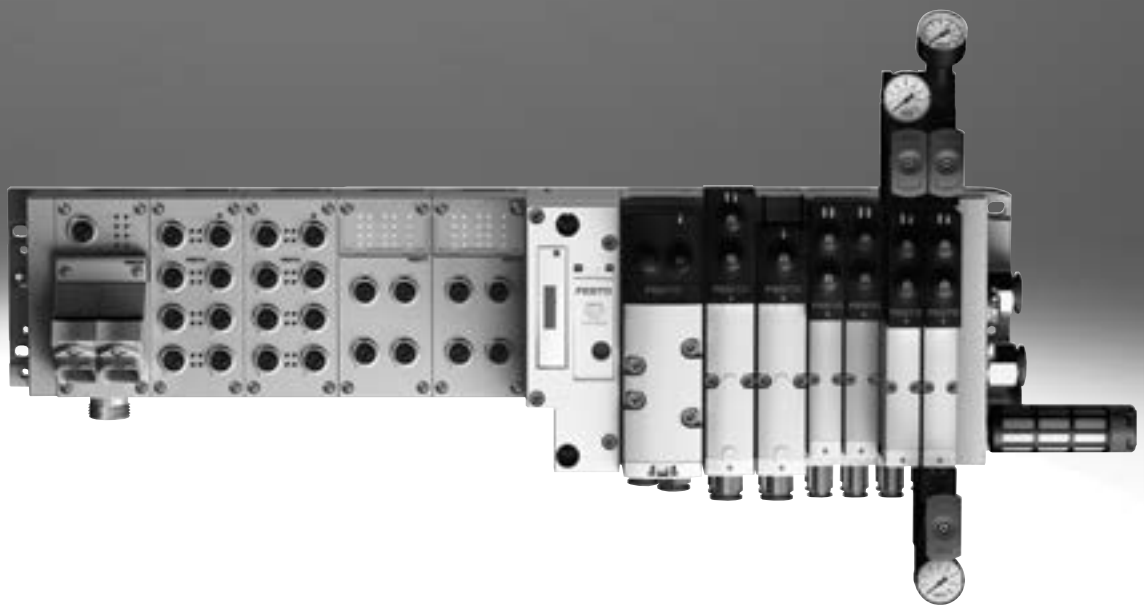
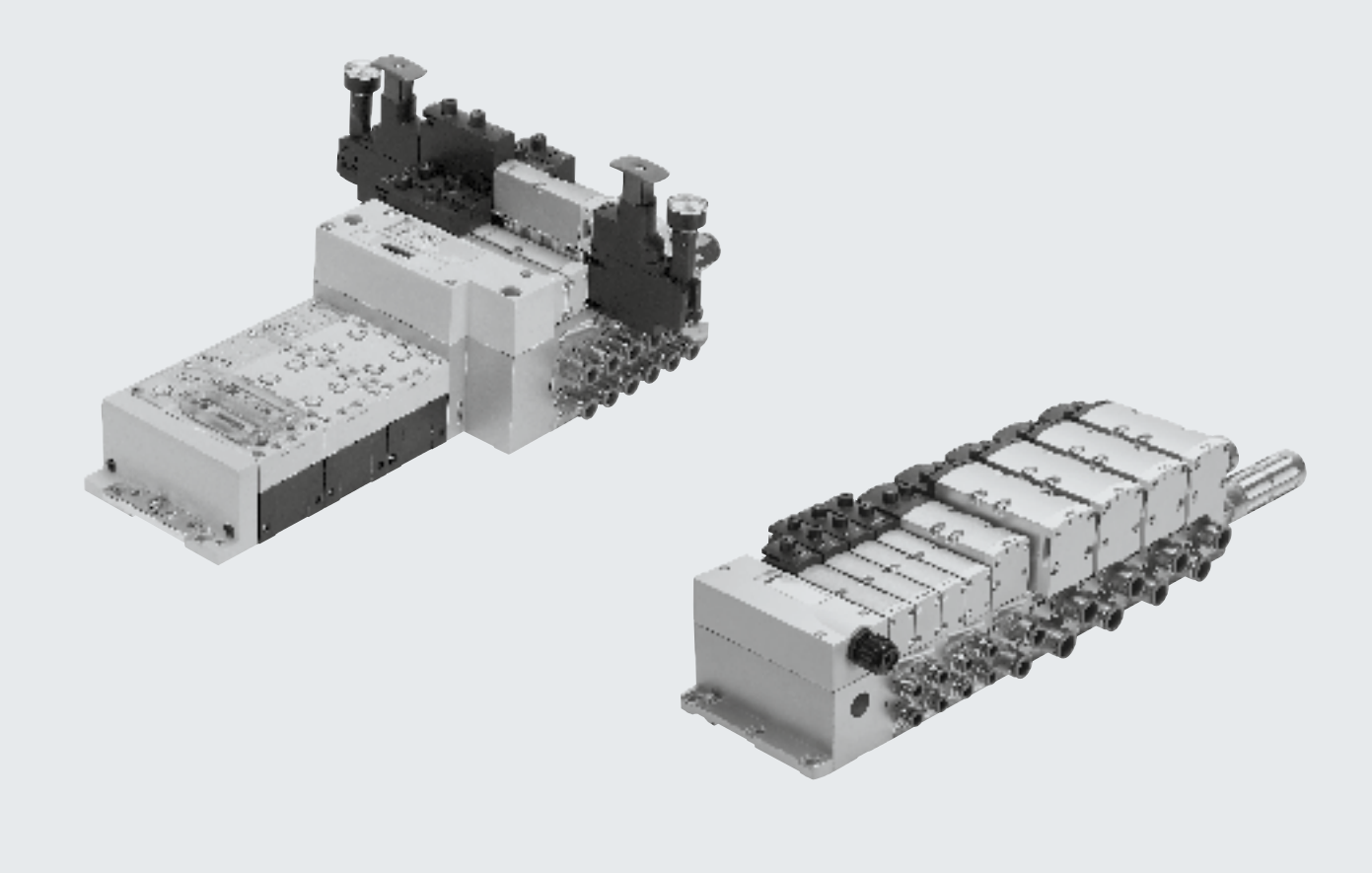
Valve terminal VTSA/VTSA-F, NPT



Key features



Innovative

- High-performance valves in a sturdy metal housing
- Five valve sizes on one valve terminal (width 65 mm with adapter)
- Standardised from the multi-pin plug to the fieldbus connection and control block
- Dream team: fieldbus valve terminal suitable for electrical peripherals CPX. This means:
  - Forward-looking internal communication system for actuating the valves and CPX modules
  - Four valve sizes on one valve terminal without adapters
- Valve functions for integration in control architectures of higher categories to EN ISO 13849-1

Flexible

- Modular system offering a range of configuration options
- Up to 32 solenoid coils
- Conversions and extensions are possible at any time
- Possible to integrate innovative function modules
- Flexible air supply and variable pressure zones
- Reverse operation
- High pressure range
- –0.9 ... 10 bar, flow rate range 550 ... 4000 l/min
- Wide range of valve functions
- Valves: 24 V DC

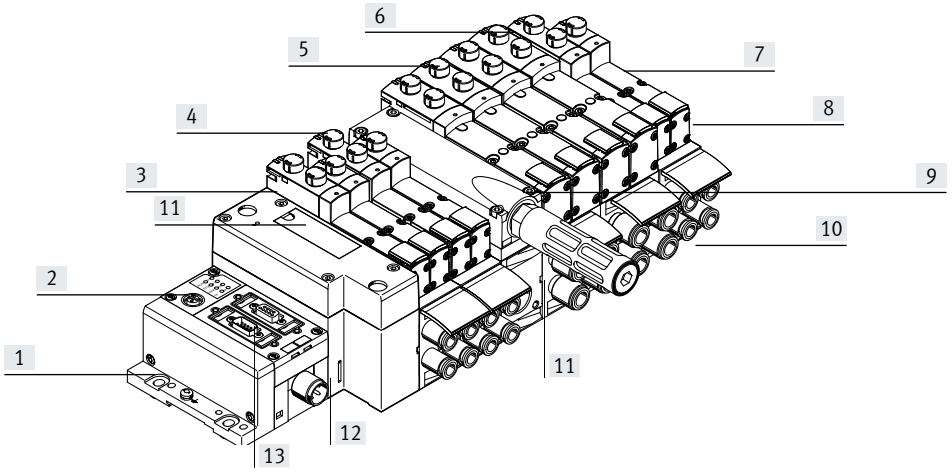
Reliable

- Sturdy and durable metal components
  - Valves
  - Manifold sub-bases
  - Seals
- Fast troubleshooting with LEDs on the valves and diagnostics via fieldbus
- Reliable servicing thanks to valves that can be replaced quickly and easily
- Manual override, either non-detenting, non-detenting/detenting or concealed
- Durable thanks to tried-and-tested piston spool valves
- Large and durable labelling system
- 100% duty cycle

Easy to install

- Ready-to-install and tested unit
- Reduced selection, ordering, installation and commissioning costs
- Secure mounting on a wall or H-rail
- Manifold sub-bases can be extended using four screws, sturdy duct separation on metal support

Key features



[1] Quick to mount: directly using screws or H-rail
[2] CPX diagnostic interface for hand-held devices (channel-oriented diagnostics down to the individual valve)
[3] Pneumatic interface to CPX
[4] Widths 18 mm, 26 mm, 42 mm and 52 mm can be combined on one valve terminal without an adapter
[5] Reduced downtimes: on-site LED diagnostics
[6] Safe operation: manual override non-detenting, non-detenting/detenting or concealed
[7] Versatile: 32 valve positions/32 solenoid coils
One valve series for a wide range of flow rates
[8] Comprehensive range of valve functions
[9] Modular: air supply plate facilitates the creation of multiple pressure zones as well as numerous additional exhaust and supply ports
[10] Practical: large connections, flow-optimised ducts, sturdy metal threads or pre-assembled push-in connections for compressed air tubing with standardised O.D.
[11] Convenient: large inscription labels
[12] Reliable: valves, outputs and logic voltage can be switched off separately
[13] Simple electrical connections
– Fieldbus interface via CPX
– Multi-pin plug connection with pre-assembled cable or terminal strip (Cage Clamp®)
– Control block via CPX
– AS-Interface
– Individual connection
– IO-Link®
– AP interface

Equipment options

Valve functions

- 2x 2/2-way valve, single solenoid, pneumatic spring, normally closed
- 2x 3/2-way valve, single solenoid
  – Normally open
  – Normally open, reversible
  – Normally closed
  – Normally closed, reversible
- 2x 3/2-way valve, single solenoid
  – 1x normally open, 1x normally closed
  – 1x normally open, 1x normally closed, reversible
- 5/2-way solenoid valve
  – Single solenoid, pneumatic spring/mechanical spring
  – Double solenoid
  – Double solenoid with dominant signal
- 5/2-way valves for special functions, single solenoid
  – Mechanical spring
  – Switching position sensing via inductive sensors with PNP or NPN output
  – Protection against unexpected start-up to EN 1037
  – Reversing
- 5/3-way solenoid valve
  – Mid-position pressurised
  – Mid-position closed
  – Mid-position exhausted
- 5/3-way solenoid valve for special functions
  – Switching position 14 is retained (switching position 14 is retained in the event of an emergency off application/power failure), there is no spring return to switching position 12.
  – Only for valve terminal (plug-in)
  – Mid-position exhausted or mid-position 1→2, 4→5
  – Switching position 14 is retained
  – pneumatic spring return
- 5/3-way solenoid valve for special functions
  – Switching position 12 is retained (switching position 12 is retained in the event of an emergency off application/power failure), there is no spring return to switching position 14.
  – Only for valve terminal (plug-in)
  – Mid-position exhausted or mid-position 1→4, 2→3
  – Switching position 12 is retained
  – pneumatic spring return
- Soft-start valve for slow and safe pressure build-up
  – High degree of safety
  – Sensing function provides feedback on switching operation

Key features

Special features

Individual valve on individual sub-base up to width 52 mm

Plug-in
- Electrical connection via standardised 4-pin M12 plug or via 4-pin spring-loaded terminal for configuration by the user
- Available with internal/external pilot air supply

Square plug or plug-in, with integrated switching position sensing
- Electrical connection to DIN EN 175301-803 type C (square plug) or
- For configuration by the user via 4-pin spring-loaded terminal or
- Cable with open end

Valve terminal with fieldbus connection and electrical peripherals

CPX terminal
- Max. 32 valve positions/max. 32 solenoid coils
- Any compressed air supply
- Any number of pressure zones

Valve terminal with individual connection
- Max. 20 valve positions/max. 20 solenoid coils
- Any compressed air supply
- Any number of pressure zones

Valve terminal with multi-pin plug connection
- Max. 32 valve positions/max. 32 solenoid coils
- Parallel, modular valve links
- Any compressed air supply
- Any number of pressure zones

AS-Interface
- 1 to 8 valve positions/ max. 8 solenoid coils
- Soft-start valve for slow and safe pressure build-up

Can be combined
- Width 18 mm: flow rate of VTSA up to 550 l/min, VTSA-F up to 700 l/min
- Width 26 mm: flow rate of VTSA up to 1100 l/min, VTSA-F up to 1350 l/min
- Width 42 mm: flow rate of VTSA up to 1300 l/min, VTSA-F up to 1860 l/min
- Width 52 mm: valve flow rate up to 2900 l/min
- Widths 18 mm, 26 mm, 42 mm, 52 mm and 65 mm can be combined on a single valve terminal (using an adapter)

Note
- Valve terminal VTSA complies with ISO 15407-2 in width 18 and 26 mm and
- with ISO 5599-2 in width 42 and 52 mm

I-Port
- Max. 16 valve positions/max. 32 solenoid coils
- Connection to an I-Port master
- Direct mounting of a bus node

IO-Link®
- Max. 16 valve positions/max. 32 solenoid coils
- Connection to an IO-Link® master

AP interface
- Max. 12 valve positions/ max. 24 solenoid coils
- Connection to an AP bus master

Key features

Valve terminal configurator → Internet: www.festo.com

A valve terminal configurator is available to help you select a suitable valve terminal VTSA/VTSA-F, making it much easier to order the right product.

The valve terminals are assembled according to your order specification and are individually checked. This reduces assembly and installation time to a minimum.

Order a valve terminal VTSA using the order code:

Ordering system for VTSA
→ Internet: vtsa

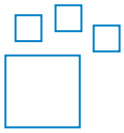
Ordering system for CPX
→ Internet: cpx

Order a valve terminal VTSA-F using the order code:

Ordering system for VTSA-F
→ Internet: vtsa-f

Ordering system for CPX
→ Internet: cpx

Ordering data – Product options



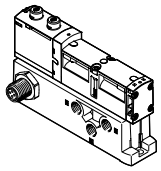
Configurable product
This product and all its product options can be ordered using the configurator.

The configurator can be found at
→ www.festo.com/catalogue/...
Enter the part number or the type.

Part no.	Type
539216	VTSA-MP-NPT
539218	VTSA-FB-NPT
547964	VTSA-F-MP-NPT
547966	VTSA-F-FB-NPT
555565	VTSA-ASI-NPT
555567	VTSA-F-ASI-NPT

Key features

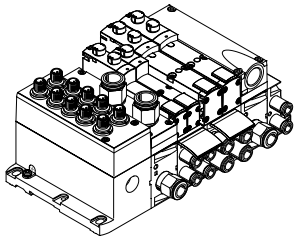
Individual pneumatic connection



Valves on individual sub-bases up to width 52 mm can be used for actuators further away from the valve terminal.

The electrical connection is established either via a standard 4-pin M12 plug, 24 V DC (EN 61076-2-101), a 4-pin spring-loaded terminal or a cable with open end 24 V DC, which are configured by the user.

Valve terminal with individual electrical connection

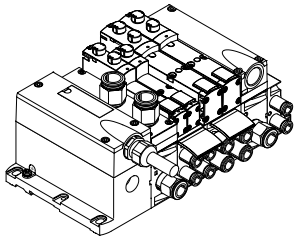


Control signals from the controller to the valve terminal are transmitted via an individual connecting cable.

The valve terminal can be equipped with a maximum of 20 valves and a maximum of 20 solenoid coils.

The electrical connection is established via a 5-pin M12 plug, 24 V DC.

Valve terminal with multi-pin plug connection

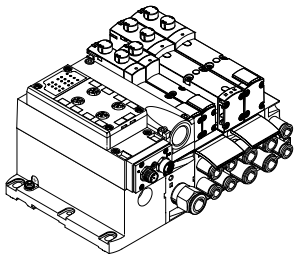


Control signals from the controller to the valve terminal are transmitted via a pre-assembled multi-core cable or a multi-pin plug connection assembled by the user (spring-loaded terminal). This substantially reduces installation time.

The valve terminal can be equipped with a maximum of 32 valves and a maximum 32 solenoid coils.

Variants
- Multi-pin plug connection with terminal strip (spring-loaded terminal), 24 V DC
- Pre-assembled connecting cable, 24 V DC
- Sub-D plug connector for assembly by the user, 37-pin
- Round plug connector M23, 19-pin, 24 V DC

AS-Interface connection



A special feature of the AS-Interface is the simultaneous transmission of data and supply power via a two-core cable. The encoded cable profile prevents connection with incorrect polarity.
The valve terminal with AS-Interface is available in the following versions:

- With one to eight modular valve positions (max. 8 solenoid coils). This corresponds to one to eight valves VSVA.
- With all available valve functions

The connection technology used for the inputs can be selected as with CPX: M8, M12, Sub-D, spring-loaded terminal (terminals to IP20).

More information
→ Internet: as-interface

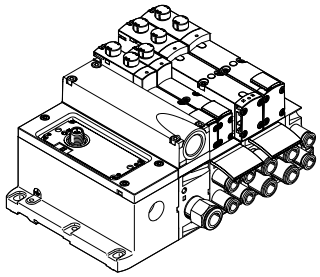
Note

The valve terminal VTSA/VTSA-F with AS-Interface connection is based on the same electrical links as the valve terminal with multi-pin plug connection. This means a valve terminal with multi-pin plug connection can be converted using an AS-Interface module (→ page 135). The technical specifications of the AS-Interface system must be observed in this case.

→ Page 62
→ Internet: as-interface

Key features

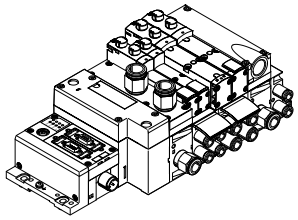
Valve terminal with I-Port/IO-Link® connection



The connection to a higher-order controller can be achieved by:
- Connection to an I-Port master from Festo (e.g. CPX-CTEL)
- Direct mounting of a bus node on the I-Port interface
- Connection to an IO-Link® master (in IO-Link® mode)

The valve terminal can comprise a maximum of 32 solenoid coils or 16 valve positions.

Valve terminal with fieldbus interface from the CPX system



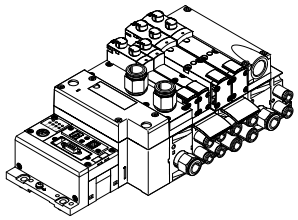
An integrated fieldbus node manages the communication connection with a higher-order PLC. This enables a space-saving pneumatic and electrical solution to be implemented.

Valve terminals with fieldbus interfaces from the CPX system can be configured with up to 16 manifold sub-bases. With 2 solenoid coils per connection, up to 32 solenoid coils can thus be actuated.

Variants
- PROFIBUS
- DeviceNet
- CANopen
- CC-Link
- EtherNet/IP
- EtherCAT
- Modbus TCP
- PROFINET
- POWERLINK
- Sercos III

→ Internet: cpx

Valve terminal with control block connection from the CPX system



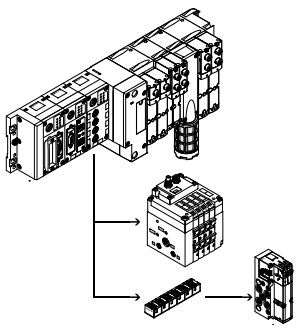
A controller integrated in the Festo valve terminal enables the construction of stand-alone control units with protection to IP65 without a control cabinet thanks to two different operating modes.

In the slave operating mode, these valve terminals can be used for intelligent preprocessing and are therefore ideal modules for designs using decentralised intelligence.

In the master operating mode, terminal groups can be designed with many options and functions that can autonomously control a medium-sized machine/system.

→ Internet: cpx

CP string extension from the CPX system



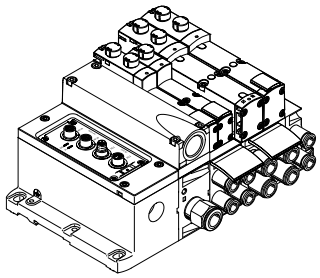
The optional CP string extension enables additional valve terminals and I/O modules to be connected to the fieldbus node of the CPX terminal on up to 4 CP strings. Different input and output modules as well as valve terminals MPA-S and CPV can be connected.

The maximum length of the CP string extension is 10 metres, which means that the extension modules can be mounted directly on-site. All the required electrical signals are transmitted via the CP cable, which in turn means that no further installation is needed on the extension module.

One CP string offers:
- 32 input signals
- 32 output signals for output modules 24 V DC or solenoid coils
- Logic and sensor supply for the input modules
- Load voltage supply for the valve terminals
- Logic supply for the output module

→ Internet: cpi

Valve terminal with AP interface

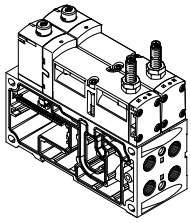


Control signals from the controller to the valve terminal are transmitted via the AP bus protocol from Festo.

The valve terminal can comprise a maximum of 24 solenoid coils or 12 valve positions.

Key features – Valves

Solenoid valve with switching position sensing, width 18 mm, 26 mm



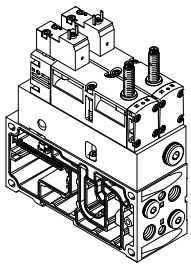
The 5/2-way single solenoid valve with spring return in width 26 mm features switching position sensing.
The normal position of the piston spool is monitored.

It is available as a plug-in or individual connection valve with pilot valves to ISO 15218 and square plug type C.
This valve is not a safety device in accordance with the Machinery Directive 2006/42/EC.

It is suitable for use in safety-related parts of control systems to EN ISO 13849-1.

➔ Page 138

Control block with safety function, width 26 mm



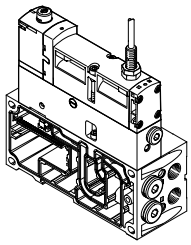
5/2-way solenoid valve
These valves are used for special applications, for example for:
- Protection against unexpected start-up
- Safe reversing
- Drives in manually loaded devices

This control block is suitable for use as a press safety valve to EN 962.

This valve is a safety device in accordance with the Machinery Directive 2006/42/EC.

➔ Page 148

Pilot air switching valve, width 18 mm, 26 mm



The pilot air switching valve is a combination of a 5/2-way solenoid valve with switching position sensing and the intermediate plate VABF-S4-...-S. It enables the pilot air to be verifiably switched on and off (sensing function) from duct 1 to 14 for the entire pressure zone or valve terminal.

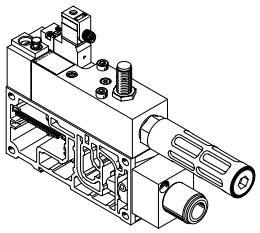
Switching position sensing is carried out using an inductive PNP proximity switch with cable and M12x1 push-in connector to EN 61076-2-104.

This valve is not a safety device in accordance with the Machinery Directive 2006/42/EC.
It is suitable for use in safety-related parts of control systems to EN ISO 13849-1.

➔ Page 155

Note
The pilot air switching valve can only be operated on the valve terminal VTSA/VTSA-F in combination with a right end plate for external pilot air type VABE-S6-1RZ-.... Port 14 on the right end plate must then be sealed.

Soft-start valve, module width 43 mm



The soft-start valve is separately electrically actuated, independently of the multi-pin plug connection, AS-Interface or fieldbus interface, via a square plug of type C to EN 175301-803 or optionally via an M12 adapter.

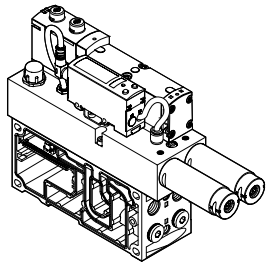
The valve can optionally be ordered with a sensor that monitors switching of the soft-start valve. The soft-start valve can supply the valve terminal or one or more pressure zones with working air.

The pressure build-up for each pressure zone is optimised for the application directly at the valve terminal by setting the switch-over pressure and the filling time.
A maximum of 5 soft-start valves can be integrated on one valve terminal in this way.

➔ Page 164

Key features – Valves

Vacuum block, module width 53 mm



5/3-way solenoid valve, with switching position 12 retained.
The vacuum block is screwed to a manifold sub-base for 2 valve positions, width 26 mm, and thus integrated into the valve terminal VTSA/VTSA-F.

The vacuum block is supplied with power and the vacuum is sensed via a standardised 4-pin M12 plug.
The vacuum block is used in conjunction with a suction gripper to pick up, hold and place components. An adjustable ejector pulse is used for setting the components down.

The vacuum block is equipped with an air saving function.
If the electrical or pneumatic supply fails, the valve moves to switching position 12 "generate vacuum".

→ Page 174

5/3-way solenoid valve for special functions

For holding, blocking a movement (mechanically)

5/3-way solenoid valve for special functions; port 2 is pressurised, port 4 exhausted. Switching position 14 is retained (code SA).

Possible applications:
- Using lifting cylinders
- Using rotary cylinders

5/3-way solenoid valve for special functions; port 2 is pressurised, port 4 exhausted. Switching position 12 is retained (code SE).

Possible applications:
- Using lifting cylinders
- Using rotary cylinders

For pressureless switching, self-holding, pneumatic operation

5/3-way solenoid valve for special functions (3 phases). Mid-position is exhausted. Switching position 14 is retained.

Possible applications:
- Pneumatic manual clamps for devices (inserting stations)

5/3-way solenoid valve for special functions (3 phases). Mid-position is exhausted. Switching position 12 is retained.

Possible applications:
- Pneumatic manual clamps for devices (inserting stations)

Peripherals

Modular pneumatic peripherals

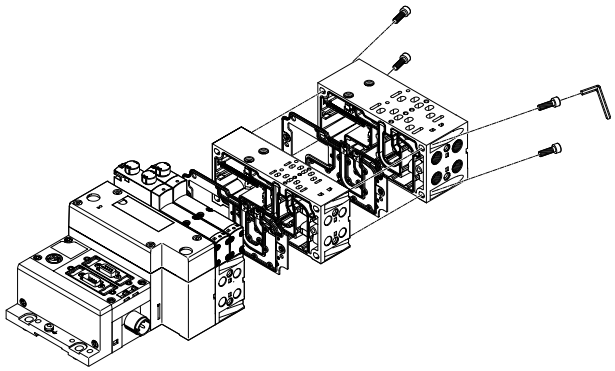
The modular design of the valve terminal VTSA/VTSA-F enables outstanding flexibility right from the planning stage and offers maximum ease of service in operation.

The system consists of manifold sub-bases and valves.
The manifold sub-bases are screwed together, thus forming the support system for the valves.

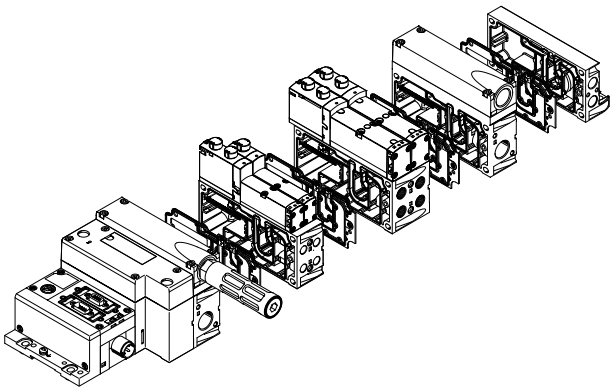
Inside the manifold sub-bases are the connection ducts for supplying compressed air to and exhausting the valve terminal as well as the working ports for the pneumatic cylinders for each valve.

Each manifold sub-base is connected to the next using four screws. Individual valve terminal sections can be isolated and further blocks easily inserted by loosening these screws. This ensures that the valve terminal can be rapidly and reliably extended.

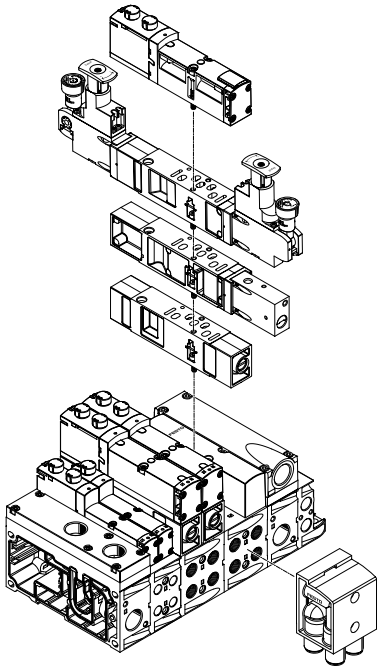
Basic system modularity



Valve modularity



Vertical stacking modularity



Peripherals

Modular electrical peripherals

The valves are actuated differently depending on whether a multi-pin terminal or fieldbus terminal is used.

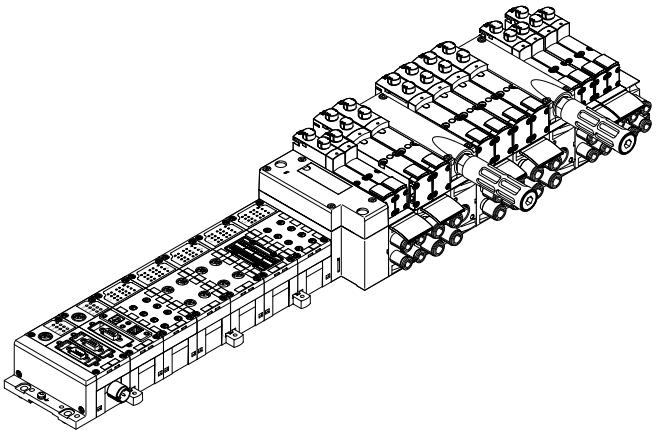
The VTSA/VTSA-F with CPX interface is based on the internal bus system of the CPX and uses this communication system for all solenoid coils and a range of electrical input and output functions.

The parallel sub-base links enable the following:
- Transmission of switching information
- Compact design
- Position-based diagnostics
- Separate power supply for valves

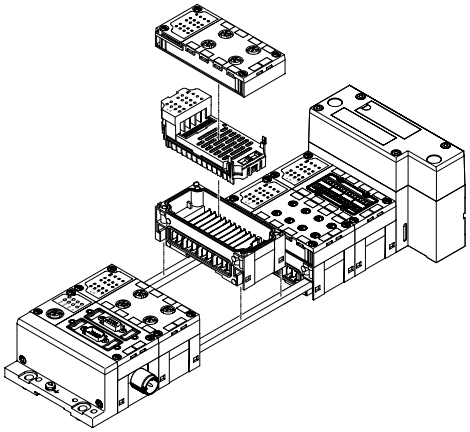
- Flexible conversion without address shifting
- Option of CP interface
- CPX-CEC as stand-alone controller with access via Ethernet and web server
- Transmission of status, parameter and diagnostic data

→ Internet: cpx

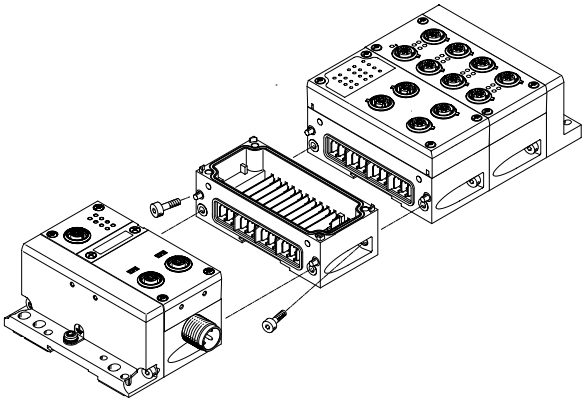
VTSA/VTSA-F with electrical peripherals CPX



Modularity with electrical peripherals CPX



CPX terminal in metal design



The CPX modules in metal design are mechanically connected to one another using an angled fitting. The CPX terminal can thus be expanded at any time.

Note

The CPX manifold blocks are also available in metal. This means a complete solution in a sturdy metal design can be selected for applications of the valve terminal VTSA/VTSA-F in welding environments.

Peripherals – Pneumatic components

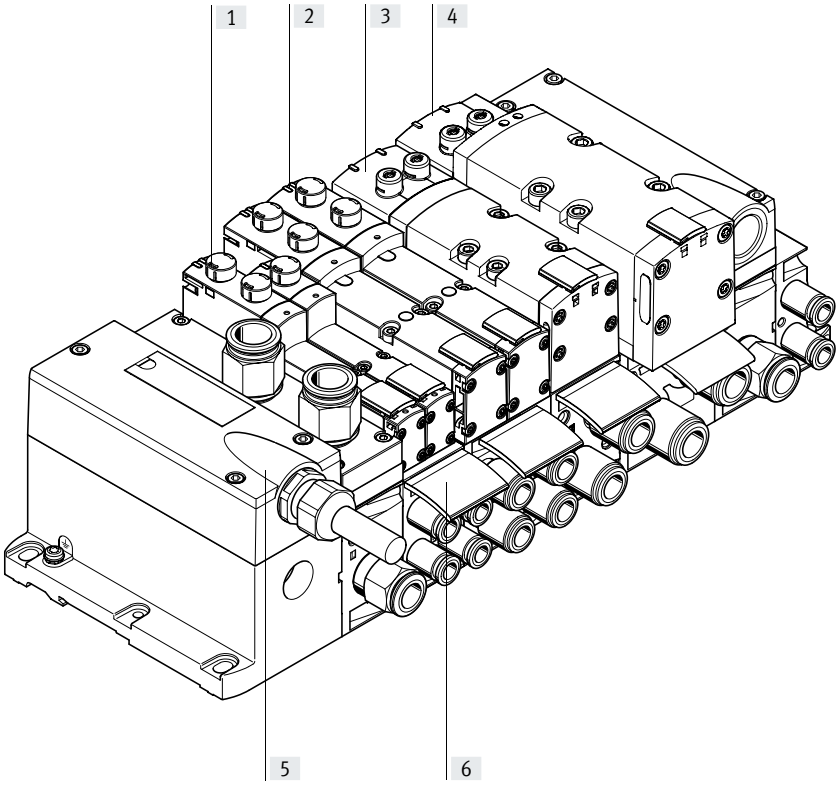
Valve terminal widths

Order code for VTSA:
- 44E-... for the electric components
- 44P-... for the pneumatic components

Order code for VTSA-F:
- 45E-... for the electric components
- 45P-... for the pneumatic components

Regardless of the type of control (e.g. multi-pin plug, fieldbus, etc.), valve terminals VTSA/VTSA-F of widths
- 18 mm
- 26 mm
- 42 mm
- 52 mm

can be combined without adapters. This enables a flow range for the VTSA of:
400 l/min to 2900 l/min
For the VTSA-F of:
700 l/min to 2900 l/min
to be covered on one valve terminal. A wide range of valve functions and vertical stacking components are available for all widths.



		Description	→ Page/Internet
[1]	Valve	Width 18 mm	98
[2]	Valve	Width 26 mm	106
[3]	Valve	Width 42 mm	114
[4]	Valve	Width 52 mm	121
[5]	Multi-pin plug connection	Via multi-pin cable, 24 V DC	135
[6]	Inscription labels	For manifold sub-base, sub-base, 90°-connection plate	137

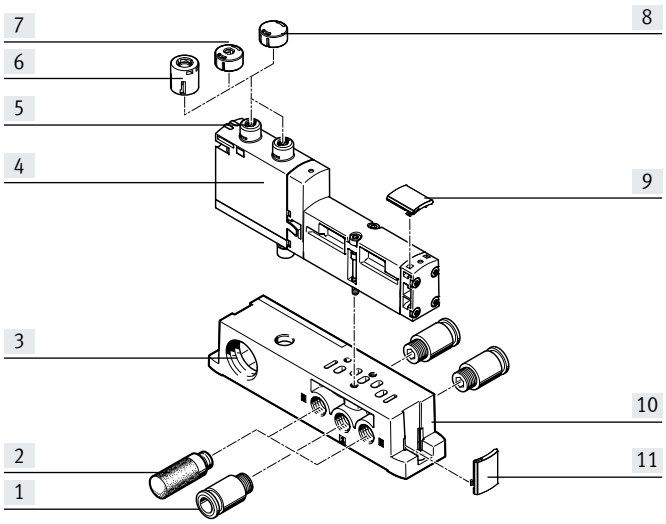
Peripherals – Pneumatic components

Individual sub-base, width 18 mm, ISO 15407-2

Order code:
- Using individual part numbers

Individual sub-bases can be equipped with any valve.

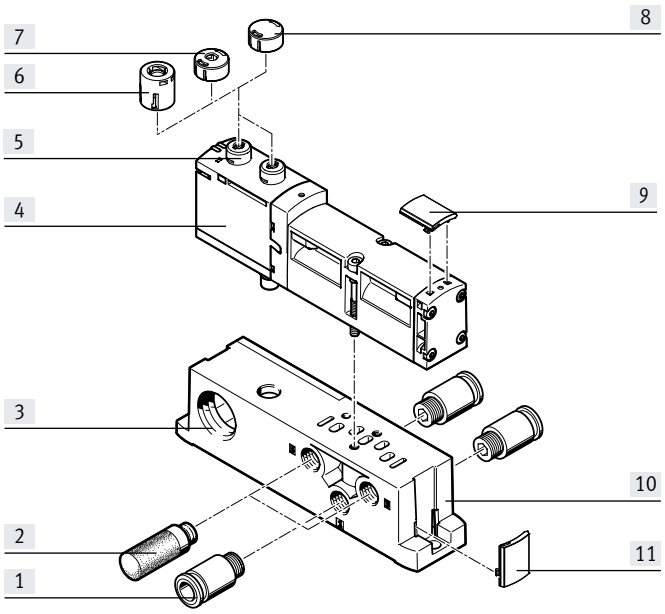
Width 18 mm with spring-loaded terminal or cable (open end)



		Description	→ Page/Internet
[1]	Fitting	1/8 NPT for working air/exhaust ports (1, 3, 5) and working ports (2, 4)	189
[2]	Silencer	U-1/8-B-NPT for exhaust ports (3, 5)	190
[3]	Electrical connection	Spring-loaded terminal, cable (open end)	–
[4]	Valve VSVA	Width 18 mm	98
[5]	Manual override	Non-detenting/detenting, per solenoid coil	–
[6]	Cover cap, heavy duty	For manual override, non-detenting heavy duty, detenting via accessory	134
[7]	Cover cap, coded	For non-detenting manual override (limited function)	134
[8]	Cover cap, concealed	MO concealed by cover cap – operation of MO prevented	134
[9]	Inscription label holder	For valves	137
[10]	Individual sub-base	For valve VSVA	188
[11]	Inscription label holder	For manifold block	137

Peripherals – Pneumatic components

Individual sub-base, width 26 mm, ISO 15407-2
With spring-loaded terminal or cable (open end)

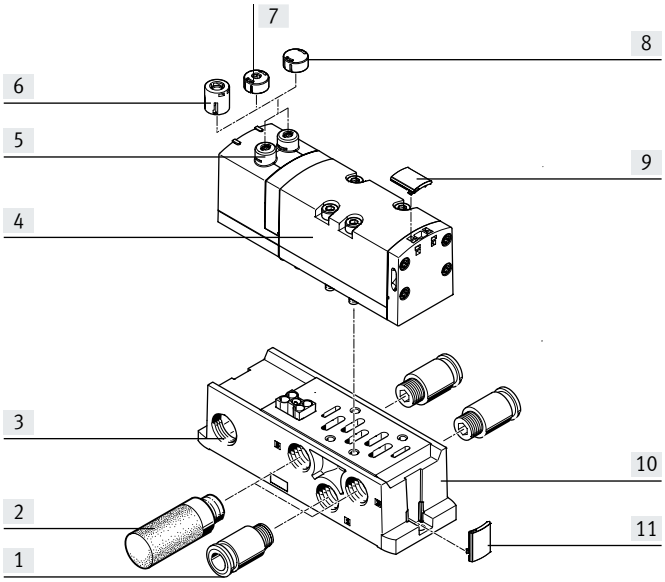


		Description	→ Page/Internet
[1]	Fitting	1/4 NPT for working air/exhaust ports (1, 3, 5) and working ports (2, 4)	189
[2]	Silencer	U-1/4-B-NPT for exhaust ports (3, 5)	190
[3]	Electrical connection	Spring-loaded terminal, cable (open end)	–
[4]	Valve VSVA	Width 26 mm	106
[5]	Manual override	Non-detenting/detenting, per solenoid coil	–
[6]	Cover cap, heavy duty	For manual override, non-detenting heavy duty, detenting via accessory	134
[7]	Cover cap, coded	For non-detenting manual override (limited function)	134
[8]	Cover cap, concealed	MO concealed by cover cap – operation of MO prevented	134
[9]	Inscription label holder	For valves	137
[10]	Individual sub-base	For valve VSVA	188
[11]	Inscription label holder	For manifold block	137

Peripherals – Pneumatic components

Individual sub-base, width 42 mm, ISO 5599-2

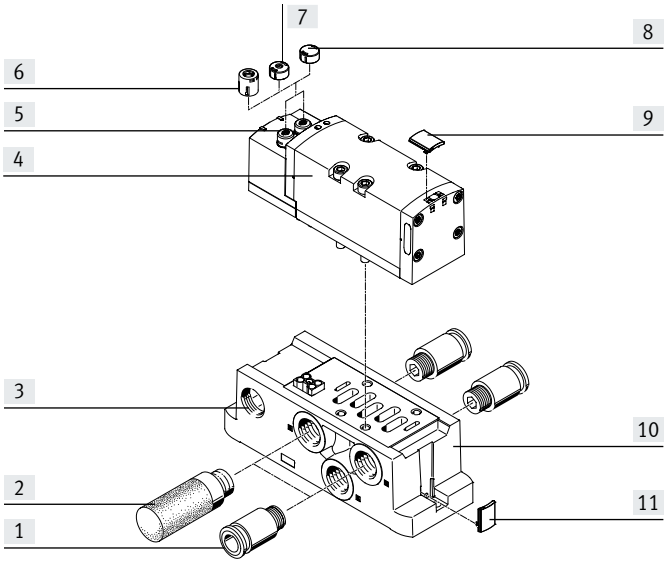
With spring-loaded terminal or cable (open end)



		Description	→ Page/Internet
[1]	Fitting	3/8 NPT for working air/exhaust ports (1, 3, 5) and working ports (2, 4)	189
[2]	Silencer	U-3/8-B-NPT for exhaust ports (3, 5)	190
[3]	Electrical connection	Spring-loaded terminal, cable (open end)	–
[4]	Valve VSVA	Width 42 mm	114
[5]	Manual override	Non-detenting/detenting, per solenoid coil	–
[6]	Cover cap, heavy duty	For manual override, non-detenting heavy duty, detenting via accessory	134
[7]	Cover cap, coded	For non-detenting manual override (limited function)	134
[8]	Cover cap, concealed	MO concealed by cover cap – operation of MO prevented	134
[9]	Inscription label holder	For valves	137
[10]	Individual sub-base	For valve VSVA	188
[11]	Inscription label holder	For manifold block	137

Peripherals – Pneumatic components

Individual sub-base, width 52 mm, ISO 5599-2
With spring-loaded terminal or cable (open end)



		Description	→ Page/Internet
[1]	Fitting	1/2 NPT for working air/exhaust ports (1, 3, 5) and working ports (2, 4)	189
[2]	Silencer	U-1/2-B-NPT for exhaust ports (3, 5)	190
[3]	Electrical connection	Spring-loaded terminal, cable (open end)	–
[4]	Valve VSVA	Width 52 mm	121
[5]	Manual override	Non-detenting/detenting, per solenoid coil	–
[6]	Cover cap, heavy duty	For manual override, non-detenting heavy duty, detenting via accessory	134
[7]	Cover cap, coded	For non-detenting manual override (limited function)	134
[8]	Cover cap, concealed	MO concealed by cover cap – operation of MO prevented	134
[9]	Inscription label holder	For valves	137
[10]	Individual sub-base	For valve VSVA	188
[11]	Inscription label holder	For manifold block	137

Peripherals – Pneumatic components

Pneumatic components of the valve terminal

The manifold sub-bases for valves with a width of 18 or 26 mm are suitable for either

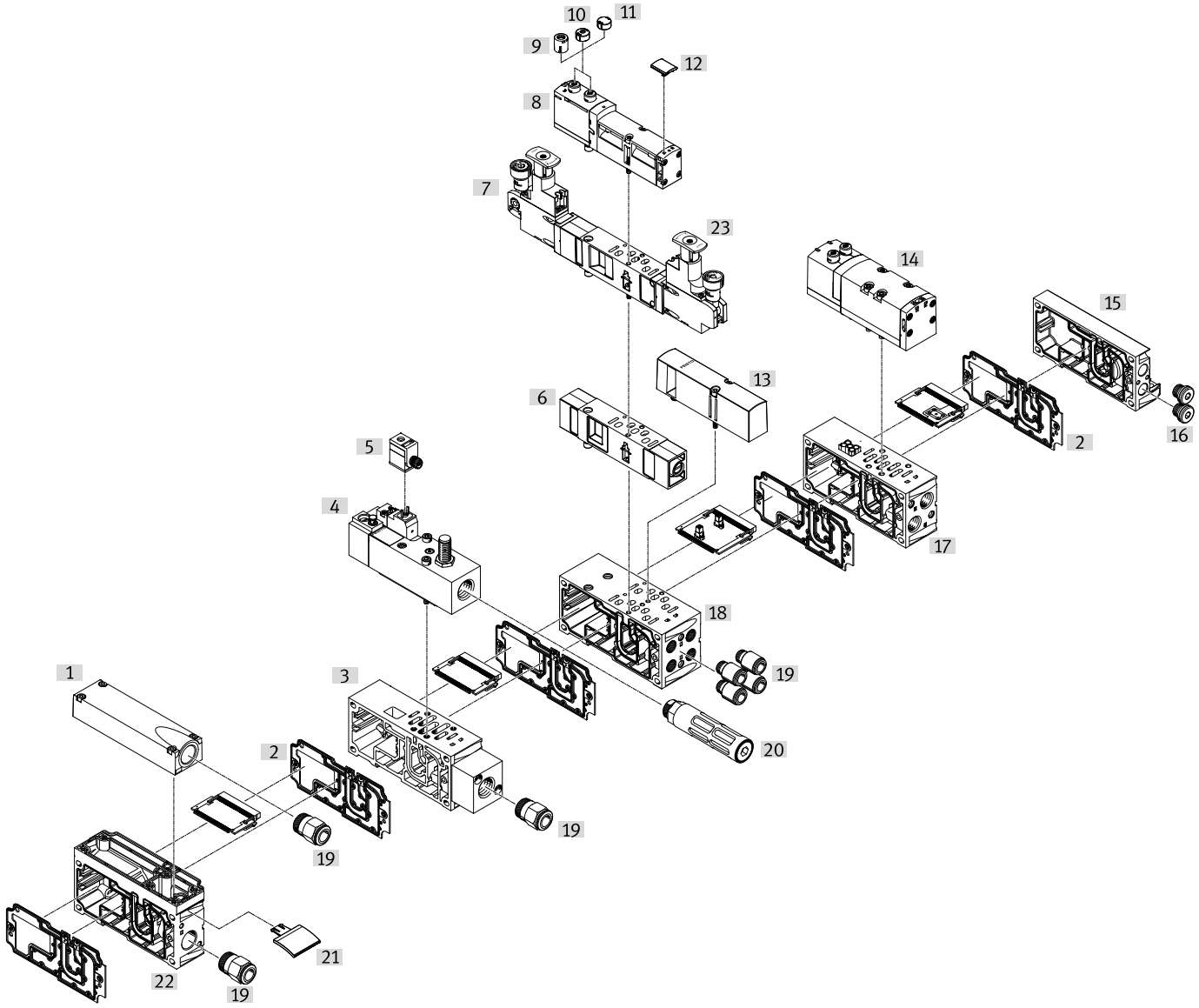
- 2 single solenoid valves or
- 2 double solenoid valves

depending on the size.

The manifold sub-bases for valves with a width of 42 or 52 mm are suitable for

- 1 single solenoid valve or
- 1 double solenoid valve

- Double solenoid valve positions can be equipped with any valve or a blanking plate.
- Single solenoid valve positions can only be equipped with single solenoid valves or a blanking plate.



Peripherals – Pneumatic components

Pneumatic components of the valve terminal			
		Description	→ Page/Internet
[1]	Exhaust port cover	For ducted exhaust air (ports 3 and 5 combined)	129
[2]	Duct separation/seal	–	129
[3]	Manifold sub-base	For soft-start valve	172
[4]	Soft-start valve	For slow and safe pressure build-up	172
[5]	Plug socket	–	173
[6]	Throttle plate	–	134
[7]	Pressure regulator plate	–	130
[8]	Valve	Width 18 mm or 26 mm	98, 106
[9]	Cover cap, heavy duty	For manual override, non-detenting heavy duty, detenting via accessory	134
[10]	Cover cap, coded	For non-detenting manual override (limited function)	134
[11]	Cover cap, concealed	MO concealed by cover cap – operation of MO prevented	134
[12]	Inscription label holder	For valve	137
[13]	Blanking plate	For unused valve position (vacant position)	134
[14]	Valve	Width 42 mm or 52 mm	114, 121
[15]	End plate with pilot air selector	–	128
[16]	Blanking plug	–	190
[17]	Manifold sub-base VTSA	For valves with a width of 42 mm or 52 mm	128
[17]	Manifold sub-base VTSA-F	For valves with a width of 42 mm or 52 mm	128
[18]	Manifold sub-base VTSA	For valves with a width of 18 mm or 26 mm	128
[18]	Manifold sub-base VTSA-F	For valves with a width of 18 mm or 26 mm	128
[19]	Fittings	–	189
[20]	Silencer	–	190
[21]	Inscription label holder	For manifold sub-base, sub-base, 90°-connection plate	137
[22]	Supply plate	–	129
[23]	Control element	Regulator knobs in different versions	34

Note

Special applications for the valve terminal, such as:
- Solenoid valve with switching position sensing
- Control block with safety function
- Pilot air switching valve
- Soft-start valve
- Vacuum block

are listed after → Accessories – General

Peripherals – Electrical components

Valve terminal with individual electrical connection

Order code for VTSA:
- 44E-... for the electric components
- 44P-... for the pneumatic components

Order code for VTSA-F:
- 45E-... for the electric components
- 45P-... for the pneumatic components

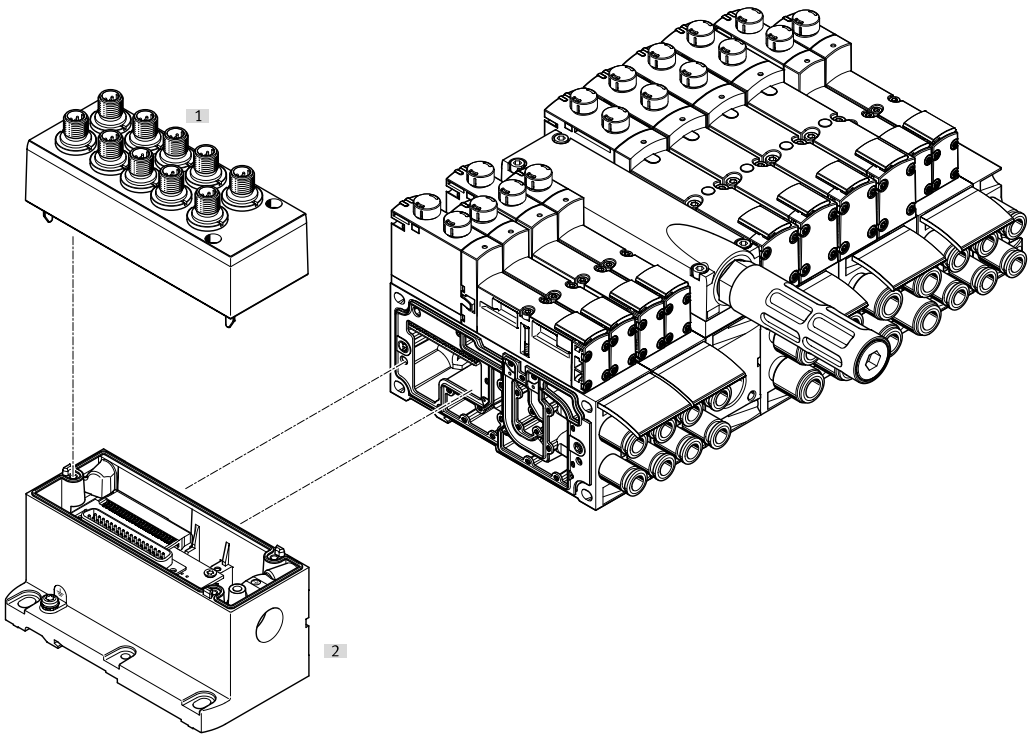
Valve terminals VTSA/VTSA-F with individual electrical connection can be expanded with up to 20 valves with max. 20 solenoid coils.
The manifold sub-bases for valves with a width of 18 or 26 mm are suitable for either
- 2 single solenoid valves or
- 2 double solenoid valves

and the manifold sub-bases for valves with a width of 42, 52 and 65 mm are suitable for
- 1 single solenoid valve or
- 1 double solenoid valve

depending on the size.

- Double solenoid valve positions can be equipped with any valve or a blanking plate.
- Single solenoid valve positions can only be equipped with single solenoid valves or a blanking plate.
- The electrical connection is established via a 5-pin M12 plug (24 V DC).

		Description	→ Page/Internet
[1]	Cover	For individual connection	135
[2]	Multi-pin plug connection	Individual connection with M12, 10-way or 6-way (including cover)	135



Peripherals – Electrical components

Valve terminal with electrical multi-pin plug connection

Order code for VTSA:
- 44E-... for the electric components
- 44P-... for the pneumatic components

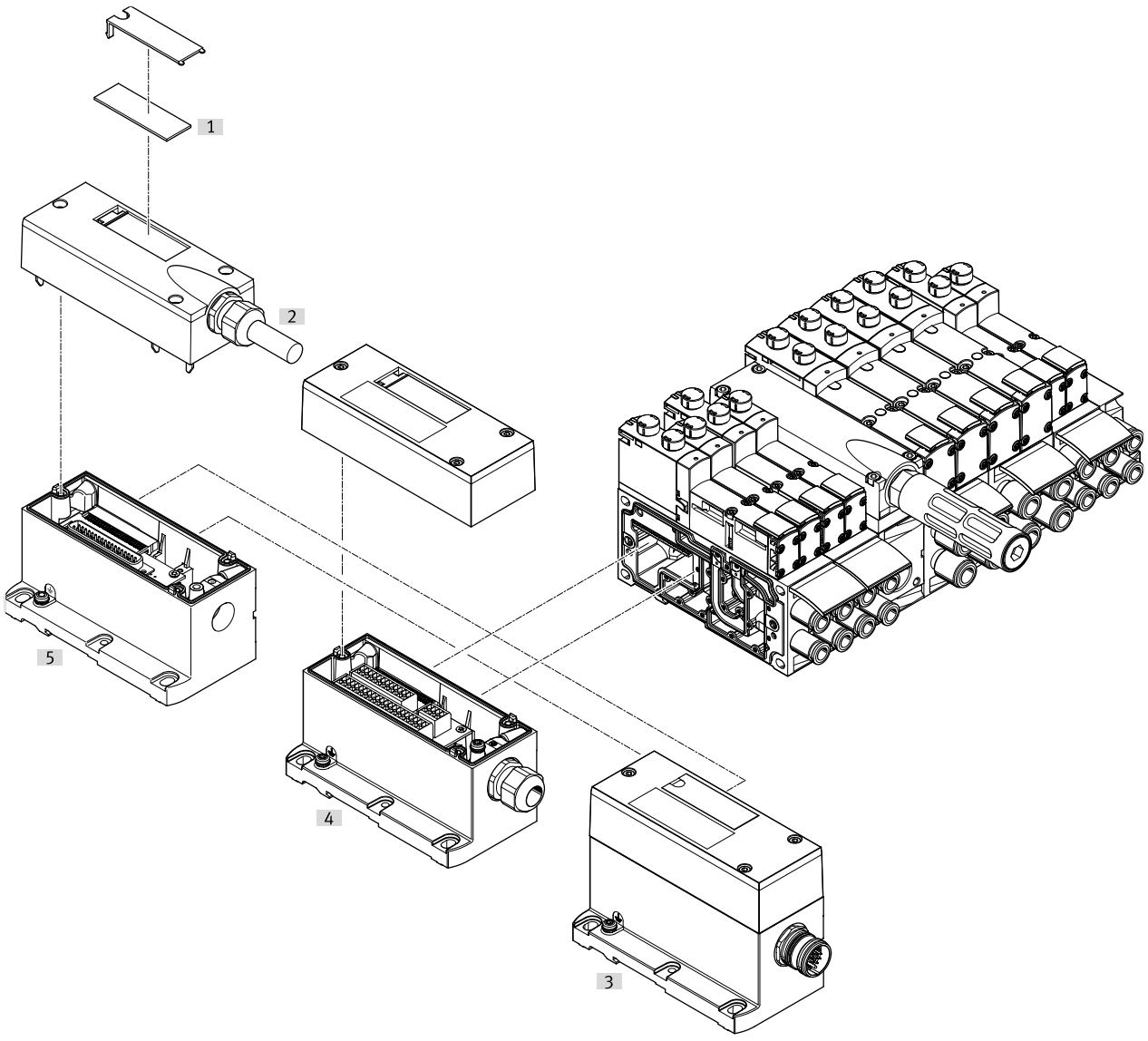
Order code for VTSA-F:
- 45E-... for the electric components
- 45P-... for the pneumatic components

Valve terminals VTSA/VTSA-F with electrical multi-pin plug connection can be expanded with up to 32 valves with max. 32 solenoid coils. The manifold sub-bases for valves with a width of 18 or 26 mm are suitable for
- 2 single solenoid valves or
- 2 double solenoid valves

and the manifold sub-bases for valves with a width of 42, 52 and 65 mm are suitable for
- 1 single solenoid valve or
- 1 double solenoid valve

- Double solenoid valve positions can be equipped with any valve or a blanking plate.
- Single solenoid valve positions can only be equipped with single solenoid valves or a blanking plate.
- The following multi-pin plug connections to IP65 are available:
- 37-pin Sub-D connection (24 V DC): the connecting cable can be ordered in lengths of 2.5 m, 5 m and 10 m for max. 8, 22 or 32 solenoid coils respectively.
- Terminal strip (24 V DC), 19-pin round plug (24 V DC)

		Description	→ Page/Internet
[1]	Inscription labels	Large, for multi-pin plug connection	–
[2]	Multi-pin cable	–	136
[3]	Multi-pin plug connection	Via M23 round plug connection, 24 V DC	135
[4]	Multi-pin plug connection	Via terminal strip (CageClamp) 24 V DC	135
[5]	Multi-pin plug connection	Via multi-pin cable, 24 V DC	135



Peripherals – Electrical components

Valve terminal with AS-Interface connection

Order code for VTSA:
- 52E-... for the electric components
- 44P-... for the pneumatic components

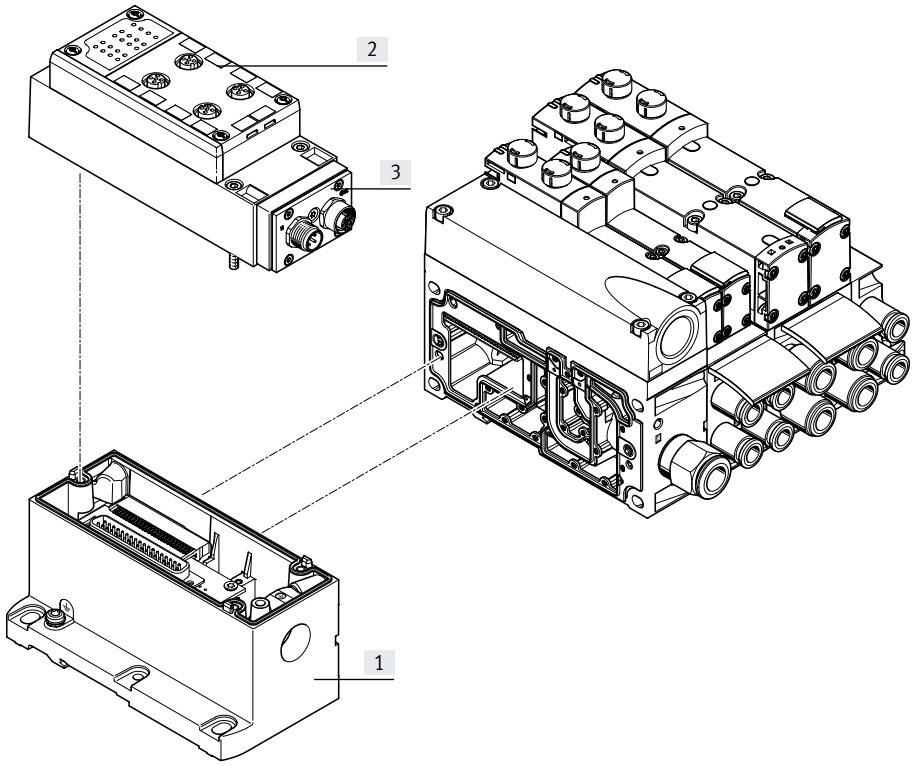
Order code for VTSA-F:
- 52E-... for the electric components
- 45P-... for the pneumatic components

Valve terminals VTSA/VTSA-F with AS-Interface connection can be expanded with up to 8 valves with max. 8 solenoid coils. The manifold sub-bases for valves with a width of 18 or 26 mm are suitable for either
- 2 single solenoid valves or
- 2 double solenoid valves

and the manifold sub-bases for valves with a width of 42, 52 and 65 mm are suitable for
- 1 single solenoid valve or
- 1 double solenoid valve

depending on the size.

- Double solenoid valve positions can be equipped with any valve or a blanking plate.
- Single solenoid valve positions can only be equipped with single solenoid valves or a blanking plate.



		Description	→ Page/Internet
[1]	Multi-pin plug connection	Can be ordered together with the AS-Interface module as an electrical connection for AS-Interface	135
[2]	Manifold block for AS-Interface	–	136
[3]	AS-Interface module	–	135

Peripherals – Electrical components

Valve terminal with I-Port/IO-Link® connection

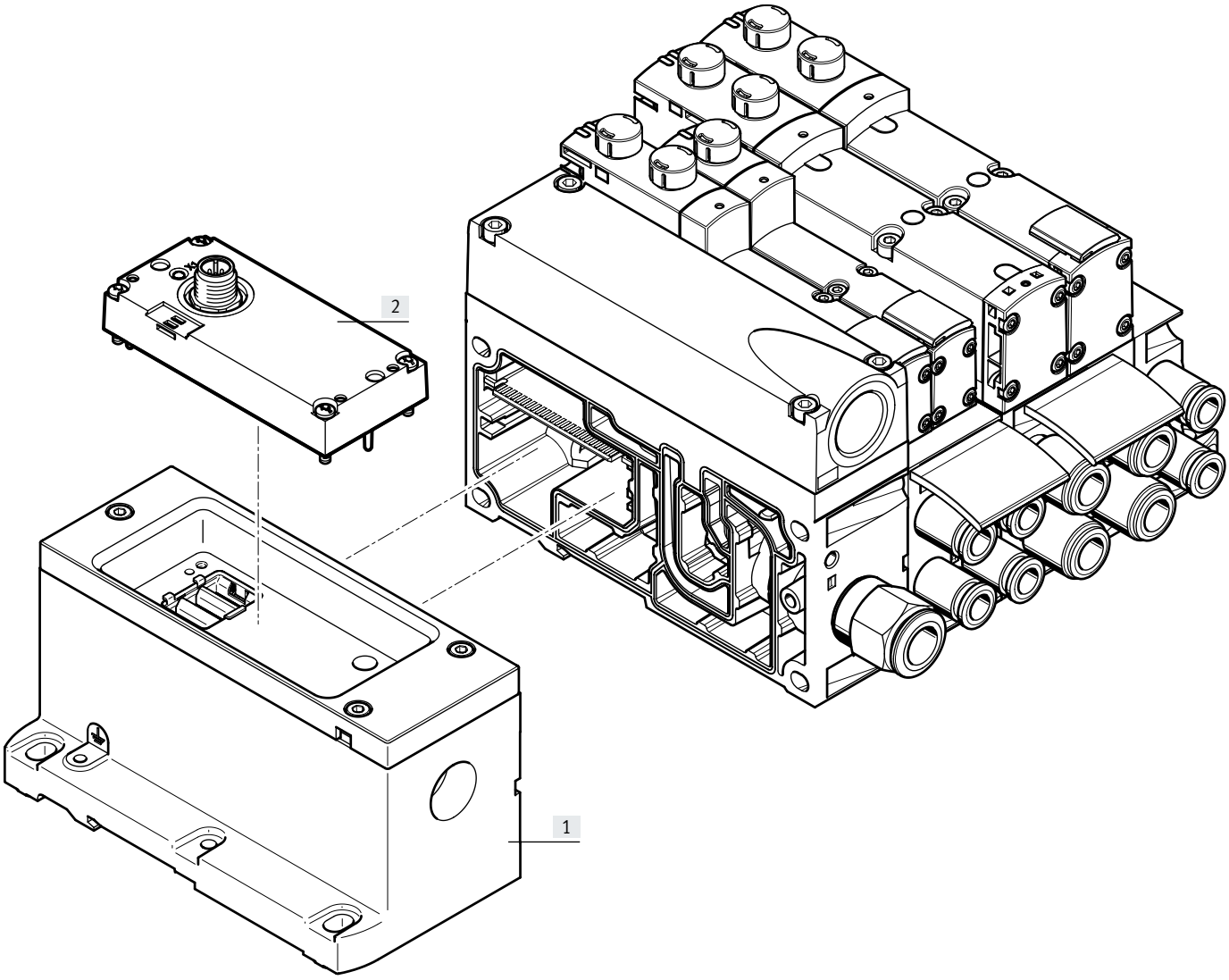
Order code for VTSA:
- 44E-... for the electric components
- 44P-... for the pneumatic components

Order code for VTSA-F:
- 45E-... for the electric components
- 45P-... for the pneumatic components

Valve terminals VTSA/VTSA-F with I-Port/IO-Link® connection can be expanded with up to 16 valves with max. 32 solenoid coils. The manifold sub-bases for valves with a width of 18 or 26 mm are suitable for either
- 2 single solenoid valves or
- 2 double solenoid valves

and the manifold sub-bases for valves with a width of 42 or 52 mm are suitable for
- 1 single solenoid valve or
- 1 double solenoid valve

depending on the size.
- Double solenoid valve positions can be equipped with any valve or a blanking plate.
- Single solenoid valve positions can only be equipped with single solenoid valves or a blanking plate.



