5.0 MPa Pilot Operated 2/3 Port Solenoid Valve & Check Valve

VCH Series

VCH41/42: 2 Port VCH410: 3 Port VCHC40: Check Valve

CE [Option]

Pilot Operated 2 Port Solenoid Valve

VCH40 Series

Stable responsiveness

Response time dispersion within ±2 ms

Service life: 10 million cycles

Non-collision construction between the iron cores keeps equipment abrasion free.

⇓

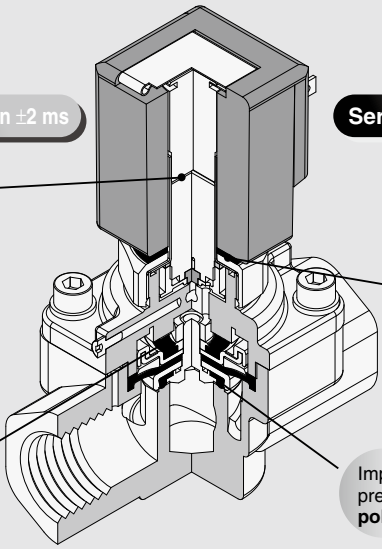
Improved responsiveness when switching off.
Reduced dispersion construction

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

Unnecessary volume inside the pilot chamber is reduced.

⇓

High speed response
Reduced dispersion



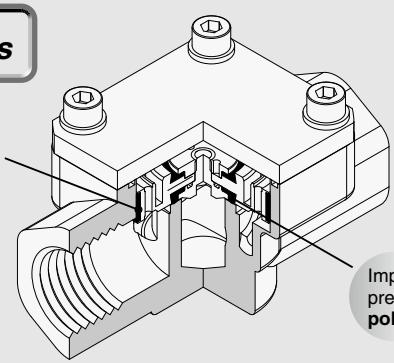
Use of **shock absorbing rubber**, resulting in protection of the pilot valve and electric parts.

Improved durability under a high pressure environment with a **polyurethane elastomer** poppet

Check Valve

VCHC40 Series

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



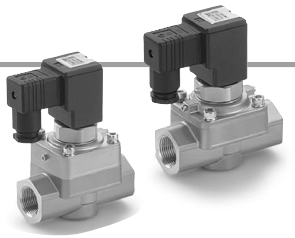
Improved durability under a high pressure environment with a **polyurethane elastomer** poppet

5.0 MPa Pilot Operated 2 Port Solenoid Valve

VCH40 Series

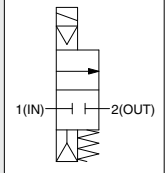
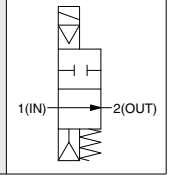
CE [Option]

How to Order



VCH4 1 – 1 D – 06 G – ☐

Valve type

1	N.C.	
2	N.O.	

∗ In the symbol Port 1 and Port 2 are shown in a blocked condition, but it is not possible to use the valve in cases of reverse pressure, where the Port 2 pressure is higher than the Port 1 pressure.

Voltage

1	100 VAC
2	200 VAC
3	110 VAC
4	220 VAC
5	24 VDC
6	12 VDC

∗ Consult with SMC for other voltages.

Electrical entry

D	DIN connector
DL	DIN connector with light
DO	Without DIN connector, with gasket

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

Port size

06	3/4
10	1

Thread type (Conforming to ISO1179-1 on the pneumatic/hydraulic G thread)

CE-compliant

Nil	—
Q	CE-compliant

Made to Order **Made to order specifications** **(For details, refer to page 439)**

