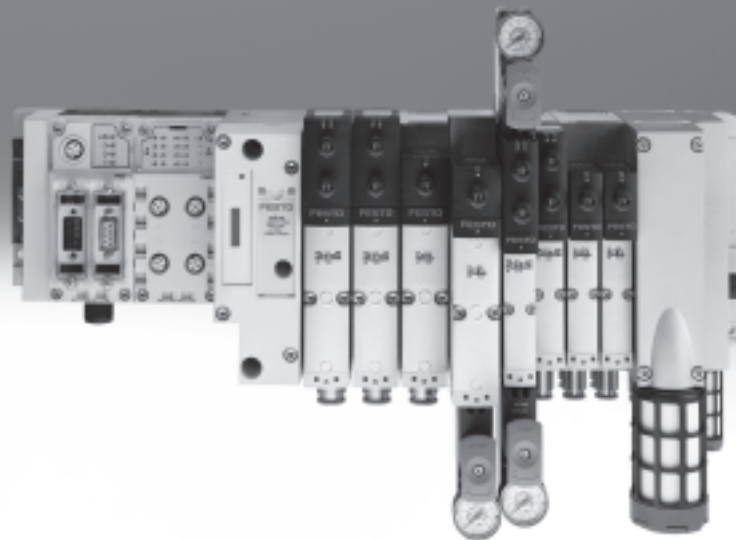


Valve terminals type 45 VTSA-F

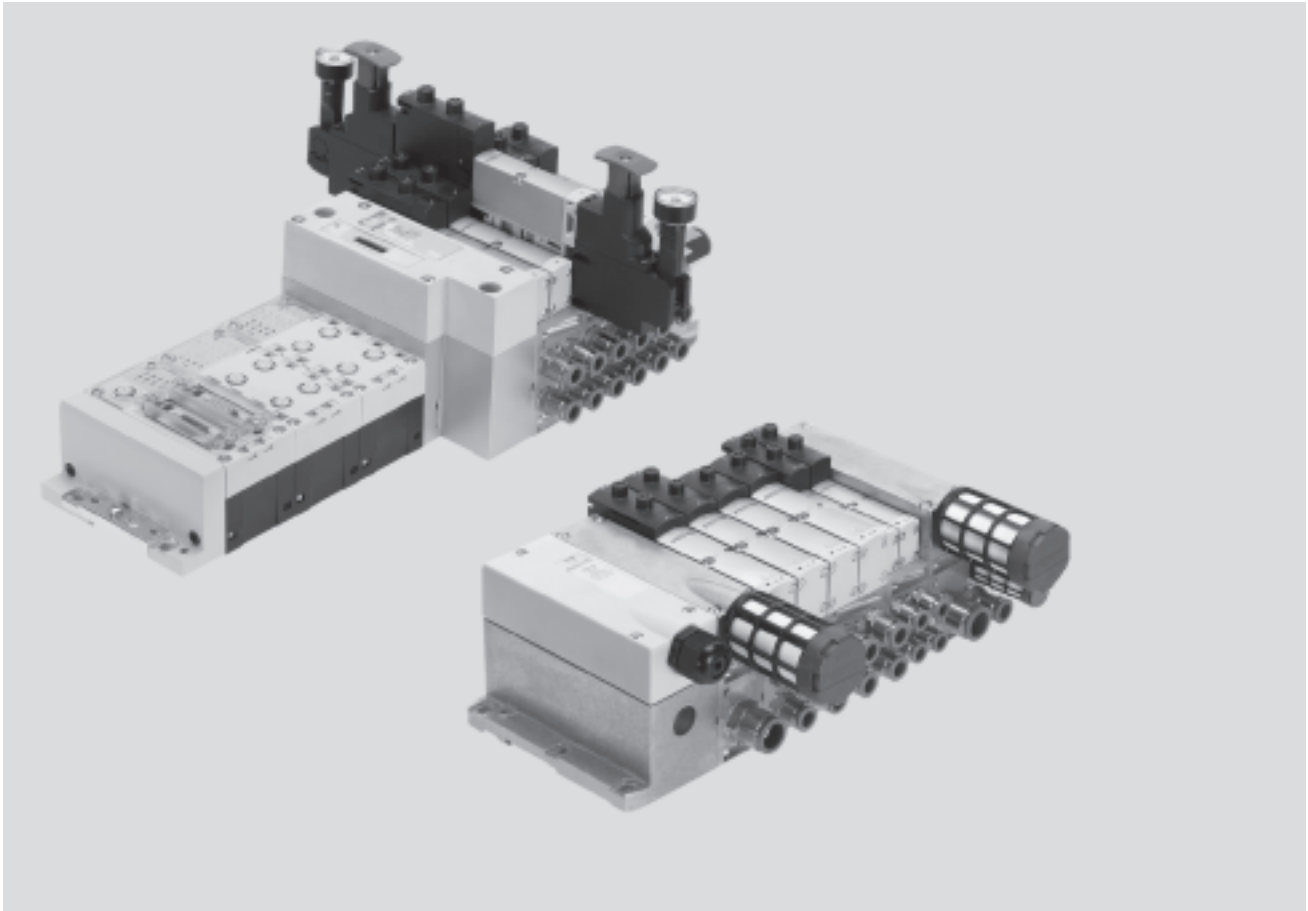
FESTO



Valve terminals type 45 VTSA-F

Key features

FESTO



Innovative

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

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 extended using four screws, sturdy duct separation on metal substrate
- Integration of innovative function modules possible
- Supply plates enable a flexible air supply and variable pressure zones
- Reverse operation
- Wide pressure range
–0.9 ... 10 bar
- Wide range of valve functions
- Valve supply: 24 V DC or 110 V AC

Reliable

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

Easy to assemble

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

Valve terminals type 45 VTSA-F

Key features

Reduced downtimes:
On-the-spot diagnostics via LEDs

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

Pneumatic interface to CPX

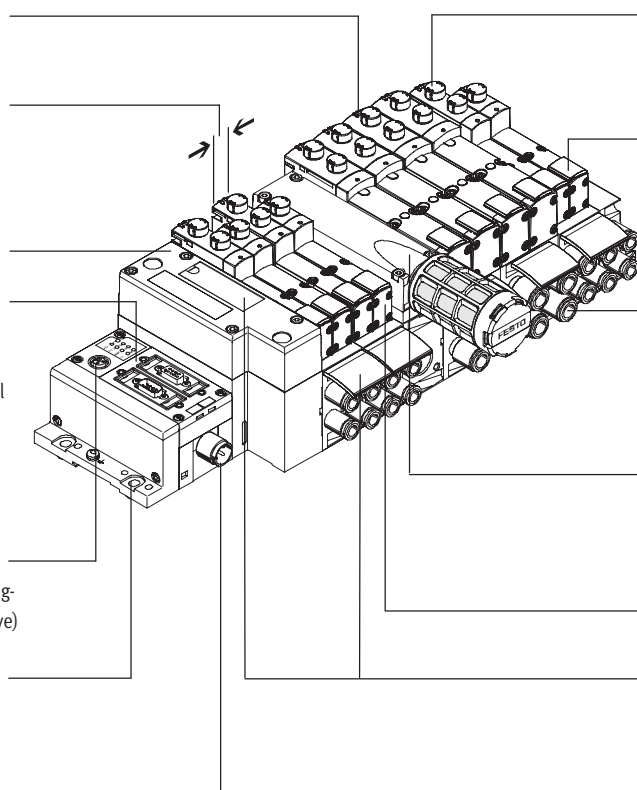
Simple electrical connections

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

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

Quick mounting:
Direct mounting using screws or H-rail

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



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

Flexible:

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

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

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

Comprehensive range of valve functions

Practical:
Large inscription labels

Equipment options

Valve functions

- 2x 2/2-way valve, single solenoid, pneumatic spring, normally closed
- 5/2-way valve
 - Single solenoid, pneumatic spring/mechanical spring
 - Double solenoid
 - Double solenoid 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

- | | | | |
|---|---|--|--|
| <p>Combinable</p> <ul style="list-style-type: none"> • 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 | <p>Terminal with individual connection</p> <ul style="list-style-type: none"> • Max. 32 valve positions/ max. 32 solenoid coils • Any compressed air supply • Any number of pressure zones <p>AS-interface</p> <ul style="list-style-type: none"> • 1 to 8 valve positions/ max. 8 solenoid coils | <p>Multi-pin plug terminal</p> <ul style="list-style-type: none"> • Max. 32 valve positions/ max. 32 solenoid coils • Parallel modular valve linking • Any compressed air supply • Any number of pressure zones | <p>Fieldbus terminal/control block CPX</p> <ul style="list-style-type: none"> • Max. 32 valve positions/ max. 32 solenoid coils • Any compressed air supply • Any number of pressure zones |
|---|---|--|--|

Valve terminals type 45 VTSA-F

Key features

Valve terminal configurator

Online via: → www.festo.com

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

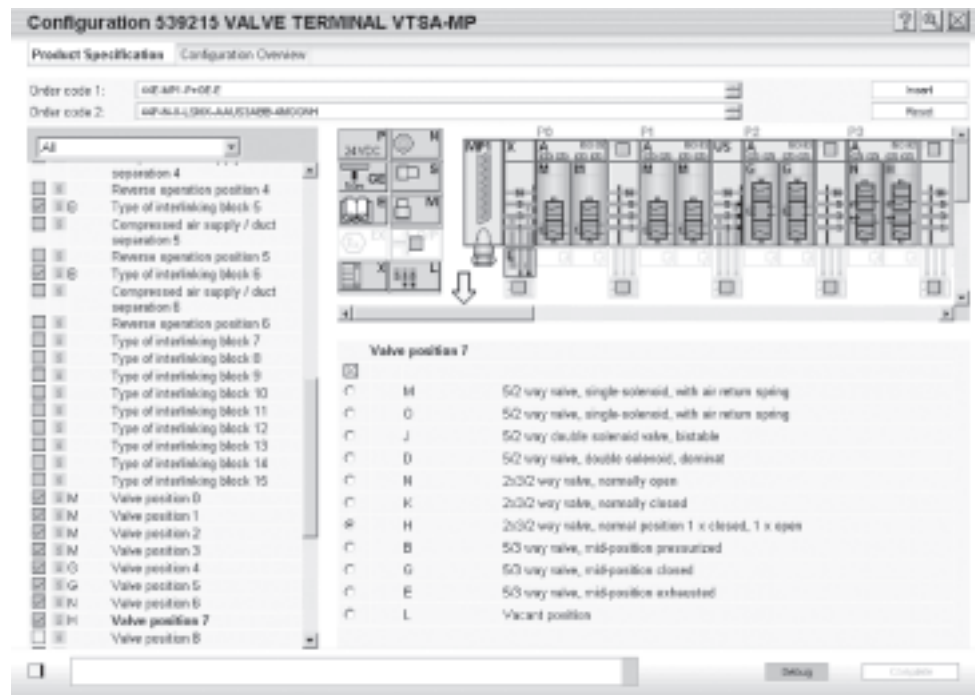
The valve terminals are fully assembled according to your order specifications and are individually tested. This reduces assembly and installation time to a minimum. You order a valve terminal type 45 using the order code.

Ordering system for type 45

→ Internet: type 45

Ordering system for CPX

→ Internet: cpx

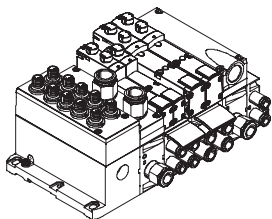


Valve terminals type 45 VTSA-F

Key features

FESTO

Terminal with individual connection

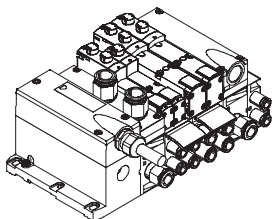


Control signals from the controller to the valve terminal are transmitted via an individual connecting cable.

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

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

Terminal with multi-pin plug connection



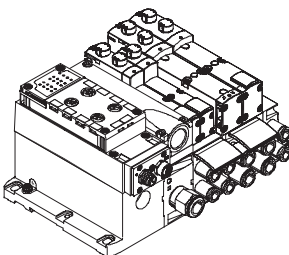
Control signals from the controller to the valve terminal are transmitted via a pre-assembled multi-wire cable or a self-assembled multi-pin plug connection (tension spring terminal), which substantially reduces installation time.

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

Versions

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

AS-interface connection



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

The valve terminal with AS-interface can be configured as follows:

- With one to eight modular valve positions (max. 8 solenoid coils). This corresponds to one to eight VTSA valves.
- With all available valve functions. The connection technology used for the inputs can be selected as with

CPX: M8, M12, quick connection, Sub-D, tension spring terminal (terminals to IP20).

Further information

➔ Internet: as-interface



Note

The valve terminal VTSA with AS-interface connection is based on the same electrical manifold module as the valve terminal with multi-pin plug connection. This means it is possible to convert a valve terminal

with multi-pin plug connection using an AS-interface module (➔ 69). The technical specifications of the AS-interface system must be observed in this case.

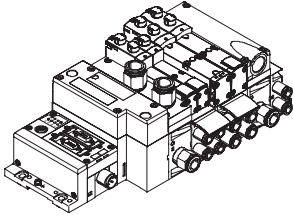
➔ Internet: as-interface

Valve terminals type 45 VTSA-F

Key features

FESTO

Terminal with fieldbus connection from the CPX system



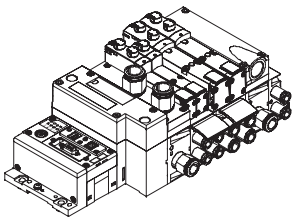
An integrated fieldbus node manages the communication connection to a higher-order PLC. This enables a space-saving pneumatic and electronic solution.

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.

Versions

- Profibus DP
- Interbus
- DeviceNet
- CANopen
- CC-Link
- CPX terminal
- EtherCAT
- ➔ Internet: cpx

Terminal with control block connection from the CPX system



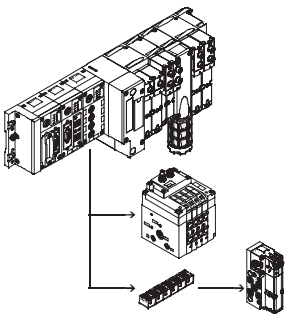
Controllers integrated in the Festo valve terminals enable the construction of stand-alone control units to IP65, without control cabinets.

Using the slave operation mode, these valve terminals can be used for intelligent pre-processing and are therefore ideal modules for designs using 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
- ➔ Internet: cpx

CP string extension from the CPX system



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

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

The CP string interface offers:

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

➔ Internet: ctec

Valve terminals type 45 VTSA-F

Peripherals overview

FESTO

Modular pneumatic components

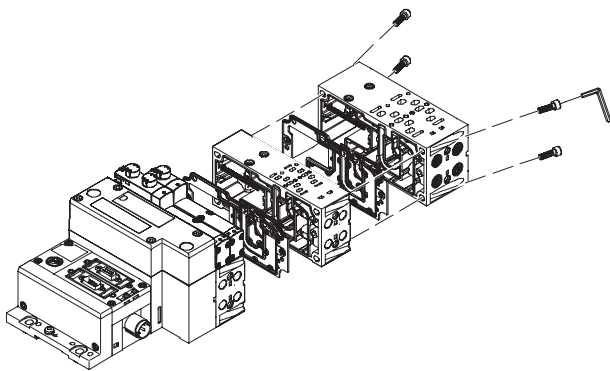
The modular design of the VTSA-F ensures maximum flexibility right from the planning stage and offers maximum ease of service in operation.

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

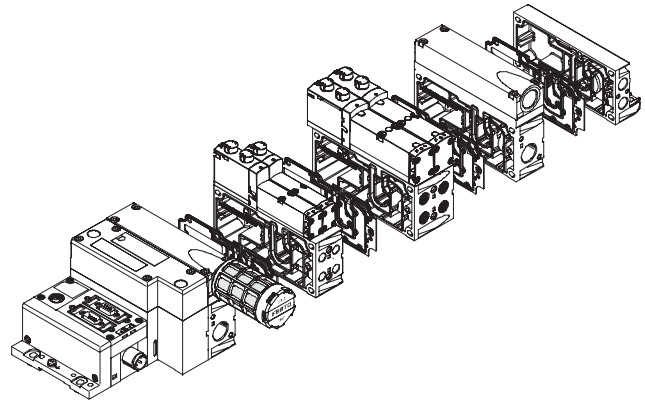
Inside the manifold sub-bases are the connection ducts for supplying compressed air to and venting from the valves on the terminal as well as the working ports for the pneumatic cylinders for each valve.

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

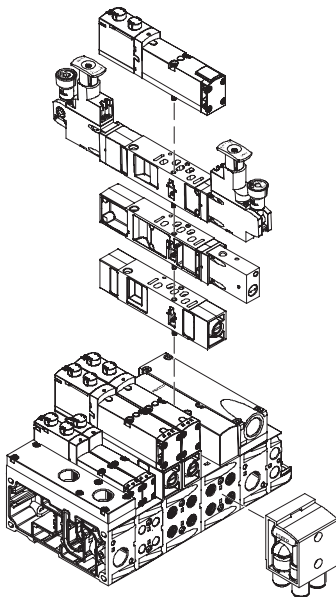
Basic system modularity



Valve modularity



Stacking modularity



Valve terminals type 45 VTSA-F

Peripherals overview

Modular electrical peripherals

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

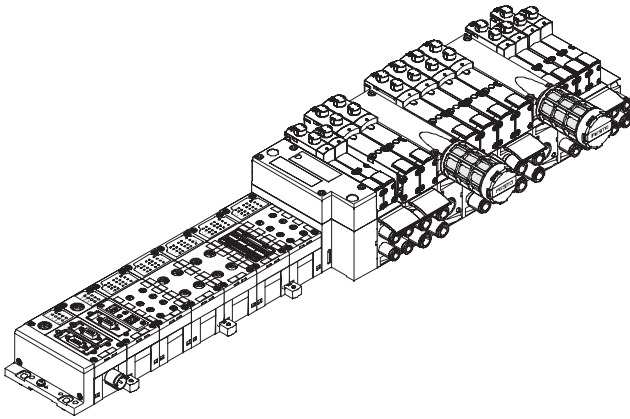
The VTSA-F with CPX interface is based on the internal bus system of the CPX and uses this communication system for all solenoid coils and a range of electrical input and output functions.