		Description	→ Page/Internet
[1]	Multi-pin plug connection	–	135
[2]	I-Port/IO-Link® connection	Electrical interface IO-Link®	135

Peripherals – Electrical components

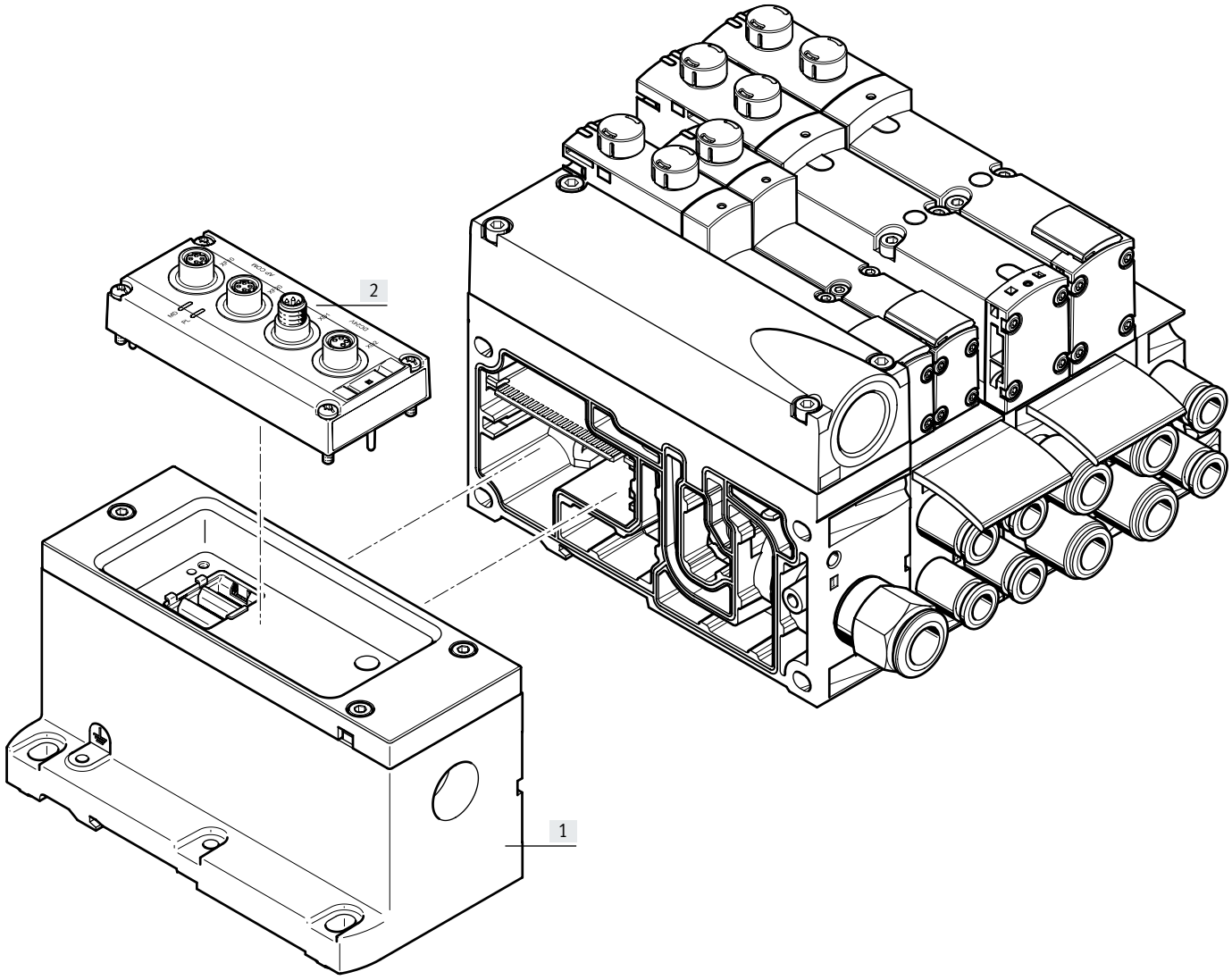
Valve terminal with AP interface

Order code for VTSA:
- 44E-... for the electric components
- 44P-... for the pneumatic components

Order code for VTSA-F:
- 45E-... for the electric components
- 45P-... for the pneumatic components

VTSA/VTSA-F valve terminals with AP interface can be expanded with up to 12 valves with a maximum of 24 solenoid coils. The manifold sub-bases for valves with a width of 18 or 26 mm are suitable for either
- 2 single solenoid valves or
- 2 double solenoid valves

and the manifold sub-bases for valves with a width of 42 or 52 mm are suitable for
- 1 single solenoid valve or
- 1 double solenoid valve
- Double solenoid valve positions can be equipped with any valve or a cover plate.
- Single solenoid valve positions can only be equipped with single solenoid valves or a cover plate.



		Description	→ Page/Internet
[1]	Multi-pin plug connection	–	135
[2]	AP interface	Electrical interface protocol AP-COM	69

Peripherals – Electrical components

Valve terminal with fieldbus interface, control block (electrical peripherals CPX)

Order code:
- 50E-... for the electrical peripherals, plastic variant
- 51E-... for the electrical peripherals, metal variant
- 53E-... for the electrical peripherals, for control cabinet installation

For VTSA:
- 44P-... for the pneumatic components

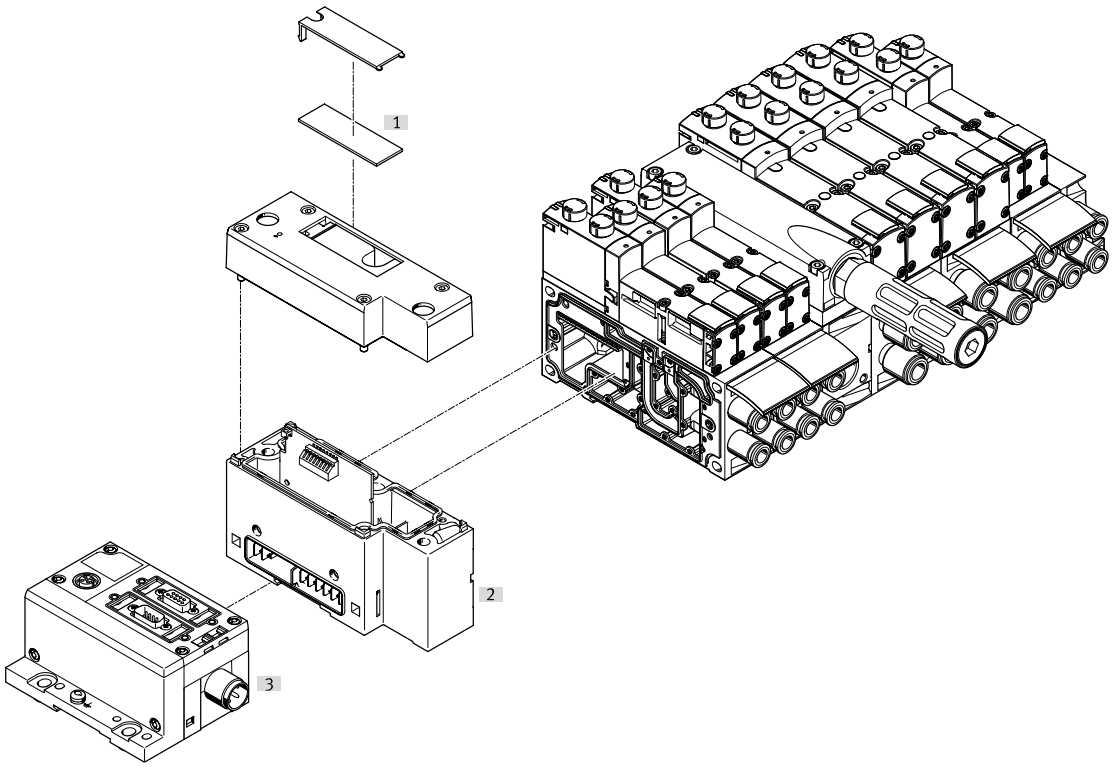
For VTSA-F:
- 45P-... for the pneumatic components

Valve terminals VTSA/VTSA-F with fieldbus interface can be expanded with up to 32 valves with max. 32 solenoid coils.
The manifold sub-bases for valves with a width of 18 or 26 mm are suitable for either
- 2 single solenoid valves or
- 2 double solenoid valves

and the manifold sub-bases for valves with a width of 42, 52 and 65 mm are suitable for
- 1 single solenoid valve or
- 1 double solenoid valve

depending on the size.
- Double solenoid valve positions can be equipped with any valve or a blanking plate.
- Single solenoid valve positions can only be equipped with single solenoid valves or a blanking plate.

Each valve position can be equipped with any valve or a blanking plate. The rules for CPX apply to the equipment that can be used with the electrical peripherals CPX.
In general:
- Max. 10 electrical modules
- Digital inputs/outputs
- Analogue inputs/outputs
- Parameterisation of inputs and outputs
- Integrated, convenient diagnostics
- Preventive maintenance concepts



		Description	→ Page/Internet
[1]	Inscription labels	Large, for pneumatic interface CPX	–
[2]	Pneumatic interface	–	135
[3]	Fieldbus interface	–	cpx

Peripherals – Electrical components

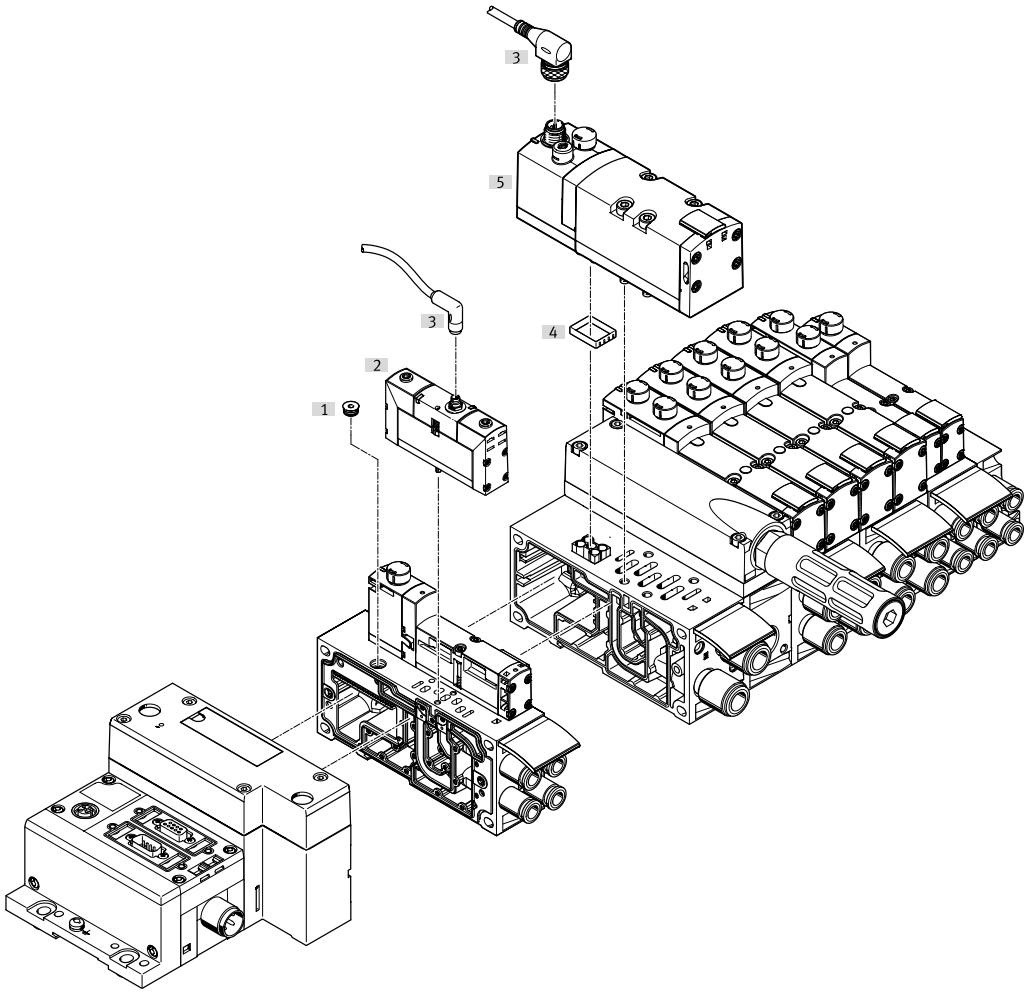
Valve terminal with fieldbus/multi-pin plug connection and individually electrically actuated valve

In applications with specific emergency off conditions, it may be necessary to switch one or more valves separately from the valve terminal controller.

Standards-based valves (VSVA) with individual electrical connection (round or square plug) are therefore mounted on the valve terminal.
In order for degree of protection IP65 to be achieved, the functionless opening in the sub-base for the electrical connection must be sealed.

A sealing cap is available for width 18 mm and 26 mm.
With manifold or individual sub-bases, valves with width 42 mm and 52 mm must be used with a seal to comply with the IP protection class
(see ➔ page 134).

For centrally controlling the valve terminal via a multi-pin plug connection or fieldbus interface, the occupied valve position acts like a vacant position, i.e. the assigned address in the fieldbus node or the corresponding connection in the multi-pin plug connection is occupied.



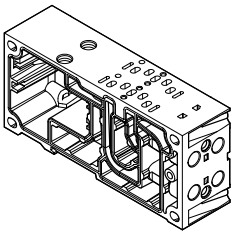
		Description	➔ Page/Internet
[1]	Sealing cap	For sealing the electrical connection on the sub-base	134
[2]	Valve	Width 18 mm or width 26 mm	vsva
[3]	Connecting cable	–	vsva
[4]	Seal	For ensuring the IP degree of protection (with width 42 mm and 52 mm)	134
[5]	Valve	Width 42 mm or width 52 mm	vsva

Note

Standards-based valves VSVA can be used on the valve terminal. A vacant position must be provided for this in the valve terminal configurator.
The appropriate standards-based valve VSVA can be ordered on the Internet at:
➔ vsva

Key features – Pneumatic components

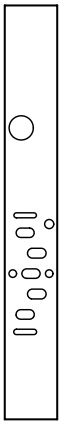
Manifold sub-base



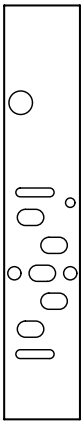
VTSA/VTSA-F is based on a modular system which consists of manifold sub-bases and valves. The VTSA-F manifold sub-bases are designed to optimise the flow rate. Manifold sub-bases are available for valve widths 18 mm and 26 mm in a double grid, i.e. two valves per manifold sub-base. For valves with a width of 42 mm or 52 mm, there are manifold sub-bases with one valve per sub-base. The manifold sub-base contains a duct seal and an electrical linking module. They can be freely mixed within a valve terminal. The manifold sub-bases are screwed together, thus forming the support system for the valves. Inside the manifold sub-bases are the connection ducts for supplying compressed air to and exhausting the valve terminal as well as the working ports for the pneumatic cylinders for each valve. Each manifold sub-base is connected to the next using four screws. Individual valve terminal sections can be isolated and further manifold sub-bases can be inserted by loosening these screws. This ensures that the valve terminal can be rapidly and reliably extended.

Port patterns to ISO 15407-2

Width 18 mm (size 02)

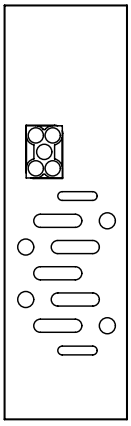


Width 26 mm (size 01)

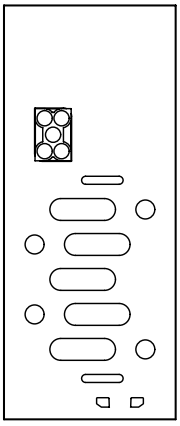


Port patterns to ISO 5599-2

Width 42 mm (size 1)

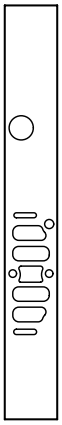


Width 52 mm (size 2)

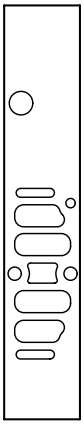


Port patterns – High-flow sub-bases with optimised flow rate (no standard)

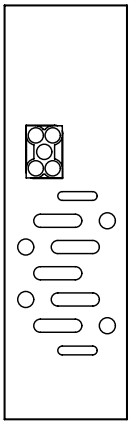
Width 18 mm



Width 26 mm



Width 42 mm

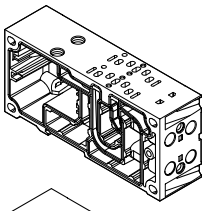
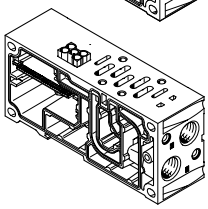
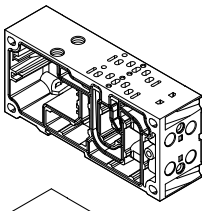
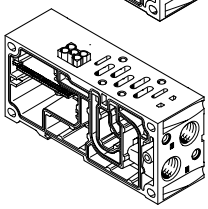


Note

The illustrations shown represent the pneumatic ISO port patterns.
The port patterns on the valve terminal VTSA-F do not correspond to the ISO standard.

Key features – Pneumatic components

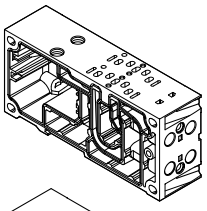
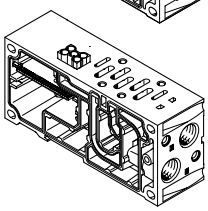
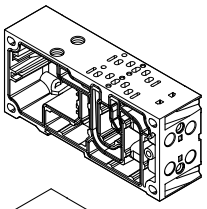
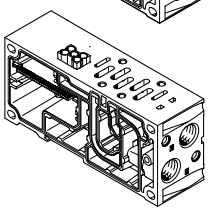
Manifold sub-base variants with QS fitting, valve terminal VTSA

Code		Type	Width				No. of valve positions (solenoid coils)[1]	Working ports (2, 4)	
			18 mm	26 mm	42 mm	52 mm		Code M Large	Code N Small
Manifold sub-base for double solenoid valves									
A		VABV-S4-2S-N18-2T2	■	–	–	–	2 (4)	QB-1/8-5/16-U	–
AK								–	QB-1/8-1/4-U
B		VABV-S4-1S-N14-2T2	–	■	–	–	2 (4)	QB-1/4-3/8-U	–
BK								–	QB-1/4-5/16-U
C		VABV-S2-1S-N38-T2	–	–	■	–	1 (2)	QB-3/8-1/2-U	–
CK								–	QB-3/8-3/8-U
D		VABV-S2-2S-N12-T2	–	–	–	■	1 (2)	QB-1/2-1/2-U	–
DK								–	–
Manifold sub-base for single solenoid valves									
E		VABV-S4-2S-N18-2T1	■	–	–	–	2 (2)	QB-1/8-5/16-U	–
EK								–	QB-1/8-1/4-U
F		VABV-S4-1S-N14-2T1	–	■	–	–	2 (2)	QB-1/4-3/8-U	–
FK								–	QB-1/4-5/16-U
G		VABV-S2-1S-N38-T1	–	–	■	–	1 (1)	QB-3/8-1/2-U	–
GK								–	QB-3/8-3/8-U
H		VABV-S2-2S-N12-T1	–	–	–	■	1 (1)	QB-1/2-1/2-U	–
HK								–	–

1) Value in brackets is max. number of solenoid coils that can be actuated

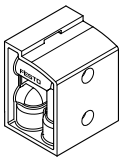
Key features – Pneumatic components

Manifold sub-base variants with QS fitting, valve terminal VTSA-F

Code		Type	Width				No. of valve positions (solenoid coils)[1]	Working ports (2, 4)	
			18 mm	26 mm	42 mm	52 mm		Code M Large	Code N Small
Manifold sub-base for double solenoid valves									
A		VABV-S4-2S-G18-2T2	■	–	–	–	2 (4)	QS-G1/8-8	–
AK								–	QS-G1/8-6
B		VABV-S4-1S-G14-2T2	–	■	–	–	2 (4)	QS-G1/4-10	–
BK								–	QS-G1/4-8
C		VABV-S2-1S-G38-T2	–	–	■	–	1 (2)	QS-G3/8-12	–
CK								–	QS-G3/8-10
D		VABV-S2-2S-G12-T2	–	–	–	■	1 (2)	QS-G1/2-16	–
DK								–	QS-G1/2-12
Manifold sub-base for single solenoid valves									
E		VABV-S4-2S-G18-2T1	■	–	–	–	2 (2)	QS-G1/8-8	–
EK								–	QS-G1/8-6
F		VABV-S4-1S-G14-2T1	–	■	–	–	2 (2)	QS-G1/4-10	–
FK								–	QS-G1/4-8
G		VABV-S2-1S-G38-T1	–	–	■	–	1 (1)	QS-G3/8-12	–
GK								–	QS-G3/8-10
H		VABV-S2-2S-G12-T1	–	–	–	■	1 (1)	QS-G1/2-16	–
HK								–	QS-G1/2-12

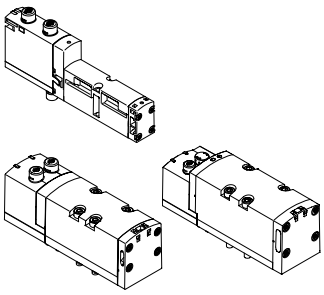
1) Value in brackets is max. number of solenoid coils that can be actuated

90°-connection plate for working ports 2 and 4 with NPT thread

Code		Type	Width				Connections	Working ports (2, 4) on the 90°-connection plate
			18 mm	26 mm	42 mm	52 mm		
P		VABF-S4-...-A2G2-N...	■	–	–	–	2 and 4	1/8 NPT
			–	■	–	–		1/4 NPT
			–	–	■	–		3/8 NPT
			–	–	–	■		1/2 NPT

Key features – Pneumatic components

Sub-base valve



All valves are fitted with piston spool and patented sealing system, which ensures efficient sealing, a broad operating pressure range and long service life.

Sub-base valves can be quickly replaced since the tubing connections remain on the manifold sub-base.

Irrespective of the valve function, there are sub-base valves with one solenoid coil (single solenoid) or with two solenoid coils for double solenoid or double valve functions.

Reverse/vacuum operation

Select reverse operation (code Z) if you wish to operate an actuator (cylinder) with different pressures for the forward and return stroke.

Please note that the valves must then be operated via a separate pressure zone.

The reversible 3/2-way solenoid valves are also suitable for vacuum operation.

Reverse operation is only possible in pressure zones with external pilot air supply.

Note

- If a pressure zone is in reverse operation, the supply pressure is connected to port 3/5 and the air is exhausted via port 1 at all valve positions in this pressure zone.
- Reversible pressure regulators cannot be selected when a pressure zone is in reverse operation.
- With reversible pressure regulators, only the valve at this position is in reverse operation.
- When using 5/3-way valves in reverse operation, the mid-position function switches from exhausted to pressurised and vice versa.

Blanking plate

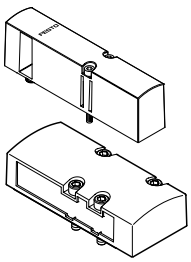


Plate without valve function for reserving valve positions on a valve terminal.

Valve and blanking plates are mounted on the manifold sub-base using screws.

Design

Valve replacement

The valves are attached to the metal manifold sub-base using two or four screws, which means that they can be easily replaced.

The sturdy mechanical manifold sub-base guarantees efficient, durable sealing.

Extension

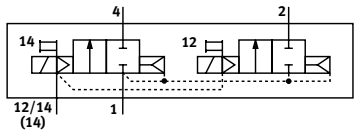
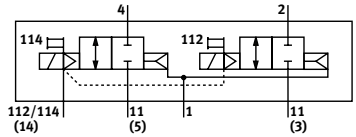
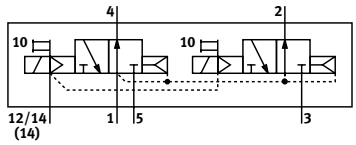
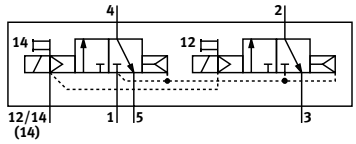
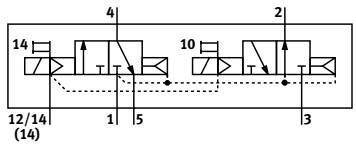
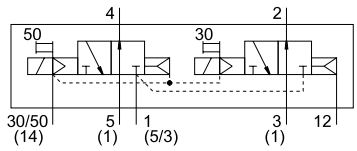
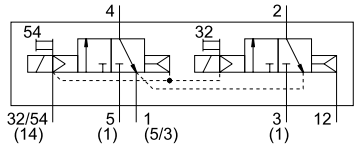
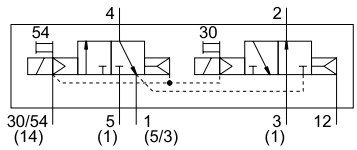
Vacant positions can be fitted with valves at a later date. The dimensions, mounting points and existing pneumatic installations remain unchanged during this process.

For more information and technical data on extension, refer to the user manual:

→ Internet: VTSA/VTSA-F

Key features – Pneumatic components

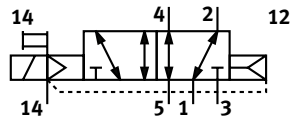
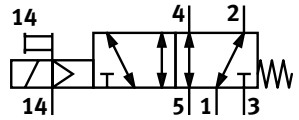
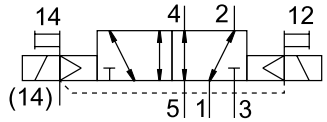
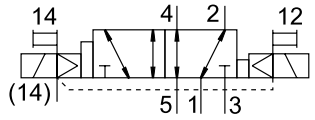
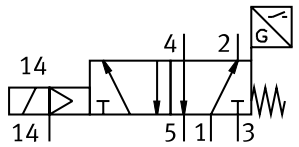
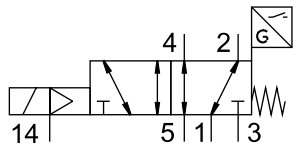
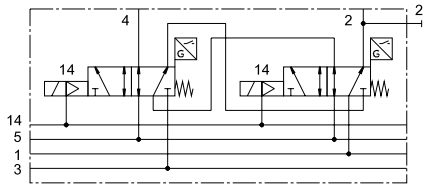
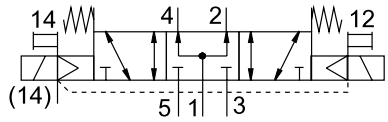
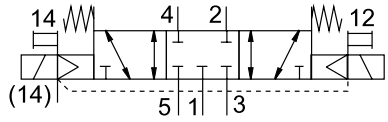
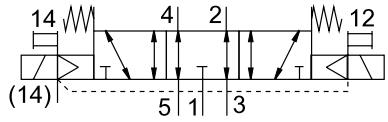
Valve function

Terminal code	Circuit symbol	Valve code	Width 18 mm	26 mm	42 mm	52 mm	Description
VC		T22C	■	■	■	■	2x 2/2-way valve, single solenoid • Normally closed • pneumatic spring return
VV		T22CV	■	■	■	–	2x 2/2-way valve, single solenoid • Reverse operation • Normally closed • pneumatic spring return • Vacuum operation possible at 3 and 5
N		T32U	■	■	■	■	2x 3/2-way valve, single solenoid • Normally open • pneumatic spring return • Operating pressure > 3 bar
K		T32C	■	■	■	■	2x 3/2-way valve, single solenoid • Normally closed • pneumatic spring return • Operating pressure > 3 bar
H		T32H	■	■	■	■	2x 3/2-way valve, single solenoid • Normal position – 1x normally closed – 1x normally open • pneumatic spring return • Operating pressure > 3 bar
P		T32F	■	■	■	■	2x 3/2-way valve, single solenoid • Reverse operation only • Normally open • pneumatic spring return
Q		T32N	■	■	■	■	2x 3/2-way valve, single solenoid • Reverse operation only • Normally closed • pneumatic spring return
R		T32W	■	■	■	■	2x 3/2-way valve, single solenoid • Reverse operation only • Normal position – 1x normally closed – 1x normally open • pneumatic spring return

Note

A filter must be installed upstream of valves operated in vacuum mode. This prevents any foreign matter in the intake air getting into the valve (e.g. when operating a suction cup).

Key features – Pneumatic components

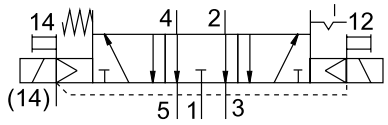
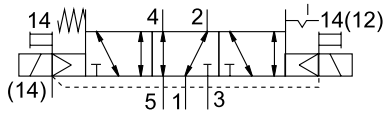
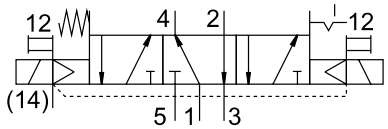
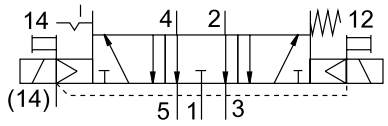
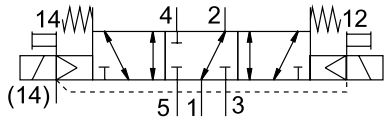
Valve function Terminal code	Circuit symbol	Valve code	Width 18 mm	26 mm	42 mm	52 mm	Description
M		M52-A	■	■	■	■	5/2-way valve, single solenoid • Reverse operation • pneumatic spring return
O		M52-M	■	■	■	■	5/2-way valve, single solenoid • Reverse operation • Mechanical spring return
J		B52	■	■	■	■	5/2-way valve, double solenoid
D		D52	■	■	■	■	5/2-way valve, double solenoid • Dominant signal at port 14 on the control side
SO SQ SS		M52-M	■	–	–	–	5/2-way valve[2], single solenoid, as plug-in or via pilot valve with pneumatic interface to ISO 15218 See also special valve function in the separate chapter "Solenoid valve with switching position sensing" → page 138
SO SQ SS		M52-M	–	■	–	–	5/2-way valve[2], single solenoid, as plug-in or via pilot valve with pneumatic interface to ISO 15218 See also special valve function in the separate chapter "Solenoid valve with switching position sensing" → page 138
SP SN		T52-M	–	■	–	–	2x 5/2-way single solenoid valve, with switching position sensing, pneumatically linked via two ducts as special valve function "control block with safety function" → page 148
B		P53U	■	■	■	■	5/3-way solenoid valve • Mid-position pressurised[1] • Mechanical spring return
G		P53C	■	■	■	■	5/3-way solenoid valve • Mid-position closed[1] • Mechanical spring return
E		P53E	■	■	■	■	5/3-way solenoid valve • Mid-position exhausted[1] • Mechanical spring return

1) If neither solenoid coil is energised, the valve is moved to its mid-position by a mechanical spring. If the two coils are permanently energised one after the other, the valve remains in the switching position of the coil that was activated first

2) The symbol represents a valve with a proximity switch with a switching output signal, in the illustration an N/O contact. In accordance with ISO 1219-1, this symbol applies to both N/O and N/C contacts. All sensors used here have an N/C contact as the switching element function.

Key features – Pneumatic components

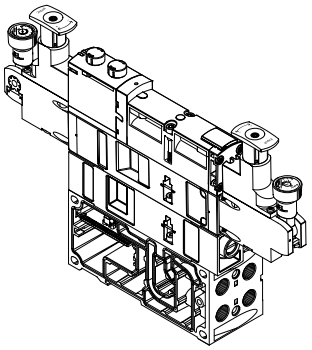
Valve function

Terminal code	Circuit symbol	Valve code	Width 18 mm	Width 26 mm	Width 42 mm	Width 52 mm	Description
SA		P53ED	■	■	–	–	5/3-way solenoid valve, for special functions as switching position 14 is retained • Pressureless switching, self-latching loop, pneumatic operation • Mid-position exhausted, switching position 14 is retained • Mechanical spring return
SB		P53AD	■	■	–	–	5/3-way solenoid valve, for special functions as switching position 14 is retained • Holding, blocking a movement (mechanically) • Mid-position port 2 pressurised, port 4 exhausted, switching position 14 is retained • Mechanical spring return
SD		P53BD	■	■	–	–	5/3-way solenoid valve, for special functions as switching position 14 is retained • Holding, blocking a movement (mechanically) • Mid-position port 4 pressurised, port 2 exhausted, switching position 14 is retained • Mechanical spring return
SE		P53EP	■	■	–	–	5/3-way solenoid valve, for special functions as switching position 12 is retained • Pressureless switching, self-latching loop, pneumatic operation • Mid-position exhausted, switching position 12 is retained • Mechanical spring return
VG		P53F	–	–	■	■	5/3-way solenoid valve • Positioning • Mid-position port 2 pressurised, port 4 closed[1)] • Mechanical spring return
VB	–	–	–	■	–	–	Vacuum generator with ejector pulse and adjustable air saving function (plate for 2 valve positions, sensor SDE3 with display and M12 connection)
L	–	–	■	■	■	■	For valve terminal only: Cover plate for vacant valve position

1) If neither solenoid coil is energised, the valve is moved to its mid-position by a mechanical spring. If the two coils are permanently energised one after the other, the valve remains in the switching position of the coil that was activated first.

Key features – Pneumatic components

Vertical stacking



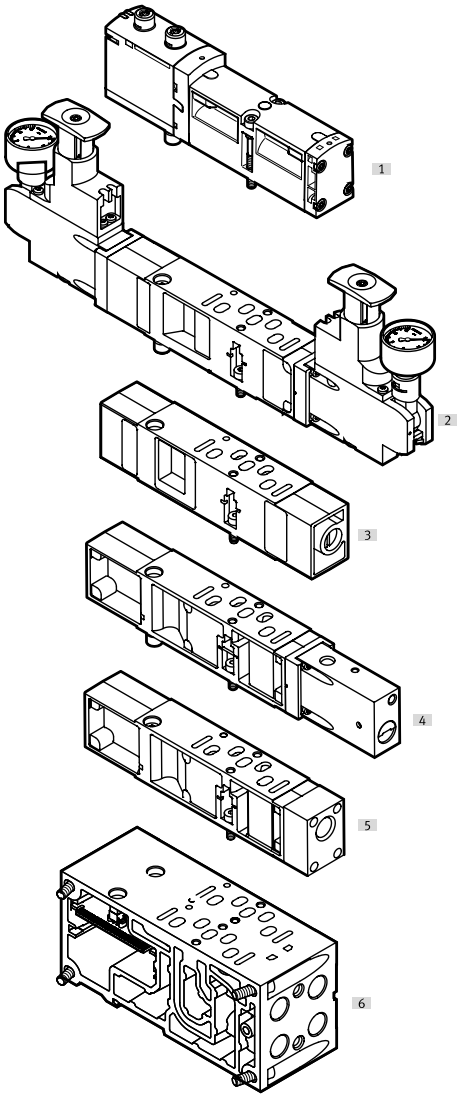
Additional function units can be added to each valve position between the base plate (manifold sub-base) and the valve.

These functions are known as vertical stacking modules and enable special functions or control of an individual valve position. It is possible to link several valve sizes on one valve terminal.

Note

Certain combinations are not recommended due to the design of the individual vertical stacking components.

Vertical stacking components



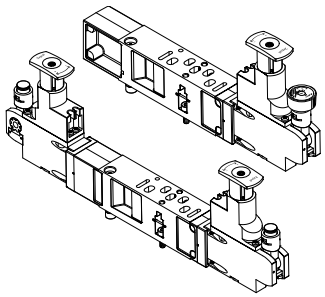
The following component sequence is recommended for valve positions with vertical stacking:

[1] Valve VSVA
[2] Pressure regulator plate
[3] Throttle plate
[4] Vertical pressure shut-off plate
[5] Vertical supply plate
[6] Manifold sub-base

Key features – Pneumatic components

Vertical stacking

Pressure regulator plate



An adjustable pressure regulator can be installed between the base plate (manifold sub-base) and the valve to control the force of the triggered actuator.

This pressure regulator maintains a largely constant output pressure (secondary side) independent of pressure fluctuations (primary side) and air consumption. Also suitable for valves with symmetrical coil layout.

Standard version:
- Standard port pattern to ISO 15407-2 or ISO 5599-2
- For pressure regulation up to 6 bar or up to 10 bar
- Without pressure gauge (optional)
- Regulator knob with 3 positions (locked, reference position, freely positionable)

Note

With the A, B and AB pressure regulators VABF-S...-1-..., the regulated pressure should not be less than 2 bar.

Use the reversible A, B or AB pressure regulators for regulated pressure of less than 2 bar.

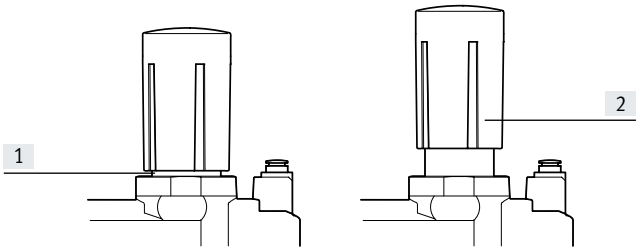
Note

Please note when reordering pressure regulators in sizes 42 mm and 52 mm:
The part number on the regulator plate refers only to the standard version.

When reordering pressure regulators with additional features, such as a lockable rotary knob, extended design etc., only use the VABF configurator.
➔ Internet: vabf-s2

Rotary knob for pressure regulator for width 42 mm and 52 mm

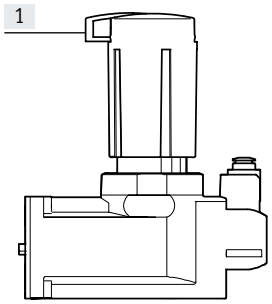
Setting the pressure



[1] Pull the rotary knob upward out of the locking position [1] into the setting position [2]
[2] Set the required pressure at the setting position [2] using the rotary knob
[3] After setting the pressure, push the rotary knob back down to the locking position 1]

Rotary knob for pressure regulator for width 42 mm and 52 mm

Locking the rotary knob



After setting the pressure, the rotary knob can be locked against unauthorised actuation.
To do this, the blue locking element is pushed out and secured with a padlock.
The rotary knob is now fixed in place and cannot be moved.

Note

The position of the rotary knob using the locking element is determined by the pressure setting.
If a number of pressure regulators are installed next to one another, there may not always be enough space to push out the locking elements.

To ensure that the rotary knob can still be locked, it can be pulled off completely, rotated 60° or 120° and pushed back on.

[1] Locking element, pushed out

Key features – Pneumatic components

Vertical stacking

Energy efficiency through dual-pressure operation or through operation with reversible pressure regulators

Saving energy starts with compressed air generation. It is possible to achieve energy savings of up to 10% per 1 bar drop in pressure. Therefore, wherever possible reduce the pressure to the minimum required.
To save additional energy, you can operate valves in dual-pressure mode in a separate pressure zone.

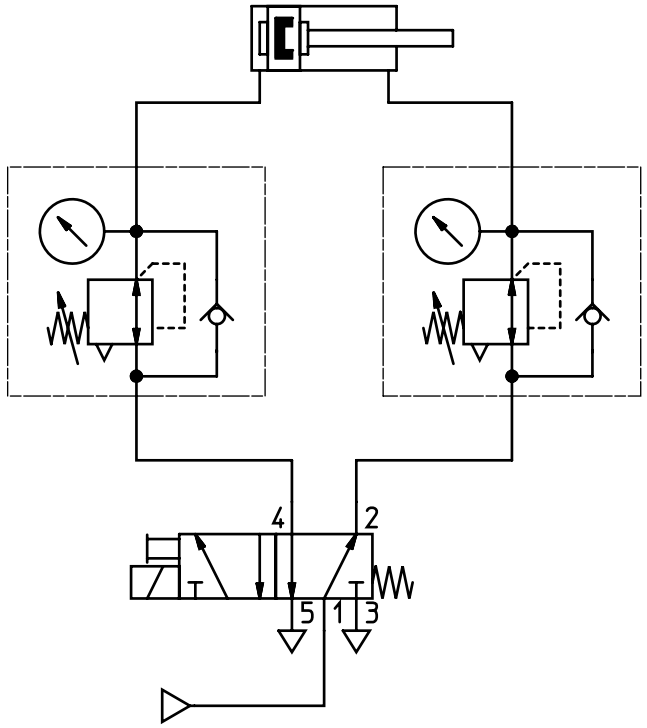
To do this, the valves used must be operated in reverse mode, i.e. with reversed flow direction (see also information on ➔ page 96). In dual-pressure operation, the valves are then supplied with pressure separately via ducts 3 and 5. The air is exhausted via duct 1.

Requirements for dual-pressure operation:
- Exhaust ducts 3 and 5 in the pressure zone are completely separate.
- Valves are used that can be operated in reverse mode.

Advantages of dual-pressure operation:
It is possible to save energy if a valve can be supplied with different pressures. The advantages are:
- Saves energy because the return stroke can be carried out using reduced force, e.g. 3 bar instead of 6 bar.
- Just one valve is required, as in the case of vacuum application with ejector pulse for example (e.g. duct 3 for vacuum switching, duct 5 for the ejector pulse).
- A reduction in compressed air consumption of up to 50% is possible if two different pressures can be applied to the valve (return stroke uses reduces pressure).

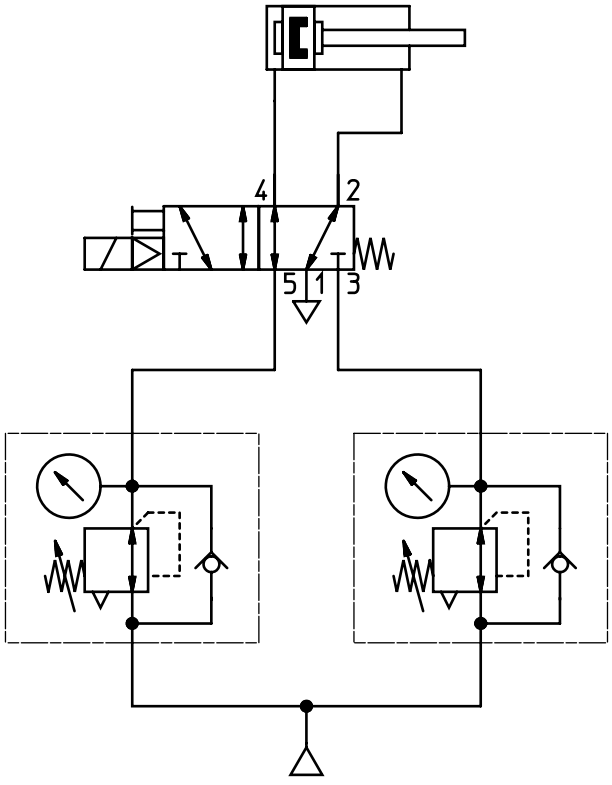
Advantages of reversible operation:
If compressed air is applied to the pressure regulator upstream of the valve (circuit diagram 2), exhausting is directly via the solenoid valve.
This has the following advantages:
- Increased exhaust capacity, exhausting is up to 50% quicker
- Lower wear on the pressure regulator
- Can be adjusted very accurately, perfect for very low operating pressures
- No quick exhaust valves are required.
- Fast cycle times
- The pressure regulator can be adjusted independently of the valve position because operating pressure is permanently present at the pressure regulator.

Dual-pressure operation with standard regulator



Circuit diagram 1:
Pressure is regulated downstream of the valve

Dual-pressure operation with reversible controller

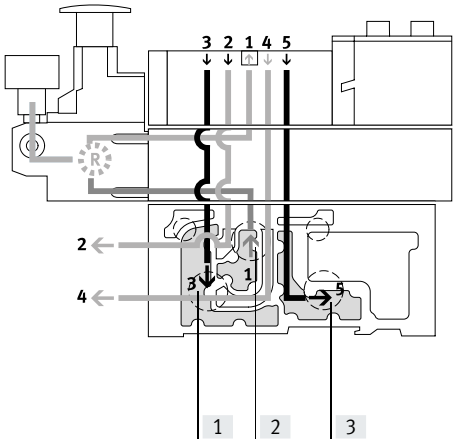


Circuit diagram 2:
Pressure is regulated upstream of the valve

Key features – Pneumatic components

Vertical stacking

Mode of operation of the pressure regulator plate (P regulator) for port 1; code: ZA, ZAY, ZF, ZFY



This pressure regulator regulates the pressure upstream of the valve in duct 1. Ducts 2 and 4 thus have the same regulated pressure.

During exhausting, the air flow in the valve is exhausted from duct 2 to duct 3 and from duct 4 to duct 5.

[1] Duct 3 (exhaust air)
[2] Duct 1 (working air)
[3] Duct 5 (exhaust air)

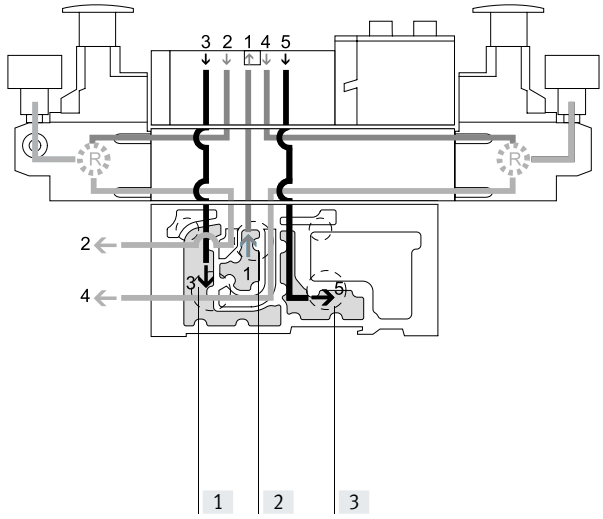
Advantages

- The pressure regulator is not affected by the exhaust process, since the pressure is regulated upstream of the valve.
- The pressure regulator can always be adjusted, since the pressure from the valve terminal is always present.

Application examples

- An equal working pressure is required at working ports 2 and 4.
- A working pressure (e.g. 3 bar) lower than the operating pressure present at the valve terminal (e.g. 8 bar) is required.

Mode of operation of the pressure regulator plate (AB regulator) for ports 2 and 4; code: ZD, ZDY, ZI, ZIY



This pressure regulator regulates the pressure in ducts 2 and 4 after the pressure medium flows through the valve. During exhausting, the exhaust flow in the valve is from duct 2 to duct 3 and from duct 4 to duct 5 via the pressure regulator.

Example with the following switching position:
The working air flows from duct 1 of the manifold sub-base via the valve to duct 2, it is then regulated and made available at port 2 of the manifold sub-base. At the same time, exhausting takes place via duct 4 of the manifold sub-base via the regulator and via the valve into duct 5 of the manifold sub-base.

[1] Duct 3 (exhaust air)
[2] Duct 1 (working air)
[3] Duct 5 (exhaust air)

Constraints

The pressure regulator cannot be adjusted in the exhaust position. For example, the pressure regulator for duct 4 cannot be adjusted when the valve is pressurised in the switching position from duct 1 to duct 2 and exhausted from duct 4 to duct 5.

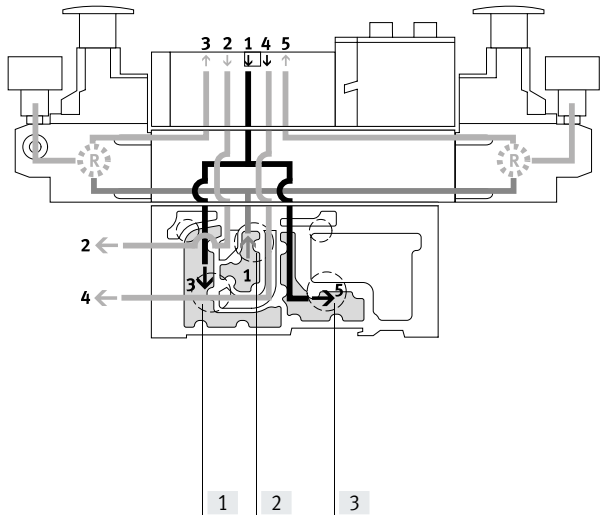
Application examples

Two different working pressures are required at ports 2 and 4 instead of the valve terminal operating pressure

Key features – Pneumatic components

Vertical stacking

Mode of operation of the pressure regulator plate (AB regulator, reversible) for ports 2 and 4, reversible; code: ZE, ZEY, ZJ, ZJY



With this pressure regulator, the working air (duct 1) is split and routed directly to both pressure regulators. In each case the regulated working air is present in ducts 3 and 5 on the valve. The valve is thus operated in reverse mode.

This means that:

- Duct 3 routes the working pressure to port 2
- Duct 5 routes the working pressure to port 4

[1] Duct 3 (exhaust air)
[2] Duct 1 (working air)
[3] Duct 5 (exhaust air)

Example with the following switching position:

The working air in duct 1 is split between ducts 3 and 5 in the regulator and flows from here to the valve. In the valve, the working air is routed to port 2 of the manifold sub-base. The exhaust air is simultaneously routed via duct 4 of the manifold sub-base and via the valve to regulator duct 1, where it is split between ducts 3 and 5 and then discharged via the manifold sub-base.

Application examples

- Two different pressures are required in ducts 2 and 4 instead of the valve terminal's operating pressure.
- Quick exhausting is required.
- The pressure regulator must always be adjustable.

Note

- Reversible pressure regulator plates should only be combined with valves that can be operated in reverse mode.
- Valves in valve positions with vertical pressure shut-off plates are operated with internal pilot air, even when the valve terminal is operated with external pilot air supply.
- The following combination of reversible valve terminals with vertical stacking components is not permitted:
  - Reversible pressure regulator plates
  - Throttle plates
  - Vertical pressure shut-off plates
  - Vertical supply plates

Advantages

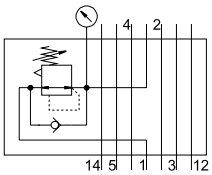
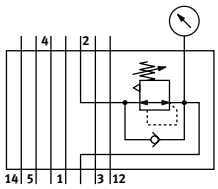
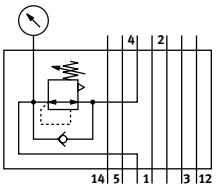
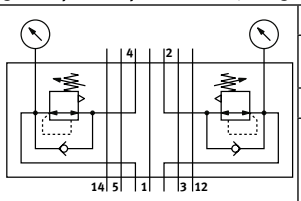
- Fast cycle times
- 50% higher exhaust flow rate, as air is not exhausted via the pressure regulator. The load on the pressure regulator is also reduced.
- No quick exhaust valves are required.
- Operating pressure is always present at the pressure regulator, as the pressure is regulated upstream of the valve, i.e. the regulator can always be adjusted.

Disadvantages

- 2x 3/2-way solenoid valves (code N, K, H) cannot be used, as pressure is present at ports 3 and 5.
- A practical combination with a throttle plate is not possible.

Key features – Pneumatic components

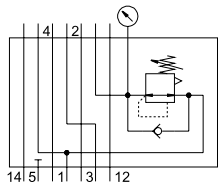
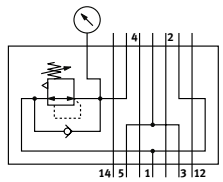
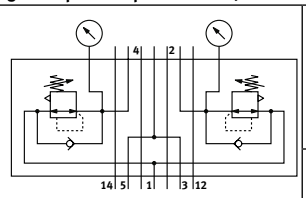
Vertical stacking – Pressure regulator plate, variants [1]

Code		Type	Width				Pressure regulation up to		Description
			18 mm	26 mm	42 mm	52 mm	6 bar	10 bar	
Pressure regulator plate for port 1 (P regulator)									
ZA		VABF-S...-R1C2-C-10	■	■	■	■	–	■	Regulates the operating pressure in duct 1 upstream of the solenoid valve
ZAY[2]		VABF-S...-R1C2-C-10E	■	■	■	■	–	■	
ZF		VABF-S...-R1C2-C-6	■	■	■	■	■	–	
ZFY[2]		VABF-S...-R1C2-C-6E	■	■	■	■	■	–	
Pressure regulator plate for port 2 (B regulator)									
ZC		VABF-S...-R2C2-C-10	■	■	■	■	–	■	Regulates the operating pressure in duct 2 downstream of the solenoid valve
ZCY[2]		VABF-S...-R2C2-C-10E	■	■	■	■	–	■	
ZH		VABF-S...-R2C2-C-6	■	■	■	■	■	–	
ZHY[2]		VABF-S...-R2C2-C-6E	■	■	■	■	■	–	
Pressure regulator plate for port 4 (A regulator)									
ZB[2]		VABF-S...-R3C2-C-10	■	■	■	■	–	■	Regulates the operating pressure in duct 4 downstream of the solenoid valve
ZG[2]		VABF-S...-R3C2-C-6	■	■	■	■	■	–	
Pressure regulator plate for ports 2 and 4 (AB regulator)									
ZD		VABF-S...-R4C2-C-10	■	■	■	■	–	■	Regulates the working pressure in ducts 2 and 4 downstream of the solenoid valve
ZDY[2]		VABF-S...-R4C2-C-10E	■	■	■	■	–	■	
ZI		VABF-S...-R4C2-C-6	■	■	■	■	■	–	**Note** These pressure regulator plates cannot be combined with reversible 2x 3/2-way solenoid valves (code P, Q, R).
ZIY[2]		VABF-S...-R4C2-C-6E	■	■	■	■	■	–	

1) Width variants 42 mm and 52 mm (ISO 5599-2, ISO 1 and ISO 2) can be selected via the pressure regulator configurator VABF-S2

2) Also suitable for valves with symmetrical design

Vertical stacking – Pressure regulator plate, reversible, variants [1]

Code		Type	Width				Pressure regulation up to		Description
			18 mm	26 mm	42 mm	52 mm	6 bar	10 bar	
Pressure regulator plate for port 2, reversible (B regulator)									
ZL		VABF-S...-R6C2-C-10	■	■	■	■	–	■	Reversible pressure regulator for port 2
ZLY[2]		VABF-S...-R6C2-C-10E	■	■	■	■	–	■	
ZN		VABF-S...-R6C2-C-6	■	■	■	■	■	–	
ZNY[2]		VABF-S...-R6C2-C-6E	■	■	■	■	■	–	
Pressure regulator plate for port 4, reversible (A regulator)									
ZK[2]		VABF-S...-R7C2-C-10	■	■	■	■	–	■	Reversible pressure regulator for port 4
ZM[2]		VABF-S...-R7C2-C-6	■	■	■	■	■	–	
Pressure regulator plate for ports 2 and 4, reversible (AB regulator)									
ZE		VABF-S...-R5C2-C-10	■	■	■	■	–	■	• Reversible pressure regulator for ports 2 and 4 • Pressure regulation upstream of the solenoid valve • Routes the operating pressure from duct 1 to ducts 3 and 5 • Routes the exhaust air from duct 1 to ducts 3 and 5
ZEY[2]		VABF-S...-R5C2-C-10E	■	■	■	■	–	■	
ZJ		VABF-S...-R5C2-C-6	■	■	■	■	■	–	**Note** These pressure regulator plates cannot be combined with standard 2x 3/2-way solenoid valves (code N, K, H). Reversible 2x 3/2-way solenoid valves (code P, Q, R) must not be operated in a separate pressure zone in combination with these pressure regulators.
ZJY[2]		VABF-S...-R5C2-C-6E	■	■	■	■	■	–	

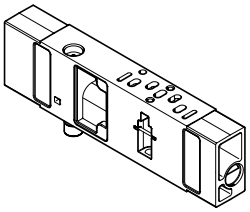
1) Width variants 42 mm and 52 mm (ISO 5599-2, ISO 1 and ISO 2) can be selected via the pressure regulator configurator VABF-S2

2) Also suitable for valves with symmetrical design

Key features – Pneumatic components

Vertical stacking

Throttle plate

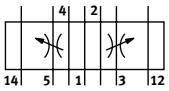


The throttle plate has two flow control valves on which the exhaust air flow rate at exhaust ports 3 or 5 can be adjusted.

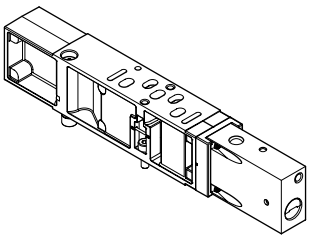
This enables the movement of the drive to be initiated and the required speed to be set on the valve terminal using the manual override.
Ducts 3 and 5 can be adjusted independently of each other.

Note

On reversible valve terminals, the working air is controlled in ducts 3 and 5 upstream of the valve.

Code		Type	Width				Description
			18 mm	26 mm	42 mm	52 mm	
X		VABF-S4-...F1B1-C	■	■	■	■	• Restricts the exhaust air downstream of the valve in ducts 3 and 5

Vertical pressure shut-off plate

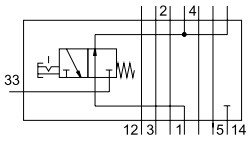
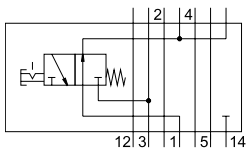
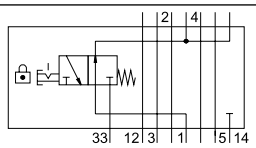


This is equipped with a switch with which the compressed air supply can be shut off. A solenoid valve or downstream vertical stacking plate can thus be replaced without switching off the overall air supply. If the control chain has a redundant connection, the cycle can continue even in the case of a cyclical control system.

When the shut-off function is activated, the exhaust air/return air is discharged from the activated valve. This is done via an M5 threaded connection or via duct 3 in the case of width 18 and 26 mm, and via duct 3 in the case of width 42 and 52 mm.

Note

The operating pressure of the valve terminal must lie within the range of the required pilot pressure (i.e. min. 3 bar). When using the end plate with pilot air selector, only the switching position with code W and U can be used.

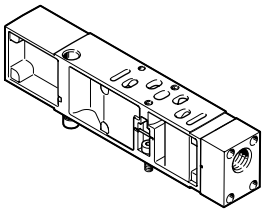
Code		Type	Width				Description
			18 mm	26 mm	42 mm	52 mm	
ZT		VABF-S4...L1D1-C	■	■	–	–	• 3/2-way valve for shutting off the operating pressure at the valve position • Blocks ducts 1 and 14 for the valve position • Supplies the valve position with internal pilot air • Pressure separation on the valve assembly
		VABF-S2...L1D1-C	–	–	■	■	
ZS		VABF-S...L1D2-C	■	■	–	–	• 3/2-way valve for shutting off the operating pressure at the valve position • Blocks ducts 1 and 14 for the valve position • Supplies the valve position with internal pilot air • Pressure separation can be shut off on the valve assembly using a key

Note

The vertical pressure shut-off plates VABF-... are provided only in combination with solenoid valves VSVA-...T1L from Festo. In the vertical pressure shut-off plate only ducts 1 and 14, and not duct 12, are blocked.

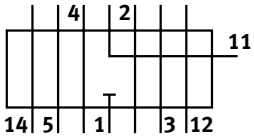
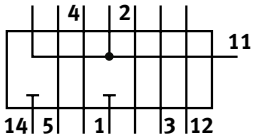
Key features – Pneumatic components

Vertical supply plate



This plate enables a valve to be supplied with individual operating pressure independently of the operating pressure of the valve terminal.

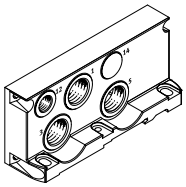
As additional compressed air supply for a valve. To supply an additional pressure zone.

Code		Type	Width				Description
			26 mm	18 mm	42 mm	52 mm	
ZU		VABF-S-...P1A3-...	■	■	■	■	Plate with port 11 for supplying individual operating pressure to a valve position, duct 1
ZV		VABF-S-...P1A14C	■	■	■	■	Plate with port 11 for supplying individual operating pressure to a valve position, ducts 1 and 14

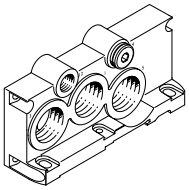
Key features – Pneumatic components

Compressed air supply and exhausting

Right end plate, internal pilot air supply

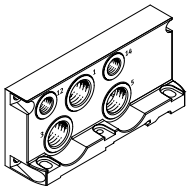


- Code V
- (no port 14)

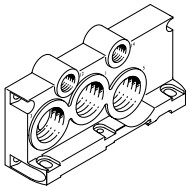


- Code V1, V3
- (port 14 is sealed with a blanking plug)

Right end plate, external pilot air supply

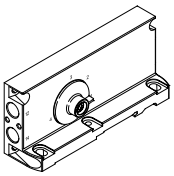


- Code X



- Code X1, X3

Right end plate with pilot air selector



- Code Z, Y, W, U
- Code Z: selector position 1, external pilot air supply
- Code Y: selector position 2, internal pilot air supply
- Code W: selector position 3, external pilot air supply (ducted)
- Code U: selector position 4, internal pilot air supply (ducted)

The valve terminal VTSA/VTSA-F can be supplied with compressed air at one or more points. This is a reliable way of ensuring that all functional components will always offer good performance, even with large-scale extensions.

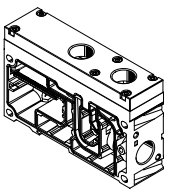
The valve terminal is generally supplied via supply plates (max. 16 per valve terminal) and/or via the right end plate. When using valves with a width of 65 mm, the compressed air can also be supplied and exhausted using the adapter plate VABA-....

Exhausting is either via silencers or ports for ducted exhaust air on the supply plates and/or on the right end plate.

Note

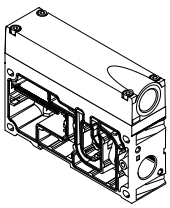
Compressed air supply and exhausting for size ISO 3 is described in a separate chapter on adaptation to width 65 mm (internal/external pilot air is regulated via MUH plate (solenoid valve)).

Supply plates, exhaust port 3/5 separated



- Code K

Supply plates, exhaust port 3/5 common



- Code L

Key features – Pneumatic components

Additional compressed air supply/duct separation

Additional supply plates can be used to ensure the compressed air supply for larger valve terminals or to create additional pressure zones.
These can be selected at any point upstream or downstream of the manifold sub-bases.

Supply plates contain ports for:
- Compressed air supply (1)
- Exhaust port (3/5) common or separate

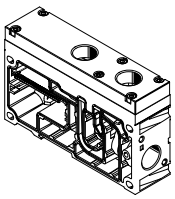
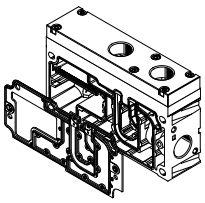
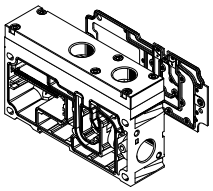
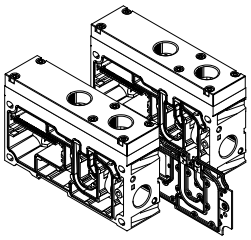
Depending on your order, the exhaust ducts are either ducted or exhausted via silencers.

VTSA/VTSA-F with ducted exhaust air:
When the exhaust air is ducted, exhausting can take place via a supply plate or a right end plate (code V or X).

If duct separation is required, there are three different options:
- Duct separation 1, 3, 5: code S
- Duct separation 1: code T
- Duct separation 3, 5: code R

If a combination of duct separation (S, T or R) and one or two supply plates is required, the following variants can be selected:
- Supply plate with duct separation on the left: code SU, TU, RU
- Supply plate with duct separation on the right: code US, UT, UR
- 2 supply plates with intermediate duct separation: code USU, UTU, URU.

Supply plates

Code		Type	Width				Description
			18 mm	26 mm	42 mm	52 mm	
U		• Exhaust port 3/5 common VABF-S6-1-P1A7-N12 • Exhaust port 3/5 separate VABF-S6-1-P1A6-N12	■	■	■	■	Supply plate without duct separation (no R, S or T selected)
SU TU RU			■	■	■	■	Supply plate with duct separation on the left, if R, S or T is selected
US UT UR			■	■	■	■	Supply plate with duct separation on the right, if R, S or T is selected
USU UTU URU			■	■	■	■	2 supply plates with duct separation in centre, if R, S or T selected

Key features – Pneumatic components

Right end plate

Right end plates with different port sizes are available depending on the flow rate required.

With the following right end plates, the outlet direction of the ports is aligned with the horizontal stacking direction.
Right end plates with pilot air supply/ pilot exhaust air
- Internal pilot air supply: code V, V1, V2 and V3 (ducts 1 and 14 are connected)
- External pilot air supply: code X, X1, X2 and X3, as well as XP1, XP2, XP3 and XS

For end plates with pilot air selector, the outlet direction of the ports is to the front of the valve terminal. This means that all the ports on the valve terminal can be combined in one outlet direction.
The special feature of the end plates with pilot air selector is the selector switch itself, which has four settings for different pilot air supply/pilot exhaust air.

End plates with pilot air selector switch set at the factory for:
- External pilot air supply: selector position 1 (code Z)
- Internal pilot air supply: selector position 2 (code Y)
- External pilot air supply, ducted pilot exhaust air: selector position 3 (code W)
- Internal pilot air supply, ducted pilot exhaust air: selector position 4 (code U)

Note
- The end plate with pilot air selector must be used in combination with a supply plate.
- The reversible 3/2-way solenoid valves (code P, Q, R) must only be operated in selector position 1 or 2.
- Ducted pilot exhaust air via port 12 is only possible with rotated seals on the valve.

Right end plate, variants

Code	Blanking plug in duct	Pilot air supply	Ducted pilot exhaust air [1] Position of the seal on solenoid valve ("ISO" is visible)	Connecting thread	
				1, 3, 5	12, 14
V	–	Internal	–	1/2 NPT	1/4 NPT
V1	14		–	3/4 NPT	1/4 NPT
V2	14		–	1 NPT	1/8 NPT
V3	14		■	3/4 NPT	1/4 NPT
X	–	External	–	1/2 NPT	1/4 NPT
X1	–		–	3/4 NPT	1/4 NPT
X2	–		–	1 NPT	1/8 NPT
X3	–		■	3/4 NPT	1/4 NPT
XP1 [2]	1	External, via soft-start valve ("gradual pressure build-up")	–	1/2 NPT	1/4 NPT
XP2 [3]	1, 14		–	1/2 NPT	1/4 NPT
XP3 [3]	1, 3, 5, 14		–	1/2 NPT	1/4 NPT
XS [4]	14	External, via pilot air switching valve ("switchable pilot air")	–	1/2 NPT	1/4 NPT

1) Pilot exhaust air is ducted on the end plate via port 12 and exhausted (done by turning the seal on the solenoid valve to position "ISO")
2) Not possible in combination with soft-start valve code PQ, PP, PO (with internal pilot air supply)
3) Not possible in combination with soft-start valve code PN, PM, PK (with external pilot air supply)
4) Only possible in combination with pilot air switching valve code SS with intermediate plate code ZO

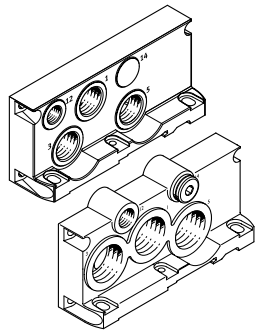
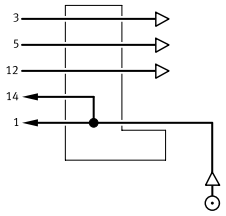
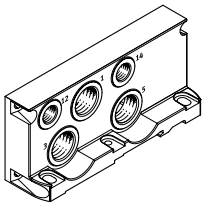
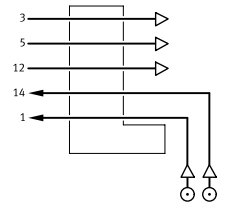
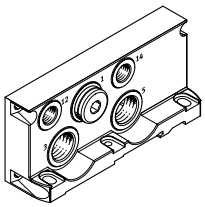
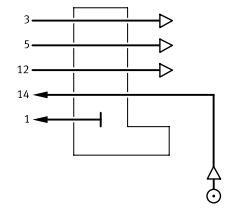
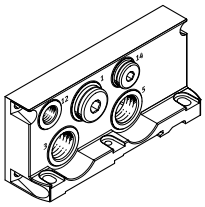
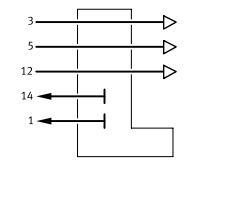
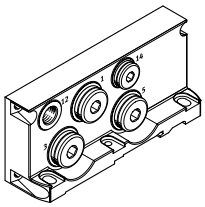
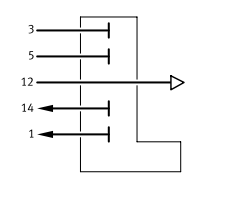
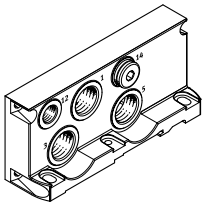
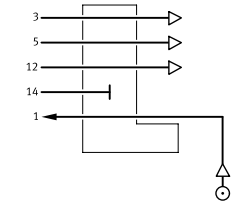
Right end plate with pilot air selector

Code	Pilot air supply	Selector position	Ducted pilot exhaust air [1] Position of the seal on solenoid valve ("ISO" is visible)	Connecting thread 12, 14
Z	External	1	–	1/4 NPT
Y	Internal	2	–	1/4 NPT
W	External (ducted)	3	■	1/4 NPT
U	Internal (ducted)	4	■	1/4 NPT

1) Pilot exhaust air is ducted on the end plate via port 12 and exhausted (done by turning the seal on the solenoid valve to position "ISO")

Key features – Pneumatic components

Right end plate

Code	Type of compressed air supply and pilot air supply		Description
Right end plate (graphical representation)			
V V1 V3			Internal pilot air supply • Pilot air supply is branched internally from port 1 • Port 14 is not available with code V • Port 14 is sealed with a blanking plug for code V1, V3, V2 (ISO 3) • Exhaust air via ports 3 and 5 • For operating pressure in the range 3 ... 10 bar • Pilot exhaust air via port 12 [1] • V1 cannot be selected in combination with a soft-start valve in the last pressure zone
X X1 X3			External pilot air supply • Pilot air supply between 2 and 10 bar is connected at port 14 • Exhaust air via ports 3 and 5 • For operating pressure in the range –0.9 ... 10 bar (suitable for vacuum) • Pilot exhaust air via port 12 [1] • X1 cannot be selected in combination with a soft-start valve in the last pressure zone
XP1			External pilot air supply, compressed air supply via soft-start valve [2] • Port 1 is sealed with a blanking plug • Exhaust air via ports 3 and 5 • Pilot exhaust air via port 12 [1]
XP2			External pilot air supply, compressed air supply via soft-start valve [2] • Internal pilot air supply 14 via soft-start valve • Ports 1 and 14 are sealed • Exhaust air via ports 3 and 5 • Pilot exhaust air via port 12 [1]
XP3			External pilot air supply, compressed air supply via soft-start valve [2] • Internal pilot air supply 14 via soft-start valve • Ports 1, 3, 5 and 14 are sealed • Pilot exhaust air via port 12 [1]
XS			External pilot air supply via pilot air switching valve [3] • Internal pilot air supply 14 via pilot air switching valve • Port 14 is sealed • Exhaust air via ports 3 and 5 • Pilot exhaust air via port 12 [1]

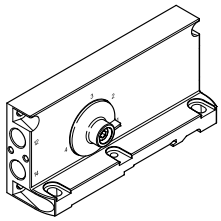
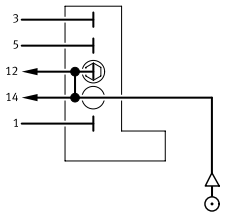
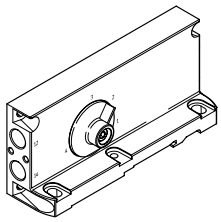
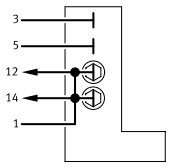
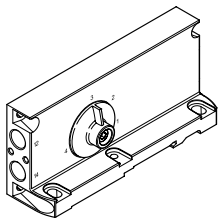
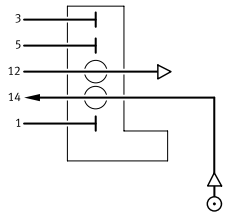
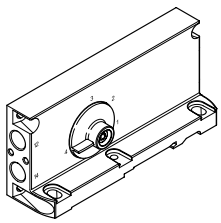
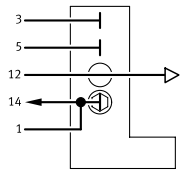
1) Ducted pilot exhaust air is only possible with rotated seals on the valve
2) Application with XP1, XP2, XP3 and soft-start valve in combination with valves of width 52 mm: please note the maximum flow rate of the soft-start valve in this pressure zone
3) Application with XS and pilot air switching valve in combination with intermediate plate

Note

The key features, valves and functions of width 65 mm are described separately in the chapter "Adaptation to width 65 mm, ISO size 3"
➔ page 180.

