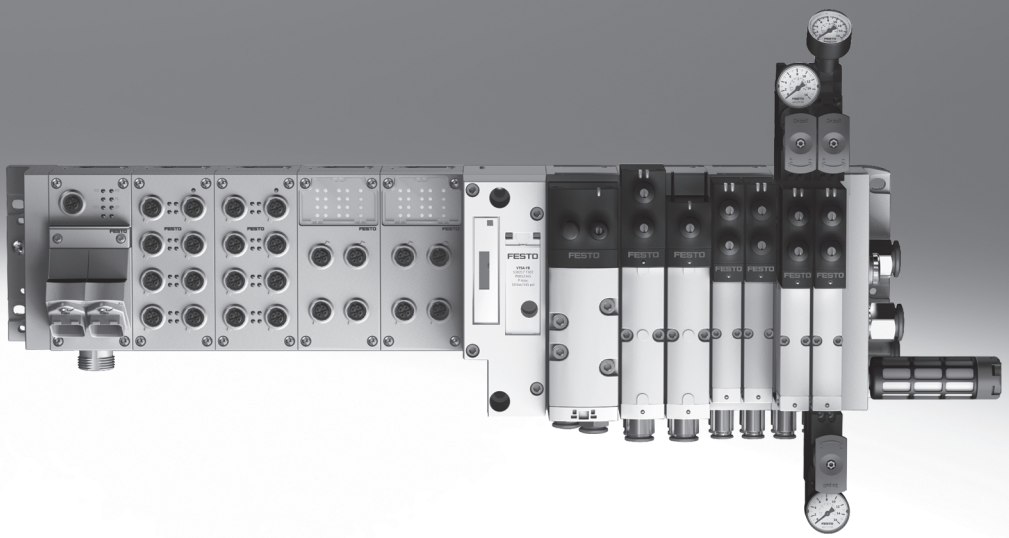
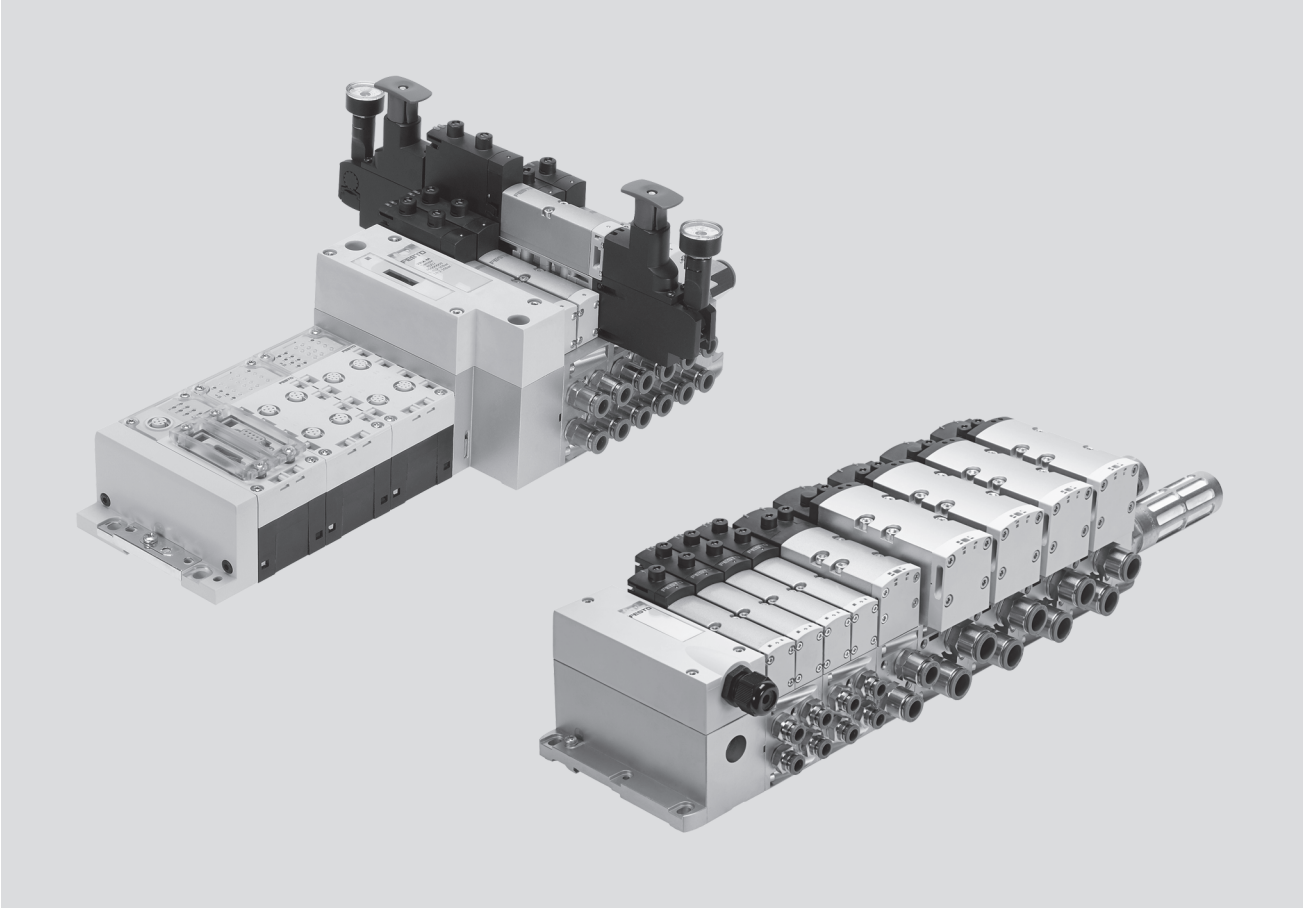
Valve terminals type 44/45, VTSA/VTSA-F, NPT



Valve terminals type 44/45, VTSA/VTSA-F, NPT

Key features



Innovative

- High-performance valves in sturdy metal housing
- Four valve sizes on one valve terminal
- Standardised from the multi-pin plug to the fieldbus connection and control block
- Dream team: fieldbus valve terminal suitable for CPX electrical peripherals. 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

Versatile

- Modular system offering a range of configuration options
- Expandable with up to 32 solenoid coils
- Conversions and extensions are possible at any time
- Manifold sub-bases can be extended using four screws, sturdy duct separation on metal support
- Integration of innovative function modules possible
- Supply plates enable a flexible air supply and variable pressure zones
- Reverse operation
- High pressure range
  –0.9 ... 10 bar
  Flow range from 400 l/min up to 4,000 l/min
- Wide range of valve functions
- Valve supply: 24 V DC or 110 V AC

Reliable

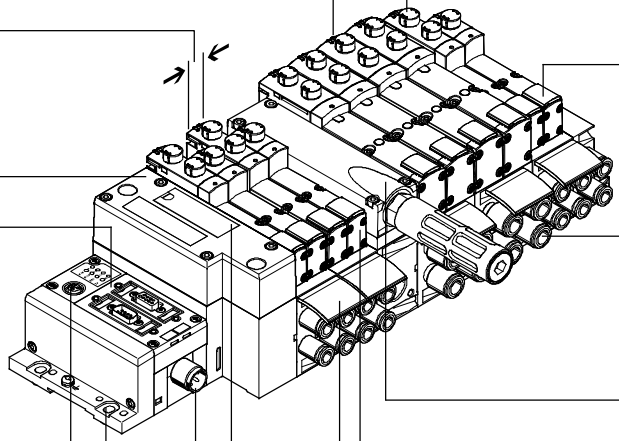
- Sturdy and durable metal components
  - Valves
  - Manifold sub-bases
  - Seals
- Fast troubleshooting thanks to LEDs on the valves and diagnostics via fieldbus
- Reliability of service thanks to valves that can be replaced quickly and easily
- Manual override either non-detenting, non-detenting/detenting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

Easy to mount

- Ready-to-install and tested unit
- Lower selection, ordering, installation and commissioning costs
- Secure mounting on wall or H-rail

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Key features



Reduced downtimes:
On-the-spot diagnostics via LEDs

Width 18 mm, 26 mm, 42 mm and 52 mm can be combined on a single valve terminal without adapter

Pneumatic interface to CPX

Simple electrical connections
- Fieldbus connection via CPX
- Multi-pin plug connection with pre-assembled cable or terminal strip (Cage Clamp®)
- Control block via CPX
- AS-interface
- Individual connection

CPX diagnostic interface for handheld devices (channel-oriented diagnostics down to the individual valve)

Quick mounting:
Direct mounting using screws or H-rail

Safe:
Valves, outputs and logic voltage can be switched off separately

Reliable operation:
Manual override, non-detenting/ detenting or covered

Flexible:
- 32 valve positions/32 solenoid coils
- One valve series for a wide range of flow rates

Functional:
Large ports, flow-optimised ducts, sturdy metal thread or pre-assembled QS connectors

Modular:
Supply plates facilitate the creation of multiple pressure zones as well as numerous additional exhaust and supply ports

Comprehensive range of valve functions

Practical:
Large inscription labels

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 with memory function (switching position 14 is retained in the event of an emergency-stop application/ power failure) there is no spring return on switching position 12
  - Only for valve terminal (plug-in)
  - Mid-position exhausted or mid-position 1⇢2, 4⇢5
  - Switching position 14 with memory function
  - Pneumatic spring return
- Soft-start valve for slow and safe pressure build-up
  - High degree of safety
  - Sensor function provides feedback on switching operation

Valve terminals type 44/45, VTSA/VTSA-F, NPT

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 piston 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 linking
- 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

Combinable

- Width 18 mm: valve flow rate up to 550 (700) l/min
- Width 26 mm: valve flow rate up to 1,100 (1,400) l/min
- Width 42 mm: valve flow rate up to 1,400 l/min
- Width 52 mm: valve flow rate up to 2,900 l/min
- Width 18 mm, 26 mm, 42 mm and 52 mm can be combined on a single valve terminal

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

Values in brackets apply to type 45, VTSA-F

Valve terminal configurator

➔ Internet: www.festo.com

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

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

You order a valve terminal VTSA using the order code:

Ordering system for VTSA
➔ Internet: vtsa

Ordering system for CPX
➔ Internet: cpx

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

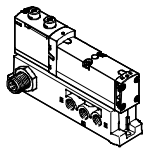
Ordering system for VTSA-F
➔ Internet: vtsa-f

Ordering system for CPX
➔ Internet: cpx

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Key features

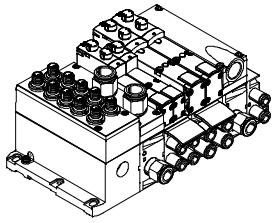
Individual pneumatic connection



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 standardised 4-pin M12 plug 24 V DC (EN 61076-2-101), 4-pin spring-loaded terminal or a cable with open end 24 V DC or 110 V AC, which are configured by the user.

Valve terminal with individual electrical connection

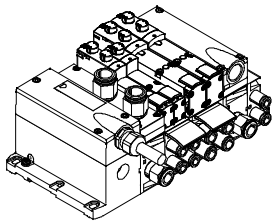


Control signals from the controller to the valve terminal are transmitted via an individual connecting cable.

The valve terminal can be equipped with max. 20 valves and max. 20 solenoid coils.

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

Valve terminal with multi-pin plug connection



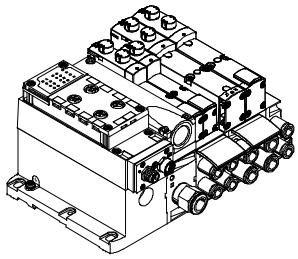
Control signals from the controller to the valve terminal are transmitted via a pre-assembled multi-wire cable or a self-assembled multi-pin plug connection (spring-loaded terminal), which substantially reduces installation time.

The valve terminals can be equipped with max. 32 valves and max. 32 solenoid coils.

Versions

- Multi-pin plug connection with terminal strip (spring-loaded terminal) 24 V DC or 110 V AC
- 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-wire 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 VSVA valves.
- With all available valve functions.

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

More information
➔ Internet: as-interface

- Note

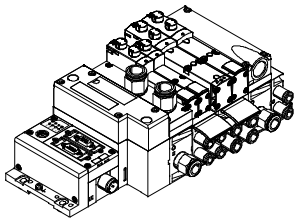
The valve terminal VTSA/VTSA-F with AS-interface connection is based on the same electrical connection block as the valve terminal with multi-pin plug connection. This means it is possible to convert a valve terminal with multi-pin plug connection using an AS-interface module (➔ 95). The technical specifications of the AS-interface system must be observed in this case.

➔ Page 51
➔ Internet: as-interface

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Key features

Valve terminal with fieldbus connection from the CPX system



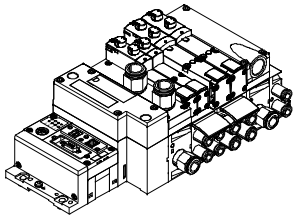
An integrated fieldbus node manages the communication connection with a higher-order PLC. This enables a space-saving pneumatic and electronic solution.

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.

Versions
- Profibus DP
- Interbus
- DeviceNet
- CANopen
- CC-Link
- CPX terminal
- Ethernet/IP
- EtherCAT
- CoDeSys controller
- Modbus/TCP
- PROFINET

➔ Internet: cpx

Valve terminal with control block connection from the CPX system



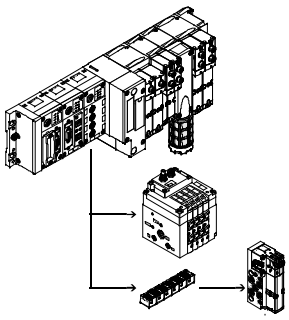
A controller integrated in the Festo valve terminal enables the construction of stand-alone control units with protection to IP65 without a control cabinet thanks to two different operating modes.

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 CPV-SC, CPV and CPA valve terminals 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

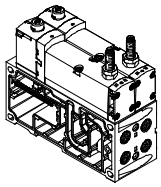
➔ Internet: ctec

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Key features – Valves

FESTO

Solenoid valve with switching position sensing, width 26 mm



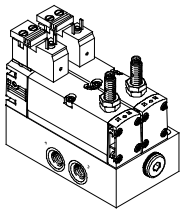
The single solenoid 5/2-way valve with spring return in width 26 mm features switching position sensing. The normal position of the piston spool valve is monitored.

Designed as plug-in or individual connection valve with pilot valves to ISO 15218 and square plug type C. This valve is not a safety component 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 98

Control block with safety function, width 26 mm



These valves are used for special applications, for example for:

- Protecting against unexpected start-up
- 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 component in accordance with the Machinery Directive 2006/42/EC.

➔ Page 104

For holding, blocking a movement (mechanically)

5/3-way solenoid valve for special functions; port 2 is pressurised, port 4 exhausted. Switching position 14 features a memory function.

Possible applications:

- Using lifting cylinders
- Using rotary cylinders

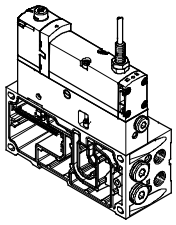
For pressureless switching, self-holding, pneumatic operation

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

Possible applications:

- Pneumatic manual clamps for devices (insert stations)

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 vertical stacking plate VABF-S4-...-S. It enables verifiable switching on and off (sensor function) of the pilot air supply from duct 1 to 14 for the entire pressure zone or valve terminal. The piston position sensing feature is realised by means of an inductive PNP proximity sensor with cable and push-in connector in the size M12x1 to EN 61076-2-104.
This valve is not a safety component 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.

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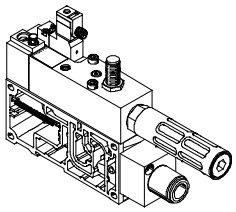
Note

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

Soft-start valve, module width 43 mm



The soft-start valve is separately electrically actuated, independently of the multi-pin plug, AS-interface or fieldbus connection, via a 4-pin plug to ISO 15407-1 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 supply air.

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

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Modular pneumatic peripherals

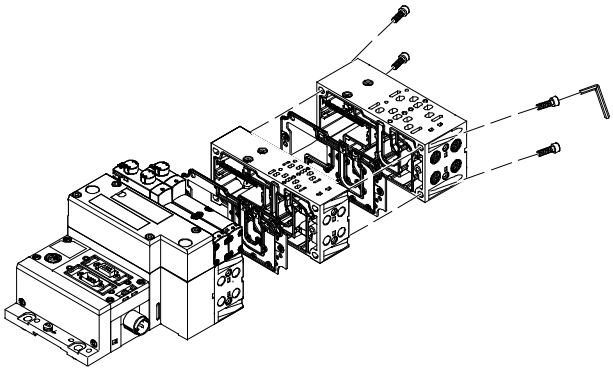
The modular design of the valve terminal VTSA/VTSA-F enables maximum flexibility right from the planning stage and offers maximum ease of service in operation.

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

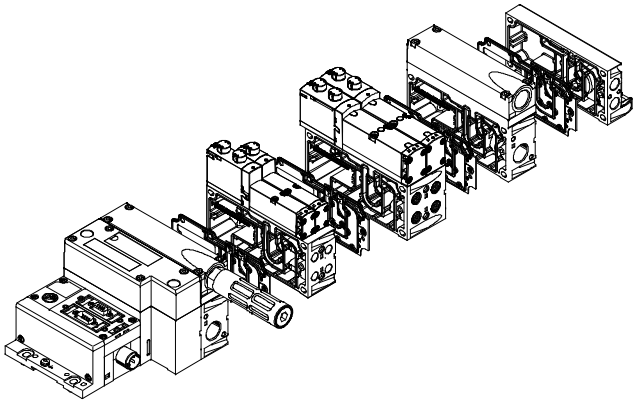
Inside the manifold sub-bases are the connection ducts for supplying compressed air to and venting from the valves on the terminal as well as the working lines for the pneumatic cylinders for each valve.

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.

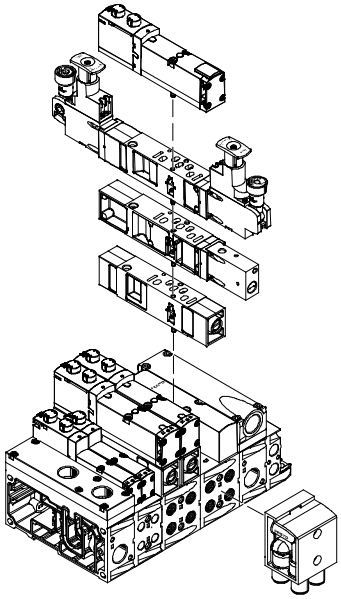
Basic system modularity



Valve modularity



Vertical stacking modularity



Modular electrical peripherals

The manner in which the valves are actuated differs according to whether you are using a multi-pin terminal or fieldbus terminal.

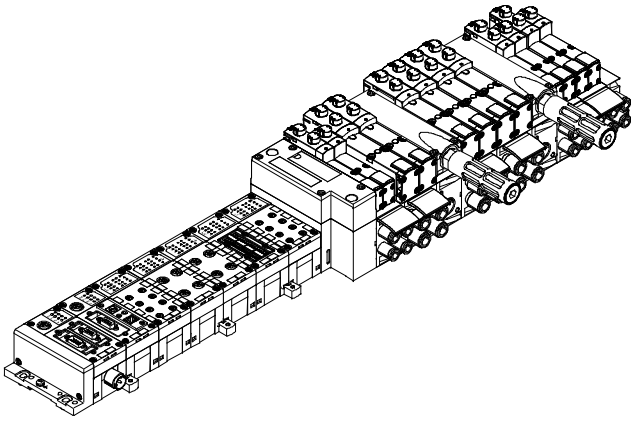
The VTSA/VTSA-F with CPX interface is based on the internal bus system of the CPX and uses this communication system for all solenoid coils and a range of electrical input and output functions.

Parallel linking enables the following:
- Transmission of switching information
- Compact design
- Position-based diagnostics
- Separate voltage supply for valves

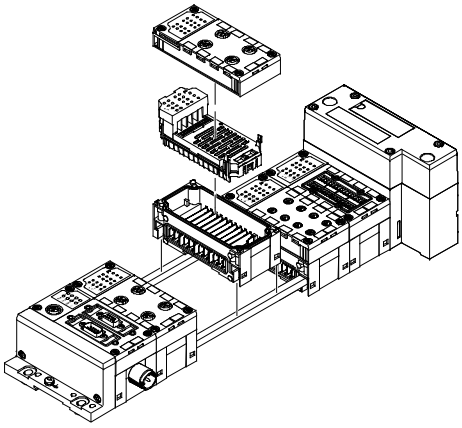
- Flexible conversion without address shifting
- Option of CP interface
- CPX-FEC as stand-alone controller with access via Ethernet and web server
- Transmission of status, parameter and diagnostic data

➔ Internet: cpx

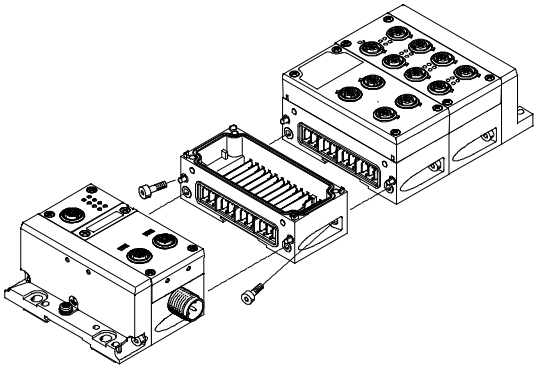
VTSA/VTSA-F with electrical peripherals CPX



Modularity with electrical peripherals CPX



CPX terminal in metal design



The mechanical connection between the CPX modules in metal design is created using special angle fixings. The CPX terminal can thus be expanded at any time.

- Note

The CPX connection blocks are also available in a metal design. 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.

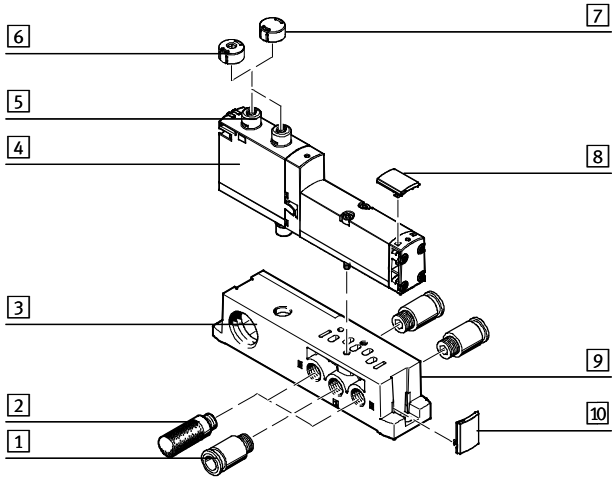
Individual sub-base, width 18 mm, ISO 15407-2

Order code:

- Using individual part numbers

Individual sub-bases can be equipped with any valve.

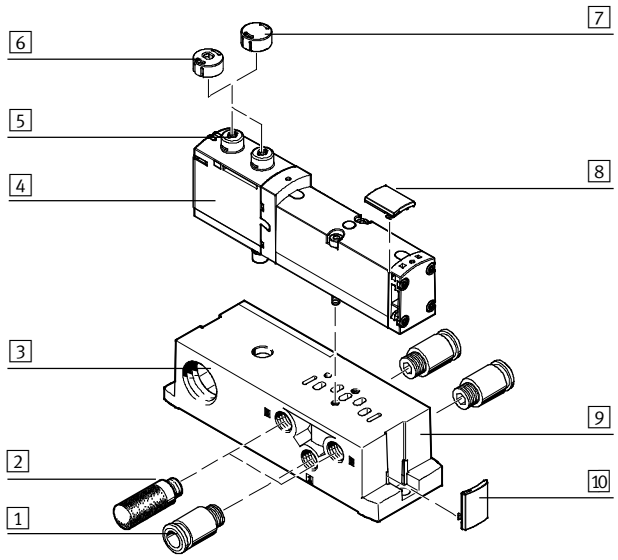
Width 18 mm with spring-loaded terminal or cable (open end)



		Brief description	➔ Page/Internet
1	Fitting	⅛" NPT for working air/exhaust ports (1, 3, 5) and working ports (2, 4)	132
2	Silencer	U-⅛-B-NPT for exhaust ports (3, 5)	132
3	Electrical connection	Spring-loaded terminal, cable (open end)	–
4	Valve VSVA	Width 18 mm	80
5	Manual override	Non-detenting/detenting, per solenoid coil	–
6	Cover cap	For non-detenting manual override	94
7	Cover cap	For covered manual override	94
8	Inscription label holder	For valves	97
9	Individual sub-base	For valve VSVA	131
10	Inscription label holder	For manifold blocks	97

Individual sub-base, width 26 mm, ISO 15407-2

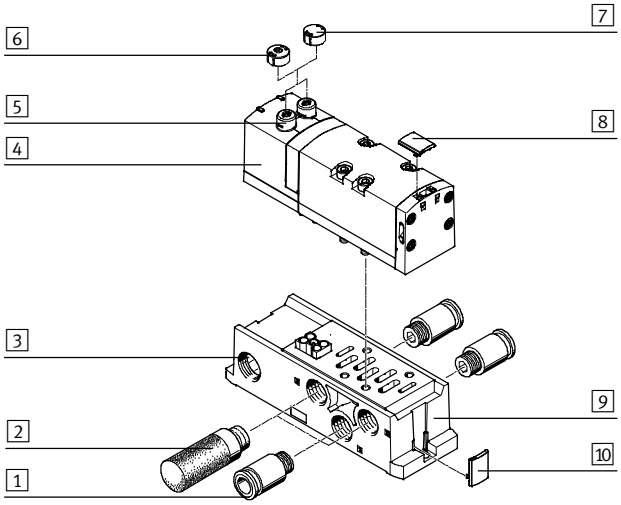
With spring-loaded terminal or cable (open end)



		Brief description	➔ Page/Internet
1	Fitting	¼" NPT for working air/exhaust ports (1, 3, 5) and working ports (2, 4)	132
2	Silencer	U-¼-B-NPT for exhaust ports (3, 5)	132
3	Electrical connection	Spring-loaded terminal, cable (open end)	–
4	Valve VSVA	Width 26 mm	81
5	Manual override	Non-detenting/detenting, per solenoid coil	–
6	Cover cap	For non-detenting manual override	94
7	Cover cap	For covered manual override	94
8	Inscription label holder	For valves	97
9	Individual sub-base	For valve VSVA	131
10	Inscription label holder	For manifold blocks	97

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

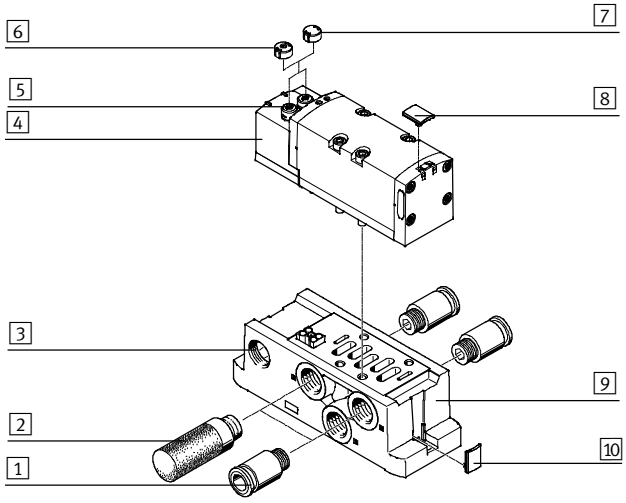
With spring-loaded terminal or cable (open end)



		Brief description	➔ Page/Internet
1	Fitting	3/8" NPT for working air/exhaust ports (1, 3, 5) and working ports (2, 4)	132
2	Silencer	U-3/8-B-NPT for exhaust ports (3, 5)	132
3	Electrical connection	Spring-loaded terminal, cable (open end)	–
4	Valve VSVA	Width 42 mm	82
5	Manual override	Non-detenting/detenting, per solenoid coil	–
6	Cover cap	For non-detenting manual override	94
7	Cover cap	For covered manual override	94
8	Inscription label holder	For valves	97
9	Individual sub-base	For valve VSVA	131
10	Inscription label holder	For manifold blocks	97

Individual sub-base, width 52 mm, ISO 5599-2

With spring-loaded terminal or cable (open end)



		Brief description	➔ Page/Internet
1	Fitting	½" NPT for working air/exhaust ports (1, 3, 5) and working ports (2, 4)	132
2	Silencer	U-½-B-NPT for exhaust ports (3, 5)	132
3	Electrical connection	Spring-loaded terminal, cable (open end)	–
4	Valve VSVA	Width 52 mm	83
5	Manual override	Non-detenting/detenting, per solenoid coil	–
6	Cover cap	For non-detenting manual override	94
7	Cover cap	For covered manual override	94
8	Inscription label holder	For valves	97
9	Individual sub-base	For valve VSVA	131
10	Inscription label holder	For manifold blocks	97

Valve terminal pneumatics

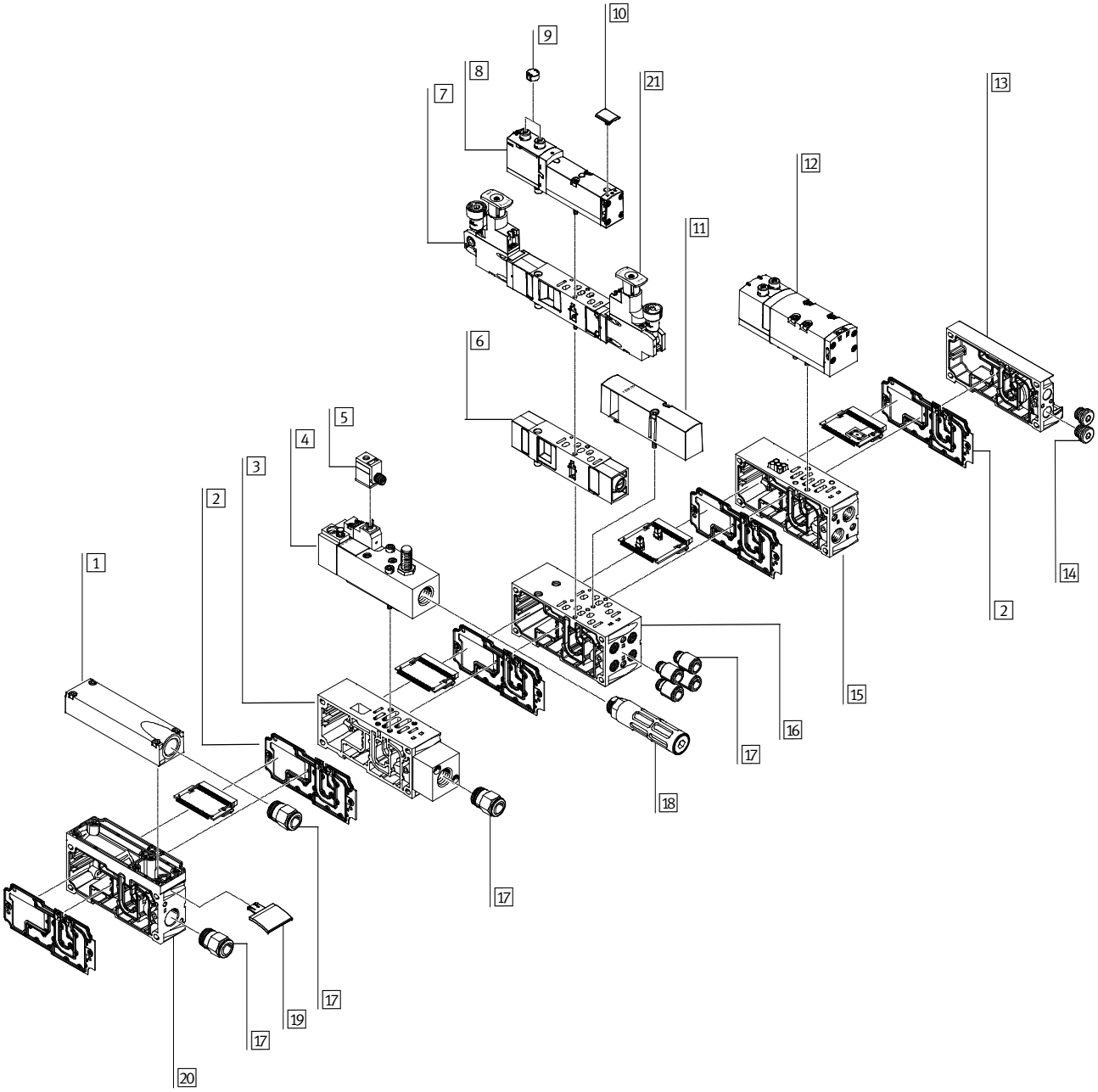
The manifold sub-bases for valves with a width of 18 or 26 mm are either prepared for

- 2 single solenoid valves or
- 2 double solenoid valves.

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.



Valve terminal pneumatics			
		Brief description	**➔ Page/Internet**
1	Exhaust port cover	For ducted exhaust air (ports 3 and 5 combined)	89
2	Duct separation/seal	–	89
3	Manifold sub-base	For soft-start valve	117
4	Soft-start valve	For slow and safe pressure build-up	117
5	Plug socket	–	121
6	Flow control plate	–	94
7	Pressure regulator plate	–	90
8	Valve	Width 18 mm or 26 mm	80
9	Cover cap	For manual override, non-detenting, covered	94
10	Inscription label holder	For valve	97
11	Blanking plate	For unused valve position (vacant position)	94
12	Valve	Width 42 mm or 52 mm	82
13	End plate with pilot air selector	–	88
14	Blanking plug	–	132
15	Manifold sub-base VTSA	For valves with a width of 42 mm or 52 mm	88
15	Manifold sub-base VTSA-F	For valves with a width of 42 mm or 52 mm	88
16	Manifold sub-base VTSA	For valves with a width of 18 mm or 26 mm	88
16	Manifold sub-base VTSA-F	For valves with a width of 18 mm or 26 mm	88
17	Fittings	–	132
18	Silencer	–	132
19	Inscription label holder	For manifold sub-base, sub-base, 90° connection plate	97
20	Supply plate	–	89
21	Control element	Regulator knobs in different versions	34

Valve terminal widths

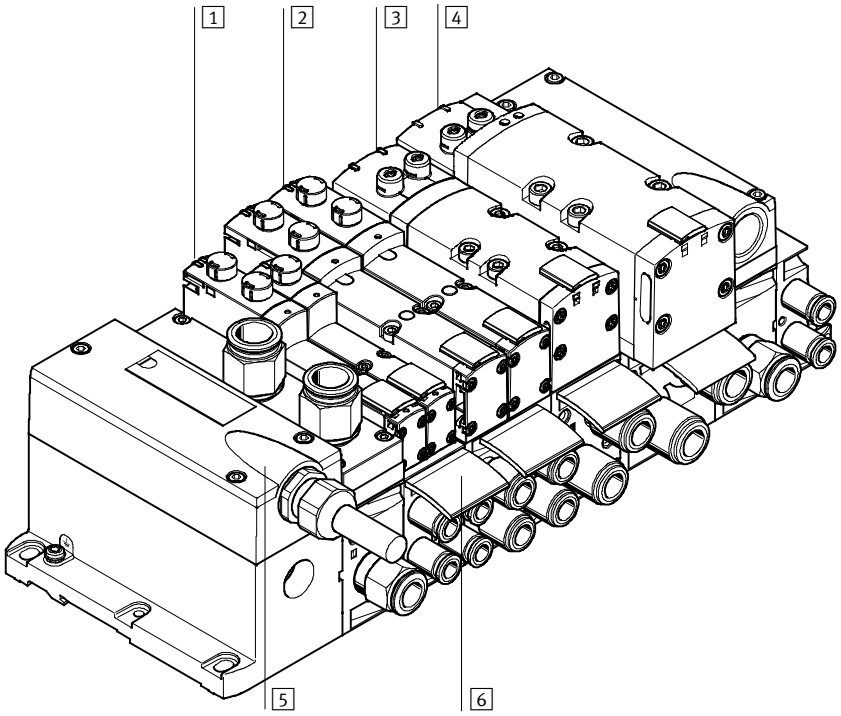
Order code for VTSA:
- 44E-... for the electrical components
- 44P-... for the pneumatic components

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

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

can be combined without adapters. This enables a flow range of 400 l/min to 2,900 l/min in the case of VTSA and 700 l/min to 2,900 l/min in the case of VTSA-F

to be covered on one valve terminal. A wide range of valve functions and vertical stacking components are available for all widths.



