

KURODA

SOLENOID VALVE FOR VACUUM

VA01 series

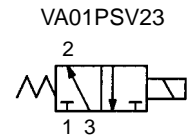
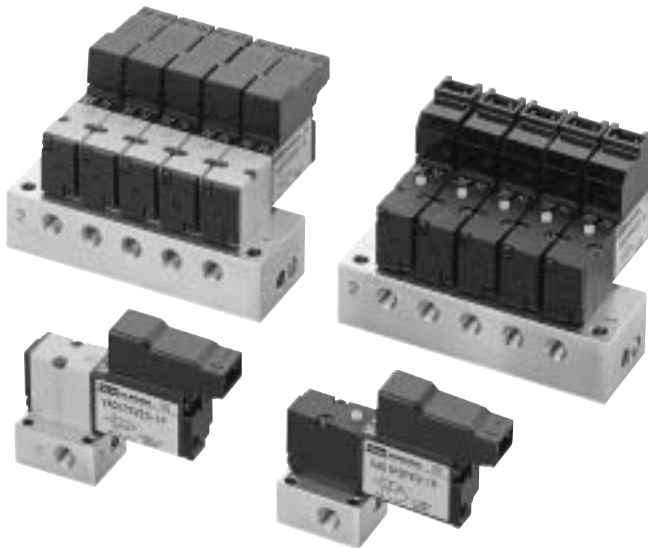


Most suitable for vacuum and vacuum break control !

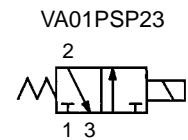
Small-sized 3-port 2-position direct-acting solenoid valve for vacuum

VA01PSV23 for vacuum

VA01PSP23 for vacuum break (positive pressure)



- 1 : Vacuum supply port
- 2 : Output port
- 3 : Atmospheric release port



- 1 : Pressure port
- 2 : Output port
- 3 : Exhaust port

● Compact and lightweight

Very compact plastic body in 10 mm width, weighting only 25 g.

● Two types of vacuum control and vacuum break control available

Two types of models for vacuum control and vacuum break control (positive pressure : 0.5 MPa max.) are available as VA01 Series.

● Minimized vacuum leak

Vacuum leak is reduced to less than 2 kPa /min (at -90 kPa, 20 cm³).

● Quick response time

5 ms response time and stable action at the time of turning on

● Mountable on manifold

Common vacuum supply port or common positive pressure supply port manifolds are available.

● Usable for air blow

Small-sized directing-acting valve VA01PSV23 can be used for air blow.

● Configurable with composite manifold (option)

It is possible to configure a vacuum unit with a double manifold equipped with both solenoid valves for vacuum and vacuum break.

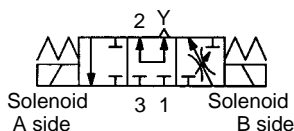
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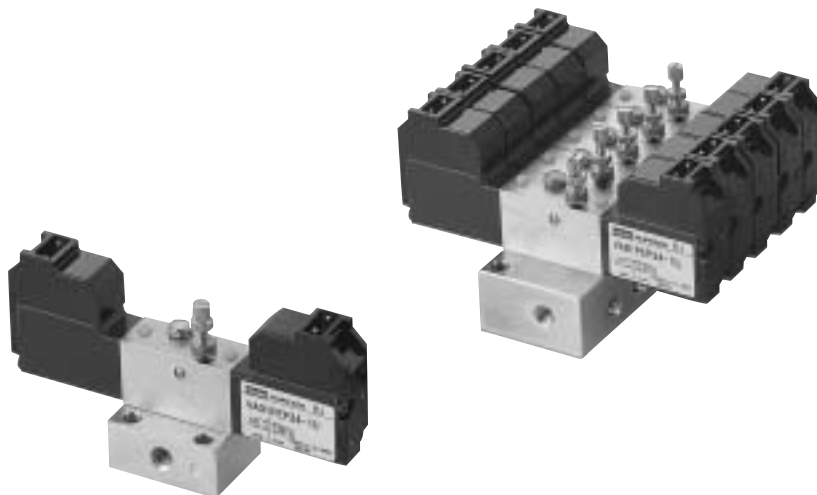
Most suitable for attraction and conveyance of very small work !

4-port 3-position direct-acting solenoid valve for vacuum

VA01PEP34



- 1 : Positive pressure supply port
- 2 : Output port
- 3 : Vacuum supply port
- Y : Atmospheric release port



● **Lightweight and compact**

Body width 10 mm, weight 56 g

● **One unit works for both vacuum control and vacuum break controls.**

Vacuum control valve and vacuum break control valve (pressure : 0.5MPa max.) are united.

● **Quick response time**

5 ms response time and stable action at the time of turning on/off.

● **Throttle valve for vacuum break flow control**

Air flow for vacuum break can be controlled according to work being attracted by setting a needle valve in the flow path for vacuum break.

● **Atmospheric release mechanism**

It serves to release the suction side pressure to the atmospheric air once and then supply air for vacuum break, when doing vacuum break from the vacuum state. This feature will be highly effective for loading and unloading very small work quickly in a stable state.

● **Manifolding**

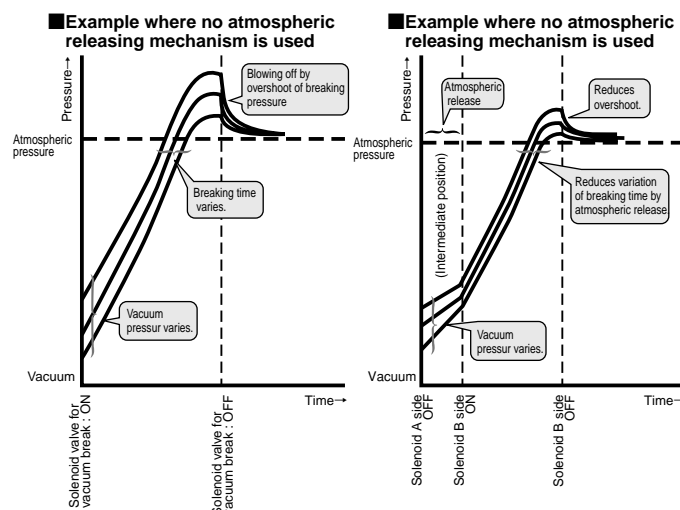
Vacuum port for common or individual manifolds are available, making it possible to manifold up to 12 stations.

To customers having the following problems in attracting very small work ;

- Parts around vacuum-breaking air are blown off, when work is detached.
- Timing of detaching work tends to vary.
- Re-attraction occurs after work is detached.
- Two solenoid valves are required to set up an atmospheric release circuit.



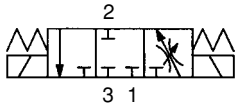
Using VA01 PEP34 will cut down these problems.



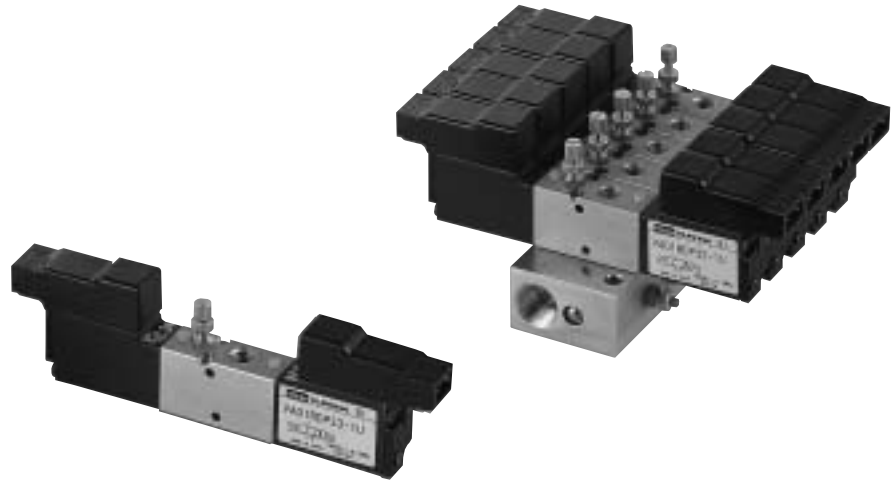
Most suitable for attraction and conveyance in vacuum pump lines !

3-port 3-position direct-acting solenoid valve for vacuum

VA01RDP33



1 : Positive pressure supply port
2 : Output port
3 : Vacuum supply port



● **Lightweight and compact**

Body width 10 mm, weight 45 g

● **One unit works for both vacuum control and vacuum break controls.**

Vacuum control valve and vacuum break control valve (pressure : 0.2 MPa max.) are united.

● **Holds vacuum at intermediate position**

Solenoid valve returns to intermediate position at the time of power failure and emergency stop, and holds attraction with vacuum pad.

● **Quick response time**

5 ms response time and stable action at the time of turning on/off

● **Throttle valve for vacuum break flow control**

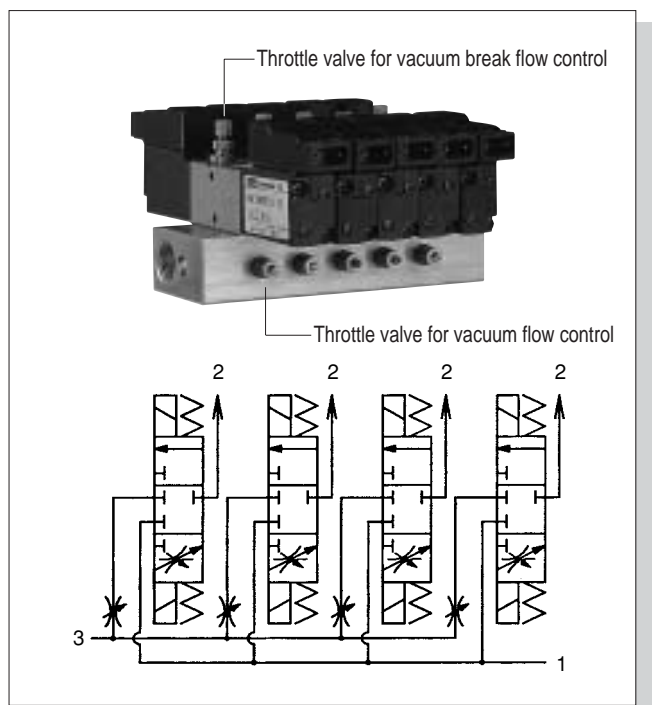
Air flow for vacuum break can be controlled according to work being attracted by setting a needle valve in the flow path for vacuum break.

● **Manifolding**

Vacuum port for common or individual manifolds are available, making it possible to manifold up to 20 stations.

● **Manifold with throttle valve for vacuum flow control**

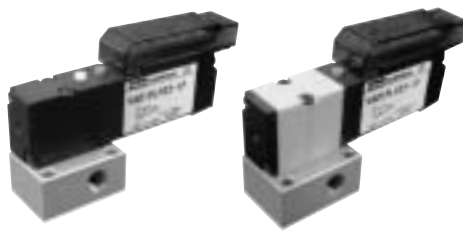
Vacuum flow can be controlled according to work by setting a needle valve in the flow path to each solenoid valve in the manifold.



Small-sized 3-port 2-position direct-acting latching solenoid valve for vacuum

VA01PLV23 for vacuum

VA01PLP23 for vacuum break (positive pressure)



Newly developed one coil latch type solenoid is incorporated !

Compact Double solenoid has been downsized to single solenoid.

Energy saving Energy-saving circuit is incorporated ; power consumption during holding is 0.5W.
No necessity for turning on power continuously to hold switching position.

