Miniature Direct-acting Solenoid Valves
VA01 Series
10mm width
Miniature Direct-acting Solenoid Valves
VA01 Series
10mm width
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.
  
  Improper 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 Pneumatics 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

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 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 and 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 Pneumatics beforehand.
- Remodeling the solenoid valve
  Do not remodel the solenoid valve.

**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.

**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.

[Diagram of C-R circuit]
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 Pneumatics 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.
- 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

WARNING

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

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 with solenoid valves, pay attention to piping diameter.
  When increasing the number of manifold stations, flow may be insufficient according to circumstances. In this case, supply and exhaust air 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 mount 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

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.

<table>
<thead>
<tr>
<th>Port size</th>
<th>Tightening torque (N-m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>0.3~0.5</td>
</tr>
<tr>
<td>M5</td>
<td>1.5~2.0</td>
</tr>
<tr>
<td>R, Rc 1/8</td>
<td>7.0~9.0</td>
</tr>
<tr>
<td>R, Rc 1/4</td>
<td>12~14</td>
</tr>
</tbody>
</table>

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.

APPLICABLE TUBES

CAUTION

- Used nylon tubes or polyurethane tubes made by KURODA Pneumatics 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 Pneumatics.

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.
Solenoid Valves for Vacuum/Common Instructions

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 an 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.

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 Pneumatics beforehand.

Maintenance and Inspection

CAUTION

- Draining
To keep the quality of air to a certain level, drain the air filter at periodical intervals.
- Check and clean the vacuum filter and silencer every-day, and also change the element periodically.

Silting will deteriorate the performance.

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 µm 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 failure 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.
VA01 SERIES/INDIVIDUAL INSTRUCTIONS

Be sure to read them before use.
Also refer to Par. "For Safety Use" and common instructions.

MOUNTING

! CAUTION

- When valve is mounted on sub-base or manifold, tighten set screws by the following clamping torque.

<table>
<thead>
<tr>
<th>Valve No.</th>
<th>Screw size</th>
<th>Tightening torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA01PSV23</td>
<td>M1.7</td>
<td>0.10~0.14</td>
</tr>
<tr>
<td>VA01PSP23</td>
<td>M1.7</td>
<td>0.12~0.20</td>
</tr>
<tr>
<td>VA01PLV23</td>
<td>M2</td>
<td>0.12~0.20</td>
</tr>
<tr>
<td>VA01PLP23</td>
<td>M2</td>
<td>0.12~0.20</td>
</tr>
<tr>
<td>VA01PEP34A</td>
<td>M1.7</td>
<td>0.12~0.20</td>
</tr>
<tr>
<td>VA01PSC24</td>
<td>M1.7</td>
<td>0.12~0.20</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>M2</td>
<td>0.12~0.20</td>
</tr>
</tbody>
</table>

ELECTRICAL WAVEFORM

- In order to realize quick response time, electrical waveform of VA01PSV23, VA01PSP23 and VA01PEP34A are the following.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Power consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>24V</td>
<td>0W</td>
</tr>
<tr>
<td>0V</td>
<td>1W</td>
</tr>
<tr>
<td>2W</td>
<td>0W</td>
</tr>
</tbody>
</table>

SIMULTANEOUS ENERGIZING

! CAUTION

- Do not energize terminal 12 and 14 at the same time in case of using latching solenoid valve.

Latching solenoid valve has interlock circuit. In case of simultaneous energizing, the switching position is held, however, please note that indicator light is sometimes switched on.

For example, if electricity is turned on for terminal 12 (green), and then it is turned on for terminal 14 without turning off for terminal 12, valve keeps the air way position of terminal 12 side, however, indicator light of terminal 14 (red) side might be switched on.

In this case, turn off electricity for terminal 14 and indicator light of terminal 12 side will be switched on.

CONTINUOUS ENERGIZING

! WARNING

- Do not energize continuously for long time to VA01PSV23/24 (standard) and VA01PLV23/24.

In case of continuous energizing to the valve or continuous operating in short tact time, solenoid will generate heat, and seal and gasket will be damaged.

Therefore, air leak or wrong operation might be caused.

If continuous energizing or continuous operating in short tact time operation is necessary for those valves, please contact KURODA Pneumatics.

! CAUTION

- Latching 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 energizing time (50ms) or over.

VACUUM BREAK ON VA01PEP34A

! CAUTION

- Vacuum break with low air pressure

If operating pressure is less than 0.05MPa, enough vacuum break pressure will not output because of air leakage from atmospheric release port. (VA01PEP34A type valve has atmospheric release port, and leakage from atmospheric release port is originally on the assumption.)

KEEPING VACUUM PRESSURE

! CAUTION

- The solenoid valve cannot keep vacuum pressure for a long period of time when electricity is OFF.

As the solenoid valve is designed to allow a certain small degree of air leak, it cannot be used to keep vacuum pressure for a long period of time during electrical power is not supplied to the valve.
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)

CAUTION

• Make connection by adjusting polarity to 和 signs on the lamp cover.
• VA01P[23, VA01PLC/RLC24
  NPN type

内部电路图

• VA01PSP23/VA01PSV23/VA01PEP34A

• VA01PSC24/VA01RDP33

• VA01HPSC24
VA01 SERIES/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>
- VA01PL 23
  ① Power is supplied to red (+) lead wire and yellow (-) lead wire. Port 1 will be closed.
  ![Diagram 1]
  Light green indicator light

  ② Power is supplied to red (+) lead wire and black (-) lead wire. Air way is connected between port 1 and port 2.
  ![Diagram 2]
  Light red indicator light

- VA01PLC/RLC24
  ① Power is supplied to red (+) lead wire and yellow (-) lead wire. Air way is connected between port 1 and port 2, and port 4 and port 3/5.
  ![Diagram 3]
  Light green indicator light

  ② Power is supplied to red (+) lead wire and black (-) lead wire. Air way is connected between port 1 and port 4, and port 2 and port 3/5.
  ![Diagram 4]
  Light red indicator light

