

### How to Order Valves

**VQ 2 1 0 0 Y 5**

**Series**  
2 VQ2000

**Type of actuation**

1	2 position single (A)(B) (R1)(P1)(R2)	Note A	4 position dual 3 port valve (A) (N.C) 1 (N.C)
	2 position double (A)(B) (R1)(P1)(R2)	Note B	4 position dual 3 port valve (B) (N.O) 1 (N.O)
2	Metal		
	Rubber	Note C	4 position dual 3 port valve (C) (N.C) 1 (N.O)

**Enclosure**  
Nil: Dust-protected  
W: Dusttight/Low jetproof type (IP65)

**Manual override**  
Nil: Non-locking push type (tool required)  
B: Push-locking slotted type  
C: Locking type (Manual)

**Light/Surge voltage suppressor**  
Nil: Yes  
E: None  
(Note) Inapplicable to the S kit.

**Coil voltage**

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)
4	220 VAC (50/60 Hz)
5	24 VDC
6	12 VDC

Note) 200/220 VAC models are applicable to F and L kits.

**Function**

Symbol	Specifications	DC	AC
Nil	Standard type	(1.0 W)	(Note)
H	High pressure type	(1.5 W)	—
Y	Low wattage type	(0.5 W)	—

Note) For power consumption of AC type, refer to page 2-4-129.  
Note) For external pilot and negative COM specifications, refer to "Option" on page 2-4-178 to 2-4-179.

**Seal**  
0: Metal seal  
1: Rubber seal

Note) For sub-plate single unit type, refer to page 2-4-165.

Note) Rubber seal type only.

### How to Order Manifold Assembly

**Example**

Double solenoid (24 VDC)  
VQ2200-5 (4 sets)

Single solenoid (24 VDC)  
VQ2100-5 (3 sets)

Blanking plate  
VQ2000-10A-1 (1 set)

D-sub connector  
AXT100-DS25-030

F kit (D-sub connector)

Manifold base (8 stations)  
VV5Q21-08C8FU2

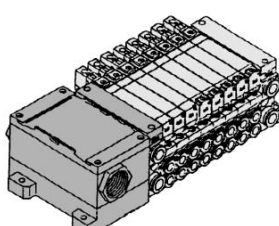
VV5Q21-08C8FU2 ... 1 set (F kit 8 station manifold base no.)  
\*VQ2100-5 ..... 3 sets (Single solenoid part no.)  
\*VQ2200-5 ..... 4 sets (Double solenoid part no.)  
\*VVQ2000-10A-1 ... 1 set (Blanking plate part no.)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Specify the part numbers for valves and options together beneath the manifold base part number. Besides, when the arrangement will be complicated, specify them by means of the manifold specification sheet.

- VQC
- SQ
- VQ0
- VQ4
- VQ5
- VQZ
- VQD

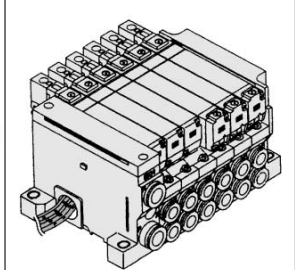
**T** kit (Terminal box)



Dust tight/Low jetproof type (IP65) available P. 2-4-146

Kit T	O	Terminal block box	2 to 20 stations <sup>(2)</sup>
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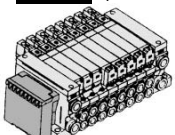
**L** kit (Lead wire cable)



Dust tight/Low jetproof type (IP65) available P. 2-4-150

Kit L	0	With cable (0.6 m)	1 to 8 stations
	1	With cable (1.5 m)	
	2	With cable (3 m)	

**S** kit (Serial transmission unit)<sup>(4)</sup>

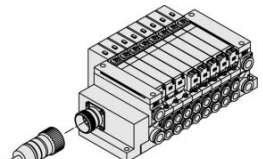


The valve is equipped with an indicator light and surge voltage suppressor, and the voltage is 24 VDC. The dusttight SI unit is available. Refer to page 2-4-154 for details. Dusttight/splashproof type (IP65) is also available. (Except SE and SG.)

P. 2-4-154

Kit S	O	Without SI unit	Max. 16 stations <sup>(2)</sup>
	A	With general type SI unit (Series EX300)	
	B	Mitsubishi Electric Corp.: MELSECNET/MINI-S3 Data Link System	
	BB <sup>(4)</sup>	Mitsubishi Electric Corp.: MELSECNET/MINI-S3 Data Link System(2 power supply lines)	Dust tight/Low jetproof type (IP65) only available
	C	OMRON Corp.: SYSBUS Wire System	
	D	SHARP Corp.: Satellite I/O Link System	
	E	Matsushita Electric Works: MEWNET-F System	
	F1	NKE Corp.: Uni-wire System (16 output points)	Max. 16 stations <sup>(2)</sup>
	G	Rockwell Automation: Allen Bradley Remote I/O (RIO) System	
	H	NKE Corp.: Uni-wire H System	
	J1	SUNX Corp.: S-LINK System (16 output points)	Max. 8 stations
	J2	SUNX Corp.: S-LINK System (8 output points)	
	K	Fuji Electric Co.: T-LINK Mini System	Max. 16 stations
	Q	DeviceNet, CompoBus/D (OMRON Corp.)	
	R1	OMRON Corp.: CompoBus/S System (16 output points)	Max. 8 stations
	R2	OMRON Corp.: CompoBus/S System (8 output points)	
	V	Mitsubishi Electric Corp.: CC-LINK System	Max. 16 stations