Safety Detent mechanism to hold switching position with permanent magnet assures safety operations such as keeping attraction by vacuum.

Powerful lineup of VA01 series

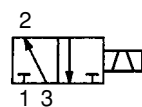
In addition to 2-position/3-position types and air releasing type, 3-port latch type solenoid valve has joined in this series.

Full lineup of solenoid valves with 10mm body width for vacuum is available.

Minimized vacuum leak

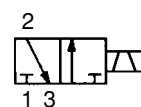
Vacuum leak is reduced to 2kPa/min (at -90kPa , 20cm^3)

VA01PLV23



1 : Vacuum supply port
2 : Output port
3 : Atmospheric release port

VA01PLP23



1 : Pressure port
2 : Output port
3 : Exhaust port



FOR SAFETY USE

Be sure to read the following instructions before use.

For common and individual instructions, refer to the text of this catalog.

The following safety precautions are provided to prevent damage and danger to personnel and to provide instructions on the correct usage of this product. These precautions are classified into 3 categories; “CAUTION”, “WARNING” and “DANGER” according to the degree of possible injury or damage and the degree of impendence of such injury or damage.

Be sure to comply with all precautions along with JIS B8370^(※1) and ISO 4414^(※2), as they include important content regarding safety.

CAUTION

- Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in personal injury or property-damage-only accidents.

WARNING

- Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in serious personal injury or death.

DANGER

- Indicates an impending hazardous situation which may arise due to improper handling or operation and could result in serious personal injury or death.

(※1) JIS B8370 : General Rules for Pneumatic Systems

(※2) ISO 4414 : Pneumatic fluid power-General rules relating to systems



WARNING

●The applicability of vacuum equipment to the intended system should be judged by the pneumatic system designer or the personnel who determined specifications for such system.

As operating conditions for products contained in this catalog are diversified, the applicability of vacuum equipment to the intended system should be determined by the pneumatic system designer or the personnel who determined specifications for such system after conducting an analysis or testing as necessary.

The system designer shall be responsible for assuring the intended system performance and safety.

Before making a system, the system designer should thoroughly examine all specifications for such a system and also take into consideration the possibility of any trouble with the equipment.

●The vacuum equipment should be handled by persons who have sufficient knowledge and rich experience.

Inproper handling of compressed air and vacuum will result in danger.

Assembling, operation and maintenance of machinery using vacuum equipment should be performed by persons who have sufficient knowledge and rich experience.

●Never operate machinery nor remove the equipment until safety is assured.

- Before checking or servicing machinery and equipment, be sure to check that steps for prevention of dropping or runaway of the driven component have been completely taken.
- When removing the equipment, make sure that the above-mentioned safety measures have been done beforehand. Then turn off air supply and power to the system and purge compressed air in the system.
- When restarting machinery and equipment, check that proper prevention of malfunction has been provided for and then restart carefully.

●When using the vacuum equipment in the following conditions or environments, take the proper safety measures and consult KURODA beforehand.

- Conditions and environments other than specified and outdoor use.
- Applications to nuclear power equipment, railroads, aircraft, vehicles, medical equipment, equipment connected with food and drink, amusement facilities and safety devices such as emergency interruption devices, clutch/brake circuits for a press and the likes.
- Applications which require extreme safety and will also greatly affect men and property.



SOLENOID VALVES FOR VACUUM/COMMON INSTRUCTIONS ①

Be sure to read them before use.

Also refer to Par. "For Safety Use" and instructions mentioned for each series of solenoid valves.

DESIGN

! WARNING

- **Power failure and trouble of air supply will lead to vacuum down ; this sometimes results in an accident.**

Take a safety measure against such and accident.

If vacuum pad loses its sucking force due to vacuum down, the workpiece being carried will drop, endangering the human body and machine, Provide prevention against the drop of a workpiece or take a proper safety measure.

- **Do not use for emergency shutoff valves.**

Solenoid valves listed in this catalogue are not designed for use in emergency shutoff valves and other safety applications.

When using the solenoid valve for such applications, provide an independent means to assure safety.

- **Exhausting residual air**

Provide a residual air exhausting function in due consideration of maintenance and inspection.

- **Use in vacuum**

In order to prevent sucking foreign matters from the suction pad and exhaust port, provide an inline filter, air muffler between the suction pad and solenoid valve and at the exhaust port.

- **Applying current continuously for long time**

When using a solenoid valve while applying current to it continuously for a long period of time, contact KURODA beforehand.

- **Remodeling the solenoid valve**

Do not remodel the solenoid valve.

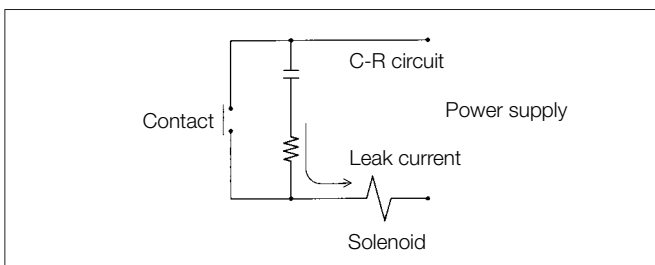
! CAUTION

- **Leak current**

When a C-R element is used in the contact protective circuit (surge voltage protection), leak current will flow through the C-R element.

If this leak current becomes large, a malfunction will occur.

Therefore, reduce leak current to less than 1 mA.



DESIGN

! CAUTION

- **Use at low temperature**

When using a solenoid valve at 5°C or below, provide an air dryer or other proper means to prevent moisture from solidifying or freezing.

- **Shock and vibration**

Reduce shocks and vibrations applied to the solenoid valve to less than the prescribed value. (refer to specifications.)

Applying shocks and vibrations exceeding the prescribed value may result in a malfunction of the solenoid valve.

SELECTION

! WARNING

- **Check the specifications.**

Solenoid valves listed in this catalog are designed for vacuum or compressed air. Avoid using other fluid than vacuum or compressed air. Do not use a solenoid valve at any pressure and temperature outside the range of specifications, otherwise resulting in a breakdown or malfunction.



SOLENOID VALVES FOR VACUUM/Common INSTRUCTIONS ②

Be sure to read them before use.

Also refer to Par. "For Safety Use" and instructions mentioned for each series of solenoid valves.

MOUNTING

! WARNING

- When mounting the solenoid valve, firmly fix it while using care to prevent the stationary part and joint from loosening.

If the solenoid valve is mounted with insufficient strength, it may sometimes come off.

- Do not start the system until it is ensured that equipment works properly.

After mounting the solenoid valve, connect power supply and then perform a functional test and a leak test. Check that it has been correctly mounted and works properly, before starting the system.

- Coating with paint

When coating the resin portion with paint, it may be adversely affected by paint and solvent. For the propriety of painting, contact KURODA beforehand.

Do not peel off the nameplate affixed on the solenoid valve and do not erase or smear out the letter on it.

- Provide space for maintenance and inspection.

! CAUTION

- Do not wipe off the model name inscribed on a nameplate etc, with organic solvent.

The inscribed indication may be erased.

- Tightening torque for mounting screw

Recommended tightening torque range is shown as below.

Valve No.	Screw size	Tightening torque (N·m)
VA01PSV23	M1.7	0.10~0.14
VA01PSP23		
VA01PEP34	M1.7	0.12~0.20
VA01RDP33	M1.7	0.12~0.20
VA01PLV23	M1.7	0.10~0.14
VA01PLP23		

- Fit an air muffler to the exhaust port of the solenoid valve.

Dust or foreign matter that enters it may cause a malfunction of the solenoid valve.

PIPING

! CAUTION

- Avoid spiral pipe laying.

When spiral pipe laying is used in a vacuum line, it may sometimes delay attaining vacuum due to the resistance of piping or cause vacuum down at the suction end ; resulting in the malfunction of the vacuum sensor.

- For manifold type solenoid valve, pay attention to piping diameter.

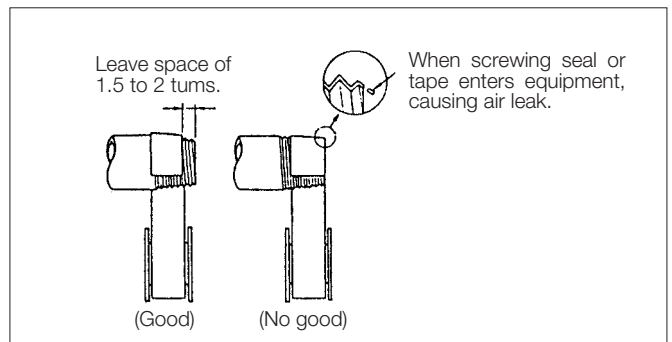
When increasing the number of manifolded units, flow may be insufficient according to circumstances. In this case, supply and exhaust from both sides of the manifold.

- Before piping

Thoroughly flush the inside of each pipe to remove chips, coolant, dust, etc. before piping.

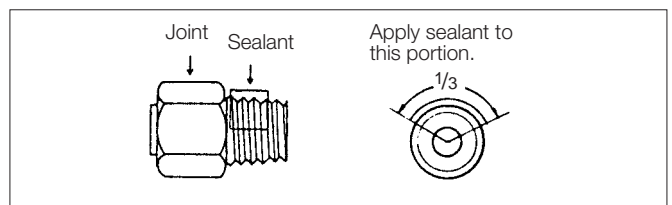
- How to wind a seal tape

When winding a seal tape around the threaded portion, leave space of 1.5 to 2 thread turns.



- How to apply liquid sealant

When applying liquid sealant to the threaded portion, apply a proper amount to about 1/3 of the periphery of the threaded portion and then screw it.



- Avoid wrong piping.

When connecting a pipe to each equipment, be careful not to mistake the supply port etc. by referring to the nameplate affixed to the product or the product catalog.



SOLENOID VALVES FOR VACUUM/COMMON INSTRUCTIONS ③

Be sure to read them before use.

Also refer to Par. "For Safety Use" and instructions mentioned for each series of solenoid valves.

PIPING



CAUTION

• Screw of pipe and joint

When screwing the pipe and joint, use care to prevent chips and sealant from entering the pipe and joint.

Tighten them within a proper range of tightening torque.

Port size	Tightening torque (N·m)
M3	0.3~0.5
M5	1.5~2.0
R、Rc 1/8	7.0~9.0
R、Rc 1/4	12~14

APPLICABLE TUBES



CAUTION

• Used nylon tubes or polyurethane tubes made by KURODA for Instant Joints. When using tubes made by other companies, check the diametral accuracy.

There are some commercially available tubes that do not satisfy the specified diametral accuracy.

• Do not extremely bend the tube near the joint ; otherwise resulting in the break or bucking of the tube.

When using the tube with it bent, use at more than minimum bend radius.

• When using with other fluid than air, consult KURODA.

CONNECTION AND DISCONNECTION OF TUBE



CAUTION

How to connect a tube

- When using a tube, cut it at right angles axially with the special tool (Tube Cutter/TC-16). Cutting it with scissors or nippers to cause a deformation may result in air leak or coming off.
- Fully insert the tube up to the tube end.
- Pull the tube lightly and check that it does not come off from the joint.

How to disconnect a tube

- Pull out the tube while pushing the release ring in parallel. Before pulling out the tube, be sure to discharge residual pressure.
- When reusing the disconnected tube, cut off the bitten portion of the tube.

WIRING



WARNING

• When doing wiring work, be sure to turn off compressed air, vacuum and power supplies beforehand.

Wiring work without turning off air, vacuum and power supplies may cause an electric shock or malfunction, this sometimes results in an injury to the human body or a damage to property.

• Avoid mis-wiring.

