CPA-SC Valve Manifold

Modularity with High Performance

CPA-SC Valves

- Valve width: 10 mm
- Flow rate: up to 0.15 Cv (150 l/min)
- 2/2-way, 3/2-way, 5/2-way and 5/3-way valve functions
- Inch and metric tubing connections

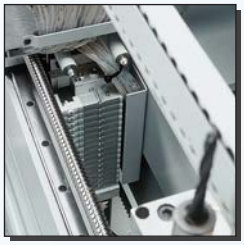
CPA-SC Manifolds with Multipin Connection

- Compact, for tight envelope constraints
- IP40 rated (in assembled state with detented plug)
- 25 pin Sub-D or 26 pin flat cable connector
- 4 to 20 positions on a manifold

CPA-SC Manifolds with Fieldbus Connection

- Comply with ODVA specifications
- IP40 rated (with covered control elements)
- Advanced diagnostic functions for easy maintenance
- CP extension, for an additional 16 I/O signals

Miniaturized Subbase Mounted Valves



Smart Cubic Valve Manifold
Miniaturized subbase mounted valve. Flange mount (all pneumatic connections located in the subbase) or semi-body ported valves (working ports located on valve body), mounted on a PRS manifold or a single subbase.

- Functions: 5/2-way single solenoid, 5/2-way double solenoid, dual 3/2-way normally open, dual 3/2-way normally closed valves, dual 2/2-way valves one normally open and one normally closed, 5/3-way open center, 5/3-way closed center, 5/3-way exhausted center, 3/2-way single valve with separate pressure supply.
- Electrical connections can be made via 25 pin sub-D, 26 pin flat cable connector (latch style) or individual sockets. IP40 degree of protection.
- 24 V DC signal must be provided to actuate valve.
- Manifold supports up to 20 coils on a 10 mm grid.
- Valve subbase and manifold assemblies can be built to customer specifications. Up to 20 valves/ 20 solenoid coils – 24 valves/ 24 solenoid coils with DeviceNet™.

Systematically Modular
The CPA-SC valve platform offers space for as many small in-line and subbase valves as your application requires.

Total Coverage
A feature shared by all the new Festo valve manifolds and valves Type CPA-SC is their total orientation to the needs of the electronics and mechatronics industries: radically reduced in terms of the installation space required, ideally matched to Festo miniature drives.

Festo...Your Automation Partner Worldwide

As a global leader in industrial automation components and systems, with over $1.8 billion sales worldwide, Festo has the resources and application experience to be your long term partner for cost-effective automation solutions.

- 55 independent subsidiaries worldwide
- Representation in 180 countries
- Worldwide networking for consistent standards of products, consultancy, sales and services.
- Worldwide support provided by over 11,000 team members

Festo Quality Assurance, ISO 9001 Certification

Festo Corporation is committed to provide Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

FESTO

UL REGISTERED FIRM
ISO 9001
A4853

All Festo locations within the United States are registered to ISO 9001.

Online Literature
Literature in PDF format is available for download at: www.festo.com/us/CPASC

CPA-SC Type 82 Valve Manifold

FESTO

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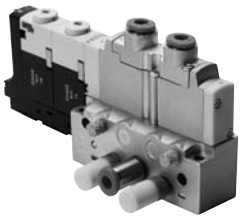
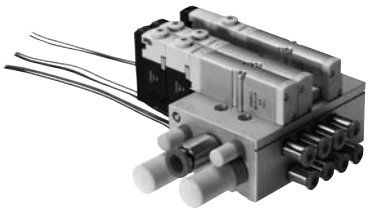
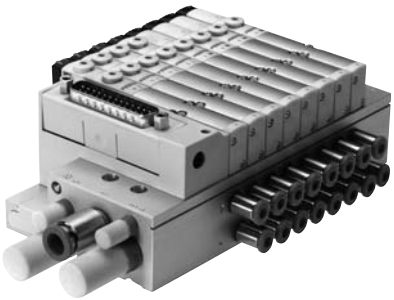


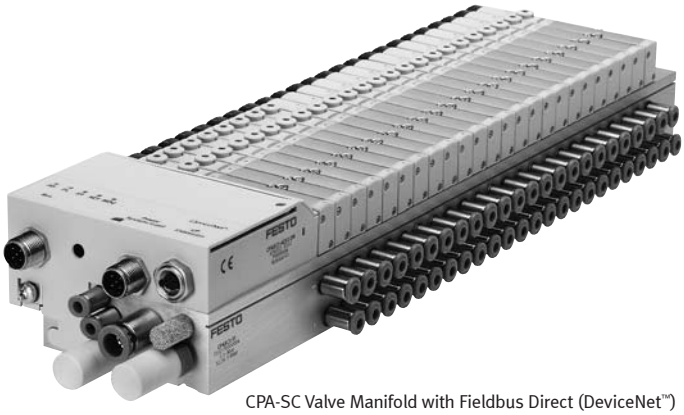
CPA-SC Valve Mounted on an Individual Subbase



CPA-SC Valves Mounted on a Manifold Subbase



CPA-SC Valve Manifold with 25 pin Sub-D Multipin Connection



CPA-SC Valve Manifold with Fieldbus Direct (DeviceNet™)

Features and Benefits

FESTO

Overview

- **Simple connection of pneumatic and electrical components to an automated system**
- **Easy diagnostics and maintenance**
- **Flow rate up to 0.15 Cv (150 l/min)**
- **2/2-way, 3/2-way, 5/2-way, 5/3-way valve functions**
- **IP40 rated**
- **Modular and flexible**
- **Reliable and durable**
- **Competitive pricing**

Flexible

- Compact size
- High flow/size ratio
- A wide range of mounting types (semi-body ported valves, single subbases and manifold subbases) offer the customer a high degree of flexibility in machine design
- Dual valve slices (for example, two 3/2-way valves in a single plate) and all other basic valves (5/2-way and 5/3-way)
- Can choose direction of connectors (from above or from the side)
- When necessary, it is very easy to exchange valves

Reliable

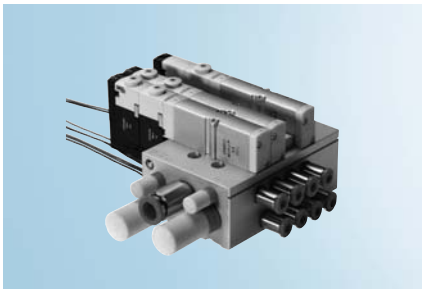
- Manual override facility
- Durable thanks to the use of tried-and-tested piston spool valves
- Sturdy thanks to metal housing and connecting thread
- Fast troubleshooting thanks to LEDs on the valves and diagnosis via fieldbus
- Festo enables designers to incorporate product into their machines avoiding major redesigns
- Catalog specifications reflect true product capability

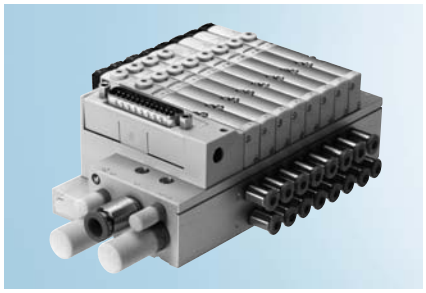
Easy

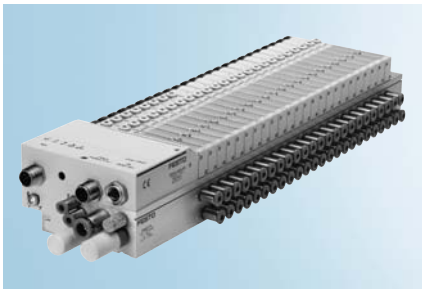
- Easy product selection
- Ready-to-install, and tested manifold
- Room for expansion with 2 to 24 valve positions on one manifold
- Use of individual valves in combination with an individual subbase
- Low operating costs
- Easy to design: 2D or 3D CAD support
- Technical support and comprehensive product documentation

Installation and Maintenance

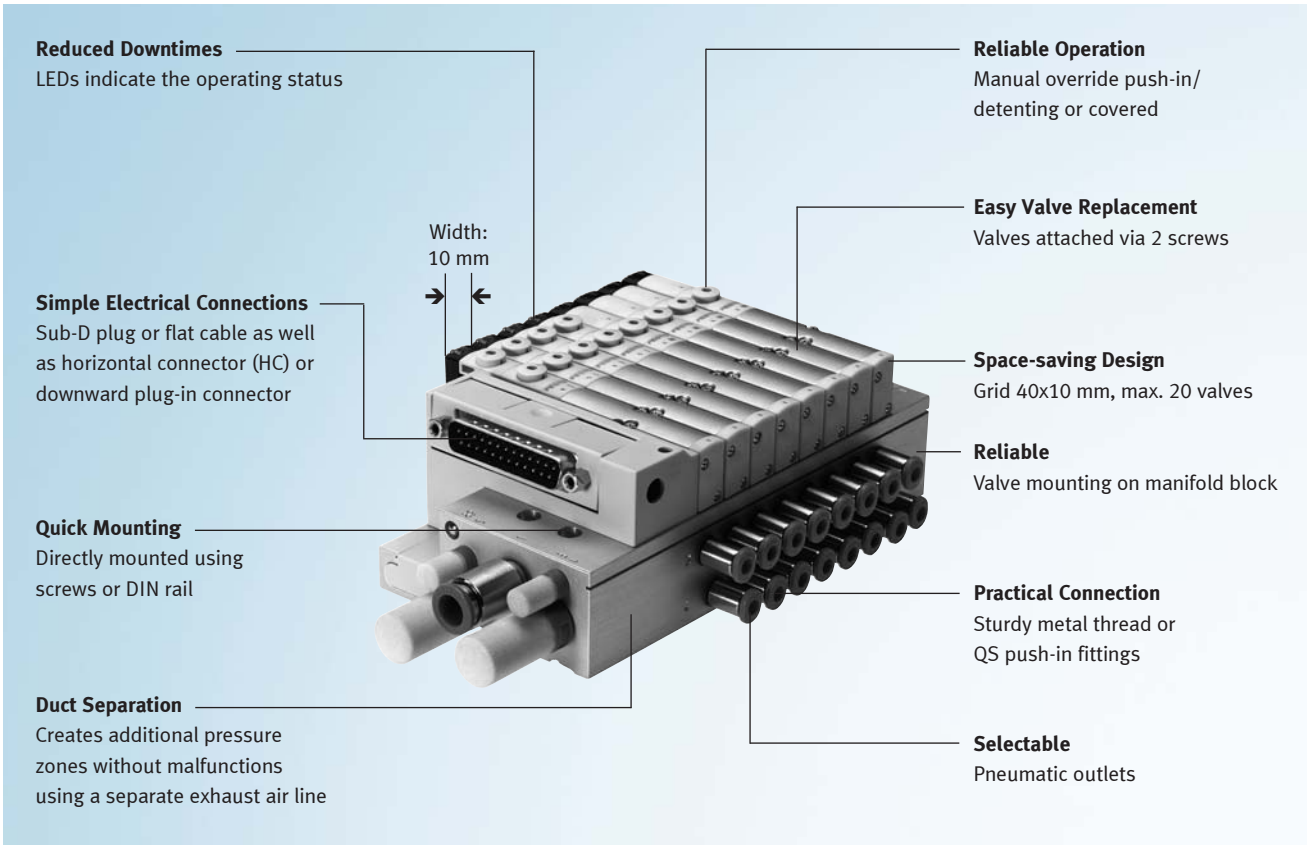
- Components, assemblies or systems from one source to the customer which provides for a simplified and more cost efficient procurement of supplies
- Easy to convert, expand, or replace
- Convenient labeling system
- Rapid error detection with integrated diagnostics
- Straightforward valve replacement
- Replaceable electronics





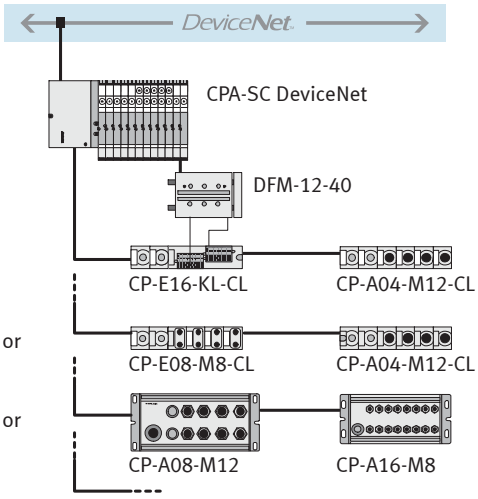


Features and Benefits

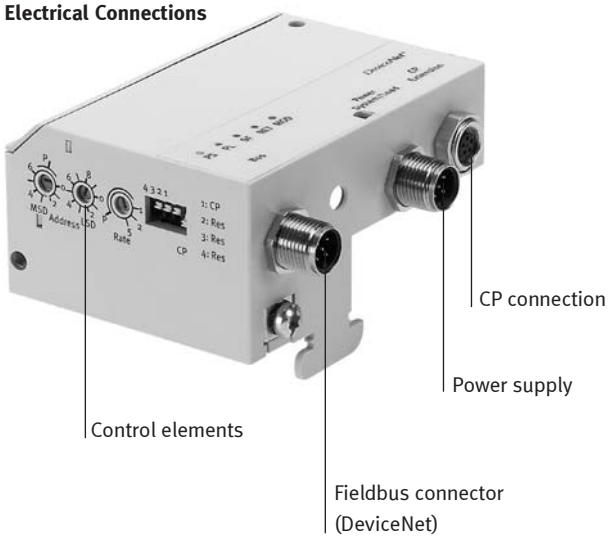


CPA-SC Valve Manifold with DeviceNet Fieldbus Connection

Control Architecture



Electrical Connections



Online Product Configurator

CPA-SC Type 82 Valve Manifolds

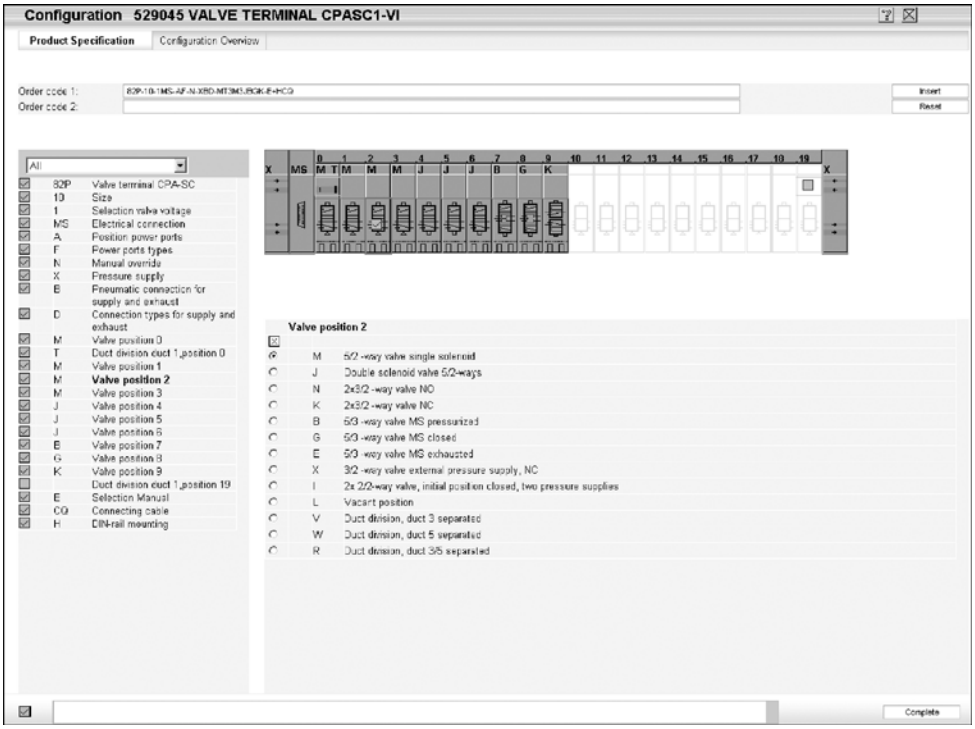
FACE Configurator **Electronic Catalog at www.festo.com/us**

A valve manifold configurator is available to help you configure a suitable CPA-SC valve manifold.

The valve manifolds are fully assembled according to your order specifications and individually tested. This reduces the amount of assembly and installation required to a minimum.

A type 82 valve manifold is ordered via a modular order code.

The ordering system for valve manifolds starts on page 50.



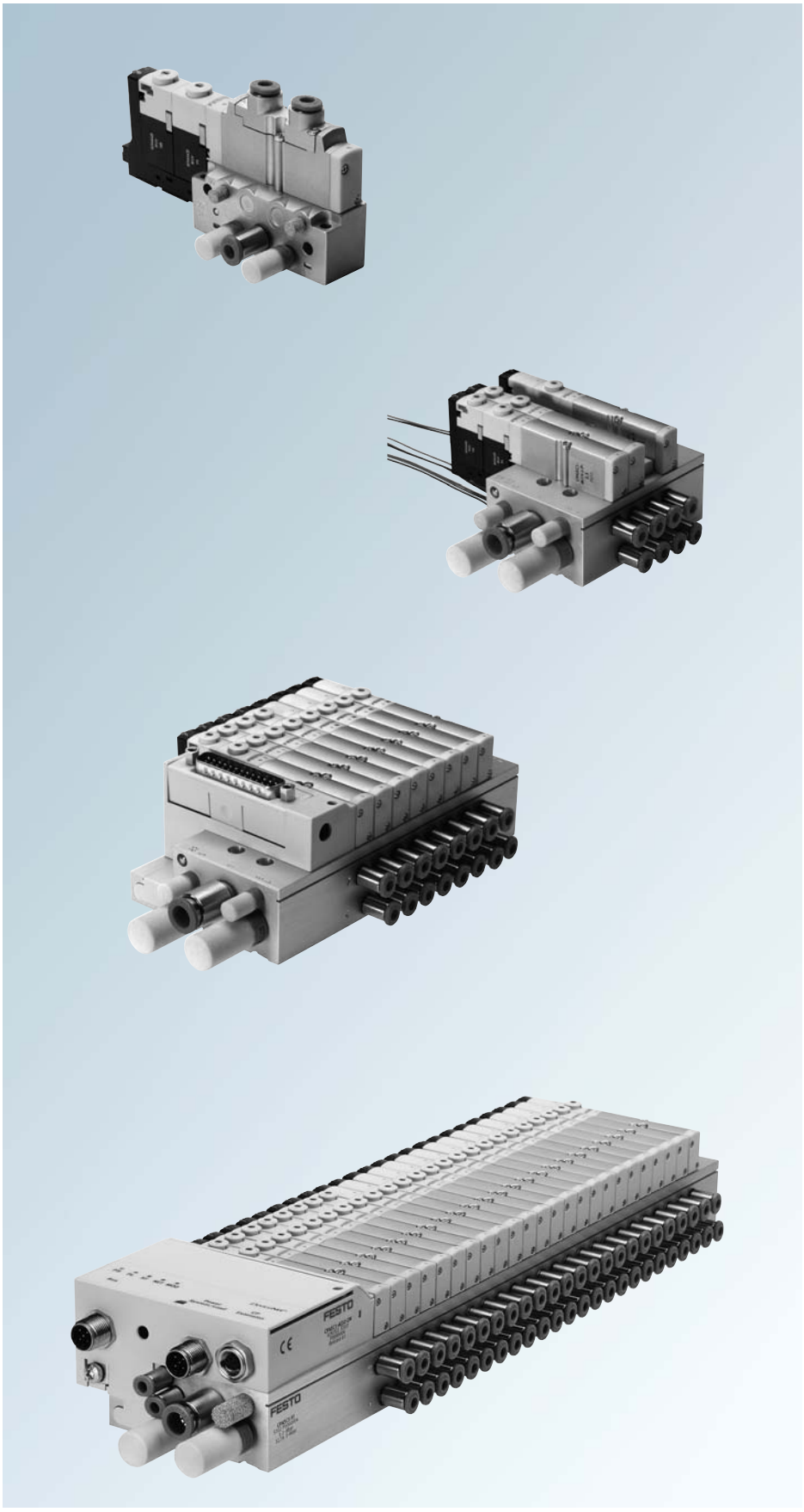
The illustration above provides an example of a valve manifold configuration.

The following steps explain how you use FACE to arrive at the order code.

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

Here you can specify a “Part No.” (e.g. 529045), “Type” (e.g. CPASC1) or “Article designation” (e.g. valve manifold) to find your “Search result”. Click on the blue shopping basket to complete the selected product according to your specifications (this does not initiate an order).

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



Compact size
(valve width 10 mm)

Flow rate up to
0.15 Cv (150 l/min)

High flow/size ratio

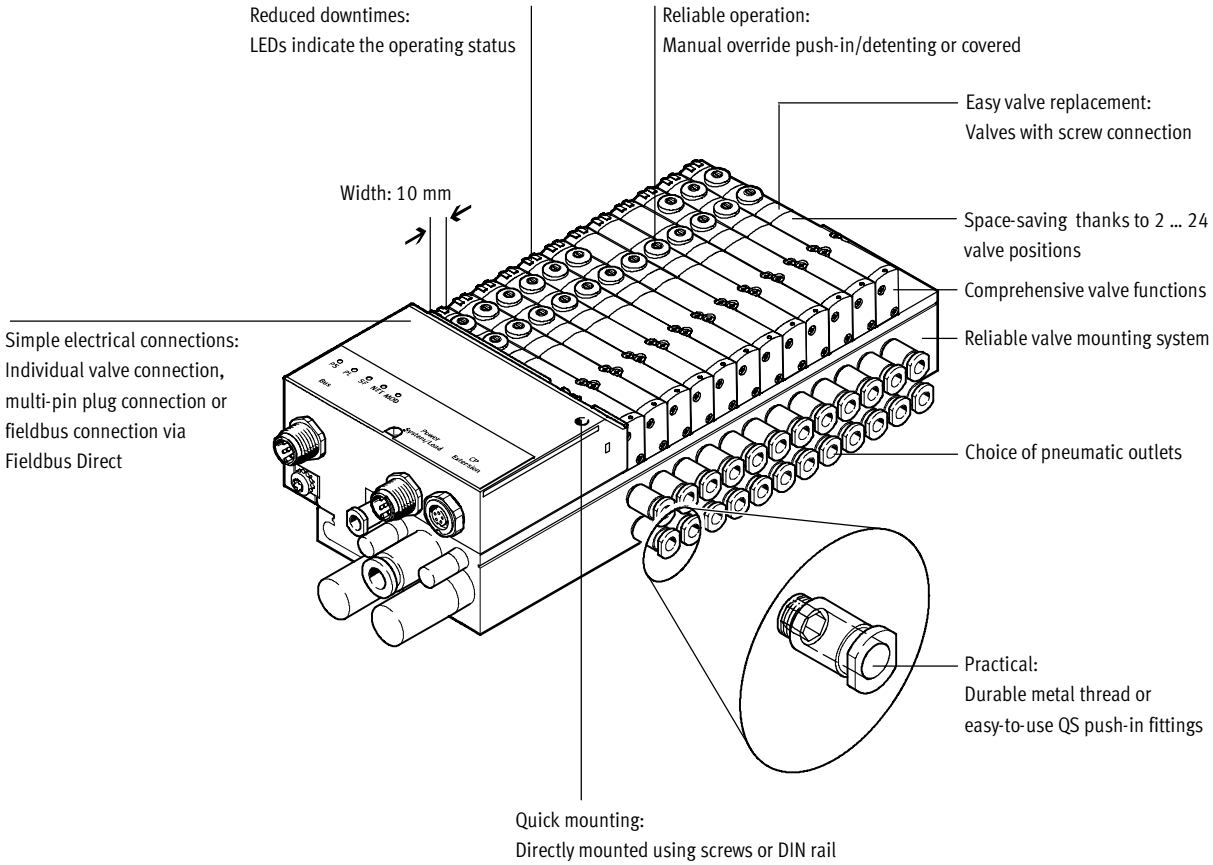
Ready-to-install,
tested manifold

Multipin and fieldbus
connections

Overview

Key Features

Valve Manifold



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
- 5/3-way valve, mid-position pressurized
- 5/3-way valve, mid-position closed
- 5/3-way valve, mid-position exhausted
- 1x 3/2-way valve, normally closed, external compressed air supply
- 2x 2/2-way valve, normally closed, dual compressed air supply

All valves have the same compact dimensions with an overall length of 91 mm and a width of 10 mm. Valves with a height of 40 mm are available for applications requiring particularly flat variants.

