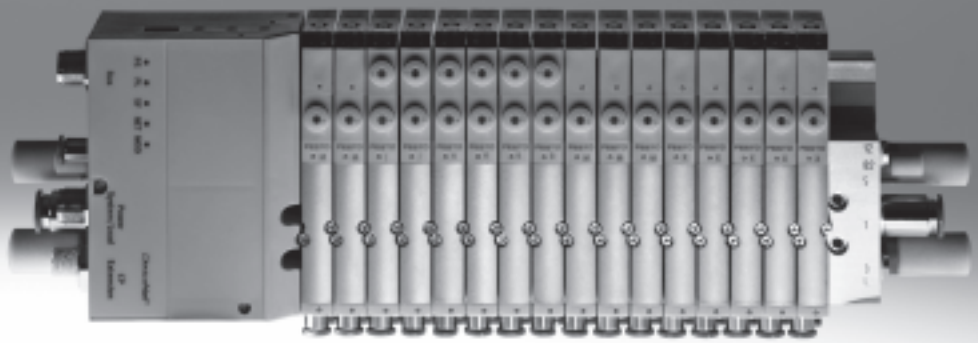
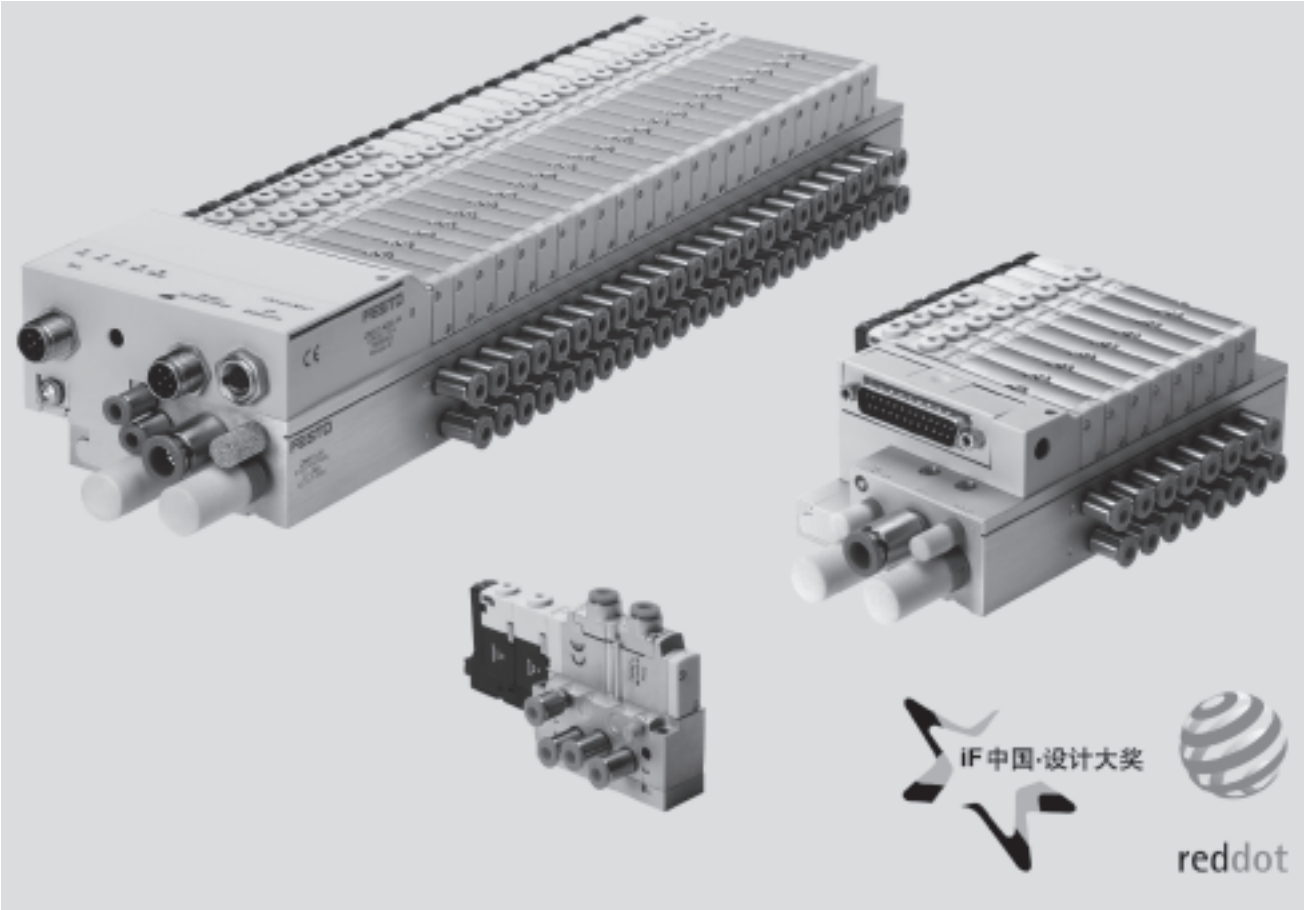
# Valve terminals type 82 CPA-SC, Smart Cubic

FESTO



# Valve terminals type 82 CPA-SC, Smart Cubic

Key features




### Innovative

- Compact valve terminal for a wide range of pneumatic applications
- Standardised from the individual valve up to multi-pin plug and fieldbus connections
- Highly versatile during the planning and assembly stages as well as in operational use
- Wide range of selectable valve functions, including valve functions for customised pressure supplies or vacuum application solutions
- Comprehensive, optimally harmonised range of accessories for flow rates of up to 180 l/min

### Versatile

- Room for expansion with 2 … 24 valve positions on one terminal
- Use of individual valves in combination with an individual block
- The flexibility of the pneumatic working connections facilitates a practical solution to different requirements
- Tubing lines can be connected horizontally to the valve or vertically on the sub-base
- High pressure range –0.9 … 10 bar
- Wide range of electrical connections for 24 V DC operating voltage

### Reliable

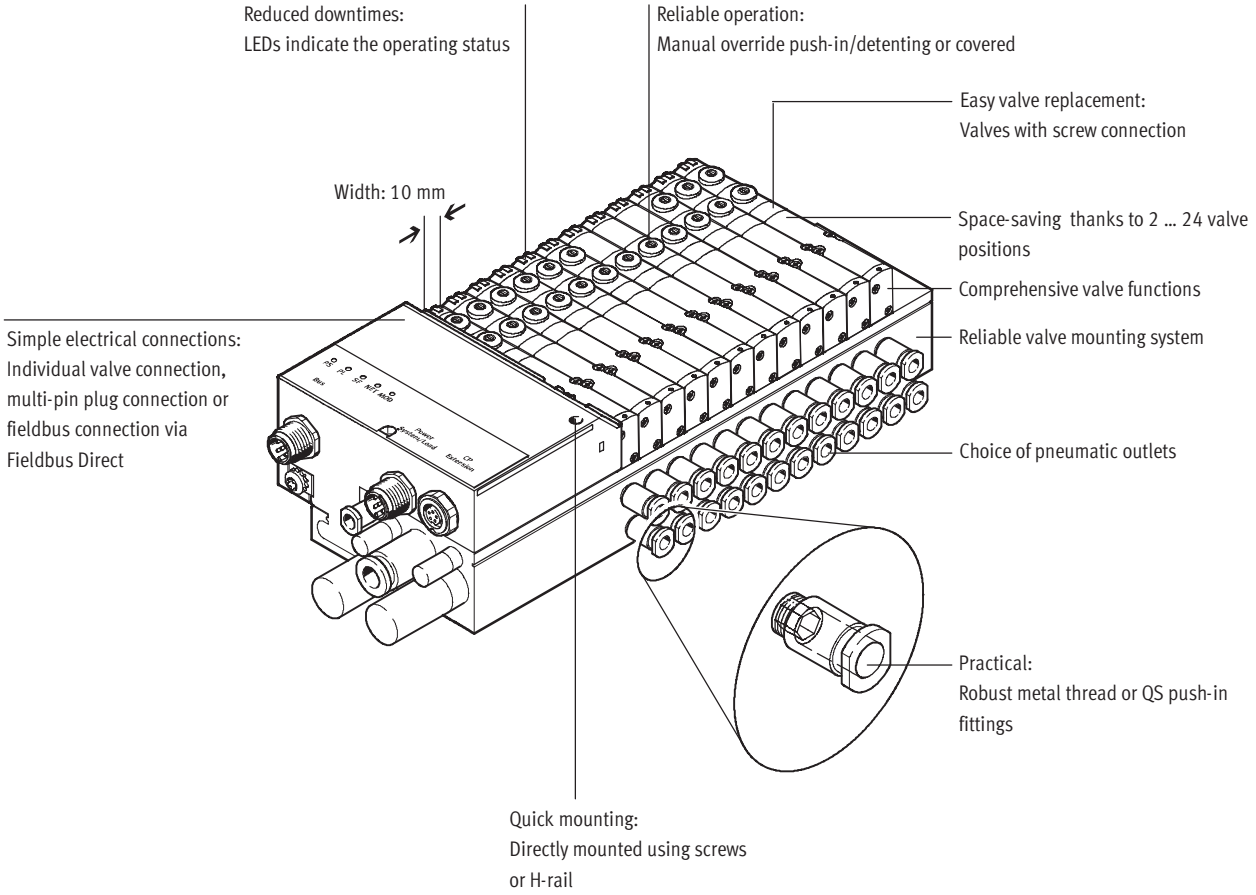
- Manual override facility
- Durable thanks to the use of tried-and-tested piston spool valves
- Sturdy thanks to metal housing and connecting thread
- Fast troubleshooting thanks to LEDs on the valves and diagnosis via fieldbus

### Easy-to-mount

- Ready-to-install unit, already assembled and tested
- Minimised expenditure with regard to ordering, installation and commissioning
- Secure wall mounting or via H-rail

# Valve terminals type 82 CPA-SC, Smart Cubic

Key features




| Equipment options | | | |
|---|---|---|---|
| Valve functions | | | |
| • 5/2-way valve, single solenoid<br>• 5/2-way valve, double solenoid<br>• 2x 3/2-way valve, normally open<br>• 2x 3/2-way valve, normally closed | • 5/3-way valve, mid-position pressurised<br>• 5/3-way valve, mid-position closed<br>• 5/3-way valve, mid-position exhausted | • 1x 3/2-way valve, normally closed, external compressed air supply<br>• 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/individual sub-base valve**<br>• Plug-in (PI)<br>• Horizontal connection (HC) | **Multi-pin**<br>• Max. 20 valve positions/ max. 20 solenoid coils<br>• Sub-D<br>• Flat cable | **Fieldbus**<br>• Max. 24 valve positions/ max. 32 solenoid coils | **CP string extension**<br>• Further valve terminals from the CPV/CPA range<br>• Electrical I/O modules |

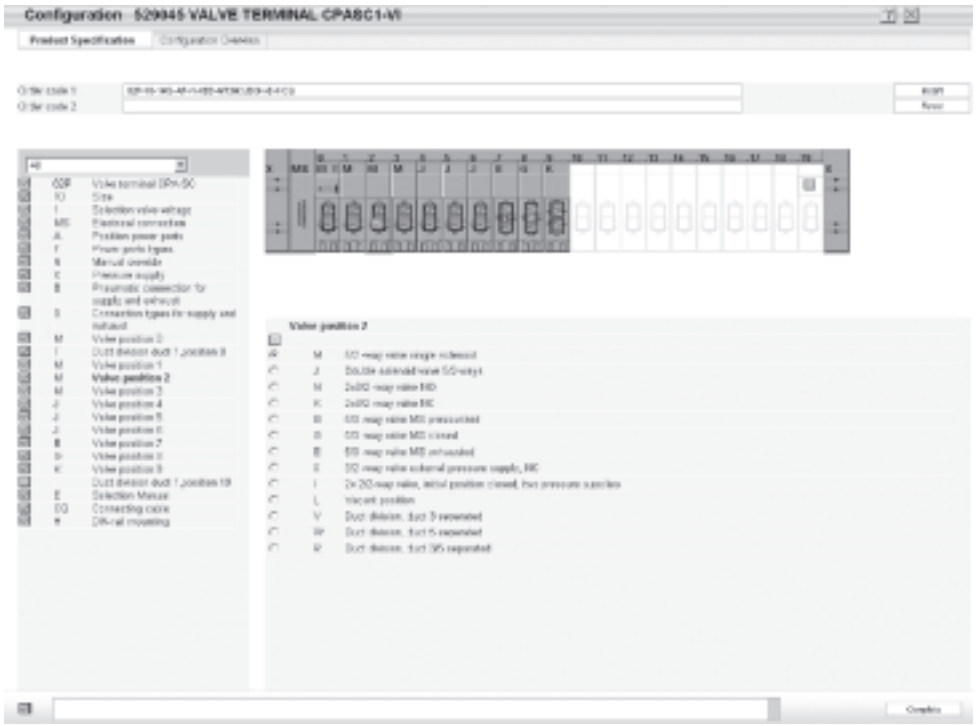
## Valve terminal configurator

**Online via:** ➔ www.festo.com/us/engineering

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

The valve terminals are fully assembled according to your order specifications and individually tested. This reduces the amount of assembly and installation required to a minimum.
A type 82 valve terminal is ordered via a modular order code.

Ordering system for type 82
➔ Internet: type 82

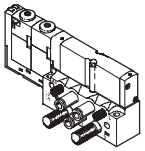


# Valve terminals type 82 CPA-SC, Smart Cubic

Key features

## Individual connection

### Valve on individual sub-base



Valves can also be used on an individual block for actuators further away from the valve terminal.

With an individual electrical connection, the plug is connected directly to the valve. Two electrical connection types are available for the valve terminal and for the individual block:

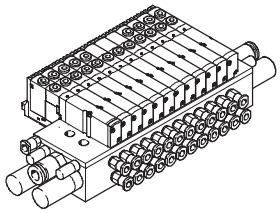
- Horizontal connection (HC)

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

- Plug-in (PI)

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

### Valves pneumatically linked on manifold sub-base

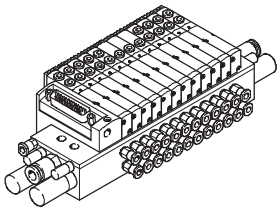


Connection is independent of the control technology used. This ensures correct polarity during installation.

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).

## Multi-pin plug connection



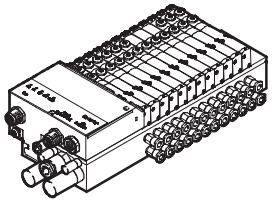
Control signals from the controller to the valve terminal are transmitted via a pre-assembled multi-core cable, which substantially reduces installation time.

These valve terminals can be fitted with 2 to 20 solenoid coils (divided between 2 to 20 valve positions).

Variants

- Sub-D connection
- Flat cable connection

## Fieldbus Direct



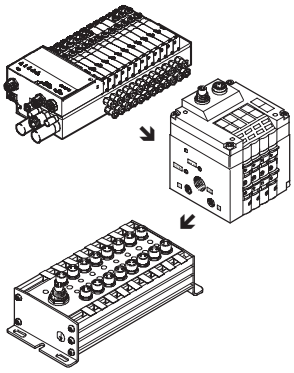
An integrated fieldbus node manages the communication connection to a higher-order PLC. This enables a space-saving pneumatic and electronic solution.
The fieldbus node is directly integrated in the electrical interface of the valve terminal and therefore takes up only a minimal amount of space.

The CP string extension option allows the functions and components of the CP installation system to be used. Valve terminals with fieldbus interfaces can be equipped with 4 to 24 valve positions and 4 to 32 solenoid coils.

Variants

- DeviceNet connection
- Profibus connection
- 4 to 32 solenoid coils

## CP string extension



The optional string extension allows additional valve terminals and I/O modules to be connected to the fieldbus node of the CPA-SC. A CP string of the CPI installation system is integrated in the fieldbus node as an extension. Different input and output modules as well as CPV- and CPA valve terminals can be connected.

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

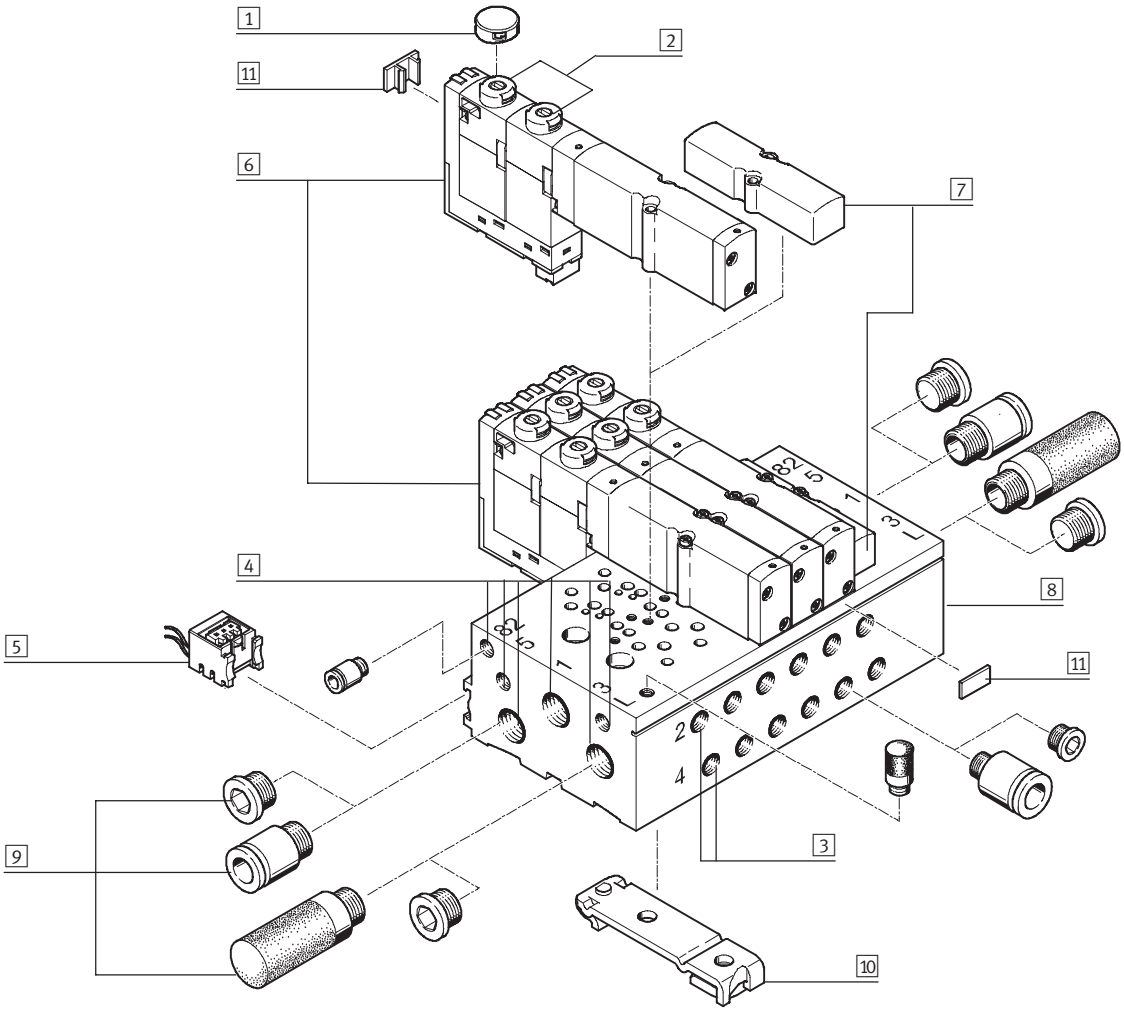
- 32 input signals
- 32 output signals for output modules 24 V DC or solenoid coils
- Logic and sensor supply for the input modules
- Load voltage supply for the valve terminals
- Logic supply for the output modules

