Valve terminals type 45 VTSA-F, NPT

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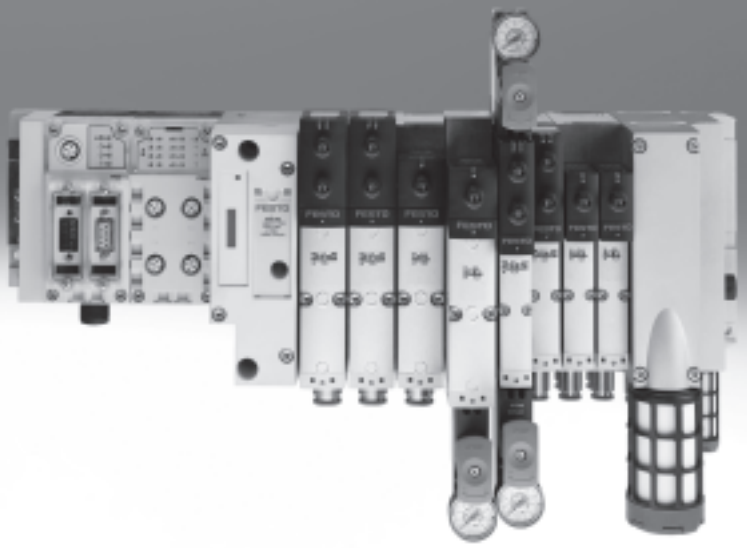
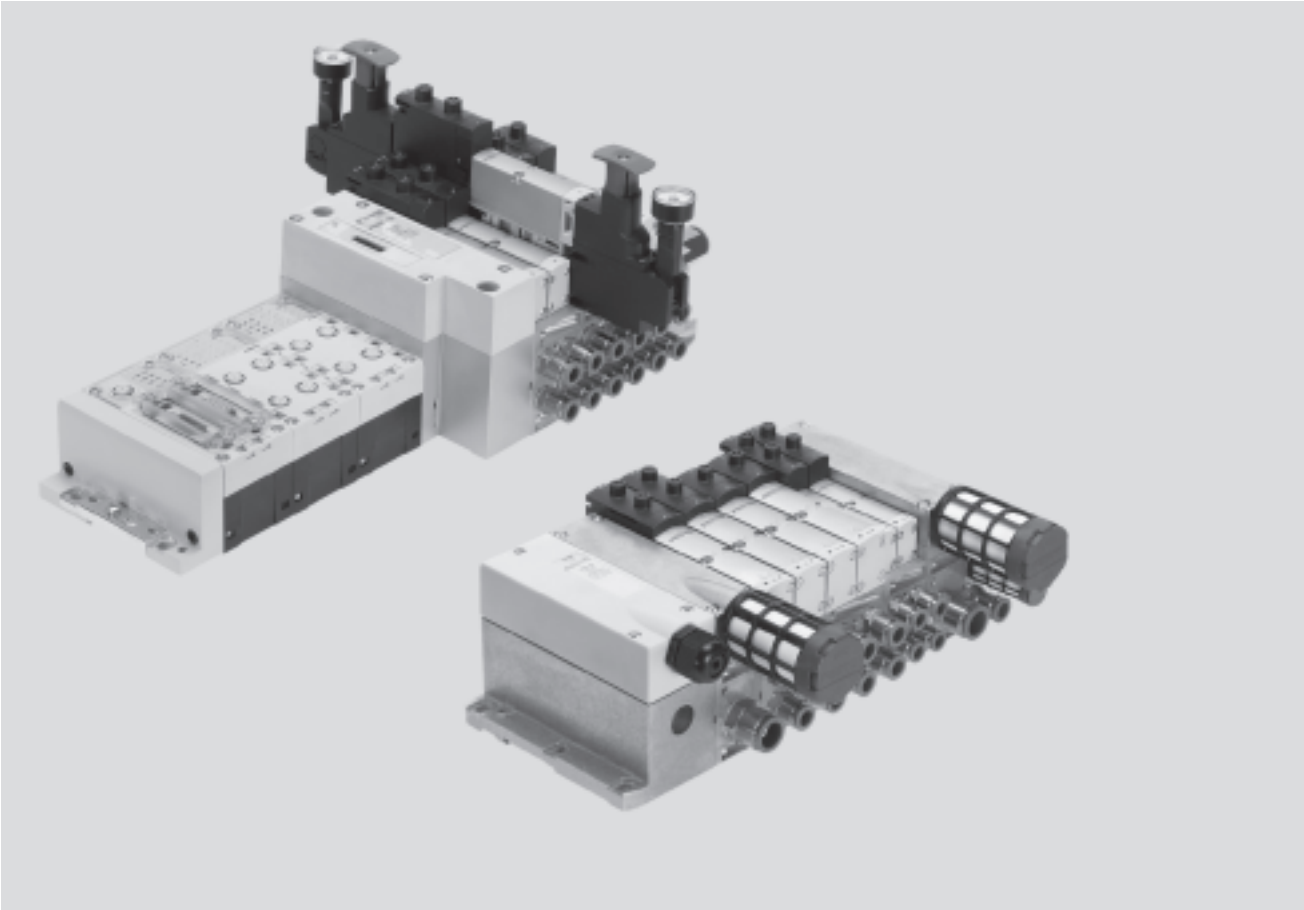


Valve terminals type 45 VTSA-F, NPT

Key features



Innovative

- High-performance valves in sturdy metal housing
- With the VTSA-F the full performance of the Festo valves with a flow rate of up to 1,400 l/min is available
- Standardised from the multi-pin plug to the fieldbus connection and control block
- Dream team: fieldbus valve terminal suitable for CPX electrical peripherals. This means:
  - Forward-looking internal communication system for actuating the valves and CPX modules
- Valve functions for integration in control architectures of higher categories to DIN EN 13849-1

Versatile

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

Reliable

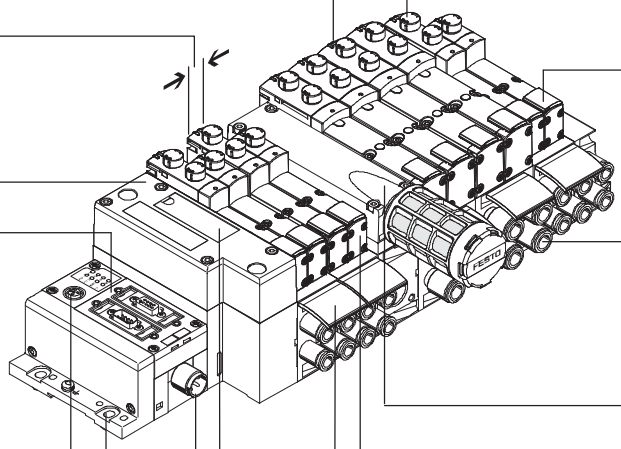
- Sturdy and durable metal components
  - Valves
  - Manifold sub-bases
  - Seals
- Fast troubleshooting thanks to LEDs on the valves and diagnostics via fieldbus
- Reliability of service thanks to valves that can be replaced quickly and easily
- Manual override either non-detenting, non-detenting/detenting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

Easy to mount

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

Valve terminals type 45 VTSA-F, NPT

Key features



Reduced downtimes:
On-the-spot diagnostics via LEDs

Width 18 mm and 26 mm can be combined on a single terminal without adapter

Pneumatic interface to CPX

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

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

Quick mounting:
Direct mounting using screws or H-rail

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

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

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

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

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

Comprehensive range of valve functions

Practical:
Large inscription labels

Equipment options

Valve functions

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

Valve terminals type 45 VTSA-F, NPT

Key features

Special features

Valve terminal with individual connection
- Max. 32 valve positions/ max. 32 solenoid coils
- Any compressed air supply
- Any number of pressure zones

Valve terminal with individual connection
- Max. 32 valve positions/ max. 32 solenoid coils
- Any compressed air supply
- Any number of pressure zones

Multi-pin terminal
- Max. 32 valve positions/ max. 32 solenoid coils
- Parallel modular valve linking
- Any compressed air supply
- Any number of pressure zones

AS-interface
- 1 to 8 valve positions/ max. 8 solenoid coils
- Soft-start valve for slow and safe pressure build-up
  - High degree of safety
  - Safe pressurisation by means of sensor function

Valve terminal with fieldbus connection and electrical peripherals type CPX
- Max. 32 valve positions/ max. 32 solenoid coils
- Any compressed air supply
- Any number of pressure zones

Combinable
- Width 18 mm: valve flow rate up to 700 l/min
- Width 26 mm: valve flow rate up to 1,400 l/min
- Width 26 mm and 18 mm can be combined on a single valve terminal

Valve terminal configurator

Online via: ➔ www.festo.com

The appropriate VTSA-F valve terminal can be chosen quickly and easily using the online catalogue. This includes an easy-to-use valve terminal configurator, which makes it much easier to find the right product.

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

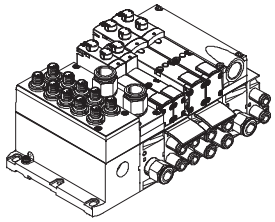
You order a valve terminal type 45 using the order code.

Ordering system for type 45
➔ Internet: type 45
Ordering system for CPX
➔ Internet: cpx

Valve terminals type 45 VTSA-F, NPT

Key features

Valve terminal with individual connection

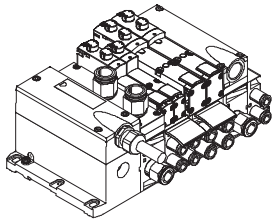


Control signals from the controller to the valve terminal are transmitted via an individual connecting cable.

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

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

Valve terminal with multi-pin plug connection



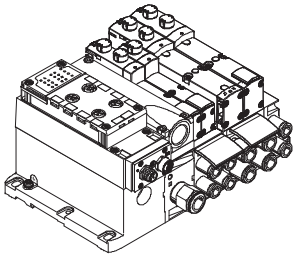
Control signals from the controller to the valve terminal are transmitted via a pre-assembled multi-wire cable or a self-assembled multi-pin plug connection (spring-loaded terminal), which substantially reduces installation time.

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

Versions

- Multi-pin plug connection with terminal strip (spring-loaded terminal) 24 V DC or 110 V AC
- Pre-assembled connecting cable 24 V DC
- Sub-D plug connector for assembly by the user, 37-pin
- Round plug connector M23, 19-pin, 24 V DC

AS-interface connection



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

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

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

Additional information
➔ Internet: as-interface

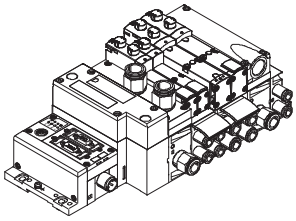
- Note

The valve terminal VTSA with AS-interface connection is based on the same electrical manifold module as the valve terminal with multi-pin plug connection. This means it is possible to convert a valve terminal with multi-pin plug connection using an AS-interface module (➔ 81). The technical specifications of the AS-interface system must be observed in this case.
➔ Internet: as-interface

Valve terminals type 45 VTSA-F, NPT

Key features

Valve terminal with fieldbus connection from the CPX system



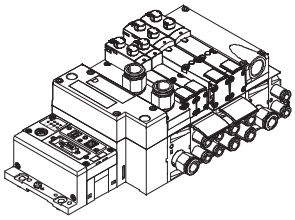
An integrated fieldbus node manages the communication connection with a higher-order PLC. This enables a space-saving pneumatic and electronic solution.

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

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

➔ Internet: cpx

Valve terminal with control block connection from the CPX system



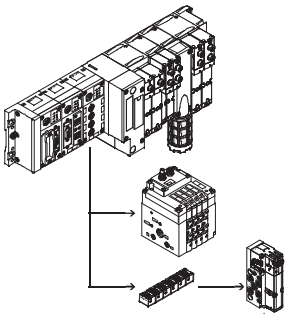
Controllers integrated in the Festo valve terminals enable the construction of stand-alone control units to IP65, without control cabinets.

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.
- CPX terminal

➔ Internet: cpx

CP string extension from the CPX system



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

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

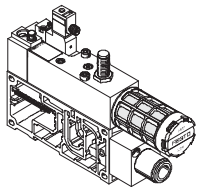
One CP string offers:
- 32 input signals
- 32 output signals for output modules 24 V DC or solenoid coils
- Logic and sensor supply for the input modules
- Load voltage supply for the valve terminals
- Logic supply for the output module

➔ Internet: ctec

Valve terminals type 45 VTSA-F, NPT

Key features

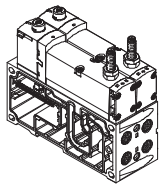
Soft-start valve



The soft-start valve is separately electrically actuated, independently of the multi-pin plug, AS-interface or fieldbus connection, via a 4-pin plug to ISO 15407-1 or optionally via an M12 adapter.

The valve can optionally be ordered with a sensor that monitors switching of the soft-start valve and in this way supplies the valve terminal or one or more pressure zones with supply air. The optimum pressure build-up required by the application for each pressure zone is configured directly on the valve terminal by setting the switchover pressure and filling time. A maximum of 5 soft-start valves can be integrated on one valve terminal in this way.

ISO valves for safety-oriented pneumatic components on valve terminals



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

- Protecting against unexpected start-up
- Reversing
- Drives in manually loaded devices

For holding, blocking a movement (mechanically)

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

Possible applications:

- Using lifting cylinders
- Using rotary cylinders

For pressureless switching, self-holding, pneumatic operation

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

- Pneumatic manual clamps for devices (insert stations)

Valve terminals type 45 VTSA-F, NPT

Peripherals overview

Modular pneumatic components

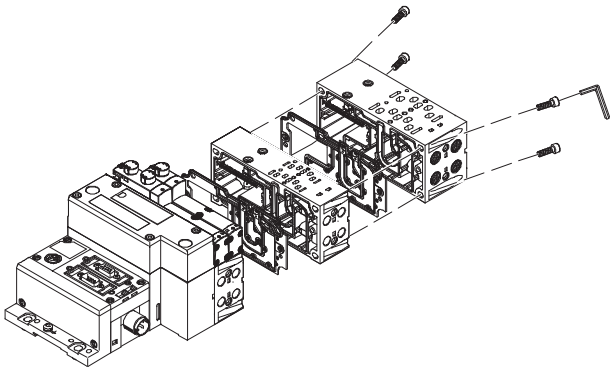
The modular design of the VTSA-F enables maximum flexibility right from the planning stage and offers maximum ease of service in operation.

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

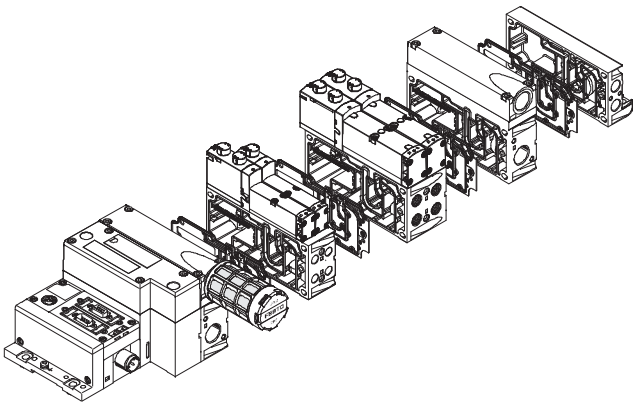
Inside the manifold sub-bases are the connection ducts for supplying compressed air to and venting from the valves on the terminal as well as the working lines for the pneumatic cylinders for each valve.

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

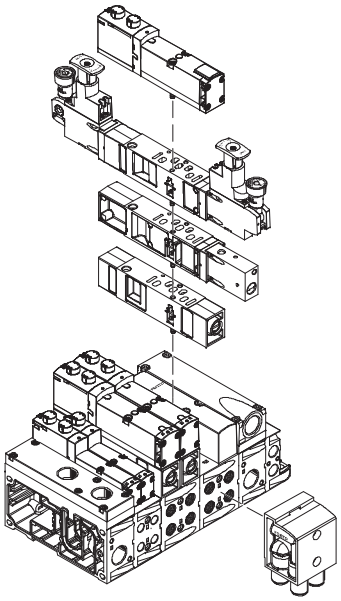
Basic system modularity



Valve modularity



Vertical stacking modularity



Valve terminals type 45 VTSA-F, NPT

Peripherals overview

Modular electrical peripherals

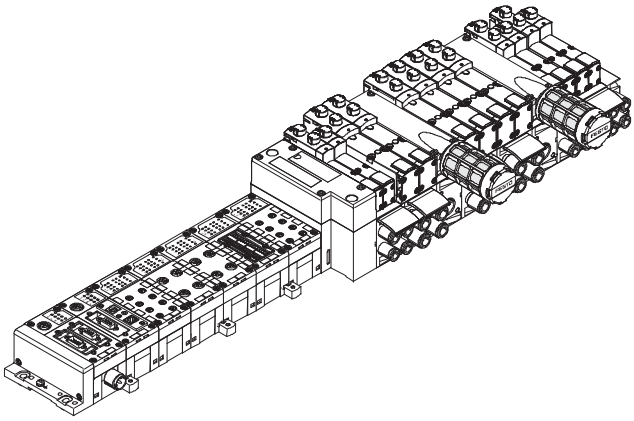
The manner in which the valves are actuated differs according to whether you are using a multi-pin terminal or fieldbus terminal.

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

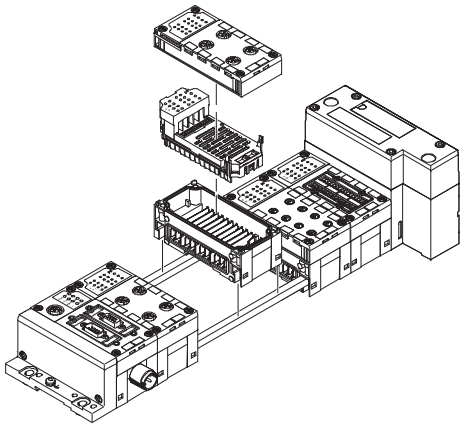
Parallel linking enables the following:

- Transmission of switching information
- High valve density
- Compact design
- Position-based diagnostics
- Separate voltage supply for valves
- Flexible conversion without address shifting
- Transmission of status, parameter and diagnostic data
  ➔ Internet: cpx
- Option of CP interface
- CPX-FEC as stand-alone controller with access via Ethernet and web server

VTSA-F with electrical peripherals CPX



Modularity with electrical peripherals CPX

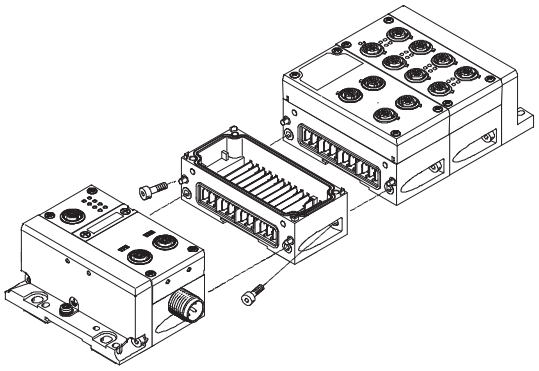


CPX terminal in metal design

- Note

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

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



Valve terminals type 45 VTSA-F, NPT

Peripherals overview

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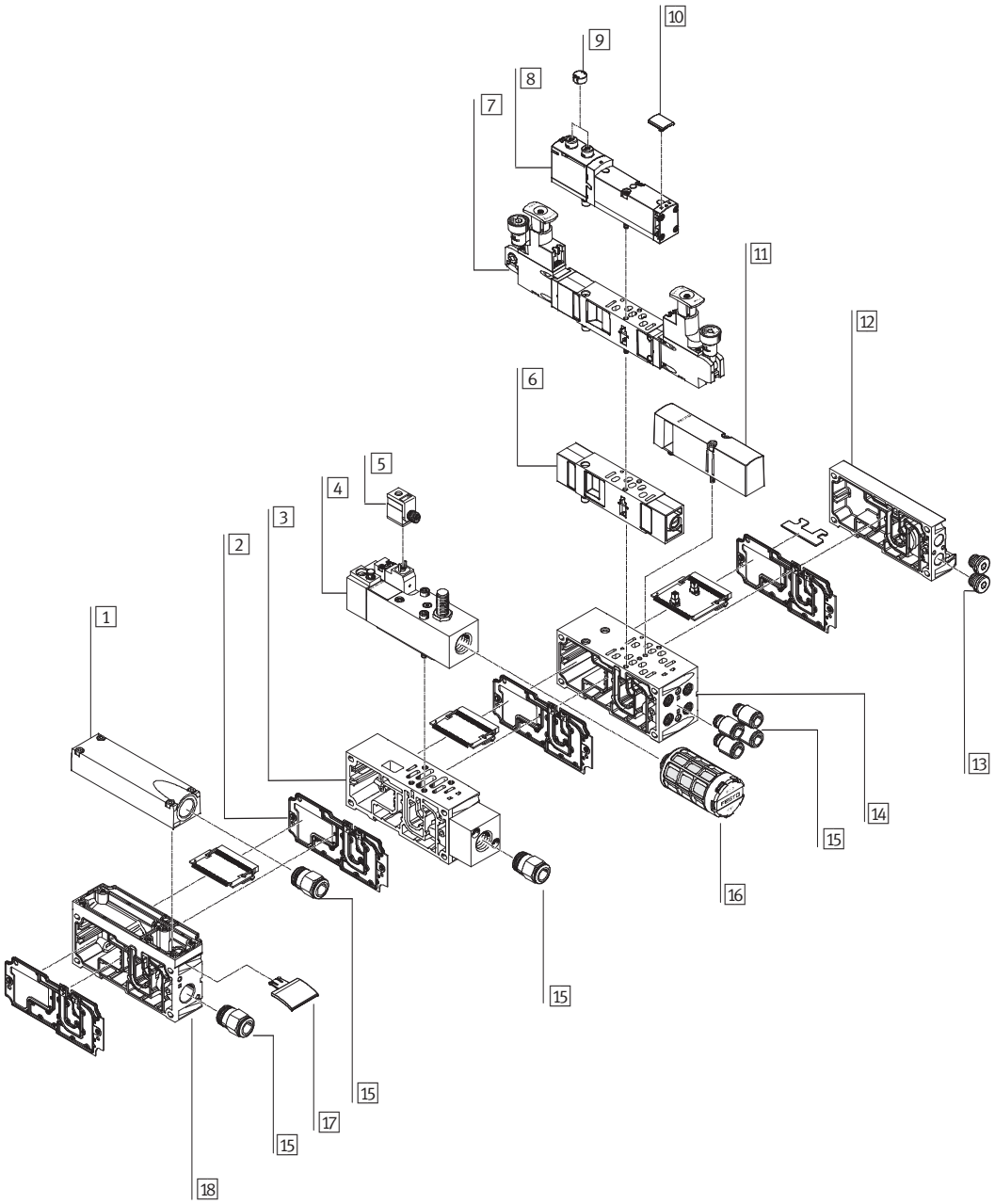
Valve terminal pneumatics

The manifold sub-bases width 18 and 26 mm are suitable for:

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



Valve terminals type 45 VTSA-F, NPT

Peripherals overview

FESTO

Valve terminal pneumatics			
		Brief description	→ Page/Internet
1	Exhaust port cover	For ducted exhaust air (ports 3 and 5 combined)	78
2	Duct separation/seal		78
3	Manifold sub-base	For soft-start valve	74
4	Soft-start valve	For slow and safe pressure build-up	74
5	Plug socket		75
6	Flow control plate		80
7	Pressure regulator plate		79
8	Valve	Width 26 mm	76
9	Cover cap	For manual override, non-detenting, covered	82
10	Inscription label	For valve	82
11	Blanking plate	For unused valve position (vacant position)	82
12	End plate with pilot air selector		78
13	Blanking plug		83
14	Manifold sub-base	For valves with a width of 26 mm	78
15	Fittings		82
16	Silencer		83
17	Inscription label holder	For manifold sub-base, sub-base, 90° connection plate	82
18	Supply plate		78

Valve terminals type 45 VTSA-F, NPT

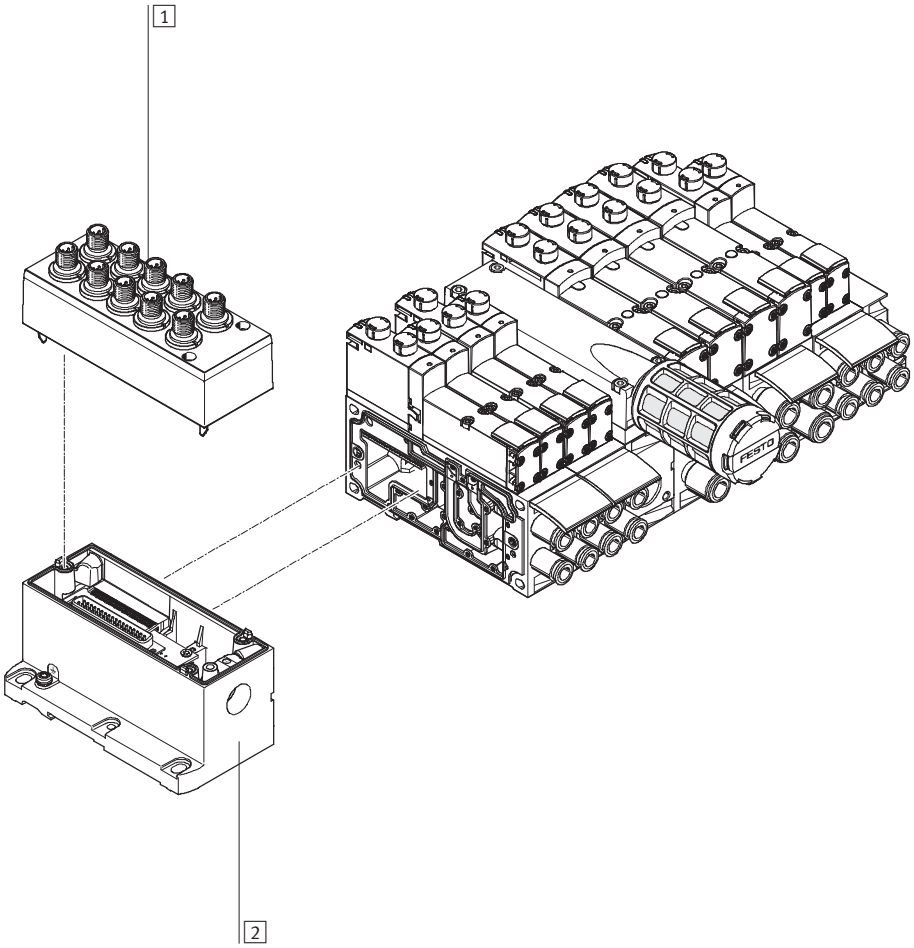
Peripherals overview

Valve terminal with individual connection

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

VTSA-F valve terminals with individual connection can be expanded with up to 20 valves with max. 20 solenoid coils.
The manifold sub-bases width 18 and 26 mm are suitable for:
- 2 single solenoid valves or
- 2 double solenoid valves.
- Double solenoid valve positions can be equipped with any valve or a blanking plate.
- Single solenoid valve positions can only be equipped with single solenoid valves or a blanking plate.