Electrical Connection Options

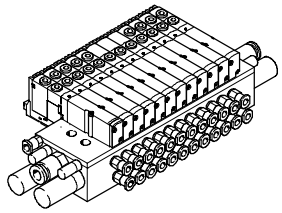
Individual Connection
- Plug-in (PI)
- Horizontal connection (HC)

Individual Subbase Valve
- Plug-in (PI)
- Horizontal connection (HC)

Multipin
- Max. 20 valve positions/ max. 20 solenoid coils
- Sub-D
- Flat cable

Fieldbus
- Max. 24 valve positions/ max. 32 solenoid coils

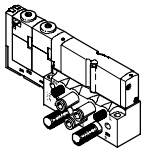
Individual Connection



Connection is independent of the control technology used. This ensures correct polarity during installation.

The valve is equipped with an LED which indicates switching status, and an overvoltage protective circuit. It also features a built-in current reduction circuit.

Individual connection permits the selection of 2 to 32 solenoid coils (divided between 2 to 16 valve positions, including in uneven gradations).



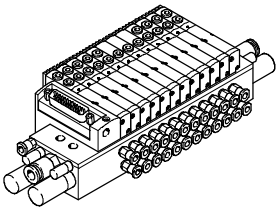
Valves can also be used on a single subbase for actuators further away from the valve manifold.

With an individual electrical connection, the plug is connected directly to the valve. Two electrical connection types are available for the valve manifold and for the single subbase:
- Horizontal connection (HC) or
- Plug-in (PI)

Version SH:
The electrical connection can be plugged in directly on the valve.

Version SP, SQ:
The connector plug is mounted on an adapter. This adapter is then attached to the manifold.

Multipin Plug Connection

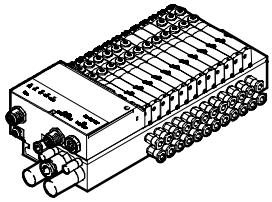


Control signals from the controller to the valve manifold are transmitted via a pre-assembled multi-core cable, which substantially reduces installation time.

These valve manifolds can be fitted with 2 to 20 solenoid coils.

Variants
- Sub-D connection
- Flat cable connection

Fieldbus Direct

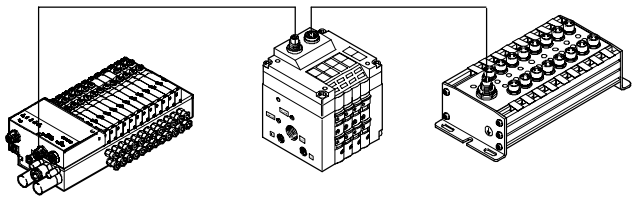


An integrated fieldbus node manages the communication connection to a higher-order PLC. This enables a space-saving pneumatic and electronic solution.

The fieldbus node is directly integrated in the electrical interface of the valve manifold and therefore takes up only a minimal amount of space. The CP string extension option allows the functions and components of the CP installation system to be used.

Valve manifolds with fieldbus interfaces can be equipped with 4 to 24 valve positions and 4 to 32 solenoid coils.
Variants
- DeviceNet connection
- 4 to 32 solenoid coils

CP string Extension



The optional string extension allows an additional valve manifold and I/O modules to be connected to Fieldbus Direct. A CP string of the CP installation system is integrated in the fieldbus node as an extension. Different input and output modules as well as CPV and CPA valve manifolds can be connected.
The max. length of the CP string extends to 10 meters, which means that the extension modules can be mounted directly on-site. All of the required electrical signals are transmitted via the CP cable, which in turn means that no further installation is needed on the extension module.

The CP string interface offers:
- 16 input signals
- 16 output signals for 24 V DC output modules or solenoid coils
- Logic and sensor supply for the input modules
- Logic and sensor supply for the output modules
- Load voltage supply for the valve manifolds
- Logic supply for the output module

➔ See Fieldbus Direct Product Guide (Info 201)

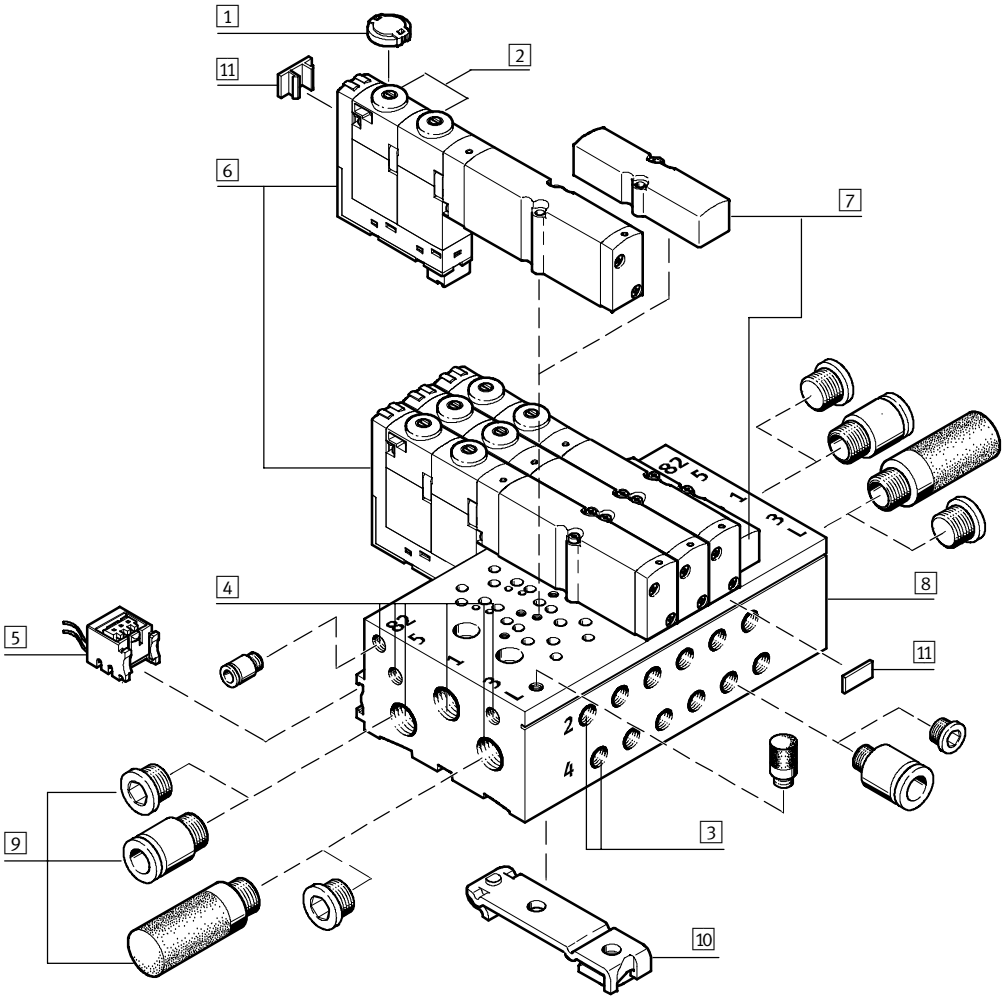
➔ See CP Valve Installation System Product Guide (Info 221)

Manifold with Subbase Valves and Indvidual Plug-in Electrical Connection (PI)

Order Codes: IP, IQ

Valve manifolds with individual plug-in electrical connections are available in sizes for 2 to max. 16 valve positions. Each valve position can either be equipped with a valve or a blanking plate.

With an individual PI connection, the connector plug remains on the manifold block. This avoids the valve being connected incorrectly in the event of a recommissioning.



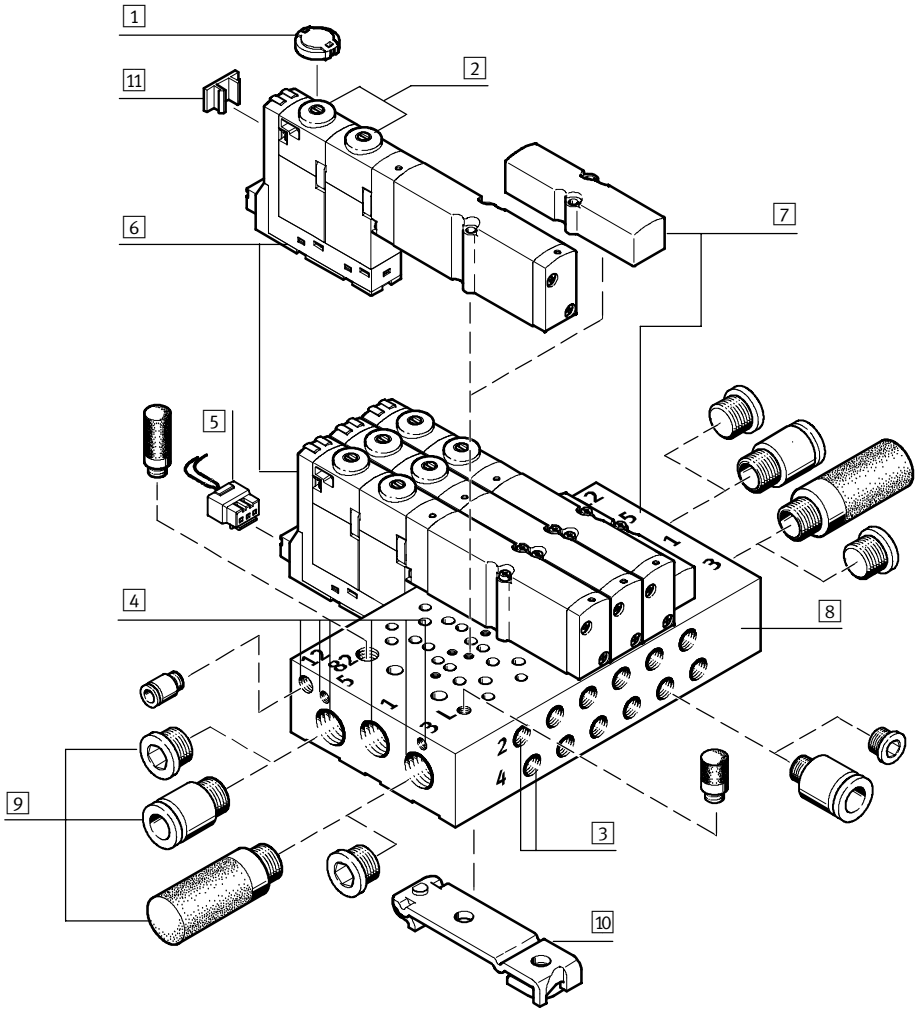
1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the manifold block (per valve position)
4 Supply ports (1, 12/14), exhaust ports (3, 5, 82/84) and pressure compensating port (L) on the left-hand and right-hand side of the manifold
5 Individual plug-in connection (PI)
6 Valve
7 Cover for spare position (blanking plate)
8 Manifold block for subbase valves
9 Connectors, silencers and blanking plugs
10 DIN rail mounting
11 Labels

Manifold with Subbase Valves and Indvidual Horizontal Electrical Connection (HC)

Order Code: IH

Valve manifolds with individual horizontal electrical connections (HC) are available in sizes for 2 to max. 16 valve positions. Each valve position can either be equipped with a valve or a blanking plate.

With an individual horizontal connection, the electrical connection for a valve must be removed when the valve is being replaced.

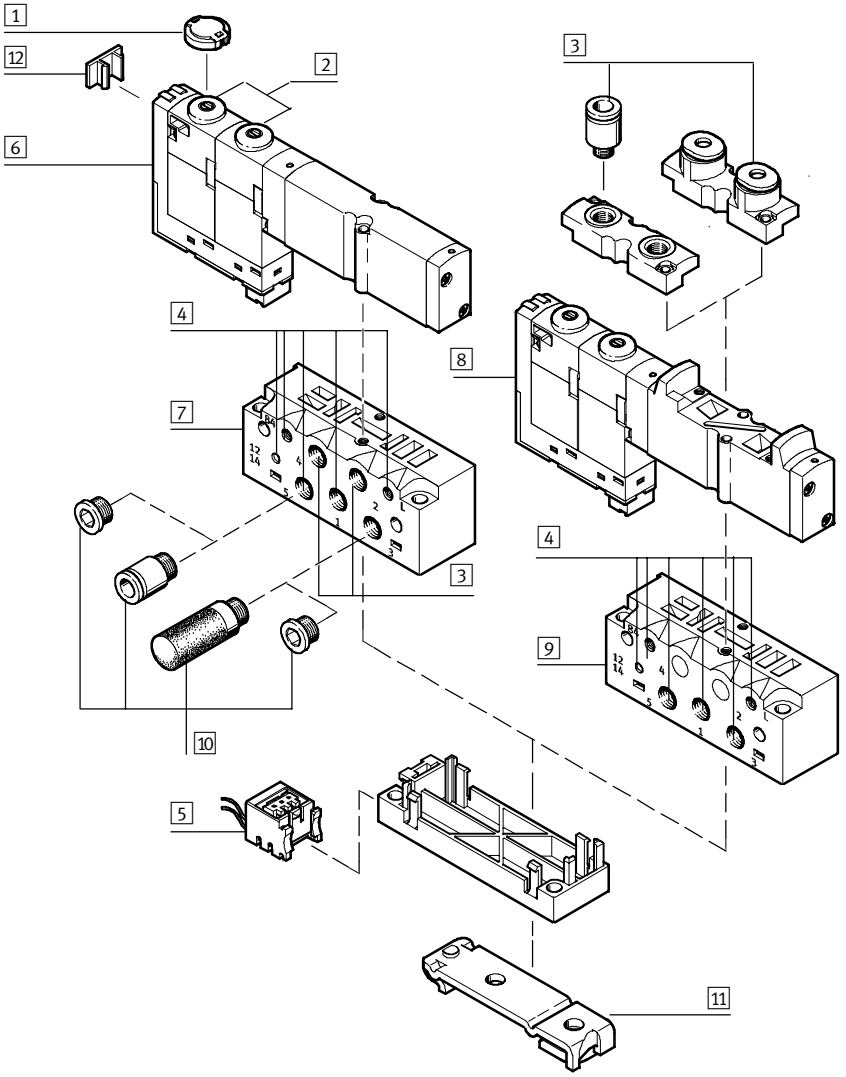


1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the manifold block (per valve position)
4 Supply ports (1, 12/14), exhaust ports (3, 5, 82/84) and pressure compensating port (L) on the left-hand and right-hand side of the manifold
5 Individual horizontal connection (HC)
6 Valve
7 Cover for spare position (blanking plate)
8 Manifold block for subbase valves
9 Connectors, silencers and blanking plugs
10 DIN rail mounting
11 Labels

Single Subbase with Subbase Valve or Semi In-line Valve and Indvidual Plug-in Electrical Connection (PI)

Order Codes: SP, SQ

With an individual PI connection, the connector plug remains on the subbase.

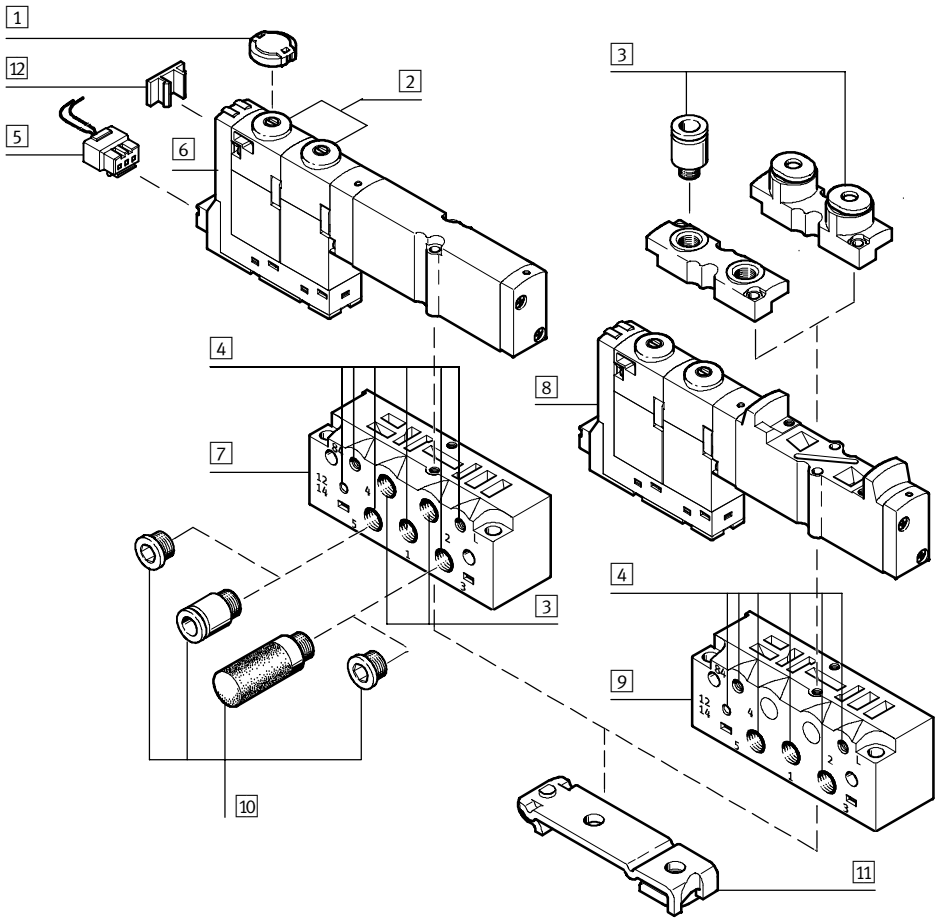


1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the single subbase or on the valve (semi in-line version)
4 Supply ports (1, 12/14), exhaust ports (3, 5, 82/84) and pressure compensating port (L) on the single subbase
5 Individual horizontal connection (HC)
6 Subbase valve
7 Single subbase for subbase valve
8 Semi in-line valve
9 Single subbase for semi in-line valve
10 Connectors, silencers and blanking plugs
11 DIN rail mounting
12 Label

Single Subbase with Subbase Valve or Semi In-line Valve and Indvidual Horizontal Electrical Connection (HC)

Order Code: SH

With an individual horizontal connection, the electrical connection for a valve must be removed when the valve is being replaced.



1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the single subbase or on the valve (semi in-line version)
4 Supply ports (1, 12/14), exhaust ports (3, 5, 82/84) and pressure compensating port (L) on the single subbase
5 Individual horizontal connection (HC)
6 Subbase valve
7 Single subbase for subbase valve
8 Semi in-line valve
9 Single subbase for semi in-line valve
10 Connectors, silencers and blanking plugs
11 DIN rail mounting
12 Label

Manifold with Subbase Valves and Electrical Multipin Connection

- 25-pin Sub-D multipin plug connection
  Code: MS

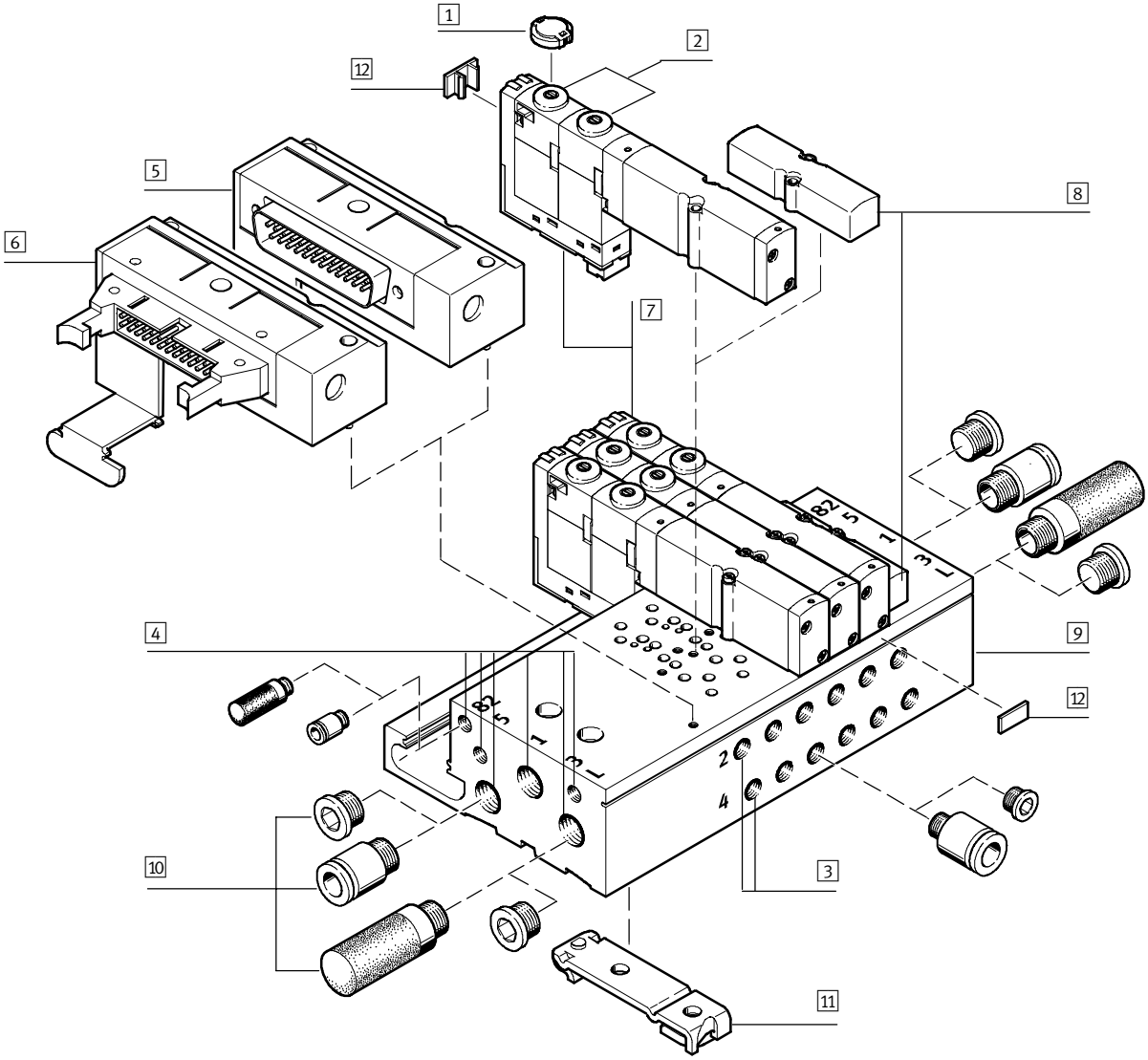
or

- 26-pin multipin plug connection with connector for flat cable
  Code: MF

Valve manifolds with electrical multipin plug connection are available in sizes for 2 to max. 20 valve positions (code: MS) or for 4 to max. 20 valve positions (code: MF). Each valve position can either be equipped with a valve or a blanking plate.

A maximum of 20 valve solenoid coils can be actuated via the electrical multipin plug connection.

