

Series VC
Direct Operated 2 Port Solenoid Valve for Air
Series *VCA*



Multipurpose Valve for Air

Direct Operated 2 Port Solenoid Valve for Air

Series VCA

Improved durability (Nearly twice the life of the previous series)

Operating resistance of moving parts reduced for improved longevity and wear resistance.

High flow rate:
324 to 2071 N/min

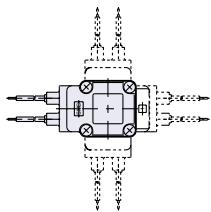
Compact: Single valve volume reduced 13% (Class 2)
Weight reduced 25% (Class 2)
Manifold length reduced 22% (Class 1: 5 stations)
(Compared to previous series)

Built-in surge voltage suppressor

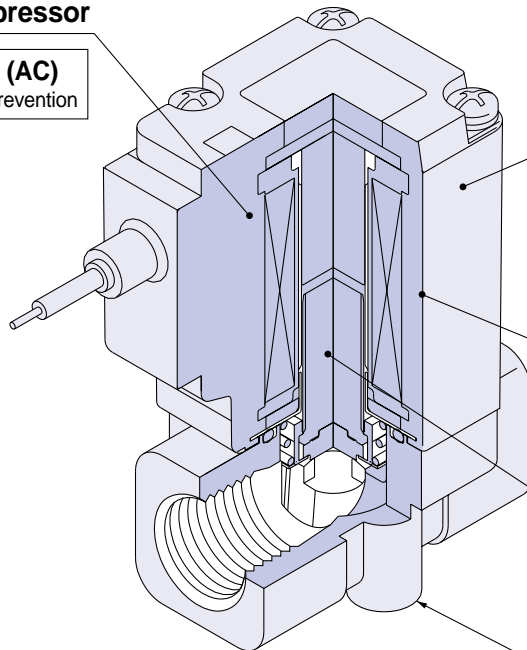
Built-in rectifying circuit (AC)
 • Noise prevention • Burn-out prevention

Electrical entry directions

Electrical entry is possible from four directions



* When shipped from the factory, the electrical entry is on the IN port side.



Miniaturized coil Size and weight reduced

New compact coil reduces the size and weight of the valve
 Volume : -13% } Compared to previous series (Class 2)
 Weight : -25%

Flame resistance

UL94 V-0 standard

Special construction reduces operating resistance

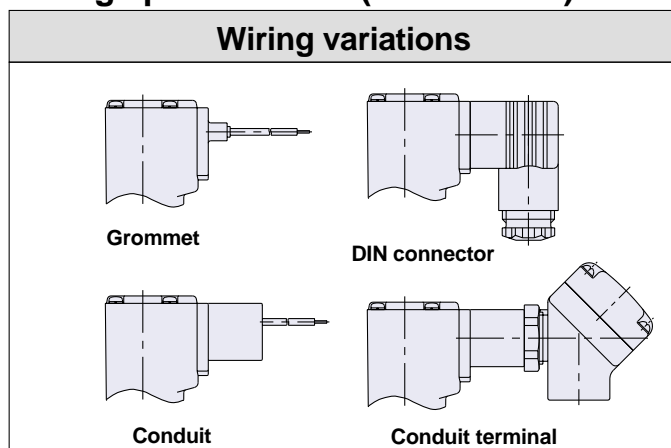
Bottom mounting threads

Mounting bracket also available

A variety of wiring variations

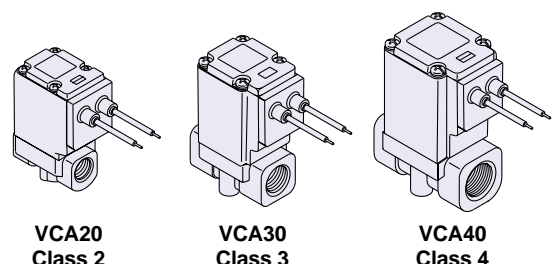
Grommet, DIN connector,
Conduit, Conduit terminal

Wiring specifications (Class B coil)



Enclosure: Dust-proof & splash-proof (IP65 equivalent)

Three compact sizes available

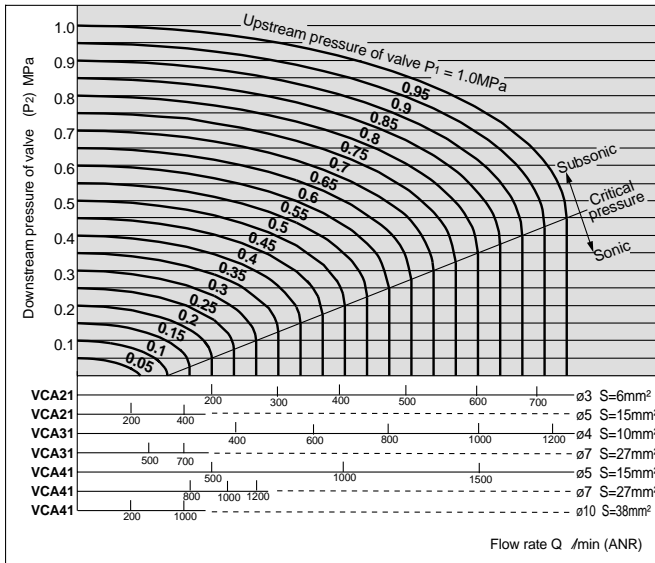


Series VCA Model Selection

Orifice size/Port size combinations

Model	Class	Port size	Orifice size (mm ø)				
			3	4	5	7	10
VCA (for air) 2 port solenoid valve	2	1/4 (8A)	●	–	●	–	–
	3	1/4 (8A)	–	●	–	●	–
		3/8 (10A)	–	●	–	●	–
	4	3/8 (10A)	–	–	●	●	●
		1/2 (15A)	–	–	●	●	●
		3/4 (20A)	–	–	–	–	●

Flow characteristics



Viewing the graph

The sonic range pressure to generate a flow rate of 500 l/min (ANR) is
P = 0.64 MPa for ø3 orifice, and
P = 0.35 MPa for ø4 orifice, and

How to find the flow rate for air/ Flow rate formulas based on the air temperature of 20°C

For subsonic range where $P_1 + 0.1013 < 1.89 (P_2 + 0.1013)$

$$Q = 226S \cdot \sqrt{\Delta P (P_2 + 0.1013)}$$

For sonic range where $P_1 = 0.1013 \geq 1.89 (P_2 + 0.1013)$

$$Q = 113S (P_1 + 0.1013)$$

- Q: Flow rate l/min (ANR)
- S: Effective area (mm²)
- ΔP: Pressure drop P₁ — P₂ (MPa)
- P₁: Upstream pressure (MPa)
- P₂: Downstream pressure (MPa)

* How to make correctio when the air temperature is different

Multiply the flow rate obtained from the formulas above by the factor in the table below.

