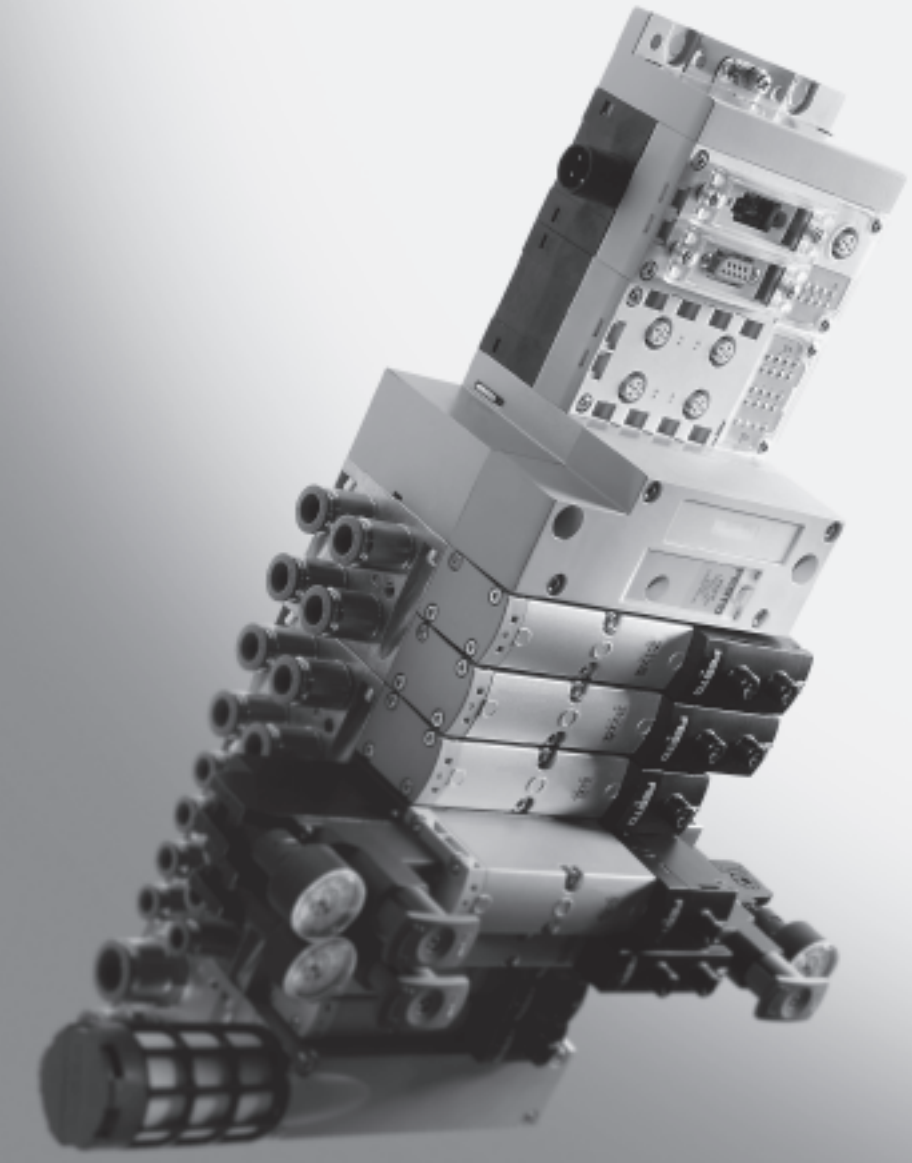
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

FESTO



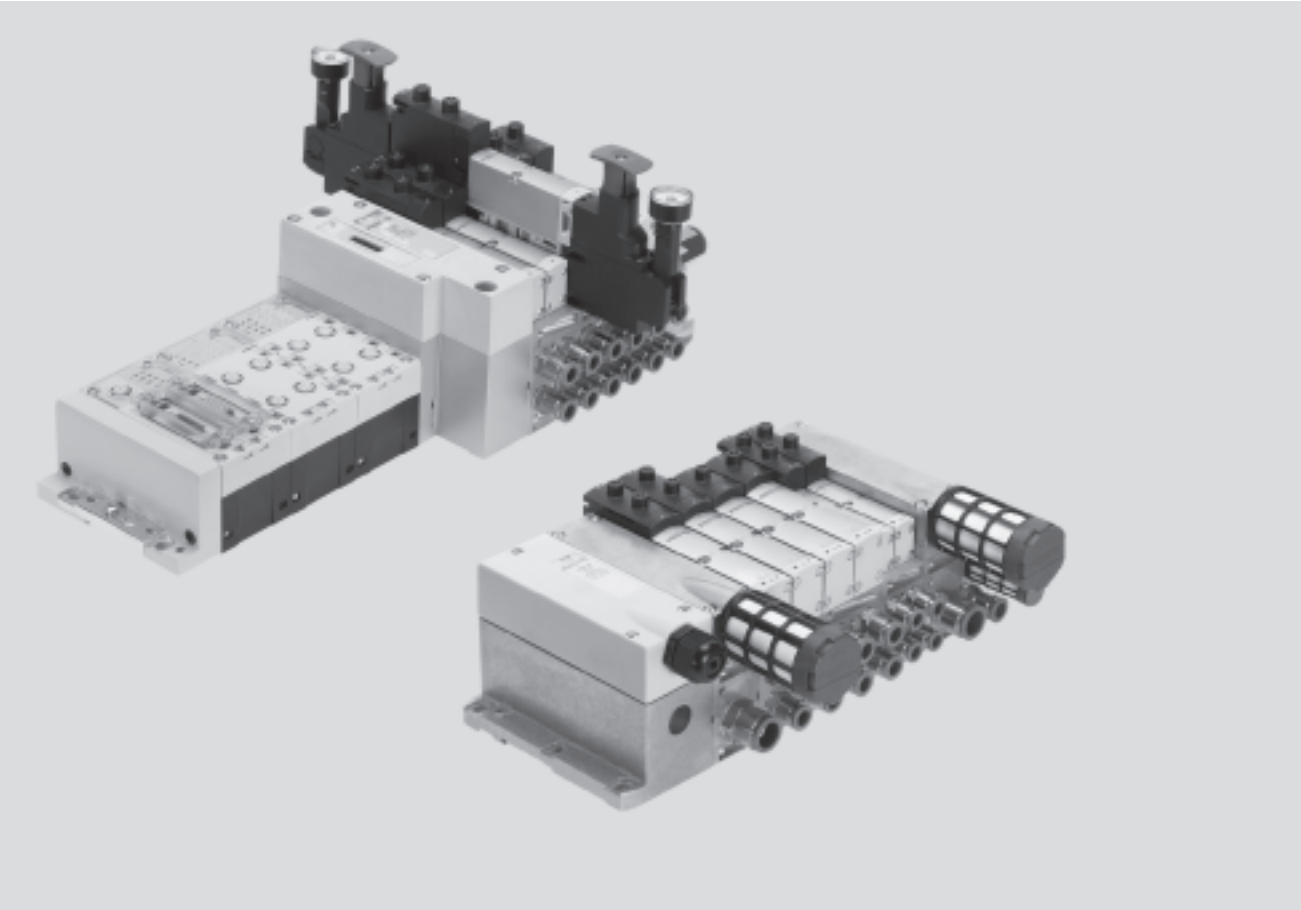
- Modular multi-functional valve terminal for up to 32 valves
- Design suitable for electrical peripherals CPX
- Channel-oriented diagnosis down to the individual valve
- Choice of operating voltage between 24 V DC and 110 V AC
- High flow rate of up to 1,400 l/min
- Two valve sizes on one valve terminal
- Sturdy metal design
- Pneumatic connections with threaded connector/QS fitting

design award winner 2005

reddot design award winner 2005

Valve terminals type 44 VTSA, type 45 VTSA-F

Key features



Innovative

- High-performance valves in sturdy metal housing
- Flow rate up to 1,400 l/min
- Standardised from the multi-pin plug connection up to the fieldbus connection and control block
- Dream team: Fieldbus valve terminal suitable for electrical peripherals CPX. This means
  - Advanced internal communication system for activation of the valves and CPX modules
  - Type VTSA-F optimised for 30% more flow

Versatile

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

Reliable

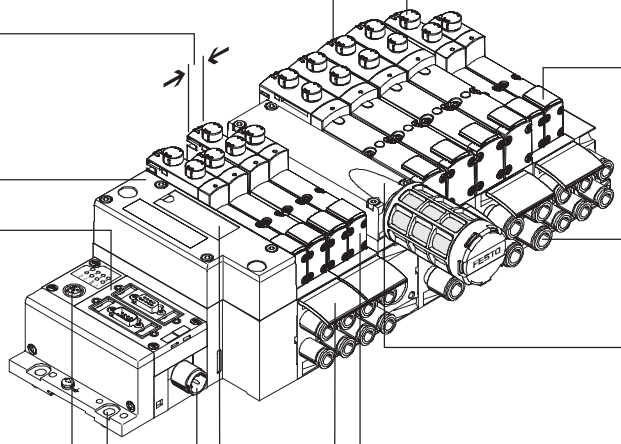
- Sturdy and durable metal components
  - Valves
  - Manifold sub-bases
  - Seals
- Fast troubleshooting thanks to LEDs on the valves and diagnosis via fieldbus
- Reliability of service thanks to valves that can be replaced easily and quickly
- Manual override either by pushing, pushing/detenting or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

Easy to mount

- Ready-to-install unit, pre-assembled and tested
- Lower costs for selection, ordering, assembly and commissioning
- Secure wall mounting or H-rail mounting

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Key features



Reduced downtimes:
LED diagnosis on the spot

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

Pneumatic interface to CPX

Straightforward electrical connections
- Fieldbus connection via CPX
- Multi-pin plug connection with pre-assembled cable or terminal strip (Cage Clamp)
- Control block via CPX

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

Quick mounting:
Directly 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
- A valve series for a wide range of different flow rates

Functional:
Robust metal thread or pre-assembled QS connections

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

Comprehensive valve functions

Practical:
Large inscription labels

Equipment options

Valve functions

- 5/2-way valve
  - Single solenoid valve, pneumatic/spring return
  - Double solenoid valve
  - Double solenoid valve with dominant signal
- 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
- 5/3-way valve
  - Mid-position pressurised
  - Mid-position closed
  - Mid-position exhausted

Special features

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

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

Individual valve
- Electrical connection via standardised 4-pin M12 plug or via 4-pin clamped terminal connection for configuration by the user
- Available with internal/external pilot air supply

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

Note

Valve terminal type 44 VTSA to ISO 15407-2

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Key features

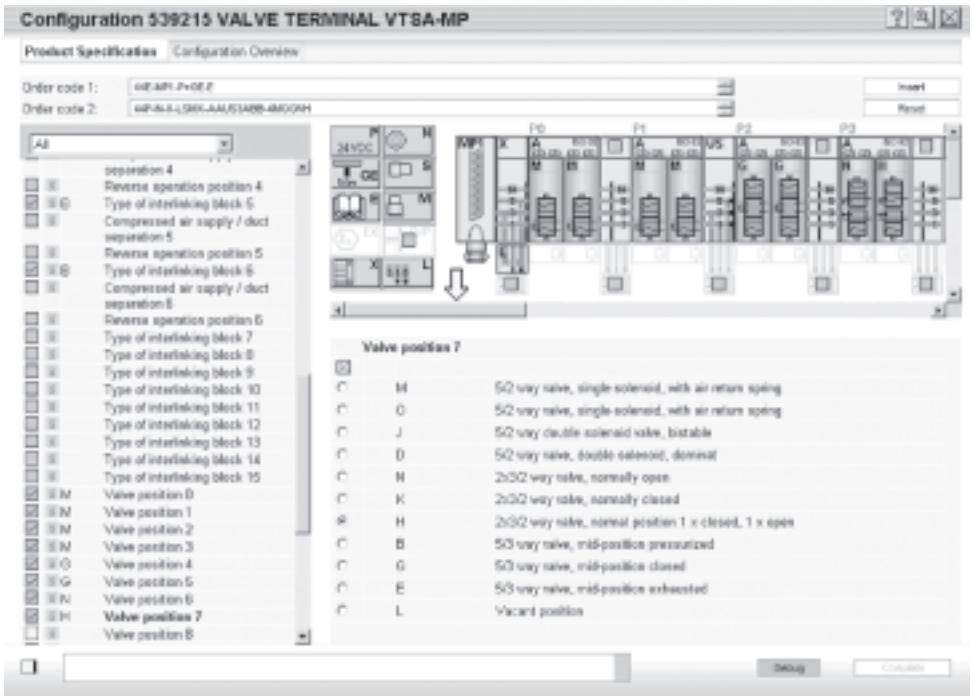
Valve terminal configurator **Online via:** ➔ www.festo.com/en/engineering

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

The valve terminals are fully assembled according to your order specifications and individually tested. This reduces the amount of assembly and installation required to a minimum.
You order a valve terminal type 44/45 using the order code.

Ordering system for type 44/45
➔ 4 / 1.3-57

Ordering system for CPX
➔ 4 / 4.8-108



The illustration above provides an example of a valve terminal configuration.
The following steps explain how you arrive at the order code:

Once you have called up the Festo home page, select the online version of the digital product catalogue from the “Products” submenu: this will bring you directly to the home page for the Pneumatic Catalogue. Activate the “Direct Search” menu.

Here you can specify a “Part No.” (e.g. 539 215, 547 963, 539 217 or 547 965), the “Type” (e.g. VTSA) or “Article name” (e.g. valve terminal) to find your “Search result”. Click on the blue shopping basket to complete the selected product according to your specifications (this does not initiate an order).

You will then be prompted to configure the product.
Select “Configurator”.
You can then configure the valve terminal step by step (from the top down) according to your requirements.
Select the “Finish” menu to continue on with the ordering process.

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Key features

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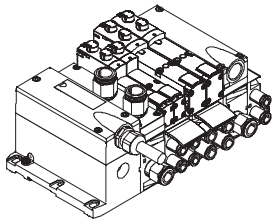
Multi-pin plug connection

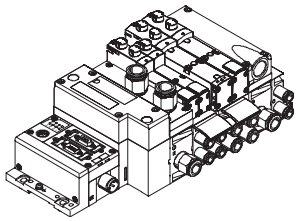


Control signals from the controller to the valve terminal are transmitted via a pre-assembled multi-wire cable or a self-assembled multi-pin plug connection (Cage Clamp), which substantially reduces installation time.

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

Designs
- Multi-pin plug connection with terminal strip (CageClamp) 24 V DC or 110 V AC
- Cnnecting cable, Pre-assembled for 24 V DC
- 37-pin Sub-D plug connector for self-assembly, flow valve on valve terminal with flow optimised manifold sub-bases
- Round plug connector M23, 19-pin, 24 V DC

Fieldbus connection via the CPX system



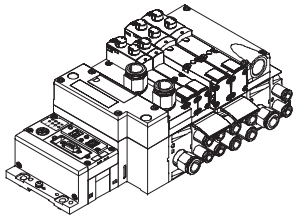
An integrated fieldbus node manages the communication connection to a higher-order PLC. This enables a space-saving pneumatic and electronic solution.

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.

Designs
- Profibus-DP
- Interbus
- DeviceNet
- CANopen
- CC-Link
- CPX terminal

➔ 4 / 4.8-2

Control block connection via the CPX system



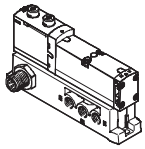
Controllers integrated in the Festo valve terminals permit the construction of stand-alone control units to IP65, without control cabinets.

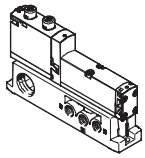
Using the slave operation mode, these valve terminals can be used for intelligent pre-processing and are therefore ideal modules for designing decentralised intelligence.

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

➔ 4 / 4.8-2

Individual connection





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

The electrical connection is established using a standard 4-pin M12 plug 24 V DC (EN 61076-2-101)

or it can be configured by the user with a 4-pin clamped terminal connection 24 V DC or 110 V AC.

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Peripherals overview

Modular pneumatic components

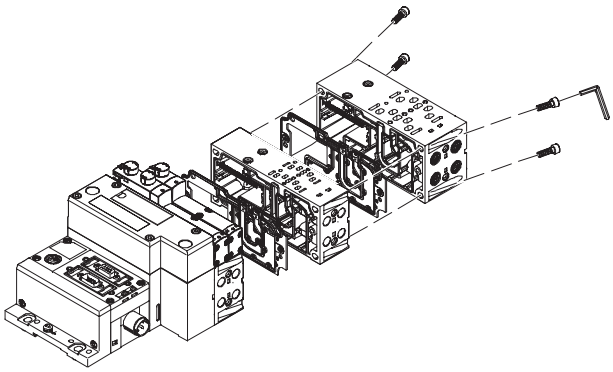
The modular design of the VTSA/ VTSA-F facilitates maximum flexibility right from the planning stage and offers maximum ease of service in operation.

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.

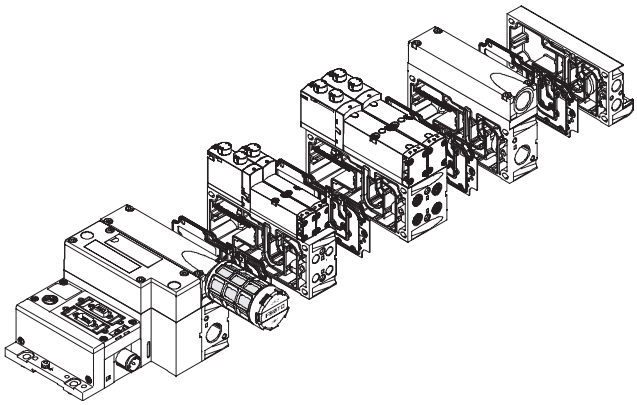
Inside, the manifold sub-bases contain the connection ducts for supplying compressed air to and venting from the valve terminal as well as the working ports for the pneumatic cylinders from each valve.

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

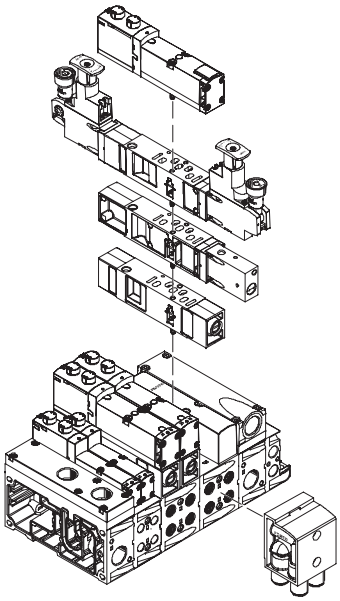
Modularity in the basic system



Modularity in the valves



Modularity in the vertical stacking



Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Peripherals overview

FESTO

Modular electrical peripherals

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

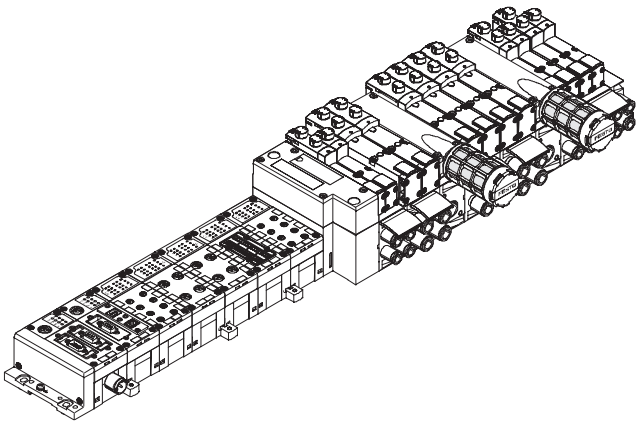
The VTSA/-VTSA-F with CPX interface is based on the internal bus system of the CPX and uses this communication system for all solenoid coils and a range of electrical input and output functions.

Parallel linking facilitates the following:
- Transmission of switching information
- High valve density
- Compact design
- Position-based diagnosis

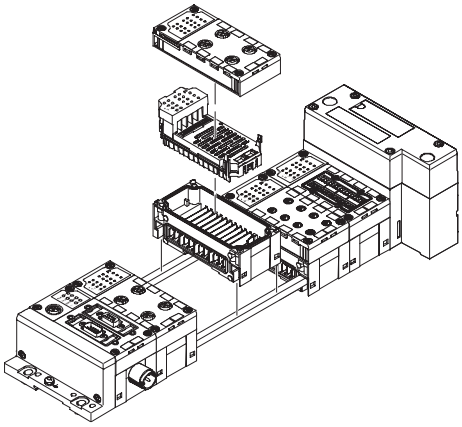
- Separate voltage supply for valves
- Flexible conversion without address shifting
- Transmission of status, parameter and diagnostic data

➔ 4 / 4.8-2

VTSA with electrical peripherals CPX



Modularity with electrical peripherals CPX



Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Peripherals overview

FESTO

Valve terminal with multi-pin plug connection

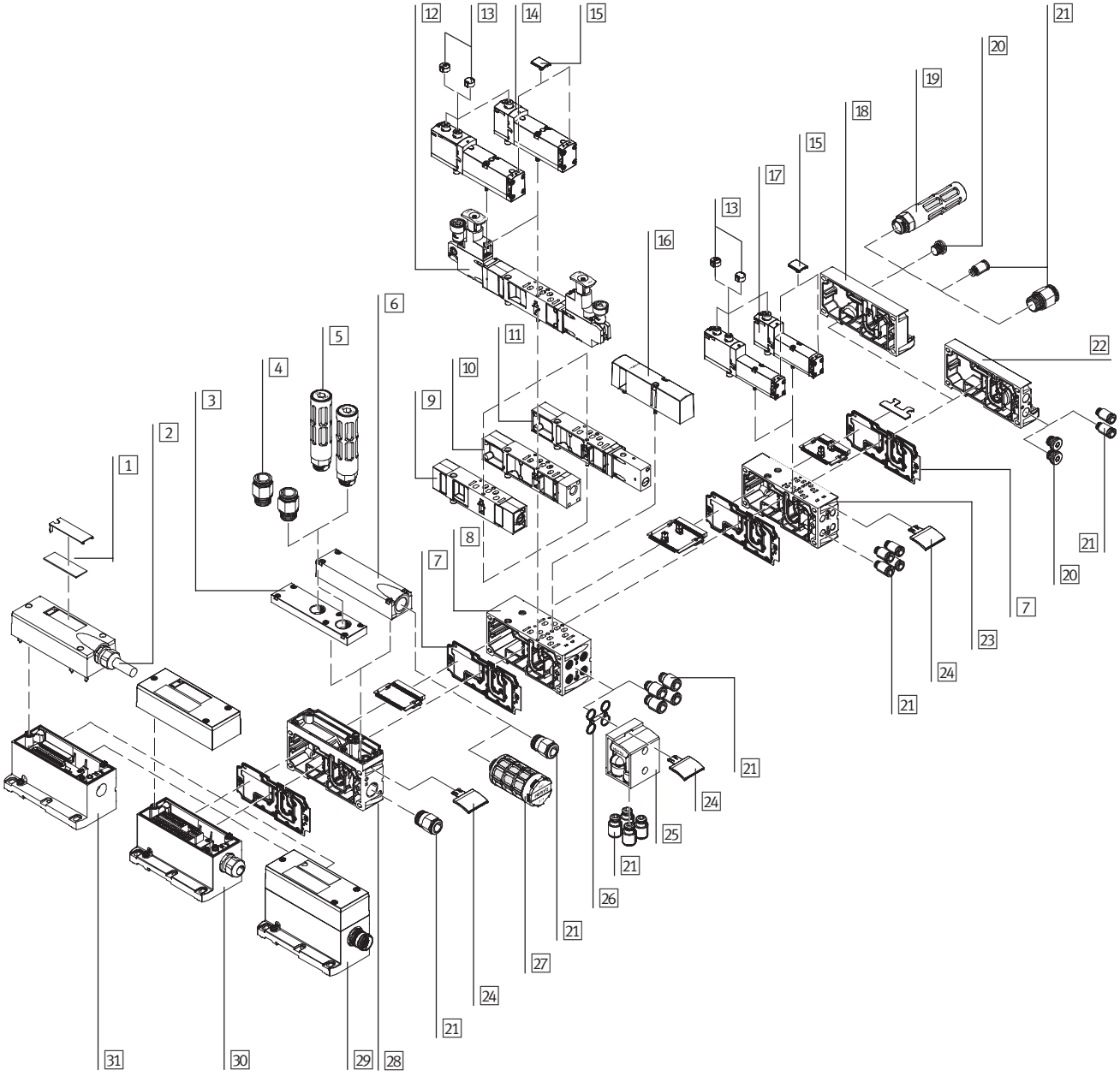
Order code:
- 44E for the electrical components
- 44P to ISO 15407-2 ... for the pneumatic components
- 45P... for the pneumatic components. High flow rate with optimised manifold sub-bases.

VTSA/VTSA-F valve terminals with multi-pin plug connection can be expanded with up to 32 valves with up to 32 solenoid coils.
The manifold sub-bases are either prepared for:
- 2 single solenoid valves
- 2 double solenoid valves

depending on the size.

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

The 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.
- Terminal strip (24 V DC or 110 V AC)
- 19-pin round plug connector (24 V DC)



Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Peripherals overview

Valve terminal with multi-pin plug connection			
		Brief description	→ Page
1	Inscription labels	Large, for multi-pin plug connection	–
2	Multi-pin cable		4 / 1.3-82
3	Exhaust plate	Ports 3 and 5 separated	4 / 1.3-79
4	Fittings	For supply plate	4 / 1.3-83
5	Silencer	For supply plate	4 / 1.3-83
6	Exhaust port cover	For ducted exhaust air (ports 3 and 5 combined)	4 / 1.3-79
7	Duct separation/seal		4 / 1.3-79
8	Manifold sub-base	For valves with a width of 26 mm	4 / 1.3-78
9	Throttle plate		4 / 1.3-81
10	Vertical supply plate		4 / 1.3-79
11	Vertical isolating plate		4 / 1.3-81
12	Pressure regulator plate		4 / 1.3-80
13	Cover cap	For manual override, pushing, covered	4 / 1.3-83
14	Valve	Width: 26 mm	4 / 1.3-77
15	Inscription label holder	For valve	4 / 1.3-83
16	Blanking plate	For unused valve position (vacant position)	4 / 1.3-83
17	Valve	Width: 18 mm	4 / 1.3-77
18	Right-hand end plate		4 / 1.3-78
19	Silencer	For end plate	4 / 1.3-83
20	Blanking plug		4 / 1.3-84
21	Fittings		4 / 1.3-83
22	End plate with coding cap		4 / 1.3-78
23	Manifold sub-base	For valves with a width of 18 mm	4 / 1.3-78
24	Inscription label holder	For supply plate, sub-base, 90° connection plate	4 / 1.3-83
25	90° connection plate		4 / 1.3-79
26	Seals		–
27	Silencer		4 / 1.3-83
28	Supply plate		4 / 1.3-79
29	Multi-pin plug connection	Via M23 round plug connection 24 V DC	4 / 1.3-81
30	Multi-pin plug connection	Via terminal strip (CageClamp) 24 V DC or 110 V AC	4 / 1.3-81
31	Multi-pin plug connection	With multi-pin cable 24 V DC	4 / 1.3-81

Note

Selection of the silencer is dependent on the type of vertical stacking of the valve positions to the left and right of the supply plate.

