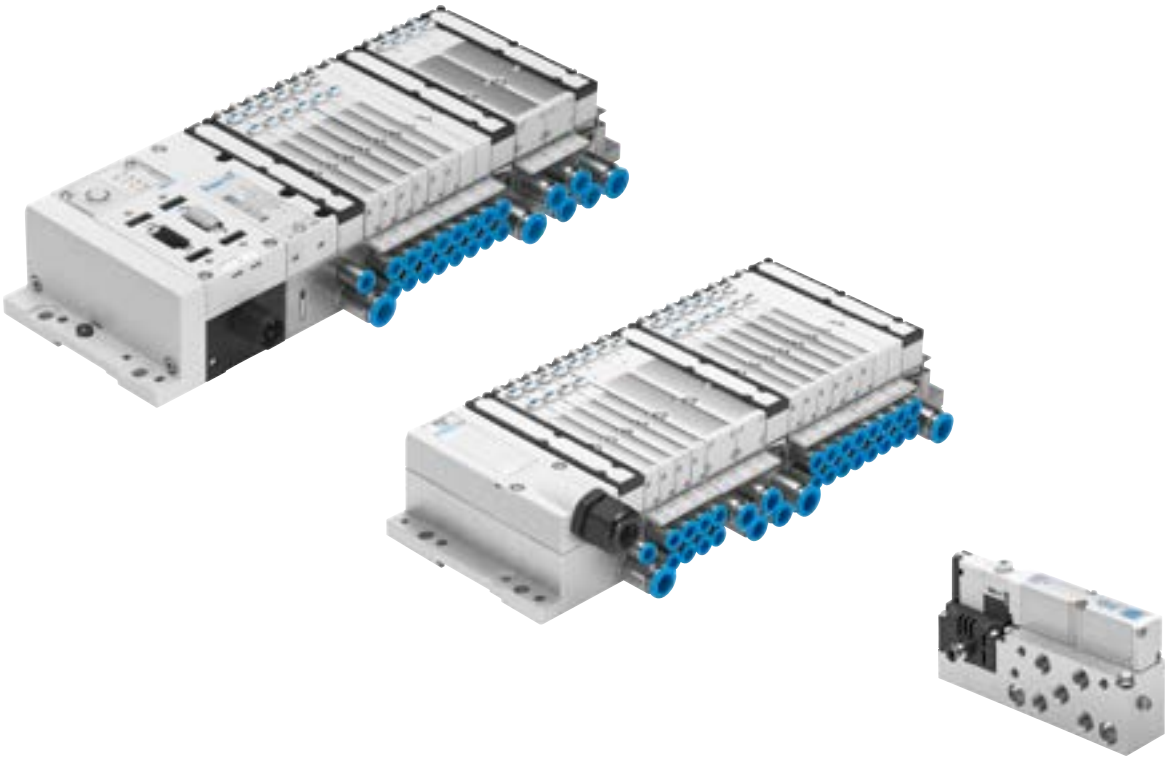
Valve terminal MPA-S

Key features



Innovative

- Compact high-performance valves in sturdy metal housing
- MPA1: flow rates up to 360 l/min
- MPA14: flow rates up to 550 l/min
- MPA2: flow rates up to 700 l/min
- From the individual valve to the valve terminal with multi-pin, AS-Interface, CPI and fieldbus connections and control block
- Dream team: fieldbus valve terminal suitable for electrical peripherals CPX. This means:
  - Forward-looking internal communication system for actuating the valves and CPX modules
  - Diagnostics down to the individual valve
  - Valves can be actuated with or without (standard option) separate electrical circuits

Flexible

- Modular system offering a range of configuration options
- Expandable with up to 128 solenoid coils
- Conversions and extensions possible at a later date
- Further sub-bases can be expanded using just three screws, sturdy separating seals on metal separator plates
- Integration of innovative function modules possible
- Manual regulators, rotatable pressure gauge
- Proportional pressure regulator
- Additional air supply via additional pressure zones using supply plates
- Wide range of pressures
- –0.09 ... 1 MPa
- Wide range of valve functions

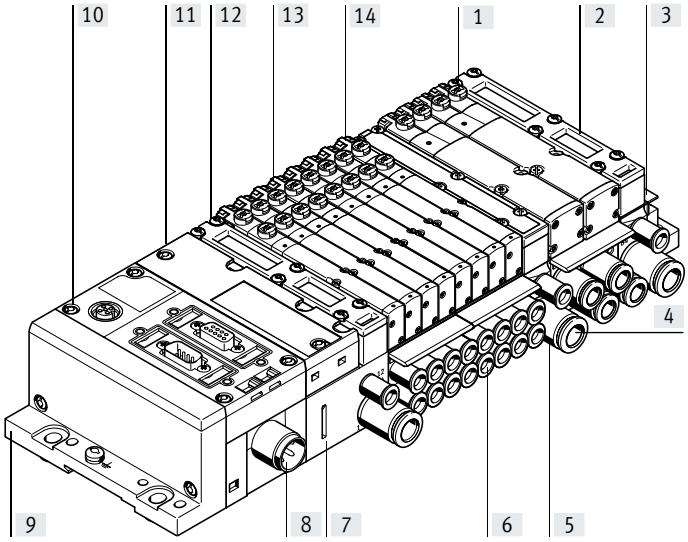
Reliable

- Sturdy and durable metal components
  - Valves
  - Sub-bases
  - Seals
- Fast troubleshooting thanks to LEDs on the valves and diagnostics via fieldbus
- Extensive operating voltage range ±25%
- Easy to service thanks to replaceable valves and electronic modules
- Manual override either non-detenting, detenting or secured against unauthorised activation (concealed)
- Durable thanks to tried-and-tested piston spool valves
- Large and durable labelling system, suitable for barcodes

Easy to install

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

Key features



[1] Safe operation:
Manual override, non-detenting/ detenting or concealed

[2] Space-saving:
Flat valves and flat plate silencer

[3] Variable:
64 valve positions/128 solenoid coils (FB)
24 valve positions/24 solenoid coils (MP)

[4] Practical:
robust metal thread or pre-assembled QS connections

[5] Modular:
supply plates for pressure zone creation as well as numerous additional exhaust and supply ports

[6] Wide range of valve functions

[7] Convenient: large inscription labels

[8] Reliable:
operating voltage connection ±25%, outputs and valves can be disconnected separately

[9] Quick to mount:
Directly using screws or on an H-rail, automatic earthing

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

[11] Straightforward electrical connection
Multi-pin connection, fieldbus interface
Control block, AS-Interface, CPI

[12] Pneumatic interface to CPX

[13] Width 10 mm, 14 mm and 20 mm

[14] Reduced downtimes: two-colour local LED diagnostics

Equipment options

Valve functions

- 5/2-way valve, single solenoid
- 5/2-way valve, double solenoid
- 2x 3/2-way valve, normally open
- 2x 3/2-way valve, normally closed
- 2x 3/2-way valve, 1x normally open, 1x normally closed
- 5/3-way valve, mid-position pressurised
- 5/3-way valve, mid-position closed
- 5/3-way valve, mid-position exhausted
- 2x 2/2-way valve, 1x normally closed, 1x normally closed, reversible
- 2x 2/2-way valve, normally closed
- 1x 3/2-way valve, normally closed, external compressed air supply
- 1x 3/2-way valve, normally open, external compressed air supply
- Manual pressure regulators
- Proportional pressure regulators (for CPI connection, fieldbus)
- Pressure sensor

All valves have the same compact dimensions with an overall length of 107 mm and a width of 10 mm, 14 mm or 20 mm.
A height of 55 mm makes them a perfect match for the electrical peripherals CPX.

Special features

Multi-pin terminal
- Max. 24 valve positions/ max. 24 solenoid coils
- Parallel modular valve linking via circuit boards
- Electronics module with integrated holding current reduction
- Any compressed air supply
- Creating pressure zones

Fieldbus terminal/control block
- Max. 64 valve positions/ max. 128 solenoid coils
- Internal CPX bus system for valve actuation
- Module for electrical valve activation with or without separate electrical circuits
- Any compressed air supply
- Creating pressure zones

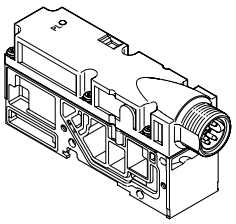
Individual valve
- Electrical M8 connection, 4-pin with screw connection
- Detachable electronics module with integrated holding current reduction

AS-Interface
- 2 to 8 valves, freely configurable (max. 8 solenoid coils) with input feedback.

CPI interface
- Max. 32 valve positions/ max. 32 solenoid coils

Combinable
- MPA1: flow rates up to 360 l/min
- MPA14: flow rates up to 550 l/min
- MPA2: flow rates up to 700 l/min
- MPA1, MPA14 and MPA2 can be combined on one valve terminal

Electrical supply plate

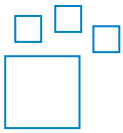


- Increases the maximum number of valve positions possible to 64, with max. 128 solenoid coils
- Creation of separate, individually disconnectable circuits (voltage zones)
- Greater economic efficiency thanks to more valves/solenoid coils per valve terminal
- Increased safety as a result of individual disconnection of valve groups, e.g. for emergency-off functions

Note
The electrical supply plate is optionally available with M18 or 7/8" connection.

Key features

Ordering data – Product options



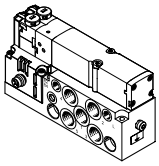
Configurable product
This product and all its product options can be ordered using the configurator. A valve terminal MPA-S can be ordered using the order code.

The configurator can be found under Products on the DVD or at
→ **www.festo.com/catalogue/...**

Part No.	Type
197330	CPX
539641	CTEC
546279	MPA-ASI-VI
546280	MPA-CPI-VI
530411	MPA-FB-VI
569926	MPAL-VI
539105	MPA-MPM-VI

Key features

Individual connection

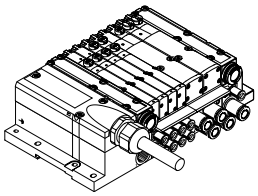


Valves on individual sub-bases can also be used for actuators further away from the valve terminal.

The electrical connection is established using a standard 4-pin M8 plug (EN 60947-5-2).,

More information
➔ VMPA1

Multi-pin plug connection

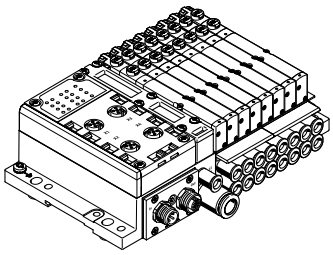


The signals are transmitted from the controller to the valve terminal via a pre-assembled or self-assembled multi-wire cable to the multi-pin plug connection, which substantially reduces installation time.

The valve terminal can be equipped with max. 24 solenoid coils. This corresponds to 4 to 24 MPA1 or 4 to 24 MPA14 or 2 to 24 MPA2 valves, or a combination of all of these.

Versions
- Sub-D connection
- Pre-assembled multi-pin cable
- Multi-pin cable for self-assembly

AS-Interface connection



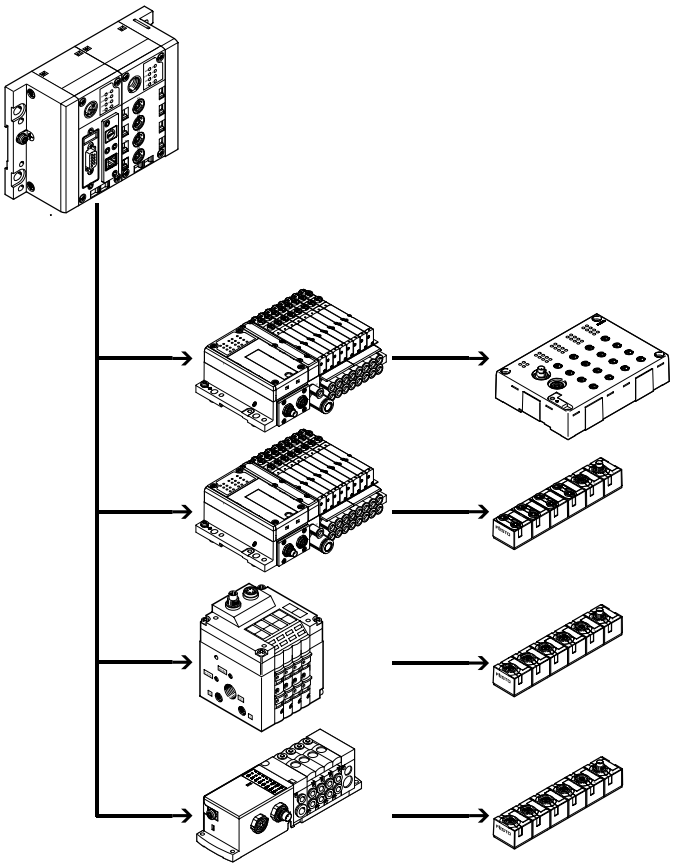
A special feature of the AS-Interface is the simultaneous transmission of data and supply power via a two-wire cable. The encoded cable profile prevents connection with incorrect polarity.
The valve terminal with AS-Interface is available in the following versions:

- With two to eight modular valve positions (max. 8 solenoid coils). This corresponds to 2 to 8 MPA1, 2 to 8 MPA14 or 2 to 8 MPA2 valves, or a combination of all of these.
- With all available valve functions

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

More information
➔ Internet: as-interface

Installation system CPI



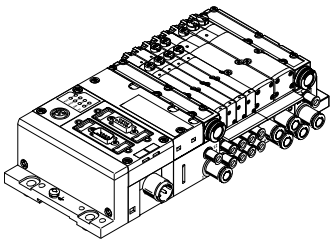
Valve terminal for installation system CPI:
The valve terminal with CP connection is provided for connection to a higher-level bus node or to control blocks. A bus node or control block additionally enables connection of decentralised input/output units. The following bus protocols are supported:
- PROFIBUS DP
- INTERBUS
- DeviceNet
- CANopen
- CC-LINK
- EtherNet/IP
- PROFINET
- POWERLINK
- EtherCAT
- Sercos III

Four strings having up to 32 inputs and outputs can be connected to a bus node or control block. The connecting cables transmit the power supply for the input modules and the load voltage for the valves as well as control signals.

More information
➔ Internet: ctec

Key features

Fieldbus interface via the CPX system



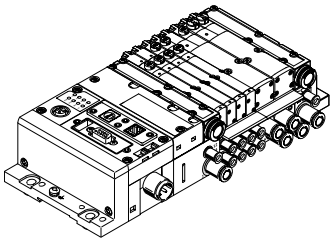
An integrated fieldbus node manages communication with a higher-order PLC. This enables space-saving pneumatic and electronic solutions to be implemented.

Valve terminals with fieldbus interfaces can be configured with up to 16 sub-bases. In conjunction with MPA1 or MPA14 and 8 solenoid coils per sub-base, up to 128 solenoid coils can thus be actuated. An MPA2 with 4 solenoid coils per sub-base can actuate 64 solenoid coils.

Versions
- PROFIBUS DP
- INTERBUS
- DeviceNet
- CANopen
- CC-LINK
- EtherNet/IP
- PROFINET
- POWERLINK
- EtherCAT
- Sercos III
- Front end controller remote
- Front End Controller
- Remote I/O
- Modbus/TCP
- CPX terminal

➔ Internet: cpx

Control block connection via the CPX system



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

In the slave operating mode, these valve terminals can be used for intelligent preprocessing and are therefore ideal modules for designing decentralised intelligence.

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

➔ Internet: cpx

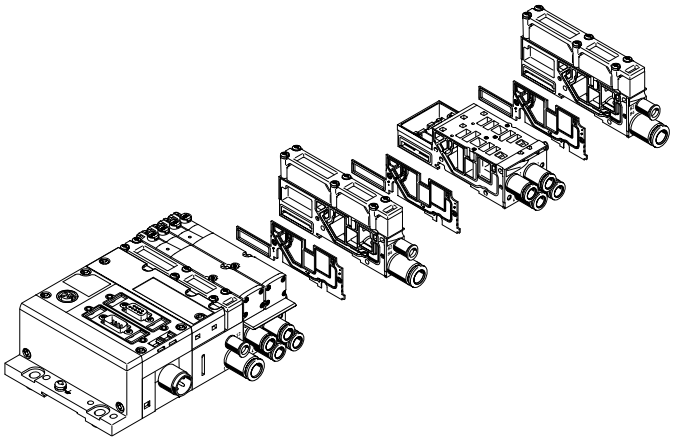
Note

Note possible restrictions for the IP protection class

➔ ATEX declaration of conformity

Peripherals overview

Modular pneumatic components



The modular design of the MPA enables maximum flexibility right from the planning stage and offers maximum ease of service in operation. The system consists of sub-bases and valves. The sub-bases are screwed together, thus forming the support system for the valves. They contain the ducts for supplying compressed air to and exhausting from the valve terminal as well as the working ports for the pneumatic drives for each valve. Each sub-base is connected to the next using three screws.

Individual valve terminal sections can be isolated and further blocks can be inserted by loosening these screws. This ensures that the valve terminal can be rapidly and reliably extended.

Modular electrical peripherals

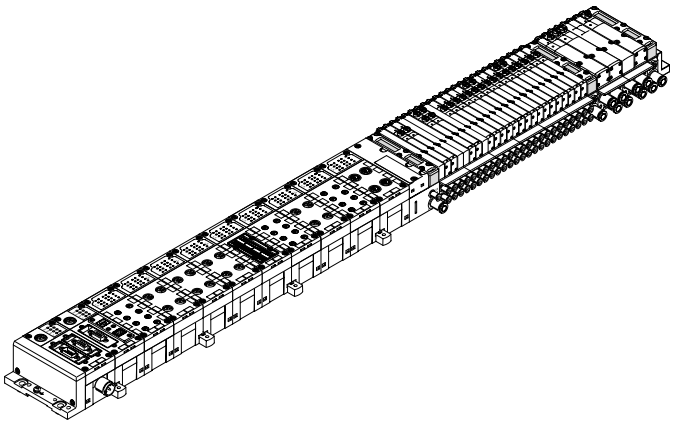
The manner in which the valves are actuated differs according to whether you are using a multi-pin terminal, fieldbus terminal or individual valve.
The MPA with CPX interface is based on the internal bus system of the CPX and uses this serial communication system for all solenoid coils and a range of electrical input and output functions.

Serial links enable the following:
- Transmission of switching information
- High valve density
- Compact design
- Diagnostics related to valve position
- Separate power supply for valves
- Flexible conversion without address shifting
- Transmission of status, parameter and diagnostic data

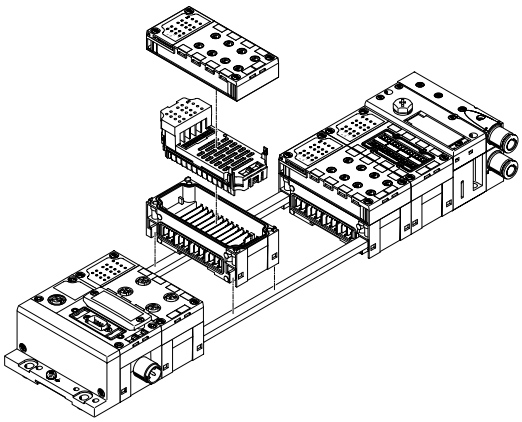
➔ Internet: cpx

- Option of CP interface
- CPX-CEC as stand-alone controller with access via Ethernet and web server

MPA with electrical peripherals CPX



Modularity with electrical peripherals CPX



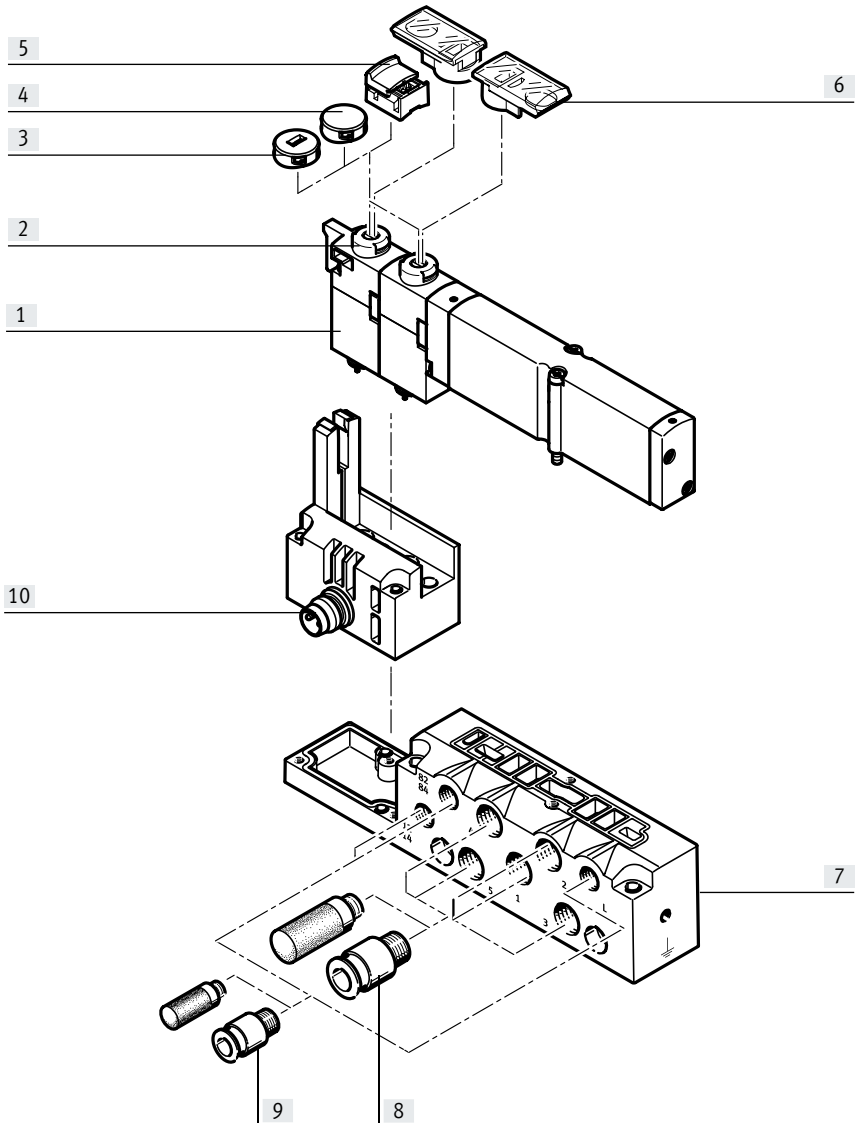
Peripherals overview

Individual sub-base

Ordering:
- Using individual part numbers

Individual sub-bases can be equipped with any valve (VMPA... of the corresponding width).

The electrical connection is established using a standard 4-pin M8 plug (EN 60947-5-2).



Designation		Description	→ Page/Internet
[1]	Solenoid valve	Width 10 mm, 14 mm, 20 mm	VMPA1
[2]	Manual override (MO)	Non-detenting/detenting by turning, per solenoid coil	VMPA1
[3]	Cover cap, coded	After fitting the cover cap, manual override operation is non-detenting only	VMPA1
[4]	Cover cap, concealed	After fitting the cover cap, manual override is blocked	VMPA1
[5]	Cover cap, manual override detenting	After fitting the cover cap, manual override is detenting and can be operated without tools	VMPA1
[6]	Identification holder	Can be pushed onto manual override	VMPA1
[7]	Sub-base	For individual valve VMPA...	VMPA1
[8]	Fittings, silencers or blanking plugs	For working ports (2, 4) and air/exhaust ports (1, 3, 5)	VMPA1
[9]	Fittings and/or silencers	For pilot air supply/pilot exhaust air (12/14, 82/84) and pressure compensation	VMPA1
[10]	Electrical connection M8	4-pin	VMPA1

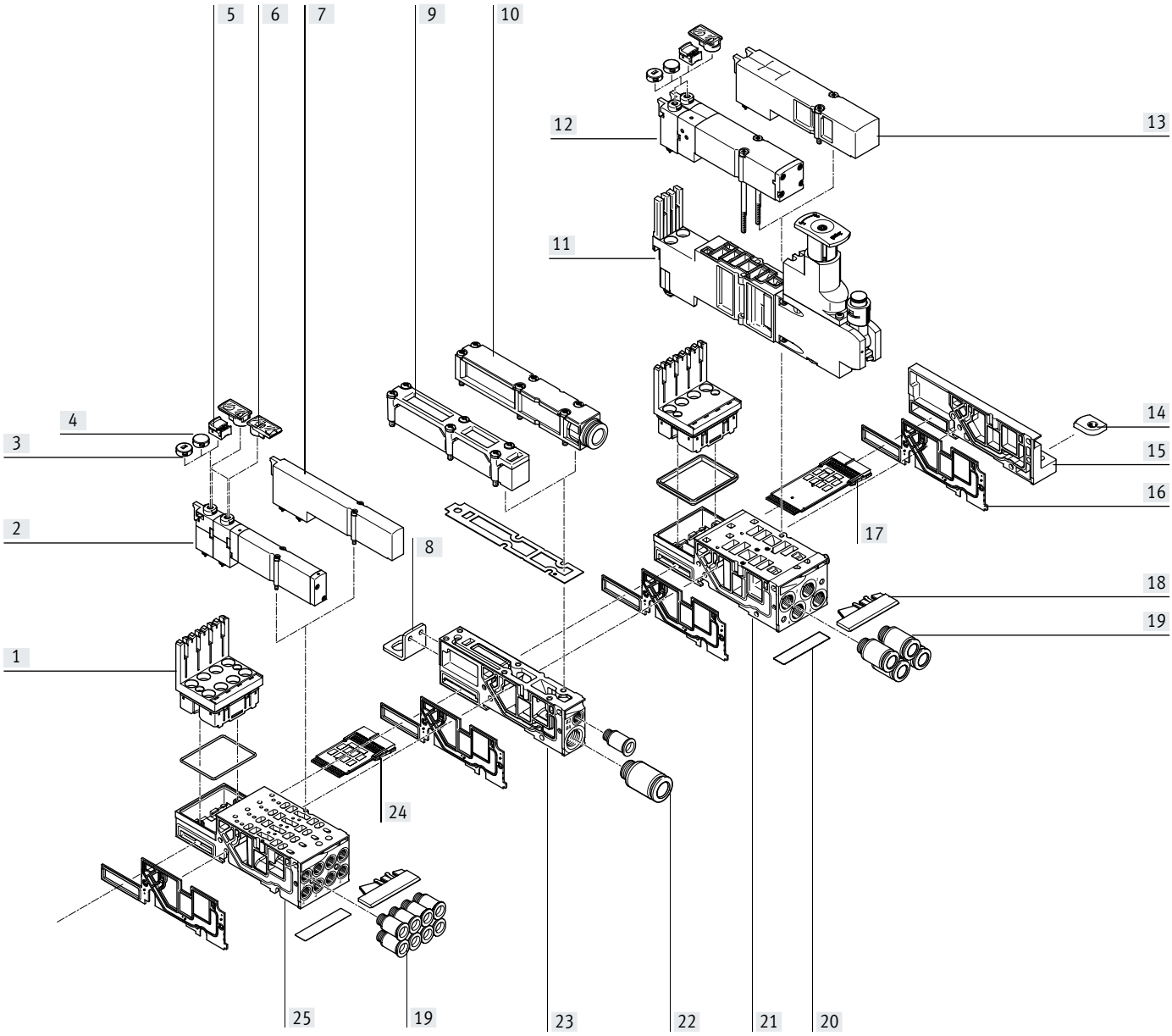
Peripherals overview

Pneumatic components of the valve terminal – Multi-pin plug, AS-Interface

The sub-bases are prepared for either
- 2 or 4 single solenoid valves
- 2 or 4 double solenoid valves

depending on the size.

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



Peripherals overview

Pneumatic components of the valve terminal – Multi-pin plug, AS-Interface			
Designation		Description	→ Page/Internet
[1]	Electronics module	For connecting valves	77, 81, 85
[2]	Solenoid valve	Width 10 mm, 14 mm	74, 79
[3]	Cover cap, coded	After fitting the cover cap, manual override operation is non-detenting only	88
[4]	Cover cap, concealed	After fitting the cover cap, manual override is blocked	88
[5]	Cover cap, manual override detenting	After fitting the cover cap, manual override is detenting and can be operated without tools	88
[6]	Identification holder	Can be pushed onto manual override	91
[7]	Cover plate	For unused valve position (vacant position), width 10 mm, 14 mm	74, 79
[8]	Mounting	Optional for valve terminal mounting (on supply plate)	91
[9]	Flat plate silencer	–	–
[10]	Exhaust plate	For ducted exhaust air	89
[11]	Regulator plate	Vertical stacking (pressure regulator, vertical pressure shut-off plate, vertical pressure supply plate)	75
[12]	Solenoid valve	Width 20 mm	82
[13]	Cover plate	For unused valve position (vacant position), width 20 mm	82
[14]	H-rail mounting	–	91
[15]	Right end plate	–	87
[16]	Separating seal	For sub-base	88
[17]	Electrical manifold module	For multi-pin plug connection, for AS-Interface, for a sub-base with pneumatic supply plate (on the left next to the sub-base), width 10 mm, 14 mm, 20 mm	78, 81, 85
[18]	Inscription label	Inscription label holder for paper foil label	91
[19]	Fittings	For working lines	91
[20]	Paper foil label	For inscription label holder	91
[21]	Sub-base	For two valve positions width 20 mm	84
[22]	Fittings	For pneumatic supply plate	91
[23]	Supply plate	–	89
[24]	Electrical manifold module	For width 10 mm, 14 mm, 20 mm	78, 81, 85
[25]	Sub-base	For four valve positions width 10 mm, 14 mm	77, 80

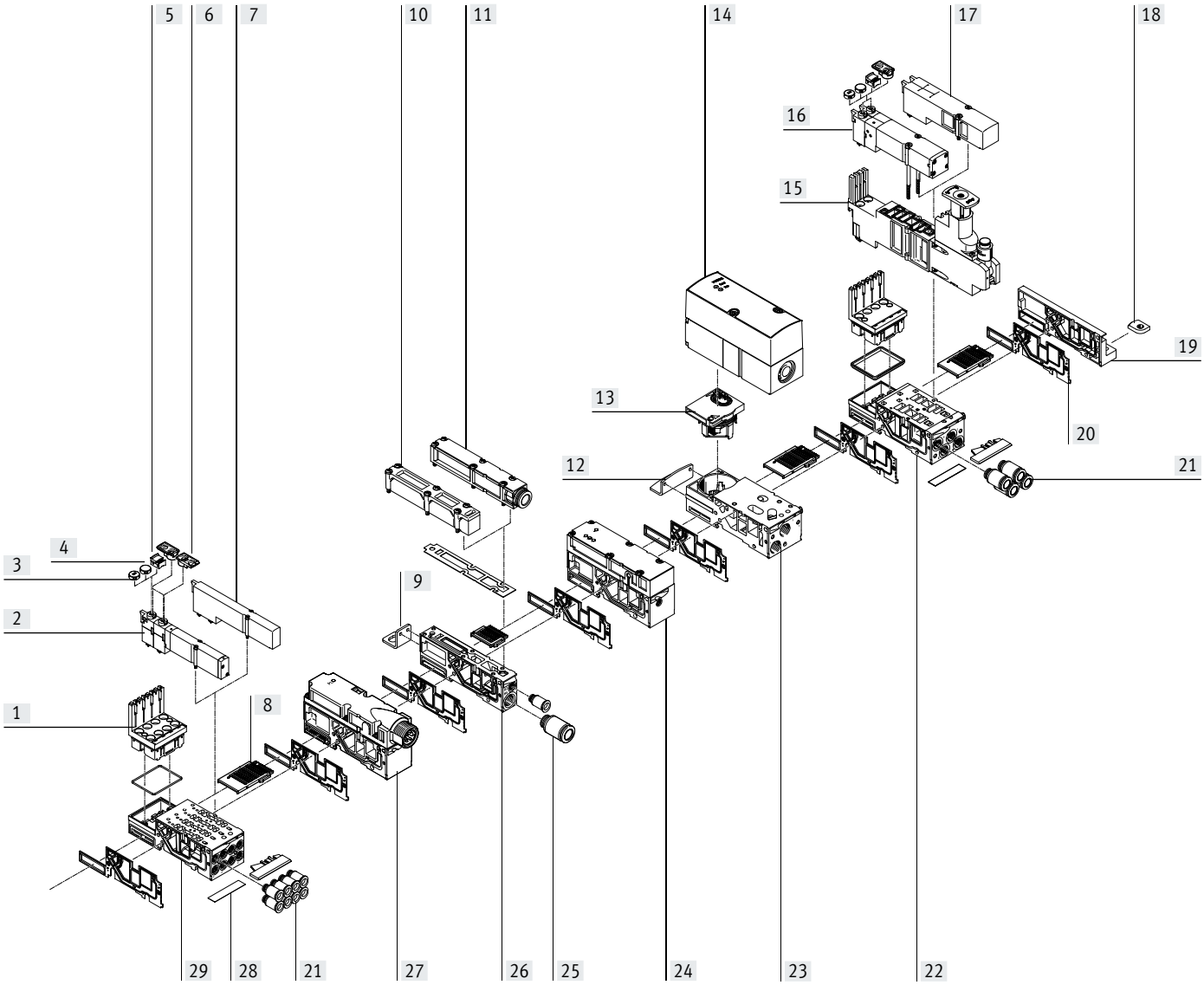
Peripherals overview

Pneumatic components of the valve terminal – CPI connection, fieldbus

The sub-bases are prepared for either
- 2 or 4 single solenoid valves
- 2 or 4 double solenoid valves

depending on the size.

