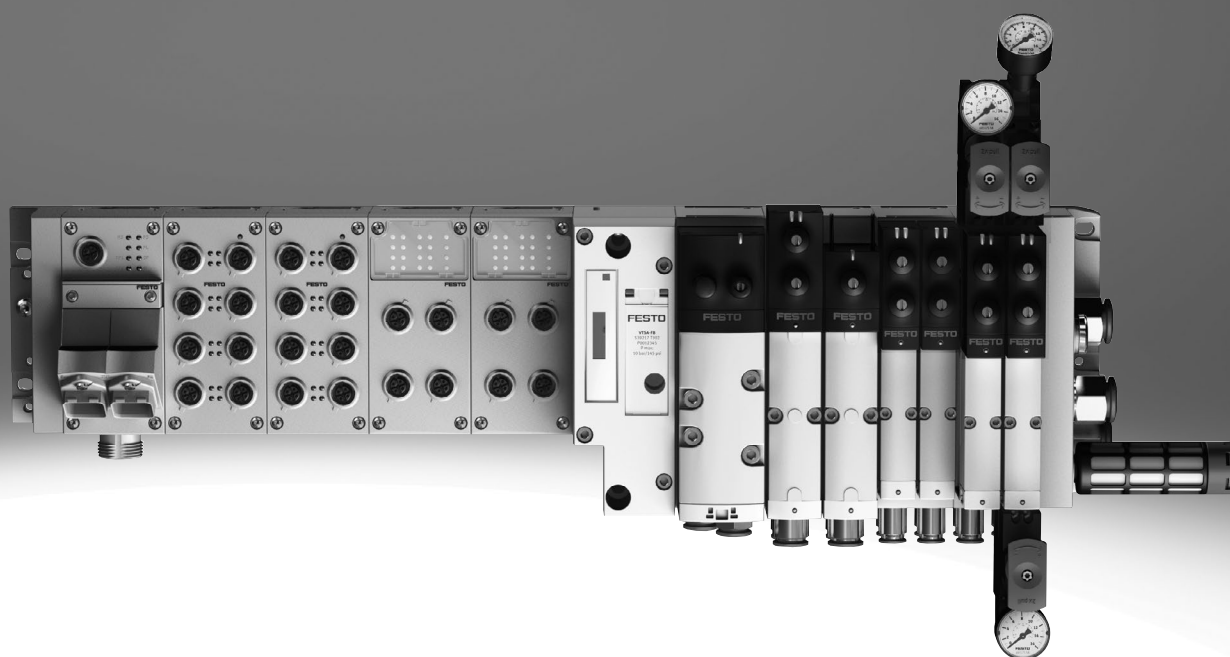
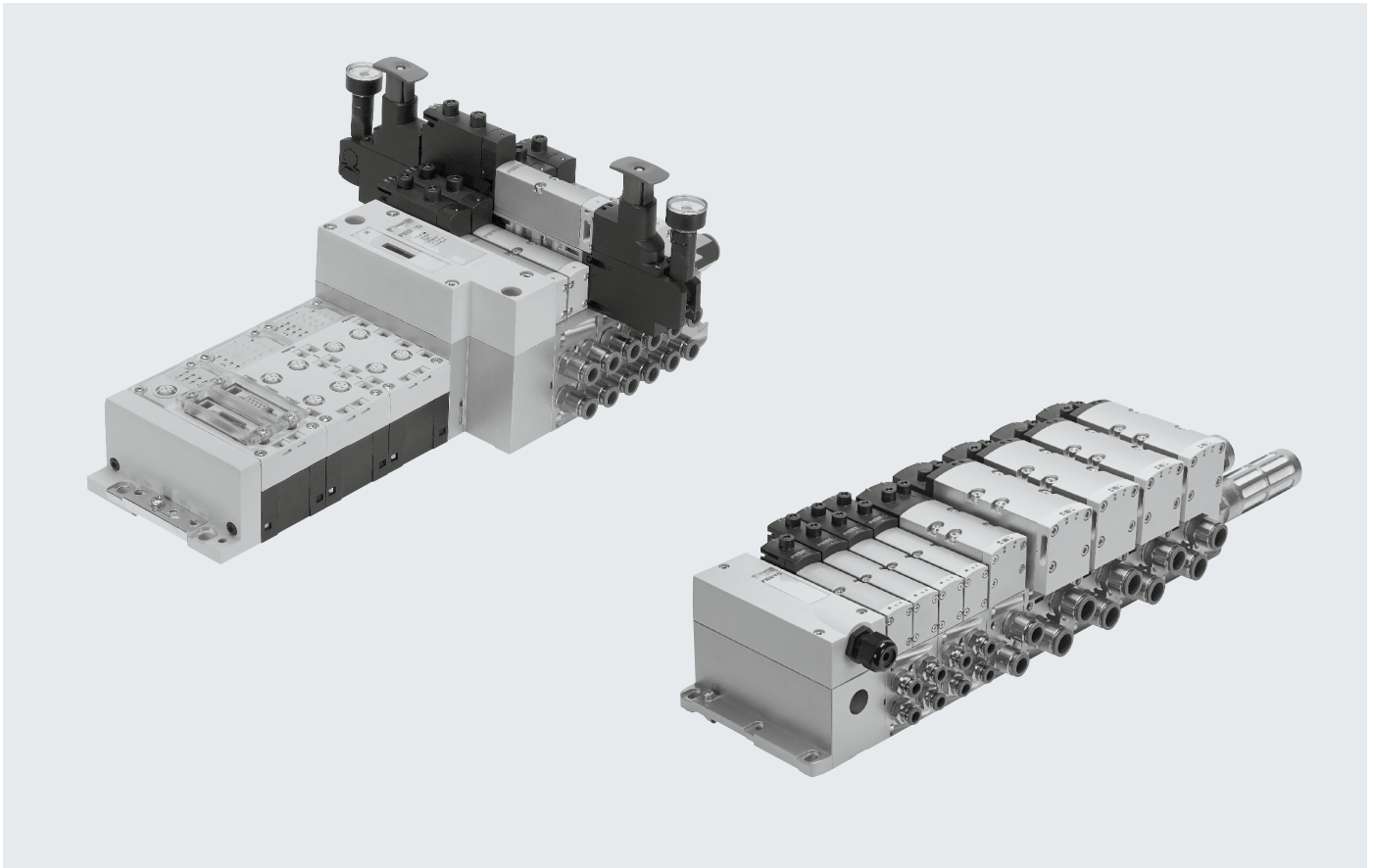


## Valve terminals VTSA

**FESTO**



## Key features



### Innovative

- High-performance valves in a sturdy metal housing
- Five 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 electrical peripherals CPX. This means:
  - Forward-looking internal communication system for actuating the valves and CPX modules
  - Four valve sizes on one valve terminal without adapters
  - Integration of smart valve functions with VTSA-F-CB
- Valve functions for integration in control architectures of higher categories to EN ISO 13849-1

### Versatile

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

#### Valve terminal VTSA-F-CB

- Serial communication in the pneumatic part
- A maximum of 7 voltage zones (6 of which via PROFIsafe shut-off module and one additional voltage zone via Uval)
- Up to 24 solenoid coils per voltage zone
- Up to 96 valve positions and up to 64 interlinking blocks per valve terminal

### Reliable

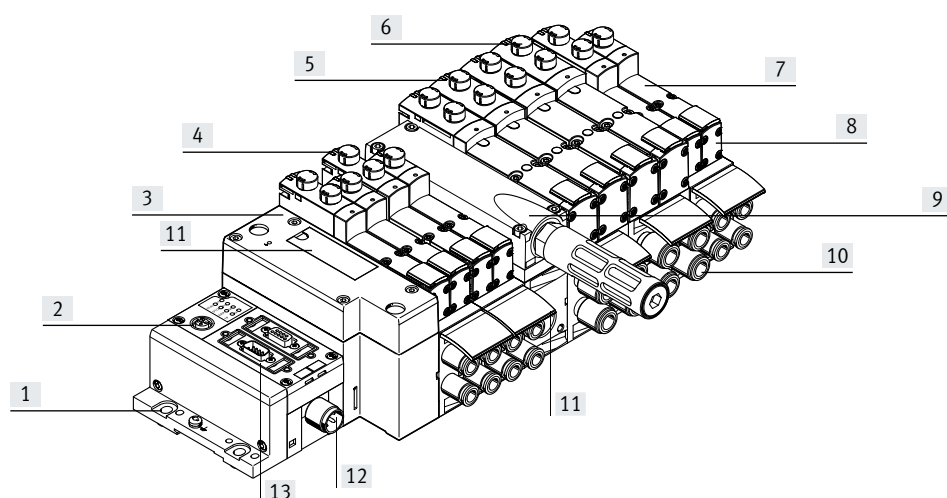
- Sturdy and durable metal components
  - Valves
  - Manifold sub-bases
  - Seals
- Fast troubleshooting with LEDs on the valves and diagnostics via fieldbus
- Reliable servicing thanks to valves that can be replaced quickly and easily
- Manual override, either non-detenting, non-detenting/detenting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

### Easy to install

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



## Key features



- |                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>[1] Quick to mount: directly using screws or DIN rail</p> <p>[2] CPX diagnostic interface for handheld devices (channel-oriented diagnostics down to the individual valve)</p> <p>[3] Pneumatic interface to CPX</p> <p>[4] Width 18 mm, 26 mm, 42 mm and 52 mm can be combined on a single valve terminal without adapter</p> | <p>[5] Reduced downtimes: on-site LED diagnostics</p> <p>[6] Safe operation: manual override non-detenting, non-detenting/de-tenting or concealed</p> <p>[7] Versatile: 32 valve positions/32 solenoid coils<br/>One valve series for a wide range of flow rates</p> <p>[8] Comprehensive range of valve functions</p> | <p>[9] Modular: Pressure zone creation, additional exhaust and supply ports possible using supply module</p> <p>[10] Practical: large connections, flow-optimised ducts, sturdy metal threads or pre-assembled push-in connections for compressed air tubing with standardised O.D.</p> <p>[11] Convenient: large inscription labels</p> <p>[12] Reliable: valves, outputs and logic voltage can be switched off separately</p> | <p>[13] Simple electrical connections</p> <ul style="list-style-type: none"> <li>– Fieldbus interface via CPX</li> <li>– Multi-pin plug connection with pre-assembled cable or terminal strip (Cage Clamp®)</li> <li>– Control block via CPX</li> <li>– AS-Interface</li> <li>– Individual connection</li> <li>– IO-Link®</li> <li>– I-Port</li> <li>– AP interface</li> </ul> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Equipment options

## Valve functions

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

## Key features

### Connection variants

#### Individual valve on individual sub-base, 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

#### Individual valve on individual sub-base, square plug or plug-in

- With integrated switching position sensing
- Electrical connection to EN 175301-803 type C (square plug) or

- For configuration by the user via 4-pin spring-loaded terminal or
- Cable with open end

#### Fieldbus interface CPX terminal

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

#### Fieldbus interface CPX terminal with VTSA-F-CB

- Serial communication in the pneumatic part
- Up to 6 voltage zones for load voltage of the valves in the pneumatic part
- Flexible shutdown of up to 3 voltage zones in the CPX interfaces, either internally with PROFIsafe or externally by 3x M12

- Pilot air switching valve or intermediate plate for switchable pilot air with integrated pressure sensor and connection via internal bus
- Soft-start valve with integrated pressure sensor and connection via internal bus

- Vacuum generator with 3 performance settings, air-saving circuit, optional increased ejection rate (power ejector pulse) and connection via internal bus, parameters can be configured via the CPX system

#### Valve terminal with individual connection

- Max. 20 valve positions/max. 20 solenoid coils
- Any compressed air supply
- Any number of pressure zones

#### Valve terminal with multi-pin plug connection:

- Max. 32 valve positions/max. 32 solenoid coils
- Parallel, modular valve links

- Any compressed air supply
- Any number of pressure zones

#### AS-Interface

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

#### I-Port

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

#### IO-Link®

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

#### AP interface

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

#### Combinable

- Width 18 mm: flow rate of VTSA up to 550 l/min, VTSA-F up to 700 l/min
- Width 26 mm: flow rate of VTSA up to 1100 l/min, VTSA-F up to 1350 l/min

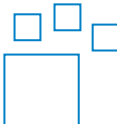
- Width 42 mm: flow rate of VTSA up to 1300 l/min, VTSA-F up to 1860 l/min
- Width 52 mm: valve flow rate up to 2900 l/min

- Width 18 mm, 26 mm, 42 mm, 52 mm can be combined on a single valve terminal (not for VTSA-F-CB)

Valve terminal VTSA complies with

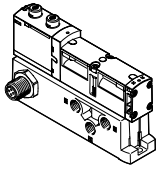
- ISO 15407-2 for width 18 and 26 mm
- ISO 5599-2 for width 42 and 52 mm

## Key features

| Valve terminal configurator                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                 |                                                                                                                                                                                                               | → Internet: <a href="http://www.festo.com">www.festo.com</a>                                                                                                                                                            |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| General                                                                                                                                                                                                                                                                                                                       | VTSA                                                                                                                                                                                            | VTSA-F                                                                                                                                                                                                        | VTSA-F-CB                                                                                                                                                                                                               |              |
| <p>A valve terminal configurator is available to help you select a suitable VTSA valve terminal, making it much easier to order the right product.</p> <p>The valve terminals are assembled according to your order specification and are individually checked. This reduces assembly and installation time to a minimum.</p> | <ul style="list-style-type: none"><li>Valve terminal to ISO 15407-2 and ISO 5599-2 (flow rate: standard).</li><li>Parallel communication between CPX module and switching valves VTSA</li></ul> | <ul style="list-style-type: none"><li>Valve terminal, flow rate-optimised (interlinking blocks) (flow rate: increased).</li><li>Parallel communication between CPX module and switching valves VTSA</li></ul> | <ul style="list-style-type: none"><li>Valve terminal: optimised in terms of flow rate and communication (flow rate: increased).</li><li>Serial communication between the CPX module and selected VTSA modules</li></ul> |              |
|                                                                                                                                                                                                                                                                                                                               | Order a valve terminal VTSA using the order code:                                                                                                                                               | Order a valve terminal VTSA-F using the order code:                                                                                                                                                           | Order a valve terminal VTSA-F-CB using the order code:                                                                                                                                                                  |              |
|                                                                                                                                                                                                                                                                                                                               | Ordering system for VTSA<br>→ Internet: <a href="http://vtsa">vtsa</a>                                                                                                                          | Ordering system for VTSA-F<br>→ Internet: <a href="http://vtsa-f">vtsa-f</a>                                                                                                                                  | Ordering system for VTSA-F-CB<br>→ Internet: <a href="http://vtsa-f-cb">vtsa-f-cb</a>                                                                                                                                   |              |
|                                                                                                                                                                                                                                                                                                                               | Ordering system for CPX<br>→ Internet: <a href="http://cpx">cpx</a>                                                                                                                             | Ordering system for CPX<br>→ Internet: <a href="http://cpx">cpx</a>                                                                                                                                           | Ordering system for CPX<br>→ Internet: <a href="http://cpx">cpx</a>                                                                                                                                                     |              |
| Ordering data – Product options                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                 |                                                                                                                                                                                                               |                                                                                                                                                                                                                         |              |
|                                                                                                                                                                                                                                             | Configurable product                                                                                                                                                                            | The configurator can be found at                                                                                                                                                                              | Part no.                                                                                                                                                                                                                | Type         |
|                                                                                                                                                                                                                                                                                                                               | This product and all its product options can be ordered using the configurator.                                                                                                                 | → <a href="http://www.festo.com/catalogue/...">www.festo.com/catalogue/...</a><br>Enter the part number or the type.                                                                                          | 539215                                                                                                                                                                                                                  | VTSA-MP      |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                 |                                                                                                                                                                                                               | 547963                                                                                                                                                                                                                  | VTSA-F-MP    |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                 |                                                                                                                                                                                                               | 539217                                                                                                                                                                                                                  | VTSA-FB      |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                 |                                                                                                                                                                                                               | 8130716                                                                                                                                                                                                                 | VTSA-FB-AP   |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                 |                                                                                                                                                                                                               | 547965                                                                                                                                                                                                                  | VTSA-F-FB    |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                 |                                                                                                                                                                                                               | 8130719                                                                                                                                                                                                                 | VTSA-F-FB-AP |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                 |                                                                                                                                                                                                               | 555564                                                                                                                                                                                                                  | VTSA-ASI     |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                 |                                                                                                                                                                                                               | 555566                                                                                                                                                                                                                  | VTSA-F-ASI   |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                 |                                                                                                                                                                                                               | 8073100                                                                                                                                                                                                                 | VTSA-F-CB    |
|                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                 | 8130722                                                                                                                                                                                                       | VTSA-F-CB-AP                                                                                                                                                                                                            |              |

## Key features

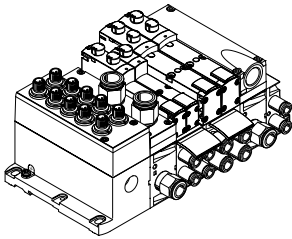
### Individual pneumatic connection



Valves on individual sub-bases up to width 52 mm can be used with actuators that are 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, which are configured by the user.

### Valve terminal with individual electrical connection

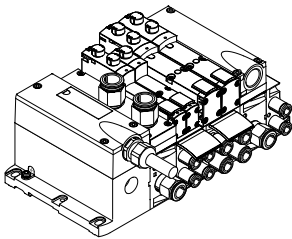


Control signals from the controller to the valve terminal are transmitted via an individual connecting cable.

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

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

### Valve terminal with multi-pin plug connection:



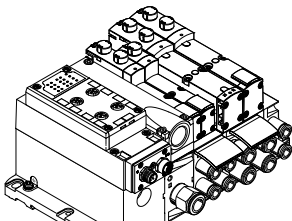
Control signals from the controller to the valve terminal are transmitted via a pre-assembled multi-core cable or a multi-pin plug connection assembled by the user (spring-loaded terminal). This substantially reduces installation time.

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

#### Variants

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

### AS-Interface connection



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

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

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

#### More information

→ Internet: as-interface

#### Note

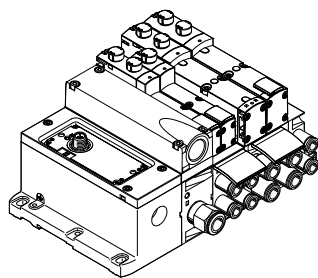
The valve terminal VTSA/VTSA-F with AS-Interface connection is based on the same electrical links as the valve terminal with multi-pin plug connection. This means a valve terminal with multi-pin plug connection can be converted using an AS-Interface module (→ page 155). The technical specifications of the AS-Interface system must be observed in this case.

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→ Internet: as-interface

## Key features

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

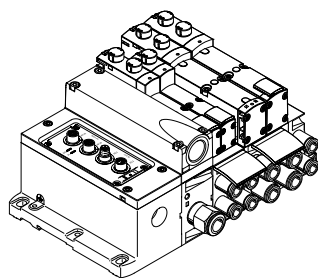


The connection to a higher-order controller can be achieved by:

- Connection to an I-Port master from Festo (e.g. CPX-CTEL)
- Direct mounting of a bus node on the I-Port interface
- Connection to an IO-Link master (in IO-Link® mode)

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

### Valve terminal with AP interface

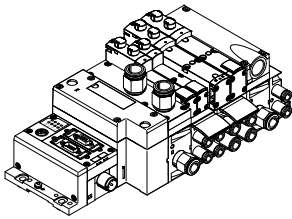


Control signals from the controller to the valve terminal are transmitted via the AP bus protocol from Festo.

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

## Key features

### Valve terminal with fieldbus interface from the CPX system



An integrated fieldbus node manages the communication connection with a higher-order PLC. This enables a space-saving pneumatic and electrical solution to be implemented. Valve terminals with fieldbus interfaces from the CPX system can be configured with up to 16 manifold sub-bases. With 2 solenoid coils per connection, up to 32 solenoid coils can thus be actuated.

There is an extended range of functions in combination with the CPX system and the smart valve terminal VTSA-F-CB:

- Serial communication in the pneumatic part
- Several voltage zones for load voltage of the valves in the pneumatic part
- Flexible shutdown of up to 3 voltage zones in the CPX interface, either internally with PROFIsafe or externally by 3x M12
- Flexible zoning for electrical and pneumatic sections, for decentralised control of various system/machine areas

VTSA/VTSA-F versions

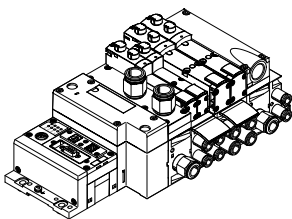
- PROFIBUS
- DeviceNet®
- CANopen
- CC-Link®
- EtherNet/IP
- EtherCAT®
- Modbus TCP
- PROFINET
- POWERLINK
- Sercos III

VTSA-F-CB versions

- PROFIBUS
- EtherNet/IP
- EtherCAT®
- PROFINET

→ Internet: cpx

### Valve terminal with control block connection from the CPX system



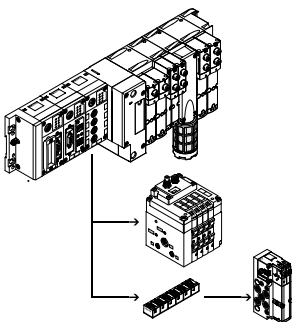
A controller integrated in the Festo valve terminal enables the construction of stand-alone control units with protection to IP65 without a control cabinet thanks to two different operating modes.

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 valve terminals MPA-S and CPV can be connected.

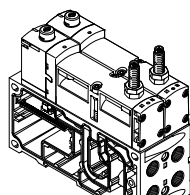
The maximum length of the CP string extension is 10 metres, which means that the extension modules can be mounted directly on-site. All the required electrical signals are transmitted via the CP cable, which in turn means that no further installation is needed on the extension module.

One CP string offers:

- 32 input signals
- 32 output signals for output stages 24 V DC or solenoid coils
- Logic and sensor supply for the input modules
- Load voltage supply for the valve terminals
- Logic supply for the output module

→ Internet: cpi

## Key features – Valves

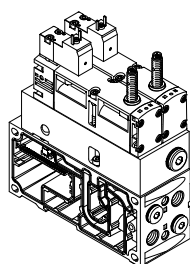
**Solenoid valve with switching position sensing for VTSA/VTSA-F/VTSA-F-CB, width 18 mm, 26 mm**

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

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

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

→ Page 160

**Control block with safety function for VTSA/VTSA-F, width 26 mm**

5/2-way solenoid valve

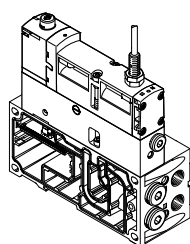
These valves are used for special applications, for example for:

- Protection against unexpected start-up
- Safe reversing
- Drives in manually loaded machining jigs

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

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

→ Page 170

**Intermediate plate for switchable pilot air for VTSA/VTSA-F, width 18 mm, 26 mm**

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

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

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

→ Page 177

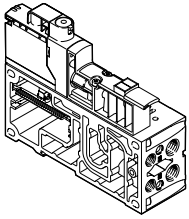
 **Note**

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



## Key features – Valves

### Pilot air switching valve for VTSA-F-CB with serial communication



The pilot air switching valve is used for pressurising and exhausting duct 14 for one pressure zone or the entire valve terminal VTSA-F-CB.

In combination with the CPX system, the pilot air switching valve enables additional functions:

- Comprehensive diagnostics
- Transmission of analogue signals
- The elimination of cable connections between the pneumatic and electrical sections

In combination with the CPX system, an integrated pressure sensor and integrated feedback enable wireless detection of the status of the pilot air switching valve.

The pilot air switching valve can be used to implement the safety function “Protection against unexpected start-up”.

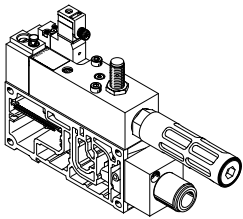
The pilot air switching valve can be supplied with compressed air internally via the valve terminal or externally via duct 2.

The hybrid manifold sub-base can be equipped both with an 18 mm and a 26 mm solenoid valve.

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

→ Page 187

### Soft-start valve for VTSA/VTSA-F, module width 43 mm



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

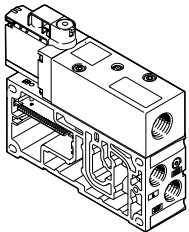
The valve can optionally be ordered with a sensor that monitors switching of the soft-start valve. The soft-start valve can supply the valve terminal or one or more pressure zones with working air.

The pressure build-up for each pressure zone is optimised for the application directly at the valve terminal by setting the switch-over pressure and the filling time.

A maximum of 5 soft-start valves can thus be integrated on one valve terminal.

→ Page 193

### Soft-start valve for VTSA-F-CB with serial communication



The soft-start valve pressurises/exhausts duct 1 (working air) of the valve terminal, or one or more pressure zones.

The soft-start valve enables additional functions in combination with the CPX system:

- Comprehensive diagnostics
- Transmission of analogue signals
- The elimination of cable connections between the pneumatic and electrical sections of the CPX/VTSA-F-CB

In combination with the CPX system, an integrated pressure sensor and integrated feedback enable wireless detection of the status of the soft-start valve.

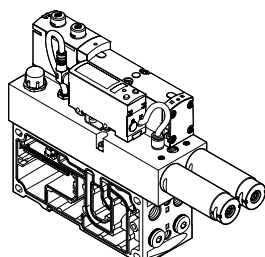
The filling time can be adjusted; the switch-over pressure is set to half the operating pressure. The pressure build-up for each pressure zone can thus be optimised for the application directly at the valve terminal.

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

→ Page 203

## Key features – Valves

## Vacuum block for VTSA-VTSA-F, module width 53 mm



5/3-way solenoid valve, with switching position 12 retained.

The vacuum block is screwed to a manifold sub-base for 2 valve positions, width 26 mm, and thus integrated into the valve terminal VTSA/VTSA-F.

The vacuum block is supplied with power and the vacuum is sensed via a standardised 4-pin M12 plug.

The vacuum block is used in conjunction with a suction gripper to pick up, hold and place components. An adjustable ejector pulse is used for setting the components down.

The vacuum block is equipped with an air saving function.

If the electrical or pneumatic supply fails, the valve moves to switching position 12 "generate vacuum".

→ Page 214

## 5/3-way solenoid valve for special functions

For holding, blocking a movement (mechanically)

5/3-way solenoid valve for special functions; port 2 is pressurised, port 4 exhausted. Switching position 14 is retained (code SA) or switching position 12 is retained (code SE).

Possible applications:

- Using lifting cylinders
- Using rotary cylinders

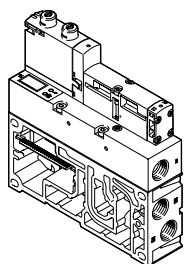
For pressureless switching, self-latching, pneumatic operation

5/3-way solenoid valve for special functions (3 phases). Mid-position is exhausted. Switching position 14 is retained (code SA) or switching position 12 is retained (code SE).

Possible applications:

- Pneumatic manual clamps for devices (inserting stations)

## Integrated vacuum generator for VTSA-F-CB with serial communication



The vacuum generator in combination with the CPX/VTSA-F-CB and FMT (Festo Maintenance Tool) offers additional smart functions:

- Opening and saving of up to four records (on a local computer)
- Teach-in functionality: recording homing runs, gripping and holding the workpiece, and setting it down

- Preventive maintenance: measurement of all vacuum times, comparison with the homing run, warning message if a definable level of deviation is reached
- Locking the ejector pulse: either when a safety function (voltage zone with safe shut-off within the valve terminal) is requested or when there is a fault with the valve load voltage (e.g. undervoltage)

- Switching air-saving function on/off
- Changing the vacuum limits per data record

The vacuum generator is used in conjunction with a suction gripper to pick up, hold and place components. An adjustable ejector pulse is used for setting the components down.

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## Peripherals

### Modular pneumatic peripherals

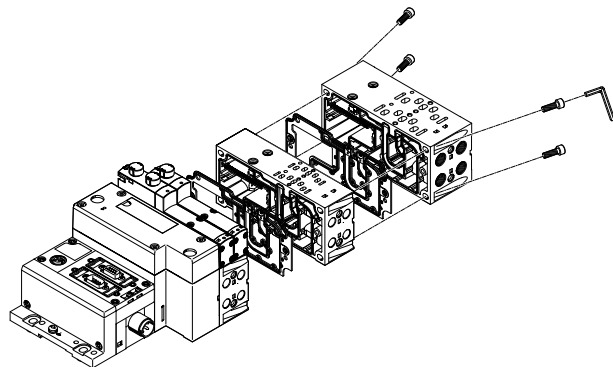
The modular design of the valve terminal VTSA/VTSA-F/VTSA-F-CB enables great flexibility right from the planning stage and offers maximum ease of service in operation.

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

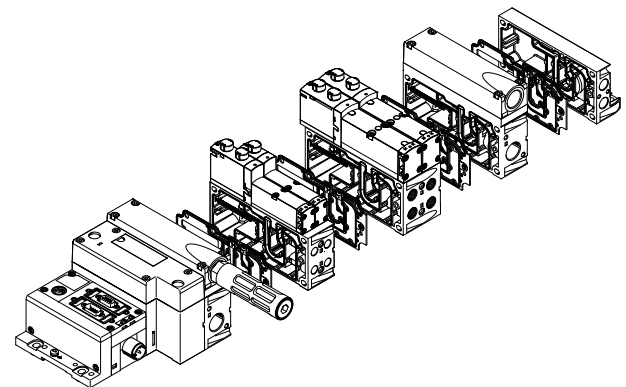
Inside the manifold sub-bases are the connection ducts for supplying compressed air to and exhausting the valve terminal as well as the working ports for the pneumatic cylinders for each valve.

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

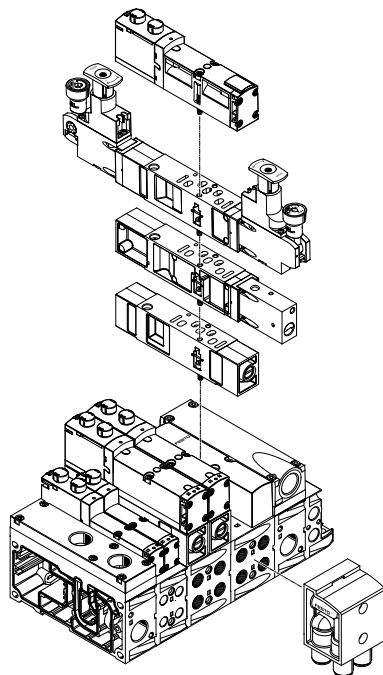
#### Basic system modularity



#### Valve modularity



#### Vertical stacking modularity



## Peripherals

### Modular electrical peripherals

How the valves are actuated depends on whether a multi-pin terminal or fieldbus terminal is used.

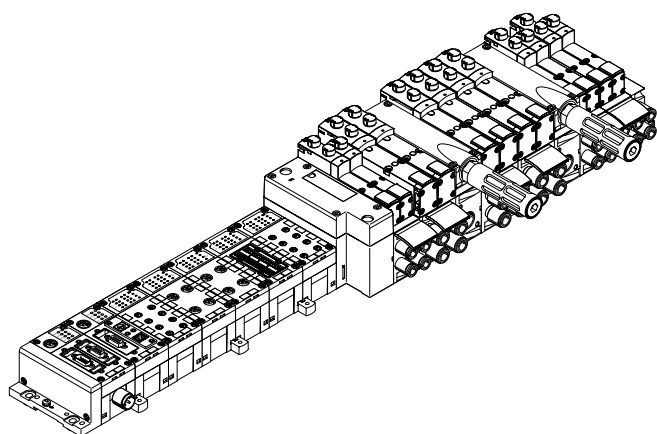
The VTSA/VTSA-F with CPX interface is based on the internal bus system of the CPX and uses this communication system for all solenoid coils and a range of electrical input and output functions.

Parallel links enable the following:

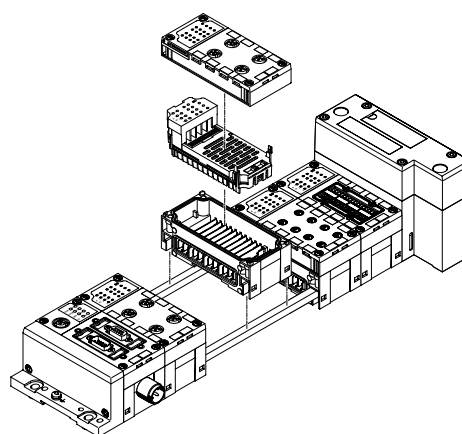
- Transmission of switching information
- Compact design
- Position-based diagnostics
- Separate power supply for valves

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

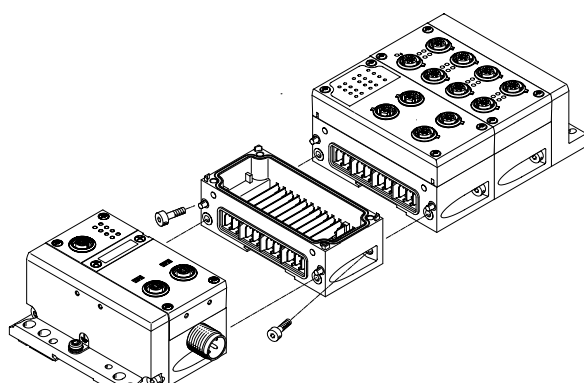
VTSA/VTSA-F with electrical peripherals CPX



Modularity with electrical peripherals CPX



CPX terminal in metal design



The metal CPX modules are mechanically connected using an angled fitting.

The CPX terminal can thus be expanded at any time.

#### Note

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

Peripherals – Pneumatic components

Valve terminal widths

Regardless of the type of control (e.g. multi-pin plug, fieldbus, etc.), valve terminals VTSA/VTSA-F of widths:

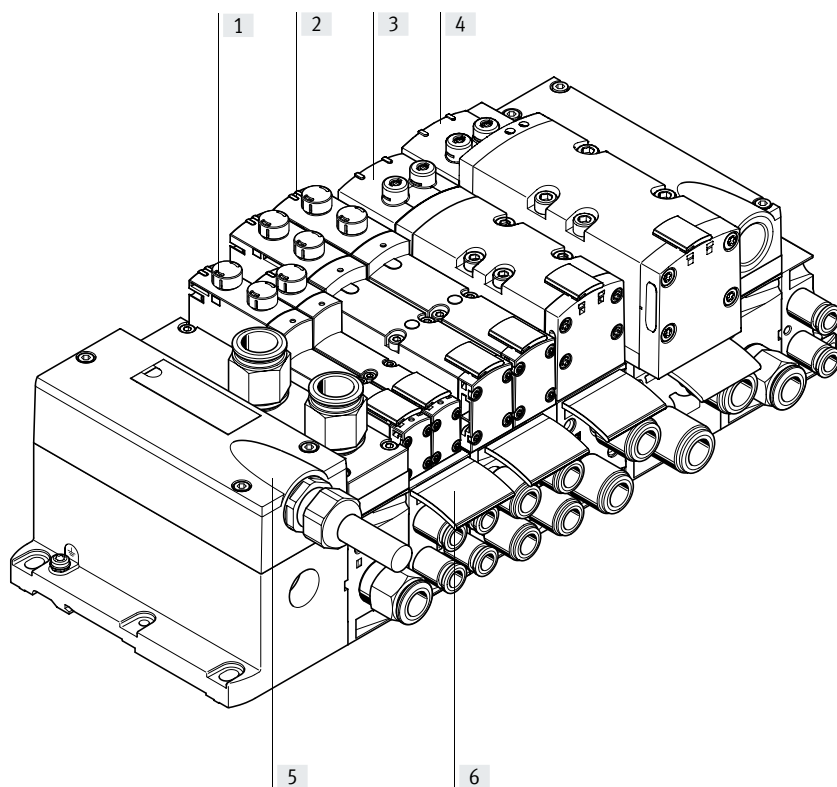
- 18 mm
- 26 mm
- 42 mm
- 52 mm

can be combined without adapters. These four widths can also be used without an adapter for the valve terminal VTSA-F-CB controlled via CPX.

This enables a flow range for the VTSA of:  
400 l/min to 2900 l/min  
For the VTSA-F of:  
700 l/min to 2900 l/min  
and for the VTSA-F-CB of:  
700 l/min to 2900 l/min  
to be covered on one valve terminal.

A wide range of valve functions and vertical stacking components are available for all widths.

The valve terminal VTSA-F-CB is controlled via the CPX pneumatic interface with serial communication. The valve terminal VTSA-F-CB cannot be installed in combination with a valve terminal VTSA/VTSA-F.



|     |                           | Description                                                      | → Page/Internet |
|-----|---------------------------|------------------------------------------------------------------|-----------------|
| [1] | Valve                     | Width 18 mm                                                      | 115             |
| [2] | Valve                     | Width 26 mm                                                      | 123             |
| [3] | Valve                     | Width 42 mm                                                      | 131             |
| [4] | Valve                     | Width 52 mm                                                      | 138             |
| [5] | Multi-pin plug connection | With 24 V DC multi-pin cable (VTSA/VTSA-F only)                  | 154             |
| [6] | Inscription labels        | For manifold sub-base, connecting plate, angled connection plate | 159             |

## Peripherals – Pneumatic components

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

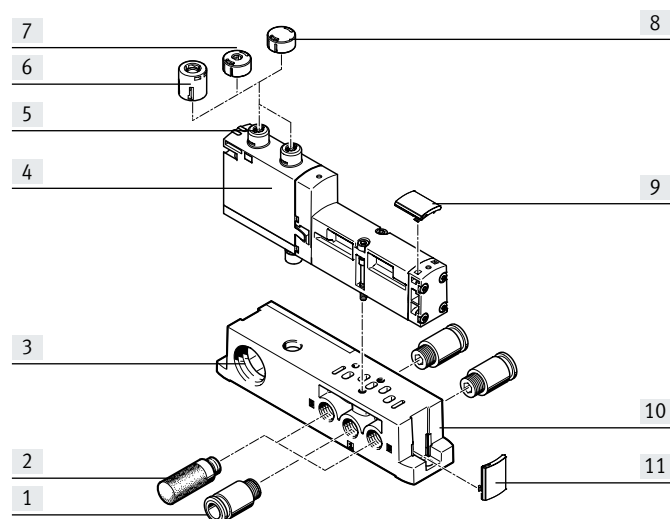
Order code:

- Using individual part numbers

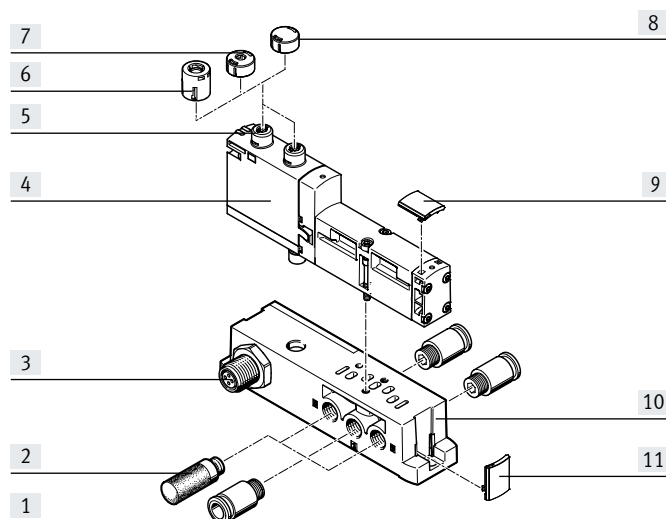
Individual sub-bases can be equipped with any valve.

The electrical connection is established via a standardised 4-pin M12 plug (EN 61076-2-101) or it can be configured by the user via a 4-pin clamped terminal connection/open cable end.

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



Width 18 mm with M12 plug



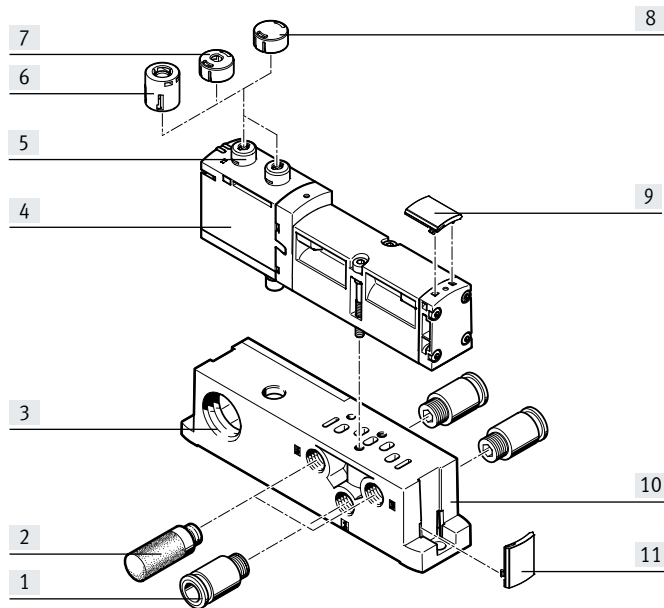
|      |                          | Description                                                            | → Page/Internet |
|------|--------------------------|------------------------------------------------------------------------|-----------------|
| [1]  | Fitting                  | G1/8 for working air/exhaust ports (1, 3, 5) and working ports (2, 4)  | 245             |
| [2]  | Silencer                 | U-1/8-B for exhaust ports (3, 5)                                       | 246             |
| [3]  | Electrical connection    | Spring-loaded terminal, cable (open end) or plug M121, 4-pin           | –               |
| [4]  | Valve VSVA               | Width 18 mm                                                            | 115             |
| [5]  | Manual override          | Non-detenting/detenting, per solenoid coil                             | –               |
| [6]  | Cover cap, heavy duty    | For manual override, non-detenting heavy duty, detenting via accessory | 158             |
| [7]  | Cover cap, coded         | For non-detenting manual override (limited function)                   | 158             |
| [8]  | Cover cap, concealed     | MO concealed by cover cap – operation of MO prevented                  | 158             |
| [9]  | Inscription label holder | For valves                                                             | 159             |
| [10] | Individual sub-base      | For valve VSVA                                                         | 243             |
| [11] | Inscription label holder | For manifold block                                                     | 159             |

1) Only for 24 V DC

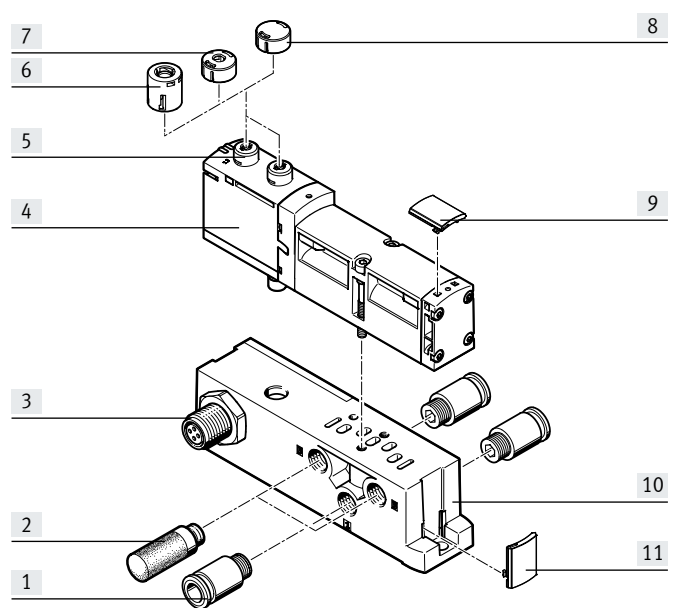
## Peripherals – Pneumatic components

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

With spring-loaded terminal or cable (open end)



With M12 push-in connector



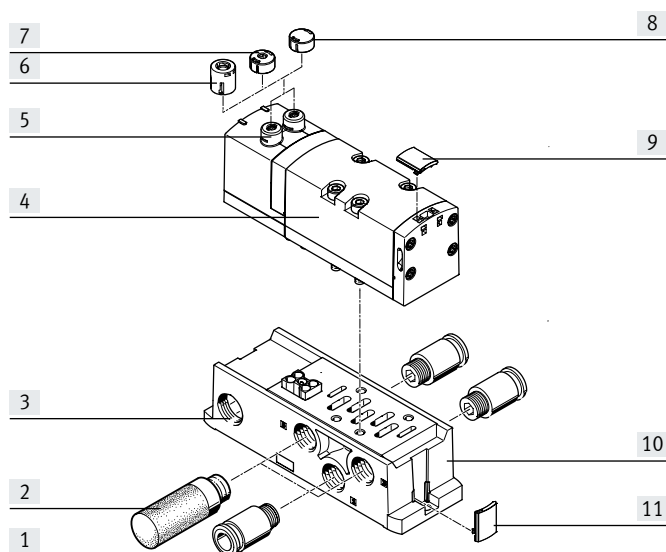
|      |                          | Description                                                            | → Page/Internet |
|------|--------------------------|------------------------------------------------------------------------|-----------------|
| [1]  | Fitting                  | G1/4 for working air/exhaust ports (1, 3, 5) and working ports (2, 4)  | 245             |
| [2]  | Silencer                 | U-1/4-B for exhaust ports (3, 5)                                       | 246             |
| [3]  | Electrical connection    | Spring-loaded terminal, cable (open end) or plug M121, 4-pin           | –               |
| [4]  | Valve VSVA               | Width 26 mm                                                            | 123             |
| [5]  | Manual override          | Non-detenting/detenting, per solenoid coil                             | –               |
| [6]  | Cover cap, heavy duty    | For manual override, non-detenting heavy duty, detenting via accessory | 158             |
| [7]  | Cover cap, coded         | For non-detenting manual override (limited function)                   | 158             |
| [8]  | Cover cap, concealed     | MO concealed by cover cap – operation of MO prevented                  | 158             |
| [9]  | Inscription label holder | For valves                                                             | 159             |
| [10] | Individual sub-base      | For valve VSVA                                                         | 243             |
| [11] | Inscription label holder | For manifold block                                                     | 159             |

1) Only for 24 V DC

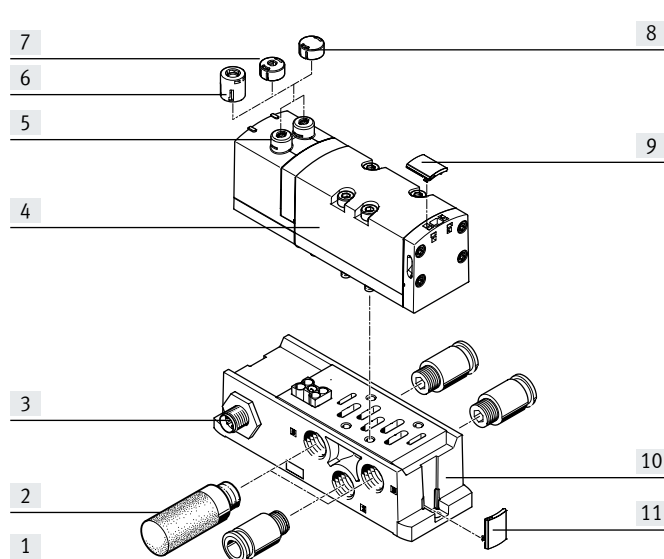
## Peripherals – Pneumatic components

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

With spring-loaded terminal or cable (open end)



With M12 plug



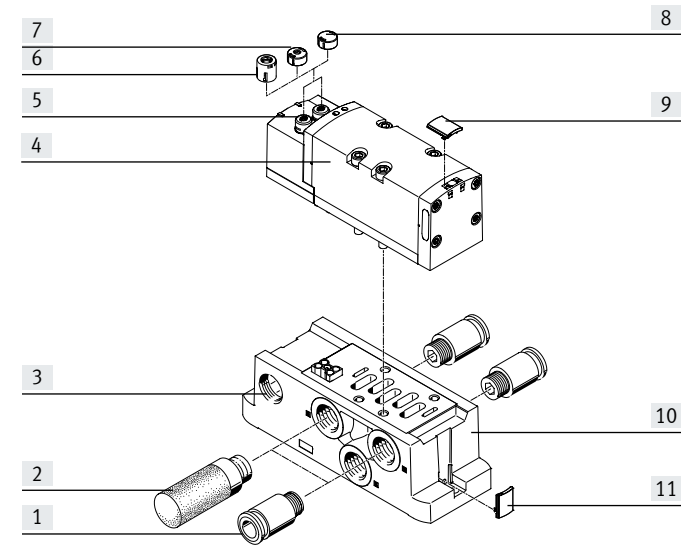
|      |                          | Description                                                            | → Page/Internet |
|------|--------------------------|------------------------------------------------------------------------|-----------------|
| [1]  | Fitting                  | G3/8 for working air/exhaust ports (1, 3, 5) and working ports (2, 4)  | 245             |
| [2]  | Silencer                 | U-3/8-B for exhaust ports (3, 5)                                       | 246             |
| [3]  | Electrical connection    | Spring-loaded terminal, cable (open end) or plug M121), 4-pin          | –               |
| [4]  | Valve VSVA               | Width 42 mm                                                            | 131             |
| [5]  | Manual override          | Non-detenting/detenting, per solenoid coil                             | –               |
| [6]  | Cover cap, heavy duty    | For manual override, non-detenting heavy duty, detenting via accessory | 158             |
| [7]  | Cover cap, coded         | For non-detenting manual override (limited function)                   | 158             |
| [8]  | Cover cap, concealed     | MO concealed by cover cap – operation of MO prevented                  | 158             |
| [9]  | Inscription label holder | For valves                                                             | 159             |
| [10] | Individual sub-base      | For valve VSVA                                                         | 243             |
| [11] | Inscription label holder | For manifold block                                                     | 159             |

1) Only for 24 V DC

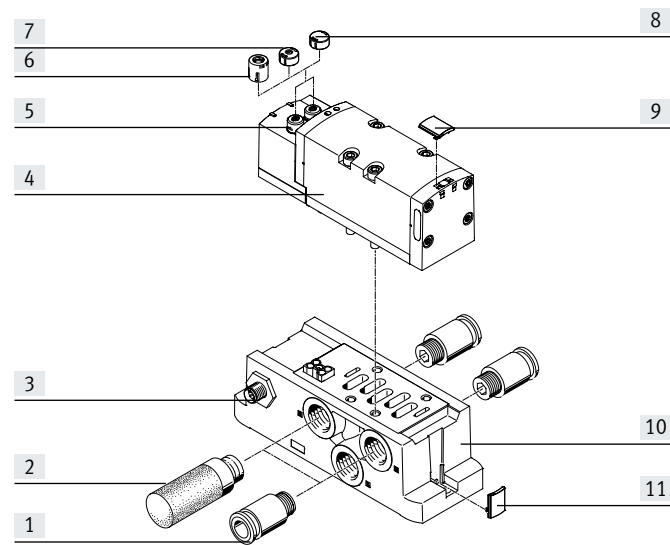


Peripherals – Pneumatic components

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



With M12 plug



|      |                          | Description                                                            | → Page/Internet |
|------|--------------------------|------------------------------------------------------------------------|-----------------|
| [1]  | Fitting                  | G1/2 for supply air/exhaust ports (1, 3, 5) and working ports (2, 4)   | 245             |
| [2]  | Silencer                 | U-1/2-B for exhaust ports (3, 5)                                       | 246             |
| [3]  | Electrical connection    | Spring-loaded terminal, cable (open end) or plug M121), 4-pin          | –               |
| [4]  | Valve VSA                | Width 52 mm                                                            | 138             |
| [5]  | Manual override          | Non-detenting/detenting, per solenoid coil                             | –               |
| [6]  | Cover cap, heavy duty    | For manual override, non-detenting heavy duty, detenting via accessory | 158             |
| [7]  | Cover cap, coded         | For non-detenting manual override (limited function)                   | 158             |
| [8]  | Cover cap, concealed     | MO concealed by cover cap – operation of MO prevented                  | 158             |
| [9]  | Inscription label holder | For valves                                                             | 159             |
| [10] | Individual sub-base      | For valve VSA                                                          | 243             |
| [11] | Inscription label holder | For manifold block                                                     | 159             |

1) Only for 24 V DC

## Peripherals – Pneumatic components

### Pneumatic components of valve terminal VTSA/VTSA-F

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

- 2 single solenoid valves or
  - 2 double solenoid valves
- depending on the size.

The hybrid manifold sub-base makes it possible to use

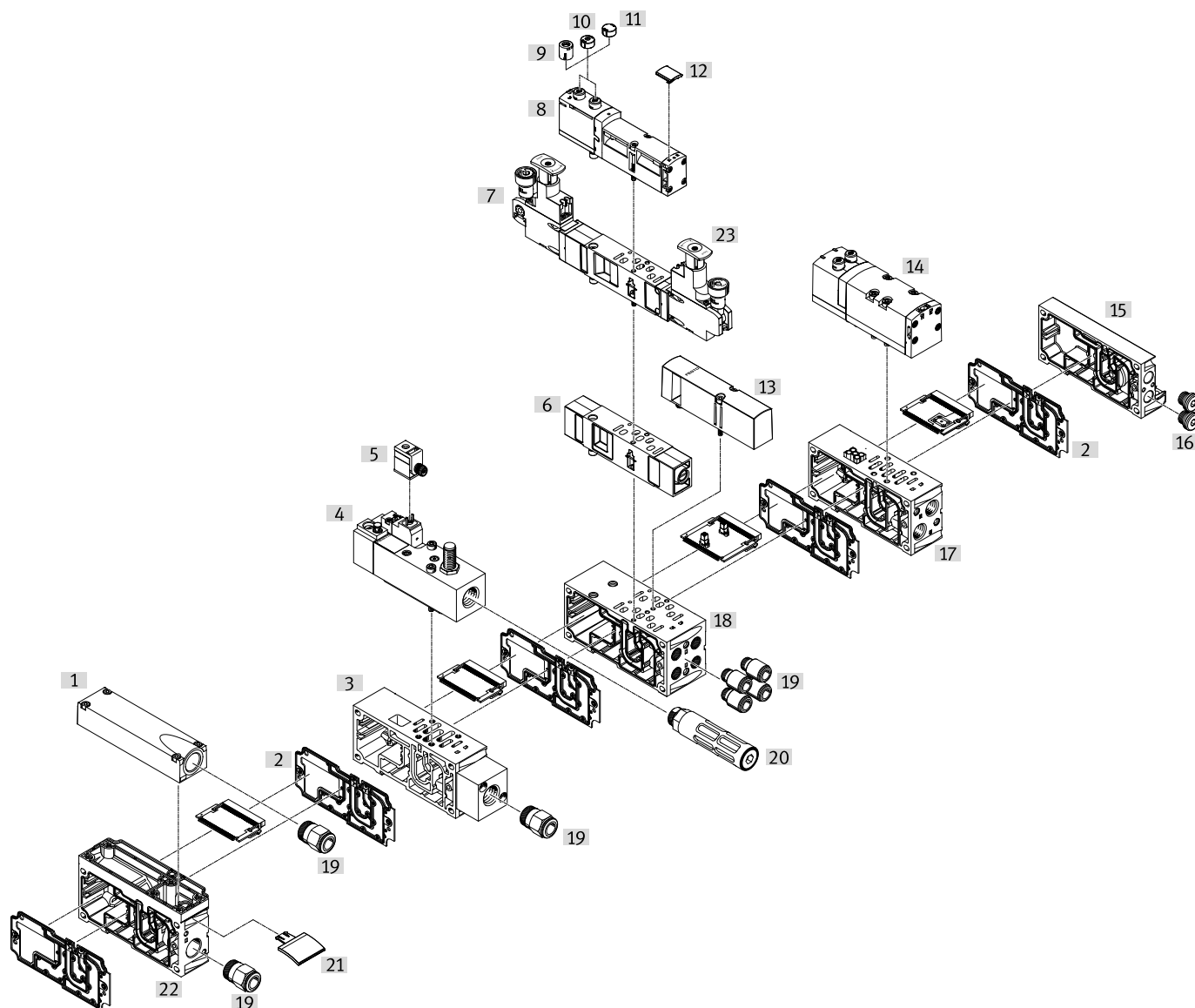
1 double solenoid valve (18 mm) and  
1 double solenoid valve (26 mm)  
together on the same manifold sub-base.

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 cover plate.



## Peripherals – Pneumatic components

| Pneumatic components of valve terminal VTSA/VTSA-F |                                   | Description                                                            | → Page/Internet |
|----------------------------------------------------|-----------------------------------|------------------------------------------------------------------------|-----------------|
| [1]                                                | Exhaust port cover                | For ducted exhaust air (ports 3 and 5 combined)                        | 146             |
| [2]                                                | Duct separation/seal              | –                                                                      | 158             |
| [3]                                                | Manifold sub-base                 | For soft-start valve                                                   | 201             |
| [4]                                                | Soft-start valve                  | For slow and safe pressure build-up                                    | 193             |
| [5]                                                | Plug socket                       | –                                                                      | 202             |
| [6]                                                | Throttle plate                    | –                                                                      | 152             |
| [7]                                                | Pressure regulator plate          | –                                                                      | 147             |
| [8]                                                | Valve                             | Width 18 mm or 26 mm                                                   | 115, 123        |
| [9]                                                | Cover cap, heavy duty             | For manual override, non-detenting heavy duty, detenting via accessory | 158             |
| [10]                                               | Cover cap, coded                  | For non-detenting manual override (limited function)                   | 158             |
| [11]                                               | Cover cap, concealed              | MO concealed by cover cap – operation of MO prevented                  | 158             |
| [12]                                               | Inscription label holder          | For valve                                                              | 159             |
| [13]                                               | Cover plate                       | For unused valve position (vacant position)                            | 152             |
| [14]                                               | Valve                             | Width 42 mm or 52 mm                                                   | 131, 138        |
| [15]                                               | End plate with pilot air selector | –                                                                      | 157             |
| [16]                                               | Blanking plug                     | –                                                                      | 246             |
| [17]                                               | Manifold sub-base VTSA            | For valves with a width of 42 mm or 52 mm                              | 145             |
| [17]                                               | Manifold sub-base VTSA-F          | For valves with a width of 42 mm or 52 mm                              | 145             |
| [18]                                               | Manifold sub-base VTSA            | For valves with a width of 18 mm or 26 mm                              | 145             |
| [18]                                               | Manifold sub-base VTSA-F          | For valves with a width of 18 mm or 26 mm                              | 145             |
| [19]                                               | Fittings                          | –                                                                      | 245             |
| [20]                                               | Silencer                          | –                                                                      | 246             |
| [21]                                               | Inscription label holder          | For manifold sub-base, connecting plate, angled connection plate       | 159             |
| [22]                                               | Supply plate                      | –                                                                      | 146             |
| [23]                                               | Control element                   | Regulator knobs in different versions                                  | 40              |

 **Note**

Special applications for the valve terminal, such as:

- Solenoid valve with switching position sensing
- Control block with safety function
- Pilot air switching valve
- Soft-start valve
- Vacuum block

are listed after → Accessories – General

## Peripherals – Pneumatic components

### Pneumatic components of valve terminal VTSA-F-CB

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

- 2 single solenoid valves or
  - 2 double solenoid valves
- depending on the size.

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

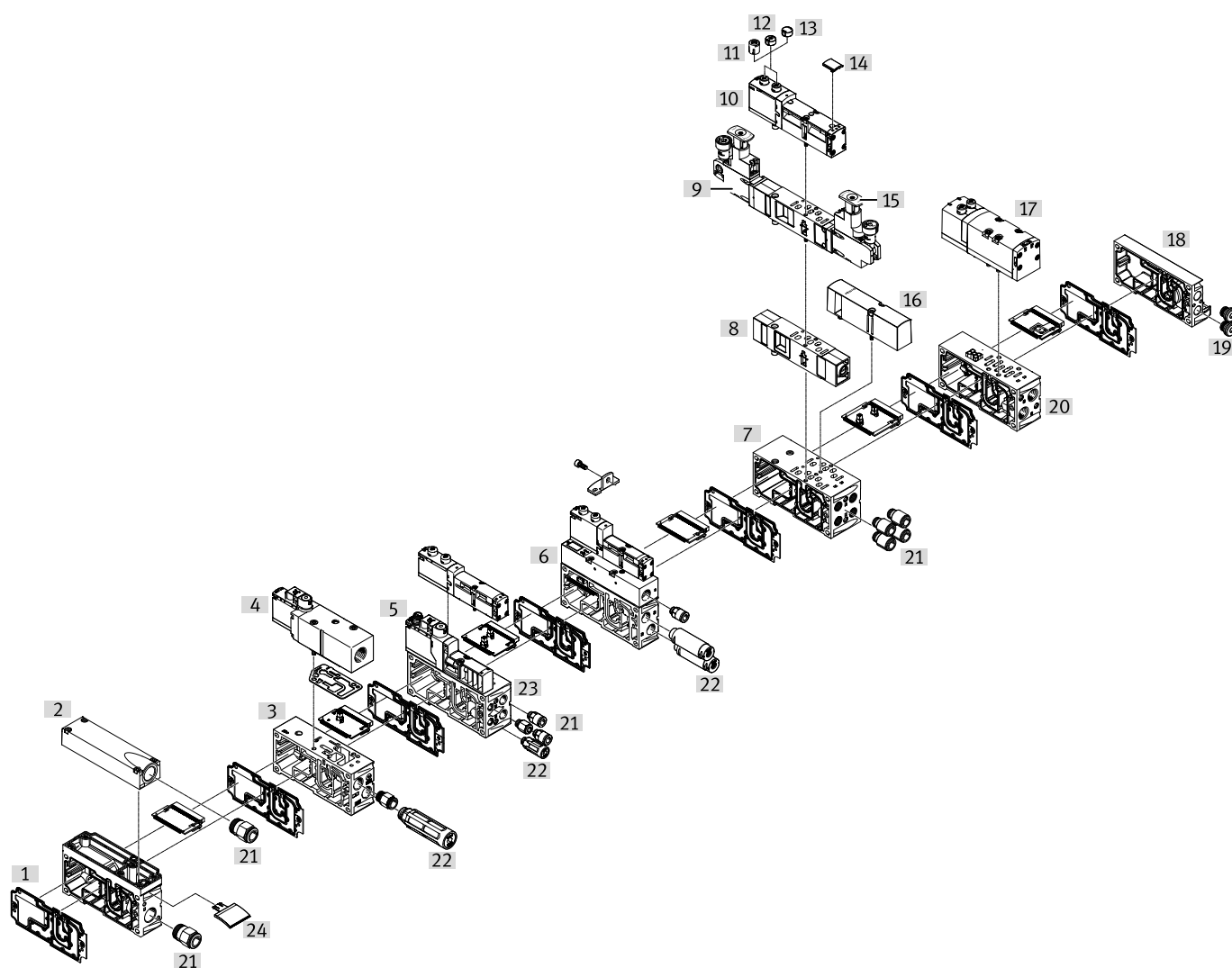
- 1 single solenoid valve or
- 1 double solenoid valve

- Double solenoid valve positions can be equipped with any valve or a blanking plate.

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

The hybrid manifold sub-base (with CBUS loop-through) makes it possible to use

- 1 double solenoid valve (18 mm) and
  - 1 double solenoid valve (26 mm)
- together on the same manifold sub-base.



## Peripherals – Pneumatic components

| Pneumatic components of valve terminal VTSA-F-CB |                                         | Description                                                            | → Page/Internet |
|--------------------------------------------------|-----------------------------------------|------------------------------------------------------------------------|-----------------|
| [1]                                              | Duct separation/seal                    | –                                                                      | 158             |
| [2]                                              | Exhaust port cover                      | For ducted exhaust air (ports 3 and 5 combined)                        | 146             |
| [3]                                              | Manifold sub-base                       | For soft-start valve                                                   | 208             |
| [4]                                              | Soft-start valve for VTSA-F-CB          | For slow and safe pressure build-up                                    | 203             |
| [5]                                              | Pilot air switching valve for VTSA-F-CB | –                                                                      | 187             |
| [6]                                              | Vacuum generator for VTSA-F-CB          | For vacuum generation                                                  | 219             |
| [7]                                              | Manifold sub-base VTSA-F-CB             | For valves with a width of 18 mm or 26 mm with CBUS loop-through       | 145             |
| [8]                                              | Throttle plate                          | –                                                                      | 152             |
| [9]                                              | Pressure regulator plate                | –                                                                      | 147             |
| [10]                                             | Valve                                   | Width 18 mm or 26 mm                                                   | 115,, 123       |
| [11]                                             | Cover cap, heavy duty                   | For manual override, non-detenting heavy duty, detenting via accessory | 158             |
| [12]                                             | Cover cap, coded                        | For non-detenting manual override (limited function)                   | 158             |
| [13]                                             | Cover cap, concealed                    | MO concealed by cover cap – operation of MO prevented                  | 158             |
| [14]                                             | Inscription label holder                | For valve                                                              | 159             |
| [15]                                             | Control element                         | Regulator knobs in different versions                                  | 40              |
| [16]                                             | Cover plate                             | For unused valve position (vacant position)                            | 152             |
| [17]                                             | Valve                                   | Width 42 mm or 52 mm                                                   | 131, 138        |
| [18]                                             | End plate with pilot air selector       | –                                                                      | 157             |
| [19]                                             | Blanking plug                           | –                                                                      | 246             |
| [20]                                             | Manifold sub-base VTSA-F-CB             | For valves with a width of 18 mm or 26 mm with CBUS loop-through       | 145             |
| [21]                                             | Fittings                                | –                                                                      | 245             |
| [22]                                             | Silencer                                | –                                                                      | 246             |
| [23]                                             | Manifold sub-base VTSA-F-CB             | For pilot air switching valve (hybrid manifold sub-base)               | 145             |
| [24]                                             | Inscription label holder                | For manifold sub-base, connecting plate, angled connection plate       | 159             |
| [25]                                             | Supply plate/air supply plate           | –                                                                      | 146             |


**Note**

Special applications for the valve terminal, such as:

- Solenoid valve with switching position sensing
- Control block with safety function
- Pilot air switching valve
- Soft-start valve
- Vacuum generator

are listed after → Accessories – General

Peripherals – Electrical components

Valve terminal with individual electrical connection

Order code for VTSA:

- 44E... for the electric components
- 44P... for the pneumatic components

Order code for VTSA-F:

- 45E... for the electric components
- 45P... for the pneumatic components

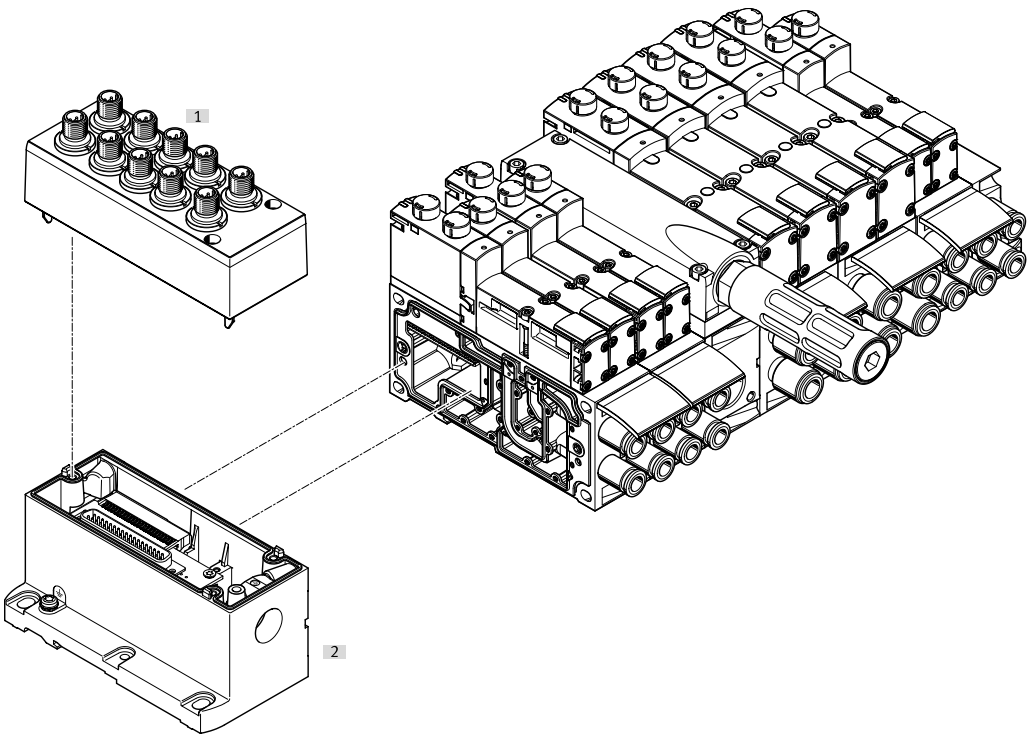
Valve terminals VTSA/VTSA-F with individual electrical connection can be expanded with up to 20 valves with max. 20 solenoid coils.

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

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

- 1 single solenoid valve or
  - 1 double solenoid valve
- depending on the size.

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



|     |                           | Description                                                       | → Page/Internet |
|-----|---------------------------|-------------------------------------------------------------------|-----------------|
| [1] | Cover                     | For individual connection                                         | 154             |
| [2] | Multi-pin plug connection | Individual connection with M12, 10-way or 6-way (including cover) | 154             |

Peripherals – Electrical components

Valve terminal with electrical multi-pin plug connection

Order code for VTSA:

- 44E... for the electric components
- 44P... for the pneumatic components

Order code for VTSA-F:

- 45E... for the electric components
- 45P... for the pneumatic components

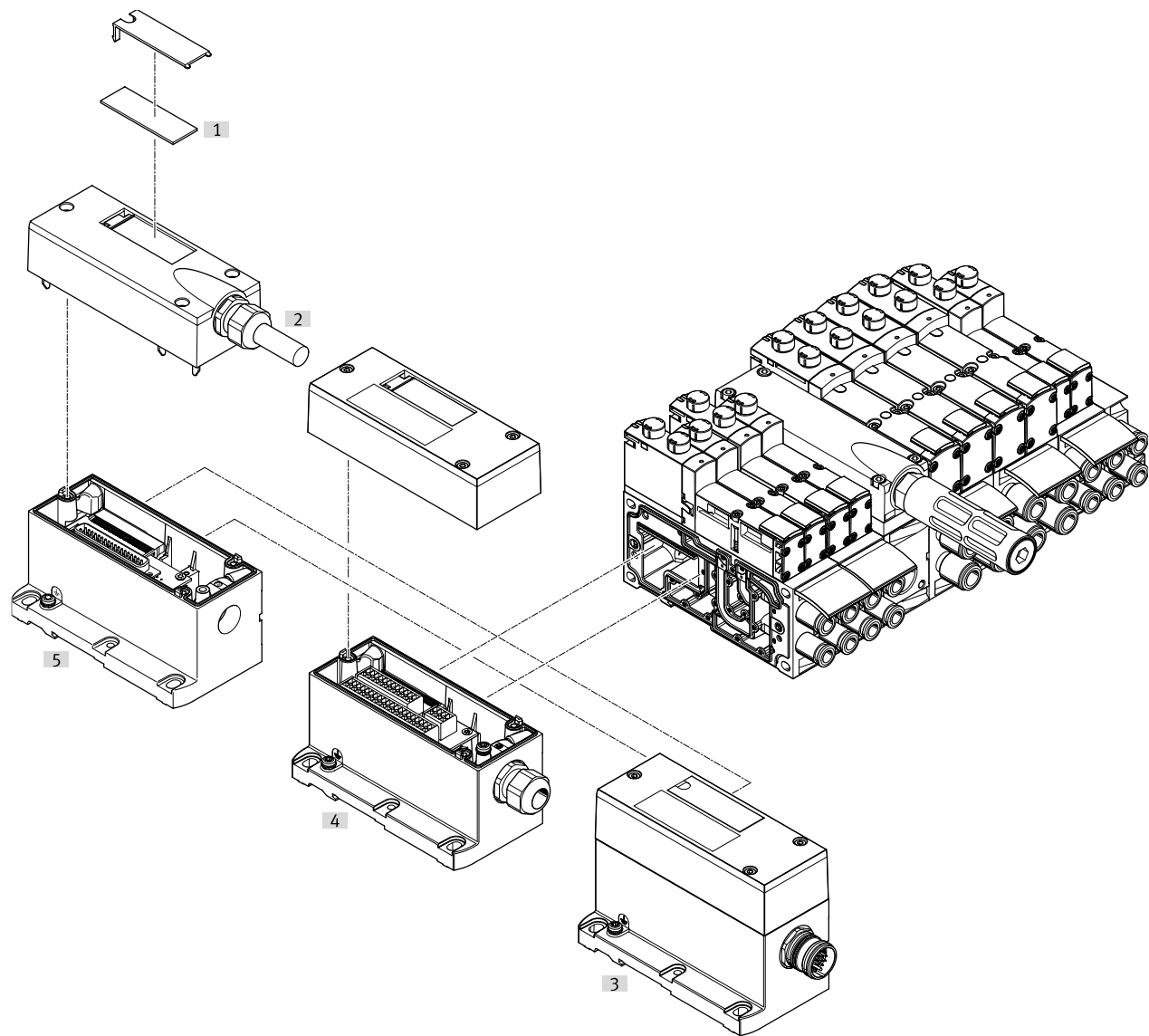
Valve terminals VTSA/VTSA-F with multi-pin plug connection can be expanded with up to 32 valves with max. 32 solenoid coils. The manifold sub-bases for valves with a width of 18 or 26 mm are suitable for

- 2 single solenoid valves or
- 2 double solenoid valves

and the manifold sub-bases for valves with a width of 42 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 cover plate.
- The following multi-pin plug connections to IP65 are available:
- 37-pin Sub-D connection (24 V DC): the connecting cable can be ordered in lengths of 2.5 m, 5 m and 10 m for max. 8, 22 or 32 solenoid coils respectively.
- Terminal strip (24 V DC), 19-pin round plug connector (24 V DC)



|     |                           | Description                            | → Page/Internet |
|-----|---------------------------|----------------------------------------|-----------------|
| [1] | Inscription labels        | Large, for multi-pin plug connection   | –               |
| [2] | Multi-pin cable           | Connecting cable                       | 157             |
| [3] | Multi-pin plug connection | Via M23 round plug connection, 24 V DC | 154             |
| [4] | Multi-pin plug connection | Via terminal strip (CageClamp) 24 V DC | 154             |
| [5] | Multi-pin plug connection | Via multi-pin cable, 24 V DC           | 154             |

## Peripherals – Electrical components

### Valve terminal with AS-Interface connection

Order code for VTSA:

- 52E... for the electric components
- 44P... for the pneumatic components

Order code for VTSA-F:

- 52E... for the electric components
- 45P... for the pneumatic components

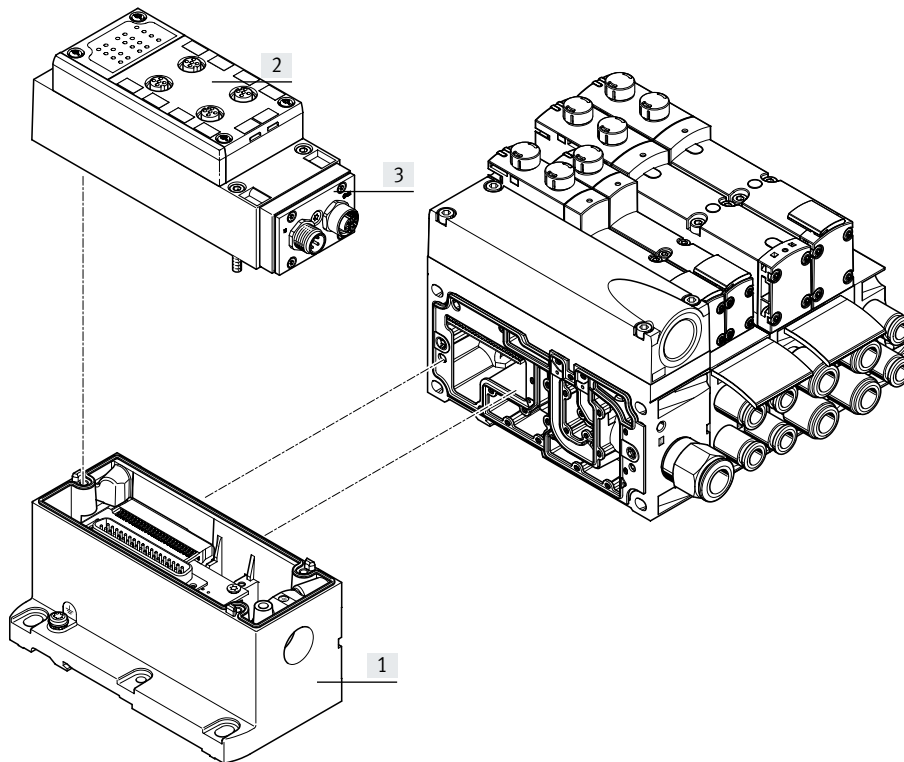
Valve terminals VTSA/VTSA-F with AS-Interface connection can be expanded with up to 8 valves with max. 8 solenoid coils.

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

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

- 1 single solenoid valve or
  - 1 double solenoid valve
- depending on the size.

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



|     |                                   | Description                                                                                       | → Page/Internet |
|-----|-----------------------------------|---------------------------------------------------------------------------------------------------|-----------------|
| [1] | Multi-pin plug connection         | Can be ordered together with the AS-Interface module as an electrical connection for AS-Interface | 155             |
| [2] | Connection block for AS-Interface | –                                                                                                 | 155             |
| [3] | AS-Interface module               | –                                                                                                 | 155             |



Peripherals – Electrical components

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

Order code for VTSA:

- 44E... for the electric components
- 44P... for the pneumatic components

Order code for VTSA-F:

- 45E... for the electric components
- 45P... for the pneumatic components

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

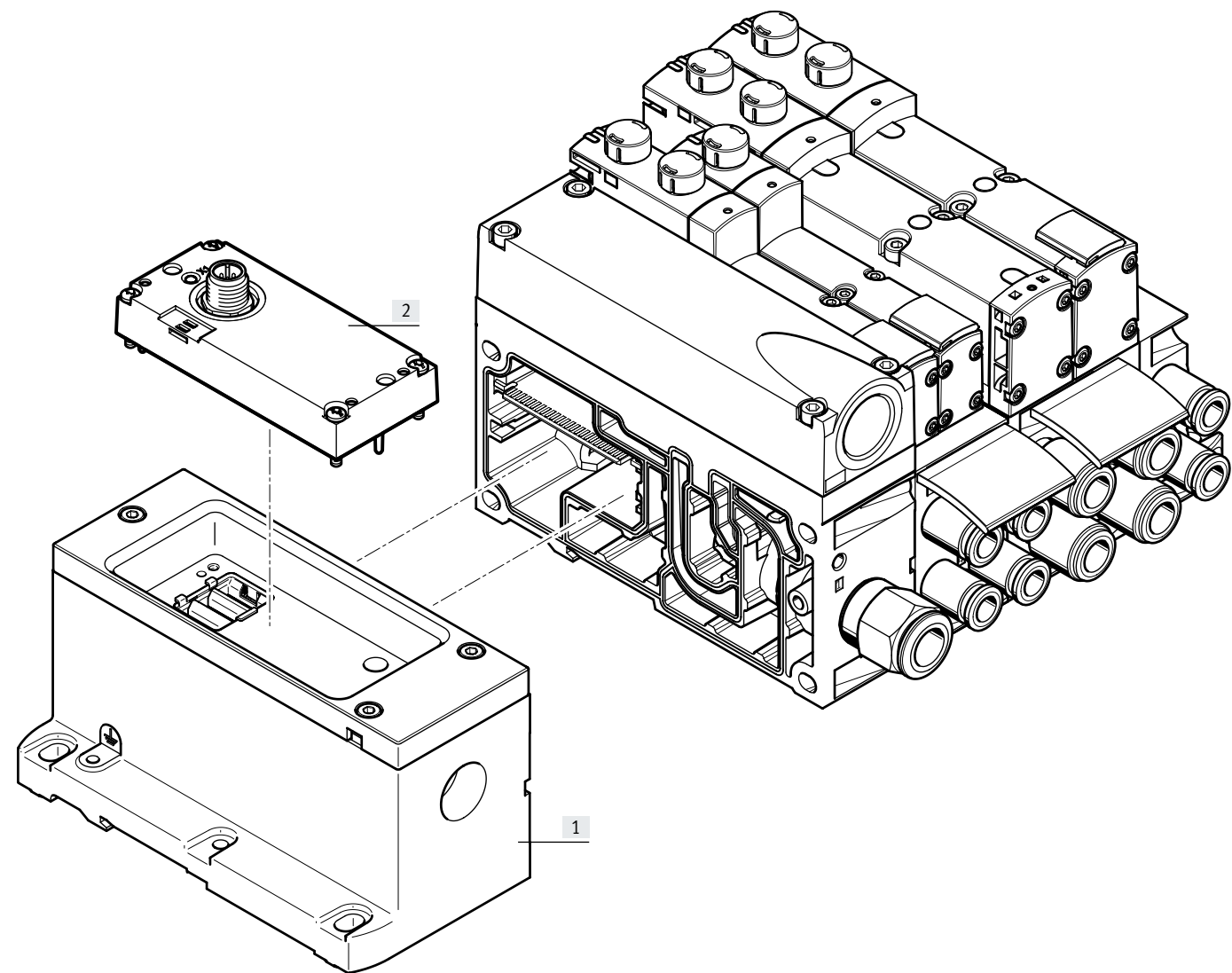
- 2 single solenoid valves or
- 2 double solenoid valves

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

- 1 single solenoid valve or
- 1 double solenoid valve

depending on the size.

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



|     |                            | Description                   | → Page/Internet |
|-----|----------------------------|-------------------------------|-----------------|
| [1] | Multi-pin plug connection  | –                             | 154             |
| [2] | I-Port/IO-Link® connection | Electrical interface IO-Link® | 155             |

## Peripherals – Electrical components

### Valve terminal with AP interface

Order code for VTSA:

- 44E... for the electric components
- 44P... for the pneumatic components

Order code for VTSA-F:

- 45E... for the electric components
- 45P... for the pneumatic components

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

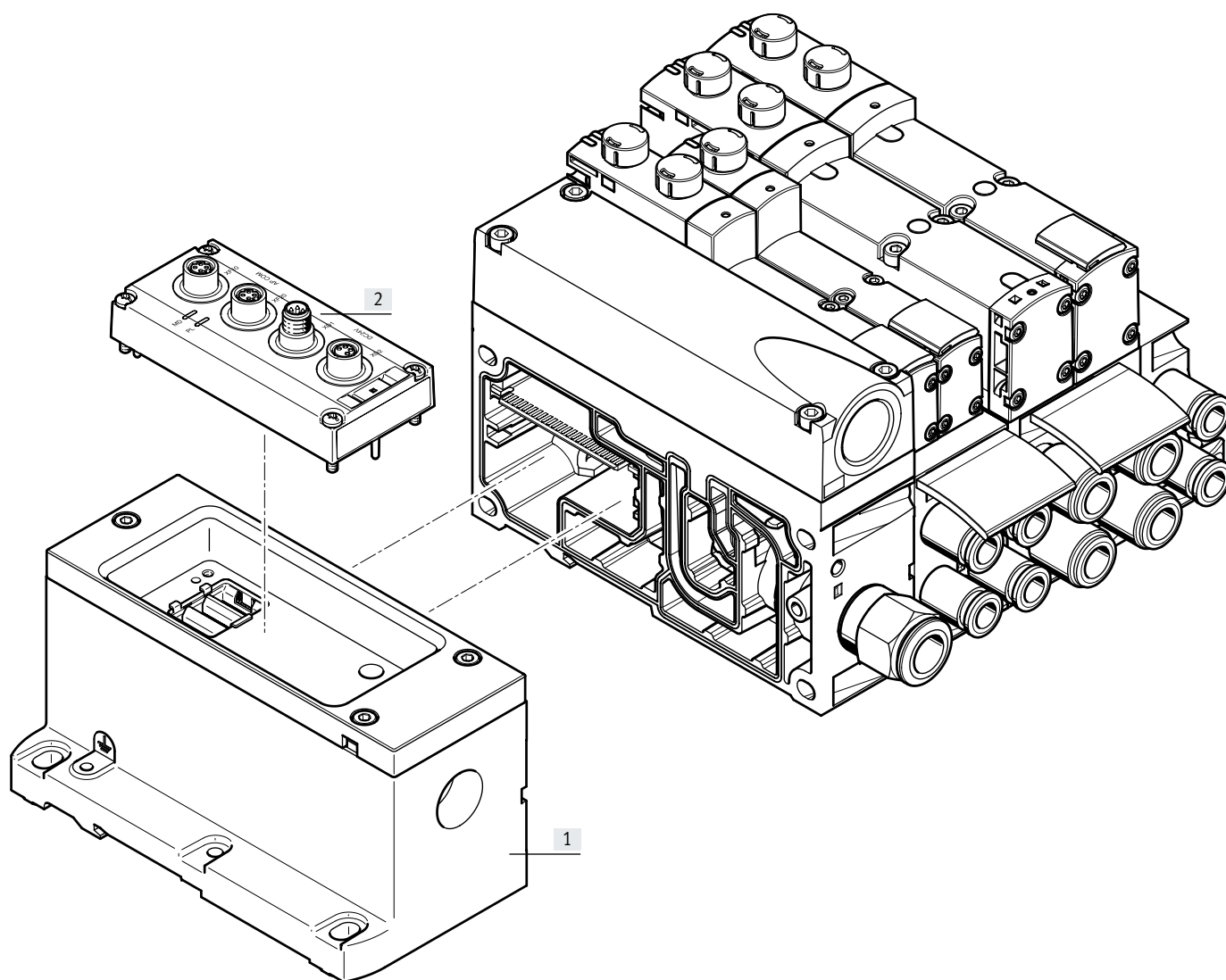
- 2 single solenoid valves or
- 2 double solenoid valves

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

- 1 single solenoid valve or
- 1 double solenoid valve

depending on the size.

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



|     |                           | Description                          | → Page/Internet |
|-----|---------------------------|--------------------------------------|-----------------|
| [1] | Multi-pin plug connection | –                                    | 154             |
| [2] | AP interface              | Electrical interface protocol AP-COM | 83              |

Peripherals – Electrical components

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

Order code:

- 50E-... for the electrical peripherals, polymer variant
- 51E-... for the electrical peripherals, metal variant
- 53E-... for the electrical peripherals, for control cabinet installation

For VTSA:

- 44P-... for the pneumatic components

For VTSA-F:

- 45P-... for the pneumatic components

For VTSA-F-CB:

- 46P-... for the pneumatic components

Valve terminals VTSA/VTSA-F with parallel communication and fieldbus interface can be expanded with up to 32 valves with max. 32 solenoid coils.

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

- 2 single solenoid valves or
- 2 double solenoid valves

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

- 1 single solenoid valve or
- 1 double solenoid valve

depending on the size.

- Double solenoid valve positions can be equipped with any valve or a blanking plate.

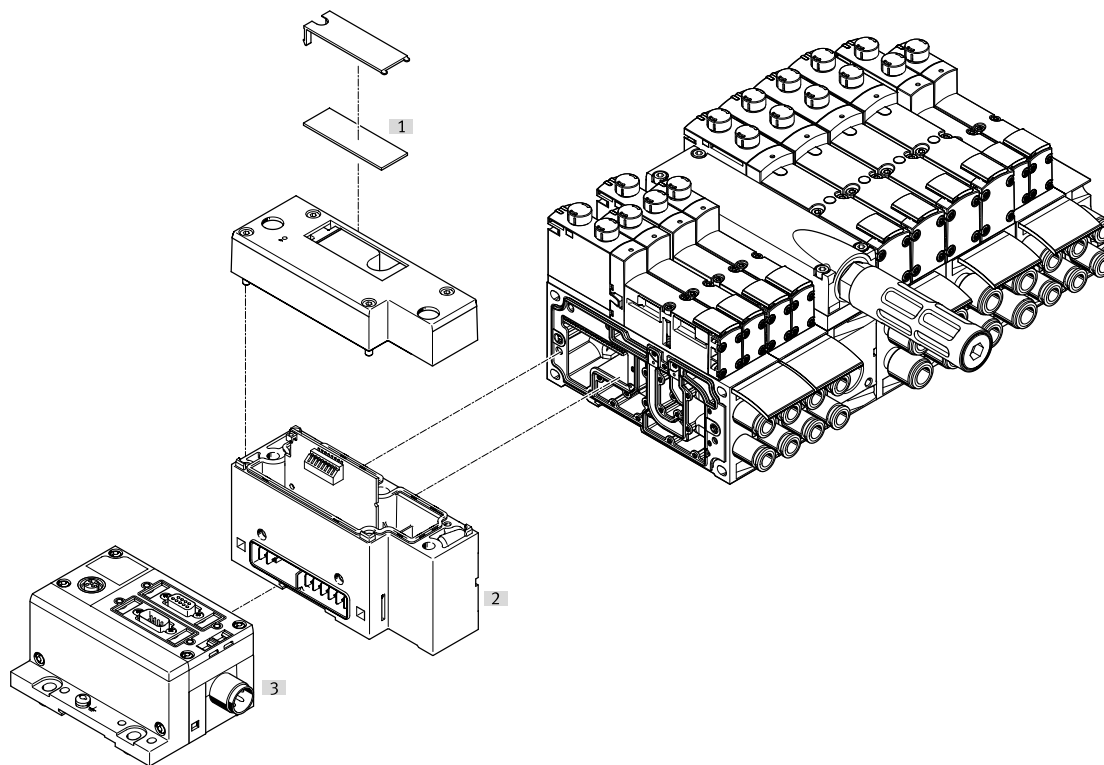
- Single solenoid valve positions can only be equipped with single solenoid valves or a blanking plate.

The valve terminal VTSA-F-CB with serial communication can be expanded with up to 96 valves with max. 96 solenoid coils. 4 zones can be equipped with max. 24 valves/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 with the electrical peripherals CPX.

In general:

- Max. 10 electrical modules
- Digital inputs/outputs
- Analogue inputs/outputs
- Parameterisation of inputs and outputs
- Integrated, convenient diagnostics
- Preventive maintenance concepts



|     |                     | Description                        | → Page/Internet |
|-----|---------------------|------------------------------------|-----------------|
| [1] | Inscription labels  | Large, for pneumatic interface CPX | –               |
| [2] | Pneumatic interface | –                                  | 154             |
| [3] | Fieldbus interface  | –                                  | cpx             |

## Peripherals – Electrical components

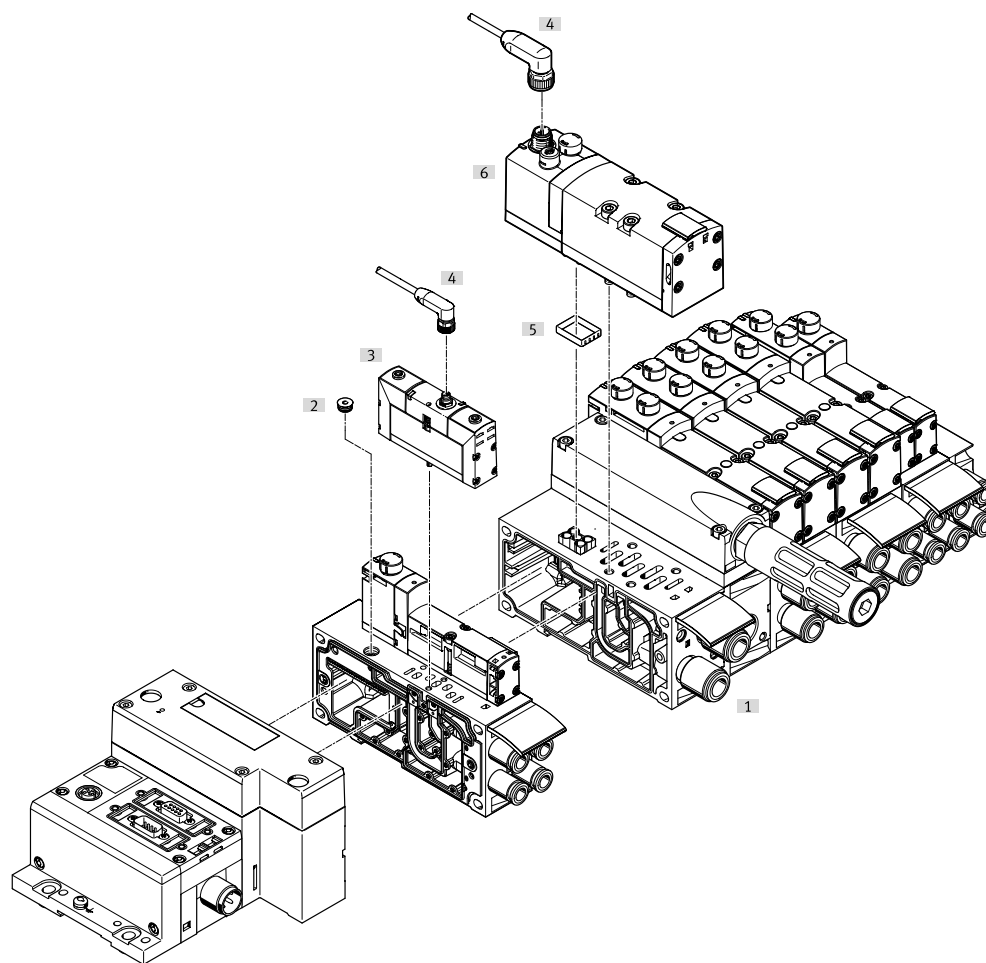
### Valve terminal with fieldbus/multi-pin plug connection and individually electrically actuated valve

In applications with specific emergency off conditions, it may be necessary to switch one or more valves separately from the valve terminal controller. Standard valves (VSVA) with individual electrical connection (round or square plug) are therefore mounted on the valve terminal.