22.0 MPa 2 Port Air Operated Valve

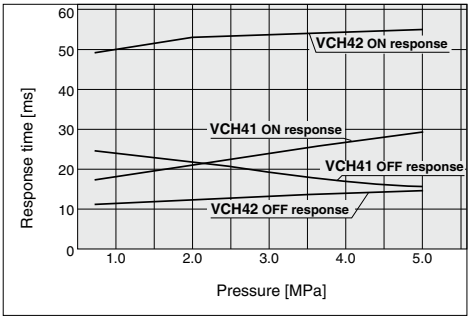
Specifications

Model		**VCH41** (N.C.)	**VCH42** (N.O.)
Valve specification	**Valve construction**	Pilot operated, diaphragm poppet	
	Fluid	Air	
	Orifice	ø16	ø17.5
	Flow characteristics: **C value (Effective area)**	17 dm³/(s•bar) (85 mm²)	22 dm³/(s•bar) (110 mm²)
	Flow characteristics: **b**	0.08	0.11
	Flow characteristics: **Cv**	4.5	5.8
	Max. operating pressure	5.0 MPa	
	Operating pressure differential Note 1)	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	Water-jet-proof (Equivalent to IP65)	
	Port size	G3/4, 1 (Conforming to ISO1179-1 on the pneumatic/hydraulic G thread)	
	Impact/Vibration resistance Note 2)	300/100 m/s² Note 3)	
	Mounting orientation	Unrestricted	
	Weight	1.67 kg	1.9 kg
Coil specification	**Rated voltage**	12 VDC, 24 VDC, 100 VAC, 110 VAC, 200 VAC, 220 VAC (50/60 Hz)	
	Allowable voltage fluctuation	±10% of rated voltage	
	Electrical entry	DIN connector	
	Coil insulation type	Class B	
	Power consumption Note 4)	5 W (DC), 13 VA (AC)	

Note 1) • Be aware that even if the pressure differential is above the minimum operating pressure differential when the valve is closed, the pressure differential may fall below the minimum operating pressure differential when the valve opens, depending on the power of the supply source (pumps, compressors, etc.,) or the type of pipe restrictions.
• Refer to the Selection 5 in the Precautions 1 on page 441.

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 energized and de-energized states. (Value in the initial stage)

Response Time



Note 1) DC solenoid
Note 2) AC solenoid: It will cause delays around 20 to 30 msec in the OFF response time.
Note 3) Conforms to JIS B 8419-2010

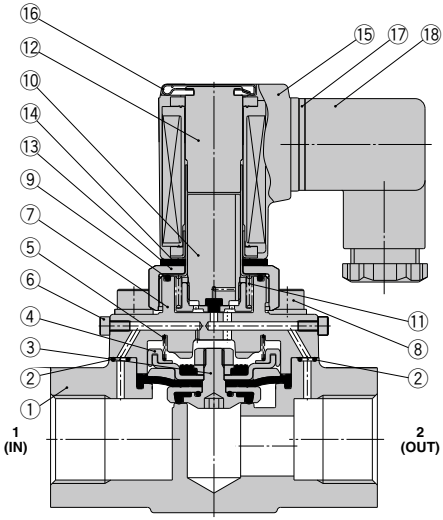
Vibration resistance: No malfunction resulted in 8.3 to 2000 Hz, a one-sweep test performed in the axial and right angle directions of the main valve and armature for both energized and de-energized states. (Value in the initial stage)

Note 3) Vibration resistance is 50 m/s² when a light/surge voltage suppressor is attached.
Note 4) No inrush voltages are generated in the AC solenoid because a full-wave rectifier is used.

SMC

Construction

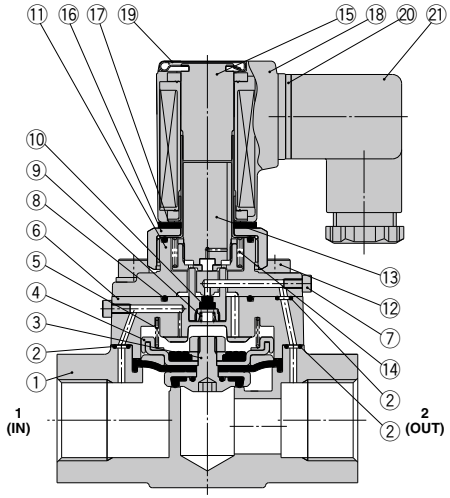
Normally closed (N.C.)



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**	Stainless 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**	Stainless steel
17	**DIN terminal gasket**	CR
18	**DIN connector**	—

Normally open (N.O.)