Key features – Pneumatic components

Right end plate

Code [1]	Type of compressed air supply and pilot air supply		Description
End plate with pilot air selector			
Z (1)			External pilot air supply • Pilot air supply is connected at port 14 • Port 12 is sealed with a blanking plug • Ports 12 and 14 are internally connected • Pilot exhaust air unducted via valve housing
Y (2)			Internal pilot air supply • Pilot air supply is branched internally from port 1 • Ports 1, 12 and 14 are internally connected • Ports 12 and 14 are sealed with blanking plugs • Pilot exhaust air unducted via valve housing
W (3)			External pilot air supply, ducted pilot exhaust air • Pilot air supply is connected at port 14 • Pilot exhaust air via port 12 [2] • Cannot be selected in combination with a soft-start valve in the last pressure zone
U (4)			Internal pilot air supply, ducted pilot exhaust air • Pilot air supply is branched internally from port 1 • Ports 1 and 14 are internally connected • Port 14 is sealed with a blanking plug • Pilot exhaust air via port 12 [2] • Cannot be selected in combination with a soft-start valve in the last pressure zone

1) Selector setting in brackets

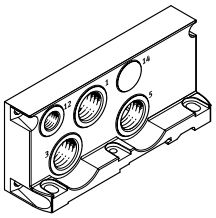
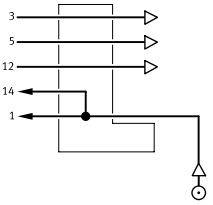
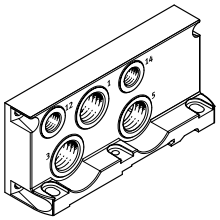
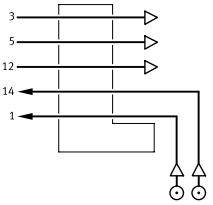
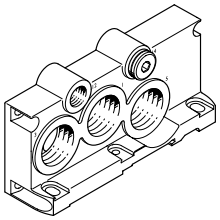
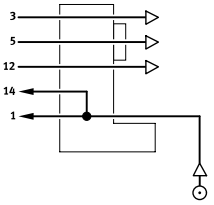
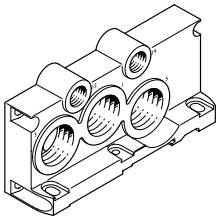
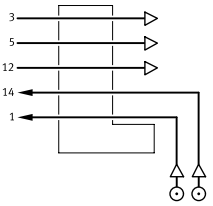
2) Ducted pilot exhaust air is only possible with rotated seals on the valve (pilot exhaust air 82/84 including venting air for valves)

Note

The reversible 3/2-way solenoid valves (code P, Q, R) must only be operated in selector position 1 or 2.

Key features – Pneumatic components

Configuration of all pneumatic connections with NPT thread

Code			Connection (duct)	Designation	Code M Push-in connector, large	Code N Push-in connector, small
Right end plate						
V			1	Push-in fitting	QS-1/2-5/8-U	QB-1/2-1/2-U
			3 and 5	Silencer or Push-in fitting	U-1/2-B-NPT or QS-1/2-5/8-U	U-1/2-B-NPT or QB-1/2-1/2-U
			12	Silencer or Push-in fitting	U-1/4-B-NPT or QB-1/4-3/8-U	U-1/4-B-NPT or QB-1/4-5/16-U
X			1	Push-in fitting	QS-1/2-5/8-U	QB-1/2-1/2-U
			3 and 5	Silencer or Push-in fitting	U-1/2-B-NPT or QS-1/2-5/8-U	U-1/2-B-NPT or QB-1/2-1/2-U
			12	Silencer or Push-in fitting	U-1/4-B-NPT or QB-1/4-3/8-U	U-1/4-B-NPT or QB-1/4-5/16-U
			14	Push-in fitting	QB-1/4-3/8-U	QB-1/4-5/16-U
V1 V3			1	Barbed hose fitting	N-3/4-P-19-NPT[1)]	–
			3 and 5	Silencer or Barbed hose fitting	U-3/4-B-NPT[1)] or N-3/4-P-19-NPT[1)]	–
			12	Silencer or Push-in fitting	U-1/4-B-NPT or QB-1/4-1/2-U	U-1/4-B-NPT or QB-1/4-3/8-U
			14	Plug	B-1/4-NPT	B-1/4-NPT
X1 X3			1	Barbed hose fitting	N-3/4-P-19-NPT[1)]	–
			3 and 5	Silencer or Barbed hose fitting	U-3/4-B-NPT or N-3/4-P-19-NPT[1)]	–
			12	Silencer or Push-in fitting	U-1/4-B-NPT or QB-1/4-1/2-U	U-1/4-B-NPT or QB-1/4-3/8-U
			14	Push-in fitting	QB-1/4-1/2-U	QB-1/4-3/8-U

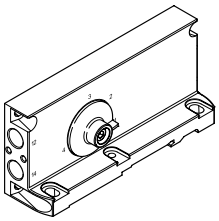
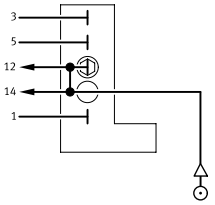
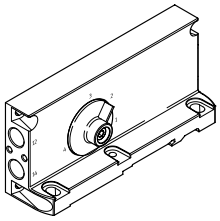
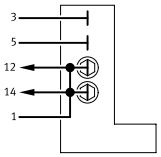
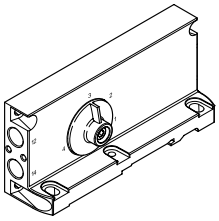
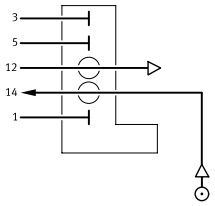
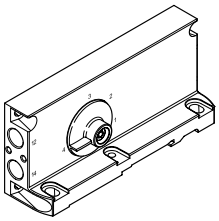
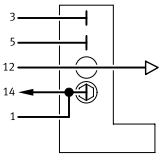
1) For tubing with I.D. 19 mm. Use tubing clips to DIN 3017

Note

The key features, valves and functions of width 65 mm are described separately in the chapter "Adaptation to width 65 mm, ISO size 3"
➔ page 180.

Key features – Pneumatic components

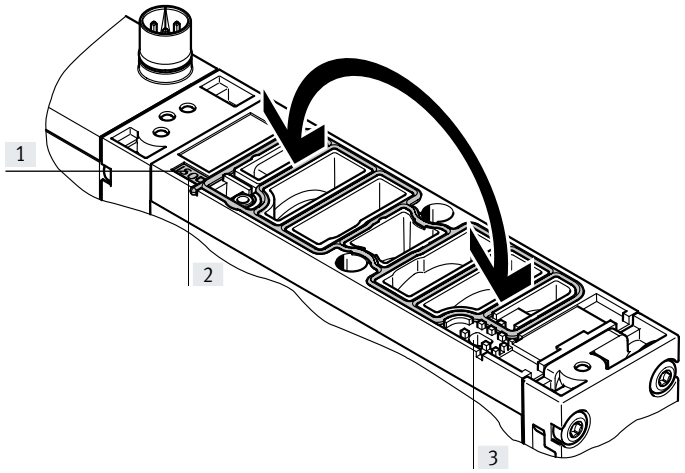
Configuration of all pneumatic connections with NPT thread

Code[1]			Connection	Designation	Code M Push-in connector, large	Code N Push-in connector, small
End plate with pilot air selector						
Z (1)			12	Blanking plug	B-1/4-NPT	B-1/4-NPT
			14	Push-in fitting	QB-1/4-3/8-U	QB-1/4-5/16-U
Y (2)			12	Blanking plug	B-1/4-NPT	B-1/4-NPT
			14	Blanking plug	B-1/4-NPT	B-1/4-NPT
W (3)			12	Silencer or Push-in fitting	U-1/4-B-NPT or QB-1/4-3/8-U	U-1/4-B-NPT or QB-1/4-5/16-U
			14	Push-in fitting	QB-1/4-3/8-U	QB-1/4-5/16-U
U (4)			12	Silencer or Push-in fitting	U-1/4-B-NPT or QB-1/4-3/8-U	U-1/4-B-NPT or QB-1/4-5/16-U
			14	Blanking plug	B-1/4-NPT	B-1/4-NPT

1) Selector setting in brackets

Key features – Pneumatic components

Using the seals with ducted/unducted pilot exhaust air



Unducted pilot exhaust air:
- The seal is visible in the display window on control side 14.
- The "ISO" mark is visible on the inscription label on the seal surface.

Ducted pilot exhaust air:
- The seal is visible in the display window on control side 12.
- The "ISO" mark is visible on the inscription label on the seal surface.

[1] Inscription label
[2] Display window on control side 14 ("ISO" is visible)
[3] Display window on control side 12 ("ISO" is visible)

Pilot air supply

The port for the pneumatic supply is located on the supply plates or the right end plate.

The ports differ for the following types of pilot air supply:
- Internal
- External

Note
If a gradual pressure build-up is required in the system by using a soft-start valve, then external pilot air should be selected so that the pilot pressure is already applied in full at the point of switch-on.

Internal pilot air supply

Internal pilot air supply can be selected if the working pressure is between 3 and 10 bar.

In this case the pilot air supply is branched from the compressed air supply 1 using an internal connection. Port 14 is not available with code V and is sealed with a blanking plug for code V1, V3.

External pilot air supply

If the supply pressure is less than 3 bar, you must operate your valve terminal VTSA/VTSA-F using external pilot air supply.

The pilot air supply is then supplied via port 14 on the right end plate. This is the case even if the valve terminal is operated with different pressure zones.

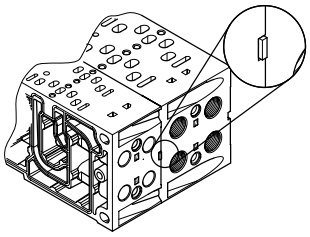
Key features – Pneumatic components

Creating pressure zones and separating exhaust air

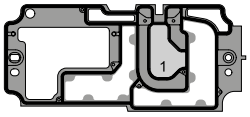
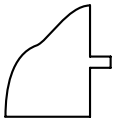
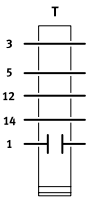
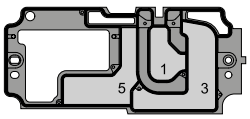
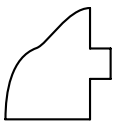
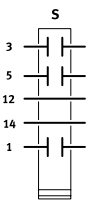
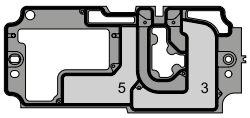
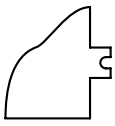
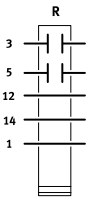
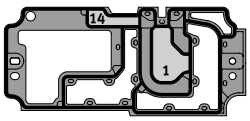
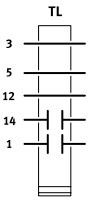
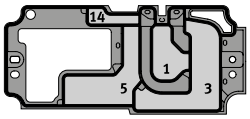
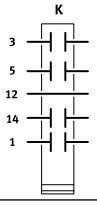
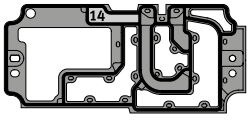
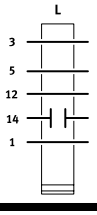
The valve terminal VTSA/VTSA-F offers a number of options for creating pressure zones if different working pressures are required.
Pressure zones are created by isolating the internal supply ducts between the manifold sub-bases by appropriate duct separation.

Compressed air is supplied and exhausted via a supply plate.
The position of the supply plates and duct separations can be freely selected for VTSA/VTSA-F.

Duct separations are integrated ex-works as per your order.
Duct separations can be distinguished by their coding, even when the valve terminal is assembled.



Creating pressure zones

Code	Separating seal			Width				Description
	Illustrated examples	Coding	Basic representation	18 mm	26 mm	42 mm	52 mm	
T				■	■	■	■	Duct 1 separate
S				■	■	■	■	Ducts 1, 3 and 5 separate
R				■	■	■	■	Ducts 3 and 5 separate
TL		Colour-coded in red		■	■	■	■	Duct 1 and 14 separated
K		Colour-coded in green		■	■	■	■	Ducts 1, 3, 5 and 14 separate
L		Colour-coded in white		■	■	■	■	Duct 14 separate

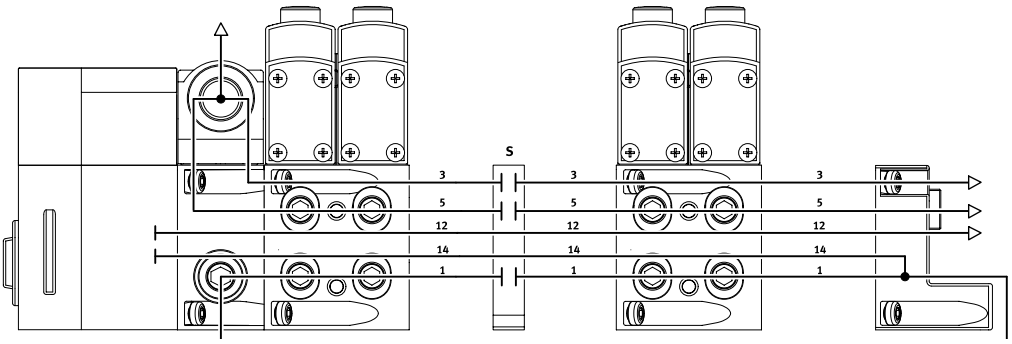
Key features – Pneumatic components

Example: Compressed air supply and pilot air supply, right end plate
Internal pilot air supply, silencer/ducted exhaust air

Right end plate: code V and V1

Optional duct separation

The diagram on the right shows an example of the configuration and connection of the compressed air supply with internal pilot air supply:
- Port 14 is not available with code V and is sealed with a blanking plug for code V1.
- The air is exhausted via the silencer at exhaust port 3/5.
- Duct separations can optionally be used to create pressure zones.

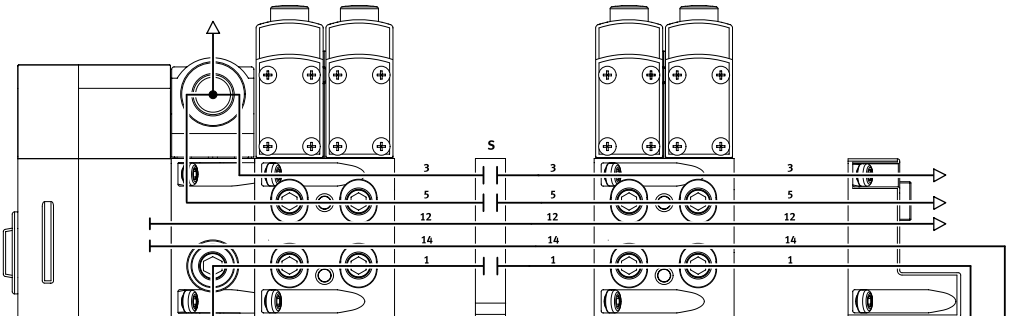


Example: Compressed air supply and pilot air supply, right end plate
External pilot air supply, silencer/ducted exhaust air

Right end plate: code X and X1

Optional duct separation

The diagram on the right shows an example of the configuration and connection of the compressed air supply with external pilot air supply:
- Port 14 on the right end plate is equipped with a fitting for this.
- The air is exhausted via the silencer at exhaust port 3/5.
- Duct separations can optionally be used to create pressure zones.



Key features – Pneumatic components – Compressed air supply and pressure zones, examples

Example: Compressed air supply and pilot air supply via end plate with pilot air selector

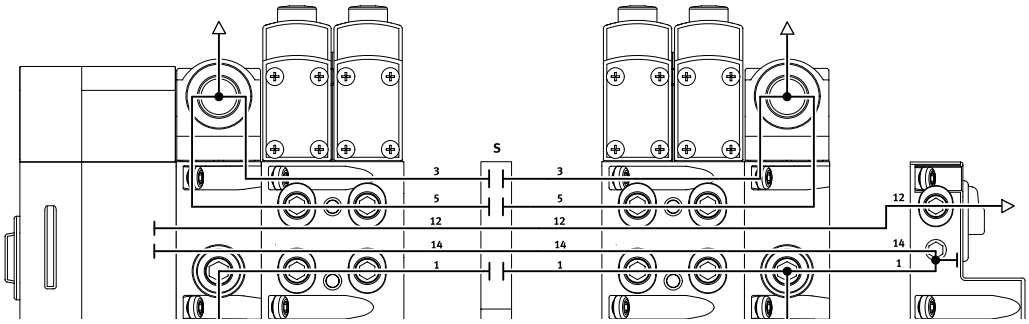
Internal pilot air supply, ducted exhaust air/silencer

Right end plate: code U

Optional duct separation

The diagram on the right shows an example of the configuration and connection of the compressed air supply with internal pilot air supply:

- Port 14 on the right end plate is tightly sealed.
- The air is ducted or discharged via the silencer at exhaust port 3/5.
- The selector switch on the pilot air selector is in position 4.
- Duct separations can optionally be used to create pressure zones.



Example: Compressed air supply and pilot air supply via end plate with pilot air selector

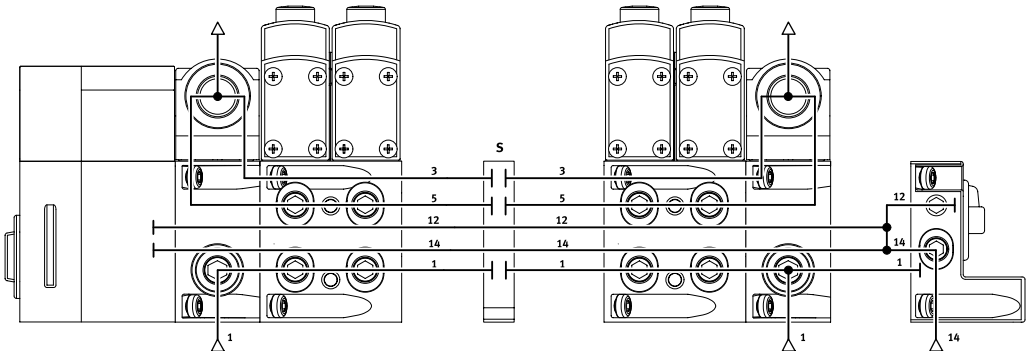
External pilot air supply, ducted exhaust air/silencer

Right end plate: code Z

Optional duct separation

The diagram on the right shows an example of the configuration and connection of the compressed air supply with external pilot air supply:

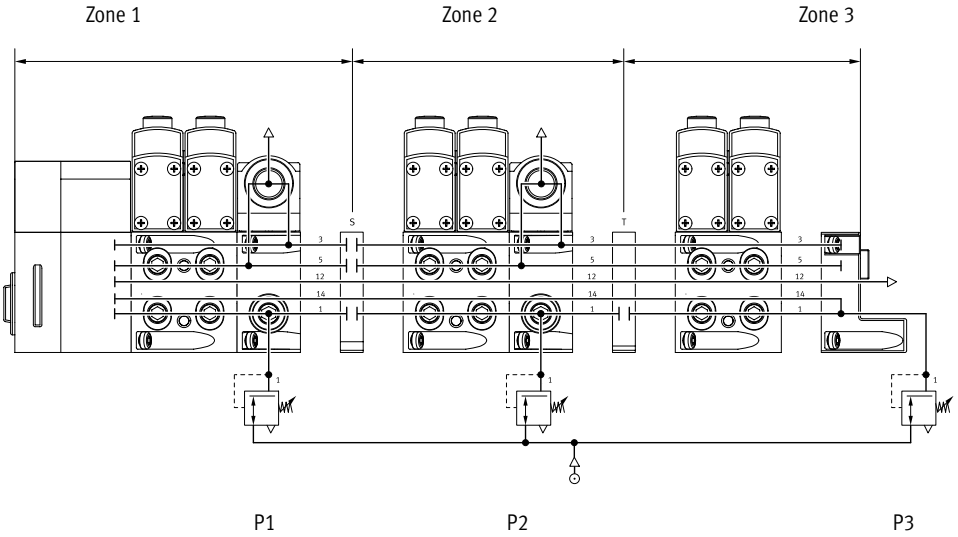
- Port 14 on the right end plate is equipped with a fitting for this.
- Port 12 is sealed with a blanking plug since it is internally connected with port 14.
- The air is ducted or discharged via the silencer at exhaust port 3/5.
- The selector switch on the pilot air selector is in position 1.
- Duct separations can optionally be used to create pressure zones.



Key features – Pneumatic components – Compressed air supply and pressure zones, examples

Examples: Creating pressure zones
VTSA/VTSA-F with CPX terminal

With the VTSA/VTSA-F, up to 16 pressure zones can be created (up to 32 pressure zones if only size 1, ISO 5599-2, is fitted). The diagram shows an example of the configuration and connection of three pressure zones using duct separations – with internal pilot air supply.



Note

Examples with pressure zones and soft-start valve are described separately in the chapter "Soft-start valve"
➔ page 167.

Key features – Mounting

Valve terminal mounting

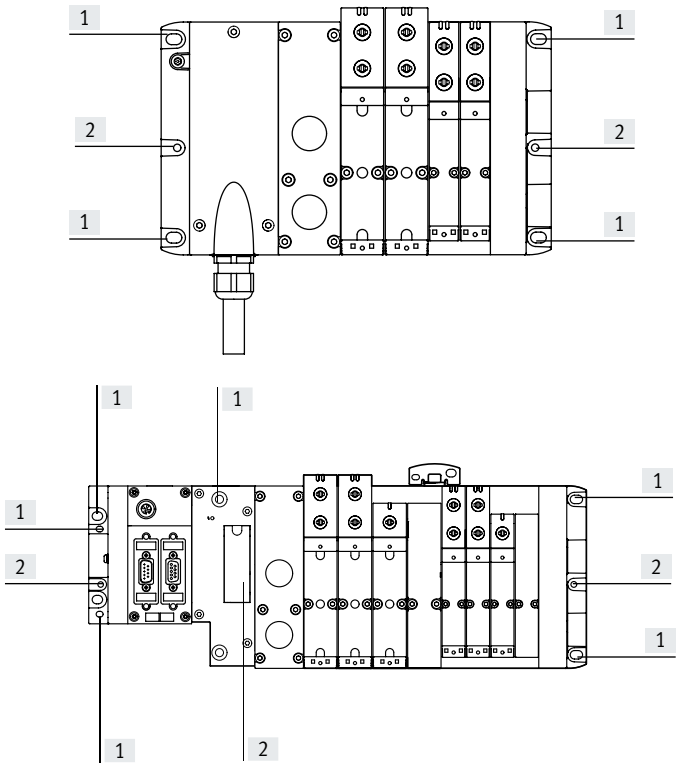
Sturdy valve terminal mounting thanks to:

- Through-holes for wall mounting
- Additional mounting brackets
- H-rail mounting for VTSA/VTSA-F (horizontal mounting position permitted)

Note

Further information on mounting the valve terminal, arranged by valve terminal configuration, can be found online.

Wall mounting, general



[1] Drilled hole for M6 screw
[2] Drilled hole for H-rail mounting

The valve terminal VTSA/VTSA-F is screwed onto the mounting surface using M6 screws. The mounting holes are located at the following points:

- Multi-pin plug
  - 2 each on the multi-pin manifold block and the right end plate
- Fieldbus, CPX:
  - 2 each on the left (CPX) and right (VTSA/VTSA-F) end plate and the pneumatic interface
- I-Port/IO-Link® (4 in total); 2 each on the I-Port/IO-Link® interface and on the right end plate

Mounting brackets can be mounted on pneumatic supply plates and manifold sub-bases. If using CPX components, see:

➔ Internet: cpx

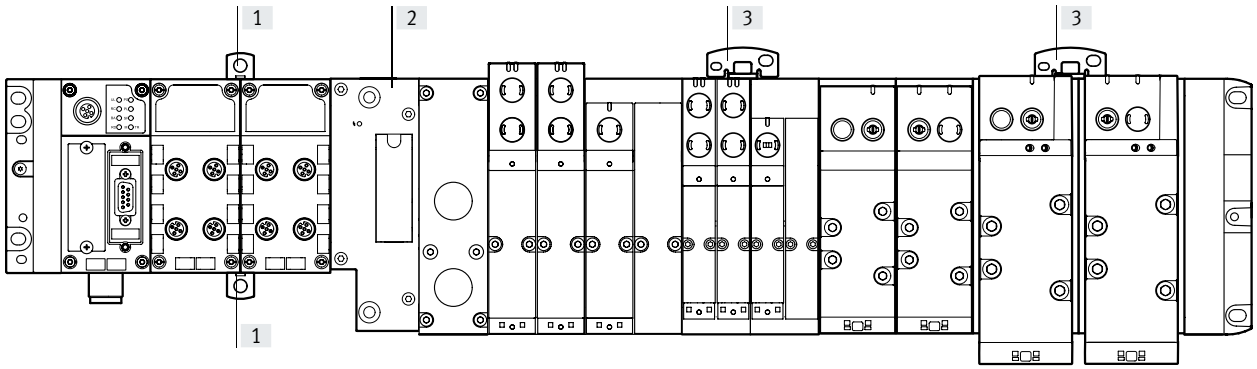
Note

Wall mounting of the VTSA/VTSA-F with more than five pneumatic modules

Note the following instructions:

- Additionally use mounting brackets of the type VAME-S6-W-M46
- Mount these on each fourth plate (manifold sub-base, supply plate or exhaust plate), counting from left to right, starting after the pneumatic interface.
- No mounting bracket is required next to the right end plate.
- Always use the pre-assembled mounting brackets when mounting factory pre-assembled valve terminals on a wall.

Wall mounting with CPX polymer design



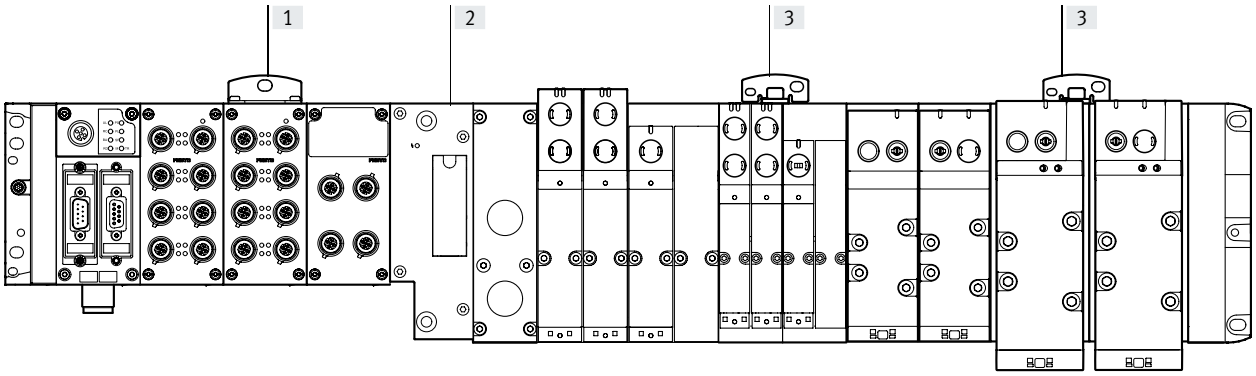
[1] Additional wall mounting for polymer CPX terminal
[2] Pneumatic interface
[3] Additional wall mounting for VTSA/VTSA-F (with drilled hole for M5 and M6 screw)

In the case of CPX terminals of polymer design with 4 and more interlinking blocks, additional wall mountings of the type CPX-BG□RW must be used every 100 ...150 mm. These mountings are clipped in at the top and bottom between the CPX modules.

In the case of the VTSA/VTSA-F, mounting brackets must be mounted on the wall as instructed above.
Brackets of the type VAME-S6-W-M46 must be used as an additional wall mounting.

Key features – Mounting

Wall mounting with CPX metal design

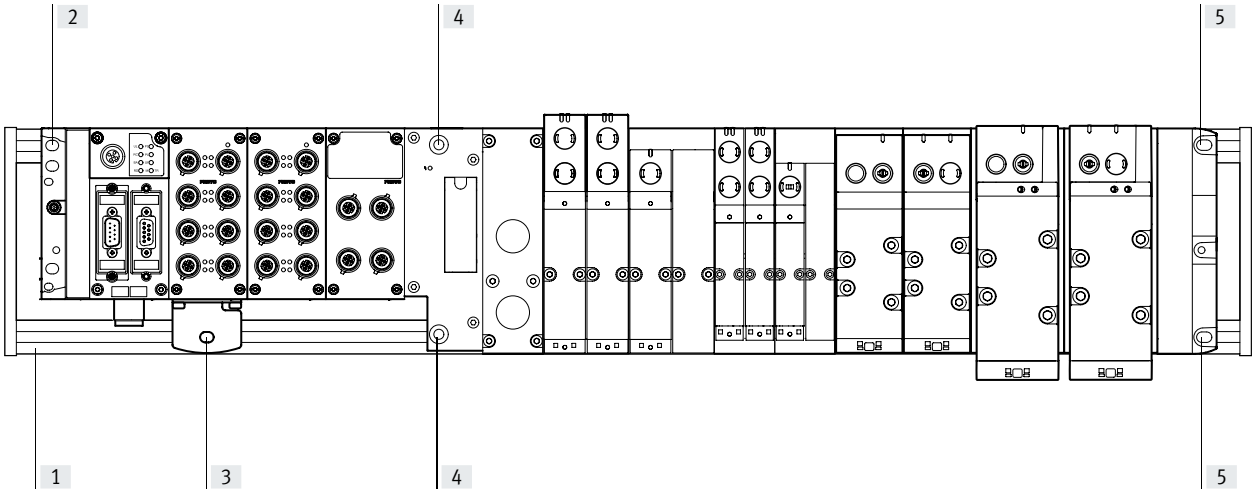


[1] Additional wall mounting for CPX metal design
[2] Pneumatic interface
[3] Additional wall mounting for VTSA/VTSA-F (with drilled hole for M5 and M6 screw)

In the case of CPX terminals of metal design with 4 and more interlinking blocks, additional wall mountings of the type CPX-M-BG□RW must be used every 100 ...150 mm. These wall mountings are screwed in at the top of the corresponding CPX module.

In the case of the VTSA/VTSA-F, mounting brackets must be mounted on the wall as instructed above.
Brackets of the type VAME-S6-W-M46 must be used as an additional wall mounting.

Mounting on support system with CPX metal design



[1] Support system (DIN mounting rail)
[2] Upper mounting for CPX metal design, left end plate on DIN mounting rail
[3] Lower mounting for CPX metal design on DIN mounting rail with mounting bracket CPX-M-BG-VT-2X
[4] Mounting for pneumatic interface on DIN mounting rail
[5] Mounting for right end plate on DIN mounting rail

If a metal terminal CPX with VTSA pneumatic components is mounted on DIN mounting rails, it may be necessary to have one or more mounting brackets on the CPX side to compensate for the length. It is possible to compensate for the length by using special mounting brackets CPX-M-BG-VT-2X. The mounting bracket connects the metal terminal CPX to the DIN mounting rail.

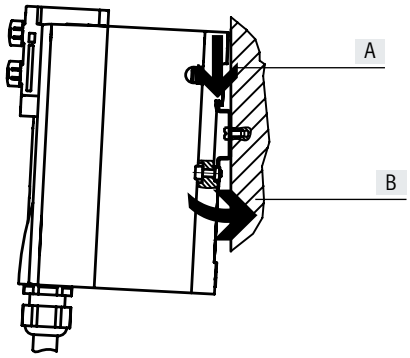
Note

- Only metal CPX modules with VTSA/VTSA-F modules of width 18 ... 52 mm must be used.
- The number of mounting brackets required depends on the number of CPX modules installed and whether any system feeds are present.

Further information about mounting the valve terminal can be found in the assembly instructions in the Festo Support Portal
→ www.festo.com/sp

Key features – Mounting

H-rail mounting



The valve terminal VTSA/VTSA-F is hooked onto the H-rail (see arrow A). It is then swivelled onto the H-rail and secured in place with the clamping component (see arrow B).

The following VTSA/VTSA-F mounting is required for H-rail mounting of the valve terminal:

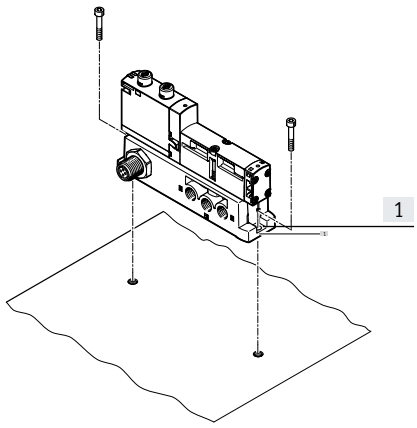
- CPX-CPA-BG-NRH

This enables the valve terminal to be mounted on an H-rail to EN 60715.

Note

- Wall mounting is recommended if more than one vertical stacking element or a long valve terminal design is required.
- Vibration/shock loads are not permissible with H-rail mounting.
- Only a horizontal mounting position is permissible for H-rail mounting.

Individual valve mounting



[1] Vertical mounting holes

The individual sub-base for wall mounting is designed for integration into a system or machine. It is mounted vertically.

Key features – Display and operation

Display and operation

Each solenoid coil is allocated an LED which indicates its switching status.

- Indicator 12 shows the signal status of the pilot control for output 2
- Indicator 14 shows the signal status of the pilot control for output 4

Manual override (MO):
The manual override enables the valve to be switched when not electrically actuated or energised.
The valve is switched by pushing the manual override. The set switching status can also be locked by turning the manual override.

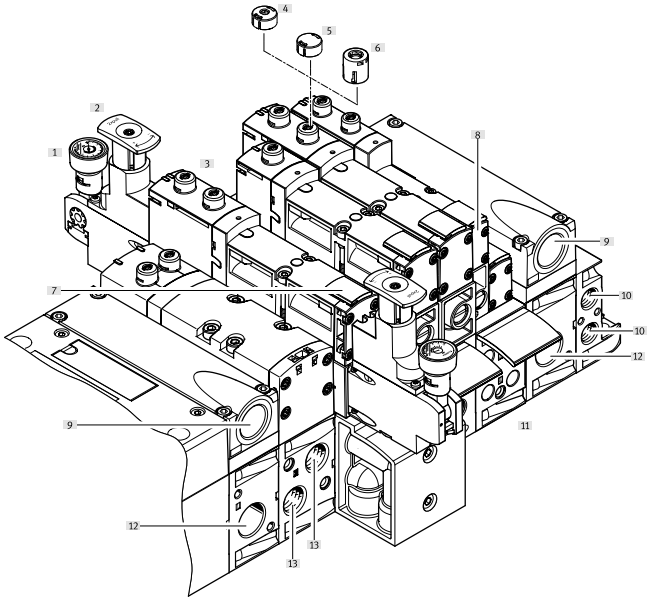
Alternatives:

- The cover cap (code N) limits the function of the manual override, preventing it from being locked. The valve can then only be actuated as non-detenting.
- The cover cap (code V) can be used to secure the manual override against accidental actuation.
- The heavy-duty cover cap protects the manual override located on the valve. The valve can be actuated as non-detenting or as detenting via accessory.

Note

Special valve variants with pre-assembled cover caps for the manual override are available for valve terminal VTSA/VTSA-F.

Pneumatic connection and control elements

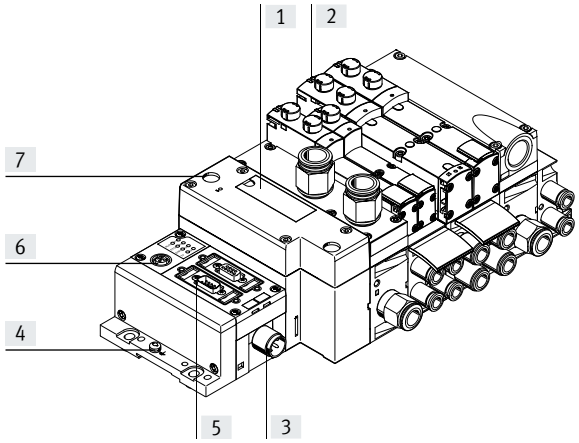


[1] Pressure gauge (optional)
[2] Adjusting knob for optional pressure regulator plate
[3] Manual override (MO) (for each pilot solenoid coil, non-detenting or non-detenting/detenting)
[4] Cover cap for MO, non-detenting
[5] Cover cap for MO, concealed
[6] Cover cap for MO, non-detenting, heavy-duty, detenting via accessory
[7] Inscription label holder for valve
[8] Adjusting screw of optional throttle plate
[9] Exhaust ports "Valves" (3/5)
[10] Pilot ports 12 and 14 for supplying the external pilot air
[11] Inscription label holder for subbase
[12] Supply port 1 (operating pressure)
[13] Working ports 2 and 4, per valve position

Note

A manually operated valve (manual override) cannot be reset electrically. Conversely, an electrically actuated valve cannot be reset using the mechanical manual override.

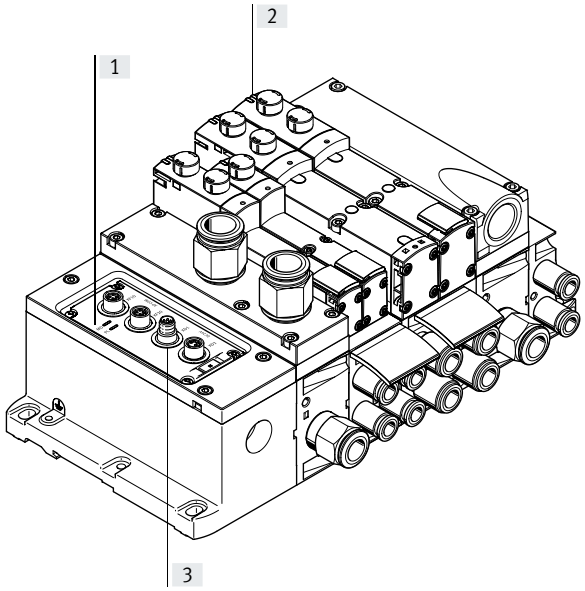
Electrical connection and display elements



[1] Inscription area and covering for H-rail mounting
[2] Yellow LEDs: signal status indication for the pilot solenoid coils
[3] Power supply connection
[4] Earthing connection
[5] Fieldbus interface (bus-specific)
[6] Service interface
[7] Red LED: common error display for valves

Key features – Display and operation

Electrical connection and display elements for AP interface

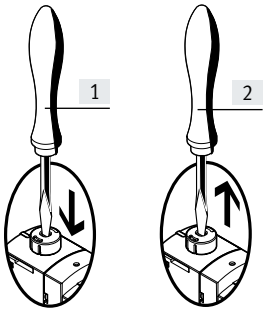


[1] LED indicators for operating status/diagnostics of the pneumatic interface
[2] Yellow LEDs: signal status indication for the pilot solenoid coils
[3] AP interface with connections

Key features – Display and operation

Manual override (MO) – Function

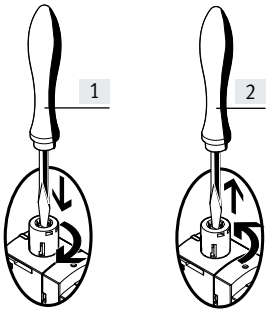
MO with automatic return (non-detenting)



[1] Press in the plunger of the manual override using a pointed object or screwdriver.
The valve is in the switching position.

[2] Remove the pointed object or screwdriver.
The spring force pushes the plunger of the manual override back.
The valve returns to its normal position (not with double solenoid valve code J or D).

MO with detent (concealed)

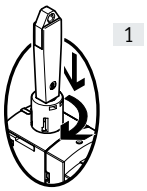


[1] Press in the plunger of the manual override using a pointed object or screwdriver until the valve switches and then turn the plunger 90° clockwise until the stop is reached.
Valve remains in the switching position.

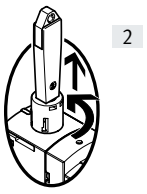
[2] Turn the plunger 90° anti-clockwise until the stop is reached and then remove the pointed object or screwdriver. The spring force pushes the plunger of the manual override back. The valve returns to its normal position (not with double solenoid valve code J or D).

Cover caps for manual override

Cover cap for MO, heavy-duty, with automatic reset (non-detenting/detenting via accessory)

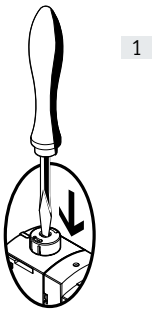


[1] Non-detenting:
Push in key for MO. The valve is in the switching position.
Detenting:
Turn the coded key in switching position clockwise through 90° until the stop is reached. Valve remains in the switching position. In this position the key is latched and cannot be removed.

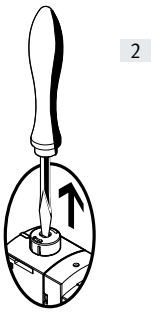


[2] Turn the key 90° anti-clockwise until the stop is reached. The key is now unlatched. The spring force of the manual override pushes the key back out. The valve returns to its normal position (not with double solenoid valve code J or D).

Cover cap for MO, with automatic return (non-detenting)

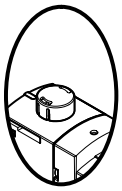


[1] Restricted function, non-detenting: push in the plunger of the MO cap using a pointed object or screwdriver. The valve is in the switching position.



[2] Remove the pointed object or screwdriver.
The spring force pushes the plunger of the manual override back.
The valve returns to its normal position (not with double solenoid valve code J or D).

Cover cap for MO, concealed



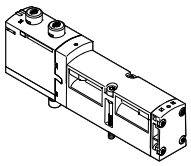
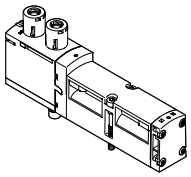
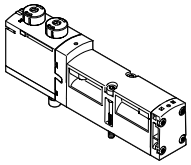
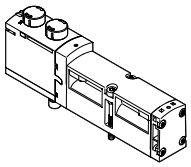
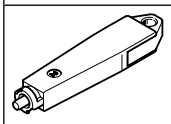
When concealed by the cover cap, the MO can be secured against accidental actuation.

Note

Cover caps for the manual override can be ordered separately as accessories. There are also VSVA valve variants with pre-assembled cover caps.

Key features – Display and operation

Overview of valve variants and cover caps for manual override (MO)

Illustration	Terminal code	Description of valve terminal order code	Manual override (MO)	Valve code identification on the rating plate sticker[1]
Solenoid valve VSVA without cover cap				
	R	Without cover cap on MO	Non-detenting, detenting	VSVA-B- ... -MZD- ...
Solenoid valve VSVA with pre-assembled cover cap on MO				
	B	MO non-detenting/heavy duty with cover cap, can be used as detenting via accessory (key), as valve variant	Non-detenting, detenting via accessory (key)	VSVA-B- ... -MZTR- ...
	C	MO can only be used as non-detenting with coded cover cap, as valve variant	Non-detenting	VSVA-B- ... -MZH- ...
	D	MO concealed by cover cap – operation of MO prevented, as valve variant	Concealed	VSVA-B- ... -MZ- ...
Cover caps for MO				
	N	MO can only be used as non-detenting with coded cover cap	Non-detenting	VSVA-B- ... -MZD- ...
	V	MO concealed by cover cap – operation of MO prevented	Concealed	VSVA-B- ... -MZD- ...
	A	MO non-detenting/heavy duty with cover cap, detenting via accessory (key)	Non-detenting, detenting via accessory	VSVA-B- ... -MZD- ...
Accessories for manual override, heavy duty				
	–	Coded key (accessory) for actuating the MO, non-detenting/heavy duty, for detenting position	For manual override, detenting	–

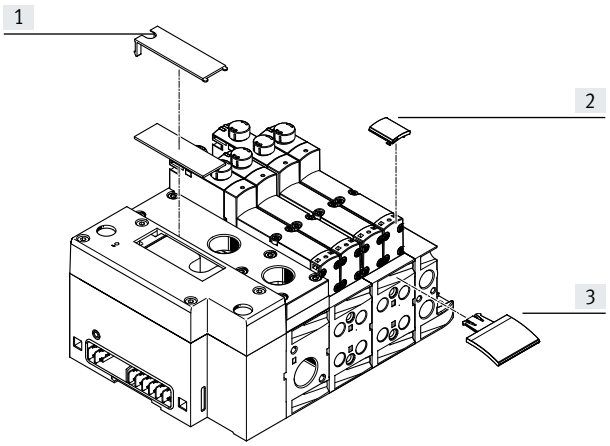
1) As an example, the part code for a 5/2-way single solenoid valve, mechanical spring return is used here (e.g. VSVA-B-M52-MZTR-A2-1T1L)

Note

Cover caps for non-detenting/heavy duty manual override, detenting via accessory, are provided for one-off use only.
If they are used more than once, reliable locking of the cover cap cannot be guaranteed.

Key features – Electrical components

Inscription system



[1] Inscription area (approx. 20 x 45 mm)
[2] Inscription label holder for valve ASCF-T-S6 (17 x 12.5 mm), ASCF-T-S6-Z
[3] Inscription label holder for manifold sub-base ASCF-M-S6, ASCF-M-S2-2

Inscription label holders can be applied to the valves and manifold sub-bases to identify them. They can be ordered by entering the code B or T in the order code for accessories.
Scope of delivery: inscription label holder including inscription label.
The following inscription labels can be used as spares:

- Inscription label holder for valve type ASCF-T-S6: part no. 540888
- Inscription label holder with additional fields for marking valve type ASCF-T-S6-Z: part no. 8106532
- Inscription label holder for manifold sub-base type ASCF-M-S6: part no. 540889
- Inscription label holder for manifold sub-base (for valve width 52 mm) type ASCF-M-S2-2: part no. 562577

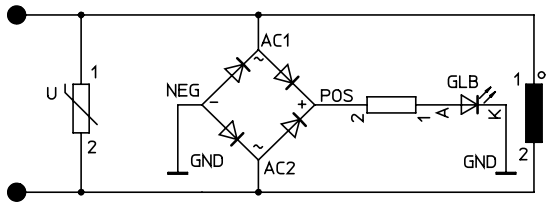
Large inscription labels can be attached to the pneumatic interface as an alternative or in addition to the smaller labels.

Protective circuit

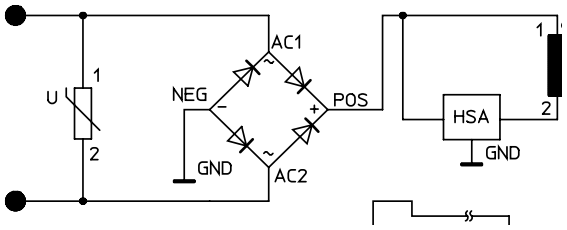
Each solenoid coil VSVA is provided with a spark arresting protective circuit and protected against polarity reversal.

The 24 V DC version of width 52 mm additionally features integrated holding current reduction.

24 V DC version (width 18 to 42 mm)



24 V DC version (width 52 mm)



Note

All control signals of the solenoid coils of a valve terminal share a common load (independent of whether multi-pin, AS-i or CPX).

Key features – Electrical components

Individual valve

Valves on individual sub-bases can be used for actuators that are further away from the valve terminal.

- Electrical connection M12, 4-pin 24 V DC
- 4-pin clamped terminal connection for configuration by the user 24 V DC
- Cable (open end) for configuration by the user 24 V DC

Individual electrical connection

A maximum of 20 solenoid coils can be actuated. 2 solenoid coils per valve can be addressed.

Individual electrical connection:
- M12
- 6-way or 10-way
- 5-pin
- 24 V DC

Electrical multi-pin plug connection

The following multi-pin plug connection variants are offered for the valve terminal VTSA/VTSA-F:
- Sub-D multi-pin plug connection (37-pin for 24 V DC): This valve terminal can be equipped with 1 ... 16 valve positions (with double solenoid valves), or with 1 ... 32 valve positions (with single solenoid valves). A maximum of 32 solenoid coils can be actuated.
- Terminal box (terminal strip for 24 V DC): This valve terminal can be equipped with 1 ... 16 valve positions (with double solenoid valves), or with 1 ... 32 valve positions (with single solenoid valves). A maximum of 32 solenoid coils can be actuated.
- Multi-pin node (round plug): electrical multi-pin plug connection with round plug, 19-pin to CNOMO E03.62.530.N, connecting thread M23 for 24 V DC. The valve terminal can be fitted with max. 16 solenoid coils.

The valves are switched by positive or negative logic (PNP or NPN). Mixed operation is not permissible because all control signals of the solenoid coils of a valve terminal share a common load.

Each pin on the multi-pin plug (Sub-D) or terminal box (terminal strip) can actuate exactly one solenoid coil. If the maximum configurable number of valve positions is 32, this means that 32 valves can be addressed, each with a single solenoid coil.
With 16 or fewer valve positions, 2 solenoid coils per valve can be addressed.

Note

Use the following 37-pin connecting cables from Festo to connect the valve terminal VTSA/VTSA-F with Sub-D multi-pin plug connection:
- NEBV-...-LE10 for max. 8 solenoid coils
- NEBV-...-LE26 for max. 22 solenoid coils
- NEBV-...-LE27 for max. 23 solenoid coils
- NEBV-...-LE37 for max. 32 solenoid coils
- NECV-S1W37 pre-assembled plug connector

AS-Interface connection

Valve terminals VTSA/VTSA-F with AS-Interface connection can be expanded with up to 8 valves with max. 8 solenoid coils.

The valve terminal with AS-Interface connection is based on the same electrical links as the valve terminal with multi-pin plug connection.

This means a valve terminal with multi-pin plug connection can be converted using an AS-Interface module.
The technical specifications of the AS-Interface system must be observed in this case.

Note

AS-Interface module VAEM-S6-S-FAS-4-4E
Always operate the AS-Interface module with additional power supply if 4 solenoid coils (width 52 mm) are supplied with current simultaneously.
More information can be found at:
➔ Internet: as-interface

Fieldbus interface/control block

All functions and features of the electrical peripherals CPX are permitted in connection with the CPX interface. This means that:

- The valves and electrical outputs are supplied via the operating voltage connection CPX
- The valves are supplied and switched off independently via a separate connection on the CPX

Note

More information can be found at:
➔ Internet: cpx

Key features – Electrical components

I-Port/IO-Link®

Valve terminals VTSA/VTSA-F with I-Port/IO-Link® connection can be expanded with up to 16 valves with max. 32 solenoid coils.

The valve terminal with I-Port/IO-Link® connection is based on the same electrical interlinking as the valve terminal with multi-pin plug connection.

This means a valve terminal with multi-pin plug connection can be converted using an I-Port/IO-Link® module. The technical specifications of the I-Port/IO-Link® system must be observed in this case.

Note

AS-i module VAEM-S6-S-FAS-4-4E. Always operate the AS-i module with additional power supply if max. 4 solenoid coils (width 52 mm) are simultaneously supplied with current.
More information can be found at:
➔ Internet: i-port, IO-Link®

AP interface

VTSA/VTSA-F valve terminals with AP interface can be expanded with up to 12 valves with a maximum of 24 solenoid coils.

The valve terminal with AP interface is based on the same electrical linkage as the valve terminal with multi-pin plug connection.

This means a valve terminal with multi-pin plug connection can be converted using an AP interface.
The technical specifications of the AP interface must be observed in this case.

Note

AS-i module VAEM-S6-S-FAS-4-4E. Always operate the AS-i module with additional power supply if max. 4 solenoid coils (width 52 mm) are simultaneously supplied with current.
More information can be found at:
➔ Internet: ap

Key features – Electrical components

Rules for addressing

Address allocation

Address allocation doesn't depend on whether single or double solenoid valves are fitted.
Addresses are assigned in ascending order without gaps, from left to right.

Single solenoid valve

A valve position for actuating one solenoid coil (VABV...T1) occupies one address.

Double solenoid valve

A valve position for actuating two solenoid coils (VABV...T2) occupies two addresses. The following allocation applies in this case:

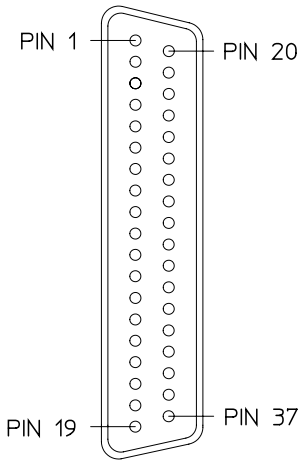
- Coil 14: lower-value address
- Coil 12: higher-value address

Connecting cable

The wire colours refer to the following pre-assembled connecting cables from Festo:

- NEBV-...-LE10 for valve terminal with max. 8 solenoid coils
- NEBV-...-LE26 for valve terminal with max. 22 solenoid coils
- NEBV-...-LE27 for valve terminal with max. 23 solenoid coils
- NEBV-...-LE37 for valve terminal with max. 32 solenoid coils

Pin allocation – Multi-pin plug, Sub-D socket, 24 V DC, electrical control code MP1



Note

The drawing shows a plan view of the Sub-D plug socket at the connecting cable NEBV-...

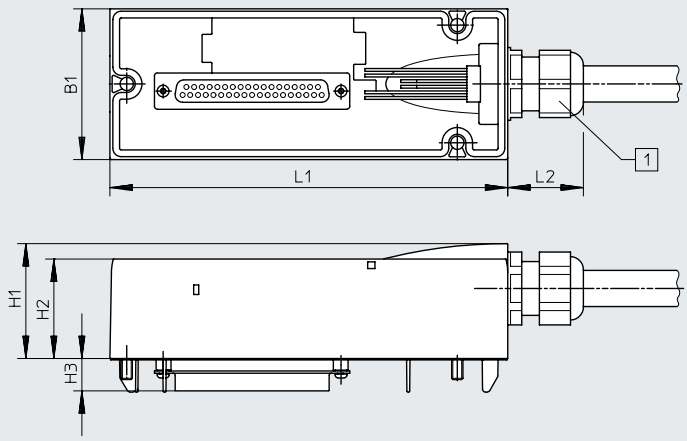
Pin [2]	Address/coil	Wire colour [1]		Pin [2]	Address/coil	Wire colour [1]
1	0	WH		17	16	WH PK
2	1	BN		18	17	PK BN
3	2	GN		19	18	WH BU
4	3	YE		20	19	BN BU
5	4	GY		21	20	WH RD
6	5	PK		22	21	BN RD
7	6	BU		23	22	GY GN
8	7	RD		24	23	YE GY
9	8	GY PK		25	24	PK GN
10	9	RD BU		26	25	YE PK
11	10	WH GN		27	26	GN BU
12	11	BN GN		28	27	YE BU
13	12	WH YE		29	28	GN RD
14	13	YE BN		30	29	YE RD
15	14	WH GY		31	30	GN BK
16	15	GY BN		32	31	GY BU
Conductor						
33	0 V[3]	YE BK		35	0 V[3]	BN BK
34	0 V[3]	WH BK		36	0 V[3]	BK
Earthing						
37	FE	VT		–	–	–

1) To IEC 757
2) Pin 9 ... 35: not allocated in the case of connecting cable NEBV-...-LE10
Pin 23 ... 33: not allocated in the case of connecting cable NEBV-...-LE26
Pin 24 ... 33: not allocated in the case of connecting cable NEBV-...-LE27
3) Connect 0 V for positive-switching control signals, 24 V for negative-switching control signals. Mixed operation is not permissible because all control signals of the solenoid coils of a valve terminal share a common load!

Key features – Electrical components

Dimensions Download CAD data ➔ www.festo.com

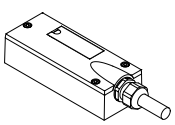
Connecting cable NEBV-...



[1] Cable fitting M20x1.5

Type	B1	H1	H2	H3	L1	L2
NEBV-...	54	41	36	11.6	142	27

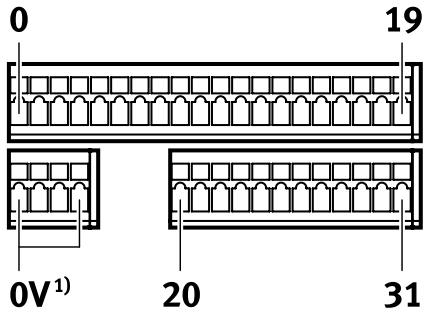
Ordering data – Connecting cable, Sub-D, 24 V DC, electrical control code MP1

	Cable sheath	Connecting cable	Length [m]	Part no.	Type
	TPE-U(PUR)	For max. 8 solenoid coils, 10-core	2.5	**539240**	**NEBV-S1W37-E-2.5-LE10**
			5	**539241**	**NEBV-S1W37-E-5-LE10**
			10	**539242**	**NEBV-S1W37-E-10-LE10**
		For max. 22 solenoid coils, 26-core	2.5	**539243**	**NEBV-S1W37-E-2.5-LE26**
			5	**539244**	**NEBV-S1W37-E-5-LE26**
			10	**539245**	**NEBV-S1W37-E-10-LE26**
		For max. 32 solenoid coils, 37-core	2.5	**539246**	**NEBV-S1W37-K-2.5-LE37**
			5	**539247**	**NEBV-S1W37-K-5-LE37**
			10	**539248**	**NEBV-S1W37-K-10-LE37**
	PVC	For max. 8 solenoid coils, 10-core	2.5	**543271**	**NEBV-S1W37-KM-2.5-LE10**
			5	**543272**	**NEBV-S1W37-KM-5-LE10**
			10	**543273**	**NEBV-S1W37-KM-10-LE10**
		For max. 23 solenoid coils, 27-core	2.5	**543274**	**NEBV-S1W37-KM-2.5-LE27**
			5	**543275**	**NEBV-S1W37-KM-5-LE27**
			10	**543276**	**NEBV-S1W37-KM-10-LE27**
		For max. 32 solenoid coils, 37-core	2.5	**543277**	**NEBV-S1W37-KM-2.5-LE37**
			5	**543278**	**NEBV-S1W37-KM-5-LE37**
			10	**543279**	**NEBV-S1W37-KM-10-LE37**

Key features – Electrical components

Pin allocation – Multi-pin, terminal strip (Cage Clamp), 24 V DC; electrical control code T (based on standard: EN 61984)

Each solenoid coil is assigned to a specific terminal on the terminal strip in order for the valves to be actuated.

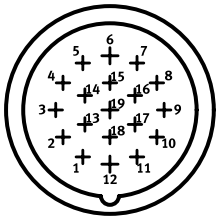


Note

The drawing shows a plan view of the multi-pin terminal strip (Cage Clamp).

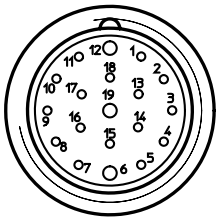
Terminal	Coil/address		Terminal	Coil/address
1	0		17	16
2	1		18	17
3	2		19	18
4	3		20	19
5	4		21	20
6	5		22	21
7	6		23	22
8	7		24	23
9	8		25	24
10	9		26	25
11	10		27	26
12	11		28	27
13	12		29	28
14	13		30	29
15	14		31	30
16	15		32	31
Conductor				
33	0 V		35	0 V
34	0 V		36	0 V

Pin allocation – Multi-pin, round plug, 24 V DC; electrical control code MP4



Address	Pin 1)		Address	Pin 1)
0	15		8	17
1	7		9	9
2	5		10	2
3	4		11	13
4	16		12	11
5	8		13	10
6	3		14	1
7	14		15	18

Pin allocation – Multi-pin plug, round plug, 24 V DC; electrical actuation – CNOMO allocation

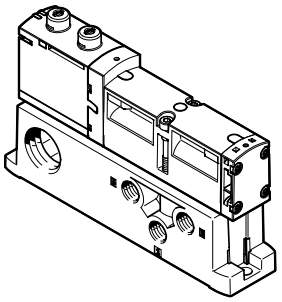


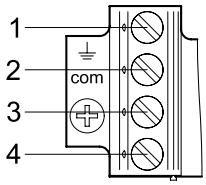
Pin	Valve position/solenoid coil		Pin	Valve position/solenoid coil
1	8/14		11	7/14
2	6/14		12	FE
3	4/14		13	6/12
4	2/12		14	4/12
5	2/14		15	1/14
6	0 V 1)		16	3/14
7	1/12		17	5/14
8	3/12		18	8/12
9	5/12		19	Not assigned
10	7/12			

1) Pin 6: 0 V for positive-switching control signals; connect 24 V for negative-switching control signals; mixed operation is not permitted!
Pin 12: earth
Pin 19: not allocated

Key features – Electrical components

Electrical connection, individual valve 24 V DC up to width 52 mm



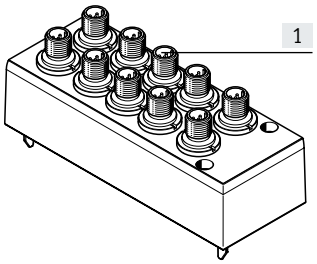


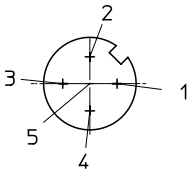
Pin assignment for assembly by the user

With positive logic:
Pin1 – Not allocated
Pin2 – U_B for coil 12
Pin3 – 0 V for coil 12 and 14
Pin4 – U_B for coil 14

With negative logic:
Pin1 – Not allocated
Pin2 – 0 V for coil 12
Pin3 – U_B for coil 12 and 14
Pin4 – 0 V for coil 14

Individual electrical connection, 6-way or 10-way, 24 V DC, code MP2/MP3 for valve terminal up to width 52 mm





[1] Connection plug M12x1, 5-pin

Pin assignment M12
With positive logic:
Pin1 – Not allocated
Pin2 – U_B for coil 12
Pin3 – 0 V for coil 12 and 14
Pin4 – U_B for coil 14
Pin5 – Functional earth

Pin assignment M12
With negative logic:
Pin1 – Not allocated
Pin2 – 0 V for coil 12
Pin3 – U_B for coil 12 and 14
Pin4 – 0 V for coil 14
Pin5 – Functional earth

Note

- Mixed operation of positive-switching (PNP) and negative-switching (NPN) control signals is not permissible because all control signals of the solenoid coils of a valve terminal share a common load.
- All M12 connections (MP2/MP3) within a valve terminal share a common load.

Instructions for use

Operating materials

Operate your system with unlubricated compressed air, if possible. Festo valves and cylinders are designed so that, if used as intended, they will not require additional lubrication and will still achieve a long service life.
The quality of compressed air downstream of the compressor must correspond to that of unlubricated compressed air. If possible, do not operate the entire system with lubricated compressed air. The lubricators should, where possible, always be installed directly upstream of the actuator requiring them.

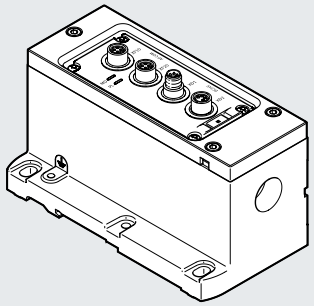
Incorrect additional oil and too high an oil content in the compressed air reduce the service life of the valve terminal.
Use Festo special oil OFSW-32 or the alternatives listed in the Festo catalogue (as specified in DIN 51524 HLP32; basic oil viscosity 32 CST at 40°C).

Bio-oils
When using bio-oils (oils which are based on synthetic or native esters, e.g. rapeseed oil methyl ester), the maximum residual oil content of 0.1 mg/m^3 must not be exceeded (see ISO 8573-1:2010 Class 2).

Mineral oils
When using mineral oils (e.g. HLP oils to DIN 51524, parts 1 to 3) or similar oils based on poly-alpha-olefins (PAO), the maximum residual oil content of 5 mg/m^3 must not be exceeded (see ISO 8573-1:2010 Class 4).
A higher residual oil content is not permitted, regardless of the compressor oil, because permanent lubrication would otherwise be flushed out over a period of time.

Datasheet – AP interface

Control signals from the controller to the valve terminal are transmitted via the AP bus protocol from Festo.



Application

The AP interface connects the VTSA valve terminal with up to 12 valves (24 valve coils) to a CPX-AP system.

Implementation

The AP interface is used for direct integration of the VTSA valve terminal into the decentralised IO system.

General technical data	
AP interface	
Connection position	On top
Reverse polarity protection	Yes
Number of pins/wires	4
Maximum number of valve positions	12
Max. no. of solenoid coils	24

Datasheet – AP interface

General data	
Diagnostics via LED	Diagnostics per module
	Power supply load
Diagnostics via internal communication	Switch-off load supply
	Electronics/sensors overvoltage
	Load undervoltage
Module parameters	Configuration of voltage monitoring load supply PL
	Response in error state

Technical data – Electrics		
Nominal operating voltage	[V AC]	110
	[V DC]	24
Nominal operating voltage for electrics/sensors	[V DC]	24
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, electrics/sensors	[%]	± 25
Permissible voltage fluctuations, load	[%]	± 10
Intrinsic current consumption of electrics/sensors	[mA]	typ. 34 mA
Intrinsic current consumption of load	[mA]	typ. 16 mA
Max. power supply	[A]	2 x 4 A (external fuse required)
Power failure buffering	[ms]	10
Mains buffering of load	[ms]	3
Fuse protection (short circuit)		Internal electronic fuse per channel
Power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded
Number of pins/wires		4
Voltage transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded
Number of pins/wires		4

Technical data – Mechanical components		
Product weight	[g]	712
Dimensions W x L x H	[mm]	71 x 142 x 84

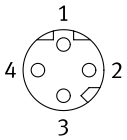
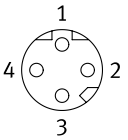
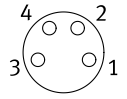
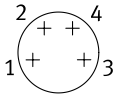
Materials	
Cover	Die-cast aluminium
Threaded sleeve	Nickel-plated brass
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L

Datasheet – AP interface

Operating and environmental conditions		
Ambient temperature	[°C]	+5 ... +50
Note on ambient temperature		Note ambient temperature derating according to IEC 61131-2:2017
Storage temperature	[°C]	–20 ... +60
Relative humidity	[%]	5 ... 95
		Non-condensing
Corrosion resistance class CRC[1)]		2
CE marking (see declaration of conformity)[2)]		To EU EMC Directive
		To EU RoHS Directive
Certification		RCM
Degree of protection		IP65
Note on degree of protection		In mounted state
		Seal unused connections
Nominal operating altitude	[m]	≤ 2000 m above sea level
Maximum cable length	[m]	50, system communication
Maximum setup altitude	[m]	3500
Note on the maximum setup altitude		> 2000 m ASL (< 79.5 kPa)
		Note ambient temperature derating according to IEC 61131-2:2017

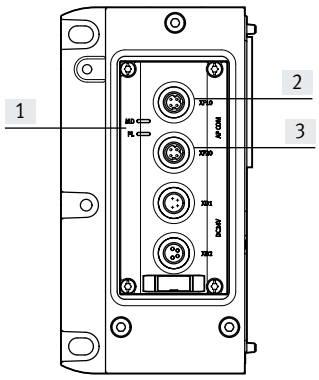
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements that are in direct contact with a normal industrial environment.