Some solenoid valves have polarity : Those operating on DC with built-in indicator light and those equipped with surge protective circuit.

When wiring to a solenoid valve, check whether or not it has polarity.

For a solenoid valve having polarity, check the lead wire color and symbol of the polarity by the catalog or actual article beforehand and then make correct wiring.

• Avoid applying stress and tensile force to lead wire repeatedly.

Wiring made in such a manner that stress and tensile force are repeatedly applied to the lead wire will result in the breaking of wire. Provide some degree of margin for wiring.

• Check that there is no insulation failure.

If an insulation failure occurs in the lead wire connection, extension cable and terminal base, an excess flows to the switching element of the solenoid valve or control unit, sometimes resulting in a damage.

• Do not mistake applied voltage.

Mistake in applied voltage in case of wiring to a solenoid valve will cause an operation failure or burn out the coil.

• After completion of wiring, check for wrong connection before turning on power.

• Do not supply power at the same time.

Do not supply power to both double solenoid type valve and latch type solenoid valve at the same time.



SOLENOID VALVES FOR VACUUM/COMMON INSTRUCTIONS ④

Be sure to read them before use.

Also refer to Par. "For Safety Use" and instructions mentioned for each series of solenoid valves.

OPERATING ENVIRONMENTS



DANGER

- Do not use solenoid valve in a explosive environment.



WARNING

- Do not use a solenoid valve in atmospheres containing corrosive gases, chemicals, seawater, water and vapor and in places where a solenoid valve contacts these matters.
- Do not use a solenoid valve in a place where vibrations or shocks are directly applied to it.
- When a solenoid valve is exposed to the direct sunlight, fit a protective cover to the solenoid valve.
- When a solenoid valve is located around a heat source, shut off the radiant heat.
- When installing a solenoid valve in the control panel, take proper heat-radiating measures so that the inside temperature may be kept within the specified temperature range.
- When using a solenoid valve in a place where it is exposed to welding spatters, provide a protective cover or other proper prevention.

Welding spatars may burn out the plastic parts of the solenoid valve, sometimes resulting in a fire.

QUALITY OF AIR



WARNING

- Use pure air.

Compressed air containing corrosive gases, chemicals, salt, etc. causes a breakdown or operation failure. So do not use such air.



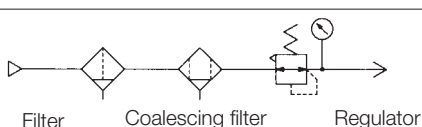
CAUTION

- Fit an air filter with filtration of 5 μ m or fine.
- Install an air dryer.

Compressed air containing much drainage causes the operation failure of pneumatic equipment. Install and air dryer, lower the temperature and reduce drainage.

- Take proper countermeasures against sludge.

If sludge produced in compressor oil enters pneumatic equipment, it will cause the operation failuse of pneumatic equipment. it is recommendable to use compressor oil (NISSEKI FAIRCALL A68, IDEMITSU DAPHUNY SUPER CS68) featuring minimized sludge production or use a coalescing filter to prevent sludge from entering the pneumatic equipment.



MAINTENANCE AND INSPECTION



WARNING

- Inspection before maintenance

First check that load drop prevention has been provided.

Then shut off air and power supplies to the system and exhaust residual air in the system beforehand.

- Inspection after maintenance

When restarting the system, check that preventive measures against flying-out of the actuator have been taken. Then connect compressed air supply to the pneumatic system, and perform a proper functional test and a leak test to check that it works safely without fail, before starting the system.

- Operation at low frequency

To prevent an operation failure, perform the switching action of the solenoid valve once per 30 days. (Be careful of air supply.)

- Manual operation

When the solenoid valve is manually operated, the system connected to it is also operated. Make sure safety before operation.

- Disassembly of solenoid valve

When disassembling the solenoid valve, contact KURODA beforehand.



CAUTION

- Draining

To keep the quality of air to a certain level, drain the air filter at periodical intervals.

- Chek and clean the vacuum filter and silencer every-day, and also change the element periodically.

Silting will deteriorate the performance.



SOLENOID VALVES VA01 SERIES/INDIVIDUAL INSTRUCTIONS

Be sure to read them before use.

Also refer to Par. "For Safety Use" and common instructions.

WIRING SPECIFICATIONS

• L type

Lead wire (AWG26 length 300 mm)



• P type

Connector with lead wire (AWG26 length 500 mm), side outlet (with indicator light & surge suppressor)



• U type

Connector with lead wire (AWG26 length 500 mm), upside outlet (with indicator light & surge suppressor)



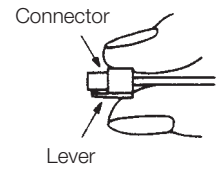
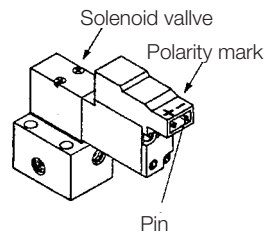
HOW TO USE CONNECTORS

! CAUTION

• How to attach and detach a connector

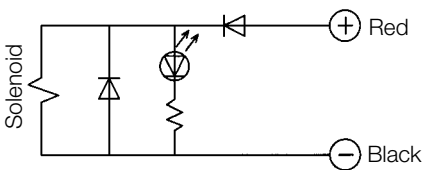
When attaching a connector, pinch the clip with your finger and insert the connector into the pin straight to the end.

When detaching a connector, pinch the clip with your finger and pull out the connector straight.

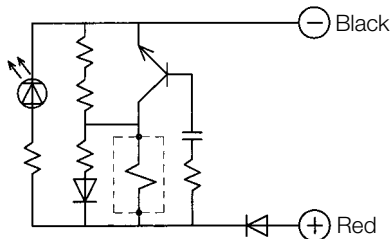


INTERNAL CIRCUIT OF P & U TYPE

VA01PSP23/VA01PSV23/VA01RDP33



VA01PEP34





LATCHING SOLENOID VALVE/INDIVIDUAL INSTRUCTIONS

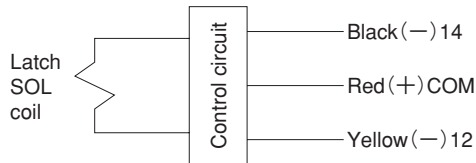
Be sure to read them before use.

Also refer to Par. "For Safety Use" and common instructions.

RELATION BETWEEN INPUT ELECTRIC SIGNAL AND VALVE OUTPUT

CAUTION

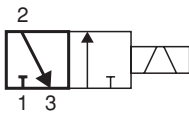
- Relation between input electric signal and valve output is as follows :



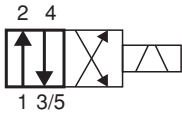
<Power supply and connection of solenoid valve>

① Power is supplied to red (+) lead wire and yellow (-) lead wire.

VA01PL□23 : Port 1 closes

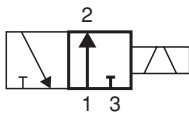


PCL/RCL241 : Port 1→2、4→3/5

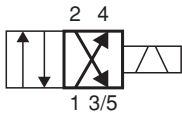


② Power is supplied to red (+) lead wire and black (-) lead wire.

VA01PL□23 : Port 1→2



PCL/RCL241 : Port 1→4、2→3/5



CONTINUOUS SUPPLY OF POWER

CAUTION

- Latch type solenoid valve requires no continuous supply of power.

After switching by pulse signal, that position is held until reverse direction signal is input. However, set input signal at minimum required excitation time (0.05ms) or over.

OPERATING PRINCIPLE OF LATCH TYPE SOLENOID VALVE

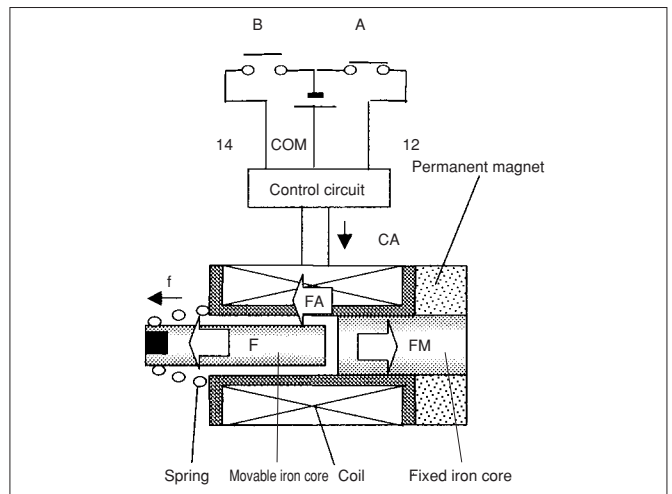
• Supplying power to Control Circuit 12

When turning on Contact A and supplying power to Control Circuit 12, force FA is generated to separate the movable iron core from the fixed iron core.

Force to which spring force f is added exceeds the attractive force FM of the permanent magnet, thereby separating the movable iron core from the fixed iron core by the force of $F=FA+f-FM$.

• No supplying power to Control Circuit 12

When turning off Contact A with the movable iron core separated from the fixed iron core, the movable iron core holds that state by spring force f.



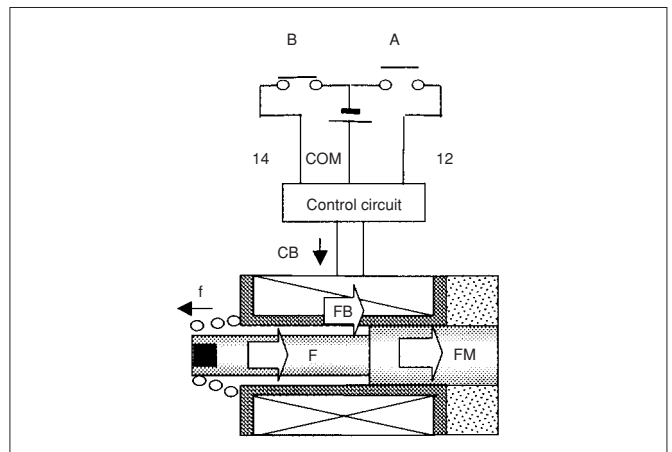
• Supplying power to Control Circuit 14

When turning on Contact B and supplying power to Control Circuit 14, force FB is generated to separate the movable iron core from the fixed iron core.

Force to which the attractive force FM of the permanent magnet is added exceeds the spring force, and thus the movable iron core is attracted to the fixed iron core by the force of $F=FB+FM-f$.

• No supplying power to Control Circuit 14

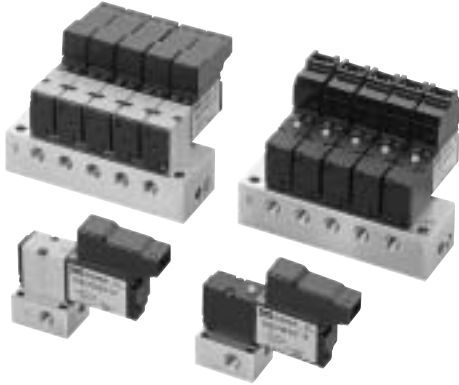
When turning off Contact B with the movable iron core attracted to the fixed iron core, the movable iron core is kept attracted by the permanent magnet.