In order for degree of protection IP65 to be achieved, the functionless opening in the sub-base for the electrical connection must be sealed.

A sealing cap is available for width 18 mm and 26 mm. With manifold or individual sub-bases, valves with width 42 mm and 52 mm must be used with a seal to comply with the IP degree of protection (see → page 152).

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



|     |                  | Description                                                                                         | → Page/Internet |
|-----|------------------|-----------------------------------------------------------------------------------------------------|-----------------|
| [1] | Valve terminal   | Valve terminal with fieldbus/multi-pin plug connection and individually electrically actuated valve | –               |
| [2] | Sealing cap      | For sealing the electrical connection on the sub-base                                               | 152             |
| [3] | Valve            | Width 18 mm or width 26 mm                                                                          | valves vsva     |
| [4] | Connecting cable | –                                                                                                   | valves vsva     |
| [5] | Seal             | For ensuring the IP degree of protection (with width 42 mm and 52 mm)                               | 153             |
| [6] | Valve            | Width 42 mm or width 52 mm                                                                          | valves vsva     |

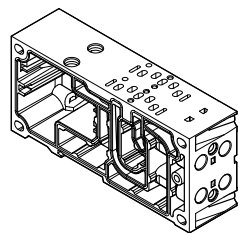
#### Note

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

→ vsva

Key features – Pneumatic components

Manifold sub-base



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 VTSA-F-CB with serial communication, there are manifold sub-bases available for valve widths 18 mm and 26 mm in a double grid.

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 link. They can be freely mixed within a valve terminal.

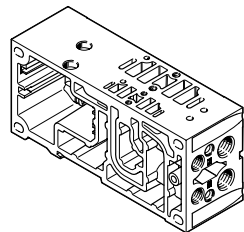
The manifold sub-bases are screwed together, thus forming the support system for the valves. Inside the manifold sub-bases are the connection ducts for supplying compressed air to and exhausting the valve terminal as well as the working ports for the pneumatic cylinders for each valve.

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

VTSA/VTSA-F with parallel communication is based on a modular system which consists of manifold sub-bases and valves.

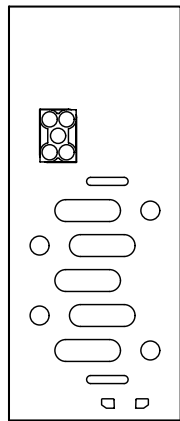
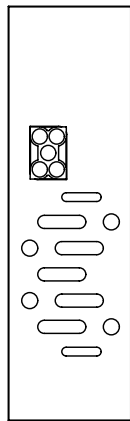
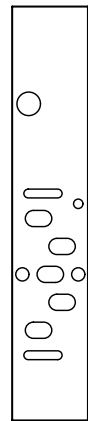
The VTSA-F manifold sub-bases are designed to optimise the flow rate.

Hybrid manifold sub-base



With hybrid manifold sub-bases, a valve with a width of 18 mm can be combined with a valve with a width of 26 mm on one manifold sub-base.

| Port patterns to ISO 154072 |                       | Port patterns to ISO 55992 |                      |
|-----------------------------|-----------------------|----------------------------|----------------------|
| Width 18 mm (size 02)       | Width 26 mm (size 01) | Width 42 mm (size 1)       | Width 52 mm (size 2) |



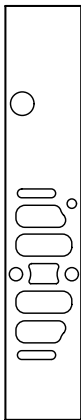
Key features – Pneumatic components

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

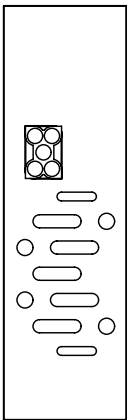
Width 18 mm



Width 26 mm

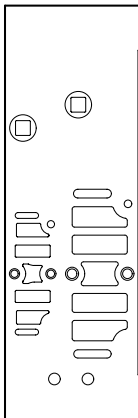


Width 42 mm



Hybrid manifold sub-base

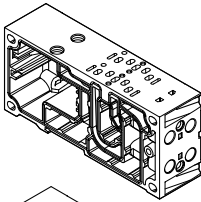
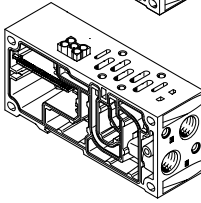
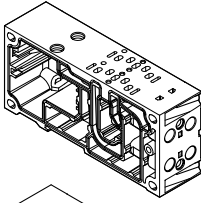
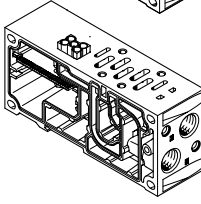
Width 18 mm + 26 mm



-  - **Note**

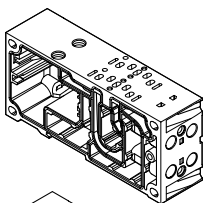
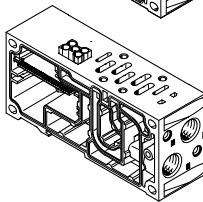
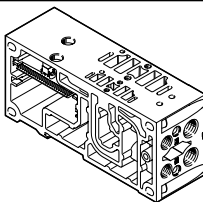
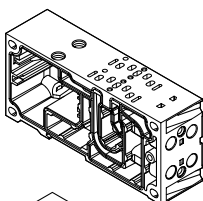
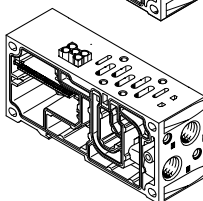
The illustrations shown represent the pneumatic port patterns.  
The port patterns on the valve terminal VTSA-F/VTSA-F-CB and the hybrid manifold sub-base do not correspond to the ISO standards.

## Key features – Pneumatic components

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

1) The value in brackets is the max. number of solenoid coils that can be actuated

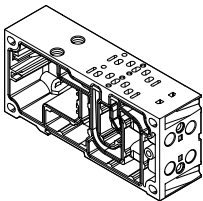
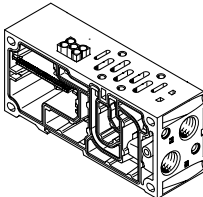
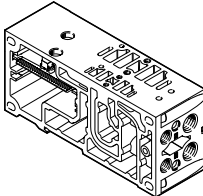
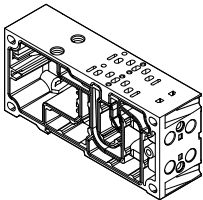
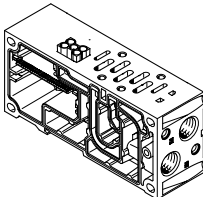
## Key features – Pneumatic components

| Manifold sub-base variants with QS fitting, valve terminal VTSA-F |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           |                                                                                                                |                 |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------|-------|-------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------|
| Code                                                              |                                                                                     | Type                                                                                                                  | Width                                                           |       |       |       | No. of valve positions (solenoid coils)1) | Working ports (2, 4)                                                                                           |                 |
|                                                                   |                                                                                     |                                                                                                                       | 18 mm                                                           | 26 mm | 42 mm | 52 mm |                                           | Code M<br>Large                                                                                                | Code N<br>Small |
| Manifold sub-base for double solenoid valves                      |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           |                                                                                                                |                 |
| A                                                                 |    | VABV-S4-2HS-G18-2T2                                                                                                   | ■                                                               | –     | –     | –     | 2 (4)                                     | QS-G1/8-8                                                                                                      | –               |
| AK                                                                |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           | –                                                                                                              | QS-G1/8-6       |
| B                                                                 |                                                                                     | VABV-S4-1HS-G14-2T2                                                                                                   | –                                                               | ■     | –     | –     | 2 (4)                                     | QS-G1/4-10                                                                                                     | –               |
| BK                                                                |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           | –                                                                                                              | QS-G1/4-8       |
| C                                                                 |    | VABV-S2-1HS-G38-T2                                                                                                    | –                                                               | –     | ■     | –     | 1 (2)                                     | QS-G3/8-12                                                                                                     | –               |
| CK                                                                |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           | –                                                                                                              | QS-G3/8-10      |
| D                                                                 |                                                                                     | VABV-S2-2S-G12-T2                                                                                                     | –                                                               | –     | –     | ■     | 1 (2)                                     | QS-G1/2-16                                                                                                     | –               |
| DK                                                                |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           | –                                                                                                              | QS-G1/2-12      |
| Manifold sub-base for double solenoid valves, hybrid sub-base     |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           |                                                                                                                |                 |
| XA                                                                |   | VABV-S4-12HS-G-2T2                                                                                                    | 1st valve position<br>18 mm<br>+<br>2nd valve position<br>26 mm |       | –     | –     | 2 (4)                                     | Left valve position:<br>QS-G1/8-8<br>QS-G1/8-10<br><br>Right valve position:<br>QS-G1/4-8<br>QS-G1/4-10        | –               |
| XAK                                                               |                                                                                     | VABV-S4-12HS-G-2T2<br>• 1x double solenoid, width 18 mm<br>• 1x double solenoid, width 26 mm<br>• with small fittings | 1st valve position<br>18 mm<br>+<br>2nd valve position<br>26 mm |       | –     | –     | 2 (4)                                     | –<br><br>Left valve position:<br>QS-G1/8-6<br>QS-G1/8-8<br><br>Right valve position:<br>QS-G1/4-6<br>QS-G1/4-8 |                 |
| Manifold sub-base for single solenoid valves                      |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           |                                                                                                                |                 |
| E                                                                 |  | VABV-S4-2HS-G18-2T1                                                                                                   | ■                                                               | –     | –     | –     | 2 (2)                                     | QS-G1/8-8                                                                                                      | –               |
| EK                                                                |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           | –                                                                                                              | QS-G1/8-6       |
| F                                                                 |                                                                                     | VABV-S4-1HS-G14-2T1                                                                                                   | –                                                               | ■     | –     | –     | 2 (2)                                     | QS-G1/4-10                                                                                                     | –               |
| FK                                                                |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           | –                                                                                                              | QS-G1/4-8       |
| G                                                                 |  | VABV-S2-1HS-G38-T1                                                                                                    | –                                                               | –     | ■     | –     | 1 (1)                                     | QS-G3/8-12                                                                                                     | –               |
| GK                                                                |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           | –                                                                                                              | QS-G3/8-10      |
| H                                                                 |                                                                                     | VABV-S2-2S-G12-T1                                                                                                     | –                                                               | –     | –     | ■     | 1 (1)                                     | QS-G1/2-16                                                                                                     | –               |
| HK                                                                |                                                                                     |                                                                                                                       |                                                                 |       |       |       |                                           | –                                                                                                              | QS-G1/2-12      |

1) The value in brackets is the max. number of solenoid coils that can be actuated

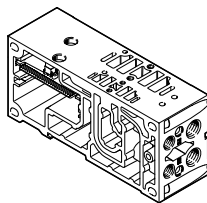
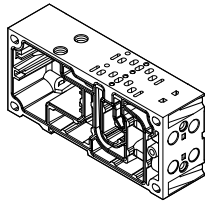
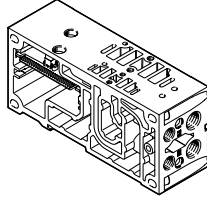


# Key features – Pneumatic components

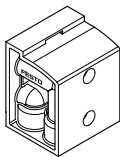
| Manifold sub-base variants with increased flow rate and CBUS loop-through, valve terminal VTSA-F-CB |                                                                                     |                                                                                                                                                                                   |       |       |       |       |                                                          |
|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|----------------------------------------------------------|
| Code                                                                                                |                                                                                     | Type                                                                                                                                                                              | Width |       |       |       | No. of valve positions<br>(solenoid coils) <sup>1)</sup> |
|                                                                                                     |                                                                                     |                                                                                                                                                                                   | 18 mm | 26 mm | 42 mm | 52 mm |                                                          |
| Manifold sub-base for double solenoid valves                                                        |                                                                                     |                                                                                                                                                                                   |       |       |       |       |                                                          |
| A                                                                                                   |    | VABV-S4-2HS-G18-CB-2T2                                                                                                                                                            | ■     | –     | –     | –     | 2 (4)                                                    |
| B                                                                                                   |                                                                                     | VABV-S4-1HS-G14-CB-2T2                                                                                                                                                            | –     | ■     | –     | –     | 2 (4)                                                    |
| C                                                                                                   |    | VABV-S2-1HS-G38-CB-T2                                                                                                                                                             |       |       | ■     |       | 1 (2)                                                    |
| D                                                                                                   |                                                                                     | VABV-S2-2S-G12-CB-T2                                                                                                                                                              |       |       |       | ■     | 1 (2)                                                    |
| Manifold sub-base for double solenoid valves, hybrid manifold sub-base                              |                                                                                     |                                                                                                                                                                                   |       |       |       |       |                                                          |
| YA                                                                                                  |   | VABV-S4-12HS-G-CB-2T2<br>(external sensor evaluation) <ul style="list-style-type: none"><li>• 1x double solenoid, width 18 mm</li><li>• 1x double solenoid, width 26 mm</li></ul> | ■     | ■     | –     | –     | 2 (4)                                                    |
| Manifold sub-base for single solenoid valves                                                        |                                                                                     |                                                                                                                                                                                   |       |       |       |       |                                                          |
| E                                                                                                   |  | VABV-S4-2HS-G18-CB-2T1                                                                                                                                                            | ■     | –     | –     | –     | 2 (2)                                                    |
| F                                                                                                   |                                                                                     | VABV-S4-1HS-G14-CB-2T1                                                                                                                                                            | –     | ■     | –     | –     | 2 (2)                                                    |
| G                                                                                                   |  | VABV-S2-1HS-G38-CB-T1                                                                                                                                                             | –     | –     | ■     | –     | 1 (1)                                                    |
| H                                                                                                   |                                                                                     | VABV-S2-2S-G12-CB-T1                                                                                                                                                              | –     | –     | –     | ■     | 1 (1)                                                    |

1) The value in brackets is the max. number of solenoid coils that can be actuated

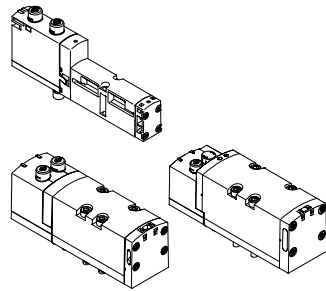
## Key features – Pneumatic components

| Manifold sub-base variants with increased flow rate and CBUS loop-through, valve terminal VTSA-F-CB |                                                                                    |                        |       |       |       |       |                                              |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------|-------|-------|-------|-------|----------------------------------------------|
| Code                                                                                                |                                                                                    | Type                   | Width |       |       |       | No. of valve positions<br>(solenoid coils)1) |
|                                                                                                     |                                                                                    |                        | 18 mm | 26 mm | 40 mm | 52 mm |                                              |
| Manifold sub-base for soft-start valve                                                              |                                                                                    |                        |       |       |       |       |                                              |
| PV                                                                                                  |   | VABV-S6-1Q-G38-CB1-T5  | –     | –     | ■     | –     | 1                                            |
| PS                                                                                                  |                                                                                    | VABV-S6-1Q-G38-CB-T5   | –     | –     | ■     | –     | 1                                            |
| Manifold sub-base for pilot air switching valve                                                     |                                                                                    |                        |       |       |       |       |                                              |
| YB                                                                                                  |   | VABV-S4-2HS-G18-CB-2T5 | ■     | –     | –     | –     | 2 (4)                                        |
| YC                                                                                                  |  | VABV-S4-12HS-G-CB-2T5  | ■     | ■     | –     | –     | 2 (4)                                        |

1) The value in brackets is the max. number of solenoid coils that can be actuated

| Angled connection plate for working ports 2 and 4 |                                                                                     |                       |       |       |       |       |                                                     |
|---------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------|-------|-------|-------|-------|-----------------------------------------------------|
| Code                                              |                                                                                     | Type                  | Width |       |       |       | Working ports (2, 4) on the angled connection plate |
|                                                   |                                                                                     |                       | 18 mm | 26 mm | 42 mm | 52 mm |                                                     |
| P                                                 |  | VABF-S4-...-A2G2-G... | ■     | –     | –     | –     | G1/8                                                |
|                                                   |                                                                                     |                       | –     | ■     | –     | –     | G1/4                                                |
|                                                   |                                                                                     |                       | –     | –     | ■     | –     | G3/8                                                |
|                                                   |                                                                                     |                       | –     | –     | –     | ■     | G1/2                                                |

Key features – Pneumatic components

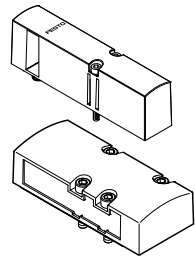
| Sub-base valve                                                                   |                                                                                                                                                      |                                                                                                                                                                                  |  |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  | All valves have a 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 re-placed since the tubing connections remain on the manifold sub-base.                                               | Irrespective of the valve function, there are sub-base valves with one solenoid coil (single solenoid) or with two solenoid coils for double solenoid or double valve functions. |  |

| Reverse/vacuum operation                                                                                                                    |                                                                                 |                                                                                |                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Select reverse operation (code Z) if you wish to operate an actuator (cylinder) with different pressures for the forward and return stroke. | Please note that the valves must then be operated via a separate pressure zone. | The reversible 3/2-way solenoid valves are also suitable for vacuum operation. | Reverse operation is only possible in pressure zones with external pilot air supply. |



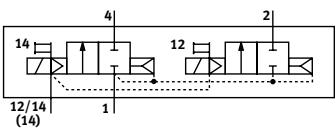
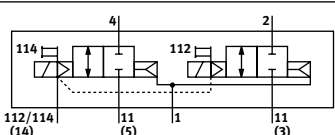
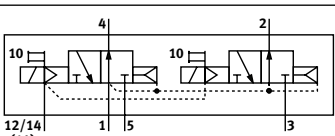
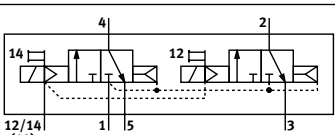
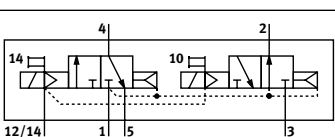
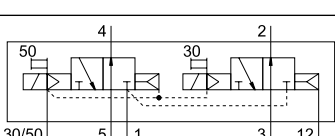
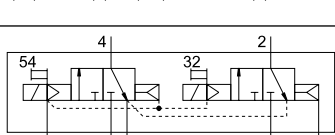
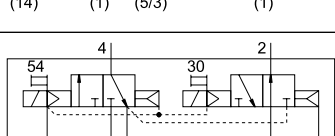
**Note**

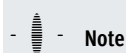
- If a pressure zone is in reverse operation, the supply pressure is connected to port 3/5 and the air is exhausted via port 1 at all valve positions in this pressure zone.
- Reversible pressure regulators cannot be selected when a pressure zone is in reverse operation.
- With reversible pressure regulators,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

| Cover plate                                                                        |                                                                                 |  |  |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--|--|
|  | Plate without valve function for reserving valve positions on a valve terminal. |  |  |
|                                                                                    | Valve and blanking plates are mounted on the manifold sub-base using screws.    |  |  |

| Design                                                                                                                         |                                                                                     |                                                                                                                                                                        |                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Replacing valves                                                                                                               |                                                                                     | Extension                                                                                                                                                              |                                                                                                            |
| The valves are attached to the metal manifold sub-base using two or four screws, which means that they can be easily replaced. | The sturdy mechanical structure of the sub-base ensures efficient, durable sealing. | Vacant positions can be fitted with valves at a later date. The dimensions, mounting points and existing pneumatic installations remain unchanged during this process. | For more information and technical data on extension, refer to the user manual:<br>→ Internet: VTSA/VTSA-F |

## Key features – Pneumatic components

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

**Note**

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

## Key features – Pneumatic components

| Valve function |                | Valve code | Width |       |       |       | Description                                                                                                                                                                                                                                  |
|----------------|----------------|------------|-------|-------|-------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Terminal code  | Circuit symbol |            | 18 mm | 26 mm | 42 mm | 52 mm |                                                                                                                                                                                                                                              |
| M              |                | M52-A      | ■     | ■     | ■     | ■     | 5/2-way valve, single solenoid<br>• Reverse operation<br>• pneumatic spring return                                                                                                                                                           |
| O              |                | M52-M      | ■     | ■     | ■     | ■     | 5/2-way valve, single solenoid<br>• Reverse operation<br>• mechanical spring return                                                                                                                                                          |
| J              |                | B52        | ■     | ■     | ■     | ■     | 5/2-way valve, double solenoid                                                                                                                                                                                                               |
| D              |                | D52        | ■     | ■     | ■     | ■     | 5/2-way valve, double solenoid<br>• Dominant signal at port 14 on the control side                                                                                                                                                           |
| SO<br>SQ<br>SS |                | M52-M      | ■     | –     | –     | –     | 5/2-way valve <sup>2)</sup> , single solenoid, as plug-in or via pilot valve with pneumatic interface to ISO 15218<br>See also special valve function in the separate chapter "Solenoid valve with switching position sensing"<br>→ page 161 |
| SO<br>SQ<br>SS |                | M52-M      | –     | ■     | –     | –     | 5/2-way valve <sup>2)</sup> , single solenoid, as plug-in or via pilot valve with pneumatic interface to ISO 15218<br>See also special valve function in the separate chapter "Solenoid valve with switching position sensing"<br>→ page 161 |
| SP<br>SN       |                | T52-M      | –     | ■     | –     | –     | 2x 5/2-way valve, single solenoid, with switching position sensing, pneumatically linked via two ducts for special valve function "control block with safety function"<br>→ page 167                                                         |
| B              |                | P53U       | ■     | ■     | ■     | ■     | 5/3-way solenoid valve<br>• Mid-position pressurised <sup>1)</sup><br>• mechanical spring return                                                                                                                                             |
| G              |                | P53C       | ■     | ■     | ■     | ■     | 5/3-way solenoid valve<br>• Mid-position closed <sup>1)</sup><br>• mechanical spring return                                                                                                                                                  |
| E              |                | P53E       | ■     | ■     | ■     | ■     | 5/3-way solenoid valve<br>• Mid-position exhausted <sup>1)</sup><br>• mechanical spring return                                                                                                                                               |

- 1) If neither solenoid coil is energised, the valve is moved to its mid-position by a mechanical spring. If the two coils are permanently energised one after the other, the valve remains in the switching position of the coil that was activated first.
- 2) The symbol represents a valve with a proximity switch with a switching output signal, in the illustration an N/O contact. This symbol applies to both N/O and N/C contacts, in accordance with ISO 1219-1. All sensors used here have an N/C contact as the switching element function.

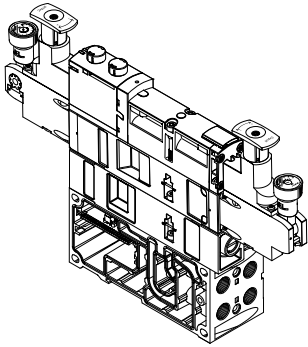
## Key features – Pneumatic components

| Valve function |                | Valve code | Width |       |       |       | Description                                                                                                                                                                                                                                                                                                            |
|----------------|----------------|------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Terminal code  | Circuit symbol |            | 18 mm | 26 mm | 42 mm | 52 mm |                                                                                                                                                                                                                                                                                                                        |
| SA             |                | P53ED      | ■     | ■     | –     | –     | 5/3-way solenoid valve, for special functions as switching position 14 is retained <ul style="list-style-type: none"> <li>• Pressureless switching, self-latching, pneumatic operation</li> <li>• Mid-position exhausted, switching position 14 is retained</li> <li>• mechanical spring return</li> </ul>             |
| SB             |                | P53AD      | ■     | ■     | –     | –     | 5/3-way solenoid valve, for special functions as switching position 14 is retained <ul style="list-style-type: none"> <li>• Holding, blocking a movement (mechanically)</li> <li>• Mid-position port 2 pressurised, port 4 exhausted, switching position 14 is retained</li> <li>• mechanical spring return</li> </ul> |
| SD             |                | P53BD      | ■     | ■     | –     | –     | 5/3-way solenoid valve, for special functions as switching position 14 is retained <ul style="list-style-type: none"> <li>• Holding, blocking a movement (mechanically)</li> <li>• Mid-position port 4 pressurised, port 2 exhausted, switching position 14 is retained</li> <li>• mechanical spring return</li> </ul> |
| SE             |                | P53EP      | ■     | ■     | –     | –     | 5/3-way solenoid valve, for special functions as switching position 12 is retained <ul style="list-style-type: none"> <li>• Pressureless switching, self-latching, pneumatic operation</li> <li>• Mid-position exhausted, switching position 12 is retained</li> <li>• mechanical spring return</li> </ul>             |
| VG             |                | P53F       | –     | –     | ■     | ■     | 5/3-way solenoid valve <ul style="list-style-type: none"> <li>• Positioning</li> <li>• Mid-position port 2 pressurised, port 4 closed<sup>1)</sup></li> <li>• mechanical spring return</li> </ul>                                                                                                                      |
| VB             | –              | –          | –     | ■     | –     | –     | Vacuum generator with ejector pulse and adjustable air saving function (plate for 2 valve positions, sensor SDE3 with display and M12 connection)                                                                                                                                                                      |
| L              | –              | –          | ■     | ■     | ■     | ■     | For valve terminal only:<br>Cover plate for vacant valve position                                                                                                                                                                                                                                                      |

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

## Key features – Pneumatic components

### Vertical stacking



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

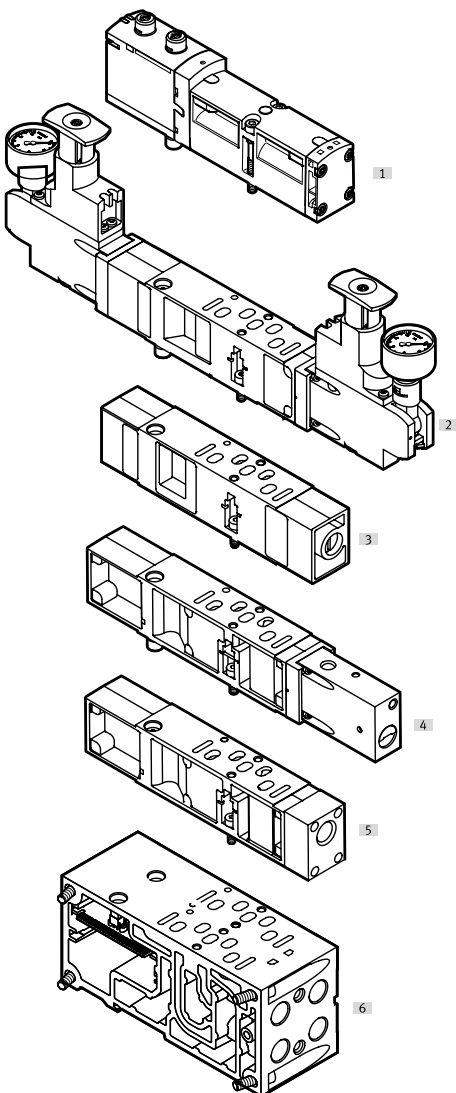
These functions are known as vertical stacking modules and enable special functions or control of an individual valve position. It is possible to link several valve sizes on one valve terminal.



#### Note

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

### Vertical stacking components



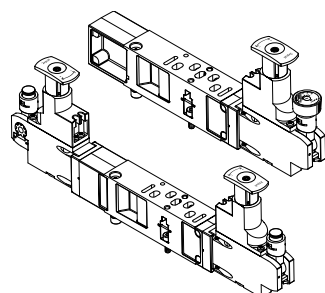
The following component sequence is recommended for valve positions with vertical stacking:

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

## Key features – Pneumatic components

### Vertical stacking

#### Pressure regulator plate



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

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

Standard version:

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

#### Note

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

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

#### Note

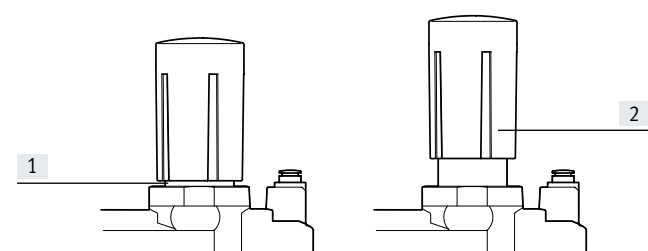
Please note when reordering pressure regulators in sizes 42 mm and 52 mm: The part number printed on the regulator plate refers only to the standard version.

When reordering pressure regulators with additional equipment, such as an extended design, only use the VABF configurator.

→ Internet: vabf-s2

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

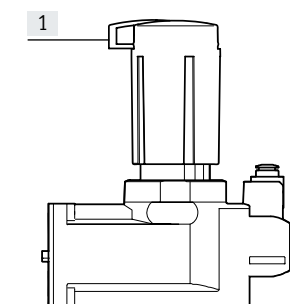
#### Setting the pressure



- [1] Pull the rotary knob upward from the locking position (1) into the setting position (2)
- [2] Set the desired pressure at the setting level (2) using the rotary knob
- [3] After setting the pressure, push the rotary knob back down to the locking position (1)

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

#### Locking the rotary knob



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

#### Note

The position of the rotary knob and the locking element is determined by the pressure setting.

If a number of pressure regulators are installed next to one another, there may not always be enough space to push out the locking elements.

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

- [1] Locking element, pushed out



## Key features – Pneumatic components

### Vertical stacking

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

Saving energy starts with compressed air generation. It is possible to achieve energy savings of up to 10% per 1 bar drop in pressure. Therefore, wherever possible reduce the pressure to the minimum required.

To save additional energy, you can operate valves in dual-pressure mode in a separate pressure zone.

To do this, the valves used must be operated in reverse mode, i.e. with reversed flow direction (see also information on → page 107). In dual-pressure operation, the valves are then supplied with pressure separately via ducts 3 and 5.

The air is exhausted via duct 1.

Requirements for dual-pressure operation:

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

### Advantages of dual-pressure operation:

It is possible to save energy if a valve can be supplied with different pressures. The advantages are:

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

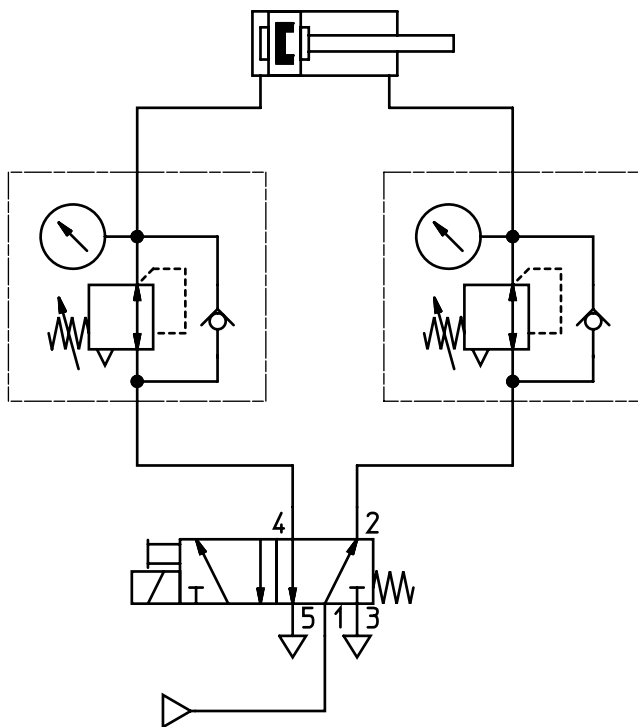
### Advantages of reversible operation:

If compressed air is applied to the pressure regulator upstream of the valve (circuit diagram 2), exhausting is directly via the solenoid valve.

This has the following advantages:

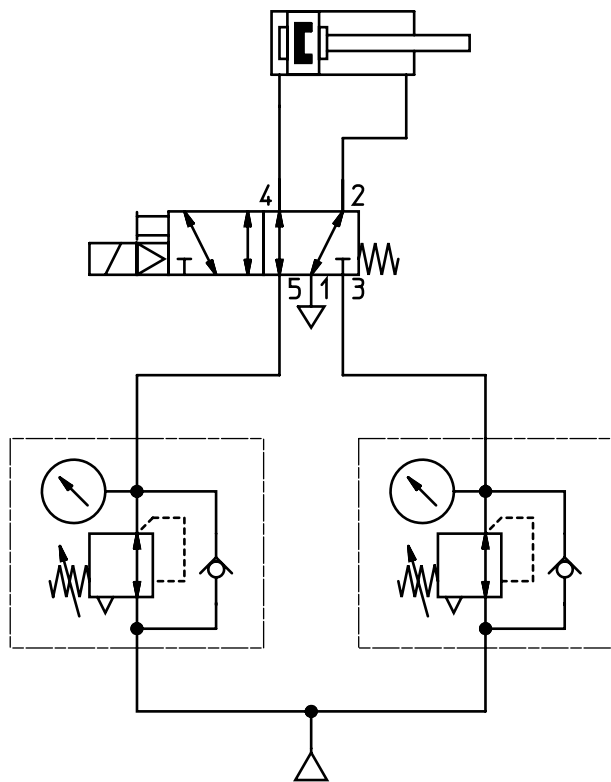
- Increased exhaust capacity, exhausting is up to 50% quicker
- Lower wear on the pressure regulator
- Can be adjusted very accurately, perfect for very low operating pressures
- No quick exhaust valves are required.
- Fast cycle times
- The pressure regulator can be adjusted independently of the valve position because operating pressure is permanently present at the pressure regulator.

Dual-pressure operation with standard regulator



Circuit diagram 1:  
Pressure is regulated downstream of the valve

Dual-pressure operation with reversible controller

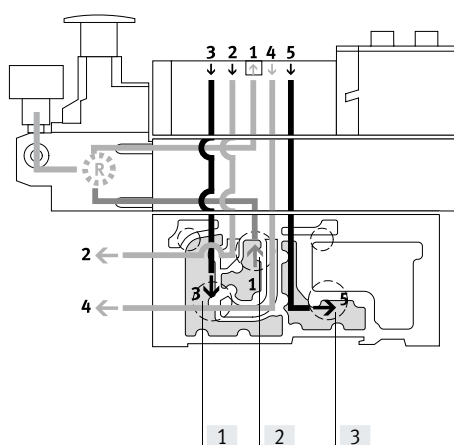


Circuit diagram 2:  
Pressure is regulated upstream of the valve

## Key features – Pneumatic components

### Vertical stacking

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



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

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

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

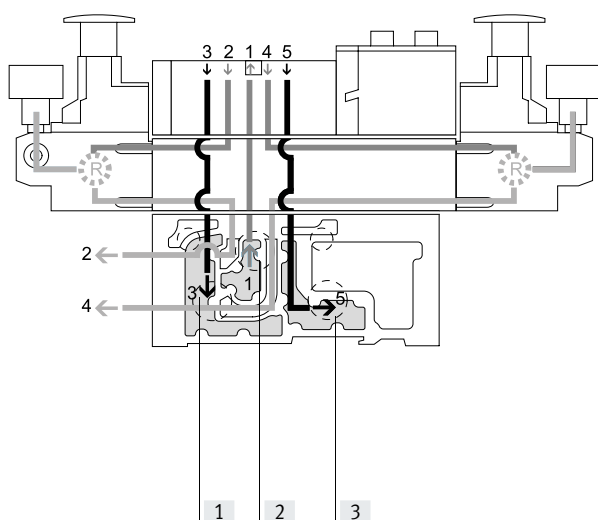
### Advantages

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

### Application examples

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

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



This pressure regulator regulates the pressure in ducts 2 and 4 after the pressure medium flows through the valve.

During exhausting, the exhaust flow in the valve is from duct 2 to duct 3 and from duct 4 to duct 5 via the pressure regulator.

Example with the following switching position:

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

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

### Constraints

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

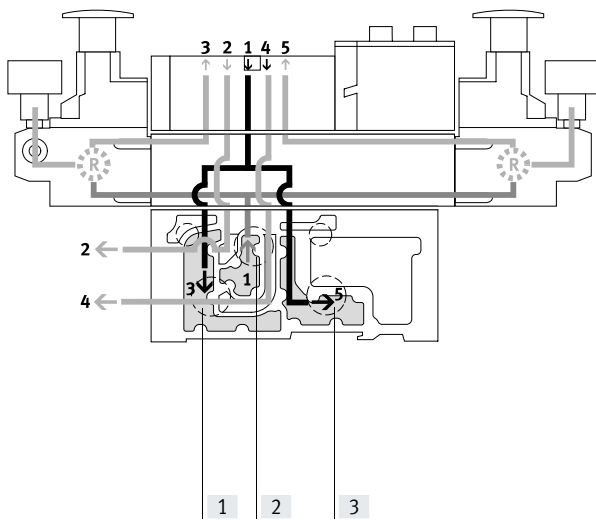
### Application examples

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

## Key features – Pneumatic components

### Vertical stacking

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



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

This means that:

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

Example with the following switching position:

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

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

### Application examples

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

### Note

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

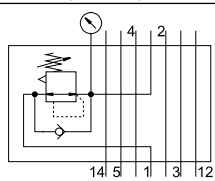
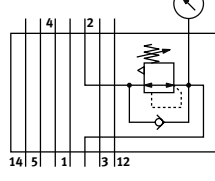
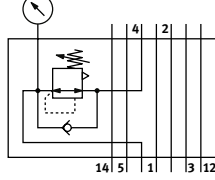
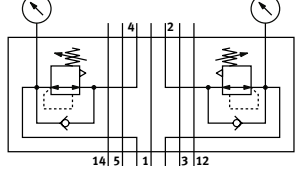
### Advantages

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

### Disadvantages

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

## Key features – Pneumatic components

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

1) Width variants 42 mm and 52 mm (ISO 5599-2, ISO 1 and ISO 2) can be selected via the pressure regulator configurator VABFS2

2) Also suitable for valves with a symmetrical design

# Key features – Pneumatic components

| Vertical stacking – Pressure regulator plate, reversible, variants 1)                                                                                                                                                                                                                                                 |  |                      |       |       |       |       |                           |        |                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------|-------|-------|-------|-------|---------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code                                                                                                                                                                                                                                                                                                                  |  | Type                 | Width |       |       |       | Pressure regulation up to |        | Description                                                                                                                                                                                                                                                                                       |
|                                                                                                                                                                                                                                                                                                                       |  |                      | 18 mm | 26 mm | 42 mm | 52 mm | 6 bar                     | 10 bar |                                                                                                                                                                                                                                                                                                   |
| Pressure regulator plate for port 2, reversible (B regulator)                                                                                                                                                                                                                                                         |  |                      |       |       |       |       |                           |        |                                                                                                                                                                                                                                                                                                   |
| ZL                                                                                                                                                                                                                                                                                                                    |  | VABF-S...-R6C2-C-10  | ■     | ■     | ■     | ■     | –                         | ■      | Reversible pressure regulator for port 2                                                                                                                                                                                                                                                          |
| ZLY <sup>2)</sup>                                                                                                                                                                                                                                                                                                     |  | VABF-S...-R6C2-C-10E | ■     | ■     | ■     | ■     | –                         | ■      |                                                                                                                                                                                                                                                                                                   |
| ZN                                                                                                                                                                                                                                                                                                                    |  | VABF-S...-R6C2-C-6   | ■     | ■     | ■     | ■     | ■                         | –      |                                                                                                                                                                                                                                                                                                   |
| ZNY <sup>2)</sup>                                                                                                                                                                                                                                                                                                     |  | VABF-S...-R6C2-C-6E  | ■     | ■     | ■     | ■     | ■                         | –      |                                                                                                                                                                                                                                                                                                   |
| Pressure regulator plate for port 4, reversible (A regulator)                                                                                                                                                                                                                                                         |  |                      |       |       |       |       |                           |        |                                                                                                                                                                                                                                                                                                   |
| ZK <sup>2)</sup>                                                                                                                                                                                                                                                                                                      |  | VABF-S...-R7C2-C-10  | ■     | ■     | ■     | ■     | –                         | ■      | Reversible pressure regulator for port 4                                                                                                                                                                                                                                                          |
| ZM <sup>2)</sup>                                                                                                                                                                                                                                                                                                      |  | VABF-S...-R7C2-C-6   | ■     | ■     | ■     | ■     | ■                         | –      |                                                                                                                                                                                                                                                                                                   |
| Pressure regulator plate for ports 2 and 4, reversible (AB regulator)                                                                                                                                                                                                                                                 |  |                      |       |       |       |       |                           |        |                                                                                                                                                                                                                                                                                                   |
| ZE                                                                                                                                                                                                                                                                                                                    |  | VABF-S...-R5C2-C-10  | ■     | ■     | ■     | ■     | –                         | ■      | <ul style="list-style-type: none"><li>• Reversible pressure regulator for ports 2 and 4</li><li>• Pressure regulation upstream of the solenoid valve</li><li>• Routes the operating pressure from duct 1 to ducts 3 and 5</li><li>• Routes the exhaust air from duct 1 to ducts 3 and 5</li></ul> |
| ZEY <sup>2)</sup>                                                                                                                                                                                                                                                                                                     |  | VABF-S...-R5C2-C-10E | ■     | ■     | ■     | ■     | –                         | ■      |                                                                                                                                                                                                                                                                                                   |
| ZJ                                                                                                                                                                                                                                                                                                                    |  | VABF-S...-R5C2-C-6   | ■     | ■     | ■     | ■     | ■                         | –      |                                                                                                                                                                                                                                                                                                   |
| ZJY <sup>2)</sup>                                                                                                                                                                                                                                                                                                     |  | VABF-S...-R5C2-C-6E  | ■     | ■     | ■     | ■     | ■                         | –      |                                                                                                                                                                                                                                                                                                   |
| <div><div></div><div><b>Note</b><br/>These pressure regulator plates cannot be combined with standard 2x 3/2-way solenoid valves (code N, K, H).<br/>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.</div></div> |  |                      |       |       |       |       |                           |        |                                                                                                                                                                                                                                                                                                   |

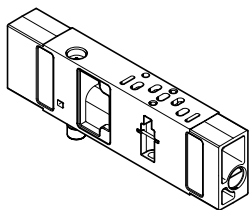
1) Width variants 42 mm and 52 mm (ISO 5599-2, ISO 1 and ISO 2) can be selected via the pressure regulator configurator VABF-S2

2) Also suitable for valves with a symmetrical design

## Key features – Pneumatic components

## Vertical stacking

## Throttle plate



Equipped with two flow control valves at which the exhaust air flow rate at exhaust ports 3 or 5 can be adjusted.

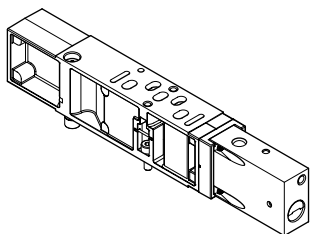
This enables the movement of the drive to be initiated and the required speed to be set on the valve terminal using the manual override. Ducts 3 and 5 can be adjusted independently of each other.

**Note**

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

| Code |  | Type              | Width |       |       |       | Description                                                                                                          |
|------|--|-------------------|-------|-------|-------|-------|----------------------------------------------------------------------------------------------------------------------|
|      |  |                   | 18 mm | 26 mm | 42 mm | 52 mm |                                                                                                                      |
| X    |  | VABF-S4-...F1B1-C | ■     | ■     | ■     | ■     | <ul style="list-style-type: none"> <li>Restricts the exhaust air downstream of the valve in ducts 3 and 5</li> </ul> |

## Vertical pressure shut-off plate



This is equipped with a switch with which the compressed air supply can be shut off. A solenoid valve or downstream vertical stacking plate can thus be replaced without switching off the overall air supply.

If the control chain has a redundant connection, the cycle can continue even in the case of a cyclical control system. After the shut-off function has been activated, the exhaust air/return air is discharged from the activated valve. This takes place via an M5 threaded connection or via duct 3 in the case of width 18 and 26 mm, and via duct 3 in the case of width 42 and 52 mm.

**Note**

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

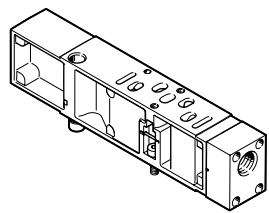
| Code |  | Type             | Width |       |       |       | Description                                                                                                                                                                                                                                                                                                                     |
|------|--|------------------|-------|-------|-------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |  |                  | 18 mm | 26 mm | 42 mm | 52 mm |                                                                                                                                                                                                                                                                                                                                 |
| ZT   |  | VABF-S4...L1D1-C | ■     | ■     | –     | –     | <ul style="list-style-type: none"> <li>3/2-way valve for shutting off the operating pressure at the valve position</li> <li>Blocks ducts 1 and 14 for the valve position</li> <li>Supplies the valve position with internal pilot air</li> <li>Pressure separation on the valve assembly</li> </ul>                             |
|      |  | VABF-S2...L1D1-C | –     | –     | ■     | ■     |                                                                                                                                                                                                                                                                                                                                 |
| ZS   |  | VABF-S...L1D2-C  | ■     | ■     | –     | –     | <ul style="list-style-type: none"> <li>3/2-way valve for shutting off the operating pressure at the valve position</li> <li>Blocks ducts 1 and 14 for the valve position</li> <li>Supplies the valve position with internal pilot air</li> <li>Pressure separation can be shut off on the valve assembly using a key</li> </ul> |

**Note**

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

Key features – Pneumatic components

Vertical supply plate



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

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

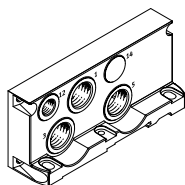
| Code |  | Type                | Width |       |       |       | Description                                                                                                                                          |
|------|--|---------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |  |                     | 26 mm | 18 mm | 42 mm | 52 mm |                                                                                                                                                      |
| ZU   |  | VABF-S-...P1A3-...  |       |       |       |       | <ul style="list-style-type: none"><li>• Plate with port 11 for supplying individual operating pressure to a valve position, duct 1</li></ul>         |
| ZV   |  | VABF-S-...P1A14-... |       |       |       |       | <ul style="list-style-type: none"><li>• Plate with port 11 for supplying individual operating pressure to a valve position, ducts 1 and 14</li></ul> |

## Key features – Pneumatic components

## Compressed air supply and exhausting

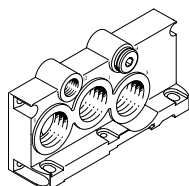
## Right end plate, internal pilot air supply

Connection size G1/2 right end plate ducts 1/3/5



- VTSA/VTSA-F
- Code V (port 14 is not available)
- VTSA-F-CB
- Code NS

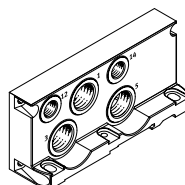
Connection size G3/4 right end plate ducts 1/3/5



- VTSA/VTSA-F
- Code V1, V3 (port 14 is sealed with a blanking plug)
- VTSA-F-CB
- Code MS

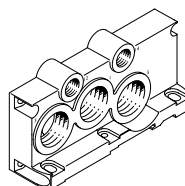
## Right end plate, external pilot air supply

Connection size G1/2 right end plate ducts 1/3/5



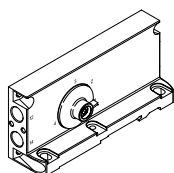
- VTSA/VTSA-F
- Code X
- VTSA-F-CB
- Code NZ

Connection size G3/4 right end plate ducts 1/3/5



- VTSA/VTSA-F
- Code X1, X3
- VTSA-F-CB
- Code MZ

## Right end plate with pilot air selector



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

- VTSA-F-CB
- Code YZ: selector position 1, external pilot air supply
  - Code YS: selector position 2, internal pilot air supply

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

The valve terminal is generally supplied via supply plates (max. 16 per valve terminal) and/or via the right end plate.

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

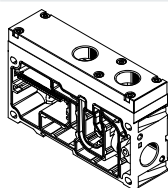


## Key features – Pneumatic components

### Compressed air supply and exhaust

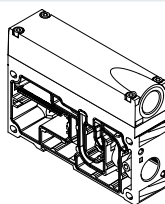
Supply plates for VTSA/VTSA-F, exhaust port 3/5 separate

- Code K



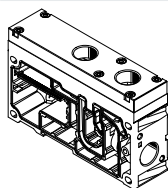
Supply plates for VTSA/VTSA-F, exhaust port 3/5 common

- Code L



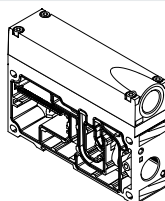
Supply plates/extension module, pneumatic and electric air supply plate for VTSA-F-CB, exhaust port 3/5 separate

- Code U
- Code UW
- Code UWS



Supply plates/extension module, pneumatic and electric air supply plate for VTSA-F-CB, exhaust port 3/5 common

- Code U
- Code UW
- Code UWS



## Key features – Pneumatic components

## Additional compressed air supply/duct separation, VTSA/VTSA-F

Additional supply plates can be used to ensure the compressed air supply for larger valve terminals or to create additional pressure zones.

These can be selected at any point upstream or downstream of the manifold sub-bases.

Supply plates contain the ports:

- Compressed air supply (1)
- Exhaust port (3/5) common or separate

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

**Operation with ducted exhaust air:**

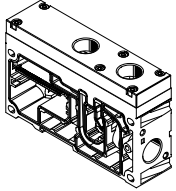
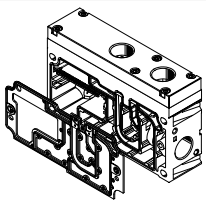
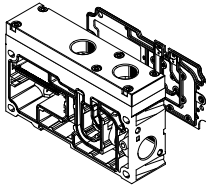
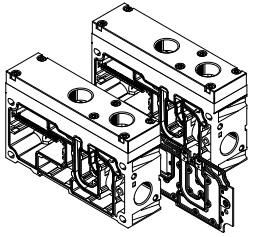
When the exhaust air is ducted, exhausting can take place via a supply plate or a right end plate (code V or X).

If duct separation is required, there are a number of different options:

- Duct separation 1, 3, 5: code S
- Duct separation 1: code T
- Duct separation 3, 5: code R

If a combination of duct separation (S, T or R) and one or two supply plates is required, the following variants can be selected:

- Supply plate with duct separation on the left: code SU, TU, RU
- Supply plate with duct separation on the right: code US, UT, UR
- 2 supply plates with intermediate duct separation: code USU, UTU, URU.

| Supply plates for VTSA/VTSA-F |                                                                                     | Type                                       | Description                                                                                                                                                                                                      |
|-------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code                          |                                                                                     |                                            |                                                                                                                                                                                                                  |
| U                             |    | VABF-S6-10-P1A7-G12<br>VABF-S6-10-P1A6-G12 | <ul style="list-style-type: none"> <li>• Supply plate without duct separation (no R, S or T selected)</li> <li>• Exhaust port 3/5 common (not shown)</li> <li>• Exhaust port 3/5 separate</li> </ul>             |
| SU<br>TU<br>RU                |   |                                            | <ul style="list-style-type: none"> <li>• Supply plate with duct separation on the left, if R, S or T is selected</li> <li>• Exhaust port 3/5 common (not shown)</li> <li>• Exhaust port 3/5 separate</li> </ul>  |
| US<br>UT<br>UR                |  |                                            | <ul style="list-style-type: none"> <li>• Supply plate with duct separation on the right, if R, S or T is selected</li> <li>• Exhaust port 3/5 common (not shown)</li> <li>• Exhaust port 3/5 separate</li> </ul> |
| USU<br>UTU<br>URU             |  |                                            | <ul style="list-style-type: none"> <li>• 2 supply plates with duct separation in centre, if R, S or T selected</li> <li>• Exhaust port 3/5 common (not shown)</li> <li>• Exhaust port 3/5 separate</li> </ul>    |

## Key features – Pneumatic components

## Additional compressed air supply/duct separation, VTSA-F-CB

Additional supply plates can be used to ensure the compressed air supply for larger valve terminals or to create additional pressure zones.

These can be selected at any point upstream or downstream of the manifold sub-bases.

Supply plates contain the ports:

- Compressed air supply (1)
- Exhaust port (3/5) common or separate

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

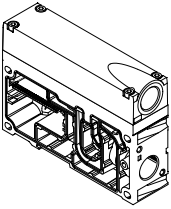
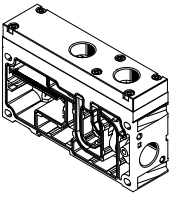
**Operation with ducted exhaust air:**

With ducted exhaust air, venting can be via a supply plate or a right end plate (code V or X).

If duct separation is required, there are a number of different options:

- Duct separation 1, 14: code TL
- Duct separation 1, 3, 5, 14: code K
- Duct separation 14: code L
- Duct separation 1, 3, 5: code S
- Duct separation 1: code T
- Duct separation 3, 5: code R

## Supply plates, extension module and pneumatic and electric air supply plate for VTSA-F-CB

| Code |                                                                                     | Type                   | Description                                                                                                                                                                                                                                                                                                    |
|------|-------------------------------------------------------------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| U    |    | VABF-S6-1-P1A7-G12-CB  | <ul style="list-style-type: none"> <li>• Additional pneumatic supply</li> <li>• Connecting thread G1/2</li> <li>• Exhaust port 3/5 common</li> </ul>                                                                                                                                                           |
| UW   |                                                                                     | VABF-S6-1-P8A7-G12-CB  | <ul style="list-style-type: none"> <li>• Additional pneumatic and electrical supply</li> <li>• Connecting thread G1/2</li> <li>• Generation of 24 additional valve addresses (electrical supply is provided internally from Uval)</li> <li>• Exhaust port 3/5 common</li> </ul>                                |
| UWS  |                                                                                     | VABF-S6-1-P8A7-G12-CB1 | <ul style="list-style-type: none"> <li>• Additional pneumatic and electrical supply</li> <li>• Connecting thread G1/2</li> <li>• Generation of 24 additional valve addresses (electrical supply is provided from new (safe) voltage zone (internally from S2))</li> <li>• Exhaust port 3/5 common</li> </ul>   |
| U    |  | VABF-S6-1-P1A6-G12-CB  | <ul style="list-style-type: none"> <li>• Additional pneumatic supply</li> <li>• Connecting thread G1/2</li> <li>• Exhaust port 3/5 separate</li> </ul>                                                                                                                                                         |
| UW   |                                                                                     | VABF-S6-1-P8A6-G12-CB  | <ul style="list-style-type: none"> <li>• Additional pneumatic and electrical supply</li> <li>• Connecting thread G1/2</li> <li>• Generation of 24 additional valve addresses (electrical supply is provided internally from Uval)</li> <li>• Exhaust port 3/5 separate</li> </ul>                              |
| UWS  |                                                                                     | VABF-S6-1-P8A6-G12-CB1 | <ul style="list-style-type: none"> <li>• Additional pneumatic and electrical supply</li> <li>• Connecting thread G1/2</li> <li>• Generation of 24 additional valve addresses (electrical supply is provided from new (safe) voltage zone (internally from S2))</li> <li>• Exhaust port 3/5 separate</li> </ul> |

## Key features – Pneumatic components

## Right end plate

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

With the following right end plates, the outlet direction of the ports is aligned with the horizontal stacking direction. Right end plates with pilot air supply/pilot exhaust air (VTSA/VTSA-F)

- Internal pilot air supply: code V, V1 and V3 (ducts 1 and 14 are connected)
- External pilot air supply: code X, X1 and X3, as well as XP1, XP2, XP3 and XS

Right end plates with pilot air supply/pilot exhaust air (VTSA-F-CB)

- Internal pilot air supply: code NS, MS (ducts 1 and 14 are connected)
- External pilot air supply: code NZ, MZ

For end plates with pilot air selector, the outlet direction of the ports is to the front of the valve terminal. This means that all the ports on the valve terminal can be combined in one outlet direction.

The special feature of the end plates with pilot air selector is the selector switch itself, which has four settings for different pilot air supply/pilot exhaust air.

End plates with pilot air selector switch set at the factory for:

- External pilot air supply: selector position 1 (code Z)
- Internal pilot air supply: selector position 2 (code Y)
- External pilot air supply, ducted pilot exhaust air: selector position 3 (code W)
- Internal pilot air supply, ducted pilot exhaust air: selector position 4 (code U)



## Note

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

| Right end plate, variants |                   |                       |                                                                     |                                                                                              |                   |        |
|---------------------------|-------------------|-----------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------|--------|
| Code<br>VTSA/VTSA-F       | Code<br>VTSA-F-CB | Blanking plug in duct | Pilot air supply                                                    | Ducted pilot exhaust air 1)<br>Position of the seal on the solenoid valve ("ISO" is visible) | Connecting thread |        |
|                           |                   |                       |                                                                     |                                                                                              | 1, 3, 5           | 12, 14 |
| V                         | NS                | –                     | Internal                                                            | –                                                                                            | G1/2              | G1/4   |
| V1                        | MS                | –                     |                                                                     | –                                                                                            | G3/4              | G1/4   |
| V3                        | –                 | –                     |                                                                     | ■                                                                                            | G3/4              | G1/4   |
| X                         | NZ                | –                     | External                                                            | –                                                                                            | G1/2              | G1/4   |
| X1                        | MZ                | –                     |                                                                     | –                                                                                            | G3/4              | G1/4   |
| X3                        | –                 | –                     |                                                                     | ■                                                                                            | G3/4              | G1/4   |
| XP1 <sup>2)</sup>         | NZAB              | 1                     | External, via soft-start valve<br>("gradual pressure build-up")     | –                                                                                            | G1/2              | G1/4   |
| XP2 <sup>3)</sup>         | NZABCB            | 1, 14                 |                                                                     | –                                                                                            | G1/2              | G1/4   |
| XP3 <sup>3)</sup>         | NZABCBGB          | 1, 3, 5, 14           |                                                                     | –                                                                                            | G1/2              | G1/4   |
| XS <sup>4)</sup>          | NZCB              | 14                    | External, via pilot air switching valve<br>("switchable pilot air") | –                                                                                            | G1/2              | G1/4   |

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

2) Not possible in combination with soft-start valve code PQ, PP, PO (with internal pilot air supply)

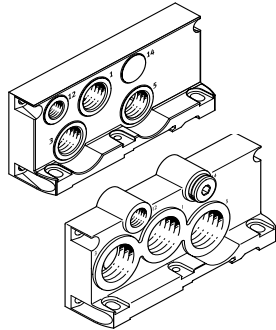
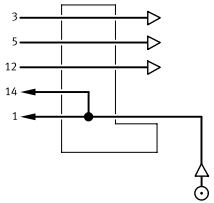
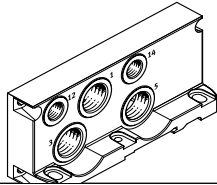
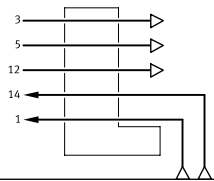
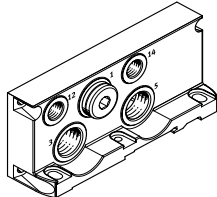
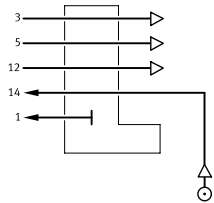
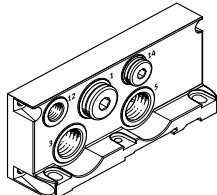
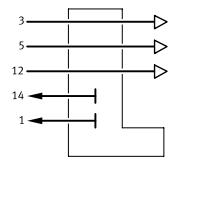
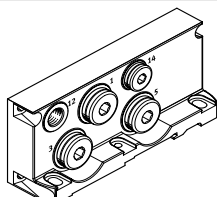
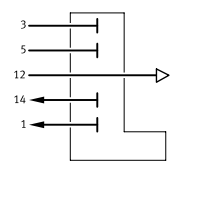
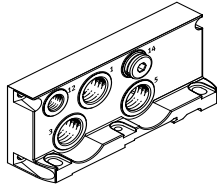
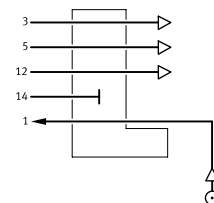
3) Not possible in combination with soft-start valve code PN, PM, PK (with external pilot air supply)

4) Only possible in combination with pilot air switching valve/intermediate plate for switchable pilot air

| Right end plate with pilot air selector |                   |                   |                   |                                                                                              |                          |  |
|-----------------------------------------|-------------------|-------------------|-------------------|----------------------------------------------------------------------------------------------|--------------------------|--|
| Code<br>VTSA/VTSA-F                     | Code<br>VTSA-F-CB | Pilot air supply  | Selector position | Ducted pilot exhaust air 1)<br>Position of the seal on the solenoid valve ("ISO" is visible) | Connecting thread 12, 14 |  |
| Z                                       | YZ                | External          | 1                 | –                                                                                            | G1/4                     |  |
| Y                                       | YS                | Internal          | 2                 | –                                                                                            | G1/4                     |  |
| W                                       | –                 | External (ducted) | 3                 | ■                                                                                            | G1/4                     |  |
| U                                       | –                 | Internal (ducted) | 4                 | ■                                                                                            | G1/4                     |  |

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

## Key features – Pneumatic components

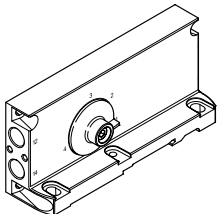
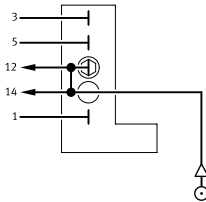
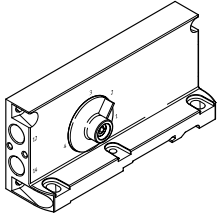
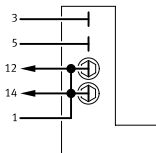
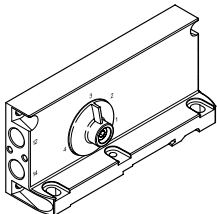
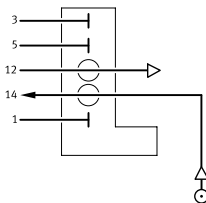
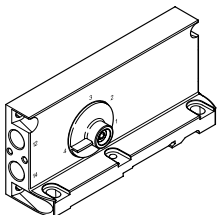
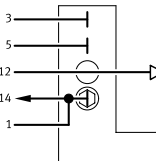
| Right end plate                          |           | Type of compressed air supply and pilot air supply                                  |                                                                                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------|-----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code                                     | Code      |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| VTSA/VTSA-F                              | VTSA-F-CB |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| End plate right (graphical illustration) |           |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| V                                        | NS        |    |    | <b>Internal pilot air supply</b> <ul style="list-style-type: none"><li>• Pilot air supply is branched internally from port 1</li><li>• Port 14 is not available with code V</li><li>• Port 14 is sealed with a blanking plug for code V1, V3</li><li>• Exhaust air via ports 3 and 5</li><li>• For operating pressure in the range 3 ... 10 bar</li><li>• Pilot exhaust air via port 12 1)</li><li>• V1 cannot be selected in combination with a soft-start valve in the last pressure zone</li></ul> |
| V1                                       | MS        |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| V3                                       | —         |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| X                                        | NZ        |    |    | <b>External pilot air supply</b> <ul style="list-style-type: none"><li>• Pilot air supply between 2 and 10 bar is connected at port 14</li><li>• Exhaust air via ports 3 and 5</li><li>• For operating pressure in the range –0.9 ... 10 bar (suitable for vacuum)</li><li>• Pilot exhaust air via port 12 1)</li><li>• X1 cannot be selected in combination with a soft-start valve in the last pressure zone</li></ul>                                                                              |
| X1                                       | MZ        |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| X3                                       | —         |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| XP1                                      | NZ        |   |   | <b>External pilot air supply, compressed air supply via soft-start valve 2)</b> <ul style="list-style-type: none"><li>• Port 1 is sealed with a blanking plug</li><li>• Exhaust air via ports 3 and 5</li><li>• Pilot exhaust air via port 12 1)</li></ul>                                                                                                                                                                                                                                            |
| XP2                                      | NZ        |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| XP2                                      | NZ        |  |  | <b>External pilot air supply, compressed air supply via soft-start valve 2)</b> <ul style="list-style-type: none"><li>• Internal pilot air supply 14 via soft-start valve</li><li>• Ports 1 and 14 are sealed</li><li>• Exhaust air via ports 3 and 5</li><li>• Pilot exhaust air via port 12 1)</li></ul>                                                                                                                                                                                            |
| XP3                                      | NZ        |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| XP3                                      | NZ        |  |  | <b>External pilot air supply, compressed air supply via soft-start valve 2)</b> <ul style="list-style-type: none"><li>• Internal pilot air supply 14 via soft-start valve</li><li>• Ports 1, 3, 5 and 14 are sealed</li><li>• Pilot exhaust air via port 12 1)</li></ul>                                                                                                                                                                                                                              |
| XS                                       | NZ        |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| XS                                       | NZ        |  |  | <b>External pilot air supply via pilot air switching valve 3)</b> <ul style="list-style-type: none"><li>• Internal pilot air supply 14 via pilot air switching valve</li><li>• Port 14 is sealed</li><li>• Exhaust air via ports 3 and 5</li><li>• Pilot exhaust air via port 12 1)</li></ul>                                                                                                                                                                                                         |
|                                          |           |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

1) Ducted pilot exhaust air is only possible with rotated seals on the valve

2) Application with XP1, XP2, XP3 and soft-start valve in combination with valves of width 52 mm:  
please note the maximum flow rate of the soft-start valve in this pressure zone

3) Application with XS and pilot air switching valve in conjunction with intermediate plate/intermediate plate for switchable pilot air

## Key features – Pneumatic components

| Right end plate                   |           |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------|-----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code <sup>1)</sup>                | Code      | Type of compressed air supply and pilot air supply                                  | Description                                                                         |                                                                                                                                                                                                                                                                                                                                                                                             |
| VTSA/VTSA-F                       | VTSA-F-CB |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                             |
| End plate with pilot air selector |           |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                             |
| Z (1)                             | YZ        |    |    | External pilot air supply <ul style="list-style-type: none"><li>Pilot air supply is connected at port 14</li><li>Port 12 is sealed with a blanking plug</li><li>Ports 12 and 14 are internally connected</li><li>Pilot exhaust air unducted via valve housing</li></ul>                                                                                                                     |
| Y (2)                             | YS        |    |    | Internal pilot air supply <ul style="list-style-type: none"><li>Pilot air supply is branched internally from port 1</li><li>Ports 1, 12 and 14 are internally connected</li><li>Ports 12 and 14 are sealed with blanking plugs</li><li>Pilot exhaust air unducted via valve housing</li></ul>                                                                                               |
| W (3)                             | YZ        |   |   | External pilot air supply, ducted pilot exhaust air <ul style="list-style-type: none"><li>Pilot air supply is connected at port 14</li><li>Pilot exhaust air via port 12 2)</li><li>Cannot be selected in combination with a soft-start valve in the last pressure zone</li></ul>                                                                                                           |
| U (4)                             | YS        |  |  | Internal pilot air supply, ducted pilot exhaust air <ul style="list-style-type: none"><li>Pilot air supply is branched internally from port 1</li><li>Ports 1 and 14 are internally connected</li><li>Port 14 is sealed with a blanking plug</li><li>Pilot exhaust air via port 12 2)</li><li>Cannot be selected in combination with a soft-start valve in the last pressure zone</li></ul> |

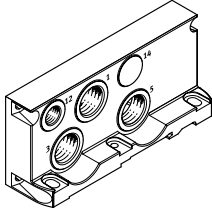
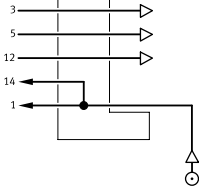
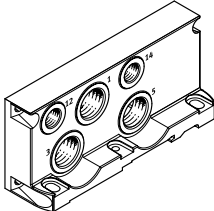
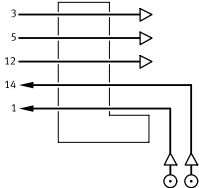
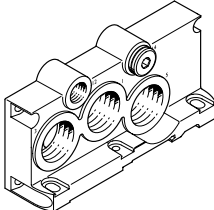
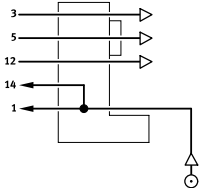
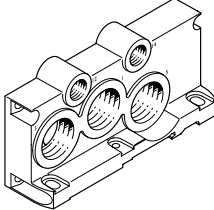
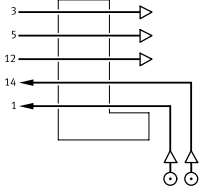
1) Selector setting in brackets

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

 **Note**

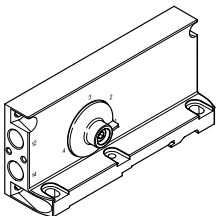
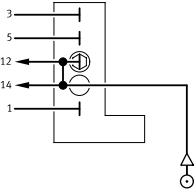
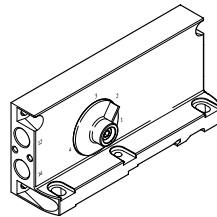
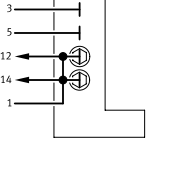
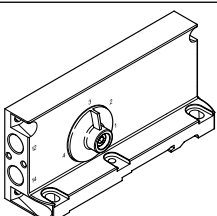
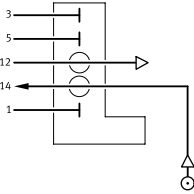
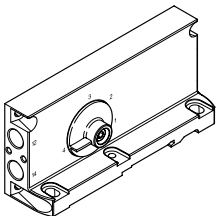
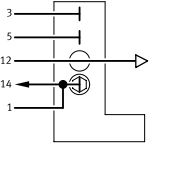
The reversible 3/2-way solenoid valves (code P, Q, R) must only be operated in selector position 1 or 2.

## Key features – Pneumatic components

| Configuration of all pneumatic threaded connections |                   |                                                                                     |                                                                                     |                      |                                       |                                           |                                         |
|-----------------------------------------------------|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------|---------------------------------------|-------------------------------------------|-----------------------------------------|
| Code<br>VTSA/VTSA-F                                 | Code<br>VTSA-F-CB |                                                                                     |                                                                                     | Connection<br>(duct) | Designation                           | Code M<br>Push-in connect-<br>or, large   | Code N<br>Push-in connect-<br>or, small |
| <b>Right end plate</b>                              |                   |                                                                                     |                                                                                     |                      |                                       |                                           |                                         |
| V                                                   | NS                |    |    | 1                    | Push-in fitting                       | QS-G1/2-16                                | QS-G1/2-12                              |
|                                                     |                   |                                                                                     |                                                                                     | 3 and 5              | Silencer<br>or<br>Push-in fitting     | U-1/2-B<br>or<br>QS-G1/2-16               | U-1/2-B<br>or<br>QS-G1/2-12             |
|                                                     |                   |                                                                                     |                                                                                     | 12                   | Silencer<br>or<br>Push-in fitting     | U-1/4<br>or<br>QS-G1/4-10                 | U-1/4<br>or<br>QS-G1/4-8                |
| X                                                   | NZ                |    |    | 1                    | Push-in fitting                       | QS-G1/2-16                                | QS-G1/2-12                              |
|                                                     |                   |                                                                                     |                                                                                     | 3 and 5              | Silencer<br>or<br>Push-in fitting     | U-1/2-B<br>or<br>QS-G1/2-16               | U-1/2-B<br>or<br>QS-G1/2-12             |
|                                                     |                   |                                                                                     |                                                                                     | 12                   | Silencer<br>or<br>Push-in fitting     | U-1/4<br>or<br>QS-G1/4-10                 | U-1/4<br>or<br>QS-G1/4-8                |
|                                                     |                   |                                                                                     |                                                                                     | 14                   | Push-in fitting                       | QS-G1/4-10                                | QS-G1/4-8                               |
| V1                                                  | MS                |   |   | 1                    | Barbed hose fitting                   | N-3/4-P-19 <sup>1)</sup>                  | –                                       |
| V3                                                  | –                 |                                                                                     |                                                                                     | 3 and 5              | Silencer<br>or<br>Barbed hose fitting | U-3/4-B<br>or<br>N-3/4-P-19 <sup>1)</sup> | –                                       |
|                                                     |                   |                                                                                     |                                                                                     | 12                   | Silencer<br>or<br>Push-in fitting     | U-1/4<br>or<br>QS-G1/4-12                 | U-1/4<br>or<br>QS-G1/4-10               |
|                                                     |                   |                                                                                     |                                                                                     | 14                   | Plug                                  | B-1/4                                     | B-1/4                                   |
| X1                                                  | MZ                |  |  | 1                    | Barbed hose fitting                   | N-3/4-P-19 <sup>1)</sup>                  | –                                       |
| X3                                                  | –                 |                                                                                     |                                                                                     | 3 and 5              | Silencer<br>or<br>Barbed hose fitting | U-3/4-B<br>or<br>N-3/4-P-19 <sup>1)</sup> | –                                       |
|                                                     |                   |                                                                                     |                                                                                     | 12                   | Silencer<br>or<br>Push-in fitting     | U-1/4<br>or<br>QS-G1/4-12                 | U-1/4<br>or<br>QS-G1/4-10               |
|                                                     |                   |                                                                                     |                                                                                     | 14                   | Push-in fitting                       | QS-G1/4-12                                | QS-G1/4-10                              |

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

## Key features – Pneumatic components

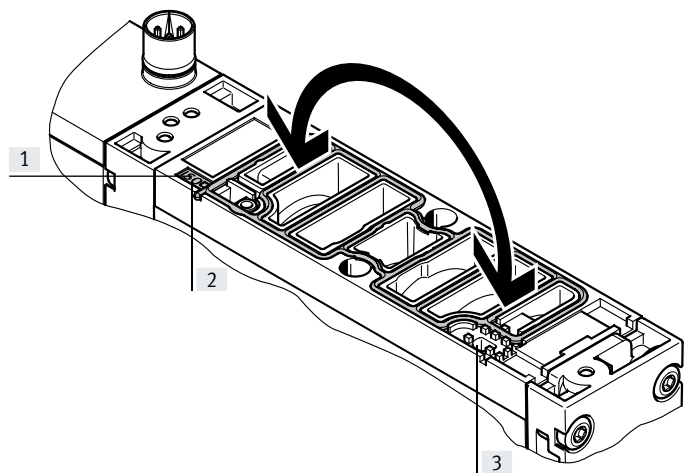
| Configuration of all pneumatic threaded connections |           |                                                                                     |                                                                                     | Connection<br>(duct) | Designation                       | Code M<br>Push-in connect-<br>or, large | Code N<br>Push-in connect-<br>or, small |
|-----------------------------------------------------|-----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------|-----------------------------------|-----------------------------------------|-----------------------------------------|
| Code <sup>1)</sup>                                  | Code      |                                                                                     |                                                                                     |                      |                                   |                                         |                                         |
| VTSA/VTSA-F                                         | VTSA-F-CB |                                                                                     |                                                                                     |                      |                                   |                                         |                                         |
| <b>End plate with pilot air selector</b>            |           |                                                                                     |                                                                                     |                      |                                   |                                         |                                         |
| Z (1)                                               | YZ        |    |    | 12                   | Blanking plug                     | B-1/4                                   | B-1/4                                   |
|                                                     |           |                                                                                     |                                                                                     | 14                   | Push-in fitting                   | QS-G1/4-10                              | QS-G1/4-8                               |
| Y (2)                                               | YS        |    |    | 12                   | Blanking plug                     | B-1/4                                   | B-1/4                                   |
|                                                     |           |                                                                                     |                                                                                     | 14                   | Blanking plug                     | B-1/4                                   | B-1/4                                   |
| W (3)                                               | YZ        |   |   | 12                   | Silencer<br>or<br>Push-in fitting | U-1/4<br>or<br>QS-G1/4-10               | U-1/4<br>or<br>QS-G1/4-8                |
|                                                     |           |                                                                                     |                                                                                     | 14                   | Push-in fitting                   | QS-G1/4-10                              | QS-G1/4-8                               |
| U (4)                                               | YS        |  |  | 12                   | Silencer<br>or<br>Push-in fitting | U-1/4<br>or<br>QS-G1/4-10               | U-1/4<br>or<br>QS-G1/4-8                |
|                                                     |           |                                                                                     |                                                                                     | 14                   | Blanking plug                     | B-1/4                                   | B-1/4                                   |

1) Selector setting in brackets



Key features – Pneumatic components

Using the seals with ducted/unducted pilot exhaust air



- Unducted pilot exhaust air:

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

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

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

| Designation        | ISO             | ISO                 |
|--------------------|-----------------|---------------------|
| Pilot exhaust air  | Ducted          | Unducted (standard) |
| Display window on  | Control side 12 | Control side 14     |
| Pilot exhaust port | 12              | –                   |

Pilot air supply

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

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

- Internal
- External

Internal pilot air supply

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

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

**Note**

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

External pilot air supply

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

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

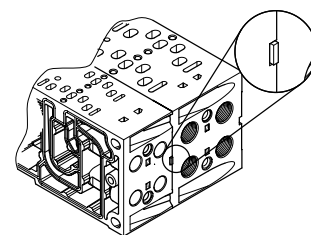
## Key features – Pneumatic components

## Creating pressure zones and separating exhaust air

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

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

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

## Key features – Pneumatic components

### Example: Compressed air supply and pilot air supply, right end plate

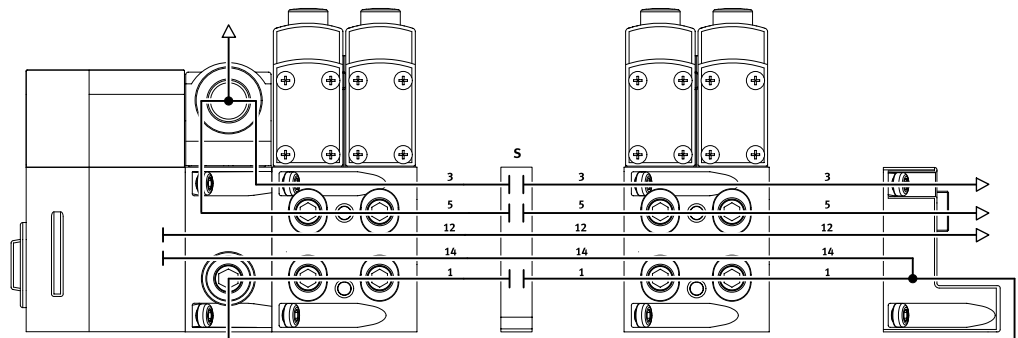
Internal pilot air supply, silencer/ducted exhaust air

Right end plate: code V and V1

Optional duct separation

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

- Port 14 is not available with code V and is sealed with a blanking plug for code V1.
- The air is exhausted via the silencer at exhaust port 3/5.
- Duct separations can optionally be used to create pressure zones.



### Example: Compressed air supply and pilot air supply, right end plate

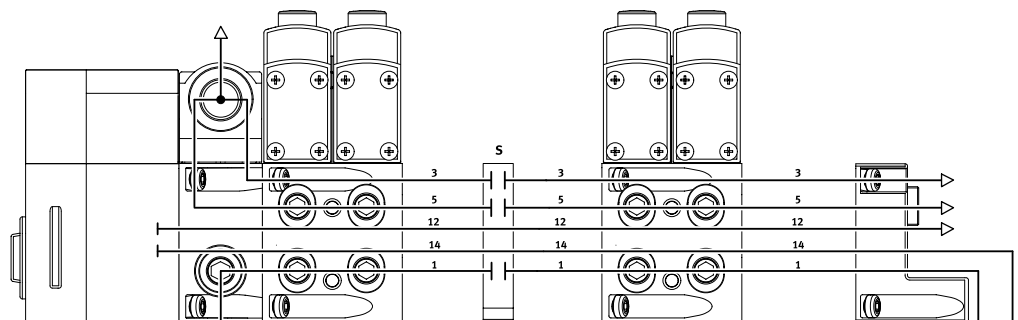
External pilot air supply, silencer/ducted exhaust air

Right end plate: code X and X1

Optional duct separation

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

- Port 14 on the right end plate is equipped with a fitting for this.
- The air is exhausted via the silencer at exhaust port 3/5.
- Duct separations can optionally be used to create pressure zones.



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

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

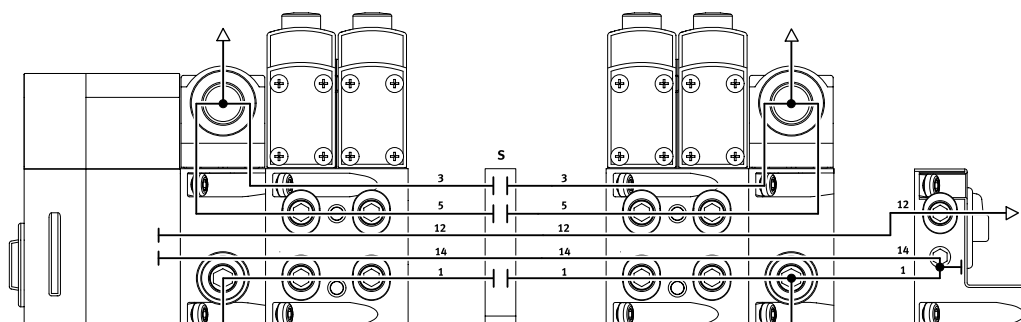
Internal pilot air supply, ducted exhaust air/silencer

Right end plate: code U

Optional duct separation

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

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



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

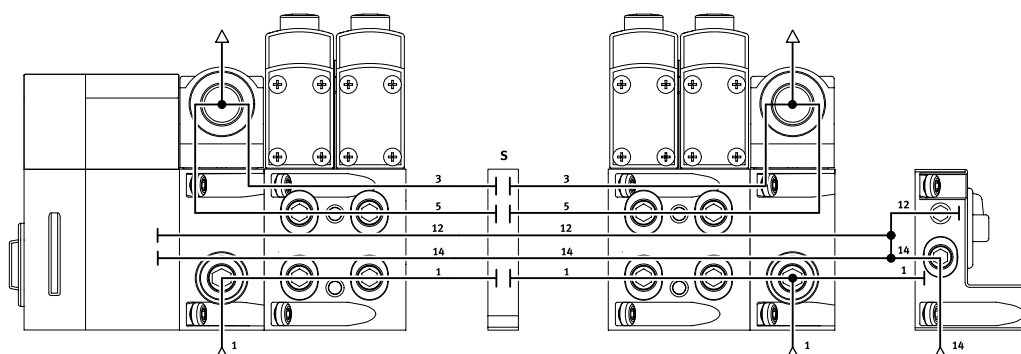
External pilot air supply, ducted exhaust air/silencer

Right end plate: code Z

Optional duct separation

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

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

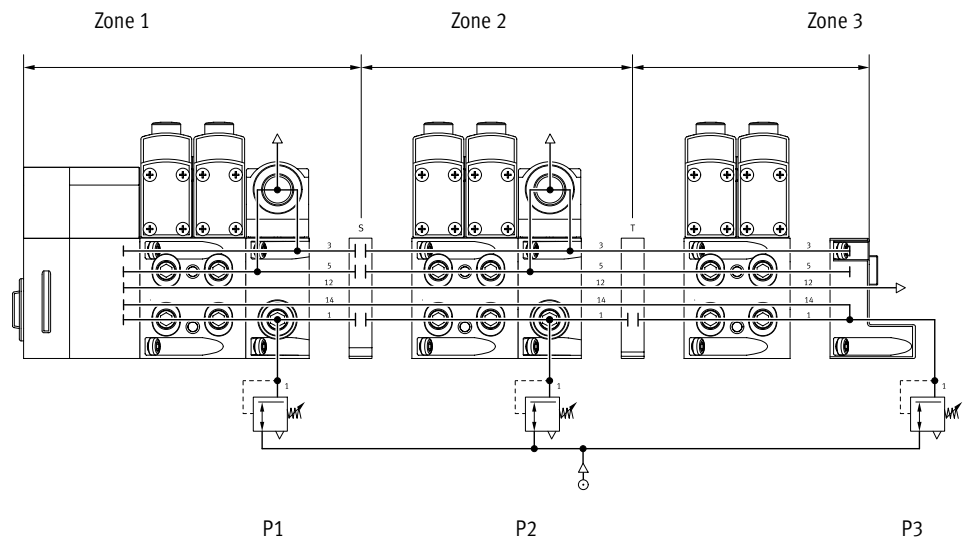


## Key features – Pneumatic components – Compressed air supply and pressure zones, examples

### Examples: Creating pressure zones

VTSA/VTSA-F/VTSA-F-CB with CPX terminal

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



### Note

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

→ page 196.

## Key features – Mounting

### Valve terminal mounting

Sturdy valve terminal mounting thanks to:

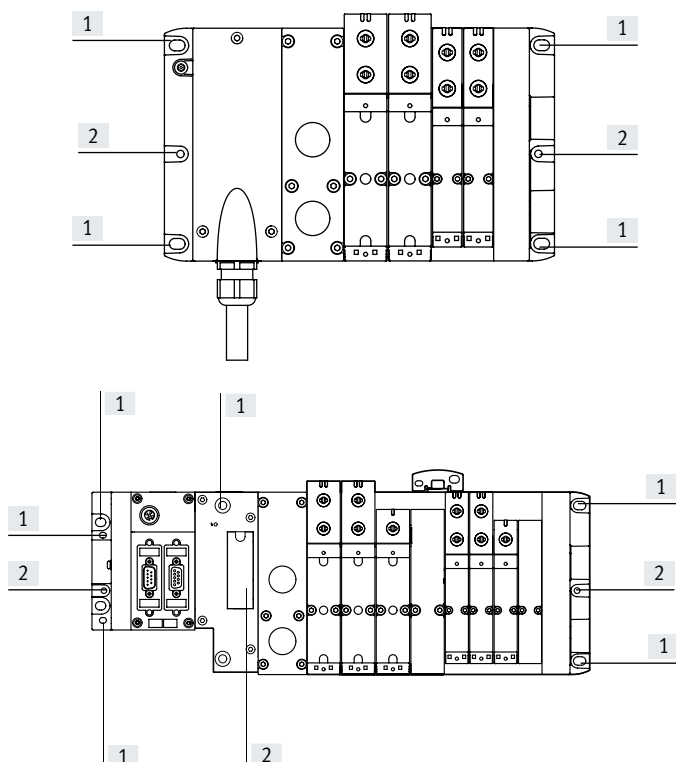
- Through-holes for wall mounting
- Additional mounting brackets
- DIN rail mounting for VTSA/VTSA-F (horizontal mounting position permitted)



#### Note

Further information on mounting the valve terminal, according to the valve terminal configuration, can be found online.

### Wall mounting, general



[1] Drilled hole for M6 screw

[2] Drilled hole for DIN rail mounting

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

- Multi-pin (4 pieces); 2 each on the multi-pin connection block and the right end plate
- Fieldbus, CPX (6 pieces); 2 each on the left (CPX) and right (VTSA/VTSA-F) end plate and the pneumatic interface
- I-Port/IO-Link® (4 pieces); 2 each on the I-Port/IO-Link® interface and on the right end plate

Mounting brackets can be mounted on pneumatic supply plates and manifold sub-bases.

If using CPX components, see:

→ Internet: cpx



#### Note

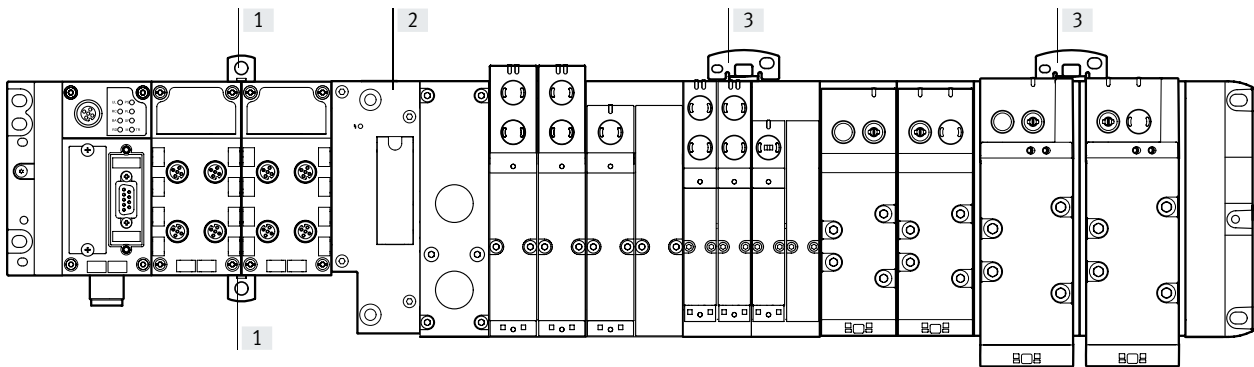
Wall mounting of the VTSA/VTSA-F/VTSA-F-CB with more than 5 pneumatic modules

Note the following information to avoid damage to the valve terminal:

- Additionally use mounting brackets of the type VAME-6-W-M46
- Mount these on each fourth plate (manifold sub-base, supply plate or exhaust plate), counting from left to right, starting after the pneumatic interface.
- No mounting bracket is required next to the right end plate.
- Always use the pre-assembled mounting brackets when mounting factory pre-assembled valve terminals on a wall.

## Key features – Mounting

### Wall mounting with CPX polymer interface



[1] Additional wall mounting for polymer CPX terminal

[2] Pneumatic interface

[3] Additional wall mounting for VTSA/VTSA-F/VTSA-F-CB

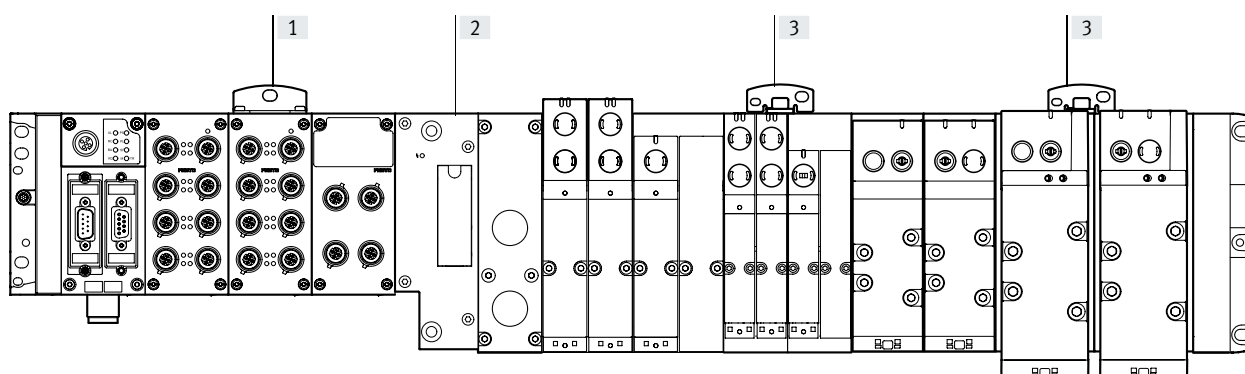
(with drilled hole for M5 and M6 screw)

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

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

## Key features – Mounting

## Wall mounting with CPX metal interface



[1] Additional wall mounting for CPX metal design

[2] Pneumatic interface

[3] Additional wall mounting for VTSA/VTSA-F/VTSA-F-CB

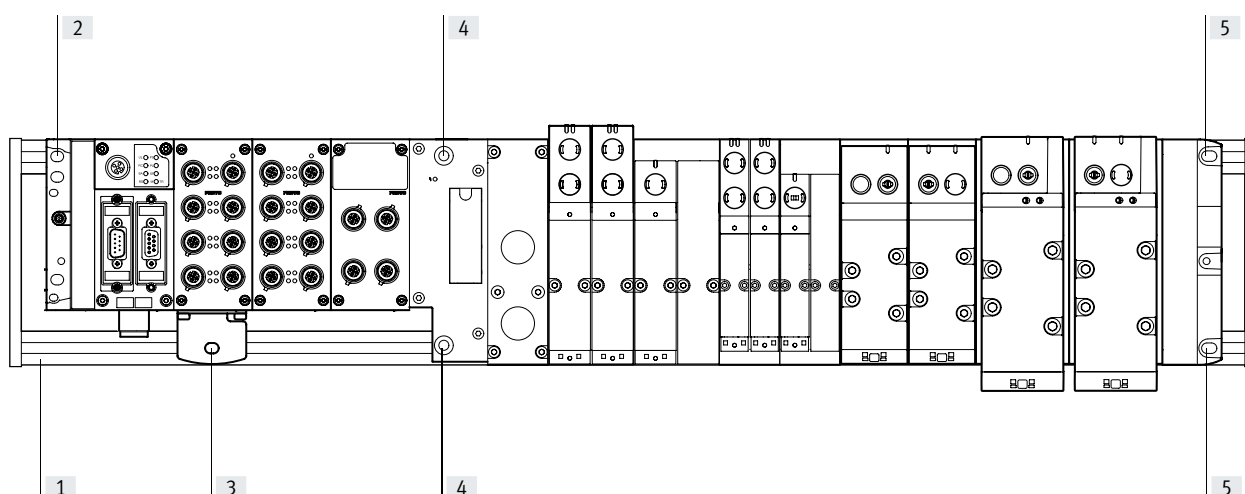
(with drilled hole for M5 and M6 screw)

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

In the case of the VTSA/VTSA-F/VTSA-F-CB, mounting brackets must be mounted on the wall as indicated above.

Brackets of the type VAME-S6-W-M46 must be used as an additional wall mounting.