MANUAL OPERATION

CAUTION
- If valve is manually operated, the application will be started. Confirm that there is no problem or danger on the application before manual operation of valve.
  - VA01PL 23 valve is switched the air way position by the following manual operation.
    ① Push blue manual button on the valve body. Port 1 will be closed.
    ![Diagram 5]
    Light green indicator light
    ② Push white manual button on the valve body. Air way is connected between port 1 and port 2.
    ![Diagram 6]
  - VA01PLC/RLC24 valve is switched the air way position by the following manual operation.
    ① Push manual button “a” (blue) on the valve body. Air way is connected between port 1 and port 2, and port 4 and port 3/5.
    ![Diagram 7]
    Light green indicator light
    ② Push manual button “b” on the valve body. Air way is connected between port 1 and port 4, and port 2 and port 3/5.
    ![Diagram 8]
**VA01 SERIES/INDIVIDUAL INSTRUCTIONS**

Be sure to read them before use.
Also refer to Par. "For Safety Use" and common instructions.

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**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 attract the movable iron core to 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.

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[Diagram showing the latch type solenoid valve with labels for B, A, 14, 12, COM, CA, FA, FM, F, Spring, Movable iron core, Coil, Fixed iron core.]

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10
For vacuum and positive pressure control/ blow off operation

Miniature size 3-port 2-position direct-acting solenoid valve

**VA01PSV23** for vacuum  
**VA01PSP23** for positive pressure

Miniature size 3-port 2-position direct-acting latching solenoid valve

**VA01PLV23** for vacuum  
**VA01PLP23** for positive pressure

- **Two types of models for vacuum control (white body) and positive pressure (black body)**  
  Easy to figure out vacuum control or positive pressure valve from valve body color.

- **Ultra quick response time**  
  Response time of latch type solenoid is 2ms and single solenoid is 3ms for turning on. Reliable stable operation is available. (VA01PSV23-1_R/VA01PSP 23-1_R)  
  Renewal electric circuit make response time up. Valve react high response by order.

- **Low power consumption**  
  New single solenoid valve mount low energy circuit and low power consumption is realized.  
  Hold is 1W (Inrush: 2W).  
  Keep the solenoid heat as low temperature and apply continuous energizing.  
  Compact valve is large flow (Cv 0.054).

- **Compact, light weight and large flow**  
  Very compact plastic body in 10mm width, weighting only 25g. (with sub-base)  
  Light and compact valve contribute for compact and light unit when valves are mounted on mounting head.

- **Oil free type is standardized. Extremely low particle.**  
  The original poppet structure, which as no friction parts without lubricating oil, realizes the extremely low particle from the valve.

- **One coil latch type solenoid**  
  Newly developed one coil latch type solenoid is incorporated!  
  Detent mechanism to hold switching position with permanent magnet in one coil solenoid assures safety operations such as keeping suction by vacuum.
Miniature size 3-port 2-position direct-acting solenoid valve for vacuum

VA01PS/LV23 for vacuum
VA01PS/LP23 for vacuum break (positive pressure)

Poppet seal/Sub-base piping type

Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Unit</th>
<th>VA01PSV23</th>
<th>VA01PSP23</th>
<th>VA01PLV23</th>
<th>VA01PLP23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td></td>
<td>Vacuum</td>
<td>Non-lubricated air</td>
<td>Vacuum</td>
<td>Non-lubricated air</td>
</tr>
<tr>
<td>Port size</td>
<td></td>
<td>M5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sonic conductance (C)</td>
<td>dm³(s•bar)</td>
<td>0.2</td>
<td>0.12</td>
<td>0.2</td>
<td>0.12</td>
</tr>
<tr>
<td>Effective area (Reference)</td>
<td>mm²</td>
<td>1.0</td>
<td>0.6</td>
<td>1.0</td>
<td>0.6</td>
</tr>
<tr>
<td>Cv value (Reference)</td>
<td></td>
<td>0.054</td>
<td>0.033</td>
<td>0.054</td>
<td>0.033</td>
</tr>
<tr>
<td>Pressure range</td>
<td></td>
<td>−100~0kPa</td>
<td>0~0.5MPa</td>
<td>−100~0kPa</td>
<td>0~0.5MPa</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>°C</td>
<td>−10~50</td>
<td>−5~50</td>
<td>−10~50</td>
<td>−5~50</td>
</tr>
<tr>
<td>Response time</td>
<td></td>
<td>ON ms 3</td>
<td>OFF ms 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. energizing time</td>
<td>ms</td>
<td>—</td>
<td>50</td>
<td>—</td>
<td>50</td>
</tr>
<tr>
<td>Shock resistance/vibration resistance</td>
<td>m/s²</td>
<td>150/50</td>
<td>150/50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>g</td>
<td>25</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(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.

Electrical Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Unit</th>
<th>VA01PSV23</th>
<th>VA01PSP23</th>
<th>VA01PLV23</th>
<th>VA01PLP23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>V</td>
<td>DC24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>%</td>
<td>±10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat resistance grade</td>
<td></td>
<td>JIS grade B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>W</td>
<td>1 (Holding), 2 (Inrush)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wiring</td>
<td>g</td>
<td>Lead wire, connector with lead wire</td>
<td>Connector with lead wire</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Miniature size 3-port 2-position direct-acting solenoid valve

Ordering instruction

Solenoid valve

Function

PSV23: 2 position single solenoid/for vacuum

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

PLV23: 2 position latching solenoid/for vacuum

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

PSP23: 2 position single solenoid/for vacuum break

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

PLP23: 2 position latching solenoid/for vacuum break

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

Voltage

DC24V

Wiring specifications

Case of VA01PS23

L Lead wire

PR Connector with lead wire, Side outlet (With indicator light & surge suppressor)

UR Connector with lead wire, Upside outlet (With indicator light & surge suppressor)

Case of VA01PL23

NPN type

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

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

PNP type

PM Connector with lead wire, Side outlet (With indicator light & surge suppressor)

UM Connector with lead wire, Upside outlet (With indicator light & surge suppressor)

Wiring accessories

No mark Without connector

E Connector with lead wire (Length: 500mm)

Port size

No mark Without sub-base

L5 M5X0.8 (Sub-base with mounting screw hole, M5)

(No) Model without sub-base is provided with mounting screws and a base gasket.

