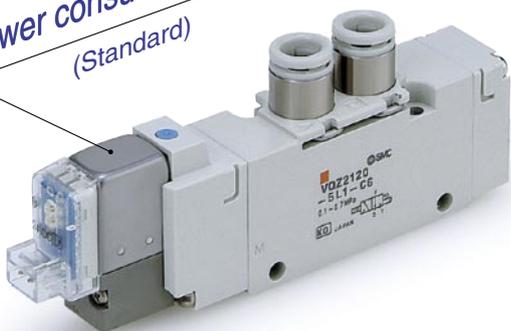


# 5 Port Solenoid Valve

Metal Seal / Rubber Seal



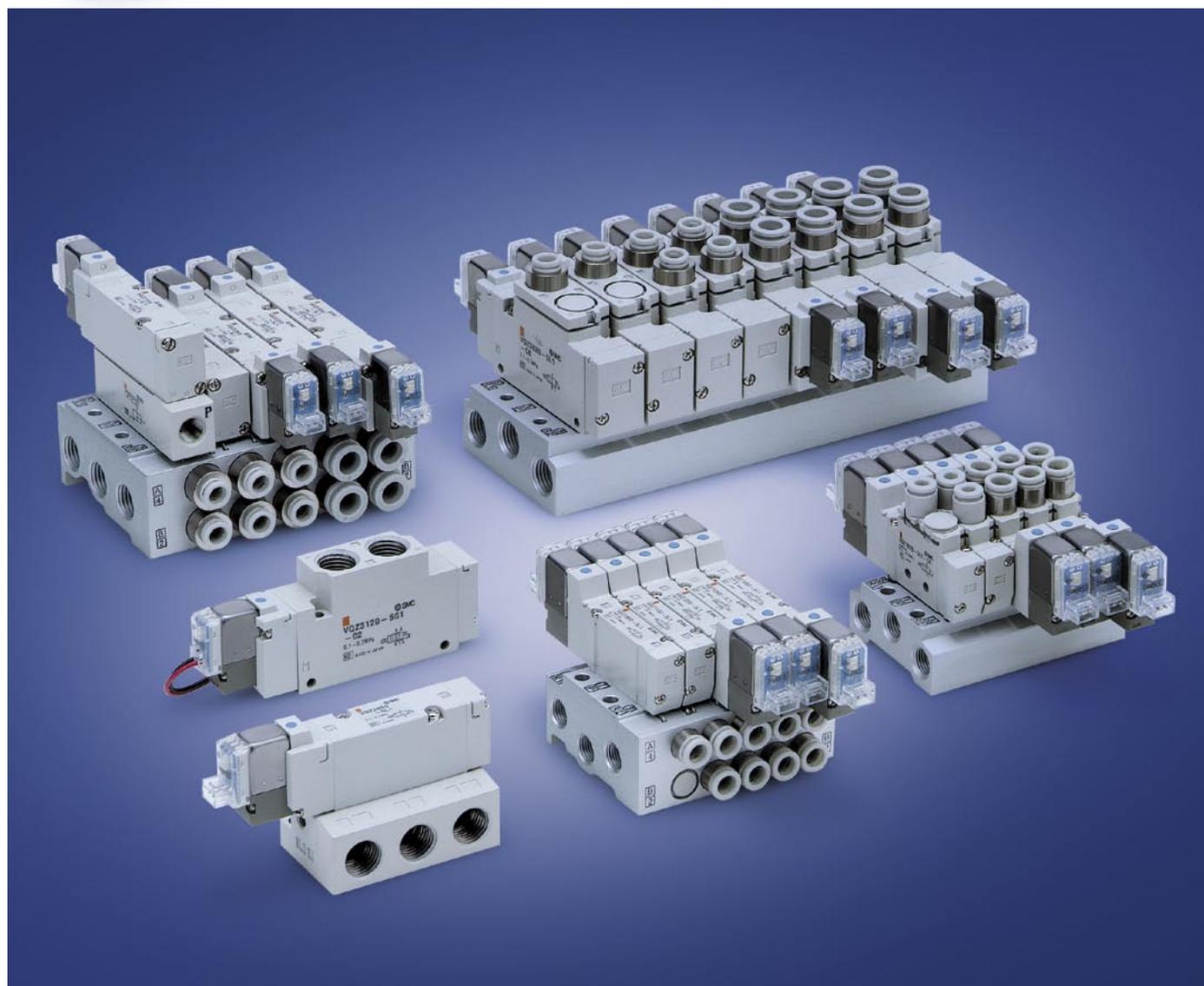
Power consumption: **0.35 w / 0.9 w**  
 (Standard)  
 (High pressure type,  
 High speed response type)



## Compact design with high flow

	Series	Valve width (mm)	Fluid characteristics		Cylinder size
			Metal seal C [dm <sup>3</sup> /(s·bar)]	Rubber seal C [dm <sup>3</sup> /(s·bar)]	
Body ported	VQZ1□2□	10	0.54	0.71	to ø50
	VQZ2□2□	15	1.4	1.6	to ø80
	VQZ3□2□	18	2.4	3.2	to ø100
Base mounted	VQZ1□5□	10	0.70	1.3	to ø63
	VQZ2□5□	15	1.9	2.3	to ø100
	VQZ3□5□	18	3.0	4.6	to ø100

\* Flow characteristics: 4/2→5/3 (A/B→R1/R2)



Series **VQZ**

Metal Seal / Rubber Seal

# 5 Port Solenoid Valve

Series VQZ1000/2000/3000

## High Speed Response and Long Service Life

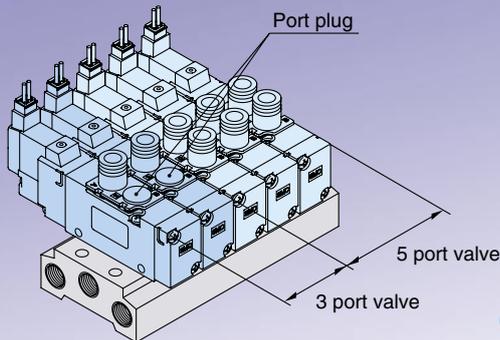
Series	Response time	Service life	Accuracy
VQZ1000	17 ms	200 million cycles	±2 ms
VQZ2000	18 ms		
VQZ3000	21 ms		

\* Metal seal, single solenoid with light/surge voltage suppressor, according to SMC life test conditions.

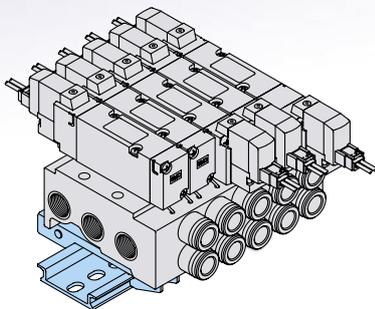


Body ported

- Both 3 and 5 port valves can be mounted on the same manifold.



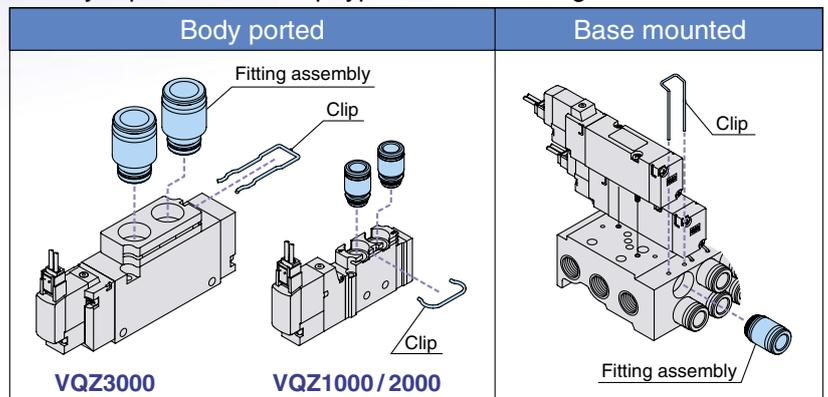
- DIN rail mounting is available.



Base mounted

- Built-in one-touch fittings for easier piping

Easy replacement of clip type one-touch fittings.