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



Peripherals overview

Pneumatic components of the valve terminal – CPI connection, fieldbus			
Designation		Description	→ Page/Internet
[1]	Electronics module	–	77, 81, 85
[2]	Solenoid valve	Width 10 mm, 14 mm	74, 79
[3]	Cover cap, coded	After fitting the cover cap, manual override operation is non-detenting only	88
[4]	Cover cap, concealed	After fitting the cover cap, manual override is blocked	88
[5]	Cover cap, manual override detenting	After fitting the cover cap, manual override is detenting and can be operated without tools	88
[6]	Identification holder	Can be pushed onto manual override	91
[7]	Cover plate	For unused valve position (vacant position), width 10 mm, 14 mm	74, 79
[8]	Electrical manifold module	For fieldbus connection, for proportional pressure regulator, width 10 mm, 14 mm, 20 mm	78, 81, 85
[9]	Mounting	Optional for valve terminal mounting (on supply plate)	91
[10]	Flat plate silencer	–	–
[11]	Exhaust plate	For ducted exhaust air	89
[12]	Mounting	Optional for valve terminal mounting (on the sub-base of the proportional pressure regulator)	91
[13]	Electronics module	For proportional pressure regulator	86
[14]	Proportional pressure regulator	–	86
[15]	Regulator plate	Vertical stacking (pressure regulator, vertical pressure shut-off plate, vertical pressure supply plate)	83
[16]	Solenoid valve	Width 20 mm	82
[17]	Cover plate	For unused valve position (vacant position), width 20 mm	88
[18]	H-rail mounting	–	91
[19]	Right end plate	–	87
[20]	Separating seal	For sub-base	88
[21]	Fittings	For working lines	91
[22]	Sub-base	For two valve positions width 20 mm	84
[23]	Sub-base	For proportional pressure regulator	86
[24]	Pressure sensor	–	88
[25]	Fittings	For pneumatic supply plate	91
[26]	Supply plate	–	89
[27]	Electrical supply plate	For auxiliary voltage supply for large valve terminals	88
[28]	Paper foil label	For inscription label holder	91
[29]	Sub-base	For four valve positions width 10 mm, 14 mm	77, 80

Peripherals overview

Valve terminal with multi-pin connection

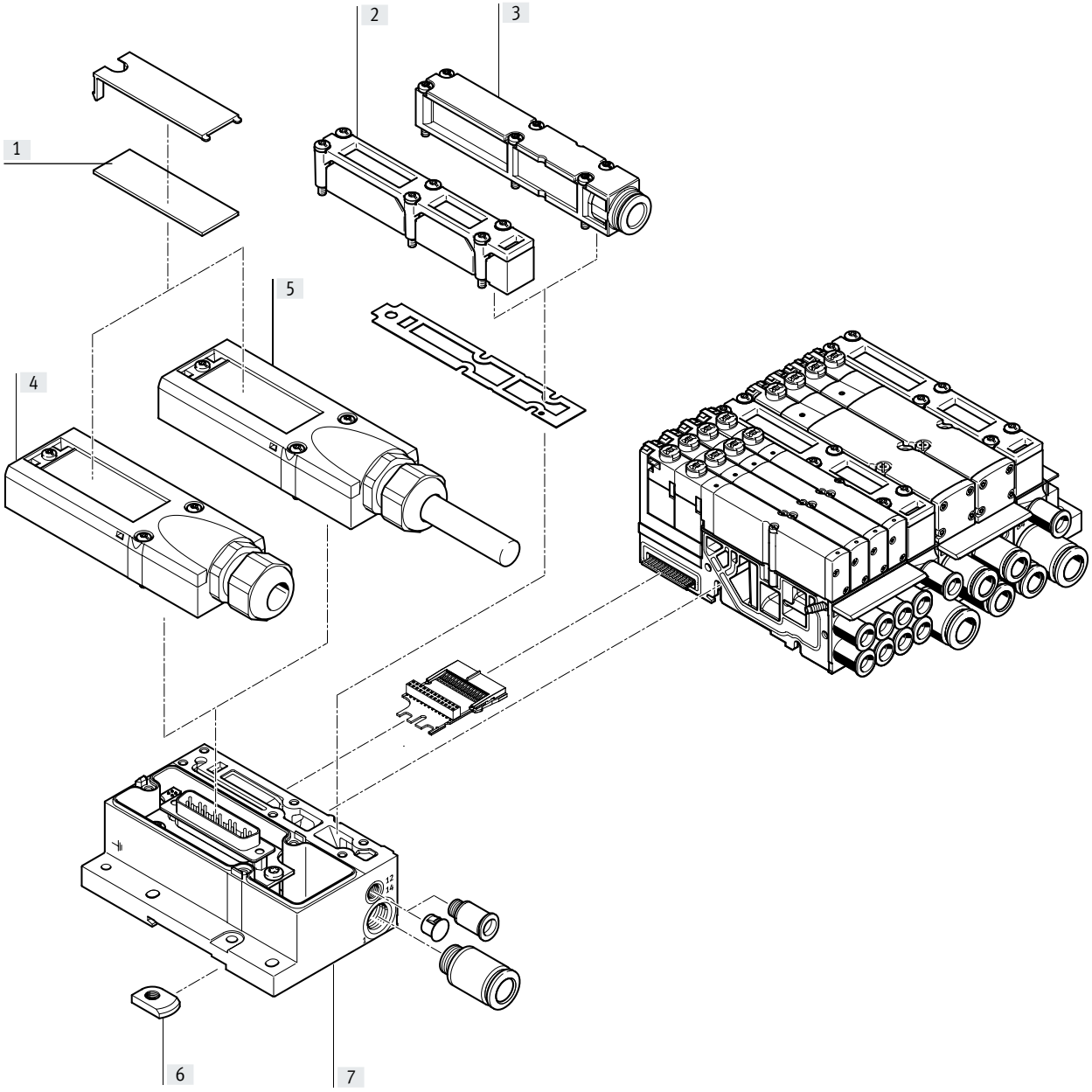
Order code:
- 32P-... for the pneumatic components
- 32E-... for the electrical components

MPA valve terminals with multi-pin plug connection can be expanded by up to 24 solenoid coils.

The multi-pin plug connection is designed as a removable 25-pin Sub-D connection to IP65.

The cable can be selected when ordering:
- 2.5 m
- 5 m
- 10 m

In each case for max. 8 or 24 valves



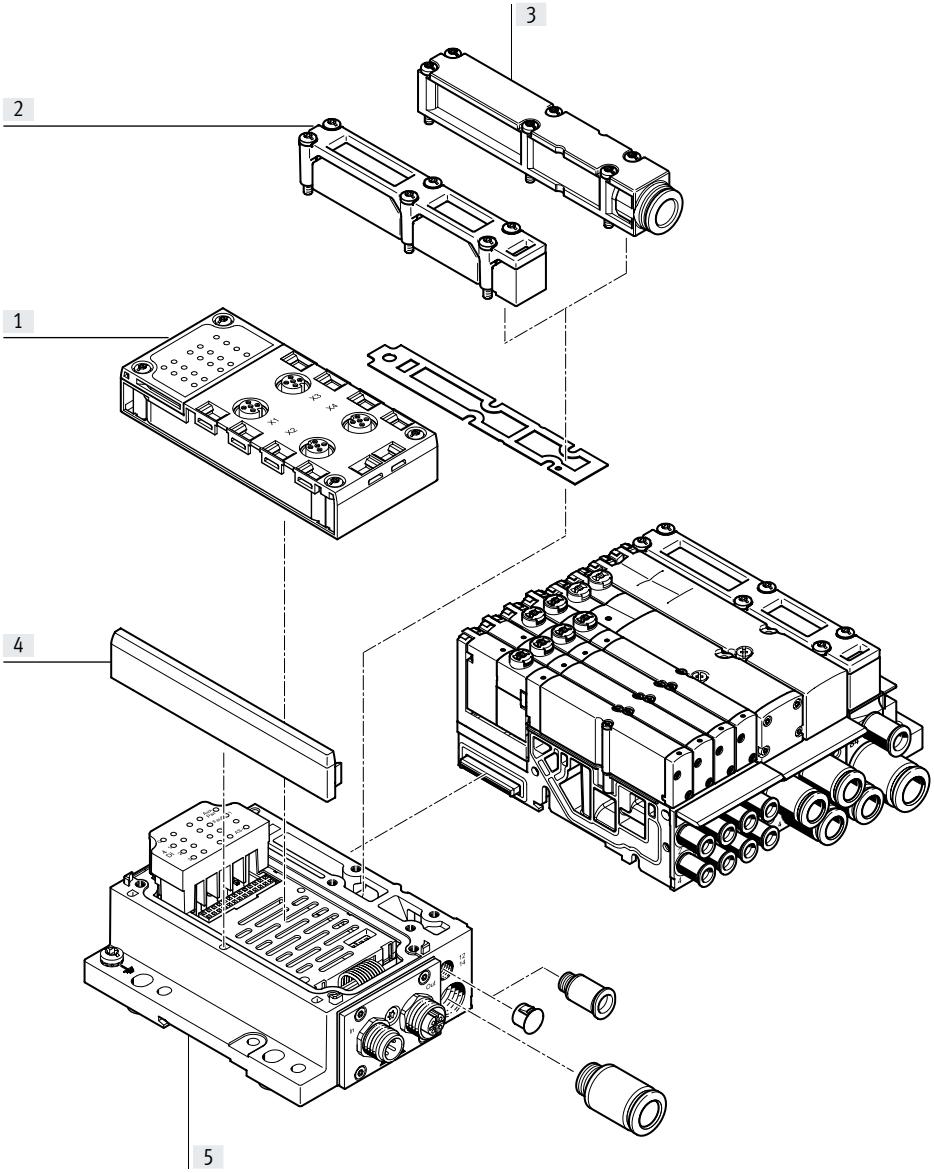
Designation		Description	→ Page/Internet
[1]	Inscription labels	Large, for multi-pin plug connection	–
[2]	Flat plate silencer	For pneumatic interface	–
[3]	Exhaust plate	For ducted exhaust air	89
[4]	Multi-pin plug connection	Self-assembled	89
[5]	Multi-pin plug connection	With multi-pin cable	89
[6]	H-rail mounting	–	91
[7]	Electrical interface	For multi-pin plug	87

Peripherals overview

Valve terminal with AS-Interface connection

Order code:
- 32P-... for the pneumatic components
- 52E-... for the electrical components

MPA valve terminals with AS-Interface can be expanded by up to 8 solenoid coils.



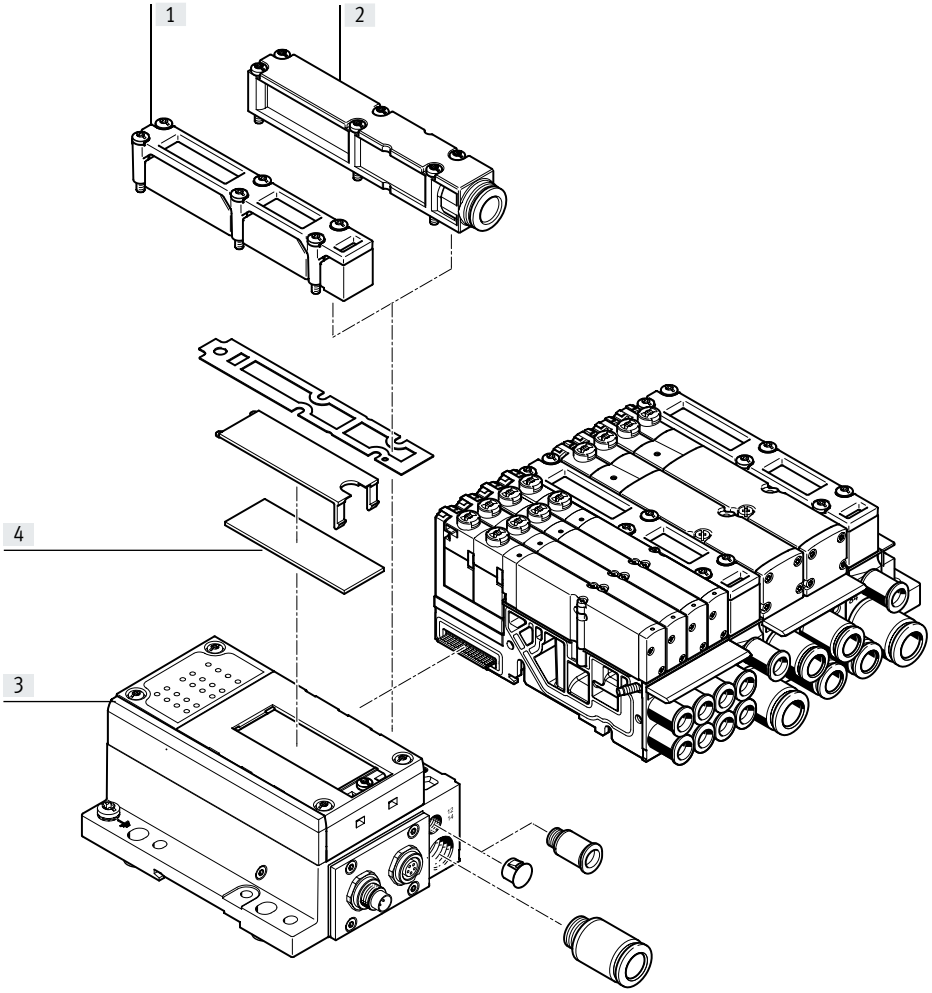
Designation		Description	➔ Page/Internet
[1]	Sub-base	–	87
[2]	Flat plate silencer	For pneumatic interface	–
[3]	Exhaust plate	For ducted exhaust air	89
[4]	Aperture	–	–
[5]	Electrical interface	–	87

Peripherals overview

Valve terminal with CPI connection

Order code:
- 32P-... for the pneumatic components
- 56E-... for the electrical
- peripherals

MPA valve terminals with CPI connection can be expanded by up to 32 solenoid coils.



Designation		Description	→ Page/Internet
[1]	Flat plate silencer	For pneumatic interface	–
[2]	Exhaust plate	For ducted exhaust air	89
[3]	Electrical interface	–	87
[4]	Inscription label	Large for CPI electrical interface	–

Peripherals overview

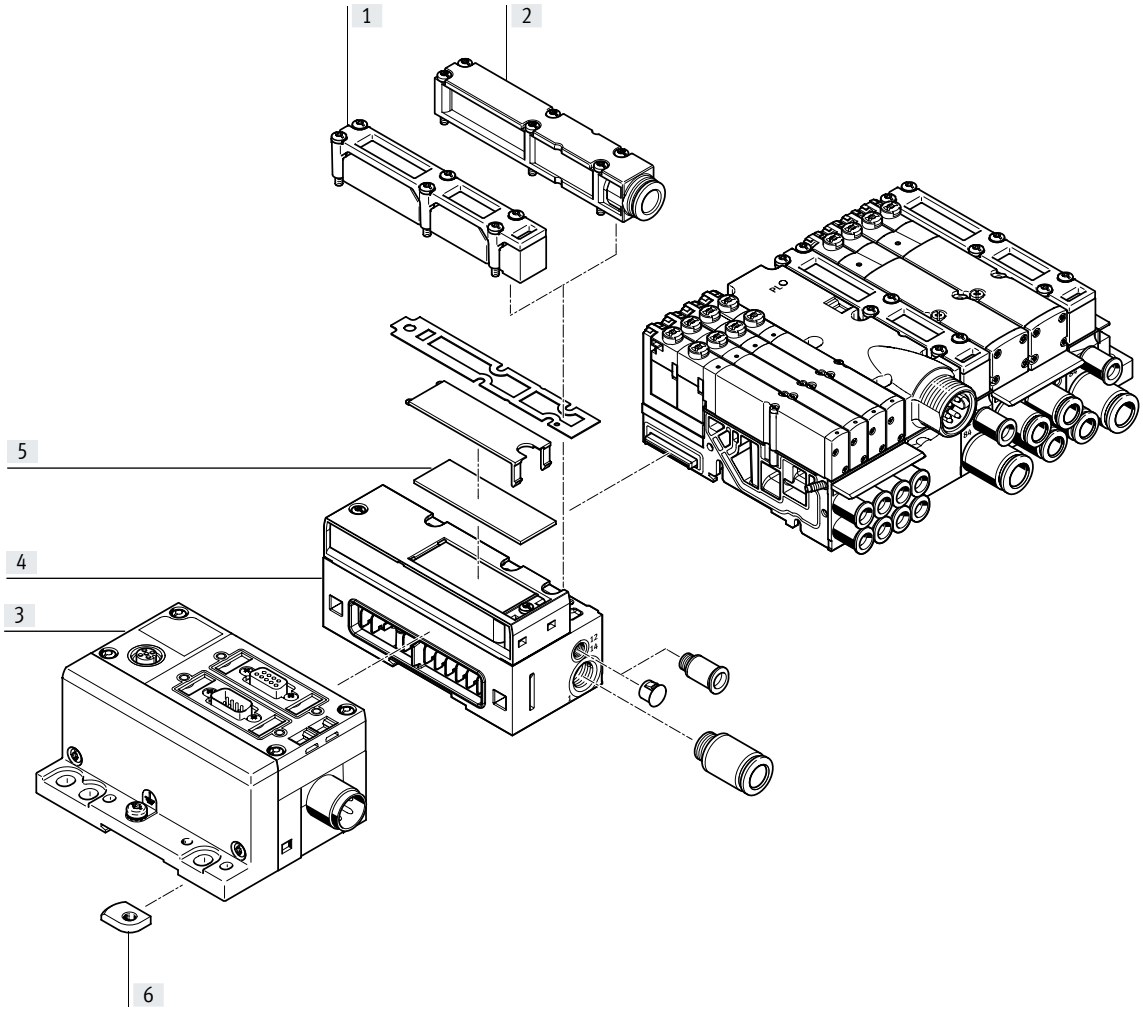
Valve terminal with fieldbus interface, control block (electrical peripherals CPX)

Order code:
- 32P-... for the pneumatic components
- 50E-... for the electrical
- peripherals

Valve terminals with fieldbus interfaces can be configured with up to 16 sub-bases. In conjunction with MPA1 or MPA14 and 8 solenoid coils per sub-base, up to 128 solenoid coils can thus be equipped. An MPA2 with 4 solenoid coils per sub-base can actuate 64 solenoid coils.

Each valve position can be equipped with any valve or a cover plate. The rules for CPX apply to the equipment that can be used with the electrical peripherals CPX.
In general:

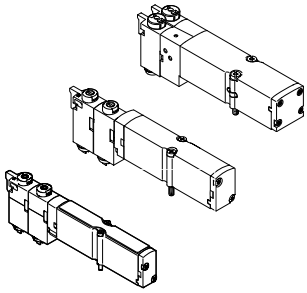
- Digital inputs/outputs
- Analogue inputs/outputs
- Parameterisation of inputs and outputs
- Integrated convenient diagnostic system
- Preventive maintenance concepts



Designation		Description	→ Page/Internet
[1]	Flat plate silencer	For pneumatic interface	–
[2]	Exhaust plate	For ducted exhaust air	89
[3]	CPX modules	–	–
[4]	Pneumatic interface	For CPX modules	87
[5]	Inscription label	Large, for pneumatic interface CPX	–
[6]	H-rail mounting	–	91

Key features – Pneumatic components

Sub-base valve



MPA offers a comprehensive range of valve functions. All valves have a patented sealing system, which ensures efficient sealing, a broad pressure range and a long service life. They have a pneumatic pilot control for optimising performance. Compressed air is supplied via a pilot air supply port.

Sub-base valves can be replaced quickly since the tubing connections remain on the sub-base.
This design is also very flat.

Whatever valve function is required, there are sub-base valves with one solenoid coil (single solenoid) or with two solenoid coils (double solenoid or two single solenoid valves in one housing).

Design

Valve replacement

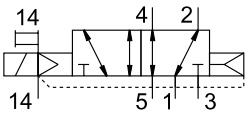
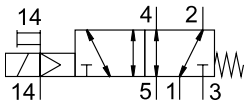
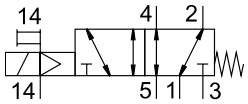
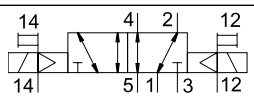
The valves are attached to the metal sub-base using two screws, which means that they can be easily replaced. The mechanical sturdiness of the sub-base guarantees good long-term sealing.

Extension

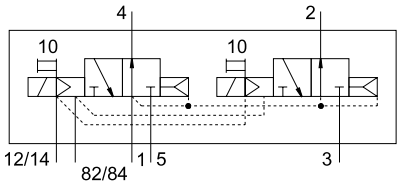
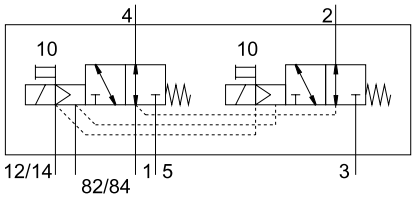
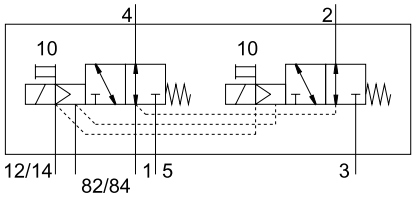
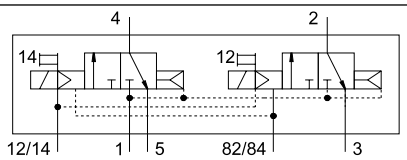
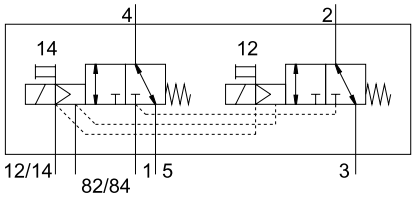
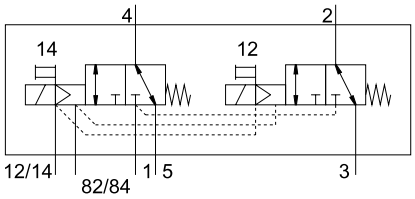
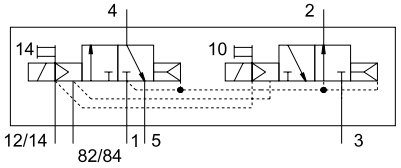
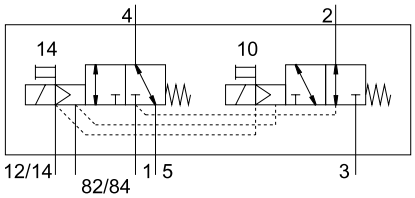
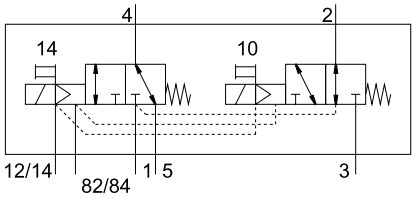
Cover plates can be replaced by valves at a later date. The dimensions, mounting points and existing pneumatic installations remain unchanged during this process.

The valve code (M, MS, MU, J, N, NS, NU, K, KS, KU, H, HS, HU, B, G, E, X, W, D, DS, I) is located on the front of the valve beneath the manual override.

5/2-way valve

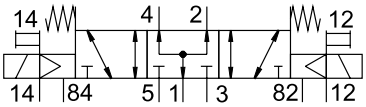
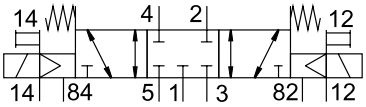
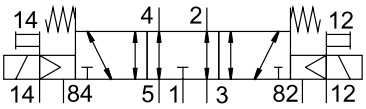
Code	Circuit symbol	Width [mm]	Description
M		10, 14, 20	• Single solenoid • Pneumatic spring return • Reversible • Operating pressure –0.09 ... +1 MPa
MS		10, 14, 20	• Single solenoid • Mechanical spring return • Reversible • Operating pressure –0.09 ... +0.8 MPa
MU		10	• Single solenoid • Polymer poppet valve • Mechanical spring return • Reversible • Operating pressure –0.09 ... +1 MPa • 5/2-way function is achieved using two mechanically separate switching elements
J		10, 14, 20	• Double solenoid • Reversible • Operating pressure –0.09 ... +1 MPa

Key features – Pneumatic components

2x 3/2-way valve Code	Circuit symbol	Width [mm]	Description
N		10, 14, 20	• Single solenoid • Normally open • Pneumatic spring return • Operating pressure 0.3 ... 1 MPa
NS		10, 14, 20	• Single solenoid • Normally open • Mechanical spring return • Reversible • Operating pressure –0.09 ... +0.8 MPa
NU		10	• Single solenoid • Polymer poppet valve • Normally open • Mechanical spring return • Reversible • Operating pressure –0.09 ... +1 MPa
K		10, 14, 20	• Single solenoid • Normally closed • Pneumatic spring return • Operating pressure 0.3 ... 1 MPa
KS		10, 14, 20	• Single solenoid • Normally closed • Mechanical spring return • Reversible • Operating pressure –0.09 ... +0.8 MPa
KU		10	• Single solenoid • Polymer poppet valve • Normally closed • Mechanical spring return • Reversible • Operating pressure –0.09 ... +1 MPa
H		10, 14, 20	• Single solenoid • Normal position – 1x closed – 1x open • Pneumatic spring return • Operating pressure 0.3 ... 1 MPa
HS		10, 14, 20	• Single solenoid • Normal position – 1x closed – 1x open • Mechanical spring return • Reversible • Operating pressure –0.09 ... +0.8 MPa
HU		10	• Single solenoid • Polymer poppet valve • Normal position – 1x closed – 1x open • Mechanical spring return • Reversible • Operating pressure –0.09 ... +1 MPa

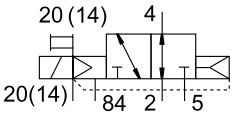
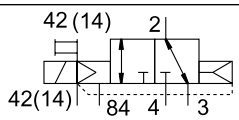
Key features – Pneumatic components

5/3-way valve

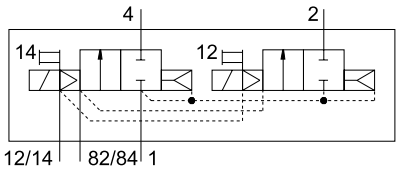
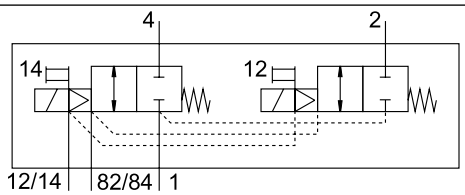
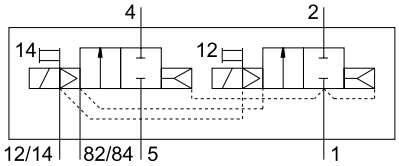
Code	Circuit symbol	Width [mm]	Description
B		10, 14, 20	• Mid-position pressurised[1)] • Mechanical spring return • Reversible • Operating pressure –0.09 ... +1 MPa
G		10, 14, 20	• Mid-position closed[1)] • Mechanical spring return • Reversible • Operating pressure –0.09 ... +1 MPa
E		10, 14, 20	• Mid-position exhausted[1)] • Mechanical spring return • Reversible • Operating pressure –0.09 ... +1 MPa

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

3/2-way valve

Code	Circuit symbol	Width [mm]	Description
W		10, 14, 20	• Single solenoid • Normally open • External compressed air supply • Pneumatic spring return • Reversible • Operating pressure –0.09 ... +1 MPa Compressed air (–0.09 ... +1 MPa) supplied at working port 2 can be switched with both internal and external pilot air supply.
X		10, 14, 20	• Single solenoid • Normally closed • External compressed air supply • Pneumatic spring return • Reversible • Operating pressure –0.09 ... +1 MPa Compressed air (–0.09 ... +1 MPa) supplied at working port 4 can be switched with both internal and external pilot air supply.

Key features – Pneumatic components

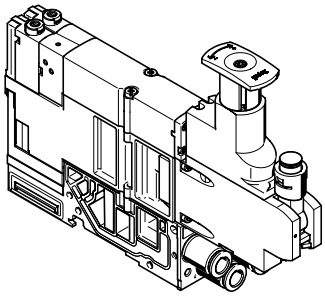
2x 2/2-way valve			
Code	Circuit symbol	Width [mm]	Description
D		10, 14, 20	• Single solenoid • Normally closed • Pneumatic spring return • Operating pressure 0.3 ... 1 MPa
DS		10, 14, 20	• Single solenoid • Normally closed • Mechanical spring return • Reversible • Operating pressure –0.09 ... +0.8 MPa
I		10, 14, 20	• Single solenoid • 1x normally closed • 1x normally closed, reversible only • Pneumatic spring return • Operating pressure 0.3 ... 1 MPa • Vacuum at port 3/5 only

Note

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

Key features – Pneumatic components

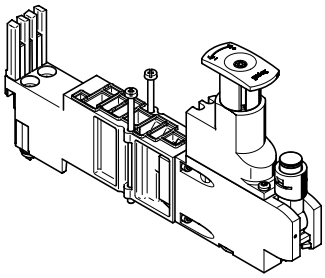
Vertical stacking



Additional functions can be added to each valve position between the sub-base and the valve.

These functions are known as vertical stacking modules and enable special functions or control of an individual valve position.

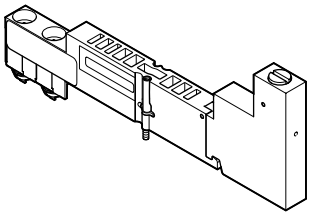
Pressure regulator plate



An adjustable pressure regulator can be installed between the base plate and the valve to control the force of the actuator.
This pressure regulator maintains a constant output pressure (secondary side) independent of pressure fluctuations (primary side) and air consumption.
Standard version:

- For pressure regulation up to 6 bar or up to 10 bar
- Without pressure gauge (optional, rotatable, M5 connection with MPA1, cartridge connection with MPA2)
- MPA2: Regulator head with 3 positions (locked, reference position, idle running)
- MPA1: Set using screwdriver

Vertical pressure shut-off plate for MPA1



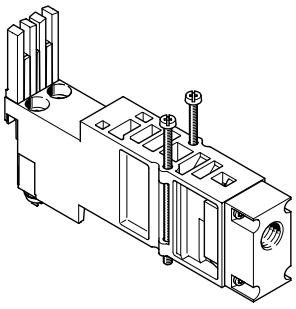
The vertical pressure shut-off plate can be used to hot swap individual valves without switching off the overall air supply.

The working pressure for the individual valve can be switched off manually via the vertical pressure shut-off plate using the actuating element.

Key features – Pneumatic components

Vertical stacking

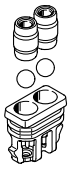
Vertical pressure supply plate for MPA2



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

The exhaust and pilot air supply of the valve are still provided via the central ports of the valve terminal.

Check valve



The check valves prevent the air (back pressure) from exhaust ducts 3 and 5 from entering the solenoid valve, preventing the back pressure from having a disruptive effect on other connected actuators.
The check valves are integrated into ducts 3 and 5 of the sub-bases designed specifically for this purpose.

Please see the relevant assembly instructions:
➔ www.festo.com/catalogue/mpa ➔ Support/Downloads.

This function makes it possible to effectively protect single-acting process valves from the effects of back pressure.
This ensures reliable and feedback-free switching operations, especially in the case of rapid switching operations.

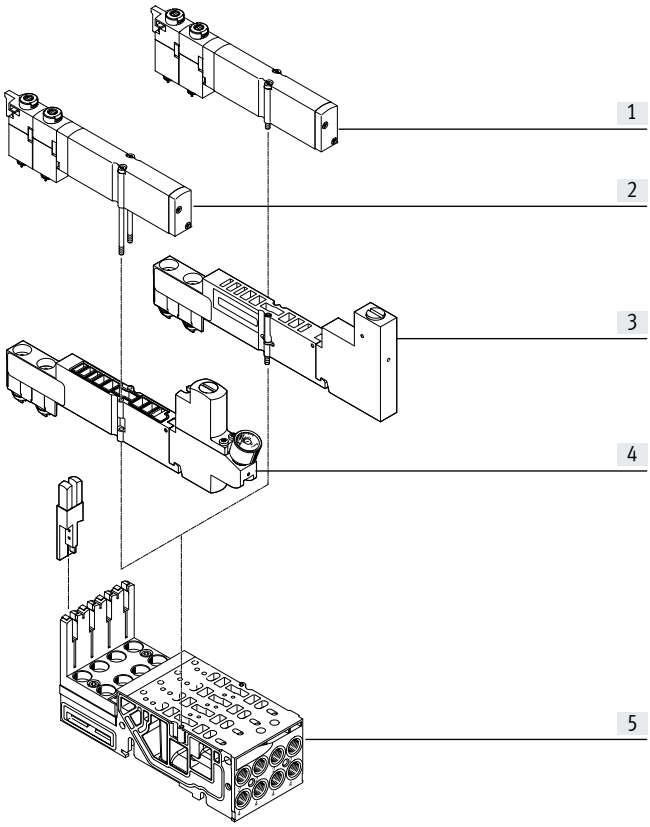
Note

- Special sub-bases are available for use with check valves.
- Standard sub-bases cannot be retrofitted with check valves.
- Pre-assembled sub-bases with integrated check valves are available.
- It is not possible to use a check valve and a fixed flow restrictor (in the same duct) at the same time.

