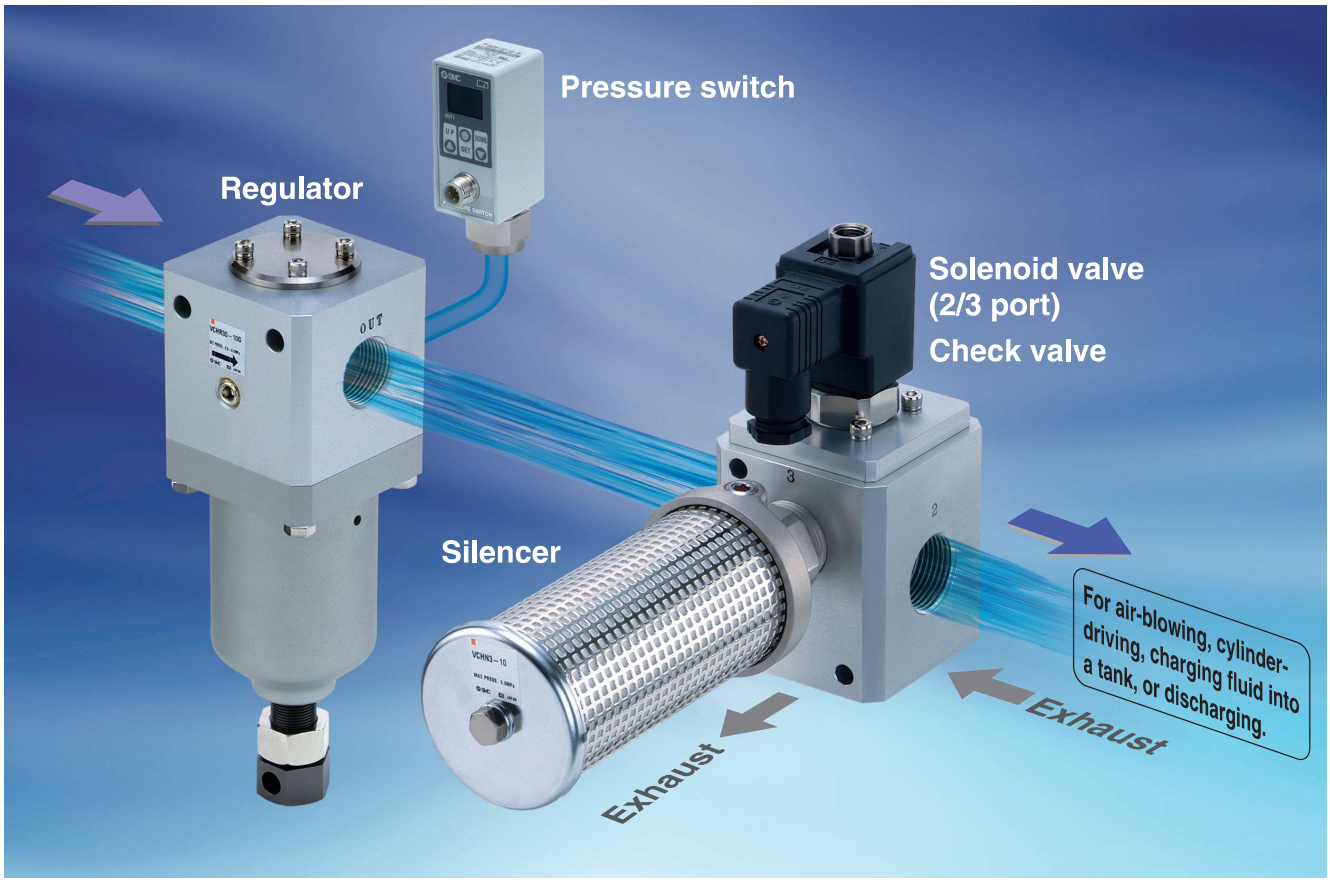
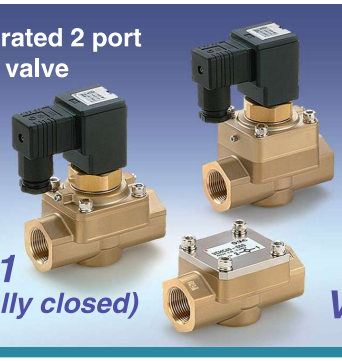
5.0 MPa Pneumatic Equipment Series



Pilot operated 2 port solenoid valve



VCH42 (Normally open)

VCH41 (Normally closed)

Check valve VCHC40

Pilot operated 3 port solenoid valve

VCH410

Direct operated regulator (Relieving type)

