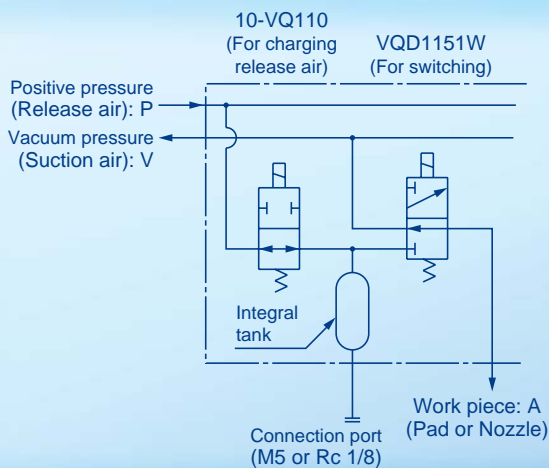
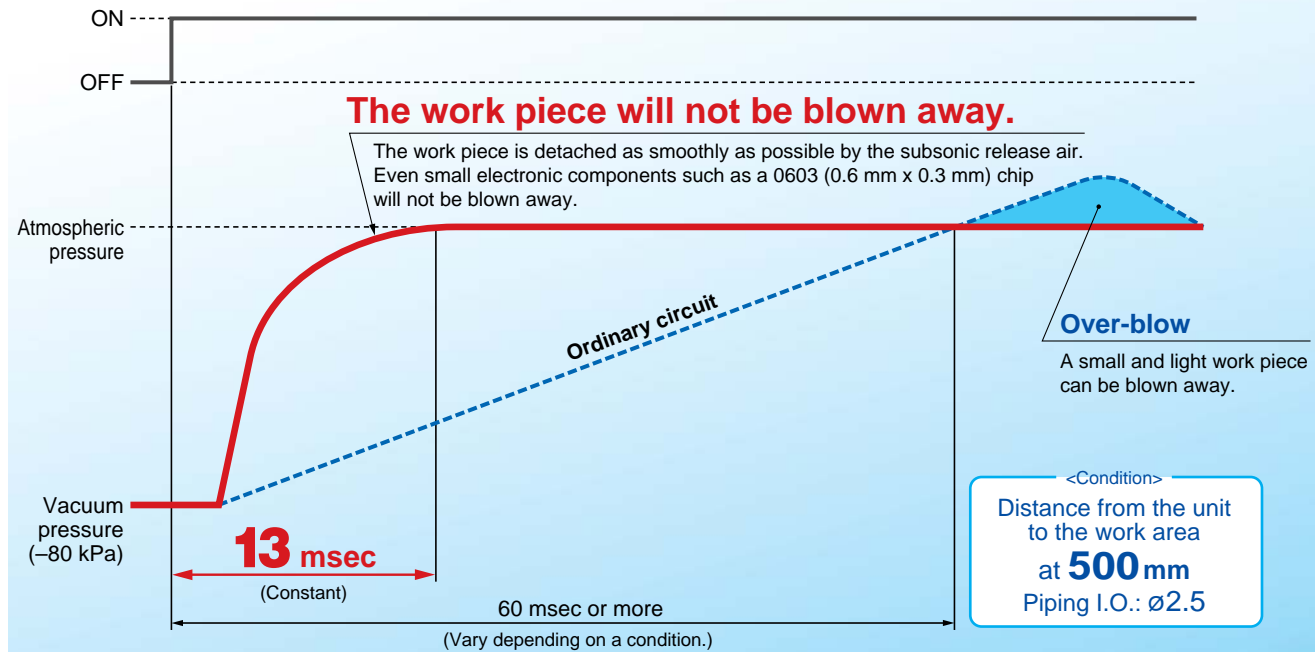