Parallel linking facilitates the following:

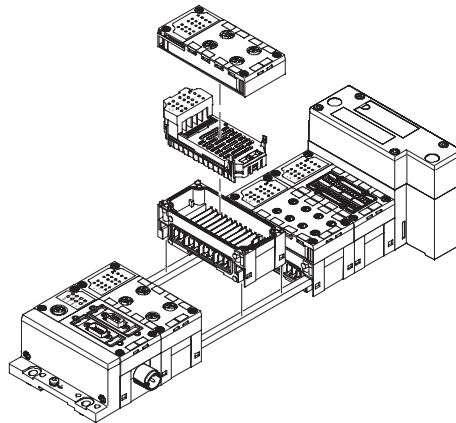
- Transmission of switching information
- High valve density
- Compact design
- Position-based diagnostics

- Separate voltage supply for valves
- Flexible conversion without address shifting
- Transmission of status, parameter and diagnostic data
 - ➔ Internet: cpx
- Option of CP interface
- CPX-FEC as autonomous controller with access via Ethernet and web server

VTSA-F with electrical peripherals CPX



Modularity with electrical peripherals CPX

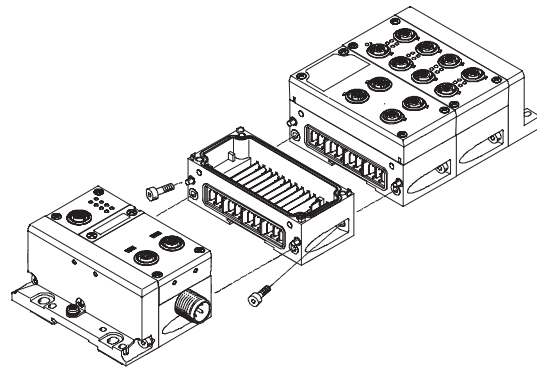


CPX terminal in metal version

-  - Note

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

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



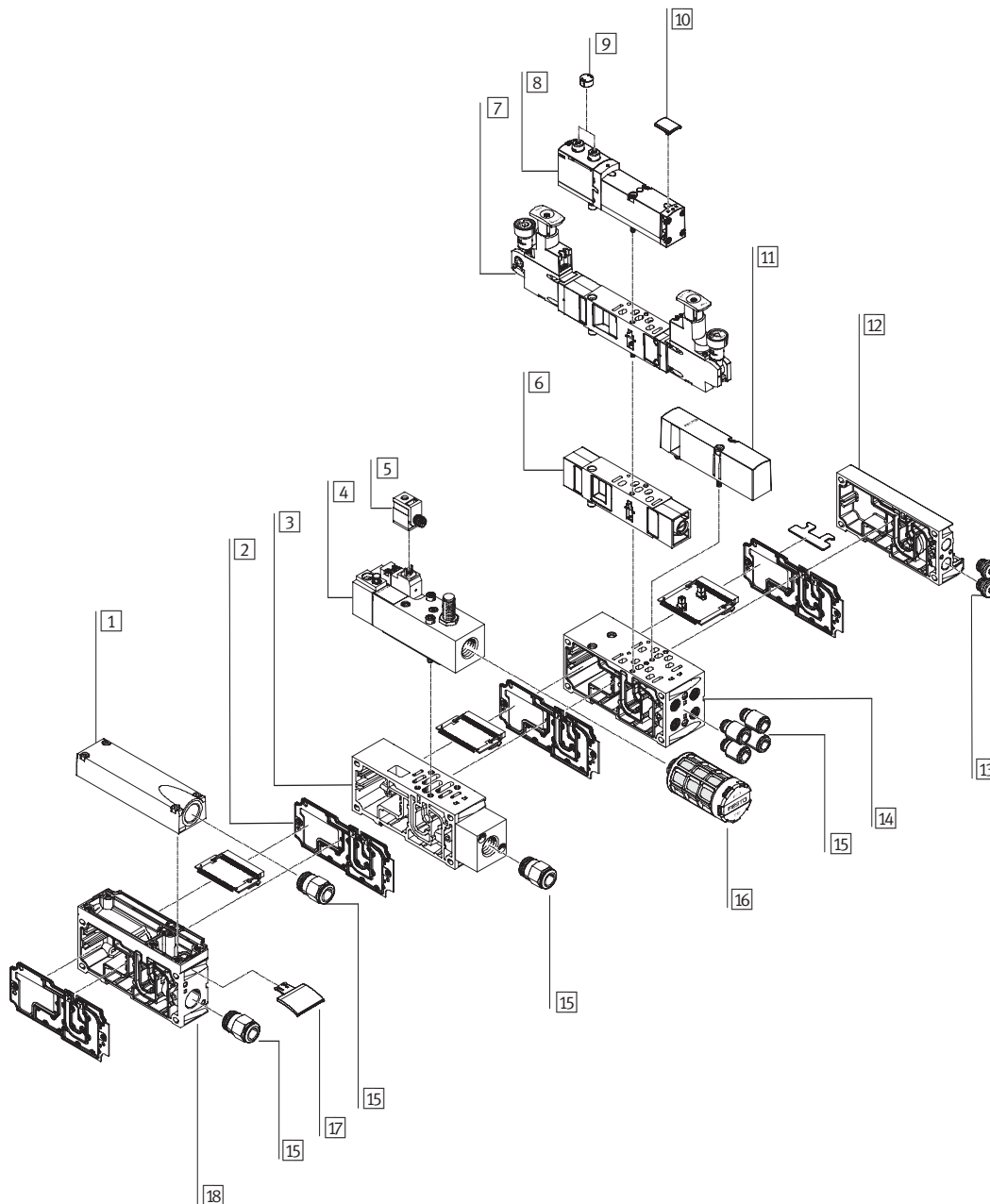
Valve terminals type 45 VTSA-F

Peripherals overview

Valve terminal pneumatics

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

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



Valve terminals type 45 VTSA-F

Peripherals overview

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

Valve terminals type 45 VTSA-F

Peripherals overview

Valve terminal with individual connection

Order code:

- 45E for the electrical components
- 45P for the pneumatic components

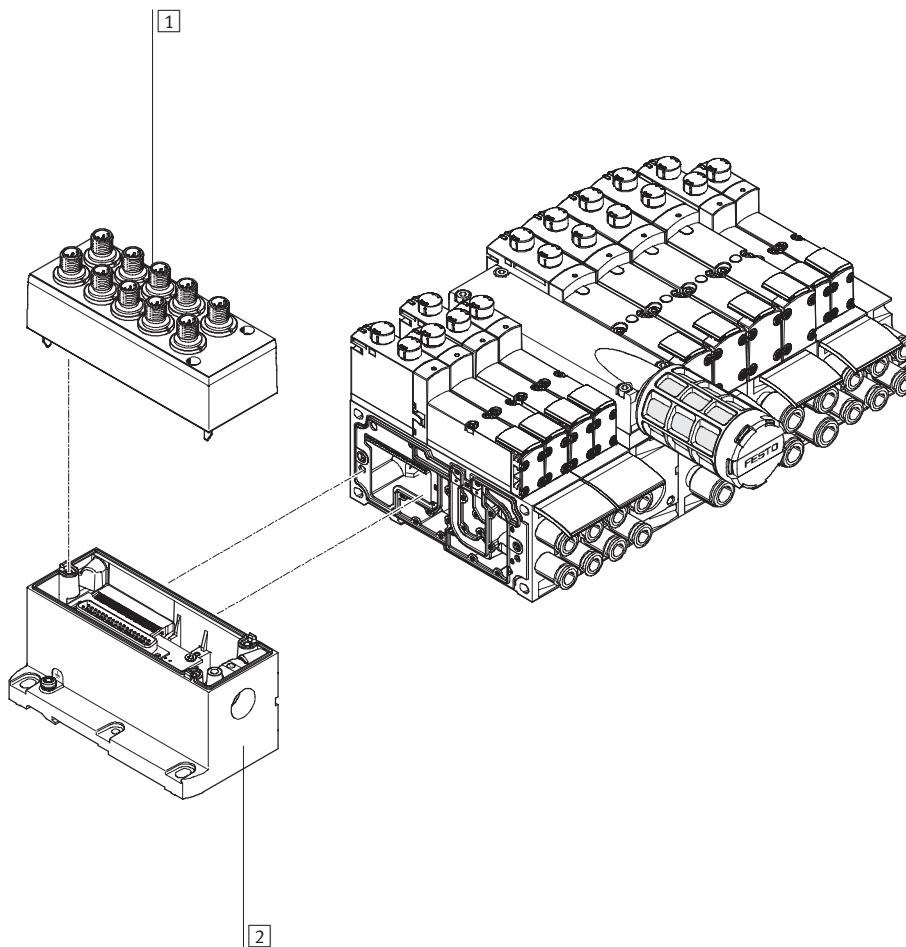
VTSA-F valve terminals with individual connections can be expanded by up to 20 valves with max. 20 solenoid coils.

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

- 2 single solenoid valves
- 2 double solenoid valves

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

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



	Brief description	→ Page/Internet
1	Cover	For individual connection 68
2	Multi-pin plug connection	Individual connection with M12, 10-way or 6-way (including cover) 68

Valve terminals type 45 VTSA-F

Peripherals overview

Valve terminal with multi-pin plug connection

Order code:

- 45E for the electrical components
- 45P for the pneumatic components

VTSA-F valve terminals with multi-pin plug connection can be expanded by up to 32 valves with max. 32 solenoid coils.

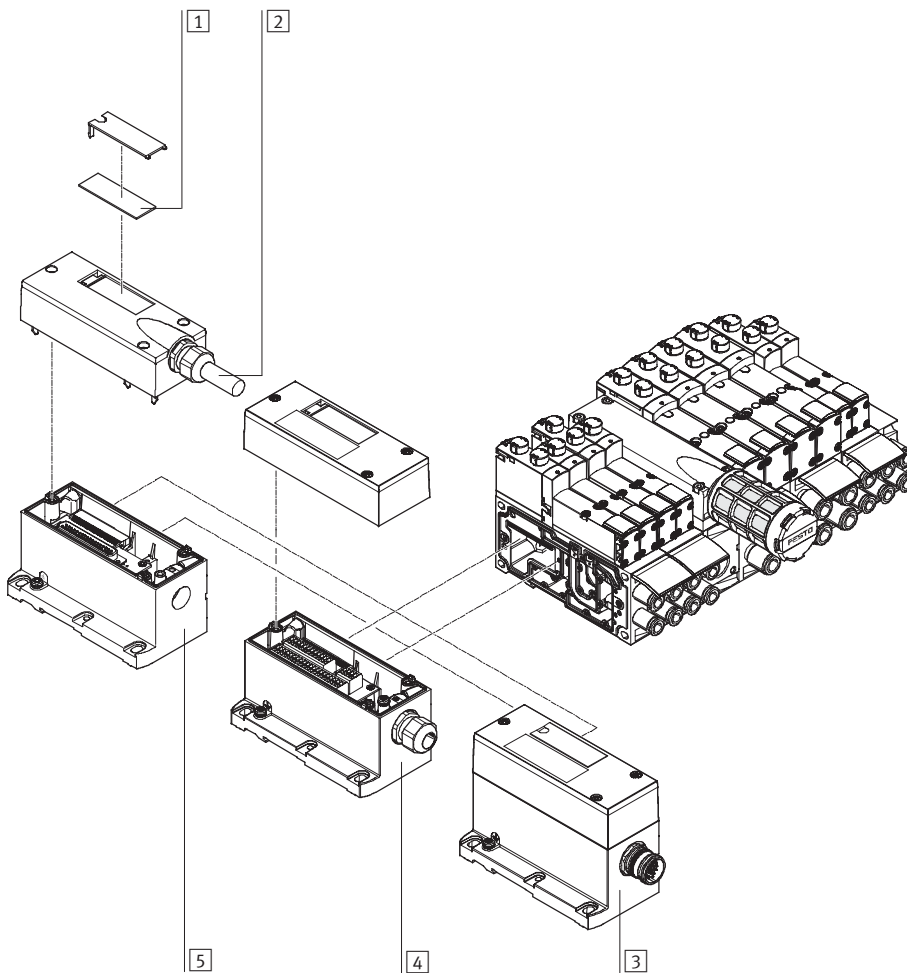
The manifold sub-bases width 18 and 26 mm are prepared for:

- 2 single solenoid valves
- 2 double solenoid valves

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

The following multi-pin plug connections to IP65 are available:

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



	Brief description	→ Page/Internet
1	Inscription labels Large, for multi-pin plug connection	–
2	Multi-pin plug cable	69
3	Multi-pin plug connection Via M23 round plug connection 24 V DC	68
4	Multi-pin plug connection Via terminal strip (Cage Clamp®) 24 V DC or 110 V AC	68
5	Multi-pin plug connection Via multi-pin cable 24 V DC	68

Valve terminals type 45 VTSA-F

Peripherals overview

Valve terminal with AS-interface connection

Order code:

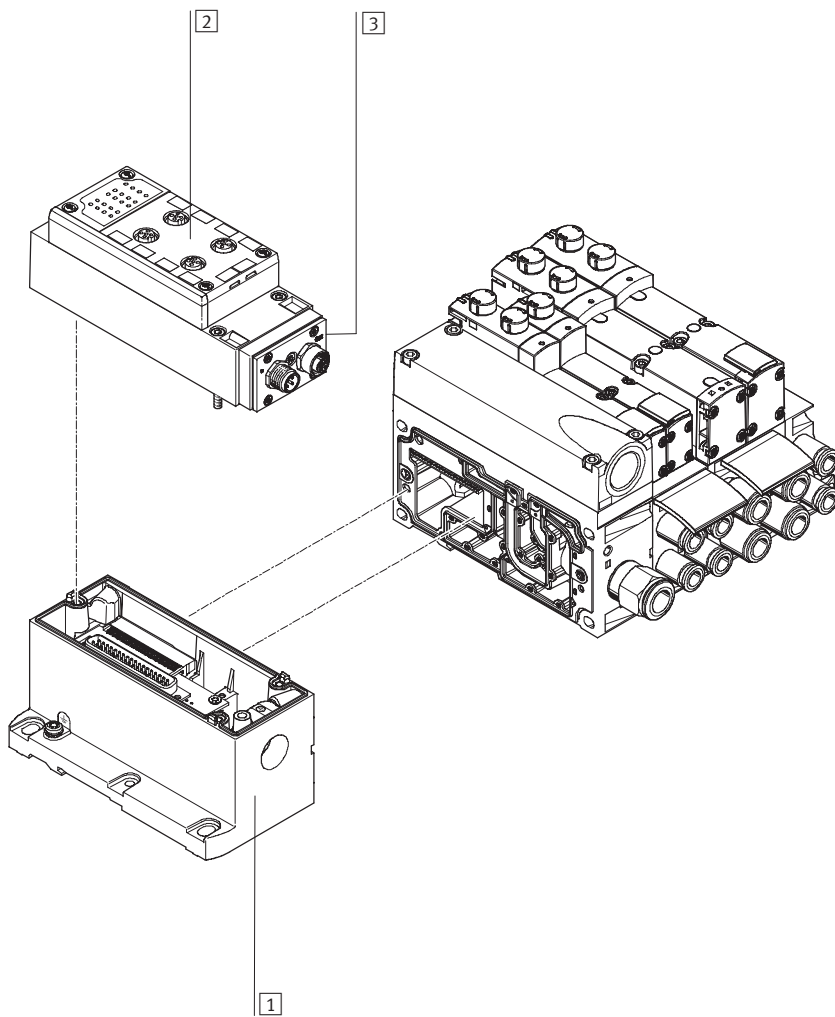
- 52E for the electrical components
- 45P for the pneumatic components

VTSA-F valve terminals with AS-interface connection can be expanded by up to 8 valves with max. 8 solenoid coils.

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

- 2 single solenoid valves
- 2 double solenoid valves

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



	Brief description	→ Page/Internet
1	Multi-pin plug connection	Can be ordered together with the AS-interface module as an electrical interface for AS-interface
2	Manifold block for AS-interface	69
3	AS-interface module	69

Valve terminals type 45 VTSA-F

Peripherals overview

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

Order code:

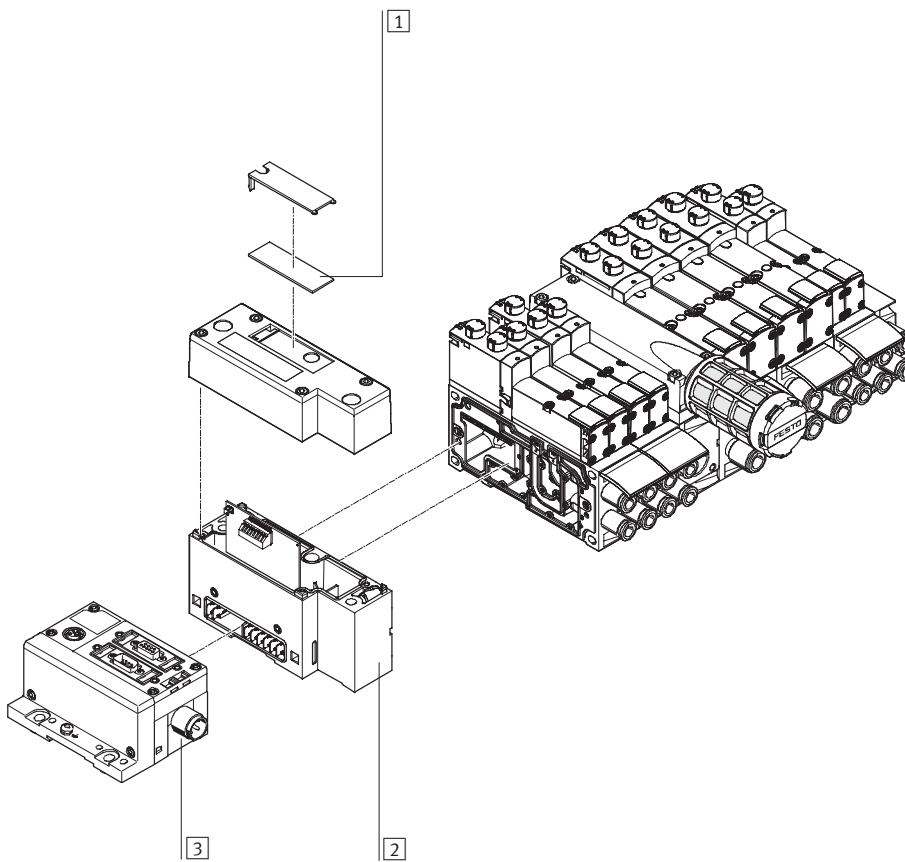
- 50E... for the electrical peripherals
- 51E... for the electrical peripherals, metal linking
- 45P for the pneumatic components

VTSA-F valve terminals with fieldbus interface can be expanded by up to 32 valves with max. 32 solenoid coils. Each valve position can be equipped

with any valve or a blanking plate. The rules for CPX apply to the equipment that can be used in combination with the electrical peripherals CPX.

In general:

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



	Brief description	→ Page/Internet
1	Inscription labels Large, for pneumatic interface CPX	–
2	Pneumatic interface	68
3	Fieldbus interface	cpX

Valve terminals type 45 VTSA-F

Peripherals overview

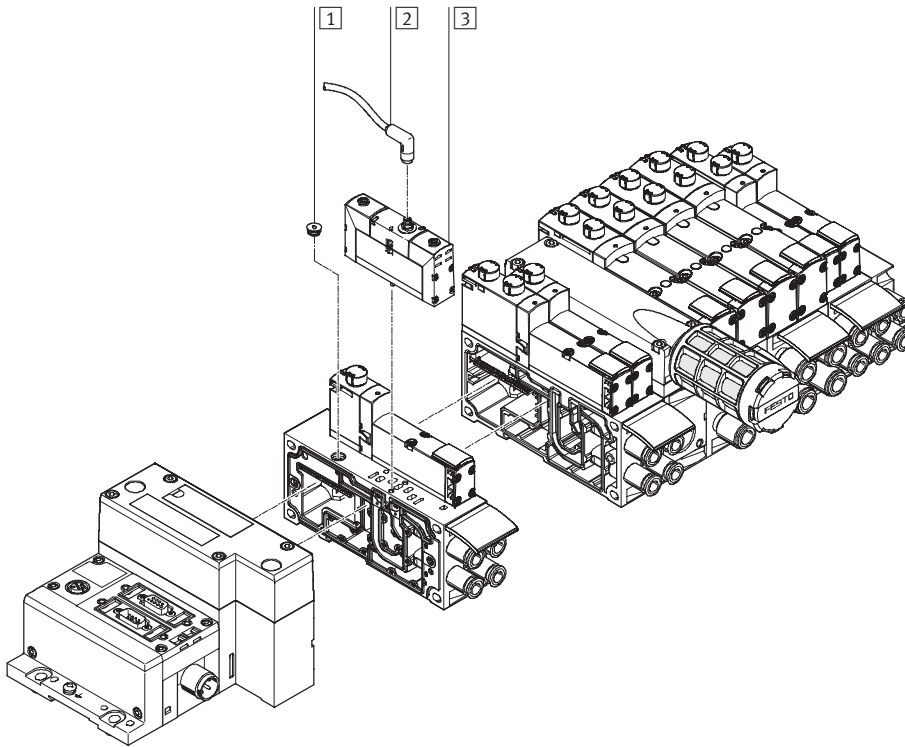
Valve terminal with fieldbus connection/multi-pin plug connection and individual valve connection

In applications with specific emergency stop conditions, it can be necessary to be able to individually switch one or more valves separately from the terminal controller.
Standard valves (VSVA) with individual

electrical connection (round or square plug) can be mounted on the valve terminal to this end.
In order for the protection class IP65 to be achieved, the functionless opening in the sub-base for the electrical

connection must be sealed.
An end cap is available for the 18 mm and the 26 mm widths.
For central control of the valve terminal via multi-pin plug or fieldbus connection, the valve position

occupied in this way acts like a vacant position, i.e. the assigned address in the fieldbus node or the corresponding connection in the multi-pin plug connection is occupied.



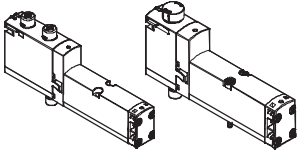
	Brief description	→ Page/Internet
1 End cap	For sealing the electrical connection on the sub-base	70
2 Connecting cable	–	valves vsva
3 Valve	Width 18 mm or width 26 mm	valves vsva

Valve terminals type 45 VTSA-F

Key features – Pneumatic components

FESTO

Sub-base valve



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

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

Reverse/vacuum operation

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

Blanking plate

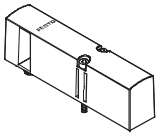
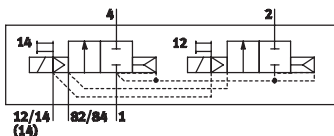
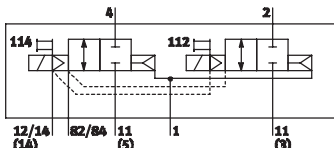
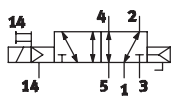
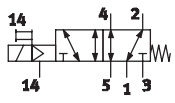
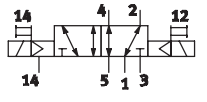
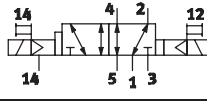
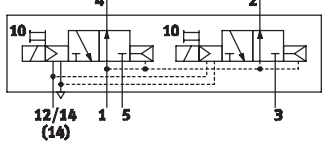
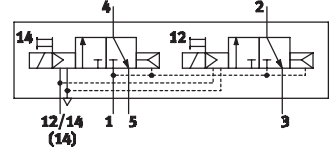



Plate without valve function for reserving valve positions on a valve terminal.