The electrical connection is located on the left-hand side. It can be rotated by 90°, thereby allowing flush mounting of the system.



1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the manifold (per valve position)
4 Supply ports (1, 12/14), exhaust ports (3, 5, 82/84) and pressure compensating port (L) on the left-hand and right-hand side of the manifold
5 Sub-D multipin plug connection
6 Multipin plug connection with connector for flat cable
7 Valve
8 Cover for spare position (blanking plate)
9 Manifold block for subbase valves
10 Connectors, silencers and blanking plugs
11 DIN rail mounting
12 Labels

Manifold with Semi In-line Valves and Electrical Multipin Connection

- 25-pin Sub-D multipin plug connection
  Code: MS

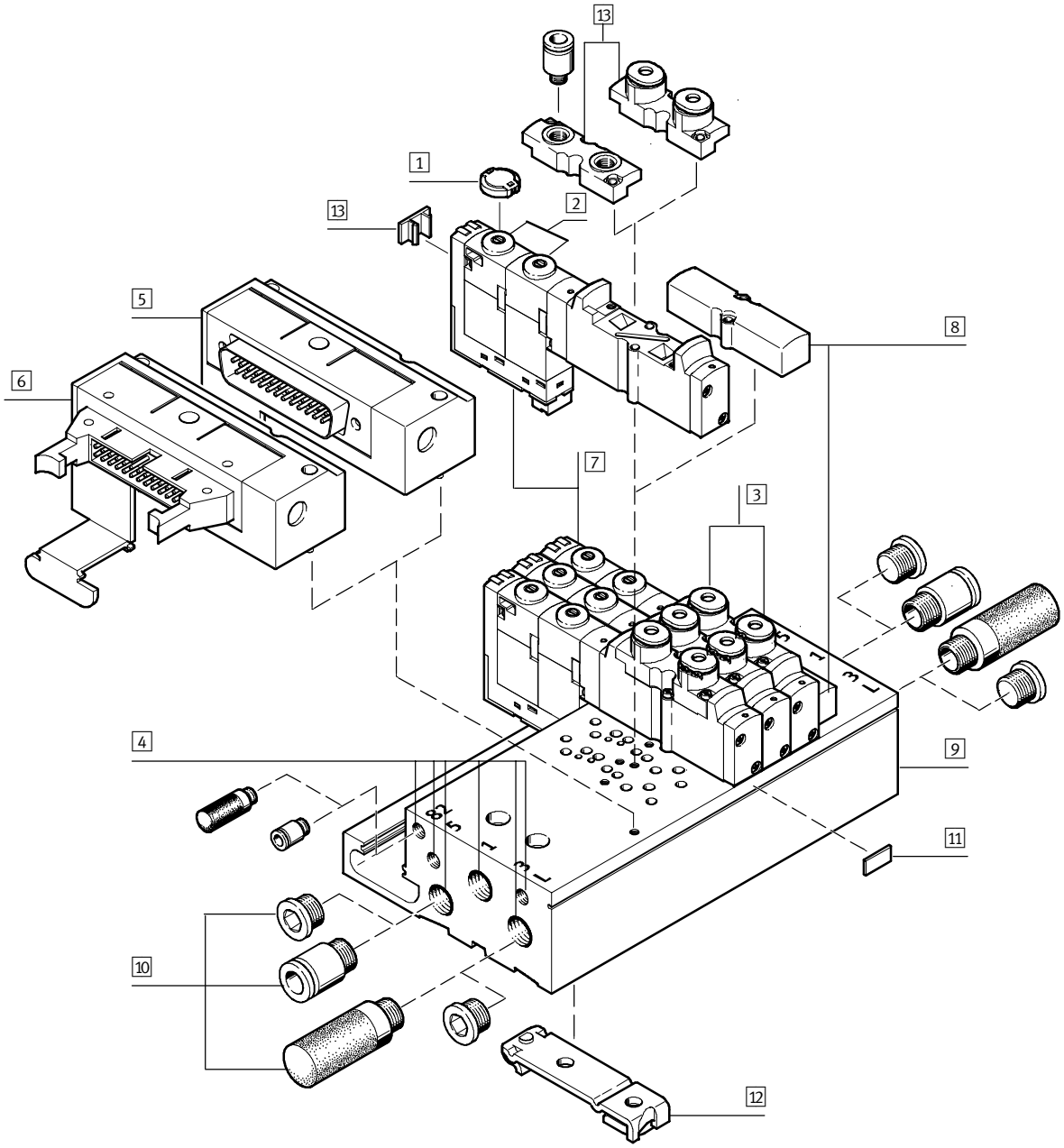
or

- 26-pin multipin plug connection with connector for flat cable
  Code: MF

Valve manifolds with electrical multipin plug connection are available in sizes for 2 to max. 20 valve positions (code: MS) or for 4 to max. 20 valve positions (code: MF). Each valve position can either be equipped with a valve or a blanking plate.

A maximum of 20 valve solenoid coils can be actuated via the electrical multipin plug connection.

The electrical connection is located on the left-hand side. It can be rotated by 90°, thereby allowing flush mounting of the system.



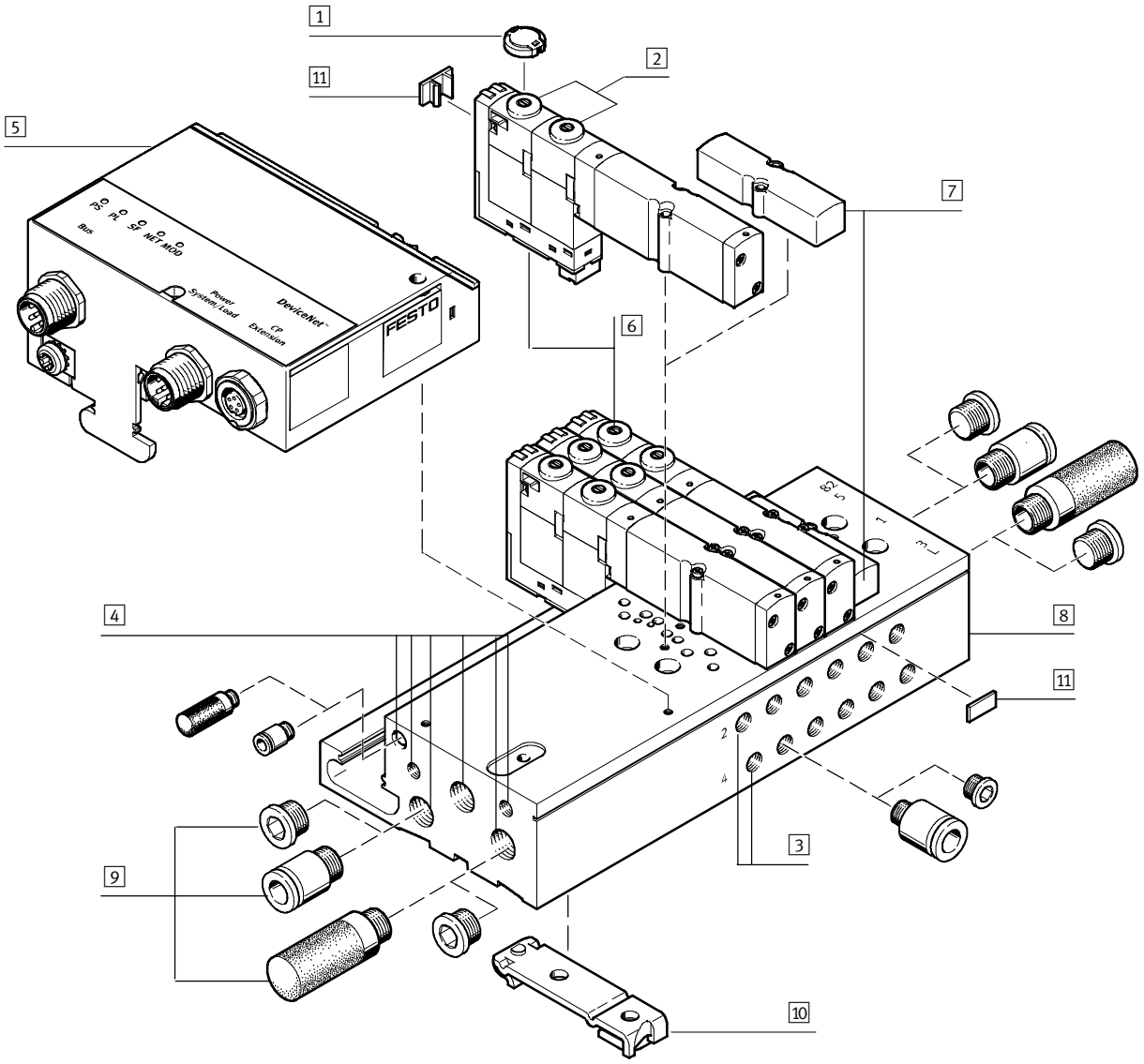
1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the valve
4 Supply ports (1, 12/14), exhaust ports (3, 5, 82/84) and pressure compensating port (L) on the left-hand and right-hand side of the manifold
5 Multipin plug connection Sub-D
6 Multipin plug connection with connector for flat cable
7 Valve
8 Cover for spare position (blanking plate)
9 Manifold block for semi in-line valves
10 Connectors, silencers and blanking plugs
11 Labels
12 DIN rail mounting
13 Pneumatic connection plates for semi in-line valves

Manifold with Subbase Valves and Fieldbus Connection (DeviceNet)

Valve manifolds with fieldbus connection are available in sizes for 4 to max. 24 valve positions.

Each valve position can either be equipped with a valve or a blanking plate.

A maximum of 32 valve solenoid coils can be actuated via the fieldbus connection.



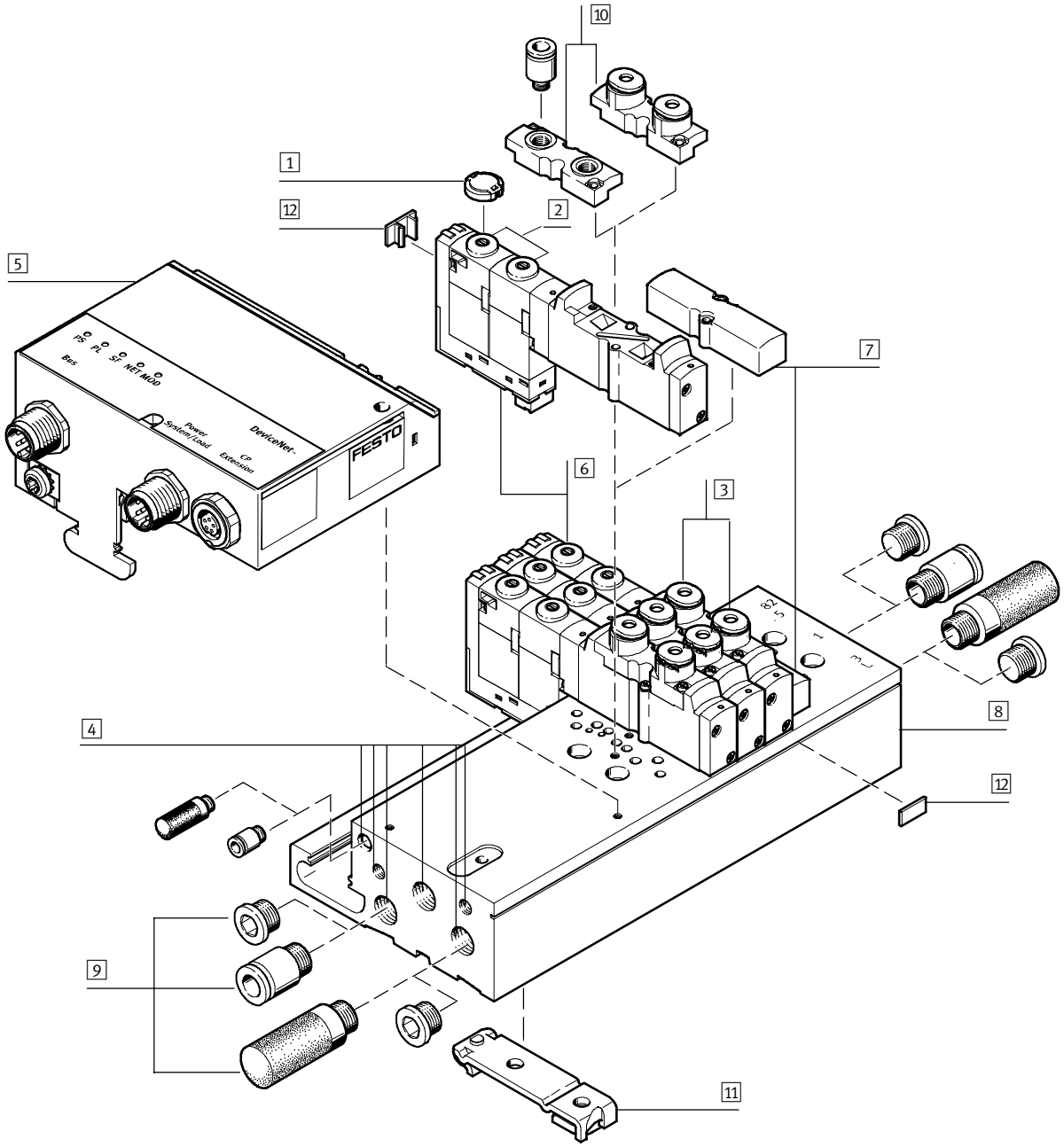
1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the manifold (per valve position)
4 Supply ports (1, 12/14), exhaust ports (3, 5, 82/84) and pressure compensating port (L) on the left-hand and right-hand side of the manifold
5 Fieldbus Direct
6 Valve
7 Cover for spare position (blanking plate)
8 Manifold block for subbase valves
9 Connectors, silencers and blanking plugs
10 DIN rail mounting
11 Labels

Manifold with Semi In-line Valves and Fieldbus Connection (DeviceNet)

Valve manifolds with fieldbus connection are available in sizes for 4 to max. 24 valve positions.

Each valve position can either be equipped with a valve or a blanking plate.

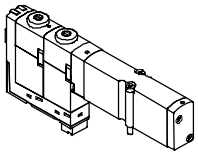
A maximum of 32 valve solenoid coils can be actuated via the fieldbus connection.



1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the valve
4 Supply ports (1, 12/14), exhaust ports (3, 5, 82/84) and pressure compensating port (L) on the left-hand and right-hand side of the manifold
5 Fieldbus Direct
6 Valve
7 Cover for vacant position (blanking plate)
8 Manifold block for semi in-line valves
9 Connectors, silencers and blanking plugs
10 Pneumatic connection plates for semi in-line valves
11 DIN rail mounting
12 Labels

Valves

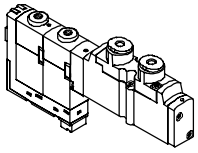
Subbase Valve



Subbase valves can be quickly replaced since the pipe connection remains on the manifold.

This design is also particularly flat.

Semi In-line Valve (With Working Ports on the Valve)



With semi in-line valves the pneumatic connections are on the top. This means that elbow connectors are not needed.

There are subbase valves and semi in-line valves with one solenoid coil (single solenoid) or with two solenoid coils (double solenoid) irrespective of the valve function.

Blanking Plate

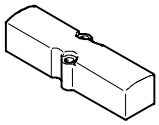
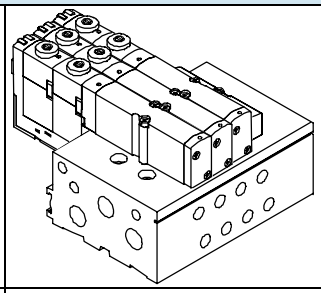
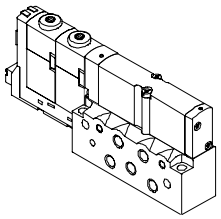
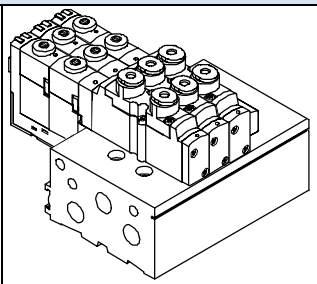
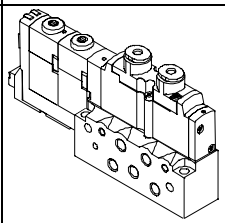


Plate without valve function for reserving valve positions on a valve manifold.

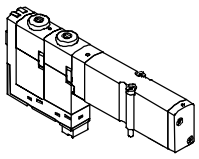
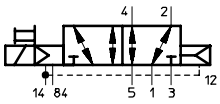
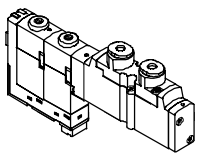
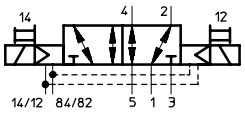
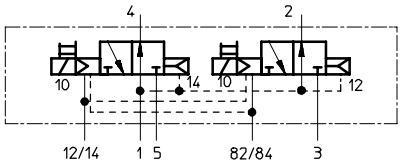
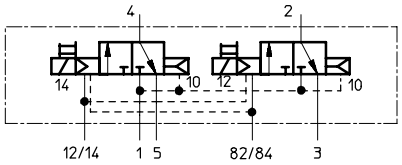
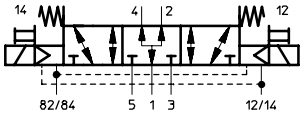
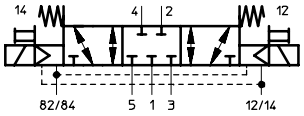
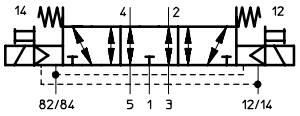
Blanking plates are attached to the manifold block using two screws.

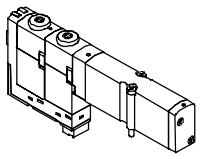
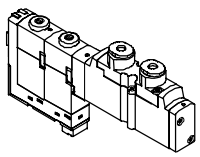
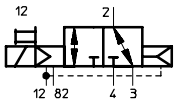
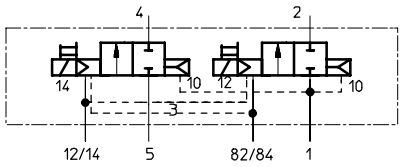
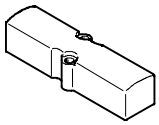
Manifold Subbases		Number of Valve Positions	Connections
Order Code A – Working Lines (2, 4) on the Manifold Block			
Manifold subbase for subbase valves and blanking plates		2 ... 20	■ With working lines (2, 4), M5 threaded hole ■ With ports for supply air (1, 12/14) and exhaust air (3, 5, 82/84) ■ With pressure compensating port (L)
Single subbase for subbase valve		1	
Order Code P – Working Lines (2, 4) on the Valve			
Manifold subbase for semi in-line valves and blanking plates		2 ... 20	■ No working lines ■ With ports for supply air (1, 12/14) and exhaust air (3, 5, 82/84) ■ With pressure compensating port (L)
Single subbase for semi in-line valve		1	

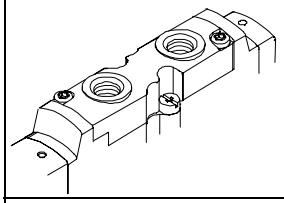
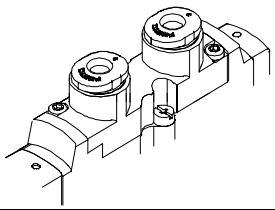
The compressed air supply and exhaust air supply for the valve manifold can either be on the left-hand side or the right-hand side of the valve manifold. Supply at both sides is also possible. Ports that are not required must be sealed with a blanking plug.

An individual subbase is the ideal solution in cramped space conditions. All available valve types can be used with an individual subbase.

Note
Semi in-line valves can also be mounted on manifold blocks for subbase valves. In this case the corresponding working ports on the manifold must be sealed using blanking plugs.

Valves				
	Code	Circuit Symbol	Size 10	Description
	M		■	5/2-way valve, single solenoid Pneumatic spring return
	J		■	5/2-way valve, double solenoid
	N		■	2x 3/2-way valve, single solenoid Normally open Pneumatic spring return
	K		■	2x 3/2-way valve, single solenoid Normally closed Pneumatic spring return
	B		■	5/3-way valve Mid-position pressurized Spring force return The piston rod of a connected cylinder advances when the valve is in the normal position due to the differential piston areas.
	G		■	5/3-way valve Mid-position closed Spring force return The piston rod side of a cylinder remains held under pressure in the normal valve position.
	E		■	5/3-way valve Mid-position exhausted Spring force return The piston rod of a connected cylinder can be moved freely in the normal valve position.

Valves				
	Code	Circuit Symbol	Size 10	Description
 	X		■	1x 3/2-way valve Normally closed, external compressed air supply Pneumatic spring return Compressed air (–0.9 ... +10 bar) supplied at working port 4 can be switched.
	I		■	2x 2/2-way valve Normally closed (operating pressure at 1 or 5), dual compressed air supply (e.g. for vacuum switching with ejector pulse) Pneumatic spring return ■ The vacuum is connected at port 5 ■ Port 14 switches the vacuum ■ Port 12 switches the ejector pulse ■ An external T connection must be established between port 2, port 4, and the vacuum generator
	L		■	Blanking plate for spare position, for valve manifold only.

Working Port		
	Code	Description
	B	M5 threaded connection
	E	QS-3 push-in fitting, 3 mm tubing connection
	F	QS-4 push-in fitting, 4 mm tubing connection

Pneumatic Connection

Supply and Exhaust

The valves are supplied with compressed air via various valve manifold blocks or single subbases.

These contain common lines for compressed air supply, exhausting and pilot exhausts from all valves.

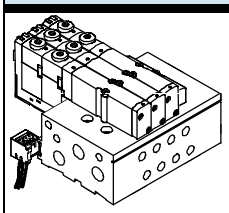
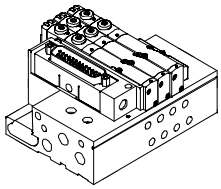
The common lines on a CPA-SC valve manifold can be connected
- At the left (code L)
- At the right (code R) or
- At both ends (code B)

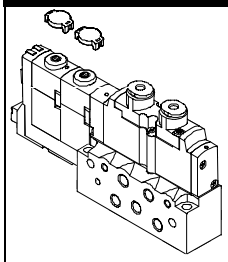
Pilot Air

The CPA-SC valve manifold is suitable for internal or external pilot air.
See Graphs ➔ Page 37

Internal Pilot Air
If the supply pressure for your CPA-SC valve manifold is between 3 and 8 bar, it can be operated with internally distributed pilot air. Pilot air is branched at the left-hand end plate of port 1 for this purpose.

External Pilot Air
If the supply pressure for your CPA-SC valve manifold is between -0.9 and +10 bar, it must be operated with external pilot air. The pilot air is supplied via port 12/14 in this case.