Key features – Pneumatic components

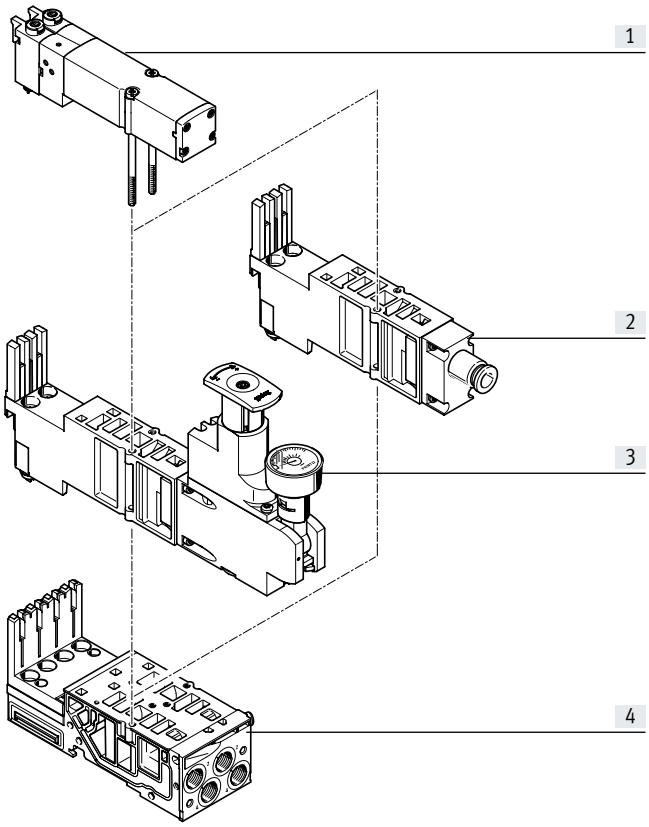
Vertical stacking

Vertical stacking components, MPA1



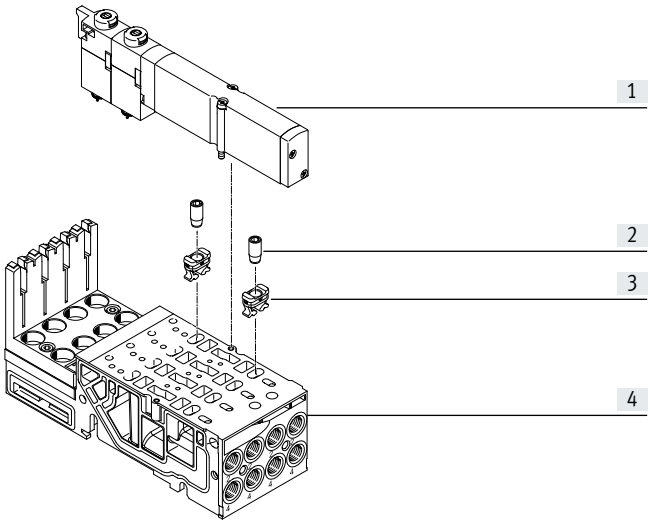
[1] Valve VMPA1
[2] Valve VMPA1, mounting screws replaced by long version (included in the scope of delivery of the regulator plate)
[3] Vertical pressure shut-off plate VMPA1-HS
[4] Regulator plate VMPA1
[5] Sub-base

Vertical stacking components, MPA2



[1] Valve VMPA2
[2] Vertical pressure supply plate
[3] Regulator plate VMPA2
[4] Sub-base

Fixed flow restrictor for manifold sub-bases MPA1



[1] Valve VMPA1
[2] Fixed flow restrictor
[3] Retaining bracket
[4] Sub-base

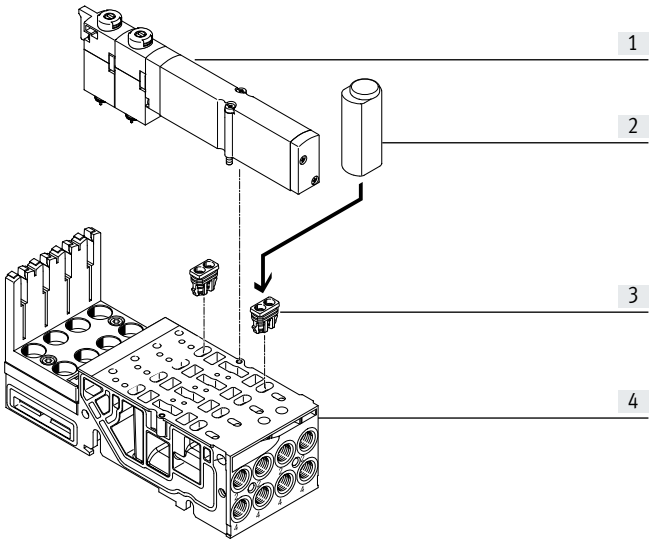
The fixed flow restrictor can be used to permanently set the exhaust flow rate in ducts 3 and 5. To be able to screw the restrictor into the sub-base, the retaining bracket is first pressed into the exhaust openings on the sub-base as far as the stop.

The fixed flow restrictor can then be screwed in flush with the top side of the retaining bracket. The restrictor screw cuts a thread into the retaining bracket as it is screwed in. As the restrictor is being screwed in, two hooks on the underside of the retaining bracket also deform to fix it into the sub-base.

Key features – Pneumatic components

Vertical stacking

Check valve



[1] Valve VMPA14
[2] Assembly tool
[3] Check valve
[4] Sub-base

Festo check valves can only be used in combination with the sub-bases designed specifically for this purpose. The check valves should be installed according to the specifications using the enclosed assembly tool. Following assembly, the check valves cannot be removed.

Please see the relevant assembly instructions:
➔ www.festo.com/catalogue/mpa ➔ Support/Downloads.

For widths 14 mm and 20 mm there are special sub-bases available that facilitate the installation of check valves.

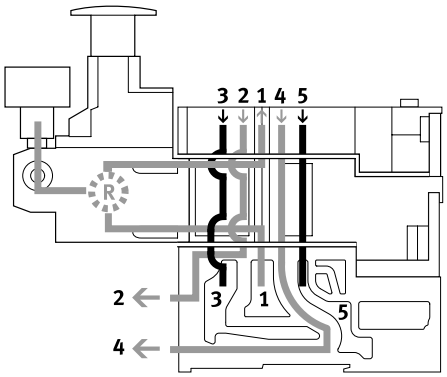
Note

- Special sub-bases are available for use with check valves.
- Standard sub-bases cannot be retrofitted with check valves.
- Pre-assembled sub-bases with integrated check valves are available.
- It is not possible to use a check valve and a fixed flow restrictor (in the same duct) at the same time.

Key features – Pneumatic components

Vertical stacking

Mode of operation of the pressure regulator plate (P regulator) for port 1; code: PA, PF



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

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

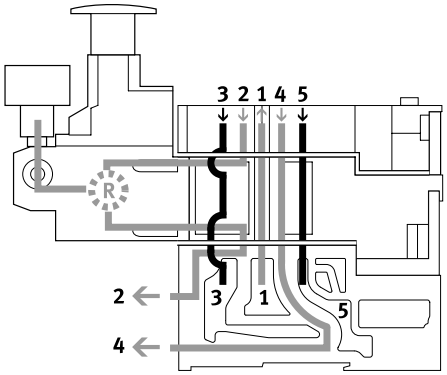
Advantages

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

Application examples

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

Mode of operation of the pressure regulator plate (B regulator) for port 2; code: PC, PH



This pressure regulator regulates the pressure in duct 2 after the pressure medium flows through the valve. During exhausting, the air flow in the valve is exhausted from duct 2 to duct 3 via the pressure regulator.

Restrictions

The pressure regulator can only be adjusted in the switched state (e.g. the valve has switched to 2 and exhausts from 4 to 5).

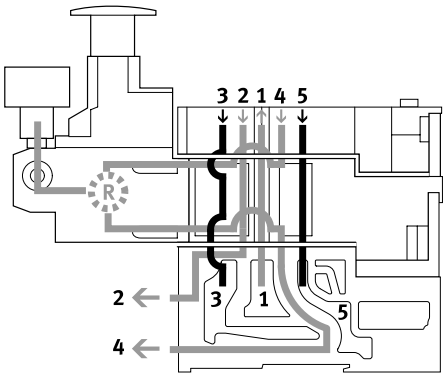
Application example

The pressure regulator facilitates the reduction of pressure at port 2 of an individual valve rather than the operating pressure of the valve terminal

Key features – Pneumatic components

Vertical stacking

Mode of operation of the pressure regulator plate (A regulator) for port 4; code: PB, PK



This pressure regulator regulates the pressure in duct 4 after the pressure medium flows through the valve. During exhausting, the air flow in the valve is exhausted from duct 4 to duct 5 via the pressure regulator.

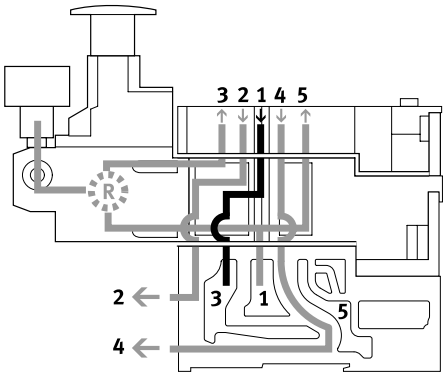
Restrictions

The pressure regulator can only be adjusted in the switched state (e.g. the valve has switched to 4 and exhausts from 2 to 3).

Application example

If different working pressures are required at ports 4 and 2. The pressure from duct 1 is present at port 2.

Mode of operation of the pressure regulator plate (B regulator, reversible) for port 2, reversible; code: PL, PN



The reversible B regulator splits the supply air in duct 1 and regulates the pressure upstream of the valve in duct 3 (the unregulated pressure from duct 1 is in duct 5). The regulated air is then regulated to duct 2. The valve is thus operated in reverse mode.

During exhausting, the air flow in the valve is exhausted from duct 2 to duct 1 and the air is returned to duct 3 via the intermediate plate.

Application examples

- If, instead of the operating pressure of the valve terminal, a different pressure is required in duct 2.
- When fast exhausting is required.
- When the pressure regulator must always be adjustable.

Note

Reversible pressure regulator plates should only be combined with valves that can be operated in reverse mode.

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.

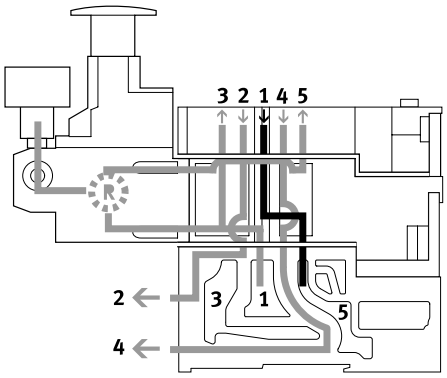
Restrictions

- 2x 3/2-way valves (code N, K, H) cannot be used, as pressure is present at ports 3 and 5.

Key features – Pneumatic components

Vertical stacking

Mode of operation of the pressure regulator plate (A regulator, reversible) for port 4, reversible; code: PK, PM



The reversible A regulator splits the working air in duct 1 and supplies the pressure upstream of the valve into duct 5 (the unregulated pressure from duct 1 is in duct 3). The regulated air is then regulated to duct 4. The valve is thus operated in reversible mode.

During exhausting, the air flow in the valve is exhausted from duct 4 to duct 1 and the air is returned to duct 5 via the intermediate plate.

Application examples

- If, instead of the operating pressure of the valve terminal, a different pressure is required in duct 4.
- When fast exhausting is required.
-
- When the pressure regulator must always be adjustable.

Note

Reversible pressure regulator plates should only be combined with valves that can be operated in reverse mode.

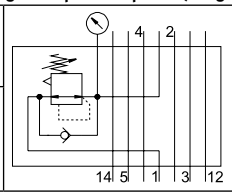
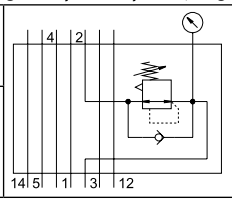
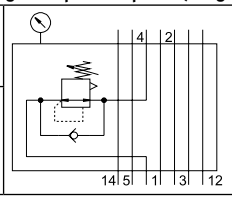
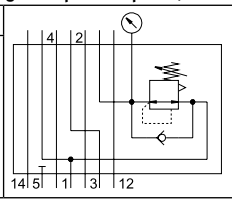
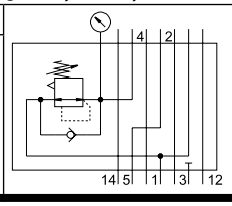
Advantages

- 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.

Restrictions

- 2x 3/2-way valves (code N, K, H) cannot be used, as pressure is present at ports 3 and 5.

Key features – Pneumatic components

Vertical stacking – Pressure regulator plate						
Code		Type	Width [mm]	Control range Up to max. 6 bar	Control range Up to max. 10 bar	Description
Pressure regulator plate for port 1 (P regulator)						
PA		VMPA1-B8-R1-M5-10 VMPA1-B8-R1C2-C-10 VMPA2-B8-R1C2-C-10	10 10 20	–	■	Regulates the operating pressure in duct 1 upstream of the directional control valve
PF		VMPA1-B8-R1-M5-06 VMPA1-B8-R1C2-C-06 VMPA2-B8-R1C2-C-06	10 10 20	■	–	
Pressure regulator plate for port 2 (B regulator)						
PC		VMPA1-B8-R2-M5-10 VMPA1-B8-R2C2-C-10 VMPA2-B8-R2C2-C-10	10 10 20	–	■	Regulates the operating pressure in duct 2 downstream of the directional control valve
PH		VMPA1-B8-R2-M5-06 VMPA1-B8-R2C2-C-06 VMPA2-B8-R2C2-C-06	10 10 20	■	–	
Pressure regulator plate for port 4 (A regulator)						
PB		VMPA1-B8-R3-M5-10 VMPA1-B8-R3C2-C-10 VMPA2-B8-R3C2-C-10	10 10 20	–	■	Regulates the operating pressure in duct 4 downstream of the directional control valve
PG		VMPA1-B8-R3-M5-06 VMPA1-B8-R3C2-C-06 VMPA2-B8-R3C2-C-06	10 10 20	■	–	
Pressure regulator plate for port 2, reversible (B regulator)						
PL		VMPA2-B8-R6C2-C-10	20	–	■	Reversible pressure regulator for port 2
PN		VMPA2-B8-R6C2-C-06	20	■	–	
Pressure regulator plate for port 4, reversible (A regulator)						
PK		VMPA2-B8-R7C2-C-10	20	–	■	Reversible pressure regulator for port 4
PM		VMPA2-B8-R7C2-C-06	20	■	–	

Key features – Pneumatic components

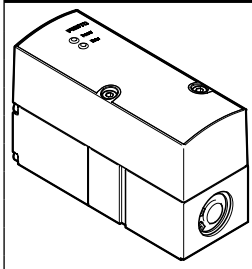
Description of proportional pressure regulator

The proportional pressure regulator VPPM-... is used to regulate pressure proportional to a specified setpoint value.
A built-in pressure sensor records the pressure at the working port and compares this value with the setpoint value. In the event of deviations between the setpoint value and actual value, the valve regulates until the output pressure has reached the setpoint value. For a constant pressure supply, which is required for high control quality, the proportional pressure regulator has an additional supply port.
The proportional pressure regulator can be configured via the PLC or on site via the interface for CPX-FMT. The proportional pressure regulator can be used for CPI connection and fieldbus.

Note

Output pressure remains unregulated if the power supply cable is interrupted.

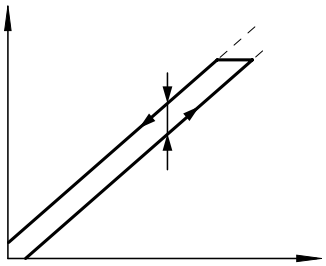
Proportional pressure regulator

Illustration	Code	Type	Linearity error full-scale [%]	Input pressure 1 [bar]	Pressure regulation range [bar]
	QA	VPPM-6TA-L-1-F-0L2H	2	0 ... 4	0.02 ... 2
	QB	VPPM-6TA-L-1-F-0L6H	2	0 ... 8	0.06 ... 6
	QC	VPPM-6TA-L-1-F-0L10H	2	0 ... 11	0.1 ... 10
	QD	VPPM-6TA-L-1-F-0L2H-S1	1	0 ... 4	0.02 ... 2
	QE	VPPM-6TA-L-1-F-0L6H-S1	1	0 ... 8	0.06 ... 6
	QF	VPPM-6TA-L-1-F-0L10H-S1	1	0 ... 11	0.1 ... 10
	QG	VPPM-8TA-L-1-F-0L2H-C1	2	0 ... 4	0.02 ... 2
	QH	VPPM-8TA-L-1-F-0L6H-C1	2	0 ... 8	0.06 ... 6
	QK	VPPM-8TA-L-1-F-0L10H-C1	2	0 ... 11	0.1 ... 10
	QL	VPPM-8TA-L-1-F-0L2H-S1C1	1	0 ... 4	0.02 ... 2
	QM	VPPM-8TA-L-1-F-0L6H-S1C1	1	0 ... 8	0.06 ... 6
	QN	VPPM-8TA-L-1-F-0L10H-S1C1	1	0 ... 11	0.1 ... 10

Key features – Pneumatic components

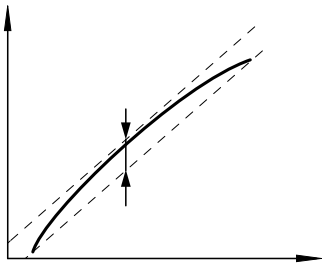
Terms related to the proportional pressure regulator

Hysteresis



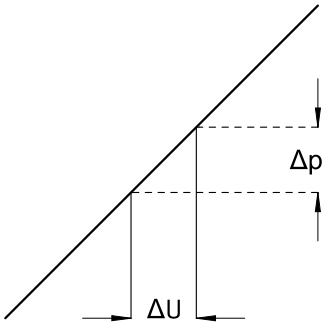
There is always a linear relationship within a certain tolerance between the setpoint value entered and the pressure output. Nevertheless, it makes a difference whether the setpoint value is entered as rising or falling. The difference between the maximum deviations is referred to as hysteresis.

Linearity error



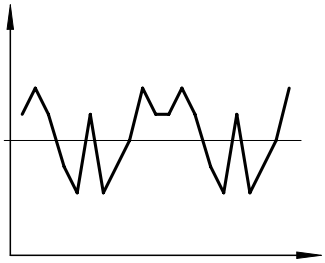
A perfectly linear progression of the control characteristic of the output pressure is theoretical. The maximum percentage deviation from this theoretical control characteristic is referred to as the linearity error. The percentage value refers to the maximum output pressure (full scale).

Response sensitivity



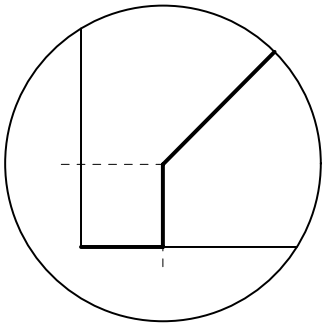
The response sensitivity of the device determines how sensitively one can change, i.e. adjust, a pressure.
The smallest setpoint value difference that results in a change in the output pressure is referred to as the response sensitivity.
In this case, 0.01 bar.

Repetition accuracy (reproducibility)



The repetition accuracy is the margin within which the fluidic output variable is scattered when the same electrical input signal coming from the same direction is repeatedly adjusted. The repetition accuracy is expressed as a percentage of the maximum fluidic output signal.

Zero point suppression



In real-world applications, it is possible for there to be a residual voltage or residual current at the setpoint input of the VPPM via the setpoint generator. Zero point suppression is used so that the valve is reliably exhausted at a setpoint value of zero.

Key features – Pneumatic components

Cover plate

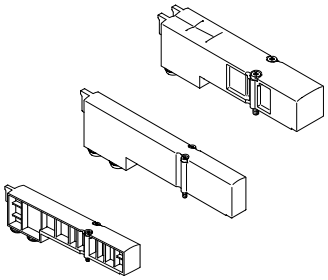


Plate without valve function for reserving valve positions on a valve terminal.

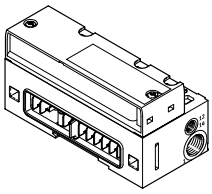
Valve and cover plates are attached to the sub-base using two screws.

Valve function

Code	Circuit symbol	Width [mm]	Description
L	–	10, 14, 20	For valve terminal only: cover plate for valve position

Compressed air supply and exhaust

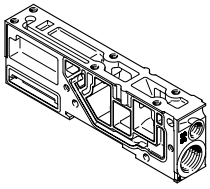
Pneumatic interface



The valve terminal MPA can be supplied with air at one or more points. This ensures that the valve terminal will always have an adequate air supply and exhaust, even with large-scale expansions.
The main supply to the valve terminal is located on the pneumatic interface, which links the electrical and pneumatic parts. Additional provision is made for several supply plates.

Exhausting is either via integrated flat plate silencers or common lines for ducted exhaust air.
These exhausts are located on the pneumatic interface as well as on the supply plates and on the right end plate (VMPA-ERP-G).

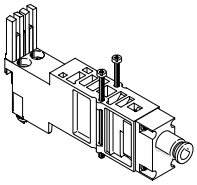
Supply plate



When there is a need for an increase in air supply, multiple supply plates can additionally be provided.

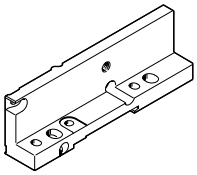
Exhausting is either via integrated flat plate silencers or common lines for ducted exhaust air.
In the case of ducted exhaust air, at least one additional supply plate is required, which is used to vent the exhaust air from the pilot air supply (port 82/84) (when using a right end plate, without port 82/84).

Vertical pressure supply plate



The individual compressed air supply of a single valve with a width of 20 mm can be realised using the vertical pressure supply plate VMPA2-VSP- ....

Right end plate (VMPA-ERP-G)



The air to be exhausted can be ducted using the right end plate with port 82/84 (VMPA-ERP-G).

Key features – Pneumatic components

Pilot air supply

The port for the main pneumatic supply is located on the pneumatic interface.
The ports differ for the following types of pilot air supply:

- Internal
- External

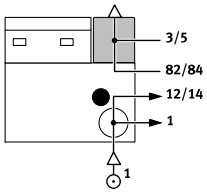
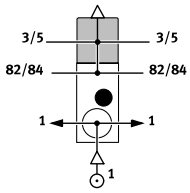
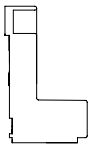
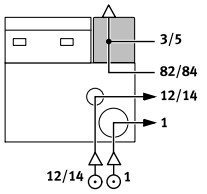
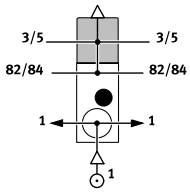
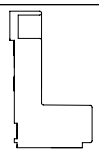
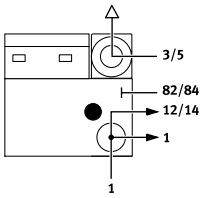
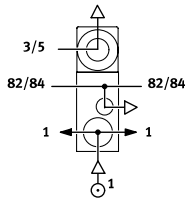
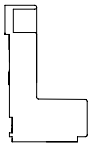
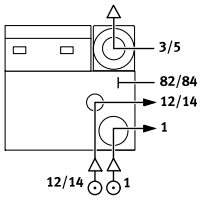
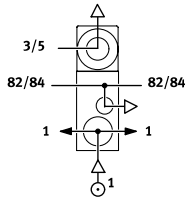
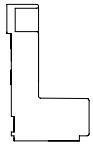
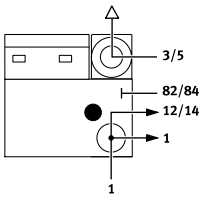
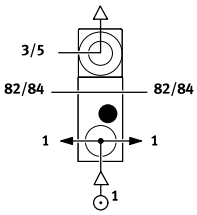
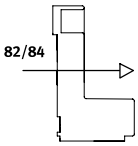
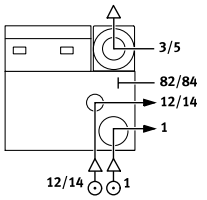
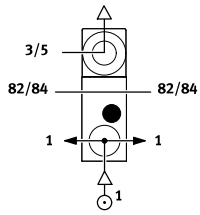
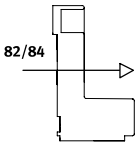
Internal pilot air supply
If the required working pressures are between 0.3 and 0.8 MPa, internal pilot air supply can be selected.
The pilot air supply is then branched from the working air 1 in the pneumatic interface using an internal connection. Port 12/14 is sealed with a blanking plug.

External pilot air supply
If the supply pressure is less than 0.3 MPa or greater than 0.8 MPa, you must operate your MPA valve terminal with external pilot air supply.
In this case, the pilot air is additionally supplied via port 12/14 on the pneumatic interface.

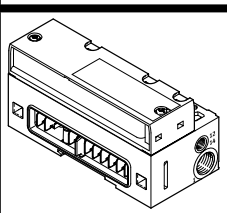
Note
If a gradual pressure build-up in the system using a soft-start valve is chosen, an external pilot air supply should be connected so that the pilot pressure applied during switch-on is already very high.

Key features – Pneumatic components

Compressed air supply and pilot air supply

Code	Illustration Type of compressed air supply and pilot air supply Pneumatic interface	Supply plate	Right end plate	Information
S				Internal pilot air supply, flat plate silencer • Pilot air supply is branched internally from port 1 in the pneumatic interface • Exhaust port 3/5 and pilot exhaust port 82/84 via flat plate silencer • For operating pressure in the range 0.3 ... 0.8 MPa
T				External pilot air supply, flat plate silencer • Pilot air supply between 0.3 and 0.8 MPa is connected at port 12/14 • Exhaust port 3/5 and pilot exhaust port 82/84 via flat plate silencer • For operating pressure in the range –0.09 ... +1 MPa (suitable for vacuum)
V				Internal pilot air supply, ducted exhaust air • Pilot air supply is branched internally from port 1 in the pneumatic interface • Exhaust port 3/5: connection to pneumatic interface and supply plate • Pilot exhaust port 82/84: connection to supply plate only • For operating pressure in the range 0.3 ... 0.8 MPa
X				External pilot air supply, ducted exhaust air • Pilot air supply (0.3 ... 0.8 MPa) is connected at port 12/14. • Exhaust port 3/5: connection to pneumatic interface and supply plate • Pilot exhaust port 82/84: connection to supply plate only • For operating pressure in the range –0.09 ... +1 MPa (suitable for vacuum)
Y				Internal pilot air supply, ducted exhaust air via right end plate • Pilot air supply is branched internally from port 1 in the pneumatic interface • Exhaust port 3/5: connection to pneumatic interface and supply plate • Pilot exhaust air 82/84 ducted via right end plate (VMPA-EPR-G) • For operating pressure in the range 0.3 ... 0.8 MPa
Z				External pilot air supply, ducted exhaust air via right end plate • Pilot air supply (0.3 ... 0.8 MPa) is connected at port 12/14. • Exhaust port 3/5: connection to pneumatic interface and supply plate • Pilot exhaust air 82/84 ducted via right end plate (VMPA-EPR-G) • For operating pressure in the range –0.09 ... +1 MPa (suitable for vacuum)

Pneumatic interface

Code	Pneumatic interface design variants Illustration	Type	Information
M		VMPA-...-EPL-...	• Used together with compressed air supply S, T, V, X • In combination with V or X, the pilot exhaust air must be exhausted at at least one supply plate. With several supply plates, port 82/84 on the final one is open ex works.

Key features – Pneumatic components

Supply plate

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

If several valves are to be operated simultaneously at full flow rate, it is recommended that a supply plate be positioned after every 8 valves (MPA1 or MPA14), or every 4 valves (MPA2).

Supply plates can be configured at any point upstream or downstream of sub-bases.

This applies to the following interfaces:
- MPA with CPX
- MPA with multi-pin plug connection
- MPA with AS-Interface connection
- MPA with CPI connection

MPA with ducted exhaust air
When using a right end plate without port 82/84, it is essential that a supply plate for ducted exhaust air is used. Alternatively, an end plate with port 82/84 (VMPA-EPR-G) can be used for ducted exhaust air. In this case, no supply plate is required.

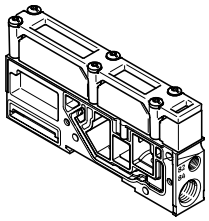
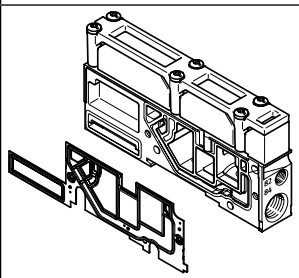
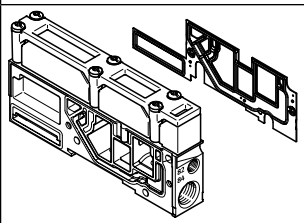
Supply plates contain the ports:
- Compressed air supply (1)
- Exhaust for the pilot air supply (82/84) and pressure compensation
- Exhaust air (3/5)

Depending on your order, the exhaust ducts are either ducted or exhausted via the flat plate silencer.

The supply plate is configured using the code letter U if no directly adjoining separating seal is required.

If a separating seal (S, T or R) is selected directly to the right or left of the supply plate, then the code letter V or W identifies the position of the left or right separating seal. The code for the separating seal (S, T or R) is placed in front of the code for the supply plate (V or W).

Supply plate (without exhaust plate)

Code[1]	Illustration	Type	Information
U		VMPA1-...-SP...	Supply plate without separating seal (no R, S or T selected)
V		VMPA1-...-SP...	Supply plate with separating seal on left, if R, S or T selected
W		VMPA1-...-SP...	Supply plate with separating seal on right, if R, S or T selected

1) Depending on the air supply code S, T, V, X, the supply plate is equipped with a silencer or an exhaust plate.

Key features – Electrical components

Electrical supply plate

Additional electrical supply plates can be used for larger terminals.
This enables up to 64 valve positions/128 solenoid coils to be supplied.

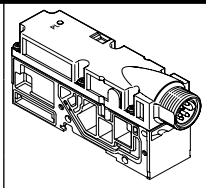
MPA with CPX
Electrical supply plates can be configured at any point upstream or downstream of sub-bases.
An electrical supply plate is required after 8 valve sub-bases.

MPA with CPI connection
Electrical supply plates can be configured at any point upstream or downstream of sub-bases.
An electrical supply plate is required after 8 valve sub-bases.

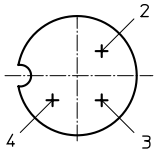
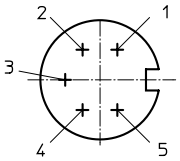
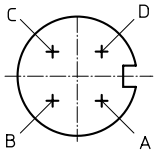
Note
For MPA with CPI connection, a maximum of 24 of the 32 MPA1 or MPA14 coils or 12 of the 16 MPA2 coils can be switched on simultaneously.

Note
Please note that only the electronics modules with a separate circuit are permitted to the right of the electrical supply plate.
The electrical supply plate must not be installed directly to the left of a pneumatic supply plate (type VMPA1-FB-SP...).

Electrical supply plate

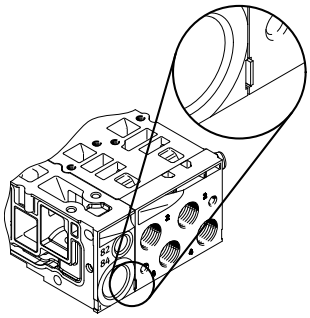
Code	Illustration	Type	Information
L		VMPA-FB-SP-V	Electrical supply plate with M18 plug connection, 3-pin
		VMPA-FB-SP-7/8-V-5POL	Electrical supply plate with7/8" plug connection, 5-pin
		VMPA-FB-SP-7/8-V-4POL	Electrical supply plate with7/8" plug connection, 4-pin

Pin allocation for power supply

	Pin	Allocation
Pin allocation for M18		
	2	24 V DC valves
	3	0 V DC
	4	FE
Pin allocation for 7/8", 5-pin		
	1	0 V DC valves
	2	n.c.
	3	FE (leading)
	4	n.c.
	5	24 V DC valves
Pin allocation for 7/8", 4-pin		
	A	n.c.
	B	24 V DC valves
	C	FE
	D	0 V DC valves (leading)

Key features – Pneumatic components

Creating pressure zones and separating exhaust air



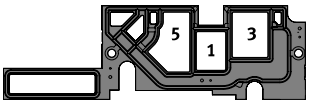
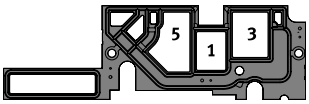
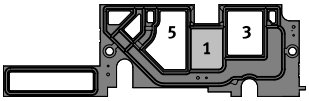
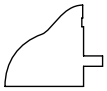
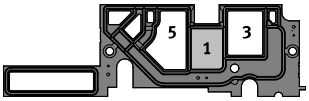
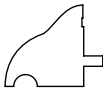
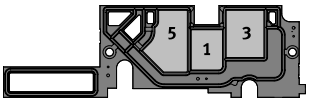
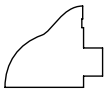
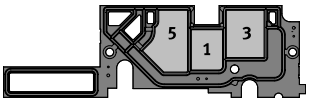
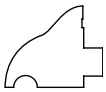
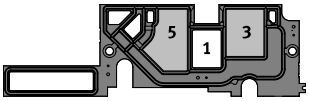
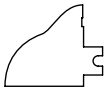
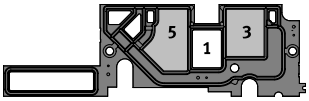
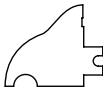
MPA offers a number of options for creating pressure zones if different working pressures are required. Depending on the electrical interface, up to 16 pressure zones are possible.
A pressure zone is created by isolating the internal supply ducts between the sub-bases using an appropriate separating seal or using a separator that is permanently integrated in the sub-base (code I or code III).

Compressed air is supplied and exhausted via a supply plate.
The position of the supply plates and separating seals can be freely selected with the valve terminal MPA.
Separating seals are integrated ex-works as per your order.
Separating seals can be distinguished through their coding, even when the valve terminal is assembled.

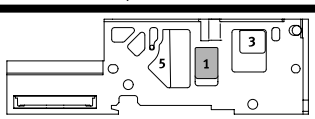
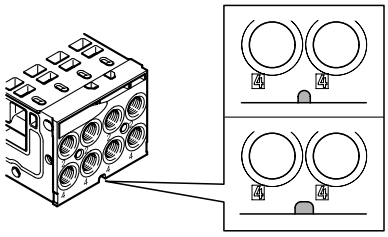
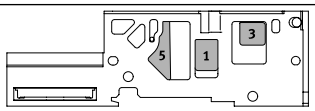
Note

The following must be taken into consideration for subsequent expansion or conversions:
Different separating seals are required for operating with ducted exhaust air and operation with flat plate silencers.