## Overview – CPA-SC valve terminal with sub-base valves

Valve terminal with individual plug-in (PI) electrical connections

Code: IP, IQ

Valve terminals with individual plug-in (PI) 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 block
5 Individual plug-in (PI) connection
6 Valve
7 Cover for vacant position (blanking plate)
8 Manifold block for sub-base valves
9 Connectors, silencers and blanking plugs
10 H-rail mounting
11 Inscription labels

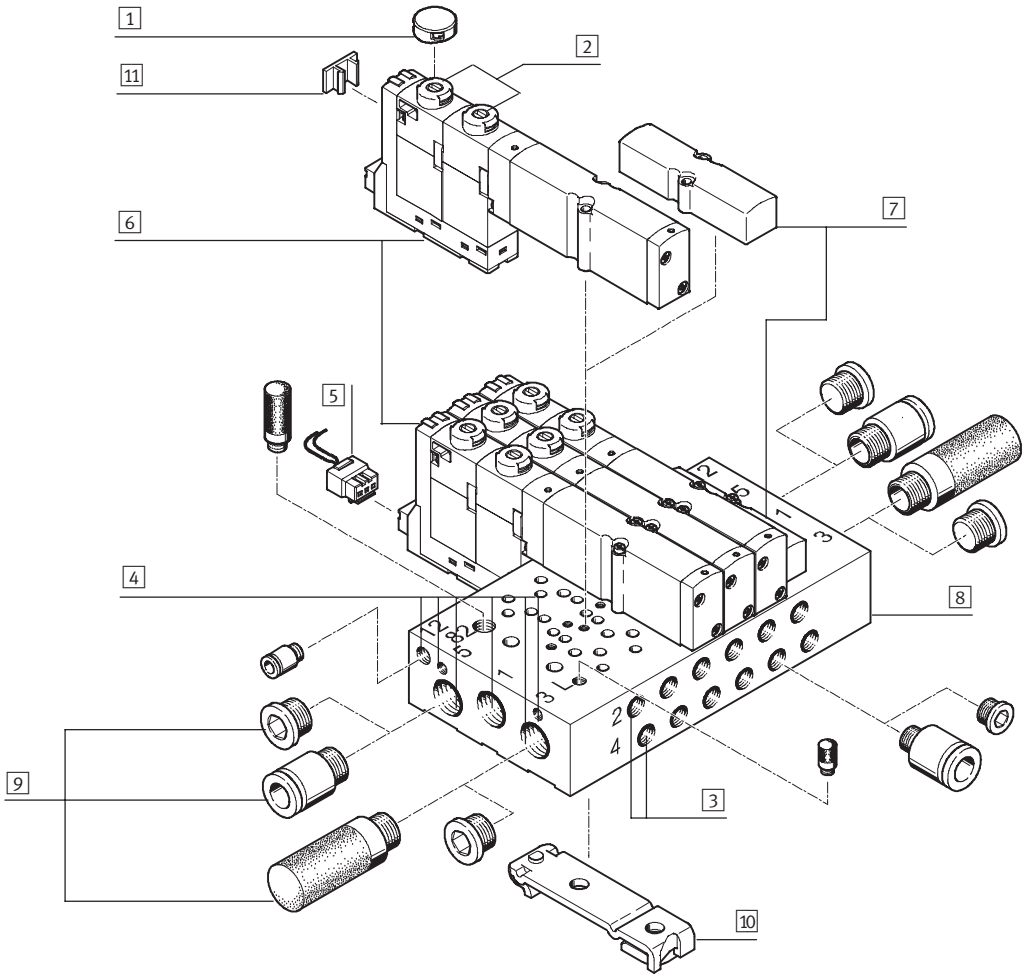
## Overview – CPA-SC valve terminal with sub-base valves

Valve terminal with individual horizontal (HC) electrical connections

Code: IH

Valve terminals 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.



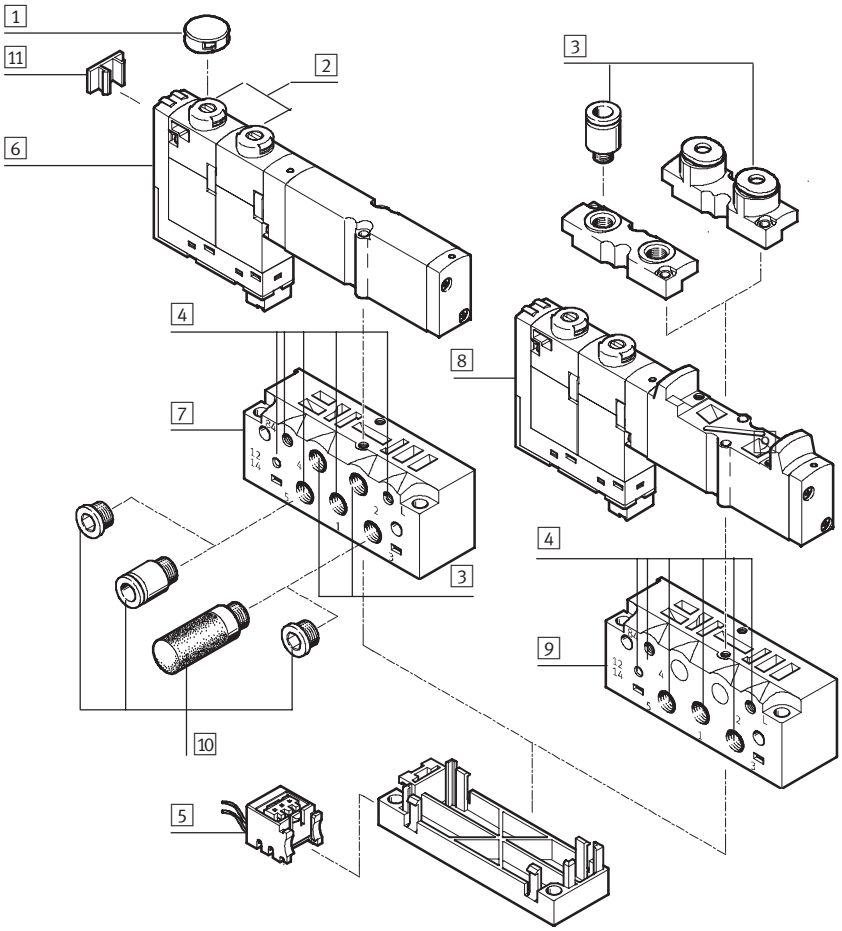

1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the manifold block (per valve position)
4 Supply ports (1, 12/14), exhaust ports (3, 5, 82/84) and pressure compensating port (L) on the left-hand and right-hand side of the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

## Overview – CPA-SC individual block with sub-base valve or semi in-line valve

Individual block with individual plug-in (PI) electrical connection

Code: SP, SQ

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



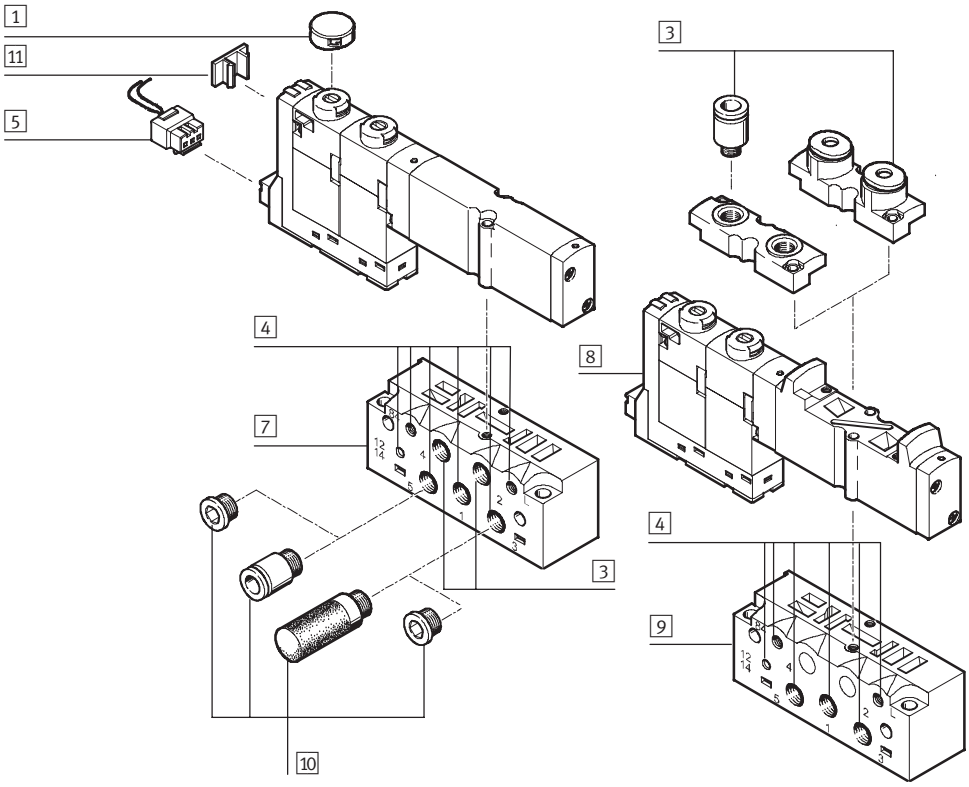

1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the individual block or on the valve (semi in-line version)
4 Supply ports (1, 12/14), exhaust ports (3, 5, 82/84) and pressure compensating port (L) on the individual block
5 Individual horizontal connection (HC)
6 Sub-base valve
7 Individual block for sub-base valve
8 Semi in-line valve
9 Individual block for semi in-line valve
10 Connectors, silencers and blanking plugs
11 Inscription label

## Overview – CPA-SC individual block with sub-base valve or semi in-line valve

Individual block with individual horizontal electrical connection (HC)

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 individual block 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 individual block
5 Individual horizontal connection (HC)
6 Sub-base valve
7 Individual block for sub-base valve
8 Semi in-line valve
9 Individual block for semi in-line valve
10 Connectors, silencers and blanking plugs
11 Inscription label

## Overview – CPA-SC valve terminal with electrical multi-pin plug connection

Valve terminal with sub-base valves

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

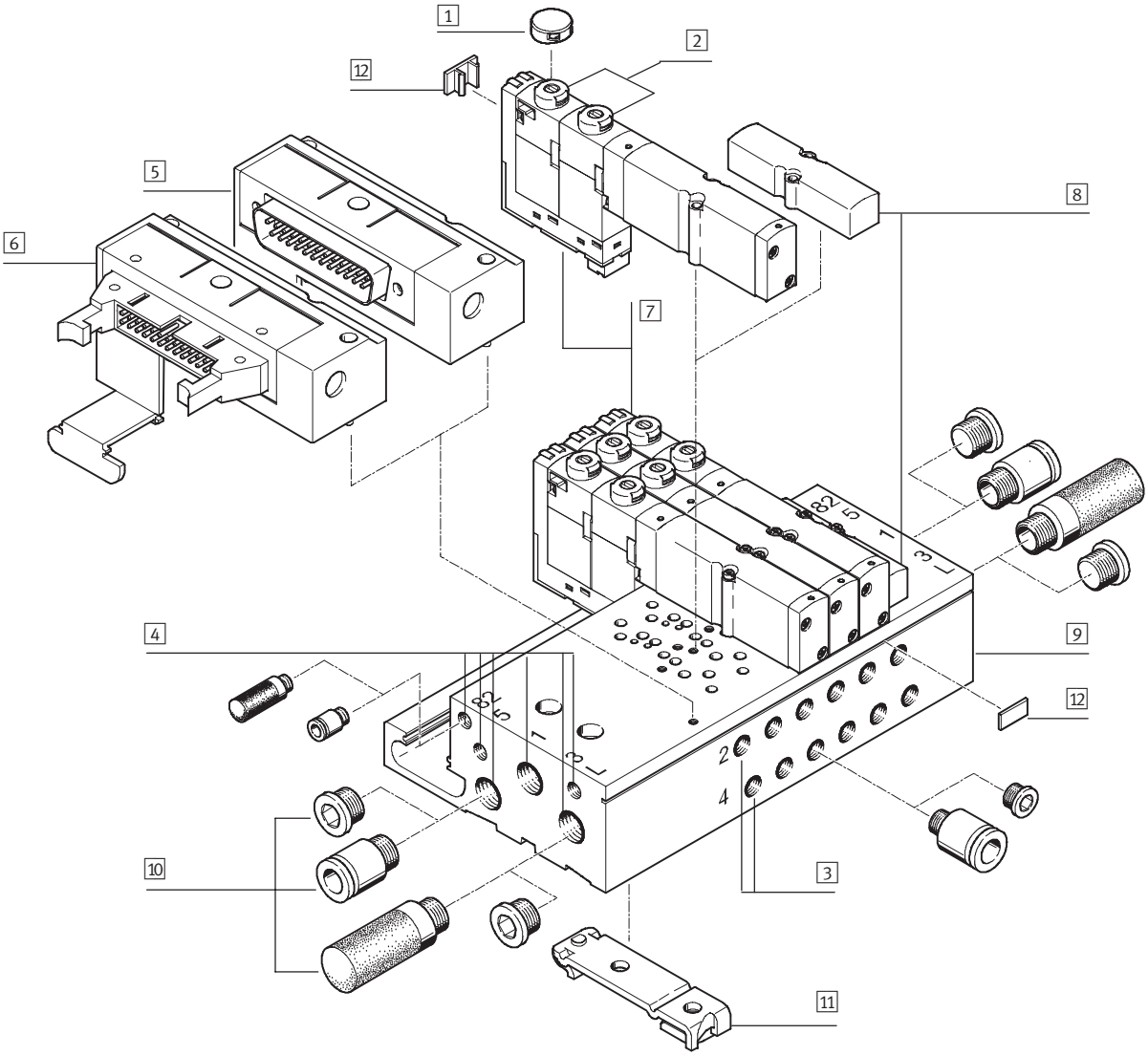
or

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

Valve terminals with electrical multi-pin 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.

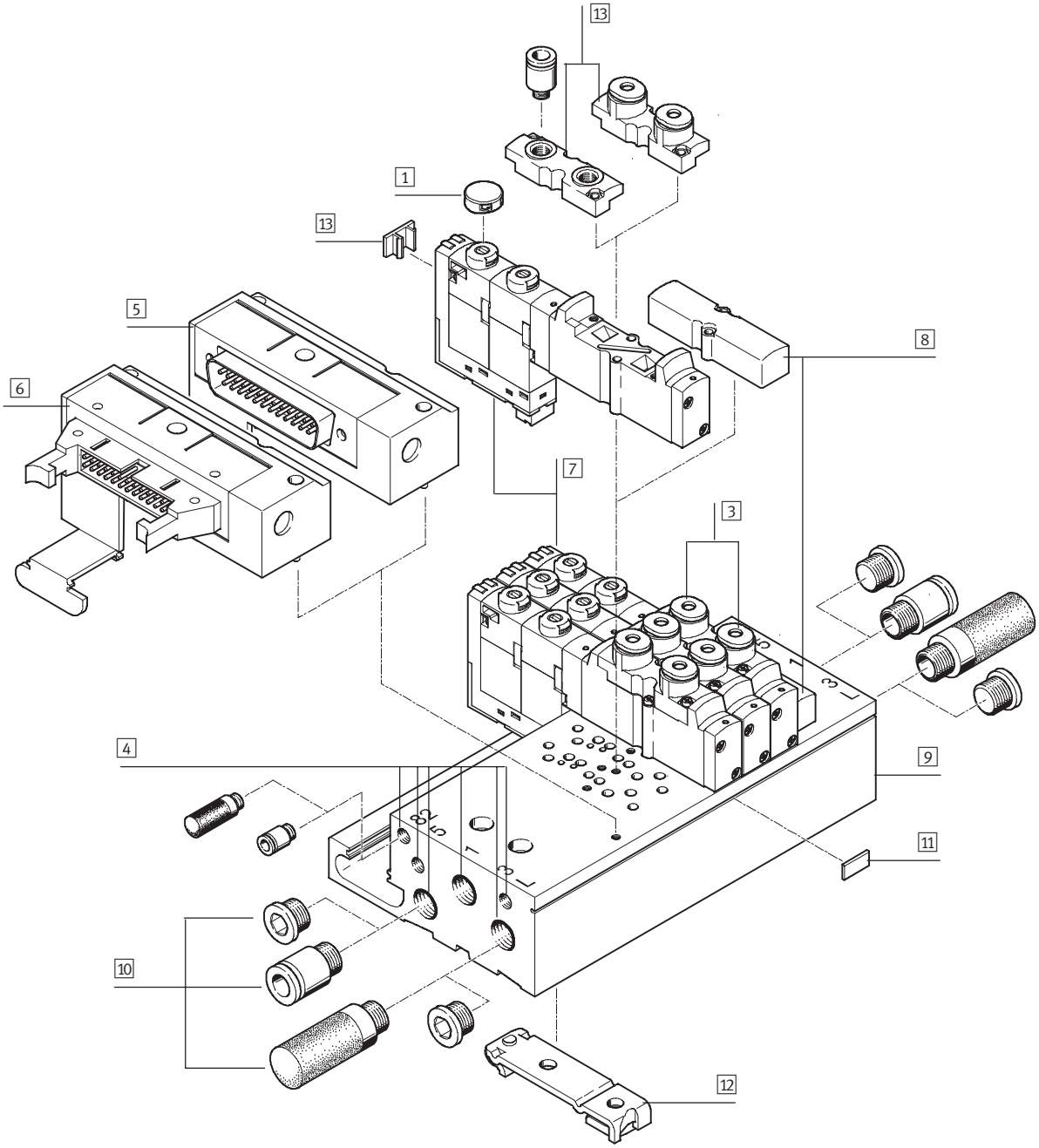
A maximum of 20 solenoid coils can be actuated via the electrical multi-pin plug connection.