Vacuum / Release Unit

Adaptable to 0603 chip

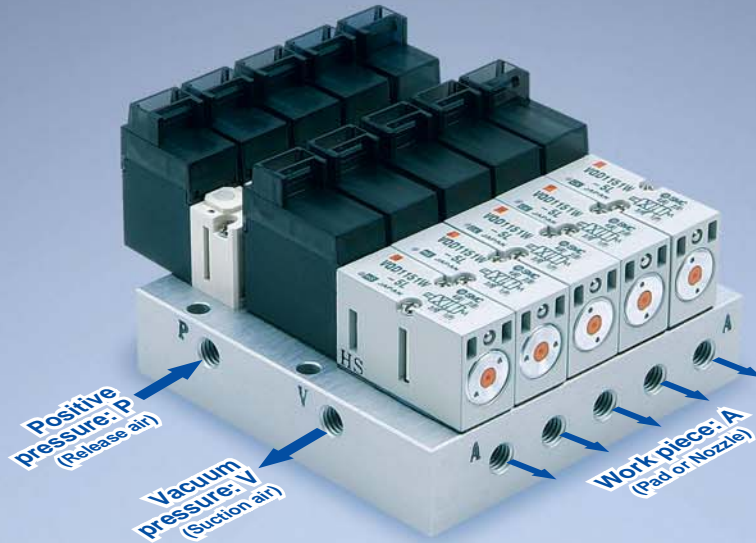
- Response speed
13 msec (at 500 mm*) / **18.5 msec** (at 1000 mm*)
* Distance from the unit to the work area
- Smooth detachment of a work piece without over-blow
The work piece will not be blown away when the air is released.
- No need to adjust the timing when switching between vacuum and positive pressure. (single signal control)
- No need to design a restrictor circuit for release air.



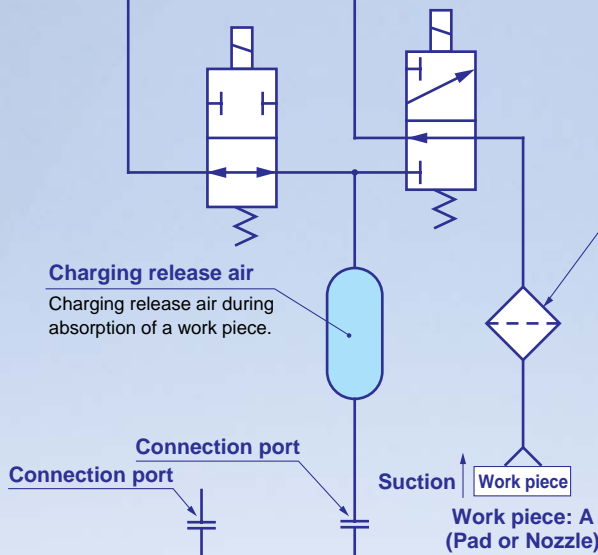
Series VQD1000-V

Vacuum / Release Unit

Series VQD1000-V



Positive pressure (Release air): P
Vacuum pressure (Suction air): V

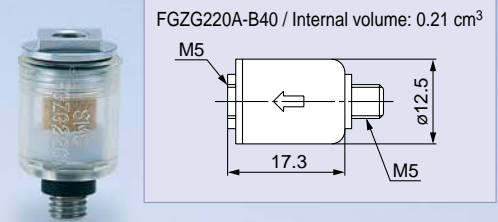


Suction filter can be cleaned.

If you energize the VQD1151W, you can clean the suction filter using positive-pressure air blowing.

Suction filter (installed near a work)

Recommended: FGZG220A-B40 (Filtration rating 40 μm)



* When cleaning (air-blowing), use a pressure of 1.5 MPa or greater, repeating the process several times but for less than 2 seconds at a time.

When the distance between work pieces is fluctuated.

Compatible with an atmospheric release pressure circuit

Possible to make it an atmospheric release type by installing a check valve on the connecting port and by setting the release air pressure (P) lower. (When the release air is running low, the pressure inside the tank changes to vacuum from the positive pressure. In this case, the pressure is rapidly released to the atmosphere due to the check valve.)

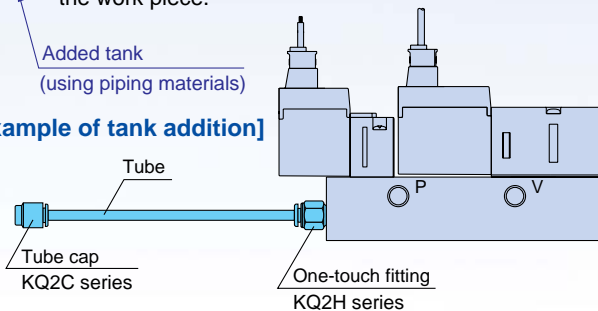
Atmospheric pressure suction port
Recommended check valve AKH04B-M5

When the release pressure is running low.

