

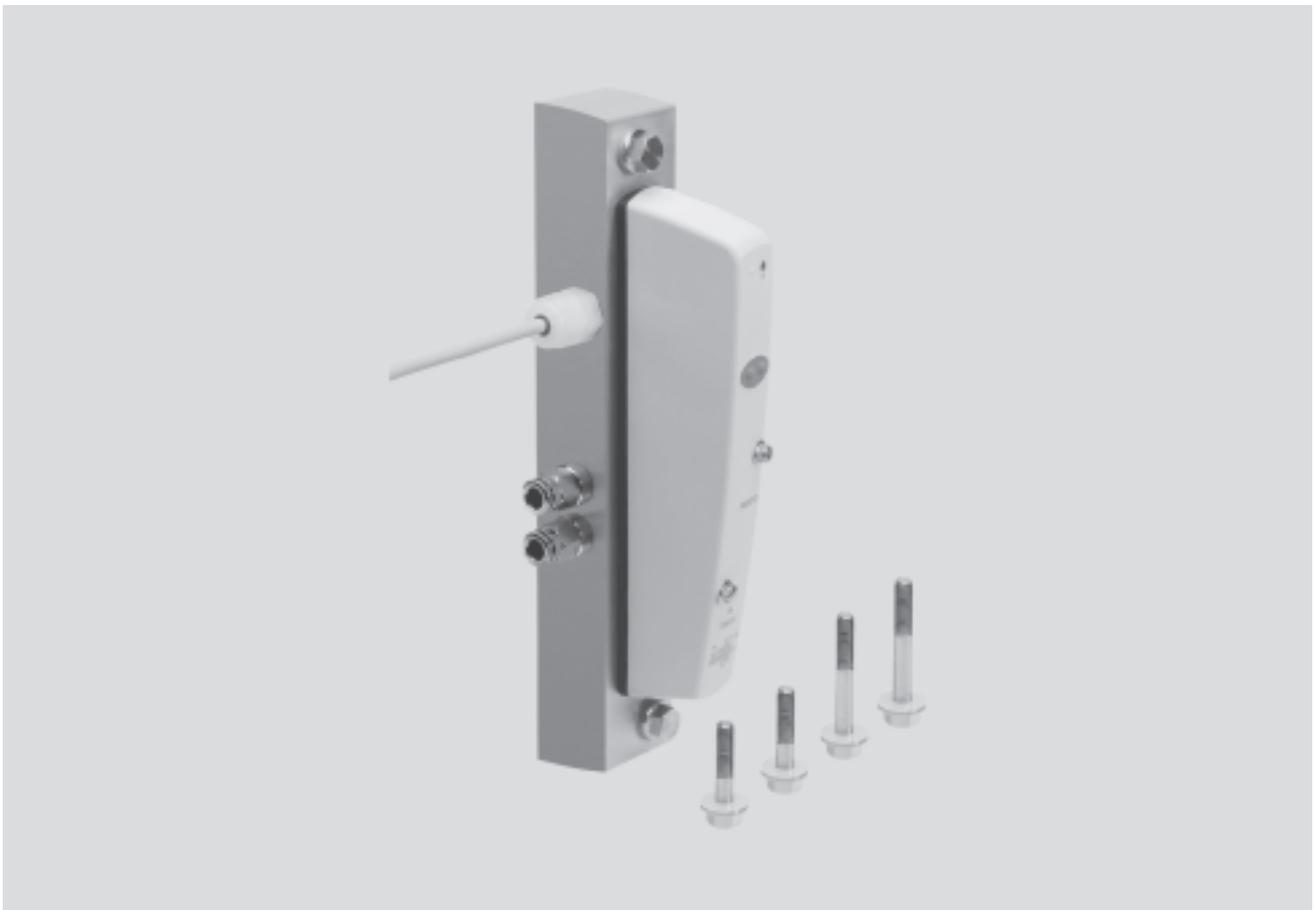


- Clean Design valve
- Hygienic
- Corrosion resistant
- Easy to clean

# Solenoid valves CDSV, Clean Design

Key features

FESTO



## Clean Design valves CDSV

The solenoid valve CDSV combines proven valve technology with a highly resistant plastic housing.