## Mounting on support system with CPX metal interface



[1] Support system (DIN mounting rail)

[2] Upper mounting for metal CPX, left end plate on DIN mounting rail

[3] Lower mounting for metal CPX on DIN mounting rail with mounting bracket CPX-M-BG-VT-2X

[4] Mounting for pneumatic interface on DIN mounting rail

[5] Mounting for right end plate on DIN mounting rail

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

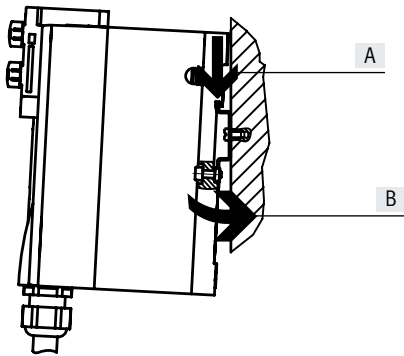
 **Note**

- Only metal CPX modules with VTSA/VTSA-F/VTSA-F-CB modules of width 18 ... 52 mm must be used.
  - The number of mounting brackets required depends on the number of CPX modules installed and whether any system feeds are present.
- Further information about mounting the valve terminal can be found in the assembly instructions in the Festo Support Portal



## Key features – Mounting

DIN rail mounting (not permitted for all VTSA-F-CB combinations)



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

To mount the valve terminal VTSA/VTSA-F/VTSA-F-CB on a DIN rail, you will need the mounting kit CPX-CPA-BG-NRH:

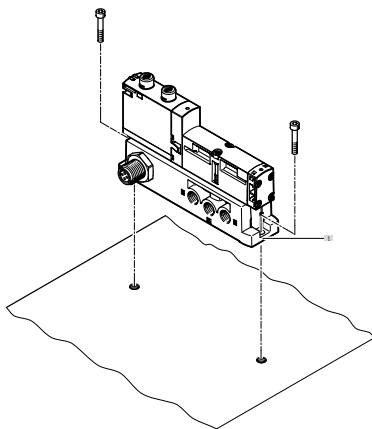
This enables the valve terminal to be mounted on a DIN rail to EN 60715.



### Note

- Wall mounting is recommended if more than one vertical stacking element or a long valve terminal design is required.
- Vibration/shock loads are not permitted for DIN rail mounting.
- Only horizontal installation is permitted for DIN rail mounting.
- Valve terminals VTSA-F-CB with pneumatic interface with voltage zones are not approved for DIN rail mounting.

## Individual valve mounting



[1] Vertical mounting holes

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

## Key features – Display and operation

### Indicators 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 (MO):

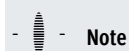
The manual override enables the valve to be switched when not electrically actuated or energised.

The valve is switched by pushing the manual override. The set switching status can also be locked by turning the manual override.

### Alternatives:

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

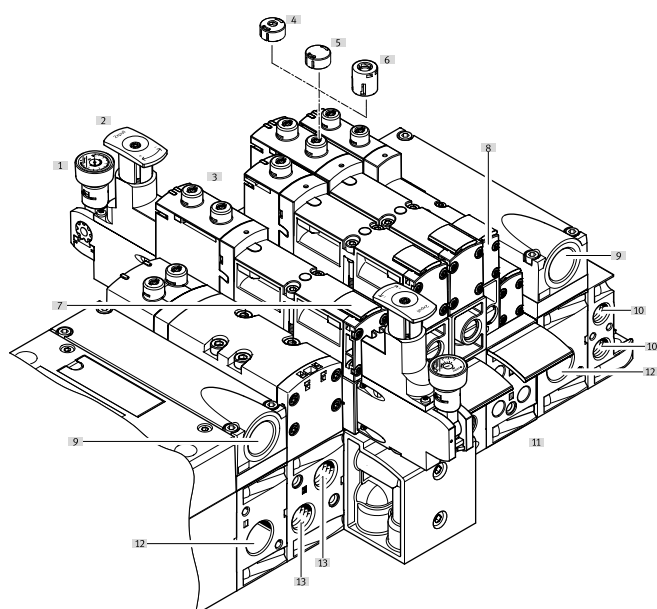
- The heavy-duty cover cap protects the manual override located on the valve. The valve can be actuated as non-detenting or as detenting via accessory.



### Note

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

### Pneumatic connection and control elements



- [1] Pressure gauge (optional)
- [2] Adjusting knob for optional pressure regulator plate
- [3] Manual override (MO) (for each pilot solenoid coil, non-detenting or non-detenting/detenting)
- [4] Cover cap for MO, non-detenting
- [5] Cover cap for MO, concealed
- [6] Cover cap for MO, non-detenting heavy duty, detenting via accessory
- [7] Inscription label holder for valve
- [8] Adjusting screw of optional throttle plate
- [9] Exhaust ports "Valves" (3/5)

- [10] Pilot ports 12 and 14 for supplying the external pilot air
- [11] Inscription label holder for sub-base
- [12] Supply port 1 (operating pressure)
- [13] Working ports 2 and 4, per valve position



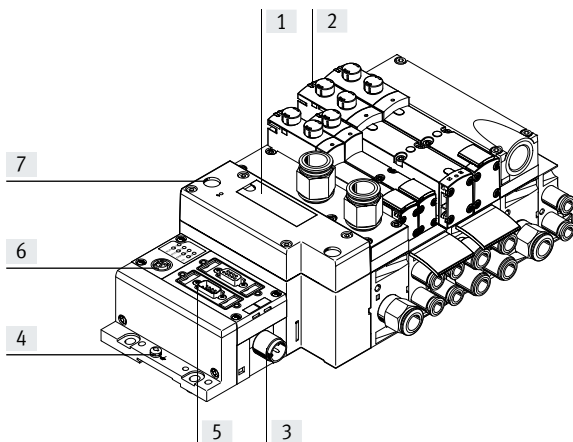
### Note

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

## Key features – Display and operation

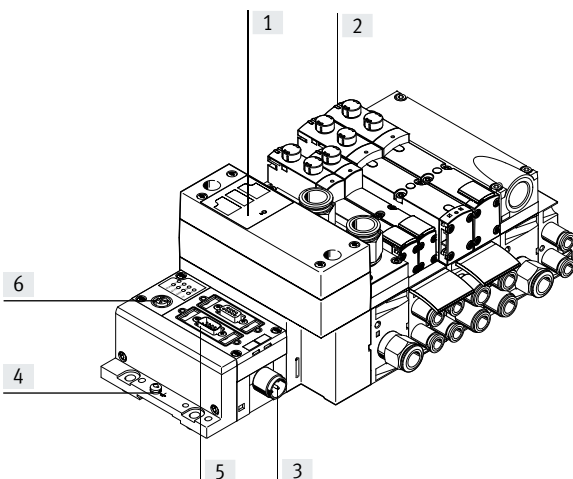
### Indicators and operation

Electrical connection and display elements for VTSA/VTSA-F



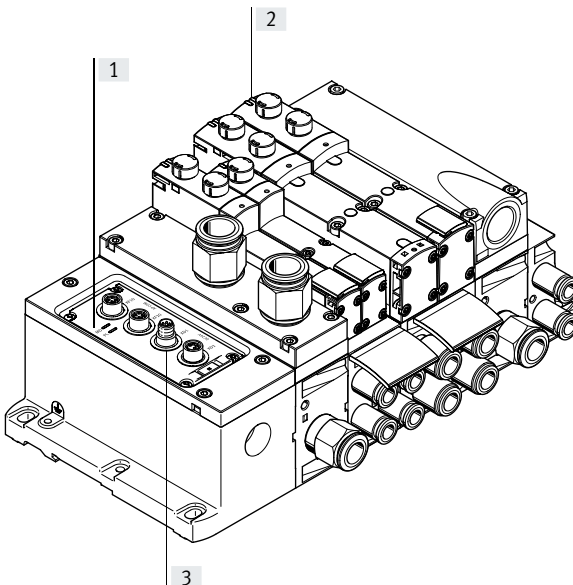
- [1] Inscription area and covering for DIN rail mounting
- [2] Yellow LEDs: signal status indication for the pilot solenoid coils
- [3] Power supply connection
- [4] Earthing connection
- [5] Fieldbus interface (bus-specific)
- [6] Service interface for handheld unit, etc.
- [7] Red LED: common error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

Electrical connection and display elements for VTSA-F-CB



- [1] LED indicators for operating status/diagnostics of the pneumatic interface
- [2] Yellow LEDs: signal status indication for the pilot solenoid coils
- [3] Power supply connection
- [4] Earthing connection
- [5] Fieldbus interface (bus-specific)
- [6] Service interface for handheld unit, etc.

Electrical connection and indicator elements for AP interface

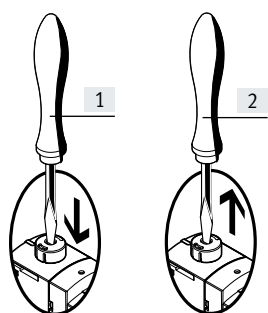


- [1] LED indicators for operating status/diagnostics of the pneumatic interface
- [2] Yellow LEDs: signal status indication for the pilot solenoid coils
- [3] AP interface with connections

## Key features – Display and operation

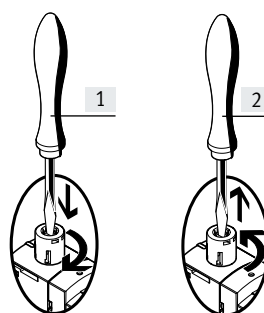
**Manual override (MO) – Function**

## MO with automatic return (non-detenting)



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

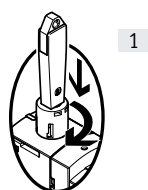
## MO with locking (detenting)



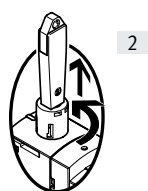
- [1] Press in the plunger of the manual override using a pointed object or screwdriver until the valve switches and then turn the plunger 90° clockwise until the stop is reached.  
Valve remains in the switching position.
- [2] Turn the plunger 90° anticlockwise until the stop is reached and then remove the pointed object or screwdriver. The spring force pushes the plunger of the manual override back. The valve returns to its normal position (not with double solenoid valve code J or D).

**Cover caps for manual override**

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

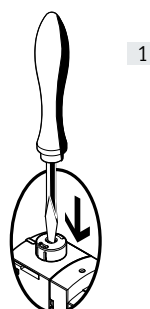


- [1] Non-detenting:  
Push in key for MO. The valve is in the switching position.  
Detenting:  
Turn the coded key in switching position 90° clockwise until the stop is reached. Valve remains in the switching position. In this position the key is latched and cannot be removed.

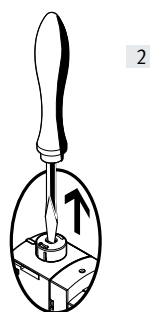


- [2] Turn the key 90° anticlockwise until the stop is reached. The key is now unlatched. The spring force of the manual override pushes the key back out. The valve returns to its normal position (not with double solenoid valve code J or D).

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

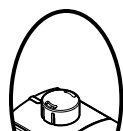


- [1] Restricted function, non-detenting: push in the plunger of the MO cap using a pointed object or screwdriver. The valve is in the switching position.



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

## Cover cap for MO, concealed

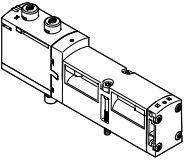
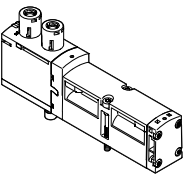
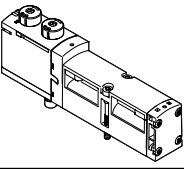
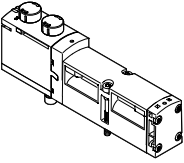
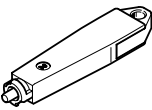


When concealed by the cover cap, the MO can be secured against accidental actuation.

- - - **Note**

Cover caps for the manual override can be ordered separately as accessories. There are also variants of the VSA valve with ready-fitted cover caps.

## Key features – Display and operation

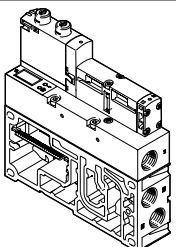
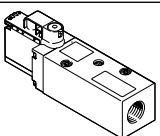
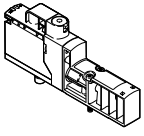
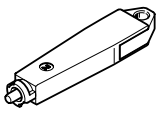
| Overview of valve variants and cover caps for manual override (MO)                 |               |                                                                                                            |                                              |                                          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

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

 **Note**

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

## Key features – Display and operation, VTSA-F-CB

| Overview of valve variants and cover caps for manual override (MO) for VTSA-F-CB    |               |                                                                                                            |                                              |                                                                     |
|-------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------|---------------------------------------------------------------------|
| Illustration                                                                        | Terminal code | Description of valve terminal order code                                                                   | Manual override (MO)                         | Valve code identification on the rating plate sticker <sup>1)</sup> |
| <b>Solenoid valve VABF, vacuum generator</b>                                        |               |                                                                                                            |                                              |                                                                     |
|    | ZQN           | MO can only be used as non-detenting with coded cover cap, as valve variant                                | Non-detenting                                | VABF-S4-2-V2B1-G38 ...                                              |
|                                                                                     | ZQR           | Non-detenting MO, can be used as detenting, as valve variant                                               | Non-detenting, detenting without accessories | VABF-S4-2-V2B1-G38 ...                                              |
|                                                                                     | ZQV           | MO concealed by cover cap – operation of MO prevented, as valve variant                                    | Concealed                                    | VABF-S4-2-V2B1-G38 ...                                              |
|                                                                                     | ZQA           | MO non-detenting/heavy duty with cover cap, can be used as detenting via accessory (key), as valve variant | Non-detenting, detenting via accessory (key) | VABF-S4-2-V2B1-G38 ...                                              |
| <b>Solenoid valve VABF, soft-start valve</b>                                        |               |                                                                                                            |                                              |                                                                     |
|    | ZQZ           | The manual override can be reset in two ways:<br>• manually or<br>• electrically via control signal        | Detenting, electrically self-resetting       | VABF-S6-1-P5A4 ... YE ...                                           |
|                                                                                     | ZQX           | Manual override concealed                                                                                  | None                                         | VABF-S6-1-P5A4 ... S ...                                            |
| <b>Solenoid valve VSVA, pilot air switching valve</b>                               |               |                                                                                                            |                                              |                                                                     |
|   | –             | The manual override can be reset in two ways:<br>• manually or<br>• electrically via control signal        | Detenting, electrically self-resetting       | VSVA-BT-M32CS... YE ...                                             |
|                                                                                     | ZX            | Manual override non-detenting                                                                              | Non-detenting                                | VSVA-BT-M32CS... MH ...                                             |
|                                                                                     | ZZ            | Manual override concealed                                                                                  | None                                         | VSVA-BT-M32CS ... S ...                                             |
| <b>Accessories for manual override, heavy duty</b>                                  |               |                                                                                                            |                                              |                                                                     |
|  | –             | Coded key (accessory) for actuating the MO, non-detenting/heavy duty, for detenting position               | For manual override, detenting               | –                                                                   |

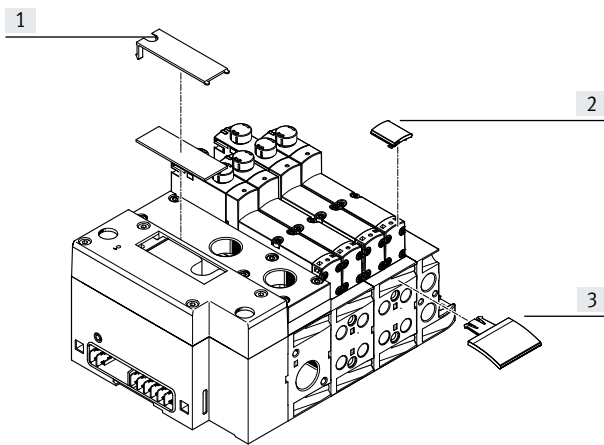
1) As an example, the part code for a 5/2-way single solenoid valve, mechanical spring return is used here (e.g. VSVA-B-M52-MZTR-A2-1T1L)

 **Note**

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

## Key features – Electrical components

### Inscription system



Inscription label holders can be applied to the valves and manifold sub-bases to identify them. They can be ordered by entering the code B or T in the order code for accessories.

Scope of delivery: inscription label holder including inscription label.

The following inscription labels can be used as spares:

- Inscription label holder for valve type ASCF-T-S6: part no. 540888
- Inscription label holder with additional fields for marking valve type ASCF-T-S6-Z: part no. 8106532

- Inscription label holder for manifold sub-base type ASCF-M-S6: part no. 540889
  - Inscription label holder for manifold sub-base (for valve width 52 mm) type ASCF-M-S2-2: part no. 562577
- Large inscription labels can be attached to the pneumatic interface as an alternative or in addition to the smaller labels.

[1] Inscription area (approx. 20 x 45 mm)

[2] Inscription label holder for valve ASCF-T-S6 (17 x 12.5 mm), ASCF-T-S6-Z

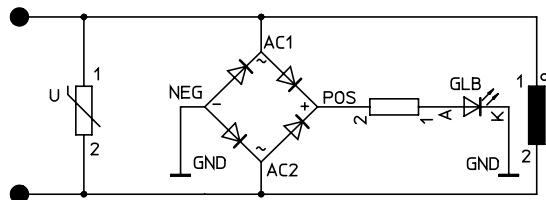
[3] Inscription label holder for manifold sub-base ASCF-M-S6, ASCF-M-S2-2

### Protective circuit

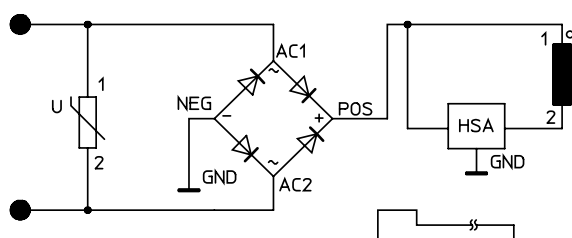
Each solenoid coil VSVA is provided with a spark arresting protective circuit and protected against polarity reversal.

The version with width 52 mm also has integrated holding current reduction.

Width 18 to 42 mm



Width 52 mm



### Note

- All control signals of the solenoid coils of a valve terminal share a common load (independent of whether multi-pin, AS-i or CPX).
- With the valve terminal VTSA-F-CB, the common load always refers to a common voltage zone.
- A configuration combining VTSA/VTSA-F and VTSA-F-CB is not permitted.

## Key features – Electrical components

### Individual valve

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

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

### Individual electrical connection

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

Individual electrical connection:

- M12
- 6-way or 10-way
- 5-pin
- 24 V DC

### Electrical multi-pin plug connection

The following multi-pin plug connection variants are offered for the valve terminal VTSA/VTSA-F:

- Sub-D multi-pin plug connection (37-pin): 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): 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, 19-pin to CNOMO E03.62.530.N, connecting thread M23 for 24 V DC. The valve terminal can be fitted with max. 16 solenoid coils.

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

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

With 16 or fewer valve positions, 2 solenoid coils per valve can be addressed.



#### Note

Use the following 37-pin connecting cables from Festo to connect the valve terminal VTSA/VTSA-F with Sub-D multi-pin plug connection:

- NEBV-...-LE10 for max. 8 solenoid coils
- NEBV-...-LE26 for max. 22 solenoid coils
- NEBV-...-LE27 for max. 23 solenoid coils
- NEBV-...-LE37 for max. 32 solenoid coils
- NECV-S1W37 pre-assembled plug connector

### AS-Interface connection

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

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

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



#### Note

AS-i module VAEM-S6-S-FAS-4-4E. Always operate the AS-i module with additional power supply if max. 4 solenoid coils (width 52 mm) are simultaneously supplied with current.

More information can be found at:  
→ Internet: as-interface

### Fieldbus interface/control block

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

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



#### Note

More information can be found at:  
→ Internet: cpx



## Key features – Electrical components

### I-Port/IO-Link®

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

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

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



#### Note

AS-i module VAEM-S6-S-FAS-4-4E. Always operate the AS-i module with additional power supply if max. 4 solenoid coils (width 52 mm) are simultaneously supplied with current.

More information can be found at:

→ Internet: i-port, io-link

### AP interface

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

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

This means a valve terminal with multi-pin plug connection can be converted using an AP interface.

The technical specifications of the AP interface must be observed in this case.



#### Note

AS-i module VAEM-S6-S-FAS-4-4E. Always operate the AS-i module with additional power supply if max. 4 solenoid coils (width 52 mm) are simultaneously supplied with current.

More information can be found at:

→ Internet: ap

## Key features – Electrical components

## Rules for addressing

## Address allocation

Address allocation doesn't depend on whether single or double solenoid valves are fitted.

Addresses are assigned in ascending order without gaps, from left to right.

## Single solenoid valve

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

## Double solenoid valve

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

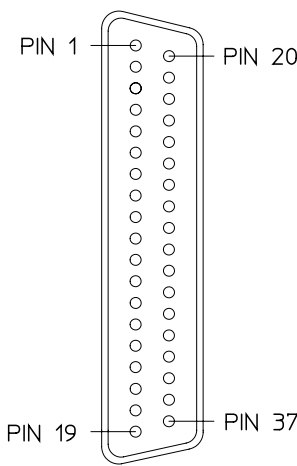
- Coil 14: lower-value address
- Coil 12: higher-value address

## Connecting cable

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

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

Pin assignment – Multi-pin plug, Sub-D socket, electrical control code MP1

|                                                                                                                                                                                            |           |                   |       | Pin <sup>2)</sup> | Address/coil | Wire colour 1)    |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------|-------|-------------------|--------------|-------------------|-------|
|                                                                                                          | PIN 1     |                   |       | 1                 | 0            | WH                |       |
|                                                                                                                                                                                            |           |                   |       | 2                 | 1            | BN                |       |
|                                                                                                                                                                                            |           |                   |       | 3                 | 2            | GN                |       |
|                                                                                                                                                                                            |           |                   |       | 4                 | 3            | YE                |       |
|                                                                                                                                                                                            |           |                   |       | 5                 | 4            | GY                |       |
|                                                                                                                                                                                            |           |                   |       | 6                 | 5            | PK                |       |
|                                                                                                                                                                                            |           |                   |       | 7                 | 6            | BU                |       |
|                                                                                                                                                                                            |           |                   |       | 8                 | 7            | RD                |       |
|                                                                                                                                                                                            |           |                   |       | 9                 | 8            | GY PK             |       |
|                                                                                                                                                                                            |           |                   |       | 10                | 9            | RD BU             |       |
|                                                                                                                                                                                            |           |                   |       | 11                | 10           | WH GN             |       |
|                                                                                                                                                                                            |           |                   |       | 12                | 11           | BN GN             |       |
|                                                                                                                                                                                            |           |                   |       | 13                | 12           | WH YE             |       |
|                                                                                                                                                                                            |           |                   |       | 14                | 13           | YE BN             |       |
|                                                                                                                                                                                            |           |                   |       | 15                | 14           | WH GY             |       |
|                                                                                                                                                                                            |           |                   |       | 16                | 15           | GY BN             |       |
|  <b>Note</b><br>The drawing shows a plan view of the Sub-D plug socket at the connecting cable NEBV-... | Conductor |                   |       |                   |              |                   |       |
|                                                                                                                                                                                            | 33        | 0 V <sup>3)</sup> | YE BK |                   | 35           | 0 V <sup>3)</sup> | BN BK |
|                                                                                                                                                                                            | 34        | 0 V <sup>3)</sup> | WH BK |                   | 36           | 0 V <sup>3)</sup> | BK    |
|                                                                                                                                                                                            | Earthing  |                   |       |                   |              |                   |       |
|                                                                                                                                                                                            | 37        | FE                | VT    |                   | –            | –                 | –     |
|                                                                                                                                                                                            |           |                   |       |                   |              |                   |       |
|                                                                                                                                                                                            |           |                   |       |                   |              |                   |       |

1) To IEC 757

2) Pin 9 ... 35: not allocated in the case of connecting cable NEBV-...-LE10

Pin 23 ... 33: not allocated in the case of connecting cable NEBV-...-LE26

Pin 24 ... 33: not allocated in the case of connecting cable NEBV-...-LE27

3) Connect 0 V for positive-switching control signals, 24 V for negative-switching control signals. Mixed operation is not permissible because all control signals of the solenoid coils of a valve terminal share a common load!

Key features – Electrical components

**Dimensions**

Connecting cable NEBV-S1W37

Download CAD data → [www.festo.com](http://www.festo.com)

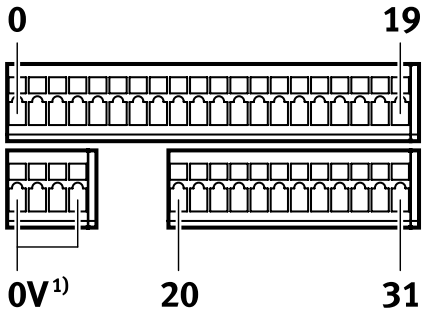
[1] Cable fitting M20x1.5

| Type       | B1 | H1 | H2 | H3   | L1  | L2 |
|------------|----|----|----|------|-----|----|
| NEBV-S1W37 | 54 | 41 | 36 | 11.6 | 142 | 27 |

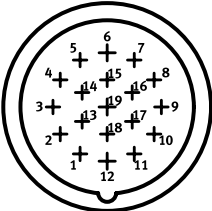
| Ordering data – Connecting cable, Sub-D, electrical control code MP1 |              |                                     |            |          |                        |  |
|----------------------------------------------------------------------|--------------|-------------------------------------|------------|----------|------------------------|--|
|                                                                      | Cable sheath | Connecting cable                    | Length [m] | Part no. | Type                   |  |
|                                                                      | TPE-U(PUR)   | For max. 8 solenoid coils, 10-core  | 2.5        | 539240   | NEBV-S1W37-E-2.5-LE10  |  |
|                                                                      |              |                                     | 5          | 539241   | NEBV-S1W37-E-5-LE10    |  |
|                                                                      |              |                                     | 10         | 539242   | NEBV-S1W37-E-10-LE10   |  |
|                                                                      |              | For max. 22 solenoid coils, 26-core | 2.5        | 539243   | NEBV-S1W37-E-2.5-LE26  |  |
|                                                                      |              |                                     | 5          | 539244   | NEBV-S1W37-E-5-LE26    |  |
|                                                                      |              |                                     | 10         | 539245   | NEBV-S1W37-E-10-LE26   |  |
|                                                                      |              | For max. 32 solenoid coils, 37-core | 2.5        | 539246   | NEBV-S1W37-K-2.5-LE37  |  |
|                                                                      |              |                                     | 5          | 539247   | NEBV-S1W37-K-5-LE37    |  |
|                                                                      |              |                                     | 10         | 539248   | NEBV-S1W37-K-10-LE37   |  |
|                                                                      | PVC          | For max. 8 solenoid coils, 10-core  | 2.5        | 543271   | NEBV-S1W37-KM-2.5-LE10 |  |
|                                                                      |              |                                     | 5          | 543272   | NEBV-S1W37-KM-5-LE10   |  |
|                                                                      |              |                                     | 10         | 543273   | NEBV-S1W37-KM-10-LE10  |  |
|                                                                      |              | For max. 23 solenoid coils, 27-core | 2.5        | 543274   | NEBV-S1W37-KM-2.5-LE27 |  |
|                                                                      |              |                                     | 5          | 543275   | NEBV-S1W37-KM-5-LE27   |  |
|                                                                      |              |                                     | 10         | 543276   | NEBV-S1W37-KM-10-LE27  |  |
|                                                                      |              | For max. 32 solenoid coils, 37-core | 2.5        | 543277   | NEBV-S1W37-KM-2.5-LE37 |  |
|                                                                      |              |                                     | 5          | 543278   | NEBV-S1W37-KM-5-LE37   |  |
|                                                                      |              |                                     | 10         | 543279   | NEBV-S1W37-KM-10-LE37  |  |

## Key features – Electrical components

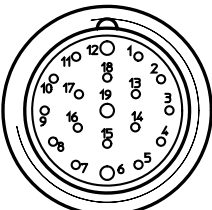
## Pin assignment – Multi-pin, terminal strip (Cage Clamp); electrical control code T (based on standard: EN 61984)

|                                                                                                                                                                              | 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           |
|  <b>Note</b><br>The drawing shows a plan view of the multi-pin terminal strip (Cage Clamp). | Conductor |              |  |          |              |
|                                                                                                                                                                              | 33        | 0 V          |  | 35       | 0 V          |
|                                                                                                                                                                              | 34        | 0 V          |  | 36       | 0 V          |

## Pin assignment – Multi-pin, round plug connector; electrical control code MP4

|                                                                                     | Address | Pin <sup>1)</sup> |  | Address | Pin <sup>1)</sup> |
|-------------------------------------------------------------------------------------|---------|-------------------|--|---------|-------------------|
|  | 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 assignment – Multi-pin plug, round plug connector; electrical actuation – CNOMO allocation

|                                                                                     | 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 V <sup>1)</sup>            |  | 15  | 1/14                         |
|                                                                                     | 7   | 1/12                         |  | 16  | 3/14                         |
|                                                                                     | 8   | 3/12                         |  | 17  | 5/14                         |
|                                                                                     | 9   | 5/12                         |  | 18  | 8/12                         |
|                                                                                     |     |                              |  | 19  | Not assigned                 |

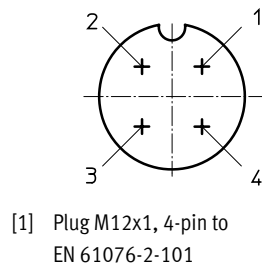
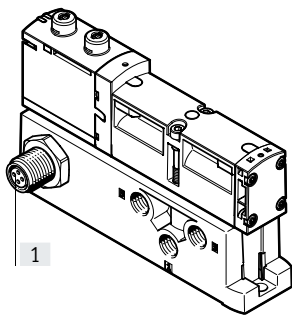
1) Pin 6: 0 V for positive-switching control signals; connect 24 V for negative-switching control signals; mixed operation is not permitted!

Pin 12: earth

Pin 19: not allocated

## Key features – Electrical components

### Electrical connection, individual valve with connector plug M12 up to width 52 mm



Pin allocation M12 on individual valve to ISO 20401

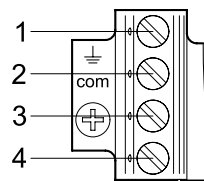
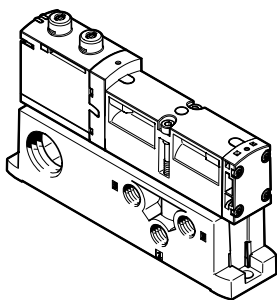
With positive control signal:

- Pin1 – Not allocated
- Pin2 –  $U_B$  for coil 12
- Pin3 – 0 V for coil 12 and 14
- Pin4 –  $U_B$  for coil 14

With negative control signal:

- Pin1 – Not allocated
- Pin2 – 0 V for coil 12
- Pin3 –  $U_B$  for coil 12 and 14
- Pin4 – 0 V for coil 14

### Electrical connection, individual valve terminal strip up to width 52 mm



Pin assignment for assembly by the user

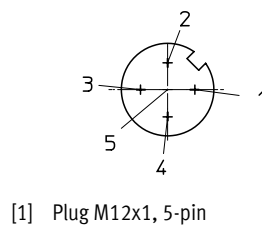
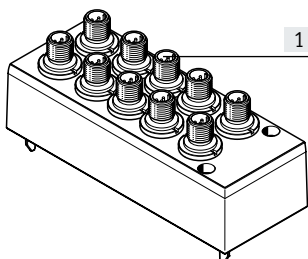
With positive control signal:

- Pin1 – Not allocated
- Pin2 –  $U_B$  for coil 12
- Pin3 – 0 V for coil 12 and 14
- Pin4 –  $U_B$  for coil 14

With negative control signal:

- Pin1 – Not allocated
- Pin2 – 0 V for coil 12
- Pin3 –  $U_B$  for coil 12 and 14
- Pin4 – 0 V for coil 14

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



Pin assignment M12

With positive control signal:

- Pin1 – Not allocated
- Pin2 –  $U_B$  for coil 12
- Pin3 – 0 V for coil 12 and 14
- Pin4 –  $U_B$  for coil 14
- Pin5 – Functional earth

Pin assignment M12

With negative control signal:

- Pin1 – Not allocated
- Pin2 – 0 V for coil 12
- Pin3 –  $U_B$  for coil 12 and 14
- Pin4 – 0 V for coil 14
- Pin5 – Functional earth

#### Note

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

## Instructions for use

### Operating materials

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

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

#### Bio-oils

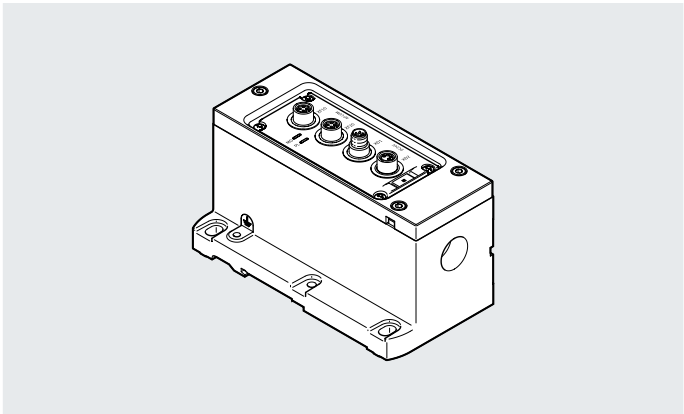
When using bio-oils (oils which are based on synthetic or native esters, e.g. rapeseed oil methyl ester), the maximum residual oil content of 0.1 mg/m<sup>3</sup> must not be exceeded (see ISO 8573-1:2010 Class 2).

#### Mineral oils

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

Datasheet – AP interface

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



Application

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

Implementation

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

| General technical data            |        |
|-----------------------------------|--------|
| AP interface                      |        |
| Connection position               | On top |
| Reverse polarity protection       | Yes    |
| Number of pins/cores              | 4      |
| Maximum number of valve positions | 12     |
| Maximum number of solenoid coils  | 24     |

## Datasheet – AP interface

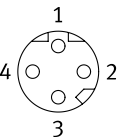
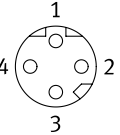
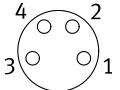
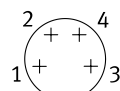
| General data                                          |        |                                                    |
|-------------------------------------------------------|--------|----------------------------------------------------|
| Diagnostics via LED                                   |        | Diagnostics per module                             |
|                                                       |        | Power supply load                                  |
| Diagnostics via internal communication                |        | Load switch-off                                    |
|                                                       |        | Electronics/sensors overvoltage                    |
|                                                       |        | Undervoltage load                                  |
| Module parameters                                     |        | Configuration of voltage monitoring load supply PL |
|                                                       |        | Response in error state                            |
| Technical data – Electrics                            |        |                                                    |
| Nominal operating voltage                             | [V AC] | 110                                                |
|                                                       | [V DC] | 24                                                 |
| Nominal operating voltage for electronics/sensors     | [V DC] | 24                                                 |
| Nominal operating voltage, load                       | [V DC] | 24                                                 |
| Permissible voltage fluctuations, electronics/sensors | [%]    | ± 25                                               |
| Permissible voltage fluctuations, load                | [%]    | ± 10                                               |
| Intrinsic current consumption of electronics/sensors  | [mA]   | Typ. 34 mA                                         |
| Intrinsic current consumption of load                 | [mA]   | Typ. 16 mA                                         |
| Max. power supply                                     | [A]    | 4 ... 16                                           |
| Power failure buffering                               | [ms]   | 10                                                 |
| Power failure buffering of load                       | [ms]   | 3                                                  |
| Fuse protection (short circuit)                       |        | Internal electronic fuse per channel               |
| Power supply                                          |        |                                                    |
| Function                                              |        | Incoming electronics/sensors and load              |
| Connection type                                       |        | Plug                                               |
| Connection technology                                 |        | M8x1, A-coded to EN 61076-2-104                    |
|                                                       |        | M12x1, D-coded to EN 61076-2-101                   |
|                                                       |        | RJ45 to IEC 61076-3-117 (V14)                      |
|                                                       |        | SCRJ to IEC 61754-24-21                            |
| Number of pins/cores                                  |        | 4                                                  |
| Power transmission                                    |        |                                                    |
| Function                                              |        | Outgoing electronics/sensors and load              |
| Connection type                                       |        | Socket                                             |
| Connection technology                                 |        | M8x1, A-coded to EN 61076-2-104                    |
|                                                       |        | M12x1, D-coded to EN 61076-2-101                   |
|                                                       |        | RJ45 to IEC 61076-3-117 (V14)                      |
|                                                       |        | SCRJ to IEC 61754-24-21                            |
| Number of pins/cores                                  |        | 4                                                  |
| Technical data – Mechanical components                |        |                                                    |
| Product weight                                        | [g]    | 712                                                |
| Dimensions W x L x H                                  | [mm]   | 71 x 142 x 84                                      |
| Materials                                             |        |                                                    |
| Cover                                                 |        | Die-cast aluminium                                 |
| Threaded sleeve                                       |        | Nickel-plated brass                                |
| Note on materials                                     |        | RoHS-compliant                                     |
| LABS (PWIS) conformity                                |        | VDMA24364-B2-L                                     |



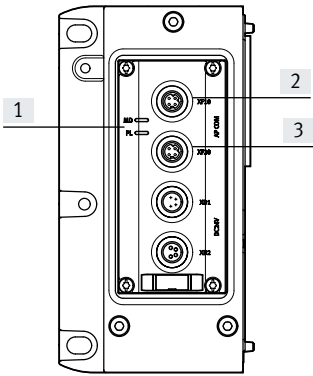
## Datasheet – AP interface

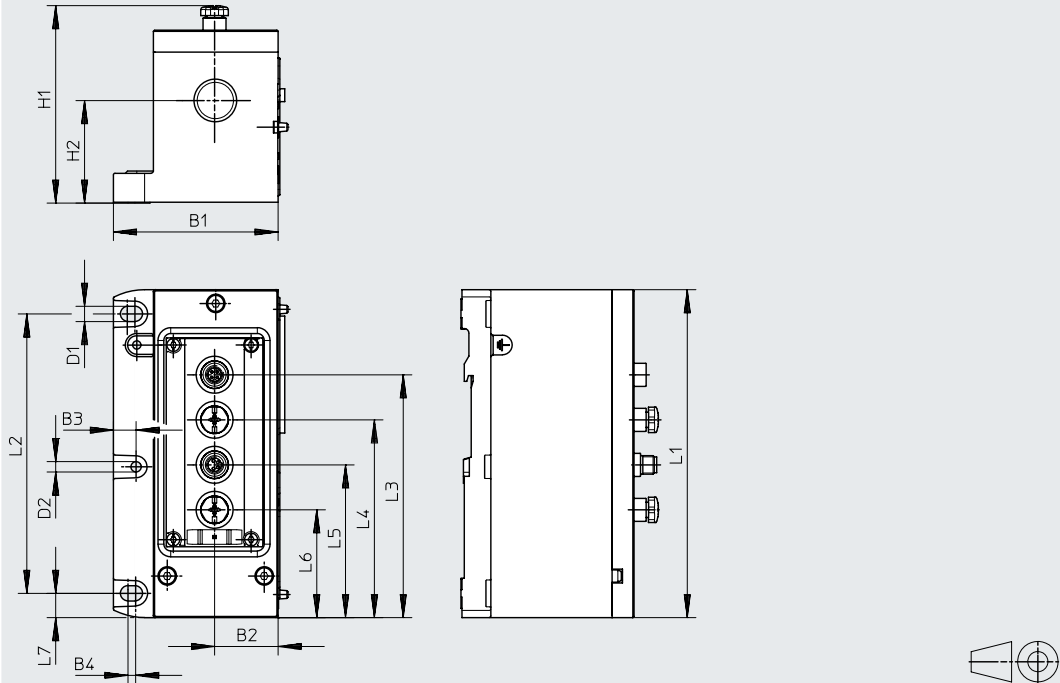
| Operating and environmental conditions                   |      |                                                       |
|----------------------------------------------------------|------|-------------------------------------------------------|
| Ambient temperature                               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

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)2) More information [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

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

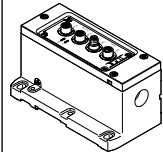
Datasheet – AP interface

| Connection and indicator components                                               |                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <div><div>[1]</div><div>LED displays for module diagnostics (MD) and power load (PL)</div><div>[2]</div><div>AP in (AP-COM)</div><div>[3]</div><div>AP out (AP-COM)</div><div>[4]</div><div>Power in (power supply)</div><div>[5]</div><div>Power out (voltage transmission)</div></div> |

| Dimensions                                                                          | Download CAD data → <a href="http://www.festo.com">www.festo.com</a> |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------|
|  |                                                                      |

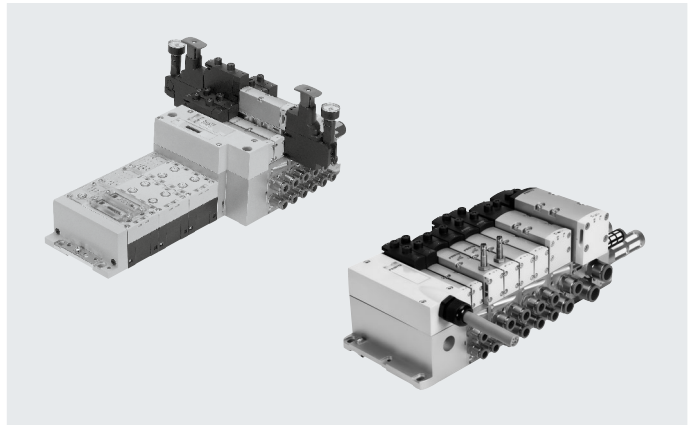
| Type         | B1   | B2   | B3  | B4 | D1  | D2  | H1   | H2   |
|--------------|------|------|-----|----|-----|-----|------|------|
| VABA-S6-1-AP | 71.3 | 27.5 | 9.8 | 3  | 6.6 | 4.5 | 85.5 | 44.4 |

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

| Ordering data – AP interface                                                        |                                            |          |              |
|-------------------------------------------------------------------------------------|--------------------------------------------|----------|--------------|
|                                                                                     | Description                                | Part no. | Type         |
|  | AP interface for operation in an AP system | 8152356  | VABA-S6-1-AP |

## Datasheet – Valve terminal

-  - Valve width  
to ISO 15407-2
  - 18 mm
  - 26 mm
 to ISO 5599-2
  - 42 mm
  - 52 mm
-  - Flow rate<sup>1)</sup>  
valve width 18 mm:  
to 550 (700) l/min  
Width 26 mm: up to  
1100 (1350) l/min  
Width 42 mm: up to  
1300 (1860) l/min  
Width 52 mm  
up to 2900 l/min
-  - Voltage  
24 V DC
-  - Repair service



1) Flow rates in brackets apply to VTSA-F

### General technical data for VTSA/VTSA-F

|                                                    |                                                                              |                                                                                                  |
|----------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Terminal type VTSA/VTSA-F                          | VTSA is the standard version, VTSA-F is the version with optimised flow rate |                                                                                                  |
| Valve sizes                                        | Width 18 mm, 26 mm, 42 mm, 52 mm                                             |                                                                                                  |
| Actuation type                                     | Electrical                                                                   |                                                                                                  |
| Electrical control                                 | With multi-pin plug: multi-pin, IO-Link®                                     |                                                                                                  |
|                                                    | With fieldbus: integrated controller, fieldbus, Industrial Ethernet          |                                                                                                  |
| Pilot air supply                                   | Internal/external                                                            |                                                                                                  |
| Exhaust function, can be throttled                 | Via throttle plate                                                           |                                                                                                  |
| Type of mounting                                   | Wall mounting                                                                |                                                                                                  |
|                                                    | On DIN rail to EN 60715                                                      |                                                                                                  |
| Mounting position                                  | Any                                                                          |                                                                                                  |
| Signal status indication                           | LED                                                                          |                                                                                                  |
| Manual override                                    | Detenting, non-detenting, concealed                                          |                                                                                                  |
| Suitable for vacuum                                | Yes                                                                          |                                                                                                  |
| Valve terminal design                              | Modular, valve sizes can be mixed                                            |                                                                                                  |
| Max. number of valve positions                     | 32 <sup>1)</sup>                                                             |                                                                                                  |
| <b>Pneumatic connections – Threaded connection</b> |                                                                              |                                                                                                  |
| Pneumatic connection                               | Via manifold sub-base                                                        |                                                                                                  |
| Supply port                                        | 1                                                                            | Dependent on the end plate or supply plate used (and adapter plate when using ISO size 3 valves) |
| Exhaust port                                       | 3/5                                                                          | Dependent on the end plate or supply plate used (and adapter plate when using ISO size 3 valves) |
| Working ports                                      | 2/4                                                                          | Dependent on the connection type selected                                                        |
| External pilot air supply port                     | 14                                                                           | Dependent on the end plate used (and adapter plate when using ISO size 3 valves)                 |
| Pilot exhaust air port                             | 12                                                                           | Dependent on the end plate used (and adapter plate when using ISO size 3 valves)                 |

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

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

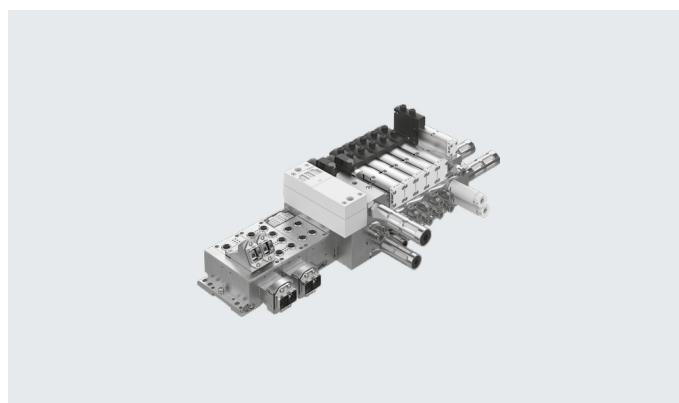
## Datasheet – Valve terminal VTSA-F-CB

-  Valve width
- 18 mm
  - 26 mm
  - 42 mm
- to ISO 5599-2
- 52 mm

-  Voltage
- 24 V DC

-  Flow rate<sup>1)</sup>
- Width 18 mm: up to 700 l/min
- Width 26 mm: up to 1350 l/min
- Width 42 mm: up to 1860 l/min
- Width 52 mm: up to 2900 l/min

-  Repair service



1) Flow rates apply to 5/2-way solenoid valve

| General technical data for VTSA-F-CB |                                                                                                                                                                                                                                                                                            |      |      |              |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|--------------|
| Terminal type CPX/VTSA-F-CB          | Type 46                                                                                                                                                                                                                                                                                    |      |      |              |
| Design                               | Piston spool valve                                                                                                                                                                                                                                                                         |      |      |              |
| Valve functions                      | <ul style="list-style-type: none"> <li>• 5/2-way solenoid valve</li> <li>• 5/3-way solenoid valve<sup>1)</sup></li> <li>• 2x 3/2-way solenoid valve</li> <li>• 2x 2/2-way solenoid valve</li> </ul> Integration of vacuum generation, soft-start/quick exhaust valve, switchable pilot air |      |      |              |
| Valve sizes, width [mm]              | 18                                                                                                                                                                                                                                                                                         | 26   | 42   | 52           |
| Grid dimension [mm]                  | 38                                                                                                                                                                                                                                                                                         | 54   | 43   | 59           |
| Number of valves/plates              | 2                                                                                                                                                                                                                                                                                          | 2    | 1    | 1            |
| To standard                          | –                                                                                                                                                                                                                                                                                          | –    | –    | Standardised |
| Actuation type                       | Electrical                                                                                                                                                                                                                                                                                 |      |      |              |
| Electrical control                   | Fieldbus: CPX                                                                                                                                                                                                                                                                              |      |      |              |
| Pilot air supply                     | Internal/external                                                                                                                                                                                                                                                                          |      |      |              |
| Exhaust function, can be throttled   | Via throttle plate                                                                                                                                                                                                                                                                         |      |      |              |
| Type of mounting                     | Wall mounting<br>On DIN rail to EN 60715 (not possible in combination with CPX-FVDA-P2 (safety module))                                                                                                                                                                                    |      |      |              |
| Mounting position                    | Any                                                                                                                                                                                                                                                                                        |      |      |              |
| Signal status indication             | LED                                                                                                                                                                                                                                                                                        |      |      |              |
| Manual override                      | Non-detenting/detenting; non-detenting/concealed; non-detenting-heavy duty/detenting with accessories; self-resetting via electrical control signal                                                                                                                                        |      |      |              |
| Suitable for vacuum                  | Yes                                                                                                                                                                                                                                                                                        |      |      |              |
| Valve terminal design                | Modular, valve sizes can be mixed                                                                                                                                                                                                                                                          |      |      |              |
| Note on forced checking procedure    | Switching frequency min. once a month                                                                                                                                                                                                                                                      |      |      |              |
| Max. number of valve positions       | Max. 24 per voltage zone: max. 4 x 24 = 96                                                                                                                                                                                                                                                 |      |      |              |
| Number of voltage zones              | ≤ 6                                                                                                                                                                                                                                                                                        |      |      |              |
| Pneumatic connection                 | Via manifold sub-base                                                                                                                                                                                                                                                                      |      |      |              |
| Supply port 1                        | Via right end plate (G1/2 and G3/4) or supply plate or soft-start valve                                                                                                                                                                                                                    |      |      |              |
| Exhaust port 3/5                     | Via right end plate (G1/2 and G3/4) or supply plate or soft-start valve                                                                                                                                                                                                                    |      |      |              |
| Pilot air connection 12              | Optional: ducted                                                                                                                                                                                                                                                                           |      |      |              |
| Working ports 2/4                    | G1/8                                                                                                                                                                                                                                                                                       | G1/4 | G3/8 | G1/2         |
| Tubing size: small [mm]              | 6                                                                                                                                                                                                                                                                                          | 8    | 10   | 12           |
| Tubing size: large [mm]              | 8                                                                                                                                                                                                                                                                                          | 10   | 12   | 16           |
| Fittings                             | QS fittings, tubing dimensions metric or imperial (hybrid)                                                                                                                                                                                                                                 |      |      |              |

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

## Datasheet – Valve terminal

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

1) Switching position

2) Mid-position

3) The valve functions P53ED, P53EP, P53AD and P53BD are only available in the 24 V DC version. Values only apply to 24 V DC.

## Datasheet – Valve terminal

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

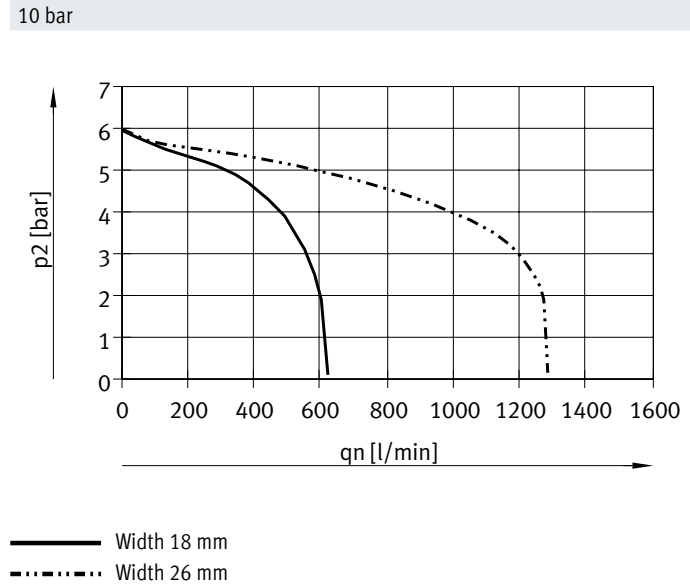
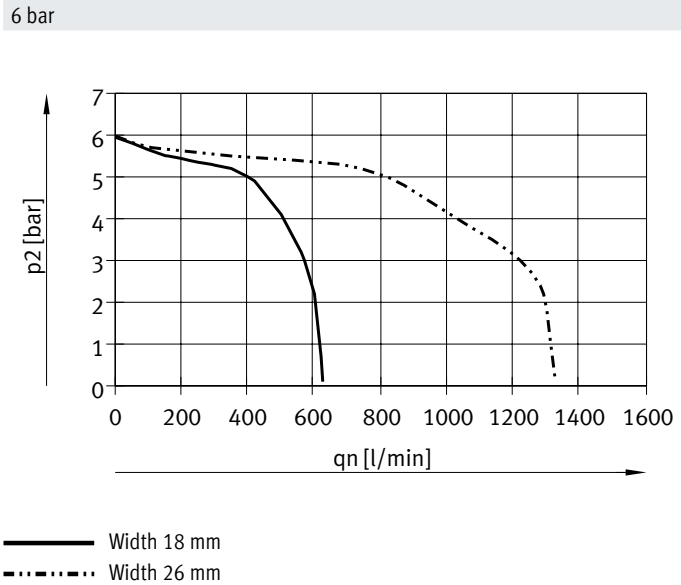
1) Switching position

2) Mid-position

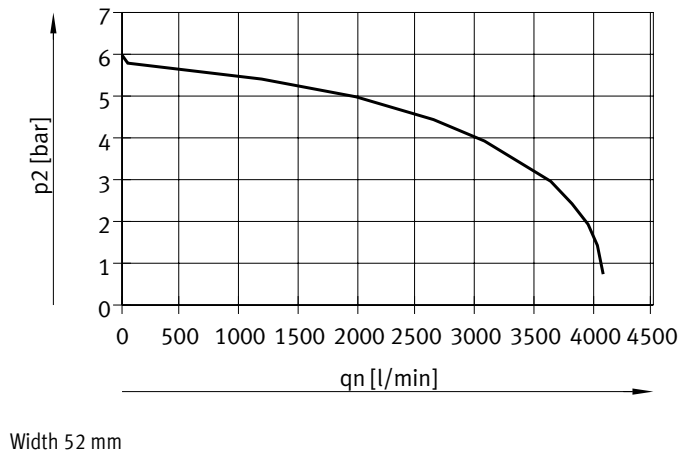
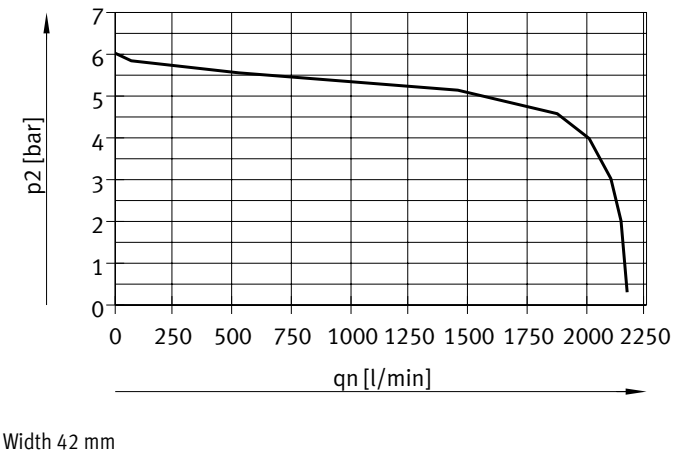
3) The valve function P53F is only available in the 24 V DC version. Values only apply to 24 V DC.

Datasheet – Valve terminal

Flow rate  $q_n$  as a function of output pressure  $p_2$  with pressure regulator plates (P regulator plate) for port 1



Input pressure 10 bar, regulated pressure set to 6 bar

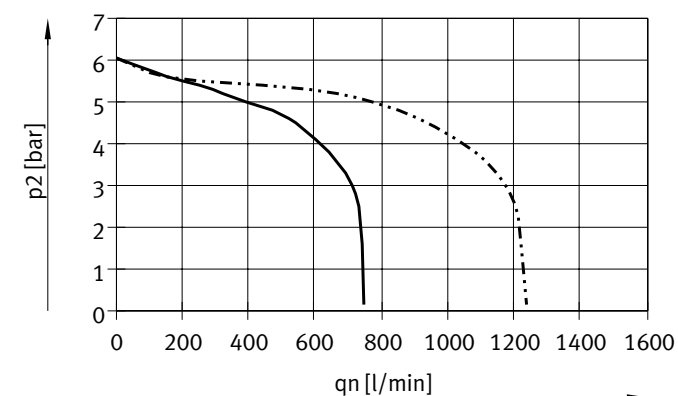


## Datasheet – Valve terminal

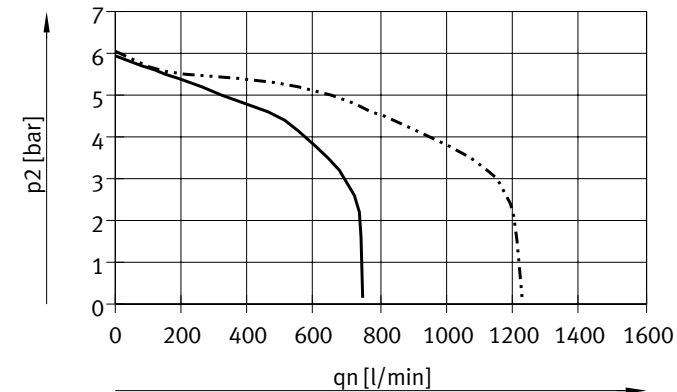
Flow rate  $q_n$  as a function of output pressure  $p_2$  with pressure regulator plates (AB regulator plates) for port 2, 4 or ports 4/2

6 bar

10 bar

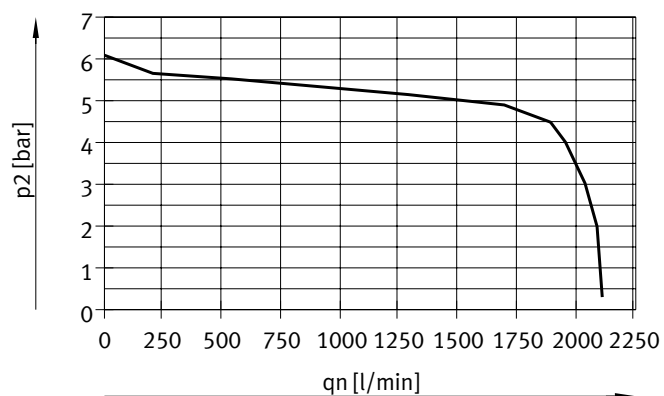


— Width 18 mm  
 - · - · - Width 26 mm

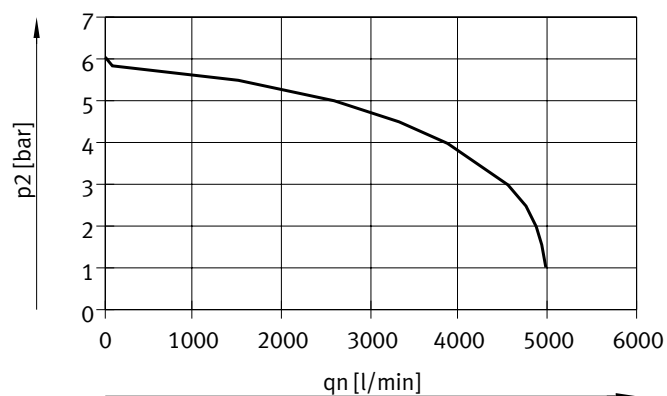


— Width 18 mm  
 - · - · - Width 26 mm

Input pressure 10 bar, regulated pressure set to 6 bar



Width 42 mm



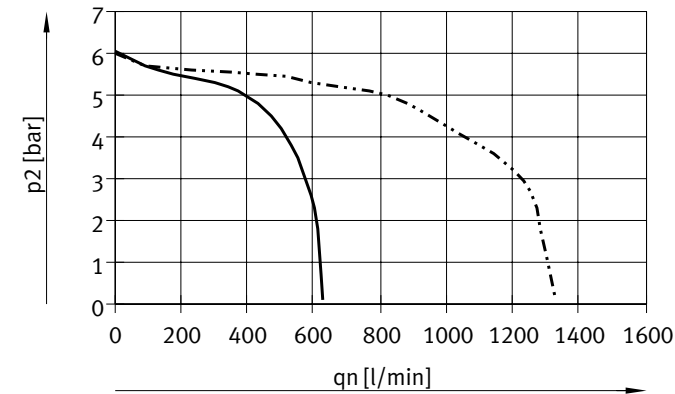
Width 52 mm



Datasheet – Valve terminal

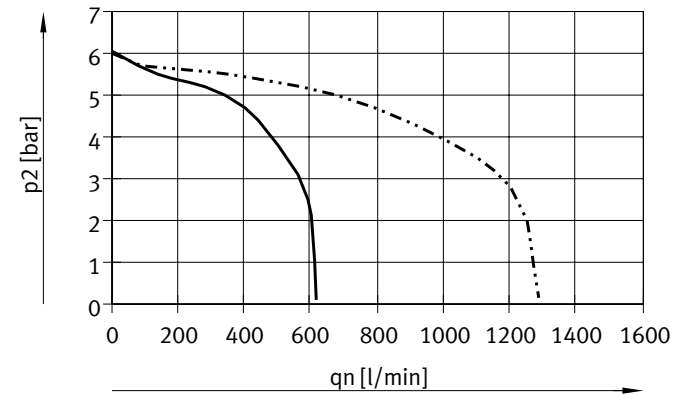
Flow rate  $q_n$  as a function of output pressure  $p_2$  with pressure regulator plates (AB regulator plates, rev.) for ports 4/2, reversible

6 bar



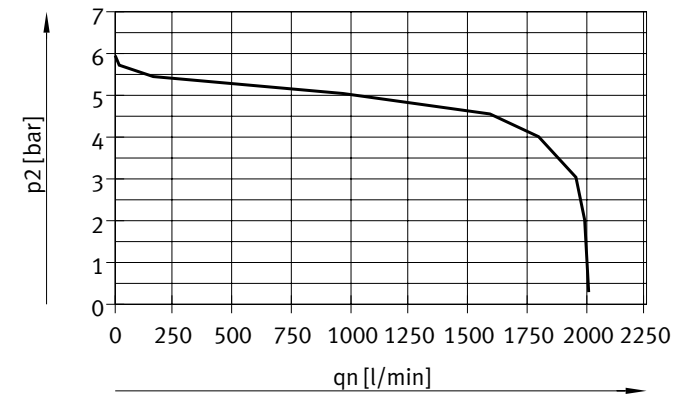
— Width 18 mm  
- - - Width 26 mm

10 bar

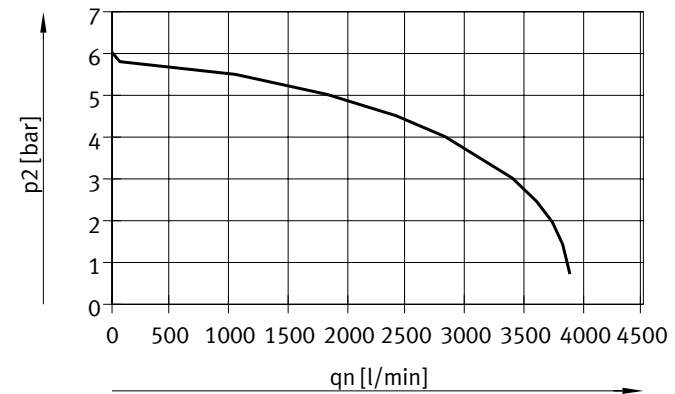


— Width 18 mm  
- - - Width 26 mm

Input pressure 10 bar, regulated pressure set to 6 bar

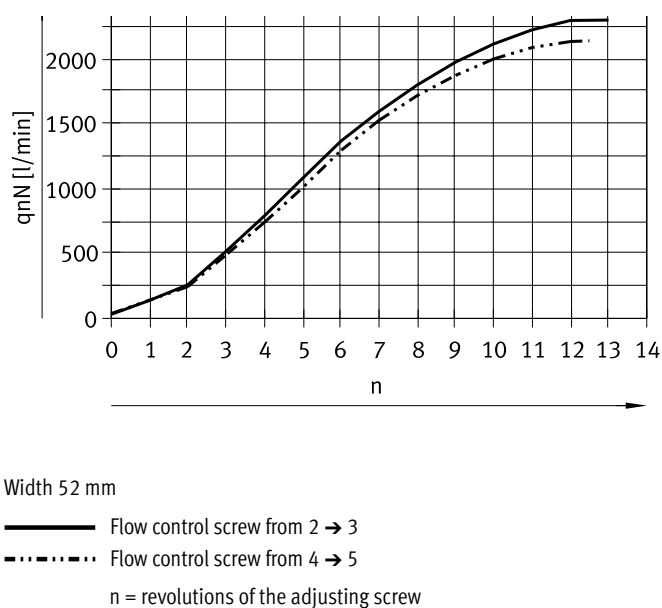
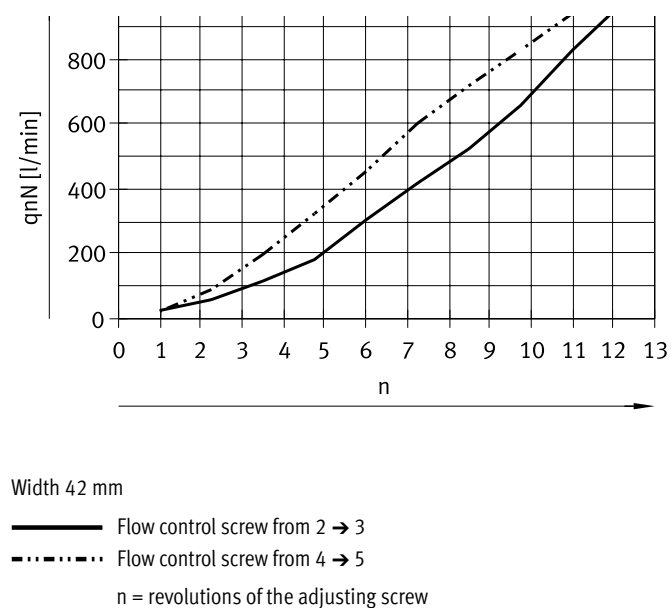
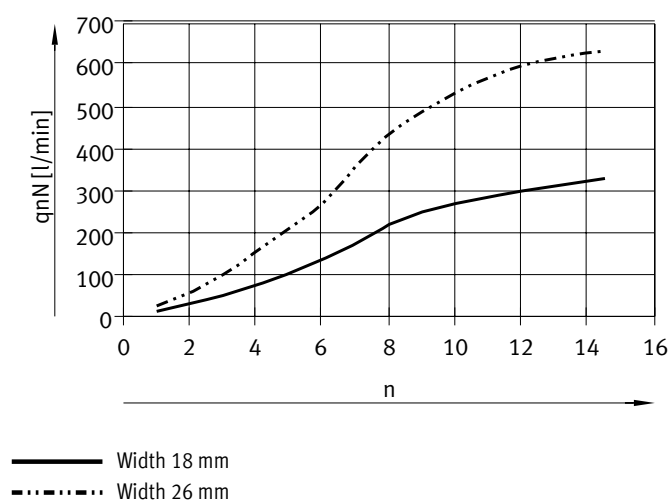


Width 42 mm



Width 52 mm

## Datasheet – Valve terminal

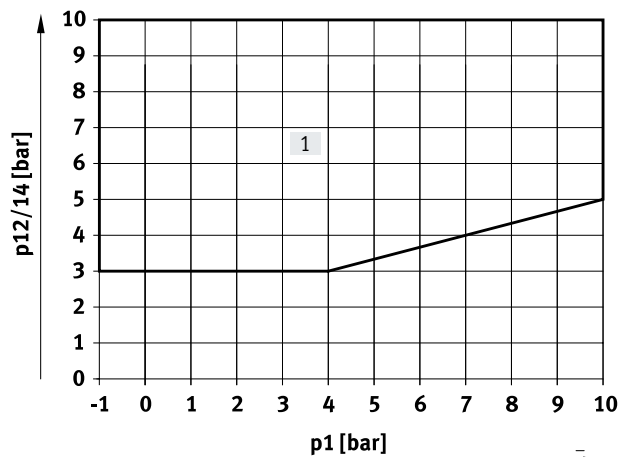
Flow rate  $q_N$  as a function of flow control

Datasheet – Valve terminal

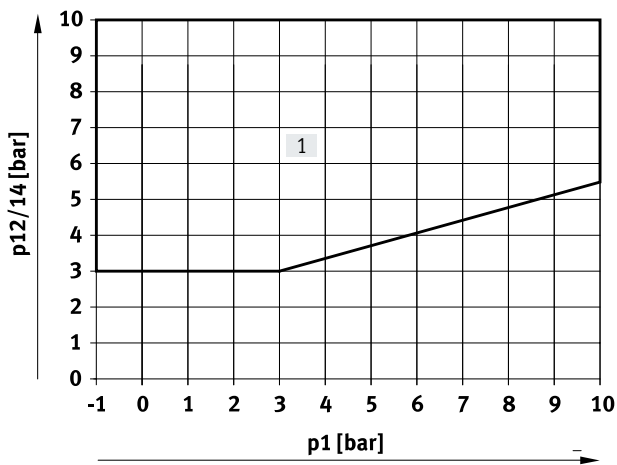
Pilot pressure  $p_{12/14}$  as a function of operating pressure  $p_1$

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

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



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



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

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

1) Lockable with key

## Datasheet – Valve terminal

| Operating and environmental conditions       |                                                                                            |               |
|----------------------------------------------|--------------------------------------------------------------------------------------------|---------------|
| Type                                         | VTSA-FB                                                                                    | VTSA-F-FB     |
| Operating medium                             | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |               |
| Pilot medium                                 | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  | –             |
| Notes on operating/<br>pilot medium          | Lubricated operation possible (in which case lubricated operation will always be required) |               |
| External                                     | [bar]                                                                                      | –0.9 ... +10  |
|                                              | [MPa]                                                                                      | –0.09 ... +1  |
| Internal                                     | [bar]                                                                                      | 3 ... 10      |
|                                              | [MPa]                                                                                      | 0.3 ... 1     |
| Pilot pressure                               | [bar]                                                                                      | 3 ... 10      |
|                                              | [MPa]                                                                                      | 0.3 ... 1     |
| Noise level LpA                              | [dB(A)]                                                                                    | 85            |
| Ambient temperature                          | [°C]                                                                                       | –5 ... +50    |
| Temperature of medium                        | [°C]                                                                                       | –5 ... +50    |
| Storage temperature                          | [°C]                                                                                       | –20 ... +60   |
| Relative humidity                            | [%]                                                                                        | 0 ... 90      |
| Certification                                | BIA                                                                                        |               |
|                                              | C-Tick                                                                                     |               |
|                                              | c UL us – Recognized (OL)                                                                  |               |
| CE marking (see declaration of conformity)   | To EU EMC Directive 1)                                                                     |               |
|                                              | To EU Explosion Protection Directive (ATEX)                                                |               |
| KC marking                                   | KC EMC                                                                                     |               |
| ATEX category for gas                        | II 3G                                                                                      |               |
| Type of ignition protection for gas          | Ex nA IIC T3 X Gc                                                                          |               |
| Explosion-proof ambient temperature          | [°C]                                                                                       | –5 ≤ Ta ≤ +50 |
| Corrosion resistance class CRC <sup>2)</sup> | 0                                                                                          |               |

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/... d Support/Downloads](http://www.festo.com/catalogue/...d/Support/Downloads).

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

2) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Datasheet – Valve terminal

| Operating and environmental conditions       |       | VTSA-F-CB                                 |
|----------------------------------------------|-------|-------------------------------------------|
| Type                                         |       |                                           |
| Operating medium                             |       | Compressed air to ISO 8573-1:2010 [7:4:4] |
| Pilot medium                                 |       | Compressed air to ISO 8573-1:2010 [7:4:4] |
| Notes on operating/<br>pilot medium          |       | Lubricated operation not possible         |
| External                                     | [bar] | −0.9 ... +10                              |
|                                              | [MPa] | −0.09 ... +1                              |
| Internal                                     | [bar] | 3 ... 10                                  |
|                                              | [MPa] | 0.3 ... 1                                 |
| Pilot pressure                               | [bar] | 3 ... 10                                  |
| Ambient temperature                          | [°C]  | −5 ... +50                                |
| Storage temperature                          | [°C]  | −20 ... +60                               |
| Relative humidity                            | [%]   | 0 ... 90                                  |
| Certification                                |       | c UL us – Recognized (OL)                 |
| Certificate-issuing authority                |       | UL E322346                                |
| CE marking (see declaration of conformity)   |       | To EU EMC Directive 1)                    |
| KC marking                                   |       | KC EMC                                    |
| Corrosion resistance class CRC <sup>2)</sup> |       | 0                                         |

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/... d Support/Downloads](http://www.festo.com/catalogue/...d%20Support/Downloads).

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2) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Datasheet – Valve terminal

| Operating and environmental conditions       |                                                                                            |               |
|----------------------------------------------|--------------------------------------------------------------------------------------------|---------------|
| Type                                         | VTSA-ASI                                                                                   | VTSA-F-ASI    |
| Operating medium                             | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |               |
| Notes on operating/<br>pilot medium          | Lubricated operation possible (in which case lubricated operation will always be required) |               |
| External                                     | [bar]                                                                                      | –0.9 ... +10  |
|                                              | [MPa]                                                                                      | –0.09 ... +1  |
| Internal                                     | [bar]                                                                                      | 3 ... 10      |
|                                              | [MPa]                                                                                      | 0.3 ... 1     |
| Pilot pressure                               | [bar]                                                                                      | 3 ... 10      |
|                                              | [MPa]                                                                                      | 0.3 ... 1     |
| Ambient temperature                          | [°C]                                                                                       | –5 ... +50    |
| Storage temperature                          | [°C]                                                                                       | –20 ... +60   |
| Relative humidity                            | [%]                                                                                        | 0 ... 90      |
| Certification                                | BIA                                                                                        |               |
|                                              | C-Tick                                                                                     |               |
|                                              | c UL us – Recognized (OL)                                                                  |               |
| CE marking (see declaration of conformity)   | To EU EMC Directive 1)                                                                     |               |
|                                              | To EU Explosion Protection Directive (ATEX)                                                |               |
| KC marking                                   | KC EMC                                                                                     |               |
| ATEX category for gas                        | II 3G                                                                                      |               |
| Type of ignition protection for gas          | Ex nA IIC T3 X Gc                                                                          |               |
| Explosion-proof ambient temperature          | [°C]                                                                                       | –5 ≤ Ta ≤ +50 |
| Corrosion resistance class CRC <sup>2)</sup> | 0                                                                                          |               |

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/... d Support/Downloads](http://www.festo.com/catalogue/...d%20Support/Downloads).

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2) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Datasheet – Valve terminal

| Operating and environmental conditions       |                                                                                            |               |
|----------------------------------------------|--------------------------------------------------------------------------------------------|---------------|
| Type                                         | VTSA-MP                                                                                    | VTSA-F-MP     |
| Operating medium                             | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |               |
| Notes on operating/<br>pilot medium          | Lubricated operation possible (in which case lubricated operation will always be required) |               |
| External                                     | [bar]                                                                                      | −0.9 ... +10  |
|                                              | [MPa]                                                                                      | −0.09 ... +1  |
| Internal                                     | [bar]                                                                                      | 3 ... 10      |
|                                              | [MPa]                                                                                      | 0.3 ... 1     |
| Pilot pressure                               | [bar]                                                                                      | 3 ... 10      |
|                                              | [MPa]                                                                                      | 0.3 ... 1     |
| Ambient temperature                          | [°C]                                                                                       | −5 ... +50    |
| Storage temperature                          | [°C]                                                                                       | −20 ... +60   |
| Relative humidity                            | [%]                                                                                        | 0 ... 90      |
| Certification                                | BIA                                                                                        |               |
|                                              | C-Tick                                                                                     |               |
|                                              | c UL us – Recognized (OL)                                                                  |               |
| Certificate-issuing authority                | UL E322346                                                                                 |               |
| CE marking (see declaration of conformity)   | To EU Low Voltage Directive                                                                |               |
|                                              | To EU EMC Directive 1)                                                                     |               |
|                                              | To EU Explosion Protection Directive (ATEX)                                                |               |
| KC marking                                   | KC EMC                                                                                     |               |
| ATEX category for gas                        | II 3G                                                                                      |               |
| Type of ignition protection for gas          | Ex nA IIC T3 X Gc                                                                          |               |
| Explosion-proof ambient temperature          | [°C]                                                                                       | −5 ≤ Ta ≤ +50 |
| Corrosion resistance class CRC <sup>2)</sup> | 0                                                                                          |               |

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/... d Support/Downloads](http://www.festo.com/catalogue/...d/Support/Downloads).

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

2) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Datasheet – Valve terminal

|                                                                                     |                        |                                                                  |
|-------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------|
| <b>Electrical data – Individual electrical connection</b>                           |                        |                                                                  |
| <b>Load voltage supply for valves (<math>U_{val}</math>)</b>                        |                        |                                                                  |
| Operating voltage                                                                   | [V DC]                 | 24 ±10%                                                          |
| Maximum total current at 24 V DC                                                    | [A]                    | 10                                                               |
| Duty cycle                                                                          |                        | 100%                                                             |
| Degree of protection                                                                |                        | IP65, NEMA 4 (for all types of signal transmission when mounted) |
| <b>Electrical data – Multi-pin plug connection</b>                                  |                        |                                                                  |
| <b>Load voltage supply for valves (<math>U_{val}</math>)</b>                        |                        |                                                                  |
| Operating voltage                                                                   | [V DC]                 | 24 ±10%                                                          |
| Maximum total current                                                               | [A]                    | 6                                                                |
| Current rating at 40 °C                                                             | [A]                    | 1                                                                |
| Surge resistance                                                                    | [kV]                   | 1.5                                                              |
| Pollution degree                                                                    |                        | 3                                                                |
| Duty cycle                                                                          |                        | 100%                                                             |
| Degree of protection                                                                |                        | IP65, NEMA 4 (for all types of signal transmission when mounted) |
| <b>Electrical data – With CPX terminal</b>                                          |                        |                                                                  |
| <b>Power supply for electronic (<math>U_{EL/SEN}</math>)</b>                        |                        |                                                                  |
| Operating voltage                                                                   | [V DC]                 | 24 ±10%                                                          |
| Max. intrinsic current consumption at 24 V DC                                       | [mA]                   | 20                                                               |
| Duty cycle                                                                          |                        | 100%                                                             |
| <b>Load voltage supply for valves (<math>U_{val}</math>)</b>                        |                        |                                                                  |
| Operating voltage                                                                   | [V DC]                 | 24 ±10%                                                          |
| Diagnostic message undervoltage $U_{OFF}$ load voltage outside the functional range | [V]                    | 21.6 ... 21.5                                                    |
| Degree of protection                                                                |                        | IP65, NEMA 4 (for all types of signal transmission when mounted) |
| <b>Materials</b>                                                                    |                        |                                                                  |
| Manifold sub-base                                                                   | Die-cast aluminium     |                                                                  |
| Valve                                                                               | Die-cast aluminium, PA |                                                                  |
| Seals                                                                               | FPM, NBR, HNBR         |                                                                  |
| Supply plate, supply plate cover                                                    | Die-cast aluminium     |                                                                  |
| Right end plate                                                                     | Die-cast aluminium     |                                                                  |
| Pneumatic interface for CPX                                                         | Die-cast aluminium     |                                                                  |
| Throttle plate                                                                      | Die-cast aluminium     |                                                                  |
| Pressure regulator plate                                                            | Die-cast aluminium, PA |                                                                  |
| Multi-pin connection block                                                          | Die-cast aluminium     |                                                                  |
| IO-Link® interface                                                                  | Die-cast aluminium, PA |                                                                  |
| Cover for the pneumatic interface and multi-pin plug connection                     | PA                     |                                                                  |
| Note on materials                                                                   | RoHS-compliant         |                                                                  |
| LABS (PWIS) conformity (exclusively for IO-Link®)                                   | VDMA24364-B2-L         |                                                                  |



## Datasheet – Valve terminal

| Product weight                                                                                                                     |     | Width                     |       |             |       |
|------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------|-------|-------------|-------|
| Approx. weight                                                                                                                     | [g] | 18 mm                     | 26 mm | 42 mm       | 52 mm |
| Multi-pin node with Sub-D or terminal strip for VTSA/VTSA-F 1)                                                                     |     | 550                       |       |             |       |
| Multi-pin node with M12 individual connection for VTSA/VTSA-F                                                                      |     | 760                       |       |             |       |
| Pneumatic interface CPX for VTSA/VTSA-F                                                                                            |     |                           |       |             |       |
| • With diagnostics for undervoltage of valves (VABA-S6-1-X1/X2/X2-D)                                                               |     | 590                       |       |             |       |
| Pneumatic interface CPX for VTSA-F-CB                                                                                              |     |                           |       |             |       |
| • With 3x load supplies (VABA-S6-1-X1/X2-3V-CB)                                                                                    |     | 580                       |       |             |       |
| • For PROFI-safe, with diagnostics for undervoltage, short circuit of valves, wire break per solenoid coil (VABA-S6-1-X2-F1/F2-CB) |     | 734                       |       |             |       |
| • With diagnostics for undervoltage, short circuit of valves, wire break per solenoid coil (VABA-S6-1-X1/X2-CB)                    |     | 560                       |       |             |       |
| IO-Link® interface                                                                                                                 |     | 690                       |       |             |       |
| Electrical interface for AS-Interface for VTSA/VTSA-F                                                                              |     | 300                       |       |             |       |
| AS-Interface module for VTSA/VTSA-F                                                                                                |     | 850                       |       |             |       |
| Supply plate for valve terminal VTSA/VTSA-F 2)                                                                                     |     |                           |       |             |       |
| • Exhaust plate with 3 and 5 common                                                                                                |     | 617                       |       |             |       |
| • Exhaust air cover with 3 and 5 separate                                                                                          |     | 597                       |       |             |       |
| Supply plate/extension module for VTSA-F-CB 2)                                                                                     |     |                           |       |             |       |
| • Exhaust plate with 3 and 5 common                                                                                                |     | 611                       |       |             |       |
| • Exhaust air cover with 3 and 5 separate                                                                                          |     | 600                       |       |             |       |
| End plate right 3)                                                                                                                 |     |                           |       |             |       |
| • With threaded connections                                                                                                        |     | 339                       |       |             | 336   |
| • Selector switch                                                                                                                  |     | 281                       |       |             | –     |
| Manifold sub-base for VTSA/VTSA-F 4)                                                                                               |     | 447                       | 634   | 340, 330 5) | 610   |
| Manifold sub-base for VTSA-F-CB 4)                                                                                                 |     | 434                       | 579   | 330         | 610   |
| Hybrid manifold sub-base for VTSA/VTSA-F 4)                                                                                        |     | 512                       | 512   | –           | –     |
| Angled connection plate 3)                                                                                                         |     | 170                       | 230   | 176         | 359   |
| Pressure regulator plate                                                                                                           |     |                           |       |             |       |
| • For port 1 (P)                                                                                                                   |     | 350                       | 402   | 640         | 1190  |
| • For port 4 or 2 (A or B)                                                                                                         |     | 367                       | 448   | 640         | 1230  |
| • For ports 4 and 2 (A/B)                                                                                                          |     | 611                       | 692   | 920         | 1990  |
| Throttle plate                                                                                                                     |     | 228                       | 320   | 220         | 565   |
| Vertical supply plate 3)                                                                                                           |     | 140                       | 191   | 340         | 605   |
| Vertical pressure shut-off plate                                                                                                   |     | 209                       | 273   | 600         | 1030  |
| Vertical pressure shut-off plate (lockable with key)                                                                               |     | 231                       | 290   | –           | –     |
| Valves                                                                                                                             |     | → Solenoid valves, widths |       |             |       |
| Cover plate                                                                                                                        |     | 34                        | 73    | 68          | 146   |

1) With sheet metal seal, printed circuit board

2) With sheet metal seal and electrical link

3) With screws

4) 4) With sheet metal seal, electrical links, inscription label holder, 4 screws

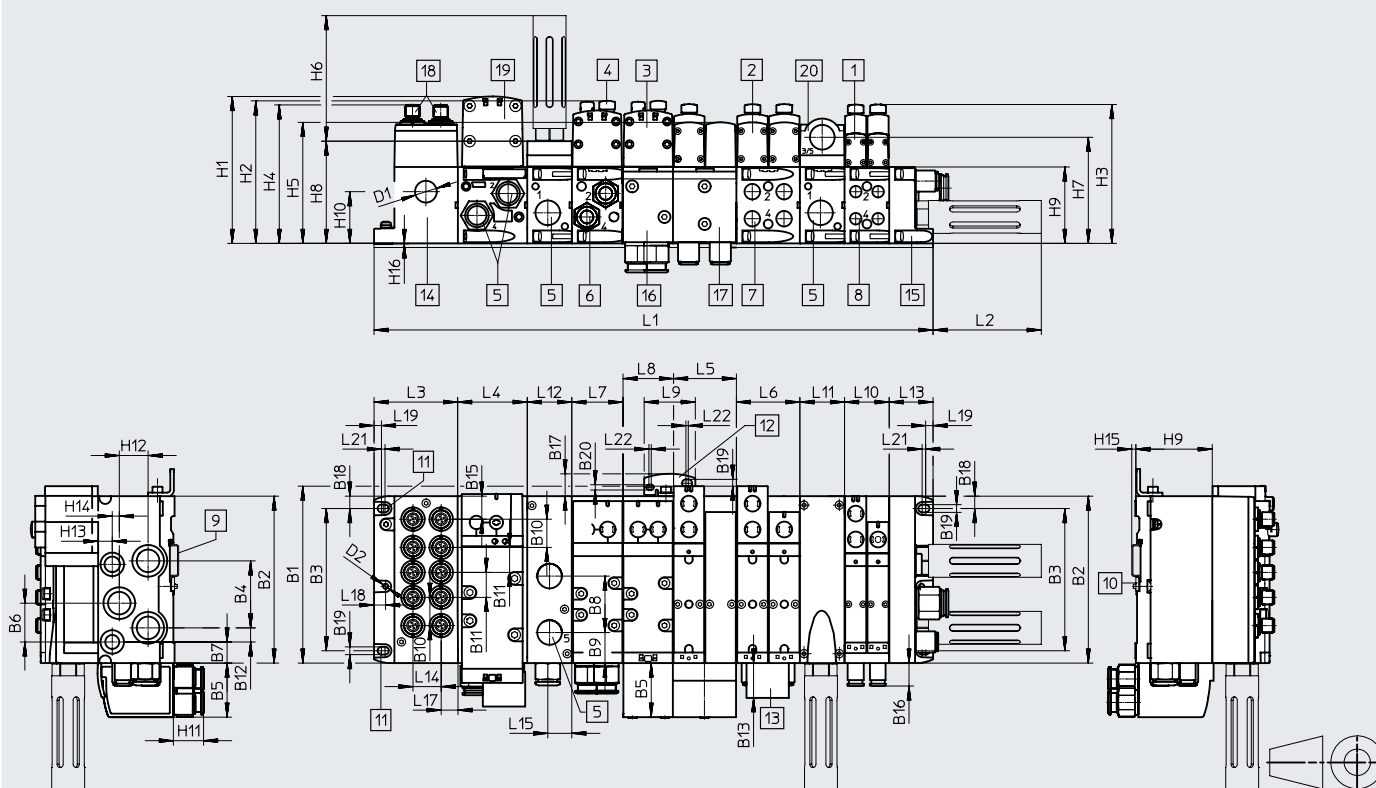
5) Manifold sub-base optimised for flow rate, HS

## Datasheet – Valve terminal

## Dimensions

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Valve terminal with individual electrical connection



|                                   |                                  |                                             |                                                                                 |
|-----------------------------------|----------------------------------|---------------------------------------------|---------------------------------------------------------------------------------|
| [1] Solenoid valve<br>width 18 mm | [7] Threaded connection G1/4     | [16] Angled connection plate<br>43 mm, G3/8 | n02 Number of manifold sub-bases<br>38 mm                                       |
| [2] Solenoid valve<br>width 26 mm | [8] Threaded connection G1/8     | [17] Angled connection plate<br>54 mm, G1/4 | n01 Number of manifold sub-bases<br>54 mm                                       |
| [3] Solenoid valve<br>width 42 mm | [9] DIN rail                     | [18] M12 plug 5-pin<br>(6-way or 10-way)    | n1 Number of manifold sub-bases<br>43 mm                                        |
| [4] Cover cap/manual override     | [10] DIN rail mounting           | [19] Solenoid valve<br>width 52 mm          | n2 Number of manifold sub-bases<br>59 mm                                        |
| [5] Threaded connection G1/2      | [11] Mounting hole               | [20] Supply plate                           | n Number of supply plates (only<br>with end plate with pilot air se-<br>lector) |
| [6] Threaded connection G3/8      | [12] Additional mounting bracket |                                             | nh Number of hybrid manifold sub-<br>bases 46 mm                                |
|                                   | [13] Inscription label holder    |                                             |                                                                                 |
|                                   | [14] Individual connection       |                                             |                                                                                 |
|                                   | [15] End plate                   |                                             |                                                                                 |

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

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

| Dim. | L20 | L21 | L22 | D1Ø  | D2Ø | H1  | H2    | H3    | H4  | H5  | H6    | H7   | H8 | H9 | H10 | H11  | H12  | H13 | H14 | H15 | H16 |
|------|-----|-----|-----|------|-----|-----|-------|-------|-----|-----|-------|------|----|----|-----|------|------|-----|-----|-----|-----|
| [mm] | 5.5 | 3   | 2   | 18.5 | 4.5 | 125 | 121.3 | 118.2 | 118 | 103 | 107.8 | 90.3 | 87 | 65 | 44  | 25.7 | 24.5 | 12  | 6   | 3.5 | 0.5 |

| Width                                                             | L1                                                                                                       |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 18 mm                                                             | $71.3 + n02 \times 38 + n \times 38 + 37.3$                                                              |
| 26 mm                                                             | $71.3 + n01 \times 54 + n \times 38 + 37.3$                                                              |
| 42 mm                                                             | $71.3 + n1 \times 43 + n \times 38 + 37.3$                                                               |
| 52 mm                                                             | $71.3 + n2 \times 59 + n \times 38 + 37.3$                                                               |
| Mix 18 mm, 26 mm, 42 mm, hybrid manifold sub-base 46 mm and 52 mm | $71.3 + n02 \times 38 + n01 \times 54 + n1 \times 43 + nh \times 46 + n2 \times 59 + n \times 38 + 37.3$ |

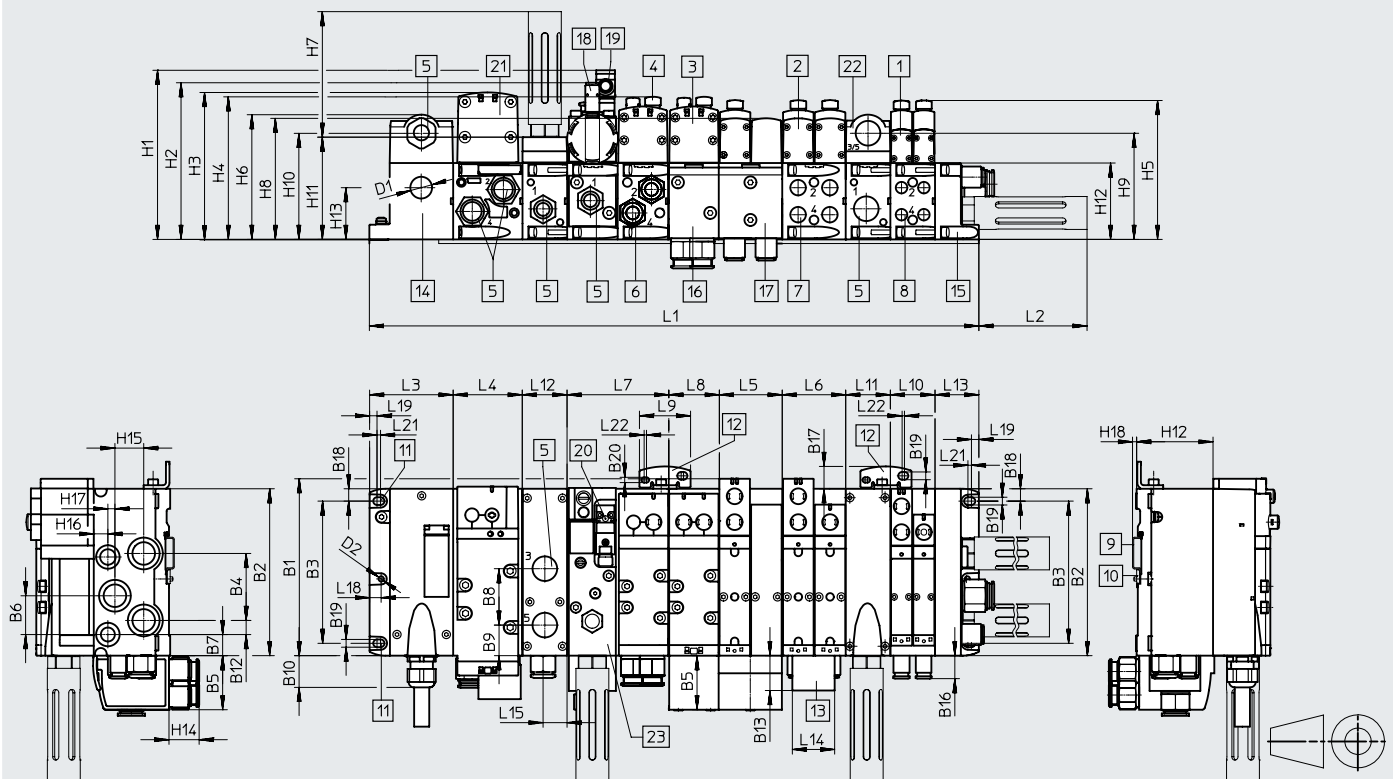
Note: This product conforms to ISO 1179-1 and ISO 228-1.