Additionally a tank can be installed.

Possible to add a tank for charging release air in accordance with the distance (volume) between the unit from the work piece.

[Example of tank addition]



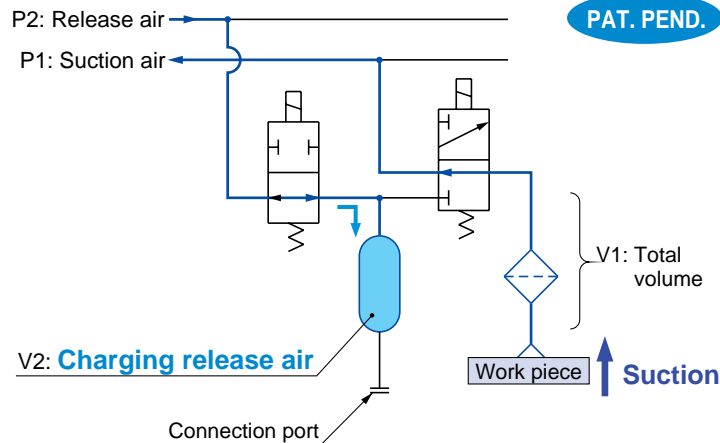
Made to Order Vacuum shut type (normally closed) when de-energized

* Please contact SMC for details.

Working principle

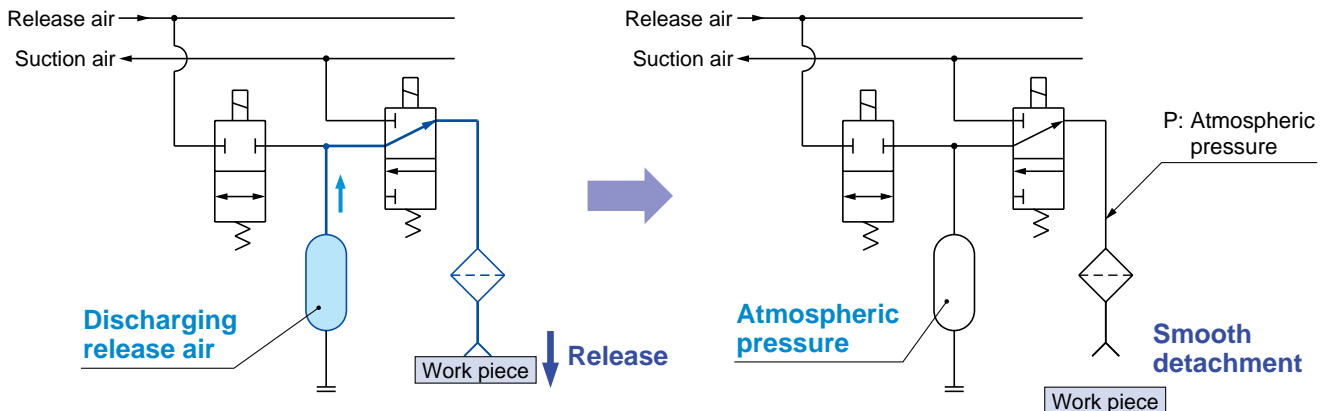
When de-energized Vacuum absorption

De-energizing 2 solenoid valves simultaneously
Charging release air during absorption of a work piece



When energized Release → Shut

Energizing 2 solenoid valves simultaneously
Release air is discharged and the pressure required for detaching / releasing a work piece turns to atmospheric pressure, resulting in smooth detachment.



<Relationship between pressure and a release air tank>

$$P2 = \frac{(P + 0.1) \times (V1 + V2) - (P1 + 0.1) \times V1}{V2} - 0.1$$

P1: Suction vacuum pressure / Negative pressure (MPa)
P2: Release pressure / Positive pressure (MPa)
P: Detaching (Release) pressure (MPa)
* 0 MPa (atmospheric pressure) is normal.