**M** kit (Multi-connector)



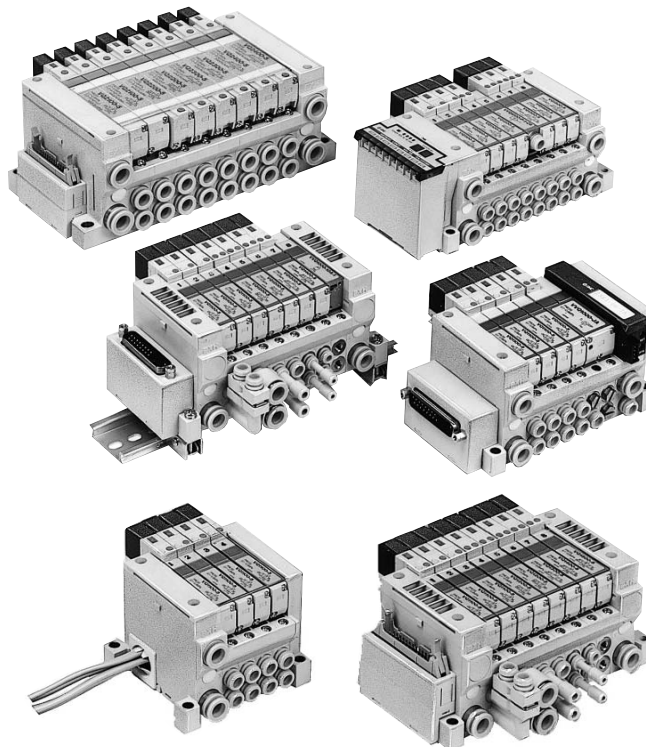
P. 2-4-162

Kit M	0	Without cable	2 to 24 stations <sup>(2)</sup>
	1	With cable (1.5 m)	
	2	With cable (3 m)	
	3	With cable (5 m)	

Note 1) Besides the above, F and P kits with different number of pins are available. Refer to page 2-4-177 for details.  
 Note 2) For details, refer to page 2-4-178.  
 Note 3) Refer to the pages on respective kits for IP65 type. (T, L and S kits)  
 Note 4) Kits with IP65 enclosure applicable to input/output are also available. Refer to page 2-4-162 for details.

# Series VQ1000/2000

## Base Mounted Plug-in Unit



### Model

Series	Number of solenoids	Model		Flow characteristics <sup>(1)</sup>						Response time (ms) <sup>(2)</sup>			Weight (g)	
				1 → 2/4 (P → A/B)			2/4 → 3/5 (A/B → R1/R2)			Standard: 1 W H: 1.5 W	Low wattage: 0.5 W	AC		
				C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv					
VQ1000	2 position	Single	Metal seal	VQ1100	0.70	0.15	0.16	0.72	0.25	0.18	12 or less	15 or less	29 or less	64
			Rubber seal	VQ1101	0.85	0.20	0.21	1.0	0.30	0.25	15 or less	20 or less	34 or less	
		Double	Metal seal	VQ1200	0.70	0.15	0.16	0.72	0.25	0.18	10 or less	13 or less	13 or less	
			Rubber seal	VQ1201	0.85	0.20	0.21	1.0	0.30	0.25	15 or less	20 or less	20 or less	
	3 position	Closed center	Metal seal	VQ1300	0.68	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	78
			Rubber seal	VQ1301	0.70	0.20	0.16	0.65	0.42	0.18	25 or less	33 or less	47 or less	
		Exhaust center	Metal seal	VQ1400	0.68	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	
			Rubber seal	VQ1401	0.70	0.20	0.16	1.0	0.30	0.25	25 or less	33 or less	47 or less	
		Pressure center	Metal seal	VQ1500	0.70	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	
			Rubber seal	VQ1501	0.85	0.20	0.21	0.65	0.42	0.18	25 or less	33 or less	47 or less	
4 position	Dual 3 port valve	Rubber seal	VQ1 <sup>A</sup> <sub>B</sub> 01 C	0.70	0.20	0.16	0.70	0.20	0.16	25 or less	33 or less	47 or less		
VQ2000	2 position	Single	Metal seal	VQ2100	2.0	0.15	0.46	2.6	0.15	0.60	22 or less	29 or less	49 or less	90
			Rubber seal	VQ2101	2.2	0.28	0.55	3.2	0.30	0.80	24 or less	31 or less	51 or less	
		Double	Metal seal	VQ2200	2.0	0.15	0.46	2.6	0.15	0.60	15 or less	20 or less	20 or less	
			Rubber seal	VQ2201	2.2	0.28	0.55	3.2	0.30	0.80	20 or less	26 or less	26 or less	
	3 position	Closed center	Metal seal	VQ2300	2.0	0.15	0.46	2.0	0.18	0.46	29 or less	38 or less	58 or less	110
			Rubber seal	VQ2301	2.0	0.28	0.49	2.2	0.31	0.60	34 or less	44 or less	64 or less	
		Exhaust center	Metal seal	VQ2400	2.0	0.15	0.46	2.6	0.15	0.60	29 or less	38 or less	58 or less	
			Rubber seal	VQ2401	2.0	0.28	0.49	3.2	0.30	0.80	34 or less	44 or less	64 or less	
		Pressure center	Metal seal	VQ2500	2.4	0.17	0.57	2.0	0.18	0.46	29 or less	38 or less	58 or less	
			Rubber seal	VQ2501	3.2	0.28	0.80	2.2	0.31	0.60	34 or less	44 or less	64 or less	
4 position	Dual 3 port valve	Rubber seal	VQ2 <sup>A</sup> <sub>B</sub> 01 C	1.8	0.28	0.46	1.8	0.28	0.46	34 or less	44 or less	64 or less		



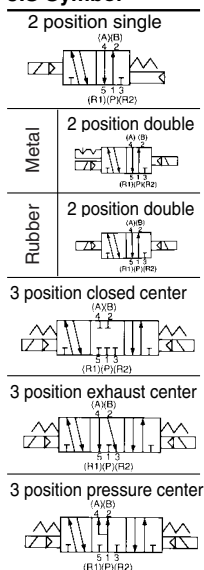
Note 1) Cylinder port size C6: (VQ1000), C8: (VQ2000) without check valve option for prevention of back pressure.