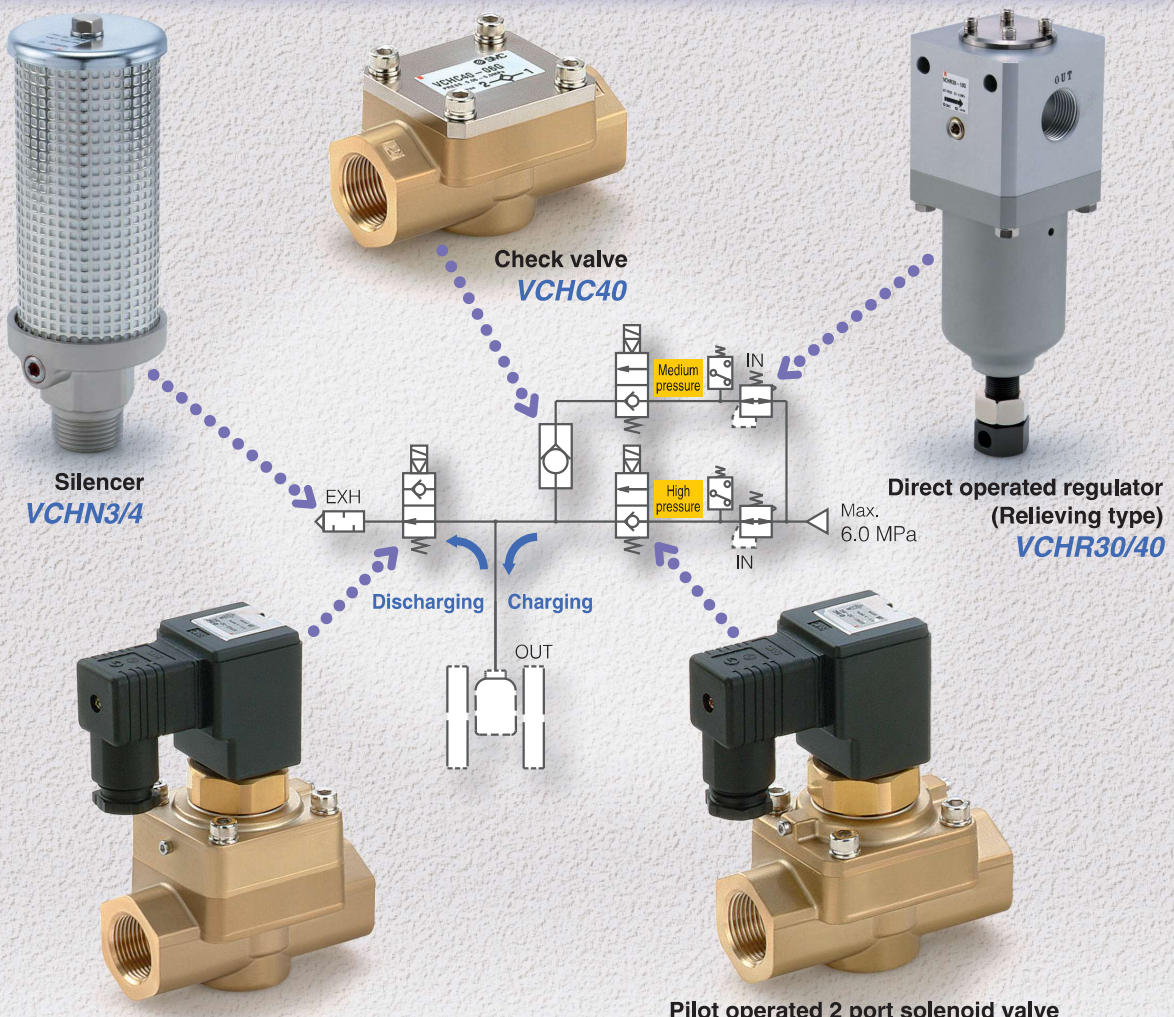
VCHR30/40

Silencer

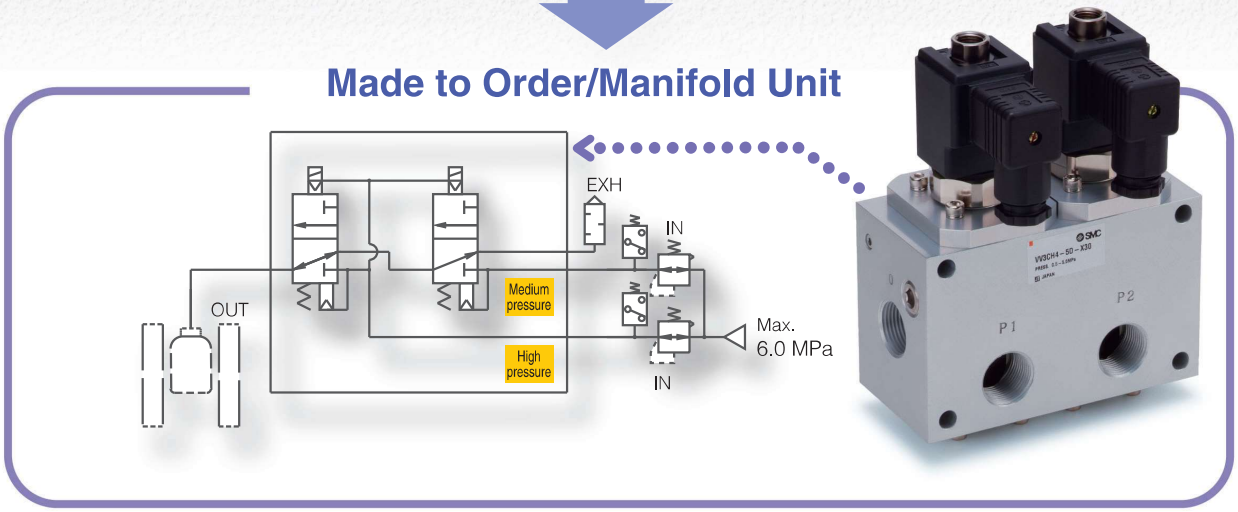
VCHN3/4

5.0 MPa Pneumatic

Applications include air-blowing, charging fluid into a vessel, or discharging (Blow-molding equipment, etc.)