V1: Total volume from a unit to a work piece (cm³)
V2: Volume of a release air tank (cm³)
(VQD1000-V type: 0.8 cm³)
(VQD1000-VL type: 3.2 cm³)

P2: Release Air Guideline

Distance between the unit and the work area (mm)	300	500	1000	2000	
V1: Total volume from the unit to the work area (cm ³)	1.68	2.66	5.12	10.02	
P2: Release pressure (MPa)	VQD1000-V	0.19	0.30	0.58	—
	VQD1000-VL	—	0.07	0.14	0.28

<Conditions> • Suction vacuum pressure (P1): -90 kPa (-0.090 MPa)
• Piping tube size: ø4 (I.D. ø2.5)
• Suction filter: When mounting FGZG220A-B040 (internal volume: 0.21 cm³)

[How to Adjust]

1. Adjust P2 release pressure, using a regulator, in accordance with V1 volume. We recommend that you use our precision type, IR series.
2. When V1 volume differs in the same manifold, equalize it by adjusting the length or internal diameter of the piping. Even when the piping length is extended a good response is ensured.

Vacuum / Release Unit

Series VQD1000-V

How to Order

Vacuum / Release Unit

VQD1000-V 05 5

Volume of release air tank: V2

Nil	0.8 cm ³	Guideline: 1 m or shorter distanced from a work piece
L	3.2 cm ³	Guideline: 1 m or longer distanced from a work piece

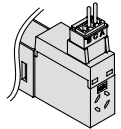
Note) Calculate according to the related formula between pressure and a release air tank on front matter 1, and select either one.

Stations

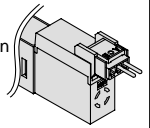
01	1 unit (1 station)
02	2 units (2 stations)
⋮	⋮
10	10 units (10 stations)

Electrical entry

Nil: L plug connector
* Standard type

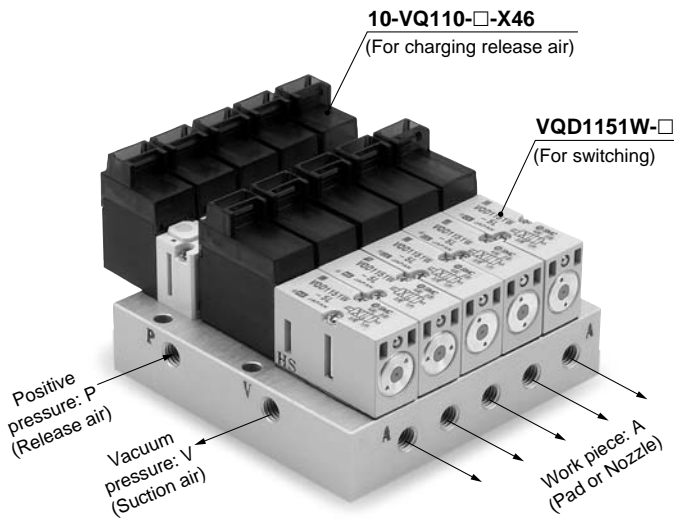


M: M plug connector
* Performances in valve installation / de-installation and handling of a connector is less ensured.