Exhaust port cover 6 with metal exhaust air silencer type U-½-B
- P pressure regulating plate
- B pressure regulating plate
- AB pressure regulating plate
- Vertical pressure shut-off plate
- Vertical supply plate
- Throttle plate

Exhaust port cover 6 with polymer exhaust air silencer type U-½
- A pressure regulating plate

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Peripherals overview

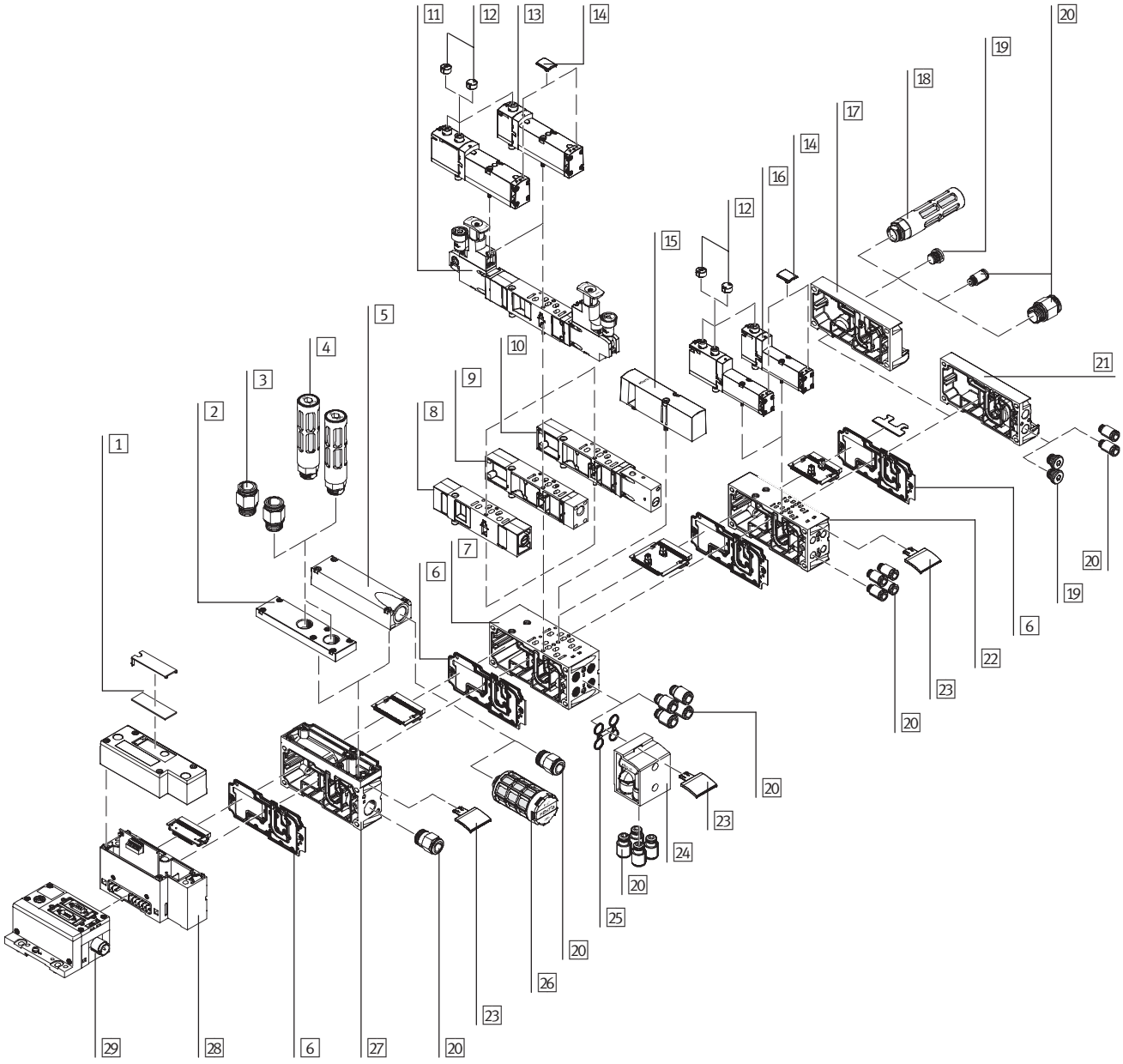
FESTO

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

Order code:
- 50E-... for the electrical peripherals
- 44P to ISO 15407-2 ... for the pneumatic components
- 45P... for the pneumatic components. High flow rate with optimised manifold sub-bases.

Valve terminals with fieldbus interfaces can be configured with up to 8 manifold sub-bases with double solenoid valves and 16 manifold sub-bases with single solenoid valves. In conjunction with CPX and 8 manifold sub-bases with double solenoid valves, up to 32 solenoid coils can thus be actuated.
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 high-feature diagnostic system
- Preventive maintenance concepts



Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Peripherals overview

FESTO

Valve terminal with fieldbus connection, control block (electrical peripherals CPX)			
		Brief description	→ Page
1	Inscription labels	Large, for pneumatic interface CPX	–
2	Exhaust plate	Ports 3 and 5 separated	4 / 1.3-79
3	Fittings	For supply plate	4 / 1.3-83
4	Silencer	For supply plate	4 / 1.3-83
5	Exhaust port cover	For ducted exhaust air (ports 3 and 5 combined)	4 / 1.3-79
6	Duct separation/seal		4 / 1.3-79
7	Manifold sub-base	For valves with a width of 26 mm	4 / 1.3-78
8	Throttle plate		4 / 1.3-81
9	Vertical supply plate		4 / 1.3-79
10	Vertical isolating plate		4 / 1.3-81
11	Pressure regulator plate		4 / 1.3-80
12	Cover cap	For manual override, pushing, covered	4 / 1.3-83
13	Valve	Width: 26 mm	4 / 1.3-77
14	Inscription label holder	For valve	4 / 1.3-83
15	Blanking plate	For unused valve position (vacant position)	4 / 1.3-83
16	Valve	Width: 18 mm	4 / 1.3-77
17	Right-hand end plate		4 / 1.3-78
18	Silencer	For end plate	4 / 1.3-83
19	Blanking plug		4 / 1.3-84
20	Fittings		4 / 1.3-83
21	End plate with coding cap		4 / 1.3-78
22	Manifold sub-base	For valves with a width of 18 mm	4 / 1.3-78
23	Inscription label holder	For supply plate/sub-base/90° connection plate	4 / 1.3-83
24	90° connection plate		4 / 1.3-79
25	Seals		–
26	Silencer		4 / 1.3-83
27	Supply plate		4 / 1.3-79
28	Pneumatic interface		4 / 1.3-81
29	Fieldbus interface		4 / 1.3-62

Note

Selection of the silencer is dependent on the type of vertical stacking of the valve positions to the left and right of the supply plate.

- AB pressure regulating plate
- Vertical pressure shut-off plate
- Vertical supply plate
- Throttle plate

Exhaust port cover 5 with metal exhaust air silencer type U-½-B
- P pressure regulating plate
- B pressure regulating plate

Exhaust port cover 5 with polymer exhaust air silencer type U-½
- A pressure regulating plate

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Peripherals overview

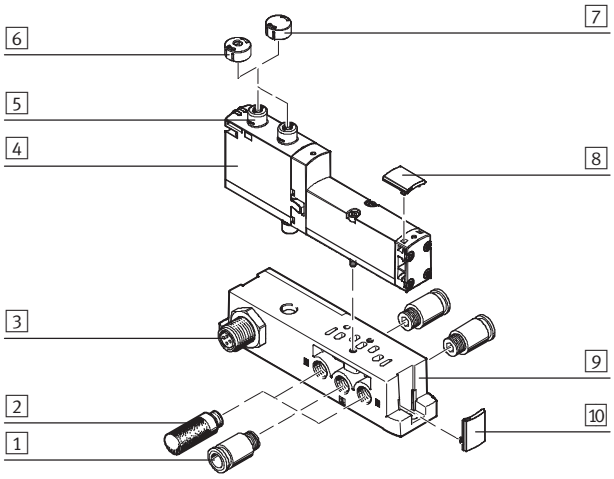
Individual sub-base

Order code:
- Using individual part numbers

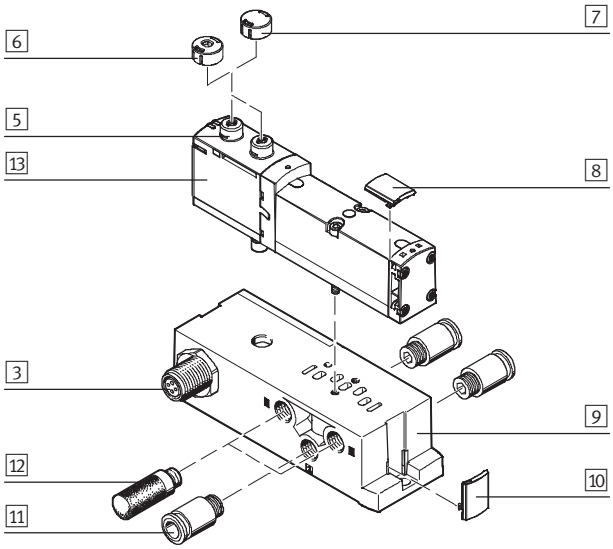
Individual sub-bases can be equipped with any valve.

The electrical connection is established using a standard 4-pin M12 plug (EN 61076-2-101) or it can be configured by the user with a 4-pin clamped terminal connection.

Width: 18 mm with M12 plug



Width: 26 mm with M12 plug



		Brief description	→ Page
1	Fitting	G⅛ over ⅛NPT for supply/exhaust ports (1, 3, 5) and working ports (2, 4)	4 / 1.3-83
2	Silencer	G⅛ over ⅛NPT for supply/exhaust ports (1, 3, 5)	4 / 1.3-83
3	Electrical connection M12[1)]	4-pin	–
4	VSVA valve	Width: 18 mm	4 / 1.3-77
5	Manual override	Non-detenting/detenting, per solenoid coil	–
6	Cover cap	For manual override, pushing	4 / 1.3-83
7	Cover cap	For manual override, covered	4 / 1.3-83
8	Inscription label holder	For valves	4 / 1.3-83
9	Individual sub-base	For valve VSVA	4 / 1.3-78
10	Inscription label holder	For sub-bases	4 / 1.3-83
11	Fitting	G¼ or ¼NPT for supply/exhaust ports (1, 3, 5) and working ports (2, 4)	4 / 1.3-83
12	Silencer	G¼ or ¼NPT for supply/exhaust ports (1, 3, 5)	4 / 1.3-83
13	VSVA valve	Width: 26 mm	4 / 1.3-77

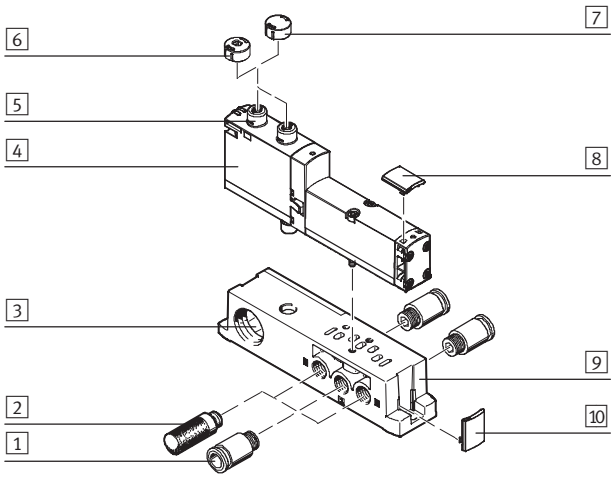
1) Only with 24 V DC

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

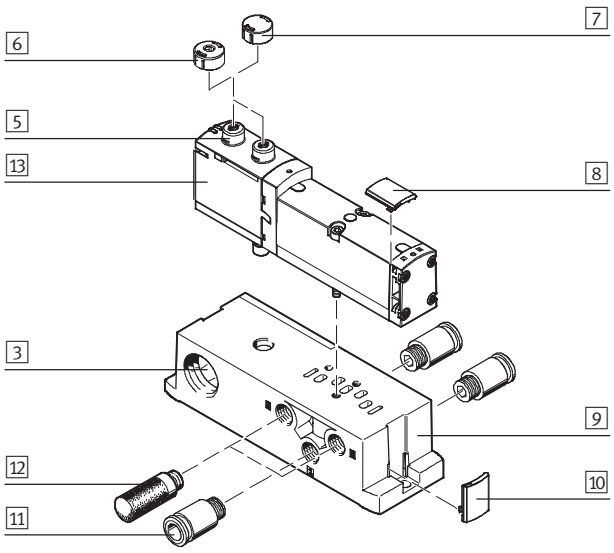
Peripherals overview

FESTO

Width: 18 mm with clamped terminal connection



Width: 26 mm with clamped terminal connection



		Brief description	➔ Page
1	Fitting	G⅛ ober ⅛NPT for aupply/exhaust ports (1, 3, 5) and working ports (2, 4)	4 / 1.3-83
2	Silencer	G⅛ over ⅛NPT for supply/exhaust ports (1, 3, 5)	4 / 1.3-83
3	Terminal connection[1)]	4-pin, configured by the user	–
4	VSVA valve	Width: 18 mm	4 / 1.3-77
5	Manual override	By pushing/detenting, per solenoid coil	–
6	Cover cap	For manual override, pushing	4 / 1.3-83
7	Cover cap	For manual override, covered	4 / 1.3-83
8	Inscription label holder	For valves	4 / 1.3-83
9	Individual sub-base	For valve VSVA	4 / 1.3-78
10	Inscription label holder	For sub-bases	4 / 1.3-83
11	Fitting	G¼ or ¼NPT for supply/exhaust ports (1, 3, 5) and working ports (2, 4)	4 / 1.3-83
12	Silencer	G¼ or ¼NPT for supply/exhaust ports (1, 3, 5)	4 / 1.3-83
13	VSVA valve	Width: 26 mm	4 / 1.3-77

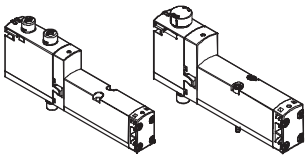
1) 24 V DC or 110 V AC

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

FESTO

Sub-base valve



VTSA/VTSA-F offers a comprehensive range of valve functions. All valves are equipped with piston spool and patented sealing system which facilitate efficient sealing, a broad 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. It must be noted here that these valves must be operated via a separate pressure zone.
The reversible 3/2-way valves are also suitable for vacuum operation.

Blanking plate

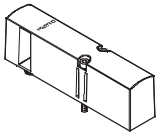
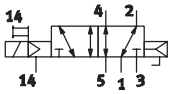
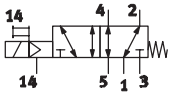
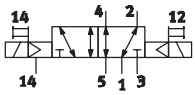
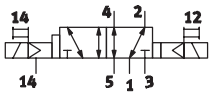
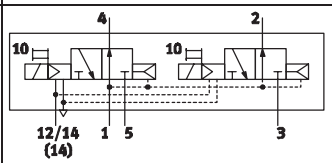
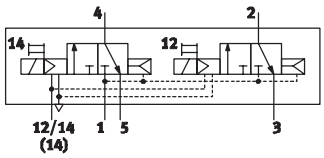


Plate without valve function for reserving valve positions on a valve terminal.

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

Valve function

Code	Circuit symbol	Width 18 mm	Width 26 mm	Description
M		■	■	5/2-way valve, single solenoid • Pneumatic spring return
O		■	■	5/2-way valve, single solenoid • Spring return
J		■	■	5/2-way valve, double solenoid
D		■	■	5/2-way valve, double solenoid • Dominating at port 14 on the pilot side
N		■	■	2x 3/2-way valve, single solenoid • Normally open • Pneumatic spring return
K		■	■	2x 3/2-way valve, single solenoid • Normally closed • Pneumatic spring return

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

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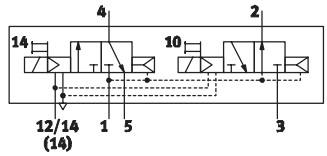
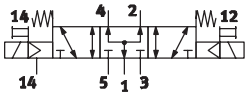
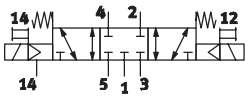
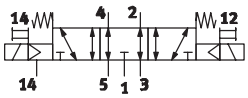
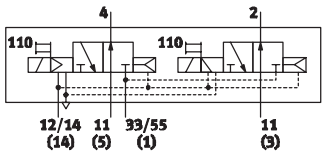
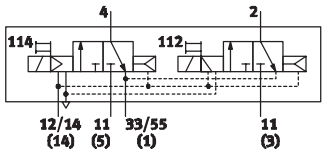
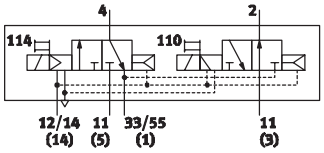
Valve function				
Code	Circuit symbol	Width		Description
		18 mm	26 mm	
H		■	■	2x 3/2-way valve, single solenoid • Normal position – 1x closed – 1x open • Pneumatic spring return • Operating pressure > 3 bar
B		■	■	5/3-way valve • Mid-position pressurised[1)] • Spring force return
G		■	■	5/3-way valve • Mid-position closed[1)] • Spring force return
E		■	■	5/3-way valve • Mid-position exhausted[1)] • Spring force return
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
L		■	■	For valve terminal only: Blanking plate for vacant valve position

1) If neither of the two solenoid coils is energized, the valve will assume mid-position due to spring pressure.
If both solenoid coils are energized simultaneously, the valve will remain in its switch position.

Design

Valve replacement

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

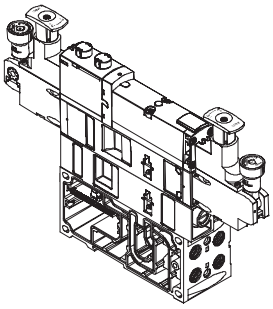
Expansion

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

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

Vertical stacking

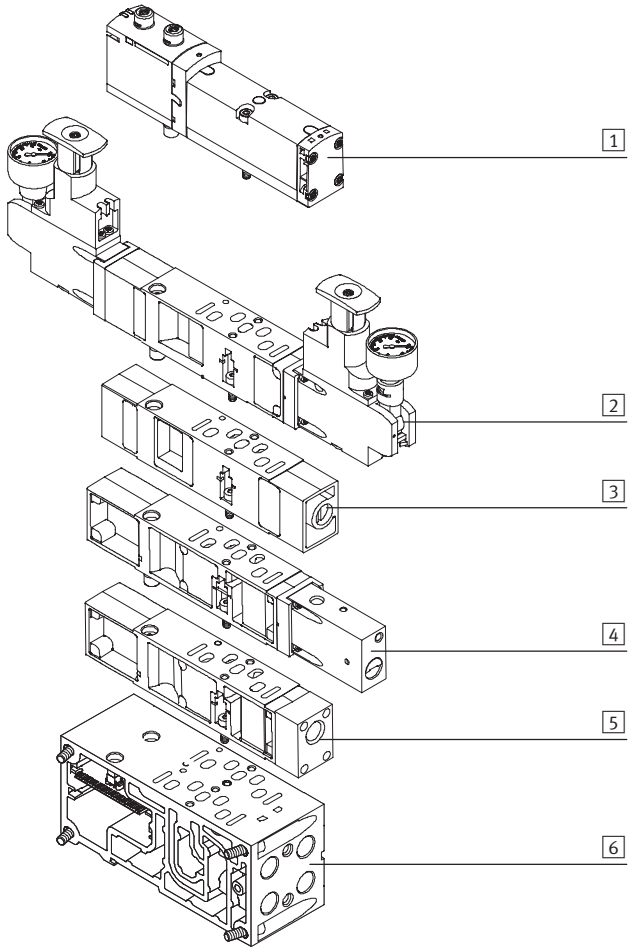


Additional function units can be added to each valve position between the sub-base and the valve. These functions, designated as vertical stacking, facilitate special functioning or control of the respective individual valve position. Combinations of several valve sizes on one valve terminal are possible.

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. ISO valve
2. Pressure regulator plate
3. Throttle plate
4. Vertical isolating plate
5. Vertical supply plate
6. Manifold sub-base

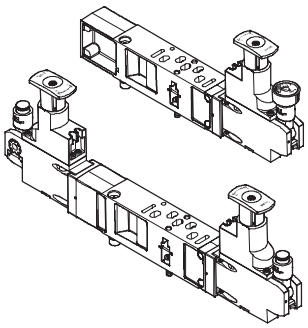
Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

FESTO

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 respective actuator.

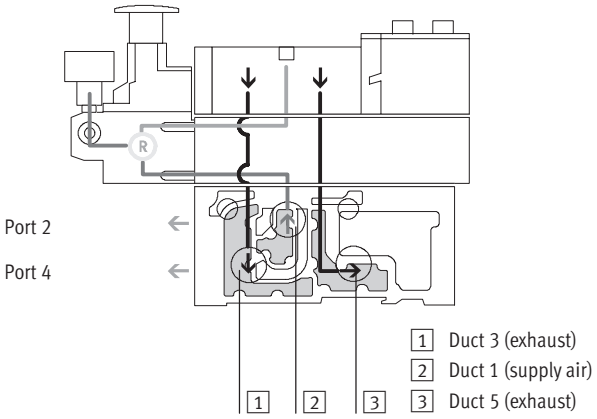
This pressure regulating valve maintains an essentially constant output pressure (secondary side) independent of pressure fluctuations (primary side) and air consumption.

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 the pressure regulating plate (P regulation) for port 1; code: ZA, ZF

This pressure regulator regulates the pressure before 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, as the pressure is regulated before the valve.
- The pressure regulator can always be adjusted, as the pressure from the valve terminal is always present.

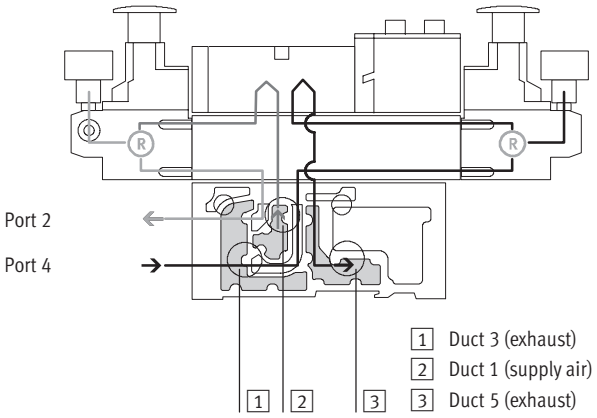
Sample applications

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

Mode of operation of the pressure regulating plate (A/B regulation) for ports 2 and 4; code: ZD, ZI

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

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



Restrictions

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

Application examples

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

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

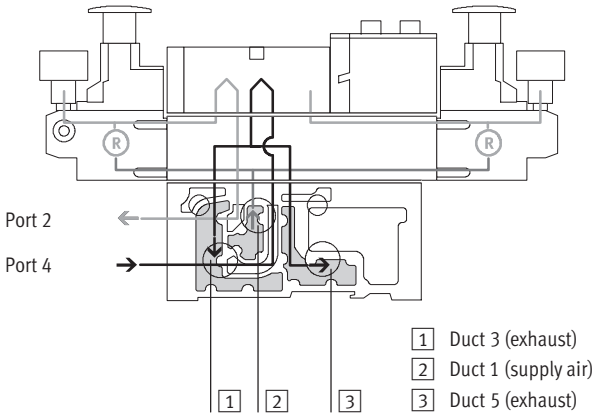
FESTO

Vertical stacking

Mode of operation of the pressure regulating plate (A/B regulation, reversible) for ports 2 and 4, reversible; code: ZE, ZJ

With this pressure regulator, the supply air (duct 1) is split and routed directly to both pressure regulators. The regulated compressed 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 among 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 drawn off 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 exhaust performance is required.
- When the pressure regulator must always be adjustable.

Note

- Reversible pressure regulating plates may only be combined with valves that can be operated in reversible mode.
- Valves in valve positions with vertical isolating 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 regulating plates
  - Throttle plates
  - Vertical isolating plates
  - Vertical supply plates

Advantages

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

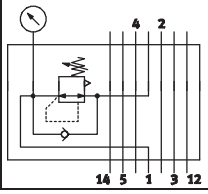
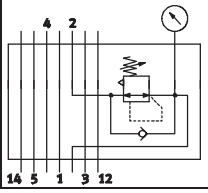
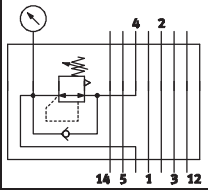
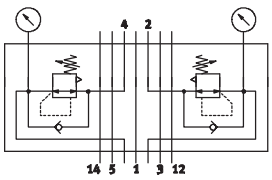
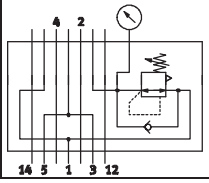
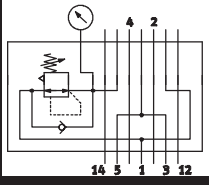
Disadvantages

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

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

FESTO

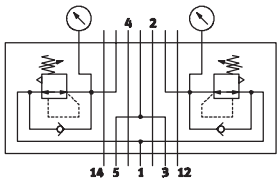
Vertical stacking – Pressure regulator plate							
Code		Type	Width		Supply pressure		Description
			18 mm	26 mm	6 bar	10 bar	
Pressure regulating plate for port 1							
ZA		VABF-S4-...-R1C2-C-10	■	■	–	■	• Regulates the operating pressure in duct 1 before the directional control valve
ZF		VABF-S4-...-R1C2-C-6	■	■	■	–	• Regulates the operating pressure in duct 1 before the directional control valve
Pressure regulating plate for port 2							
ZC		VABF-S4-...-R2C2-C-10	■	■	–	■	• Regulates the operating pressure in duct 2 downstream of the directional control valve
ZH		VABF-S4-...-R2C2-C-6	■	■	■	–	
Pressure regulating plate for port 4							
ZB		VABF-S4-...-R3C2-C-10	■	■	–	■	• Regulates the operating pressure in duct 4 downstream of the directional control valve
ZG		VABF-S4-...-R3C2-C-6	■	■	■	–	
Pressure regulating plate for ports 2 and 4							
ZD		VABF-S4-...-R4C2-C-10	■	■	–	■	• Regulates the operating pressure in ducts 2 and 4 after the directional control valve
ZI		VABF-S4-...-R4C2-C-6	■	■	■	–	Note This pressure regulating plate cannot be combined with reversible 2x 3/2-way valves (code P, Q, R).
Pressure regulating plate for port 2							
ZL		VABF-S4-...-R6C2-C-10	■	■	–	■	• Reversible pressure regulator for port 2
ZN		VABF-S4-...-R6C2-C-6	■	■	■	–	
Pressure regulating plate for port 4							
ZK		VABF-S4-...-R7C2-C-10	■	■	–	■	• Reversible pressure regulator for port 4
ZM		VABF-S4-...-R7C2-C-6	■	■	■	–	

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

FESTO

Vertical stacking – Pressure regulator plate

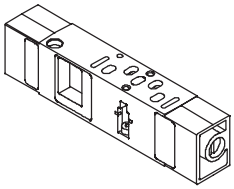
Code		Type	Width		Supply pressure		Description
			18 mm	26 mm	6 bar	10 bar	
Pressure regulating plate for ports 2 and 4, reversible							
ZE		VABF-S4-...-R5C2-C-10	■	■	–	■	• Reversible pressure regulator for ports 2 and 4 • Pressure regulation before the valve • Redirects the operating pressure from duct 1 to ducts 3 and 5 • Routes the exhaust air from duct 1 to ducts 3 and 5
ZJ		VABF-S4-...-R5C2-C-6	■	■	■	–	- - Note This pressure regulating plate 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.

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

FESTO

Vertical stacking – Throttle plate

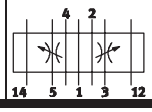


This plate is used for exhaust air flow control in ducts 3 and 5 of a valve in order to adjust the speed of the actuator.

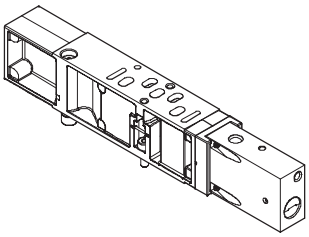
Ducts 3 and 5 can be adjusted independently of each other.

Note

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

Code		Type	Width		Description
			18 mm	26 mm	
X		VABF-S4-...F1B1-C	■	■	• Controls the flow of exhaust air after the valve to ducts 3 and 5

Vertical stacking – Vertical isolating plate

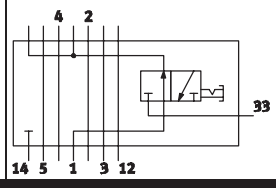


With this plate a valve can be shut off from the supply pressure of the terminal. This means that the valve can be removed without shutting off the pressure.

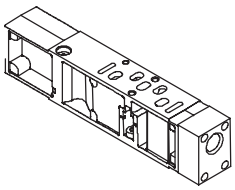
Following activation of the shut-off, the exhaust air/return air from the cylinder is drawn off via the M5 threaded connection.

Note

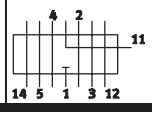
The pressure in duct 1 of a manifold where a vertical isolating plate is located must be greater than 3 bar (45 psi).

Code		Type	Width		Description
			18 mm	26 mm	
ZT		VABF-S4-...L1D1-C	■	■	• 2/2-way valve for shutting off the operating pressure at the valve position • Blocks ducts 12 and 14 for the valve position • Supplies the valve position with internal pilot air

Vertical stacking – Vertical supply plate



With this plate a valve can be supplied with individual operating pressure independently of the operating pressure of the terminal.

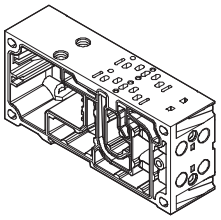
Code		Type	Width		Description
			18 mm	26 mm	
ZU		VABF-S4-...P1A3-...	■	■	• Plate with port 11 for supplying an individual operating pressure for a valve position

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

FESTO

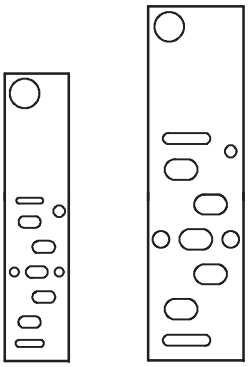
Manifold sub-base



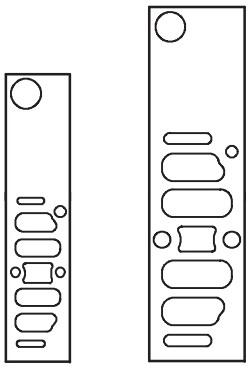
VTSA/VTSA-F is based on a modular system which consists of manifold sub-bases and valves. Manifold sub-bases are available for valve width 18 mm and width 26 mm in a double grid, i.e. two valves per manifold sub-base. The manifold sub-base contains a ducting seal and electrical linking. They can be freely 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 contain the connecting ducts for supplying compressed air to and venting from the valve terminal as well as the working ports for the pneumatic cylinders for each valve. Each manifold sub-base is connected to the next using four screws. Individual 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 expanded.

Port patterns on manifold sub-base

Standard design



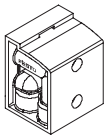
Flow optimised



Note

Flow optimised manifold sub-bases increase the valve flow rate by up to 30%.

