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Key features



Innovative

- Proven valve technology combined with a highly resistant polymer material
- The valves are identical with the valves in the valve terminal CDVI. This simplifies planning, ordering and warehousing

Versatile

- 1 valve position
- 2 solenoid coils
- Flow rate 300 ... 650 l/min
- Valve width 24 mm
- Connected via 10 m PVC cable

Reliable

Developed with practical considerations in mind

- Hygienic
- Corrosion-resistant
- Easy to clean
- External pilot air
- Ducted venting hole

Easy to mount

As is the case with all Festo products, all CDVI and CDSV are fully pre-assembled and equipped according to customer requirements

- With QS...-F fittings on the working lines and end plates
- Tested for electrical and pneumatic function

Key features

CDSV and CDVI – The requirements



The food industry has higher hygiene requirements than any other sector, which means there can be no compromises when it comes to ease of cleaning and resistance to corrosion. Festo's answer is the CDSV and CDVI. Developed in close consultation with leading names from the food and packaging industry, the CDSV and CDVI represent a totally new valve and valve terminal solution for splash zones. Clean Design valves have a revolutionary corrosion-resistant design that sets them apart from their competitors and scores them top marks for ease of cleaning.

CDSV and CDVI - The solution

The new Clean Design valves – 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 established 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 can be found in the tables in the ordering system section on page → 15. 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 blocks must be used for

this. More information

→ Internet: cdvi

Clean in theory and practice – the CDSV

The requirements for the hygienic design of machine components to DIN EN 1672-2 and DIN ISO 14159 have been implemented. 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 CDSV Clean Design valve can be cleaned using special cleaning agents that are compatible with aluminium, available from the following manufacturers:

- Henkel
- Ecolab
- Iohnson Diversev
- Kärcher

Key features - Pneumatic components

The 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
- 3/2-way valve, single solenoid,
- normally closed3/2-way valve, single solenoid, normally open
- 2x 3/2-way valve, single solenoid, normally closed

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- 2x 3/2-valve valve, single solenoid, normally open
- 2x 3/2-way valve, single solenoid, 1x normally open,
- 1x normally closed2/2-way valve, single solenoid,
- normally closed
- 2/2-way valve, single solenoid, normally open

Individual sub-base

Chemical-resistant



All CDVI valves can be assembled on an individual sub-base CDSV. The CDSV has a connection for external pilot air supply, is pre-assembled with a valve and a 10 m PVC cable and is fully inspected before shipment. Pre-assembled push-in fittings will be included on request.

Pressure compensation

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

Mounting

A Clean Design mounting set comprising two screws and blanking plugs (blanking plugs already fitted in the drawing) permits mounting from the front or from the rear.

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

Push-in fittings QS-F (nickel-plated and chromed brass)

The ideal range for the food industry

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



Peripherals overview



		Brief description	→ Page/Internet
1	Mounting kit	Mounting from above or below	17
2	Sub-base for individual valve	-	16
3	Individual electrical connection	-	-
4	Push-in fitting	For working lines	17
5	Push-in fitting	For pilot air supply and venting, venting hole	17
6	Push-in fitting	For compressed air supply and venting	17
7	Valve	-	16
8	LED display	-	-
9	Manual override	For each solenoid coil, non-detenting	-

All valves on the valve terminal CDVI can be mounted on the individual sub-base CDSV. The individual sub-base CDSV has a connection for external pilot air supply, is pre-assembled with a valve and a 10 m PVC cable and is fully inspected before shipment. Assembled push-in fittings included on request. A Clean Design mounting kit comprising two screws (18 mm and 40 mm) and two stainless steel blanking plugs permits mounting from above or below. If you have included fittings with your order, the pressure compensation hole is also equipped with a QS fitting. The collected exhaust air from the pilot solenoid coils of the valves is drawn off via the pressure compensation hole (venting hole) on the rear side.