Made to Order/Manifold Unit



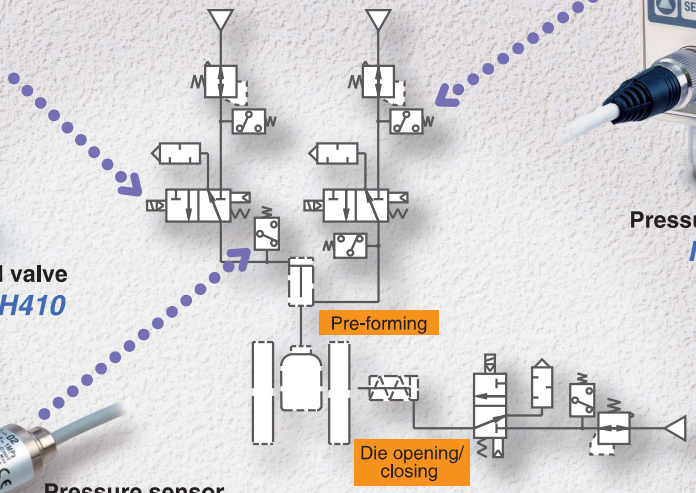
SMC

Equipment Variations

Example of driving a cylinder

Pilot operated 3 port solenoid valve
VCH410

Pressure switch
ISE75(H)



Pressure sensor
Made to Order

	Description	Features	Maximum operating pressure (MPa)	Series	Port size 1/4	1/2	3/4	1	1 1/4	1 1/2	Page
	Pilot operated 2 port solenoid valve	**Service life: 10 million cycles** A polyurethane elastoner poppet is adopted as a valve part. This improves durability undera high pressure envoronment.	5.0	**VCH41(N.C.)**			●	●			P.1
				VCH42(N.O.)			●	●			
	Check valve		5.0	**VCHC40**			●	●			P.5
	Pilot operated 3 port solenoid valve		5.0	**VCH410**		●	●	●			P.7
	Direct operated regulator (Relieving type)		Inlet pressure 6.0 Set pressure 0.5 to 5.0	**VCHR30**			●	●			P.15
				VCHR40				●		●	
	Silencer	**Noise reduction 35 dB(A)** (At supply pressure 4.0 MPa, back pressure 2.0 MPa) **Reduction of clogging with double-layer construction**	5.0 (Relief valve release pressure: 1.8 MPa)	**VCHN3**			●	●			P.21
				VCHN4				●	●	●	

Related Equipment

	Pressure switch	**2-colour display Metal body** (Aluminum die-cast)	10.0 15.0	**ISE75(H)**	●						

Made to Order P.24

1. 6.0 MPa pilot operated regulator (Air operated type) 
2. 22.0 MPa 2 port air operated valve 
3. 5.0 MPa pressure sensor 

5.0 MPa Pilot Operated 2 Port Solenoid Valve & Check Valve

Series VCH40/VCHC40

For Air

CE

Series VCH40

Stable responsiveness

Response time variation within ±2 ms

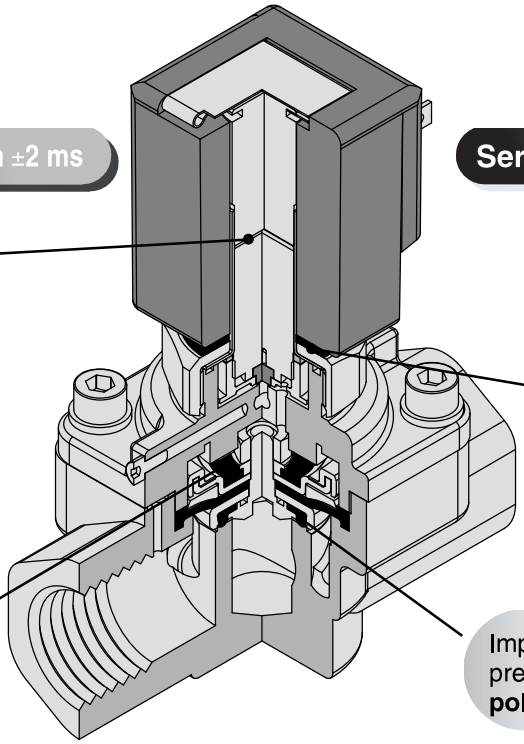
Service life: 10 million cycles

Collision-proof construction between the iron cores keeps equipment free of abrasion.

↓

Construction with reduced variation and improved responsiveness when switching off.

Improved durability by applying a **special surface treatment** to the sliding parts.



Use of **shock absorbing rubber**, results in protection of the pilot valve and electric parts.

Unnecessary volume inside the pilot chamber is reduced.

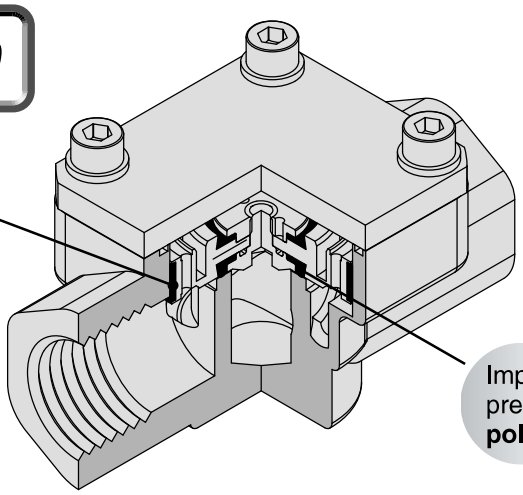
↓

High speed response with reduced variance

Improved durability under a high pressure environment is due to the **polyurethane elastomer** poppet.