Note 2) As per JIS B 8375-1981 (Supply pressure; 0.5 MPa; with indicator light/surge voltage suppressor; clean air)

The response time is subject to the pressure and quality of the air. The values at the time of ON are given for double types.

Standard Specifications

JIS Symbol



Valve specifications	Valve construction	Metal seal	Rubber seal	
	Fluid	Air/Inert gas	Air/Inert gas	
	Maximum operating pressure	0.7 MPa (High pressure type: 0.8 MPa)		
	Minimum operating pressure	Single	0.1 MPa	0.15 MPa
		Double	0.1 MPa	0.1 MPa
		3 position	0.1 MPa	0.2 MPa
	Ambient and fluid temperature	-10 to 50°C <sup>(1)</sup>		
	Lubrication	Not required		
	Manual override	Push type/Locking type (Tool required, Manual type) Option		
	Impact/Vibration resistance <sup>(2)</sup>	150/30 m/s <sup>2</sup>		
Enclosure	Dust-protected, Dust tight/Low jetproof type (IP65) <sup>(5)</sup>			
Solenoid	Coil rated voltage	12, 24 VDC, 100, 110, 200, 220 VAC (50/60 Hz)		
	Allowable voltage fluctuation	±10% of rated voltage		
	Coil insulation type	Class B or equivalent		
	Power consumption (Current)	24 VDC	1 W DC (42 mA), 1.5 W DC (63 mA) <sup>(3)</sup> , 0.5 W DC (21 mA) <sup>(4)</sup>	
		12 VDC	1 W DC (83 mA), 1.5 W DC (125 mA) <sup>(3)</sup> , 0.5 W DC (42 mA) <sup>(4)</sup>	
		100 VAC	Inrush 1.2 VA (12 mA), Holding 1.2 VA (12 mA)	
		110 VAC	Inrush 1.3 VA (12 mA), Holding 1.3 VA (12 mA)	
200 VAC		Inrush 2.4 VA (12 mA), Holding 2.4 VA (12 mA)		
220 VAC	Inrush 2.6 VA (12 mA), Holding 2.6 VA (12 mA)			

VQC

SQ

VQ0

VQ4

VQ5

VQZ

VQD

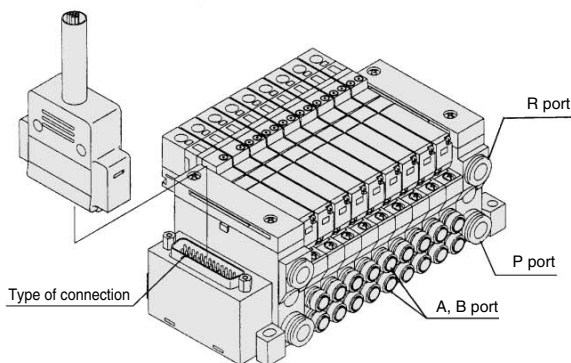


Note 1) Use dry air to prevent condensation when operating at low temperatures.  
 Note 2) Impact resistance ... No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)  
 Vibration resistance ... No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)  
 Note 3) Value for high voltage type (1.5 W)  
 Note 4) Value for low voltage type (0.5 W)  
 Note 5) Dusttight/Low jetproof type (IP65) is available on T, L, S and M kits of VQ2000.