Air temperature (°C)	-20	-10	0	10	30	40	50	60
Correction factor	1.08	1.06	1.04	1.02	0.98	0.97	0.95	0.94

Explanation of Terminology

Pressure Terminology

1. Maximum operating pressure differential

This indicates the maximum pressure differential (upstream and downstream pressure differential) which can be allowed for operation with the valve closed or open.

2. Maximum operating pressure

This indicates the limit of pressure that can be applied inside the pipelines. (line pressure)

(The pressure differential of the solenoid valve unit must be no more than the maximum operating pressure differential.)

3. Withstand pressure

The pressure which must be withstood without a drop in performance after returning to the operating pressure range. (the value under the prescribed conditions)

Electrical Terminology

1. Surge voltage

A high voltage which is momentarily generated in the shut-off unit by shutting off the power.

Other

1. Materials

HNBR: Nitrile hydride rubber

Series VC

Direct Operated 2 Port Solenoid Valve for Air

Series VCA

How to Order Valves (Single Type)

VC A 2 1 5 G 3 02 Q

For air

Series

2	Class 2
3	Class 3
4	Class 4

Valve type

Fluid

Nil	General air
A	Dry air

Voltage

AC*		DC*	
1	100VAC	5	24VDC
2	200VAC	6	12VDC
3	110VAC	9	(Other, less than 50VDC)
4	220VAC		
9	(Other, less than 250VAC)		

* AC specifications are only for DIN terminal and conduit terminal type.

* Consult SMC regarding other voltages (9).

Option

Nil	None
F	Foot type bracket

* When only brackets are required, refer to Table 2 below.

Thread type (single type)

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

Symbol	Port size	Class 2	Class 3	Class 4
02	1/4 (8A)	○	○	—
03	3/8 (10A)	—	○	○
04	1/2 (15A)	—	—	○
06	3/4 (20A)	—	—	○

Orifice size

Symbol	Orifice size (mmø)	Class 2	Class 3	Class 4
3	3	○	—	—
4	4	—	○	—
5	5	○	—	○
7	7	—	○	○
10	10	—	—	○

* Refer to the table below for orifice and port size combinations.

Manual Override

Nil	None
B	Slotted locking type

Electrical entry

G – Grommet	C – Conduit
T – With conduit terminal TL – With conduit terminal and light	D – DIN DL – DIN with light DO – DIN (without connector)

Table 1. Orifice and port size combinations

Class	Port size	Orifice size (mmø)				
		3	4	5	7	10
2	1/4 (8A)	●	—	●	—	—
	3/8 (10A)	—	●	—	●	—
3	1/2 (15A)	—	—	●	●	●
	3/4 (20A)	—	—	—	—	●

Table 2. Bracket assembly part nos.

Valve model	Bracket assembly part no.
VCA21	VCA20-12-1A
VCA31	VCA30-12-1A
VCA41	VCA40-12-1A

* All types equipped with surge voltage suppressor.

Direct Operated 2 Port for Air *Series VCA*

Standard Specifications



Valve specifications	Valve construction		Direct operated poppet
	Fluid		Air/Inert gas
	Withstand pressure MPa		2.0
	Body material		Al
	Seal material		HNBR
	Ambient temperature °C		-20 to 60
	Fluid temperature °C		-10 to 60 (with no freezing)
	Enclosure		Dust proof, Splash proof (equivalent to IP65)
	Environment		Location without corrosive or explosive gases
	Valve leakage cm ³ /min (ANR)		0.2 or less
	Mounting orientation		Unrestricted
Vibration/Impact resistance m/s ² <small>Note 2)</small>		30/150 or less	
Coil specifications	Rated voltage		24VDC, 12VDC, 100VAC, 110VAC, 200VAC, 220VAC (50/60Hz)
	Allowable voltage fluctuation		±10% of rated voltage
	Coil insulation type		Class B
	Power consumption	DC	VCA2: 6.5W, VCA3: 8W, VCA4: 11.5W
	Apparent power	AC <small>Note 1)</small>	50Hz
60Hz			

Note 1) Since AC coil specifications include a rectifying device, there is no difference in apparent power for starting and holding.

Note 2) Vibration resistance ... Conditions when tested with one sweep of 10 to 300Hz in the axial direction and at a right angle to the armature, in both energized and deenergized states

Impact resistance Conditions when tested with a drop tester in the axial direction and at a right angle to the armature, one time each in energized and deenergized states

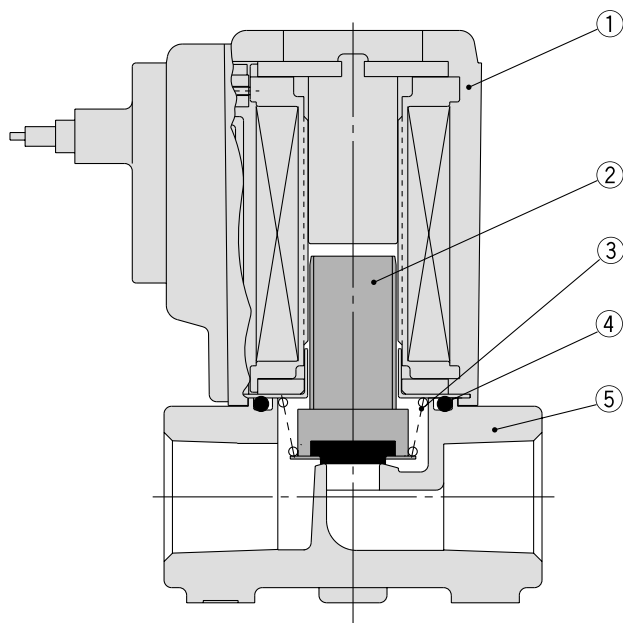
Characteristic Specifications

Model	Class	Port size	Orifice size mmø	Maximum operating pressure differential MPa	Effective area mm ² (N/min)	Max. operating pressure MPa	<small>Note 1)</small> Weight kg
VCA (for air) 2 port solenoid valve	2	1/4 (8A)	3	1.0	6 (324)	1.0	0.21
			5	0.15	15 (815)		
	3	1/4 (8A) 3/8 (10A)	4	1.0	10 (540)	1.0	0.30
			7	0.15	27 (1472)		
	4	3/8 (10A) 1/2 (15A) 3/4 (20A)	5	1.0	15 (815)	1.0	0.50
			7	0.3	27 (1472)		
10			0.15	38 (2071)			

Note 1) Weight values are for the grommet type.