90° connection plate for working ports (2, 4) of the manifold sub-base

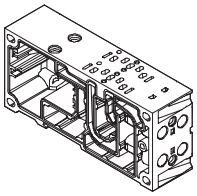
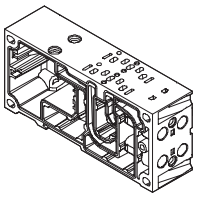
Code		Type	Width		Connections	Working ports (2, 4) in the 90° connection plate
			18 mm	26 mm		
P		Threaded connection: VABF-S4-...-A2G2-G... NPT thread: VABF-S4-...-A2G2-N...	■	■	2 and 4	Outlet at bottom • Connection sizes for 18 mm width: G1⁄8, 1⁄8NPT • Connection sizes for 26 mm width: G1⁄4, 1⁄4NPT

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

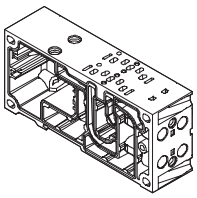
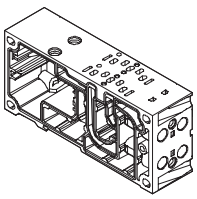
Key features – Pneumatic components

FESTO

Manifold sub-base variants – standard design

Code		Type	Width		No. of valve positions/ solenoid coils	Working ports (2, 4) on manifold sub-base
			18 mm	26 mm		
Manifold sub-base for multi-pin plug/fieldbus connection for double solenoid valves						
A AK		Threaded connection: VABV-S4-2S-G18-2T2 NPT thread: VABV-S4-2S-N18-2T2	■	–	2/4	• Connection sizes for 18 mm width: G⅛, QS-G⅛-8, QS-G⅛-6, ⅛NPT, QS-⅛-5/16-U, QS-⅛-¼-U
B BK		Threaded connection: VABV-S4-1S-G14-2T2 NPT thread: VABV-S4-1S-N14-2T2	–	■	2/4	• Connection sizes for 26 mm width: G¼, QS-G¼-10, QS-G¼-8, ¼NPT, QS-¼-⅜-U, QS-¼-5/16-U
Manifold sub-base for multi-pin plug/fieldbus connection for single solenoid valves						
E EK		Threaded connection: VABV-S4-2S-G18-2T1 NPT thread: VABV-S4-2S-N18-2T1	■	–	2/2	• Connection sizes for 18 mm width: G⅛, QS-G⅛-8, QS-G⅛-6, ⅛NPT, QS-⅛-5/16-U, QS-⅛-¼-U
F FK		Threaded connection: VABV-S4-1S-G14-2T1 NPT thread: VABV-S4-1S-N14-2T1	–	■	2/2	• Connection sizes for 26 mm width: G¼, QS-G¼-10, QS-G¼-8, ¼NPT, QS-¼-⅜-U, QS-¼-5/16-U

Manifold sub-base variants – flow optimesed design

Code		Type	Width		No. of valve positions/ solenoid coils	Working ports (2, 4) on manifold sub-base
			18 mm	26 mm		
Manifold sub-base for multi-pin plug/fieldbus connection for double solenoid valves						
A AK		Threaded connection: VABV-S4-2HS-G18-2T2 NPT thread: VABV-S4-2HS-N18-2T2	■	–	2/4	• Connection sizes for 18 mm width: G⅛, QS-G⅛-8, QS-G⅛-6, ⅛NPT, QS-⅛-5/16-U, QS-⅛-¼-U
B BK		Threaded connection: VABV-S4-1HS-G14-2T2 NPT thread: VABV-S4-1HS-N14-2T2	–	■	2/4	• Connection sizes for 26 mm width: G¼, QS-G¼-10, QS-G¼-8, ¼NPT, QS-¼-⅜-U, QS-¼-5/16-U
Manifold sub-base for multi-pin plug/fieldbus connection for single solenoid valves						
E EK		Threaded connection: VABV-S4-2HS-G18-2T1 NPT thread: VABV-S4-2HS-N18-2T1	■	–	2/2	• Connection sizes for 18 mm width: G⅛, QS-G⅛-8, QS-G⅛-6, ⅛NPT, QS-⅛-5/16-U, QS-⅛-¼-U
F FK		Threaded connection: VABV-S4-1HS-G14-2T1 NPT thread: VABV-S4-1HS-N14-2T1	–	■	2/2	• Connection sizes for 26 mm width: G¼, QS-G¼-10, QS-G¼-8, ¼NPT, QS-¼-⅜-U, QS-¼-5/16-U

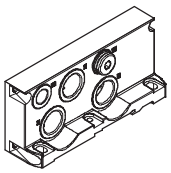
Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

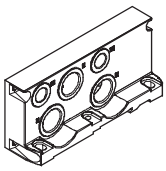
FESTO

Compressed air supply and venting

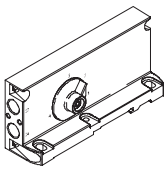
Right-hand end plate
– Code V



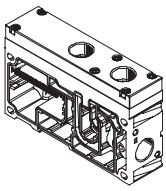
Right-hand end plate
– Code X



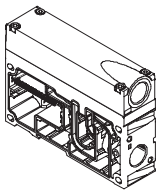
End plate with coding cap
– Code Y, U, Z, W



Supply plate with separate 3/5 exhaust
– Code K



Supply plate with common 3/5 exhaust
– Code L



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

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 required 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 valve terminal using external pilot air supply. The pilot air supply is supplied via port 14 on the right-hand end plate to this end. This is the case even if the valve terminal is operated with different pressure zones.

Note

If a gradual pressure build-up in the system using a pressurised on-off valve is required, external pilot supply air where the control pressure applied during switch-on is already very high should be 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 supply air/exhaust air
– Internal pilot air supply: code V
– External pilot air supply: code X

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

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

Note

The end plate with coding cap 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.

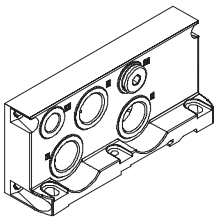
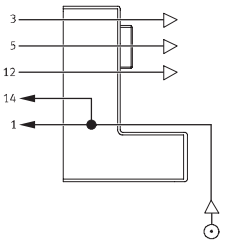
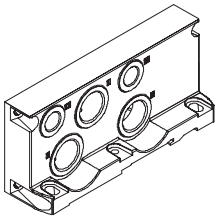
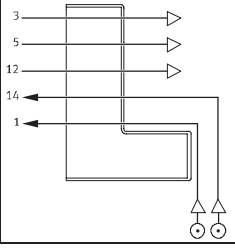
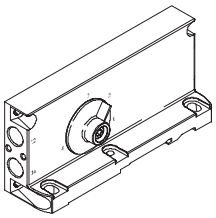
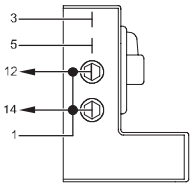
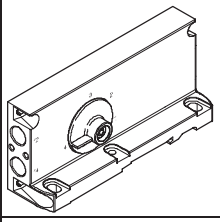
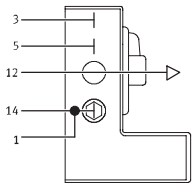
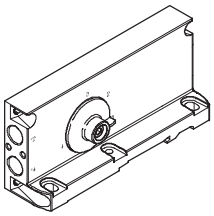
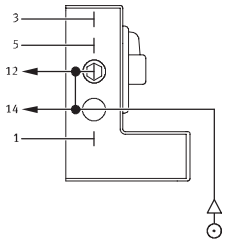
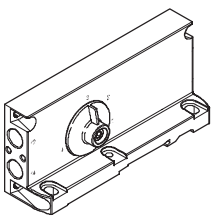
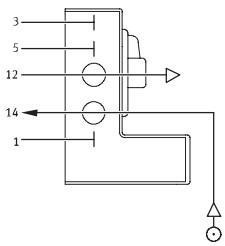
Right-hand end plate with coding cap

Code	Selector position
Z	1
Y	2
W	3
U	4

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

FESTO

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			■	■	Supply air/exhaust air, internal pilot air supply, silencer • Pilot air supply is branched internally from port 1 • Port 14 is sealed with a blanking plug • Exhaust 3/5 via silencer • For operating pressure in the range 3 ... 10 bar • Pilot exhaust[1)]
X			■	■	Supply air/exhaust air, external pilot air supply, silencer • Pilot air supply between 2 and 10 bar is connected at port 14 • Exhaust 3/5 via silencer • For operating pressure in the range –0.9 ... 10 bar (suitable for vacuum) • Pilot exhaust[1)]
Code[2)]	End plate with coding cap				
Y (2)			■	■	Internal pilot air supply • Pilot air supply is branched internally from port 1 • Ports 1/12/14 are internally connected • Ports 12/14 are sealed with blanking plugs • Pilot exhaust air not ducted via valve housing
U (4)			■	■	Internal pilot supply air, ducted exhaust air • Pilot air supply is branched internally from port 1 • Ports 1/14 are internally connected • Port 14 is sealed with a blanking plug • Pilot exhaust via port 12 with silencer[1)]
Z (1)			■	■	External pilot air supply • Pilot air supply is connected at port 14 • Port 12 is sealed with a blanking plug • Ports 12/14 are internally connected • Pilot exhaust air not ducted via valve housing
W (3)			■	■	External pilot supply air, ducted exhaust air • Pilot air supply is connected at port 14 • Pilot exhaust via port 12 with silencer[1)]

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

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

FESTO

Compressed air supply/duct separation

Additional supply plates can be used for larger terminals or to create pressure zones.
These can be selected at any point before or after manifold sub-bases.

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

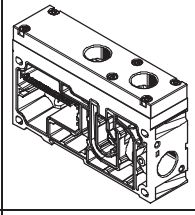
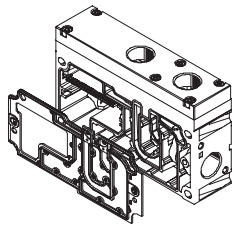
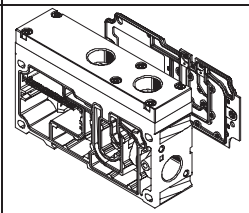
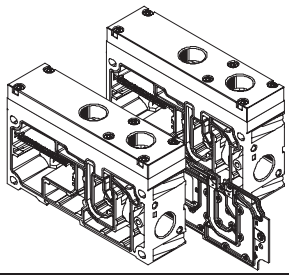
Depending on your order, the exhaust air ducts are either ducted or vented via silencers.

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

If a 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: US, UT, UR
- 2 supply plates with intermediate duct separation: code USU, UTU, URU

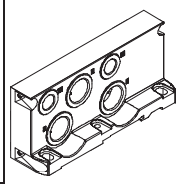
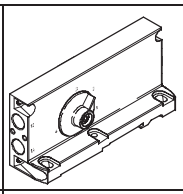
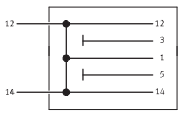
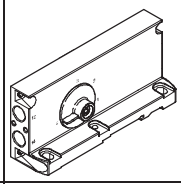
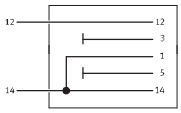
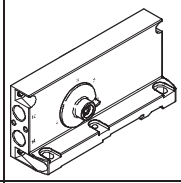
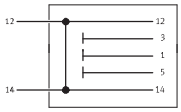
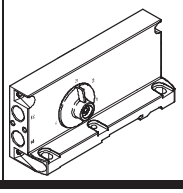
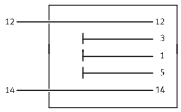
Supply plates

Code		Type	Width		Description
			18 mm	26 mm	
U		• Exhaust port 3/5 common For threaded connection: VABF-S6-10-P1A7-G12 For NPT thread: VABF-S6-10-P1A7-N12 • Exhaust air 3/5 separated For threaded connection: VABF-S6-10-P1A6-G12 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

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

FESTO

Configuration of all pneumatic threaded connections							
Code[1]			Connection		Designation	**Code M** Push-in connector large	**Code N** Push-in connector small
V		–	Right-hand end plate, internal pilot air supply, silencer				
			1	Compressed air/ vacuum supply	Push-in fitting	QS-G½-16	QS-G½-12
			3/5	Exhaust air	Via silencer	U-½-B	U-½-B
			14	Pilot air supply	Blanking plug	B-¼	B-¼
X			Right-hand end plate, external pilot air supply, silencer				
			1	Compressed air/ vacuum supply	Push-in fitting	QS-G½-16	QS-G½-12
			3/5	Exhaust air	Via silencer	U-½-B	U-½-B
			12	Pilot exhaust air	Via silencer	U-¼	U-¼
			14	Pilot air supply	Push-in fitting	QS-G¼-10	QS-G¼-8
Y (2)			End plate with coding cap, internal pilot air supply				
			12/14	Pilot air supply/ pilot exhaust air	Blanking plug/push-in fitting	B-¼ / QS-G¼-10	B-¼ / QS-G¼-8
U (4)			End plate with coding cap, internal pilot air supply, ducted exhaust air				
			12/14	Pilot air supply/ pilot exhaust air	Blanking plug/blanking plug	B-¼ / B-¼	B-¼ / B-¼
Z (1)			End plate with coding cap, external pilot air supply				
			12/14	Pilot air supply/ pilot exhaust air	Push-in fitting or silencer/ push-in fitting	QS-G¼-10 or U-¼ / QS-G¼-10	QS-G¼-8 or U-¼ / QS-G¼-8
W (3)			End plate with coding cap, external pilot air supply, ducted exhaust air				
			12/14	Pilot air supply/ pilot exhaust air	Push-in fitting or silencer/ blanking plug	QS-G¼-10 or U-¼ / B-¼	QS-G¼-8 or U-¼ / B-¼

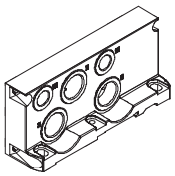
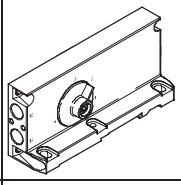
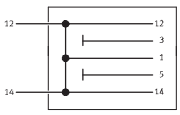
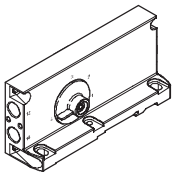
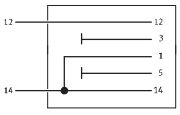
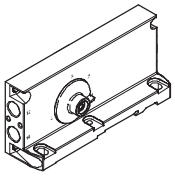
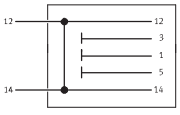
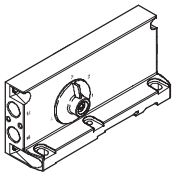
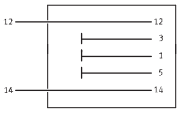
1) Selector position in brackets

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

FESTO

Design of all pneumatic connections with NPT thread

Code[1]			Connection		Designation	**Code M** Push-in connector large	**Code N** Push-in connector small
V		–	Right-hand end plate, internal pilot air supply, silencer				
			1	Compressed air/ vacuum supply	Push-in fitting	QS-½-5/8-U	QS-½-½-U
			3/5	Exhaust air	Via silencer	U-½-B-NPT	U-½-B-NPT
			14	Pilot air supply	Blanking plug	B-¼-NPT	B-¼-NPT
X			Right-hand end plate, external pilot air supply, silencer				
			1	Compressed air/ vacuum supply	Push-in fitting	QS-½-5/8-U	QS-½-½-U
			3/5	Exhaust air	Via silencer	U-½-B-NPT	U-½-B-NPT
			12	Pilot exhaust air	Via silencer	U-¼-B-NPT	U-¼-B-NPT
			14	Pilot air supply	Push-in fitting	QS-¼-3/8-U	QS-¼-5/16-U
Y (2)			End plate with coding cap, internal pilot air supply				
			12/14	Pilot air supply/ pilot exhaust air	Blanking plug/push-in fitting	B-¼-NPT / QS-¼-3/8-U	B-¼-NPT / QS-¼-5/16-U
U (4)			End plate with coding cap, internal pilot air supply, ducted exhaust air				
			12/14	Pilot air supply/ pilot exhaust air	Blanking plug/blanking plug	B-¼-NPT / B-¼-NPT	B-¼-NPT / B-¼-NPT
Z (1)			End plate with coding cap, external pilot air supply				
			12/14	Pilot air supply/ pilot exhaust air	Push-in fitting or silencer/ push-in fitting	QS-¼-3/8-U or U-¼-B-NPT / QS-¼-3/8-U	QS-¼-5/16-U or U-¼-B-NPT / QS-¼-5/16-U
W (3)			End plate with coding cap, external pilot air supply, ducted exhaust air				
			12/14	Pilot air supply/ pilot exhaust air	Push-in fitting or silencer/ blanking plug	QS-¼-3/8-U or U-¼-B-NPT / B-¼-NPT	QS-¼-5/16-U or U-¼-B-NPT / B-¼-NPT

1) Selektor position in brackets.

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Pneumatic components

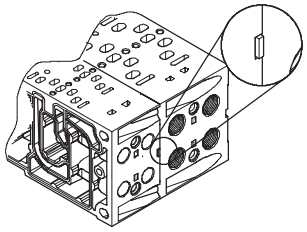
FESTO

Creation of pressure zones and separation of exhaust air

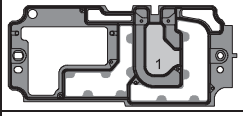
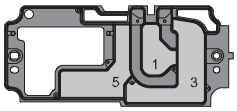
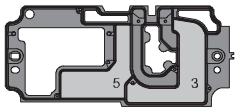
The valve terminal VTSA/VTSA-F offers a number of options for creating pressure zones if different working pressures are required.
Pressure zones are created by isolating the internal supply ducts between the manifold sub-bases using an appropriate duct separation.

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

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



Creating pressure zones

Code	Duct separation for operation with silencer		Width		Description
	Pictorial examples	Coding	18 mm	26 mm	
T			■	■	Duct 1 separated
S			■	■	Duct 1 and 3/5 separated
R			■	■	Duct 3/5 separated

Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

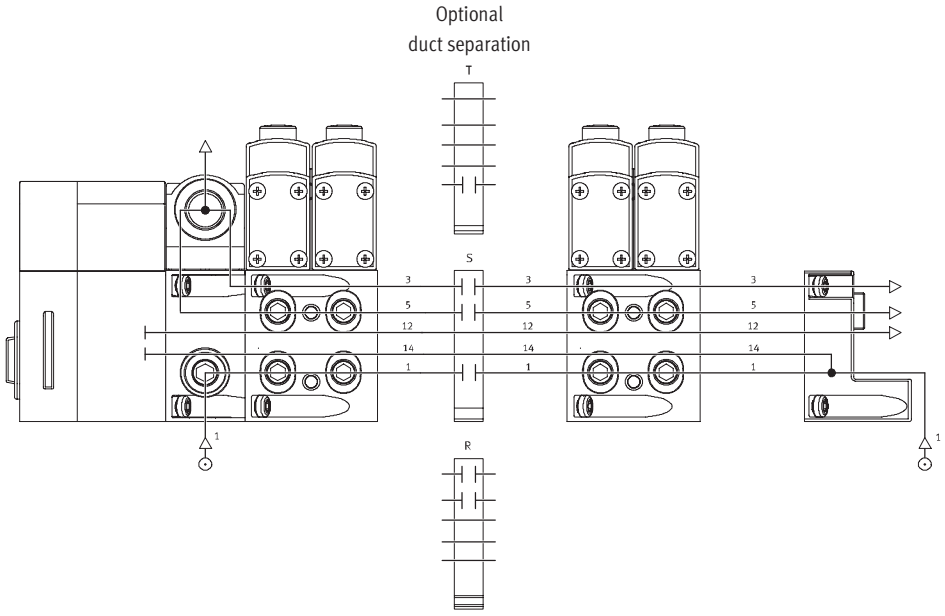
Key features – Pneumatic components

FESTO

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

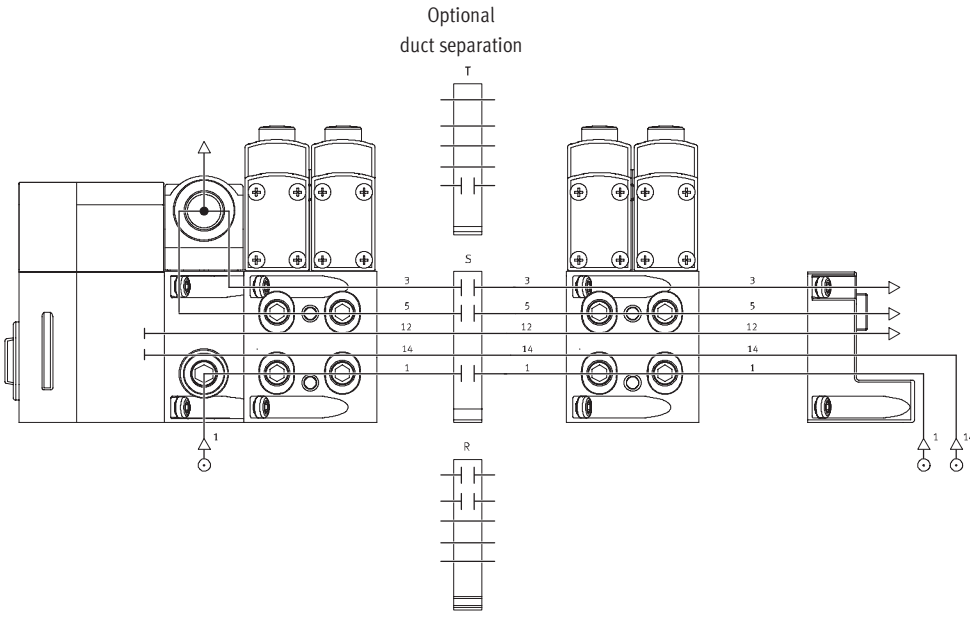
Internal pilot air supply, silencer/ducted exhaust air

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



External pilot air supply, silencer/ducted exhaust air

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



Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

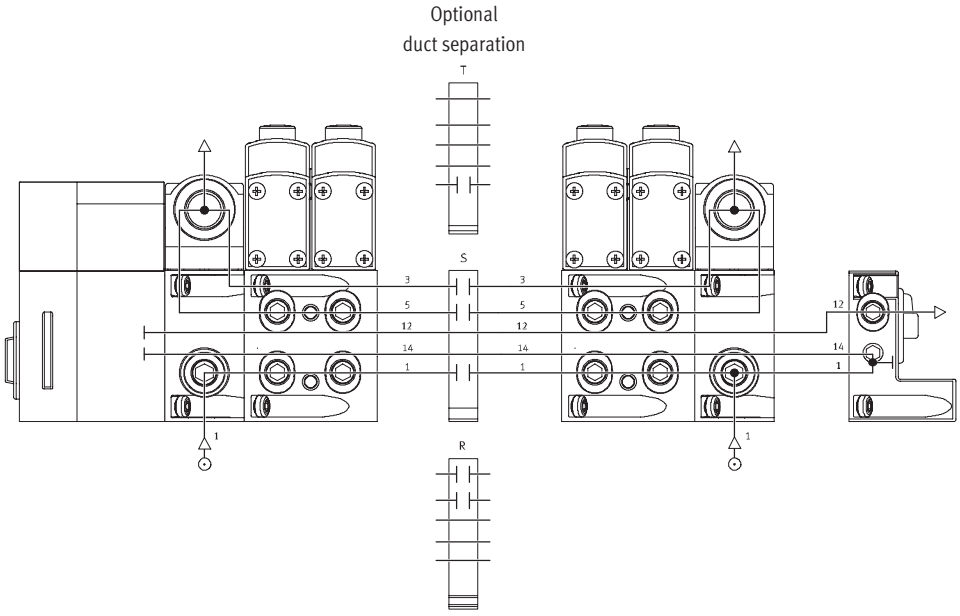
Key features – Pneumatic components

FESTO

Examples: Compressed air supply and pilot air supply via end plate with coding cap

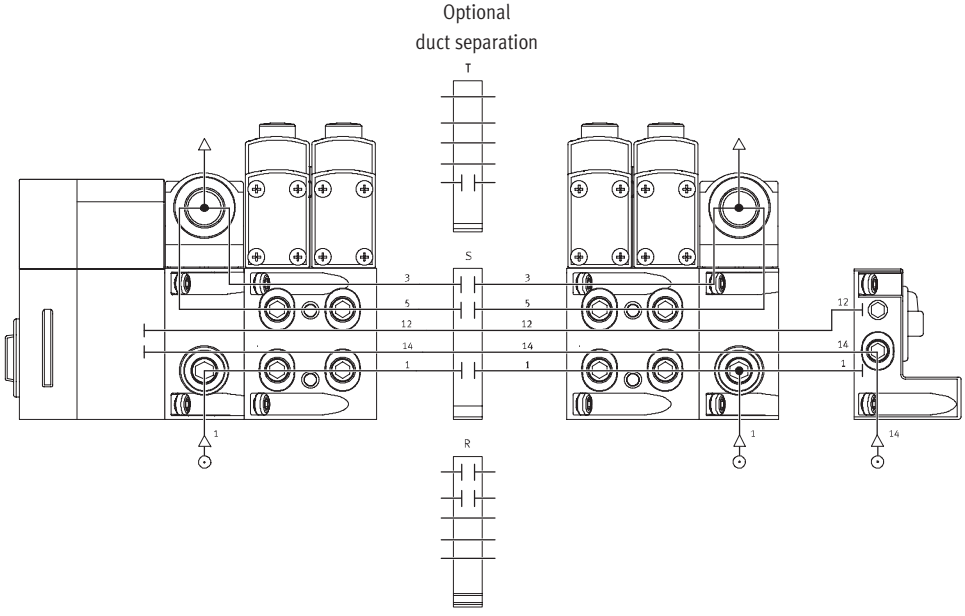
Internal pilot air supply, ducted exhaust air/silencer

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



External pilot air supply, ducted exhaust air/silencer

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



Valve terminals type 44 VTSA, type 45 VTSA-F optimised flow

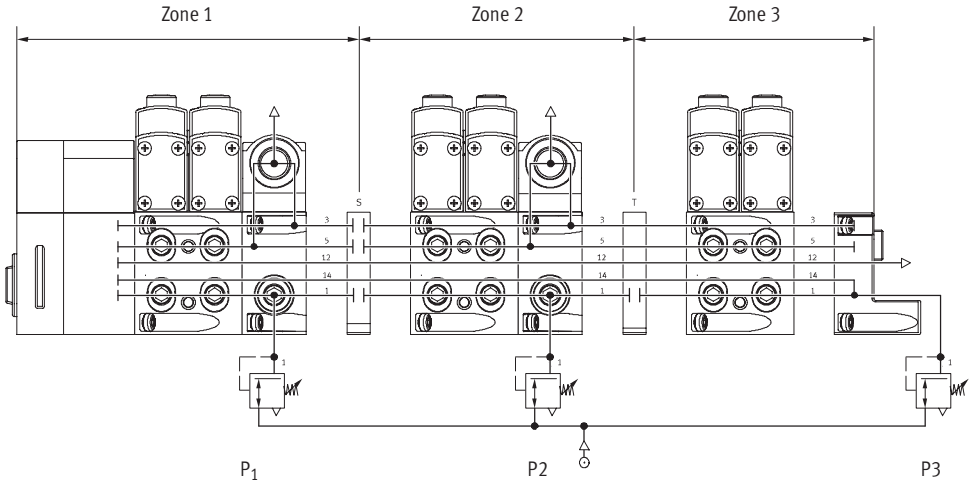
Key features – Pneumatic components

FESTO

Examples: Creation of pressure zones

VTSA/VTSA-F with CPX terminal connection

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



Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Assembly

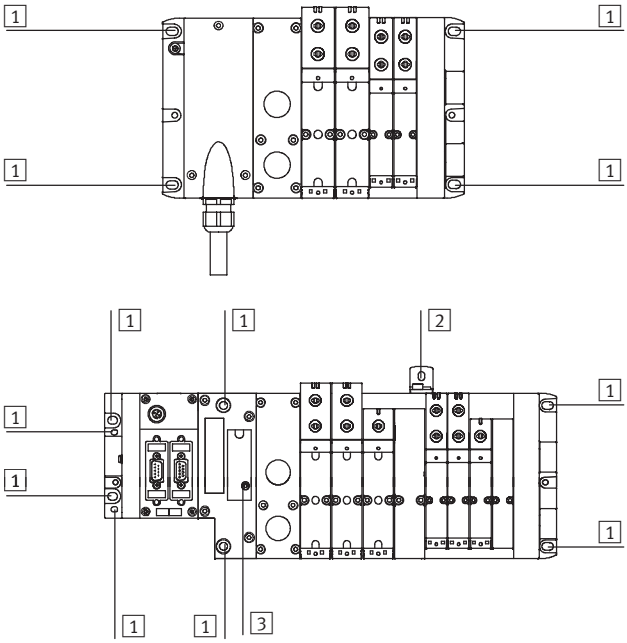
FESTO

Valve terminal assembly

Sturdy terminal attachment thanks to:

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

Wall mounting



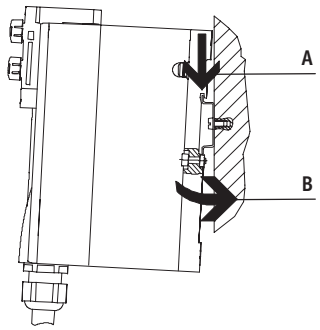
The VTSA/VTSA-F valve terminal is screwed onto the mounting surface using M6 screws. The mounting holes are located at the following points:

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

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

The fieldbus version additionally provides a bracket for wall mounting (type VTSA/VTSA-F, Part No. 665 983). The mounting brackets can be used with very long valve terminals (6 manifold sub-bases or more) to improve load capacity during vibrations or shocks.