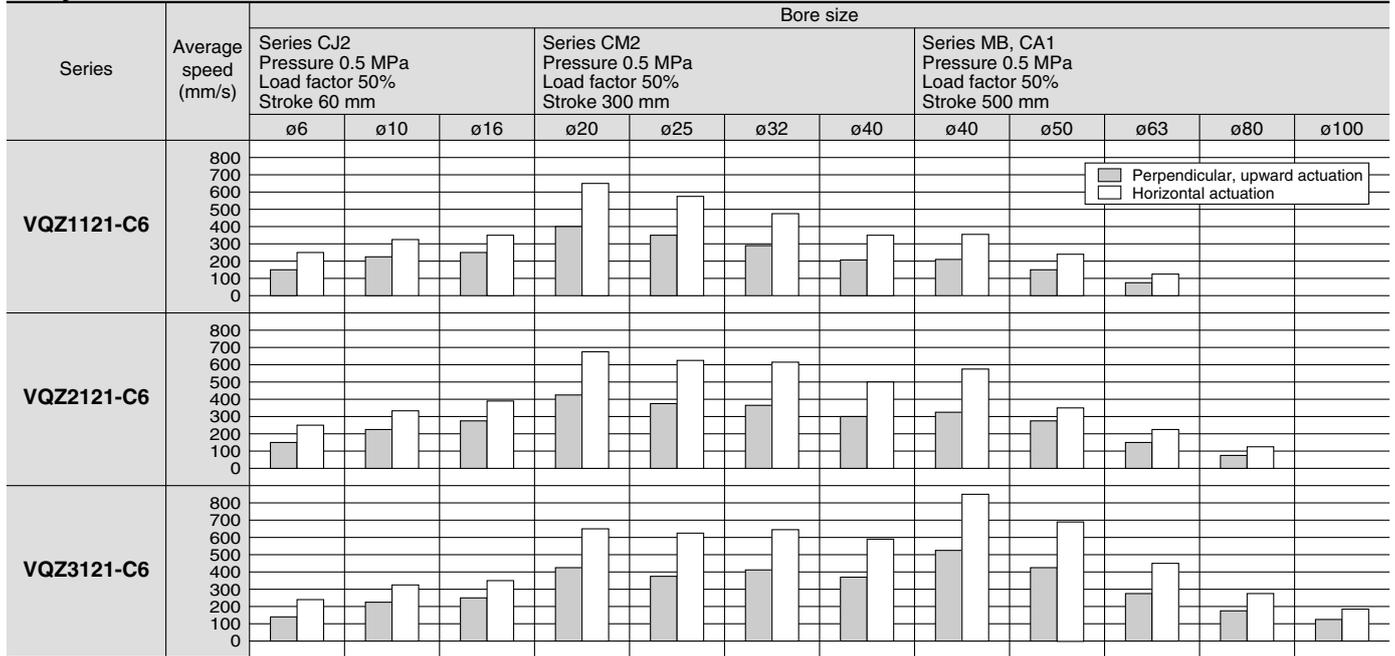
- Enclosure IP65 compliant (DIN terminal, Common exhaust)
- Choice of metal or rubber seal for main valve construction

# Cylinder Speed Chart

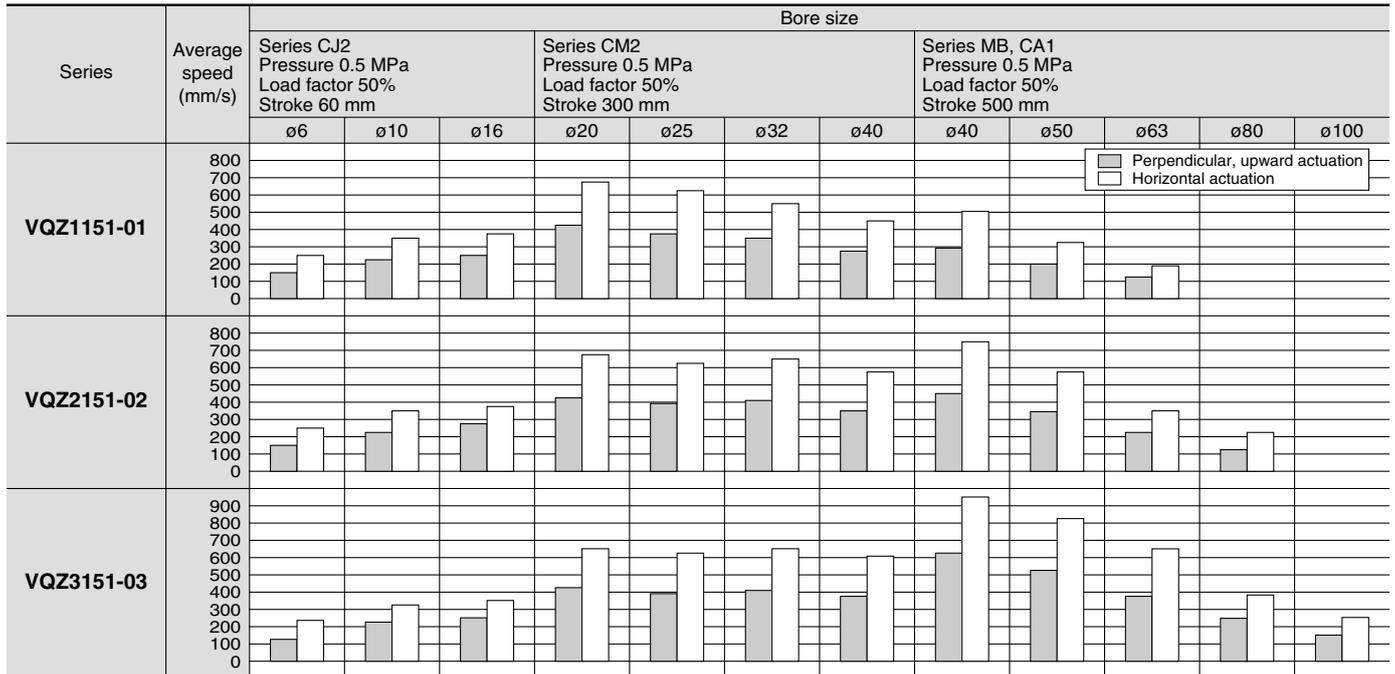
Use as a guide for selection.

Please confirm the actual conditions with SMC's Model Selection Programme.

## Body Ported



## Base Mounted



- \* For when the cylinder is extending with a meter-out type speed controller which is directly connected to the cylinder, and with its needle valve fully open.
- \* The average velocity of the cylinder is the stroke length divided by the total stroke time.
- \* Load factor:  $((\text{Load weight} \times 9.8) / \text{Theoretical force}) \times 100\%$

## Conditions

Body ported		Series CJ2	Series CM2	Series MB, CA1
VQZ1121-C6	Tube x Length		T0604 x 1 m	
	Speed controller		AS2051F-06	
	Silencer		AN120-M5	
VQZ2121-C6	Tube x Length		T0604 x 1 m	
	Speed controller		AS3001F-06	
	Silencer		INA-25-46	
VQZ3121-C6	Tube x Length		T1075 x 1 m	
	Speed controller		AS4001F-10	
	Silencer		AN101-01	

Base mounted		Series CJ2	Series CM2	Series MB, CA1
VQZ1151-01	Tube x Length		T0604 x 1 m	
	Speed controller		AS3001F-06	
	Silencer		AN110-01	
VQZ2151-02	Tube x Length	T0604 x 1 m	T0806 x 1 m	
	Speed controller	AS3001F-06	AS3001F-08	
	Silencer		AN200-02	
VQZ3151-03	Tube x Length	T0604 x 1 m	T1075 x 1 m	T1209 x 1 m
	Speed controller	AS3001F-06	AS4001F-10	AS4001F-12
	Silencer		AN300-03	

# Series VQZ

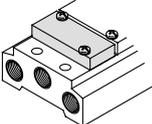
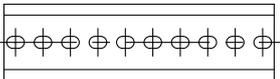
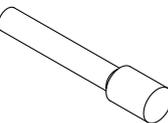
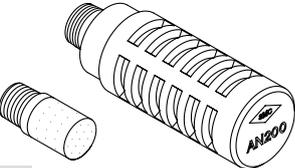
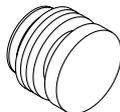
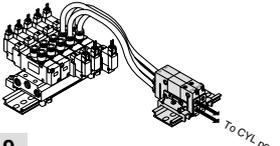
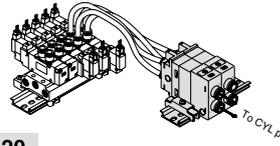
## Model Selection

		Sonic conductance C [dm <sup>3</sup> /(s·bar)]		Type of actuation	Voltage	Electrical entry	Light/surge voltage suppressor	Manual override
<b>Body ported</b>	<b>5 port</b>	<b>VQZ1000</b> 	0.54	0.71	2 position single 			
		<b>VQZ2000</b> 	1.4	1.6	2 position double 			
		<b>VQZ3000</b> 	2.4	3.2	3 position closed centre 			
	<b>3 port for mixed mounting</b>	<b>VQZ1000</b> 	0.54	0.71	(A) 			
		<b>VQZ2000</b> 	1.4	1.6	N.C. 			
		<b>VQZ3000</b> 	2.4	3.2	N.O. 			
<b>Base mounted</b>	<b>5 port</b>	<b>VQZ1000</b> 	Metal	Rubber	2 position single 	(Standard) 12 VDC 24 VDC  (Option) 100 VAC 200 VAC 110 VAC 220 VAC	Grommet (G) 	Non-locking push type (Tool required)
		<b>VQZ2000</b> 	0.70	1.3	2 position double 			
		<b>VQZ3000</b> 	1.9	2.3	3 position closed centre 			
	<b>3 port for mixed mounting</b>	<b>VQZ1000</b> 	0.90	1.3	(A) 			
		<b>VQZ2000</b> 	1.9	2.3	N.C. 			
		<b>VQZ3000</b> 	3.0	4.6	N.O. 			
						L plug connector (L) 	With light/surge voltage suppressor	Locking type (Tool required)
						M plug connector (M) 	L plug connector (L) M plug connector (M)	
						DIN terminal (Y) 	DIN terminal (YZ) (Except VQZ1000)	
						(Except VQZ1000) 		