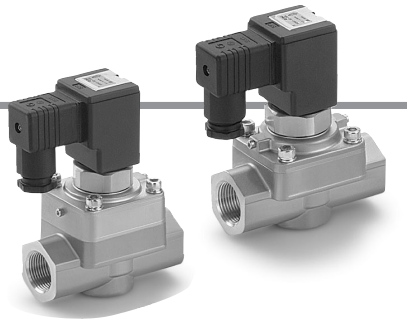
Series VCHC40

Uses **NSF-H1-certified grease** on the guide ring (sliding part).



Improved durability under a high pressure environment is due to the **polyurethane elastomer** poppet.

How to Order



VCH4 1 — 5 D — 06 G -Q

Valve type

	N.C.	N.O.
1	1(IN) — 2(OUT)	
2		1(IN) — 2(OUT)

Voltage

5	24 VDC
6	12 VDC

* Consult with SMC for other voltages. CE marking compliant products are only available with 50 VDC or less.

Thread type
(G thread for hydraulics and pneumatics conforming to ISO1179-1)

Port size

06	3/4
10	1

Electrical entry

D	DIN connector
DL	DIN connector with light

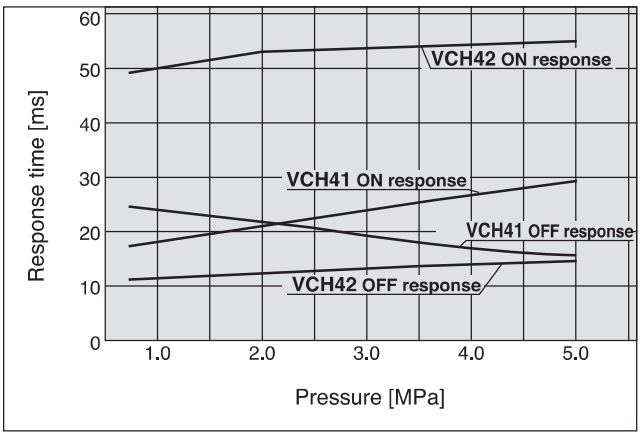
* A surge voltage suppressor is integrated inside the coil as a standard feature.

Specifications

Model			VCH41 (N.C.)	VCH42 (N.O.)
Valve specification	Valve construction		Pilot operated, diaphragm poppet	
	Fluid		Air, Inert gas	
	Orifice		ø16	ø17.5
	Flow characteristics	C value (Effective area)	17 dm³/(s•bar) (85 mm²)	22 dm³/(s•bar) (110 mm²)
		b	0.08	0.11
		Cv	4.5	5.8
	Max. operating pressure		5.0 MPa	
	Operating pressure		0.5 to 5.0 MPa	
	Fluid temperature		–5 to 80 °C	
	Ambient temperature		–5 to 80 °C	
	Body material		Brass	
	Main seal material		Polyurethane elastomer	
	Enclosure		Drip proof (Equivalent to IP65)	
	Port size		G3/4, 1 (G thread for hydraulics and pneumatics conforming to ISO1179-1)	
	Impact/Vibration resistance Note 1)		300/100 m/s² Note 2)	
	Mounting orientation		Unrestricted	
	Weight		1.67 kg	1.9 kg
Coil specification	Rated voltage		12 VDC, 24 VDC	
	Allowable voltage fluctuation		±10 % of rated voltage	
	Electrical entry		DIN connector	
	Coil insulation type		Class B	
	Power consumption		5 W (DC)	

Note 1) Impact resistance: No malfunction resulted in an impact test using a drop impact tester. The test was performed one time each in the axial and right angle directions of the main valve and armature, for both energised and de-energised states. (Value in the initial stage)
Vibration resistance: No malfunction resulted in 8.3 to 2000 Hz, a one-sweep test performed in the axial and right angle directions of the main valve and armature for both energised and de-energised states. (Value in the initial stage)
Note 2) Vibration resistance is 50 m/s² when a light/surge voltage suppressor is attached.

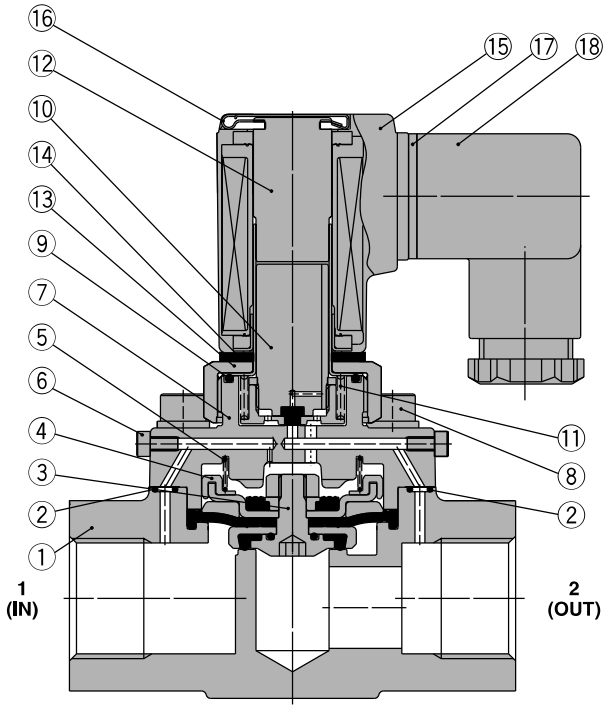
Response Time



Note 1) DC solenoid without a light/surge voltage suppressor
Note 2) DC solenoid with an indicator light: It will cause delays around 20 to 30 msec in the OFF response time.