H-rail mounting



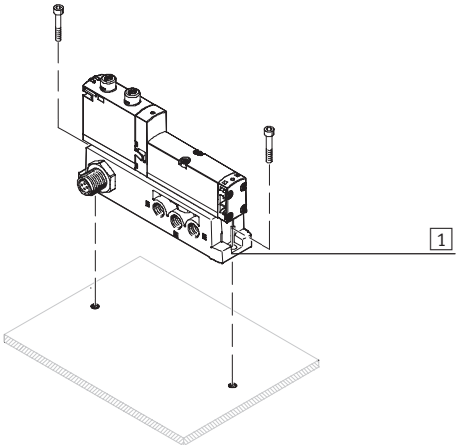
The VTSA/VTSA-F valve terminal is attached to the H-rail (see arrow A).
It is then swivelled on the H-rail and secured in place with the clamping component (see arrow B).

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

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

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

Individual valve assembly



[1] Vertical mounting holes

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

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Display and operation

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

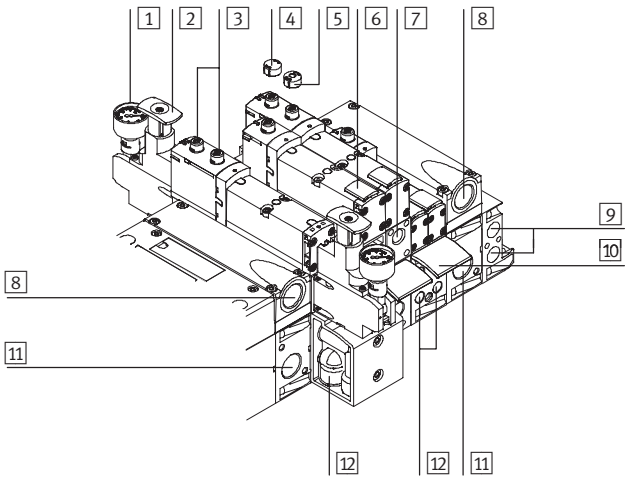
Manual override

The manual override allows the valve to be switched when in the electrically non-activated or de-energised status. The valve is actuated by pushing the manual override. The set switching status can also be secured 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

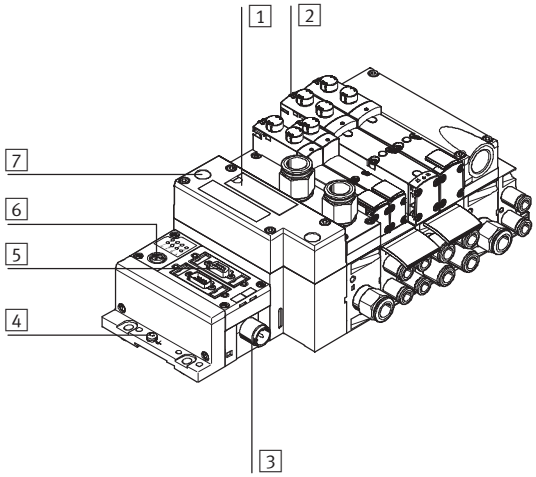


1 Pressure gauge (optional)
2 Adjusting knob of optional pressure regulating plate
3 Manual override (per pilot solenoid coil, pushing or pushing/detenting)
4 Optional cover cap for manual override (manual override non-functional)
5 Optional cover cap for manual override with non-detenting pushing function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

Note

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

Electrical connection and display components



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

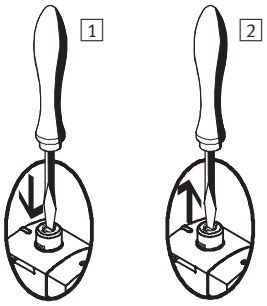
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Display and operation

FESTO

Manual override (MO)

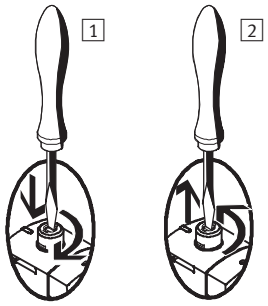
Manual override with automatic return (non-detenting)



1 Press in the stem of the manual override using a pin or screwdriver.
Valve is in switching position.

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

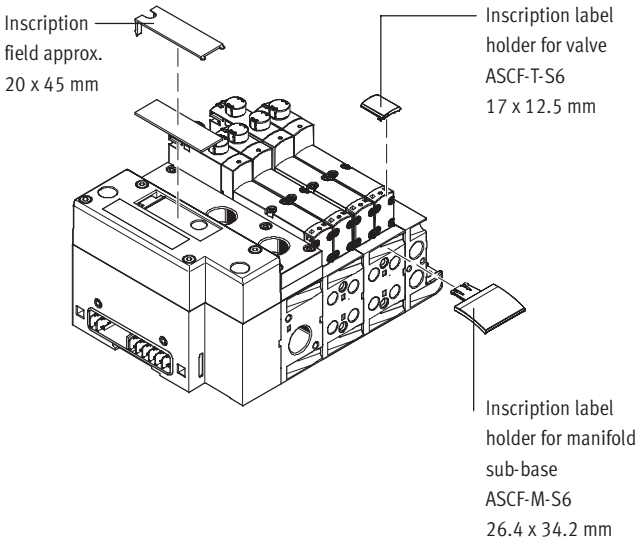
MO with detent (covered)



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

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

Inscription system



Inscription label holders can be applied to the valves and 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. 540 888
- Inscription label holder for sub-bases type ASCF-M-S6: Part No. 540 889

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

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

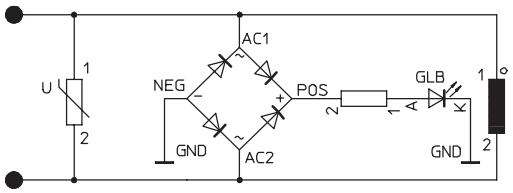
Key features – Electrical components

FESTO

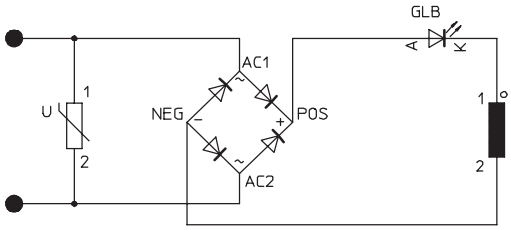
Protective circuit

Each VTSA/VTSA-F solenoid coil is protected against spark arresting and revers polarity by means of a protective circuit.

24 V DC design



110 V AC design



Individual valve

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

- Electrical M12 connector, 4 pin 24 V DC
- 4-pin clamped terminal connection for configuration by the user 24 V DC or 110 V AC

Electrical multi-pin plug connection

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

- 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 terminals can be fitted 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 can be addressed via a single solenoid coil.
With 16 or less valve positions, 2 valve solenoid coils per valve can be addressed.

Note

Use the following 37-pin connecting cables from Festo to connect the valve terminal VTSA 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

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 of the CPX
- The valves are supplied and disconnected separately via a separate port on the CPX

Note

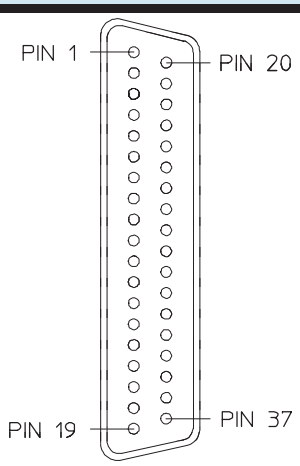
Further information can be found in
➔ 4 / 4.8-2

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Electrical components

FESTO

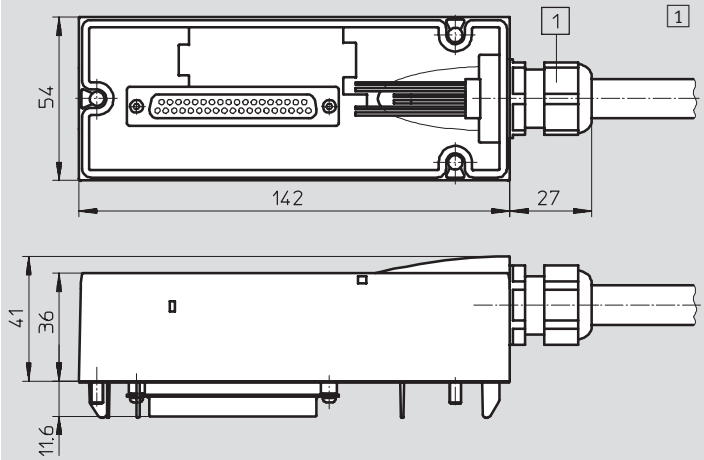
Pin allocation – Sub-D plug socket, 24 V DC; electrical connection code MP1

	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
Note The drawing shows the view on the Sub-D plug socket at the multi-pin cable end NEBV-S1W37-....	Conductor						
	33	0 V[3]	YE BK		35	0 V[3]	BN BK
	34	0 V[3]	WH BK		36	0 V[3]	BK
	Earthing						
	37	FE	VT		–	–	–

1) To IEC 757
2) Pin 9 ... 35: Not available with cable NEBV-S1-W37-...-10
Pin 23 ... 33: Not available with cable NEBV-S1-W37-...-26
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/en/engineering**

Multi-pin cable NEBV-S1W37-...



1 Cable conduit fitting M20x1.5

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

- NEBV-S1W37-...-10
  for valve terminal
  with max. 8 solenoid coils
- NEBV-S1W37-...-26
  for valve terminal
  with max. 22 solenoid coils
- NEBV-S1W37-...-37
  for valve terminal
  with max. 32 solenoid coils

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Key features – Electrical components

FESTO

Sub-D plug, 24 V DC; electrical connection code MP1					
Type	Sheath	Length [m]	Wire x mm² [mm²]	Cable ∅ [mm]	Part No.
NEBV-S1W37-E2,5-LE10	Polyurethane	2.5	10 x 0.34	7.7	**539 240**
NEBV-S1W37-E5-LE10		5			**539 241**
NEBV-S1W37-E10-LE10		10			**539 242**
NEBV-S1W37-E2,5-LE26		2.5	26 x 0.34	11.5	**539 243**
NEBV-S1W37-E5-LE26		5			**539 244**
NEBV-S1W37-E10-LE26		10			**539 245**
NEBV-S1W37-K2,5-LE37		2.5	37 x 0.34	13	**539 246**
NEBV-S1W37-K5-LE37		5			**539 247**
NEBV-S1W37-K10-LE37		10			**539 248**
NEBV-S1W37-KM-2,5-LE10	Polyvinyl chloride	2.5	10 x 0.34	7.7	**543 271**
NEBV-S1W37-KM-5-LE10		5			**543 272**
NEBV-S1W37-KM-10-LE10		10			**543 273**
NEBV-S1W37-KM-2,5-LE27		2.5	27 x 0.34	11.5	**543 274**
NEBV-S1W37-KM-5-LE27		5			**543 275**
NEBV-S1W37-KM-10-LE27		10			**543 276**
NEBV-S1W37-KM-2,5-LE37		2.5	37 x 0.34	13	**543 277**
NEBV-S1W37-KM-5-LE37		5			**543 278**
NEBV-S1W37-KM-10-LE37		10			**543 279**

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

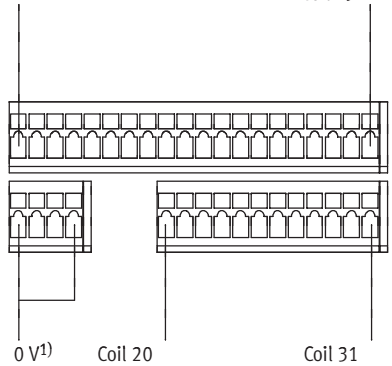
Key features – Electrical components

FESTO

Pin allocation – Multi-pin terminal strip (CageClamp), 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 actuation of the valves to take place.

Coil 0 Coil 19



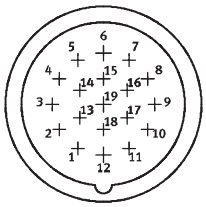
Note

The drawing shows the view onto the multi-pin terminal strip (CageClamp).

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



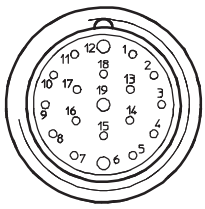
Address	Pin1)		Address	Pin1)
0	15		8	17
1	7		9	9
2	5		10	2
3	4		11	13
4	16		12	11
5	8		13	10
6	3		14	1
7	14		15	18

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 is independent of whether single solenoid or double solenoid valves are used.
- The addresses are allocated in ascending consecutive order from left to right.
- A valve position for activating a solenoid coil occupies one address (type VABV-...-...T1).
- A valve position for activating two solenoid coils occupies two addresses(type VABV-...-...T1). The following allocation applies in this case:
  - Coil 14: Less significant address
  - Coil 12: Higher-value address

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



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

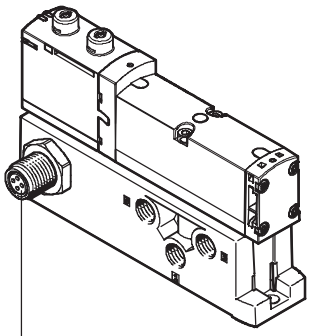
1) 0 V for positive switching control signals; connect 24 V for negative switching control signals; mixed operation is not permitted!

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

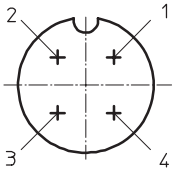
Key features – Electrical components

FESTO

Electrical connection, individual valve 24 V DC



Connector plug M12x1, 4-pin
to EN 61076-2-101

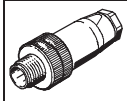
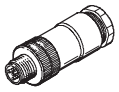
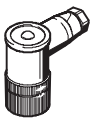
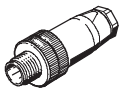
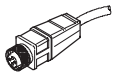
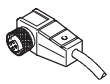


Pin allocation M12 on individual valve to ISO 20401

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

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

Electrical connection technology

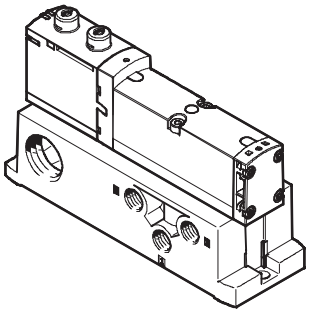
	Electrical connection	Type of mounting/cable length	Type	Part No.
Sensor plug/socket for inputs/outputs				
	Straight plug, 4-pin, screw terminal	Threaded connector M12	**SEA-GS-7**	**18 666**
			SEA-GS-9	**18 778**
			**SEA-GS-11-DUO**	**18 779**
	Plug socket, angled, 4-pin, screw terminal	Union nut M12	**SEA-M12-4WD-PG7**	**185 498**
	Straight plug, 4-pin, screw terminal	Threaded connector M12	**SEA-4GS-7-2,5**	**192 008**
Plug socket with cable for connecting individual valves or sensors				
	Straight socket, 4-pin, M12	5 m	**SIM-M12-4GD-5-PU**	**164 259**
	Angled socket, 4-pin, M12	5 m	**SIM-M12-4WD-5-PU**	**164 258**

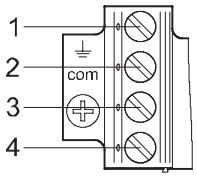
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Instructions for use

FESTO

Electrical connection, individual valve 24 V DC or 110 V AC





Pin allocation if cables are connected by the customer

With positive logic:

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

With negative logic:

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

Equipment

Operate your equipment with unlubricated compressed air if possible. Festo valves and cylinders are designed for operation under normal use without any additional lubrication, yet still have a long service life. The quality of compressed air downstream from the compressor must correspond to that of unlubricated compressed air. If possible, do not operate all of your 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 reduces the service life of a 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 upon 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

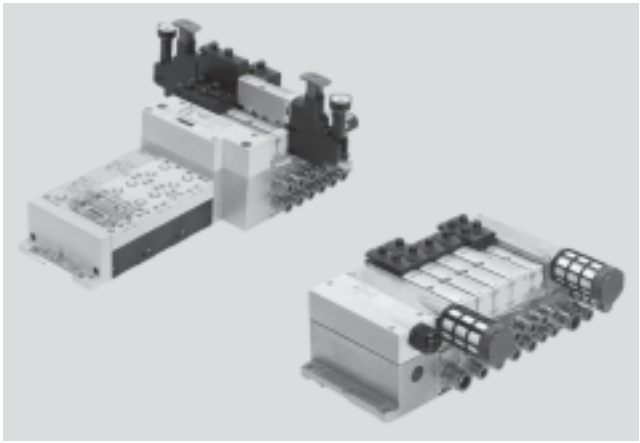
When using mineral oils (e.g. HLP oils to DIN 51524, parts 1 through 3) or similar oils based on poly-alpha-olefins (PAO), the maximum residual oil content of 5 mg/m^3 must not be exceeded (see ISO 8573-1 Class 4).
A higher residual oil content irrespective of the compressor oil cannot be permitted, as the basic lubricant would be flushed out over time.

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

FESTO

- Flow rate
  Width 18 mm:
  up to 700 l/min
  Width 26 mm:
  up to 1,400 l/min
- Valve width
  18 mm
  26 mm
- Voltage
  24 V DC
  110 V AC



General technical data					
Width		18 mm		26 mm	
Design		Electromagnetically actuated piston spool valve			
Lubrication		Lubrication for life			
Type of mounting		Wall mounting			
		On H-rail to EN 60715			
Assembly position		Any			
Manual override		Non-detenting, non-detenting/detenting, covered			
Width	[mm]	18		26	
Width		18 mm		26 mm	
Pneumatic connections		Threaded connection	NPT thread	Threaded connection	NPT thread
Pneumatic connection		Via manifold sub-base			
Supply port	1	G½, QS-G½-12, QS-G½-16	½NPT, QS-½-½-U, QS-½-⅝-U	G½, QS-G½-12, QS-G½-16	½NPT, QS-½-½-U, QS-½-⅝-U
Exhaust port	3/5	G½, QS-G½-12, QS-G½-16	½NPT, QS-½-½-U, QS-½-⅝-U	G½, QS-G½-12, QS-G½-16	½NPT, QS-½-½-U, QS-½-⅝-U
Working ports	2/4	Depending on the connection type selected			
		• G⅛ • QS-G⅛-6 • QS-G⅛-8	• ⅛NPT • QS-⅛-¼-U • QS-⅛-5/16-U	• G¼ • QS-G¼-8 • QS-G¼-10	• ¼NPT • QS-¼-5/16-U • QS-¼-⅜-U
Port for external pilot air supply	14	G¼	¼NPT	G¼	¼NPT
Pilot exhaust air port	12	G¼	¼NPT	G¼	¼NPT

Standard nominal flow rate [l/min]																								
Width	18 mm												26 mm											
Valve function order code	M	O	J	D	N	K	H	B	G	E	P	Q	R	M	O	J	D	N	K	H	B	G	E	P	Q	R
Flow rate of valve	750				600			650[1] 430[2]			600			1,400				1,250			1,400[1] 1,000[2]			1,250		
Flow rate of valve on individual sub-base	600				500			550[1] 360[2]			500			1,200				1,100			1,200[1] 850[2]			1,100		
Flow rate of valve on valve terminal	550				400			450[1] 300[2]			400			1,100				900			1,000[1] 700[2]			900		
Flow valve on valve terminal with flow optimised manifold sub-bases	700				550			650[1] 430[2]			550			1,350				1,150			1,350[1] 1,000[2]			1,150		

1) Switching position
2) Mid-position

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

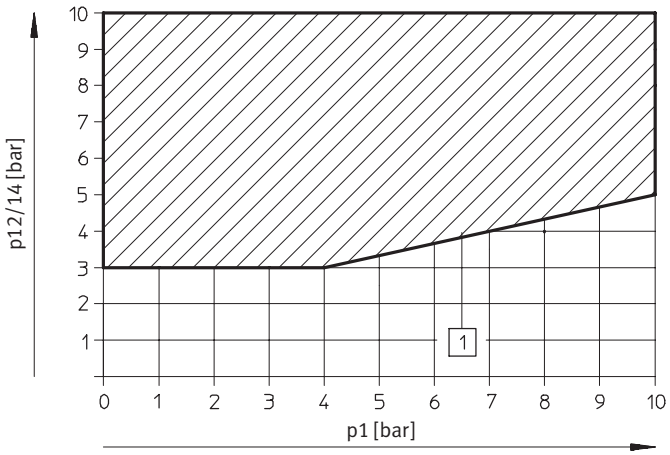
FESTO

Operating and environmental conditions														
Valve function order code			M	O	J	D	N	K	H	B	G	E	P	Q	R
Operating medium			Filtered compressed air, lubricated or unlubricated, inert gases ➔ 4 / 1.3-41												
Grade of filtration		[µm]	40 (average pore size)												
Operating pressure	Pilot pressure	[bar]	3 ... 10												
	With internal pilot supply air	[bar]	3 ... 10												
	With external pilot supply air	[bar]	–0.9 ... +10				3 ... 10			–0.9 ... +10					
Ambient temperature		[°C]	–5 ... +50												
Temperature of medium		[°C]	–5 ... +50												
Storage temperature[1]		[°C]	–20 ... +40												
Relative air humidity		[%]	90												

1) Long-term storage

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

Valve response times [ms]														
Valve function order code		M	O	J	D	N	K	H	B	G	E	P	Q	R
18 mm														
Response times	On	22	12	–	–	12	12	12	15	15	15	25	25	25
	Off	28	38	–	–	30	30	30	44	44	44	12	12	12
	Reversing	–	–	11	11	–	–	–	22	22	22	–	–	–
26 mm														
Response times	On	25	20	–	–	20	20	20	22	22	22	32	32	32
	Off	45	65	–	–	38	38	38	65	65	65	30	30	30
	Reversing	–	–	18	18	–	–	–	33	33	33	–	–	–

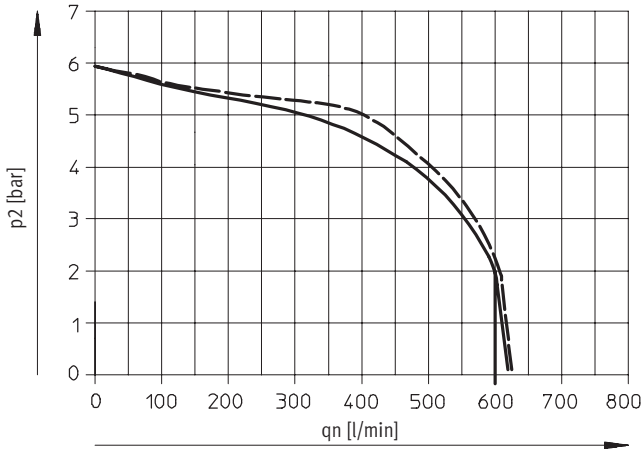
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

FESTO

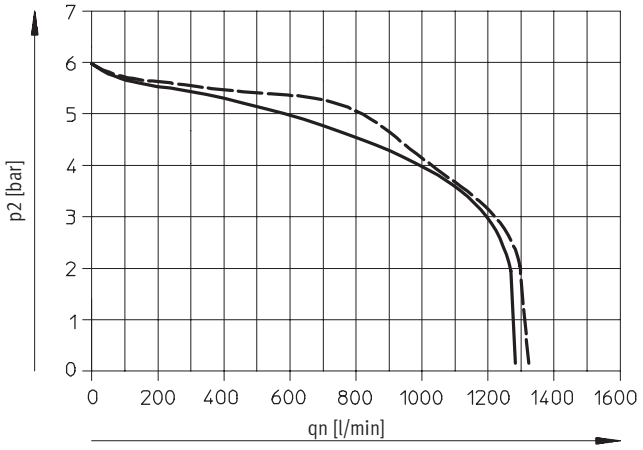
Flow rate qn as a function of output pressure p2 with pressure regulating plates (P regulator block) for port 1

Width: 18 mm



6 bar
10 bar

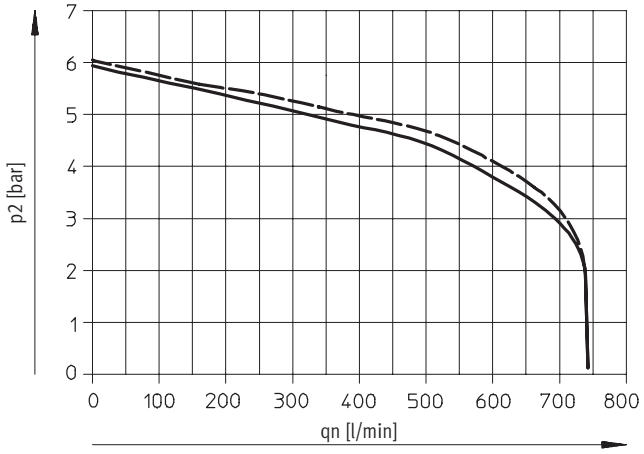
Width: 26 mm



6 bar
10 bar

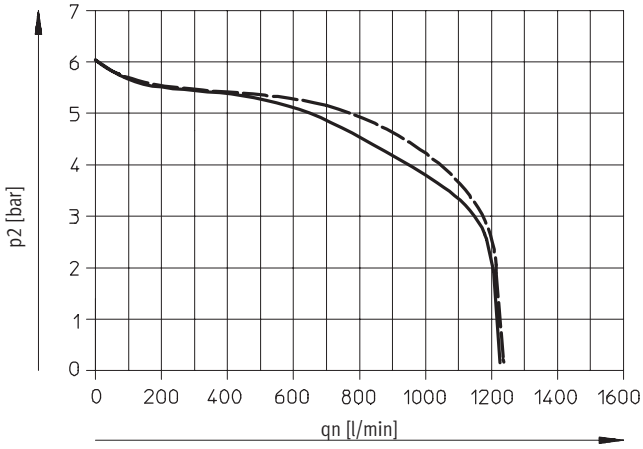
Flow rate qn as a function of output pressure p2 with pressure regulating plates (A/B regulator blocks) for port 2, 4 or ports 4/2

Width: 18 mm



6 bar
10 bar

Width: 26 mm



6 bar
10 bar

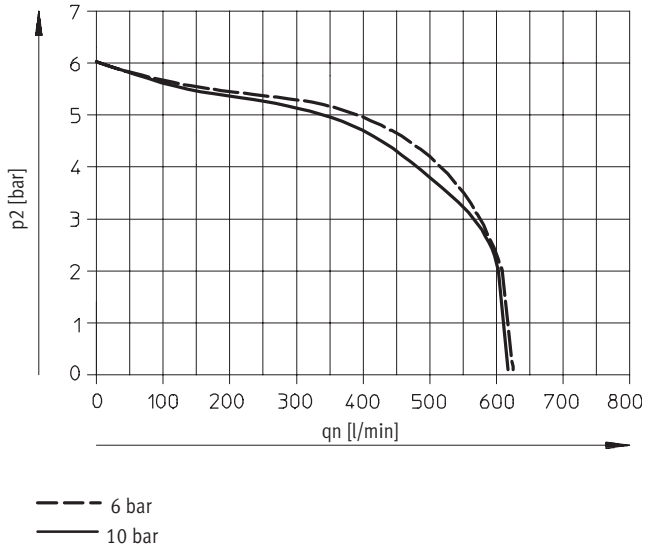
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

FESTO

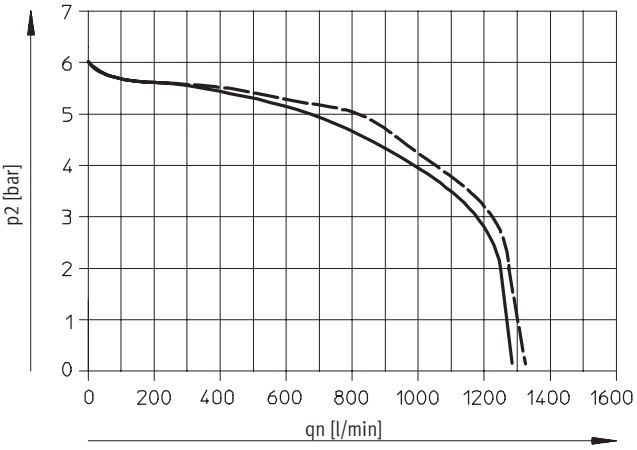
Flow rate qn as a function of output pressure p2 with pressure regulating plates (A/B regulator blocks, rev.) for ports 4/2, reversible