The 5/2-way, 5/2-way double solenoid, 5/3-way, 2 x 3/2-way valves ensure that the needs of the food industry are met.

### Individual sub-base

- 1 valve position
- 2 solenoid coils
- Connection via 10 m PVC cable
- External auxiliary pilot air
- Venting hole ducted

Developed with practical considerations in mind

- Hygienic
- Corrosion resistant
- Easy to clean

### Multi-functional, variable:

- Flow rate 300 ... 650 l/min
- Valve width 18 mm

The valves are identical to the valves of valve terminal CDVI. This makes planning, ordering and warehousing easier.

# Solenoid valves CDSV, Clean Design

Key features

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## CDSV and CDVI – The requirements



The food industry has stricter hygiene requirements than any other sector: There can therefore be no compromise when it comes to easy cleaning and corrosion resistance.

The result: CDSV and CDVI. Developed in close consultation with leading names from the food and packaging industry, the CDVI represents a totally new valve and valve terminal solution for splash zones. Clean Design valves have a revolutionary corrosion resistant and easy to clean design that makes them stand out from their competitors.

## CDSV and CDVI – The solution

### The new Clean Design valves – simply a clean solution

Apart from reduced cleaning times, the CDSV and CDVI also take less time to install and assemble. Stainless steel control cabinets have become a thing of the past and the electrical connection is now set up using the pre-fitted, ready to connect cable. The CDSV is, of course, supplied ex works fully assembled and tested to IP65 and IP67.

This results in minimal installation time. The various equipment options are included in the tables in the

ordering system section on page → 12. The individual sub-base includes all supply ports and common exhausts.

### Valve terminal CDVI

The valve terminal CDVI is available with four or eight valve positions in the basic design and can be expanded by up to four valve positions.

Expansion modules must be used in this case.

Additional information

→ Internet: [cdvi](http://cdvi).

### Clean in theory and practice CDSV

The requirements for the hygienic design of machine components to DIN EN 1672-2 and DIN ISO 14 159 have been implemented in the CDSV.

They are easy to clean thanks to:

- No sharp edges
- No small radii
- No crevices where dirt can gather
- Space between the valves for easy cleaning
- Corrosion resistant materials