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

Valve terminals type 45 VTSA-F

Key features – Pneumatic components

Valve function				
Code	Circuit symbol	Width		Description
		18 mm	26 mm	
VC		■	■	2x 2/2-way valve, single solenoid <ul style="list-style-type: none"> • Normally closed • Pneumatic spring return
VV		■	■	2x 2/2-way valve, single solenoid <ul style="list-style-type: none"> • Normally closed • Pneumatic spring return • Vacuum operation 3 and 5 possible
M		■	■	5/2-way valve, single solenoid <ul style="list-style-type: none"> • Pneumatic spring return
O		■	■	5/2-way valve, single solenoid <ul style="list-style-type: none"> • Mechanical spring return
J		■	■	5/2-way valve, double solenoid
D		■	■	5/2-way valve, double solenoid <ul style="list-style-type: none"> • Dominant signal with port 14 on the control side
N		■	■	2x 3/2-way valve, single solenoid <ul style="list-style-type: none"> • Normally open • Pneumatic spring return • Operating pressure > 3 bar
K		■	■	2x 3/2-way valve, single solenoid <ul style="list-style-type: none"> • Normally closed • Pneumatic spring return • Operating pressure > 3 bar

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

Valve terminals type 45 VTSA-F

Key features – Pneumatic components



Valve function				
Code	Circuit symbol	Width		Description
		18 mm	26 mm	
H		■	■	2x 3/2-way valve, single solenoid <ul style="list-style-type: none"> • Normal position <ul style="list-style-type: none"> – 1x closed – 1x open • Pneumatic spring return • Operating pressure > 3 bar
B		■	■	5/3-way valve <ul style="list-style-type: none"> • Mid-position pressurised¹⁾ • Mechanical spring return
G		■	■	5/3-way valve <ul style="list-style-type: none"> • Mid-position closed¹⁾ • Spring force return
E		■	■	5/3-way valve <ul style="list-style-type: none"> • Mid-position exhausted¹⁾ • Mechanical spring return
P		■	■	2x 3/2-way valve, single solenoid <ul style="list-style-type: none"> • Reverse operation • Normally open • Pneumatic spring return
Q		■	■	2x 3/2-way valve, single solenoid <ul style="list-style-type: none"> • Reverse operation • Normally closed • Pneumatic spring return
R		■	■	2x 3/2-way valve, single solenoid <ul style="list-style-type: none"> • Reverse operation • Normal position <ul style="list-style-type: none"> – 1x closed – 1x open • Pneumatic spring return
L		■	■	For valve terminal only: Blanking plate for vacant valve position

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

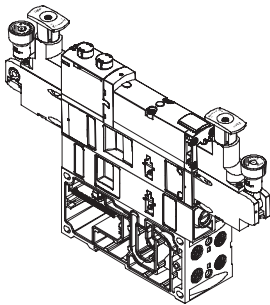
Constructional design

Valve replacement	Extension
The valves are attached to the metal manifold sub-base using two screws, which means that they can be easily replaced. The mechanical robustness of the manifold sub-base guarantees efficient long-term sealing.	Vacant positions can be fitted with valves at a later date. The dimensions, mounting points and existing pneumatic installations remain unchanged during this process. The order code VSVA-... is located on the front of the valve beneath the manual override.

Valve terminals type 45 VTSA-F

Key features – Pneumatic components

Vertical stacking



Additional functions can be added to each valve position between the manifold sub-base and the valve. These functions are known as vertical stacking modules, and enable special

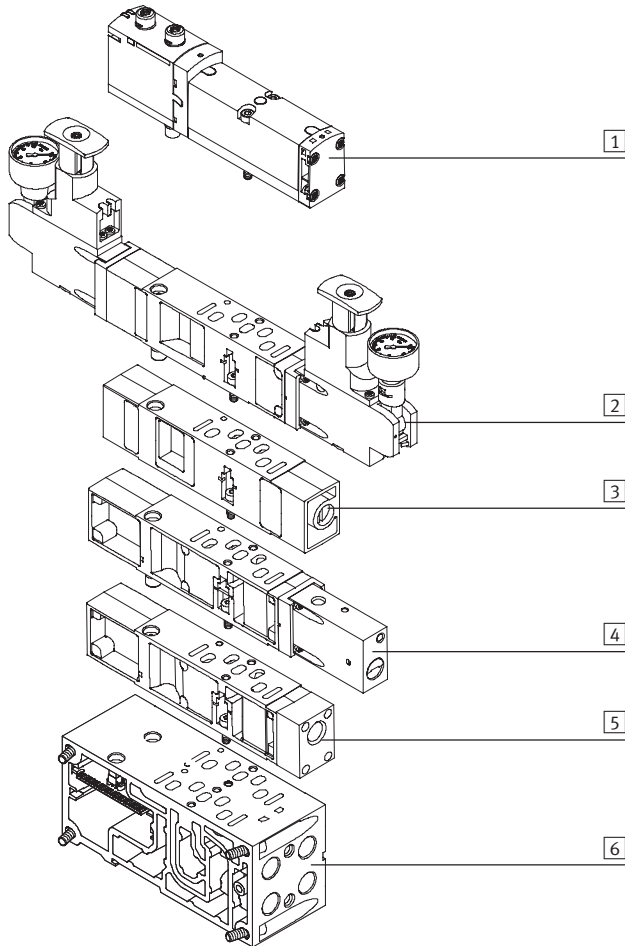
functioning or control of an individual valve position. Combinations of several valve sizes on one valve terminal are possible.



Note

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

Vertical stacking components



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

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

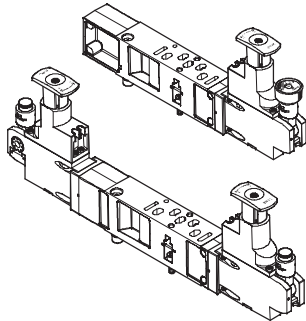
Valve terminals type 45 VTSA-F

Key features – Pneumatic components



Vertical stacking

Pressure regulator plate



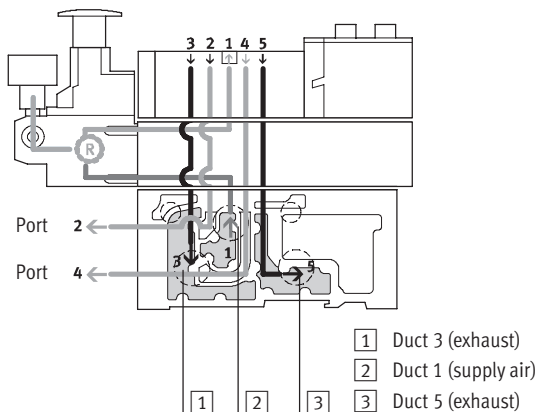
An adjustable pressure regulator can be installed between the manifold block and the valve in order to control the force of the triggered actuator.

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

Standard version:

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

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



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

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

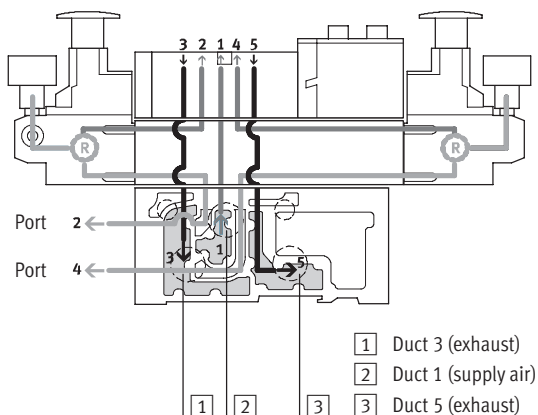
Advantages

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

Application examples

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

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



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

Example with the following switching position:

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

Restrictions

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

Application examples

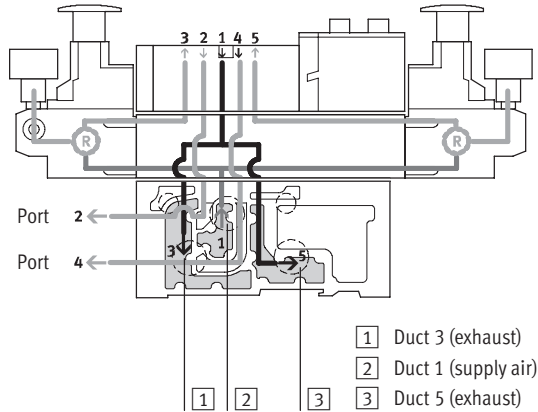
- When two different working pressures are required instead of the valve terminal operating pressure at ports 2 and 4.

Valve terminals type 45 VTSA-F

Key features – Pneumatic components

Vertical stacking

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



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

This means:

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

Example with the following switching position:

The supply air in duct 1 is split 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 venting is required.
- When the pressure regulator must always be adjustable.

Note

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

Advantages

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

Disadvantages

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

Valve terminals type 45 VTSA-F

Key features – Pneumatic components



Vertical stacking – Pressure regulator plate							
Code	Type	Width		Supply pressure		Description	
		18 mm	26 mm	6 bar	10 bar		
Pressure regulator plate for port 1 (P regulator)							
ZA		VABF-S4-...-R1C2-C-10	■	■	-	■	<ul style="list-style-type: none"> Regulates the operating pressure in duct 1 upstream of the directional control valve
ZAY ¹⁾		VABF-S4-...-R1C2-C-10E	■	■	-	■	
ZF		VABF-S4-...-R1C2-C-6	■	■	■	-	
ZFY ¹⁾		VABF-S4-...-R1C2-C-6E	■	■	■	-	
Pressure regulator plate for port 2 (B regulator)							
ZC		VABF-S4-...-R2C2-C-10	■	■	-	■	<ul style="list-style-type: none"> Regulates the operating pressure in duct 2 downstream of the directional control valve
ZCY ¹⁾		VABF-S4-...-R2C2-C-10E	■	■	-	■	
ZH		VABF-S4-...-R2C2-C-6	■	■	■	-	
ZHY ¹⁾		VABF-S4-...-R2C2-C-6E	■	■	■	-	
Pressure regulator plate for port 4 (A regulator)							
ZB ¹⁾		VABF-S4-...-R3C2-C-10	■	■	-	■	<ul style="list-style-type: none"> Regulates the operating pressure in duct 4 downstream of the directional control valve
ZG ¹⁾		VABF-S4-...-R3C2-C-6	■	■	■	-	
Pressure regulator plate for ports 2 and 4 (AB regulator)							
ZD		VABF-S4-...-R4C2-C-10	■	■	-	■	<ul style="list-style-type: none"> Regulates the working pressure in ducts 2 and 4 downstream of the directional control valve <p>Note</p> <p>These pressure regulator plates cannot be combined with reversible 2x 3/2-way valves (code P, Q, R).</p>
ZDY ¹⁾		VABF-S4-...-R4C2-C-10E	■	■	-	■	
ZI		VABF-S4-...-R4C2-C-6	■	■	■	-	
ZIY ¹⁾		VABF-S4-...-R4C2-C-6E	■	■	■	-	
Pressure regulator plate for port 2, reversible (B regulator)							
ZL		VABF-S4-...-R6C2-C-10	■	■	-	■	<ul style="list-style-type: none"> Reversible pressure regulator for port 2
ZLY ¹⁾		VABF-S4-...-R6C2-C-10E	■	■	-	■	
ZN		VABF-S4-...-R6C2-C-6	■	■	■	-	
ZNY ¹⁾		VABF-S4-...-R6C2-C-6E	■	■	■	-	
Pressure regulator plate for port 4, reversible (A regulator)							
ZK ¹⁾		VABF-S4-...-R7C2-C-10	■	■	-	■	<ul style="list-style-type: none"> Reversible pressure regulator for port 4
ZM ¹⁾		VABF-S4-...-R7C2-C-6	■	■	■	-	

1) Also suitable for symmetrical valves

Valve terminals type 45 VTSA-F

Key features – Pneumatic components

Vertical stacking – Pressure regulator plate							
Code	Type	Width		Supply pressure		Description	
		18 mm	26 mm	6 bar	10 bar		
Pressure regulator plate for ports 2 and 4, reversible (AB regulator)							
ZE		VABF-S4-...-R5C2-C-10	■	■	-	■	<ul style="list-style-type: none"> Reversible pressure regulator for ports 2 and 4 Pressure regulation upstream of the valve
ZEY ¹⁾		VABF-S4-...-R5C2-C-10E	■	■	-	■	<ul style="list-style-type: none"> Redirects the operating pressure from duct 1 to ducts 3 and 5 Conducts the exhaust from duct 1 to ducts 3 and 5
ZJ		VABF-S4-...-R5C2-C-6	■	■	■	-	<p> Note</p> <p>These pressure regulator plates cannot be combined with standard 2x 3/2-way valves (code N, K, H). Reversible 2x 3/2-way valves (code P, Q, R) must not be operated in a separate pressure zone in combination with these pressure regulators.</p>
ZJY ¹⁾		VABF-S4-...-R5C2-C-6E	■	■	■	-	

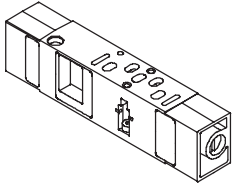
1) Also suitable for symmetrical valves

Valve terminals type 45 VTSA-F

Key features – Pneumatic components



Vertical stacking – Flow control plate



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

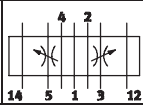
Ducts 3 and 5 can be adjusted independently of each other.



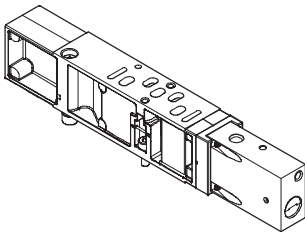
Note

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

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



Vertical stacking – Vertical pressure shut-off plate



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

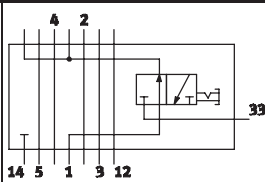
Following activation of the shut-off, the exhaust air/return air from the cylinder is drawn off via the M5 threaded connection.



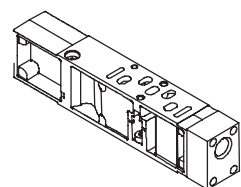
Note

It must be ensured that the operating pressure of the valve terminal lies within the range of the required pilot pressure (i.e. min. 3 bar).

Code	Type	Width		Description
		18 mm	26 mm	
ZT	VABF-S4-...L1D1-C	■	■	<ul style="list-style-type: none"> 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

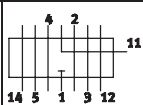


Vertical stacking – Vertical supply plate



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

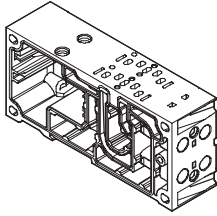
Code	Type	Width		Description
		18 mm	26 mm	
ZU	VABF-S4-...P1A3-...	■	■	<ul style="list-style-type: none"> Plate with port 11 for supplying individual operating pressure to a valve position



Valve terminals type 45 VTSA-F

Key features – Pneumatic components

Manifold sub-base



VTSAVTSA-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. For width 42 mm there are manifold sub-bases with one valve per 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 are the connection ducts for supplying compressed air to and venting from the valves on the terminal as well as

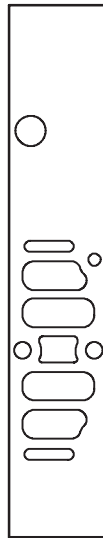
the working ports for the pneumatic cylinders for each valve.

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 extended.

Port patterns on the manifold sub-base

Width 18 mm

Width 26 mm



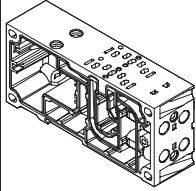
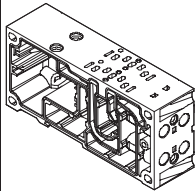
90° connection plate for working ports (2 and 4) of the manifold sub-bases

Code	Image	Type	Width		Ports	Working ports (2, 4) on 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 <ul style="list-style-type: none"> • Connection sizes for 18 mm width: G$\frac{1}{8}$, $\frac{1}{8}$NPT • Connection sizes for 26 mm width: G$\frac{1}{4}$, $\frac{1}{4}$NPT

Valve terminals type 45 VTSA-F

Key features – Pneumatic components

FESTO

Manifold sub-base variants						
Code		Type	Width		No. of valve positions/solenoid coils	Working ports (2, 4) on the manifold sub-base
			18 mm	26 mm		
Manifold sub-base for multi-pin plug/fieldbus connection for double solenoid valves						
A AK		Threaded connection: VABV-S4-2HS-G18-2T2 NPT thread: VABV-S4-2HS-N18-2T2	■	–	2/4	<ul style="list-style-type: none"> Connection sizes for 18 mm width: G$\frac{1}{8}$, QS-G$\frac{1}{8}$-8, QS-G$\frac{1}{8}$-6, $\frac{1}{8}$NPT, QS-$\frac{1}{8}$-$\frac{5}{16}$-U, QS-$\frac{1}{8}$-$\frac{1}{4}$-U
B BK		Threaded connection: VABV-S4-1HS-G14-2T2 NPT thread: VABV-S4-1HS-N14-2T2	–	■	2/4	<ul style="list-style-type: none"> Connection sizes for 26 mm width: G$\frac{1}{4}$, QS-G$\frac{1}{4}$-10, QS-G$\frac{1}{4}$-8, $\frac{1}{4}$NPT, QS-$\frac{1}{4}$-$\frac{3}{8}$-U, QS-$\frac{1}{4}$-$\frac{5}{16}$-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	<ul style="list-style-type: none"> Connection sizes for 18 mm width: G$\frac{1}{8}$, QS-G$\frac{1}{8}$-8, QS-G$\frac{1}{8}$-6, $\frac{1}{8}$NPT, QS-$\frac{1}{8}$-$\frac{5}{16}$-U, QS-$\frac{1}{8}$-$\frac{1}{4}$-U
F FK		Threaded connection: VABV-S4-1HS-G14-2T1 NPT thread: VABV-S4-1HS-N14-2T1	–	■	2/2	<ul style="list-style-type: none"> Connection sizes for 26 mm width: G$\frac{1}{4}$, QS-G$\frac{1}{4}$-10, QS-G$\frac{1}{4}$-8, $\frac{1}{4}$NPT, QS-$\frac{1}{4}$-$\frac{3}{8}$-U, QS-$\frac{1}{4}$-$\frac{5}{16}$-U

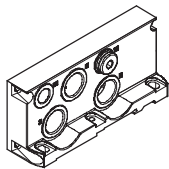
Valve terminals type 45 VTSA-F

Key features – Pneumatic components

Compressed air supply and venting

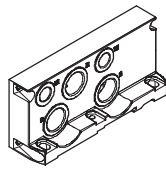
Right-hand end plate

- Code V



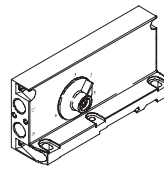
Right-hand end plate

- Code X



End plate with pilot air selector

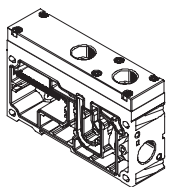
- Code Y, U, Z, W



Port configuration for supply plates

Exhaust port 3/5 separated

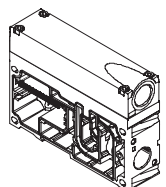
- Code K



Port configuration for supply plates

Exhaust port 3/5 common

- Code L



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

- Exhaust port 3/5 common
- Exhaust port 3/5 separated

Pilot air supply

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

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

- Internal
- External

Internal pilot air supply

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

External pilot air supply

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



Note

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

Right-hand end plate

Different right-hand end plates are available.

With the following two end plates, the outgoing direction of the ports is aligned with the horizontal stacking direction.

Right-hand end plates with pilot air supply/pilot exhaust air

- Internal pilot air supply: Code V
- External pilot air supply: Code X

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

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

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

- 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 pilot air selector must be used in combination with a supply plate. The reversible 3/2-way valves (code P, Q, R) must only be operated in selector position 1 or 2.

Right-hand end plate with pilot air selector

Code	Selector position
Z	1
Y	2
W	3
U	4

Valve terminals type 45 VTSA-F

Key features – Pneumatic components



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, silencer <ul style="list-style-type: none"> • Pilot air is branched internally from port 1 • Port 14 is sealed with a blanking plug • Exhaust port 3/5 via silencer • For operating pressure in the range 3 ... 10 bar • Pilot exhaust air¹⁾
X			■	■	Supply air/exhaust air, external pilot air, silencer <ul style="list-style-type: none"> • Pilot air between 2 and 10 bar is connected at port 14 • Exhaust port 3/5 via silencer • For operating pressure in the range -0.9 ... 10 bar (suitable for vacuum) • Pilot exhaust air¹⁾
Code ²⁾ End plate with pilot air selector					
Y (2)			■	■	Internal pilot air <ul style="list-style-type: none"> • Pilot air 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 air supply, ducted exhaust air <ul style="list-style-type: none"> • 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 silencer¹⁾
Z (1)			■	■	External pilot supply air <ul style="list-style-type: none"> • 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 air, ducted exhaust air <ul style="list-style-type: none"> • Pilot air is connected at port 14 • Pilot exhaust via port 12 with silencer¹⁾

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

2) Selector setting in brackets

Valve terminals type 45 VTSA-F

Key features – Pneumatic components

Compressed air supply/duct separation

Additional supply plates can be used for larger terminals or to create additional pressure zones.

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

Supply plates contain the ports:

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

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

VTSA-F with ducted exhaust air:

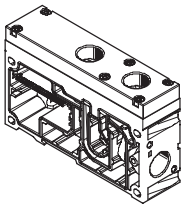
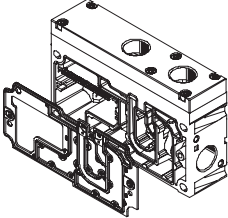
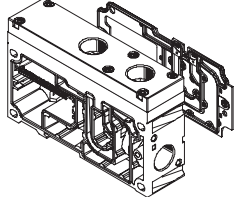
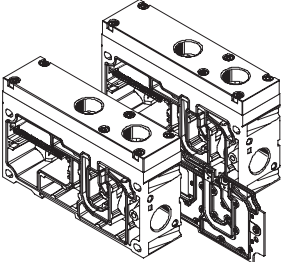
With ducted exhaust air, venting can be via a supply plate or a right-hand end plate (code V or X).

