

3-Port Solenoid Valve

VQ100 Series

How to Order Valves

VQ1 1 0 - **5 F** - - - -

VQ series
Compact 3-port valve

Actuation

1	Normally closed
2*1	Normally open

*1 Normally open is only selectable for the standard type (1 W).

Functions*3

Nil	Standard type (1 W)
H	High-pressure type (1.5 W)
Y	Low wattage type (0.5 W)
L*2	Latching type*4 Positive common
N*2	Latching type*4 Negative common
U*2	Large flow capacity type

*2 Semi-standard (It has both + and - polarity.)
*3 Only one function can be selected. If the valve is to be energized continuously for extended periods of time, select "Y" (low-wattage type). For details, refer to "Extended periods of continuous energization" in the "Selection" section of the Best Pneumatics No. 1 catalog.
*4 For details on the latching type, refer to the latching type in the "Specific Product Precautions" on page 15.

Coil rated voltage

		CE/UKCA-compliant
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	●

For other rated voltages, please consult with SMC.

CE/UKCA-compliant

Nil	—
Q	CE/UKCA-compliant

* The 100 VAC, 110 VAC, 24 VDC, and 12 VDC are the only CE/UKCA-compliant products.

Made to Order

Symbol	Specifications
Nil	Standard
X21	Power saving type (1.5 W)
X42	Fluid-contact part: Oil-free
X113	Fluororubber

Port size

Nil	Without sub-plate
M3	With sub-plate
M5	With sub-plate

Manual override

Nil	Non-locking push type (Tool required)
	Latching type: Push-locking type (Tool required)
B*5	Locking type (Tool required)

*5 Semi-standard
* Latching manual override: Push-locking type only.

Electrical entry

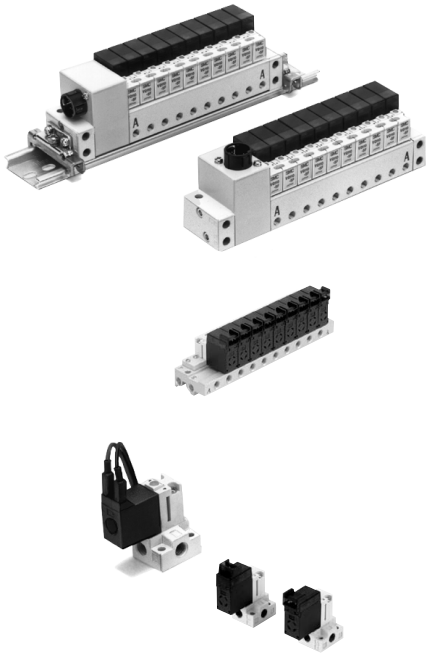
F	Plug-in With light/surge voltage suppressor (only for plug-in manifold)	
L	L plug connector, With lead wire With light/surge voltage suppressor	
LO	L plug connector, Without connector With light/surge voltage suppressor	
M	M plug connector, With lead wire With light/surge voltage suppressor	
MO	M plug connector, Without connector With light/surge voltage suppressor	
G	Grommet	

* Grommet: No latching, AC and large flow capacity.

L plug connector

M plug connector

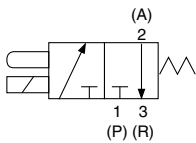
Grommet



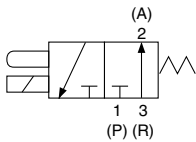
Standard Specifications

Item		Type	Standard (1 W)	High-pressure (1.5 W)	Low wattage (0.5 W)	
Valve specifications	Valve structure		3-port direct operated poppet			
	Fluid		Air			
	Max. operating pressure		0.7 MPa	0.8 MPa	0.7 MPa	
	Min. operating pressure (Vacuum)		0 MPa (-0.1 MPa ^{*5})			
	Flow rate characteristics	1 → 2	C [dm ³ /(s·bar)]	0.055	0.042	
			b	0.22	0.27	
			Cv	0.014	0.011	
		2 → 3	C [dm ³ /(s·bar)]	0.083	0.045	
			b	0.28	0.28	
			Cv	0.021	0.012	
	Response time^{*1}		ON: 3.5 ms, OFF: 2 ms		ON: 3.5 ms, OFF: 2.5 ms	
	Ambient and fluid temperatures		-10 to 50°C ^{*2}			
	Lubrication		Not required			
Manual override		Non-locking push type/Locking type (Tool required) ^{*3}				
Mounting operation		Free				
Impact/Vibration resistance^{*4}		150/30 m/s ²				
Enclosure		Dust-tight				
Weight		12.6 g (L/M plug connector, Without sub-plate)				
Electrical specifications	Coil rated voltage	DC	24 V, 12 V			
	Allowable voltage fluctuation		±10% of rated voltage			
	Coil insulation type		Equivalent to class B			
	Power consumption (Current)	DC	1 W (42 mA)	1.5 W (63 mA)	0.5 W (21 mA)	
	Electrical entry		Grommet Plug-in, L plug connector, M plug connector (With light/surge voltage suppressor)			