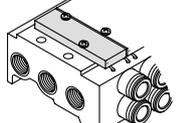
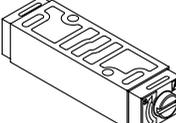
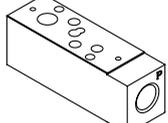
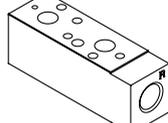
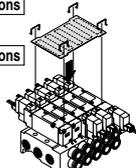
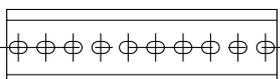
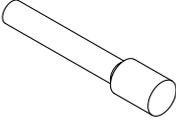
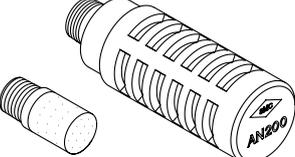
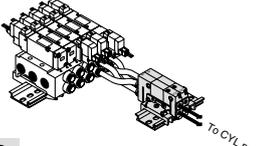
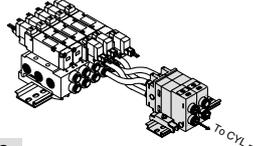
\* Flow characteristics: 4/2→5/3 (A/B→R1/R2)

## Manifold Options

### Body Ported

<p><b>Blanking plate assembly</b> VVQZ1000-10A-2 (For VQZ1000) VVQZ2000-10A-2 (For VQZ2000) VVQZ3000-10A-2 (For VQZ3000)</p>  <p>P.18</p>	<p><b>DIN rail</b> AXT100-DR-□</p>  <p>P.18</p>	<p><b>Blanking plug</b> KQP-23-X19 KQP-04-X19 KQP-06-X19 KQP-08-X19 KQP-10-X19</p>  <p>P.18</p>	<p><b>Silencer (For EXH port)</b></p>  <p>P.18</p>
<p><b>Port plug</b> VVQZ100-CP (For VQZ1000/2000) VVQZ2000-CP (For VQZ3000)</p>  <p>P.18</p>	<p><b>Double check block (Separated)</b> For VQZ1000 VQ1000-FPG-□□</p>  <p>P.19</p>	<p><b>Double check block (Separated)</b> For VQZ2000/3000 VQ2000-FPG-□□</p>  <p>P.20</p>	<p><b>Connector assembly</b> For single solenoid SY3000-37-81A-□-N For double solenoid SY3000-37-81A-□-□</p>  <p>P.29</p>
<p><b>Connector assembly</b> SY3000-37-80A-□</p>  <p>P.29</p>	<p><b>Housing (1 set: 8 pcs.)</b> SY3000-44-3A</p>  <p>P.29</p>		

### Base Mounted

<p><b>Blanking plate assembly</b> VVQZ1000-10A-5 (For VQZ1000) VVQZ2000-10A-5 (For VQZ2000) VVQZ3000-10A-5 (For VQZ3000)</p>  <p>P.47</p>	<p><b>Restrictor spacer</b> (Applicable to VQZ2000) VVQZ2000-20A-5</p>  <p>P.47</p>	<p><b>Individual SUP spacer</b> VVQZ1000-P-5-M5 (For VQZ1000) VVQZ2000-P-5-01 (For VQZ2000) VVQZ3000-P-5-02 (For VQZ3000)</p>  <p>P.47</p>	<p><b>Individual EXH spacer</b> VVQZ1000-R-5-M5 (For VQZ1000) VVQZ2000-R-5-01 (For VQZ2000) VVQZ3000-R-5-02 (For VQZ3000)</p>  <p>P.47</p>
<p><b>Port plug</b> VVQZ1000-CP (For VQZ1000) VVQZ2000-CP (For VQZ2000) VVQZ3000-CP (For VQZ3000)</p>  <p>P.47</p>	<p><b>Name plate [-N]</b> (Applicable to VQZ2000/3000) VVQZ2000-N5-Stations (For VQZ2000) VVQZ3000-N5-Stations (For VQZ3000)</p>  <p>P.48</p>	<p><b>DIN rail</b> AXT100-DR-□</p>  <p>P.48</p>	<p><b>Blanking plug</b> KQP-23-X19 KQP-04-X19 KQP-06-X19 KQP-08-X19 KQP-10-X19</p>  <p>P.48</p>
<p><b>Silencer (For EXH port)</b></p>  <p>P.48</p>	<p><b>Double check block (Separated)</b> For VQZ1000 VQ1000-FPG-□□</p>  <p>P.49</p>	<p><b>Double check block (Separated)</b> For VQZ2000/3000 VQ2000-FPG-□□</p>  <p>P.50</p>	<p><b>Connector assembly</b> For single solenoid SY3000-37-81A-□-N For double solenoid SY3000-37-81A-□-□</p>  <p>P.61</p>
<p><b>Connector assembly</b> SY3000-37-80A-□</p>  <p>P.61</p>	<p><b>Housing (1 set: 8 pcs.)</b> SY3000-44-3A</p>  <p>P.61</p>		

Body Ported  
Plug Lead Unit

# 5 Port Solenoid Valve

## Series VQZ1000/2000/3000

### Single Unit



### How to Order Valve

VQZ 1 1 2 1 — 5 M — 1 — C6 — Q

**Series**

1	VQZ1000 body width 10 mm
2	VQZ2000 body width 15 mm
3	VQZ3000 body width 18 mm

**Type of actuation**

1	2 position single (A)(B) 5 1 3 (R1)(P)(R2)	Note 1)	5	3 position pressure centre (A)(B) 4 2 5 1 3 (R1)(P)(R2)
	2 position double (A)(B) (A)(B) 5 1 3 5 1 3 (R1)(P)(R2) (R1)(P)(R2) Metal seal Rubber seal			8
3	3 position closed centre (A)(B) 4 2 5 1 3 (R1)(P)(R2)	Note 2)	9	3 port for mixed mounting (N.O.) (A)(B) 4 2 5 1 3 (R1)(P)(R2)
	3 position exhaust centre (A)(B) 4 2 5 1 3 (R1)(P)(R2)			4

Note 1) There is no 3 position pressure centre for the metal seal type of the VQZ1000 series.  
Note 2) The port plug of the 3-port mixing valve can be replaced with a fitting and the valve can then be used as a 5 port single type valve. (Refer to back page 5.)

**Body type**

2	Body ported
---	-------------

**Seal**

0	Metal seal
1	Rubber seal

**Function**

Symbol	Specifications	DC	AC
-	Standard type	(0.35 W)	Note 4)
B Note 1)	High speed response type	(0.9 W)	—
K Note 1)	High pressure type (Metal seal type only)	(0.9 W)	—
R Note 1, 2, 3)	External pilot type		
BR Note 1, 2, 3)	High speed response/External pilot type	(0.9 W)	—
KR Note 1, 2, 3)	High pressure/External pilot type (Metal seal type only)	(0.9 W)	—

Note 1) Option  
Note 2) For details on external pilot type, refer to page 21.  
Note 3) External pilot type is not applicable to VQZ1000.  
Note 4) For power consumption of AC specification, refer to page 2.



**Caution**  
Use standard (DC) specification for continuous duty.

**IP65 compliant**

-	None
W Note)	Compliant

Note) VQZ2000/3000 DIN terminal rubber seal type only (without external pilot). For details on IP65 enclosure, refer to page 21.

**Port size [4 (A), 2 (B) port]**

Symbol	Port size	VQZ1000	VQZ2000	VQZ3000
C3	ø3.2 one-touch fitting		—	—
C4	ø4 one-touch fitting			—
C6	ø6 one-touch fitting			
C8	ø8 one-touch fitting	—	—	
C10	ø10 one-touch fitting	—	—	
M5	M5 thread			—
O2	Rc 1/4	—	—	

Note) For inch size one-touch fittings and optional thread type (NPT, NPTF, G), refer to page 21.

**Manual override**

-: Non-locking push type (Tool required)	B: Locking type (Tool required)

**Option**

-: None	F: With bracket (2 position single type only)

**Electrical entry**

G: Grommet (DC specification)	L: L plug connector with lead wire	LO: L plug connector without connector	M: M plug connector with lead wire	MO: M plug connector without connector
	With light/surge voltage suppressor 	With light/surge voltage suppressor 	With light/surge voltage suppressor 	With light/surge voltage suppressor 
Y: DIN terminal Note 1)	YO: DIN terminal without connector Note 1)	YZ: DIN terminal Note 1)	YOS: DIN terminal without connector (DC specification) Note 1)	YS: DIN terminal (DC specification) Note 1)
		With light/surge voltage suppressor 	With surge voltage suppressor 	With surge voltage suppressor 

Note 1) Applicable to VQZ2000/3000 only. For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.  
Note 2) Standard lead wire length: 300 mm

**Coil voltage**

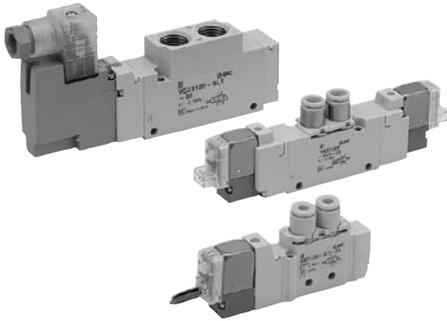
1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC [115 VAC] (50/60 Hz)
4	220 VAC [230 VAC] (50/60 Hz)
5	24 VDC
6	12 VDC

Note) AC specification is only available with Y, YO, YZ type.