	Brief description	➔ Page/Internet
1 Valve	Width 18 mm	88
2 Valve	Width 26 mm	88
3 Valve	Width 42 mm	88
4 Valve	Width 52 mm	88
5 Multi-pin plug connection	Via multi-pin cable 24 V DC	95
6 Inscription labels	For manifold sub-base, sub-base, 90° connection plate	97

Valve terminal with individual electrical connection

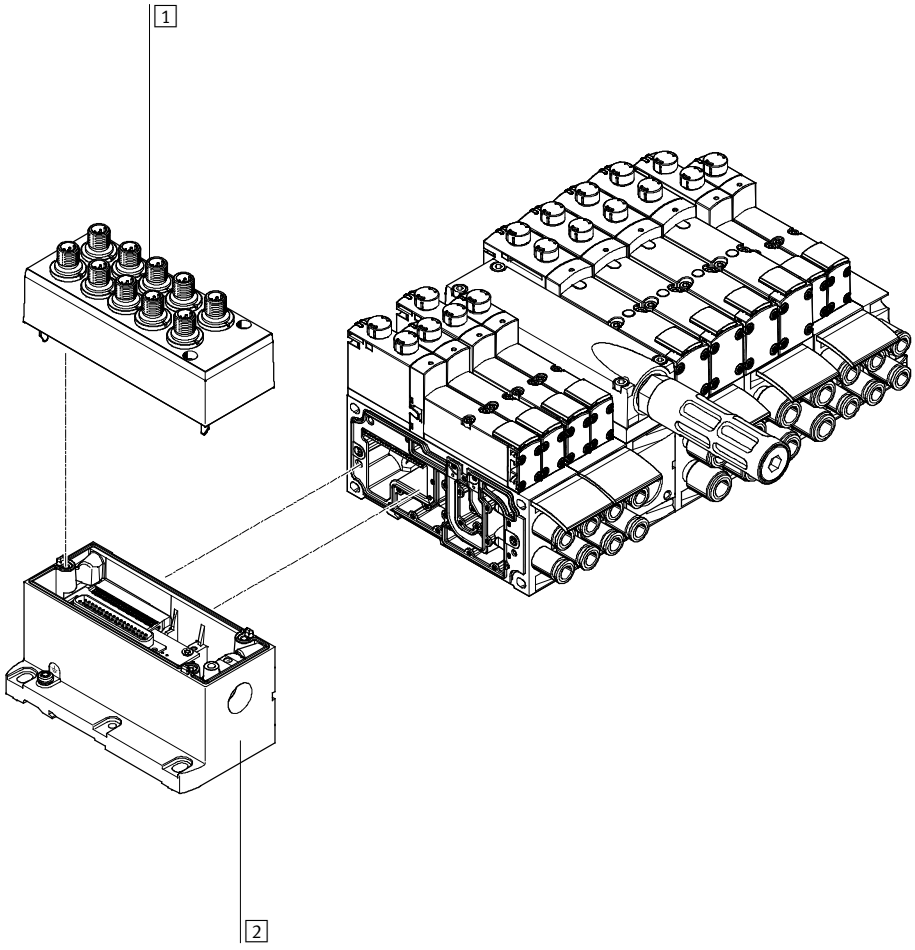
Order code for VTSA:
- 44E-... for the electrical components
- 44P-... for the pneumatic components

Order code for VTSA-F:
- 45E-... for the electrical 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 either prepared for
- 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 prepared 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 electrical connection is established via a 5-pin M12 plug (24 V DC).



	Brief description	➔ Page/Internet
1 Cover	For individual connection	95
2 Multi-pin plug connection	Individual connection with M12, 10-way or 6-way (including cover)	95

Valve terminal with electrical multi-pin plug connection

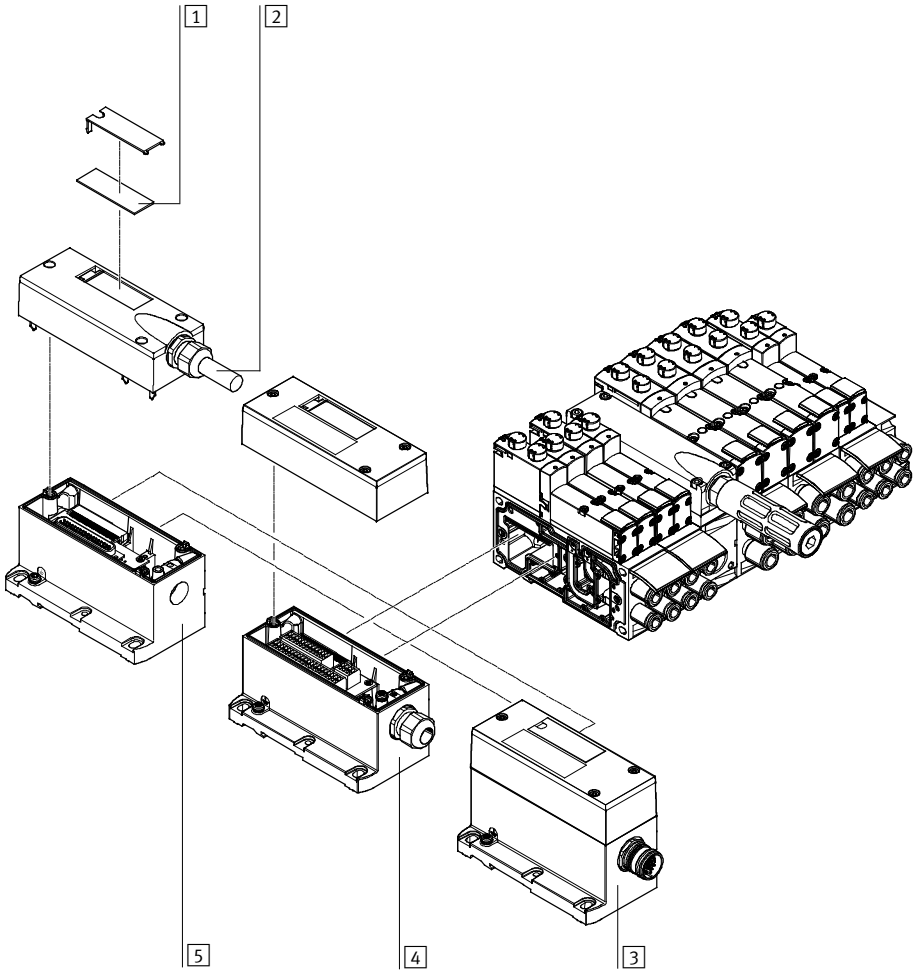
Order code for VTSA:
- 44E-... for the electrical components
- 44P-... for the pneumatic components

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

Valve terminals VTSA/VTSA-F with 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 prepared for
– 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 prepared 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 or 110 V AC) 19-pin round plug connector (24 V DC).



		Brief description	➔ Page/Internet
1	Inscription labels	Large, for multi-pin plug connection	–
2	Multi-pin plug cable	–	96
3	Multi-pin plug connection	Via M23 round plug connection 24 V DC	95
4	Multi-pin plug connection	Via terminal strip (Cage Clamp®) 24 V DC or 110 V AC	95
5	Multi-pin plug connection	Via multi-pin cable 24 V DC	95

Valve terminal with AS-interface connection

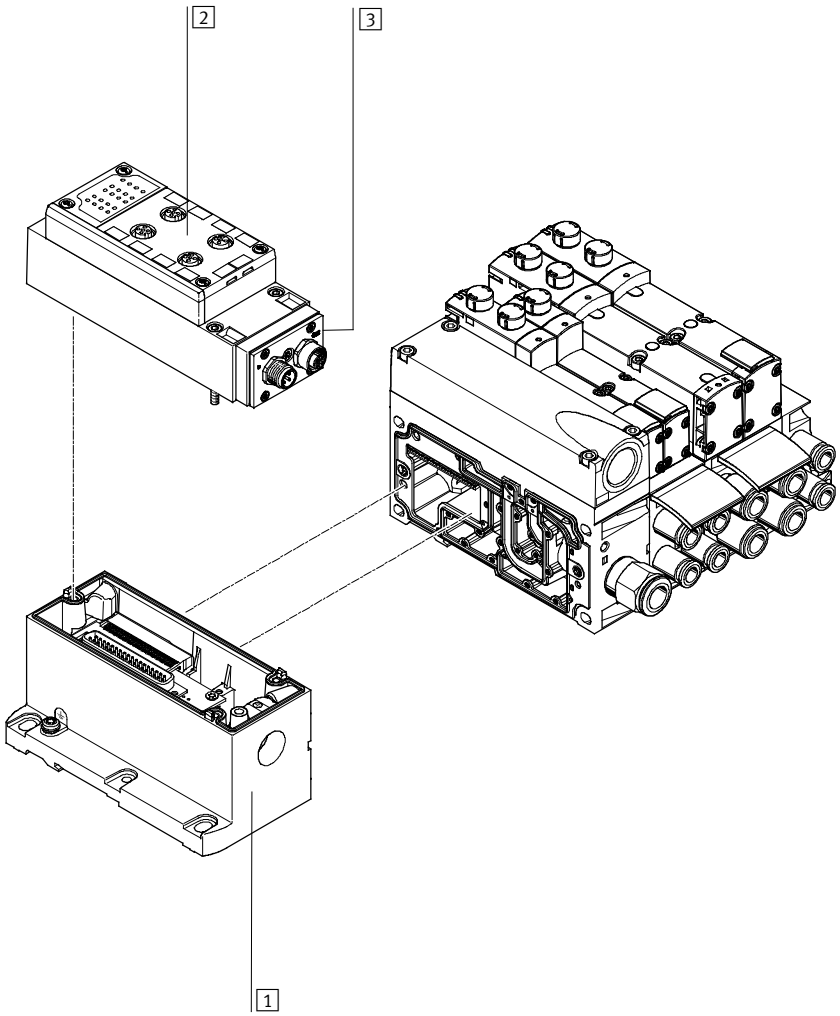
Order code for VTSA:
- 52E-... for the electrical components
- 44P-... for the pneumatic components

Order code for VTSA-F:
- 52E-... for the electrical 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 either prepared 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 prepared 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.



	Brief description	➔ Page/Internet
1 Multi-pin plug connection	Can be ordered together with the AS-interface module as an electrical connection for AS-interface	95
2 Manifold block for AS-interface	–	96
3 AS-interface module	–	95

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

Order code:
- 50E-... for the electrical peripherals
- 51E-... for the electrical peripherals, metal manifold module

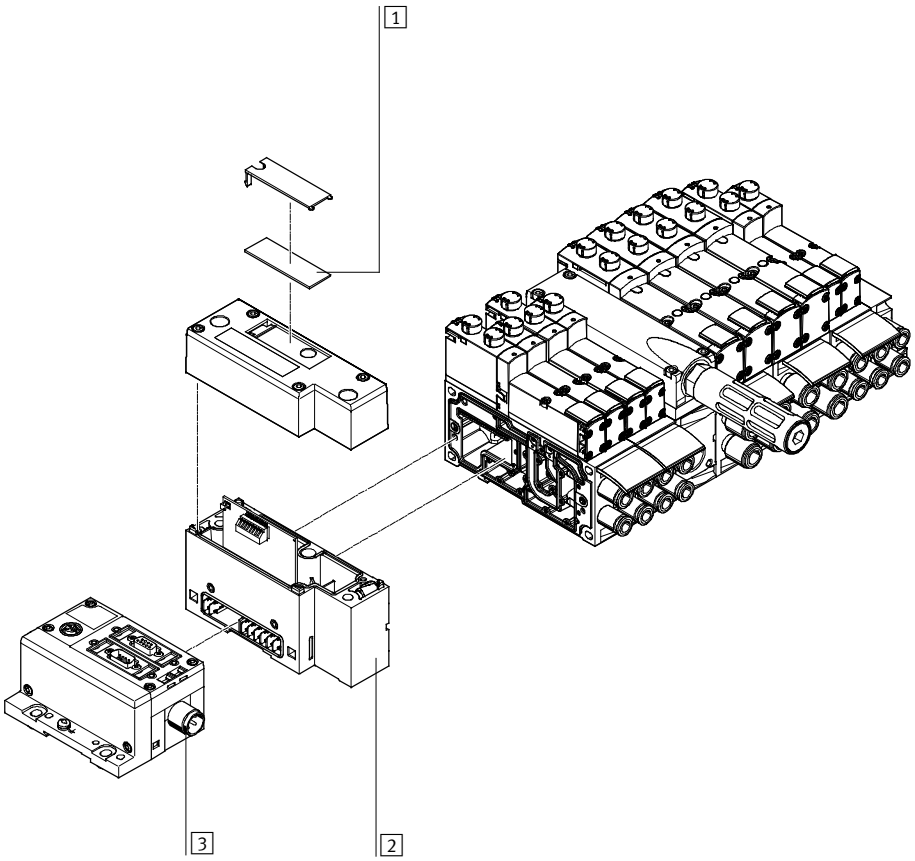
For VTSA:
- 44P-... for the pneumatic components

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.

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 in combination with the electrical peripherals CPX.

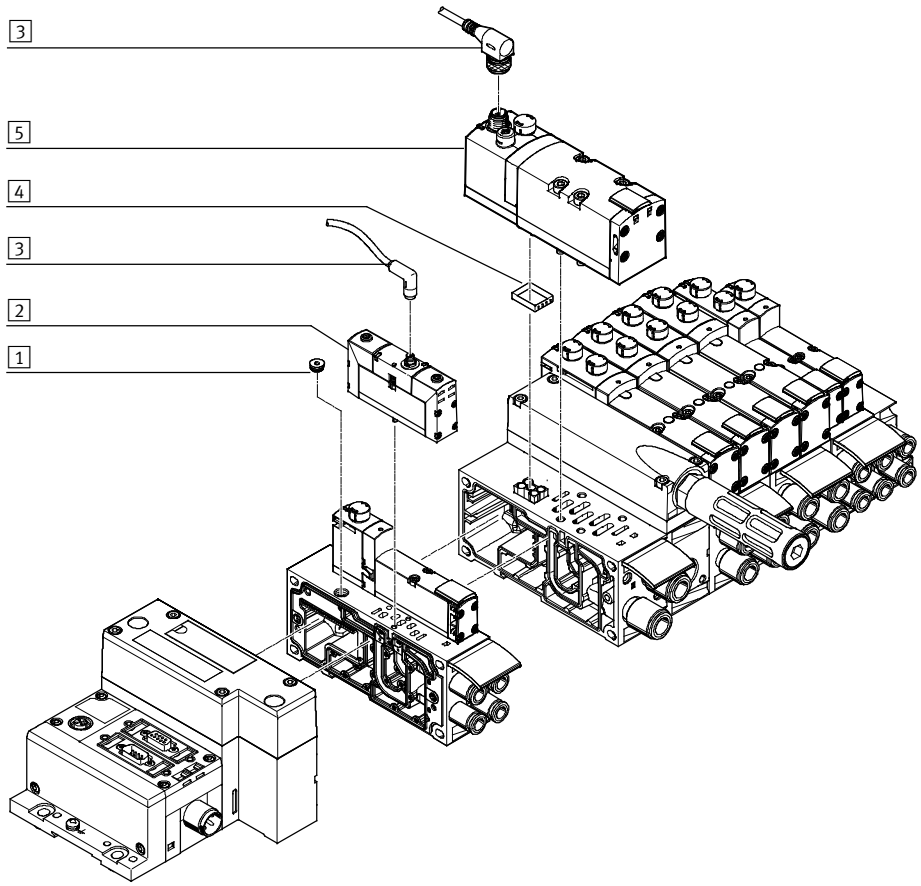
In general:
- Max. 10 electrical modules
- Digital inputs/outputs
- Analogue inputs/outputs
- Parameterisation of inputs and outputs
- Integrated convenient diagnostic system
- Preventive maintenance concepts



	Brief description	➔ Page/Internet
1 Inscription labels	Large, for pneumatic interface CPX	–
2 Pneumatic interface	–	95
3 Fieldbus interface	–	cpx

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

In applications with specific emergency stop conditions, it may be necessary to switch one or more valves separately from the valve terminal controller. Standard valves (VSVA) with individual electrical connection (round or square plug) are mounted on the valve terminal to this end.
In order for protection class IP65 to be achieved, the functionless opening in the sub-base for the electrical connection must be sealed.
A sealing cap is available for the 18 mm and 26 mm widths.
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 94).
For central control of the valve terminal via a multi-pin plug or fieldbus connection, the valve position occupied in this way 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.

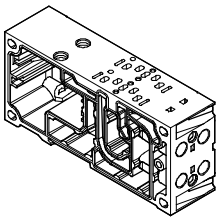


	Brief description	➔ Page/Internet
1 Sealing cap	For sealing the electrical connection on the sub-base	94
2 Valve	Width 18 mm or width 26 mm	valves vsva
3 Connecting cable	–	valves vsva
4 Seal	For ensuring the IP protection class (with width 42 mm and 52 mm)	94
5 Valve	Width 42 mm or width 52 mm	valves vsva

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Key features – Pneumatic components

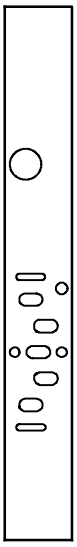
Manifold sub-base



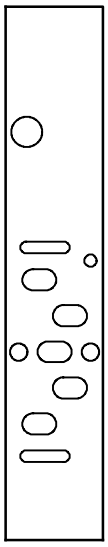
VTSA/VTSA-F is based on a modular system which consists of manifold sub-bases and valves. Manifold sub-bases are available for valve widths 18 mm and 26 mm in a double grid, i.e. two valves per manifold sub-base. For valves with a width of 42 mm or 52 mm, there are manifold sub-bases with one valve per sub-base. The manifold sub-base contains a duct seal and an electrical interlinking module. They can be freely mixed within a valve terminal. The manifold sub-bases are screwed together and thus form the support system for the valves. Inside the manifold sub-bases are the connection ducts for supplying compressed air to and venting from the valves on the terminal as well as the working lines 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 inserted by loosening these screws. This ensures that the valve terminal can be rapidly and reliably extended.

Port patterns on the manifold sub-base for one valve position

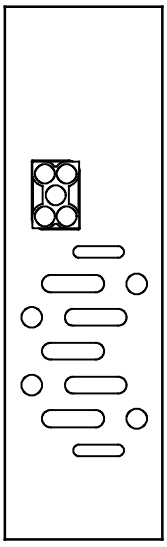
Width 18 mm



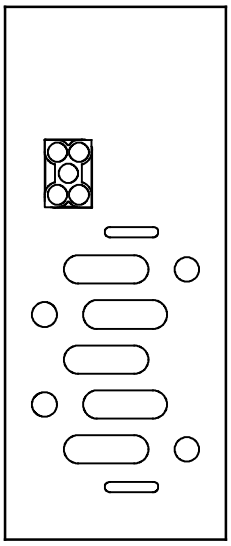
Width 26 mm



Width 42 mm



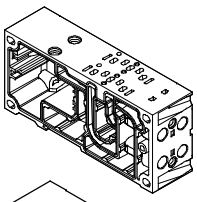
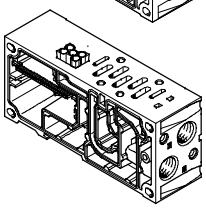
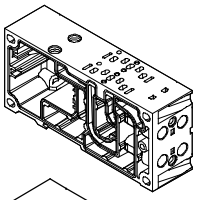
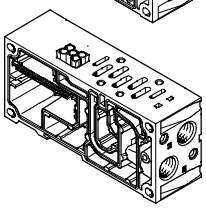
Width 52 mm



- Note

The illustrations shown depict a schematic representation of the pneumatic ISO port patterns.

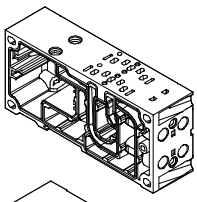
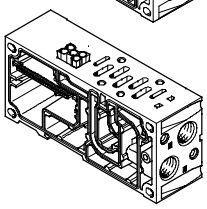
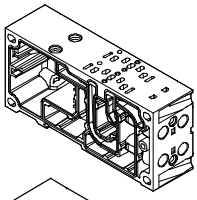
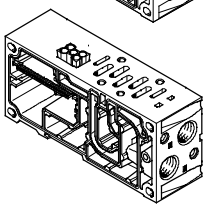
The port patterns on the valve terminal VTSA-F do not correspond to the ISO standard.

Manifold sub-base variants with NPT thread, valve terminal VTSA									
Code		Type	Width				No. of valve positions/ solenoid coils	Working ports (2, 4)	
			18 mm	26 mm	42 mm	52 mm		Code M large	Code N small
Manifold sub-base for multi-pin plug/fieldbus connection for double solenoid valves									
A		VABV-S4-2S-N18-2T2	■	–	–	–	2/4	QS-1/8-5/16-U	–
AK								–	QS-1/8-1/4-U
B		VABV-S4-1S-N14-2T2	–	■	–	–	2/4	QS-1/4-3/8-U	–
BK								–	QS-1/4-5/16-U
C		VABV-S2-1S-N38-T2	–	–	■	–	1/2	QS-3/8-3/8-U	–
CK								–	QS-3/8-1/2-U
D		VABV-S2-2S-N12-T2	–	–	–	■	1/2	QS-1/2-1/2-U	–
DK								–	–
Manifold sub-base for multi-pin plug/fieldbus connection for single solenoid valves									
E		VABV-S4-2S-N18-2T1	■	–	–	–	2/2	QS-1/8-5/16-U	–
EK								–	QS-1/8-1/4-U
F		VABV-S4-1S-N14-2T1	–	■	–	–	2/2	QS-1/4-3/8-U	–
FK								–	QS-1/4-5/16-U
G		VABV-S2-1S-N38-T1	–	–	■	–	1/1	QS-3/8-1/2-U	–
GK								–	QS-3/8-3/8-U
H		VABV-S2-2S-N12-T1	–	–	–	■	1/1	QS-1/2-1/2-U	–
HK								–	–

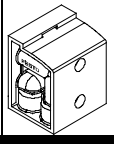
Valve terminals type 44/45, VTSA/VTSA-F, NPT

Key features – Pneumatic components

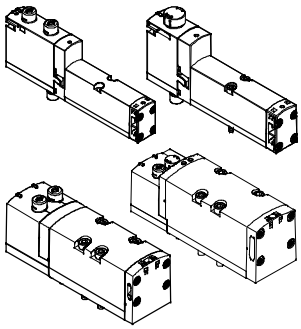
Manifold sub-base variants with NPT thread, valve terminal VTSA-F

Code		Type	Width				No. of valve positions/ solenoid coils	Working ports (2, 4)	
			18 mm	26 mm	42 mm	52 mm		Code M large	Code N small
Manifold sub-base for multi-pin plug/fieldbus connection for double solenoid valves									
A		VABV-S4-2HS-N18-2T2	■	–	–	–	2/4	QS-⅛-5/16-U	–
AK								–	QS-⅛-¼-U
B		VABV-S4-1HS-N14-2T2	–	■	–	–	2/4	QS-¼-⅜-U	–
BK								–	QS-¼-5/16-U
C		VABV-S2-1S-N38-T2	–	–	■	–	1/2	QS-⅜-½-U	–
CK								–	QS-⅜-⅜-U
D		VABV-S2-2S-N12-T2	–	–	–	■	1/2	QS-½-½-U	–
DK								–	–
Manifold sub-base for multi-pin plug/fieldbus connection for single solenoid valves									
E		VABV-S4-2HS-N18-2T1	■	–	–	–	2/2	QS-⅛-5/16-U	–
EK								–	QS-⅛-¼-U
F		VABV-S4-1HS-N14-2T1	–	■	–	–	2/2	QS-¼-⅜-U	–
FK								–	QS-¼-5/16-U
G		VABV-S2-1S-N38-T1	–	–	■	–	1/1	QS-⅜-½-U	–
GK								–	QS-⅜-⅜-U
H		VABV-S2-2S-N12-T1	–	–	–	■	1/1	QS-½-½-U	–
HK								–	–

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

Code		Type	Width				Ports	Working lines (2, 4) on the 90° connection plate
			18 mm	26 mm	42 mm	52 mm		
P		VABF-S4-...-A2G2-N...	■	–	–	–	2 and 4	⅛" NPT
			–	■	–	–		¼" NPT
			–	–	■	–		⅜" NPT
			–	–	–	■		½" NPT

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 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 (the valve terminal can be supplied with internal pilot air supply).

Blanking plate

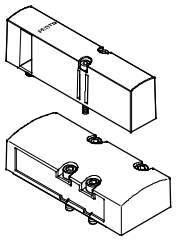


Plate without valve function for reserving valve positions on a valve terminal.

Valves and blanking plates are attached to the manifold sub-base using screws.

Design

Valve replacement

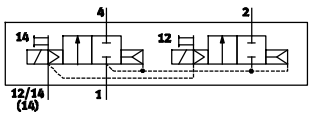
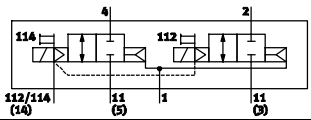
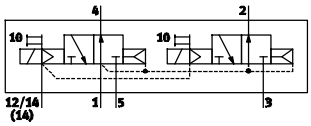
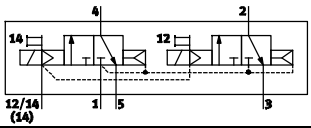
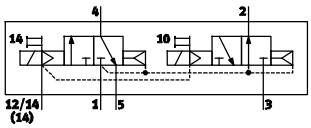
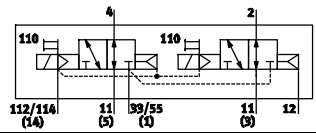
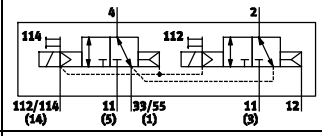
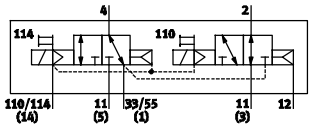
The valves are attached to the metal manifold sub-base using two screws, which means that they can be easily replaced. The mechanical robustness of the manifold sub-base guarantees efficient long-term sealing.

Expansion

Vacant positions can be fitted with valves at a later date. The dimensions, mounting points and existing pneumatic installations remain unchanged during this process.
The order code VSVA-... is located on the front of the valve beneath the manual override.

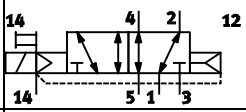
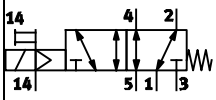
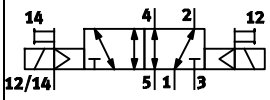
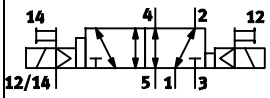
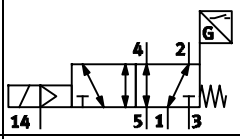
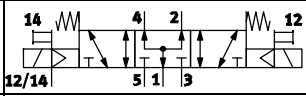
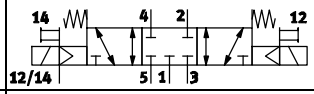
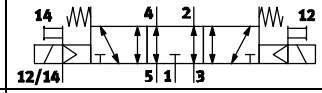
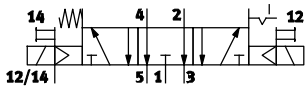
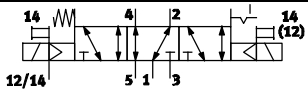
Valve terminals type 44/45, VTSA/VTSA-F, NPT

Key features – Pneumatic components

Valve functions						
Code	Circuit symbol	Width				Description
		18 mm	26 mm	42 mm	52 mm	
VC		■	■	■	■	2x 2/2-way valve, single solenoid • Normally closed • Pneumatic spring return
VV		■	■	■	–	2x 2/2-way valve, single solenoid • Normally closed • Pneumatic spring return • Vacuum operation possible at 3 and 5
N		■	■	■	■	2x 3/2-way valve, single solenoid • Normally open • Pneumatic spring return • Operating pressure > 3 bar
K		■	■	■	■	2x 3/2-way valve, single solenoid • Normally closed • Pneumatic spring return • Operating pressure > 3 bar
H		■	■	■	■	2x 3/2-way valve, single solenoid • Normal position – 1x closed – 1x open • Pneumatic spring return • Operating pressure > 3 bar
P		■	■	■	■	2x 3/2-way valve, single solenoid • Reverse operation • Normally open • Pneumatic spring return
Q		■	■	■	■	2x 3/2-way valve, single solenoid • Reverse operation • Normally closed • Pneumatic spring return
R		■	■	■	■	2x 3/2-way valve, single solenoid • Reverse operation • Normal position – 1x closed – 1x open • Pneumatic spring return

- Note

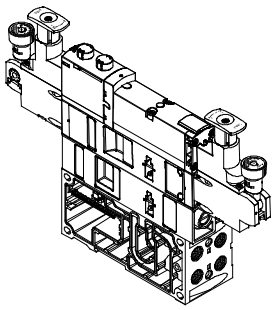
A filter must be installed upstream of valves operated in vacuum mode. This prevents any foreign matter in the intake air getting into the valve (e.g. when operating a suction cup).

Valve function						
Code	Circuit symbol	Width				Description
		18 mm	26 mm	42 mm	52 mm	
M		■	■	■	■	5/2-way valve, single solenoid • Pneumatic spring return
O		■	■	■	■	5/2-way valve, single solenoid • Mechanical spring return
J		■	■	■	■	5/2-way valve, double solenoid
D		■	■	■	■	5/2-way valve, double solenoid • Dominant signal at port 14 on the control side
SO SQ		–	■	–	–	5/2-way solenoid valve[2], single solenoid, as plug-in or via pilot valve with pneumatic interface to ISO 15218 See also special valve function in the section “Control block with safety function” ➔ page 104
B		■	■	■	■	5/3-way solenoid valve • Mid-position pressurised[1] • Mechanical spring return
G		■	■	■	■	5/3-way solenoid valve • Mid-position closed[1] • Mechanical spring return
E		■	■	■	■	5/3-way solenoid valve • Mid-position exhausted[1] • Mechanical spring return
SA		–	■	–	–	5/3-way solenoid valve, with enhanced function through signal storage in switching position 14 • Pressureless switching, self-holding, pneumatic operation • Mid-position exhausted, switching position 14 with memory function • Mechanical spring return
SB		–	■	–	–	5/3-way solenoid valve, with enhanced function through signal storage in switching position 14 • Holding, blocking a movement (mechanically) • Mid-position: port 2 pressurised, port 4 exhausted, switching position 14 with memory function • Mechanical spring return
L		■	■	■	■	For valve terminal only: Blanking plate for vacant valve position

1) If neither solenoid coil is energised, the valve moves to its mid-position by means of 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 sensor 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 contacts as well as N/C contacts. The switching element function of all sensors used here is an N/C contact.

Vertical stacking

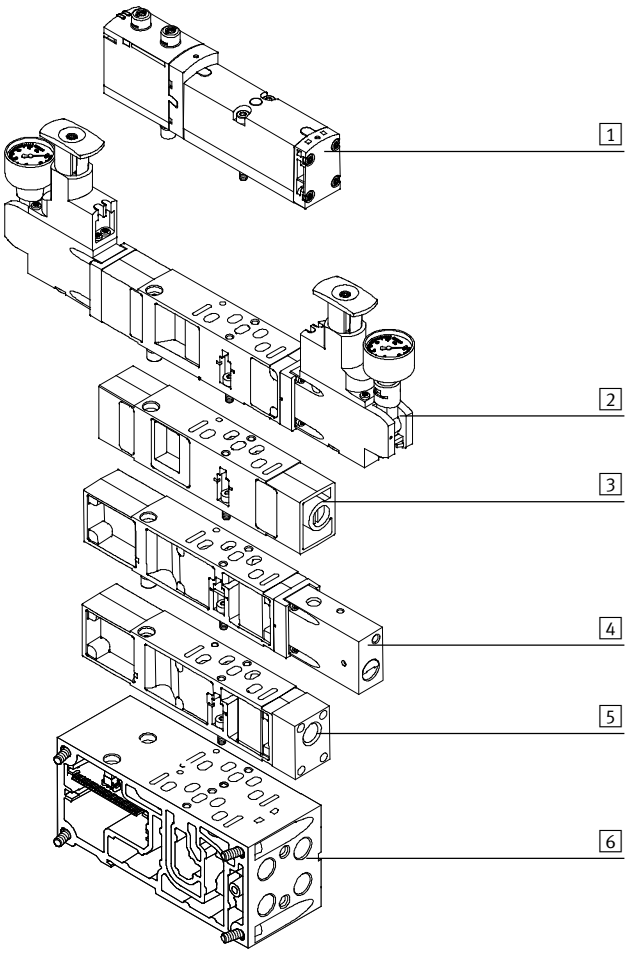


Additional functions can be added to each valve position between the sub-base and the valve. These functions are known as vertical stacking modules and enable special functioning or control of an individual valve position. Combinations of several valve sizes on one valve terminal are possible.

- Note

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

Vertical stacking components

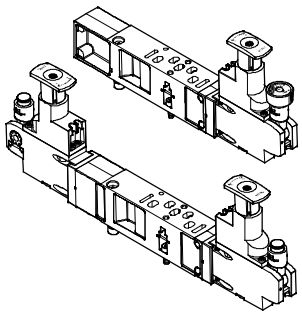


The following component sequence is recommended for valve positions with vertical stacking:

1. Valve VSVA
2. Pressure regulator plate
3. Flow control plate
4. Vertical pressure shut-off plate
5. Vertical supply plate
6. Manifold sub-base

Vertical stacking

Pressure regulator plate



An adjustable pressure regulator can be installed between the sub-base and the valve in order to control the force of the triggered actuator.

This pressure regulator maintains an essentially constant output pressure (secondary side) independent of pressure fluctuations (primary side) and air consumption. Also suitable for symmetrical valves.

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

Note

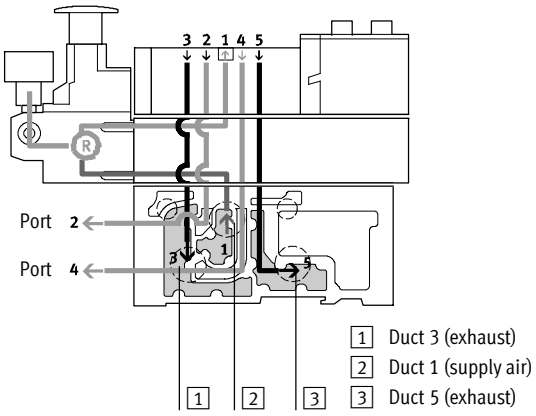
With the A, B and AB pressure regulators VABF-S...-1-..., the control pressure should not be under 2 bar.

Use the reversible A, B or AB pressure regulators for control pressures under 2 bar.

Note

Please note for repeat orders:
Certain equipment versions of pressure regulator plates can only be ordered via type codes.
The part number imprinted on the regulator plate installed on the VTSA/VTSA-F valve terminal will not match the equipment version in these cases. For that reason, always use the VABF configurator for repeat orders.

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 venting, the exhaust flow in the valve is from duct 2 to duct 3 and from duct 4 to duct 5.

Advantages

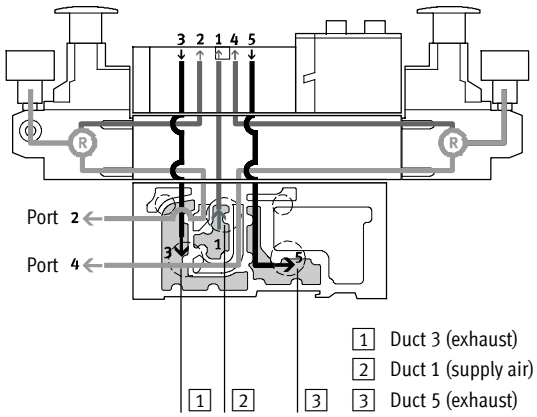
- The pressure regulator is not affected by venting, since the pressure is regulated upstream of the valve.
- The pressure regulator can always be adjusted, since the pressure from the valve terminal is always present.

Application examples

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

Vertical stacking

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 venting, 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 supply 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, venting 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.

Restrictions

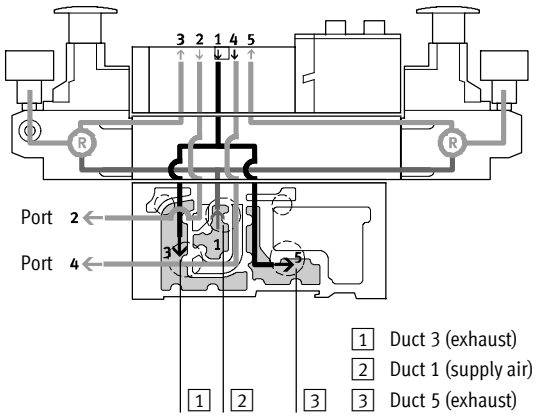
- The pressure regulator cannot be adjusted in the exhaust position. For example, the pressure regulator for duct 4 cannot be adjusted when the valve is pressurised in the switching position from duct 1 to duct 2 and exhausted from duct 4 to duct 5.

Application examples

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

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 supply air (duct 1) is split and routed directly to both pressure regulators. In each case the regulated supply air is present in ducts 3 and 5 on the valve. The valve is thus operated in reversible mode.
This means:

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

Example with the following switching position:
The supply 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 supply 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 expelled 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.
- Fast venting is required.
- The pressure regulator must always be adjustable.

Note

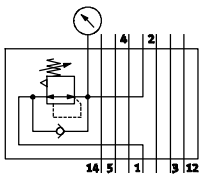
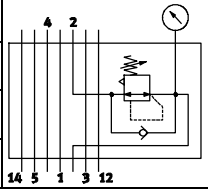
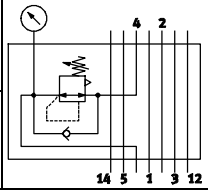
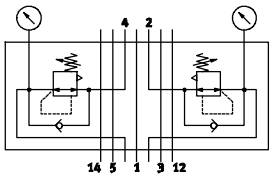
- Reversible pressure regulator plates should only be combined with valves that can be operated in reversible mode.
- Valves in valve positions with vertical pressure shut-off plates are operated with internal pilot air supply, even when the valve terminal is operated with external pilot air supply.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

Advantages

- Fast cycle times.
- 50% higher exhaust flow rate, as air is not vented 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.