Manifold

Number of stations

2 2 stations

10 10 stations

Type of valve

V3 P23 for vacuum

P3 P23 for positive pressure

Manifold specifications

CC Common SUP, common EXH

Blank plate (with 2 screws and a gasket)

Model No. V23-BP

Connector with lead wire

<table>
<thead>
<tr>
<th>Lead wire length</th>
<th>PSV/PSP</th>
<th>Model No.</th>
<th>PLV/PLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>500mm</td>
<td>PC2-D24-CL5 (Standard)</td>
<td>PCL2-D24-CL5 (Standard)</td>
<td></td>
</tr>
<tr>
<td>1000mm</td>
<td>PC2-D24-CL10</td>
<td>PCL2-D24-CL10</td>
<td></td>
</tr>
<tr>
<td>3000mm</td>
<td>PC2-D24-CL30</td>
<td>PCL2-D24-CL30</td>
<td></td>
</tr>
</tbody>
</table>
Miniature size 3-port 2-position direct-acting solenoid valve

Ordering instruction

VA01PS□23-1□E-L5 (Sub-base with mounting screw hole, M3)

VA01PSV23

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

VA01PSP23

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

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

Port 1
M5×0.8
Vacuum port/Pressure port

Port 2
M5×0.8
Output port

Port 3
M5×0.8
Atmospheric release port/Exhaust port

Manual button
(Mounting hole)

L type

P type

U type

4.6
5.4

Port 2
M5×0.8
Output port

Manual button
(Mounting hole)

VA01PSV23

2
1
3

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

VA01PSP23

2
1
3

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

4.7
5.4

Lead wire length 300
AWG26

Lead wire length 500
AWG26

Lead wire length 500
AWG26

Vacuum port/Pressure port

L type

P type

U type

3.5
15
22

41.9
30.5

12.6
5.4

5.4
4.7

32
48.4

37.8
6

41.9

Manual button
(Mounting hole)

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

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

Ordering instruction

(Unit : mm)
Miniature size 3-port 2-position direct-acting solenoid valve

**Dimensions**

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

Lead wire length 500
AWG26

Port 3
M5x0.8
Atmospheric release port/
Exhaust port

Port 1
M5x0.8
Vacuum port/Pressure port

Lead wire length 500
AWG26

Port 2
M5x0.8
Output port

Manual button 12
Manual button 14
Black 14
Yellow 12
Red COM

2.5 x 3.5
(Mounting hole)
Miniature size 3-port 2-position direct-acting solenoid valve

**Dimensions**

**Manifold**

![Diagram of manifold with dimensions and port descriptions]

- **Port 1**: M5 X 0.8 Vacuum port/Pressure port
- **Port 2**: n-M5 X 0.8 Output port
- **Port 3**: M5 X 0.8 Atmospheric release port/Exhaust port

<table>
<thead>
<tr>
<th>n</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>35.5</td>
<td>27.5</td>
</tr>
<tr>
<td>3</td>
<td>46</td>
<td>38</td>
</tr>
<tr>
<td>4</td>
<td>56.5</td>
<td>48.5</td>
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<tr>
<td>5</td>
<td>67</td>
<td>59</td>
</tr>
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<td>6</td>
<td>77.5</td>
<td>69.5</td>
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<tr>
<td>7</td>
<td>88</td>
<td>80</td>
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<tr>
<td>8</td>
<td>98.5</td>
<td>90.5</td>
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<tr>
<td>9</td>
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<td>101</td>
</tr>
<tr>
<td>10</td>
<td>119.5</td>
<td>111.5</td>
</tr>
</tbody>
</table>

n : Number of stations

**Lead wire length**

- 500 AWG26
- 300 AWG26

**Mounting hole**: 2-4.35
Miniature size 4-port 2-position direct-acting solenoid valve

VA01PSC24  Single solenoid, Sub-base piping type
VA01PLC24  Latching solenoid, Sub-base piping type
VA01RSC24  Single solenoid, In-line piping type
VA01RLC24  Latching solenoid, In-line piping type

- Exceedingly long life. 500 million cycles. (Under the test condition of KURODA Pneumatics.)
  The reliable double poppets structure, which has the reliance over many years in “PC1 series” is applied.

- Ultra quick response time/Stable operation
  Balanced poppets and direct solenoid mechanism make it available for quick and stable response time.
  (Latch solenoid type: ON/OFF 2±1ms, Single solenoid type: ON/OFF 3±1ms (VA01HPSC24). Under the test condition of KURODA Pneumatics.)

- Compact/Light weight/Large flow
  Compact valve (Body width 10mm) is possible to operate large flow (C value 0.2dm³/(s·bar). Furthermore, resin body (Sub-base type) realizes light weight. (Single solenoid type with sub-base: 33.5g)

- Both vacuum and positive pressure are available.
  Balanced poppets structure operates both vacuum and positive pressure (–100kPa~0.8MPa) in one valve.

- Oil free is standardized, and extremely low particle. Clean !!
  Double poppets structure, which has no friction parts without lubricating oil, realizes the extremely clean air blow. Furthermore, the direct operated solenoid has no valve breathing and pilot air exhaust, and the valve does not pollute outside environment.