Width: 18 mm



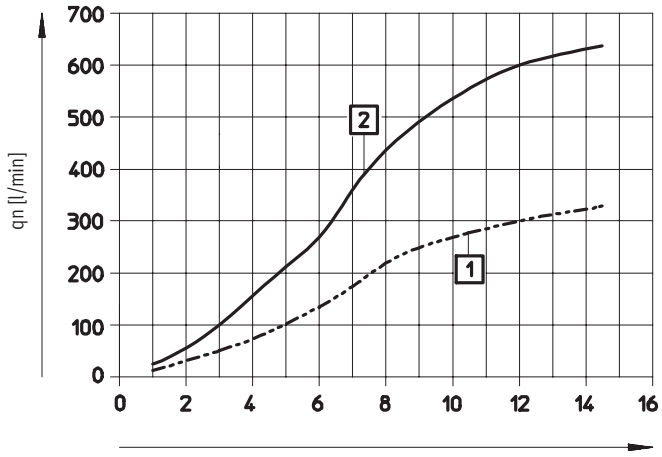
6 bar
10 bar

Width: 26 mm



6 bar
10 bar

Flow rate qn as a function of flow control



1 Width: 18 mm
2 Width: 26 mm

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

FESTO

Electrical data			
VTSA/VTSA-F with CPX terminal		18 mm	26 mm
Voltage supply for electronics ($U_{EL/SEN}$)			
Operating voltage	[V]	24 DC ±10%	
Max. intrinsic current consumption at 24 V DC	[mA]	20	
Load voltage supply for valves (U_{val})			
Operating voltage	[V]	24 DC ±10%	
Diagnostic message on undervoltage U_{OFF}, Load voltage outside function range	[V]	21.6 ... 21.5	
Protection class to EN 60529		IP65 (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, 5/3-way valve	[W]	1.6	

Electrical data			
VTSA/VTSA-F with multi-pin plug		18 mm	26 mm
Load voltage supply for valves (U_{val})			
Operating voltage	[V]	24 DC ±10% 110 AC ±10% (50 ... 60 Hz)	
Protection class to EN 60529		IP65 (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, 5/3-way valve	[W]	1.6	
Power consumption at 110 V AC			
2x 3/2-way valve	[VA]	1	
5/2-way valve, 5/3-way valve	[VA]	1.6	

Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

FESTO

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	
Left-hand pneumatic interface	Die-cast aluminium	
Throttle 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	

Product weight		
Approx. weights [g]	18 mm	26 mm
Sub-D multi-pin interface module or terminal strip[1]	550	
Interface module CPX[1]	1,470	
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
90º 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
Throttle plate	228	320
Vertical supply plate[3]	140	191
Vertical isolating plate	209	273
Valves		
• 5/3-way valve (code: B, G, E)	191	320
• 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
Blanking plate	34.4	73.3

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

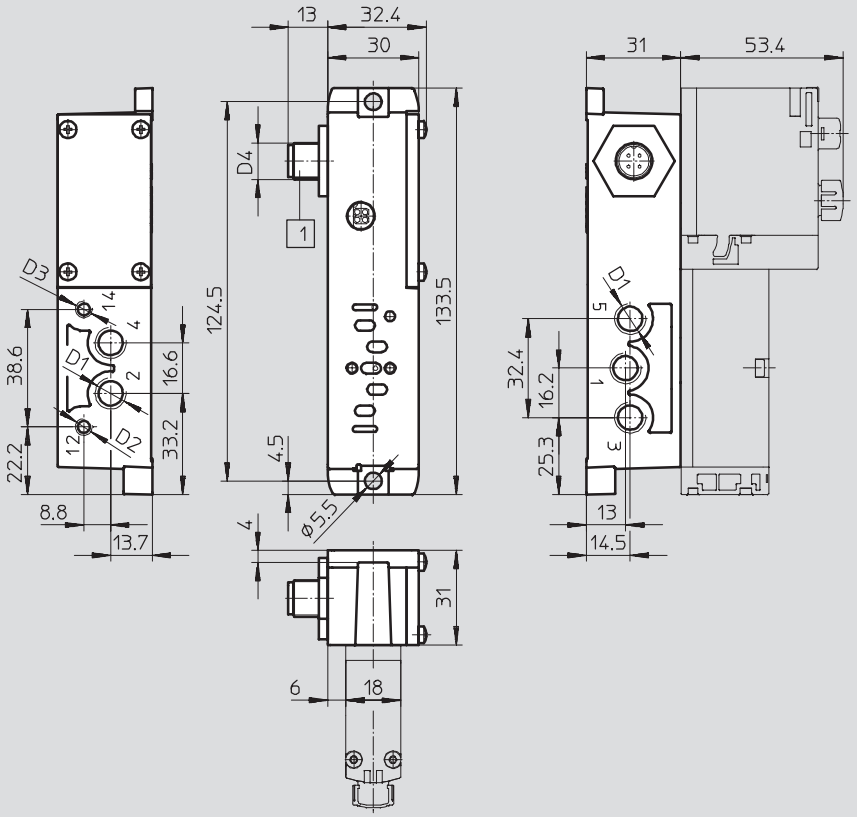
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

FESTO

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base with M12 plug, width: 18 mm



1 Plug to EN 61076-2-101

Type	D1	D2	D3	D4
External pilot air supply, M12 plug				
VABS-S4-2S-G18-R3	G1/8	M5	M5	M12
Internal pilot air supply, M12 plug				
VABS-S4-2S-G18-B-R3	G1/8	M5	–	M12

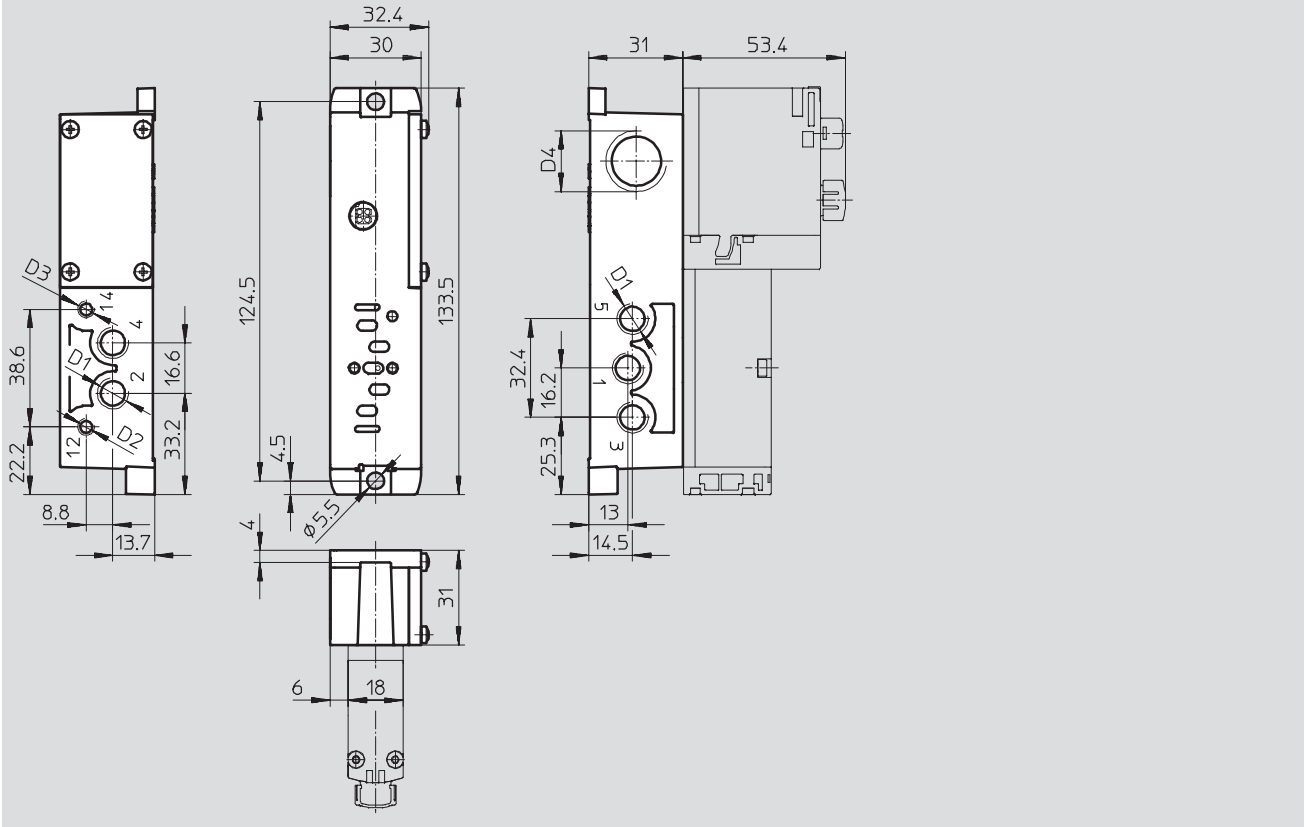
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

FESTO

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base with terminals, width: 18 mm



Type	D1	D2	D3	D4
External pilot air supply, terminals				
VABS-S4-2S-G18-K2	G⅛	M5	M5	M20x1.5
VABS-S4-2S-N18-K2	⅛NPT	10-32 UNF-2B	10-32 UNF-2B	½NPT
Internal pilot air supply, terminals				
VABS-S4-2S-G18-B-K2	G⅛	M5	–	M20x1.5
VABS-S4-2S-N18-B-K2	⅛NPT	10-32 UNF-2B	–	½NPT

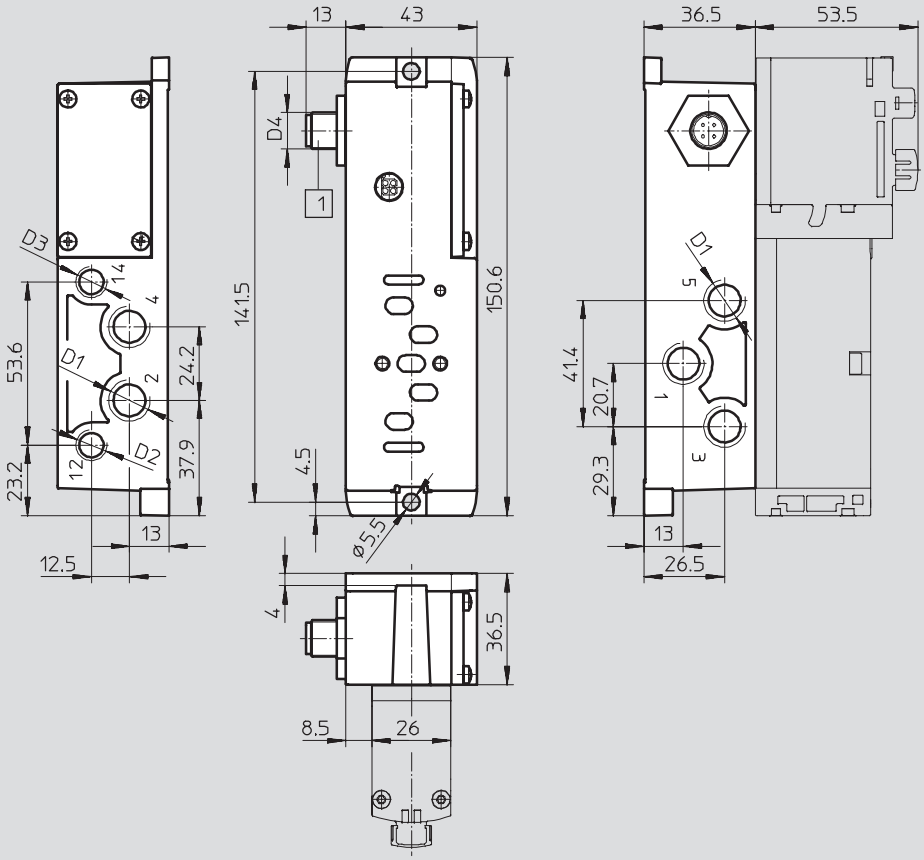
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

FESTO

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base with M12 plug, width: 26 mm



1 Plug to EN 61076-2-101

Type	D1	D2	D3	D4
External pilot air supply, M12 plug				
VABS-S4-1S-G14-R3	G¼	G⅛	G⅛	M12
Internal pilot air supply, M12 plug				
VABS-S4-1S-G14-B-R3	G¼	G⅛	–	M12

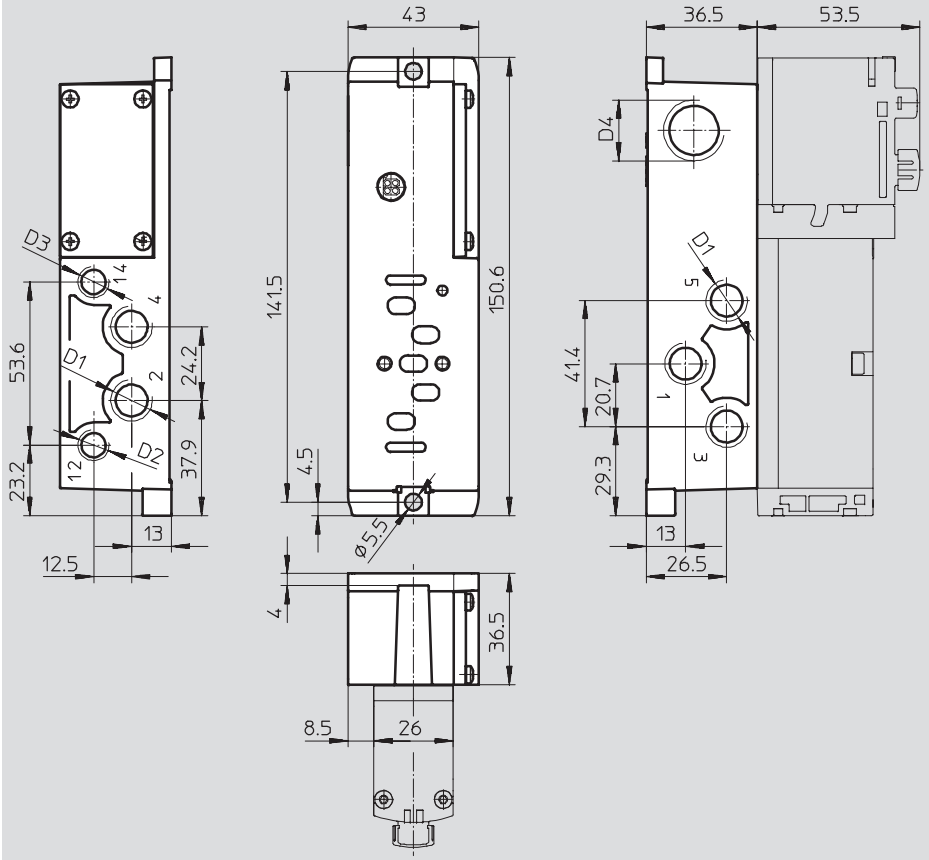
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

FESTO

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base with terminals, width: 26 mm



Type	D1	D2	D3	D4
External pilot air supply, terminals				
VABS-S4-1S-G14-K2	G¼	G⅛	G⅛	M20x1.5
VABS-S4-1S-N14-K2	¼NPT	⅛NPT	⅛NPT	½NPT
Internal pilot air supply, terminals				
VABS-S4-1S-G14-B-K2	G¼	G⅛	–	M20x1.5
VABS-S4-1S-N14-B-K2	¼NPT	⅛NPT	–	½NPT

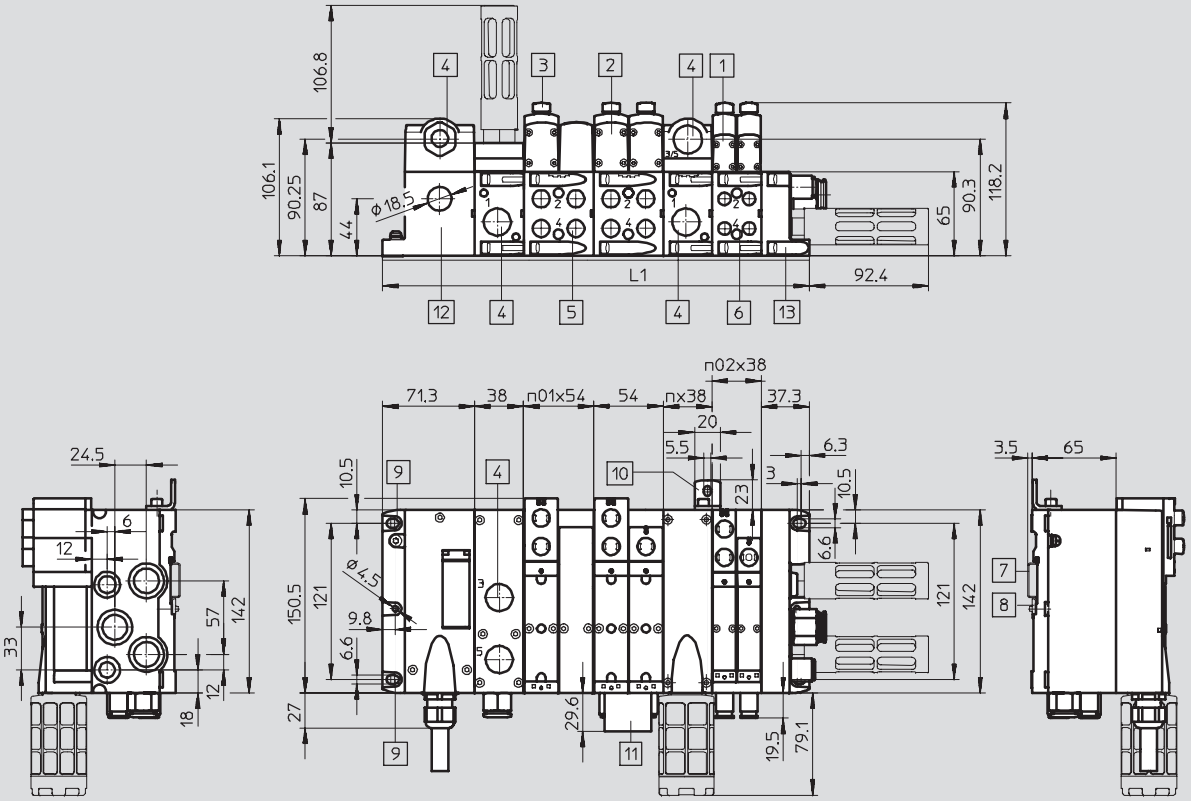
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

FESTO

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Valve terminal with multi-pin plug connection

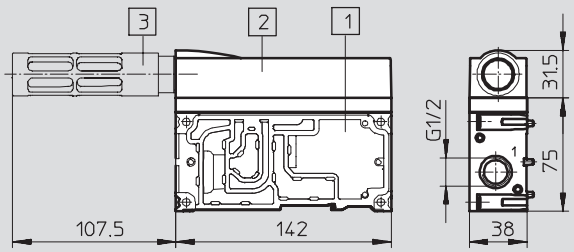


1 Solenoid valve 18 mm
2 Solenoid valve 26 mm
3 Cover cap/manual override
4 Threaded connection G1/2 or 1/2NPT
5 Threaded connection G1/4 or 1/4NPT
6 Threaded connection G1/8 or 1/8NPT
7 H-rail
8 H-rail mounting
9 Mounting hole
10 Additional mounting bracket
11 Inscription label holder
12 Multi-pin plug connection
13 End plate

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

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

Supply plate with silencer



1 Supply plate
2 Exhaust port cover
3 Silencer U-1/2-B or U-1/2-B-NPT

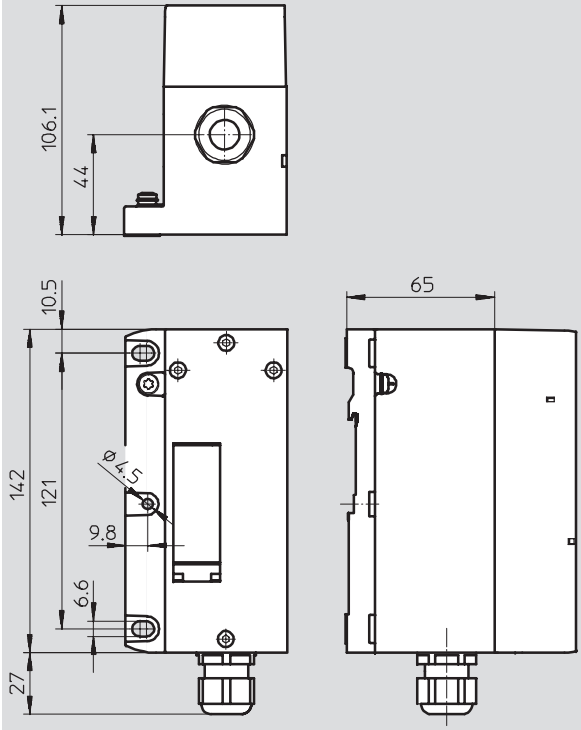
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

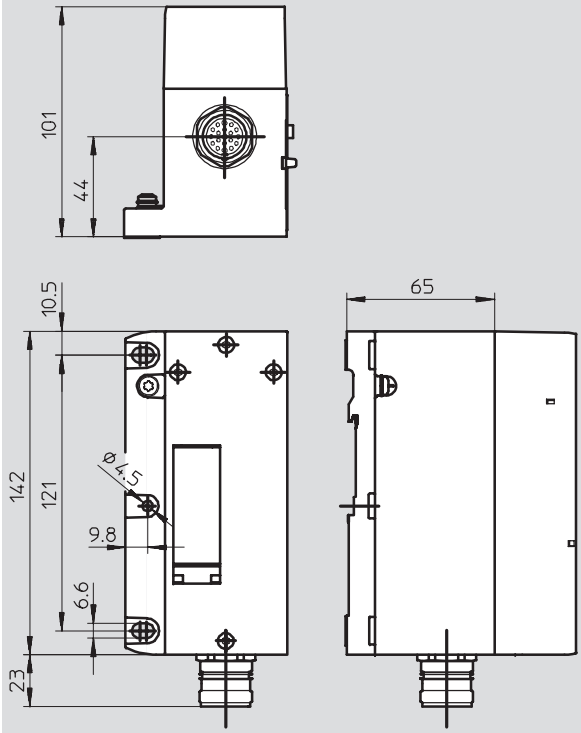
FESTO

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Multi-pin plug, terminal strip (CageClamp)



Multi-pin, round plug connector



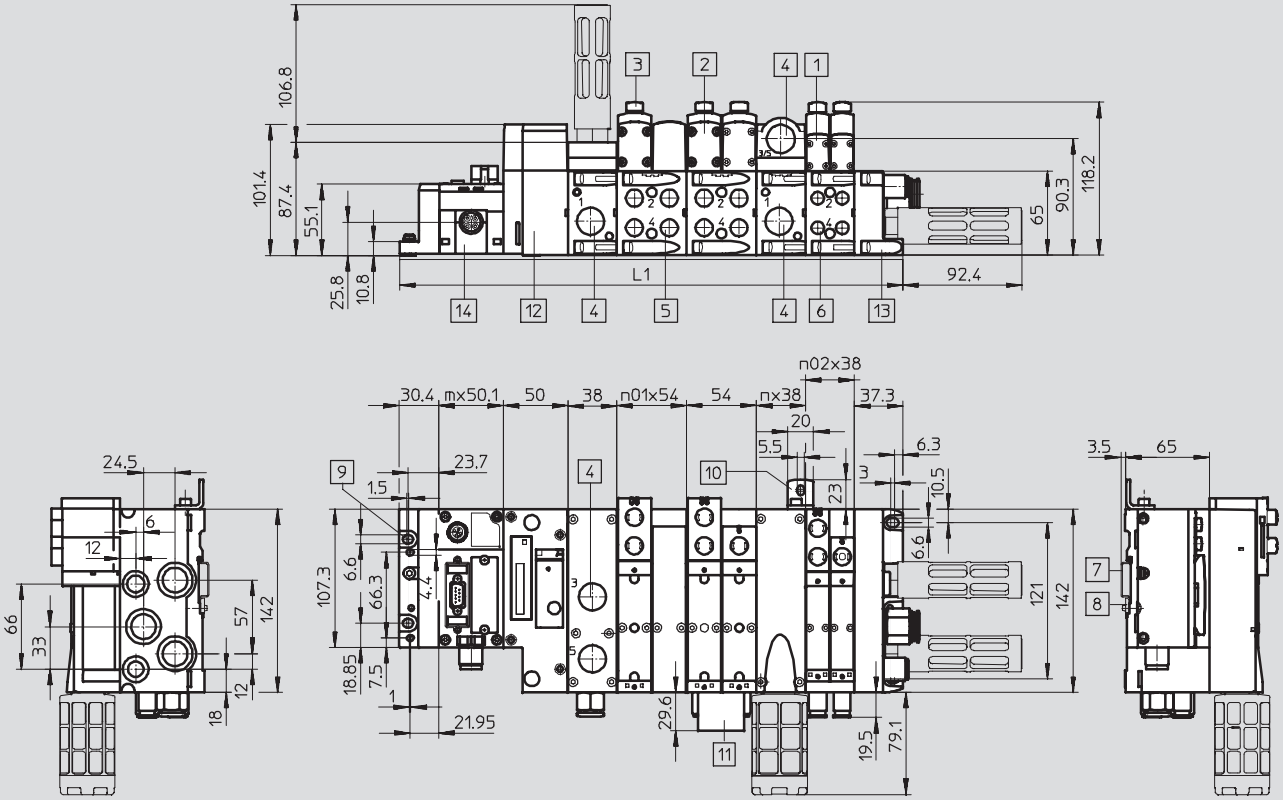
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

FESTO

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Valve terminal with fieldbus connection

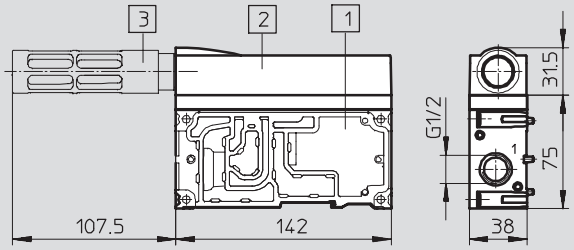


1 Solenoid valve 18 mm
2 Solenoid valve 26 mm
3 Cover cap/manual override
4 Threaded connection G1/2 or 1/2NPT
5 Threaded connection G1/4 or 1/4NPT
6 Threaded connection G1/8 or 1/8NPT
7 H-rail
8 H-rail mounting
9 Mounting hole
10 Additional mounting bracket
11 Inscription label holder
12 Pneumatic interface CPX
13 End plate
14 CPX module/fieldbus node

n02 Number of 18 mm manifold sub-bases
n01 Number of 26 mm manifold sub-bases
n Number of supply plates (only with end plate with coding cap)
m Number of CPX modules

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

Supply plate with silencer



1 Supply plate
2 Exhaust port cover
3 Silencer U-1/2-B or U-1/2-B-NPT

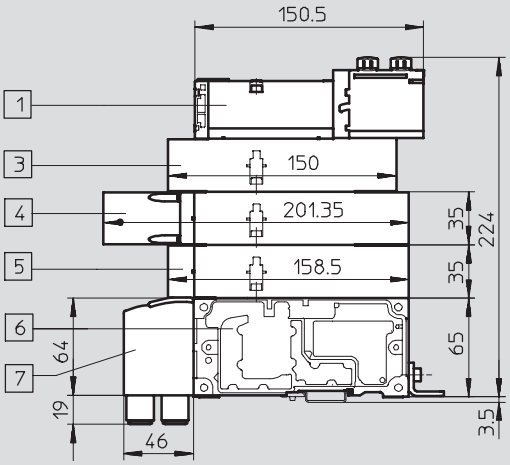
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

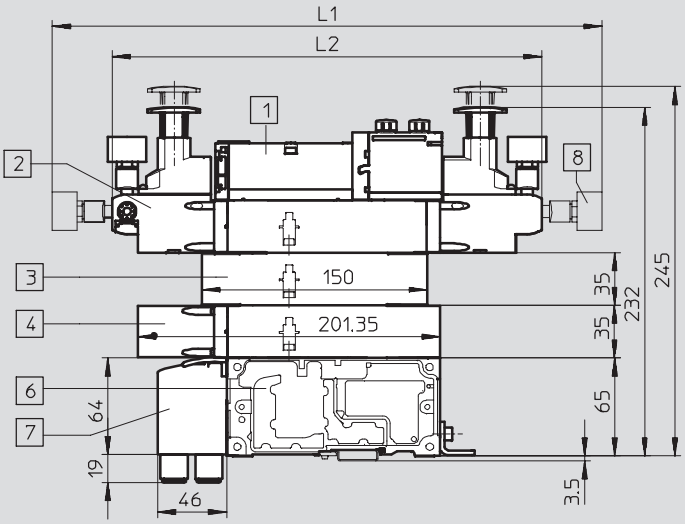
FESTO

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Vertical stacking components



1 Solenoid valve
3 Throttle plate
4 Vertical isolating plate
5 Vertical supply plate
6 Manifold sub-base
7 90° connection plate



1 Solenoid valve
2 Pressure regulator plate
3 Throttle plate
4 Vertical isolating plate
6 Manifold sub-base
7 90° connection plate
8 Pressure gauge, freely positionable