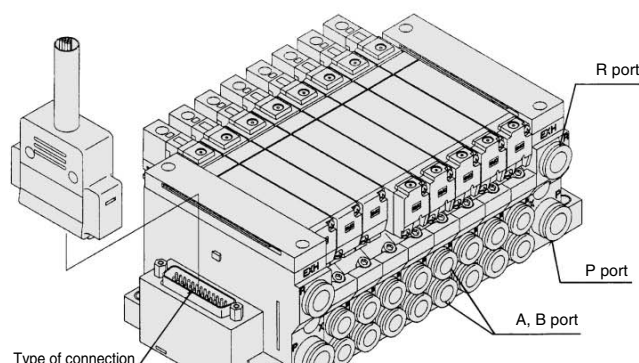
Manifold Specifications

Series	Base model	Type of connection	Porting specifications		Applicable stations <sup>(2)</sup>	Applicable solenoid valve	5 station weight (g)	
			Port location	Port size <sup>(1)</sup>				
VQ1000	VV5Q11-□□□	<ul style="list-style-type: none"> <li>■ F kit—D-sub connector</li> <li>■ P kit—Flat ribbon cable connector</li> <li>■ J kit—Flat ribbon cable connector (20P)</li> <li>■ G kit—Flat ribbon cable connector with terminal block</li> <li>■ T kit—Terminal box</li> <li>■ L kit—Lead wire cable</li> <li>■ S kit—Serial transmission unit</li> </ul>	Side	1(P), 3(R)	4(A), 2(B)	F, P, T kits 2 to 24 stations (J, G, S kit) 2 to 16 stations (L kit) 1 to 8 stations	VQ1□00 VQ1□01	628 (Single) 759 (Double, 3 position)
				C8 (ø8) Option (Built-in silencer, direct exhaust)	C3 (ø3.2) C4 (ø4) C6 (ø6) M5 (M5 thread)			
VQ2000	VV5Q21-□□□	<ul style="list-style-type: none"> <li>■ F kit—D-sub connector</li> <li>■ P kit—Flat ribbon cable connector</li> <li>■ J kit—Flat ribbon cable connector (20P)</li> <li>■ G kit—Flat ribbon cable connector with terminal block</li> <li>■ T kit—Terminal box</li> <li>■ L kit—Lead wire cable</li> <li>■ S kit—Serial transmission unit</li> <li>■ M kit—Multi-connector</li> </ul>	Side	C10 (ø10) Option (Built-in silencer, direct exhaust)	C4 (ø4) C6 (ø6) C8 (ø8)	(F, P kits) 2 to 24 stations (J, G, S kit) 2 to 16 stations (L kit) 1 to 8 stations (T kit) 2 to 20 stations	VQ2□00 VQ2□01	1051 (Single) 1144 (Double, 3 position)

Note 1) Inch-size One-touch fittings are also available. For details, refer to page 2-4-179.  
 Note 2) For details, refer to page 2-4-178.



VV5Q11



VV5Q21

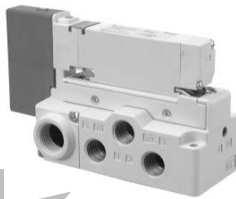
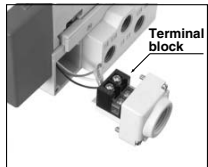
# Series VQ2000

## VQ2000 Only

# Sub-plate Single Unit

Conforming to IP65 in standard specifications

Easy-to-use terminal block



### How to Order

Valve + Sub-plate  
**VQ2 1 0 0 5 W 02**

Entry is the same as standard products.

Enclosure

Nil	Dust tight
W <sup>Note)</sup>	IP65 (Dust tight/Low jetproof type)

Note) Valves are IP65 specifications.

Thread type

Nil	Rc
N	NPT
T	NPTF
F	G

With and without sub-plate

Nil	Without sub-plate
02	With sub-plate (Port size: 1/4)