Pneumatic Supply						
With Manifold Block	Code	Connection		Ports for Supply and Exhaust		
				Designation	Code H Metric QS Connection For 8 mm Tubing Type	Code D G⅛ Threaded Connection Type
	Compressed Air Supplied by Means of Internal Pilot Air, Exhausting via Silencer					
	S	1	Compressed air/vacuum supply	Push-in fitting	QS-G⅛-8-I	–
		3/5	Exhaust	Silencer	UC-⅛	–
		12/14	Pilot air	–	–	–
		82/84	Exhaust for pilot air	Silencer	UC-M5	–
		L	Pressure compensation	Silencer	UC-M5	–
	Compressed Air Supplied via External Pilot Air, Exhausting via Silencer					
	T	1	Compressed air/vacuum supply	Push-in fitting	QS-G⅛-8-I	–
		3/5	Exhaust	Silencer	UC-⅛	–
		12/14	Pilot air	Push-in fitting	QSM-M5-4-I	–
		82/84	Exhaust for pilot air	Silencer	UC-M5	–
		L	Pressure compensation	Silencer	UC-M5	–
	Compressed Air Supplied by Means of Internal Pilot Air, Ducted Exhaust					
	V	1	Compressed air/vacuum supply	Push-in fitting	QS-G⅛-8-I	–
		3/5	Exhaust	Push-in fitting	QS-G⅛-8-I	–
		12/14	Pilot air	–	–	–
		82/84	Exhaust for pilot air	Push-in fitting	QSM-M5-4-I	–
		L	Pressure compensation	Silencer	UC-M5	–
	Compressed Air Supplied via External Pilot Air, Ducted Exhaust					
	X	1	Compressed air/vacuum supply	Push-in fitting	QS-G⅛-8-I	–
		3/5	Exhaust	Push-in fitting	QS-G⅛-8-I	–
		12/14	Pilot air	Push-in fitting	QSM-M5-4-I	–
		82/84	Exhaust for pilot air	Push-in fitting	QSM-M5-4-I	–
		L	Pressure compensation	Silencer	UC-M5	–

Pneumatic Supply						
With Single Subbase	Code	Connection		Ports for Supply and Exhaust		
				Designation	Code B M5 Threaded Connection Type	Code F Metric Push-in Fitting QS4 For 4 mm Tubing Type
	Compressed Air Supplied by Means of Internal Pilot Air, Exhausting via Silencer					
	S	1	Compressed air/vacuum supply	Push-in fitting	–	QSM-M5-4-I
		3/5	Exhaust	Silencer	–	UC-M5
		12/14	Pilot air	–	–	–
		82/84	Exhaust for pilot air	Silencer	–	U-M3
		L	Pressure compensation	Silencer	–	U-M3
	Compressed Air Supplied via External Pilot Air, Exhausting via Silencer					
	T	1	Compressed air/vacuum supply	Push-in fitting	–	QSM-M5-4-I
		3/5	Exhaust	Silencer	–	UC-M5
		12/14	Pilot air	Push-in fitting	–	QSM-M3-3-I
		82/84	Exhaust for pilot air	Silencer	–	U-M3
		L	Pressure compensation	Silencer	–	U-M3
	Compressed Air Supplied by Means of Internal Pilot Air, Ducted Exhaust					
	V	1	Compressed air/vacuum supply	Push-in fitting	–	QSM-M5-4-I
		3/5	Exhaust	Push-in fitting	–	QSM-M5-4-I
		12/14	Pilot air	–	–	–
		82/84	Exhaust for pilot air	Push-in fitting	–	QSM-M3-3-I
		L	Pressure compensation	Silencer	–	U-M3
	Compressed Air Supplied via External Pilot Air, Ducted Exhaust					
	X	1	Compressed air/vacuum supply	Push-in fitting	–	QSM-M5-4-I
		3/5	Exhaust	Push-in fitting	–	QSM-M5-4-I
		12/14	Pilot air	Push-in fitting	–	QSM-M3-3-I
		82/84	Exhaust for pilot air	Push-in fitting	–	QSM-M3-3-I
		L	Pressure compensation	Silencer	–	U-M3

Note

Port L compensates the pressure between moving parts inside the valve and the surrounding environment.

A silencer protects against contamination.
Port L must not be sealed by blanking plugs at both ends.

Using Pressure Zones

The CPA-SC valve manifold can be operated with a maximum of 2 pressure zones, supplied either from the left or from the right.

Pressure zones are created by means of separator elements that can be used in the following ducts:

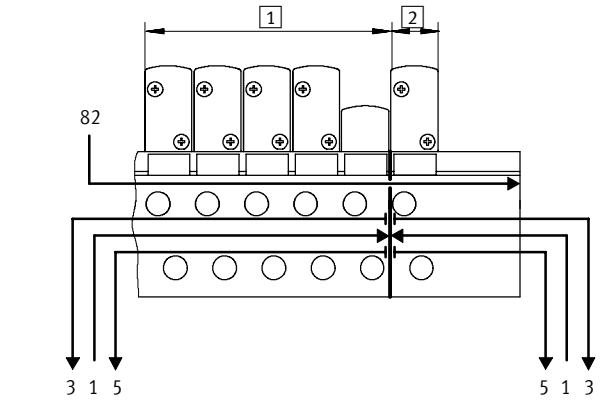
– Supply duct 1 (code T)
and
– Exhaust duct 3 (code V) or
– Exhaust duct 5 (code W) or
– Exhaust duct 3 and 5 (code R)

Note

The addition of a separator element results in the following valve subbases being supplied with less compressed air:

– Valve subbase at the valve position in which the locating pin is inserted
– Valve subbases on the two adjacent valve positions

Duct Separation



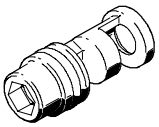
1 Pressure zone 1
2 Pressure zone 2

Code	Description
T	Duct 1 closed
V	Duct 3 closed
W	Duct 5 closed
R	Duct 3/5 closed

Note

The separator element can be mounted using an Allen key.
An assembly tool for long manifolds is available as an accessory.

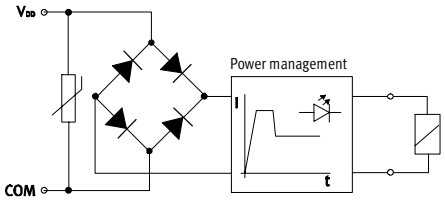
Separator element CPA-SC-KT



Electrical Power as a Result of Current Reduction

Each valve 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.



Individual Electrical Connection

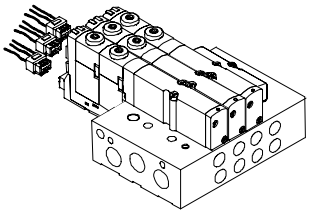
With an individual electrical connection, the plug is connected directly to the valve.

Two individual electrical connection types are available for the valve manifold and for a single subbase:
- Horizontal connection (HC) or
- Plug-in (PI)

Note
Connecting cables with 2- or 3-wires are available for single solenoid valves with one solenoid coil or double solenoid valves with two solenoid coils.

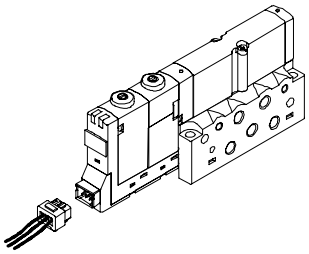
Individual Electrical Connection – Horizontal Connection (HC)

Valves on Manifold Block
Order Code IH



The valve manifold can be configured with 2 to 16 valve positions. This means that 32 valve solenoid coils can be actuated with this type of electrical connection.
The horizontal connection (HC) must be removed when replacing the valve.

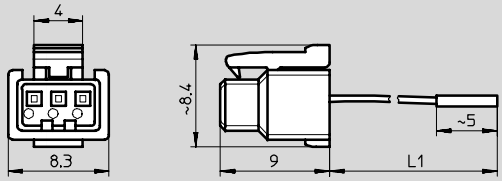
Valve on Single Subbase
Order Code SH



With a single subbase, the electrical connection can be plugged directly into the valve.

Dimensions – Horizontal Connection (HC)

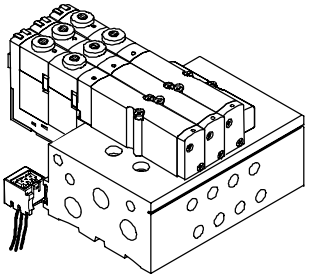
Download CAD data ➔ **www.festo.com/en/engineering**



Type	Code	L1 Cable Length [m]	Number of Valve Solenoid Coils	Cable Color Pin 1 Common	Pin 2 Solenoid Coil 12	Pin 3 Solenoid Coil 14
KMH-0.5	CH	0.5	1 coil	black	–	red
KMH-1	CI	1	1 coil	black	–	red
KMH-2.5	CJ	2.5	1 coil	black	–	red
KMH-5	CK	5	1 coil	black	–	red
KMH-D-0.5	CD	0.5	2 coils	black	blue	red
KMH-D-1	CE	1	2 coils	black	blue	red
KMH-D-2.5	CF	2.5	2 coils	black	blue	red
KMH-D-5	CG	5	2 coils	black	blue	red

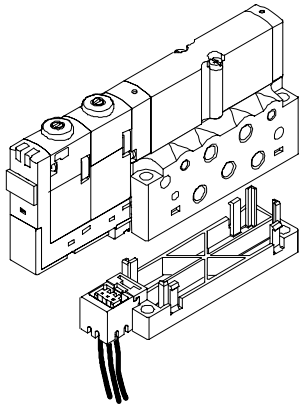
Individual Electrical Connection – Plug-in (PI)

Valves on Manifold Block
Codes IP, IQ



The valve manifold can be configured with 2 to 16 valve positions. This means that 32 valve solenoid coils can be actuated with this type of electrical connection.
The connector plug is inserted into the slot on the manifold block.
To replace a valve or extend the manifold (vacant position), all you need do is loosen two screws; the connector plug remains in the slot.

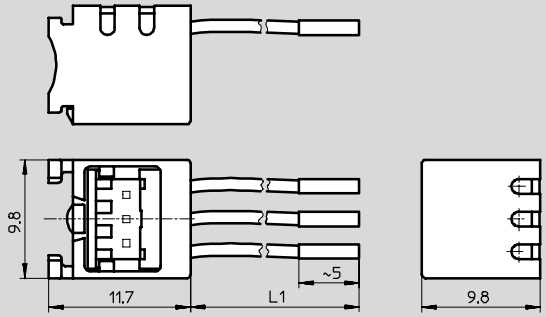
Valve on Single Subbase
Codes SP, SQ



With this electrical connection, the connector plug is mounted on an adapter. This adapter is then attached to the single subbase.

Dimensions – Plug-in Connection (PI)

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



Type	Code	L1 Cable Length [m]	Number of Valve Solenoid Coils	Cable Color Pin 1 Common	Pin 2 Solenoid Coil 12	Pin 3 Solenoid Coil 14
MHAP-PI	–	0.5	1 coil	black	–	red
MHAP-PI-1	–	1	1 coil	black	–	red
MHAP-PI-D-0.5	–	0.5	2 coils	black	blue	red
MHAP-PI-D-1	–	1	2 coils	black	blue	red

Electrical Multipin Plug Connection

The following multipin plug connection types are offered for the CPA-SC valve manifold:

- Sub-D multipin plug connection (25-pin)
- Multipin plug connection with connector for flat cable (26-pin)

Pins 1 ... 20 are used for coils 1 ... 20 in sequence. If there are fewer than 20 coils on the valve manifold, the remaining pins up to 20 remain free. Pins 21 and upwards are reserved for earthed conductors. Four solenoid coils are always combined on an earthed conductor.
This allows individual valve groups to be disconnected separately or a combination of NPN- and PNP-switching valves to be achieved.

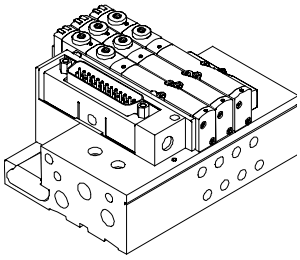
Each pin on the multipin plug can activate just one valve solenoid coil. For a maximum configurable number of 20 valve positions, 20 valves each with a single solenoid coil can be addressed.
With 10 or less valve positions, 2 valve solenoid coils can be addressed per valve. Where there are more than 12 valve positions, the number of available valve positions for valves with two solenoid coils is reduced (➔ See table below).

Example:
With 16 valve positions, valves with one or two solenoid coils can be actuated on the first four (0 ... 3) positions. Valves with only one solenoid coil are permitted at positions 4 ... 15.

Address/ Solenoid Coil	Number of the Valve Position																			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1				
20	2	2	2	2	2	2	2	2	1	1	1	1								
20	2	2	2	2	2	2	2	2	2	2										
16	2	2	2	2	2	2	2	2												
12	2	2	2	2	2	2														
8	2	2	2	2																

Electrical Multipin Plug Connection – Sub-D

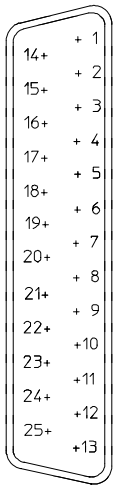
Order Code: MS



With this electrical connection option, all valves are actuated centrally via the 25-pin plug connector.

The electrical connection is located on the left-hand side and can be turned 90°.

Pin Allocation – Connector for Sub-D, 25-pin Cable

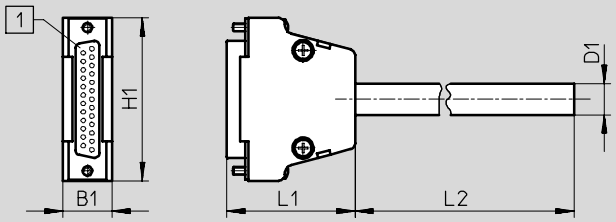


Pin	Address/ Solenoid Coil	Core Color[2] KMP6-25P-12	Core Color[2] KMP6-25P-25	Valve Positions[1] 2	4	6	8	10	12	16	20
				Valve Position No./Coil Designation							
1	0	White	White	0/14	0/14	0/14	0/14	0/14	0/14	0/14	0/14
2	1	Brown	Brown	0/12	0/12	0/12	0/12	0/12	0/12	0/12	1/14
3	2	Green	Green	1/14	1/14	1/14	1/14	1/14	1/14	1/14	2/14
4	3	Yellow	Yellow	1/12	1/12	1/12	1/12	1/12	1/12	1/12	3/14
5	4	Gray	Gray		2/14	2/14	2/14	2/14	2/14	2/14	4/14
6	5	Pink	Pink		2/12	2/12	2/12	2/12	2/12	2/12	5/14
7	6	Blue	Blue		3/14	3/14	3/14	3/14	3/14	3/14	6/14
8	7	Red	Red		3/12	3/12	3/12	3/12	3/12	3/12	7/14
9	8	Black	Black			4/14	4/14	4/14	4/14	4/14	8/14
10	9	Purple	Purple			4/12	4/12	4/12	4/12	5/14	9/14
11	10	Gray-pink	Gray-pink			5/14	5/14	5/14	5/14	6/14	10/14
12	11	Red-blue	Red-blue			5/12	5/12	5/12	5/12	7/14	11/14
13	12	–	White-green				6/14	6/14	6/14	8/14	12/14
14	13	–	Brown-green				6/12	6/12	6/12	9/14	13/14
15	14	–	White-yellow				7/14	7/14	7/14	10/14	14/14
16	15	–	Yellow-brown				7/12	7/12	7/12	11/14	15/14
17	16	–	White-green					8/14	8/14	12/14	16/14
18	17	–	Brown-green					8/12	9/14	13/14	17/14
19	18	–	White-yellow					9/14	10/14	14/14	18/14
20	19	–	Yellow-brown					9/12	11/14	15/14	19/14
21	com	–	White-blue	Coil 16 ... 19							
22	com	–	Brown-blue	Coil 12 ... 15							
23	com	White-green	White-red	Coil 8 ... 11							
24	com	Brown-green	Brown-red	Coil 4 ... 7							
25	com	White-yellow	White-black	Coil 0 ... 3							
No. of Solenoid Coils				4	8	12	16	20	20	20	20

1) Gray boxes indicate double solenoid valve assignments.
2) As per IEC 757

Dimensions – Sub-D Plug with Cable

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

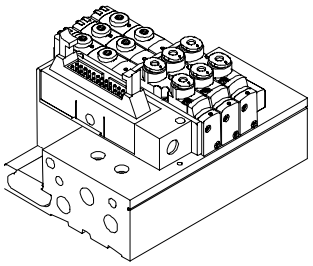


1 25-pin plug

Type	Code	B1 [mm]	D1 [mm]	H1 [mm]	L1 [mm]	L2 [m]
KMP6-25P-20-2.5	CP	16	10.3	53.4	37.7	2.5
KMP6-25P-20-5	CQ	16	10.3	53.4	37.7	5
KMP6-25P-20-10	CR	16	10.3	53.4	37.7	10
KMP6-25P-12-2.5	CV	16	8.5	53.4	37.7	2.5
KMP6-25P-12-5	CW	16	8.5	53.4	37.7	5
KMP6-25P-12-10	CX	16	8.5	53.4	37.7	10

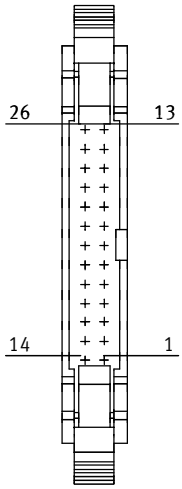
Electrical Multipin Plug Connection – Connector for Flat Cable

Order Code MF



With this electrical connection option, all valves are actuated centrally via the 26-pin plug connector. The electrical connection is located on the left-hand side and it can be turned 90°.

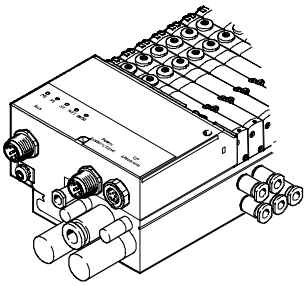
Pin Allocation – Connector for Flat Cable



Pin	Address/ Solenoid Coil	Valve Positions[1]						
		4	6	8	10	12	16	20
		Valve Position No./Coil Designation						
1	0	0/14	0/14	0/14	0/14	0/14	0/14	0/14
2	1	0/12	0/12	0/12	0/12	0/12	0/12	1/14
3	2	1/14	1/14	1/14	1/14	1/14	1/14	2/14
4	3	1/12	1/12	1/12	1/12	1/12	1/12	3/14
5	4	2/14	2/14	2/14	2/14	2/14	2/14	4/14
6	5	2/12	2/12	2/12	2/12	2/12	2/12	5/14
7	6	3/14	3/14	3/14	3/14	3/14	3/14	6/14
8	7	3/12	3/12	3/12	3/12	3/12	3/12	7/14
9	8		4/14	4/14	4/14	4/14	4/14	8/14
10	9		4/12	4/12	4/12	4/12	5/14	9/14
11	10		5/14	5/14	5/14	5/14	6/14	10/14
12	11		5/12	5/12	5/12	5/12	7/14	11/14
13	12			6/14	6/14	6/14	8/14	12/14
14	13			6/12	6/12	6/12	9/14	13/14
15	14			7/14	7/14	7/14	10/14	14/14
16	15			7/12	7/12	7/12	11/14	15/14
17	16				8/14	8/14	12/14	16/14
18	17				8/12	9/14	13/14	17/14
19	18				9/14	10/14	14/14	18/14
20	19				9/12	11/14	15/14	19/14
21 (free)	–	–						
22	com	Coil 16 ... 19						
23	com	Coil 12 ... 15						
24	com	Coil 8 ... 11						
25	com	Coil 4 ... 7						
26	com	Coil 0 ... 3						
No. of solenoid coils		8	12	16	20	20	20	20

1) Gray boxes indicate double solenoid valve assignments.

Fieldbus Direct (DeviceNet)



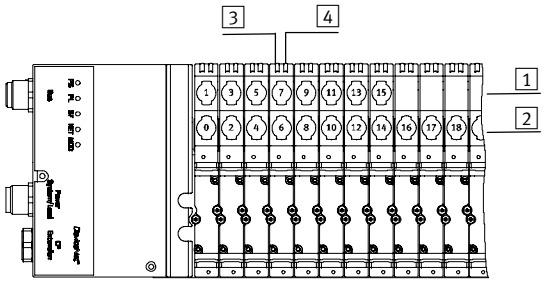
Fieldbus Direct is a system for the compact connection of a valve manifold of various size to different fieldbus standards.

The CP string extension option allows the functions and components of the CP installation system to be used.

The I/O modules and cables for the CP string extension are ordered using the order code for the CP installation system.

➔ See CP Valve Installation System Product Guide (Info 221)

Address Allocation – Solenoid Coils



1 Valve solenoid 12
2 Valve solenoid 14
3 LED valve solenoid 12
4 LED valve solenoid 14

The addresses of the valve solenoids on the CPA-SC-DN are allocated from left to right, while the addresses of the individual valve positions are allocated from front to back.

Example:
Valve manifold where the first 8 valve positions are prepared for 2 solenoids each.

Each valve position can actuate one or two solenoid coils depending on the configuration (number of valve positions and internal wiring). It then occupies one or two addresses. The internal wiring cannot be changed.

The number of addresses each valve position occupies has nothing to do with what is actually mounted on the valve position (valve, blanking plate).

If a valve position for 2 addresses is actually equipped with two solenoid coils, the following allocation applies:
- Valve solenoid 14 occupies the less significant address
- Valve solenoid 12 occupies the more significant address

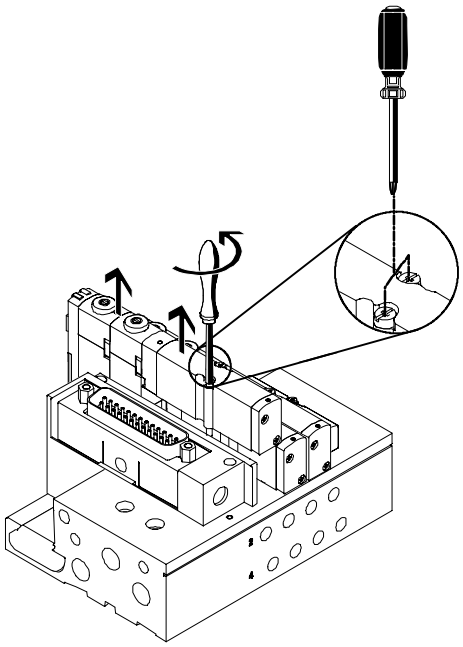
If a valve position for 2 addresses is equipped with only one solenoid coil, the more significant address remains unused. The valve position occupies two addresses nonetheless.

Address/ Solenoid Coil	Number of the Valve Position																							
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
32	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
32	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	–	–	–	–
32	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	–	–	–	–	–	–	–	–
24	2	2	2	2	2	2	2	2	2	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–
20	2	2	2	2	2	2	2	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
16	2	2	2	2	2	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
12	2	2	2	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	2	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Valves

Valve Replacement
The valves are attached to the metal manifold block using two screws. This means that they can be easily replaced.

Extension
Spare positions can be replaced by valves at a later date. The dimensions, mounting points and existing pneumatic installations remain unchanged by this. Valve codes (M, J, N, K, B, G, E, X, I) are located on the front of the valves beneath the manual override.



Note

Plug-in Versions
If a spare position is replaced by a valve, a plug-in socket must also be ordered and inserted into the slot.

When ordering an HC manifold, you must determine the number and length of connecting cable you need and specify them in the order code.

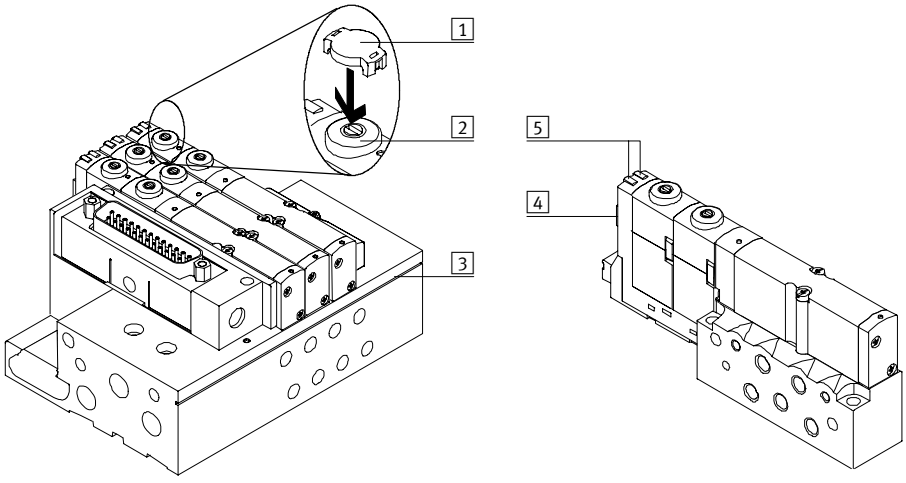
Multipin Plug and Individual Valve Connection

Each valve solenoid coil is allocated an LED which indicates its operating status. Labels (type IBS-6x10) can be applied to each valve for labeling purposes. Alternatively labels (type MH-BZ-80x) can also be affixed to the slot on the manifold block.