Small-sized 3-port 2-position direct-acting solenoid valve for vacuum

VA01PSV23 for vacuum

VA01PSP23 for vacuum break (positive pressure)



Specifications

Model No.	Unit	VA01PSV23	VA01PSP23
Fluid		Air	Air
Port size		M5	
Flow	Vacuum	ℓ /min (ANR)	22 (at -100kPa)
	Vacuum break	ℓ /min (ANR)	40 (at 0.5MPa)
Pressure range		-100~0kPa	0~0.5MPa
Ambient temperature	°C	-10~50	
Response time	ON	ms	5 or less
	OFF	ms	5 (10) or less
Rated voltage	V	DC24	
Permissible voltage fluctuation	%	±10	
Heat resistance grade		Grade B	
Power consumption	W	2	
Wiring		Lead wire, connector with lead wire	
Vibration resistance/Shock resistance	m/s ²	150/50	
Mass	g	25	

(Note) • When using the valve for vacuum break at less than 5 °C by supplying compressed air, use dry air passing through an air dryer to prevent dew condensation and freezing.

• Response time in bracket () shows with surge suppressor.

Ordering instruction

Solenoid valve		Manifold	
VA01 PS V23 - 1 L - M5 - <input type="checkbox"/>		MFS <input type="checkbox"/> - V01 V3 CC - M5	
①	②	③	④
① Type of piping	② Function	③ Voltage	④ Wiring specifications
PS Sub-base piping Single solenoid	V23 2-position 3-port Vacuum P23 2-position 3-port Vacuum break (Positive pressure)	1 DC24V	L Lead wire P Connector with lead wire, Side outlet (With indicator light & surge suppressor) U Connector with lead wire, Upside outlet (With indicator light & surge suppressor)
			⑤ Port size
			No mark No sub-base M5 M5×0.5
			(Note) Model without sub-base is provided with mounting screw and base gasket.
			⑥ Wiring accessories
			No mark No connector E Connector with lead wire (Length : 500 mm)
			① Number of stations
			2 2 stations : : 20 20 stations
			② Type of valve
			V3 PSV23 for vacuum P3 PSP23 for positive pressure
			③ Manifold specifications
			CC Common 1, Common 3
			④ Port size
			M5 M5×0.5
			Connector with lead wire
			Lead wire length Model No. 500mm PC2-D24-CL5 (Standard) 1000mm PC2-D24-CL10



CAUTION

- Supply pressure of -100 to 0 kPa to vacuum supply port of VA01PSV23. Do not supply positive pressure.
- Supply pressure of 0 to 0.5 MPa to positive pressure supply port of VA01PSP23. Do not supply vacuum pressure.

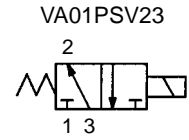
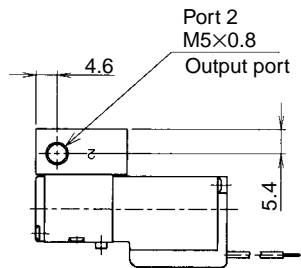
Small-sized 3-port 2-position direct-acting solenoid valve for vacuum

Dimensions

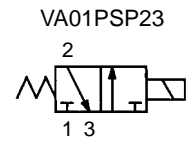
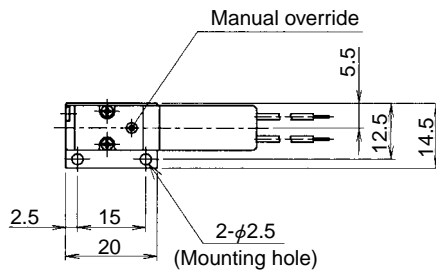
Solenoid valve

(Unit : mm)

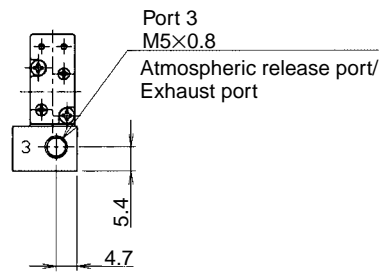
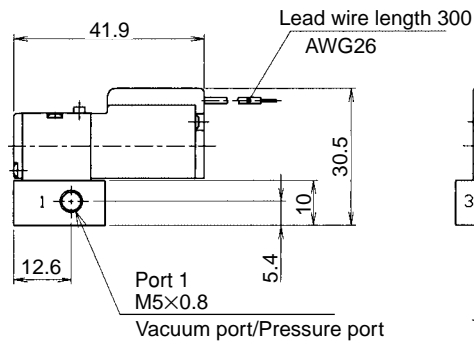
VA01PS□23



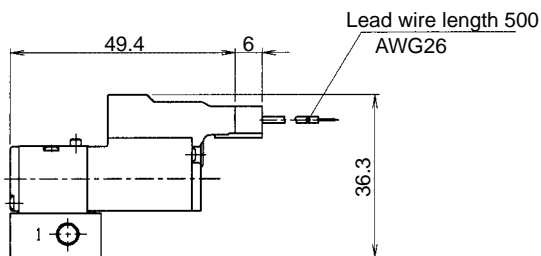
1 : Vacuum supply port
2 : Output port
3 : Atmospheric release port



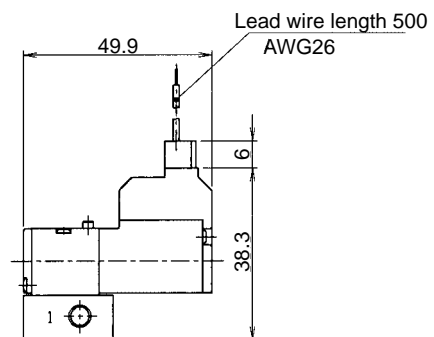
1 : Pressure port
2 : Output port
3 : Exhaust port



L type



P type



U type

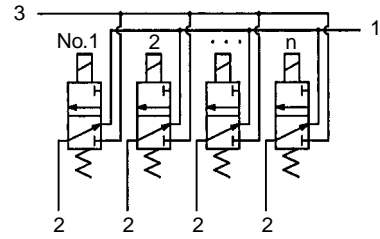
Small-sized 3-port 2-position direct-acting solenoid valve for vacuum

Dimensions

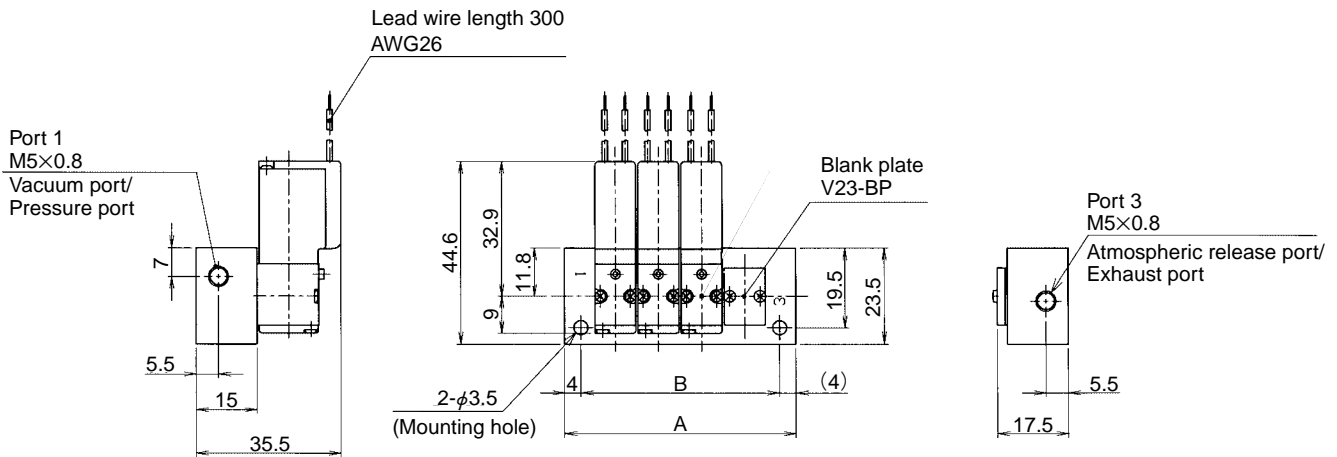
Manifold

(Unit : mm)

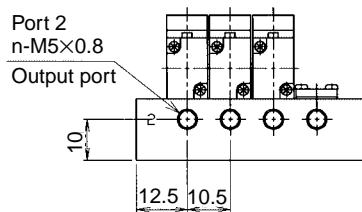
MFS□-V01□3CC-M5



Circuit diagram

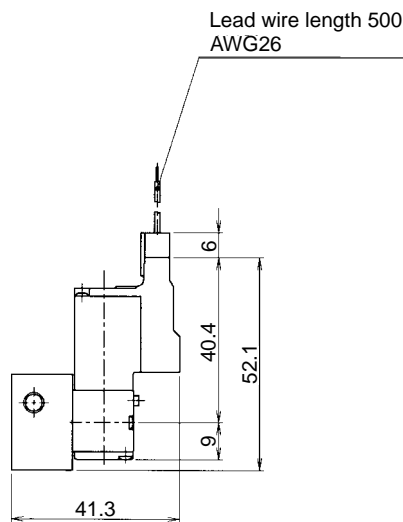


L type

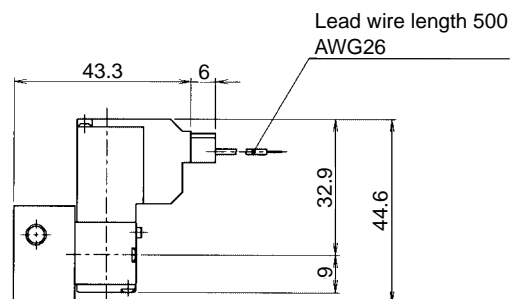


n	A	B	n	A	B
2	35.5	27.5	11	130	122
3	46	38	12	140.5	132.5
4	56.5	48.5	13	151	143
5	67	59	14	161.5	153.5
6	77.5	69.5	15	172	164
7	88	80	16	182.5	174.5
8	98.5	90.5	17	193	185
9	109	101	18	203.5	195.5
10	119.5	111.5	19	214	206
			20	224.5	216.5

n : Number of stations



P type

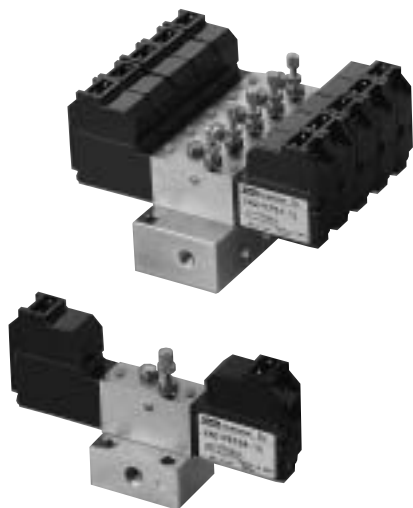


U type

4-port 3-position direct-acting solenoid valve for vacuum

VA01PEP34

Poppet seal/Sub-base piping type



Specifications

Model No.	Unit	VA01PEP34	
Fluid		Air	
Port size		M5	
Flow	Vacuum	R /min (ANR)	20 at -100kPa (Port 3→2)
	Vacuum break	R /min (ANR)	14 at 0.5MPa (Port 1→2)
Pressure range		-100~-30kPa	0.05~0.5MPa
Ambient temperature	°C	-10~50	
Response time	ms	ON : 5 or less OFF : 5 or less	
Rated voltage	V	DC24	
Permissible voltage fluctuation	%	±10	
Heat resistance grade		Grade B	
Power consumption	W	0.9 (Holding), 4 (Inrush)	
Wiring		Lead wire, connector with lead wire	
Vibration resistance/Shock resistance	m/s ²	150/50	
Mass	g	56	

(Note) · When using the valve for vacuum break at less than 5 ? by supply ing compressed air, use dry air passing through an air dryer to prevent dew condensation and freezing.