Series VCA

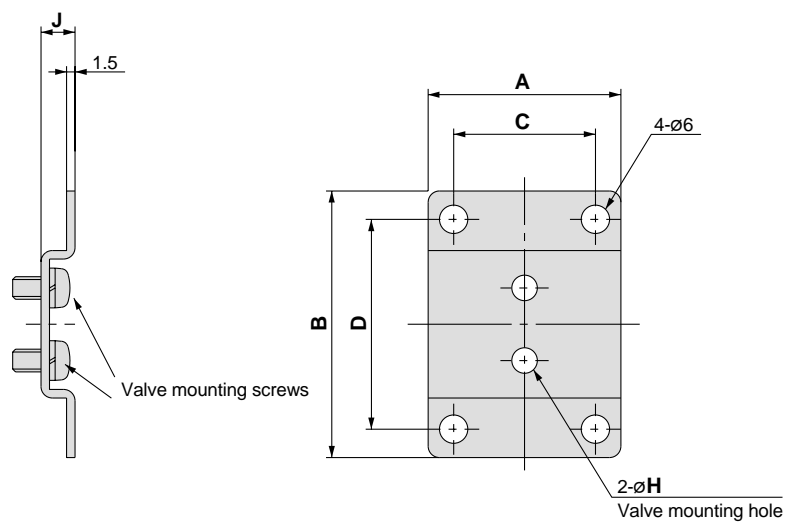
Construction



Parts list

No.	Description	Material
1	Solenoid coil	—
2	Armature assembly	Stainless steel, HNBR, PPS
3	Return spring	Stainless steel
4	O-ring	HNBR
5	Body	Al

Bracket Assembly Dimensions

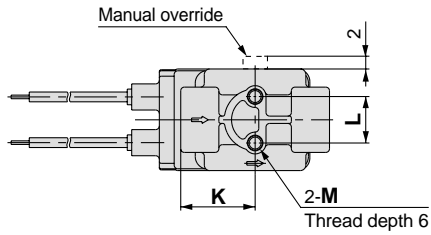


Bracket mounting dimensions/Bracket material: Stainless steel

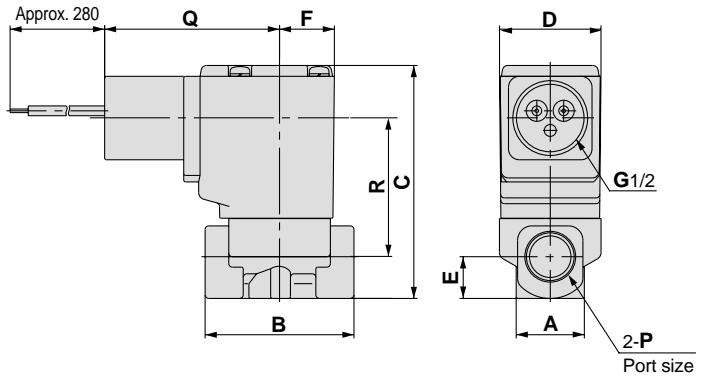
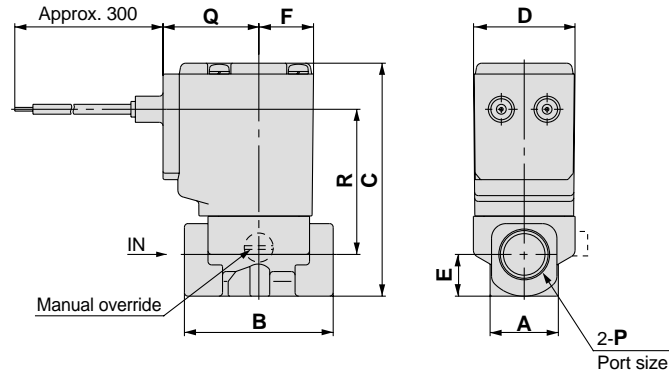
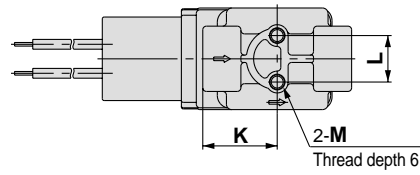
Assembly part no.	A	B	C	D	H	J
VCA20-12-1A	41	52	30	40	4.5	6
VCA30-12-1A	48	56	36	44	5.5	7
VCA40-12-1A	50	62	38	50	5.5	7

Dimensions

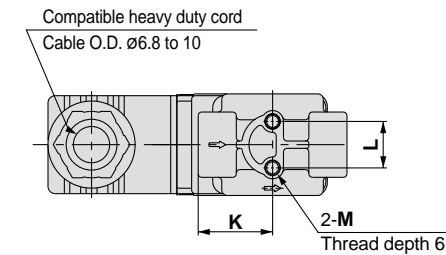
Grommet: G



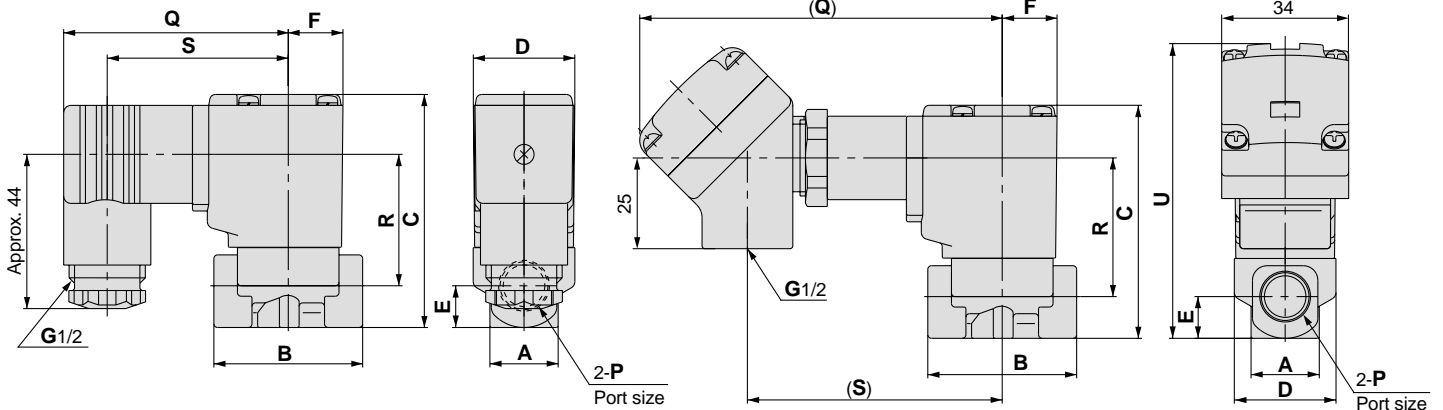
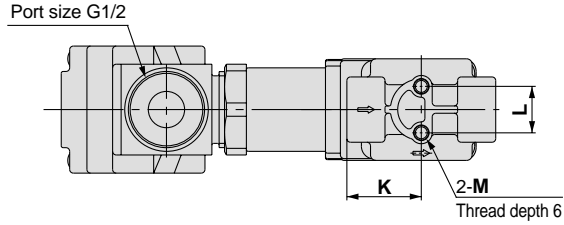
Conduit: C