Forming pressure zones – using a separating seal

Code	For operation with flat plate silencer		For operation with ducted exhaust air		Information
	Illustrated examples	Coding	Illustrated examples	Coding	
–	 VMPA...-DPU		 VMPA...-DP		No duct separation
T	 VMPA...-DPU-P		 VMPA...-DP-P		Duct 1 separated
S	 VMPA...-DPU-PRS		 VMPA...-DP-PRS		Duct 1 and 3/5 separated
R	 VMPA...-DPU-RS		 VMPA...-DP-RS		Duct 3/5 separated

Key features – Pneumatic components

Creating pressure zones – via sub-base			
Code	For operation with flat plate silencer or with ducted exhaust air		Information
	Illustrated examples	Coding	
I			Duct 1 separated (short marking)
III			Duct 1 and 3/5 separated (long marking)

Note

Duct separation cannot be removed at a later date and takes place in the centre of the sub-base:

- Between valve 2 and 3 for width 10 mm
- Between valve 2 and 3 for width 14 mm
- Between valve 1 and 2 for width 20 mm

Key features – Pneumatic components

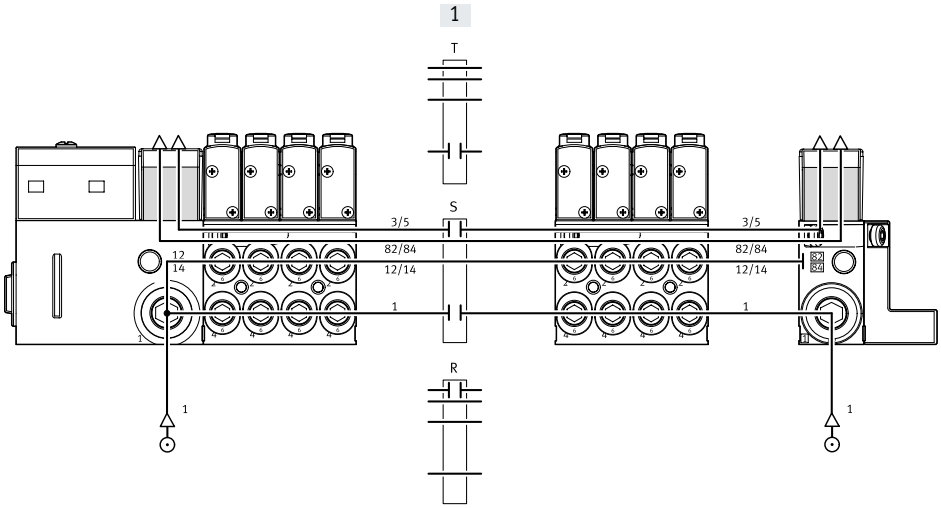
Examples: compressed air supply and pilot air supply

Internal pilot air supply, flat plate silencer

Pneumatic supply to the valve terminal: code S

The adjacent diagram shows an example of the configuration and connection of the air supply with internal pilot air supply. Port 12/14 on the pneumatic interface or on the electrical interface (multi-pin) is tightly sealed. Ports 3/5 and 82/84 are exhausted via the flat plate silencers. Port 82/84 is tightly sealed. Separating seals can optionally be used to create pressure zones.

[1] Optional separating seal

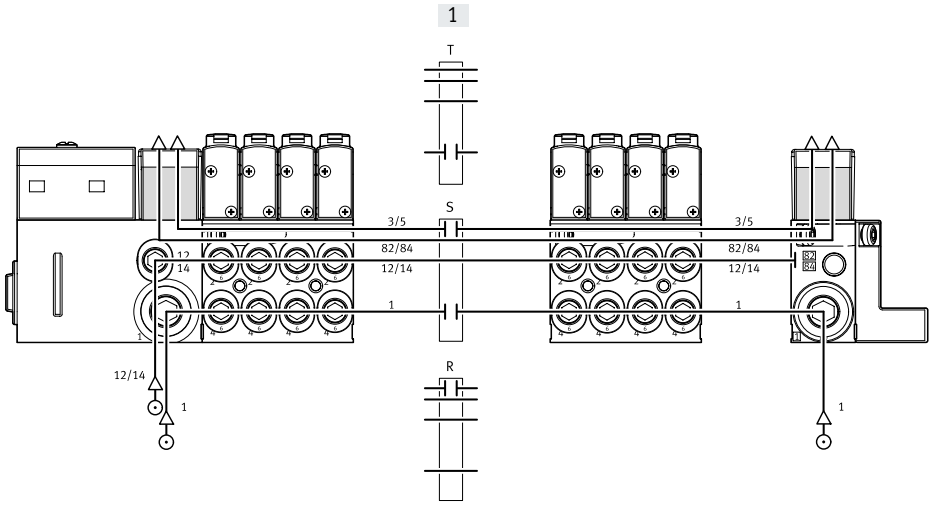


External pilot air supply, flat plate silencer

Pneumatic supply to the valve terminal: code T

The adjacent diagram shows an example of the configuration and connection of the compressed air supply in the case of external pilot air supply. Port 12/14 on the pneumatic interface or the electrical interface (multi-pin) is equipped with a fitting for this purpose. Ports 3/5 and 82/84 are exhausted via the flat plate silencers. Port 82/84 is tightly sealed. Separating seals can optionally be used to create pressure zones.

[1] Optional separating seal



Key features – Pneumatic components

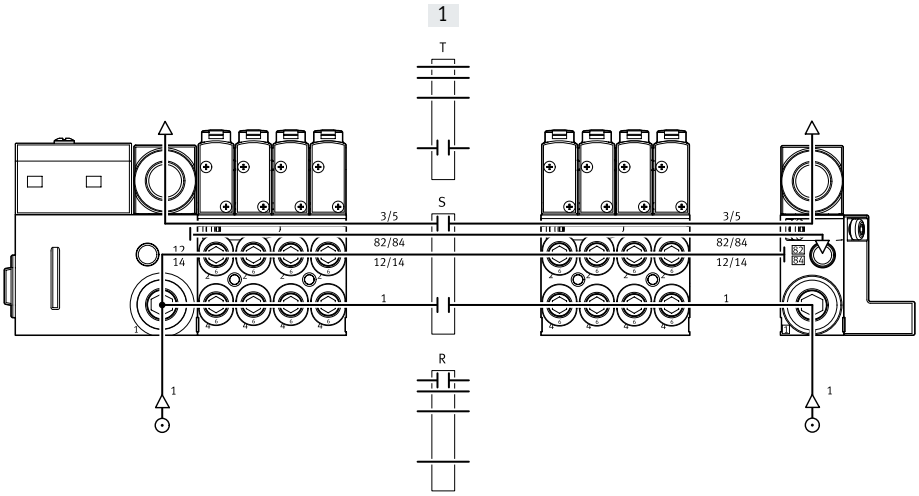
Examples: compressed air supply and pilot air supply

Internal pilot air supply, ducted exhaust air

Pneumatic supply to the valve terminal: code V

The adjacent diagram shows an example of the configuration and connection of the compressed air supply with internal pilot air supply. Port 12/14 on the pneumatic interface or on the electrical interface (multi-pin) is tightly sealed. Exhaust ports 3/5 and 82/84 are exhausted via the appropriate connections. Separating seals can be used optionally to create pressure zones.

[1] Optional separating seal

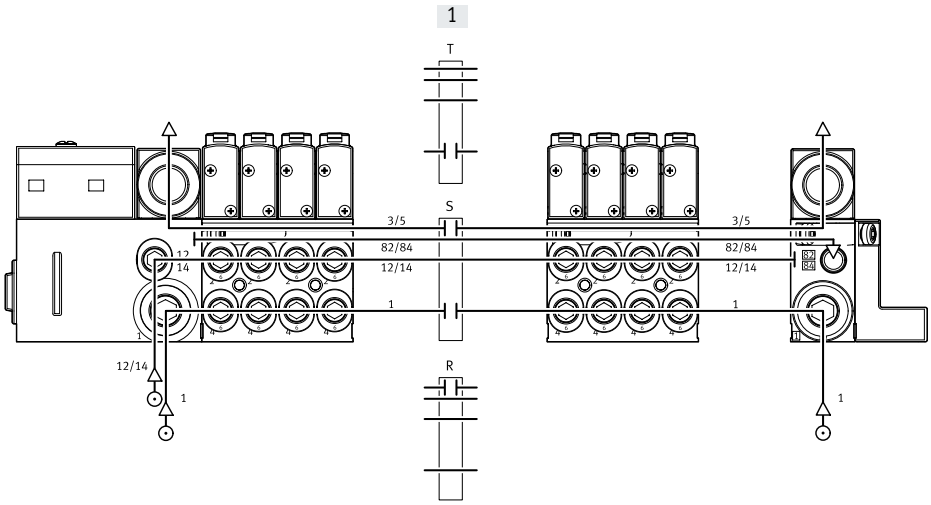


External pilot air supply, ducted exhaust air

Pneumatic supply to the valve terminal: code X

The adjacent diagram shows an example of the configuration and connection of the compressed air supply in the case of external pilot air supply. Port 12/14 on the pneumatic interface or the electrical interface (multi-pin) is equipped with a fitting for this purpose. Exhaust ports 3/5 and 82/84 are exhausted via the appropriate connections. Separating seals can be used optionally to create pressure zones.

[1] Optional separating seal



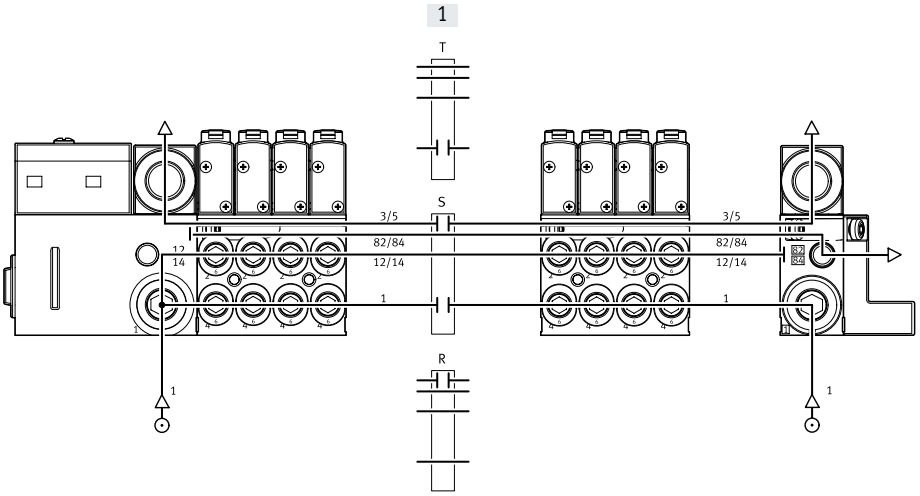
Key features – Pneumatic components

Examples: compressed air supply and pilot air supply

Internal pilot air supply, ducted exhaust air 82/84 via right end plate

Pneumatic supply to the valve terminal: code Y

The adjacent diagram shows an example of the configuration and connection of the compressed air supply with internal pilot air supply. Port 12/14 on the pneumatic interface or on the electrical interface (multi-pin) is tightly sealed. The exhaust port 3/5 is exhausted via the corresponding ports. The exhaust air from port 82/84 is ducted via the right end plate (VMPA-EPR-G). In this case, there is no need for a power supply module for exhausting the ducted exhaust air 82/84. Separating seals can optionally be used to create pressure zones.

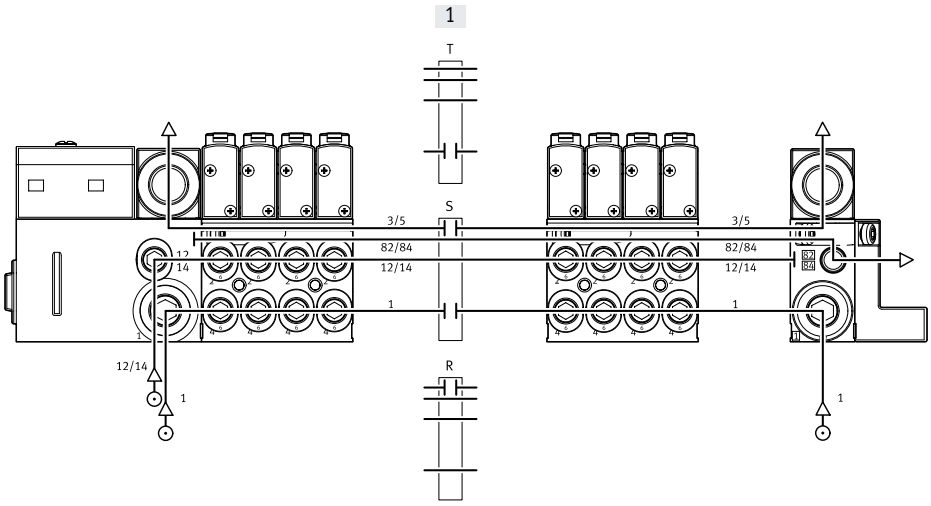


[1] Optional separating seal

External pilot air supply, ducted exhaust air 82/84 via right end plate

Pneumatic supply to the valve terminal: code Z

The adjacent diagram shows an example of the configuration and connection of the compressed air supply in the case of external pilot air supply. Port 12/14 on the pneumatic interface or the electrical interface (multi-pin) is equipped with a fitting for this purpose. The exhaust port 3/5 is exhausted via the corresponding ports. The exhaust air from port 82/84 is ducted via the right end plate (VMPA-EPR-G). In this case, there is no need for a power supply module for exhausting the ducted exhaust air 82/84. Separating seals can optionally be used to create pressure zones.



[1] Optional separating seal

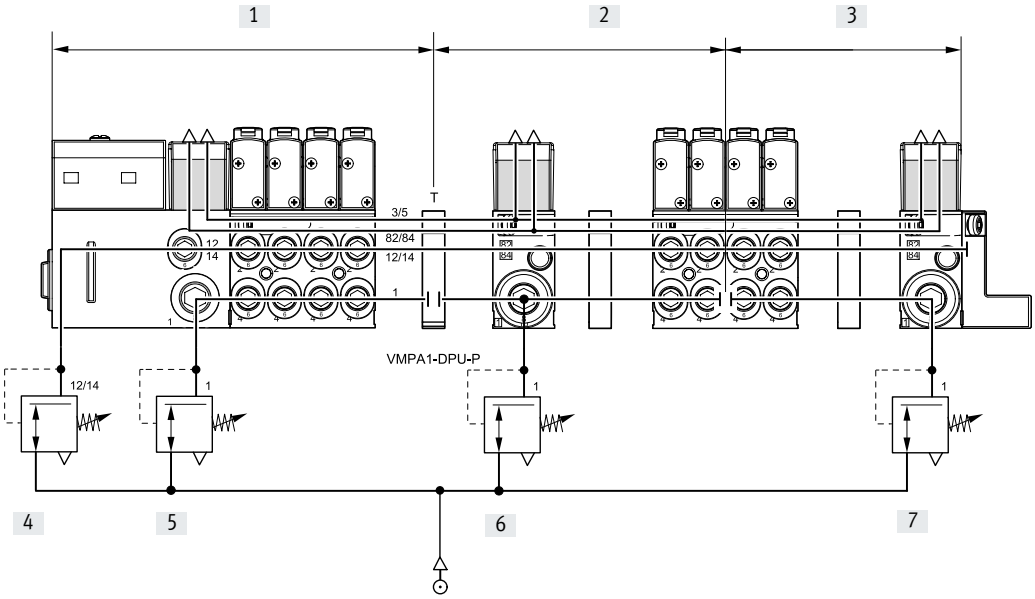
Key features – Pneumatic components

Examples: Creating pressure zones

MPA with CPX terminal connection

The diagram shows an example of the configuration and connection of three pressure zones using separating seals – with external pilot air supply.

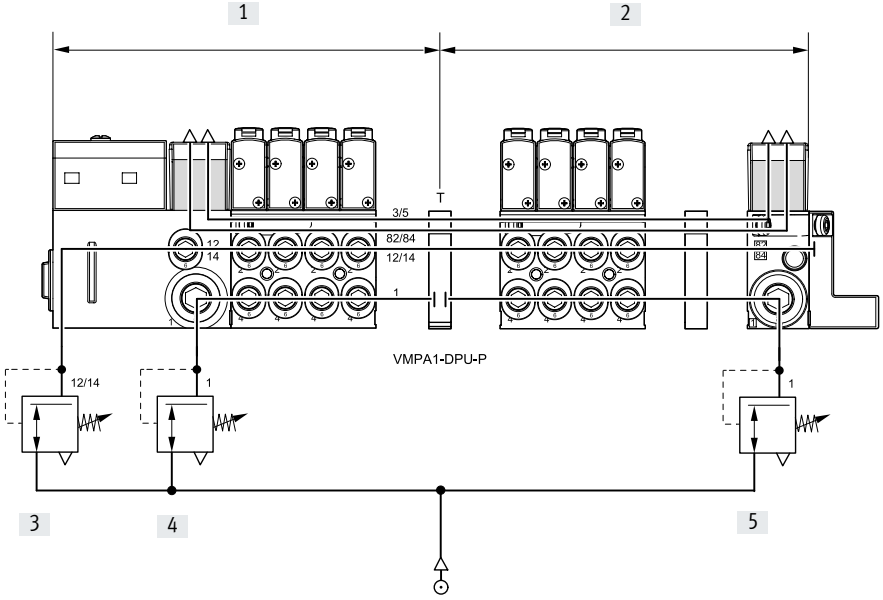
[1] Zone 1
[2] Zone 2
[3] Zone 3
[4] Pilot air supply
[5] P1
[6] P2
[7] P3



MPA with multi-pin plug connection

The diagram shows an example of the configuration and connection of the pressure zones – with external pilot air supply.

[1] Zone 1
[2] Zone 2
[3] Pilot air supply
[4] P1
[5] P2



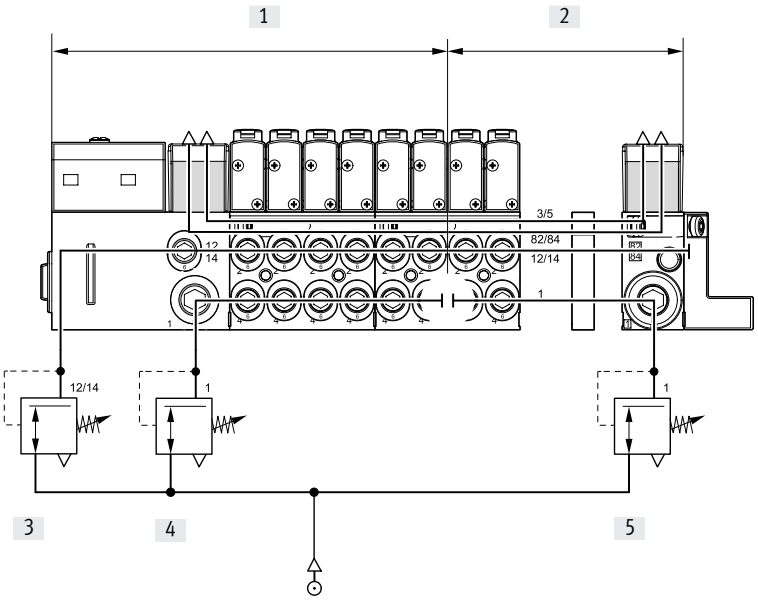
Key features – Pneumatic components

Examples: Creating pressure zones

Sub-base with pressure zone separation in duct 1

Another option for pressure zone separation can be achieved by using sub-bases with pressure zone separation.
The adjacent diagram shows the variant with pressure zone separation in duct 1.

Pilot air supply
[1] Zone 1
[2] Zone 2
[3] Pilot air supply
[4] P1
[5] P2

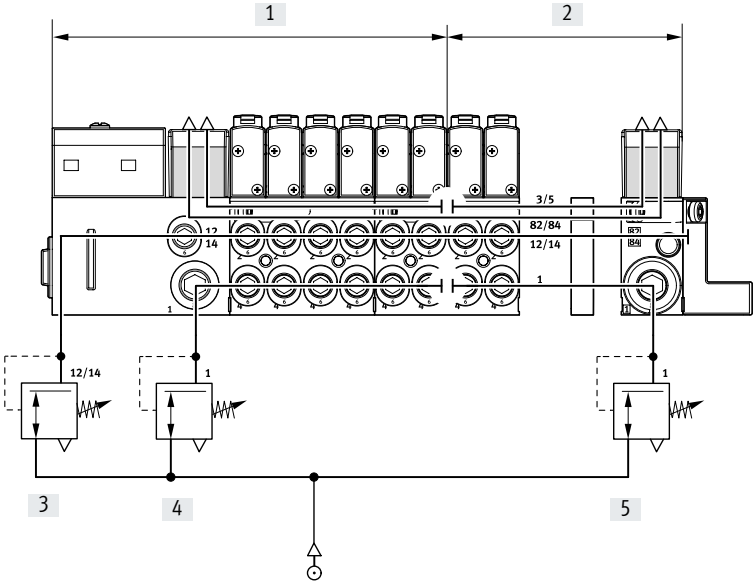


Sub-base with pressure zone separation in duct 1 and duct 3/5

The adjacent diagram shows the variant with pressure zone separation in duct 1 and duct 3/5.

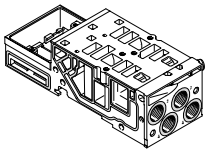
Pilot air supply

[1] Zone 1
[2] Zone 2
[3] Pilot air supply
[4] P1
[5] P2



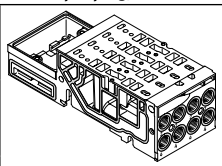
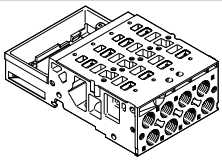
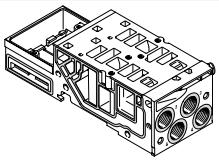
Key features – Pneumatic components

Sub-base



MPA is based on a modular system consisting of sub-bases and valves. The sub-bases are screwed together, thus forming the support system for the valves.
They contain the ducts for supplying compressed air to and exhausting the valve terminal as well as the working ports for the pneumatic drives for each valve.
Each sub-base is connected to the next using three screws. Individual valve terminal sections can be isolated and further blocks can be inserted by loosening these screws. This ensures that the valve terminal can be rapidly and reliably extended.

Sub-base variants

Code	Illustration	Type	Width [mm]	Number of valve positions (solenoid coils)	Information
Sub-base for multi-pin plug/fieldbus connection					
A, C[1]		VMPA1-FB-AP-4-1	10	4 (8/4[1])	Working ports (2, 4) on sub-base • Connection sizes: MPA1: M7, QS4, QS6 • Code I: duct 1 separated in the sub-base • Code III: duct 1 and duct 3/5 separated in the sub-base
AI, CI[1]		VMPA1-FB-AP-4-1-T1			
AIII, CIII[1]		VMPA1-FB-AP-4-1-S1			
E, F[1]		VMPA14-FB-AP-4-1	14	4 (8/4[1])	Working ports (2, 4) on sub-base • Connection sizes MPA14: G1/8, QS6, QS8 • Code I: duct 1 separated in the sub-base • Code III: duct 1 and duct 3/5 separated in the sub-base
EI, FI[1]		VMPA14-FB-AP-4-1-T1			
EIII, FIII[1]		VMPA14-FB-AP-4-1-S1			
B, D[1]		VMPA2-FB-AP-2-1	20	2 (4/2[1])	Working ports (2, 4) on sub-base • Connection sizes MPA2: G1/8, QS6, QS8 • Code I: duct 1 separated in the sub-base • Code III: duct 1 and duct 3/5 separated in the sub-base
BI, DI[1]		VMPA2-FB-AP-2-1-TO			
BIII, DIII[1]		VMPA2-FB-AP-2-1-SO			

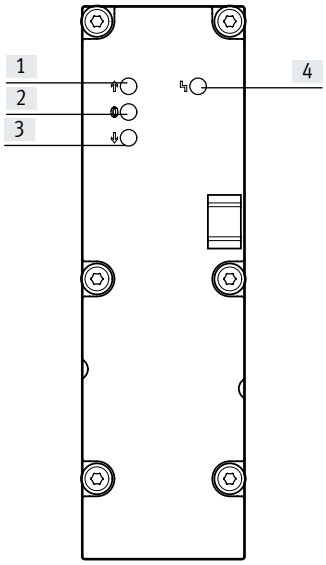
1) Only possible with multi-pin plug connection

Note

More information about individual sub-bases can be found at:
➔ VMPA1

Key features – Pneumatic components

Pressure sensor

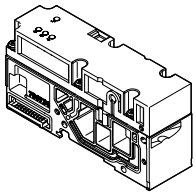


[1] Red LED: pressure exceeded
[2] Green LED: pressure maintained
[3] Red LED: pressure fallen below
[4] Red LED: common error display

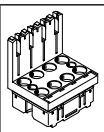
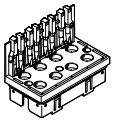
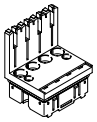
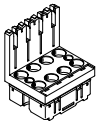
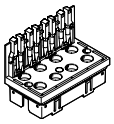
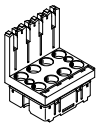
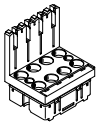
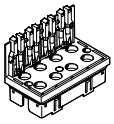
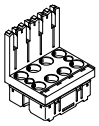
The pressure sensor indicates whether the applied pressure exceeds, conforms to or falls below the setpoint value using three LEDs. An additional LED indicates common errors (limit exceeded or fallen below).
The limits for pressure monitoring are set by means of parameterisation. The pressure sensor plate can be parameterised via the PLC or the interface for CPX-FMT.

Alternatively the pressure in the exhaust duct (3/5) and the process pressure (external) can be measured. Pressure measurement in the exhaust duct is used for monitoring the operating pressure during reverse operation (supply to (3/5).

Pressure sensor versions

Code	Illustration	Type	Use
PE		VMPA-FB-PS-1	Monitoring the operating pressure in duct 1
PF		VMPA-FB-PS-3/5	Monitoring the pressure in exhaust ducts 3 and 5 (Monitoring the exhaust performance or pressure monitoring with reversibly operated valve terminal)
PG		VMPA-FB-PS-P1	Monitoring an external process pressure

Key features – Pneumatic components

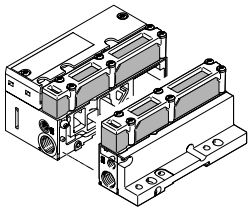
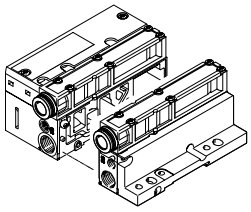
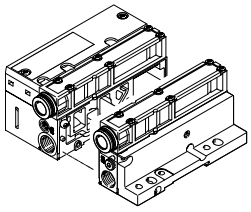
Electrical interface versions					
Code	Illustration	Type	Width [mm]	Number of valve positions (solenoid coils)	Information
Electronics module for multi-pin plug (MPM)					
A, C		VMPA1-MPM-EMM-8 VMPA1-MPM-EMM-4	10	4 (8) 4 (4)	Each solenoid coil is assigned to a specific pin of the multi-pin plug for the valves to be actuated. Regardless of whether valve positions are fitted with cover plates or valves, they are used to control: • One address for a single coil • Two addresses for a double coil
E, F		VMPA14-MPM-EMM-8 VMPA14-MPM-EMM-4	14	4 (8) 4 (4)	
B, D		VMPA2-MPM-EMM-4 VMPA2-MPM-EMM-2	20	2 (4) 2 (2)	
Electronics module for fieldbus with standard diagnostics					
A, H		VMPA10-FB-EMS-8 VMPA10-FB-EMG-8	10	4 (8)	The electronics module includes serial communication and facilitates: • Transmission of switching information • Actuation of up to 8 solenoid coils • Position-based diagnostics • Separate voltage supply for valves • Transmission of status, parameter and diagnostic data There are different versions: • Without separate circuit (VMPA...-FB-EMS-...) • With separate circuit (VMPA...-FB-EMG-...) Diagnostic function: • Fault: valve load supply
E, H		VMPA14-FB-EMS-8 VMPA14-FB-EMG-8	14	4 (8)	
B, QB, H		VMPA20-FB-EMS-4 VMPA20-FB-EMG-4	20	2 (4)	
Electronics module for fieldbus with enhanced diagnostic function					
A, H		VMPA10-FB-EMS-D2-8 VMPA10-FB-EMG-D2-8	10	4 (8)	The electronics module with enhanced diagnostic function includes the same functions as the electronics module with standard diagnostics. The diagnostic function is further enhanced: • Fault: valve load supply • Fault: wire break (open load) • Fault: short-circuited valve load supply • Message: condition monitoring
E, H		VMPA14-FB-EMS-D2-8 VMPA14-FB-EMG-D2-8	14	4 (8)	
B, QB, H		VMPA20-FB-EMS-D2-4 VMPA20-FB-EMG-D2-4	20	2 (4)	

Note

- Multi-pin with modular links
- Sub-bases VMPA1, VMPA14 and VMPA2 can be combined as required
- Positive- or negative-switching control is possible (mixed operation is not permitted)
- Double solenoid valves cannot be mounted on single solenoid electronics modules
- Single solenoid valves can be mounted on double solenoid electronics modules

Key features – Pneumatic components

Ports for supply and exhaust

Code		Connection		Designation	Code L Push-in connector Large	Code K Push-in connector Small	Code D Thread for supply
S		**Internal pilot air supply, silencer**					
		1	Working air/vacuum supply	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4
		3/5	Exhaust air	Flat plate silencer	–	–	–
		12/14	Pilot air supply	–	–	–	–
		82/84	Pilot exhaust air	Flat plate silencer	–	–	–
			Pressure compensation	Exhausts via silencer to atmosphere			
T		**External pilot air supply, silencer**					
		1	Working air/vacuum supply	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4
		3/5	Exhaust air	Flat plate silencer	–	–	–
		12/14	Pilot air supply	Push-in fitting	QSM-M7-6-I	QSM-M7-6-I	M7
		82/84	Pilot exhaust air	Flat plate silencer	–	–	–
			Pressure compensation	Exhausts via silencer to atmosphere			
V		**Internal pilot air supply, ducted exhaust air**					
		1	Working air/vacuum supply	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4
		3/5	Exhaust air	Push-in fitting	QS-10	QS-10	QS-10
		12/14	Pilot air supply	–	–	–	–
		82/84	Pilot exhaust air	Push-in fitting	QSM-M7-6-I	QSM-M7-6-I	M7
			Pressure compensation	Exhausts into duct 82/84			
X		**External pilot air supply, ducted exhaust air**					
		1	Working air/vacuum supply	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4
		3/5	Exhaust air	Push-in fitting	QS-10	QS-10	QS-10
		12/14	Pilot air supply	Push-in fitting	QSM-M7-6-I	QSM-M7-6-I	M7
		82/84	Pilot exhaust air	Push-in fitting	QSM-M7-6-I	QSM-M7-6-I	M7
			Pressure compensation	Exhausts into duct 82/84			
Y		**Internal pilot air supply, ducted exhaust air via right end plate (VMPA-EPR-G)**					
		1	Working air/vacuum supply	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4
		3/5	Exhaust air	Push-in fitting	QS-10	QS-10	QS-10
		12/14	Pilot air supply	–	–	–	–
		82/84	Pilot exhaust air	Push-in fitting	QSM-M5-3-I	QSM-M5-3-I	M5
			Pressure compensation	Exhausts into duct 82/84			
Z		**External pilot air supply, ducted exhaust air via right end plate (VMPA-EPR-G)**					
		1	Working air/vacuum supply	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4
		3/5	Exhaust air	Push-in fitting	QS-10	QS-10	QS-10
		12/14	Pilot air supply	Push-in fitting	QSM-M7-6-I	QSM-M7-6-I	M7
		82/84	Pilot exhaust air	Push-in fitting	QSM-M5-3-I	QSM-M5-3-I	M5
			Pressure compensation	Exhausts into duct 82/84			

Key features – Mounting

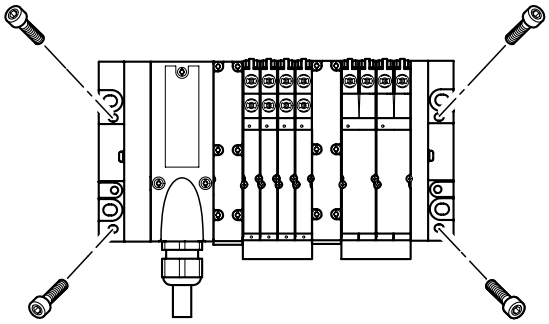
Valve terminal mounting

Sturdy terminal mounting via:
- Four through-holes for wall mounting
- Additional mounting brackets
- H-rail mounting

Note

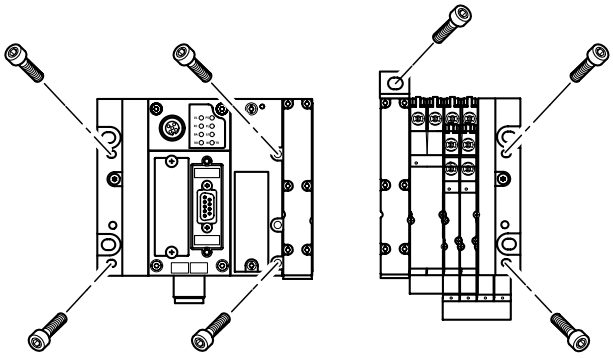
When wall mounting valve terminals MPA with more than 4 sub-bases, use additional mounting brackets of type VMPA-BG-RW to prevent damage to the valve terminal. The mounting brackets can be mounted on the pneumatic supply plates.