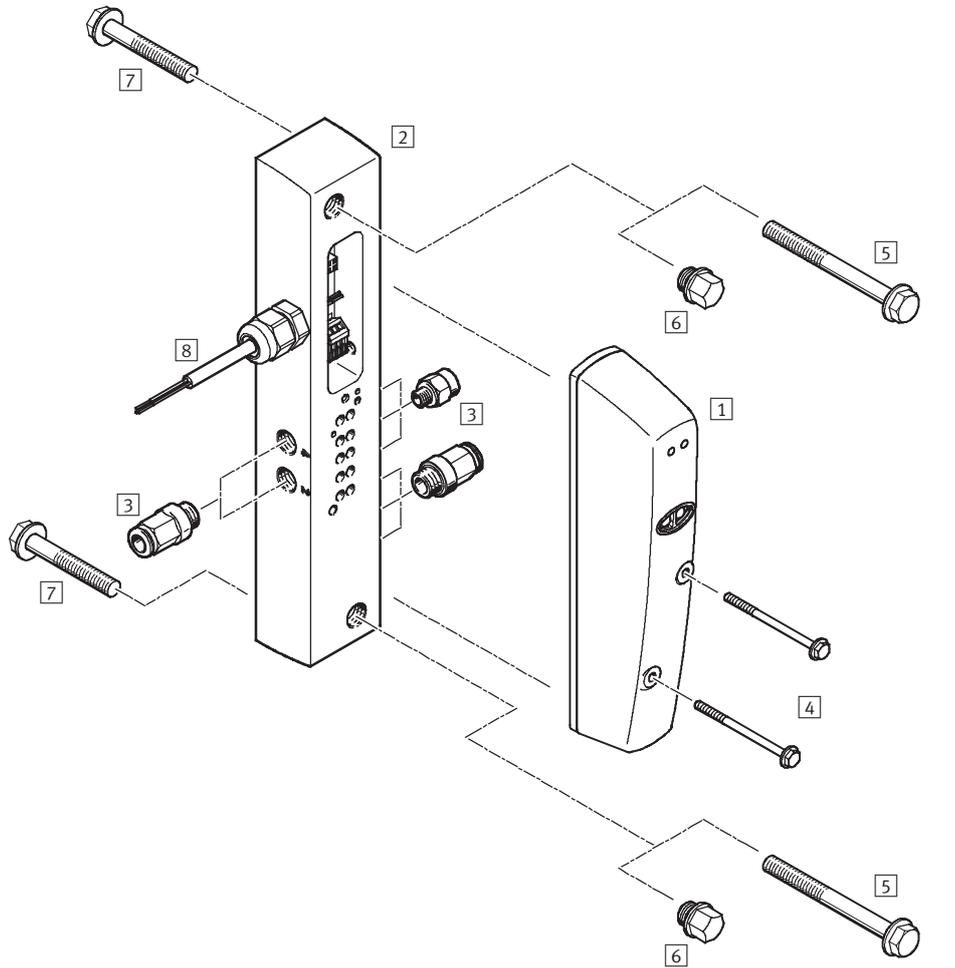
The Clean Design valve CDSV can be cleaned using special cleaning agents that are compatible with aluminium from the manufacturers

- Henkel
- Ecolab
- Johnson Diversey
- Kärcher

# Solenoid valves CDSV, Clean Design

Peripherals overview

## Overview – Clean Design individual valve



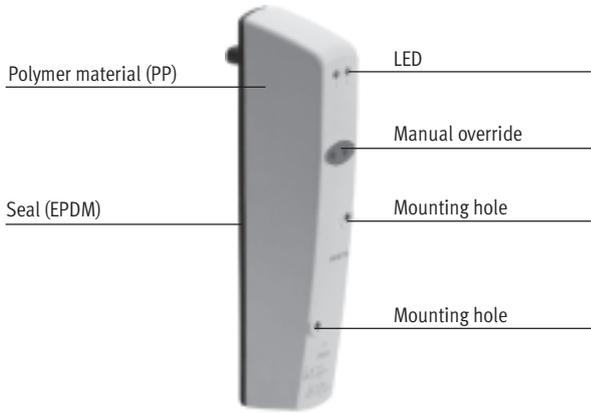
- |                                       |  |   |
|---------------------------------------|--|---|
| <b>1</b> Sub-base valve CDSV          | <b>4</b> Mounting screws for valve   | <b>6</b> Blanking plugs CDVI5.0-G1/8 <sup>1)</sup>  |
| <b>2</b> Sub-base                     | <b>5</b> Hexagon head screws<br>M6x40-A2-80 for sub-base,<br>mounting from the front <sup>1)</sup> | <b>7</b> Hexagon head screws<br>M6x18-A2-80 for sub-base,<br>mounting from the rear <sup>1)</sup> |
| <b>3</b> QS push-in/threaded fittings |  | <b>8</b> PVC cable, chemical resistant  |