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



	Brief description	➔ Page/Internet
1 Cover	For individual connection	80
2 Multi-pin plug connection	Individual connection with M12, 10-way or 6-way (including cover)	80

Valve terminals type 45 VTSA-F, NPT

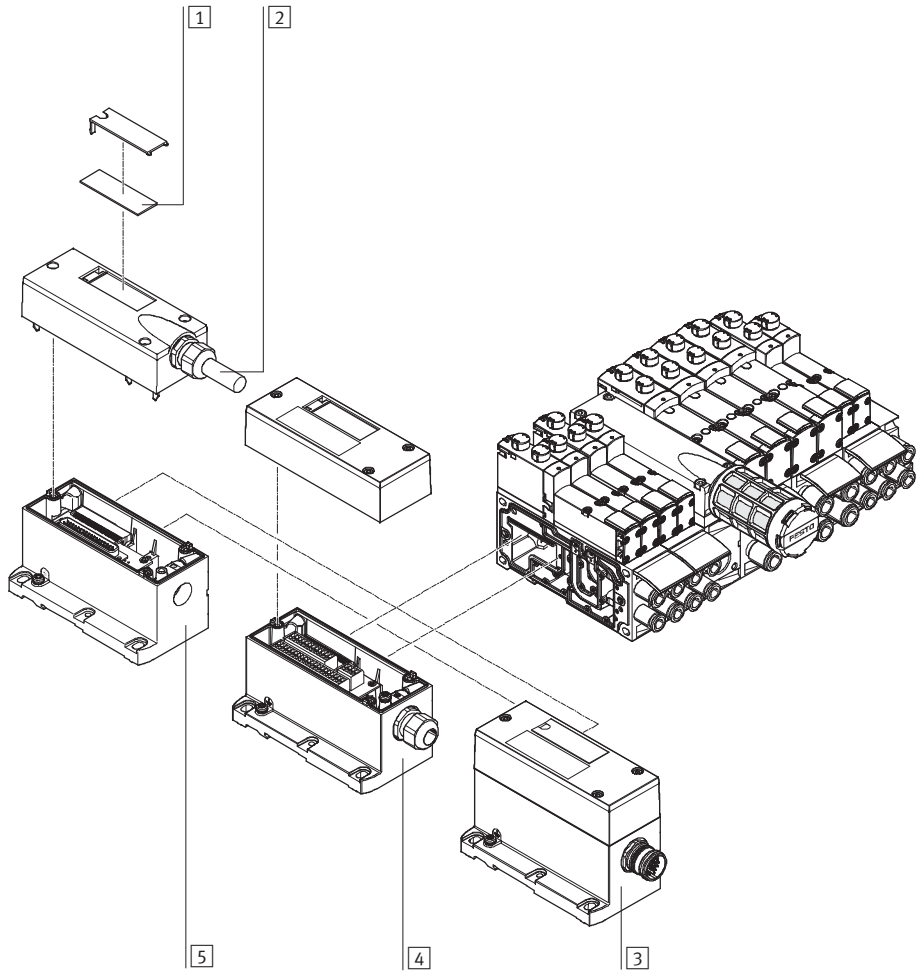
Peripherals overview

Valve terminal with multi-pin plug connection

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

VTSA-F valve terminals with multi-pin plug connection can be expanded with up to 32 valves with max. 32 solenoid coils.
The manifold sub-bases width 18 and 26 mm are suitable for:
- 2 single solenoid valves or
- 2 double solenoid valves.
- Double solenoid valve positions can be equipped with any valve or a blanking plate.
- Single solenoid valve positions can only be equipped with single solenoid valves or a blanking plate.

The following multi-pin plug connections to IP65 are available:
- 37-pin Sub-D connection (24 V DC): The connecting cable can be ordered in lengths of 2.5 m, 5 m and 10 m for max. 8, 22 or 32 solenoid coils respectively.
- Terminal strip (24 V DC or 110 V AC).
- 19-pin round plug connector (24 V DC).



	Brief description	→ Page/Internet
1 Inscription labels	Large, for multi-pin plug connection	–
2 Multi-pin plug cable	–	81
3 Multi-pin plug connection	Via M23 round plug connection, 24 V DC	80
4 Multi-pin plug connection	Via terminal strip (Cage Clamp®) 24 V DC or 110 V AC	80
5 Multi-pin plug connection	Via multi-pin cable 24 V DC	80

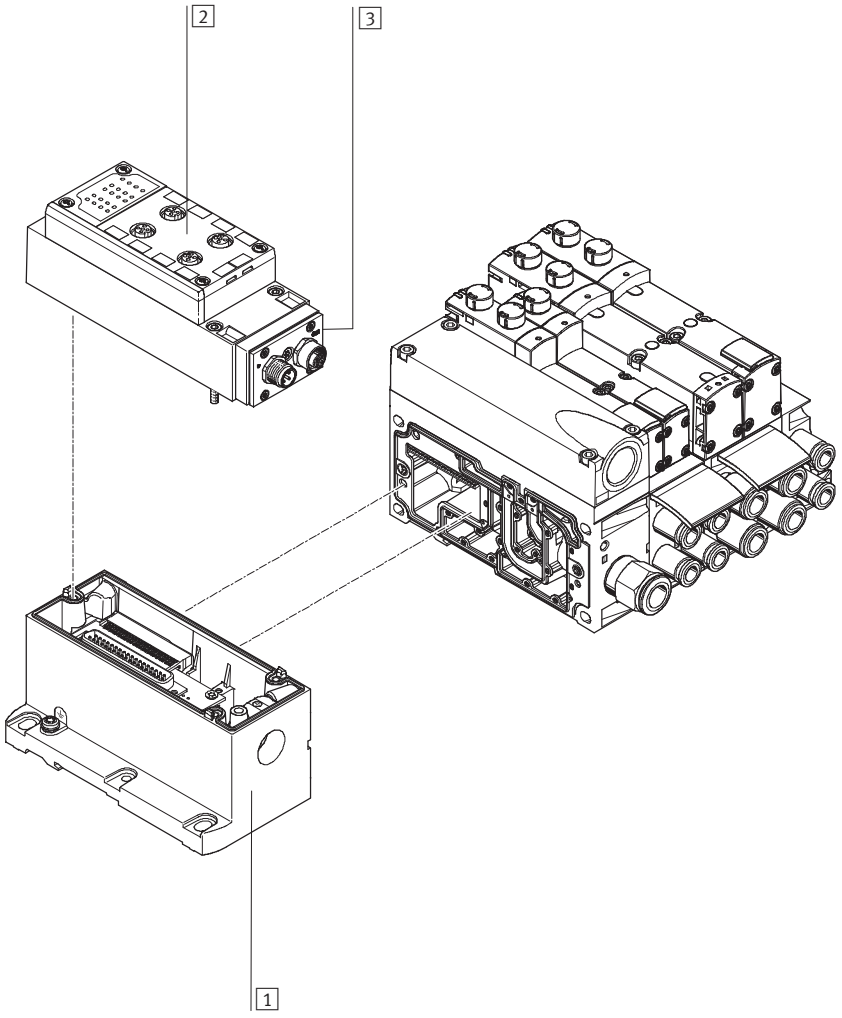
Valve terminals type 45 VTSA-F, NPT

Peripherals overview

Valve terminal with AS-interface connection

Order code:
- 52E for the electrical components
- 45P for the pneumatic components

VTSA-F valve terminals with AS-interface connection can be expanded with up to 8 valves with max. 8 solenoid coils.
The manifold sub-bases width 18 and 26 mm are suitable for:
- 2 single solenoid valves or
- 2 double solenoid valves.
- Double solenoid valve positions can be equipped with any valve or a blanking plate.
- Single solenoid valve positions can only be equipped with single solenoid valves or a blanking plate.



	Brief description	➔ Page/Internet
1 Multi-pin plug connection	Can be ordered together with the AS-interface module as an electrical connection for AS-interface	81
2 Manifold block for AS-interface	–	81
3 AS-interface module	–	81

Valve terminals type 45 VTSA-F, NPT

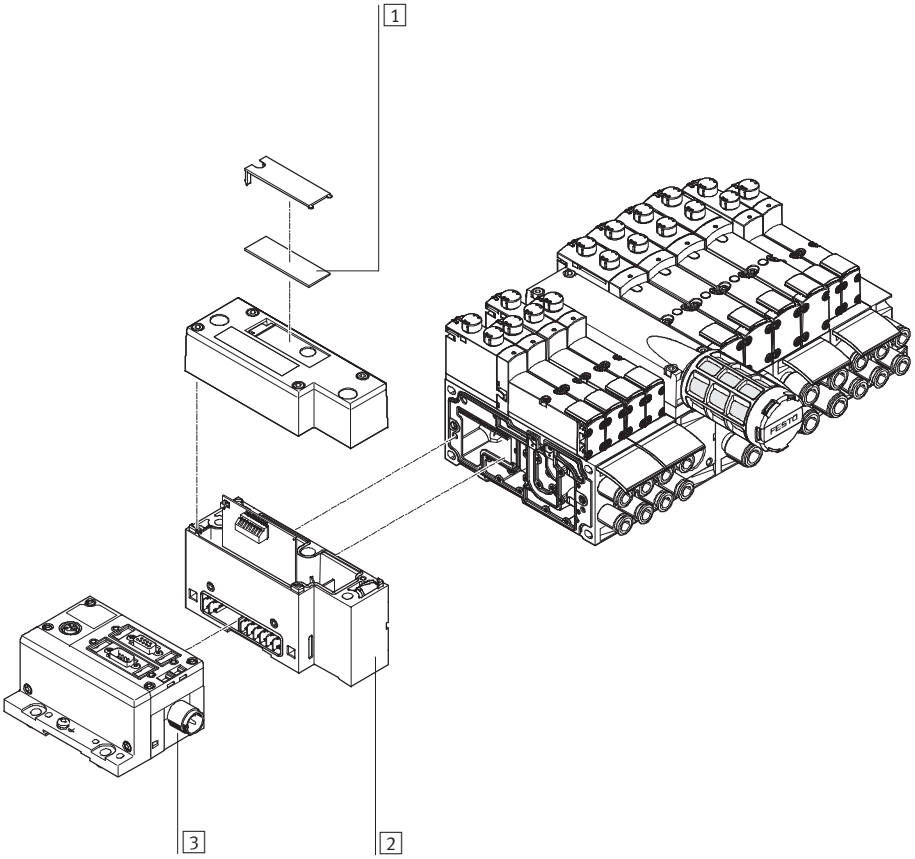
Peripherals overview

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

Order code:
- 50E-... for the electrical peripherals
- 51E-... for the electrical peripherals, metal manifold module
- 45P for the pneumatic components

VTSA-F valve terminals with fieldbus interface can be expanded with up to 32 valves with max. 32 solenoid coils. Each valve position can be equipped with any valve or a blanking plate. The rules for CPX apply to the equipment that can be used in combination with the electrical peripherals CPX.

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



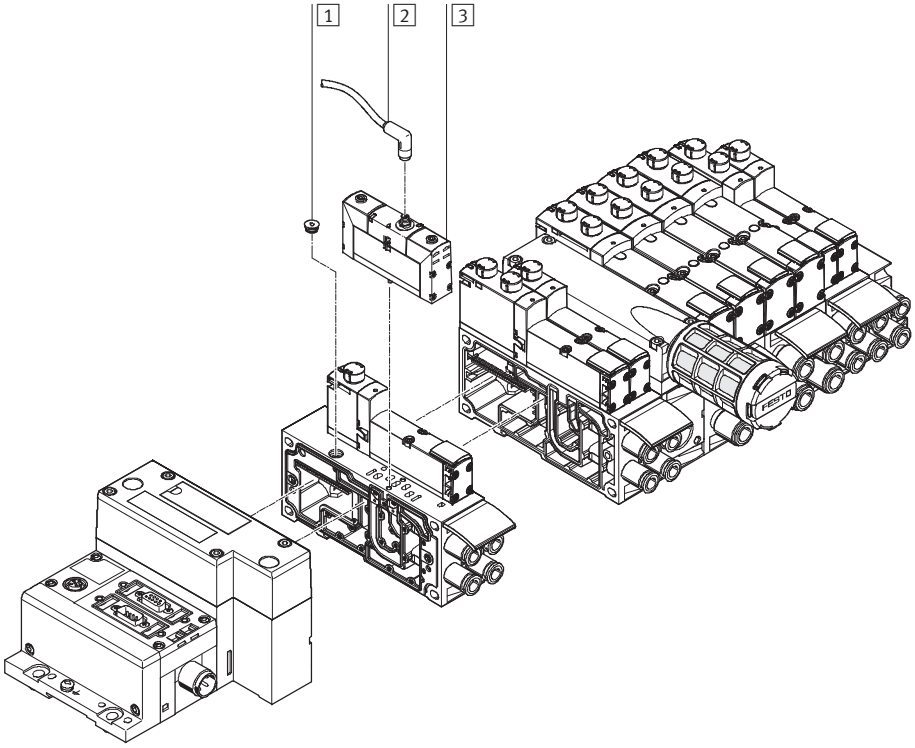
	Brief description	➔ Page/Internet
1 Inscription labels	Large, for pneumatic interface CPX	–
2 Pneumatic interface	–	80
3 Fieldbus interface	–	cpx

Valve terminal with fieldbus connection/multi-pin plug connection and individual valve connection

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

In order for the protection class IP65 to be achieved, the functionless opening in the sub-base for the electrical connection must be sealed.
A sealing cap is available for the 18 mm and 26 mm widths.

For central control of the valve terminal via a multi-pin plug or fieldbus connection, the valve position occupied in this way acts like a vacant position, i.e. the assigned address in the fieldbus node or the corresponding connection in the multi-pin plug connection is occupied.

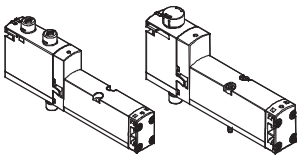


	Brief description	➔ Page/Internet
1 Sealing cap	For sealing the electrical connection on the sub-base	82
2 Connecting cable	–	valves vsva
3 Valve	Width 18 mm or width 26 mm	valves vsva

Valve terminals type 45 VTSA-F, NPT

Key features – Pneumatic components

Sub-base valve



VTSA-F offers a comprehensive range of valve functions. All valves are fitted with piston spool and patented sealing system, which ensures efficient sealing, a broad operating pressure range and long service life.

Sub-base valves can be quickly replaced since the tubing connections remain on the sub-base.
Irrespective of the valve function there are sub-base valves with one solenoid coil (single solenoid) or with two solenoid coils for double solenoid or double valve functions.

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

Blanking plate

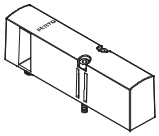


Plate without valve function for reserving valve positions on a valve terminal.

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

Design

Valve replacement

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

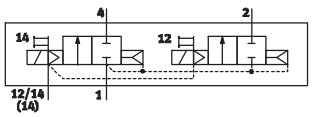
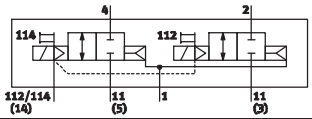
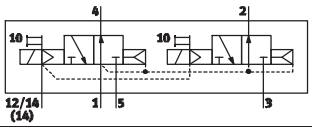
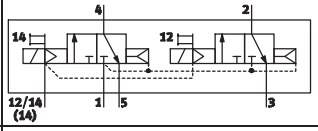
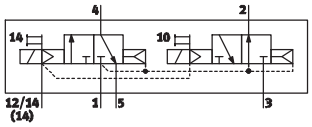
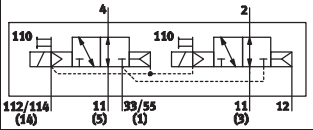
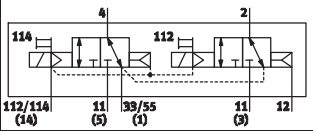
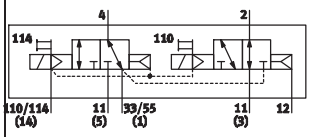
Expansion

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

The order code VSVA-... is located on the front of the valve beneath the manual override.

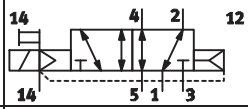
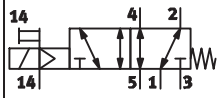
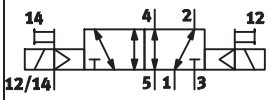
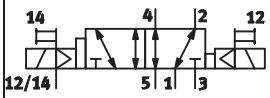
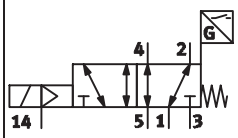
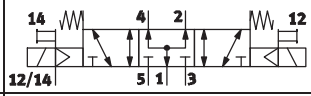
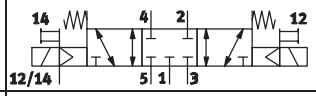
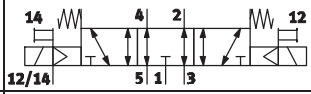
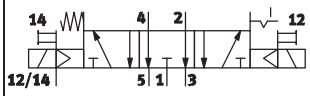
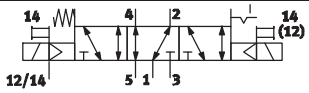
Valve terminals type 45 VTSA-F, NPT

Key features – Pneumatic components

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

Note

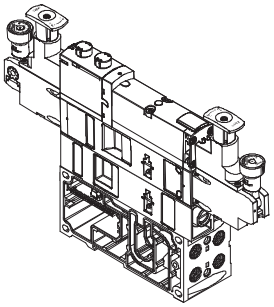
A filter must be installed upstream of valves operated in vacuum mode. This prevents any foreign matter in the intake air getting into the valve (e.g. when operating a suction cup).

Valve function				
Code	Circuit symbol	Width		Description
		18 mm	26 mm	
M		■	■	5/2-way valve, single solenoid • Pneumatic spring return
O		■	■	5/2-way valve, single solenoid • Mechanical spring return
J		■	■	5/2-way valve, double solenoid
D		■	■	5/2-way valve, double solenoid • Dominant signal with port 14 on the control side
–		–	■	5/2-way valve2), single solenoid, as plug-in or via pilot valve with pneumatic interface to ISO 15218 • Mechanical spring return • With piston position sensing via inductive sensor • PNP or NPN with switching output via push-in connector or cable with open wire ends
B		■	■	5/3-way valve • Mid-position pressurised[1)] • Mechanical spring return
G		■	■	5/3-way valve • Mid-position closed[1)] • Mechanical spring return
E		■	■	5/3-way valve • Mid-position exhausted[1)] • Mechanical spring return
SA		–	■	5/3-way valve, with enhanced function through signal storage in switching position 14 • Pressureless switching, self-holding, pneumatic operation • Mid-position exhausted, switching position 14 with memory function • Pneumatic spring return
SB		–	■	5/3-way valve, with enhanced function through signal storage in switching position 14 • Holding, blocking a movement (mechanically) • Mid-position: port 2 pressurised, port 4 exhausted, switching position 14 with memory function • Pneumatic spring return
L		■	■	For valve terminal only: Blanking plate for valve position

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

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

Vertical stacking

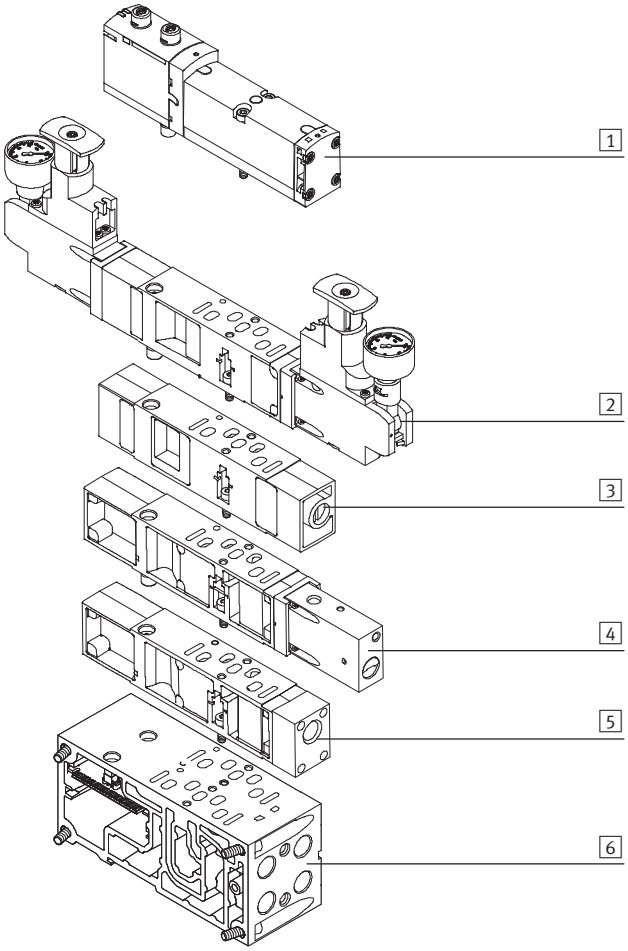


Additional functions can be added to each valve position between the sub-base and the valve. These functions are known as vertical stacking modules, and enable special functioning or control of an individual valve position. Combinations of several valve sizes on one valve terminal are possible.