Note

All ports and mounting holes that are not required must be sealed with a blanking plug. Exception: venting hole

Key features – Pneumatic components

Valves Code Circuit symbol Description 2/2-way valve, single solenoid R <u>2</u> + **A** • Normally closed \leq • Pneumatic spring return • Suitable for vacuum • External supply air 2/2-way valve, single solenoid S • Normally open • Pneumatic spring return • Suitable for vacuum • External supply air Х 3/2-way valve, single solenoid 42 (14) Normally closed • Pneumatic spring return • Suitable for vacuum • External supply air 3/2-way valve, single solenoid W • Normally open • Pneumatic spring return • Suitable for vacuum • External supply air 2x 3/2-way valve, single solenoid К 2 • Normally closed • Pneumatic spring return • Not suitable for vacuum 12/14 1 82/84 3 Ν 2x 3/2-way valve, single solenoid • Normally open Ī -< Pneumatic spring return • Not suitable for vacuum 12/14 82/84 1 2x 3/2-way valve, single solenoid Н • 1x normally closed, 1x normally open 14 _____ ____ • Pneumatic spring return • Not suitable for vacuum 2/14 82/

Note

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

Solenoid valves CDSV, Clean Design Key features – Pneumatic components

Valves and cover			
	Code	Circuit symbol	Description
Contraction of the second seco	M		5/2-way valve, single solenoidPneumatic spring returnSuitable for vacuum
	J		5/2-way valve, double solenoid Suitable for vacuum
	G		 5/3-way valve Mid-position closed Mechanical spring return The piston rod side of the cylinder remains under pressure when the valve is in the normal position Suitable for vacuum
	В		 5/3-way valve Mid-position pressurised Mechanical spring return The piston rod of a connected cylinder advances when the valve is in the normal position due to the different piston areas Suitable for vacuum
	E		 5/3-way valve Mid-position exhausted Mechanical spring return The piston rod can be moved freely in the normal valve position Suitable for vacuum



Key features – Pneumatic components

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- 1 Yellow LEDs (one per solenoid coil)
- 2 Non-detenting manual override (per solenoid coil)

Key features – Pneumatic components

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Brown

Black

Blue

Solenoid coil 14

com¹⁾

1) 0 V for positive switching valves; 24 V can be connected for negative switching control signals

Solenoid coil 12 (not on 5/2-way single solenoid valve)

Solenoid valves CDSV, Clean Design Technical data

- 1 Flow rate 300 ... 650 l/min
- **J** Valve width 24 mm



General technical data Valve function order code		R	S	Х	W	К	N	Ін	М	1.	G	В	E		
		-								J					
Valve function		2/2-way solenoid 3/2-way solenoid				2x 3/2-w	ay soleno	id valve		5/2-way solenoid		5/3-way solenoid valve			
		valve		valve					valve						
Reset method		Pneumat	, -		tic spring	Pneumat				tic spring		ical sprin	g		
Direction of flow		Reversibl		Reversib		Non-reve			Reversib		Reversi				
Exhaust function		With flow	<i>ı</i> control		w control	No flow o	ontrol		With flow	v control		w control			
b value		0.34		0.34		0.14			0.38		0.5	0.37	0.5		
C value	[l/sbar]	2.05		2.05		1.4			2.75		2.55	3.2	1.54		
Standard nominal flow rate	[l/min]	500	300	500		300			650		650	650	400		
Design			ool valve												
Actuation type		Electric													
Sealing principle		Soft													
Width	[mm]	24													
Nominal size	[mm]	5													
Tightening torque of	[Nm]	0.8													
valve/blanking plate															
Mounting position		Any													
Manual override		Non-dete	enting												
Max. no of valve positions		16 (max.	24 solence	oid coils)											
Type of mounting															
Valves		With 2 so	rews (DIN	6921)											
Individual sub-base		With 2 so	rews M6x	40 (moun	ting from th	ne front)									
		With 2 so	rews M6x	18 (moun	ting from th	ne rear)									
Pneumatic connections															
Supply	1	G1⁄8													
Exhaust	3/5	G1⁄8													
Working lines	2/4	G1⁄8													
Pilot air supply	12/14	M5													
Pilot exhaust air	82/84	M5													
Pressure compensation		M5													