1) Included in adapter kit CDSV5.0

# Solenoid valves CDSV, Clean Design

Key features – Pneumatics

## Features

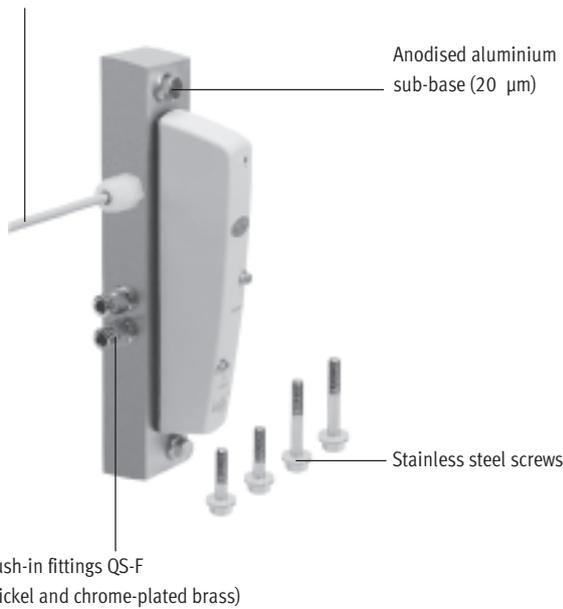


The CDSV supports the following valve types:

- 5/2-way valve, single solenoid
- 5/2-way valve, double solenoid
- 5/3-way valve, mid-position pressurised
- 5/3-way valve, mid-position exhausted
- 5/3-way valve, mid-position closed
- 2x 3/2-way valve, single solenoid, normally closed
- 2x 3/2-way valve, single solenoid, normally open
- 2x 3/2-way valve, single solenoid, 1 normally open, 1 normally closed

## Individual sub-base

Chemical resistant multi-pin cable



All CDVI valves can be mounted on the individual sub-base CDSV.

The CDSV has a connection for external pilot air and is supplied pre-assembled and tested with a valve and 10 m PVC cable. Pre-assembled push-in fittings can also be included on request.

### Mounting

A Clean Design mounting set, consisting of two screws and two blanking plugs (blanking plugs already mounted in the figure) allows for mounting from the front or from the rear.

The valve can be mounted in any position. However, the selected mounting position should allow for the cleaning off of dirt and the draining off of cleaning agent.

### Pressure compensation

The collected exhaust air from the pilot solenoid coils of the valves is drawn off via the pressure relieving hole on the right-hand side. If you have included fittings with your order, the pressure relieving hole is also equipped with a QS fitting.

## The ideal range for the food industry

A wide range comprising

- actuators in corrosion resistant designs that are easy to clean,
  - valves as well as
  - stainless steel fittings and flow control valves and
  - tubing approved for use in the food industry is available.
- All have been tested using cleaning agents from leading manufacturers.



# Solenoid valves CDSV, Clean Design

Key features – Pneumatics

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## Accessories

Tubing PLN



Push-in fitting QS-F/QSL-F...



You should only use accessories that have been approved by Festo. This is the only way of ensuring optimum performance from the CDVI in the following areas:

- Resilience
- Corrosion resistance classification
- Easy cleaning

## Auxiliary pilot air

The valves used are piloted solenoid valves.

The pilot air supply duct 12/14 is taken either from the main supply port 1 or via a separate auxiliary pilot air supply at port 12/14.

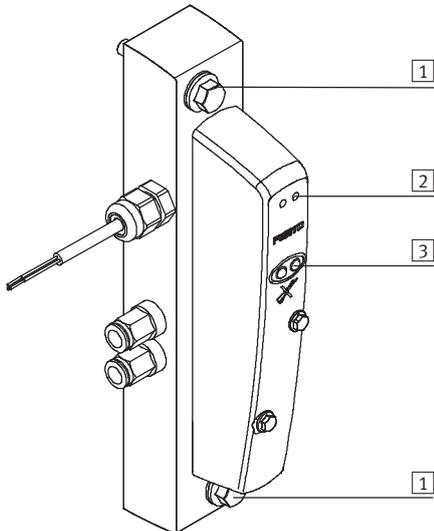
A separate pilot air supply is required in any event if supply pressure is less than 3 bar or greater than 6 bar. In this case it is advisable to restrict auxiliary pilot air to max. 6 bar with a suitable regulator.