Width	L1	L2
18 mm	348.2	268.6
26 mm	365.7	286.1

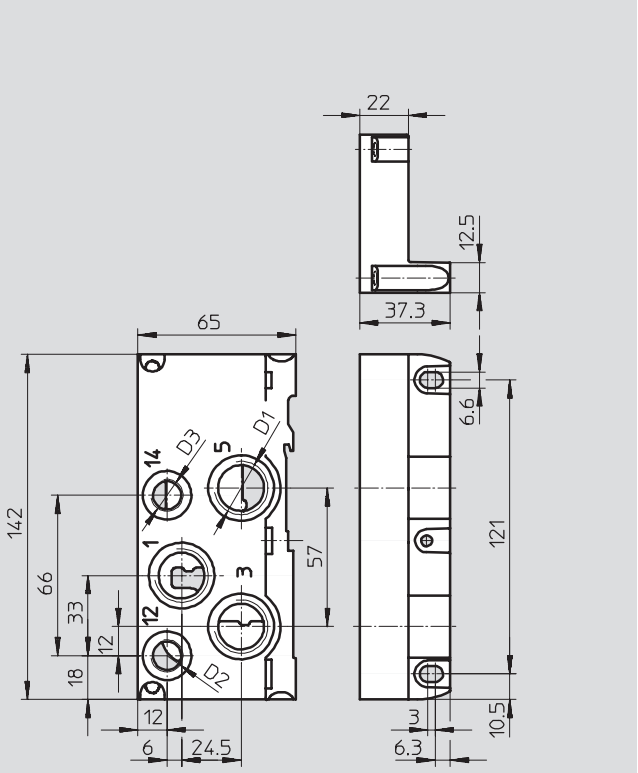
Valve terminal type 44 VTSA, type 45 VTSA-F optimised flow

Technical data

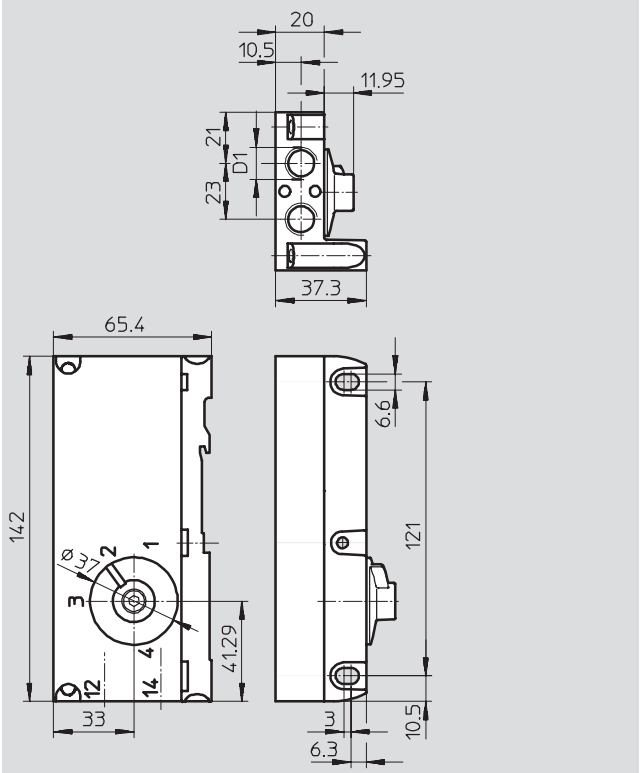
FESTO

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Right-hand end plate



Right-hand end plate with coding cap



Typ	D1	D2	D3
VABE-S6-1R-G12	G½	G¼	G¼
VABE-S6-1RZ-G12			
VABE-S6-1R-N12	½NPT	¼NPT	¼NPT
VABE-S6-1RZ-N12			

Typ	D1
VABE-S6-1RZ-G-B1	G¼
VABE-S6-1RZ-N-B1	¼NPT

Valve terminals with threaded connection for multi-pin plug – Electrical part

FESTO

Ordering data – Modular products

M Mandatory data				O Options		
Module No.	Valve terminal, electrical part	Electrical connection	Voltage	Connecting cable for multi-pin plug connection	User documentation	H-rail mounting
539 215 547 963	44E 45E	T, MP1, MP4	P, Q	GA, GB, GC, GD, GE, GF, GG, GH ,GI, GK, GL, GM, GN, GO, GP, GQ, GR, GS	D, E, F, I, S, V	H
Order example						
539 215	44E	– MP1	– P	+ GE	– D	–
1	2	3	4	5	6	7

Ordering table

				Conditions	Code		Enter code
M	1	Module No.		**539 215**			
	2	Valve terminal, electrical part		Valve terminal type 44, VTSA, electrical multi-pin plug connection/terminal box		**44E**	
	1	Module No.		**547 963**			
	2	Valve terminal, electrical part		Valve terminal type 45, VTSA-F, electrical multi-pin plug connection/terminal box		**45E**	
	3	Electrical connection		Multi-pin plug, CageClamp	1	**-T**	
				Electrical multi-pin plug connection, Sub-D (37-pin)	1	**-MP1**	
				Electrical multi-pin plug connection, round plug connector (19-pin), M23	2	**-MP4**	
	4	Voltage		24 V DC		**-P**	
				110 V AC	3	**-Q**	
O	5	**Electrical accessories**				**+**	+
		Connecting cable for multi-pin plug connection, pre-assembled, supplied loose	Polyurethane	Connecting cable for Sub-D, 2.5 m, 10-wire, 8 solenoid coils	4	**GA**	
				Connecting cable for Sub-D, 5 m, 10-wire, 8 solenoid coils	4	**GB**	
				Connecting cable for Sub-D, 10 m, 10-wire, 8 solenoid coils	4	**GC**	
				Connecting cable for Sub-D, 2.5 m, 26-wire, 22 solenoid coils	4	**GD**	
				Connecting cable for Sub-D, 5 m, 26-wire, 22 solenoid coils	4	**GE**	
				Connecting cable for Sub-D, 10 m, 26-wire, 22 solenoid coils	4	**GF**	
				Connecting cable for Sub-D, 2.5 m, 37-wire, 32 solenoid coils	4	**GG**	
				Connecting cable for Sub-D, 5 m, 37-wire, 32 solenoid coils	4	**GH**	
				Connecting cable for Sub-D, 10 m, 37-wire, 32 solenoid coils	4	**GI**	
			Polyvinyl chloride	Connecting cable for Sub-D, 2.5 m, 10-wire, 8 solenoid coils	4	**GK**	
				Connecting cable for Sub-D, 5 m, 10-wire, 8 solenoid coils	4	**GL**	
				Connecting cable for Sub-D, 10 m, 10-wire, 8 solenoid coils	4	**GM**	
				Connecting cable for Sub-D, 2.5 m, 27-wire, 22 solenoid coils	4	**GN**	
				Connecting cable for Sub-D, 5 m, 27-wire, 22 solenoid coils	4	**GO**	
				Connecting cable for Sub-D, 10 m, 27-wire, 22 solenoid coils	4	**GP**	
				Connecting cable for Sub-D, 2.5 m, 37-wire, 32 solenoid coils	4	**GQ**	
				Connecting cable for Sub-D, 5 m, 37-wire, 32 solenoid coils	4	**GR**	
				Connecting cable for Sub-D, 10 m, 37-wire, 32 solenoid coils	4	**GS**	
	6	User documentation		German		**-D**	
				English		**-E**	
				French		**-F**	
				Italian		**-I**	
				Spanish		**-S**	
				Swedish		**-V**	
	7	H-rail mounting		1		**-H**	

1 **T, MP1** Max. 32 addresses can be actuated
2 **MP4** Max. 16 addresses can be actuated
3 **Q** Only with electrical connection (3) T (multi-pin plug, CageClamp)
4 **G...** Not with electrical connection (3) T (multi-pin plug, CageClamp) and MP4 (electrical multi-pin plug connection, round plug connector)

Valve terminals with threaded connection for multi-pin plug – Pneumatic part

FESTO

Ordering data – Modular products

M Mandatory data				O Options →					
Module No.	Valve terminal, pneumatic part	Manual override type	Right-hand end plate	Port configuration for supply plates	Pneumatic supply to valve terminal	Configuration of all pneumatic connections	Outgoing direction of all working lines	Left-hand supply plate	Reverse operation
539 215 547 963	44P 45P	N, R, V	V, X, Y, U, Z, W	K, L	S, V	M, N, G	P	X	Z
Order example									
539 215	44P	– R	– V	– K	S	M	P	X	
1	2	3	4	5	6	7	8	9	10

Ordering table

Width			18 mm	26 mm	Condi-tions	Code		Enter code
M	1	Module No.	**539 215**	**539 215**				
	2	Valve terminal, pneumatic part	Valve terminal type 44, VTSA, modular sub-base valves to ISO 15407-2, pneumatic threaded connections			**44P**		
	1	Module No.	**547 963**	**547 963**				
	2	Valve terminal, pneumatic part	Valve terminal type 45, VTSA-F, modular sub-base valves, optimised flow rate, pneumatic threaded connections			**45P**		
	3	Manual override type	Pushing (non-detenting)			**-N**		
			Pushing/detenting			**-R**		
			Covered			**-V**		
	4	Right-hand end plate	Right-hand end plate, with supply air/exhaust air, internal pilot air supply			**-V**		
			Right-hand end plate with supply air/exhaust air, external pilot air supply			**-X**		
			End plate with pilot air selector, internal pilot air supply		1	**-Y**		
			End plate with pilot air selector, internal pilot air supply, ducted pilot exhaust air		1	**-U**		
			End plate with pilot air selector, external pilot air supply		1	**-Z**		
			End plate with pilot air selector, external pilot air supply, ducted pilot exhaust air		1	**-W**		
O	5	Port configuration for supply plates	Normal operation: Supply port 1, exhaust port 3/5 separated		2	**-K**		
			Reverse operation: Exhaust port 1, supply port 3/5 separated					
			Normal operation: Supply port 1, exhaust port 3/5 common		2	**-L**		
			Reverse operation: Exhaust port 1, supply port 3/5 common					
	6	Pneumatic valve terminal supply (standard: threaded connection)	Silencer and QS push-in fittings			**S**		
			QS push-in fittings			**V**		
	7	Configuration of all pneumatic connections	QS push-in fittings, large		3	**M**		
			QS push-in fittings, small		3	**N**		
			QS push-in fittings, large and small mixed		3	**G**		
	8	Outgoing direction of all working lines (standard outlet at front)	90° connection plate, outlet at bottom			**P**		
	9	Left-hand supply plate	Left-hand supply plate in front of manifold sub-base 00			**X**		
↓	10	Reverse operation	Reverse operation as of valve position 00		4	**Z**		

1 **Y, U, Z, W** At least one left-hand supply plate (9) X or one compressed air supply/duct separation (12) U, SU, TU, RU, USU, UTU or URU must be selected

2 **K, L** Must be selected if left-hand supply plate (9) X or one compressed air supply/duct separation (12) (S, T, R, U, SU, US, TU, UT, RU, UR, USU, UTU, URU) was selected

3 **M, N, G** Must be selected if pneumatic valve terminal supply (6) S or V was selected
Sizes of pneumatic connections → Table on page 4 / 1.3-66

4 **Z** A reversible pressure zone cannot be terminated with a right-hand end plate (4) V, Y, U (internal pilot air supply)

Valve terminals with threaded connection for multi-pin plug – Pneumatic part

FESTO

Ordering data – Modular products

→ 0 **Options** →

Pneumatic manifold sub-bases 00 ... 15

11 Type of interlinking block: A, B, E, F, AK, BK, EK, FK

12 Compressed air supply/duct separation: S, T, R, U, SU, US, TU, UT, RU, UR, USU, UTU, URU

13 Reverse operation: Z

Module position

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
–	**A**	**B**	**B**	**B**	**S**	**B**										

11 + 12 + 13

Ordering table

Width			18 mm	26 mm	Conditions	Code		Enter code
↓	**11**	Pneumatic manifold sub-bases			5	-		-
0		Type of interlinking block 00 ... 15 — Manifold sub-base	2 valve positions, 4 addresses	–		**A**		Enter the equipment selected in the order code
			–	2 valve positions, 4 addresses		**B**		
			2 valve positions, 2 addresses	–	6	**E**		
			–	2 valve positions, 2 addresses	6	**F**		
		Manifold sub-base with QS push-in fittings, small	2 valve positions, 4 addresses	–	7	**AK**		
			–	2 valve positions, 4 addresses	7	**BK**		
			2 valve positions, 2 addresses	–	8	**EK**		
			–	2 valve positions, 2 addresses	8	**FK**		
	12	Compressed air supply/duct separation 00... 15	Duct separation 1, 3, 5		9 10	**S**		
			Duct separation 1		9 10	**T**		
			Duct separation 3, 5		9 10	**R**		
			Supply plate			**U**		
			Supply plate with duct separation 1, 3, 5 at left		9	**SU**		
			Supply plate with duct separation 1, 3, 5 at right		9	**US**		
			Supply plate with duct separation 1 at left		9	**TU**		
			Supply plate with duct separation 1 at right		9	**UT**		
			Supply plate with duct separation 3, 5 at left		9	**RU**		
			Supply plate with duct separation 3, 5 at right		9	**UR**		
			2 supply plates with duct separation 1, 3, 5 in centre			**USU**		
			2 supply plates with duct separation 1 in centre			**UTU**		
			2 supply plates with duct separation 3, 5 in centre			**URU**		
↓	**13**	Reverse operation 00 ... 15	Subsequent valve positions permitted for reverse operation		11	**Z**		

5 Manifold sub-bases must be equipped throughout without any gaps

6 **E, F** Only with valves (14) M, O and L

7 **AK, BK** Only with configuration of all pneumatic connections (7) N or G

8 **EK, FK** Only with configuration of all pneumatic connections (7) N or G
Only with valves (14) M, O and L

9 **S, T, R, SU, US, TU, UT, RU, UR**
No pressure-free zones may be created

10 **S, T, R** Cannot be selected on last manifold sub-base

11 **Z** Only with compressed air supply/duct separation (12) S, SU, US or USU.
A reversible pressure zone cannot be terminated with a right-hand end plate (4) V, Y, U

Valve terminals with threaded connection for multi-pin plug – Pneumatic part

FESTO

Ordering data – Modular products

→ 0 **Options** →

Pneumatic valve positions 00 ... 31

14 Valve position 00 ... 31: M, O, J, D, N, K, H, B, G, E, P, Q, R, L

15 Pressure regulator for position 00 ... 31: ZA, ZB, ZC, ZD, ZE, ZK, ZL, ZF, ZG, ZH, ZI, ZJ, ZM, ZN

16 Pressure indicator for position 00 ... 31: T, U

17 Flow control valve position 00 ... 31: X

18 Vertical pressure isolating plate position 00 ... 31: ZT

19 Vertical supply plate for position 00 ... 31: ZU

Valve position	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	...	30	31
–	M	M	M	O	O	O	J	J	E	E												...		

14 + 15 + 16 + 17 + 18 + 19

Ordering table

		Width		18 mm	26 mm	Conditions	Code		Enter code
↓	**14**	Pneumatic valve positions 00 ... 31					**-**		-
0		Valve position 00 ... 31		5/2-way valve, single solenoid with pneumatic spring return			**M**		Enter equipment selection for valve positions in order code
				5/2-way valve, single solenoid with spring return			**O**		
				5/2-way valve, double solenoid			**J**		
				5/2-way valve, double solenoid with dominant signal			**D**		
				2x 3/2-way valve, normally open		12	**N**		
				2x 3/2-way valve, normally closed		12	**K**		
				2x 3/2-way valve, 1x normally closed, 1x normally open		12	**H**		
				5/3-way valve, mid-position pressurised			**B**		
				5/3-way valve, mid-position closed			**G**		
				5/3-way valve, mid-position exhausted			**E**		
				2x 3/2-way valve, normally open, reverse operation		13	**P**		
				2x 3/2-way valve, normally closed, reverse operation		13	**Q**		
				2x 3/2-way valve, 1x normally closed, 1x normally open, reverse operation		13	**R**		
				Vacant position			**L**		
	15	Pressure regulator for valve position 00 ... 31	Input pressure 10 bar	Pressure regulator plate for port 1		14	**ZA**		
				Pressure regulator plate for port 4			**ZB**		
				Pressure regulator plate for port 2			**ZC**		
				Pressure regulator plate for port 4/2			**ZD**		
				Pressure regulator plate for port 4/2, reversible		15	**ZE**		
				Pressure regulator plate for port 4, reversible		15	**ZK**		
				Pressure regulator plate for port 2, reversible		15	**ZL**		
			Input pressure 6 bar	Pressure regulator plate for port 1		14	**ZF**		
				Pressure regulator plate for port 4			**ZG**		
				Pressure regulator plate for port 2			**ZH**		
				Pressure regulator plate for port 4/2			**ZI**		
				Pressure regulator plate for port 4/2, reversible		15	**ZJ**		
				Pressure regulator plate for port 4, reversible		15	**ZM**		
↓				Pressure regulator plate for port 2, reversible		15	**ZN**		

12 **N, K, H** Not permitted in zones with reverse operation.
Not with pressure regulator (15) ZE, ZJ (reversible pressure regulator plate)

13 **P, Q, R** Only permissible in zones with reverse operation or with pressure regulator (15) ZE, ZJ (reversible pressure regulator plate). Pilot pressure required on duct 12 (ducted exhaust air not possible).
Not with right-hand end plate (4) Y, Z

14 **ZA, ZF** Not permitted in zones with reverse operation

15 **ZE, ZK, ZL, ZJ, ZM, ZN**
Not permitted in zones with reverse operation.
Not with 2x 3/2-way valves (14) N, K, H

Valve terminals with threaded connection for multi-pin plug – Pneumatic part

FESTO

Ordering data – Modular products

➔ 0 **Options**

	Pneumatic accessories
	U, ...B, ...T, ...N, ...V
+	**10N**
	20

Ordering table

Width			18 mm	26 mm	Condi-tions	Code		Enter code
↓ 0	**16**	Pressure indicator for valve position 00 ... 31	Pressure gauge, 10 bar		16	**T**		Enter equipment **selection** for valve positions in **order code**
			Pressure gauge, 6 bar		17	**U**		
	17	Flow control valve for valve position 00 ... 31	Throttle plate		18	**X**		
	18	Vertical isolating plate for valve position 00 ... 31	Pressure separator plate on valve assembly		19	**ZT**		
	19	Vertical supply plate for valve position 00 ... 31	Compressed-air supply on valve		18	**ZU**		
	20	**Pneumatic accessories**				**+**		+
		Mounting bracket (pack of 5)	Supplied separately		20	**U**		
		Inscription label holder for valves	5 ... 50			**...B**		
		Inscription label holder for manifold sub-bases	5 ... 50			**...T**		
		Cover cap for manual override, non-detenting	10 ... 90			**...N**		
		Cover cap for manual override, covered	10 ... 90			**...V**		

16 **T** Only with pressure regulator (15) ZA, ZB, ZC, ZD, ZE
17 **U** Only with pressure regulator (15) ZF, ZG, ZH, ZI, ZJ
18 **X, ZU** Not with valves with reverse operation (14) P, Q, R
19 **ZT** Not with right-hand end plate (4) Y, Z
20 **U** Can only be selected if there are more than 9 valve positions

Valve terminals with threaded connection for CPX – Pneumatic part

Ordering data – Modular products

FESTO

M Mandatory data				O Options →					
Module No.	Valve terminal, pneumatic part	Manual override type	Right-hand end plate	Port configuration for supply plates	Pneumatic supply to valve terminal	Configuration of all pneumatic connections	Outgoing direction of all working lines	Left-hand supply plate	Reverse operation
539 217 547 965	44P 45P	N, R, V	V, X, Y, U, Z, W	K, L	S, V	M, N, G	P	X	Z
Order example									
539 217	44P	– R	– V	– K	S	M	P	X	
1	2	3	4	5	6	7	8	9	10

Ordering table

		Width	18 mm	26 mm	Condi-tions	Code		Enter code
M	1	Module No.	**539 217**	**539 217**				
	2	Valve terminal, pneumatic part	Valve terminal type 44, VTSA, modular sub-base valves to ISO 15407-2, pneumatic threaded connections			**44P**		
	1	Module No.	**547 965**	**547 965**				
	2	Valve terminal, pneumatic part	Valve terminal type 45, VTSA-F, modular sub-base valves, optimised flow rate, pneumatic threaded connections			**45P**		
	3	Manual override type	Pushing (non-detenting)			**-N**		
			Pushing/detenting			**-R**		
			Covered			**-V**		
	4	Right-hand end plate	Right-hand end plate, with supply air/exhaust air, internal pilot air supply			**-V**		
			Right-hand end plate with supply air/exhaust air, external pilot air supply			**-X**		
			End plate with pilot air selector, internal pilot air supply		1	**-Y**		
			End plate with pilot air selector, internal pilot air supply, ducted pilot exhaust air		1	**-U**		
			End plate with pilot air selector, external pilot air supply		1	**-Z**		
			End plate with pilot air selector, external pilot air supply, ducted pilot exhaust air		1	**-W**		
O	5	Port configuration for supply plates	Normal operation: Supply port 1, exhaust port 3/5 separated		2	**-K**		
			Reverse operation: Exhaust port 1, supply port 3/5 separated					
			Normal operation: Supply port 1, exhaust port 3/5 common		2	**-L**		
			Reverse operation: Exhaust port 1, supply port 3/5 common					
	6	Pneumatic valve terminal supply (standard: threaded connection)	Silencer and QS push-in fittings			**S**		
			QS push-in fittings			**V**		
	7	Configuration of all pneumatic connections	QS push-in fittings, large		3	**M**		
			QS push-in fittings, small		3	**N**		
			QS push-in fittings, large and small mixed		3	**G**		
	8	Outgoing direction of all working lines (standard outlet at front)	90° connection plate, outlet at bottom			**P**		
	9	Left-hand supply plate	Left-hand supply plate in front of manifold sub-base 00			**X**		
↓	10	Reverse operation	Reverse operation as of valve position 00		4	**Z**		

1 **Y, U, Z, W** At least one left-hand supply plate (9) X or one compressed air supply/duct separation (12) U, SU, TU, RU, USU, UTU or URU must be selected

2 **K, L** Must be selected if left-hand supply plate (9) X or one compressed air supply/duct separation (12) (S, T, R, U, SU, US, TU, UT, RU, UR, USU, UTU, URU) was selected

3 **M, N, G** Must be selected if pneumatic valve terminal supply (6) S or V was selected
Sizes of pneumatic connections → Table on page 4 / 1.3-66

4 **Z** A reversible pressure zone cannot be terminated with a right-hand end plate (4) V, Y, U (internal pilot air supply)

Valve terminals with threaded connection for CPX – Pneumatic part

Ordering data – Modular products

FESTO

→ 0 **Options** →

Pneumatic manifold sub-bases 00 ... 15

11 Type of interlinking block: A, B, E, F, AK, BK, EK, FK

12 Compressed air supply/duct separation: S, T, R, U, SU, US, TU, UT, RU, UR, USU, UTU, URU

13 Reverse operation: Z

Module position

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
–	**A**	**B**	**B**	**B**	**S**	**B**										

11 + 12 + 13

Ordering table

Width			18 mm	26 mm	Conditions	Code		Enter code
↓	**11**	Pneumatic manifold sub-bases			5	-		-
0		Type of interlinking block 00 ... 15	Manifold sub-base	2 valve positions, 4 addresses	–		**A**		Enter the equipment selected in the order code
				–	2 valve positions, 4 addresses		**B**	
				2 valve positions, 2 addresses	–	6	**E**	
				–	2 valve positions, 2 addresses	6	**F**	
			Manifold sub-base with QS push-in fittings, small	2 valve positions, 4 addresses	–	7	**AK**	
				–	2 valve positions, 4 addresses	7	**BK**	
				2 valve positions, 2 addresses	–	8	**EK**	
				–	2 valve positions, 2 addresses	8	**FK**	
	12	Compressed air supply/duct separation 00... 15	Duct separation 1, 3, 5		9 10	**S**		
			Duct separation 1		9 10	**T**		
			Duct separation 3, 5		9 10	**R**		
			Supply plate			**U**		
			Supply plate with duct separation 1, 3, 5 at left		9	**SU**		
			Supply plate with duct separation 1, 3, 5 at right		9	**US**		
			Supply plate with duct separation 1 at left		9	**TU**		
			Supply plate with duct separation 1 at right		9	**UT**		
			Supply plate with duct separation 3, 5 at left		9	**RU**		
			Supply plate with duct separation 3, 5 at right		9	**UR**		
			2 supply plates with duct separation 1, 3, 5 in centre			**USU**		
			2 supply plates with duct separation 1 in centre			**UTU**		
			2 supply plates with duct separation 3, 5 in centre			**URU**		
↓	**13**	Reverse operation 00 ... 15	Subsequent valve positions permitted for reverse operation		11	**Z**		

5 Manifold sub-bases must be equipped throughout without any gaps

6 **E, F** Only with valves (14) M, O and L

7 **AK, BK** Only with configuration of all pneumatic connections (7) N or G

8 **EK, FK** Only with configuration of all pneumatic connections (7) N or G
Only with valves (14) M, O and L

9 **S, T, R, SU, US, TU, UT, RU, UR**
No pressure-free zones may be created

10 **S, T, R** Cannot be selected on last manifold sub-base

11 **Z** Only with compressed air supply/duct separation (12) S, SU, US or USU.
A reversible pressure zone cannot be terminated with a right-hand end plate (4) V, Y, U

Valve terminals with threaded connection for CPX – Pneumatic part

Ordering data – Modular products

FESTO

→ 0 Options →

Pneumatic valve positions 00 ... 31

14 Valve position 00 ... 31: M, O, J, D, N, K, H, B, G, E, P, Q, R, L
15 Pressure regulator for position 00 ... 31: ZA, ZB, ZC, ZD, ZE, ZK, ZL, ZF, ZG, ZH, ZI, ZJ, ZM, ZN
16 Pressure indicator for position 00 ... 31: T, U
17 Flow control valve position 00 ... 31: X
18 Vertical isolating plate for position 00 ... 31: ZT
19 Vertical supply plate for position 00 ... 31: ZU

Valve position	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	...	30	31
–	M	M	M	O	O	O	J	J	E	E												...		