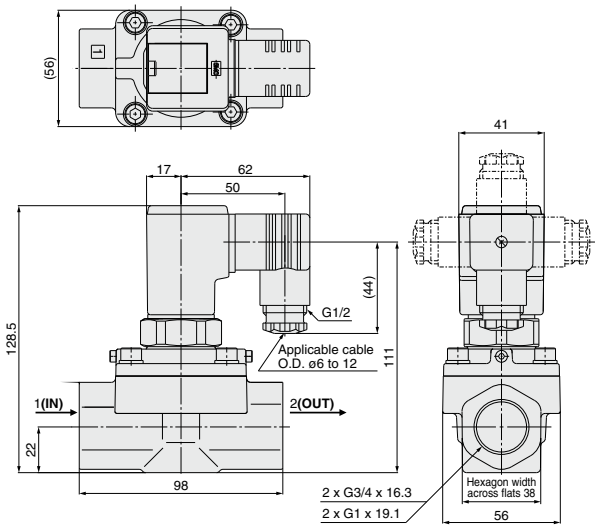


Component Parts

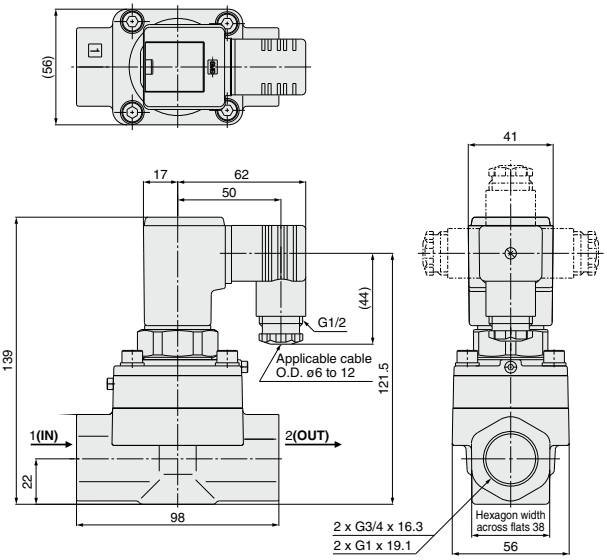
No.	Description	Material
1	**Body**	Brass
2	**O-ring**	NBR
3	**Diaphragm assembly**	Polyurethane elastomer
		Stainless steel
4	**Main valve guide**	Resin
5	**Poppet spring**	Stainless steel
6	**Bonnet plate**	Brass
7	**Hexagon socket head cap screw**	Stainless steel
8	**O-ring**	NBR
9	**Valve spring**	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**	Stainless steel
20	**DIN terminal gasket**	CR
21	**DIN connector**	—

Dimensions

VCH41 (N.C.)



VCH42 (N.O.)



5.0 MPa Check Valve
VCHC40 Series

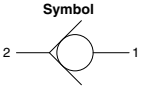
How to Order

VCHC40 – 06 G

- **Thread type (Conforming to ISO1179-1 on the pneumatic/hydraulic G thread)**
- **Port size**

06	3/4
10	1

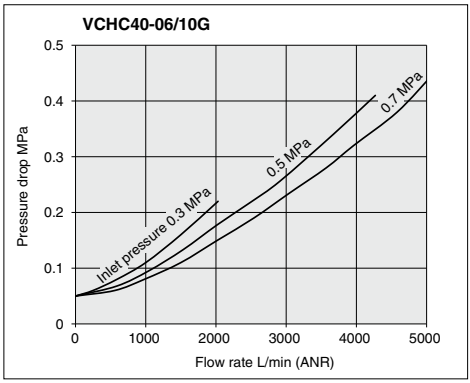
Symbol

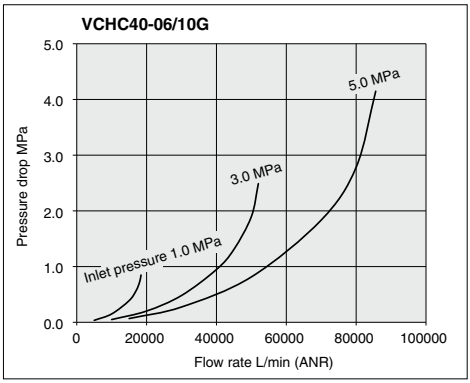


Specifications

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
Fluid temperature		5 to 80°C
Ambient temperature		5 to 80°C
Body material		Brass
Seal material		Polyurethane elastomer
Port size		G3/4, 1 (Conforming to ISO1179-1 on the pneumatic/hydraulic G thread)
Mounting orientation		Unrestricted
Weight		1.02 kg

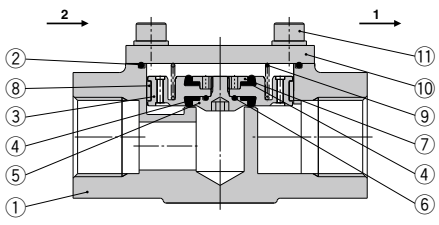
Flow Rate Characteristics





Note) The flow rate characteristics are representative values.