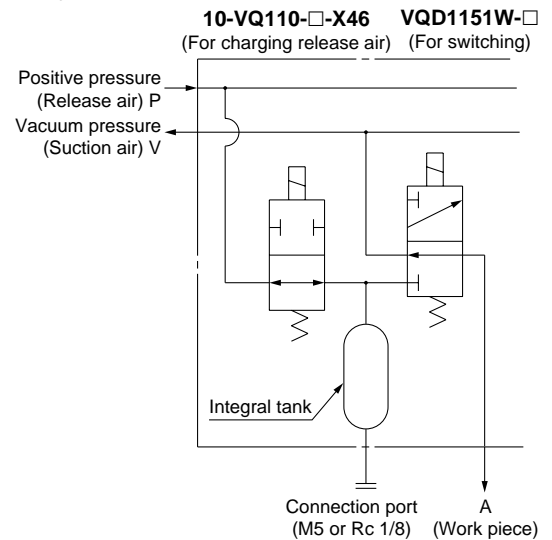


Voltage

5	24 VDC
6	12 VDC



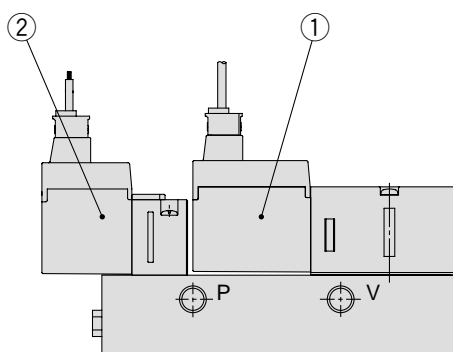
JIS Symbol



Specifications

Valve specifications	Valve construction		Direct operated poppet valve
	Fluid		Air, Inert gas/Low ozone resistant product
	Operating pressure range	Suction (negative pressure)	0 to -100 kPa
		Release (positive pressure)	0 to 0.7 MPa
	Response time	Suction (OFF)	2 ± 1 msec
		Release (ON)	4 ± 1 msec
	Suction flow rate/Sonic conductance		16 ℓ/min/0.27 dm ³ /(s·bar)
	Manual override		Non-locking push type
	Shock/Vibration resistance		150/30 m/s ²
	Mounting position		Unrestricted
Enclosure		Dusttight	
Electric specifications	Coil rated voltage		24 VDC, 12 VDC
	Allowable rated voltage		±10% of rated voltage
	Coil insulation type		Class B or equivalent
	Power consumption	VQD1151W (for switching)	3.2 W energy saving type (Inrush: 3.2 W, Holding: 2.4 W)
		10-VQ110 (for release supply)	1 W
Electrical entry		L/M plug connector (with light/surge voltage suppressor)	

Replacement Parts



① Solenoid valve for switching

VQD1151W-5 L

Voltage		Electrical entry	
5	24 VDC	L	L plug connector
6	12 VDC	M	M plug connector