Ordering instruction

Solenoid valve	Manifold								
<p>VA01 P EP3 4 - 1 U - M5 - [] - []</p> <p>① ② ③ ④ ⑤ ⑥ ⑦</p>	<p>MFS [] - V01P4 CC - M5</p> <p>① ② ③</p>								
<p>① Type of piping</p> <table border="1"> <tr> <td>P</td> <td>Sub-base piping</td> </tr> </table>	P	Sub-base piping	<p>① Number of stations</p> <table border="1"> <tr> <td>2</td> <td>2 stations</td> </tr> <tr> <td>:</td> <td>:</td> </tr> <tr> <td>12</td> <td>12 stations</td> </tr> </table>	2	2 stations	:	:	12	12 stations
P	Sub-base piping								
2	2 stations								
:	:								
12	12 stations								
<p>② Function</p> <table border="1"> <tr> <td>EP3</td> <td>3-position with atmospheric release mechanism Double solenoid</td> </tr> </table>	EP3	3-position with atmospheric release mechanism Double solenoid	<p>② Manifold specifications</p> <table border="1"> <tr> <td>CC</td> <td>Common 1 (Positive prssure), Common 3 (Vacuum)</td> </tr> <tr> <td>CI</td> <td>Common 1 (Positive prssure), Individual 3 (Vacuum)</td> </tr> </table>	CC	Common 1 (Positive prssure), Common 3 (Vacuum)	CI	Common 1 (Positive prssure), Individual 3 (Vacuum)		
EP3	3-position with atmospheric release mechanism Double solenoid								
CC	Common 1 (Positive prssure), Common 3 (Vacuum)								
CI	Common 1 (Positive prssure), Individual 3 (Vacuum)								
<p>③ Voltage</p> <table border="1"> <tr> <td>1</td> <td>DC24V</td> </tr> </table>	1	DC24V	<p>③ Port size</p> <table border="1"> <tr> <td>M5</td> <td>M5 × 0.8</td> </tr> </table>	M5	M5 × 0.8				
1	DC24V								
M5	M5 × 0.8								
<p>④ Wiring specifications</p> <table border="1"> <tr> <td>U</td> <td>Connector with lead wire, Upside outlet (With indicator light & surge suppressor)</td> </tr> </table>	U	Connector with lead wire, Upside outlet (With indicator light & surge suppressor)	<p>Connector with lead wire</p> <table border="1"> <thead> <tr> <th>Lead wire length</th> <th>Model No.</th> </tr> </thead> <tbody> <tr> <td>500mm</td> <td>PC2-D24-CL5 (Standard)</td> </tr> <tr> <td>1000mm</td> <td>PC2-D24-CL10</td> </tr> </tbody> </table>	Lead wire length	Model No.	500mm	PC2-D24-CL5 (Standard)	1000mm	PC2-D24-CL10
U	Connector with lead wire, Upside outlet (With indicator light & surge suppressor)								
Lead wire length	Model No.								
500mm	PC2-D24-CL5 (Standard)								
1000mm	PC2-D24-CL10								
<p>⑤ Port size</p> <table border="1"> <tr> <td>No mark</td> <td>No sub-base</td> </tr> <tr> <td>M5</td> <td>M5 × 0.8</td> </tr> </table>	No mark	No sub-base	M5	M5 × 0.8					
No mark	No sub-base								
M5	M5 × 0.8								
<p>⑥ Wiring accessories</p> <table border="1"> <tr> <td>No mark</td> <td>No connector</td> </tr> <tr> <td>E</td> <td>Connector with lead wire (Length : 500 mm)</td> </tr> </table>	No mark	No connector	E	Connector with lead wire (Length : 500 mm)					
No mark	No connector								
E	Connector with lead wire (Length : 500 mm)								
<p>⑦ Option</p> <table border="1"> <tr> <td>No mark</td> <td>No option</td> </tr> <tr> <td>F</td> <td>Atmosheric release port with filter</td> </tr> </table>	No mark	No option	F	Atmosheric release port with filter					
No mark	No option								
F	Atmosheric release port with filter								

(Note) Model without sub-base is provided with mounting screw and base gasket.



CAUTION

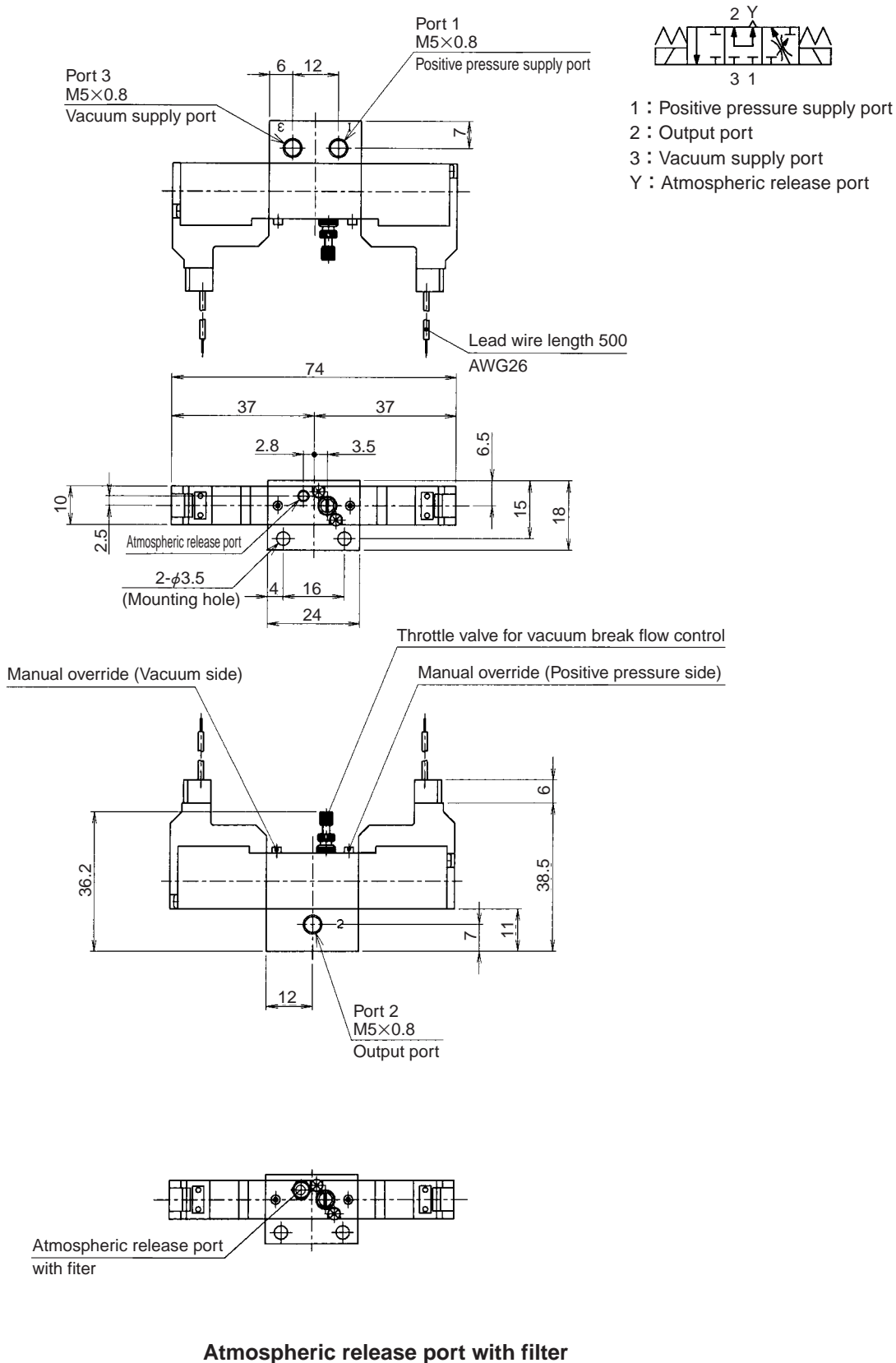
- Use positive pressure supply port within pressure range of 0 to 0.5 MPa. Do not supply vacuum pressure.
- Use vacuum supply port within pressure range of -100 to 0 kPa. Do not supply positive pressure.

4-port 3-position direct-acting solenoid valve for vacuum

Dimensions

Solenoid valve

(Unit : mm)



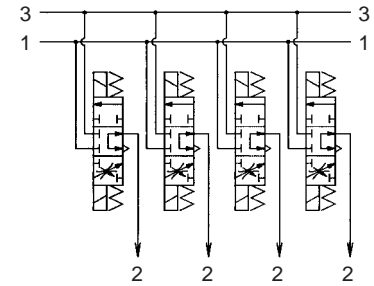
4-port 3-position direct-acting solenoid valve for vacuum

Dimensions

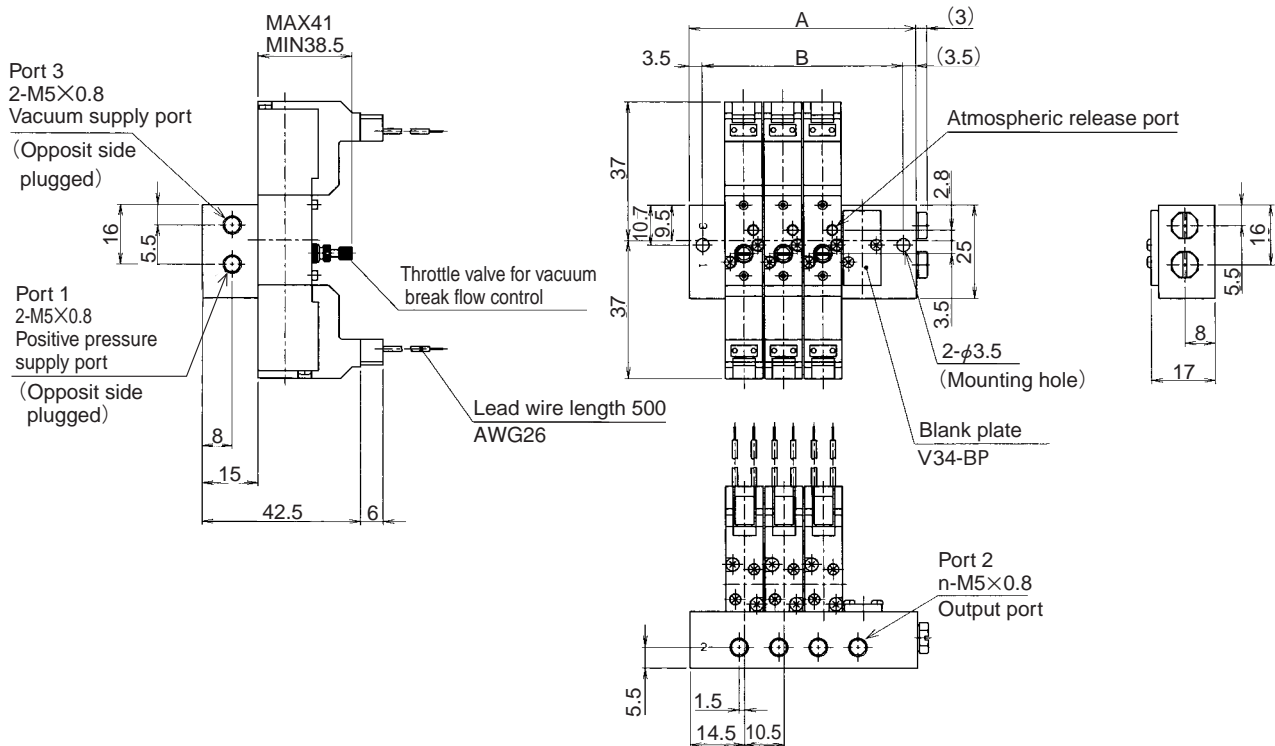
Manifold

(Unit : mm)