In the case of sub-plate alone

**VQ2000 – PW – 02**

VQC

SQ

**VQ0**

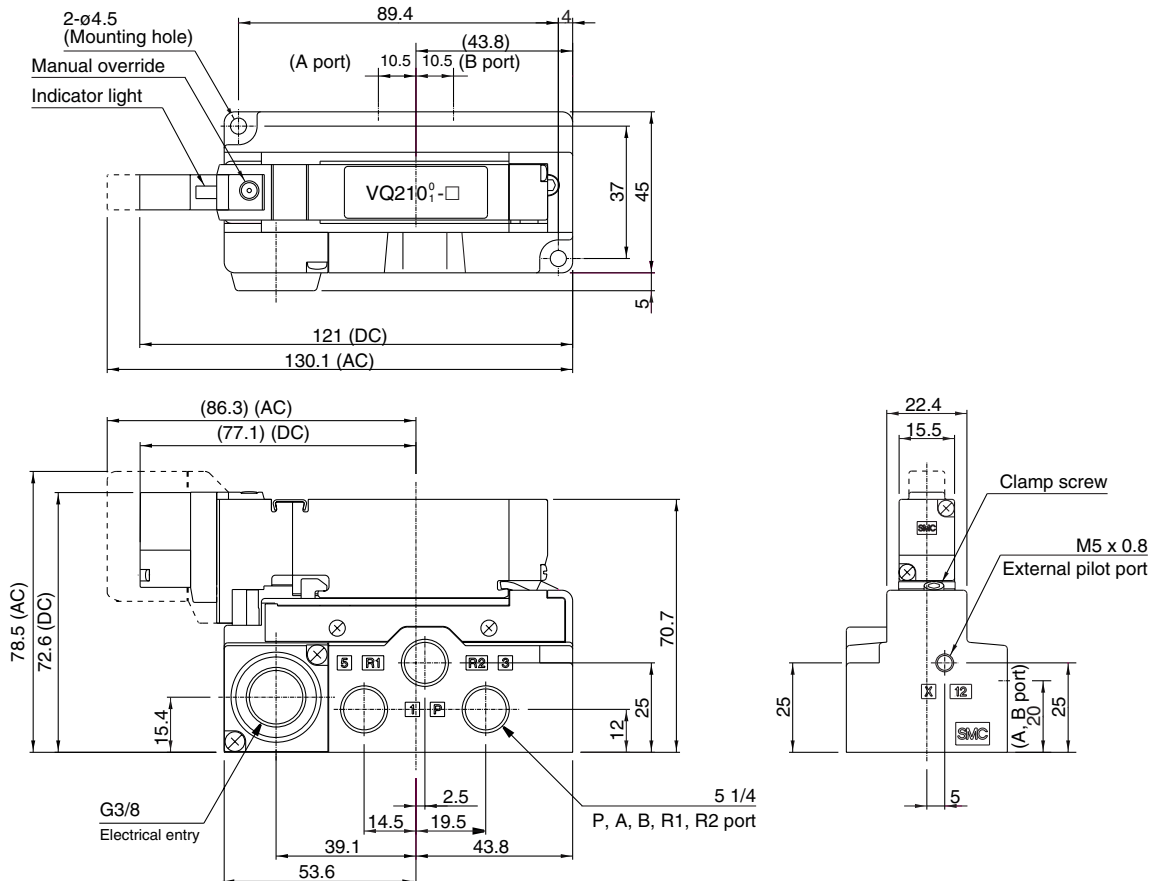
VQ4

VQ5

VQZ

VQD

### Dimensions





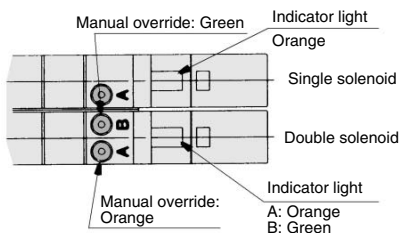
# ⚠ Precautions 1

**Be sure to read before handling. For Safety Instructions and Solenoid Valve Precautions, refer to page 2-9-2.**

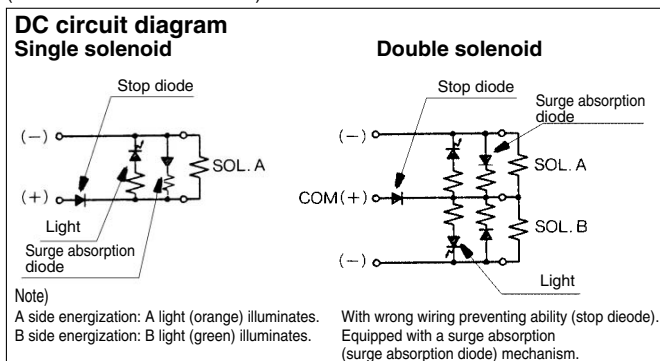
## Light/Surge Voltage Suppressor

### ⚠ Caution

The lighting positions are concentrated on one side for both single solenoid type and double solenoid type. In the double solenoid type, A side and B side energization are indicated by two colors which match the colors of the manual overrides.



(DWG shows a VQ1000 case.)



## Manual Override

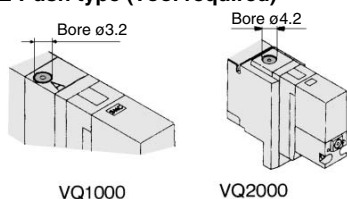
### ⚠ Warning

Without an electric signal for the solenoid valve the manual override is used for switching the main valve.

Push type is standard. (Tool required)

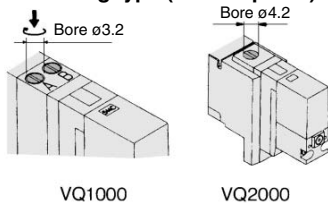
Option: Locking type (Tool required/Manual)

#### ■ Push type (Tool required)



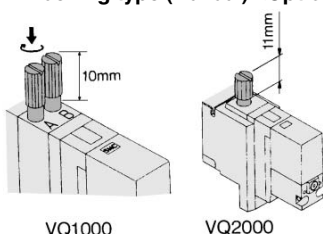
Push down on the manual override button with a small screwdriver until it stops. Release the screwdriver and the manual override will return.

#### ■ Locking type (Tool required) <Option>



Push down on the manual override button with a small screwdriver or with your fingers until it stops. Turn clockwise by 90° to lock it. Turn it counterclockwise to release it.

#### ■ Locking type (Manual) <Option>



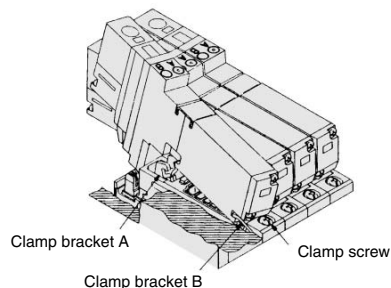
Push down on the manual override button with a small screwdriver or with your fingers until it stops. Turn clockwise by 90° to lock it. Turn it counterclockwise to release it.

### ⚠ Caution

Do not apply excessive torque when turning the locking type manual override. (0.1 N·m or less)

## How to Mount/Remove Solenoid Valve

### ⚠ Caution



#### Removing

1. Loosen the clamp screw until it turns freely. (The screw is captive.)
2. Lift the coil side of the valve body while pressing down slightly on the screw head and remove it from the clamp bracket B. When the screw head cannot be pressed easily, gently press the area near the manual override of the valve.

#### Mounting

1. Press down on the clamp screw. → Clamp bracket A opens. Diagonally insert the hook on the valve end plate side into clamp B.
2. Press the valve body downward. (When the screw is released, it will be locked by clamp bracket A.)
3. Tighten the clamp screw. (Proper tightening torque: VQ1000, 0.25 to 0.35 N·m; VQ2000, 0.5 to 0.7 N·m.)

### ⚠ Caution

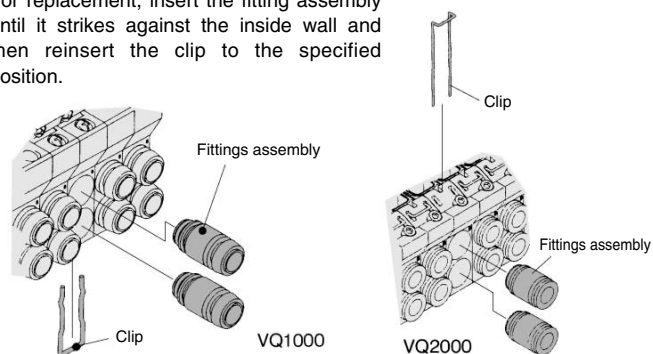
Dust on the sealing surface of the gasket or solenoid valve can cause air leakage.