Orders with code B (push-in fittings QS-F pre-fitted) come with 1 Y-distributor QSY-F. This can be used to branch auxiliary pilot air directly from port 1.

# Solenoid valves CDSV, Clean Design

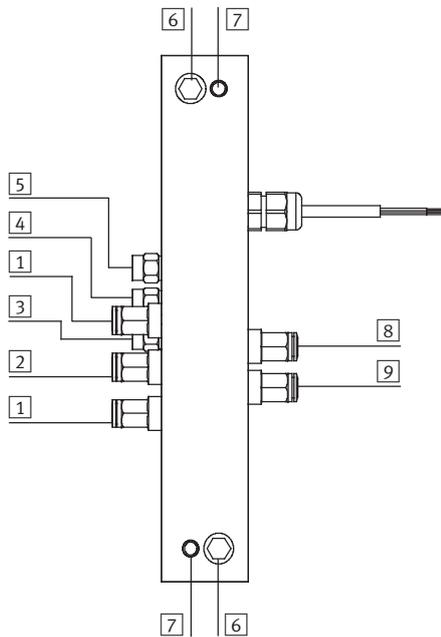
Key features – Pneumatics

## Mounting, display and operating elements



- 1 Hole for front mounting with M6 screws;  
if not required: can be covered with blanking plug G $\frac{1}{8}$
- 2 Yellow LEDs (one per valve solenoid)→
- 3 Manual override (one per solenoid valve coil)

## Mounting and connection elements



- 1 Exhaust port (3/5)
- 2 Supply port (1)
- 3 Pilot exhaust port (82/84)
- 4 Auxiliary pilot air connection (12/14)
- 5 Pressure relieving port
- 6 Threaded hole M6 for mounting from the rear
- 7 Holes for front mounting with M6 screws;  
can be covered with blanking plug G $\frac{1}{8}$
- 8 Working line (4) per valve
- 9 Working line (2) per valve

## Terminal allocation – Individual sub-base CDSV cable

Core colour	Allocation
Brown	Coil 14
Black	Coil 12 (not on 5/2-way valve, single solenoid)
Blue	com <sup>1)</sup>

1) 0 V for positive switching valves; for negative switching control signals connect 24 V

# Solenoid valves CDSV, Clean Design

## Technical data

-  - Flow rate  
300 ... 650 l/min

-  - Valve width  
18 mm



General technical data								
Valve function	5/2-way valve		2x 3/2-way valve			5/3-way valve		
	Single pilot	Double pilot	Normal position			Mid-position		
Valve function order code			Open	Closed	1 x open 1x closed	pressurised	exhausted	closed
Valve function order code	M	J	N	K	H	B	E	G
Constructional design	Piston spool valve							
Width [mm]	18							
Nominal size [mm]	5							
Lubrication	Lubrication for life, PWIS-free (free of paint wetting impairment substances)							
Type of mounting	<ul style="list-style-type: none"> <li>Valves: With 2 screws (DIN 6921)</li> <li>Individual sub-base: With 2 screws M6x40 (mounting from the front) With 2 screws M6x18 (mounting from the rear)</li> </ul>							
Mounting position	Any							
Manual override	Non-detenting							
Pneumatic connections								
Supply connection	1	G $\frac{3}{8}$						
Exhaust connection	3/5	G $\frac{3}{8}$						
Working lines	2/4	G $\frac{3}{8}$						
Pilot air connection	12/14	M5						
Pilot exhaust air connection	82/84	M5						
Pressure compensation connection	M5							

Operating pressure [bar]								
Valve function order code	M	J	N	K	H	B	E	G
P1 with external pilot air	-0.9 ... +10		3 ... 10 <sup>1)</sup>			-0.9 ... +10		
Pilot air	3 ... 6							
P1 if pilot air branched	3 ... 6							