If duct separation is required, there are three different options:

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

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

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

Supply plates					
Code	Image	Type	Width		Description
			18 mm	26 mm	
U		<ul style="list-style-type: none"> • Exhaust port 3/5 common for threaded connection: VABF-S6-10-P1A7-G12 for NPT thread: VABF-S6-10-P1A7-N12 • Exhaust port 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 45 VTSA-F

Key features – Pneumatic components

FESTO

Configuration of all pneumatic threaded connections							
Code ¹⁾		Port	Designation	Code M Large push-in connector	Code N Small push-in connector		
V		-	Right-hand end plate, internal pilot air supply, silencer				
			1	Supply air/vacuum supply	Push-in fitting	QS-G1/2-16	QS-G1/2-12
			3/5	Exhaust air	Via silencer	U-1/2-B	U-1/2-B
			14	Pilot air supply	Blanking plug	B-1/4	B-1/4
X		-	Right-hand end plate, external pilot air supply, silencer				
			1	Supply air/vacuum supply	Push-in fitting	QS-G1/2-16	QS-G1/2-12
			3/5	Exhaust air	Via silencer	U-1/2-B	U-1/2-B
			12	Pilot exhaust air	Via silencer	U-1/4	U-1/4
14	Pilot air supply	Push-in fitting	QS-G1/4-10	QS-G1/4-8			
Y (2)			End plate with pilot air selector, internal pilot air supply				
			12	Pilot air supply	Blanking plug	B-1/4	B-1/4
14	Pilot exhaust air	Push-in fitting	QS-G1/4-10	QS-G1/4-8			
			End plate with pilot air selector, internal pilot air supply, ducted exhaust air				
U (4)			12	Pilot air supply	Blanking plug	B-1/4	B-1/4
			14	Pilot exhaust air	Blanking plug	B-1/4	B-1/4
Z (1)			End plate with pilot air selector, external pilot air supply				
			12	Pilot air supply	Push-in fitting or silencer	QS-G1/4-10 or U-1/4	QS-G1/4-8 or U-1/4
14	Pilot exhaust air	Push-in fitting	QS-G1/4-10	QS-G1/4-8			
W (3)			End plate with pilot air selector, external pilot air supply, ducted exhaust air				
			12	Pilot air supply	Push-in fitting or silencer	QS-G1/4-10 or U-1/4	QS-G1/4-8 or U-1/4
14	Pilot exhaust air	Blanking plug	B-1/4	B-1/4			

1) Selector setting in brackets

Valve terminals type 45 VTSA-F

Key features – Pneumatic components



Configuration of all pneumatic connections with NPT thread							
Code ¹⁾		Port	Designation	Code M Large push-in connector	Code N Small push-in connector		
V		Right-hand end plate, internal pilot air supply, silencer					
		1	Supply air/vacuum supply	Push-in fitting	QS-1/2-5/8-U	QS-1/2-1/2-U	
		3/5	Exhaust air	Via silencer	U-1/2-B-NPT	U-1/2-B-NPT	
		14	Pilot air supply	Blanking plug	B-1/4-NPT	B-1/4-NPT	
X		Right-hand end plate, external pilot air supply, silencer					
		1	Supply air/vacuum supply	Push-in fitting	QS-1/2-5/8-U	QS-1/2-1/2-U	
		3/5	Exhaust air	Via silencer	U-1/2-B-NPT	U-1/2-B-NPT	
		12	Pilot exhaust air	Via silencer	U-1/4-B-NPT	U-1/4-B-NPT	
		14	Pilot air supply	Push-in fitting	QS-1/4-3/8-U	QS-1/4-5/16-U	
Y (2)			End plate with pilot air selector, internal pilot air supply				
			12	Pilot air supply	Blanking plug	B-1/4-NPT	B-1/4-NPT
			14	Pilot exhaust air	Push-in fitting	QS-1/4-3/8-U	QS-1/4-5/16-U
U (4)			End plate with pilot air selector, internal pilot air supply, ducted exhaust air				
			12	Pilot air supply	Blanking plug	B-1/4-NPT	B-1/4-NPT
			14	Pilot exhaust air	Blanking plug	B-1/4-NPT	B-1/4-NPT
Z (1)			End plate with pilot air selector, external pilot air supply				
			12	Pilot air supply	Push-in fitting or silencer	QS-1/4-3/8-U or U-1/4-B-NPT	QS-1/4-5/16-U or U-1/4-B-NPT
			14	Pilot exhaust air	Push-in fitting	QS-1/4-3/8-U	QS-1/4-5/16-U
W (3)			End plate with pilot air selector, external pilot air supply, ducted exhaust air				
			12	Pilot air supply	Push-in fitting or silencer	QS-1/4-3/8-U or U-1/4-B-NPT	QS-1/4-5/16-U or U-1/4-B-NPT
			14	Pilot exhaust air	Blanking plug	B-1/4-NPT	B-1/4-NPT

1) Selector setting in brackets

Valve terminals type 45 VTSA-F

Key features – Pneumatic components

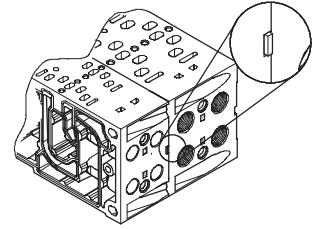


Creation of pressure zones and separation of exhaust air

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

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

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



Creating pressure zones					
Code	Separating seal		Width		Description
	Pictorial examples	Coding	18 mm	26 mm	
T			■	■	Duct 1 separated
S			■	■	Duct 1 and 3/5 separated
R			■	■	Duct 3/5 separated

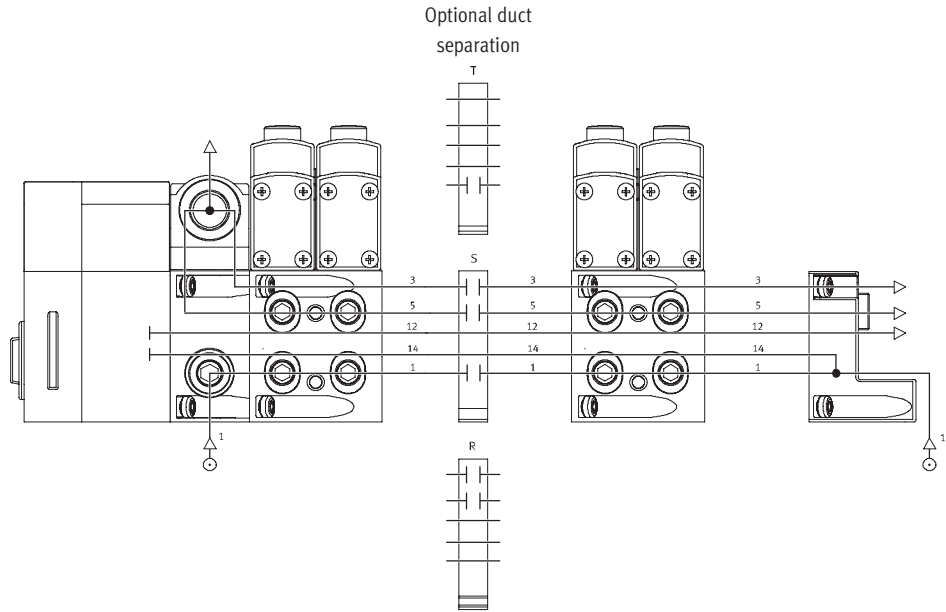
Valve terminals type 45 VTSA-F

Key features – Pneumatic components

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

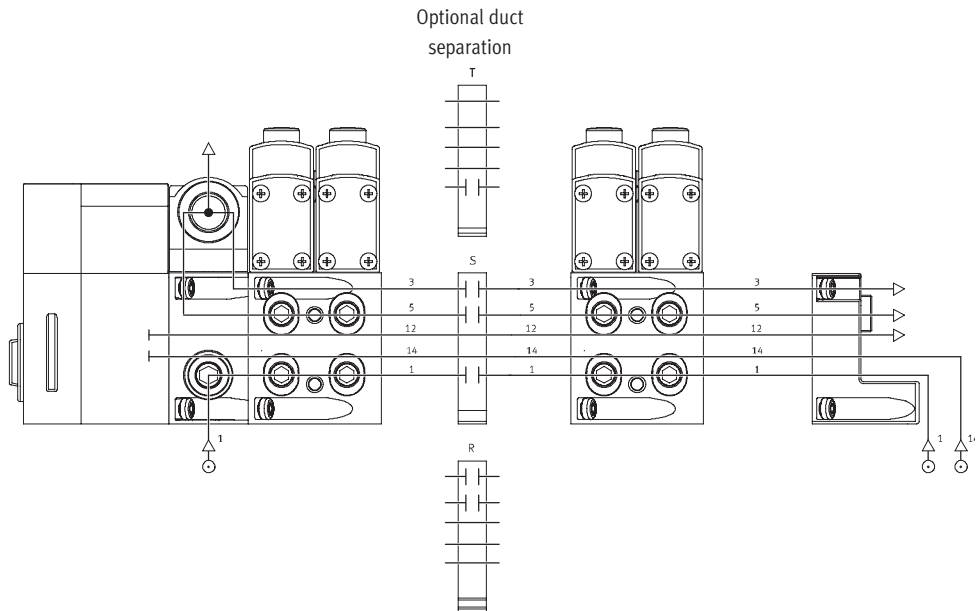
Internal pilot air supply, silencer/ducted exhaust air

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



Valve terminals type 45 VTSA-F

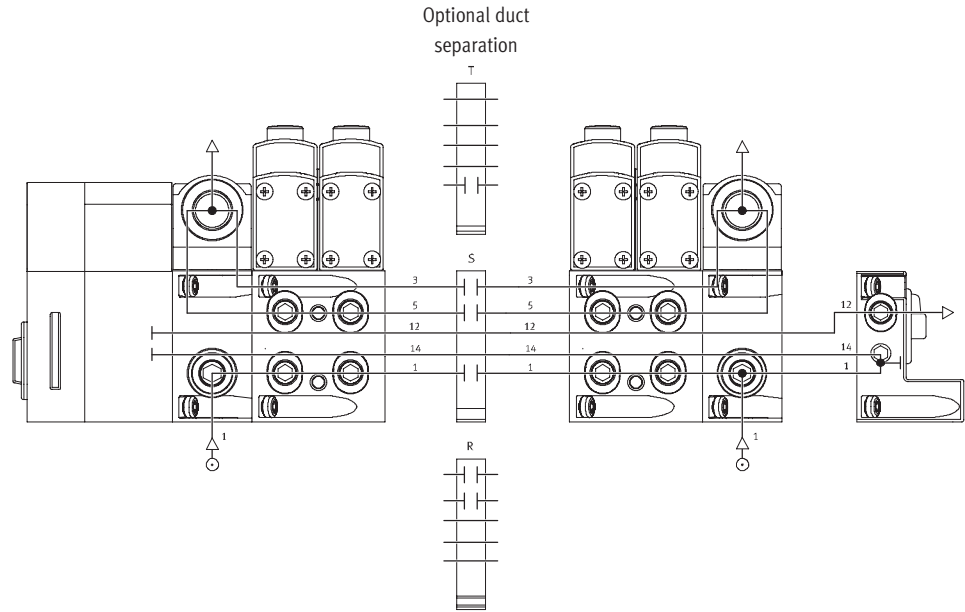
Key features – Pneumatic components



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

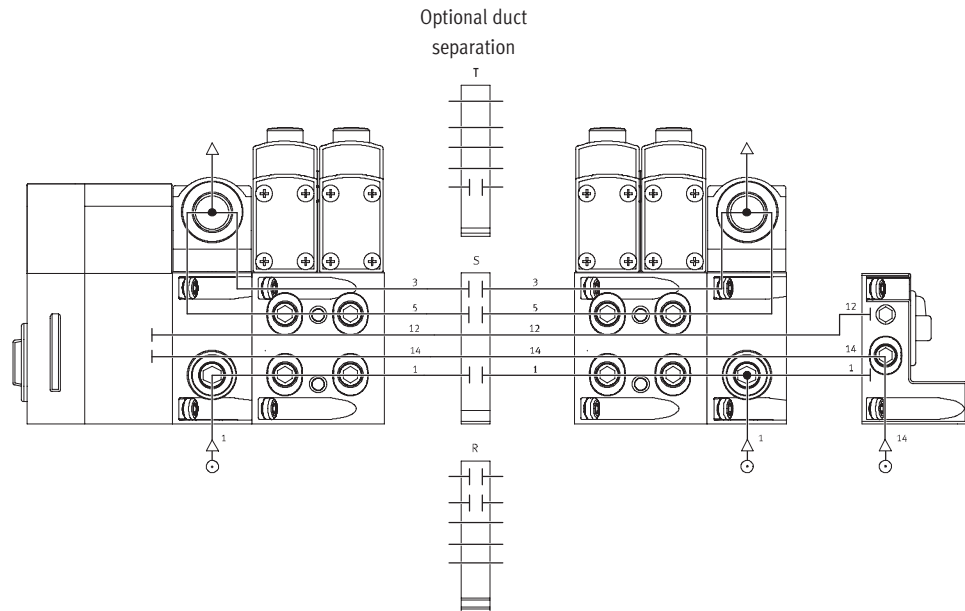
Internal pilot air supply, ducted exhaust air/silencer

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



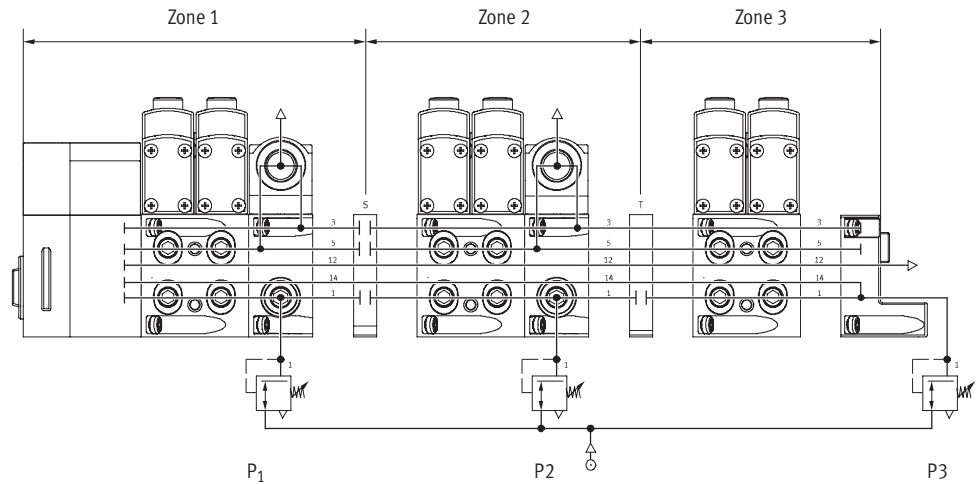
Valve terminals type 45 VTSA-F

Key features – Pneumatic components

Examples: Creating pressure zones

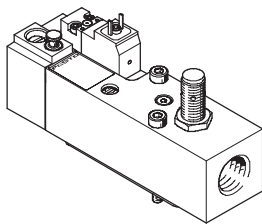
VTSA-F with CPX terminal connection

VTSA-F allows 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.



Soft-start valve

Valve



The soft-start valve is used for slow and gradual pressure build-up and quick venting of the supply pressure of the valve terminal. If a soft-start valve is used in a valve terminal, no additional elements supplying compressed air must be used in the same pressure zone.

The piston position of the soft-start valve is monitored by a sensor. This can be used to check whether the

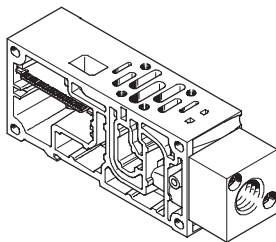
valve terminal compressed air supply is working. Pressure sensing via a pressure gauge (optional) is also possible.

The valve terminal can either be operated with internal pilot air supply via the soft-start valve or with internal or external pilot air supply via the different end plate variants. The type of pilot air supply is determined by the

piston position of the valve seal of the soft-start valve. If internal pilot air supply via the soft-start valve is selected, there must be no additional pilot air supply (duct 14) within the valve terminal.

Exhaust air cannot be expelled via the soft-start valve. An exhaust plate is required for operation in a pressure zone with duct 1 and 3/5 separated.

Manifold sub-base



Modified manifold sub-bases (width 42 mm) are available for the soft-start valve. This manifold sub-base supplies the pressure zone on the valve terminal with compressed air and provides a high flow range. The pneumatic interface to ISO5599-1 is

used here so that conventional individual sub-bases to ISO in combination with the soft-start valve can be used as an alternative to this manifold sub-base. Included with the manifold sub-base is a blanking plug for sealing ports on the end plate

VABE-S6-1RZ-.... Depending on the position/pressure zone of the soft-start valve on the valve terminal and the use of internal or external pilot air supply, the ports of the end plate are sealed with blanking plugs.

Valve terminals type 45 VTSA-F

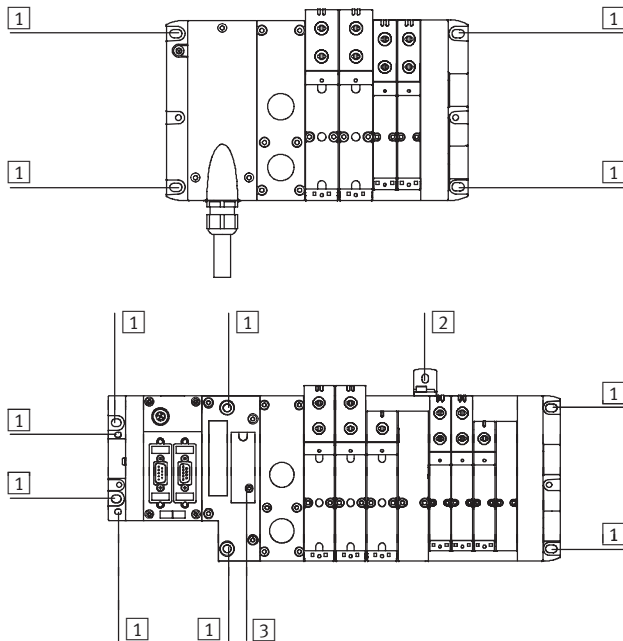
Key features – Assembly

Valve terminal assembly

Sturdy terminal mounting thanks to:

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

Wall mounting



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

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

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

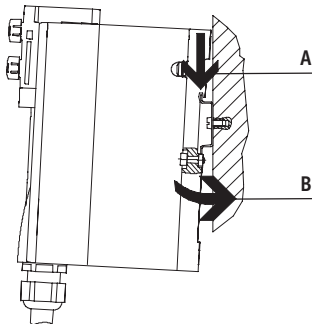


Note

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

Use mounting brackets of the type IBGW-03 for the electrical part of the valve terminal VTSA-FB-03E.

H-rail mounting



The VTSA-F valve terminal is hooked onto the H-rail (see arrow A).

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

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

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

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

Valve terminals type 45 VTSA-F

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

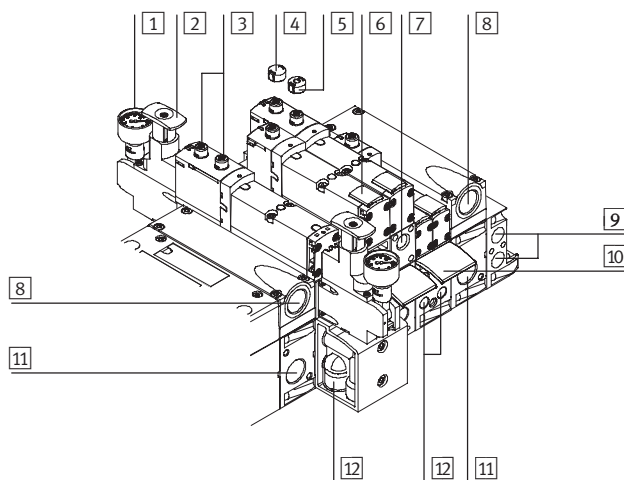
The valve is switched by pushing the manual override. The set switching status can also be locked by turning the manual override.

Alternatives:

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

- A cover (code V) can be fitted over the manual override to prevent it from being accidentally activated.