14 + 15 + 16 + 17 + 18 + 19

Ordering table

		Width		18 mm	26 mm	Conditions	Code		Enter code
↓	14	Pneumatic valve positions 00 ... 31					-		-
0		Valve position 00 ... 31		5/2-way valve, single solenoid with pneumatic spring return			M		Enter equipment selection for valve positions in order code
				5/2-way valve, single solenoid with spring return			O		
				5/2-way valve, double solenoid			J		
				5/2-way valve, double solenoid with dominant signal			D		
				2x 3/2-way valve, normally open		12	N		
				2x 3/2-way valve, normally closed		12	K		
				2x 3/2-way valve, 1x normally closed, 1x normally open		12	H		
				5/3-way valve, mid-position pressurised			B		
				5/3-way valve, mid-position closed			G		
				5/3-way valve, mid-position exhausted			E		
				2x 3/2-way valve, normally open, reverse operation		13	P		
				2x 3/2-way valve, normally closed, reverse operation		13	Q		
				2x 3/2-way valve, 1x normally closed, 1x normally open, reverse operation		13	R		
				Vacant position			L		
	15	Pressure regulator for valve position 00 ... 31	Input pressure 10 bar	Pressure regulator plate for port 1		14	ZA		
				Pressure regulator plate for port 4			ZB		
				Pressure regulator plate for port 2			ZC		
				Pressure regulator plate for port 4/2			ZD		
				Pressure regulator plate for port 4/2, reversible		15	ZE		
				Pressure regulator plate for port 4, reversible		15	ZK		
				Pressure regulator plate for port 2, reversible		15	ZL		
			Input pressure 6 bar	Pressure regulator plate for port 1		14	ZF		
				Pressure regulator plate for port 4			ZG		
				Pressure regulator plate for port 2			ZH		
				Pressure regulator plate for port 4/2			ZI		
				Pressure regulator plate for port 4/2, reversible		15	ZJ		
				Pressure regulator plate for port 4, reversible		15	ZM		
↓				Pressure regulator plate for port 2, reversible		15	ZN		

12 **N, K, H** Not permitted in zones with reverse operation.
Not with pressure regulator (15) ZE, ZJ (reversible pressure regulator plate)

13 **P, Q, R** Only permissible in zones with reverse operation or with pressure regulator (15) ZE, ZJ (reversible pressure regulator plate). Pilot pressure required on duct 12 (ducted exhaust air not possible).
Not with right-hand end plate (4) Y, Z

14 **ZA, ZF** Not permitted in zones with reverse operation

15 **ZE, ZK, ZL, ZJ, ZM, ZN**
Not permitted in zones with reverse operation.
Not with 2x 3/2-way valves (14) N, K, H

Valve terminals with threaded connection for CPX – Pneumatic part

Ordering data – Modular products

FESTO

➔ 0 **Options**

	Pneumatic accessories
	U, ...B, ...T, ...N, ...V
+	**10N**
	20

Ordering table

		Width	18 mm	26 mm	Condi-tions	Code		Enter code
↓ 0	**16**	Pressure indicator for valve position 00 ... 31	Pressure gauge, 10 bar		16	**T**		Enter equipment **selection** for valve positions in **order code**
			Pressure gauge, 6 bar		17	**U**		
	17	Flow control valve for valve position 00 ... 31	Throttle plate		18	**X**		
	18	Vertical isolating plate for valve position 00 ... 31	Pressure separator plate on valve assembly		19	**ZT**		
	19	Vertical supply plate for valve position 00 ... 31	Compressed-air supply on valve		18	**ZU**		
	20	**Pneumatic accessories**				**+**		+
		Mounting bracket (pack of 5)	Supplied separately		20	**U**		
		Inscription label holder for valves	5 ... 50			**...B**		
		Inscription label holder for manifold sub-bases	5 ... 50			**...T**		
		Cover cap for manual override, non-detenting	10 ... 90			**...N**		
		Cover cap for manual override, covered	10 ... 90			**...V**		

16 **T** Only with pressure regulator (15) ZA, ZB, ZC, ZD, ZE
17 **U** Only with pressure regulator (15) ZF, ZG, ZH, ZI, ZJ
18 **X, ZU** Not with valves with reverse operation (14) P, Q, R
19 **ZT** Not with right-hand end plate (4) Y, Z
20 **U** Can only be selected if there are more than 9 valve positions
Cannot be combined with H-rail

Valve terminals with threaded connection – Pneumatic part

Ordering data – Modular products

FESTO

Sizes of pneumatic connections						
		Code	Duct	Configuration	Width	
					18 mm	26 mm
7		Configuration of all pneumatic connections				
4	Right-hand end plate V, X, Y, U, Z, W	**M**	12, 14	Standard + optimised for flow rate	G¼ (QS-G¼-10)	G¼ (QS-G¼-10)
		G	12, 14	Standard + optimised for flow rate	G¼ (QS-G¼-10)	G¼ (QS-G¼-10)
		N	12, 14	Standard + optimised for flow rate	G¼ (QS-G¼-8)	G¼ (QS-G¼-8)
4	Right-hand end plate V, X, U	**M**	1, 3, 5	Standard + optimised for flow rate	G½ (QS-G½-16)	G½ (QS-G½-16)
		G	1, 3, 5	Standard + optimised for flow rate	G½ (QS-G½-16)	G½ (QS-G½-16)
		N	1, 3, 5	Standard + optimised for flow rate	G½ (QS-G½-12)	G½ (QS-G½-12)
9	Left-hand supply plate X	**M**	1, 3, 5	Standard + optimised for flow rate	G½ (QS-G½-16)	G½ (QS-G½-16)
		G	1, 3, 5	Standard + optimised for flow rate	G½ (QS-G½-16)	G½ (QS-G½-16)
		N	1, 3, 5	Standard + optimised for flow rate	G½ (QS-G½-12)	G½ (QS-G½-12)
11	Type of interlinking block A, B, E, F	**M**	2, 4	Standard + optimised for flow rate	G⅛ (QS-G⅛-8)	G¼ (QS-G¼-10)
11	Type of interlinking block AK, BK, EK, FK	**N**	2, 4	Standard + optimised for flow rate	G⅛ (QS-G⅛-6)	G¼ (QS-G¼-8)

Valve terminals with NPT thread for multi-pin plug – Electrical part

FESTO

Ordering data – Modular products

M Mandatory data				O Options		
Module No.	Valve terminal, electrical part	Electrical connection	Voltage	Connecting cable for multi-pin plug connection	User documentation	H-rail mounting
539 216 547 964	44E 45E	T, MP1, MP4	P, Q	GA, GB, GC, GD, GE, GF, GG, GH ,GI, GK, GL, GM, GN, GO, GP, GQ, GR, GS	D, E, F, I, S, V	H
Order example						
539 216	44E	– MP1	– P	+ GE	– D	–
1	2	3	4	5	6	7

Ordering table

				Conditions	Code		Enter code
M	1	Module No.	**539 216**				
	2	Valve terminal, electrical part	Valve terminal type 44, VTSA, electrical multi-pin plug connection/terminal box		**44E**		
	1	Module No.	**547 964**				
	2	Valve terminal, electrical part	Valve terminal type 45, VTSA-F, electrical multi-pin plug connection/terminal box		**45E**		
	3	Electrical connection	Multi-pin plug, CageClamp	1	**-T**		
			Electrical multi-pin plug connection, Sub-D (37-pin)	1	**-MP1**		
			Electrical multi-pin plug connection, round plug connector (19-pin), M23	2	**-MP4**		
	4	Voltage	24 V DC		**-P**		
			110 V AC	3	**-Q**		
O	5	**Electrical accessories**			**+**		+
		Connecting cable for multi-pin plug connection, pre-assembled, supplied loose, Polyurethane	Connecting cable for Sub-D, 2.5 m, 10-wire, 8 solenoid coils	4	**GA**		
			Connecting cable for Sub-D, 5 m, 10-wire, 8 solenoid coils	4	**GB**		
			Connecting cable for Sub-D, 10 m, 10-wire, 8 solenoid coils	4	**GC**		
			Connecting cable for Sub-D, 2.5 m, 26-wire, 22 solenoid coils	4	**GD**		
			Connecting cable for Sub-D, 5 m, 26-wire, 22 solenoid coils	4	**GE**		
			Connecting cable for Sub-D, 10 m, 26-wire, 22 solenoid coils	4	**GF**		
			Connecting cable for Sub-D, 2.5 m, 37-wire, 32 solenoid coils	4	**GG**		
			Connecting cable for Sub-D, 5 m, 37-wire, 32 solenoid coils	4	**GH**		
			Connecting cable for Sub-D, 10 m, 37-wire, 32 solenoid coils	4	**GI**		
		Polyvinyl chloride	Connecting cable for Sub-D, 2.5 m, 10-wire, 8 solenoid coils	4	**GK**		
			Connecting cable for Sub-D, 5 m, 10-wire, 8 solenoid coils	4	**GL**		
			Connecting cable for Sub-D, 10 m, 10-wire, 8 solenoid coils	4	**GM**		
			Connecting cable for Sub-D, 2.5 m, 27-wire, 22 solenoid coils	4	**GN**		
			Connecting cable for Sub-D, 5 m, 27-wire, 22 solenoid coils	4	**GO**		
			Connecting cable for Sub-D, 10 m, 27-wire, 22 solenoid coils	4	**GP**		
			Connecting cable for Sub-D, 2.5 m, 37-wire, 32 solenoid coils	4	**GQ**		
			Connecting cable for Sub-D, 5 m, 37-wire, 32 solenoid coils	4	**GR**		
			Connecting cable for Sub-D, 10 m, 37-wire, 32 solenoid coils	4	**GS**		
	6	User documentation	German		**-D**		
			English		**-E**		
			French		**-F**		
			Italian		**-I**		
			Spanish		**-S**		
			Swedish		**-V**		
	7	H-rail mounting	1		**-H**		

1 **T, MP1** Max. 32 addresses can be actuated
2 **MP4** Max. 16 addresses can be actuated
3 **Q** Only with electrical connection (3) T (multi-pin plug, CageClamp)
4 **G...** Not with electrical connection (3) T (multi-pin plug, CageClamp) and MP4 (electrical multi-pin plug connection, round plug connector)

Valve terminals with NPT thread for multi-pin plug – Pneumatic part

FESTO

Ordering data – Modular products

M Mandatory data | O Options →

Module No.	Valve terminal, pneumatic part		Manual override type		Right-hand end plate		Port configuration for supply plates	Pneumatic supply to valve terminal	Configuration of all pneumatic connections	Outgoing direction of all working lines	Left-hand supply plate	Reverse operation
539 216 547 964	44PN 45PN		N, R, V		V, X, Y, U, Z, W		K, L	S, V	M, N, G	P	X	Z
Order example												
539 216	44PN	–	R	–	V	–	K	S	M	P	X	
1	2		3		4		5	6	7	8	9	10

Ordering table

		Width	18 mm	26 mm	Conditions	Code		Enter code
M	1	Module No.	**539 216**	**539 216**				
	2	Valve terminal, pneumatic part	Valve terminal type 44, VTSA, modular sub-base valves to ISO 15407-2, pneumatic connections with NPT thread			**44PN**		
	1	Module No.	**547 964**	**547 964**				
	2	Valve terminal, pneumatic part	Valve terminal type 45, VTSA-F, modular sub-base valves, optimised flow rate, pneumatic connections with NPT thread			**45PN**		
	3	Manual override type	Pushing (non-detenting)			**-N**		
			Pushing/detenting			**-R**		
			Covered			**-V**		
	4	Right-hand end plate	Right-hand end plate, with supply air/exhaust air, internal pilot air supply			**-V**		
			Right-hand end plate with supply air/exhaust air, external pilot air supply			**-X**		
			End plate with pilot air selector, internal pilot air supply		1	**-Y**		
			End plate with pilot air selector, internal pilot air supply, ducted pilot exhaust air		1	**-U**		
			End plate with pilot air selector, external pilot air supply		1	**-Z**		
			End plate with pilot air selector, external pilot air supply, ducted pilot exhaust air		1	**-W**		
O	5	Port configuration for supply plates	Normal operation: Supply port 1, exhaust port 3/5 separated		2	**-K**		
			Reverse operation: Exhaust port 1, supply port 3/5 separated					
			Normal operation: Supply port 1, exhaust port 3/5 common		2	**-L**		
			Reverse operation: Exhaust port 1, supply port 3/5 common					
	6	Pneumatic valve terminal supply (standard: threaded connection)	Silencer and QS push-in fittings			**S**		
			QS push-in fittings			**V**		
	7	Configuration of all pneumatic connections	QS push-in fittings, large		3	**M**		
			QS push-in fittings, small		3	**N**		
			QS push-in fittings, large and small mixed		3	**G**		
	8	Outgoing direction of all working lines (standard outlet at front)	90° connection plate, outlet at bottom			**P**		
	9	Left-hand supply plate	Left-hand supply plate in front of manifold sub-base 00			**X**		
↓	10	Reverse operation	Reverse operation as of valve position 00		4	**Z**		

1 **Y, U, Z, W** At least one left-hand supply plate (9) X or one compressed air supply/duct separation (12) U, SU, TU, RU, USU, UTU or URU must be selected

2 **K, L** Must be selected if left-hand supply plate (9) X or one compressed air supply/duct separation (12) (S, T, R, U, SU, US, TU, UT, RU, UR, USU, UTU, URU) was selected

3 **M, N, G** Must be selected if pneumatic valve terminal supply (6) S or V was selected
Sizes of pneumatic connections → Table on page 4 / 1.3-76

4 **Z** A reversible pressure zone cannot be terminated with a right-hand end plate (4) V, Y, U (internal pilot air supply)

Valve terminals with NPT thread for multi-pin plug – Pneumatic part

FESTO

Ordering data – Modular products

→ 0 **Options** →

Pneumatic manifold sub-bases 00 ... 15

11 Type of interlinking block: A, B, E, F, AK, BK, EK, FK

12 Compressed air supply/duct separation: S, T, R, U, SU, US, TU, UT, RU, UR, USU, UTU, URU

13 Reverse operation: Z

Module position

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
–	**A**	**B**	**B**	**B**	**S**	**B**										

11 + 12 + 13

Ordering table

Width			18 mm	26 mm	Conditions	Code		Enter code
↓	**11**	Pneumatic manifold sub-bases			5	-		-
0		Type of interlinking block 00 ... 15 — Manifold sub-base	2 valve positions, 4 addresses	–		**A**		Enter the equipment selected in the order code
			–	2 valve positions, 4 addresses		**B**		
			2 valve positions, 2 addresses	–	6	**E**		
			–	2 valve positions, 2 addresses	6	**F**		
		Manifold sub-base with QS push-in fittings, small	2 valve positions, 4 addresses	–	7	**AK**		
			–	2 valve positions, 4 addresses	7	**BK**		
			2 valve positions, 2 addresses	–	8	**EK**		
			–	2 valve positions, 2 addresses	8	**FK**		
	12	Compressed air supply/duct separation 00... 15	Duct separation 1, 3, 5		9 10	**S**		
			Duct separation 1		9 10	**T**		
			Duct separation 3, 5		9 10	**R**		
			Supply plate			**U**		
			Supply plate with duct separation 1, 3, 5 at left		9	**SU**		
			Supply plate with duct separation 1, 3, 5 at right		9	**US**		
			Supply plate with duct separation 1 at left		9	**TU**		
			Supply plate with duct separation 1 at right		9	**UT**		
			Supply plate with duct separation 3, 5 at left		9	**RU**		
			Supply plate with duct separation 3, 5 at right		9	**UR**		
			2 supply plates with duct separation 1, 3, 5 in centre			**USU**		
			2 supply plates with duct separation 1 in centre			**UTU**		
			2 supply plates with duct separation 3, 5 in centre			**URU**		
↓	**13**	Reverse operation 00 ... 15	Subsequent valve positions permitted for reverse operation		11	**Z**		

5 Manifold sub-bases must be equipped throughout without any gaps

6 **E, F** Only with valves (14) M, O and L

7 **AK, BK** Only with configuration of all pneumatic connections (7) N or G

8 **EK, FK** Only with configuration of all pneumatic connections (7) N or G
Only with valves (14) M, O and L

9 **S, T, R, SU, US, TU, UT, RU, UR**
No pressure-free zones may be created

10 **S, T, R** Cannot be selected on last manifold sub-base

11 **Z** Only with compressed air supply/duct separation (12) S, SU, US or USU.
A reversible pressure zone cannot be terminated with a right-hand end plate (4) V, Y, U

Valve terminals with NPT thread for multi-pin plug – Pneumatic part

FESTO

Ordering data – Modular products

→ 0 **Options** →

Pneumatic valve positions 00 ... 31

14 Valve position 00 ... 31: M, O, J, D, N, K, H, B, G, E, P, Q, R, L
15 Pressure regulator for position 00 ... 31: ZA, ZB, ZC, ZD, ZE, ZK, ZL, ZF, ZG, ZH, ZI, ZJ, ZM, ZN
16 Pressure indicator for position 00 ... 31: T, U
17 Flow control valve position 00 ... 31: X
18 Vertical pressure isolating plate for position 00 ... 31: ZT
19 Vertical supply plate for position 00 ... 31: ZU

Valve position	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	...	30	31
–	M	M	M	O	O	O	J	J	E	E												...		

14 + 15 + 16 + 17 + 18 + 19

Ordering table

		Width		18 mm	26 mm	Conditions	Code		Enter code
↓	**14**	Pneumatic valve positions 00 ... 31					**-**		-
0		Valve position 00 ... 31		5/2-way valve, single solenoid with pneumatic spring return			**M**		Enter equipment selection for valve positions in order code
				5/2-way valve, single solenoid with spring return			**O**		
				5/2-way valve, double solenoid			**J**		
				5/2-way valve, double solenoid with dominant signal			**D**		
				2x 3/2-way valve, normally open		12	**N**		
				2x 3/2-way valve, normally closed		12	**K**		
				2x 3/2-way valve, 1x normally closed, 1x normally open		12	**H**		
				5/3-way valve, mid-position pressurised			**B**		
				5/3-way valve, mid-position closed			**G**		
				5/3-way valve, mid-position exhausted			**E**		
				2x 3/2-way valve, normally open, reverse operation		13	**P**		
				2x 3/2-way valve, normally closed, reverse operation		13	**Q**		
				2x 3/2-way valve, 1x normally closed, 1x normally open, reverse operation		13	**R**		
				Vacant position			**L**		
	15	Pressure regulator for valve position 00 ... 31	Input pressure 10 bar	Pressure regulator plate for port 1		14	**ZA**		
				Pressure regulator plate for port 4			**ZB**		
				Pressure regulator plate for port 2			**ZC**		
				Pressure regulator plate for port 4/2			**ZD**		
				Pressure regulator plate for port 4/2, reversible		15	**ZE**		
				Pressure regulator plate for port 4, reversible		15	**ZK**		
				Pressure regulator plate for port 2, reversible		15	**ZL**		
			Input pressure 6 bar	Pressure regulator plate for port 1		14	**ZF**		
				Pressure regulator plate for port 4			**ZG**		
				Pressure regulator plate for port 2			**ZH**		
				Pressure regulator plate for port 4/2			**ZI**		
				Pressure regulator plate for port 4/2, reversible		15	**ZJ**		
				Pressure regulator plate for port 4, reversible		15	**ZM**		
↓				Pressure regulator plate for port 2, reversible		15	**ZN**		

12 **N, K, H** Not permitted in zones with reverse operation.
Not with pressure regulator (15) ZE, ZJ (reversible pressure regulator plate)

13 **P, Q, R** Only permissible in zones with reverse operation or with pressure regulator (15) ZE, ZJ (reversible pressure regulator plate). Pilot pressure required on duct 12 (ducted exhaust air not possible).
Not with right-hand end plate (4) Y, Z

14 **ZA, ZF** Not permitted in zones with reverse operation

15 **ZE, ZK, ZL, ZJ, ZM, ZN** Not permitted in zones with reverse operation.
Not with 2x 3/2-way valves (14) N, K, H

Valve terminals with NPT thread for multi-pin plug – Pneumatic part

Ordering data – Modular products

FESTO

➔	0	**Options**
		Pneumatic accessories
		U, ...B, ...T, ...N, ...V
+		**10N**
		20

Ordering table

Width		18 mm	26 mm	Condi-tions	Code		Enter code
↓ 0	**16** Pressure indicator for valve position 00 ... 31	Pressure gauge, 10 bar		16	**T**		Enter equipment **selection** for valve positions in **order code**
		Pressure gauge, 6 bar		17	**U**		
	17 Flow control valve for valve position 00 ... 31	Throttle plate		18	**X**		
	18 Vertical pressure isolating plate for valve position 00 ... 31	Pressure separator plate on valve assembly		19	**ZT**		
	19 Vertical supply plate for valve position 00 ... 31	Compressed-air supply on valve		18	**ZU**		
	20 **Pneumatic accessories**				**+**		+
	Mounting bracket (pack of 5)	Supplied separately		20	**U**		
	Inscription label holder for valves	5 ... 50			**...B**		
	Inscription label holder for manifold sub-bases	5 ... 50			**...T**		
	Cover cap for manual override, non-detenting	10 ... 90			**...N**		
	Cover cap for manual override, covered	10 ... 90			**...V**		

16 **T** Only with pressure regulator (15) ZA, ZB, ZC, ZD, ZE
17 **U** Only with pressure regulator (15) ZF, ZG, ZH, ZI, ZJ
18 **X, ZU** Not with valves with reverse operation (14) P, Q, R
19 **ZT** Not with right-hand end plate (4) Y, Z
20 **U** Can only be selected if there are more than 9 valve positions

Valve terminals with NPT thread for CPX – Pneumatic part

Ordering data – Modular products

FESTO

M Mandatory data				O Options →					
Module No.	Valve terminal, pneumatic part	Manual override type	Right-hand end plate	Port configuration for supply plates	Pneumatic supply to valve terminal	Configuration of all pneumatic connections	Outgoing direction of all working lines	Left-hand supply plate	Reverse operation
539 218 547 966	44PN 45PN	N, R, V	V, X, Y, U, Z, W	K, L	S, V	M, N, G	P	X	Z
Order example									
539 218	44PN	– R	– V	– K	S	M	P	X	
1	2	3	4	5	6	7	8	9	10

Ordering table

Width			18 mm	26 mm	Condi-tions	Code		Enter code
M	1	Module No.	**539 218**	**539 218**				
	2	Valve terminal, pneumatic part	Valve terminal type 44, VTSA, modular sub-base valves to ISO 15407-2, pneumatic connections with NPT thread			**44PN**		
	1	Module No.	**547 966**	**547 966**				
	2	Valve terminal, pneumatic part	Valve terminal type 45, VTSA-F, modular sub-base valves, optimised flow rate, pneumatic threaded connections			**45P**		
	3	Manual override type	Pushing (non-detenting)			**-N**		
			Pushing/detenting			**-R**		
			Covered			**-V**		
	4	Right-hand end plate	Right-hand end plate, with supply air/exhaust air, internal pilot air supply			**-V**		
			Right-hand end plate with supply air/exhaust air, external pilot air supply			**-X**		
			End plate with pilot air selector, internal pilot air supply		1	**-Y**		
			End plate with pilot air selector, internal pilot air supply, ducted pilot exhaust air		1	**-U**		
			End plate with pilot air selector, external pilot air supply		1	**-Z**		
			End plate with pilot air selector, external pilot air supply, ducted pilot exhaust air		1	**-W**		
O	5	Port configuration for supply plates	Normal operation: Supply port 1, exhaust port 3/5 separated		2	**-K**		
			Reverse operation: Exhaust port 1, supply port 3/5 separated					
			Normal operation: Supply port 1, exhaust port 3/5 common		2	**-L**		
			Reverse operation: Exhaust port 1, supply port 3/5 common					
	6	Pneumatic valve terminal supply (standard: threaded connection)	Silencer and QS push-in fittings			**S**		
			QS push-in fittings			**V**		
	7	Configuration of all pneumatic connections	QS push-in fittings, large		3	**M**		
			QS push-in fittings, small		3	**N**		
			QS push-in fittings, large and small mixed		3	**G**		
	8	Outgoing direction of all working lines (standard outlet at front)	90° connection plate, outlet at bottom			**P**		
	9	Left-hand supply plate	Left-hand supply plate in front of manifold sub-base 00			**X**		
↓	10	Reverse operation	Reverse operation as of valve position 00		4	**Z**		

1 **Y, U, Z, W** At least one left-hand supply plate (9) X or one compressed air supply/duct separation (12) U, SU, TU, RU, USU, UTU or URU must be selected

2 **K, L** Must be selected if left-hand supply plate (9) X or one compressed air supply/duct separation (12) (S, T, R, U, SU, US, TU, UT, RU, UR, USU, UTU, URU) was selected

3 **M, N, G** Must be selected if pneumatic valve terminal supply (6) S or V was selected
Sizes of pneumatic connections → Table on page 4 / 1.3-76

4 **Z** A reversible pressure zone cannot be terminated with a right-hand end plate (4) V, Y, U (internal pilot air supply)

Valve terminals with NPT thread for CPX – Pneumatic part

Ordering data – Modular products

FESTO

→ 0 **Options** →

Pneumatic manifold sub-bases 00 ... 15

11 Type of interlinking block: A, B, E, F, AK, BK, EK, FK

12 Compressed air supply/duct separation: S, T, R, U, SU, US, TU, UT, RU, UR, USU, UTU, URU

13 Reverse operation: Z

Module position

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
–	**A**	**B**	**B**	**B**	**S**	**B**										

11 + 12 + 13

Ordering table

Width			18 mm	26 mm	Conditions	Code		Enter code
↓	**11**	Pneumatic manifold sub-bases			5	-		-
0		Type of interlinking block 00 ... 15 — Manifold sub-base	2 valve positions, 4 addresses	–		**A**		Enter the equipment selected in the order code
			–	2 valve positions, 4 addresses		**B**		
			2 valve positions, 2 addresses	–	6	**E**		
			–	2 valve positions, 2 addresses	6	**F**		
		Manifold sub-base with QS push-in fittings, small	2 valve positions, 4 addresses	–	7	**AK**		
			–	2 valve positions, 4 addresses	7	**BK**		
			2 valve positions, 2 addresses	–	8	**EK**		
			–	2 valve positions, 2 addresses	8	**FK**		
	12	Compressed air supply/duct separation 00... 15	Duct separation 1, 3, 5		9 10	**S**		
			Duct separation 1		9 10	**T**		
			Duct separation 3, 5		9 10	**R**		
			Supply plate			**U**		
			Supply plate with duct separation 1, 3, 5 at left		9	**SU**		
			Supply plate with duct separation 1, 3, 5 at right		9	**US**		
			Supply plate with duct separation 1 at left		9	**TU**		
			Supply plate with duct separation 1 at right		9	**UT**		
			Supply plate with duct separation 3, 5 at left		9	**RU**		
			Supply plate with duct separation 3, 5 at right		9	**UR**		
			2 supply plates with duct separation 1, 3, 5 in centre			**USU**		
			2 supply plates with duct separation 1 in centre			**UTU**		
			2 supply plates with duct separation 3, 5 in centre			**URU**		
↓	**13**	Reverse operation 00 ... 15	Subsequent valve positions permitted for reverse operation		11	**Z**		

5 Manifold sub-bases must be equipped throughout without any gaps

6 **E, F** Only with valves (14) M, O and L

7 **AK, BK** Only with configuration of all pneumatic connections (7) N or G

8 **EK, FK** Only with configuration of all pneumatic connections (7) N or G
Only with valves (14) M, O and L

9 **S, T, R, SU, US, TU, UT, RU, UR**
No pressure-free zones may be created

10 **S, T, R** Cannot be selected on last manifold sub-base

11 **Z** Only with compressed air supply/duct separation (12) S, SU, US or USU.
A reversible pressure zone cannot be terminated with a right-hand end plate (4) V, Y, U

Valve terminals with NPT thread for CPX – Pneumatic part

Ordering data – Modular products

FESTO

→ 0 Options →

Pneumatic valve positions 00 ... 31

14 Valve position 00 ... 31: M, O, J, D, N, K, H, B, G, E, P, Q, R, L
15 Pressure regulator for position 00 ... 31: ZA, ZB, ZC, ZD, ZE, ZK, ZL, ZF, ZG, ZH, ZI, ZJ, ZM, ZN
16 Pressure indicator for position 00 ... 31: T, U
17 Flow control valve position 00 ... 31: X
18 Vertical pressure isolating plate for position 00 ... 31: ZT
19 Vertical supply plate for position 00 ... 31: ZU

Valve position	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	...	30	31
–	M	M	M	O	O	O	J	J	E	E												...		