Note) For one-touch fittings to be mouned on this valve and silencer part no., refer to back page 4.

# Body Ported Series VQZ1000/2000/3000

## Specifications



Type		Metal seal	Rubber seal
Fluid		Air, Inert gas	
Max. operating pressure (MPa)		0.7 (High pressure type: 1.0)	
Min. operating pressure (MPa)	2 position	0.1	0.15
	3 position	VQZ3000, 3 position only	0.1
			0.2
Ambient and fluid temperature (°C)		-10 to 50 (No freezing)	
Max. operating frequency (Hz)	2 position single, double	20	5
	3 position	10	3
Manual override		Non-locking push type, Locking type (Tool required)	
Pilot exhaust method		Individual exhaust	
Lubrication		Not required	
Mounting orientation		Free	
Shock/Vibration resistance (m/s <sup>2</sup> ) <sup>Note)</sup>		150/30	
Enclosure		Dust-tight (DIN terminal: IP65*)	



\* Based on IEC60529.

Note) 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 energised and de-energised states every once for each condition. (Value in the initial state)

Vibration resistance: No malfunction occurred in one sweep test between 45 and 2000 Hz. Test was performed to axis and right angle directions of the main valve and armature when pilot signal is ON and OFF. (Value in the initial state)

## Optional Specifications

High speed response type
High pressure type (Metal seal type only)
External pilot type (Except VQZ1000)*

\* For details on external pilot type, refer to page 21.

## Solenoid Specifications

Electrical entry	Grommet (G)		M plug connector (M)	
	L plug connector (L)	DIN terminal (Y)	DIN terminal (Y)	
	G, L, M	Y		
Coil rated voltage (V)	DC		24, 12	
	AC 50/60 Hz		100, 110, 200, 220*	
Allowable voltage fluctuation				
±10% of rated voltage				
Power consumption (W)	DC	Standard	0.35 (With light: 0.4 (DIN terminal with light: 0.45))	
		High speed response, high pressure	0.9 (With light: 0.95 (DIN terminal with light: 1.0))	
Apparent power (VA)*	AC	100V	-	0.78 (With light: 0.87)
		110V	-	0.86 (With light: 0.87)
		[115V]	-	[0.94 (With light: 1.07)]
		200V	-	1.15 (With light: 1.30)
		[230V]	-	[1.39 (With light: 1.60)]
Surge voltage suppressor		Diode (DIN terminal, Varistor when non-polar types)		
Indicator light		LED (Neon light when AC with DIN terminal)		



\* In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

\* For 115 VAC and 230 VAC, the allowable voltage is -15% to +5% of rated voltage.

## Flow Characteristics

Series	Configuration		Model	Flow characteristics						Response time (ms) <sup>Note 1)</sup>				Weight (g) <sup>Note 2)</sup>	
				1→4/2 (P→A/B)			4/2→5/3 (A/B→EA/EB)			Standard: 0.35 W	High speed: 0.9 W	High pressure: 0.9 W	AC		
				C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv						
VQZ1000	2 position	Single	Metal seal VQZ1120	0.54	0.20	0.13	0.54	0.26	0.13	17 or less	12 or less	15 or less	-	45	
			Rubber seal VQZ1121	0.90	0.40	0.26	0.71	0.40	0.19	17 or less	12 or less	15 or less	-		
	2 position	Double	Metal seal VQZ1220	0.54	0.20	0.13	0.54	0.26	0.13	10 or less	10 or less	13 or less	-	62	
			Rubber seal VQZ1221	0.90	0.40	0.26	0.71	0.40	0.19	10 or less	10 or less	13 or less	-		
	3 position	Closed centre	Metal seal VQZ1320	0.55	0.29	0.13	0.50	0.25	0.08	25 or less	20 or less	26 or less	-	65	
			Rubber seal VQZ1321	0.87	0.38	0.23	0.68	0.39	0.18	30 or less	25 or less	33 or less	-		
Exhaust centre		Metal seal VQZ1420	0.55	0.28	0.13	0.54	0.26	0.13	25 or less	20 or less	26 or less	-			
		Rubber seal VQZ1421	0.87	0.38	0.23	0.71	0.40	0.19	30 or less	25 or less	33 or less	-			
3 position	Pressure centre	Metal seal VQZ1520	0.91	0.41	0.26	0.68	0.39	0.18	30 or less	25 or less	33 or less	-	65		
		Rubber seal VQZ1521	0.91	0.41	0.26	0.68	0.39	0.18	30 or less	25 or less	33 or less	-			
VQZ2000	2 position	Single	Metal seal VQZ2120	1.2	0.21	0.30	1.4	0.20	0.32	18 or less	14 or less	18 or less	34 or less	65	
			Rubber seal VQZ2121	1.7	0.39	0.45	1.6	0.35	0.44	20 or less	15 or less	20 or less	36 or less		
		2 position	Double	Metal seal VQZ2220	1.2	0.21	0.30	1.4	0.20	0.32	10 or less	10 or less	13 or less	13 or less	84
				Rubber seal VQZ2221	1.7	0.39	0.45	1.6	0.35	0.44	12 or less	12 or less	15 or less	15 or less	
	3 position	Closed centre	Metal seal VQZ2320	1.1	0.21	0.26	1.1	0.24	0.26	28 or less	23 or less	30 or less	44 or less	91	
			Rubber seal VQZ2321	1.4	0.33	0.35	1.4	0.37	0.36	30 or less	25 or less	33 or less	47 or less		
		Exhaust centre	Metal seal VQZ2420	1.1	0.23	0.28	1.4	0.20	0.32	28 or less	23 or less	30 or less	44 or less		
			Rubber seal VQZ2421	1.4	0.33	0.35	1.6	0.35	0.44	30 or less	25 or less	33 or less	47 or less		
		3 position	Pressure centre	Metal seal VQZ2520	1.3	0.28	0.34	1.2	0.27	0.30	28 or less	23 or less	30 or less		44 or less
				Rubber seal VQZ2521	1.7	0.34	0.44	1.4	0.37	0.36	30 or less	25 or less	33 or less		47 or less
VQZ3000	2 position	Single	Metal seal VQZ3120	2.4	0.23	0.56	2.4	0.19	0.54	21 or less	17 or less	22 or less	34 or less	108	
			Rubber seal VQZ3121	3.1	0.34	0.79	3.2	0.38	0.81	33 or less	25 or less	33 or less	57 or less		
		2 position	Double	Metal seal VQZ3220	2.4	0.23	0.56	2.4	0.19	0.54	10 or less	10 or less	13 or less	13 or less	125
				Rubber seal VQZ3221	3.1	0.34	0.79	3.2	0.38	0.81	15 or less	15 or less	20 or less	20 or less	
	3 position	Closed centre	Metal seal VQZ3320	2.3	0.19	0.54	2.1	0.21	0.54	33 or less	25 or less	33 or less	53 or less	136	
			Rubber seal VQZ3321	2.7	0.30	0.66	2.4	0.33	0.62	35 or less	30 or less	39 or less	59 or less		
		Exhaust centre	Metal seal VQZ3420	2.3	0.19	0.54	2.4	0.19	0.54	33 or less	25 or less	33 or less	53 or less		
			Rubber seal VQZ3421	2.7	0.30	0.66	3.2	0.38	0.81	35 or less	30 or less	39 or less	59 or less		
		3 position	Pressure centre	Metal seal VQZ3520	2.5	0.25	0.60	2.1	0.18	0.47	33 or less	25 or less	33 or less		53 or less
				Rubber seal VQZ3521	3.2	0.38	0.82	2.4	0.33	0.62	35 or less	30 or less	39 or less		59 or less



Note 1) Based on JIS B 8375-1981 (Supply pressure: 0.5 MPa; with light/surge voltage suppressor: clean air)

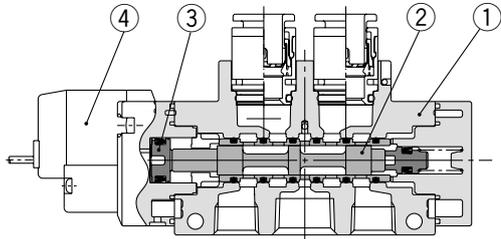
Response time values will change depending on pressure and air quality.