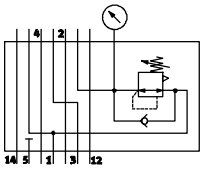
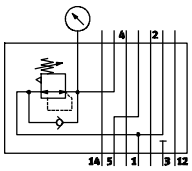
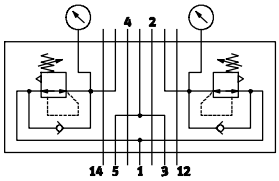
Disadvantages

- 2x 3/2-way solenoid valves (code N, K, H) cannot be used, as pressure is present at ports 3 and 5.
- No practical combination with a flow control plate possible.

Vertical stacking – Pressure regulator plate, variants[1]									
Code		Type	Width				Supply pressure		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 directional control valve
ZAY[2]		VABF-S...-R1C2-C-10-E	■	■	■	■	–	■	
ZF		VABF-S...-R1C2-C-6	■	■	■	■	■	–	
ZFY[2]		VABF-S...-R1C2-C-6-E	■	■	■	■	■	–	
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 directional control valve
ZCY[2]		VABF-S...-R2C2-C-10-E	■	■	■	■	–	■	
ZH		VABF-S...-R2C2-C-6	■	■	■	■	■	–	
ZHY[2]		VABF-S...-R2C2-C-6-E	■	■	■	■	■	–	
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 directional control 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 directional control valve
ZDY[2]		VABF-S...-R4C2-C-10-E	■	■	■	■	–	■	
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-6-E	■	■	■	■	■	–	

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

2) Also suitable for symmetrical valves

Vertical stacking – Pressure regulator plate, variants[1]									
Code		Type	Width				Supply pressure		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-10-E	■	■	■	■	–	■	
ZN		VABF-S...-R6C2-C-6	■	■	■	■	■	–	
ZNY[2]		VABF-S...-R6C2-C-6-E	■	■	■	■	■	–	
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 directional control valve • Routes the operating pressure from duit 1 to ducts 3 and 5 • Routes the exhaust air from duct 1 to ducts 3 and 5
ZEY[2]		VABF-S...-R5C2-C-10-E	■	■	■	■	–	■	
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-6-E	■	■	■	■	■	–	

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

Vertical stacking – Pressure regulator plate type codes

VABF	–	S2	–	1	R1	C2	–	C	–	6	–	L1	–	E

Valve series	
VABF	Regulator plate

Allocation	
S2	ISO 5599-2[1]
S4	ISO 15407-2

Valve size	
1	26 mm (ISO 15407-2, ISO 01)
2	18 mm (ISO 15407-2, ISO 02)
1	42 mm (ISO 5599-2, ISO 1)
2	52 mm (ISO 5599-2, ISO 2)

Function plate	
R1	Pressure regulator, port 1
R2	Pressure regulator, port 2
R3	Pressure regulator, port 4
R4	Pressure regulator, ports 2 and 4
R5	Pressure regulator, ports 2 and 4, reversible
R6	Pressure regulator, port 2, reversible
R7	Pressure regulator, port 4, reversible

Pressure display	
C2	Sealed
C3	Pressure gauge [bar][1]
C4	Pressure gauge [MPa][1]
C6	Pressure gauge [psi][1]

Pneumatic connection	
C	Sealed

Pressure range	
6	6 bar
10	10 bar

Control element[2]	
–	Short (standard button)
L1	Long
L2	Long, lockable
K2	Short, lockable
K3	With integrated lock

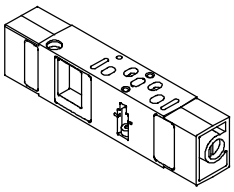
Optional	
E	Extended design[1]

1) These functions are available via the pressure regulator configurator VABF-S2 for width 42 mm and 52 mm (ISO 5599-2, ISO 1 and ISO 2) only. Alternatively they can be selected for all four sizes in the valve terminal configurator or via their own order numbers in the chapter Accessories on page 93.

2) All variants are only possible for VABF-S2.

Vertical stacking

Flow control plate

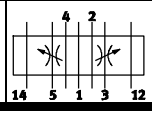


The flow control plate is equipped with two flow control valves on which the exhaust air flow rate at exhaust ports 3 or 5 can be adjusted. This enables the movement of the drive to be initiated and the desired speed to be set on the valve terminal using the manual override.

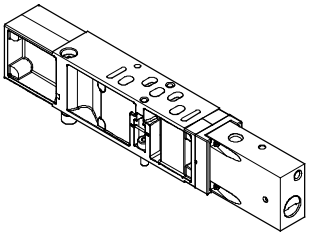
Ducts 3 and 5 can be adjusted independently of each other.

Note

On reversible valve terminals, supply air flow control takes place 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

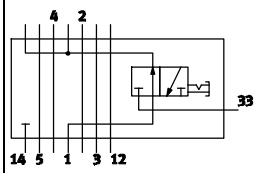


The vertical pressure shut-off plate is equipped with a switch via which the compressed air supply can be shut off. This enables a solenoid directional control valve or subsequent vertical stacking plate to be replaced without switching off the overall air supply. If the control chain has a redundant connection, the cycle can continue in the case of a cyclical control system.

Following activation of the shut-off, the exhaust air/return air from the cylinder is expelled via the M5 threaded connection.

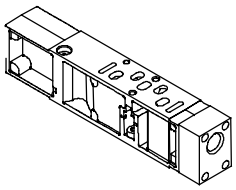
Note

It must be ensured that the operating pressure of the valve terminal lies within the range of the required pilot pressure (i.e. min. 3 bar). When using an end plate with pilot air selector, only end plates with the 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 solenoid 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

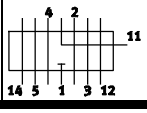
Vertical stacking

Vertical supply plate



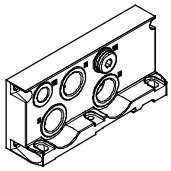
This plate enables a valve to be supplied with individual operating pressure independently of the operating pressure of the valve terminal.

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

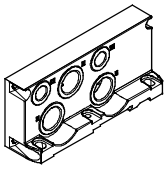
Code		Type	Width				Description
			26 mm	18 mm	42 mm	52 mm	
ZU		VABF-S4-...P1A3-...	■	■	■	■	• Plate with port 11 for supplying individual operating pressure to a valve position

Compressed air supply and venting

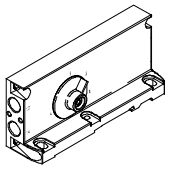
Right-hand end plate
- Code V
- Internal pilot air supply



Right-hand end plate
- Code X
- External pilot air supply

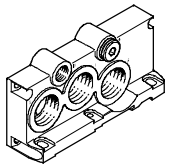


End plate with pilot air selector
- Code Z, Y, W, U

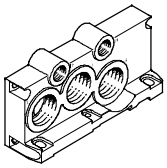


The valve terminal VTSA/VTSA-F can be supplied with compressed air at one or more points. This is a reliable way of ensuring that all functional components will always offer good performance, even with large-scale extensions. The valve terminal is supplied via supply plates (max. 16 per valve terminal) or via the right-hand end plate.

Right-hand end plate
- Code V1
- Internal pilot air supply

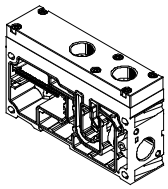


Right-hand end plate
- Code X1
- External pilot air supply

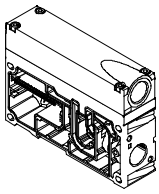


Venting is via silencers or ports for ducted exhaust air on the supply plates and/or on the right-hand end plate. There are two types of supply plates:
- Exhaust port 3/5 common
- Exhaust port 3/5 separated

Port configuration for supply plates
Exhaust port 3/5 separated
- Code K



Port configuration for supply plates
Exhaust port 3/5 common
- Code L



Pilot air supply

The port for the pneumatic supply is located on the supply plates or the right-hand 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 means of a soft-start valve, then external pilot air should be selected whereby the pilot pressure is already applied 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.

The pilot air supply is then branched from the compressed air supply 1 using an internal connection. Port 14 on the right-hand end plate is sealed with a blanking plug.

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-hand end plate. This is the case even if the valve terminal is operated with different pressure zones.

Additional compressed air supply/duct separation

Additional supply plates can be used 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 the ports:
- Compressed air supply (1)
- Exhaust port (3/5) common or separated

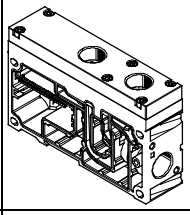
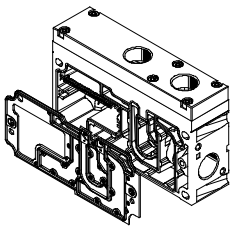
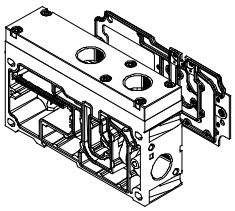
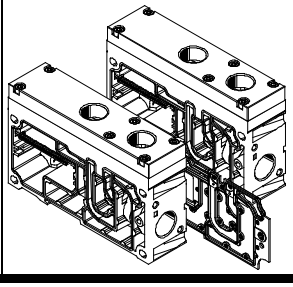
Depending on your order, the exhaust air ducts are either ducted or vented via silencers.

VTSA/VTSA-F with ducted exhaust air:
With ducted exhaust air, venting can be via a supply plate or a right-hand 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-hand side: code SU, TU, RU
- Supply plate with duct separation on the right-hand side: 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-S6-10-P1A7-G12 • Exhaust port 3/5 separated VABF-S6-10-P1A6-G12	■	■	■	■	Supply plate without duct separation (no R, S or T selected)
SU TU RU			■	■	■	■	Supply plate with duct separation on left, if R, S or T selected
US UT UR			■	■	■	■	Supply plate with duct separation on right, if R, S or T selected
USU UTU URU			■	■	■	■	2 supply plates with duct separation in centre, if R, S or T selected

Right-hand end plate

Different right-hand end plates are available.

With the following two end plates, the outlet direction of the ports is aligned with the horizontal stacking direction.
Right-hand end plates with pilot air supply/pilot exhaust air

- Internal pilot air supply: code V, V1 and V2
- External pilot air supply: code X, X1 and X2

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: code Z
- Internal pilot air supply: code Y
- External pilot air supply, ducted pilot exhaust air: code W
- Internal pilot air supply, ducted pilot exhaust air: 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 turned seals on the valve.

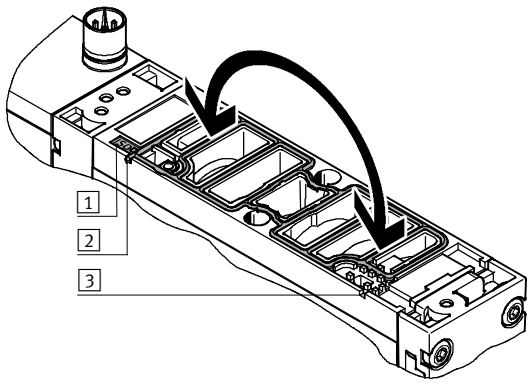
Right-hand end plate

Code	Pilot air supply	Seal turned, pilot exhaust air ducted at port 12	Connecting thread	
			1, 3, 5	12, 14
V, V1, V2	Internal	■	½" NPT	¼" NPT
X, X1, X2	External	■	½" NPT	¼" NPT

Right-hand end plate with pilot air selector

Code	Pilot air supply	Selector position	Seal turned, pilot exhaust air ducted at port 12	Connecting thread 12, 14
Z	External	1	–	¼" NPT
Y	Internal	2	–	¼" NPT
W	External (ducted)	3	■	¼" NPT
U	Internal (ducted)	4	■	¼" NPT

Handling of the seals with ducted/unducted pilot exhaust air



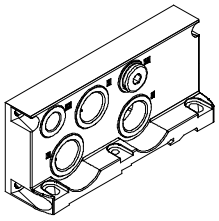
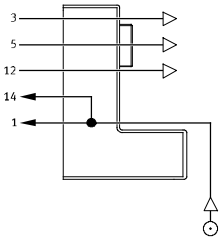
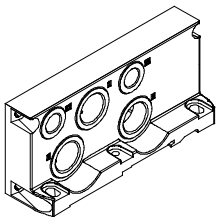
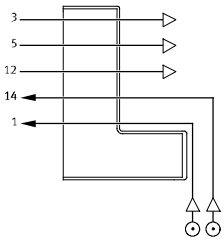
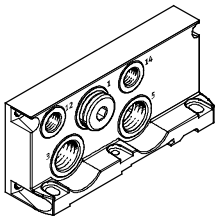
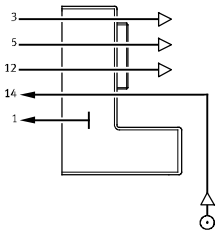
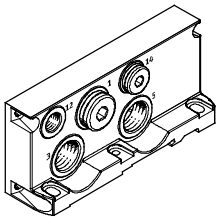
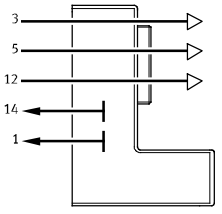
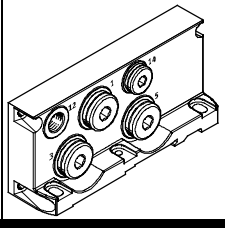
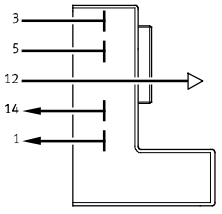
Unducted pilot exhaust air:

- The seal is visible in the inspection window on control side 14.
- The ISO mark is visible on the designation label on the seal surface.

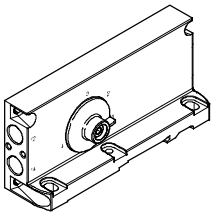
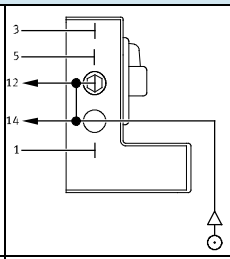
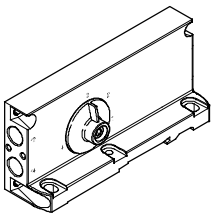
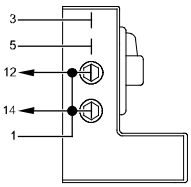
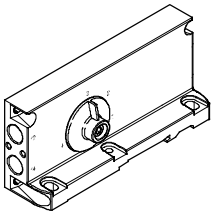
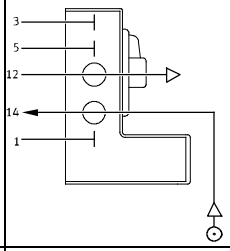
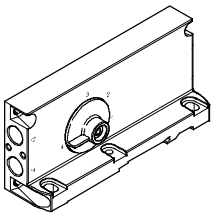
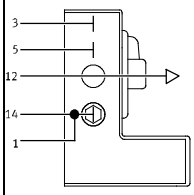
Ducted pilot exhaust air:

- The seal is visible in the inspection window on control side 12.
- The ~~ISO~~ mark is visible on the designation label on the seal surface.

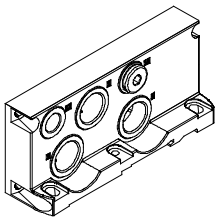
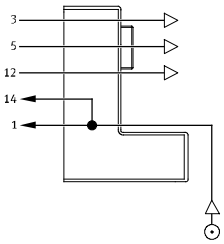
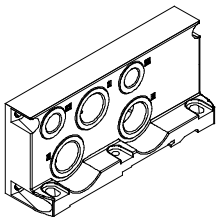
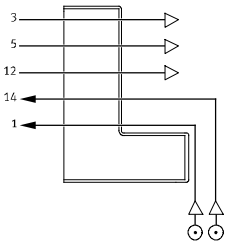
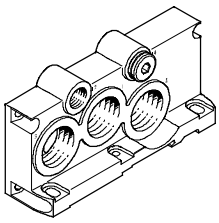
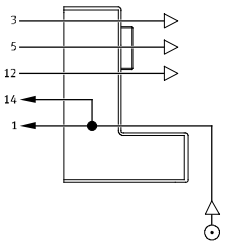
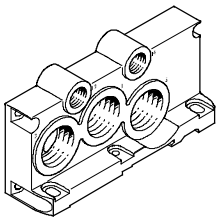
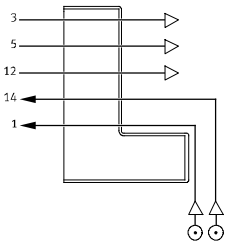
1 Designation label
2 Inspection window on control side 14
3 Inspection window on control side 12

Right-hand end plate							
Code	Type of compressed air supply and pilot air supply		Width				Description
			18 mm	26 mm	42 mm	52 mm	
Right-hand end plate							
V V1 V2			■	■	■	■	Internal pilot air supply • Pilot air supply is branched internally from port 1 • Port 14 is sealed with a blanking plug • 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 X2			■	■	■	■	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, pressure 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, pressure supply via soft-start valve[2)] • Internal pilot air supply 14 via soft-start valve • Ports 1 and 14 are sealed with a blanking plug • Exhaust air via ports 3 and 5 • Pilot exhaust air via port 12[1)]
XP3			■	■	■	■	External pilot air supply, pressure supply via soft-start valve[2)] • Internal pilot air supply 14 via soft-start valve • Ports 1, 3, 5 and 14 are sealed with a blanking plug • Pilot exhaust air via port 12[1)]

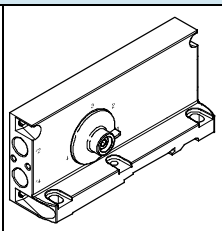
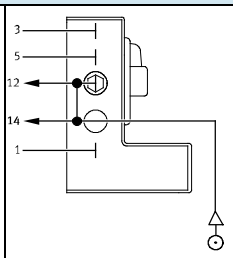
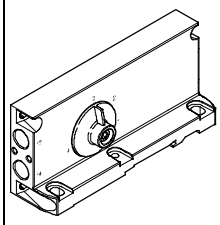
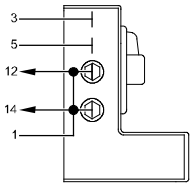
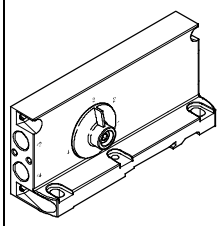
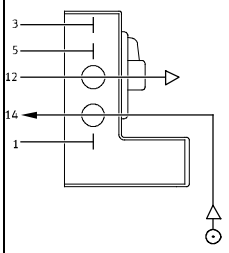
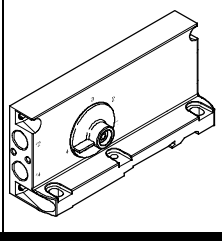
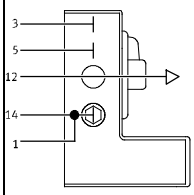
1) Ducted pilot exhaust air is only possible with turned seals on the valve
2) Application with XP1, XP2, XP3 and soft-start valve in combination with valves of width 52 mm: please note the maximum flow rate of the soft-start valve in this pressure zone

Right-hand end plate							
Code[2]	Type of compressed air supply and pilot air supply		Width				Description
			18 mm	26 mm	42 mm	52 mm	
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[1] • 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[1] • Cannot be selected in combination with a soft-start valve in the last pressure zone

1) Ducted pilot exhaust air is only possible with turned seals on the valve
2) Selector setting in brackets

Configuration of all pneumatic connections with NPT thread						
Code			Port	Designation	Code M Push-in connector, large	Code N Push-in connector, small
Right-hand end plate						
V			1	Push-in fitting	QS-½-5/8-U	QS-½-½-U
			3 and 5	Silencer or push-in fitting	U-½-B-NPT or QS-½-5/8-U	U-½-B-NPT or QS-½-½-U
			12	Silencer or push-in fitting	U-¼-B-NPT or QS-¼-3/8-U	U-¼-B-NPT or QS-¼-5/16-U
			14	Blanking plug	B-¼-NPT	B-¼-NPT
X			1	Push-in fitting	QS-½-5/8-U	QS-½-½-U
			3 and 5	Silencer or push-in fitting	U-½-B-NPT or QS-½-5/8-U	U-½-B-NPT or QS-½-½-U
			12	Silencer or push-in fitting	U-¼-B-NPT or QS-¼-3/8-U	U-¼-B-NPT or QS-¼-5/16-U
			14	Push-in fitting	QS-¼-3/8-U	QS-¼-5/16-U
V1			1	Female hose connector	N-¾-P-19-NPT[1)]	–
			3 and 5	Silencer or female hose connector	U-¾-B-NPT[1)] or N-¾-P-19-NPT[1)]	–
			12	Silencer or push-in fitting	U-¼-B-NPT or QS-¼-½-U	U-¼-B-NPT or QS-¼-3/8-U
			14	Blanking plug	B-¼-NPT	B-¼-NPT
X1			1	Female hose connector	N-¾-P-19-NPT[1)]	–
			3 and 5	Silencer or female hose connector	U-¾-B-NPT or N-¾-P-19-NPT[1)]	–
			12	Silencer or push-in fitting	U-¼-B-NPT or QS-¼-½-U	U-¼-B-NPT or QS-¼-3/8-U
			14	Push-in fitting	QS-¼-½-U	QS-¼-3/8-U

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

Configuration of all pneumatic connections with NPT thread						
Code[1]			Port	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	QS-1/4-3/8-U	QS-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 QS-1/4-3/8-U	U-1/4-B-NPT or QS-1/4-5/16-U
			14	Push-in fitting	QS-1/4-3/8-U	QS-1/4-5/16-U
U (4)			12	Silencer or push-in fitting	U-1/4-B-NPT or QS-1/4-3/8-U	U-1/4-B-NPT or QS-1/4-5/16-U
			14	Blanking plug	B-1/4-NPT	B-1/4-NPT

1) Selector setting in brackets

Valve terminals type 44/45, VTSA/VTSA-F, NPT

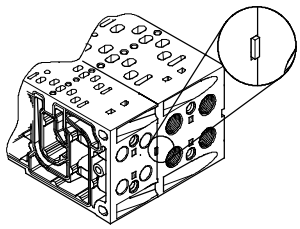
Key features – Pneumatic components

Creating pressure zones and separating exhaust air

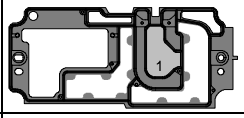
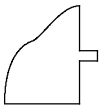
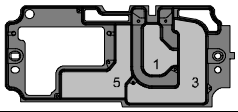
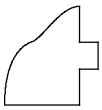
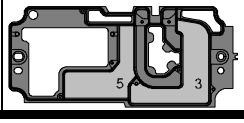
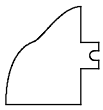
The valve terminal VTSA/VTSA-F offers a number of options for creating pressure zones if different working pressures are required.
Pressure zones are created by isolating the internal supply ducts between the manifold sub-bases by means of appropriate duct separation.

Compressed air is supplied and vented 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

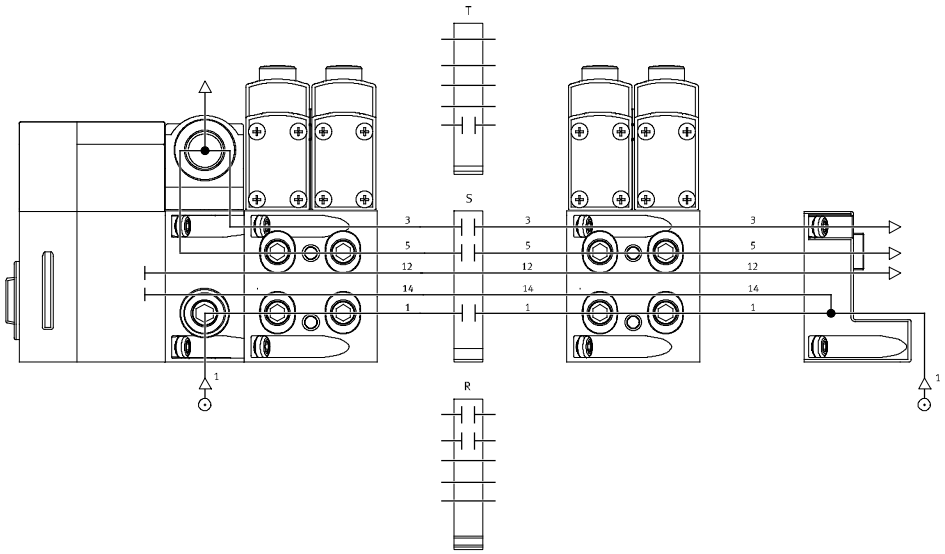
Code	Separating seal		Width				Description
	Pictorial examples	Coding	18 mm	26 mm	42 mm	52 mm	
T			■	■	■	■	Duct 1 separated
S			■	■	■	■	Ducts 1, 3 and 5 separated
R			■	■	■	■	Ducts 3 and 5 separated

Examples: Compressed air supply and pilot air supply, right-hand end plate

Internal pilot air supply, silencer/ducted exhaust air

Right-hand end plate: code V and V1
The diagram opposite shows an example of the configuration and connection of the compressed air supply with internal pilot air supply. Port 14 on the right-hand end plate is tightly sealed. At exhaust port 3/5 the air is expelled via the silencer.
Duct separations can optionally be used to create pressure zones.

Optional duct separation

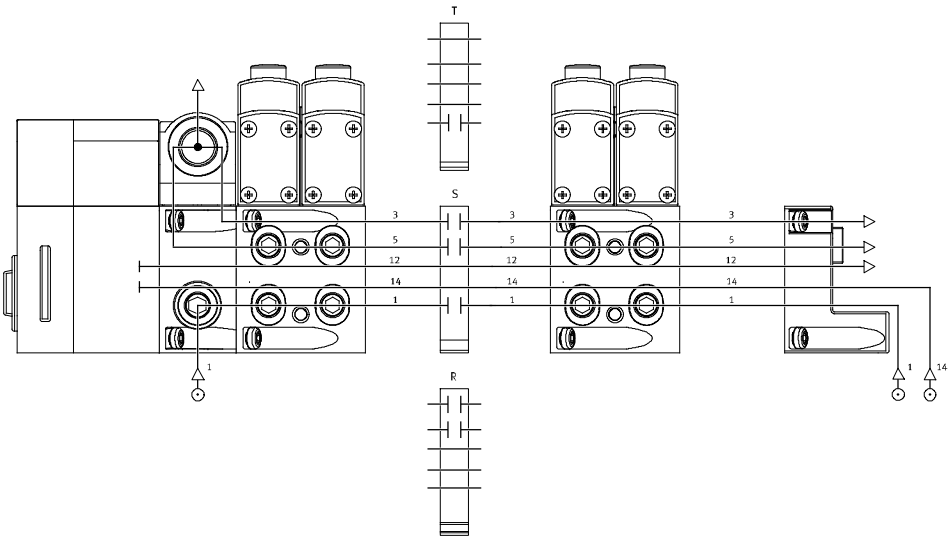


Examples: Compressed air supply and pilot air supply, right-hand end plate

External pilot air supply, silencer/ducted exhaust air

Right-hand end plate: code X and X1
The diagram opposite shows an example of the configuration and connection of the compressed air supply with external pilot air supply. Port 14 on the right-hand end plate is equipped with a fitting for this. At exhaust port 3/5 the air is expelled via the silencer.
Duct separations can optionally be used to create pressure zones.

Optional duct separation

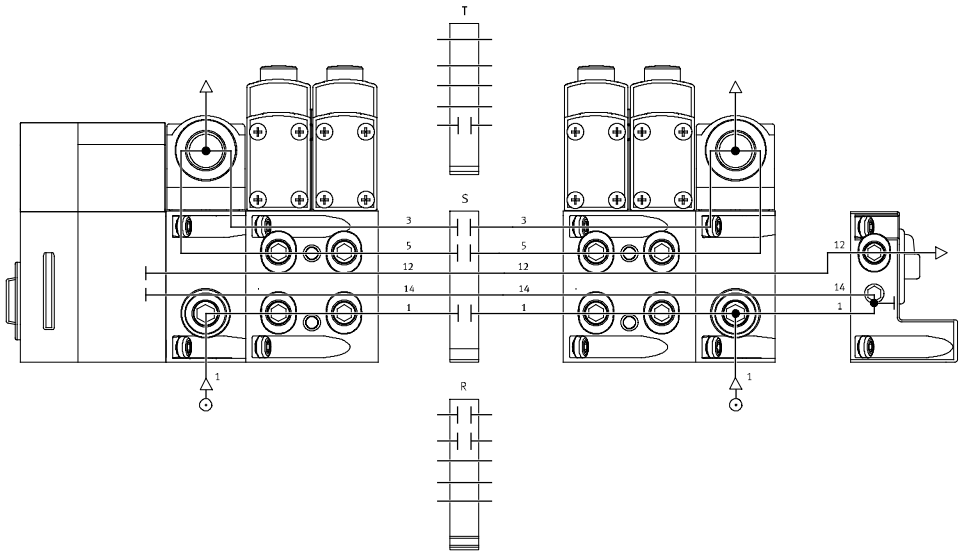


Examples: Compressed air supply and pilot air supply via end plate with pilot air selector

Internal pilot air supply, ducted exhaust air/silencer

Right-hand end plate: code U
The diagram opposite shows an example of the configuration and connection of the compressed air supply with internal pilot air supply. Port 14 on the right-hand end plate is tightly sealed. At exhaust port 3/5 the air is ducted or expelled via the silencer.
The selector switch on the pilot air selector is in position 4.
Duct separations can optionally be used to create pressure zones.

Optional duct separation



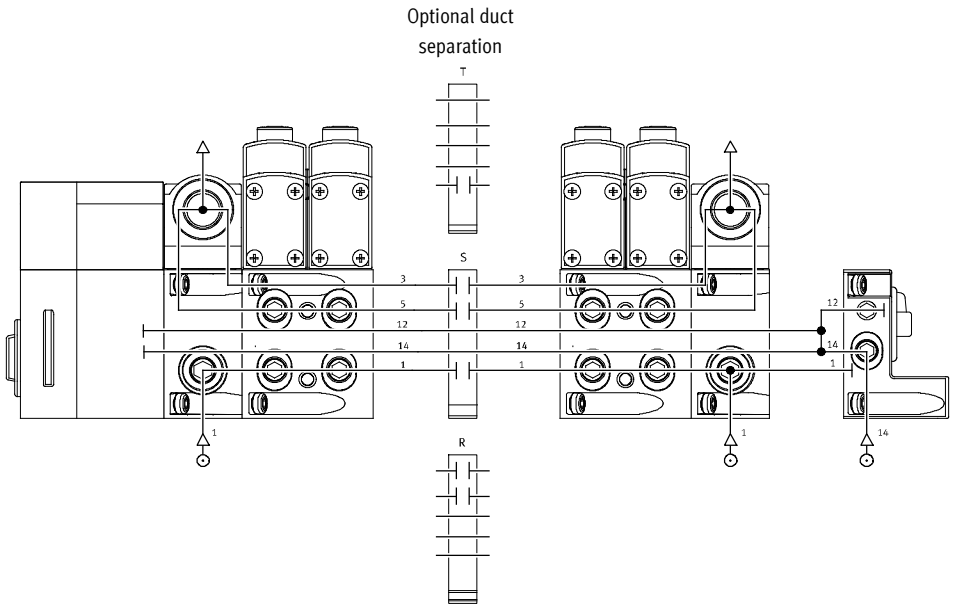
Examples: Compressed air supply and pilot air supply via end plate with pilot air selector

External pilot air supply, ducted exhaust air/silencer

Right-hand end plate: code Z

The diagram opposite shows an example of the configuration and connection of the compressed air supply with external pilot air supply. Port 14 on the right-hand 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. At exhaust port 3/5 the air is ducted or expelled via the silencer. The selector switch on the pilot air selector is in position 1.

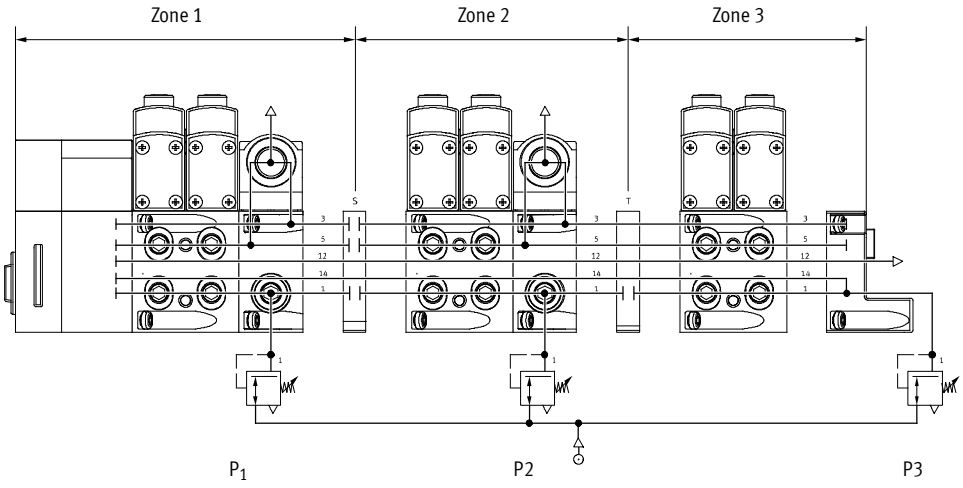
Duct separations can optionally be used to create pressure zones.



Examples: Creating pressure zones

VTSA/VTSA-F with CPX terminal

VTSA/VTSA-F facilitates the creation of up to 16 pressure zones (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.

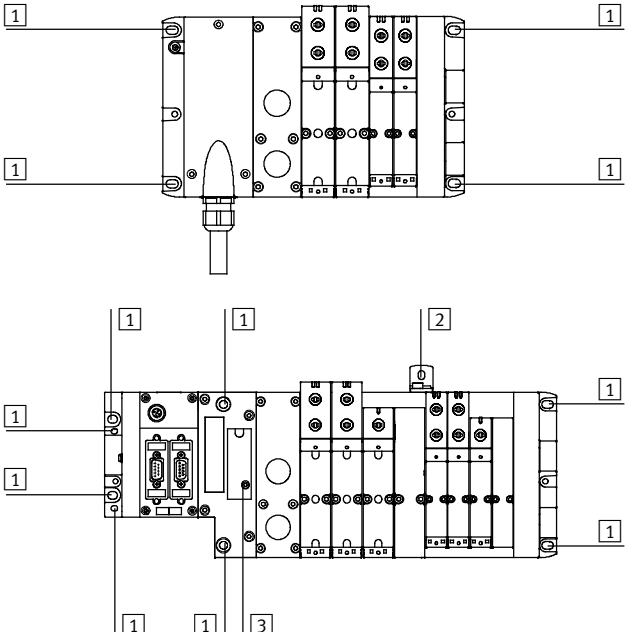


Valve terminal mounting

Sturdy valve terminal mounting thanks to:

- Four through-holes for wall mounting
- Additional mounting brackets
- H-rail mounting

Wall 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:

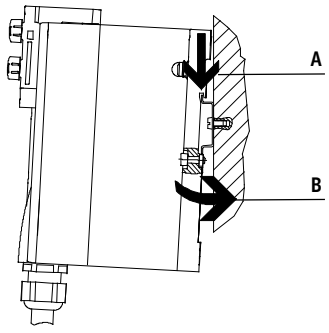
- Multi-pin plug (4 pieces):
  2 each on the multi-pin connection block and the right-hand end plate
- Fieldbus, CPX (4 pieces):
  2 each on the left-hand (CPX) and right-hand (VTSA/VTSA-F) end plate. The pneumatic interface additionally provides further mounting holes as well as optional mounting brackets.

1 Hole for M6 screw
2 Hole for M5 screw
3 Hole for H-rail mounting

Note

When wall mounting valve terminals with more than five manifold sub-bases, use additional mounting brackets of the type VAME-S...-10-W to prevent damage to the valve terminal. The mounting brackets are mounted on the pneumatic supply plates.

H-rail mounting



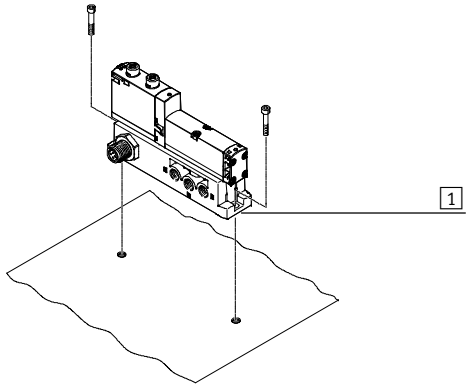
The valve terminal VTSA/VTSA-F is hooked onto the H-rail (see arrow A). It is then swivelled onto the H-rail and secured in place with the clamping component (see arrow B).