## Replacement of Cylinder Port Fittings

### ⚠ Caution

The cylinder port fittings are a cassette for easy replacement. The fittings are blocked by a clip inserted from the top of manifold. Remove the clip with a screwdriver to remove fittings.

For replacement, insert the fitting assembly until it strikes against the inside wall and then reinsert the clip to the specified position.



Applicable tubing O.D.	Fitting assembly part no.	
	VQ1000	VQ2000
Applicable tubing ø3.2	VVQ1000-50A-C3	—
Applicable tubing ø4	VVQ1000-50A-C4	VVQ1000-51A-C4
Applicable tubing ø6	VVQ1000-50A-C6	VVQ1000-51A-C6
Applicable tubing ø8	—	VVQ1000-51A-C8
M5	VVQ1000-50A-M5	—

\* Refer to "Option" on pages 2-4-172 to 2-4-173 for other types of fittings.

### ⚠ Caution

1. Use caution that O-rings must be free from scratches and dust. Otherwise, air leakage may result.
2. After screwing in the fittings, mount the M5 fitting assembly on the manifold base. (Tightening torque: 0.8 to 1.2 N·m)
3. Purchasing order is available in units of 10 pieces.

## ⚠️ Precautions 2

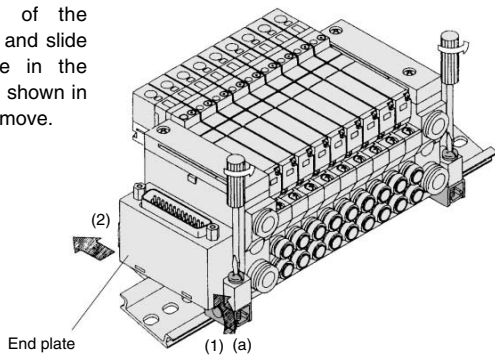
Be sure to read before handling. For Safety Instructions and Solenoid Valve Precautions, refer to page 2-9-2.

### Mounting/Removing from the DIN Rail

#### ⚠️ Caution

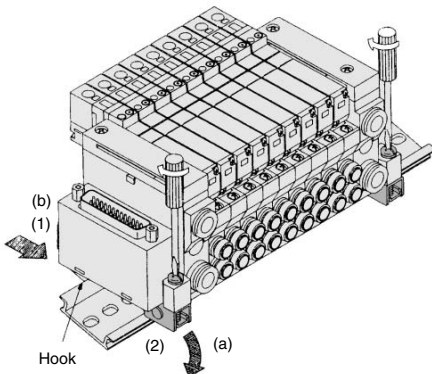
##### Removing

- Loosen the clamp screw on side (a) of the end plate on both sides.
- Lift side (a) of the manifold base and slide the end plate in the direction of (2) shown in the figure to remove.



##### Mounting

- Hook side (b) of the manifold base on the DIN rail.
- Press down side (a) and mount the end plate on the DIN rail. Tighten the clamp screw on side (a) of the end plate. The proper tightening torque for screws is 0.4 to 0.6 N·m.



### Enclosure IP65

#### ⚠️ Caution

Wires, cables, connectors, etc. used for models conforming to IP65 should also have enclosures equivalent to or of stricter than IP65.

### Built-in Silencer Replacement Element

#### ⚠️ Caution

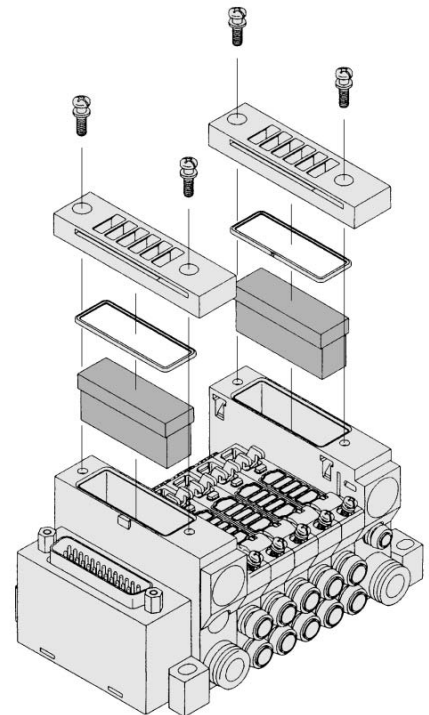
A silencer element is incorporated in the end plate on both sides of the A dirty and choked element may reduce cylinder speed or cause malfunction. Clean or replace the dirty element.

#### Element Part No.

Type	Element part no.	
	VQ1000	VQ2000
Built-in silencer, direct exhaust	VVQ1000-82A-1	VVQ2000-82A-1

\* The minimum order quantity is 10 pcs.

Remove the cover from the top of the end plate and remove the old element with a screwdriver, etc.



### How to Calculate the Flow Rate

For obtaining the flow rate, refer to pages 2-1-8 to 2-1-11.

Option

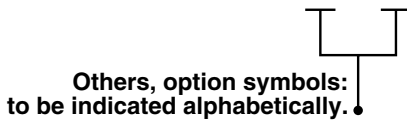
Special Wiring Specifications

In the internal wiring of F kit, P kit, J kit, G kit, T kit and S kit, double wiring (connected to SOL. A and SOL. B) is adopted for each station regardless of the valve and option types. Mixed single and double wiring is available as an option.