Wall mounting – Multi-pin plug connection, AS-Interface and CPI connection



The MPA valve terminal is screwed onto the mounting surface using four M4 or M6 screws. The mounting holes are on the pneumatic interface and on the right end plate.
Optional mounting brackets are also available.

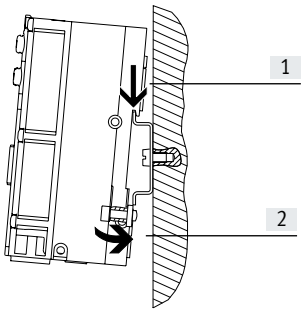
Wall mounting – Fieldbus connection



The MPA valve terminal is screwed onto the mounting surface using six M4 or M6 screws. The mounting holes are on the left end plate (CPX) and on the right end plate MPA.

The pneumatic interface also provides further mounting holes as well as optional mounting brackets.

H-rail mounting



The valve terminal MPA is attached to the H-rail ➔ arrow [1].
The valve terminal MPA is then swivelled onto the H-rail and secured in place with the clamping component ➔ arrow [2].

For H-rail mounting of the valve terminal you will need the following MPA mounting kit:
- CPX-CPA-BG-NRH

This enables the valve terminal to be mounted on an H-rail to EN 60715.

Note

More information about mounting solenoid valves on individual sub-bases can be found at
➔ VMPA1

Key features – Display and operation

Display and operation

Each solenoid coil is allocated an LED that indicates its signal status.

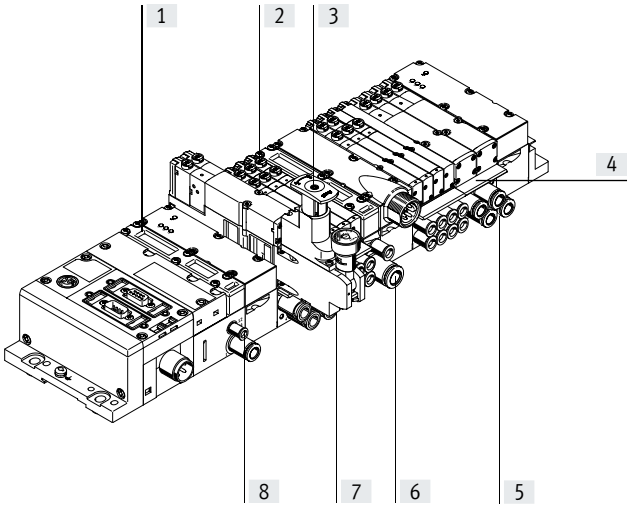
- Indicator 12 shows the signal status of the coil for output 2
- Indicator 14 shows the signal status of the coil for output 4

Manual override

The manual override (MO) enables the valve to be switched when not electrically activated or energised. The valve is switched by pushing the manual override. The set switching status can also be locked by turning the manual override (code R). Alternatives:

- The cover cap (code N or as an accessory) prevents the manual override from being locked. The manual override can then only be activated by pushing it.
- The cover cap (code V or as an accessory) can prevent the manual override from being accidentally activated.
- The cover cap (code Y or as an accessory) can be used to operate the manual override in detenting mode without additional tools.

Pneumatic connection and control elements

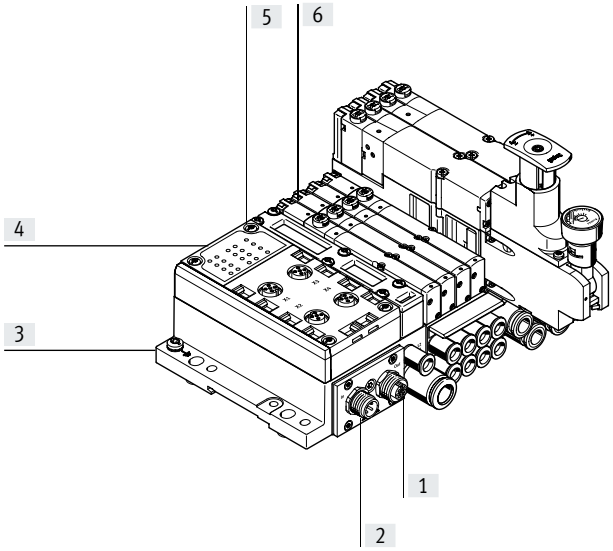


[1] Flat plate silencer for exhaust port 3/5
[2] Manual override (for each pilot solenoid coil, non-detenting or non-detenting/detenting)
[3] Adjusting knob for optional pressure regulator plate
[4] Inscription label holder for sub-base
[5] Working ports 2 and 4, per valve position
[6] Supply port 1
[7] Pressure gauge (optional)
[8] Ports 12 and 14 for supplying the external pilot air

Note

A manually operated 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 on the AS-Interface

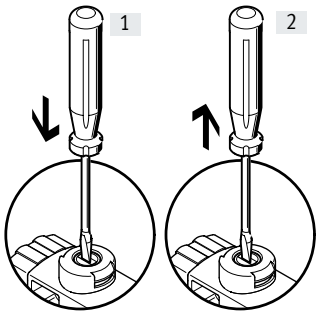


[1] M12 socket for AS-Interface bus and additional supply (AS-i Out)
[2] M12 plug for AS-Interface bus and auxiliary power supply (AS-i In)
[3] Earth terminal
[4] Status LEDs for inputs
[5] Status LEDs for AS-Interface
[6] Diagnostic LEDs for valves

Key features – Display and operation

Manual override (MO)

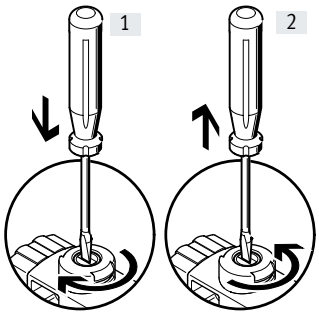
Manual override with automatic return (non-detenting)



[1] Press in the stem of the MO with a pointed object or screwdriver.
The pilot valve switches and actuates the main valve.

[2] Remove the pointed object or screwdriver.
The spring force pushes the stem of the manual override back.
The pilot valve returns to its normal position as does the single solenoid main valve (not the case with double solenoid valve code J).

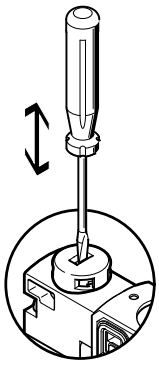
MO with locking (detenting)



[1] Press in the stem of the MO with a pointed object or screwdriver until the valve switches and then turn the stem clockwise by 90° until the stop is reached.
The valve remains actuated

[2] Turn the plunger anti-clockwise by 90° until the stop is reached and then remove the pointed object or screwdriver. The spring force pushes the stem of the manual override back.
The valve returns to its normal position (not the case with double solenoid valve code J).

Manual override with automatic return (non-detenting)

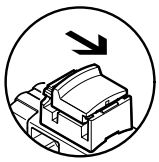


MO is actuated by pushing it with a pointed object or screwdriver and reset by spring force (detenting position prevented by coded cover cap).
Valves can be ordered with a fitted cover cap in the valve terminal configurator using the selection menu "Manual override" (code N).

MO with lock – Assembly

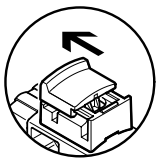
Turn MO to clip it onto the pilot valve.
The MO cap can then be operated (detenting) without tools.
Valves can be ordered with a fitted cover cap in the valve terminal configurator using the selection menu "Manual override" (code N).

MO with lock – Actuation



Sliding the cap for the MO with lock in the direction of the arrow causes the following to happen:
- Cap locks into the end position
- The pilot valve switches and actuates the main valve.

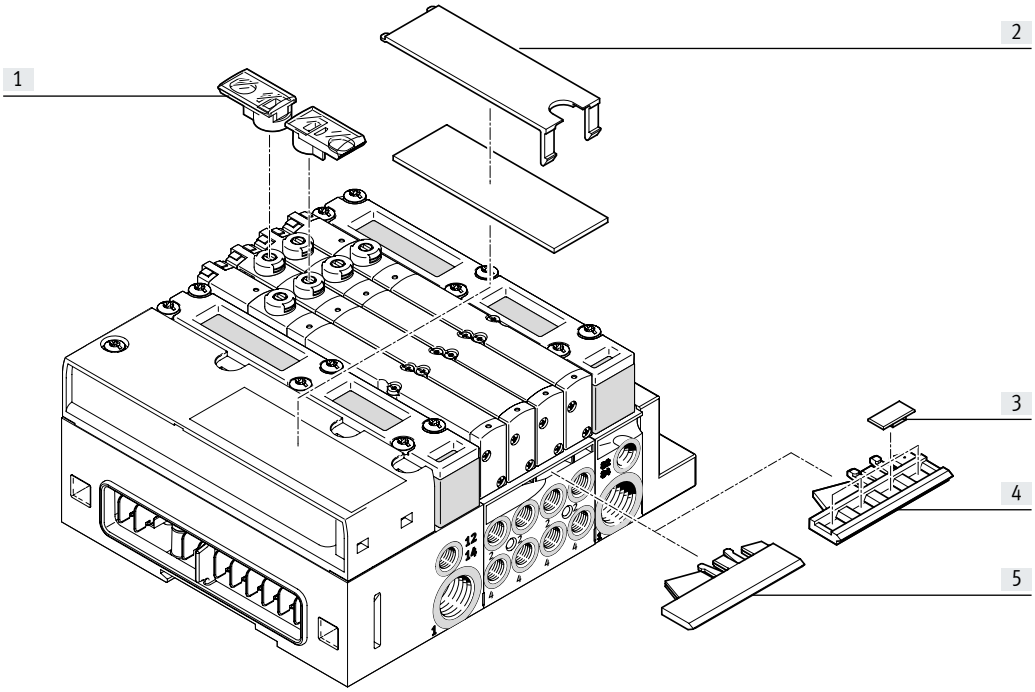
MO with lock – Actuation



Sliding the cap for the MO with lock in the direction of the arrow causes the following to happen:
- Cap locks into the end position
- The spring force pushes the stem of the manual override back.
- The pilot valve returns to its normal position as does the single solenoid main valve (not the case with double solenoid valve code J).

Key features – Display and operation

Inscription system



[1] Inscription label holder ASLR-D-L1
[2] Inscription label on the flat plate silencer of the pneumatic interface
[3] Inscription labels IBS-6x10
[4] Inscription label holder for sub-base VMPA...-ST-2-4, 4-part, for IBS-6x10 inscription labels
[5] Inscription label holder for sub-base VMPA...-ST-1-4, transparent, for paper foil labels

To label the valve, an inscription label holder VMPA1-ST-1-4 (for paper foil labels) or VMPA1-ST-2-4 (for inscription labels IBS-6x10) can be mounted on every sub-base size 10 or 20.

The sub-base for width 14 is wider. Separate inscription label holders VMPA14-ST-1-4 (for paper foil labels) or VMPA14-ST-2-4 (for inscription labels IBS-6x10) are therefore available for width 14.

The inscription label holder ASLR-D-L1 can be pushed onto the manual override.
Inscription label holders/inscription labels that can be ordered individually ➔ page 91.

As an alternative or in addition, large inscription labels can be applied to the flat plate silencer on the pneumatic interface:
Labelling templates can be downloaded from the online portal:
➔ Internet: mpa
In the “Software” area.

Key features – Electrical components

Electrical power as a result of current reduction

Each MPA solenoid coil is protected with a spark arresting protective circuit as well as against polarity reversal.
All valve types are additionally equipped with integrated current reduction.

MPA valves are supplied with operating voltage in the range 18 ... 30 V (24 V +/–25%). This high tolerance is made possible by the integrated control electronics and offers additional safety, e.g. in the case of a drop in operating voltage.

Individual valve

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

- Detachable electronics module with integrated holding current reduction
- Electrical M8 connection, 4-pin with screw connection

Note

More information about the individual valve interface can be found at
➔ VMPA1

Electrical multi-pin plug connection

The following multi-pin plug connection is offered for the valve terminal MPA:
- Sub-D multi-pin plug connection (25-pin)

Pin 1 ... 24 are used for addresses 1 ... 24 in order.
If fewer than 24 addresses are used for the valve terminal, the remaining pins to 24 are left free. Pin 25 is reserved for the neutral conductor.
The valves are switched by means of positive or negative logic (PNP or NPN). Mixed operation is not permitted.
Each pin on the multi-pin plug can actuate exactly one solenoid coil. When using the maximum configurable number of 24 valve positions, 24 valves can be addressed, each with a single solenoid coil.

With 12 or fewer valve positions, 2 solenoid coils per valve can be addressed. With 12 or more valve positions, the number of available valve positions for valves with two solenoid coils decreases.

Note

If a single solenoid valve is assembled on a double solenoid valve position, the second address is also occupied and cannot be used.

Guidelines on addressing for valves/solenoid coils

- The maximum possible number of addresses for multi-pin plug connection is 24.
- Each sub-base/electronics module occupies a defined number of addresses/pins:
  - Sub-base MPA1 for 4 single solenoid valves: 4
  - Sub-base MPA1 for 4 double solenoid valves: 8
  - Sub-base MPA14 for 4 single solenoid valves: 4
  - Sub-base MPA14 for 4 double solenoid valves: 8
  - Sub-base MPA2 for 2 single solenoid valves: 2
  - Sub-base MPA2 for 2 double solenoid valves: 4
- The numbering of the addresses goes from left to right in ascending consecutive order. The following applies at the individual valve positions: address x for coil 14 and address x+1 for coil 12.
- If single solenoid valves are mounted on sub-bases for double solenoid valves, the address of coil 12 and the assigned pin will remain unused.

Key features – Electrical components

AS-Interface® fieldbus connection

The AS-Interface allows individual components or small component groups to be widely distributed in terms of space.

The AS-interface connection of valve terminal MPA-S can be used to control up to 8 solenoid coils.
The electrical interface of the valve terminal contains the LEDs that indicate the signal status and the protective circuit for the valves.

Note
More information can be found at
➔ Internet: as-interface

CPI fieldbus connection

All CP valve terminals and CP modules are connected using a ready-to-install CP cable, and are attached to the CP interface. 4 modules, for example one CPV valve terminal and one to three CP input modules, make up an installation string that ends at the CP interface. The installation system supports a maximum of 4 installation strings that can be connected to a CP bus node.

Note
More information can be found at
➔ Internet: ctec

Fieldbus connection CPX

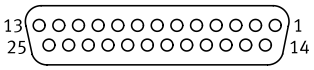
All functions and features of the electrical peripherals CPX are permitted in connection with the CPX interface. This means that:

- The valves and electrical outputs are supplied via the operating voltage connection CPX
- The valves are supplied and disconnected separately via a separate valve connection on the CPX (code V)

Note
More information can be found at
➔ Internet: cpx

Key features – Electrical components

Pin allocation – Sub-D socket, cable



Pin	Address/coil	Wire colour[2]	Pin	Address/coil	Wire colour[2]
1	0	WH	17	16	WH PK
2	1	GN	18	17	PK BN
3	2	YE	19	18	WH BU
4	3	GY	20	19	BN BU
5	4	PK	21	20	WH RD
6	5	BU	22	21	BN RD
7	6	RD	23	22	WH BK
8	7	VT	24	23	BN
9	8	GY PK	25	0 V[1]	BK
10	9	RD BU			
11	10	WH GN			
12	11	BN GN			
13	12	WH YE			
14	13	YE BN			
15	14	WH GY			
16	15	GY BN			

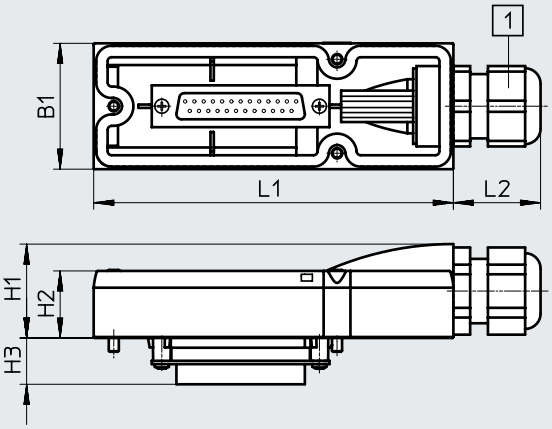
Note

The drawing shows a view of the Sub-D socket on the multi-pin plug cable VMPA-KMS1-....

1) 0 V with positive-switching control signals; in the case of negative-switching control signals, connect 24 V; mixed operation is not permitted!
2) To IEC 757

Dimensions Download CAD data ➔ www.festo.com

Connecting cables



[1] Cable connector with clamping range 6 ... 12 mm

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

- VMPA-KMS1-8-... Valve terminal for up to 4 valve positions (8 coils)
- VMPA-KMS1-24-... Valve terminal with 8 ... 24 valve positions

Type	L1	L2	B1	H1	H2	H3
VMPA-KMS-H	107.3	26	37.6	28	20	13.8

Type	Casing	Length [m]	Wire x mm²	D [mm]	Part No.
VMPA-KMS1-8-2.5	PVC	2.5	10 x 0.34	6.9	**533195**
VMPA-KMS2-8-2.5-PUR	PUR	2.5	10 x 0.25	8.3	**533504**
VMPA-KMS1-8-5	PVC	5	10 x 0.34	6.9	**533196**
VMPA-KMS2-8-5-PUR	PUR	5	10 x 0.25	8.3	**533505**
VMPA-KMS1-8-10	PVC	10	10 x 0.34	6.9	**533197**
VMPA-KMS2-8-10-PUR	PUR	10	10 x 0.25	8.3	**533506**
VMPA-KMS1-24-2.5	PVC	2.5	25 x 0.34	11.4	**533192**
VMPA-KMS2-24-2.5-PUR	PUR	2.5	25 x 0.25	11.2	**533501**
VMPA-KMS1-24-5	PVC	5	25 x 0.34	11.4	**533193**
VMPA-KMS2-24-5-PUR	PUR	5	25 x 0.25	11.2	**533502**
VMPA-KMS1-24-10	PVC	10	25 x 0.34	11.4	**533194**
VMPA-KMS2-24-10-PUR	PUR	10	25 x 0.25	11.2	**533503**
VMPA-KMS-H	Hood for self-assembly				**533198**

Key features – Electrical components

Instructions for use

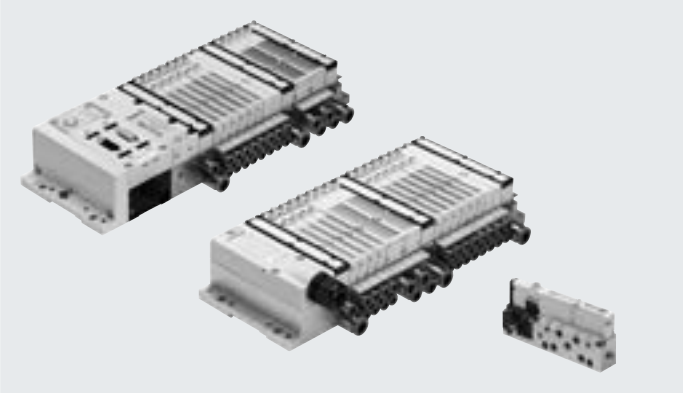
Service fluids		Bio-oils	Mineral oils
Operate your system with unlubricated compressed air if possible. Festo valves and cylinders are designed so that, if used as intended, they will not require additional lubrication and will still achieve a long service life. The quality of compressed air downstream of the compressor must correspond to that of unlubricated compressed air. If possible, do not operate the entire system with lubricated compressed air. The lubricators should, where possible, always be installed directly upstream of the actuator requiring them.	Incorrect additional oil and too high an oil content in the compressed air reduce the service life of the valve terminal. Use Festo special oil OFSW-32 or the alternatives listed in the Festo catalogue (as specified in DIN 51524 HLP32; basic oil viscosity 32 CST at 40°C).	When using bio-oils (oils which are based on synthetic or native esters, e.g. rapeseed oil methyl ester), the maximum residual oil content of 0.1 mg/m^3 must not be exceeded (see ISO 8573-1 Class 2).	When using mineral oils (e.g. HLP oils to DIN 51524, parts 1 to 3) or similar oils based on poly-alpha-olefins (PAO), the maximum residual oil content of 5 mg/m^3 must not be exceeded (see ISO 8573-1 Class 4). A higher residual oil content is not permitted, regardless of the compressor oil, because the permanent lubrication would otherwise be flushed out over a period of time.

Technical data – Valve terminal

Flow rate
MPA1: up to 360 l/min
MPA14: up to 550 l/min
MPA2: up to 700 l/min

Valve width
MPA1: 10 mm
MPA14: 14 mm
MPA2: 20 mm

Voltage
24 V DC



General technical data					
Valve terminal design		Modular, valve sizes can be mixed			
Electrical actuation		Fieldbus	Multi-pin plug	AS-i interface	CPI interface
Actuation type		Electrical			
Nominal voltage	[V DC]	24			
Operating voltage range	[V DC]	18 ... 30			
Residual ripple	[Vss]	4			
Max. no. of valve positions		64 (FB), 24 (MP)			
Valve size	[mm]	10, 14, 20			
Pilot air supply		Internal or external			
Lubrication		Life-time lubrication, PWIS-free (free of paint-wetting impairment substances)			
Type of mounting		Wall mounting			
		On H-rail to EN 60715			
Mounting position		Any (wall mounting)			
		Horizontal only (H-rail)			
Manual override		Non-detenting, detenting			
Degree of protection to EN 60529		IP67 (for all types of signal transmission in assembled state)			
Pneumatic connections					
Pneumatic connection		Via sub-base or individual connection			
Supply port	1	G1/4 (M7 with individual sub-base)			
Exhaust port	3/5	QS-10, QS-3/8" (M7 with individual sub-base)			
Working ports	2/4	Depending on the connection type selected MPA1: M7, QS4, QS6, 3/16", 1/4" MPA14: G1/8, QS6, QS8, 1/4", 5/16" MPA2: G1/8, QS6, QS8, 1/4", 5/16"			
Pilot air connection	12/14	M7 (M5 with individual sub-base)			
Pilot exhaust air port	82/84	M7 (M5 with individual sub-base and with end plate VMPA-EPR-G)			
Pressure compensation port		With ducted exhaust air: via port 82/84 (M5 with individual sub-base and with end plate VMPA-EPR-G) With flat plate silencer: exhausting to atmosphere			

Note
Note possible restrictions for the IP protection class
➔ ATEX declaration of conformity

Technical data

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/ pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure	[MPa]	–0.09 ... 1
	[bar]	–0.9 ... 10
Pilot pressure	[MPa]	0.3 ... 0.8
	[bar]	3 ... 8
Ambient temperature	[°C]	–5 ... +50
Temperature of medium	[°C]	–5 ... +50
Storage temperature[1]	[°C]	–20 ... +40
Relative humidity		Max. 90% at 40°C

1) Long-term storage

Certifications[1]				
Type	MPA-MPM-VI (multi-pin plug interface)	MPA-FB-VI (fieldbus interface)	MPA-ASI-VI (AS-i interface)	MPA-CPI-VI (CPI interface)
Part number	539105	530411	546279	546280
ATEX category for gas	II 3 G		II 3 G	
Type of ignition protection for gas	Ex nA IIC T4 X Gc	Ex nA IIC T4 Gc	Ex nA IIC T4 X Gc	
ATEX ambient temperature [°C]	–5 ≤ Ta ≤ +50		–5 ≤ Ta ≤ +50	
Explosion protection certification outside the EU	–	EPL Gc (BR)	–	–
Certificate issuing authority	–	DNV 15.0193 X	–	–
CE marking (see declaration of conformity)	To EU EMC Directive[2]	To EU EMC Directive[2]	To EU EMC Directive[2]	To EU EMC Directive[2]
	To EU Explosion Protection Directive (ATEX)	To EU Explosion Protection Directive (ATEX)	To EU Explosion Protection Directive (ATEX)	To EU Explosion Protection Directive (ATEX)
KC mark	KC EMC			
Certification	c UL us - Recognized (OL)			
	RCM			
Corrosion resistance class CRC[3]	1	1	0	0

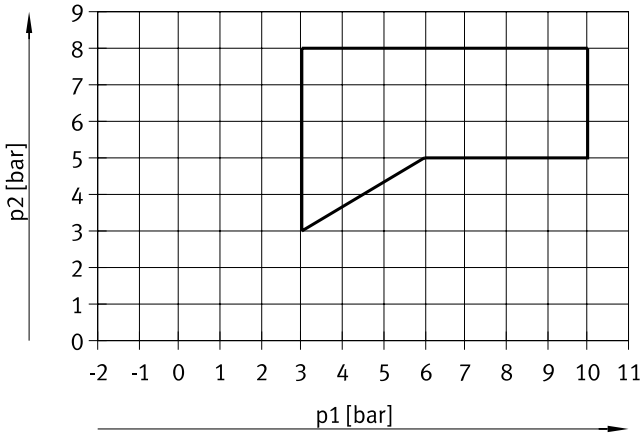
1) Interface versions that are not listed do not have any of the listed certifications
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
3) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Technical data

Pilot pressure p2 as a function of working pressure p1 with external pilot air supply

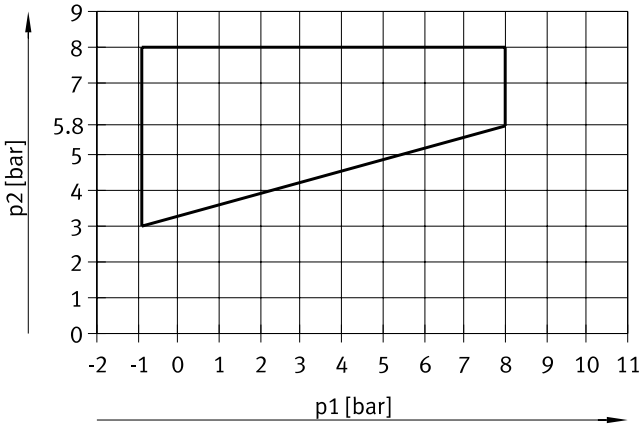
For valves with code: M, J, B, G, E, W, X

For valves with code: N, K, H, D, I

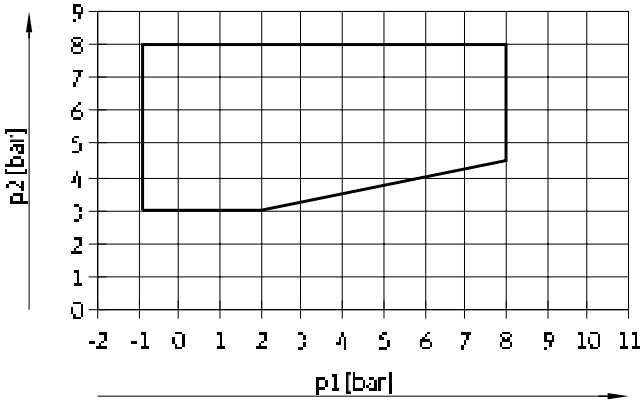


Pilot pressure p2 as a function of working pressure p1 for valves with mechanical spring return

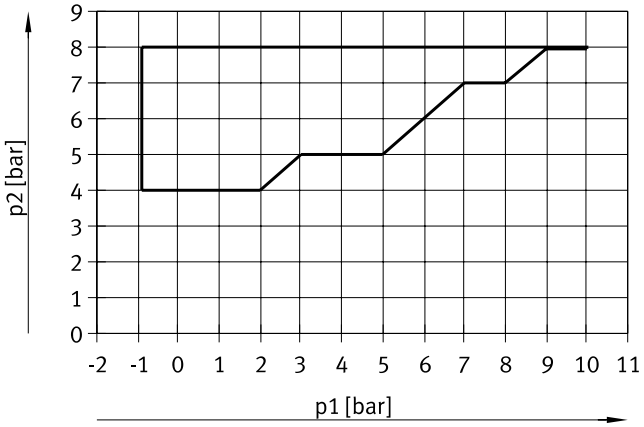
For valves in width 10 mm with code: MS, NS, KS, HS, DS



For valves in width 20 mm with code: MS, NS, KS, HS, DS



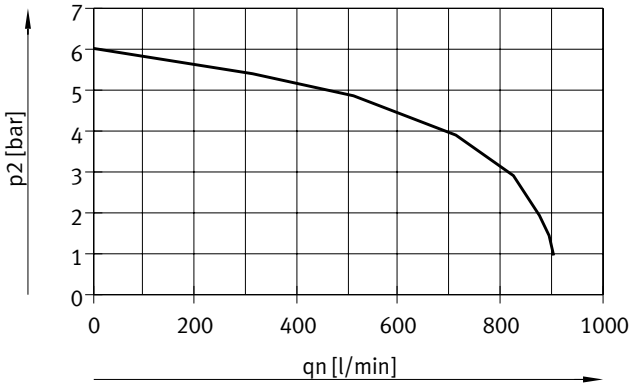
For valves in width 10 mm with code: MU, NU, KU, HU



Technical data

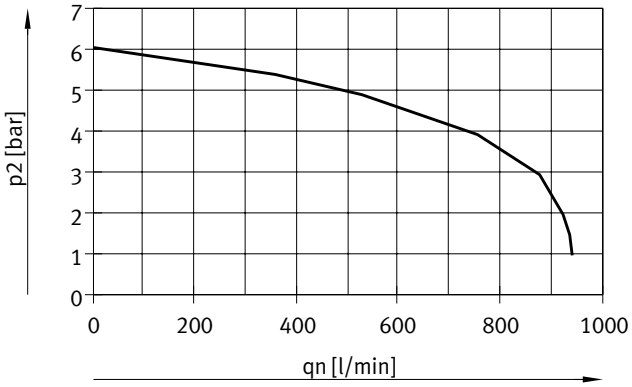
Flow rate qn as a function of output pressure p2 with pressure regulator plates (width 20 mm)

(P regulator plate) for port 1



Supply pressure 10 bar,
regulated pressure set at 6 bar

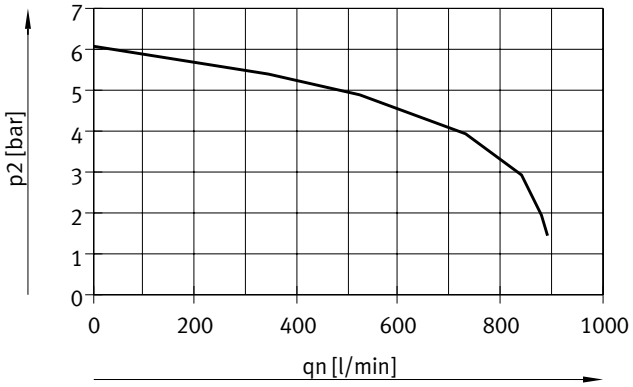
(B regulator plates) for port 2



Supply pressure 10 bar,
regulated pressure set at 6 bar

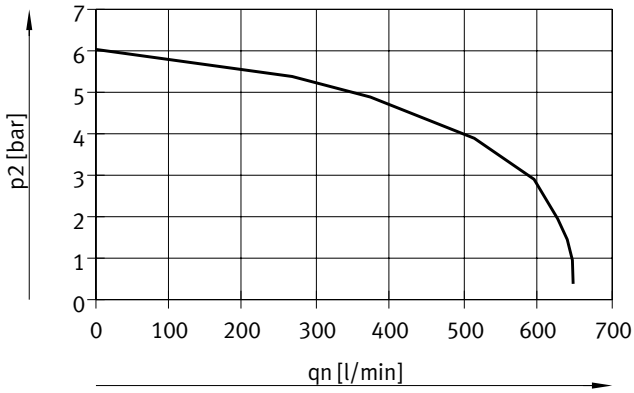
Flow rate qn as a function of output pressure p2 with pressure regulator plates (width 20 mm)

(A regulator plates) for ports 4



Supply pressure 10 bar,
regulated pressure set at 6 bar

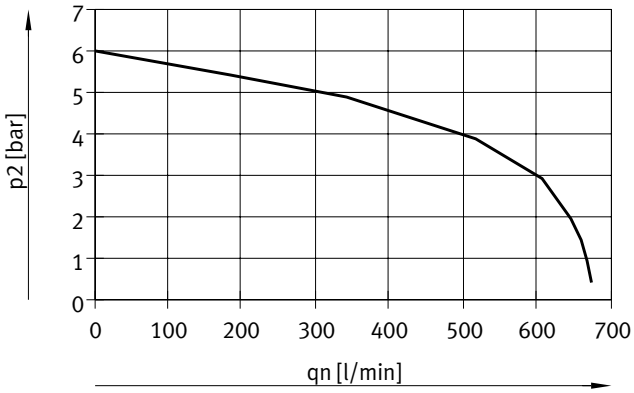
(B regulator plates, rev.) for ports 3, reversible



Supply pressure 10 bar,
regulated pressure set at 6 bar

Flow rate qn as a function of output pressure p2 with pressure regulator plates (width 20 mm)

(A regulator plates, rev.) for ports 5, reversible



Supply pressure 10 bar,
regulated pressure set at 6 bar

Technical data

Technical data – Valve width 10 mm														
Code			M	J	N	K	H	B	G	E	X	W	D	I
Design			Piston spool valve											
Sealing principle			Soft											
Overlap			Positive overlap											
Reset method			Pneumatic spring	–	Pneumatic spring			Mechanical spring			Pneumatic spring			
Switching times	On	[ms]	10	10	10	10	10	10	10	10	10	10	10	8
	Off	[ms]	20	–	20	20	20	35	35	35	20	20	20	20
	Change-over	[ms]	–	15	–	–	–	15	15	15	–	–	–	–
Standard nominal flow rate		[l/min]	360	360	300	230	300	300	320	240	255	255	230	260
Operating pressure		[MPa]	–0.09 ... +1		0.3 ... 1			–0.09 ... +1			–0.09 ... +1		0.3 ... 1	
		[bar]	–0.9 ... +10		3 ... 10			–0.9 ... +10			–0.9 ... +10		3 ... 10	
Pilot pressure		[MPa]	0.3 ... 0.8											
		[bar]	3 ... 8											
Max. tightening torque for valve mounting		[Nm]	0.25											
Materials			Die-cast aluminium											
Product weight		[g]	49	56	56	56	56	56	56	56	49	49	56	56