1) 3/2-way valves not suitable for vacuum

Valve response times [ms]									
Valve function order code		M	J	N	K	H	B	E	G
Response times	On	12	-	10	10	10	12	12	12
	Off	22	-	22	22	22	25	25	25
	Changeover	-	10	-	-	-	17	17	17

# Solenoid valves CDSV, Clean Design

Technical data

Operating and environmental conditions								
Valve function order code	M	J	N	K	H	B	E	G
Operating medium	Filtered compressed air, lubricated or unlubricated							
Grade of filtration [µm]	40							
Operating temperature [°C]	-5 ... +50							
Temperature of medium [°C]	-5 ... +50							
Corrosion resistance class CRC <sup>1)</sup>	3							

- 1) Corrosion resistance class 3 according to Festo standard 940 070  
 Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface.

Electrical data								
Valve function order code	M	J	N	K	H	B	E	G
Electromagnetic compatibility	Interference immunity tested to EN 61 000-6-2							
Operating voltage [V]	24 DC (±10%)							
Minimum power supply requirements	0.4 V/ms voltage increase time to reach the high current phase							
Residual ripple [Vss]	4							
Switch-on current consumption • per solenoid coil at 24 V (with LEDs)	Typical 60 mA							
Current consumption during operation • per solenoid coil at 24 V (with LEDs)	Min. 26 mA							
Electrical power [W] consumption per solenoid coil (with LEDs)	1.5							
Duty cycle	100%							
Protection class to EN 60 529	IP65/67 (fully assembled)							
Vibration resistance	To DIN/IEC 68/EN 60 068, parts 2-6 and IEC 721/EN 60 068 parts 2-3							
Shock resistance	To DIN/IEC 68/EN 60 068, parts 2-27 and IEC 721							
Continuous shock resistance	To DIN/IEC 68/EN 60 068, parts 2-29: +/-15 g at 6 ms, 1000 cycles							

Materials								
Valve function order code	M	J	N	K	H	B	E	G
Cover	Polypropylene (PP), TPE, polyamide (PA)							
Manifold block	AL (anodised min. 20 µm)							
Blanking plug	VA (material no.: 1.4303 or 1.4301)							
End plate	PP							
Screws	VA (material no.: 1.4303 or 1.4301)							
Spacer bolt	AL (anodised min. 20 µm)							
Valve	AL, PEI, polyacetate (POM), polyphenylene sulphide (PPS), polyamide (PA), nitrile rubber (NBR), Ms, St, polycarbonate (PC), polypropylene (PP), TPE, ESA-BA, Novolem							

Product weight [g]		Approx. weights						
Valve function order code	M	J	N	K	H	B	E	G
Valve	210							
CDSV individual sub-base	690							

Nominal flow rate [l/min.]								
Valve function order code	M	J	N	K	H	B	E	G
	650	650	300	300	300	500/300 <sup>1)</sup>	400/200 <sup>1)</sup>	600