For H-rail mounting of the valve terminal you will need the following VTSA/VTSA-F mounting kit:

- CPX-CPA-BG-NRH

This permits mounting of the valve terminal on an H-rail to EN 60715.

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.

Display and operation

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

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

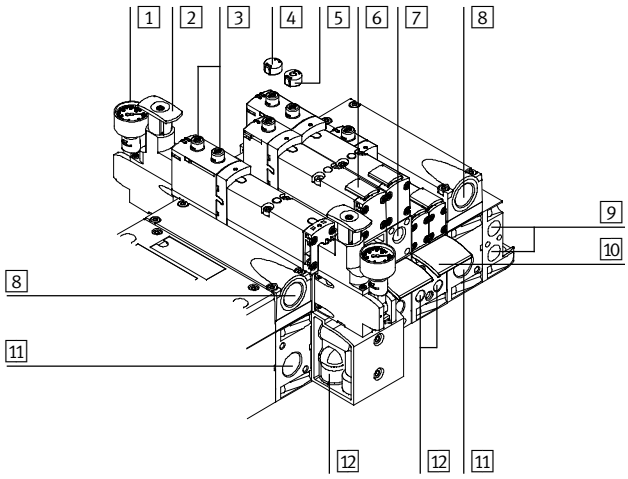
Manual override

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:

- A cover cap (accessory code N) can be fitted over the manual override to prevent it from being turned. The valve can then only be actuated by pressing it.
- A cover (code V) can be fitted over the manual override to prevent it from being accidentally actuated.

Pneumatic connection and control elements

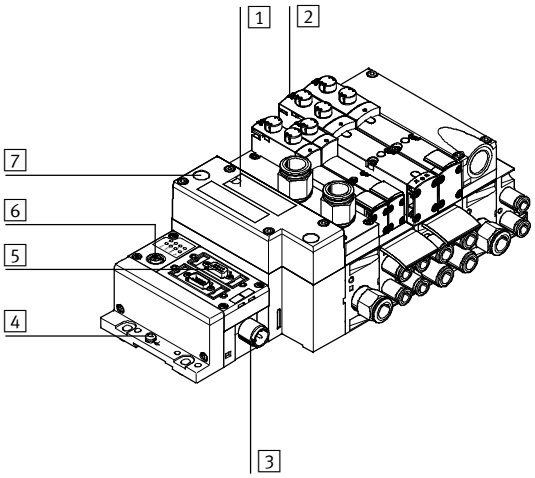


1 Pressure gauge (optional)
2 Adjusting knob of optional pressure regulator plate
3 Manual override (for each pilot solenoid coil, non-detenting or non-detenting/detenting)
4 Optional cover cap for manual override (prevents usage of manual override)
5 Optional cover cap for manual override with non-detenting function
6 Inscription label holder for valve
7 Adjusting screw of optional flow control plate
8 Exhaust ports "valves" (3/5)
9 Pilot ports 12 and 14 for supplying the external pilot air
10 Inscription label holder for sub-base
11 Supply port 1 (operating pressure)
12 Working ports 2 and 4, for each valve position

Note

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

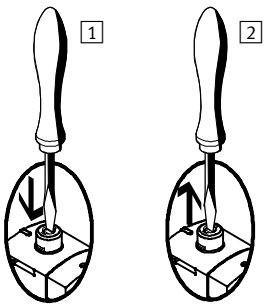
Electrical connection and display components



1 Inscription area and cover for H-rail mounting
2 Yellow LEDs: signal status display for pilot solenoid coils
3 Power supply connection
4 Earth terminal
5 Fieldbus connection (bus-specific)
6 Service interface for handheld unit, etc.
7 Red LED: common error display for valves

Manual override (MO)

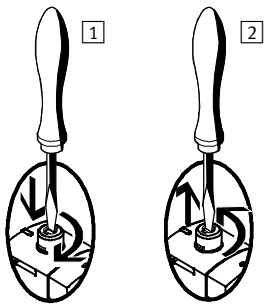
MO with automatic return (non-detenting)



1 Press in the stem of the manual override using a pointed object or screwdriver.
Valve is then switched

2 Remove the pointed object or screwdriver.
Spring force pushes the stem of the manual override back.
Valve returns to initial position (not with double solenoid valve code J).

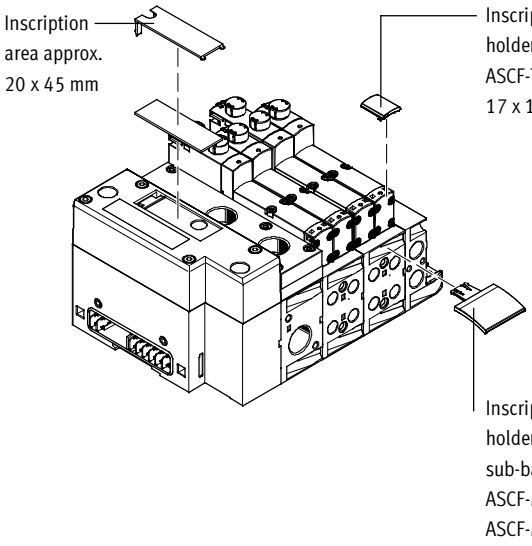
MO with detent (covered)



1 Press in the stem of the manual override using a pointed object or screwdriver until the valve switches and then turn the stem clockwise by 90° until the stop is reached.
Valve remains switched

2 Turn the stem anti-clockwise by 90° until the stop is reached and then remove the pointed object or screwdriver. Spring force pushes the stem of the manual override back. Valve returns to initial position (not with double solenoid valve code J and D).

Identification system



Inscription label holders can be applied to the valves and manifold sub-bases to identify them. These inscription label holders 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 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

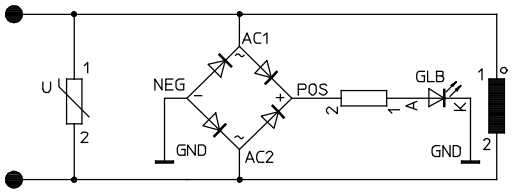
Large inscription labels can be attached to the pneumatic interface as an alternative or in addition to the smaller labels.

Protective circuit

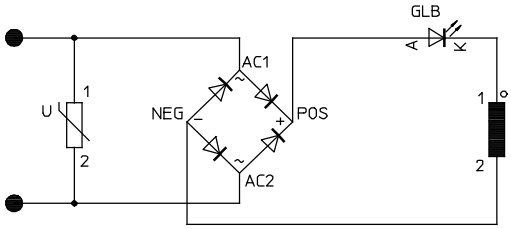
Each VSVA solenoid coil is protected with a spark arresting protective circuit as well as against polarity reversal.

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

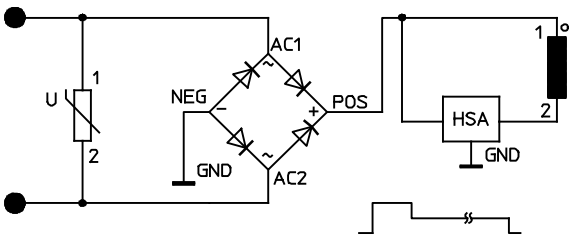
24 V DC version (width 18 to 42 mm)



110 V AC version (width 18 to 52 mm)



24 V DC version (width 52 mm)



Individual valve

Valves can also be used on individual sub-bases for actuators 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 or 110 V AC
- Cable (open end) for configuration by the user
  24 V DC or 110 V AC

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 or 110 V AC): 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 connector): electrical multi-pin plug connection with round plug connector, 19-pin to CNOMO E03.62.530.N, connecting thread M23 for 24 V DC. The valve terminals can be equipped with max. 16 solenoid coils.

The valves are switched by means of positive or negative logic (PNP or NPN). Mixed operation is not permitted.

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, each with a single solenoid coil, can be addressed. 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-S1W37-...-LE10 for max. 8 solenoid coils
- NEBV-S1W37-...-LE26 for max. 22 solenoid coils
- NEBV-S1W37-...-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 connection block as the valve terminal with multi-pin plug connection.
This means it is possible to convert a valve terminal with multi-pin plug connection using an AS-interface module.

The technical specifications of the AS-interface 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 4 solenoid coils (width 52 mm) are supplied with current simultaneously.
More information can be found at:
➔ Internet: as-interface

Fieldbus connection/control block

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

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

Note

More information can be found at:
➔ Internet: cpx

Rules for addressing

Address allocation

Address allocation does not depend on whether single or double solenoid valves are fitted.
Addresses are allocated in ascending order without gaps, from left to right.

Single solenoid valve

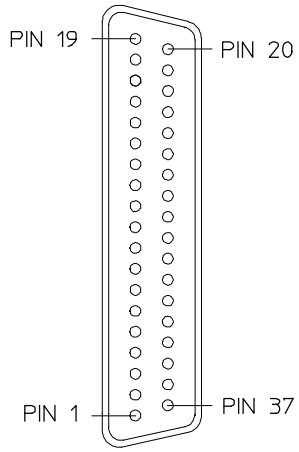
A valve position for actuating one solenoid coil (VABV...T1) occupies one address.

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

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



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		–	–	–

Note

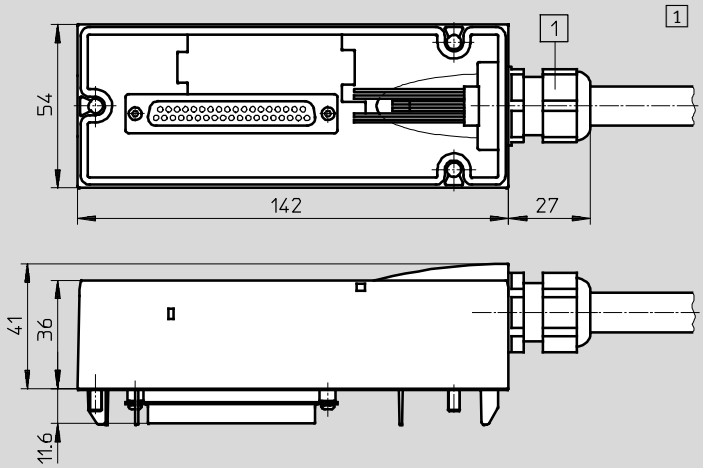
The drawing shows the view onto the Sub-D plug socket at the connecting cable NEBV-S1W37-....

1) To IEC 757
2) Pin 9 ... 35: not used with connecting cable NEBV-S1-W37-...-LE10
   Pin 23 ... 33: not used with connecting cable NEBV-S1-W37-...-LE26
3) 0 V for positive switching control signals; connect 24 V for negative switching control signals; mixed operation is not permitted.

Dimensions

Download CAD data ➔ **www.festo.com**

Connecting cable NEBV-S1W37-...

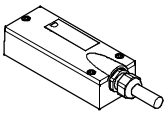


1 Cable connector M20x1.5

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

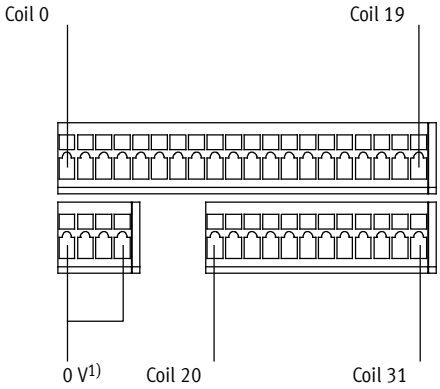
- NEBV-S1W37-...-LE10 for valve terminal with max. 8 solenoid coils
- NEBV-S1W37-...-LE26 for valve terminal with max. 22 solenoid coils
- NEBV-S1W37-...-LE37 for valve terminal with max. 32 solenoid coils

Pin allocation – Multi-pin plug, Sub-D plug, 24 V DC, connecting cable; electrical connection code MP1

	Sheath	Length [m]	Cable composition [mm²]	Cable diameter [mm]	Part No.	Type
	Polyurethane	2.5	10 x 0.34	7.7	**539240**	**NEBV-S1W37-E2,5-LE10**
		5			**539241**	**NEBV-S1W37-E5-LE10**
		10			**539242**	**NEBV-S1W37-E10-LE10**
		2.5	26 x 0.34	11.5	**539243**	**NEBV-S1W37-E2,5-LE26**
		5			**539244**	**NEBV-S1W37-E5-LE26**
		10			**539245**	**NEBV-S1W37-E10-LE26**
		2.5	37 x 0.34	13	**539246**	**NEBV-S1W37-K2,5-LE37**
		5			**539247**	**NEBV-S1W37-K5-LE37**
		10			**539248**	**NEBV-S1W37-K10-LE37**
	Polyvinyl chloride, cable properties (standard)	2.5	10 x 0.34	7.7	**543271**	**NEBV-S1W37-KM-2,5-LE10**
		5			**543272**	**NEBV-S1W37-KM-5-LE10**
		10			**543273**	**NEBV-S1W37-KM-10-LE10**
		2.5	27 x 0.34	11.5	**543274**	**NEBV-S1W37-KM-2,5-LE27**
		5			**543275**	**NEBV-S1W37-KM-5-LE27**
		10			**543276**	**NEBV-S1W37-KM-10-LE27**
		2.5	37 x 0.34	13	**543277**	**NEBV-S1W37-KM-2,5-LE37**
		5			**543278**	**NEBV-S1W37-KM-5-LE37**
		10			**543279**	**NEBV-S1W37-KM-10-LE37**

Pin allocation – Multi-pin plug, terminal strip (Cage Clamp®), 24 V DC and 110 V AC; electrical connection code T

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

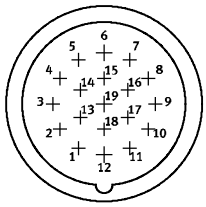


- Note

The drawing shows the view onto the multi-pin terminal strip (Cage Clamp®).

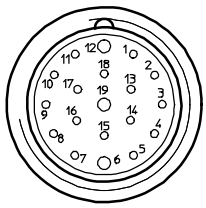
Terminal	Coil/address		Terminal	Coil/address
1	0		17	16
2	1		18	17
3	2		19	18
4	3		20	19
5	4		21	20
6	5		22	21
7	6		23	22
8	7		24	23
9	8		25	24
10	9		26	25
11	10		27	26
12	11		28	27
13	12		29	28
14	13		30	29
15	14		31	30
16	15		32	31
Conductor				
33	0 V		35	0 V
34	0 V		36	0 V

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



Address	Pin1)		Address	Pin1)
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

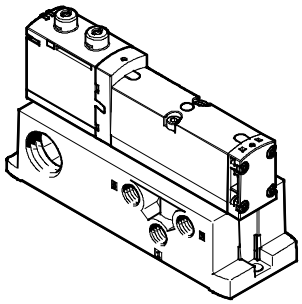
Pin allocation – Multi-pin plug, round plug connector, 24 V DC; electrical connection – CNOMO assignment

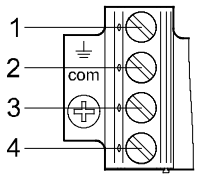


Pin	Valve position/ solenoid coil		Pin	Valve position/ solenoid coil
1	8/14		10	7/12
2	6/14		11	7/14
3	4/14		12	FE
4	2/12		13	6/12
5	2/14		14	4/12
6	0 V1)		15	1/14
7	1/12		16	3/14
8	3/12		17	5/14
9	5/12		18	8/12
			19	Unused

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: unused

Electrical connection, individual valve 24 V DC or 110 V AC up to width 52 mm





Pin allocation for assembly by the user

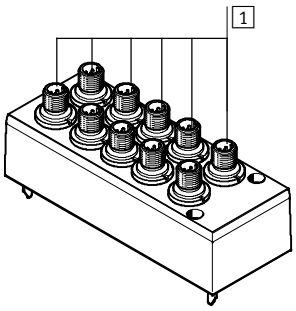
With positive logic:

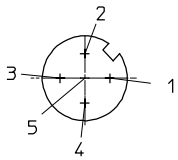
Pin1 – Unused (with 110 V AC connection for earthing)
Pin2 – U_B for coil 12
Pin3 – 0 V for coil 12 and 14
Pin4 – U_B for coil 14

With negative logic:

Pin1 – Unused
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] Connector plug M12x1, 5-pin

Pin allocation M12

With positive logic:

Pin1 – Unused
Pin2 – U_B for coil 12
Pin3 – 0 V for coil 12 and 14
Pin4 – U_B for coil 14
Pin5 – Functional earth

Pin allocation M12

With negative logic:

Pin1 – Unused
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 permitted.

System equipment

Operate system equipment with unlubricated compressed air if possible. Festo valves and cylinders are designed so that, if used as designated, 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 all of your system equipment with lubricated compressed air. The lubricators should, where possible, always be installed directly upstream of the actuator used.

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 ester, 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 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 Class 4).
A higher residual oil content irrespective of the compressor oil cannot be permitted, as the basic lubricant would be flushed out over time.

Valve terminals type 44/45, VTSA/VTSA-F, NPT

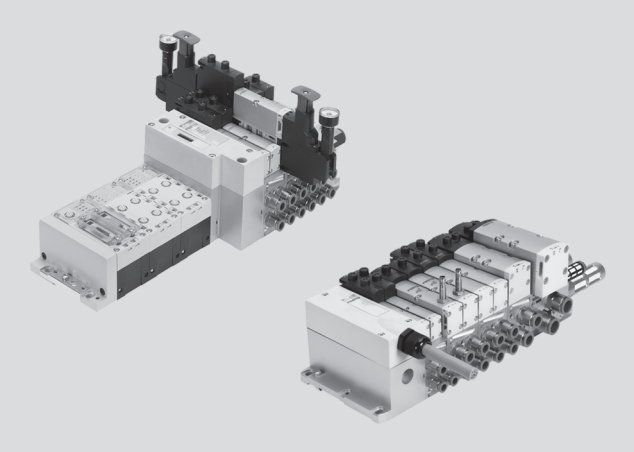
Technical data – Valve terminal

FESTO

- 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
  110 V AC

- Flow rate
  Width 18 mm:
  up to 550 (700) l/min
  Width 26 mm:
  up to 1,100 (1,400) l/min
  Width 42 mm:
  up to 1,400 l/min
  Width 52 mm:
  up to 2,900 l/min



Flow rates in brackets apply to VTSA-F

General technical data					
Design		Piston spool valve			
Sealing principle		Soft			
Actuation type		Electrical			
Type of control		Piloted			
Exhaust function, with flow control		Via flow control plate			
Lubrication		Lubricated for life			
Type of mounting		Wall mounting			
		On H-rail to EN 60715			
Mounting position		Any			
Manual override		Non-detenting, detenting, covered			
Valve terminal design		Modular and expandable			
Max. no of valve positions		32			
Pneumatic connections – NPT thread					
Width		18 mm	26 mm	42 mm	52 mm
Pneumatic connection		Via manifold sub-base			
Supply port	1	• ½" NPT • QS-½-⅝-U • QS-½-½-U	• ½" NPT • QS-½-⅝-U • QS-½-½-U	• ½" NPT • QS-½-⅝-U • QS-½-½-U	• ¾" NPT • N-¾-P-19-NPT
Exhaust port	3/5	• ½" NPT • QS-½-⅝-U • QS-½-½-U	• ½" NPT • QS-½-⅝-U • QS-½-½-U	• ½" NPT • QS-½-⅝-U • QS-½-½-U	• ¾" NPT • N-¾-P-19-NPT
Working ports	2/4	Dependent on the connection type selected			
		• ⅛" NPT • QS-⅛-5/16-U • QS-⅛-¼-U	• ¼" NPT • QS-¼-⅜-U • QS-¼-5/16-U	• ⅜" NPT • QS-⅜-½-U • QS-⅜-⅜-U	• ½" NPT • QS-½-⅝-U • QS-½-½-U
External pilot air supply port	14	• ¼" NPT • QS-¼-⅜-U • QS-¼-5/16-U	• ¼" NPT • QS-¼-⅜-U • QS-¼-5/16-U	• ¼" NPT • QS-¼-⅜-U • QS-¼-5/16-U	• ¼" NPT • QS-¼-½-U • QS-¼-⅜-U
Pilot exhaust air port	12	• ¼" NPT • QS-¼-⅜-U • QS-¼-5/16-U	• ¼" NPT • QS-¼-⅜-U • QS-¼-5/16-U	• ¼" NPT • QS-¼-⅜-U • QS-¼-5/16-U	• ¼" NPT • QS-¼-½-U • QS-¼-⅜-U

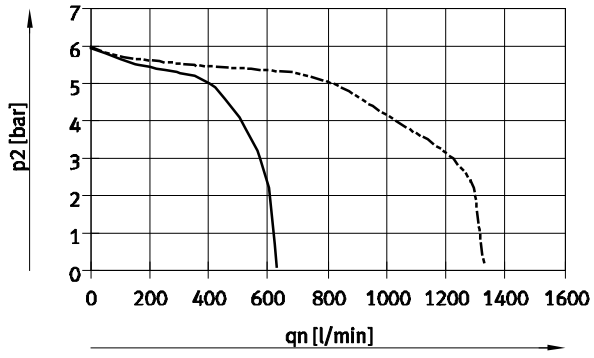
Note: This product conforms to ISO 1179-1 and to ISO 228-1

Standard nominal flow rate of valve/valve terminal																		
Valve function order code		VC	VV	N	K	H	P	Q	R	M	O	J	D	B	G	E	SA	SB
Width 18 mm																		
Flow rate of valve	[l/min]	700		600						750				700[1], 330[2]			–	–
Flow rate of valve on valve terminal VTSA	[l/min]	500		400						550				450[1] 330[2]			–	–
Flow rate of valve on valve terminal VTSA-F	[l/min]	650		550						700				480[1] (U) 330[2] (E) 650 (C)			–	–
Width 26 mm																		
Flow rate of valve	[l/min]	1,350		1,250						1,400				1,400[1]			1,400	700
Flow rate of valve on valve terminal VTSA	[l/min]	1,000		900						1,100				1,000[1] 700[2]			1,000	700
Flow rate of valve on valve terminal VTSA-F	[l/min]	1,300		1,150						1,350				1,350[1] 700[2]			1,000	700
Width 42 mm																		
Flow rate of valve	[l/min]	1,600		1,600						2,000				1,900[1], 800[2]			–	–
Flow rate of valve on valve terminal VTSA	[l/min]	1,400		1,200						1,300				1,200[1], 800[2]			–	–
Flow rate of valve on valve terminal VTSA-F	[l/min]	1,400		1,200						1,300				1,200[1], 800[2]			–	–
Width 52 mm																		
Flow rate of valve	[l/min]	4,000	–	3,000						4,000				3,600[1], 1,700[2]			–	–
Flow rate of valve on valve terminal VTSA	[l/min]	2,800	–	2,400						2,900				2,800[1], 1,700[2]			–	–
Flow rate of valve on valve terminal VTSA-F	[l/min]	2,800	–	2,400						2,900				2,800[1], 1,700[2]			–	–

1) Switching position
2) Mid-position

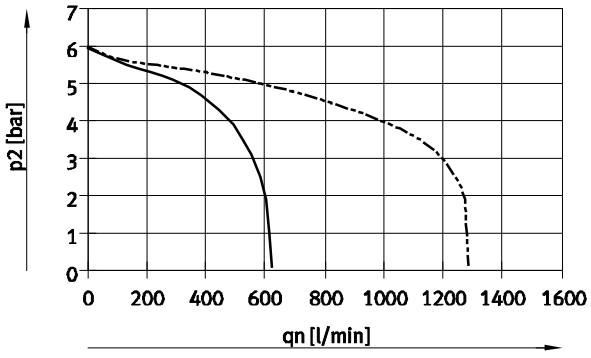
Flow rate qn as a function of output pressure p2 with pressure regulator plates (P regulator plate) for port 1

6 bar



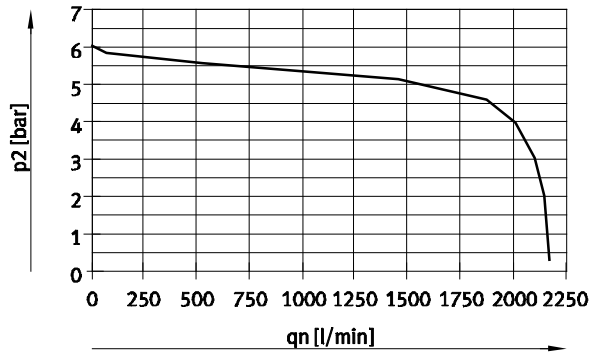
Width 18 mm
Width 26 mm

10 bar

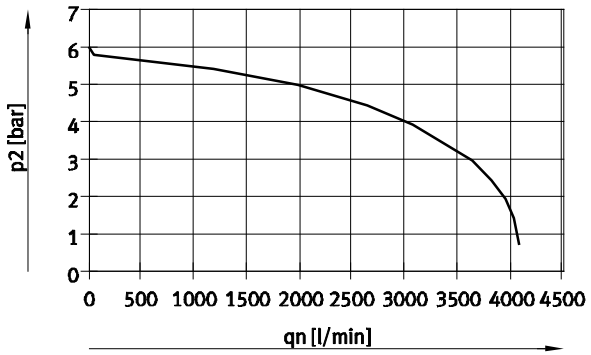


Width 18 mm
Width 26 mm

Supply pressure 10 bar, set control pressure 6 bar



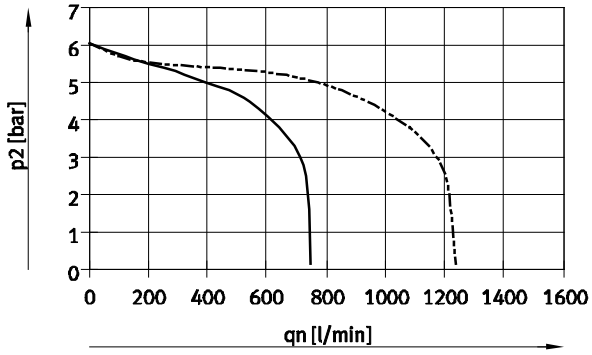
Width 42 mm (ISO 1)



Width 52 mm (ISO 2)

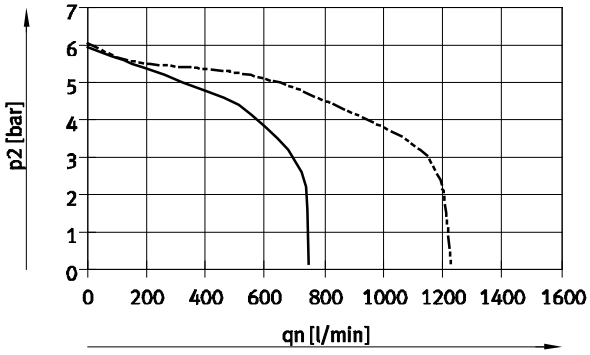
Flow rate qn as a function of output pressure p2 with pressure regulator plates (AB regulator plates) for port 2, 4 or ports 4/2

6 bar



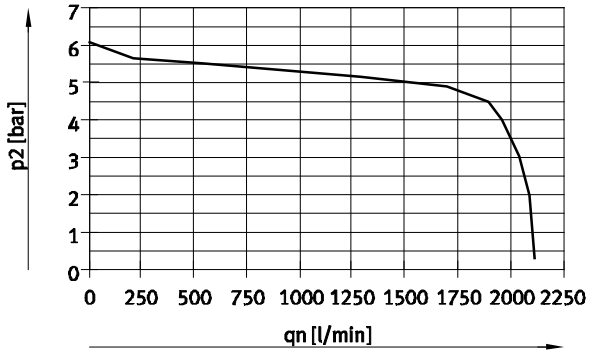
Width 18 mm
Width 26 mm

10 bar

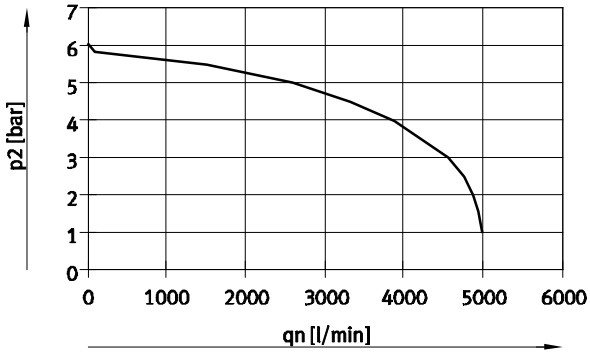


Width 18 mm
Width 26 mm

Supply pressure 10 bar, set controller pressure 6 bar



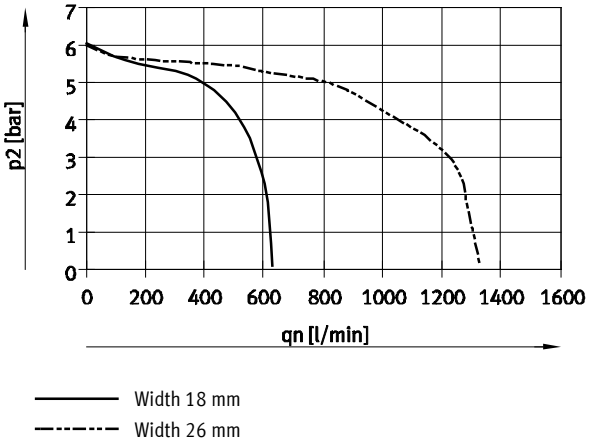
Width 42 mm (ISO 1)



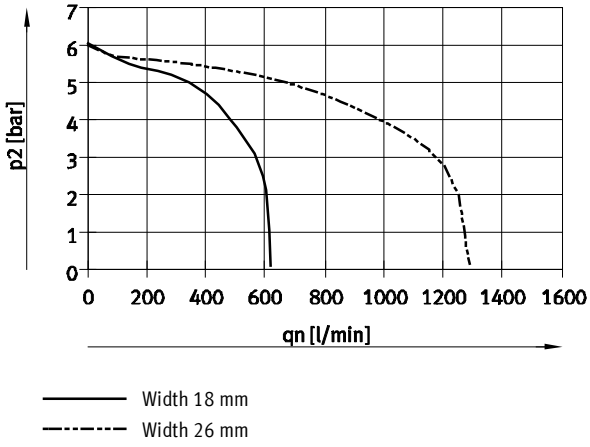
Width 52 mm (ISO 2)

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

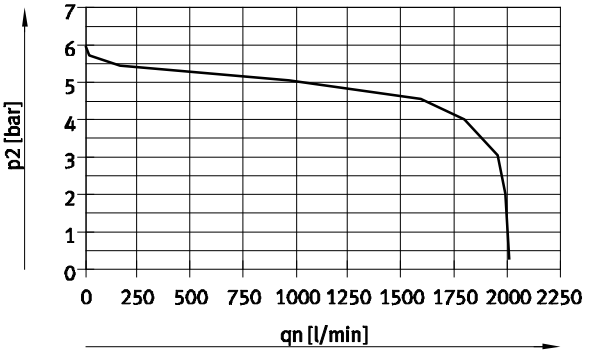
6 bar



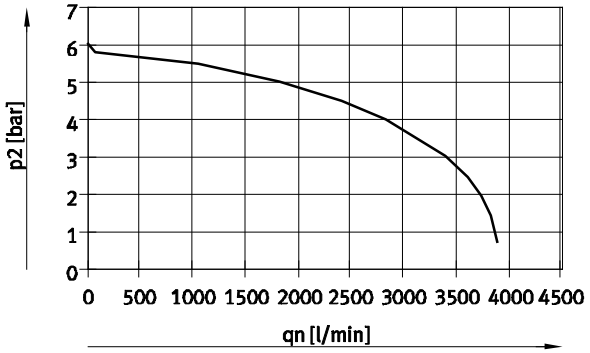
10 bar



Supply pressure 10 bar, set controller pressure 6 bar

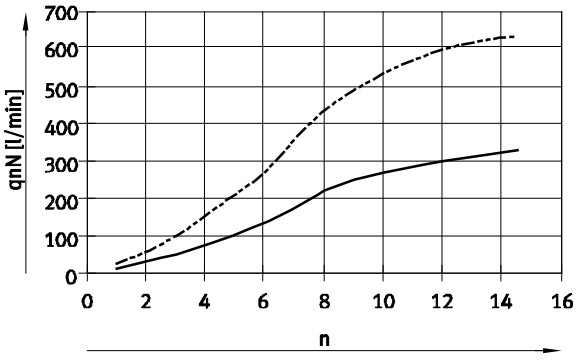


Width 42 mm (ISO 1)



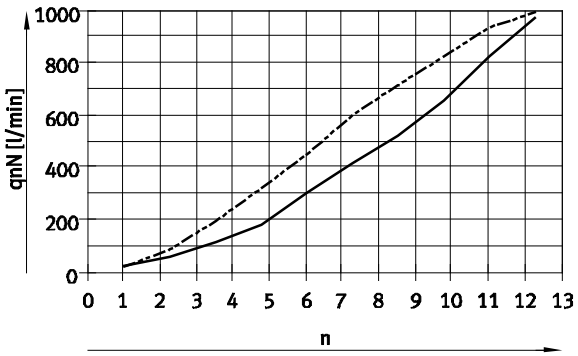
Width 52 mm (ISO 2)

Flow rate qn as a function of flow control



Width 18 mm

Width 26 mm

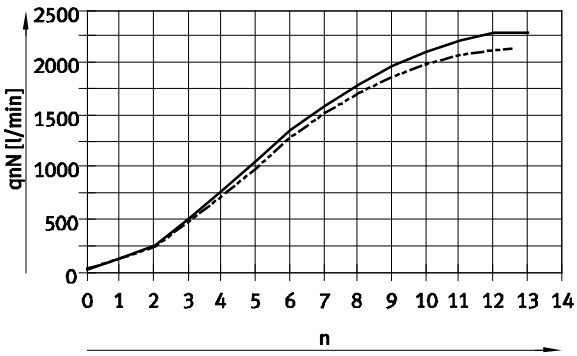


Width 42 mm (ISO 01)

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

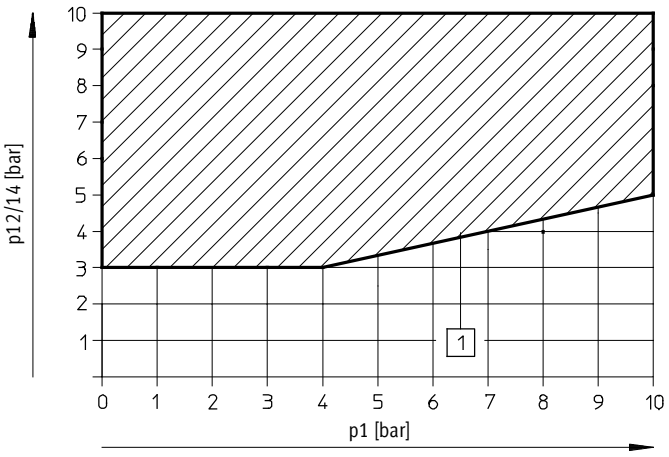
Flow control screw from 4 ⇢ 5

n Revolutions of the adjusting screw

Pneumatic characteristic data																	
Valve function order code	VC	VV	N	K	H	P	Q	R	M	O	J	D	B	G	E	SA	SB
Direction of flow																	
Any	–	■	–	–	–	–	–	–	■	■	■	■	■	■	■	–	■
Reversible only	–	–	–	–	–	■	■	■	–	–	–	–	–	–	–	–	–
Non-reversible	■	–	■	■	■	–	–	–	–	–	–	–	–	–	–	■	–
Reset method																	
Pneumatic spring	■	■	■	–	■	■	■	■	■	–	–	–	–	–	–	■	■
Mechanical spring	–	–	–	■	–	–	–	–	–	■	–	–	■	■	■	–	–

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

for 3/2-way solenoid valves



1 Operating range for valves with external pilot air supply

Note

Reversible 3/2-way solenoid valves (flow direction reversible only)

- These values 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 pressure separation 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-hand end plate with pilot air selector: can be realised via position 1 or 2
- Right-hand end plate with threaded connections: 12 and 14 must be supplied with the same pressure level

Operating and environmental conditions																	
Valve function order code		VC	N	K	H	VV	P	Q	R	M	O	J	D	B	G	E	SA	SB
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4] ➔ 56																
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)																
Operating pressure	[bar]	3 ... 10				–0.9 ... +10												
Operating pressure for valve terminal with internal pilot air supply	[bar]	3 ... 10																
Pilot pressure	[bar]	3 ... 10																
Ambient temperature	[°C]	–5 ... +50																
Temperature of medium	[°C]	–5 ... +50																
Storage temperature[1)]	[°C]	–20 ... +40																
Relative air humidity	[%]	90																
PWIS criterion		Free of paint-wetting impairment substances																
Certification		cULus recognized (OL)																