1. How to Order

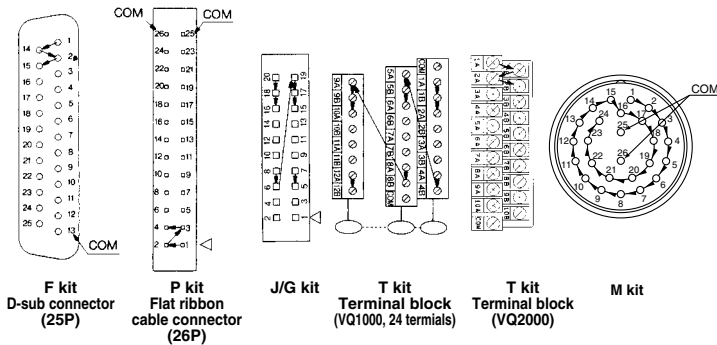
Indicate an option symbol “-K”, for the manifold no. and be sure to specify the mounting position and number of stations of the single and double wiring by means of the manifold specification sheet.

Example) **VV5Q11-08C6FU1-D K S**



2. Wiring specifications

With the A side solenoid of the 1st station as no.1 (meaning, to be connected to no.1 terminal), without making any terminals vacant.



3. Max. number of stations

The maximum number of stations depends upon the number of solenoids. Assuming one for a single and two for a double, determine the number of stations so that the total number is not more than the max. number given in the following table.

Kit	F kit (D-sub connector)		P kit (Flat ribbon cable connector)				J kit (Flat ribbon cable connector)	G kit (Flat ribbon cable with terminal block)
Type	F <sub>S</sub> <sup>U</sup> □ 25P	F <sub>S</sub> <sup>U</sup> A 15P	P <sub>S</sub> <sup>U</sup> □ 26P	P <sub>S</sub> <sup>U</sup> C 20P	P <sub>S</sub> <sup>U</sup> B 16P	P <sub>S</sub> <sup>U</sup> A 10P	J <sub>S</sub> <sup>U</sup> □ 20P	G
Max. points	24	14	24	18	14	8	16	16
Kit	T kit (Terminal block)				S kit (Serial transmission)		M kit (Circular connector)	
Type	2 rows of terminal blocks		3 rows of terminal blocks		S□		M□	
Max. points	VQ1000 16		24		VQ2000 16		24	

Negative Common Specifications

Specify the valve model no. as shown below for negative COM specification. The manifold no. shown below is for the T and L kits. For other kits the standard manifold can be used. For negative COM S or G kit, please contact SMC.

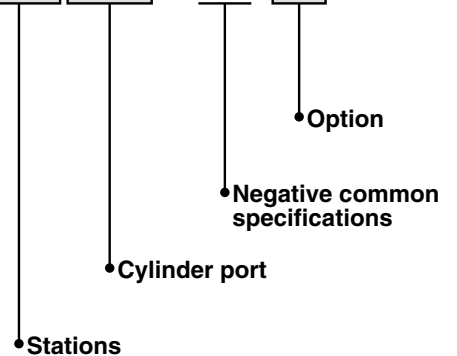
VQ1100 N - 5

• Negative common specifications

How to order negative COM manifold

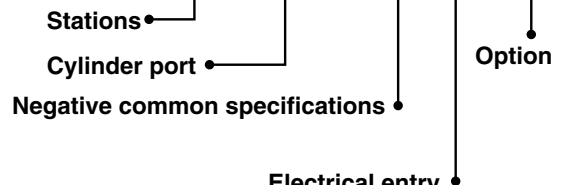
T kit:

VV5Q11-06 C6 T N - N



L kit:

VV5Q11-06 C6 L N 1 - N

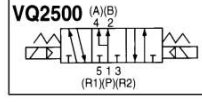
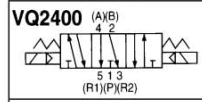
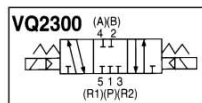
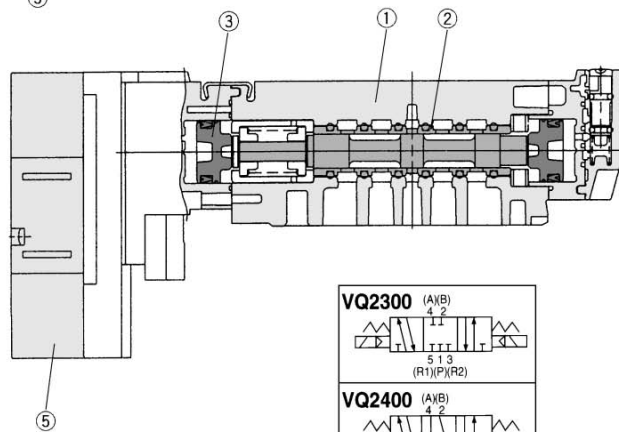
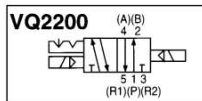
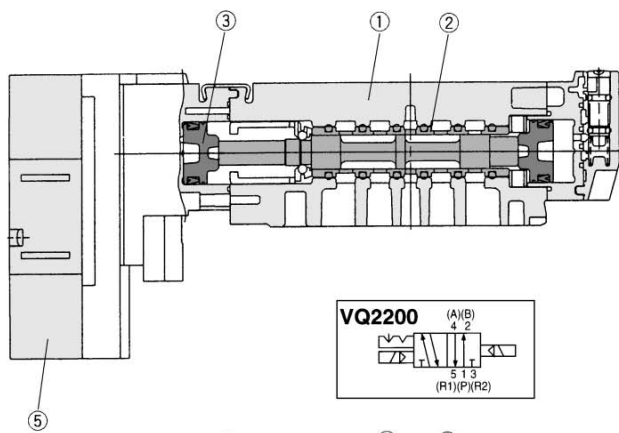
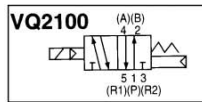
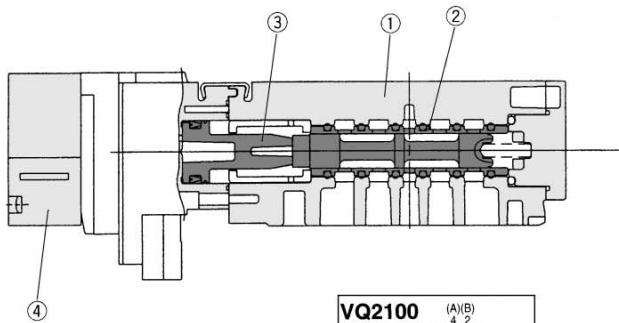