- One coil latch type solenoid
  Newly developed one coil latch type solenoid realizes more compact valve body. (20% less volume. Ratio of KURODA Pneumatics)
  Detent mechanism, which holds the air switching positions by permanent magnet, is ideal for keeping vacuum position in case of power cut.
Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Fluid</th>
<th>Non-lubricated air</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA01PSC24</td>
<td>Port size</td>
<td>M5</td>
</tr>
<tr>
<td>VA01PSC24</td>
<td>Sonic conductance (C)</td>
<td>dm³/(s·bar)</td>
</tr>
<tr>
<td>VA01HPSC24</td>
<td>Critical pressure ratio</td>
<td>0.3</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Effective area (Reference)</td>
<td>0.2</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>(1)</td>
<td>—</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Cv value (Reference)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Ambient temperature</td>
<td>—5 to 50°C</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Pressure range</td>
<td>−100kPa to −0.8 MPa</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Response time</td>
<td>ms</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>ON</td>
<td>4.5</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>OFF</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Manual override</td>
<td>Non-lock type push button</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Min. energizing time</td>
<td>3 ms</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Mounting position</td>
<td>Free</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Shock resistance/vibration resistance</td>
<td>ms²</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Mass</td>
<td>g</td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>33.5</td>
<td>36.0</td>
</tr>
</tbody>
</table>

(Note) • Sonic speed conductance, critical pressure ratio, effective area and Cv value shown above are value between port 1 and 4.
• When temperature of valve site goes down below 5°C, complete dry air shall be supplied to prevent from freezing.
• Response time in bracket ( ) shows with surge suppressor.

Electrical Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Rated voltage</th>
<th>VA01PSC24</th>
<th>VA01HPSC24</th>
<th>VA01PLC24</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA01PSC24</td>
<td>DC24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VA01HPSC24</td>
<td>±10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>JIS grade B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Lead wire, Connector with lead wire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Diode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>Varistor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VA01PLC24</td>
<td>LED</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Note) • Surge suppressor and indicator light are not available for Lead wire type.
4-port 2-position direct-acting solenoid valve

Ordering instruction

VA01PSC24 - 1PE - M5

1. **Function**
   - VA01PSC24: Standard
   - VA01HPSC24: Quick response

2. **Voltage**
   - 1 DC24V

3. **Wiring specifications**
   - Case of VA01PSC24, VA01HPSC24
     - 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)

4. **Wiring accessories**
   - No mark: Without connector
   - E: Connector with lead wire (Length: 500mm)

5. **Port size**
   - No mark: Without sub-base
   - M3: Without sub-base, M3 x 0.5 body ( manifold MFU type only)
   - M5: M5 x 0.8 (Sub-base with mounting screw hole, M2)
   - L5: M5 x 0.8 (Sub-base with mounting screw hole, M3)

6. **Wiring accessories**
   - Case of VA01PLC24
     - NPN type
     - P: Connector with lead wire, Side outlet (With indicator light & surge suppressor)
     - U: Connector with lead wire, Upside outlet (With indicator light & surge suppressor)

    **Connector with lead wire**
    | Lead wire length | Model No.          |
    |------------------|--------------------|
    | 500mm            | PC2-D24-CL5 (Standard) |
    | 1000mm           | PC2-D24-CL10       |
    | 3000mm           | PC2-D24-CL30       |

7. **Constructions**
   - VA01PSC24
   - VA01PLC24

8. **Main components**
   - No.
   - Description
   - Material
     - ① Body: Synthetic resins
     - ② Poppet ass' y: —
     - ③ Manual override 14: Copper alloy
     - ④ Manual override 12: Synthetic resins
     - ⑤ Solenoid ass' y: —
     - ⑥ Sub-base: Aluminium alloy
     - ⑦ Valve seat E: Copper alloy
     - ⑧ Valve seat S: Copper alloy
     - ⑨ Spring V: Stainless steel
     - ⑩ Spring: Stainless steel
     - ⑪ Base gasket: NBR+Stainless steel
4-port 2-position direct-acting solenoid valve

Dimensions
VA01PSC24-1※E-M5, VA01HPSC24-1※E-M5 (Sub-base with mounting screw hole, M2)

(Unit : mm)
4-port 2-position direct-acting solenoid valve

Dimensions
VA01PSC24-1※E-L5, VA01HPSC24-1※E-L5 (Sub-base with mounting screw hole, M3)

(Unit : mm)
4-port 2-position direct-acting solenoid valve

Dimensions
VA01PLC24-1※E-M5 (Sub-base with mounting screw hole, M2)

(Unit : mm)
4-port 2-position direct-acting solenoid valve

Dimensions
VA01PSC24-1※E-L5 (Sub-base with mounting screw hole, M3)

(Unit : mm)
Individual Wiring Type Manifold

**MF○-V01**

**Manifold specifications**

<table>
<thead>
<tr>
<th>Type of manifold</th>
<th>MFS</th>
<th>MFD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port 1</td>
<td>M5 (Both sides)</td>
<td>Rc1/8 (Both sides)</td>
</tr>
<tr>
<td>Port 3/5</td>
<td>M5 (Both sides)</td>
<td>Rc1/8 (Both sides)</td>
</tr>
<tr>
<td>Port 2, 4</td>
<td>M3</td>
<td>M5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of stations</th>
<th>2~20</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Mountable solenoid valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA01PSC24</td>
</tr>
<tr>
<td>VA01HPSC24</td>
</tr>
<tr>
<td>VA01PLC24</td>
</tr>
</tbody>
</table>

| Blank plate          | PC1-BP |

**Ordering instruction**

**Manifold**

1. Type of manifold
   - Port 2, 4
     - MFS: Manifold body side ported (Ports 1, 3/5 on both sides)
     - MFD: Manifold body side ported (Ports 1, 3/5 on one side)

2. Number of stations
   - 2: 2 station
   - 20: 20 station

3. Mountable solenoid valve
   - V01PV: VA01 series

4. Manifold specifications
   - CC: Common SUP, Common EXH

5. Option
   - No mark
   - Standard
   - B: With bracket

6. Port size of port 2, 4
   - M3: M3x0.5 (Only MFS)
   - M5: M5x0.8

**Blank plate (with 2 screws and a gasket)**

- Model No.: V24-BP

**Ordering information**

To order the valves with the manifold, use the notation described on the right.
Specify model numbers and quantities for manifold and valves.