DIN connector: D



Conduit terminal: T



(mm)

Model	P Port size	A	B	C	D	E	F	K	L	M	Electrical entry										
											Grommet: G		Conduit: C		DIN connector: D			Conduit terminal: T			
											Q	R	Q	R	Q	R	S	Q	R	S	U
VCA21	1/4	18	41	64	28	11.5	15	20.5	12.8	M4	27	40	46	36	63	35	51	98	36	68	81
VCA31	1/4, 3/8	24	50	76	34	14	17	25	19	M5	30	48	50	44	66	42	54	101	44	71	91.5
VCA41	3/8, 1/2	30	60	86	40	15	20	30	23	M5	32	56	52	53	69	51	57	104	53	74	101
	3/4	35	68	91	40	17.5	20	34	23	M5	32	58.5	52	55.5	69	53.5	57	104	55.5	74	103.5

Series VCA

How to Order Manifolds (VCA20)

VV2C A 2 - 02 02

For air

Series

2	Class 2
---	---------

Stations

02	2 stations
:	:
10	10 stations

IN port direction


Nil	Side
A	Front

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

OUT port size

02	1/4 (8A)
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How to Order Manifold Assemblies (Example)

Enter the valve and option models to be mounted under the manifold base part number.

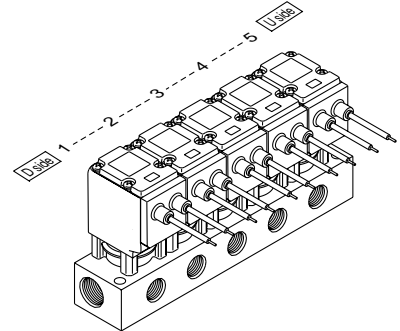
<Example>

VV2CA2-0502 1 set Manifold part no.

* VCA23-5G-3-Q 5 sets Valve part no. (Stations 1 to 5)

"*" is the symbol for mounting. Add a "*" in front of the part numbers for solenoid valves, etc., to be mounted.

Enter together in order, counting from station 1 on the D side.



How to Order Valves (VCA20)

VC A 2 3 - 5 G - 3 - Q

For air

Series

2	Class 2
---	---------

Valve type

3	N.C. for manifold
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Fluid

Nil	General air
A	Dry air

Voltage

AC*		DC*	
1	100VAC	5	24VDC
2	200VAC	6	12VDC
3	110VAC	9	(Other, less than 50VDC)
4	220VAC		
9	(Other, less than 250VAC)		

* AC specifications are only for DIN terminal and conduit terminal type.

Orifice size

Symbol	Orifice size (mmØ)
3	3
5	5

Manual override

Nil	None
B	Slotted locking type (tool required)

Electrical entry

G	Grommet
C	Conduit
T	Conduit terminal
TL	Conduit terminal with light
D	DIN
DL	DIN with light
DO	DIN (without connector)

* All types equipped with surge voltage suppressor.



* Consult SMC regarding other voltages (9).

How to Order Manifolds (VCA30/40)

VV2C A 3 02

For air

Series

3	Class 3
4	Class 4

Stations


02	2 stations
:	:
10	10 stations

IN port direction

Nil	Side
A	Front

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF



How to Order Manifold Assemblies (Example)

Enter the valve and option models to be mounted under the manifold base part number.

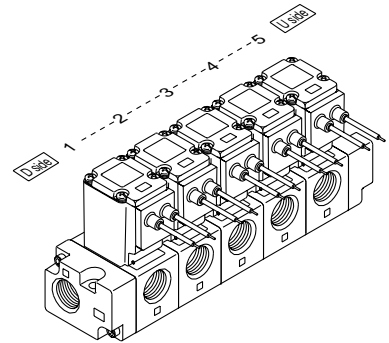
<Example>

VV2CA3-05 1 set Manifold part no.

* VCA35-5G-4-03-Q 5 sets Valve part no. (Stations 1 to 5)

"*" is the symbol for mounting. Add a "*" in front of the part numbers for solenoid valves, etc., to be mounted.

Enter together in order, counting from station 1 on the D side.



How to Order Valves (VCA30/40)

VC A 3 5 5 G 4 03 Q

For air

Series

3	Class 3
4	Class 4

Valve type

5	N.C. for manifold
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Fluid

Nil	General air
A	Dry air

Voltage

AC*		DC*	
1	100VAC	5	24VDC
2	200VAC	6	12VDC
3	110VAC	9	(Other, less than 50VDC)
4	220VAC		
9	(Other, less than 250VAC)		

* AC specifications are only for DIN terminal and conduit terminal type.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size (OUT)

Symbol	Port size	Class 3	Class 4
03	3/8 (10A)	○	—
04	1/2 (15A)	○	○
06	3/4 (20A)	—	○

Orifice size

Symbol	Orifice size (mmø)	Class 3	Class 4
4	4	○	—
5	5	—	○
7	7	○	○
10	10	—	○

Manual override

Nil	None
B	Slotted locking type (tool required)