The manual override (MO) allows the valve to be switched when in the electrically non-activated or de-energized status. The valve is switched by pushing the manual override. The set switching status can also be secured by rotating the manual override.

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

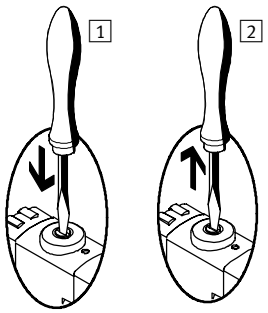
Note
A manually actuated valve (manual override) cannot be reset electrically. Conversely, an electrically actuated valve cannot be reset using the mechanical manual override.



1 Cover for manual override (code V or accessory CPA-SC-MO-V)
2 Optional manual override (pushing and detenting by turning with a screwdriver)
3 Slot for labels type MH-BZ-80x
4 Location for valve label type ISB-6x10
5 LED signal status display per solenoid coil

Manual Override (MO)

Manual Override with Automatic Return (Push-in)

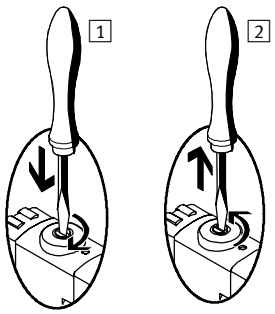


1 Press in the stem of the MO with a pin or screwdriver.
⇢ Valve is in switching position

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

Manual Override (MO)

Manual Override with Lock (Turning with Detent)



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

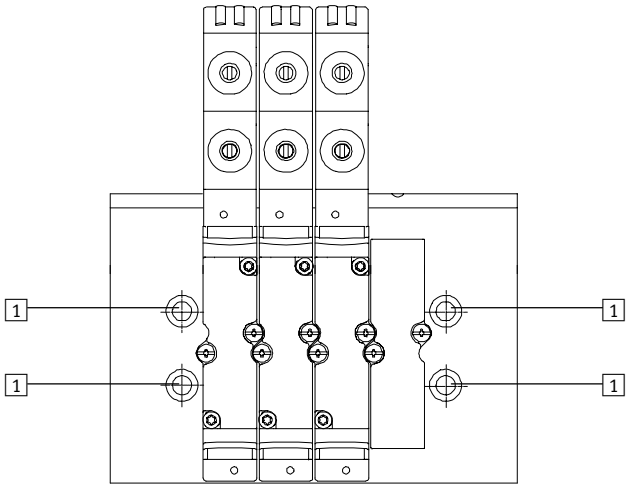
2 Turn the stem counterclockwise 90° until the stop is reached and then remove the screwdriver.
Spring force pushes the stem of the MO back.
⇢ Valve returns to initial position (not with double solenoid valve code J).

Mounting – Valve Manifold

Sturdy manifold attachment thanks to the following:

- Four through-holes for wall mounting
- Integrated attachment for DIN rail mounting

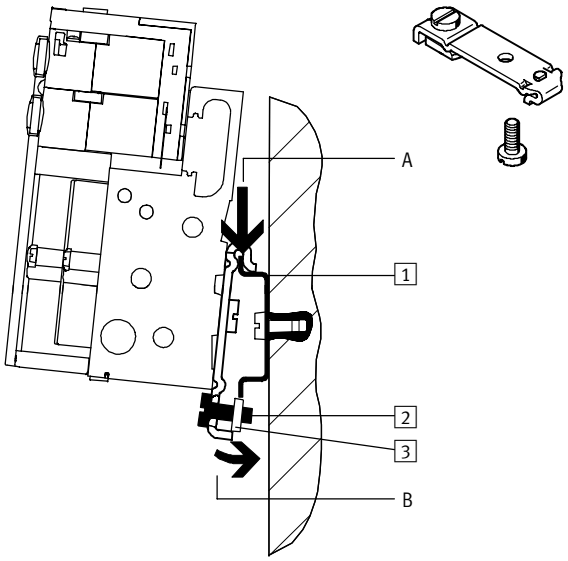
Wall Mounting



The CPA-SC valve manifold is screwed onto the mounting surface using four M4 screws.

[1] Holes for wall mounting

Din Rail Mounting



The CPA-SC valve manifold is attached to the DIN rail (see arrow A).
The CPA-SC valve manifold is then hinged on the DIN rail and secured in place with the clamping component (see arrow B).

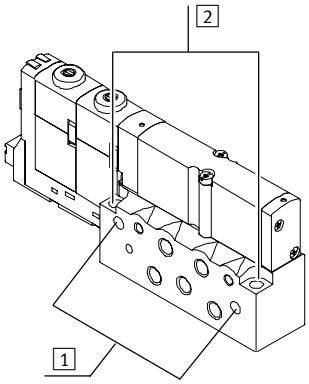
For DIN rail mounting of the CPA-SC valve manifold, you will need the mounting kit CPA-BG-NRH. This permits mounting of the valve manifold on a DIN rail to EN 60715.

[1] DIN rail
[2] Self-tapping M4x10 screw of the DIN rail clamping unit
[3] Clamping component of the DIN rail clamping unit

Mounting – Single Subbase

The single subbase for wall mounting is designed for integration into a system or machine.

Wall Mounting



Mounting Holes
1 Horizontal mounting
2 Vertical mounting

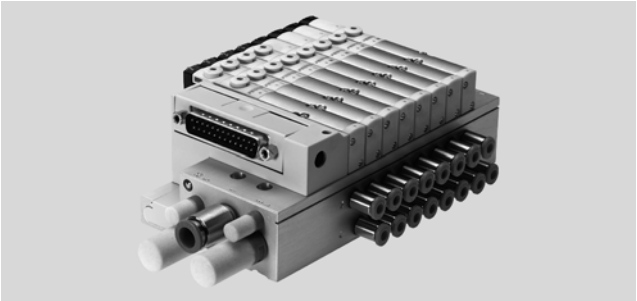
Technical Data

Pneumatic

Flow Rate: 150 l/min

Width: 10 mm

Voltage: 24 V DC

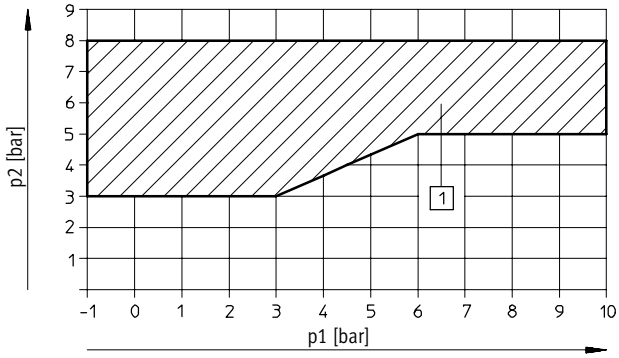


General Technical Data										
Valve		5/2-way Valve		2x 3/2-way Valve		5/3-way Valve			1x 3/2-way Valve	2x 2/2-way Valve
				Normally		Mid-position			Normally	
		Single Solenoid	Double Solenoid	Open	Closed	Pressurized	Closed	Exhausted	Closed	Closed
Valve Function Ordering Code		M	J	N	K	B	G	E	X	I
Design		Electromagnetically actuated piston spool valve								
Width	[mm]	10								
Nominal diameter	[mm]	2.5								
Lubrication		Lubricated for life, PWIS-free (free of paint-wetting impairment substances)								
Type of mounting		Wall mounting								
		On DIN rail to EN 60715								
Assembly position		Any								
Manual override		Pushing/detented by turning								
Pneumatic Connections										
Pneumatic connection		Via manifold block, PRS manifold or individual connection								
Supply port	1	G⅛ (M5 with individual block)								
Exhaust port	3/5	G⅛ (M5 with individual block)								
Working lines	2/4	Depending on the connection type selected Metric ■ M5 ■ QS-3 ■ QS-4 Inch ■ QS-1/8 ■ QS-5/32								
Pilot air port	12/14	M5 (M3 with individual block)								
Pilot exhaust air port	82/84	M5 (M3 with individual block)								
Pressure compensating port	L	M5, M3								

Operating Pressure [bar]									
Valve Function Ordering Code	M	J	N	K	B	G	E	X	I
With internal pilot air supply	+3 ... +8								
With external pilot air supply	–0.9 ... +10		+3 ... +10		–0.9 ... +10				+3 ... +10

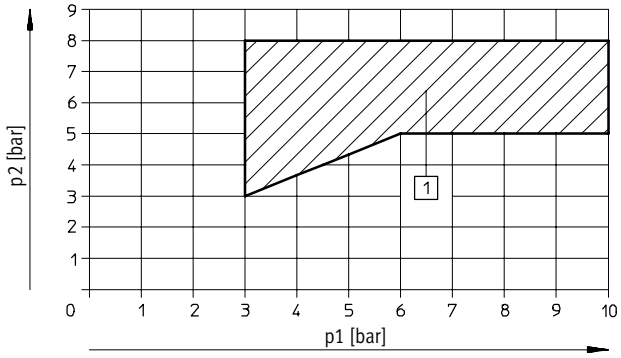
Pilot Pressure p2 as a Function of Working Pressure p1 with External Pilot Air Supply

For Valve Subbases with Code M, J, B, G, E, X



1 Operating range for valves with external pilot air supply

For Valve Subbases with Code N, K, I



1 Operating range for valves with external pilot air supply

Valve Response Times [ms]										
Valve Function Ordering Code		M	J	N	K	B	G	E	X	I
Response times	On	10	–	10	10	10	10	10	10	10
	Off	20	–	20	20	25	25	25	20	20
	Changeover	–	10	–	–	–	–	–	–	–

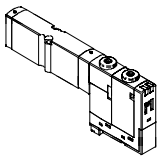
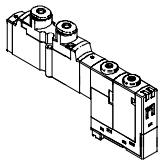
Operating and Environmental Conditions										
Valve Function Ordering Code		M	J	N	K	B	G	E	X	I
Operating medium		Filtered compressed air, lubricated or unlubricated, inert gases								
Grade of filtration	[µm]	40								
Ambient temperature	[°C]	–5 … +60		–5 … +40[2)]		–5 … +60				–5 … +40[2)]
Ambient temperature with DeviceNet connection	[°C]	–5 … +50		–5 … +40[2)]		–5 … +50				–5 … +40[2)]
Storage temperature	[°C]	–20 … +40								
Corrosion resistance class CRC[1)]		1								

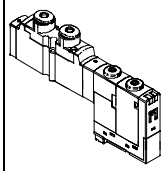
1) Corrosion resistance class 1 according to Festo standard 940070. Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

2) Restricted ambient temperature in case of two permanently activated solenoid coils per valve location, otherwise same temperature range as ordering code M.
Restricted ambient temperature in case of fieldbus connection, otherwise same temperature range as ordering code M.

Materials									
Valve Function Ordering Code	M	J	N	K	B	G	E	X	I
Manifold block	Wrought aluminum alloy								
Valve subbase	Die-cast aluminum								
Seal	Nitrile rubber								

Product Weight [g]	Approx. Weights								
Valve Function Ordering Code	M	J	N	K	B	G	E	X	I
Basic manifold block weight	125								
Additional manifold block weight per valve position	40								
Single subbase	45								
Per valve subbase	40								
Fieldbus connection	150								

Standard Nominal Flow Rate [l/min]						
	Code	Valve Function	Valve	Single Subbase	CPA-SC Valve Manifold with Multipin Plug Connection/ Individual PI Connections	CPA-SC Valve Manifold with Individual Horizontal Connections
	**Subbase Valve**					
	M	5/2-way valve, single solenoid	220	170	150	120
	J	5/2-way valve, double solenoid	220	170	150	120
	N	2x 3/2-way valve, normally open	220	170	150	120
	K	2x 3/2-way valve, normally closed	180	150	120	120
	B	5/3-way valve, mid-position pressurized	220	150	120	120
	G	5/3-way valve, mid-position closed	180	150	120	120
	E	5/3-way valve, mid-position exhausted	180	150	120	120
	X	1x 3/2-way valve	120	–	100	85
	I	2x 2/2-way valve	150	140	140	120
	**Semi In-line Valve with Working Port M5**					
	M	5/2-way valve, single solenoid	200	180	180	180
	J	5/2-way valve, double solenoid	200	180	180	180
	N	2x 3/2-way valve, normally open	200	180	180	180
	K	2x 3/2-way valve, normally closed	150	150	150	150
	B	5/3-way valve, mid-position pressurized	180	180	180	180
	G	5/3-way valve, mid-position closed	150	150	150	150
	E	5/3-way valve, mid-position exhausted	180	170	180	170
	X	1x 3/2-way valve	120	–	120	120
	I	2x 2/2-way valve	150	150	150	150

Standard Nominal Flow Rate [l/min]						
	Code	Valve Function	Valve	Single Subbase	CPA-SC Valve Manifold with Multi-pin Plug Connection/ Individual PI Connections	CPA-SC Valve Manifold with Individual Horizontal Connections
	**Semi in-Line Valve, Working Port with QS-3 Fitting (for 3 mm tubing)**					
	M	5/2-way valve, single solenoid	140	140	140	140
	J	5/2-way valve, double solenoid	140	140	140	140
	N	2x 3/2-way valve, normally open	140	140	140	140
	K	2x 3/2-way valve, normally closed	130	130	130	130
	B	5/3-way valve, mid-position pressurized	140	140	140	140
	G	5/3-way valve, mid-position closed	130	130	130	130
	E	5/3-way valve, mid-position exhausted	140	140	140	140
	X	1x 3/2-way valve	100	–	100	100
	I	2x 2/2-way valve	130	130	130	130
	Semi In-line Valve, Working Port with QS-4 Fitting (for 4 mm tubing)					
	M	5/2-way valve, single solenoid	180	170	180	180
	J	5/2-way valve, double solenoid	180	170	180	180
	N	2x 3/2-way valve, normally open	180	170	180	180
	K	2x 3/2-way valve, normally closed	150	150	150	150
	B	5/3-way valve, mid-position pressurized	180	170	180	170
	G	5/3-way valve, mid-position closed	150	150	150	150
	E	5/3-way valve, mid-position exhausted	170	170	170	170
	X	1x 3/2-way valve	120	–	120	120
	I	2x 2/2-way valve	150	140	150	150

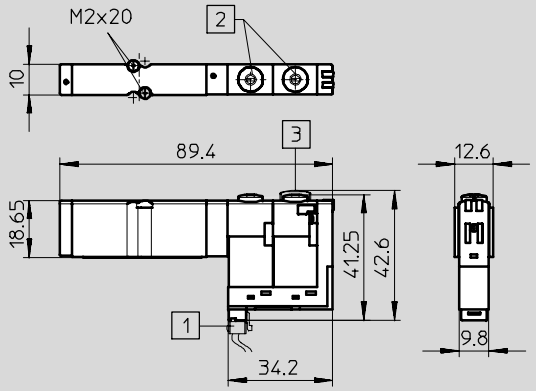
Electrical Data										
Valve Function Ordering Code		M	J	N	K	B	G	E	X	I
Electromagnetic compatibility of the CPA-SC valve terminal (Sub-D or flat cable connection)		Interference emission tested to EN 61000-6-4, industry								
		Interference immunity[1] tested to EN 61000-6-2, industry								
Protection against electric shock (protection against direct and indirect contact to EN 60204-1/IEC 204)		By means of PELV power supply unit								
Operating Voltage of Valves and Electronic Components										
Nominal operating voltage	[V]	24 DC								
Operating voltage range	[V]	20.4 ... 26.4 DC								
Electrical Power Consumption										
Electronic components	[mA]	200 and current consumption of sensors								
Valves	[W]	Pull: 1, hold: 0.3								
Residual ripple	[Vss]	4								
Cut-off pause	[ms]	Min. 10								
Switching frequency	[Hz]	Max. 10								
Duty cycle		100% at 40°C ambient temperature								
Protection class to EN 60529		IP40 (in assembled state and with detented plug)								
Relative air humidity		90% at 40°C, non-condensing								
Vibration resistance		To DIN/IEC 68/EN 60068, Parts 2-6, severity level 2								
Continuous shock resistance		To DIN/IEC 68/EN 60068, Parts 2-27, severity level 2								

1) The maximum signal line length is 10 m.

Subbase Valve

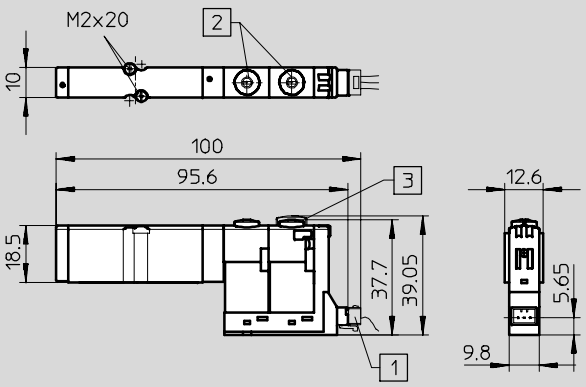
Download CAD data ➔ **www.festo.com/en/engineering**

With Individual Plug-in Connection (PI)



1 Individual plug-in connection
2 Manual override (MO)
3 Manual override cover

With Individual Horizontal Connection (HC)

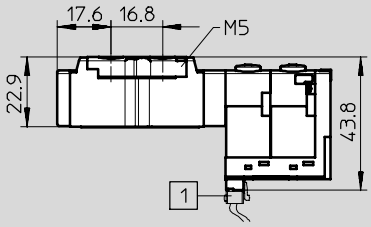


1 Individual horizontal connection
2 Manual override (MO)
3 Manual override cover

Semi In-line Valve with M5 Working Port

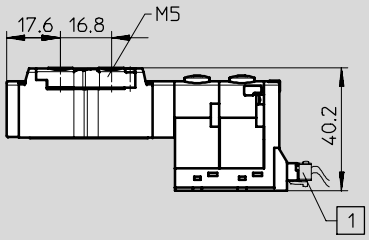
Download CAD data ➔ **www.festo.com/en/engineering**

With Individual Plug-in Connection (PI)



1 Individual plug-in connection

With Individual Horizontal Connection (HC)

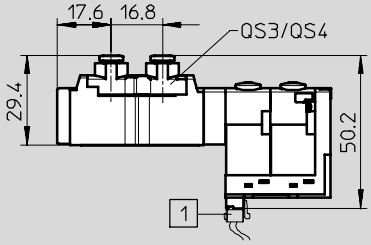


1 Individual horizontal connection

Semi In-line Valve with QS-3/QS-4 Working Port

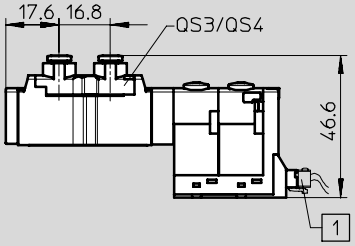
Download CAD data ➔ **www.festo.com/en/engineering**

With Individual Plug-in Connection (PI)



1 Individual plug-in connection

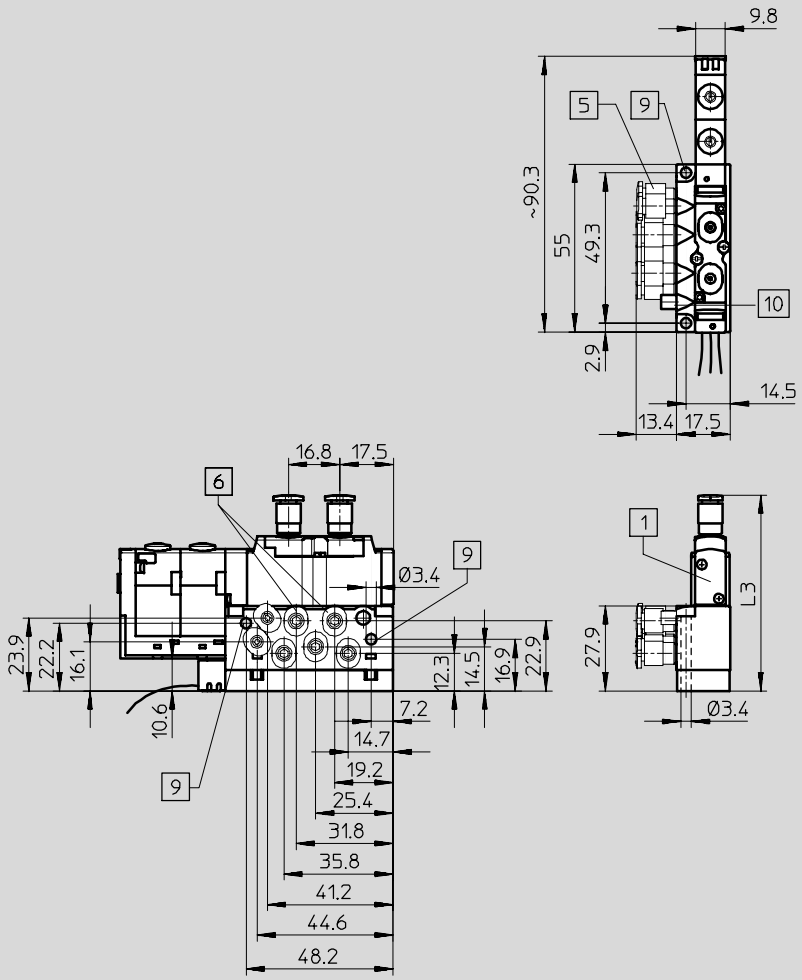
With Individual Horizontal Connection (HC)



1 Individual horizontal connection

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

With Individual Plug-in Connection (PI)