- 1) Mid-position

# Solenoid valves CDSV, Clean Design

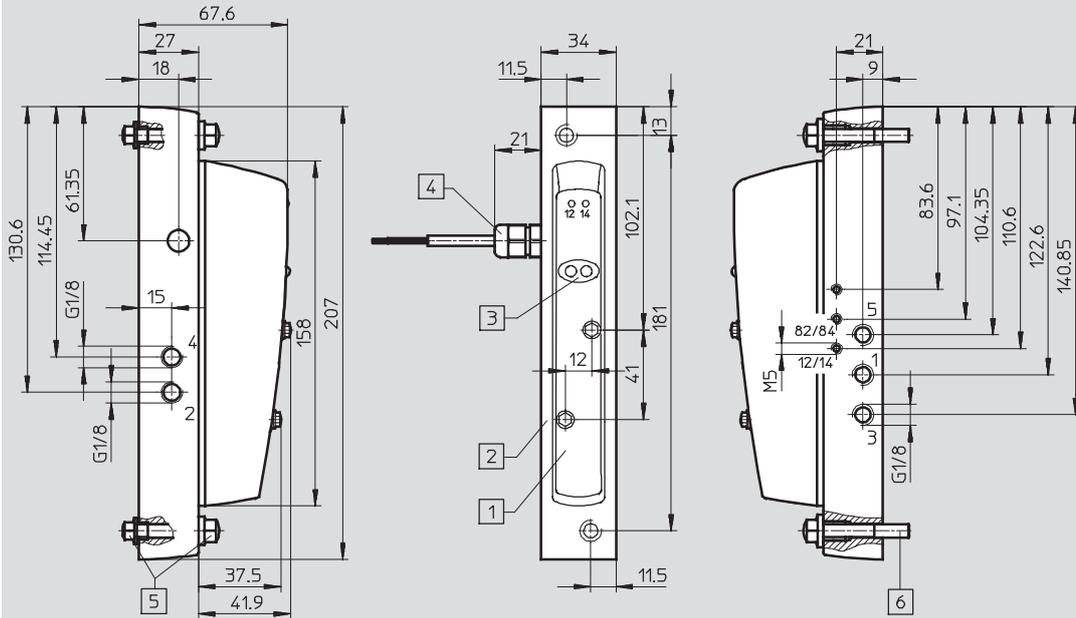
Technical data

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## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

### Individual sub-base



1 Choice of single solenoid or double solenoid sub-base valve

2 Individual sub-base

3 Manual override

4 Cable conduit fitting M20x1.5

5 Mounting from the rear:

2x screw M6x18-A2-80

2x sealing ring CRO-M6

2x blanking plug G1/8

2x sealing ring G1/8

6 Mounting from the front:

2x screw M6x40-A2-80

2x sealing ring CRO-M6

# Solenoid valves CDSV, Clean Design

Ordering system

## Ordering system information

Just like the valve terminals, solenoid valves CDSV are selected using an order code. This order code specifies the valve functions as well as the type of compressed air supply.

As is the case with all Festo products, the CDVI and CDSV are:

- fully pre-assembled
- fitted with QS...-F fittings on the working lines and end plates on request

- tested for electrical functions
- tested for pneumatic functions and
- packed securely

## Notes on the order code and ordering procedure

### Individual sub-base

The individual sub-base can be ordered using the valve terminal order code or individual part numbers.

Order example:

**15P-K10-1B-XR-M-B+Z**

Order codes printed in bold do not have any options.

### Fittings

The basic CDSV price includes the following:

- the straight QS-F-G1/8 fittings in the working connections for optimum flow and

- suitable straight QS-F-G1/8 fittings for compressed air supply and main exhaust air.

These sets of fittings are assembled before leaving the factory.

## Valve terminal configurator

Online via: → [www.festo.com/us/engineering](http://www.festo.com/us/engineering)

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

The valves and valve terminals are equipped and assembled according to customer requirements. This results in minimal installation time. They are supplied fully tested.



# Solenoid valves CDSV, Clean Design

Ordering data – Modular product system

**M** Mandatory data →

Module No.	Valve terminal, pneumatic part	Electrical connection	Number of valves on the basic block	Pneumatic connection	End plates/pressure supply	Seal type	Basic block equipment, valve position 0
197 648	15P	K10	1	B, G	X	R	Valves M, J, G, E, B, K, N, H, A  Valve position 0
<b>Order example</b> 197 648	<b>15P</b>	- <b>K10</b>	- <b>1</b>	<b>B</b>	- <b>X</b>	<b>R</b>	- <b>M</b>
1	2	3	4	5	6	7	8