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 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 block
5 Multi-pin plug connection Sub-D
6 Multi-pin plug connection with connector for flat cable
7 Valve
8 Cover for vacant position (blanking plate)
9 Manifold block for sub-base valves
10 Connectors, silencers and blanking plugs
11 H-rail mounting
12 Inscription labels

## Overview – CPA-SC valve terminal with electrical multi-pin plug connection
Valve terminal with semi in-line valves




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 block
5 Multi-pin plug connection Sub-D
6 Multi-pin plug connection with connector for flat cable
7 Valve
8 Cover for vacant position (blanking plate)
9 Manifold block for semi in-line valves
10 Connectors, silencers and blanking plugs
11 Inscription labels
12 H-rail mounting
13 Pneumatic connection plates for semi in-line valves

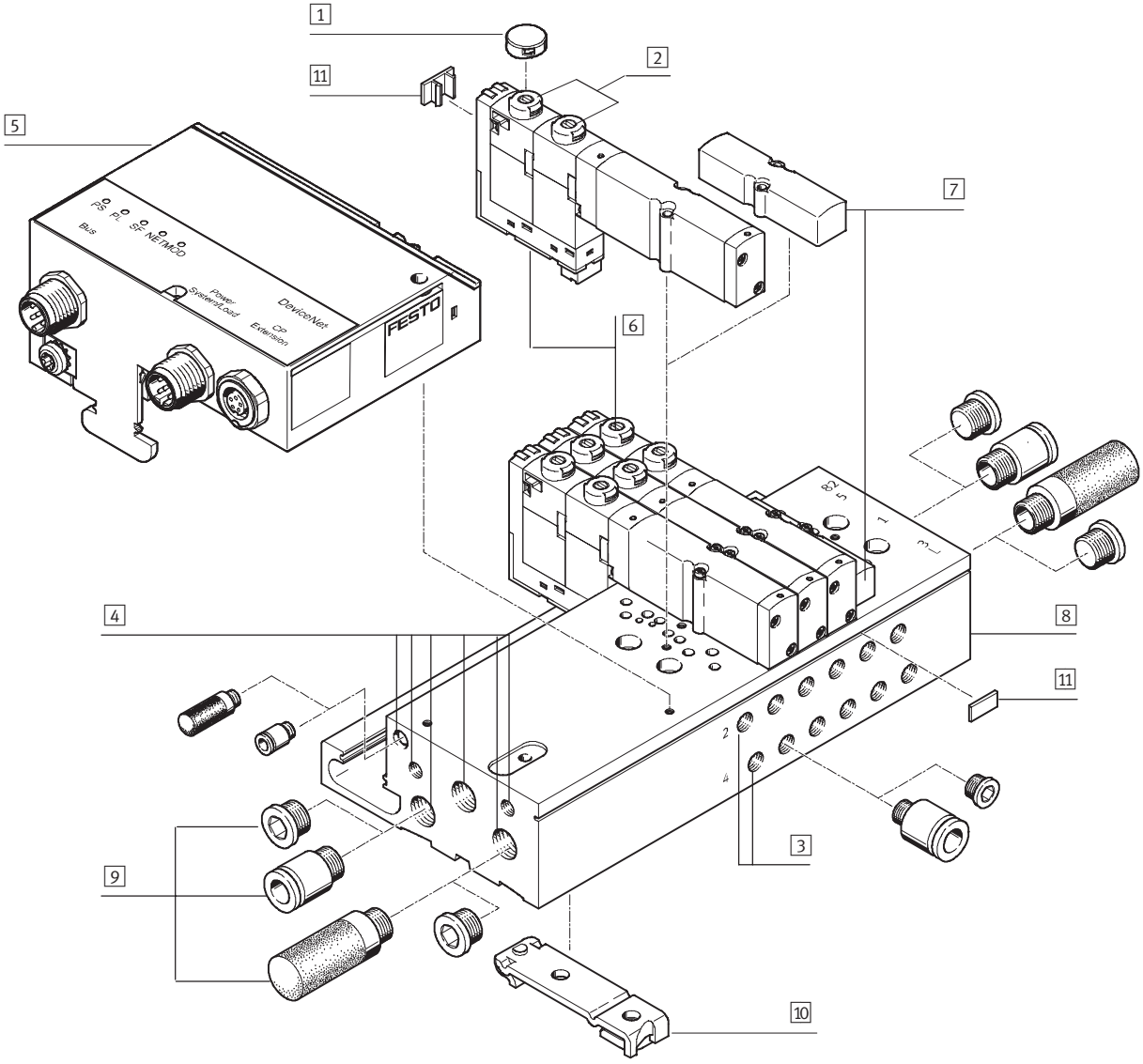
## Overview – CPA-SC valve terminal with Fieldbus Direct

Valve terminal with sub-base valves

Valve terminals 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.

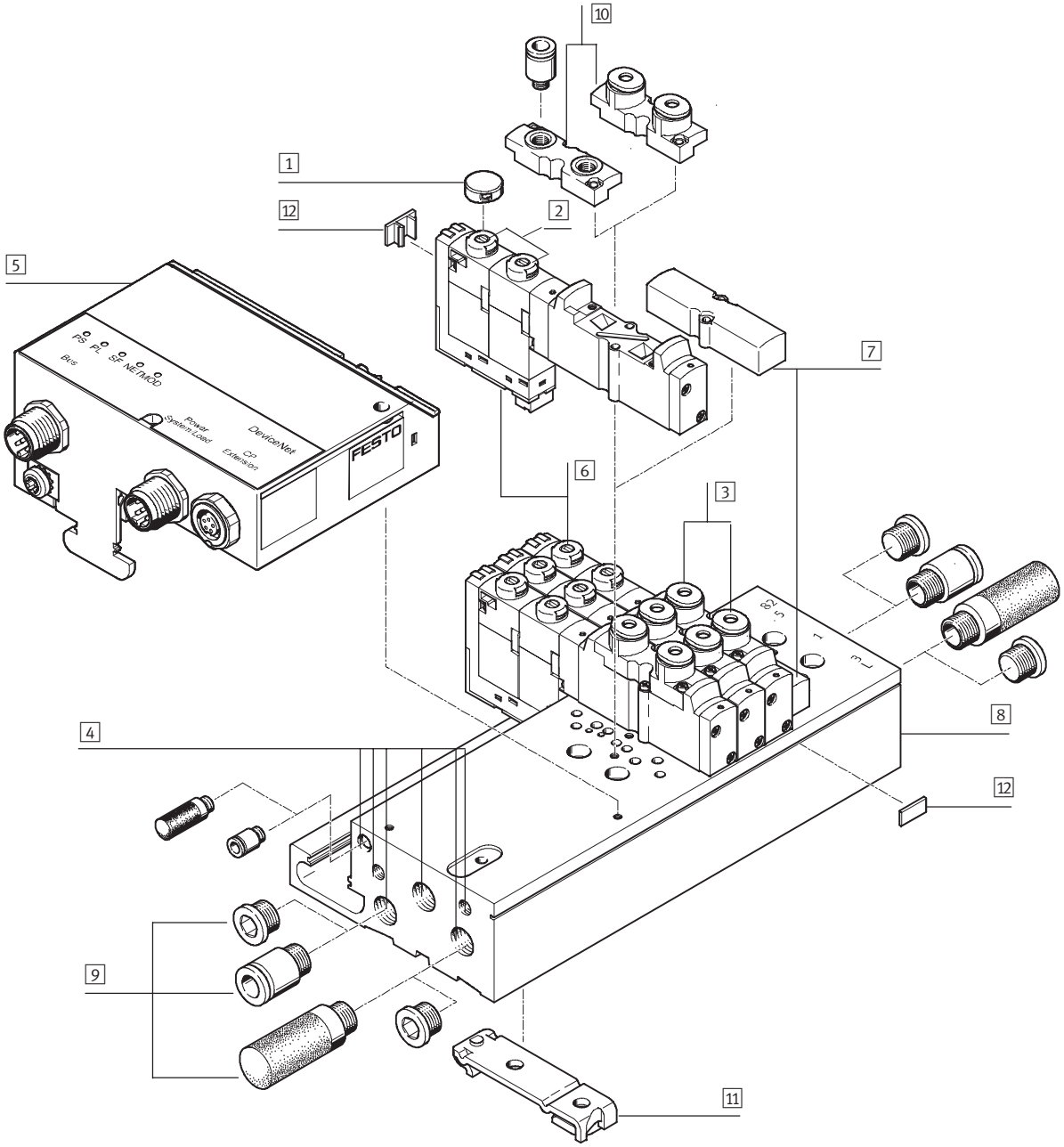
A maximum of 32 solenoid coils can be actuated via the fieldbus connection.




1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the manifold 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 block
5 Fieldbus Direct
6 Valve
7 Cover for vacant position (blanking plate)
8 Manifold block for sub-base valves
9 Connectors, silencers and blanking plugs
10 H-rail mounting
11 Inscription labels

## Overview – CPA-SC valve terminal with Fieldbus Direct

Valve terminal with semi in-line valves



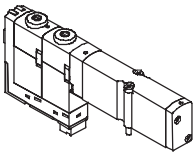

1 Cover for manual override (optional)
2 Manual override (per solenoid coil, push-in/rotary-detenting)
3 Working lines (2, 4) on the valve
4 Supply ports (1, 12/14), exhaust ports (3, 5, 82/84) and pressure compensating port (L) on the left-hand and right-hand side of the manifold block
5 Fieldbus Direct
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 H-rail mounting
12 Inscription labels

# Valve terminals type 82 CPA-SC, Smart Cubic

Key features – Pneumatic components

## Valves

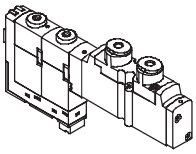
### Sub-base valve



Sub-base valves can be quickly replaced since the tubing connections remain on the manifold block.

This design is also particularly slim.

### 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 sub-base 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

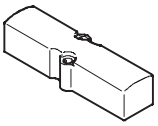
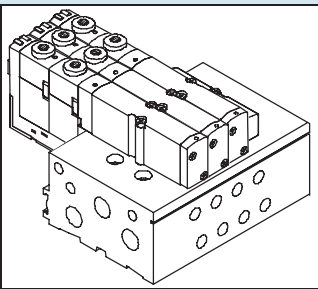
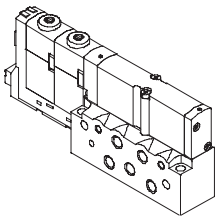
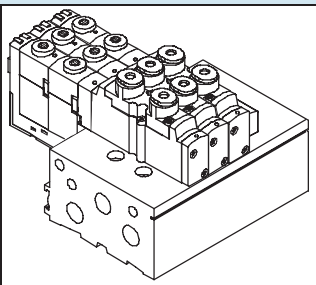
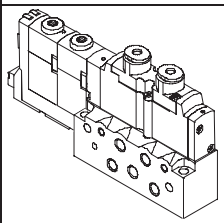


Plate without valve function for reserving valve positions on a valve terminal.

Valve sub-bases and blanking plates are attached to the manifold block using two screws.

| **Manifold blocks** | | | |
|---|---|---|---|
| Manifold block | | Number of valve positions | Manifold block connections |
| Code A – Working ports (2, 4) on the manifold block | | | |
| Manifold block for sub-base valves and blanking plates |  | 2 … 20 | • With working ports (2, 4), M5 threaded hole<br>• With ports for supply air (1, 12/14) and exhaust air (3, 5, 82/84)<br>• With pressure compensating port (L) |
| Individual sub-base for sub-base valve |  | 1 | |
| | | | |
| Code P – Working ports (2, 4) on the valve | | | |
| Manifold block for semi in-line valves and blanking plates |  | 2 … 20 | • Without working ports<br>• With ports for supply air (1, 12/14) and exhaust air (3, 5, 82/84)<br>• With pressure compensating port (L) |
| Individual sub-base for semi in-line valve |  | 1 | |

**Note**

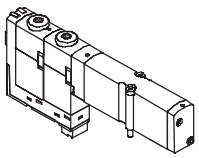
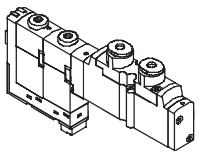
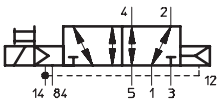
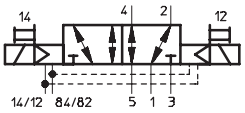
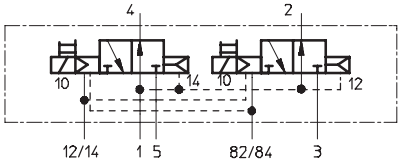
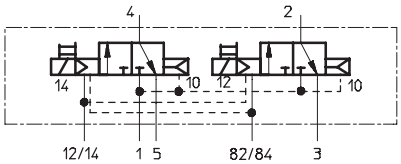
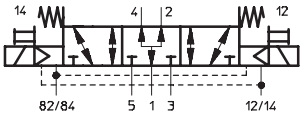
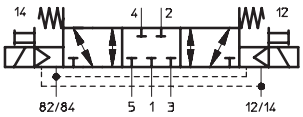
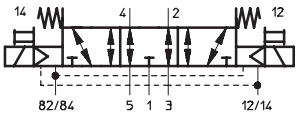
Semi in-line valves can also be mounted on manifold blocks for sub-base valves. In this case the corresponding working ports on the manifold block must be sealed using blanking plugs.

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

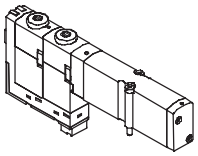
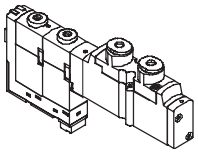
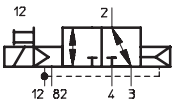
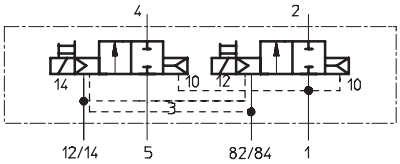
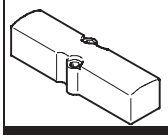
An individual sub-base is the ideal solution in cramped space conditions. All available valve types can be used.

# Valve terminals type 82 CPA-SC, Smart Cubic

Key features – Pneumatic components

| Valves | | | | |
|---|---|---|---|---|
| | Code | Circuit symbol | Size 10 | Description |
|   | M |   | ■ | 5/2-way valve, single solenoid<br>• Pneumatic spring return |
| | J |   | ■ | 5/2-way valve, double solenoid |
| | N |   | ■ | 2x 3/2-way valve, single solenoid<br>• Normally open<br>• Pneumatic spring return |
| | K |   | ■ | 2x 3/2-way valve, single solenoid<br>• Normally closed<br>• Pneumatic spring return |
| | B |   | ■ | 5/3-way valve<br>• Mid-position pressurised[1)]<br>• Mechanical spring return<br>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<br>• Mid-position closed[1)]<br>• Mechanical spring return<br>The piston rod side of a connected cylinder remains held under pressure when the valve is in the normal position. |
| | E |   | ■ | 5/3-way valve<br>• Mid-position exhausted[1)]<br>• Mechanical spring return<br>The piston rod of a connected cylinder remains freely movable when the valve is in the normal position. |

1) If neither solenoid coil is being supplied with power, the valve assumes its mid-position by means of spring force.
If both coils are being supplied with power simultaneously, the valve remains in the switching position previously assumed.

| Valves | | | | |
|---|---|---|---|---|
| | Code | Circuit symbol | Size 10 | Description |
|   | X |   | ■ | 1x 3/2-way valve<br>• Normally closed<br>• External compressed air supply<br>• Pneumatic spring return<br>Compressed air (–0.9 ... +10 bar) supplied at working port 4 can be switched. |
| | I |   **Note**<br>When using this valve, please note that duct 5 is used as a supply duct for the second 2/2-way valve.<br>Use of the valve is advisable in a separate pressure zone with ducts 5 and 1 isolated. | ■ | 2x 2/2-way valve<br>• Normally closed<br>• Normally closed, reversible<br>• Pneumatic spring return<br>– The vacuum is connected at port 5<br>– Port 14 switches the vacuum<br>– Port 12 switches the ejector pulse<br>– An external T-connection must be established between port 2, 4 and the vacuum generator |
|  | L | | ■ | Blanking plate for vacant position<br>For valve terminal only |

**Note**

For vacuum operation valves require a filter. This is to avoid that foreign matter is drawn into the valve (e.g. when using a suction cup).

## Constructional design

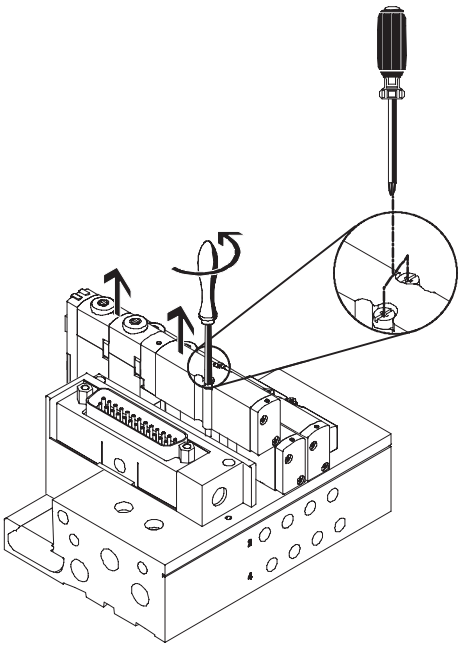
**Valve replacement**

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

**Expansion**

Vacant positions can be replaced by valves at a later date. The dimensions, mounting points and existing pneumatic installations remain unchanged by this.

The valve code (M, J, N, K, B, G, E, X, I) is located on the front of the valve beneath the manual override.



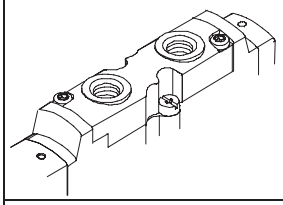
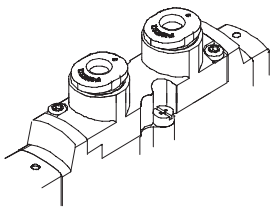
**Note**

**Plug-in versions**

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

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

## Working port

| | Code | Description |
|---|---|---|
|  | B | M5 threaded connection |
|  | E | QS-3 push-in connector |
| | F | QS-4 push-in connector |

## Pneumatic connection

### Supply and exhaust

The valves are supplied with compressed air via various valve terminal manifold blocks or individual blocks.

These contain common lines for compressed air supply, exhaust and pilot exhaust for all valves.

The common lines on a CPA-SC valve terminal can be connected

- at the left (code L)
- at the right (code R) or
- at both ends (code B)

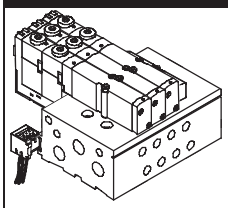
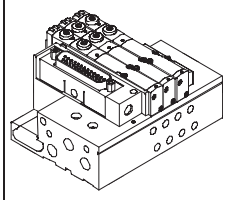
### Pilot air supply

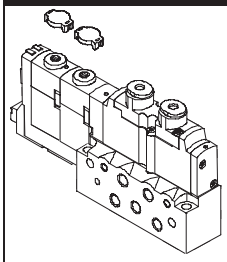
The CPA-SC valve terminal is suitable for internal or external pilot air. Graphs ➔ 31

**Internal pilot air supply**
If supply pressure for the CPA-SC valve is within a range of 3 to 8 bar, it can be operated with internally distributed pilot air. The pilot air supply in the left-hand end plate (electrical multi-pin plug connection and Fieldbus Direct) or in the right-hand end plate (individual electrical connection) is branched off from port 1 in this case.

**External pilot air supply**
If supply pressure for the CPA-SC valve terminal is within a range of –0.9 to +10 bar, it must be operated with external pilot air supply. The pilot air is supplied via port 12/14 in this case.