Construction

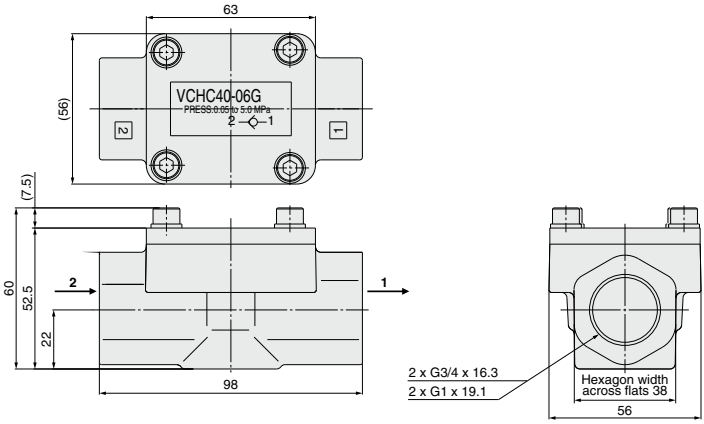


Component Parts

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

VCH400 Series

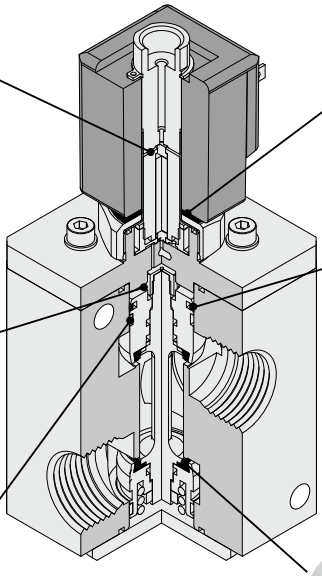
For Air

CE [Option]

Stable responsiveness

Response time dispersion within ±2 ms

Service life: 10 million cycles



Non-collision construction between the iron cores keeps equipment abrasion free.

⇩

Improved responsiveness when switching off.
Reduced dispersion construction

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

Unnecessary volume inside the pilot chamber is reduced.

⇩

High speed response
Reduced dispersion

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

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

Special fluororesin sealant is adopted for the sliding part.

⇩

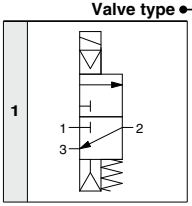
Stable responsivess after extended disuse.
No likely to subject to a pressure.

Improved durability under a high pressure environment with a **polyurethane elastomer** poppet

How to Order

VCH410 − 1 D − 06 G − □

Valve type



Voltage

1	100 VAC
2	200 VAC
3	110 VAC
4	220 VAC
5	24 VDC
6	12 VDC

∗ Consult with SMC for other voltages.

Electrical entry

D	DIN connector
DL	DIN connector with light
DO	Without DIN connector, with gasket

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

Thread type
(Conforming to ISO1179-1 on the pneumatic/hydraulic G thread)

Port size

04	1/2
06	3/4
10	1

CE-compliant

Nil	—
Q	CE-compliant

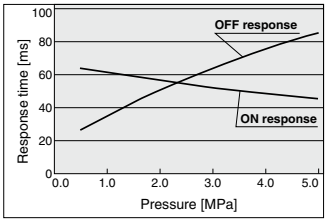
Specifications

	Model	VCH410	
Valve specification	Valve construction	Pilot operated, poppet	
	Fluid	Air	
	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)
	Flow characteristics: b	G1/2 0.26	G3/4, 1 0.36
	Flow characteristics: 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 differential 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	Water-jet-proof (Equivalent to IP65)	
	Port size	G1/2, 3/4, 1 (Conforming to ISO1179-1 on the pneumatic/hydraulic G thread)	
	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, 100 VAC, 110 VAC, 200 VAC, 220 VAC (50/60 Hz)	
	Allowable voltage fluctuation	±10% of rated voltage	
	Electrical entry	DIN connector	
	Coil insulation type	Class B	
	Power consumption Note 4)	5 W (DC), 13 VA (AC)	