- Note

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

Vertical stacking components

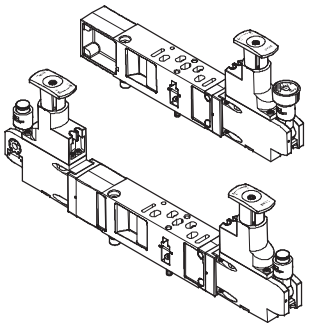


The following component sequence is recommended for valve positions with vertical stacking:

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

Vertical stacking

Pressure regulator plate

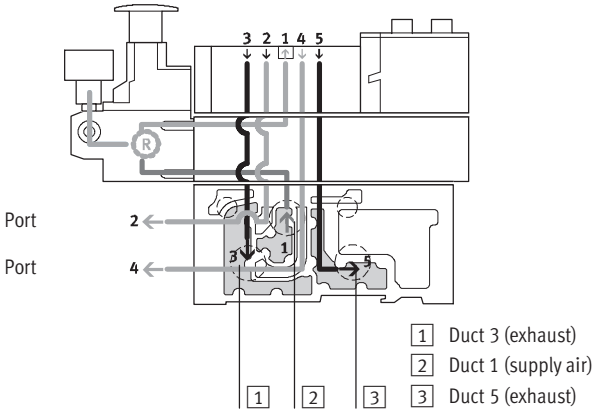


An adjustable pressure regulator can be installed between the sub-base and the valve in order to control the force of the triggered actuator.

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

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

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



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

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

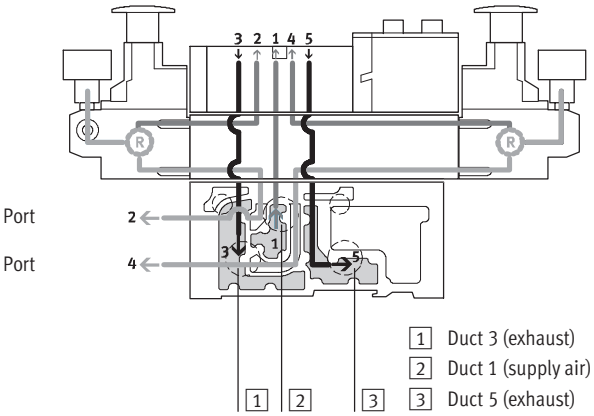
Advantages

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

Application examples

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

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



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

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

Restrictions

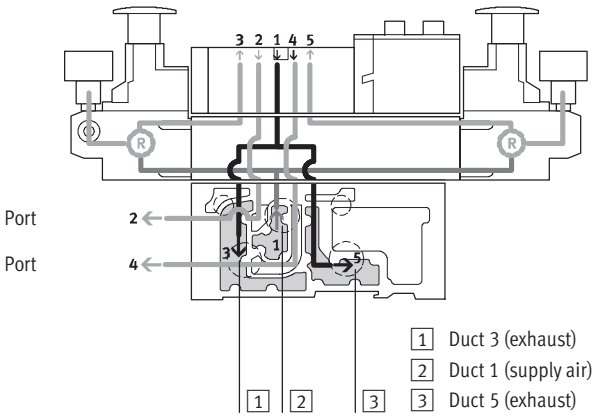
- The pressure regulator cannot be adjusted in the exhaust position. For example, the pressure regulator for duct 4 cannot be adjusted when the valve is pressurised in the switching position from duct 1 to duct 2 and vented from duct 4 to duct 5.

Application examples

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

Vertical stacking

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



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

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

Example with the following switching position:
The supply air in duct 1 is split between ducts 3 and 5 in the regulator and flows from here to the valve. In the valve, the supply air is routed to port 2 of the manifold sub-base. The exhaust air is simultaneously routed via duct 4 of the manifold sub-base and via the valve to regulator duct 1, where it is split between ducts 3 and 5 and then expelled via the manifold sub-base.

Application examples

- When two different pressures are required in ducts 2 and 4 instead of the operating pressure.
- When fast venting is required.
- When the pressure regulator must always be adjustable.

Note

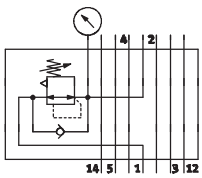
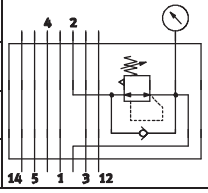
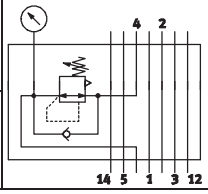
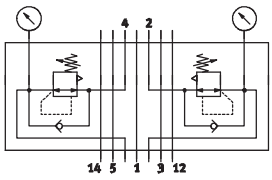
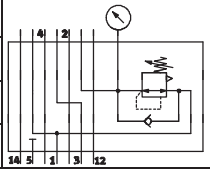
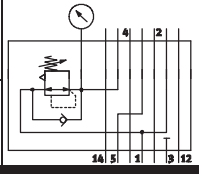
- Reversible pressure regulator plates can only be combined with valves that can be operated in reversible mode.
- Valves in valve positions with vertical pressure shut-off plates are operated with internal pilot air supply, even when the valve terminal is operated with external pilot air supply.
- The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

Advantages

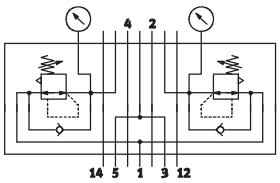
- Fast cycle times.
- 50% higher exhaust flow rate, as air is not vented via the pressure regulator. The load on the pressure regulator is also reduced.
- No quick exhaust valves are required.
- Operating pressure is always present at the pressure regulator, as the pressure is regulated upstream of the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

Disadvantages

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

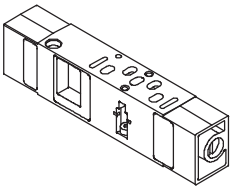
Vertical stacking – Pressure regulator plate							
Code		Type	Width		Supply pressure		Description
			18 mm	26 mm	6 bar	10 bar	
Pressure regulator plate for port 1 (P regulator)							
ZA		VABF-S4-...-R1C2-C-10	■	■	–	■	• Regulates the operating pressure in duct 1 upstream of the directional control valve
ZAY[1)]		VABF-S4-...-R1C2-C-10E	■	■	–	■	
ZF		VABF-S4-...-R1C2-C-6	■	■	■	–	
ZFY[1)]		VABF-S4-...-R1C2-C-6E	■	■	■	–	
Pressure regulator plate for port 2 (B regulator)							
ZC		VABF-S4-...-R2C2-C-10	■	■	–	■	• Regulates the operating pressure in duct 2 downstream of the directional control valve
ZCY[1)]		VABF-S4-...-R2C2-C-10E	■	■	–	■	
ZH		VABF-S4-...-R2C2-C-6	■	■	■	–	
ZHY[1)]		VABF-S4-...-R2C2-C-6E	■	■	■	–	
Pressure regulator plate for port 4 (A regulator)							
ZB[1)]		VABF-S4-...-R3C2-C-10	■	■	–	■	• Regulates the operating pressure in duct 4 downstream of the directional control valve
ZG[1)]		VABF-S4-...-R3C2-C-6	■	■	■	–	
Pressure regulator plate for ports 2 and 4 (AB regulator)							
ZD		VABF-S4-...-R4C2-C-10	■	■	–	■	• Regulates the working pressure in ducts 2 and 4 downstream of the directional control valve
ZDY[1)]		VABF-S4-...-R4C2-C-10E	■	■	–	■	
ZI		VABF-S4-...-R4C2-C-6	■	■	■	–	- Note These pressure regulator plates cannot be combined with reversible 2x 3/2-way valves (code P, Q, R).
ZIY[1)]		VABF-S4-...-R4C2-C-6E	■	■	■	–	
Pressure regulator plate for port 2, reversible (B regulator)							
ZL		VABF-S4-...-R6C2-C-10	■	■	–	■	• Reversible pressure regulator for port 2
ZLY[1)]		VABF-S4-...-R6C2-C-10E	■	■	–	■	
ZN		VABF-S4-...-R6C2-C-6	■	■	■	–	
ZNY[1)]		VABF-S4-...-R6C2-C-6E	■	■	■	–	
Pressure regulator plate for port 4, reversible (A regulator)							
ZK[1)]		VABF-S4-...-R7C2-C-10	■	■	–	■	• Reversible pressure regulator for port 4
ZM[1)]		VABF-S4-...-R7C2-C-6	■	■	■	–	

1) Also suitable for symmetrical valves

Vertical stacking – Pressure regulator plate							
Code		Type	Width		Supply pressure		Description
			18 mm	26 mm	6 bar	10 bar	
Pressure regulator plate for ports 2 and 4, reversible (AB regulator)							
ZE		VABF-S4-...-R5C2-C-10	■	■	–	■	• Reversible pressure regulator for ports 2 and 4 • Pressure regulation upstream of the directional control valve • Routes the operating pressure from duct 1 to ducts 3 and 5 • Routes the exhaust air from duct 1 to ducts 3 and 5
ZEY[1)]		VABF-S4-...-R5C2-C-10E	■	■	–	■	
ZJ		VABF-S4-...-R5C2-C-6	■	■	■	–	- Note These pressure regulator plates cannot be combined with standard 2x 3/2-way valves (code N, K, H). Reversible 2x 3/2-way valves (code P, Q, R) must not be operated in a separate pressure zone in combination with these pressure regulators.
ZJY[1)]		VABF-S4-...-R5C2-C-6E	■	■	■	–	

1) Also suitable for symmetrical valves

Vertical stacking – Flow control plate

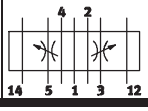


This plate is used for exhaust air flow control in ducts 3 and 5 of a valve in order to adjust the speed of the actuator.

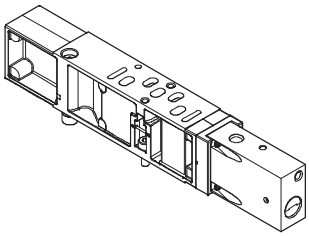
Ducts 3 and 5 can be adjusted independently of each other.

- Note

On reversible valve terminals, supply air flow control takes place in ducts 3 and 5 upstream of the valve.

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

Vertical stacking – Vertical pressure shut-off plate

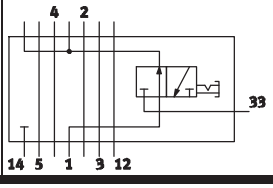


This plate enables a valve to be shut off from the supply pressure of the terminal. This means that the valve can be removed without shutting off the pressure.

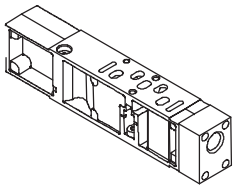
Following activation of the shut-off, the exhaust air/return air from the cylinder is expelled via the M5 threaded connection.

- Note

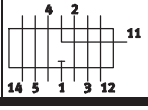
It must be ensured that the operating pressure of the valve terminal lies within the range of the required pilot pressure (i.e. min. 3 bar).
When using an end plate with pilot air selector, only end plates with the code W and U can be used.

Code		Type	Width		Description
			18 mm	26 mm	
ZT		VABF-S4-...L1D1-C	■	■	• 3/2-way valve for shutting off the operating pressure at the valve position • Blocks ducts 1 and 14 for the valve position • Supplies the valve position with internal pilot air

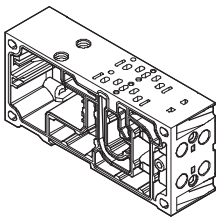
Vertical stacking – Vertical supply plate



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

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

Manifold sub-base



VTSA-F is based on a modular system which consists of manifold sub-bases and valves. Manifold sub-bases are available for valve widths 18 mm and 26 mm in a double grid, i.e. two valves per manifold sub-base. The manifold sub-base contains a duct seal and an electrical interlinking module. They can be freely mixed within a valve terminal. The manifold sub-bases are screwed together and thus form the support system for the valves.

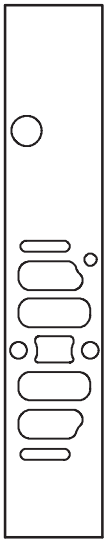
Inside the manifold sub-bases are the connection ducts for supplying compressed air to and venting from the valves on the terminal as well as the working lines for the pneumatic cylinders for each valve.

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

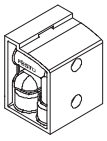
Port patterns on the manifold sub-base

Width 18 mm

Width 26 mm

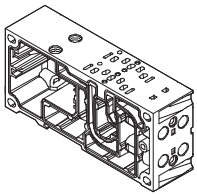
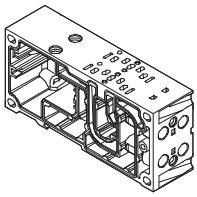


90° connection plate for working lines (2 and 4) of the manifold sub-bases

Code		Type	Width		Ports	Working lines (2, 4) on the 90° connection plate
			18 mm	26 mm		
P		NPT thread: VABF-S4-...-A2G2-N...	■	■	2 and 4	Outlet at bottom • Connection sizes for 18 mm width: ⅛NPT • Connection sizes for 26 mm width: ¼NPT

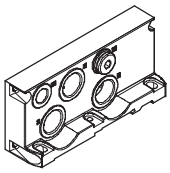
Valve terminals type 45 VTSA-F, NPT

Key features – Pneumatic components

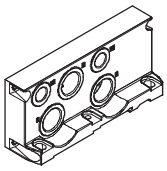
Manifold sub-base variants						
Code		Type	Width		No. of valve positions/ solenoid coils	Working lines (2, 4) on the manifold sub-base
			18 mm	26 mm		
Manifold sub-base for multi-pin plug/fieldbus connection for double solenoid valves						
A AK		NPT thread: VABV-S4-2HS-N18-2T2	■	–	2/4	• Connection sizes for 18 mm width: 1/8NPT, QS-1/8-5/16-U, QS-1/8-1/4-U
B BK		NPT thread: VABV-S4-1HS-N14-2T2	–	■	2/4	• Connection sizes for 26 mm width: 1/4NPT, QS-1/4-3/8-U, QS-1/4-5/16-U
Manifold sub-base for multi-pin plug/fieldbus connection for single solenoid valves						
E EK		NPT thread: VABV-S4-2HS-N18-2T1	■	–	2/2	• Connection sizes for 18 mm width: 1/8NPT, QS-1/8-5/16-U, QS-1/8-1/4-U
F FK		NPT thread: VABV-S4-1HS-N14-2T1	–	■	2/2	• Connection sizes for 26 mm width: 1/4NPT, QS-1/4-3/8-U, QS-1/4-5/16-U

Compressed air supply and venting

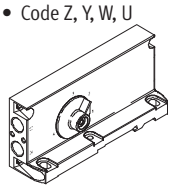
Right-hand end plate
- Code V



Right-hand end plate
- Code X

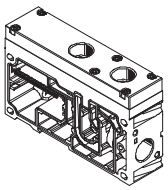


End plate with pilot air selector
- Code Z, Y, W, U

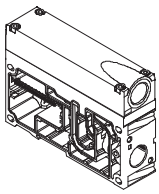


The valve terminal VTSA-F can be supplied with compressed air at one or more points. This is a reliable way of ensuring that all functional components will always offer good performance, even with large-scale extensions. The valve terminal is supplied via supply plates (max. 16 per terminal) or via an end plate.
Venting is via silencers or ports for ducted exhaust air
on the supply plates and/or on the right-hand end plate. There are two types of supply plates:
- Exhaust port 3/5 common
- Exhaust port 3/5 separated

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



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



Pilot air supply

The port for the pneumatic supply is located on the supply plates or the right-hand end plate.
The ports differ for the following types of pilot air supply:
- Internal
- External

Internal pilot air supply
Internal pilot air supply can be selected if the working pressure is between 3 and 10 bar.
The pilot air supply is then branched from the compressed air supply 1 using an internal connection. Port 14 on the right-hand end plate is sealed with a blanking plug.

External pilot air supply
If the supply pressure is less than 3 bar, you must operate your VTSA-F valve terminal using external pilot air supply. The pilot air supply is then supplied via port 14 on the right-hand end plate. This is the case even if the valve terminal is operated with different pressure zones.

- Note

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

Compressed air supply/duct separation

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

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

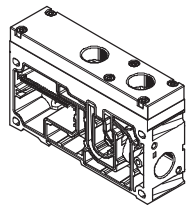
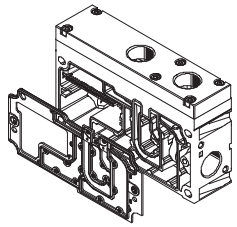
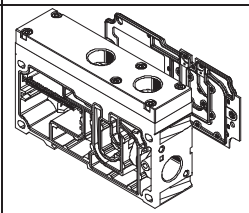
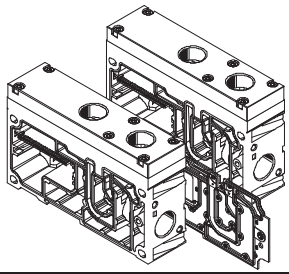
Depending on your order, the exhaust air ducts are either ducted or vented via silencers.

VTSA-F with ducted exhaust air:
With ducted exhaust air, venting can be via a supply plate or a right-hand end plate (code V or X).

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

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

Supply plates

Code		Type	Width		Description
			18 mm	26 mm	
U		• Exhaust port 3/5 common for NPT thread: VABF-S6-10-P1A7-N12 • Exhaust port 3/5 separated for NPT thread: VABF-S6-10-P1A6-N12	■	■	Supply plate without duct separation (no R, S or T selected)
SU TU RU			■	■	Supply plate with duct separation on left, if R, S or T selected
US UT UR			■	■	Supply plate with duct separation on right, if R, S or T selected
USU UTU URU			■	■	2 supply plates with duct separation in centre, if R, S or T selected

Right-hand end plate

Different right-hand end plates are available.

With the following two end plates, the outgoing direction of the ports is aligned with the horizontal stacking direction.
Right-hand end plates with pilot air supply/pilot exhaust air
- Internal pilot air supply: code V
- External pilot air supply: code X

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

End plates with pilot air selector switch set at the factory for:
- External pilot air supply: code Z
- Internal pilot air supply: code Y
- External pilot air supply, ducted pilot exhaust air: code W
- Internal pilot air supply, ducted pilot exhaust air: code U

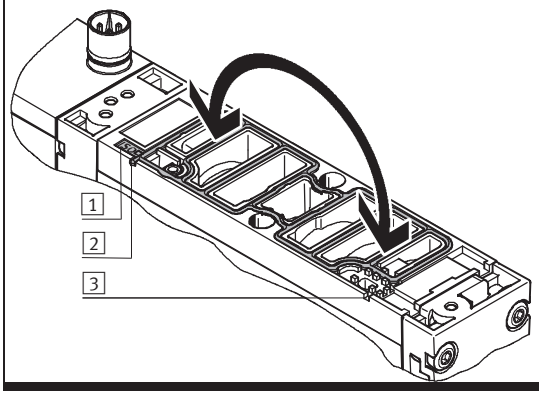
Note

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

Right-hand end plate with pilot air selector

Code	Selector position	Seal not turned	Seal turned
Z	1	---	---
Y	2	---	---
W	3	---	Ducted exhaust air via port 12
U	4	---	Ducted exhaust air via port 12

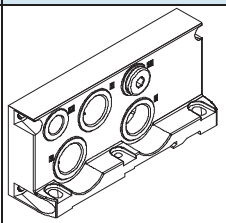
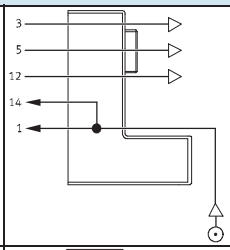
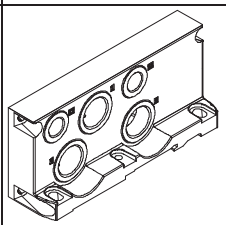
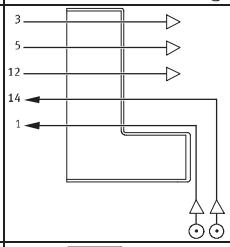
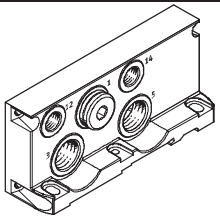
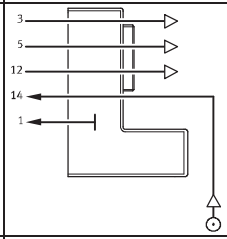
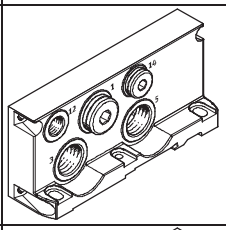
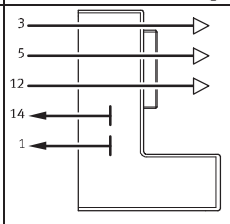
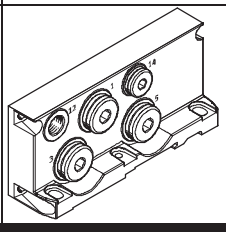
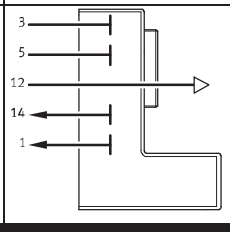
Handling of the seals with ducted/unducted pilot exhaust air



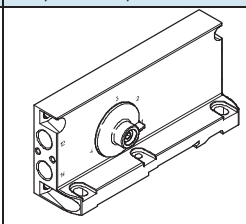
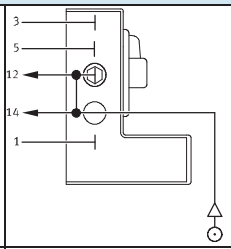
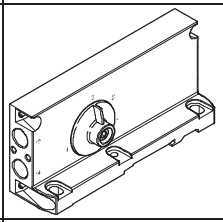
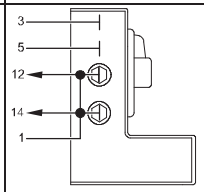
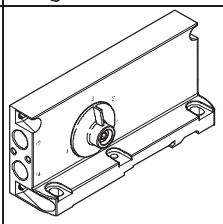
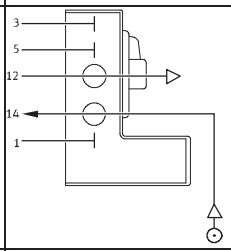
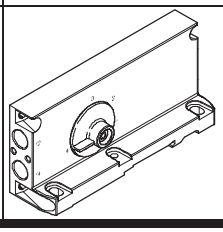
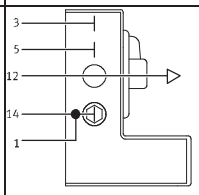
Unducted pilot exhaust air:
- The seal is visible in the inspection window on control side 14.
- The ISO mark is visible on the designation label on the seal surface.