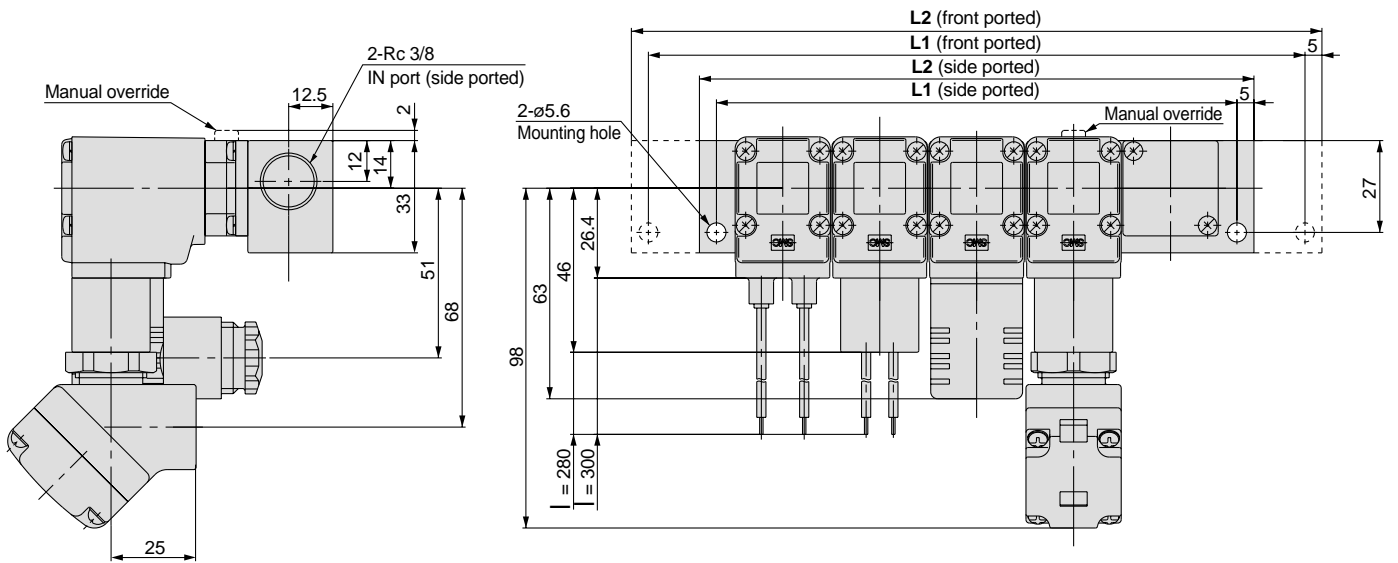
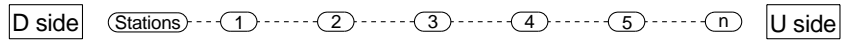
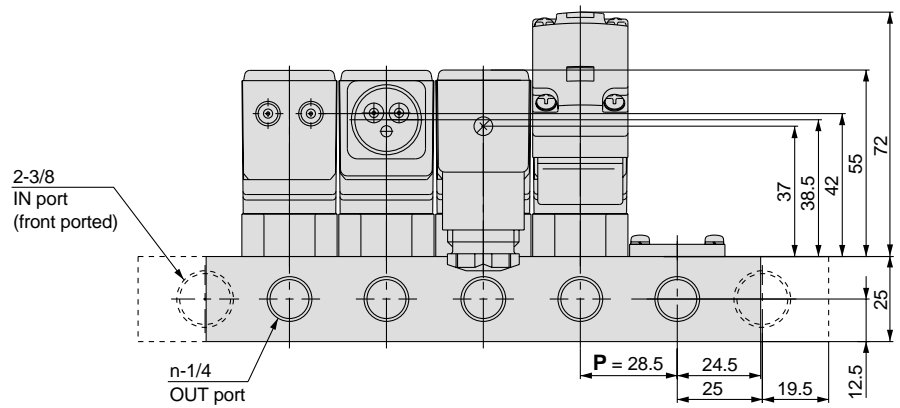
Electrical entry

G	Grommet
C	Conduit
T	Conduit terminal
TL	Conduit terminal with light
D	DIN
DL	DIN with light
DO	DIN (without connector)

* All types equipped with surge voltage suppressor.

Series VCA

Dimensions/VCA20 Manifold

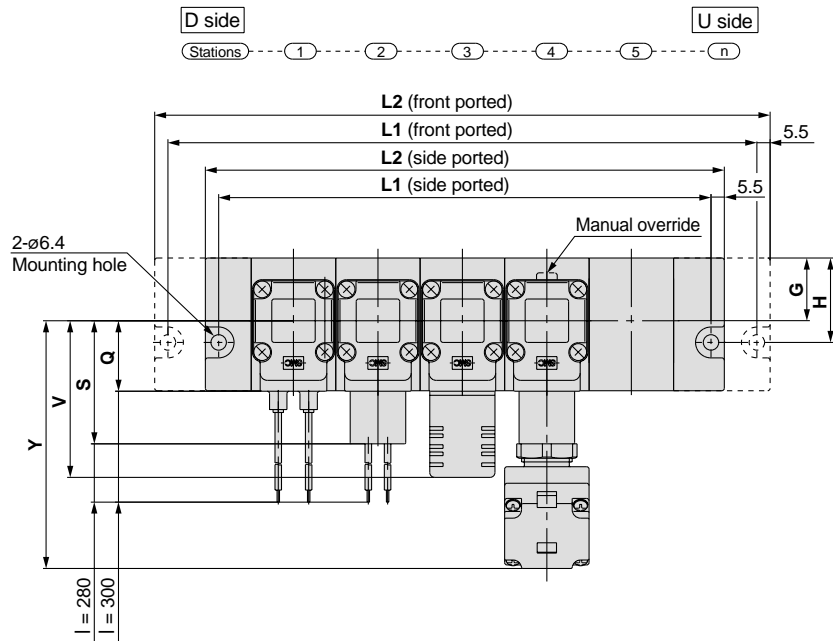
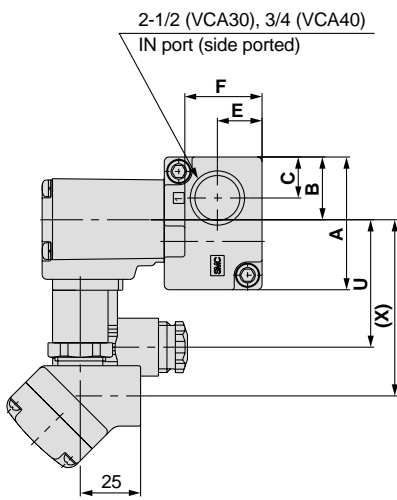
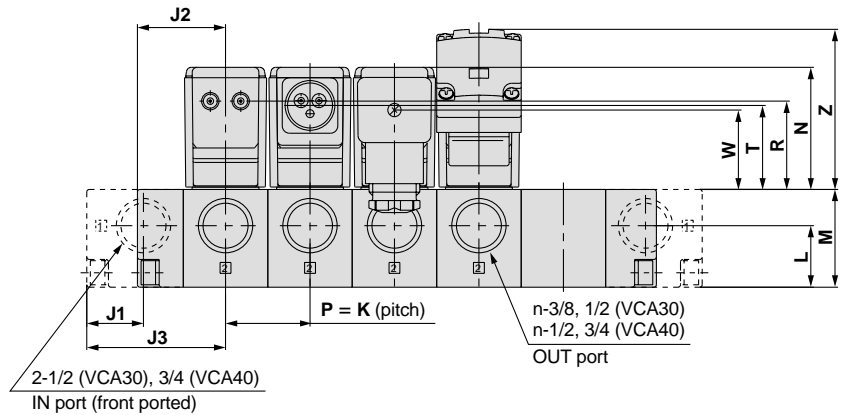
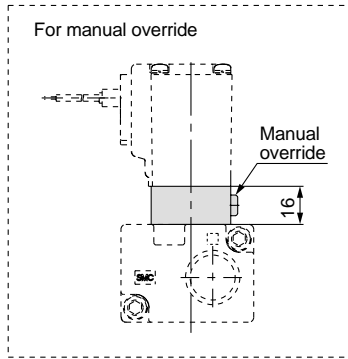