## Pneumatic supply

| With CPA-SC valve terminal | Code | Port | | Connections for supply and exhaust | | |
|---|---|---|---|---|---|---|
| | | | | Designation | Code H<br>QS connection<br>metric, 8 mm<br>Type | Code D<br>Threaded connection<br>G⅛<br>Type |
|  | Compressed air supplied by means of internal pilot air supply, exhausting via silencer | | | | | |
| | S | 1 | Working air/vacuum supply | Push-in fitting | QS-G⅛-8-I | – |
| | | 3/5 | Exhaust air | Silencer | UC-⅛ | – |
| | | 12/14 | Pilot air supply | – | – | – |
| | | 82/84 | Pilot exhaust air | Silencer | UC-M5 | – |
| | | L | Pressure relieving port | Silencer | UC-M5 | – |
|  | Compressed air supplied via external pilot air supply, exhausting via silencer | | | | | |
| | T | 1 | Working air/vacuum supply | Push-in fitting | QS-G⅛-8-I | – |
| | | 3/5 | Exhaust air | Silencer | UC-⅛ | – |
| | | 12/14 | Pilot air supply | Push-in fitting | QSM-M5-4-I | – |
| | | 82/84 | Pilot exhaust air | Silencer | UC-M5 | – |
| | | L | Pressure relieving port | Silencer | UC-M5 | – |
| | Compressed air supplied by means of internal pilot air supply, ducted exhaust | | | | | |
| | V | 1 | Working air/vacuum supply | Push-in fitting | QS-G⅛-8-I | – |
| | | 3/5 | Exhaust air | Push-in fitting | QS-G⅛-8-I | – |
| | | 12/14 | Pilot air supply | – | – | – |
| | | 82/84 | Pilot exhaust air | Push-in fitting | QSM-M5-4-I | – |
| | | L | Pressure relieving port | Silencer | UC-M5 | – |
| | Compressed air supplied via external pilot air supply, ducted exhaust | | | | | |
| | X | 1 | Working air/vacuum supply | Push-in fitting | QS-G⅛-8-I | – |
| | | 3/5 | Exhaust air | Push-in fitting | QS-G⅛-8-I | – |
| | | 12/14 | Pilot air supply | Push-in fitting | QSM-M5-4-I | – |
| | | 82/84 | Pilot exhaust air | Push-in fitting | QSM-M5-4-I | – |
| | | L | Pressure relieving port | Silencer | UC-M5 | – |



| Pneumatic supply | | | | | | |
|---|---|---|---|---|---|---|
| With CPA-SC individual block | Code | Port | | Connections for supply and exhaust | | |
| | | | | Designation | Code B<br>Threaded connection<br>M5<br>Type | Code F<br>Push-in connector<br>QS4<br>Type |
| | Compressed air supplied by means of internal pilot air supply, exhausting via silencer | | | | | |
| | S | 1 | Working air/vacuum supply | Push-in fitting | – | QSM-M5-4-I |
| | | 3/5 | Exhaust air | Silencer | – | UC-M5 |
| | | 12/14 | Pilot air supply | – | – | – |
| | | 82/84 | Pilot exhaust air | Silencer | – | U-M3 |
| | | L | Pressure relieving port | Silencer | – | U-M3 |
| | Compressed air supplied via external pilot air supply, exhausting via silencer | | | | | |
| | T | 1 | Working air/vacuum supply | Push-in fitting | – | QSM-M5-4-I |
| | | 3/5 | Exhaust air | Silencer | – | UC-M5 |
| | | 12/14 | Pilot air supply | Push-in fitting | – | QSM-M3-3-I |
| | | 82/84 | Pilot exhaust air | Silencer | – | U-M3 |
| | | L | Pressure relieving port | Silencer | – | U-M3 |
| | Compressed air supplied by means of internal pilot air supply, ducted exhaust | | | | | |
| | V | 1 | Working air/vacuum supply | Push-in fitting | – | QSM-M5-4-I |
| | | 3/5 | Exhaust air | Push-in fitting | – | QSM-M5-4-I |
| | | 12/14 | Pilot air supply | – | – | – |
| | | 82/84 | Pilot exhaust air | Push-in fitting | – | QSM-M3-3-I |
| | | L | Pressure relieving port | Silencer | – | U-M3 |
| | Compressed air supplied via external pilot air supply, ducted exhaust | | | | | |
| | X | 1 | Working air/vacuum supply | Push-in fitting | – | QSM-M5-4-I |
| | | 3/5 | Exhaust air | Push-in fitting | – | QSM-M5-4-I |
| | | 12/14 | Pilot air supply | Push-in fitting | – | QSM-M3-3-I |
| | | 82/84 | Pilot exhaust air | Push-in fitting | – | QSM-M3-3-I |
| | | L | Pressure relieving port | Silencer | – | U-M3 |

**Note**

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

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

## Instructions for using pressure zones

The CPA-SC valve terminal 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 separators 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)

## Pilot air supply

The Pilot air supply is branched off from port 1 in the left-hand end plate (electrical multi-pin plug connection and Fieldbus Direct) or in the right-hand end plate (individual electrical connection).

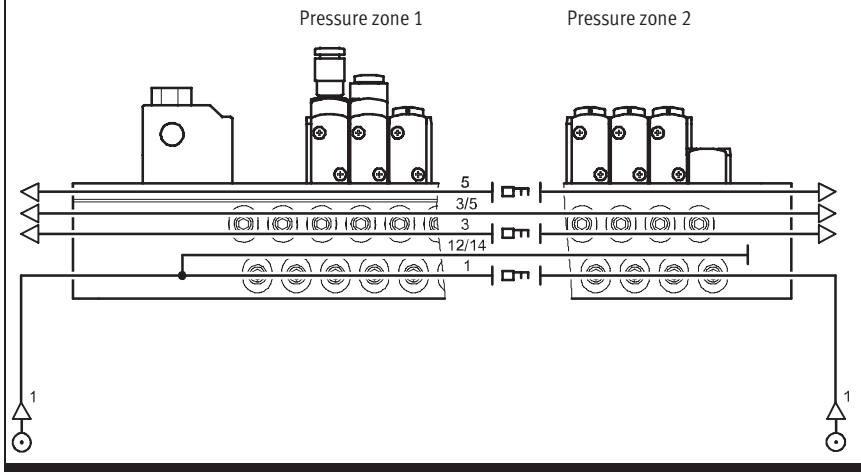
Internal pilot air supply is only possible at an operating pressure within a range of 3 to 8 bar.
It must therefore be noted in connection with pressure zone separation that the valve terminal is supplied with internal pilot air supply via the left-hand side when using a multi-pin plug connection and Fieldbus Direct and via the right-hand side when using an individual electrical connection. This means that the operating pressure at this port must be within a range of 3 to 8 bar.

**Note**

The addition of a separator element results in the following valve sub-bases being supplied with less working air:

- Valve sub-base at the valve position in which the locating pin is inserted
- Valve sub-bases at the two adjacent valve positions

## Creation of pressure zones and duct separation

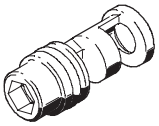



| Code | Description |
|---|---|
| T | Duct 1 closed |
| V | Duct 3 closed |
| W | Duct 5 closed |
| R | Duct 3/5 closed |

**Note**

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

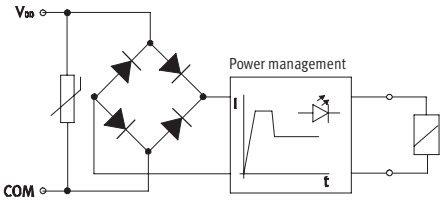
Separator CPASC-KT



## 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 types of individual electrical connection are available for the valve terminal and for the individual sub-base:

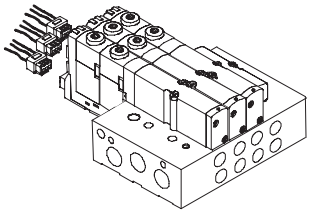
- Horizontal connection (HC) or
- Plug-in (PI)

**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.

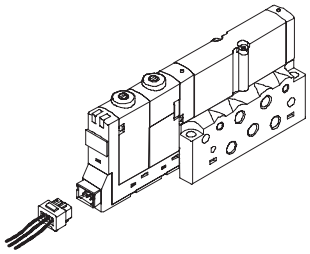
## Individual electrical connection – Horizontal connection (HC)

Valve on manifold block — Code IH



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

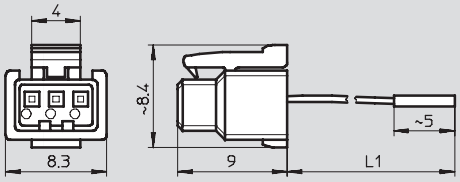
Valve on individual block — Code SH



With the individual sub-base, the electrical connection is also plugged in directly on the valve.

## Dimensions – Horizontal connection (HC)

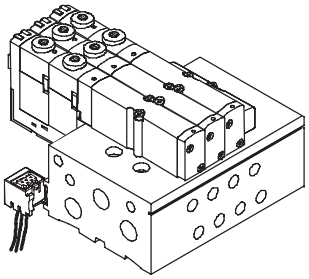
Download CAD Data ➔ **www.festo.com/us/cad**




| Type | Code | L1 Cable length [m] | Number of solenoid coils | Cable colour | | |
|---|---|---|---|---|---|---|
| | | | | 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 |

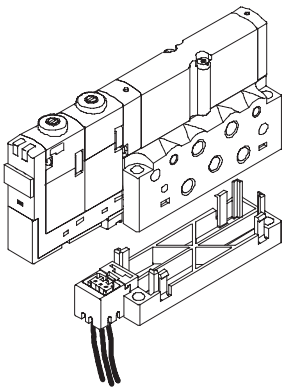
## Individual electrical connection – Plug-in (PI)

Valve on manifold block — Code IP, IQ



The valve terminal can be configured with 2 to max. 16 valve positions. This means that max. 32 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 terminal (vacant position), all you need do is loosen two screws; the connector plug remains in the slot.

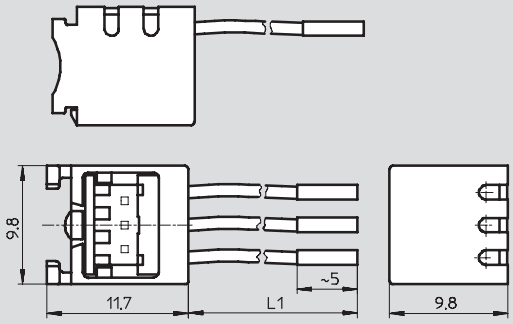
Valve on individual block — Code SP, SQ



With this electrical connection variant, the connector plug is mounted on an adapter. This adapter is then attached to the manifold block.

## Dimensions – Plug-in (PI) connection

Download CAD Data ➔ **www.festo.com/us/cad**




| Type | Code | L1 Cable length [m] | Number of solenoid coils | Cable colour | | |
|---|---|---|---|---|---|---|
| | | | | 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 multi-pin plug connection

The following multi-pin plug connection types are offered for the valve terminal CPA-SC:

- Sub-D multi-pin plug connection (25-pin) or
- Multi-pin plug connection with connector for flat cable (26-pin)

Pins 1 … 20 are used for coils 1 … 20 in order. If there are fewer than 20 coils on the valve terminal, the remaining pins up to 20 are left free. Pins 21 and above are reserved for neutral conductors. Four solenoid coils are always combined on one neutral conductor.
This means that individual valve groups can be switched off separately or a mixture of negative- and positive-switching valves achieved.

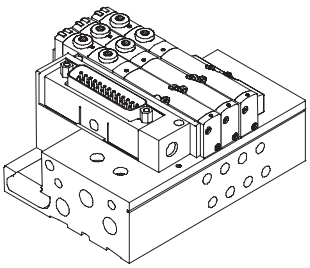
Each pin on the multi-pin plug can activate only one valve solenoid coil. If the maximum configurable number of valve positions is 20, this means that 20 valves each with a single solenoid can be addressed.
With 10 or less valve positions, 2 solenoid coils per valve can be addressed.
With 12 or more valve positions, the number of available valve positions for valves with two solenoid coils decreases (➔ 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 just one solenoid coil are permissible 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 | | | | | | | | | | | | | | | | |

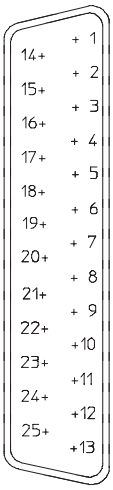
## Electrical multi-pin plug connection – Sub-D

Code MS



With this electrical connection variant, all valves are centrally actuated via the 25-pin connector plug.
The electrical connection is located on the left-hand side and can be re-positioned by 90°.

**Pin allocation – Connector for Sub-D, 25-pin cable**

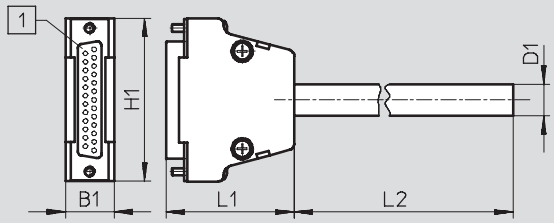



| Pin | Address/solenoid coil | Core colour[2] KMP6-25P-12-... | Core colour[2] KMP6-25P-20-... | Valve positions[1] 2 | 4 | 6 | 8 | 10 | 12 | 16 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Valve position no./coil designation | | | | | | | |
| 1 | 0 | WH | WH | 0/14 | 0/14 | 0/14 | 0/14 | 0/14 | 0/14 | 0/14 | 0/14 |
| 2 | 1 | BN | BN | 0/12 | 0/12 | 0/12 | 0/12 | 0/12 | 0/12 | 0/12 | 1/14 |
| 3 | 2 | GN | GN | 1/14 | 1/14 | 1/14 | 1/14 | 1/14 | 1/14 | 1/14 | 2/14 |
| 4 | 3 | YE | YE | 1/12 | 1/12 | 1/12 | 1/12 | 1/12 | 1/12 | 1/12 | 3/14 |
| 5 | 4 | GY | GY | | 2/14 | 2/14 | 2/14 | 2/14 | 2/14 | 2/14 | 4/14 |
| 6 | 5 | PK | PK | | 2/12 | 2/12 | 2/12 | 2/12 | 2/12 | 2/12 | 5/14 |
| 7 | 6 | BU | BU | | 3/14 | 3/14 | 3/14 | 3/14 | 3/14 | 3/14 | 6/14 |
| 8 | 7 | RD | RD | | 3/12 | 3/12 | 3/12 | 3/12 | 3/12 | 3/12 | 7/14 |
| 9 | 8 | BK | BK | | | 4/14 | 4/14 | 4/14 | 4/14 | 4/14 | 8/14 |
| 10 | 9 | VT | VT | | | 4/12 | 4/12 | 4/12 | 4/12 | 5/14 | 9/14 |
| 11 | 10 | GY PK | GY PK | | | 5/14 | 5/14 | 5/14 | 5/14 | 6/14 | 10/14 |
| 12 | 11 | RD BU | RD BU | | | 5/12 | 5/12 | 5/12 | 5/12 | 7/14 | 11/14 |
| 13 | 12 | – | WH GN | | | | 6/14 | 6/14 | 6/14 | 8/14 | 12/14 |
| 14 | 13 | – | BN GN | | | | 6/12 | 6/12 | 6/12 | 9/14 | 13/14 |
| 15 | 14 | – | WH YE | | | | 7/14 | 7/14 | 7/14 | 10/14 | 14/14 |
| 16 | 15 | – | YE BN | | | | 7/12 | 7/12 | 7/12 | 11/14 | 15/14 |
| 17 | 16 | – | WH GY | | | | | 8/14 | 8/14 | 12/14 | 16/14 |
| 18 | 17 | – | GY BN | | | | | 8/12 | 9/14 | 13/14 | 17/14 |
| 19 | 18 | – | WH PK | | | | | 9/14 | 10/14 | 14/14 | 18/14 |
| 20 | 19 | – | PK BN | | | | | 9/12 | 11/14 | 15/14 | 19/14 |
| 21 | com | – | WH BU | Coil 16 ... 19 | | | | | | | |
| 22 | com | – | BN BU | Coil 12 ... 15 | | | | | | | |
| 23 | com | WH GN | WH RD | Coil 8 ... 11 | | | | | | | |
| 24 | com | BN GN | BN RD | Coil 4 ... 7 | | | | | | | |
| 25 | com | WH YE | WH BK | Coil 0 ... 3 | | | | | | | |
| Number of solenoid coils | | | | 4 | 8 | 12 | 16 | 20 | 20 | 20 | 20 |

1) Valve positions for actuation of 2 coils are shown against a grey background
2) To IEC 757

**Dimensions – Sub-D plug with cable**

Download CAD Data ➔ **www.festo.com/us/cad**

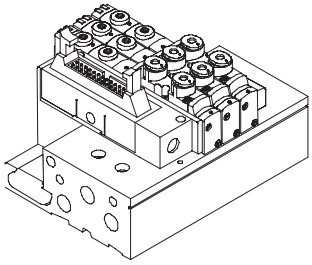



1 25-pin plug

| 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 multi-pin plug connection – Connector for flat cable

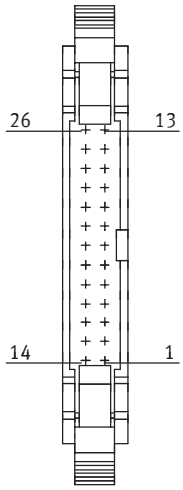
Code MF



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

This connection is intended for flat cables to DIN EN 60603-13, cable cross section AWG26.

## Pin allocation – Connector for flat cable

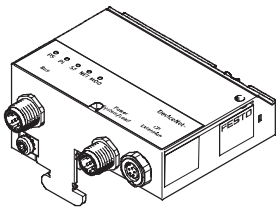



| Pin | Address/ solenoid coil | Valve positions[1] | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 4 | 6 | 8 | 10 | 12 | 16 | 20 |
| | | Valve position no./coil designation | | | | | | |
| 1 | 0 | 0/14 | 0/14 | 0/14 | 0/14 | 0/14 | 0/14 | 0/14 |
| 2 | 1 | 0/12 | 0/12 | 0/12 | 0/12 | 0/12 | 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 | | | | | | |
| Number of solenoid coils | | 8 | 12 | 16 | 20 | 20 | 20 | 20 |

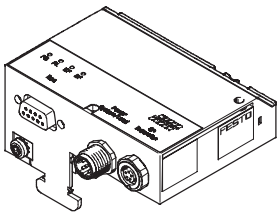
1) Valve positions for actuation of 2 coils are shown against a grey background

## Fieldbus Direct

DeviceNet



Profibus DP



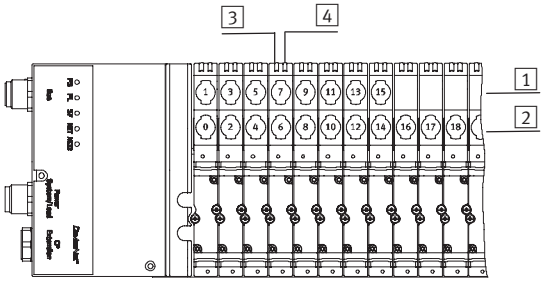
Properties

Fieldbus Direct is a system for the compact connection of a valve terminal of various sizes to different fieldbus standards.
The CP string extension option allows the functions and components of the CPI installation system to be used.