1) Long-term storage

Valve switching times																		
Valve function order code[1]		VC	VV	N	K	H	P	Q	R	M	O	J	D	B	G	E	SA	SB
Width 18 mm, nominal operating voltage 24 V DC/110 V AC																		
Switching times [ms]	On	12	12	12	12	12	25	25	25	22	12	–	–	15	15	15	–	–
	Off	30	30	30	30	30	12	12	12	28	38	–	–	44	44	44	–	–
	Changeover	–	–	–	–	–	–	–	–	–	–	11	13	–	–	–	–	–
Width 26 mm, nominal operating voltage 24 V DC/110 V AC																		
Switching times [ms]	On	20	20	20	20	20	32	32	32	25	20	–	–	22	22	22	9/22	9/19
	Off	38	38	38	38	38	30	30	30	45	65	–	–	65	65	65	49	36
	Changeover	–	–	–	–	–	–	–	–	–	–	18	21	–	–	–	33	32
Width 42 mm, nominal operating voltage 24 V DC																		
Switching times [ms]	On	20	20	20	20	20	34	34	34	27	22	–	–	22	22	22	–	–
	Off	38	38	38	38	38	28	28	28	45	60	–	–	65	65	65	–	–
	Changeover	–	–	–	–	–	–	–	–	–	–	16	19	–	–	–	–	–
Width 42 mm, nominal operating voltage 110 V AC																		
Switching times [ms]	On	22	22	22	22	22	34	34	34	20	20	–	–	22	22	22	–	–
	Off	46	46	46	46	46	38	38	38	55	55	–	–	68	68	68	–	–
	Changeover	–	–	–	–	–	–	–	–	–	–	16	19	–	–	–	–	–
Width 52 mm, nominal operating voltage 24 V DC with holding current reduction																		
Switching times [ms]	On	14	–	20	20	20	30	30	30	40	20	–	–	23	23	23	–	–
	Off	35	–	35	35	35	30	30	30	45	60	–	–	60	60	60	–	–
	Changeover	–	–	–	–	–	–	–	–	–	–	18	18	–	–	–	–	–
Width 52 mm, nominal operating voltage 110 V AC																		
Switching times [ms]	On	35	–	35	35	35	50	50	50	70	25	–	–	30	30	30	–	–
	Off	70	–	70	70	70	65	65	65	90	110	–	–	100	100	100	–	–
	Changeover	–	–	–	–	–	–	–	–	–	–	35	42	–	–	–	–	–

1) Valve code SA, switching time 22 ms for control side 12, 9 ms for control side 14
Valve code SB, switching time 19 ms for control side 12, 9 ms for control side 14

Electrical data – Maximum current consumption per solenoid coil, width 52 mm			
Valve function		2x 2/2-way and 2x 3/2-way solenoid valve	5/2-way, 5/3-way solenoid valve
At nominal voltage (valves with holding current reduction)			
Nominal pick-up current	[mA]	165	165
Nominal current following current reduction	[mA]	35	35
Time until current reduction	[ms]	30	30

Electrical data – Individual electrical connection					
Width		18 mm	26 mm	42 mm	52 mm
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%			
Protection class to EN 60529		IP65 and NEMA 4 (for all types of signal transmission in assembled state)			
Coil characteristics at 24 V DC					
2/2-way and 3/2-way solenoid valves	[W]	1.3			4.6
5/2-way solenoid valves (code D)	[W]	1.3			4.6
5/2-way, 5/3-way solenoid valves	[W]	1.6			4.6

Electrical data – Multi-pin plug connection					
Width		18 mm	26 mm	42 mm	52 mm
Load voltage supply for valves (U_{val})					
Operating voltage	[V DC] [V AC]	24 ±10% 110 ±10% (50 ... 60 Hz)			
Max. residual current	[A]	6			
Acceptable current load at 40 °C	[A]	1			
Surge capacity	[kV]	1.5			
Degree of contamination		3			
Duty cycle		100%			
Protection class to EN 60529		IP65 and NEMA 4 (for all types of signal transmission in assembled state)			
Coil characteristics at 24 V DC					
2/2-way and 3/2-way solenoid valves	[W]	1.3			4.6
5/2-way solenoid valves (code D)	[W]	1.3			4.6
5/2-way, 5/3-way solenoid valves	[W]	1.6			4.6
Coil characteristics at 110 V AC					
2/2-way and 3/2-way solenoid valves	[VA]	1			
5/2-way, 5/3-way solenoid valves	[VA]	1.6			

Electrical data – With CPX terminal					
Width		18 mm	26 mm	42 mm	52 mm
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 function range	[V]	21.6 ... 21.5			
Protection class to EN 60529		IP65 and NEMA 4 (for all types of signal transmission in assembled state)			
Coil characteristics at 24 V DC					
2/2-way and 3/2-way solenoid valves	[W]	1.3			4.6
5/2-way solenoid valves (code D)	[W]	1.3			4.6
5/2-way, 5/3-way solenoid valves	[W]	1.6			4.6

ATEX				
Connection variant[1]	VTSA-MP		VTSA-FB	VTSA-ASI
	24 V DC	110 V AC		
ATEX category for gas	II 3G			
Explosion ignition protection type for gas	Ex nA II T3 X			
ATEX category for dust	II 3D			
Explosion ignition protection type for dust	Ex tD A22 IP65 T125° C X			
ATEX temperature rating [°C]	–5 ≤ Ta ≤ +50			
CE marking (see declaration of conformity)	–	To EU Low Voltage Directive	To EU EMC Directive[2]	–

1) This product is certified for use in the ATEX zone in accordance with the EU ATEX Directive
The certification is valid for: VTSA-MP, VTSA-FB and VTSA-ASI

2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com ➔ Support ➔ User documentation.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Materials	
Manifold sub-base	Die-cast aluminium
Valve	Die-cast aluminium, reinforced polyamide
Seals	Nitrile rubber, elastomer (support made of steel)
Supply plate	Die-cast aluminium
Right-hand end plate	Die-cast aluminium
Pneumatic interface for CPX	Die-cast aluminium
Flow control plate	Die-cast aluminium
Pressure regulator plate	Die-cast aluminium, reinforced polyamide
Multi-pin connection block	Die-cast aluminium
Cover for the pneumatic interface and multi-pin plug connection	Reinforced polyamide
Note on materials	RoHS-compliant

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]	1,470			
Electrical connection for AS-interface	300			
AS-interface module	850			
Supply plate[2]				
• Exhaust plate with 3 and 5 common	617			
• Exhaust port cover with 3 and 5 separated	597			
Right-hand end plate[3]				
– With threaded connections	339			336
– Selector	281			–
Manifold sub-base[4]	447	634	340	815
90° connection plate[3]	170	230	176	359
Pressure regulator plate				
for port 1	350	402	640	1,190
for port 4 or 2	367	448	640	1,230
for ports 4 and 2	611	692	920	1,990
Flow control plate	228	320	220	565
Vertical supply plate[3]	140	191	340	605
Vertical pressure shut-off plate	209	273	600	1030
Valves				
• 5/3-way solenoid valve (code: B, G, E)	191	320	456	780
• 5/3-way solenoid valve (code: SA, SB)	–	301	–	–
• 5/2-way valve, single solenoid (code: M, O)	163	293	426	702
• 5/2-way valve, double solenoid (code: J, D)	172	276	439	732
• 2x 3/2-way solenoid valve (code: N, K, H, P, Q, R)	190	335	442	740
• 2x 2/2-way solenoid valve (code: VC, VV)	190	335	442	740
Blanking plate	34	73	68	146

1) With sheet metal seal, printed circuit board
2) With sheet metal seal and electrical interlinking module
3) With screws
4) With sheet metal seal, electrical interlinking module, inscription label holder, 4 screws

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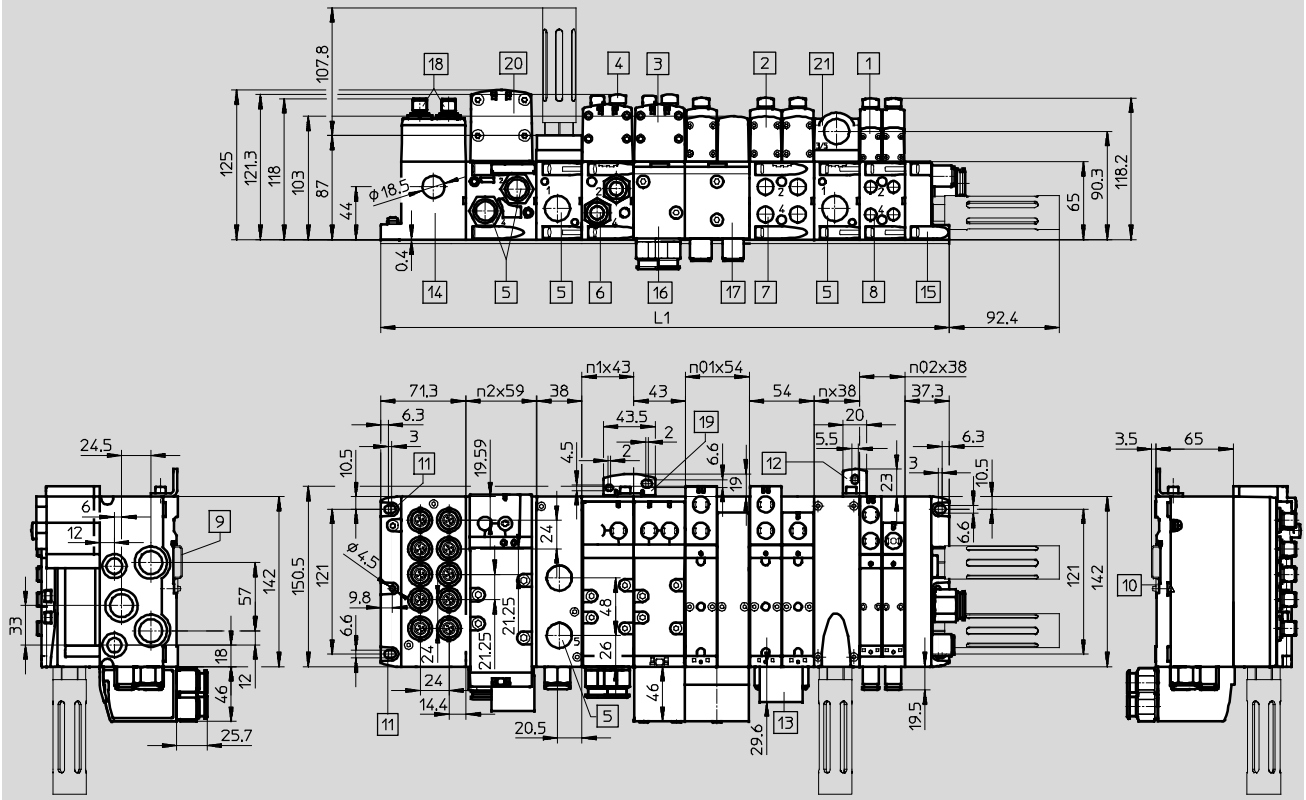
Valve terminal with individual electrical connection



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 ½" NPT
6 Threaded connection ⅜" NPT
7 Threaded connection ¼" NPT
8 Threaded connection ⅛" 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, ⅜" NPT
17 90° connection plate 54 mm, ½" NPT
18 M12 plug, 5-pin (6-way or 10-way)
19 Additional mounting bracket
20 Solenoid valve, width 52 mm
21 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)

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 to ISO 228-1

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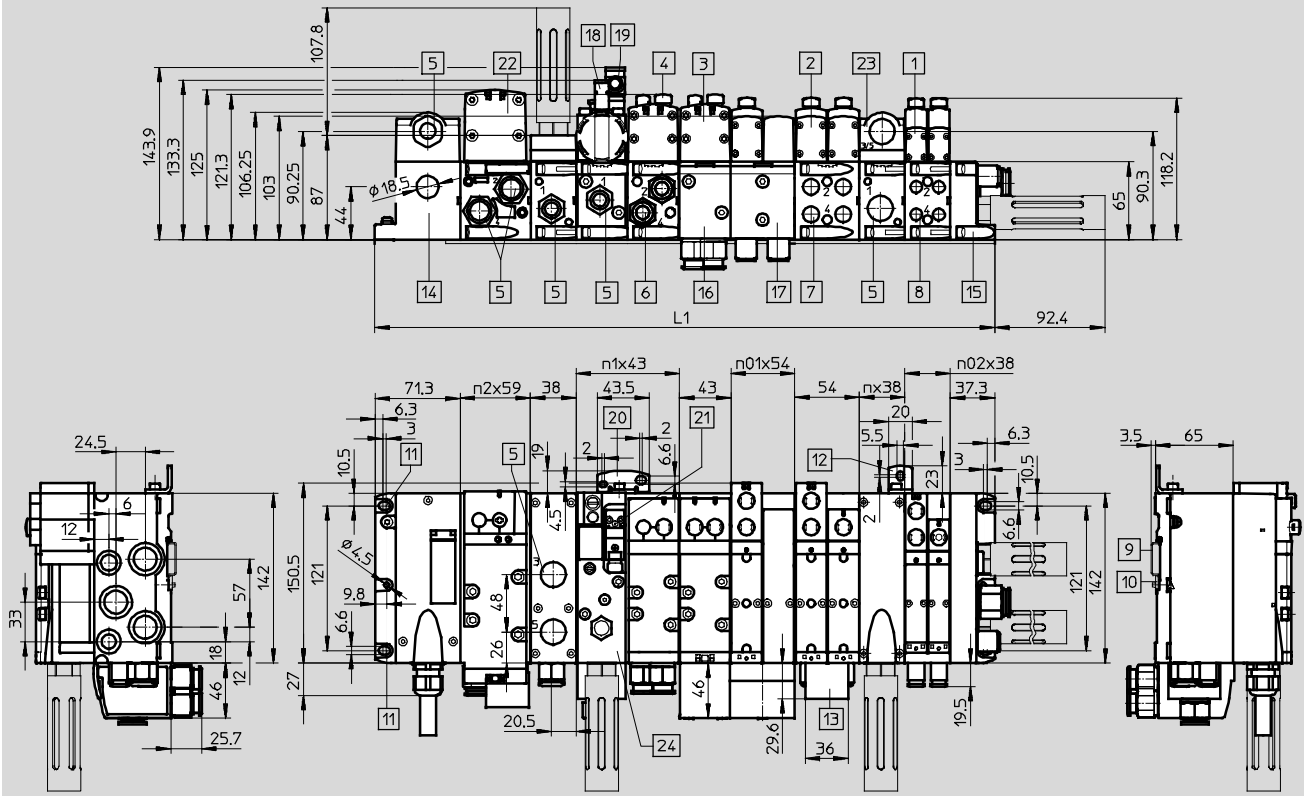
Valve terminal with multi-pin plug connection



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 ½" NPT
6 Threaded connection ⅜" NPT
7 Threaded connection ¼" NPT
8 Threaded connection ⅛" 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, ⅜" NPT
17 90° connection plate 54 mm, ½" NPT
18 Proximity sensor M12x1
19 Plug socket M12x1
20 Additional mounting
21 Electrical connection to DIN EN 175301-803, type C
22 Solenoid valve, width 52 mm
23 Supply plate
24 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)

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 to ISO 228-1

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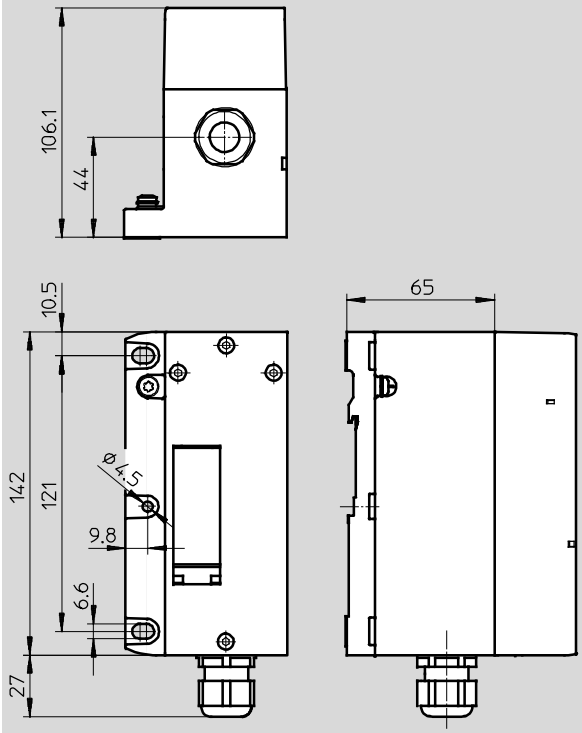
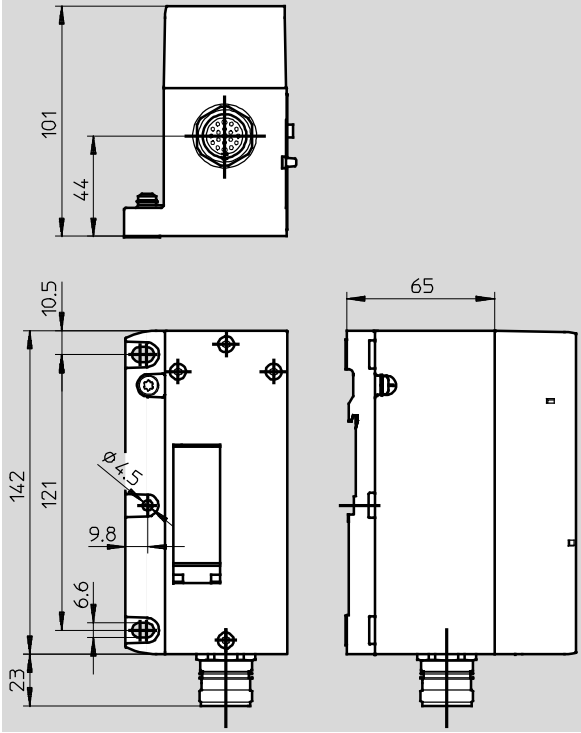
Multi-pin, terminal strip (Cage Clamp®)



Multi-pin, round plug connector



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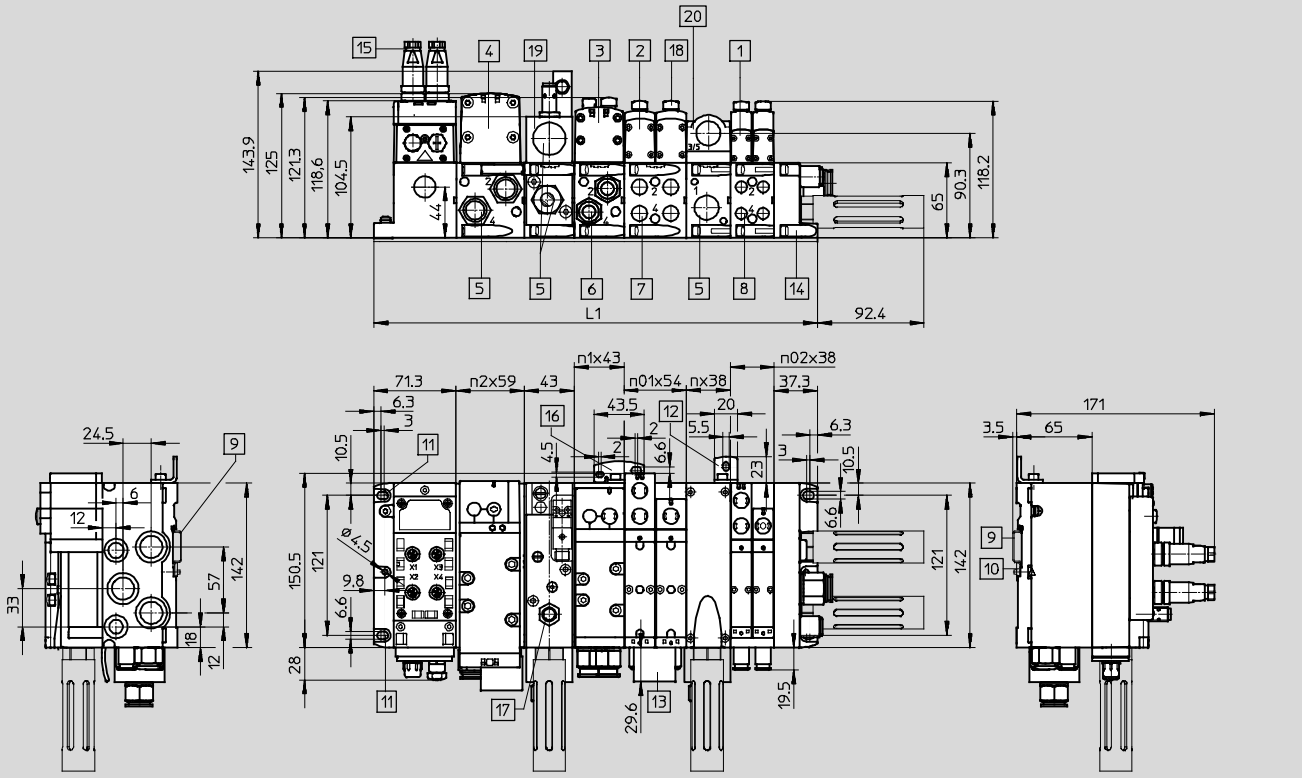
Valve terminal with AS-interface connection



1	Solenoid valve, width 18 mm	9	H-rail	16	Additional mounting	n02	Number of manifold sub-bases 38 mm
2	Solenoid valve, width 26 mm	10	H-rail mounting	17	Proximity sensor M12x1	n01	Number of manifold sub-bases 54 mm
3	Solenoid valve, width 42 mm	11	Mounting hole	18	Cover cap/manual override	n1	Number of manifold sub-bases 43 mm
4	Solenoid valve, width 52 mm	12	Additional mounting bracket	19	Soft-start valve, width 43 mm	n2	Number of manifold sub-bases 59 mm
5	Threaded connection ½" NPT	13	Inscription label	20	Supply plate	n	Number of supply plates
6	Threaded connection ⅜" NPT	14	End plate				
7	Threaded connection ¼" NPT	15	Plug M12				
8	Threaded connection ⅛" NPT						

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

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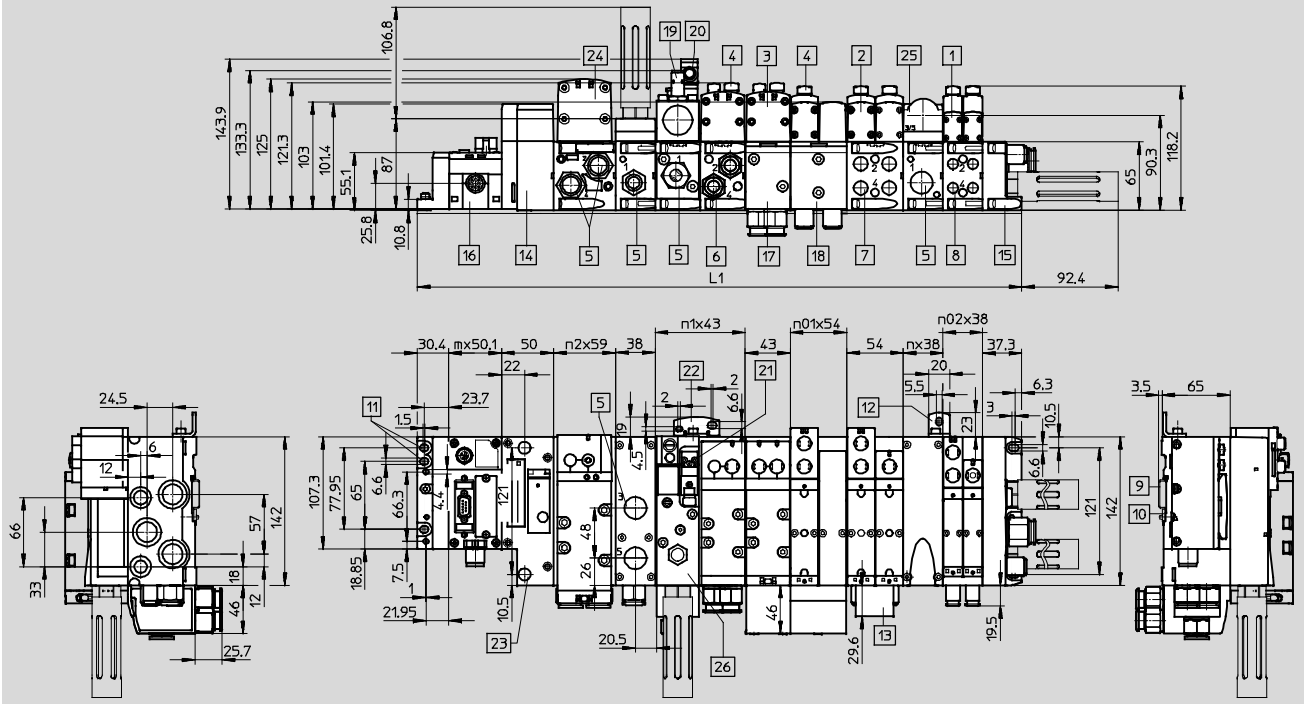
Valve terminal with fieldbus connection



1	Solenoid valve, width 18 mm	10	H-rail mounting	19	Proximity sensor M12x1
2	Solenoid valve, width 26 mm	11	Mounting hole	20	Plug socket M12x1
3	Solenoid valve, width 42 mm	12	Additional mounting bracket	21	Electrical connection to DIN EN 175301-803, type C
4	Cover cap/manual override	13	Inscription label holder	22	Additional mounting bracket
5	Threaded connection ½" NPT	14	Pneumatic interface CPX	23	Hole for additional mounting, diameter 6.4 2x
6	Threaded connection ⅜" NPT	15	End plate	24	Solenoid valve, width 52 mm
7	Threaded connection ¼" NPT	16	CPX module/fieldbus node	25	Supply plate
8	Threaded connection ⅛" NPT	17	90° connection plate 43 mm, ⅜" NPT	26	Soft-start valve
9	H-rail	18	90° connection plate 54 mm, ½" NPT		

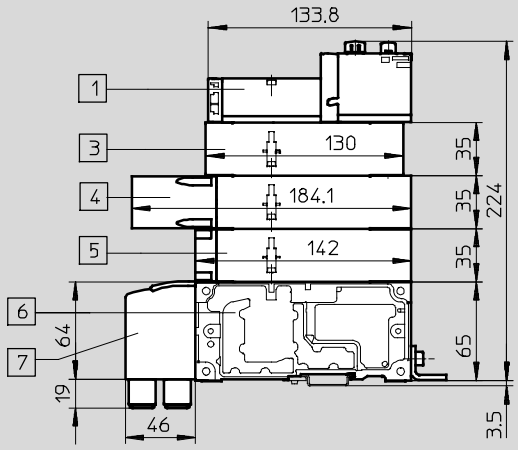
n02	Number of manifold sub-bases 38 mm
n01	Number of manifold sub-bases 54 mm
n1	Number of manifold sub-bases 43 mm
n2	Number of manifold sub-bases 59 mm
n	Number of supply plates (only with end plate with pilot air selector)
m	Number of CPX modules

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

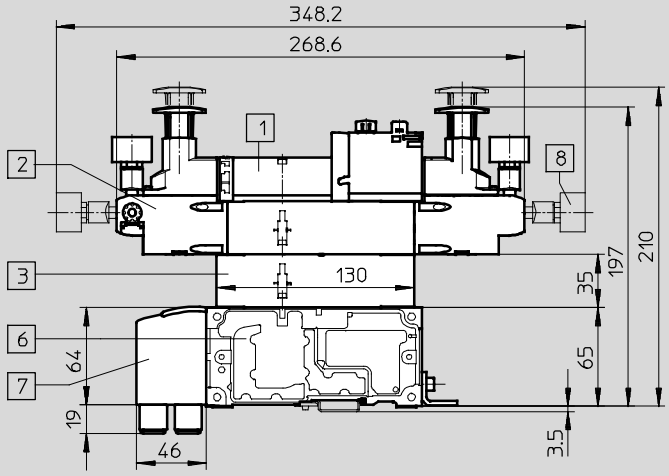
Note: This product conforms to ISO 1179-1 and to ISO 228-1

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

Vertical stacking components, width 18 mm

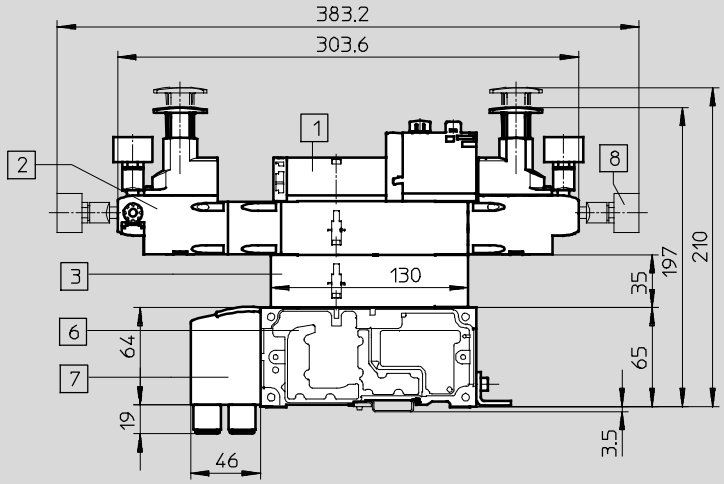


1 Solenoid valve with two solenoid coils, width 18 mm
3 Flow control plate
4 Vertical pressure shut-off plate
5 Vertical supply plate
6 Manifold sub-base
7 90° connection plate



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

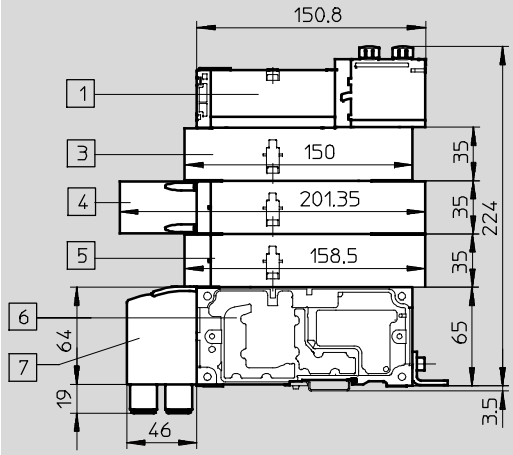
Vertical stacking components, width 18 mm, with the pressure regulator plate also suitable for symmetrical valves



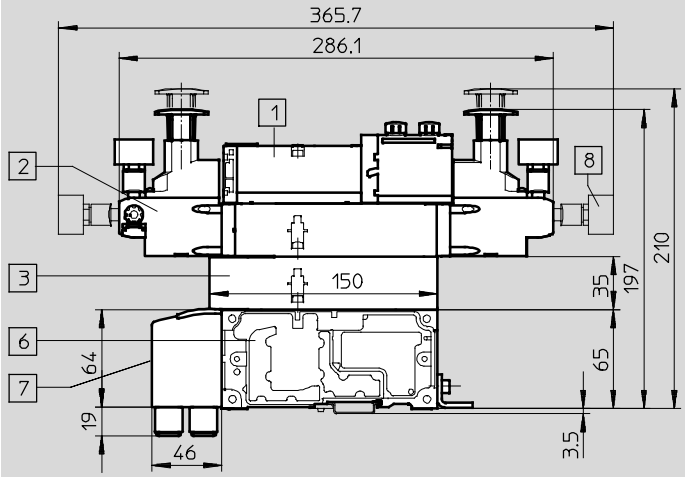
1 Solenoid valve with two solenoid coils, width 18 mm
2 Pressure regulator plate
3 Flow control plate
6 Manifold sub-base
7 90° connection plate
8 Pressure gauge, freely positionable

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

Vertical stacking components, width 26 mm

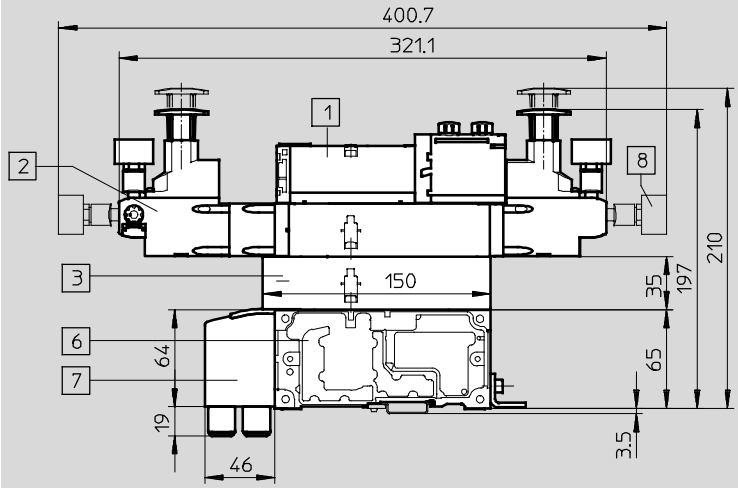


1 Solenoid valve with two solenoid coils, width 26 mm
3 Flow control plate
4 Vertical pressure shut-off plate
5 Vertical supply plate
6 Manifold sub-base
7 90° connection plate



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

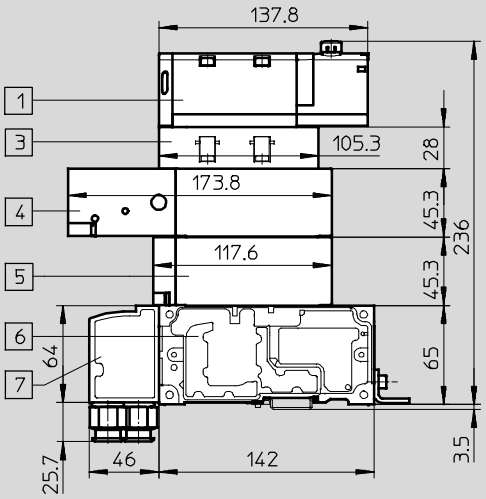
Vertical stacking components, width 26 mm, with the pressure regulator plate also suitable for symmetrical valves



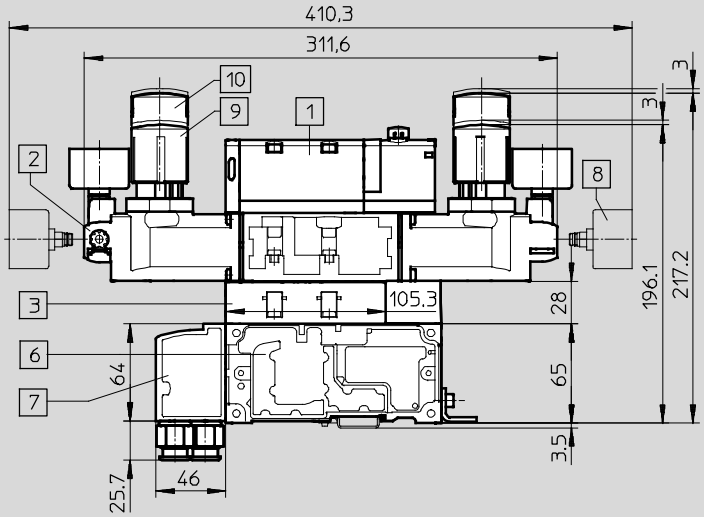
1 Solenoid valve with two solenoid coils, width 26 mm
2 Pressure regulator plate
3 Flow control plate
6 Manifold sub-base
7 90° connection plate
8 Pressure gauge, freely positionable

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

Vertical stacking components, width 42 mm



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



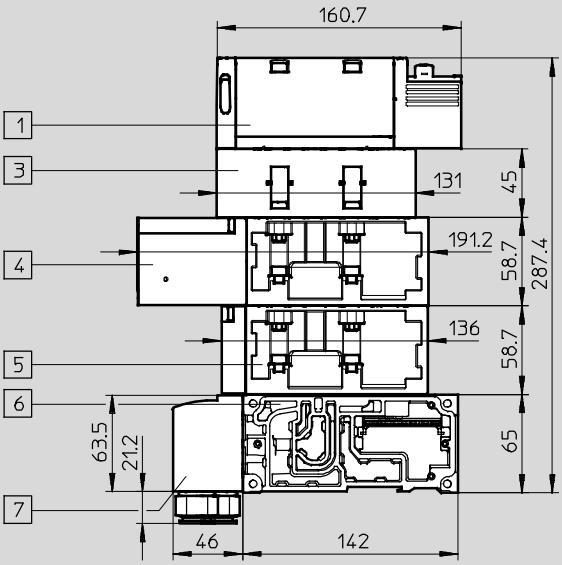
1 Solenoid valve
2 Pressure regulator plate
3 Flow control plate
6 Manifold sub-base
7 90° connection plate
8 Pressure gauge, freely positionable
9 Standard rotary knob
10 Lockable rotary knob

Note

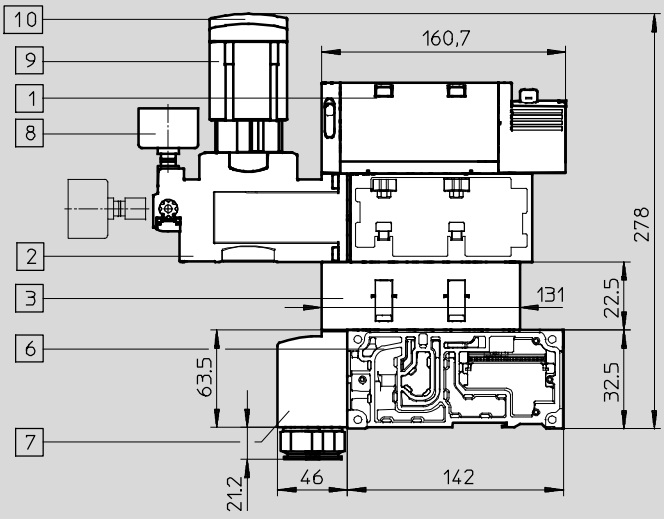
Pressure regulator plates for symmetrical valves with widths of 42 mm and 52 mm can only be ordered via the pressure regulator configurator VABF-S2.
➔ Internet: vabf-s2