**[Example]**

- MFS5-V01PVCC-M5
- VA01PSC24-1P—2pcs.
- VA01PLC24-1P—3pcs.
4-port 2-position direct-acting solenoid valve

Ordering instruction

Mountable solenoid valve

VA01PSC24 - 1P£

① Function
VA01PSC24 : Standard
VA01HPSC24 : Quick response

② Voltage
1 DC24V

③ Wiring
● Case of VA01PSC24, VA01HPSC24

<table>
<thead>
<tr>
<th>L</th>
<th>Lead wire (For VA01PSC24)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Connector with lead wire, Side outlet (With indicator light &amp; surge suppressor)</td>
</tr>
<tr>
<td>U</td>
<td>Connector with lead wire, Upside outlet (With indicator light &amp; surge suppressor)</td>
</tr>
</tbody>
</table>

● Case of VA01PLC24

NPN type

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

PNP type

| PM | Connector with lead wire, Side outlet (With indicator light & surge suppressor) |
| UM | Connector with lead wire, Upside outlet (With indicator light & surge suppressor) |

④ Wiring accessories

<table>
<thead>
<tr>
<th>No mark</th>
<th>Without connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Connector with lead wire (Length:500mm)</td>
</tr>
</tbody>
</table>

Connector with lead wire

<table>
<thead>
<tr>
<th>Lead wire length</th>
<th>Model No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSC</td>
<td>PLC</td>
</tr>
<tr>
<td>500mm</td>
<td>PC2-D24-CL5 (Standard)</td>
</tr>
<tr>
<td>1000mm</td>
<td>PC2-D24-CL10</td>
</tr>
<tr>
<td>3000mm</td>
<td>PC2-D24-CL30</td>
</tr>
</tbody>
</table>
4-port 2-position direct-acting solenoid valve

Dimensions

MFS□-V01PVCC(B)-M3

(Unit : mm)

<table>
<thead>
<tr>
<th>n</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>41</td>
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<tr>
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<td>94</td>
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<td>9</td>
<td>111</td>
<td>104</td>
</tr>
<tr>
<td>10</td>
<td>121</td>
<td>114</td>
</tr>
</tbody>
</table>

n: Number of stations
4-port 2-position direct-acting solenoid valve

Dimensions
MFS□-V01PVCC-M5 (Unit : mm)

VA01PLC24-1P
VA01PLC24-1L
VA01PLC24-1U
VA01PSC24-1P
VA01PSC24-1L
VA01PSC24-1U
VA01HPSC24-1P
VA01HPSC24-1L
VA01HPSC24-1U

Port1
Rc1/8
Port3/5
Rc1/8

Port2
Port4

2×Φ3.5 (Mounting hole)

Blank plate (V24-BP)

Lead wire length 500
AWG26

Lead wire length 300
AWG26

n: Number of stations

n A B n A B
2 43 34 12 133 124
3 53 44 13 153 144
4 63 54 14 163 154
5 73 64 15 174 164
6 83 74 16 184 174
7 93 84 17 194 186
8 103 94 18 204 196
9 113 104 19 214 206
10 123 114 20 225 216
4-port 2-position direct-acting solenoid valve

Dimensions
MFD□-V01PVCC(B)-M5

(Unit: mm)

Port 1
Rc1/4

Port 3/5
Rc1/4

Blank plate (PC1-BP)

Port 4
M5×0.8

Mounting bracket

Port 2
M5×0.8

n: Number of stations

<table>
<thead>
<tr>
<th>n</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>3</td>
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<td>104</td>
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<tr>
<td>10</td>
<td>133</td>
<td>114</td>
</tr>
</tbody>
</table>

VA01PLC24-1P
VA01PSC24-1P
VA01HPSC24-1P

VA01PLC24-1U
VA01PSC24-1U
VA01HPSC24-1U

VA01PSC24-1L
## Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Unit</th>
<th>VA01RSC24</th>
<th>VA01HRSC24</th>
<th>VA01RLC24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Port size</td>
<td></td>
<td>M3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sonic conductance (C)</td>
<td>dm³/(s·bar)</td>
<td>0.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical pressure ratio</td>
<td></td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective area (Reference)</td>
<td>mm²</td>
<td>(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cv value (Reference)</td>
<td></td>
<td>(0.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>℃</td>
<td>–5~50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure range</td>
<td></td>
<td>–100kPa~0.8 MPa</td>
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</tr>
<tr>
<td>Response time</td>
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<td></td>
</tr>
<tr>
<td>ON</td>
<td>ms</td>
<td>4.5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>OFF</td>
<td>ms</td>
<td>1 (4.5)</td>
<td>1.5</td>
<td>2</td>
</tr>
<tr>
<td>Manual override</td>
<td></td>
<td>Non-lock type push button</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. energizing time</td>
<td>ms</td>
<td>—</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Mounting position</td>
<td></td>
<td>Free</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shock resistance/vibration resistance</td>
<td>m/s²</td>
<td>150/30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>g</td>
<td>26.3</td>
<td>28.9</td>
<td></td>
</tr>
</tbody>
</table>

(Note) • Sonic speed conductance, critical pressure ratio, effective area and Cv value shown above are value between port 1 and 4.
• When temperature of valve site goes down below 5℃, complete dry air shall be supplied to prevent from freezing.
• Responce time in bracket ( ) shows with surge suppressor.