② Solenoid valve for charging release air

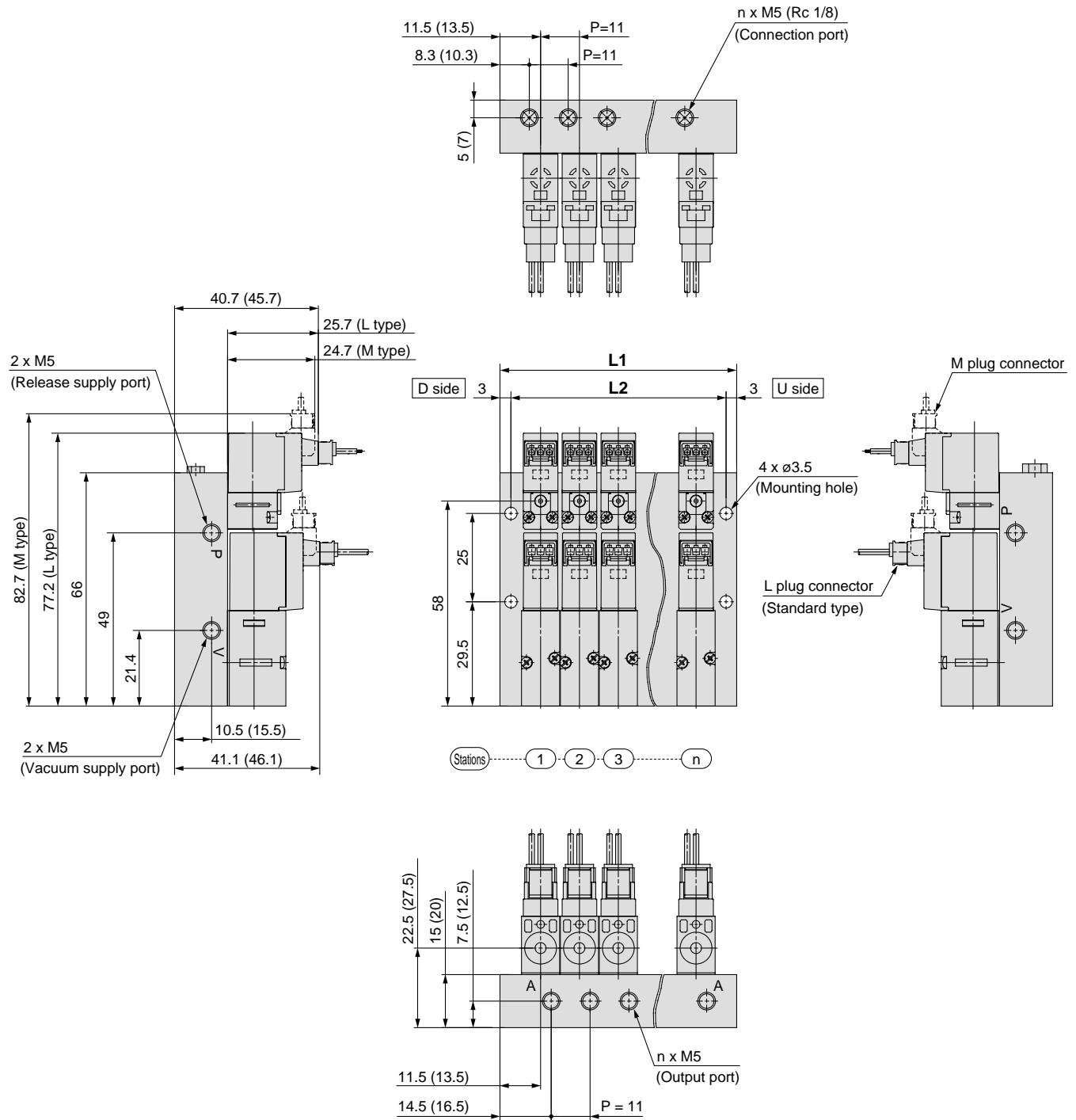
10-VQ110-5 L-X46

Voltage		Electrical entry	
5	24 VDC	L	L plug connector
6	12 VDC	M	M plug connector

Note) Product with specification on pressurizing R port.
If a standard product is used, external leakage may occur.

Series VQD1000-V

Replacement Parts



L: Dimensions (VQD1000-V-□□ / Standard type: Tank volume 0.8 cm³)

L \ n	1	2	3	4	5	6	7	8	9	10
L1	23	34	45	56	67	78	89	100	111	122
L2	17	28	39	50	61	72	83	94	105	116

Formula: $L1 = 11n + 12$, $L2 = 11n + 6$ (Max. 10 stations)

L: Dimensions (VQD1000-VL-□□ / Tank volume 3.2 cm³)

L \ n	1	2	3	4	5	6	7	8	9	10
L1	25	36	47	58	69	80	91	102	113	124
L2	19	30	41	52	63	74	85	96	107	118

Formula: $L1 = 11n + 14$, $L2 = 11n + 8$ (Max. 10 stations)

The dimensions shown in brackets indicate the VQD1000-VL-□□ / tank volume 3.2 cm³.



Series VQD1000-V Safety Instructions

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

■ Explanation of the labels

Labels	Explanation of the labels
Danger	In extreme conditions, there is a possible result of serious injury or loss of life.
Warning	Operator error could result in serious injury or loss of life.
Caution	Operator error could result in injury ^{Note 3)} or equipment damage. ^{Note 4)}

Note 1) ISO 4414: Pneumatic fluid power – General rules relating to systems

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

Note 3) Injury indicates light wounds, burns and electrical shocks that do not require hospitalization or hospital visits for long-term medical treatment.

Note 4) Equipment damage refers to extensive damage to the equipment and surrounding devices.

■ Selection/Handling/Applications

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

Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or post analysis and/or tests to meet the specific requirements. The expected performance and safety assurance are the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalog information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

2. Only trained personnel should operate pneumatic machinery and equipment.

Compressed air can be dangerous if handled incorrectly. Assembly, handling or repair of the systems using pneumatic equipment should be performed by trained and experienced operators. (Understanding JIS B 8370 General Rules for Pneumatic Equipment, and other safety rules are included.)

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

1. Inspection and maintenance of the machinery/equipment should only be performed once measures to prevent falling or runaway of the driven objects have been confirmed.
2. If the equipment must be removed, confirm the safety process as mentioned above. Turn off the supply pressure for the equipment and exhaust all residual compressed air in the system, and release all the energy (liquid pressure, spring, condenser, gravity).
3. Before the machinery/equipment is restarted, take measures to prevent quick extension of a cylinder piston rod, etc.