Construction

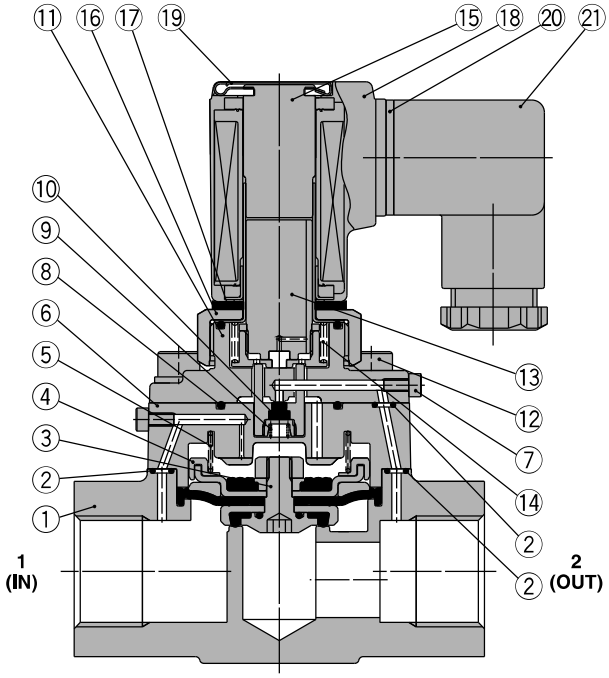
Normally closed (N.C.)



Component Parts

No.	Description	Material
1	**Body**	Brass
2	**O-ring**	NBR
3	**Diaphragm assembly**	Polyurethane elastomer
		Stainless steel
4	**Main valve guide**	Resin
5	**Poppet spring**	Stainless steel
6	**Hexagon socket head cap screw**	Carbon steel
7	**Bonnet**	Brass
8	**Hexagon socket head cap screw (with SW)**	Carbon steel
9	**O-ring**	NBR
10	**Armature assembly**	—
11	**Return spring**	Stainless steel
12	**Tube assembly**	Stainless steel
13	**Nut**	Brass
14	**Rubber mount**	NBR
15	**DIN connector type solenoid coil**	—
16	**Clip**	Carbon steel
17	**DIN terminal gasket**	CR
18	**DIN connector**	—

Normally open (N.O.)