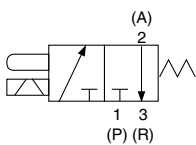
Symbol



Normally closed



Normally open



Latching type

Clean Series

Clean series is available for both standard and option specifications.

How to Order Valves

10 - VQ110 □ - □

● Clean series



- *1 Based on JIS B 8374-1993. With light/surge voltage suppressor (clean air), Dispersion accuracy ±1 ms
- *2 Use dry air to prevent condensation when operating at low temperatures.
- *3 Locking type: Semi-standard
- *4 Impact resistance: No malfunction when tested with a drop tester in the axial direction and at a right angle to the armature, one time each in energized and deenergized states. Vibration resistance: No malfunction when tested with one sweep of 45 to 2000 Hz in the axial direction and at a right angle to the armature, in both energized and deenergized states. (Value in the initial stage)
- *5 For vacuum, please use the 10- clean series. The 3(R) port can be used for vacuum, and the 1(P) port can be used for vacuum release pressure. (For the differential pressure between the 3(R) port and the 1(P) port, use within the max. operating pressure of each type.)
- * For the power-saving type electrical entry, plug-in, L, or M plug connectors are applicable.

VQ100 Series

Semi-standard Specifications

Item		Type	Latching type	AC type	Large flow capacity type	Normally open type	Power saving type	
Valve specifications	Model		VQ110L-□	VQ110-½□	VQ110U-□	VQ120-□	VQ110-□-X21	
	Max. operating pressure		0.7 MPa		0.6 MPa	0.5 MPa	0.7 MPa	
	Min. operating pressure		0 MPa (-100 kPa ^{*4, *5})					
	Flow rate characteristics	1 → 2 ^{*6} (3 → 2)	C [dm ³ /(s·bar)]	0.042		0.14	0.04	0.055
			b	0.27		0.26	0.11	0.22
			Cv	0.011		0.036	0.009	0.014
		2 → 3 ^{*6} (2 → 1)	C [dm ³ /(s·bar)]	0.045		0.14	0.044	0.083
			b	0.28		0.25	0.3	0.28
Cv			0.012		0.036	0.011	0.021	
Response time ^{*2}		5 ms or less	15 ms or less	5 ms or less	5 ms or less	5 ms or less		
Electrical specifications	Power consumption (Current)	24 VDC	1 W (42 mA) ^{*7}	—	0.35 W (15 mA) ^{*3}	1 W (42 mA)	0.25 W (11 mA) ^{*8}	
		12 VDC	1 W (83 mA) ^{*7}	—	0.35 W (30 mA) ^{*3}	1 W (83 mA)	0.25 W (21 mA) ^{*8}	
		100 VAC	0.6 VA (6 mA)	0.5 VA (5 mA)	—			
		110 VAC	0.65 VA (5.9 mA)	0.55 VA (5 mA)	—			
		200 VAC	1.2 VA (6 mA)	1.0 VA (5 mA)	—			
		220 VAC	1.3 VA (5.9 mA)	1.1 VA (5 mA)	—			
	Electrical entry ^{*1}		Plug-in, L plug connector, M plug connector (With light/surge voltage suppressor)					



*1 Grommets can only be produced for the normally open type (without light/surge voltage suppressor).

Only the 1 W DC specification is available for the normally open type.

*2 Based on JIS B 8374-1993. With light/surge voltage suppressor (clean air).

*3 Inrush: 3.1 W (10 ms after energized); Holding: 0.35 W (It has both + and - polarity.)

*4 For vacuum, please use the 10- clean series. The 3(R) port can be used for vacuum, and the 1(P) port can be used for vacuum release pressure. (For the differential pressure between the 3(R) port and the 1(P) port, use within the max. operating pressure of each type.)