L dimensions Side ported: L1 = $n \times 28.5 + 10.5$ L2 = $n \times 28.5 + 20.5$
 Front ported: L1 = $n \times 28.5 + 50.5$ L2 = $n \times 28.5 + 60.5$ (mm)

Model	IN port direction	Dimension	n (stations)								
			2	3	4	5	6	7	8	9	10
VV2CA2	Side ported	L1	67.5	96	124.5	153	181.5	210	238.5	267	295.5
		L2	77.5	106	134.5	163	191.5	220	248.5	277	305.5
	Front ported	L1	107.5	136	164.5	193	221.5	250	278.5	307	335.5
		L2	117.5	146	174.5	203	231.5	260	288.5	317	345.5

Direct Operated 2 Port for Air Series VCA

Dimensions/VCA30/40 Manifold



L dimensions

Model	IN port direction	Dimension	n (stations)									
			2	3	4	5	6	7	8	9	10	
VV2CA3	Side ported	L1	103	138	173	208	243	278	313	348	383	
		L2	114	149	184	219	254	289	324	359	394	
	Front ported	L1	139	174	209	244	279	314	349	384	419	
		L2	150	185	220	255	290	325	360	395	430	
VV2CA4	Side ported	L1	117	158	199	240	281	322	363	404	445	
		L2	128	169	210	251	292	333	374	415	456	
	Front ported	L1	161	202	243	284	325	366	407	448	489	
		L2	172	213	254	295	336	377	418	459	500	

Formulas

VV2CA3

Side ported: $L1 = n \times 35 + 33$, $L2 = n \times 35 + 44$

Front ported: $L1 = n \times 35 + 69$, $L2 = n \times 35 + 80$

VV2CA4

Side ported: $L1 = n \times 41 + 35$, $L2 = n \times 41 + 46$

Front ported: $L1 = n \times 41 + 79$, $L2 = n \times 41 + 90$

Dimensions

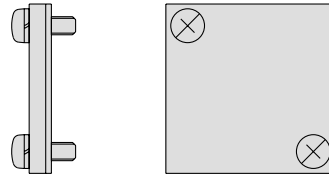
Model	A	B	C	E	F	G	H	J1	J2	J3	K	L	M	N	Electrical entry									
															Grommet: G		Conduit: C		DIN connector: D		Conduit terminal: T			
															Q	R	S	T	U	V	W	X	Y	Z
VV2CA3	55	26	17	19.5	33	26	35	23.5	39.5	57.5	35	26.5	41.5	50	30	36	50	32	54	66	30	71	101	65.5
VV2CA4	62	31	19	21	39.5	31	43	27	43.5	65.5	41	29	48	55	32	41	52	38	57	69	36	74	104	71

Manifold Options

Blanking plate assembly (VCA20)

VVCA20 - 4A

This is used when a blanking plate is mounted on a manifold as preparation for a planned valve installation.

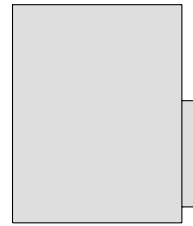


Blanking block assembly (VCA30, 40)

VVCA 3 0 - 2A - 00

3	Series VCA30
4	Series VCA40

This is used when a blanking block is mounted on a manifold as preparation for a planned valve installation.

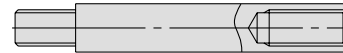


Tie-rod for additional stations (1 station, set of 2) (VCA30, 40)

VVCA 3 0 - 6 - 1A

3	Series VCA30
4	Series VCA40

Mounted on the tie-rod when adding one station.








Series VCA

Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by a label of "**Caution**", "**Warning**" or "**Danger**". To ensure safety, be sure to observe ISO 4414 Note 1) JIS B 8370 Note 2) and other safety practices.

 **Caution** : Operator error could result in injury or equipment damage.

 **Warning** : Operator error could result in serious injury or loss of life.

 **Danger** : In extreme conditions, there is a possible result of serious injury or loss of life.

Note 1) ISO 4414 : Pneumatic fluid power – Recommendations for the application of equipment to transmission and control systems

Note 2) JIS B 8370 : General Rules for Pneumatic Equipment

Warning

1. The compatibility of equipment is the responsibility of the person who designs the system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility for the specific system must be based on specifications or after analysis and/or tests to meet your specific requirements. Be particularly careful in determining the compatibility of the fluid to be used.

2. Only trained personnel should operate machinery and equipment.

The fluid can be dangerous if handled incorrectly. Assembly, handling or repair of systems should be performed by trained and experienced operators.

3. Do not service machinery/equipment or attempt to remove components until safety is confirmed.

1. Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions and measures to prevent danger from the fluid.
2. When equipment is to be removed, confirm the safety process as mentioned above, release fluid pressure and be certain there is no danger from fluid leakage or fluid remaining in the system.
3. Restart machinery carefully, confirming that safety measures are being implemented.

4. Contact SMC if the product is to be used in any of the following conditions:

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. With fluids whose application causes concern due to the type of fluid or additives, etc.
3. An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.



Series VCA

2 Port Solenoid Valve for Fluid Control Precautions 1

Be sure to read before handling.

Design

Warning

1. Cannot be used as an emergency shutoff valve, etc.

The valves presented in this catalog are not designed for safety applications such as an emergency shutoff valve. If the valves are used in this type of system, other reliable safety assurance measures should also be adopted.

2. Extended periods of continuous energization

Consult SMC if valves will be continuously energized for extended periods of time.

3. This solenoid valve cannot be used for explosion proof applications.

4. Maintenance space

The installation should allow sufficient space for maintenance activities (removal of valve, etc.).

5. Actuator drive

When an actuator, such as a cylinder, is to be driven using a valve, take appropriate measures to prevent potential danger caused by actuator operation.

6. When the conduit type is used as equivalent to an IP65 enclosure, install a wiring conduit, etc.

See page 14 for details.