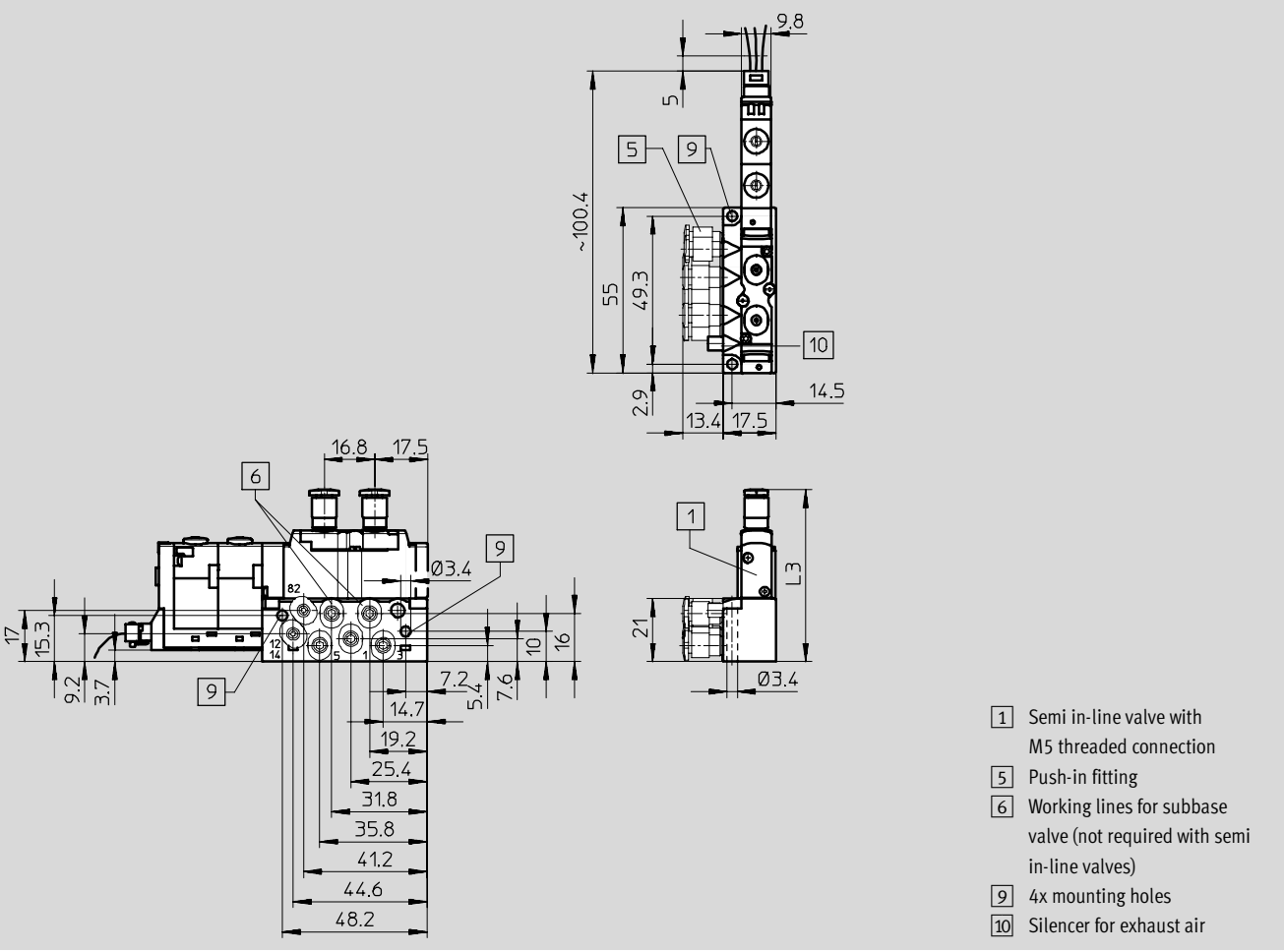


1 Semi in-line valve with M5 threaded connections
5 Push-in fitting
6 Working lines for subbase valve (not required with semi in-line valves)
9 4x mounting holes
10 Silencer for exhaust air

Valve Type		L3 [mm]
Semi in-line valve	with working port M5	50.8
	with working port QS-3 [for 3 mm tubing]	57.2
	with working port QS-4 [for 4 mm tubing]	57.2
	with working port QS-1/8 [for 1/8″ tubing]	63.7
	with working port QS-5/32 [for 5/32″ tubing]	63.5
Subbase valve		48.3
Blanking plate		37.1

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

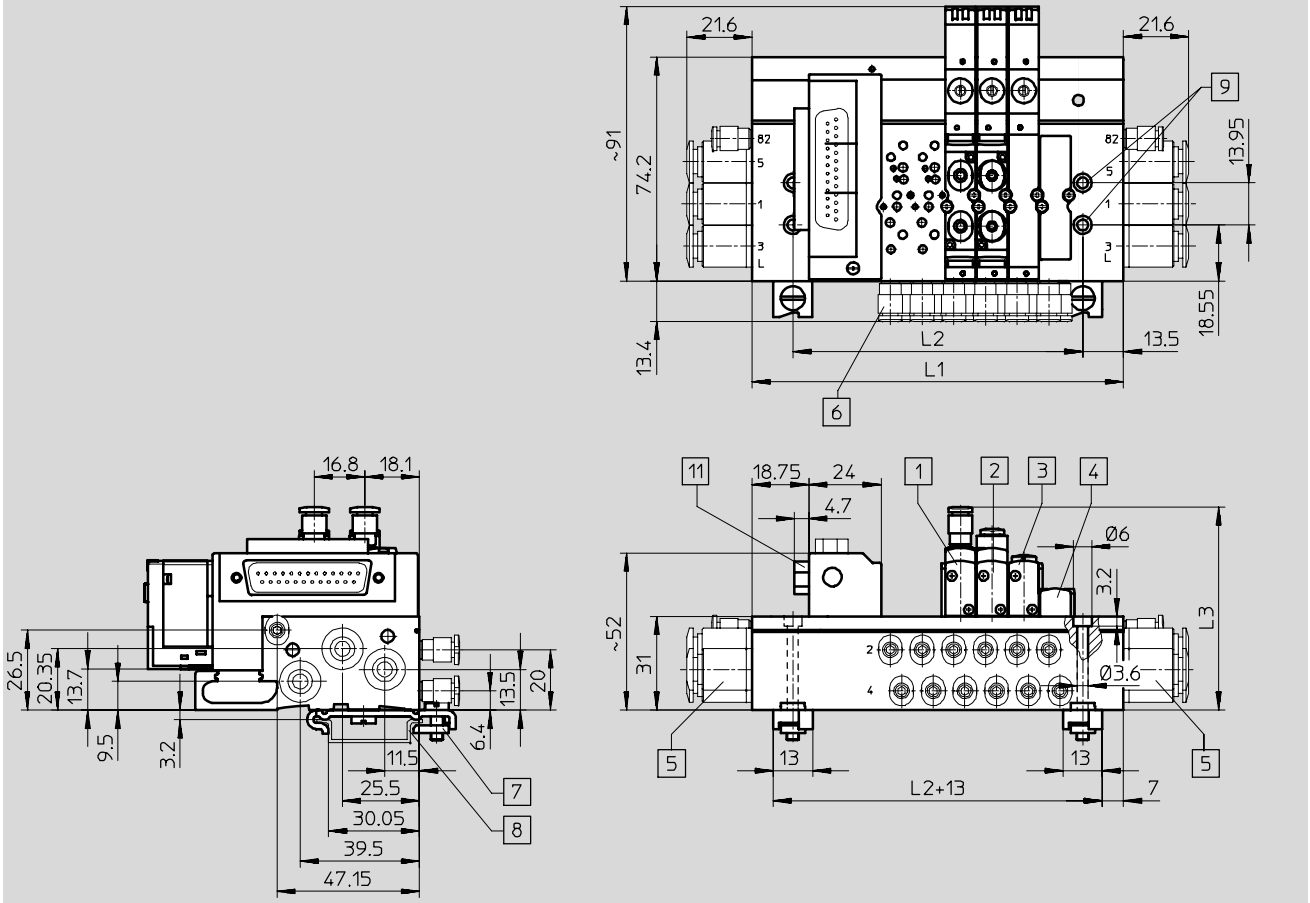
With Individual Horizontal Connection (HC)



Valve Type		L3 [mm]
Semi in-line valve	with working port M5	43.9
	with working port QS-3 [for 3 mm tubing]	50.3
	with working port QS-4 [for 4 mm tubing]	50.3
	with working port QS-1/8 [for 1/8″ tubing]	63.7
	with working port QS-5/32 [for 5/32″ tubing]	63.5
Subbase valve		41.4
Blanking plate		30.2

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

With Sub-D Multipin Plug Connection



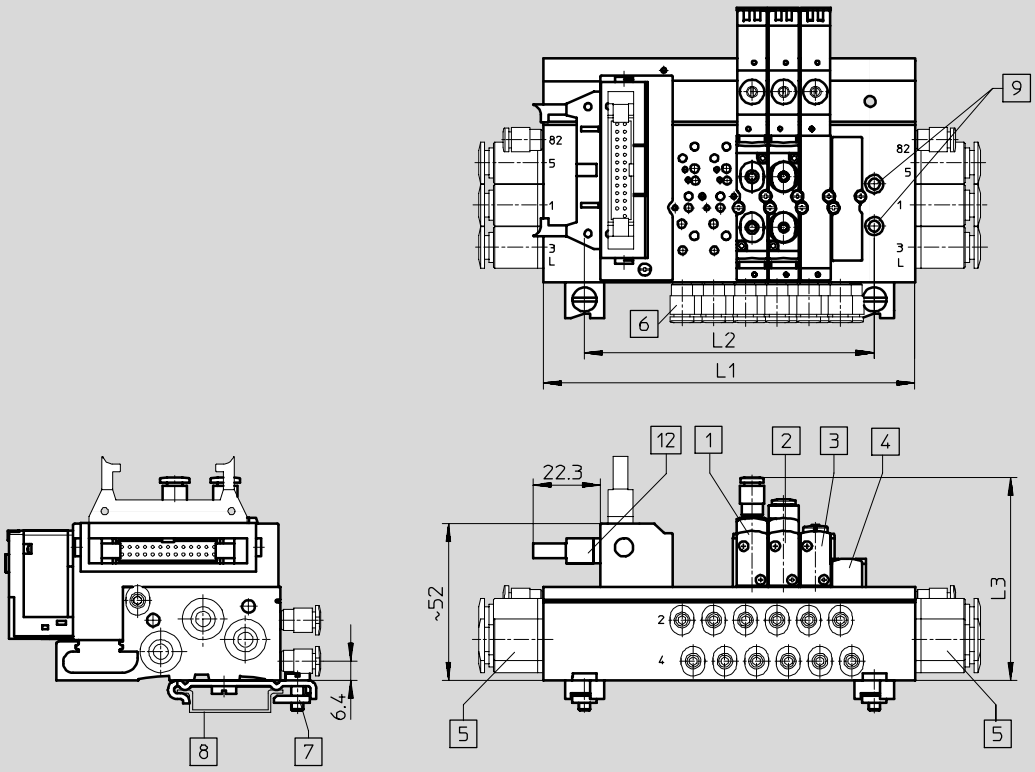
1 Semi in-line valve with M5 threaded connection
2 Semi in-line valve with integrated push-in fitting
3 Subbase valve
4 Blanking plate for spare position
5 Push-in fitting
6 Working lines for subbase valves (not required with semi in-line valves)
7 Mounting for DIN rail TH 35-7.5 EN60715
8 DIN rail
9 4x mounting holes
11 Sub-D multi-pin plug connection, 25-pin, rotatable 90°

Valve Positions	L1 [mm]	L2 [mm]
4	102	75
6	123	96
8	144	117
10	165	138
12	186	159
16	228	201
20	270	243

Valve Type		L3 [mm]
Semi in-line valve	with working port M5	53.9
	with working port QS-3 [for 3 mm tubing]	60.3
	with working port QS-4 [for 4 mm tubing]	67.3
	with working port QS-1/8 [for 1/8″ tubing]	66.8
	with working port QS-5/32 [for 5/32″ tubing]	66.6
Subbase valve		51.4
Blanking plate		40.2

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

With Multipin Connector for Flat Cable



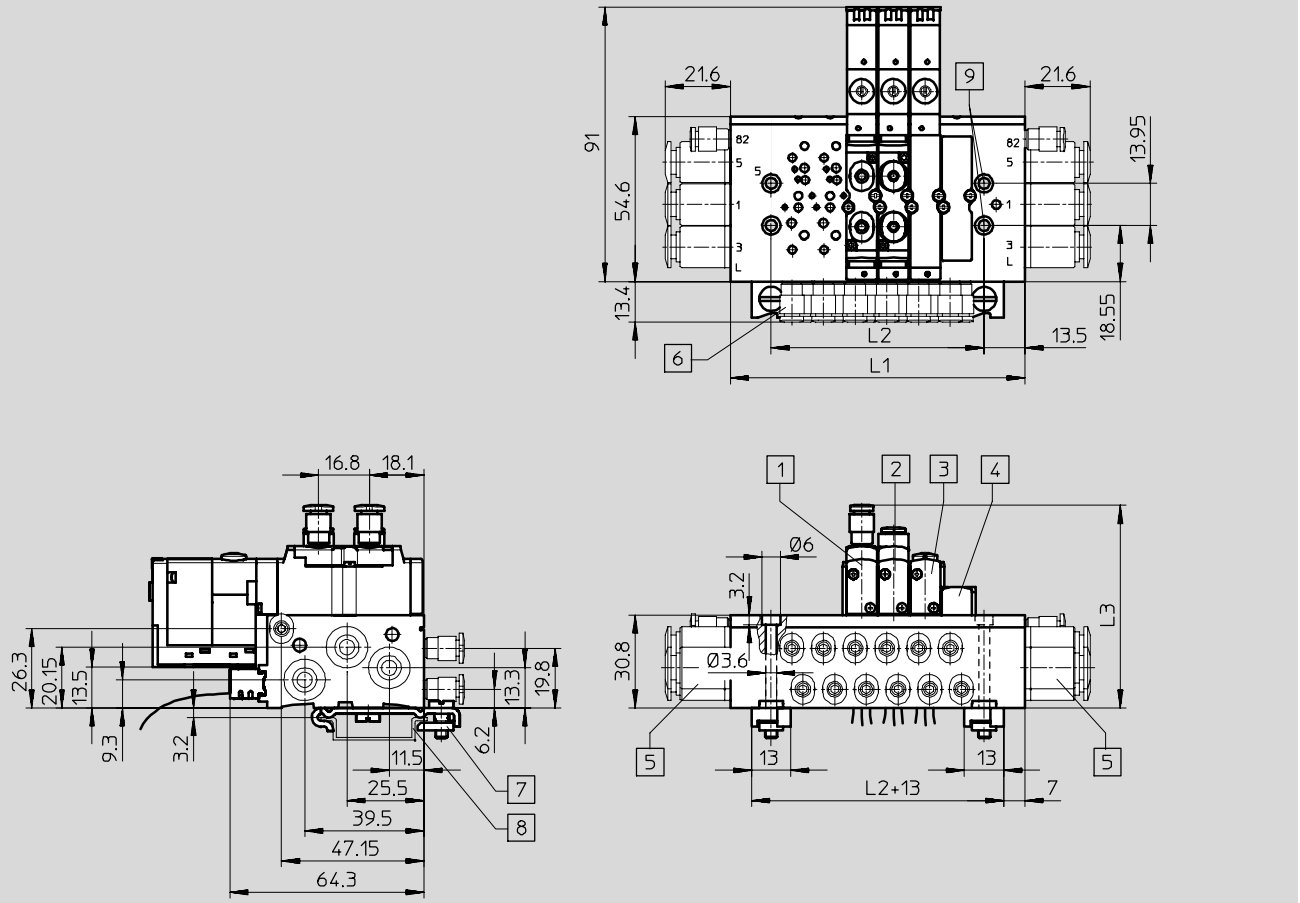
1 Semi in-line valve with M5 threaded connection
2 Semi in-line valve with integrated push-in fitting
3 Subbase valve
4 Blanking plate for spare position
5 Push-in fitting
6 Working lines for subbase valves (not required with semi in-line valves)
7 Mounting for DIN rail TH 35-7.5 EN60715
8 DIN rail
9 4x mounting holes
12 Connector for flat cable, 26-pin, rotatable 90°

Valve Positions	L1 [mm]	L2 [mm]
4	102	75
6	123	96
8	144	117
10	165	138
12	186	159
16	228	201
20	270	243

Valve Type		L3 [mm]
Semi in-line valve	with working port M5	53.9
	with working port QS-3 [for 3 mm tubing]	60.3
	with working port QS-4 [for 4 mm tubing]	67.3
	with working port QS-1/8 [for 1/8″ tubing]	66.8
	with working port QS-5/32 [for 5/32″ tubing]	66.6
Subbase valve		51.4
Blanking plate		40.2

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

With Individual Plug-in Connection (PI)



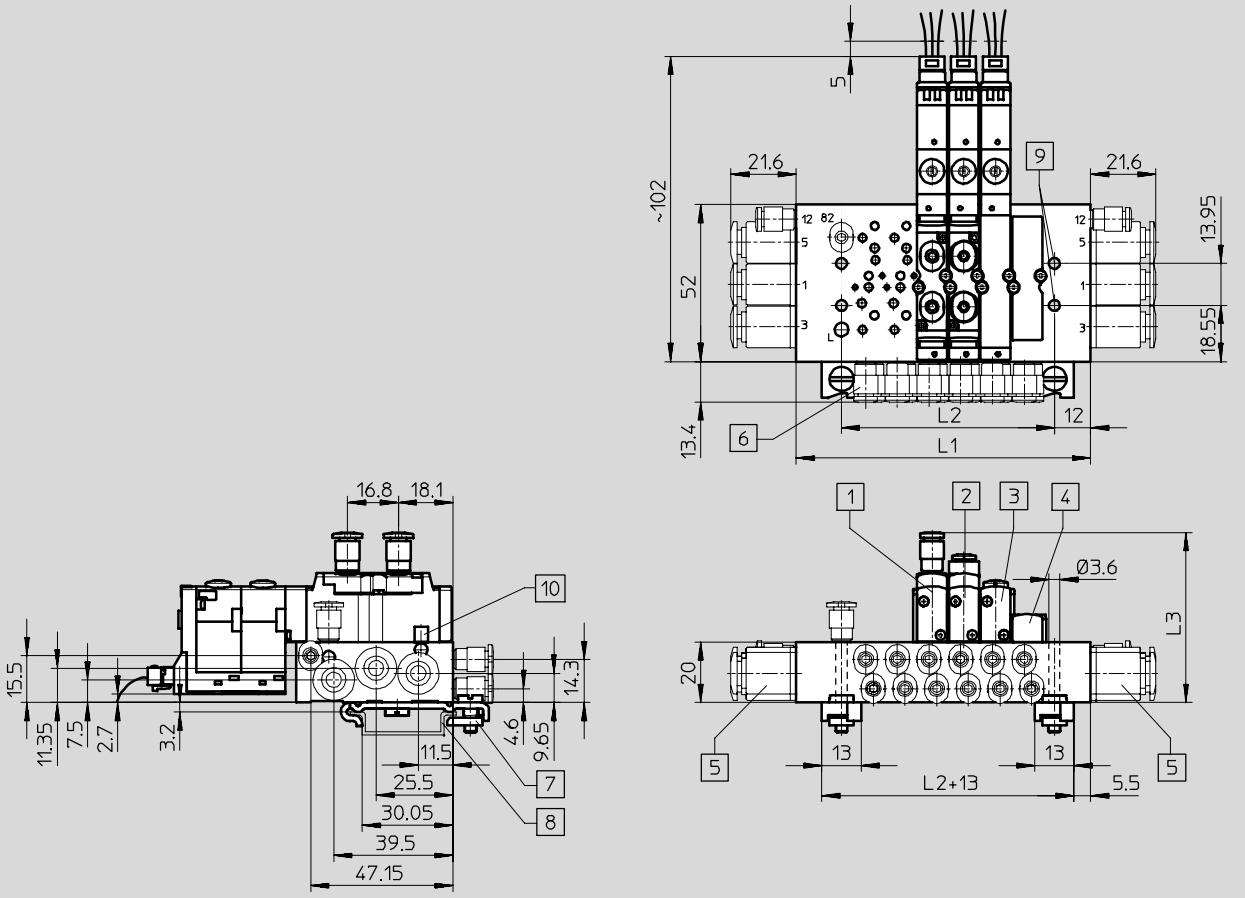
1 Semi in-line valve with M5 threaded connection
2 Semi in-line valve with integrated push-in fitting
3 Subbase valve
4 Blanking plate for spare position
5 Push-in fitting
6 Working lines for subbase valves (not required with semi in-line valves)
7 Mounting for DIN rail TH 35-7.5 EN60715
8 DIN rail
9 4x mounting holes

Valve Positions	L1 [mm]	L2 [mm]
2	55	28.5
4	76.5	49.5
6	97.5	70.5
8	118.5	91.5
10	139.5	112.5
12	160.5	133.5
16	202.5	175.5

Valve Type		L3 [mm]
Semi in-line valve	with working port M5	53.7
	with working port QS-3 [for 3 mm tubing]	60.1
	with working port QS-4 [for 4 mm tubing]	60.1
	with working port QS-1/8 [for 1/8″ tubing]	66.6
	with working port QS-5/32 [for 5/32″ tubing]	66.4
Subbase valve		51.2
Blanking plate		40

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

With Individual Horizontal Connection (HC)

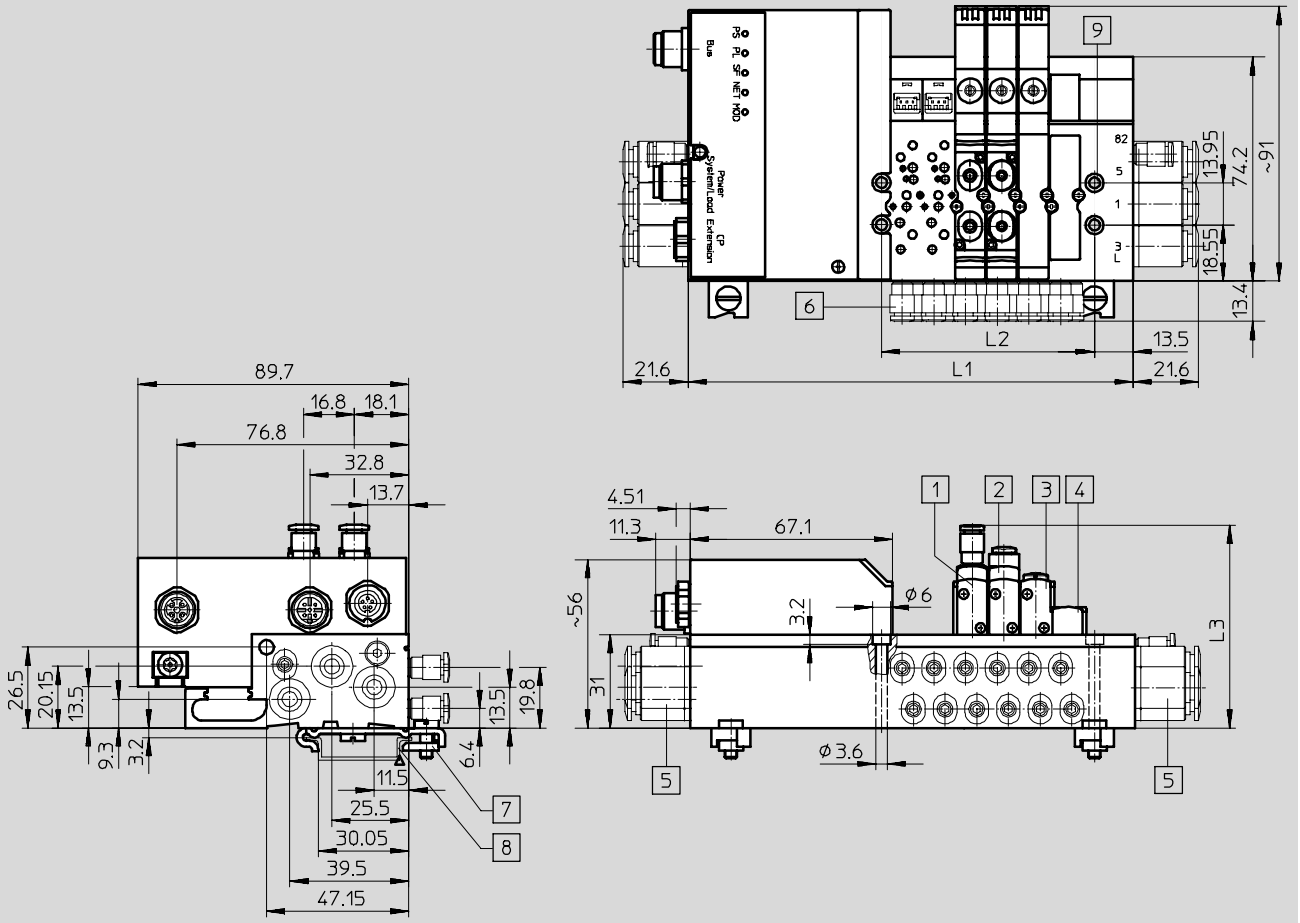


1 Semi in-line valve with M5 threaded connection
2 Semi in-line valve with integrated push-in fitting
3 Subbase valve
4 Blanking plate for spare position
5 Push-in fitting
6 Working lines for subbase valves (not required with semi in-line valves)
7 Mounting for DIN rail TH 35-7.5 EN60715
8 DIN rail
9 4x mounting holes
10 Silencer for exhaust air