→ **M** Mandatory data

**O** Options

User documentation

B

- **B**

9

Accessories

Z

+ **Z**

10

**Ordering table**

		Condition s	Code	Enter code	
<b>M</b> 1	Module No.		<b>197648</b>		
2	Valve terminal, pneumatic part	Clean Design CDVI Type 15	<b>15P</b>	15P	
3	Electrical connection	Multi-pin cable, 10 m	<b>-K10</b>	-K10	
4	Number of valves on the basic block	1	<b>-1</b>	-1	
5	Pneumatic connection	QS fittings, straight, tubing 6 mm	<b>B</b>		
		No fitting	<b>G</b>		
6	End plates/pressure supply	Supply at right, external pilot air supply	<b>-X</b>	-X	
7	Seal type	Resistant to cleaning agents	<b>R</b>	R	
8	Basic block equipment	Valve position 0	-	-	
		Valves	5/2-way valve, single solenoid	<b>M</b>	
			5/2-way valve, double solenoid	<b>J</b>	
			5/3-way valve, mid-position closed	<b>G</b>	
			5/3-way valve, mid-position exhausted	<b>E</b>	
			5/3-way valve, mid-position pressurised	<b>B</b>	
			2x 3/2-way valve, normally closed	<b>K</b>	
			2x 3/2-way valve, normally open	<b>N</b>	
2x 3/2-way valve, 1 normally open, 1 normally closed	<b>H</b>				
9	User documentation	Express waiver - no manual to be included (already available)	<b>-B</b>	-B	
<b>O</b> 10	Accessories		<b>+</b>	+	
		Pneumatic accessories	Adapter kit for individual valve CDSV	<b>Z</b>	

Transfer order code

197 648	15P	- K10	- 1		- X	R	- <span style="border: 1px solid black; padding: 2px;">Valve position 0</span>	→	
1	2	3	4	5	6	7	8		
- B								+ <span style="border: 1px solid black; padding: 2px;"> </span>	
9								10	

# Solenoid valves CDSV, Clean Design

Ordering data – Individual valve

Ordering data				
Individual sub-base valve				
	Code	Valve function	Part No.	Type
	M	5/2-way valve, single solenoid	196 657	CDVI5.0-MT2H-5LS
	J	5/2-way valve, double solenoid	196 659	CDVI5.0-MT2H-5JS
	N	2x 3/2-way valve, normally open	196 663	CDVI5.0-MT2H-2x3OLS
	K	2x 3/2-way valve, normally closed	196 661	CDVI5.0-MT2H-2x3GLS
	H	2x 3/2-way valve, 1 normally open 1 normally closed	196 665	CDVI5.0-MT2H-2x3OLS-3GLS
	B	5/3-way valve, mid-position pressurised	196 655	CDVI5.0-MT2H-5/3BS
	E	5/3-way valve, mid-position exhausted	196 653	CDVI5.0-MT2H-5/3ES
	G	5/3-way valve, mid-position closed	196 651	CDVI5.0-MT2H-5/3GS

Ordering data				
Designation			Part No.	Type
<b>Sub-base</b>				
	Sub-base, individual connection		534 434	CDSV5.0-AS-1/8
<b>Mounting</b>				
	Adapter kit SET		534 436	CDSV5.0
<b>Blanking plug</b>				
	Blanking plug G1/8		196 720	CDVI-5.0-B-G1/8
<b>Plug</b>				
	Blanking plug for tubing OD	6 mm	153 268	QSC-6H

# Product Range and Company Overview

## A Complete Suite of Automation Services

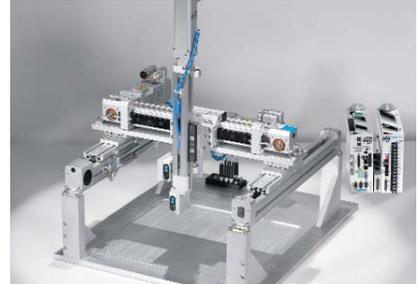
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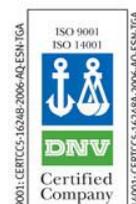
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Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

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**Email:** [customer.service@us.festo.com](mailto:customer.service@us.festo.com)

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