2) More information: www.festo.com/catalogue/... → Support/Downloads.

Pin assignment	Pin	Allocation	Description
M8, D-coded, socket			
AP in (AP-COM) 	1	TX–	AP bus, transmission signal positive
	2	RX+	AP bus, receive signal positive
	3	TX+	AP bus, receive signal negative
	4	RX–	AP bus, transmission signal negative
AP out (AP-COM) 	1	RX–	AP bus, transmission signal positive
	2	TX+	AP bus, receive signal positive
	3	RX+	AP bus, receive signal negative
	4	TX–	AP bus, transmission signal negative
Power out (voltage transmission) 	1	24 V PS	Supply voltage for electronics and sensors
	2	0 V PL	Supply voltage for valves and outputs
	3	0 V PS	Supply voltage for electronics and sensors
	4	24 V PL	Supply voltage for valves and outputs
M8, D-coded, plug			
Power In (power supply) 	1	24 V PS	Supply voltage for electronics and sensors
	2	0 V PL	Supply voltage for valves and outputs
	3	0 V PS	Supply voltage for electronics and sensors
	4	24 V PL	Supply voltage for valves and outputs

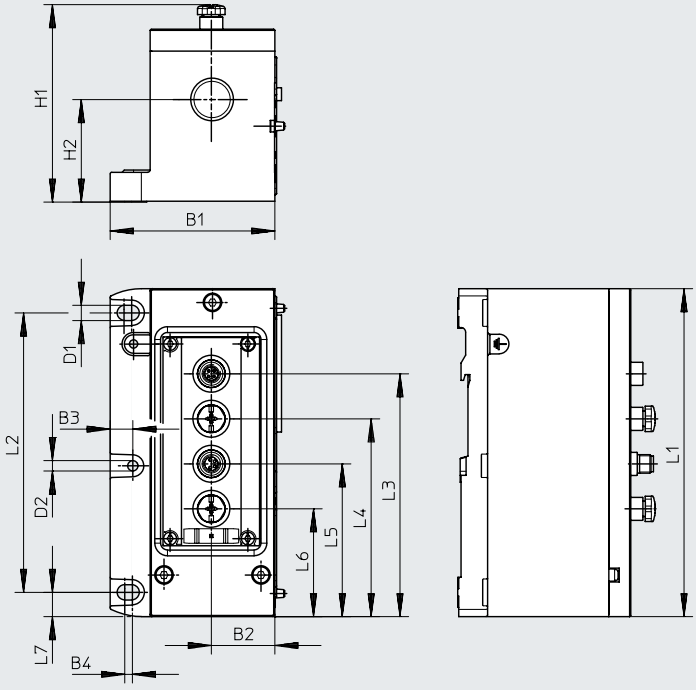
Datasheet – AP interface

Connection and display components



[1] LED displays for module diagnostics (MD) and power load (PL)
[2] AP in (AP-COM)
[3] AP out (AP-COM)
[4] Power in (power supply)
[5] Power out (voltage transmission)

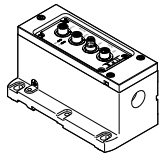
Dimensions Download CAD data ➔ www.festo.com



Type	B1	B2	B3	B4	D1	D2	H1	H2
VABA-S6-1-AP	71.3	27.5	9.8	3	6.6	4.5	85.5	44.4

Type	L1	L2	L3	L4	L5	L6	L7
VABA-S6-1-AP	142	121	105.2	85.7	66.2	46.7	10.5

Ordering data – AP interface

	Description	Part no.	Type
	AP interface for operation in an AP system	**8152356**	**VABA-S6-1-AP**

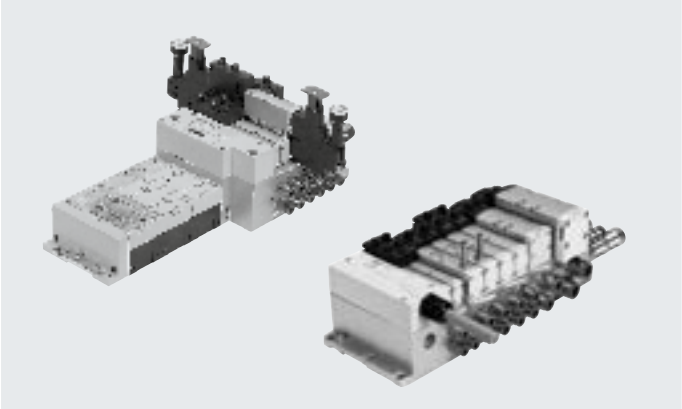
Datasheet – Valve terminal

- Valve width
  to ISO 15407-2
  - 18 mm
  - 26 mm

  to ISO 5599-2
  - 42 mm (ISO 1)
  - 52 mm (ISO 2)

- Voltage
  24 V DC

- Flow rate[1)]
  Width 18 mm: up to 550 (700) l/min
  Width 26 mm: up to 1100 (1350) l/min
  Width 42 mm: up to 1300 (1860) l/min
  Width 52 mm: up to 2900 l/min



1) Flow rates in brackets apply to VTSA-F

General technical data		
Terminal type VTSA/VTSA-F		VTSA is the standard version, VTSA-F is the version with optimised flow rate
Valve sizes		Widths 18 mm, 26 mm, 42 mm, 52 mm
Actuation type		Electrical
Electrical control		With multi-pin plug: multi-pin
		With fieldbus: integrated controller, fieldbus, Industrial Ethernet
Type of control		Piloted
Exhaust function, can be throttled		Via throttle plate
Type of mounting		Wall mounting
		On H-rail to EN 60715
Mounting position		Any
Manual override		Detenting, non-detenting, concealed
Suitable for vacuum		Yes
Valve terminal design		Modular, valve sizes can be mixed
Max. no. of valve positions		32 [1)]
Pneumatic connections – NPT thread		
Pneumatic connection		Via manifold sub-base
Supply port	1	Dependent on the end plate or supply plate used (and adapter plate when using ISO size 3 valves)
Exhaust port	3/5	Dependent on the end plate or supply plate used (and adapter plate when using ISO size 3 valves)
Working ports	2/4	Dependent on the connection type selected
External pilot air supply port	14	Dependent on the end plate used (and adapter plate when using ISO size 3 valves)
Pilot exhaust air port	12	Dependent on the end plate used (and adapter plate when using ISO size 3 valves)

1) Dependent on the electrical interface and the manifold sub-bases used

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

Datasheet – Valve terminal

Standard nominal flow rate of valve/valve terminal [l/min]

Valve function (with valve code)	Terminal code	Width 18 mm			Width 26 mm		
		Valve	Valve on valve terminal VTSA	Valve on valve terminal VTSA-F	Valve	Valve on valve terminal VTSA	Valve on valve terminal VTSA-F
5/2-way double solenoid (B52)	J	750	550	700	1400	1100	1350
5/2-way double solenoid with dominant signal (D52)	D	750	550	700	1400	1100	1350
5/2-way single solenoid, pneumatic spring (M52A)	M	750	550	700	1400	1100	1350
5/2-way single solenoid, mechanical spring (M52M)	O	750	550	700	1400	1100	1350
5/3-way closed (P53C)	G	700	450	650	1400[1)] 700[2)]	1000[1)] 700[2)]	1350[1)] 700[2)]
5/3-way exhausted (P53E)	E	700[1)] 330[2)]	450[1)] 330[2)]	480[1)] 330[2)]	1400[1)] 700[2)]	1000[1)] 700[2)]	1350[1)] 700[2)]
5/3-way pressurised (P53U)	B	700[1)] 330[2)]	450[1)] 330[2)]	480[1)] 330[2)]	1400[1)] 700[2)]	1000[1)] 700[2)]	1350[1)] 700[2)]
5/3-way exhausted, switching position 14 detenting (P53ED)	SA	–	380[1)] 310[2)]	430[1)] 360[2)]	1400[1)] 700[2)]	1000[1)] 700[2)]	1350[1)] 700[2)]
5/3-way exhausted, switching position 12 detenting (P53EP)	SE	–	380[1)] 300[2)]	460[1)] 350[2)]	1400[1)] 700[2)]	1000[1)] 700[2)]	1350[1)] 700[2)]
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	SB	–	380[1)] 350[2)]	440[1)] 400[2)]	700[1)] 700[2)]	700[1)] 700[2)]	700[1)] 700[2)]
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	SD	–	370[1)] 340[2)]	430[1)] 360[2)]	–	850[1)] 820[2)]	950[1)] 860[2)]
2x3/2-way single solenoid, closed (T32C)	K	600	400	550	1250	900	1150
2x3/2-way single solenoid, open (T32U)	N	600	400	550	1250	900	1150
2x3/2-way single solenoid, open/closed (T32H)	H	600	400	550	1250	900	1150
2x3/2-way single solenoid, closed (T32N)	Q	600	400	550	1250	900	1150
2x3/2-way single solenoid, open (T32F)	P	600	400	550	1250	900	1150
2x3/2-way single solenoid, open/closed (T32W)	R	600	400	550	1250	900	1150
2x2/2-way single solenoid, closed (T22C)	VC	700	500	650	1350	1000	1300
2x2/2-way single solenoid, closed (T22CV)	VV	700	500	650	1350	1000	1300

1) Switching position
2) Mid-position

Datasheet – Valve terminal

Standard nominal flow rate of valve/valve terminal [l/min]

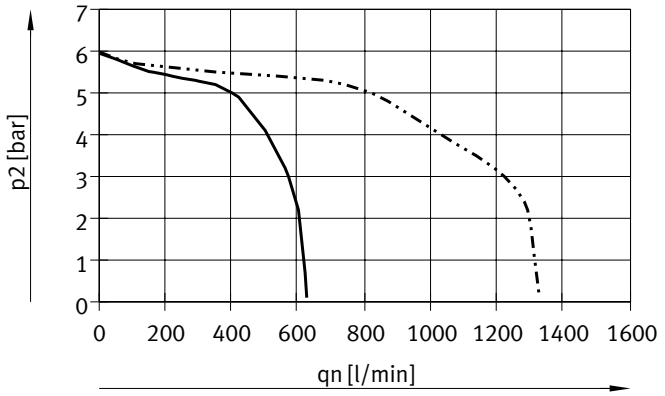
Valve function (with valve code)	Terminal code	Width 42 mm			Width 52 mm		
		Valve	Valve on valve terminal VTSA	Valve on valve terminal VTSA-F	Valve	Valve on valve terminal VTSA	Valve on valve terminal VTSA-F
5/2-way double solenoid (B52)	J	2000	1300	1860	4000	2900	2900
5/2-way double solenoid with dominant signal (D52)	D	2000	1300	1860	4000	2900	2900
5/2-way single solenoid, pneumatic spring (M52A)	M	2000	1300	1860	4000	2900	2900
5/2-way single solenoid, mechanical spring (M52M)	O	2000	1300	1860	4000	2900	2900
5/3-way closed (P53C)	G	1900[1)] 950[2)]	1200[1)] 800[2)]	1690[1)] 830[2)]	3600[1)] 1700[2)]	2800[1)] 1700[2)]	2800[1)] 1700[2)]
5/3-way exhausted (P53E)	E	1900[1)] 950[2)]	1200[1)] 800[2)]	1690[1)] 830[2)]	3600[1)] 1700[2)]	2800[1)] 1700[2)]	2800[1)] 1700[2)]
5/3-way pressurised (P53U)	B	1900[1)] 950[2)]	1200[1)] 800[2)]	1690[1)] 830[2)]	3600[1)] 1700[2)]	2800[1)] 1700[2)]	2800[1)] 1700[2)]
5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)	VG	1700[1)] 700[2)]	1400[1)] 800[2)]	1700[1)] 700[2)]	3000[1)] 900[2)]	2300[1)] 900[2)]	2300[1)] 900[2)]
2x3/2-way single solenoid, closed (T32C)	K	1600	1200	1300	3000	2400	2400
2x3/2-way single solenoid, open (T32U)	N	1600	1200	1300	3000	2400	2400
2x3/2-way single solenoid, open/closed (T32H)	H	1600	1200	1300	3000	2400	2400
2x3/2-way single solenoid, closed (T32N)	Q	1600	1200	1300	3000	2400	2400
2x3/2-way single solenoid, open (T32F)	P	1600	1200	1300	3000	2400	2400
2x3/2-way single solenoid, open/closed (T32W)	R	1600	1200	1300	3000	2400	2400
2x2/2-way single solenoid, closed (T22C)	VC	1600	1400	1500	4000	2800	2800
2x2/2-way single solenoid, closed (T22CV)	VV	1600	1400	1500	–	–	–

1) Switching position
2) Mid-position

Datasheet – Valve terminal

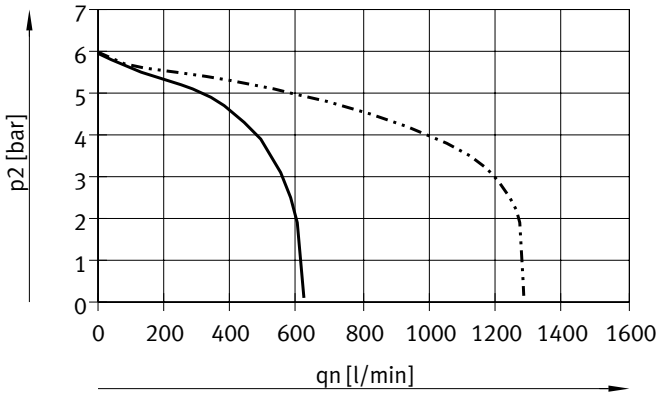
Flow rate qn as a function of output pressure p2 with pressure regulator plates (P regulator plate) for port 1

6 bar



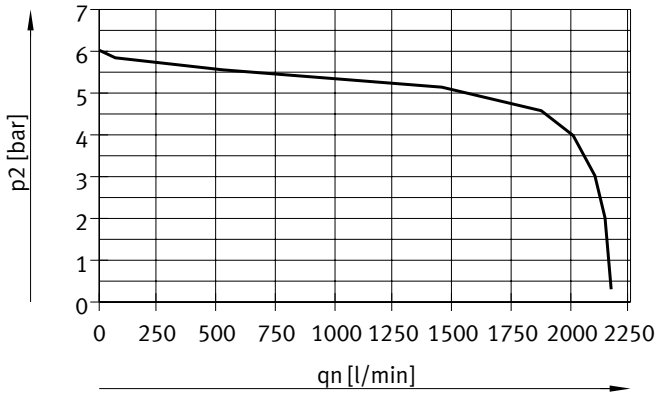
Width 18 mm
Width 26 mm

10 bar

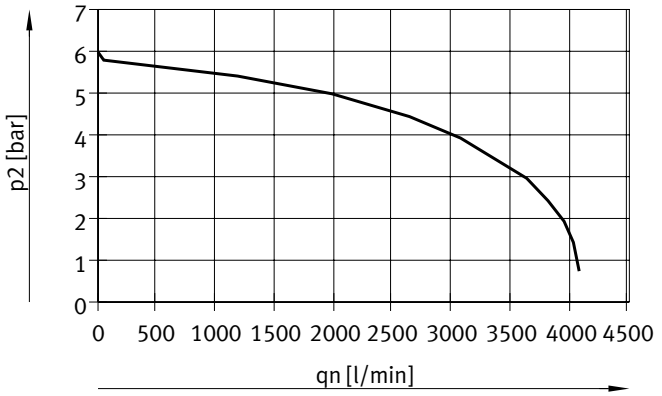


Width 18 mm
Width 26 mm

Input pressure 10 bar, regulated pressure set to 6 bar



Width 42 mm (ISO 1)

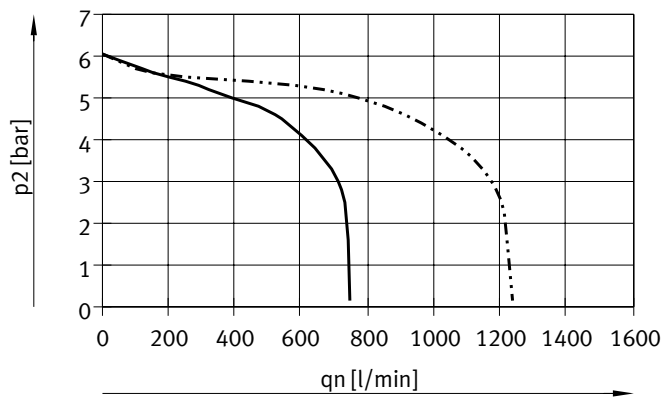


Width 52 mm (ISO 2)

Datasheet – Valve terminal

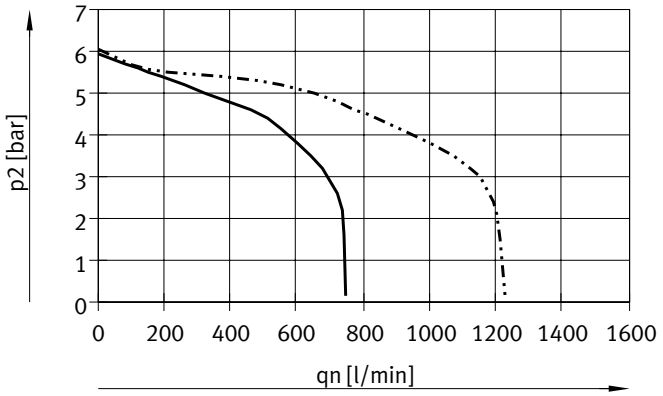
Flow rate qn as a function of output pressure p2 with pressure regulator plates (AB regulator plates) for port 2, 4 or ports 4/2

6 bar



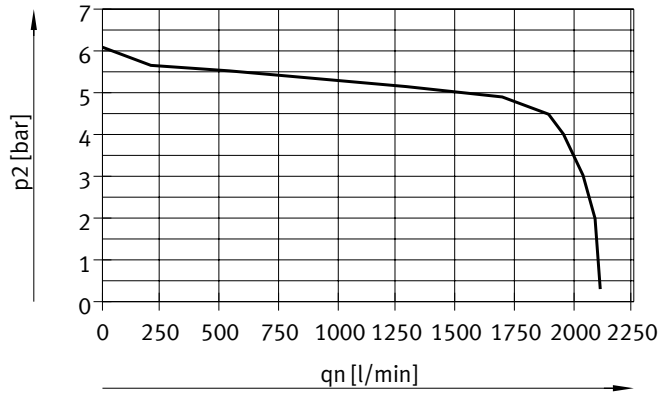
Width 18 mm
Width 26 mm

10 bar

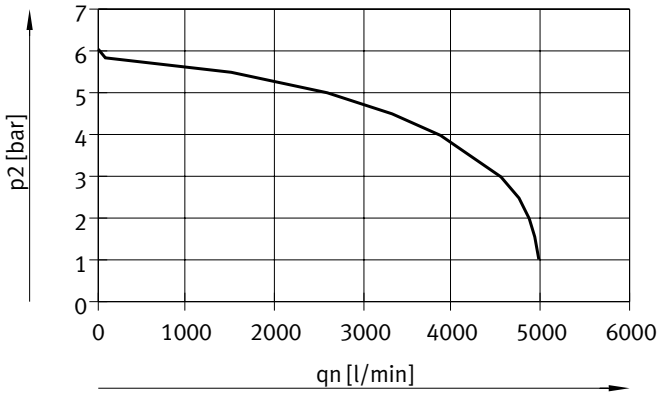


Width 18 mm
Width 26 mm

Input pressure 10 bar, regulated pressure set to 6 bar



Width 42 mm (ISO 1)

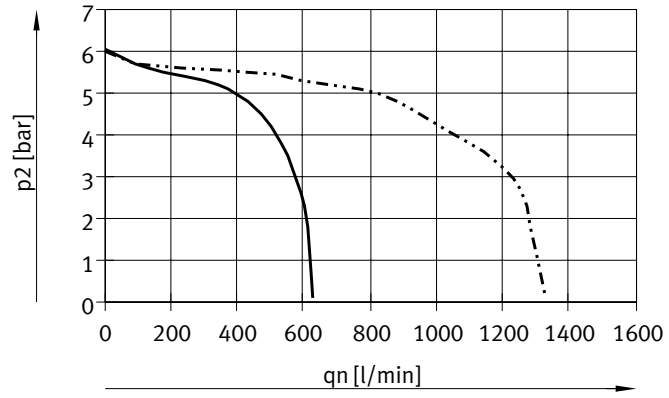


Width 52 mm (ISO 2)

Datasheet – Valve terminal

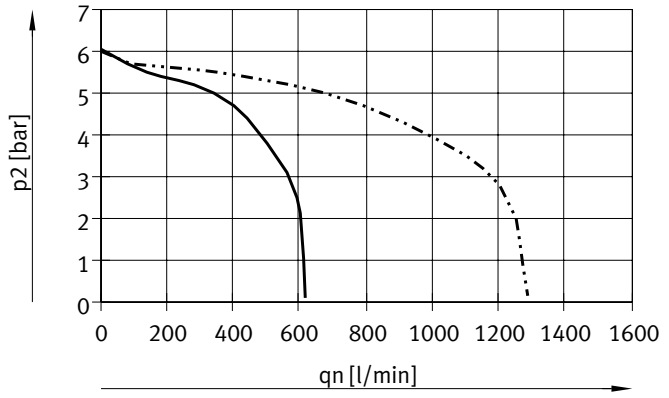
Flow rate qn as a function of output pressure p2 with pressure regulator plates (AB regulator plates, rev.) for ports 4/2, reversible

6 bar



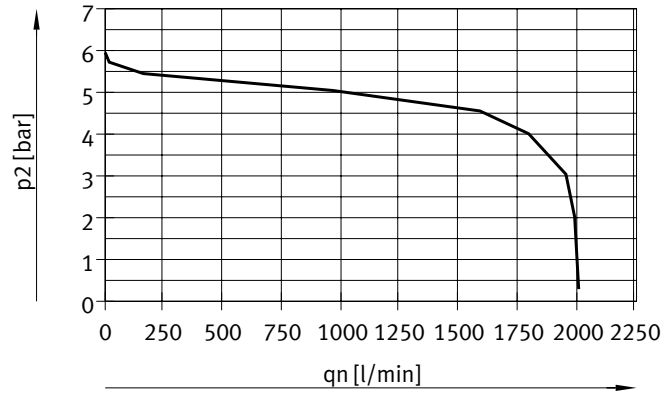
Width 18 mm
Width 26 mm

10 bar

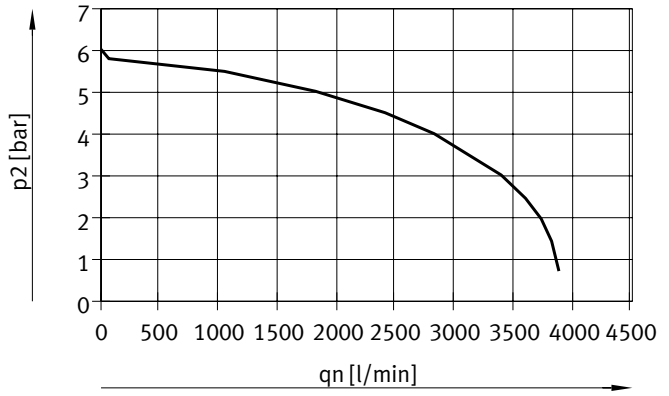


Width 18 mm
Width 26 mm

Input pressure 10 bar, regulated pressure set to 6 bar



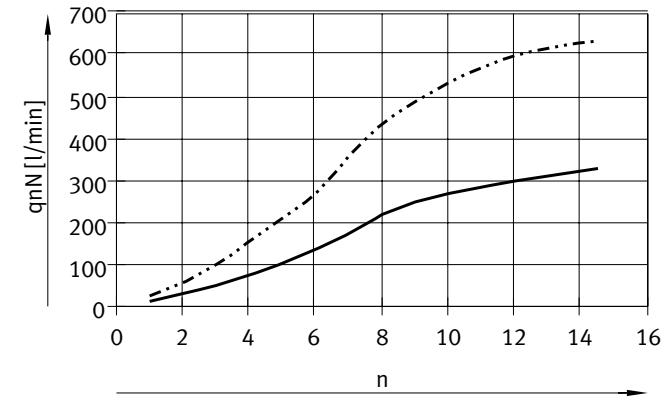
Width 42 mm (ISO 1)



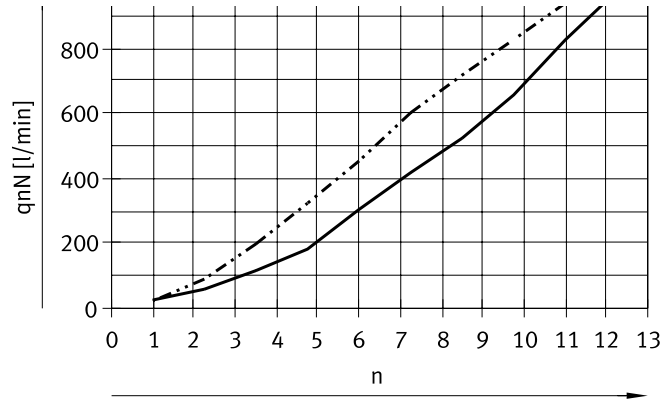
Width 52 mm (ISO 2)

Datasheet – Valve terminal

Flow rate qn as a function of flow control

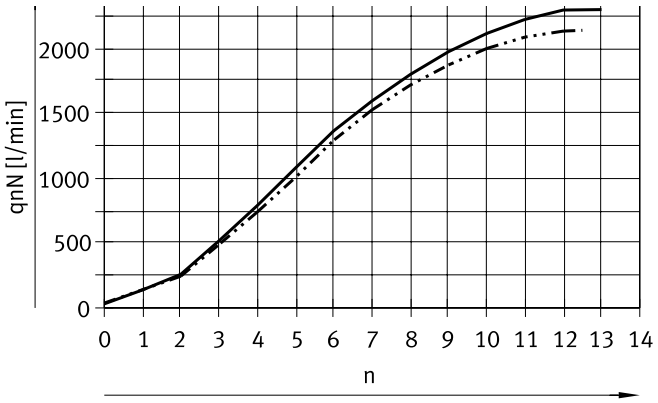


Width 18 mm
Width 26 mm



Width 42 mm (ISO 1)

Flow control screw from 2 ➔ 3
Flow control screw from 4 ➔ 5
n = revolutions of the adjusting screw

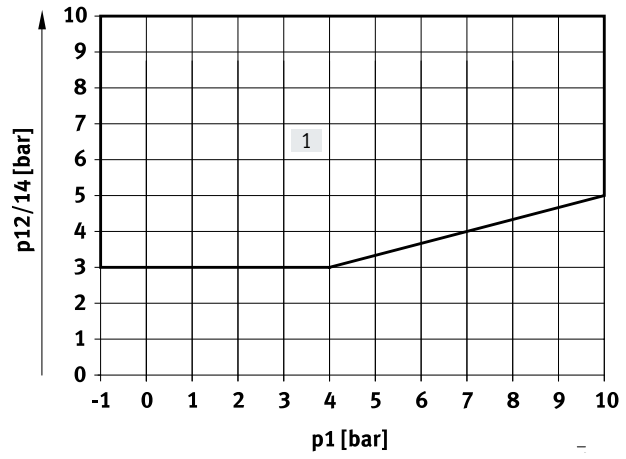


Width 52 mm (ISO 2)

Flow control screw from 2 ➔ 3
Flow control screw from 4 ➔ 5
n = revolutions of the adjusting screw

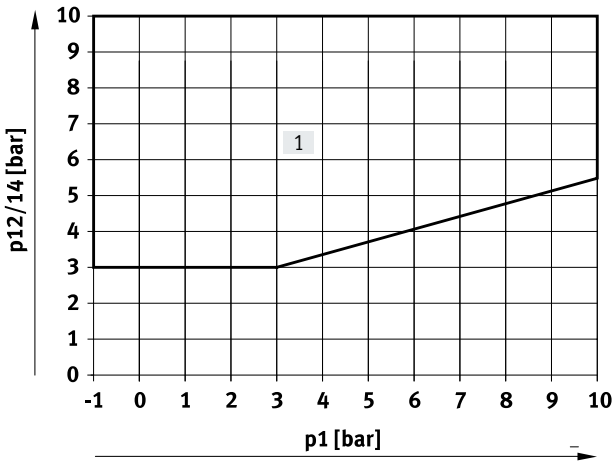
Pilot pressure p12/14 as a function of operating pressure p1

For 3/2-way solenoid valves (T32, T22)



[1] Operating range for valves with external pilot air supply

For 5/2-way solenoid valves (M52, B52, D52, P53)



[1] Operating range for valves with external pilot air supply

Datasheet – Valve terminal

Standard nominal flow rate with vertical stacking [l/min]				
Widths	18 mm	26 mm	42 mm	52 mm
Throttle plate				
VABF-S4-2-F1B1-C	See characteristic curve	–	–	–
VABF-S4-1-F1B1-C	–	See characteristic curve	–	–
VABF-S2-1-F1B1-C	–	–	1100	–
VABF-S2-2-F1B1-C	–	–	–	See characteristic curve
Vertical supply plate				
VABF-S4-2-P1A ... -G18	430	–	–	–
VABF-S4-1-P1A ... -G14	–	900	–	–
VABF-S2-1-P1A ... -G38	–	–	1300	–
VABF-S2-2-P1A ... -G12	–	–	–	2800
Vertical pressure shut-off plate				
VABF-S4-2-L1D1-C	400	–	–	–
VABF-S4-2-L1D2-C [1]	320	–	–	–
VABF-S4-1-L1D1-C	–	800	–	–
VABF-S4-1-L1D2-C [1]	–	620	–	–
VABF-S2-1-L1D1-C	–	–	1200	–
VABF-S2-2-L1D1-C	–	–	–	1950

1) Lockable with key

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Notes on operating/ pilot medium		Lubricated operation possible (in which case lubrication will always be required)
External	[bar]	–0.9 ... +10
	[MPa]	–0.09 ... +1
Internal	[bar]	3 ... 10
	[MPa]	0.3 ... 1
Pilot pressure	[bar]	3 ... 10
	[MPa]	0.3 ... 1
Noise level LpA	[dB(A)]	85
Ambient temperature	[°C]	–5 ... +50
Temperature of medium	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +60
Relative humidity	[%]	0 ... 90
Certification		BIA
		C-Tick
		c UL us – Recognized (OL)
CE marking (see declaration of conformity)		To EU EMC Directive [1]
KC marking		KC EMC
Corrosion resistance class CRC [3]		0

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... ➔ Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
2) Solenoid valves with code VC (2/2-way type ... T22C), N (3/2-way type ... T32U), K (3/2-way type ... T32C), H (3/2-way type ... T32H) must not be operated with vacuum; the operating pressure here is 3 ... 10 bar
3) Corrosion resistance class CRC 0 to Festo standard FN 940070
No corrosion stress. Applies to small, visually unimportant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

Datasheet – Valve terminal

Electrical data – Individual electrical connection		
Load voltage supply for valves (U_{val})		
Operating voltage	[V DC]	24 ±10%
Max. residual current at 24 V DC	[A]	10
Duty cycle		100%
Degree of protection		IP65, NEMA 4 (for all types of signal transmission when mounted)

Electrical data – Multi-pin plug connection		
Load voltage supply for valves (U_{val})		
Operating voltage	[V DC]	24 ±10%
Max. total current	[A]	6
Current rating at 40°C	[A]	1
Surge resistance	[kV]	1.5
Pollution degree		3
Duty cycle		100%
Degree of protection		IP65, NEMA 4 (for all types of signal transmission when mounted)

Electrical data – With CPX terminal		
Power supply for electronics ($U_{EL/SEN}$)		
Operating voltage	[V DC]	24 ±10%
Max. intrinsic current consumption at 24 V DC	[mA]	20
Duty cycle		100%
Load voltage supply for valves (U_{val})		
Operating voltage	[V DC]	24 ±10%
Diagnostic message undervoltage U_{OFF}, load voltage outside the functional range	[V]	21.6 ... 21.5
Degree of protection		IP65, NEMA 4 (for all types of signal transmission when mounted)

Materials	
Manifold sub-base	Die-cast aluminium
Valve	Die-cast aluminium, PA
Seals	FPM, NBR, HNBR
Supply plate	Die-cast aluminium
Right end plate	Die-cast aluminium
Pneumatic interface for CPX	Die-cast aluminium
Throttle plate	Die-cast aluminium
Pressure regulator plate	Die-cast aluminium, PA
Multi-pin manifold block	Die-cast aluminium
Cover for the pneumatic interface and multi-pin plug connection	PA
Note on materials	RoHS-compliant

Datasheet – Valve terminal

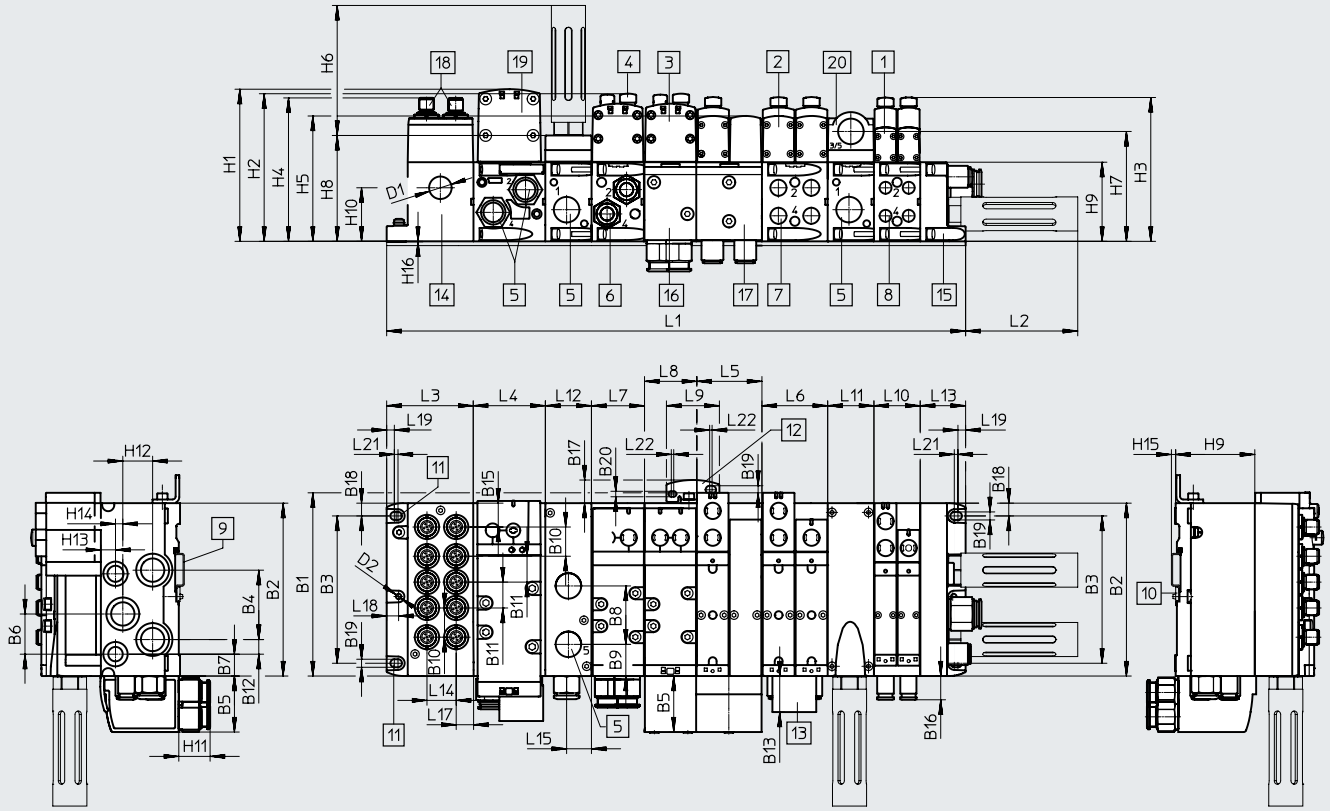
Product weight					
Approx. weight	[g]				
Width		**18 mm**	**26 mm**	**42 mm**	**52 mm**
Multi-pin node with Sub-D or terminal strip[1]		550			
Multi-pin node with M12 individual connection		760			
Pneumatic interface CPX[1]		1470			
Electrical interface for AS-Interface		300			
AS-Interface module		850			
Supply plate[2]					
• Exhaust plate with 3 and 5 common		617			
• Exhaust air cover with 3 and 5 separate		597			
Right end plate[3]					
• With threaded connections		339			336
• Selector switch		281			–
Manifold sub-base[4]		447	634	340, 330 [5]	610
90°-connection plate[3]		170	230	176	359
Pressure regulator plate					
• For port 1 (P)		350	402	640	1190
• For port 4 or 2 (A or B)		367	448	640	1230
• For ports 4 and 2 (A/B)		611	692	920	1990
Throttle plate		228	320	220	565
Vertical supply plate[3]		140	191	340	605
Vertical pressure shut-off plate		209	273	600	1030
Vertical pressure shut-off plate (lockable with key)		231	290	–	–
Blanking plate		34	73	68	146

1) With sheet metal seal, printed circuit board
2) With sheet metal seal and electrical link
3) With screws
4) With sheet metal seal, electrical interlinking module, inscription label holder, 4 screws
5) Manifold sub-base optimised for flow rate, HS

Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

Valve terminal with individual electrical connection



[1] Solenoid valve, width 18 mm
[2] Solenoid valve, width 26 mm
[3] Solenoid valve, width 42 mm
[4] Cover cap/manual override
[5] Threaded connection 1/2 NPT
[6] Threaded connection 3/8 NPT
[7] Threaded connection 1/4 NPT
[8] Threaded connection 1/8 NPT
[9] H-rail
[10] H-rail mounting
[11] Mounting hole
[12] Additional mounting bracket
[13] Inscription label holder
[14] Individual connection
[15] End plate
[16] 90°-connection plate 43 mm, 3/8 NPT
[17] 90°-connection plate 54 mm, 1/4 NPT
[18] M12 plug 5-pin (6-way or 10-way)
[19] Solenoid valve, width 52 mm
[20] Supply plate

N02 Number of manifold sub-bases 38 mm
N01 Number of manifold sub-bases 54 mm
N1 Number of manifold sub-bases 43 mm
N2 Number of manifold sub-bases 59 mm
n Number of supply plates (only with end plate with pilot air selector)

Dim.	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
[mm]	150.5	142	121	57	46	33	18	48	26	24	21.3	12	29.6	23	19.6	19.5	19	10.5	6.6	4.5

Dim.	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17	L18	L19
[mm]	92.4	71.3	n2x59	n01x54	54	n1x43	43	43.5	n02x38	nx38	38	37.3	24	20.5	20	14.1	9.8	6.3

Dim.	L20	L21	L22	D1ø	D2ø	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16
[mm]	5.5	3	2	18.5	4.5	125	121.3	118.2	118	103	107.8	90.3	87	65	44	25.7	24.5	12	6	3.5	0.5

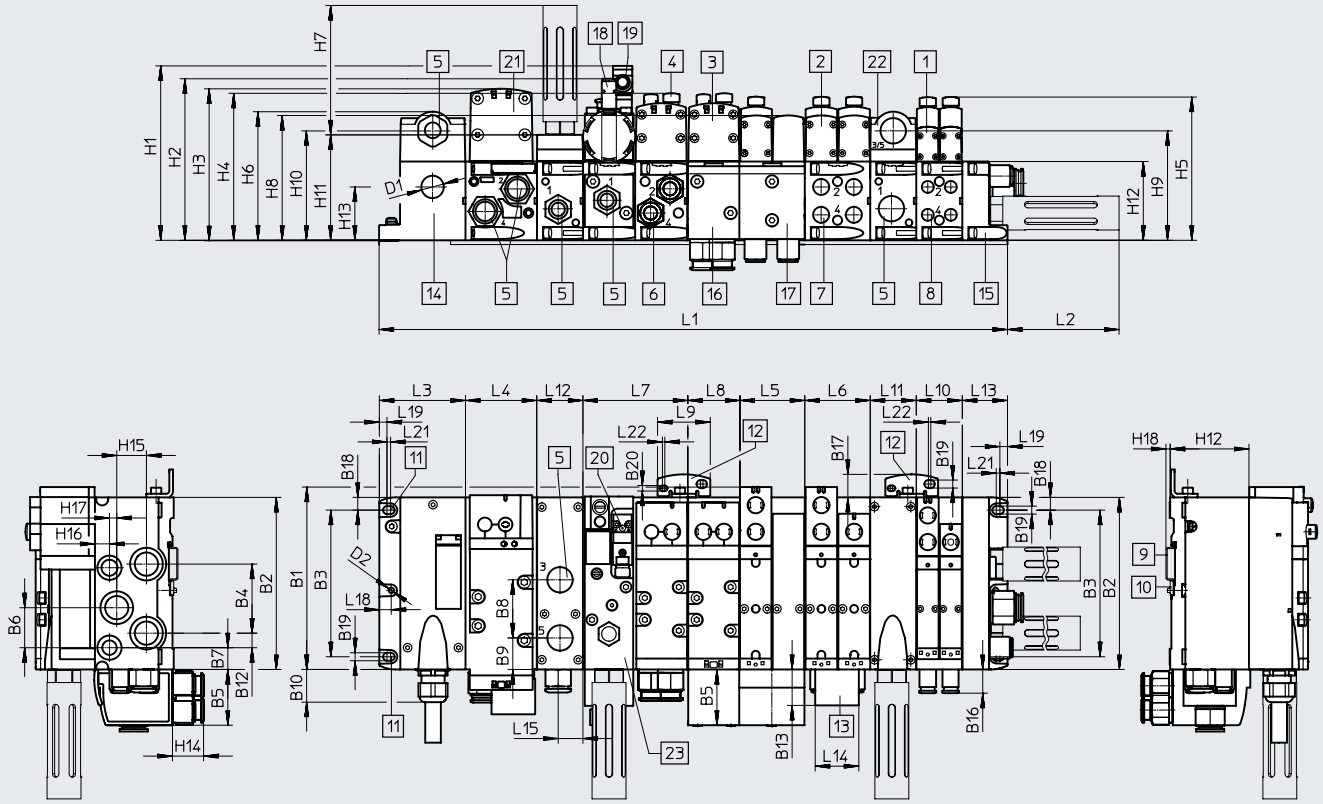
Width	L1
18 mm	71.3 + n02 x 38 + n x 38 + 37.3
26 mm	71.3 + n01 x 54 + n x 38 + 37.3
42 mm	71.3 + n1 x 43 + n x 38 + 37.3
52 mm	71.3 + n2 x 59 + n x 38 + 37.3
Mixture of 18 mm, 26 mm, 42 mm and 52 mm	71.3 + n02 x 38 + n01 x 54 + n1 x 43 + n2x59 + n x 38 + 37.3

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

Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

Valve terminal with multi-pin plug connection



[1] Solenoid valve Width 18 mm
[2] Solenoid valve Width 26 mm
[3] Solenoid valve Width 42 mm
[4] Cover cap/manual override
[5] Threaded connection 1/2 NPT
[6] Threaded connection 3/8 NPT
[7] Threaded connection 1/4 NPT
[8] Threaded connection 1/8 NPT
[9] H-rail
[10] H-rail mounting
[11] Mounting hole
[12] Additional mounting bracket
[13] Inscription label holder
[14] Multi-pin plug connection
[15] End plate
[16] 90°-connection plate 43 mm, 3/8 NPT
[17] 90°-connection plate 54 mm, 1/4 NPT
[18] Proximity switch M12x1
[19] Plug socket M12x1
[20] Electrical connection to EN 175301-803, type C
[21] Solenoid valve, width 52 mm
[22] Supply plate
[23] Soft-start valve

N02 Number of manifold sub-bases 38 mm
N01 Number of manifold sub-bases 54 mm
N1 Number of manifold sub-bases 43 mm
N2 Number of manifold sub-bases 59 mm
n Number of supply plates (only with end plate with pilot air selector)

Dim.	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B16	B17	B18	B19	B20
[mm]	150.5	142	121	57	46	33	18	48	26	27	2	12	29.6	23	19.5	19	10.5	6.6	4.5

Dim.	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L18	L19	L20	L21
[mm]	92.4	71.3	n2x59	n01x54	54	n1x43	43	43.5	n02x38	nx38	38	37.3	36	20.5	20	9.8	6.3	5.5	3

Dim.	L22	D1Ø	D2Ø	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18
[mm]	2	18.5	4.5	143.9	133.3	125	121.3	118.2	106.3	107.8	103	90.3	90.3	87	65	44	25.7	24.5	12	6	3.5

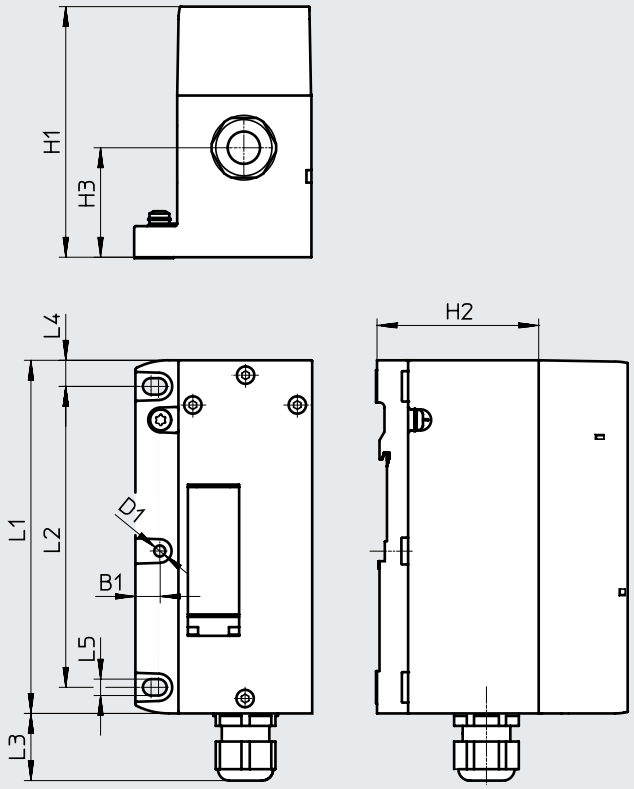
Width	L1
18 mm	71.3 + n02 x 38 + n x 38 + 37.3
26 mm	71.3 + n01 x 54 + n x 38 + 37.3
42 mm	71.3 + n1 x 43 + n x 38 + 37.3
52 mm	71.3 + n2 x 59 + n x 38 + 37.3
Mixture of 18 mm, 26 mm, 42 mm and 52 mm	71.3 + n02 x 38 + n01 x 54 + n1 x 43 + n2 x 59 +n x 38+ 37.3

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

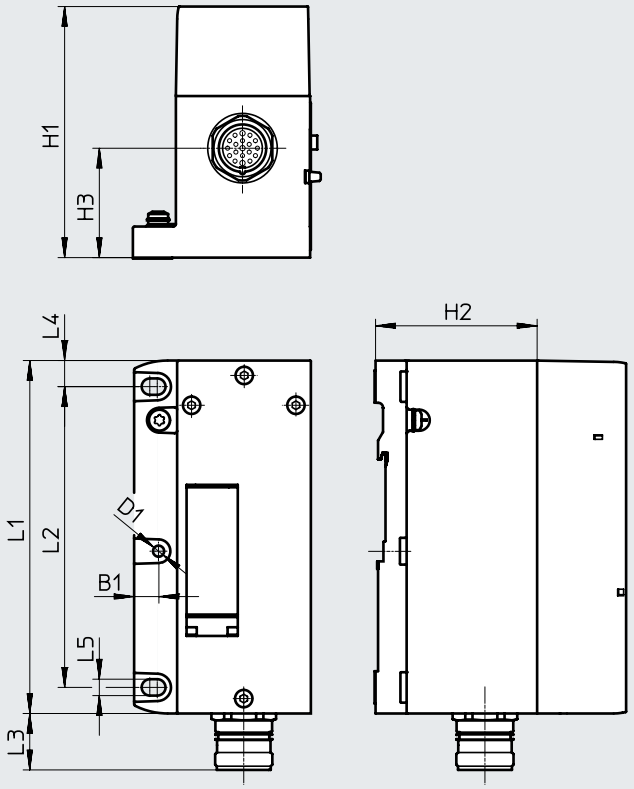
Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

Multi-pin, terminal strip (Cage Clamp), VABE-S6-1LF-C-M1-C...



Multi-pin, round plug, VABE-S6-1LF-C-M1-R...

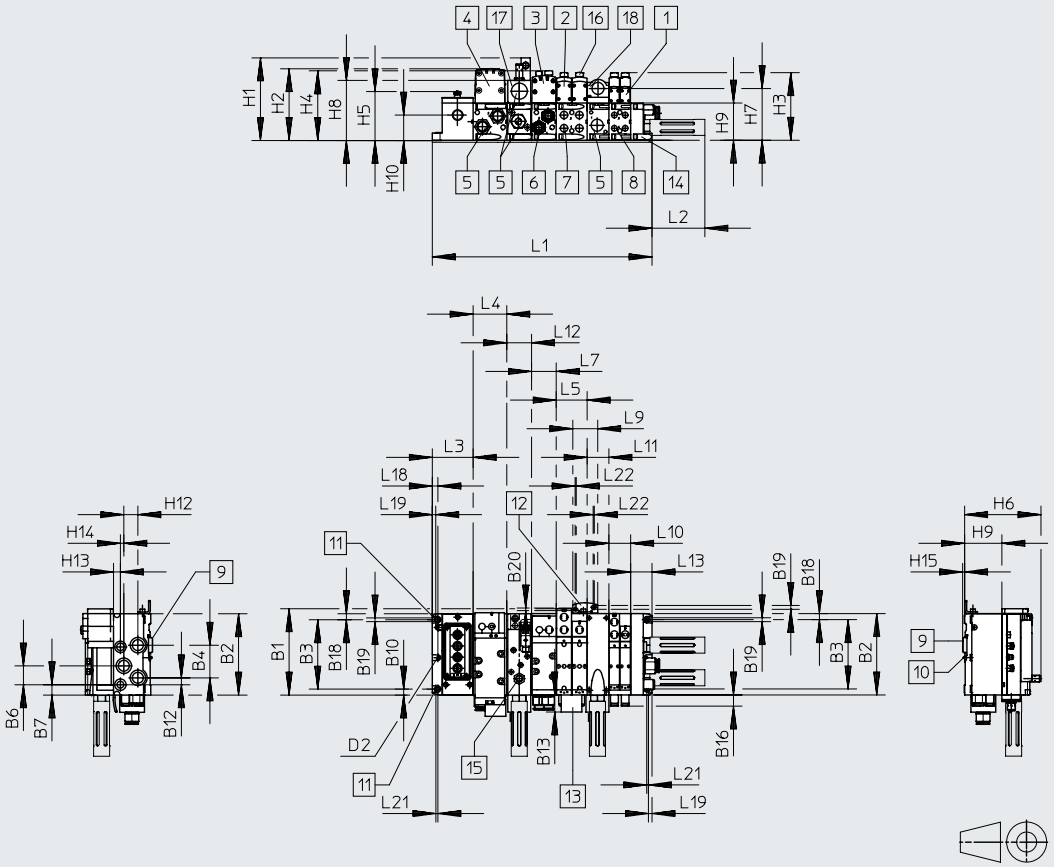


Type	H1	H2	H3	D1Ø	L1	L2	L3	L4	L5	B1
VABE-S6-1LF-C-M1-C...	106.1	65	44	4.5	142	121	27	10.5	6.6	9.8
VABE-S6-1LF-C-M1-R...	101	65	44	4.5	142	121	25	10.5	6.6	9.8

Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

AP interface



[1] Solenoid valve 18 mm
[2] Solenoid valve 26 mm
[3] Solenoid valve 42 mm
[4] Solenoid valve 52 mm
[5] Threaded connection G1/2, 1/2 NPT
[6] Threaded connection G3/8, 3/8 NPT
[7] Threaded connection G1/4, 1/4 NPT
[8] Threaded connection G1/8, 1/8 NPT
[9] H-rail
[10] H-rail mounting
[11] Mounting hole
[12] Additional mounting bracket
[13] Inscription label
[14] End plate
[15] Proximity switch M12x1
[16] Cover cap/manual override
[17] Soft-start valve 43 mm
[18] Supply plate

Type	B1	B2	B3	B4	B6	B7	B10	B12	B13	B16	B18	B19	B20	D2 ø
VTSA-ASI-...	150.5	142	121	57	33	18	28	12	29.6	19.5	10.5	6.6	4.5	4.5

Type	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H12	H13	H14	H15
VTSA-ASI-...	143.9	125	118.2	121.3	85.5	171	90.3	104.5	65	44.4	24.5	12	6	3.5

Type	L1
Valve size 18 mm	02: 71.3 + n02 x 38 + n x 38 + 37.3
Valve size 26 mm	01: 71.3 + n01 x 54 + n x 38 + 37.3
Valve size 42 mm	71.3 + n1 x 43 + n x 38 + 37.3
Valve size 52 mm	71.3 + n2 x 59 + n x 38 + 37.3
Mixture of 18 mm, 26 mm, 42 mm and 52 mm	02 + 01 + 1 + 2 71.3 + n02 x 38 + n01 x 54 + n1 x 43 + n2 x 59 + n x 38 + 37.3

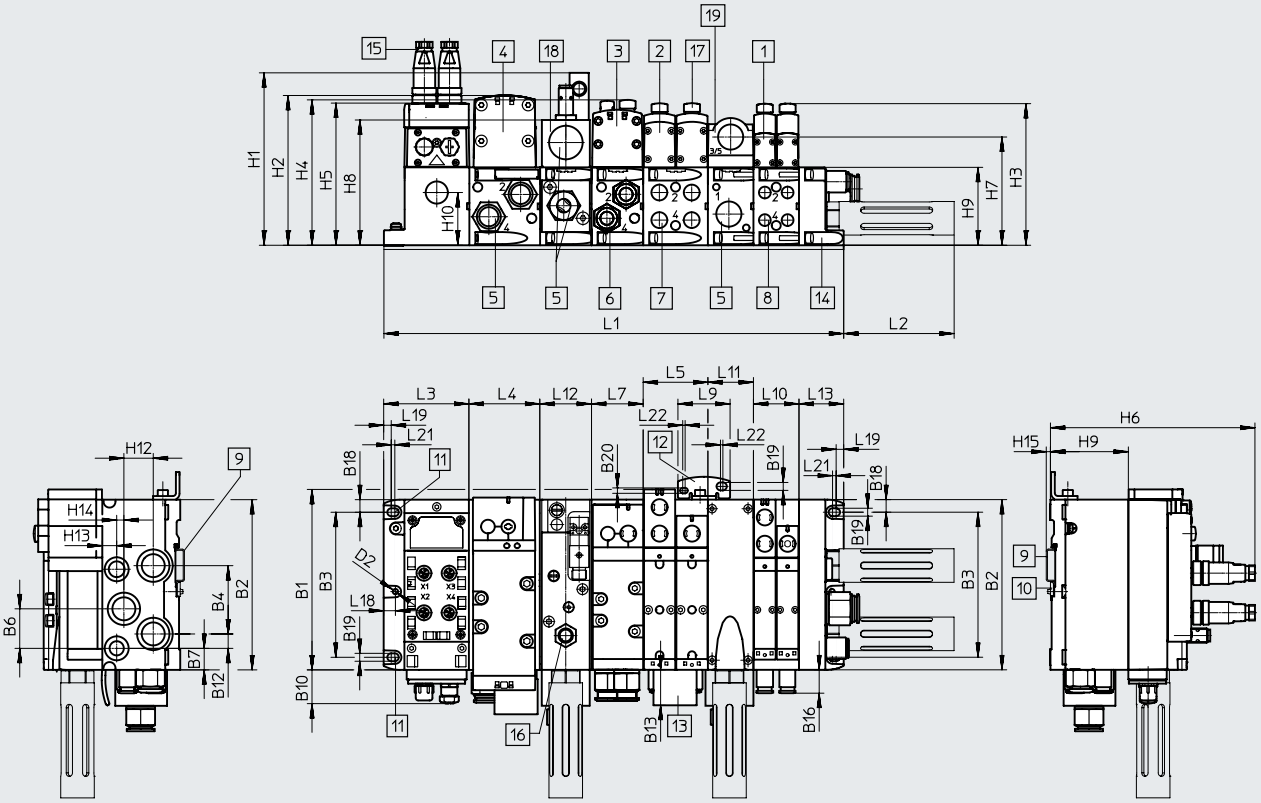
Type	L2	L3	L4	L5	L7	L9	L10	L11	L12	L13	L18	L19	L21	L22
VTSA-ASI-...	92.4	71.3	n2[1] x 59	n01[2] x 54	n1[3] x 43	43.5	n02[4] x 38	n[5] x 38	43	37.3	9.8	6.3	3	2

1) Number of manifold sub-bases 59 mm
2) Number of manifold sub-bases 54 mm
3) Number of manifold sub-bases 43 mm
4) Number of manifold sub-bases 38 mm
5) Number of manifold sub-bases

Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

Valve terminal with AS-Interface connection



[1] Solenoid valve, width 18 mm
[2] Solenoid valve, width 26 mm
[3] Solenoid valve, width 42 mm
[4] Solenoid valve, width 52 mm
[5] Threaded connection 1/2 NPT
[6] Threaded connection 3/8 NPT
[7] Threaded connection 1/4 NPT
[8] Threaded connection 1/8 NPT
[9] H-rail
[10] H-rail mounting
[11] Mounting hole
[12] Additional mounting bracket
[13] Inscription label
[14] End plate
[15] Plug M12
[16] Proximity switch M12x1
[17] Cover cap/manual override
[18] Soft-start valve, width 43 mm
[19] Supply plate

N02 Number of manifold sub-bases 38 mm
N01 Number of manifold sub-bases 54 mm
N1 Number of manifold sub-bases 43 mm
N2 Number of manifold sub-bases 59 mm
n Number of supply plates

Dim.	B1	B2	B3	B4	B6	B7	B10	B12	B13	B14	B16	B18	B19	B20
[mm]	150.5	142	121	57	33	18	28	12	29.6	23	19.5	10.5	6.6	4.5

Dim.	L2	L3	L4	L5	L7	L9	L10	L11	L12	L13	L16	L18	L19	L20	L21
[mm]	92.4	71.3	n2x59	n01x54	n1x43	43.5	n02x38	nx38	43	37.3	20	9.8	6.3	5.5	3

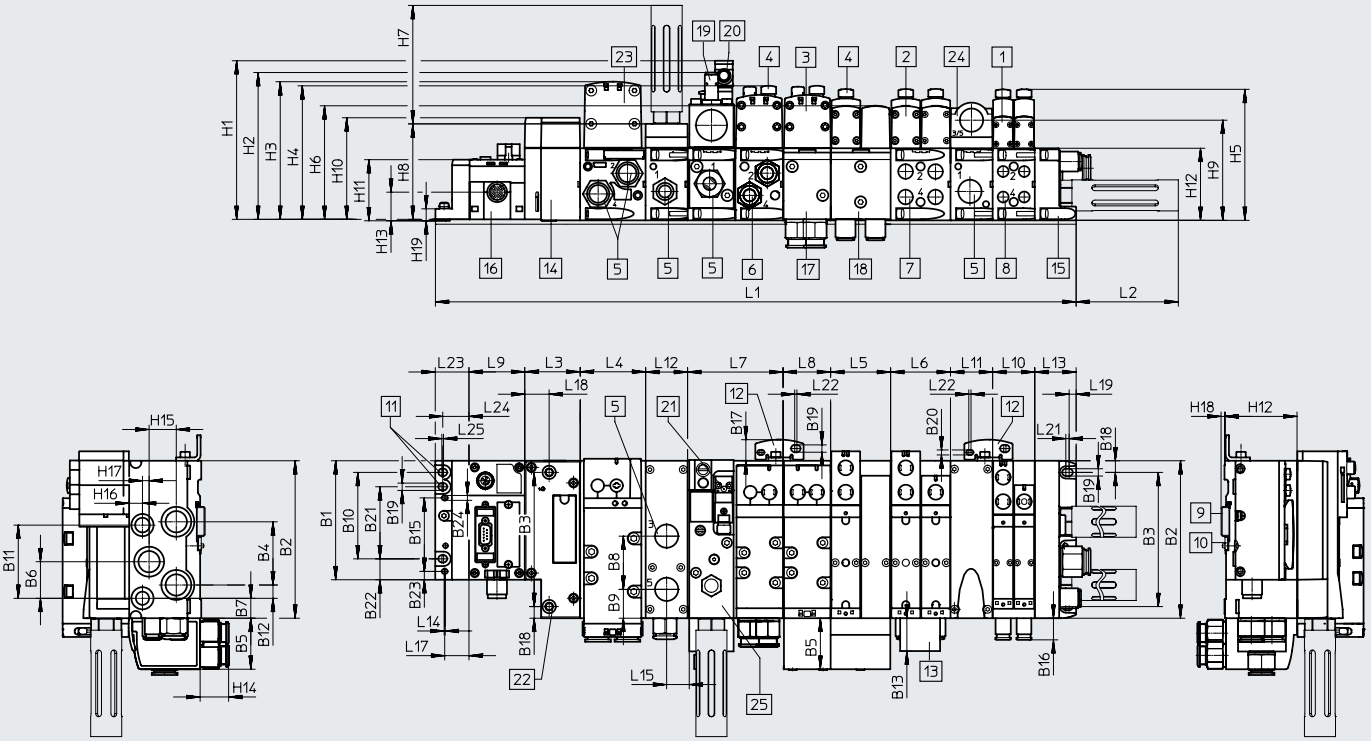
Dim.	L22	D2Ø	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H12	H13	H14	H15
[mm]	2	4.5	143.9	125	118.2	121.3	118.6	171	90.3	104.5	65	44	24.5	12	6	3.5

Width	L1
18 mm	71.3 + n02 x 38 + n x 38 + 37.3
26 mm	71.3 + n01 x 54 + n x 38 + 37.3
42 mm	71.3 + n1 x 43 + n x 38 + 37.3
52 mm	71.3 + n2 x 59 + n x 38 + 37.3
Mixture of 18 mm, 26 mm, 42 mm and 52 mm	71.3 + n02 x 38 + n01 x 54 + n1 x 43 + n2 x 59 + n x 38 + 37.3

Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

Valve terminal with fieldbus interface



[1] Solenoid valve, width 18 mm
[2] Solenoid valve, width 26 mm
[3] Solenoid valve, width 42 mm
[4] Cover cap/manual override
[5] Threaded connection 1/2 NPT
[6] Threaded connection 3/8 NPT
[7] Threaded connection 1/4 NPT
[8] Threaded connection 1/8 NPT
[9] H-rail
[10] H-rail mounting
[11] Mounting hole
[12] Additional mounting bracket
[13] Inscription label holder
[14] Pneumatic interface CPX
[15] End plate
[16] CPX module/bus node
[17] 90°-connection plate 43 mm, 3/8 NPT
[18] 90°-connection plate 54 mm, 1/4 NPT
[19] Proximity switch M12x1
[20] Plug socket M12x1
[21] Electrical connection to EN 175301-803, type C
[22] Hole for additional mounting, diameter 6.4 2x
[23] Solenoid valve, width 52 mm
[24] Supply plate
[25] Soft-start valve

N02 Number of manifold sub-bases 38 mm
N01 Number of manifold sub-bases 54 mm
N1 Number of manifold sub-bases 43 mm
N2 Number of manifold sub-bases 59 mm
n Number of supply plates (only with end plate with pilot air selector)
m Number of CPX modules

Dim.	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B16	B17	B18	B19	B20	B21	B22	B23	B24
[mm]	107.3	142	121	57	46	33	18	48	26	78	66	12	29.6	23	19.5	19	10.5	6.6	4.5	65	18.9	7.5	4.4

Dim.	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L17	L18	L19	L21	L22
[mm]	92.4	50	n2x59	n01x54	54	n1x43	43	mx50.1	n02x38	nx38	38	37.3	1	20.5	22	22	6.3	3	2

Dim.	L23	L24	L25	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19
[mm]	30.4	23.7	1.5	143.9	133.3	125	121.3	118.2	103	106.8	87	90.3	92.9	55.1	65	25.8	25.7	24.5	12	6	3.5	10.8

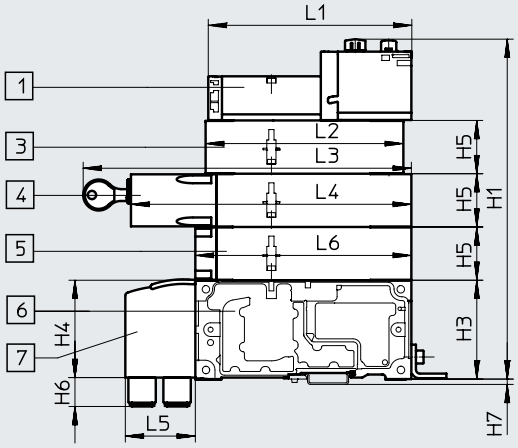
Width	L1
18 mm	30.4 + m x 50.1 + 50 + n02 x 38 + n x 38 + 37.3
26 mm	30.4 + m x 50.1 + 50 + n01 x 54 + n x 38 + 37.3
42 mm	30.4 + m x 50.1 + 50 + n1 x 43 + n x 38 + 37.3
52 mm	30.4 + m x 50.1 + 50 + n2 x 59 + n x 38 + 37.3
Mixture of 18 mm, 26 mm, 42 mm and 52 mm	30.4 + m x 50.1 + 50 + n02 x 38 + n01 x 54 + n1 x 43 + n2x59 + n x 38 + 37.3

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

Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

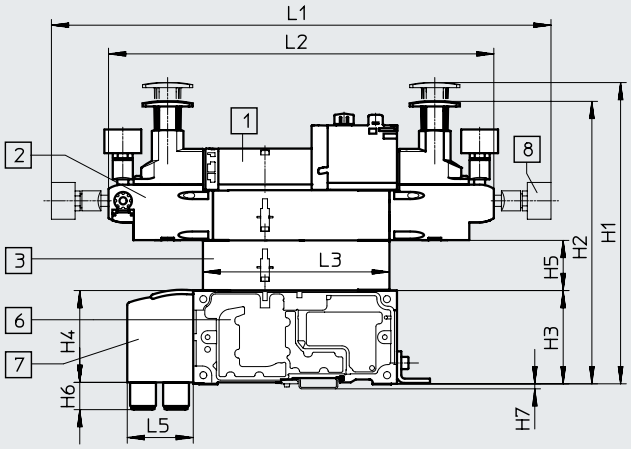
Vertical stacking components, width 18 mm



[1] Solenoid valve with two solenoid coils, width 18 mm
[3] Throttle plate
[4] Vertical pressure shut-off plate lockable (code ZT), optionally lockable with key (code ZS)
[5] Vertical supply plate
[6] Manifold sub-base
[7] 90°-connection plate

Dim.	L1	L2	L3 (Code ZT)	L4 (Code ZT)	L3 (Code ZS)	L4 (Code ZS)	L5	L6	H1	H3	H4	H5	H6	H7
[mm]	133.8	130	–	203.7	222.3	198.3	46	142	224	65	64	35	19	3.5

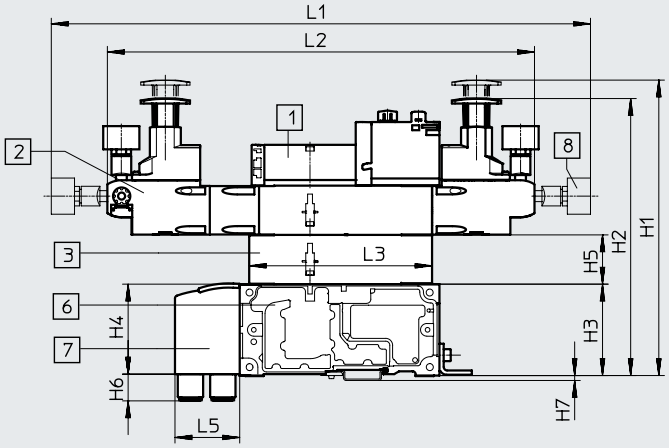
Vertical stacking components, width 18 mm



[1] Solenoid valve with two solenoid coils, width 18 mm
[2] Pressure regulator plate
[3] Throttle plate
[6] Manifold sub-base
[7] 90°-connection plate
[8] Pressure gauge, freely positionable

Dim.	L1	L2	L3	L5	H1	H2	H3	H4	H5	H6	H7
[mm]	348.2	268.6	130	46	210	197	65	64	35	19	3.5

Vertical stacking components, width 18 mm, with the pressure regulator plate also suitable for valves with symmetrical design



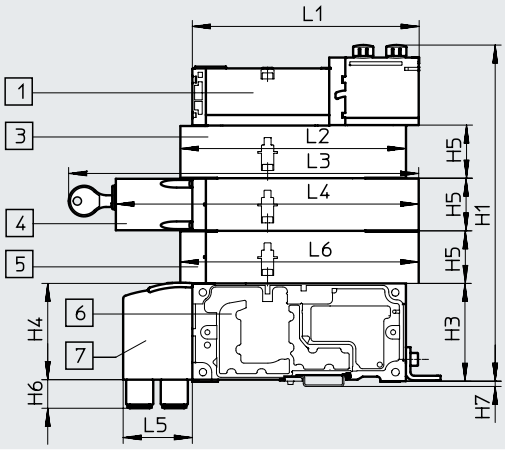
[1] Solenoid valve with two solenoid coils, width 18 mm
[2] Pressure regulator plate
[3] Throttle plate
[6] Manifold sub-base
[7] 90°-connection plate
[8] Pressure gauge, freely positionable

Dim.	L1	L2	L3	L5	H1	H2	H3	H4	H5	H6	H7
[mm]	383.2	303.6	130	46	210	197	65	64	35	19	3.5

Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

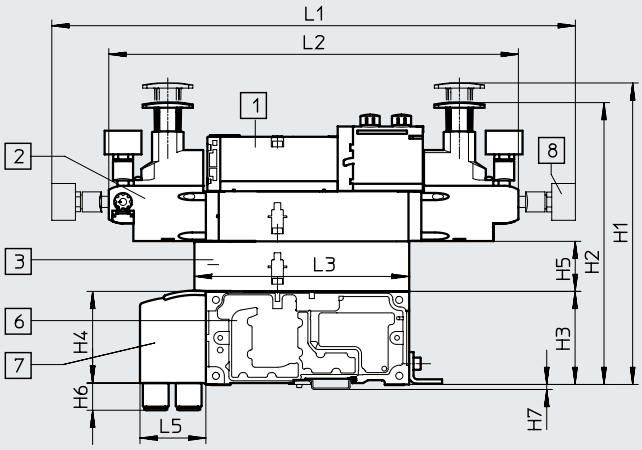
Vertical stacking components, width 26 mm



[1] Solenoid valve with two solenoid coils, width 26 mm
[3] Throttle plate
[4] Vertical pressure shut-off plate, lockable (code ZT), optionally lockable with key (code ZS)
[5] Vertical supply plate
[6] Manifold sub-base
[7] 90°-connection plate

Dim.	L1	L2	L3 (Code ZT)	L4 (Code ZT)	L3 (Code ZS)	L4 (Code ZS)	L5	L6	H1	H3	H4	H5	H6	H7
[mm]	150.8	150	–	221	239.5	215.5	46	158.5	224	65	64	35	19	3.5

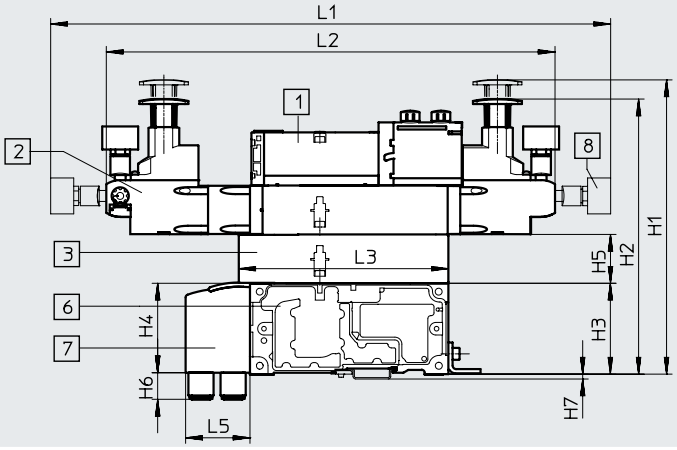
Vertical stacking components, width 26 mm



[1] Solenoid valve with two solenoid coils, width 26 mm
[2] Pressure regulator plate
[3] Throttle plate
[6] Manifold sub-base
[7] 90°-connection plate
[8] Pressure gauge, freely positionable

Dim.	L1	L2	L3	L5	H1	H2	H3	H4	H5	H6	H7
[mm]	365.7	286.1	150	46	210	197	65	64	35	19	3.5

Vertical stacking components, width 26 mm, with the pressure regulator plate also suitable for valves with symmetrical design



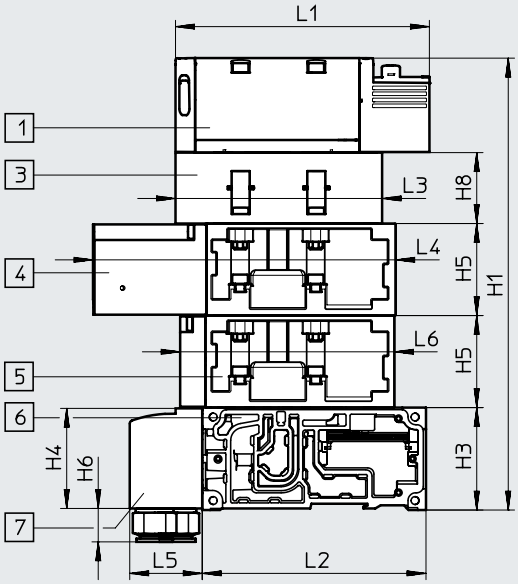
[1] Solenoid valve with two solenoid coils, width 26 mm
[2] Pressure regulator plate
[3] Throttle plate
[6] Manifold sub-base
[7] 90°-connection plate
[8] Pressure gauge, freely positionable

Dim.	L1	L2	L3	L5	H1	H2	H3	H4	H5	H6	H7
[mm]	400.7	321.1	150	46	210	197	65	64	35	19	3.5

Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

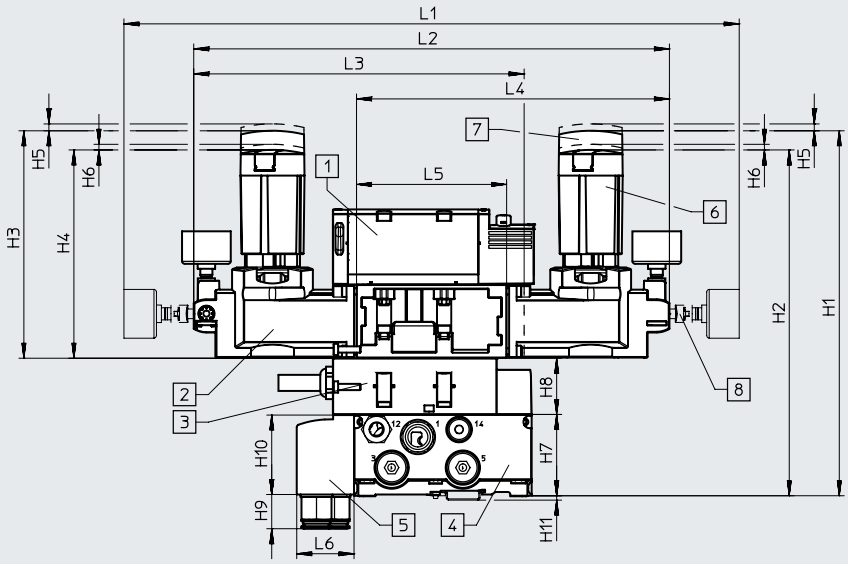
Vertical stacking components, width 42 mm



[1] Solenoid valve
[3] Throttle plate
[4] Vertical pressure shut-off plate
[5] Vertical supply plate
[6] Manifold sub-base
[7] 90°-connection plate

Dim.	L1	L2	L3	L4	L5	L6	H1	H3	H4	H5	H6	H7	H8
[mm]	137.8	142	105.3	173.8	46	117.6	236	65	64	45.3	25.7	3.5	28

Vertical stacking components, width 42 mm



[1] Solenoid valve
[2] Pressure regulator plate
[3] Throttle plate
[4] Manifold sub-base
[5] 90°-connection plate
[6] Short rotary knob, lockable (standard)
[7] Long rotary knob, lockable
[8] Pressure gauge, freely positionable

Dim.	L1	L2	L3	L4	L5	L6	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11
[mm]	410.3	311.6	216.1	207.1	102.6	46	220	205	127	112	3	4.2	65	28	25.7	64	3.5

Note

Pressure regulator plates for symmetrical valves with widths of 42 mm and 52 mm can only be ordered via the pressure regulator configurator VABF-S2.