Selection

Warning

1. Air quality

1) Use clean air.

Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt or corrosive gases, etc., as it can cause damage or malfunction.

2) Install air filters.

Install air filters close to valves at their upstream side. A filtration degree of 5µm or less should be selected.

3) Install an air dryer or after cooler, etc.

Compressed air that includes excessive drainage may cause malfunction of valves and other pneumatic equipment. To prevent this, install an air dryer or after cooler, etc.

4) If excessive carbon powder is generated, eliminate it by installing mist separators at the upstream side of valves.

If excessive carbon powder is generated by the compressor, it may adhere to the inside of valves and cause malfunction.

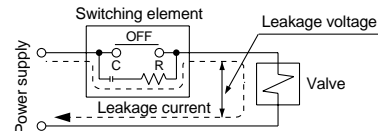
Refer to SMC's "Air Cleaning Equipment" catalog for further details on compressed air quality.

Selection

Caution

1. Leakage voltage

Particularly when using a resistor in parallel with a switching element and using a C-R element (surge voltage suppressor) to protect the switching element, take note that leakage current will flow through the resistor and C-R element, etc., creating a danger that the valve may not shut OFF.



AC coil

10% or less of rated voltage

DC coil

2% or less of rated voltage

2. Low temperature operation

Unless otherwise indicated in each valve's specifications, the valve can be used at temperatures as low as -20°C , but take measures to prevent freezing or solidification of drainage and moisture, etc.



Series VCA

2 Port Solenoid Valve for Fluid Control Precautions 2

Be sure to read before handling.

Mounting

⚠ Warning

1. If air leakage increases or equipment does not operate properly, stop operation.

After mounting is completed, confirm that it has been done correctly by performing a suitable function test.

2. Do not apply external force to the coil section.

When tightening is performed, apply a wrench or other tool to the outside of the piping connection parts.

3. Do not warm the coil assembly with a heat insulator, etc.

Use tape and heaters, etc., for freeze prevention on the piping and body only. They can cause burn out of the coil.

4. Secure with the use of brackets or bottom mount threads, except in the case of steel piping and copper fittings.

5. Avoid sources of vibration, or adjust the arm from the body to the minimum length so that resonance will not occur. (Refer to the standard specifications on page 2.)

6. Painting and coating

Warnings or specifications printed or pasted on the product should not be erased, removed or covered up.

Piping

⚠ Caution

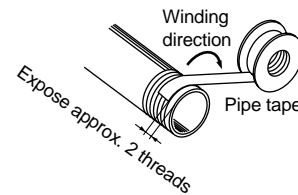
1. Preparation before piping

Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

2. Wrapping of pipe tape

When connecting pipes and fittings, etc., be sure that chips from the pipe threads and sealing material do not get inside the valve.

Furthermore, when pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.



3. Avoid connection of ground lines to piping, as this may cause electric corrosion of the system.

4. Always tighten threads with the proper tightening torque.

When screwing fittings into valves, tighten with the proper tightening torque shown below.

Tightening torque for piping

Connection threads	Proper tightening torque N·m
Rc 1/8	7 to 9
Rc 1/4	12 to 14
Rc 3/8	22 to 24
Rc 1/2	28 to 30
Rc 3/4	28 to 30

5. Connection of piping to products

When connecting piping to a product, avoid mistakes regarding the supply port, etc.



Series VCA

2 Port Solenoid Valve for Fluid Control Precautions 3

Be sure to read before handling.

Wiring

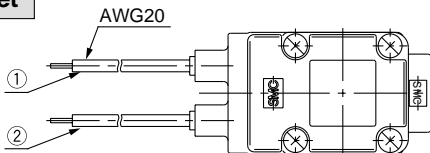
⚠ Caution

1. Use electrical wire with a conductor cross sectional area of 0.5 to 1.25mm² for wiring. Furthermore, do not allow excessive force to be applied to the lines.
2. Use electrical circuits which do not generate chattering in their contacts.
3. Use voltage which is within $\pm 10\%$ of the rated voltage. In cases where importance is placed on responsiveness, stay within $\pm 5\%$ of the rated value. The voltage drop is the value in the lead wire section connecting the coil.

Electrical Connections

⚠ Caution

Grommet

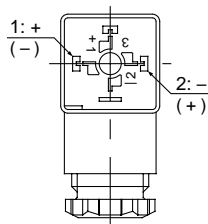


Rated voltage	Lead wire color	
	①	②
DC	Black	Red

* There is no polarity for DC.

DIN connector

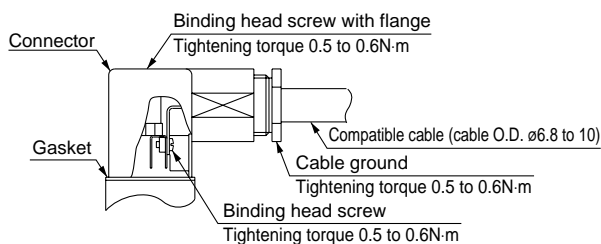
Since internal connections are as shown below for the DIN connector, make connections to the power supply accordingly.



Terminal no.	1	2
DIN terminal	+ (-)	- (+)

* There is no polarity.

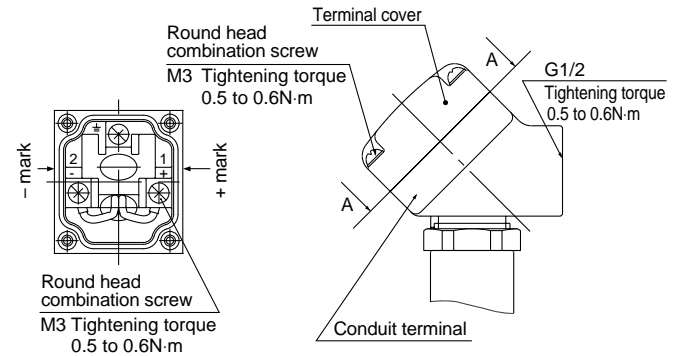
- Use compatible heavy duty cords with cable O.D. of $\phi 6.8$ to 10.
- Use the tightening torques below for each section.



Conduit terminal

In the case of the conduit terminal, make connections according to the marks shown below.

- Use the tightening torques below for each section.
- Properly seal the terminal connection (G1/2) with the special wiring conduit, etc.



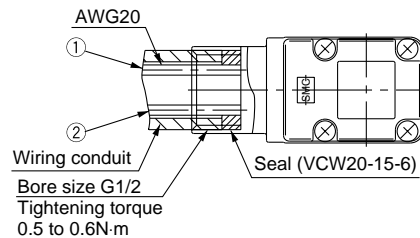
View A-A

(Internal connection diagram)

* There is polarity only when equipped with light.