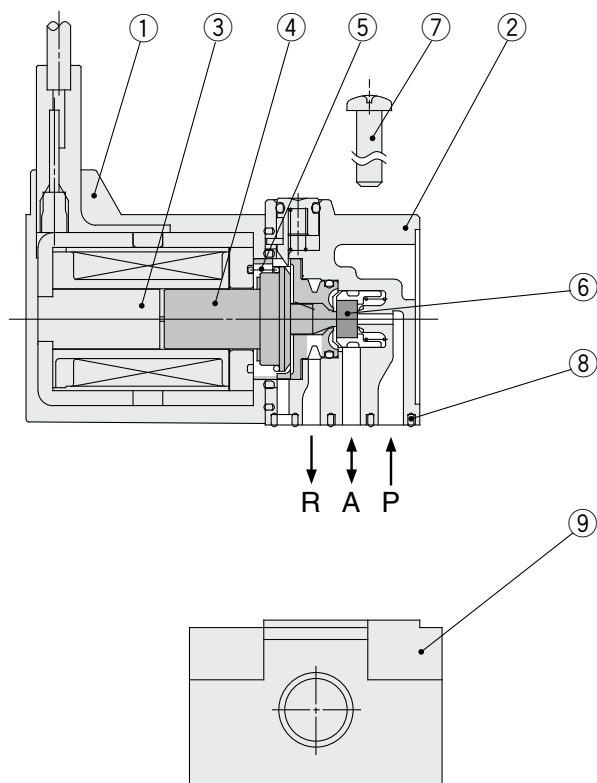
*5 If the 1(P) port is to be used for vacuum, and the 3(R) port is to be used for vacuum release, please select the VQ120 (normally open type). In this case, the 10- is not required.

*6 The values in brackets are for the normally open type's air passage.

*7 It has both + and - polarity.

*8 For the power-saving type electrical entry, plug-in, L, or M plug connectors are applicable.

Construction



(The normally closed valve is shown.)

Component Parts

No.	Description	Material
1	Solenoid coil	—
2	Body	Resin
3	Core	Stainless steel
4	Armature assembly	Stainless steel/Resin
5	Return spring	Stainless steel
6	Poppet	NBR
7	Round head combination screw	Carbon steel
8	Interface gasket	FKM

Replacement Parts

No.	Description	Material	Part no.
9	Sub-plate	ZDC	AXT662-1- $\frac{1}{2}$ (1: M5, 2: M3)

Optional Parts

· Gasket and screw: VQ100-GS-5



* 1 set includes 1 gasket and 2 screws.
An order contains 10 of these sets.

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VQ1 1 0 - **5 L** - **M5** - - -

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Nil	Non-locking push type (Tool required)
	Latching type: Push-locking type (Tool required)
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Electrical entry

L	L plug connector, With lead wire With light/surge voltage suppressor
LO	L plug connector, Without connector With light/surge voltage suppressor
M	M plug connector, With lead wire With light/ surge voltage suppressor
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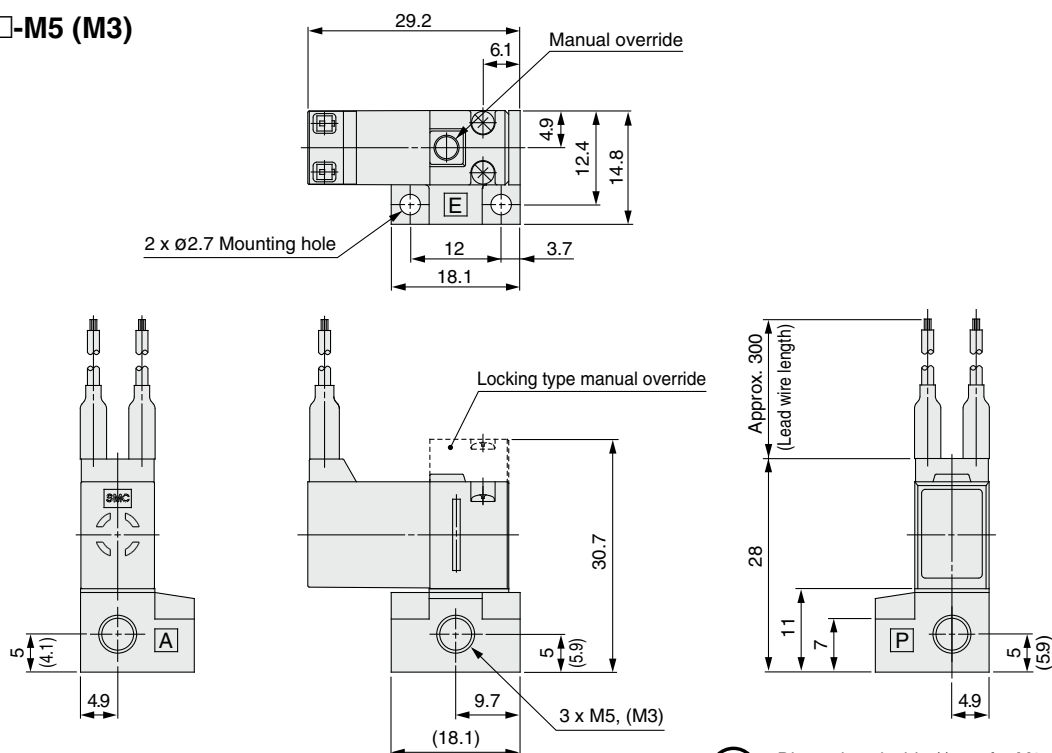
For other rated voltages, please consult with SMC.