## Electrical Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Unit</th>
<th>VA01RSC24</th>
<th>VA01HRSC24</th>
<th>VA01RLC24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>V</td>
<td>DC24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>%</td>
<td>±10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>W</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Heat resistance grade</td>
<td></td>
<td>JIS grade B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wiring</td>
<td></td>
<td>Lead wire, Connector with lead wire</td>
<td>Connector with lead wire</td>
<td></td>
</tr>
<tr>
<td>Surge suppressor</td>
<td></td>
<td>Diode</td>
<td></td>
<td>Varistor</td>
</tr>
<tr>
<td>Indicator light</td>
<td></td>
<td>LED</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Note) • Surge suppressor and indicator light are not available for Lead wire type.
4-port 2-position direct-acting solenoid valve

Ordering instruction

Function
- VA01RSC24: Standard
- VA01HRSC24: Quick response

Wiring specifications
- **Case of VA01RSC24, VA01HRSC24**
  - **L** Lead wire (For VA01PSC24)
  - **P** Connector with lead wire, Side outlet (With indicator light & surge suppressor)
  - **U** Connector with lead wire, Upside outlet (With indicator light & surge suppressor)

- **Case of VA01RLC24**
  - NPN type
    - **P** Connector with lead wire, Side outlet (With indicator light & surge suppressor)
    - **U** Connector with lead wire, Upside outlet (With indicator light & surge suppressor)
  - PNP type
    - **PM** Connector with lead wire, Side outlet (With indicator light & surge suppressor)
    - **UM** Connector with lead wire, Upside outlet (With indicator light & surge suppressor)

Wiring accessories
- **No mark** Without connector
- **E** Connector with lead wire (Length: 500mm)

Port size
- M3
- M3x0.5

Voltage
- **1** DC24V

Wiring accessories

Connector with lead wire

<table>
<thead>
<tr>
<th>Lead wire length</th>
<th>Model No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>500mm</td>
<td>RSC</td>
</tr>
<tr>
<td></td>
<td>PC2-D24-CL5 (Standard)</td>
</tr>
<tr>
<td>1000mm</td>
<td>RLC</td>
</tr>
<tr>
<td></td>
<td>PCL2-D24-CL5 (Standard)</td>
</tr>
<tr>
<td>3000mm</td>
<td>RLC</td>
</tr>
<tr>
<td></td>
<td>PCL2-D24-CL10</td>
</tr>
<tr>
<td></td>
<td>PCL2-D24-CL30</td>
</tr>
</tbody>
</table>

Constructions

VA01RSC24

Main components

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminium alloy</td>
</tr>
<tr>
<td>2</td>
<td>Poppet ass’y</td>
<td>–</td>
</tr>
<tr>
<td>3</td>
<td>Manual override 14</td>
<td>Copper alloy</td>
</tr>
<tr>
<td>4</td>
<td>Manual override 12</td>
<td>Synthetic resins</td>
</tr>
<tr>
<td>5</td>
<td>Solenoid ass’y</td>
<td>–</td>
</tr>
<tr>
<td>6</td>
<td>Valve seat E</td>
<td>Copper alloy</td>
</tr>
<tr>
<td>7</td>
<td>Valve seat S</td>
<td>Copper alloy</td>
</tr>
<tr>
<td>8</td>
<td>Spring V</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>9</td>
<td>Spring</td>
<td>Stainless steel</td>
</tr>
</tbody>
</table>
4-port 2-position direct-acting solenoid valve

Dimensions
VA01RSC24, VA01HRSC24

(Unit : mm)
### 4-port 2-position direct-acting solenoid valve

#### Dimensions

**VA01RLC24**

(Unit: mm)

<table>
<thead>
<tr>
<th>Port 1</th>
<th>Port 2</th>
<th>Port 3/5</th>
<th>Port 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3x0.5</td>
<td>M3x0.5</td>
<td>M3x0.5</td>
<td>M3x0.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lead wire length</th>
<th>AWG26</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manual button 12</th>
<th>Manual button 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lead wire length</th>
<th>AWG26</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Black 14</th>
<th>Red COM</th>
<th>Yellow 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

- **P type**
- **U type**

- 2-M2x0.4 depth 3.5
- Mounting bracket

- Lead wire length 500
- AWG26

- 2-φ3.2 (Mounting hole)
Most suitable for vacuum and vacuum break in vacuum pump lines!

3-port 3-position direct-acting solenoid valve for vacuum and vacuum break  VA01RDP33

- Light weight 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

- Needle valve for vacuum break flow control
  Air flow for vacuum break can be controlled according to work by a needle valve in the flow path for vacuum break.

- Manifold is available
  Vacuum port for common or individual manifolds are available up to 10 stations.

- Manifold with Needle valve for vacuum flow control
  Vacuum flow can be controlled according to work by a needle valve in the flow path to each solenoid valve in the manifold.
# Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Unit</th>
<th>VA01RDP33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td></td>
<td>Air</td>
</tr>
<tr>
<td>Port size</td>
<td></td>
<td>M5</td>
</tr>
<tr>
<td>Flow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacuum</td>
<td>l/min (ANR)</td>
<td>10 at –90kPa (Port 3→2)</td>
</tr>
<tr>
<td>Vacuum break</td>
<td>l/min (ANR)</td>
<td>8 at 0.2MPa (Port 1→2)</td>
</tr>
<tr>
<td>Pressure range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacuum</td>
<td>kPa</td>
<td>–100~0</td>
</tr>
<tr>
<td>Vacuum break</td>
<td>MPa</td>
<td>0~0.2</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>℃</td>
<td>–10~50</td>
</tr>
<tr>
<td>Response time</td>
<td>ms</td>
<td>ON : 5 or less OFF : 5 (20) or less</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>V</td>
<td>DC24</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>%</td>
<td>±10</td>
</tr>
<tr>
<td>Heat resistance grade</td>
<td></td>
<td>JIS grade B</td>
</tr>
<tr>
<td>Power consumption</td>
<td>L type</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>P, U type</td>
<td>W</td>
</tr>
<tr>
<td>Wiring</td>
<td>Lead wire, connector with lead wire</td>
<td></td>
</tr>
<tr>
<td>Vibration resistance/Shock resistance</td>
<td>m/s²</td>
<td>150/50</td>
</tr>
<tr>
<td>Mass</td>
<td>g</td>
<td>45</td>
</tr>
</tbody>
</table>