Note 1) • Be aware that even if the pressure differential is above the minimum operating pressure differential when the valve is closed, the pressure differential may fall below the minimum operating pressure differential when the valve opens, depending on the power of the supply source (pumps, compressors, etc.,) or the type of pipe restrictions.
• When used as a selector valve (pressurizing 1, 3 port), the pressure in the port should be within the range of the port 1 pressure port 3 pressure x 2 (2 times).
• Refer to the Design 7 and Selection 5 in the Precautions 1 on page 441.

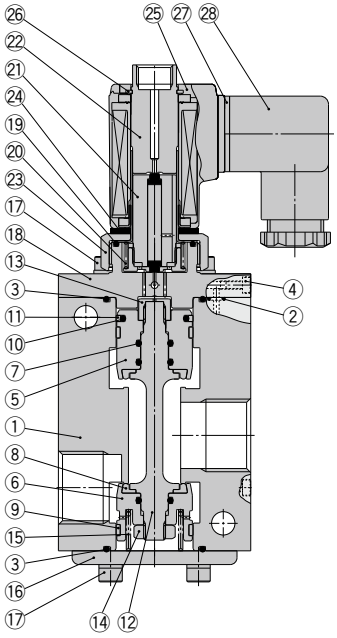
Note 2) Impact resistance: No malfunction resulted in an impact test using a drop impact tester. The test was performed one time each in the axial and right angle directions of the main valve and armature, for both energized and de-energized states. (Value in the initial stage)
Vibration resistance: 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 energized and de-energized states. (Value in the initial stage)
Note 3) Vibration resistance is 50 m/s² when a light/surge voltage suppressor is attached.
Note 4) No inrush voltages are generated in the AC solenoid because a full-wave rectifier is used.

Response Time



Note 1) DC solenoid
Note 2) AC solenoid: It will cause delays around 20 to 30 msec in the OFF response time.
Note 3) Conforms to JIS B 8419-2010