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

➔ Internet: ctec

## Address allocation – Solenoid coils




1 Solenoid coils 12
2 Solenoid coils 14
3 LED solenoid coil 12
4 LED solenoid coil 14

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

**Example:**
Valve terminal 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 subsequently.

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:

- Solenoid coil 14 occupies the less significant address
- Solenoid coil 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 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

## Display and operation – Multi-pin plug and individual valve connection

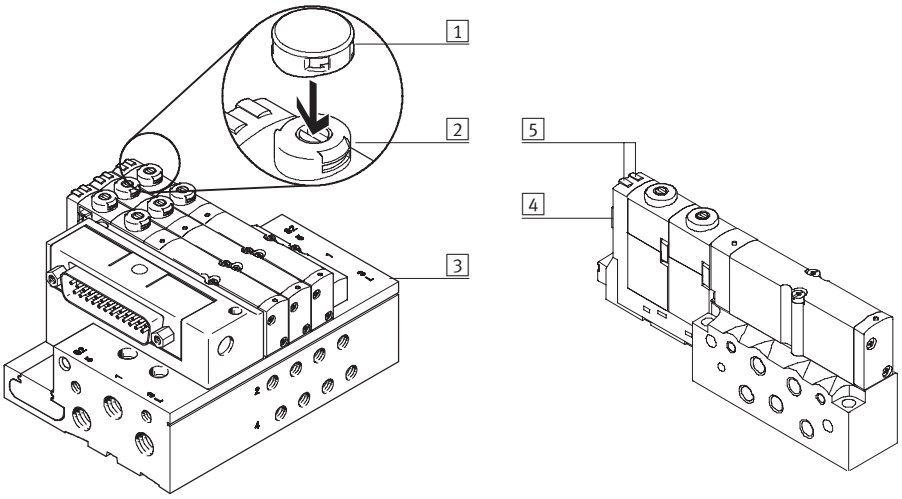
Each valve solenoid coil is allocated an LED which indicates its operating status. Inscription labels (type IBS-6x10) can be applied to each valve for labelling purposes. Alternatively inscription labels (type MH-BZ-80x) can also be affixed to the slot in the manifold block.

The manual override (MO) allows the valve to be activated without electronic control or power supply. The valve is activated by pushing the manual override. The set switching status can also be secured by turning the manual override.

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

**Note**

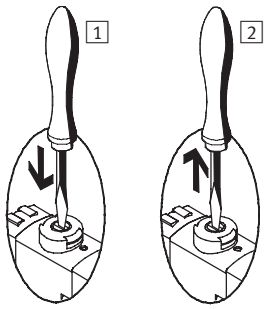
A manually activated valve (manual override) cannot be reset electrically. Conversely, an electrically activated valve cannot be reset using the manual override facility.




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

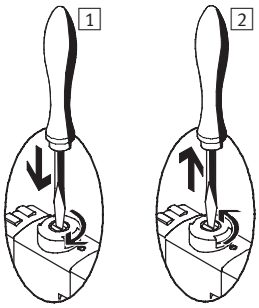
## Manual override (MO)

### Manual override with automatic return (non-detenting)




1 Press in the stem of the MO with a screwdriver.
⇢ Valve is in switching position
2 Remove the screwdriver. Spring force pushes the stem of the MO back.
⇢ Valve returns to initial position (not with double solenoid valve code J).

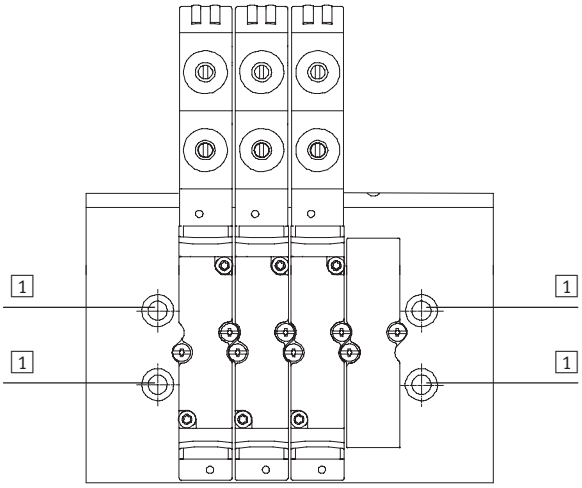
### MO with detent (turning with detent)




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

## Mounting – Valve terminal

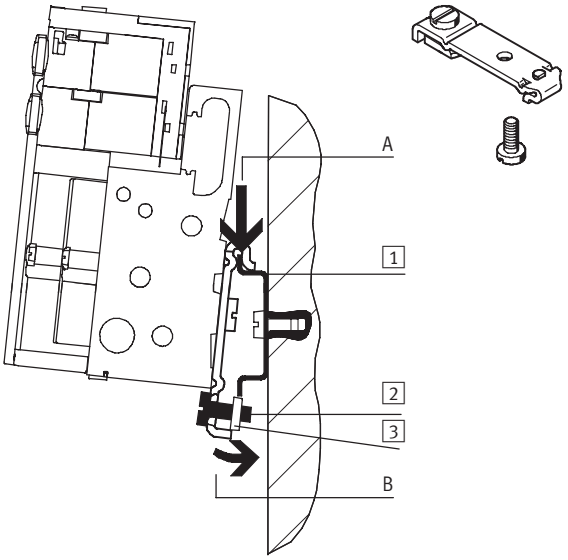
### Wall mounting




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

1 Holes for wall mounting

### H-rail mounting



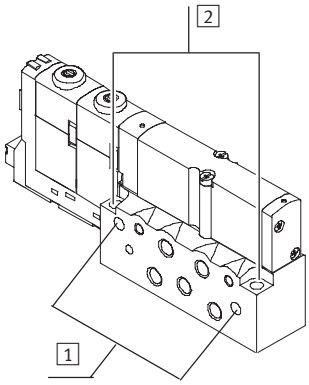

The CPA-SC valve terminal is attached to the H-rail (see arrow A).
The CPA-SC valve terminal is then swivelled on the H-rail and secured in place with the clamping component (see arrow B).

For H-rail mounting of the CPA valve terminal, you will need the mounting kit CPA-BG-NRH. This enables the valve terminal to be mounted on a H-rail to EN 60715.

1 H-rail
2 Self-tapping M4x10 screw of the H-rail clamping unit
3 Clamping component of the H-rail clamping unit

## Mounting – Individual sub-base

### Wall mounting




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

Mounting holes
1 Horizontal mounting
2 Vertical mounting

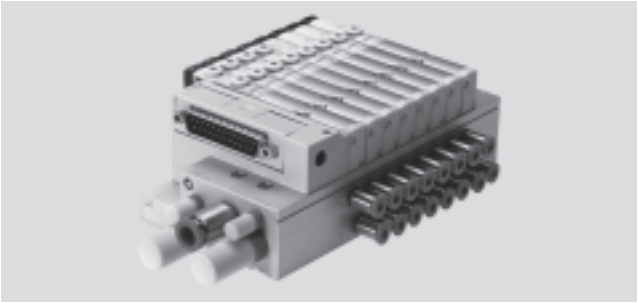
# Valve terminals type 82 CPA-SC, Smart Cubic

Technical data

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 | Normally |
| | Single solenoid | Double solenoid | open | closed | pressurised | 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 H-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<br>• M5<br>• QS-3<br>• QS-4 |
| 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 |

| 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 | – | – | – | – | – | – | – |

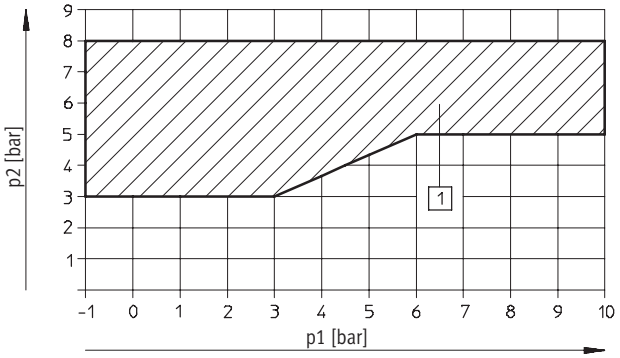
| Operating and environmental conditions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Valve function ordering code | | M | J | N | K | B | G | E | X | I |
| Operating medium | | Filtered compressed air, lubricated or unlubricated, inert gases ➔ 35 | | | | | | | | |
| Grade of filtration | [µm] | 40 | | | | | | | | |
| Operating pressure | [bar] | –0.9 ... +10 | | 3 ... 10 | | –0.9 ... +10 | | | | 3 ... 10 |
| Operating pressure for valve terminal with internal pilot air supply | [bar] | 3 ... 8 | | | | | | | | |
| Pilot pressure | [bar] | 3 ... 8 | | | | | | | | |
| Ambient temperature | [°C] | –5 ... +60 | | –5 ... +40[2)] | | –5 ... +60 | | | | –5 ... +40[2)] |
| Ambient temperature in case of fieldbus connection | [°C] | –5 ... +50 | | –5 ... +40[2)] | | –5 ... +50 | | | | –5 ... +40[2)] |
| Storage temperature | [°C] | –20 ... +40 | | | | | | | | |
| Corrosion resistance class CRC[1)] | | 1 | | | | | | | | |
| Certification | | c UL us - Recognized (OL) | | | | | | | | |

1) Corrosion resistance class 1 according to Festo standard 940 070
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.

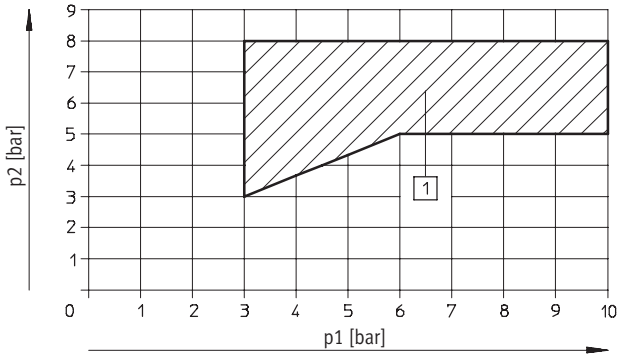
**Pilot pressure p2 as a function of working pressure p1 with external pilot air supply**

for valve sub-bases with code M, J, B, G, E, X




1 Operating range for valves with external pilot air supply

for valve sub-bases with code N, K, I




1 Operating range for valves with external pilot air supply

# Valve terminals type 82 CPA-SC, Smart Cubic

Technical data

| 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. 1 | | | | | | | | |
| Switching frequency [Hz] | Max. 10 | | | | | | | | |
| Duty cycle | 100% | | | | | | | | |
| Protection class to EN 60529 | IP40 (in assembled state and with detenting 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 | | | | | | | | |

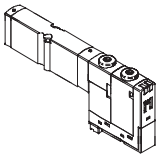
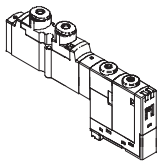
1) The maximum signal line length is 10 m

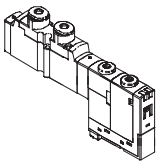
| Materials | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Valve function ordering code | M | J | N | K | B | G | E | X | I |
| Manifold block | Wrought aluminium alloy | | | | | | | | |
| Valve sub-base | Die-cast aluminium | | | | | | | | |
| Seal | Nitrile rubber | | | | | | | | |

| 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 | | | | | | | | |
| Individual block | 45 | | | | | | | | |
| per valve sub-base | 40 | | | | | | | | |
| Fieldbus connection | 150 | | | | | | | | |

# Valve terminals type 82 CPA-SC, Smart Cubic

Technical data

| Standard nominal flow rate [l/min] | | | | | | |
|---|---|---|---|---|---|---|
| | Code | Valve function | Valve | Individual block | CPA-SC valve terminal with multi-pin plug connection/individual PI connections | CPA-SC valve terminal with individual horizontal connections |
|  | Sub-base 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 pressurised | 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 pressurised | 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 | Individual block | CPA-SC valve terminal with multi-pin plug connection/individual PI connections | CPA-SC valve terminal with individual horizontal connections |
|  | Semi in-line valve, working port with QS-3 fitting | | | | | |
| | 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 pressurised | 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 | | | | | |
| | 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 pressurised | 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 |

## Pneumatic equipment

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

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

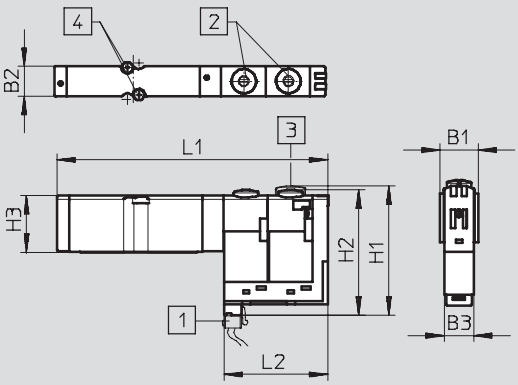
**Bio-oils**
When using bio-oils (oils which are based upon synthetic or native ester, e.g. rapeseed oil methyl ester), the maximum residual oil content of 0.1 mg/m$^3$ must not be exceeded (see ISO 8573-1 Class 2).

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

## Dimensions – Sub-base valve

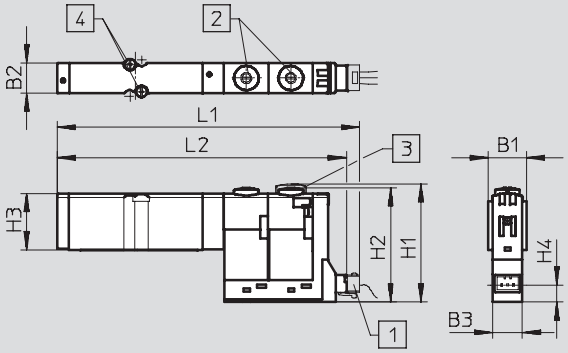
Download CAD Data ➔ **www.festo.com/us/cad**

Plug-In (PI)




1 Individual PI connection
2 Manual override (MO)
3 Manual override cover
4 Screws M2x20

Horizontal connection (HC)




1 Individual horizontal connection
2 Manual override (MO)
3 Manual override cover
4 Screws M2x20

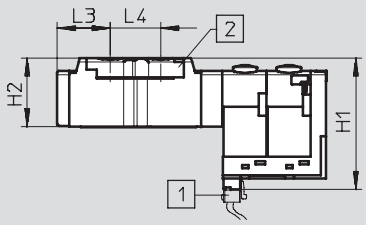
| Plug-In (PI) | | | | | | | |
|---|---|---|---|---|---|---|---|
| B1 | B2 | B3 | H1 | H2 | H3 | L1 | L2 |
| 12.6 | 10 | 9.8 | 43.8 | 42.5 | 18.7 | 89.4 | 33.7 |

| Horizontal connection (HC) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| B1 | B2 | B3 | H1 | H2 | H3 | H4 | L1 | L2 |
| 12.6 | 10 | 9.8 | 39.1 | 37.7 | 18.5 | 5.7 | 100 | 95.6 |

## Dimensions – Semi in-line valve

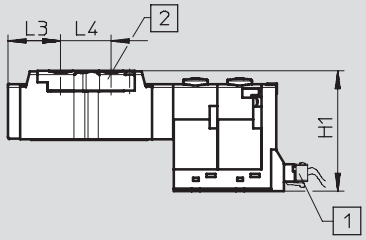
Download CAD Data ➔ **www.festo.com/us/cad**

Plug-In (PI), working port M5



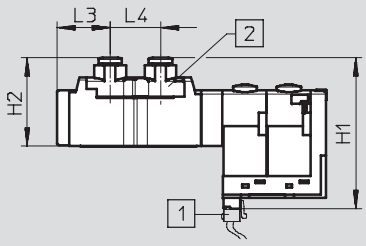

1 Individual PI connection
2 Working port M5

Horizontal connection (HC), working port M5



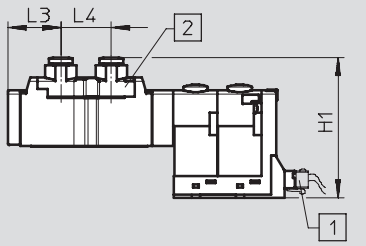

1 Individual horizontal connection
2 Working port M5

Plug-In (PI), working port QS-3/QS-4




1 Individual PI connection
2 Working port QS-3/QS-4

Horizontal connection (HC), working port QS-3/QS-4



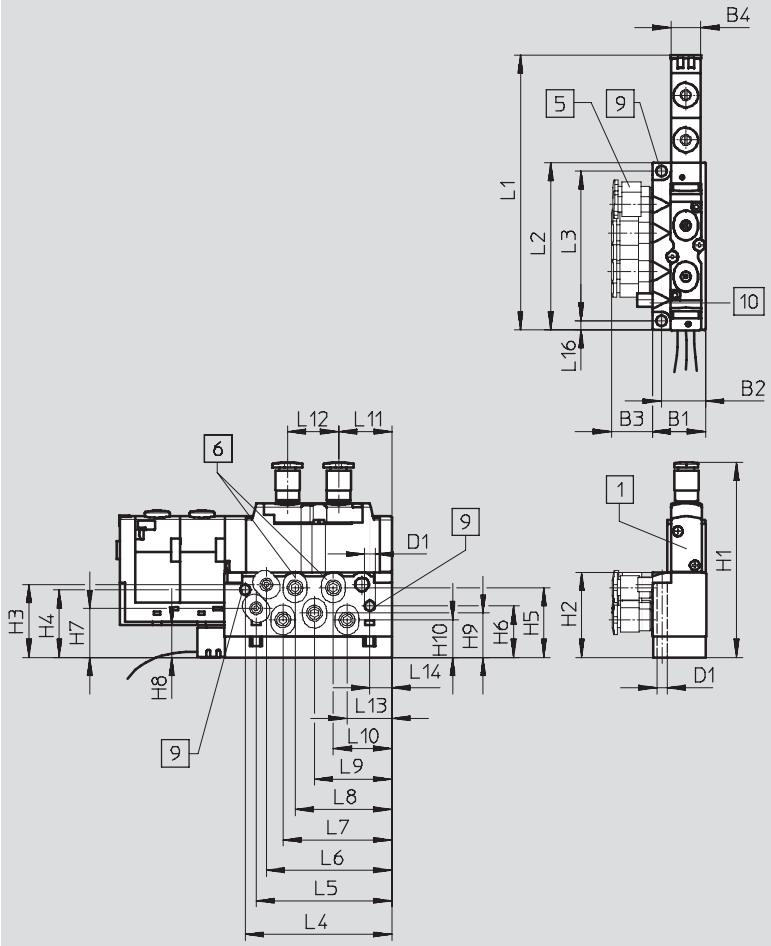

1 Individual horizontal connection
2 Working port QS-3/QS-4

| Plug-In (PI) | | | | |
|---|---|---|---|---|
| | H1 | H2 | L3 | L4 |
| Working port M5 | 43.8 | 22.9 | 17.6 | 16.8 |
| Working port QS-3/QS-4 | 50.2 | 29.4 | 17.6 | 16.8 |

| Horizontal connection (HC) | | | |
|---|---|---|---|
| | H1 | L3 | L4 |
| Working port M5 | 40.2 | 17.6 | 16.8 |
| Working port QS-3/QS-4 | 46.6 | 17.6 | 16.8 |