Electrical entry Cable length

0	With cable (0.6 m)
1	With cable (1.5 m)
2	With cable (3 m)

**Construction: VQ2000/Plug-in Unit**

**Metal seal**



**Component Parts**

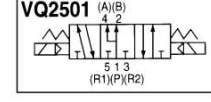
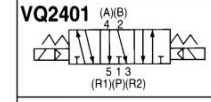
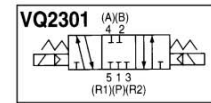
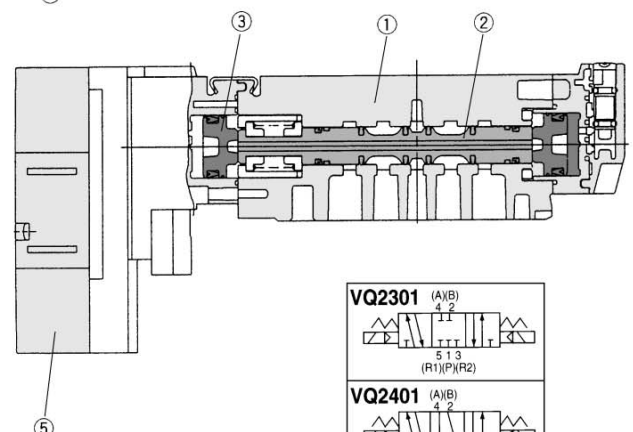
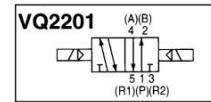
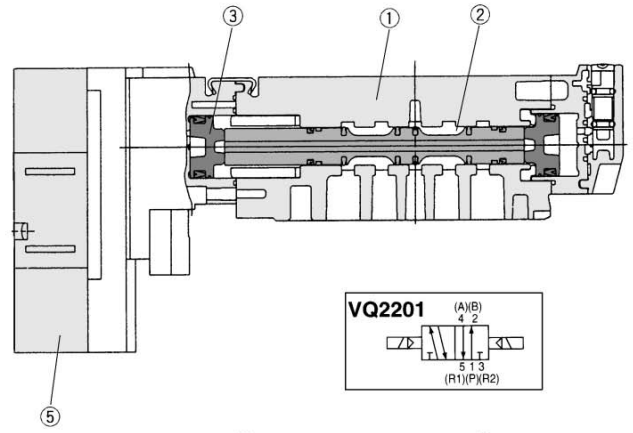
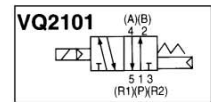
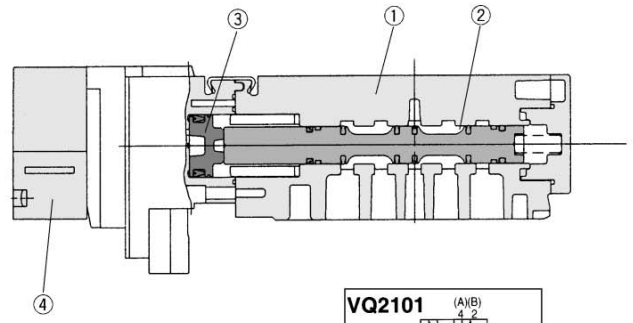
No.	Description	Material	Note
①	Body	Aluminum die-casted	
②	Spool/Sleeve	Stainless steel	
③	Piston	Resin	

**Replacement Parts**

④	Pilot valve assembly	VQ111 <sup>(H)</sup> <sub>(Y)</sub> -□-1 <small>Note) Voltage1 to 6</small>	Single
⑤	Pilot valve assembly	VQ131 <sup>(H)</sup> <sub>(Y)</sub> -□-1 <small>Note) Voltage1 to 6</small>	Double/3 position

Note) (H): 1.5 W, (Y): 0.5 W

**Rubber seal type**



**Component Parts**

No.	Description	Material	Note
①	Body	Aluminum die-casted	
②	Spool valve	Aluminum/HNBR	
③	Piston	Resin	

**Replacement Parts**

④	Pilot valve assembly	VQ111 <sup>(H)</sup> <sub>(Y)</sub> -□-1 <small>Note) Voltage1 to 6</small>	Single
⑤	Pilot valve assembly	VQ131 <sup>(H)</sup> <sub>(Y)</sub> -□-1 <small>Note) Voltage1 to 6</small>	Double/3 position

Note) (H): 1.5 W, (Y): 0.5 W

VQC

SQ

**VQ0**

VQ4

VQ5

VQZ

VQD