4. If the equipment will be used in the following conditions or environment, please contact SMC first and be sure to take all necessary safety precautions.

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, clutch and brake circuits in press applications, or safety equipment.
3. An application which has the possibility of having negative effects on people, property, requiring special safety analysis.
4. If the products are used in an interlock circuit, prepare a double interlock style circuit with a mechanical protection function for the prevention of a breakdown. And, examine the devices periodically if they function normally or not.

■ Exemption from liability

1. SMC is exempted from liability for any damages caused by earthquakes, fire for which SMC is not responsible for, actions by a third person, accidents, customer error with or without intention, product misuse, and any other damages caused by abnormal operating conditions.
2. SMC is exempted from liability for any accompanied damages, such as profit loss and discontinuation of business operation, caused by the operation or incompetency to operate our products.
3. SMC is exempted from liability for any damages caused by operations, which the catalogs and instruction manuals have not introduced, and operations outside of the specification range.
4. SMC is exempted from liability for any damages caused by malfunctions of our products when combined with other devices or software in which SMC is not involved in.



Series VQD1000-V Specific Product Precautions

Be sure to read this before handling.

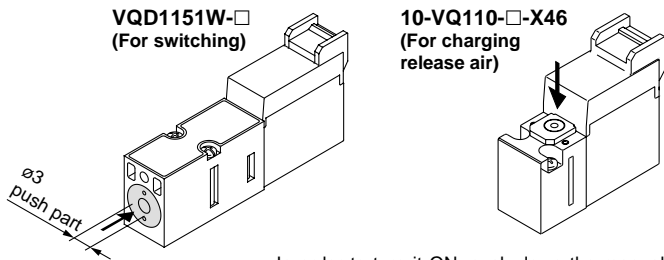
For Safety Instructions, refer to the back of page 1. For Common Precautions, refer to "Precautions for Handling Pneumatic Devices" (M-03-E3A).

Manual Override Operation

Warning

Connected actuator is started by manual operation. Use the manual override after confirming that there is no danger.

■ Non-locking push type (Tool required)

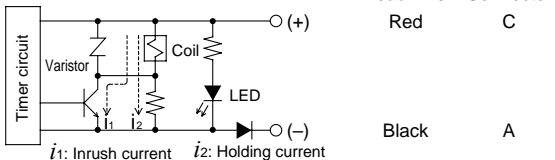


• In order to turn it ON, push down the manual override button in the direction the arrow (→) indicates until it stops (approx. 0.5 mm), and release it to turn it OFF.

Wiring Specifications

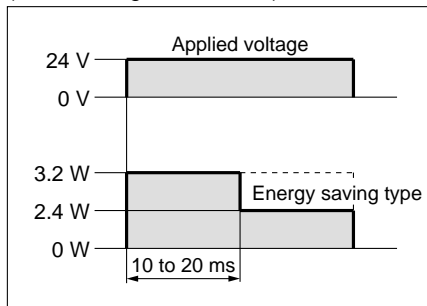
Caution

VQD1151W-□
(For switching)

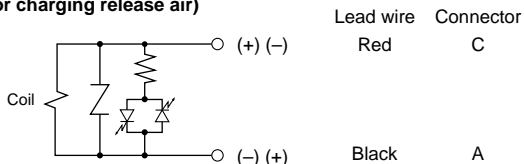


For the VQD1151W specifications (energy saving type), power consumption at holding is reduced with the above circuit. Refer to electrical power waveform as shown below.

<Energy saving type's electrical power waveform>
(Rated voltage: at 24 VDC)



10-VQ110-□-X46
(For charging release air)



Continuous Energization

Warning

Coil temperature may get high due to ambient temperature or energizing duration. Do not touch the valve by hand directly. When there is such a dangerous case to be touched by hand directly, install a protective cover.

Caution

When simultaneously energizing 3 stations or more, make sure to place an energized and non-energized valve alternatively.

However, if this is not possible and 3 stations or more need to be energized simultaneously, the energizing time should be less than 30 minutes to achieve an energized status not exceeding 50%.

Valve Mounting

Caution

After confirming the gasket is correctly placed under the valve, securely tighten the bolts with the proper torque shown in the table below.