Conduit

When used as an IP65 equivalent, use seal (part no. VCW20-15-6) to install the wiring conduit. Also, use the tightening torque below for the conduit.



Rated voltage	Lead wire colour	
	①	②
DC	Black	Red
100VAC	Blue	Blue
200VAC	Red	Red
Other AC	Gray	Gray



Series VCA

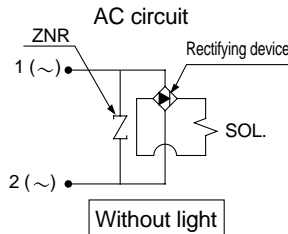
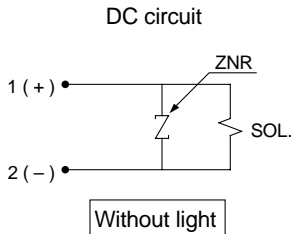
2 Port Solenoid Valve for Fluid Control Precautions 4

Be sure to read before handling.

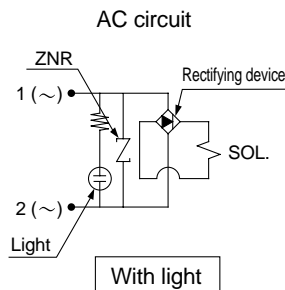
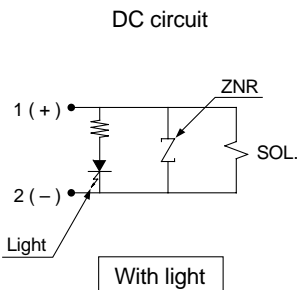
Electrical Circuits

⚠ Caution

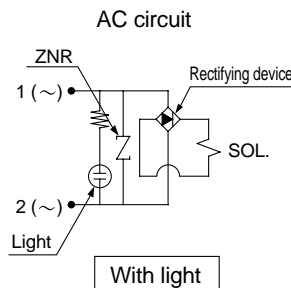
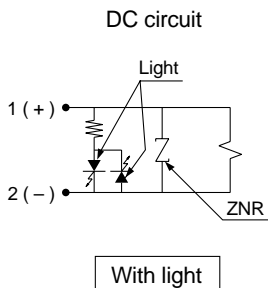
Grommet, Conduit, Conduit terminal, DIN connector



Conduit terminal



DIN connector



Operating Environment

⚠ Warning

1. Do not use valves in atmospheres of corrosive gases, chemicals, salt water, water, steam, or where there is direct contact with any of these.
2. Do not use in explosive atmospheres.
3. Do not use in locations subject to vibration or impact.
4. Do not use in locations where radiated heat will be received from nearby heat sources.
5. Employ suitable protective measures in locations where there is contact with water droplets, oil or welding spatter, etc.

Maintenance

⚠ Warning

1. Removing the product

1. Shut off the fluid supply and release the fluid pressure in the system.
2. Shut off the power supply.
3. Remove the product.

2. Low frequency operation

Switch valves at least once every 30 days to prevent malfunction.

⚠ Caution

1. Filters and strainers

1. Be careful regarding clogging of filters and strainers.
2. Replace filter elements after one year of use, or earlier if the amount of pressure drop reaches 0.1MPa.
3. Clean strainers when the amount of pressure drop reaches 0.1MPa.
4. Flush drainage from air filters periodically.

2. Manual override operation

When the manual override is operated, connected equipment will be actuated. Confirm safety before operating.

Lubrication

⚠ Caution

1. This solenoid valve can be operated without lubrication.

In the event that it is lubricated, use Class 1 turbine oil (without additives), ISO VG32.



Series VCA Specific Product Precautions

Be sure to read before handling.

Refer to pages 11 through 15 for safety instructions and precautions of 2 port solenoid valve for fluid control.

Manual Override Operation

Warning

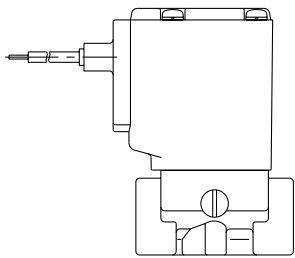
Manual operation

Slotted locking type (tool required)

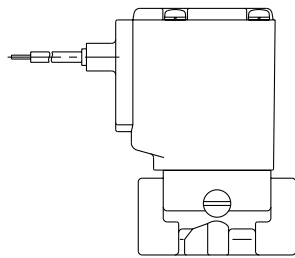
Opening the valve: With a flat head screw driver, turn 90° to the right to open the valve. The valve remains in the open condition even when the screw driver is removed.

Closing the valve: Turn 90° to the left from the open condition to close the valve.

Perform electrical operation with the valve closed.



Closed condition (vertical slot)



Open condition (horizontal slot)

Assembly and Disassembly

Caution

- Before disassembling, shut down the power supply and air pressure supply, and release the residual pressure.

Disassembly procedure

1. Remove the mounting screws on the top.
2. Remove the solenoid coil, spring, and armature assembly.
3. If foreign matter is adhering to the parts, perform an appropriate procedure, such as blowing with air or cleaning with a neutral detergent.

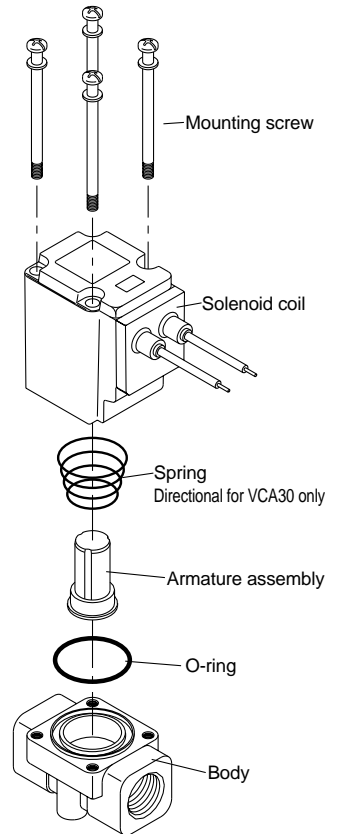
Assembly procedure

Re-assemble by following the disassembly procedure in the reverse order.

When changing the electrical entry direction, mount it in the direction that solenoid coils will be mounted.

Note 1) For series VCA30, the end of the spring with the smaller O.D. is fitted over the armature assembly. Be sure to make this distinction when assembling.

Note 2) Tighten the four mounting screws in the diagonally crossing order, and use the proper tightening torque below.



Proper tightening torque N·m

VCA20	0.4 to 0.5
VCA30	0.6 to 0.8
VCA40	0.6 to 0.8

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