Technical data – Valve width 10 mm											
Code			MS	NS	KS	HS	DS	MU	NU	KU	HU
Design			Piston spool valve					Poppet valve with spring return			
Sealing principle			Soft					Soft			
Overlap			Positive overlap					Negative overlap			
Reset method			Mechanical spring					Mechanical spring			
Switching times	On	[ms]	10	14	14	14	14	10	10	8	10
	Off	[ms]	27	16	16	16	16	14	8	10	10
	Change-over	[ms]	–	–	–	–	–	–	–	–	–
Standard nominal flow rate		[l/min]	360	300	230	300	230	140 ... 190	190	160	140 ... 190
Note on standard nominal flow rate			–					1 → 2: 190 l/min 1 → 4: 140 l/min	–	–	1 → 2: 190 l/min 1 → 4: 140 l/min
Operating pressure		[MPa]	–0.09 ... +0.8					–0.09 ... +1			
		[bar]	–0.9 ... +8					–0.9 ... +10			
Pilot pressure		[MPa]	0.3 ... 0.8					0.4 ... 0.8			
		[bar]	3 ... 8					4 ... 8			
Max. tightening torque for valve mounting		[Nm]	0.25					0.25			
Materials			Die-cast aluminium					PPA reinforced			
Product weight		[g]	56					35	42	42	42

Technical data – Valve width 14 mm																			
Code			M	J	N	K	H	B	G	E	X	W	D	I	MS	NS	KS	HS	DS
Design			Piston spool valve																
Sealing principle			Soft																
Overlap			Positive overlap																
Reset method			Pneumatic spring					Mechanical spring			Pneumatic spring				Mechanical spring				
Switching times	On	[ms]	13	9	12	12	12	16	13	13	12	12	12	10	13	12	12	12	10
	Off	[ms]	30	–	38	38	38	50	52	50	20	20	30	28	30	23	23	23	25
	Change-over	[ms]	–	24	–	–	–	26	26	26	–	–	–	–	–	–	–	–	–
Standard nominal flow rate		[l/min]	550	550	550	550	550	550	550	420	360	340	550	550	550	470	470	470	500
Operating pressure		[MPa]	–0.09 ... +1		0.3 ... 1			–0.09 ... +1			–0.09 ... +1		0.3 ... 1		–0.09 ... +0.8				
		[bar]	–0.9 ... +10		3 ... 10			–0.9 ... +10			–0.9 ... +10		3 ... 10		–0.9 ... +8				
Pilot pressure		[MPa]	0.3 ... 0.8												0.3 ... 0.8				
		[bar]	3 ... 8												3 ... 8				
Max. tightening torque for valve mounting		[Nm]	0.65												0.65	0.25			
Materials			Die-cast aluminium																
Product weight		[g]	77																

Technical data

Technical data – Valve width 20 mm																			
Code			M	J	N	K	H	B	G	E	X	W	D	I	MS	NS	KS	HS	DS
Design			Piston spool valve																
Sealing principle			Soft																
Overlap			Positive overlap																
Reset method			Pneumatic spring					Mechanical spring			Pneumatic spring				Mechanical spring				
Switching times	On	[ms]	15	9	8	8	8	11	10	11	13	13	7	7	8	12	12	12	12
	Off	[ms]	28	–	28	28	28	46	40	47	22	22	25	23	36	25	25	25	25
	Change-over	[ms]	–	22	–	–	–	23	21	23	–	–	–	–	–	–	–	–	–
Standard nominal flow rate		[l/min]	670	670	550	550	550	510	610	590	470	470	650	650	670	550	500	550	650
Operating pressure		[MPa]	–0.09 ... +1		0.3 ... 1			–0.09 ... +1			–0.09 ... +1		0.3 ... 1		–0.09 ... +0.8				
		[bar]	–0.9 ... +10		3 ... 10			–0.9 ... +10			–0.9 ... +10		3 ... 10		–0.9 ... +8				
Pilot pressure		[MPa]	0.3 ... 0.8																
		[bar]	3 ... 8																
Max. tightening torque for valve mounting		[Nm]	0.65																
Materials			Die-cast aluminium																
Product weight		[g]	100																

Safety characteristics				
		Valve width 10 mm	Valve width 14 mm	Valve width 20 mm
Max. positive test pulse with 0 signal	[µs]	400	400	400
Max. negative test pulse with 1 signal	[µs]	200	200	900
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27		
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6		

Technical data

Electrical data – MPA with electronics module VMPA...-FB... (CPX terminal, CPI interface)				
		MPA1	MPA14	MPA2
Intrinsic current consumption per electronics module				
At 24 V $U_{EL/SEN}$ [1] (internal electronics, all outputs 0-signal)	[mA]	Typically 8		
At 24 V Uval [2] (internal electronics, without valves)				
VMPA...-EMG..., separate circuits	[mA]	Typically 23		
VMPA...-EMS..., without separate circuits	[mA]	Typically 3		
Maximum current consumption per solenoid coil at nominal voltage				
Nominal pick-up current	[mA]	58	58	99
Nominal current following current reduction	[mA]	9	9	18
Time until current reduction	[ms]	24	24	24
Diagnostic message				
Undervoltage U_{OFF} [3]	[V]	17.5 ... 16		

Electrical data – MPA with electronics module VMPA...-MPM... (ASI interface, multi-pin)				
		MPA1	MPA14	MPA2
Current consumption at Sub-D multi-pin plug connection per solenoid coil at nominal voltage				
Nominal pick-up current	[mA]	80	80	100
Nominal current with current reduction	[mA]	25	25	20
Time until current reduction	[ms]	25	25	50

Calculation example for current consumption (CPX terminal, CPI interface)		
Current consumption with two solenoid coils MPA2 switched in parallel and one electronics module VMPA...-EMS... without separate circuits	[mA]	$I_{EI/SEN}$ = 8
Nominal pick-up current (duration 24 ms)	[mA]	I_{VAL} = 3 (intrinsic current consumption of electronics module) + 2 x 99 (MPA2) = 202
Nominal current with current reduction (after 24 ms)	[mA]	I_{VAL} = 3 (intrinsic current consumption of electronics module) + 2 x 18 (MPA2) = 39

1) Power supply for electronics and sensors
2) Load voltage supply for valves
3) Load voltage outside of function range

Technical data

Materials	
Sub-base	Die-cast aluminium
Seals	NBR, elastomer
Supply plate	Die-cast aluminium
Right end plate	Die-cast aluminium
Left pneumatic interface	Die-cast aluminium, PA
Exhaust plate	PA
Flat plate silencer	PE
Electrical supply plate	Housing: Die-cast aluminium End cap: PA reinforced
Electronics module	PA
Electrical interlinking module	Bronze/PBT
Regulator plate	Control section, housing: PA; seals: NBR
Note on materials	RoHS-compliant

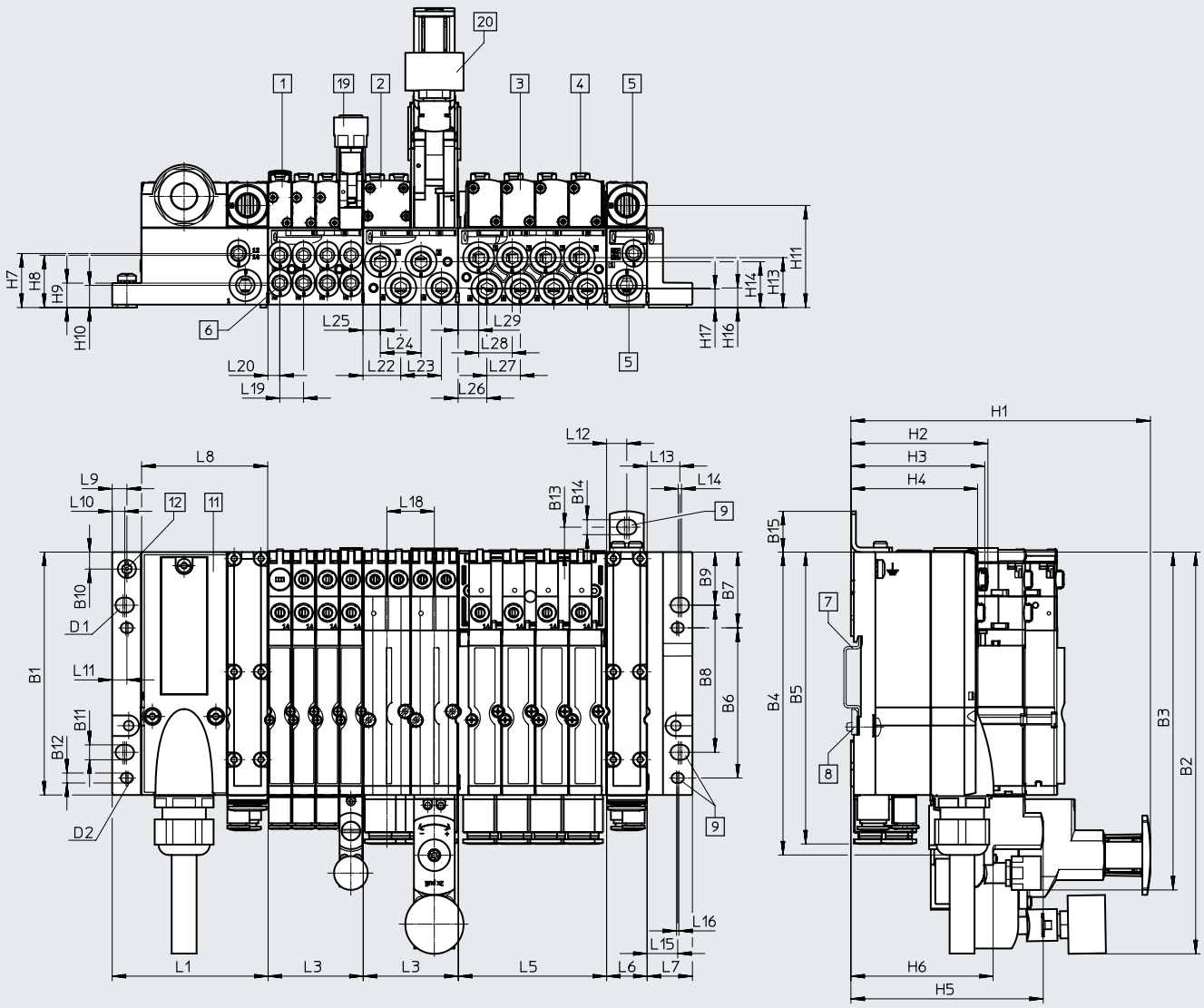
Product weight Approx. weight [g]	MPA1	MPA14	MPA2
Basic weight of sub-base[1)]	210 (4 valve positions)	252 (4 valve positions)	210 (2 valve positions)
Individual sub-base (VMPA ... I C...)	92	184	233
Per vacant position L	20	40	45
Right end plate with connection 82/84 for ducted exhaust air (connecting thread M5)	55		
Right end plate without connection 82/84	58		
Left pneumatic interface[1)] • With flat plate silencer • With ducted exhaust air	 315 324		
Supply plate[1)] • With flat plate silencer • With ducted exhaust air	 111 120		
Electrical supply plate	200		
Regulator plate (MPA1) Regulator plate (MPA2)	73.8 180		
QSM-M5-3-I	3		
QSM-M5-5/32-I-U-M	3		
QSM-M5-4-I	4		
QSM-M5-3/16-I-U-M	4		
QSM-M5-6-I	5		
QSM-M5-1/4-I-U-M	5		
QSM-M7-4-I	4		
QSM-M7-3/16-I-U-M	4		
QSM-M7-6-I	5		
QSM-M7-1/4-I-U-M	5		
QS-G1/8-6-I	11		
QS-1/8-1/4-I-U-M	11		
QS-G1/8-8-I	13		
QS-1/8-5/16-I-U-M	13		
QS-G1/4-8-I	22		
QS-1/4-5/16-I-U-M	22		
QS-G1/4-10-I	22		
QS-1/4-3/8-I-U-M	22		

1) With sheet metal seal, inscription label holder, screws

Technical data

Dimensions Download CAD data ➔ www.festo.com

Valve terminal with multi-pin connection



[1] Solenoid valve MPA1
[2] Solenoid valve MPA2
[3] Solenoid valve MPA14
[4] Manual override
[5] Supply/exhaust ports
[6] Working ports
[7] H-rail
[8] H-rail mounting
[9] Mounting holes
[11] Multi-pin plug connection
[12] Earthing screw
[19] Vertical stacking MPA1
[20] Vertical stacking MPA2

Type	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
MPA-S (MP)	107.3	178	149.2	133.8	128.9	66.3	33.5	65	23.5	7.5	6.6	4.4	11	6.6	18

Type	D1	D2	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H13	H14
MPA-S (MP)	M6	M4	132.3	60.5	59	56	84.9	63.1	23.9	23.1	10.8	9.8	45.1	22.1	20.3

Type	H16	H17	L1	L3[1)]	L5[1)]	L6	L7	L8	L9	L10	L11	L12	L13
MPA-S (MP)	8.7	8.2	68.9	n x 42	n x 65.5	17.9	20	55.8	6.5	5.6	6.5	9	14.5

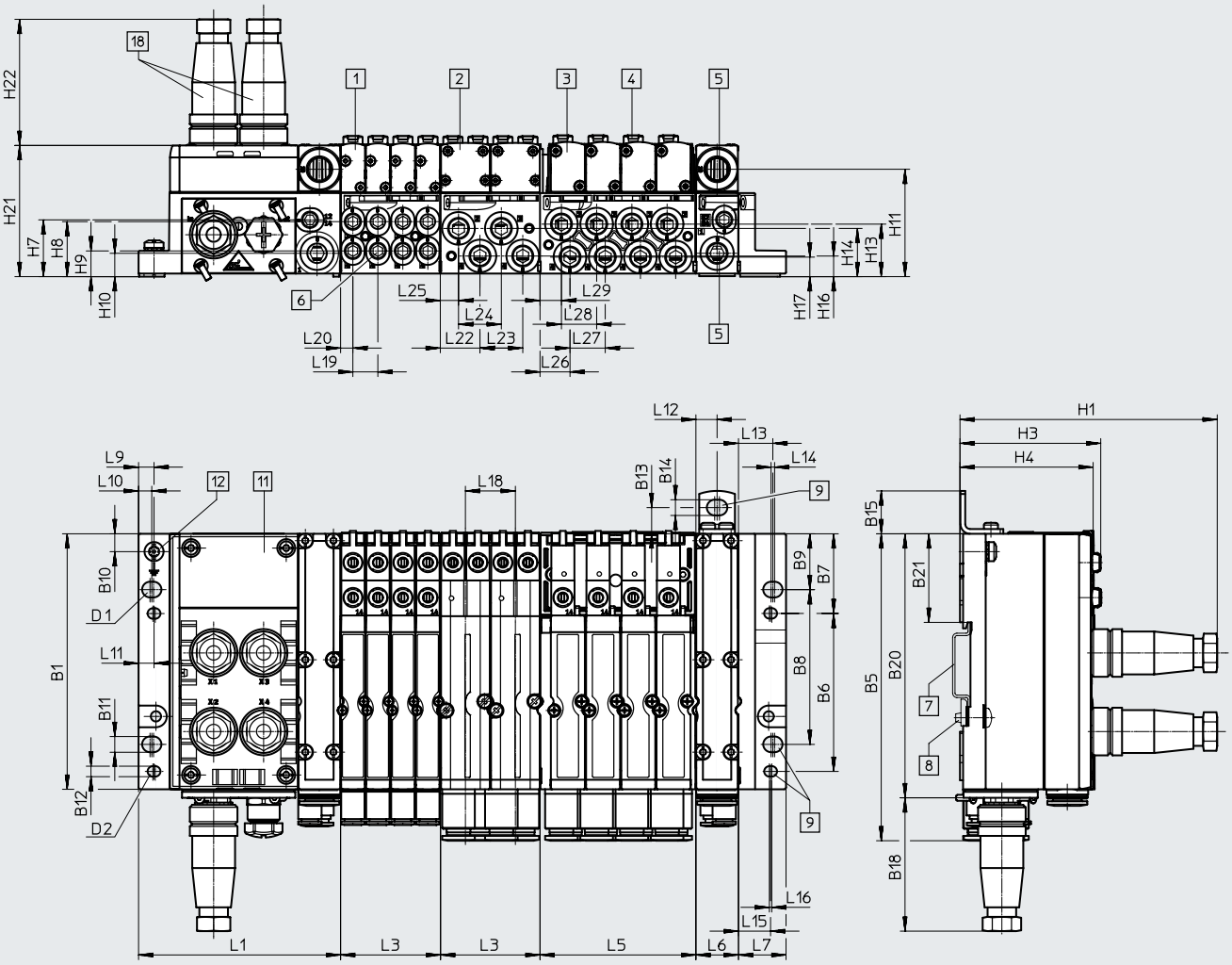
Type	L14	L15	L16	L18	L19	L20	L22	L23	L24	L25	L26	L27	L28	L29
MPA-S (MP)	1.5	13.5	1	21	10.5	5.3	16.7	18	18	7.7	12.7	14.8	14.8	9.1

1) n = number of sub-bases (with MPA1, width 10 mm and MPA14, width 14 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)

Technical data

Dimensions Download CAD data ➔ www.festo.com

Valve terminal with AS-Interface connection



[1] Solenoid valve MPA1
[2] Solenoid valve MPA2
[3] Solenoid valve MPA14
[4] Manual override
[5] Supply/exhaust ports
[6] Working ports
[7] H-rail
[8] H-rail mounting
[9] Mounting holes
[11] Sub-base
[12] Earthing screw
[18] Plug M12

Type	B1	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B18	B20	B21
MPA-S (AS-i)	107.3	128.9	66.3	33.5	65	23.5	7.5	6.6	4.4	11	6.6	18	56	110.9	37.2

Type	D1	D2	H1	H3	H4	H7	H8	H9	H11	H13	H14	H16	H17	H21	H22
MPA-S (AS-i)	M6	M4	108.1	59	56	23.9	23.1	10.8	45.1	22.1	20.3	8.7	8.2	55.1	53

Type	L1	L3[1)]	L5[1)]	L6	L7	L9	L10	L11	L12	L13	L14	L15
MPA-S (AS-i)	85	n x 42	n x 65.5	17.9	20	6.5	5.6	6.5	9	14.5	1.5	13.5

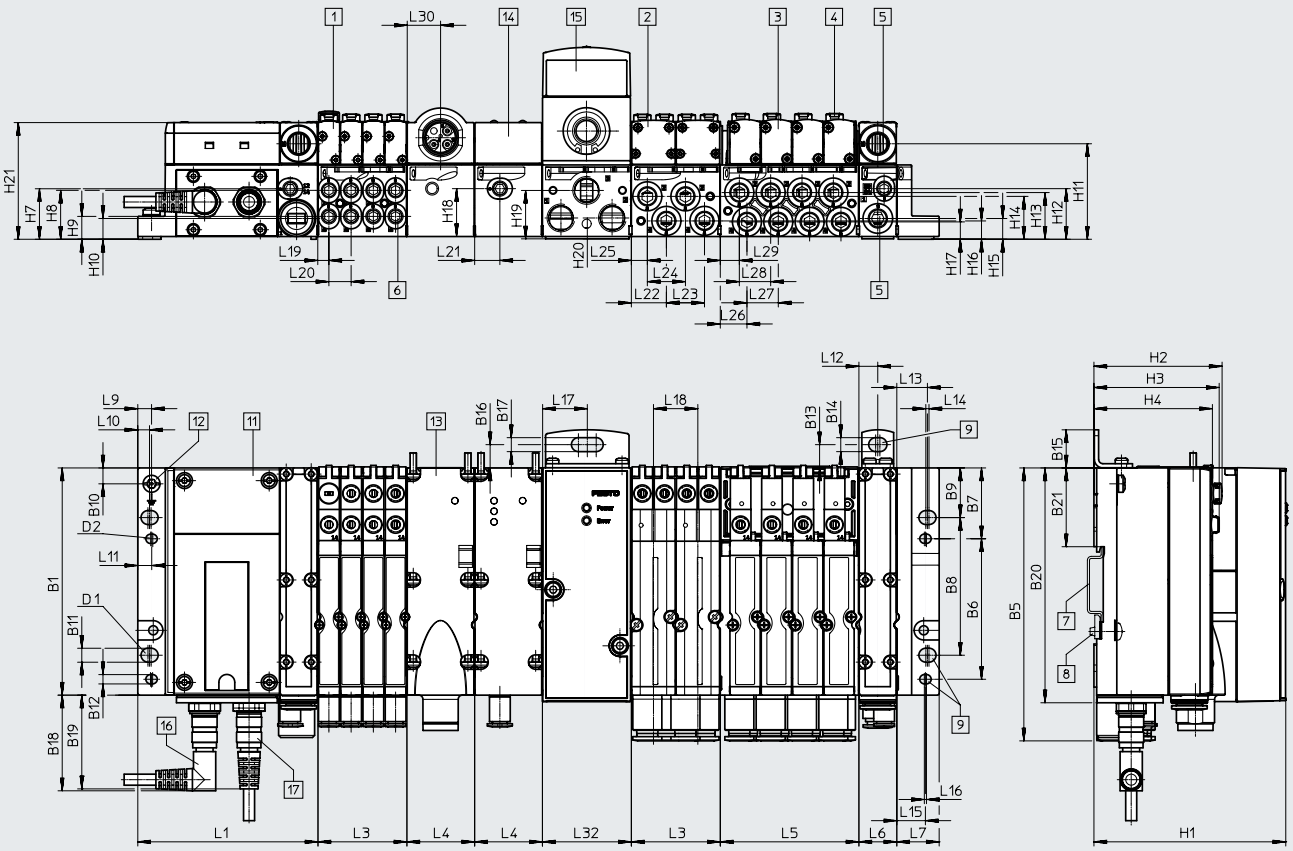
Type	L16	L18	L19	L20	L22	L23	L24	L25	L26	L27	L28	L29
MPA-S (AS-i)	1	21	10.5	5.2	16.7	18	18	7.7	12.6	14.8	14.8	9

1) n = number of sub-bases (with MPA1, width 10 mm and MPA14, width 14 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)

Technical data

Dimensions Download CAD data ➔ www.festo.com

Valve terminal with CPI connection



[1] Solenoid valve MPA1
[2] Solenoid valve MPA2
[3] Solenoid valve MPA14
[4] Manual override
[5] Supply/exhaust ports
[6] Working ports
[7] H-rail
[8] H-rail mounting
[9] Mounting holes
[11] Sub-base
[12] Earthing screw
[13] Electrical supply plate
[14] Pressure sensor
[15] Proportional pressure regulator
[16] Connecting cable with angled plug
[17] Connecting cable with straight plug

Type	B1	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21
MPA-S (CPI)	107.3	128.9	66.3	33.5	65	23.5	7.5	6.6	4.4	11	6.6	18	11	6.6	45.2	44.3	110.9	37.2

Type	D1	D2	H1	H2	H3	H4	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17
MPA-S (CPI)	M6	M4	90.6	60.5	59.1	56	23.9	23.1	10.8	9.8	45.1	23.9	22.1	20.3	9.8	8.7	8.2

Type	H18	H19	H20	H21	L1	L3[1)]	L4	L5[1)]	L6	L7	L9	L10	L11	L12	L13
MPA-S (CPI)	22.6	22.9	9.9	55.1	85	n x 42	32	n x 65.5	17.9	20	6.5	5.5	6.5	9	14.5

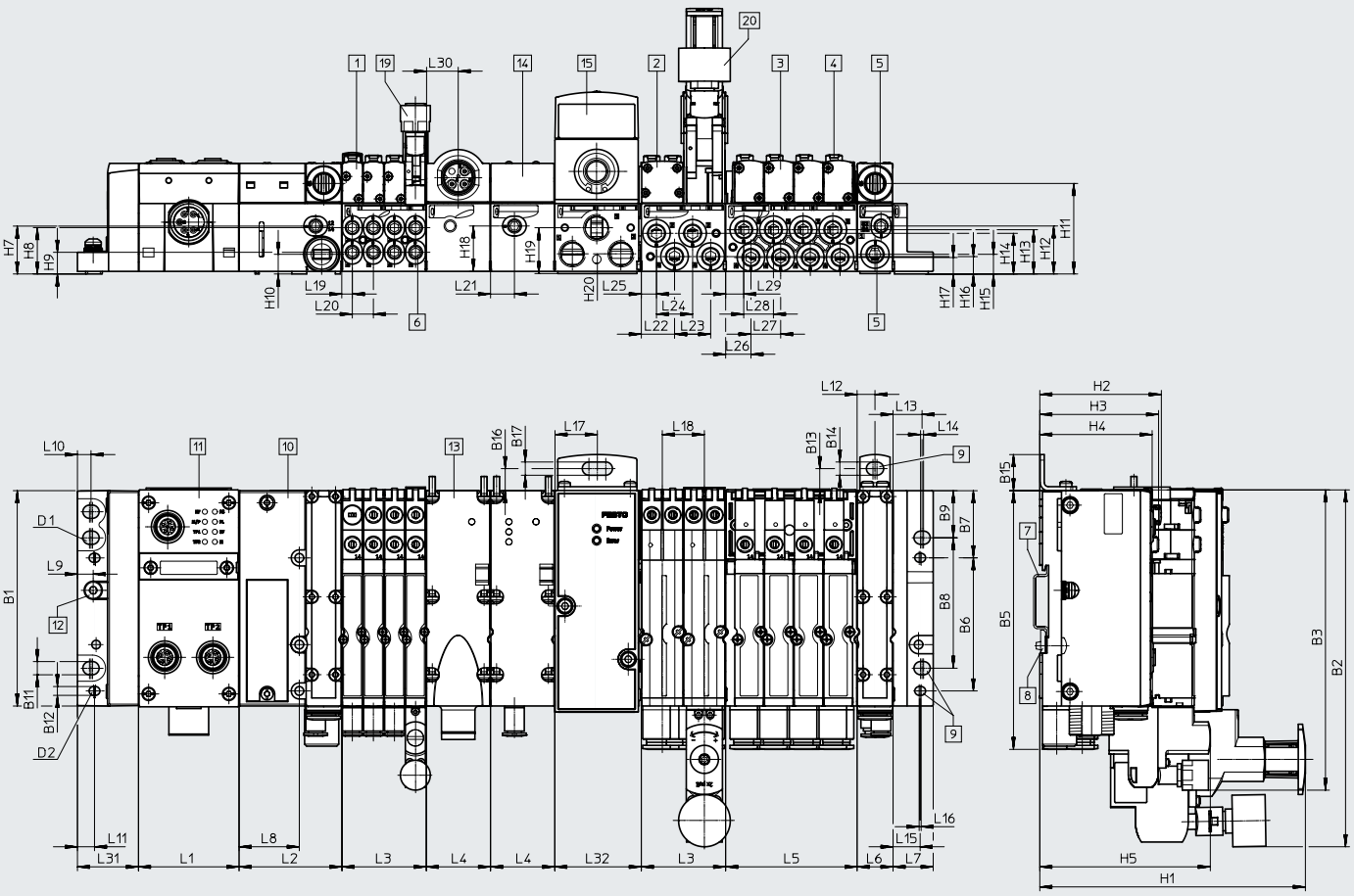
Type	L14	L15	L16	L17	L18	L19	L20	L21	L22	L23	L24	L25	L26	L27	L28	L29	L30	L32
MPA-S (CPI)	1.5	13.5	1	21	21	5.3	10.5	11.9	16.6	18	18	7.6	12.6	14.8	14.8	9	15.8	42

1) n = number of sub-bases (with MPA1, width 10 mm and MPA14, width 14 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)

Technical data

Dimensions Download CAD data ➔ www.festo.com

Valve terminal with fieldbus connection



[1] Solenoid valve MPA1
[2] Solenoid valve MPA2
[3] Solenoid valve MPA14
[4] Manual override
[5] Supply/exhaust ports
[6] Working ports
[7] H-rail
[8] H-rail mounting
[9] Mounting holes
[10] Pneumatic interface MPA
[11] CPX module
[12] Earthing screw
[13] Electrical supply plate
[14] Pressure sensor
[15] Proportional pressure regulator
[19] Vertical stacking MPA1
[20] Vertical stacking MPA2

Type	B1	B2	B3	B5	B6	B7	B8	B9	B11	B12	B13	B14	B15	B16	B17	D1	D2
MPA-S (FB)	107.3	178	149.2	129	66.4	33.5	65	23.5	6.6	4.4	11	6.6	18	11	6.6	M6	M4

Type	H1	H2	H3	H4	H5	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19	H20
MPA-S (FB)	132.3	60.5	59.1	56	84.9	23.9	23.1	10.8	9.8	45.1	23.9	22.1	20.3	9.8	8.7	8.2	22.6	22.9	9.9

Type	L1[1]	L2	L3[2]	L4	L5[2]	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16
MPA-S (FB)	m x 50.1	51.3	n x 42	32	n x 65.5	17.9	20	30	7.9	6.8	8.5	9	14.5	1.5	13.5	1

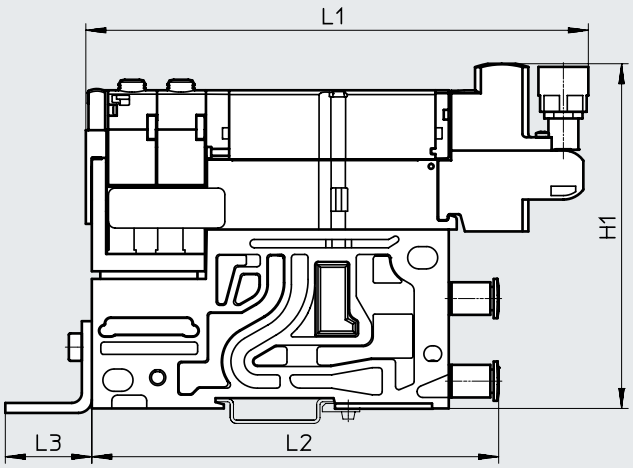
Type	L17	L18	L19	L20	L21	L22	L23	L24	L25	L26	L27	L28	L29	L30	L31	L32
MPA-S (FB)	21	21	5.3	10.5	11.9	16.6	18	18	7.6	12.6	14.8	14.8	9	15.8	30.4	42

1) m = number of CPX modules
2) n = number of sub-bases (with MPA1, width 10 mm and MPA14, width 14 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)

Technical data

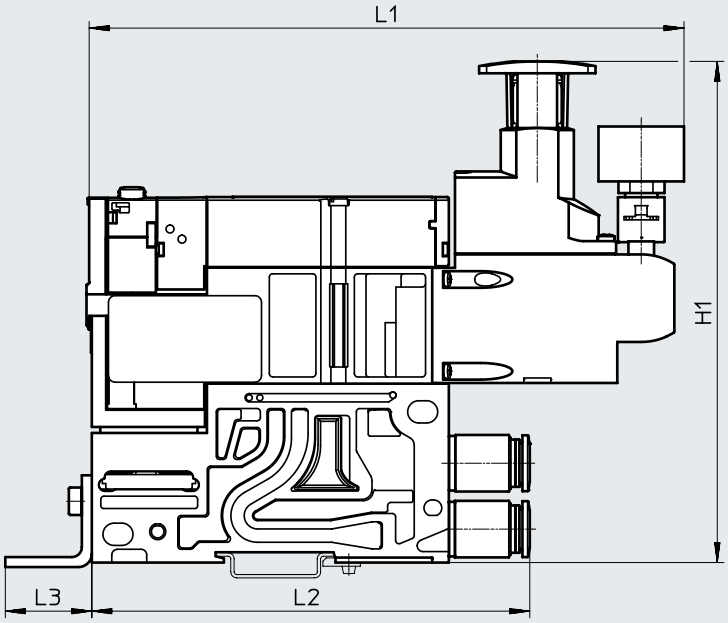
Dimensions Download CAD data ➔ www.festo.com

Vertical stacking components, regulator plate VMPA1



Type	H1	L1	L2	L3
VMPA1-...	105	151.1	122.3	26.9

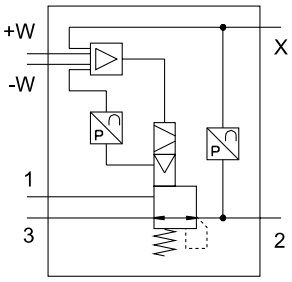
Vertical stacking components, regulator plate VMPA2



Type	H1	L1	L2	L3
VMPA2-...	152	179.6	131.6	26.9

Technical data – Proportional pressure regulator VPPM

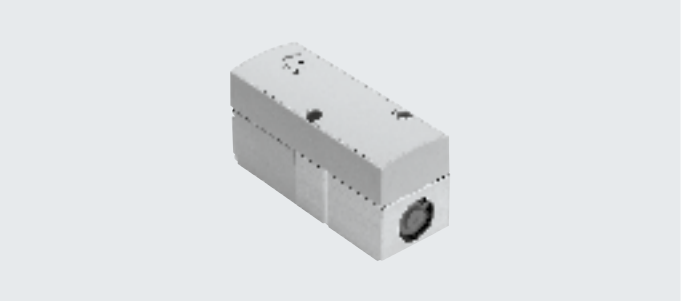
Function:



Flow rate
380 ... 1650 l/min

Pressure regulation ranges
0.02 ... 10 bar

Voltage
21.6 ... 26.4 V DC



General technical data			VPPM-6TA	VPPM-8TA
Valve function			3-way proportional pressure regulator	
Design			Piloted diaphragm regulator	
Range of application			For CPI connection, for fieldbus	
Type of mounting			Via through-hole or accessories	
Sealing principle			Soft	
Actuation type			Electrical	
Type of control			Piloted	
Mounting position			Any	
Reset method			Mechanical spring	
Display type			LED	Back-lit LCD
Pneumatic connection	1, 2, 3		Sub-base	
Nominal size	Pressurisation	[mm]	6	8
	Exhaust port	[mm]	4.5	7
Standard nominal flow rate	2 bar type	[l/min]	380	450
	6 bar type	[l/min]	900	1050
	10 bar type	[l/min]	1400	1650
Product weight		[g]	400	500
Material	Housing		Anodised wrought aluminium alloy	

Electrical data		
Electrical connection		Via sub-base
Operating voltage range	[V DC]	21.6 ... 26.4
Residual ripple	[%]	10
Max. electrical power consumption	[W]	7
Duty cycle	[%]	100
Short circuit current rating		For all electrical connections
Reverse polarity protection		For all electrical connections
Degree of protection to EN 60529		IP65

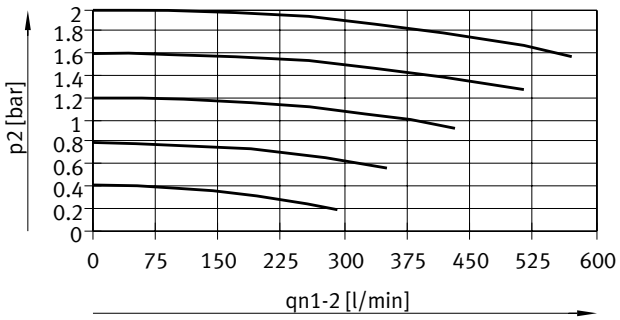
Note
Output pressure remains unregulated if the power supply cable is interrupted.