## Datasheet – Valve terminal

## Dimensions

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Valve terminal with multi-pin plug connection:



- |                                   |                                             |                                                        |                                                                               |
|-----------------------------------|---------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------|
| [1] Solenoid valve<br>Width 18 mm | [9] DIN rail                                | [17] Angled connection plate<br>54 mm, G1/4            | N02 Number of manifold sub-bases 38 mm                                        |
| [2] Solenoid valve<br>Width 26 mm | [10] DIN rail mounting                      | [18] Proximity switch M12x1                            | N01 Number of manifold sub-bases 54 mm                                        |
| [3] Solenoid valve<br>Width 42 mm | [11] Mounting hole                          | [19] Plug socket M12x1                                 | N1 Number of manifold sub-bases 43 mm                                         |
| [4] Cover cap/manual override     | [12] Additional mounting bracket            | [20] Electrical connection to<br>EN 175301-803, type C | N2 Number of manifold sub-bases 59 mm                                         |
| [5] Threaded connection G1/2      | [13] Inscription label holder               | [21] Solenoid valve<br>width 52 mm                     | n Number of supply plates (only<br>with end plate with pilot air<br>selector) |
| [6] Threaded connection G3/8      | [14] Multi-pin plug connection              | [22] Supply plate                                      | nh Number of hybrid manifold sub-bases 46 mm                                  |
| [7] Threaded connection G1/4      | [15] End plate                              | [23] Soft-start valve                                  |                                                                               |
| [8] Threaded connection G1/8      | [16] Angled connection plate<br>43 mm, G3/8 |                                                        |                                                                               |

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

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

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

| Width                                                             | L1                                                                                                       |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 18 mm                                                             | $71.3 + n02 \times 38 + n \times 38 + 37.3$                                                              |
| 26 mm                                                             | $71.3 + n01 \times 54 + n \times 38 + 37.3$                                                              |
| 42 mm                                                             | $71.3 + n1 \times 43 + n \times 38 + 37.3$                                                               |
| 52 mm                                                             | $71.3 + n2 \times 59 + n \times 38 + 37.3$                                                               |
| Mix 18 mm, 26 mm, 42 mm, hybrid manifold sub-base 46 mm and 52 mm | $71.3 + n02 \times 38 + n01 \times 54 + n1 \times 43 + nh \times 46 + n2 \times 59 + n \times 38 + 37.3$ |

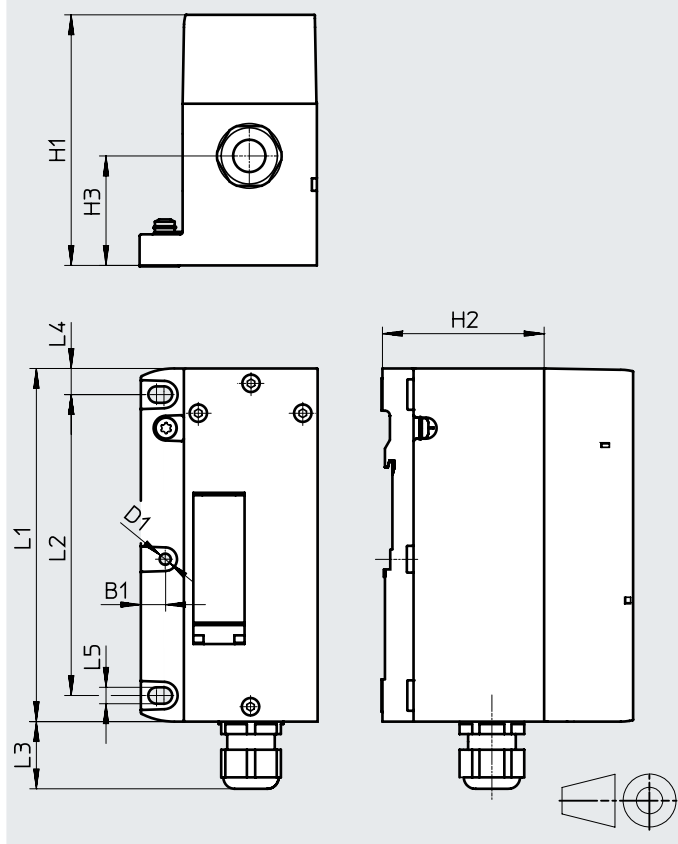
Note: This product conforms to ISO 1179-1 and ISO 228-1.

## Datasheet – Valve terminal

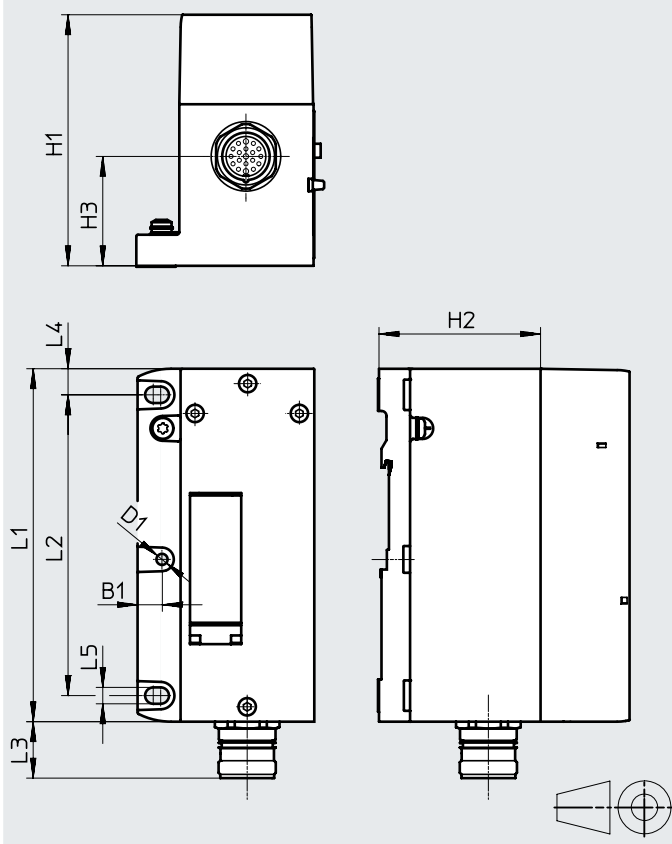
## Dimensions

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



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



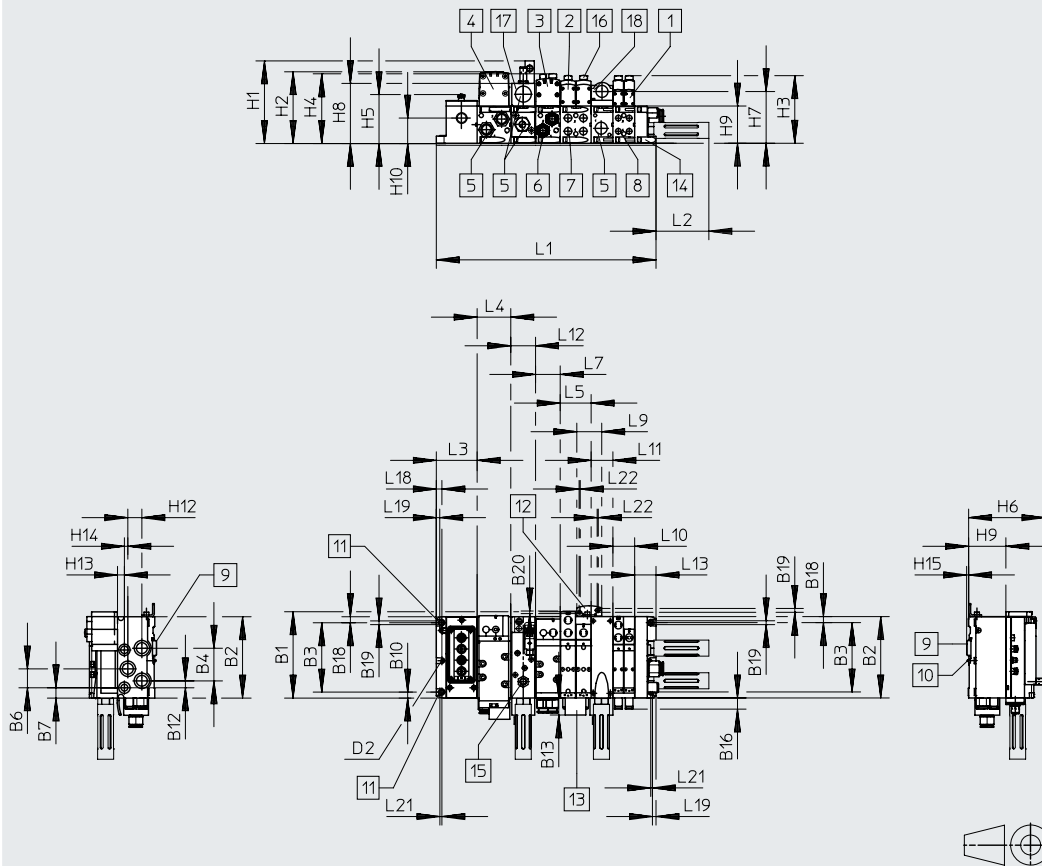
| Type                  | H1    | H2 | H3 | D1Ø | L1  | L2  | L3 | L4   | L5  | B1  |
|-----------------------|-------|----|----|-----|-----|-----|----|------|-----|-----|
| VABE-S6-1LF-C-M1-C... | 106.1 | 65 | 44 | 4.5 | 142 | 121 | 27 | 10.5 | 6.6 | 9.8 |
| VABE-S6-1LF-C-M1-R... | 101   | 65 | 44 |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

## Datasheet – Valve terminal

## Dimensions

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AP interface



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

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

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

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

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

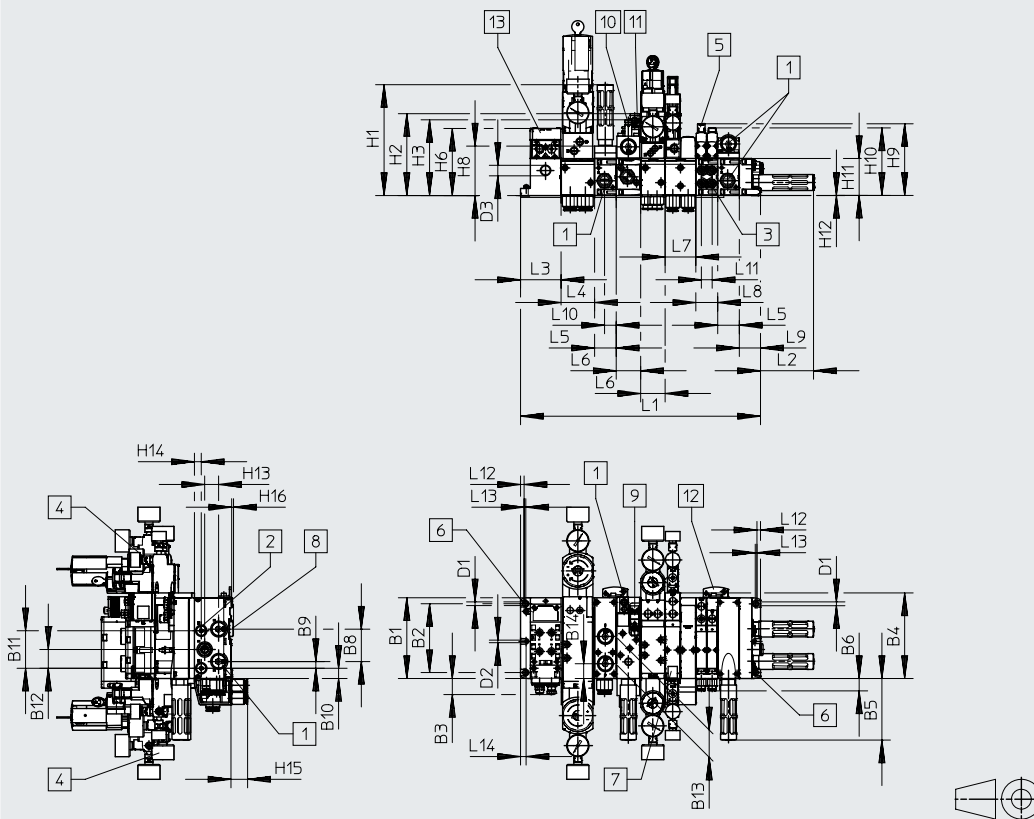
- 1) Number of manifold sub-bases 59 mm  
 2) Number of manifold sub-bases 54 mm  
 3) Number of manifold sub-bases 43 mm  
 4) Number of manifold sub-bases 38 mm  
 5) Number of manifold sub-bases

## Datasheet – Valve terminal

## Dimensions

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Valve terminal with AS-Interface connection



- |                                         |                                                        |      |                                     |
|-----------------------------------------|--------------------------------------------------------|------|-------------------------------------|
| [1] Threaded connection 1/2             | [7] Inscription label                                  | n02  | Number of manifold sub-bases ISO 02 |
| [2] Threaded connection 1/4             | [8] DIN rail mounting                                  | n01  | Number of manifold sub-bases ISO 01 |
| [3] Threaded connection 1/8             | [9] Electrical connection to DIN EN 175301-803, type C | n1   | Number of manifold sub-bases ISO 1  |
| [4] Pressure gauge, freely positionable | [10] Proximity switch M12x1                            | n2   | Number of manifold sub-bases ISO 2  |
| [5] Manual override                     | [11] Plug socket M12x1                                 | nZWP | Number of supply plates             |
| [6] Mounting holes                      | [12] Additional mounting bracket                       | nDA  | Number of soft-start valves         |
|                                         | [13] Electronic connection for AS-Interface            | s    |                                     |

| Dim. | B1  | B2  | B3 | B4    | B5    | B6   | B8 | B9 | B10 | B11 | B12 | B13 | B14 | D1  | D2  | D3   |
|------|-----|-----|----|-------|-------|------|----|----|-----|-----|-----|-----|-----|-----|-----|------|
| [mm] | 142 | 121 | 28 | 150.5 | 108.1 | 21.6 | 57 | 12 | 18  | 66  | 33  | 48  | 26  | 6.6 | 4.5 | 18.5 |

| Dim. | H1    | H2  | H3    | H6  | H8 | H9  | H10   | H11 | H12 | H13  | H14 | H15  | H16 |
|------|-------|-----|-------|-----|----|-----|-------|-----|-----|------|-----|------|-----|
| [mm] | 195.2 | 144 | 133.4 | 118 | 87 | 126 | 118.8 | 65  | 0.4 | 24.4 | 12  | 29.3 | 3.5 |

| Dim. | L1    | L2   | L3   | L4 | L5 | L6 | L7 | L8   | L9   | L10  | L11 | L12 | L13 | L14 |
|------|-------|------|------|----|----|----|----|------|------|------|-----|-----|-----|-----|
| [mm] | 578.3 | 93.2 | 71.3 | 59 | 38 | 43 | 54 | 38.6 | 37.3 | 20.5 | 19  | 6.3 | 3   | 9.8 |

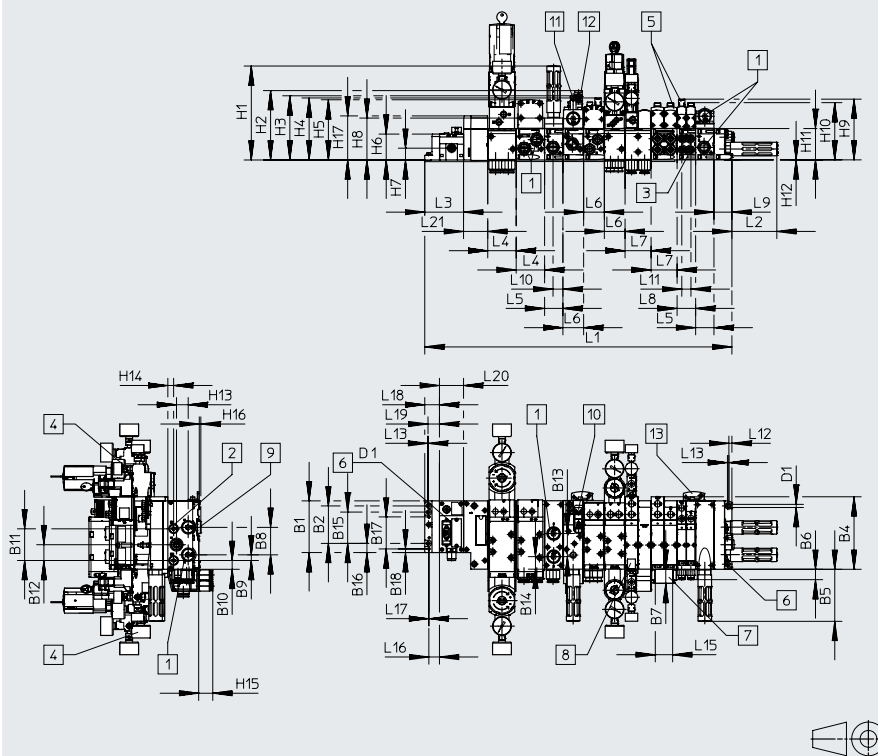
| ISO size            | Sub-base width      | Overall length                                                                                   |
|---------------------|---------------------|--------------------------------------------------------------------------------------------------|
| 02 + ZWP            | 38                  | $108.6 + n02 \cdot 38 + nZWP \cdot 38 + nDA \cdot 43$                                            |
| 01                  | 54                  | $108.6 + n01 \cdot 54 + nZWP \cdot 38 + nDA \cdot 43$                                            |
| 1 + DA              | 43                  | $108.6 + n1 \cdot 43 + nZWP \cdot 38 + nDA \cdot 43$                                             |
| 2                   | 59                  | $108.6 + n2 \cdot 59 + nZWP \cdot 38 + nDA \cdot 43$                                             |
| mix 02 + 01 + 1 + 2 | $38 + 54 + 43 + 59$ | $108.6 + n02 \cdot 38 + n01 \cdot 54 + n1 \cdot 43 + nZWP \cdot 38 + n2 \cdot 59 + nDA \cdot 43$ |

## Datasheet – Valve terminal

## Dimensions

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Valve terminal with fieldbus interface



- [1] Threaded connection 1/2  
[2] Threaded connection 1/4  
[3] Threaded connection 1/8  
[4] Pressure gauge, freely position-able

- [5] Manual override  
[6] Mounting holes  
[7] Inscription label  
[8] Inscription label

- [9] DIN rail mounting  
[10] Electrical connection to EN 175301-803, type C  
[11] Proximity switch M12x1  
[12] Plug socket M12x1  
[13] Additional mounting

- n02 Number of manifold sub-bases ISO 02  
n01 Number of manifold sub-bases ISO 01  
n1 Number of manifold sub-bases ISO 1  
n2 Number of manifold sub-bases ISO 2  
n Number of supply plates (only with end plate with pilot air selector)  
nDA Number of soft-start valves  
m Number of CPX modules

| Dim. | B1    | B2 | B4    | B5    | B6   | B7   | B8 | B9 | B10 | B11 | B12 | B13 | B14 | B15 | B16  | B17  | B18 | D1  | D3  |
|------|-------|----|-------|-------|------|------|----|----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|
| [mm] | 107.3 | 78 | 150.5 | 108.1 | 21.6 | 29.4 | 57 | 12 | 18  | 66  | 33  | 48  | 26  | 65  | 18.9 | 66.3 | 7.5 | 6.6 | 4.5 |

| Dim. | L1    | L2   | L3   | L4 | L5 | L6 | L7 | L8   | L9   | L10  | L11 | L13 | L15 | L17 | L18  | L19  | L20  | L21 |
|------|-------|------|------|----|----|----|----|------|------|------|-----|-----|-----|-----|------|------|------|-----|
| [mm] | 587.5 | 93.2 | 80.5 | 59 | 38 | 43 | 54 | 38.6 | 37.3 | 20.5 | 19  | 3   | 36  | 1   | 30.4 | 23.7 | mx50 | 50  |

| Dim. | H1    | H2  | H3    | H4    | H5  | H6   | H7   | H8 | H9  | H10   | H11 | H12 | H13  | H14 | H15  | H16 | H17  |
|------|-------|-----|-------|-------|-----|------|------|----|-----|-------|-----|-----|------|-----|------|-----|------|
| [mm] | 195.2 | 144 | 133.4 | 128.7 | 125 | 55.1 | 25.8 | 87 | 126 | 118.8 | 65  | 0.4 | 24.4 | 12  | 29.3 | 3.5 | 91.6 |

| ISO size            | Sub-base width      | L1                                                                       |
|---------------------|---------------------|--------------------------------------------------------------------------|
| 02 + ZWP            | 38                  | $117.7 + n02 * 38 + nZWP * 38 + nDA * 43$                                |
| 01                  | 54                  | $117.7 + n01 * 54 + nZWP * 38 + nDA * 43$                                |
| 1 + DA              | 43                  | $117.7 + n1 * 43 + nZWP * 38 + nDA * 43$                                 |
| 2                   | 59                  | $117.7 + n2 * 59 + nZWP * 38 + nDA * 43$                                 |
| mix 02 + 01 + 1 + 2 | $38 + 54 + 43 + 59$ | $117.7 + n02 * 38 + n01 * 54 + n1 * 43 + nZWP * 38 + n2 * 59 + nDA * 43$ |

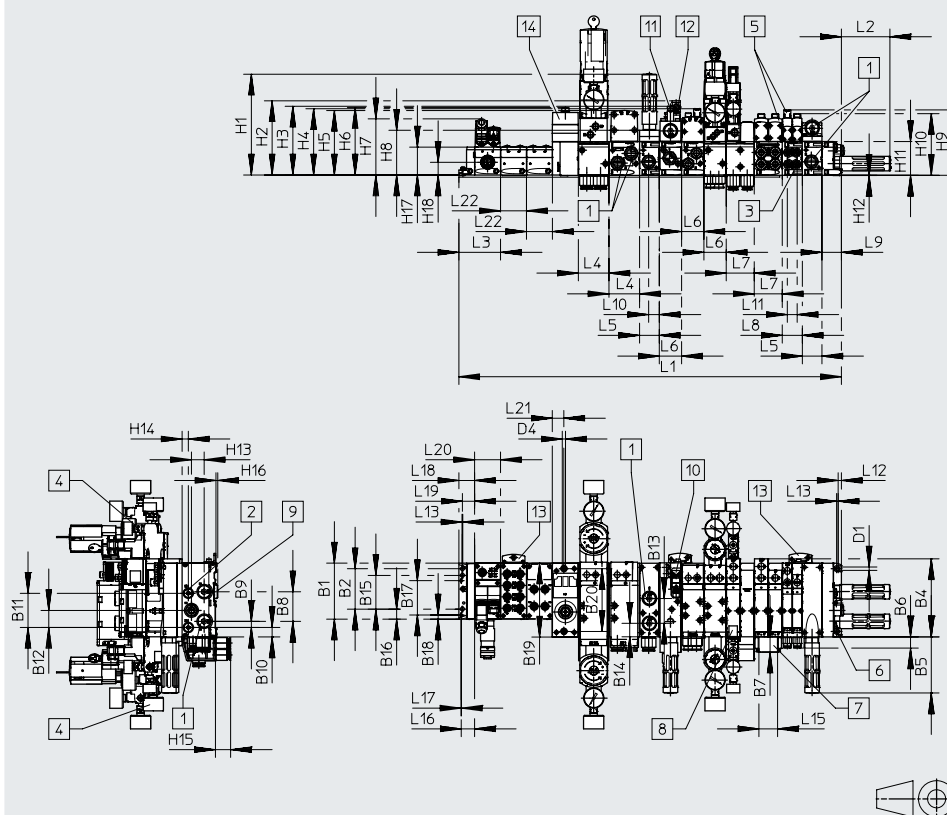
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

## Datasheet – Valve terminal

## Dimensions

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Valve terminal VTSA-F-CB with fieldbus interface



- |                                                         |                              |     |                                     |      |                                      |
|---------------------------------------------------------|------------------------------|-----|-------------------------------------|------|--------------------------------------|
| [1] Threaded connection 1/2                             | [12] Plug socket M12x1       | n02 | Number of manifold sub-bases ISO 02 | nZWP | Number of intermediate supply plates |
| [2] Threaded connection 1/4                             | [13] Additional mounting     | n01 | Number of manifold sub-bases ISO 01 | nDA  | Number of soft-start valves          |
| [3] Threaded connection 1/8                             | [14] Pneumatic interface CPX | n1  | Number of manifold sub-bases ISO 1  | m    | Number of CPX modules                |
| [4] Pressure gauge, freely positionable                 |                              | n2  | Number of manifold sub-bases ISO 2  |      |                                      |
| [5] Manual override                                     |                              |     |                                     |      |                                      |
| [6] Mounting holes                                      |                              |     |                                     |      |                                      |
| [7] Inscription label                                   |                              |     |                                     |      |                                      |
| [8] Inscription label                                   |                              |     |                                     |      |                                      |
| [9] DIN rail mounting                                   |                              |     |                                     |      |                                      |
| [10] Electrical connection to DIN EN 175301-803, type C |                              |     |                                     |      |                                      |
| [11] Proximity switch M12x1                             |                              |     |                                     |      |                                      |

| Dim. | B1    | B2 | B4    | B5    | B6   | B7   | B8 | B9 | B10 | B11 | B12 | B13 | B14 | B15 | B16  | B17  | B18 | B19   | B20 |
|------|-------|----|-------|-------|------|------|----|----|-----|-----|-----|-----|-----|-----|------|------|-----|-------|-----|
| [mm] | 108.1 | 78 | 150.5 | 108.1 | 21.6 | 29.4 | 57 | 12 | 18  | 66  | 33  | 48  | 26  | 65  | 19.3 | 66.3 | 7.9 | 142.6 | 121 |

| Dim. | D4  | H1    | H2    | H3    | H4    | H5  | H6    | H7    | H8 | H9  | H10   | H11 | H12 | H13  | H14 | H15  | H16 | H17  | H18  |
|------|-----|-------|-------|-------|-------|-----|-------|-------|----|-----|-------|-----|-----|------|-----|------|-----|------|------|
| [mm] | 6.6 | 195.2 | 103.3 | 133.4 | 128.7 | 125 | 106.5 | 108.3 | 87 | 126 | 118.8 | 65  | 0.4 | 24.4 | 12  | 29.3 | 3.5 | 53.8 | 24.5 |

| Dim. | L1  | L2   | L3   | L4 | L5 | L6 | L7 | L8   | L9   | L10  | L11 | L13 | L15 | L16  | L17 | L18  | L19  | L20    | L21  | L22  |
|------|-----|------|------|----|----|----|----|------|------|------|-----|-----|-----|------|-----|------|------|--------|------|------|
| [mm] | 557 | 93.2 | 80.3 | 59 | 38 | 43 | 54 | 38.6 | 37.3 | 20.5 | 19  | 1.5 | 36  | 25.9 | 1   | 30.4 | 23.7 | mx50.1 | 22.3 | 50.1 |

| ISO size            | Sub-base width      | Overall length                                                           |
|---------------------|---------------------|--------------------------------------------------------------------------|
| 02 + ZWP            | 38                  | $117.7 + n02 * 38 + nZWP * 38 + nDA * 43$                                |
| 01                  | 54                  | $117.7 + n01 * 54 + nZWP * 38 + nDA * 43$                                |
| 1 + DA              | 43                  | $117.7 + n1 * 43 + nZWP * 38 + nDA * 43$                                 |
| 2                   | 59                  | $117.7 + n2 * 59 + nZWP * 38 + nDA * 43$                                 |
| mix 02 + 01 + 1 + 2 | $38 + 54 + 43 + 59$ | $117.7 + n02 * 38 + n01 * 54 + n1 * 43 + nZWP * 38 + n2 * 59 + nDA * 43$ |



Datasheet – Valve terminal

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Vertical stacking components, width 18 mm

Technical drawing of vertical stacking components (width 18 mm) showing dimensions L1, L2, L3, L4, L5, L6, L7, H1, H3, H4, H5, H6, H7 and callouts 1-7.

[1] Solenoid valve with two solenoid coils, width 18 mm

[3] Throttle plate

[4] Vertical pressure shut-off plate lockable (code ZT), optionally lockable with key (code ZS)

[5] Vertical supply plate

[6] Manifold sub-base

[7] Angled connection plate

| Dim. | L1    | L2  | L3<br>(Code ZT) | L4<br>(Code ZT) | L3<br>(Code ZS) | L4<br>(Code ZS) | L5 | L6  | H1  | H3 | H4 | H5 | H6 | H7  |
|------|-------|-----|-----------------|-----------------|-----------------|-----------------|----|-----|-----|----|----|----|----|-----|
| [mm] | 133.8 | 130 | –               | 184.1           | 222.3           | 198.3           | 46 | 142 | 224 | 65 | 64 | 35 | 19 | 3.5 |

Vertical stacking components, width 18 mm

Technical drawing of vertical stacking components (width 18 mm) showing dimensions L1, L2, L3, L4, L5, L6, L7, H1, H2, H3, H4, H5, H6, H7, H8, H9, H10 and callouts 1-5.

[1] Solenoid valve with two solenoid coils, width 18 mm

[2] Pressure regulator plate

[3] Throttle plate

[4] Pressure gauge, freely positionable

[5] DIN rail mounting

| Dim. | H1  | H2    | H3 | H4   | H5 | H6   | H7    | H8   | H9   | H10 | L1    | L2    | L3    | L4    | L5    | L6 |
|------|-----|-------|----|------|----|------|-------|------|------|-----|-------|-------|-------|-------|-------|----|
| [mm] | 209 | 197.1 | 65 | 34.9 | 64 | 25.7 | 109.1 | 97.3 | 38.6 | 3.5 | 366.4 | 286.1 | 218.3 | 209.3 | 150.5 | 46 |

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

Technical drawing of vertical stacking components (width 18 mm) with pressure regulator plate, showing dimensions L1, L2, L3, L4, L5, L6, L7, H1, H2, H3, H4, H5, H6, H7 and callouts 1-8.

[1] Solenoid valve with two solenoid coils, width 18 mm

[2] Pressure regulator plate

[3] Throttle plate

[6] Manifold sub-base

[7] Angled connection plate

[8] Pressure gauge, freely positionable

Download CAD data → [www.festo.com](http://www.festo.com)

[illegible]

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

| Dim. | L1    | L2  | L3<br>(Code ZT) | L4<br>(Code ZT) | L3<br>(Code ZS) | L4<br>(Code ZS) | L5 | L6    | H1  | H3 | H4 | H5 | H6 | H7  |
|------|-------|-----|-----------------|-----------------|-----------------|-----------------|----|-------|-----|----|----|----|----|-----|
| [mm] | 150.8 | 150 | –               | 201.4           | 239.5           | 215.5           | 46 | 158.5 | 224 | 65 | 64 | 35 | 19 | 3.5 |

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

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

Technical drawing of the 3000 series valve assembly, showing top and side views with dimensions and callouts.

**Dimensions:**

- L1:** Total length of the assembly.
- L2:** Length from the left end to the center of the main body.
- L3:** Length of the main body section.
- L5:** Width of the base.
- H1:** Total height of the assembly.
- H2:** Height from the base to the top of the main body.
- H3:** Height from the base to the top of the valve handle.
- H4:** Height from the base to the top of the valve handle (alternative measurement).
- H5:** Height from the base to the top of the valve handle (alternative measurement).
- H6:** Height from the base to the top of the valve handle (alternative measurement).
- H7:** Height from the base to the top of the valve handle (alternative measurement).

**Callouts:**

- 1:** Main body of the valve.
- 2:** Left end cap.
- 3:** Valve handle.
- 6:** Valve handle (alternative view).
- 7:** Valve handle (alternative view).
- 8:** Right end cap.

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

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

Datasheet – Valve terminal

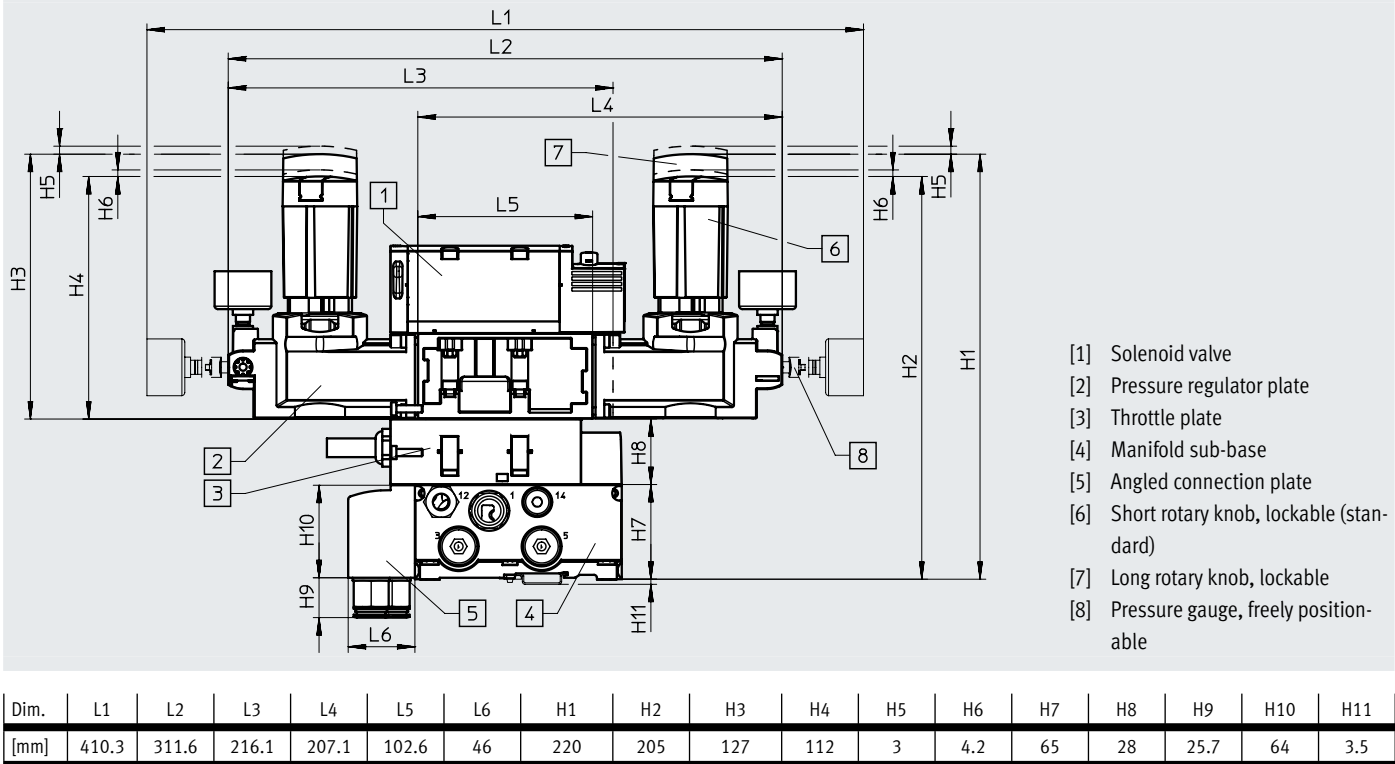
Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Vertical stacking components, width 42 mm



Vertical stacking components, width 42 mm



 **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](http://vabf-s2)

The following can be selected using the pressure regulator configurator VABF-S2:

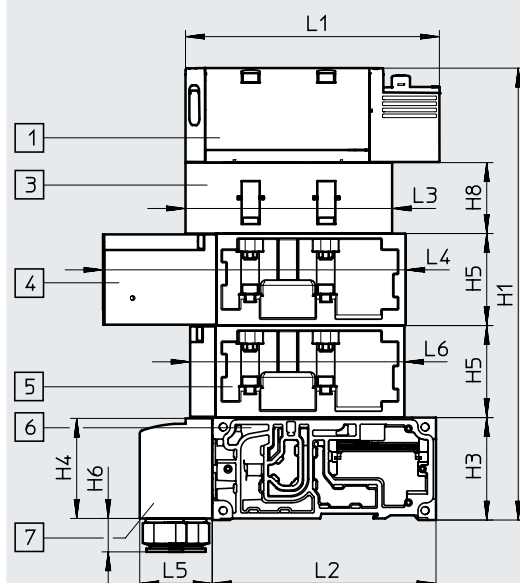
- Rotary knob, short version with locking element (standard)
- Rotary knob, long version with locking element
- Rotary knob with integrated lock

## Datasheet – Valve terminal

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

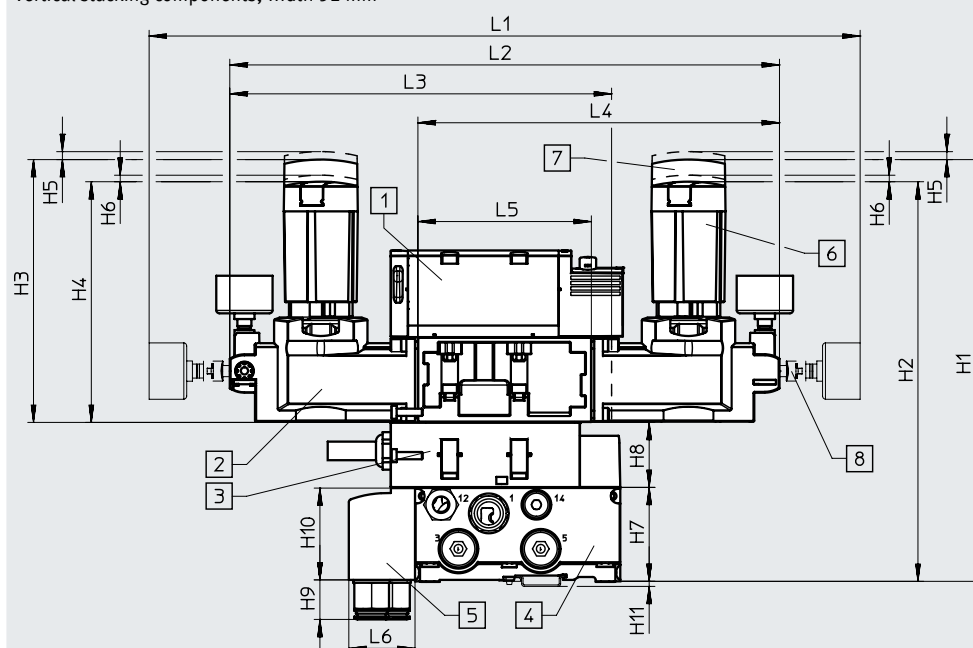
Vertical stacking components, width 52 mm



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

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

Vertical stacking components, width 52 mm



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

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

 **Note**

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

→ Internet: [vabf-s2](http://vabf-s2)

The following can be selected using the pressure regulator configurator VABF-S2:

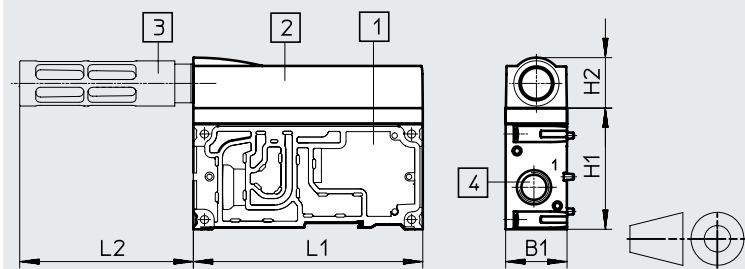
- Rotary knob, short version with locking element (standard)
- Rotary knob, long version with locking element
- Rotary knob with integrated lock

Datasheet – Valve terminal

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

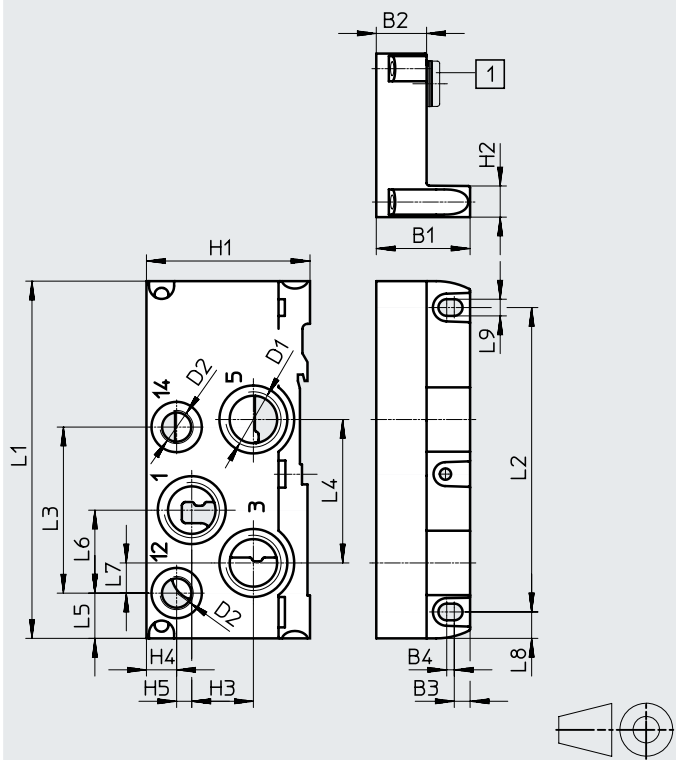
Supply plate with silencer



- [1] Supply plate
- [2] Exhaust port cover
- [3] Silencer U-1/2-B
- [4] Threaded connection G1/2

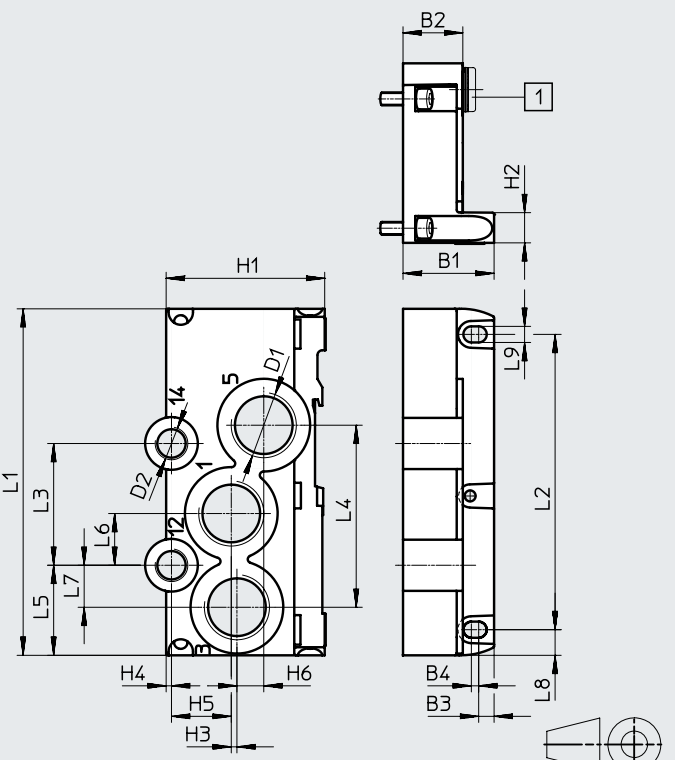
| Dim. | L1  | L2    | H1 | H2   | B1 |
|------|-----|-------|----|------|----|
| [mm] | 142 | 107.5 | 75 | 31.5 | 38 |

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



[1] Blanking plug

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



[1] Blanking plug

| Type            | L1  | L2  | L3   | L4   | L5   | L6   | L7   | L8   | L9  | D1   | D2   | H1 | H2   | H3   | H4  | H5   | H6 | B1   | B2   | B3  | B4 | with <sup>1)</sup> |
|-----------------|-----|-----|------|------|------|------|------|------|-----|------|------|----|------|------|-----|------|----|------|------|-----|----|--------------------|
| VABE-S6-1R-G12  | 142 | 121 | 66   | 57   | 18   | 33   | 12   | 10.5 | 6.6 | G1/2 | G1/4 | 65 | 12.5 | 24.5 | 12  | 6    | –  | 37.3 | 22   | 6.3 | 3  | [1]                |
| VABE-S6-1RZ-G12 |     |     |      |      |      |      |      |      |     |      |      |    |      |      |     |      |    |      |      |     |    | –                  |
| VABE-S6-2R-G34  | 142 | 121 | 49.9 | 74.6 | 36.9 | 21.2 | 17.2 | 10.5 | 6.6 | G3/4 | G1/4 | 65 | 12.5 | 2.3  | 2.2 | 24.5 | 11 | 37.3 | 24.5 | 6.3 | 3  | [1]                |
| VABE-S6-2RZ-G34 |     |     |      |      |      |      |      |      |     |      |      |    |      |      |     |      |    |      |      |     |    | –                  |

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

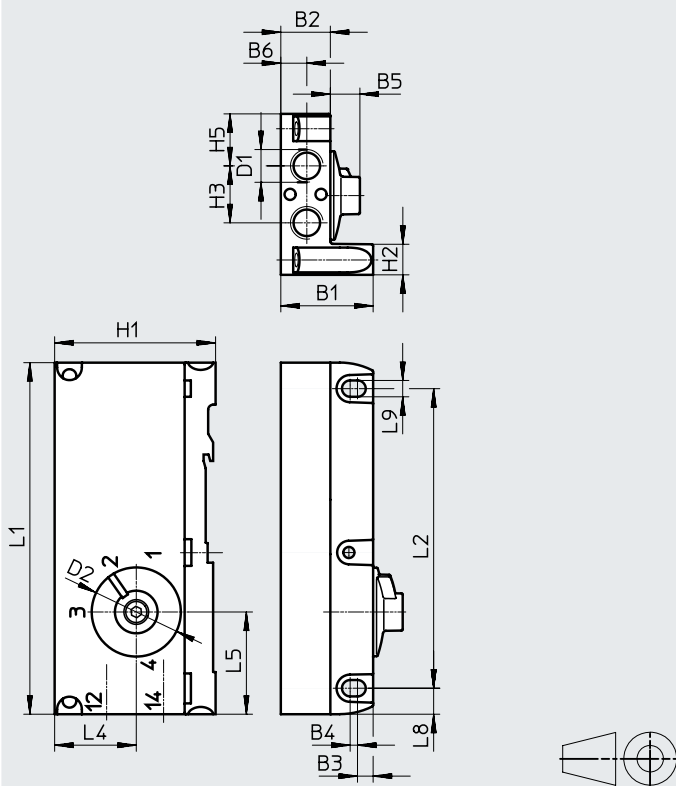
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet – Valve terminal

Dimensions

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

Download CAD data → [www.festo.com](http://www.festo.com)

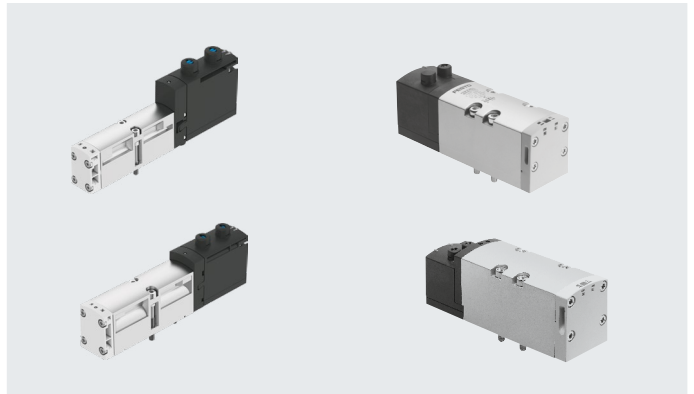


| Type             | L1  | L2  | L5   | L8   | L9  | D1   | D2 | H1   | H2   | H3 | H4 | H5 | B1   | B2 | B3  | B4 | B5 | B6   |
|------------------|-----|-----|------|------|-----|------|----|------|------|----|----|----|------|----|-----|----|----|------|
| VABE-S6-1RZ-G-B1 | 142 | 121 | 41.3 | 10.5 | 6.6 | G1/4 | 37 | 65.4 | 12.5 | 23 | 33 | 21 | 37.3 | 20 | 6.3 | 3  | 12 | 10.5 |

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

## Datasheet – Solenoid valves VSVA

-  - Valve width  
to ISO 15407-2
- 18 mm
  - 26 mm
- to ISO 5599-2
- 42 mm
  - 52 mm
-  - Flow rate<sup>1)</sup>
- Width 18 mm: up to  
550 (700) l/min
- Width 26 mm: up to  
1100 (1350) l/min
- Width 42 mm: up to  
1300 (1860) l/min
- Width 52 mm  
up to 2900 l/min
-  - Voltage  
24 V DC



1) Flow rates in brackets apply to VTSA-F and VTSA-F-CB

### General technical data – Solenoid valves

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

## Datasheet – Solenoid valves

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

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

## Flow direction of solenoid valves

## Solenoid valves only with reversible flow direction

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

## Solenoid valves with any flow direction

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



## Datasheet – Solenoid valves

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

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

## Datasheet – Solenoid valve width 18 mm

-  - Valve width  
to ISO 15407-2  
18 mm

-  - Voltage  
24 V DC

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



## Safety characteristics for valve

|                      |                                                                   |
|----------------------|-------------------------------------------------------------------|
| Conforms to standard | EN 13849-1/2                                                      |
| Shock resistance     | Shock test with severity level 2, to EN 60068-2-27                |
| Vibration resistant  | Transport application test with severity level 2, to EN 60068-2-6 |

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/...d Support/Downloads](http://www.festo.com/catalogue/...d Support/Downloads).

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

## Safety characteristics for valve

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

## Datasheet – Solenoid valve width 18 mm

| Datasheet for valve                                                               |               |                |                 |                |                  |                   |            |
|-----------------------------------------------------------------------------------|---------------|----------------|-----------------|----------------|------------------|-------------------|------------|
| Valve function (with valve code)                                                  | Terminal code | Flow direction |                 |                | Reset method     |                   | Weight [g] |
|                                                                                   |               | Any            | Only reversible | Not reversible | Pneumatic spring | Mechanical spring |            |
| 5/2-way double solenoid (B52)                                                     | J             | ■              | –               | –              | –                | –                 | 172        |
| 5/2-way double solenoid with dominant signal (D52)                                | D             | ■              | –               | –              | –                | –                 | 172        |
| 5/2-way single solenoid (M52A)                                                    | M             | ■              | –               | –              | ■                | –                 | 163        |
| 5/2-way single solenoid (M52M)                                                    | O             | ■              | –               | –              | –                | ■                 | 163        |
| 5/3-way closed1) (P53C)                                                           | G             | ■              | –               | –              | –                | ■                 | 191        |
| 5/3 exhausted1) (P53E)                                                            | E             | ■              | –               | –              | –                | ■                 | 191        |
| 5/3 pressurised1) (P53U)                                                          | B             | ■              | –               | –              | –                | ■                 | 191        |
| 5/3-way exhausted, switching position 14 detenting (P53ED)                        | SA            | –              | –               | ■              | –                | ■                 | 170        |
| 5/3-way exhausted, switching position 12 detenting (P53EP)                        | SE            | –              | –               | ■              | –                | ■                 | 170        |
| 5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD) | SB            | ■              | –               | –              | –                | ■                 | 172        |
| 5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD) | SD            | –              | –               | ■              | –                | ■                 | 172        |
| 2x3/2-way single solenoid, closed (T32C)                                          | K             | –              | –               | ■              | ■                | –                 | 190        |
| 2x3/2-way single solenoid, open (T32U)                                            | N             | –              | –               | ■              | ■                | –                 | 190        |
| 2x3/2-way single solenoid, open/closed (T32H)                                     | H             | –              | –               | ■              | ■                | –                 | 190        |
| 2x3/2-way single solenoid, closed (T32N)                                          | Q             | –              | ■               | –              | ■                | –                 | 190        |
| 2x3/2-way single solenoid, open (T32F)                                            | P             | –              | ■               | –              | ■                | –                 | 190        |
| 2x3/2-way single solenoid, open/closed (T32W)                                     | R             | –              | ■               | –              | ■                | –                 | 190        |
| 2x2/2-way single solenoid, closed (T22C)                                          | VC            | –              | –               | ■              | ■                | –                 | 190        |
| 2x2/2-way single solenoid, closed (T22CV)                                         | VV            | ■              | –               | –              | ■                | –                 | 190        |

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

## Datasheet – Solenoid valve width 18 mm

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

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

 **Note**

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

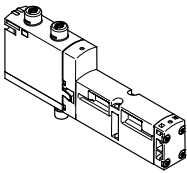
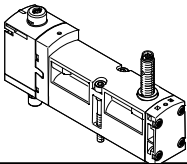
## Datasheet – Solenoid valve width 18 mm

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

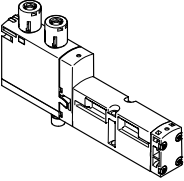
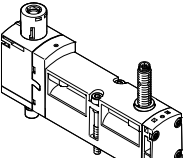
| Characteristic coil values                                                        |               |                                              |
|-----------------------------------------------------------------------------------|---------------|----------------------------------------------|
| Valve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

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

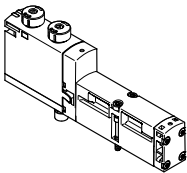
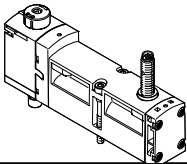
## Ordering data – Solenoid valve width 18 mm

| Ordering data – Solenoid valve VSVA, MO non-detenting/detenting (D)                 |               |                                                                                                                                                                                                                                                    |            |       |          |                                |
|-------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|----------|--------------------------------|
|                                                                                     | Terminal code | Valve function                                                                                                                                                                                                                                     | Valve code | Width | Part no. | Type                           |
| <b>Solenoid valves</b>                                                              |               |                                                                                                                                                                                                                                                    |            |       |          |                                |
|    | VC            | 2x 2/2-way valve, single solenoid, Normally closed, pneumatic spring return                                                                                                                                                                        | T22C       | 18 mm | 561155   | VSVA-B-T22C-AZD-A2-1T1L        |
|                                                                                     | VV            | 2x 2/2-way valve, single solenoid, Normally closed, Pneumatic spring return, vacuum operation possible at 3 and 5                                                                                                                                  | T22CV      | 18 mm | 561159   | VSVA-B-T22CV-AZD-A2-1T1L       |
|                                                                                     | N             | 2x 3/2-way valve, single solenoid, Normally open                                                                                                                                                                                                   | T32U       | 18 mm | 539178   | VSVA-B-T32U-AZD-A2-1T1L        |
|                                                                                     | K             | 2x 3/2-way valve, single solenoid, Normally closed                                                                                                                                                                                                 | T32C       | 18 mm | 539176   | VSVA-B-T32C-AZD-A2-1T1L        |
|                                                                                     | H             | 2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed                                                                                                                                                                            | T32H       | 18 mm | 539180   | VSVA-B-T32H-AZD-A2-1T1L        |
|                                                                                     | P             | 2x 3/2-way valve, single solenoid, reverse operation, Normally open                                                                                                                                                                                | T32F       | 18 mm | 539179   | VSVA-B-T32F-AZD-A2-1T1L        |
|                                                                                     | Q             | 2x 3/2-way valve, single solenoid, reverse operation, Normally closed                                                                                                                                                                              | T32N       | 18 mm | 539177   | VSVA-B-T32N-AZD-A2-1T1L        |
|                                                                                     | R             | 2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed                                                                                                                                                         | T32W       | 18 mm | 539181   | VSVA-B-T32W-AZD-A2-1T1L        |
|                                                                                     | M             | 5/2-way valve, single solenoid, pneumatic spring return                                                                                                                                                                                            | M52-A      | 18 mm | 539184   | VSVA-B-M52-AZD-A2-1T1L         |
|                                                                                     | O             | 5/2-way valve, single solenoid, mechanical spring return                                                                                                                                                                                           | M52-M      | 18 mm | 539185   | VSVA-B-M52-MZD-A2-1T1L         |
|                                                                                     | J             | 5/2-way valve, double solenoid                                                                                                                                                                                                                     | B52        | 18 mm | 539182   | VSVA-B-B52-ZD-A2-1T1L          |
|                                                                                     | D             | 5/2-way valve, double solenoid, with dominant signal                                                                                                                                                                                               | D52        | 18 mm | 539183   | VSVA-B-D52-ZD-A2-1T1L          |
|                                                                                     | B             | 5/3-way solenoid valve, Mid-position pressurised                                                                                                                                                                                                   | P53U       | 18 mm | 539186   | VSVA-B-P53U-ZD-A2-1T1L         |
|                                                                                     | G             | 5/3-way solenoid valve, Mid-position closed                                                                                                                                                                                                        | P53C       | 18 mm | 539188   | VSVA-B-P53C-ZD-A2-1T1L         |
|                                                                                     | E             | 5/3-way solenoid valve, Mid-position exhausted                                                                                                                                                                                                     | P53E       | 18 mm | 539187   | VSVA-B-P53E-ZD-A2-1T1L         |
|                                                                                     | SA            | 5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return                                                                                                                                          | P53ED      | 18 mm | 8031814  | VSVA-B-P53ED-ZD-A2-1T1L        |
|                                                                                     | SE            | 5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return                                                                                                                                          | P53EP      | 18 mm | 8031818  | VSVA-B-P53EP-ZD-A2-1T1L        |
|                                                                                     | SB            | 5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return | P53AD      | 18 mm | 8031815  | VSVA-B-P53AD-ZD-A2-1T1L        |
|                                                                                     | SD            | 5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return | P53BD      | 18 mm | 8031817  | VSVA-B-P53BD-ZD-A2-1T1L        |
|  | SS            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1                                                                                    | M52-M      | 18 mm | 573201   | VSVA-B-M52-MZD-A2-1T1L-APX-0.5 |
|                                                                                     | SO            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1                                                                                                                 | M52-M      | 18 mm | 573202   | VSVA-B-M52-MZD-A2-1T1L-APP     |

## Ordering data – Solenoid valve width 18 mm

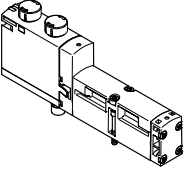
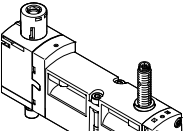
| Ordering data – Solenoid valve VSVA with cover cap for MO non-detenting/heavy duty, detenting via accessory (TR) |               |                                                                                                                                                                                                                                                    |            |       |          |                                 |
|------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|----------|---------------------------------|
|                                                                                                                  | Terminal code | Valve function                                                                                                                                                                                                                                     | Valve code | Width | Part no. | Type                            |
| <b>Solenoid valves</b>                                                                                           |               |                                                                                                                                                                                                                                                    |            |       |          |                                 |
|                                  | VC            | 2x 2/2-way valve, single solenoid, Normally closed, pneumatic spring return                                                                                                                                                                        | T22C       | 18 mm | 8033457  | VSVA-B-T22C-AZTR-A2-1T1L        |
|                                                                                                                  | VV            | 2x 2/2-way valve, single solenoid, Normally closed, Pneumatic spring return, vacuum operation possible at 3 and 5                                                                                                                                  | T22CV      | 18 mm | 8033458  | VSVA-B-T22CV-AZTR-A2-1T1L       |
|                                                                                                                  | N             | 2x 3/2-way valve, single solenoid, Normally open                                                                                                                                                                                                   | T32U       | 18 mm | 8033446  | VSVA-B-T32U-AZTR-A2-1T1L        |
|                                                                                                                  | K             | 2x 3/2-way valve, single solenoid, Normally closed                                                                                                                                                                                                 | T32C       | 18 mm | 8033444  | VSVA-B-T32C-AZTR-A2-1T1L        |
|                                                                                                                  | H             | 2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed                                                                                                                                                                            | T32H       | 18 mm | 8033448  | VSVA-B-T32H-AZTR-A2-1T1L        |
|                                                                                                                  | P             | 2x 3/2-way valve, single solenoid, reverse operation, Normally open                                                                                                                                                                                | T32F       | 18 mm | 8033447  | VSVA-B-T32F-AZTR-A2-1T1L        |
|                                                                                                                  | Q             | 2x 3/2-way valve, single solenoid, reverse operation, Normally closed                                                                                                                                                                              | T32N       | 18 mm | 8033445  | VSVA-B-T32N-AZTR-A2-1T1L        |
|                                                                                                                  | R             | 2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed                                                                                                                                                         | T32W       | 18 mm | 8033449  | VSVA-B-T32W-AZTR-A2-1T1L        |
|                                                                                                                  | M             | 5/2-way valve, single solenoid, pneumatic spring return                                                                                                                                                                                            | M52-A      | 18 mm | 8033452  | VSVA-B-M52-AZTR-A2-1T1L         |
|                                                                                                                  | O             | 5/2-way valve, single solenoid, mechanical spring return                                                                                                                                                                                           | M52-M      | 18 mm | 8033453  | VSVA-B-M52-MZTR-A2-1T1L         |
|                                                                                                                  | J             | 5/2-way valve, double solenoid                                                                                                                                                                                                                     | B52        | 18 mm | 8033450  | VSVA-B-B52-ZTR-A2-1T1L          |
|                                                                                                                  | D             | 5/2-way valve, double solenoid, with dominant signal                                                                                                                                                                                               | D52        | 18 mm | 8033451  | VSVA-B-D52-ZTR-A2-1T1L          |
|                                                                                                                  | B             | 5/3-way solenoid valve, Mid-position pressurised                                                                                                                                                                                                   | P53U       | 18 mm | 8033454  | VSVA-B-P53U-ZTR-A2-1T1L         |
|                                                                                                                  | G             | 5/3-way solenoid valve, Mid-position closed                                                                                                                                                                                                        | P53C       | 18 mm | 8033456  | VSVA-B-P53C-ZTR-A2-1T1L         |
|                                                                                                                  | E             | 5/3-way solenoid valve, Mid-position exhausted                                                                                                                                                                                                     | P53E       | 18 mm | 8033455  | VSVA-B-P53E-ZTR-A2-1T1L         |
|                                                                                                                  | SA            | 5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return                                                                                                                                          | P53ED      | 18 mm | 8039181  | VSVA-B-P53ED-ZTR-A2-1T1L        |
|                                                                                                                  | SE            | 5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return                                                                                                                                          | P53EP      | 18 mm | 8039190  | VSVA-B-P53EP-ZTR-A2-1T1L        |
|                                                                                                                  | SB            | 5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return | P53AD      | 18 mm | 8039184  | VSVA-B-P53AD-ZTR-A2-1T1L        |
|                                                                                                                  | SD            | 5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return | P53BD      | 18 mm | 8040110  | VSVA-B-P53BD-ZTR-A2-1T1L        |
|                                | SS            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1                                                                                    | M52-M      | 18 mm | 8033459  | VSVA-B-M52-MZTR-A2-1T1L-APX-0.5 |
|                                                                                                                  | SO            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1                                                                                                                 | M52-M      | 18 mm | 8033460  | VSVA-B-M52-MZTR-A2-1T1L-APP     |

## Ordering data – Solenoid valve width 18 mm

| Ordering data – Solenoid valve VSVA with cover cap for MO, non-detenting (H)        |               |                                                                                                                                                                                                                                                    |            |       |          |                                |
|-------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|----------|--------------------------------|
|                                                                                     | Terminal code | Valve function                                                                                                                                                                                                                                     | Valve code | Width | Part no. | Type                           |
| <b>Solenoid valves</b>                                                              |               |                                                                                                                                                                                                                                                    |            |       |          |                                |
|    | VC            | 2x 2/2-way valve, single solenoid, Normally closed, pneumatic spring return                                                                                                                                                                        | T22C       | 18 mm | 8033475  | VSVA-B-T22C-AZH-A2-1T1L        |
|                                                                                     | VV            | 2x 2/2-way valve, single solenoid, Normally closed, Pneumatic spring return, vacuum operation possible at 3 and 5                                                                                                                                  | T22CV      | 18 mm | 8033476  | VSVA-B-T22CV-AZH-A2-1T1L       |
|                                                                                     | N             | 2x 3/2-way valve, single solenoid, Normally open                                                                                                                                                                                                   | T32U       | 18 mm | 8033464  | VSVA-B-T32U-AZH-A2-1T1L        |
|                                                                                     | K             | 2x 3/2-way valve, single solenoid, Normally closed                                                                                                                                                                                                 | T32C       | 18 mm | 8033462  | VSVA-B-T32C-AZH-A2-1T1L        |
|                                                                                     | H             | 2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed                                                                                                                                                                            | T32H       | 18 mm | 8033466  | VSVA-B-T32H-AZH-A2-1T1L        |
|                                                                                     | P             | 2x 3/2-way valve, single solenoid, reverse operation, Normally open                                                                                                                                                                                | T32F       | 18 mm | 8033465  | VSVA-B-T32F-AZH-A2-1T1L        |
|                                                                                     | Q             | 2x 3/2-way valve, single solenoid, reverse operation, Normally closed                                                                                                                                                                              | T32N       | 18 mm | 8033463  | VSVA-B-T32N-AZH-A2-1T1L        |
|                                                                                     | R             | 2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed                                                                                                                                                         | T32W       | 18 mm | 8033467  | VSVA-B-T32W-AZH-A2-1T1L        |
|                                                                                     | M             | 5/2-way valve, single solenoid, pneumatic spring return                                                                                                                                                                                            | M52-A      | 18 mm | 8033470  | VSVA-B-M52-AZH-A2-1T1L         |
|                                                                                     | O             | 5/2-way valve, single solenoid, mechanical spring return                                                                                                                                                                                           | M52-M      | 18 mm | 8033471  | VSVA-B-M52-MZH-A2-1T1L         |
|                                                                                     | J             | 5/2-way valve, double solenoid                                                                                                                                                                                                                     | B52        | 18 mm | 8033468  | VSVA-B-B52-ZH-A2-1T1L          |
|                                                                                     | D             | 5/2-way valve, double solenoid, with dominant signal                                                                                                                                                                                               | D52        | 18 mm | 8033469  | VSVA-B-D52-ZH-A2-1T1L          |
|                                                                                     | B             | 5/3-way solenoid valve, Mid-position pressurised                                                                                                                                                                                                   | P53U       | 18 mm | 8033472  | VSVA-B-P53U-ZH-A2-1T1L         |
|                                                                                     | G             | 5/3-way solenoid valve, Mid-position closed                                                                                                                                                                                                        | P53C       | 18 mm | 8033474  | VSVA-B-P53C-ZH-A2-1T1L         |
|                                                                                     | E             | 5/3-way solenoid valve, Mid-position exhausted                                                                                                                                                                                                     | P53E       | 18 mm | 8033473  | VSVA-B-P53E-ZH-A2-1T1L         |
|                                                                                     | SA            | 5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return                                                                                                                                          | P53ED      | 18 mm | 8039182  | VSVA-B-P53ED-ZH-A2-1T1L        |
|  | SE            | 5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return                                                                                                                                          | P53EP      | 18 mm | 8039191  | VSVA-B-P53EP-ZH-A2-1T1L        |
|                                                                                     | SB            | 5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return | P53AD      | 18 mm | 8039185  | VSVA-B-P53AD-ZH-A2-1T1L        |
|                                                                                     | SD            | 5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return | P53BD      | 18 mm | 8040111  | VSVA-B-P53BD-ZH-A2-1T1L        |
|                                                                                     | SS            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1                                                                                    | M52-M      | 18 mm | 8033477  | VSVA-B-M52-MZH-A2-1T1L-APX-0.5 |
|                                                                                     | SO            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1                                                                                                                 | M52-M      | 18 mm | 8033478  | VSVA-B-M52-MZH-A2-1T1L-APP     |



# Ordering data – Solenoid valve width 18 mm

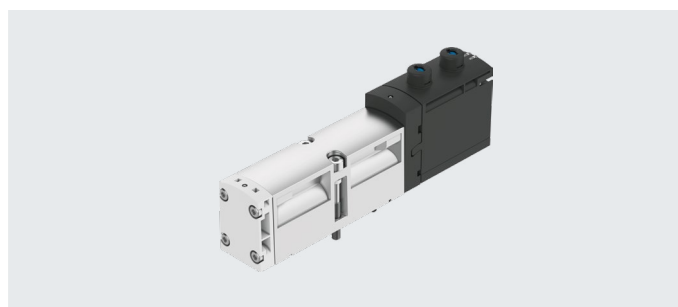
| Ordering data – Solenoid valve VSVA with cover cap for MO, concealed               |               |                                                                                                                                                                                                                                                    |            |       |          |                               |
|------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|----------|-------------------------------|
|                                                                                    | Terminal code | Valve function                                                                                                                                                                                                                                     | Valve code | Width | Part no. | Type                          |
| <b>Solenoid valves</b>                                                             |               |                                                                                                                                                                                                                                                    |            |       |          |                               |
|    | VC            | 2x 2/2-way valve, single solenoid, Normally closed, pneumatic spring return                                                                                                                                                                        | T22C       | 18 mm | 8033493  | VSVA-B-T22C-AZ-A2-1T1L        |
|                                                                                    | VV            | 2x 2/2-way valve, single solenoid, Normally closed, Pneumatic spring return, vacuum operation possible at 3 and 5                                                                                                                                  | T22CV      | 18 mm | 8033494  | VSVA-B-T22CV-AZ-A2-1T1L       |
|                                                                                    | N             | 2x 3/2-way valve, single solenoid, Normally open                                                                                                                                                                                                   | T32U       | 18 mm | 8033482  | VSVA-B-T32U-AZ-A2-1T1L        |
|                                                                                    | K             | 2x 3/2-way valve, single solenoid, Normally closed                                                                                                                                                                                                 | T32C       | 18 mm | 8033480  | VSVA-B-T32C-AZ-A2-1T1L        |
|                                                                                    | H             | 2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed                                                                                                                                                                            | T32H       | 18 mm | 8033484  | VSVA-B-T32H-AZ-A2-1T1L        |
|                                                                                    | P             | 2x 3/2-way valve, single solenoid, reverse operation, Normally open                                                                                                                                                                                | T32F       | 18 mm | 8033483  | VSVA-B-T32F-AZ-A2-1T1L        |
|                                                                                    | Q             | 2x 3/2-way valve, single solenoid, reverse operation, Normally closed                                                                                                                                                                              | T32N       | 18 mm | 8033481  | VSVA-B-T32N-AZ-A2-1T1L        |
|                                                                                    | R             | 2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed                                                                                                                                                         | T32W       | 18 mm | 8033485  | VSVA-B-T32W-AZ-A2-1T1L        |
|                                                                                    | M             | 5/2-way valve, single solenoid, pneumatic spring return                                                                                                                                                                                            | M52-A      | 18 mm | 8033488  | VSVA-B-M52-AZ-A2-1T1L         |
|                                                                                    | O             | 5/2-way valve, single solenoid, mechanical spring return                                                                                                                                                                                           | M52-M      | 18 mm | 8033489  | VSVA-B-M52-MZ-A2-1T1L         |
|                                                                                    | J             | 5/2-way valve, double solenoid                                                                                                                                                                                                                     | B52        | 18 mm | 8033486  | VSVA-B-B52-Z-A2-1T1L          |
|                                                                                    | D             | 5/2-way valve, double solenoid, with dominant signal                                                                                                                                                                                               | D52        | 18 mm | 8033487  | VSVA-B-D52-Z-A2-1T1L          |
|                                                                                    | B             | 5/3-way solenoid valve, Mid-position pressurised                                                                                                                                                                                                   | P53U       | 18 mm | 8033490  | VSVA-B-P53U-Z-A2-1T1L         |
|                                                                                    | G             | 5/3-way solenoid valve, Mid-position closed                                                                                                                                                                                                        | P53C       | 18 mm | 8033492  | VSVA-B-P53C-Z-A2-1T1L         |
|                                                                                    | E             | 5/3-way solenoid valve, Mid-position exhausted                                                                                                                                                                                                     | P53E       | 18 mm | 8033491  | VSVA-B-P53E-Z-A2-1T1L         |
|                                                                                    | SA            | 5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return                                                                                                                                          | P53ED      | 18 mm | 8039183  | VSVA-B-P53ED-Z-A2-1T1L        |
|                                                                                    | SE            | 5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return                                                                                                                                          | P53EP      | 18 mm | 8039192  | VSVA-B-P53EP-Z-A2-1T1L        |
|                                                                                    | SB            | 5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return | P53AD      | 18 mm | 8039186  | VSVA-B-P53AD-Z-A2-1T1L        |
|                                                                                    | SD            | 5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return | P53BD      | 18 mm | 8040112  | VSVA-B-P53BD-Z-A2-1T1L        |
|  | SS            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1                                                                                    | M52-M      | 18 mm | 8033495  | VSVA-B-M52-MZ-A2-1T1L-APX-0.5 |
|                                                                                    | SO            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1                                                                                                                 | M52-M      | 18 mm | 8033496  | VSVA-B-M52-MZ-A2-1T1L-APP     |

## Datasheet – Solenoid valve width 26 mm

-  Valve width  
to ISO 15407-2  
26 mm

-  Voltage  
24 V DC

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



## Safety characteristics for valve

|                                            |                                                                   |
|--------------------------------------------|-------------------------------------------------------------------|
| Conforms to standard                       | EN 13849-1/2                                                      |
| CE marking (see declaration of conformity) | Direct voltage<br>24 V DC                                         |
| Shock resistance                           | To EU EMC Directive 1) (solenoid valves with sensor only)         |
| Vibration resistant                        | Shock test with severity level 2, to EN 60068-2-27                |
|                                            | Transport application test with severity level 2, to EN 60068-2-6 |

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/...d Support/Downloads](http://www.festo.com/catalogue/...d%20Support/Downloads).

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

## Safety characteristics for valve

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

## Datasheet – Solenoid valve width 26 mm

| Datasheet for valve                                                               |               |                |                 |                |                  |                   |            |
|-----------------------------------------------------------------------------------|---------------|----------------|-----------------|----------------|------------------|-------------------|------------|
| Valve function (with valve code)                                                  | Terminal code | Flow direction |                 |                | Reset method     |                   | Weight [g] |
|                                                                                   |               | Any            | Only reversible | Not reversible | Pneumatic spring | Mechanical spring |            |
| 5/2-way double solenoid (B52)                                                     | J             | ■              | –               | –              | –                | –                 | 276        |
| 5/2-way double solenoid with dominant signal (D52)                                | D             | ■              | –               | –              | –                | –                 | 276        |
| 5/2-way single solenoid (M52A)                                                    | M             | ■              | –               | –              | ■                | –                 | 293        |
| 5/2-way single solenoid (M52M)                                                    | O             | ■              | –               | –              | –                | ■                 | 293        |
| 5/3-way closed1) (P53C)                                                           | G             | ■              | –               | –              | –                | ■                 | 320        |
| 5/3 exhausted1) (P53E)                                                            | E             | ■              | –               | –              | –                | ■                 | 320        |
| 5/3 pressurised1) (P53U)                                                          | B             | ■              | –               | –              | –                | ■                 | 320        |
| 5/3-way exhausted, switching position 14 detenting (P53ED)                        | SA            | –              | –               | ■              | –                | ■                 | 291        |
| 5/3-way exhausted, switching position 12 detenting (P53EP)                        | SE            | –              | –               | ■              | –                | ■                 | 291        |
| 5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD) | SB            | ■              | –               | –              | –                | ■                 | 301        |
| 5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD) | SD            | –              | –               | ■              | –                | ■                 | 301        |
| 2x3/2-way single solenoid, closed (T32C)                                          | K             | –              | –               | ■              | ■                | –                 | 335        |
| 2x3/2-way single solenoid, open (T32U)                                            | N             | –              | –               | ■              | ■                | –                 | 335        |
| 2x3/2-way single solenoid, open/closed (T32H)                                     | H             | –              | –               | ■              | ■                | –                 | 335        |
| 2x3/2-way single solenoid, closed (T32N)                                          | Q             | –              | ■               | –              | ■                | –                 | 335        |
| 2x3/2-way single solenoid, open (T32F)                                            | P             | –              | ■               | –              | ■                | –                 | 335        |
| 2x3/2-way single solenoid, open/closed (T32W)                                     | R             | –              | ■               | –              | ■                | –                 | 335        |
| 2x2/2-way single solenoid, closed (T22C)                                          | VC            | –              | –               | ■              | ■                | –                 | 335        |
| 2x2/2-way single solenoid, closed (T22CV)                                         | VV            | ■              | –               | –              | ■                | –                 | 335        |

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

## Datasheet – Solenoid valve width 26 mm

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

1) Switching position

2) Mid-position

**Note**

The solenoid valves VSVA-B-P53BD...-A1-1T1L (terminal code SD) can be operated without restrictions at an operating pressure of less than 6 bar. At an operating pressure of more than 6 bar, the actual flow rate must not exceed 1900 l/min (e.g. 10-->2 bar) or these solenoid valves may switch unintentionally (to the mid-position or switching position 14).

At pressures above 6 bar, excessive flow can be avoided with a throttle/orifice (e.g. a reducing nipple at connection 2 or 4 from G1/4 to G1/8).

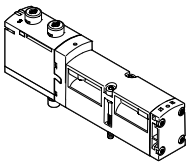
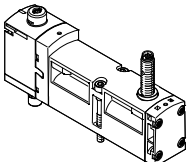
## Datasheet – Solenoid valve width 26 mm

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

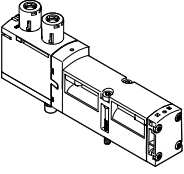
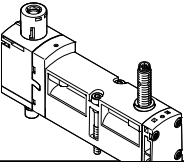
| Characteristic coil values                                                        |               |                                              |
|-----------------------------------------------------------------------------------|---------------|----------------------------------------------|
| Valve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

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

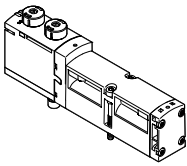
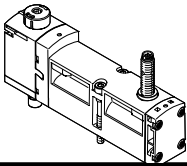
## Ordering data – Solenoid valve width 26 mm

| Ordering data – Solenoid valve VSVA, MO non-detenting/detenting (D)                 |               |                                                                                                                                                                                                                                                    |            |       |          |                                |
|-------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|----------|--------------------------------|
|                                                                                     | Terminal code | Valve function                                                                                                                                                                                                                                     | Valve code | Width | Part no. | Type                           |
| <b>Solenoid valves</b>                                                              |               |                                                                                                                                                                                                                                                    |            |       |          |                                |
|    | VC            | 2x 2/2-way valve, single solenoid, Normally closed, pneumatic spring return                                                                                                                                                                        | T22C       | 26 mm | 561149   | VSVA-B-T22C-AZD-A1-1T1L        |
|                                                                                     | VV            | 2x 2/2-way valve, single solenoid, Normally closed, Pneumatic spring return, vacuum operation possible at 3 and 5                                                                                                                                  | T22CV      | 26 mm | 561153   | VSVA-B-T22CV-AZD-A1-1T1L       |
|                                                                                     | N             | 2x 3/2-way valve, single solenoid, Normally open                                                                                                                                                                                                   | T32U       | 26 mm | 539152   | VSVA-B-T32U-AZD-A1-1T1L        |
|                                                                                     | K             | 2x 3/2-way valve, single solenoid, Normally closed                                                                                                                                                                                                 | T32C       | 26 mm | 539150   | VSVA-B-T32C-AZD-A1-1T1L        |
|                                                                                     | H             | 2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed                                                                                                                                                                            | T32H       | 26 mm | 539154   | VSVA-B-T32H-AZD-A1-1T1L        |
|                                                                                     | P             | 2x 3/2-way valve, single solenoid, reverse operation, Normally open                                                                                                                                                                                | T32F       | 26 mm | 539153   | VSVA-B-T32F-AZD-A1-1T1L        |
|                                                                                     | Q             | 2x 3/2-way valve, single solenoid, reverse operation, Normally closed                                                                                                                                                                              | T32N       | 26 mm | 539151   | VSVA-B-T32N-AZD-A1-1T1L        |
|                                                                                     | R             | 2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed                                                                                                                                                         | T32W       | 26 mm | 539155   | VSVA-B-T32W-AZD-A1-1T1L        |
|                                                                                     | M             | 5/2-way valve, single solenoid, pneumatic spring return                                                                                                                                                                                            | M52-A      | 26 mm | 539158   | VSVA-B-M52-AZD-A1-1T1L         |
|                                                                                     | O             | 5/2-way valve, single solenoid, mechanical spring return                                                                                                                                                                                           | M52-M      | 26 mm | 539159   | VSVA-B-M52-MZD-A1-1T1L         |
|                                                                                     | J             | 5/2-way valve, double solenoid                                                                                                                                                                                                                     | B52        | 26 mm | 539156   | VSVA-B-B52-ZD-A1-1T1L          |
|                                                                                     | D             | 5/2-way valve, double solenoid, with dominant signal                                                                                                                                                                                               | D52        | 26 mm | 539157   | VSVA-B-D52-ZD-A1-1T1L          |
|                                                                                     | B             | 5/3-way solenoid valve, Mid-position pressurised                                                                                                                                                                                                   | P53U       | 26 mm | 539160   | VSVA-B-P53U-ZD-A1-1T1L         |
|                                                                                     | G             | 5/3-way solenoid valve, Mid-position closed                                                                                                                                                                                                        | P53C       | 26 mm | 539162   | VSVA-B-P53C-ZD-A1-1T1L         |
|                                                                                     | E             | 5/3-way solenoid valve, Mid-position exhausted                                                                                                                                                                                                     | P53E       | 26 mm | 539161   | VSVA-B-P53E-ZD-A1-1T1L         |
|                                                                                     | SA            | 5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return                                                                                                                                          | P53ED      | 26 mm | 560727   | VSVA-B-P53ED-ZD-A1-1T1L        |
|                                                                                     | SE            | 5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return                                                                                                                                          | P53EP      | 26 mm | 8026638  | VSVA-B-P53EP-ZD-A1-1T1L        |
|                                                                                     | SB            | 5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return | P53AD      | 26 mm | 560728   | VSVA-B-P53AD-ZD-A1-1T1L        |
|                                                                                     | SD            | 5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return | P53BD      | 26 mm | 8031816  | VSVA-B-P53BD-ZD-A1-1T1L        |
|  | SS            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1                                                                                    | M52-M      | 26 mm | 570850   | VSVA-B-M52-MZD-A1-1T1L-APX-0.5 |
|                                                                                     | SO            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1                                                                                                                 | M52-M      | 26 mm | 560724   | VSVA-B-M52-MZD-A1-1T1L-APP     |

## Ordering data – Solenoid valve width 26 mm

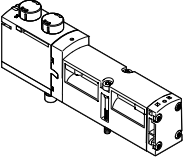
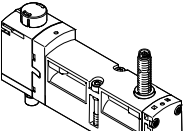
| Ordering data – Solenoid valve VSVA with cover cap for MO non-detenting/heavy duty, detenting via accessory (TR) |               |                                                                                                                                                                                                                                                    |            |       |          |                                 |
|------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|----------|---------------------------------|
|                                                                                                                  | Terminal code | Valve function                                                                                                                                                                                                                                     | Valve code | Width | Part no. | Type                            |
| <b>Solenoid valves</b>                                                                                           |               |                                                                                                                                                                                                                                                    |            |       |          |                                 |
|                                  | VC            | 2x 2/2-way valve, single solenoid, Normally closed, pneumatic spring return                                                                                                                                                                        | T22C       | 26 mm | 8033032  | VSVA-B-T22C-AZTR-A1-1T1L        |
|                                                                                                                  | VV            | 2x 2/2-way valve, single solenoid, Normally closed, Pneumatic spring return, vacuum operation possible at 3 and 5                                                                                                                                  | T22CV      | 26 mm | 8033033  | VSVA-B-T22CV-AZTR-A1-1T1L       |
|                                                                                                                  | N             | 2x 3/2-way valve, single solenoid, Normally open                                                                                                                                                                                                   | T32U       | 26 mm | 8033015  | VSVA-B-T32U-AZTR-A1-1T1L        |
|                                                                                                                  | K             | 2x 3/2-way valve, single solenoid, Normally closed                                                                                                                                                                                                 | T32C       | 26 mm | 8033013  | VSVA-B-T32C-AZTR-A1-1T1L        |
|                                                                                                                  | H             | 2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed                                                                                                                                                                            | T32H       | 26 mm | 8033017  | VSVA-B-T32H-AZTR-A1-1T1L        |
|                                                                                                                  | P             | 2x 3/2-way valve, single solenoid, reverse operation, Normally open                                                                                                                                                                                | T32F       | 26 mm | 8033016  | VSVA-B-T32F-AZTR-A1-1T1L        |
|                                                                                                                  | Q             | 2x 3/2-way valve, single solenoid, reverse operation, Normally closed                                                                                                                                                                              | T32N       | 26 mm | 8033014  | VSVA-B-T32N-AZTR-A1-1T1L        |
|                                                                                                                  | R             | 2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed                                                                                                                                                         | T32W       | 26 mm | 8033018  | VSVA-B-T32W-AZTR-A1-1T1L        |
|                                                                                                                  | M             | 5/2-way valve, single solenoid, pneumatic spring return                                                                                                                                                                                            | M52-A      | 26 mm | 8033021  | VSVA-B-M52-AZTR-A1-1T1L         |
|                                                                                                                  | O             | 5/2-way valve, single solenoid, mechanical spring return                                                                                                                                                                                           | M52-M      | 26 mm | 8033022  | VSVA-B-M52-MZTR-A1-1T1L         |
|                                                                                                                  | J             | 5/2-way valve, double solenoid                                                                                                                                                                                                                     | B52        | 26 mm | 8033019  | VSVA-B-B52-ZTR-A1-1T1L          |
|                                                                                                                  | D             | 5/2-way valve, double solenoid, with dominant signal                                                                                                                                                                                               | D52        | 26 mm | 8033020  | VSVA-B-D52-ZTR-A1-1T1L          |
|                                                                                                                  | B             | 5/3-way solenoid valve, Mid-position pressurised                                                                                                                                                                                                   | P53U       | 26 mm | 8033023  | VSVA-B-P53U-ZTR-A1-1T1L         |
|                                                                                                                  | G             | 5/3-way solenoid valve, Mid-position closed                                                                                                                                                                                                        | P53C       | 26 mm | 8033025  | VSVA-B-P53C-ZTR-A1-1T1L         |
|                                                                                                                  | E             | 5/3-way solenoid valve, Mid-position exhausted                                                                                                                                                                                                     | P53E       | 26 mm | 8033024  | VSVA-B-P53E-ZTR-A1-1T1L         |
|                                                                                                                  | SA            | 5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return                                                                                                                                          | P53ED      | 26 mm | 8033028  | VSVA-B-P53ED-ZTR-A1-1T1L        |
|                                                                                                                  | SE            | 5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return                                                                                                                                          | P53EP      | 26 mm | 8033035  | VSVA-B-P53EP-ZTR-A1-1T1L        |
|                                                                                                                  | SB            | 5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return | P53AD      | 26 mm | 8033029  | VSVA-B-P53AD-ZTR-A1-1T1L        |
|                                                                                                                  | SD            | 5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return | P53BD      | 26 mm | 8039187  | VSVA-B-P53BD-ZTR-A1-1T1L        |
|                                | SS            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1                                                                                    | M52-M      | 26 mm | 8033034  | VSVA-B-M52-MZTR-A1-1T1L-APX-0.5 |
|                                                                                                                  | SO            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1                                                                                                                 | M52-M      | 26 mm | 8033027  | VSVA-B-M52-MZTR-A1-1T1L-APP     |

## Ordering data – Solenoid valve width 26 mm

| Ordering data – Solenoid valve VSVA with cover cap for MO, non-detenting (H)        |               |                                                                                                                                                                                                                                                    |            |       |          |                                |
|-------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|----------|--------------------------------|
|                                                                                     | Terminal code | Valve function                                                                                                                                                                                                                                     | Valve code | Width | Part no. | Type                           |
| <b>Solenoid valves</b>                                                              |               |                                                                                                                                                                                                                                                    |            |       |          |                                |
|    | VC            | 2x 2/2-way valve, single solenoid, Normally closed, pneumatic spring return                                                                                                                                                                        | T22C       | 26 mm | 8033055  | VSVA-B-T22C-AZH-A1-1T1L        |
|                                                                                     | VV            | 2x 2/2-way valve, single solenoid, Normally closed, Pneumatic spring return, vacuum operation possible at 3 and 5                                                                                                                                  | T22CV      | 26 mm | 8033056  | VSVA-B-T22CV-AZH-A1-1T1L       |
|                                                                                     | N             | 2x 3/2-way valve, single solenoid, Normally open                                                                                                                                                                                                   | T32U       | 26 mm | 8033038  | VSVA-B-T32U-AZH-A1-1T1L        |
|                                                                                     | K             | 2x 3/2-way valve, single solenoid, Normally closed                                                                                                                                                                                                 | T32C       | 26 mm | 8033036  | VSVA-B-T32C-AZH-A1-1T1L        |
|                                                                                     | H             | 2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed                                                                                                                                                                            | T32H       | 26 mm | 8033040  | VSVA-B-T32H-AZH-A1-1T1L        |
|                                                                                     | P             | 2x 3/2-way valve, single solenoid, reverse operation, Normally open                                                                                                                                                                                | T32F       | 26 mm | 8033039  | VSVA-B-T32F-AZH-A1-1T1L        |
|                                                                                     | Q             | 2x 3/2-way valve, single solenoid, reverse operation, Normally closed                                                                                                                                                                              | T32N       | 26 mm | 8033037  | VSVA-B-T32N-AZH-A1-1T1L        |
|                                                                                     | R             | 2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed                                                                                                                                                         | T32W       | 26 mm | 8033041  | VSVA-B-T32W-AZH-A1-1T1L        |
|                                                                                     | M             | 5/2-way valve, single solenoid, pneumatic spring return                                                                                                                                                                                            | M52-A      | 26 mm | 8033044  | VSVA-B-M52-AZH-A1-1T1L         |
|                                                                                     | O             | 5/2-way valve, single solenoid, mechanical spring return                                                                                                                                                                                           | M52-M      | 26 mm | 8033045  | VSVA-B-M52-MZH-A1-1T1L         |
|                                                                                     | J             | 5/2-way valve, double solenoid                                                                                                                                                                                                                     | B52        | 26 mm | 8033042  | VSVA-B-B52-ZH-A1-1T1L          |
|                                                                                     | D             | 5/2-way valve, double solenoid, with dominant signal                                                                                                                                                                                               | D52        | 26 mm | 8033043  | VSVA-B-D52-ZH-A1-1T1L          |
|                                                                                     | B             | 5/3-way solenoid valve, Mid-position pressurised                                                                                                                                                                                                   | P53U       | 26 mm | 8033046  | VSVA-B-P53U-ZH-A1-1T1L         |
|                                                                                     | G             | 5/3-way solenoid valve, Mid-position closed                                                                                                                                                                                                        | P53C       | 26 mm | 8033048  | VSVA-B-P53C-ZH-A1-1T1L         |
|                                                                                     | E             | 5/3-way solenoid valve, Mid-position exhausted                                                                                                                                                                                                     | P53E       | 26 mm | 8033047  | VSVA-B-P53E-ZH-A1-1T1L         |
|                                                                                     | SA            | 5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return                                                                                                                                          | P53ED      | 26 mm | 8033051  | VSVA-B-P53ED-ZH-A1-1T1         |
|                                                                                     | SE            | 5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return                                                                                                                                          | P53EP      | 26 mm | 8033058  | VSVA-B-P53EP-ZH-A1-1T1L        |
|                                                                                     | SB            | 5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return | P53AD      | 26 mm | 8033052  | VSVA-B-P53AD-ZH-A1-1T1L        |
|                                                                                     | SD            | 5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return | P53BD      | 26 mm | 8039188  | VSVA-B-P53BD-ZH-A1-1T1L        |
|  | SS            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1                                                                                    | M52-M      | 26 mm | 8033057  | VSVA-B-M52-MZH-A1-1T1L-APX-0.5 |
|                                                                                     | SO            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1                                                                                                                 | M52-M      | 26 mm | 8033050  | VSVA-B-M52-MZH-A1-1T1L-APP     |