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

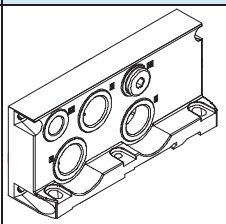
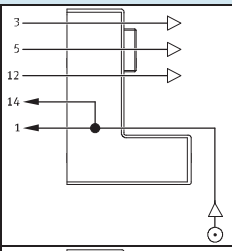
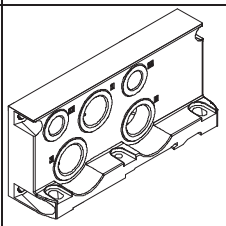
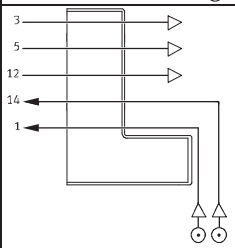
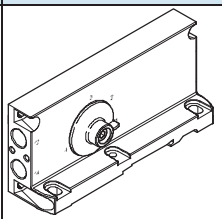
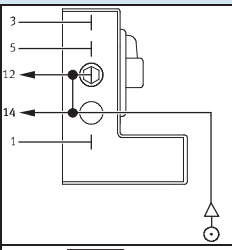
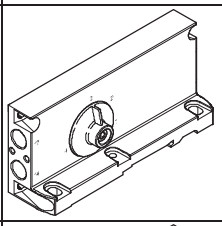
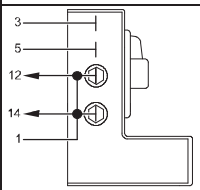
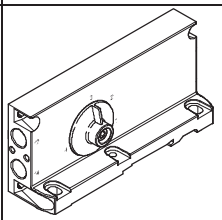
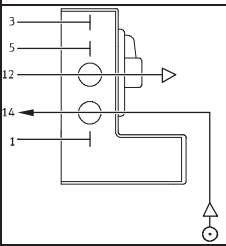
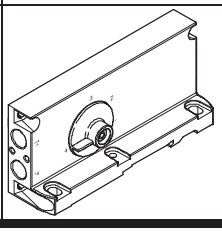
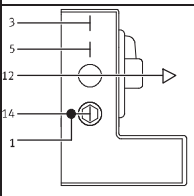
1 Designation label
2 Inspection window on control side 14
3 Inspection window on control side 12

Right-hand end plate					
Code	Type of compressed air supply and pilot air supply		Width		Description
			18 mm	26 mm	
	Right-hand end plate				
V			■	■	Internal pilot air supply • Pilot air supply is branched internally from port 1 • Port 14 is sealed with a blanking plug • Exhaust air via ports 3 and 5 • For operating pressure in the range 3 ... 10 bar • Pilot exhaust air via port 12[1)]
X			■	■	External pilot air supply • Pilot air supply between 2 and 10 bar is connected at port 14 • Exhaust air via ports 3 and 5 • For operating pressure in the range –0.9 ... 10 bar (suitable for vacuum) • Pilot exhaust air via port 12[1)]
XP1			■	■	External pilot air supply, pressure supply via soft-start valve • Port 1 is sealed with a blanking plug • Exhaust air via ports 3 and 5 • Pilot exhaust air via port 12[1)]
XP2			■	■	External pilot air supply, pressure supply via soft-start valve • Internal pilot air supply 14 via soft-start valve • Ports 1 and 14 are sealed with a blanking plug • Exhaust air via ports 3 and 5 • Pilot exhaust air via port 12[1)]
XP3			■	■	External pilot air supply, pressure supply via soft-start valve • Internal pilot air supply 14 via soft-start valve • Ports 1, 3, 5 and 14 are sealed with a blanking plug • Pilot exhaust air via port 12[1)]

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

Right-hand end plate					
Code	Type of compressed air supply and pilot air supply		Width		Description
			18 mm	26 mm	
Code[2]	End plate with pilot air selector[3]				
Z (1)			■	■	External pilot air supply • Pilot air supply is connected at port 14 • Port 12 is sealed with a blanking plug • Ports 12 and 14 are internally connected • Pilot exhaust air unducted via valve housing
Y (2)			■	■	Internal pilot air supply • Pilot air supply is branched internally from port 1 • Ports 1, 12 and 14 are internally connected • Ports 12 and 14 are sealed with blanking plugs • Pilot exhaust air unducted via valve housing
W (3)			■	■	External pilot air supply, ducted pilot exhaust air • Pilot air supply is connected at port 14 • Pilot exhaust air via port 12[1]
U (4)			■	■	Internal pilot air supply, ducted pilot exhaust air • Pilot air supply is branched internally from port 1 • Ports 1 and 14 are internally connected • Port 14 is sealed with a blanking plug • Pilot exhaust air via port 12[1]

1) Ducted pilot exhaust air is only possible with turned seals on the valve
2) Selector setting in brackets
3) Ducted pilot exhaust air is only possible in pilot air selector position 3 or 4

Configuration of all pneumatic connections with NPT thread						
Code			Port	Designation	**Code M** Push-in connector, large	**Code N** Push-in connector, small
	Right-hand end plate					
V			1	Push-in fitting	QS-½-5/8-U	QS-½-½-U
			3 and 5	Silencer or push-in fitting	U-½-B-NPT or QS-½-5/8-U	U-½-B-NPT or QS-½-½-U
			14	Blanking plug	B-¼-NPT	B-¼-NPT
X			1	Push-in fitting	QS-½-5/8-U	QS-½-½-U
			3 and 5	Silencer or push-in fitting	U-½-B-NPT or QS-½-5/8-U	U-½-B-NPT or QS-½-½-U
			12	Silencer or push-in fitting	U-¼-B-NPT or QS-¼-3/8-U	U-¼-B-NPT or QS-¼-5/16-U
			14	Push-in fitting	QS-¼-3/8-U	QS-¼-5/16-U
Code[1)]	End plate with pilot air selector					
Z (1)			12	Blanking plug	B-¼-NPT	B-¼-NPT
			14	Push-in fitting	QS-¼-3/8-U	QS-¼-5/16-U
Y (2)			12	Blanking plug	B-¼-NPT	B-¼-NPT
			14	Blanking plug	B-¼-NPT	B-¼-NPT
W (3)			12	Silencer or push-in fitting	U-¼-B-NPT or QS-¼-3/8-U	U-¼-B-NPT or QS-¼-5/16-U
			14	Push-in fitting	QS-¼-3/8-U	QS-¼-5/16-U
U (4)			12	Silencer or push-in fitting	U-¼ or QS-¼-3/8-U	U-¼ or QS-¼-5/16-U
			14	Blanking plug	B-¼-NPT	B-¼-NPT

1) Selector setting in brackets

Valve terminals type 45 VTSA-F, NPT

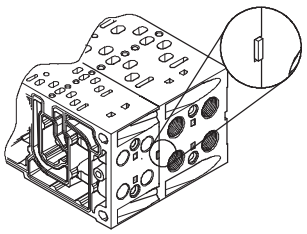
Key features – Pneumatic components

Creating pressure zones and separating exhaust air

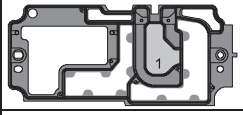
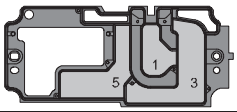
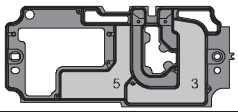
The valve terminal VTSA-F offers a number of options for creating pressure zones if different working pressures are required.
Pressure zones are created by isolating the internal supply ducts between the manifold sub-bases using appropriate duct separation.

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

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



Creating pressure zones

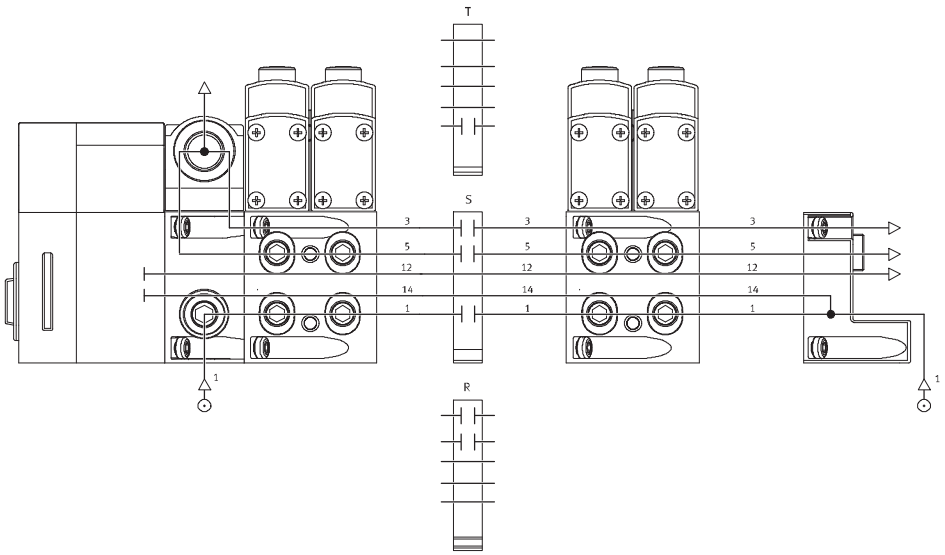
Code	Separating seal		Width		Description
	Pictorial examples	Coding	18 mm	26 mm	
T			■	■	Duct 1 separated
S			■	■	Ducts 1, 3 and 5 separated
R			■	■	Ducts 3 and 5 separated

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

Internal pilot air supply, silencer/ducted exhaust air

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

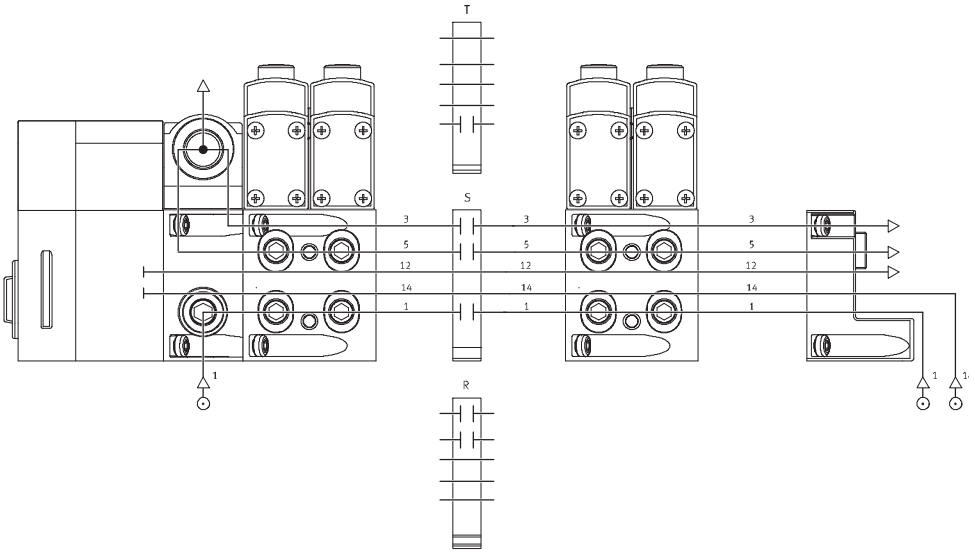
Optional duct separation



External pilot air supply, silencer/ducted exhaust air

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

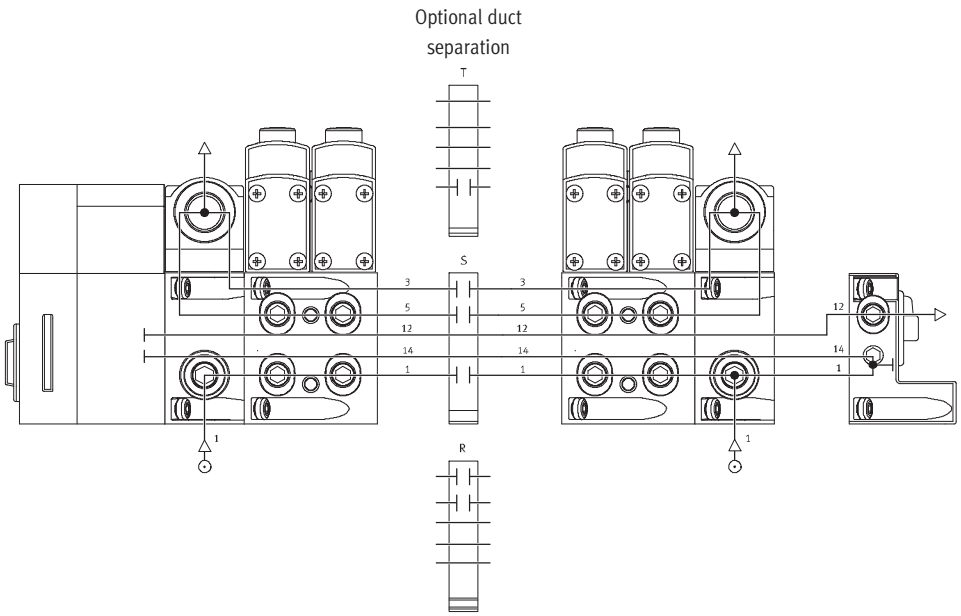
Optional duct separation



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

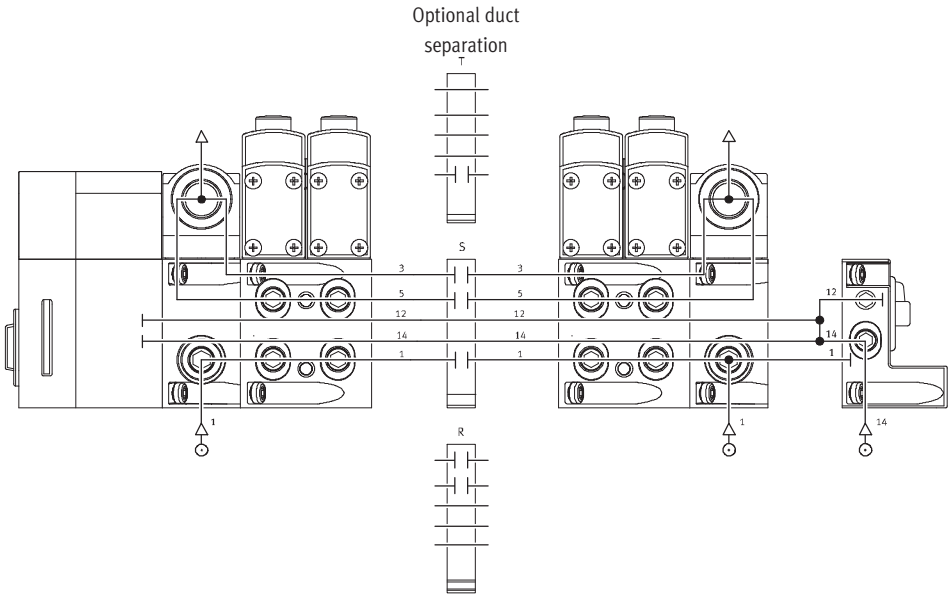
Internal pilot air supply, ducted exhaust air/silencer

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



External pilot air supply, ducted exhaust air/silencer

Right-hand end plate: code Z
The diagram opposite shows an example of the configuration and connection of the compressed air supply with external pilot air supply. Port 14 on the right-hand end plate is equipped with a fitting for this. Port 12 is sealed with a blanking plug since it is internally connected with port 14. Exhaust port 3/5 is ducted or expelled via the silencer.
The selector switch in the pilot air selector is in position 1.
Duct separations can optionally be used to create pressure zones.



Valve terminals type 45 VTSA-F, NPT

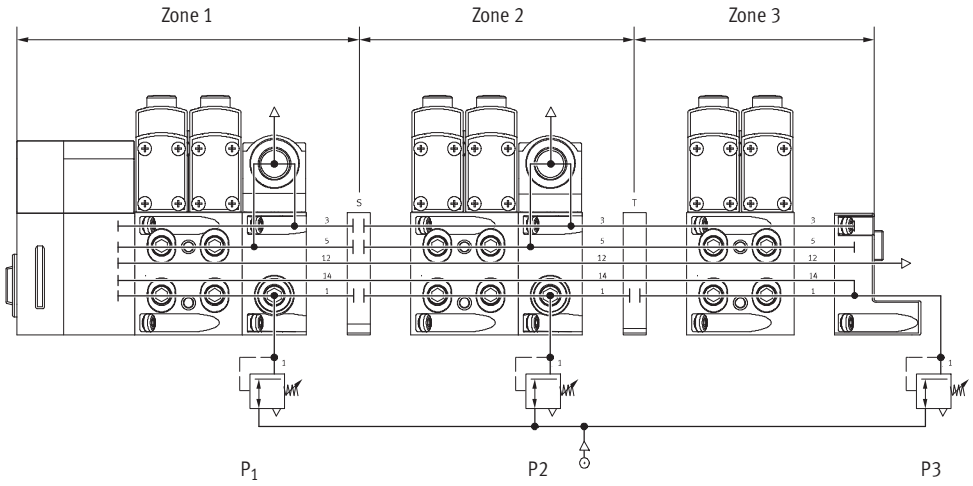
Key features – Pneumatic components

FESTO

Examples: Creating pressure zones

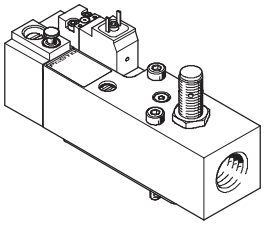
VTSA-F with CPX terminal connection

VTSA-F facilitates the creation of up to 16 pressure zones. The diagram shows an example of the configuration and connection of three pressure zones using duct separations – with internal pilot air supply.



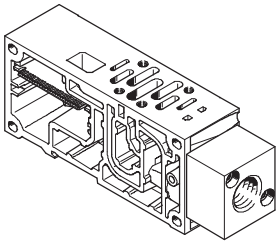
Soft-start valve

Valve



The soft-start valve is used for slow and safe pressure build-up and quick venting of the supply pressure of the valve terminal. If a soft-start valve is used in a valve terminal, no additional elements supplying compressed air must be used in the same pressure zone.
The piston position of the soft-start valve is monitored by a sensor. This can be used to check whether the valve terminal compressed air supply is working. Pressure sensing via a pressure gauge (optional) is also possible.
The valve terminal can either be operated with internal pilot air supply via the soft-start valve or with internal or external pilot air supply via the different end plate variants. The type of pilot air supply is determined by the seal of the soft-start valve. If internal pilot air supply via the soft-start valve is selected, there must be no additional pilot air supply (duct 14) within the valve terminal.
Exhaust air cannot be expelled via the soft-start valve. An exhaust plate is required for operation in a pressure zone with duct 1 and 3/5 separated.

Manifold sub-base



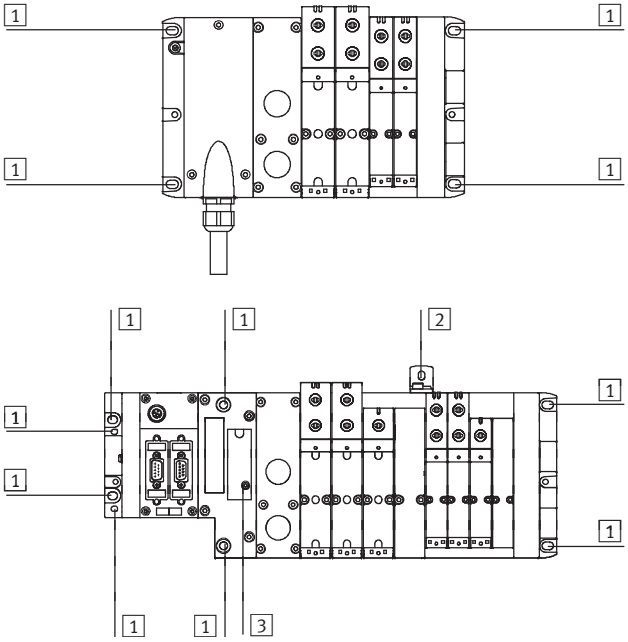
Modified manifold sub-bases (width 42 mm) are available for the soft-start valve. This manifold sub-base supplies the pressure zone on the valve terminal with compressed air and provides a high flow range. The manifold sub-base comes with blanking plugs for sealing the ports on the end plate VABE-S6-1RZ-.... The ports on the end plate are sealed with blanking plugs as appropriate to the position/pressure zone of the soft-start valve on the valve terminal and the use of internal or external pilot air supply.

Valve terminal mounting

Sturdy terminal mounting thanks to:

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

Wall mounting



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

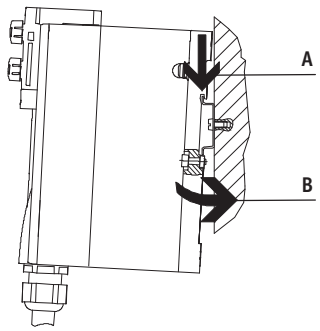
- Multi-pin plug (4 pieces):
  2 each on the multi-pin connection block and the right-hand end plate
- Fieldbus, CPX (4 pieces):
  2 each on the left-hand (CPX) and right-hand (VTSA-F) end plate. The pneumatic interface additionally provides further mounting holes as well as optional mounting brackets.

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

Note

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

H-rail mounting



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

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

- With multi-pin plug:
  CPA-BG-NRH
- With fieldbus:
  CPX-CPA-BG-NRH

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

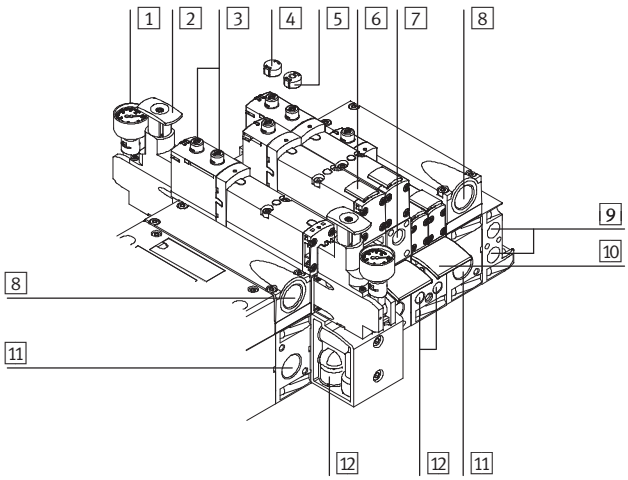
Display and operation

Each solenoid coil is allocated an LED which indicates its switching status.
- Indicator 12 shows the switching status of the pilot control for output 2
- Indicator 14 shows the switching status of the pilot control for output 4

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

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

Pneumatic connection and control elements

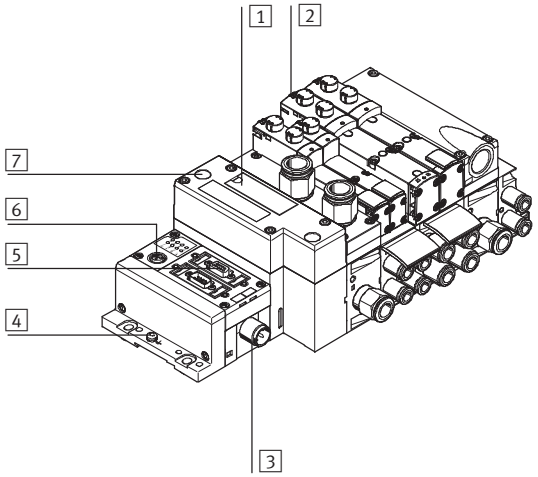


1 Pressure gauge (optional)
2 Adjusting knob of optional pressure regulator plate
3 Manual override (for each pilot solenoid coil, non-detenting or non-detenting/detenting)
4 Optional cover cap for manual override (prevents usage of manual override)
5 Optional cover cap for manual override with non-detenting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

Note

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

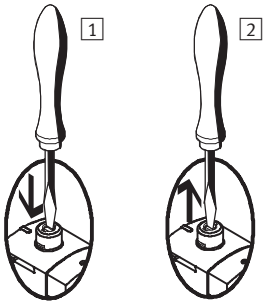
Electrical connection and display components



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

Manual override (MO)

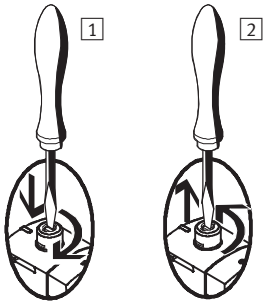
MO with automatic return (non-detenting)



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

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

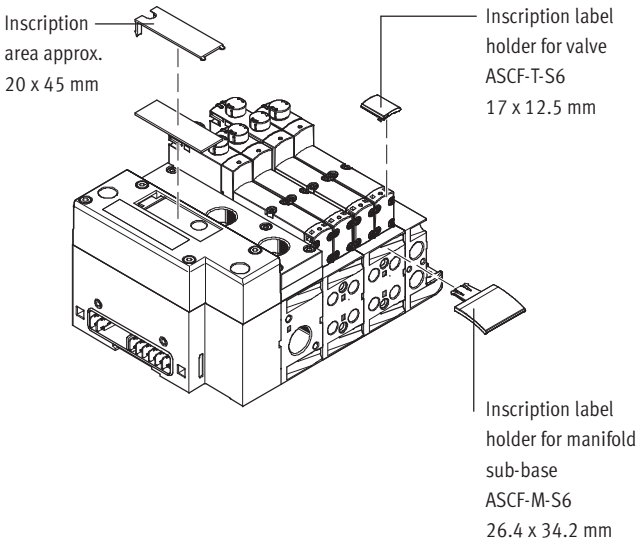
MO set via turning (covered)



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

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

Identification system



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

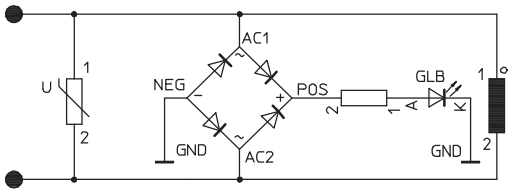
- Inscription label holder for valve type ASCF-T-S6: Part No. 540888
- Inscription label holder for manifold sub-base type ASCF-M-S6: Part No. 540889

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

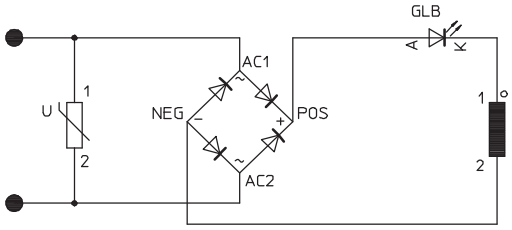
Protective circuit

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

24 V DC version



110 V AC version



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-F:

- Sub-D multi-pin plug connection (37-pin for 24 V DC): this valve terminal is available with 2 ... 16 valve positions equipped with double solenoid valves and 2 ... 32 valve positions equipped with single solenoid valves. A maximum of 32 solenoid coils can be actuated.
- Terminal box (terminal strip for 24 V DC or 110 V AC): this valve terminal is available with 2 ... 16 valve positions equipped with double solenoid valves and 2 ... 32 valve positions equipped with single solenoid valves. A maximum of 32 solenoid coils can be actuated.
- Multi-pin node (round plug connector): electrical multi-pin plug connection with round plug connector, 19-pin to CNOMO E03.62.530.N, connecting thread M23 for 24 V DC. The valve terminal can be equipped with max. 16 solenoid coils.