Valve Positions	L1 [mm]	L2 [mm]
2	54.5	29
4	75.5	50
6	96.5	71
8	117.5	92
10	138.5	113
12	159.5	134
16	201.5	176

Valve Type		L3 [mm]
Semi in-line valve	with working port M5	42.9
	with working port QS-3 [for 3 mm tubing]	49.3
	with working port QS-4 [for 4 mm tubing]	49.3
	with working port QS-1/8 [for 1/8″ tubing]	55.8
	with working port QS-5/32 [for 5/32″ tubing]	55.6
Subbase valve		40.4
Blanking plate		29.2

Valve Manifold with Fieldbus Connection Download CAD data ➔ **www.festo.com/en/engineering**



1 Semi in-line valve with M5 threaded connection
2 Semi in-line valve with integrated push-in fitting
3 Subbase valve
4 Blanking plate for spare position
5 Push-in fitting
6 Working lines for subbase valves (not required with semi in-line valves)
7 Mounting for DIN rail TH 35-7.5 EN60715
8 DIN rail
9 4x mounting holes

Valve Positions	L1 [mm]	L2 [mm]
4	127.2	49.5
6	148.2	70.5
8	169.2	91.5
10	190.2	112.5
12	211.2	133.5
16	253.2	175.5
20	295.2	217.5
24	337.2	259.5

Valve Type		L3 [mm]
Semi in-line valve	with working port M5	53.9
	with working port QS-3 [for 3 mm tubing]	60.3
	with working port QS-4 [for 4 mm tubing]	67.3
	with working port QS-1/8 [for 1/8″ tubing]	66.8
	with working port QS-5/32 [for 5/32″ tubing]	66.6
Subbase valve		51.4
Blanking plate		40.2

Ordering Data

Multipin Connection, Electrical Section

FESTO

M **Mandatory Data**

Module No.	Valve Manifold		Size		Power Supply	Electrical Connection		Position of Working Ports	Type of Working Ports		Manual Override		Pneumatic Supply	Pneumatic Supply Connection	Type of Connections
529045	82P		10		1	MS MF		P A	B E F I J		N V		S T V X	L R B	H G D
Ordering Example															
529045	**82P**	–	**10**	–	**1**		–			–		–			
1	**2**		**3**		**4**	**5**		**6**	**7**		**8**		**9**	**10**	**11**

Ordering Table

Size			10	Conditions	Code		Enter Code
M	**1**	Module No.	**529045**				
	2	Valve Manifold	Valve manifold type 82, Smart Cubic, CPA-SC		**82P**		82P
	3	Size [mm]	10		**-10**		-10
	4	Power Supply	Power supply for valves, 24 V DC		**-1**		-1
	5	Electrical Connection	Multi-pin plug connection for Sub-D, 25-pin	1	**MS**		
			Multi-pin plug connection for flat cable, 26-pin	2	**MF**		
	6	Position of Working Ports	Working ports on valve		**-P**		
			Working ports on subbase		**-A**		
	7	Type of Working Ports	M5 Threaded connection		**B**		
			QS-3 Push-in fitting [3 mm tubing connection]		**E**		
			QS-4 Push-in fitting [4 mm tubing connection]		**F**		
			QS-1/8 Push-in fitting [1/8 inch tubing connection]		**I**		
			QS-5/32 Push-in fitting [5/32 inch tubing connection]		**J**		
	8	Manual Override	Manual override, push-in/detenting		**-N**		
			Manual override blocked		**-V**		
	9	Pneumatic Supply	Internal pilot air supply, exhausting via silencer		**-S**		
			External pilot air supply, exhausting via silencer		**-T**		
			Internal pilot air supply, ducted exhaust air		**-V**		
			External pilot air supply, ducted exhaust air		**-X**		
	10	Pneumatic Supply Connection Position	Supply at left		**L**		
			Supply at right		**R**		
			Supply at both ends		**B**		
	11	Type of Connections for Supply	QS-8 Push-in fitting [8 mm tubing connection]		**H**		
			QS-5/16 Push-in fitting [5/16 inch tubing connection]		**G**		
↓			G⅛ Threaded connection		**D**		

1 At least 2 valve positions must be equipped.

2 At least 4 valve positions must be equipped.

Ordering Data

Multipin Connection, Pneumatic Section

FESTO

M Mandatory Data			O Options
Equipment at Valve Position 0 ... 19		User Documentation	Accessories
12 Valves: M, J, N, K, B, G, E, X, I, L, V, W, R **13 Duct Separation, Duct 1, Valve Position 0 ... 18:** T		B, E, D, F, I, S, V	H, ...CP, ...CQ, ...CR, ...CV, ...CW, ...CX
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19			
–	–		+
12 + 13		**14**	**15**

Ordering Table

Size			10	Conditions	Code		Enter Code
↓	**12**	Equipment at Valve Position 0 ... 19		3	**-**		-
M		Valves	5/2-way valve, single solenoid		**M**		Enter equipment selection for valve positions in order code
			5/2-way valve, double solenoid		**J**		
			2x 3/2-way valve, normally open		**N**		
			2x 3/2-way valve, normally closed		**K**		
			5/3-way valve, mid-position pressurized		**B**		
			5/3-way valve, mid-position closed		**G**		
			5/3-way valve, mid-position exhausted		**E**		
			3/2-way valve, normally closed, external supply air		**X**		
			2x 2/2-way valve, normally closed, dual compressed air supply		**I**		
			Spare position		**L**		
			Duct separation, duct 3 separate	4	**V**		
			Duct separation, duct 5 separate	4	**W**		
			Duct separation, duct 3/5 separate	4	**R**		
	13	Duct Separation, Duct 1, Valve Position 0 ... 18	Duct 1 separate	4	**T**		
	14	User Documentation	Express waiver - no manual to be included (already available)		**-B**		
			Manuals, English		**-E**		
			Manuals, German		**-D**		
			Manuals, French		**-F**		
			Manuals, Italian		**-I**		
			Manuals, Spanish		**-S**		
			Manuals, Swedish		**-V**		
O	**15**	Accessories			**+**		+
		DIN Rail Mounting	1		**H**		
		Connecting Cable, Sub-D, 25-pin (25-strand) 2.5 m	1 ... 99	5	**...CP**		
		Connecting Cable, Sub-D, 25-pin (25-strand) 5 m	1 ... 99	5	**...CQ**		
		Connecting Cable, Sub-D, 25-pin (25-strand) 10 m	1 ... 99	5	**...CR**		
		Connecting Cable, Sub-D, 25-pin (12-strand) 2.5 m	1 ... 99	5	**...CV**		
		Connecting Cable, Sub-D, 25-pin (12-strand) 5 m	1 ... 99	5	**...CW**		
		Connecting Cable, Sub-D, 25-pin (12-strand) 10 m	1 ... 99	5	**...CX**		

3 **Equipment at valve position 0 ... 19**
Max. number of coils: 20
Coil usage of the valves: I, J, K, L, N, B, E, G: 2 coils
M, X: 1 coil
With 4 ... 12 valve positions: Only with valve M, N, K, X, I, L from position 9
With 4 ... 16 valve positions: Only with valve M, N, K, X, I, L from position 5
With 4 ... 20 valve positions: Only with valve M, N, K, X, I, L

4 Only with pneumatic supply connection B (pneumatic supply connection at both ends).
Only one duct separation per valve manifold can be selected for the supply and for the exhaust.
Duct separation T only is permissible at the first valve position.
Duct separation is not permissible at the last valve position.

5 Only in combination with electrical connection MS, whereby CV, CW and CX is only permissible with 2, 4 or 6 valve positions.

Ordering Data

Individual Plug-in Connection, Electrical Section

FESTO

M Mandatory Data →

Module No.	Valve Manifold	Size	Power Supply	Electrical Connection	Position of Working Ports	Type of Working Ports	Manual Override	Pneumatic Supply	Pneumatic Supply Connection	Type of Connections
529045	82P	10	1	IP IQ	P A	B E F I J	N V	S T V X	L R B	H G D
Ordering Example										
529045	**82P**	**10**	**1**							
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**

Ordering Table

Size			10	Conditions	Code		Enter Code
M	**1**	Module No.	**529045**				
	2	Valve Manifold	Valve manifold type 82, Smart Cubic, CPA-SC		**82P**		82P
	3	Size [mm]	10		**-10**		-10
	4	Power Supply	Power supply for valves, 24 V DC		**-1**		-1
	5	Electrical Connection	Connecting cable 0.5 m, for individual plug-in connection, 2 coils	[1]	**IP**		
			Connecting cable 1 m, for individual plug-in connection, 2 coils	[1]	**IQ**		
	6	Position of Working Ports	Working ports on valve		**-P**		
			Working ports on subbase		**-A**		
	7	Type of Working Ports	M5 Threaded connection		**B**		
			QS-3 Push-in fitting [3 mm tubing connection]		**E**		
			QS-4 Push-in fitting [4 mm tubing connection]		**F**		
			QS-1/8 Push-in fitting [1/8 inch tubing connection]		**I**		
			QS-5/32 Push-in fitting [5/32 inch tubing connection]		**J**		
	8	Manual Override	Manual override, push-in/detenting		**-N**		
			Manual override blocked		**-V**		
	9	Pneumatic Supply	Internal pilot air supply, exhausting via silencer		**-S**		
			External pilot air supply, exhausting via silencer		**-T**		
			Internal pilot air supply, ducted exhaust air		**-V**		
			External pilot air supply, ducted exhaust air		**-X**		
	10	Pneumatic Supply Connection Position	Supply at left		**L**		
			Supply at right		**R**		
			Supply at both ends		**B**		
	11	Type of Connections for Supply	QS-8 Push-in fitting [8 mm tubing connection]		**H**		
			QS-5/16 Push-in fitting [5/16 inch tubing connection]		**G**		
↓			G⅛ Threaded connection		**D**		

[1] Number of valve positions: 2, 4, 6, 8, 10, 12, 16.

Transfer Order Code

529045	**82P**	**10**	**1**							
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**

Ordering Data

Individual Plug-in Connection, Pneumatic Section

FESTO

[M] Mandatory Data	[O] Options

Equipment at Valve Position 0 ... 15	User Documentation	Accessories
12 Valves: M, J, N, K, B, G, E, X, I, L, V, W, R **13 Duct Separation, Duct 1, Valve Position 0 ... 14:** T	B, E, D, F, I, S, V	H
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15		
–	–	+
12 + 13	**14**	**15**

Ordering Table

Size			10	Conditions	Code		Enter Code
↓	**12**	Equipment at Valve Position 0 ... 15			**-**		-
[M]		Valves	5/2-way valve, single solenoid		**M**		Enter equipment selection for valve positions in order code
			5/2-way valve, double solenoid		**J**		
			2x 3/2-way valve, normally open		**N**		
			2x 3/2-way valve, normally closed		**K**		
			5/3-way valve, mid-position pressurized		**B**		
			5/3-way valve, mid-position closed		**G**		
			5/3-way valve, mid-position exhausted		**E**		
			3/2-way valve, normally closed, external supply air		**X**		
			2x 2/2-way valve, normally closed, dual compressed air supply		**I**		
			Spare position		**L**		
			Duct separation, duct 3 separate	[2]	**V**		
			Duct separation, duct 5 separate	[2]	**W**		
			Duct separation, duct 3/5 separate	[2]	**R**		
	13	Duct Separation, Duct 1, Valve Position 0 ... 14	Duct 1 separate	[2]	**T**		
	14	User Documentation	Express waiver - no manual to be included (already available)		**-B**		
			Manuals, English		**-E**		
			Manuals, German		**-D**		
			Manuals, French		**-F**		
			Manuals, Italian		**-I**		
			Manuals, Spanish		**-S**		
			Manuals, Swedish		**-V**		
[O]	**15**	Accessories			**+**		+
		DIN Rail Mounting	1		**H**		

[2] Only with pneumatic supply connection B (pneumatic supply at both ends).
Only one duct separation per valve manifold can be selected for the supply and for the exhaust.
Duct separation T only is permissible at the first valve position.
Duct separation is not permissible at the last valve position.

Transfer Order Code

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15		
–	–	+
12 + 13	**14**	**15**

Ordering Data

Individual Horizontal Plug-in Connection, Electrical Section

FESTO

M **Mandatory Data** →

Module No.	Valve Manifold	Size	Power Supply	Electrical Connection	Position of Working Ports	Type of Working Ports	Manual Override	Pneumatic Supply	Pneumatic Supply Connection	Type of Connections
529045	82P	10	1	IH	P A	B E F I J	N V	S T V X	L R B	H G D
Ordering Example										
529045	**82P**	**10**	**1**	**IH**						
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**

Ordering Table

Size			10	Conditions	Code		Enter Code
M	**1**	Module No.	**529045**				
	2	Valve Manifold	Valve manifold type 82, Smart Cubic, CPA-SC		**82P**		82P
	3	Size [mm]	10		**-10**		-10
	4	Power Supply	Power supply for valves, 24 V DC		**-1**		-1
	5	Electrical Connection	Individual horizontal electrical connection	[1]	**IH**		IH
	6	Position of Working Ports	Working ports on valve		**-P**		
			Working ports on subbase		**-A**		
	7	Type of Working Ports	M5 Threaded connection		**B**		
			QS-3 Push-in fitting [3 mm tubing connection]		**E**		
			QS-4 Push-in fitting [4 mm tubing connection]		**F**		
			QS-1/8 Push-in fitting [1/8 inch tubing connection]		**I**		
			QS-5/32 Push-in fitting [5/32 inch tubing connection]		**J**		
	8	Manual Override	Manual override, push-in/detenting		**-N**		
			Manual override blocked		**-V**		
	9	Pneumatic Supply	Internal pilot air supply, exhausting via silencer		**-S**		
			External pilot air supply, exhausting via silencer		**-T**		
			Internal pilot air supply, ducted exhaust air		**-V**		
			External pilot air supply, ducted exhaust air		**-X**		
	10	Pneumatic Supply Connection Position	Supply at left		**L**		
			Supply at right		**R**		
			Supply at both ends		**B**		
	11	Type of Connections for Supply	QS-8 Push-in fitting [8 mm tubing connection]		**H**		
			QS-5/16 Push-in fitting [5/16 inch tubing connection]		**G**		
↓			G⅛ Threaded connection		**D**		

[1] Number of valve positions: 2, 4, 6, 8, 10, 12, 16.

Transfer Order Code

529045	**82P**	**10**	**1**	**IH**						
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**

Ordering Data

Individual Horizontal Plug-in Connection, Pneumatic Section

FESTO

M Mandatory Data			O Options
Equipment at Valve Position 0 ... 15		User Documentation	Accessories
12 Valves: M, J, N, K, B, G, E, X, I, L		B, E, D, F, I, S, V	H, ...CD, ...CE, ...CF, ...CG, ...CH, ...CI, ...CJ, ...CK
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15			
–	–		+
12		13	14

Ordering Table

Size			10	Conditions	Code		Enter Code
↓	12	Equipment at Valve Position 0 ... 15			-		-
M		Valves	5/2-way valve, single solenoid		**M**		Enter equipment selection for valve positions in order code
			5/2-way valve, double solenoid		**J**		
			2x 3/2-way valve, normally open		**N**		
			2x 3/2-way valve, normally closed		**K**		
			5/3-way valve, mid-position pressurized		**B**		
			5/3-way valve, mid-position closed		**G**		
			5/3-way valve, mid-position exhausted		**E**		
			3/2-way valve, normally closed, external supply air		**X**		
			2x 2/2-way valve, normally closed, dual compressed air supply		**I**		
			Spare position		**L**		
	13	User Documentation	Express waiver - no manual to be included (already available)		**-B**		
			Manuals, English		**-E**		
			Manuals, German		**-D**		
			Manuals, French		**-F**		
			Manuals, Italian		**-I**		
			Manuals, Spanish		**-S**		
			Manuals, Swedish		**-V**		
O	14	Accessories			+		+
		DIN Rail Mounting	1		**H**		
		Connecting cable for individual connection, 2 coils 0.5 m	1 ... 99		**...CD**		
		Connecting cable for individual connection, 2 coils 1 m	1 ... 99		**...CE**		
		Connecting cable for individual connection, 2 coils 2.5 m	1 ... 99		**...CF**		
		Connecting cable for individual connection, 2 coils 5 m	1 ... 99		**...CG**		
		Connecting cable for individual connection, 1 coil 0.5 m	1 ... 99		**...CH**		
		Connecting cable for individual connection, 1 coil 1 m	1 ... 99		**...CI**		
		Connecting cable for individual connection, 1 coil 2.5 m	1 ... 99		**...CJ**		
		Connecting cable for individual connection, 1 coil 5 m	1 ... 99		**...CK**		

Transfer Order Code

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15		
–	–	+
12	13	14

Ordering Data

Manifold with Individual Subbase, Electrical Section

FESTO

M Mandatory Data →

Module No.	Valve Manifold		Size		Power Supply	Electrical Connection		Position of Working Ports	Type of Working Ports		Manual Override		Pneumatic Supply	Pneumatic Supply Connection	Type of Connections
529045	82P		10		1	SP SQ SH		P A	B E F I J		N V		S T V X	L	B F J
Ordering Example															
529045	**82P**	–	**10**	–	**1**		–			–		–		**L**	
1	**2**		**3**		**4**	**5**		**6**	**7**		**8**		**9**	**10**	**11**

Ordering Table

Size			10	Conditions	Code		Enter Code
M	**1**	Module No.	**529045**				
	2	Valve Manifold	Valve manifold type 82, Smart Cubic, CPA-SC		**82P**		82P
	3	Size [mm]	10		**-10**		-10
	4	Power Supply	Power supply for valves, 24 V DC		**-1**		-1
	5	Electrical Connection	Individual plug-in subbase, connecting cable 0.5 m	1	**SP**		
			Individual plug-in subbase, connecting cable 1 m	1	**SQ**		
			Individual subbase, horizontal connection	1	**SH**		
	6	Position of Working Ports	Working ports on valve		**-P**		
			Working ports on subbase		**-A**		
	7	Type of Working Ports	M5 Threaded connection		**B**		
			QS-3 Push-in fitting [3 mm tubing connection]		**E**		
			QS-4 Push-in fitting [4 mm tubing connection]		**F**		
			QS-1/8 Push-in fitting [1/8 inch tubing connection]		**I**		
			QS-5/32 Push-in fitting [5/32 inch tubing connection]		**J**		
	8	Manual Override	Manual override, push-in/detenting		**-N**		
			Manual override blocked		**-V**		
	9	Pneumatic Supply	Internal pilot air supply, exhausting via silencer		**-S**		
			External pilot air supply, exhausting via silencer		**-T**		
			Internal pilot air supply, ducted exhaust air		**-V**		
			External pilot air supply, ducted exhaust air		**-X**		
	10	Pneumatic Supply Connection Position	Supply at left		**L**		L
	11	Type of Connections for Supply	M5 Threaded connection		**B**		
			QS-4 Push-in fitting [4 mm tubing connection]		**F**		
↓			QS-5/32 Push-in fitting [5/32 inch tubing connection]		**J**		

1 No user documentation selectable.

Transfer Order Code

529045	**82P**	–	**10**	–	**1**		–			–		–		**L**	
1	**2**		**3**		**4**	**5**		**6**	**7**		**8**		**9**	**10**	**11**

Ordering Data

Manifold with Individual Subbase, Pneumatic Section

FESTO

M Mandatory Data	O Options
Equipment for Valve Positions	**Accessories**
12 Valves: M, J, N, K, B, G, E, I	...CD, ...CE, ...CF, ...CG, ...CH, ...CI, ...CJ, ...CK
– 12	+ 13

Ordering Table

Size			10	Conditions	Code		Enter Code
↓	12	Equipment for Valve Positions			**-**		-
M		Valves	5/2-way valve, single solenoid		**M**		Enter equipment selection for valve positions in order code
			5/2-way valve, double solenoid		**J**		
			2x 3/2-way valve, normally open		**N**		
			2x 3/2-way valve, normally closed		**K**		
			5/3-way valve, mid-position pressurized		**B**		
			5/3-way valve, mid-position closed		**G**		
			5/3-way valve, mid-position exhausted		**E**		
			2x 2/2-way valve, normally closed, dual compressed air supply		**I**		
O	13	Accessories			**+**		+
		Connecting Cable for Individual Connection, 2 Coils 0.5 m	1 ... 99	2	**...CD**		
		Connecting Cable for Individual Connection, 2 Coils 1 m	1 ... 99	2	**...CE**		
		Connecting Cable for Individual Connection, 2 Coils 2.5 m	1 ... 99	2	**...CF**		
		Connecting Cable for Individual Connection, 2 Coils 5 m	1 ... 99	2	**...CG**		
		Connecting Cable for Individual Connection, 1 Coil 0.5 m	1 ... 99	2	**...CH**		
		Connecting Cable for Individual Connection, 1 Coil 1 m	1 ... 99	2	**...CI**		
		Connecting Cable for Individual Connection, 1 Coil 2.5 m	1 ... 99	2	**...CJ**		
		Connecting Cable for Individual Connection, 1 Coil 5 m	1 ... 99	2	**...CK**		

2 Only in combination with electrical connection SH.

Transfer Order Code

– 12 + 13

Ordering Data

Manifold with DeviceNet, Electrical Section

FESTO

M Mandatory Data →

Module No.	Valve Manifold	Size	Electrical Connection	Position of Working Ports	Type of Working Ports	Manual Override	Pneumatic Supply	Pneumatic Supply Connection	Type of Connections
538509	82P	10	DN	P A	B E F I J	N V	S T V X	L R B	B F H G D
Ordering Example									
538509	**82P**	**10**	**DN**	**P**	**E**	**N**	**S**	**B**	**D**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

Ordering Table

Size			10	Conditions	Code		Enter Code
M	1	Module No.	**538509**				
	2	Valve Manifold	Valve manifold type 82, Smart Cubic, CPA-SC		**82P**		82P
	3	Size [mm]	10		**-10**		-10
	4	Electrical Connection	DeviceNet		**-DN**		-DN
	5	Position of Working Ports	Working ports on valve		**-P**		
			Working ports on subbase		**-A**		
	6	Type of Working Ports	M5 Threaded connection		**B**		
			QS-3 Push-in fitting [3 mm tubing connection]		**E**		
			QS-4 Push-in fitting [4 mm tubing connection]		**F**		
			QS-1/8 Push-in fitting [1/8 inch tubing connection]		**I**		
			QS-5/32 Push-in fitting [5/32 inch tubing connection]		**J**		
	7	Manual Override	Manual override, push-in/detenting		**-N**		
			Manual override blocked		**-V**		
	8	Pneumatic Supply	Internal pilot air supply, exhausting via silencer		**-S**		
			External pilot air supply, exhausting via silencer		**-T**		
			Internal pilot air supply, ducted exhaust air		**-V**		
			External pilot air supply, ducted exhaust air		**-X**		
	9	Pneumatic Supply Connection Position	Supply at left		**L**		
			Supply at right		**R**		
			Supply at both ends		**B**		
	10	Type of Connections for Supply	M5 Threaded connection		**B**		
			QS-4 Push-in fitting [4 mm tubing connection]		**F**		
			QS-8 Push-in fitting [8 mm tubing connection]		**H**		
			QS-5/16 Push-in fitting [5/16 inch tubing connection]		**G**		
↓			G⅛ Threaded connection		**D**		

Transfer Order Code

538509	82P	–	10	–	DN	–			–		–			
1	**2**		**3**		**4**		**5**	**6**		**7**		**8**	**9**	**10**

Ordering Data

Manifold with DeviceNet, Pneumatic Section

FESTO

M Mandatory Data		O Options
Equipment at Valve Position 0 ... 23	**User Documentation**	**Accessories**
11 Valves: M, J, N, K, B, G, E, X, I, L, V, W, R **12 Duct Separation, Duct 1, Valve Position 0 ... 22:** T Valve Position 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	E, D, F, I, S, V	H, ...D, ...M
– **11 + 12**	– **13**	+ **14**

Ordering Table

Size			10	Conditions	Code		Enter Code
↓	**11**	Equipment at Valve Position 0 ... 23		1	**-**		-
M		Valves	5/2-way valve, single solenoid		**M**		Enter equipment selection for valve positions in order code
			5/2-way valve, double solenoid		**J**		
			2x 3/2-way valve, normally open		**N**		
			2x 3/2-way valve, normally closed		**K**		
			5/3-way valve, mid-position pressurized		**B**		
			5/3-way valve, mid-position closed		**G**		
			5/3-way valve, mid-position exhausted		**E**		
			3/2-way valve, normally closed, external supply air		**X**		
			2x 2/2-way valve, normally closed, dual compressed air supply		**I**		
			Spare position		**L**		
			Duct separation, duct 3 separate	2	**V**		
			Duct separation, duct 5 separate	2	**W**		
			Duct separation, duct 3/5 separate	2	**R**		
	12	Duct Separation, Duct 1, Valve Position 0 ... 22	Duct 1 separate	2	**T**		
	13	User Documentation	Manuals, English		**-E**		
			Manuals, German		**-D**		
			Manuals, French		**-F**		
			Manuals, Italian		**-I**		
			Manuals, Spanish		**-S**		
			Manuals, Swedish		**-V**		
O	**14**	Accessories			**+**		+
		DIN Rail Mounting	1		**H**		
		Connector Plug Straight	1 ... 99		**...D**		
		DeviceNet B-coded	1 ... 99		**...M**		

1 **Equipment at valve Position 0 ... 23**
Max. number of coils: 32
Coil usage of the valves: I, J, K, L, N, B, E, G: 2 coils
M, X: 1 coil

2 Only with pneumatic supply connection B (pneumatic supply connection at both ends).
Only one duct separation per valve manifold can be selected for the supply and for the exhaust.
Duct separation T only is permissible at the first valve position. Duct separation is not permissible at the last valve position.