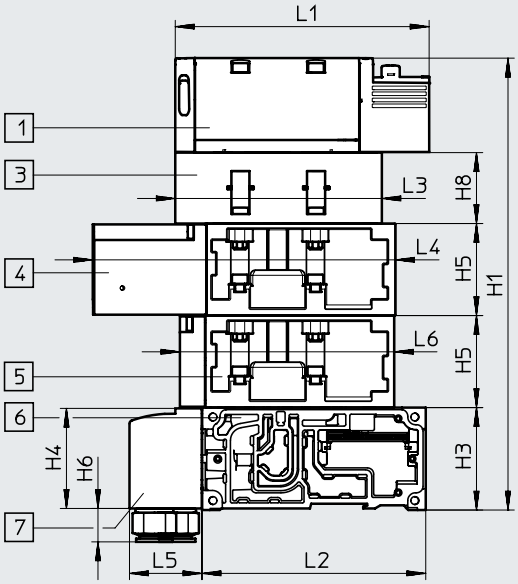
➔ Internet: vabf-s2

The following can be selected using the pressure regulator configurator VABF-S2:
- Rotary knob, short version with locking element (standard)
- Rotary knob, long version with locking element
- Rotary knob with integrated lock

Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

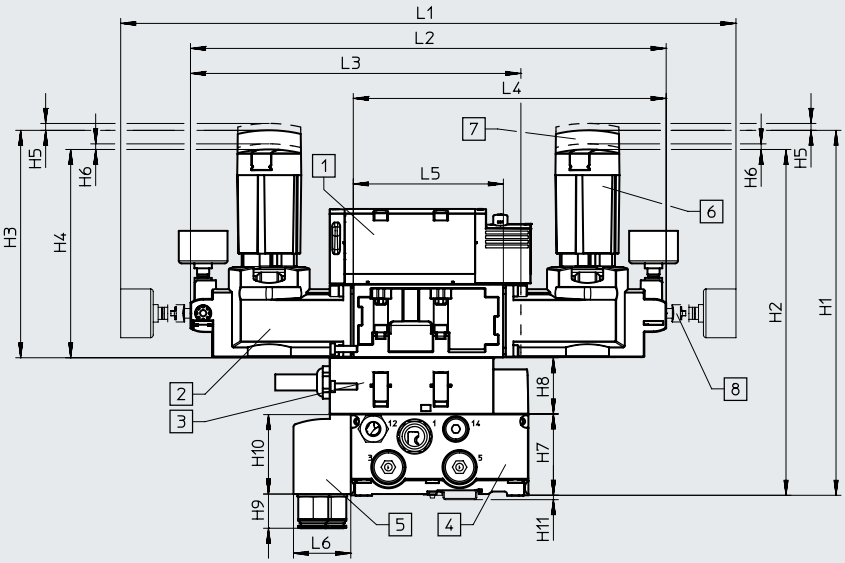
Vertical stacking components, width 52 mm



[1] Solenoid valve
[3] Throttle plate
[4] Vertical pressure shut-off plate
[5] Vertical supply plate
[6] Manifold sub-base
[7] 90°-connection plate

Dim.	L1	L2	L3	L4	L5	L6	H1	H3	H4	H5	H6	H8
[mm]	160.7	142	131	191.2	46	136	287.4	65	63.5	58.7	21.2	45

Vertical stacking components, width 52 mm



[1] Solenoid valve
[2] Pressure regulator plate
[3] Throttle plate
[4] Manifold sub-base
[5] 90°-connection plate
[6] Short rotary knob, lockable (standard)
[7] Long rotary knob, lockable
[8] Pressure gauge, freely positionable

Dim.	L1	L2	L3	L4	L5	L6	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11
[mm]	492	380.4	264.2	250.2	120	45.8	291	276	181	166	5.5	4.5	65	45	27.4	63.5	3.5

Note

Pressure regulator plates for symmetrical valves with widths of 42 mm and 52 mm can only be ordered via the pressure regulator configurator VABF-S2.

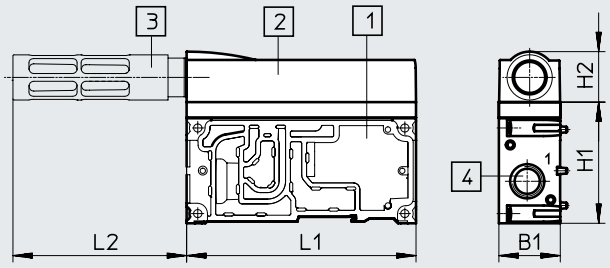
➔ Internet: vabf-s2

The following can be selected using the pressure regulator configurator VABF-S2:
- Rotary knob, short version with locking element (standard)
- Rotary knob, long version with locking element
- Rotary knob with integrated lock

Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

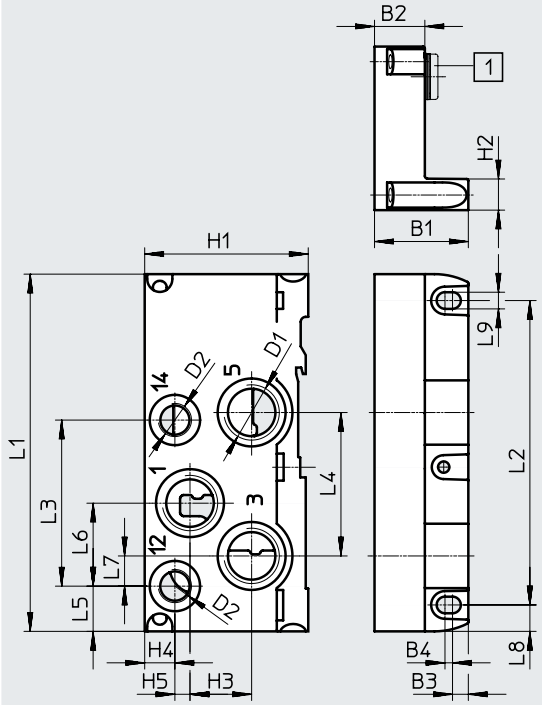
Supply plate with silencer



[1] Supply plate
[2] Exhaust port cover
[3] Silencer U-1/2-B-NPT
[4] Threaded connection 1/2 NPT

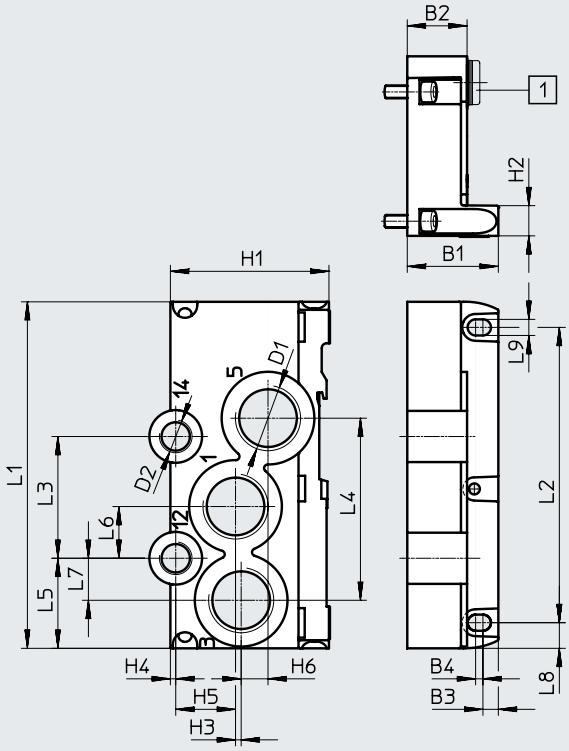
Dim.	L1	L2	H1	H2	B1
[mm]	142	107.5	75	31.5	38

Right end plate, VABE-S6-1R...



[1] Blanking plug

Right end plate, VABE-S6-2R...



[1] Blanking plug

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	D1	D2	H1	H2	H3	H4	H5	H6	B1	B2	B3	B4	With[1)]
VABE-S6-1R-G12	142	121	66	57	18	33	12	10.5	6.6	1/2 NPT	1/4 NPT	65	12.5	24.5	12	6	–	37.3	22	6.3	3	[1]
VABE-S6-1RZ-G12																						–
VABE-S6-2R-G34	142	121	49.9	74.6	36.9	21.2	17.2	10.5	6.6	3/4 NPT	1/4 NPT	65	12.5	2.3	2.2	24.5	11	37.3	24.5	6.3	3	[1]
VABE-S6-2RZ-G34																						–

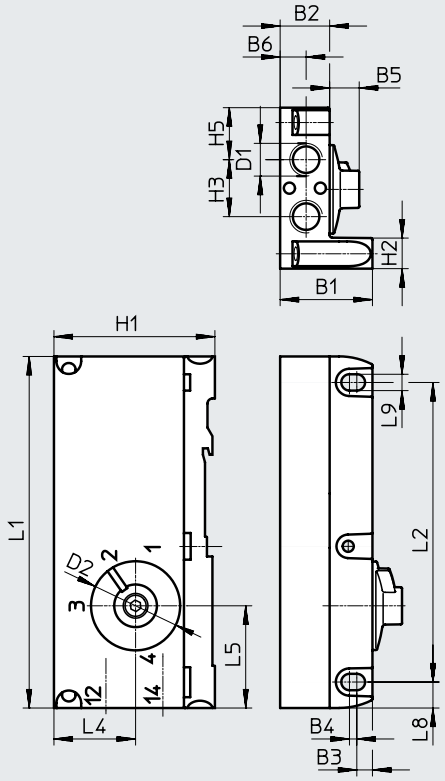
1) With blanking plug = internal pilot air supply, – without blanking plug = external pilot air supply
Special feature: There is no port 14 for VABE-S6-1R-G12 (code V).

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

Datasheet – Valve terminal

Dimensions Download CAD data ➔ www.festo.com

Right end plate with pilot air selector, VABE-S6-1RZ-N-B1



Type	L1	L2	L5	L8	L9	D1	D2	H1	H2	H3	H4	H5	B1	B2	B3	B4	B5	B6
VABE-S6-1RZ-N-B1	142	121	41.3	10.5	6.6	1/4 NPT	37	65.4	12.5	23	33	21	37.3	20	6.3	3	12	10.5

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

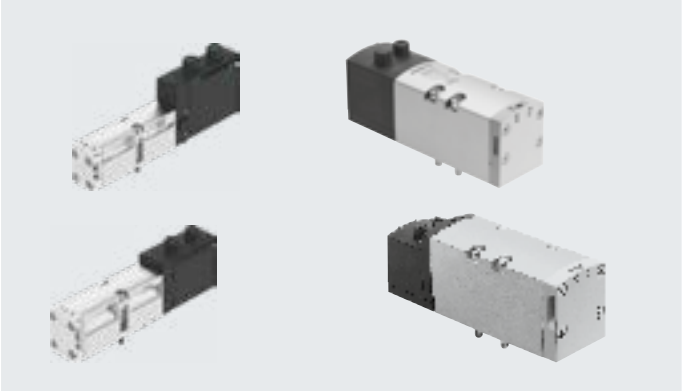
Datasheet – Solenoid valves VSVA

- Valve width
  to ISO 15407-2
  - 18 mm
  - 26 mm

  to ISO 5599-2
  - 42 mm (ISO 1)
  - 52 mm (ISO 2)

- Voltage
  24 V DC

- Flow rate[1)]
  Width 18 mm: up to 550 (700) l/min
  Width 26 mm: up to 1100 (1350) l/min
  Width 42 mm: up to 1300 (1860) l/min
  Width 52 mm: up to 2900 l/min



1) Flow rates in brackets apply to VTSA-F

General technical data for solenoid valves		
Design		Piston spool valve
Sealing principle		Soft
Overlap		Overlap (excluding types P53AD, P53BD)
		Negative overlap (types P53AD, P53BD)
Reset method		Mechanical or pneumatic, depending on the type used
Actuation type		Electrical
Electrical connection		Plug to ISO 15407-2, 2-pin (single solenoid types) or 4-pin (double solenoid and 5/3-way types)
Type of control		Piloted
Degree of protection to EN 60529		IP65, NEMA 4 (for all types of signal transmission when mounted)
Exhaust function, can be throttled		Via individual sub-base, via throttle plate (not with valve type T22)
Type of mounting		On manifold sub-base, on individual sub-base
Mounting position		Any
Manual override		Detenting, non-detenting, concealed
Signal status indication		LED (except types with signal status display sensor, and part nos.: 560727 and 560728)
Sensor signal status indication		Yellow LED
Duty cycle	[%]	100
Pollution degree		3
Surge resistance	[kV]	2.5
Nominal operating voltage	[V DC]	24 (dependent on valve type)
Permissible voltage fluctuations	[%]	±10
Pneumatic connections		
Supply	1	Via the manifold sub-base of the valve terminal or via individual sub-base
Exhausting	3/5	
Working ports	2/4	
Pilot air supply	1 2/14	
Pilot exhaust air	8 2/84	Either ducted or unducted

Datasheet – Solenoid valves

Pneumatic characteristic data										
Terminal code	VC	VV	N	K	H	P	Q	R	M	O
Valve code	T22C	T22CV	T32U	T32C	T32H	T32F	T32N	T32W	M52-A	M52-M
Flow direction										
Any	–	■	–	–	–	–	–	–	■	■
Reversible only	–	–	–	–	–	■	■	■	–	–
Not reversible	■	–	■	■	■	–	–	–	–	–
Reset method										
Pneumatic spring	■	■	■	■	■	■	■	■	■	–
Mechanical spring	–	–	–	–	–	–	–	–	–	■

Pneumatic characteristic data										
Terminal code	J	D	B	G	E	SA	SB	SD	SE	VG
Valve code	B52	D52	P53U	P53C	P53E	P53ED	P53AD	P53BD	P53EP	P53F
Flow direction										
Any	■	■	■	■	■	–	■	–	–	■
Reversible only	–	–	–	–	–	–	–	–	–	–
Not reversible	–	–	–	–	–	■	–	■	■	–
Reset method										
Pneumatic spring	–	–	–	–	–	–	–	–	–	–
Mechanical spring	–	–	■	■	■	■	■	■	■	■

Flow direction of solenoid valves

Solenoid valves only with reversible flow direction

- These valves must only be operated on pressure zones with reversible supply (3 and 5 with supply pressure 1 as exhaust air) or on a reversible pressure regulator. If necessary, create separate pressure zones with duct separation.
- Reversible 3/2-way solenoid valves do not permit the special function "ducted pilot exhaust air"
- Ports 12 and 14 on the end plate variants must be supplied with the same pressure.
- Right end plate with pilot air selector: can be realised via position 1 or 2
- Right end plate with threaded connections: 12 and 14 must be supplied with the same pressure level

Solenoid valves with any flow direction

- Valves with any flow direction such as the 5/2-way solenoid valve, code M, for example, are suitable for vacuum operation (standard valves such as the 2x 2/2-way solenoid valve with code VC, for example, must not be used for vacuum operation).
- An exception is the 2x 2/2-way solenoid valve with code VV (T22CV), which only allows vacuum operation at ports 3 and 5. The solenoid valve with code VV (T22CV) cannot be combined with other valve functions; a separate pressure zone is required.

Datasheet – Solenoid valves

Operating and environmental conditions			
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]
Notes on operating/ pilot medium			Lubricated operation possible (in which case lubrication will always be required)
Operating pressure, pilot air supply[2]		[bar]	–0.9 ... +10 (valves with any flow direction and reversible valves)
			3 ... 10 (non-reversible valves)
		[MPa]	–0.09 ... +1 (valves with any flow direction and reversible valves)
			0.3 ... 1 (non-reversible valves)
Pilot pressure		[bar]	3 ... 10
		[MPa]	0.3 ... 1
Pilot air supply			External
			Internal via valve terminal
Ambient temperature		[°C]	–5 ... +50
Relative humidity		[%]	0 ... 90
Certification			BIA (for characteristic SP and/or SN only)
	Direct voltage 24 V DC		C-Tick (only size 52 mm and solenoid valves with sensor (position sensing))
			c UL us – Recognized (OL)
CE marking (see declaration of conformity)	Direct voltage 24 V DC		To EU EMC Directive [1]

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... ➔ Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

2) Solenoid valves with code VC (2/2-way type ... T22C), N (3/2-way type ... T32U), K (3/2-way type ... T32C), H (3/2-way type ... T32H) must not be operated with vacuum; the operating pressure here is 3 ... 10 bar

Datasheet – Solenoid valve width 18 mm

- Valve width
  to ISO 15407-2
  18 mm

- Flow rate
  Valve width 18 mm:
  VTSA up to 550 l/min
  VTSA-F up to 700 l/min

- Voltage
  24 V DC

Safety characteristics – Valve, width 18 mm	
Conforms to	EN 13849-1/2
CE marking (see declaration of conformity) Direct voltage 24 V DC	To EU EMC Directive [1] (solenoid valves with sensor only)
Shock resistance	Shock test with severity level 2, to EN 60068-2-27
Vibration resistant	Transport application test with severity level 2, to EN 60068-2-6

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Safety characteristics – Valve, width 18 mm

Valve function (with valve code)	Terminal code	Test pulses	
		Max. positive test pulse with logic 0 [µs]	Max. negative test pulse with logic 1 [µs]
5/2-way double solenoid (B52)	J	1500	800
5/2-way double solenoid with dominant signal (D52)	D	1700	1200
5/2-way single solenoid (M52A)	M	1500	800
5/2-way single solenoid (M52M)	O	1500	800
5/3-way closed (P53C)	G	1500	800
5/3-way exhausted (P53E)	E	1500	800
5/3-way pressurised (P53U)	B	1500	800
5/3-way exhausted, switching position 14 detenting (P53ED)	SA	1500	800
5/3-way exhausted, switching position 12 detenting (P53EP)	SE	1500	800
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	SB	1500	800
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	SD	1500	800
2x3/2-way single solenoid, closed (T32C)	K	1700	1200
2x3/2-way single solenoid, open (T32U)	N	1700	1200
2x3/2-way single solenoid, open/closed (T32H)	H	1700	1200
2x3/2-way single solenoid, closed (T32N)	Q	1700	1200
2x3/2-way single solenoid, open (T32F)	P	1700	1200
2x3/2-way single solenoid, open/closed (T32W)	R	1700	1200
2x2/2-way single solenoid, closed (T22C)	VC	1700	1200
2x2/2-way single solenoid, closed (T22CV)	VV	1700	1200

Datasheet – Solenoid valve width 18 mm

Technical data - Valve, width 18 mm

Valve function (with valve code)	Terminal code	Flow direction			Reset method		Weight [g]
		Any	Reversible only	Not reversible	Pneumatic spring	Mechanical spring	
5/2-way double solenoid (B52)	J	■	–	–	–	–	172
5/2-way double solenoid with dominant signal (D52)	D	■	–	–	–	–	172
5/2-way single solenoid (M52A)	M	■	–	–	■	–	163
5/2-way single solenoid (M52M)	O	■	–	–	–	■	163
5/3-way closed[1] (P53C)	G	■	–	–	–	■	191
5/3-way exhausted[1] (P53E)	E	■	–	–	–	■	191
5/3-way pressurised[1] (P53U)	B	■	–	–	–	■	191
5/3-way exhausted, switching position 14 detenting (P53ED)	SA	–	–	■	–	■	170
5/3-way exhausted, switching position 12 detenting (P53EP)	SE	–	–	■	–	■	170
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	SB	■	–	–	–	■	172
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	SD	–	–	■	–	■	172
2x3/2-way single solenoid, closed (T32C)	K	–	–	■	■	–	190
2x3/2-way single solenoid, open (T32U)	N	–	–	■	■	–	190
2x3/2-way single solenoid, open/closed (T32H)	H	–	–	■	■	–	190
2x3/2-way single solenoid, closed (T32N)	Q	–	■	–	■	–	190
2x3/2-way single solenoid, open (T32F)	P	–	■	–	■	–	190
2x3/2-way single solenoid, open/closed (T32W)	R	–	■	–	■	–	190
2x2/2-way single solenoid, closed (T22C)	VC	–	–	■	■	–	190
2x2/2-way single solenoid, closed (T22CV)	VV	■	–	–	■	–	190

1) If neither solenoid coil is energised, the valve is moved to its mid-position by spring force.
If both solenoid coils are energised at the same time, the valve remains in the previously assumed switching position.

Datasheet – Solenoid valve width 18 mm

Standard nominal flow rate of valve/valve terminal [l/min], width 18 mm

Valve function (with valve code)	Terminal code	Flow rate			
		Valve	Valve on valve terminal VTSA	Valve on valve terminal VTSA-F	Valve on individual subbase
5/2-way double solenoid (B52)	J	750	550	700	600
5/2-way double solenoid with dominant signal (D52)	D	750	550	700	600
5/2-way single solenoid (M52A)	M	750	550	700	600
5/2-way single solenoid (M52M)	O	750	550	700	600
5/3-way closed (P53C)	G	700	450	650	550
5/3-way exhausted (P53E)	E	700[1)] 330[2)]	450[1)] 330[2)]	480[1)] 330[2)]	500[1)] 330[2)]
5/3-way pressurised (P53U)	B	700[1)] 330[2)]	450[1)] 330[2)]	480[1)] 330[2)]	500[1)] 330[2)]
5/3-way exhausted, switching position 14 detenting (P53ED)	SA	–	380[1)] 310[2)]	430[1)] 360[2)]	390[1)] 310[2)]
5/3-way exhausted, switching position 12 detenting (P53EP)	SE	–	380[1)] 300[2)]	460[1)] 350[2)]	390[1)] 320[2)]
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	SB	–	380[1)] 350[2)]	440[1)] 400[2)]	380[1)] 360[2)]
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	SD	–	370[1)] 340[2)] 360[3)] 360[4)]	430[1)] 360[2)] 450[3)] 450[4)]	400[1)] 350[2)] 390[3)] 380[4)]
2x3/2-way single solenoid, closed (T32C)	K	600	400	550	500
2x3/2-way single solenoid, open (T32U)	N	600	400	550	500
2x3/2-way single solenoid, open/closed (T32H)	H	600	400	550	500
2x3/2-way single solenoid, closed (T32N)	Q	600	400	550	500
2x3/2-way single solenoid, open (T32F)	P	600	400	550	500
2x3/2-way single solenoid, open/closed (T32W)	R	600	400	550	500
2x2/2-way single solenoid, closed (T22C)	VC	700	500	650	500
2x2/2-way single solenoid, closed (T22CV)	VV	700	500	650	500

1) Switching position
2) Mid-position
3) Switching position 4 ➔ 5
4) Mid-position 2 ➔ 3

Note

When using the solenoid valves VSVA-B-P53AD-...- or VSVA-B-P53BD-...- (terminal code SB or SD) for unobstructed exhausting (1➔ 2 or 1➔ 4) in the detenting or mid-position, the flow rate can reduce or drop to 0 l/min if the operating pressure is greater than 6 bar. This does not happen if a tube measuring at least 15 cm in length is used at port 2/4.

Datasheet – Solenoid valve width 18 mm

Valve switching times in [ms]

Valve function (with valve code)	Terminal code	On	Off	Changeover
5/2-way double solenoid (B52)	J	–	–	11
5/2-way double solenoid with dominant signal (D52)	D	–	–	13
5/2-way single solenoid (M52A)	M	22	28	–
5/2-way single solenoid (M52M)	O	12	38	–
5/3-way closed (P53C)	G	15	44	–
5/3-way exhausted (P53E)	E	15	44	–
5/3-way pressurised (P53U)	B	15	44	–
5/3-way exhausted, switching position 14 detenting (P53ED)	SA	13 for control side 12 10 for control side 14	37 for control side 12	(24)
5/3-way exhausted, switching position 12 detenting (P53EP)	SE	10 for control side 12 13 for control side 14	30 for control side 12	(23)
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	SB	12 for control side 12 9 for control side 14	28 for control side 12	–
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	SD	12 for control side 12 9 for control side 14	28 for control side 12	–
2x3/2-way single solenoid, closed (T32C)	K	12	30	–
2x3/2-way single solenoid, open (T32U)	N	12	30	–
2x3/2-way single solenoid, open/closed (T32H)	H	12	30	–
2x3/2-way single solenoid, closed (T32N)	Q	25	12	–
2x3/2-way single solenoid, open (T32F)	P	25	12	–
2x3/2-way single solenoid, open/closed (T32W)	R	25	12	–
2x2/2-way single solenoid, closed (T22C)	VC	12	30	–
2x2/2-way single solenoid, closed (T22CV)	VV	12	30	–

Characteristic coil data, width 18 mm

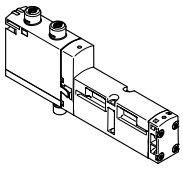
Valve function (with valve code)	Terminal code	Characteristic coil data at 24 V DC in [W]
5/2-way double solenoid (B52)	J	1.6
5/2-way double solenoid with dominant signal (D52)	D	1.3
5/2-way single solenoid (M52A)	M	1.6
5/2-way single solenoid (M52M)	O	1.6
5/3-way closed (P53C)	G	1.6
5/3-way exhausted (P53E)	E	1.6
5/3-way pressurised (P53U)	B	1.6
5/3-way exhausted, switching position 14 detenting (P53ED)	SA	1.6
5/3-way exhausted, switching position 12 detenting (P53EP)	SE	1.6
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	SB	1.6
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	SD	1.6
2x3/2-way single solenoid, closed (T32C)	K	1.3
2x3/2-way single solenoid, open (T32U)	N	1.3
2x3/2-way single solenoid, open/closed (T32H)	H	1.3
2x3/2-way single solenoid, closed (T32N)	Q	1.3
2x3/2-way single solenoid, open (T32F)	P	1.3
2x3/2-way single solenoid, open/closed (T32W)	R	1.3
2x2/2-way single solenoid, closed (T22C)	VC	1.3
2x2/2-way single solenoid, closed (T22CV)	VV	1.3

Materials

Housing	Die-cast aluminium, PA
Seals	FPM, NBR, HNBR
Screws	Galvanised steel
Note on materials	RoHS-compliant

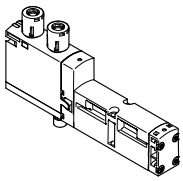
Ordering data – Solenoid valve

Ordering data – Solenoid valve VSVA, MO non-detenting/detenting (D)

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	18 mm	**561155**	**VSVA-B-T22C-AZD-A2-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	18 mm	**561159**	**VSVA-B-T22CV-AZD-A2-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	18 mm	**539178**	**VSVA-B-T32U-AZD-A2-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	18 mm	**539176**	**VSVA-B-T32C-AZD-A2-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	18 mm	**539180**	**VSVA-B-T32H-AZD-A2-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	18 mm	**539179**	**VSVA-B-T32F-AZD-A2-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	18 mm	**539177**	**VSVA-B-T32N-AZD-A2-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	18 mm	**539181**	**VSVA-B-T32W-AZD-A2-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	18 mm	**539184**	**VSVA-B-M52-AZD-A2-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	18 mm	**539185**	**VSVA-B-M52-MZD-A2-1T1L**
	J	5/2-way valve, double solenoid	B52	18 mm	**539182**	**VSVA-B-B52-ZD-A2-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	18 mm	**539183**	**VSVA-B-D52-ZD-A2-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	18 mm	**539186**	**VSVA-B-P53U-ZD-A2-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	18 mm	**539188**	**VSVA-B-P53C-ZD-A2-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	18 mm	**539187**	**VSVA-B-P53E-ZD-A2-1T1L**
	SA	5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return	P53ED	18 mm	**8031814**	**VSVA-B-P53ED-ZD-A2-1T1L**
	SE	5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return	P53EP	18 mm	**8031818**	**VSVA-B-P53EP-ZD-A2-1T1L**
	SB	5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return	P53AD	18 mm	**8031815**	**VSVA-B-P53AD-ZD-A2-1T1L**
	SD	5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return	P53BD	18 mm	**8031817**	**VSVA-B-P53BD-ZD-A2-1T1L**

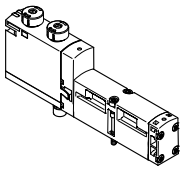
Ordering data – Solenoid valve

Ordering data – Solenoid valve VSVA with cover cap for MO non-detenting/heavy duty, detenting via accessory (TR)

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	18 mm	**8033457**	**VSVA-B-T22C-AZTR-A2-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	18 mm	**8033458**	**VSVA-B-T22CV-AZTR-A2-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	18 mm	**8033446**	**VSVA-B-T32U-AZTR-A2-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	18 mm	**8033444**	**VSVA-B-T32C-AZTR-A2-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	18 mm	**8033448**	**VSVA-B-T32H-AZTR-A2-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	18 mm	**8033447**	**VSVA-B-T32F-AZTR-A2-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	18 mm	**8033445**	**VSVA-B-T32N-AZTR-A2-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	18 mm	**8033449**	**VSVA-B-T32W-AZTR-A2-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	18 mm	**8033452**	**VSVA-B-M52-AZTR-A2-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	18 mm	**8033453**	**VSVA-B-M52-MZTR-A2-1T1L**
	J	5/2-way valve, double solenoid	B52	18 mm	**8033450**	**VSVA-B-B52-ZTR-A2-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	18 mm	**8033451**	**VSVA-B-D52-ZTR-A2-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	18 mm	**8033454**	**VSVA-B-P53U-ZTR-A2-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	18 mm	**8033456**	**VSVA-B-P53C-ZTR-A2-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	18 mm	**8033455**	**VSVA-B-P53E-ZTR-A2-1T1L**
	SA	5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return	P53ED	18 mm	**8039181**	**VSVA-B-P53ED-ZTR-A2-1T1L**
	SE	5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return	P53EP	18 mm	**8039190**	**VSVA-B-P53EP-ZTR-A2-1T1L**
	SB	5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return	P53AD	18 mm	**8039184**	**VSVA-B-P53AD-ZTR-A2-1T1L**
	SD	5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return	P53BD	18 mm	**8040110**	**VSVA-B-P53BD-ZTR-A2-1T1L**

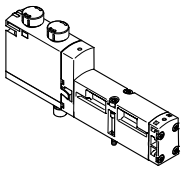
Ordering data – Solenoid valve

Ordering data – VSVA solenoid valve with cover cap for MO, non-detenting (H)

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	18 mm	**8033475**	**VSVA-B-T22C-AZH-A2-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	18 mm	**8033476**	**VSVA-B-T22CV-AZH-A2-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	18 mm	**8033464**	**VSVA-B-T32U-AZH-A2-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	18 mm	**8033462**	**VSVA-B-T32C-AZH-A2-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	18 mm	**8033466**	**VSVA-B-T32H-AZH-A2-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	18 mm	**8033465**	**VSVA-B-T32F-AZH-A2-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	18 mm	**8033463**	**VSVA-B-T32N-AZH-A2-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	18 mm	**8033467**	**VSVA-B-T32W-AZH-A2-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	18 mm	**8033470**	**VSVA-B-M52-AZH-A2-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	18 mm	**8033471**	**VSVA-B-M52-MZH-A2-1T1L**
	J	5/2-way valve, double solenoid	B52	18 mm	**8033468**	**VSVA-B-B52-ZH-A2-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	18 mm	**8033469**	**VSVA-B-D52-ZH-A2-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	18 mm	**8033472**	**VSVA-B-P53U-ZH-A2-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	18 mm	**8033474**	**VSVA-B-P53C-ZH-A2-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	18 mm	**8033473**	**VSVA-B-P53E-ZH-A2-1T1L**
	SA	5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return	P53ED	18 mm	**8039182**	**VSVA-B-P53ED-ZH-A2-1T1L**
	SE	5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return	P53EP	18 mm	**8039191**	**VSVA-B-P53EP-ZH-A2-1T1L**
	SB	5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, Mechanical spring return	P53AD	18 mm	**8039185**	**VSVA-B-P53AD-ZH-A2-1T1L**
	SD	5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return	P53BD	18 mm	**8040111**	**VSVA-B-P53BD-ZH-A2-1T1L**

Ordering data – Solenoid valve

Ordering data – VSVA solenoid valve with cover cap for MO, concealed

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	18 mm	**8033493**	**VSVA-B-T22C-AZ-A2-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	18 mm	**8033494**	**VSVA-B-T22CV-AZ-A2-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	18 mm	**8033482**	**VSVA-B-T32U-AZ-A2-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	18 mm	**8033480**	**VSVA-B-T32C-AZ-A2-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	18 mm	**8033484**	**VSVA-B-T32H-AZ-A2-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	18 mm	**8033483**	**VSVA-B-T32F-AZ-A2-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	18 mm	**8033481**	**VSVA-B-T32N-AZ-A2-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	18 mm	**8033485**	**VSVA-B-T32W-AZ-A2-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	18 mm	**8033488**	**VSVA-B-M52-AZ-A2-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	18 mm	**8033489**	**VSVA-B-M52-MZ-A2-1T1L**
	J	5/2-way valve, double solenoid	B52	18 mm	**8033486**	**VSVA-B-B52-Z-A2-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	18 mm	**8033487**	**VSVA-B-D52-Z-A2-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	18 mm	**8033490**	**VSVA-B-P53U-Z-A2-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	18 mm	**8033492**	**VSVA-B-P53C-Z-A2-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	18 mm	**8033491**	**VSVA-B-P53E-Z-A2-1T1L**
	SA	5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return	P53ED	18 mm	**8039183**	**VSVA-B-P53ED-Z-A2-1T1L**
	SE	5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return	P53EP	18 mm	**8039192**	**VSVA-B-P53EP-Z-A2-1T1L**
	SB	5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return	P53AD	18 mm	**8039186**	**VSVA-B-P53AD-Z-A2-1T1L**
	SD	5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return	P53BD	18 mm	**8040112**	**VSVA-B-P53BD-Z-A2-1T1L**

Datasheet – Solenoid valve width 26 mm

- Valve width
  to ISO 15407-2
  26 mm

- Flow rate
  Valve width 26 mm:
  VTSA up to 1100 l/min
  VTSA-F up to 1350 l/min

- Voltage
  24 V DC

Safety characteristics – Valve, width 26 mm		
Conforms to		EN 13849-1/2
CE marking (see declaration of conformity)	Direct voltage 24 V DC	To EU EMC Directive [1] (solenoid valves with sensor only)
Shock resistance		Shock test with severity level 2, to EN 60068-2-27
Vibration resistant		Transport application test with severity level 2, to EN 60068-2-6

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Safety characteristics – Valve, width 26 mm

Valve function (with valve code)	Terminal code	Test pulses	
		Max. positive test pulse with logic 0 [µs]	Max. negative test pulse with logic 1 [µs]
5/2-way double solenoid (B52)	J	1200	1100
5/2-way double solenoid with dominant signal (D52)	D	1200	1100
5/2-way single solenoid (M52A)	M	1200	1100
5/2-way single solenoid (M52M)	O	1200	1100
5/3-way closed (P53C)	G	1200	1100
5/3-way exhausted (P53E)	E	1200	1100
5/3-way pressurised (P53U)	B	1200	1100
5/3-way exhausted, switching position 14 detenting (P53ED)	SA	1200	1100
5/3-way exhausted, switching position 12 detenting (P53EP)	SE	1200	1100
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	SB	1200	1100
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	SD	1200	1100
2x3/2-way single solenoid, closed (T32C)	K	1500	1200
2x3/2-way single solenoid, open (T32U)	N	1500	1200
2x3/2-way single solenoid, open/closed (T32H)	H	1500	1200
2x3/2-way single solenoid, closed (T32N)	Q	1500	1200
2x3/2-way single solenoid, open (T32F)	P	1500	1200
2x3/2-way single solenoid, open/closed (T32W)	R	1500	1200
2x2/2-way single solenoid, closed (T22C)	VC	1500	1200
2x2/2-way single solenoid, closed (T22CV)	VV	1500	1200

Datasheet – Solenoid valve width 26 mm

Technical data - Valve, width 26 mm

Valve function (with valve code)	Terminal code	Flow direction			Reset method		Weight [g]
		Any	Reversible only	Not reversible	Pneumatic spring	Mechanical spring	
5/2-way double solenoid (B52)	J	■	–	–	–	–	276
5/2-way double solenoid with dominant signal (D52)	D	■	–	–	–	–	276
5/2-way single solenoid (M52A)	M	■	–	–	■	–	293
5/2-way single solenoid (M52M)	O	■	–	–	–	■	293
5/3-way closed[1] (P53C)	G	■	–	–	–	■	320
5/3-way exhausted[1] (P53E)	E	■	–	–	–	■	320
5/3-way pressurised[1] (P53U)	B	■	–	–	–	■	320
5/3-way exhausted, switching position 14 detenting (P53ED)	SA	–	–	■	–	■	291
5/3-way exhausted, switching position 12 detenting (P53EP)	SE	–	–	■	–	■	291
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	SB	■	–	–	–	■	301
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	SD	–	–	■	–	■	301
2x3/2-way single solenoid, closed (T32C)	K	–	–	■	■	–	335
2x3/2-way single solenoid, open (T32U)	N	–	–	■	■	–	335
2x3/2-way single solenoid, open/closed (T32H)	H	–	–	■	■	–	335
2x3/2-way single solenoid, closed (T32N)	Q	–	■	–	■	–	335
2x3/2-way single solenoid, open (T32F)	P	–	■	–	■	–	335
2x3/2-way single solenoid, open/closed (T32W)	R	–	■	–	■	–	335
2x2/2-way single solenoid, closed (T22C)	VC	–	–	■	■	–	335
2x2/2-way single solenoid, closed (T22CV)	VV	■	–	–	■	–	335

1) If neither solenoid coil is energised, the valve is moved to its mid-position by spring force.
If both solenoid coils are energised at the same time, the valve remains in the previously assumed switching position.

Datasheet – Solenoid valve width 26 mm

Standard nominal flow rate of valve/valve terminal [l/min], width 26 mm

Valve function (with valve code)	Terminal code	Flow rate			
		Valve	Valve on valve terminal VTSA	Valve on valve terminal VTSA-F	Valve on individual subbase
5/2-way double solenoid (B52)	J	1400	1100	1350	1200
5/2-way double solenoid with dominant signal (D52)	D	1400	1100	1350	1200
5/2-way single solenoid (M52A)	M	1400	1100	1350	1200
5/2-way single solenoid (M52M)	O	1400	1100	1350	1200
5/3-way closed (P53C)	G	1400[1)] 700[2)]	1000[1)] 700[2)]	1350[1)] 700[2)]	1200[1)] 700[2)]
5/3-way exhausted (P53E)	E	1400[1)] 700[2)]	1000[1)] 700[2)]	1350[1)] 700[2)]	1200[1)] 700[2)]
5/3-way pressurised (P53U)	B	1400[1)] 700[2)]	1000[1)] 700[2)]	1350[1)] 700[2)]	1200[1)] 700[2)]
5/3-way exhausted, switching position 14 detenting (P53ED)	SA	1400[1)] 700[2)]	1000[1)] 700[2)]	1350[1)] 700[2)]	1200[1)] 700[2)]
5/3-way exhausted, switching position 12 detenting (P53EP)	SE	1400[1)] 700[2)]	1000[1)] 700[2)]	1350[1)] 700[2)]	1200[1)] 700[2)]
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	SB	700[1)] 700[2)]	700[1)] 700[2)]	700[1)] 700[2)]	700[1)] 700[2)]
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	SD	–	850[1)] 820[2)]	950[1)] 860[2)]	900[1)] 840[2)]
2x3/2-way single solenoid, closed (T32C)	K	1250	900	1150	1100
2x3/2-way single solenoid, open (T32U)	N	1250	900	1150	1100
2x3/2-way single solenoid, open/closed (T32H)	H	1250	900	1150	1100
2x3/2-way single solenoid, closed (T32N)	Q	1250	900	1150	1100
2x3/2-way single solenoid, open (T32F)	P	1250	900	1150	1100
2x3/2-way single solenoid, open/closed (T32W)	R	1250	900	1150	1100
2x2/2-way single solenoid, closed (T22C)	VC	1350	1000	1300	1100
2x2/2-way single solenoid, closed (T22CV)	VV	1350	1000	1300	1100

1) Switching position
2) Mid-position

Note

The solenoid valves VSVA-B-P53BD...-A1-1T1L (terminal code SD) can be operated without restrictions at an operating pressure of less than 6 bar. At an operating pressure of more than 6 bar, the actual flow rate must not exceed 1900 l/min
(e.g. 10-->2 bar), otherwise these solenoid valves may switch unintentionally (to the mid-position or switching position 14).
At high pressures, this can be achieved, for example, using a flow control valve/orifice.
(e.g. a reducing nipple on port 2 or 4 to reduce it from G1/4 to G1/8).

Datasheet – Solenoid valve width 26 mm

Valve switching times in [ms], width 26 mm

Valve function (with valve code)	Terminal code	On	Off	Changeover
5/2-way double solenoid (B52)	J	–	–	18
5/2-way double solenoid with dominant signal (D52)	D	–	–	21
5/2-way single solenoid (M52A)	M	25	45	–
5/2-way single solenoid (M52M)	O	20	65	–
5/3-way closed (P53C)	G	22	65	–
5/3-way exhausted (P53E)	E	22	65	–
5/3-way pressurised (P53U)	B	22	65	–
5/3-way exhausted, switching position 14 detenting (P53ED)	SA	22 for control side 12 9 for control side 14	49 for control side 12	33
5/3-way exhausted, switching position 12 detenting (P53EP)	SE	10 for control side 12 22 for control side 14	50 for control side 14	40
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	SB	19 for control side 12 9 for control side 14	36 for control side 12	32
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	SD	16 for control side 12 9 for control side 14	26 for control side 12 36 for control side 14	–
2x3/2-way single solenoid, closed (T32C)	K	20	38	–
2x3/2-way single solenoid, open (T32U)	N	20	38	–
2x3/2-way single solenoid, open/closed (T32H)	H	20	38	–
2x3/2-way single solenoid, closed (T32N)	Q	32	30	–
2x3/2-way single solenoid, open (T32F)	P	32	30	–
2x3/2-way single solenoid, open/closed (T32W)	R	32	30	–
2x2/2-way single solenoid, closed (T22C)	VC	20	38	–
2x2/2-way single solenoid, closed (T22CV)	VV	20	38	–

Characteristic coil data, width 26 mm

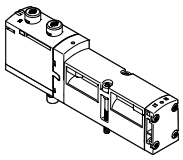
Valve function (with valve code)	Terminal code	Characteristic coil data at 24 V DC in [W]
5/2-way double solenoid (B52)	J	1.6
5/2-way double solenoid with dominant signal (D52)	D	1.3
5/2-way single solenoid (M52A)	M	1.6
5/2-way single solenoid (M52M)	O	1.6
5/3-way closed (P53C)	G	1.6
5/3-way exhausted (P53E)	E	1.6
5/3-way pressurised (P53U)	B	1.6
5/3-way exhausted, switching position 14 detenting (P53ED)	SA	1.6
5/3-way exhausted, switching position 12 detenting (P53EP)	SE	1.6
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	SB	1.6
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	SD	1.6
2x3/2-way single solenoid, closed (T32C)	K	1.3
2x3/2-way single solenoid, open (T32U)	N	1.3
2x3/2-way single solenoid, open/closed (T32H)	H	1.3
2x3/2-way single solenoid, closed (T32N)	Q	1.3
2x3/2-way single solenoid, open (T32F)	P	1.3
2x3/2-way single solenoid, open/closed (T32W)	R	1.3
2x2/2-way single solenoid, closed (T22C)	VC	1.3
2x2/2-way single solenoid, closed (T22CV)	VV	1.3

Materials

Housing	Die-cast aluminium, PA
Seals	FPM, NBR, HNBR
Screws	Galvanised steel
Note on materials	RoHS-compliant

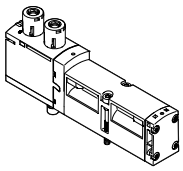
Ordering data – Solenoid valve

Ordering data – Solenoid valve VSVA, MO non-detenting/detenting (D)

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	26 mm	**561149**	**VSVA-B-T22C-AZD-A1-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	26 mm	**561153**	**VSVA-B-T22CV-AZD-A1-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	26 mm	**539152**	**VSVA-B-T32U-AZD-A1-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	26 mm	**539150**	**VSVA-B-T32C-AZD-A1-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	26 mm	**539154**	**VSVA-B-T32H-AZD-A1-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	26 mm	**539153**	**VSVA-B-T32F-AZD-A1-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	26 mm	**539151**	**VSVA-B-T32N-AZD-A1-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	26 mm	**539155**	**VSVA-B-T32W-AZD-A1-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	26 mm	**539158**	**VSVA-B-M52-AZD-A1-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	26 mm	**539159**	**VSVA-B-M52-MZD-A1-1T1L**
	J	5/2-way valve, double solenoid	B52	26 mm	**539156**	**VSVA-B-B52-ZD-A1-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	26 mm	**539157**	**VSVA-B-D52-ZD-A1-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	26 mm	**539160**	**VSVA-B-P53U-ZD-A1-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	26 mm	**539162**	**VSVA-B-P53C-ZD-A1-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	26 mm	**539161**	**VSVA-B-P53E-ZD-A1-1T1L**
	SA	5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return	P53ED	26 mm	**560727**	**VSVA-B-P53ED-ZD-A1-1T1L**
	SE	5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return	P53EP	26 mm	**8026638**	**VSVA-B-P53EP-ZD-A1-1T1L**
	SB	5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return	P53AD	26 mm	**560728**	**VSVA-B-P53AD-ZD-A1-1T1L**
	SD	5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return	P53BD	26 mm	**8031816**	**VSVA-B-P53BD-ZD-A1-1T1L**

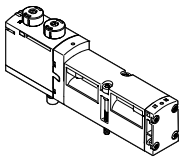
Ordering data – Solenoid valve

Ordering data – Solenoid valve VSVA with cover cap for MO non-detenting/heavy duty, detenting via accessory (TR)

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	26 mm	**8033032**	**VSVA-B-T22C-AZTR-A1-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	26 mm	**8033033**	**VSVA-B-T22CV-AZTR-A1-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	26 mm	**8033015**	**VSVA-B-T32U-AZTR-A1-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	26 mm	**8033013**	**VSVA-B-T32C-AZTR-A1-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	26 mm	**8033017**	**VSVA-B-T32H-AZTR-A1-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	26 mm	**8033016**	**VSVA-B-T32F-AZTR-A1-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	26 mm	**8033014**	**VSVA-B-T32N-AZTR-A1-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	26 mm	**8033018**	**VSVA-B-T32W-AZTR-A1-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	26 mm	**8033021**	**VSVA-B-M52-AZTR-A1-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	26 mm	**8033022**	**VSVA-B-M52-MZTR-A1-1T1L**
	J	5/2-way valve, double solenoid	B52	26 mm	**8033019**	**VSVA-B-B52-ZTR-A1-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	26 mm	**8033020**	**VSVA-B-D52-ZTR-A1-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	26 mm	**8033023**	**VSVA-B-P53U-ZTR-A1-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	26 mm	**8033025**	**VSVA-B-P53C-ZTR-A1-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	26 mm	**8033024**	**VSVA-B-P53E-ZTR-A1-1T1L**
	SA	5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return	P53ED	26 mm	**8033028**	**VSVA-B-P53ED-ZTR-A1-1T1L**
	SE	5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return	P53EP	26 mm	**8033035**	**VSVA-B-P53EP-ZTR-A1-1T1L**
	SB	5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return	P53AD	26 mm	**8033029**	**VSVA-B-P53AD-ZTR-A1-1T1L**
	SD	5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return	P53BD	26 mm	**8039187**	**VSVA-B-P53BD-ZTR-A1-1T1L**

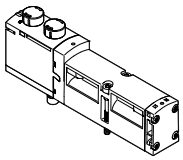
Ordering data – Solenoid valve

Ordering data – VSVA solenoid valve with cover cap for MO, non-detenting (H)

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	26 mm	**8033055**	**VSVA-B-T22C-AZH-A1-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	26 mm	**8033056**	**VSVA-B-T22CV-AZH-A1-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	26 mm	**8033038**	**VSVA-B-T32U-AZH-A1-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	26 mm	**8033036**	**VSVA-B-T32C-AZH-A1-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	26 mm	**8033040**	**VSVA-B-T32H-AZH-A1-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	26 mm	**8033039**	**VSVA-B-T32F-AZH-A1-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	26 mm	**8033037**	**VSVA-B-T32N-AZH-A1-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	26 mm	**8033041**	**VSVA-B-T32W-AZH-A1-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	26 mm	**8033044**	**VSVA-B-M52-AZH-A1-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	26 mm	**8033045**	**VSVA-B-M52-MZH-A1-1T1L**
	J	5/2-way valve, double solenoid	B52	26 mm	**8033042**	**VSVA-B-B52-ZH-A1-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	26 mm	**8033043**	**VSVA-B-D52-ZH-A1-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	26 mm	**8033046**	**VSVA-B-P53U-ZH-A1-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	26 mm	**8033048**	**VSVA-B-P53C-ZH-A1-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	26 mm	**8033047**	**VSVA-B-P53E-ZH-A1-1T1L**
	SA	5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return	P53ED	26 mm	**8033051**	**VSVA-B-P53ED-ZH-A1-1T1**
	SE	5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return	P53EP	26 mm	**8033058**	**VSVA-B-P53EP-ZH-A1-1T1L**
	SB	5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return	P53AD	26 mm	**8033052**	**VSVA-B-P53AD-ZH-A1-1T1L**
	SD	5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return	P53BD	26 mm	**8039188**	**VSVA-B-P53BD-ZH-A1-1T1L**

Ordering data – Solenoid valve

Ordering data – VSVA solenoid valve with cover cap for MO, concealed

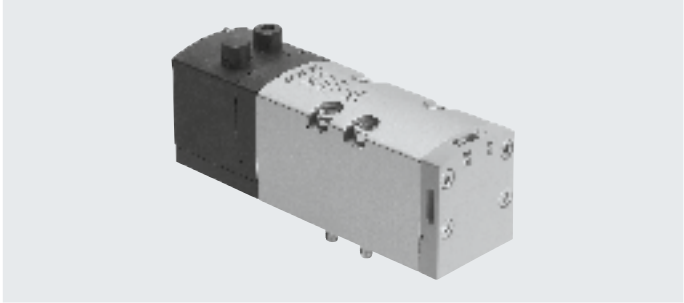
	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	26 mm	**8033078**	**VSVA-B-T22C-AZ-A1-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	26 mm	**8033079**	**VSVA-B-T22CV-AZ-A1-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	26 mm	**8033061**	**VSVA-B-T32U-AZ-A1-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	26 mm	**8033059**	**VSVA-B-T32C-AZ-A1-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	26 mm	**8033063**	**VSVA-B-T32H-AZ-A1-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	26 mm	**8033062**	**VSVA-B-T32F-AZ-A1-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	26 mm	**8033060**	**VSVA-B-T32N-AZ-A1-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	26 mm	**8033064**	**VSVA-B-T32W-AZ-A1-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	26 mm	**8033067**	**VSVA-B-M52-AZ-A1-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	26 mm	**8033068**	**VSVA-B-M52-MZ-A1-1T1L**
	J	5/2-way valve, double solenoid	B52	26 mm	**8033065**	**VSVA-B-B52-Z-A1-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	26 mm	**8033066**	**VSVA-B-D52-Z-A1-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	26 mm	**8033069**	**VSVA-B-P53U-Z-A1-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	26 mm	**8033071**	**VSVA-B-P53C-Z-A1-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	26 mm	**8033070**	**VSVA-B-P53E-Z-A1-1T1L**
	SA	5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return	P53ED	26 mm	**8033074**	**VSVA-B-P53ED-Z-A1-1T1L**
	SE	5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return	P53EP	26 mm	**8033081**	**VSVA-B-P53EP-Z-A1-1T1L**
	SB	5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return	P53AD	26 mm	**8033075**	**VSVA-B-P53AD-Z-A1-1T1L**
	SD	5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return	P53BD	26 mm	**8039189**	**VSVA-B-P53BD-Z-A1-1T1L**

Datasheet – Solenoid valve width 42 mm

- Valve width
  to ISO 5599-2
  42 mm (ISO 1)

- Voltage
  24 V DC

- Flow rate
  Width 42 mm:
  VTSA up to 1300 l/min
  VTSA-F up to 1860 l/min



Safety characteristics – Valve, width 42 mm	
Conforms to	EN 13849-1/2
Shock resistance	Shock test with severity level 2, to EN 60068-2-27
Vibration resistant	Transport application test with severity level 2, to EN 60068-2-6

Safety characteristics – Valve, width 42 mm			
Valve function (with valve code)	Terminal code	Test pulses	
		Max. positive test pulse with 0 signal [µs]	Max. negative test pulse with 1 signal [µs]
5/2-way double solenoid (B52)	J	1400	900
5/2-way double solenoid with dominant signal (D52)	D	1600	1100
5/2-way single solenoid (M52A)	M	1400	900
5/2-way single solenoid (M52M)	O	1400	900
5/3-way closed (P53C)	G	1400	900
5/3-way exhausted (P53E)	E	1400	900
5/3-way pressurised (P53U)	B	1400	900
5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)	VG	–	–
2x3/2-way single solenoid, closed (T32C)	K	1600	1100
2x3/2-way single solenoid, open (T32U)	N	1600	1100
2x3/2-way single solenoid, open/closed (T32H)	H	1600	1100
2x3/2-way single solenoid, closed (T32N)	Q	1600	1100
2x3/2-way single solenoid, open (T32F)	P	1600	1100
2x3/2-way single solenoid, open/closed (T32W)	R	1600	1100
2x2/2-way single solenoid, closed (T22C)	VC	1600	1100
2x2/2-way single solenoid, closed (T22CV)	VV	1600	1100

Datasheet – Solenoid valve width 42 mm

Technical data - Valve, width 42 mm

Valve function (with valve code)	Terminal code	Flow direction			Reset method		Weight [g]
		Any	Reversible only	Not reversible	Pneumatic spring	Mechanical spring	
5/2-way double solenoid (B52)	J	■	–	–	–	–	439
5/2-way double solenoid with dominant signal (D52)	D	■	–	–	–	–	439
5/2-way single solenoid (M52A)	M	■	–	–	■	–	426
5/2-way single solenoid (M52M)	O	■	–	–	–	■	426
5/3-way closed[1] (P53C)	G	■	–	–	–	■	456
5/3-way exhausted[1] (P53E)	E	■	–	–	–	■	456
5/3-way pressurised[1] (P53U)	B	■	–	–	–	■	456
5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)	VG	■	–	–	–	–	456
2x3/2-way single solenoid, closed (T32C)	K	–	–	■	■	–	442
2x3/2-way single solenoid, open (T32U)	N	–	–	■	■	–	442
2x3/2-way single solenoid, open/closed (T32H)	H	–	–	■	■	–	442
2x3/2-way single solenoid, closed (T32N)	Q	–	■	–	■	–	442
2x3/2-way single solenoid, open (T32F)	P	–	■	–	■	–	442
2x3/2-way single solenoid, open/closed (T32W)	R	–	■	–	■	–	442
2x2/2-way single solenoid, closed (T22C)	VC	–	–	■	■	–	442
2x2/2-way single solenoid, closed (T22CV)	VV	■	–	–	■	–	442

1) If neither solenoid coil is energised, the valve is moved to its mid-position by spring force.
If both solenoid coils are energised at the same time, the valve remains in the previously assumed switching position.