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

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

- Note

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

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

AS-interface connection

VTSA valve terminals 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 manifold module as the valve terminal with multi-pin plug connection.
This means it is possible to convert a valve terminal with multi-pin plug connection using an AS-interface module.

- The technical specifications of the AS-interface system must be observed in this case.

- Note

AS-i module VAEM-S6-S-FAS-4-4E.
Always operate solenoid valves with additional power supply if 4 solenoid coils are supplied with current simultaneously.
Further information can be found at:
➔ Internet: as-interface

Fieldbus connection/control block

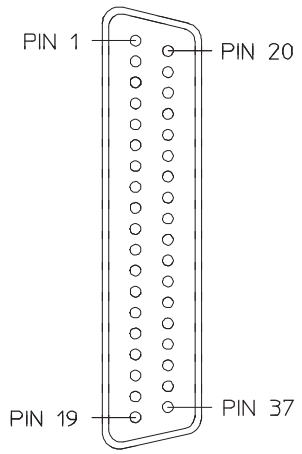
All functions and features of the electrical peripherals CPX are permitted in connection with the CPX interface. This means:

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

- Note

Further information can be found at:
➔ Internet: cpx

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



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

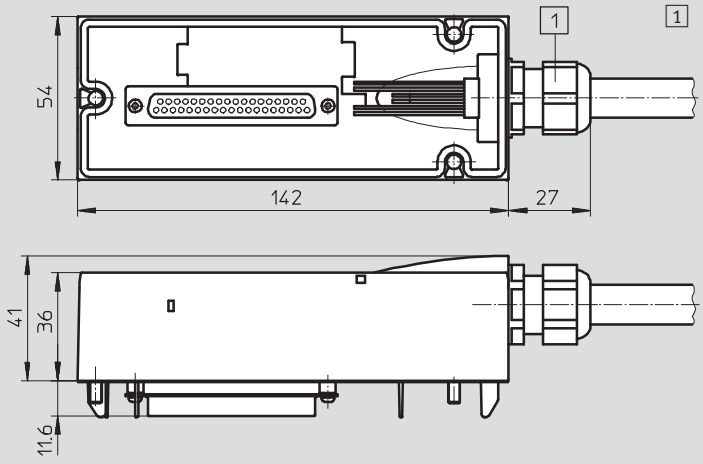
Note

The drawing shows the view on the Sub-D plug socket at the multi-pin cable NEBV-S1W37-....

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

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

Connecting cable NEBV-S1W37-...



1 Cable connector M20x1.5

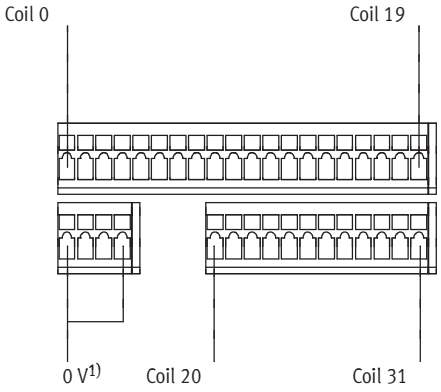
The wire colours refer to the following pre-assembled multi-pin cables from Festo:

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

Sub-D plug, 24 V DC; electrical connection code MP1					
Type	Sheath	Length [m]	Wire x mm² [mm²]	Cable diameter [mm]	Part No.
NEBV-S1W37-E2,5-LE10	Polyurethane	2.5	10 x 0.34	7.7	**539240**
NEBV-S1W37-E5-LE10		5			**539241**
NEBV-S1W37-E10-LE10		10			**539242**
NEBV-S1W37-E2,5-LE26		2.5	26 x 0.34	11.5	**539243**
NEBV-S1W37-E5-LE26		5			**539244**
NEBV-S1W37-E10-LE26		10			**539245**
NEBV-S1W37-K2,5-LE37		2.5	37 x 0.34	13	**539246**
NEBV-S1W37-K5-LE37		5			**539247**
NEBV-S1W37-K10-LE37		10			**539248**
NEBV-S1W37-KM-2,5-LE10	Polyvinyl chloride	2.5	10 x 0.34	7.7	**543271**
NEBV-S1W37-KM-5-LE10		5			**543272**
NEBV-S1W37-KM-10-LE10		10			**543273**
NEBV-S1W37-KM-2,5-LE27		2.5	27 x 0.34	11.5	**543274**
NEBV-S1W37-KM-5-LE27		5			**543275**
NEBV-S1W37-KM-10-LE27		10			**543276**
NEBV-S1W37-KM-2,5-LE37		2.5	37 x 0.34	13	**543277**
NEBV-S1W37-KM-5-LE37		5			**543278**
NEBV-S1W37-KM-10-LE37		10			**543279**

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

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



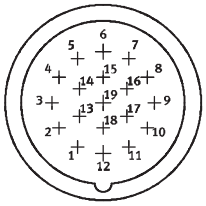
- Note

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

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

1) 0 V for positive switching control signals; connect 24 V for negative switching control signals; mixed operation is not permitted.

Pin allocation – Round plug connector, 24 V DC; electrical connection code MP4



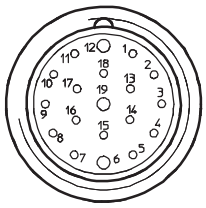
Address	Pin1)		Address	Pin1)
0	15		8	17
1	7		9	9
2	5		10	2
3	4		11	13
4	16		12	11
5	8		13	10
6	3		14	1
7	14		15	18

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

Rules for addressing

- Address allocation does not depend on whether single or double solenoid valves are fitted.
- Addresses are allocated in ascending order without gaps, from left to right.
- A valve position for actuating one solenoid coil occupies one address (type VABV-...-...T1).
- A valve position for actuating two solenoid coils occupies two addresses (type VABV-...-...T2). The following allocation applies in this case:
  - Coil 14: lower-value address
  - Coil 12: higher-value address

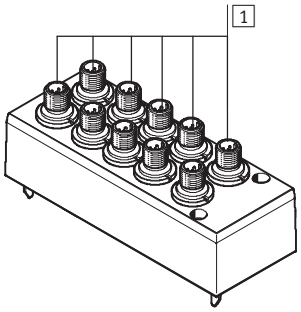
Pin allocation – Round plug connector, 24 V DC; electrical connection – CNOMO assignment

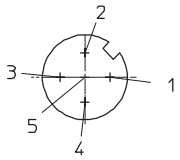


Pin	Valve position/ solenoid coil		Pin	Valve position/ solenoid coil
1	8/14		10	7/12
2	6/14		11	7/14
3	4/14		12	FE
4	2/12		13	6/12
5	2/14		14	4/12
6	0 V[1)]		15	1/14
7	1/12		16	3/14
8	3/12		17	5/14
9	5/12		18	8/12
			19	Unused

1) 0 V for positive switching control signals; connect 24 V for negative switching control signals; mixed operation is not permitted.

Individual electrical connection, 6-way or 10-way, 24 V DC, code MP2/MP3 for valve terminal





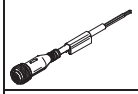
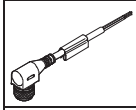
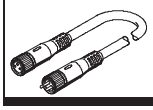
1 Connector plug M12x1, 5-pin

Pin allocation M12
With positive logic:
Pin1 – Unused
Pin2 – V_B for coil 12
Pin3 – 0 V for coil 12 and 14
Pin4 – V_B for coil 14
Pin5 – Functional earth

Pin allocation M12
With negative logic:
Pin1 – Unused
Pin2 – 0 V for coil 12
Pin3 – V_B for coil 12 and 14
Pin4 – 0 V for coil 14
Pin5 – Functional earth

Note

Mixed operation of positive switching and negative switching control signals is not permitted.

Electrical connection technology				
	Electrical connection	Type of mounting/cable length	Type	Part No.
Plug socket with cable for connecting individual valves				
	Straight socket, 5-pin, M12	5 m	**NEBU-M12G5-K-5-LE3**	**541364**
	Angled socket, 5-pin, M12	5 m	**NEBU-M12W5-K-5-LE3**	**541370**
	Modular system for connecting cables	–	**NEBU-...** ➔ Internet: nebu	**–**

System equipment

Operate system equipment with unlubricated compressed air if possible. Festo valves and cylinders are designed so that, if used as designated, they will not require additional lubrication and will still achieve a long service life.

The quality of compressed air downstream of the compressor must correspond to that of unlubricated compressed air. If possible, do not operate all your system equipment with lubricated compressed air. The lubricators should, where possible, always be installed directly upstream of the actuator used.

Incorrect additional oil and too high an oil content in the compressed air reduce the service life of the valve terminal.

Use Festo special oil OFSW-32 or the alternatives listed in the Festo catalogue (as specified in DIN 51524 HLP32; basic oil viscosity 32 CST at 40 °C).

Bio-oils

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

Mineral oils

When using mineral oils (e.g. HLP oils to DIN 51524, parts 1 to 3) or similar oils based on poly-alpha-olefins (PAO), the maximum residual oil content of 5 mg/m^3 must not be exceeded (see ISO 8573-1 Class 4).

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

Valve terminals type 45 VTSA-F, NPT

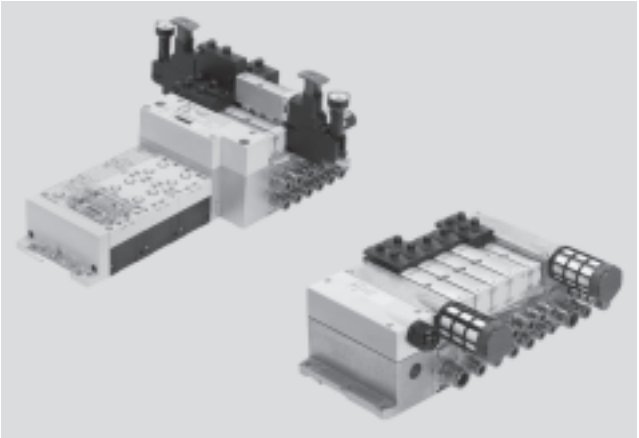
Technical data

FESTO

- Flow rate
  Width 18 mm:
  Up to 700 l/min
  Width 26 mm:
  Up to 1,400 l/min

- Valve width
  02: 18 mm
  01: 26 mm

- Voltage
  24 V DC
  110 V AC



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

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

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

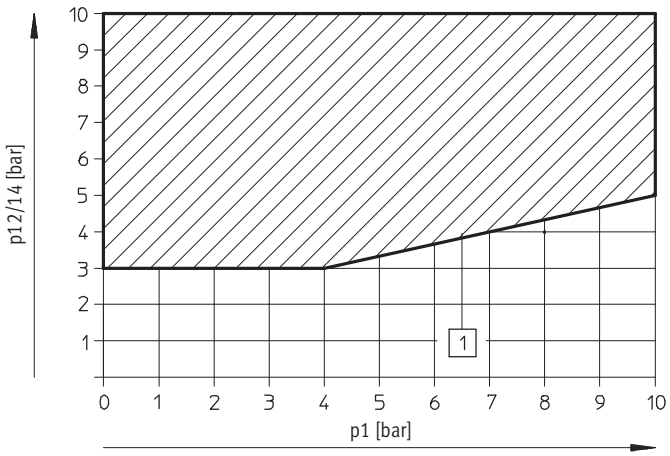
1) Switching position
2) Mid-position

Operating and environmental conditions																	
Valve function order code		VC	N	K	H	VV	P	Q	R	M	O	J	D	B	G	E	SA	SB
Operating medium		Filtered compressed air, lubricated or unlubricated, inert gases ➔ 48																
Grade of filtration	[µm]	40 (average pore size)																
Operating pressure	[bar]	3 … 10				–0.9 … +10												
Operating pressure for valve terminal with internal pilot air supply	[bar]	3 … 10																
Pilot pressure	[bar]	3 … 10																
Ambient temperature	[°C]	–5 … +50																
Temperature of medium	[°C]	–5 … +50																
Storage temperature[1)]	[°C]	–20 … +40																
Relative air humidity	[%]	90																
PWIS criterion		Free of paint-wetting impairment substances																

1) Long-term storage

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

Pilot pressure p12/14 as a function of operating pressure p1
for 3/2-way valves



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

Note

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

- 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 pressure separation zones with duct separation.
- Reversible 3/2-way valves do not permit the special function "pilot exhaust air ducting".
- Ports 112 and 14 on the end plate variants must be supplied with the same pressure.
- Right-hand end plate with pilot air selector: can be realised via position 1 or 2.
- Right-hand end plate with threaded connections: 12 and 14 must be supplied with the same pressure level.

Valve switching times [ms]

Valve function order code		VC	VV	N	K	H	P	Q	R	M	O	J	D	B	G	E	SA[1)]	SB[1)]
18 mm, nominal operating voltage 24 V DC/110 V AC																		
Switching times	on	12	12	12	12	12	25	25	25	22	12	–	–	15	15	15	–	–
	off	30	30	30	30	30	12	12	12	28	38	–	–	44	44	44	–	–
	change-over	–	–	–	–	–	–	–	–	–	–	11	13	–	–	–	–	–
26 mm, nominal operating voltage 24 V DC/110 V AC																		
Switching times	on	20	20	20	20	20	32	32	32	25	20	–	–	22	22	22	9/22	9/19
	off	38	38	38	38	38	30	30	30	45	65	–	–	65	65	65	49	36
	change-over	–	–	–	–	–	–	–	–	–	–	18	21	–	–	–	33	32

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

Electrical data			
VTSA-F with individual connection		18 mm	26 mm
Load voltage supply for valves (V_{val})			
Operating voltage	[V DC]	24 ±10%	
Maximum residual current	[A]	10	
Duty cycle		100%	
Protection class to EN 60529		IP65 and NEMA 4 (for all types of signal transmission in assembled state)	
Power consumption at 24 V DC			
2x 3/2-way valve	[W]	1.3	
5/2-way valve (code D)	[W]	1.3	
5/2-way, 5/3-way valve	[W]	1.6	

Electrical data			
VTSA-F with multi-pin plug connection		18 mm	26 mm
Load voltage supply for valves (V_{val})			
Operating voltage	[V DC]	24 ±10%	
	[V AC]	110 ±10% (50 ... 60 Hz)	
Maximum residual current	[A]	6	
Acceptable current load at 40 °C	[A]	1	
Surge capacity	[kV]	1.5	
Degree of contamination		3	
Duty cycle		100%	
Protection class to EN 60529		IP65 and NEMA 4 (for all types of signal transmission in assembled state)	
Power consumption at 24 V DC			
2x 3/2-way valve	[W]	1.3	
5/2-way valve (code D)	[W]	1.3	
5/2-way, 5/3-way valve	[W]	1.6	
Power consumption at 110 V AC			
2x 3/2-way valve	[VA]	1	
5/2-way, 5/3-way valve	[VA]	1.6	

Electrical data			
VTSA-F with CPX terminal		18 mm	26 mm
Power supply for electronics ($V_{EL/SEN}$)			
Operating voltage	[V DC]	24 ±10%	
Max. intrinsic current consumption at 24 V DC	[mA]	20	
Duty cycle		100%	
Load voltage supply for valves (V_{val})			
Operating voltage	[V DC]	24 ±10%	
Diagnostic message undervoltage V_{OFF}, load voltage outside function range	[V]	21.6 ... 21.5	
Protection class to EN 60529		IP65 and NEMA 4 (for all types of signal transmission in assembled state)	
Power consumption at 24 V DC			
2x 3/2-way valve	[W]	1.3	
5/2-way valve (code D)	[W]	1.3	
5/2-way, 5/3-way valve	[W]	1.6	

Certifications		
This product is certified for use in the ATEX zone in accordance with the EU ATEX Directive[1)]		
ATEX category for gas		II 3G
Explosion ignition protection type for gas		Ex nA II T3 X
ATEX category for dust		II 3D
Explosion ignition protection type for dust		Ex tD A22 IP65 T125° C X
ATEX temperature rating	[°C]	−5 ≤ Ta ≤ +50
Certification		cULus recognized (OL)
CE mark[2)] (see declaration of conformity)		To EU EMC Directive

1) Certification valid for: VTSA-F-MP, VTSA-F-ASI, VTSA-F-FB
2) Multi-pin plug variant 1 (24 V DC): no
Multi-pin plug variant 2A (110 V): to EU Low Voltage Directive
CPX variant: to EU EMC Directive

Materials		
	18 mm	26 mm
Manifold sub-base	Die-cast aluminium	
Valve	Die-cast aluminium, reinforced polyamide	
Seals	Nitrile rubber, elastomer (support made of steel)	
Supply plate	Die-cast aluminium	
Right-hand end plate	Die-cast aluminium	
Pneumatic interface for CPX	Die-cast aluminium	
Flow control plate	Die-cast aluminium	
Pressure regulator plate	Die-cast aluminium, reinforced polyamide	
Multi-pin connection block	Die-cast aluminium	
Cover for the pneumatic interface and multi-pin plug connection	Wellamid, reinforced polyamide	
RoHS status	RoHS-compliant	

Valve terminals type 45 VTSA-F, NPT

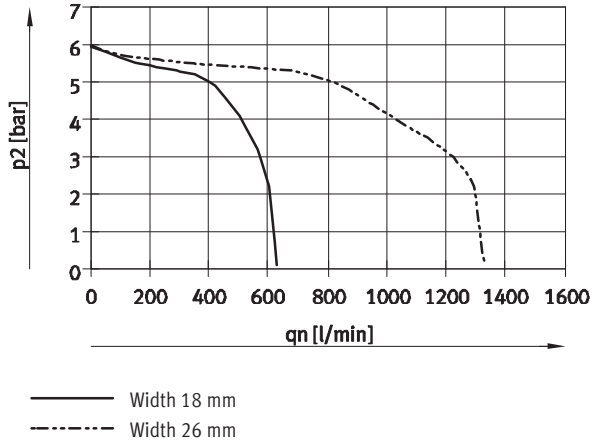
Technical data

Product weight	Design	
Approx. weight [g]	18 mm	26 mm
Sub-D multi-pin interface module or terminal strip[1]	550	
Multi-pin node with M12 individual connection	760	
Interface module CPX[1]	1,470	
Electrical connection for AS-interface	300	
AS-interface module	850	
Supply plate[2]		
• Exhaust plate with 3 and 5 common	617	
• Exhaust port cover with 3 and 5 separated	597	
Right-hand end plate[3]		
• Axial	339	
• Selector	281	
Manifold sub-base[4]	447	634
90° connection plate[3]	170	230
Pressure regulator plate		
for port 1	350	402
for port 4 or 2	367	448
for ports 4/2	611	692
Flow control plate	228	320
Vertical supply plate[3]	140	191
Vertical pressure shut-off plate	209	273
Valves		
• 5/3-way valve (code: B, G, E)	191	320
• 5/3-way valve (code: SA, SB)	–	301
• 5/2-way valve, single solenoid (code: M, O)	163	293
• 5/2-way valve, double solenoid (code: J, D)	172	276
• 2x 3/2-way valve (code: N, K, H, P, Q, R)	190	335
• 2x 2/2-way valve (code: VC, VV)	190	335
Blanking plate	34	73

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

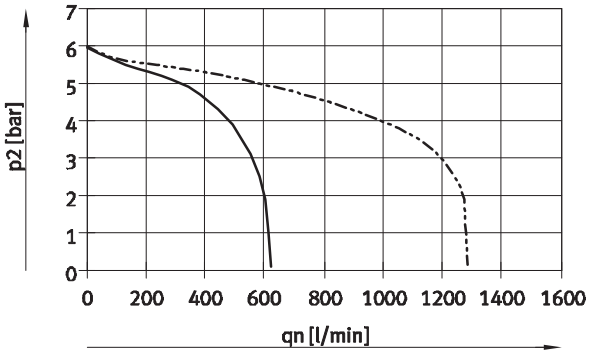
Flow rate qn as a function of output pressure p2 with pressure regulator plates (P regulator plate) for port 1

6 bar



Width 18 mm
Width 26 mm

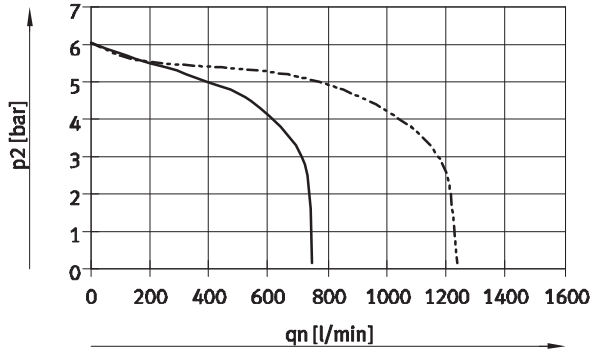
10 bar



Width 18 mm
Width 26 mm

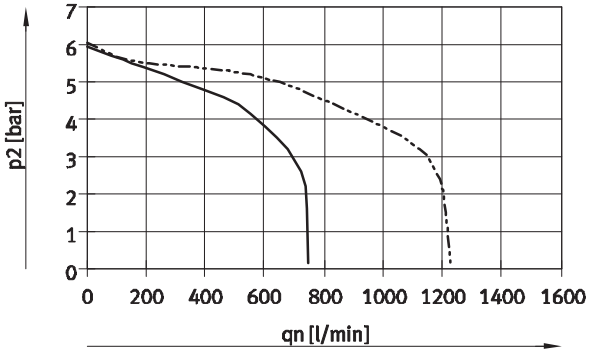
Flow rate qn as a function of output pressure p2 with pressure regulator plates (AB regulator plates) for port 2, 4 or ports 4/2