Note
Note possible restrictions for the IP protection class
➔ ATEX declaration of conformity

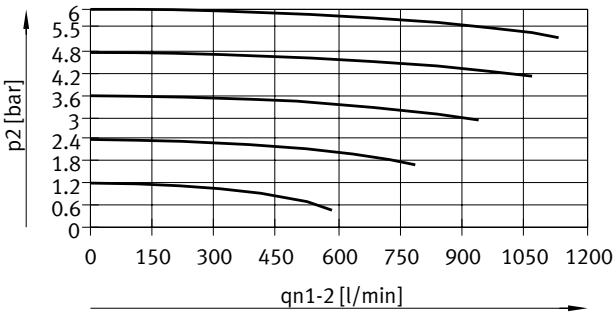
Technical data – Proportional pressure regulator VPPM

Flow rate qn from 1 → 2 as a function of output pressure p2

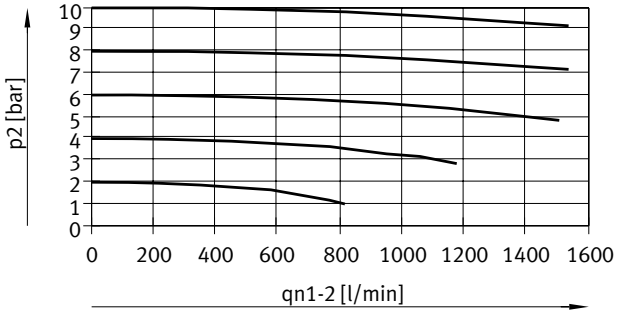
VPPM-6TA-...-0L2H-... (2 bar)



VPPM-6TA-...-0L6H-... (6 bar)

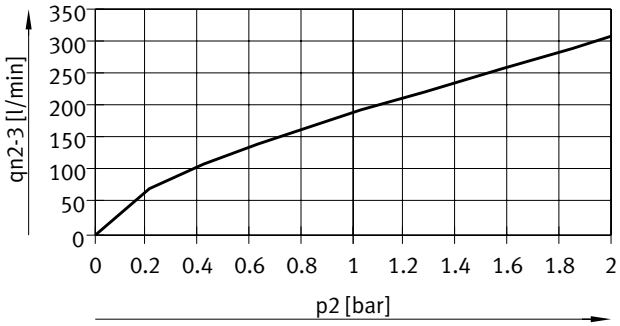


VPPM-6TA-...-0L10H-... (10 bar)

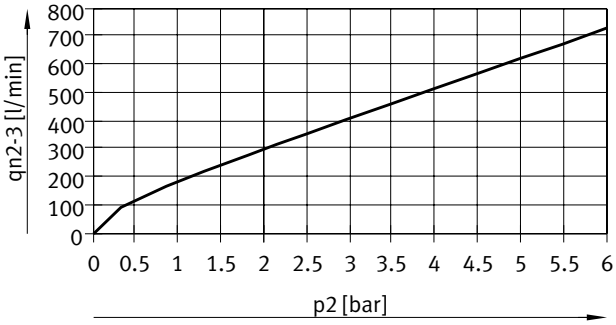


Flow rate qn from 2} → 3 as a function of output pressure p2

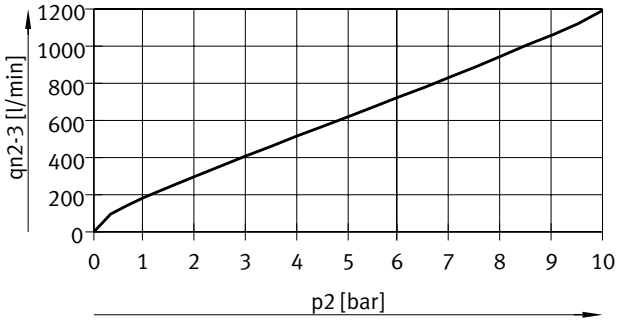
VPPM-6TA-...-0L2H-... (2 bar)



VPPM-6TA-...-0L6H-... (6 bar)



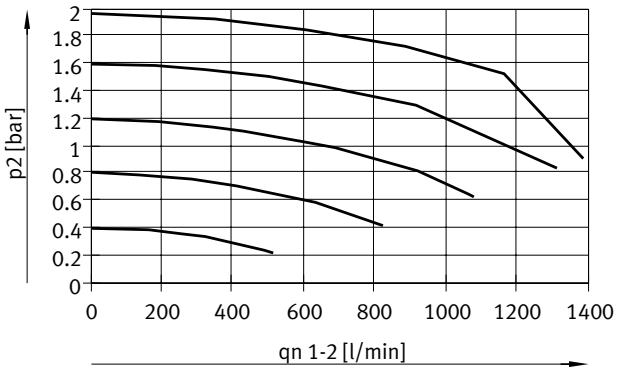
VPPM-6TA-...-0L10H-... (10 bar)



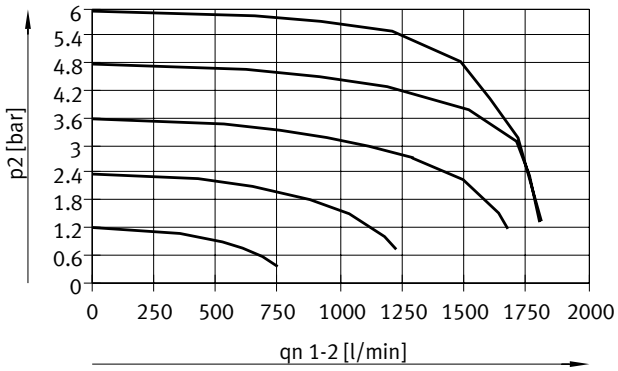
Technical data – Proportional pressure regulator VPPM

Flow rate qn from 1 → 2 as a function of output pressure p2

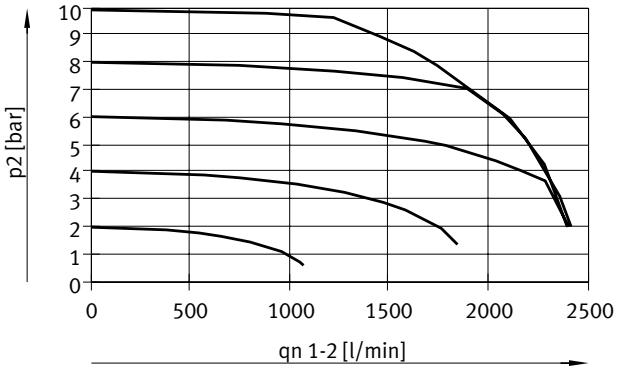
VPPM-8TA-...-0L2H-... (2 bar)



VPPM-8TA-...-0L6H-... (6 bar)

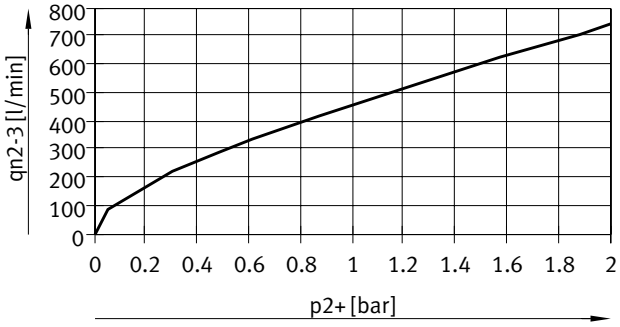


VPPM-8TA-...-0L10H-... (10 bar)

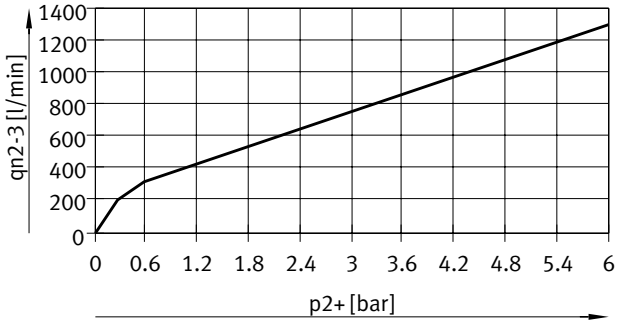


Flow rate qn from 2 → 3 as a function of output pressure p2

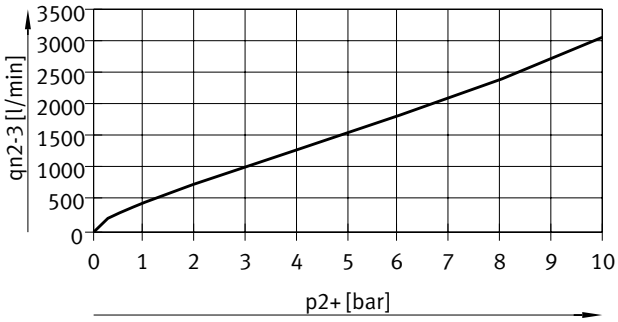
VPPM-8TA-...-0L2H-... (2 bar)



VPPM-8TA-...-0L6H-... (6 bar)



VPPM-8TA-...-0L10H-... (10 bar)

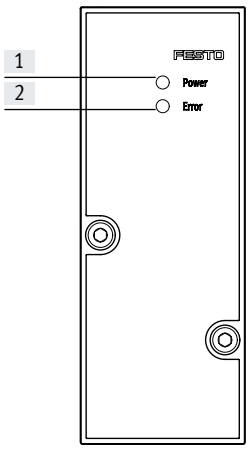


Technical data – Proportional pressure regulator VPPM

Operating and environmental conditions			VPPM-6TA	VPPM-8TA
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
			Inert gases	
Note on operating/pilot medium			Lubricated operation not possible	
Pressure regulation range	VPPM-...-0L2H-...	[bar]	0.02 ... 2	
	VPPM-...-0L6H-...	[bar]	0.06 ... 6	
	VPPM-...-0L10H-...	[bar]	0.1 ... 10	
Input pressure 1[1]	VPPM-...-0L2H-...	[bar]	0 ... 4	
	VPPM-...-0L6H-...	[bar]	0 ... 8	
	VPPM-...-0L10H-...	[bar]	0 ... 11	
Max. pressure hysteresis	VPPM-...-0L2H-...	[bar]	0.01	
	VPPM-...-0L6H-...	[bar]	0.03	
	VPPM-...-0L10H-...	[bar]	0.05	
Linearity error FS (full scale)	Standard	[%]	2	
	Type S1	[%]	1	
FS (full scale) repetition accuracy		[%]	0.5	
Temperature coefficient		[%/K]	0.04	
Ambient temperature		[°C]	0 ... 60	0 ... 50
Temperature of medium		[°C]	10 ... 50	
Corrosion resistance class CRC[2]			2	
CE marking (see declaration of conformity)			To EU EMC Directive[3]	
Certification			c UL us - Recognized (OL)	–
			C-Tick	

1) Supply pressure 1 should always be 1 bar greater than the maximum regulated output pressure.
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
3) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... ➔ Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

LEDs on the proportional pressure regulator VPPM-6TA

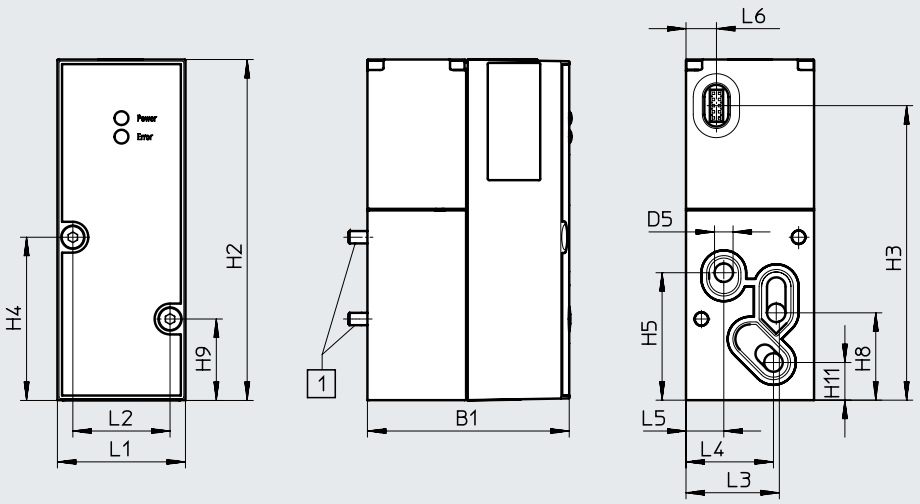


[1] Green power LED
[2] Red error LED

Technical data – Proportional pressure regulator VPPM

Dimensions Download CAD data ➔ www.festo.com

VPPM-6TA

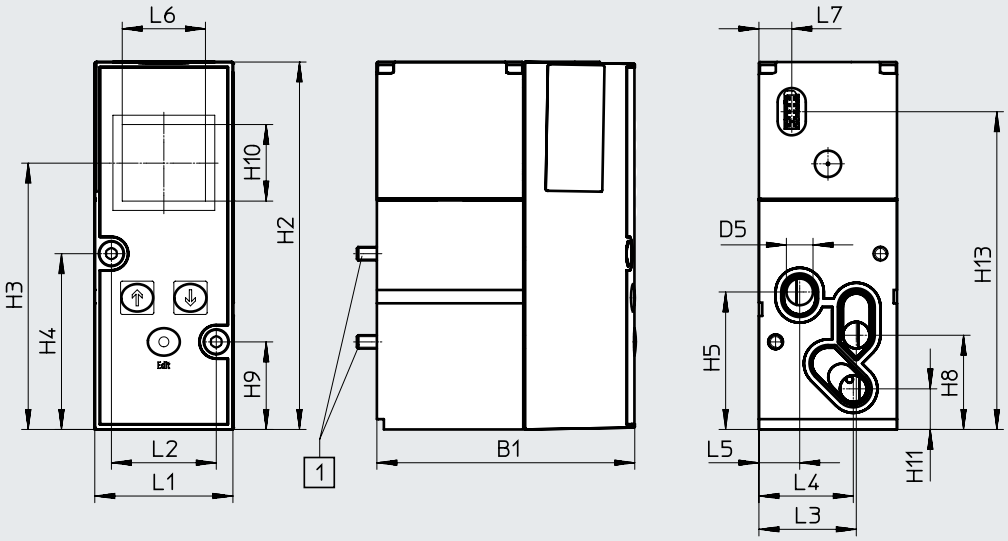


[1] Socket head screw M4x55

Type	B1	D5 ⌀	H2	H3	H4	H5	H8	H9	H11
VPPM-6TA	55.5	6	110.4	95.5	52.8	41.3	28.3	26.3	12.2

Type	L1	L2	L3	L4	L5	L6
VPPM-6TA	41.5	31.5	30.3	28.4	12.3	9.9

VPPM-8TA with LCD



[1] Socket head screw M4x77

Type	B1	D5 ⌀	H2	H3	H4	H5	H8	H9	H10	H11	H13
VPPM-8TA	77.4	8	110.4	80	52.8	41.3	28.3	26.3	23	12.2	95.5

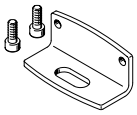
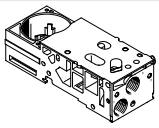
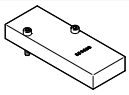
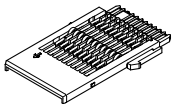
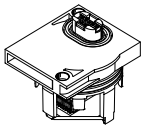
Type	L1	L2	L3	L4	L5	L6	L7
VPPM-8TA	41.5	31.5	29.3	28.4	12.3	25	9.9

Technical data – Proportional pressure regulator VPPM

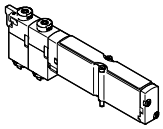
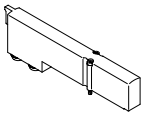
Ordering data

Code	Overall accuracy [%]	Input pressure 1 [bar]	Pressure regulation range [bar]	Part No.	Type
QA	2	0 ... 4	0.02 ... 2	**542220**	**VPPM-6TA-L-1-F-0L2H**
QD	1	0 ... 4	0.02 ... 2	**542217**	**VPPM-6TA-L-1-F-0L2H-S1**
QB	2	0 ... 8	0.06 ... 6	**542221**	**VPPM-6TA-L-1-F-0L6H**
QE	1	0 ... 8	0.06 ... 6	**542218**	**VPPM-6TA-L-1-F-0L6H-S1**
QC	2	0 ... 11	0.1 ... 10	**542222**	**VPPM-6TA-L-1-F-0L10H**
QF	1	0 ... 11	0.1 ... 10	**542219**	**VPPM-6TA-L-1-F-0L10H-S1**
QL	1	0 ... 4	0.02 ... 2	**572407**	**VPPM-8TA-L-1-F-0L2H-S1C1**
QG	2	0 ... 4	0.02 ... 2	**572410**	**VPPM-8TA-L-1-F-0L2H-C1**
QM	1	0 ... 8	0.06 ... 6	**572408**	**VPPM-8TA-L-1-F-0L6H-S1C1**
QH	2	0 ... 8	0.06 ... 6	**572411**	**VPPM-8TA-L-1-F-0L6H-C1**
QN	1	0 ... 11	0.1 ... 10	**572409**	**VPPM-8TA-L-1-F-0L10H-S1C1**
QK	2	0 ... 11	0.1 ... 10	**572412**	**VPPM-8TA-L-1-F-0L10H-C1**

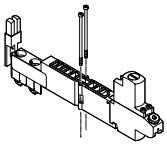
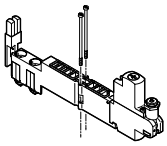
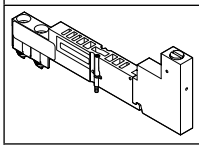
Ordering data – Accessories

Designation		Part No.	Type
	Mounting	**558844**	**VMPA-BG**
	Sub-base without electrical manifold module and without electronics module	**542223**	**VMPA-FB-AP-P1**
	Cover plate	**559638**	**VMPA-P-RP**
	Electrical interlinking module for sub-base of the proportional pressure regulator	**537998**	**VMPA1-FB-EV-AB**
	Electronics module	**542224**	**VMPA-FB-EMG-P1**

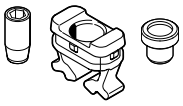
Accessories

Ordering data	Code	Valve function	Part No.	Type
Individual solenoid valve – width 10 mm				
	**5/2-way valve**			
	Position function 1-32: M	Single solenoid	**533342**	**VMPA1-M1H-M-PI**
	Position function 1-32: MS	Single solenoid, mechanical spring return	**571334**	**VMPA1-M1H-MS-PI**
	Position function 1-32: MU	Polymer poppet valve, single solenoid, Mechanical spring return	**553113**	**VMPA1-M1H-MU-PI**
	Position function 1-32: J	Double solenoid	**533343**	**VMPA1-M1H-J-PI**
	2x 3/2-way valve			
	Position function 1-32: N	Normally open	**533348**	**VMPA1-M1H-N-PI**
	Position function 1-32: NS	Normally open, Mechanical spring return	**556839**	**VMPA1-M1H-NS-PI**
	Position function 1-32: NU	Polymer poppet valve, normally open, Mechanical spring return	**553111**	**VMPA1-M1H-NU-PI**
	Position function 1-32: K	Normally closed	**533347**	**VMPA1-M1H-K-PI**
	Position function 1-32: KS	Normally closed, Mechanical spring return	**556838**	**VMPA1-M1H-KS-PI**
	Position function 1-32: KU	Polymer poppet valve, normally closed, Mechanical spring return	**553110**	**VMPA1-M1H-KU-PI**
	Position function 1-32: H	1x normally open, 1x normally closed	**533349**	**VMPA1-M1H-H-PI**
	Position function 1-32: HS	1x normally open, 1x normally closed, Mechanical spring return	**556840**	**VMPA1-M1H-HS-PI**
	Position function 1-32: HU	Polymer poppet valve, 1x normally open, 1x normally closed, Mechanical spring return	**553112**	**VMPA1-M1H-HU-PI**
	5/3-way valve			
	Position function 1-32: B	Mid-position pressurised	**533344**	**VMPA1-M1H-B-PI**
	Position function 1-32: G	Mid-position closed	**533345**	**VMPA1-M1H-G-PI**
	Position function 1-32: E	Mid-position exhausted	**533346**	**VMPA1-M1H-E-PI**
	1x 3/2-way valve			
	Position function 1-32: W	Normally open, external compressed air supply	**540050**	**VMPA1-M1H-W-PI**
	Position function 1-32: X	Normally closed, external compressed air supply	**534415**	**VMPA1-M1H-X-PI**
	2x 2/2-way valve			
	Position function 1-32: D	Normally closed	**533350**	**VMPA1-M1H-D-PI**
	Position function 1-32: DS	Normally closed, Mechanical spring return	**556841**	**VMPA1-M1H-DS-PI**
	Position function 1-32: I	1x normally closed, 1x normally closed, reversible only	**543605**	**VMPA1-M1H-I-PI**
Vacant position – Installation width 10 mm				
	Position function 1-32: L	Cover plate for a valve position in width 10 mm A self-adhesive label is supplied.	**533351**	**VMPA1-RP**

Accessories

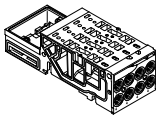
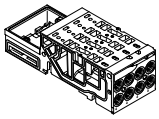
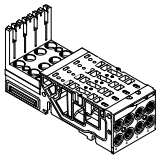
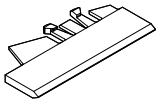
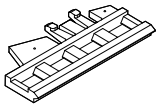
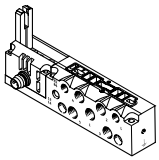
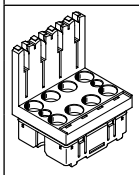
Ordering data	Code	Description			Part No.	Type
Vertical stacking modules – width 10 mm						
	Pressure regulator 1-32: PF	Pressure regulator plate with fixed threaded connection M5	For port 1	0.5 ... 5 bar	**564911**	**VMPA1-B8-R1-M5-06**
	Pressure regulator 1-32: PA			0.5 ... 8.5 bar	**564908**	**VMPA1-B8-R1-M5-10**
	Pressure regulator 1-32: PH		For port 2	2 ... 5 bar	**564912**	**VMPA1-B8-R2-M5-06**
	Pressure regulator 1-32: PC			2 ... 8.5 bar	**564909**	**VMPA1-B8-R2-M5-10**
	Pressure regulator 1-32: PG		For port 4	2 ... 5 bar	**564913**	**VMPA1-B8-R3-M5-06**
	Pressure regulator 1-32: PB			2 ... 8.5 bar	**564910**	**VMPA1-B8-R3-M5-10**
	Pressure regulator 1-32: PF	Pressure regulator plate with swivelling threaded connection M5	For port 1	0.5 ... 5 bar	**549052**	**VMPA1-B8-R1C2-C-06**
	Pressure regulator 1-32: PA			0.5 ... 8.5 bar	**543339**	**VMPA1-B8-R1C2-C-10**
	Pressure regulator 1-32: PH		For port 2	2 ... 5 bar	**549053**	**VMPA1-B8-R2C2-C-06**
	Pressure regulator 1-32: PC			2 ... 8.5 bar	**543340**	**VMPA1-B8-R2C2-C-10**
	Pressure regulator 1-32: PG		For port 4	2 ... 5 bar	**549054**	**VMPA1-B8-R3C2-C-06**
	Pressure regulator 1-32: PB			2 ... 8.5 bar	**543341**	**VMPA1-B8-R3C2-C-10**
	Pressure regulator 1-32: PS	Vertical pressure shut-off plate For manually disconnecting an individual valve from the compressed air supply of the valve terminal (duct 1 and 12/14 pilot air supply), operating pressure 3 ... 8 bar			**567805**	**VMPA1-HS**
	Pressure gauge 1-32: VE	Screw-in pressure gauge with thread M5 for pressure regulator plate with swivelling threaded connection		Unit of measure: bar	**132340**	**MA-15-10-M5**
	Pressure gauge 1-32: VD			Unit of measure: psi	**132341**	**MA-15-145-M5-PSI**
	Pressure gauge 1-32: VC	Locking push-in fitting with thread M5 for pressure regulator plate			**153291**	**QSK-M5-4**

Accessories

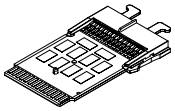
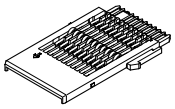
Ordering data	Code	Description		Part No.	Type	PU[1]
Fixed flow restrictor – width 10 mm						
	Pneumatic connection 3, 1-40: V03	Hollow bolt, for flow control of the exhaust air	3.5 ... 5.5 l/min	**572544**	**VMPA1-FT-NW0.3-10**	**10**
	Pneumatic connection 5, 1-40: Q03					
	Pneumatic connection 3, 1-40: V05		9 ... 12 l/min	**572545**	**VMPA1-FT-NW0.5-10**	**10**
	Pneumatic connection 5, 1-40: Q05					
	Pneumatic connection 3, 1-40: V07		18 ... 22 l/min	**572546**	**VMPA1-FT-NW0.7-10**	**10**
	Pneumatic connection 5, 1-40: Q07					
	Pneumatic connection 3, 1-40: V10		36 ... 41 l/min	**572547**	**VMPA1-FT-NW1.0-10**	**10**
	Pneumatic connection 5, 1-40: Q10					
	Pneumatic connection 3, 1-40: V12		52 ... 58 l/min	**572548**	**VMPA1-FT-NW1.2-10**	**10**
	Pneumatic connection 5, 1-40: Q12					
	Pneumatic connection 3, 1-40: V15		81 ... 89 l/min	**572549**	**VMPA1-FT-NW1.5-10**	**10**
	Pneumatic connection 5, 1-40: Q15					
	Pneumatic connection 3, 1-40: V17		105 ... 115 l/min	**572550**	**VMPA1-FT-NW1.7-10**	**10**
	Pneumatic connection 5, 1-40: Q17					
Flow control set – width 10 mm						
	–	Fixed flow restrictor, two of each size, two retaining brackets and one assembly tool		**572543**	**VMPA1-FT-NW0.3-1.7**	**14**
Holder for fixed flow restrictor – width 10 mm						
	–	Retaining bracket for exhaust opening in the sub-base		**572542**	**VMPA1-FTI-10**	**10**

1) Packaging unit.

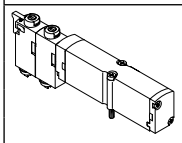
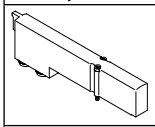
Accessories

Ordering data	Code	Description		Part No.	Type
Sub-base – width 10 mm					
	–	For multi-pin plug/fieldbus, four valve positions, no electrical interlinking module	No duct separation	**533352**	**VMPA1-FB-AP-4-1**
			Duct 1 blocked	**538657**	**VMPA1-FB-AP-4-1-T1**
			Duct 1 blocked and duct 3/5 blocked	**555901**	**VMPA1-FB-AP-4-1-S1**
Sub-bases with check valve in duct 3 and 5 – width 10 mm					
	–	For multi-pin plug/fieldbus, four valve positions, no electrical interlinking module	No duct separation	**8034547**	**VMPA1-FB-AP-4-1-RV**
			Duct 1 blocked	**8034549**	**VMPA1-FB-AP-4-1-T1-RV**
			Duct 1 blocked and duct 3/5 blocked	**8034551**	**VMPA1-FB-AP-4-1-S1-RV**
Sub-base – including electrical interlinking and electronics modules – width 10 mm					
	–	For fieldbus	Four valve positions	**546802**	**VMPA1-AP-4-1-EMS-8**
		For multi-pin plug	Four solenoid coils	**546806**	**VMPA1-AP-4-1-EMM-4**
			Eight solenoid coils	**546804**	**VMPA1-AP-4-1-EMM-8**
Inscription label holder for sub-base – width 10 mm					
	–	For foil Inscription label holder for sub-base, transparent, for paper foil label		**533362**	**VMPA1-ST-1-4**
	–	For IBS Inscription label holder for sub-base, 4-part, for IBS 6x10		**544384**	**VMPA1-ST-2-4**
	–	Inscription labels, 6 x 10 in frames, pack of 64		**18576**	**IBS-6x10**
Sub-base – width 10 mm					
	–	For individual connection, without ATEX specification	Internal pilot air	**533394**	**VMPA1-IC-AP-1**
			External pilot air	**533395**	**VMPA1-IC-AP-S-1**
		For individual connection, with ATEX specification: II 3G Ex nA IIC T4 XGc	Internal pilot air	**8005149**	**VMPA1-IC-AP-1-EX1E**
			External pilot air	**8005150**	**VMPA1-IC-AP-S-1-EX1E**
Electronics module – width 10 mm					
	–	For fieldbus connection, without separate circuit	8 coils	**533360**	**VMPA1-FB-EMS-8**
		For fieldbus connection, with separate circuit	8 coils	**533361**	**VMPA1-FB-EMG-8**
		For fieldbus connection, with enhanced diagnostic function, without separate circuit	8 coils	**543331**	**VMPA1-FB-EMS-D2-8**
		For fieldbus connection, with enhanced diagnostic function, with separate circuit	8 coils	**543333**	**VMPA1-FB-EMG-D2-8**
		For multi-pin plug connection	4 coils	**537987**	**VMPA1-MPM-EMM-4**
			8 coils	**537988**	**VMPA1-MPM-EMM-8**

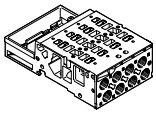
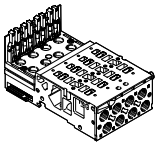
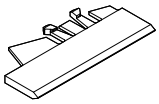
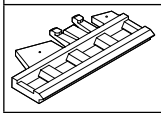
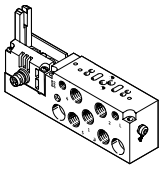
Accessories

Ordering data	Code	Description		Part No.	Type
Electrical manifold module – width 10 mm					
	–	For a multi-pin connection and AS-Interface for a sub-base	4 coils	**537993**	**VMPA1-MPM-EV-AB-4**
			8 coils	**537994**	**VMPA1-MPM-EV-AB-8**
		For multi-pin plug connection and AS-Interface for a sub-base with pneumatic supply plate (on the left next to the sub-base)	4 coils	**537995**	**VMPA1-MPM-EV-ABV-4**
			8 coils	**537996**	**VMPA1-MPM-EV-ABV-8**
	–	For fieldbus connection and CPI, for sub-bases MPA size 1 and 2 and proportional pressure regulator		**537998**	**VMPA1-FB-EV-AB**
		For fieldbus connection and CPI for a pneumatic supply plate		**537999**	**VMPA1-FB-EV-V**

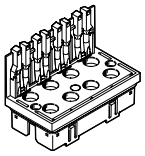
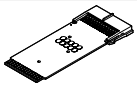
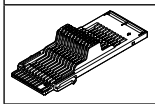
Accessories

Ordering data	Code	Valve function	Part No.	Type
Individual solenoid valve – width 14 mm				
	**5/2-way valve**			
	Position function 1-32: M	Single solenoid	**573718**	**VMPA14-M1H-M-PI**
	Position function 1-32: MS	Single solenoid	**573974**	**VMPA14-M1H-MS-PI**
	Position function 1-32: J	Double solenoid	**573717**	**VMPA14-M1H-J-PI**
	2x 3/2-way valve			
	Position function 1-32: N	Normally open	**573725**	**VMPA14-M1H-N-PI**
	Position function 1-32: NS	Normally open, Mechanical spring return	**575977**	**VMPA14-M1H-NS-PI**
	Position function 1-32: K	Normally closed	**573724**	**VMPA14-M1H-K-PI**
	Position function 1-32: KS	Normally closed, Mechanical spring return	**575976**	**VMPA14-M1H-KS-PI**
	Position function 1-32: H	1x normally open, 1x normally closed	**573726**	**VMPA14-M1H-H-PI**
	Position function 1-32: HS	1x normally open, 1x normally closed, Mechanical spring return	**575979**	**VMPA14-M1H-HS-PI**
	5/3-way valve			
	Position function 1-32: B	Mid-position pressurised	**573719**	**VMPA14-M1H-B-PI**
	Position function 1-32: G	Mid-position closed	**573721**	**VMPA14-M1H-G-PI**
	Position function 1-32: E	Mid-position exhausted	**573720**	**VMPA14-M1H-E-PI**
	3/2-way valve			
	Position function 1-32: W	Normally open, external compressed air supply	**573723**	**VMPA14-M1H-W-PI**
	Position function 1-32: X	Normally closed, external compressed air supply	**573722**	**VMPA14-M1H-X-PI**
	2x 2/2-way valve			
	Position function 1-32: D	Normally closed	**573727**	**VMPA14-M1H-D-PI**
	Position function 1-32: DS	Normally closed, Mechanical spring return	**575978**	**VMPA14-M1H-DS-PI**
	Position function 1-32: I	1x normally closed, 1x normally closed, reversible only	**573728**	**VMPA14-M1H-I-PI**
Vacant position – Installation width 14 mm				
	Position function 1-32: L	Cover plate for a valve position in width 14 mm A self-adhesive label is supplied.	**573729**	**VMPA14-RP**
Check valve – width 14 mm				
	–	Check valve for installation in duct 3 or 5 (scope of delivery: 10 check valves, one assembly tool)	**8039820**	**VMPA14-RV**