Pneumatic connection and control elements



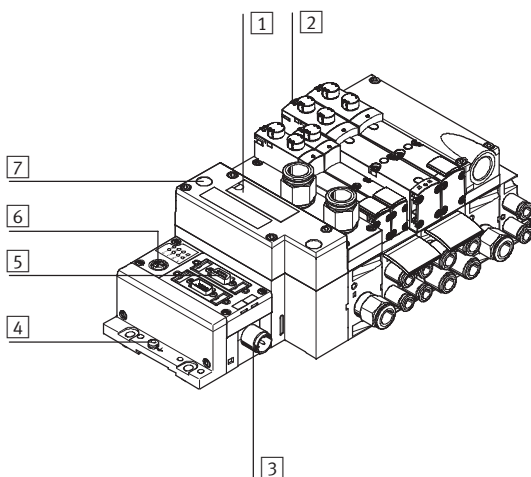
- | | |
|--|--|
| <ul style="list-style-type: none"> 1 Pressure gauge (optional) 2 Adjusting knob for optional pressure regulator plate 3 Manual override (for each pilot solenoid coil, non-detenting or non-detenting/detenting) 4 Optional cover cap for manual override (prevents manual override) 5 Optional cover cap for manual override with non-detenting function 6 Inscription label holder for valve 7 Adjusting screw of optional flow control plate 8 Exhaust ports (valves) (3/5) | <ul style="list-style-type: none"> 9 Pilot ports 12 and 14 for supplying the external pilot air 10 Inscription label holder for sub-base 11 Supply port 1 (operating pressure) 12 Working ports 2 and 4, for each valve position |
|--|--|



Note

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

Electrical connection and display components



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

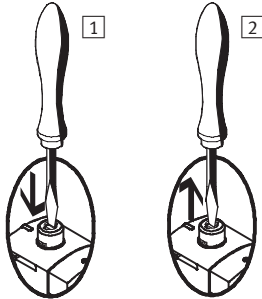
Valve terminals type 45 VTSA-F

Key features – Display and operation

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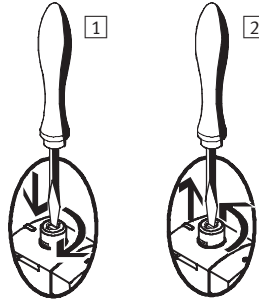
Manual override (MO)

MO with automatic return (non-detenting)



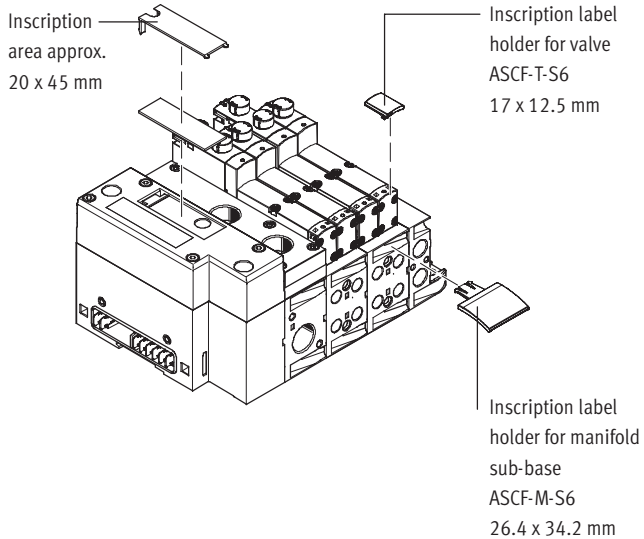
- 1 Press in the stem of the manual override using a pin or screwdriver. Valve is then switched.
- 2 Remove the pin or screwdriver. Spring force pushes the stem of the manual override back. Valve returns to initial position (not with double solenoid valve code J).

MO set via turning (covered)



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

Inscription system



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

- Inscription label holder for valve type ASCF-T-S6: Part-No. 540 888
 - Inscription label holder for manifold sub-base type ASCF-M-S6: Part No. 540 889
- Large inscription labels can be attached to the pneumatic interface as an alternative or in addition to the smaller labels.

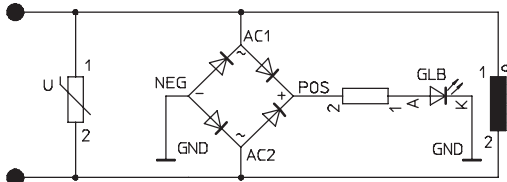
Valve terminals type 45 VTSA-F

Key features – Electrical components

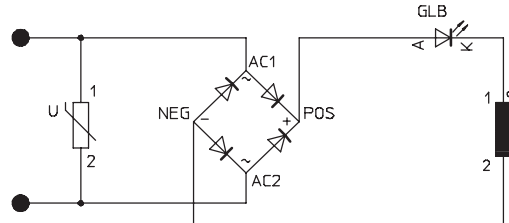
Protective circuit

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

24 V DC version



110 V AC version



Individual electrical connection

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

Individual electrical connection:

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

Electrical multi-pin plug connection

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

- Sub-D multi-pin plug connection (37-pin for 24 V DC): This valve terminal is available with 2 ... 16 valve positions equipped with double solenoid valves and 2 ... 32 valve positions equipped with single solenoid valves. A maximum of 32 solenoid coils can be actuated.
- Terminal box (terminal strip for 24 V DC or 110 V AC): This valve terminal is available with 2 ... 16 valve positions equipped with double solenoid valves and

2 ... 32 valve positions equipped with single solenoid valves.

A maximum of 32 solenoid coils can be actuated.

- Multi-pin node (round plug connector): Electrical multi-pin plug connection with round plug connector, 19-pin to CNOMO E03.62.530.N, connecting thread M23 for 24 V DC. The valve terminal can be equipped with max. 16 solenoid coils.

The valves are switched by means of positive or negative logic (PNP or

NPN). Mixed operation is not permitted.

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

Note

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

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

Fieldbus connection/control block

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

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

Note

Further information can be found here:

➔ Internet: cpx

Valve terminals type 45 VTSA-F

Key features – Electrical components



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
<p> Note</p> <p>The drawing shows the view on the Sub-D plug socket at the multi-pin cable NEBV-S1W37-....</p>	Conductor						
	33	0 V ³⁾	YE BK		35	0 V ³⁾	BN BK
	34	0 V ³⁾	WH BK		36	0 V ³⁾	BK
	Earthing						
	37	FE	VT		-	-	-

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

Dimensions

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

Connecting 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 terminals type 45 VTSA-F

Key features – Electrical components

FESTO

Sub-D plug, 24 V DC; electrical connection code MP1							
Type	Sheath	Length [m]	Wire x mm ² [mm ²]	Cable Ø [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		Polyurethane	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			Polyurethane	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		Polyvinyl chloride		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			Polyvinyl chloride	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 terminals type 45 VTSA-F

Key features – Electrical components



Pin allocation – Multi-pin terminal strip (Cage Clamp®), 24 V DC and 110 V AC; electrical connection code T					
	Terminal	Coil/address		Terminal	Coil/address
<p>Each solenoid coil must be assigned to a specific terminal on the terminal strip in order for actuation of the valves to take place.</p>	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
<p>- - Note The drawing shows the view onto the multi-pin terminal strip (Cage Clamp®).</p>	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	Pin ¹⁾		Address	Pin ¹⁾
	0	15		8	17
	1	7		9	9
	2	5		10	2
	3	4		11	13
	4	16		12	11
	5	8		13	10
	6	3		14	1
	7	14		15	18

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

Rules for addressing

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

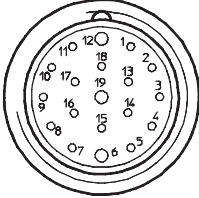
– A valve position for actuating one solenoid coil occupies one address (type VABV-...-...T1).

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

- Coil 14: Lower-value address
- Coil 12: Higher-value address

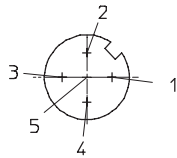
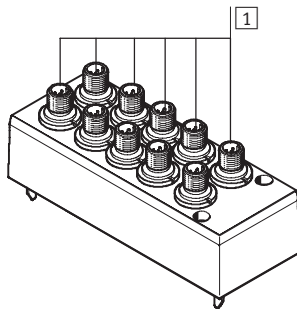
Valve terminals type 45 VTSA-F

Key features – Electrical components

Pin allocation – Round plug connector, 24 V DC; electrical connection – CNOMO allocation					
	Pin	Valve position/ solenoid coil		Pin	Valve position/ solenoid coil
	1	8/14		10	7/12
	2	6/14		11	7/14
	3	4/14		12	FE
	4	2/12		13	6/12
	5	2/14		14	4/12
	6	0 V ¹⁾		15	1/14
	7	1/12		16	3/14
	8	3/12		17	5/14
	9	5/12		18	8/12
			19	Unused	

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

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



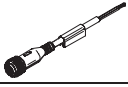

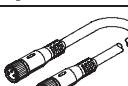
Pin allocation M12

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

1 Connector plug M12x1, 5-pin

Valve terminals type 45 VTSA-F

Key features – Electrical components

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

System equipment

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

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

Bio-oils


When using bio-oils (oils which are based on synthetic or native ester, e.g. rapeseed oil methyl ester), the maximum residual oil content of 0.1 mg/m³ 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/m³ must not be exceeded (see ISO 8573-1 Class 4). A higher residual oil content irrespective of the compressor oil cannot be permitted, as the basic lubricant would be flushed out over time.

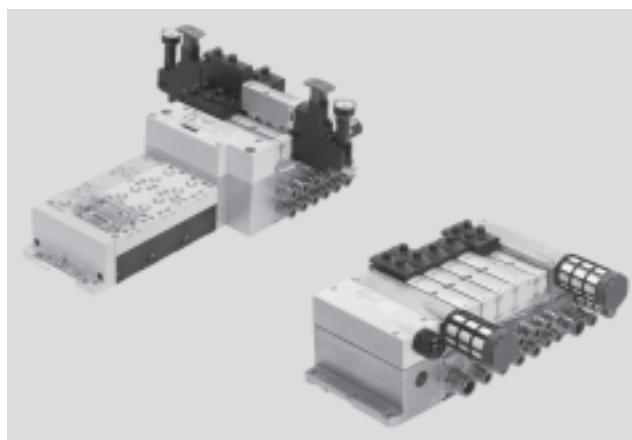
Valve terminals type 45 VTSA-F

Technical data

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

-  - Valve width
 02: 18 mm
 01: 26 mm

-  - Voltage
 24 V DC
 110 V AC



General technical data					
Width	18 mm		26 mm		
Constructional design	Electromagnetically actuated piston spool valve				
Lubrication	Lubricated for life				
Type of mounting	Wall mounting On H-rail to EN 60715				
Mounting position	Any				
Manual override	Non-detenting, non-detenting/detenting, covered				
Pneumatic connections	Threaded connection	NPT thread	Threaded connection	NPT thread	
Pneumatic connection	Via manifold sub-base				
Supply port	1	G $\frac{1}{2}$, QS-G $\frac{1}{2}$ -12, QS-G $\frac{1}{2}$ -16	$\frac{1}{2}$ NPT, QS- $\frac{1}{2}$ - $\frac{1}{2}$ -U, QS- $\frac{1}{2}$ - $\frac{5}{8}$ -U	G $\frac{1}{2}$, QS-G $\frac{1}{2}$ -12, QS-G $\frac{1}{2}$ -16	$\frac{1}{2}$ NPT, QS- $\frac{1}{2}$ - $\frac{1}{2}$ -U, QS- $\frac{1}{2}$ - $\frac{5}{8}$ -U
Exhaust port	3/5	G $\frac{1}{2}$, QS-G $\frac{1}{2}$ -12, QS-G $\frac{1}{2}$ -16	$\frac{1}{2}$ NPT, QS- $\frac{1}{2}$ - $\frac{1}{2}$ -U, QS- $\frac{1}{2}$ - $\frac{5}{8}$ -U	G $\frac{1}{2}$, QS-G $\frac{1}{2}$ -12, QS-G $\frac{1}{2}$ -16	$\frac{1}{2}$ NPT, QS- $\frac{1}{2}$ - $\frac{1}{2}$ -U, QS- $\frac{1}{2}$ - $\frac{5}{8}$ -U
Working ports	2/4	Depending on the connection type selected			
		<ul style="list-style-type: none"> G$\frac{1}{8}$ QS-G$\frac{1}{8}$-6 QS-G$\frac{1}{8}$-8 	<ul style="list-style-type: none"> $\frac{1}{8}$NPT QS-$\frac{1}{8}$-$\frac{1}{4}$-U QS-$\frac{1}{8}$-$\frac{5}{16}$-U 	<ul style="list-style-type: none"> G$\frac{1}{4}$ QS-G$\frac{1}{4}$-8 QS-G$\frac{1}{4}$-10 	<ul style="list-style-type: none"> $\frac{1}{4}$NPT QS-$\frac{1}{4}$-$\frac{5}{16}$-U QS-$\frac{1}{4}$-$\frac{3}{8}$-U
External pilot air supply port	14	G $\frac{1}{4}$	$\frac{1}{4}$ NPT	G $\frac{1}{4}$	$\frac{1}{4}$ NPT
Pilot exhaust air port	12	G $\frac{1}{4}$	$\frac{1}{4}$ NPT	G $\frac{1}{4}$	$\frac{1}{4}$ NPT

-  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate [l/min]															
Valve function order code	VC	VV	M	O	J	D	N	K	H	B	G	E	P	Q	R
Width 18 mm															
Flow rate of valve	700		750		600			500 ¹⁾ 330 ²⁾		600					
Flow rate of valve on valve terminal	500		700		550			500 ¹⁾ 330 ²⁾		550					
Width 26 mm															
Flow rate of valve	1,350		1,400		1,250			1,400 ¹⁾ 700 ²⁾		1,250					
Flow rate of valve on valve terminal	1,000		1,350		1,150			1,350 ¹⁾ 700 ²⁾		1,150					

1) Switching position
 2) Mid-position

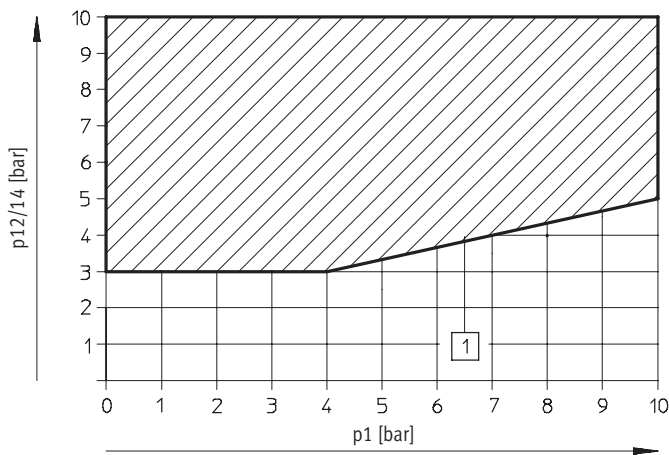
Valve terminals type 45 VTSA-F

Technical data

Operating and environmental conditions		VC	VV	M	O	J	D	N	K	H	B	G	E	P	Q	R
Valve function order code																
Operating medium		Filtered compressed air, lubricated or unlubricated, inert gases → 44														
Grade of filtration	[µm]	40 (average pore size)														
Operating pressure	[bar]	3 ... 10			-0.9 ... +10				3 ... 10			-0.9 ... +10				
Operating pressure for valve terminal with internal pilot air supply	[bar]	3 ... 10														
Pilot pressure	[bar]	3 ... 10														
Ambient temperature	[°C]	-5 ... +50														
Temperature of medium	[°C]	-5 ... +50														
Storage temperature ¹⁾	[°C]	-20 ... +40														
CE mark (see declaration of conformity)		To EU Low Voltage Directive														
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

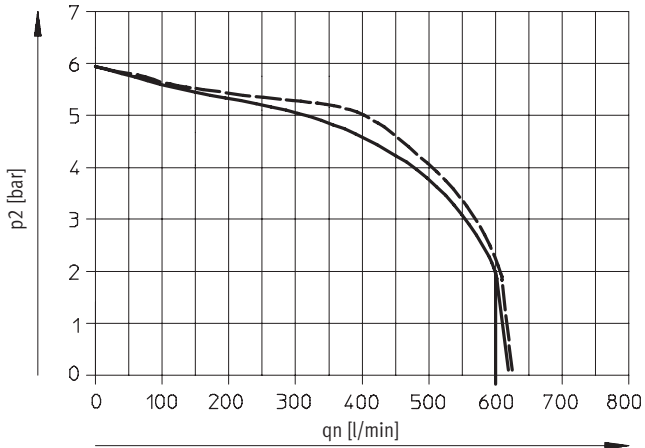
Valve switching times [ms]		VC	VV	M	O	J	D	N	K	H	B	G	E	P	Q	R
18 mm																
Switching times	on	12	12	22	12	-	-	12	12	12	15	15	15	25	25	25
	off	30	30	28	38	-	-	30	30	30	44	44	44	12	12	12
	change-over	-	-	-	-	11	11	-	-	-	-	-	-	-	-	-
26 mm																
Switching times	on	20	20	25	20	-	-	20	20	20	22	22	22	32	32	32
	off	38	38	45	65	-	-	38	38	38	65	65	65	30	30	30
	change-over	-	-	-	-	18	18	-	-	-	-	-	-	-	-	-

Valve terminals type 45 VTSA-F

Technical data

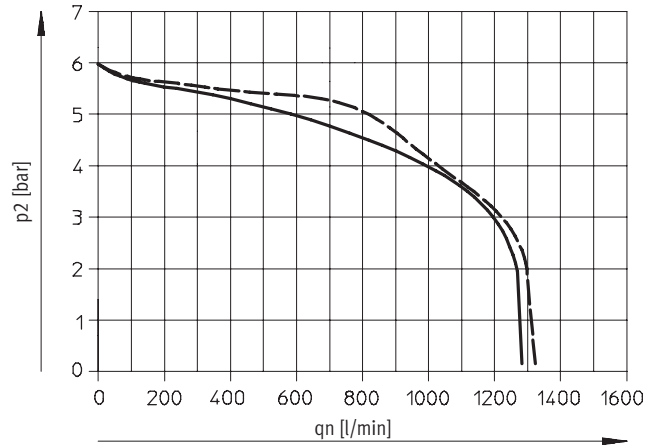
Flow rate q_n as a function of output pressure p_2 with pressure regulator plates (P regulator plate) for port 1

Width 18 mm



--- 6 bar
— 10 bar

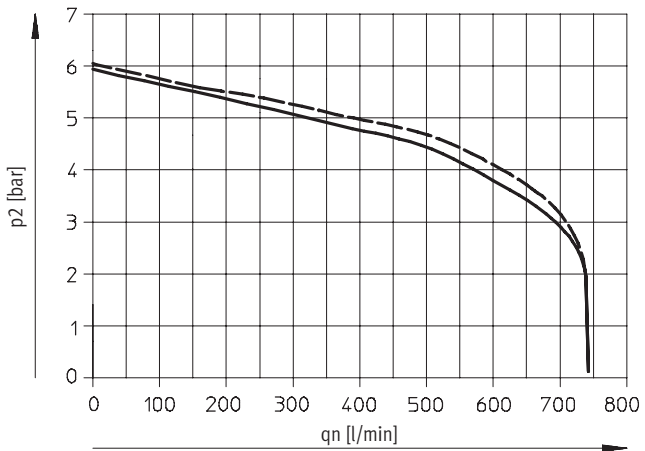
Width 26 mm



--- 6 bar
— 10 bar

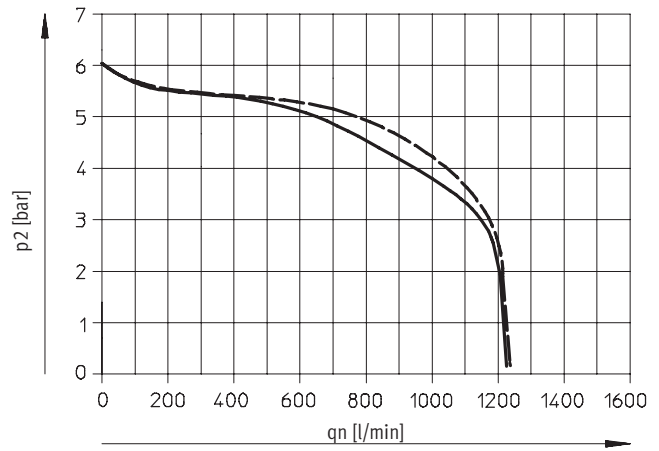
Flow rate q_n as a function of output pressure p_2 with pressure regulator plates (AB regulator plates) for port 2, 4 or ports 4/2

Width 18 mm



--- 6 bar
— 10 bar

Width 26 mm



--- 6 bar
— 10 bar

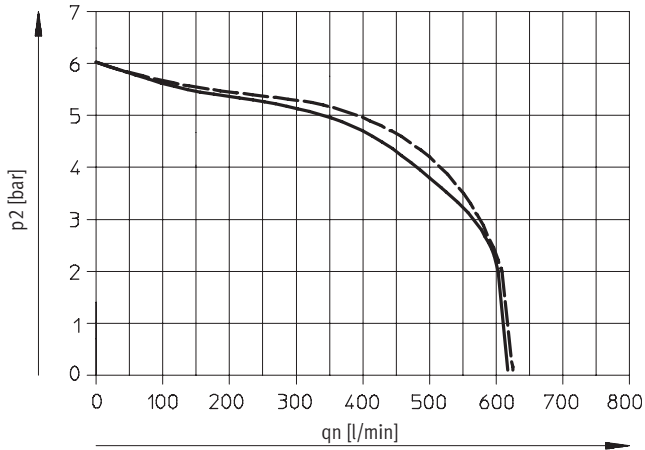
Valve terminals type 45 VTSA-F

Technical data

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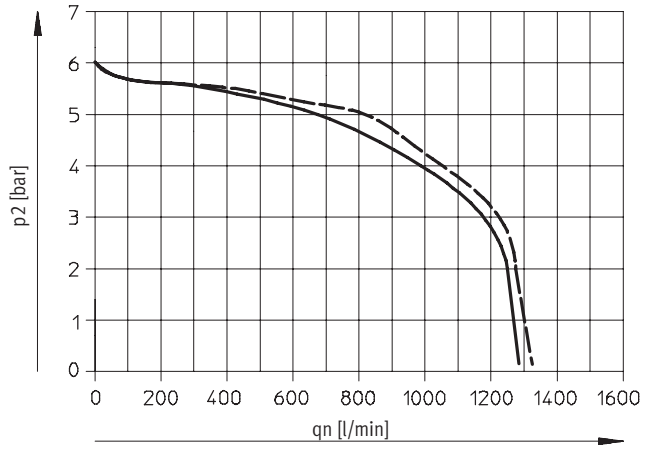
Flow rate q_n as a function of output pressure p_2 with pressure regulator plates (AB regulator plates, rev.) for ports 4/2, reversible