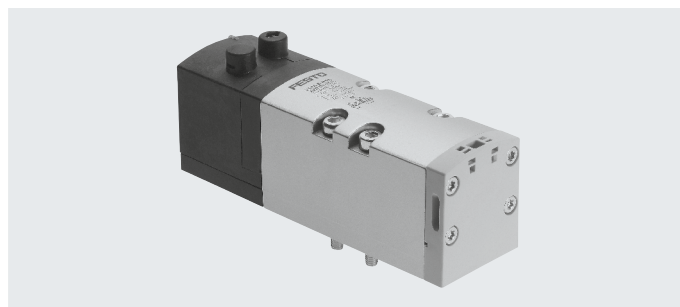


## Ordering data – Solenoid valve width 26 mm

| Ordering data – Solenoid valve VSVA with cover cap for MO, concealed               |               |                                                                                                                                                                                                                                                    |            |       |                |                                      |
|------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|----------------|--------------------------------------|
|                                                                                    | Terminal code | Valve function                                                                                                                                                                                                                                     | Valve code | Width | Part no.       | Type                                 |
| <b>Solenoid valves</b>                                                             |               |                                                                                                                                                                                                                                                    |            |       |                |                                      |
|    | VC            | 2x 2/2-way valve, single solenoid, Normally closed, pneumatic spring return                                                                                                                                                                        | T22C       | 26 mm | <b>8033078</b> | <b>VSVA-B-T22C-AZ-A1-1T1L</b>        |
|                                                                                    | VV            | 2x 2/2-way valve, single solenoid, Normally closed, Pneumatic spring return, vacuum operation possible at 3 and 5                                                                                                                                  | T22CV      | 26 mm | <b>8033079</b> | <b>VSVA-B-T22CV-AZ-A1-1T1L</b>       |
|                                                                                    | N             | 2x 3/2-way valve, single solenoid, Normally open                                                                                                                                                                                                   | T32U       | 26 mm | <b>8033061</b> | <b>VSVA-B-T32U-AZ-A1-1T1L</b>        |
|                                                                                    | K             | 2x 3/2-way valve, single solenoid, Normally closed                                                                                                                                                                                                 | T32C       | 26 mm | <b>8033059</b> | <b>VSVA-B-T32C-AZ-A1-1T1L</b>        |
|                                                                                    | H             | 2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed                                                                                                                                                                            | T32H       | 26 mm | <b>8033063</b> | <b>VSVA-B-T32H-AZ-A1-1T1L</b>        |
|                                                                                    | P             | 2x 3/2-way valve, single solenoid, reverse operation, Normally open                                                                                                                                                                                | T32F       | 26 mm | <b>8033062</b> | <b>VSVA-B-T32F-AZ-A1-1T1L</b>        |
|                                                                                    | Q             | 2x 3/2-way valve, single solenoid, reverse operation, Normally closed                                                                                                                                                                              | T32N       | 26 mm | <b>8033060</b> | <b>VSVA-B-T32N-AZ-A1-1T1L</b>        |
|                                                                                    | R             | 2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed                                                                                                                                                         | T32W       | 26 mm | <b>8033064</b> | <b>VSVA-B-T32W-AZ-A1-1T1L</b>        |
|                                                                                    | M             | 5/2-way valve, single solenoid, pneumatic spring return                                                                                                                                                                                            | M52-A      | 26 mm | <b>8033067</b> | <b>VSVA-B-M52-AZ-A1-1T1L</b>         |
|                                                                                    | O             | 5/2-way valve, single solenoid, mechanical spring return                                                                                                                                                                                           | M52-M      | 26 mm | <b>8033068</b> | <b>VSVA-B-M52-MZ-A1-1T1L</b>         |
|                                                                                    | J             | 5/2-way valve, double solenoid                                                                                                                                                                                                                     | B52        | 26 mm | <b>8033065</b> | <b>VSVA-B-B52-Z-A1-1T1L</b>          |
|                                                                                    | D             | 5/2-way valve, double solenoid, with dominant signal                                                                                                                                                                                               | D52        | 26 mm | <b>8033066</b> | <b>VSVA-B-D52-Z-A1-1T1L</b>          |
|                                                                                    | B             | 5/3-way solenoid valve, Mid-position pressurised                                                                                                                                                                                                   | P53U       | 26 mm | <b>8033069</b> | <b>VSVA-B-P53U-Z-A1-1T1L</b>         |
|                                                                                    | G             | 5/3-way solenoid valve, Mid-position closed                                                                                                                                                                                                        | P53C       | 26 mm | <b>8033071</b> | <b>VSVA-B-P53C-Z-A1-1T1L</b>         |
|                                                                                    | E             | 5/3-way solenoid valve, Mid-position exhausted                                                                                                                                                                                                     | P53E       | 26 mm | <b>8033070</b> | <b>VSVA-B-P53E-Z-A1-1T1L</b>         |
|                                                                                    | SA            | 5/3-way solenoid valve, mid-position exhausted, switching position 14 detenting, mechanical spring return                                                                                                                                          | P53ED      | 26 mm | <b>8033074</b> | <b>VSVA-B-P53ED-Z-A1-1T1L</b>        |
|                                                                                    | SE            | 5/3-way solenoid valve, mid-position exhausted, switching position 12 detenting, mechanical spring return                                                                                                                                          | P53EP      | 26 mm | <b>8033081</b> | <b>VSVA-B-P53EP-Z-A1-1T1L</b>        |
|                                                                                    | SB            | 5/3-way solenoid valve, mid-position 1x exhausted from 4 to 5, 1x pressurised from 1 to 2, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 4 and exhausted from 2 to 3, mechanical spring return | P53AD      | 26 mm | <b>8033075</b> | <b>VSVA-B-P53AD-Z-A1-1T1L</b>        |
|                                                                                    | SD            | 5/3-way solenoid valve, mid-position 1x exhausted from 2 to 3, 1x pressurised from 1 to 4, switching position 14 detenting, same function in both switching positions: pressurised from 1 to 2 and exhausted from 4 to 5, mechanical spring return | P53BD      | 26 mm | <b>8039189</b> | <b>VSVA-B-P53BD-Z-A1-1T1L</b>        |
|  | SS            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1                                                                                    | M52-M      | 26 mm | <b>8033080</b> | <b>VSVA-B-M52-MZ-A1-1T1L-APX-0.5</b> |
|                                                                                    | SO            | 5/2-way valve, single solenoid, mechanical spring return, inductive sensor with PNP output and 3-pin sensor push-in connector M8x1                                                                                                                 | M52-M      | 26 mm | <b>8033073</b> | <b>VSVA-B-M52-MZ-A1-1T1L-APP</b>     |

## Datasheet – Solenoid valve width 42 mm

-  Valve width  
to ISO 5599-2  
42 mm (ISO 1)
-  Flow rate  
Valve width 42 mm:  
VTSA up to 1300 l/min  
VTSA-F up to 1860 l/min  
VTSA-F-CB up to 1860 l/min
-  Voltage  
24 V DC



## Safety characteristics for valve

|                      |                                                                   |
|----------------------|-------------------------------------------------------------------|
| Conforms to standard | EN 13849-1/2                                                      |
| Shock resistance     | Shock test with severity level 2, to EN 60068-2-27                |
| Vibration resistant  | Transport application test with severity level 2, to EN 60068-2-6 |

## Safety characteristics for valve

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

## Datasheet – Solenoid valve width 42 mm

| Datasheet for valve                                |               |                |                 |                |                  |                   |            |
|----------------------------------------------------|---------------|----------------|-----------------|----------------|------------------|-------------------|------------|
| Valve function (with valve code)                   | Terminal code | Flow direction |                 |                | Reset method     |                   | Weight [g] |
|                                                    |               | Any            | Only reversible | Not reversible | Pneumatic spring | Mechanical spring |            |
| 5/2-way double solenoid (B52)                      | J             | ■              | –               | –              | –                | –                 | 439        |
| 5/2-way double solenoid with dominant signal (D52) | D             | ■              | –               | –              | –                | –                 | 439        |
| 5/2-way single solenoid (M52A)                     | M             | ■              | –               | –              | ■                | –                 | 426        |
| 5/2-way single solenoid (M52M)                     | O             | ■              | –               | –              | –                | ■                 | 426        |
| 5/3-way closed1) (P53C)                            | G             | ■              | –               | –              | –                | ■                 | 456        |
| 5/3 exhausted1) (P53E)                             | E             | ■              | –               | –              | –                | ■                 | 456        |
| 5/3 pressurised1) (P53U)                           | B             | ■              | –               | –              | –                | ■                 | 456        |
| 5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)  | VG            | ■              | –               | –              | –                | –                 | 456        |
| 2x3/2-way single solenoid, closed (T32C)           | K             | –              | –               | ■              | ■                | –                 | 442        |
| 2x3/2-way single solenoid, open (T32U)             | N             | –              | –               | ■              | ■                | –                 | 442        |
| 2x3/2-way single solenoid, open/closed (T32H)      | H             | –              | –               | ■              | ■                | –                 | 442        |
| 2x3/2-way single solenoid, closed (T32N)           | Q             | –              | ■               | –              | ■                | –                 | 442        |
| 2x3/2-way single solenoid, open (T32F)             | P             | –              | ■               | –              | ■                | –                 | 442        |
| 2x3/2-way single solenoid, open/closed (T32W)      | R             | –              | ■               | –              | ■                | –                 | 442        |
| 2x2/2-way single solenoid, closed (T22C)           | VC            | –              | –               | ■              | ■                | –                 | 442        |
| 2x2/2-way single solenoid, closed (T22CV)          | VV            | ■              | –               | –              | ■                | –                 | 442        |

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

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

- 1) Switching position  
 2) Mid-position

## Datasheet – Solenoid valve width 42 mm

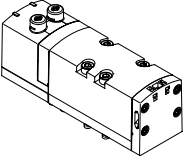
| Valve switching times in [ms]                      |               |    |     |            |
|----------------------------------------------------|---------------|----|-----|------------|
| Valve function (with valve code)                   | Terminal code | On | Off | Changeover |
| 5/2-way double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

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

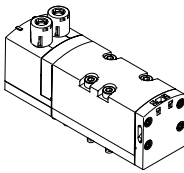
| Max. current consumption per solenoid coil                         |          |                    |
|--------------------------------------------------------------------|----------|--------------------|
| Type                                                               | T22, T32 | B52, D52, M52,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

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

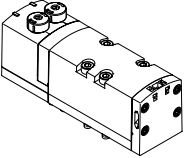
## Ordering data – Solenoid valve width 42 mm

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

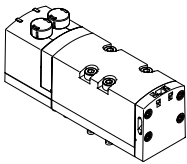
## Ordering data – Solenoid valve width 42 mm

| Ordering data – Solenoid valve VSVA with cover cap for MO non-detenting/heavy duty, detenting via accessory (TR) |               |                                                                                                                   |            |       |          |                           |
|------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------|------------|-------|----------|---------------------------|
|                                                                                                                  | Terminal code | Valve function                                                                                                    | Valve code | Width | Part no. | Type                      |
| <b>Solenoid valves</b>                                                                                           |               |                                                                                                                   |            |       |          |                           |
|                                 | VC            | 2x 2/2-way valve, single solenoid, Normally closed, pneumatic spring return                                       | T22C       | 42 mm | 8034781  | VSVA-B-T22C-AZTR-D1-1T1L  |
|                                                                                                                  | VV            | 2x 2/2-way valve, single solenoid, Normally closed, Pneumatic spring return, vacuum operation possible at 3 and 5 | T22CV      | 42 mm | 8034782  | VSVA-B-T22CV-AZTR-D1-1T1L |
|                                                                                                                  | N             | 2x 3/2-way valve, single solenoid, Normally open                                                                  | T32U       | 42 mm | 8034770  | VSVA-B-T32U-AZTR-D1-1T1L  |
|                                                                                                                  | K             | 2x 3/2-way valve, single solenoid, Normally closed                                                                | T32C       | 42 mm | 8034768  | VSVA-B-T32C-AZTR-D1-1T1L  |
|                                                                                                                  | H             | 2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed                                           | T32H       | 42 mm | 8034772  | VSVA-B-T32H-AZTR-D1-1T1L  |
|                                                                                                                  | P             | 2x 3/2-way valve, single solenoid, reverse operation, Normally open                                               | T32F       | 42 mm | 8034771  | VSVA-B-T32F-AZTR-D1-1T1L  |
|                                                                                                                  | Q             | 2x 3/2-way valve, single solenoid, reverse operation, Normally closed                                             | T32N       | 42 mm | 8034769  | VSVA-B-T32N-AZTR-D1-1T1L  |
|                                                                                                                  | R             | 2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed                        | T32W       | 42 mm | 8034773  | VSVA-B-T32W-AZTR-D1-1T1L  |
|                                                                                                                  | M             | 5/2-way valve, single solenoid, pneumatic spring return                                                           | M52-A      | 42 mm | 8034776  | VSVA-B-M52-AZTR-D1-1T1L   |
|                                                                                                                  | O             | 5/2-way valve, single solenoid, mechanical spring return                                                          | M52-M      | 42 mm | 8034777  | VSVA-B-M52-MZTR-D1-1T1L   |
|                                                                                                                  | J             | 5/2-way valve, double solenoid                                                                                    | B52        | 42 mm | 8034774  | VSVA-B-B52-ZTR-D1-1T1L    |
|                                                                                                                  | D             | 5/2-way valve, double solenoid, with dominant signal                                                              | D52        | 42 mm | 8034775  | VSVA-B-D52-ZTR-D1-1T1L    |
|                                                                                                                  | B             | 5/3-way solenoid valve, Mid-position pressurised                                                                  | P53U       | 42 mm | 8034778  | VSVA-B-P53U-ZTR-D1-1T1L   |
|                                                                                                                  | G             | 5/3-way solenoid valve, Mid-position closed                                                                       | P53C       | 42 mm | 8034780  | VSVA-B-P53C-ZTR-D1-1T1L   |
|                                                                                                                  | E             | 5/3-way solenoid valve, Mid-position exhausted                                                                    | P53E       | 42 mm | 8034779  | VSVA-B-P53E-ZTR-D1-1T1L   |
|                                                                                                                  | VG            | 5/3-way solenoid valve, mid-position pressurised 1 to 2, 4 to 5 closed                                            | P53F       | 42 mm | 8034783  | VSVA-B-P53F-ZTR-D1-1T1L   |

## Ordering data – Solenoid valve width 42 mm

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

## Ordering data – Solenoid valve width 42 mm

| Ordering data – Solenoid valve VSVA with cover cap for MO, concealed              |               |                                                                                                                   |            |       |          |                         |
|-----------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------|------------|-------|----------|-------------------------|
|                                                                                   | Terminal code | Valve function                                                                                                    | Valve code | Width | Part no. | Type                    |
| <b>Solenoid valves, 24 V DC</b>                                                   |               |                                                                                                                   |            |       |          |                         |
|  | VC            | 2x 2/2-way valve, single solenoid, Normally closed, pneumatic spring return                                       | T22C       | 42 mm | 8034843  | VSVA-B-T22C-AZ-D1-1T1L  |
|                                                                                   | VV            | 2x 2/2-way valve, single solenoid, Normally closed, Pneumatic spring return, vacuum operation possible at 3 and 5 | T22CV      | 42 mm | 8034844  | VSVA-B-T22CV-AZ-D1-1T1L |
|                                                                                   | N             | 2x 3/2-way valve, single solenoid, Normally open                                                                  | T32U       | 42 mm | 8034832  | VSVA-B-T32U-AZ-D1-1T1L  |
|                                                                                   | K             | 2x 3/2-way valve, single solenoid, Normally closed                                                                | T32C       | 42 mm | 8034830  | VSVA-B-T32C-AZ-D1-1T1L  |
|                                                                                   | H             | 2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed                                           | T32H       | 42 mm | 8034834  | VSVA-B-T32H-AZ-D1-1T1L  |
|                                                                                   | P             | 2x 3/2-way valve, single solenoid, reverse operation, Normally open                                               | T32F       | 42 mm | 8034833  | VSVA-B-T32F-AZ-D1-1T1L  |
|                                                                                   | Q             | 2x 3/2-way valve, single solenoid, reverse operation, Normally closed                                             | T32N       | 42 mm | 8034831  | VSVA-B-T32N-AZ-D1-1T1L  |
|                                                                                   | R             | 2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed                        | T32W       | 42 mm | 8034835  | VSVA-B-T32W-AZ-D1-1T1L  |
|                                                                                   | M             | 5/2-way valve, single solenoid, pneumatic spring return                                                           | M52-A      | 42 mm | 8034838  | VSVA-B-M52-AZ-D1-1T1L   |
|                                                                                   | O             | 5/2-way valve, single solenoid, mechanical spring return                                                          | M52-M      | 42 mm | 8034839  | VSVA-B-M52-MZ-D1-1T1L   |
|                                                                                   | J             | 5/2-way valve, double solenoid                                                                                    | B52        | 42 mm | 8034836  | VSVA-B-B52-Z-D1-1T1L    |
|                                                                                   | D             | 5/2-way valve, double solenoid, with dominant signal                                                              | D52        | 42 mm | 8034837  | VSVA-B-D52-Z-D1-1T1L    |
|                                                                                   | B             | 5/3-way solenoid valve, Mid-position pressurised                                                                  | P53U       | 42 mm | 8034840  | VSVA-B-P53U-Z-D1-1T1L   |
|                                                                                   | G             | 5/3-way solenoid valve, Mid-position closed                                                                       | P53C       | 42 mm | 8034842  | VSVA-B-P53C-Z-D1-1T1L   |
|                                                                                   | E             | 5/3-way solenoid valve, Mid-position exhausted                                                                    | P53E       | 42 mm | 8034841  | VSVA-B-P53E-Z-D1-1T1L   |
|                                                                                   | VG            | 5/3-way solenoid valve, mid-position pressurised 1 to 2, 4 to 5 closed                                            | P53F       | 42 mm | 8034845  | VSVA-B-P53F-Z-D1-1T1L   |

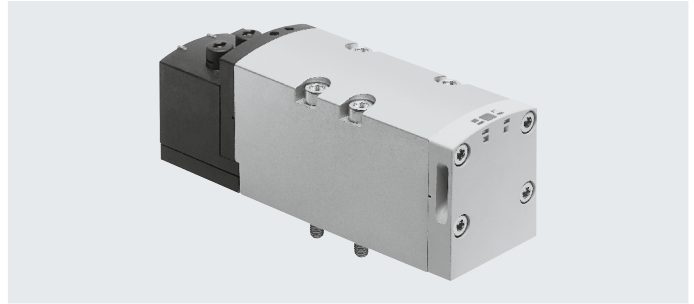


## Datasheet – Solenoid valve width 52 mm

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

 Voltage  
24 V DC

 Flow rate  
Valve width 52 mm:  
VTSA up to 2900 l/min  
VTSA-F up to 2900 l/min  
VTSA-F-CB up to 2900 l/min



### Safety characteristics for valve

|                                            |                                                                   |
|--------------------------------------------|-------------------------------------------------------------------|
| Conforms to standard                       | EN 13849-1/2                                                      |
| CE marking (see declaration of conformity) | Direct voltage<br>24 V DC<br>To EU EMC Directive 1)               |
| KC marking                                 | KC EMC                                                            |
| Shock resistance                           | Shock test with severity level 2, to EN 60068-2-27                |
| Vibration resistant                        | Transport application test with severity level 2, to EN 60068-2-6 |

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/... d Support/Downloads](http://www.festo.com/catalogue/...d%20Support/Downloads).

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

### Safety characteristics for valve

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

## Datasheet – Solenoid valve width 52 mm

| Datasheet for valve                                |               |                |                 |                |                  |                   |            |
|----------------------------------------------------|---------------|----------------|-----------------|----------------|------------------|-------------------|------------|
| Valve function (with valve code)                   | Terminal code | Flow direction |                 |                | Reset method     |                   | Weight [g] |
|                                                    |               | Any            | Only reversible | Not reversible | Pneumatic spring | Mechanical spring |            |
| 5/2-way double solenoid (B52)                      | J             | ■              | –               | –              | –                | –                 | 732        |
| 5/2-way double solenoid with dominant signal (D52) | D             | ■              | –               | –              | –                | –                 | 732        |
| 5/2-way single solenoid (M52A)                     | M             | ■              | –               | –              | ■                | –                 | 702        |
| 5/2-way single solenoid (M52M)                     | O             | ■              | –               | –              | –                | ■                 | 702        |
| 5/3-way closed1) (P53C)                            | G             | ■              | –               | –              | –                | ■                 | 780        |
| 5/3 exhausted1) (P53E)                             | E             | ■              | –               | –              | –                | ■                 | 780        |
| 5/3 pressurised1) (P53U)                           | B             | ■              | –               | –              | –                | ■                 | 780        |
| 5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)  | VG            | ■              | –               | –              | –                | –                 | 780        |
| 2x3/2-way single solenoid, closed (T32C)           | K             | –              | –               | ■              | ■                | –                 | 740        |
| 2x3/2-way single solenoid, open (T32U)             | N             | –              | –               | ■              | ■                | –                 | 740        |
| 2x3/2-way single solenoid, open/closed (T32H)      | H             | –              | –               | ■              | ■                | –                 | 740        |
| 2x3/2-way single solenoid, closed (T32N)           | Q             | –              | ■               | –              | ■                | –                 | 740        |
| 2x3/2-way single solenoid, open (T32F)             | P             | –              | ■               | –              | ■                | –                 | 740        |
| 2x3/2-way single solenoid, open/closed (T32W)      | R             | –              | ■               | –              | ■                | –                 | 740        |
| 2x2/2-way single solenoid, closed (T22C)           | VC            | –              | –               | ■              | ■                | –                 | 740        |

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

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

- 1) Switching position  
 2) Mid-position

## Datasheet – Solenoid valve width 52 mm

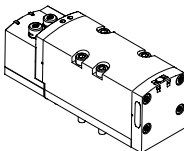
| Valve switching times in [ms]                      |               |    |     |            |
|----------------------------------------------------|---------------|----|-----|------------|
| Valve function (with valve code)                   | Terminal code | On | Off | Changeover |
| 5/2-way double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

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

| Max. current consumption per solenoid coil                         |      |     |
|--------------------------------------------------------------------|------|-----|
| At nominal voltage 24 V DC (valves with holding current reduction) |      |     |
| Nominal pick-up current                                            | [mA] | 165 |
| Nominal current following current reduction                        | [mA] | 35  |
| Time until current reduction                                       | [ms] | 30  |

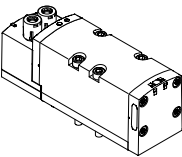
| Materials         |                        |
|-------------------|------------------------|
| Housing           | Die-cast aluminium, PA |
| Seals             | FPM, NBR, HNBR         |
| Screws            | Galvanised steel       |
| Note on materials | RoHS-compliant         |

## Ordering data – Solenoid valve width 52 mm

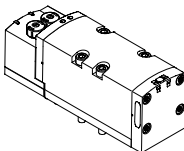
| Ordering data – Solenoid valve VSVA, MO non-detenting/detenting (D)               |               |                                                                                            |            |       |          |                         |
|-----------------------------------------------------------------------------------|---------------|----------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

## Ordering data – Solenoid valve width 52 mm

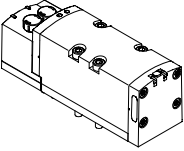
Ordering data – Solenoid valve VSVA with cover cap for MO non-detenting/heavy duty, detenting via accessory (TR)

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

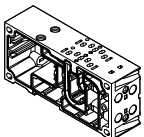
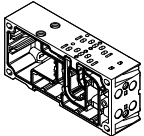
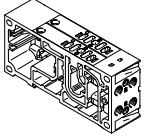
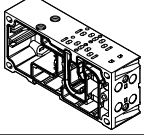
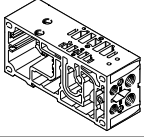
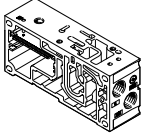
## Ordering data – Solenoid valve width 52 mm

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

## Ordering data – Solenoid valve width 52 mm

| Ordering data – Solenoid valve VSVA with cover cap for M0, concealed             |               |                                                                                            |            |       |          |                        |
|----------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------|------------|-------|----------|------------------------|
|                                                                                  | Terminal code | Valve function                                                                             | Valve code | Width | Part no. | Type                   |
| <b>Solenoid valves</b>                                                           |               |                                                                                            |            |       |          |                        |
|  | VC            | 2x 2/2-way valve, single solenoid, Normally closed, pneumatic spring return                | T22C       | 52 mm | 8034997  | VSVA-B-T22C-AZ-D2-1T1L |
|                                                                                  | N             | 2x 3/2-way valve, single solenoid, Normally open                                           | T32U       | 52 mm | 8034993  | VSVA-B-T32U-AZ-D2-1T1L |
|                                                                                  | K             | 2x 3/2-way valve, single solenoid, Normally closed                                         | T32C       | 52 mm | 8034991  | VSVA-B-T32C-AZ-D2-1T1L |
|                                                                                  | H             | 2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed                    | T32H       | 52 mm | 8034995  | VSVA-B-T32H-AZ-D2-1T1L |
|                                                                                  | P             | 2x 3/2-way valve, single solenoid, reverse operation, Normally open                        | T32F       | 52 mm | 8034994  | VSVA-B-T32F-AZ-D2-1T1L |
|                                                                                  | Q             | 2x 3/2-way valve, single solenoid, reverse operation, Normally closed                      | T32N       | 52 mm | 8034992  | VSVA-B-T32N-AZ-D2-1T1L |
|                                                                                  | R             | 2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed | T32W       | 52 mm | 8034996  | VSVA-B-T32W-AZ-D2-1T1L |
|                                                                                  | M             | 5/2-way valve, single solenoid, pneumatic spring return                                    | M52-A      | 52 mm | 8034986  | VSVA-B-M52-AZ-D2-1T1L  |
|                                                                                  | O             | 5/2-way valve, single solenoid, mechanical spring return                                   | M52-M      | 52 mm | 8034987  | VSVA-B-M52-MZ-D2-1T1L  |
|                                                                                  | J             | 5/2-way valve, double solenoid                                                             | B52        | 52 mm | 8034984  | VSVA-B-B52-Z-D2-1T1L   |
|                                                                                  | D             | 5/2-way valve, double solenoid, with dominant signal                                       | D52        | 52 mm | 8034985  | VSVA-B-D52-Z-D2-1T1L   |
|                                                                                  | B             | 5/3-way solenoid valve, Mid-position pressurised                                           | P53U       | 52 mm | 8034988  | VSVA-B-P53U-Z-D2-1T1L  |
|                                                                                  | G             | 5/3-way solenoid valve, Mid-position closed                                                | P53C       | 52 mm | 8034990  | VSVA-B-P53C-Z-D2-1T1L  |
|                                                                                  | E             | 5/3-way solenoid valve, Mid-position exhausted                                             | P53E       | 52 mm | 8034989  | VSVA-B-P53E-Z-D2-1T1L  |
|                                                                                  | VG            | 5/3-way solenoid valve, mid-position pressurised 1 to 2, 4 to 5 closed                     | P53F       | 52 mm | 8034998  | VSVA-B-P53F-Z-D2-1T1L  |

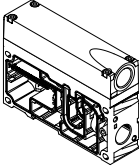
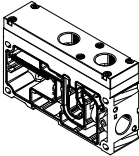
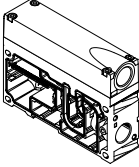
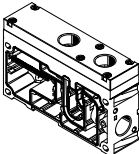
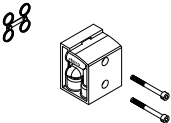
## Accessories – Pneumatic components

| Ordering data – Manifold sub-base                                                   |      |                                                                                                                                                                                                                |          |          |                        |
|-------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|------------------------|
|                                                                                     | Code | Description                                                                                                                                                                                                    | Width    | Part no. | Type                   |
| <b>VTSA, port pattern to ISO 15407-2 and ISO 5599-2</b>                             |      |                                                                                                                                                                                                                |          |          |                        |
|    | A    | 2 valve positions, 4 addresses, for double solenoid valves                                                                                                                                                     | 18 mm    | 539224   | VABV-S4-2S-G18-2T2     |
|                                                                                     | B    | 2 valve positions, 4 addresses, for double solenoid valves                                                                                                                                                     | 26 mm    | 539220   | VABV-S4-1S-G14-2T2     |
|                                                                                     | YA   | 2 valve positions, 4 addresses, for double solenoid valves <sup>1)</sup>                                                                                                                                       | 18/26 mm | 8068911  | VABV-S4-12HS-G-CB-2T2  |
|                                                                                     | C    | 1 valve position, 2 addresses, for double solenoid valves                                                                                                                                                      | 42 mm    | 542458   | VABV-S2-1S-G38-T2      |
|                                                                                     | D    | 1 valve position, 2 addresses, for double solenoid valves                                                                                                                                                      | 52 mm    | 560841   | VABV-S2-2S-G12-T2      |
|                                                                                     | E    | 2 valve positions, 2 addresses, for single solenoid valves                                                                                                                                                     | 18 mm    | 539226   | VABV-S4-2S-G18-2T1     |
|                                                                                     | F    | 2 valve positions, 2 addresses, for single solenoid valves                                                                                                                                                     | 26 mm    | 539222   | VABV-S4-1S-G14-2T1     |
|                                                                                     | G    | 1 valve position, 1 address, for single solenoid valves                                                                                                                                                        | 42 mm    | 542459   | VABV-S2-1S-G38-T1      |
|                                                                                     | H    | 1 valve position, 1 address, for single solenoid valves                                                                                                                                                        | 52 mm    | 560842   | VABV-S2-2S-G12-T1      |
| <b>VTSA-F, optimised for flow rate</b>                                              |      |                                                                                                                                                                                                                |          |          |                        |
|    | A    | 2 valve positions, 4 addresses, for double solenoid valves                                                                                                                                                     | 18 mm    | 546215   | VABV-S4-2HS-G18-2T2    |
|                                                                                     | B    | 2 valve positions, 4 addresses, for double solenoid valves                                                                                                                                                     | 26 mm    | 546211   | VABV-S4-1HS-G14-2T2    |
|                                                                                     | XA   | 2 valve positions, 4 addresses, for double solenoid valves                                                                                                                                                     | 18/26 mm | 8190411  | VABV-S4-12HS-G-2T2     |
|                                                                                     | C    | 1 valve position, 2 addresses, for double solenoid valves                                                                                                                                                      | 42 mm    | 546219   | VABV-S2-1HS-G38-T2     |
|                                                                                     | D    | 1 valve position, 2 addresses, for double solenoid valves                                                                                                                                                      | 52 mm    | 560841   | VABV-S2-2S-G12-T2      |
|                                                                                     | E    | 2 valve positions, 2 addresses, for single solenoid valves                                                                                                                                                     | 18 mm    | 546214   | VABV-S4-2HS-G18-2T1    |
|                                                                                     | F    | 2 valve positions, 2 addresses, for single solenoid valves                                                                                                                                                     | 26 mm    | 546210   | VABV-S4-1HS-G14-2T1    |
|                                                                                     | G    | 1 valve position, 1 address, for single solenoid valves                                                                                                                                                        | 42 mm    | 546218   | VABV-S2-1HS-G38-T1     |
|                                                                                     | H    | 1 valve position, 1 address, for single solenoid valves                                                                                                                                                        | 52 mm    | 560842   | VABV-S2-2S-G12-T1      |
| <b>VTSA-F-CB, with CBUS loop-through</b>                                            |      |                                                                                                                                                                                                                |          |          |                        |
|   | A    | 2 valve positions, 4 addresses, for double solenoid valves <sup>1)</sup>                                                                                                                                       | 18 mm    | 8067932  | VABV-S4-2HS-G18-CB-2T2 |
|                                                                                     | B    | 2 valve positions, 4 addresses, for double solenoid valves <sup>1)</sup>                                                                                                                                       | 26 mm    | 8067940  | VABV-S4-1HS-G14-CB-2T2 |
|                                                                                     | C    | 1 valve position, 2 addresses, for double solenoid valves <sup>1)</sup>                                                                                                                                        | 42 mm    | 8068154  | VABV-S2-1HS-G38-CB-T2  |
|                                                                                     | D    | 1 valve position, 2 addresses, for double solenoid valves <sup>1)</sup>                                                                                                                                        | 52 mm    | 8068146  | VABV-S2-2S-G12-CB-T2   |
|                                                                                     | E    | 2 valve positions, 2 addresses, for single solenoid valves <sup>1)</sup>                                                                                                                                       | 18 mm    | 8067934  | VABV-S4-2HS-G18-CB-2T1 |
|                                                                                     | F    | 2 valve positions, 2 addresses, for single solenoid valves <sup>1)</sup>                                                                                                                                       | 26 mm    | 8067942  | VABV-S4-1HS-G14-CB-2T1 |
|                                                                                     | G    | 1 valve position, 1 address, for single solenoid valves <sup>1)</sup>                                                                                                                                          | 42 mm    | 8068156  | VABV-S2-1HS-G38-CB-T1  |
|                                                                                     | H    | 1 valve position, 1 address, for single solenoid valves <sup>1)</sup>                                                                                                                                          | 52 mm    | 8068148  | VABV-S2-2S-G12-CB-T1   |
| <b>VTSA-F-CB, with CBUS loop-through for pilot air switching valve</b>              |      |                                                                                                                                                                                                                |          |          |                        |
|  | YB   | 2 valve positions, 2 addresses, for pilot air switching valve<br>• 1 valve position, width 18 mm, with CBUS communication<br>• 1 valve position, width 18 mm, double solenoid<br>• Sensor evaluation: internal | 18 mm    | 8068913  | VABV-S4-2HS-G18-CB-2T5 |
|  | YC   | 2 valve positions, 2 addresses, for pilot air switching valve<br>• 1 valve position, width 18 mm, with CBUS communication<br>• 1 valve position, width 26 mm, double solenoid<br>• Sensor evaluation: internal | 18/26 mm | 8068912  | VABV-S4-12HS-G-CB-2T5  |
| <b>VTSA-F-CB, with CBUS loop-through for soft-start valve</b>                       |      |                                                                                                                                                                                                                |          |          |                        |
|  | PV   | • With CBUS loop-through and new voltage zone<br>• Pressure sensor plug-in<br>• Sensor evaluation: internal<br>(Ports 2 and 4 are combined),<br>pneumatic connection G3/8, M5                                  | 41 mm    | 8068609  | VABV-S6-1Q-G38-CB1-T5  |
|                                                                                     | PS   | • With CBUS loop-through in the same voltage zone<br>• Pressure sensor plug-in<br>• Sensor evaluation: internal<br>(Ports 2 and 4 are combined),<br>pneumatic connection G3/8, M5                              | 41 mm    | 8068610  | VABV-S6-1Q-G38-CB-T5   |

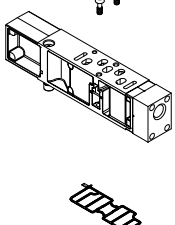
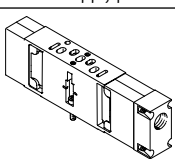
1) When using single solenoid valves on double solenoid sub-bases, one address will be lost!

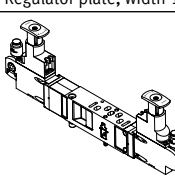
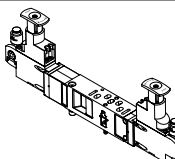


## Accessories – Pneumatic components

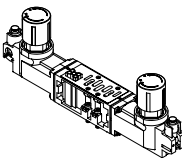
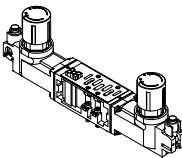
| Ordering data – Supply plate/extension module                                      |      |                                                                                                                                                                                                                                                             |                        |          |                        |                    |
|------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------|------------------------|--------------------|
|                                                                                    | Code | Description                                                                                                                                                                                                                                                 | Width                  | Part no. | Type                   |                    |
| VTSA/VTSA-F, supply plate                                                          |      |                                                                                                                                                                                                                                                             |                        |          |                        |                    |
|    | L    | With exhaust plate, 3/5 common, G1/2                                                                                                                                                                                                                        | 38 mm                  | 539231   | VABF-S6-1-P1A7-G12     |                    |
|    | K    | With exhaust air cover, 3/5 separated (for dual-pressure operation), G1/2                                                                                                                                                                                   | 38 mm                  | 539230   | VABF-S6-1-P1A6-G12     |                    |
| VTSA-F-CB, extension module, pneumatic and electric air supply plate               |      |                                                                                                                                                                                                                                                             |                        |          |                        |                    |
|    | U    | Additional air supply<br>With exhaust plate, 3/5 common, G1/2                                                                                                                                                                                               | 38 mm                  | 8092506  | VABF-S6-1-P1A7-G12-CB  |                    |
|                                                                                    | UW   | Additional pneumatic and electrical supply<br>With exhaust plate, 3/5 common, G1/2<br>Generation of 24 additional valve addresses<br>(electrical supply is provided internally from Uval)                                                                   | 38 mm                  | 8104042  | VABF-S6-1-P8A7-G12-CB  |                    |
|                                                                                    | USW  | Additional pneumatic and electrical supply<br>With exhaust plate, 3/5 common, G1/2<br>Generation of 24 additional valve addresses<br>(electrical supply is provided from new (safe) voltage zone (internally from S2))                                      | 38 mm                  | 8104044  | VABF-S6-1-P8A7-G12-CB1 |                    |
|  | U    | Additional air supply<br>With exhaust air cover, 3/5 separated (for dual-pressure operation), G1/2                                                                                                                                                          | 38 mm                  | 8092502  | VABF-S6-1-P1A6-G12-CB  |                    |
|                                                                                    | UW   | Additional pneumatic and electrical supply<br>With exhaust air cover, 3/5 separated (for dual-pressure operation), G1/2<br>Generation of 24 additional valve addresses<br>(electrical supply is provided internally from Uval)                              | 38 mm                  | 8104041  | VABF-S6-1-P8A6-G12-CB  |                    |
|                                                                                    | USW  | Additional pneumatic and electrical supply<br>With exhaust air cover, 3/5 separated (for dual-pressure operation), G1/2<br>Generation of 24 additional valve addresses<br>(electrical supply is provided from new (safe) voltage zone (internally from S2)) | 38 mm                  | 8104043  | VABF-S6-1-P8A6-G12-CB1 |                    |
| Angled connection plate for VTSA/VTSA-F                                            |      |                                                                                                                                                                                                                                                             |                        |          |                        |                    |
|  | P    | Outlet underneath                                                                                                                                                                                                                                           | Connecting thread G1/8 | 18 mm    | 539719                 | VABF-S4-2-A2G2-G18 |
|                                                                                    |      |                                                                                                                                                                                                                                                             | Connecting thread G1/4 | 26 mm    | 539721                 | VABF-S4-1-A2G2-G14 |
|                                                                                    |      |                                                                                                                                                                                                                                                             | Connecting thread G3/8 | 42 mm    | 546097                 | VABF-S2-1-A1G2-G38 |
|                                                                                    |      |                                                                                                                                                                                                                                                             | Connecting thread G1/2 | 52 mm    | 555702                 | VABF-S2-2-A1G2-G12 |

## Accessories – Pneumatic components

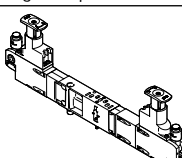
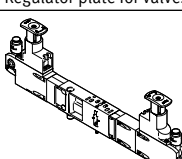
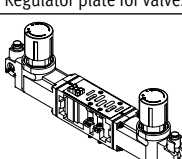
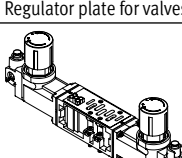
| Ordering data – Vertical stacking                                                 |      |                                                  |                        |       |          |                     |  |
|-----------------------------------------------------------------------------------|------|--------------------------------------------------|------------------------|-------|----------|---------------------|--|
|                                                                                   | Code | Description                                      |                        | Width | Part no. | Type                |  |
| Vertical supply plate                                                             |      |                                                  |                        |       |          |                     |  |
|  | ZU   | Individual compressed air supply, duct 1         | Connecting thread G1/8 | 18 mm | 540173   | VABF-S4-2-P1A3-G18  |  |
|                                                                                   |      |                                                  | Connecting thread G1/4 | 26 mm | 540171   | VABF-S4-1-P1A3-G14  |  |
|                                                                                   |      |                                                  | Connecting thread G3/8 | 42 mm | 546093   | VABF-S2-1-P1A3-G38  |  |
|                                                                                   |      |                                                  | Connecting thread G1/2 | 52 mm | 555786   | VABF-S2-2-P1A3-G12  |  |
|                                                                                   | ZV   | Individual compressed air supply, ducts 1 and 14 | Connecting thread G1/8 | 18 mm | 8000693  | VABF-S4-2-P1A14-G18 |  |
|                                                                                   |      |                                                  | Connecting thread G1/4 | 26 mm | 8000689  | VABF-S4-1-P1A14-G14 |  |
|                                                                                   |      |                                                  | Connecting thread G3/8 | 42 mm | 8000536  | VABF-S2-1-P1A14-G38 |  |
|                                                                                   |      |                                                  | Connecting thread G1/2 | 52 mm | 8000549  | VABF-S2-2-P1A14-G12 |  |
| Vertical supply plate for valves with central plug, VTSA-F-CB                     |      |                                                  |                        |       |          |                     |  |
|  | ZU   | Individual compressed air supply, duct 1         | Connecting thread G1/8 | 18 mm | 544435   | VABF-S3-2-P1A3-G18  |  |
|                                                                                   |      |                                                  | Connecting thread G1/4 | 26 mm | 544434   | VABF-S3-1-P1A3-G14  |  |
|                                                                                   |      |                                                  | Connecting thread G3/8 | 42 mm | 549100   | VABF-S1-1-P1A3-G38  |  |
|                                                                                   |      |                                                  | Connecting thread G1/2 | 52 mm | 555785   | VABF-S1-2-P1A3-G12  |  |

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

## Accessories – Pneumatic components

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

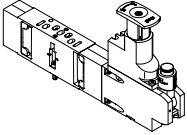
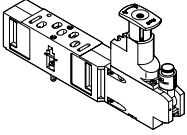
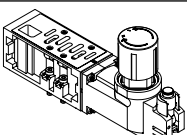
## Accessories – Pneumatic components

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

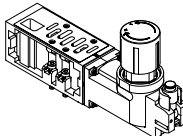
1) These functions are only available via the pressure regulator configurator VABFS2 for width 42 mm and 52 mm only (ISO 5599-2, ISO 1 and ISO 2)

## Accessories – Pneumatic components

## Ordering data – Vertical stacking for valves with central plug, VTSA-F-CB

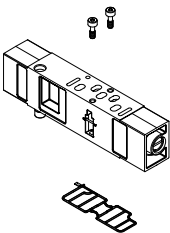
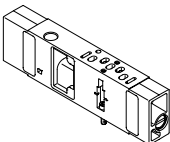
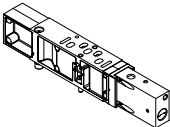
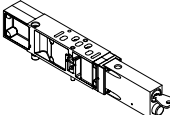
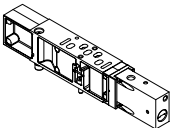
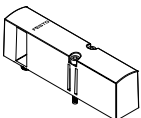
|                                                                                    | Code          | Pressure regulation for port | Control range |               | Width  | Part no.           | Type                |
|------------------------------------------------------------------------------------|---------------|------------------------------|---------------|---------------|--------|--------------------|---------------------|
|                                                                                    |               |                              | [bar]         | [MPa]         |        |                    |                     |
| Regulator plate, width 18 mm                                                       |               |                              |               |               |        |                    |                     |
|    | ZA            | 1                            | 0.5 ... 8.5   | 0.05 ... 0.85 | 18 mm  | 543526             | VABF-S3-2-R1C2-C-10 |
|                                                                                    | ZF            | 1                            | 0.5 ... 6     | 0.05 ... 0.6  | 18 mm  | 543524             | VABF-S3-2-R1C2-C-6  |
|                                                                                    | ZC            | 2                            | 2 ... 8.5     | 0.2 ... 0.85  | 18 mm  | 543534             | VABF-S3-2-R2C2-C-10 |
|                                                                                    | ZH            | 2                            | 2 ... 6       | 0.2 ... 0.6   | 18 mm  | 543532             | VABF-S3-2-R2C2-C-6  |
|                                                                                    | ZB            | 4                            | 2 ... 8.5     | 0.2 ... 0.85  | 18 mm  | 543530             | VABF-S3-2-R3C2-C-10 |
|                                                                                    | ZG            | 4                            | 2 ... 6       | 0.2 ... 0.6   | 18 mm  | 543528             | VABF-S3-2-R3C2-C-6  |
|                                                                                    | ZD            | 2 and 4                      | 2 ... 8.5     | 0.2 ... 0.85  | 18 mm  | 543538             | VABF-S3-2-R4C2-C-10 |
|                                                                                    | ZI            | 2 and 4                      | 2 ... 6       | 0.2 ... 0.6   | 18 mm  | 543536             | VABF-S3-2-R4C2-C-6  |
|                                                                                    | ZE            | 2 and 4, reversible          | 0.5 ... 8.5   | 0.05 ... 0.85 | 18 mm  | 543542             | VABF-S3-2-R5C2-C-10 |
|                                                                                    | ZJ            | 2 and 4, reversible          | 0.5 ... 6     | 0.05 ... 0.6  | 18 mm  | 543540             | VABF-S3-2-R5C2-C-6  |
|                                                                                    | ZL            | 2, reversible                | 0.5 ... 8.5   | 0.05 ... 0.85 | 18 mm  | 546788             | VABF-S3-2-R6C2-C-10 |
|                                                                                    | ZN            | 2, reversible                | 0.5 ... 6     | 0.05 ... 0.6  | 18 mm  | 546786             | VABF-S3-2-R6C2-C-6  |
|                                                                                    | ZK            | 4, reversible                | 0.5 ... 8.5   | 0.05 ... 0.85 | 18 mm  | 546792             | VABF-S3-2-R7C2-C-10 |
| ZM                                                                                 | 4, reversible | 0.5 ... 6                    | 0.05 ... 0.6  | 18 mm         | 546790 | VABF-S3-2-R7C2-C-6 |                     |
| Regulator plate, width 26 mm                                                       |               |                              |               |               |        |                    |                     |
|    | ZA            | 1                            | 0.5 ... 8.5   | 0.05 ... 0.85 | 26 mm  | 543527             | VABF-S3-1-R1C2-C-10 |
|                                                                                    | ZF            | 1                            | 0.5 ... 6     | 0.05 ... 0.6  | 26 mm  | 543525             | VABF-S3-1-R1C2-C-6  |
|                                                                                    | ZC            | 2                            | 2 ... 8.5     | 0.2 ... 0.85  | 26 mm  | 543535             | VABF-S3-1-R2C2-C-10 |
|                                                                                    | ZH            | 2                            | 2 ... 6       | 0.2 ... 0.6   | 26 mm  | 543533             | VABF-S3-1-R2C2-C-6  |
|                                                                                    | ZB            | 4                            | 2 ... 8.5     | 0.2 ... 0.85  | 26 mm  | 543531             | VABF-S3-1-R3C2-C-10 |
|                                                                                    | ZG            | 4                            | 2 ... 6       | 0.2 ... 0.6   | 26 mm  | 543529             | VABF-S3-1-R3C2-C-6  |
|                                                                                    | ZD            | 2 and 4                      | 2 ... 8.5     | 0.2 ... 0.85  | 26 mm  | 543539             | VABF-S3-1-R4C2-C-10 |
|                                                                                    | ZI            | 2 and 4                      | 2 ... 6       | 0.2 ... 0.6   | 26 mm  | 543537             | VABF-S3-1-R4C2-C-6  |
|                                                                                    | ZE            | 2 and 4, reversible          | 0.5 ... 8.5   | 0.05 ... 0.85 | 26 mm  | 543543             | VABF-S3-1-R5C2-C-10 |
|                                                                                    | ZJ            | 2 and 4, reversible          | 0.5 ... 6     | 0.05 ... 0.6  | 26 mm  | 543541             | VABF-S3-1-R5C2-C-6  |
|                                                                                    | ZL            | 2, reversible                | 0.5 ... 8.5   | 0.05 ... 0.85 | 26 mm  | 546789             | VABF-S3-1-R6C2-C-10 |
|                                                                                    | ZN            | 2, reversible                | 0.5 ... 6     | 0.05 ... 0.6  | 26 mm  | 546787             | VABF-S3-1-R6C2-C-6  |
|                                                                                    | ZK            | 4, reversible                | 0.5 ... 8.5   | 0.05 ... 0.85 | 26 mm  | 546793             | VABF-S3-1-R7C2-C-10 |
| ZM                                                                                 | 4, reversible | 0.5 ... 6                    | 0.05 ... 0.6  | 26 mm         | 546791 | VABF-S3-1-R7C2-C-6 |                     |
| Regulator plate, width 42 mm                                                       |               |                              |               |               |        |                    |                     |
|  | ZA            | 1                            | 0.5 ... 10    | 0.05 ... 1    | 42 mm  | 546818             | VABF-S1-1-R1C2-C-10 |
|                                                                                    | ZF            | 1                            | 0.5 ... 6     | 0.05 ... 0.6  | 42 mm  | 546817             | VABF-S1-1-R1C2-C-6  |
|                                                                                    | ZC            | 2                            | 1.0 ... 10    | 0.1 ... 1     | 42 mm  | 546822             | VABF-S1-1-R2C2-C-10 |
|                                                                                    | ZH            | 2                            | 1.0 ... 6     | 0.1 ... 0.6   | 42 mm  | 546821             | VABF-S1-1-R2C2-C-6  |
|                                                                                    | ZB            | 4                            | 1.0 ... 10    | 0.1 ... 1     | 42 mm  | 546820             | VABF-S1-1-R3C2-C-10 |
|                                                                                    | ZG            | 4                            | 0.5 ... 6     | 0.05 ... 0.6  | 42 mm  | 546819             | VABF-S1-1-R3C2-C-6  |
|                                                                                    | ZD            | 2 and 4                      | 1.0 ... 10    | 0.1 ... 1     | 42 mm  | 546824             | VABF-S1-1-R4C2-C-10 |
|                                                                                    | ZI            | 2 and 4                      | 1.0 ... 6     | 0.1 ... 0.6   | 42 mm  | 546823             | VABF-S1-1-R4C2-C-6  |
|                                                                                    | ZE            | 2 and 4, reversible          | 0.5 ... 10    | 0.05 ... 1    | 42 mm  | 546826             | VABF-S1-1-R5C2-C-10 |
|                                                                                    | ZJ            | 2 and 4, reversible          | 0.5 ... 6     | 0.05 ... 0.6  | 42 mm  | 546825             | VABF-S1-1-R5C2-C-6  |
|                                                                                    | ZL            | 2, reversible                | 0.5 ... 10    | 0.05 ... 1    | 42 mm  | 546828             | VABF-S1-1-R6C2-C-10 |
|                                                                                    | ZN            | 2, reversible                | 0.5 ... 6     | 0.05 ... 0.6  | 42 mm  | 546827             | VABF-S1-1-R6C2-C-6  |
|                                                                                    | ZK            | 4, reversible                | 0.5 ... 10    | 0.05 ... 1    | 42 mm  | 546830             | VABF-S1-1-R7C2-C-10 |
| ZM                                                                                 | 4, reversible | 0.5 ... 6                    | 0.05 ... 0.6  | 42 mm         | 546829 | VABF-S1-1-R7C2-C-6 |                     |

## Accessories – Pneumatic components

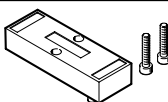
| Ordering data – Vertical stacking for valves with central plug, VTSA-F-CB         |      |                              |               |              |       |          |                     |
|-----------------------------------------------------------------------------------|------|------------------------------|---------------|--------------|-------|----------|---------------------|
|                                                                                   | Code | Pressure regulation for port | Control range |              | Width | Part no. | Type                |
|                                                                                   |      |                              | [bar]         | [MPa]        |       |          |                     |
| Regulator plate, width 52 mm                                                      |      |                              |               |              |       |          |                     |
|  | ZA   | 1                            | 0.5 ... 10    | 0.05 ... 1   | 52 mm | 555758   | VABF-S1-2-R1C2-C-10 |
|                                                                                   | ZF   | 1                            | 0.5 ... 6     | 0.05 ... 0.6 | 52 mm | 555757   | VABF-S1-2-R1C2-C-6  |
|                                                                                   | ZC   | 2                            | 1.0 ... 10    | 0.1 ... 1    | 52 mm | 555760   | VABF-S1-2-R2C2-C-10 |
|                                                                                   | ZH   | 2                            | 1.0 ... 6     | 0.1 ... 0.6  | 52 mm | 555759   | VABF-S1-2-R2C2-C-6  |
|                                                                                   | ZB   | 4                            | 1.0 ... 10    | 0.1 ... 1    | 52 mm | 555762   | VABF-S1-2-R3C2-C-10 |
|                                                                                   | ZG   | 4                            | 1.0 ... 6     | 0.1 ... 0.6  | 52 mm | 555761   | VABF-S1-2-R3C2-C-6  |
|                                                                                   | ZD   | 2 and 4                      | 1.0 ... 10    | 0.1 ... 1    | 52 mm | 555764   | VABF-S1-2-R4C2-C-10 |
|                                                                                   | ZI   | 2 and 4                      | 1.0 ... 6     | 0.1 ... 0.6  | 52 mm | 555763   | VABF-S1-2-R4C2-C-6  |
|                                                                                   | ZE   | 2 and 4, reversible          | 0.5 ... 10    | 0.05 ... 1   | 52 mm | 555766   | VABF-S1-2-R5C2-C-10 |
|                                                                                   | ZJ   | 2 and 4, reversible          | 0.5 ... 6     | 0.05 ... 0.6 | 52 mm | 555765   | VABF-S1-2-R5C2-C-6  |
|                                                                                   | ZL   | 2, reversible                | 0.5 ... 10    | 0.05 ... 1   | 52 mm | 555768   | VABF-S1-2-R6C2-C-10 |
|                                                                                   | ZN   | 2, reversible                | 0.5 ... 6     | 0.05 ... 0.6 | 52 mm | 555767   | VABF-S1-2-R6C2-C-6  |
|                                                                                   | ZK   | 4, reversible                | 0.5 ... 10    | 0.05 ... 1   | 52 mm | 555770   | VABF-S1-2-R7C2-C-10 |
|                                                                                   | ZM   | 4, reversible                | 0.5 ... 6     | 0.05 ... 0.6 | 52 mm | 555769   | VABF-S1-2-R7C2-C-6  |

| Ordering data                                                                      |      |                                                                 |                                                                                                             |       |          |                   |
|------------------------------------------------------------------------------------|------|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------|----------|-------------------|
|                                                                                    | Code | Description                                                     |                                                                                                             | Width | Part no. | Type              |
| Pressure gauge                                                                     |      |                                                                 |                                                                                                             |       |          |                   |
|  | T    | With cartridge connection for regulator, 10 bar                 | scale in bar/psi, display range 0...16 bar/0...240 psi, for regulator plate code ZA, ZB, ZC, ZD, ZE, ZK, ZL | 18 mm | 543487   | PAGN-26-16-P10    |
|                                                                                    |      |                                                                 |                                                                                                             | 26 mm |          |                   |
|                                                                                    |      |                                                                 |                                                                                                             | 42 mm | 548010   | PAGN-40-16-P10    |
|                                                                                    |      |                                                                 |                                                                                                             | 52 mm |          |                   |
|                                                                                    | U    | With cartridge connection for regulator, 6 bar,                 | scale in bar/psi, display range 0...10 bar/0...145 psi, for regulator plate code ZF, ZG, ZH, ZI, ZJ, ZM, ZN | 18 mm | 543488   | PAGN-26-10-P10    |
|                                                                                    |      |                                                                 |                                                                                                             | 26 mm |          |                   |
|                                                                                    |      |                                                                 |                                                                                                             | 42 mm | 548009   | PAGN-40-10-P10    |
|                                                                                    |      |                                                                 |                                                                                                             | 52 mm |          |                   |
|                                                                                    | WT   | With cartridge connection for regulator, 10 bar                 | Scale in MPa, display range 0...16 bar/0...1.6 MPa, for regulator plate code ZA, ZB, ZC, ZD, ZE, ZK, ZL     | 18 mm | 563735   | PAGN-26-1.6M-P10  |
|                                                                                    |      |                                                                 |                                                                                                             | 26 mm |          |                   |
|                                                                                    |      |                                                                 |                                                                                                             | 42 mm | 563737   | PAGN-40-1.6M-P10  |
|                                                                                    |      |                                                                 |                                                                                                             | 52 mm |          |                   |
|                                                                                    | WU   | With cartridge connection for regulator, 6 bar                  | Scale in MPa, display range 0...16 bar/0...1 MPa for regulator plate code ZF, ZG, ZH, ZI, ZJ, ZM, ZN        | 18 mm | 563736   | PAGN-26-1M-P10    |
|                                                                                    |      |                                                                 |                                                                                                             | 26 mm |          |                   |
|                                                                                    |      |                                                                 |                                                                                                             | 42 mm | 563738   | PAGN-40-1M-P10    |
|                                                                                    |      |                                                                 |                                                                                                             | 52 mm |          |                   |
|                                                                                    | VT   | With cartridge connection for regulator, 10 bar                 | Scale in psi/bar, display range 0...16 bar/0...232 psi for regulator plate code ZA, ZB, ZC, ZD, ZE, ZK, ZL  | 18 mm | 563731   | PAGN-26-232P-P10  |
|                                                                                    |      |                                                                 |                                                                                                             | 26 mm |          |                   |
|                                                                                    |      |                                                                 |                                                                                                             | 42 mm | 563733   | PAGN-40-232P-P10  |
|                                                                                    |      |                                                                 |                                                                                                             | 52 mm |          |                   |
|                                                                                    | PS   | With cartridge connection for regulator, 6 bar                  | Scale in psi/bar, display range 0...10 bar/0...145 psi for regulator plate code ZF, ZG, ZH, ZI, ZJ, ZM, ZN  | 18 mm | 563732   | PAGN-26-145P-P10  |
|                                                                                    |      |                                                                 |                                                                                                             | 26 mm |          |                   |
|                                                                                    |      |                                                                 |                                                                                                             | 42 mm | 563734   | PAGN-40-145P-P10  |
|                                                                                    |      |                                                                 |                                                                                                             | 52 mm |          |                   |
|                                                                                    | SGR  | Red-green scale, with cartridge connection for regulator, 6 bar | Scale in bar, display range 0...10 bar                                                                      | 18 mm | 8090378  | PAGN-26-10-P10-RG |
|                                                                                    |      |                                                                 |                                                                                                             | 26 mm |          |                   |

## Accessories – Pneumatic components

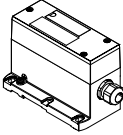
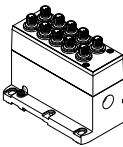
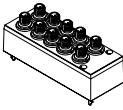
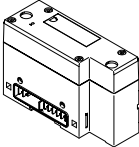
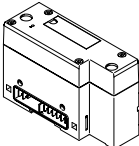
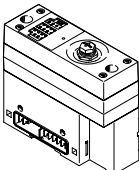
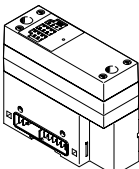
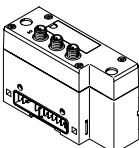
| Ordering data – Vertical stacking                                                  |      |                                                                                                                                                      |            |          |                  |
|------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|------------------|
|                                                                                    | Code | Description                                                                                                                                          |            | Part no. | Type             |
| Cartridge for regulator plate                                                      |      |                                                                                                                                                      |            |          |                  |
|    | –    | For tubing O.D. 4 mm                                                                                                                                 | Pack of 1  | 172972   | QSP10-4          |
|    | –    | Adapter for pressure gauge<br>(allows products with threaded connection G1/8 to be attached to the cartridge connection)                             | Pack of 6  | 565811   | QSP10-G1/8       |
| Throttle plate                                                                     |      |                                                                                                                                                      |            |          |                  |
|    | X    | Restricts the exhaust air downstream of the valve in 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 |
| Throttle plate for valves with central plug, VTSA-F-CB                             |      |                                                                                                                                                      |            |          |                  |
|   | X    | For port pattern to ISO 15407-2 and ISO 5599-2,<br>Restricts the exhaust air downstream of the valve in ducts 3 and 5                                | 18 mm      | 543603   | VABF-S3-2-F1B1-C |
|                                                                                    |      |                                                                                                                                                      | 26 mm      | 543604   | VABF-S3-1-F1B1-C |
|                                                                                    |      |                                                                                                                                                      | 42 mm      | 549102   | VABF-S1-1-F1B1-C |
|                                                                                    |      |                                                                                                                                                      | 52 mm      | 555788   | VABF-S1-2-F1B1-C |
| Vertical pressure shut-off plate                                                   |      |                                                                                                                                                      |            |          |                  |
|  | ZT   | 3/2-way valve for shutting off the operating pressure at the valve position<br>Pressure separation can be shut off on the valve assembly             | 18 mm      | 542884   | VABF-S4-2-L1D1-C |
|                                                                                    |      |                                                                                                                                                      | 26 mm      | 542885   | VABF-S4-1-L1D1-C |
|                                                                                    |      |                                                                                                                                                      | 42 mm      | 546096   | VABF-S2-1-L1D1-C |
|                                                                                    |      |                                                                                                                                                      | 52 mm      | 555791   | VABF-S2-2-L1D1-C |
|  | ZS   | 3/2-way valve for shutting off the operating pressure at the valve position<br>Pressure separation can be shut off on the valve assembly using a key | 18 mm      | 8001178  | VABF-S4-2-L1D2-C |
|                                                                                    |      |                                                                                                                                                      | 26 mm      | 8001179  | VABF-S4-1-L1D2-C |
| Vertical pressure shut-off plate for valves with central plug, VTSA-F-CB           |      |                                                                                                                                                      |            |          |                  |
|  | ZT   | 3/2-way valve for shutting off the operating pressure at the valve position<br>Pressure separation can be shut off on the valve assembly             | 18 mm      | 543601   | VABF-S3-2-L1D1-C |
|                                                                                    |      |                                                                                                                                                      | 26 mm      | 543602   | VABF-S3-1-L1D1-C |
|                                                                                    |      |                                                                                                                                                      | 42 mm      | 549103   | VABF-S1-1-L1D1-C |
|                                                                                    |      |                                                                                                                                                      | 52 mm      | 555790   | VABF-S1-2-L1D1-C |
| Covering                                                                           |      |                                                                                                                                                      |            |          |                  |
|  | L    | Blanking plate for vacant position                                                                                                                   | 18 mm      | 539213   | VABB-S4-2-WT     |
|                                                                                    |      |                                                                                                                                                      | 26 mm      | 539212   | VABB-S4-1-WT     |
|                                                                                    |      |                                                                                                                                                      | 42 mm      | 543186   | VABB-S2-1-WT     |
|                                                                                    |      |                                                                                                                                                      | 52 mm      | 560845   | VABB-S2-2-WT     |
|  | –    | Sealing cap for electrical links (with individual connection), size 18 mm and 26 mm                                                                  | Pack of 10 | 547713   | VABD-S4-E-C      |
|  | –    | Seal (with individual connection), width 42 mm and 52 mm                                                                                             | Pack of 2  | 571343   | VABD-S2-1-S-C    |

## Accessories – Pneumatic components

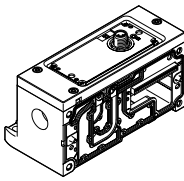
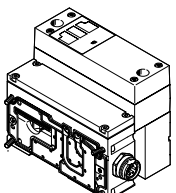
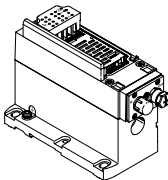
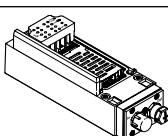
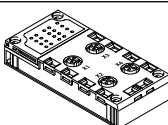
| Ordering data – Accessories for valves with central plug, VTSA-F-CB               |                                                                                     |            |               |                      |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------|---------------|----------------------|
|                                                                                   | Description                                                                         |            | Part no.      | Type                 |
|  | Cover plate to seal spare or vacant valve positions                                 | 18 mm      | <b>161114</b> | <b>NDV-02-VDMA</b>   |
|                                                                                   |                                                                                     | 26 mm      | <b>161107</b> | <b>NDV-01-VDMA</b>   |
|  | Sealing cap for electrical links (with individual connection), size 18 mm and 26 mm | Pack of 10 | <b>547713</b> | <b>VABD-S4-E-C</b>   |
|  | Seal (with individual connection), width 42 mm and 52 mm                            | Pack of 2  | <b>571343</b> | <b>VABD-S2-1-S-C</b> |



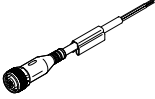
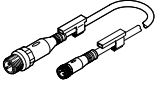
## Accessories – Electrical components

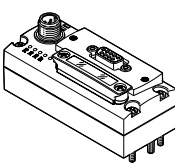
| Ordering data                                                                      |     |                                                                                                                                                                                                                                                                                                   | Code                                                                                                                                                                                             | Description | Width               | Part no.              | Type |
|------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------|-----------------------|------|
| Multi-pin node for VTSA/VTSA-F                                                     |     |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                  |             |                     |                       |      |
|    | T   | Terminal strip, 36-pin                                                                                                                                                                                                                                                                            |  <b>Note</b><br>Multi-pin node supplied without cover.<br>Please order appropriate cover with cable separately. | –           | 543412              | VABE-S6-1LF-C-M1-C36M |      |
|                                                                                    | MP1 | Sub-D plug, 37-pin                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                  | –           | 543414              | VABE-S6-1LT-C-M1-S37  |      |
|                                                                                    | MP4 | Round plug, 19-pin                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                  | –           | 543415              | VABE-S6-1LF-C-M1-R19  |      |
| Individual electrical connection for VTSA/VTSA-F                                   |     |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                  |             |                     |                       |      |
|    | MP2 | Multi-pin node with individual connection M12, 6-way                                                                                                                                                                                                                                              | –                                                                                                                                                                                                | 549046      | VABE-S6-LT-C-S6-R5  |                       |      |
|                                                                                    | MP3 | Multi-pin node with individual connection M12, 10-way                                                                                                                                                                                                                                             | –                                                                                                                                                                                                | 549047      | VABE-S6-LT-C-S10-R5 |                       |      |
|    | –   | Cover for individual connection M12, 6-way                                                                                                                                                                                                                                                        | –                                                                                                                                                                                                | 549048      | VAEM-S6-C-S6-R5     |                       |      |
|                                                                                    | –   | Cover for individual connection M12, 10-way                                                                                                                                                                                                                                                       | –                                                                                                                                                                                                | 549049      | VAEM-S6-C-S10-R5    |                       |      |
| Pneumatic interface for VTSA/VTSA-F                                                |     |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                  |             |                     |                       |      |
|   | –   | For electrical terminal CPX in polymer                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                | 543416      | VABA-S6-1-X1        |                       |      |
|                                                                                    | –   | For electrical terminal CPX in metal                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                | 550663      | VABA-S6-1-X2        |                       |      |
|                                                                                    | –   | For electrical terminal CPX in metal, with changed diagnostic function                                                                                                                                                                                                                            | –                                                                                                                                                                                                | 573613      | VABA-S6-1-X2-D      |                       |      |
|                                                                                    | –   | For electrical terminal CPX-AP                                                                                                                                                                                                                                                                    | –                                                                                                                                                                                                | 8152356     | VABA-S6-1-AP        |                       |      |
| Pneumatic interface for VTSA-F-CB                                                  |     |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                  |             |                     |                       |      |
|  | RA  | For electrical terminal CPX in polymer                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                | 8082877     | VABA-S6-1-X1-CB     |                       |      |
|                                                                                    |     | <ul style="list-style-type: none"><li>Integrated diagnostics (short circuit and undervoltage of valves, wire break per solenoid coil)</li></ul>                                                                                                                                                   | –                                                                                                                                                                                                | 8082876     | VABA-S6-1-X2-CB     |                       |      |
|  | RD  | For electrical terminal CPX (interface for PROFIsafe only) in metal with <ul style="list-style-type: none"><li>2 safe voltage zones and</li><li>1 safe output (connection: M12)</li><li>Integrated diagnostics (short circuit and undervoltage of valves, wire break per solenoid coil)</li></ul> | –                                                                                                                                                                                                | 8068241     | VABA-S6-1-X2-F2-CB  |                       |      |
|  | RC  | For electrical terminal CPX (interface for PROFIsafe only) in metal with <ul style="list-style-type: none"><li>3 safe voltage zones</li><li>Integrated diagnostics (short circuit and undervoltage of valves, wire break per solenoid coil)</li></ul>                                             | –                                                                                                                                                                                                | 8068240     | VABA-S6-1-X2-F1-CB  |                       |      |
|  | RB  | For electrical terminal CPX (interface for fieldbus only) in polymer <ul style="list-style-type: none"><li>With 3 voltage zones</li><li>With external power supply 3xM12</li><li>Integrated diagnostics (short circuit and undervoltage of valves, wire break per solenoid coil)</li></ul>        | –                                                                                                                                                                                                | 8082879     | VABA-S6-1-X1-3V-CB  |                       |      |
|                                                                                    | RB  | For electrical terminal CPX (interface for fieldbus only) in metal <ul style="list-style-type: none"><li>With 3 voltage zones</li><li>With external power supply 3xM12</li><li>Integrated diagnostics (short circuit and undervoltage of valves, wire break per solenoid coil)</li></ul>          | –                                                                                                                                                                                                | 8082878     | VABA-S6-1-X2-3V-CB  |                       |      |

## Accessories – Electrical components

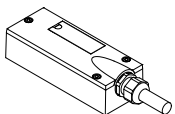
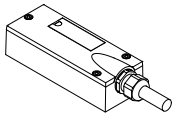
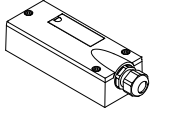
| Ordering data                                                                       |    | Code | Description                                                                                                         | Part no. | Type                   |
|-------------------------------------------------------------------------------------|----|------|---------------------------------------------------------------------------------------------------------------------|----------|------------------------|
| Electrical interface IO-Link®                                                       |    |      |                                                                                                                     |          |                        |
|    | –  |      | IO-Link® interface for 16 valve positions                                                                           | 8152353  | VABA-S6-1-PT           |
|                                                                                     |    |      |                                                                                                                     |          |                        |
| Pneumatic interface for VTSA-F-CB                                                   |    |      |                                                                                                                     |          |                        |
|    | XB |      | Pneumatic interface, for expansion by 3 external power supplies for the zones                                       | 8152438  | VABA-S6-1-X2-3V-CB-AL  |
|                                                                                     | XC |      | Pneumatic interface for extending by 3 safe internal zones (PROFIsafe)                                              | 8152437  | VABA-S6-1-X2-F1-CB-AL  |
|                                                                                     | XD |      | Pneumatic interface for extending by 2 safe internal zones + 1 safe output (PROFIsafe)                              | 8152436  | VABA-S6-1-X2-F2-CB-AL  |
|                                                                                     | PC |      | Pneumatic interface with additional power supply for extending by 3 safe internal zones (PROFIsafe)                 | 8152435  | VABA-S6-1-X2-F1-CB2-AL |
|                                                                                     | PD |      | Pneumatic interface with additional power supply for extending by 2 safe internal zones + 1 safe output (PROFIsafe) | 8152434  | VABA-S6-1-X2-F2-CB2-AL |
| Electrical interface for AS-Interface for VTSA/VTSA-F                               |    |      |                                                                                                                     |          |                        |
|   | –  |      | 4 inputs/4 outputs                                                                                                  | 549042   | VABE-S6-1LF-C-A4-E     |
|                                                                                     | –  |      | 8 inputs/8 outputs                                                                                                  | 549043   | VABE-S6-1LF-C-A8-E     |
| AS-Interface module for VTSA/VTSA-F                                                 |    |      |                                                                                                                     |          |                        |
|  | –  |      | 4 inputs/4 outputs                                                                                                  | 549044   | VAEM-S6-S-FAS-4-4E     |
|                                                                                     | –  |      | 8 inputs/8 outputs                                                                                                  | 549045   | VAEM-S6-S-FAS-8-8E     |
| Connection block for AS-Interface for VTSA/VTSA-F                                   |    |      |                                                                                                                     |          |                        |
|  | X  |      | 4x M12, 5-pin, double, socket                                                                                       | 195704   | CPX-AB-4-M12x2-5POL    |
|                                                                                     | GW |      | 4x M12, 5-pin, socket, metal thread                                                                                 | 541254   | CPX-AB-4-M12x2-5POL-R  |
|                                                                                     | R  |      | 8x M8, 3-pin, socket                                                                                                | 195706   | CPX-AB-8-M8-3POL       |
|                                                                                     | J  |      | 8x spring-loaded terminal, Cage Clamp, 4-pin                                                                        | 195708   | CPX-AB-8-KL-4POL       |
|                                                                                     | B  |      | Sub-D, 25-pin, socket                                                                                               | 525676   | CPX-AB-1-SUB-BU-25POL  |

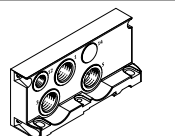
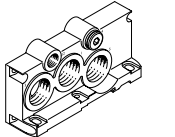
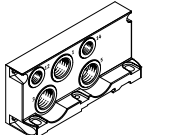
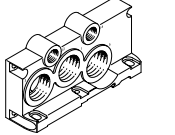
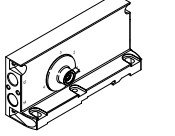
## Accessories – Electrical components

| Ordering data                                                                                |                                                                                                                                                                 |          |         |                         |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|-------------------------|
|                                                                                              | Description                                                                                                                                                     | Part no. | Type    |                         |
| Connecting cable for electrical connection of individual valves with central plug, VSTA-F-CB |                                                                                                                                                                 |          |         |                         |
|              | <ul style="list-style-type: none"><li>• Straight socket, M12x1, 5-pin</li><li>• Open end, 4-core</li></ul>                                                      | 5 m      | 8078240 | NEBA-M12G5-U-5-N-LE4    |
|              | <ul style="list-style-type: none"><li>• Straight socket, M8x1, 3-pin</li><li>• Straight plug M12x1, 3-pin</li><li>• With 2x inscription label holders</li></ul> | 0.5 m    | 8078278 | NEBA-M8G3-U-0.5-N-M12G3 |

| Ordering data                                                                    |                      |          |         |
|----------------------------------------------------------------------------------|----------------------|----------|---------|
|                                                                                  | Description          | Part no. | Type    |
| Bus node with I-Port interface, for electrical interface IO-Link®                |                      |          |         |
|  | PROFIBUS bus node    | 570040   | CTEU-PB |
|                                                                                  | EtherCAT® bus node   | 572556   | CTEU-EC |
|                                                                                  | EtherNet/IP bus node | 2798071  | CTEU-EP |
|                                                                                  | PROFINET RT bus node | 2201471  | CTEU-PN |

## Accessories – General

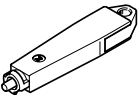
| Ordering data                                                                      |      |                                                      |          |            |                        |
|------------------------------------------------------------------------------------|------|------------------------------------------------------|----------|------------|------------------------|
|                                                                                    | Code | Description                                          | Part no. | Type       |                        |
| Connecting cable, Sub-D (TPE-U(PUR), IP65)                                         |      |                                                      |          |            |                        |
|   | GA   | Connecting cable for max. 8 solenoid coils, 10-core  | 2.5 m    | 539240     | NEBV-S1W37-E-2.5-LE10  |
|                                                                                    | GB   |                                                      | 5 m      | 539241     | NEBV-S1W37-E-5-LE10    |
|                                                                                    | GC   |                                                      | 10 m     | 539242     | NEBV-S1W37-E-10-LE10   |
|                                                                                    | GD   | Connecting cable for max. 22 solenoid coils, 26-core | 2.5 m    | 539243     | NEBV-S1W37-E-2.5-LE26  |
|                                                                                    | GE   |                                                      | 5 m      | 539244     | NEBV-S1W37-E-5-LE26    |
|                                                                                    | GF   |                                                      | 10 m     | 539245     | NEBV-S1W37-E-10-LE26   |
|                                                                                    | GG   | Connecting cable for max. 32 solenoid coils, 37-core | 2.5 m    | 539246     | NEBV-S1W37-K-2.5-LE37  |
|                                                                                    | GH   |                                                      | 5 m      | 539247     | NEBV-S1W37-K-5-LE37    |
|                                                                                    | GI   |                                                      | 10 m     | 539248     | NEBV-S1W37-K-10-LE37   |
| Connecting cable, Sub-D (PVC, IP65)                                                |      |                                                      |          |            |                        |
|   | GK   | Connecting cable for max. 8 solenoid coils, 10-core  | 2.5 m    | 543271     | NEBV-S1W37-KM-2.5-LE10 |
|                                                                                    | GL   |                                                      | 5 m      | 543272     | NEBV-S1W37-KM-5-LE10   |
|                                                                                    | GM   |                                                      | 10 m     | 543273     | NEBV-S1W37-KM-10-LE10  |
|                                                                                    | GN   | Connecting cable for max. 23 solenoid coils, 27-core | 2.5 m    | 543274     | NEBV-S1W37-KM-2.5-LE27 |
|                                                                                    | GO   |                                                      | 5 m      | 543275     | NEBV-S1W37-KM-5-LE27   |
|                                                                                    | GP   |                                                      | 10 m     | 543276     | NEBV-S1W37-KM-10-LE27  |
|                                                                                    | GQ   | Connecting cable for max. 32 solenoid coils, 37-core | 2.5 m    | 543277     | NEBV-S1W37-KM-2.5-LE37 |
|                                                                                    | GR   |                                                      | 5 m      | 543278     | NEBV-S1W37-KM-5-LE37   |
|                                                                                    | GS   |                                                      | 10 m     | 543279     | NEBV-S1W37-KM-10-LE37  |
| Cover for multi-pin plug for VTSA/VTSA-F                                           |      |                                                      |          |            |                        |
|  | –    | For configuration by the user                        | 545974   | NECV-S1W37 |                        |

| Ordering data – End plates                                                          |                 |                                                                                                        |          |                  |
|-------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------|----------|------------------|
|                                                                                     | Code            | Description                                                                                            | Part no. | Type             |
| Right, with threaded connection                                                     |                 |                                                                                                        |          |                  |
|  | V               | With working air/exhaust air, internal pilot air supply, G1/2 (no port 14)                             | 539234   | VABE-S6-1R-G12   |
|  | V1              | With working air/exhaust air, internal pilot air supply, G3/4 (port 14 is sealed with a blanking plug) | 560837   | VABE-S6-2R-G34   |
|  | X               | With working air/exhaust air, external pilot air supply, G1/2                                          | 539236   | VABE-S6-1RZ-G12  |
|  | X1              | With working air/exhaust air, external pilot air supply, G3/4                                          | 560839   | VABE-S6-2RZ-G34  |
| With pilot air selector                                                             |                 |                                                                                                        |          |                  |
|  | Y <sup>1)</sup> | Internal pilot air supply                                                                              | 539238   | VABE-S6-1RZ-G-B1 |
|                                                                                     | U <sup>1)</sup> | Internal pilot air supply, ducted pilot exhaust air                                                    |          |                  |
|                                                                                     | Z <sup>1)</sup> | External pilot air supply                                                                              |          |                  |
|                                                                                     | W <sup>1)</sup> | External pilot air supply, ducted pilot exhaust air                                                    |          |                  |

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

## Accessories – General

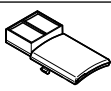
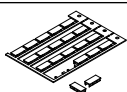
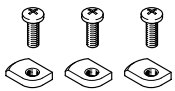
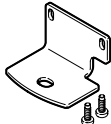
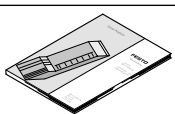
| Ordering data – Duct separation/seal                                             |      |                                                                                                                            |        |          |                |
|----------------------------------------------------------------------------------|------|-------------------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

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

 **Note**

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

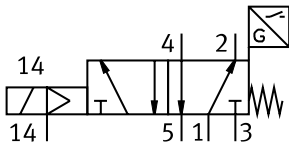
## Accessories – General

| Ordering data                                                                                                                                                                                                                                                         |      |                                                                                                                                                                                                                                           | Part no.   | Type                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|
|                                                                                                                                                                                                                                                                       | Code | Description                                                                                                                                                                                                                               |            |                           |
| Inscription label holders/inscription labels                                                                                                                                                                                                                          |      |                                                                                                                                                                                                                                           |            |                           |
|                                                                                                                                                                                      | B    | Clip-on inscription label holder for valve cap                                                                                                                                                                                            | Pack of 5  | 540888<br>ASCF-T-S6       |
|                                                                                                                                                                                      | BZ   | Clip-on inscription label holder for valve cap with additional text fields (electrical and pneumatic zone separation)                                                                                                                     | Pack of 4  | 8106532<br>ASCF-T-S6-Z    |
|                                                                                                                                                                                      | T    | Inscription label holder for manifold blocks/manifold sub-bases VTSA/VTSA-F                                                                                                                                                               | Pack of 5  | 540889<br>ASCF-M-S6       |
|                                                                                                                                                                                                                                                                       | TD   | Inscription label holder for manifold blocks/manifold sub-bases VTSA/VTSA-F, size 52 mm                                                                                                                                                   | Pack of 5  | 562577<br>ASCF-M-S2-2     |
|                                                                                                                                                                                      | –    | Identification clip for manifold blocks/manifold sub-bases VTSA-F-CB (code A, B, C, E, F, G, PV, PS)                                                                                                                                      | –          | 8110689<br>ASCF-M-S6-1    |
|                                                                                                                                                                                      | –    | Inscription label for ISO 15407 valves with individual electrical connection (20 labels in frames)                                                                                                                                        | Pack of 20 | 18182<br>IBS-9x20         |
|                                                                                                                                                                                                                                                                       | –    | Inscription label for pressure zone separation <ul style="list-style-type: none"><li>• 4 inscription labels, duct 1/3/5 blocked</li><li>• 4 inscription labels, duct 1 blocked</li><li>• 4 inscription labels, duct 3/5 blocked</li></ul> | 3x4 pieces | 8003303<br>ASLR-L-S6-2016 |
| DIN rail mounting                                                                                                                                                                                                                                                     |      |                                                                                                                                                                                                                                           |            |                           |
|                                                                                                                                                                                     | –    | VTSA and VTSA-F                                                                                                                                                                                                                           | Pack of 3  | 526032<br>CPX-CPA-BG-NRH  |
| Wall mounting                                                                                                                                                                                                                                                         |      |                                                                                                                                                                                                                                           |            |                           |
|                                                                                                                                                                                    | –    | Mounting bracket with a mounting hole for M5 screw                                                                                                                                                                                        | Pack of 5  | 539214<br>VAME-S6-10-W    |
|                                                                                                                                                                                    | U    | Mounting bracket with a mounting hole for M4 screw and a mounting hole for M6 screw                                                                                                                                                       | Pack of 1  | 567038<br>VAME-S6-W-M46   |
|                                                                                                                                                                                    | AW   | Mounting bracket for length compensation on the CPX side when mounting using support system<br>Set comprising 1 angle bracket and 2 screws                                                                                                | Pack of 1  | 2721419<br>CPX-M-BG-VT-2X |
| User documentation                                                                                                                                                                                                                                                    |      |                                                                                                                                                                                                                                           |            |                           |
|                                                                                                                                                                                    | D    | User documentation for valve terminal VTSA/VTSA-F                                                                                                                                                                                         | German     | 538922<br>VTSA/VTSA-F-DE  |
|                                                                                                                                                                                                                                                                       | E    |                                                                                                                                                                                                                                           | English    | 538923<br>VTSA/VTSA-F-EN  |
| Pneumatic connection accessories                                                                                                                                                                                                                                      |      |                                                                                                                                                                                                                                           |            |                           |
| A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter Accessories → page 245 or on the website via the individual search terms:<br><b>Internet</b> → connection technology, silencer, blanking plug |      |                                                                                                                                                                                                                                           |            |                           |

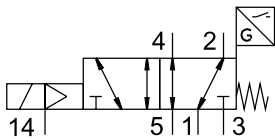
## Datasheet – Solenoid valve with switching position sensing

### Function1)

Valves with code S0, SQ, SS,  
width 18 mm



Valves with code S0, SQ, SS,  
width 26 mm

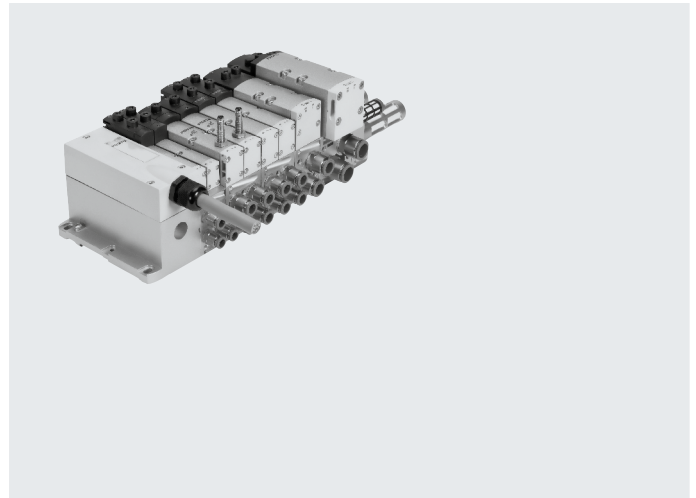


-  - Flow rate  
up to 1100 l/min

-  - Valve width  
18 mm  
26 mm

-  - Voltage  
24 V DC

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



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

#### Function

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

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

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

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

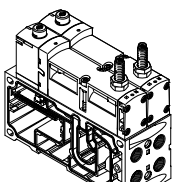
#### Decentralised individual connection variant

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

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

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

#### Variant for valve terminal VTSA/VTSA-F



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

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

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

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

-  - **Note**

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

## Datasheet – Solenoid valve with switching position sensing

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

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

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

| General technical data             |                                             |                            |                          |
|------------------------------------|---------------------------------------------|----------------------------|--------------------------|
| Valve                              | VSVA-B-M52-MZD-A2-1T1L-...                  | VSVA-B-M52-MZD-A1-1T1L-... | VSVA-B-M52-MZ-A1-1C1-... |
| Width                              | 18 mm                                       | 26 mm                      | 26 mm                    |
| Conforms to                        | ISO 15407-2                                 |                            | ISO 15407-1              |
| Design                             | Piston spool valve                          |                            |                          |
| Sealing principle                  | Soft                                        |                            |                          |
| Actuation type                     | Electrical                                  |                            |                          |
| Type of control                    | Piloted                                     |                            |                          |
| Exhaust function, can be throttled | Via individual sub-base, via throttle plate |                            |                          |
| Lubrication                        | Lifetime lubrication                        |                            |                          |
| Type of mounting                   | Via through-hole, on manifold sub-base      |                            |                          |
| Mounting position                  | Any                                         |                            |                          |
| Manual override                    | Concealed                                   |                            |                          |
| Individual sub-base                |                                             |                            | → Page 231               |
| Valve terminal                     |                                             |                            | → Page 84                |

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



## Datasheet – Solenoid valve with switching position sensing

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

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

| Electrical data for sensor             |                   |                                  |
|----------------------------------------|-------------------|----------------------------------|
| Electrical connection                  | Cable, 3-core     |                                  |
|                                        | 1x M8 plug, 3-pin |                                  |
| Cable length                           | [m]               | 2.5                              |
| Switching output                       |                   | PNP or NPN                       |
| Switching element function             |                   | N/C                              |
| Switching status indication            |                   | Yellow LED                       |
| Operating voltage range                | [V DC]            | 10 ... 30                        |
| Residual ripple                        | [%]               | ±10                              |
| Sensor no-load current                 | [mA]              | ≤10                              |
| Maximum output current                 | [mA]              | 200                              |
| Voltage drop                           | [V]               | ≤2                               |
| Max. switching frequency               | [Hz]              | 5000                             |
| Short circuit current rating           |                   | Pulsed                           |
| Reverse polarity protection for sensor |                   | For all electrical connections   |
| Measuring principle                    |                   | Inductive                        |
| Switching position sensing             |                   | Valve normal position via sensor |

## Datasheet – Solenoid valve with switching position sensing

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

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/...d Support/Downloads](http://www.festo.com/catalogue/...d Support/Downloads).