Transfer Order Code

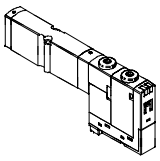
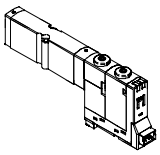
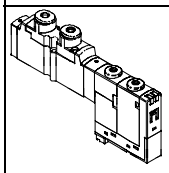
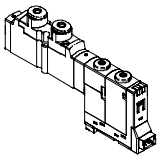
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

– **11 + 12** – **13** + **14**

Ordering Data

Replacement Valves

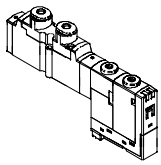
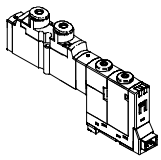
FESTO

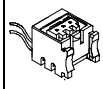
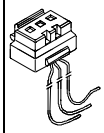
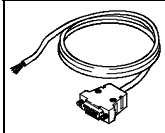
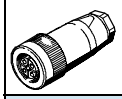
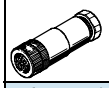
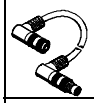
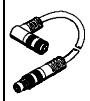
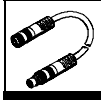
Valves							
			Electrical Plug-in Connection			Electrical Horizontal Connection	
	Code	Valve Function	Type	Part No.		Type	Part No.
	**Subbase Valve**						
	M	5/2-way valve, single solenoid	**CPASC1-M1H-M-P-2.5**	**526990**		**CPASC1-M1H-M-H-2.5**	**527008**
	J	5/2-way valve, double solenoid	**CPASC1-M1H-J-P-2.5**	**526992**		**CPASC1-M1H-J-H-2.5**	**527010**
	N	2x 3/2-way valve, normally open	**CPASC1-M1H-N-P-2.5**	**526994**		**CPASC1-M1H-N-H-2.5**	**527012**
	K	2x 3/2-way valve, normally closed	**CPASC1-M1H-K-P-2.5**	**526996**		**CPASC1-M1H-K-H-2.5**	**527014**
	B	5/3-way valve, mid-position pressurized	**CPASC1-M1H-B-P-2.5**	**526998**		**CPASC1-M1H-B-H-2.5**	**527016**
	G	5/3-way valve, mid-position closed	**CPASC1-M1H-G-P-2.5**	**527000**		**CPASC1-M1H-G-H-2.5**	**527018**
	E	5/3-way valve, mid-position exhausted	**CPASC1-M1H-E-P-2.5**	**527002**		**CPASC1-M1H-E-H-2.5**	**527020**
	X	1x 3/2-way valve	**CPASC1-M1H-X-P-2.5**	**527004**		**CPASC1-M1H-X-H-2.5**	**527022**
	I	2x 2/2-way valve	**CPASC1-M1H-I-P-2.5**	**527006**		**CPASC1-M1H-I-H-2.5**	**527024**
	**Semi In-line Valve with M5 Working Ports**						
	M	5/2-way valve, single solenoid	**CPPSC1-M1H-M-P-M5**	**527294**		**CPPSC1-M1H-M-H-M5**	**527303**
	J	5/2-way valve, double solenoid	**CPPSC1-M1H-J-P-M5**	**527295**		**CPPSC1-M1H-J-H-M5**	**527304**
	N	2x 3/2-way valve, normally open	**CPPSC1-M1H-N-P-M5**	**527296**		**CPPSC1-M1H-N-H-M5**	**527305**
	K	2x 3/2-way valve, normally closed	**CPPSC1-M1H-K-P-M5**	**527297**		**CPPSC1-M1H-K-H-M5**	**527306**
	B	5/3-way valve, mid-position pressurized	**CPPSC1-M1H-B-P-M5**	**527298**		**CPPSC1-M1H-B-H-M5**	**527307**
	G	5/3-way valve, mid-position closed	**CPPSC1-M1H-G-P-M5**	**527299**		**CPPSC1-M1H-G-H-M5**	**527308**
	E	5/3-way valve, mid-position exhausted	**CPPSC1-M1H-E-P-M5**	**527300**		**CPPSC1-M1H-E-H-M5**	**527309**
	X	1x 3/2-way valve	**CPPSC1-M1H-X-P-M5**	**527301**		**CPPSC1-M1H-X-H-M5**	**527310**
	I	2x 2/2-way valve	**CPPSC1-M1H-I-P-M5**	**527302**		**CPPSC1-M1H-I-H-M5**	**527311**
	Semi In-line Valve with QS-3 Working Ports						
	M	5/2-way valve, single solenoid	**CPPSC1-M1H-M-P-Q3**	**527330**		**CPPSC1-M1H-M-H-Q3**	**527339**
	J	5/2-way valve, double solenoid	**CPPSC1-M1H-J-P-Q3**	**527331**		**CPPSC1-M1H-J-H-Q3**	**527340**
	N	2x 3/2-way valve, normally open	**CPPSC1-M1H-N-P-Q3**	**527332**		**CPPSC1-M1H-N-H-Q3**	**527341**
	K	2x 3/2-way valve, normally closed	**CPPSC1-M1H-K-P-Q3**	**527333**		**CPPSC1-M1H-K-H-Q3**	**527342**
	B	5/3-way valve, mid-position pressurized	**CPPSC1-M1H-B-P-Q3**	**527334**		**CPPSC1-M1H-B-H-Q3**	**527343**
	G	5/3-way valve, mid-position closed	**CPPSC1-M1H-G-P-Q3**	**527335**		**CPPSC1-M1H-G-H-Q3**	**527344**
	E	5/3-way valve, mid-position exhausted	**CPPSC1-M1H-E-P-Q3**	**527336**		**CPPSC1-M1H-E-H-Q3**	**527345**
	X	1x 3/2-way valve	**CPPSC1-M1H-X-P-Q3**	**527337**		**CPPSC1-M1H-X-H-Q3**	**527346**
	I	2x 2/2-way valve	**CPPSC1-M1H-I-P-Q3**	**527338**		**CPPSC1-M1H-I-H-Q3**	**527347**

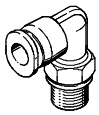
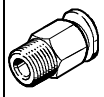
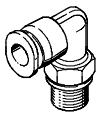
Ordering Data

Replacement Valves

Valves

	Code	Valve Function	Electrical Plug-in Connection			Electrical Horizontal Connection	
			Type	Part No.		Type	Part No.
 	**Semi In-line Valve with QS-4 Working Ports**						
	M	5/2-way valve, single solenoid	**CPPSC1-M1H-M-P-Q4**	**527312**		**CPPSC1-M1H-M-H-Q4**	**527321**
	J	5/2-way valve, double solenoid	**CPPSC1-M1H-J-P-Q4**	**527313**		**CPPSC1-M1H-J-H-Q4**	**527322**
	N	2x 3/2-way valve, normally open	**CPPSC1-M1H-N-P-Q4**	**527314**		**CPPSC1-M1H-N-H-Q4**	**527323**
	K	2x 3/2-way valve, normally closed	**CPPSC1-M1H-K-P-Q4**	**527315**		**CPPSC1-M1H-K-H-Q4**	**527324**
	B	5/3-way valve, mid-position pressurized	**CPPSC1-M1H-B-P-Q4**	**527316**		**CPPSC1-M1H-B-H-Q4**	**527325**
	G	5/3-way valve, mid-position closed	**CPPSC1-M1H-G-P-Q4**	**527317**		**CPPSC1-M1H-G-H-Q4**	**527326**
	E	5/3-way valve, mid-position exhausted	**CPPSC1-M1H-E-P-Q4**	**527318**		**CPPSC1-M1H-E-H-Q4**	**527327**
	X	1x 3/2-way valve	**CPPSC1-M1H-X-P-Q4**	**527319**		**CPPSC1-M1H-X-H-Q4**	**527328**
	I	2x 2/2-way valve	**CPPSC1-M1H-I-P-Q4**	**527320**		**CPPSC1-M1H-I-H-Q4**	**527329**

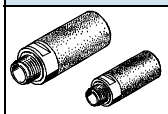
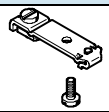
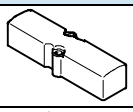
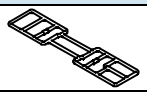
Ordering Data				
Designation			Type	Part No.
Plug Socket with Cable for Plug-in Connection				
	For 1 coil	0.5 m	**MHAP-PI**	**197260**
		1 m	**MHAP-PI-1**	**532182**
	For 2 coils	0.5 m	**MHAP-PI-D-0.5**	**529116**
		1 m	**MHAP-PI-D-1**	**527395**
Plug Socket with Cable for Horizontal Connection				
	For 1 coil, 2-wire	0.5 m	**KMH-0.5**	**197263**
		1 m	**KMH-1**	**197264**
		2.5 m	**KMH-2.5**	**527400**
		5 m	**KMH-5**	**527401**
	For 2 coils, 3-wire	0.5 m	**KMH-D-0.5**	**527396**
		1 m	**KMH-D-1**	**527397**
		2.5 m	**KMH-D-2.5**	**527398**
		5 m	**KMH-D-5**	**527399**
Connecting Cable IP20				
	Sub-D, 25-pin, up to 20 coils	2.5 m	**KMP6-25P-20-2.5**	**530046**
		5 m	**KMP6-25P-20-5**	**530047**
		10 m	**KMP6-25P-20-10**	**530048**
	Sub-D, 25-pin, up to 12 coils	2.5 m	**KMP6-25P-12-2.5**	**530049**
		5 m	**KMP6-25P-12-5**	**530050**
		10 m	**KMP6-25P-12-10**	**530051**
Power Supply				
	MicroStyle M12, 5-pin socket (B-coded)	for 0.75 mm^2	**NTSD-GD-9-M12-5POL-RK**	**538999**
Fieldbus Connection				
	Fieldbus socket for MicroStyle connection, M12, socket (A-coded)		**FBSD-GD-9-5POL**	**18324**
Valve Terminal Connection				
	Angled plug – angled socket WS-WD	0.5 m	**KVI-CP-1-WS-WD-0.5**	**178564**
		2 m	**KVI-CP-1-WS-WD-2**	**163139**
		5 m	**KVI-CP-1-WS-WD-5**	**163138**
	Plug straight GS-WD	5 m	**KVI-CP-1-GS-WD-5**	**163137**
		8 m	**KVI-CP-1-GS-WD-8**	**163136**
	Plug straight GS-GD	2 m, for chain link trunking	**KVI-CP-2-GS-GD-2**	**170234**
		5 m, for chain link trunking	**KVI-CP-2-GS-GD-5**	**170235**
		8 m, for chain link trunking	**KVI-CP-2-GS-GD-8**	**165616**

Ordering Data				
Designation			Type	Part No.
Push-in Fittings for Working Ports				
	Connecting thread M5 for tubing O.D.	3 mm	**QSM-M5-3**	**153302**
		4 mm	**QSM-M5-4**	**153304**
		3 mm	**QSM-M5-3-I**	**153313**
		4 mm	**QSM-M5-4-I**	**153315**
Push-in L-fittings for Working Ports				
	Connecting thread M5 for tubing O.D.	3 mm	**QSML-M5-3**	**153331**
		4 mm	**QSML-M5-4**	**153333**
		6 mm	**QSML-M5-6**	**153335**
		4 mm	**QSMLL-M5-4**	**153339**
		6 mm	**QSMLL-M5-6**	**153341**
Push-in Fittings for Manifolds				
	Connecting thread M3 for tubing O.D.	3 mm	**QSM-M3-3**	**153301**
		4 mm	**QSM-M3-4**	**153303**
		3 mm	**QSM-M3-3-I**	**153312**
		4 mm	**QSM-M3-4-I**	**153314**
	Connecting thread M5 for tubing O.D.	3 mm	**QSM-M5-3**	**153302**
		4 mm	**QSM-M5-4**	**153304**
		6 mm	**QSM-M5-6**	**153306**
		3 mm	**QSM-M5-3-I**	**153313**
		4 mm	**QSM-M5-4-I**	**153315**
		6 mm	**QSM-M5-6-I**	**153317**
	Connecting thread G1⁄8 for tubing O.D.	$^{5}/_{32}$ inch	**QSM-M5-$^{5}/_{32}$-I-U-M**	**130593**
		$^{1}/_{4}$ inch	**QSM-M5-$^{1}/_{4}$-I-U-M**	**130591**
		$^{1}/_{8}$ inch	**QSM-M5-$^{1}/_{8}$-I-U-M**	**130749**
		$^{3}/_{16}$ inch	**QSM-M5-$^{3}/_{16}$-I-U-M**	**183750**
		$^{1}/_{4}$ inch	**QS-M5-$^{1}/_{4}$-I-U-M**	**192808**
		4 mm	**QSM-G1⁄8-4-I**	**186266**
		6 mm	**QSM-G1⁄8-6-I**	**186267**
		8 mm	**QS-G1⁄8-8-I**	**186109**
	Connecting thread R1⁄8 for tubing O.D.	4 mm	**QSM-1⁄8-4**	**153305**
		6 mm	**QSM-1⁄8-6**	**153307**
		4 mm	**QSM-1⁄8-4-I**	**153316**
		6 mm	**QSM-1⁄8-6-I**	**153318**
Push-in L-fittings for Manifolds				
	Connecting thread M3 for tubing O.D.	3 mm	**QSML-M3-3**	**153330**
		4 mm	**QSML-M3-4**	**153332**
		3 mm	**QSMLL-M3-3**	**153337**
		4 mm	**QSMLL-M3-4**	**153338**
	Connecting thread M5 for tubing O.D.	3 mm	**QSML-M5-3**	**153331**
		4 mm	**QSML-M5-4**	**153333**
		6 mm	**QSML-M5-6**	**153335**
		4 mm	**QSMLL-M5-4**	**153339**
		6 mm	**QSMLL-M5-6**	**153341**
	Connecting thread R1⁄8 for tubing O.D.	4 mm	**QSML-1⁄8-4**	**153334**
		6 mm	**QSML-1⁄8-6**	**153336**
		4 mm	**QSMLL-1⁄8-4**	**153340**
		6 mm	**QSMLL-1⁄8-6**	**153342**

Accessories

Miscellaneous

FESTO

Ordering Data				
Designation			Type	Part No.
Silencers				
	Connecting thread	M3	**U-M3**	**163978**
		M5	**U-M5**	**4645**
		M5	**UC-M5**	**165003**
		G1/8	**UC-1/8**	**161419**
	Connection type, push-in sleeve	3 mm	**UC-QS-3H**	**165005**
		4 mm	**UC-QS-4H**	**165006**
		6 mm	**UC-QS-6H**	**165007**
		8 mm	**UC-QS-8H**	**175611**
Blanking Plugs				
	M5 Thread		**B-M5**	**3843**
	M5 Thread		**B-M5-B**	**174308**
	G1/8 Thread		**B-1/8**	**3568**
Plugs				
	Blanking plug for tubing O.D.	3 mm	**QSMC-3H**	**153382**
		4 mm	**QSC-4H**	**153267**
		6 mm	**QSC-6H**	**153268**
		8 mm	**QSC-8H**	**153269**
Labels				
	6x10 in frames, 64 pieces for valve identification		**IBS-6x10**	**18576**
	4.5x9 mm, 80 pieces for manifold block identification		**MH-BZ-80x**	**197259**
Mounting				
	For DIN rail		**CPASC1-BG-NRH**	**527392**
Cover				
	Cover for vacant position (one self adhesive label supplied)		**CPASC1-RP**	**527062**
	Cover for manual override		**CPASC1-MO-V**	**527393**
Valve Seal				
	For manifold block		**CPASC1-SEAL-A**	**527394**
Separator Element and Assembly Tool				
	Separator element		**CPASC1-KT**	**536942**
	Assembly tool for separator element		**CPASC1-MWKT**	**536943**
User Documentation				
	User documentation – CPA-SC	English	**P.BE-CPASC-EN**	**530933**
		German	**P.BE-CPASC-DE**	**530932**
		French	**P.BE-CPASC-FR**	**530934**
		Spanish	**P.BE-CPASC-ES**	**530935**
		Italian	**P.BE-CPASC-IT**	**530936**
		Swedish	**P.BE-CPASC-SV**	**530937**
	User documentation – Fieldbus DeviceNet	English	**P.BE-CPASC-CPVSC-DN-EN**	**539009**
		German	**P.BE-CPASC-CPVSC-DN-DE**	**539008**
		French	**P.BE-CPASC-CPVSC-DN-FR**	**539010**
		Spanish	**P.BE-CPASC-CPVSC-DN-ES**	**539011**
		Italian	**P.BE-CPASC-CPVSC-DN-IT**	**539012**
		Swedish	**P.BE-CPASC-CPVSC-DN-SV**	**539013**
Software				
	Software – CD-ROM	Valve terminals	**P.CD-VALVE-T**	**183350**
		Utilities	**P.CD-VI-UTILITIES-2**	**533500**

Compressed Air

Operate your equipment with unlubricated compressed air if possible. Festo valves and cylinders are designed for operation under normal use without any additional lubrication, yet still have a long service life. The quality of compressed air downstream of the compressor must correspond to that of unlubricated compressed air.
If possible, do not operate all of your equipment with lubricated compressed air. The lubricators should, where possible, always be located downstream of the valves, directly upstream of the cylinders used.

Incorrect additional oil and too high an oil content in the compressed air reduces the service life of the valve terminal. Use Festo special oil OFSW-32, P/N 152811 (1 liter) (as specified in DIN 51524-HLP32; basic oil viscosity 32 cSt at 40 °C).

Biodegradable Oils
When using bio-oils (oils which are based upon synthetic or native ester, e.g. rapeseed oil methyl ester), the maximum residual oil content of 0.1 mg/m3 must not be exceeded (see ISO 8573-1 Class 4).

Mineral Oils
When using mineral oils (e.g. HLP oils to DIN 51524, parts 1 to 3) or similar oils based on poly-alpha-olefins (PAO), the maximum residual oil content of 5 mg/m3 must not be exceeded (see ISO 8573-1 Class 4). A higher residual oil content irrespective of the compressor oil cannot be permitted, as the basic lubricant would be washed away over time.

Festo Product Range

Integrated Systems

- Design, documentation, assembly/testing
- Single and multi-axis linear and rotary systems
- Stepper controls, servo pneumatic and servo electric systems

Control Systems

- Design, documentation, assembly/testing
- Cabinets are designed, manufactured, assembled, and tested per NEMA, UL, and IEC standards
- Standard and stainless steel enclosures

Pneumatic Actuators and Grippers

- ISO and NFPA cylinders
- Linear and rotary actuators
- Standard, precision, and micro grippers plus accessories

Electromechanical Actuators

- Belt and ball screw driven linear actuators
- High accuracy and repeatability
- High rigidity and speed

Pneumatic Valves and Valve Manifolds

Valves
- In-line/sub-base directional control valves
- OSHA compliant lockout valves
- Proportional valves

Valve Manifolds
- Direct, multi-pin, and fieldbus manifolds

Sensors and Control Technology

- Inductive, optical, mechanical, pressure and vacuum sensors
- PLCs and IPCs
- Remote access panels [HMI]
- Counters, timers and gauges

Air Preparation

- Filters
- Regulators
- Lubricators
- Dryers
- Combination units

Vacuum Components

- Vacuum generators
- Suction cups and suction grippers
- A variety of suction cup types and materials are available

Fittings and Tubing

- Inch/metric fittings, hybrid fittings, and flow controls
- Inch/metric tubing (various materials and colors)

Industry Specific Solutions

- Cylinders, manifolds, tubing and fittings for use in washdown environments
- Linear/rotary actuators with and without a process valve; diaphragm valves, Namur valves

For more information about the entire Festo product range, including technical specifications, CAD models, product selection software, and access to our on-line store, visit us at www.festo.com/us.

Conversion Factors
The conversion table below includes the units most commonly used for designing a system. They are given to enable the user to make necessary calculations.

Length or Distance

m ⇢ ft	=	x 3.281
mm ⇢ inch	=	÷ 25.4

Volume

cm^3 ⇢ in^3	=	x 0.061

Mass

g ⇢ lb	=	x 0.002
kg ⇢ lb	=	x 2.2046

Pressure

bar ⇢ psi	=	x 14.7

Temperature

C° ⇢ F°	=	x [1.8] + 32

Flow

l/min ⇢ Cv	=	x 0.001
l/min ⇢ scfm	=	x 0.0353

Force

N ⇢ lbf	=	x 0.2248
kgf ⇢ N	=	x 9.80665

Moment

Nm ⇢ in-lb	=	x 8.8507
Nm ⇢ ft-lb	=	x 0.7376

Moment of Inertia

$kg \cdot cm^2$ ⇢ $lb\text{-}in^2$	=	x 0.3417
kg·m ⇢ lb-ft	=	x 7.233
$kg \cdot m^2$ ⇢ $oz\text{-}in^2$	=	x 5.4675

Festo North America

United States

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