14 + 15 + 16 + 17 + 18 + 19

Ordering table

		Width		18 mm	26 mm	Conditions	Code		Enter code
↓	14	Pneumatic valve positions 00 ... 31					-		-
0		Valve position 00 ... 31		5/2-way valve, single solenoid with pneumatic spring return			M		Enter equipment selection for valve positions in order code
				5/2-way valve, single solenoid with spring return			O		
				5/2-way valve, double solenoid			J		
				5/2-way valve, double solenoid with dominant signal			D		
				2x 3/2-way valve, normally open		12	N		
				2x 3/2-way valve, normally closed		12	K		
				2x 3/2-way valve, 1x normally closed, 1x normally open		12	H		
				5/3-way valve, mid-position pressurised			B		
				5/3-way valve, mid-position closed			G		
				5/3-way valve, mid-position exhausted			E		
				2x 3/2-way valve, normally open, reverse operation		13	P		
				2x 3/2-way valve, normally closed, reverse operation		13	Q		
				2x 3/2-way valve, 1x normally closed, 1x normally open, reverse operation		13	R		
				Vacant position			L		
	15	Pressure regulator for valve position 00 ... 31	Input pressure 10 bar	Pressure regulator plate for port 1		14	ZA		
				Pressure regulator plate for port 4			ZB		
				Pressure regulator plate for port 2			ZC		
				Pressure regulator plate for port 4/2			ZD		
				Pressure regulator plate for port 4/2, reversible		15	ZE		
				Pressure regulator plate for port 4, reversible		15	ZK		
				Pressure regulator plate for port 2, reversible		15	ZL		
			Input pressure 6 bar	Pressure regulator plate for port 1		14	ZF		
				Pressure regulator plate for port 4			ZG		
				Pressure regulator plate for port 2			ZH		
				Pressure regulator plate for port 4/2			ZI		
				Pressure regulator plate for port 4/2, reversible		15	ZJ		
				Pressure regulator plate for port 4, reversible		15	ZM		
↓				Pressure regulator plate for port 2, reversible		15	ZN		

12 **N, K, H** Not permitted in zones with reverse operation.
Not with pressure regulator (15) ZE, ZJ (reversible pressure regulator plate)

13 **P, Q, R** Only permissible in zones with reverse operation or with pressure regulator (15) ZE, ZJ (reversible pressure regulator plate). Pilot pressure required on duct 12 (ducted exhaust air not possible).
Not with right-hand end plate (4) Y, Z

14 **ZA, ZF** Not permitted in zones with reverse operation

15 **ZE, ZK, ZL, ZJ, ZM, ZN**
Not permitted in zones with reverse operation.
Not with 2x 3/2-way valves (14) N, K, H

Valve terminals with NPT thread for CPX – Pneumatic part

Ordering data – Modular products

FESTO

➔ 0 **Options**

	Pneumatic accessories
	U, ...B, ...T, ...N, ...V
+	**10N**
	20

Ordering table

		Width	18 mm	26 mm	Condi-tions	Code		Enter code
↓ 0	**16**	Pressure indicator for valve position 00 ... 31	Pressure gauge, 10 bar		16	**T**		Enter equipment **selection** for valve positions in **order code**
			Pressure gauge, 6 bar		17	**U**		
	17	Flow control valve for valve position 00 ... 31	Throttle plate		18	**X**		
	18	Vertical isolating plate for valve position 00 ... 31	Pressure separator plate on valve assembly		19	**ZT**		
	19	Vertical supply plate for valve position 00 ... 31	Compressed-air supply on valve		18	**ZU**		
	20	**Pneumatic accessories**				**+**		+
		Mounting bracket (pack of 5)	Supplied separately		20	**U**		
		Inscription label holder for valves	5 ... 50			**...B**		
		Inscription label holder for manifold sub-bases	5 ... 50			**...T**		
		Cover cap for manual override, non-detenting	10 ... 90			**...N**		
		Cover cap for manual override, covered	10 ... 90			**...V**		

16 **T** Only with pressure regulator (15) ZA, ZB, ZC, ZD, ZE
17 **U** Only with pressure regulator (15) ZF, ZG, ZH, ZI, ZJ
18 **X, ZU** Not with valves with reverse operation (14) P, Q, R
19 **ZT** Not with right-hand end plate (4) Y, Z
20 **U** Can only be selected if there are more than 9 valve positions
Cannot be combined with H-rail

Valve terminals with NPT thread – Pneumatic part

Ordering data – Modular products

FESTO

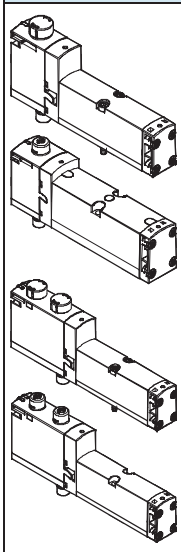
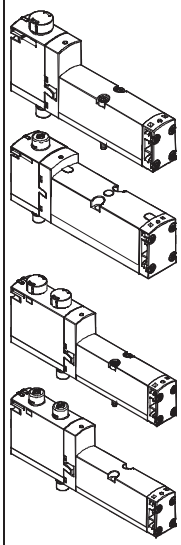
Sizes of pneumatic connections						
		Code	Duct	Configuration	Width	
					18 mm	26 mm
7		Configuration of all pneumatic connections				
4	Right-hand end plate V, X, Y, U, Z, W	M	12, 14	Standard + optimised for flow rate	¼NPT (QS-¼-⅜-U)	¼NPT (QS-¼-⅜-U)
		G	12, 14	Standard + optimised for flow rate	¼NPT (QS-¼-⅜-U)	¼NPT (QS-¼-⅜-U)
		N	12, 14	Standard + optimised for flow rate	¼NPT (QS-¼-5/16-U)	¼NPT (QS-¼-5/16-U)
4	Right-hand end plate V, X, U	M	1, 3, 5	Standard + optimised for flow rate	½NPT (QS-½-⅝-U)	½NPT (QS-½-⅝-U)
		G	1, 3, 5	Standard + optimised for flow rate	½NPT (QS-½-⅝-U)	½NPT (QS-½-⅝-U)
		N	1, 3, 5	Standard + optimised for flow rate	½NPT (QS-½-½-U)	½NPT (QS-½-½-U)
9	Left-hand supply plate X	M	1, 3, 5	Standard + optimised for flow rate	½NPT (QS-½-⅝-U)	½NPT (QS-½-⅝-U)
		G	1, 3, 5	Standard + optimised for flow rate	½NPT (QS-½-⅝-U)	½NPT (QS-½-⅝-U)
		N	1, 3, 5	Standard + optimised for flow rate	½NPT (QS-½-½-U)	½NPT (QS-½-½-U)
11	Type of interlinking block A, B, E, F	M	2, 4	Standard + optimised for flow rate	⅛NPT (QS-⅛-5/16-U)	¼NPT (QS-¼-⅜-U)
11	Type of interlinking block AK, BK, EK, FK	N	2, 4	Standard + optimised for flow rate	⅛NPT (QS-⅛-¼-U)	¼NPT (QS-G¼-5/16-U)

Valve terminals type 44 VTSA, type 45 VTSA-F, optimised for flow rate

Individual valve

FESTO

Ordering data

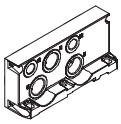
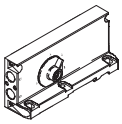
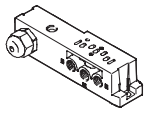
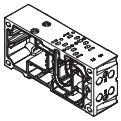
	Code	Valve function	Width	Type	Part No.
Solenoid valves, 24 V DC, port pattern to ISO 15407-2					
	M	5/2-way valve, single solenoid, pneumatic spring return	18 mm	VSVA-B-M52-AZD-A2-1T1L	539 184
			26 mm	VSVA-B-M52-AZD-A1-1T1L	539 158
	O	5/2-way valve, single solenoid, spring return	18 mm	VSVA-B-M52-MZD-A2-1T1L	539 185
			26 mm	VSVA-B-M52-MZD-A1-1T1L	539 159
	J	5/2-way valve, bistable, double solenoid	18 mm	VSVA-B-B52-ZD-A2-1T1L	539 182
			26 mm	VSVA-B-B52-ZD-A1-1T1L	539 156
	D	5/2-way valve, bistable, dominating signal	18 mm	VSVA-B-D52-ZD-A2-1T1L	539 183
			26 mm	VSVA-B-D52-ZD-A1-1T1L	539 157
	N	2x 3/2-way valve, single solenoid, normally open	18 mm	VSVA-B-T32U-AZD-A2-1T1L	539 178
			26 mm	VSVA-B-T32U-AZD-A1-1T1L	539 152
	K	2x 3/2-way valve, single solenoid, normally closed	18 mm	VSVA-B-T32C-AZD-A2-1T1L	539 176
			26 mm	VSVA-B-T32C-AZD-A1-1T1L	539 150
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	18 mm	VSVA-B-T32H-AZD-A2-1T1L	539 180
			26 mm	VSVA-B-T32H-AZD-A1-1T1L	539 154
	B	5/3-way valve, mid-position pressurised	18 mm	VSVA-B-P53U-ZD-A2-1T1L	539 186
			26 mm	VSVA-B-P53U-ZD-A1-1T1L	539 160
	G	5/3-way valve, mid-position closed	18 mm	VSVA-B-P53C-ZD-A2-1T1L	539 188
			26 mm	VSVA-B-P53C-ZD-A1-1T1L	539 162
	E	5/3-way valve, mid-position exhausted	18 mm	VSVA-B-P53E-ZD-A2-1T1L	539 187
			26 mm	VSVA-B-P53E-ZD-A1-1T1L	539 161
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	18 mm	VSVA-B-T32F-AZD-A2-1T1L	539 179
			26 mm	VSVA-B-T32F-AZD-A1-1T1L	539 153
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	18 mm	VSVA-B-T32N-AZD-A2-1T1L	539 177
			26 mm	VSVA-B-T32N-AZD-A1-1T1L	539 151
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	18 mm	VSVA-B-T32W-AZD-A2-1T1L	539 181
			26 mm	VSVA-B-T32W-AZD-A1-1T1L	539 155
Solenoid valves, 110 V AC, port pattern to ISO 15407-2					
	M	5/2-way valve, single solenoid, pneumatic spring return	18 mm	VSVA-B-M52-AZD-A2-2AT1L	539 171
			26 mm	VSVA-B-M52-AZD-A1-2AT1L	539 145
	O	5/2-way valve, single solenoid, spring return	18 mm	VSVA-B-M52-MZD-A2-2AT1L	539 172
			26 mm	VSVA-B-M52-MZD-A1-2AT1L	539 146
	J	5/2-way valve, bistable, double solenoid	18 mm	VSVA-B-B52-ZD-A2-2AT1L	539 169
			26 mm	VSVA-B-B52-ZD-A1-2AT1L	539 143
	D	5/2-way valve, bistable, dominating signal	18 mm	VSVA-B-D52-ZD-A2-2AT1L	539 170
			26 mm	VSVA-B-D52-ZD-A1-2AT1L	539 144
	N	2x 3/2-way valve, single solenoid, normally open	18 mm	VSVA-B-T32U-AZD-A2-2AT1L	539 165
			26 mm	VSVA-B-T32U-AZD-A1-2AT1L	539 139
	K	2x 3/2-way valve, single solenoid, normally closed	18 mm	VSVA-B-T32C-AZD-A2-2AT1L	539 163
			26 mm	VSVA-B-T32C-AZD-A1-2AT1L	539 137
	H	2x 3/2-way valve, single solenoid, 1x normally open, 1x normally closed	18 mm	VSVA-B-T32H-AZD-A2-2AT1L	539 167
			26 mm	VSVA-B-T32H-AZD-A1-2AT1L	539 141
	B	5/3-way valve, mid-position pressurised	18 mm	VSVA-B-P53U-ZD-A2-2AT1L	539 173
			26 mm	VSVA-B-P53U-ZD-A1-2AT1L	539 147
	G	5/3-way valve, mid-position closed	18 mm	VSVA-B-P53C-ZD-A2-2AT1L	539 175
			26 mm	VSVA-B-P53C-ZD-A1-2AT1L	539 149
	E	5/3-way valve, mid-position exhausted	18 mm	VSVA-B-P53E-ZD-A2-2AT1L	539 174
			26 mm	VSVA-B-P53E-ZD-A1-2AT1L	539 148
	P	2x 3/2-way valve, single solenoid, reverse operation, normally open	18 mm	VSVA-B-T32F-AZD-A2-2AT1L	539 166
			26 mm	VSVA-B-T32F-AZD-A1-2AT1L	539 140
	Q	2x 3/2-way valve, single solenoid, reverse operation, normally closed	18 mm	VSVA-B-T32N-AZD-A2-2AT1L	539 164
			26 mm	VSVA-B-T32N-AZD-A1-2AT1L	539 138
	R	2x 3/2-way valve, single solenoid, reverse operation, 1x normally open, 1x normally closed	18 mm	VSVA-B-T32W-AZD-A2-2AT1L	539 168
			26 mm	VSVA-B-T32W-AZD-A1-2AT1L	539 142

Valve terminals type 44 VTSA, type 45 VTSA-F, optimised for flow rate

Accessories

FESTO

Ordering data

Designation	Code	Description	Width	Type	Part No.
Right-hand end plate					
	Threaded connections				
	V	With supply air/exhaust air, internal pilot air supply, G1/2		**VABE-S6-1R-G12**	**539 234**
	X	With supply air/exhaust air, external pilot air supply, G1/2		**VABE-S6-1RZ-G12**	**539 236**
	NPT thread				
	V	With supply air/exhaust air, internal pilot air supply, NPT1/2		**VABE-S6-1R-N12**	**539 235**
	X	With supply air/exhaust air, external pilot air supply, NPT1/2		**VABE-S6-1RZ-N12**	**539 237**
End plate with pilot air selector					
	Threaded connections				
	Y	Internal pilot air supply		**VABE-S6-1RZ-G-B1**	**539 238**
	U	Internal pilot air supply, ducted pilot exhaust air			
	Z	External pilot air supply			
	W	External pilot air supply, ducted pilot exhaust air			
	NPT thread				
	Y	Internal pilot air supply		**VABE-S6-1RZ-N-B1**	**539 239**
	U	Internal pilot air supply, ducted pilot exhaust air			
	Z	External pilot air supply			
	W	External pilot air supply, ducted pilot exhaust air			
Individual sub-base, port pattern to ISO 15407-2					
	Threaded connection, internal pilot air supply				
	–	Connections at side, G1/8, plug M12	18 mm	**VABS-S4-2S-G18-B-R3**	**541 070**
	–	Connections at side, G1/8, terminals	18 mm	**VABS-S4-2S-G18-B-K2**	**541 067**
	–	Connections at side, G1/4, plug M12	26 mm	**VABS-S4-1S-G14-B-R3**	**541 069**
	–	Connections at side, G1/4, terminals	26 mm	**VABS-S4-1S-G14-B-K2**	**541 065**
	Threaded connection, external pilot air supply				
	–	Connections at side, G1/4, plug M12	26 mm	**VABS-S4-1S-G14-R3**	**541 063**
	–	Connections at side, G1/4, terminals	26 mm	**VABS-S4-1S-G14-K2**	**539 725**
	–	Connections at side, G1/8, plug M12	18 mm	**VABS-S4-2S-G18-R3**	**541 064**
	–	Connections at side, G1/8, terminals	18 mm	**VABS-S4-2S-G18-K2**	**539 723**
	NPT thread, internal pilot air supply				
	–	Connections at side, external pilot air supply, 1/2NPT, terminals	18 mm	**VABS-S4-2S-N18-B-K2**	**541 068**
	–	Connections at side, external pilot air supply, 1/2NPT, terminals	26 mm	**VABS-S4-1S-N14-B-K2**	**541 066**
	NPT thread, external pilot air supply				
	–	Connections at side, 1/2NPT, terminals	18 mm	**VABS-S4-2S-N18-K2**	**539 724**
	–	Connections at side, 1/2NPT, terminals	26 mm	**VABS-S4-1S-N14-K2**	**539 726**
Manifold sub-base, port pattern to ISO 15407-2 – Standard design					
	Threaded connection				
	A	2 valve positions, 4 addresses, for double solenoid valves	18 mm	**VABV-S4-2S-G18-2T2**	**539 224**
	B	2 valve positions, 4 addresses, for double solenoid valves	26 mm	**VABV-S4-1S-G14-2T2**	**539 220**
	E	2 valve positions, 2 addresses, for single solenoid valves	18 mm	**VABV-S4-2S-G18-2T1**	**539 226**
	F	2 valve positions, 2 addresses, for single solenoid valves	26 mm	**VABV-S4-1S-G14-2T1**	**539 222**
	NPT thread				
	A	2 valve positions, 4 addresses, for double solenoid valves	18 mm	**VABV-S4-2S-N18-2T2**	**539 223**
	B	2 valve positions, 4 addresses, for double solenoid valves	26 mm	**VABV-S4-1S-N14-2T2**	**539 219**
	E	2 valve positions, 2 addresses, for single solenoid valves	18 mm	**VABV-S4-2S-N18-2T1**	**539 225**
	F	2 valve positions, 2 addresses, for single solenoid valves	26 mm	**VABV-S4-1S-N14-2T1**	**539 221**

Valve terminals type 44 VTSA, type 45 VTSA-F, optimised for flow rate

Accessories

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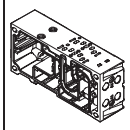
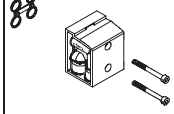
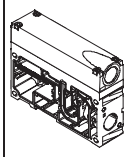
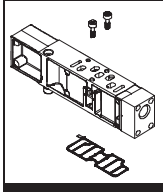
Ordering data

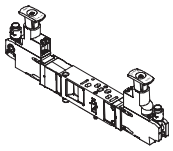
Designation	Code	Description	Width	Type	Part No.
Manifold sub-base, optimised for flow rate					
	Threaded connection				
	A	2 valve positions, 4 addresses, for double solenoid valves	18 mm	**VABV-S4-2HS-G18-2T2**	**546 215**
	B	2 valve positions, 4 addresses, for double solenoid valves	26 mm	**VABV-S4-1HS-G14-2T2**	**546 211**
	E	2 valve positions, 2 addresses, for single solenoid valves	18 mm	**VABV-S4-2HS-G18-2T1**	**546 214**
	F	2 valve positions, 2 addresses, for single solenoid valves	26 mm	**VABV-S4-1HS-G14-2T1**	**546 210**
	NPT thread				
	A	2 valve positions, 4 addresses, for double solenoid valves	18 mm	**VABV-S4-2HS-N18-2T2**	**546 217**
	B	2 valve positions, 4 addresses, for double solenoid valves	26 mm	**VABV-S4-1HS-N14-2T2**	**546 213**
	E	2 valve positions, 2 addresses, for single solenoid valves	18 mm	**VABV-S4-2HS-N18-2T1**	**546 216**
	F	2 valve positions, 2 addresses, for single solenoid valves	26 mm	**VABV-S4-1HS-N14-2T1**	**546 212**
Separator plate					
	S	Duct separation 1, 3, 5		**VABD-S6-10-P3-C**	**539 228**
	T	Duct separation 1		**VABD-S6-10-P1-C**	**539 227**
	R	Duct separation 3, 5		**VABD-S6-10-P2-C**	**539 229**
90° connection plate					
	Threaded connection				
	P	Outlet at bottom, connecting thread G⅛	18 mm	**VABF-S4-2-A2G2-G18**	**539 719**
	P	Outlet at bottom, connecting thread G¼	26 mm	**VABF-S4-1-A2G2-G14**	**539 721**
	NPT thread				
	P	Outlet at bottom, connecting thread ⅛NPT	18 mm	**VABF-S4-2-A2G2-N18**	**539 720**
	P	Outlet at bottom, connecting thread ¼NPT	26 mm	**VABF-S4-1-A2G2-N14**	**539 722**
Supply plate					
	Threaded connection				
	L	With exhaust plate, 3/5 common, G½		**VABF-S6-10-P1A7-G12**	**539 231**
	K	With exhaust port cover, 3/5 separated, G½		**VABF-S6-10-P1A6-G12**	**539 230**
	NPT thread				
	L	With exhaust plate, 3/5 common, NPT½		**VABF-S6-10-P1A7-N12**	**539 233**
	K	With exhaust port cover, 3/5 separated, NPT½		**VABF-S6-10-P1A6-N12**	**539 232**
Vertical supply plate					
	Threaded connection				
	ZU	Connecting thread G⅛	18 mm	**VABF-S4-2-P1A3-G18**	**540 173**
		Connecting thread G¼	26 mm	**VABF-S4-1-P1A3-G14**	**540 171**
	NPT thread				
	ZU	Connecting thread ⅛NPT	18 mm	**VABF-S4-2-P1A3-N18**	**540 174**
		Connecting thread ¼NPT	26 mm	**VABF-S4-1-P1A3-N14**	**540 172**

Valve terminals type 44 VTSA, type 45 VTSA-F, optimised for flow rate

Accessories

FESTO

Ordering data

Designation	Code	Description	Width	Type	Part No.
Regulator plate					
	ZA	For port 1, 10 bar	18 mm	**VABF-S4-2-R1C2-C-10**	**540 153**
		For port 1, 10 bar	26 mm	**VABF-S4-1-R1C2-C-10**	**540 154**
	ZF	For port 1, 6 bar	18 mm	**VABF-S4-2-R1C2-C-6**	**540 151**
		For port 1, 6 bar	26 mm	**VABF-S4-1-R1C2-C-6**	**540 152**
	ZB	For port 4, 10 bar	18 mm	**VABF-S4-2-R3C2-C-10**	**540 157**
		For port 4, 10 bar	26 mm	**VABF-S4-1-R3C2-C-10**	**540 158**
	ZG	For port 4, 6 bar	18 mm	**VABF-S4-2-R3C2-C-6**	**540 155**
		For port 4, 6 bar	26 mm	**VABF-S4-1-R3C2-C-6**	**540 156**
	ZC	For port 2, 10 bar	18 mm	**VABF-S4-2-R2C2-C-10**	**540 161**
		For port 2, 10 bar	26 mm	**VABF-S4-1-R2C2-C-10**	**540 162**
	ZH	For port 2, 6 bar	18 mm	**VABF-S4-2-R2C2-C-6**	**540 159**
		For port 2, 6 bar	26 mm	**VABF-S4-1-R2C2-C-6**	**540 160**
	ZD	For ports 2 and 4, 10 bar	18 mm	**VABF-S4-2-R4C2-C-10**	**540 165**
		For ports 2 and 4, 10 bar	26 mm	**VABF-S4-1-R4C2-C-10**	**540 166**
	ZI	For ports 2 and 4, 6 bar	18 mm	**VABF-S4-2-R4C2-C-6**	**540 163**
		For ports 2 and 4, 6 bar	26 mm	**VABF-S4-1-R4C2-C-6**	**540 164**
	ZE	For ports 2 and 4, reversible, 10 bar	18 mm	**VABF-S4-2-R5C2-C-10**	**540 169**
		For ports 2 and 4, reversible, 10 bar	26 mm	**VABF-S4-1-R5C2-C-10**	**540 170**
	ZJ	For ports 2 and 4, reversible, 6 bar	18 mm	**VABF-S4-2-R5C2-C-6**	**540 167**
		For ports 2 and 4, reversible, 6 bar	26 mm	**VABF-S4-1-R5C2-C-6**	**540 168**
	ZL	For port 2, reversible, 10 bar	18 mm	**VABF-S4-2-R6C2-C-10**	**546 252**
		For port 2, reversible, 10 bar	26 mm	**VABF-S4-1-R6C2-C-10**	**546 251**
	ZN	For port 2, reversible, 6 bar	18 mm	**VABF-S4-2-R6C2-C-6**	**546 248**
		For port 2, reversible, 6 bar	26 mm	**VABF-S4-1-R6C2-C-6**	**546 247**
	ZK	For port 4, reversible, 10 bar	18 mm	**VABF-S4-2-R7C2-C-10**	**546 254**
		For port 4, reversible, 10 bar	26 mm	**VABF-S4-1-R7C2-C-10**	**546 253**
	ZM	For port 4, reversible, 6 bar	18 mm	**VABF-S4-2-R7C2-C-6**	**546 250**
		For port 4, reversible, 6 bar	26 mm	**VABF-S4-1-R7C2-C-6**	**546 249**

Valve terminals type 44 VTSA, type 45 VTSA-F, optimised for flow rate

Accessories

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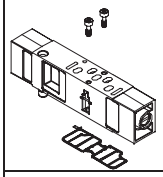
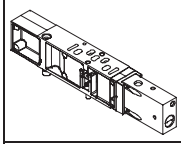
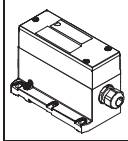
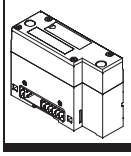
Ordering data				
Designation	Code	Description	Type	Part No.
Pressure gauge				
	T	With cartridge connection for regulator, 10 bar for regulator plate, code ZA, ZB, ZC, ZD, ZE	**PAGN-26-16-P10**	**543 487**
	U	With cartridge connection for regulator, 6 bar for regulator plate, code ZF, ZG, ZH, ZI, ZJ	**PAGN-26-10-P10**	**543 488**
Cartridge for regulator plate				
		Push-in connector 4 mm	**QSP10-4**	**172 972**
		Plug connector 3/8"	**QSP10-3/16U**	**172975**
Throttle plate				
	X	Width 18 mm	**VABF-S4-2-F1B1-C**	**540 176**
		Width 26 mm	**VABF-S4-1-F1B1-C**	**540 175**
Vertical pressure isolating plate				
	ZT	Width 18 mm	**VABF-S4-2-L1D1-C**	**542 884**
		Width 26 mm	**VABF-S4-1-L1D1-C**	**542 885**
Multi-pin node				
	T	Tension spring, for threaded connection, 36-pin	**VABE-S6-1LF-C-M1-C36M**	**543 412**
		Tension spring, for NPT connection, 36-pin	**VABE-S6-1LF-C-M1-C36N**	**543 413**
	MP1	Sub-D plug, 37-pin	**VABE-S6-1LT-C-M1-S37**	**543 414**
	MP4	Round plug, 19-pin	**VABE-S6-1LF-C-M1-R19**	**543 415**
Pneumatic interface				
		For electrical terminal CPX	**VABA-1S6-X1**	**543 416**

Valve terminals type 44 VTSA, type 45 VTSA-F, optimised for flow rate

Accessories

FESTO

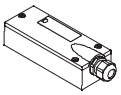
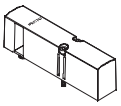
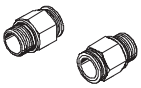
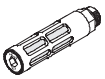
Ordering data					
Designation	Code	Description		Type	Part No.
Connecting cable with Sub-D plug socket					
	Polyurethane, IP65				
	GA	Connecting cable for max. 8 solenoid coils, 10-pin, suitable for chain link trunking	2.5 m	**NEBV-S1W37-E-2,5-LE10**	**539 240**
	GB		5 m	**NEBV-S1W37-E-5-LE10**	**539 241**
	GC		10 m	**NEBV-S1W37-E-10-LE10**	**539 242**
	GD	Connecting cable for max. 22 solenoid coils, 26-pin, suitable for chain link trunking	2.5 m	**NEBV-S1W37-E-2,5-LE26**	**539 243**
	GE		5 m	**NEBV-S1W37-E-5-LE26**	**539 244**
	GF		10 m	**NEBV-S1W37-E-10-LE26**	**539 245**
	GG	Connecting cable for max. 32 solenoid coils, 37-pin	2.5 m	**NEBV-S1W37-K-2,5-LE37**	**539 246**
	GH		5 m	**NEBV-S1W37-K-5-LE37**	**539 247**
	GI		10 m	**NEBV-S1W37-K-10-LE37**	**539 248**
	Polyvinyl chloride, IP65				
	GK	Connecting cable for max. 8 solenoid coils, 10-pin	2.5 m	**NEBV-S1W37-KM-2,5-LE10**	**543 271**
	GL		5 m	**NEBV-S1W37-KM-5-LE10**	**543 272**
	GM		10 m	**NEBV-S1W37-KM-10-LE10**	**543 273**
	GN	Connecting cable for max. 22 solenoid coils, 27-pin	2.5 m	**NEBV-S1W37-KM-2,5-LE27**	**543 274**
	GO		5 m	**NEBV-S1W37-KM-5-LE27**	**543 275**
	GP		10 m	**NEBV-S1W37-KM-10-LE27**	**543 276**
	GQ	Connecting cable for max. 32 solenoid coils, 37-pin	2.5 m	**NEBV-S1W37-KM-2,5-LE37**	**543 277**
	GR		5 m	**NEBV-S1W37-KM-5-LE37**	**543 278**
	GS		10 m	**NEBV-S1W37-KM-10-LE37**	**543 279**

Valve terminals type 44 VTSA, type 45 VTSA-F, optimised for flow rate

Accessories

FESTO

Ordering data

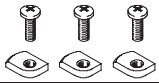
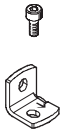
Designation	Code	Description		Type	Part No.
Cover for multi-pin plug					
	–	For user configuration		**NECV-S1W37**	**545 974**
Cover					
	L	Blanking plate for vacant position	18 mm	**VABB-S4-2-WT**	**539 213**
			26 mm	**VABB-S4-1-WT**	**539 212**
	N	Cover cap for manual override, non-detenting	10 pieces	**VAMC-S6-CH**	**541 010**
	V	Cover cap for manual override, covered	10 pieces	**VAMC-S6-CS**	**541 011**
Inscription label holder					
	B	Clip-on inscription label holder for valve cap	5 pieces	**ASCF-T-S6**	**540 888**
	T	Inscription label holder for manifold blocks	5 pieces	**ASCF-M-S6**	**540 889**
Push-in fitting					
	Threaded connection				
	–	Connecting thread G¼ for tubing O.D. 10 mm	10 pieces	**QS-G¼-10**	**186 101**
		Connecting thread G¼ for tubing O.D. 8 mm	10 pieces	**QS-G¼-8**	**186 099**
		Connecting thread G⅛ for tubing O.D. 10 mm	10 pieces	**QS-G⅛-10**	**190 643**
		Connecting thread G⅛ for tubing O.D. 8 mm	10 pieces	**QS-G⅛-8**	**186 098**
		Connecting thread G⅛ for tubing O.D. 6 mm	10 pieces	**QS-G⅛-6**	**186 096**
		Connecting thread G½ for tubing O.D. 16 mm	1 pieces	**QS-G½-16**	**186 105**
		Connecting thread G⅜ for tubing O.D. 10 mm	10 pieces	**QS-G⅜-10**	**186 102**
		Connecting thread G⅜ for tubing O.D. 12 mm	10 pieces	**QS-G⅜-12**	**186 103**
	NPT thread				
	–	Connecting thread ¼NPT for tubing O.D. 5/16"		**QS-¼-5/16-U**	**153 609**
		Connecting thread ¼NPT for tubing O.D. ½"		**QS-¼-½-U**	**190 681**
		Connecting thread ⅛NPT for tubing O.D. 5/16"		**QS-⅛-5/16-U**	**153 608**
		Connecting thread ⅛NPT for tubing O.D. ¼"		**QS-⅛-¼-U**	**153 605**
		Connecting thread ½NPT for tubing O.D. ½"		**QS-½-½-U**	**153 615**
		Connecting thread ½NPT for tubing O.D. ⅝"		**QS-½-⅝-U**	**190 682**
Silencer					
	Threaded connection				
	–	Connecting thread G¼		**U-¼**	**2316**
	L	Connecting thread G½		**U-½**	**2310**
	K	Connecting thread G½		**U-½-B**	**6844**
	NPT thread				
	–	Connecting thread ¼NPT		**U-¼-B-NPT**	**12 639**
	K, L	Connecting thread ½NPT		**U-½-B-NPT**	**12 741**

Valve terminals type 44 VTSA, type 45 VTSA-F, optimised for flow rate

Accessories

FESTO

Ordering data

Designation	Code	Description		Type	Part No.
Blanking plug					
	Threaded connection				
	–	Thread G1⁄8	10 pieces	**B-1⁄8**	**3568**
	–	Thread G1⁄4	10 pieces	**B-1⁄4**	**3569**
	NPT thread				
	–	Thread 1⁄8NPT	1 piece	**B-1⁄8-NPT**	**173 985**
	–	Thread 1⁄4NPT	1 piece	**B-1⁄4-NPT**	**174 165**
Mounting					
	–	For H-rail, VTSA/VTSA-F with fieldbus	3 pieces	**CPX-CPA-BG-NRH**	**526 032**
	–	For H-rail, VTSA-F with multi-pin plug	2 pieces	**CPA-BG-NRH**	**173 498**
Wall mounting					
	U	Mounting bracket		**VAME-S6-10-W**	**539 214**
User documentation					
	D	User's manual for valve terminal type 44 VTSA-F	German	**P.BE-VTSA-44-DE**	**538 922**
	E		English	**P.BE-VTSA-44-EN**	**538 923**
	S		Spanish	**P.BE-VTSA-44-ES**	**538 924**
	F		French	**P.BE-VTSA-44-FR**	**538 925**
	I		Italian	**P.BE-VTSA-44-IT**	**538 926**
	V		Swedish	**P.BE-VTSA-44-SV**	**538 927**