* Grommet: No latching, AC and large flow capacity.

Dimensions

Grommet

VQ1□0□-□G□-M5 (M3)

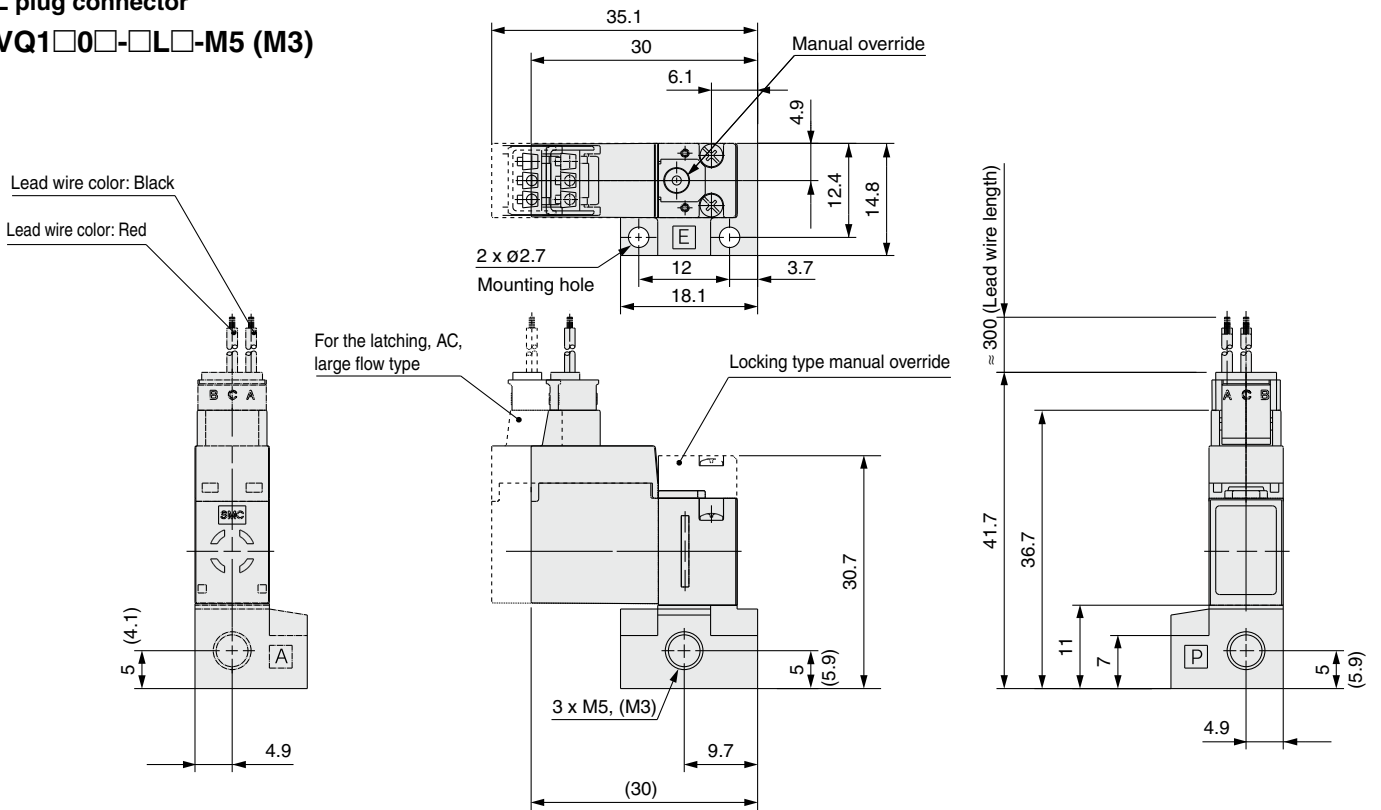


· Dimensions inside () are for M3.
· Broken line: locking type manual override

Dimensions

L plug connector

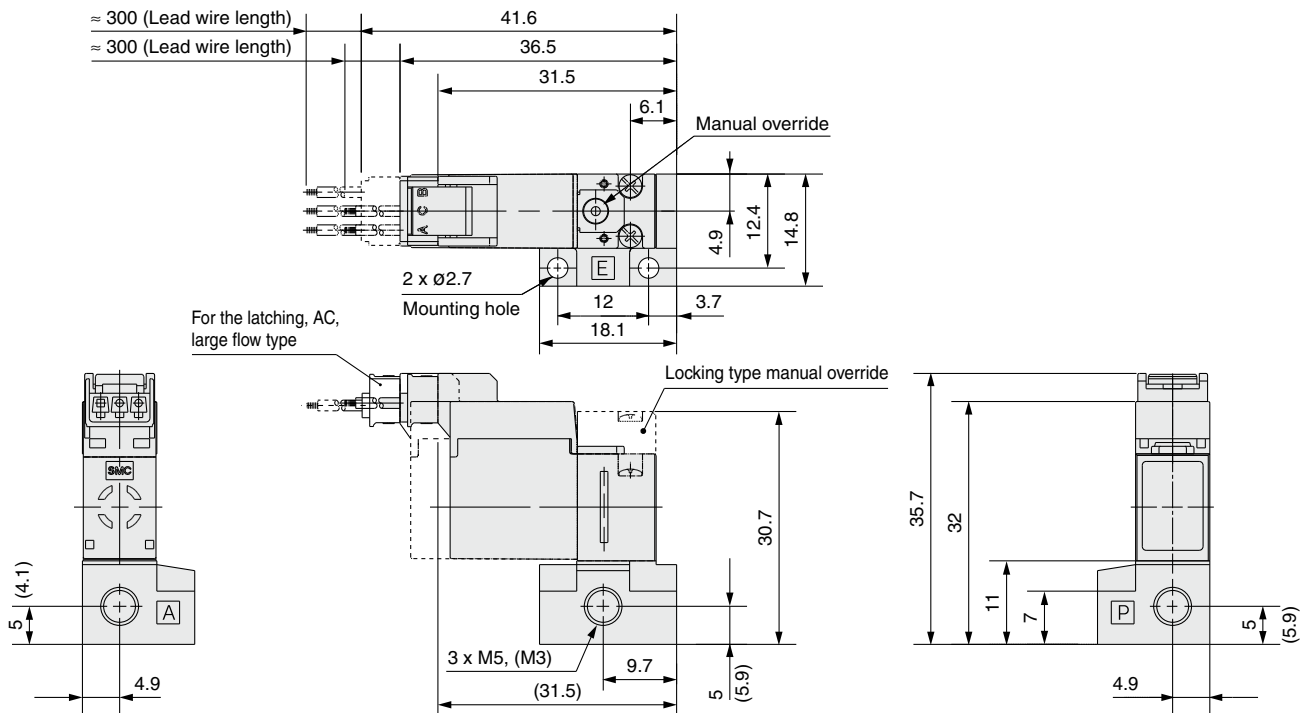
VQ1□0□-□L□-M5 (M3)



- Dimensions inside () are for M3.
- The dashed lines show the latching, AC, large flow type.
- Dashed line: Locking type manual override and push locking type manual override (latching)

M plug connector

VQ1□0-□M□-M5 (M3)



- Dimensions inside () are for M3.
- The dashed lines show the latching, AC, large flow type.
- Dashed line: Locking type manual override and push locking type manual override (latching)