Standard nominal flow rate of valve/valve terminal [l/min], width 42 mm

Valve function (with valve code)	Terminal code	Flow rate			
		Valve	Valve on valve terminal VTSA	Valve on valve terminal VTSA-F	Valve on individual subbase
5/2-way double solenoid (B52)	J	2000	1300	1860	1500
5/2-way double solenoid with dominant signal (D52)	D	2000	1300	1860	1500
5/2-way single solenoid (M52A)	M	2000	1300	1860	1500
5/2-way single solenoid (M52M)	O	2000	1300	1860	1500
5/3-way closed (P53C)	G	1900[1] 950[2]	1200[1] 800[2]	1690[1] 830[2]	1400[1] 800[2]
5/3-way exhausted (P53E)	E	1900[1] 950[2]	1200[1] 800[2]	1690[1] 830[2]	1400[1] 800[2]
5/3-way pressurised (P53U)	B	1900[1] 950[2]	1200[1] 800[2]	1690[1] 830[2]	1400[1] 800[2]
5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)	VG	1700[1] 700[2]	1400[1] 800[2]	1700[1] 700[2]	1400[1] 700[2]
2x3/2-way single solenoid, closed (T32C)	K	1600	1200	1300	1200
2x3/2-way single solenoid, open (T32U)	N	1600	1200	1300	1200
2x3/2-way single solenoid, open/closed (T32H)	H	1600	1200	1300	1200
2x3/2-way single solenoid, closed (T32N)	Q	1600	1200	1300	1200
2x3/2-way single solenoid, open (T32F)	P	1600	1200	1300	1200
2x3/2-way single solenoid, open/closed (T32W)	R	1600	1200	1300	1200
2x2/2-way single solenoid, closed (T22C)	VC	1600	1400	1500	1400
2x2/2-way single solenoid, closed (T22CV)	VV	1600	1400	1500	1400

1) Switching position
2) Mid-position

Datasheet – Solenoid valve width 42 mm

Valve switching times in [ms], width 42 mm

Valve function (with valve code)	Terminal code	On	Off	Changeover
5/2-way double solenoid (B52)	J	–	–	16
5/2-way double solenoid with dominant signal (D52)	D	–	–	19
5/2-way single solenoid (M52A)	M	27	45	–
5/2-way single solenoid (M52M)	O	22	60	–
5/3-way closed (P53C)	G	22	65	38
5/3-way exhausted (P53E)	E	22	65	38
5/3-way pressurised (P53U)	B	22	65	38
5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)	VG	22	65	38
2x3/2-way single solenoid, closed (T32C)	K	20	38	–
2x3/2-way single solenoid, open (T32U)	N	20	38	–
2x3/2-way single solenoid, open/closed (T32H)	H	20	38	–
2x3/2-way single solenoid, closed (T32N)	Q	34	28	–
2x3/2-way single solenoid, open (T32F)	P	34	28	–
2x3/2-way single solenoid, open/closed (T32W)	R	34	28	–
2x2/2-way single solenoid, closed (T22C)	VC	20	38	–
2x2/2-way single solenoid, closed (T22CV)	VV	20	38	–

Characteristic coil data, width 42 mm

Valve function (with valve code)	Terminal code	[W]
5/2-way double solenoid (B52)	J	1.6
5/2-way double solenoid with dominant signal (D52)	D	1.3
5/2-way single solenoid (M52A)	M	1.6
5/2-way single solenoid (M52M)	O	1.6
5/3-way closed (P53C)	G	1.6
5/3-way exhausted (P53E)	E	1.6
5/3-way pressurised (P53U)	B	1.6
5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)	VG	1.6
2x3/2-way single solenoid, closed (T32C)	K	1.3
2x3/2-way single solenoid, open (T32U)	N	1.3
2x3/2-way single solenoid, open/closed (T32H)	H	1.3
2x3/2-way single solenoid, closed (T32N)	Q	1.3
2x3/2-way single solenoid, open (T32F)	P	1.3
2x3/2-way single solenoid, open/closed (T32W)	R	1.3
2x2/2-way single solenoid, closed (T22C)	VC	1.3
2x2/2-way single solenoid, closed (T22CV)	VV	1.3

Max. current consumption per solenoid coil

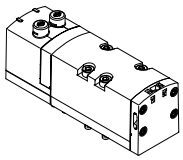
Type		T22, T32	B52, D52, M52, P53
At nominal voltage 24 V DC (valves with holding current reduction)			
Nominal pick-up current	[mA]	60	72
Nominal current following current reduction	[mA]	–	–
Time until current reduction	[ms]	30	30

Materials

Housing	Die-cast aluminium, PA
Seals	FPM, NBR, HNBR
Screws	Galvanised steel
Note on materials	RoHS-compliant

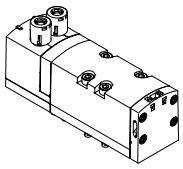
Ordering data – Solenoid valve

Ordering data – Solenoid valve VSVA, MO non-detenting/detenting (D)

	Terminal code	Valve function with MO detenting/non-detenting (D)	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	42 mm	**561340**	**VSVA-B-T22C-AZD-D1-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	42 mm	**561344**	**VSVA-B-T22CV-AZD-D1-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	42 mm	**543692**	**VSVA-B-T32U-AZD-D1-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	42 mm	**543690**	**VSVA-B-T32C-AZD-D1-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	42 mm	**543694**	**VSVA-B-T32H-AZD-D1-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	42 mm	**543693**	**VSVA-B-T32F-AZD-D1-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	42 mm	**543691**	**VSVA-B-T32N-AZD-D1-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	42 mm	**543695**	**VSVA-B-T32W-AZD-D1-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	42 mm	**543698**	**VSVA-B-M52-AZD-D1-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	42 mm	**543699**	**VSVA-B-M52-MZD-D1-1T1L**
	J	5/2-way valve, double solenoid	B52	42 mm	**543696**	**VSVA-B-B52-ZD-D1-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	42 mm	**543697**	**VSVA-B-D52-ZD-D1-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	42 mm	**543700**	**VSVA-B-P53U-ZD-D1-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	42 mm	**543702**	**VSVA-B-P53C-ZD-D1-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	42 mm	**543701**	**VSVA-B-P53E-ZD-D1-1T1L**
	VG	5/3-way solenoid valve, mid-position pressurised 1 to 2, 4 to 5 closed	P53F	42 mm	**8000464**	**VSVA-B-P53F-ZD-D1-1T1L**

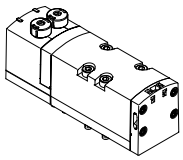
Ordering data – Solenoid valve

Ordering data – Solenoid valve VSVA with cover cap for MO non-detenting/heavy duty, detenting via accessory (TR)

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	42 mm	**8034781**	**VSVA-B-T22C-AZTR-D1-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	42 mm	**8034782**	**VSVA-B-T22CV-AZTR-D1-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	42 mm	**8034770**	**VSVA-B-T32U-AZTR-D1-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	42 mm	**8034768**	**VSVA-B-T32C-AZTR-D1-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	42 mm	**8034772**	**VSVA-B-T32H-AZTR-D1-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	42 mm	**8034771**	**VSVA-B-T32F-AZTR-D1-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	42 mm	**8034769**	**VSVA-B-T32N-AZTR-D1-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	42 mm	**8034773**	**VSVA-B-T32W-AZTR-D1-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	42 mm	**8034776**	**VSVA-B-M52-AZTR-D1-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	42 mm	**8034777**	**VSVA-B-M52-MZTR-D1-1T1L**
	J	5/2-way valve, double solenoid	B52	42 mm	**8034774**	**VSVA-B-B52-ZTR-D1-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	42 mm	**8034775**	**VSVA-B-D52-ZTR-D1-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	42 mm	**8034778**	**VSVA-B-P53U-ZTR-D1-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	42 mm	**8034780**	**VSVA-B-P53C-ZTR-D1-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	42 mm	**8034779**	**VSVA-B-P53E-ZTR-D1-1T1L**
	VG	5/3-way solenoid valve, mid-position pressurised 1 to 2, 4 to 5 closed	P53F	42 mm	**8034783**	**VSVA-B-P53F-ZTR-D1-1T1L**

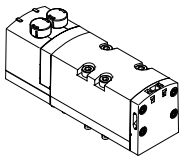
Ordering data – Solenoid valve

Ordering data – VSVA solenoid valve with cover cap for MO, non-detenting (H)

	Terminal code	Valve function with MO non-detenting (H)	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	42 mm	**8034812**	**VSVA-B-T22C-AZH-D1-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	42 mm	**8034813**	**VSVA-B-T22CV-AZH-D1-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	42 mm	**8034801**	**VSVA-B-T32U-AZH-D1-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	42 mm	**8034799**	**VSVA-B-T32C-AZH-D1-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	42 mm	**8034803**	**VSVA-B-T32H-AZH-D1-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	42 mm	**8034802**	**VSVA-B-T32F-AZH-D1-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	42 mm	**8034800**	**VSVA-B-T32N-AZH-D1-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	42 mm	**8034804**	**VSVA-B-T32W-AZH-D1-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	42 mm	**8034807**	**VSVA-B-M52-AZH-D1-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	42 mm	**8034808**	**VSVA-B-M52-MZH-D1-1T1L**
	J	5/2-way valve, double solenoid	B52	42 mm	**8034805**	**VSVA-B-B52-ZH-D1-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	42 mm	**8034806**	**VSVA-B-D52-ZH-D1-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	42 mm	**8034809**	**VSVA-B-P53U-ZH-D1-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	42 mm	**8034811**	**VSVA-B-P53C-ZH-D1-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	42 mm	**8034810**	**VSVA-B-P53E-ZH-D1-1T1L**
	VG	5/3-way solenoid valve, mid-position pressurised 1 to 2, 4 to 5 closed	P53F	42 mm	**8034814**	**VSVA-B-P53F-ZH-D1-1T1L**

Ordering data – Solenoid valve

Ordering data – VSVA solenoid valve with cover cap for MO, concealed

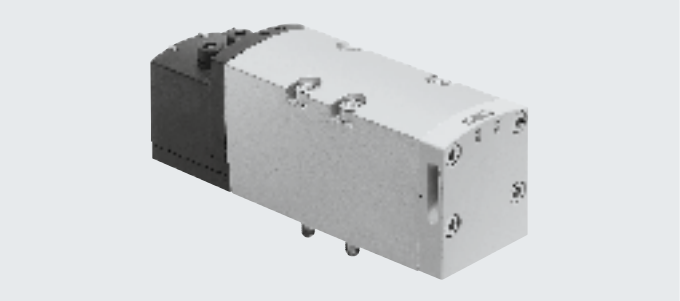
	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	42 mm	**8034843**	**VSVA-B-T22C-AZ-D1-1T1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, Vacuum operation possible at 3 and 5	T22CV	42 mm	**8034844**	**VSVA-B-T22CV-AZ-D1-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	42 mm	**8034832**	**VSVA-B-T32U-AZ-D1-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	42 mm	**8034830**	**VSVA-B-T32C-AZ-D1-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	42 mm	**8034834**	**VSVA-B-T32H-AZ-D1-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	42 mm	**8034833**	**VSVA-B-T32F-AZ-D1-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	42 mm	**8034831**	**VSVA-B-T32N-AZ-D1-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	42 mm	**8034835**	**VSVA-B-T32W-AZ-D1-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	42 mm	**8034838**	**VSVA-B-M52-AZ-D1-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	42 mm	**8034839**	**VSVA-B-M52-MZ-D1-1T1L**
	J	5/2-way valve, double solenoid	B52	42 mm	**8034836**	**VSVA-B-B52-Z-D1-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	42 mm	**8034837**	**VSVA-B-D52-Z-D1-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	42 mm	**8034840**	**VSVA-B-P53U-Z-D1-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	42 mm	**8034842**	**VSVA-B-P53C-Z-D1-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	42 mm	**8034841**	**VSVA-B-P53E-Z-D1-1T1L**
	VG	5/3-way solenoid valve, mid-position pressurised 1 to 2, 4 to 5 closed	P53F	42 mm	**8034845**	**VSVA-B-P53F-Z-D1-1T1L**

Datasheet – Solenoid valve width 52 mm

- Valve width
  to ISO 5599-2
  52 mm (ISO 2)

- Voltage
  24 V DC

- Flow rate
  Width 52 mm:
  VTSA up to 2900 l/min
  VTSA-F up to 2900 l/min



Safety characteristics for valve	
Conforms to	EN 13849-1/2
CE marking (see declaration of conformity) Direct voltage 24 V DC	To EU EMC Directive [1]
KC marking	KC EMC
Shock resistance	Shock test with severity level 2, to EN 60068-2-27
Vibration resistant	Transport application test with severity level 2, to EN 60068-2-6

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... ➔ Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Safety characteristics – Valve, width 52 mm

Valve function (with valve code)	Terminal code	Test pulses	
		Max. positive test pulse with logic 0 [µs]	Max. negative test pulse with logic 1 [µs]
5/2-way double solenoid (B52)	J	1000	3500
5/2-way double solenoid with dominant signal (D52)	D	1000	3500
5/2-way single solenoid (M52A)	M	1000	3500
5/2-way single solenoid (M52M)	O	1000	3500
5/3-way closed (P53C)	G	1000	3500
5/3-way exhausted (P53E)	E	1000	3500
5/3-way pressurised (P53U)	B	1000	3500
5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)	VG	–	–
2x3/2-way single solenoid, closed (T32C)	K	1000	3500
2x3/2-way single solenoid, open (T32U)	N	1000	3500
2x3/2-way single solenoid, open/closed (T32H)	H	1000	3500
2x3/2-way single solenoid, closed (T32N)	Q	1000	3500
2x3/2-way single solenoid, open (T32F)	P	1000	3500
2x3/2-way single solenoid, open/closed (T32W)	R	1000	3500
2x2/2-way single solenoid, closed (T22C)	VC	1000	3500

Datasheet – Solenoid valve width 52 mm

Technical data - Valve, width 52 mm

Valve function (with valve code)	Terminal code	Flow direction			Reset method		Weight [g]
		Any	Reversible only	Not reversible	Pneumatic spring	Mechanical spring	
5/2-way double solenoid (B52)	J	■	–	–	–	–	732
5/2-way double solenoid with dominant signal (D52)	D	■	–	–	–	–	732
5/2-way single solenoid (M52A)	M	■	–	–	■	–	702
5/2-way single solenoid (M52M)	O	■	–	–	–	■	702
5/3-way closed[1] (P53C)	G	■	–	–	–	■	780
5/3-way exhausted[1] (P53E)	E	■	–	–	–	■	780
5/3-way pressurised[1] (P53U)	B	■	–	–	–	■	780
5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)	VG	■	–	–	–	–	780
2x3/2-way single solenoid, closed (T32C)	K	–	–	■	■	–	740
2x3/2-way single solenoid, open (T32U)	N	–	–	■	■	–	740
2x3/2-way single solenoid, open/closed (T32H)	H	–	–	■	■	–	740
2x3/2-way single solenoid, closed (T32N)	Q	–	■	–	■	–	740
2x3/2-way single solenoid, open (T32F)	P	–	■	–	■	–	740
2x3/2-way single solenoid, open/closed (T32W)	R	–	■	–	■	–	740
2x2/2-way single solenoid, closed (T22C)	VC	–	–	■	■	–	740

1) If neither solenoid coil is energised, the valve is moved to its mid-position by spring force.
If both solenoid coils are energised at the same time, the valve remains in the previously assumed switching position.

Standard nominal flow rate of valve/valve terminal [l/min], width 52 mm

Valve function (with valve code)	Terminal code	Flow rate			
		Valve	Valve on valve terminal VTSA	Valve on valve terminal VTSA-F	Valve on individual subbase
5/2-way double solenoid (B52)	J	4000	2900	2900	3400
5/2-way double solenoid with dominant signal (D52)	D	4000	2900	2900	3400
5/2-way single solenoid (M52A)	M	4000	2900	2900	3400
5/2-way single solenoid (M52M)	O	4000	2900	2900	3400
5/3-way closed (P53C)	G	3600[1] 1700[2]	2800[1] 1700[2]	2800[1] 1700[2]	3200[1] 1700[2]
5/3-way exhausted (P53E)	E	3600[1] 1700[2]	2800[1] 1700[2]	2800[1] 1700[2]	3200[1] 1700[2]
5/3-way pressurised (P53U)	B	3600[1] 1700[2]	2800[1] 1700[2]	2800[1] 1700[2]	3200[1] 1700[2]
5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)	VG	3000[1] 900[2]	2300[1] 900[2]	2300[1] 900[2]	2600[1] 900[2]
2x3/2-way single solenoid, closed (T32C)	K	3000	2400	2400	2600
2x3/2-way single solenoid, open (T32U)	N	3000	2400	2400	2600
2x3/2-way single solenoid, open/closed (T32H)	H	3000	2400	2400	2600
2x3/2-way single solenoid, closed (T32N)	Q	3000	2400	2400	2600
2x3/2-way single solenoid, open (T32F)	P	3000	2400	2400	2600
2x3/2-way single solenoid, open/closed (T32W)	R	3000	2400	2400	2600
2x2/2-way single solenoid, closed (T22C)	VC	4000	2800	2800	3400

1) Switching position
2) Mid-position

Datasheet – Solenoid valve width 52 mm

Valve switching times in [ms], width 52 mm				
Valve function (with valve code)	Terminal code	On	Off	Changeover
5/2-way double solenoid (B52)	J	–	–	18
5/2-way double solenoid with dominant signal (D52)	D	–	–	18
5/2-way single solenoid (M52A)	M	40	45	–
5/2-way single solenoid (M52M)	O	20	60	–
5/3-way closed (P53C)	G	23	60	38
5/3-way exhausted (P53E)	E	23	60	38
5/3-way pressurised (P53U)	B	23	60	38
5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)	VG	23	60	38
2x3/2-way single solenoid, closed (T32C)	K	20	35	–
2x3/2-way single solenoid, open (T32U)	N	20	35	–
2x3/2-way single solenoid, open/closed (T32H)	H	20	35	–
2x3/2-way single solenoid, closed (T32N)	Q	20	35	–
2x3/2-way single solenoid, open (T32F)	P	20	35	–
2x3/2-way single solenoid, open/closed (T32W)	R	20	35	–
2x2/2-way single solenoid, closed (T22C)	VC	14	35	–

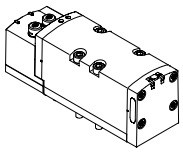
Characteristic coil data, width 52 mm		
Valve function (with valve code)	Terminal code	[W]
5/2-way double solenoid (B52)	J	4.6
5/2-way double solenoid with dominant signal (D52)	D	4.6
5/2-way single solenoid (M52A)	M	4.6
5/2-way single solenoid (M52M)	O	4.6
5/3-way closed (P53C)	G	4.6
5/3-way exhausted (P53E)	E	4.6
5/3-way pressurised (P53U)	B	4.6
5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)	VG	4.6
2x3/2-way single solenoid, closed (T32C)	K	4.6
2x3/2-way single solenoid, open (T32U)	N	4.6
2x3/2-way single solenoid, open/closed (T32H)	H	4.6
2x3/2-way single solenoid, closed (T32N)	Q	4.6
2x3/2-way single solenoid, open (T32F)	P	4.6
2x3/2-way single solenoid, open/closed (T32W)	R	4.6
2x2/2-way single solenoid, closed (T22C)	VC	4.6

Maximum current consumption per solenoid coil, width 52 mm		
At nominal voltage 24 V DC (valves with holding current reduction)		
Nominal pick-up current	[mA]	165
Nominal current following current reduction	[mA]	35
Time until current reduction	[ms]	30

Materials	
Housing	Die-cast aluminium, PA
Seals	FPM, NBR, HNBR
Screws	Galvanised steel
Note on materials	RoHS-compliant

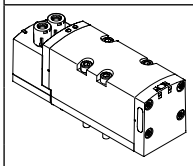
Ordering data – Solenoid valve

Ordering data – Solenoid valve VSVA, MO non-detenting/detenting (D)

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	52 mm	**560831**	**VSVA-B-T22C-AZD-D2-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	52 mm	**560827**	**VSVA-B-T32U-AZD-D2-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	52 mm	**560825**	**VSVA-B-T32C-AZD-D2-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	52 mm	**560829**	**VSVA-B-T32H-AZD-D2-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	52 mm	**560828**	**VSVA-B-T32F-AZD-D2-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	52 mm	**560826**	**VSVA-B-T32N-AZD-D2-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	52 mm	**560830**	**VSVA-B-T32W-AZD-D2-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	52 mm	**560820**	**VSVA-B-M52-AZD-D2-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	52 mm	**560821**	**VSVA-B-M52-MZD-D2-1T1L**
	J	5/2-way valve, double solenoid	B52	52 mm	**560818**	**VSVA-B-B52-ZD-D2-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	52 mm	**560819**	**VSVA-B-D52-ZD-D2-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	52 mm	**560822**	**VSVA-B-P53U-ZD-D2-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	52 mm	**560824**	**VSVA-B-P53C-ZD-D2-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	52 mm	**560823**	**VSVA-B-P53E-ZD-D2-1T1L**
	VG	5/3-way solenoid valve, mid-position pressurised 1 to 2, 4 to 5 closed	P53F	52 mm	**8000465**	**VSVA-B-P53F-ZD-D2-1T1L**

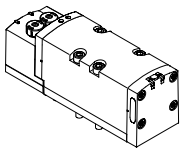
Ordering data – Solenoid valve

Ordering data – Solenoid valve VSVA with cover cap for MO non-detenting/heavy duty, detenting via accessory (TR)

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	52 mm	**8034967**	**VSVA-B-T22C-AZTR-D2-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	52 mm	**8034963**	**VSVA-B-T32U-AZTR-D2-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	52 mm	**8034961**	**VSVA-B-T32C-AZTR-D2-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	52 mm	**8034965**	**VSVA-B-T32H-AZTR-D2-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	52 mm	**8034964**	**VSVA-B-T32F-AZTR-D2-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	52 mm	**8034962**	**VSVA-B-T32N-AZTR-D2-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	52 mm	**8034966**	**VSVA-B-T32W-AZTR-D2-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	52 mm	**8034956**	**VSVA-B-M52-AZTR-D2-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	52 mm	**8034957**	**VSVA-B-M52-MZTR-D2-1T1L**
	J	5/2-way valve, double solenoid	B52	52 mm	**8034954**	**VSVA-B-B52-ZTR-D2-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	52 mm	**8034955**	**VSVA-B-D52-ZTR-D2-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	52 mm	**8034958**	**VSVA-B-P53U-ZTR-D2-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	52 mm	**8034960**	**VSVA-B-P53C-ZTR-D2-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	52 mm	**8034959**	**VSVA-B-P53E-ZTR-D2-1T1L**
	VG	5/3-way solenoid valve, mid-position pressurised 1 to 2, 4 to 5 closed	P53F	52 mm	**8034968**	**VSVA-B-P53F-ZTR-D2-1T1L**

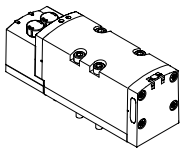
Ordering data – Solenoid valve

Ordering data – VSVA solenoid valve with cover cap for MO, non-detenting (H)

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	52 mm	**8034982**	**VSVA-B-T22C-AZH-D2-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	52 mm	**8034978**	**VSVA-B-T32U-AZH-D2-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	52 mm	**8034976**	**VSVA-B-T32C-AZH-D2-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	52 mm	**8034980**	**VSVA-B-T32H-AZH-D2-1T1LL**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	52 mm	**8034979**	**VSVA-B-T32F-AZH-D2-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	52 mm	**8034977**	**VSVA-B-T32N-AZH-D2-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	52 mm	**8034981**	**VSVA-B-T32W-AZH-D2-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	52 mm	**8034971**	**VSVA-B-M52-AZH-D2-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	52 mm	**8034972**	**VSVA-B-M52-MZH-D2-1T1L**
	J	5/2-way valve, double solenoid	B52	52 mm	**8034969**	**VSVA-B-B52-ZH-D2-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	52 mm	**8034970**	**VSVA-B-D52-ZH-D2-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	52 mm	**8034973**	**VSVA-B-P53U-ZH-D2-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	52 mm	**8034975**	**VSVA-B-P53C-ZH-D2-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	52 mm	**8034974**	**VSVA-B-P53E-ZH-D2-1T1L**
	VG	5/3-way solenoid valve, mid-position pressurised 1 to 2, 4 to 5 closed	P53F	52 mm	**8034983**	**VSVA-B-P53F-ZH-D2-1T1L**

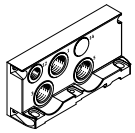
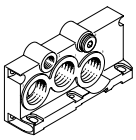
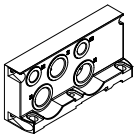
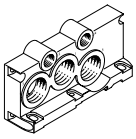
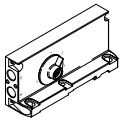
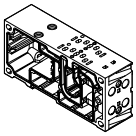
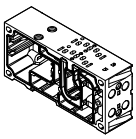
Ordering data – Solenoid valve

Ordering data – VSVA solenoid valve with cover cap for MO, concealed

	Terminal code	Valve function	Valve code	Width	Part no.	Type
Solenoid valves						
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	T22C	52 mm	**8034997**	**VSVA-B-T22C-AZ-D2-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	T32U	52 mm	**8034993**	**VSVA-B-T32U-AZ-D2-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	T32C	52 mm	**8034991**	**VSVA-B-T32C-AZ-D2-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	T32H	52 mm	**8034995**	**VSVA-B-T32H-AZ-D2-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	T32F	52 mm	**8034994**	**VSVA-B-T32F-AZ-D2-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	T32N	52 mm	**8034992**	**VSVA-B-T32N-AZ-D2-1T1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	T32W	52 mm	**8034996**	**VSVA-B-T32W-AZ-D2-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	M52-A	52 mm	**8034986**	**VSVA-B-M52-AZ-D2-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	M52-M	52 mm	**8034987**	**VSVA-B-M52-MZ-D2-1T1L**
	J	5/2-way valve, double solenoid	B52	52 mm	**8034984**	**VSVA-B-B52-Z-D2-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	D52	52 mm	**8034985**	**VSVA-B-D52-Z-D2-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	P53U	52 mm	**8034988**	**VSVA-B-P53U-Z-D2-1T1L**
	G	5/3-way solenoid valve, mid-position closed	P53C	52 mm	**8034990**	**VSVA-B-P53C-Z-D2-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	P53E	52 mm	**8034989**	**VSVA-B-P53E-Z-D2-1T1L**
	VG	5/3-way solenoid valve, mid-position pressurised 1 to 2, 4 to 5 closed	P53F	52 mm	**8034998**	**VSVA-B-P53F-Z-D2-1T1L**

Accessories – Pneumatic components

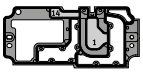
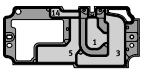
Ordering data

	Code	Description		Part no.	Type
Right end plate					
	V	With working air/exhaust air, internal pilot air supply, 1/2 NPT (no port 14)		**539235**	**VABE-S6-1R-N12**
	V1	With working air/exhaust air, internal pilot air supply, 3/4 NPT (port 14 is sealed with a blanking plug)		**560838**	**VABE-S6-2R-N34**
	X	With working air/exhaust air, external pilot air supply, 1/2 NPT		**539237**	**VABE-S6-1RZ-N12**
	X1	With working air/exhaust air, external pilot air supply, 3/4 NPT		**560840**	**VABE-S6-2RZ-N34**
End plate with pilot air selector					
	Y[1]	Internal pilot air supply		**539239**	**VABE-S6-1RZ-N-B1**
	U[1]	Internal pilot air supply, ducted pilot exhaust air			
	Z[1]	External pilot air supply			
	W[1]	External pilot air supply, ducted pilot exhaust air			
Manifold sub-base, port pattern to ISO 15407-2 and ISO 5599-2					
	A	2 valve positions, 4 addresses, for double solenoid valves	18 mm	**539223**	**VABV-S4-2S-N18-2T2**
	B	2 valve positions, 4 addresses, for double solenoid valves	26 mm	**539219**	**VABV-S4-1S-N14-2T2**
	C	1 valve position, 2 addresses, for double solenoid valves	42 mm	**542460**	**VABV-S2-1S-N38-T2**
	D	1 valve position, 2 addresses, for double solenoid valves	52 mm	**560843**	**VABV-S2-2S-N12-T2**
	E	2 valve positions, 2 addresses, for single solenoid valves	18 mm	**539225**	**VABV-S4-2S-N18-2T1**
	F	2 valve positions, 2 addresses, for single solenoid valves	26 mm	**539221**	**VABV-S4-1S-N14-2T1**
	G	1 valve position, 1 address, for single solenoid valves	42 mm	**542461**	**VABV-S2-1S-N38-T1**
	H	1 valve position, 1 address, for single solenoid valves	52 mm	**560844**	**VABV-S2-2S-N12-T1**
Manifold sub-base VTSA-F, optimised for flow rate					
	A	2 valve positions, 4 addresses, for double solenoid valves	18 mm	**546217**	**VABV-S4-2HS-N18-2T2**
	B	2 valve positions, 4 addresses, for double solenoid valves	26 mm	**546213**	**VABV-S4-1HS-N14-2T2**
	C	1 valve position, 2 addresses, for double solenoid valves	42 mm	**546221**	**VABV-S2-1HS-N38-T2**
	D	1 valve position, 2 addresses, for double solenoid valves	52 mm	**560843**	**VABV-S2-2S-N12-T2**
	E	2 valve positions, 2 addresses, for single solenoid valves	18 mm	**546216**	**VABV-S4-2HS-N18-2T1**
	F	2 valve positions, 2 addresses, for single solenoid valves	26 mm	**546212**	**VABV-S4-1HS-N14-2T1**
	G	1 valve position, 1 address, for single solenoid valves	42 mm	**546220**	**VABV-S2-1HS-N38-T1**
	H	1 valve position, 1 address, for single solenoid valves	52 mm	**560844**	**VABV-S2-2S-N12-T1**

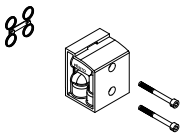
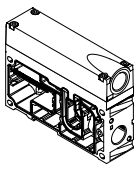
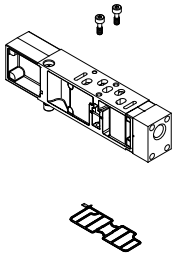
1) Code letter within the order code for a valve terminal configuration

Accessories – Pneumatic components

Ordering data – Duct separation/seal

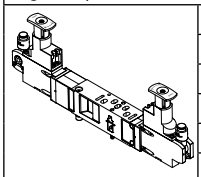
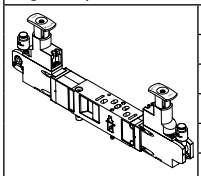
	Code	Description	Weight [g]	Part no.	Type
	S	Duct separation 1, 3, 5	57	**539228**	**VABD-S6-1-P3-C**
	T	Duct separation 1	43	**539227**	**VABD-S6-1-P1-C**
	R	Duct separation 3, 5	54	**539229**	**VABD-S6-1-P2-C**
	L	Seal between sub-bases, duct 1, 3, 5 open, port 14 blocked (colour coding: white)	40	**573191**	**VABD-S6-1-P7-C**
	TL	Seal between sub-bases, duct 1 blocked, port 14 blocked (colour coding: red) Note: additional pilot air supply required	43	**8060483**	**VABD-S6-1-P8-C**
	K	Seal between sub-bases, duct 1, 3, 5 blocked, port 14 blocked (colour coding: green)	57	**8034612**	**VABD-S6-1-P6-C**

Ordering data

	Code	Description	Width	Part no.	Type
90°-connection plate					
	P	Outlet at bottom, connecting thread 1/8 NPT	18 mm	539720	**VABF-S4-2-A2G2-N18**
		Outlet at bottom, connecting thread 1/4 NPT	26 mm	539722	**VABF-S4-1-A2G2-N14**
		Outlet at bottom, connecting thread 3/8 NPT	42 mm	546098	**VABF-S2-1-A1G2-N38**
		Outlet at bottom, connecting thread 1/2 NPT	52 mm	555703	**VABF-S2-2-A1G2-N12**
Supply plate					
	L	With exhaust plate, 3/5 common, 1/2 NPT		539233	**VABF-S6-1-P1A7-N12**
	K	With exhaust air cover, 3/5 separate, 1/2 NPT		539232	**VABF-S6-1-P1A6-N12**
Vertical supply plate (operating pressure 0.9...10 bar)					
	ZU	Connecting thread 1/8 NPT Individual compressed air supply, duct 1	18 mm	540174	**VABF-S4-2-P1A3-N18**
		Connecting thread 1/4 NPT Individual compressed air supply, duct 1	26 mm	540172	**VABF-S4-1-P1A3-N14**
		Connecting thread 3/8 NPT Individual compressed air supply, duct 1	42 mm	546094	**VABF-S2-1-P1A3-N38**
		Connecting thread 1/2 NPT Individual compressed air supply, duct 1	52 mm	555787	**VABF-S2-2-P1A3-N12**
	ZV	Connecting thread 1/8 NPT Individual compressed air supply, ducts 1 and 14	18 mm	8000694	**VABF-S4-2-P1A14-N18**
		Connecting thread 1/4 NPT Individual compressed air supply, ducts 1 and 14	26 mm	8000690	**VABF-S4-2-P1A14-N14**
		Connecting thread 3/8 NPT Individual compressed air supply, ducts 1 and 14	42 mm	8000540	**VABF-S2-1-P1A14-N38**
		Connecting thread 1/2 NPT Individual compressed air supply, ducts 1 and 14	52 mm	8000550	**VABF-S2-2-P1A14-N12**

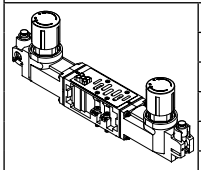
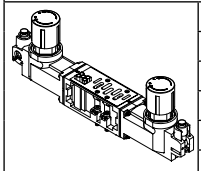
Accessories – Pneumatic components

Ordering data – Vertical stacking

	Code	Pressure regulation for port	Control range [bar]	[MPa]	Width	Part no.	Type
Regulator plate, width 18 mm							
	ZA	1	0.5 ... 8.5	0.05 ... 0.85	18 mm	**540153**	**VABF-S4-2-R1C2-C-10**
	ZF	1	0.5 ... 6	0.05 ... 0.6	18 mm	**540151**	**VABF-S4-2-R1C2-C-6**
	ZC	2	2 ... 8.5	0.2 ... 0.85	18 mm	**540161**	**VABF-S4-2-R2C2-C-10**
	ZH	2	2 ... 6	0.2 ... 0.6	18 mm	**540159**	**VABF-S4-2-R2C2-C-6**
	ZB	4	2 ... 8.5	0.2 ... 0.85	18 mm	**540157**	**VABF-S4-2-R3C2-C-10**
	ZG	4	2 ... 6	0.2 ...0.6	18 mm	**540155**	**VABF-S4-2-R3C2-C-6**
	ZD	2 and 4	2 ... 8.5	0.2 ... 0.85	18 mm	**540165**	**VABF-S4-2-R4C2-C-10**
	ZI	2 and 4	2 ... 6	0.2 ... 0.6	18 mm	**540163**	**VABF-S4-2-R4C2-C-6**
	ZE	2 and 4, reversible	0.5 ... 8.5	0.05 ... 0.85	18 mm	**540169**	**VABF-S4-2-R5C2-C-10**
	ZJ	2 and 4, reversible	0.5 ... 6	0.05 ... 0.6	18 mm	**540167**	**VABF-S4-2-R5C2-C-6**
	ZL	2, reversible	0.5 ... 8.5	0.05 ... 0.85	18 mm	**546252**	**VABF-S4-2-R6C2-C-10**
	ZN	2, reversible	0.5 ... 6	0.05 ... 0.6	18 mm	**546248**	**VABF-S4-2-R6C2-C-6**
	ZK	4, reversible	0.5 ... 8.5	0.05 ... 0.85	18 mm	**546254**	**VABF-S4-2-R7C2-C-10**
	ZM	4, reversible	0.5 ... 6	0.05 ... 0.6	18 mm	**546250**	**VABF-S4-2-R7C2-C-6**
Regulator plate, width 26 mm							
	ZA	1	0.5 ... 8.5	0.05 ... 0.85	26 mm	**540154**	**VABF-S4-1-R1C2-C-10**
	ZF	1	0.5 ... 6	0.05 ... 0.6	26 mm	**540152**	**VABF-S4-1-R1C2-C-6**
	ZC	2	2 ... 8.5	0.2 ... 0.85	26 mm	**540162**	**VABF-S4-1-R2C2-C-10**
	ZH	2	2 ... 6	0.2 ...0.6	26 mm	**540160**	**VABF-S4-1-R2C2-C-6**
	ZB	4	2 ... 8.5	0.2 ... 0.85	26 mm	**540158**	**VABF-S4-1-R3C2-C-10**
	ZG	4	2 ... 6	0.2 ...0.6	26 mm	**540156**	**VABF-S4-1-R3C2-C-6**
	ZD	2 and 4	2 ... 8.5	0.2 ... 0.85	26 mm	**540166**	**VABF-S4-1-R4C2-C-10**
	ZI	2 and 4	2 ... 6	0.2 ...0.6	26 mm	**540164**	**VABF-S4-1-R4C2-C-6**
	ZE	2 and 4, reversible	0.5 ... 8.5	0.05 ... 0.85	26 mm	**540170**	**VABF-S4-1-R5C2-C-10**
	ZJ	2 and 4, reversible	0.5 ... 6	0.05 ... 0.6	26 mm	**540168**	**VABF-S4-1-R5C2-C-6**
	ZL	2, reversible	0.5 ... 8.5	0.05 ... 0.85	26 mm	**546251**	**VABF-S4-1-R6C2-C-10**
	ZN	2, reversible	0.5 ... 6	0.05 ... 0.6	26 mm	**546247**	**VABF-S4-1-R6C2-C-6**
	ZK	4, reversible	0.5 ... 8.5	0.05 ... 0.85	26 mm	**546253**	**VABF-S4-1-R7C2-C-10**
	ZM	4, reversible	0.5 ... 6	0.05 ... 0.6	26 mm	**546249**	**VABF-S4-1-R7C2-C-6**

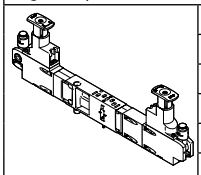
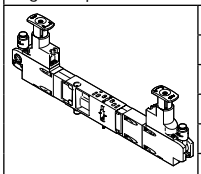
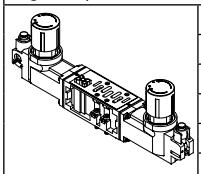
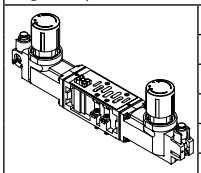
Accessories – Pneumatic components

Ordering data – Vertical stacking

	Code	Pressure regulation for port	Control range [bar]	[MPa]	Width	Part no.	Type
Regulator plate, width 42 mm							
	ZA	1	0.5 ... 8.5	0.05 ... 0.85	42 mm	**546084**	**VABF-S2-1-R1C2-C-10**
	ZF	1	0.5 ... 6	0.05 ... 0.6	42 mm	**546083**	**VABF-S2-1-R1C2-C-6**
	ZC	2	1.0 ... 10	0.1 ... 1	42 mm	**546088**	**VABF-S2-1-R2C2-C-10**
	ZH	2	1.0 ... 6	0.1 ... 0.6	42 mm	**546087**	**VABF-S2-1-R2C2-C-6**
	ZB	4	1.0 ... 10	0.1 ... 1	42 mm	**546086**	**VABF-S2-1-R3C2-C-10**
	ZG	4	0.5 ... 6	0.05 ... 0.6	42 mm	**546085**	**VABF-S2-1-R3C2-C-6**
	ZD	2 and 4	1.0 ... 10	0.1 ... 1	42 mm	**546090**	**VABF-S2-1-R4C2-C-10**
	ZI	2 and 4	1.0 ... 6	0.1 ... 0.6	42 mm	**546089**	**VABF-S2-1-R4C2-C-6**
	ZE	2 and 4, reversible	0.5 ... 10	0.05 ... 1	42 mm	**546092**	**VABF-S2-1-R5C2-C-10**
	ZJ	2 and 4, reversible	0.5 ... 6	0.05 ... 0.6	42 mm	**546091**	**VABF-S2-1-R5C2-C-6**
	ZL	2, reversible	0.5 ... 10	0.05 ... 1	42 mm	**546832**	**VABF-S2-1-R6C2-C-10**
	ZN	2, reversible	0.5 ... 6	0.05 ... 0.6	42 mm	**546831**	**VABF-S2-1-R6C2-C-6**
	ZK	4, reversible	0.5 ... 10	0.05 ... 1	42 mm	**546834**	**VABF-S2-1-R7C2-C-10**
	ZM	4, reversible	0.5 ... 6	0.05 ... 0.6	42 mm	**546833**	**VABF-S2-1-R7C2-C-6**
Regulator plate, width 52 mm							
	ZA	1	0.5 ... 10	0.05 ... 1	52 mm	**555772**	**VABF-S2-2-R1C2-C-10**
	ZF	1	0.5 ... 6	0.05 ... 0.6	52 mm	**555771**	**VABF-S2-2-R1C2-C-6**
	ZC	2	1.0 ... 10	0.1 ... 1	52 mm	**555774**	**VABF-S2-2-R2C2-C-10**
	ZH	2	1.0 ... 6	0.1 ... 0.6	52 mm	**555773**	**VABF-S2-2-R2C2-C-6**
	ZB	4	1.0 ... 10	0.1 ... 1	52 mm	**555776**	**VABF-S2-2-R3C2-C-10**
	ZG	4	1.0 ... 6	0.1 ... 0.6	52 mm	**555775**	**VABF-S2-2-R3C2-C-6**
	ZD	2 and 4	1.0 ... 10	0.1 ... 1	52 mm	**555778**	**VABF-S2-2-R4C2-C-10**
	ZI	2 and 4	1.0 ... 6	0.1 ... 0.6	52 mm	**555777**	**VABF-S2-2-R4C2-C-6**
	ZE	2 and 4, reversible	0.5 ... 10	0.05 ... 1	52 mm	**555780**	**VABF-S2-2-R5C2-C-10**
	ZJ	2 and 4, reversible	0.5 ... 6	0.05 ... 0.6	52 mm	**555779**	**VABF-S2-2-R5C2-C-6**
	ZL	2, reversible	0.5 ... 10	0.05 ... 1	52 mm	**555782**	**VABF-S2-2-R6C2-C-10**
	ZN	2, reversible	0.5 ... 6	0.05 ... 0.6	52 mm	**555781**	**VABF-S2-2-R6C2-C-6**
	ZK	4, reversible	0.5 ... 10	0.05 ... 1	52 mm	**555784**	**VABF-S2-2-R7C2-C-10**
	ZM	4, reversible	0.5 ... 6	0.05 ... 0.6	52 mm	**555783**	**VABF-S2-2-R7C2-C-6**

Accessories – Pneumatic components

Ordering data – Vertical stacking

	Code	Pressure regulation for port	Control range [bar]	[MPa]	Width	Part no.	Type
Regulator plate for valves with symmetrical design, width 18 mm							
	ZAY	1	0.5 ... 8.5	0.05 ... 0.85	18 mm	**560756**	**VABF-S4-2-R1C2-C-10E**
	ZFY	1	0.5 ... 6	0.05 ... 0.6	18 mm	**560758**	**VABF-S4-2-R1C2-C-6E**
	ZCY	2	2 ... 8.5	0.2 ... 0.85	18 mm	**560763**	**VABF-S4-2-R2C2-C-10E**
	ZHY	2	2 ... 6	0.2 ... 0.6	18 mm	**560765**	**VABF-S4-2-R2C2-C-6E**
	ZDY	2 and 4	2 ... 8.5	0.2 ... 0.85	18 mm	**560767**	**VABF-S4-2-R4C2-C-10E**
	ZIY	2 and 4	2 ... 6	0.2 ... 0.6	18 mm	**560769**	**VABF-S4-2-R4C2-C-6E**
	ZEY	2 and 4, reversible	0.5 ... 8.5	0.05 ... 0.85	18 mm	**560771**	**VABF-S4-2-R5C2-C-10E**
	ZJY	2 and 4, reversible	0.5 ... 6	0.05 ... 0.6	18 mm	**560773**	**VABF-S4-2-R5C2-C-6E**
	ZLY	2, reversible	0.5 ... 8.5	0.05 ... 0.85	18 mm	**560775**	**VABF-S4-2-R6C2-C-10E**
	ZNY	2, reversible	0.5 ... 6	0.05 ... 0.6	18 mm	**560777**	**VABF-S4-2-R6C2-C-6E**
Regulator plate for valves with symmetrical design, width 26 mm							
	ZAY	1	0.5 ... 8.5	0.05 ... 0.85	26 mm	**560757**	**VABF-S4-1-R1C2-C-10E**
	ZFY	1	0.5 ... 6	0.05 ... 0.6	26 mm	**549876**	**VABF-S4-1-R1C2-C-6E**
	ZCY	2	2 ... 8.5	0.2 ... 0.85	26 mm	**560764**	**VABF-S4-1-R2C2-C-10E**
	ZHY	2	2 ... 6	0.2 ... 0.6	26 mm	**560766**	**VABF-S4-1-R2C2-C-6E**
	ZDY	2 and 4	2 ... 8.5	0.2 ... 0.85	26 mm	**560768**	**VABF-S4-1-R4C2-C-10E**
	ZIY	2 and 4	2 ... 6	0.2 ... 0.6	26 mm	**560770**	**VABF-S4-1-R4C2-C-6E**
	ZEY	2 and 4, reversible	0.5 ... 8.5	0.05 ... 0.85	26 mm	**560772**	**VABF-S4-1-R5C2-C-10E**
	ZJY	2 and 4, reversible	0.5 ... 6	0.05 ... 0.6	26 mm	**560774**	**VABF-S4-1-R5C2-C-6E**
	ZLY	2, reversible	0.5 ... 8.5	0.05 ... 0.85	26 mm	**560776**	**VABF-S4-1-R6C2-C-10E**
	ZNY	2, reversible	0.5 ... 6	0.05 ... 0.6	26 mm	**560778**	**VABF-S4-1-R6C2-C-6E**
Regulator plate for valves with symmetrical design, width 42 mm [1]							
	ZAY	1	0.5 ... 10	0.05 ... 1	42 mm	–	**VABF-S2-1-R1C2-C-10E**
	ZFY	1	0.5 ... 6	0.05 ... 0.6	42 mm	–	**VABF-S2-1-R1C2-C-6E**
	ZCY	2	0.5 ... 10	0.05 ... 1	42 mm	–	**VABF-S2-1-R2C2-C-10E**
	ZHY	2	0.5 ... 6	0.05 ... 0.6	42 mm	–	**VABF-S2-1-R2C2-C-6E**
	ZBY	4	0.5 ... 10	0.05 ... 1	42 mm	–	**VABF-S2-1-R3C2-C-10E**
	ZGY	4	0.5 ... 6	0.05 ... 0.6	42 mm	–	**VABF-S2-1-R3C2-C-6E**
	ZDY	2 and 4	0.5 ... 10	0.05 ... 1	42 mm	–	**VABF-S2-1-R4C2-C-10E**
	ZIY	2 and 4	0.5 ... 6	0.05 ... 0.6	42 mm	–	**VABF-S2-1-R4C2-C-6E**
	ZEY	2 and 4, reversible	0.5 ... 10	0.05 ... 1	42 mm	–	**VABF-S2-1-R5C2-C-10E**
	ZJY	2 and 4, reversible	0.5 ... 6	0.05 ... 0.6	42 mm	–	**VABF-S2-1-R5C2-C-6E**
	ZLY	2, reversible	0.5 ... 10	0.05 ... 1	42 mm	–	**VABF-S2-1-R6C2-C-10E**
	ZNY	2, reversible	0.5 ... 6	0.05 ... 0.6	42 mm	–	**VABF-S2-1-R6C2-C-6E**
	ZKY	4, reversible	0.5 ... 10	0.05 ... 1	42 mm	–	**VABF-S2-1-R7C2-C-10E**
	ZMY	4, reversible	0.5 ... 6	0.05 ... 0.6	42 mm	–	**VABF-S2-1-R7C2-C-6E**
Regulator plate for valves with symmetrical design, width 52 mm [1]							
	ZAY	1	0.5 ... 10	0.05 ... 1	52 mm	–	**VABF-S2-2-R1C2-C-10E**
	ZFY	1	0.5 ... 6	0.05 ... 0.6	52 mm	–	**VABF-S2-2-R1C2-C-6E**
	ZCY	2	0.5 ... 10	0.05 ... 1	52 mm	–	**VABF-S2-2-R2C2-C-10E**
	ZHY	2	0.5 ... 6	0.05 ... 0.6	52 mm	–	**VABF-S2-2-R2C2-C-6E**
	ZBY	4	0.5 ... 10	0.05 ... 1	52 mm	–	**VABF-S2-2-R3C2-C-10E**
	ZGY	4	0.5 ... 6	0.05 ... 0.6	52 mm	–	**VABF-S2-2-R3C2-C-6E**
	ZDY	2 and 4	0.5 ... 10	0.05 ... 1	52 mm	–	**VABF-S2-2-R4C2-C-10E**
	ZIY	2 and 4	0.5 ... 6	0.05 ... 0.6	52 mm	–	**VABF-S2-2-R4C2-C-6E**
	ZEY	2 and 4, reversible	0.5 ... 10	0.05 ... 1	52 mm	–	**VABF-S2-2-R5C2-C-10E**
	ZJY	2 and 4, reversible	0.5 ... 6	0.05 ... 0.6	52 mm	–	**VABF-S2-2-R5C2-C-6E**
	ZLY	2, reversible	0.5 ... 10	0.05 ... 1	52 mm	–	**VABF-S2-2-R6C2-C-10E**
	ZNY	2, reversible	0.5 ... 6	0.05 ... 0.6	52 mm	–	**VABF-S2-2-R6C2-C-6E**
	ZKY	4, reversible	0.5 ... 10	0.05 ... 1	52 mm	–	**VABF-S2-2-R7C2-C-10E**
	ZMY	4, reversible	0.5 ... 6	0.05 ... 0.6	52 mm	–	**VABF-S2-2-R7C2-C-6E**

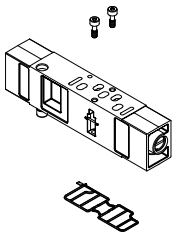
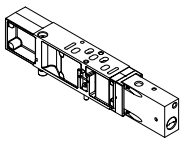
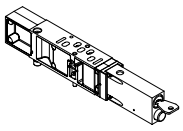
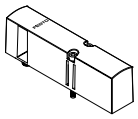
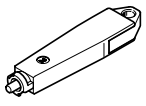
1) These functions are only available via the pressure regulator configurator VABF-S2 for width 42 mm and 52 mm only (ISO 5599-2, ISO 1 and ISO 2)

Accessories – Pneumatic components

Ordering data

	Code	Description		Width	Part no.	Type
Pressure gauge						
	T	With cartridge connection for regulator, 10 bar,	scale in bar/psi, display range 0...16 bar/0...240 psi, for regulator plate code ZA, ZB, ZC, ZD, ZE, ZK, ZL	18 mm	**543487**	**PAGN-26-16-P10**
				26 mm		
				42 mm	**548010**	**PAGN-40-16-P10**
				52 mm		
	U	With cartridge connection for regulator, 6 bar,	scale in bar/psi, display range 0...10 bar/0...145 psi, for regulator plate code ZF, ZG, ZH, ZI, ZJ, ZM, ZN	18 mm	**543488**	**PAGN-26-10-P10**
				26 mm		
				42 mm	**548009**	**PAGN-40-10-P10**
				52 mm		
	WT	With cartridge connection for regulator, 10 bar	Scale in MPa, display range 0...16 bar/0...1.6 MPa, for regulator plate code ZA, ZB, ZC, ZD, ZE, ZK, ZL	18 mm	**563735**	**PAGN-26-1.6M-P10**
				26 mm		
				42 mm	**563737**	**PAGN-40-1.6M-P10**
				52 mm		
	WU	With cartridge connection for regulator, 6 bar	Scale in MPa, display range 0...16 bar/0...1 MPa for regulator plate code ZF, ZG, ZH, ZI, ZJ, ZM, ZN	18 mm	**563736**	**PAGN-26-1M-P10**
				26 mm		
				42 mm	**563738**	**PAGN-40-1M-P10**
				52 mm		
	VT	With cartridge connection for regulator, 10 bar	Scale in psi/bar, display range 0...16 bar/0...232 psi for regulator plate code ZA, ZB, ZC, ZD, ZE, ZK, ZL	18 mm	**563731**	**PAGN-26-232P-P10**
				26 mm		
				42 mm	**563733**	**PAGN-40-232P-P10**
				52 mm		
	PS	With cartridge connection for regulator, 6 bar	Scale in psi/bar, display range 0...10 bar/0...145 psi for regulator plate code ZF, ZG, ZH, ZI, ZJ, ZM, ZN	18 mm	**563732**	**PAGN-26-145P-P10**
				26 mm		
				42 mm	**563734**	**PAGN-40-145P-P10**
				52 mm		

Accessories – Pneumatic components

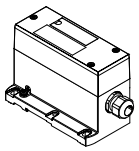
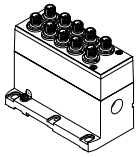
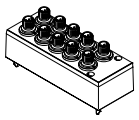
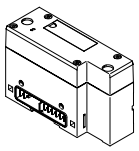
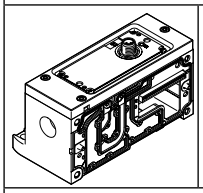
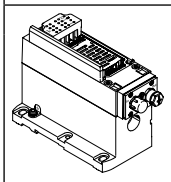
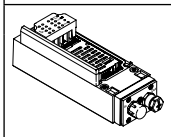
Ordering data	Code	Description		Part no.	Type
Cartridge for regulator plate					
	–	For tubing O.D. 4 mm	Pack of 1	**172972**	**QSP10-4**
	–	Adapter for pressure gauge (allows products with threaded connection G1/8 to be attached to the cartridge connection)	Pack of 6	**565811**	**QSP10-G1/8**
Throttle plate					
	X	controls the flow of exhaust air downstream of the valve to ducts 3 and 5	18 mm	**540176**	**VABF-S4-2-F1B1-C**
			26 mm	**540175**	**VABF-S4-1-F1B1-C**
			42 mm	**546095**	**VABF-S2-1-F1B1-C**
			52 mm	**555789**	**VABF-S2-2-F1B1-C**
Vertical pressure shut-off plate					
	ZT	3/2-way valve for shutting off the operating pressure at the valve position Pressure separation can be shut off on the valve assembly	18 mm	**542884**	**VABF-S4-2-L1D1-C**
			26 mm	**542885**	**VABF-S4-1-L1D1-C**
			42 mm	**546096**	**VABF-S2-1-L1D1-C**
			52 mm	**555791**	**VABF-S2-2-L1D1-C**
	ZS	3/2-way valve for shutting off the operating pressure at the valve position Pressure separation can be shut off on the valve assembly using a key	18 mm	**8001178**	**VABF-S4-2-L1D2-C**
			26 mm	**8001179**	**VABF-S4-1-L1D2-C**
Covering					
	L	Blanking plate for vacant position	18 mm	**539213**	**VABB-S4-2-WT**
			26 mm	**539212**	**VABB-S4-1-WT**
			42 mm	**543186**	**VABB-S2-1-WT**
			52 mm	**560845**	**VABB-S2-2-WT**
	N	Cover cap for manual override, non-detenting	Pack of 10	**541010**	**VAMC-S6-CH**
	V	Cover cap for manual override, concealed	Pack of 10	**541011**	**VAMC-S6-CS**
	A	Cover cap, heavy duty, for manual override, non-detenting heavy duty, detenting via accessory (key) (The cover cap is provided for one-off mounting only)	Pack of 10	**4105147**	**VAMC-B-S6-CTR**
	–	Sealing cap for electrical links (with individual connection), size 18 mm and 26 mm	Pack of 10	**547713**	**VABD-S4-E-C**
	–	Seal (with individual connection), Width 42 mm and 52 mm	Pack of 2	**571343**	**VABD-S2-1-S-C**
Accessories for manual override, heavy duty					
	–	Coded key (accessory) for actuating the cover cap, heavy duty, for detenting position (VAMC-B-S6-CTR)	Pack of 1	**1662543**	**AHB-MEB-B**

Note

There is a wide range of preconfigured solenoid valves with cover cap for manual override and correct valve type code available to order in the sections on solenoid valves.

Accessories – Electrical components

Ordering data

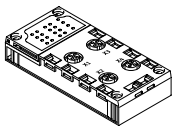
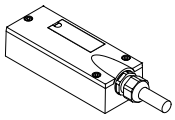
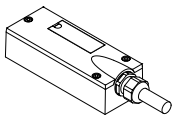
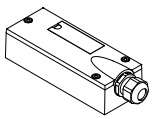
	Code	Description	Part no.	Type
Multi-pin node for VTSA/VTSA-F				
	T	Terminal strip, 36-pin	**543412**	**VABE-S6-1LF-C-M1-C36M**
	MP1	Sub-D plug, 37-pin	**543414**	**VABE-S6-1LT-C-M1-S37**
	MP4	Round plug, 19-pin	**543415**	**VABE-S6-1LF-C-M1-R19**
Individual electrical connection for VTSA/VTSA-F				
	-MP2	Multi-pin node with individual connection M12, 6-way	**549046**	**VABE-S6-LT-C-S6-R5**
	-MP3	Multi-pin node with individual connection M12, 10-way	**549047**	**VABE-S6-LT-C-S10-R5**
	–	Cover for individual connection M12, 6-way	**549048**	**VAEM-S6-C-S6-R5**
	–	Cover for individual connection M12, 10-way	**549049**	**VAEM-S6-C-S10-R5**
Pneumatic interface for VTSA/VTSA-F				
	–	For electrical terminal CPX in polymer	**543416**	**VABA-S6-1-X1**
	–	For electrical terminal CPX in metal	**550663**	**VABA-S6-1-X2**
	–	For electrical terminal CPX in metal, with changed diagnostic function	**573613**	**VABA-S6-1-X2-D**
Electrical interface IO-Link®				
	–	IO-Link® interface for 16 valve positions	**8152353**	**VABA-S6-1-PT**
Electrical interface for AS-Interface for VTSA/VTSA-F				
	–	4 inputs/4 outputs	**549042**	**VABE-S6-1LF-C-A4-E**
	–	8 inputs/8 outputs	**549043**	**VABE-S6-1LF-C-A8-E**
AS-Interface module for VTSA/VTSA-F				
	–	4 inputs/4 outputs	**549044**	**VAEM-S6-S-FAS-4-4E**
	–	8 inputs/8 outputs	**549045**	**VAEM-S6-S-FAS-8-8E**

Note

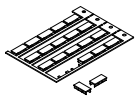
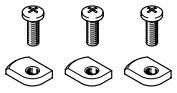
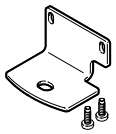
Multi-pin node supplied without cover. Please order appropriate cover with cable separately.

Accessories – Electrical components

Ordering data

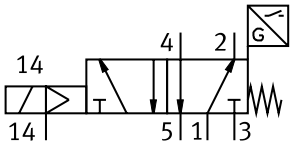
	Code	Description		Part no.	Type
Manifold block for AS-Interface					
	X	4x M12, 5-pin, double, socket		**195704**	**CPX-AB-4-M12x2-5POL**
	GW	4x M12, 5-pin, socket, metal thread		**541254**	**CPX-AB-4-M12x2-5POL-R**
	R	8x M8, 3-pin, socket		**195706**	**CPX-AB-8-M8-3POL**
	J	8x spring-loaded terminal, Cage Clamp, 4-pin		**195708**	**CPX-AB-8-KL-4POL**
	B	Sub-D, 25-pin, socket		**525676**	**CPX-AB-1-SUB-BU-25POL**
Connecting cable, Sub-D (TPE-U(PUR), IP65)					
	GA	Connecting cable for max. 8 solenoid coils, 10-core	2.5 m	**539240**	**NEBV-S1W37-E-2.5-LE10**
	GB		5 m	**539241**	**NEBV-S1W37-E-5-LE10**
	GC		10 m	**539242**	**NEBV-S1W37-E-10-LE10**
	GD	Connecting cable for max. 22 solenoid coils, 26-core	2.5 m	**539243**	**NEBV-S1W37-E-2.5-LE26**
	GE		5 m	**539244**	**NEBV-S1W37-E-5-LE26**
	GF		10 m	**539245**	**NEBV-S1W37-E-10-LE26**
	GG	Connecting cable for max. 32 solenoid coils, 37-core	2.5 m	**539246**	**NEBV-S1W37-K-2.5-LE37**
	GH		5 m	**539247**	**NEBV-S1W37-K-5-LE37**
	GI		10 m	**539248**	**NEBV-S1W37-K-10-LE37**
Connecting cable, Sub-D (PVC, IP65)					
	GK	Connecting cable for max. 8 solenoid coils, 10-core	2.5 m	**543271**	**NEBV-S1W37-KM-2.5-LE10**
	GL		5 m	**543272**	**NEBV-S1W37-KM-5-LE10**
	GM		10 m	**543273**	**NEBV-S1W37-KM-10-LE10**
	GN	Connecting cable for max. 23 solenoid coils, 27-core	2.5 m	**543274**	**NEBV-S1W37-KM-2.5-LE27**
	GO		5 m	**543275**	**NEBV-S1W37-KM-5-LE27**
	GP		10 m	**543276**	**NEBV-S1W37-KM-10-LE27**
	GQ	Connecting cable for max. 32 solenoid coils, 37-core	2.5 m	**543277**	**NEBV-S1W37-KM-2.5-LE37**
	GR		5 m	**543278**	**NEBV-S1W37-KM-5-LE37**
	GS		10 m	**543279**	**NEBV-S1W37-KM-10-LE37**
Cover for multi-pin plug					
	–	For configuration by the user		**545974**	**NECV-S1W37**

Accessories – General

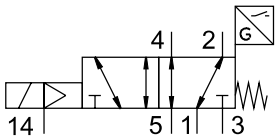
Ordering data	Code	Description		Part no.	Type
Inscription label holders/inscription labels					
	B	Clip-on inscription label holder for valve cap	Pack of 5	**540888**	**ASCF-T-S6**
	T	Inscription label holder for manifold blocks	Pack of 5	**540889**	**ASCF-M-S6**
	TD	Inscription label holder for manifold blocks, size 52 mm	Pack of 5	**562577**	**ASCF-M-S2-2**
	–	Inscription label for ISO 15407 valves with individual electrical connection (20 labels in frames)	Pack of 20	**18182**	**IBS-9x20**
	–	Inscription label for pressure zone separation • 4 inscription labels, duct 1/3/5 blocked • 4 inscription labels, duct 1 blocked • 4 inscription labels, duct 3/5 blocked	Pack of 3x4	**8003303**	**ASLR-L-S6-2016**
H-rail mounting					
	–	VTSA/VTSA-F	Pack of 3	**526032**	**CPX-CPA-BG-NRH**
Wall mounting					
	–	Mounting bracket with a mounting hole for M5 screw	Pack of 5	**539214**	**VAME-S6-10-W**
	U	Mounting bracket with a mounting hole for M4 screw and a mounting hole for M6 screw	Pack of 1	**567038**	**VAME-S6-W-M46**
	AW	Mounting bracket for length compensation on the CPX side when mounting using support system Set comprising 1 angle bracket and 2 screws	Pack of 1	**2721419**	**CPX-M-BG-VT-2X**
User documentation					
	D	User documentation for valve terminal VTSA/VTSA-F	German	**538922**	**VTSA/VTSA-F-DE**
	E		English	**538923**	**VTSA/VTSA-F-EN**
	S		Spanish	**538924**	**VTSA/VTSA-F-ES**
	F		French	**538925**	**VTSA/VTSA-F-FR**
	I		Italian	**538926**	**VTSA/VTSA-F-IT**
Pneumatic connection accessories					
A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter "Accessories" → page 189 or on the website via the individual search terms: **Internet** → connection technology, silencer, blanking plug					

Datasheet – Solenoid valve with switching position sensing

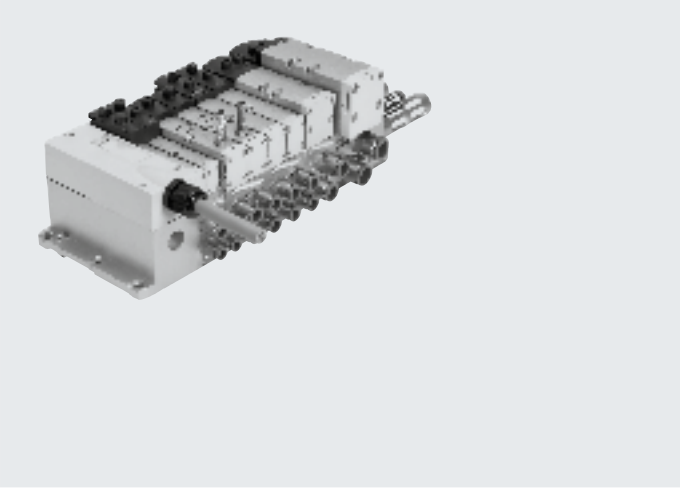
Function[1)]
Valves with code SO, SQ, SS,
width 18 mm



Valves with code SO, SQ, SS,
width 26 mm



- Flow rate
  up to 1100 l/min
- Valve width
  18 mm
  26 mm
- Voltage
  24 V DC
- Operating pressure
  0.3 ... 1 MPa
  3 ... 10 bar



ISO valves with switching position sensing for safety-related pneumatic components

Function

The single solenoid 5/2-way valve with spring return in width 18 mm and 26 mm features valve diagnostics. It is available as a valve with plug-in or individual connection with pilot valves to ISO 15218 and square plug type C.

The normal position of the piston spool is monitored by the inductive sensor.
This valve is not a safety device in accordance with the Machinery Directive 2006/42/EC. When used in higher categories, the sensor signal from the valve must be evaluated by the control system.

This valve is suitable for use in safety-related parts of control systems to EN ISO 13849-1.
The control block has been developed and manufactured in accordance with the basic and proven safety principles of EN ISO 13849-2.

This valve is designed for installation in machines and automation systems and must only be used in industrial applications (high-demand mode).

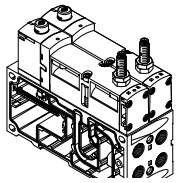
Decentralised individual connection variant

Valve on individual sub-base (square plug or plug-in) with integrated switching position sensing.

The electrical connection is established via either a standardised 4-pin M12 plug 24 V DC (ISO 15407-2), a 4-pin spring-loaded terminal or a cable (open end) 24 V DC, which can be configured by the user.

The individual sub-base can be supplied with internal or external pilot air depending on the version.

Variant for valve terminal VTSA/VTSA-F



The valves with integrated switching position sensing in plug-in design for valve terminal VTSA/VTSA-F can be used regardless of the type of electrical actuation (individual, multi-pin plug or fieldbus/control block connection).

Pilot air supply:
The valve terminal can be supplied with internal or external pilot air via the various end plate variants.

Note

Valves in plug-in design are always supplied with pilot air via duct 14 in the manifold sub-base.

1) The circuit diagram represents a valve with a proximity switch with a N/O switching output signal. In accordance with ISO 1219-1, this symbol applies to both N/O and N/C contacts. The switching element function of the sensors used here is designed as an N/C contact.

Note

Pilot exhaust air port 12 is exhausted directly at the valve, without a connection. If the customer requests a "turned seal", exhaust air is vented at the end plates of the valve terminal, which doesn't conform to the ISO standard.