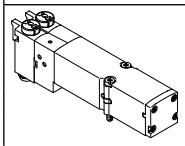
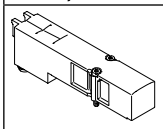
Accessories

Ordering data	Code	Description		Part No.	Type
Sub-base – width 14 mm					
	–	For multi-pin plug/fieldbus, four valve positions, no electrical interlinking module	No duct separation	**8074666**	**VMPA14-FB-AP-4-1**
			Duct 1 blocked	**8043928**	**VMPA14-FB-AP-4-1-T1**
			Duct 1 blocked and duct 3/5 blocked	**8043929**	**VMPA14-FB-AP-4-1-S1**
Sub-base – including electrical interlinking and electronics modules – width 14 mm					
	–	For fieldbus	Four valve positions	**8066778**	**VMPA14-AP-4-1-EMS-8**
		For multi-pin plug	Four solenoid coils	**8066779**	**VMPA14-AP-4-1-EMM-4**
			Eight solenoid coils	**8066780**	**VMPA14-AP-4-1-EMM-8**
Inscription label holder for sub-base – width 14 mm					
	–	For foil Inscription label holder for sub-base, transparent, for paper foil label		**8085996**	**VMPA14-ST-1-4**
	–	For IBS Inscription label holder for sub-base, 4-part, for IBS 6x10		**8085997**	**VMPA14-ST-2-4**
	–	Inscription labels, 6 x 10 in frames, pack of 64		**18576**	**IBS-6x10**
Sub-base – width 14 mm					
	–	For individual connection, without ATEX specification	Internal pilot air	**8023666**	**VMPA14-IC-AP-1**
			External pilot air	**8023667**	**VMPA14-IC-AP-S-1**
		For individual connection, with ATEX specification: II 3G Ex nA IIC T4 XGc	Internal pilot air	**8023668**	**VMPA14-IC-AP-1-EX1E**
			External pilot air	**8023669**	**VMPA14-IC-AP-S1-EX1E**

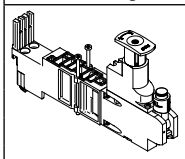
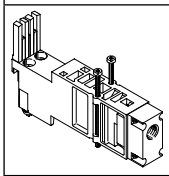
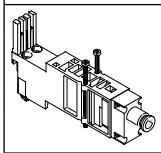
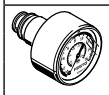
Accessories

Ordering data	Code	Description		Part No.	Type
Electronics module – width 14 mm					
	–	For fieldbus connection, without separate circuit	8 coils	**8066764**	**VMPA14-FB-EMS-8**
		For fieldbus connection, with separate circuit	8 coils	**8066765**	**VMPA14-FB-EMG-8**
		For fieldbus connection, with enhanced diagnostic function, without separate circuit	8 coils	**8066766**	**VMPA14-FB-EMS-D2-8**
		For fieldbus connection, with enhanced diagnostic function, with separate circuit	8 coils	**8066767**	**VMPA14-FB-EMG-D2-8**
		For multi-pin plug connection	4 coils	**8066768**	**VMPA14-MPM-EMM-4**
			8 coils	**8066769**	**VMPA14-MPM-EMM-8**
Electrical manifold module – width 14 mm					
	–	For a multi-pin connection and AS-Interface for a sub-base	4 coils	**8066770**	**VMPA14-MPM-EV-AB-4**
			8 coils	**8066771**	**VMPA14-MPM-EV-AB-8**
		For multi-pin plug connection and AS-Interface for a sub-base with pneumatic supply plate (on the left next to the sub-base)	4 coils	**8066772**	**VMPA14-MPM-EV-ABV-4**
			8 coils	**8066773**	**VMPA14-MPM-EV-ABV-8**
	–	For fieldbus connection and CPI, for sub-bases MPA size 14		**8066774**	**VMPA14-FB-EV-AB**

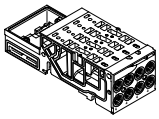
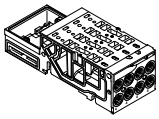
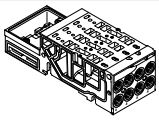
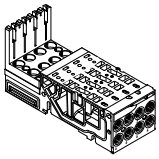
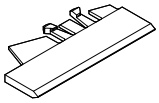
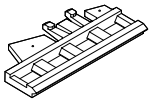
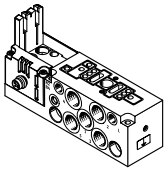
Accessories

Ordering data	Code	Valve function	Part No.	Type
Individual solenoid valve – width 20 mm				
	**5/2-way valve**			
	Position function 1-32: M	Single solenoid	**537952**	**VMPA2-M1H-M-PI**
	Position function 1-32: MS	Single solenoid, mechanical spring return	**571333**	**VMPA2-M1H-MS-PI**
	Position function 1-32: J	Double solenoid	**537953**	**VMPA2-M1H-J-PI**
	2x 3/2-way valve			
	Position function 1-32: N	Normally open	**537958**	**VMPA2-M1H-N-PI**
	Position function 1-32: NS	Normally open, Mechanical spring return	**568655**	**VMPA2-M1H-NS-PI**
	Position function 1-32: K	Normally closed	**537957**	**VMPA2-M1H-K-PI**
	Position function 1-32: KS	Normally closed, Mechanical spring return	**568656**	**VMPA2-M1H-KS-PI**
	Position function 1-32: H	1x normally open, 1x normally closed	**537959**	**VMPA2-M1H-H-PI**
	Position function 1-32: HS	1x normally open, 1x normally closed, Mechanical spring return	**568658**	**VMPA2-M1H-HS-PI**
	5/3-way valve			
	Position function 1-32: B	Mid-position pressurised	**537954**	**VMPA2-M1H-B-PI**
	Position function 1-32: G	Mid-position closed	**537955**	**VMPA2-M1H-G-PI**
	Position function 1-32: E	Mid-position exhausted	**537956**	**VMPA2-M1H-E-PI**
	1x 3/2-way valve			
	Position function 1-32: W	Normally open, external compressed air supply	**540051**	**VMPA2-M1H-W-PI**
	Position function 1-32: X	Normally closed, external compressed air supply	**537961**	**VMPA2-M1H-X-PI**
	2x 2/2-way valve			
	Position function 1-32: D	Normally closed	**537960**	**VMPA2-M1H-D-PI**
	Position function 1-32: DS	Normally closed, Mechanical spring return	**568657**	**VMPA2-M1H-DS-PI**
	Position function 1-32: I	1x normally closed, 1x normally closed, reversible only	**543703**	**VMPA2-M1H-I-PI**
Vacant position – Installation width 20 mm				
	Position function 1-32: L	Cover plate for a valve position in width 20 mm A self-adhesive label is supplied.	**537962**	**VMPA2-RP**

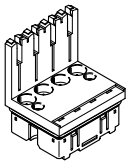
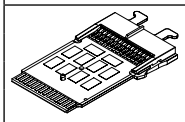
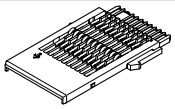
Accessories

Ordering data	Code	Valve function			Part No.	Type
Vertical stacking modules – width 20 mm						
	Pressure regulator 1-32: PA	Pressure regulator plate (with 10 mm cartridge connection for pressure gauge)	For port 1	0.5 ... 8.5 bar	**543342**	**VMPA2-B8-R1C2-C-10**
	Pressure regulator 1-32: PF			0.5 ... 5 bar	**549055**	**VMPA2-B8-R1C2-C-06**
	Pressure regulator 1-32: PC		For port 2	2 ... 8.5 bar	**543343**	**VMPA2-B8-R2C2-C-10**
	Pressure regulator 1-32: PH			2 ... 5 bar	**549056**	**VMPA2-B8-R2C2-C-06**
	Pressure regulator 1-32: PB		For port 4	2 ... 8.5 bar	**543344**	**VMPA2-B8-R3C2-C-10**
	Pressure regulator 1-32: PG			2 ... 5 bar	**549057**	**VMPA2-B8-R3C2-C-06**
	Pressure regulator 1-32: PL		For port 2, reversible	0.5 ... 8.5 bar	**543347**	**VMPA2-B8-R6C2-C-10**
	Pressure regulator 1-32: PN			0.5 ... 5 bar	**549113**	**VMPA2-B8-R6C2-C-06**
	Pressure regulator 1-32: PK		For port 4, reversible	0.5 ... 8.5 bar	**543348**	**VMPA2-B8-R7C2-C-10**
	Pressure regulator 1-32: PM			0.5 ... 5 bar	**549114**	**VMPA2-B8-R7C2-C-06**
	Pressure regulator 1-32: PV	Vertical pressure supply plate	Connecting thread	G1/8	**8029486**	**VMPA2-VSP-0**
			With fitting for tubing O.D.	6 mm	**8035441**	**VMPA2-VSP-QS6**
				8 mm	**8029488**	**VMPA2-VSP-QS8**
				10 mm	**8029489**	**VMPA2-VSP-QS10**
				1/4"	**8035442**	**VMPA2-VSP-QS1/4**
				5/16"	**8029491**	**VMPA2-VSP-QS5/16**
	Pressure gauge 1-32: T	Pressure gauge, 10 mm cartridge connection, for pressure regulating valve plate	Display unit bar/psi	0 ... 16 bar	**543487**	**PAGN-26-16-P10**
				0 ... 10 bar	**543488**	**PAGN-26-10-P10**
	–		Display unit MPa	0 ... 1.0 MPa	**563736**	**PAGN-26-1M-P10**
				0 ... 1.6 MPa	**563735**	**PAGN-26-1.6M-P10**
	Pressure gauge 1-32: VF	Threaded adapter for cartridge connection 10 mm to thread G1/8			**565811**	**QSP10-G1/8**
Check valve – width 20 mm						
	–	Check valve for installation in duct 3 or 5 (scope of delivery: 10 check valves, one assembly tool)			**8039821**	**VMPA2-RV**

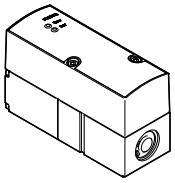
Accessories

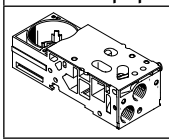
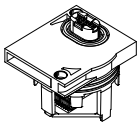
Ordering data	Code	Description		Part No.	Type
Sub-base – width 20 mm					
	–	For multi-pin plug/fieldbus, two valve positions, no electrical interlinking module	No duct separation	**538000**	**VMPA2-FB-AP-2-1**
			Duct 1 blocked	**538677**	**VMPA2-FB-AP-2-1-T0**
			Duct 1 blocked and duct 3/5 blocked	**555902**	**VMPA2-FB-AP-2-1-S0**
Sub-bases for check valves – width 20 mm					
	–	For multi-pin plug/fieldbus, two valve positions, no electrical interlinking module	No duct separation	**578863**	**VMPA2-FB-APF-2-1**
			Duct 1 blocked	**578864**	**VMPA2-FB-APF-2-1-T0**
			Duct 1 blocked and duct 3/5 blocked	**578865**	**VMPA2-FB-APF-2-1-S0**
Sub-bases with check valve in duct 3 and 5 – width 20 mm					
	–	For multi-pin plug/fieldbus, two valve positions, no electrical interlinking module	No duct separation	**8034548**	**VMPA2-FB-AP-2-1-RV**
			Duct 1 blocked	**8034550**	**VMPA2-FB-AP-2-1-T0-RV**
			Duct 1 blocked and duct 3/5 blocked	**8034552**	**VMPA2-FB-AP-2-1-S0-RV**
Sub-base – including electrical interlinking and electronics modules – width 20 mm					
	–	For fieldbus	Two valve positions	**546803**	**VMPA2-AP-2-1-EMS-4**
		For multi-pin plug	Two solenoid coils	**546807**	**VMPA2-AP-2-1-EMM-2**
			Four solenoid coils	**546805**	**VMPA2-AP-2-1-EMM-4**
Inscription label holder for sub-base – width 20 mm					
	–	For foil Inscription label holder for sub-base, transparent, for paper foil label		**533362**	**VMPA1-ST-1-4**
	–	For IBS Inscription label holder for sub-base, 4-part, for IBS 6x10		**544384**	**VMPA1-ST-2-4**
	–	Inscription labels, 6 x 10 in frames, pack of 64		**18576**	**IBS-6x10**
Sub-base – width 20 mm					
	–	For individual connection, without ATEX specification	Internal pilot air	**537981**	**VMPA2-IC-AP-1**
			External pilot air	**537982**	**VMPA2-IC-AP-S-1**
		For individual connection, with ATEX specification: II 3G Ex nA IIC T4 XGc	Internal pilot air	**8005151**	**VMPA2-IC-AP-1-EX1E**
			External pilot air	**8005152**	**VMPA2-IC-AP-S-1-EX1E**

Accessories

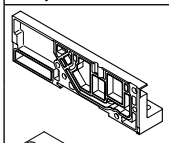
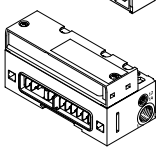
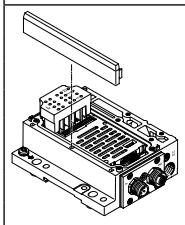
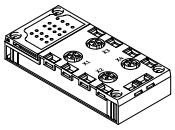
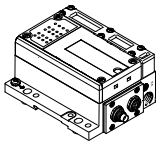
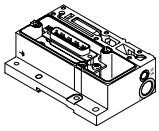
Ordering data	Code	Description		Part No.	Type
Electronics module – width 20 mm					
	–	For fieldbus connection, without separate circuit	4 coils	**537983**	**VMPA2-FB-EMS-4**
		For fieldbus connection, with separate circuit	4 coils	**537984**	**VMPA2-FB-EMG-4**
		For fieldbus connection, with enhanced diagnostic function, without separate circuit	4 coils	**543332**	**VMPA2-FB-EMS-D2-4**
		For fieldbus connection, with enhanced diagnostic function, with separate circuit	4 coils	**543334**	**VMPA2-FB-EMG-D2-4**
		For multi-pin plug connection	2 coils	**537985**	**VMPA2-MPM-EMM-2**
			8 coils	**537986**	**VMPA2-MPM-EMM-4**
Electrical manifold module – width 20 mm					
	–	For a multi-pin connection and AS-Interface for a sub-base	2 coils	**537989**	**VMPA2-MPM-EV-AB-2**
			4 coils	**537993**	**VMPA1-MPM-EV-AB-4**
		For multi-pin plug connection and AS-Interface for a sub-base with pneumatic supply plate (on the left next to the sub-base)	2 coils	**537991**	**VMPA2-MPM-EV-ABV-2**
			4 coils	**537995**	**VMPA1-MPM-EV-ABV-4**
	–	For fieldbus connection and CPI, for sub-bases MPA size 1 and 2 and proportional pressure regulator		**537998**	**VMPA1-FB-EV-AB**
		For fieldbus connection and CPI for a pneumatic supply plate		**537999**	**VMPA1-FB-EV-V**

Accessories

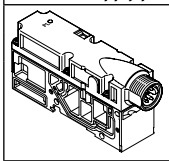
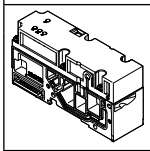
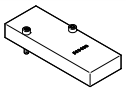
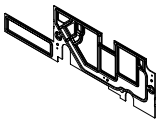
Ordering data	Code	Full-scale linearity error	Input pressure 1	Pressure regulation range	Part No.	Type
Proportional-pressure regulator						
	QA	2%	0 ... 4 bar	0.02 ... 2 bar	**542220**	**VPPM-6TA-L-1-F-0L2H**
	QD	1%	0 ... 4 bar	0.02 ... 2 bar	**542217**	**VPPM-6TA-L-1-F-0L2H-S1**
	QB	2%	0 ... 8 bar	0.06 ... 6 bar	**542221**	**VPPM-6TA-L-1-F-0L6H**
	QE	1%	0 ... 8 bar	0.06 ... 6 bar	**542218**	**VPPM-6TA-L-1-F-0L6H-S1**
	QC	2%	0 ... 11 bar	0.1 ... 10 bar	**542222**	**VPPM-6TA-L-1-F-0L10H**
	QF	1%	0 ... 11 bar	0.1 ... 10 bar	**542219**	**VPPM-6TA-L-1-F-0L10H-S1**
	QL	1%	0 ... 4 bar	0.02 ... 2 bar	**572407**	**VPPM-8TA-L-1-F-0L2H-S1C1**
	QG	2%	0 ... 4 bar	0.02 ... 2 bar	**572410**	**VPPM-8TA-L-1-F-0L2H-C1**
	QM	1%	0 ... 8 bar	0.06 ... 6 bar	**572408**	**VPPM-8TA-L-1-F-0L6H-S1C1**
	QH	2%	0 ... 8 bar	0.06 ... 6 bar	**572411**	**VPPM-8TA-L-1-F-0L6H-C1**
	QN	1%	0 ... 11 bar	0.1 ... 10 bar	**572409**	**VPPM-8TA-L-1-F-0L10H-S1C1**
	QK	2%	0 ... 11 bar	0.1 ... 10 bar	**572412**	**VPPM-8TA-L-1-F-0L10H-C1**

Ordering data Designation		Part No.	Type
Sub-base for proportional pressure regulator			
	Sub-base without electrical manifold module and without electronics module	**542223**	**VMPA-FB-AP-P1**
Electronics module for proportional pressure regulator			
	–	**542224**	**VMPA-FB-EMG-P1**

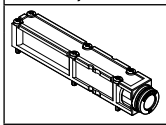
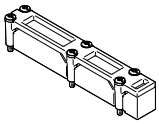
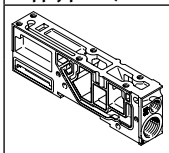
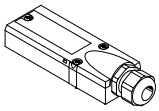
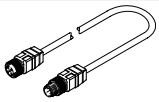
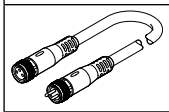
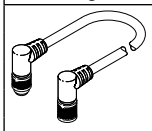
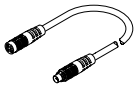
Accessories

Ordering data Designation				Part No.	Type
End plate and fieldbus pneumatic interface					
	Right end plate	With connection 82/84 for ducted exhaust air (connecting thread M5)	–	**8029133**	**VMPA-EPR-G**
	Right end plate	Without connection 82/84	–	**533373**	**VMPA-EPR**
	Pneumatic interface	Ducted exhaust air, internal pilot air	For CPX plastic interlinking module	**533370**	**VMPA-FB-EPL-G**
	Pneumatic interface	Ducted exhaust air, internal pilot air	For CPX metal interlinking module	**552286**	**VMPA-FB-EPLM-G**
	Pneumatic interface	Ducted exhaust air, external pilot air	For CPX plastic interlinking module	**533369**	**VMPA-FB-EPL-E**
	Pneumatic interface	Ducted exhaust air, external pilot air	For CPX metal interlinking module	**552285**	**VMPA-FB-EPLM-E**
	Pneumatic interface	Flat plate silencer, internal pilot air	For CPX plastic interlinking module	**533372**	**VMPA-FB-EPL-GU**
	Pneumatic interface	Flat plate silencer, internal pilot air	For CPX metal interlinking module	**552288**	**VMPA-FB-EPLM-GU**
	Pneumatic interface	Flat plate silencer, external pilot air	For CPX plastic interlinking module	**533371**	**VMPA-FB-EPL-EU**
	Pneumatic interface	Flat plate silencer, external pilot air	For CPX metal interlinking module	**552287**	**VMPA-FB-EPLM-EU**
Electrical interface for AS-Interface					
	4 inputs/4 outputs, to spec. 2.1	Internal pilot air	Ducted exhaust air	**546989**	**VMPA-ASI-EPL-G-4E4A-Z**
			Silencers	**546991**	**VMPA-ASI-EPL-GU-4E4A-Z**
		External pilot air	Ducted exhaust air	**546988**	**VMPA-ASI-EPL-E-4E4A-Z**
			Silencers	**546990**	**VMPA-ASI-EPL-EU-4E4A-Z**
	8 inputs/8 outputs, to spec. 2.1	Internal pilot air	Ducted exhaust air	**546993**	**VMPA-ASI-EPL-G-8E8A-Z**
			Silencers	**546995**	**VMPA-ASI-EPL-GU-8E8A-Z**
		External pilot air	Ducted exhaust air	**546992**	**VMPA-ASI-EPL-E-8E8A-Z**
			Silencers	**546994**	**VMPA-ASI-EPL-EU-8E8A-Z**
	8 inputs/8 outputs, to spec. 3.0, expanded addressing range	Internal pilot air	Ducted exhaust air	**573184**	**VMPA-ASI-EPL-G-8E8A-CE**
			Silencers	**573186**	**VMPA-ASI-EPL-GU-8E8A-CE**
		External pilot air	Ducted exhaust air	**573183**	**VMPA-ASI-EPL-E-8E8A-CE**
			Silencers	**573185**	**VMPA-ASI-EPL-EU-8E8A-CE**
Sub-base for AS-Interface					
	M12 socket, 5-pin			**195704**	**CPX-AB-4-M12X2-5POL**
	M8 socket, 3-pin			**195706**	**CPX-AB-8-M8-3POL**
	Spring-loaded terminals, 32-pin			**195708**	**CPX-AB-8-KL-4POL**
	Socket, Sub-D, 25-pin			**525676**	**CPX-AB-1-SUB-BU-25POL**
	Dose, Schnellanschluss, 4-polig			**525636**	**CPX-AB-4-HAR-4POL**
Electrical interface for CPI					
	External pilot air	Ducted exhaust air		**546983**	**VMPA-CPI-EPL-E**
	Internal pilot air	Ducted exhaust air		**546984**	**VMPA-CPI-EPL-G**
	External pilot air	Silencer		**546985**	**VMPA-CPI-EPL-EU**
	Internal pilot air	Silencer		**546986**	**VMPA-CPI-EPL-GU**
Electrical interface for multi-pin plug connection					
	External pilot air	Ducted exhaust air		**540893**	**VMPA1-MPM-EPL-E**
	Internal pilot air	Ducted exhaust air		**540894**	**VMPA1-MPM-EPL-G**
	External pilot air	Silencer		**540895**	**VMPA1-MPM-EPL-EU**
	Internal pilot air	Silencer		**540896**	**VMPA1-MPM-EPL-GU**

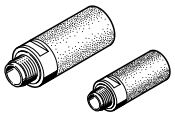
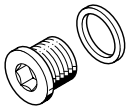
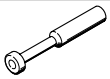
Accessories

Ordering data Designation			Part No.	Type
Electrical supply plate				
	Plug connection M18, 3-pin		**541082**	**VMPA-FB-SP-V**
	Plug connection 7/8", 5-pin		**541083**	**VMPA-FB-SP-7/8-V-5POL**
	Plug connection 7/8", 4-pin		**541084**	**VMPA-FB-SP-7/8-V-4POL**
Pressure sensor				
	For monitoring the operating pressure in duct 1		**541085**	**VMPA-FB-PS-1**
	For monitoring the pressure in exhaust ducts 3 and 5		**541086**	**VMPA-FB-PS-3/5**
	For monitoring an external process pressure		**541087**	**VMPA-FB-PS-P1**
Cover				
	Cover plate		**559638**	**VMPA-P-RP**
	Cover cap for manual override with coded cover cap, manual override non-detenting (pack of 10)		**540897**	**VMPA-HBT-B**
	Cover cap for manual override, concealed, manual override blocked (pack of 10)		**540898**	**VMPA-HBV-B**
	Cover cap for manual override, manual override detenting, can be operated manually without accessories (pack of 10)		**8002234**	**VAMC-L1-CD**
	Inscription label holder for inscription label and cover for signal status indication and manual override (blocked) (pack of 10)		**570818**	**ASLR-D-L1**
Seal for sub-base				
	MPA with ducted exhaust air	No duct separation	**533359**	**VMPA1-DP**
		Duct 1 separated	**533363**	**VMPA1-DP-P**
		Duct 3/5 separated	**533364**	**VMPA1-DP-RS**
		Duct 1 and 3/5 separated	**533365**	**VMPA1-DP-PRS**
	MPA with flat plate silencer	No duct separation	**533355**	**VMPA1-DPU**
		Duct 1 separated	**533356**	**VMPA1-DPU-P**
		Duct 3/5 separated	**533357**	**VMPA1-DPU-RS**
		Duct 1 and 3/5 separated	**533358**	**VMPA1-DPU-PRS**

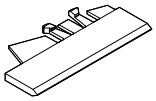
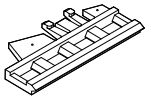
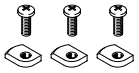
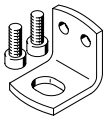
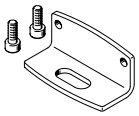
Accessories

Ordering data Designation			Part No.	Type
Exhaust plate				
	Ducted exhaust air, with 10 mm push-in connector		**533375**	**VMPA-AP**
	Ducted exhaust air, with connector QS-3/8		**541629**	**VMPA-AP-3/8**
	Flat plate silencer		**533374**	**VMPA-APU**
Supply plate (without exhaust plate)				
	For ducted exhaust air		**533354**	**VMPA1-FB-SP**
	For flat plate silencer		**533353**	**VMPA1-FB-SPU**
Multi-pin plug connection, electrical				
	Cover without connecting cable, for self-assembly		**533198**	**VMPA-KMS-H**
	PVC interconnecting cable for 8 solenoid coils	2.5 m	**533195**	**VMPA-KMS1-8-2.5**
		5 m	**533196**	**VMPA-KMS1-8-5**
		10 m	**533197**	**VMPA-KMS1-8-10**
	PVC interconnecting cable for 24 solenoid coils	2.5 m	**533192**	**VMPA-KMS1-24-2.5**
		5 m	**533193**	**VMPA-KMS1-24-5**
		10 m	**533194**	**VMPA-KMS1-24-10**
	PUR interconnecting cable for 8 solenoid coils, suitable for energy chains	2.5 m	**533504**	**VMPA-KMS2-8-2.5-PUR**
		5 m	**533505**	**VMPA-KMS2-8-5-PUR**
		10 m	**533506**	**VMPA-KMS2-8-10-PUR**
	PUR interconnecting cable for 24 solenoid coils, suitable for energy chains	2.5 m	**533501**	**VMPA-KMS2-24-2.5-PUR**
		5 m	**533502**	**VMPA-KMS2-24-5-PUR**
		10 m	**533503**	**VMPA-KMS2-24-10-PUR**
Connecting cable, AS-Interface connection				
	• Straight socket, M12 x 1, 5-pin, A-coded • Straight plug, M12 x 1, 4-pin, A-coded	0.5 m	**8000208**	**NEBU-M12G5-K-0.5-M12G4**
	Modular system for a choice of connecting cables		**–**	**→ Internet: nebu**
Connecting cable, CPI connection				
	• Angled plug, 5-pin • Angled socket, 5-pin	0.25 m	**540327**	**KVI-CP-3-WS-WD-0.25**
		0.5 m	**540328**	**KVI-CP-3-WS-WD-0.5**
		2 m	**540329**	**KVI-CP-3-WS-WD-2**
		5 m	**540330**	**KVI-CP-3-WS-WD-5**
		8 m	**540331**	**KVI-CP-3-WS-WD-8**
	• Straight plug, 5-pin • Straight socket, 5-pin	2 m	**540332**	**KVI-CP-3-GS-GD-2**
		5 m	**540333**	**KVI-CP-3-GS-GD-5**
		8 m	**540334**	**KVI-CP-3-GS-GD-8**

Accessories

Ordering data Designation			Part No.	Type	PU[1)]
Push-in connector for sub-base, pneumatic interface, supply plate					
	Connecting thread M5 for tubing O.D.	3 mm	**153313**	**QSM-M5-3-I**	**10**
		4 mm	**153315**	**QSM-M5-4-I**	**10**
			578370	**NPQH-DK-M5-Q4-P10**	**10**
		6 mm	**153317**	**QSM-M5-6-I**	**10**
			578371	**NPQH-DK-M5-Q6-P10**	**10**
		5/32"	**130593**	**QSM-M5-5/32-I-U-M**	**1**
		3/16"	**183750**	**QSM-M5-3/16-I-U-M**	**1**
		1/4"	**130591**	**QSM-M5-1/4-I-U-M**	**50**
	Connecting thread M7 for tubing O.D.	4 mm	**153319**	**QSM-M7-4-I**	**10**
			578372	**NPQH-DK-M7-Q4-P10**	**10**
		6 mm	**153321**	**QSM-M7-6-I**	**10**
			132919	**QSM-M7-6-I-R-100**	**100**
			578373	**NPQH-DK-M7-Q6-P10**	**10**
		3/16"	**183739**	**QSM-M7-3/16-I-U-M**	**1**
		1/4"	**183740**	**QSM-M7-1/4-I-U-M**	**50**
	Connecting thread G1/8 for tubing O.D.	6 mm	**186107**	**QS-G1/8-6-I**	**10**
			578375	**NPQH-DK-G18-Q6-P10**	**10**
		8 mm	**186109**	**QS-G1/8-8-I**	**10**
			578376	**NPQH-DK-G18-Q8-P10**	**10**
		1/4"	**183741**	**QS-1/8-1/4-I-U-M**	**1**
		5/16"	**183742**	**QS-1/8-5/16-I-U-M**	**1**
	Connecting thread G1/4 for tubing O.D.	8 mm	**186110**	**QS-G1/4-8-I**	**10**
			578377	**NPQH-DK-G14-Q8-P10**	**10**
		10 mm	**186112**	**QS-G1/4-10-I**	**10**
			578378	**NPQH-DK-G14-Q10-P10**	**10**
		5/16"	**183743**	**QS-1/4-5/16-I-U-M**	**1**
		3/8"	**183744**	**QS-1/4-3/8-I-U-M**	**1**
Silencers					
	Connecting thread	M5	**165003**	**UC-M5**	**1**
		M7	**161418**	**UC-M7**	**1**
		G1/4	**165004**	**UC-1/4**	**1**
		G1/8	**161419**	**UC-1/8**	**1**
	Push-in sleeve connection	3 mm	**165005**	**UC-QS-3H**	**1**
		4 mm	**165006**	**UC-QS-4H**	**1**
		6 mm	**165007**	**UC-QS-6H**	**1**
		8 mm	**175611**	**UC-QS-8H**	**1**
		10 mm	**526475**	**UC-QS-10H**	**1**
Blindstopfen					
	M5 thread		**3843**	**B-M5**	**10**
			578404	**NPQH-BK-M5-P10**	**10**
	M7 thread		**174309**	**B-M7**	**10**
			578405	**NPQH-BK-M7-P10**	**10**
	G1/8 thread		**3568**	**B-1/8**	**10**
			578406	**NPQH-BK-G18-P10**	**10**
	G1/4 thread		**3569**	**B-1/4**	**10**
			578407	**NPQH-BK-G14-P10**	**10**
Plug					
	Blanking plug for tubing O.D.	4 mm	**153267**	**QSC-4H**	**10**
		6 mm	**153268**	**QSC-6H**	**10**
		8 mm	**153269**	**QSC-8H**	**10**
		10 mm	**153270**	**QSC-10H**	**10**
		3/16"	**564785**	**QBC-3/16H-U**	**10**
		1/4"	**564786**	**QBC-1/4H-U**	**10**
		5/16"	**564787**	**QBC-5/16H-U**	**10**
		3/8"	**564788**	**QBC-3/8H-U**	**10**

Accessories

Ordering data Designation			Part No.	Type
Inscription labels				
	For foil Inscription label holder for sub-base, transparent, for paper foil label	Can be used for VMPA1, VMPA2	**533362**	**VMPA1-ST-1-4**
		Can be used for VMPA14	**8085996**	**VMPA14-ST-1-4**
	For IBS Inscription label holder for sub-base, 4-part, for IBS 6x10	Can be used for VMPA1, VMPA2	**544384**	**VMPA1-ST-2-4**
		Can be used for VMPA14	**8085997**	**VMPA14-ST-2-4**
	Inscription labels, 6 x 10 in frames, pack of 64		**18576**	**IBS-6x10**
	Inscription label holder for an inscription label and a cover for the manual override, pack of 10		**570818**	**ASLR-D-L1**
Mounting				
	For H-rail		**526032**	**CPX-CPA-BG-NRH**
	Mounting (for supply plate)		**534416**	**VMPA-BG-RW**
	Mounting (for proportional pressure regulator sub-base)		**558844**	**VMPA-BG**
User documentation				
	MPA pneumatic components	German	**534240**	**P.BE-MPA-DE**
		English	**534241**	**P.BE-MPA-EN**
		French	**534243**	**P.BE-MPA-FR**
		Spanish	**534242**	**P.BE-MPA-ES**
		Italian	**534244**	**P.BE-MPA-IT**
	Manual – MPA electronic components (pneumatic modules, pressure sensors, proportional pressure regulators, etc.)	German	**562112**	**P.BE-MPA-Elektronik-DE**
		English	**562113**	**P.BE-MPA-Elektronik-EN**
		French	**562115**	**P.BE-MPA-Elektronik-FR**
		Spanish	**562114**	**P.BE-MPA-Elektronik-ES**
		Italian	**562116**	**P.BE-MPA-Elektronik-IT**