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

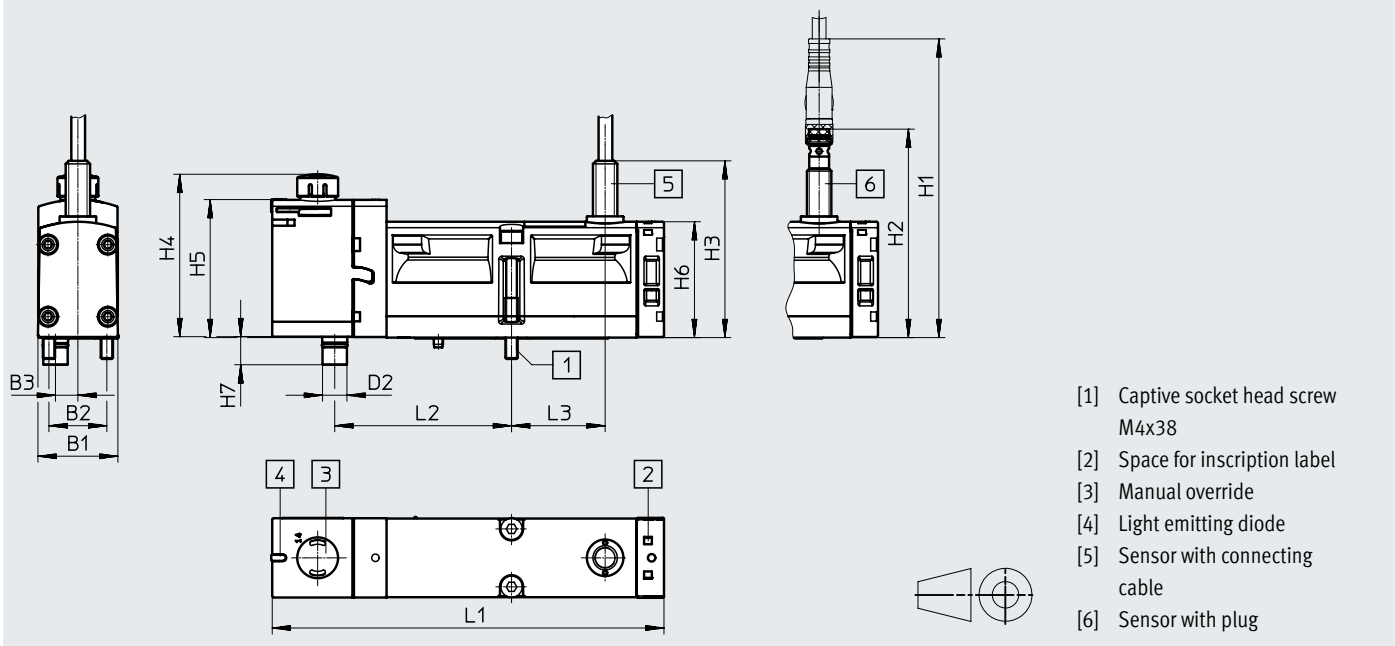
| Materials                  |                            |
|----------------------------|----------------------------|
| Sub-base/manifold sub-base | Die-cast aluminium         |
| Valve                      | Die-cast aluminium, PA     |
| Seals                      | FPM, NBR                   |
|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

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

Datasheet – Solenoid valve with switching position sensing

Dimensions Download CAD data → [www.festo.com](http://www.festo.com)

Solenoid valve with sensor, width 26 mm



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

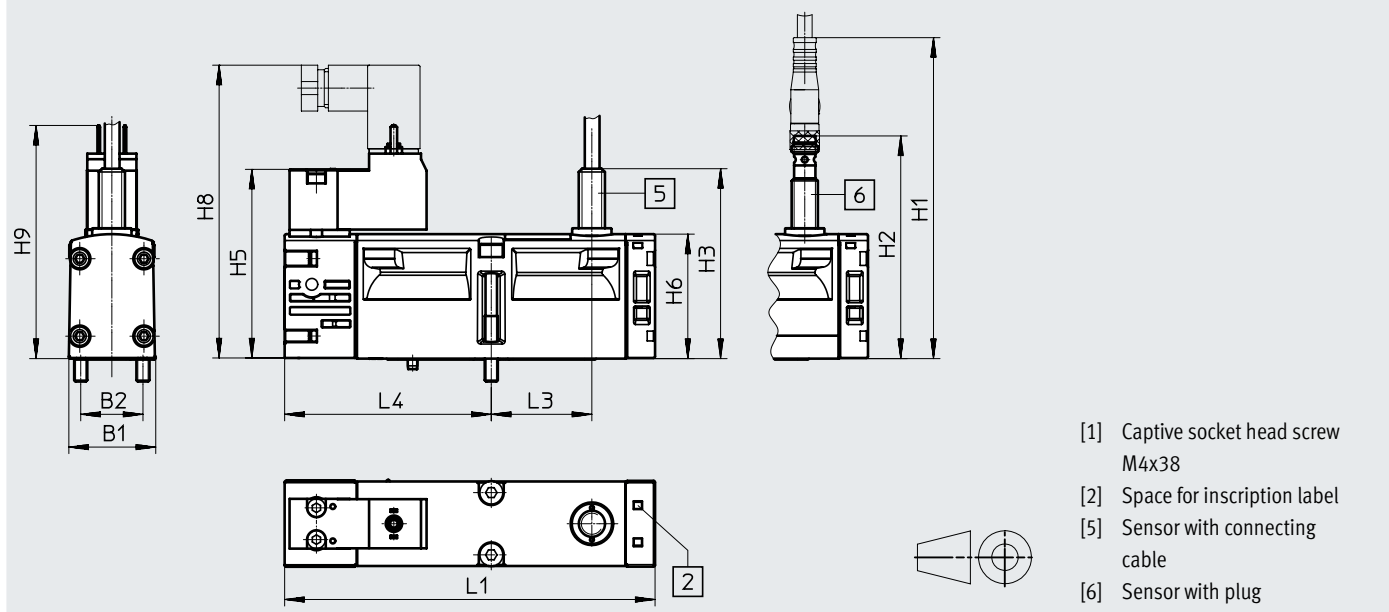
| Type                           | H1 | H2   | H3 | H4   | H5   | H6 | H7  |
|--------------------------------|----|------|----|------|------|----|-----|
| VSVA-B-M52-MZD-A1-1T1L...      | 98 | 68.2 | 58 | 52.5 | 45.3 | 38 | 9.2 |
| VSVA-B-M52-MZD-A1-1T1L-APX-0.5 |    |      |    |      |      |    |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

## Datasheet – Solenoid valve with switching position sensing

### Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

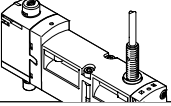
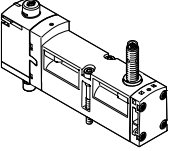
Solenoid valve with sensor, with plug type C, width 26 mm

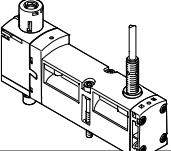
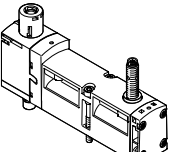


| Type                     | B1   | B2 | L1    | L3   | L4   |
|--------------------------|------|----|-------|------|------|
| VSVA-B-M52-MZ-A1-1C1-... | 26.2 | 19 | 113.1 | 30.7 | 63.1 |

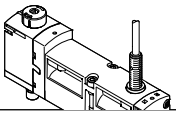
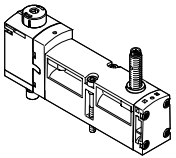
| Type                     | H1 | H2   | H3 | H5   | H6 | H8   | H9   |
|--------------------------|----|------|----|------|----|------|------|
| VSVA-B-M52-MZ-A1-1C1-... | 98 | 68.2 | 58 | 57.8 | 38 | 89.6 | 71.2 |

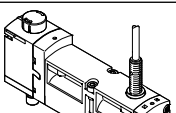
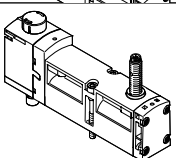
## Ordering data – Solenoid valve with switching position sensing

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

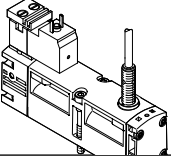
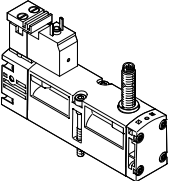
| Ordering data – Solenoid valve VSVA with cover cap for MO non-detenting/heavy duty, detenting via accessory (TR) |      |                                                                                                                                                                 |       |       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

## Ordering data – Solenoid valve with switching position sensing

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

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

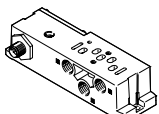
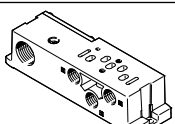
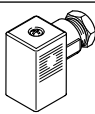
## Ordering data – Solenoid valve with switching position sensing

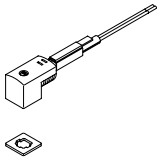
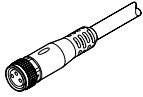
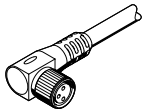
| Ordering data                                                                           | Code | Valve function                                                                                                                                                                     | Width | Part no.    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

 **Note**

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

## Accessories – Solenoid valve with switching position sensing

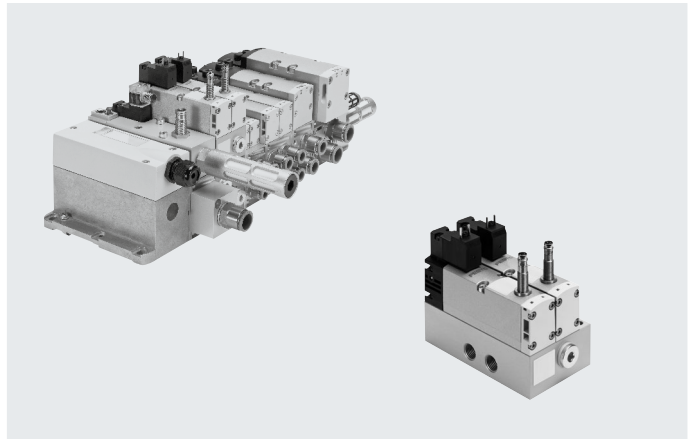
| Ordering data                                                                                  |   |                                                                                                                                |      | Code  | Description | Part no.            | Type           |
|------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------|------|-------|-------------|---------------------|----------------|
| Individual sub-base, port pattern to ISO 15407-2, electrical connection via plug connector M12 |   |                                                                                                                                |      |       |             |                     |                |
|               | – | Threaded connection, internal pilot air supply,<br>Ports on the side                                                           | G1/8 | 18 mm | 541070      | VABS-S4-2S-G18-B-R3 |                |
|                                                                                                |   |                                                                                                                                | G1/4 | 26 mm | 541069      | VABS-S4-1S-G14-B-R3 |                |
|                                                                                                | – | Threaded connection, external pilot air supply,<br>Ports on the side                                                           | G1/8 | 18 mm | 541064      | VABS-S4-2S-G18-R3   |                |
|                                                                                                |   |                                                                                                                                | G1/4 | 26 mm | 541063      | VABS-S4-1S-G14-R3   |                |
| Individual sub-base, port pattern to ISO 15407-2, electrical connection via cable clamps       |   |                                                                                                                                |      |       |             |                     |                |
|               | – | Threaded connection, internal pilot air supply,<br>Ports on the side                                                           | G1/8 | 18 mm | 541067      | VABS-S4-2S-G18-B-K2 |                |
|                                                                                                |   |                                                                                                                                | G1/4 | 26 mm | 541065      | VABS-S4-1S-G14-B-K2 |                |
|                                                                                                | – | Threaded connection, external pilot air supply,<br>Ports on the side                                                           | G1/8 | 18 mm | 539723      | VABS-S4-2S-G18-K2   |                |
|                                                                                                |   |                                                                                                                                | G1/4 | 26 mm | 539725      | VABS-S4-1S-G14-K2   |                |
| Plug socket for the electrical connection of individual valves, type C                         |   |                                                                                                                                |      |       |             |                     |                |
|               | – | <ul style="list-style-type: none"><li>• Angled socket, type C, 3-pin</li><li>• Straight plug, PG7</li><li>• 230 V AC</li></ul> |      |       |             | 151687              | MSSD-EB        |
|                                                                                                |   | <ul style="list-style-type: none"><li>• Angled socket, type C, 3-pin</li><li>• Straight plug, M12x1</li></ul>                  |      |       |             | 539712              | MSSD-EB-M12    |
| Illuminating seal for connection pattern to EN 175301-803, type C                              |   |                                                                                                                                |      |       |             |                     |                |
|               | – | For plug socket MSSD, 12 ... 24 V DC                                                                                           |      |       |             | 151717              | MEB-LD-12-24DC |

| Ordering data                                                                                                                                                                                                                                                      |                                                                                     |                                                                                                                                            |       |          |                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|-----------------------|
|                                                                                                                                                                                                                                                                    | Code                                                                                | Description                                                                                                                                |       | Part no. | Type                  |
| Connecting cable for electrical connection of individual valves, type C                                                                                                                                                                                            |                                                                                     |                                                                                                                                            |       |          |                       |
|                                                                                                                                                                                 | GG                                                                                  | <ul style="list-style-type: none"><li>• Angled socket, type C, 3-pin, with LED</li><li>• Open end, 3-core</li><li>• 24 V DC, PVC</li></ul> | 2.5 m | 151688   | KMEB-1-24-2.5-LED     |
|                                                                                                                                                                                                                                                                    | GH                                                                                  |                                                                                                                                            | 5 m   | 151689   | KMEB-1-24-5-LED       |
|                                                                                                                                                                                                                                                                    | GJ                                                                                  |                                                                                                                                            | 10 m  | 193457   | KMEB-1-24-10-LED      |
|                                                                                                                                                                                                                                                                    |  |                                                                                                                                            |       |          |                       |
| Connecting cable for the electrical connection of sensors for switching position sensing                                                                                                                                                                           |                                                                                     |                                                                                                                                            |       |          |                       |
|                                                                                                                                                                                 | GM                                                                                  | <ul style="list-style-type: none"><li>• Straight socket, M8x1, 3-pin</li><li>• Open end, 3-core</li></ul>                                  | 2.5 m | 8078223  | NEBA-M8G3-U-2.5-N-LE3 |
|                                                                                                                                                                                                                                                                    | GN                                                                                  | <ul style="list-style-type: none"><li>• Straight socket, M8x1, 3-pin</li><li>• Open end, 3-core</li></ul>                                  | 5 m   | 8078224  | NEBA-M8G3-U-5-N-LE3   |
|                                                                                                                                                                                 | GO                                                                                  | <ul style="list-style-type: none"><li>• Angled socket, M8x1, 3-pin</li><li>• Open end, 3-core</li></ul>                                    | 2.5 m | 8078230  | NEBA-M8W3-U-2.5-N-LE3 |
|                                                                                                                                                                                                                                                                    | GP                                                                                  | <ul style="list-style-type: none"><li>• Angled socket, M8x1, 3-pin</li><li>• Open end, 3-core</li></ul>                                    | 5 m   | 8078230  | NEBA-M8W3-U-5-N-LE3   |
|                                                                                                                                                                                                                                                                    | –                                                                                   | <ul style="list-style-type: none"><li>• Angled socket, rotatable, M8x1, 3-pin</li><li>• Open end, 3-core</li></ul>                         | 2.5 m | 8001660  | NEBU-M8R3-K-2.5-LE3   |
|                                                                                                                                                                                                                                                                    | –                                                                                   | <ul style="list-style-type: none"><li>• Angled socket, rotatable, M8x1, 3-pin</li><li>• Open end, 3-core</li></ul>                         | 5 m   | 8001661  | NEBU-M8R3-K-5-LE3     |
| Pneumatic connection accessories                                                                                                                                                                                                                                   |                                                                                     |                                                                                                                                            |       |          |                       |
| A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter Accessories a page: 245<br>or on the website via the individual search terms:<br>Internet a connection technology, silencer, blanking plug |                                                                                     |                                                                                                                                            |       |          |                       |



## Datasheet – Control block with safety function for VTSA/VTSA-F

-  - Flow rate  
on valve terminal: 830 l/min
-  - Operating pressure  
0.3 ... 1 MPa  
3 ... 10 bar
-  - Solenoid valve width  
26 mm
-  - Voltage  
24 V DC



### Description

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

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

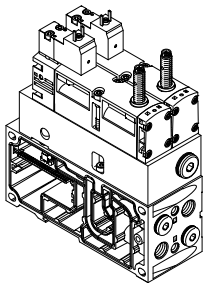
The control attributes of the control block enable Performance Level e to be achieved for the protective measures. The control block has been developed and manufactured in accordance with the basic and proven safety principles of EN ISO 13849-1 and EN ISO 13849-2.

The requirements of EN ISO 13849-1 and EN ISO 13849-2 (e.g. CCF, DC) must be taken into consideration when installing and operating the component and when using it in higher categories (2 to 4).

When using this product in machines or systems subject to specific C standards, the requirements specified in these standards must be observed.

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

### Version for valve terminal VTSA/VTSA-F



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

The electrical connection for the solenoid valves is established separately via a standardised square plug to EN 175301-803, type C.

The switching position sensing of the inductive PNP or NPN proximity switch is via a push-in connector size M8x1 to EN 61076-2-104.

### Note

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

### Note

The control block with safety function (VOFA) is also available as a decentralised individual connection variant with electrical and pneumatic individual connection.

For information see:

→ Internet: vofa

## Datasheet – Control block with safety function for VTSA/VTSA-F

### Pneumatic/electrical links

#### Function

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

Port (2) is always supplied with compressed air if at least one of the two solenoid valves is in normal position.

The valves are reset via a mechanical spring.

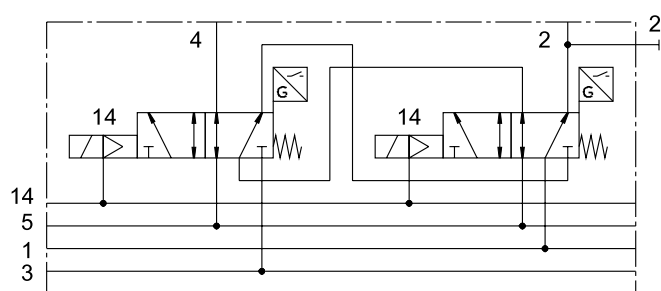
The switching operation of the solenoid valves can be sensed using the proximity switches on the solenoid valves (switching position sensing).

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

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

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

#### Circuit symbol<sup>1)</sup>



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

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

### Safety characteristics

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

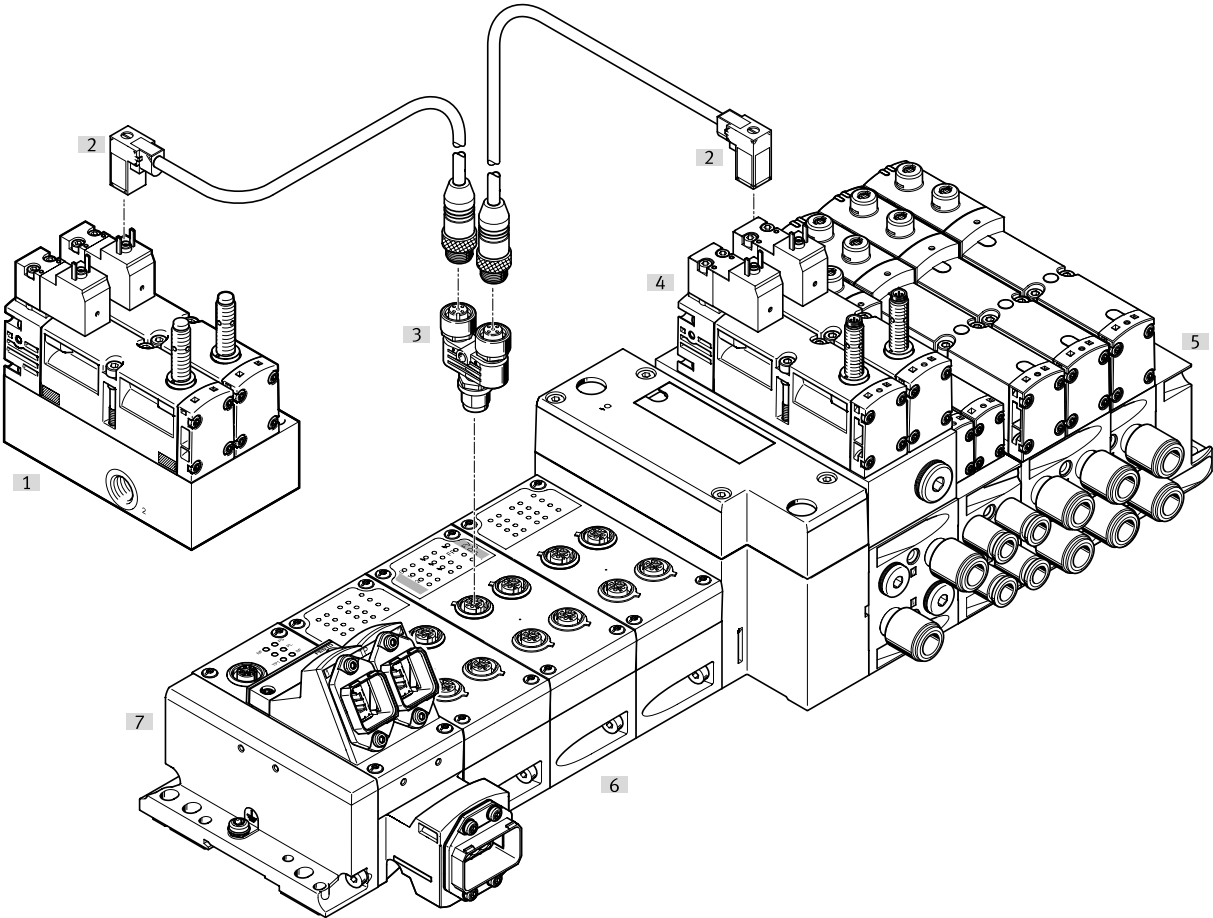
- 1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/...d Support/Downloads](http://www.festo.com/catalogue/...d Support/Downloads).

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Datasheet – Control block with safety function for VTSA/VTSA-F

Peripherals overview

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



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

## Datasheet – Control block with safety function for VTSA/VTSA-F

| General technical data                                               |         |                                                                                            |
|----------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------|
| Design                                                               |         | Piston spool valve                                                                         |
| Standard nominal flow rate                                           | [l/min] | 830                                                                                        |
| Reset method                                                         |         | Mechanical spring                                                                          |
| Sealing principle                                                    |         | Soft                                                                                       |
| Exhaust air function                                                 |         | Can be throttled                                                                           |
| Actuation type                                                       |         | Electrical                                                                                 |
| Overlap                                                              |         | Positive overlap                                                                           |
| Type of control                                                      |         | Piloted                                                                                    |
| Flow direction                                                       |         | Not reversible                                                                             |
| Exhaust air function                                                 |         | Can be throttled                                                                           |
| Suitable for vacuum                                                  |         | –                                                                                          |
| Nominal width                                                        | [mm]    | 9                                                                                          |
| Pilot air supply                                                     |         | Via valve terminal                                                                         |
| Type of mounting                                                     |         | Via through-hole, on manifold sub-base                                                     |
| Mounting position                                                    |         | Any                                                                                        |
| Manual override                                                      |         | –                                                                                          |
| Signal status indication, valve                                      |         | With accessories                                                                           |
| Pneumatic ports                                                      |         |                                                                                            |
| Supply                                                               | 1       | Via the manifold sub-base of the valve terminal                                            |
| Exhausting                                                           | 3/5     |                                                                                            |
| Working ports                                                        | 2/4     |                                                                                            |
| Pilot air supply                                                     | 14      |                                                                                            |
| Pressure gauge                                                       |         | G1/4                                                                                       |
| Operating and environmental conditions                               |         |                                                                                            |
| Operating medium                                                     |         | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |
| Pilot medium                                                         |         | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |
| Notes on operating/<br>Pilot medium                                  |         | Lubricated operation possible (in which case lubricated operation will always be required) |
| Operating pressure                                                   | [bar]   | 0 ... 10                                                                                   |
|                                                                      | [MPa]   | 0 ... 1                                                                                    |
| Operating pressure for valve terminal with internal pilot air supply | [bar]   | 3 ... 10                                                                                   |
|                                                                      | [MPa]   | 0.3 ... 1                                                                                  |
| Pilot pressure                                                       | [bar]   | 3 ... 10                                                                                   |
|                                                                      | [MPa]   | 0.3 ... 1                                                                                  |
| Noise level LpA                                                      | [dB(A)] | 85                                                                                         |
| Ambient temperature                                                  | [°C]    | –5 ... +50                                                                                 |
| Temperature of medium                                                | [°C]    | –5 ... +50                                                                                 |
| CE marking (see declaration of conformity)                           |         | To EU EMC Directive <sup>1)</sup>                                                          |
|                                                                      |         | To EU Machinery Directive                                                                  |

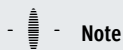
1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/...d Support/Downloads](http://www.festo.com/catalogue/...d%20Support/Downloads).

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

## Datasheet – Control block with safety function for VTSA/VTSA-F

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

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

**Note**

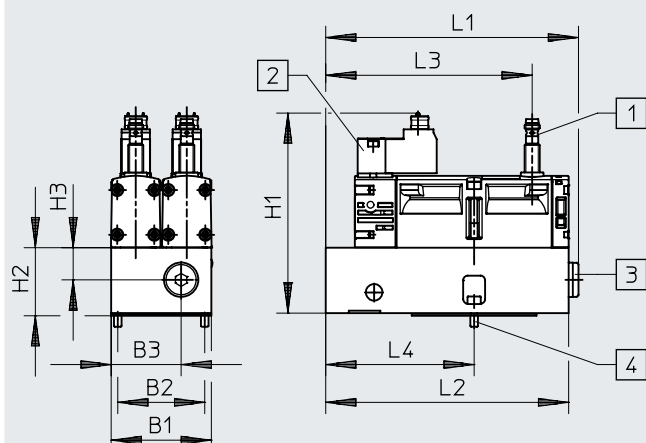
With a duty cycle of 100%, the control block must be de-energised once a week.

| Electrical data – Sensor (to EN -60947-5-2) |        |                                    |  |
|---------------------------------------------|--------|------------------------------------|--|
| Electrical connection                       |        | Cable, 3-core<br>1x M8 plug, 3-pin |  |
| Cable length                                | [m]    | 2.5                                |  |
| Switching output                            |        | PNP or NPN                         |  |
| Switching element function                  |        | N/C                                |  |
| Signal status indication                    |        | Yellow LED                         |  |
| Operating voltage range                     | [V DC] | 10 ... 30                          |  |
| Residual ripple                             | [%]    | ±10                                |  |
| Sensor no-load current                      | [mA]   | Max. 10                            |  |
| Maximum output current                      | [mA]   | 200                                |  |
| Voltage drop                                | [V]    | Max. 2                             |  |
| Max. switching frequency                    | [Hz]   | 5000                               |  |
| Short circuit current rating                |        | Pulsed                             |  |
| Reverse polarity protection for sensor      |        | For all electrical connections     |  |
| Measuring principle                         |        | Inductive                          |  |

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

## Datasheet – Control block with safety function for VTSA/VTSA-F

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

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

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

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

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



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

| Ordering data                                                |                                                                                                                                                                                                              |                  |                  |            |            |                 |                               |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|------------|------------|-----------------|-------------------------------|
|                                                              | Valve function                                                                                                                                                                                               | Code             | Switching output | Width [mm] | Weight [g] | Part no.        | Type                          |
| <b>Control block, version for valve terminal VTSA/VTSA-F</b> |                                                                                                                                                                                                              |                  |                  |            |            |                 |                               |
|                                                              | 2x 5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor and 3-pin sensor push-in connector M8, mounted on intermediate plate for pneumatic linking | SP <sup>2)</sup> | PNP              | 53         | 1112       | – <sup>1)</sup> | <b>VOFA-B26-T52-M-1C1-APP</b> |
|                                                              |                                                                                                                                                                                                              | SN <sup>2)</sup> | NPN              | 53         | 1112       | – <sup>1)</sup> | <b>VOFA-B26-T52-M-1C1-ANP</b> |

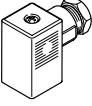
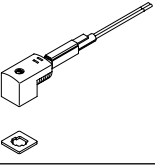
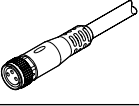
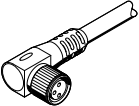
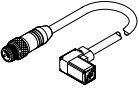
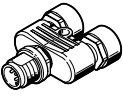
1) The control block with safety function can only be ordered via the valve terminal configurator and therefore does not have a separate part number. The appropriate manifold sub-base required for the valve terminal VTSA/VTSA-F is automatically allocated to the control block by the configurator

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

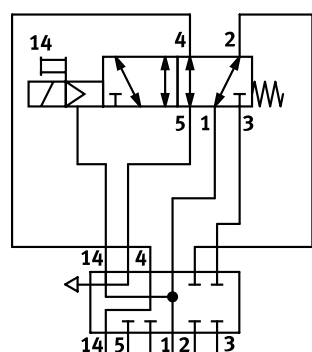
**Note**

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

## Accessories – Control block with safety function for VTSA/VTSA-F

| Ordering data                                                                                                                                                                                                                                                          |    | Code                                                                                                                                                                                                                                            | Description | Part no.                      | Type                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------|---------------------------|
| Plug socket for the electrical connection of individual valves, type C                                                                                                                                                                                                 |    |                                                                                                                                                                                                                                                 |             |                               |                           |
|                                                                                                                                                                                        | –  | • Angled socket, type C, 3-pin<br>• Screw terminal                                                                                                                                                                                              |             | 151687                        | MSSD-EB                   |
|                                                                                                                                                                                                                                                                        | –  | • Angled socket, type C, 3-pin<br>• Straight plug, M12x1<br>• With switching position indication                                                                                                                                                |             | 539712                        | MSSD-EB-M12               |
| Illuminating seal for connection pattern to EN 175301-803, type C                                                                                                                                                                                                      |    |                                                                                                                                                                                                                                                 |             | Datasheets → Internet: meb-ld |                           |
|                                                                                                                                                                                        | –  | For plug socket MSSD, 12 ... 24 V DC                                                                                                                                                                                                            |             | 151717                        | MEB-LD-12-24DC            |
| Connecting cable for electrical connection of individual valves, type C                                                                                                                                                                                                |    |                                                                                                                                                                                                                                                 |             |                               |                           |
|                                                                                                                                                                                        | GG | • Angled socket, type C, 3-pin, with LED                                                                                                                                                                                                        | 2.5 m       | 151688                        | KMEB-1-24-2.5-LED         |
|                                                                                                                                                                                                                                                                        | GH | • Open end, 3-core                                                                                                                                                                                                                              | 5 m         | 151689                        | KMEB-1-24-5-LED           |
|                                                                                                                                                                                                                                                                        | GJ | • 24 V DC, PVC                                                                                                                                                                                                                                  | 10 m        | 193457                        | KMEB-1-24-10-LED          |
| Connecting cable for the electrical connection of sensors for switching position sensing                                                                                                                                                                               |    |                                                                                                                                                                                                                                                 |             |                               |                           |
|                                                                                                                                                                                        | GM | • Straight socket, M8x1, 3-pin<br>• Open end, 3-core                                                                                                                                                                                            | 2.5 m       | 8078223                       | NEBA-M8G3-U-2.5-N-LE3     |
|                                                                                                                                                                                                                                                                        | GN | • Straight socket, M8x1, 3-pin<br>• Open end, 3-core                                                                                                                                                                                            | 5 m         | 8078224                       | NEBA-M8G3-U-5-N-LE3       |
|                                                                                                                                                                                      | –  | • Angled socket, rotatable, M8x1, 3-pin<br>• Open end, 3-core                                                                                                                                                                                   | 2.5 m       | 8001660                       | NEBU-M8R3-K-2.5-LE3       |
|                                                                                                                                                                                                                                                                        | –  | • Angled socket, rotatable, M8x1, 3-pin<br>• Open end, 3-core                                                                                                                                                                                   | 5 m         | 8001661                       | NEBU-M8R3-K-5-LE3         |
| Connecting cable for the electrical connection of PROFI-safe shut-off module CPX-FVDA-P2 to the control block                                                                                                                                                          |    |                                                                                                                                                                                                                                                 |             |                               |                           |
|                                                                                                                                                                                      | –  | For the easy connection of one control block valve (power supply via PROFI-safe shut-off module CPX-FVDA-P2)<br>• Angled socket, type C, 3-pin, with LED<br>• Straight plug M12x1, 5-pin<br>• 24 V DC, PUR                                      | 0.5 m       | 177677                        | KMEB-2-24-M12-0.5-LED     |
| Push-in T-connector for dual electrical connection of PROFI-safe shut-off module CPX-FVDA-P2 to the control block                                                                                                                                                      |    |                                                                                                                                                                                                                                                 |             |                               |                           |
|                                                                                                                                                                                      | –  | For dual connection of two control block valves (power supply via PROFI-safe shut-off module CPX-FVDA-P2)<br>• Straight plug, M12x1, 5-pin (A-coded)<br>• 2x straight socket, M12x1, 5-pin (A-coded)<br>• Operating voltage range 0 ... 30 V DC |             | 2839867                       | NEDU-L2R1-V10-M12G5-M12G5 |
| Pneumatic connection accessories                                                                                                                                                                                                                                       |    |                                                                                                                                                                                                                                                 |             |                               |                           |
| A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter Accessories → page: 245 or on the website via the individual search terms:<br><b>Internet →</b> connection technology, silencer, blanking plug |    |                                                                                                                                                                                                                                                 |             |                               |                           |

## Datasheet – Intermediate plate for switchable pilot air for VTSA/VTSA-F

Function<sup>1)</sup>

-  - Flow rate  
150 l/min (18 mm)  
450 l/min (26 mm)
-  - Valve width  
18 mm  
26 mm
-  - Voltage  
24 V DC
-  - Operating pressure  
-0.9 ... 10 bar  
-0.09 ... 1 MPa

### Description

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

This combination is not a safety device in accordance with the Machinery Directive 2006/42/EC. When used in higher categories, the sensor signal from the valve must be evaluated by the control system.

This combination is suitable for use in safety-related parts of control systems to EN ISO 13849-1. This combination is designed for installation in machines and automation systems and must only be used in industrial applications (high-demand mode).

### Alternative switching position sensing with pressure switch

As an alternative to the sensing function in the solenoid valve, a pressure switch can be mounted (in place of the blanking plug) on the intermediate plate VABF-S4-...-S. With this pressure switch, the switching on and off (sensing function) of the pilot air supply can be verified.

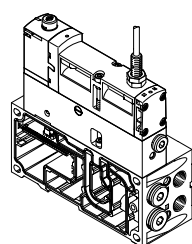
An ISO solenoid valve without a sensor can therefore be mounted on the intermediate plate to give the same function.

→ Internet: spba

### Note

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

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



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

This module is supplied pre-assembled together with the valve terminal VTSA/VTSA-F. No other assembly steps are required before installation.

Switching position sensing is carried out using an inductive PNP proximity switch with cable and M12x1 push-in connector to EN 61076-2-104. Alternatively, combinations with a pressure switch in the intermediate plate and ISO solenoid valves are possible.

### Note

All solenoid valves VSVA to ISO 15407-1 can be used.

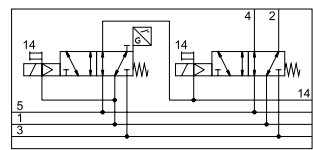
→ Internet: vsva

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



Datasheet – Intermediate plate for switchable pilot air for VTSA/VTSA-F

Function of pneumatic/electrical links



The function for switching off the pilot air is essentially achieved by combining the intermediate plate type VABF-S4-...-S with the 5/2-way single solenoid valve.

The valve terminal is not supplied with any pilot air via the right end plate type VABE-S6-1 (ident. code XS, external pilot air). Port 14 on the end plate is sealed.

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

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

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

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

**Note**

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

**Pilot air switching valve with integrated switching position monitoring**

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

**Alternative switching position sensing with pressure switch**

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

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

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

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/... d Support/Downloads](http://www.festo.com/catalogue/...d%20Support/Downloads).  
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

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

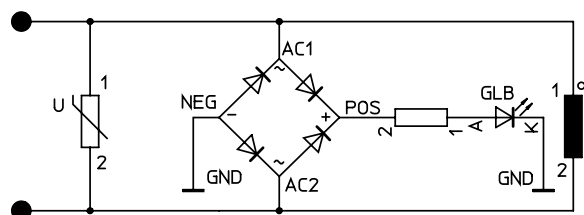
## Datasheet – Intermediate plate for switchable pilot air for VTSA/VTSA-F

| General technical data                                       |     |                                                                                             |                 |
|--------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------|-----------------|
|                                                              |     | Solenoid valve type VSVA-B-M52-MZD-A2-1T1L-APX-0.5<br>mounted on valve terminal VTSA/VTSA-F |                 |
|                                                              |     | Solenoid valve type VSVA-B-M52-MZD-A1-1T1L-APX-0.5<br>mounted on valve terminal VTSA/VTSA-F |                 |
| <b>Width</b>                                                 |     | <b>18 mm</b>                                                                                |                 |
| Design                                                       |     | Piston spool valve                                                                          |                 |
| Sealing principle                                            |     | Soft                                                                                        |                 |
| Overlap                                                      |     | Positive overlap                                                                            |                 |
| Actuation type                                               |     | Electrical                                                                                  |                 |
| Type of control                                              |     | Piloted                                                                                     |                 |
| Type of mounting:<br>Solenoid valve on intermediate<br>plate |     | M3                                                                                          | M4              |
| Intermediate plate on manifold<br>sub-base                   |     | M3x12 (captive)                                                                             | M4x12 (captive) |
| Mounting position                                            |     | Any                                                                                         |                 |
|                                                              |     |                                                                                             |                 |
| <b>Pneumatic ports</b>                                       |     |                                                                                             |                 |
| Supply                                                       | 1   | Via the manifold sub-base of the valve terminal                                             |                 |
| Exhausting                                                   | 3/5 | Via the manifold sub-base of the valve terminal                                             |                 |
| Working ports                                                | 2/4 | Sealed with blanking plug type B-1/4                                                        |                 |
| Pilot air supply                                             | 14  | Via the manifold sub-base of the valve terminal                                             |                 |
| Pressure gauge/pressure switch                               |     | G1/8                                                                                        |                 |
|                                                              |     |                                                                                             |                 |
| <b>Switching times [ms]</b>                                  |     |                                                                                             |                 |
| Width                                                        |     | 18 mm                                                                                       | 26 mm           |
| Valve type                                                   |     | 5/2                                                                                         | 5/2             |
| Identifier                                                   |     | MZD-A2                                                                                      | MZD-A1          |
| Valve switching time                                         | On  | 12                                                                                          | 20              |
|                                                              | Off | 38                                                                                          | 54              |
| Valve sensor switching time1)                                | On  | 32                                                                                          | 60              |
|                                                              | Off | 9                                                                                           | 11              |

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

### Protective circuit

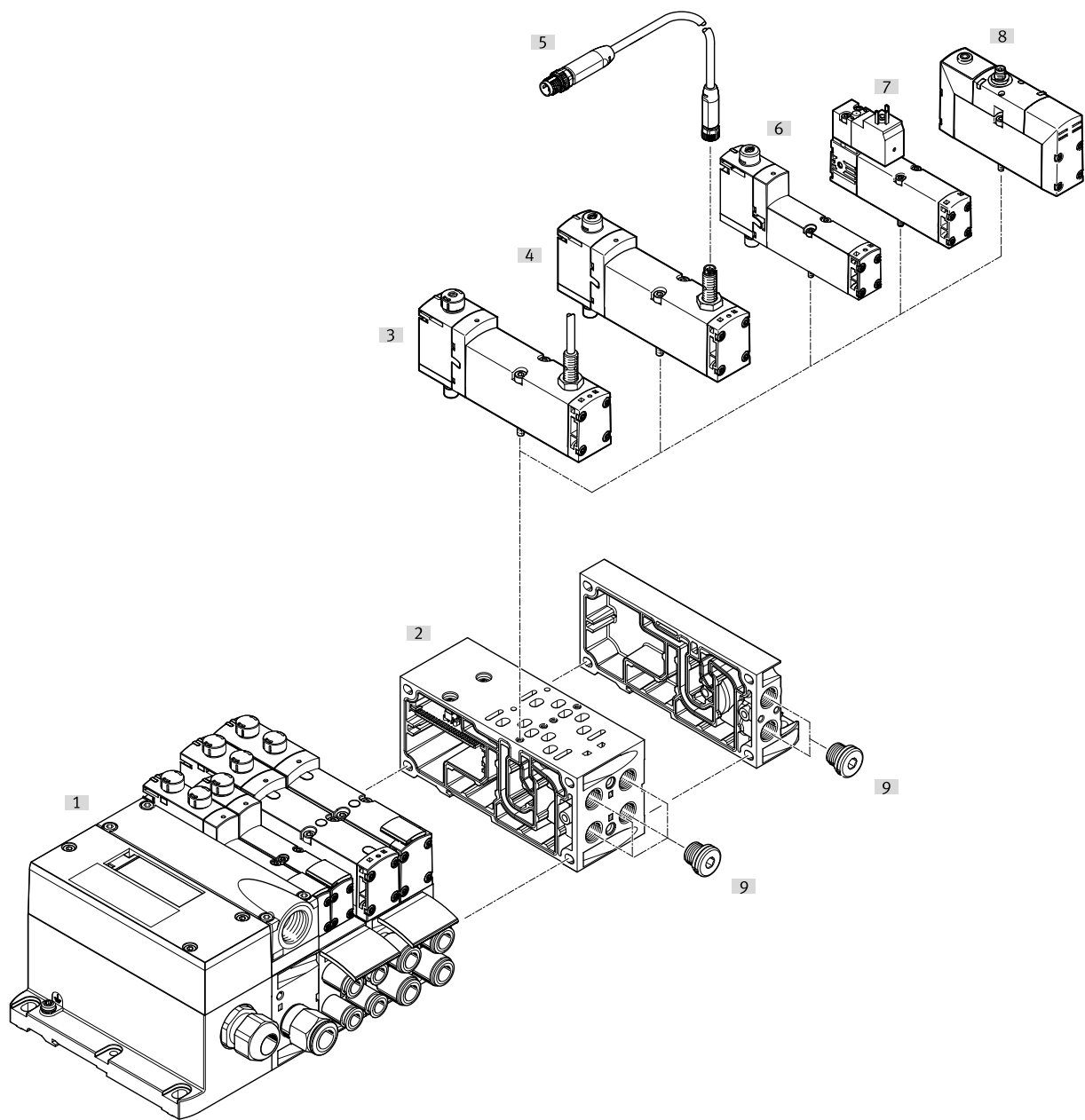
Each solenoid coil VSVA is protected with a spark arresting protective circuit as well as against polarity reversal.



Datasheet – Intermediate plate for switchable pilot air for VTSA/VTSA-F

Peripherals overview

Pilot air switching valve/intermediate plate for switchable pilot air with switching position monitoring



|     |                               | Description                                                     | → Page/Internet |
|-----|-------------------------------|-----------------------------------------------------------------|-----------------|
| [1] | Valve terminal VTSA/VTSA-F    | Valve terminal with multi-pin plug interface                    | vtsa            |
| [2] | Manifold sub-base VABF-...    | Width 18 mm or 26 mm                                            | 145             |
| [3] | Solenoid valve VSVA-B-M52-... | Width 18 mm or 26 mm, with sensor and integrated cable 0.5 m    | 183             |
| [4] | Solenoid valve VSVA-B-M52-... | Width 18 mm or 26 mm, with sensor for external connecting cable | 183             |
| [5] | Connecting cable NEBU-M8 ...  | For connecting to the sensor                                    | 184             |
| [6] | Solenoid valve VSVA-B-M52-... | Width 18 mm or 26 mm 1)                                         | 183             |
| [7] | Solenoid valve VSVA-B-M52-... | Width 18 mm or 26 mm, with plug to EN 175301, type C 1)         | 183             |
| [8] | Solenoid valve VSVA-B-M52-... | Width 18 mm or 26 mm, with round plug 1)                        | vsva            |
| [9] | Blanking plug                 | –                                                               | 246             |

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

## Datasheet – Intermediate plate for switchable pilot air for VTSA/VTSA-F

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

| Electrical data for sensor       |                                    |     |                               |     |                                        |
|----------------------------------|------------------------------------|-----|-------------------------------|-----|----------------------------------------|
| Sensor designation               | APP                                | ANP | APC                           | ANC | APX                                    |
| Switching output                 | PNP                                | NPN | PNP                           | NPN | PNP                                    |
| Sensor connection                | 1x M8 plug, 3-pin                  |     | With fixed cable and open end |     | With fixed cable and plug M12x1, 4-pin |
| Cable length [m]                 | 0.5 (with socket M8x1, plug M12x1) |     | 2.5                           |     | 0.5                                    |
| Switching element function       | N/C                                |     |                               |     |                                        |
| Signal status indication         | Yellow LED (on the sensor)         |     |                               |     |                                        |
| Operating voltage range [V DC]   | 10 ... 30                          |     |                               |     |                                        |
| Residual ripple [%]              | ±10                                |     |                               |     |                                        |
| Rated operating voltage [V DC]   | 24                                 |     |                               |     |                                        |
| Max. no-load supply current [mA] | 10                                 |     |                               |     |                                        |
| Max. output current [mA]         | 200                                |     |                               |     |                                        |
| Max. voltage drop [V]            | 2                                  |     |                               |     |                                        |
| Max. switching frequency [Hz]    | 5000                               |     |                               |     |                                        |
| Short circuit current rating     | Pulsed                             |     |                               |     |                                        |
| Reverse polarity protection      | For all electrical connections     |     |                               |     |                                        |
| Measuring principle              | Inductive                          |     |                               |     |                                        |
| Switching position sensing       | Valve normal position via sensor   |     |                               |     |                                        |

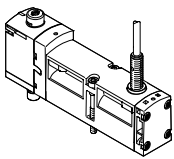
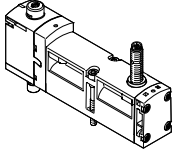
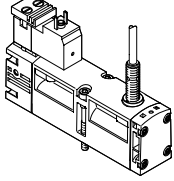
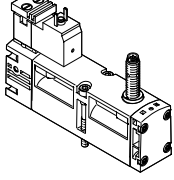
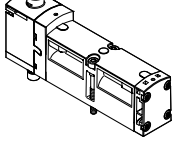
## Datasheet – Intermediate plate for switchable pilot air for VTSA/VTSA-F

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

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

| Product weight [g]                    |       |       |
|---------------------------------------|-------|-------|
| Width                                 | 18 mm | 26 mm |
| <b>5/2-way solenoid valve type...</b> |       |       |
| VSVA-B-M52-M...-A1-1T1L-APC           | –     | 307   |
| VSVA-B-M52-M...-A1-1T1L-APP           | –     | 264   |
| VSVA-B-M52-M...-A1-1C1-APC            | –     | 332   |
| VSVA-B-M52-M...-A1-1C1-APP            | –     | 289   |
| VSVA-B-M52-M...-A1-1T1L-ANC           | –     | 307   |
| VSVA-B-M52-M...-A1-1T1L-ANP           | –     | 264   |
| VSVA-B-M52-M...-A1-1C1-ANC            | –     | 332   |
| VSVA-B-M52-M...-A1-1C1-ANP            | –     | 289   |
| VSVA-B-M52-M...-A1-1T1L-APX-0.5       | –     | 281   |
| VSVA-B-M52-M...-A2-1T1L-APX-0.5       | 157   | –     |
| VSVA-B-M52-M...-A2-1T1L-APP           | 140   | –     |
| VSVA-B-M52-M...-A2-1T1L-ANP           | 140   | –     |
| VSVA-B-M52-M...-A1-1T1L               | –     | 293   |
| VSVA-B-M52-M...-A2-1T1L               | 163   | –     |

## Ordering data – Intermediate plate for switchable pilot air for VTSA/VTSA-F

| Ordering data                                                                       |    |                                                                                                                                    | Code | Valve function | Part no. | Type                           |
|-------------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------------------------------------------------------|------|----------------|----------|--------------------------------|
| 5/2-way solenoid valve, 24 V DC, plug-in design with proximity switch               |    |                                                                                                                                    |      |                |          |                                |
|    | SS | 5/2-way valve, single solenoid, mechanical spring return, with 0.5 m connecting cable and 4-pin sensor push-in connector M12x1     | PNP  | 18 mm          | 573201   | VSVA-B-M52-MZD-A2-1T1L-APX-0.5 |
|                                                                                     |    |                                                                                                                                    |      | 26 mm          | 570850   | VSVA-B-M52-MZD-A1-1T1L-APX-0.5 |
|                                                                                     | –  | 5/2-way valve, single solenoid, mechanical spring return, with 2.5 m connecting cable                                              | PNP  | 26 mm          | 560723   | VSVA-B-M52-MZD-A1-1T1L-APC     |
|                                                                                     |    |                                                                                                                                    |      | NPN            | 26 mm    | 560742                         |
|    | S0 | 5/2-way valve, single solenoid, mechanical spring return, with 3-pin sensor push-in connector M8x1                                 | PNP  | 18 mm          | 573202   | VSVA-B-M52-MZD-A2-1T1L-APP     |
|                                                                                     |    |                                                                                                                                    |      | 26 mm          | 560724   | VSVA-B-M52-MZD-A1-1T1L-APP     |
|                                                                                     | SQ |                                                                                                                                    | NPN  | 18 mm          | 573203   | VSVA-B-M52-MZD-A2-1T1L-ANP     |
|                                                                                     |    |                                                                                                                                    |      | 26 mm          | 560743   | VSVA-B-M52-MZD-A1-1T1L-ANP     |
|    | –  | 5/2-way valve, single solenoid, mechanical spring return, with plug to EN 175301, type C, with 2.5 m connecting cable              | PNP  | 26 mm          | 560725   | VSVA-B-M52-MZ-A1-1C1-APC       |
|                                                                                     |    |                                                                                                                                    |      | NPN            | 26 mm    | 560745                         |
|   | –  | 5/2-way valve, single solenoid, mechanical spring return, with plug to EN 175301, type C, with 3-pin sensor push-in connector M8x1 | PNP  | 26 mm          | 560726   | VSVA-B-M52-MZ-A1-1C1-APP       |
|                                                                                     |    |                                                                                                                                    |      | NPN            | 26 mm    | 560744                         |
| 5/2-way solenoid valve, 24 V DC, plug-in design                                     |    |                                                                                                                                    |      |                |          |                                |
|  | –  | 5/2-way valve, single solenoid, mechanical spring return                                                                           |      | 26 mm          | 539159   | VSVA-B-M52-MZD-A1-1T1L         |
|                                                                                     |    |                                                                                                                                    |      | 18 mm          | 539185   | VSVA-B-M52-MZD-A2-1T1L         |

 **Note**

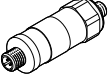
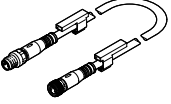
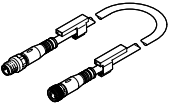
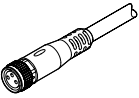
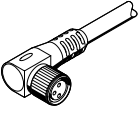
Further solenoid valves with switching position sensing can be ordered as distinct types. These are preconfigured with the required MO cover caps.

→ Solenoid valve with switching position sensing, page 166

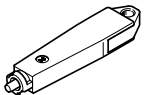
 **Note**

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

## Ordering data – Intermediate plate for switchable pilot air for VTSA/VTSA-F

| Ordering data                                                                            |    | Code | Description                                                                                                                                                 | Part no. | Type                            |
|------------------------------------------------------------------------------------------|----|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------|
| Pressure switch for intermediate plate                                                   |    |      |                                                                                                                                                             |          |                                 |
|          | WL |      | Mechanical pressure switch for switchable pilot air supply (only in combination with intermediate plate ZO), with plug M12x1, 4-pin                         | 8000033  | SPBA-P2R-G18-W-M12-0.25X        |
|          | WH |      | Electrical pressure switch for switchable pilot air supply, switching output 2xPNP (only in combination with intermediate plate ZO), with plug M12x1, 4-pin | 8000210  | SPBA-P2R-G18-2P-M12-0.25X       |
| Connecting cable for connection of pressure switches                                     |    |      |                                                                                                                                                             |          |                                 |
|          | GE |      | <ul style="list-style-type: none"> <li>Straight socket, M12x1, 5-pin</li> <li>Straight plug, M12x1, 4-pin</li> </ul>                                        | 0.5 m    | 8000208 NEBU-M12G5-K-0.5-M12G4  |
| Connecting cable for the electrical connection of sensors for switching position sensing |    |      |                                                                                                                                                             |          |                                 |
|          | –  |      | <ul style="list-style-type: none"> <li>Straight socket, M8x1, 3-pin</li> <li>Straight plug, M12x1, 3-pin</li> </ul>                                         | 0.5 m    | 8078278 NEBA-M8G3-U-0.5-N-M12G3 |
|         | GM |      | <ul style="list-style-type: none"> <li>Straight socket, M8x1, 3-pin</li> <li>Open end, 3-core</li> </ul>                                                    | 2.5 m    | 8078223 NEBA-M8G3-U-2.5-N-LE3   |
|                                                                                          | GN |      | <ul style="list-style-type: none"> <li>Straight socket, M8x1, 3-pin</li> <li>Open end, 3-core</li> </ul>                                                    | 5 m      | 8078224 NEBA-M8G3-U-5-N-LE3     |
|        | GO |      | <ul style="list-style-type: none"> <li>Angled socket, M8x1, 3-pin</li> <li>Open end, 3-core</li> </ul>                                                      | 2.5 m    | 8078230 NEBA-M8W3-U-2.5-N-LE3   |
|                                                                                          | GP |      | <ul style="list-style-type: none"> <li>Angled socket, M8x1, 3-pin</li> <li>Open end, 3-core</li> </ul>                                                      | 5 m      | 8078231 NEBA-M8W3-U-5-N-LE3     |
|                                                                                          | –  |      | <ul style="list-style-type: none"> <li>Angled socket, rotatable, M8x1, 3-pin</li> <li>Open end, 3-core</li> </ul>                                           | 2.5 m    | 8001660 NEBU-M8R3-K-2.5-LE3     |
|                                                                                          | –  |      | <ul style="list-style-type: none"> <li>Angled socket, rotatable, M8x1, 3-pin</li> <li>Open end, 3-core</li> </ul>                                           | 5 m      | 8001661 NEBU-M8R3-K-5-LE3       |

## Ordering data – Pilot air switching valve for VTSA/VTSA-F

| Ordering data                                                                                                                                                                                                                                                          |      |                                                                                                                                                              |            |                |                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------|----------------------|
|                                                                                                                                                                                                                                                                        | Code | Description                                                                                                                                                  |            | Part no.       | Type                 |
| Covering                                                                                                                                                                                                                                                               |      |                                                                                                                                                              |            |                |                      |
|                                                                                                                                                                                       | N    | Cover cap for manual override, non-detenting                                                                                                                 | Pack of 10 | <b>541010</b>  | <b>VAMC-S6-CH</b>    |
|                                                                                                                                                                                       | V    | Cover cap for manual override, concealed                                                                                                                     | Pack of 10 | <b>541011</b>  | <b>VAMC-S6-CS</b>    |
|                                                                                                                                                                                       | A    | Cover cap, heavy duty, for manual override, non-detenting heavy duty, detenting via accessory (key)<br>(The cover cap is provided for one-off mounting only) | Pack of 10 | <b>4105147</b> | <b>VAMC-B-S6-CTR</b> |
| Accessories for manual override, heavy duty                                                                                                                                                                                                                            |      |                                                                                                                                                              |            |                |                      |
|                                                                                                                                                                                       | –    | Coded key (accessory) for actuating the cover cap, heavy duty, for detenting position (VAMC-B-S6-CTR)                                                        | Pack of 1  | <b>1662543</b> | <b>AHB-MEB-B</b>     |
| Pneumatic connection accessories                                                                                                                                                                                                                                       |      |                                                                                                                                                              |            |                |                      |
| A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter Accessories → page: 245 or on the website via the individual search terms:<br><b>Internet</b> → connection technology, silencer, blanking plug |      |                                                                                                                                                              |            |                |                      |

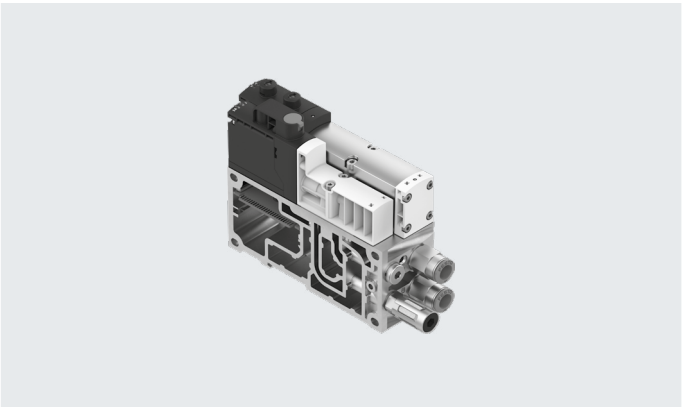
 **Note**

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



Datasheet – Pilot air switching valve for VTSA/VTSA-F-CB

-  - Flow rate 125 l/min
-  - Width pilot air switching valve 18 mm
-  - Voltage 24 V DC
-  - Operating pressure 0.3 ... 1 MPa



Description

Duct 14 of the valve terminal is supplied with pilot air via the pilot air switching valve. This can be used to realise the safety function "Protection against unexpected start-up". The pilot air switching valve is always supplied with internal pilot air from the valve terminal. The valve terminal can be operated with internal pilot air (from duct 1 of the valve terminal) or with external pilot air (external compressed air supply via duct 2).

The pilot air switching valve is actuated via an electromagnetic pilot control. It can be switched on and off manually using the manual override. The manual override can be shut off manually or using the electrical pilot control. The pilot air switching valve enables the pilot air supply to be verifiably switched on and off (sensor function) from duct 1 to 14 for the entire pressure zone or valve terminal.

This valve is not a safety device in accordance with the Machinery Directive 2006/42/EC. When used in higher categories, the sensor signal from the valve must be evaluated by the control system. This valve is suitable for use in safety-related parts of control systems to EN ISO 13849-1.

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

 - **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 end plate must then be sealed. This information applies only for a single pressure zone.

| Safety characteristics                |                                                                   |      |
|---------------------------------------|-------------------------------------------------------------------|------|
| Max. positive test pulse with logic 0 | [µs]                                                              | 2000 |
| Max. negative test pulse with logic 1 | [µs]                                                              | 1200 |
| Shock resistance                      | Shock test with severity level 2, to EN 60068-2-27                |      |
| Vibration resistant                   | Transport application test with severity level 2, to EN 60068-2-6 |      |

## Datasheet – Pilot air switching valve for VTSA/VTSA-F-CB

| General technical data                           |         |                                                                                                                       |
|--------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------|
| Design                                           |         | Poppet valve                                                                                                          |
| Valve function                                   |         | 3/2-way closed, single solenoid                                                                                       |
| Standard nominal flow rate                       | [l/min] | 125                                                                                                                   |
| Standard nominal flow rate for exhaust           | [l/min] | 125                                                                                                                   |
| Reset method                                     |         | Mechanical spring and pneumatic spring                                                                                |
| Sealing principle                                |         | Soft                                                                                                                  |
| Actuation type                                   |         | Electrical                                                                                                            |
| Overlap                                          |         | Negative overlap                                                                                                      |
| Type of control                                  |         | Piloted                                                                                                               |
| Mounting position                                |         | Any                                                                                                                   |
| Flow direction                                   |         | Not reversible                                                                                                        |
| Manual override                                  |         | None (part no.: 8066575, 8066574, 8066571, 8066570)                                                                   |
|                                                  |         | Detenting, self-resetting via electrical control signal (part no.: 8066573, 8066572, 8066569, 8066568)                |
|                                                  |         | Non-detenting (part no.: 8171467, 8171468, 8171469, 8171470)                                                          |
| Pilot air supply                                 |         | For pilot air switching valve: internal via valve terminal                                                            |
|                                                  |         | For the valve terminal: internal via valve terminal (duct 1) – (part nos.: 8066569, 8066568, 8066571, 8066570)        |
|                                                  |         | For the valve terminal: external via compressed air supply (duct 2) – (part nos.: 8066573, 8066572, 8066575, 8066574) |
| Type of mounting                                 |         | Via through-hole, on manifold sub-base                                                                                |
| MTTF subcomponent                                |         | 443 years, pressure switch                                                                                            |
| Width, manifold sub-base                         | [mm]    | 38 (for additional valve 18 mm)                                                                                       |
|                                                  | [mm]    | 46 (for additional valve 26 mm)                                                                                       |
| Pneumatic connections, pilot air switching valve |         |                                                                                                                       |
| Supply                                           | 1       | Via the manifold sub-base of the valve terminal                                                                       |
| Exhausting                                       | 3/5     | Via the manifold sub-base of the valve terminal                                                                       |
| Compressed air supply port (external)            | 2       | G1/8                                                                                                                  |
| Exhaust air/exhaust                              | 4       | G1/8                                                                                                                  |
| Pilot air supply                                 | 14      | Via the manifold sub-base of the valve terminal                                                                       |
| Pneumatic connections, additional valve position |         |                                                                                                                       |
| Supply                                           | 1       | Via the manifold sub-base of the valve terminal                                                                       |
| Exhausting                                       | 3/5     | Via the manifold sub-base of the valve terminal                                                                       |
| Working ports (for valve 18 mm)                  | 2/4     | G1/8                                                                                                                  |
| Working ports (for valve 26 mm)                  | 2/4     | G1/4                                                                                                                  |
| Pilot air supply                                 | 14      | Via the manifold sub-base of the valve terminal                                                                       |
| Operating and environmental conditions           |         |                                                                                                                       |
| Operating medium                                 |         | Compressed air to ISO 8573-1:2010 [7:4:4]                                                                             |
| Pilot medium                                     |         | Compressed air to ISO 8573-1:2010 [7:4:4]                                                                             |
| Notes on operating/<br>Pilot medium              |         | Lubricated operation not possible                                                                                     |
| Operating pressure <sup>2)</sup>                 | [bar]   | 3 ... 10                                                                                                              |
|                                                  | [MPa]   | 0.3 ... 1                                                                                                             |
| Pilot pressure                                   | [bar]   | 3 ... 10                                                                                                              |
|                                                  | [MPa]   | 0.3 ... 1                                                                                                             |
| Ambient temperature <sup>2)</sup>                | [°C]    | –5 ... +50                                                                                                            |
| Temperature of medium <sup>2)</sup>              | [°C]    | –5 ... +50                                                                                                            |
| Corrosion resistance class CRC <sup>1)</sup>     |         | 0                                                                                                                     |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

2) With an ambient temperature and a temperature of the medium from –5 °C to +5 °C and +40 °C to +50 °C, the maximum permissible operating pressure is 8 bar.

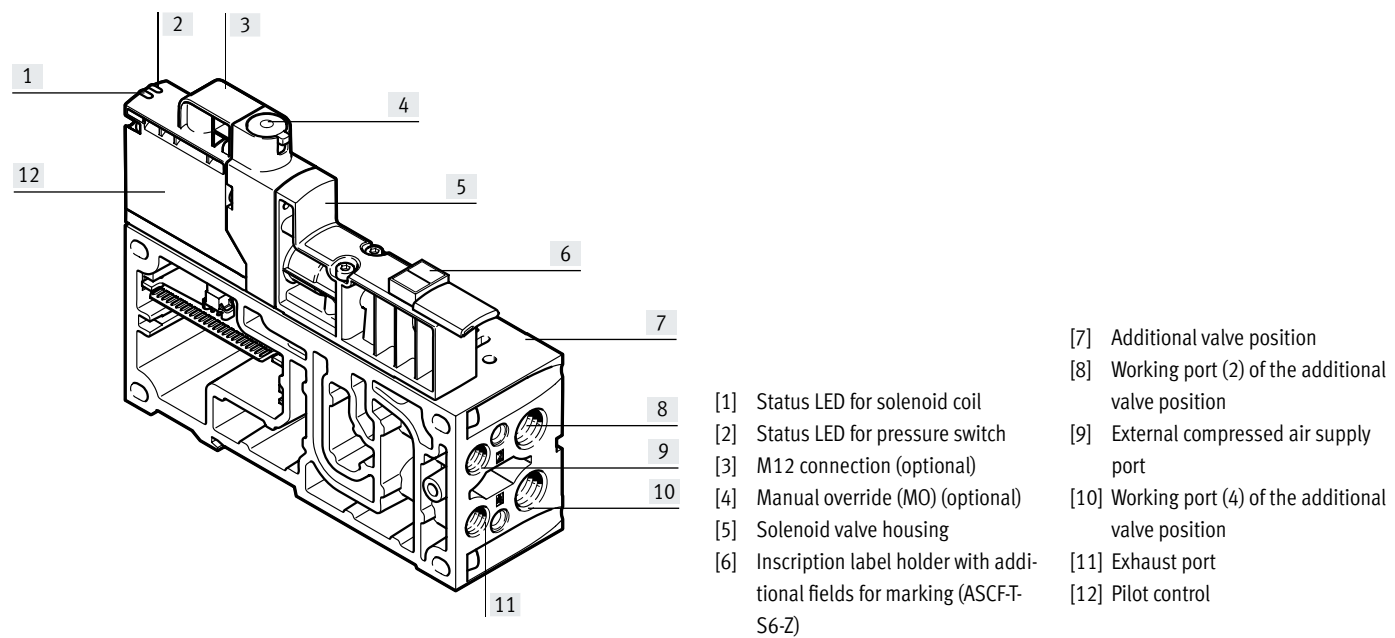
Datasheet – Pilot air switching valve for VTSA/VTSA-F-CB

| Electrical data – Pilot air switching valve |        |                                              |
|---------------------------------------------|--------|----------------------------------------------|
| Nominal operating voltage                   | [V DC] | 24                                           |
| Permissible voltage fluctuations            | [%]    | ±10                                          |
| Electrical connection                       |        | Plug-in                                      |
| Power consumption                           | [W]    | 1.6                                          |
| Nominal pick-up current per solenoid coil   | [mA]   | 60 up to 35 ms                               |
| Additional functions                        |        | Holding current reduction                    |
| Nominal current with current reduction      | [mA]   | 11 after 35 ms                               |
| Switching element function                  |        | N/C                                          |
| Switching position sensing                  |        | Via pressure switch, exhausted status        |
| Signal status indication                    |        | Yellow LED, valve control                    |
|                                             |        | Green LED, pressure switch, exhausted status |
| Duty cycle                                  | [%]    | 100                                          |
| Switch-on point                             | [bar]  | 0.2                                          |
| Max. switch-on point                        | [bar]  | 0.3                                          |
| Switch-off point min.                       | [bar]  | 0.05                                         |
| Degree of protection                        |        | IP65                                         |

| Materials         |                  |
|-------------------|------------------|
| Housing           | Reinforced PA    |
| Seals             | NBR, HNBR        |
| Screws            | Galvanised steel |
| Note on materials | RoHS-compliant   |

Connection and indicator components

Pilot air switching valve VSVA-BT-M32CS... with manifold sub-base

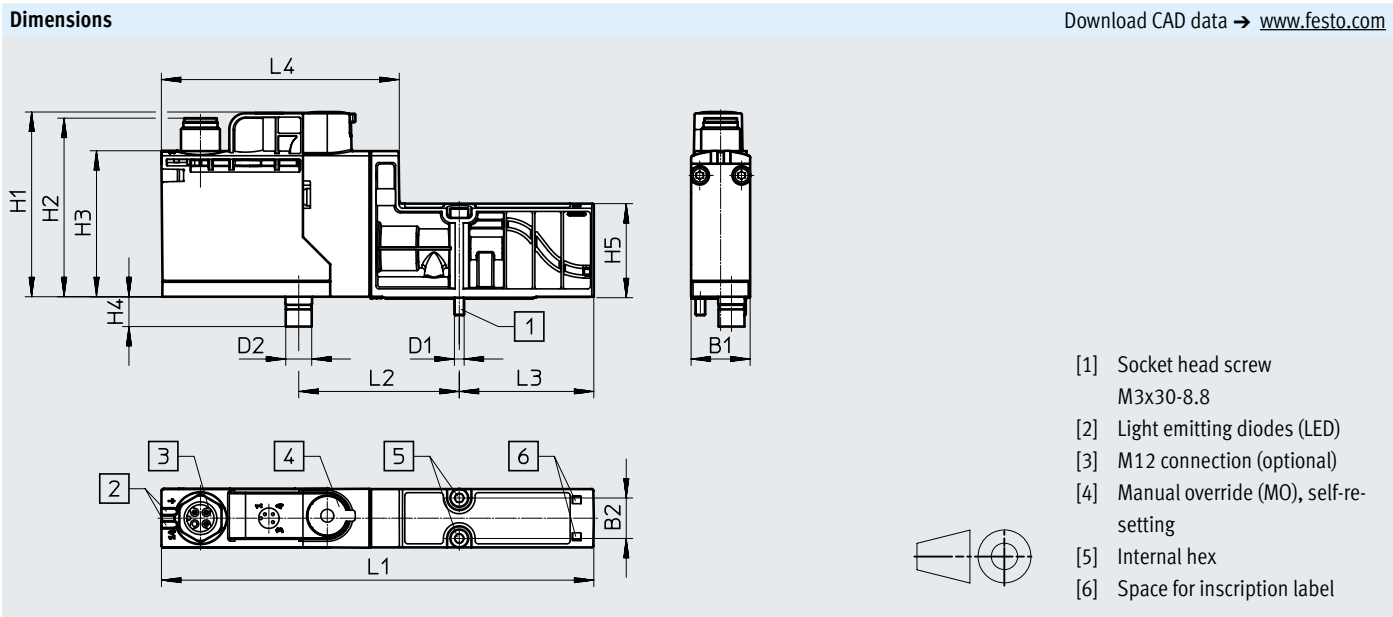


 **Note**  
Detailed information on the manual override can be found in the user documentation.

## Datasheet – Pilot air switching valve for VTSA-F-CB

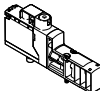
| Valve function |                |                                                                                                                                                                                                                     |
|----------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Terminal code  | Circuit symbol | Description                                                                                                                                                                                                         |
| CT             |                | <ul style="list-style-type: none"> <li>Pilot air supply via duct 2 (external pilot air) of manifold sub-base</li> <li>Without manual override (MO)</li> </ul>                                                       |
| CT             |                | <ul style="list-style-type: none"> <li>Pilot air supply via duct 2 (external pilot air) of manifold sub-base</li> <li>With manual override (MO)</li> </ul>                                                          |
| AT             |                | <ul style="list-style-type: none"> <li>Pilot air supply via duct 2 (external pilot air) of manifold sub-base</li> <li>Without manual override (MO)</li> </ul>                                                       |
| AT             |                | <ul style="list-style-type: none"> <li>Pilot air supply via duct 2 (external pilot air) of manifold sub-base</li> <li>With manual override (MO)</li> </ul>                                                          |
| CS             |                | <ul style="list-style-type: none"> <li>Pilot air supply via duct 1 (internal pilot air) for the valve terminal's pressure zone (end plate/additional supply plate)</li> <li>Without manual override (MO)</li> </ul> |
| CS             |                | <ul style="list-style-type: none"> <li>Pilot air supply via duct 1 (internal pilot air) for the valve terminal's pressure zone (end plate/additional supply plate)</li> <li>With manual override (MO)</li> </ul>    |
| AS             |                | <ul style="list-style-type: none"> <li>Pilot air supply via duct 1 (internal pilot air) for the valve terminal's pressure zone (end plate/additional supply plate)</li> <li>Without manual override (MO)</li> </ul> |
| AS             |                | <ul style="list-style-type: none"> <li>Pilot air supply via duct 1 (internal pilot air) for the valve terminal's pressure zone (end plate/additional supply plate)</li> <li>With manual override (MO)</li> </ul>    |

Datasheet – Pilot air switching valve for VTSA/VTSA-F-CB



| Type             | B1 | B2   | D1 | D2<br>ø | H1 | H2   | H3 | H4  | H5 | L1  | L2   | L3   | L4 |
|------------------|----|------|----|---------|----|------|----|-----|----|-----|------|------|----|
| VSVA-BT-M32CS... | 18 | 12.5 | M3 | 8       | 57 | 55.1 | 45 | 9.2 | 29 | 134 | 49.5 | 41.5 | 74 |

## Datasheet – Pilot air switching valve for VTSA-F-CB

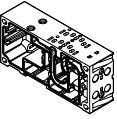
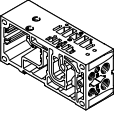
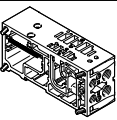
| Ordering data                                                                     |                                                                             |                                                                                    |                                                                                    |                                  |         |                                          |                    |                       |          |                               |                               |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------|---------|------------------------------------------|--------------------|-----------------------|----------|-------------------------------|-------------------------------|
|                                                                                   | Terminal code<br>VTSA-F-CB                                                  | Terminal code<br>VTSA/<br>VTSA-F                                                   | Description                                                                        | Operating pressure <sup>1)</sup> |         | Standard nominal flow rate <sup>2)</sup> |                    | Wt. [g] <sup>3)</sup> | Part no. | Type                          |                               |
|                                                                                   |                                                                             |                                                                                    |                                                                                    | [MPa]                            | [bar]   | [l/min]                                  | Exhausting [l/min] |                       |          |                               |                               |
| 3/2-way solenoid valve, 24 V DC, plug-in design                                   |                                                                             |                                                                                    |                                                                                    |                                  |         |                                          |                    |                       |          |                               |                               |
|  | 3/2-way solenoid valve NC, external pilot air supply for the valve terminal |                                                                                    |                                                                                    |                                  |         |                                          |                    |                       |          |                               |                               |
|                                                                                   | CT                                                                          | –                                                                                  | Control plug-in, pressure switch plug-in, manual override (MO) self-resetting      | 18 mm                            | 0.3...1 | 3...10                                   | 150                | 150                   | 110      | 8066573                       | VSVA-BT-M32CS2-MYE-A2-1T5L-PA |
|                                                                                   | CT                                                                          | AT                                                                                 | Control plug-in, external M12 pressure switch, manual override (MO) self-resetting | 18 mm                            | 0.3...1 | 3...10                                   | 150                | 150                   | 110      | 8066572                       | VSVA-BT-M32CS2-MYE-A2-1T1L-PZ |
|                                                                                   | CT                                                                          | –                                                                                  | Control plug-in, pressure switch plug-in, manual override (MO) concealed           | 18 mm                            | 0.3...1 | 3...10                                   | 150                | 150                   | 110      | 8066575                       | VSVA-BT-M32CS2-MS-A2-1T5L-PA  |
|                                                                                   | CT                                                                          | AT                                                                                 | Control plug-in, external M12 pressure switch, manual override (MO) concealed      | 18 mm                            | 0.3...1 | 3...10                                   | 150                | 150                   | 110      | 8066574                       | VSVA-BT-M32CS2-MS-A2-1T1L-PZ  |
|                                                                                   | CT                                                                          | –                                                                                  | Control plug-in, pressure switch plug-in, manual override (MO) non-detenting       | 18 mm                            | 0.3...1 | 3...10                                   | 125                | 125                   | 110      | 8171467                       | VSVA-BT-M32CS2-MH-A2-1T5L-PA  |
|                                                                                   | CT                                                                          | AT                                                                                 | Control plug-in, external pressure switch M12, manual override (MO) non-detenting  | 18 mm                            | 0.3...1 | 3...10                                   | 125                | 125                   | 110      | 8171469                       | VSVA-BT-M32CS2-MH-A2-1T1L-PZ  |
| 3/2-way solenoid valve NC, internal pilot air supply for the valve terminal       |                                                                             |                                                                                    |                                                                                    |                                  |         |                                          |                    |                       |          |                               |                               |
| CS                                                                                | –                                                                           | Control plug-in, pressure switch plug-in, manual override (MO) self-resetting      | 18 mm                                                                              | 0.3...1                          | 3...10  | 150                                      | 150                | 110                   | 8066569  | VSVA-BT-M32CS1-MYE-A2-1T5L-PA |                               |
| CS                                                                                | AS                                                                          | Control plug-in, external M12 pressure switch, manual override (MO) self-resetting | 18 mm                                                                              | 0.3...1                          | 3...10  | 150                                      | 150                | 110                   | 8066568  | VSVA-BT-M32CS1-MYE-A2-1T1L-PZ |                               |
| CS                                                                                | –                                                                           | Control plug-in, pressure switch plug-in, manual override (MO) concealed           | 18 mm                                                                              | 0.3...1                          | 3...10  | 150                                      | 150                | 110                   | 8066571  | VSVA-BT-M32CS1-MS-A2-1T5L-PA  |                               |
| CS                                                                                | AS                                                                          | Control plug-in, external M12 pressure switch, manual override (MO) concealed      | 18 mm                                                                              | 0.3...1                          | 3...10  | 150                                      | 150                | 110                   | 8066570  | VSVA-BT-M32CS1-MS-A2-1T1L-PZ  |                               |
| CS                                                                                | –                                                                           | Control plug-in, pressure switch plug-in, manual override (MO) non-detenting       | 18 mm                                                                              | 0.3...1                          | 3...10  | 125                                      | 125                | 110                   | 8171468  | VSVA-BT-M32CS1-MH-A2-1T5L-PA  |                               |
| CS                                                                                | AS                                                                          | Control plug-in, external M12 pressure switch, manual override (MO) non-detenting  | 18 mm                                                                              | 0.3...1                          | 3...10  | 125                                      | 125                | 110                   | 8171470  | VSVA-BT-M32CS1-MH-A2-1T1L-PZ  |                               |

1) With an ambient temperature and temperature of medium of from –5 °C to +5 °C and 40 °C to 50 °C, the maximum permissible operating pressure is 0.8 MPa or 8 bar.

2) +/- 15% to FN 942032

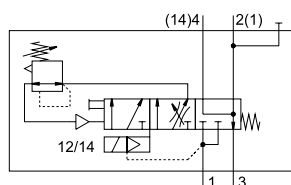
3) Weight of pilot air switching valve without manifold sub-base

## Datasheet – Pilot air switching valve for VTSA/VTSA-F-CB

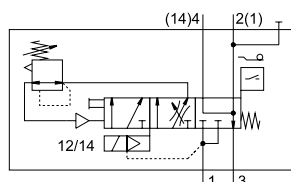
| Ordering data                                                                    |                            |                                  |                                                                                                                                                                                                      |             |               |                |                               |
|----------------------------------------------------------------------------------|----------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------|----------------|-------------------------------|
|                                                                                  | Terminal code<br>VTSA-F-CB | Terminal code<br>VTSA/<br>VTSA-F | Description                                                                                                                                                                                          |             | Weight<br>[g] | Part no.       | Type                          |
| <b>Manifold sub-base for pilot air switching valve</b>                           |                            |                                  |                                                                                                                                                                                                      |             |               |                |                               |
|  | YB                         | –                                | For 2 valve positions (4 addresses)<br>1x valve position,<br>1x double solenoid valve, high flow                                                                                                     | 18 mm       | 434           | <b>8068913</b> | <b>VABF-S4-2HS-G18-CB-2T5</b> |
|  | YC                         | –                                | Hybrid manifold sub-base, width 18 and 26 mm<br>For 2 valve positions (4 addresses)<br>1x valve position with CBUS communication,<br>1x double solenoid valve, high flow (with CBUS<br>loop-through) | 18 mm/26 mm | 512           | <b>8068912</b> | <b>VABV-S4-12HS-G-CB-2T5</b>  |
|  | –                          | XA                               | Hybrid manifold sub-base, width 18 and 26 mm<br>For 2 valve positions (4 addresses)                                                                                                                  | 18 mm/26 mm | 512           | <b>8190411</b> | <b>VABV-S4-12HS-G-2T2</b>     |

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

### Function without sensor



### With sensor

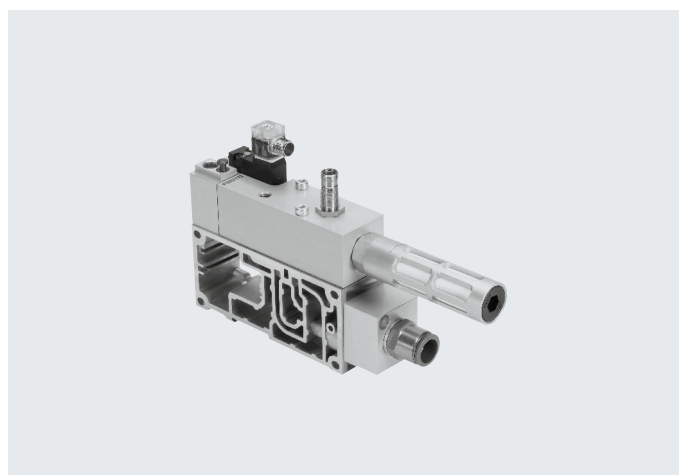


-  - Flow rate  
Pressurisation:  
3000 l/min  
Exhausting: 3300 l/min

-  - Module width  
43 mm

-  - Temperature range  
-5 ... +50 °C

-  - Operating pressure  
0.2 ... 1.2 MPa  
2 ... 12 bar



### Description

#### Function

The purpose of the soft-start valve is to slowly and safely build up the supply pressure in duct 1 of the valve terminal or to quickly exhaust it via duct 1.

Switch-on takes place in two stages:

- First the working pressure for duct 1 gradually increases (the speed can be adjusted using a throttle screw).

- Once the working pressure in duct 1 reaches a previously set value, the soft-start valve switches to full operating pressure at duct 1 of the valve terminal.

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

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

Duct 1 of the valve terminal is exhausted via the exhaust port of the soft-start valve only when the valve is in the normal position and not switched. The exhaust air can optionally be ducted with a QS fitting or using a silencer.

A detenting manual override with self-reset via an electrical control signal is available for maintenance and service purposes.

#### - - Note

When using "Protection against unexpected start-up":

Protection against unexpected activation of the manual override (MO) must be guaranteed in all operating modes.

### Diagnostics

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

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

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

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

### Pilot air supply

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

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

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

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



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

**Description**

Creating pressure zones with a soft-start valve

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

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

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

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

**Constraints****Compressed air supply**

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

**Exhaust air**

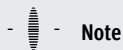
Exhaust air cannot be expelled via the soft-start valve. If it is being used in a pressure zone with duct 3/5 separate, an exhaust plate is required.

**Pilot air supply**

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

**Reverse operation**

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

**Note**

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

**Safety characteristics**

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

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

**General technical data**

|                            |                                                                                             |
|----------------------------|---------------------------------------------------------------------------------------------|
| Design                     | Piston spool                                                                                |
| Actuation type             | Electrical                                                                                  |
| Sealing principle          | Soft                                                                                        |
| Type of mounting           | On sub-base, ISO size 1 to ISO 5599-2                                                       |
| Mounting position          | Any                                                                                         |
| Valve function             | Soft-start function                                                                         |
| Manual override            | Detenting, self-resetting via electrical control signal, normal position on top, → page 200 |
| Reset method               | Mechanical spring                                                                           |
| Type of control            | Piloted                                                                                     |
| Pilot air supply           | Internal, external                                                                          |
| Flow direction             | Not reversible                                                                              |
| Switching position sensing | Switching position with sensor                                                              |

**Standard nominal flow rate [l/min]**

|                |      |
|----------------|------|
| Pressurisation | 3000 |
| Exhausting     | 3300 |

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

| Operating and environmental conditions |                  |                                                                                            |
|----------------------------------------|------------------|--------------------------------------------------------------------------------------------|
| Operating medium                       |                  | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |
| Notes on operating/<br>pilot medium    |                  | Lubricated operation possible (in which case lubricated operation will always be required) |
| Operating pressure                     | [bar]            | 2 ... 12                                                                                   |
|                                        | [MPa]            | 0.2 ... 1.2                                                                                |
| Switchover pressure presetting         | [bar]            | 4                                                                                          |
|                                        | [MPa]            | 0.4                                                                                        |
| Ambient temperature                    | [°C]             | −5 ... +50                                                                                 |
| Note on materials                      |                  | RoHs-compliant                                                                             |
| Valve switching times [ms]             |                  |                                                                                            |
| Valve switching time                   | On               | 17                                                                                         |
|                                        | Off              | 50                                                                                         |
| Electrical data for soft-start valve   |                  |                                                                                            |
| Electrical connection                  |                  | Plug, type C to EN 175301-803, square design                                               |
| Nominal operating voltage              | [V]              | 24 DC                                                                                      |
| Operating voltage range                | [V]              | 24 DC ±10%                                                                                 |
| Characteristic coil values             |                  | 24 V DC: 2.5 W                                                                             |
| Degree of protection to EN 60529       |                  | IP65, NEMA 4 (for all types of signal transmission when mounted)                           |
| Electrical data for sensor             |                  |                                                                                            |
| Type                                   | SIEN-M12B-PS-S-L | SIEN-M12B-NS-S-L                                                                           |
| Electrical connection                  |                  | Plug M12x1 to EN 60947-5-2, 4-pin                                                          |
| Switching output                       |                  | PNP                                                                                        |

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

### Example 1: Pressure zone with soft-start valve and pilot air supply

Internal, external pilot air supply

#### Requirements

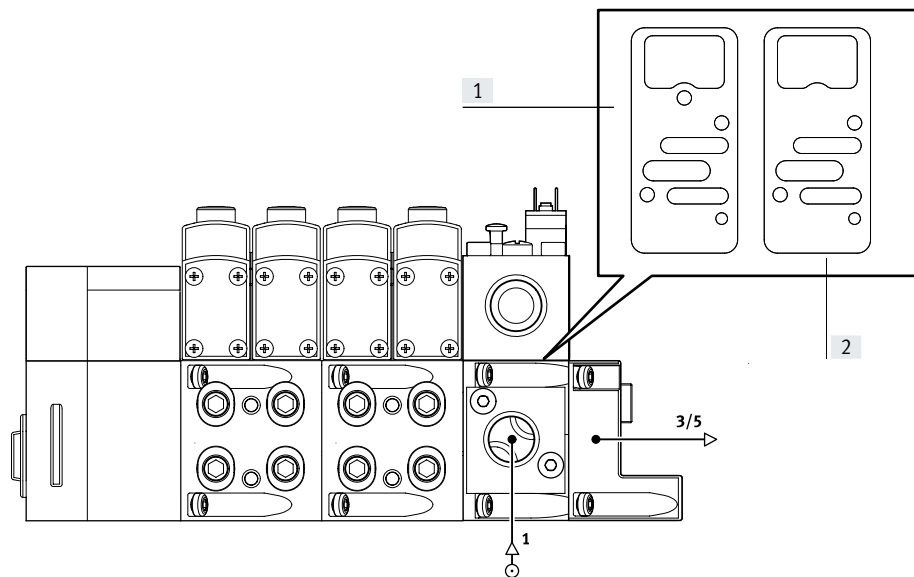
- Compressed air supply via soft-start valve
- Right end plate1): blanking plug in duct 1

#### For internal pilot air supply:

- Seal (soft-start valve - manifold sub-base) with pilot air supply bore "open" and
- Right end plate: blanking plug in duct 14

#### For external pilot air supply:

- Seal (soft-start valve - manifold sub-base) with pilot air supply bore "closed" and
- Pilot air supply via duct 14 in the right end plate



[1] Seal for internal pilot air supply

[2] Seal for external pilot air supply

1) A right end plate with pilot air selector cannot be used with this configuration, as it doesn't allow the exhaust air to be discharged

### Example 2: Pressure zone with soft-start valve, supply plate and pilot air supply

Internal, external pilot air supply

#### Requirements

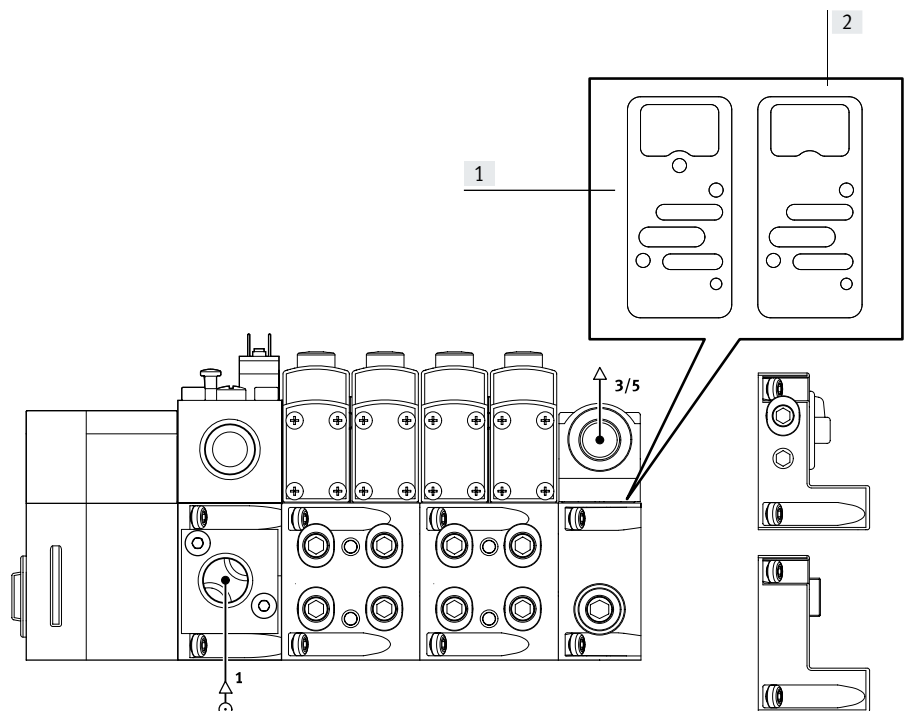
- Compressed air supply via soft-start valve
- Supply plate: blanking plug in duct 1
- Right end plate: blanking plug in duct 1, 3, 5 or
- Right end plate with pilot air selector

#### For internal pilot air supply:

- Seal (soft-start valve - manifold sub-base) with pilot air supply bore "open" and
- Right end plate: blanking plug in duct 14 or
- End plate with coding (position 2, internal pilot air supply)

#### For external pilot air supply:

- Seal (soft-start valve - manifold sub-base) with pilot air supply bore "closed" and
- Pilot air supply via duct 14 in the right end plate or
- End plate with coding (position 1, external pilot air supply)



[1] Seal for internal pilot air supply

[2] Seal for external pilot air supply

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

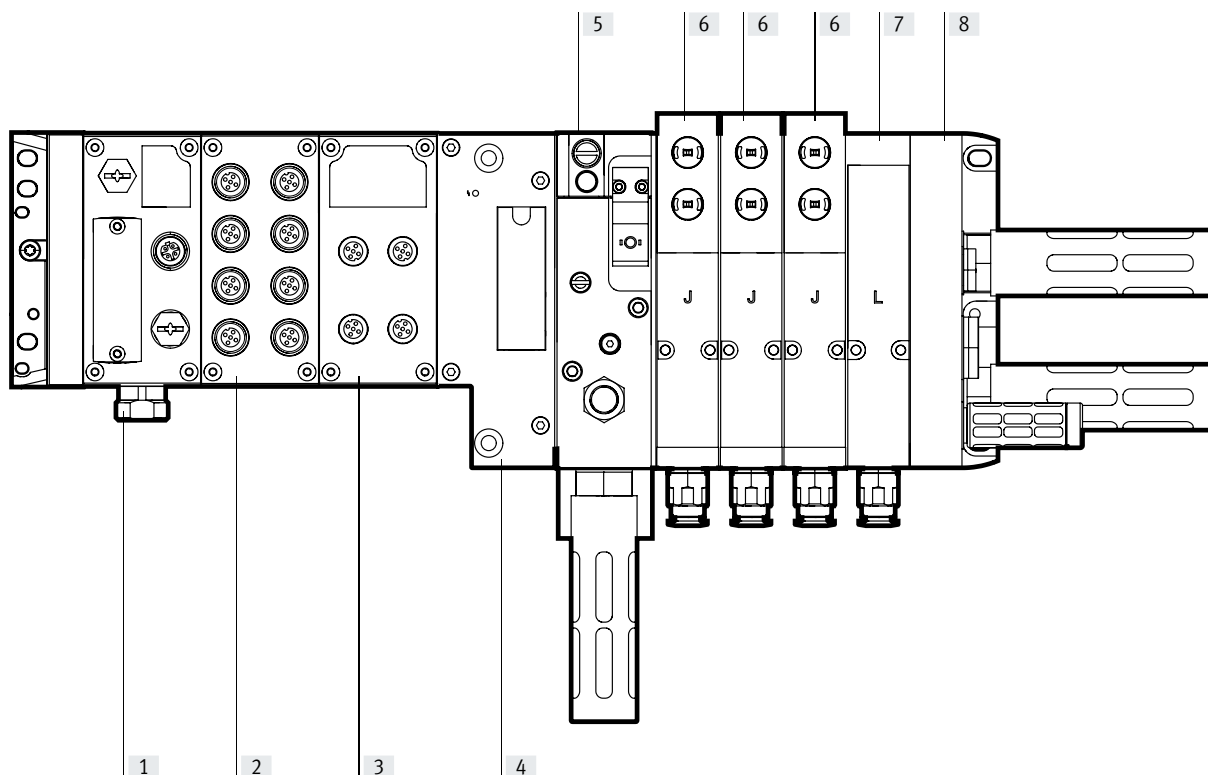
### Practical example 1: Valve terminal VTSA with CPX terminal (metal design) and soft-start valve

With internal pilot air (PP and XP2):

Part no.: 539217

With external pilot air (PM and XP1):

Part no. 539217



[1] Fieldbus node for EtherNet/IP or Modbus TCP

[2] Input module (16 digital inputs)

[3] Output module (8 digital outputs)

[4] CPX pneumatic interface

[5] Soft-start valve

(PP – internal pilot air)

[5] Soft-start valve

(PM – external pilot air)

[6] 5/2-way valve, double solenoid (J)

[7] Vacant position (L)

[8] Right end plate (XP2) with supply air/exhaust air, external pilot air supply, blanking plug in duct 1 and 14

[8] Right end plate (XP1) with supply air/exhaust air, external pilot air supply, blanking plug in duct 1

#### Selection with internal pilot air (PP and XP2):

Part no.: 539217

Electrical part: 51E-F36GCQPNMKBLX-S+GSBA

Pneumatic part: 44P-N-XP2-SMPP-BB-3JL+UGBP1

#### Selection with external pilot air (PM and XP1):

Part no.: 539217

Electrical part: 51E-F36GCQPNMKBLX-S+GSBA

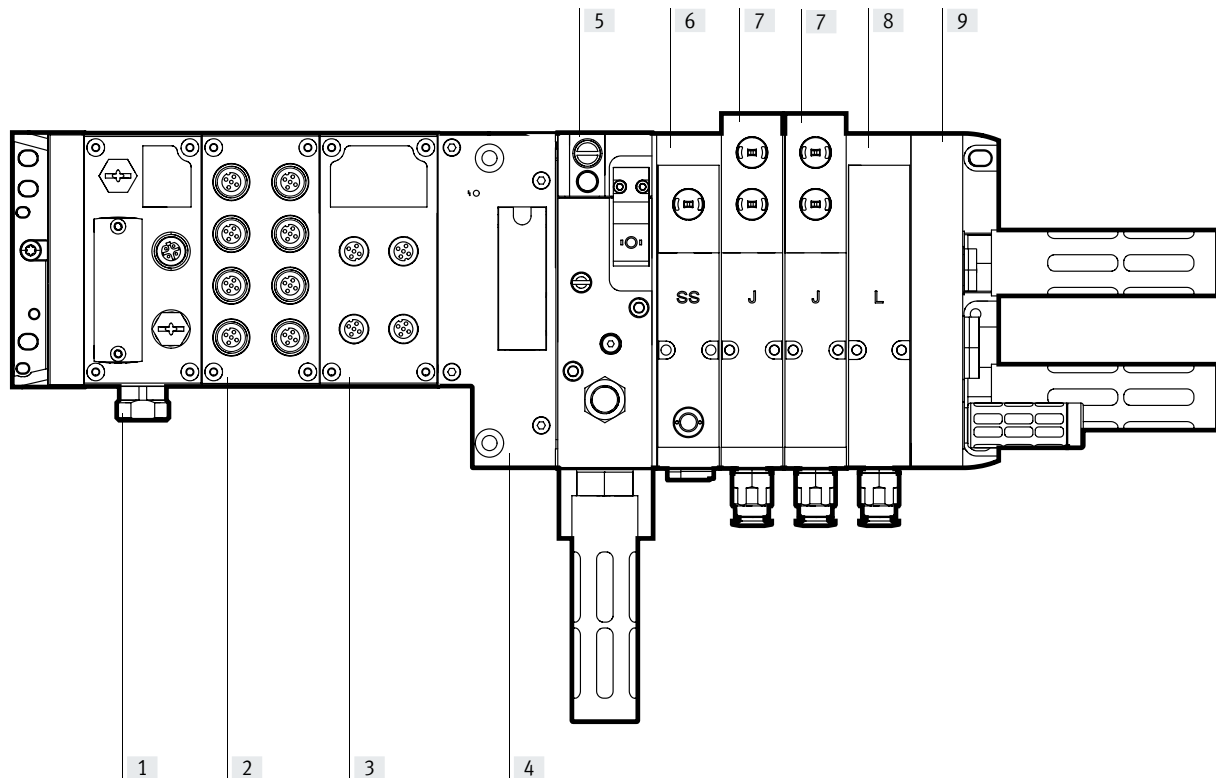
Pneumatic part: 44P-N-XP1-SMPM-BB-3JL+UGBP1

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

### Practical example 2: Valve terminal VTSA with CPX terminal (metal design), soft-start valve and switching position sensing

With external pilot air (PM and XP2):

Part no.: 539217



- |                                                 |                                                |                                                                                                                                                                                                                         |                                                                                                                  |
|-------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| [1] Fieldbus node for EtherNet/IP or Modbus TCP | [4] CPX pneumatic interface                    | [6] 5/2-way single solenoid valve, spring return, switching status indication with PNP sensor with 0.5 m connecting cable and push-in connector M12x1 (SS), and intermediate plate for switchable pilot air supply (ZO) | [7] 5/2-way double solenoid valve (J), width 26 mm                                                               |
| [2] Input module (16 digital inputs)            | [5] Soft-start valve (PM – external pilot air) |                                                                                                                                                                                                                         | [8] Vacant position (L)                                                                                          |
| [3] Output module (8 digital outputs)           |                                                |                                                                                                                                                                                                                         | [9] Right end plate (XP2) with supply air/exhaust air, external pilot air supply, blanking plug in duct 1 and 14 |

Selection with external pilot air (PM and XP2), solenoid valve with switching position sensing (SS) and intermediate plate for switchable pilot air supply (ZO)

Part no.: 539217

Electrical part: 51E-F36GCQPNMKBLX-S+GSBA

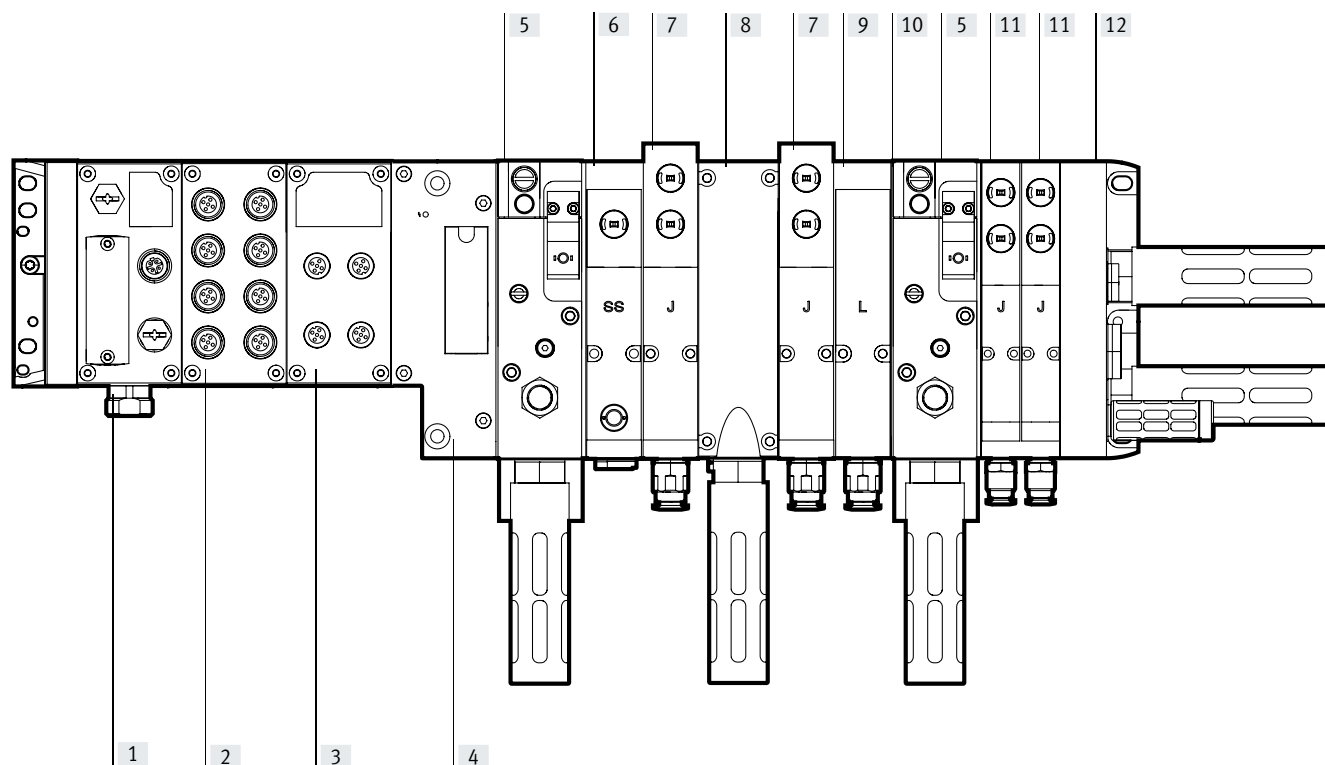
Pneumatic part: 44P-N-XP2-SMPM-BB-SSZOJL+UGCGBP1

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

### Practical example 3: Valve terminal VTSA with CPX terminal (metal design), switching position sensing, soft-start valve and 2 pressure zones

With external pilot air (PM and XP2)

Part no.: 539217



- |                                                 |                                                                                                                                                                                                                                   |                                                    |                                                                                                                   |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| [1] Fieldbus node for EtherNet/IP or Modbus TCP | [5] Soft-start valve for one pressure zone (PM – external pilot air)                                                                                                                                                              | [7] 5/2-way double solenoid valve (J), width 26 mm | [11] 5/2-way double solenoid valve (J), width 18 mm                                                               |
| [2] Input module (16 digital inputs)            | [6] 5/2-way single solenoid valve, spring return, switching status indication with PNP sensor with 0.5 m connecting cable and push-in connector M12x1 (SS), and intermediate plate for switchable auxiliary pilot air supply (ZO) | [8] Exhaust plate (W) for ducts 3/5                | [12] Right end plate (XP2) with supply air/exhaust air, external pilot air supply, blanking plug in duct 1 and 14 |
| [3] Output module (8 digital outputs)           |                                                                                                                                                                                                                                   | [9] Vacant position (L)                            |                                                                                                                   |
| [4] CPX pneumatic interface                     |                                                                                                                                                                                                                                   | [10] Duct separation (S) 1, 3, 5                   |                                                                                                                   |

Selection with external pilot air (PM and XP2), solenoid valve with switching position sensing (SS) and intermediate plate for switchable pilot air supply and 2 pressure zones

Part no.: 539217

Electrical part: 51E-F36GCQPNMKBLX-S+GSBA

Pneumatic part: 44P-N-XP2-LSMPM-BWBSPMA-SSZOJLJJ+UGCGBP1

### Electrical connection of pneumatic components

The solenoid valve with switching position sensing (SS), with sensor connection M12 is connected to the CPX input module using an appropriate connecting cable in order to link the sensor signal to the CPX system.