Datasheet – Solenoid valve with switching position sensing

Safety data	
Conforms to	EN 13849-1/2
CE marking (see declaration of conformity)	To EU EMC Directive [1]
Shock resistance	Shock test with severity level 2, to EN 60068-2-27
Vibration resistant	Transport application test with severity level 2, to EN 60068-2-6

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Safety data		
Valve function 5/2-way, single solenoid	Test pulses	
	Max. positive test pulse with logic 0 [µs]	Max. negative test pulse with logic 1 [µs]
VSVA-B-M52-MZ...-A1-1T1L- ...	1200	1100
VSVA-B-M52-MZ...-A2-1T1L- ...	1500	800
VSVA-B-M52-MZ-A1-1C1- ...	1800	800

General technical data			
Valve	VSVA-B-M52-MZD-A2-1T1L-...	VSVA-B-M52-MZD-A1-1T1L-...	VSVA-B-M52-MZ-A1-1C1-...
Width	**18 mm**	**26 mm**	**26 mm**
Conforms to	ISO 15407-2		ISO 15407-1
Design	Piston spool valve		
Sealing principle	Soft		
Overlap	Positive overlap		
Actuation type	Electrical		
Type of control	Piloted		
Exhaust function, can be throttled	Via individual sub-base, via throttle plate		
Lubrication	Lifetime lubrication		
Type of mounting	Via through-hole, on manifold sub-base		
Mounting position	Any		
Manual override	Concealed		
Individual sub-base			**➔ Page 180**
Valve terminal			**➔ Page 73**

Standard nominal flow rate [l/min]				
Valve function	Flow rate			
	Valve	Valve on valve terminal VTSA	Valve on valve terminal VTSA-F	Valve on individual sub-base
VSVA-B-M52-MZ-A1-1C1-ANC	1400	1100	–	1100
VSVA-B-M52-MZ-A1-1C1-ANP	1400	1100	–	1100
VSVA-B-M52-MZ-A1-1C1-APC	1400	1100	–	1100
VSVA-B-M52-MZ-A1-1C1-APP	1400	1100	–	1100
VSVA-B-M52-MZD-A1-1T1L-ANC	1400	1100	1350	1200
VSVA-B-M52-MZD-A1-1T1L-ANP	1400	1100	1350	1200
VSVA-B-M52-MZD-A1-1T1L-APC	1400	1100	1350	1200
VSVA-B-M52-MZD-A1-1T1L-APP	1400	1100	1350	1200
VSVA-B-M52-MZD-A1-1T1L-APX-0.5	1400	1100	1350	1200
VSVA-B-M52-MZD-A2-1T1L-ANP	750	550	700	600
VSVA-B-M52-MZD-A2-1T1L-APP	750	550	700	600
VSVA-B-M52-MZD-A2-1T1L-APX-0.5	750	550	700	600

Datasheet – Solenoid valve with switching position sensing

Valve switching times [ms]				
Valve		VSVA-B-M52-MZD-A2-1T1L-...	VSVA-B-M52-MZD-A1-1T1L-...	VSVA-B-M52-MZ-A1-1C1-...
Width		**18 mm**	**26 mm**	**26 mm**
Valve switching times	On	12	20	21
	Off	38	54	41
Sensor switching times	On	32	60	60
	Off	9	11	11

Electrical data for valve				
Valve		VSVA-B-M52-MZD-A2-1T1L-...	VSVA-B-M52-MZD-A1-1T1L-...	VSVA-B-M52-MZ-A1-1C1-...
Width		**18 mm**	**26 mm**	**26 mm**
Electrical connection		4-pin plug to ISO 15407-2		Plug to EN 175301-803, type C, without PE conductor
Nominal operating voltage	[V DC]	24		
Permissible voltage fluctuations	[%]	±10		-15/+10
Surge resistance	[kV]	2.5		
Pollution degree		3		
Power consumption	[W]	1.6		1.8
Switching position sensing		Normal position via sensor		
Duty cycle	[%]	100		
Degree of protection to EN 60529		IP65, NEMA 4 (for all types of signal transmission when mounted)		
Signal status indication		LED		Via accessories

Electrical data for sensor		
Electrical connection		Cable, 3-core
		Plug M8x1, 3-pin
Cable length	[m]	2.5
Switching output		PNP or NPN
Switching element function		N/C
Switching status indication		Yellow LED
Operating voltage range	[V DC]	10 ... 30
Residual ripple	[%]	±10
Sensor no-load current	[mA]	š10
Max. output current	[mA]	200
Voltage drop	[V]	š2
Max. switching frequency	[Hz]	5000
Short circuit current rating		Clocked
Reverse polarity protection for sensor		For all electrical connections
Measuring principle		Inductive
Switching position sensing		Valve normal position via sensor

Datasheet – Solenoid valve with switching position sensing

Operating and environmental conditions			
Valve		VSVA-B-M52-...-1T1L-...	VSVA-B-M52-...-1C1-...
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Notes on operating/ pilot medium		Lubricated operation possible (in which case lubrication will always be required)	
Operating pressure	[bar]	–0.9 ... 10	–0.9 ... 16
	[MPa]	–0.09 ... 1	–0.09 ... 1.6
Operating pressure for valve terminal with internal pilot air supply	[bar]	3 ... 10	
	[MPa]	0.3 ... 1	
Pilot pressure	[bar]	3 ... 10	
	[MPa]	0.3 ... 1	
Ambient temperature	[°C]	–5 ... +50	
Temperature of medium	[°C]	–5 ... +50	
Note on materials		RoHS-compliant	
Noise level LpA	[dB(A)]	85	
CE marking (see declaration of conformity)		To EU EMC Directive[1)]	
UKCA marking (see declaration of conformity)		To UK EMC regulations[1)]	
KC marking		KC EMC	
Certification		C-Tick	C-Tick
		c UL us - Recognized (OL)	–

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

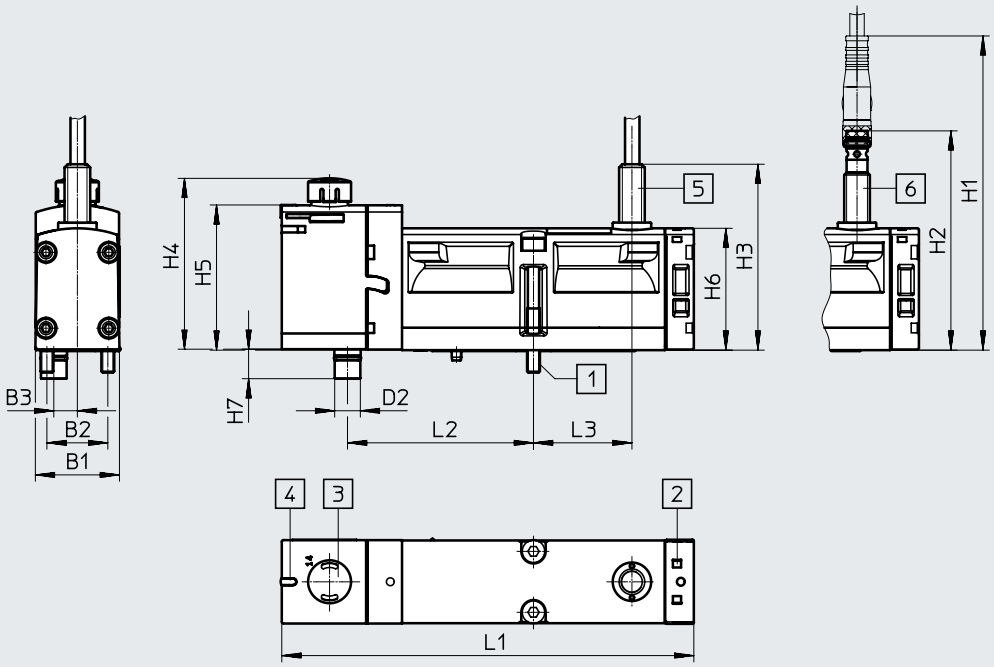
Materials	
Sub-base/manifold sub-base	Die-cast aluminium
Valve	Die-cast aluminium, PA
Seals	FPM, NBR
Screws	Galvanised steel
Sensor housing	High-alloy stainless steel
Sensor cable sheath	TPE-U(PUR)

Product weight		
Width	18 mm	26 mm
5/2-way solenoid valve type		
VSVA-B-M52-MZD-A2-1T1L-APX-0.5	157 g	–
VSVA-B-M52-MZD-A2-1T1L-APP	140 g	–
VSVA-B-M52-MZD-A2-1T1L-ANP	140 g	–
VSVA-B-M52-MZD-A1-1T1L-APC	–	307 g
VSVA-B-M52-MZD-A1-1T1L-APP	–	264 g
VSVA-B-M52-MZ-A1-1C1-APC	–	332 g
VSVA-B-M52-MZ-A1-1C1-APP	–	289 g
VSVA-B-M52-MZD-A1-1T1L-ANC	–	307 g
VSVA-B-M52-MZD-A1-1T1L-ANP	–	264 g
VSVA-B-M52-MZ-A1-1C1-ANC	–	332 g
VSVA-B-M52-MZ-A1-1C1-ANP	–	289 g
VSVA-B-M52-MZD-A1-1T1L-APX-0.5	–	281 g
Individual connection		
Individual sub-base	192	302 g

Datasheet – Solenoid valve with switching position sensing

Dimensions Download CAD data ➔ www.festo.com

Solenoid valve with sensor, width 26 mm



[1] Captive socket head screw M4x38
[2] Space for inscription label
[3] Manual override
[4] Light emitting diode
[5] Sensor with connecting cable
[6] Sensor with plug

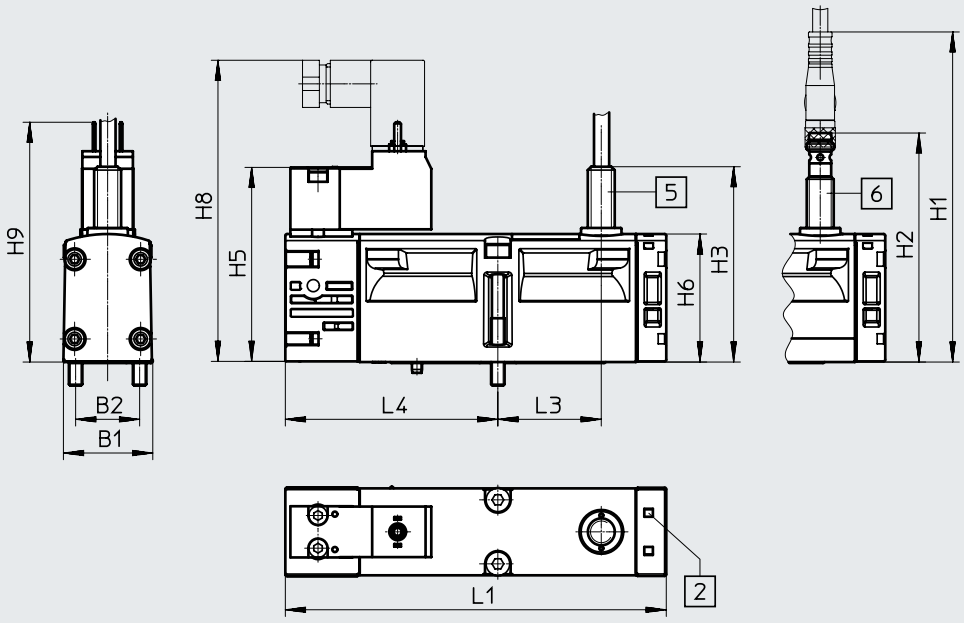
Type	B1	B2	B3	D2	L1	L2	L3
VSVA-B-M52-MZD-A1-1T1L-...	26.2	19	7.4	8	128.9	58	30.7
VSVA-B-M52-MZD-A1-1T1L-APX-0.5							

Type	H1	H2	H3	H4	H5	H6	H7
VSVA-B-M52-MZD-A1-1T1L-...	98	68.2	58	52.5	45.3	38	9.2
VSVA-B-M52-MZD-A1-1T1L-APX-0.5							

Datasheet – Solenoid valve with switching position sensing

Dimensions Download CAD data ➔ www.festo.com

Solenoid valve with sensor, with plug type C, width 26 mm



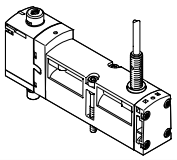
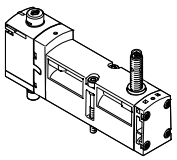
[1] Captive socket head screw M4x38
[2] Space for inscription label
[5] Sensor with connecting cable
[6] Sensor with plug

Type	B1	B2	L1	L3	L4
VSVA-B-M52-MZ-A1-1C1-...	26.2	19	113.1	30.7	63.1

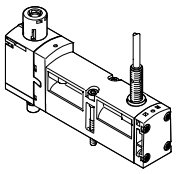
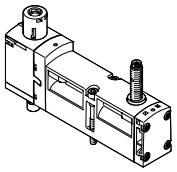
Type	H1	H2	H3	H5	H6	H8	H9
VSVA-B-M52-MZ-A1-1C1-...	98	68.2	58	57.8	38	89.6	71.2

Ordering data – Solenoid valve with switching position sensing

Ordering data – Solenoid valve VSVA, manual override non-detenting/detenting (D)

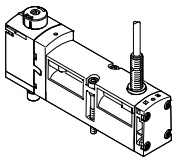
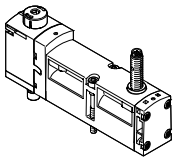
	Code	Valve function	Width	Part no.	Type
5/2-way solenoid valve, 24 V DC, plug-in design for valve terminal VTSA/VTSA-F with proximity switch					
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and cable, 3-core, 2.5 m	26 mm	**560723**	**VSVA-B-M52-MZD-A1-1T1L-APC**
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with NPN output and cable, 3-core, 2.5 m	26 mm	**560742**	**VSVA-B-M52-MZD-A1-1T1L-ANC**
	SS	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1	18 mm	**573201**	**VSVA-B-M52-MZD-A2-1T1L-APX-0.5**
			26 mm	**570850**	**VSVA-B-M52-MZD-A1-1T1L-APX-0.5**
	SO	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1	18 mm	**573202**	**VSVA-B-M52-MZD-A2-1T1L-APP**
			26 mm	**560724**	**VSVA-B-M52-MZD-A1-1T1L-APP**
	SQ	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with NPN output and 3-pin sensor push-in connector M8x1	18 mm	**573203**	**VSVA-B-M52-MZD-A2-1T1L-ANP**
			26 mm	**560743**	**VSVA-B-M52-MZD-A1-1T1L-ANP**

Ordering data – Solenoid valve VSVA with cover cap for manual override non-detenting/heavy duty, detenting via accessory (TR)

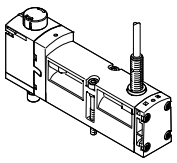
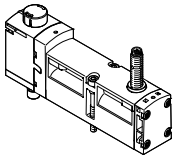
	Code	Valve function	Width	Part no.	Type
5/2-way solenoid valve, 24 V DC, plug-in design for valve terminal VTSA/VTSA-F with proximity switch					
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and cable, 3-core, 2.5 m	26 mm	**8033026**	**VSVA-B-M52-MZTR-A1-1T1L-APC**
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with NPN output and cable, 3-core, 2.5 m	26 mm	**8033030**	**VSVA-B-M52-MZTR-A1-1T1L-ANC**
	SS	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1	18 mm	**8033459**	**VSVA-B-M52-MZTR-A2-1T1L-APX-0.5**
			26 mm	**8033034**	**VSVA-B-M52-MZTR-A1-1T1L-APX-0.5**
	SO	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1	18 mm	**8033460**	**VSVA-B-M52-MZTR-A2-1T1L-APP**
			26 mm	**8033027**	**VSVA-B-M52-MZTR-A1-1T1L-APP**
	SQ	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with NPN output and 3-pin sensor push-in connector M8x1	18 mm	**8033461**	**VSVA-B-M52-MZTR-A2-1T1L-ANP**
			26 mm	**8033031**	**VSVA-B-M52-MZTR-A1-1T1L-ANP**

Ordering data – Solenoid valve with switching position sensing

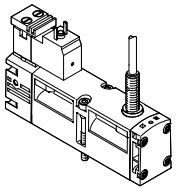
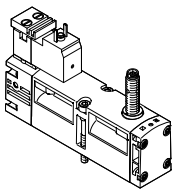
Ordering data – Solenoid valve VSVA with cover cap for manual override, non-detenting (H)

	Code	Valve function	Width	Part no.	Type
5/2-way solenoid valve, 24 V DC, plug-in design for valve terminal VTSA/VTSA-F with proximity switch					
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and cable, 3-core, 2.5 m	26 mm	**8033049**	**VSVA-B-M52-MZH-A1-1T1L-APC**
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with NPN output and cable, 3-core, 2.5 m	26 mm	**8033053**	**VSVA-B-M52-MZH-A1-1T1L-ANC**
	SS	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1	18 mm	**8033477**	**VSVA-B-M52-MZH-A2-1T1L-APX-0.5**
			26 mm	**8033057**	**VSVA-B-M52-MZH-A1-1T1L-APX-0.5**
	SO	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1	18 mm	**8033478**	**VSVA-B-M52-MZH-A2-1T1L-APP**
			26 mm	**8033050**	**VSVA-B-M52-MZH-A1-1T1L-APP**
	SQ	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with NPN output and 3-pin sensor push-in connector M8x1	18 mm	**8033479**	**VSVA-B-M52-MZH-A2-1T1L-ANP**
			26 mm	**8033054**	**VSVA-B-M52-MZH-A1-1T1L-ANP**

Ordering data – Solenoid valve VSVA with cover cap for manual override, concealed

	Code	Valve function	Width	Part no.	Type
5/2-way solenoid valve, 24 V DC, plug-in design for valve terminal VTSA/VTSA-F with proximity switch					
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and cable, 3-core, 2.5 m	26 mm	**8033072**	**VSVA-B-M52-MZ-A1-1T1L-APC**
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with NPN output and cable, 3-core, 2.5 m	26 mm	**8033076**	**VSVA-B-M52-MZ-A1-1T1L-ANC**
	SS	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1	18 mm	**8033495**	**VSVA-B-M52-MZ-A2-1T1L-APX-0.5**
			26 mm	**8033080**	**VSVA-B-M52-MZ-A1-1T1L-APX-0.5**
	SO	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1	18 mm	**8033496**	**VSVA-B-M52-MZ-A2-1T1L-APP**
			26 mm	**8033073**	**VSVA-B-M52-MZ-A1-1T1L-APP**
	SQ	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with NPN output and 3-pin sensor push-in connector M8x1	18 mm	**8033497**	**VSVA-B-M52-MZ-A2-1T1L-ANP**
			26 mm	**8033077**	**VSVA-B-M52-MZ-A1-1T1L-ANP**

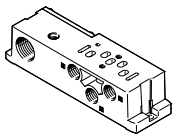
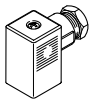
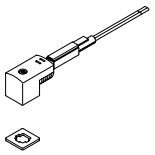
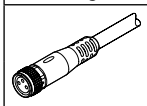
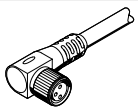
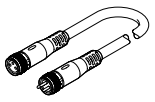
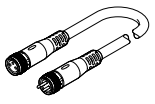
Ordering data – Solenoid valve with switching position sensing

Ordering data					
	Code	Valve function	Width	Part no.	Type
Solenoid valves, 24 V DC, with pneumatic interface to ISO 15218 for individual sub-base					
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and cable, 3-core, 2.5 m, electrical connection to EN 175301-803, type C	26 mm	**560725**	**VSVA-B-M52-MZ-A1-1C1-APC**
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with NPN output and cable, 3-core, 2.5 m, electrical connection to EN 175301-803, type C	26 mm	**560744**	**VSVA-B-M52-MZ-A1-1C1-ANC**
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1, electrical connection to EN 175301-803, type C	26 mm	**560726**	**VSVA-B-M52-MZ-A1-1C1-APP**
	–	5/2-way valve, single solenoid, mechanical spring return, inductive sensor with NPN output and 3-pin sensor push-in connector M8x1, electrical connection to EN 175301-803, type C	26 mm	**560745**	**VSVA-B-M52-MZ-A1-1C1-ANP**

Note

- The sensors integrated in the valves must not be replaced by the customer. Incorrect assembly can result in malfunctions or damage to the valve. Return the module to Festo for repair in the event of a fault.
- Valves with switching position sensing from the VSVA-B-M52-... series can only be ordered individually. If these are used on a valve terminal, appropriate vacant positions must be provided for them. Exceptions are the valves with ident. code SS, SO and SQ.

Accessories – Solenoid valve with switching position sensing

Ordering data	Code	Description		Part no.	Type
Individual sub-base, port pattern to ISO 15407-2, electrical connection via cable terminals					
	–	Threaded connection, internal pilot air supply, lateral connections	18 mm	**541068**	**VABS-S4-2S-N18-B-K2**
			26 mm	**541066**	**VABS-S4-1S-N14-B-K2**
	–	Threaded connection, external pilot air supply, lateral connections	18 mm	**539724**	**VABS-S4-2S-N18-K2**
			26 mm	**539726**	**VABS-S4-1S-N14-K2**
Plug socket for the electrical connection of individual valves, type C					
	–	• Angled socket, type C, 3-pin • Straight plug, PG7 • 230 V AC		**151687**	**MSSD-EB**
		• Angled socket, type C, 3-pin • Straight plug, M12x1		**539712**	**MSSD-EB-M12**
Illuminating seal for plug pattern to EN 175301-803, type C				Datasheets → Internet: meb-ld	
	–	For plug socket MSSD, 12 ... 24 V DC		**151717**	**MEB-LD-12-24DC**
Connecting cable for electrical connection of individual valves, type C					
	GG	• Angled socket, type C, 3-pin, with LED • Open end, 3-core • 24 V DC, PVC	2.5 m	**151688**	**KMEB-1-24-2.5-LED**
	GH		5 m	**151689**	**KMEB-1-24-5-LED**
	GJ		10 m	**193457**	**KMEB-1-24-10-LED**
Connecting cable for the electrical connection of sensors for switching position sensing					
	GM	• Straight socket, M8x1, 3-pin • Open end, 3-core	2.5 m	**541333**	**NEBU-M8G3-K-2.5-LE3**
	GN	• Straight socket, M8x1, 3-pin • Open end, 3-core	5 m	**541334**	**NEBU-M8G3-K-5-LE3**
	GO	• Angled socket, M8x1, 3-pin • Open end, 3-core	2.5 m	**541338**	**NEBU-M8W3-K-2.5-LE3**
	GP	• Angled socket, M8x1, 3-pin • Open end, 3-core	5 m	**541341**	**NEBU-M8W3-K-5-LE3**
	–	• Angled socket, rotatable, M8x1, 3-pin • Open end, 3-core	2.5 m	**8001660**	**NEBU-M8R3-K-2.5-LE3**
	–	• Angled socket, rotatable, M8x1, 3-pin • Open end, 3-core	5 m	**8001661**	**NEBU-M8R3-K-5-LE3**
	GQ	• Straight socket, M8x1, 3-pin • Straight plug M8x1, 4-pin	2.5 m	**554037**	**NEBU-M8G3-K-2.5-M8G4**
	–	Modular system for a choice of connecting cables	–	**–**	**NEBU-...** **→ Internet: nebu**
Pneumatic connection accessories					
A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter "Accessories" → page: 189 or on the website using the individual search terms: **Internet** → connection technology, silencer, blanking plug					

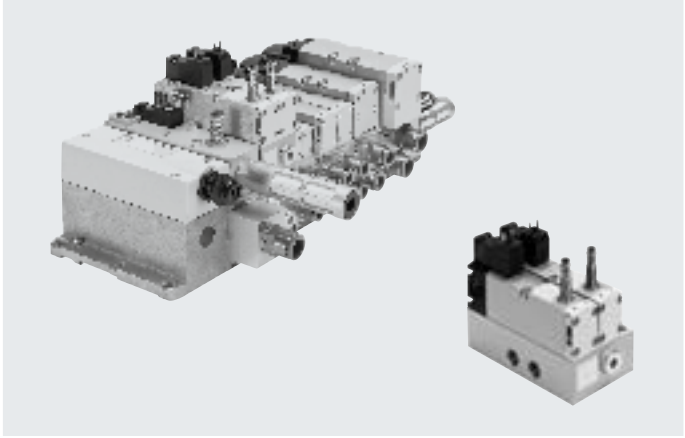
Datasheet – Control block with safety function

- Flow rate
  on valve terminal: 830 l/min

- Solenoid valve width
  26 mm

- Voltage
  24 V DC

- Operating pressure
  0.3 ... 1 MPa
  3 ... 10 bar



Description

The control block is designed for two-channel control of pneumatic drive components such as double-acting linear cylinders and can be used to realise the following protective measures:

- Protection against unexpected start-up (EN 1037)
- Reversing hazardous movements, provided the reversing motion will not result in further hazards

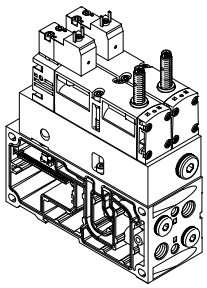
The control attributes of the control block enable Performance Level e to be achieved for the protective measures. The control block has been developed and manufactured in accordance with the basic and proven safety principles of EN ISO 13849-1 and EN ISO 13849-2.

The requirements of EN ISO 13849-1 and EN ISO 13849-2 (e.g. CCF, DC) must be taken into consideration when installing and operating the component and when using it in higher categories (2 to 4).
When using this product in machines or systems subject to specific C standards, the requirements specified in these standards must be observed.

The control block with safety function is designed for installation in machines and automation systems and must only be used in industrial applications (high-demand mode)!
The control block with safety function is suitable for use as a press safety valve to EN 962.

More information and technical data
➔ Internet: User documentation

Version for valve terminal VTSA/VTSA-F



The valves with integrated switching position sensing on manifold sub-base for valve terminal VTSA/VTSA-F need to be supplied with power regardless of the type of electrical actuation (individual, multi-pin plug or fieldbus/control block connection).

The electrical connection for the solenoid valves is established separately via a standardised square plug to EN 175301-803, type C.
The switching position sensing of the inductive PNP or NPN proximity switch is via a push-in connector size M8x1 to EN 61076-2-104.

Note

The appropriate manifold sub-base VABV-S4- ..., which is required for integration into the valve terminal, is not part of the control block. It is automatically allocated by the configurator when the control block is selected.

Note

The control block with safety function (VOFA) is also available as a decentralised individual connection variant with electrical and pneumatic individual connection.
For information see:
➔ Internet: vofa

Datasheet – Control block with safety function

Pneumatic/electrical links

Function

The safety function is achieved by pneumatically linking two ducts for two 5/2-way single solenoid valves within the control block: port 4 is only pressurised if both solenoid valves are switched to switching position 14.

Port 2 is always pressurised if at least one of the two solenoid valves is in the normal position. The valves are reset via a mechanical spring.

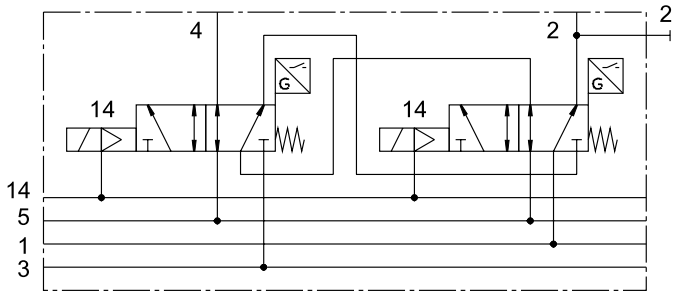
The switching operation of the solenoid valves can be sensed using the proximity switches on the solenoid valves (switching position sensing).

By connecting the control signal and the switching signal of the proximity switch it is possible to check if the piston spool of the solenoid valve has reached or left the normal position (expectations).

The piston spools of the solenoid valves are designed so that pneumatic short circuits between ports 2 and 4 are prevented (positive overlap).

The two solenoid valves must be actuated via two separate ducts to achieve the required category 4 (Performance Level e, to EN ISO 13849-1).

Circuit symbol[1)]



For the control block with safety function VOFA-B26-T52-... for the valve terminal, two 5/2-way solenoid valves of width 26 mm are pneumatically linked via two ducts, using an intermediate plate as vertical stacking element (output 2 is switched in parallel, output 4 is switched in series).

1) The circuit diagram represents a valve with a proximity switch with a N/O switching output signal.
In accordance with ISO 1219-1, this symbol applies to both N/O and N/C contacts. The switching element function of the sensors used here is designed as an N/C contact.

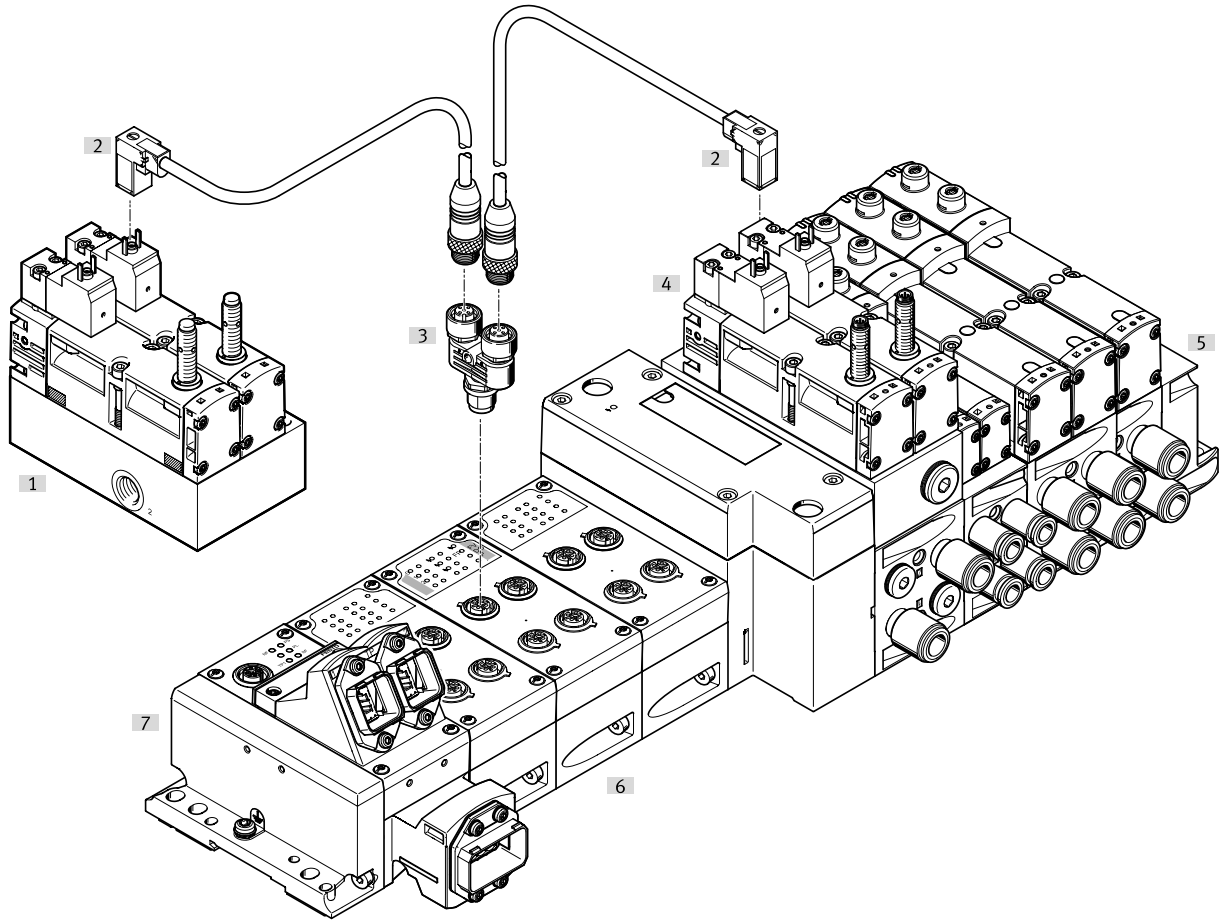
Safety data	
Conforms to	EN 13849-1
Safety function	Protection against manipulation, prevention of unexpected start-up
	Reversing a movement
Performance Level (PL)	Protection against manipulation, prevention of unexpected start-up/up to category 4, Performance Level e
	Reversing a movement/up to category 4, Performance Level e
Note on forced checking procedure	Switching frequency min. 1/week
Certificate-issuing authority	IFA 1001179
CE marking (see declaration of conformity)	To EU EMC Directive[1)]
	To EU Machinery Directive
Max. positive test pulse with logic 0 [µs]	1000
Max. negative test pulse with logic 1 [µs]	800
Shock resistance	Shock test with severity level 2, to EN 60068-2-27
Vibration resistant	Transport application test with severity level 2, to EN 60068-2-6

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Datasheet – Control block with safety function

Peripherals overview

Electrical connection option for control block with safety function via PROFIsafe shut-off module CPX-FVDA-P2 (safety module)



Peripherals overview

		Description	→ Page/Internet
[1]	Control block with safety function	Away from the valve terminal as a decentralised individual connection variant	vofa
[2]	Connecting cable KMEB-...	For electrical connection of the control block with safety function via PROFIsafe shut-off module CPX-FVDA-P2 (safety module)	kmeb
[3]	Push-in T-connector NEDU-...	For simultaneously actuating two valves, e.g. control block with safety function	nedu
[4]	Control block with safety function	Integrated in the pneumatic section of the valve terminal VTSA/VTSA-F	–
[5]	Pneumatic section of the valve terminal VTSA/VTSA-F	Pneumatic components of the valve terminal VTSA/VTSA-F	–
[6]	CPX-FVDA-P2 (safety module)	PROFIsafe shut-off module integrated in the CPX terminal of the valve terminal VTSA/VTSA-F	cpx
[7]	CPX terminal of the valve terminal VTSA/VTSA-F	Electrical components of the valve terminal VTSA/VTSA-F	–

Datasheet – Control block with safety function

General technical data		
Design		Piston spool valve
Standard nominal flow rate	[l/min]	830
Reset method		Mechanical spring
Sealing principle		Soft
Exhaust air function		Can be throttled
Actuation type		Electrical
Overlap		Positive overlap
Type of control		Piloted
Flow direction		Not reversible
Exhaust air function		Can be throttled
Suitable for vacuum		–
Nominal width	[mm]	9
Pilot air supply		Via valve terminal
Type of mounting		Via through-hole, on manifold sub-base
Mounting position		Any
Manual override		–
Signal status display, valve		Via accessories
Pneumatic connections		
Supply	1	Via the manifold sub-base of the valve terminal
Exhausting	3/5	
Working ports	2/4	
Pilot air supply	14	
Pressure gauge		G1/4

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Notes on operating/ pilot medium		Lubricated operation possible (in which case lubrication will always be required)
Operating pressure	[bar]	0 ... 10
	[MPa]	0 ... 1
Operating pressure for valve terminal with internal pilot air supply	[bar]	3 ... 10
	[MPa]	0.3 ... 1
Pilot pressure	[bar]	3 ... 10
	[MPa]	0.3 ... 1
Noise level LpA	[dB(A)]	85
Ambient temperature	[°C]	–5 ... +50
Temperature of medium	[°C]	–5 ... +50
CE marking (see declaration of conformity)		To EU EMC Directive[1)]
		To EU Machinery Directive

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Datasheet – Control block with safety function

Electrical data for control block			
Electrical connection			Plug to EN 175301-803, type C, without PE conductor
Nominal operating voltage		[V DC]	24
Permissible voltage fluctuations		[%]	–15/+10
Surge resistance		[kV]	2.5
Pollution degree			3
Power consumption		[W]	1.8
Max. magnetic disruption field		[mT]	60
Switching position sensing			Normal position via sensor
Duty cycle		[%]	100
Degree of protection to EN 60529			IP65, NEMA 4 (for all types of signal transmission when mounted)
Protection against direct and indirect contact			PELV Protection class to EN 60950/IEC 950
Valve switching time	On	[ms]	22
	Off	[ms]	59
Valve sensor switching time [1]	On	[ms]	60
	Off	[ms]	11

1) Valve sensor switching time off: period of time from the coil being energised to the sensor being switched off when using a PNP sensor.
Valve sensor switching time on: period of time from the coil being de-energised to 0-L edge at the sensor when using a PNP sensor.

Note

With a 100% duty cycle, the control block must be de-energised once per week.

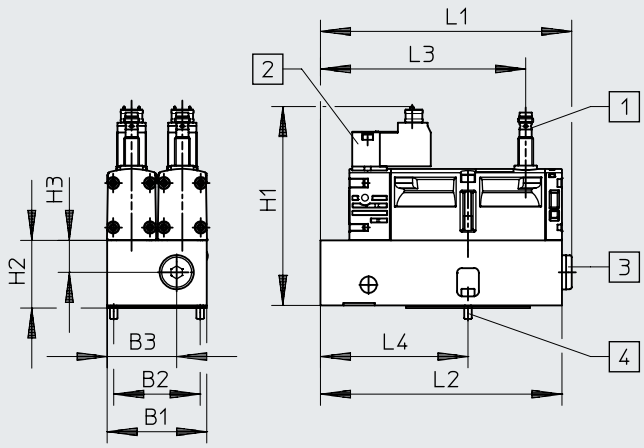
Electrical data – Sensor (to EN -60947-5-2)		
Electrical connection		Cable, 3-core
		Plug M8x1, 3-pin
Cable length	[m]	2.5
Switching output		PNP or NPN
Switching element function		N/C
Signal status indication		Yellow LED
Operating voltage range	[V DC]	10 ... 30
Residual ripple	[%]	±10
Sensor no-load current	[mA]	Max. 10
Max. output current	[mA]	200
Voltage drop	[V]	Max. 2
Max. switching frequency	[Hz]	5000
Short circuit current rating		Clocked
Reverse polarity protection for sensor		For all electrical connections
Measuring principle		Inductive

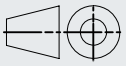
Materials	
Sub-base/manifold sub-base	Wrought aluminium alloy
Valve	Die-cast aluminium, PA
Seals	FPM, NBR, HNBR
Screws	Galvanised steel
Sensor housing	High-alloy stainless steel
Sensor cable sheath	PUR
Note on materials	RoHS-compliant

Datasheet – Control block with safety function

Dimensions Download CAD data ➔ www.festo.com

Version for valve terminal VTSA/VTSA-F





[1] Proximity switch PNP or NPN, size M8x1, plug connection to EN 61076-2-104

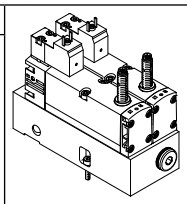
[2] Electrical connection to EN 175301-803, type C

[3] Pneumatic connection G1/4 sealed with blanking plug

[4] 2x screw with internal hexagon (width across flats 2.5), M4x12 (included in the scope of delivery)

Type	B1	B2	B3	H1	H2	H3	L1	L2	L3	L4
VOFA-B26-T52-M-1C1-APP	53	46	37	105.8	34.6	17	133.7	128.5	109.2	78.5
VOFA-B26-T52-M-1C1-ANP										

Ordering data

Code	Valve function		Switching output	Weight [g]	Part no.	Type
Control block, version for valve terminal VTSA/VTSA-F						
SP [2]		2x 5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor and 3-pin sensor push-in connector M8, mounted on intermediate plate for pneumatic linking	PNP	1112	– [1]	**VOFA-B26-T52-M-1C1-APP**
SN [2]			NPN	1112	– [1]	**VOFA-B26-T52-M-1C1-ANP**

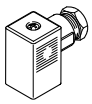
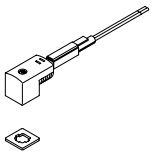
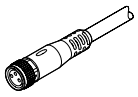
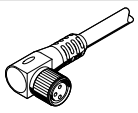
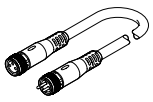
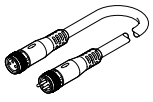
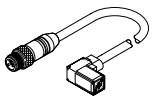
1) The control block with safety function can only be ordered via the valve terminal configurator and therefore does not have a separate part number. The appropriate manifold sub-required base for the valve terminal VTSA/VTSA-F is automatically allocated to the control block by the configurator.

2) Code letter within the order code for a valve terminal configuration

Note

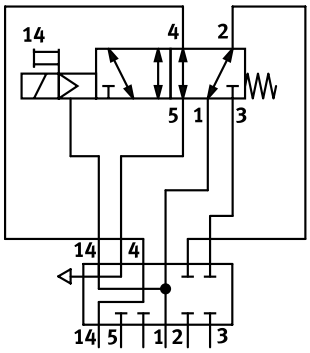
The sensors integrated in the valves must not be replaced by the customer. Incorrect assembly can result in malfunctions or damage to the valve.
Please contact Festo in the event of a malfunction.

Accessories – Control block with safety function

Ordering data	Code	Description		Part no.	Type
Plug socket for the electrical connection of individual valves					
	–	• Angled socket, type C, 3-pin • PG7		**151687**	**MSSD-EB**
	–	• Angled socket, type C, 3-pin • M12x1		**539712**	**MSSD-EB-M12**
Illuminating seal for plug pattern to EN 175301-803				Datasheets → Internet: meb-ld	
	–	For plug socket MSSD		**151717**	**MEB-LD-12-24DC**
Connecting cable for electrical connection of individual valves					
	GG	• Angled socket, type C, 3-pin, with LED • Open end, 3-core	2.5 m	**151688**	**KMEB-1-24-2.5-LED**
	GH		5 m	**151689**	**KMEB-1-24-5-LED**
	GJ		10 m	**193457**	**KMEB-1-24-10-LED**
Connecting cable for the electrical connection of sensors for switching position sensing					
	GM	• Straight socket, M8x1, 3-pin • Open end, 3-core	2.5 m	**541333**	**NEBU-M8G3-K-2.5-LE3**
	GN		5 m	**541334**	**NEBU-M8G3-K-5-LE3**
	–	• Angled socket, rotatable, M8x1, 3-pin • Open end, 3-core	2.5 m	**8001660**	**NEBU-M8R3-K-2.5-LE3**
	–		5 m	**8001661**	**NEBU-M8R3-K-5-LE3**
	GQ	• Straight socket, M8x1, 3-pin • Straight plug M8x1, 4-pin	2.5 m	**554037**	**NEBU-M8G3-K-2.5-M8G4**
	–	Modular system for a choice of connecting cables	–	**–**	**NEBU-...** **→ Internet: nebu**
Connecting cable for the electrical connection of PROFIsafe shut-off module CPX-FVDA-P2 to the control block					
	–	For the easy connection of one control block valve (power supply via PROFIsafe shut-off module CPX-FVDA-P2) • Angled socket, type C, 3-pin, with LED • Straight plug M12x1, 5-pin	0.5 m	**177677**	**KMEB-2-24-M12-0.5-LED**
Push-in T-connector for dual electrical connection of PROFIsafe shut-off module CPX-FVDA-P2 to the control block					
	–	For dual connection of two control block valves (power supply via PROFIsafe shut-off module CPX-FVDA-P2) • Straight plug, M12x1, 5-pin (A-coded) • 2x straight socket, M12x1, 5-pin (A-coded)		**2839867**	**NEDU-L2R1-V10-M12G5-M12G5**
Pneumatic connection accessories					
A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter "Accessories" → page: 189 or on the website via the individual search terms: **Internet** → connection technology, silencer, blanking plug					

Datasheet – Pilot air switching valve

Function[1)]



- Flow rate
  150 l/min (18 mm)
  450 l/min (26 mm)
- Valve width
  18 mm
  26 mm
- Voltage
  24 V DC
- Operating pressure
  –0.9 ... 10 bar

Description

The pilot air switching valve is essentially a combination of a 5/2-way solenoid valve with switching position sensing and the intermediate plate VABF-S4-...-S..
It enables the pilot air supply to be verifiably switched on and off (sensor function) from duct 1 to 14 for the entire pressure zone or valve terminal.
This valve is not a safety device in accordance with the Machinery Directive 2006/42/EC. When used in higher categories, the sensor signal from the valve must be evaluated by the control system.
This valve is suitable for use in safety-related parts of control systems to EN ISO 13849-1.
This valve is designed for installation in machines and automation systems and must only be used in industrial applications (high-demand mode).

Alternative switching position sensing with pressure switch

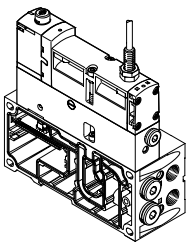
As an alternative to the sensing function in the solenoid valve, a pressure switch can be mounted (in place of the blanking plug) in the intermediate plate VABF-S4-...-S. With this pressure switch, the switching on and off (sensing function) of the pilot air supply can be verified.
An ISO solenoid valve without a sensor can therefore be mounted on the intermediate plate to give the same function.

→ Internet: spba

Note

The pilot air switching valve can only be operated on the valve terminal VTSA/VTSA-F in combination with a right end plate for external pilot air type VABE-S6-1RZ-.... Port 14 on the right end plate must then be sealed.

Vertical stacking variant for valve terminal VTSA/VTSA-F, width 18 mm, 26 mm



The valves with integrated switching position sensing in plug-in design for valve terminal VTSA/VTSA-F can be used regardless of the type of electrical actuation (individual, multi-pin plug or fieldbus/control block connection).
This module is supplied pre-assembled together with the valve terminal VTSA/VTSA-F. No other assembly steps are required before installation.
Switching position sensing is carried out using an inductive PNP proximity switch with cable and M12x1 push-in connector to EN 61076-2-104.
Alternatively, combinations with a pressure switch in the intermediate plate and ISO solenoid valves are possible.

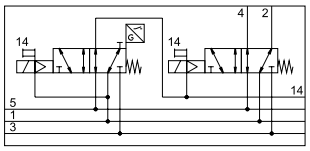
Note

All solenoid valves VSVA to ISO 15407-1 can be used.
→ Internet: vsva

1) The circuit diagram represents a valve with a proximity switch with a N/O switching output signal. In accordance with ISO 1219-1, this symbol applies to both N/O and N/C contacts.
The switching element function of the sensors used here is designed as an N/C contact.

Datasheet – Pilot air switching valve

Function of pneumatic/electrical links



The function for switching off the pilot air is essentially achieved by combining the intermediate plate type VABF-S4-...-S with the 5/2-way single solenoid valve type VSVA-B-M52-MZD-...-1T1L-APX-0.5. The valve terminal is not supplied with any pilot air via the right end plate type VABE-S6-1 (ident. code XS, external pilot air). Port 14 on the end plate is sealed.

The pilot air for the valve is branched from duct 1 in the intermediate plate and redirected to the pilot air duct 14 of the valve terminal when the valve is in the switching position. Ports 2 and 4 of the manifold sub-base are sealed with blanking plugs. The switching operation of the solenoid valve can be monitored by sensing using the proximity switch in the solenoid valve (or pressure sensor in the intermediate plate VABF...).

By connecting the control signal and the switching signal of the proximity switch it is possible to check if the piston spool of the solenoid valve has reached or left the normal position (expectations).

The piston spool of the solenoid valve is designed so that pneumatic short circuits between ports 2 and 4 are prevented (overlap).

Alternatively, combinations with a pressure switch in the intermediate plate and ISO solenoid valves are possible.

Note

A valve from the modular system VTSA/VTSA-F can be provided or configured to the right of the valve with switching position sensing on the intermediate plate of the pilot air switching valve.

Pilot air switching valve with integrated switching position sensing

The pilot air switching valve can be ordered as a combination of a 5/2-way solenoid valve with switching position sensing and the intermediate plate VABF-S4-...-S.

Alternative switching position sensing with pressure switch

As an alternative to the pilot air switching valve with integrated switching position sensing, it is possible to combine an ISO solenoid valve and a pressure switch in the intermediate plate.

To do this, various 5/2-way solenoid valves in combination with a pressure switch SPBA-... are available.

Safety data	
Conforms to	EN 13849-1/2
CE marking (see declaration of conformity)	To EU EMC Directive [1)]
Shock resistance	Shock test with severity level 2, to EN 60068-2-27
Vibration resistant	Transport application test with severity level 2, to EN 60068-2-6

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Safety data			
Valve function 5/2-way, single solenoid		Test pulses	
		Max. positive test pulse with 0 signal	Max. negative test pulse with 1 signal
VSVA-B-M52-MZ...-A1-1T1L- ...	[µs]	1200	1100
VSVA-B-M52-MZ...-A2-1T1L- ...	[µs]	1500	800
VSVA-B-M52-MZ-A1-1C1- ...	[µs]	1800	800

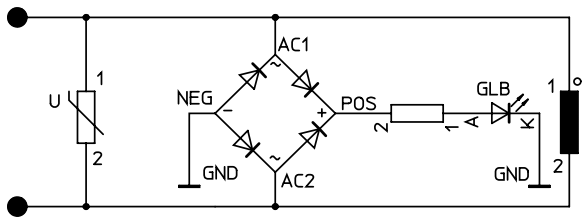
Datasheet – Pilot air switching valve

General technical data			
		Intermediate plate type VABF-S4-2-S and solenoid valve type VSVA-B-M52-MZD-A2-1T1L-APX-0.5 mounted on valve terminal VTSA/VTSA-F	Intermediate plate type VABF-S4-1-S and solenoid valve type VSVA-B-M52-MZD-A1-1T1L-APX-0.5 mounted on valve terminal VTSA/VTSA-F
Width		**18 mm**	**26 mm**
Design		Piston spool valve	
Sealing principle		Soft	
Overlap		Positive overlap	
Actuation type		Electrical system	
Type of control		Piloted	
Type of mounting: Solenoid valve on intermediate plate Intermediate plate on manifold sub-base		M3 M3x12 (captive)	M4 M4x12 (captive)
Mounting position		Any	
Pneumatic connections			
Supply	1	Via the manifold sub-base of the valve terminal	
Exhausting	3/5	Via the manifold sub-base of the valve terminal	
Working ports	2/4	Sealed with blanking plug type B-1/4	
Pilot air supply	14	Via the manifold sub-base of the valve terminal	
Pressure gauge/pressure switch		G1/8	

Switching times [ms]				
Width		18 mm	26 mm	
Valve type		5/2	5/2	
Identifier		MZD-A2	MZD-A1	MZ-A1
Valve switching time	On	12	20	21
	Off	38	54	41
Valve sensor switching time[1)]	On	32	60	60
	Off	9	11	11

1) Valve sensor switching time off: period of time from the coil being energised to the sensor being switched off when using a PNP sensor.
Valve sensor switching time on: period of time from the coil being de-energised to 0-L edge at the sensor when using a PNP sensor.

Protective circuit

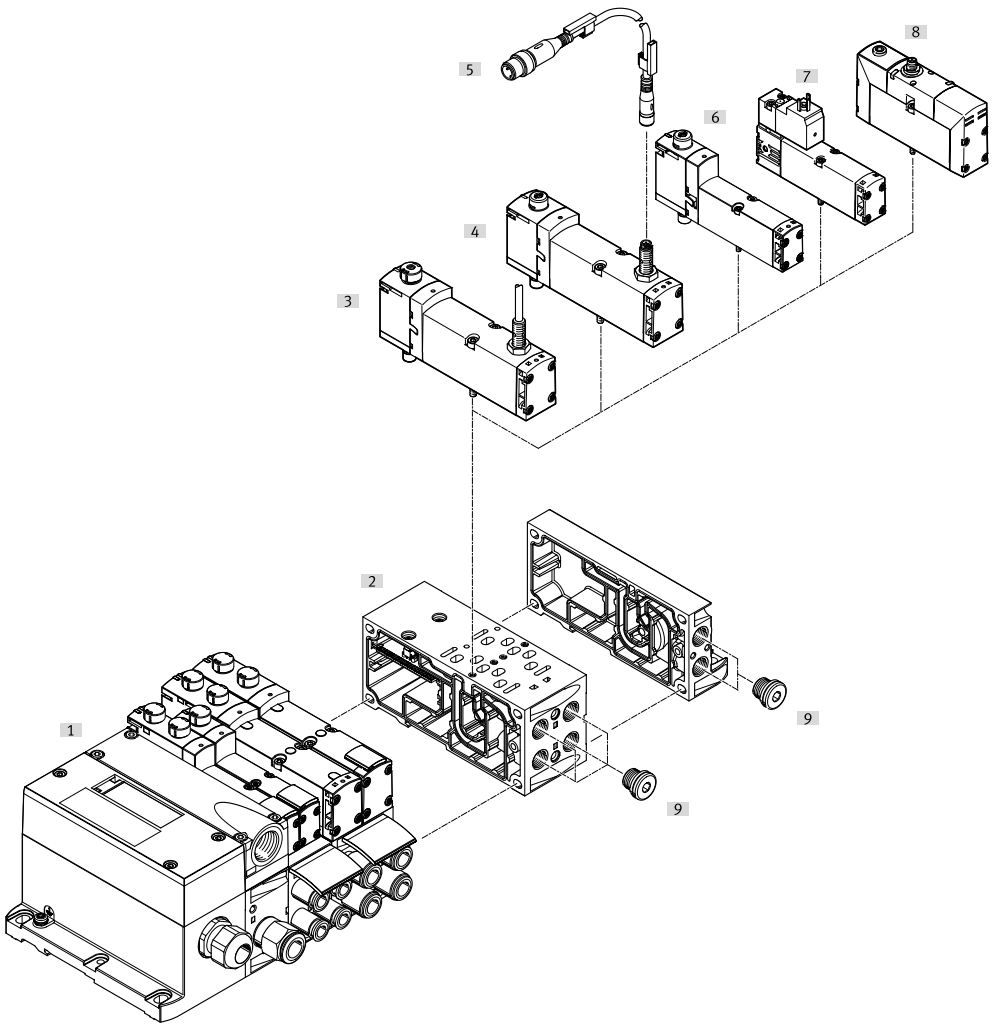


Each solenoid coil VSVA is protected with a spark arresting protective circuit as well as against polarity reversal.

Datasheet – Pilot air switching valve

Peripherals overview

Pilot air switching valve with switching position sensing



Peripherals overview – Pilot air switching valve

		Description	→ Page/Internet
[1]	Valve terminal VTSA/VTSA-F	Valve terminal with multi-pin plug interface	vtsa
[2]	Manifold sub-base VABF-...	Width 18 mm or 26 mm	128
[3]	Intermediate plate VABF-S4-...	For pilot air switching valve	161
[4]	Solenoid valve VSVA-B-M52-...	Width 18 mm or 26 mm, with sensor and integrated cable 0.5 m	161
[5]	Solenoid valve VSVA-B-M52-...	Width 18 mm or 26 mm, with sensor for external connecting cable	161
[6]	Connecting cable NEBU-M8 ...	For connection to sensor	162
[7]	Solenoid valve VSVA-B-M52-...	Width 18 mm or 26 mm [1)]	161
[8]	Solenoid valve VSVA-B-M52-...	Width 18 mm or 26 mm, with plug to EN 175301, type C [1)]	161
[9]	Solenoid valve VSVA-B-M52-...	Width 18 mm or 26 mm, with round plug [1)]	vsva
[10]	Pressure switch SPBA-...	Mechanically actuated	162
[11]	Connecting cable NEBU-M12G5-...	For connection to pressure switch	162
[12]	Pressure switch SPBA-...	Electrically actuated	162
[13]	Blanking plug	–	190

1) The switching position is sensed by pressure switches when the solenoid valves used have no integrated sensor.
The pressure switch is screwed into the intermediate plate in place of the blanking plug.

Datasheet – Pilot air switching valve

Electrical data for pilot air switching valve		
Nominal operating voltage	[V DC]	24
Permissible voltage fluctuations	[%]	±10
Surge resistance	[kV]	2.5
Pollution degree		3
Power consumption	[W]	1.6 (M52-MZD), 1.8 (M52-MZ)
Max. magnetic disruption field	[mT]	60
Switching position sensing		Normal position via sensor
Duty cycle	[%]	100
Degree of protection		IP65, NEMA 4 (for all types of signal transmission when mounted)

Electrical data for sensor						
Sensor identifier		APP	ANP	APC	ANC	APX
Switching output		PNP	NPN	PNP	NPN	PNP
Sensor connection		Plug M8x1, 3-pin		With fixed cable and open end		With fixed cable and plug M12x1, 4-pin
Cable length	[m]	0.5 (with socket M8x1, plug M12x1)		2.5		0.5
Switching element function		N/C				
Signal status indication		Yellow LED (on sensor)				
Operating voltage range	[V DC]	10 ... 30				
Residual ripple	[%]	±10				
Rated operating voltage	[V DC]	24				
Max. no-load supply current	[mA]	10				
Max. output current	[mA]	200				
Max. voltage drop	[V]	2				
Max. switching frequency	[Hz]	5000				
Short circuit current rating		Clocked				
Reverse polarity protection		For all electrical connections				
Measuring principle		Inductive				
Switching position sensing		Valve normal position via sensor				

Datasheet – Pilot air switching valve

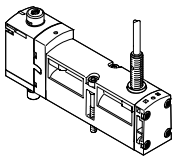
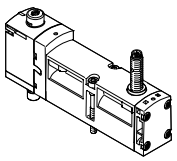
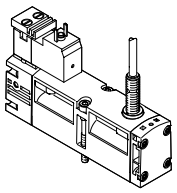
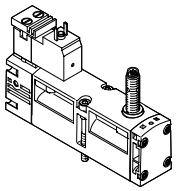
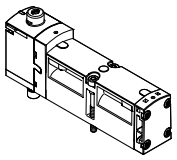
Operating and environmental conditions				
Valve		VSVA-B-M52-...-1T1L-...	VSVA-B-M52-...-1C1-...	Without sensor
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Notes on operating/ pilot medium		Lubricated operation possible (in which case lubrication will always be required)		
Operating pressure	[bar]	–0.9 ... 10	–0.9 ... 16	–0.9 ... 10
	[MPa]	–0.09 ... 1	–0.09 ... 1	–0.09 ... 1
Noise level LpA	[dB(A)]	85	85	–
Ambient temperature	[°C]	–5 ... +50	–5 ... +50	–5 ... +50
Temperature of medium	[°C]	–5 ... +50	–5 ... +50	–
Note on materials		RoHS-compliant	RoHS-compliant	RoHS-compliant
KC marking		KC EMC	KC EMC	–
UKCA marking		To UK EMC regulations	To UK EMC regulations	–
Certification		C-Tick	C-Tick	–
		c UL us Recognized (OL)	–	c UL us Recognized (OL)

Materials	
Sub-base/manifold sub-base	Die-cast aluminium
Valve	Die-cast aluminium, PA
Seals	FPM, NBR
Screws	Galvanised steel
Sensor housing	High-alloy stainless steel
Sensor cable sheath	TPE-U(PUR)

Product weight		
Width	18 mm	26 mm
Solenoid valve		
VSVA-B-M52-MZD-A1-1T1L-APC	–	307 g
VSVA-B-M52-MZD-A1-1T1L-APP	–	264 g
VSVA-B-M52-MZ-A1-1C1-APC	–	332 g
VSVA-B-M52-MZ-A1-1C1-APP	–	289 g
VSVA-B-M52-MZD-A1-1T1L-ANC	–	307 g
VSVA-B-M52-MZD-A1-1T1L-ANP	–	264 g
VSVA-B-M52-MZ-A1-1C1-ANC	–	332 g
VSVA-B-M52-MZ-A1-1C1-ANP	–	289 g
VSVA-B-M52-MZD-A1-1T1L-APX-0.5	–	281 g
VSVA-B-M52-MZD-A2-1T1L-APX-0.5	157 g	–
VSVA-B-M52-MZD-A2-1T1L-APP	140 g	–
VSVA-B-M52-MZD-A2-1T1L-ANP	140 g	–
VSVA-B-M52-MZD-A1-1T1L	–	293 g
VSVA-B-M52-MZD-A2-1T1L	163 g	–

Ordering data – Pilot air switching valve

Ordering data

	Code	Valve function			Part no.	Type
5/2-way solenoid valve, 24 V DC, plug-in design with proximity switch						
	SS	5/2-way valve, single solenoid, mechanical spring return, with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1	PNP	18 mm	**573201**	**VSVA-B-M52-MZD-A2-1T1L-APX-0.5**
				26 mm	**570850**	**VSVA-B-M52-MZD-A1-1T1L-APX-0.5**
	–	5/2-way valve, single solenoid, mechanical spring return, with 2.5 m connecting cable	PNP	26 mm	**560723**	**VSVA-B-M52-MZD-A1-1T1L-APC**
			NPN	26 mm	**560742**	**VSVA-B-M52-MZD-A1-1T1L-ANC**
	SO	5/2-way valve, single solenoid, mechanical spring return, with 3-pin sensor push-in connector M8x1	PNP	18 mm	**573202**	**VSVA-B-M52-MZD-A2-1T1L-APP**
				26 mm	**560724**	**VSVA-B-M52-MZD-A1-1T1L-APP**
	SQ		NPN	18 mm	**573203**	**VSVA-B-M52-MZD-A2-1T1L-ANP**
				26 mm	**560743**	**VSVA-B-M52-MZD-A1-1T1L-ANP**
	–	5/2-way valve, single solenoid, mechanical spring return, with plug to EN 175301, type C, with 2.5 m connecting cable	PNP	26 mm	**560725**	**VSVA-B-M52-MZ-A1-1C1-APC**
			NPN	26 mm	**560745**	**VSVA-B-M52-MZ-A1-1C1-ANP**
	–	5/2-way valve, single solenoid, mechanical spring return, with plug to EN 175301, type C, with 3-pin sensor push-in connector M8x1	PNP	26 mm	**560726**	**VSVA-B-M52-MZ-A1-1C1-APP**
			NPN	26 mm	**560744**	**VSVA-B-M52-MZ-A1-1C1-ANC**
5/2-way solenoid valve, 24 V DC, plug-in design						
	–	5/2-way valve, single solenoid, mechanical spring return		26 mm	**539159**	**VSVA-B-M52-MZD-A1-1T1L**
				18 mm	**539185**	**VSVA-B-M52-MZD-A2-1T1L**

Note

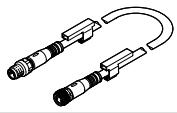
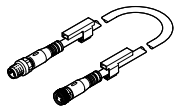
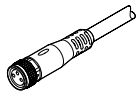
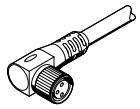
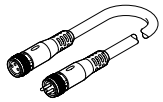
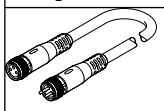
Further solenoid valves with switching position sensing can be ordered as distinct types. These are preconfigured with the desired manual override cover caps.

➔ Solenoid valve with switching position sensing, page 138

Note

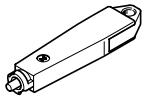
The sensors integrated in the valves must not be replaced by the customer. Incorrect assembly can result in malfunctions or damage to the valve. Please contact Festo in the event of a malfunction.

Ordering data – Pilot air switching valve

Ordering data	Code	Description		Part no.	Type
Pressure switch for intermediate plate for pilot air switching valve					
	WL	Mechanical pressure switch (only in combination with intermediate plate ZO), with plug M12x1, 4-pin		**8000033**	**SPBA-P2R-G18-W-M12-0.25X**
	WH	Electrical pressure switch, switching output 2xPNP (only in combination with intermediate plate ZO), with plug M12x1, 4-pin		**8000210**	**SPBA-P2R-G18-2P-M12-0.25X**
Connecting cable for connection of pressure switches					
	GE	• Straight socket, M12x1, 5-pin • Straight plug M12x1, 4-pin	0.5 m	**8000208**	**NEBU-M12G5-K-0.5-M12G4**
Connecting cable for the electrical connection of sensors for switching position sensing					
	–	• Straight socket, M8x1, 3-pin • Straight plug M12x1, 3-pin	0.5 m	**8000209**	**NEBU-M8G3-K-0.5-M12G3**
	GM	• Straight socket, M8x1, 3-pin • Open end, 3-core	2.5 m	**541333**	**NEBU-M8G3-K-2.5-LE3**
	GN		5 m	**541334**	**NEBU-M8G3-K-5-LE3**
	GO	• Angled socket, M8x1, 3-pin • Open end, 3-core	2.5 m	**541338**	**NEBU-M8W3-K-2.5-LE3**
	GP		5 m	**541341**	**NEBU-M8W3-K-5-LE3**
	–	• Angled socket, rotatable, M8x1, 3-pin • Open end, 3-core	2.5 m	**8001660**	**NEBU-M8R3-K-2.5-LE3**
	–		5 m	**8001661**	**NEBU-M8R3-K-5-LE3**
	GQ	• Straight socket, M8x1, 3-pin • Straight plug M8x1, 4-pin	2.5 m	**554037**	**NEBU-M8G3-K-2.5-M8G4**
	–	Modular system for a choice of connecting cables	–	**–**	**NEBU-...** **→ Internet: nebu**

Ordering data – Pilot air switching valve

Ordering data

	Code	Description		Part no.	Type
Covering					
	N	Cover cap for manual override, non-detenting	Pack of 10	**541010**	**VAMC-S6-CH**
	V	Cover cap for manual override, concealed	Pack of 10	**541011**	**VAMC-S6-CS**
	A	Cover cap, heavy duty, for manual override, non-detenting heavy duty, detenting via accessory (key) (The cover cap is provided for one-off mounting only)	Pack of 10	**4105147**	**VAMC-B-S6-CTR**
Accessories for manual override, heavy duty					
	–	Coded key (accessory) for actuating cover cap, heavy duty, for detenting position	Pack of 1	**1662543**	**AHB-MEB-B**

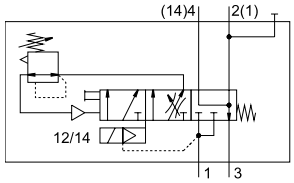
Pneumatic connection accessories
A selection of possible fittings, blanking plugs, silencers and
other pneumatic accessories can be found in the chapter "Accessories" ➔ page: 189
or on the website via the individual search terms:
Internet ➔ connection technology, silencer, blanking plug

Note

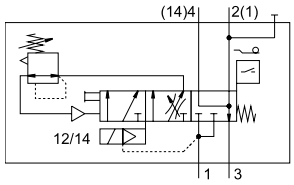
There is a wide range of preconfigured solenoid valves with cover cap for manual override and correct valve type code available to order in the sections on solenoid valves.

Datasheet – Soft-start valve for VTSA/VTSA-F

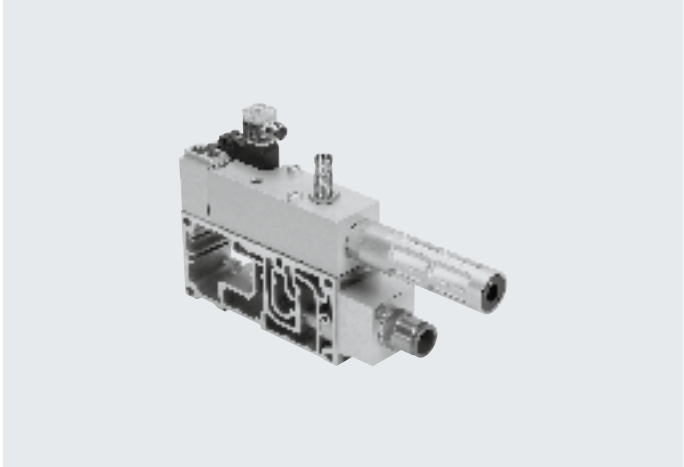
Function
without sensor



With sensor



- Flow rate
  Pressurisation:
  3000 l/min
  Exhausting: 3300 l/min
- Module width
  43 mm
- Temperature range
  –5 ... +50°C
- Operating pressure
  0.2 ... 1.2 MPa
  2 ... 12 bar



Description

Function

The purpose of the soft-start valve is to slowly and safely build up the supply pressure in duct 1 of the valve terminal or to quickly exhaust it via duct 1.
Switch-on takes place in two stages:

- First the working pressure for duct 1 gradually increases (the speed can be adjusted using a flow control screw).
- Once the working pressure in duct 1 reaches a previously set value, the soft-start valve switches to full operating pressure at duct 1 of the valve terminal.

The switching point for full operating pressure is set to 4 bar at the factory, but can be changed using an adjusting screw.

The full operating pressure is applied at duct 14 (pilot air) at all times. This pressure causes the valves on the valve terminal to immediately move to the required switching position, so an unspecified position is not possible.

Duct 1 of the valve terminal is exhausted via the soft-start valve's exhaust port only in the normal position, when the valve is not switched. The exhaust air can optionally be ducted with a fitting or using a silencer.
A detenting manual override with self-reset via an electrical control signal is available for maintenance and service purposes.

Note

When using "Protection against unexpected start-up":
Protection against unexpected activation of the manual override (MO) must be guaranteed in all operating modes.

Diagnostics

The piston position of the soft-start valve can be monitored by a sensor with integrated LED display. This sensor registers whether the valve has switched and thus whether the valve terminal is being supplied with working air.

Pressure sensing via a pressure gauge (optional) is also possible.

The soft-start valve can also be ordered with a sensor. A sensor cannot be retrofitted at a later date because of the calibration that is required.

Connecting cables with integrated LED display are provided for displaying the signal status.

Pilot air supply

The valve terminal can either be supplied with internal pilot air via the soft-start valve or with internal or external pilot air via the various end plate variants.

The pilot air supply for the valve terminal (internal/external) is determined by the seal between the manifold subbase and the soft-start valve.

The scope of delivery of the soft-start valve includes both the seal for internal pilot air supply (with drilled hole) and the seal for external pilot air supply (no drilled hole).

The soft-start valve itself is always supplied with internal pilot air.

Datasheet – Soft-start valve for VTSA/VTSA-F

Creating pressure zones with a soft-start valve

The soft-start valve can be used for the pneumatic compressed air supply of the valve terminal or of a pressure zone. The soft-start valve can only be used as the sole compressed air supply component on valve terminals with one pressure zone or within a pressure zone.

If a soft-start valve in combination with a right end plate (code XP3) is chosen for a pressure zone, a supply plate with a blanking plug in duct 1 (code W) is required in this pressure zone.

When using a soft-start valve, a supply plate (with blanking plug in duct 1) is generally also required for this pressure zone to discharge the exhaust air (duct 3/5).

A supply plate is not required if the exhaust air (duct 3/5) in a pressure zone with soft-start valve can be expelled via the right end plate.

Constraints

Compressed air supply

There must be no other elements supplying compressed air in the pressure zone in which the soft-start valve is being used.

Exhaust air

Exhaust air cannot be expelled via the soft-start valve. If it is being used in a pressure zone with duct 3/5 separate, an exhaust plate is required.

Pilot air supply

If the soft-start valve is used for internal pilot air supply (duct 14), there must be no other pilot air supply within the valve terminal.

Reverse operation

The soft-start valve is not approved for reverse operation.

Note

Setting options as well as drawings with descriptions of the components for the soft-start valve can be found in the user documentation.
The adjusting screws are freely accessible once they are fitted.