Construction

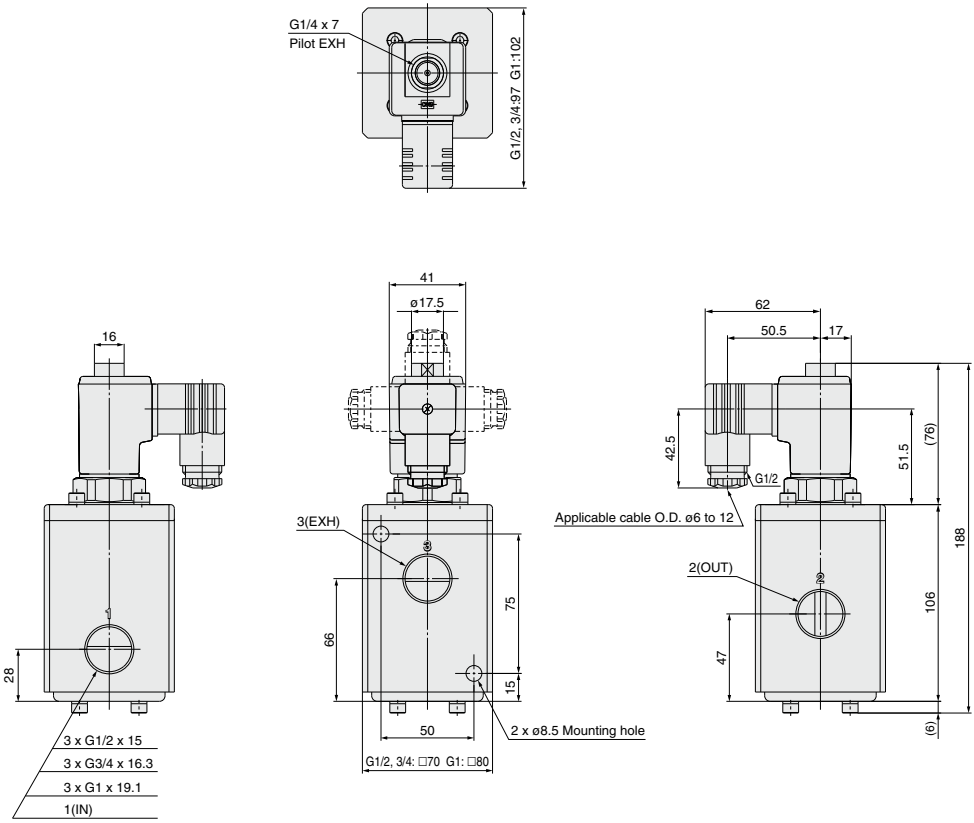


Component Parts

No.	Description	Material
1	Body	Aluminum + Hard anodized
2	O-ring	NBR
3	O-ring	NBR
4	Hexagon socket head cap screw	Stainless 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 Type S retaining ring	Carbon steel
27	DIN terminal gasket	CR
28	DIN connector	—

Dimensions

VCH410



Made to Order Specifications:

Made to Order

Please contact SMC for detailed dimensions, specifications and lead times.

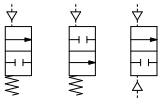
1 22.0 MPa 2 Port Air Operated Valve

AXT836 A

Specifications

Symbol	Passage	Piping size
A	N.C.	1/4" fitting integrated type
B	N.O.	1/4" fitting integrated type
C	N.C.	Flange type
D	N.O.	Flange type
E	Double acting	1/4" fitting integrated type

Symbol



N.C. N.O. Double acting

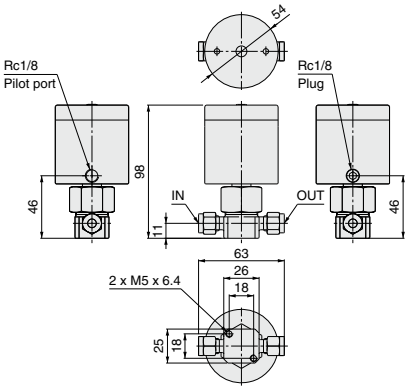
Integrated fitting type **Flange type**

Specifications

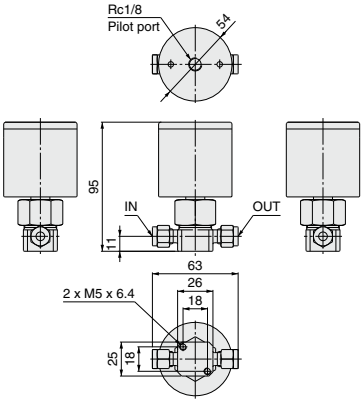
	A, C (N.C. type)	B, D (N.O. type)	E (Double acting)
Fluid	Air		
Fluid temperature	−10 to 60°C (No freezing)		
Ambient temperature	−10 to 60°C (No freezing)		
Operating pressure range	0 to 22.0 MPa		0 to 20.0 MPa
Proof pressure	35.0 MPa		
Pilot pressure range	0.4 to 0.7 MPa		0.3 to 0.5 MPa
Valve leakage	0.1 cm^3/min or less		
Orifice diameter	2.8 mm		

Dimensions

AXT836A

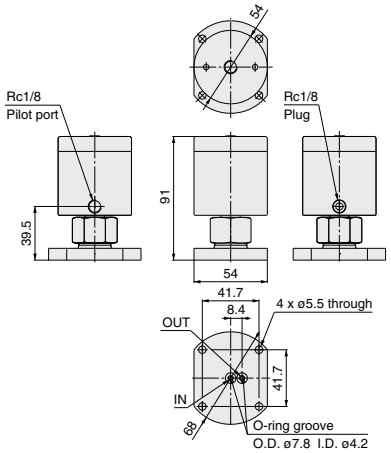


AXT836B

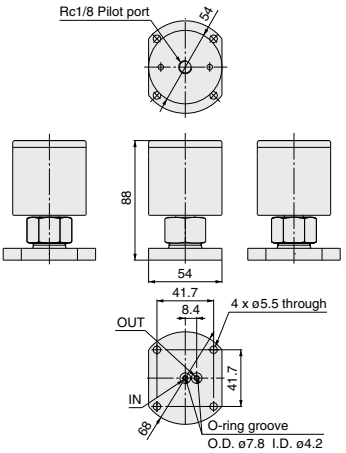


Dimensions

AXT836C



AXT836D



AXT836E