**Dimensions – Individual sub-base** Download CAD Data ➔ **www.festo.com/us/cad**

With individual plug-in (PI) connection




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

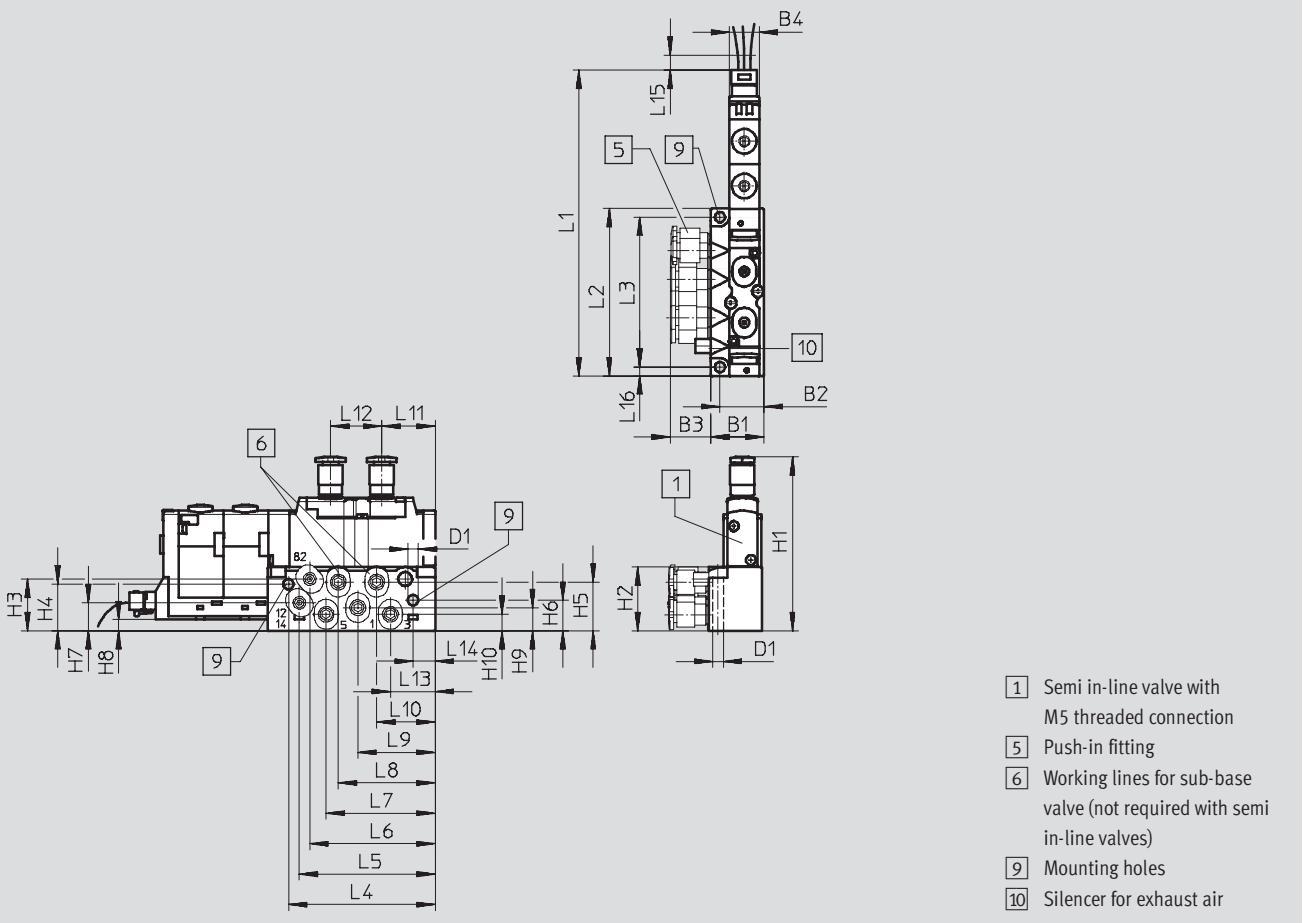
| H2 | H3 | H4 | H5 | H6 | H7 | H8 | H9 | H10 | B1 | B2 | B3 | B4 | D1 | – |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27.9 | 23.9 | 22.2 | 22.9 | 16.9 | 16.1 | 10.6 | 14.5 | 12.3 | 17.5 | 14.5 | 13.4 | 9.8 | 3.4 | – |

| L1 | L2 | L3 | L4 | L5 | L6 | L7 | L8 | L9 | L10 | L11 | L12 | L13 | L14 | L16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90.3 | 55 | 49.3 | 48.2 | 44.6 | 41.2 | 35.8 | 31.8 | 25.4 | 19.2 | 17.5 | 16.8 | 14.7 | 7.2 | 2.9 |

| Valve type | | H1 |
|---|---|---|
| Semi in-line valve | with working port M5 | 50.8 |
| | with working port QS-3/QS-4 | 57.2 |
| Sub-base valve | | 48.3 |
| Blanking plate | | 37.1 |

**Dimensions – Individual sub-base** Download CAD Data ➔ **www.festo.com/us/cad**

With individual horizontal connection (HC)



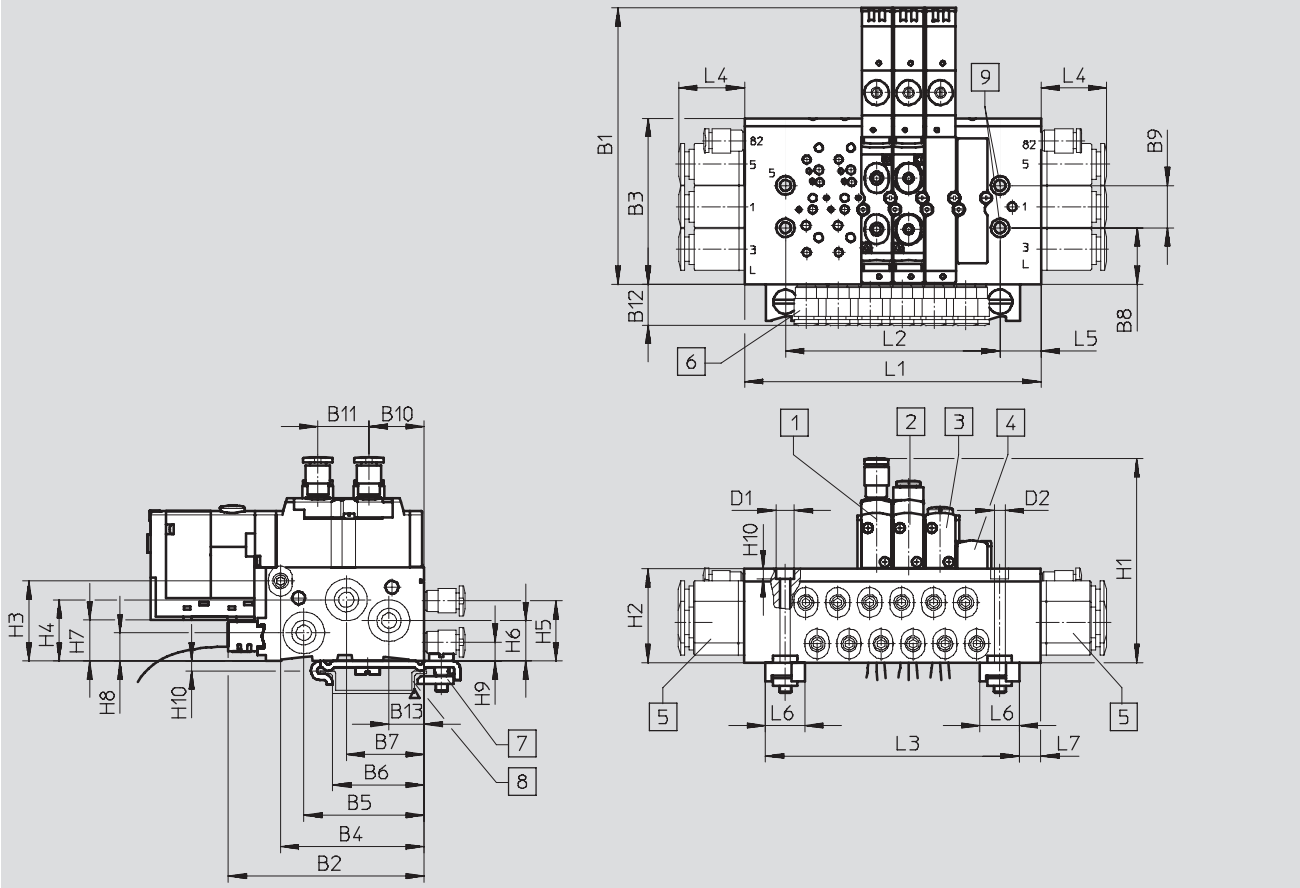

| H2 | H3 | H4 | H5 | H6 | H7 | H8 | H9 | H10 | B1 | B2 | B3 | B4 | D1 | – |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | 17 | 15.3 | 16 | 10 | 9.2 | 3.7 | 7.6 | 5.4 | 17.5 | 14.5 | 13.4 | 9.8 | 3.4 | – |

| L1 | L2 | L3 | L4 | L5 | L6 | L7 | L8 | L9 | L10 | L11 | L12 | L13 | L14 | L15 | L16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.4 | 55 | 49.3 | 48.2 | 44.6 | 41.2 | 35.8 | 31.8 | 25.4 | 19.2 | 17.5 | 16.8 | 14.7 | 7.2 | 5 | 2.9 |

| Valve type | | H1 |
|---|---|---|
| Semi in-line valve | with working port M5 | 43.9 |
| | with working port QS-3/QS-4 | 50.3 |
| Sub-base valve | | 41.4 |
| Blanking plate | | 30.2 |

**Dimensions – Valve terminal** Download CAD Data ➔ **www.festo.com/us/cad**

With individual plug-in (PI) connection




1 Semi in-line valve with M5 threaded connection
2 Semi in-line valve with integrated push-in fitting
3 Sub-base valve
4 Blanking plate for vacant position
5 Push-in fitting
6 Working lines for sub-base valves (not required with semi in-line valves)
7 Mounting for H-rail TH 35-7.5 EN 60715
8 H-rail
9 Mounting holes

| B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 | B12 | B13 | D1 | D2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 91 | 64.3 | 54.6 | 47.2 | 39.5 | 30.1 | 25.5 | 18.6 | 14 | 18.1 | 16.8 | 13.4 | 11.5 | 6 | 3.6 |

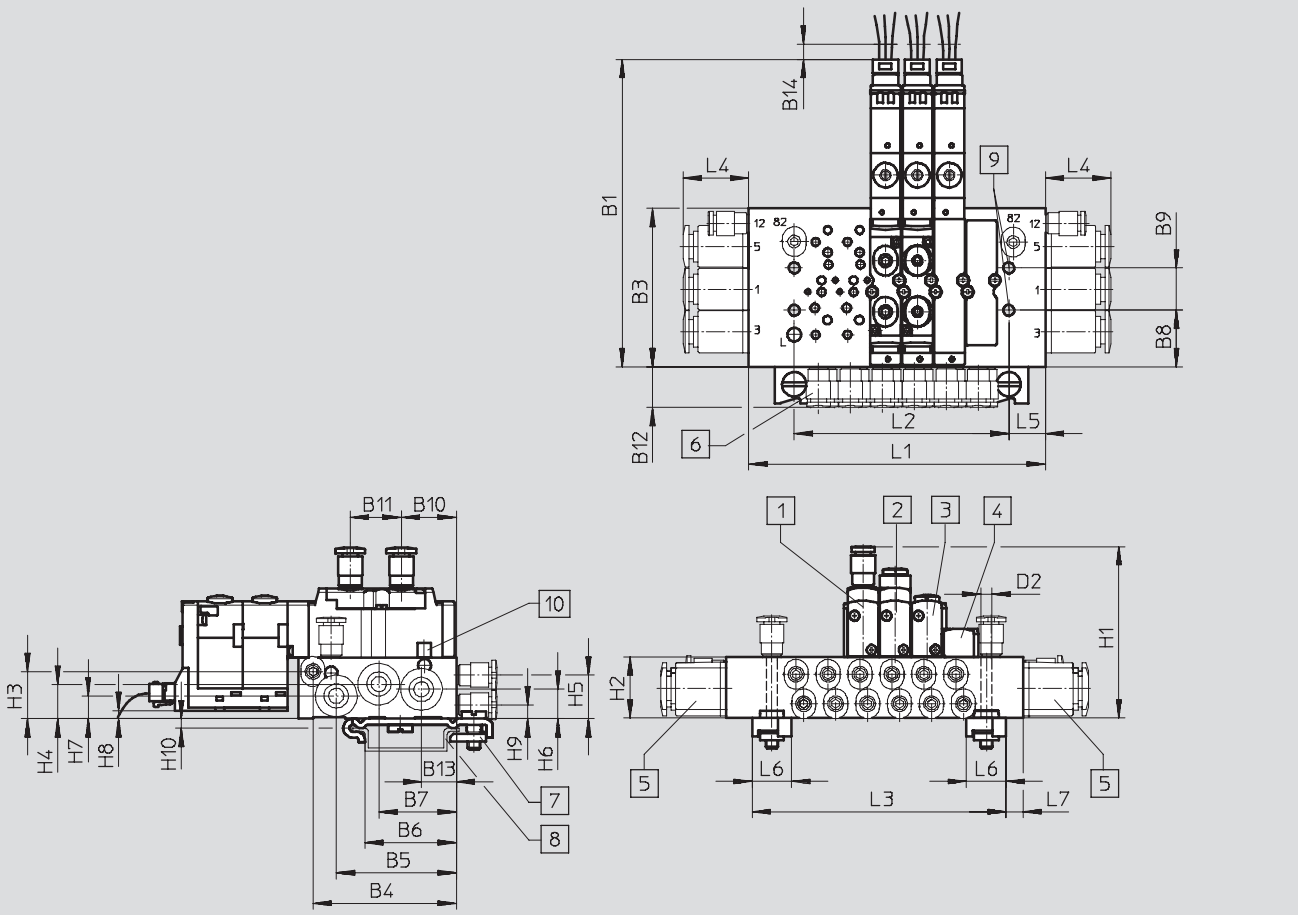
| H2 | H3 | H4 | H5 | H6 | H7 | H8 | H9 | H10 | L3 | L4 | L5 | L6 | L7 | – |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30.8 | 26.3 | 20.2 | 19.8 | 13.3 | 13.5 | 9.3 | 6.2 | 3.2 | L2+13 | 21.6 | 13.5 | 13 | 7 | – |

| Valve positions | L1 | L2 |
|---|---|---|
| 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 | | H1 |
|---|---|---|
| Semi in-line valve | with working port M5 | 53.7 |
| | with working port QS-3/QS-4 | 60.1 |
| Sub-base valve | | 51.2 |
| Blanking plate | | 40 |

**Dimensions – Valve terminal** Download CAD Data ➔ **www.festo.com/us/cad**

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 Sub-base valve
4 Blanking plate for vacant position
5 Push-in fitting
6 Working lines for sub-base valves (not required with semi in-line valves)
7 Mounting for H-rail TH 35-7.5 EN 60715
8 H-rail
9 Mounting holes
10 Silencer for exhaust air

| B1 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 | B12 | B13 | D1 | D2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 102 | 52 | 47.2 | 39.5 | 30.1 | 25.5 | 18.6 | 14 | 18.1 | 16.8 | 13.4 | 11.5 | 6 | 3.6 |

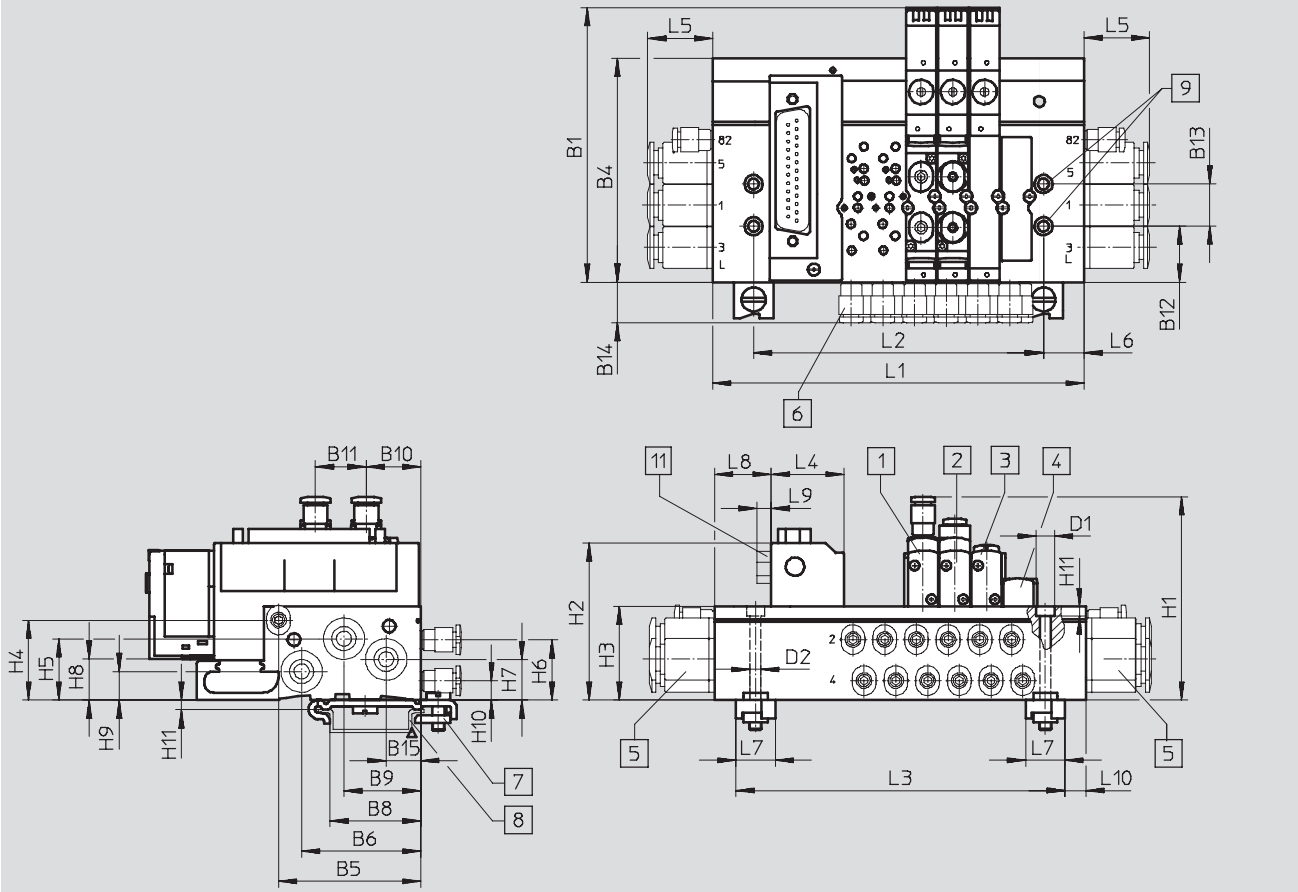
| H2 | H3 | H4 | H5 | H6 | H7 | H8 | H9 | H10 | L3 | L4 | L5 | L6 | L7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 15.5 | 11.4 | 14.3 | 9.7 | 7.5 | 2.7 | 4.6 | 3.2 | L2+13 | 21.6 | 12 | 13 | 5.5 |

| Valve positions | L1 | L2 |
|---|---|---|
| 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 | | H1 |
|---|---|---|
| Semi in-line valve | with working port M5 | 42.9 |
| | with working port QS-3/QS-4 | 49.3 |
| Sub-base valve | | 40.4 |
| Blanking plate | | 29.2 |