MFS□-V01P4CC-M5



Circuit diagram



n	A	B
2	39.5	32.5
3	50	43
4	60.5	53.5
5	71	64
6	81.5	74.5
7	92	85
8	102.5	95.5
9	113	106
10	123.5	116.5
11	134	127
12	144.5	137.5

n : Number of stations

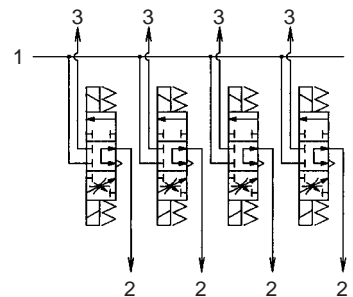
4-port 3-position direct-acting solenoid valve for vacuum

Dimensions

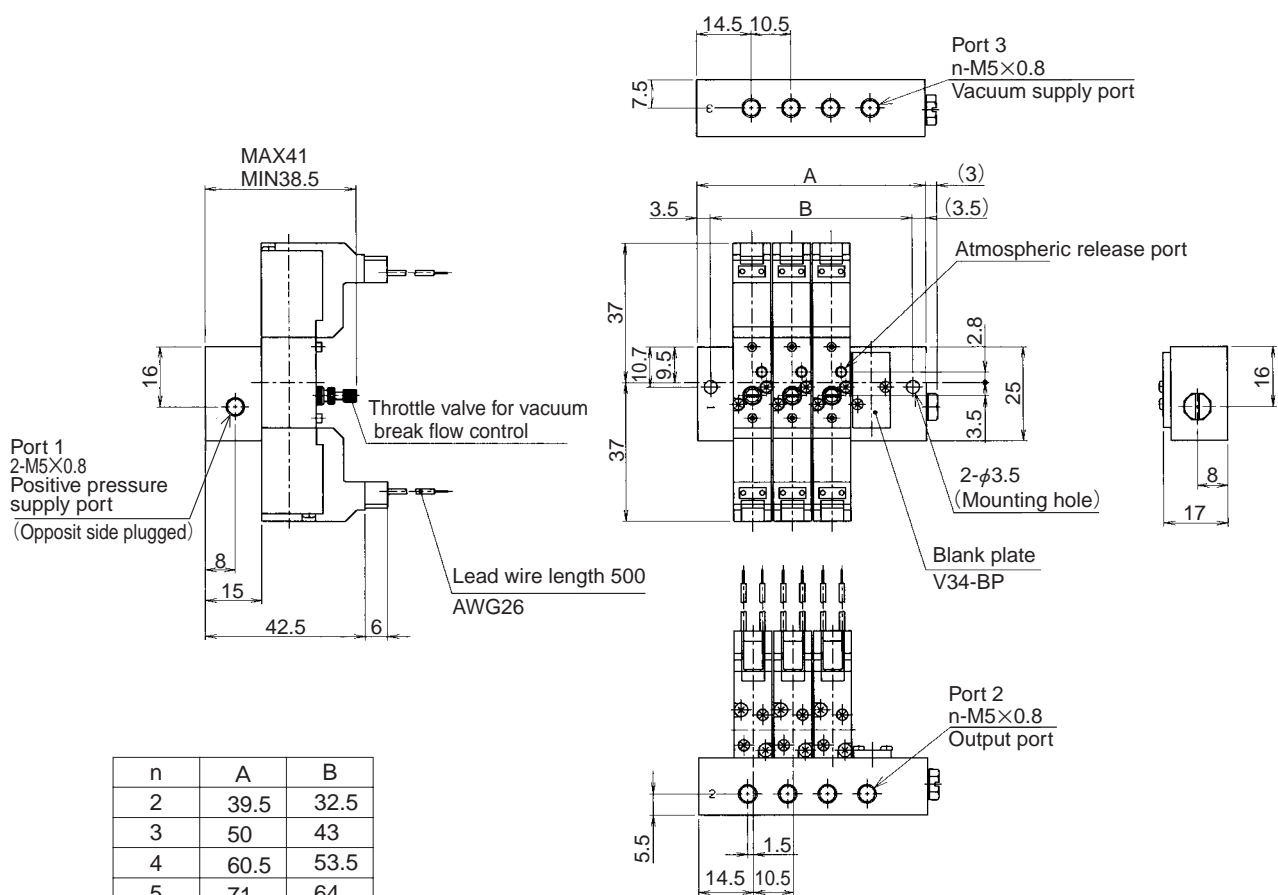
Manifold

(Unit : mm)

MFS□-V01P4CI-M5



Circuit diagram



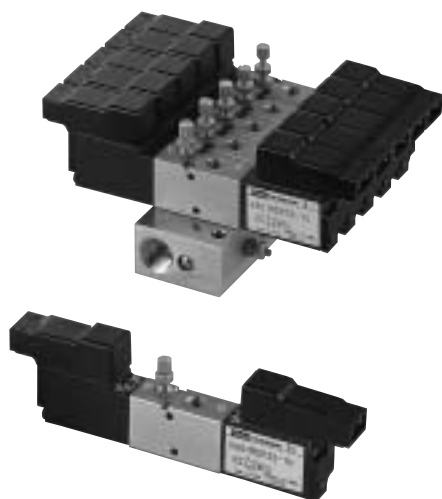
n	A	B
2	39.5	32.5
3	50	43
4	60.5	53.5
5	71	64
6	81.5	74.5
7	92	85
8	102.5	95.5
9	113	106
10	123.5	116.5
11	134	127
12	144.5	137.5

n : Number of stations

3-port 3-position direct-acting solenoid valve for vacuum

VA01RDP33

Poppet seal/In-line piping type



Specifications

Model No.	Unit	VA01RDP33
Fluid		Air
Port size		M5
Flow	Vacuum	ℓ /min (ANR) 10 at -90kPa (Port 3→2)
	Vacuum break	ℓ /min (ANR) 8 at 0.2MPa (Port 1→2)
Pressure range		-100kPa~0.2MPa
Ambient temperature	°C	-10~50
Response time	ms	ON : 5 or less OFF : 5 (20) or less
Rated voltage	V	DC24
Permissible voltage fluctuation	%	±10
Heat resistance grade		Grade B
Power consumption	L type	W 0.5
	P, U type	W 0.55
Wiring		Lead wire, connector with lead wire
Vibration resistance/Shock resistance	m/s ²	150/50
Mass	g	45

(Note) • When using the valve for vacuum break at less than 5 °C by supplying compressed air, use dry air passing through an air dryer to prevent dew condensation and freezing.
• Response time in bracket () shows with surge suppressor.

Ordering instruction

Solenoid valve	Manifold								
VA01 R DP3 3 - 1 L - M5 - [] - [] ① ② ③ ④ ⑤ ⑥ ⑦	MFU 5 - V01R3 CC V - M5 ① ② ③ ④								
① Type of piping <table border="1" style="width: 100%;"> <tr> <td>R</td> <td>In-line piping</td> </tr> </table>	R	In-line piping	① Number of stations <table border="1" style="width: 100%;"> <tr> <td>2</td> <td>2 stations</td> </tr> <tr> <td>:</td> <td>:</td> </tr> <tr> <td>20</td> <td>20 stations</td> </tr> </table>	2	2 stations	:	:	20	20 stations
R	In-line piping								
2	2 stations								
:	:								
20	20 stations								
② Function <table border="1" style="width: 100%;"> <tr> <td>DP3</td> <td>3-position closed center Double solenoid</td> </tr> </table>	DP3	3-position closed center Double solenoid	② Manifold specifications <table border="1" style="width: 100%;"> <tr> <td>CC</td> <td>Common 1 (Positive pressure), Common 3 (Vacuum)</td> </tr> <tr> <td>CI</td> <td>Common 1 (Positive pressure), Individual 3 (Vacuum)</td> </tr> </table>	CC	Common 1 (Positive pressure), Common 3 (Vacuum)	CI	Common 1 (Positive pressure), Individual 3 (Vacuum)		
DP3	3-position closed center Double solenoid								
CC	Common 1 (Positive pressure), Common 3 (Vacuum)								
CI	Common 1 (Positive pressure), Individual 3 (Vacuum)								
③ Voltage <table border="1" style="width: 100%;"> <tr> <td>1</td> <td>DC24V</td> </tr> </table>	1	DC24V	③ Throttle valve for vacuum flow control <table border="1" style="width: 100%;"> <tr> <td>No mark</td> <td>No throttle valve</td> </tr> <tr> <td>V</td> <td>Throttle valve for vacuum flow control (Only for CC specification)</td> </tr> </table>	No mark	No throttle valve	V	Throttle valve for vacuum flow control (Only for CC specification)		
1	DC24V								
No mark	No throttle valve								
V	Throttle valve for vacuum flow control (Only for CC specification)								
④ Wiring specifications <table border="1" style="width: 100%;"> <tr> <td>L</td> <td>Lead wire</td> </tr> <tr> <td>P</td> <td>Connector with lead wire, Side outlet (With indicator light & surge suppressor)</td> </tr> <tr> <td>U</td> <td>Connector with lead wire, Upside outlet (With indicator light & surge suppressor)</td> </tr> </table>	L	Lead wire	P	Connector with lead wire, Side outlet (With indicator light & surge suppressor)	U	Connector with lead wire, Upside outlet (With indicator light & surge suppressor)	(Note) Solenoid valve with throttle valve for vacuum flow control is to be made to order.		
L	Lead wire								
P	Connector with lead wire, Side outlet (With indicator light & surge suppressor)								
U	Connector with lead wire, Upside outlet (With indicator light & surge suppressor)								
⑤ Port size <table border="1" style="width: 100%;"> <tr> <td>M5</td> <td>M5×0.8</td> </tr> </table>	M5	M5×0.8	④ Port size <table border="1" style="width: 100%;"> <tr> <td>M5</td> <td>M5×0.8</td> </tr> </table>	M5	M5×0.8				
M5	M5×0.8								
M5	M5×0.8								
⑥ Wiring accessories <table border="1" style="width: 100%;"> <tr> <td>No mark</td> <td>No connector</td> </tr> <tr> <td>E</td> <td>Connector with lead wire (Length : 500 mm)</td> </tr> </table>	No mark	No connector	E	Connector with lead wire (Length : 500 mm)					
No mark	No connector								
E	Connector with lead wire (Length : 500 mm)								
⑦ For mounting manifold <table border="1" style="width: 100%;"> <tr> <td>MF</td> <td>For mounting manifold (With mounting screw, gasket)</td> </tr> </table>	MF	For mounting manifold (With mounting screw, gasket)							
MF	For mounting manifold (With mounting screw, gasket)								
(Note) No mark : Other solenoid valves than those for mounting manifold									
Connector with lead wire									
<table border="1" style="width: 100%;"> <tr> <th>Lead wire length</th> <th>Model No.</th> </tr> <tr> <td>500mm</td> <td>PC2-D24-CL5 (Standard)</td> </tr> <tr> <td>1000mm</td> <td>PC2-D24-CL10</td> </tr> </table>		Lead wire length	Model No.	500mm	PC2-D24-CL5 (Standard)	1000mm	PC2-D24-CL10		
Lead wire length	Model No.								
500mm	PC2-D24-CL5 (Standard)								
1000mm	PC2-D24-CL10								



CAUTION

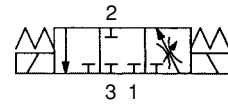
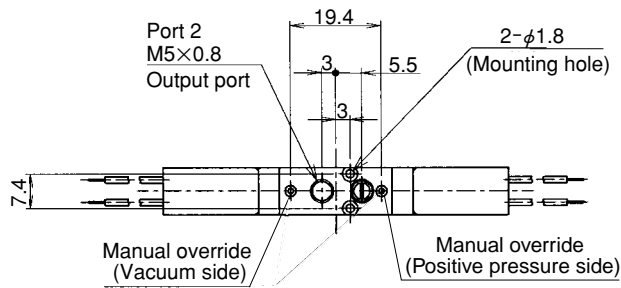
- Use positive pressure supply port within pressure range of 0 to 0.2 MPa. Do not supply vacuum pressure.
- Use vacuum supply port within pressure range of -100 to 0 kPa. Do not supply positive pressure.