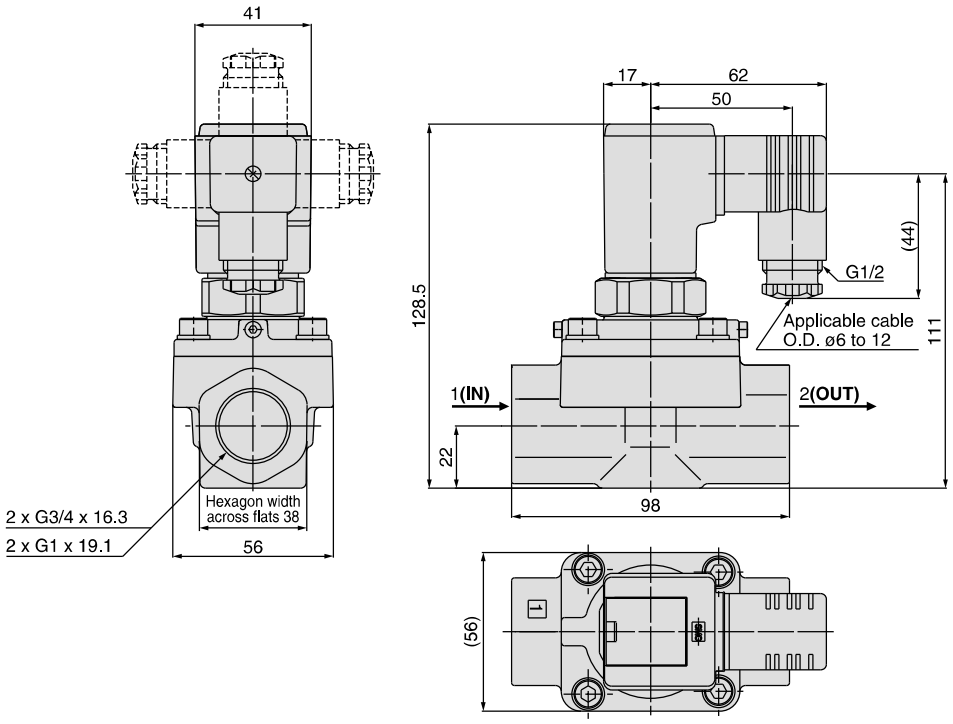


Component Parts

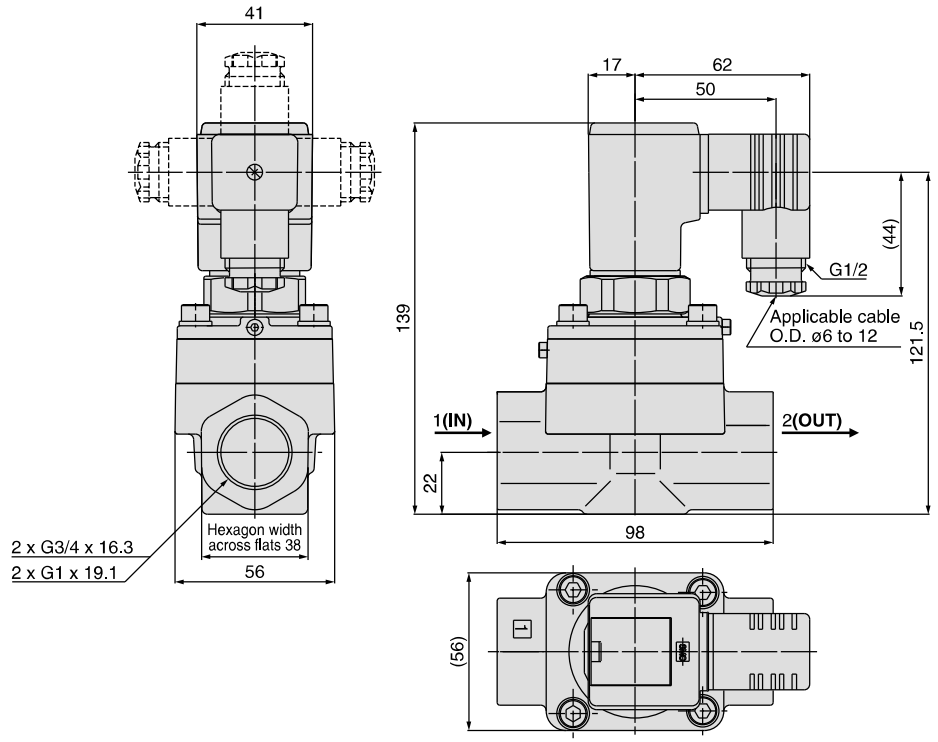
No.	Description	Material
1	**Body**	Brass
2	**O-ring**	NBR
3	**Diaphragm assembly**	Polyurethane elastomer
		Stainless steel
4	**Main valve guide**	Resin
5	**Poppet spring**	Stainless steel
6	**Bonnet plate**	Brass
7	**Hexagon socket head cap screw**	Carbon steel
8	**O-ring**	NBR
9	**Valve spring**	Stainless steel
10	**Poppet**	H-NBR
11	**Bonnet**	Brass
12	**Hexagon socket head cap screw (with SW)**	Carbon steel
13	**Armature assembly**	—
14	**Return spring**	Stainless steel
15	**Tube assembly**	Stainless steel
16	**Nut**	Brass
17	**Rubber mount**	NBR
18	**DIN connector type solenoid coil**	—
19	**Clip**	Carbon steel
20	**DIN terminal gasket**	CR
21	**DIN connector**	—

Dimensions

VCH41 (N.C.)



VCH42 (N.O.)



5.0 MPa Check Valve
Series VCHC40

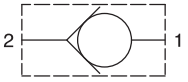
How to Order

VCHC40 — 06 G

- **Thread type**
  (G thread for hydraulics and pneumatics conforming to ISO1179-1)
- **Port size**

06	3/4
10	1

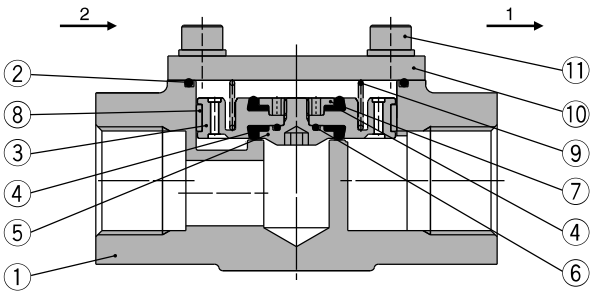
Symbol



Specifications

Model		VCHC40
Operating pressure		0.05 to 5.0 MPa
Cracking pressure		0.05 MPa
Orifice diameter		ø16
Flow characteristics	**C value (Effective area)**	28 $dm^3/(s \cdot bar)$ (140 mm^2)
	b	0.15
	Cv	7.4
Fluid		Air, Inert gas
Fluid temperature		–5 to 80 °C
Ambient temperature		–5 to 80 °C
Body material		Brass
Seal material		Polyurethane elastomer
Port size		G3/4, 1 (G thread for hydraulics and pneumatics conforming to ISO1179-1)
Mounting orientation		Unrestricted
Weight		1.02 kg