**Dimensions – Valve terminal** Download CAD Data ➔ **www.festo.com/us/cad**

With Sub-D multi-pin plug connection




1 Semi in-line valve with M5 threaded connection
2 Semi in-line valve with integrated push-in fitting
3 Sub-base valve
4 Blanking plate for vacant position
5 Push-in fitting
6 Working lines for sub-base valves (not required with semi in-line valves)
7 Mounting for H-rail TH 35-7.5 EN 60715
8 H-rail
9 Mounting holes
11 Sub-D multi-pin plug connection, 25-pin, 90° rotatable

| B1 | B4 | B5 | B6 | B8 | B9 | B10 | B11 | B12 | B13 | B14 | B15 | D1 | D2 | – |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 91 | 74.2 | 47.2 | 39.5 | 30.1 | 25.5 | 18.1 | 16.8 | 18.6 | 14 | 13.4 | 11.5 | 6 | 3.6 | – |

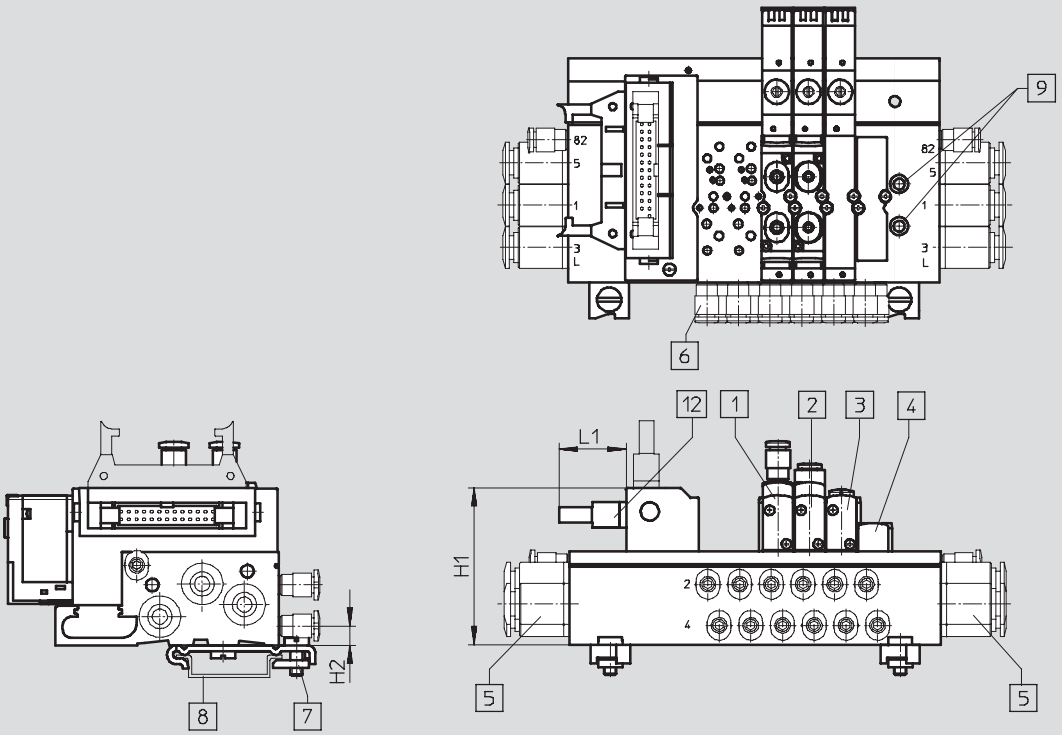
| H2 | H3 | H4 | H5 | H6 | H7 | H8 | H9 | H10 | H11 | L3 | L4 | L5 | L6 | L7 | L8 | L9 | L10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | 31 | 26.5 | 20.4 | 20 | 13.5 | 13.7 | 9.5 | 6.4 | 3.2 | L2+13 | 24 | 21.6 | 13.5 | 13 | 18.8 | 4.7 | 7 |

| Valve positions | L1 | L2 |
|---|---|---|
| 2 | 81 | 54 |
| 4 | 102 | 75 |
| 6 | 123 | 96 |
| 8 | 144 | 117 |
| 10 | 165 | 138 |
| 12 | 186 | 159 |
| 16 | 228 | 201 |
| 20 | 270 | 243 |

| Valve type | | H1 |
|---|---|---|
| Semi in-line valve | with working port M5 | 53.9 |
| | with working port QS-3/QS-4 | 60.3 |
| Sub-base valve | | 51.4 |
| Blanking plate | | 40.2 |

**Dimensions – Valve terminal** Download CAD Data ➔ **www.festo.com/us/cad**

With multi-pin connector for flat cable

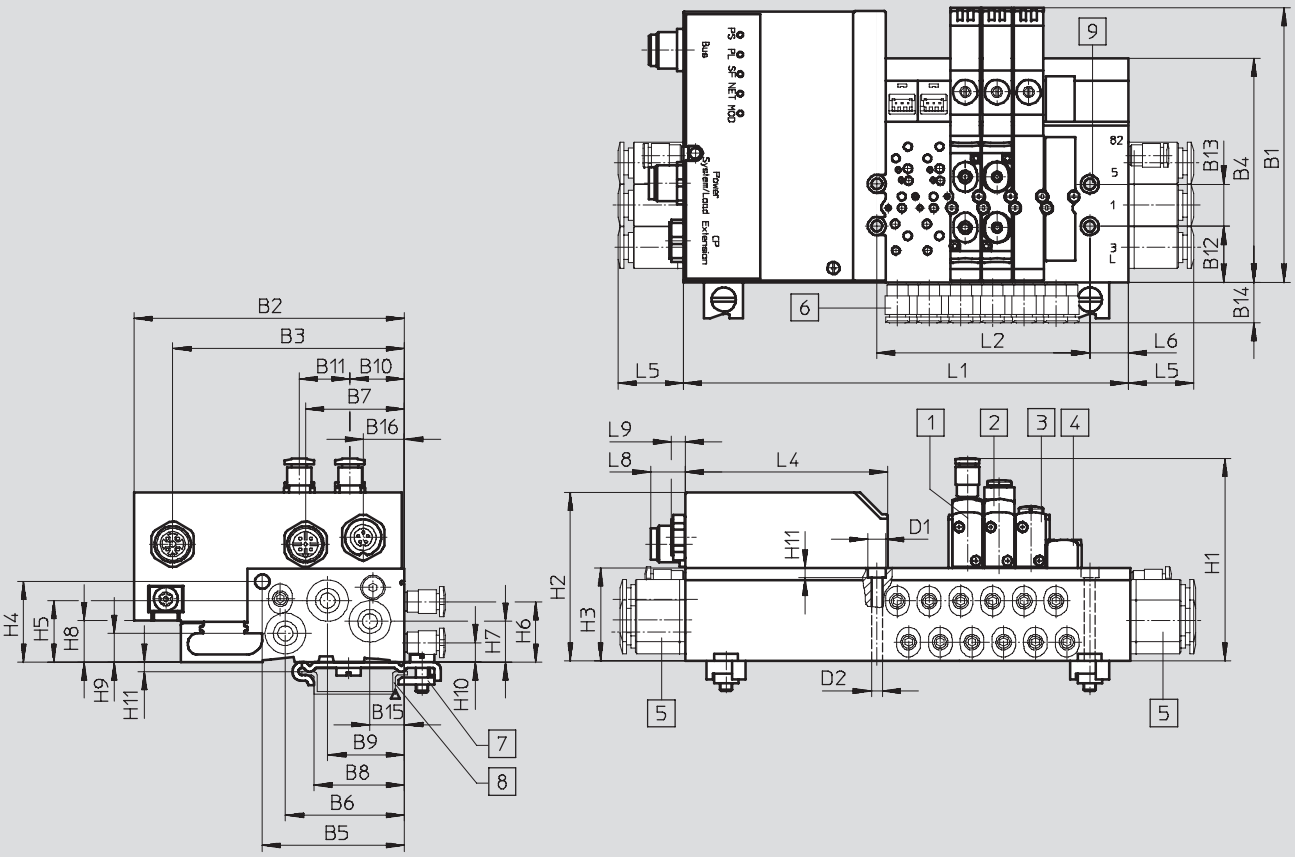



1 Semi in-line valve with M5 threaded connection
2 Semi in-line valve with integrated push-in fitting
3 Sub-base valve
4 Blanking plate for vacant position
5 Push-in fitting
6 Working lines for sub-base valves (not required with semi in-line valves)
7 Mounting for H-rail TH 35-7.5 EN 60715
8 H-rail
9 Mounting holes
12 Connector for flat cable, 26-pin, 90° rotatable

| | H1 | H2 | L1 |
|---|---|---|---|
| Valve terminal | 52 | 6.4 | 22.3 |

**Dimensions – Valve terminal** Download CAD Data ➔ **www.festo.com/us/cad**

With fieldbus connection




1 Semi in-line valve with M5 threaded connection
2 Semi in-line valve with integrated push-in fitting
3 Sub-base valve
4 Blanking plate for vacant position
5 Push-in fitting
6 Working lines for sub-base valves (not required with semi in-line valves)
7 Mounting for H-rail TH 35-7.5 EN 60715
8 H-rail
9 Mounting holes

| B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 | B12 | B13 | B14 | B15 | B16 | D1 | D2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 91 | 89.7 | 76.8 | 74.2 | 47.2 | 39.5 | 32.8 | 30.1 | 25.5 | 18.1 | 16.8 | 18.6 | 14 | 13.4 | 11.5 | 13.7 | 6 | 3.6 |

| H2 | H3 | H4 | H5 | H6 | H7 | H8 | H9 | H10 | H11 | L4 | L5 | L6 | L8 | L9 | – |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 56 | 31 | 26.5 | 20.2 | 19.8 | 13.5 | 13.5 | 9.3 | 6.4 | 3.2 | 67.1 | 21.6 | 13.5 | 11.3 | 4.5 | – |

| Valve positions | L1 | L2 |
|---|---|---|
| 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 |

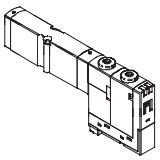
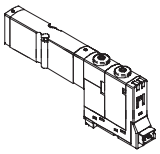
| Valve type | | H1 |
|---|---|---|
| Semi in-line valve | with working port M5 | 53.9 |
| | with working port QS-3/QS-4 | 60.3 |
| Sub-base valve | | 51.4 |
| Blanking plate | | 40.2 |

# Valve terminals type 82 CPA-SC, Smart Cubic

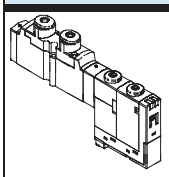
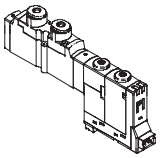
Ordering data – Individual valve

FESTO

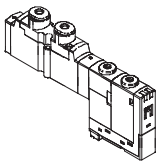
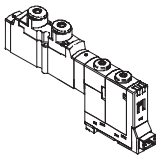
**Ordering data – Sub-base valves**

| | Code | Valve function | Electrical plug-in connection | | Electrical horizontal connection | |
|---|---|---|---|---|---|---|
| | | | Part No. | Type | Part No. | Type |
|  | M | 5/2-way valve, single solenoid | **526990** | **CPASC1-M1H-M-P-2,5** | **527008** | **CPASC1-M1H-M-H-2,5** |
| | J | 5/2-way valve, double solenoid | **526992** | **CPASC1-M1H-J-P-2,5** | **527010** | **CPASC1-M1H-J-H-2,5** |
| | N | 2x 3/2-way valve, normally open | **526994** | **CPASC1-M1H-N-P-2,5** | **527012** | **CPASC1-M1H-N-H-2,5** |
| | K | 2x 3/2-way valve, normally closed | **526996** | **CPASC1-M1H-K-P-2,5** | **527014** | **CPASC1-M1H-K-H-2,5** |
|  | B | 5/3-way valve, mid-position pressurised | **526998** | **CPASC1-M1H-B-P-2,5** | **527016** | **CPASC1-M1H-B-H-2,5** |
| | G | 5/3-way valve, mid-position closed | **527000** | **CPASC1-M1H-G-P-2,5** | **527018** | **CPASC1-M1H-G-H-2,5** |
| | E | 5/3-way valve, mid-position exhausted | **527002** | **CPASC1-M1H-E-P-2,5** | **527020** | **CPASC1-M1H-E-H-2,5** |
| | X | 1x 3/2-way valve | **527004** | **CPASC1-M1H-X-P-2,5** | **527022** | **CPASC1-M1H-X-H-2,5** |
| | I | 2x 2/2-way valve | **527006** | **CPASC1-M1H-I-P-2,5** | **527024** | **CPASC1-M1H-I-H-2,5** |

**Ordering data – Semi in-line valves**

| | Code | Valve function | Electrical plug-in connection | | Electrical horizontal connection | |
|---|---|---|---|---|---|---|
| | | | Part No. | Type | Part No. | Type |
|  | Semi in-line valve with M5 working ports | | | | | |
| | M | 5/2-way valve, single solenoid | **527294** | **CPPSC1-M1H-M-P-M5** | **527303** | **CPPSC1-M1H-M-H-M5** |
| | J | 5/2-way valve, double solenoid | **527295** | **CPPSC1-M1H-J-P-M5** | **527304** | **CPPSC1-M1H-J-H-M5** |
| | N | 2x 3/2-way valve, normally open | **527296** | **CPPSC1-M1H-N-P-M5** | **527305** | **CPPSC1-M1H-N-H-M5** |
| | K | 2x 3/2-way valve, normally closed | **527297** | **CPPSC1-M1H-K-P-M5** | **527306** | **CPPSC1-M1H-K-H-M5** |
|  | B | 5/3-way valve, mid-position pressurised | **527298** | **CPPSC1-M1H-B-P-M5** | **527307** | **CPPSC1-M1H-B-H-M5** |
| | G | 5/3-way valve, mid-position closed | **527299** | **CPPSC1-M1H-G-P-M5** | **527308** | **CPPSC1-M1H-G-H-M5** |
| | E | 5/3-way valve, mid-position exhausted | **527300** | **CPPSC1-M1H-E-P-M5** | **527309** | **CPPSC1-M1H-E-H-M5** |
| | X | 1x 3/2-way valve | **527301** | **CPPSC1-M1H-X-P-M5** | **527310** | **CPPSC1-M1H-X-H-M5** |
| | I | 2x 2/2-way valve | **527302** | **CPPSC1-M1H-I-P-M5** | **527311** | **CPPSC1-M1H-I-H-M5** |
| | | | | | | |
| | Semi in-line valve with QS-3 working ports | | | | | |
| | M | 5/2-way valve, single solenoid | **527330** | **CPPSC1-M1H-M-P-Q3** | **527339** | **CPPSC1-M1H-M-H-Q3** |
| | J | 5/2-way valve, double solenoid | **527331** | **CPPSC1-M1H-J-P-Q3** | **527340** | **CPPSC1-M1H-J-H-Q3** |
| | N | 2x 3/2-way valve, normally open | **527332** | **CPPSC1-M1H-N-P-Q3** | **527341** | **CPPSC1-M1H-N-H-Q3** |
| | K | 2x 3/2-way valve, normally closed | **527333** | **CPPSC1-M1H-K-P-Q3** | **527342** | **CPPSC1-M1H-K-H-Q3** |
| | B | 5/3-way valve, mid-position pressurised | **527334** | **CPPSC1-M1H-B-P-Q3** | **527343** | **CPPSC1-M1H-B-H-Q3** |
| | G | 5/3-way valve, mid-position closed | **527335** | **CPPSC1-M1H-G-P-Q3** | **527344** | **CPPSC1-M1H-G-H-Q3** |
| | E | 5/3-way valve, mid-position exhausted | **527336** | **CPPSC1-M1H-E-P-Q3** | **527345** | **CPPSC1-M1H-E-H-Q3** |
| | X | 1x 3/2-way valve | **527337** | **CPPSC1-M1H-X-P-Q3** | **527346** | **CPPSC1-M1H-X-H-Q3** |
| | I | 2x 2/2-way valve | **527338** | **CPPSC1-M1H-I-P-Q3** | **527347** | **CPPSC1-M1H-I-H-Q3** |

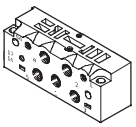
**Ordering data – Semi in-line valves**

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

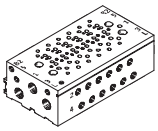
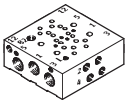
**Note**

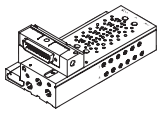
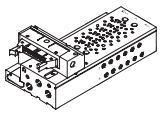
Manifold blocks with multi-pin plug or fieldbus connection can only be equipped with valves with electrical plug-in connection.