Safety data	
Conforms to	ISO 5599-2
Note on forced checking procedure	Switching frequency min. once a month
Max. positive test pulse with logic 0 [µs]	2500[1)]
Max. negative test pulse with logic 1 [µs]	1400[1)]
Shock resistance	Shock test with severity level 2, to EN 60068-2-27
Vibration resistant	Transport application test with severity level 2, to EN 60068-2-6

1) Values apply only to types with direct voltage 24 V DC

General technical data	
Design	Piston spool
Actuation type	Electrical
Sealing principle	Soft
Type of mounting	On sub-base, ISO size 1 to ISO 5599-2
Mounting position	Any
Valve function	Soft-start function
Manual override	Detenting, self-resetting via electrical control signal, normal position on top, → page 171
Reset method	Mechanical spring
Type of control	Piloted
Pilot air supply	Internal, external
Flow direction	Not reversible
Switching position sensing	Switching position with sensor

Standard nominal flow rate [l/min]	
Pressurisation	3000
Exhausting	3300

Datasheet – Soft-start valve for VTSA/VTSA-F

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Notes on operating/ pilot medium		Lubricated operation possible (in which case lubrication will always be required)
Operating pressure	[bar]	2 ... 12
	[MPa]	0.2 ... 1.2
Switchover pressure presetting	[bar]	4
	[MPa]	0.4
Ambient temperature	[°C]	–5 ... +50
Note on materials		RoHS-compliant

Valve switching times [ms]		
Valve switching time	On	17
	Off	50

Electrical data for soft-start valve		
Electrical connection		Plug, type C to EN 175301-803, square design
Nominal operating voltage	[V]	24 DC
Operating voltage range	[V]	24 DC ±10%
Characteristic coil data		24 V DC: 2.5 W
Degree of protection to EN 60529		IP65, NEMA 4 (for all types of signal transmission when mounted)

Electrical data for sensor			
Type		SIEN-M12B-PS-S-L	SIEN-M12B-NS-S-L
Electrical connection		Plug M12x1 to EN 60947-5-2, 4-pin	
Switching output		PNP	NPN
Switching element function		N/O contact	
Signal status indication		Yellow LED	
Operating voltage range	[V DC]	10 ... 30	
Residual ripple	[%]	±10	
Rated operating voltage	[V DC]	24	
Max. no-load current for sensor	[mA]	10	
Max. output current	[mA]	200	
Max. voltage drop	[V]	2	
Max. switching frequency	[Hz]	3000	
Short circuit current rating		Clocked	
Reverse polarity protection for sensor		For all electrical connections	
Measuring principle		Inductive	
Switching position sensing		Switching position with sensor	

Materials – Soft-start valve		
	Soft-start valve	Manifold sub-base
Housing	Wrought aluminium alloy	Die-cast aluminium
Seals	NBR, HNBR	–
Screws	Galvanised steel	–

Datasheet – Soft-start valve for VTSA/VTSA-F

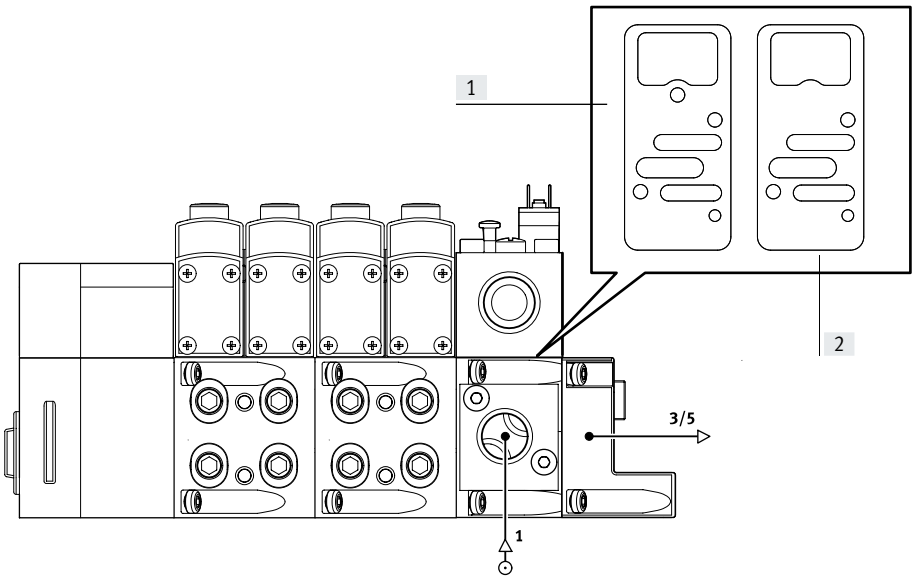
Example 1: Pressure zone with soft-start valve and pilot air supply

Internal, external pilot air supply

Requirements
- Compressed air supply via soft-start valve
- Right end plate[1)]: Blanking plug in duct 1

For internal pilot air supply:
- Seal (soft-start valve - manifold sub-base) with pilot air supply bore "open" and
- Right end plate: Blanking plug in duct 14

For external pilot air supply:
- Seal (soft-start valve - manifold sub-base) with pilot air supply bore "closed" and
- Pilot air supply via duct 14 in the right end plate



[1] Seal for internal pilot air supply
[2] Seal for external pilot air supply

1) A right end plate with pilot air selector cannot be used with this configuration, as it doesn't allow the exhaust air to be discharged

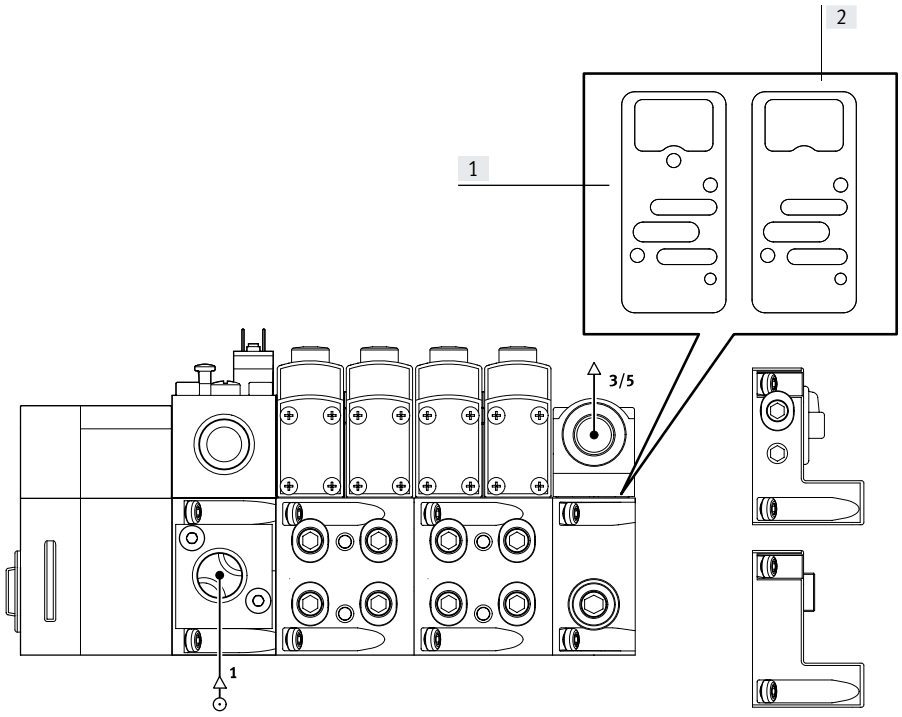
Example 2: Pressure zone with soft-start valve, supply plate and pilot air supply

Internal, external pilot air supply

Requirements
- Compressed air supply via soft-start valve
- Supply plate: Blanking plug in duct 1
- Right end plate: blanking plug in duct 1, 3, 5 or
- Right end plate with pilot air selector

For internal pilot air supply:
- Seal (soft-start valve - manifold sub-base) with pilot air supply bore "open" and
- Right end plate: blanking plug in duct 14 or
- End plate with coding (position 2, internal pilot air supply)

For external pilot air supply:
- Seal (soft-start valve - manifold sub-base) with pilot air supply bore "closed" and
- Pilot air supply via duct 14 in the right end plate or
- End plate with coding (position 1, external pilot air supply)



[1] Seal for internal pilot air supply
[2] Seal for external pilot air supply

Datasheet – Soft-start valve for VTSA/VTSA-F

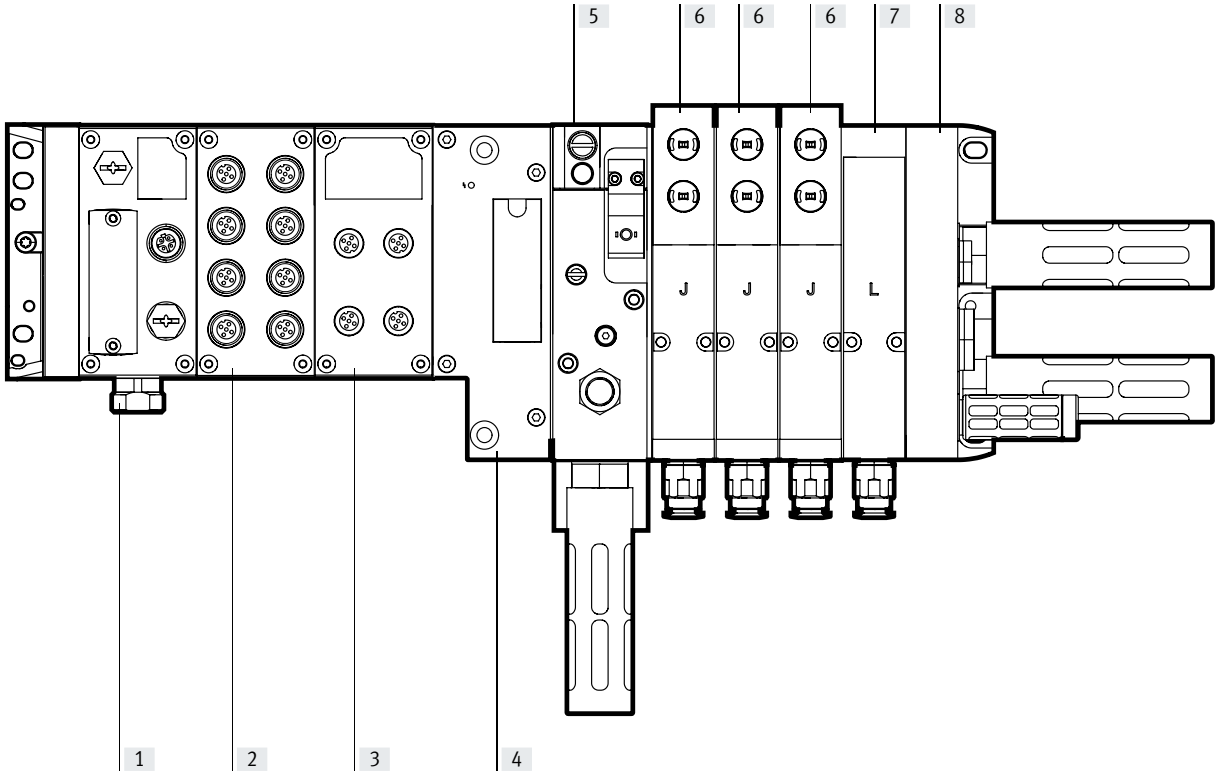
Practical example 1: Valve terminal VTSA with CPX terminal (metal design) and soft-start valve

With internal pilot air (PP and XP2):

Selection no.: 539217

With external pilot air (PM and XP1):

Selection no.: 539217



[1] Bus node for EtherNet/IP or Modbus TCP
[2] Input module (16 digital inputs)
[3] Output module (8 digital outputs)
[4] CPX pneumatic interface
[5] Soft-start valve (PP – internal pilot air)
[5] Soft-start valve (PM – external pilot air)
[6] 5/2-way valve, double solenoid (J)
[7] Vacant position (L)
[8] Right end plate (XP2) with supply air/exhaust air, external pilot air supply, blanking plug in duct 1 and 14
[8] Right end plate (XP1) with supply air/exhaust air, external pilot air supply, blanking plug in duct 1

Selection with internal pilot air (PP and XP2):

Selection no. in online catalogue: 539217
Electrical part: 51E-F36GCQPNMKBLX-S+GSBA
Pneumatic part: 44P-N-XP2-SMPP-BB-3JL+UGBP1

Selection with external pilot air (PM and XP1):

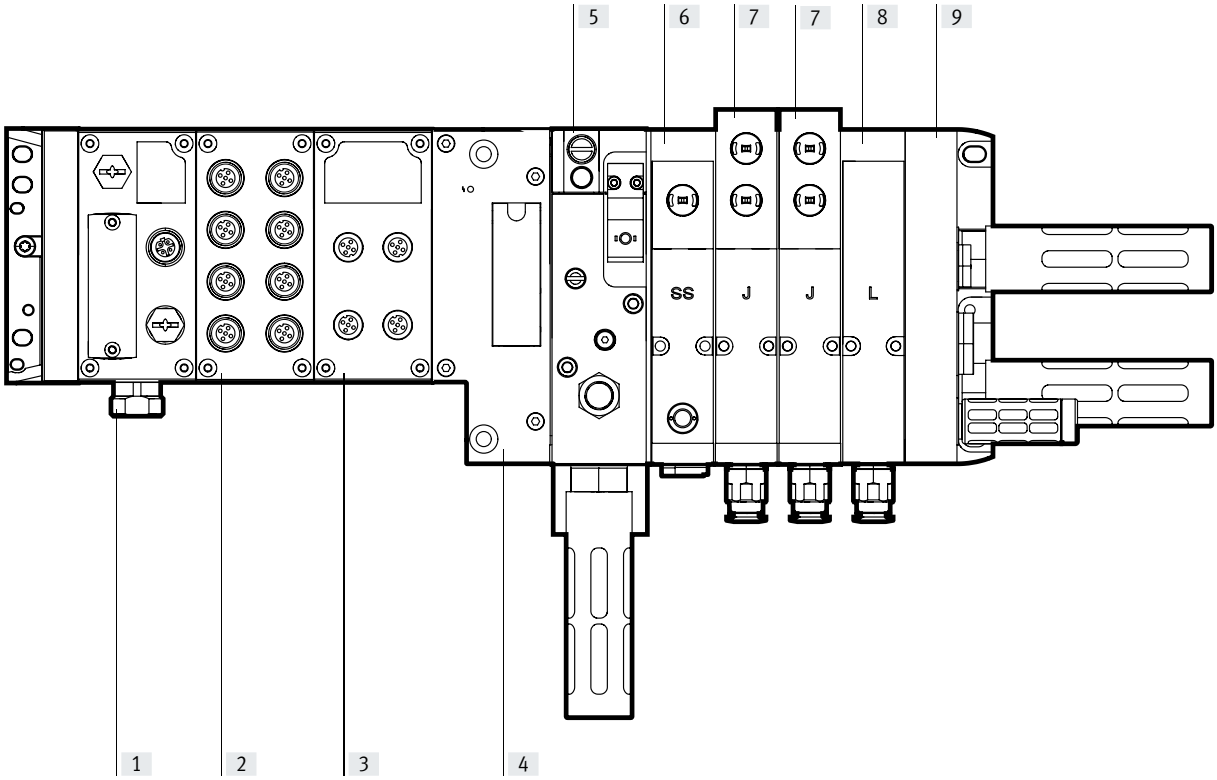
Selection no. in online catalogue: 539217
Electrical part: 51E-F36GCQPNMKBLX-S+GSBA
Pneumatic part: 44P-N-XP1-SMPM-BB-3JL+UGBP1

Datasheet – Soft-start valve for VTSA/VTSA-F, width 43 mm

Practical example 2: Valve terminal VTSA with CPX terminal (metal design), soft-start valve and switching position sensing

With external pilot air (PM and XP2):

Selection no.: 539217



[1] Bus node for EtherNet/IP or Modbus TCP
[2] Input module (16 digital inputs)
[3] Output module (8 digital outputs)
[4] CPX pneumatic interface
[5] Soft-start valve (PM – external pilot air)
[6] 5/2-way single solenoid valve, spring return, switching status indication with PNP sensor with 0.5 m connecting cable and push-in connector M12x1 (SS), and intermediate plate for switchable pilot air supply (ZO)
[7] 5/2-way double solenoid valve (J), width 26 mm
[8] Vacant position (L)
[9] Right end plate (XP2) with supply air/exhaust air, external pilot air supply, blanking plug in duct 1 and 14

Selection with external pilot air (PM and XP2), solenoid valve with switching position sensing (SS) and intermediate plate for switchable pilot air supply (ZO)

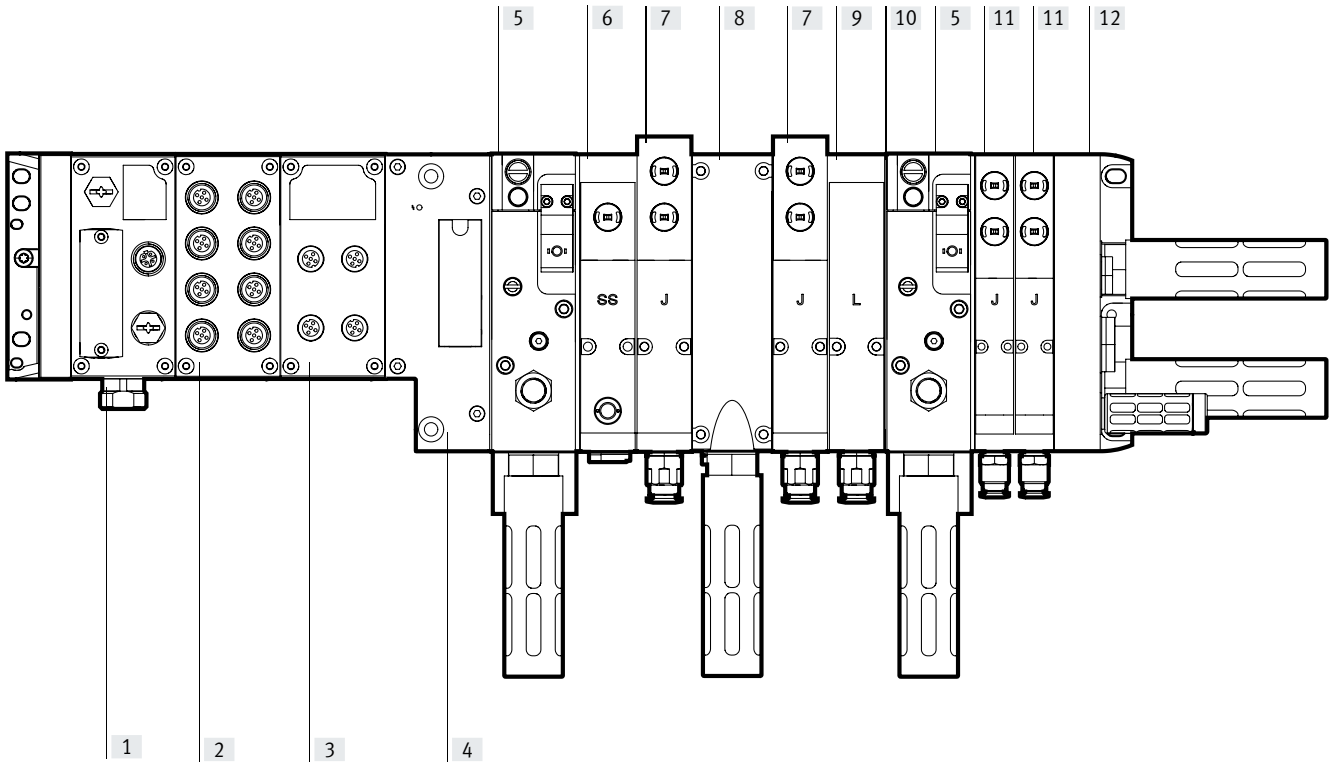
Selection no. in online catalogue: 539217
Electrical part: 51E-F36GCQPNMKBLX-S+GSBA
Pneumatic part: 44P-N-XP2-SMPM-BB-SSZOJJL+UGCGBP1

Datasheet – Soft-start valve for VTSA/VTSA-F

Practical example 3: Valve terminal VTSA with CPX terminal (metal design), switching position sensing, soft-start valve and 2 pressure zones

With external pilot air (PM and XP2)

Selection no.: 539217



[1] Bus node for EtherNet/IP or Modbus TCP
[2] Input module (16 digital inputs)
[3] Output module (8 digital outputs)
[4] CPX pneumatic interface
[5] Soft-start valve for one pressure zone (PM – external pilot air)
[6] 5/2-way single solenoid valve, spring return, switching status indication with PNP sensor with 0.5 m connecting cable and push-in connector M12x1 (SS), and intermediate plate for switchable auxiliary pilot air supply (ZO)
[7] 5/2-way double solenoid valve (J), width 26 mm
[8] Exhaust plate (W) for ducts 3/5
[9] Vacant position (L)
[10] Duct separation (S) 1, 3, 5
[11] 5/2-way double solenoid valve (J), width 18 mm
[12] Right end plate (XP2) with supply air/exhaust air, external pilot air supply, blanking plug in duct 1 and 14

Selection with external pilot air (PM and XP2), solenoid valve with switching position sensing (SS) and intermediate plate for switchable pilot air supply and 2 pressure zones

Selection no. in online catalogue: 539217
Electrical part: 51E-F36GCQPNMKBLX-S+GSBA
Pneumatic part: 44P-N-XP2-LSMPM-BWBSPMA-SSZOJJLJJ+UGCGBP1

Electrical connection of pneumatic components

The solenoid valve with switching position sensing (SS), with sensor connection M12 is connected to the CPX input module using an appropriate connecting cable in order to link the sensor signal into the CPX system.

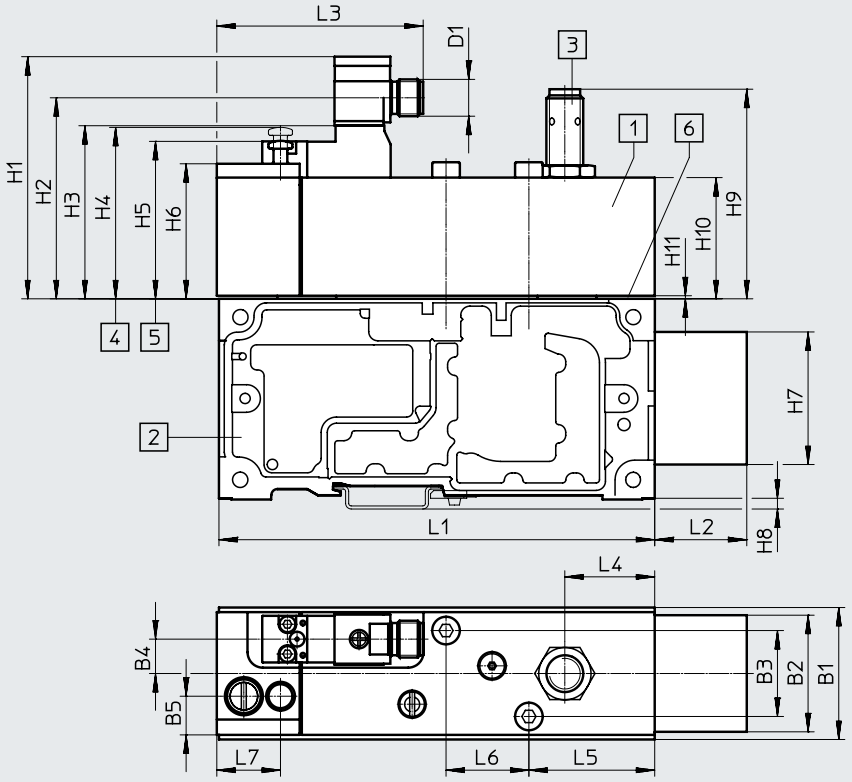
The soft-start valve (PM – with sensor PNP) is connected to the CPX input module using an appropriate connecting cable (GC) in order to integrate the sensor signal into the CPX system.

A connecting cable (GBP1) to/from the CPX output module is used to control the soft-start valve (PM). (Control signal)

Datasheet – Soft-start valve for VTSA/VTSA-F

Dimensions Download CAD data ➔ www.festo.com

Soft-start valve



[1] Soft-start valve, (port pattern to ISO 5599-2)

[2] Manifold sub-base with connecting adapter (ducts 2 and 4), pneumatic connection G1/2

[3] Soft-start valve optionally with sensor or protective cap

[4] Manual override, normal position (unactuated)

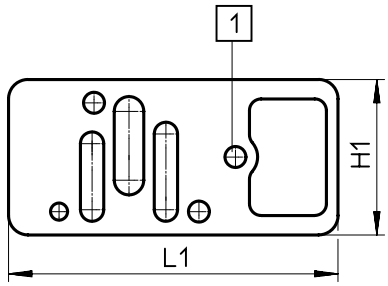
[5] Manual override, switching position (actuated)

[6] Seal for internal or external pilot air supply of the valve terminal

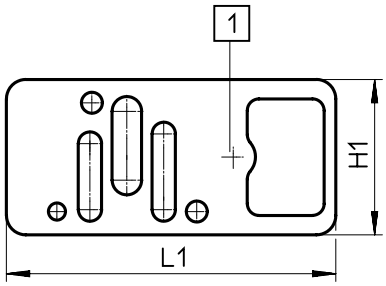
Type	B1	B2	B3	B4	B5	D1	L1	L2	L3	L4	L5	L6	L7
VABF-S6-1-P5A4-G12-4- ...	43	36.5	28	11.2	12.6	M12x1	142	30	67.3	29.3	41	27	20.8

Type	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11
VABF-S6-1-P5A4-G12-4- ...	78.9	65.5	56.4	55.9	51.5	44	41.2	3.5	68.3	39.5	1

Seal [1] between soft-start valve and manifold sub-base



[1] With drilled hole, internal pilot air supply



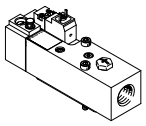
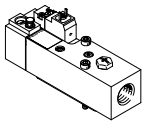
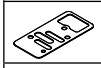
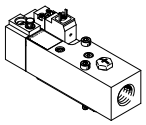
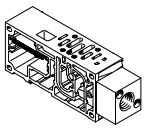
[1] Without drilled hole, external pilot air supply

Type	H1	L1
VABD-S6- ...	40	84.8

1) Seals are included with the soft-start valve

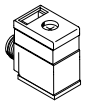
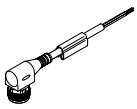
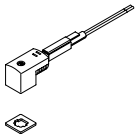
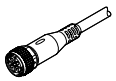
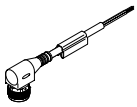
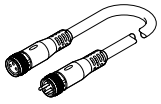
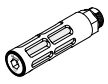
Datasheet – Soft-start valve for VTSA/VTSA-F

Ordering data

	Terminal code	Description	Weight [g]	Part no.	Type
Soft-start valve					
	–	Without sensor output (with seals for internal and external pilot air)	590	**558231**	**VABF-S6-1-P5A4-N12-4-1**
	PN	Seal for external pilot air (without drilled hole)			
	PQ	Seal for internal pilot air (with drilled hole)			
	–	With sensor output PNP (with seals for internal and external pilot air)	605	**558232**	**VABF-S6-1-P5A4-N12-4-1-P**
	PM	Seal for external pilot air (without drilled hole)			
	PP	Seal for internal pilot air (with drilled hole)			
	–	With sensor output NPN (with seals for internal and external pilot air)	605	**558234**	**VABF-S6-1-P5A4-N12-4-1-N**
	PK	Seal for external pilot air (without drilled hole)			
	PO	Seal for internal pilot air (with drilled hole)			
Manifold sub-base					
	–	Suitable for a soft-start valve (ports for ducts 2 and 4 combined)	570	**556988**	**VABV-S6-1Q-N12**

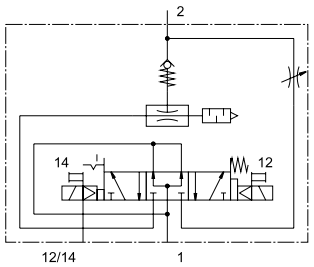
Accessories – Soft-start valve for VTSA/VTSA-F

Ordering data

Designation	Code	Description		Part no.	Type
Cover cap					
	–	M12, for sealing the sensor opening	Pack of 10	**165592**	**ISK-M12**
Electrical connection for soft-start valve					
	P1	• Angled socket, type C, 2-pin, with LED • Straight plug M12x1, 2-pin		**188024**	**MSSD-EB-M12-MONO**
	GB	• Straight socket, M12x1, 5-pin • Open end, 4-core	5 m	**541328**	**NEBU-M12G5-K-5-LE4**
	–	• Angled socket, M12x1, 5-pin • Open end, 4-core	5 m	**541329**	**NEBU-M12W5-K-5-LE4**
	GG	• Angled socket, type C, 3-pin, with LED • Open end, 3-core	2.5 m	**151688**	**KMEB-1-24-2.5-LED**
	GH		5 m	**151689**	**KMEB-1-24-5-LED**
	GJ		10 m	**193457**	**KMEB-1-24-10-LED**
	GK	• Angled socket, type C, 3-pin • Open end, 3-core	2.5 m	**151690**	**KMEB-1-230AC-2.5**
	GL		5 m	**151691**	**KMEB-1-230AC-5**
Connecting cable for electrical connection of the proximity switch					
	–	• Straight socket, M12x1, 5-pin • Open end, 4-core	5 m	**541328**	**NEBU-M12G5-K-5-LE4**
	GC	• Angled socket, M12x1, 5-pin • Open end, 4-core	5 m	**541329**	**NEBU-M12W5-K-5-LE4**
	–	Modular system for a choice of connecting cables		**–**	**NEBU-...** → Internet: nebu
Silencer					
	U	Standard version (pack of 1)	1/2 NPT	**12741**	**U-1/2-B-NPT**
	A	Sintered design (pack of 10)	1/2 NPT	**1206992**	**AMTE-M-LH-N12**
Pneumatic connection accessories					
A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter "Accessories" → page: 189					

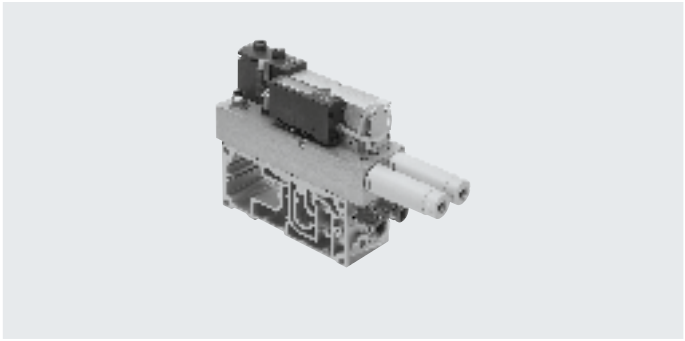
Datasheet – Vacuum block for VTSA/VTSA-F

Function



Vacuum Ejection

- Vacuum block width
  53 mm
- Voltage
  24 V DC
- Operating pressure
  0.4 ... 0.8 MPa
  4 ... 8 bar



Description

The vacuum block can be integrated into the existing valve terminal VTSA/VTSA-F. To do this, the vacuum block is screwed to a manifold sub-base for 2 valve positions, width 26 mm.

The vacuum block is used in conjunction with a suction gripper to pick up, hold and place components. The suction gripper uses vacuum for picking up and holding.

Once the component has been positioned, it is released by an ejector pulse. This ejector pulse is created by pressurising the vacuum system so that the vacuum briefly collapses. The ejector pulse can be set.

Note
The vacuum block can be operated in combination with the vertical stacking for pilot air switch-off (intermediate plate VABF-S4-1-S plus 5/2-way valve) on the valve terminal VTSA/VTSA-F.

Function

The vacuum block VABF-S4-1-V2B1... is used to generate a vacuum. The generated vacuum and a suction gripper produce a force which is used to grip and transport a workpiece. The supply of compressed air for vacuum generation is controlled by a solenoid valve.

The vacuum is generated by actuating the solenoid coil 12. The setpoint value set at duct B for the generated vacuum is monitored via a vacuum sensor (with switching output). Vacuum generation reverts to a self-holding phase after reaching the setpoint value. The vacuum block controls the vacuum generation process independently within the range of the set switching points (air saving function).

The integrated solenoid valve is used to generate an ejector pulse by activating coil 14. The workpiece is thus safely released from the suction cup with connector and the vacuum is rapidly reduced. The length of the ejector pulse can be influenced by the duration of the electrical pulse. The strength of the ejector pulse is influenced by the adjustable flow control.

Note
If the electrical or pneumatic supply fails while the valve is in the "generate vacuum" or "air saving" state, the valve moves to the "generate vacuum" position.

Operating mode of the air saving function (LS)

If the desired threshold value (1) (turn off suction) is reached for the vacuum, vacuum generation is automatically switched off.

Check valves prevent the reduction of the vacuum. However, leakages (e.g. due to rough workpiece surfaces) will slowly reduce the vacuum.

If the vacuum drops below the set threshold value (turn on suction), vacuum generation is switched on automatically.

Vacuum is generated until the set threshold value (turn off suction) is reached again.

Threshold value to turn off suction (air saving function) (1):

The vacuum generator is switched off simultaneously when the output Out A is set.

The preset value is -700 mbar.

Note
Setting options and further instructions are described in the operating instructions and/or documentation VABF-S4-1-V2B1....

Threshold value to turn on suction (2):

The threshold value (2) should always be above the switching point of duct B (3) "vacuum sensing".

The gap between (2) and (3) should be at least 50 mbar.

Datasheet – Vacuum block for VTSA/VTSA-F

General technical data		
Valve function		5/3-way, pressurised
Design		Non-modular
Mounting position		Any
Nominal width of Laval nozzle (vacuum generation)	[mm]	2.0
Ejector characteristics		High vacuum, standard
Integrated functions		• Ejector pulse valve, electric • Flow control valve • On/off valve, electric • Air-saving circuit, electric • Check valve • Open silencer • Vacuum switch
Silencer design		Open
Measured variable		Relative pressure
Measuring principle		Piezoresistive
Switching function		Threshold value comparator
Short circuit current rating		Yes
Reverse polarity protection		For all electrical connections
Inductive protective circuit		Adapted to MZ, MY, ME coils
Switching element function		N/O contact
Threshold-value setting range	[bar]	–0.999 ... 0 (recommended operating range: –0.95 ... –0.05)
	[MPa]	–0.0999 ... 0 (recommended operating range: –0.095 ... –0.005)
Hysteresis setting range	[bar]	–0.9 ... 0
	[MPa]	–0.09 ... 0
Power supply, vacuum block		Via own M12 plug
Pneumatic supply for vacuum block		Via valve terminal VTSA/VTSA-F
Ejector pulse		Strength adjustable via flow control screw
Actuation type • Solenoid valve • Vacuum block		 Electrically actuated Vacuum generation via Venturi nozzle
Type of actuation for solenoid valve		Piloted
Flow direction		Not reversible
Exhaust air function		Can be throttled (duct 3 and 5)
Type of mounting		Via through-hole, screwed onto manifold sub-base, width 26 mm
Manual override • For vacuum generation • For ejector pulse		Detenting, non-detenting, concealed Yes, solenoid coil 12 (holding) Yes, solenoid coil 14 (spring return), (only effective when power supply is switched off)
Signal status display, valve		LED
Pneumatic connections		
Supply	1, 3	Via the manifold sub-base of the valve terminal, width 26 mm
Exhausting	3/5	Via the modular silencer for vacuum block
Working port (vacuum port)	2	Via the manifold sub-base of the valve terminal (QS push-in fitting – vacuum), G1/4
Connection	4	Via the manifold sub-base of the valve terminal (sealed with blanking plug type B-1/4)

Datasheet – Vacuum block

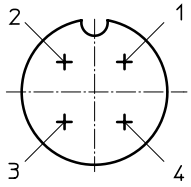
Technical data for pressure switch of vacuum block (delivery status)		
Duct A: air saving function		
Switching behaviour		Threshold value comparator
Switching point	[mbar]	–700
	[MPa]	–0.07
Hysteresis	[mbar]	200
	[MPa]	0.02
Switching characteristic		NO (normally open contact)
Duct B: vacuum sensing		
Switching behaviour		Threshold value comparator
Switching point	[mbar]	–400
	[MPa]	–0.04
Hysteresis	[mbar]	5
	[MPa]	0.0005
Switching characteristic		NO (normally open contact)

Note

Setting options for duct A and duct B and further instructions are described in the operating manual and/or documentation VABF-S4-1-V2B1....

Electrical data		
Electrical connection		4-pin plug to ISO 15407-2 (vacuum block supplied with power separately, not via valve terminal)
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	21.6 ... 26.4
Duty cycle	[%]	100
Max. output current	[mA]	50
Voltage drop	[V]	š1.5
No-load current	[mA]	50 ... 150 (dependent on the switching status of the solenoid coils)
Characteristic coil data	[V DC]	24
Power consumption (Characteristic coil data)	[W]	1.3
Overload protection		Available
Accuracy (full scale)	[% FS]	±3
Degree of protection to EN 60529		IP65, NEMA 4 (for all types of signal transmission when mounted)

Electrical connection[1)]

	1xM12 plug, 4-pin to EN 61076-2-101	Pin1 + 24 V DC (brown (BN)) Pin2 Out B (white (WH)) Pin3 0 V DC (blue (BU)) Pin4 Out A (black (BK))		Supply voltage Switching output B (duct B) 0 V DC Switching output A (duct A)

1) Max. permissible signal cable length: 5 m

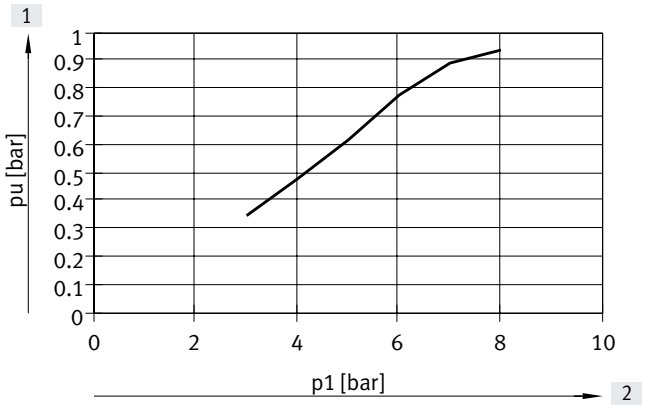
Datasheet – Vacuum block

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Notes on the operating medium		Unlubricated operation
Operating pressure	[bar]	4 ... 8
	[MPa]	0.4 ... 0.8
Nominal operating pressure	[bar]	6
	[MPa]	0.6
Pressure measuring range	[bar]	–1 ... 0
	[MPa]	–0.1 ... 0
Negative pressure	[bar]	Up to approx. 0.9 (as a function of operating pressure)
	[MPa]	Up to approx. 0.09 (as a function of operating pressure)
Ambient temperature	[°C]	0 ... 50
Temperature of medium	[°C]	0 ... 50
Noise level LpA (at nominal operating pressure)	[dB(A)]	78

Materials	
Housing, jet nozzle	Wrought aluminium alloy
Screws	Galvanised steel
Seals	NBR
Plug housing	Nickel-plated die-cast zinc
Plug contacts	Gold-plated brass
Inspection window on pressure sensor	PA
Pressure sensor keypad	TPE-U
Note on materials	RoHS-compliant

Pressure ratios, air consumption and volumetric flow rate

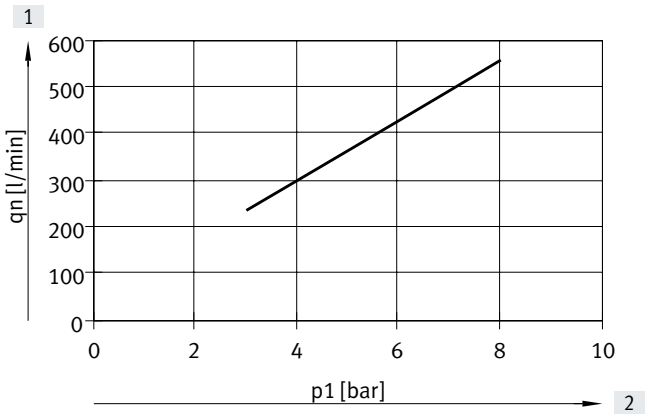
Vacuum as a function of operating pressure



[1] Vacuum

[2] Operating pressure

Air consumption as a function of operating pressure

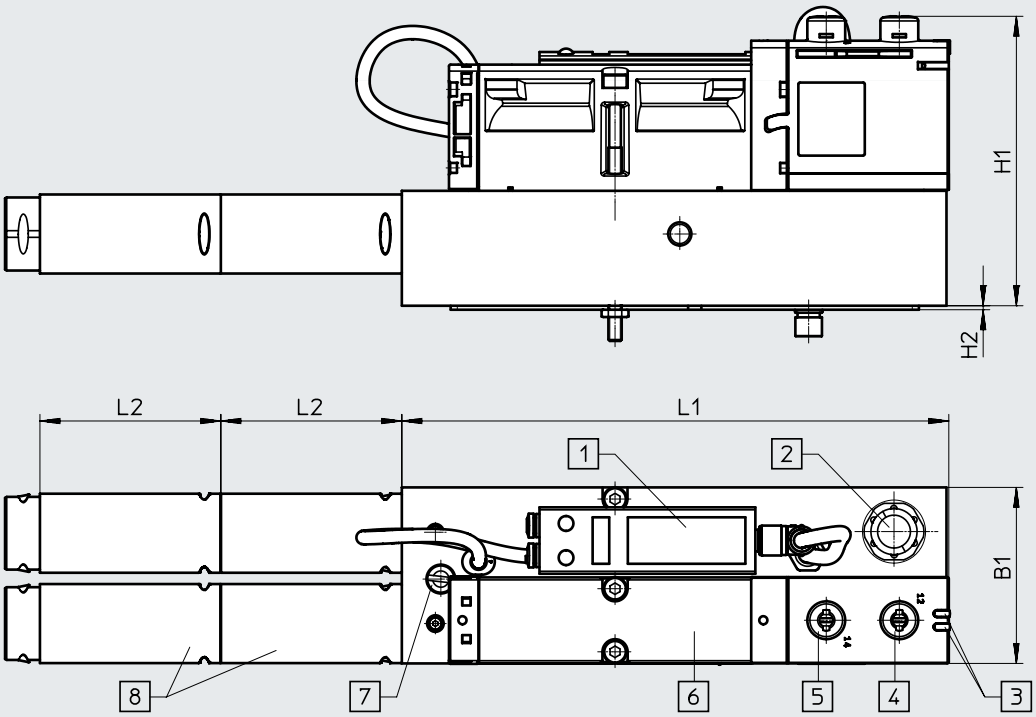


[1] Air consumption

[2] Operating pressure

Datasheet – Vacuum block

Dimensions Download CAD data ➔ www.festo.com

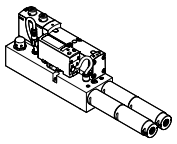
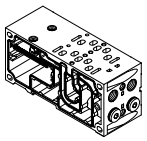
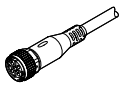
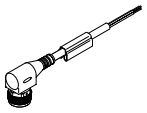
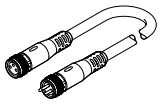


[1] Pressure sensor with LCD display and operating buttons
[2] Plug for electrical connection and vacuum sensing (M12, 4-pin)
[3] LED signal status indication, solenoid valve
[4] Manual override for vacuum generation
[5] Manual override for ejector pulse (only effective when the power supply is switched off)
[6] Solenoid valve
[7] Flow control screw for adjusting the strength of the ejector pulse
[8] Modular silencer

Type	B1	H1	H2	L1	L2
VABF-S4-1-V2B1-C-VH-20	53	87.1	1.2	164.7	54.2

Datasheet – Vacuum block

Ordering data

	Code	Description		Part no.	Type
Vacuum block					
	VB	Vacuum block for valve terminal VTSA/VTSA-F with air-saving function and adjustable ejector pulse	1120 g	**571425**	**VABF-S4-1-V2B1-C-VH-20**
Manifold sub-base					
	L[2]	For vacuum block 2 valve positions, 4 addresses, with 2 blanking plugs in port 4	26 mm	**– [1]**	**VABV-S4-...**
	LK[2]	For vacuum block 2 valve positions, 4 addresses, with 2 blanking plugs in port 4, with small QS fitting	26 mm	**– [1]**	**VABV-S4-...**
Connecting cable					
	–	• Straight socket, M12x1, 5-pin • Open end, 4-core	2.5 m	**550326**	**NEBU-M12G5-K-2.5-LE4**
			5 m	**541328**	**NEBU-M12G5-K-5-LE4**
	GC	• Angled socket, M12x1, 5-pin • Open end, 4-core	**5 m**	**541329**	**NEBU-M12W5-K-5-LE4**
	–	Modular system for a choice of connecting cables		**–**	**NEBU-...** → Internet: nebu
Pneumatic connection accessories					
A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter "Accessories" → page: 189 or on the website via the individual search terms: **Internet** → connection technology, silencer, blanking plug					

1) The manifold sub-base for use with the vacuum block can only be ordered via the valve terminal configurator and therefore doesn't have a separate part number.
2) Code letter within the order code for a valve terminal configuration

Datasheet – Valves on individual sub-base

- Valve width
  to ISO 15407-2
  • 18 mm
  • 26 mm
  to ISO 5599-2
  • 42 mm (ISO 1)
  • 52 mm (ISO 2)

- Flow rate
  Width 18 mm:
  up to 600 l/min
  Width 26 mm:
  up to 1200 l/min
  Width 42 mm:
  up to 1500 l/min
  Width 52 mm:
  up to 3400 l/min

- Voltage
  24 V DC
  110 V AC

General technical data					
Design		Piston spool valve			
Sealing principle		Soft			
Actuation type		Electrical			
Type of control		Piloted			
Exhaust function, can be throttled		Via individual sub-base			
Lubrication		Lifetime lubrication			
Type of mounting • Valve • Individual sub-base		 Screwed onto sub-base Screwed via through-hole			
Mounting position		Any			
Manual override		Detenting, non-detenting, concealed			
Pneumatic connections – NPT thread					
Width		18 mm	26 mm	42 mm	52 mm
Pneumatic connection		Via sub-base			
Supply port	1	1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT
Exhaust port	3/5	1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT
Working ports	2/4	1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT
External pilot air supply port	14	10-32UNF-2B	1/8 NPT	1/8 NPT	1/8 NPT
Pilot exhaust air port	12	10-32UNF-2B	1/8 NPT	1/8 NPT	1/8 NPT

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Notes on operating/ pilot medium		Lubricated operation possible (in which case lubrication will always be required)
Operating pressure	[bar]	–0.9 ... +10
	[MPa]	–0.09 ... +1
Ambient temperature	[°C]	–5 ... +50
Certification		c UL us - Recognized (OL)
CE marking (see declaration of conformity)		In accordance with EU Low Voltage Directive (not for VABS-S4...R3 and variants of width 52, VABS-S2-2S...)
Degree of protection		IP65, NEMA 4 (for all types of signal transmission when mounted)

Datasheet – Valves on individual sub-base

Standard nominal flow rate of valve/individual sub-base [l/min]

Valve function (with valve code)	Width 18 mm		Width 26 mm	
	Valve	Valve on individual sub-base	Valve	Valve on individual sub-base
5/2-way double solenoid (B52)	750	600	1400	1200
5/2-way double solenoid with dominant signal (D52)	750	600	1400	1200
5/2-way single solenoid, pneumatic spring (M52A)	750	600	1400	1200
5/2-way single solenoid, mechanical spring (M52M)	750	600	1400	1200
5/3-way closed (P53C)	700	550	1400[1)] 700[2)]	1200[1)] 700[2)]
5/3-way exhausted (P53E)	700[1)] 330[2)]	500[1)] 330[2)]	1400[1)] 700[2)]	1200[1)] 700[2)]
5/3-way pressurised (P53U)	700[1)] 330[2)]	500[1)] 330[2)]	1400[1)] 700[2)]	1200[1)] 700[2)]
5/3-way exhausted, switching position 14 detenting (P53ED)	–	390[1)] 310[2)]	1400[1)] 700[2)]	1200[1)] 700[2)]
5/3-way exhausted, switching position 12 detenting (P53EP)	–	390[1)] 320[2)]	1400[1)] 700[2)]	1200[1)] 700[2)]
5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)	–	380[1)] 360[2)]	700[1)] 700[2)]	700[1)] 700[2)]
5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)	–	400	–	900[1)] 840[2)]
2x3/2-way single solenoid, closed (T32C)	600	500	1250	1100
2x3/2-way single solenoid, open (T32U)	600	500	1250	1100
2x3/2-way single solenoid, open/closed (T32H)	600	500	1250	1100
2x3/2-way single solenoid, closed (T32N)	600	500	1250	1100
2x3/2-way single solenoid, open (T32F)	600	500	1250	1100
2x3/2-way single solenoid, open/closed (T32W)	600	500	1250	1100
2x2/2-way single solenoid, closed (T22C)	700	500	1350	1100
2x2/2-way single solenoid, closed (T22CV)	700	500	1350	1100

1) Switching position
2) Mid-position

Datasheet – Valves on individual sub-base

Standard nominal flow rate of valve/individual sub-base [l/min]

Valve function (with valve code)	Width 42 mm		Width 52 mm	
	Valve	Valve on individual sub-base	Valve	Valve on individual sub-base
5/2-way double solenoid (B52)	2000	1500	4000	3400
5/2-way double solenoid with dominant signal (D52)	2000	1500	4000	3400
5/2-way single solenoid, pneumatic spring (M52A)	2000	1500	4000	3400
5/2-way single solenoid, mechanical spring (M52M)	2000	1500	4000	3400
5/3-way closed (P53C)	1900[1)] 950[2)]	1400[1)] 800[2)]	3600[1)] 1700[2)]	3200[1)] 1700[2)]
5/3-way exhausted (P53E)	1900[1)] 950[2)]	1400[1)] 800[2)]	3600[1)] 1700[2)]	3200[1)] 1700[2)]
5/3-way pressurised (P53U)	1900[1)] 950[2)]	1400[1)] 800[2)]	3600[1)] 1700[2)]	3200[1)] 1700[2)]
5/3-way, pressurised 1 to 2, 4 to 5 closed (P53F)[3)]	1700[1)] 700[2)]	1400[1)] 700[2)]	3000[1)] 900[2)]	2600[1)] 900[2)]
2x3/2-way single solenoid, closed (T32C)	1600	1200	3000	2600
2x3/2-way single solenoid, open (T32U)	1600	1200	3000	2600
2x3/2-way single solenoid, open/closed (T32H)	1600	1200	3000	2600
2x3/2-way single solenoid, closed (T32N)	1600	1200	3000	2600
2x3/2-way single solenoid, open (T32F)	1600	1200	3000	2600
2x3/2-way single solenoid, open/closed (T32W)	1600	1200	3000	2600
2x2/2-way single solenoid, closed (T22C)	1600	1400	4000	3400
2x2/2-way single solenoid, closed (T22CV)	1600	1400	–	–

1) Switching position
2) Mid-position
3) The valve function P53F is only available in the 24 V DC version. Values only apply to 24 V DC.

Electrical data, individual sub-base

Current rating at 40°C	[A]	2 (1 A per coil)
Degree of protection to EN 60529		IP65, NEMA 4 (for all types of signal transmission when mounted)
Variants with cable connector		
Operating voltage range	[V DC]	24 ±10% (for variants with cable terminal VABS-...-K1/C1, ...-K2)
	[V AC]	110 ±10% (50 ... 60Hz) (for variants with cable and spring-loaded terminal VABS-...-K1/C1, ...-K2)
Surge resistance	[kV]	4
Pollution degree		3
Duty cycle	[ED]	100%

Note
A cable connector is needed to ensure the IP degree of protection and to protect against tensile load, twisting and bending.

Datasheet – Valves on individual sub-base

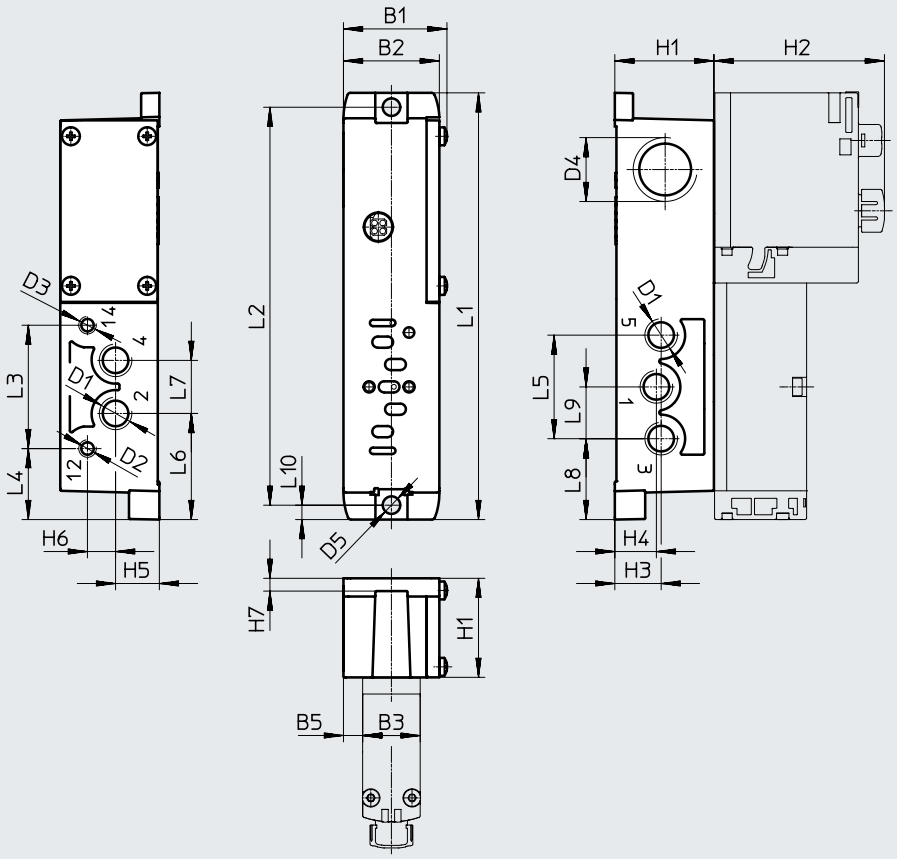
Materials				
Width	18 mm	26 mm	42 mm	52 mm
Connecting plate	Die-cast aluminium			Gravity die-cast aluminium
Valve	Die-cast aluminium, PA			
Seals	FPM, NBR			
Note on materials	RoHS-compliant			

Product weight [g]				
Width	18 mm	26 mm	42 mm	52 mm
Valves				
5/2-way solenoid valve, Double solenoid	172	276	439	732
5/2-way valve, single solenoid	163	293	426	702
5/3-way solenoid valve (P53C, P53E, P53U)	191	320	456	780
5/3-way solenoid valve (P53BD)	172	301	–	–
5/3-way solenoid valve (P53ED, P53EP)	170	291	–	–
5/3-way solenoid valve (P53AD)	172	301	–	–
5/3-way solenoid valve (P53F)	–	–	456	780
2x 3/2-way solenoid valve	190	335	442	740
2x 2/2-way solenoid valve	190	335	442	740
Individual connection				
Individual sub-base	192	302	386	815

Datasheet – Valves on individual sub-base

Dimensions Download CAD data ➔ www.festo.com

Individual sub-base with cable terminals, width 18 mm



Type	B1	B2	B3	B5	D1	D2	D3	D4	D5 ⌀	H1	H2	H3	H4	H5	H6	H7
VABS-S4-2S-N18-K2 [1]	32.4	30	18	6	1/8 NPT	10-32UNF-2B	10-32UNF-2B	M20x1.5	5.5	31	53.4	14.5	13	13.7	8.8	4
VABS-S4-2S-N18-B-K2 [2]							–									

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
VABS-S4-2S-N18-K2 [1]	133.5	124.5	38.6	22.2	32.4	33.2	16.6	25.3	16.2	4.5
VABS-S4-2S-N18-B-K2 [2]										

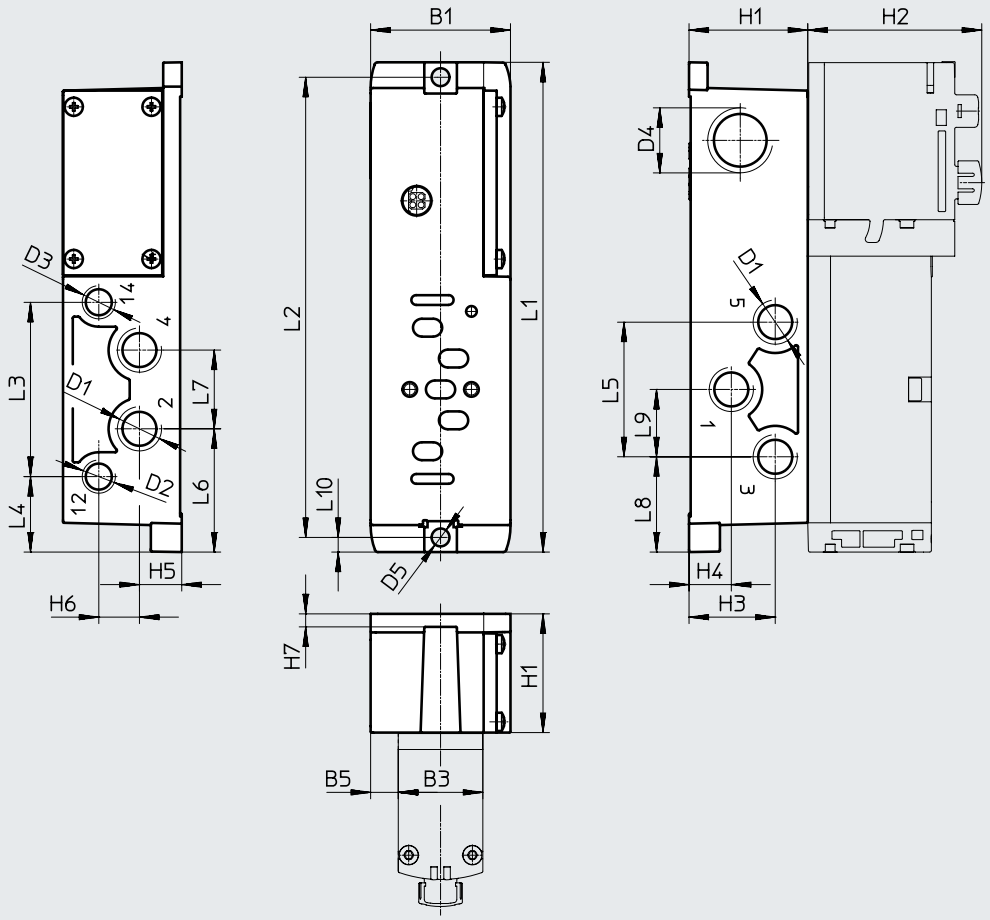
1) External pilot air supply
2) Internal pilot air supply

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

Datasheet – Valves on individual sub-base

Dimensions Download CAD data ➔ www.festo.com

Individual sub-base with cable terminals, width 26 mm



Type	B1	B3	B5	D1	D2	D3	D4	D5 ⌀	H1	H2	H3	H4	H5	H6	H7
VABS-S4-1S-G14-K2 [1]	43	26	8.5	1/4 NPT	1/8 NPT	1/8 NPT	M20x1.5	5.5	36.5	53.5	26.5	13	13	12.5	4
VABS-S4-1S-G14-B-K2 [2]						–									

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
VABS-S4-1S-G14-K2 [1]	150.6	141.5	53.6	23.2	41.4	37.9	24.2	29.3	20.7	4.5
VABS-S4-1S-G14-B-K2 [2]										

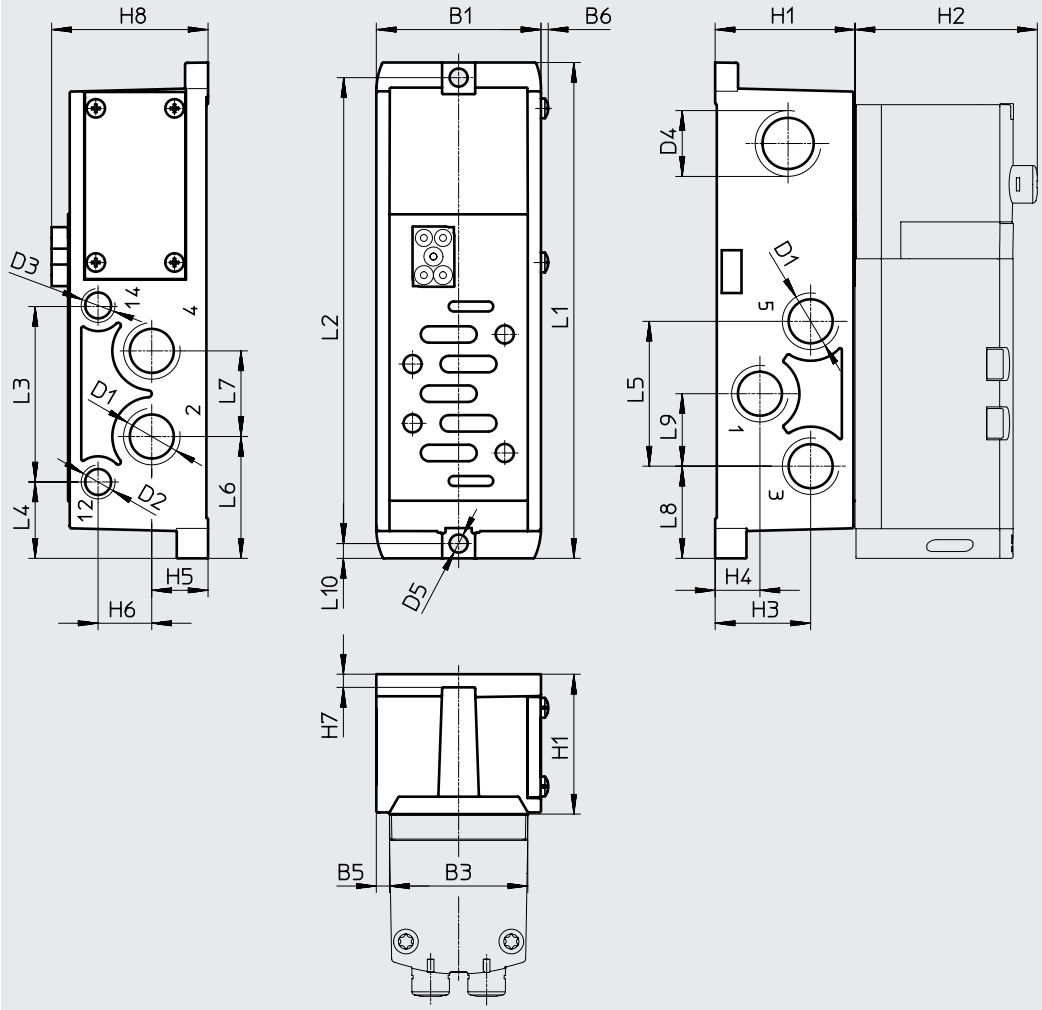
1) External pilot air supply
2) Internal pilot air supply

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

Datasheet – Valves on individual sub-base

Dimensions Download CAD data ➔ www.festo.com

Individual sub-base with spring-loaded terminal or for assembly by the user, width 42 mm



Type	B1	B3	B5	B6	D1	D2	D3	D4	D5 ø	H1	H2	H3	H4	H5	H6	H7	H8
VABS-S2-1S-N38-K1 [1]	50	42	4	2.2	3/8 NPT	1/8 NPT	1/8 NPT	M20x1.5	5.5	42.5	55.3	29	13.6	17.1	16.3	4	47.5
VABS-S2-1S-N38-C1 [1]																	
VABS-S2-1S-N38-B-K1 [2]							–										
VABS-S2-1S-N38-B-C1 [2]																	

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
VABS-S2-1S-N38-K1 [1]	150.6	141.5	53.6	23.2	44	37	26	28	22	4.5
VABS-S2-1S-N38-C1 [1]										
VABS-S2-1S-N38-B-K1 [2]										
VABS-S2-1S-N38-B-C1 [2]										

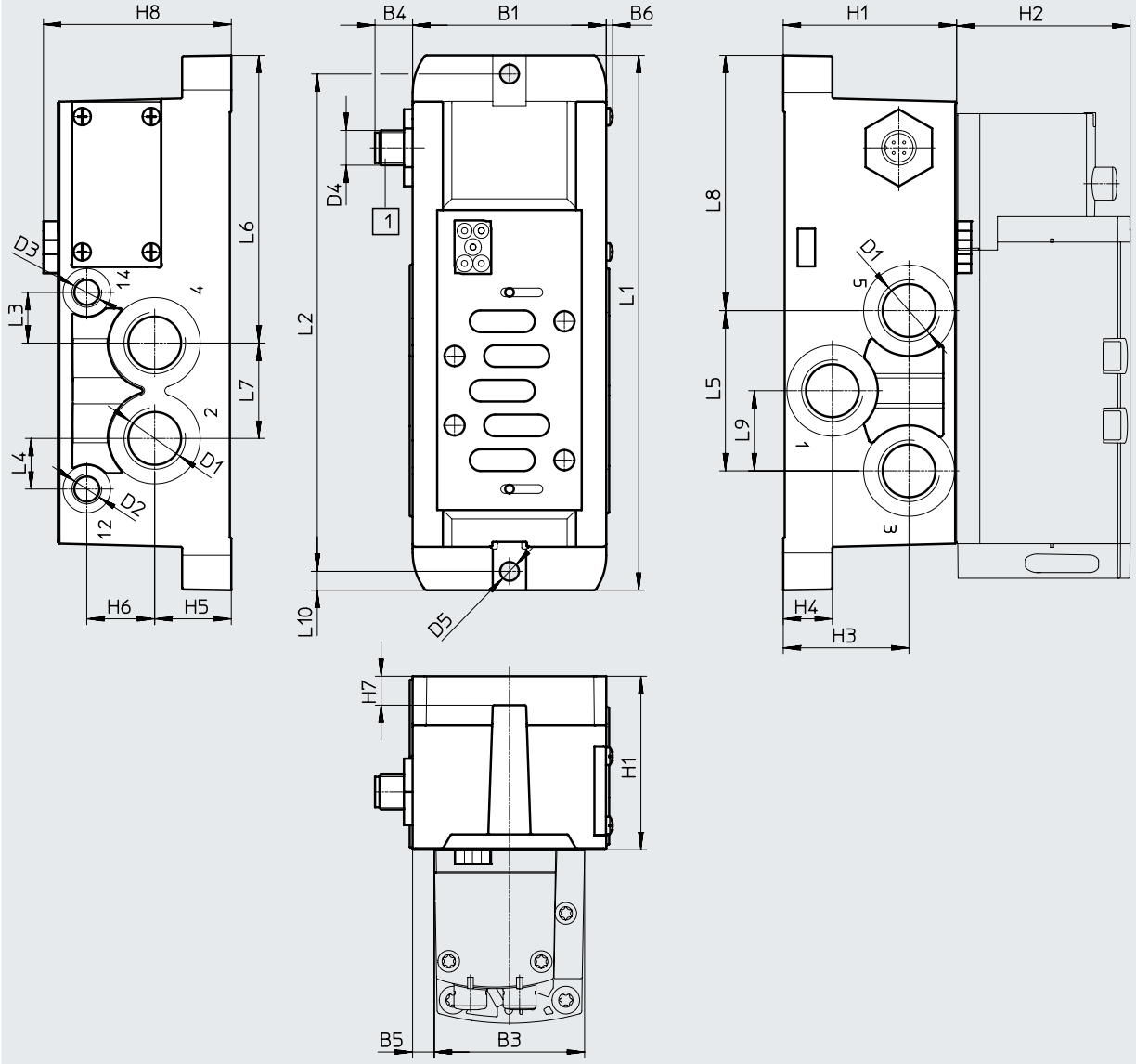
1) External pilot air supply
2) Internal pilot air supply

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

Datasheet – Valves on individual sub-base

Dimensions Download CAD data ➔ www.festo.com

Individual sub-base with M12 plug, width 52 mm



[1] Plug to EN 61076-2-101

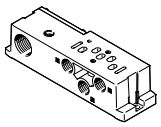
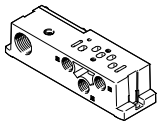
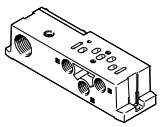
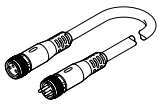
Type	B1	B3	B5	B6	D1	D2	D3	D4	D5 ⌀	H1	H2	H3	H4	H5	H6	H7	H8
VABS-S2-2S-N12-K1 [1]	67	52	7.5	2.2	1/2 NPT	1/8 NPT	1/8 NPT	M20x1.5	6.5	60	60	43.5	17	26.5	23.5	10	65
VABS-S2-2S-N12-C1 [1]																	
VABS-S2-2S-N12-B-K1 [2]							–										
VABS-S2-2S-N12-B-C1 [2]																	

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
VABS-S2-2S-N12-K1 [1]	185	172	17.5	17.5	55.4	99.5	33	88.3	27.7	6.5
VABS-S2-2S-N12-C1 [1]										
VABS-S2-2S-N12-B-K1 [2]										
VABS-S2-2S-N12-B-C1 [2]										

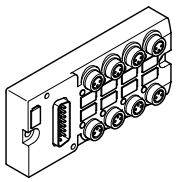
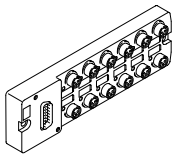
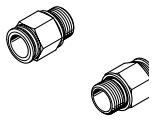
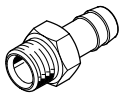
1) External pilot air supply
2) Internal pilot air supply

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

Accessories – Individual connection

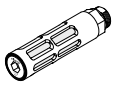
Ordering data					
	Description		Width	Part no.	Type
Individual sub-base, electrical connection via cable terminals					
	Internal pilot air supply	1/8 NPT connections	18 mm	**541068**	**VABS-S4-2S-N18-B-K2**
		1/4 NPT connections	26 mm	**541066**	**VABS-S4-1S-N14-B-K2**
	External pilot air supply	1/8 NPT connections	18 mm	**539724**	**VABS-S4-2S-N18-K2**
		1/4 NPT connections	26 mm	**539726**	**VABS-S4-1S-N14-K2**
Individual sub-base, electrical connection via spring-loaded terminal					
	Internal pilot air supply	3/8 NPT connections	42 mm	**546763**	**VABS-S2-1S-N38-B-C1**
		1/2 NPT connections	52 mm	**555644**	**VABS-S2-2S-N12-B-C1**
	External pilot air supply	3/8 NPT connections	42 mm	**546761**	**VABS-S2-1S-N38-C1**
		1/2 NPT connections	52 mm	**555639**	**VABS-S2-2S-N12-C1**
Individual sub-base, electrical connection via cable (open end)					
	Internal pilot air supply	3/8 NPT connections	42 mm	**546103**	**VABS-S2-1S-N38-B-K1**
		1/2 NPT connections	52 mm	**555642**	**VABS-S2-2S-N12-B-K1**
	External pilot air supply	3/8 NPT connections	42 mm	**546100**	**VABS-S2-1S-N38-K1**
		1/2 NPT connections	52 mm	**555637**	**VABS-S2-2S-N12-K1**
Connecting cable for electrical connection of individual valves at the individual electrical connection					
	Modular system for a choice of connecting cables			–	**NEBU-...** → Internet: nebu
Pneumatic connection accessories					
A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter "Accessories" → page: 189					

Accessories

Ordering data	Description		Part no.	Type	PU[1]
Multi-pin plug distributor					
	15-pin Sub-D socket/8x 3-pin M8 plugs		**177669**	**MPV-E/A08-M8**	1
	15-pin Sub-D socket/12x 3-pin M8 plugs		**177670**	**MPV-E/A12-M8**	1
Push-in fitting					
	Connecting thread 1/4 NPT for tubing O.D.	1/2"	**567771**	**QB-1/4-1/2-U**	10
		3/8"	**533278**	**QB-1/4-3/8-U**	10
		5/16"	**533277**	**QB-1/4-5/16-U**	10
	Connecting thread 1/8 NPT for tubing O.D.	3/8"	**567773**	**QB-1/8-3/8-U**	10
		1/4"	**533273**	**QB-1/8-1/4-U**	10
		5/16"	**533274**	**QB-1/8-5/16-U**	10
	Connecting thread 3/8 NPT for tubing O.D.	1/2"	**533282**	**QB-3/8-1/2-U**	5
		3/8"	**533281**	**QB-3/8-3/8-U**	5
	Connecting thread 1/2 NPT for tubing O.D.	5/8"	**190682**	**QS-1/2-5/8-U**	1
		1/2"	**533284**	**QB-1/2-1/2-U**	5
Barbed hose fitting					
	For right end plate (connecting thread NPT)	3/4"	**564848**	**N-3/4-P-19-NPT**	1
		R1	**572243**	**N-1-P-19-NPT**	1
	For adapter plate (connecting thread NPT)	R1	**572243**	**N-1-P-19-NPT**	1

1) Packaging unit

Accessories

Ordering data						
	Code	Description		Part no.	Type	PU[1]
Silencer						
	U	Standard design, connecting thread NPT	1/8"	**12638**	**U-1/8-B-NPT**	1
			1/4"	**12639**	**U-1/4B-NPT**	1
			1/2"	**12741**	**U-1/2-B-NPT**	1
			3/4"	**566823**	**U-3/4-B-NPT**	1
			1"	**571280**	**U-1-B-NPT**	1
	A	Sintered design, connecting thread NPT	1/8"	**1206989**	**AMTE-M-LH-N18**	20
			1/4"	**1206990**	**AMTE-M-LH-N14**	20
			1/2"	**1206992**	**AMTE-M-LH-N12**	10
Blanking plug						
	–	Connecting thread NPT	1/8"	**173985**	**B-1/8-NPT**	1
			1/4"	**174165**	**B-1/4-NPT**	1
			1/2"	**31785**	**B-1/2-NPT**	1
			3/4"	**31786**	**B-3/4-NPT**	1
			1"	**31787**	**B-1-NPT**	1
Other pneumatic connection accessories						
A selection of possible fittings, blanking plugs and silencers can be found on the website via the individual search terms: **Internet →** connection technology, silencer, blanking plug						

1) Packaging unit