(Note) • When using the valve for vacuum break at less than 5 ℃ 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

**VA01**

1. Type of piping
   - **R** In-line piping

2. Function
   - **DP3** 3-position closed center
   - **Double solenoid**

3. Voltage
   - **1** DC24V

4. Wiring specifications
   - **Bipolar type**

   - **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. Wiring accessories
   - **No mark** No connector
   - **E** Connector with lead wire (Length : 500 mm)

6. Port size
   - **M5** M5×0.8

7. For mounting manifold
   - **MF** For mounting manifold (With mounting screws, gasket)

### Manifold

**MFU**

1. Number of stations
   - **2**: 2 stations
   - **10**: 10 stations

2. Port size
   - **M5** M5×0.8

3. Manifold specifications
   - **CC** Common 1 (Positive pressure), Common 3 (Vacuum)
   - **CI** Common 1 (Positive pressure), Individual 3 (Vacuum)

4. Needle valve for vacuum flow control
   - **No mark** No needle valve
   - **V** Needle valve for vacuum flow control (Only for CC specification)

(Note) Solenoid valve with needle valve for vacuum flow control is to be made to order.

## Blank plate (with 2 screws and a gasket)

**Model No.** V33-BP

## Connector with lead eire

<table>
<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>
<tr>
<td>3000mm</td>
<td>PC2-D24-CL30</td>
</tr>
</tbody>
</table>

## CAUTION

- Use positive pressure for port 1 within pressure range of 0 to 0.2 MPa. Do not supply vacuum pressure.
- Use vacuum pressure for port 3 within pressure range of –100 to 0 kPa. Do not supply positive pressure.
3-port 3-position direct-acting solenoid valve for vacuum and vacuum break

Dimensions
VA01RDP33

(Unit : mm)

Port 2
M5×0.8
Output port

Port 3
M5×0.8
Vacuum supply port

Port 1
M5×0.8
Positive pressure supply port

Manual button
(Vacuum side)

Manual button
(Positive pressure side)

Needle valve for vacuum break flow control

Lead wire length 300
AWG26

Lead wire length 500
AWG26

Lead wire length 500
AWG26

L type

P type

U type

1 : Positive pressure supply port
2 : Output port
3 : Vacuum supply port
3-port 3-position direct-acting solenoid valve for vacuum and vacuum break

**Dimensions**

**Manifold**

![Manifold Diagram](image)

**MFU-V01R3CC-M5**

- **Port 3**
  - Vacuum supply port
- **Rc1/8**
- **Needle valve for vacuum break flow control**
- **Lead wire length 300**
  - AWG26
- **L type**

**MFU-V01R3CCV-M5 (Order made)**

- **Port 3**
  - Vacuum supply port
- **Rc1/8**
- **Needle valve for vacuum flow control**
- **L type**
- **Throttle valve for vacuum break flow control**
- **Lead wire length 300**
  - AWG26

**Circuit diagram**

- **Port 1**
  - Positive pressure supply port
- **Port 2**
  - n-M5 x 0.8
  - Output port
- **Port 3**
  - Vacuum supply port
- **(Mounting hole)**

**Dimensions (Unit: mm)**

- **Port 1**
  - Maximum: 41
  - Minimum: 38.5

- **Port 2**
  - Maximum: 18.5
  - Minimum: 7.5

- **Port 3**
  - Maximum: 35.3
  - Minimum: 15

- **Circuit diagram**
  - 2 x 3.5
  - (Mounting hole)
3-port 3-position direct-acting solenoid valve for vacuum and vacuum break

**Dimensions**

**Manifold**

(Unit : mm)

**MFU□-V01R3CI-M5**

Circuit diagram

Port 3
n-M5×0.8
Vacuum supply port

Port 1
Rc1/8
Positive pressure supply port

Port 2
n-M5×0.8
Output port

Blank plate
V33-BP

**L type**

Lead wire length 300
AWG26

**P type**

Lead wire length 500
AWG26

**U type**

Lead wire length 500
AWG26

<table>
<thead>
<tr>
<th>n</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>42.5</td>
<td>28.5</td>
</tr>
<tr>
<td>3</td>
<td>53</td>
<td>39</td>
</tr>
<tr>
<td>4</td>
<td>63.5</td>
<td>49.5</td>
</tr>
<tr>
<td>5</td>
<td>74</td>
<td>60</td>
</tr>
<tr>
<td>6</td>
<td>84.5</td>
<td>70.5</td>
</tr>
<tr>
<td>7</td>
<td>95</td>
<td>81</td>
</tr>
<tr>
<td>8</td>
<td>105.5</td>
<td>91.5</td>
</tr>
<tr>
<td>9</td>
<td>116</td>
<td>102</td>
</tr>
<tr>
<td>10</td>
<td>126.5</td>
<td>112.5</td>
</tr>
</tbody>
</table>

n : Number of stations

---

**Needle valve for vacuum break flow control**

**Lead wire length 500**

**AWG26**

**Port 1**

**Rc1/8**

Positive pressure supply port

**Port 2**

n-M5×0.8
Output port

**Port 3**

n-M5×0.8
Vacuum supply port

**Overall length**

**Overall height**

**MAX41 MIN38.5**

**Overall length**

**Overall height**

**Lead wire length 500**

**AWG26**

**Blank plate**

V33-BP
Most suitable for vacuum and vacuum break of very small work!

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

VA01PEP34A

To customers having the following problems in pick and place very small work:

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

Using VA01PEP34A will cut down these problems.

- Light weight 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.

- Needle valve for vacuum break flow control
  Air flow for vacuum break can be controlled according to work by 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.

- Manifold is available
  Vacuum port for common or individual manifolds are available up to 10 stations.