6 bar



Width 18 mm
Width 26 mm

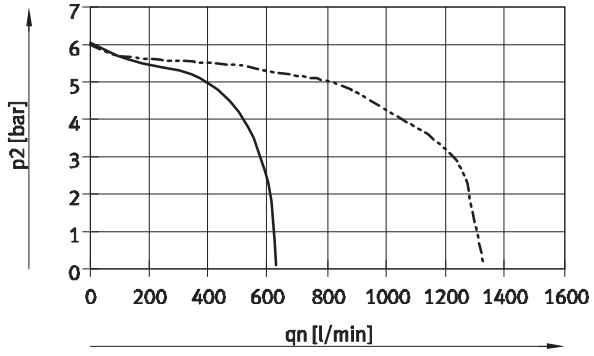
10 bar



Width 18 mm
Width 26 mm

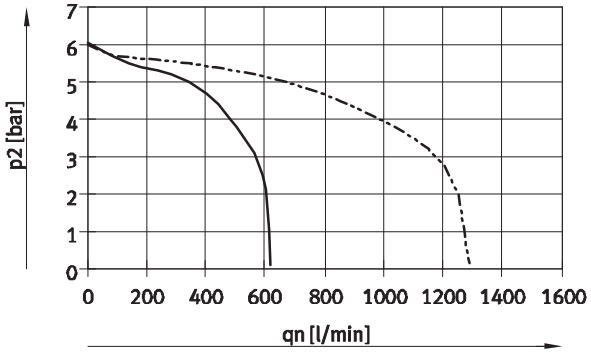
Flow rate qn as a function of output pressure p2 with pressure regulator plates (AB regulator plates, rev.) for ports 4/2, reversible

6 bar



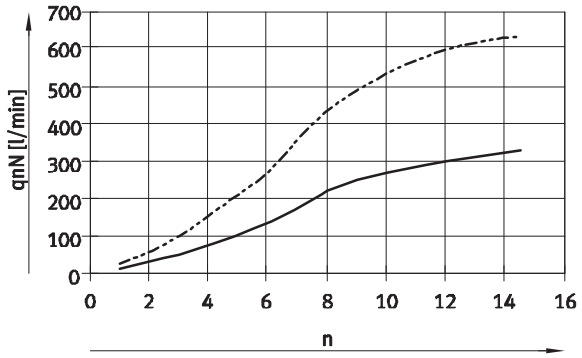
Width 18 mm
Width 26 mm

10 bar



Width 18 mm
Width 26 mm

Flow rate qn as a function of flow control

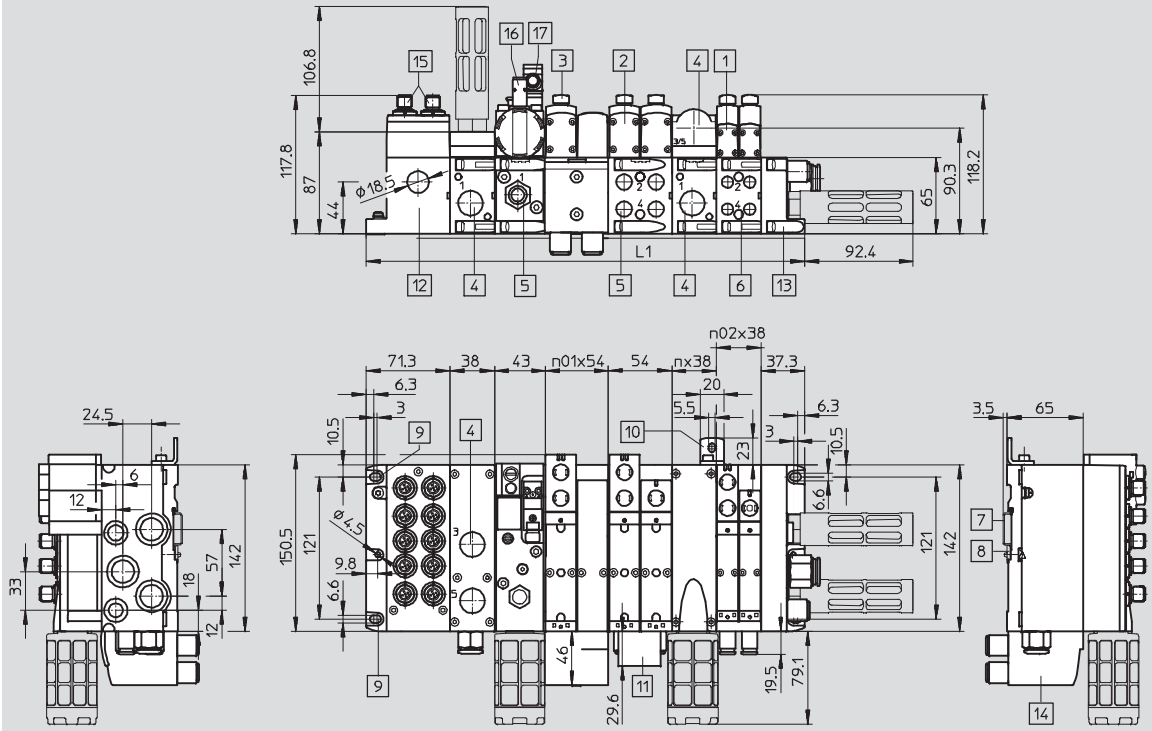


Width 18 mm
Width 26 mm

n Revolutions of the adjusting screw

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

Valve terminal with individual electrical connection



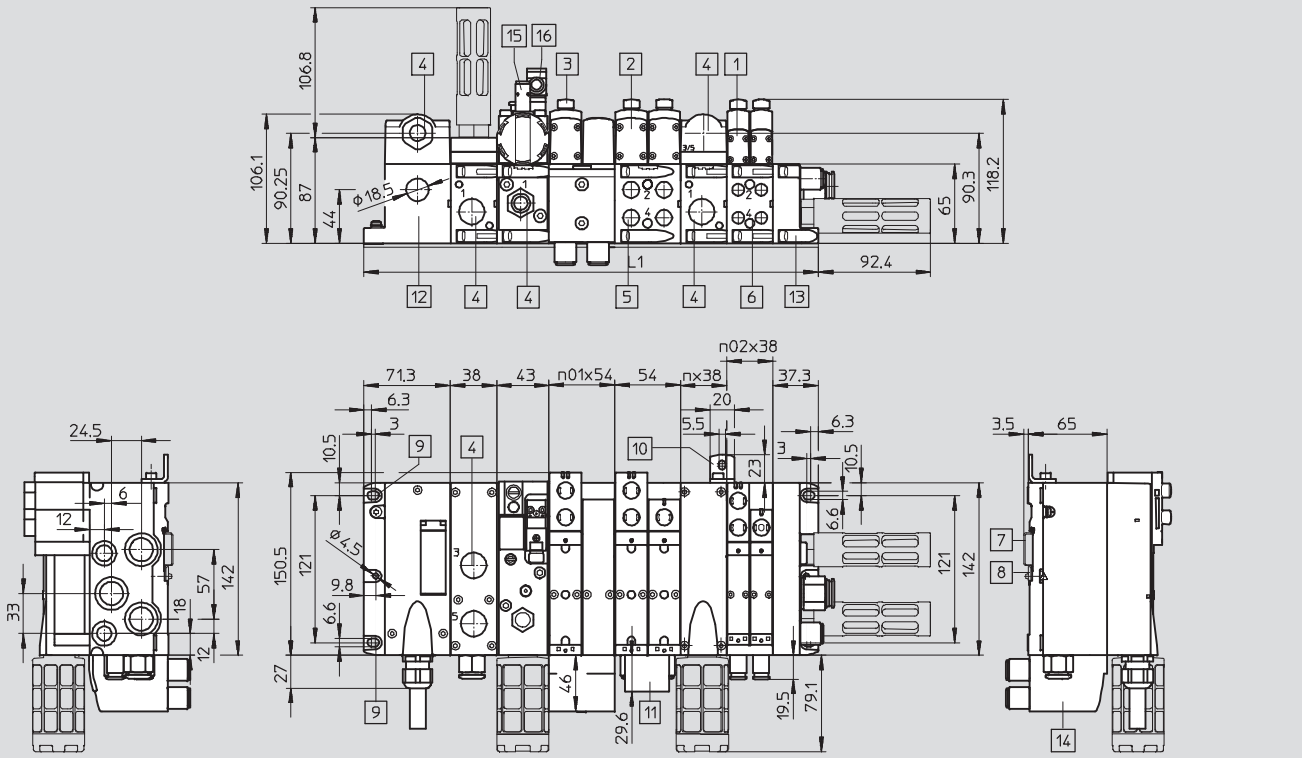
1	Solenoid valve 18 mm	7	H-rail	13	End plate	n02	Number of manifold sub-bases 18 mm
2	Solenoid valve 26 mm	8	H-rail mounting	14	90° connection plate		
3	Cover cap/manual override	9	Mounting hole	15	M12 plug, 5-pin (6-way or 10-way)	n01	Number of manifold sub-bases 26 mm
4	Threaded connection ½NPT	10	Additional mounting bracket	17	Proximity sensor M12x1	n	Number of supply plates
5	Threaded connection ¼NPT	11	Inscription label holder	17	Plug socket M12x1		
6	Threaded connection ⅛NPT	12	Individual connection				

Width	L1
18 mm	71.3 + n02 x 38 + 43 + nx 38 + 37.3
26 mm	71.3 + n01 x 54 + 43 + nx 38 + 37.3
Mixture of 18 mm and 26 mm	71.3 + n02 x 38 + n01 x 54 + 43 +nx 38 + 37.3

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

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

Valve terminal with multi-pin plug connection



1 Solenoid valve 18 mm
2 Solenoid valve 26 mm
3 Cover cap/manual override
4 Threaded connection ½NPT
5 Threaded connection ¼NPT
6 Threaded connection ⅛NPT
7 H-rail
8 H-rail mounting
9 Mounting hole
10 Additional mounting bracket
11 Inscription label holder
12 Multi-pin plug connection
13 End plate
14 90° connection plate
15 Proximity sensor M12x1
16 Plug socket M12x1

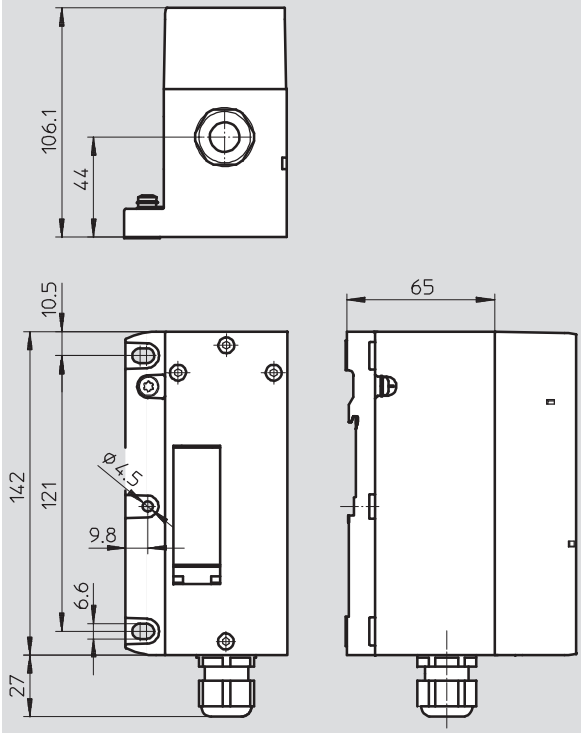
n02 Number of manifold sub-bases 18 mm
n01 Number of manifold sub-bases 26 mm
n Number of supply plates

Width	L1
18 mm	71.3 + n02 x 38 + 43 + nx 38 + 37.3
26 mm	71.3 + n01 x 54 + 43 + nx 38 + 37.3
Mixture of 18 mm and 26 mm	71.3 + n02 x 38 + 43 + n01 x 54 + nx 38 + 37.3

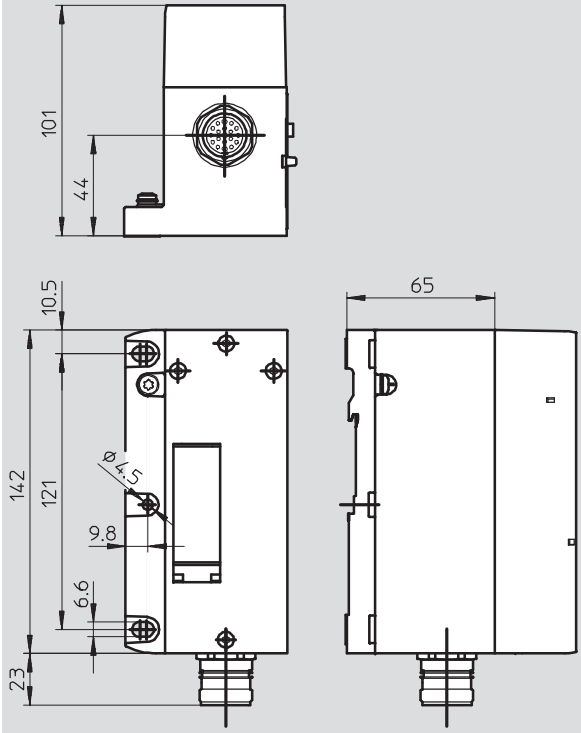
Note: This product conforms to ISO 1179-1 and ISO 228-1.

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

Multi-pin, terminal strip (Cage Clamp®)



Multi-pin, round plug connector

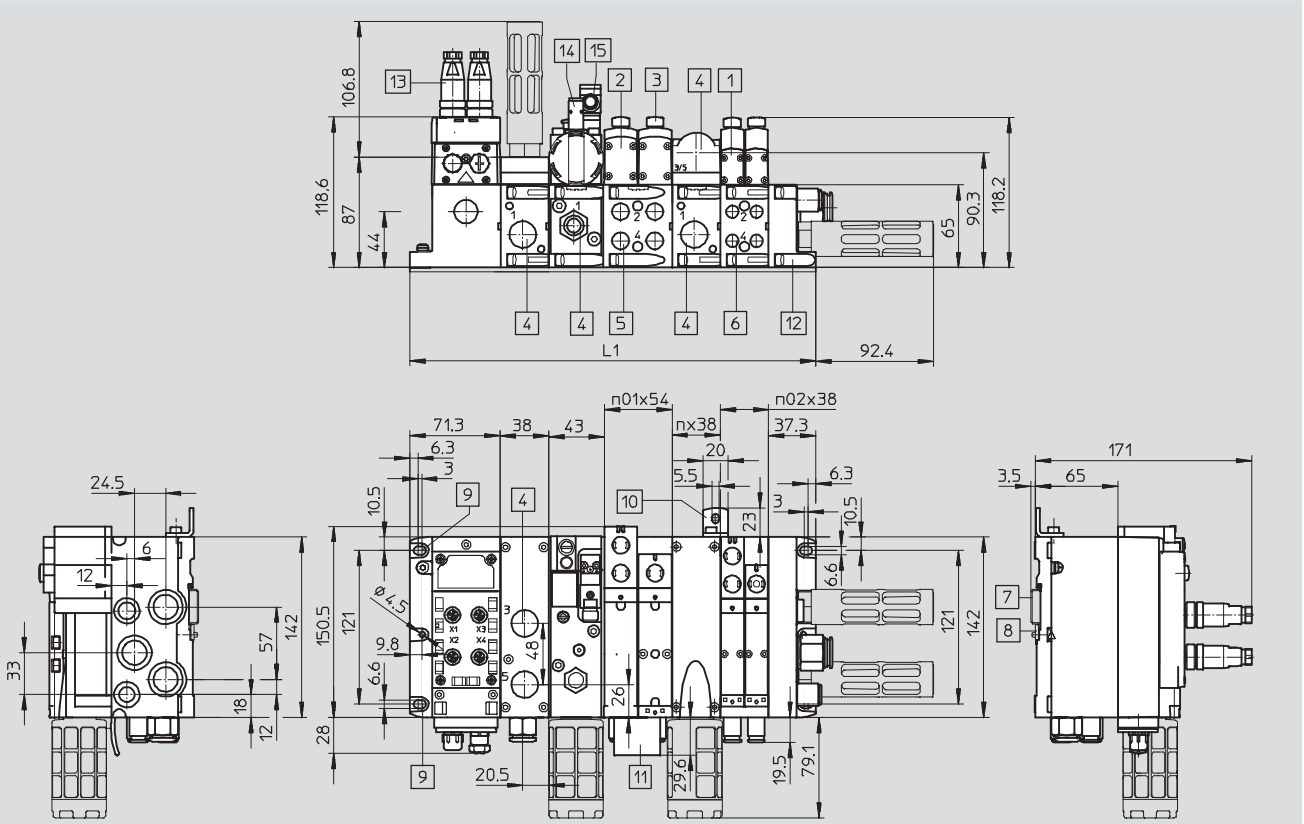


Valve terminals type 45 VTSA-F, NPT

Technical data

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

Valve terminal with AS-interface connection

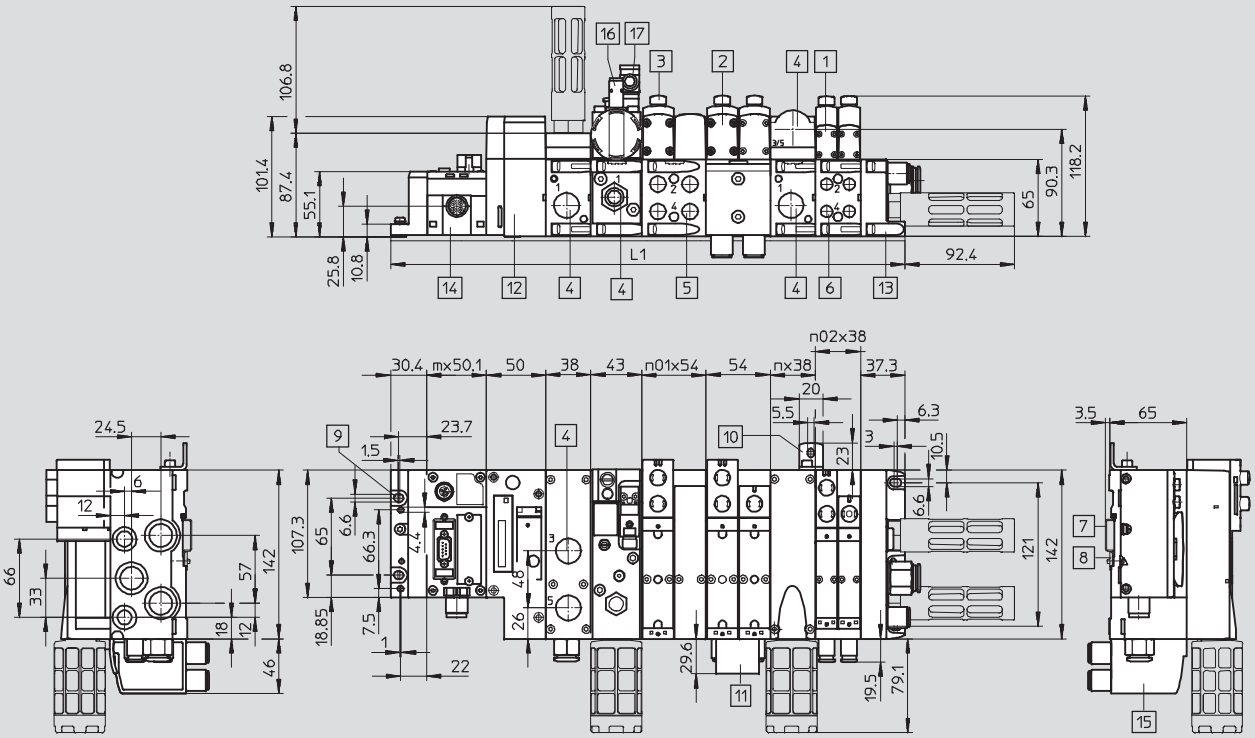


1	Solenoid valve 18 mm	6	Threaded connection ⅛NPT	11	Inscription label holder	n02	Number of manifold sub-bases 18 mm
2	Solenoid valve 26 mm	7	H-rail	12	End plate		
3	Cover cap/manual override	8	H-rail mounting	13	Plug M12	n01	Number of manifold sub-bases 26 mm
4	Threaded connection ½NPT	9	Mounting hole	14	Proximity sensor M12x1		
5	Threaded connection ¼NPT	10	Additional mounting bracket	15	Plug socket M12x1	n	Number of supply plates

Width	L1
18 mm	71.3 + n02 x 38 + 43 + nx 38 + 37.3
26 mm	71.3 + n01 x 54 +43 + nx 38 + 37.3
Mixture of 18 mm and 26 mm	71.3 + n02 x 38 + n01 x 54 + 43 +nx 38 + 37.3

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

Valve terminal with fieldbus connection



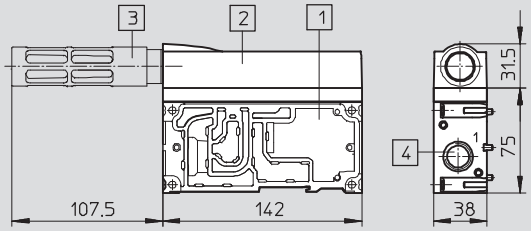
1	Solenoid valve 18 mm	7	H-rail	13	End plate	n02	Number of manifold sub-bases 18 mm
2	Solenoid valve 26 mm	8	H-rail mounting	14	CPX module/fieldbus node	n01	Number of manifold sub-bases 26 mm
3	Cover cap/manual override	9	Mounting hole	15	90° connection plate width 18 mm, ⅛NPT width 26 mm, ¼NPT	n	Number of supply plates
4	Threaded connection ½NPT	10	Additional mounting bracket	16	Proximity sensor M12x1	m	Number of CPX modules
5	Threaded connection ¼NPT	11	Inscription label holder	17	Plug socket M12x1		
6	Threaded connection ⅛NPT	12	Pneumatic interface CPX				

Width	L1
18 mm	30.4 + m x 50.1 + 50 + 43 + n02 x 38 + nx 38 + 37.3
26 mm	30.4 + m x 50.1 + 50 + 43 + n01 x 54 + nx 38 + 37.3
Mixture of 18 mm and 26 mm	30.4 + m x 50.1 + 50 + 43 + n02 x 38 + n01 x 54 + nx 38 + 37.3

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

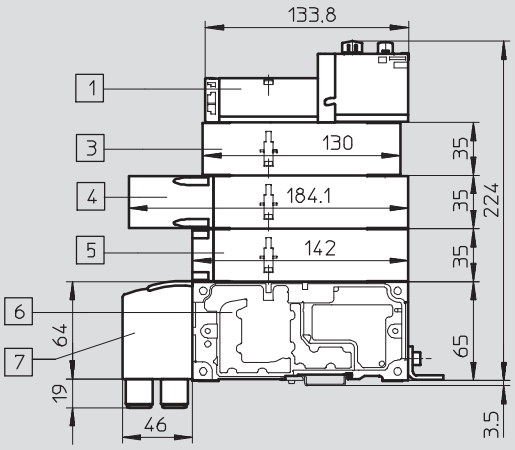
Dimensions Download CAD data ➔ **www.festo.com**