Valve switching times [ms]													
Valve function order code		R	S	Х	W	К	Ν	Н	М	J	G	В	E
Switching times	On	10	10	10	10	10	10	10	12	-	12	12	12
	Off	14	14	14	14	22	22	22	22	-	25	25	25
	Changeo	-	-	-	-	-	-	-	-	10	17	17	17
	ver												

Technical data

Operating and environmental cond	itions											
Valve function order code	R	S	Х	W	К	Ν	Н	М	J	G	В	E
Operating medium	Compres	sed air to	ISO 8573-	1:2010 [7	':4:4]							
Note about the operating/pilot med	ium Lubricat	ed operat	ion possible	e (require	d during si	ubsequent	operatio	n)				
Operating pressure [bar]	-0.9 +	-10			3 101	.)		-0.9	. +10			
Operating pressure for valve [bar]	3 8 (n	ot availab	ole on the CI	DSV)								
terminal with internal pilot												
air supply												
Pilot pressure [bar	3 8											
Ambient temperature [°C]	-5 +5	0										
Temperature of medium [°C]	-5 +5	0										
Corrosion resistance class CRC ²⁾	3											
CE marking	To EU EN	IC Directiv	ve ³⁾									
(see declaration of conformity)												
Based on standard	EN 1672	-2 (food p	processing n	nachines,	general de	esign princ	ples)					
	ISO 141	ISO 14159 (machine safety – hygiene requirements for machinery design)										
Certification	C-Tick											

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

2) Corrosion resistance class 3 according to Festo standard 940 070

Components subject to high corrosion stress. 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.

3) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com -> Support -> User documentation. If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Pilot pressure with external pilot air supply

Switch-on pilot pressure of 5/2-way and 5/3-way valves and 3/2-way valves with external air supply (EXT)



1 Permissible pressure range

Switch-on pilot pressure of 3/2-way valves



1 Permissible pressure range

l

Electrical data		
Electromagnetic compatibility		Interference immunity tested to EN 61000-6-2
Nominal operating voltage	[V DC]	24, reverse polarity protected
Permissible voltage	[%]	±10
fluctuations		
Residual ripple	[Vss]	4
Switch-on current consumption		
 Per solenoid coil at 24 V 	[mA]	Тур. 120
(with LEDs)		
Current consumption during op	eration	
 Per solenoid coil at 24 V 	[mA]	Min. 26
(with LEDs)		
Electrical power consumption	[W]	3.1
per solenoid coil (with LED)		
Duty cycle		100%
Protection class to EN 60529		IP65, IP66, IP67, NEMA 4 (fully assembled)

Materials	
Connection block	Aluminium (anodised, at least 20 μm)
Blanking plug	Polybutylene terephthalate (material no.: 1.4303 or 1.4301)
Screws	Polybutylene terephthalate (material no.: 1.4303 or 1.4301)
Valve	Aluminium, polyacetal (POM), polyphenylene sulphide (PPS), polyamide (PA), nitrile rubber (NBR), brass (Ms), steel (St), polycarbonate (PC), polypropylene (PP)
Note on materials	RoHS-compliant

Product weight [g]												
Valve function order code	R	S	Х	W	К	Ν	Н	Μ	J	G	В	E
Valve	185	185	185	185	210	210	210	195	205	210	210	210
CDSV individual sub-base ¹⁾	690											

1) Individual sub-base, without pneumatic fittings and valve.