Proper tightening torque (N·m)
0.18 to 0.25

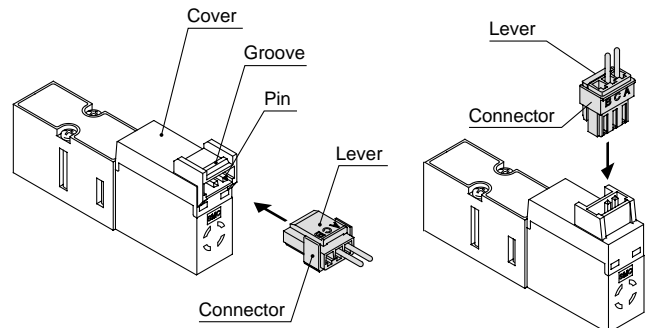
How to Use Plug Connector

Caution

Attaching and detaching connectors

- To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.
- To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.

Note) Gently pull the lead wire, otherwise it may cause contact failure or disconnection.



When Piping to a Product

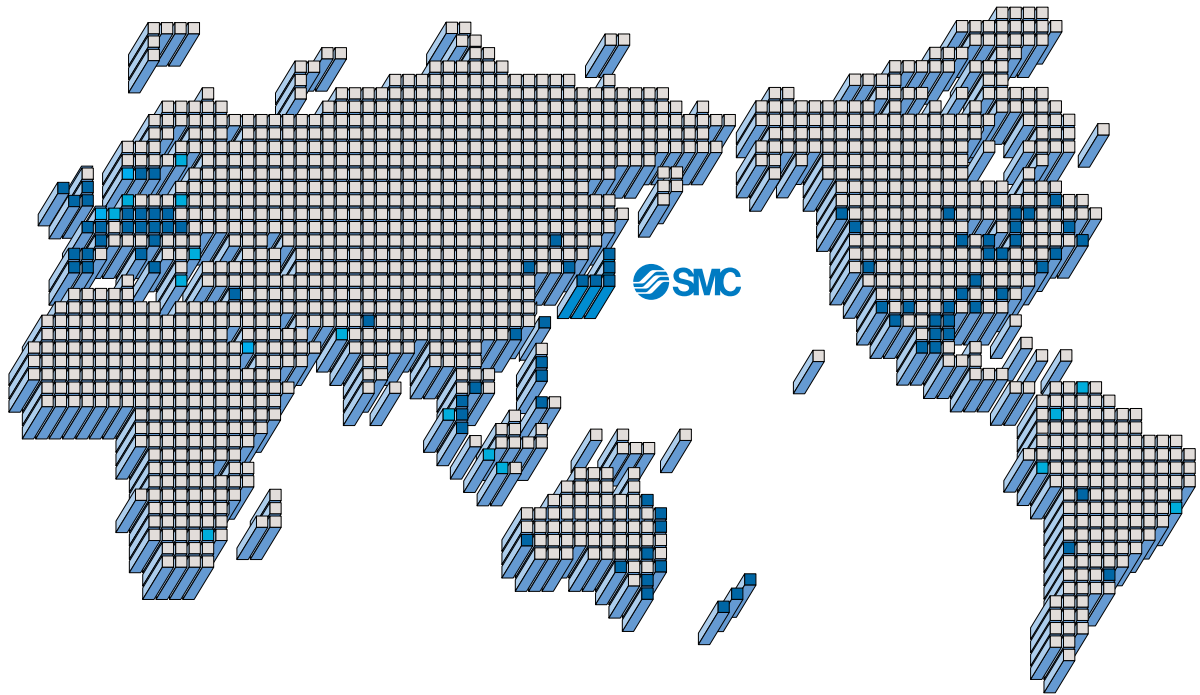
Caution

When piping to a product, check the supply port, etc.

Also, when tightening the piping tube, clamp the base unit to avoid any undue force from being applied to the valve. If a force of 120 N or more is applied to the coil especially, the connecting pin may be deformed, resulting in malfunction.



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Safety Instructions

Be sure to read "Precautions for Handling Pneumatic Devices" (M-03-E3A) before using.

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D-DN

1st printing KV printing KV 120DN Printed in Japan.

This catalog is printed on recycled paper with concern for the global environment.