Note 2) Weight for threaded connection

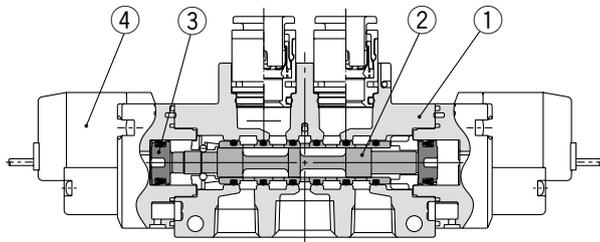
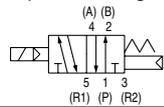
# Series VQZ1000/2000/3000

## Construction: VQZ1000/2000/3000

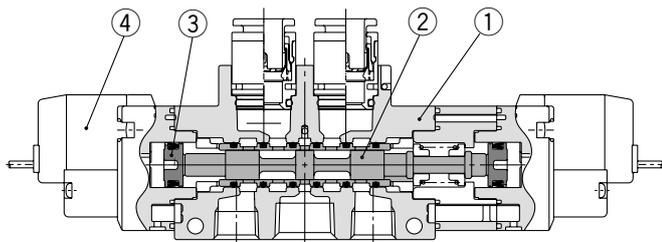
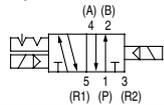
### Metal seal type



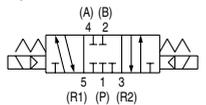
2 position single



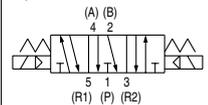
2 position double



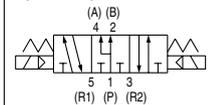
3 position closed centre



3 position exhaust centre

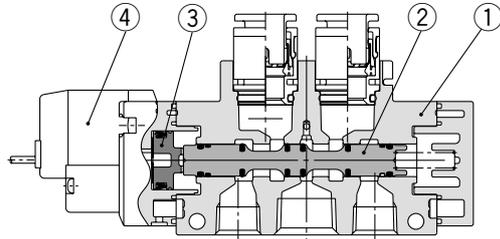


3 position pressure centre

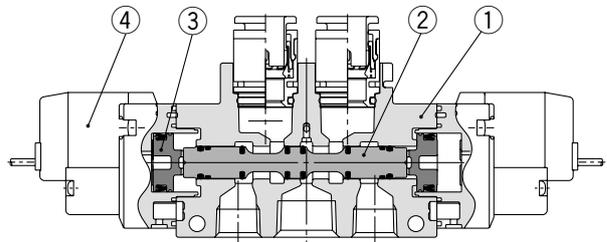
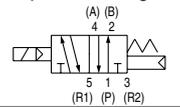


 Note) Except metal seal type of the VQZ1000.

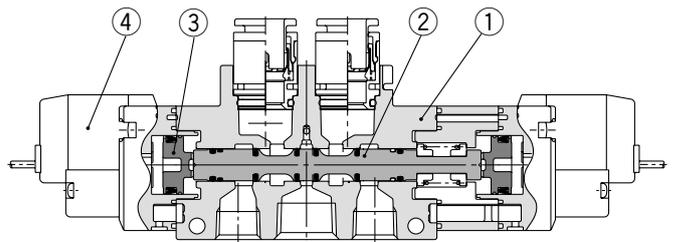
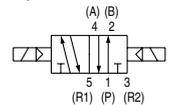
### Rubber seal type



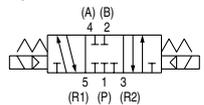
2 position single



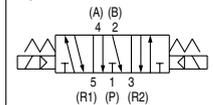
2 position double



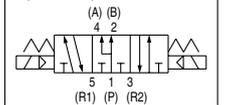
3 position closed centre



3 position exhaust centre



3 position pressure centre



### Component Parts

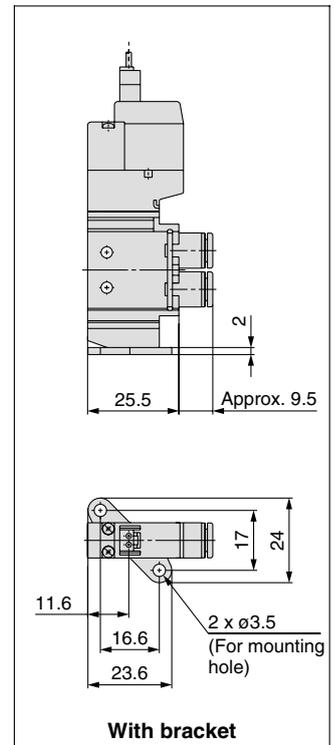
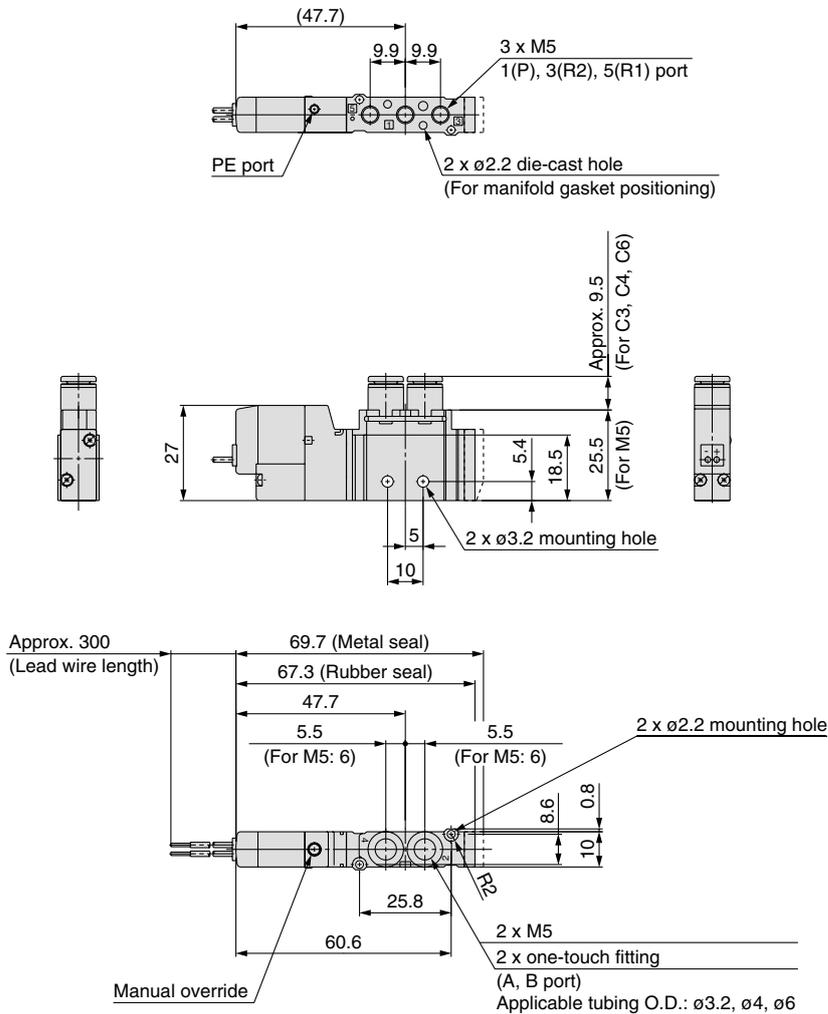
No.	Description	Material	Note
1	<b>Body</b>	Aluminum die-casted	
2	<b>Spool, Sleeve</b>	Stainless steel	Metal seal
	<b>Spool valve</b>	Aluminum/HNBR	Rubber seal
3	<b>Piston</b>	Resin	
4	<b>Pilot valve assembly</b>	—	

Note) For "How to Order" of the pilot valve assembly, refer to page 22.

## Dimensions: VQZ1000

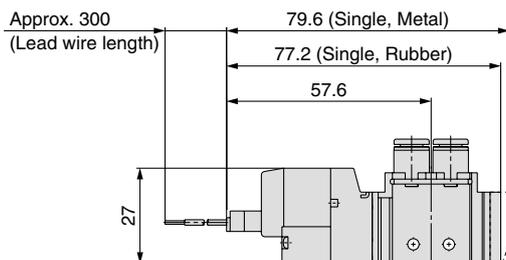
### 2 Position Single

Grommet (G): VQZ112<sup>0</sup> - □G□1-C3, C4, C6, M5-Q

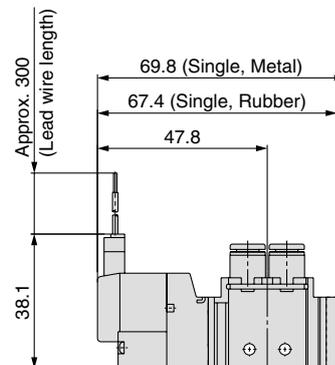


Note) For bracket assembly part no., refer to page 22.