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

Vertical stacking components, width 52 mm



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



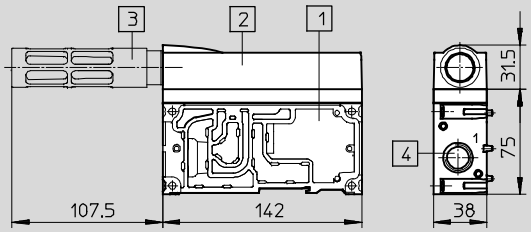
1 Solenoid valve
2 Pressure regulator plate
3 Flow control plate
6 Manifold sub-base
7 90° connection plate
8 Pressure gauge, freely positionable
9 Standard rotary knob
10 Lockable rotary knob

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

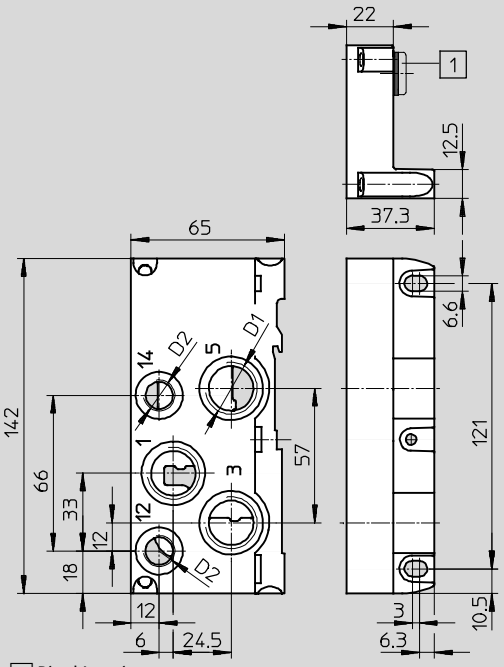
Dimensions Download CAD data ➔ **www.festo.com**

Supply plate with silencer



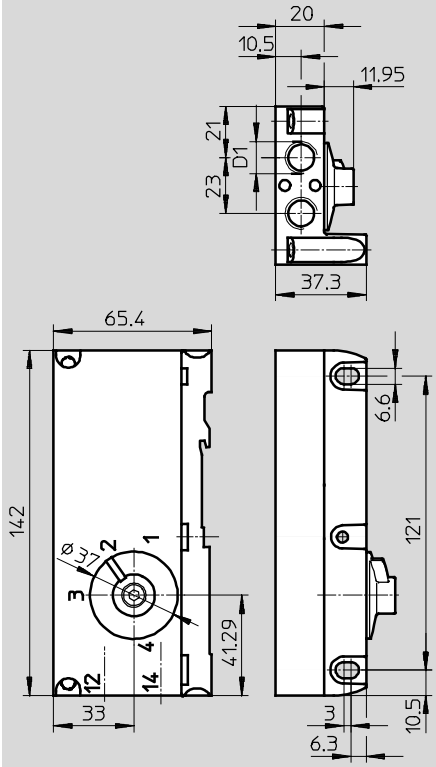
1 Supply plate
2 Exhaust port cover
3 Silencer U-½-B-NPT
4 Threaded connection ½" NPT

Right-hand end plate



1 Blanking plug

Right-hand end plate with pilot air selector



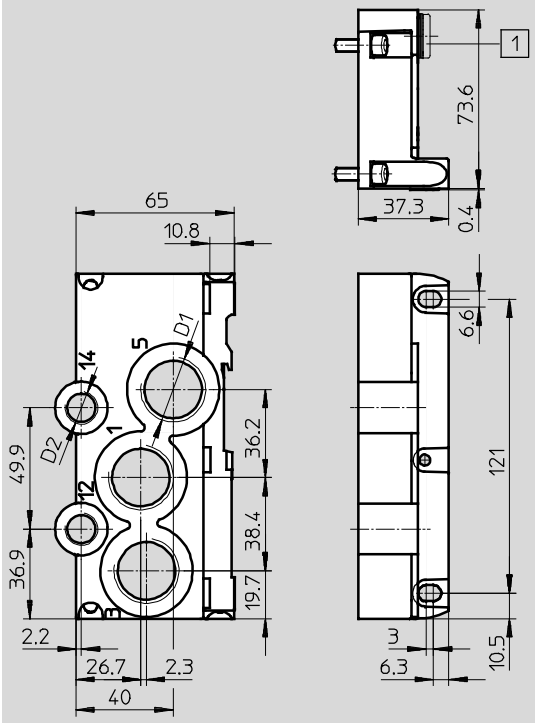
Type	D1	D2	With
VABE-S6-1R-N12	½" NPT	¼" NPT	1
VABE-S6-1RZ-N12	½" NPT	¼" NPT	–

Type	D1
VABE-S6-1RZ-N-B1	¼" NPT

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

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

Right-hand end plate



1 Blanking plug

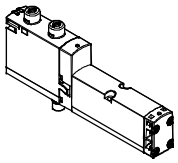
Type	D1	D2	With
VABE-S6-2R-N34	¾" NPT	¼" NPT	1
VABE-S6-2RZ-N34	¾" NPT	¼" NPT	

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

Valve terminals type 44/45, VTSA/VTSA-F, NPT

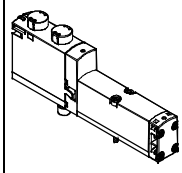
Ordering data – Individual valve 24 V DC

Ordering data

	Code	Valve function	Width	Part No.	Type
Solenoid valves, 24 V DC					
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	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	18 mm	**561159**	**VSVA-B-T22CV-AZD-A2-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	18 mm	**539178**	**VSVA-B-T32U-AZD-A2-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	18 mm	**539176**	**VSVA-B-T32C-AZD-A2-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	18 mm	**539180**	**VSVA-B-T32H-AZD-A2-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	18 mm	**539179**	**VSVA-B-T32F-AZD-A2-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	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	18 mm	**539181**	**VSVA-B-T32W-AZD-A2-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	18 mm	**539184**	**VSVA-B-M52-AZD-A2-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	18 mm	**539185**	**VSVA-B-M52-MZD-A2-1T1L**
	J	5/2-way valve, double solenoid	18 mm	**539182**	**VSVA-B-B52-ZD-A2-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	18 mm	**539183**	**VSVA-B-D52-ZD-A2-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	18 mm	**539186**	**VSVA-B-P53U-ZD-A2-1T1L**
	G	5/3-way solenoid valve, mid-position closed	18 mm	**539188**	**VSVA-B-P53C-ZD-A2-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	18 mm	**539187**	**VSVA-B-P53E-ZD-A2-1T1L**

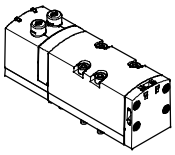
Valve terminals type 44/45, VTSA/VTSA-F, NPT

Ordering data – Individual valve 24 V DC

Ordering data					
	Code	Valve function	Width	Part No.	Type
Solenoid valves, 24 V DC					
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	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	26 mm	**561153**	**VSVA-B-T22CV-AZD-A1-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	26 mm	**539152**	**VSVA-B-T32U-AZD-A1-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	26 mm	**539150**	**VSVA-B-T32C-AZD-A1-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	26 mm	**539154**	**VSVA-B-T32H-AZD-A1-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	26 mm	**539153**	**VSVA-B-T32F-AZD-A1-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	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	26 mm	**539155**	**VSVA-B-T32W-AZD-A1-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	26 mm	**539158**	**VSVA-B-M52-AZD-A1-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	26 mm	**539159**	**VSVA-B-M52-MZD-A1-1T1L**
	J	5/2-way valve, double solenoid	26 mm	**539156**	**VSVA-B-B52-ZD-A1-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	26 mm	**539157**	**VSVA-B-D52-ZD-A1-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	26 mm	**539160**	**VSVA-B-P53U-ZD-A1-1T1L**
	G	5/3-way solenoid valve, mid-position closed	26 mm	**539162**	**VSVA-B-P53C-ZD-A1-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	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	26 mm	**560727**	**VSVA-B-P53ED-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	26 mm	**560728**	**VSVA-B-P53AD-ZD-A1-1T1L**

Valve terminals type 44/45, VTSA/VTSA-F, NPT

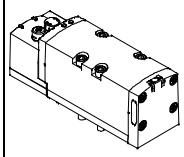
Ordering data – Individual valve 24 V DC

Ordering data					
	Code	Valve function	Width	Part No.	Type
Solenoid valves, 24 V DC					
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	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	42 mm	**561344**	**VSVA-B-T22CV-AZD-D1-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	42 mm	**543692**	**VSVA-B-T32U-AZD-D1-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	42 mm	**543690**	**VSVA-B-T32C-AZD-D1-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	42 mm	**543694**	**VSVA-B-T32H-AZD-D1-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	42 mm	**543693**	**VSVA-B-T32F-AZD-D1-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	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	42 mm	**543695**	**VSVA-B-T32W-AZD-D1-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	42 mm	**543698**	**VSVA-B-M52-AZD-D1-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	42 mm	**543699**	**VSVA-B-M52-MZD-D1-1T1L**
	J	5/2-way valve, double solenoid	42 mm	**543696**	**VSVA-B-B52-ZD-D1-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	42 mm	**543697**	**VSVA-B-D52-ZD-D1-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	42 mm	**543700**	**VSVA-B-P53U-ZD-D1-1T1L**
	G	5/3-way solenoid valve, mid-position closed	42 mm	**543702**	**VSVA-B-P53C-ZD-D1-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	42 mm	**543701**	**VSVA-B-P53E-ZD-D1-1T1L**

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Ordering data – Individual valve 24 V DC

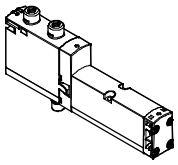
Ordering data

	Code	Valve function	Width	Part No.	Type
Solenoid valves, 24 V DC					
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	52 mm	**560831**	**VSVA-B-T22C-AZD-D2-1T1L**
	N	2x 3/2-way valve, single solenoid, normally open	52 mm	**560827**	**VSVA-B-T32U-AZD-D2-1T1L**
	K	2x 3/2-way valve, single solenoid, normally closed	52 mm	**560825**	**VSVA-B-T32C-AZD-D2-1T1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	52 mm	**560829**	**VSVA-B-T32H-AZD-D2-1T1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	52 mm	**560828**	**VSVA-B-T32F-AZD-D2-1T1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	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	52 mm	**560830**	**VSVA-B-T32W-AZD-D2-1T1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	52 mm	**560820**	**VSVA-B-M52-AZD-D2-1T1L**
	O	5/2-way valve, single solenoid, mechanical spring return	52 mm	**560821**	**VSVA-B-M52-MZD-D2-1T1L**
	J	5/2-way valve, double solenoid	52 mm	**560818**	**VSVA-B-B52-ZD-D2-1T1L**
	D	5/2-way valve, double solenoid, with dominant signal	52 mm	**560819**	**VSVA-B-D52-ZD-D2-1T1L**
	B	5/3-way solenoid valve, mid-position pressurised	52 mm	**560822**	**VSVA-B-P53U-ZD-D2-1T1L**
	G	5/3-way solenoid valve, mid-position closed	52 mm	**560824**	**VSVA-B-P53C-ZD-D2-1T1L**
	E	5/3-way solenoid valve, mid-position exhausted	52 mm	**560823**	**VSVA-B-P53E-ZD-D2-1T1L**

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Ordering data – Individual valve 110 V AC

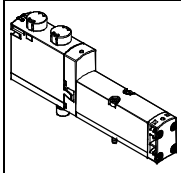
Ordering data

	Code	Valve function	Width	Part No.	Type
Solenoid valves, 110 V AC					
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	18 mm	**561156**	**VSVA-B-T22C-AZD-A2-2AT1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, vacuum operation possible at 3 and 5	18 mm	**561160**	**VSVA-B-T22CV-AZD-A2-2AT1L**
	N	2x 3/2-way valve, single solenoid, normally open	18 mm	**539165**	**VSVA-B-T32U-AZD-A2-2AT1L**
	K	2x 3/2-way valve, single solenoid, normally closed	18 mm	**539163**	**VSVA-B-T32C-AZD-A2-2AT1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	18 mm	**539167**	**VSVA-B-T32H-AZD-A2-2AT1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	18 mm	**539166**	**VSVA-B-T32F-AZD-A2-2AT1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	18 mm	**539164**	**VSVA-B-T32N-AZD-A2-2AT1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	18 mm	**539168**	**VSVA-B-T32W-AZD-A2-2AT1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	18 mm	**539171**	**VSVA-B-M52-AZD-A2-2AT1L**
	O	5/2-way valve, single solenoid, mechanical spring return	18 mm	**539172**	**VSVA-B-M52-MZD-A2-2AT1L**
	J	5/2-way valve, double solenoid	18 mm	**539169**	**VSVA-B-B52-ZD-A2-2AT1L**
	D	5/2-way valve, double solenoid, with dominant signal	18 mm	**539170**	**VSVA-B-D52-ZD-A2-2AT1L**
	B	5/3-way solenoid valve, mid-position pressurised	18 mm	**539173**	**VSVA-B-P53U-ZD-A2-2AT1L**
	G	5/3-way solenoid valve, mid-position closed	18 mm	**539175**	**VSVA-B-P53C-ZD-A2-2AT1L**
	E	5/3-way solenoid valve, mid-position exhausted	18 mm	**539174**	**VSVA-B-P53E-ZD-A2-2AT1L**

Valve terminals type 44/45, VTSA/VTSA-F, NPT

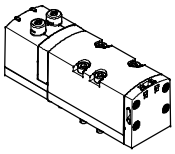
Ordering data – Individual valve 110 V AC

Ordering data

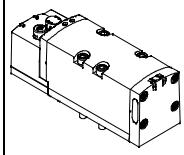
	Code	Valve function	Width	Part No.	Type
Solenoid valves, 110 V AC					
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	26 mm	**561150**	**VSVA-B-T22C-AZD-A1-2AT1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, vacuum operation possible at 3 and 5	26 mm	**561154**	**VSVA-B-T22CV-AZD-A1-2AT1L**
	N	2x 3/2-way valve, single solenoid, normally open	26 mm	**539139**	**VSVA-B-T32U-AZD-A1-2AT1L**
	K	2x 3/2-way valve, single solenoid, normally closed	26 mm	**539137**	**VSVA-B-T32C-AZD-A1-2AT1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	26 mm	**539141**	**VSVA-B-T32H-AZD-A1-2AT1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	26 mm	**539140**	**VSVA-B-T32F-AZD-A1-2AT1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	26 mm	**539138**	**VSVA-B-T32N-AZD-A1-2AT1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	26 mm	**539142**	**VSVA-B-T32W-AZD-A1-2AT1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	26 mm	**539145**	**VSVA-B-M52-AZD-A1-2AT1L**
	O	5/2-way valve, single solenoid, mechanical spring return	26 mm	**539146**	**VSVA-B-M52-MZD-A1-2AT1L**
	J	5/2-way valve, double solenoid	26 mm	**539143**	**VSVA-B-B52-ZD-A1-2AT1L**
	D	5/2-way valve, double solenoid, with dominant signal	26 mm	**539144**	**VSVA-B-D52-ZD-A1-2AT1L**
	B	5/3-way solenoid valve, mid-position pressurised	26 mm	**539147**	**VSVA-B-P53U-ZD-A1-2AT1L**
	G	5/3-way solenoid valve, mid-position closed	26 mm	**539149**	**VSVA-B-P53C-ZD-A1-2AT1L**
	E	5/3-way solenoid valve, mid-position exhausted	26 mm	**539148**	**VSVA-B-P53E-ZD-A1-2AT1L**

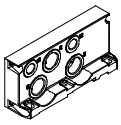
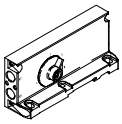
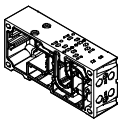
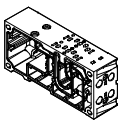
Valve terminals type 44/45, VTSA/VTSA-F, NPT

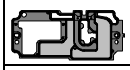
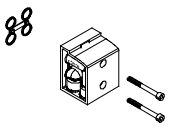
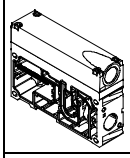
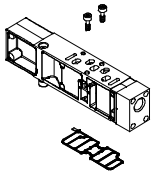
Ordering data – Individual valve 110 V AC

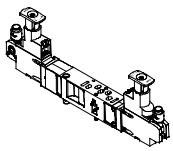
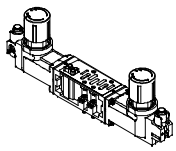
Ordering data					
	Code	Valve function	Width	Part No.	Type
Solenoid valves, 110 V AC					
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	42 mm	**561341**	**VSVA-B-T22C-AZD-D1-2AT1L**
	VV	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return, vacuum operation possible at 3 and 5	42 mm	**561345**	**VSVA-B-T22CV-AZD-D1-2AT1L**
	N	2x 3/2-way valve, single solenoid, normally open	42 mm	**543679**	**VSVA-B-T32U-AZD-D1-2AT1L**
	K	2x 3/2-way valve, single solenoid, normally closed	42 mm	**543677**	**VSVA-B-T32C-AZD-D1-2AT1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	42 mm	**543681**	**VSVA-B-T32H-AZD-D1-2AT1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	42 mm	**543680**	**VSVA-B-T32F-AZD-D1-2AT1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	42 mm	**543678**	**VSVA-B-T32N-AZD-D1-2AT1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	42 mm	**543682**	**VSVA-B-T32W-AZD-D1-2AT1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	42 mm	**543685**	**VSVA-B-M52-AZD-D1-2AT1L**
	O	5/2-way valve, single solenoid, mechanical spring return	42 mm	**543686**	**VSVA-B-M52-MZD-D1-2AT1L**
	J	5/2-way valve, double solenoid	42 mm	**543683**	**VSVA-B-B52-ZD-D1-2AT1L**
	D	5/2-way valve, double solenoid, with dominant signal	42 mm	**543684**	**VSVA-B-D52-ZD-D1-2AT1L**
	B	5/3-way solenoid valve, mid-position pressurised	42 mm	**543687**	**VSVA-B-P53U-ZD-D1-2AT1L**
	G	5/3-way solenoid valve, mid-position closed	42 mm	**543689**	**VSVA-B-P53C-ZD-D1-2AT1L**
	E	5/3-way solenoid valve, mid-position exhausted	42 mm	**543688**	**VSVA-B-P53E-ZD-D1-2AT1L**

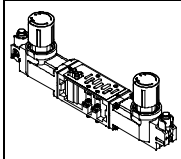
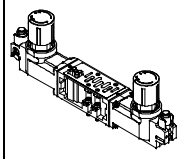
Ordering data

	Code	Valve function	Width	Part No.	Type
Solenoid valves, 110 V AC					
	VC	2x 2/2-way valve, single solenoid, normally closed, pneumatic spring return	52 mm	**560812**	**VSVA-B-T22C-AZD-D2-2AT1L**
	N	2x 3/2-way valve, single solenoid, normally open	52 mm	**560808**	**VSVA-B-T32U-AZD-D2-2AT1L**
	K	2x 3/2-way valve, single solenoid, normally closed	52 mm	**560806**	**VSVA-B-T32C-AZD-D2-2AT1L**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	52 mm	**560810**	**VSVA-B-T32H-AZD-D2-2AT1L**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	52 mm	**560809**	**VSVA-B-T32F-AZD-D2-2AT1L**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	52 mm	**560807**	**VSVA-B-T32N-AZD-D2-2AT1L**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	52 mm	**560811**	**VSVA-B-T32W-AZD-D2-2AT1L**
	M	5/2-way valve, single solenoid, pneumatic spring return	52 mm	**560801**	**VSVA-B-M52-AZD-D2-2AT1L**
	O	5/2-way valve, single solenoid, mechanical spring return	52 mm	**560802**	**VSVA-B-M52-MZD-D2-2AT1L**
	J	5/2-way valve, double solenoid	52 mm	**560799**	**VSVA-B-B52-ZD-D2-2AT1L**
	D	5/2-way valve, double solenoid, with dominant signal	52 mm	**560800**	**VSVA-B-D52-ZD-D2-2AT1L**
	B	5/3-way solenoid valve, mid-position pressurised	52 mm	**560803**	**VSVA-B-P53U-ZD-D2-2AT1L**
	G	5/3-way solenoid valve, mid-position closed	52 mm	**560805**	**VSVA-B-P53C-ZD-D2-2AT1L**
	E	5/3-way solenoid valve, mid-position exhausted	52 mm	**560804**	**VSVA-B-P53E-ZD-D2-2AT1L**

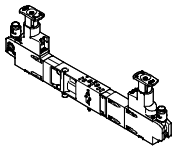
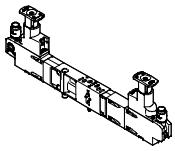
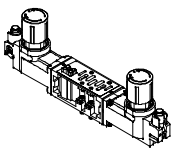
Ordering data					
	Code	Description	Width	Part No.	Type
Right-hand end plate					
	V	With supply air/exhaust air, internal pilot air supply, ½" NPT		**539235**	**VABE-S6-1R-N12**
	V1	With supply air/exhaust air, internal pilot air supply, ¾" NPT		**560838**	**VABE-S6-2R-N34**
	X	With supply air/exhaust air, external pilot air supply, ½" NPT		**539237**	**VABE-S6-1RZ-N12**
	X1	With supply air/exhaust air, external pilot air supply, ¾" NPT		**560840**	**VABE-S6-2RZ-N34**
End plate with pilot air selector					
	Y	Internal pilot air supply		**539239**	**VABE-S6-1RZ-N-B1**
	U	Internal pilot air supply, ducted pilot exhaust air			
	Z	External pilot air supply			
	W	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**
	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**

Ordering data					
	Code	Description	Width	Part No.	Type
Separator plate					
	S	Duct separation 1, 3, 5		539228	VABD-S6-10-P3-C
	T	Duct separation 1		539227	VABD-S6-10-P1-C
	R	Duct separation 3, 5		539229	VABD-S6-10-P2-C
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-S6-10-P1A7-N12
	K	With exhaust port cover, 3/5 separated, 1/2" NPT		539232	VABF-S6-10-P1A6-N12
Vertical supply plate					
	ZU	Connecting thread 1/8" NPT	18 mm	540174	VABF-S4-2-P1A3-N18
		Connecting thread 1/4" NPT	26 mm	540172	VABF-S4-1-P1A3-N14
		Connecting thread 3/8" NPT	42 mm	546094	VABF-S2-1-P1A3-N38
		Connecting thread 1/2" NPT	52 mm	555787	VABF-S2-2-P1A3-N12

Ordering data					
	Code	Description	Width	Part No.	Type
Regulator plate, width 18 mm					
	ZA	For port 1, 0.5...10 bar	18 mm	**540153**	**VABF-S4-2-R1C2-C-10**
	ZF	For port 1, 0.5...6 bar	18 mm	**540151**	**VABF-S4-2-R1C2-C-6**
	ZC	For port 2, 2...10 bar	18 mm	**540161**	**VABF-S4-2-R2C2-C-10**
	ZH	For port 2, 2...6 bar	18 mm	**540159**	**VABF-S4-2-R2C2-C-6**
	ZB	For port 4, 2...10 bar	18 mm	**540157**	**VABF-S4-2-R3C2-C-10**
	ZG	For port 4, 2...6 bar	18 mm	**540155**	**VABF-S4-2-R3C2-C-6**
	ZD	For ports 2 and 4, 2...10 bar	18 mm	**540165**	**VABF-S4-2-R4C2-C-10**
	ZI	For ports 2 and 4, 2...6 bar	18 mm	**540163**	**VABF-S4-2-R4C2-C-6**
	ZE	For ports 2 and 4, reversible, 0.5...10 bar	18 mm	**540169**	**VABF-S4-2-R5C2-C-10**
	ZJ	For ports 2 and 4, reversible, 0.5...6 bar	18 mm	**540167**	**VABF-S4-2-R5C2-C-6**
	ZL	For port 2, reversible, 0.5...10 bar	18 mm	**546252**	**VABF-S4-2-R6C2-C-10**
	ZN	For port 2, reversible, 0.5...6 bar	18 mm	**546248**	**VABF-S4-2-R6C2-C-6**
	ZK	For port 4, reversible, 0.5...10 bar	18 mm	**546254**	**VABF-S4-2-R7C2-C-10**
	ZM	For port 4, reversible, 0.5...6 bar	18 mm	**546250**	**VABF-S4-2-R7C2-C-6**
Regulator plate, width 26 mm					
	ZA	For port 1, 0.5...10 bar	26 mm	**540154**	**VABF-S4-1-R1C2-C-10**
	ZF	For port 1, 0.5...6 bar	26 mm	**540152**	**VABF-S4-1-R1C2-C-6**
	ZC	For port 2, 2...10 bar	26 mm	**540162**	**VABF-S4-1-R2C2-C-10**
	ZH	For port 2, 2...6 bar	26 mm	**540160**	**VABF-S4-1-R2C2-C-6**
	ZB	For port 4, 2...10 bar	26 mm	**540158**	**VABF-S4-1-R3C2-C-10**
	ZG	For port 4, 2...6 bar	26 mm	**540156**	**VABF-S4-1-R3C2-C-6**
	ZD	For ports 2 and 4, 2...10 bar	26 mm	**540166**	**VABF-S4-1-R4C2-C-10**
	ZI	For ports 2 and 4, 2...6 bar	26 mm	**540164**	**VABF-S4-1-R4C2-C-6**
	ZE	For ports 2 and 4, reversible, 0.5...10 bar	26 mm	**540170**	**VABF-S4-1-R5C2-C-10**
	ZJ	For ports 2 and 4, reversible, 0.5...6 bar	26 mm	**540168**	**VABF-S4-1-R5C2-C-6**
	ZL	For port 2, reversible, 0.5...10 bar	26 mm	**546251**	**VABF-S4-1-R6C2-C-10**
	ZN	For port 2, reversible, 0.5...6 bar	26 mm	**546247**	**VABF-S4-1-R6C2-C-6**
	ZK	For port 4, reversible, 0.5...10 bar	26 mm	**546253**	**VABF-S4-1-R7C2-C-10**
	ZM	For port 4, reversible, 0.5...6 bar	26 mm	**546249**	**VABF-S4-1-R7C2-C-6**

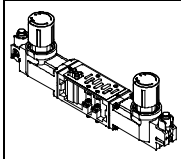
Ordering data					
	Code	Description	Width	Part No.	Type
Regulator plate, width 42 mm					
	ZA	For port 1, 0.5...10 bar	42 mm	**546084**	**VABF-S2-1-R1C2-C-10**
	ZF	For port 1, 0.5...6 bar	42 mm	**546083**	**VABF-S2-1-R1C2-C-6**
	ZC	For port 2, 0.5...10 bar	42 mm	**546088**	**VABF-S2-1-R2C2-C-10**
	ZH	For port 2, 0.5...6 bar	42 mm	**546087**	**VABF-S2-1-R2C2-C-6**
	ZB	For port 4, 0.5...10 bar	42 mm	**546086**	**VABF-S2-1-R3C2-C-10**
	ZG	For port 4, 0.5...6 bar	42 mm	**546085**	**VABF-S2-1-R3C2-C-6**
	ZD	For ports 2 and 4, 0.5...10 bar	42 mm	**546090**	**VABF-S2-1-R4C2-C-10**
	ZI	For ports 2 and 4, 0.5...6 bar	42 mm	**546089**	**VABF-S2-1-R4C2-C-6**
	ZE	For ports 2 and 4, reversible, 0.5...10 bar	42 mm	**546092**	**VABF-S2-1-R5C2-C-10**
	ZJ	For ports 2 and 4, reversible, 0.5...6 bar	42 mm	**546091**	**VABF-S2-1-R5C2-C-6**
	ZL	For port 2, reversible, 0.5...10 bar	42 mm	**546832**	**VABF-S2-1-R6C2-C-10**
	ZN	For port 2, reversible, 0.5...6 bar	42 mm	**546831**	**VABF-S2-1-R6C2-C-6**
	ZK	For port 4, reversible, 0.5...10 bar	42 mm	**546834**	**VABF-S2-1-R7C2-C-10**
	ZM	For port 4, reversible, 0.5...6 bar	42 mm	**546833**	**VABF-S2-1-R7C2-C-6**
Regulator plate, width 52 mm					
	ZA	For port 1, 0.5...10 bar	52 mm	**555772**	**VABF-S2-2-R1C2-C-10**
	ZF	For port 1, 0.5...6 bar	52 mm	**555771**	**VABF-S2-2-R1C2-C-6**
	ZC	For port 2, 0.5...10 bar	52 mm	**555774**	**VABF-S2-2-R2C2-C-10**
	ZH	For port 2, 0.5...6 bar	52 mm	**555773**	**VABF-S2-2-R2C2-C-6**
	ZB	For port 4, 0.5...10 bar	52 mm	**555776**	**VABF-S2-2-R3C2-C-10**
	ZG	For port 4, 0.5...6 bar	52 mm	**555775**	**VABF-S2-2-R3C2-C-6**
	ZD	For ports 2 and 4, 0.5...10 bar	52 mm	**555778**	**VABF-S2-2-R4C2-C-10**
	ZI	For ports 2 and 4, 0.5...6 bar	52 mm	**555777**	**VABF-S2-2-R4C2-C-6**
	ZE	For ports 2 and 4, reversible, 0.5...10 bar	52 mm	**555780**	**VABF-S2-2-R5C2-C-10**
	ZJ	For ports 2 and 4, reversible, 0.5...6 bar	52 mm	**555779**	**VABF-S2-2-R5C2-C-6**
	ZL	For port 2, reversible, 0.5...10 bar	52 mm	**555782**	**VABF-S2-2-R6C2-C-10**
	ZN	For port 2, reversible, 0.5...6 bar	52 mm	**555781**	**VABF-S2-2-R6C2-C-6**
	ZK	For port 4, reversible, 0.5...10 bar	52 mm	**555784**	**VABF-S2-2-R7C2-C-10**
	ZM	For port 4, reversible, 0.5...6 bar	52 mm	**555783**	**VABF-S2-2-R7C2-C-6**

Ordering data

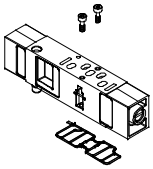
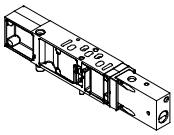
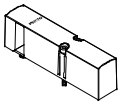
	Code	Description	Width	Part No.	Type
Regulator plate for symmetrical valves, width 18 mm					
	ZAY	For port 1, 0.5...10 bar	18 mm	**560756**	**VABF-S4-2-R1C2-C-10-E**
	ZFY	For port 1, 0.5...6 bar	18 mm	**560758**	**VABF-S4-2-R1C2-C-6-E**
	ZCY	For port 2, 2...10 bar	18 mm	**560763**	**VABF-S4-2-R2C2-C-10-E**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

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

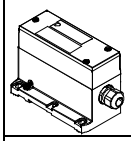
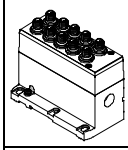
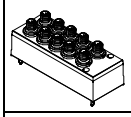
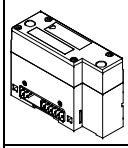
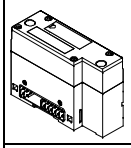
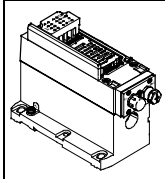
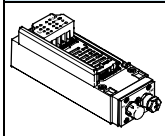
Ordering data

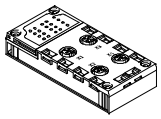
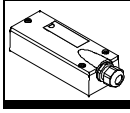
	Code	Description	Width	Part No.	Type
Regulator plate for symmetrical valves, width 52 mm[1]					
	ZAY	For port 1, 0.5...10 bar	52 mm	–	**VABF-S2-2-R1C2-C-10-E**
	ZFY	For port 1, 0.5...6 bar	52 mm	–	**VABF-S2-2-R1C2-C-6-E**
	ZCY	For port 2, 0.5...10 bar	52 mm	–	**VABF-S2-2-R2C2-C-10-E**
	ZHY	For port 2, 0.5...6 bar	52 mm	–	**VABF-S2-2-R2C2-C-6-E**
	ZBY	For port 4, 0.5...10 bar	52 mm	–	**VABF-S2-2-R3C2-C-10-E**
	ZGY	For port 4, 0.5...6 bar	52 mm	–	**VABF-S2-2-R3C2-C-6-E**
	ZDY	For ports 2 and 4, 0.5...10 bar	52 mm	–	**VABF-S2-2-R4C2-C-10-E**
	ZIY	For ports 2 and 4, 0.5...6 bar	52 mm	–	**VABF-S2-2-R4C2-C-6-E**
	ZEY	For ports 2 and 4, reversible, 0.5...10 bar	52 mm	–	**VABF-S2-2-R5C2-C-10-E**
	ZJY	For ports 2 and 4, reversible, 0.5...6 bar	52 mm	–	**VABF-S2-2-R5C2-C-6-E**
	ZLY	For port 2, reversible, 0.5...10 bar	52 mm	–	**VABF-S2-2-R6C2-C-10-E**
	ZNY	For port 2, reversible, 0.5...6 bar	52 mm	–	**VABF-S2-2-R6C2-C-6-E**
	ZKY	For port 4, reversible, 0.5...10 bar	52 mm	–	**VABF-S2-2-R7C2-C-10-E**
	ZMY	For port 4, reversible, 0.5...6 bar	52 mm	–	**VABF-S2-2-R7C2-C-6-E**
Pressure gauge					
	T	With cartridge connection for regulator, 10 bar, scale bar/psi, display range 0...16 bar/0...240 psi, for regulator plate code ZA, ZB, ZC, ZD, ZE, ZK, ZL	18 mm 26 mm 42 mm 52 mm	**543487** **548010** 	**PAGN-26-16-P10** **PAGN-40-16-P10**
	U	With cartridge connection for regulator, 6 bar, scale bar/psi, display range 0...10 bar/0...145 psi, for regulator plate code ZF, ZG, ZH, ZI, ZJ, ZM, ZN	18 mm 26 mm 42 mm 52 mm	**543488** **548009** 	**PAGN-26-10-P10** **PAGN-40-10-P10**
	WT	With cartridge connection for regulator, 10 bar, scale MPa, display range 0...16 bar/0...1.6 MPa, for regulator plate code ZA, ZB, ZC, ZD, ZE, ZK, ZL	18 mm 26 mm 42 mm 52 mm	**563735** **563737** 	**PAGN-26-1.6M-P10** **PAGN-40-1.6M-P10**
	WU	With cartridge connection for regulator, 6 bar, scale MPa, display range 0...16 bar/0...1 MPa, for regulator plate code ZF, ZG, ZH, ZI, ZJ, ZM, ZN	18 mm 26 mm 42 mm 52 mm	**563736** **563738** 	**PAGN-26-1M-P10** **PAGN-40-1M-P10**
	VT	With cartridge connection for regulator, 10 bar, scale psi/bar, display range 0...16 bar/0...232 psi, for regulator plate code ZA, ZB, ZC, ZD, ZE, ZK, ZL	18 mm 26 mm 42 mm 52 mm	**563731** **563733** 	**PAGN-26-232P-P10** **PAGN-40-232P-P10**
	VU	With cartridge connection for regulator, 6 bar, scale psi/bar, display range 0...10 bar/0...145 psi, for regulator plate code ZF, ZG, ZH, ZI, ZJ, ZM, ZN	18 mm 26 mm 42 mm 52 mm	**563732** **563734** 	**PAGN-26-145P-P10** **PAGN-40-145P-P10**

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

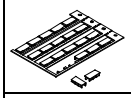
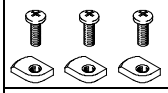
Ordering data					
	Code	Description		Part No.	Type
Cartridge for regulator plate					
	–	For tubing O.D. 4 mm		**172972**	**QSP10-4**
Adapter					
	–	Adapter for pressure gauge		**565811**	**QSP10-G⅛**
Flow control plate					
	X	Controls the flow of exhaust air downstream of the valve to ducts 3 and 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	2/2-way solenoid valve for shutting off the operating pressure at the valve position	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**
Cover					
	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	10 pieces	**541010**	**VAMC-S6-CH**
	V	Cover cap for manual override, covered	10 pieces	**541011**	**VAMC-S6-CS**
	–	End cap for electrical interlinking module (with individual connection), size 18 mm and 26 mm	10 pieces	**547713**	**VABD-S4-E-C**
	–	Seal (with individual connection), size 42 mm and 52 mm	2 pieces	**571343**	**VABD-S2-1-S-C**

Ordering data

	Code	Description	Part No.	Type
Multi-pin node				
	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				
	-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 electrical terminal CPX in plastic design	**543416**	**VABA-S6-1-X1**
	–	For electrical terminal CPX in metal design	**550663**	**VABA-S6-1-X2**
Electrical connection for AS-interface				
	–	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				
	–	4 inputs/4 outputs	**549044**	**VAEM-S6-S-FAS-4-4E**
	–	8 inputs/8 outputs	**549045**	**VAEM-S6-S-FAS-8-8E**

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**
	H	4x Harax®, 4-pin, socket		**525636**	**CPX-AB-4-HAR-4POL**
	B	Sub-D, 25-pin, socket		**525676**	**CPX-AB-1-SUB-BU-25POL**
Connecting cable with Sub-D plug socket (polyurethane, IP65)					
	GA	Connecting cable for max. 8 solenoid coils, 10-pin	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-pin	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-pin	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 with Sub-D plug socket (polyvinyl chloride, IP65)					
	GK	Connecting cable for max. 8 solenoid coils, 10-pin, cable properties (standard)	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. 22 solenoid coils, 27-pin, cable properties (standard)	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-pin, cable properties (standard)	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 user configuration		**545974**	**NECV-S1W37**

Ordering data

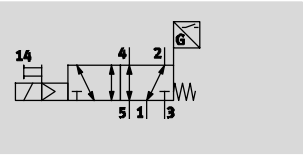
	Code	Description		Part No.	Type
Inscription label holder/inscription labels					
	B	Clip-on inscription label holder for valve cap	5 pieces	**540888**	**ASCF-T-S6**
	T	Inscription label holder for manifold blocks	5 pieces	**540889**	**ASCF-M-S6**
	TD	Inscription label holder for manifold blocks, size 52 mm	5 pieces	**562577**	**ASCF-M-S2-2**
	–	Inscription label (20 labels in frames)	20 pieces	**18182**	**IBS-9x20**
H-rail mounting					
	–	VTSA/VTSA-F	3 pieces	**526032**	**CPX-CPA-BG-NRH**
Wall mounting					
	U	Mounting bracket	5 pieces	**539214**	**VAME-S6-10-W**
	–	Mounting bracket		**567038**	**VAME-S6-W-M46**
Manual					
	D	Manual for valve terminal VTSA/VTSA-F	German	**538922**	**P.BE-VTSA-44-DE**
	E		English	**538923**	**P.BE-VTSA-44-EN**
	S		Spanish	**538924**	**P.BE-VTSA-44-ES**
	F		French	**538925**	**P.BE-VTSA-44-FR**
	I		Italian	**538926**	**P.BE-VTSA-44-IT**
	V		Swedish	**538927**	**P.BE-VTSA-44-SV**
Pneumatic connection accessories					
A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter **Accessories** ➔ page 132 or on the Internet via the individual search terms: **Internet** ➔ connection technology, silencer, blanking plug					

New

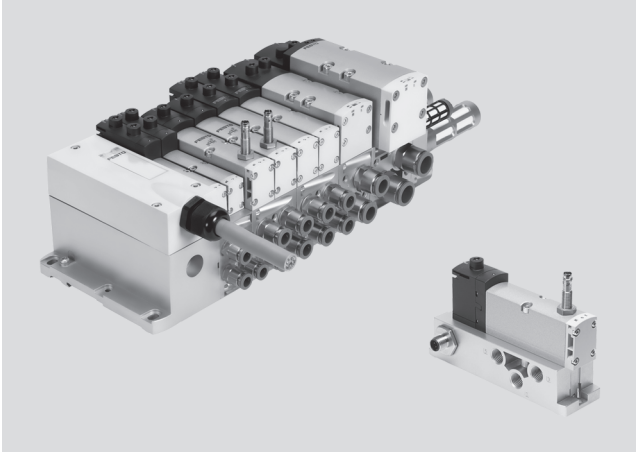
Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Solenoid valve with switching position sensing

Function[1)]



- Flow rate
  up to 1,100 l/min
- Valve width
  18 mm
  26 mm
- Voltage
  24 V DC
- Operating pressure
  3 ... 10 bar

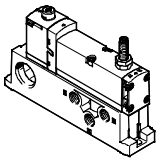


ISO valves with switching position sensing for safety-oriented pneumatic components

Function

The single solenoid 5/2-way valve with spring return in width 18 mm and 26 mm features valve diagnostics. Designed as plug-in or individual connection valve with pilot valves to ISO 15218 and square plug type C. The normal position of the piston spool valve is monitored by the inductive sensor.
This valve is not a safety component in accordance with the Machinery Directive 2006/42/EC. For use 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 or automated systems and must only be used in industrial applications (high-demand mode).