The soft-start valve (PM – with sensor PNP) is connected to the CPX input module using an appropriate connecting cable (GC) in order to integrate the sensor signal into the CPX system.

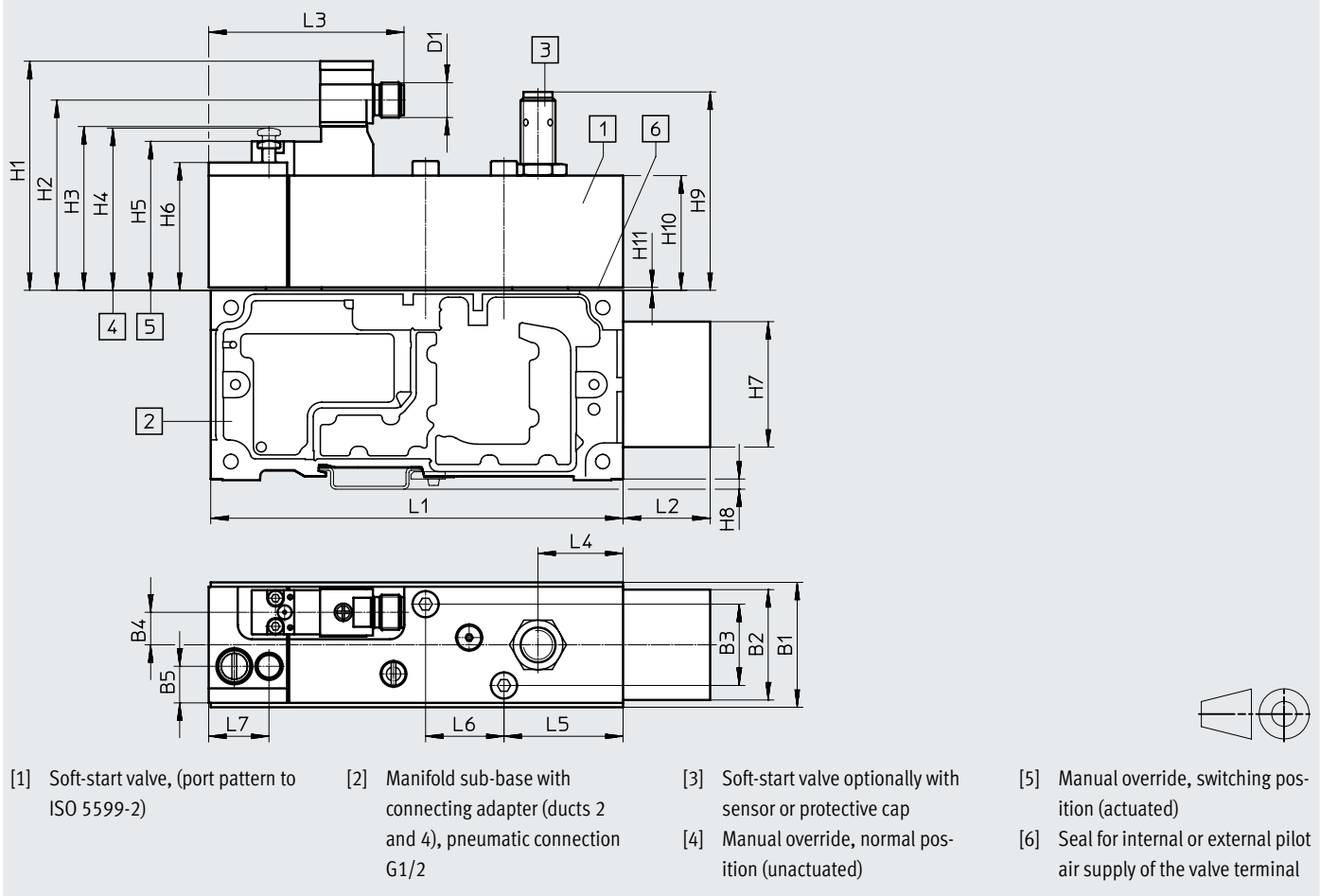
A connecting cable (GBP1) to/from the CPX output module is used to control the soft-start valve (PM). (Control signal)

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

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

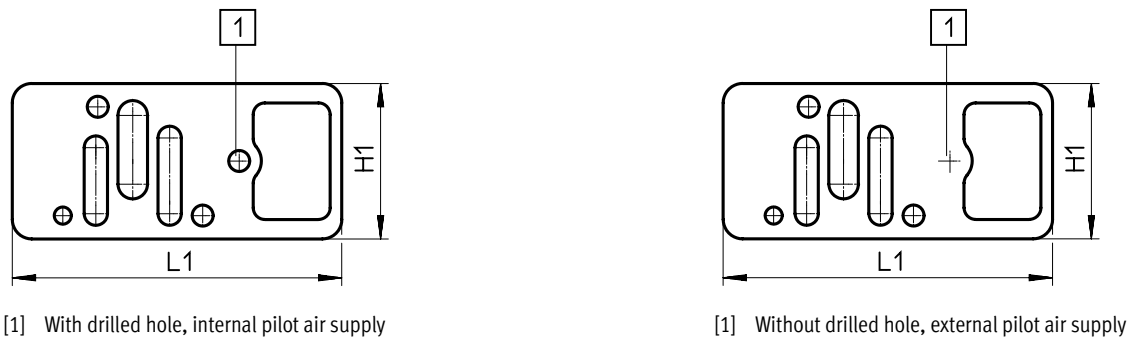
Soft-start valve



| Type                      | B1 | B2   | B3 | B4   | B5   | D1    | L1  | L2 | L3   | L4   | L5 | L6 | L7   |
|---------------------------|----|------|----|------|------|-------|-----|----|------|------|----|----|------|
| VABF-S6-1-P5A4-G12-4- ... | 43 | 36.5 | 28 | 11.2 | 12.6 | M12x1 | 142 | 30 | 67.3 | 29.3 | 41 | 27 | 20.8 |

| Type                      | H1   | H2   | H3   | H4   | H5   | H6 | H7   | H8  | H9   | H10  | H11 |
|---------------------------|------|------|------|------|------|----|------|-----|------|------|-----|
| VABF-S6-1-P5A4-G12-4- ... | 78.9 | 65.5 | 56.4 | 55.9 | 51.5 | 44 | 41.2 | 3.5 | 68.3 | 39.5 | 1   |

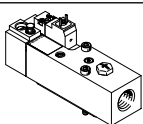
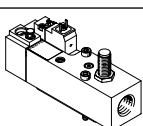
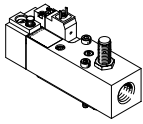
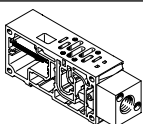
Seal 1) between soft-start valve and manifold sub-base



| Type         | H1 | L1   |
|--------------|----|------|
| VABD-S6- ... | 40 | 84.8 |

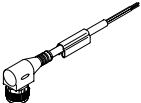
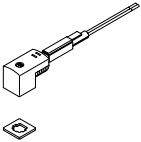
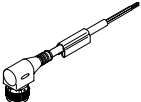
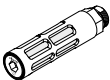
1) Seals are included with the soft-start valve

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

| Ordering data                                                                       |    | Terminal code | Description                                                                                        | Weight [g] | Part no. | Type                     |
|-------------------------------------------------------------------------------------|----|---------------|----------------------------------------------------------------------------------------------------|------------|----------|--------------------------|
| Soft-start valve, 24 V DC                                                           |    |               |                                                                                                    |            |          |                          |
|    | –  |               | Without sensor output, pneumatic connection G1/2 (with seals for internal and external pilot air)  | 590        | 558230   | VABF-S6-1-P5A4-G12-4-1   |
|    | PN |               | Seal for external pilot air (without drilled hole)                                                 |            |          |                          |
|    | PQ |               | Seal for internal pilot air (with drilled hole)                                                    |            |          |                          |
|    | –  |               | With sensor output PNP, pneumatic connection G1/2 (with seals for internal and external pilot air) | 605        | 557377   | VABF-S6-1-P5A4-G12-4-1-P |
|    | PM |               | Seal for external pilot air (without drilled hole)                                                 |            |          |                          |
|    | PP |               | Seal for internal pilot air (with drilled hole)                                                    |            |          |                          |
|   | –  |               | With sensor output NPN, pneumatic connection G1/2 (with seals for internal and external pilot air) | 605        | 558233   | VABF-S6-1-P5A4-G12-4-1-N |
|  | PK |               | Seal for external pilot air (without drilled hole)                                                 |            |          |                          |
|  | PO |               | Seal for internal pilot air (with drilled hole)                                                    |            |          |                          |
| Manifold sub-base                                                                   |    |               |                                                                                                    |            |          |                          |
|  | –  |               | Suitable for a soft-start valve (ports for ducts 2 and 4 are combined), pneumatic connection G1/2  | 570        | 556989   | VABV-S6-1Q-G12           |



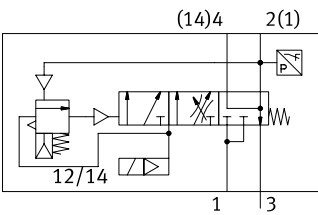
## Accessories – Soft-start valve for VTSA/VTSA-F

| Ordering data                                                                                                                                                                                                                                                          |      |                                                                                                                                           |            |         |                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|----------------------|
| Designation                                                                                                                                                                                                                                                            | Code | Description                                                                                                                               | Part no.   | Type    |                      |
| Cover cap                                                                                                                                                                                                                                                              |      |                                                                                                                                           |            |         |                      |
|                                                                                                                                                                                        | –    | M12, for sealing the sensor opening                                                                                                       | Pack of 10 | 165592  | ISK-M12              |
| Electrical connection for soft-start valve                                                                                                                                                                                                                             |      |                                                                                                                                           |            |         |                      |
|                                                                                                                                                                                        | P1   | <ul style="list-style-type: none"><li>Angled socket, type C, 2-pin, with LED</li><li>Straight plug M12x1, 2-pin</li><li>24 V DC</li></ul> |            | 188024  | MSSD-EB-M12-MONO     |
|                                                                                                                                                                                        | GB   | <ul style="list-style-type: none"><li>Straight socket, M12x1, 5-pin</li><li>Open end, 4-core</li></ul>                                    | 5 m        | 8078240 | NEBA-M12G5-U-5-N-LE4 |
|                                                                                                                                                                                        | –    | <ul style="list-style-type: none"><li>Angled socket, M12x1, 5-pin</li><li>Open end, 4-core</li></ul>                                      | 5 m        | 8078249 | NEBA-M12W5-U-5-N-LE4 |
|                                                                                                                                                                                        | GG   | <ul style="list-style-type: none"><li>Angled socket, type C, 3-pin, with LED</li></ul>                                                    | 2.5 m      | 151688  | KMEB-1-24-2.5-LED    |
|                                                                                                                                                                                                                                                                        | GH   | <ul style="list-style-type: none"><li>Open end, 3-core</li></ul>                                                                          | 5 m        | 151689  | KMEB-1-24-5-LED      |
|                                                                                                                                                                                                                                                                        | GJ   | <ul style="list-style-type: none"><li>24 V DC, PVC</li></ul>                                                                              | 10 m       | 193457  | KMEB-1-24-10-LED     |
|                                                                                                                                                                                                                                                                        | GK   | <ul style="list-style-type: none"><li>Angled socket, type C, 3-pin</li></ul>                                                              | 2.5 m      | 151690  | KMEB-1-230AC-2.5     |
|                                                                                                                                                                                                                                                                        | GL   | <ul style="list-style-type: none"><li>Open end, 3-core</li><li>230 V AC, PVC</li></ul>                                                    | 5 m        | 151691  | KMEB-1-230AC-5       |
| Connecting cable for electrical connection of the proximity switch                                                                                                                                                                                                     |      |                                                                                                                                           |            |         |                      |
|                                                                                                                                                                                      | –    | <ul style="list-style-type: none"><li>Straight socket, M12x1, 5-pin</li><li>Open end, 4-core</li></ul>                                    | 5 m        | 8078240 | NEBA-M12G5-U-5-N-LE4 |
|                                                                                                                                                                                      | GC   | <ul style="list-style-type: none"><li>Angled socket, M12x1, 5-pin</li><li>Open end, 4-core</li></ul>                                      | 5 m        | 8078249 | NEBA-M12W5-U-5-N-LE4 |
| Silencer                                                                                                                                                                                                                                                               |      |                                                                                                                                           |            |         |                      |
|                                                                                                                                                                                      | U    | Standard design, connecting thread (1 piece)                                                                                              | G1/2       | 6844    | U-1/2-B              |
|                                                                                                                                                                                      | A    | Sintered design, connecting thread (pack of 10)                                                                                           | G1/2       | 1205863 | AMTE-M-LH-G12        |
| Pneumatic connection accessories                                                                                                                                                                                                                                       |      |                                                                                                                                           |            |         |                      |
| A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter Accessories → page: 245 or on the website via the individual search terms:<br><b>Internet</b> → connection technology, silencer, blanking plug |      |                                                                                                                                           |            |         |                      |

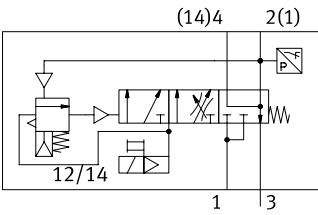
Datasheet – Soft-start valve for VTSA-F-CB

Function

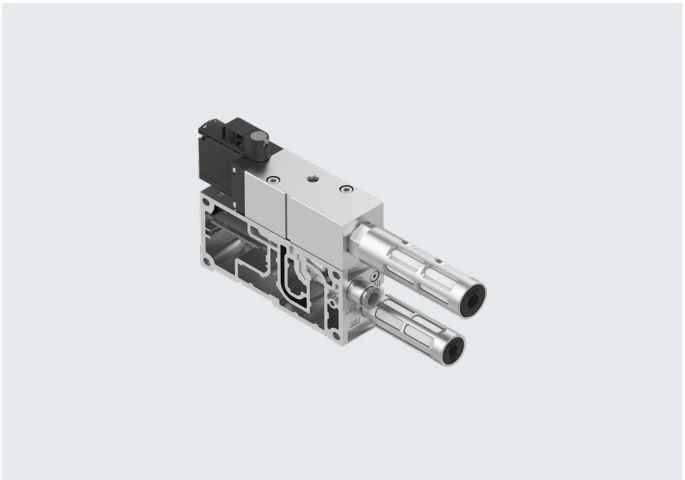
Without manual override



With manual override



-  - Flow rate  
Pressurisation:  
3000 l/min  
Exhausting: 3300 l/min
-  - Module width  
41 mm
-  - Temperature range  
-5 ... +50 °C
-  - Operating pressure  
2 ... 10 bar  
0.2 ... 1 MPa



Description

Smart valve functions

The basic functions are the same as for the familiar soft-start valve. There is a variant with internal pilot air supply (code PM) and a variant without internal pilot air supply (code PN). In addition, the new smart soft-start valve has:

- An integrated pressure sensor for sensing the exhausted position
- A revised design of the manual override with protection against unintended actuation, as well as an automatic reset

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

- First the working pressure for duct 1 gradually increases (the speed can be adjusted using a throttle screw).

- Once the working pressure in duct 1 reaches half the operating pressure, the soft-start valve switches to full operating pressure at duct 1 of the valve terminal.

The switching point is permanently set at 50% of the operating pressure. The full operating pressure is applied at duct 14 (pilot air) at all times. This pressure causes the valves on the valve terminal to immediately move to the required switching position, so an unspecified position is not possible.

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

Safety characteristics

|                                       |      |                                                                   |
|---------------------------------------|------|-------------------------------------------------------------------|
| Max. positive test pulse with logic 0 | [µs] | 2000                                                              |
| Max. negative test pulse with logic 1 | [µs] | 1200                                                              |
| Shock resistance                      |      | Shock test with severity level 2, to EN 60068-2-27                |
| Vibration resistant                   |      | Transport application test with severity level 2, to EN 60068-2-6 |

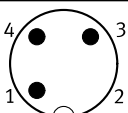
## Datasheet – Soft-start valve for VTSA-F-CB

| General technical data                       |       |                                                                                                                                |                      |
|----------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Design                                       |       | Piston spool valve                                                                                                             |                      |
| Grid dimension                               | [mm]  | 41                                                                                                                             |                      |
| Valve size                                   | [mm]  | 40                                                                                                                             |                      |
| Overlap                                      |       | Negative overlap                                                                                                               |                      |
| Actuation type                               |       | Electrical                                                                                                                     |                      |
| Sealing principle                            |       | Soft                                                                                                                           |                      |
| Type of mounting                             |       | On sub-base                                                                                                                    |                      |
| Mounting position                            |       | Any                                                                                                                            |                      |
| Valve function                               |       | Soft-start and exhaust function                                                                                                |                      |
| Manual override                              |       | Detenting, self-resetting via electrical control signal (part numbers 8067407 and 8067405), normal position on top, → page 208 |                      |
| Manual override                              |       | None (part numbers 8161611, 8161610, 8067411 and 8067409)                                                                      |                      |
| Reset method                                 |       | Mechanical spring                                                                                                              |                      |
| Type of control                              |       | Piloted                                                                                                                        |                      |
| Pilot air supply                             |       | For soft-start valve: always internal via valve terminal                                                                       |                      |
|                                              |       | For valve terminal: internal via soft start valve (part nos. 8067407, 8067411)                                                 |                      |
|                                              |       | For valve terminal: internal, not via soft-start valve (part nos. 8067405, 8067409)                                            |                      |
| Flow direction                               |       | Not reversible                                                                                                                 |                      |
| Pneumatic port 3                             |       | G1/2                                                                                                                           |                      |
| MTTF, subcomponent                           |       | 452 years, pressure switch                                                                                                     |                      |
| Switch-on point                              | [bar] | 0.2                                                                                                                            |                      |
| Maximum switch-on point                      | [bar] | 0.3                                                                                                                            |                      |
| Minimum switch-off point                     | [bar] | 0.05                                                                                                                           |                      |
| Standard nominal flow rate [l/min]           |       |                                                                                                                                |                      |
| Pressurisation                               |       | 3000                                                                                                                           |                      |
| Note pressurisation                          |       | MPA: 1200                                                                                                                      |                      |
|                                              |       | VTSA: 3000                                                                                                                     |                      |
| Exhausting                                   |       | 3300                                                                                                                           |                      |
| Note exhausting                              |       | MPA: 1600                                                                                                                      |                      |
|                                              |       | VTSA: 3300                                                                                                                     |                      |
| Operating and environmental conditions       |       |                                                                                                                                |                      |
| Type                                         |       | VABF-S6-1-P5A4S1-...                                                                                                           | VABF-S6-1-P5A4S2-... |
| Operating medium                             |       | Compressed air to ISO 8573-1:2010 [7:4:4]                                                                                      |                      |
| Pilot medium                                 |       | Compressed air to ISO 8573-1:2010 [7:4:4]                                                                                      |                      |
| Notes on operating/<br>pilot medium          |       | Lubricated operation not possible                                                                                              |                      |
| Pilot pressure                               | [bar] | 3 ... 10                                                                                                                       | 2 ... 10             |
|                                              | [MPa] | 0.3 ... 1                                                                                                                      | 0.2 ... 1            |
| Operating pressure                           | [bar] | 3 ... 10                                                                                                                       | 2 ... 10             |
|                                              | [MPa] | 0.3 ... 1                                                                                                                      | 0.2 ... 1            |
| Relative humidity                            |       | Max. 90% at 40 °C                                                                                                              |                      |
| Ambient temperature                          | [°C]  | −5 ... +50                                                                                                                     |                      |
| Temperature of medium                        | [°C]  | −5 ... +50                                                                                                                     |                      |
| Storage temperature                          | [°C]  | −20 ... +60                                                                                                                    |                      |
| Corrosion resistance class CRC <sup>1)</sup> |       | 0                                                                                                                              |                      |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Datasheet – Soft-start valve for VTSA-F-CB

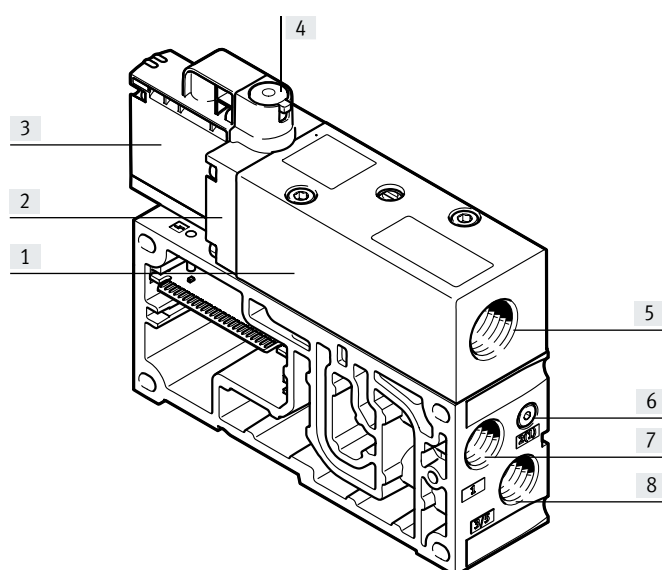
| Electrical data for soft-start valve      |      |                                                          |  |
|-------------------------------------------|------|----------------------------------------------------------|--|
| Electrical control                        |      | Fieldbus                                                 |  |
| Electrical connection                     |      | Plug-in                                                  |  |
| Nominal operating voltage                 | [V]  | 24 DC                                                    |  |
| Operating voltage range                   | [V]  | 24 DC $\pm 10\%$                                         |  |
| Characteristic coil values                |      | 24 V DC: 1.6 W                                           |  |
| Permissible voltage fluctuations          | [%]  | $\pm 10\%$                                               |  |
| Nominal pick-up current per solenoid coil | [mA] | 60 up to 35 ms                                           |  |
| Additional functions                      |      | Holding current reduction                                |  |
| Nominal current with current reduction    | [mA] | 11 after 35 ms                                           |  |
| Degree of protection to EN 60529          |      | IP65 (for all types of signal transmission when mounted) |  |
| Pressure sensor                           |      | Integrated (plug-in)                                     |  |
| Sensor evaluation                         |      | Internal                                                 |  |
| Switching element function                |      | N/C                                                      |  |
| Switching position sensing                |      | Via pressure switch, exhausted status                    |  |
| Signal status indication                  |      | Yellow LED, valve control                                |  |
|                                           |      | Green LED, pressure switch, exhausted status             |  |
| Duty cycle                                | [%]  | 100                                                      |  |

| Electrical connection                                                              |                            |      |                  |
|------------------------------------------------------------------------------------|----------------------------|------|------------------|
|  | Connection plug M12, 3-pin | Pin1 | – + 24 V DC      |
|                                                                                    |                            | Pin3 | – 0 V DC         |
|                                                                                    |                            | Pin4 | – Out            |
|                                                                                    |                            |      | Supply voltage   |
|                                                                                    |                            |      | 0 V DC           |
|                                                                                    |                            |      | Switching output |

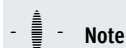
| Materials         |                         |                    |
|-------------------|-------------------------|--------------------|
|                   | Soft-start valve        | Manifold sub-base  |
| Housing           | Wrought aluminium alloy | Die-cast aluminium |
| Seals             | NBR, HNBR               | –                  |
| Screws            | Galvanised steel        | –                  |
| Note on materials | RoHs-compliant          |                    |

### Connection and indicator components

Soft-start valve VABF-S6-1-P5A4-... with manifold sub-base



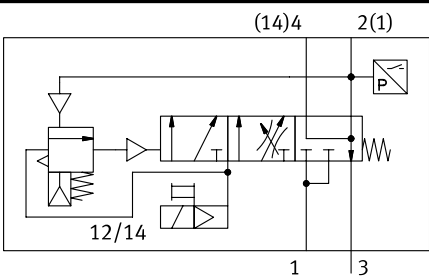
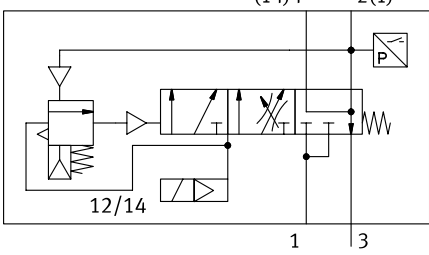
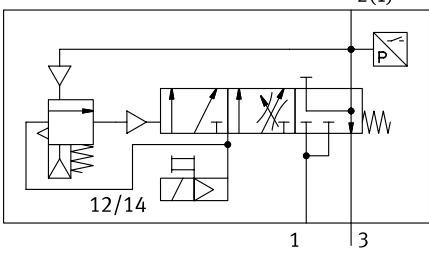
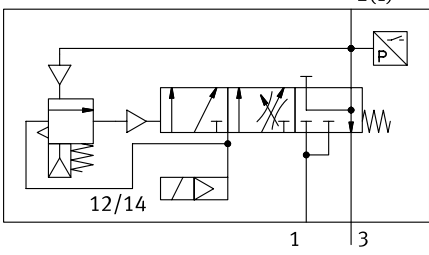
- |                                |                                   |
|--------------------------------|-----------------------------------|
| [1] Basic valve housing        | [5] Exhaust air port for duct 1   |
| [2] Intermediate plate         | [6] Pressure sensing for duct 1   |
| [3] Pilot control              | [7] Compressed air supply port    |
| [4] Manual override (optional) | [8] Exhaust air port for duct 3/5 |



#### Note

Detailed information on the manual override can be found in the user documentation.

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

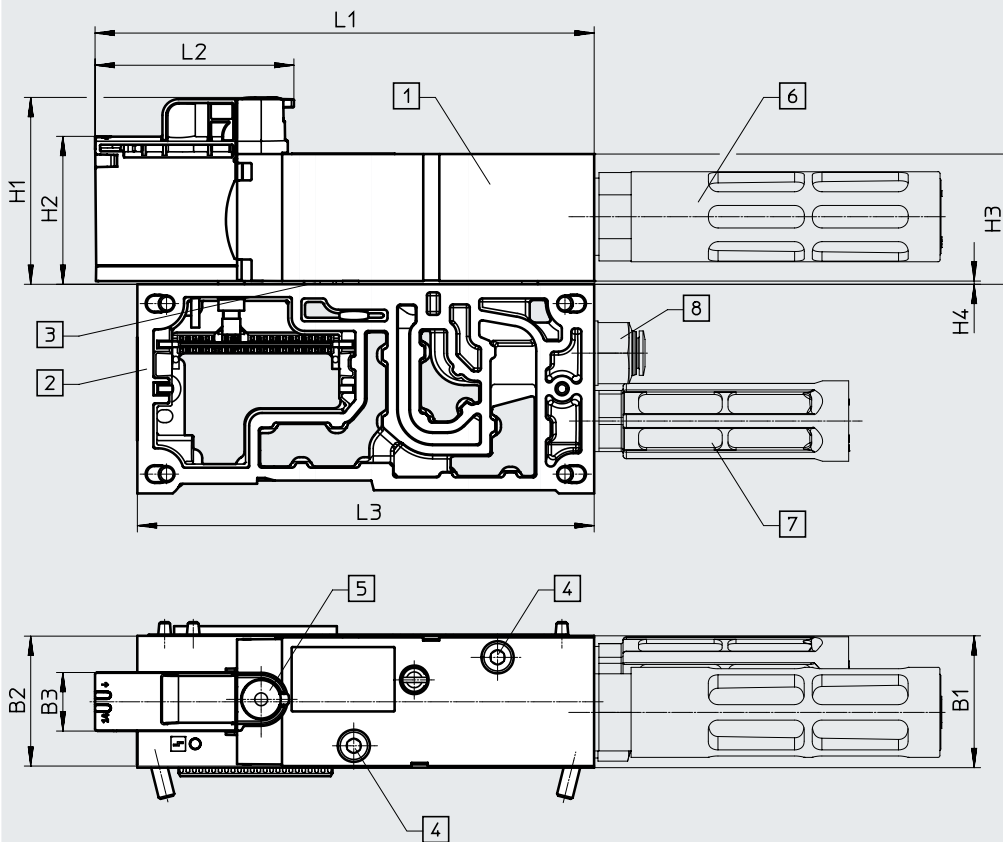
| Valve function |                                                                                     |                                                                                                                                                     |
|----------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Terminal code  | Circuit symbol                                                                      | Description                                                                                                                                         |
| PM             |    | <ul style="list-style-type: none"><li>• Soft-start valve with pilot air supply</li><li>• Soft-start valve with manual override (MO)</li></ul>       |
| PM             |    | <ul style="list-style-type: none"><li>• Soft-start valve with pilot air supply</li><li>• Soft-start valve without manual override (MO)</li></ul>    |
| PN             |   | <ul style="list-style-type: none"><li>• Soft-start valve without pilot air supply</li><li>• Soft-start valve with manual override (MO)</li></ul>    |
| PN             |  | <ul style="list-style-type: none"><li>• Soft-start valve without pilot air supply</li><li>• Soft-start valve without manual override (MO)</li></ul> |

# Datasheet – Soft-start valve for VTSA-F-CB

## Dimensions

[Download CAD data → www.festo.com](http://www.festo.com)

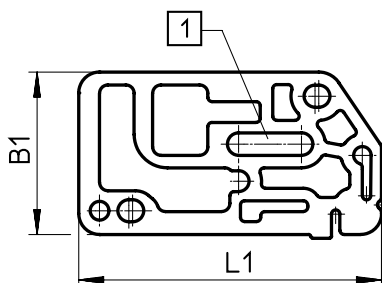
Soft-start valve with manifold sub-base



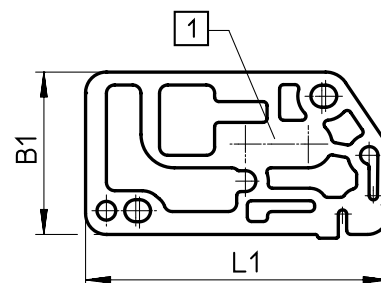
- |                                                  |                                                             |                                                                       |                                    |
|--------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------|
| [1] Soft-start valve                             | [4] Socket head screw M5x45 for manifold sub-base (captive) | [5] Manual override, self-resetting (code: YE) or concealed (code: S) | [6] Silencer, connection size G1/2 |
| [2] Manifold sub-base, pneumatic connection G3/8 |                                                             |                                                                       | [7] Silencer, connection size G3/8 |
| [3] Seal                                         |                                                             |                                                                       | [8] Fitting connection size G3/8   |

| Type                         | B1 | B2   | B3   | H1   | H2 | H3   | H4 | L1    | L2   | L3  |
|------------------------------|----|------|------|------|----|------|----|-------|------|-----|
| VABF-S6-1-P5A4...-G12-1T5-PA | 41 | 40.4 | 18.2 | 58.1 | 46 | 40.5 | 1  | 155.1 | 60.3 | 142 |

Seal 1) between soft-start valve and manifold sub-base



[1] With elongated hole, internal pilot air supply

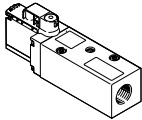


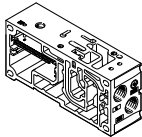
[1] Without elongated hole, external pilot air supply

| Type                | B1 | L1   |
|---------------------|----|------|
| VABF-S6-1-P5A4Z ... | 39 | 72.7 |

1) Seals are included with the soft-start valve

## Accessories – Soft-start valve for VTSA-F-CB

| Ordering data                                                                    |      |                                             |                                      |           |               |          |                |                                      |
|----------------------------------------------------------------------------------|------|---------------------------------------------|--------------------------------------|-----------|---------------|----------|----------------|--------------------------------------|
|                                                                                  | Code | Description                                 | Operating pressure                   |           | Weight<br>[g] | Part no. | Type           |                                      |
|                                                                                  |      |                                             | [MPa]                                | [bar]     |               |          |                |                                      |
| Soft-start valve, without manifold sub-base                                      |      |                                             |                                      |           |               |          |                |                                      |
|  | PM   | Pilot pressure build-up from duct 1 (S1)    | Manual override (MO), self-resetting | 0.3 ... 1 | 3 ... 10      | 466      | <b>8067407</b> | <b>VABF-S6-1-P5A4S1YE-G12-1T5-PA</b> |
|                                                                                  |      |                                             | Manual override (MO), concealed      | 0.3 ... 1 | 3 ... 10      | 466      | <b>8067411</b> | <b>VABF-S6-1-P5A4S1S-G12-1T5-PA</b>  |
|                                                                                  | PN   | No pilot pressure build-up from duct 1 (S2) | Manual override (MO), self-resetting | 0.2 ... 1 | 2 ... 10      | 466      | <b>8067405</b> | <b>VABF-S6-1-P5A4S2YE-G12-1T5-PA</b> |
|                                                                                  |      |                                             | Manual override (MO), concealed      | 0.2 ... 1 | 2 ... 10      | 466      | <b>8067409</b> | <b>VABF-S6-1-P5A4S2S-G12-1T5-PA</b>  |

| Ordering data                                                                    |      |                                                                                                                                                                                                                                                         |               |                |                              |  |
|----------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------|------------------------------|--|
|                                                                                  | Code | Description                                                                                                                                                                                                                                             | Weight<br>[g] | Part no.       | Type                         |  |
| Manifold sub-base for soft-start valve                                           |      |                                                                                                                                                                                                                                                         |               |                |                              |  |
|  | PV   | <ul style="list-style-type: none"><li>• With CBUS loop-through</li><li>• Sensor evaluation: internal</li><li>• Duct 3/5 combined</li><li>• Only in combination with pneumatic interface with voltage zone</li><li>• Pneumatic connection G3/8</li></ul> | 421           | <b>8068609</b> | <b>VABV-S6-1Q-G38-CB1-T5</b> |  |

Datasheet – Pneumatic interface for VTSA-F-CB

- 4 - Voltage  
24 V DC



| Description                                                                                                                                                                                                                          |                                                                                                                                              |                                                                                                                                                                                                          |                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Up to three safe voltage zones can be formed in the pneumatic part of the valve terminal using the pneumatic interface.                                                                                                              | There is also a variant available which uses a safe voltage zone as an external output.                                                      | The pneumatic interfaces (zone extensions) can be placed centrally in the pneumatic section of a valve terminal VTSA-F-CB and they extend the valve terminal by up to 3 additional (safe) voltage zones. |                                                                                                        |
| Function                                                                                                                                                                                                                             |                                                                                                                                              |                                                                                                                                                                                                          |                                                                                                        |
| Two different equipment levels: <ul style="list-style-type: none"><li>• Creation of up to three safe internal voltage zones</li><li>• Creation of up to two safe internal voltage zones and one safe external voltage zone</li></ul> | <ul style="list-style-type: none"><li>• Integrated driver levels for addressing up to 24 valves within the first safe voltage zone</li></ul> | <ul style="list-style-type: none"><li>• Integrated diagnostics on short circuit and overload of the controlled valve coils</li></ul>                                                                     | <ul style="list-style-type: none"><li>• Integrated diagnostics for load voltage undervoltage</li></ul> |



## Datasheet – Pneumatic interface for VTSA-F-CB

|                                                            |        |                                                         |
|------------------------------------------------------------|--------|---------------------------------------------------------|
| <b>General technical data</b>                              |        |                                                         |
| Type                                                       |        | VABA-S6-1-X2-3V-CB-AL                                   |
| Max. number of valve positions                             |        | 12 with double solenoid valves                          |
|                                                            |        | 24 with single solenoid valves                          |
| Product weight                                             | [g]    | 1388                                                    |
| <b>Electrical data</b>                                     |        |                                                         |
| Type                                                       |        | VABA-S6-1-X2-3V-CB-AL                                   |
| Electrical connection                                      |        | 3x M12x1, A-coded                                       |
|                                                            |        | 5-pin                                                   |
|                                                            |        | Plug                                                    |
|                                                            |        | Via CPX                                                 |
| Operating voltage range                                    | [V DC] | 21.6 ... 26.4                                           |
| Intrinsic current consumption at nominal operating voltage | [mA]   | Typically 11 (operating voltage supply for electronics) |
|                                                            |        | Typically 45 (load voltage supply for valves)           |
| Max. power supply per channel                              | [A]    | 0.2                                                     |
| Max. total current per module                              | [A]    | 6                                                       |
| Nominal operating voltage                                  | [V DC] | 24                                                      |
| Degree of protection                                       |        | IP65                                                    |
|                                                            |        | NEMA 4                                                  |
| <b>Operating and environmental conditions</b>              |        |                                                         |
| Type                                                       |        | VABA-S6-1-X2-3V-CB-AL                                   |
| Ambient temperature                                        | [°C]   | –5 ... 50                                               |
| <b>Materials</b>                                           |        |                                                         |
| Type                                                       |        | VABA-S6-1-X2-3V-CB-AL                                   |
| Note on materials                                          |        | RoHS-compliant                                          |
| Information on materials: Housing                          |        | Die-cast aluminium                                      |
| Information on materials: Cover                            |        | PA                                                      |
| Corrosion resistance class CRC                             |        | 0 <sup>1)</sup>                                         |
| LABS (PWIS) conformity                                     |        | VDMA24364-B1/B2-L                                       |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Datasheet – Pneumatic interface for VTSA-F-CB

| General technical data         |                                                                  |                                                                  |
|--------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|
| Type                           | VABA-S6-1-X2-F1-CB-AL                                            | VABA-S6-1-X2-F1-CB2-AL                                           |
| Max. number of valve positions | 12 with double solenoid valves<br>24 with single solenoid valves | 12 with double solenoid valves<br>24 with single solenoid valves |
| Product weight [g]             | 1542                                                             | 1576                                                             |

| Electrical data                                                 |                                                                       |                                                                       |
|-----------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|
| Type                                                            | VABA-S6-1-X2-F1-CB-AL                                                 | VABA-S6-1-X2-F1-CB2-AL                                                |
| I/O output, function                                            | –                                                                     | Power supply, valve                                                   |
| I/O output, connection type                                     | –                                                                     | Plug                                                                  |
| I/O output, connection technology                               | –                                                                     | 7/8" round plug connector                                             |
| I/O output, number of pins                                      | –                                                                     | 5                                                                     |
| Electrical connection                                           | Via CPX                                                               | Via CPX                                                               |
| Operating voltage range [V DC]                                  | 21.6 ... 26.4                                                         | 21.6 ... 26.4                                                         |
| Intrinsic current consumption at nominal operating voltage [mA] | Typically 15 El. w/o CPX-FVDA-P2<br>Typically 25 El. with CPX-FVDA-P2 | Typically 15 El. w/o CPX-FVDA-P2<br>Typically 25 El. with CPX-FVDA-P2 |
| Max. power supply per channel [A]                               | 0.2                                                                   | 0.2                                                                   |
| Max. total current per module [A]                               | 2                                                                     | 2                                                                     |
| Nominal operating voltage [V DC]                                | 24                                                                    | 24                                                                    |
| Degree of protection                                            | IP65                                                                  | IP65                                                                  |

| Operating and environmental conditions |                                                                                  |                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Type                                   | VABA-S6-1-X2-F1-CB-AL                                                            | VABA-S6-1-X2-F1-CB2-AL                                                           |
| Storage temperature [°C]               | –20 ... 60                                                                       | –                                                                                |
| Ambient temperature [°C]               | –                                                                                | –5 ... 50                                                                        |
| Vibration resistant                    | Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6 | Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6 |
| Shock resistance                       | Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27                | Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27                |

| Materials                          |                                   |                        |
|------------------------------------|-----------------------------------|------------------------|
| Type                               | VABA-S6-1-X2-F1-CB-AL             | VABA-S6-1-X2-F1-CB2-AL |
| Note on materials                  | RoHS-compliant                    |                        |
| Information on materials: Sub-base | Die-cast aluminium                |                        |
| Information on materials: Cover    | PA                                |                        |
| Information on materials: Screws   | Steel                             |                        |
| Information on materials: Seals    | NBR                               |                        |
| Corrosion resistance class CRC     | 0 <sup>1)</sup>                   |                        |
| CE marking                         | To EU EMC Directive <sup>2)</sup> |                        |
|                                    | To EU RoHS Directive              |                        |

1) Corrosion resistance class CRC 0 to Festo standard FN 940070

No corrosion stress. Applies to small, visually unimportant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

2) For information about the area of use, see the declaration of conformity at: [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

## Datasheet – Pneumatic interface for VTSA-F-CB

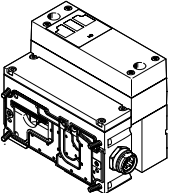
| General technical data                                     |                                                                                  |                                   |                                                                                  |
|------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------|
| Type                                                       | VABA-S6-1-X2-F2-CB-AL                                                            |                                   | VABA-S6-1-X2-F2-CB2-AL                                                           |
| Max. number of valve positions                             | 12 with double solenoid valves                                                   |                                   | 12 with double solenoid valves                                                   |
|                                                            | 24 with single solenoid valves                                                   |                                   | 24 with single solenoid valves                                                   |
| Product weight                                             | [g]                                                                              | 1562                              | 1596                                                                             |
| Electrical data                                            |                                                                                  |                                   |                                                                                  |
| Type                                                       | VABA-S6-1-X2-F2-CB-AL                                                            |                                   | VABA-S6-1-X2-F2-CB2-AL                                                           |
| I/O output, function                                       | Safe digital output                                                              |                                   |                                                                                  |
| I/O output, connection type                                | Socket                                                                           |                                   |                                                                                  |
| I/O output, connection technology                          | M12x1, A-coded to EN 61076-2-101                                                 |                                   |                                                                                  |
| I/O output, number of pins                                 | 5                                                                                |                                   |                                                                                  |
| I/O valve, function                                        | –                                                                                |                                   | Power supply, valve                                                              |
| I/O valve, connection type                                 | –                                                                                |                                   | Plug                                                                             |
| I/O valve, connection technology                           | –                                                                                |                                   | 7/8" round plug connector                                                        |
| I/O valve, number of pins                                  | –                                                                                |                                   | 5                                                                                |
| Electrical connection                                      | Via CPX                                                                          |                                   |                                                                                  |
| Operating voltage range                                    | [V DC]                                                                           | 21.6 ... 26.4                     |                                                                                  |
| Intrinsic current consumption at nominal operating voltage | [mA]                                                                             | Typically 15 El. w/o CPX-FVDA-P2  |                                                                                  |
|                                                            |                                                                                  | Typically 25 El. with CPX-FVDA-P2 |                                                                                  |
| Max. power supply per channel                              | [A]                                                                              | 0.2                               |                                                                                  |
| Max. total current per module                              | [A]                                                                              | 2                                 |                                                                                  |
| Nominal operating voltage                                  | [V DC]                                                                           | 24                                |                                                                                  |
| Degree of protection                                       | IP65                                                                             |                                   |                                                                                  |
| Operating and environmental conditions                     |                                                                                  |                                   |                                                                                  |
| Type                                                       | VABA-S6-1-X2-F2-CB-AL                                                            |                                   | VABA-S6-1-X2-F2-CB2-AL                                                           |
| Storage temperature                                        | [°C]                                                                             | –                                 |                                                                                  |
| Ambient temperature                                        | [°C]                                                                             | –5 ... 50                         |                                                                                  |
| Vibration resistant                                        | Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6 |                                   | Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6 |
| Shock resistance                                           | Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27                |                                   | Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27                |
| Materials                                                  |                                                                                  |                                   |                                                                                  |
| Type                                                       | VABA-S6-1-X2-F2-CB-AL                                                            |                                   | VABA-S6-1-X2-F2-CB2-AL                                                           |
| Note on materials                                          | RoHS-compliant                                                                   |                                   |                                                                                  |
| Information on materials: Sub-base                         | Die-cast aluminium                                                               |                                   |                                                                                  |
| Information on materials: Cover                            | PA                                                                               |                                   |                                                                                  |
| Information on materials: Screws                           | Steel                                                                            |                                   |                                                                                  |
| Information on materials: Seals                            | NBR                                                                              |                                   |                                                                                  |
| Corrosion resistance class CRC                             | 0 <sup>1)</sup>                                                                  |                                   |                                                                                  |
| CE marking                                                 | To EU EMC Directive <sup>2)</sup>                                                |                                   |                                                                                  |
|                                                            | To EU RoHS Directive                                                             |                                   |                                                                                  |

1) Corrosion resistance class CRC 0 to Festo standard FN 940070

No corrosion stress. Applies to small, visually unimportant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

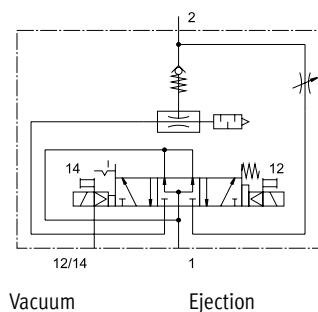
2) For information about the area of use, see the declaration of conformity at: [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

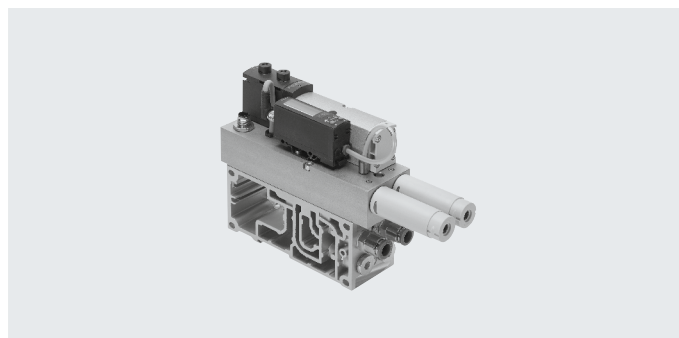
| Ordering data                                                                      |      |                                                                                                                     |          |                        |
|------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------|----------|------------------------|
|                                                                                    | Code | Description                                                                                                         | Part no. | Type                   |
|  | XB   | Pneumatic interface for extending by 3 external voltage zones                                                       | 8152438  | VABA-S6-1-X2-3V-CB-AL  |
|                                                                                    | XC   | Pneumatic interface for extending by 3 safe internal zones (PROFIsafe)                                              | 8152437  | VABA-S6-1-X2-F1-CB-AL  |
|                                                                                    | XD   | Pneumatic interface for extending by 2 safe internal zones + 1 safe output (PROFIsafe)                              | 8152436  | VABA-S6-1-X2-F2-CB-AL  |
|                                                                                    | PC   | Pneumatic interface with additional power supply for extending by 3 safe internal zones (PROFIsafe)                 | 8152435  | VABA-S6-1-X2-F1-CB2-AL |
|                                                                                    | PD   | Pneumatic interface with additional power supply for extending by 2 safe internal zones + 1 safe output (PROFIsafe) | 8152434  | VABA-S6-1-X2-F2-CB2-AL |
|                                                                                    |      |                                                                                                                     |          |                        |

## Datasheet – Vacuum block for VTSA/VTSA-F

### Function



-  - Vacuum block width  
53 mm
-  - Voltage  
24 V DC
-  - Operating pressure  
0.4 ... 0.8 MPa  
4 ... 8 bar



### Description

The vacuum block can be integrated into the existing valve terminal VTSA/VTSA-F. To do this, the vacuum block is screwed to a manifold sub-base for 2 valve positions, width 26 mm.

The vacuum block is used in conjunction with a suction gripper to pick up, hold and place components. The suction gripper uses vacuum for picking up and holding.

Once the component has been positioned, it is released by an ejector pulse. This ejector pulse is created by pressurising the vacuum system so that the vacuum briefly collapses. The ejector pulse can be set.

#### Note

The vacuum block can be operated in combination with the vertical stacking for pilot air switch-off on the valve terminal VTSA/VTSA-F.

### Function

The vacuum block VABF-S4-1-V2B1... is used to generate a vacuum. The generated vacuum and a suction gripper produce a force which is used to grip and transport a workpiece. The supply of compressed air for vacuum generation is controlled by a solenoid valve. The vacuum is generated by actuating solenoid coil 12.

The setpoint value set at duct B for the generated vacuum is monitored via a vacuum sensor (with switching output). Vacuum generation reverts to a self-latching phase after reaching the setpoint value. The vacuum block controls the vacuum generation process independently within the range of the set switching points (air saving function).

The integrated solenoid valve is used to generate an ejector pulse by activating coil 14. The workpiece is thus safely released from the suction cup with connector and the vacuum is rapidly reduced. The length of the ejector pulse can be influenced by the duration of the electrical pulse. The strength of the ejector pulse is influenced by the adjustable flow control.

#### Note

If the electrical or pneumatic supply fails while the valve is in the "generate vacuum" or "air saving" state, the valve moves to the "generate vacuum" position.

### Operating mode of the air saving function (LS)

If the desired threshold value (1) (turn off suction) is reached for the vacuum, vacuum generation is automatically switched off.

Check valves prevent the reduction of the vacuum. However, leakages (e.g. due to rough workpiece surfaces) will slowly reduce the vacuum.

If the vacuum drops below the set threshold value (2) (turn on suction), vacuum generation is switched on automatically.

Vacuum is generated until the set threshold value (1) (turn off suction) is reached again.

#### Threshold value to turn off suction (air saving function) (1):

The vacuum generator is switched off simultaneously when the output Out A is set.

The preset value is -700 mbar.

#### Threshold value to turn on suction (2):

The threshold value (2) should always be above the switching point of duct B (3) "vacuum sensing".

The gap between (2) and (3) should be at least 50 mbar.

#### Note

Setting options and further instructions are described in the operating instructions and/or documentation VABF-S4-1-V2B1... on the Support Portal from Festo.

## Datasheet – Vacuum block for VTSA/VTSA-F

| General technical data                            |       |                                                                                                                                                                                                                                                                 |
|---------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Valve function                                    |       | 5/3-way, pressurised                                                                                                                                                                                                                                            |
| Design                                            |       | Non-modular                                                                                                                                                                                                                                                     |
| Mounting position                                 |       | Any                                                                                                                                                                                                                                                             |
| Nominal width of Laval nozzle (vacuum generation) | [mm]  | 2.0                                                                                                                                                                                                                                                             |
| Ejector characteristics                           |       | High vacuum, standard                                                                                                                                                                                                                                           |
| Integrated functions                              |       | <ul style="list-style-type: none"> <li>• Ejector pulse valve, electric</li> <li>• Flow restrictor</li> <li>• On/off valve, electric</li> <li>• Air-saving circuit, electric</li> <li>• Check valve</li> <li>• Open silencer</li> <li>• Vacuum switch</li> </ul> |
| Silencer design                                   |       | Open                                                                                                                                                                                                                                                            |
| Measured variable                                 |       | Relative pressure                                                                                                                                                                                                                                               |
| Measuring principle                               |       | Piezoresistive                                                                                                                                                                                                                                                  |
| Switching function                                |       | Threshold-comparator                                                                                                                                                                                                                                            |
| Short circuit current rating                      |       | Yes                                                                                                                                                                                                                                                             |
| Reverse polarity protection                       |       | For all electrical connections                                                                                                                                                                                                                                  |
| Inductive protective circuit                      |       | Adapted to MZ, MY, ME coils                                                                                                                                                                                                                                     |
| Switching element function                        |       | N/O                                                                                                                                                                                                                                                             |
| Threshold-value setting range                     | [bar] | –0.999 ... 0 (recommended operating range: –0.95 ... –0.05)                                                                                                                                                                                                     |
|                                                   | [MPa] | –0.0999 ... 0 (recommended operating range: –0.095 ... –0.005)                                                                                                                                                                                                  |
| Hysteresis setting range                          | [bar] | –0.9 ... 0                                                                                                                                                                                                                                                      |
|                                                   | [MPa] | –0.09 ... 0                                                                                                                                                                                                                                                     |
| Power supply, vacuum block                        |       | Via own plug M12                                                                                                                                                                                                                                                |
| Pneumatic supply for vacuum block                 |       | Via valve terminal VTSA/VTSA-F                                                                                                                                                                                                                                  |
| Ejector pulse                                     |       | Strength adjustable via flow control screw                                                                                                                                                                                                                      |
| Actuation type                                    |       |                                                                                                                                                                                                                                                                 |
| • Solenoid valve                                  |       | Electrically actuated                                                                                                                                                                                                                                           |
| • Vacuum block                                    |       | Vacuum generation via Venturi nozzle                                                                                                                                                                                                                            |
| Type of actuation for solenoid valve              |       | Piloted                                                                                                                                                                                                                                                         |
| Flow direction                                    |       | Not reversible                                                                                                                                                                                                                                                  |
| Exhaust air function                              |       | Can be throttled (duct 3 and 5)                                                                                                                                                                                                                                 |
| Type of mounting                                  |       | Via through-hole, screwed onto manifold sub-base, width 26 mm                                                                                                                                                                                                   |
| Manual override                                   |       | Detenting, non-detenting, concealed                                                                                                                                                                                                                             |
| • For vacuum generation                           |       | Yes, solenoid coil 12 (holding)                                                                                                                                                                                                                                 |
| • For ejector pulse                               |       | Yes, solenoid coil 14 (spring return), (only effective when power supply is switched off)                                                                                                                                                                       |
| Signal status indication, valve                   |       | LED                                                                                                                                                                                                                                                             |
| Pneumatic ports                                   |       |                                                                                                                                                                                                                                                                 |
| Supply                                            | 1, 3  | Via the manifold sub-base of the valve terminal, width 26 mm                                                                                                                                                                                                    |
| Exhausting                                        | 3/5   | Via the modular silencer for vacuum block                                                                                                                                                                                                                       |
| Working port (vacuum port)                        | 2     | Via the manifold sub-base of the valve terminal (QS push-in fitting – vacuum), G1/4                                                                                                                                                                             |
| Connection                                        | 4     | Via the manifold sub-base of the valve terminal (sealed with blanking plug type B-1/4)                                                                                                                                                                          |

## Datasheet – Vacuum block for VTSA/VTSA-F

| Technical data for pressure switch of vacuum block (delivery status) |        |                            |
|----------------------------------------------------------------------|--------|----------------------------|
| Duct A: air saving function                                          |        |                            |
| Switching behaviour                                                  |        | Threshold-comparator       |
| Switching point                                                      | [mbar] | –700                       |
|                                                                      | [MPa]  | –0.07                      |
| Hysteresis                                                           | [mbar] | 200                        |
|                                                                      | [MPa]  | 0.02                       |
| Switching characteristic                                             |        | NO (normally open contact) |
| Duct B: vacuum sensing                                               |        |                            |
| Switching behaviour                                                  |        | Threshold-comparator       |
| Switching point                                                      | [mbar] | –400                       |
|                                                                      | [MPa]  | –0.04                      |
| Hysteresis                                                           | [mbar] | 5                          |
|                                                                      | [MPa]  | 0.0005                     |
| Switching characteristic                                             |        | NO (normally open contact) |



### Note

Setting options for duct A and duct B and further instructions can be found on the Support Portal from Festo in the operating instructions and/or documentation VABF-S4-1-V2B1...

| Electrical data                                   |        |                                                                                                 |
|---------------------------------------------------|--------|-------------------------------------------------------------------------------------------------|
| Electrical connection                             |        | 4-pin plug to ISO 15407-2 (vacuum block supplied with power separately, not via valve terminal) |
| Nominal operating voltage                         | [V DC] | 24                                                                                              |
| Operating voltage range                           | [V DC] | 21.6 ... 26.4                                                                                   |
| Duty cycle                                        | [%]    | 100                                                                                             |
| Maximum output current                            | [mA]   | 50                                                                                              |
| Voltage drop                                      | [V]    | ≤1.5                                                                                            |
| No-load current                                   | [mA]   | 50 ... 150 (dependent on the switching status of the solenoid coils)                            |
| Characteristic coil values                        | [V DC] | 24                                                                                              |
| Power consumption<br>(Characteristic coil values) | [W]    | 1.3                                                                                             |
| Overload protection                               |        | Available                                                                                       |
| Accuracy (full scale)                             | [% FS] | ±3                                                                                              |
| Degree of protection to EN 60529                  |        | IP65, NEMA 4 (for all types of signal transmission when mounted)                                |

| Electrical connection <sup>1)</sup>                                                 |                                     |      |                          |                             |
|-------------------------------------------------------------------------------------|-------------------------------------|------|--------------------------|-----------------------------|
|  | Plug M12x1, 4-pin to EN 61076-2-101 | Pin1 | – + 24 V DC (brown (BN)) | Supply voltage              |
|                                                                                     |                                     | Pin2 | – Out B (white (WH))     | Switching output B (duct B) |
|                                                                                     |                                     | Pin3 | – 0 V DC (blue (BU))     | 0 V DC                      |
|                                                                                     |                                     | Pin4 | – Out A (black (BK))     | Switching output A (duct A) |

1) Max. permissible signal cable length: 5 m

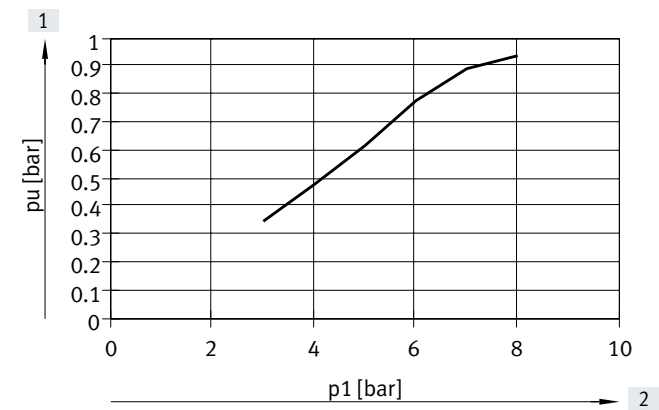
Datasheet – Vacuum block for VTSA/VTSA-F

| Operating and environmental conditions          |         |                                                          |
|-------------------------------------------------|---------|----------------------------------------------------------|
| Operating medium                                |         | Compressed air to ISO 8573-1:2010 [7:4:4]                |
| Notes on the operating medium                   |         | Unlubricated operation                                   |
| Operating pressure                              | [bar]   | 4 ... 8                                                  |
|                                                 | [MPa]   | 0.4 ... 0.8                                              |
| Nominal operating pressure                      | [bar]   | 6                                                        |
|                                                 | [MPa]   | 0.6                                                      |
| Pressure measuring range                        | [bar]   | –1 ... 0                                                 |
|                                                 | [MPa]   | –0.1 ... 0                                               |
| Negative pressure                               | [bar]   | Up to approx. 0.9 (as a function of operating pressure)  |
|                                                 | [MPa]   | Up to approx. 0.09 (as a function of operating pressure) |
| Ambient temperature                             | [°C]    | 0 ... 50                                                 |
| Temperature of medium                           | [°C]    | 0 ... 50                                                 |
| Noise level LpA (at nominal operating pressure) | [dB(A)] | 78                                                       |

| Materials                            |                             |
|--------------------------------------|-----------------------------|
| Housing, jet nozzle                  | Wrought aluminium alloy     |
| Screws                               | Galvanised steel            |
| Seals                                | NBR                         |
| Plug housing                         | Nickel-plated die-cast zinc |
| Plug contacts                        | Gold-plated brass           |
| Inspection window on pressure sensor | PA                          |
| Pressure sensor keypad               | TPE-U                       |
| Note on materials                    | RoHs-compliant              |
| LABS (PWIS) conformity               | VDMA24364-Zone III          |

Pressure ratios, air consumption and volumetric flow rate

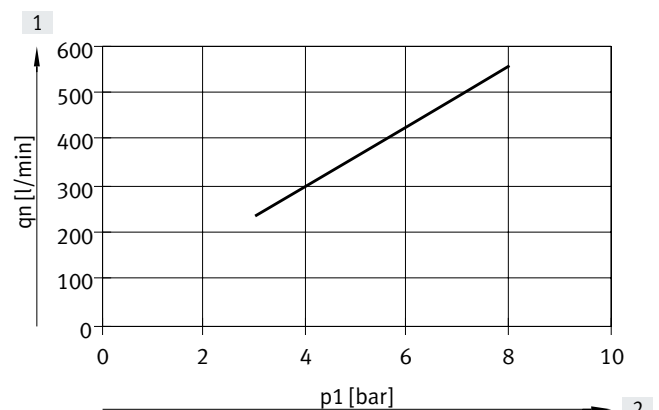
Vacuum as a function of operating pressure



[1] Vacuum

[2] Operating pressure

Air consumption as a function of operating pressure

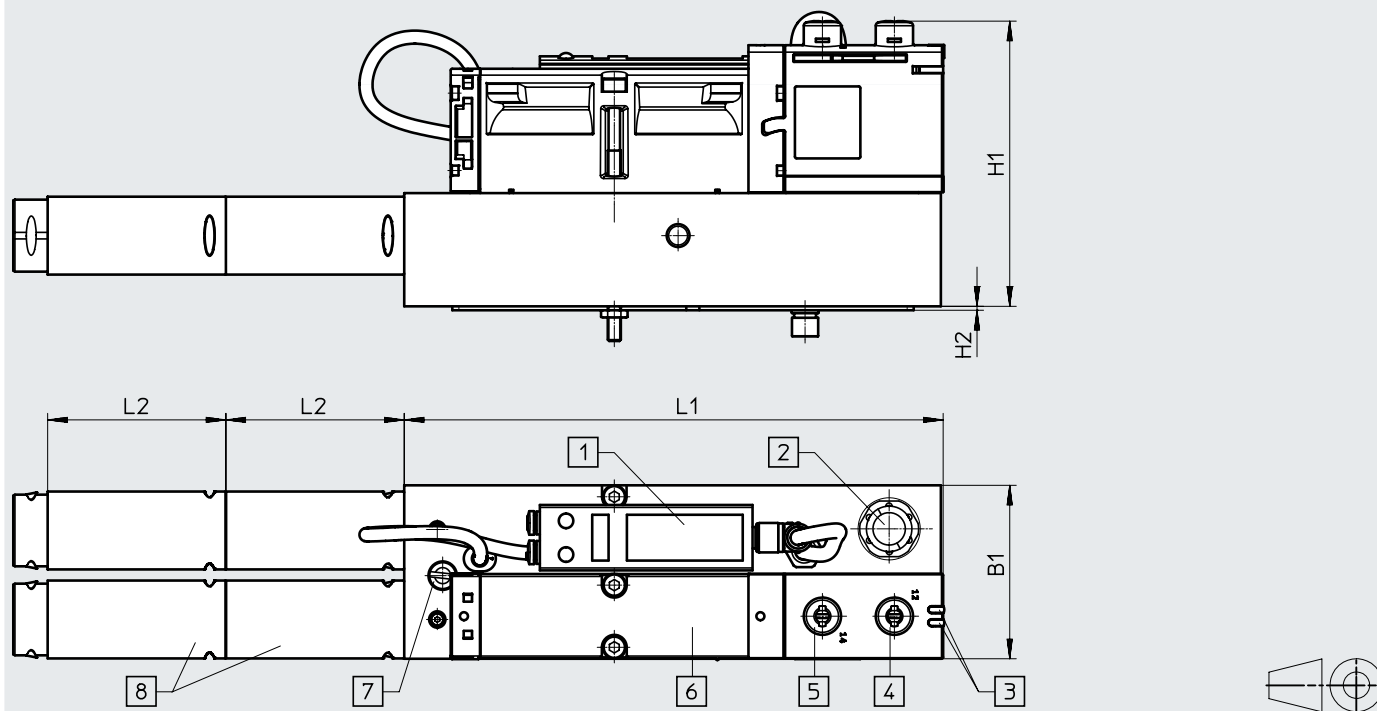


[1] Air consumption

[2] Operating pressure

## Datasheet – Vacuum block for VTSA/VTSA-F

## Dimensions

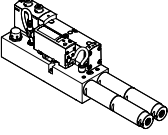
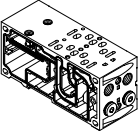
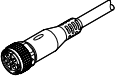
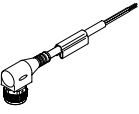
Download CAD data → [www.festo.com](http://www.festo.com)

- |                                                                    |                                                  |                                                                                              |                                                                        |
|--------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| [1] Pressure sensor with LCD display and operating buttons         | [3] LED signal status indication, solenoid valve | [5] Manual override for ejector pulse (only effective when the power supply is switched off) | [6] Solenoid valve                                                     |
| [2] Plug for electrical connection and vacuum sensing (M12, 4-pin) | [4] Manual override for vacuum generation        |                                                                                              | [7] Flow control screw for adjusting the strength of the ejector pulse |
|                                                                    |                                                  |                                                                                              | [8] Modular silencer                                                   |

| Type                   | B1 | H1   | H2  | L1    | L2   |
|------------------------|----|------|-----|-------|------|
| VABF-S4-1-V2B1-C-VH-20 | 53 | 87.1 | 1.2 | 164.7 | 54.2 |



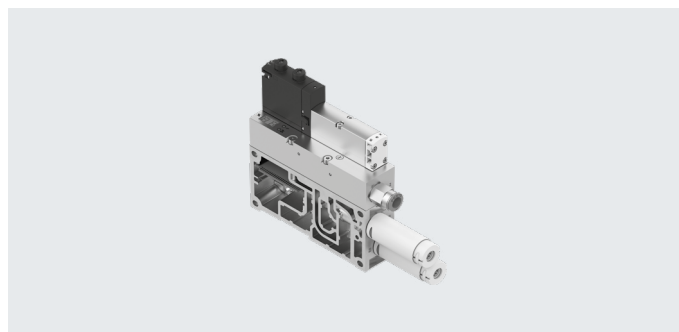
## Datasheet – Vacuum block for VTSA/VTSA-F

| Ordering data                                                                                                                                                                                                                                                          |                  |                                                                                                                  |        |                 |                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------|--------|-----------------|-------------------------------|
|                                                                                                                                                                                                                                                                        | Code             | Description                                                                                                      |        | Part no.        | Type                          |
| Vacuum block                                                                                                                                                                                                                                                           |                  |                                                                                                                  |        |                 |                               |
|                                                                                                                                                                                        | VB               | Vacuum block for valve terminal VTSA/VTSA-F with air-saving function and adjustable ejector pulse                | 1120 g | <b>571425</b>   | <b>VABF-S4-1-V2B1-C-VH-20</b> |
| Manifold sub-base                                                                                                                                                                                                                                                      |                  |                                                                                                                  |        |                 |                               |
|                                                                                                                                                                                        | L <sup>2)</sup>  | For vacuum block<br>2 valve positions, 4 addresses,<br>with 2 blanking plugs in port 4                           | 26 mm  | – <sup>1)</sup> | <b>VABV-S4-...</b>            |
|                                                                                                                                                                                                                                                                        | LK <sup>2)</sup> | For vacuum block<br>2 valve positions, 4 addresses,<br>with 2 blanking plugs in port 4,<br>with small QS fitting | 26 mm  | – <sup>1)</sup> | <b>VABV-S4-...</b>            |
| Connecting cable                                                                                                                                                                                                                                                       |                  |                                                                                                                  |        |                 |                               |
|                                                                                                                                                                                        | –                | <ul style="list-style-type: none"> <li>• Straight socket, M12x1, 5-pin</li> <li>• Open end, 4-core</li> </ul>    | 2.5 m  | <b>8078239</b>  | <b>NEBA-M12G5-U-2.5-N-LE4</b> |
|                                                                                                                                                                                        | –                | <ul style="list-style-type: none"> <li>• Straight socket, M12x1, 5-pin</li> <li>• Open end, 4-core</li> </ul>    | 5 m    | <b>8078240</b>  | <b>NEBA-M12G5-U-5-N-LE4</b>   |
|                                                                                                                                                                                      | GC               | <ul style="list-style-type: none"> <li>• Angled socket, M12x1, 5-pin</li> <li>• Open end, 4-core</li> </ul>      | 5 m    | <b>8078249</b>  | <b>NEBA-M12W5-U-5-N-LE4</b>   |
| Pneumatic connection accessories                                                                                                                                                                                                                                       |                  |                                                                                                                  |        |                 |                               |
| A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter Accessories → page: 245 or on the website via the individual search terms:<br><b>Internet</b> → connection technology, silencer, blanking plug |                  |                                                                                                                  |        |                 |                               |

- 1) The manifold sub-base for use with the vacuum block can only be ordered via the valve terminal configurator and therefore doesn't have a separate part number.  
2) Code letter within the order code for a valve terminal configuration

## Datasheet – Vacuum generator for VTSA-F-CB

-  - Vacuum generator width  
35 mm
-  - Voltage  
24 V DC
-  - Operating pressure  
4 ... 8 bar  
0.4 ... 0.8 MPa



### Description

The vacuum generator VABF is designed for generating a vacuum. The vacuum generator can be integrated into the existing valve terminal VTSA-F-CB. The valve terminal supplies both compressed air and power.

A solenoid valve (solenoid coil 12, vacuum generation) controls the compressed air supply. Vacuum is generated using the Venturi principle when the vacuum generator is pressurised with compressed air. The vacuum generator is used in conjunction with a suction gripper to pick up, hold and place components.

The suction gripper uses vacuum for picking up and holding. Once the component has been positioned, it is released by an ejector pulse. The ejector pulse can be set.

The ejector pulse is generated using the solenoid valve (solenoid coil 14, ejector pulse). The vacuum collapses if the vacuum system is briefly pressurised. The power ejector pulse variant (-AP) of the vacuum generator is a more energy- and air-saving option.

### Extended functions with VTSA-F-CB

The VTSA-F-CB with serial communication provides the vacuum generator with extended functions:

- Opening and saving of up to four records (on a local computer)
- Teach-in functionality: recording homing runs, from gripping and holding the workpiece to setting it down. Configuration of switching points and monitoring.
- Preventive maintenance: measurement of all vacuum times, comparison with the homing run, warning message if a definable level of deviation is reached
- Switching air-saving function on/off
- Changing the vacuum parameters per record
- Locking the ejector pulse:
  - When the Uval of the adjacent voltage zone is switched off (voltage zone with safe shut-off within the valve terminal)
  - When there is a fault with the valve load voltage (e.g. undervoltage)
- Extended diagnostic functions via CBUS and display of status LED (yellow) or error LED (red)



#### Note

In the event of an "emergency off" of the valve terminal (shutdown  $U_{VAL}$ ), the vacuum generator VABF remains in vacuum generation mode with air-saving function. If there is a complete power failure (bus shutdown,  $U_{SEN}$ ) when the vacuum generator is in "Generate vacuum" mode, the valve switches to the "Permanent suction" position.

### Vacuum generation

The vacuum is generated according to the Venturi principle using the vacuum generator cartridges VN.

For the large sizes 20 and 30, two vacuum generator cartridges are used and connected in parallel.

For size 14, one vacuum generator cartridge is used (the second port is sealed with a blanking plug).

Vacuum generation is activated when the output signal "vacuum generation" is applied for at least 50 ms. Since the vacuum generation is pulse-controlled, vacuum is also generated after the output signal is deactivated.

## Datasheet – Vacuum generator for VTSA-F-CB

## Function overview

## Monitoring process parameters

- Pressure value at vacuum port
- Limit values
- Evacuation time  $t_E$
- Pressurisation time  $t_B$
- Process quality

## Static teach-in

Switching points and cycle time can be configured using the FMT (Festo Maintenance Tool).

## Dynamic teach-in

Calculating and optimising existing process sequences. Switching points and monitoring functions can be configured during operation.

## Pressure value (vacuum)

Pressure values are measured continuously between the vacuum port and filter. If the operating voltage of the vacuum generator is switched off, the values are reset.

## Cycle time

The time from the start of the evacuation through ejection to the start of the new evacuation.

## Fault detection and diagnostic messages

- Supply voltage not reached
- Evacuation time exceeded
- Fault on air-saving function
- Vacuum value not reached
- Evacuation or pressurisation time exceeded
- Process quality below limit value
- Teach-in error

## Air saving function

- Is set at the factory.
- Can be switched off for "air-permeable workpieces" (otherwise there will be an unnecessarily high number of switching processes).

## Manual override

Both solenoid coils, for vacuum generation and ejector pulse, can be switched manually using the manual override.

## Evacuation and pressurisation time

The evacuation time  $t_E$  is measured from the start of the evacuation until the switching point is reached. The pressurisation time  $t_B$  is measured from the start of the pressurisation to the time at which the pressure value (vacuum) falls below  $-5$  kPa.

## Blanking plug

A vacuum generator V\*20 or V\*30 can be converted at a later date to V\*14 using a blanking plug OASC-V1-P. This makes it possible to reduce the air consumption or reduce the suction rate (e.g. for evacuation of smaller volumes).

## Emergency stop function

If the emergency stop (switching off the load voltage supply) is triggered during vacuum generation, the vacuum generator remains in vacuum generation mode.

If the air saving function was activated, it remains active. If the parameter "ejector pulse interlock" is activated (set to inactive at the factory), no ejector pulse is triggered in the event of an emergency stop.

If there is a complete power failure (electronic supply voltage) during vacuum generation, the valve switches to "generate vacuum" position.

When the power supply is switched on again, the valve remains in the "generate vacuum" operating status until an ejection signal is received.

## Error state

If communication between the controller and the vacuum generator is interrupted, a specific status is set.

The following settings are defined in this state:

- Output bit "vacuum generation" is set to 0.
- Output bit "ejector pulse" is set to 0.
- Parameter set is set to 0
- Air saving function is not affected

## Additional characteristics

- Galvanic isolation between the vacuum generator VABF and valve terminal VTSA-F-CB
- 3 performance settings for vacuum generation (14, 20, 30)
- Integrated solenoid valve for vacuum generation (solenoid coil 12) and ejector pulse (solenoid coil 14)
- Air-saving ejector pulse with increased ejecting rate (power ejector pulse)
- Flow control screw to adjust the ejector pulse
- Integrated pressure sensor
- Integrated air-saving function
- Integrated strainer for filtering process air in order to protect the vacuum generator [-AP]
- Switching of the solenoid valve for vacuum generation with mechanical manual override
- Open silencer for reduced noise levels
- A check valve prevents purging of the vacuum if vacuum generation is interrupted

## Datasheet – Vacuum generator for VTSA-F-CB

| General technical data                               |         |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                           |
|------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                 |         | Functions with type code VABF...A                                                                                                                                                                                                                   | Functions with type code VABF...AP                                                                                                                                                                                                                        |
| Valve function                                       |         | 5/3-way, pressurised                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| Design                                               |         | Non-modular                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                           |
| Mounting position                                    |         | Any                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                           |
| Nominal width of Laval nozzle<br>(vacuum generation) | 14 [mm] | 1.4                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                           |
|                                                      | 20 [mm] | 2.0                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                           |
|                                                      | 30 [mm] | 3.0                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                           |
| Ejector characteristics                              |         |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                           |
| • VABF...V2B1...VH...                                |         | High vacuum, standard                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                           |
| • VABF...V2B1...VL...                                |         | High suction rate, standard                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                           |
| Integrated functions                                 |         | <ul style="list-style-type: none"><li>• Ejector pulse, electrical</li><li>• Flow restrictor</li><li>• On/off valve, electric</li><li>• Air-saving circuit, electric</li><li>• Check valve</li><li>• Open silencer</li><li>• Vacuum switch</li></ul> | <ul style="list-style-type: none"><li>• Power ejector pulse, electrical</li><li>• Flow restrictor</li><li>• On/off valve, electric</li><li>• Air-saving circuit, electric</li><li>• Check valve</li><li>• Open silencer</li><li>• Vacuum switch</li></ul> |
| Silencer design                                      |         | Open                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| Measured variable                                    |         | Relative pressure                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                           |
| Measuring principle                                  |         | Piezoresistive                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                           |
| Switching function                                   |         | Window comparator                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                           |
|                                                      |         | Threshold-comparator                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| Reverse polarity protection                          |         | For all electrical connections                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                           |
| Switching element function                           |         | N/O                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                           |
| Pneumatic supply for vacuum gen-<br>erator           |         | Via valve terminal VTSA-F-CB                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                           |
| Ejector pulse                                        |         | Strength adjustable via flow control screw                                                                                                                                                                                                          |                                                                                                                                                                                                                                                           |
| Solenoid valve actuation type                        |         | Electrically actuated                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                           |
| Type of actuation for solenoid valve                 |         | Piloted                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                           |
| Flow direction                                       |         | Not reversible                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                           |
| Type of mounting                                     |         | Via through-hole, screwed onto manifold sub-base, width 35 mm                                                                                                                                                                                       |                                                                                                                                                                                                                                                           |
| Manual override                                      |         | Non-detenting (only non-detenting: with accessories), detenting, covered (with accessories)                                                                                                                                                         |                                                                                                                                                                                                                                                           |
| • For vacuum generation                              |         | Yes, solenoid coil 12 (holding)                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                           |
| • For ejector pulse                                  |         | Yes, solenoid coil 14 (spring return), (only effective when power supply is switched off)                                                                                                                                                           |                                                                                                                                                                                                                                                           |
|                                                      |         |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                           |
| Pneumatic ports                                      |         |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                           |
| Supply                                               | 1       | Compressed air is supplied via the valve terminal                                                                                                                                                                                                   |                                                                                                                                                                                                                                                           |
| Exhausting                                           | 3       | Via silencer (open)                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                           |
| Working port<br>(vacuum port)                        | 2       | G3/8                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |

| Electrical data and sensors         |          |             |
|-------------------------------------|----------|-------------|
| Operating voltage range (UB)        | [V DC]   | 21.6 ... 30 |
| Nominal operating voltage           | [V DC]   | 24          |
| Duty cycle                          | [%]      | 100         |
| No-load current                     | [mA]     | 30          |
| Electrical control                  | Fieldbus |             |
| Electrical connection               | Via CPX  |             |
| Pressure measuring range            | [bar]    | –1 ... 0    |
|                                     | [MPa]    | –0.1 ... 0  |
| Accuracy (full scale)               | [% FS]   | ±3          |
| Reproducibility, switching value FS | [%]      | 1           |
| Degree of protection to EN 60529    | IP65     |             |
| Protection class to DIN EN 61140    | III      |             |

## Datasheet – Vacuum generator for VTSA-F-CB

| Display and operation                    |                      |
|------------------------------------------|----------------------|
| Display type                             | LED display, 2-digit |
| Threshold-value setting range [kPa]      | 0 ... 99             |
| Hysteresis setting range [kPa]           | 0 ... 90             |
| Setting options                          | Teach-in             |
|                                          | Via parameter sets   |
| Sensor switching status indication       | LED                  |
| Display range start value [kPa]          | 0                    |
| Display range end value [kPa]            | 99                   |
| Displayable unit(s) [kPa]                | Vacuum               |
| Signal status indication, solenoid valve | LED                  |

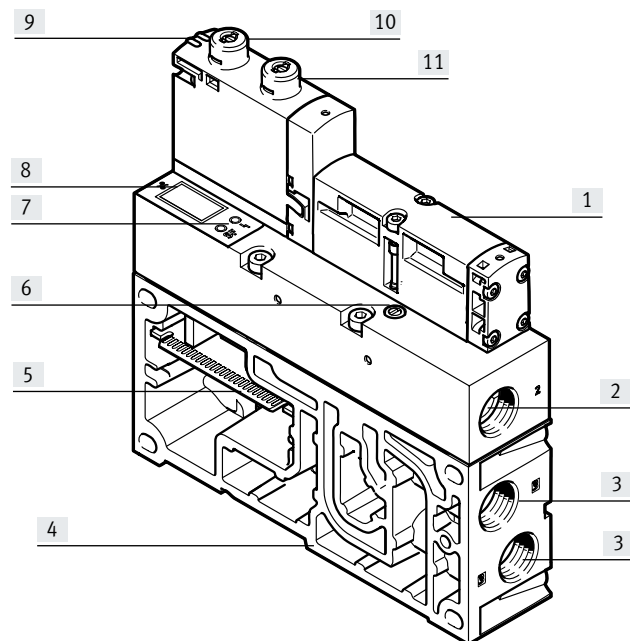
| Operating and environmental conditions            |       |                                           |          |            |          |         |          |         |          |         |          |
|---------------------------------------------------|-------|-------------------------------------------|----------|------------|----------|---------|----------|---------|----------|---------|----------|
| Type VABF...                                      |       | VH-14-A                                   | VH-14-AP | VH-20-A    | VH-20-AP | VH-30-A | VH-30-AP | VL-14-A | VL-14-AP | VL-20-A | VL-20-AP |
| Operating medium                                  |       | Compressed air to ISO 8573-1:2010 [7:4:4] |          |            |          |         |          |         |          |         |          |
| Note on operating/pilot medium                    |       | Lubricated operation not possible         |          |            |          |         |          |         |          |         |          |
| Pilot pressure pS                                 | [bar] | 4 ... 10                                  |          |            |          |         |          |         |          |         |          |
|                                                   | [MPa] | 0.4 ... 1                                 |          |            |          |         |          |         |          |         |          |
| Operating pressure pB                             | [bar] | 4 ... 8                                   |          |            |          |         |          |         |          |         |          |
|                                                   | [MPa] | 0.4 ... 0.8                               |          |            |          |         |          |         |          |         |          |
| Nominal operating pressure pBnom                  | [bar] | 6                                         |          |            |          |         |          |         |          |         |          |
|                                                   | [MPa] | 0.6                                       |          |            |          |         |          |         |          |         |          |
| Operating pressure for max. suction rate          | [bar] | 4                                         |          | 4          |          | 6       |          | 4       |          | 5       |          |
|                                                   | [MPa] | 0.4                                       |          | 0.4        |          | 0.6     |          | 0.4     |          | 0.5     |          |
| Operating pressure for max. vacuum pumax          | [bar] | 4                                         |          | 4          |          | 6       |          | –       |          | –       |          |
|                                                   | [MPa] | 0.4                                       |          | 0.4        |          | 0.6     |          | –       |          | –       |          |
| Max. vacuum pVmax                                 |       | 92                                        |          |            |          |         |          | –       |          | –       |          |
| Max. suction rate with respect to atmosphere      |       | [l/min]                                   |          | 51         |          | 99      |          | 167     |          | 91      |          |
| Pressurisation time at nominal operating pressure |       | [s]                                       |          | 0.2        |          | 0.3     |          | 0.2     |          | 0.25    |          |
| Noise level LpA (at nominal operating pressure)   |       | [dB(A)]                                   |          | 70         |          | 73      |          | 75      |          | 62      |          |
| Ambient temperature tamb                          |       | [°C]                                      |          | –5 ... +50 |          |         |          |         |          |         |          |
| Temperature of medium tmed                        |       | [°C]                                      |          | –5 ... +50 |          |         |          |         |          |         |          |
| CE marking (see declaration of conformity)        |       | To EU EMC Directive                       |          |            |          |         |          |         |          |         |          |
| Certification                                     |       | RCM Mark                                  |          |            |          |         |          |         |          |         |          |
| Corrosion resistance class CRC <sup>1)</sup>      |       | 0                                         |          |            |          |         |          |         |          |         |          |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

| Materials                          |                                                     |
|------------------------------------|-----------------------------------------------------|
| Housing, jet nozzle, blanking plug | Wrought aluminium alloy                             |
| Adjusting screw                    | High-alloy stainless steel                          |
| Screws                             | Steel                                               |
| Vacuum generator seals             | NBR, HNBR                                           |
| Blanking plug seals                | NBR                                                 |
| Plate                              | Die-cast aluminium                                  |
| Female nozzle                      | POM                                                 |
| Silencer                           | PU foam, POM                                        |
| Note on materials                  | RoHS-compliant (vacuum generator and blanking plug) |

## Datasheet – Vacuum generator for VTSA-F-CB

### Connection and indicator components



- [1] Solenoid valve VSVA
- [2] Vacuum port G3/8
- [3] Port for silencer UOM-3/8 [VH/L-14 (1x) and VH-20 (2x)]
- [4] Manifold sub-base for valve terminal VTSA-F-CB (pneumatic and electric)
- [5] Electrical link to valve terminal VTSA-F-CB
- [6] Flow control screw for adjusting the strength of the ejector pulse
- [7] The status LED (yellow) indicates the operating status of the vacuum generator and displays warnings in the event of a process fault
- [8] The error LED (red) indicates the status of the CBUS connection and displays errors
- [9] The 7-segment display (2-digit blue LED display) shows the pressure value (vacuum) in kPa
- [10] LED switching status indication for solenoid valve
- [11] Manual override for vacuum generation
- [12] Manual override for ejector pulse

### Diagnostics and monitoring

The vacuum generator has monitoring functions that enable malfunctions or faults to be detected at an early stage during operation.

The following diagnostic functions are possible:

- Monitoring tE (evacuation time), reference via teach-in
- Monitoring tB (pressurisation time), reference via teach-in
- Monitoring air consumption via vacuum drop rate VDR (process quality) when air saving function is active (tLS)

#### Definition of diagnostic levels

| Status     | Normal operation | Warning                   | Faults      |
|------------|------------------|---------------------------|-------------|
| Definition | Device is OK     | Outside the specification | Malfunction |

#### Operating statuses of the vacuum generator

| Actuation        |                  |                                  |                                                                                                                              |
|------------------|------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Solenoid coil 12 | Solenoid coil 14 | Function/operating status        | Comment                                                                                                                      |
| 0                | 0                | Normal position                  | No actuation or status after the end of the "ejection" signal/the "pressurisation" function                                  |
|                  |                  | Generating vacuum                | Operating status after failure of the pilot air supply or the electrical supply of the vacuum generator (self-latching loop) |
| 1                | 0                | Generating vacuum                | Pulse actuation with self-latching loop                                                                                      |
| 0                | 1                | Pressurisation (ejector pulse)   | Accelerated vacuum reduction                                                                                                 |
| 1                | 1                | Saving air (air saving function) | Maintain vacuum (valve mid-position)                                                                                         |

## Datasheet – Vacuum generator for VTSA-F-CB

### Electrical and pneumatic status changes

| Status change                                                                                  | Operating status before status change | Operating status after status change                                                                    |
|------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------|
| Failure/deactivation of the electronics supply or the pilot air supply of the vacuum generator | Generating vacuum                     | Generating vacuum<br>(The valve spool remains in the "generate vacuum" position)                        |
|                                                                                                | Saving air                            | Generating vacuum<br>(The mechanical spring pushes the valve spool into the "generate vacuum" position) |
|                                                                                                | Pressurisation                        | Normal position1)                                                                                       |
|                                                                                                | Normal position1)                     | Normal position1)                                                                                       |
| Emergency stop/switch-off of the load voltage supply                                           | Generating vacuum                     | Generating vacuum                                                                                       |
|                                                                                                | Saving air                            | Generating vacuum<br>(vacuum is maintained)                                                             |
|                                                                                                | Pressurisation                        | Normal position or function is interrupted2)                                                            |
|                                                                                                | Normal position1)                     | Normal position1)                                                                                       |

- 1) Normal position means the vacuum block is not in the "generate vacuum", "air saving" or "ejection" operating status
- 2) Parameter "ejector pulse interlock" must be active

-  - **Note**

If the working air or power supply to the valve terminal fails, this will result in the following statuses:

1. Working air failure:

- No vacuum can be generated, even if the valve is in the "generate vacuum" position.
- No ejector pulse can be generated, even if the valve is in the "ejection" position.

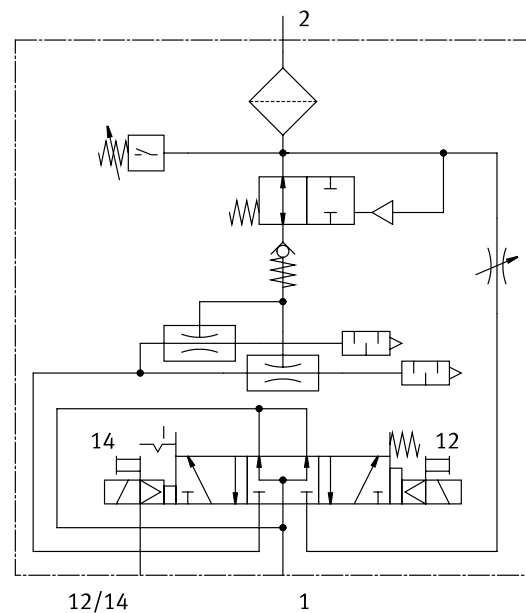
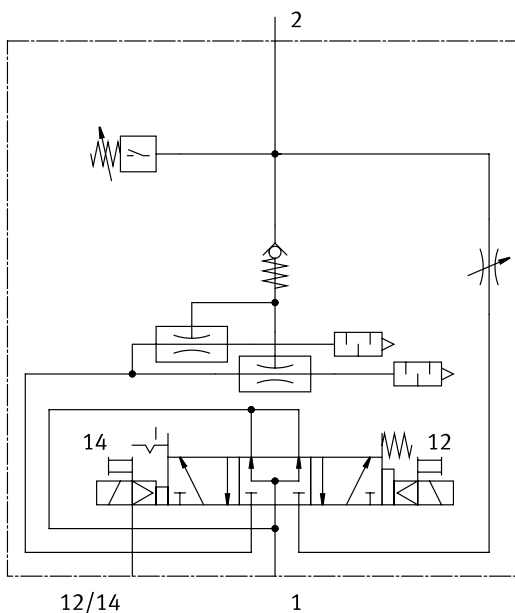
2. Power supply failure to the valve terminal:

- If both solenoid coils are de-energised at the same time, the valve switches to permanent suction because of the pilot air volume still present and remains in this state.

### Circuit symbols, vacuum generator

VABF...V2B1...A

VABF...V2B1...AP



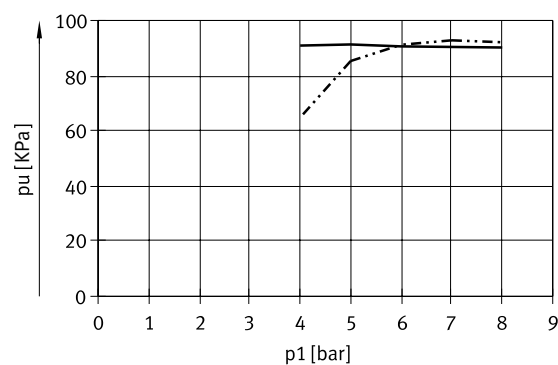
The vacuum generator is supplied internally via duct 1 of the manifold sub-base of the valve terminal.