L plug connector (L): VQZ112<sup>0</sup> - □L□1-C3, C4, C6, M5-Q



M plug connector (M): VQZ112<sup>0</sup> - □M□1-C3, C4, C6, M5-Q

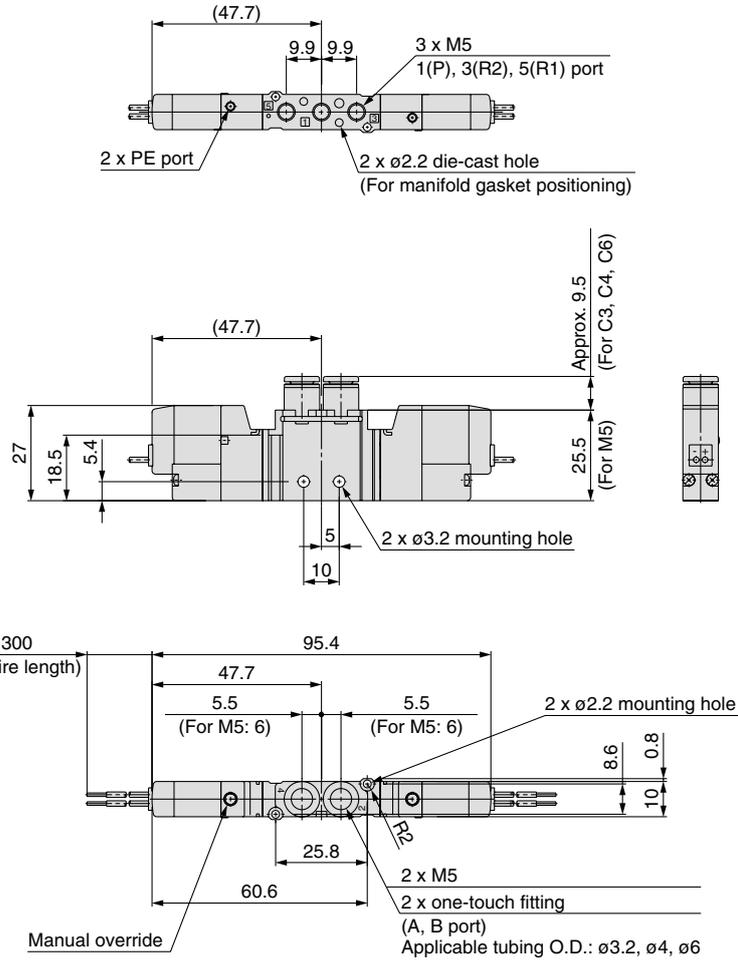


# Series VQZ1000/2000/3000

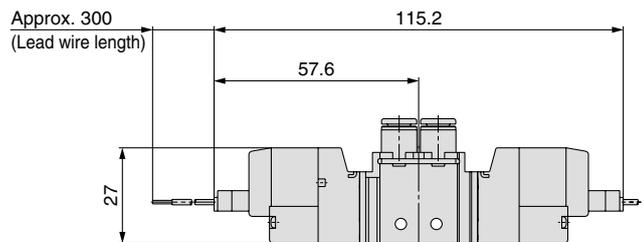
## Dimensions: VQZ1000

### 2 Position Double

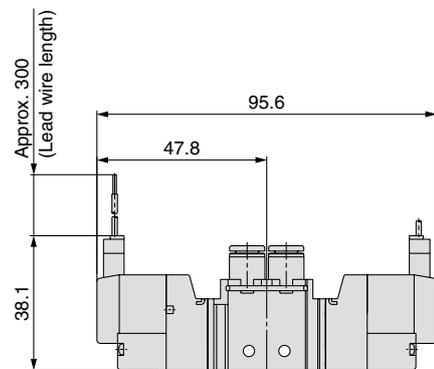
Grommet (G): VQZ122<sup>0</sup><sub>1</sub> - □G□1-C3, C4, C6, M5-Q



L plug connector (L): VQZ122<sup>0</sup><sub>1</sub> - □L□1-C3, C4, C6, M5-Q



M plug connector (M): VQZ122<sup>0</sup><sub>1</sub> - □M□1-C3, C4, C6, M5-Q

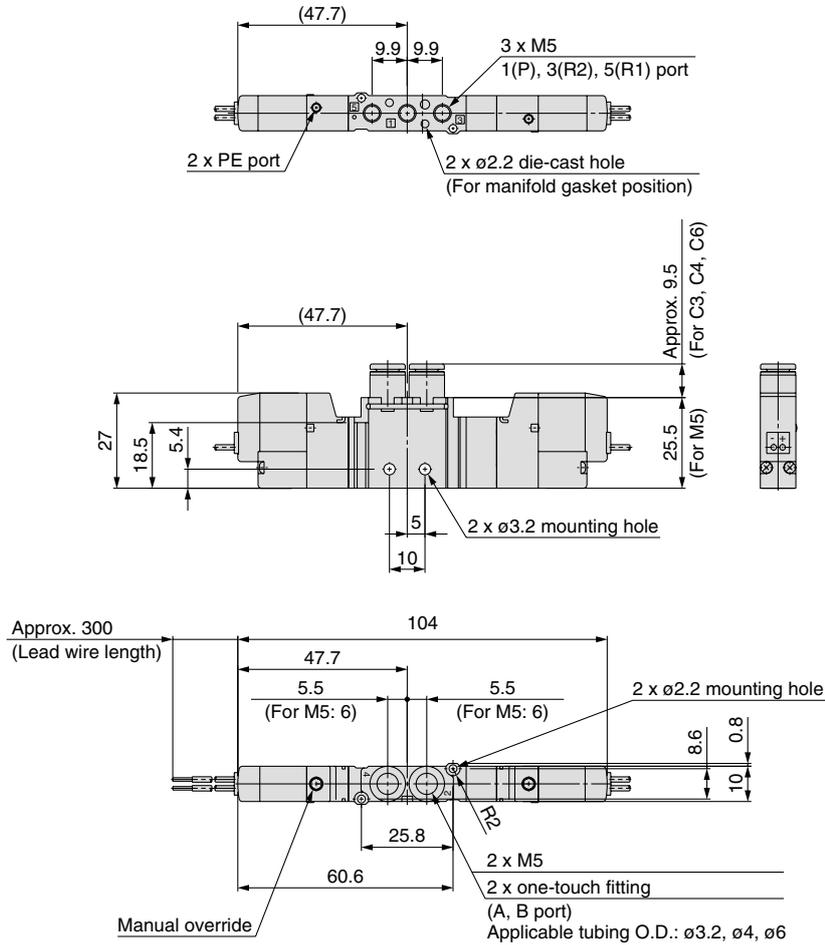


# Body Ported *Series VQZ1000/2000/3000*

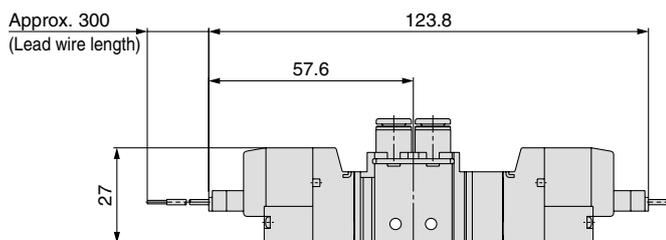
## Dimensions: VQZ1000

### 3 Position Closed Centre/Exhaust Centre/Pressure Centre (Except Metal Seal Type)

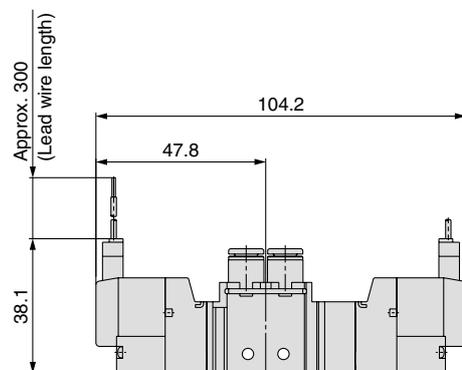
Grommet (G): VQZ1 $\frac{3}{4}$ 2 $\frac{0}{5}$ -□G□1-C3, C4, C6, M5-Q