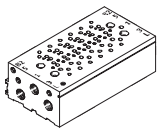
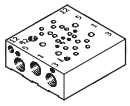
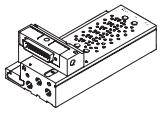
**Ordering data – Individual sub-base**

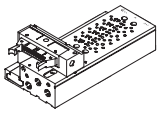
| | | | |
|---|---|---|---|
|  | With internal pilot air supply | **527384** | **CPPSC1-PRS-1-5-HC** |
| | With external pilot air supply | **527388** | **CPPSC1-PRS-1-5S-HC** |

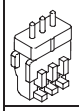
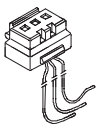
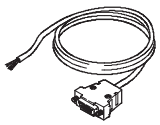
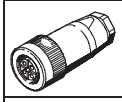
**Ordering data – Manifold block for sub-base valves**

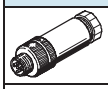
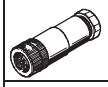
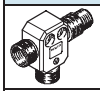
| | Valve positions | Internal pilot air supply | | External pilot air supply | |
|---|---|---|---|---|---|
| | | Part No. | Type | Part No. | Type |
| Individual plug-in connection | | | | | |
|  | 2 | **527106** | **CPASC1-PRS-2-5-M5-PI** | **527218** | **CPASC1-PRS-2-5S-M5-PI** |
| | 4 | **527108** | **CPASC1-PRS-4-5-M5-PI** | **527220** | **CPASC1-PRS-4-5S-M5-PI** |
| | 6 | **527110** | **CPASC1-PRS-6-5-M5-PI** | **527222** | **CPASC1-PRS-6-5S-M5-PI** |
| | 8 | **527112** | **CPASC1-PRS-8-5-M5-PI** | **527224** | **CPASC1-PRS-8-5S-M5-PI** |
| | 10 | **527114** | **CPASC1-PRS-10-5-M5-PI** | **527226** | **CPASC1-PRS-10-5S-M5-PI** |
| | 12 | **527116** | **CPASC1-PRS-12-5-M5-PI** | **527228** | **CPASC1-PRS-12-5S-M5-PI** |
| | 16 | **527118** | **CPASC1-PRS-16-5-M5-PI** | **527230** | **CPASC1-PRS-16-5S-M5-PI** |
| Individual horizontal connection | | | | | |
|  | 2 | **527078** | **CPASC1PRS-2-5-M5-HC** | **527190** | **CPASC1PRS-2-5S-M5-HC** |
| | 4 | **527080** | **CPASC1PRS-4-5-M5-HC** | **527192** | **CPASC1PRS-4-5S-M5-HC** |
| | 6 | **527082** | **CPASC1PRS-6-5-M5-HC** | **527194** | **CPASC1PRS-6-5S-M5-HC** |
| | 8 | **527084** | **CPASC1PRS-8-5-M5-HC** | **527196** | **CPASC1PRS-8-5S-M5-HC** |
| | 10 | **527086** | **CPASC1PRS-10-5-M5-HC** | **527198** | **CPASC1PRS-10-5S-M5-HC** |
| | 12 | **527088** | **CPASC1PRS-12-5-M5-HC** | **527200** | **CPASC1PRS-12-5S-M5-HC** |
| | 16 | **527090** | **CPASC1PRS-16-5-M5-HC** | **527202** | **CPASC1PRS-16-5S-M5-HC** |

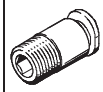
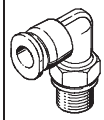
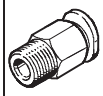
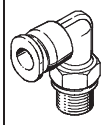
| Ordering data – Manifold block for sub-base valves | | | | | |
|---|---|---|---|---|---|
| | Valve positions | Internal pilot air supply | | External pilot air supply | |
| | | Part No. | Type | Part No. | Type |
| Multi-pin plug connection, Sub-D | | | | | |
|  | 2 | 539898 | CPASC1-PRS-2-5-M5-MP | 539896 | CPASC1-PRS-2-5S-M5-MP |
| | 4 | 527134 | CPASC1-PRS-4-5-M5-MP | 527246 | CPASC1-PRS-4-5S-M5-MP |
| | 6 | 527136 | CPASC1-PRS-6-5-M5-MP | 527248 | CPASC1-PRS-6-5S-M5-MP |
| | 8 | 527138 | CPASC1-PRS-8-5-M5-MP | 527250 | CPASC1-PRS-8-5S-M5-MP |
| | 10 | 527140 | CPASC1-PRS-10-5-M5-MP | 527252 | CPASC1-PRS-10-5S-M5-MP |
| | 12 | 527142 | CPASC1-PRS-12-5-M5-MP | 527254 | CPASC1-PRS-12-5S-M5-MP |
| | 16 | 527144 | CPASC1-PRS-16-5-M5-MP | 527256 | CPASC1-PRS-16-5S-M5-MP |
| | 20 | 527146 | CPASC1-PRS-20-5-M5-MP | 527258 | CPASC1-PRS-20-5S-M5-MP |
| Multi-pin plug connection, flat cable | | | | | |
|  | 4 | 527162 | CPASC1-PRS-4-5-M5-FL | 527274 | CPASC1-PRS-4-5S-M5-FL |
| | 6 | 527164 | CPASC1-PRS-6-5-M5-FL | 527276 | CPASC1-PRS-6-5S-M5-FL |
| | 8 | 527166 | CPASC1-PRS-8-5-M5-FL | 527278 | CPASC1-PRS-8-5S-M5-FL |
| | 10 | 527168 | CPASC1-PRS-10-5-M5-FL | 527280 | CPASC1-PRS-10-5S-M5-FL |
| | 12 | 527170 | CPASC1-PRS-12-5-M5-FL | 527282 | CPASC1-PRS-12-5S-M5-FL |
| | 16 | 527172 | CPASC1-PRS-16-5-M5-FL | 527284 | CPASC1-PRS-16-5S-M5-FL |
| | 20 | 527174 | CPASC1-PRS-20-5-M5-FL | 527286 | CPASC1-PRS-20-5S-M5-FL |

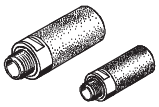
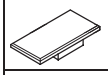
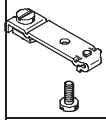
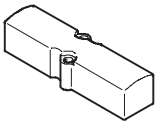
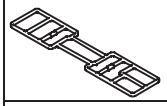
| Ordering data – Manifold block for semi in-line valves | | | | | |
|---|---|---|---|---|---|
| | Valve positions | Internal pilot air supply | | External pilot air supply | |
| | | Part No. | Type | Part No. | Type |
| Individual plug-in connection | | | | | |
|  | 2 | 527092 | CPPSC1-PRS-2-5-PI | 527204 | CPPSC1-PRS-2-5S-PI |
| | 4 | 527094 | CPPSC1-PRS-4-5-PI | 527206 | CPPSC1-PRS-4-5S-PI |
| | 6 | 527096 | CPPSC1-PRS-6-5-PI | 527208 | CPPSC1-PRS-6-5S-PI |
| | 8 | 527098 | CPPSC1-PRS-8-5-PI | 527210 | CPPSC1-PRS-8-5S-PI |
| | 10 | 527100 | CPPSC1-PRS-10-5-PI | 527212 | CPPSC1-PRS-10-5S-PI |
| | 12 | 527102 | CPPSC1-PRS-12-5-PI | 527214 | CPPSC1-PRS-12-5S-PI |
| | 16 | 527104 | CPPSC1-PRS-16-5-PI | 527216 | CPPSC1-PRS-16-5S-PI |
| Individual horizontal connection | | | | | |
|  | 2 | 527064 | CPPSC1PRS-2-5-HC | 527176 | CPPSC1PRS-2-5S-HC |
| | 4 | 527066 | CPPSC1PRS-4-5-HC | 527178 | CPPSC1PRS-4-5S-HC |
| | 6 | 527068 | CPPSC1PRS-6-5-HC | 527180 | CPPSC1PRS-6-5S-HC |
| | 8 | 527070 | CPPSC1PRS-8-5-HC | 527182 | CPPSC1PRS-8-5S-HC |
| | 10 | 527072 | CPPSC1PRS-10-5-HC | 527184 | CPPSC1PRS-10-5S-HC |
| | 12 | 527074 | CPPSC1PRS-12-5-HC | 527186 | CPPSC1PRS-12-5S-HC |
| | 16 | 527076 | CPPSC1PRS-16-5-HC | 527188 | CPPSC1PRS-16-5S-HC |
| Multi-pin plug connection, Sub-D | | | | | |
|  | 2 | 539902 | CPPSC1-PRS-2-5-MP | 539900 | CPPSC1-PRS-2-5S-MP |
| | 4 | 527120 | CPPSC1-PRS-4-5-MP | 527232 | CPPSC1-PRS-4-5S-MP |
| | 6 | 527122 | CPPSC1-PRS-6-5-MP | 527234 | CPPSC1-PRS-6-5S-MP |
| | 8 | 527124 | CPPSC1-PRS-8-5-MP | 527236 | CPPSC1-PRS-8-5S-MP |
| | 10 | 527126 | CPPSC1-PRS-10-5-MP | 527238 | CPPSC1-PRS-10-5S-MP |
| | 12 | 527128 | CPPSC1-PRS-12-5-MP | 527240 | CPPSC1-PRS-12-5S-MP |
| | 16 | 527130 | CPPSC1-PRS-16-5-MP | 527242 | CPPSC1-PRS-16-5S-MP |
| | 20 | 527132 | CPPSC1-PRS-20-5-MP | 527244 | CPPSC1-PRS-20-5S-MP |

| Ordering data – Manifold block for semi in-line valves | | | | | |
|---|---|---|---|---|---|
| | Valve positions | Internal pilot air supply | | External pilot air supply | |
| | | Part No. | Type | Part No. | Type |
| Multi-pin plug connection, flat cable | | | | | |
|  | 4 | **527148** | **CPPSC1-PRS-4-5-FL** | **527260** | **CPPSC1-PRS-4-5S-FL** |
| | 6 | **527150** | **CPPSC1-PRS-6-5-FL** | **527262** | **CPPSC1-PRS-6-5S-FL** |
| | 8 | **527152** | **CPPSC1-PRS-8-5-FL** | **527264** | **CPPSC1-PRS-8-5S-FL** |
| | 10 | **527154** | **CPPSC1-PRS-10-5-FL** | **527266** | **CPPSC1-PRS-10-5S-FL** |
| | 12 | **527156** | **CPPSC1-PRS-12-5-FL** | **527268** | **CPPSC1-PRS-12-5S-FL** |
| | 16 | **527158** | **CPPSC1-PRS-16-5-FL** | **527270** | **CPPSC1-PRS-16-5S-FL** |
| | 20 | **527160** | **CPPSC1-PRS-20-5-FL** | **527272** | **CPPSC1-PRS-20-5S-FL** |

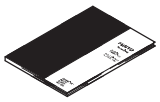
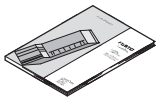
| Ordering data – Accessories | | | | |
|---|---|---|---|---|
| Designation | | | Part No. | Type |
| Soldering base for plug-in connection | | | | |
|  | 3-pin | Scope of delivery 10 pieces | **539904** | **PCBC-B-10** |
| | 3-pin | Scope of delivery 100 pieces | **539905** | **PCBC-B-100** |
| Plug socket with cable for plug-in connection | | | | |
| | For 1 coil | 0.5 m | **197260** | **MHAP-PI** |
| | | 1 m | **532182** | **MHAP-PI-1** |
| | For 2 coils | 0.5 m | **529116** | **MHAP-PI-D-0,5** |
| | | 1 m | **527395** | **MHAP-PI-D-1** |
| Plug socket with cable for horizontal connection | | | | |
|  | For 1 coil, 2-wire | 0.5 m | **197263** | **KMH-0,5** |
| | | 1 m | **197264** | **KMH-1** |
| | | 2.5 m | **527400** | **KMH-2,5** |
| | | 5 m | **527401** | **KMH-5** |
| | For 2 coils, 3-wire | 0.5 m | **527396** | **KMH-D-0,5** |
| | | 1 m | **527397** | **KMH-D-1** |
| | | 2.5 m | **527398** | **KMH-D-2,5** |
| | | 5 m | **527399** | **KMH-D-5** |
| Connecting cable to IP40 | | | | |
|  | Sub-D, 25-pin, up to 20 coils | 2.5 m | **530046** | **KMP6-25P-20-2,5** |
| | | 5 m | **530047** | **KMP6-25P-20-5** |
| | | 10 m | **530048** | **KMP6-25P-20-10** |
| | Sub-D, 25-pin, up to 12 coils | 2.5 m | **530049** | **KMP6-25P-12-2,5** |
| | | 5 m | **530050** | **KMP6-25P-12-5** |
| | | 10 m | **530051** | **KMP6-25P-12-10** |
| Power supply | | | | |
|  | MicroStyle M12, 5-pin socket (B-coded) for DeviceNet | for 0.75 mm$^2$ | **538999** | **NTSD-GD-9-M12-5POL-RK** |
| | M12, 5-pin socket (A-coded) for Profibus DP | for 0.75 mm$^2$ | **18324** | **FBSD-GD-9-5POL** |

| Ordering data – Accessories | | | | |
|---|---|---|---|---|
| Designation | | | Part No. | Type |
| Fieldbus connection | | | | |
|  | Plug to IP65, M12, 5-pin, PG9 for DeviceNet | for 0.75 $mm^2$ | **175380** | **FBS-M12-5GS-PG9** |
|  | Fieldbus socket for MicroStyle connection, M12, 5-pin socket (A-coded) for DeviceNet | for 0.75 $mm^2$ | **18324** | **FBSD-GD-9-5POL** |
| | | | | |
| Adapter | | | | |
|  | T-adapter, 5-pin, for DH-485/DeviceNet | – | **171175** | **FB-TA-M12-5POL** |
| | | | | |
| Valve terminal connection | | | | |
| | Connecting cable WS-WD, angled plug-angled socket | 0.25 m | **540327** | **KVI-CP-3-WS-WD-0,25** |
| | | 0.5 m | **540328** | **KVI-CP-3-WS-WD-0,5** |
| | | 2 m | **540329** | **KVI-CP-3-WS-WD-2** |
| | | 5 m | **540330** | **KVI-CP-3-WS-WD-5** |
| | | 8 m | **540331** | **KVI-CP-3-WS-WD-8** |
| | Connecting cable GS-GD, straight plug-straight socket | 2 m | **540332** | **KVI-CP-3-GS-GD-2** |
| | | 5 m | **540333** | **KVI-CP-3-GS-GD-5** |
| | | 8 m | **540334** | **KVI-CP-3-GS-GD-8** |

| Ordering data – Accessories | | | | |
|---|---|---|---|---|
| Designation | | | Part No. | Type |
| Push-in fitting for working ports | | | | |
|  | Connecting thread M5 for tubing O.D. | 3 mm | 153302 | QSM-M5-3 |
| | | 4 mm | 153304 | QSM-M5-4 |
| | | 3 mm | 153313 | QSM-M5-3-I |
| | | 4 mm | 153315 | QSM-M5-4-I |
| Push-in L-fitting for working ports | | | | |
|  | Connecting thread M5 for tubing O.D. | 3 mm | 153331 | QSML-M5-3 |
| | | 4 mm | 153333 | QSML-M5-4 |
| | | 6 mm | 153335 | QSML-M5-6 |
| | | 4 mm | 153339 | QSMLL-M5-4 |
| | | 6 mm | 153341 | QSMLL-M5-6 |
| Push-in fitting for manifold block | | | | |
|  | Connecting thread M3 for tubing O.D. | 3 mm | 153301 | QSM-M3-3 |
| | | 4 mm | 153303 | QSM-M3-4 |
| | | 3 mm | 153312 | QSM-M3-3-I |
| | | 4 mm | 153314 | QSM-M3-4-I |
| | Connecting thread M5 for tubing O.D. | 3 mm | 153302 | QSM-M5-3 |
| | | 4 mm | 153304 | QSM-M5-4 |
| | | 6 mm | 153306 | QSM-M5-6 |
| | | 3 mm | 153313 | QSM-M5-3-I |
| | | 4 mm | 153315 | QSM-M5-4-I |
| | | 6 mm | 153317 | QSM-M5-6-I |
| | Connecting thread G⅛ for tubing O.D. | 4 mm | 186266 | QSM-G⅛-4-I |
| | | 6 mm | 186267 | QSM-G⅛-6-I |
| | | 8 mm | 186109 | QS-G⅛-8-I |
| | Connecting thread R⅛ for tubing O.D. | 4 mm | 153305 | QSM-⅛-4 |
| | | 6 mm | 153307 | QSM-⅛-6 |
| | | 4 mm | 153316 | QSM-⅛-4-I |
| | | 6 mm | 153318 | QSM-⅛-6-I |
| Push-in L-fitting for manifold block | | | | |
|  | Connecting thread M3 for tubing O.D. | 3 mm | 153330 | QSML-M3-3 |
| | | 4 mm | 153332 | QSML-M3-4 |
| | | 3 mm | 153337 | QSMLL-M3-3 |
| | | 4 mm | 153338 | QSMLL-M3-4 |
| | Connecting thread M5 for tubing O.D. | 3 mm | 153331 | QSML-M5-3 |
| | | 4 mm | 153333 | QSML-M5-4 |
| | | 6 mm | 153335 | QSML-M5-6 |
| | | 4 mm | 153339 | QSMLL-M5-4 |
| | | 6 mm | 153341 | QSMLL-M5-6 |
| | Connecting thread R⅛ for tubing O.D. | 4 mm | 153334 | QSML-⅛-4 |
| | | 6 mm | 153336 | QSML-⅛-6 |
| | | 4 mm | 153340 | QSMLL-⅛-4 |
| | | 6 mm | 153342 | QSMLL-⅛-6 |

| Ordering data – Accessories | | | | |
|---|---|---|---|---|
| Designation | | | Part No. | Type |
| **Silencer** | | | | |
|  | Connecting thread | M3 | **163978** | **U-M3** |
| | | M5 | **4645** | **U-M5** |
| | | M5 | **165003** | **UC-M5** |
| | | G⅛ | **161419** | **UC-⅛** |
| | Push-in sleeve connection | 3 mm | **165005** | **UC-QS-3H** |
| | | 4 mm | **165006** | **UC-QS-4H** |
| | | 6 mm | **165007** | **UC-QS-6H** |
| | | 8 mm | **175611** | **UC-QS-8H** |
| **Blanking plug** | | | | |
| | Thread M5 | | **3843** | **B-M5** |
| | Thread M5 | | **174308** | **B-M5-B** |
| | Thread G⅛ | | **3568** | **B-⅛** |
| | Blanking plug for tubing O.D. | 4 mm | **153267** | **QSC-4H** |
| | | 6 mm | **153268** | **QSC-6H** |
| | | 8 mm | **153269** | **QSC-8H** |
| | | 3 mm | **153382** | **QSMC-3H** |
| **Inscription labels** | | | | |
|  | 6x10 in frames, 64 pieces for valve identification | | **18576** | **IBS-6x10** |
| | 4.5x9 mm, 80 pieces for manifold block identification | | **197259** | **MH-BZ-80x** |
| **Mounting** | | | | |
|  | For H-rail | | **527392** | **CPASC1-BG-NRH** |
| **Blanking plate** | | | | |
|  | Cover for vacant position[1] | | **527062** | **CPASC1-RP** |
| | Cover for manual override, covered (10 pieces) | | **540898** | **VMPA-HBV-B** |
| **Valve seal** | | | | |
|  | For manifold block | | **527394** | **CPASC1-SEAL-A** |
| **Separator and assembly tool** | | | | |
| | Separator | | **536942** | **CPASC1-KT** |
| | Assembly tool for separator | | **536943** | **CPASC1-MWKT** |

1) A self-adhesive label is supplied.

| Ordering data – Accessories | | | | |
|---|---|---|---|---|
| Designation | | | Part No. | Type |
| User documentation | | | | |
|  | User documentation – CPA-SC | German | 530932 | P.BE-CPASC-DE |
| | | English | 530933 | P.BE-CPASC-EN |
| | | French | 530934 | P.BE-CPASC-FR |
| | | Spanish | 530935 | P.BE-CPASC-ES |
| | | Italian | 530936 | P.BE-CPASC-IT |
| | | Swedish | 530937 | P.BE-CPASC-SV |
|  | User documentation – DeviceNet fieldbus | German | 539008 | P.BE-CPASC-CPVSC-DN-DE |
| | | English | 539009 | P.BE-CPASC-CPVSC-DN-EN |
| | | French | 539010 | P.BE-CPASC-CPVSC-DN-FR |
| | | Spanish | 539011 | P.BE-CPASC-CPVSC-DN-ES |
| | | Italian | 539012 | P.BE-CPASC-CPVSC-DN-IT |
| | | Swedish | 539013 | P.BE-CPASC-CPVSC-DN-SV |
| | User documentation – Profibus DP fieldbus | German | 548725 | P.BE-CPASC-CPVSC-DP-DE |
| | | English | 548726 | P.BE-CPASC-CPVSC-DP-EN |
| | | French | 548728 | P.BE-CPASC-CPVSC-DP-FR |
| | | Spanish | 548727 | P.BE-CPASC-CPVSC-DP-ES |
| | | Italian | 548729 | P.BE-CPASC-CPVSC-DP-IT |
| | | Swedish | 548730 | P.BE-CPASC-CPVSC-DP-SV |

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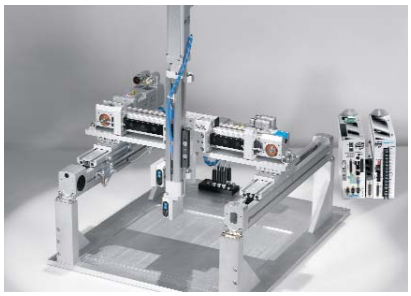

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ISO 9001
ISO 14001
DNV
Certified Company
14001: CERTCC5-16248A-2006-AQ-ESN-TGA

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