Width 18 mm



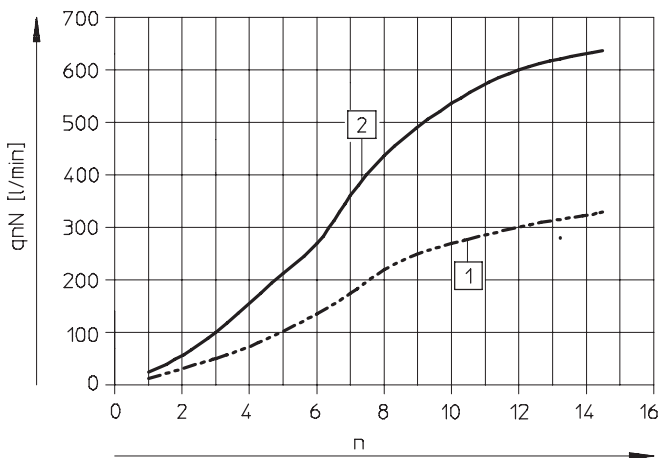
--- 6 bar
— 10 bar

Width 26 mm



--- 6 bar
— 10 bar

Flow rate q_n as a function of flow control



- 1 Width 18 mm
- 2 Width 26 mm
- n Revolutions of the adjusting screw

Valve terminals type 45 VTSA-F

Technical data

Electrical data		
VTSA-F with CPX terminal	18 mm	26 mm
Voltage supply for electronics (V _{EL/SEN})		
Operating voltage	[V DC]	24 ±10%
Max. intrinsic current consumption at 24 V DC	[mA]	20
Duty cycle		100%
Load voltage supply for valves (V _{val})		
Operating voltage	[V DC]	24 ±10%
Diagnostic message undervoltage V _{OFF} load voltage outside function range	[V]	21.6 ... 21.5
Protection class to EN 60529		IP65 (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-F with multi-pin plug connection	18 mm	26 mm
Load voltage supply for valves (V _{val})		
Operating voltage	[V DC] [V AC]	24 ±10% 110 ±10% (50 ... 60 Hz)
Maximum residual current	[A]	6
Acceptable current load at 40°C	[A]	1
Surge capacity	[kV]	1.5
Degree of contamination		3
Duty cycle		100%
Protection class to EN 60529		IP65 (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

Electrical data		
VTSA-F with individual connection	18 mm	26 mm
Load voltage supply for valves (V _{val})		
Operating voltage	[V DC]	24 ±10%
Maximum residual current	[A]	10
Duty cycle		100%
Protection class to EN 60529		IP65 (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

Valve terminals type 45 VTSA-F

Technical data

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	
Flow control plate	Die-cast aluminium	
Pressure regulator plate	Die-cast aluminium, reinforced polyamide	
Multi-pin connection block	Die-cast aluminium	
Cover for the pneumatic interface and multi-pin plug connection	Wellamid, reinforced polyamide	

Product weight		Design	
Approx. weight	[g]	18 mm	26 mm
Sub-D multi-pin interface module or terminal strip ¹⁾	550		
Interface module CPX ¹⁾	1,470		
Electrical interface for AS-interface	300		
AS-interface module	850		
Supply plate ²⁾			
• Exhaust plate with 3 and 5 common	617		
• Exhaust port cover with 3 and 5 separated	597		
Right-hand end plate ³⁾			
• Axial	339		
• Selector	281		
Manifold sub-base ⁴⁾	447		634
90° connection plate ³⁾	170		230
Pressure regulator plate			
for port 1	350		402
for port 4 or 2	367		448
for ports 4/2	611		692
Flow control plate	228		320
Vertical supply plate ³⁾	140		191
Vertical pressure shut-off plate	209		273
Valves			
• 5/3-way valve (code: B, G, E)	191		320
• 5/2-way valve, single solenoid (code: M, O)	163		293
• 5/2-way valve, double solenoid (code: J, D)	172		276
• 2x 3/2-way valve (code: N, K, H, P, Q, R)	190		335
• 2x 2/2-way valve (code: VC, VV)	190		335
Blanking plate	34.4		73.3

1) With sheet metal seal, printed circuit board

2) With sheet metal seal and electrical manifold module

3) With screws

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

Valve terminals type 45 VTSA-F

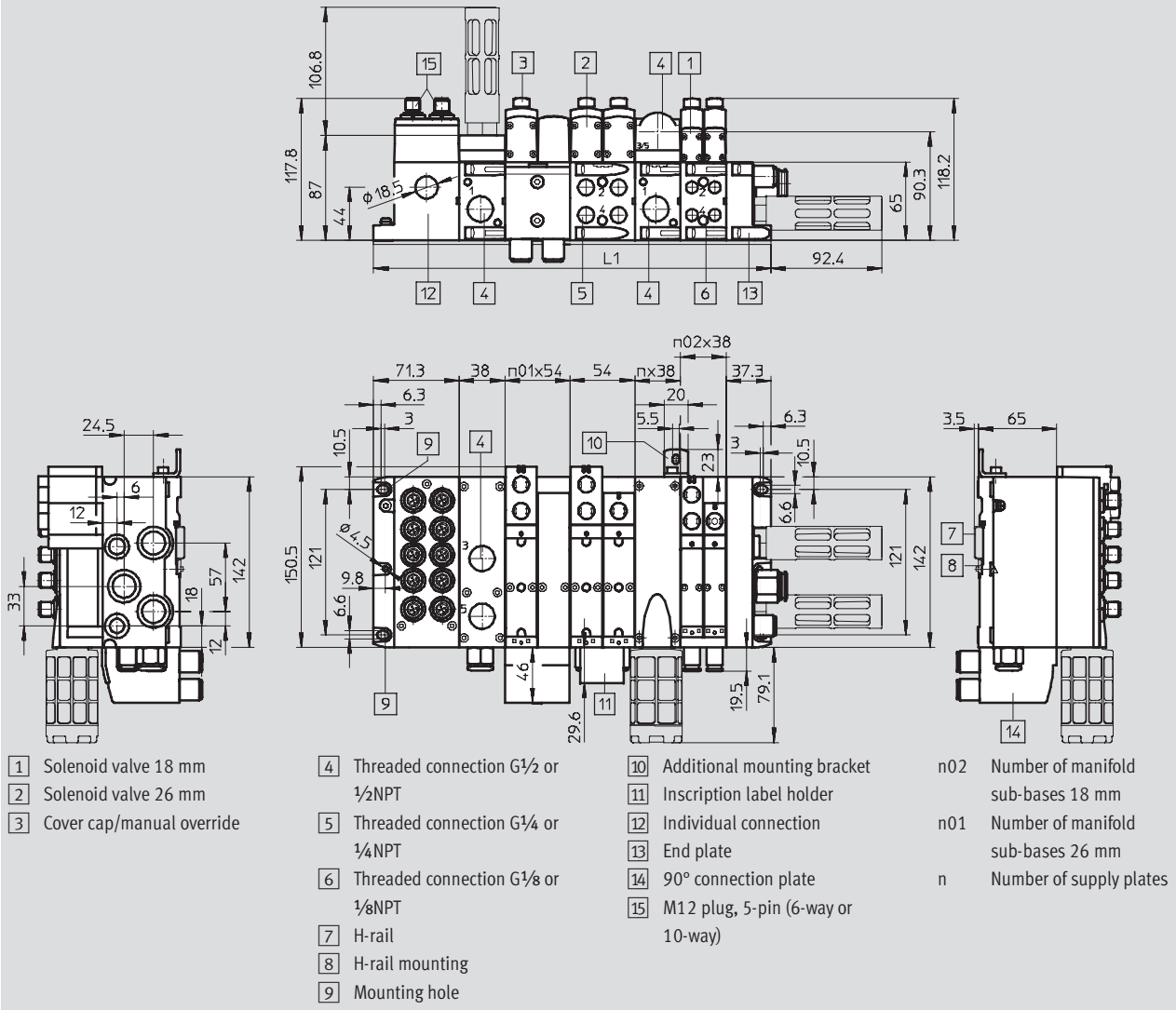
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com

Valve terminal with individual electrical connection



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

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Valve terminals type 45 VTSA-F

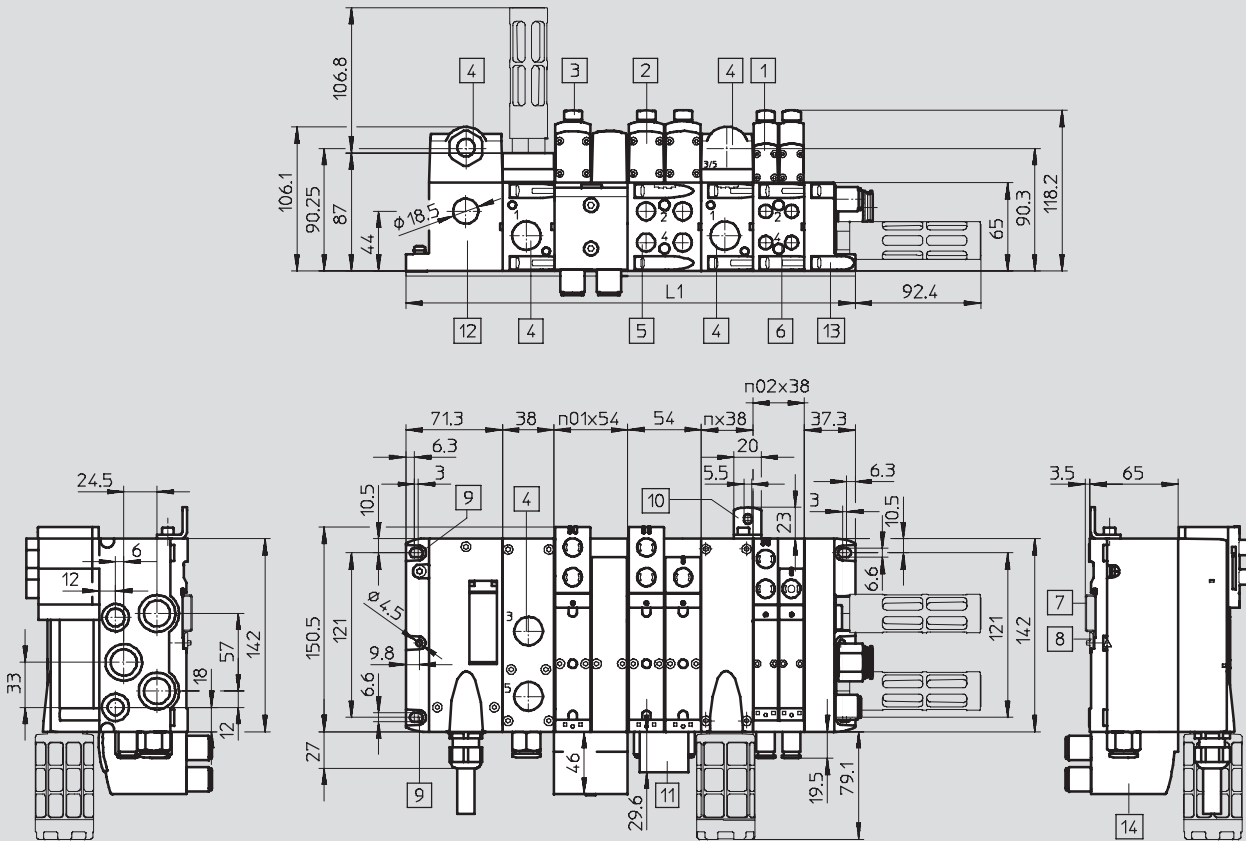
Technical data

FESTO

Dimensions

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Valve terminal with multi-pin plug connection

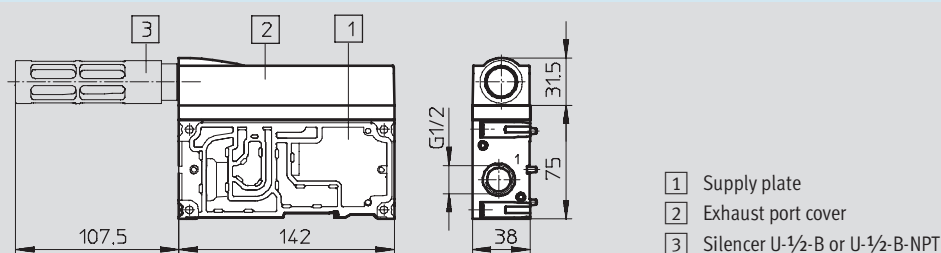


- | | | | |
|-----------------------------|--|--------------------------------|--|
| 1 Solenoid valve 18 mm | 4 Threaded connection G $\frac{1}{2}$ or $\frac{1}{2}$ NPT | 10 Additional mounting bracket | n02 Number of manifold sub-bases 18 mm |
| 2 Solenoid valve 26 mm | 5 Threaded connection G $\frac{1}{4}$ or $\frac{1}{4}$ NPT | 11 Inscription label holder | n01 Number of manifold sub-bases 26 mm |
| 3 Cover cap/manual override | 6 Threaded connection G $\frac{3}{8}$ or $\frac{1}{8}$ NPT | 12 Multi-pin plug connection | n Number of supply plates |
| | 7 H-rail | 13 End plate | |
| | 8 H-rail mounting | 14 90° connection plate | |
| | 9 Mounting hole | | |

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

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Supply plate with silencer



- | |
|---|
| 1 Supply plate |
| 2 Exhaust port cover |
| 3 Silencer U- $\frac{1}{2}$ -B or U- $\frac{1}{2}$ -B-NPT |

Valve terminals type 45 VTSA-F

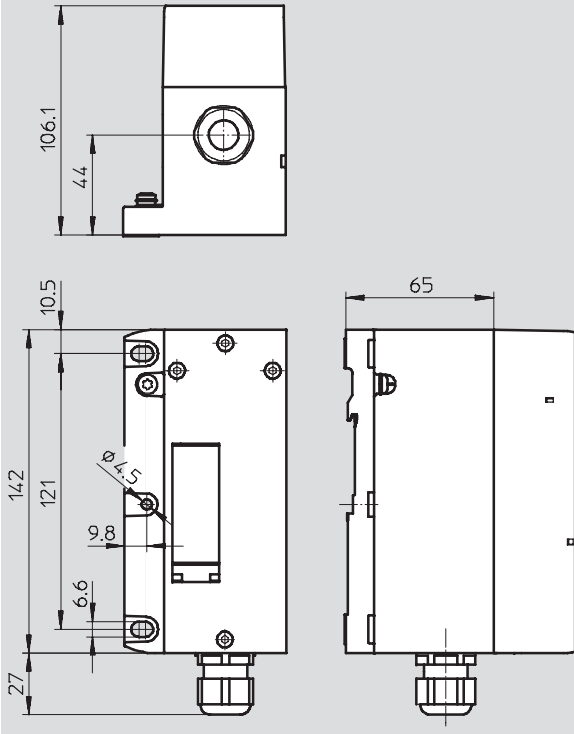
Technical data

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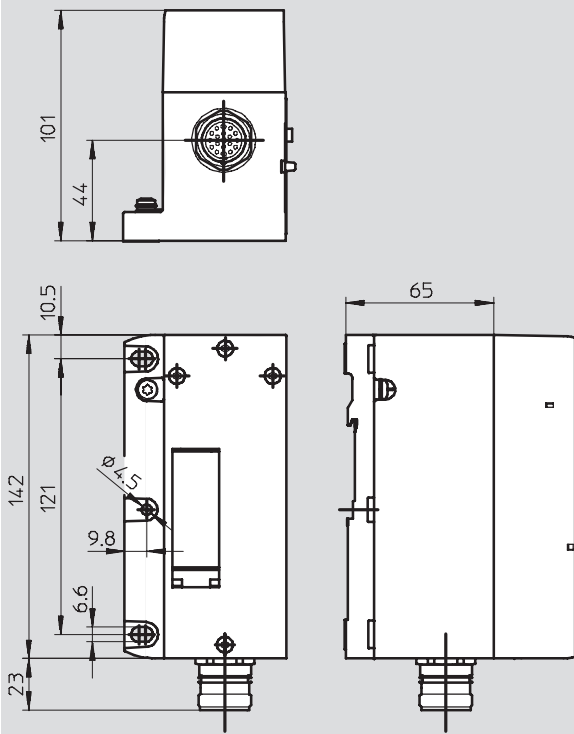
Dimensions

Download CAD data → www.festo.com

Multi-pin, terminal strip (Cage Clamp®)



Multi-pin, round plug connector



Valve terminals type 45 VTSA-F

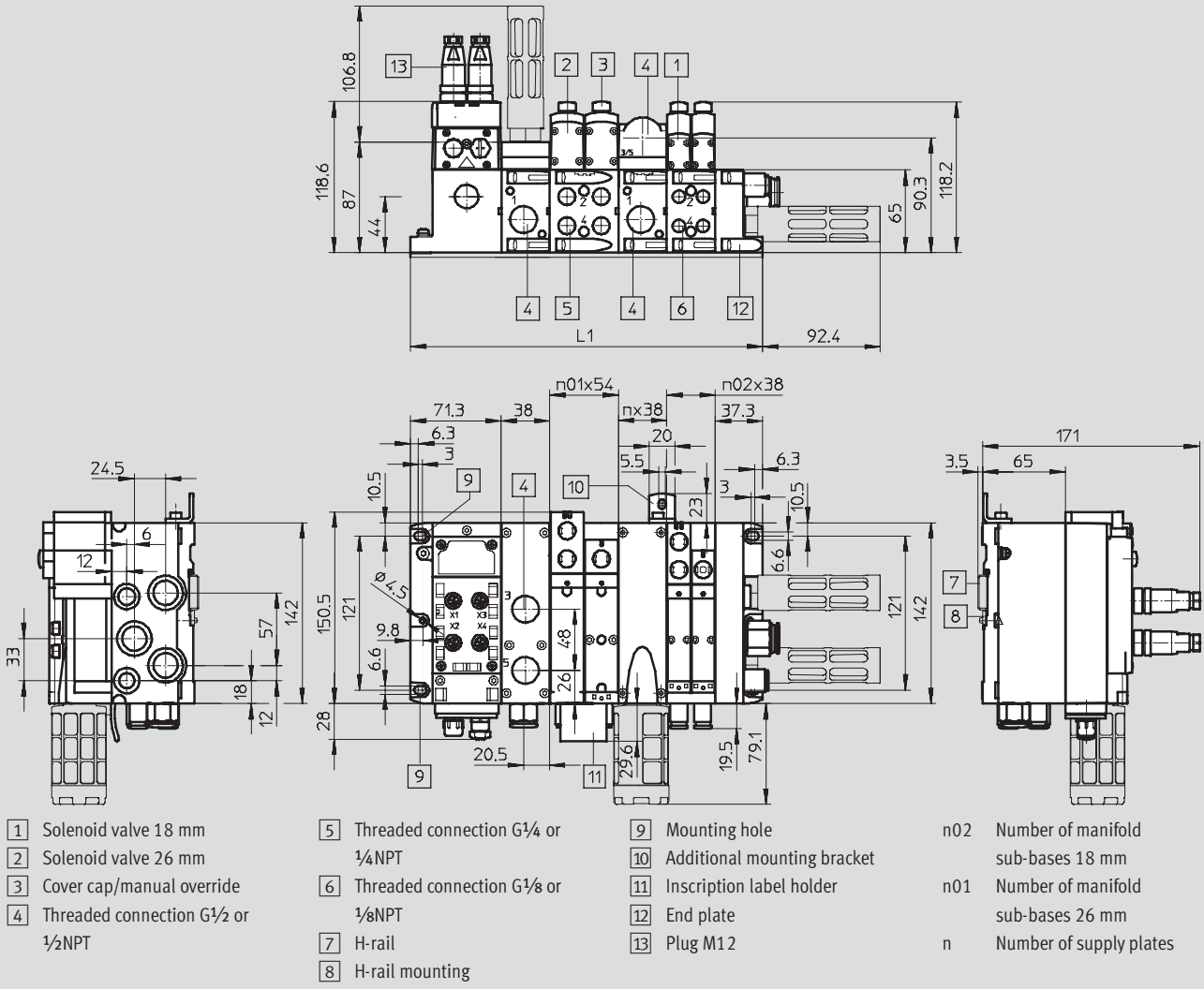
Technical data

FESTO

Dimensions

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Valve terminal with AS-interface connection