L plug connector (L): VQZ1 $\frac{3}{4}$ 2 $\frac{0}{5}$ -□L□1-C3, C4, C6, M5-Q



M plug connector (M): VQZ1 $\frac{3}{4}$ 2 $\frac{0}{5}$ -□M□1-C3, C4, C6, M5-Q

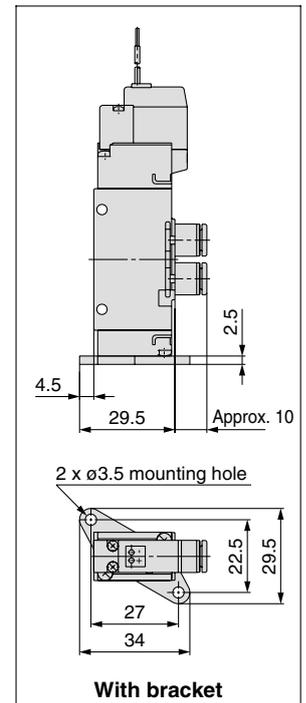
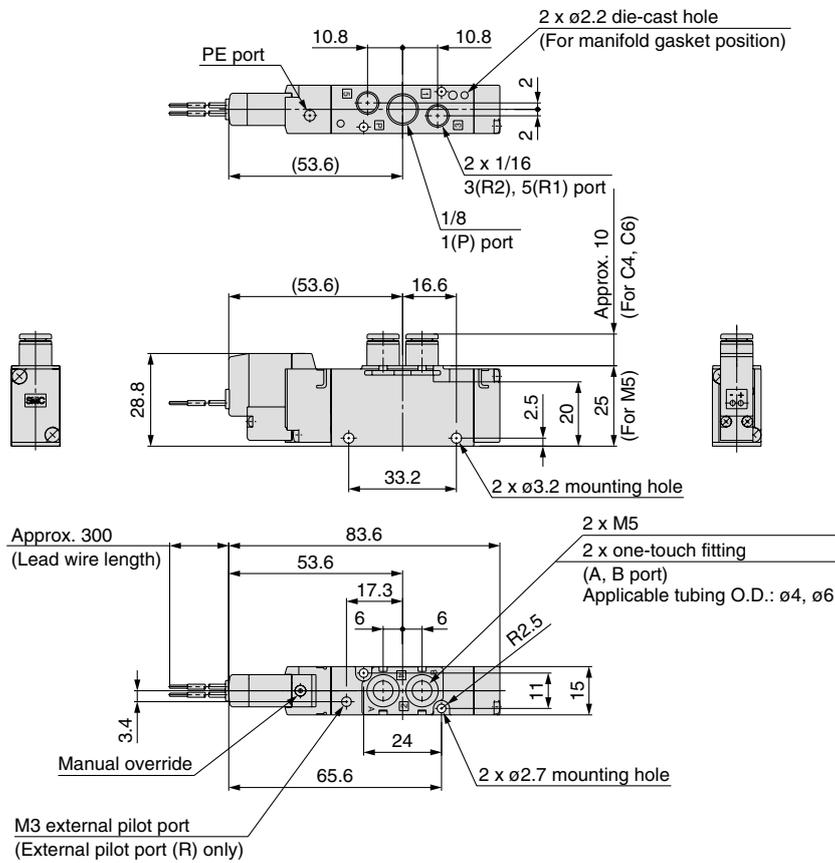


# Series VQZ1000/2000/3000

## Dimensions: VQZ2000

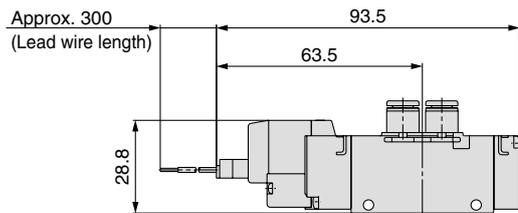
### 2 Position Single

Grommet (G): VQZ212<sub>1</sub><sup>0</sup> (R)-□G□1-C4, C6, M5-Q

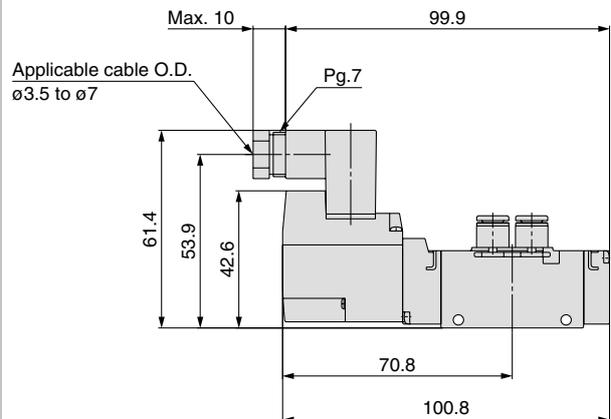


Note 1) For bracket assembly part no., refer to page 22.  
 Note 2) For model no. of one-touch fittings for P and R port and silencer, refer to back page 4.

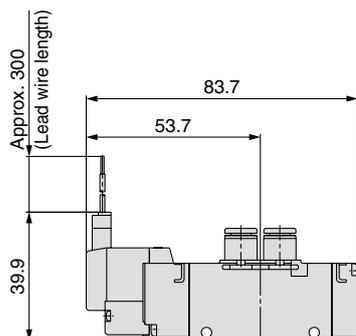
L plug connector (L): VQZ212<sub>1</sub><sup>0</sup> (R)-□L□1-C4, C6, M5-Q



DIN terminal (Y): VQZ212<sub>1</sub><sup>0</sup> (R)-□Y□1-C4, C6, M5-Q



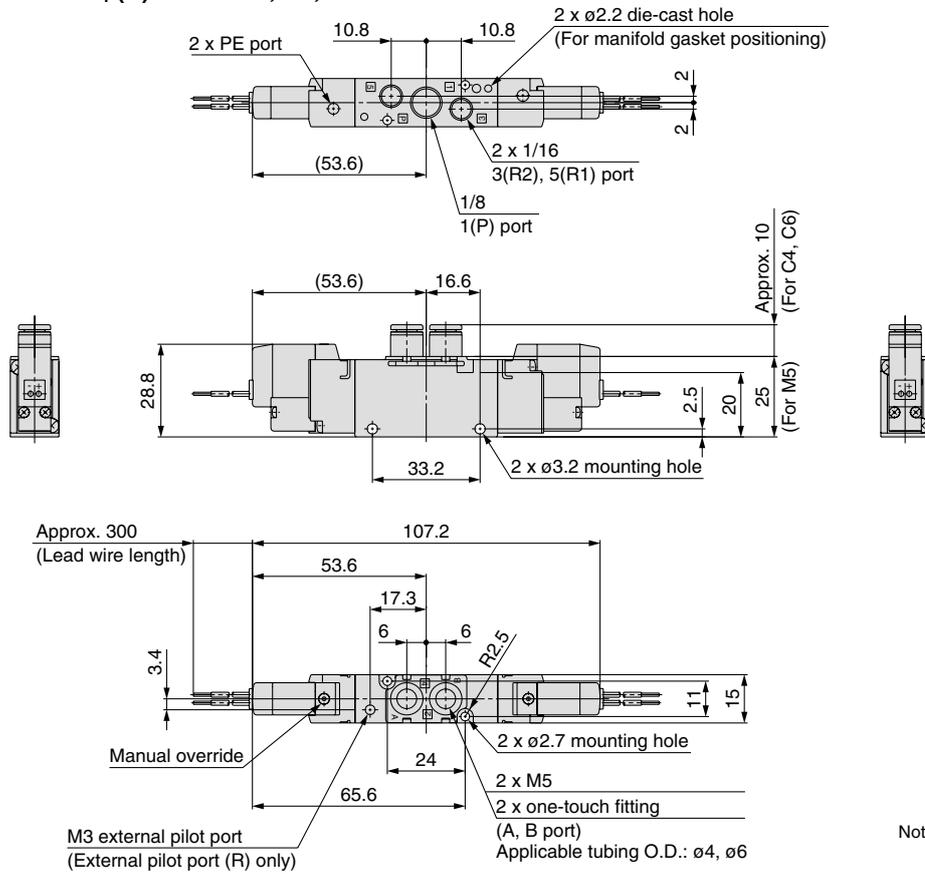
M plug connector (M): VQZ212<sub>1</sub><sup>0</sup> (R)-□M□1-C4, C6, M5-Q



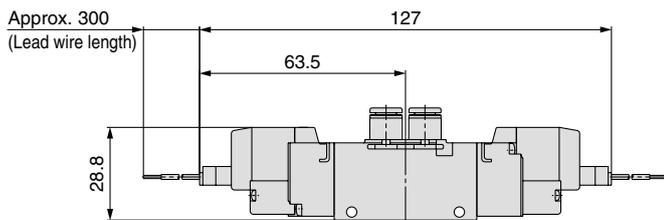
## Dimensions: VQZ2000

### 2 Position Double

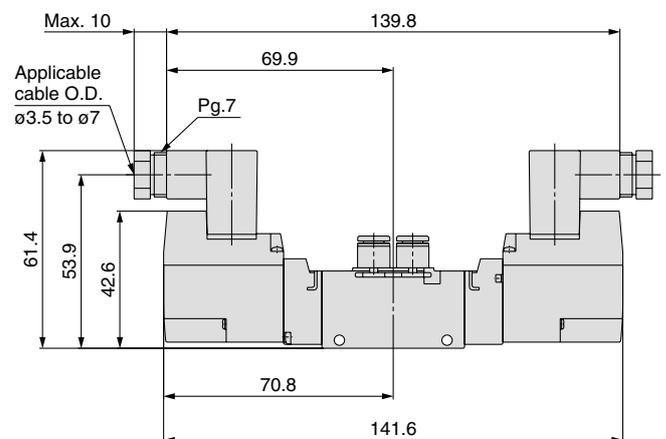
Grommet (G): VQZ222<sup>0</sup><sub>1</sub>(R)-□G□1-C4, C6, M5-Q



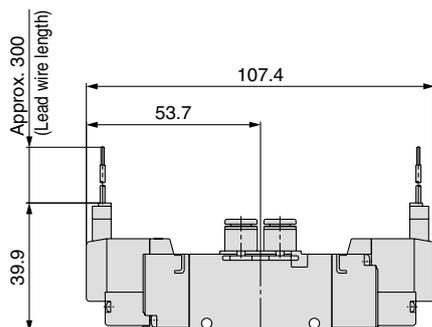
L plug connector (L): VQZ222<sup>0</sup><sub>1</sub>(R)-□L□1-C4, C6, M5-Q