3-port 3-position direct-acting solenoid valve for vacuum

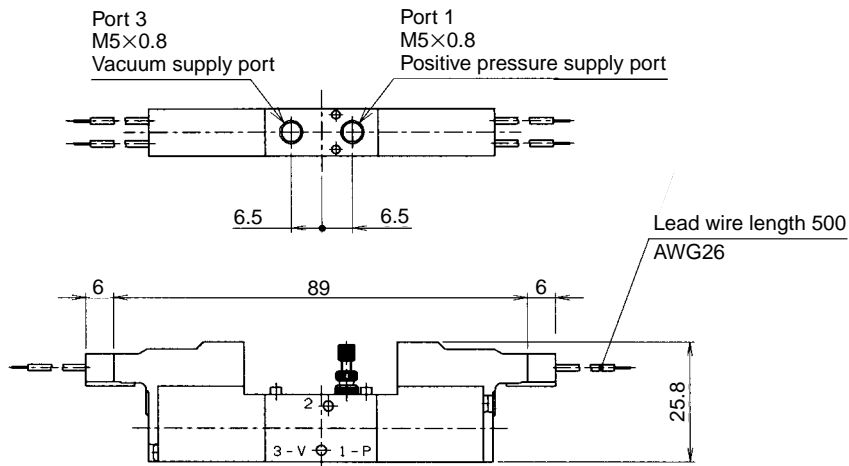
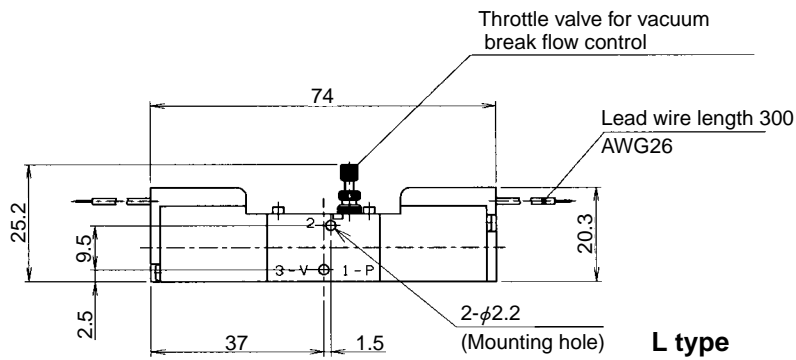
Dimensions

Solenoid valve

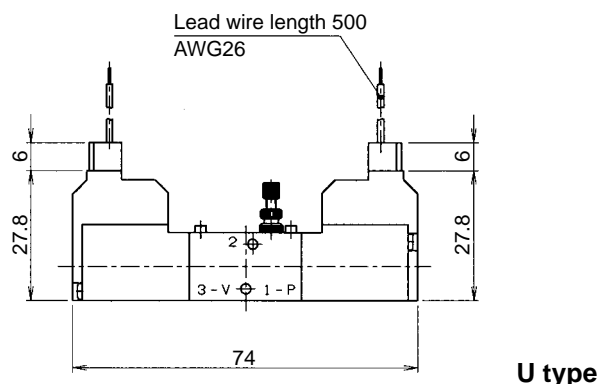
(Unit : mm)



- 1 : Positive pressure supply port
- 2 : Output port
- 3 : Vacuum supply port



P type



U type

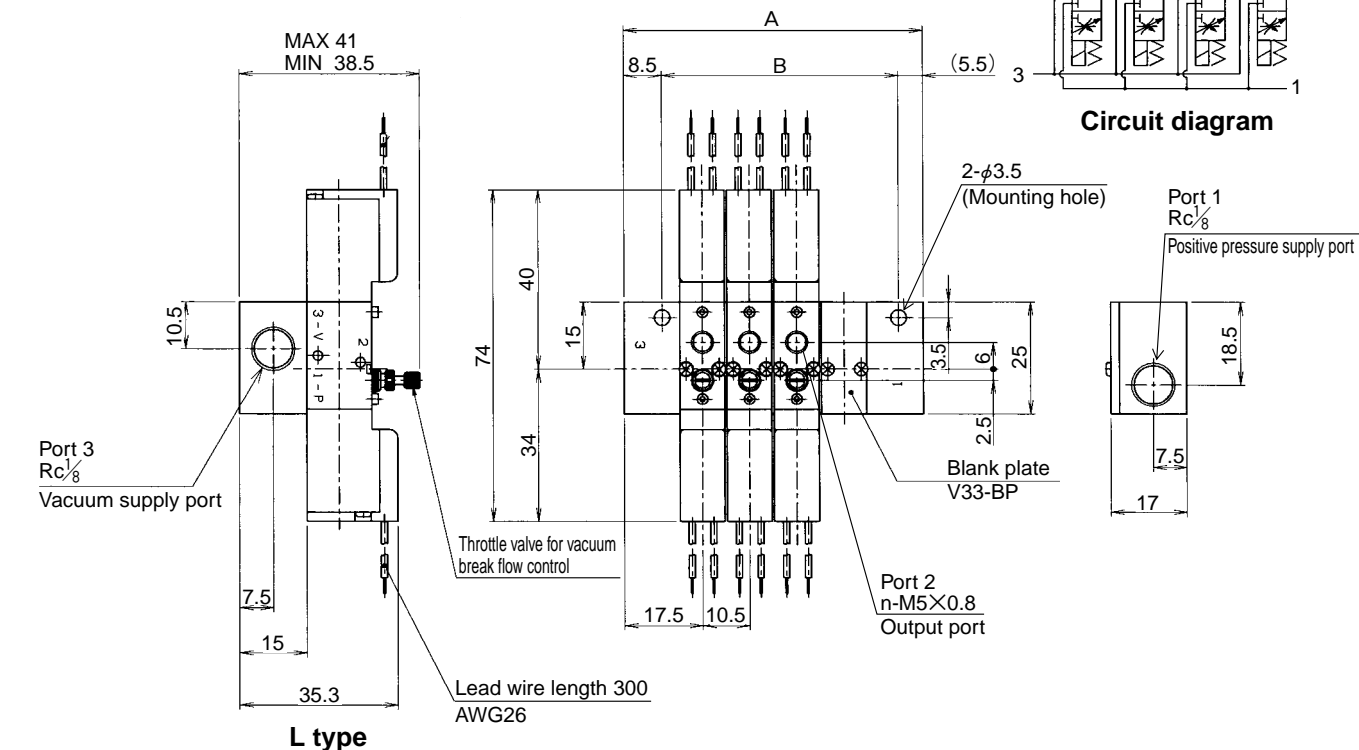
3-port 3-position direct-acting solenoid valve for vacuum

Dimensions

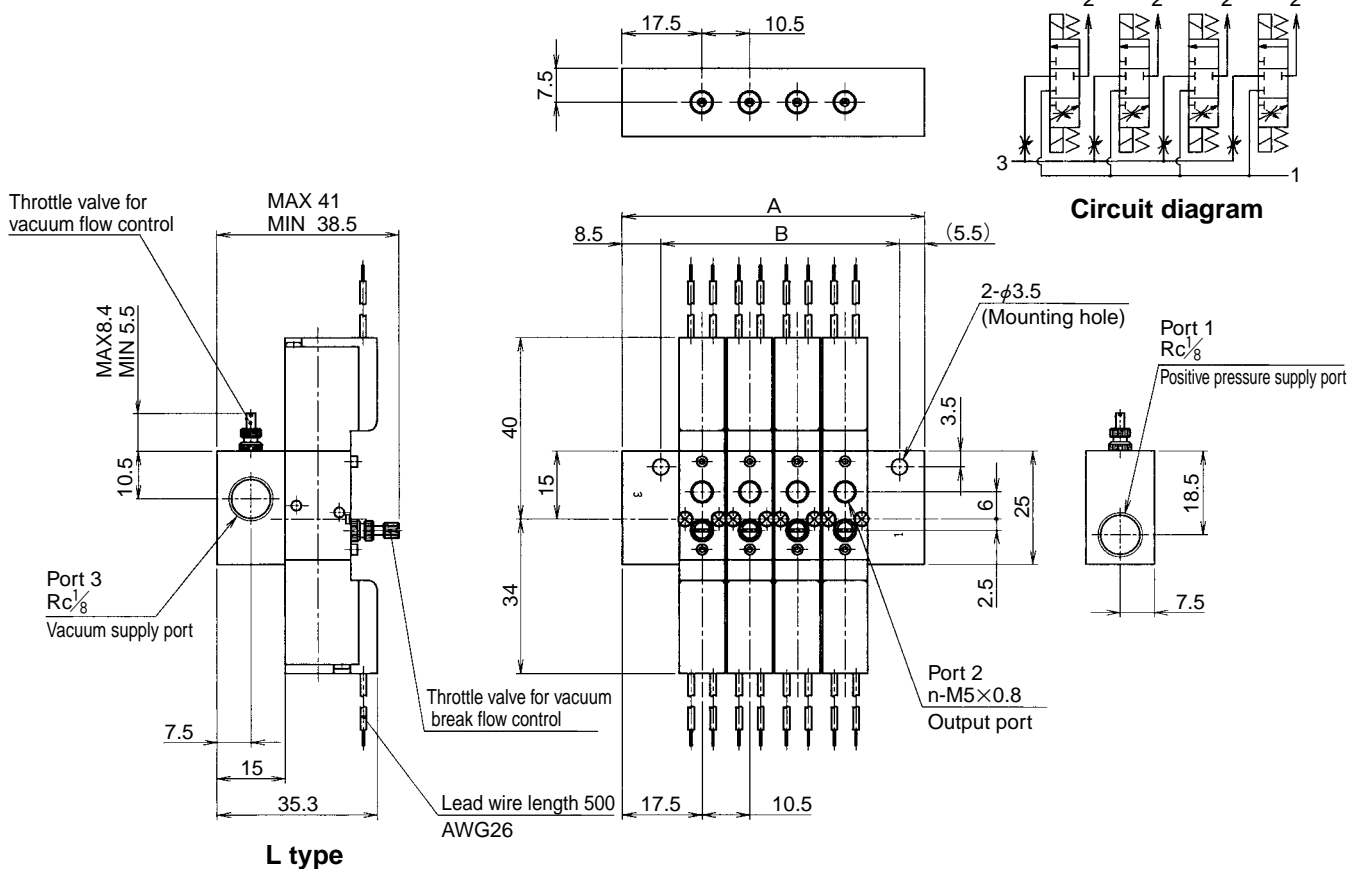
Manifold

(Unit : mm)

MFU□-V01R3CC-M5



MFU□-V01R3CCV-M5 (Order made)