Supply plate with silencer

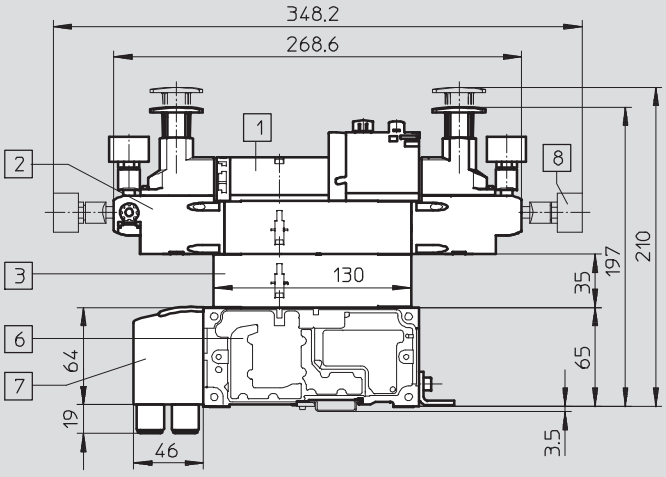


1 Supply plate
2 Exhaust port cover
3 Silencer U-½-B-NPT
4 ½NPT

Vertical stacking components, width 18 mm



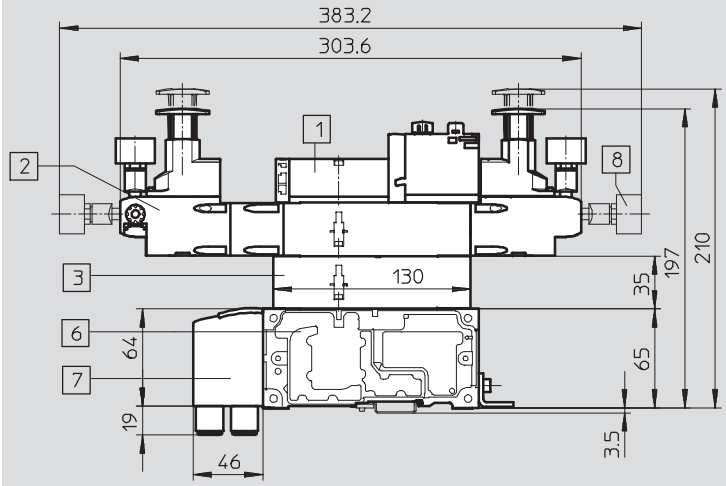
1 Solenoid valve with two solenoid coils, width 18 mm
3 Flow control plate
4 Vertical pressure shut-off plate
5 Vertical supply plate
6 Manifold sub-base
7 90° connection plate



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

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

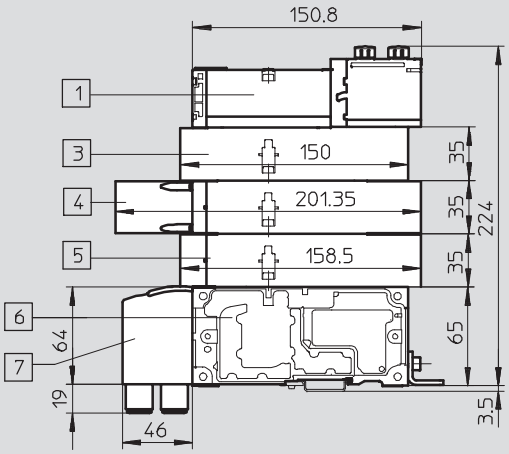
Vertical stacking components, width 18 mm, with the pressure regulator plate also suitable for symmetrical valves



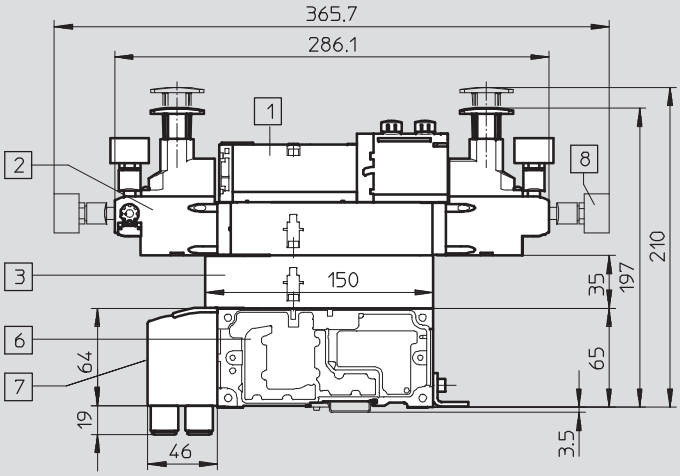
1 Solenoid valve with two solenoid coils, width 18 mm
2 Pressure regulator plate
3 Flow control plate
6 Manifold sub-base
7 90° connection plate
8 Pressure gauge, freely positionable

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

Vertical stacking components, width 26 mm

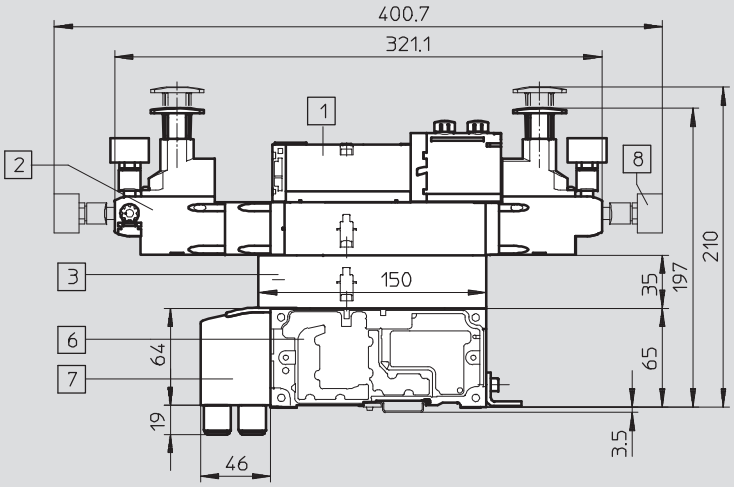


1 Solenoid valve with two solenoid coils, width 26 mm
3 Flow control plate
4 Vertical pressure shut-off plate
5 Vertical supply plate
6 Manifold sub-base
7 90° connection plate



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

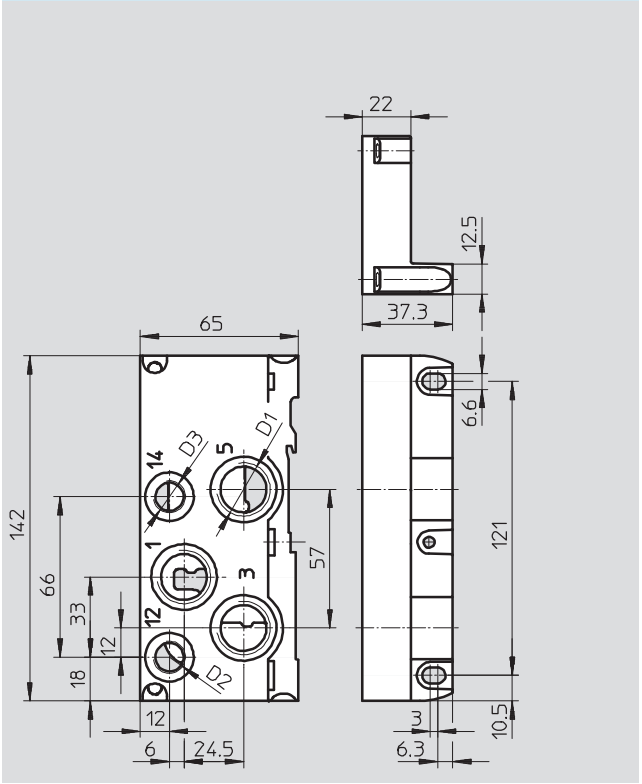
Vertical stacking components, width 26 mm, with the pressure regulator plate also suitable for symmetrical valves



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

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

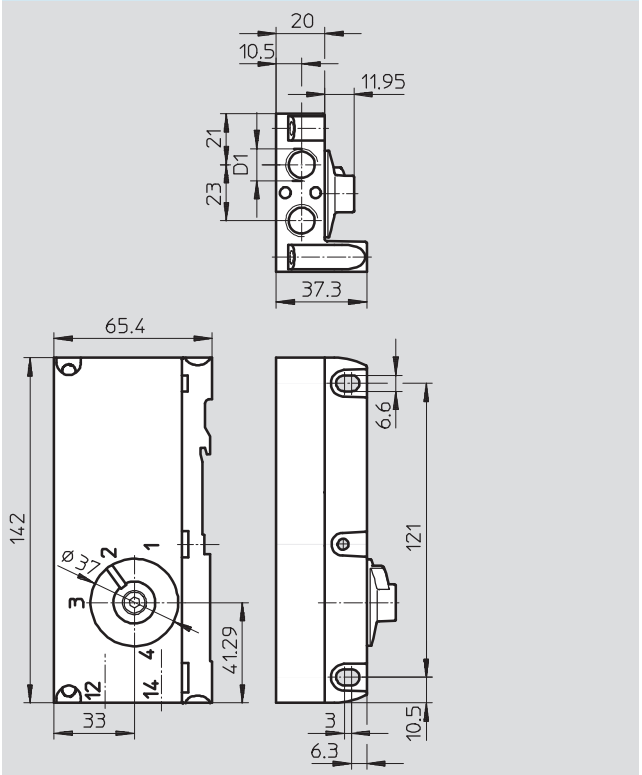
Right-hand end plate



Type	D1	D2	D3
VABE-S6-1R-N12	½NPT	¼NPT	¼NPT
VABE-S6-1RZ-N12			

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

Right-hand end plate with pilot air selector



Type	D1
VABE-S6-1RZ-N-B1	¼NPT

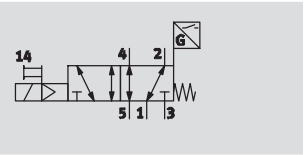
1) Note: This product conforms to ISO 1179-1 and ISO 228-1.

Valve terminals type 45 VTSA-F, NPT

Technical data

FESTO

Function

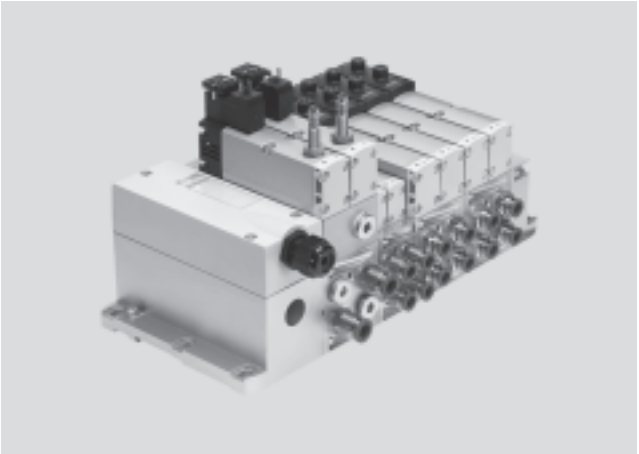


Flow rate
950 l/min

Valve width
01: 26 mm

Voltage
24 V DC

Operating pressure
3 ... 10 bar



ISO valves for safety-oriented pneumatic components

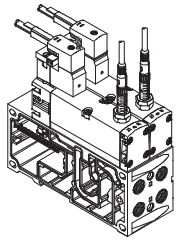
Function

The single solenoid 5/2-way valve with spring return in width 26 mm features valve diagnostics. Designed as plug-in or individual connection valve with pilot valves to ISO 15218 and square plug type C. The normal position of the piston spool valve is monitored by the inductive sensor.

The use of a N/C contact enables wire breaks to be detected. Suitable for controllers with higher safety category to DIN EN 13849-1.

- Protection against unexpected start-up
- Drives in manually loaded devices
- Reversing of the cylinder movement

Valve terminal



The valves with integrated piston position sensing can be used regardless of the type of electrical actuation (individual, multi-pin plug or fieldbus/control block connection).

Electrical connection via square plugs (DIN EN 175301-803, type C) is required for use in safety-oriented parts of controllers.

Pilot air supply

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

Note

Do not replace the sensors in the valves as incorrect assembly can result in malfunctions or damage to the valve. Return the module to Festo for maintenance in the event of a fault. Valves (with switching position sensing) from the VSVA-B-M52 -...- series can only be ordered individually. If these are used on a valve terminal, appropriate vacant positions must be provided for them.

Valve terminals type 45 VTSA-F, NPT

Technical data

FESTO

General technical data			
Width		26 mm	
Valve			
Design		Piston spool valve	
Sealing principle		Soft	
Actuation type		Electrical	
Type of control		Piloted	
Exhaust function, with flow control		Via individual sub-base	
Lubrication		Lubricated for life	
Type of mounting		Through-hole to ISO 15407-2	
Mounting position		Any	
Manual override		Covered	
Individual sub-base			
Pneumatic connection		Threaded connection	Fitting
Supply port	1	¼NPT	QS-¼-⅜ QS-¼-5/16-U
Exhaust port	3/5	¼NPT	QS-¼-⅜ QS-¼-5/16-U
Working lines	2/4	¼NPT	QS-¼-⅜ QS-¼-5/16-U
Pilot air supply port	14	⅛NPT	QS-⅛-5/16-U QS-⅛-¼-U
Pilot exhaust air port	12	⅛NPT	QS-⅛-5/16-U QS-⅛-¼-U
Valve terminal			➔49

Standard nominal flow rate qnN [l/min]			
Valve		VSVA-B-M52-MZD-A1-1T1L-...-	VSVA-B-M52-MZ-A1-1C1-...-
Width 26 mm			
Flow rate of valve		1,400	1,400
Flow rate of valve on valve terminal		1,200	1,100

Operating and environmental conditions		
Valve/manifold sub-base		
Operating medium		Filtered compressed air, lubricated or unlubricated, inert gases ➔ 48
Grade of filtration	[µm]	40 (average pore size)
Operating pressure	[bar]	3 ... 10
Operating pressure for valve terminal with internal pilot air supply	[bar]	3 ... 10
Pilot pressure	[bar]	3 ... 10
Ambient temperature	[°C]	−5 ... +50
Temperature of medium	[°C]	−5 ... +50
Storage temperature[1)]	[°C]	−20 ... +40
Relative air humidity	[%]	90

Valve terminals type 45 VTSA-F, NPT

Technical data

Valve switching times [ms]			
Valve		VSVA-B-M52-MZD-A1-1T1L-...-	VSVA-B-M52-MZ-A1-1C1-...-
Width 26 mm			
Switching times	on	20	21
	off	54	41

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

Electrical data		
Sensor		M8x1
Electrical connection	Cable	3-wire
	Plug	M8x1, 3-pin
Cable length	[m]	2.5
Switching output		PNP or NPN
Switching element function		N/C contact
Switching status display		Yellow LED
Operating voltage range	[V DC]	10 ... 30
Residual ripple	[%]	±10
Rated operating voltage	[V DC]	24
Sensor idle current	[mA]	<=10
Max. output current	[mA]	200
Voltage drop	[V]	<=2
Max. switching frequency	[Hz]	5 000
Protection against short circuit		Pulsed
Protection against polarity reversal for sensor		For all electrical connections
Measuring principle		Inductive
Piston position sensing		Valve normal position via sensor

Valve terminals type 45 VTSA-F, NPT

Technical data

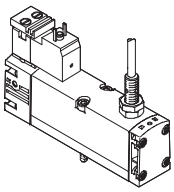
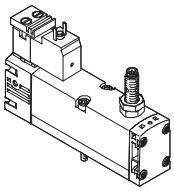
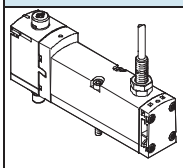
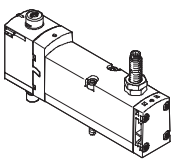
Product weight	Width
Approx. weight [g]	26 mm
5/2-way valves	
• VSVA-B-M52-MZ-A1-1C1-APC	332
• VSVA-B-M52-MZ-A1-1C1-APP	289
• VSVA-B-M52-MZ-A1-1C1-ANC	332
• VSVA-B-M52-MZ-A1-1C1-ANP	289
• VSVA-B-M52-MZD-A1-1T1L-APC	307
• VSVA-B-M52-MZD-A1-1T1L-APP	264
• VSVA-B-M52-MZD-A1-1T1L-ANC	307
• VSVA-B-M52-MZD-A1-1T1L-ANP	264
Individual sub-base	302

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

Valve terminals type 45 VTSA-F, NPT

Technical data

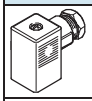
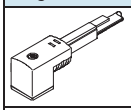
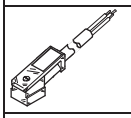
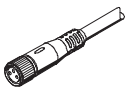
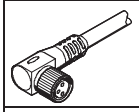
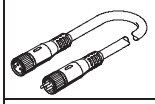
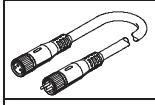
FESTO

Ordering data					
	Code	Valve function	Width	Type	Part No.
Solenoid valves, 24 V DC, with pneumatic interface to ISO 15218					
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor, PNP output with cable, 3-wire	26 mm	**VSVA-B-M52-MZ-A1-1C1-APC**	**560725**
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor, NPN output with cable, 3-wire	26 mm	**VSVA-B-M52-MZ-A1-1C1-ANC**	**560744**
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor, PNP output, 3-pin push-in connector, M8	26 mm	**VSVA-B-M52-MZ-A1-1C1-APP**	**560726**
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor, NPN output, 3-pin push-in connector, M8	26 mm	**VSVA-B-M52-MZ-A1-1C1-ANP**	**560745**
Solenoid valves, 24 V DC, with plug-in connection					
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor, PNP output with cable, 3-wire	26 mm	**VSVA-B-M52-MZD-A1-1T1L-APC**	**560723**
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor, NPN output with cable, 3-wire	26 mm	**VSVA-B-M52-MZD-A1-1T1L-ANC**	**560742**
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor, PNP output, 3-pin push-in connector, M8	26 mm	**VSVA-B-M52-MZD-A1-1T1L-APP**	**560724**
	–	5/2-way valve, single solenoid, mechanical spring return, with switching position sensing via inductive sensor, NPN output, 3-pin push-in connector, M8	26 mm	**VSVA-B-M52-MZD-A1-1T1L-ANP**	**560743**

Valve terminals type 45 VTSA-F, NPT

Technical data

FESTO

Electrical connection technology				
	Electrical connection	Type of mounting/cable length	Type	Part No.
Plug sockets for connecting individual valves				
	Angled socket, 3-pin, screw terminal	Fitting PG7	**MSSD-EB**	**151687**
		Fitting M12	**MSSD-EB-M12**	**539712**
Plug socket with cable for connecting individual valves				
	Angled socket, 3-pin	2.5 m	**KMEB-1-24-2,5-LED**	**151688**
	Angled socket, 3-pin	5 m	**KMEB-1-24-5-LED**	**151589**
	Angled socket, 3-pin	10 m	**KMEB-1-24-10-LED**	**193457**
	Angled socket, 4-pin	2.5 m	**KMEB-2-24-2,5-LED**	**174844**
	Angled socket, 4-pin	5 m	**KMEB-2-24-5-LED**	**174845**
	Straight socket, 3-pin, M8	2.5 m	**NEBU-M8G3-K-2,5-LE3**	**541333**
		5 m	**NEBU-M8G3-K-5-LE3**	**541334**
	Angled socket, 3-pin, M8	2.5 m	**NEBU-M8-W3-K-2,5-LE3**	**541338**
		5 m	**NEBU-M8W3-K-5-LE3**	**541341**
	Straight socket, straight plug	2.5 m	**NEBU-M8G3-K-2,5-M8G4**	**554037**
	Modular system for connecting cables	–	**NEBU-...** ➔ Internet: nebu	**–**

Ordering data – Illuminating seal for plug pattern DIN EN 175301-803, type C			Technical data ➔ Internet: meb-ld	
	Voltage		Type	Part No.
	[V DC]	[V AC]		
	12 ... 24	–	**MEB-LD-12-24DC**	**151 717**
	–	230	**MEB-LD-230AC**	**151 718**

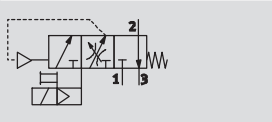
New

Valve terminals type 45 VTSA-F, NPT

Technical data – Soft-start valve

FESTO

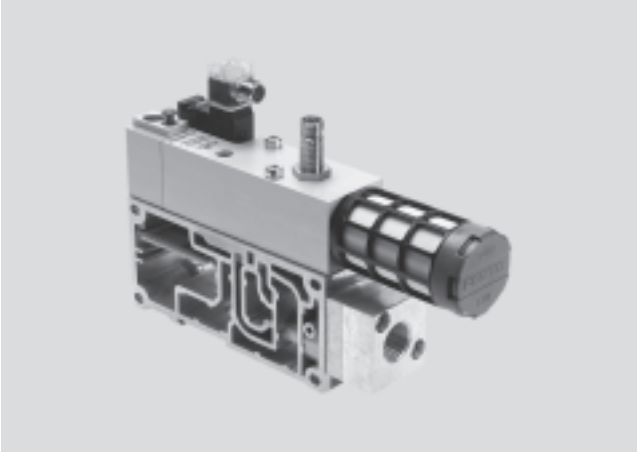
Function



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

Temperature range
–5 ... +50 °C

Operating pressure
2 ... 10 bar



Application

Function

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

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

The switching point for full operating pressure is set to 4 bar at the factory, but can be changed using an adjusting screw.
The full operating pressure is applied to duct 14 (pilot air) at all times. This pressure causes the valves on the valve terminal to immediately move to the required switching position.
When the valve is not switched, duct 1 of the valve terminal is exhausted via the soft-start valve's exhaust port.
A self-resetting manual override is available for maintenance and service purposes.

Diagnostics

The piston position of the soft-start valve can be monitored by a sensor with integrated LED display. This sensor registers whether the valve has switched and thus whether the valve terminal is being supplied with air. Pressure sensing via a pressure gauge (optional) is also possible.
The soft-start valve can alternatively be ordered with a sensor (retrofitting of a sensor is very complicated due to the necessary sensor calibration).
Connecting cables with integrated LED display are provided for displaying the switching status/signal status.

Pilot air supply

The valve terminal can either be supplied with internal pilot air via the soft-start valve or with internal or external pilot air via the various end plate variants. The type of pilot air supply is determined by the seal of the soft-start valve.
The scope of delivery of the soft-start valve includes both the seal for internal pilot air supply and the seal for external pilot air supply.