Nominal flow rate [l/min]												
Valve function order code	R	S	Х	W	К	Ν	Н	М	J	G	В	E
Pressurised	500	300	500	500	300	300	300	650	650	650	650	400
Exhausted	500	300	500	500	300	300	300	650	650	650	400	650
Mid-position	-	-	-	-	-	-	-	-	-	-	150	150



Ordering system

Ordering system information

The solenoid valves CDSV can be processed via an ident. code. This ident. code specifies the valve functions and 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 function
- tested for pneumatic function and
- supplied safely packaged

Notes on the order code and ordering procedure Individual sub-base

The individual sub-base can be ordered either via the ident. code or via individual part numbers.

Order example:

15P-K10-1B-**XR-**M-**B+**Z Ident. codes in bold print do not permit alternative selections. The basic CDSV price includes the following:

Fittings

- The straight QS-F-G1/a fittings on the working lines for the best possible flow rate
- The matching straight QS-F-G1/8 fittings for air supply and main exhaust.

These sets of fittings are assembled before the CDSV leaves the factory.

Valve terminal configurator

A valve terminal configurator is available to help you select a suitable valve CDSV or valve terminal CDVI. This makes it much easier to order the right product. The valves and valve terminals are equipped and assembled according to customer requirements. This results in minimal installation time. They are also fully inspected before shipment.



Online via: → www.festo.com/us/engineering

Solenoid valves CDSV, Clean Design Ordering data – Modular products



Ordering table

oruci	ing table		Constitution	C. J.	L Enten
			Condition	Code	Enter code
			5		code
M 1	Module No.	197648			
2	Valve terminal, pneumatic part	Valve terminal type 15, CDVI, Clean Design		15P	15P
3	Electrical connection	Multi-pin plug, 10 m cable		-K10	-K10
4	No. of valves on the basic block	1		-1	-1
5	Pneumatic connection	Straight push-in connectors, QS-6		В	
		Thread Gx, without fitting		G	
6	End plates/pneumatic supply	Supply at right, external pilot air		-Х	-Х
7	Type of seal	Resistant to cleaning agents		R	R
8	Basic block equipment	Valve position 0		-	-
	Valve functions	5/2-way valve, single solenoid		М	
		5/2-way valve, double solenoid		J	
		5/3-way valve, mid-position closed		G	
		5/3-way valve, mid-position exhausted		E	
		5/3-way valve, mid-position pressurised		В	
		3/2-way valve, normally closed, external supply air		Х	
		3/2-way valve, normally open, external supply air		W	
		2/2-way valve, normally closed, external supply air		R	
		2/2-way valve, normally open, external supply air		S	
		2x 3/2-way valve, normally closed		К	
		2x 3/2-way valve, normally open		N	
		2x 3/2-way valve, 1x normally open, 1x closed		Н	
		Vacant position for two solenoid coils		Α	
09	Accessories			+	+
	Pneumatic accessories	Mounting set for individual valve CDSV		Z	