Example where no atmospheric releasing mechanism is used

Example where atmospheric releasing mechanism is used
### Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Fluid</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA01PEP34A</td>
<td>Air</td>
<td>M5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow</th>
<th>Vacuum</th>
<th>20 at –100kPa (Port 3→2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuum break</td>
<td>14 at 0.5MPa (Port 1→2)</td>
<td></td>
</tr>
<tr>
<td>Pressure range</td>
<td>Vacuum</td>
<td>kPa</td>
</tr>
<tr>
<td></td>
<td>Vacuum break</td>
<td>MPa</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>°C</td>
<td>–10~50</td>
</tr>
<tr>
<td>Response time</td>
<td>ms</td>
<td>ON : 5 or less, OFF : 5 or less</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>V</td>
<td>DC24</td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>%</td>
<td>±10</td>
</tr>
<tr>
<td>Heat resistance grade</td>
<td>JIS grade B</td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>W</td>
<td>1 (Holding), 2 (Inrush)</td>
</tr>
<tr>
<td>Wiring</td>
<td>Lead wire, connector with lead wire</td>
<td></td>
</tr>
<tr>
<td>Vibration resistance/Shock resistance</td>
<td>m/s²</td>
<td>150/30</td>
</tr>
<tr>
<td>Mass</td>
<td>g</td>
<td>56</td>
</tr>
</tbody>
</table>

(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

<table>
<thead>
<tr>
<th>VA01</th>
<th>P</th>
<th>EP3</th>
<th>4A</th>
<th>1</th>
<th>U</th>
<th>-</th>
<th>M5</th>
<th>-</th>
</tr>
</thead>
</table>

1. **Type of piping**
   - P: Sub-base piping

2. **Function**
   - EP3: 3-position with atmospheric release mechanism, Double solenoid

3. **Voltage**
   - 1 DC24V

4. **Wiring specifications**
   - U: Connector with lead wire, Upside outlet (With indicator light & surge suppressor)

5. **Wiring accessories**
   - No mark: No connector
   - E: Connector with lead wire (Length : 500 mm)

6. **Port size**
   - No mark: No sub-base
   - M5: M5×0.8

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

7. **Option**
   - No mark: No option
   - F: Atmospheric release port with filter

#### Manifold

<table>
<thead>
<tr>
<th>MFS</th>
<th>-</th>
<th>V01P4</th>
<th>CC</th>
<th>-</th>
<th>M5</th>
</tr>
</thead>
</table>

1. **Number of stations**
   - 2 stations: 2
   - 10 stations: 10

2. **Manifold specifications**
   - CC: Common 1 (Positive pressure), Common 3 (Vacuum)
   - CI: Common 1 (Positive pressure), Individual 3 (Vacuum)

3. **Port size**
   - M5: M5×0.8

### Filter for atmospheric release port

- **Model No.**
  - V34-F

- **Blank plate (with 2 screws and a gasket)**
  - Model No. V34-BP

### Connector with lead wire

<table>
<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>
<tr>
<td>3000mm</td>
<td>PC2-D24-CL30</td>
</tr>
</tbody>
</table>

### CAUTION

- Use positive pressure for port 1 within pressure range of 0.05 to 0.5 MPa. Do not supply vacuum pressure.
- Use vacuum pressure for port 3 within pressure range of –100 to –30 kPa. Do not supply positive pressure.
4-port 3-position direct-acting solenoid valve for vacuum and vacuum break

Dimensions
VA01PEP34A

(Unit: mm)

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

Atmospheric release port with filter "V34-F". (Option)
4-port 3-position direct-acting solenoid valve for vacuum and vacuum break

**Dimensions**

**Manifold**

MFS\(\square\)-V01P4CC-M5

---

**Circuit diagram**

- Port 3
  - 2-M5\(\times\)0.8 Vacuum supply port
  - (Opposite side plugged)
- Port 1
  - 2-M5\(\times\)0.8 Positive pressure supply port
  - (Opposite side plugged)
- Needle valve for vacuum break flow control
- Lead wire length 500 AWG26
- Atmospheric release port
- Blank plate V34-BP
- Port 2
  - n-M5\(\times\)0.8 Output port

---

<table>
<thead>
<tr>
<th>(n)</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>39.5</td>
<td>32.5</td>
</tr>
<tr>
<td>3</td>
<td>50</td>
<td>43</td>
</tr>
<tr>
<td>4</td>
<td>60.5</td>
<td>53.5</td>
</tr>
<tr>
<td>5</td>
<td>71</td>
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\(n\) : Number of stations

(Unit : mm)
4-port 3-position direct-acting solenoid valve for vacuum and vacuum break

Dimensions
Manifold

MFS-V01P4CI-M5

Port 1
2-M5x0.8
Positive pressure supply port
(Opposite side plugged)

Port 2
n-M5x0.8
Output port

Port 3
n-M5x0.8
Vacuum supply port

Atmospheric release port

Blank plate
V34-BP

Lead wire length 500
AWG26

Circuit diagram

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n : Number of stations

(Unit : mm)
Miniature size 4-port 2-position direct-acting solenoid valve

VA05PSC24 Single solenoid, Sub-base piping type
VA05RSC24 Single solenoid, In-line piping type

- Compact Large flow
  Compact valve (Body width 15mm) is possible to operate large flow (C value 0.7dm³/(s·bar)).

- Quick response time/Stable operation
  Balanced poppets and direct solenoid mechanism make it available for quick and stable response time.
  Single solenoid type: ON 5.5ms/OFF 3ms. Under the test condition of KURODA Pneumatics.)

- Oil free is standardized, and extremely low particle. Clean !!
  Double poppets structure, which has no friction parts without lubricating oil, realizes the extremely clean air blow.
  Furthermore, the direct operated solenoid has no valve breathing and pilot air exhaust, and the valve does not pollute outside environment.

- Both vacuum and positive pressure are available.
  Balanced poppets structure operates both vacuum and positive pressure (–100kPa~0.8MPa) in one valve.

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