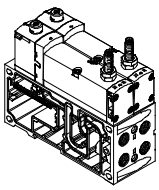
Decentralised individual connection variant



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

The electrical connection is established either via a standardised 4-pin M12 plug 24 V DC (ISO 15407-2), 4-pin spring-loaded terminal or a cable (open end) 24 V DC/110 V AC, which are 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 piston 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 always get their pilot air from duct 14 in the manifold sub-base.

1) The circuit symbol represents a valve with a proximity sensor with switching output signal with an N/O contact. In accordance with ISO 1219-1, this symbol applies to both N/O contacts as well as 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 vents 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 does not conform to the ISO standard.

Valve terminals type 44/45, VTSA/VTSA-F, NPT

FESTO

Technical data – Solenoid valve with switching position sensing

General technical data		
Valve	VSVA-B-M52-MZD-A1-1T1L-... on valve terminal	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	
Actuation type	Electrical	
Type of control	Piloted	
Exhaust function, with flow control	Via individual sub-base, via flow control plate	
Lubrication	Lubricated for life	
Type of mounting	Via through-hole, on manifold sub-base	
Mounting position	Any	
Manual override	Covered	
Individual sub-base		➔122
Valve terminal		➔57

Standard nominal flow rate [l/min]			
Valve	VSVA-B-M52-MZD-A1-1T1L-... on valve terminal		VSVA-B-M52-MZ-A1-1C1-...
Width	18 mm	26 mm	26 mm
Flow rate of valve on individual sub-base	–	–	1,100
Flow rate of valve on valve terminal VTSA	550	1,100	–
Flow rate of valve on valve terminal VTSA-F	700	1,350	–

Operating and environmental conditions		
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)
Operating pressure	[bar]	–0.9 ... 10
Operating pressure for valve terminal with internal pilot air supply	[bar]	3 ... 10
Pilot pressure	[bar]	3 ... 10
Ambient temperature	[°C]	–5 ... +50
Temperature of medium	[°C]	–5 ... +50
Storage temperature[1)]	[°C]	–20 ... +40
Relative air humidity	[%]	90
Note on materials		Contains PWIS (paint-wetting impairment substances), RoHS-compliant
Certification		cULus recognized (OL), only Part Nos.: 560723, 560742, 560724, 560743

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Solenoid valve with switching position sensing

Valve switching times [ms]				
Valve		VSVA-B-M52-MZD-A1-1T1L-... on valve terminal		VSVA-B-M52-MZ-A1-1C1-...
Width		18 mm	26 mm	26 mm
Switching times	On	12	20	21
Switching times	Off	38	54	41

Electrical data – Valve			
Valve		VSVA-B-M52-MZD-A1-1T1L-...- on valve terminal	VSVA-B-M52-MZ-A1-1C1-...-
Width		18 mm, 26 mm	26 mm
Electrical connection		4-pin plug to ISO 15407-2	Plug to DIN EN 175301-803, type C, without protective earth conductor
Nominal operating voltage	[V DC]	24	
Permissible voltage fluctuations	[%]	±10	–15/+10
Surge capacity	[kV]	2.5	
Degree of contamination		3	
Power consumption	[W]	1.6 W	1.8 W
Piston position sensing		Normal position via sensor	
Duty cycle	[%]	100	
Max. positive test pulse with 0 signal	[µs]	800	
Max. negative test pulse with 1 signal	[µs]	800	
Protection class to DIN EN 60529		IP65, NEMA 4	

Electrical data – Sensor		
Electrical connection		Cable, 3-wire
		Plug M8x1, 3-pin
Cable length	[m]	2.5
Switching output		PNP or NPN
Switching element function		N/C contact
Switching status display		Yellow LED
Operating voltage range	[V DC]	10 ... 30
Residual ripple	[%]	±10
Sensor idle current	[mA]	≤10
Max. output current	[mA]	200
Voltage drop	[V]	≤2
Max. switching frequency	[Hz]	5,000
Protection against short circuit		Pulsed
Protection against polarity reversal for sensor		For all electrical connections
Measuring principle		Inductive
Piston position sensing		Valve normal position via sensor

Valve terminals type 44/45, VTSA/VTSA-F, NPT

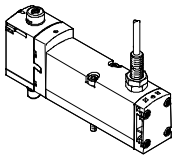
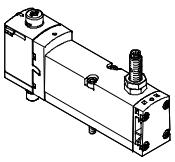
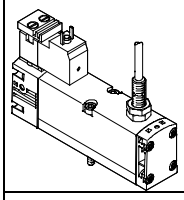
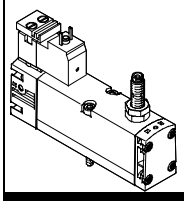
Technical data – Solenoid valve with switching position sensing

Materials	
Sub-base/manifold sub-base	Die-cast aluminium
Valve	Die-cast aluminium, reinforced polyamide
Seals	Nitrile rubber, elastomer (support made of steel)
Screws	Galvanised steel
Sensor housing	High-alloy stainless steel
Sensor cable sheath	Polyurethane

Product weight		
Width	18 mm	26 mm
5/2-way solenoid valve type...		
VSVA-B-M52-MZD-A2-1T1L-APX-0.5	198 g	–
VSVA-B-M52-MZD-A2-1T1L-APP	181 g	–
VSVA-B-M52-MZD-A2-1T1L-ANP	181 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	–	302 g

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Ordering data – Solenoid valve with switching position sensing

Ordering data					
	Code	Valve function	Width	Part No.	Type
Solenoid valves, 24 V DC, plug-in design for valve terminal VTSA					
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor with PNP output and cable, 3-wire, 2.5 m	26 mm	**560723**	**VSVA-B-M52-MZD-A1-1T1L-APC**
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor with NPN output and cable, 3-wire, 2.5 m	26 mm	**560742**	**VSVA-B-M52-MZD-A1-1T1L-ANC**
	SO	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via 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, with switching position sensing via 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**
Solenoid valves, 24 V DC, with pneumatic interface to ISO 15218 for individual sub-base					
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor with PNP output and cable, 3-wire	26 mm	**560725**	**VSVA-B-M52-MZ-A1-1C1-APC**
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor with NPN output and cable, 3-wire	26 mm	**560744**	**VSVA-B-M52-MZ-A1-1C1-ANC**
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor with PNP output and 3-pin sensor push-in connector M8	26 mm	**560726**	**VSVA-B-M52-MZ-A1-1C1-APP**
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor with NPN output and 3-pin sensor push-in connector M8	26 mm	**560745**	**VSVA-B-M52-MZ-A1-1C1-ANP**

Note

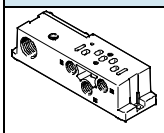
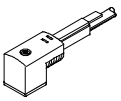
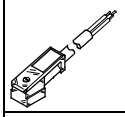
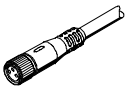
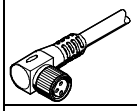
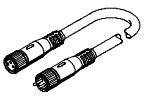
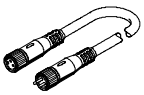
The sensors contained in the valves must not be replaced. Incorrect assembly can result in malfunctions or damage to the valve. Return the module to Festo for maintenance in the event of a fault.

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 two valves with ident. code SO and SQ.

Valve terminals type 44/45, VTSA/VTSA-F, NPT

FESTO

Accessories – Solenoid valve with switching position sensing

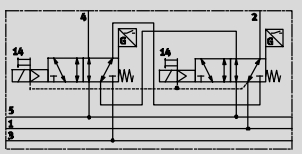
Ordering data					
	Description			Part No.	Type
Individual sub-base, port pattern to ISO 15407-2, electrical connection via cable terminals					
	Threaded connection, internal pilot air supply, lateral connections	1/8" NPT	18 mm	541068	VABS-S4-2S-N18-B-K2
		1/4" NPT	26 mm	541066	VABS-S4-1S-N14-B-K2
	Threaded connection, external pilot air supply, lateral connections	1/8" NPT	18 mm	539724	VABS-S4-2S-N18-K2
		1/4" NPT	26 mm	539726	VABS-S4-1S-N14-K2
Plug socket for electrical connection of individual valves					
	Angled socket, 3-pin, screw terminal, cable connector PG7			151687	MSSD-EB
	Angled socket, 3-pin, screw terminal, cable connector M12			539712	MSSD-EB-M12
Connecting cable for electrical connection of individual valves					
	Angled socket, 3-pin, cable length 2.5 m			151688	KMEB-1-24-2,5-LED
	Angled socket, 3-pin, cable length 5 m			151589	KMEB-1-24-5-LED
	Angled socket, 3-pin, cable length 10 m			193457	KMEB-1-24-10-LED
	Angled socket, 4-pin, cable length 2.5 m			174844	KMEB-2-24-2,5-LED
	Angled socket, 4-pin, cable length 5 m			174845	KMEB-2-24-5-LED
Connecting cable for electrical connection of sensors for switching position sensing					
	Straight socket, 3-pin, M8 plug, cable length 2.5 m			541333	NEBU-M8G3-K-2,5-LE3
	Straight socket, 3-pin, M8 plug, cable length 5 m			541334	NEBU-M8G3-K-5-LE3
	Angled socket, 3-pin, M8 plug, cable length 2.5 m			541338	NEBU-M8-W3-K-2,5-LE3
	Angled socket, 3-pin, M8 plug, cable length 5 m			541341	NEBU-M8W3-K-5-LE3
	Straight socket, straight plug, 3-pin, M8 plug, cable length 2.5 m			554037	NEBU-M8G3-K-2,5-M8G4
	Modular system for connecting cables			–	NEBU-... ➔ Internet: nebu
Illuminating seal for plug pattern DIN EN 175301-803, type C					Technical data ➔ Internet: meb-ld
	12 ... 24 V DC			151717	MEB-LD-12-24DC
	230 V AC			151718	MEB-LD-230AC
Pneumatic connection accessories					
A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter **Accessories** ➔ page 132 or on the Internet via the individual search terms: **Internet** ➔ connection technology, silencer, blanking plug					

New

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Control block with safety function, width 26 mm

Function[1)]

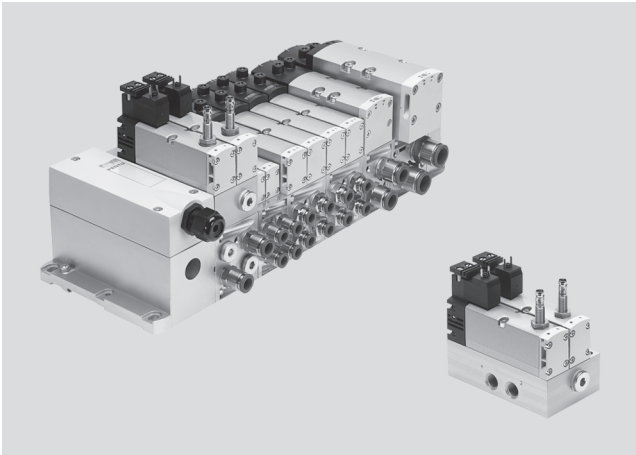


Flow rate
up to 950 l/min

Solenoid valve width
26 mm

Voltage
24 V DC

Operating pressure
3 ... 10 bar



Description

The control block is designed for two-channel actuation of pneumatic drive components such as double-acting linear cylinders, for example, 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

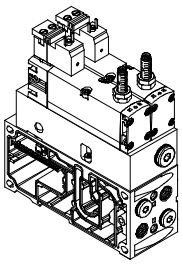
The control attributes of the control block enable a performance level e to be achieved for the safety measures. The control block has been developed and manufactured in accordance with the basic and proven safety principles of EN ISO 13849–2.
The requirements of EN ISO 13849 (e.g. CCF, DC) must be taken into consideration for use in higher categories (2 to 4).

The basic safety principles of EN ISO 13849–2 relating to implementation and operation of the component must be satisfied. For category 2 to 4, the proven safety principles to EN ISO 13849–2 for implementation and operation of the component must be satisfied. 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: manual

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



The valves with integrated piston position sensing on manifold sub-base for valve terminal VTSA/VTSA-F must be supplied with electrical 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 DIN EN 175301–803, type C. The piston position sensing feature of the inductive PNP or NPN proximity sensor is realised using a push-in connector in the size M8x1 to EN 61076–2–104.

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

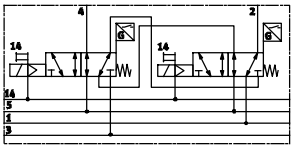
Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Control block with safety function, width 26 mm

FESTO

Function – Pneumatic/electrical interlinking

Vertical stacking variant
(on valve terminal)



The safety function is achieved through two-channel pneumatic interlinking of two single solenoid 5/2-way directional control valves within the control block: port (4) is only fed with compressed air if both solenoid valves are switched to switching position (14).
Port (2) is always fed with compressed air if at least one of the two solenoid valves is in normal position. The valve is reset via a mechanical spring.

The switching operation of the solenoid valves can be monitored by sensing via the proximity sensors at the solenoid valves. This is done by linking the control signal and signal change of the proximity sensor so that it is possible to check whether the piston spools of the solenoid valves are reaching or leaving the normal position (expectations).

The piston spools of the solenoid valves are designed so that pneumatic short circuits between ports (2) and (4) are ruled out (freedom from overlap).

To achieve the required category, the two solenoid valves must be actuated via two separate channels.

General technical data			
Control block		VOFA-B26-T52-M-1C1-...- on valve terminal	
Width		53 mm (intermediate plate)	
Design		Piston spool valve	
Sealing principle		Soft	
Actuation type		Electrical	
Type of control		Piloted	
Pilot air supply		Internal/external via valve terminal	
Type of mounting		Via through-hole, on manifold sub-base	
Mounting position		Any	
Manual override		Covered	
Valve switching status display		Via accessories	
Pneumatic connections		Connection with NPT thread	Fitting
Supply port	1	Via the manifold sub-base of the valve terminal	
Exhaust port	3/5	Via the manifold sub-base of the valve terminal	
Working lines	2/4	¼" NPT	QS-¼-⅜ QS-¼-5/16-U
Pilot air supply	14	Via the manifold sub-base of the valve terminal	
Pressure gauge		G¼	

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Control block with safety function, width 26 mm

Standard nominal flow rate [l/min]	
Control block	VOFA-B26-T52-M-1C1-...- on valve terminal
Width	53 mm (intermediate plate)
Flow rate of valve on valve terminal	830

Operating and environmental conditions		
Control block		VOFA-B26-T52-M-1C1-...- on valve terminal
Width		53 mm (intermediate plate)
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4][1)]
Pilot medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)
Operating pressure	[bar]	0 ... 10
Operating pressure for valve terminal with internal pilot air supply	[bar]	3 ... 10
Pilot pressure	[bar]	3 ... 10
Noise level LpA	[dB(A)]	85
Ambient temperature	[°C]	–5 ... +50
Temperature of medium	[°C]	–5 ... +50
Fire protection classification to UL94		HB
Note on materials		Contains PWIS (paint-wetting impairment substances), RoHS-compliant
Common cause failure (CCF)		Observe operating pressure limits
		Observe pilot pressure limits
		Observe temperature range
		Observe vibration/shock limits
		Compressed air quality according to the technical data, in particular avoidance of flash rust dust (for example caused by servicing work) as well as adherence to the residual oil content of max. 0.1 mg/m^3 when using ester-containing oils (which may, for example, be contained in the compressor oil)
Performance level	[PL]	Cat. 4, PL e safety component
Max. positive test pulse with 0 signal	[µs]	1,000
Max. negative test pulse with 1 signal	[µs]	800

1) The pressure dew point must be at least 10 K lower than the temperature of the medium, since ice would otherwise form in the expanded compressed air.

Note

With the test pulses, make sure that the maximum pulse length is not exceeded as otherwise the safety function can be impaired.

Valve terminals type 44/45, VTSA/VTSA-F, NPT

FESTO

Technical data – Control block with safety function, width 26 mm

Switching times [ms]		
Control block		VOFA-B26-T52-M-1C1-...- on valve terminal
Width		53 mm (intermediate plate)
Valve switching time	On	22
	Off	59
Valve sensor switching time[1)]	On	60
	Off	11

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

Electrical data – Control block		
Electrical connection		Plug to DIN EN 175301-803, type C, without protective earth conductor
Nominal operating voltage	[V DC]	24
Permissible voltage fluctuations	[%]	–15/+10
Surge capacity	[kV]	2.5
Degree of contamination		3
Power consumption	[W]	1.8 W
Max. magnetic disruption field	[mT]	60
Piston position sensing		Normal position via sensor
Duty cycle	[%]	100
Protection class to DIN EN 60529		IP65, NEMA 4 (for all types of signal transmission in assembled state)
Protection against direct and indirect contact		PELV (Protective Extra-Low Voltage) Protected to EN 60950/IEC 950

Electrical data – Sensor		
Electrical connection		Cable, 3-wire
		Plug M8x1, 3-pin
Cable length	[m]	2.5
Switching output		PNP or NPN
Switching element function		N/C contact
Switching status display		Yellow LED
Operating voltage range	[V DC]	10 ... 30
Residual ripple	[%]	±10
Sensor idle current	[mA]	<=10
Max. output current	[mA]	200
Voltage drop	[V]	<=2
Max. switching frequency	[Hz]	5,000
Protection against short circuit		Pulsed
Protection against polarity reversal for sensor		For all electrical connections
Measuring principle		Inductive
Piston position sensing		Valve normal position via sensor

Note

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

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Control block with safety function, width 26 mm

Certifications	
Certification	BIA
CE marking (see declaration of conformity)	To EU Machinery Directive

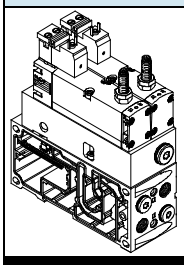
Materials	
Sub-base/manifold sub-base	Die-cast aluminium
Valve	Die-cast aluminium, reinforced polyamide
Seals	Nitrile rubber, elastomer (support made of steel)
Screws	Galvanised steel
Sensor housing	High-alloy stainless steel
Sensor cable sheath	Polyurethane

Product weight		
Control block		VOFA-B26-T52-M-1C1-...- on valve terminal
Width		53 mm (intermediate plate)
Approx. weight	[g]	1,112

Valve terminals type 44/45, VTSA/VTSA-F, NPT

FESTO

Ordering data – Control block with safety function, width 26 mm

Ordering data					
	Code	Description	Width	Part No.	Type
Control block, 24 V DC, vertical stacking variant for valve terminal VTSA/VTSA-F					
	SP	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor with PNP output and 3-pin sensor push-in connector M8, mounted on intermediate plate for pneumatic interlinking	53 mm	– [1]	**VOFA-B26-T52-M-1C1-APP**
	SN	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor with NPN output and 3-pin sensor push-in connector M8, mounted on intermediate plate for pneumatic interlinking	53 mm	– [1]	**VOFA-B26-T52-M-1C1-ANP**

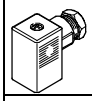
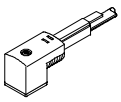
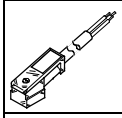
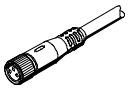
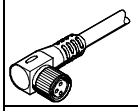
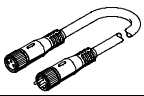
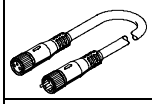
1) The control block with safety function can only be ordered via the valve terminal configurator and therefore does not have a separate part number.

Note

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

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Accessories – Control block with safety function, width 26 mm

Ordering data			
	Description	Part No.	Type
Plug socket for electrical connection of individual valves			
	Angled socket, 3-pin, screw terminal, cable connector PG7	**151687**	**MSSD-EB**
	Angled socket, 3-pin, screw terminal, cable connector M12	**539712**	**MSSD-EB-M12**
Connecting cable for electrical connection of individual valves			
	Angled socket, 3-pin, cable length 2.5 m	**151688**	**KMEB-1-24-2,5-LED**
	Angled socket, 3-pin, cable length 5 m	**151589**	**KMEB-1-24-5-LED**
	Angled socket, 3-pin, cable length 10 m	**193457**	**KMEB-1-24-10-LED**
	Angled socket, 4-pin, cable length 2.5 m	**174844**	**KMEB-2-24-2,5-LED**
	Angled socket, 4-pin, cable length 5 m	**174845**	**KMEB-2-24-5-LED**
Connecting cable for electrical connection of sensors for switching position sensing			
	Straight socket, 3-pin, M8 plug, cable length 2.5 m	**541333**	**NEBU-M8G3-K-2,5-LE3**
	Straight socket, 3-pin, M8 plug, cable length 5 m	**541334**	**NEBU-M8G3-K-5-LE3**
	Angled socket, 3-pin, M8 plug, cable length 2.55 m	**541338**	**NEBU-M8-W3-K-2,5-LE3**
	Angled socket, 3-pin, M8 plug, cable length 5 m	**541341**	**NEBU-M8W3-K-5-LE3**
	Straight socket, straight plug, 3-pin, M8 plug, cable length 2.5 m	**554037**	**NEBU-M8G3-K-2,5-M8G4**
	Modular system for connecting cables	–	**NEBU-...** ➔ Internet: nebu
Illuminating seal for plug pattern DIN EN 175301-803, type C			Technical data ➔ Internet: meb-ld
	12 ... 24 V DC	**151717**	**MEB-LD-12-24DC**
	230 V AC	**151718**	**MEB-LD-230AC**
Pneumatic connection accessories			
A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter **Accessories** ➔ page 132 or on the Internet via the individual search terms: **Internet** ➔ connection technology, silencer, blanking plug			

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Pilot air switching valve, width 18 mm, 26 mm

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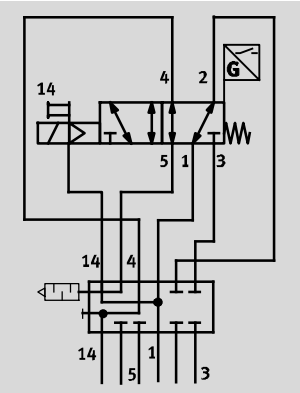
Function[1)]

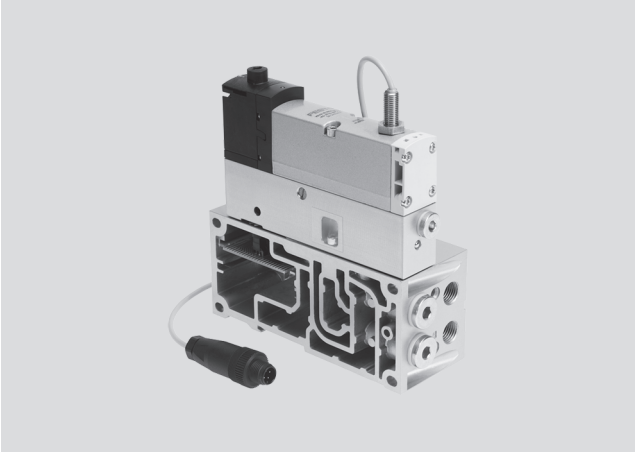


Flow rate
150 l/min (18 mm)
450 l/min (26 mm)

Valve width
18 mm
26 mm

Voltage
24 V DC

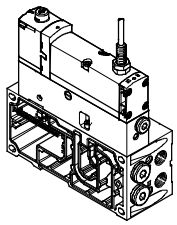
Operating pressure
3 ... 10 bar



Description

The pilot air switching valve is a combination of a 5/2-way solenoid valve with switching position sensing and the vertical stacking plate VABF-S4-...-S. It enables verifiable switching on and off (sensor function) of the pilot air supply from duct 1 to 14 for the entire pressure zone or valve terminal.
This valve is not a safety component in accordance with the Machinery Directive 2006/42/EC. For use 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).
More information and technical data
➔ Internet: manual

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



The pilot air switching valve with integrated piston position sensing on manifold sub-base for valve terminal VTSA/VTSA-F can be used regardless of the type of electrical actuation of the valve terminal.
This module is supplied pre-assembled together with the valve terminal VTSA/VTSA-F. No other assembly steps are required before installation.
The piston position sensing feature is realised by means of an inductive PNP proximity sensor with cable and push-in connector in the size M12x1 to EN 61076-2-104.

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

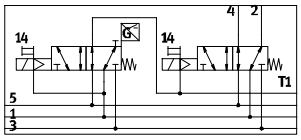
Note

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

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Pilot air switching valve, width 18 mm, 26 mm

Function – Pneumatic/electrical interlinking



The function for switching off the pilot air is achieved on this module by combining the vertical stacking plate type VABF-S4-...-S with the single solenoid 5/2-way valve type VSVA-B-M52-MZD-...-1T1L-APX-0,5. The valve terminal is not supplied with any pilot air via the right-hand 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 vertical stacking 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 via the proximity sensor in the solenoid valve.

This is done by linking the control signal and signal change of the proximity sensor so that it is possible to check whether the piston spool of the solenoid valve is reaching or leaving the normal position (expectations).
The piston spool of the solenoid valve is designed so that pneumatic short circuits between ports (2) and (4) are ruled out (freedom from overlap).

Note

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

General technical data			
		Vertical stacking 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	Vertical stacking plate type VABF-S4-1-S and solenoid valve type VSVA-B-M52-MZD-A1-1T1L-APX-0,5
Width		18 mm	26 mm
Design		Piston spool valve	
Sealing principle		Soft	
Actuation type		Electrical	
Type of control		Piloted	
Type of mounting: Solenoid valve on pilot air switching valve Pilot air switching valve on sub-base/ manifold sub-base		M3 M3x12 (captive)	M4 M4x12 (captive)
Mounting position		Any	
Pneumatic connections			
Supply port	1	Via the manifold sub-base of the valve terminal	
Exhaust port	3/5	Via the manifold sub-base of the valve terminal	
Working port	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		G¼	

Valve terminals type 44/45, VTSA/VTSA-F, NPT

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Technical data – Pilot air switching valve, width 18 mm, 26 mm

Operating and environmental conditions		
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)
Operating pressure	[bar]	3 ... 10
Noise level LpA	[dB(A)]	85
Ambient temperature	[°C]	–5 ... +50
Temperature of medium	[°C]	–5 ... +50
Fire protection classification to UL94		HB
Note on materials		Contains PWIS (paint-wetting impairment substances), RoHS-compliant

Switching times [ms]			
Valve		VSVA-B-M52-MZD-A2-1T1L-APX-0,5	VSVA-B-M52-MZD-A1-1T1L-APX-0,5
Width		18 mm	26 mm
Valve switching time	On	12	20
	Off	38	54
Valve sensor switching time[1)]	On	60	
	Off	11	

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

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Pilot air switching valve, width 18 mm, 26 mm

Electrical data – Pilot air switching valve		
Nominal operating voltage	[V DC]	24
Permissible voltage fluctuations	[%]	±10
Surge capacity	[kV]	2.5
Degree of contamination		3
Power consumption	[W]	1.6 W
Max. magnetic disruption field	[mT]	60
Piston position sensing		Normal position via sensor
Duty cycle	[%]	100
Protection class to DIN EN 60529		IP65, NEMA 4 (for all types of signal transmission in assembled state)

Electrical data – Sensor		
Electrical connection		Plug M12x1, 4-pin
Cable length	[m]	0.5
Switching output		PNP
Switching element function		N/C contact
Switching status display		Yellow LED
Operating voltage range	[V DC]	10 ... 30
Residual ripple	[%]	±10
Rated operating voltage	[V DC]	24
Sensor idle current	[mA]	≤10
Max. output current	[mA]	200
Voltage drop	[V]	≤2
Max. switching frequency	[Hz]	5,000
Protection against short circuit		Pulsed
Protection against polarity reversal for sensor		For all electrical connections
Measuring principle		Inductive
Piston position sensing		Valve normal position via sensor

Valve terminals type 44/45, VTSA/VTSA-F, NPT

FESTO

Technical data – Pilot air switching valve, width 18 mm, 26 mm

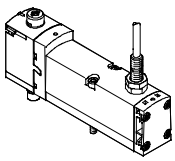
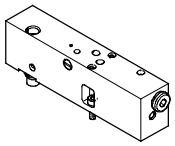
Materials	
Sub-base/manifold sub-base	Die-cast aluminium
Valve	Die-cast aluminium, reinforced polyamide
Seals	Nitrile rubber, elastomer (support made of steel)
Screws	Galvanised steel
Sensor housing	High-alloy stainless steel
Sensor cable sheath	Polyurethane

Product weight			
		Vertical stacking plate type VABF-S4-2-S	Vertical stacking plate type VABF-S4-1-S
Width		18 mm	26 mm
Approx. weight	[g]	235	295

Valve terminals type 44/45, VTSA/VTSA-F, NPT

FESTO

Ordering data – Pilot air switching valve, width 18 mm, 26 mm

Ordering data					
	Code	Valve function		Part No.	Type
Solenoid valve, 24 V DC, plug-in design for valve terminal VTSA/VTSA-F					
	SS	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor with PNP output and 0.5 m cable with 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**
Vertical stacking plate for pilot air switching valve for valve terminal VTSA/VTSA-F					
	ZO	Vertical stacking plate, for switching pilot air from duct 1 to duct 14	18 mm	**573200**	**VABF-S4-2-S**
			26 mm	**570851**	**VABF-S4-1-S**
Cover					
	–	Cover cap for manual override, non-detenting	10 pieces	**541010**	**VAMC-S6-CH**

Note

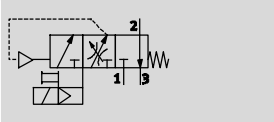
The sensors contained in the valves must not be replaced. Incorrect assembly can result in malfunctions or damage to the valve. Please contact Festo in the event of a malfunction.

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Soft-start valve, width 43 mm

FESTO

Function

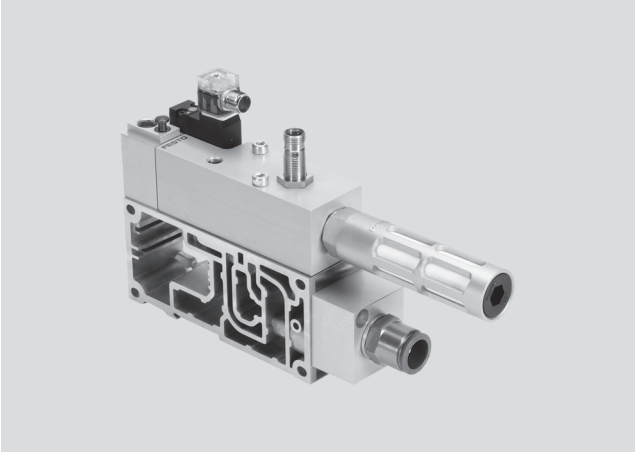


Flow rate
Pressurisation: 3,000 l/min
Exhaust: 3,300 l/min

Module width
43 mm

Temperature range
–5 ... +50 °C

Operating pressure
2 ... 10 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 vent it.
Switch-on takes place in two stages:

- First the working pressure provided 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 the 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 to duct 14 (pilot air) at all times. This pressure causes the valves on the valve terminal to immediately move to the required switching position.
When the valve is not switched, duct 1 of the valve terminal is exhausted via the soft-start valve's exhaust port.
A self-resetting manual override is available for maintenance and service purposes.

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 air.
Pressure sensing via a pressure gauge (optional) is also possible.
The soft-start valve can alternatively be ordered with a sensor (retrofitting of a sensor is very complicated due to the necessary sensor calibration).
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 type of pilot air supply is determined by the seal of the soft-start valve.
The scope of delivery of the soft-start valve includes both the seal for internal pilot air supply and the seal for external pilot air supply.