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Code	Description	Part No.	Туре
se valve			
R	2/2-way valve, single solenoid,	556379	CDVI5.0-MT2H-1X2GLS-EXT
	normally closed,		
	external supply air		
S	2/2-way valve, single solenoid,	556380	CDVI5.0-MT2H-1X2OLS-EXT
	normally open,		
	external supply air		
Х	3/2-way valve, single solenoid,	547013	CDVI5.0-MT2H-1X3GLS-EXT
	normally closed,		
	external supply air		
W	3/2-way valve, single solenoid,	547014	CDVI5.0-MT2H-1X3OLS-EXT
	normally open,		
	external supply air		
К	2x 3/2-way valve, single solenoid,	196661	CDVI5.0-MT2H-2x3GLS
	normally closed		
Ν	2x 3/2-way valve, single solenoid,	196663	CDVI5.0-MT2H-2x3OLS
	normally open		
Н	2x 3/2-way valve, single solenoid,	196665	CDVI5.0-MT2H-3OLS-3GLS
	1x normally open, 1x normally closed		
Μ	5/2-way valve,	196657	CDVI5.0-MT2H-5LS
	single solenoid		
J	5/2-way valve,	196659	CDVI5.0-MT2H-5JS
	double solenoid		
G	5/3-way valve,	196651	CDVI5.0-MT2H-5/3GS
	mid-position closed		
В	5/3-way valve,	196655	CDVI5.0-MT2H-5/3BS
	mid-position pressurised		
E	5/3-way valve,	196653	CDVI5.0-MT2H-5/3ES
	mid-position exhausted		
•	÷		
1	Sub-base, individual connection	534434	CDSV5.0-AS-1/8
	R S S X W K N H H G B E	R 2/2-way valve, single solenoid, normally closed, external supply air S 2/2-way valve, single solenoid, normally open, external supply air X 3/2-way valve, single solenoid, normally closed, external supply air W 3/2-way valve, single solenoid, normally open, external supply air K 2x 3/2-way valve, single solenoid, normally closed N 2x 3/2-way valve, single solenoid, normally closed N 2x 3/2-way valve, single solenoid, normally open H 2x 3/2-way valve, single solenoid, normally open, 1x normally closed M 5/2-way valve, single solenoid, 1x normally open, 1x normally closed M 5/2-way valve, single solenoid J 5/2-way valve, mid-position closed B 5/3-way valve, mid-position pressurised E 5/3-way valve, mid-position exhausted	se valve R 2/2-way valve, single solenoid, normally closed, external supply air 556379 S 2/2-way valve, single solenoid, normally open, external supply air 556380 X 3/2-way valve, single solenoid, normally closed, external supply air 547013 W 3/2-way valve, single solenoid, normally closed, external supply air 547014 W 3/2-way valve, single solenoid, normally closed 547014 N 2x 3/2-way valve, single solenoid, normally closed 196661 N 2x 3/2-way valve, single solenoid, normally closed 196665 N 2x 3/2-way valve, single solenoid, normally closed 196657 H 2x 3/2-way valve, single solenoid, 1st normally closed 196657 M 5/2-way valve, single solenoid, 1st normally closed 196657 J 5/2-way valve, single solenoid, 1st normally closed 196657 G 5/3-way valve, 1single solenoid 196651 G 5/3-way valve, single solenoid 196651 B 5/3-way valve, mid-position closed 196655 E 5/3-way valve, mid-position exhausted 196653

Ordering data					
	Code	Description		Part No.	Туре
Mounting attachme	nts				
	® -	Mounting kit		534436	CDSV5.0
Blanking plug					
	-	Blanking plug	Gx for end plates	196720	CDVI-5.0-B-G ¹ /8
Plug					
OF D	-	Blanking plug for tubing O.D.	6 mm	153268	QSC-6H
Push-in fittings (10	pieces)				
	-	Straight, connecting thread M5 for tubing	; O.D. 4 mm	533844	QS-F-M5-4
	В	Straight, connecting thread G ¹ /8 for tubin		193409	QS-F-G ¹ /8-6
	A	Straight, connecting thread G ¹ /8 for tubin	-	193410	QS-F-G ¹ /8-8
	-	Angled, connecting thread M5 for tubing		533849	QSL-F-M5-4
	D	Angled, connecting thread Gx for tubing C		193419	QSL-F-G ¹ /8-6
	С	Angled, connecting thread Gx for tubing C		193420	QSL-F-G ¹ /8-8

FESTO

Product Range and Company Overview

A Complete Suite of Automation Services

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



Custom Automation Components Complete custom engineered solutions



Custom Control Cabinets Comprehensive engineering support and on-site services



Complete Systems Shipment, stocking and storage services

The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.



Electromechanical Electromechanical actuators, motors, controllers & drives



Pneumatics Pneumatic linear and rotary actuators, valves, and air supply



PLCs and I/O Devices PLC's, operator interfaces, sensors and I/O devices

Supporting Advanced Automation... As No One Else Can!

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.

Quality Assurance, ISO 9001 and ISO 14001 Certifications

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





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