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

Valve terminals type 45 VTSA-F

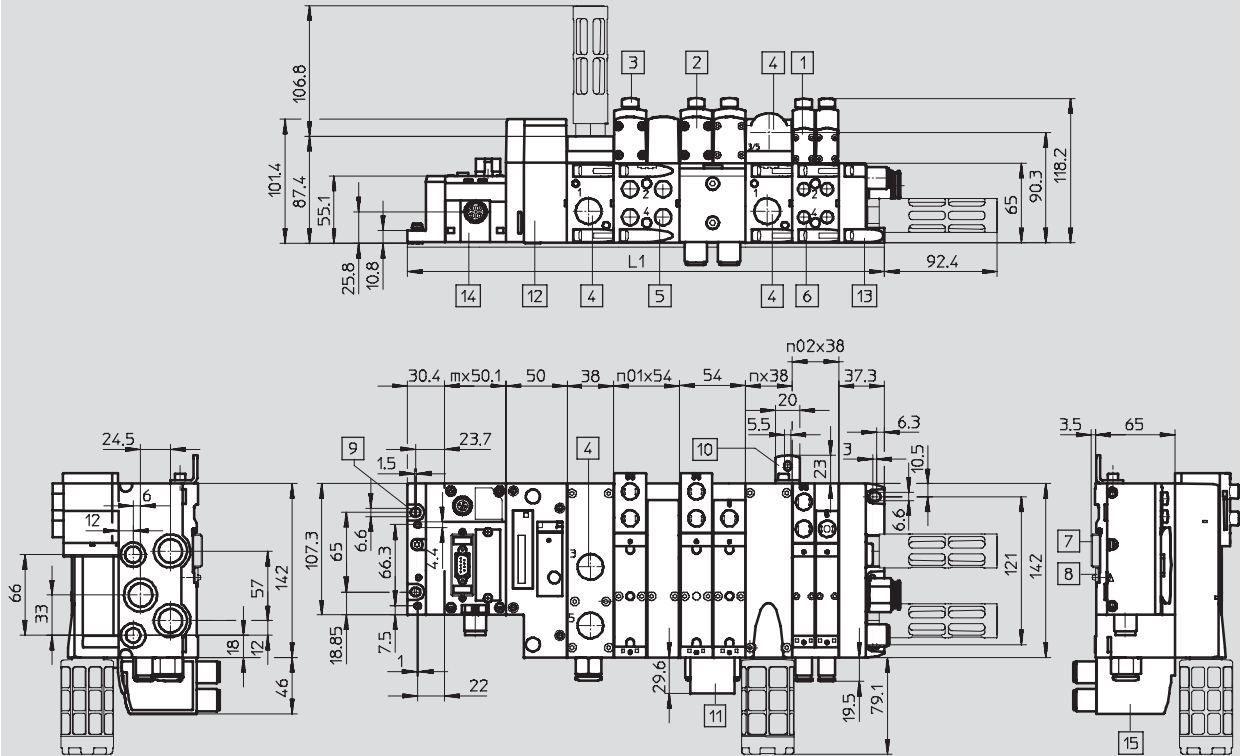
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com

Valve terminal with fieldbus connection



- | | | | |
|-----------------------------|--|---|--|
| 1 Solenoid valve 18 mm | 4 Threaded connection G $\frac{1}{2}$ or $\frac{1}{2}$ NPT | 10 Additional mounting bracket | n02 Number of manifold sub-bases 18 mm |
| 2 Solenoid valve 26 mm | 5 Threaded connection G $\frac{3}{4}$ or $\frac{1}{4}$ NPT | 11 Inscription label holder | n01 Number of manifold sub-bases 26 mm |
| 3 Cover cap/manual override | 6 Threaded connection G $\frac{3}{8}$ or $\frac{1}{8}$ NPT | 12 Pneumatic interface CPX | n Number of supply plates |
| | 7 H-rail | 13 End plate | m Number of CPX modules |
| | 8 H-rail mounting | 14 CPX module/fieldbus node | |
| | 9 Mounting hole | 15 90° connection plate width 18 mm, G $\frac{1}{8}$ width 26 mm, G $\frac{1}{4}$ | |

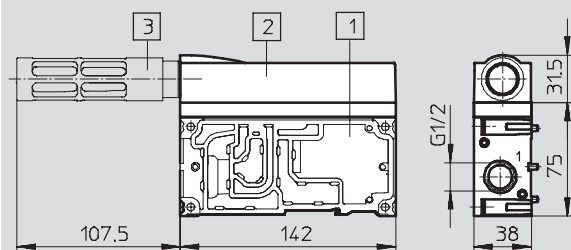
Width	L1
18 mm	$30.4 + m \times 50.1 + 50 + n02 \times 38 + n \times 38 + 37.3$
26 mm	$30.4 + m \times 50.1 + 50 + n01 \times 54 + n \times 38 + 37.3$
Mixture of 18 mm and 26 mm	$30.4 + m \times 50.1 + 50 + n02 \times 38 + n01 \times 54 + n \times 38 + 37.3$

– Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions

Download CAD data → www.festo.com

Supply plate with silencer



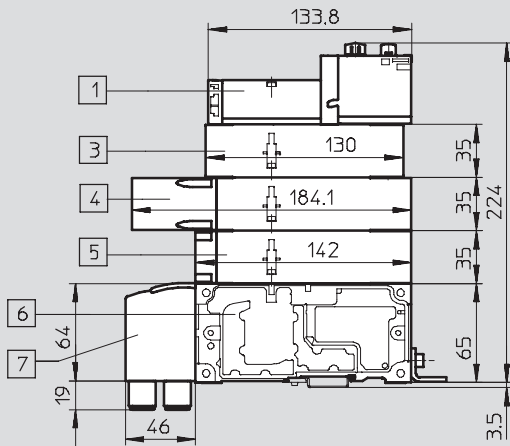
- | |
|---|
| 1 Supply plate |
| 2 Exhaust port cover |
| 3 Silencer U- $\frac{1}{2}$ -B or U- $\frac{1}{2}$ -B-NPT |

Valve terminals type 45 VTSA-F

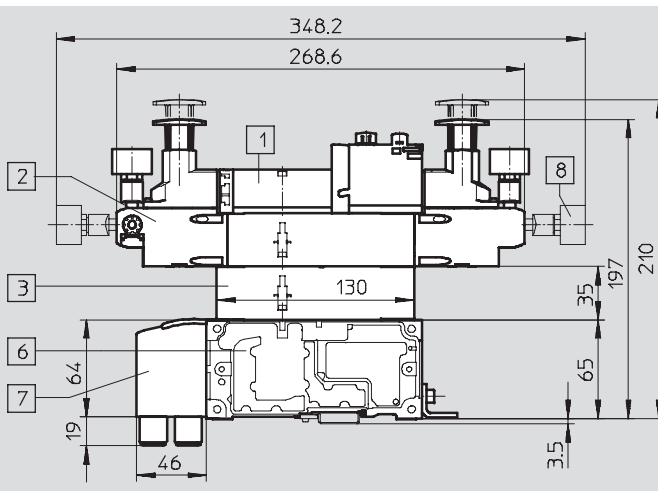
Technical data

FESTO

Vertical stacking components, width 18 mm

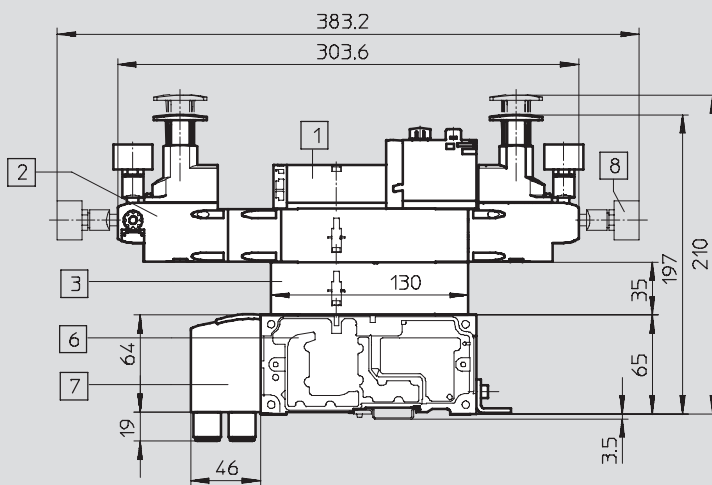


- 1 Solenoid valve with two solenoid coils, width 18 mm
- 3 Flow control plate
- 4 Vertical pressure shut-off plate
- 5 Vertical supply plate
- 6 Manifold sub-base
- 7 90° connection plate



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

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



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

Valve terminals type 45 VTSA-F

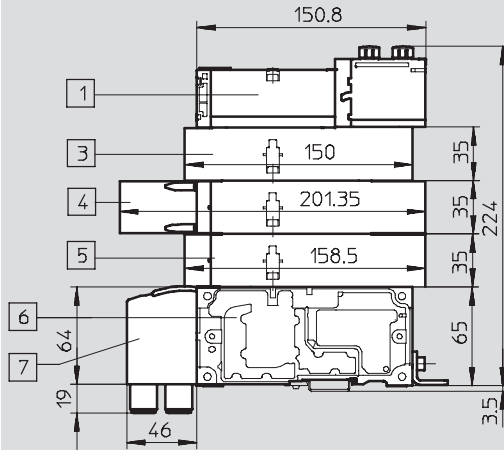
Technical data

FESTO

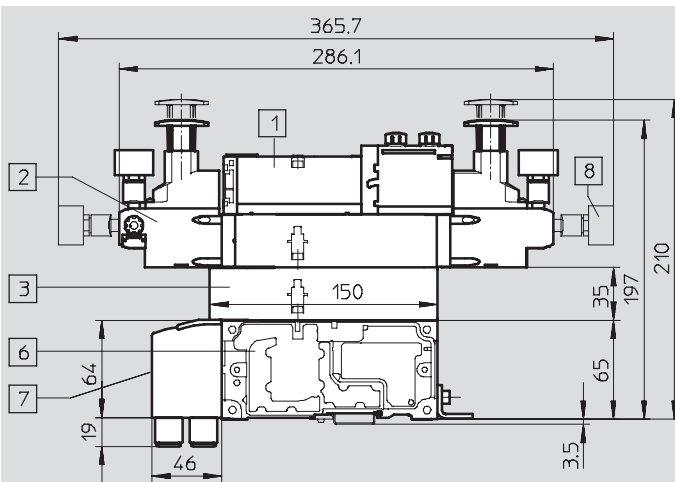
Dimensions

Download CAD data → www.festo.com

Vertical stacking components, width 26 mm

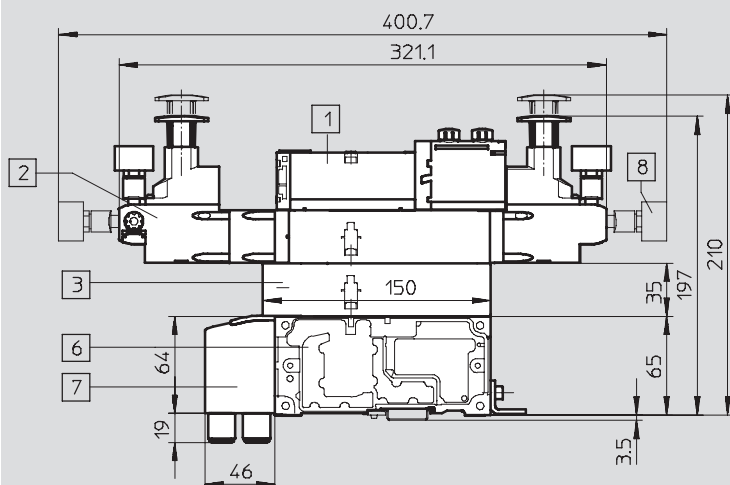


- 1 Solenoid valve with two solenoid coils, width 26 mm
- 3 Flow control plate
- 4 Vertical pressure shut-off plate
- 5 Vertical supply plate
- 6 Manifold sub-base
- 7 90° connection plate



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

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



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

Valve terminals type 45 VTSA-F

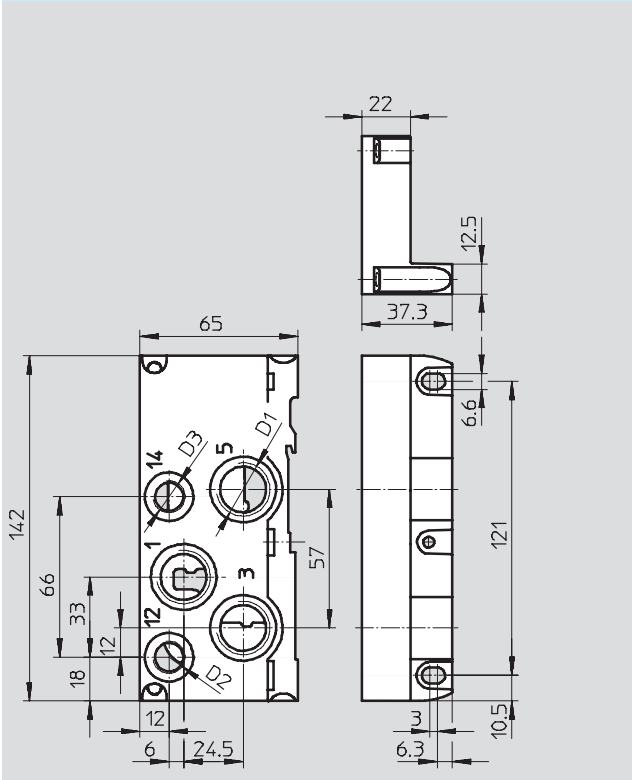
Technical data

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Dimensions

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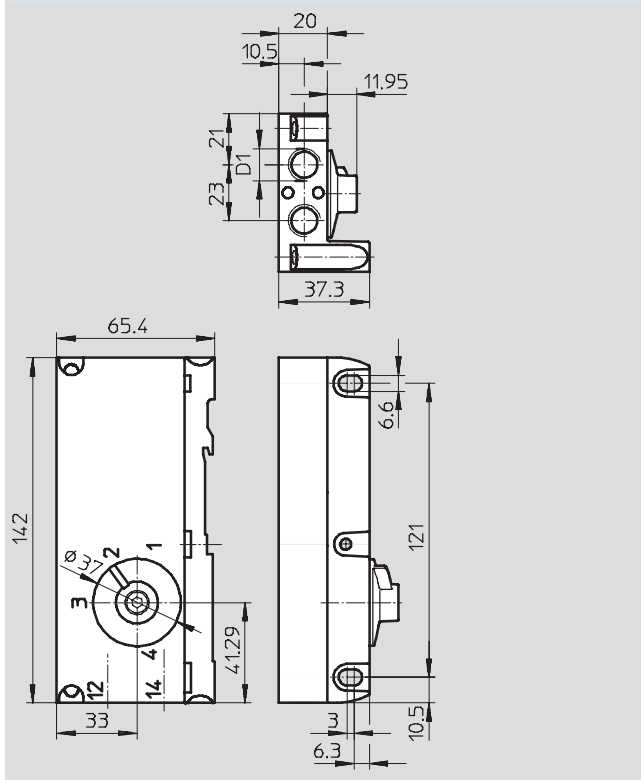
Right-hand end plate



Type	D1	D2	D3
VABE-S6-1R-G12	G $\frac{1}{2}$	G $\frac{1}{4}$	G $\frac{1}{4}$
VABE-S6-1RZ-G12			
VABE-S6-1R-N12	$\frac{1}{2}$ NPT	$\frac{1}{4}$ NPT	$\frac{1}{4}$ NPT
VABE-S6-1RZ-N12			

· | · Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Right-hand end plate with pilot air selector



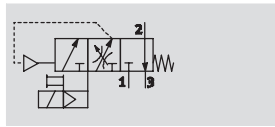
Type	D1
VABE-S6-1RZ-G-B1	G $\frac{1}{4}$
VABE-S6-1RZ-N-B1	$\frac{1}{4}$ NPT




· | · Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

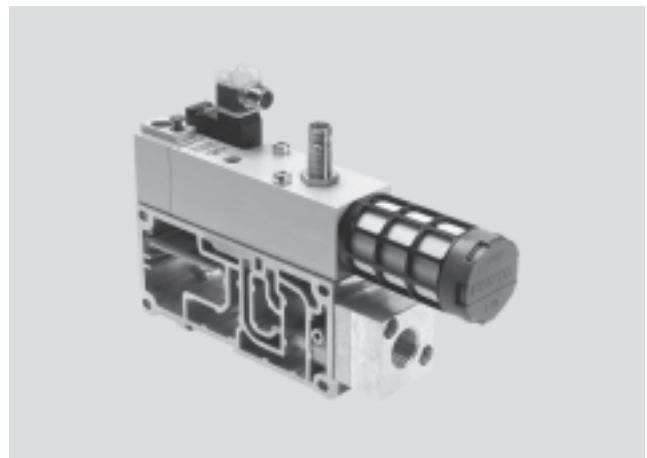
Valve terminals type 45 VTSA-F

Technical data – Soft-start valve

Function



-  - Flow rate
Pressurisation: 3,000 l/min
Exhaust: 3,300 l/min
-  - Temperature range
-5 ... +50 °C
-  - Operating pressure
2 ... 10 bar



Application

Function

The purpose of the soft-start valve is to slowly and reliably build up the supply pressure in duct 1 of the valve terminal or to quickly exhaust it.

Switch-on takes place in two stages:

- First the working pressure provided for duct 1 gradually increases (the speed can be adjusted using a flow control screw).

- Once the working pressure in duct 1 reaches a previously set value, the soft-start valve switches the full operating pressure at duct 1 of the valve terminal.

The switching point for full operating pressure is set to 4 bar at the factory,

but can be changed using an adjusting screw.

The full operating pressure is applied to duct 14 (pilot air) at all times. This pressure causes the valves on the valve terminal to immediately move to the required switching position.

When the valve is not switched, duct 1 of the valve terminal is exhausted via the soft-start valve's exhaust port. A self-resetting manual override is available for maintenance and service purposes.

Diagnostics

The piston position of the soft-start valve can be monitored using a sensor. This sensor registers whether the valve has switched and thus whether

the valve terminal is being supplied with air. Pressure sensing via a pressure gauge (optional) is also possible. The soft-start valve can alternatively

be ordered with a sensor (retrofitting of a sensor is very complicated due to the necessary sensor calibration).

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

Pilot air supply

The valve terminal can either be supplied with internal pilot air via the soft-start valve or with internal or

external pilot air via the various end plate variants. The type of pilot air supply is determined by the seal of the

soft-start valve. The scope of delivery of the soft-start valve includes both the seal for

internal pilot air supply and the seal for external pilot air supply.