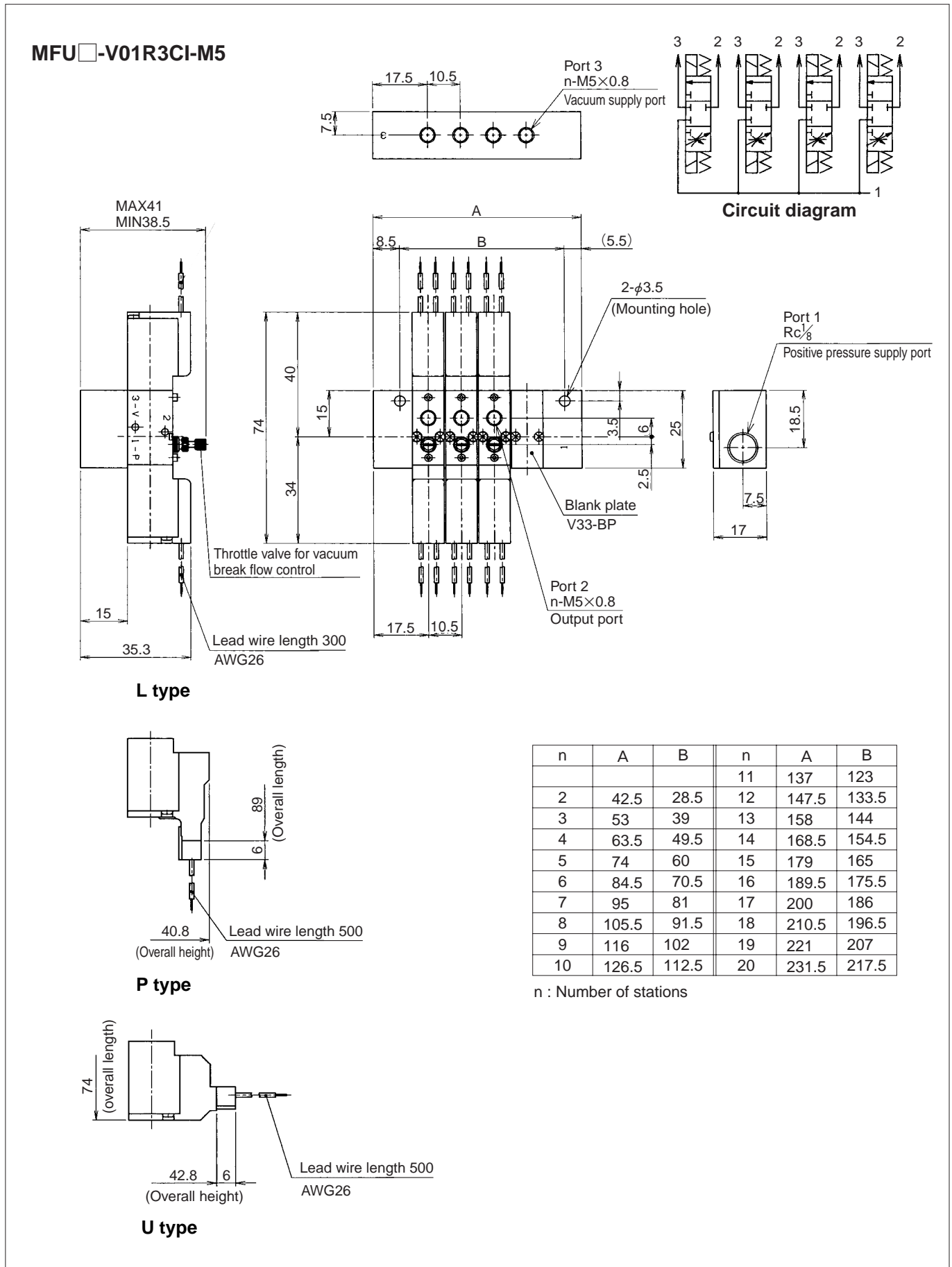


3-port 3-position direct-acting solenoid valve for vacuum

Dimensions

Manifold

(Unit : mm)



Small-sized 3-port 2-position direct-acting latching solenoid valve for vacuum

VA01PLV23 for vacuum

VA01PLP23 for vacuum break (positive pressure)



Specifications

Model No.	Unit	VA01PLV23	VA01PLP23
Fluid		Air	Air
Port size		M5	M5
Flow	Vacuum	ℓ /min (ANR)	22 (at -100kPa)
	Vacuum break	ℓ /min (ANR)	40 (at 0.5MPa)
Pressure range		-100~0kPa	0~0.5MPa
Ambient temperature	°C	-5~50	
Response time	ms	3	
Rated voltage	V	DC24	
Permissible voltage fluctuation	%	±10	
Heat resistance grade		Grade B	
Power consumption	W	Holding : 0.5 (Inrush : 2)	
Wiring		Connector with lead wire	
Mass	g	30	

(Note) When using the valve for vacuum break at less than 5°C by supplying compressed air, use dry air passing through an air dryer to prevent dew condensation and freezing.

Ordering instruction

Solenoid valve

VA01PL **V23** - **1** **P** - **M5** -

① ② ③ ④ ⑤

① Function

V23	2-position 3-port Vacuum
P23	2-position 3-port Vacuum break (Positive pressure)

② Voltage

1	DC24V
---	-------

③ Wiring specifications

P	Connector with lead wire, Side outlet (With indicator light & surge suppressor)
U	Connector with lead wire, Upside outlet (With indicator light & surge suppressor)

④ Port size

No mark	Without sub-base
M5	M5×0.8

(Note) Model without sub-base is provided with mounting screw and base gasket.

⑤ Wiring accessories

No mark	Without connector
E	Connector with lead wire (Length : 500 mm)

Manifold

MFS - V01 **V3** **CC** - **M5**

① ② ③ ④

① Number of stations

2	2 stations
:	:
10	10 stations

② Type of valve

V3	PLV23 for vacuum
P3	PLP23 for positive pressure

③ Manifold specifications

CC	Common 1, Common 3
----	--------------------

④ Port size

M5	M5×0.8
----	--------

Connector with lead wire

Lead wire length	Model No.
500mm	PC2-D24-CL5 (standard)
1000mm	PC2-D24-CL10



CAUTION

- Supply pressure of -100 to 0 kPa to vacuum supply port of VA01PLV23. Do not supply positive pressure.
- Supply pressure of 0 to 0.5 MPa to positive pressure supply port of VA01PLP23. Do not supply vacuum pressure.

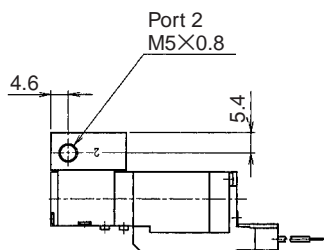
Small-sized 3-port 2-position direct-acting latching solenoid valve for vacuum

Dimensions

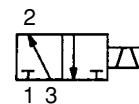
Solenoid valve

(Unit : mm)

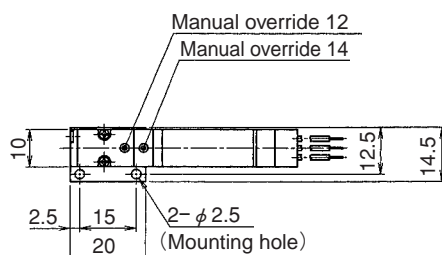
VA01PL□23



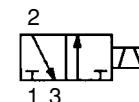
VA01PLV23



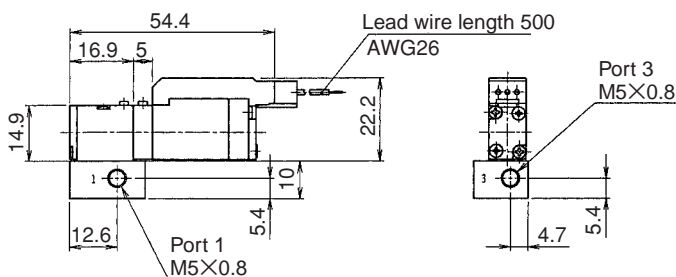
- 1 : Vacuum supply port
- 2 : Output port
- 3 : Atmospheric release port



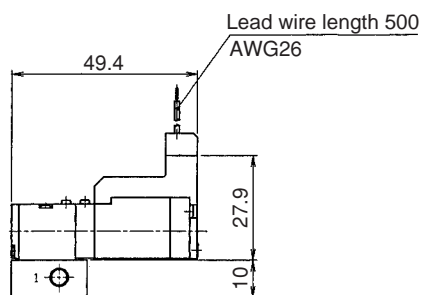
VA01PLP23



- 1 : Pressure port
- 2 : Output port
- 3 : Exhaust port



P type



U type

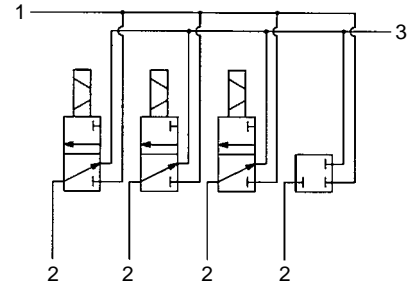
Small-sized 3-port 2-position direct-acting latching solenoid valve for vacuum

Dimensions

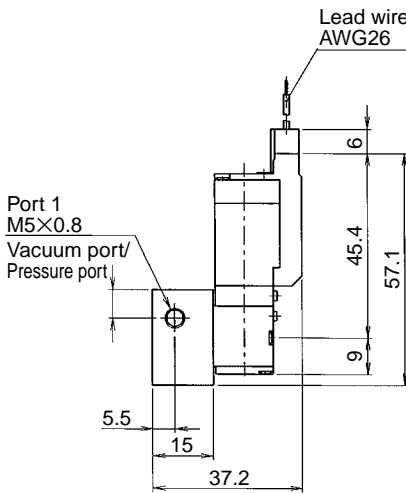
Manifold

(Unit : mm)

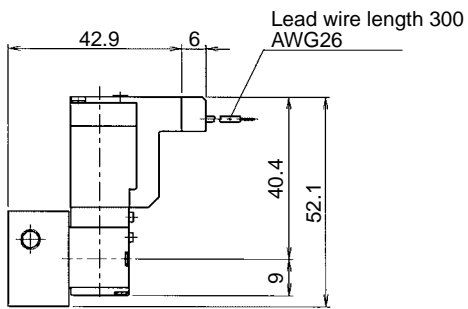
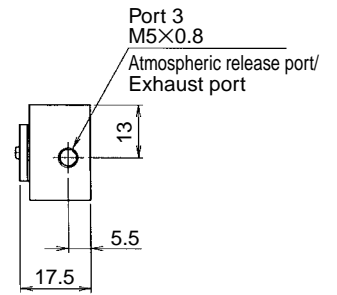
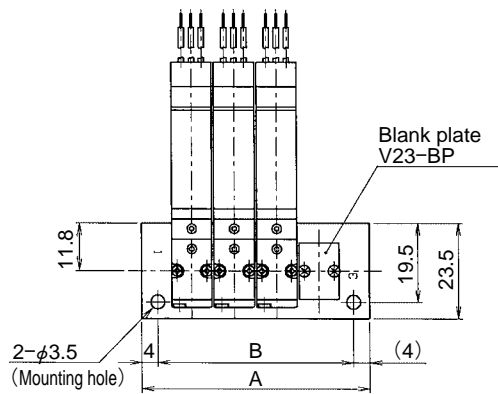
MFS□-V01□-3CC-M5



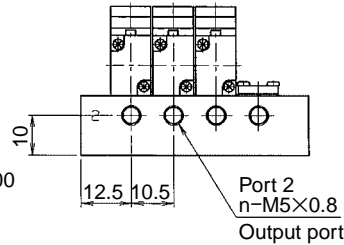
Circuit diagram



P type



U type



n	A	B
2	35.5	27.5
3	46	38
4	56.5	48.5
5	67	59
6	77.5	69.5
7	88	80
8	98.5	90.5
9	109	101
10	119.5	111.5

n : Number of stations



WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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