The pilot air is supplied internally via duct 12/14 of the manifold sub-base of the valve terminal.

# Datasheet – Vacuum generator for VTSA-F-CB

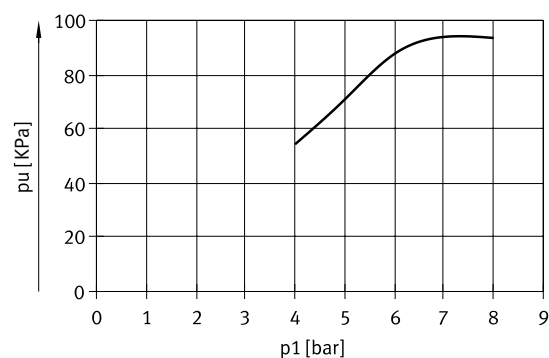
## Pressure ratios, negative pressure $p_u$ as a function of operating pressure $p_1$

VH-1 4/20/30



— VH-14/20  
 ..... VH-30

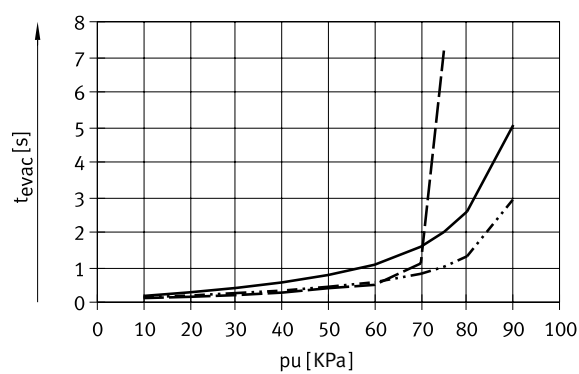
VL-1 4/20



— VL-14/20

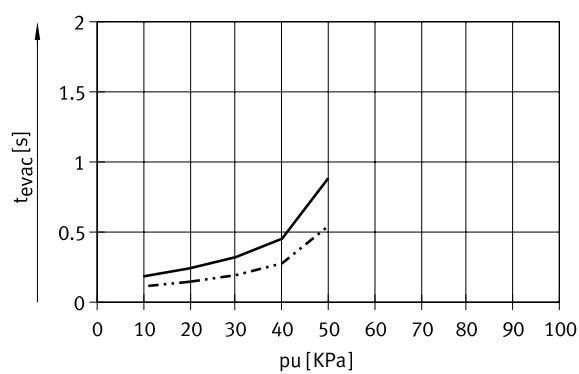
## Pressure ratios, evacuation time $t_{\text{evac}}$ as a function of negative pressure $p_u$ and operating pressure 4 bar for 1 l volume

VH-1 4/20/30:  $t_{\text{evac}}(p_1)$



— VH-14  
 ..... VH-20  
 - - - - - VH-30

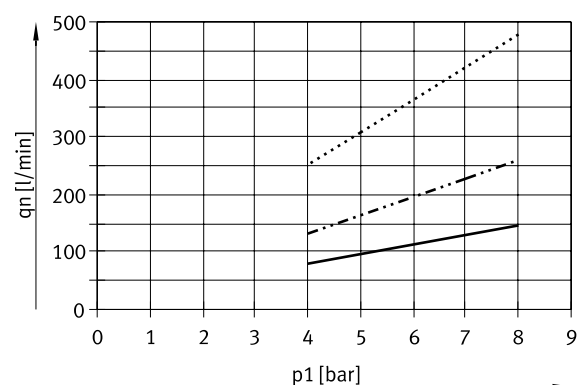
VL-1 4/20:  $t_{\text{evac}}(p_1)$



— VL-14  
 ..... VL-20

## Pressure ratios, air consumption $q_n$ as a function of operating pressure $p_1$

V...-14/20/30



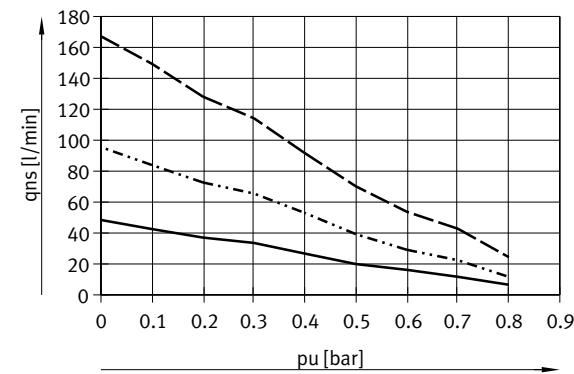
— VH/L-14  
 ..... VH/L-20  
 - - - - - VH-30



Datasheet – Vacuum generator for VTSA-F-CB

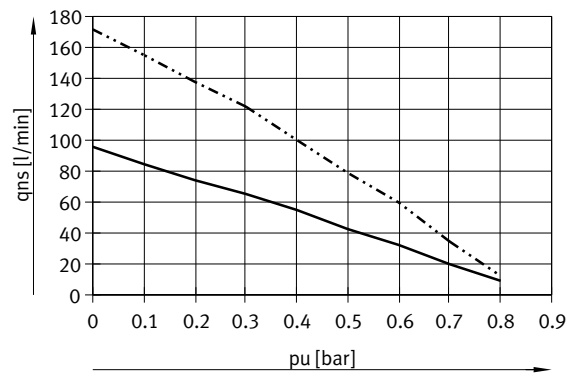
Pressure ratios, suction rate  $q_{ns}$  as a function of negative pressure  $p_u$ ,  $p_1$  and operating pressure 6 bar

VH-1 4/20/30



— VH-14  
····· VH-20  
- - - VH-30

VL-1 4/20



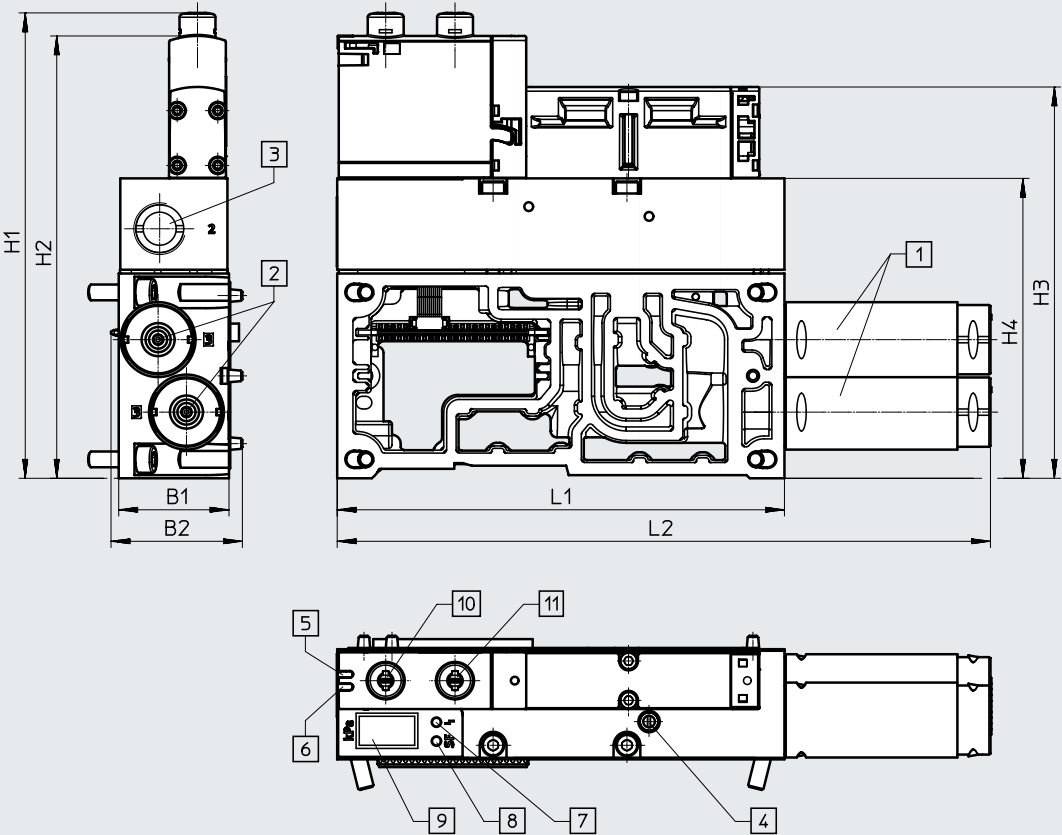
— VL-14  
····· VL-20

Datasheet – Vacuum generator for VTSA-F-CB

Dimensions

Vacuum generator Laval nozzle 2.0 with high negative pressure

Download CAD data → [www.festo.com](http://www.festo.com)



- [1] Silencer UOM-3/8
- [2] Exhaust port G3/8
- [3] Vacuum port G3/8
- [4] Flow control screw for adjusting the strength of the ejector pulse
- [5] LED switching status indication for solenoid valve ejector pulse
- [6] LED switching status indication for solenoid valve vacuum generation
- [7] Fault LED (red)
- [8] Status LED (yellow)
- [9] 2-digit 7-segment display (blue LEDs) for vacuum
- [10] Manual override for vacuum generation, non-detenting/detenting
- [11] Manual override for ejector pulse, non-detenting/detenting

| Type                             | B1 | B2   | H1    | H2    | H3    | H4   | L1  | L2    |
|----------------------------------|----|------|-------|-------|-------|------|-----|-------|
| VABF-S4-2-V2B1-G38-CB-VH-20-A... | 35 | 41.7 | 147.7 | 140.4 | 124.2 | 95.2 | 142 | 207.4 |

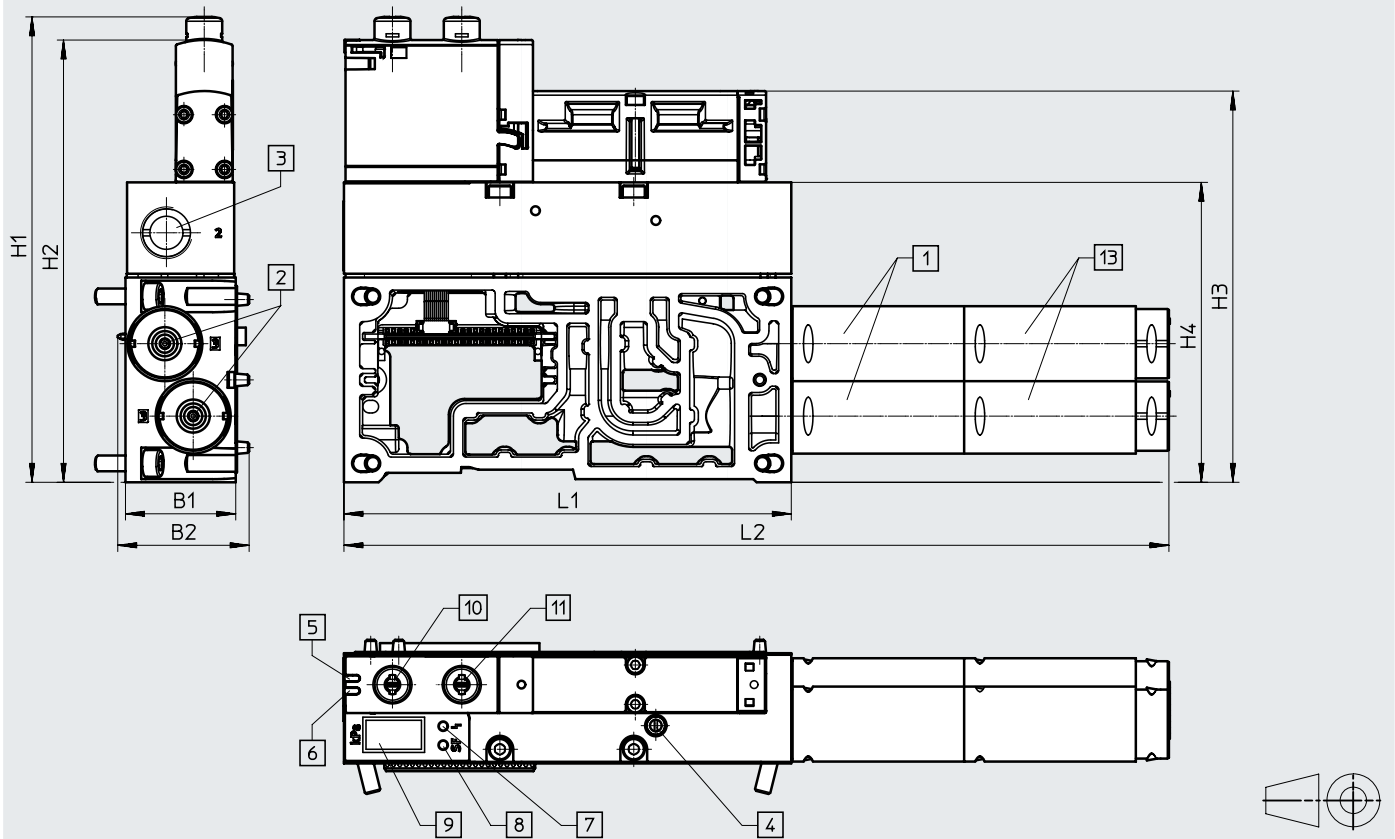
**Note**  
 Silencer UOM-3/8, seal VABD-S6-1-C and screws for manifold sub-base are included with the order for the vacuum generator.  
 If required, the silencer extension UOMS-3/8 can be ordered separately.

Datasheet – Vacuum generator for VTSA-F-CB

Dimensions

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Vacuum generator Laval nozzle 3.0 and Laval nozzle 2.0 with high suction rate



- [1] Silencer UOM-3/8

[2] Exhaust port G3/8

[3] Vacuum port G3/8

[4] Flow control screw for adjusting the strength of the ejector pulse
- [5] LED switching status indication for solenoid valve ejector pulse

[6] LED switching status indication for solenoid valve vacuum generation

[7] Fault LED (red)

[8] Status LED (yellow)
- [9] 2-digit 7-segment display (blue LEDs) for vacuum

[10] Manual override for vacuum generation, non-detenting/detenting
- [11] Manual override for ejector pulse, non-detenting/detenting

[13] Silencer extension UOMS-3/8

| Type                             | B1 | B2   | H1    | H2    | H3    | H4   | L1  | L2    |
|----------------------------------|----|------|-------|-------|-------|------|-----|-------|
| VABF-S4-2-V2B1-G38-CB-VL-20-A... | 35 | 41.7 | 147.7 | 140.4 | 124.2 | 95.2 | 142 | 261.9 |
| VABF-S4-2-V2B1-G38-CB-VH-30-A... |    |      |       |       |       |      |     |       |

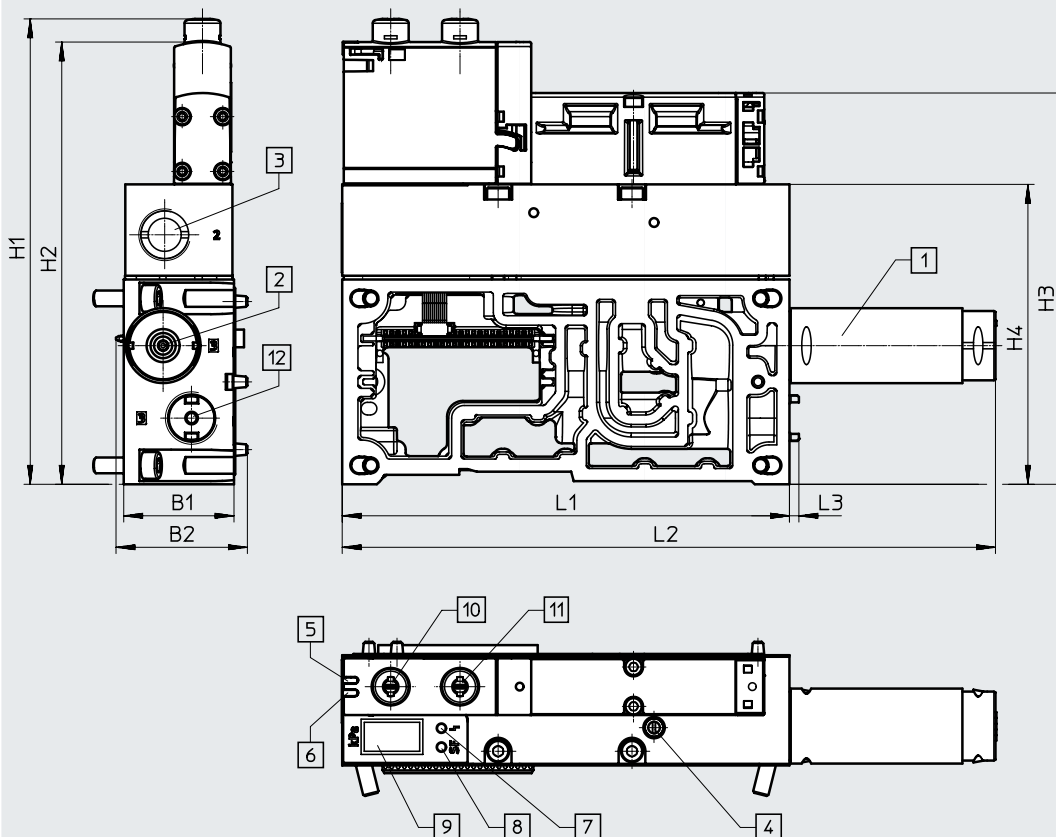
 **Note**  
Silencer UOM-3/8, seal VABD-S6-1-C and screws for manifold sub-base are included with the order for the vacuum generator.  
If required, the silencer extension UOMS-3/8 can be ordered separately.

## Datasheet – Vacuum generator for VTSA-F-CB

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Vacuum generator Laval nozzle 1.4



- [1] Silencer UOM-3/8
- [2] Exhaust port G3/8
- [3] Vacuum port G3/8
- [4] Flow control screw for adjusting the strength of the ejector pulse

- [5] LED switching status indication for solenoid valve ejector pulse
- [6] LED switching status indication for solenoid valve vacuum generation
- [7] Fault LED (red)
- [8] Status LED (yellow)

- [9] 2-digit 7-segment display (blue LEDs) for vacuum
- [10] Manual override for vacuum generation, non-detenting/detenting

- [11] Manual override for ejector pulse, non-detenting/detenting
- [12] Screw-in blanking plug (max. tightening torque 4 Nm)

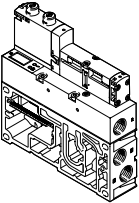
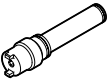


| Type                             | B1 | B2   | H1    | H2    | H3    | H4   | L1  | L2    | L3 |
|----------------------------------|----|------|-------|-------|-------|------|-----|-------|----|
| VABF-S4-2-V2B1-G38-CB-VL-14-A... | 35 | 41.7 | 147.7 | 140.4 | 124.2 | 95.2 | 142 | 207.4 | 3  |
| VABF-S4-2-V2B1-G38-CB-VH-14-A... |    |      |       |       |       |      |     |       |    |

 **Note**

Silencer UOM-3/8, seal VABD-S6-1-C and screws for manifold sub-base are included with the order for the vacuum generator.  
If required, the silencer extension UOMS-3/8 can be ordered separately.

## Datasheet – Vacuum generator for VTSA-F-CB

| Ordering data                                                                                                                                                                                                                                                          |                        |                                                                                                                                                                                                                     |            |          |                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|--------------------------------|
|                                                                                                                                                                                                                                                                        | Terminal code          | Description                                                                                                                                                                                                         | Weight [g] | Part no. | Type                           |
| Vacuum generator for VTSA-F-CB, with integrated sensor                                                                                                                                                                                                                 |                        |                                                                                                                                                                                                                     |            |          |                                |
|                                                                                                                                                                                        | With high suction rate |                                                                                                                                                                                                                     |            |          |                                |
|                                                                                                                                                                                                                                                                        | II                     | Laval nozzle, 1.4 mm                                                                                                                                                                                                | 915        | 8088779  | VABF-S4-2-V2B1-G38-CB-VL-14-A  |
|                                                                                                                                                                                                                                                                        | IIPH                   | Laval nozzle, 1.4 mm with power ejector pulse                                                                                                                                                                       | 930        | 8088781  | VABF-S4-2-V2B1-G38-CB-VL-14-AP |
|                                                                                                                                                                                                                                                                        | IV                     | Laval nozzle, 2.0 mm                                                                                                                                                                                                | 955        | 8067141  | VABF-S4-2-V2B1-G38-CB-VL-20-A  |
|                                                                                                                                                                                                                                                                        | IVPH                   | Laval nozzle, 2.0 mm with power ejector pulse                                                                                                                                                                       | 970        | 8067144  | VABF-S4-2-V2B1-G38-CB-VL-20-AP |
|                                                                                                                                                                                                                                                                        | With high vacuum       |                                                                                                                                                                                                                     |            |          |                                |
|                                                                                                                                                                                                                                                                        | I                      | Laval nozzle, 1.4 mm                                                                                                                                                                                                | 915        | 8088778  | VABF-S4-2-V2B1-G38-CB-VH-14-A  |
|                                                                                                                                                                                                                                                                        | IPH                    | Laval nozzle, 1.4 mm with power ejector pulse                                                                                                                                                                       | 930        | 8088780  | VABF-S4-2-V2B1-G38-CB-VH-14-AP |
|                                                                                                                                                                                                                                                                        | III                    | Laval nozzle, 2.0 mm                                                                                                                                                                                                | 920        | 8067140  | VABF-S4-2-V2B1-G38-CB-VH-20-A  |
|                                                                                                                                                                                                                                                                        | IIIPH                  | Laval nozzle, 2.0 mm with power ejector pulse                                                                                                                                                                       | 940        | 8067143  | VABF-S4-2-V2B1-G38-CB-VH-20-AP |
|                                                                                                                                                                                                                                                                        | V                      | Laval nozzle, 3.0 mm                                                                                                                                                                                                | 955        | 8067142  | VABF-S4-2-V2B1-G38-CB-VH-30-A  |
|                                                                                                                                                                                                                                                                        | VPH                    | Laval nozzle, 3.0 mm with power ejector pulse                                                                                                                                                                       | 970        | 8067145  | VABF-S4-2-V2B1-G38-CB-VH-30-AP |
| Silencer extension                                                                                                                                                                                                                                                     |                        |                                                                                                                                                                                                                     |            |          |                                |
|                                                                                                                                                                                      | –                      | Can be attached to enclosed silencer UOM and secured in place.                                                                                                                                                      | 17.5       | 538437   | UOMS-3/8                       |
| Blanking plug                                                                                                                                                                                                                                                          |                        |                                                                                                                                                                                                                     |            |          |                                |
|                                                                                                                                                                                      | –                      | With connecting thread G3/8<br>(The blanking plug can be used to subsequently convert an existing vacuum generator V...20 to a vacuum generator V...14, or a vacuum generator V...30 to a vacuum generator V...20.) | 23         | 8068144  | OASC-V1-P                      |
| Pneumatic connection accessories                                                                                                                                                                                                                                       |                        |                                                                                                                                                                                                                     |            |          |                                |
| A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter Accessories → page: 245 or on the website via the individual search terms:<br><b>Internet</b> → connection technology, silencer, blanking plug |                        |                                                                                                                                                                                                                     |            |          |                                |

## Datasheet – Valves on individual sub-base

-  Valve width  
 to ISO 15407-2  
 • 18 mm  
 • 26 mm  
 to ISO 5599-2  
 • 42 mm  
 • 52 mm
-  Flow rate  
 Width 18 mm: up to 600 l/min  
 Width 26 mm: up to 1200 l/min  
 Width 42 mm: up to 1500 l/min  
 Width 52 mm  
 up to 3400 l/min
-  Voltage  
 24 V DC  
 110 V AC

## General technical data

|                                    |                                     |
|------------------------------------|-------------------------------------|
| Design                             | Piston spool valve                  |
| Sealing principle                  | Soft                                |
| Actuation type                     | Electrical                          |
| Type of control                    | Piloted                             |
| Exhaust function, can be throttled | Via individual sub-base             |
| Lubrication                        | Lifetime lubrication                |
| Type of mounting                   | Screwed onto sub-base               |
| • Valve                            | Screwed via through-hole            |
| • Individual sub-base              |                                     |
| Mounting position                  | Any                                 |
| Manual override                    | Detenting, non-detenting, concealed |

## Pneumatic connections – Threaded connection

| Width                             | 18 mm        | 26 mm | 42 mm | 52 mm |
|-----------------------------------|--------------|-------|-------|-------|
| Pneumatic connection              | Via sub-base |       |       |       |
| Supply port 1                     | G1/8         | G1/4  | G3/8  | G1/2  |
| Exhaust port 3/5                  | G1/8         | G1/4  | G3/8  | G1/2  |
| Working ports 2/4                 | G1/8         | G1/4  | G3/8  | G1/2  |
| External pilot air supply port 14 | M5           | G1/8  | G1/8  | G1/8  |
| Pilot exhaust air port 12         | M5           | G1/8  | G1/8  | G1/8  |

## Operating and environmental conditions, individual sub-base

|                                                   |                                                                                             |
|---------------------------------------------------|---------------------------------------------------------------------------------------------|
| Operating medium                                  | Compressed air to ISO 8573-1:2010 [7:4:4]                                                   |
| Notes on operating/<br>Pilot medium               | Lubricated operation possible (in which case lubricated operation will always be required)  |
| Operating pressure [bar]                          | −0.9 ... +10                                                                                |
| [MPa]                                             | −0.09 ... +1                                                                                |
| Ambient temperature [°C]                          | −5 ... +50                                                                                  |
| Certification                                     | c UL us – Recognized (OL)                                                                   |
| CE marking (see declaration of conformity)        | To EU Low Voltage Directive (only for 110 V AC coils, not for variants with round plug M12) |
|                                                   | To EU Explosion Protection Directive (ATEX, EX1E1) (for variants with round plug M12 only)  |
|                                                   | To EU RoHS Directive                                                                        |
| UKCA marking (see declaration of conformity)      | To UK EMC regulations                                                                       |
|                                                   | To UK explosion regulations                                                                 |
|                                                   | To UK RoHS regulations                                                                      |
| ATEX category for gas                             | II 3G (EX1E <sup>1)</sup> )                                                                 |
| Type of ignition protection for gas               | Ex ec IIC T3 Gc X (EX1E <sup>1)</sup> )                                                     |
| Explosion-proof ambient temperature [°C]          | −5 ... +50 (EX1E <sup>1)</sup> )                                                            |
| Explosion protection certification outside the EU | EPL Gc (GB)                                                                                 |

1) EX1E certification for installation in a housing

2) For information about the area of use, see the declaration of conformity at: [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

## Datasheet – Valves on individual sub-base

| Standard nominal flow rate of valve/individual sub-base [l/min]                     |                                        |                                        |                                         |                                         |
|-------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------------------|
| Valve function (with valve code)                                                    | Width 18 mm                            |                                        | Width 26 mm                             |                                         |
|                                                                                     | Valve                                  | Valve on individual sub-base           | Valve                                   | Valve on individual sub-base            |
| 5/2-way double solenoid (B52)                                                       | 750                                    | 600                                    | 1400                                    | 1200                                    |
| 5/2-way double solenoid with dominant signal (D52)                                  | 750                                    | 600                                    | 1400                                    | 1200                                    |
| 5/2-way single solenoid, pneumatic spring (M52A)                                    | 750                                    | 600                                    | 1400                                    | 1200                                    |
| 5/2-way single solenoid, mechanical spring (M52M)                                   | 750                                    | 600                                    | 1400                                    | 1200                                    |
| 5/3-way closed (P53C)                                                               | 700                                    | 550                                    | 1400 <sup>1)</sup><br>700 <sup>2)</sup> | 1200 <sup>1)</sup><br>700 <sup>2)</sup> |
| 5/3-way exhausted (P53E)                                                            | 700 <sup>1)</sup><br>330 <sup>2)</sup> | 500 <sup>1)</sup><br>330 <sup>2)</sup> | 1400 <sup>1)</sup><br>700 <sup>2)</sup> | 1200 <sup>1)</sup><br>700 <sup>2)</sup> |
| 5/3-way pressurised (P53U)                                                          | 700 <sup>1)</sup><br>330 <sup>2)</sup> | 500 <sup>1)</sup><br>330 <sup>2)</sup> | 1400 <sup>1)</sup><br>700 <sup>2)</sup> | 1200 <sup>1)</sup><br>700 <sup>2)</sup> |
| 5/3-way, exhausted, switching position 14 detenting (P53ED)3)                       | –                                      | 390 <sup>1)</sup><br>310 <sup>2)</sup> | 1400 <sup>1)</sup><br>700 <sup>2)</sup> | 1200 <sup>1)</sup><br>700 <sup>2)</sup> |
| 5/3-way, exhausted, switching position 12 detenting (P53EP)3)                       | –                                      | 390 <sup>1)</sup><br>320 <sup>2)</sup> | 1400 <sup>1)</sup><br>700 <sup>2)</sup> | 1200 <sup>1)</sup><br>700 <sup>2)</sup> |
| 5/3-way, port 2 pressurised, 4 exhausted, switching position 14 detenting (P53AD)3) | –                                      | 380 <sup>1)</sup><br>360 <sup>2)</sup> | 700 <sup>1)</sup><br>700 <sup>2)</sup>  | 700 <sup>1)</sup><br>700 <sup>2)</sup>  |
| 5/3-way, port 4 pressurised, 2 exhausted, switching position 14 detenting (P53BD)3) | –                                      | 400                                    | –                                       | 900 <sup>1)</sup><br>840 <sup>2)</sup>  |
| 2x3/2-way single solenoid, closed (T32C)                                            | 600                                    | 500                                    | 1250                                    | 1100                                    |
| 2x3/2-way single solenoid, open (T32U)                                              | 600                                    | 500                                    | 1250                                    | 1100                                    |
| 2x3/2-way single solenoid, open/closed (T32H)                                       | 600                                    | 500                                    | 1250                                    | 1100                                    |
| 2x3/2-way single solenoid, closed (T32N)                                            | 600                                    | 500                                    | 1250                                    | 1100                                    |
| 2x3/2-way single solenoid, open (T32F)                                              | 600                                    | 500                                    | 1250                                    | 1100                                    |
| 2x3/2-way single solenoid, open/closed (T32W)                                       | 600                                    | 500                                    | 1250                                    | 1100                                    |
| 2x2/2-way single solenoid, closed (T22C)                                            | 700                                    | 500                                    | 1350                                    | 1100                                    |
| 2x2/2-way single solenoid, closed (T22CV)                                           | 700                                    | 500                                    | 1350                                    | 1100                                    |

1) Switching position

2) Mid-position

3) The valve functions P53AD, P53BD, P53ED, P53EP are only available in the 24 V DC version. Values only apply to 24 V DC.

## Datasheet – Valves on individual sub-base

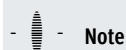
| Standard nominal flow rate of valve/individual sub-base [l/min] |                                         |                                         |                                          |                                          |
|-----------------------------------------------------------------|-----------------------------------------|-----------------------------------------|------------------------------------------|------------------------------------------|
| Valve function (with valve code)                                | Width 42 mm                             |                                         | Width 52 mm                              |                                          |
|                                                                 | Valve                                   | Valve on individual sub-base            | Valve                                    | Valve on individual sub-base             |
| 5/2-way double solenoid (B52)                                   | 2000                                    | 1500                                    | 4000                                     | 3400                                     |
| 5/2-way double solenoid with dominant signal (D52)              | 2000                                    | 1500                                    | 4000                                     | 3400                                     |
| 5/2-way single solenoid, pneumatic spring (M52A)                | 2000                                    | 1500                                    | 4000                                     | 3400                                     |
| 5/2-way single solenoid, mechanical spring (M52M)               | 2000                                    | 1500                                    | 4000                                     | 3400                                     |
| 5/3-way closed (P53C)                                           | 1900 <sup>1)</sup><br>950 <sup>2)</sup> | 1400 <sup>1)</sup><br>800 <sup>2)</sup> | 3600 <sup>1)</sup><br>1700 <sup>2)</sup> | 3200 <sup>1)</sup><br>1700 <sup>2)</sup> |
| 5/3-way exhausted (P53E)                                        | 1900 <sup>1)</sup><br>950 <sup>2)</sup> | 1400 <sup>1)</sup><br>800 <sup>2)</sup> | 3600 <sup>1)</sup><br>1700 <sup>2)</sup> | 3200 <sup>1)</sup><br>1700 <sup>2)</sup> |
| 5/3-way pressurised (P53U)                                      | 1900 <sup>1)</sup><br>950 <sup>2)</sup> | 1400 <sup>1)</sup><br>800 <sup>2)</sup> | 3600 <sup>1)</sup><br>1700 <sup>2)</sup> | 3200 <sup>1)</sup><br>1700 <sup>2)</sup> |
| 5/3-way, 1 to 2 pressurised, 4 to 5 closed (P53F)3)             | 1700 <sup>1)</sup><br>700 <sup>2)</sup> | 1400 <sup>1)</sup><br>700 <sup>2)</sup> | 3000 <sup>1)</sup><br>900 <sup>2)</sup>  | 2600 <sup>1)</sup><br>900 <sup>2)</sup>  |
| 2x3/2-way single solenoid, closed (T32C)                        | 1600                                    | 1200                                    | 3000                                     | 2600                                     |
| 2x3/2-way single solenoid, open (T32U)                          | 1600                                    | 1200                                    | 3000                                     | 2600                                     |
| 2x3/2-way single solenoid, open/closed (T32H)                   | 1600                                    | 1200                                    | 3000                                     | 2600                                     |
| 2x3/2-way single solenoid, closed (T32N)                        | 1600                                    | 1200                                    | 3000                                     | 2600                                     |
| 2x3/2-way single solenoid, open (T32F)                          | 1600                                    | 1200                                    | 3000                                     | 2600                                     |
| 2x3/2-way single solenoid, open/closed (T32W)                   | 1600                                    | 1200                                    | 3000                                     | 2600                                     |
| 2x2/2-way single solenoid, closed (T22C)                        | 1600                                    | 1400                                    | 4000                                     | 3400                                     |
| 2x2/2-way single solenoid, closed (T22CV)                       | 1600                                    | 1400                                    | –                                        | –                                        |

1) Switching position

2) Mid-position

3) The valve function P53F is only available in the 24 V DC version. Values only apply to 24 V DC.

| Electrical data – Individual sub-base |        |                                                                                                    |
|---------------------------------------|--------|----------------------------------------------------------------------------------------------------|
| Current rating<br>at 40 °C            | [A]    | 2 (1 A per coil)                                                                                   |
| Degree of protection to EN 60529      |        | IP65, NEMA 4 (for all types of signal transmission when mounted)                                   |
| Variants with round plug M12          |        |                                                                                                    |
| Operating voltage range               | [V DC] | 24 ±10% (for variants with round plug M12 VABS-...-R3)                                             |
| Surge resistance                      | [kV]   | 0.8                                                                                                |
| Pollution degree                      |        | 3                                                                                                  |
| Duty cycle                            | ED     | 100%                                                                                               |
| Variants with cable connector         |        |                                                                                                    |
| Operating voltage range               | [V DC] | 24 ±10% (for variants with cable clamps VABS-...-K1/C1, ...-K2)                                    |
|                                       | [V AC] | 110 ±10% (50 ... 60Hz) (for variants with cable and spring-loaded terminal VABS-...-K1/C1, ...-K2) |
| Surge resistance                      | [kV]   | 4                                                                                                  |
| Pollution degree                      |        | 3                                                                                                  |
| Duty cycle                            | [ED]   | 100%                                                                                               |



### Note

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



## Datasheet – Valves on individual sub-base

| Materials         |                        |       |       |                            |
|-------------------|------------------------|-------|-------|----------------------------|
| Width             | 18 mm                  | 26 mm | 42 mm | 52 mm                      |
| Sub-base          | Die-cast aluminium     |       |       | Gravity die-cast aluminium |
| Valve             | Die-cast aluminium, PA |       |       |                            |
| Seals             | FPM, NBR               |       |       |                            |
| Note on materials | RoHS-compliant         |       |       |                            |

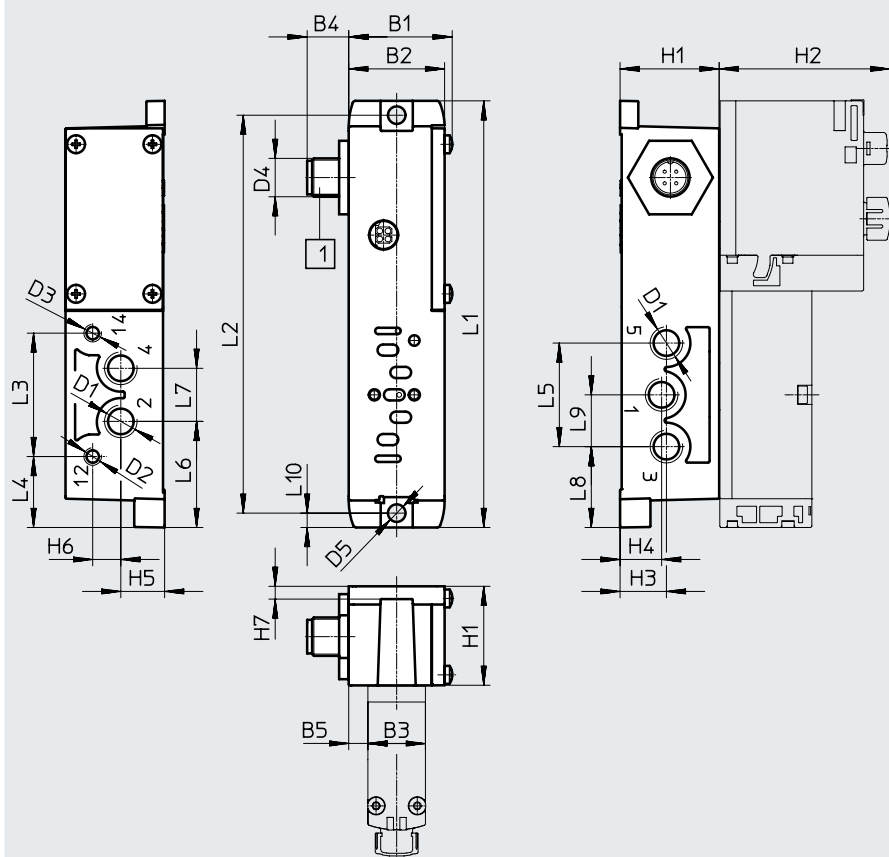
| Product weight [g]                                             |       |       |       |       |
|----------------------------------------------------------------|-------|-------|-------|-------|
| Width                                                          | 18 mm | 26 mm | 42 mm | 52 mm |
| Valves                                                         |       |       |       |       |
| 5/2-way solenoid valve, double solenoid (B52, D52)             | 172   | 276   | 439   | 732   |
| 5/2-way valve, single solenoid (M52A, M52M)                    | 163   | 293   | 426   | 702   |
| 5/3-way solenoid valve (P53C, P53E, P53U)                      | 191   | 320   | 456   | 780   |
| 5/3-way solenoid valve (P53BD)                                 | 172   | 301   | –     | –     |
| 5/3-way solenoid valve (P53ED, P53EP)                          | 170   | 291   | –     | –     |
| 5/3-way solenoid valve (P53AD)                                 | 172   | 301   | –     | –     |
| 5/3-way solenoid valve (P53F)                                  | –     | –     | 456   | 780   |
| 2x 3/2-way solenoid valve (T32C, T32U, T32H, T32N, T32F, T32W) | 190   | 335   | 442   | 740   |
| 2x 2/2-way solenoid valve (T22C, T22CV)                        | 190   | 335   | 442   | 740   |
| Individual connection                                          |       |       |       |       |
| Individual sub-base                                            | 192   | 302   | 386   | 815   |

## Datasheet – Valves on individual sub-base

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Individual sub-base with M12 plug, width 18 mm



[1] Plug to  
EN 61076-2-101

| Type                              | B1   | B2 | B3 | B4 | B5 | D1   | D2 | D3 | D4    | D5ø | H1 | H2   | H3   | H4 | H5   | H6  | H7 |
|-----------------------------------|------|----|----|----|----|------|----|----|-------|-----|----|------|------|----|------|-----|----|
| VABS-S4-2S-G18-R3 <sup>1)</sup>   | 32.4 | 30 | 18 | 13 | 6  | G1/8 | M5 | M5 | M12x1 | 5.5 | 31 | 53.4 | 14.5 | 13 | 13.7 | 8.8 | 4  |
| VABS-S4-2S-G18-B-R3 <sup>2)</sup> |      |    |    |    |    |      |    | –  |       |     |    |      |      |    |      |     |    |

| Type                              | L1    | L2    | L3   | L4   | L5   | L6   | L7   | L8   | L9   | L10 |
|-----------------------------------|-------|-------|------|------|------|------|------|------|------|-----|
| VABS-S4-2S-G18-R3 <sup>1)</sup>   | 133.5 | 124.5 | 38.6 | 22.2 | 32.4 | 33.2 | 16.6 | 25.3 | 16.2 | 4.5 |
| VABS-S4-2S-G18-B-R3 <sup>2)</sup> |       |       |      |      |      |      |      |      |      |     |

1) External pilot air supply

2) Internal pilot air supply

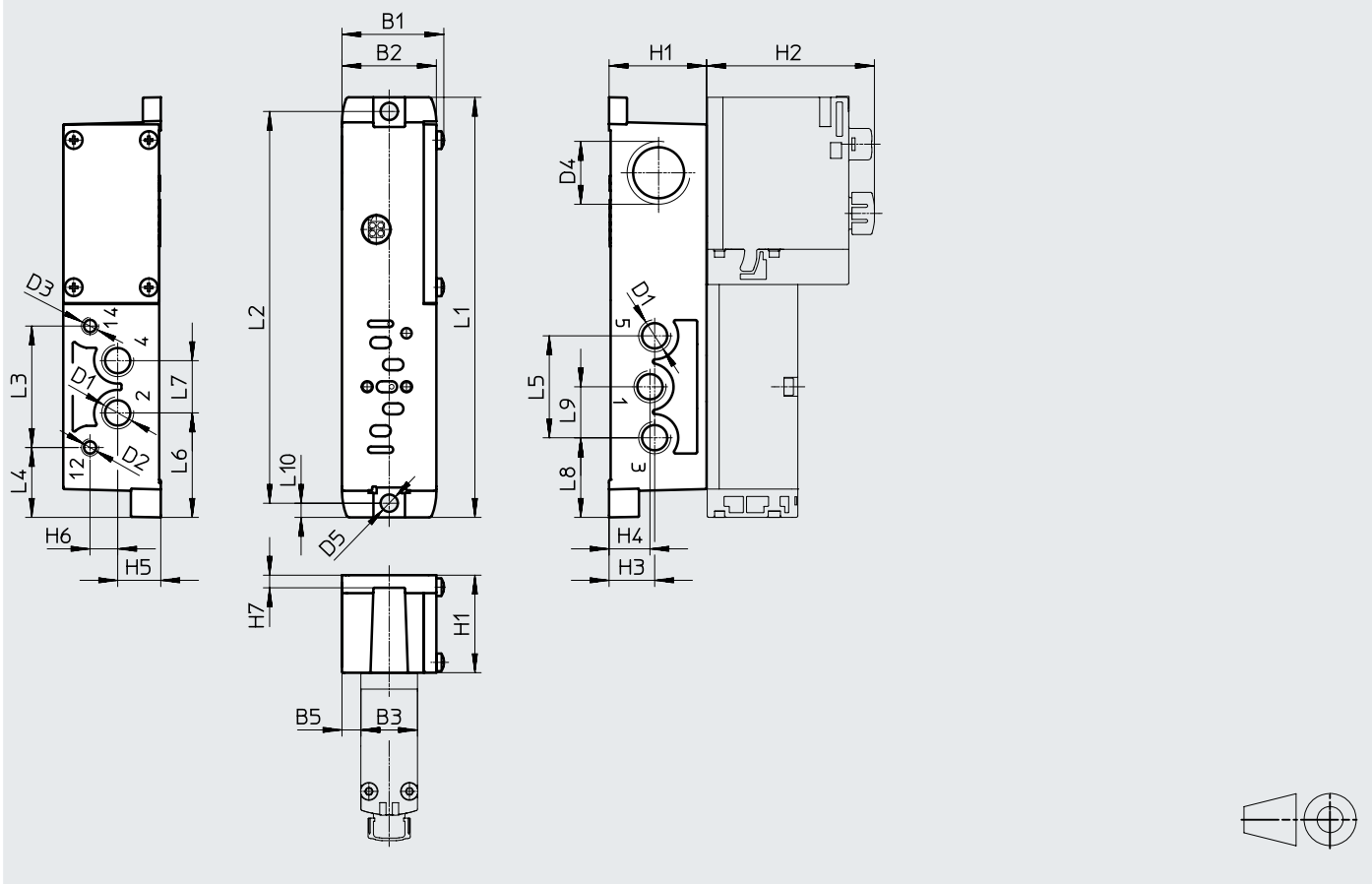
– Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet – Valves on individual sub-base

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Individual sub-base with cable clamps, width 18 mm



| Type                              | B1   | B2 | B3 | B5 | D1   | D2 | D3 | D4      | D5 ø | H1 | H2   | H3   | H4 | H5   | H6  | H7 |
|-----------------------------------|------|----|----|----|------|----|----|---------|------|----|------|------|----|------|-----|----|
| VABS-S4-2S-G18-K2 <sup>1)</sup>   | 32.4 | 30 | 18 | 6  | G1/8 | M5 | M5 | M20x1.5 | 5.5  | 31 | 53.4 | 14.5 | 13 | 13.7 | 8.8 | 4  |
| VABS-S4-2S-G18-B-K2 <sup>2)</sup> |      |    |    |    |      |    | –  |         |      |    |      |      |    |      |     |    |

| Type                              | L1    | L2    | L3   | L4   | L5   | L6   | L7   | L8   | L9   | L10 |
|-----------------------------------|-------|-------|------|------|------|------|------|------|------|-----|
| VABS-S4-2S-G18-K2 <sup>1)</sup>   | 133.5 | 124.5 | 38.6 | 22.2 | 32.4 | 33.2 | 16.6 | 25.3 | 16.2 | 4.5 |
| VABS-S4-2S-G18-B-K2 <sup>2)</sup> |       |       |      |      |      |      |      |      |      |     |

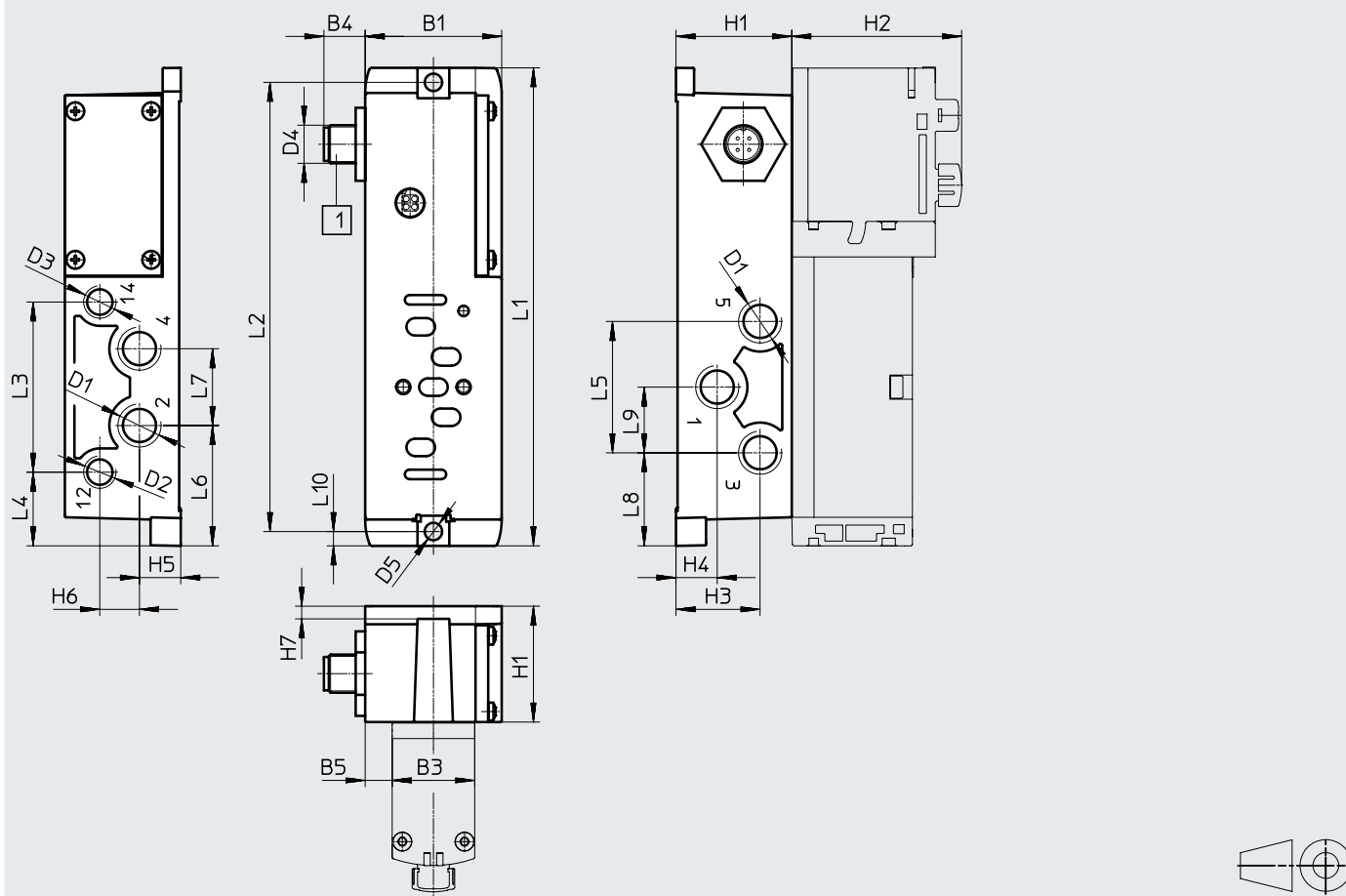
1) External pilot air supply  
2) Internal pilot air supply  
- ‡ - Note: This product conforms to ISO 1179-1 and ISO 228-1.

## Datasheet – Valves on individual sub-base

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Individual sub-base with M12 plug, width 26 mm



[1] Plug to  
EN 61076-2-101

| Type                              | B1 | B3 | B4 | B5  | D1   | D2   | D3   | D4    | D5 Ø | H1   | H2   | H3   | H4 | H5 | H6   | H7 |
|-----------------------------------|----|----|----|-----|------|------|------|-------|------|------|------|------|----|----|------|----|
| VABS-S4-1S-G14-R3 <sup>1)</sup>   | 43 | 26 | 13 | 8.5 | G1/4 | G1/8 | G1/8 | M12x1 | 5.5  | 36.5 | 53.5 | 26.5 | 13 | 13 | 12.5 | 4  |
| VABS-S4-1S-G14-B-R3 <sup>2)</sup> |    |    |    |     |      |      | –    |       |      |      |      |      |    |    |      |    |

| Type                              | L1    | L2    | L3   | L4   | L5   | L6   | L7   | L8   | L9   | L10 |
|-----------------------------------|-------|-------|------|------|------|------|------|------|------|-----|
| VABS-S4-1S-G14-R3 <sup>1)</sup>   | 150.6 | 141.5 | 53.6 | 23.2 | 41.4 | 37.9 | 24.2 | 29.3 | 20.7 | 4.5 |
| VABS-S4-1S-G14-B-R3 <sup>2)</sup> |       |       |      |      |      |      |      |      |      |     |

1) External pilot air supply

2) Internal pilot air supply

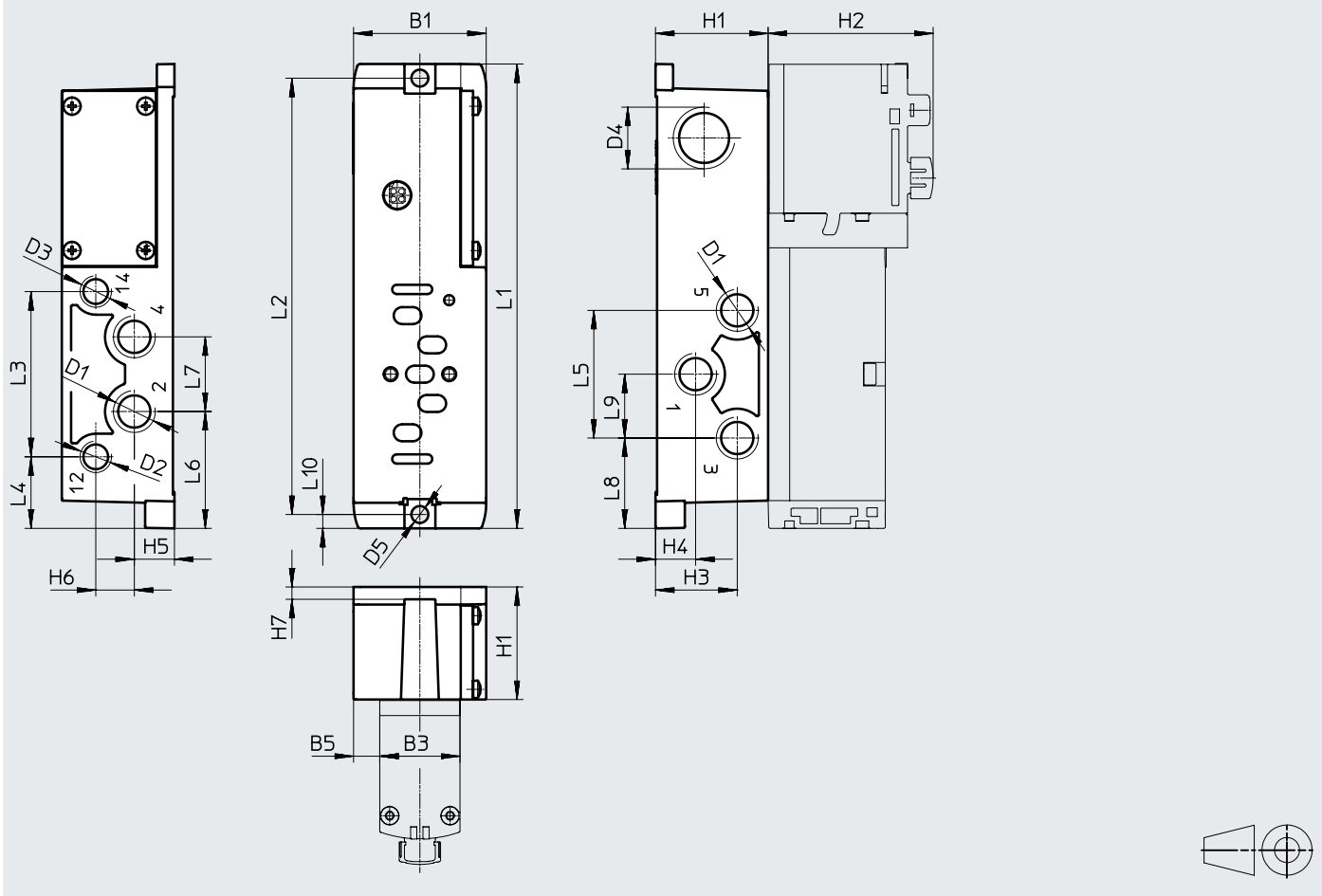
• Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet – Valves on individual sub-base

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Individual sub-base with cable clamps, width 26 mm



| Type                              | B1 | B3 | B5  | D1   | D2   | D3   | D4      | D5 ø | H1   | H2   | H3   | H4 | H5 | H6   | H7 |
|-----------------------------------|----|----|-----|------|------|------|---------|------|------|------|------|----|----|------|----|
| VABS-S4-1S-G14-K2 <sup>1)</sup>   | 43 | 26 | 8.5 | G1/4 | G1/8 | G1/8 | M20x1.5 | 5.5  | 36.5 | 53.5 | 26.5 | 13 | 13 | 12.5 | 4  |
| VABS-S4-1S-G14-B-K2 <sup>2)</sup> |    |    |     |      |      | –    |         |      |      |      |      |    |    |      |    |

| Type                              | L1    | L2    | L3   | L4   | L5   | L6   | L7   | L8   | L9   | L10 |
|-----------------------------------|-------|-------|------|------|------|------|------|------|------|-----|
| VABS-S4-1S-G14-K2 <sup>1)</sup>   | 150.6 | 141.5 | 53.6 | 23.2 | 41.4 | 37.9 | 24.2 | 29.3 | 20.7 | 4.5 |
| VABS-S4-1S-G14-B-K2 <sup>2)</sup> |       |       |      |      |      |      |      |      |      |     |

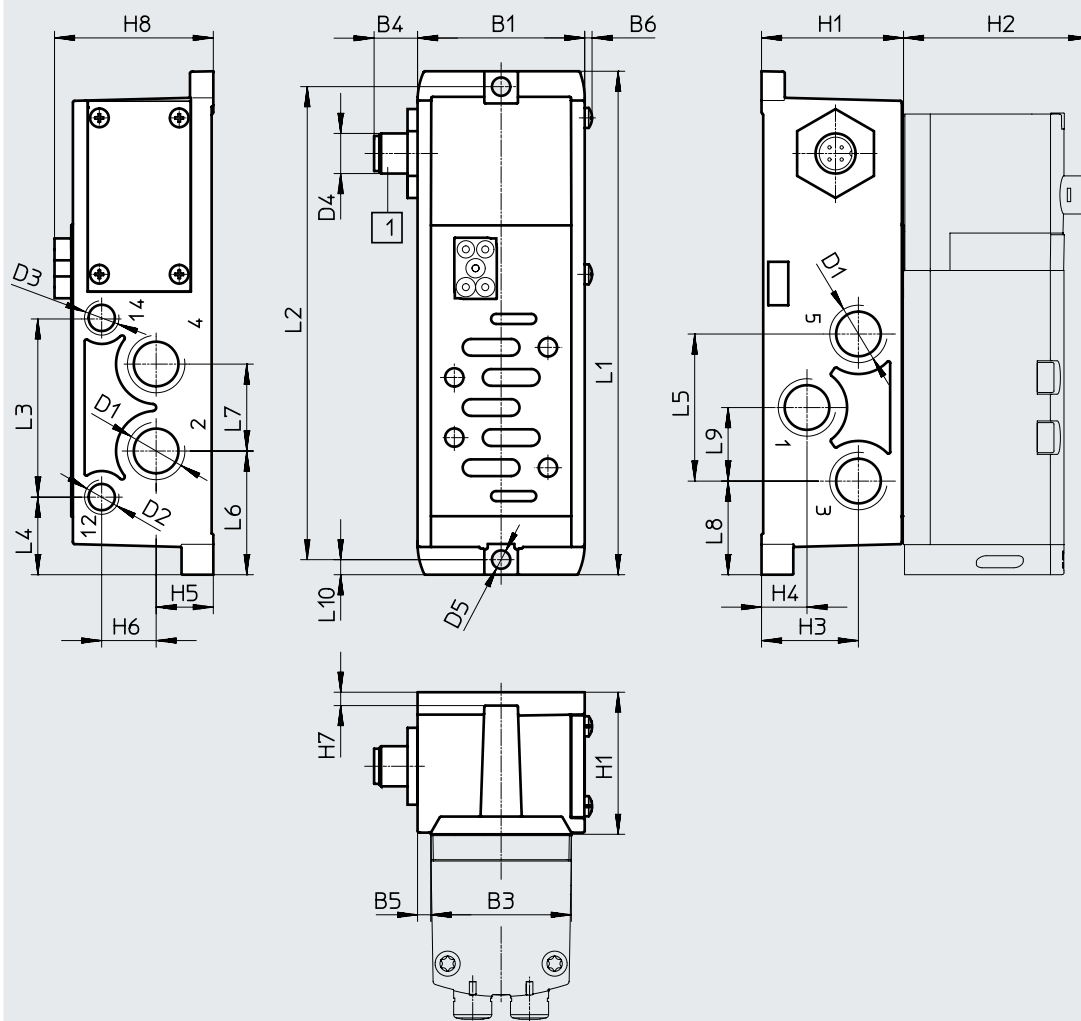
1) External pilot air supply  
2) Internal pilot air supply  
- † - Note: This product conforms to ISO 1179-1 and ISO 228-1.

## Datasheet – Valves on individual sub-base

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Individual sub-base with M12-Plug, width 42 mm



[1] Plug to  
EN 61076-2-101

| Type                              | B1 | B3 | B4 | B5 | B6  | D1   | D2   | D3   | D4      | D5Ø | H1   | H2   | H3 | H4   | H5   | H6   | H7 | H8   |
|-----------------------------------|----|----|----|----|-----|------|------|------|---------|-----|------|------|----|------|------|------|----|------|
| VABS-S2-1S-G38-R3 <sup>1)</sup>   | 50 | 42 | 13 | 4  | 2.2 | G3/8 | G1/8 | G1/8 | M20x1.5 | 5.5 | 42.5 | 55.3 | 29 | 13.6 | 17.1 | 16.3 | 4  | 47.5 |
| VABS-S2-1S-G38-B-R3 <sup>2)</sup> |    |    |    |    |     |      |      | —    |         |     |      |      |    |      |      |      |    |      |

| Type                              | L1    | L2    | L3   | L4   | L5 | L6 | L7 | L8 | L9 | L10 |
|-----------------------------------|-------|-------|------|------|----|----|----|----|----|-----|
| VABS-S2-1S-G38-R3 <sup>1)</sup>   | 150.6 | 141.5 | 53.6 | 23.2 | 44 | 37 | 26 | 28 | 22 | 4.5 |
| VABS-S2-1S-G38-B-R3 <sup>2)</sup> |       |       |      |      |    |    |    |    |    |     |

1) External pilot air supply

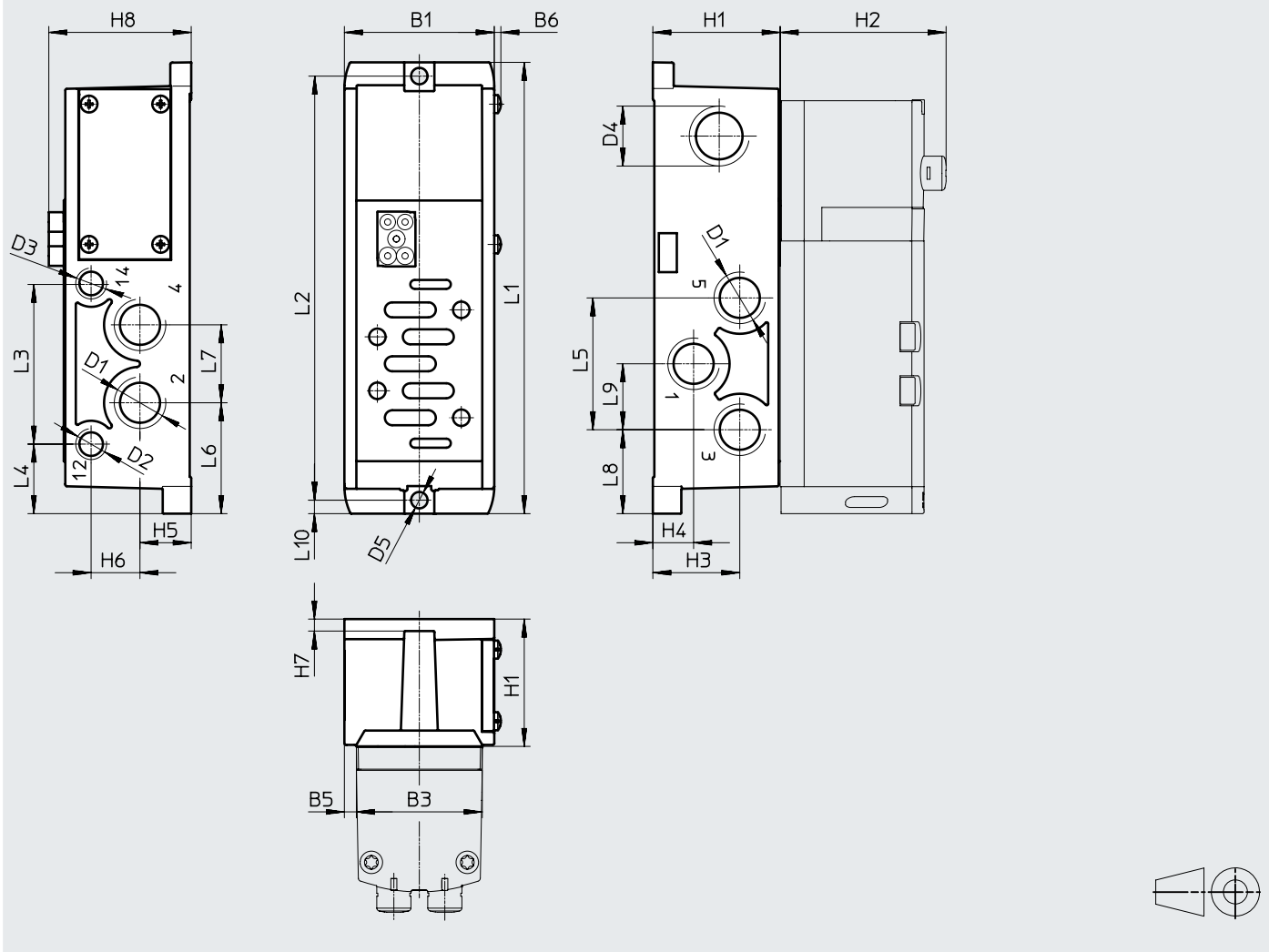
2) Internal pilot air supply

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

Datasheet – Valves on individual sub-base

Dimensions Download CAD data → [www.festo.com](http://www.festo.com)

Individual sub-base with spring-loaded terminal or for assembly by the user, width 42 mm



| Type                              | B1 | B3 | B5 | B6  | D1   | D2   | D3   | D4      | D5 ø | H1   | H2   | H3 | H4   | H5   | H6   | H7 | H8   |
|-----------------------------------|----|----|----|-----|------|------|------|---------|------|------|------|----|------|------|------|----|------|
| VABS-S2-1S-G38-K1 <sup>1)</sup>   | 50 | 42 | 4  | 2.2 | G3/8 | G1/8 | G1/8 | M20x1.5 | 5.5  | 42.5 | 55.3 | 29 | 13.6 | 17.1 | 16.3 | 4  | 47.5 |
| VABS-S2-1S-G38-C1 <sup>1)</sup>   |    |    |    |     |      |      |      |         |      |      |      |    |      |      |      |    |      |
| VABS-S2-1S-G38-B-K1 <sup>2)</sup> |    |    |    |     |      |      |      |         |      |      |      |    |      |      |      |    |      |
| VABS-S2-1S-G38-B-C1 <sup>2)</sup> |    |    |    |     |      |      | -    |         |      |      |      |    |      |      |      |    |      |

| Type                              | L1    | L2    | L3   | L4   | L5 | L6 | L7 | L8 | L9 | L10 |
|-----------------------------------|-------|-------|------|------|----|----|----|----|----|-----|
| VABS-S2-1S-G38-K1 <sup>1)</sup>   | 150.6 | 141.5 | 53.6 | 23.2 | 44 | 37 | 26 | 28 | 22 | 4.5 |
| VABS-S2-1S-G38-C1 <sup>1)</sup>   |       |       |      |      |    |    |    |    |    |     |
| VABS-S2-1S-G38-B-K1 <sup>2)</sup> |       |       |      |      |    |    |    |    |    |     |
| VABS-S2-1S-G38-B-C1 <sup>2)</sup> |       |       |      |      |    |    |    |    |    |     |

1) External pilot air supply  
2) Internal pilot air supply  
- † - Note: This product conforms to ISO 1179-1 and ISO 228-1.

**Note**

Electrical connection

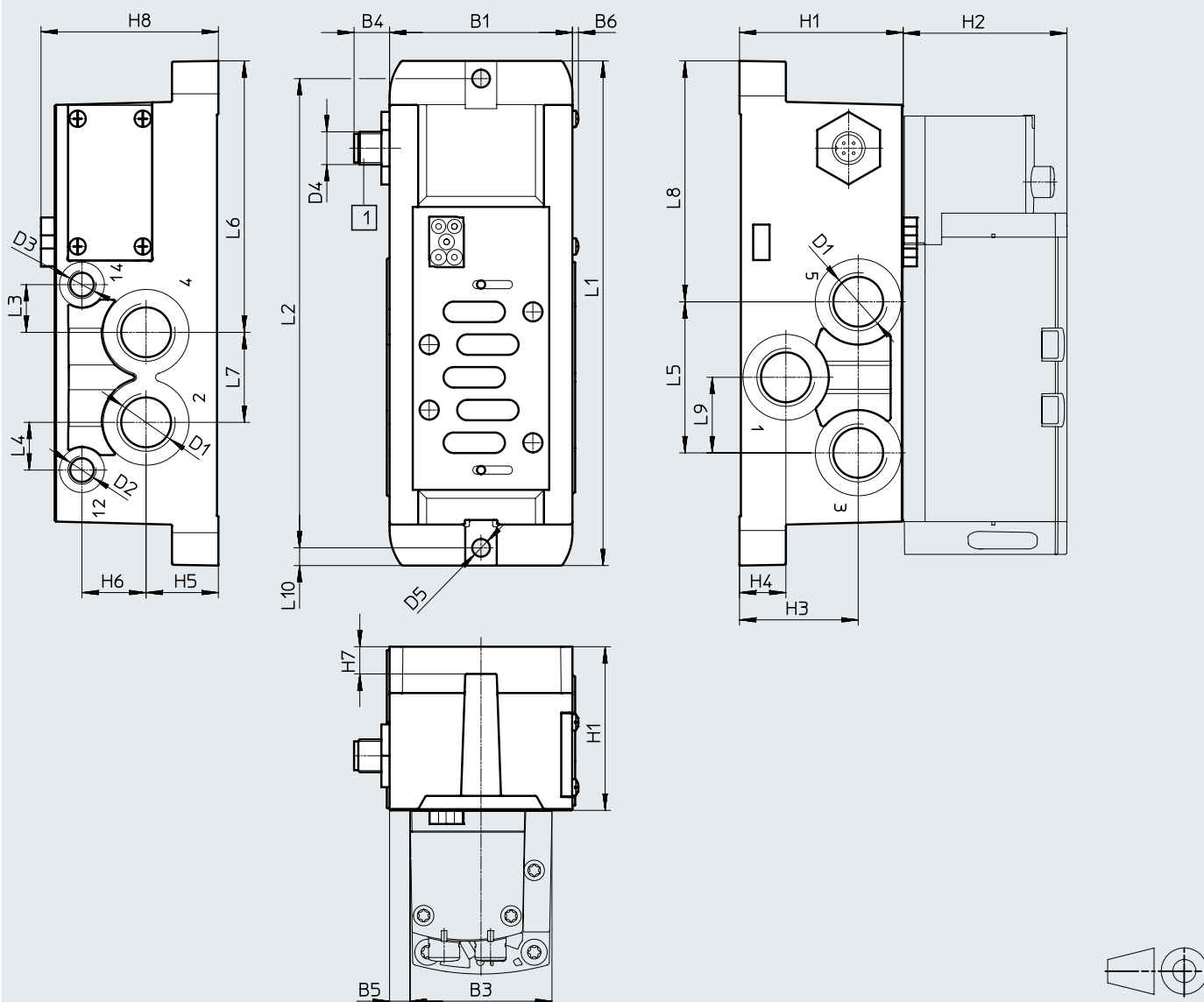
- VABS-...-K1: open end
- VABS-...-C1: spring-loaded terminal

## Datasheet – Valves on individual sub-base

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Individual sub-base with M12 plug, width 52 mm



[1] Plug to  
EN 61076-2-101

| Type                              | B1 | B3 | B4 | B5  | B6  | D1   | D2   | D3   | D4    | D5 ø | H1 | H2 | H3   | H4 | H5   | H6   | H7 | H8 |
|-----------------------------------|----|----|----|-----|-----|------|------|------|-------|------|----|----|------|----|------|------|----|----|
| VABS-S2-2S-G12-R3 <sup>1)</sup>   | 67 | 52 | 13 | 7.5 | 2.2 | G1/2 | G1/8 | G1/8 | M12x1 | 6.5  | 60 | 60 | 43.5 | 17 | 26.5 | 23.5 | 10 | 65 |
| VABS-S2-2S-G12-B-R3 <sup>2)</sup> |    |    |    |     |     |      |      | –    |       |      |    |    |      |    |      |      |    |    |

| Type                              | L1  | L2  | L3   | L4   | L5   | L6   | L7 | L8   | L9   | L10 |
|-----------------------------------|-----|-----|------|------|------|------|----|------|------|-----|
| VABS-S2-2S-G12-R3 <sup>1)</sup>   | 185 | 172 | 17.5 | 17.5 | 55.4 | 99.5 | 33 | 88.3 | 27.7 | 6.5 |
| VABS-S2-2S-G12-B-R3 <sup>2)</sup> |     |     |      |      |      |      |    |      |      |     |

1) External pilot air supply

2) Internal pilot air supply

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

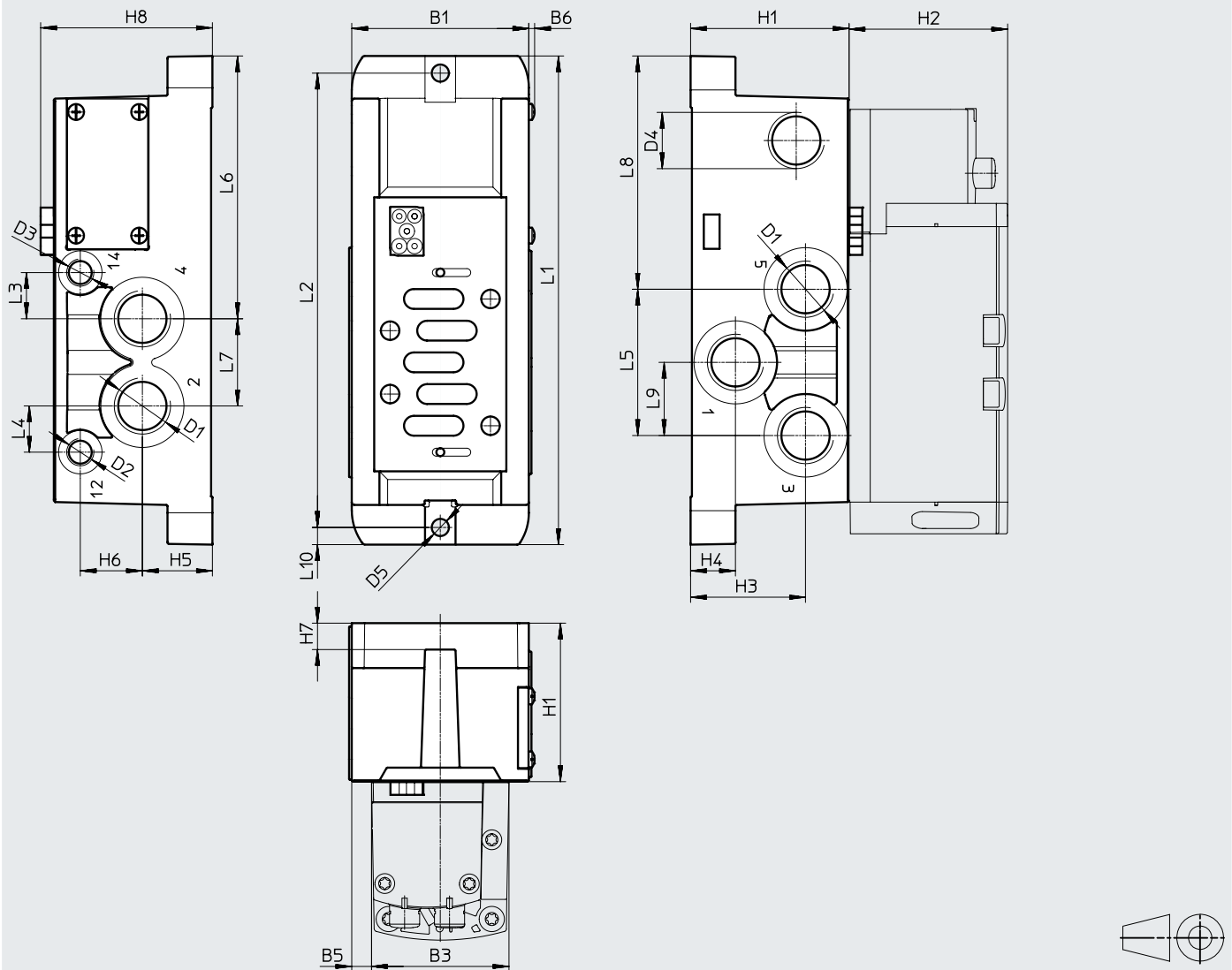


# Datasheet – Valves on individual sub-base

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Individual sub-base with spring-loaded terminal or for assembly by the user, width 52 mm



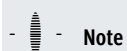
| Type                              | B1 | B3 | B5  | B6  | D1   | D2   | D3   | D4      | D5 Ø | H1 | H2 | H3   | H4 | H5   | H6   | H7 | H8 |
|-----------------------------------|----|----|-----|-----|------|------|------|---------|------|----|----|------|----|------|------|----|----|
| VABS-S2-2S-G12-K1 <sup>1)</sup>   | 67 | 52 | 7.5 | 2.2 | G1/2 | G1/8 | G1/8 | M20x1.5 | 6.5  | 60 | 60 | 43.5 | 17 | 26.5 | 23.5 | 10 | 65 |
| VABS-S2-2S-G12-C1 <sup>1)</sup>   |    |    |     |     |      |      | -    |         |      |    |    |      |    |      |      |    |    |
| VABS-S2-2S-G12-B-K1 <sup>2)</sup> |    |    |     |     |      |      | -    |         |      |    |    |      |    |      |      |    |    |
| VABS-S2-2S-G12-B-C1 <sup>2)</sup> |    |    |     |     |      |      | -    |         |      |    |    |      |    |      |      |    |    |

| Type                              | L1  | L2  | L3   | L4   | L5   | L6   | L7 | L8   | L9   | L10 |
|-----------------------------------|-----|-----|------|------|------|------|----|------|------|-----|
| VABS-S2-2S-G12-K1 <sup>1)</sup>   | 185 | 172 | 17.5 | 17.5 | 55.4 | 99.5 | 33 | 88.3 | 27.7 | 6.5 |
| VABS-S2-2S-G12-C1 <sup>1)</sup>   |     |     |      |      |      |      |    |      |      |     |
| VABS-S2-2S-G12-B-K1 <sup>2)</sup> |     |     |      |      |      |      |    |      |      |     |
| VABS-S2-2S-G12-B-C1 <sup>2)</sup> |     |     |      |      |      |      |    |      |      |     |

<sup>1)</sup> External pilot air supply

<sup>2)</sup> Internal pilot air supply

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

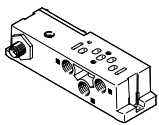
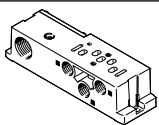
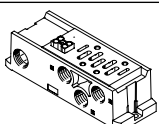
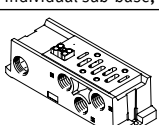


## Note

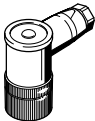
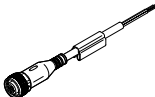
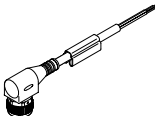
Electrical connection

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

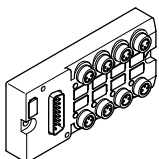
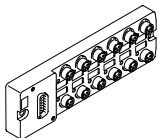
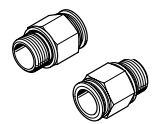
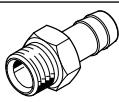
## Accessories – Individual connection

| Ordering data                                                                           |                                                |                                 |                                 |          |                          |                          |
|-----------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------|---------------------------------|----------|--------------------------|--------------------------|
| Description                                                                             |                                                |                                 | Width                           | Part no. | Type                     |                          |
| Individual sub-base, electrical connection with plug connector M12 (without CE marking) |                                                |                                 |                                 |          |                          |                          |
|        | Threaded connection, internal pilot air supply | Connections G1/8                | –                               | 18 mm    | 541070                   | VABS-S4-2S-G18-B-R3      |
|                                                                                         |                                                |                                 | Explosion group of assembly IIC |          | 8033156                  | VABS-S4-2S-G18-B-R3-EX1E |
|                                                                                         |                                                | Connections G1/4                | –                               | 26 mm    | 541069                   | VABS-S4-1S-G14-B-R3      |
|                                                                                         |                                                |                                 | Explosion group of assembly IIC |          | 8033158                  | VABS-S4-1S-G14-B-R3-EX1E |
|                                                                                         |                                                | Connections G3/8                | –                               | 42 mm    | 546104                   | VABS-S2-1S-G38-B-R3      |
|                                                                                         |                                                |                                 | Explosion group of assembly IIC |          | 8033160                  | VABS-S2-1S-G38-B-R3-EX1E |
|                                                                                         | Connections G1/2                               | –                               | 52 mm                           | 555645   | VABS-S2-2S-G12-B-R3      |                          |
|                                                                                         |                                                | Explosion group of assembly IIC |                                 | 8033162  | VABS-S2-2S-G12-B-R3-EX1E |                          |
|                                                                                         | Threaded connection, external pilot air supply | Connections G1/8                | –                               | 18 mm    | 541064                   | VABS-S4-2S-G18-R3        |
|                                                                                         |                                                |                                 | Explosion group of assembly IIC |          | 8033155                  | VABS-S4-2S-G18-R3-EX1E   |
|                                                                                         |                                                | Connections G1/4                | –                               | 26 mm    | 541063                   | VABS-S4-1S-G14-R3        |
|                                                                                         |                                                |                                 | Explosion group of assembly IIC |          | 8033157                  | VABS-S4-1S-G14-R3-EX1E   |
|                                                                                         |                                                | Connections G3/8                | –                               | 42 mm    | 546101                   | VABS-S2-1S-G38-R3        |
|                                                                                         |                                                |                                 | Explosion group of assembly IIC |          | 8033159                  | VABS-S2-1S-G38-R3-EX1E   |
| Connections G1/2                                                                        |                                                | –                               | 52 mm                           | 555640   | VABS-S2-2S-G12-R3        |                          |
|                                                                                         |                                                | Explosion group of assembly IIC |                                 | 8033161  | VABS-S2-2S-G12-R3-EX1E   |                          |
| Individual sub-base, electrical connection via cable clamps                             |                                                |                                 |                                 |          |                          |                          |
|      | Threaded connection, internal pilot air supply | Connections G1/8                |                                 | 18 mm    | 541067                   | VABS-S4-2S-G18-B-K2      |
|                                                                                         |                                                | Connections G1/4                |                                 | 26 mm    | 541065                   | VABS-S4-1S-G14-B-K2      |
|                                                                                         | Threaded connection, external pilot air supply | Connections G1/8                |                                 | 18 mm    | 539723                   | VABS-S4-2S-G18-K2        |
|                                                                                         |                                                | Connections G1/4                |                                 | 26 mm    | 539725                   | VABS-S4-1S-G14-K2        |
| Individual sub-base, electrical connection via spring-loaded terminal                   |                                                |                                 |                                 |          |                          |                          |
|      | Threaded connection, internal pilot air supply | Connections G3/8                |                                 | 42 mm    | 546762                   | VABS-S2-1S-G38-B-C1      |
|                                                                                         |                                                | Connections G1/2                |                                 | 52 mm    | 555643                   | VABS-S2-2S-G12-B-C1      |
|                                                                                         | Threaded connection, external pilot air supply | Connections G3/8                |                                 | 42 mm    | 546760                   | VABS-S2-1S-G38-C1        |
|                                                                                         |                                                | Connections G1/2                |                                 | 52 mm    | 555638                   | VABS-S2-2S-G12-C1        |
| Individual sub-base, electrical connection via cable (open end)                         |                                                |                                 |                                 |          |                          |                          |
|      | Threaded connection, internal pilot air supply | Connections G3/8                |                                 | 42 mm    | 546102                   | VABS-S2-1S-G38-B-K1      |
|                                                                                         |                                                | Connections G1/2                |                                 | 52 mm    | 555641                   | VABS-S2-2S-G12-B-K1      |
|                                                                                         | Threaded connection, external pilot air supply | Connections G3/8                |                                 | 42 mm    | 546099                   | VABS-S2-1S-G38-K1        |
|                                                                                         |                                                | Connections G1/2                |                                 | 52 mm    | 555636                   | VABS-S2-2S-G12-K1        |

## Accessories – Individual connection

| Ordering data                                                                                                                                                                                                                                                          |                                                                                                            | Description | Part no. | Type                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------|----------|----------------------|
| Plug socket for the electrical connection of individual valves                                                                                                                                                                                                         |                                                                                                            |             |          |                      |
|                                                                                                                                                                                        | Angled socket, M12x1, 4-pin, type A, screw terminal                                                        |             | 8162292  | NECB-M12W4-C2        |
| Connecting cable for electrical connection of individual valves, 6-way or 10-way                                                                                                                                                                                       |                                                                                                            |             |          |                      |
|                                                                                                                                                                                        | <ul style="list-style-type: none"><li>• Straight socket, M12x1, 5-pin</li><li>• Open end, 4-core</li></ul> | 5 m         | 8078240  | NEBA-M12G5-U-5-N-LE4 |
|                                                                                                                                                                                        | <ul style="list-style-type: none"><li>• Angled socket, M12x1, 5-pin,</li><li>• Open end, 4-core</li></ul>  | 5 m         | 8078249  | NEBA-M12W5-U-5-N-LE4 |
| Pneumatic connection accessories                                                                                                                                                                                                                                       |                                                                                                            |             |          |                      |
| A selection of possible fittings, blanking plugs, silencers and other pneumatic accessories can be found in the chapter Accessories → page: 245 or on the website via the individual search terms:<br><b>Internet</b> → connection technology, silencer, blanking plug |                                                                                                            |             |          |                      |

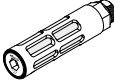
## Accessories

| Ordering data                                                                       |      |                                           |                        |                        |                           |                                   |
|-------------------------------------------------------------------------------------|------|-------------------------------------------|------------------------|------------------------|---------------------------|-----------------------------------|
|                                                                                     | Code | Description                               |                        |                        | Part no.                  | Type                              |
| Multi-pin plug distributor                                                          |      |                                           |                        |                        |                           |                                   |
|    | –    | 15-pin Sub-D socket on 8x 3-pin M8 plugs  |                        |                        | 8 inputs/outputs          | <b>177669</b> <b>MPV-E/A08-M8</b> |
|    | –    | 15-pin Sub-D socket on 12x 3-pin M8 plugs |                        |                        | 12 inputs/outputs         | <b>177670</b> <b>MPV-E/A12-M8</b> |
| Push-in fitting with connecting thread                                              |      |                                           |                        |                        |                           |                                   |
|    | –    | G1/8 for                                  | Tubing O.D. 6 mm       | Plastic releasing ring | <b>186096</b>             | <b>QS-G1/8-6</b>                  |
|                                                                                     | E    |                                           |                        | Metal releasing ring   | <b>558662</b>             | <b>NPQM-D-G18-Q6-P10</b>          |
|                                                                                     | –    |                                           | Tubing O.D. 8 mm       | Plastic releasing ring | <b>186098</b>             | <b>QS-G1/8-8</b>                  |
|                                                                                     | E    |                                           |                        | Metal releasing ring   | <b>558663</b>             | <b>NPQM-D-G18-Q8-P10</b>          |
|                                                                                     | –    | G1/4 for                                  | Tubing O.D. 10 mm      | Plastic releasing ring | <b>190643</b>             | <b>QS-G1/8-10</b>                 |
|                                                                                     | E    |                                           |                        | Metal releasing ring   | <b>186099</b>             | <b>QS-G1/4-8</b>                  |
|                                                                                     | –    |                                           | Tubing O.D. 8 mm       | Plastic releasing ring | <b>558665</b>             | <b>NPQM-D-G14-Q8-P10</b>          |
|                                                                                     | E    |                                           |                        | Metal releasing ring   | <b>186101</b>             | <b>QS-G1/4-10</b>                 |
|                                                                                     | –    | G3/8 for                                  | Tubing O.D. 10 mm      | Plastic releasing ring | <b>558666</b>             | <b>NPQM-D-G14-Q10-P10</b>         |
|                                                                                     | E    |                                           |                        | Metal releasing ring   | <b>186350</b>             | <b>QS-G1/4-12</b>                 |
|                                                                                     | –    |                                           | Tubing O.D. 12 mm      | Plastic releasing ring | <b>558667</b>             | <b>NPQM-D-G14-Q12-P10</b>         |
|                                                                                     | E    |                                           |                        | Metal releasing ring   | <b>186102</b>             | <b>QS-G3/8-10</b>                 |
|                                                                                     | –    | G1/2 for                                  | Tubing O.D. 10 mm      | Plastic releasing ring | <b>558669</b>             | <b>NPQM-D-G38-Q10-P10</b>         |
|                                                                                     | E    |                                           |                        | Metal releasing ring   | <b>186114</b>             | <b>QS-G3/8-12-I</b>               |
|                                                                                     | –    |                                           | Tubing O.D. 12 mm      | Plastic releasing ring | <b>558670</b>             | <b>NPQM-D-G38-Q12-P10</b>         |
|                                                                                     | E    |                                           |                        | Metal releasing ring   | <b>558672</b>             | <b>NPQM-D-G12-Q12-P10</b>         |
|                                                                                     | –    | Tubing O.D. 12 mm                         | Plastic releasing ring | <b>186104</b>          | <b>QS-G1/2-12</b>         |                                   |
|                                                                                     | E    |                                           | Metal releasing ring   | <b>558672</b>          | <b>NPQM-D-G12-Q12-P10</b> |                                   |
|                                                                                     | –    |                                           | Tubing O.D. 14 mm      | Metal releasing ring   | <b>570451</b>             | <b>NPQM-D-G12-Q14-P10</b>         |
|                                                                                     | –    |                                           | Tubing O.D. 16 mm      | Plastic releasing ring | <b>186105</b>             | <b>QS-G1/2-16</b>                 |
| Barbed hose fitting/push-in fitting                                                 |      |                                           |                        |                        |                           |                                   |
|  | –    | For right end plate                       | G3/4                   | <b>8040613</b>         | <b>QS-G3/4-22</b>         |                                   |
|                                                                                     |      |                                           | R1                     | <b>572260</b>          | <b>N-1-P-19</b>           |                                   |
|                                                                                     | –    | For adapter plate                         | R1                     | <b>572260</b>          | <b>N-1-P-19</b>           |                                   |

 **Note**

Metal push-in fittings type NPQM-... should be selected when the highest protection is required for electrical and electronic components (anti-static requirements).

## Accessories

| Ordering data                                                                                                                                                                                   |      |                                    |      |          |               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------------------------------|------|----------|---------------|
|                                                                                                                                                                                                 | Code | Description                        |      | Part no. | Type          |
| Silencer                                                                                                                                                                                        |      |                                    |      |          |               |
|                                                                                                                 | U    | Standard design, connecting thread | G1/8 | 2307     | U-1/8         |
|                                                                                                                                                                                                 |      |                                    | G1/4 | 2316     | U-1/4         |
|                                                                                                                                                                                                 |      |                                    | G3/8 | 6843     | U-3/8-B       |
|                                                                                                                                                                                                 |      |                                    | G1/2 | 6844     | U-1/2-B       |
|                                                                                                                                                                                                 |      |                                    | G3/4 | 6845     | U-3/4-B       |
|                                                                                                                                                                                                 |      |                                    | G1   | 151990   | U-1-B         |
|                                                                                                                 | A    | Sintered design, connecting thread | G1/8 | 1205860  | AMTE-M-LH-G18 |
|                                                                                                                                                                                                 |      |                                    | G1/4 | 1205861  | AMTE-M-LH-G14 |
|                                                                                                                                                                                                 |      |                                    | G3/8 | 1205862  | AMTE-M-LH-G38 |
|                                                                                                                                                                                                 |      |                                    | G1/2 | 1205863  | AMTE-M-LH-G12 |
|                                                                                                                                                                                                 |      |                                    | G3/4 | 1205864  | AMTE-M-LH-G34 |
|                                                                                                                                                                                                 |      |                                    | G1   | 1205865  | AMTE-M-LH-G1  |
| Blanking plug                                                                                                                                                                                   |      |                                    |      |          |               |
|                                                                                                                 | —    | Connecting thread                  | M5   | 3843     | B-M5          |
|                                                                                                                                                                                                 |      |                                    | G1/8 | 3568     | B-1/8         |
|                                                                                                                                                                                                 |      |                                    | G1/4 | 3569     | B-1/4         |
|                                                                                                                                                                                                 |      |                                    | G1/2 | 3571     | B-1/2         |
|                                                                                                                                                                                                 |      |                                    | G3/4 | 3572     | B-3/4         |
|                                                                                                                                                                                                 |      |                                    | G1   | 5763     | B-1           |
| Other pneumatic connection accessories                                                                                                                                                          |      |                                    |      |          |               |
| A selection of possible fittings, blanking plugs and silencers can be found on the website via the individual search terms:<br><b>Internet</b> → connection technology, silencer, blanking plug |      |                                    |      |          |               |