Construction

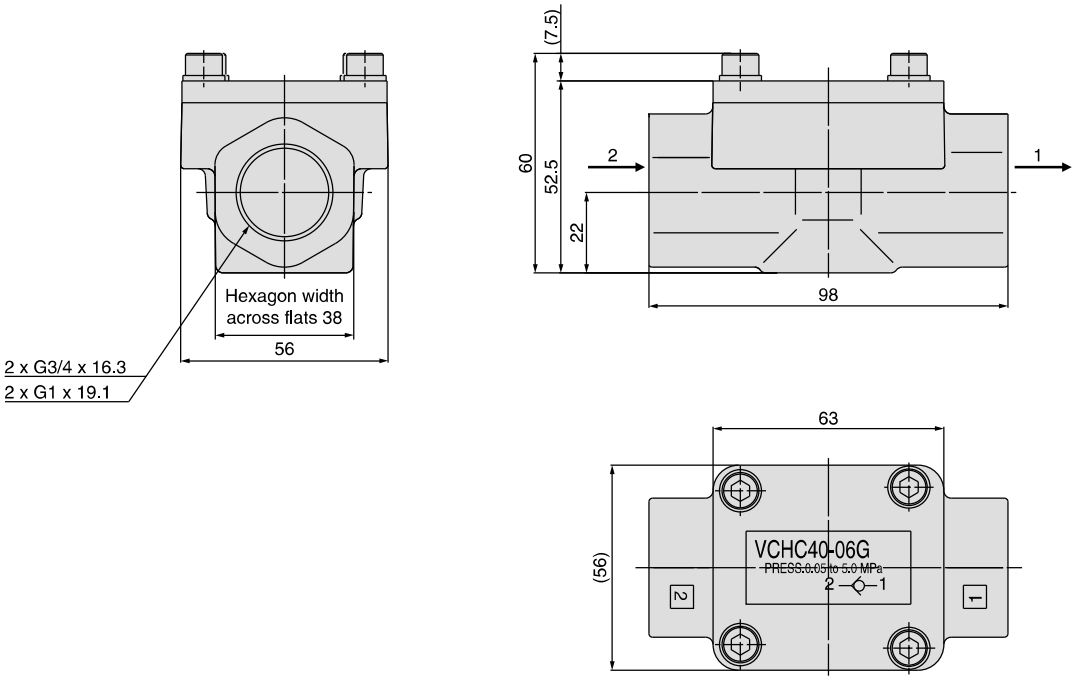


Component Parts

No.	Description	Material
1	**Body**	Brass
2	**O-ring**	NBR
3	**Piston**	Aluminum + Hard anodized
4	**Poppet**	Polyurethane elastomer
5	**Set screw**	Stainless steel
6	**O-ring**	NBR
7	**Nut**	Stainless steel
8	**Guide ring**	Resin
9	**Spring**	Stainless steel
10	**Plate**	Steel + Electroless nickel plated
11	**Hexagon socket head cap screw (with SW)**	Carbon steel

Dimensions

VCHC40



5.0 MPa Pilot Operated 3 Port Solenoid Valve

Series VCH400

For Air

CE

Stable responsiveness

Response time variation within ±2 ms

Service life: 10 million cycles

Collision-proof construction between the iron cores keeps equipment free of abrassion.

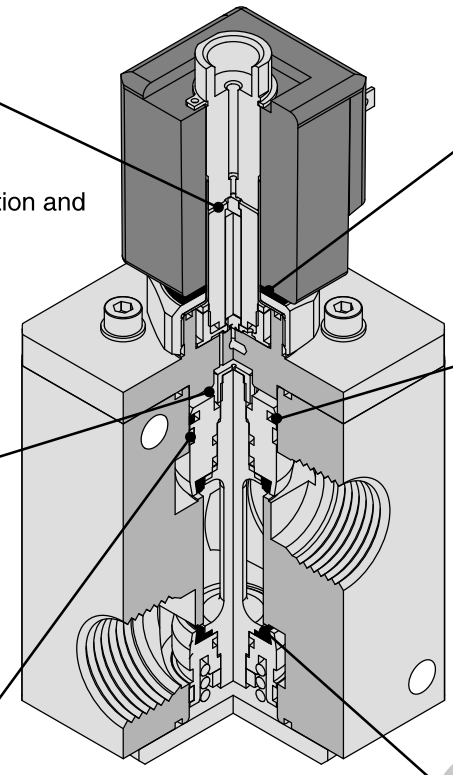
Construction with reduced variation and improved responsiveness when switching off.

Improved durability by applying a **special surface treatment** to the sliding parts.

Unnecessary volume inside the pilot chamber is reduced.

High speed response with reduced variance

Uses NSF-H1-certified grease on the guide ring (sliding part). Special treatment containing **fluoro-resin is applied** to the body side sliding face.



Use of **shock absorbing rubber**, results in protection of the pilot valve and electric parts.

A special fluoro-resin seal is adopted for the sliding part.

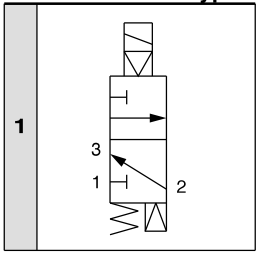
Stable responsivess after extended mactivity.
Less likely to subject to a pressure changes.

Improved durability under a high pressure environment is due to the **polyurethane elastomer** poppet.

How to Order

VCH410 — 5 D — 06 G -Q

Valve type



Voltage

5	24 VDC
6	12 VDC

∗ Consult with SMC for other voltages. CE marking compliant products are only available with 50 VDC or less.

Electrical entry

D	DIN connector
DL	DIN connector with light

∗ A surge voltage suppressor is integrated inside the coil as a standard feature.