Restrictions

Compressed air supply

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

Exhaust air

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

Pilot air supply

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

Reverse operation

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

Valve terminals type 45 VTSA-F, NPT

Technical data – Soft-start valve

FESTO

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

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

Valve switching times [ms]		
Switching times	on	17
	off	50
	change-over	–

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

Operating and environmental conditions			
Type		VABF-S6-1-P5A4-...-2A	VABF-S6-1-P5A4-...-1
Operating pressure	[bar]	2 ... 10	
Switchover pressure presetting	[bar]	4	
Operating medium		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Ambient temperature	[°C]	–5 ... +50	
CE mark (see declaration of conformity)		To EU EMC Directive	–

Weight [g]	
Manifold sub-base	570
Soft-start valves without proximity sensor	590
Soft-start valves with proximity sensor	605

Materials	
Housing	Wrought aluminium alloy
Seals	Nitrile rubber
Screws	Galvanised steel

Valve terminals type 45 VTSA-F, NPT

Technical data – Soft-start valve

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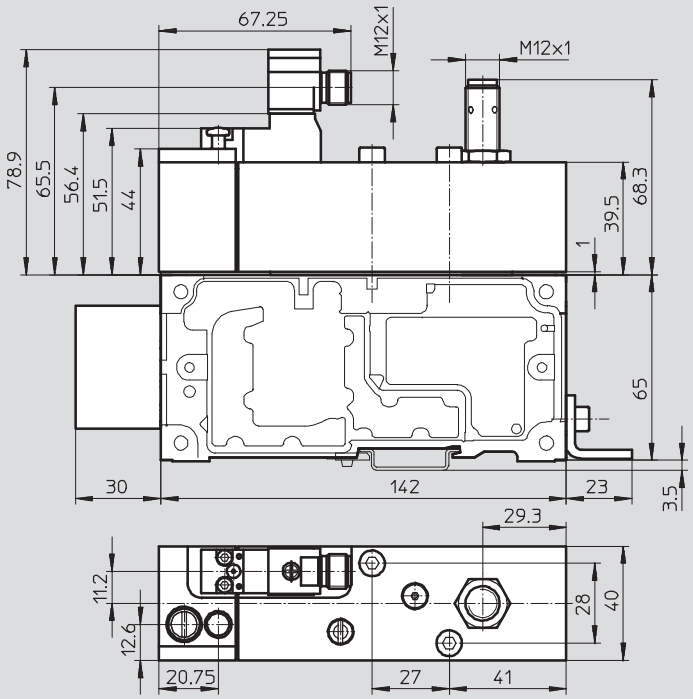
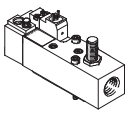
Dimensions Download CAD data ➔ **www.festo.com**

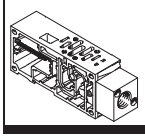


1 Socket head screw M5x48
DIN 912, captive

Ordering data – Valves

	Nominal operating voltage		Sensor output	Pneumatic connection	Type	Part No.
	24 V DC	110 V AC				
	–	■	None	½ NPT	**VABF-S6-1-P5A4-N12-4-2A**	**558229**
	■	–	None	½ NPT	**VABF-S6-1-P5A4-N12-4-1**	**558231**
	■	–	PNP	½ NPT	**VABF-S6-1-P5A4-N12-4-1-P**	**558232**
	■	–	NPN	½ NPT	**VABF-S6-1-P5A4-N12-4-1-N**	**558234**

Ordering data – Manifold sub-bases

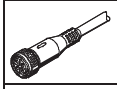
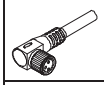
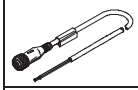
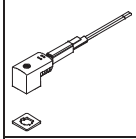
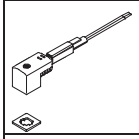
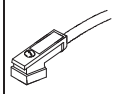
	Pneumatic connection	Type	Part No.
	½ NPT	**VABV-S6-1Q-N12**	**556988**

Valve terminals type 45 VTSA-F, NPT

Technical data – Soft-start valve

FESTO

Ordering data – Accessories

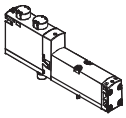
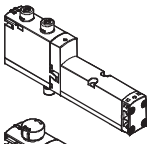
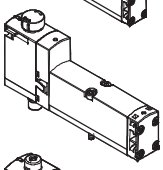
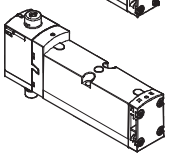
			Type	Part No.
	Angled socket, for solenoid coil, 2-pin; straight plug, 2-pin, M12		**MSSD-EB-M12-MONO**	**188024**
	Protective cap M12 for sealing the sensor opening		**ISK-M12**	**165592**
	Proximity sensor	PNP	**SIEN-M12B-PS-S-L**	**150403**
		NPN	**SIEN-M12B-NS-S-L**	**150401**
	Connecting cable, 4-wire, straight socket, M12x1	5 m cable	**SIM-M12-4GD-5-PU**	**164259**
	Connecting cable, 3-wire, angled socket, M12x1	5 m cable	**NEBU-M12W5-K-5-LE3**	**541370**
	Connecting cable, 3-wire, straight socket, M12x1	5 m cable	**NEBU-M12G5-K-5-LE3**	**541364**
	Connecting cable, angled socket, type C, for solenoid coil 24 V DC, with LED for switching status display	2.5 m cable	**KMEB-1-24-2,5-LED**	**151688**
		5 m cable	**KMEB-1-24-5-LED**	**151689**
		10 m cable	**KMEB-1-24-10-LED**	**193457**
	Connecting cable, angled socket, type C, for solenoid coil 230 V AC	2.5 m cable	**KMEB-1-230AC-2,5**	**151690**
		5 m cable	**KMEB-1-230-5**	**151691**
	Connecting cable, angled socket, type C, for solenoid coil 24 V DC, with LED for switching status display	2.5 m cable	**KMEB-2-24-2,5-LED**	**174844**
		5 m cable	**KMEB-2-24-5-LED**	**174845**
	Connecting cable, angled socket, type C, for solenoid coil 230 V AC	2.5 m cable	**KMEB-2-230AC-2,5**	**174846**
		5 m cable	**KMEB-2-230-5**	**174847**
	Blanking plug for thread G½	Scope of delivery 10 pieces	**B-½**	**3571**
	Pressure gauge 0 ... 10 bar	Pneumatic connection M5	**MA-27-10-M5**	**526323**

Valve terminals type 45 VTSA-F, NPT

Individual valve

FESTO

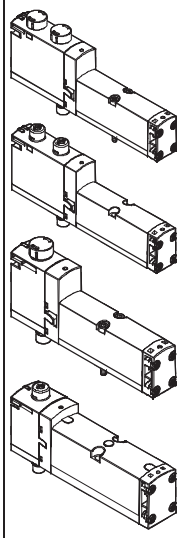
Ordering data

	Code	Valve function	Width	Type	Part No.
Solenoid valves, 24 V DC					
   	VC	2x 2/2-way valve, single solenoid, normally closed, mechanical spring return	18 mm	**VSVA-B-T22C-AZD-A2-1T1L**	**561155**
			26 mm	**VSVA-B-T22C-AZD-A1-1T1L**	**561149**
	VV	2x 2/2-way valve, single solenoid, normally closed, mechanical spring return, vacuum operation possible at 3 and 5	18 mm	**VSVA-B-T22CV-AZD-A2-1T1L**	**561159**
			26 mm	**VSVA-B-T22CV-AZD-A1-1T1L**	**561153**
	N	2x 3/2-way valve, single solenoid, normally open	18 mm	**VSVA-B-T32U-AZD-A2-1T1L**	**539178**
			26 mm	**VSVA-B-T32U-AZD-A1-1T1L**	**539152**
	K	2x 3/2-way valve, single solenoid, normally closed	18 mm	**VSVA-B-T32C-AZD-A2-1T1L**	**539176**
			26 mm	**VSVA-B-T32C-AZD-A1-1T1L**	**539150**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	18 mm	**VSVA-B-T32H-AZD-A2-1T1L**	**539180**
			26 mm	**VSVA-B-T32H-AZD-A1-1T1L**	**539154**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	18 mm	**VSVA-B-T32F-AZD-A2-1T1L**	**539179**
			26 mm	**VSVA-B-T32F-AZD-A1-1T1L**	**539153**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	18 mm	**VSVA-B-T32N-AZD-A2-1T1L**	**539177**
			26 mm	**VSVA-B-T32N-AZD-A1-1T1L**	**539151**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	18 mm	**VSVA-B-T32W-AZD-A2-1T1L**	**539181**
			26 mm	**VSVA-B-T32W-AZD-A1-1T1L**	**539155**
	M	5/2-way valve, single solenoid, pneumatic spring return	18 mm	**VSVA-B-M52-AZD-A2-1T1L**	**539184**
			26 mm	**VSVA-B-M52-AZD-A1-1T1L**	**539158**
	O	5/2-way valve, single solenoid, mechanical spring return	18 mm	**VSVA-B-M52-MZD-A2-1T1L**	**539185**
			26 mm	**VSVA-B-M52-MZD-A1-1T1L**	**539159**
	J	5/2-way valve, double solenoid	18 mm	**VSVA-B-B52-ZD-A2-1T1L**	**539182**
			26 mm	**VSVA-B-B52-ZD-A1-1T1L**	**539156**
	D	5/2-way valve, double solenoid, with dominant signal	18 mm	**VSVA-B-D52-ZD-A2-1T1L**	**539183**
			26 mm	**VSVA-B-D52-ZD-A1-1T1L**	**539157**
	B	5/3-way valve, mid-position pressurised	18 mm	**VSVA-B-P53U-ZD-A2-1T1L**	**539186**
			26 mm	**VSVA-B-P53U-ZD-A1-1T1L**	**539160**
	G	5/3-way valve, mid-position closed	18 mm	**VSVA-B-P53C-ZD-A2-1T1L**	**539188**
			26 mm	**VSVA-B-P53C-ZD-A1-1T1L**	**539162**
	E	5/3-way valve, mid-position exhausted	18 mm	**VSVA-B-P53E-ZD-A2-1T1L**	**539187**
			26 mm	**VSVA-B-P53E-ZD-A1-1T1L**	**539161**
	SA	5/3-way valve, mid-position exhausted, switching position 14 detenting	26 mm	**VSVA-B-P53ED-H-A1-1T1L**	**560727**
	SB	5/3-way valve, mid-position 1x exhausted, 1x pressurised, switching position 14 detenting	26 mm	**VSVA-B-P53AD-H-A1-1T1L**	**560728**

Valve terminals type 45 VTSA-F, NPT

Individual valve

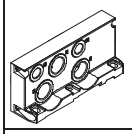
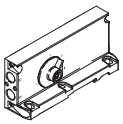
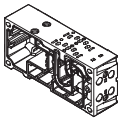
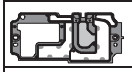
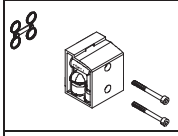
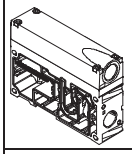
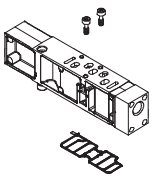
Ordering data

	Code	Valve function	Width	Type	Part No.
Solenoid valves, 110 V AC					
	VC	2x 2/2-way valve, single solenoid, normally closed, mechanical spring return	18 mm	**VSVA-B-T22C-AZD-A2-2AT1L**	**561156**
			26 mm	**VSVA-B-T22C-AZD-A1-2AT1L**	**561150**
	VV	2x 2/2-way valve, single solenoid, normally closed, mechanical spring return, vacuum operation possible at 3 and 5	18 mm	**VSVA-B-T22CV-AZD-A2-2AT1L**	**561160**
			26 mm	**VSVA-B-T22CV-AZD-A1-2AT1L**	**561154**
	N	2x 3/2-way valve, single solenoid, normally open	18 mm	**VSVA-B-T32U-AZD-A2-2AT1L**	**539165**
			26 mm	**VSVA-B-T32U-AZD-A1-2AT1L**	**539139**
	K	2x 3/2-way valve, single solenoid, normally closed	18 mm	**VSVA-B-T32C-AZD-A2-2AT1L**	**539163**
			26 mm	**VSVA-B-T32C-AZD-A1-2AT1L**	**539137**
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	18 mm	**VSVA-B-T32H-AZD-A2-2AT1L**	**539167**
			26 mm	**VSVA-B-T32H-AZD-A1-2AT1L**	**539141**
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	18 mm	**VSVA-B-T32F-AZD-A2-2AT1L**	**539166**
			26 mm	**VSVA-B-T32F-AZD-A1-2AT1L**	**539140**
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	18 mm	**VSVA-B-T32N-AZD-A2-2AT1L**	**539164**
			26 mm	**VSVA-B-T32N-AZD-A1-2AT1L**	**539138**
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	18 mm	**VSVA-B-T32W-AZD-A2-2AT1L**	**539168**
			26 mm	**VSVA-B-T32W-AZD-A1-2AT1L**	**539142**
	M	5/2-way valve, single solenoid, pneumatic spring return	18 mm	**VSVA-B-M52-AZD-A2-2AT1L**	**539171**
			26 mm	**VSVA-B-M52-AZD-A1-2AT1L**	**539145**
	O	5/2-way valve, single solenoid, mechanical spring return	18 mm	**VSVA-B-M52-MZD-A2-2AT1L**	**539172**
			26 mm	**VSVA-B-M52-MZD-A1-2AT1L**	**539146**
	J	5/2-way valve, double solenoid	18 mm	**VSVA-B-B52-ZD-A2-2AT1L**	**539169**
			26 mm	**VSVA-B-B52-ZD-A1-2AT1L**	**539143**
	D	5/2-way valve, double solenoid, with dominant signal	18 mm	**VSVA-B-D52-ZD-A2-2AT1L**	**539170**
			26 mm	**VSVA-B-D52-ZD-A1-2AT1L**	**539144**
	B	5/3-way valve, mid-position pressurised	18 mm	**VSVA-B-P53U-ZD-A2-2AT1L**	**539173**
			26 mm	**VSVA-B-P53U-ZD-A1-2AT1L**	**539147**
	G	5/3-way valve, mid-position closed	18 mm	**VSVA-B-P53C-ZD-A2-2AT1L**	**539175**
			26 mm	**VSVA-B-P53C-ZD-A1-2AT1L**	**539149**
	E	5/3-way valve, mid-position exhausted	18 mm	**VSVA-B-P53E-ZD-A2-2AT1L**	**539174**
			26 mm	**VSVA-B-P53E-ZD-A1-2AT1L**	**539148**

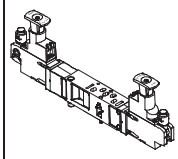
Valve terminals type 45 VTSA-F, NPT

Accessories

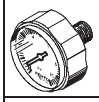
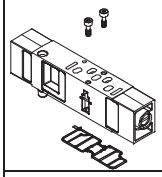
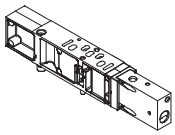
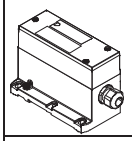
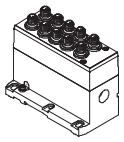
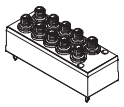
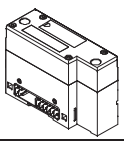
Ordering data

Designation	Code	Description	Width	Type	Part No.
Right-hand end plate					
	NPT thread				
	V	With supply air/exhaust air, internal pilot air supply, NPT½		**VABE-S6-1R-N12**	**539235**
	X	With supply air/exhaust air, external pilot air supply, NPT½		**VABE-S6-1RZ-N12**	**539237**
End plate with pilot air selector					
	NPT thread				
	Y	Internal pilot air supply		**VABE-S6-1RZ-N-B1**	**539239**
	U	Internal pilot air supply, ducted pilot exhaust air			
	Z	External pilot air supply			
	W	External pilot air supply, ducted pilot exhaust air			
Manifold sub-base, optimised for flow rate					
	NPT thread				
	A	2 valve positions, 4 addresses, for double solenoid valves	18 mm	**VABV-S4-2HS-N18-2T2**	**546217**
	B	2 valve positions, 4 addresses, for double solenoid valves	26 mm	**VABV-S4-1HS-N14-2T2**	**546213**
	E	2 valve positions, 2 addresses, for single solenoid valves	18 mm	**VABV-S4-2HS-N18-2T1**	**546216**
	F	2 valve positions, 2 addresses, for single solenoid valves	26 mm	**VABV-S4-1HS-N14-2T1**	**546212**
Separator plate					
	S	Duct separation 1, 3, 5		**VABD-S6-10-P3-C**	**539228**
	T	Duct separation 1		**VABD-S6-10-P1-C**	**539227**
	R	Duct separation 3, 5		**VABD-S6-10-P2-C**	**539229**
90° connection plate					
	NPT thread				
	P	Outlet at bottom, connecting thread ⅛NPT	18 mm	**VABF-S4-2-A2G2-N18**	**539720**
	P	Outlet at bottom, connecting thread ¼NPT	26 mm	**VABF-S4-1-A2G2-N14**	**539 722**
Supply plate					
	NPT thread				
	L	With exhaust plate, 3/5 common, ½NPT		**VABF-S6-10-P1A7-N12**	**539233**
	K	With exhaust port cover, 3/5 separated, ½NPT		**VABF-S6-10-P1A6-N12**	**539232**
Vertical supply plate					
	NPT thread				
	ZU	Connecting thread ⅛NPT	18 mm	**VABF-S4-2-P1A3-N18**	**540174**
		Connecting thread ¼NPT	26 mm	**VABF-S4-1-P1A3-N14**	**540172**

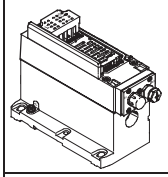
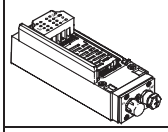
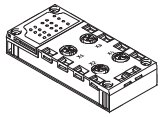
Ordering data

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

Ordering data

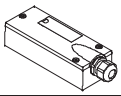
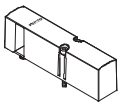
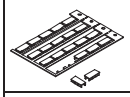
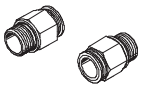
Designation	Code	Description	Width	Type	Part No.
Pressure gauge					
	T	With cartridge connection for regulator, 10 bar for regulator plate code ZA, ZB, ZC, ZD, ZE		**PAGN-26-16-P10**	**543487**
	U	With cartridge connection for regulator, 6 bar for regulator plate code ZF, ZG, ZH, ZI, ZJ		**PAGN-26-10-P10**	**543488**
	–	For soft-start valve		**MA-27-10-M5**	**526323**
Cartridge for regulator plate					
	–	For tubing O.D. 3/16"		**QSP10-3/16U**	**172975**
Flow control plate					
	X	Controls the flow of exhaust air downstream of the valve to ducts 3 and 5	18 mm	**VABF-S4-2-F1B1-C**	**540176**
			26 mm	**VABF-S4-1-F1B1-C**	**540175**
Vertical pressure shut-off plate					
	ZT	2/2-way valve for shutting off the operating pressure at the valve position	18 mm	**VABF-S4-2-L1D1-C**	**542884**
			26 mm	**VABF-S4-1-L1D1-C**	**542885**
Multi-pin node					
	T	Tension spring, for NPT connection, 36-pin		**VABE-S6-1LF-C-M1-C36N**	**543413**
	MP1	Sub-D plug, 37-pin		**VABE-S6-1LT-C-M1-S37**	**543414**
	MP4	Round plug, 19-pin		**VABE-S6-1LF-C-M1-R19**	**543 415**
Individual electrical connection					
	-MP2	Multi-pin node with individual connection M12, 6-way		**VABE-S6-LT-C-S6-R5**	**549046**
	-MP3	Multi-pin node with individual connection M12, 10-way		**VABE-S6-LT-C-S10-R5**	**549047**
	–	Cover for individual connection M12, 6-way		**VAEM-S6-C-S6-R5**	**549048**
	–	Cover for individual connection M12, 10-way		**VAEM-S6-C-S10-R5**	**549049**
Pneumatic interface					
	–	For electrical terminal CPX in plastic design		**VABA-S6-1-X1**	**543416**
	–	For electrical terminal CPX in metal design		**VABA-S6-1-X2**	**550663**

Ordering data

Designation	Code	Description		Type	Part No.
Electrical connection for AS-interface					
	–	4 inputs/4 outputs		**VABE-S6-1LF-C-A4**	**549042**
	–	8 inputs/8 outputs		**VABE-S6-1LF-C-A8**	**549043**
AS-interface module					
	–	4 inputs/4 outputs		**VAEM-S6-S-FAS-4-4E**	**549044**
	–	8 inputs/8 outputs		**VAEM-S6-S-FAS-8-8E**	**549045**
Manifold block for AS-interface					
	X	4xM12, 5-pin, double, socket		**CPX-AB-4-M12x2-5POL**	**195704**
	GW	4xM12, 5-pin, socket, metal thread		**CPX-AB-4-M12x2-5POL-R**	**541254**
	R	8xM8, 3-pin, socket		**CPX-AB-8-M8-3POL**	**195706**
	J	8xspring-loaded terminal, Cage Clamp®, 4-pin		**CPX-AB-8-KL-4POL**	**195708**
	H	4xHarax®, 4-pin, socket		**CPX-AB-4-HAR-4POL**	**525636**
	B	Sub-D, 25-pin, socket		**CPX-AB-1-SUB-BU-25POL**	**525676**
Connecting cable with Sub-D plug socket					
	Polyurethane, IP65				
	GA	Connecting cable for max. 8 solenoid coils, 10-pin	2.5 m	**NEBV-S1W37-E-2,5-LE10**	**539240**
	GB		5 m	**NEBV-S1W37-E-5-LE10**	**539241**
	GC		10 m	**NEBV-S1W37-E-10-LE10**	**539242**
	GD	Connecting cable for max. 22 solenoid coils, 26-pin	2.5 m	**NEBV-S1W37-E-2,5-LE26**	**539243**
	GE		5 m	**NEBV-S1W37-E-5-LE26**	**539244**
	GF		10 m	**NEBV-S1W37-E-10-LE26**	**539245**
	GG	Connecting cable for max. 32 solenoid coils, 37-pin	2.5 m	**NEBV-S1W37-K-2,5-LE37**	**539246**
	GH		5 m	**NEBV-S1W37-K-5-LE37**	**539247**
	GI		10 m	**NEBV-S1W37-K-10-LE37**	**539248**
	Polyvinyl chloride, IP65				
	GK	Connecting cable for max. 8 solenoid coils, 10-pin, cable properties (standard)	2.5 m	**NEBV-S1W37-KM-2,5-LE10**	**543271**
	GL		5 m	**NEBV-S1W37-KM-5-LE10**	**543272**
	GM		10 m	**NEBV-S1W37-KM-10-LE10**	**543273**
	GN	Connecting cable for max. 22 solenoid coils, 27-pin, cable properties (standard)	2.5 m	**NEBV-S1W37-KM-2,5-LE27**	**543274**
	GO		5 m	**NEBV-S1W37-KM-5-LE27**	**543275**
	GP		10 m	**NEBV-S1W37-KM-10-LE27**	**543276**
	GQ	Connecting cable for max. 32 solenoid coils, 37-pin, cable properties (standard)	2.5 m	**NEBV-S1W37-KM-2,5-LE37**	**543277**
	GR		5 m	**NEBV-S1W37-KM-5-LE37**	**543278**
	GS		10 m	**NEBV-S1W37-KM-10-LE37**	**543279**

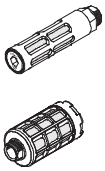
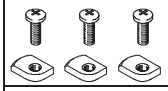
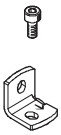
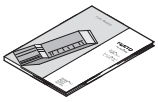
Valve terminals type 45 VTSA-F, NPT

Accessories

Ordering data					
Designation	Code	Description		Type	Part No.
Cover for multi-pin plug					
	–	For user configuration		**NECV-S1W37**	**545974**
Cover					
	L	Blanking plate for vacant position	18 mm	**VABB-S4-2-WT**	**539213**
			26 mm	**VABB-S4-1-WT**	**539212**
	N	Cover cap for manual override, non-detenting	10 pieces	**VAMC-S6-CH**	**541010**
	V	Cover cap for manual override, covered	10 pieces	**VAMC-S6-CS**	**541011**
	–	End cap for electrical manifold module, size 18 mm and 26 mm	10 pieces	**VABD-S4-E-C**	**547713**
Inscription label holder					
	B	Clip-on inscription label holder for valve cap	5 pieces	**ASCF-T-S6**	**540888**
	T	Inscription label holder for manifold blocks	5 pieces	**ASCF-M-S6**	**540889**
	–	Inscription label (20 labels in frames)	20 pieces	**IBS-9x20**	**18182**
Push-in fitting					
	NPT thread				
	–	Connecting thread ¼NPT for tubing O.D. 5/16"		**QS-¼-5/16-U**	**153609**
		Connecting thread ¼NPT for tubing O.D. ½"		**QS-¼-½-U**	**190681**
		Connecting thread ⅛NPT for tubing O.D. 5/16"		**QS-⅛-5/16-U**	**153608**
		Connecting thread ⅛NPT for tubing O.D. ¼"		**QS-⅛-¼-U**	**153605**
		Connecting thread ½NPT for tubing O.D. ½"		**QS-½-½-U**	**153615**
		Connecting thread ½NPT for tubing O.D. ⅝"		**QS-½-⅝-U**	**190682**

Valve terminals type 45 VTSA-F, NPT

Accessories

Ordering data					
Designation	Code	Description		Type	Part No.
Silencer					
	NPT thread				
	–	Connecting thread ¼NPT		**U-¼-B-NPT**	**12639**
	K, L	Connecting thread ½NPT		**U-½-B-NPT**	**12741**
Blanking plug					
	NPT thread				
	–	Thread ⅛NPT	1 piece	**B-⅛-NPT**	**173985**
	–	Thread ¼NPT	1 piece	**B-¼-NPT**	**174165**
H-rail mounting					
	–	VTSA-F with fieldbus	3 pieces	**CPX-CPA-BG-NRH**	**526032**
	–	VTSA-F with multi-pin plug	2 pieces	**CPA-BG-NRH**	**173498**
Wall mounting					
	U	Mounting bracket		**VAME-S6-10-W**	**539214**
Manual					
	D	Manual for valve terminal VTSA-F	German	**P.BE-VTSA-44-DE**	**538922**
	E		English	**P.BE-VTSA-44-EN**	**538923**
	S		Spanish	**P.BE-VTSA-44-ES**	**538924**
	F		French	**P.BE-VTSA-44-FR**	**538925**
	I		Italian	**P.BE-VTSA-44-IT**	**538926**
	V		Swedish	**P.BE-VTSA-44-SV**	**538927**