Restrictions

Compressed air supply

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

Exhaust air

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

Pilot air supply

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

Reverse operation

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

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Soft-start valve, width 43 mm

General technical data	
Design	Piston spool valve
Actuation type	Electrical
Sealing principle	Soft
Type of mounting	On sub-base
Mounting position	Any
Valve function	Soft-start function
Manual override	Non-detenting
Reset method	Mechanical spring
Type of control	Piloted
Pilot air supply	Internal, external
Direction of flow	Non-reversible
Piston position sensing	Switching position via sensor

Standard nominal flow rate [l/min]	
Pressurisation	3,000
Exhaust	3,300

Operating and environmental conditions			
Type		VABF-S6-1-P5A4-...-2A	VABF-S6-1-P5A4-...-1
Operating pressure	[bar]	2 ... 12	
Switchover pressure presetting	[bar]	4	
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)	
Ambient temperature	[°C]	–5 ... +50	
CE mark (see declaration of conformity)		To EU EMC Directive	–

Valve terminals type 44/45, VTSA/VTSA-F, NPT

FESTO

Technical data – Soft-start valve, width 43 mm

Valve switching times [ms]		
Switching times	On	17
	Off	50
	Changeover	–

Electrical data – Soft-start valve			
Type		VABF-S6-1-P5A4-...-1	VABF-S6-1-P5A4-...-2A
Electrical connection		Plug type C to DIN EN 175301-803, square design	
Nominal operating voltage	[V]	24 DC	110 AC
Operating voltage range	[V]	24 DC ±10%	110 AC ±10%
Coil characteristics		24 V DC: 2.5 W	110 V AC: 50/60 Hz, 3 VA pull: 110 V AC: 50/60 Hz, 2.4 VA hold
Protection class to EN 60529		IP65, NEMA 4	

Electrical data – Sensor		
Electrical connection		Plug M12x1, 4-pin
Switching output		PNP
Switching element function		N/O contact
Switching status display		Yellow LED
Operating voltage range	[V DC]	10 ... 30
Residual ripple	[%]	±10
Rated operating voltage	[V DC]	24
Sensor idle current	[mA]	≤10
Max. output current	[mA]	200
Voltage drop	[V]	≤2
Max. switching frequency	[Hz]	3,000
Protection against short circuit		Pulsed
Protection against polarity reversal for sensor		For all electrical connections
Measuring principle		Inductive
Piston position sensing		Switching position via sensor

Materials	
Housing	Wrought aluminium alloy
Seals	Nitrile rubber
Screws	Galvanised steel

Product weight		
Approx. weight	[g]	
Manifold sub-base		570
Soft-start valves without proximity sensor		590
Soft-start valves with proximity sensor		605

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Soft-start valve, width 43 mm

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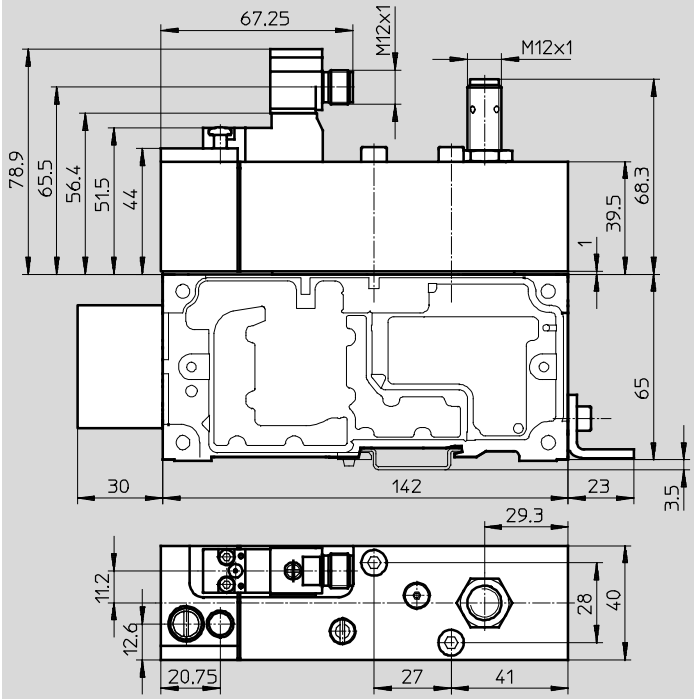
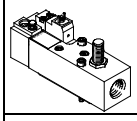
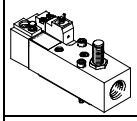
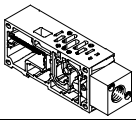
Dimensions Download CAD data ➔ **www.festo.com**

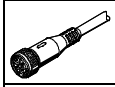
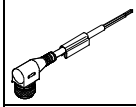
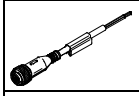
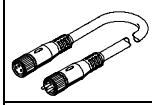
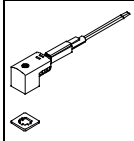
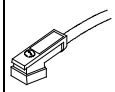


Ordering data

	Description	Part No.	Type
Soft-start valve, 24 V DC			
	Without sensor output, pneumatic connection ½" NPT	**558231**	**VABF-S6-1-P5A4-N12-4-1**
	With sensor output PNP, pneumatic connection ½" NPT	**558232**	**VABF-S6-1-P5A4-N12-4-1-P**
	With sensor output NPN, pneumatic connection ½" NPT	**558234**	**VABF-S6-1-P5A4-N12-4-1-N**
Soft-start valve, 110 V AC			
	Without sensor output, pneumatic connection ½" NPT	**558229**	**VABF-S6-1-P5A4-N12-4-2A**
Manifold sub-base			
	Pneumatic connection ½" NPT	**556988**	**VABV-S6-1Q-N12**

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Accessories – Soft-start valve, width 43 mm

Ordering data				
Designation	Description		Part No.	Type
Proximity sensor				
	With integrated switching status display via LED (yellow)	PNP	**150403**	**SIEN-M12B-PS-S-L**
		NPN	**150401**	**SIEN-M12B-NS-S-L**
Protective cap				
	M12, for sealing the sensor opening (10 pieces)		**165592**	**ISK-M12**
Plug socket for electrical connection of the soft-start valve				
	Angled socket, 2-pin, for solenoid coil, straight plug, M12		**188024**	**MSSD-EB-M12-MONO**
Connecting cable for electrical connection of the proximity sensor				
	Straight socket, M12x1 plug, 4-wire, cable length 5 m		**164259**	**SIM-M12-4GD-5-PU**
	Angled socket, 5-pin, M12 plug, cable length 5 m		**541370**	**NEBU-M12W5-K-5-LE3**
	Straight socket, 5-pin, M12 plug, cable length 5 m		**541364**	**NEBU-M12G5-K-5-LE3**
	Modular system for connecting cables		–	**NEBU-...** ➔ Internet: nebu
Connecting cable for electrical connection of the soft-start valve				
	Angled socket, type C, 24 V DC, with LED for switching status display	2.5 m	**151688**	**KMEB-1-24-2,5-LED**
		5 m	**151689**	**KMEB-1-24-5-LED**
		10 m	**193457**	**KMEB-1-24-10-LED**
	Angled socket, type C, for solenoid coil 230 V AC	2.5 m	**151690**	**KMEB-1-230AC-2,5**
		5 m	**151691**	**KMEB-1-230-5**
	Angled socket, type C, 24 V DC, with LED for switching status display	2.5 m	**174844**	**KMEB-2-24-2,5-LED**
		5 m	**174845**	**KMEB-2-24-5-LED**
	Angled socket, type C, for solenoid coil 230 V AC	2.5 m	**174846**	**KMEB-2-230AC-2,5**
		5 m	**174847**	**KMEB-2-230-5**
Pressure gauge				
	0 ... 10 bar, pneumatic connection M5		**526323**	**MA-27-10-M5**
Pneumatic connection accessories				
A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter **Accessories** ➔ page 132 or on the Internet via the individual search terms: **Internet** ➔ connection technology, silencer, blanking plug				

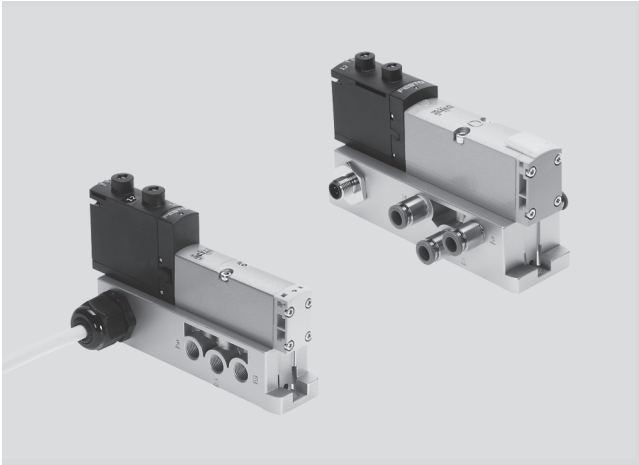
Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Valves on individual sub-base

- Flow rate
  Width 18 mm:
  up to 600 l/min
  Width 26 mm:
  up to 1,200 l/min
  Width 42 mm:
  up to 1,500 l/min
  Width 52 mm:
  up to 3,200 l/min

- 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
  110 V AC



General technical data					
Design		Piston spool valve			
Sealing principle		Soft			
Actuation type		Electrical			
Type of control		Piloted			
Exhaust function, with flow control		Via individual sub-base			
Lubrication		Lubricated for life			
Type of mounting		Through-hole to ISO 15407-2			
Mounting position		Any			
Manual override		Detenting, non-detenting, covered			
Pneumatic connections – NPT thread					
Width		18 mm	26 mm	42 mm	52 mm
Pneumatic connection		Via sub-base			
Supply port	1	⅛" NPT	¼" NPT	⅜" NPT	½" NPT
Exhaust port	3/5	⅛" NPT	¼" NPT	⅜" NPT	½" NPT
Working lines	2/4	⅛" NPT	¼" NPT	⅜" NPT	½" NPT
External pilot air supply port	14	10-32UNF-2B	⅛" NPT	⅛" NPT	⅛" NPT
Pilot exhaust air port	12	10-32UNF-2B	⅛" NPT	⅛" NPT	⅛" NPT

Valve terminals type 44/45, VTSA/VTSA-F, NPT

Technical data – Valves on individual sub-base

Standard nominal flow rate [l/min]																	
Valve function order code[1]	VC	VV	N	K	H	P	Q	R	M	O	J	D	B	E	G	SA	SB
Width 18 mm																	
Flow rate of valve	700		600						750				700[2] 330[3]			–	–
Flow rate of valve on individual sub-base	500		500						600				500[2] 330[3]		550	–	–
Width 26 mm																	
Flow rate of valve	1,350		1,250						1,400				1,400[2] 700[3]			1,400	700
Flow rate of valve on individual sub-base	1,100		1,100			1,000			1,200				1,200[2] 700[3]			1,200	700
Width 42 mm																	
Flow rate of valve	1,600		1,600						2,000				1,900[2] 950[3]			–	–
Flow rate of valve on individual sub-base	1,400		1,200						1,500				1,400[1] 800[3]			–	–
Width 52 mm																	
Flow rate of valve	3,500		3,000						4,000				3,500[2] 1,700[3]			–	–
Flow rate of valve on individual sub-base	3,000		2,500						3,200				3,000[2] 1,700[3]			–	–

1) Order code VV not for size 2
2) Switching position
3) Mid-position

Operating and environmental conditions		
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4] ➔ 56
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)
Operating pressure	[bar]	–0.9 ... +10
Ambient temperature	[°C]	–5 ... +50

Pneumatic characteristic data																	
Valve function order code	VC	VV	N	K	H	P	Q	R	M	O	J	D	B	G	E	SA	SB
Direction of flow																	
Any	–	■	–	–	–	–	–	–	■	■	■	■	■	■	■	–	■
Reversible only	–	–	–	–	–	■	■	■	–	–	–	–	–	–	–	–	–
Non-reversible	■	–	■	■	■	–	–	–	–	–	–	–	–	–	–	■	–
Reset method																	
Pneumatic spring	■	■	■	–	■	■	■	■	■	–	–	–	–	–	–	■	■
Mechanical spring	–	–	–	■	–	–	–	–	–	■	–	–	■	■	■	–	–

Valve switching times																		
Valve function order code[1]		VC	VV	N	K	H	P	Q	R	M	O	J	D	B	G	E	SA	SB
Width 18 mm, nominal operating voltage 24 V DC/110 V AC																		
Switching times [ms]	On	12	12	12	12	12	25	25	25	22	12	–	–	15	15	15	–	–
	Off	30	30	30	30	30	12	12	12	28	38	–	–	44	44	44	–	–
	Changeover	–	–	–	–	–	–	–	–	–	–	11	13	–	–	–	–	–
Width 26 mm, nominal operating voltage 24 V DC/110 V AC																		
Switching times [ms]	On	20	20	20	20	20	32	32	32	25	20	–	–	22	22	22	9/22	9/19
	Off	38	38	38	38	38	30	30	30	45	65	–	–	65	65	65	49	36
	Changeover	–	–	–	–	–	–	–	–	–	–	18	21	–	–	–	33	32
Width 42 mm, nominal operating voltage 24 V DC																		
Switching times [ms]	On	20	20	20	20	20	34	34	34	27	22	–	–	22	22	22	–	–
	Off	38	38	38	38	38	28	28	28	45	60	–	–	65	65	65	–	–
	Changeover	–	–	–	–	–	–	–	–	–	–	16	19	–	–	–	–	–
Width 42 mm, nominal operating voltage 110 V AC																		
Switching times [ms]	On	22	22	22	22	22	34	34	34	20	20	–	–	22	22	22	–	–
	Off	46	46	46	46	46	38	38	38	55	55	–	–	68	68	68	–	–
	Changeover	–	–	–	–	–	–	–	–	–	–	16	19	–	–	–	–	–
Width 52 mm, nominal operating voltage 24 V DC with holding current reduction																		
Switching times [ms]	On	14	–	20	20	20	30	30	30	40	20	–	–	23	23	23	–	–
	Off	35	–	35	35	35	30	30	30	45	60	–	–	60	60	60	–	–
	Changeover	–	–	–	–	–	–	–	–	–	–	18	18	–	–	–	–	–
Width 52 mm, nominal operating voltage 110 V AC																		
Switching times [ms]	On	35	–	35	35	35	50	50	50	70	25	–	–	30	30	30	–	–
	Off	70	–	70	70	70	65	65	65	90	110	–	–	100	100	100	–	–
	Changeover	–	–	–	–	–	–	–	–	–	–	35	35	–	–	–	–	–

1) Not for individual sub-base with round plug type VABS ...B-R3

2) Order code SA, switching time 22 ms for control side 12, 9 ms for control side 14
Order code SB, switching time 19 ms for control side 12, 9 ms for control side 14

Electrical data		
Acceptable current load at 40 °C	[A]	2 (1 A per coil)
Variants with cable connector		
Operating voltage range	[V AC]	110 ±10% (50 ... 60 Hz) (with variants with cable and spring-loaded terminal VABS-...-K1/C1)
Surge capacity	[kV]	4
Degree of contamination		3
Duty cycle	[%]	100%

- - Note

A cable connector is needed to ensure the IP protection class and to protect against tensile load, twisting and bending.

Certifications	
ATEX category for gas	II 3G
Explosion ignition protection type for gas	Ex nA II T3 X
ATEX category for dust	II 3D
Explosion ignition protection type for dust	Ex tD A22 IP65 T125° C X
ATEX temperature rating [°C]	−5 ≤ Ta ≤ +50
Certification	cULus recognized (OL)
Protection class	IP65, NEMA 4 in assembled state
CE mark[1)] (see declaration of conformity)	To EU Low Voltage Directive

- Note

This product is certified for use in the ATEX zone in accordance with the EU ATEX Directive.

Materials				
Width	18 mm	26 mm	42 mm	52 mm
Sub-base	Die-cast aluminium			Gravity die cast aluminium
Valve	Die-cast aluminium, reinforced polyamide			
Seals	Nitrile rubber, elastomer (support made of steel)			

- Note

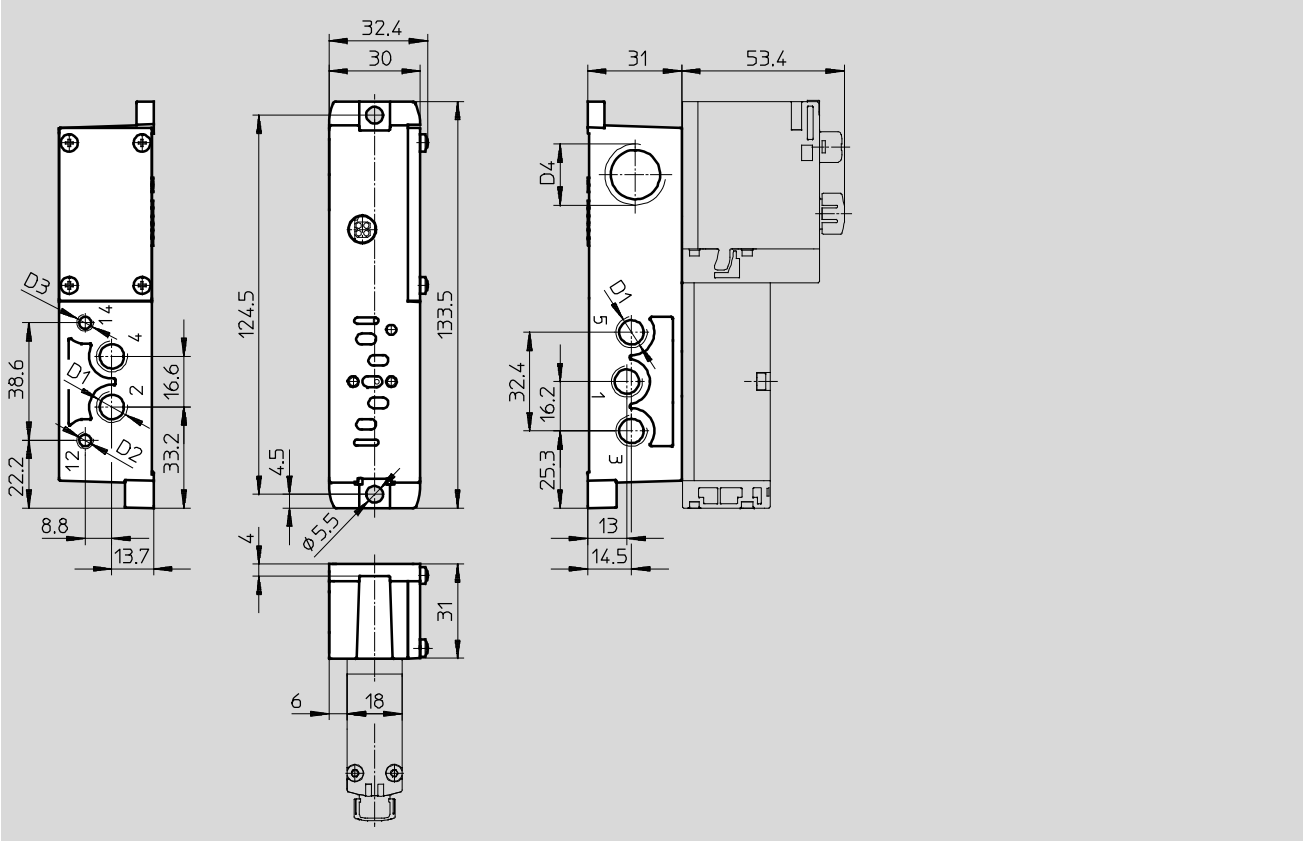
The sub-bases with the part numbers shown opposite are ATEX-certified:

- 563066
- 563067
- 563068
- 563069
- 563070
- 563071
- 567703
- 567704

Product weight [g]				
Width	18 mm	26 mm	42 mm	52 mm
Valves				
5/3-way solenoid valve (code: B, G, E)	191	320	456	780
5/3-way solenoid valve (code: SA, SB)	–	301	–	–
5/2-way valve, single solenoid (code: M, O)	163	293	426	702
5/2-way valve, double solenoid (code: J, D)	172	276	439	732
2x 3/2-way solenoid valve (code: N, K, H, P, Q, R)	190	335	442	740
2x 2/2-way solenoid valve (code: VC, VV)	190	335	442	740
Individual connection				
Individual sub-base	192	302	386	815

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

Individual sub-base with cable terminals, width 18 mm

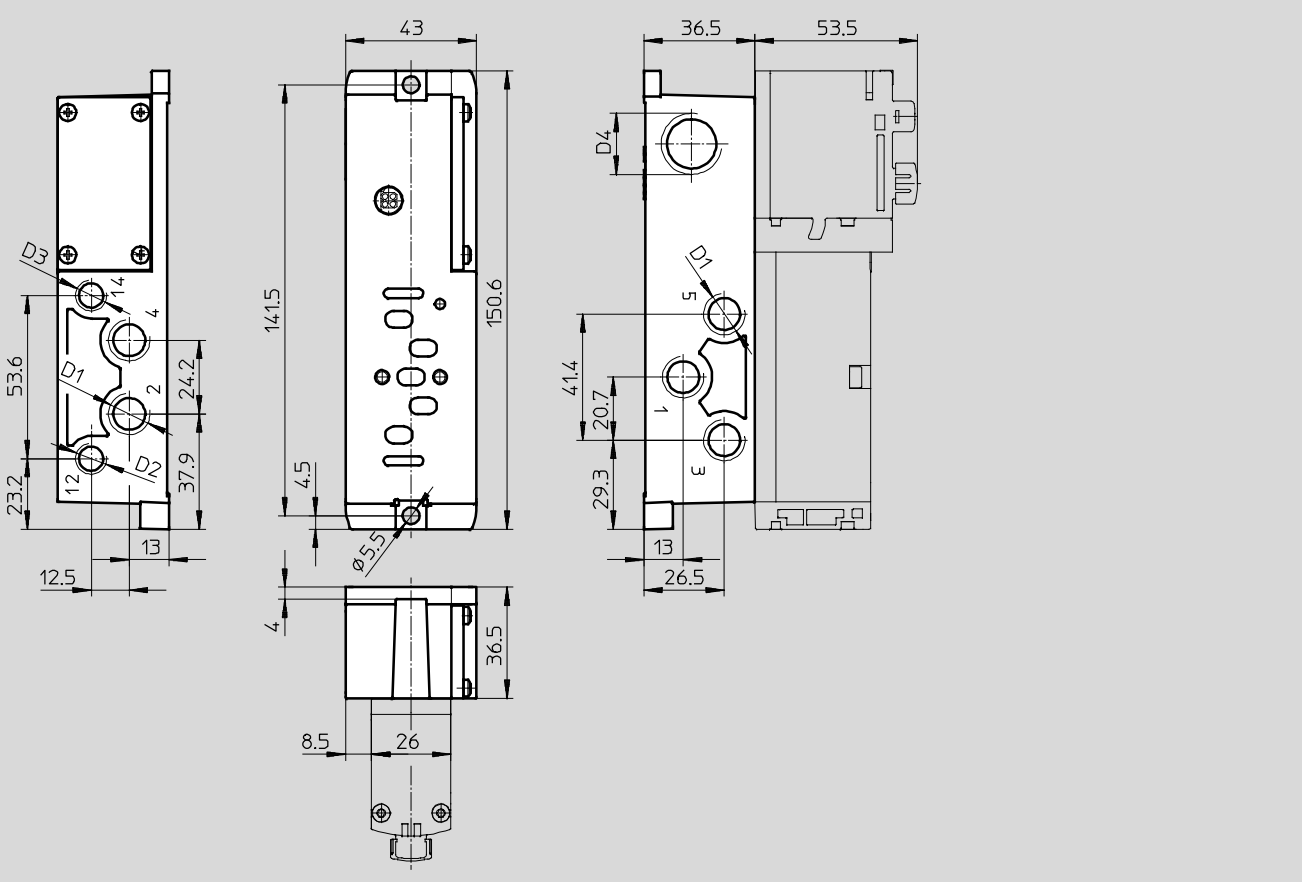


Type	D1	D2	D3	D4
External pilot air supply				
VABS-S4-2S-N18-K2	⅛" NPT	10-32UNF-2B	10-32UNF-2B	M20x1.5
Internal pilot air supply				
VABS-S4-2S-N18-B-K2	⅛" NPT	10-32UNF-2B	–	M20x1.5

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

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

Individual sub-base with cable terminals, width 26 mm

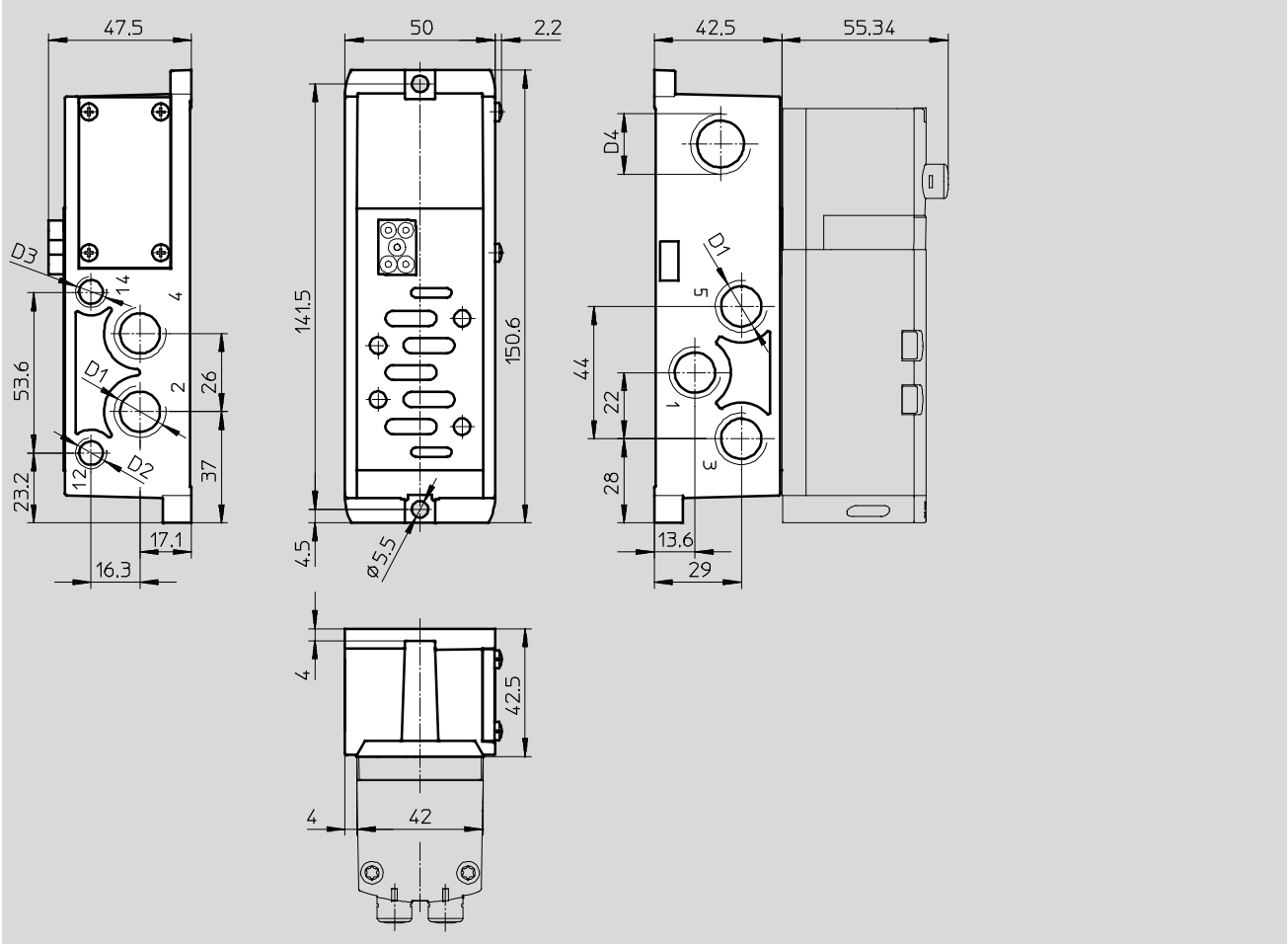


Type	D1	D2	D3	D4
External pilot air supply				
VABS-S4-1S-N14-K2	¼" NPT	⅛" NPT	⅛" NPT	M20x1.5
Internal pilot air supply				
VABS-S4-1S-N14-B-K2	¼" NPT	⅛" NPT	–	M20x1.5

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

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

Individual sub-base with spring-loaded terminal or for self-assembly, width 42 mm



Type	D1	D2	D3	D4
External pilot air supply				
VABS-S2-1S-N38-K1	3/8" NPT	1/8" NPT	1/8" NPT	M20x1.5
VABS-S2-1S-N38-C1	3/8" NPT	1/8" NPT	1/8" NPT	M20x1.5
Internal pilot air supply				
VABS-S2-1S-N38-B-K1	3/8" NPT	1/8" NPT	–	M20x1.5
VABS-S2-1S-N38-B-C1	3/8" NPT	1/8" NPT	–	M20x1.5

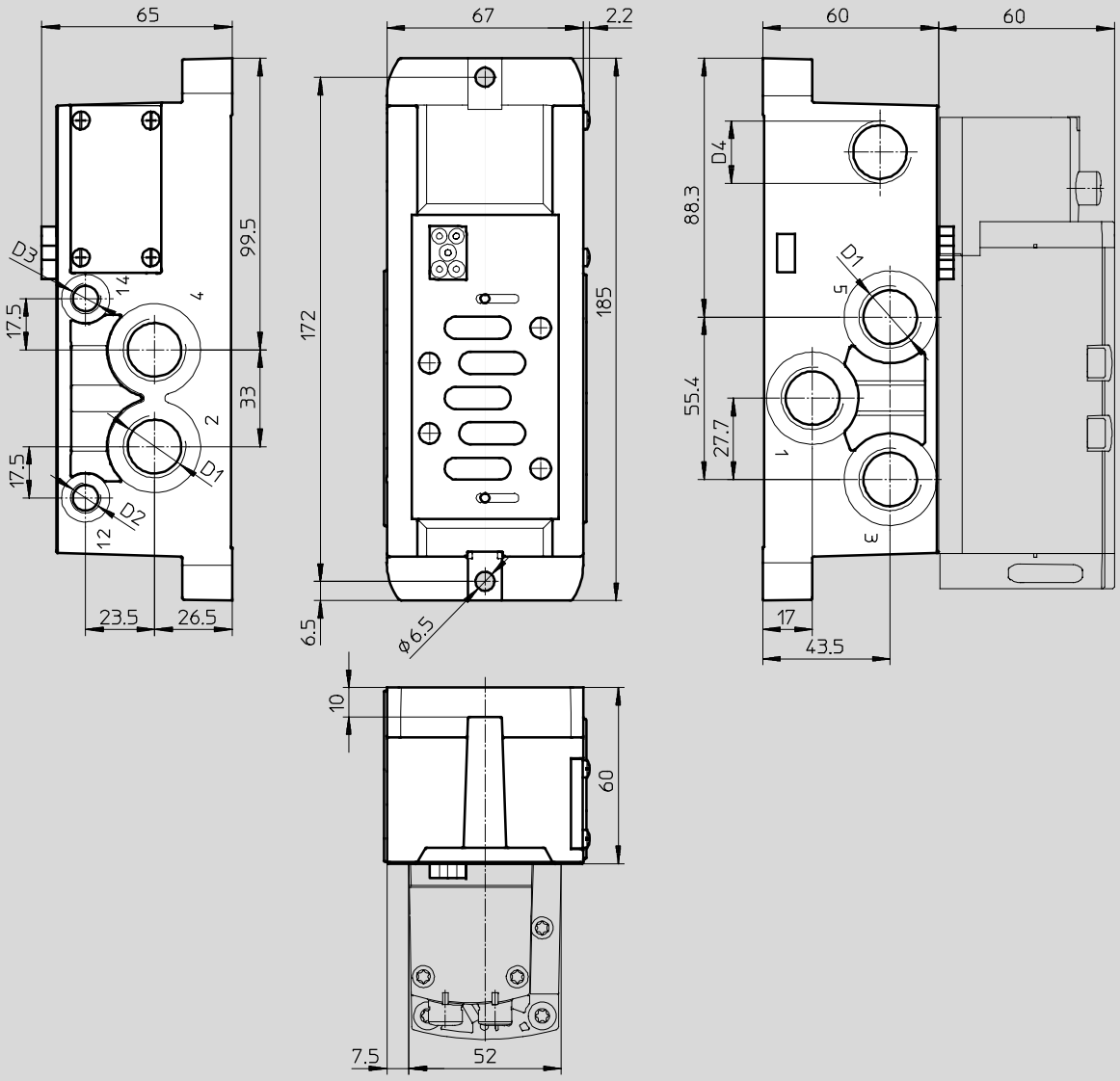
Note: This product conforms to ISO 1179-1 and to ISO 228-1

Note

Electrical connection
- VABS-...-K1: open end
- VABS-...-C1: spring-loaded terminal

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

Individual sub-base with spring-loaded terminal or for self-assembly, width 52 mm



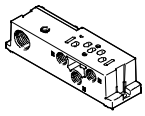
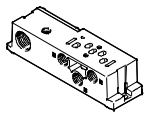
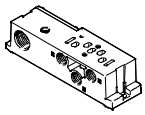
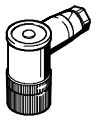
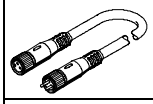
Type	D1	D2	D3	D4
External pilot air supply				
VABS-S2-2S-N12-K1	½" NPT	⅛" NPT	⅛" NPT	M20x1.5
VABS-S2-2S-N12-C1	½" NPT	⅛" NPT	⅛" NPT	M20x1.5
Internal pilot air supply				
VABS-S2-2S-N12-B-K1	½" NPT	⅛" NPT	–	M20x1.5
VABS-S2-2S-N12-B-C1	½" NPT	⅛" NPT	–	M20x1.5

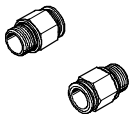
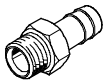
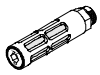
Note: This product conforms to ISO 1179-1 and to ISO 228-1

Note

Electrical connection

- VABS-...-K1: open end
- VABS-...-C1: spring-loaded terminal

Ordering data					
	Description		Width	Part No.	Type
Individual sub-base, port pattern to ISO 15407-2, electrical connection via cable terminals					
	Threaded connection, internal pilot air supply	Connections 1/8" NPT	18 mm	**541068**	**VABS-S4-2S-N18-B-K2**
		Connections 1/4" NPT	26 mm	**541066**	**VABS-S4-1S-N14-B-K2**
	Threaded connection, external pilot air supply	Connections 1/8" NPT	18 mm	**539724**	**VABS-S4-2S-N18-K2**
		Connections 1/4" NPT	26 mm	**539726**	**VABS-S4-1S-N14-K2**
Individual sub-base, port pattern to ISO 5599-2, electrical connection via cable (open end)					
	Threaded connection, internal pilot air supply	Connections 3/8" NPT	42 mm	**546103**	**VABS-S2-1S-N38-B-K1**
		Connections 1/2" NPT	52 mm	**555642**	**VABS-S2-2S-N12-B-K1**
	Threaded connection, external pilot air supply	Connections 3/8" NPT	42 mm	**546100**	**VABS-S2-1S-N38-K1**
		Connections 1/2" NPT	52 mm	**555637**	**VABS-S2-2S-N12-K1**
Individual sub-base, port pattern to ISO 5599-2, electrical connection via spring-loaded terminal					
	Threaded connection, internal pilot air supply	Connections 3/8" NPT	42 mm	**546763**	**VABS-S2-1S-N38-B-C1**
		Connections 1/2" NPT	52 mm	**555644**	**VABS-S2-2S-N12-B-C1**
	Threaded connection, external pilot air supply	Connections 3/8" NPT	42 mm	**546761**	**VABS-S2-1S-N38-C1**
		Connections 1/2" NPT	52 mm	**555639**	**VABS-S2-2S-N12-C1**
Plug socket for electrical connection of individual valves					
	Angled socket, 4-pin, screw terminal, union nut M12			**185498**	**SEA-M12-4WD-PG7**
Connecting cable for electrical connection of individual valves at the individual electrical connection					
	Modular system for connecting cables			–	**NEBU-...** ➔ Internet: nebu
Illuminating seal for plug pattern DIN EN 175301-803, type C					Technical data ➔ Internet: meb-ld
	12 ... 24 V DC			**151717**	**MEB-LD-12-24DC**
	230 V AC			**151718**	**MEB-LD-230AC**
Pneumatic connection accessories					
A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter **Accessories** ➔ page 132 or on the Internet via the individual search terms: **Internet** ➔ connection technology, silencer, blanking plug					

Ordering data				
	Description		Part No.	Type
Push-in fitting				
	Connecting thread ¼" NPT for tubing O.D.	½"	**190681**	**QS-¼-½-U**
		⅜"	**153611**	**QS-¼-⅜-U**
		5/16"	**153609**	**QS-¼-5/16-U**
	Connecting thread ⅛" NPT for tubing O.D.	⅜"	**190679**	**QS-⅛-⅜-U**
		¼"	**153605**	**QS-⅛-¼-U**
		5/16"	**153608**	**QS-⅛-5/16-U**
	Connecting thread ⅜" NPT for tubing O.D.	½"	**153614**	**QS-⅜-½-U**
		⅜"	**153612**	**QS-⅜-⅜-U**
	Connecting thread ½" NPT for tubing O.D.	⅝"	**190682**	**QS-½-⅝-U**
		½"	**153615**	**QS-½-½-U**
Female hose connector				
	For right-hand end plate (connecting thread NPT)	¾"	**564848**	**N-¾-P-19-NPT**
		R1	**752414**	**N-1-P-19-R-NPT**
	For adapter plate (connecting thread NPT)	R1		
Silencer				
	Connecting thread NPT	⅛"	**12638**	**U-⅛-B-NPT**
		¼"	**12639**	**U-¼-B-NPT**
		½"	**12741**	**U-½-B-NPT**
		¾"	**566823**	**U-¾-B-NPT**
		1"	**571280**	**U-1-NPT-SA**
Blanking plug				
	Connecting thread NPT	⅛"	**173985**	**B-⅛-NPT**
		¼"	**174165**	**B-¼-NPT**
		½"	**31785**	**B-½-NPT**
		¾"	**31786**	**B-¾-NPT**
		1"	**31787**	**B-1-NPT**
Other pneumatic connection accessories				
A selection of possible fittings, blanking plugs and silencers can be found on the Internet via the individual search terms: **Internet** ➔ connection technology, silencer, blanking plug				