Port size

04	1/2
06	3/4
10	1

Thread type
(G thread for hydraulics and pneumatics conforming to ISO1179-1)

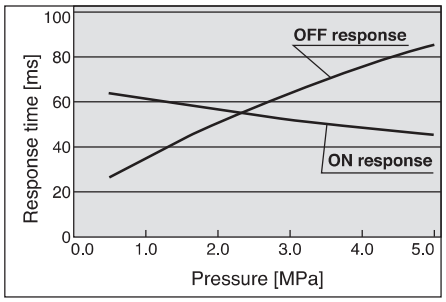
SMC

Specifications

Model			VCH410	
Valve specification	Valve construction		Pilot operated, diaphragm poppet	
	Fluid		Air, Inert gas	
	Orifice		ø18	
	Flow characteristics	C value (Effective area)	G1/2 1→2:20 dm³/(s•bar) (100mm²) 2→3:22 dm³/(s•bar) (110mm²)	G3/4, 1 1→2:22 dm³/(s•bar) (110mm²) 2→3:24 dm³/(s•bar) (120mm²)
		b	G1/2 0.26	G3/4, 1 0.36
		Cv	G1/2 1→2 5.3 2→3 5.8	G3/4, 1 1→2 5.8 2→3 6.3
	Max. operating pressure		5.0 MPa	
	Operating pressure Note 1)		0.5 to 5.0 MPa	
	Fluid temperature		–5 to 80 °C	
	Ambient temperature		–5 to 80 °C	
	Body material		Aluminum + Hard anodized	
	Main seal material		Polyurethane elastomer	
	Enclosure		Drip proof (Equivalent to IP65)	
	Port size		G1/2, 3/4, 1 (G thread for hydraulics and pneumatics conforming to ISO1179-1)	
	Impact/Vibration resistance Note 2)		300/100 m/s² Note 3)	
	Mounting orientation		Unrestricted	
	Weight		G1/2, 3/4: 1.83 kg, G1: 2.11 kg	
Coil specification	Rated voltage		12 VDC, 24 VDC	
	Allowable voltage fluctuation		±10% of rated voltage	
	Electrical entry		DIN connector	
	Coil insulation type		Class B	
	Power consumption		5 W (DC), 13 VA (AC)	

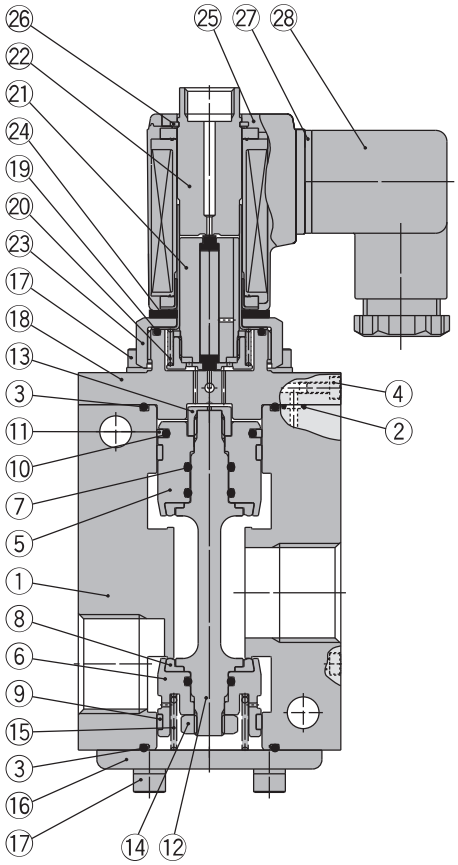
Note 1) When used as a selector valve (pressurising ports 1, 3), the pressure should be within the range of port 1 pressure port 3 pressure x 2 (2 times).
Note 2) Impact resistance: No malfunction resulted in an impact test using a drop impact tester. The test was performed one time each in the axial and right angle directions of the main valve and armature, for both energised and de-energised states. (Value in the initial stage)
Vibration resistance: No malfunction resulted in 8.3 to 2000 Hz, a one-sweep test performed in the axial and right angle directions of the main valve and armature for both energised and de-energised states. (Value in the initial stage)
Note 3) Vibration resistance is 50 m/s² when a light/surge voltage suppressor is attached.

Response Time



Note 1) DC solenoid without a light/surge voltage suppressor
Note 2) DC solenoid with an indicator light: It will cause delays around 20 to 30 msec in the OFF response time.

Construction



Component Parts

No.	Description	Material
1	Body	Aluminum + Hard anodized
2	O-ring	NBR
3	O-ring	NBR
4	Hexagon socket head cap screw	Carbon steel
5	Piston A	Aluminum + Hard anodized
6	Piston B	Aluminum + Hard anodized
7	O-ring	NBR
8	Poppet	Polyurethane elastomer
9	Guide ring	Resin
10	O-ring	NBR
11	Ring	Resin
12	Rod	Stainless steel
13	Hexagon nut	Brass
14	Hexagon nut class 3	Stainless steel
15	Poppet spring	Stainless steel
16	Plate	Steel + Electroless nickel plated
17	Hexagon socket head cap screw (with SW)	Carbon steel
18	Bonnet	Aluminum + Hard anodized
19	O-ring	NBR
20	Return spring	Stainless steel
21	Armature assembly	—
22	Tube assembly	Stainless steel
23	Nut	Brass
24	Rubber mount	NBR
25	DIN connector type solenoid coil	—
26	Round S-type retaining ring	Carbon steel
27	DIN terminal gasket	CR
28	DIN connector	—

Dimensions

VCH410