Restrictions

Compressed air supply

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

Exhaust air

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

Pilot air supply

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

Reverse operation

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

Valve terminals type 45 VTSA-F

Technical data – Soft-start valve

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

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

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

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

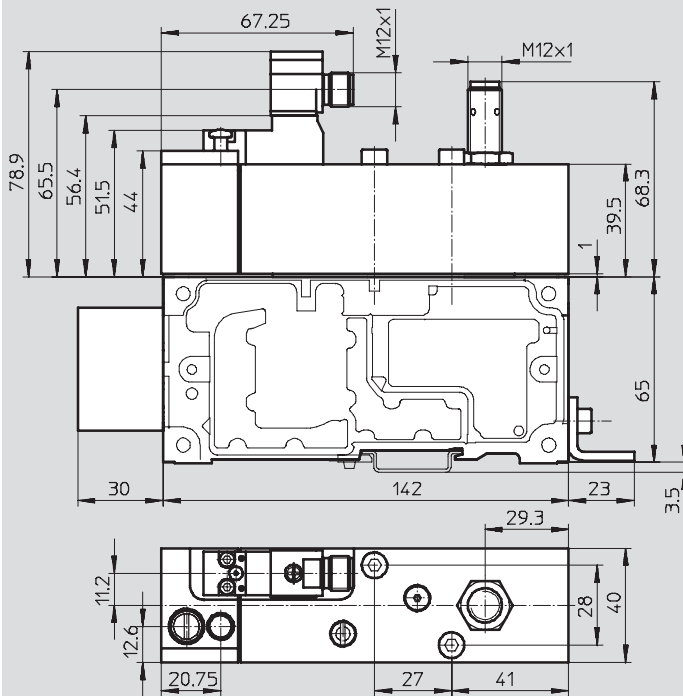
Weight [g]	
Manifold sub-base	570
Soft-start valves without proximity sensor	590
Soft-start valves with proximity sensor	605

Materials	
Housing	Wrought aluminium alloy
Seals	Nitrile rubber
Screws	Galvanised steel

Valve terminals type 45 VTSA-F

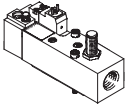
Technical data – Soft-start valve

Dimensions

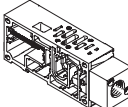
 Download CAD data → www.festo.com


1 Socket head screw M5x48
DIN 912, captive

Ordering data – Valves












	Nominal operating voltage		Sensor output	Pneumatic connection	Type	Part No.
	24 V DC	110 V AC				
	-	■	No	G $\frac{1}{2}$	VABF-S6-1-P5A4-G12-4-2A	558228
	-	■	No	$\frac{1}{2}$ NPT	VABF-S6-1-P5A4-N12-4-2A	558229
	■	-	No	G $\frac{1}{2}$	VABF-S6-1-P5A4-G12-4-1	558230
	■	-	No	$\frac{1}{2}$ NPT	VABF-S6-1-P5A4-N12-4-1	558231
	■	-	PNP	G $\frac{1}{2}$	VABF-S6-1-P5A4-G12-4-1-P	557377
	■	-	PNP	$\frac{1}{2}$ NPT	VABF-S6-1-P5A4-N12-4-1-P	558232
	■	-	NPN	G $\frac{1}{2}$	VABF-S6-1-P5A4-G12-4-1-N	558233
	■	-	NPN	$\frac{1}{2}$ NPT	VABF-S6-1-P5A4-N12-4-1-N	558234

Ordering data – Manifold sub-bases

	Pneumatic connection	Type	Part No.
	G $\frac{1}{2}$	VABV-S6-1Q-G12	556989
	$\frac{1}{2}$ NPT	VABV-S6-1Q-N12	556988

Valve terminals type 45 VTSA-F

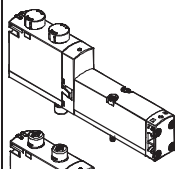
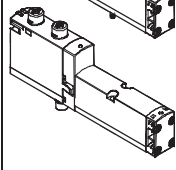
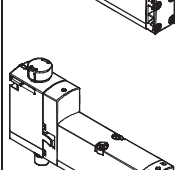
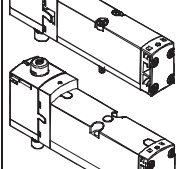
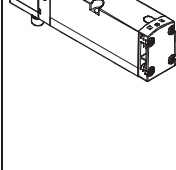








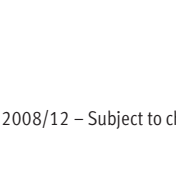
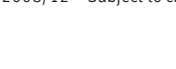
Technical data – Soft-start valve

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

Valve terminals type 45 VTSA-F

Individual valve

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

Valve terminals type 45 VTSA-F

Individual valve

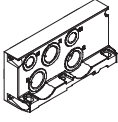
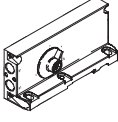
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Ordering data					
	Code	Valve function	Width	Type	Part No.
Solenoid valves, 110 V AC					
	M	5/2-way valve, single solenoid, pneumatic spring return	18 mm	VSVA-B-M52-AZD-A2-2AT1L	539171
			26 mm	VSVA-B-M52-AZD-A1-2AT1L	539145
	O	5/2-way valve, single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

Valve terminals type 45 VTSA-F

Accessories

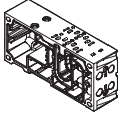
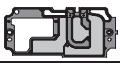
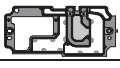

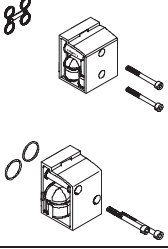
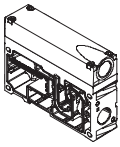
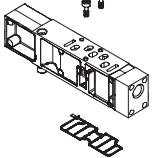
FESTO

Ordering data				
Designation	Code	Description	Type	Part No.
Right-hand end plate				
	Threaded connection			
	V	With supply air/exhaust air, internal pilot air supply, G $\frac{1}{2}$	VABE-S6-1R-G12	539234
	X	With supply air/exhaust air, external pilot air supply, G $\frac{1}{2}$	VABE-S6-1RZ-G12	539236
	NPT thread			
	V	With supply air/exhaust air, internal pilot air supply, NPT $\frac{1}{2}$	VABE-S6-1R-N12	539235
	X	With supply air/exhaust air, external pilot air supply, NPT $\frac{1}{2}$	VABE-S6-1RZ-N12	539237
End plate with pilot air selector				
	Threaded connection			
	Y	Internal pilot air supply	VABE-S6-1RZ-G-B1	539238
	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	539239
	U	Internal pilot air supply, ducted pilot exhaust air		
	Z	External pilot air supply		
	W	External pilot air supply, ducted pilot exhaust air		

Valve terminals type 45 VTSA-F

Accessories

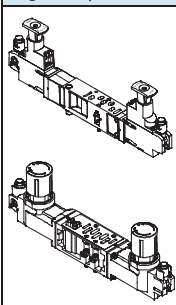
FESTO

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	546215
	B	2 valve positions, 4 addresses, for double solenoid valves	26 mm	VABV-S4-1HS-G14-2T2	546211
	E	2 valve positions, 2 addresses, for single solenoid valves	18 mm	VABV-S4-2HS-G18-2T1	546214
	F	2 valve positions, 2 addresses, for single solenoid valves	26 mm	VABV-S4-1HS-G14-2T1	546210
	NPT thread				
	A	2 valve positions, 4 addresses, for double solenoid valves	18 mm	VABV-S4-2HS-N18-2T2	546217
	B	2 valve positions, 4 addresses, for double solenoid valves	26 mm	VABV-S4-1HS-N14-2T2	546213
	E	2 valve positions, 2 addresses, for single solenoid valves	18 mm	VABV-S4-2HS-N18-2T1	546216
	F	2 valve positions, 2 addresses, for single solenoid valves	26 mm	VABV-S4-1HS-N14-2T1	546212
Separator plate					
	S	Duct separation 1, 3, 5		VABD-S6-10-P3-C	539228
	T	Duct separation 1		VABD-S6-10-P1-C	539227
	R	Duct separation 3, 5		VABD-S6-10-P2-C	539229
90° connection plate					
	Threaded connection				
	P	Outlet at bottom, connecting thread G $\frac{1}{8}$	18 mm	VABF-S4-2-A2G2-G18	539719
	P	Outlet at bottom, connecting thread G $\frac{1}{4}$	26 mm	VABF-S4-1-A2G2-G14	539721
	NPT thread				
	P	Outlet at bottom, connecting thread $\frac{1}{8}$ NPT	18 mm	VABF-S4-2-A2G2-N18	539720
	P	Outlet at bottom, connecting thread $\frac{1}{4}$ NPT	26 mm	VABF-S4-1-A2G2-N14	539722
Supply plate					
	Threaded connection				
	L	With exhaust plate, 3/5 common, G $\frac{1}{2}$		VABF-S6-10-P1A7-G12	539231
	K	With exhaust port cover, 3/5 separated, G $\frac{1}{2}$		VABF-S6-10-P1A6-G12	539230
	NPT thread				
	L	With exhaust plate, 3/5 common, NPT $\frac{1}{2}$		VABF-S6-10-P1A7-N12	539233
	K	With exhaust port cover, 3/5 separated, NPT $\frac{1}{2}$		VABF-S6-10-P1A6-N12	539232
Vertical supply plate					
	Threaded connection				
	ZU	Connecting thread G $\frac{1}{8}$	18 mm	VABF-S4-2-P1A3-G18	540173
		Connecting thread G $\frac{1}{4}$	26 mm	VABF-S4-1-P1A3-G14	540171
	NPT thread				
	ZU	Connecting thread $\frac{1}{8}$ NPT	18 mm	VABF-S4-2-P1A3-N18	540174
		Connecting thread $\frac{1}{4}$ NPT	26 mm	VABF-S4-1-P1A3-N14	540172

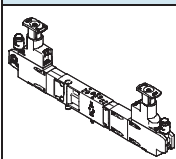
Valve terminals type 45 VTSA-F

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	540153
		For port 1, 10 bar	26 mm	VABF-S4-1-R1C2-C-10	540154
	ZF	For port 1, 6 bar	18 mm	VABF-S4-2-R1C2-C-6	540151
		For port 1, 6 bar	26 mm	VABF-S4-1-R1C2-C-6	540152
	ZB ¹⁾	For port 4, 10 bar	18 mm	VABF-S4-2-R3C2-C-10	540157
		For port 4, 10 bar	26 mm	VABF-S4-1-R3C2-C-10	540158
	ZG ¹⁾	For port 4, 6 bar	18 mm	VABF-S4-2-R3C2-C-6	540155
		For port 4, 6 bar	26 mm	VABF-S4-1-R3C2-C-6	540156
	ZC	For port 2, 10 bar	18 mm	VABF-S4-2-R2C2-C-10	540161
		For port 2, 10 bar	26 mm	VABF-S4-1-R2C2-C-10	540162
	ZH	For port 2, 6 bar	18 mm	VABF-S4-2-R2C2-C-6	540159
		For port 2, 6 bar	26 mm	VABF-S4-1-R2C2-C-6	540160
	ZD	For ports 2 and 4, 10 bar	18 mm	VABF-S4-2-R4C2-C-10	540165
		For ports 2 and 4, 10 bar	26 mm	VABF-S4-1-R4C2-C-10	540166
	ZI	For ports 2 and 4, 6 bar	18 mm	VABF-S4-2-R4C2-C-6	540163
		For ports 2 and 4, 6 bar	26 mm	VABF-S4-1-R4C2-C-6	540164
	ZE	For ports 2 and 4, reversible, 10 bar	18 mm	VABF-S4-2-R5C2-C-10	540169
		For ports 2 and 4, reversible, 10 bar	26 mm	VABF-S4-1-R5C2-C-10	540170
	ZJ	For ports 2 and 4, reversible, 6 bar	18 mm	VABF-S4-2-R5C2-C-6	540167
		For ports 2 and 4, reversible, 6 bar	26 mm	VABF-S4-1-R5C2-C-6	540168
	ZL	For port 2, reversible, 10 bar	18 mm	VABF-S4-2-R6C2-C-10	546252
		For port 2, reversible, 10 bar	26 mm	VABF-S4-1-R6C2-C-10	546251
	ZN	For port 2, reversible, 6 bar	18 mm	VABF-S4-2-R6C2-C-6	546248
		For port 2, reversible, 6 bar	26 mm	VABF-S4-1-R6C2-C-6	546247
ZK ¹⁾	For port 4, reversible, 10 bar	18 mm	VABF-S4-2-R7C2-C-10	546254	
	For port 4, reversible, 10 bar	26 mm	VABF-S4-1-R7C2-C-10	546253	
ZM ¹⁾	For port 4, reversible, 6 bar	18 mm	VABF-S4-2-R7C2-C-6	546250	
	For port 4, reversible, 6 bar	26 mm	VABF-S4-1-R7C2-C-6	546249	




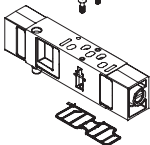
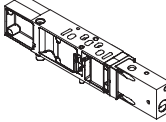
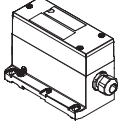
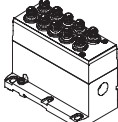
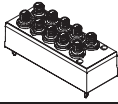
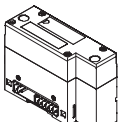
1) Also suitable for symmetrical valves

Ordering data					
Designation	Code	Description	Width	Type	Part No.
Regulator plate for symmetrical valves					
	ZAY	For port 1, 10 bar	18 mm	VABF-S4-2-R1C2-C-10E	560756
		For port 1, 10 bar	26 mm	VABF-S4-1-R1C2-C-10E	560757
	ZFY	For port 1, 6 bar	18 mm	VABF-S4-2-R1C2-C-6E	560758
		For port 1, 6 bar	26 mm	VABF-S4-1-R1C2-C-6E	549876
	ZCY	For port 2, 10 bar	18 mm	VABF-S4-2-R2C2-C-10E	560763
		For port 2, 10 bar	26 mm	VABF-S4-1-R2C2-C-10E	560764
	ZHY	For port 2, 6 bar	18 mm	VABF-S4-2-R2C2-C-6E	560765
		For port 2, 6 bar	26 mm	VABF-S4-1-R2C2-C-6E	560766
	ZDY	For ports 2 and 4, 10 bar	18 mm	VABF-S4-2-R4C2-C-10E	560767
		For ports 2 and 4, 10 bar	26 mm	VABF-S4-1-R4C2-C-10E	560768
	ZIY	For ports 2 and 4, 6 bar	18 mm	VABF-S4-2-R4C2-C-6E	560769
		For ports 2 and 4, 6 bar	26 mm	VABF-S4-1-R4C2-C-6E	560770
	ZEY	For ports 2 and 4, reversible, 10 bar	18 mm	VABF-S4-2-R5C2-C-10E	560771
		For ports 2 and 4, reversible, 10 bar	26 mm	VABF-S4-1-R5C2-C-10E	560772
	ZJY	For ports 2 and 4, reversible, 6 bar	18 mm	VABF-S4-2-R5C2-C-6E	560773
		For ports 2 and 4, reversible, 6 bar	26 mm	VABF-S4-1-R5C2-C-6E	560774
	ZLY	For port 2, reversible, 10 bar	18 mm	VABF-S4-2-R6C2-C-10E	560775
		For port 2, reversible, 10 bar	26 mm	VABF-S4-1-R6C2-C-10E	560776
	ZNY	For port 2, reversible, 6 bar	18 mm	VABF-S4-2-R6C2-C-6E	560777
		For port 2, reversible, 6 bar	26 mm	VABF-S4-1-R6C2-C-6E	560778

Valve terminals type 45 VTSA-F

Accessories

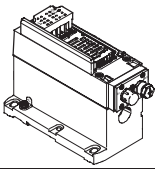
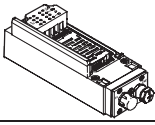
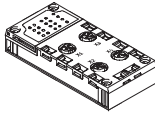

FESTO

Ordering data					
Designation	Code	Description	Width	Type	Part No.
Pressure gauge					
	T	With cartridge connection for regulator, 10 bar for regulator plate, code ZA, ZB, ZC, ZD, ZE		PAGN-26-16-P10	543487
	U	With cartridge connection for regulator, 6 bar for regulator plate, code ZF, ZG, ZH, ZI, ZJ		PAGN-26-10-P10	543488
	-	For soft-start valve		MA-27-10-M5	526323
Cartridge for regulator plate					
	-	For tubing O.D. 4 mm		QSP10-4	172972
	-	For tubing O.D. 3/16"		QSP10-3/16U	172975
Flow control plate					
	X	Controls the flow of exhaust air downstream of the valve to ducts 3 and 5	18 mm	VABF-S4-2-F1B1-C	540176
			26 mm	VABF-S4-1-F1B1-C	540 175
Vertical pressure shut-off plate					
	ZT	2/2-way valve for shutting off the operating pressure at the valve position	18 mm	VABF-S4-2-L1D1-C	542884
			26 mm	VABF-S4-1-L1D1-C	542885
Multi-pin node					
	T	Tension spring, for threaded connection, 36-pin		VABE-S6-1LF-C-M1-C36M	543412
		Tension spring, for NPT connection, 36-pin		VABE-S6-1LF-C-M1-C36N	543413
	MP1	Sub-D plug, 37-pin		VABE-S6-1LT-C-M1-S37	543414
	MP4	Round plug, 19-pin		VABE-S6-1LF-C-M1-R19	543415
Individual electrical connection					
	-MP2	Multi-pin node with individual connection M12, 6-way		VABE-S6-LT-C-S6-R5	549046
	-MP3	Multi-pin node with individual connection M12, 10-way		VABE-S6-LT-C-S10-R5	549047
	-	Cover for individual connection M12, 6-way		VAEM-S6-C-S6-R5	549048
	-	Cover for individual connection M12, 10-way		VAEM-S6-C-S10-R5	549049
Pneumatic interface					
	-	For electrical terminal CPX in plastic design		VABA-S6-1-X1	543416
	-	For electrical terminal CPX in metal design		VABA-S6-1-X2	550663

Valve terminals type 45 VTSA-F

Accessories

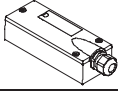
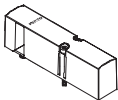





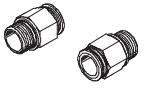
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Ordering data				
Designation	Code	Description	Type	Part No.
Electrical interface for AS-interface				
	-	4 inputs/4 outputs	VABE-S6-1LF-C-A4	549042
	-	8 inputs/8 outputs	VABE-S6-1LF-C-A8	549043
AS-interface module				
	-	4 inputs/4 outputs	VAEM-S6-S-FAS-4-4E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

Valve terminals type 45 VTSA-F

FESTO

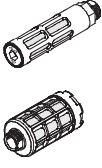

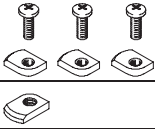


Accessories

Ordering data					
Designation	Code	Description	Type	Part No.	
Cover for multi-pin plug					
	-	For user configuration	NECV-S1W37	545974	
Cover					
	L	Blanking plate for vacant position	18 mm	VABB-S4-2-WT	539213
			26 mm	VABB-S4-1-WT	539212
			42 mm	VABB-S2-1-WT	543186
	N	Cover cap for manual override, non-detenting	10 pieces	VAMC-S6-CH	541010
	V	Cover cap for manual override, covered	10 pieces	VAMC-S6-CS	541011
	-	End cap for electrical manifold module, size 18 mm and 26 mm	10 pieces	VABD-S4-E-C	547713
Inscription label holder					
	B	Clip-on inscription label holder for valve cap	5 pieces	ASCF-T-S6	540888
	T	Inscription label holder for manifold blocks	5 pieces	ASCF-M-S6	540889
Push-in fitting					
	Threaded connection				
	-	Connecting thread G $\frac{1}{4}$ for tubing O.D. 10 mm	10 pieces	QS-G $\frac{1}{4}$ -10	186101
		Connecting thread G $\frac{1}{4}$ for tubing O.D. 8 mm	10 pieces	QS-G $\frac{1}{4}$ -8	186099
		Connecting thread G $\frac{1}{8}$ for tubing O.D. 10 mm	10 pieces	QS-G $\frac{1}{8}$ -10	190643
		Connecting thread G $\frac{1}{8}$ for tubing O.D. 8 mm	10 pieces	QS-G $\frac{1}{8}$ -8	186098
		Connecting thread G $\frac{1}{8}$ for tubing O.D. 6 mm	10 pieces	QS-G $\frac{1}{8}$ -6	186096
		Connecting thread G $\frac{1}{2}$ for tubing O.D. 16 mm	1 piece	QS-G $\frac{1}{2}$ -16	186105
		Connecting thread G $\frac{3}{8}$ for tubing O.D. 10 mm	10 pieces	QS-G $\frac{3}{8}$ -10	186102
		Connecting thread G $\frac{3}{8}$ for tubing O.D. 12 mm	10 pieces	QS-G $\frac{3}{8}$ -12	186103
	NPT thread				
	-	Connecting thread $\frac{1}{4}$ NPT for tubing O.D. $\frac{5}{16}$ "		QS- $\frac{1}{4}$ - $\frac{5}{16}$ -U	153609
		Connecting thread $\frac{1}{4}$ NPT for tubing O.D. $\frac{1}{2}$ "		QS- $\frac{1}{4}$ - $\frac{1}{2}$ -U	190681
		Connecting thread $\frac{1}{8}$ NPT for tubing O.D. $\frac{5}{16}$ "		QS- $\frac{1}{8}$ - $\frac{5}{16}$ -U	153608
		Connecting thread $\frac{1}{8}$ NPT for tubing O.D. $\frac{1}{4}$ "		QS- $\frac{1}{8}$ - $\frac{1}{4}$ -U	153605
		Connecting thread $\frac{1}{2}$ NPT for tubing O.D. $\frac{1}{2}$ "		QS- $\frac{1}{2}$ - $\frac{1}{2}$ -U	153615
Connecting thread $\frac{1}{2}$ NPT for tubing O.D. $\frac{5}{8}$ "			QS- $\frac{1}{2}$ - $\frac{5}{8}$ -U	190682	

Valve terminals type 45 VTSA-F

Accessories

FESTO

Ordering data					
Designation	Code	Description	Type	Part No.	
Silencer					
	Threaded connection				
	-	Connecting thread G $\frac{1}{4}$		U- $\frac{1}{4}$	2316
	L	Connecting thread G $\frac{1}{2}$		U- $\frac{1}{2}$	2310
	K	Connecting thread G $\frac{1}{2}$		U- $\frac{1}{2}$ -B	6844
	NPT thread				
	-	Connecting thread $\frac{1}{4}$ NPT		U- $\frac{1}{4}$ -B-NPT	12639
K, L	Connecting thread $\frac{1}{2}$ NPT		U- $\frac{1}{2}$ -B-NPT	12741	
Blanking plug					
	Threaded connection				
	-	Thread G $\frac{1}{8}$	10 pieces	B- $\frac{1}{8}$	3568
	-	Thread G $\frac{1}{4}$	10 pieces	B- $\frac{1}{4}$	3569
	NPT thread				
	-	Thread $\frac{1}{8}$ NPT	1 piece	B- $\frac{1}{8}$ -NPT	173985
-	Thread $\frac{1}{4}$ NPT	1 piece	B- $\frac{1}{4}$ -NPT	174165	
H-rail mounting					
	-	VTSA-F with fieldbus	3 pieces	CPX-CPA-BG-NRH	526032
	-	VTSA-F with multi-pin plug	2 pieces	CPA-BG-NRH	173498
Wall mounting					
	U	Mounting bracket		VAME-S6-10-W	539214
Manual					
	D	Manual for valve terminal VTSA-F	German	P.BE-VTSA-44-DE	538922
	E		English	P.BE-VTSA-44-EN	538923
	S		Spanish	P.BE-VTSA-44-ES	538924
	F		French	P.BE-VTSA-44-FR	538925
	I		Italian	P.BE-VTSA-44-IT	538926
	V		Swedish	P.BE-VTSA-44-SV	538927