DIN terminal (Y): VQZ222<sup>0</sup><sub>1</sub>(R)-□Y□1-C4, C6, M5



M plug connector (M): VQZ222<sup>0</sup><sub>1</sub>(R)-□M□1-C4, C6, M5-Q

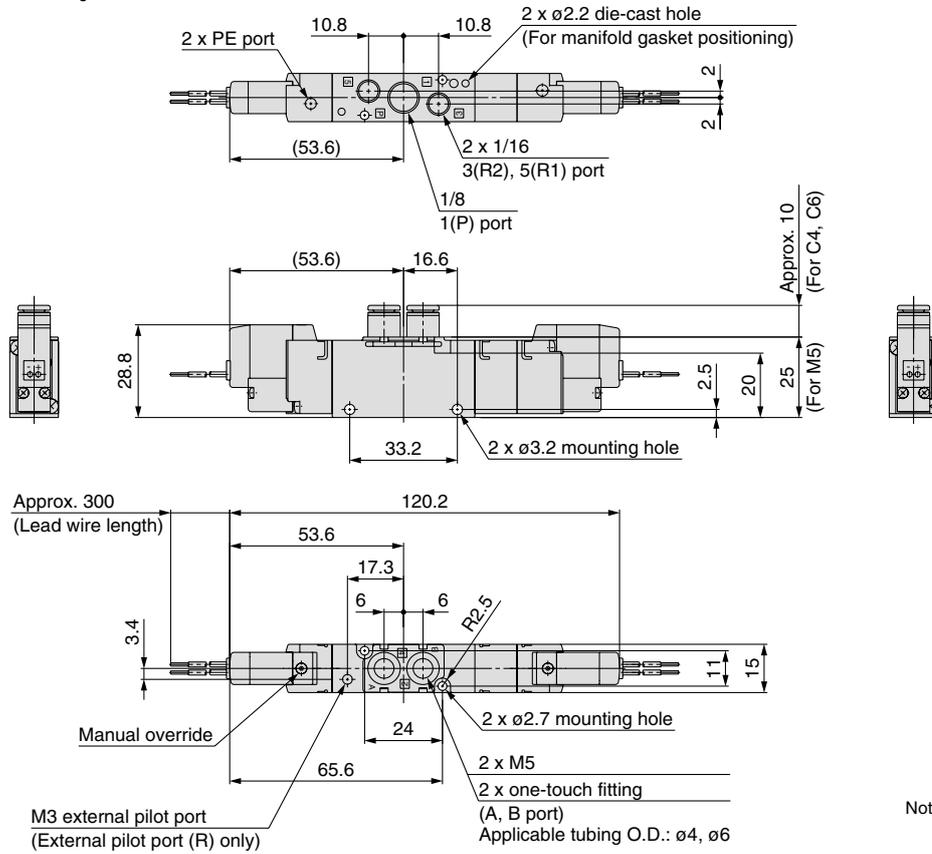


# Series VQZ1000/2000/3000

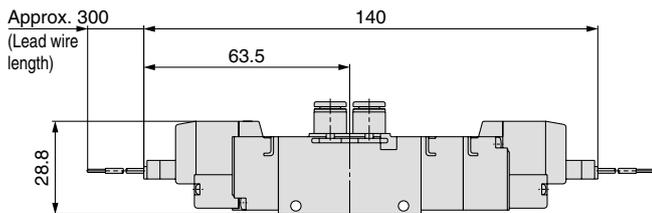
## Dimensions: VQZ2000

### 3 Position Closed Centre/Exhaust Centre/Pressure Centre

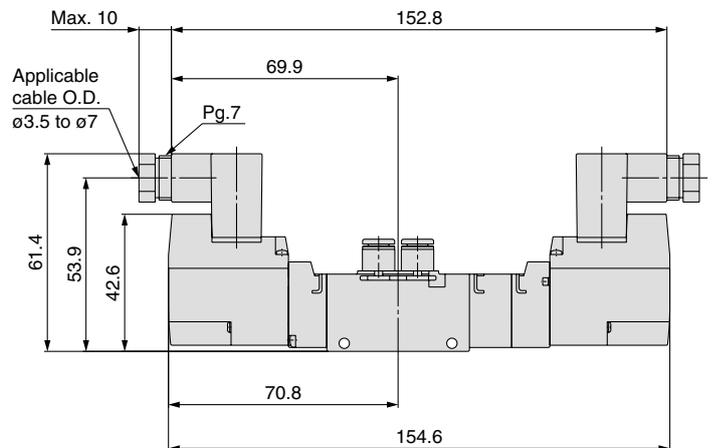
Grommet (G): VQZ2 $\frac{3}{4}$  2 $\frac{0}{1}$  (R)-□G□1-C4, C6, M5-Q



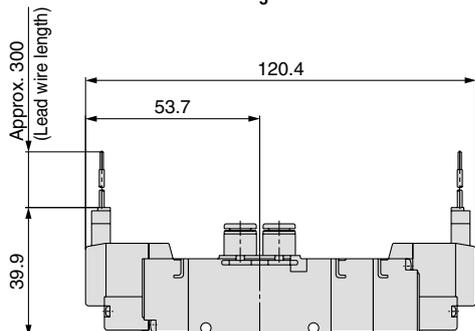
L plug connector (L): VQZ2 $\frac{3}{4}$  2 $\frac{0}{1}$  (R)-□L□1-C4, C6, M5-Q



DIN terminal (Y): VQZ2 $\frac{3}{4}$  2 $\frac{0}{1}$  (R)-□Y□1-C4, C6, M5-Q



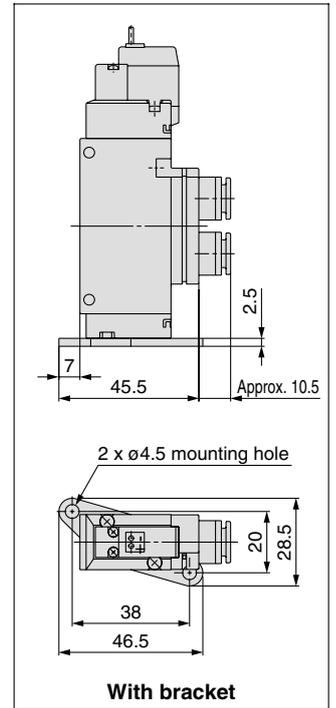
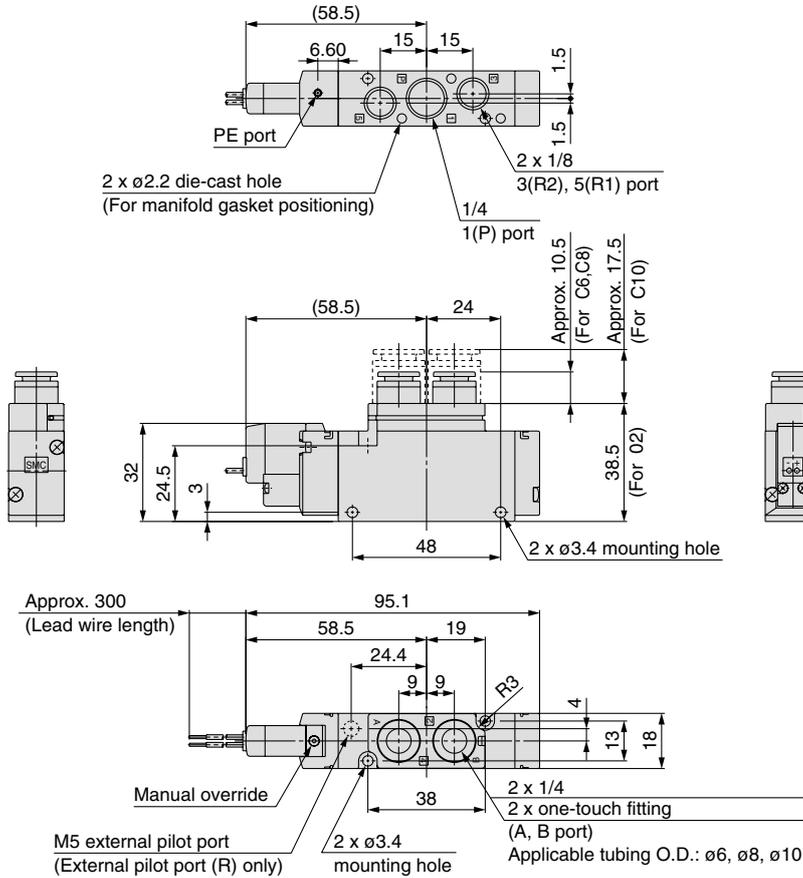
M plug connector (M): VQZ2 $\frac{3}{4}$  2 $\frac{0}{1}$  (R)-□M□1-C4, C6, M5-Q



## Dimensions: VQZ3000

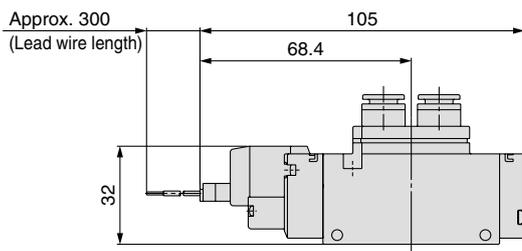
### 2 Position Single

Grommet (G): VQZ312  $\frac{0}{1}$ (R)-□G□1-C6, C8, C10, 02-Q

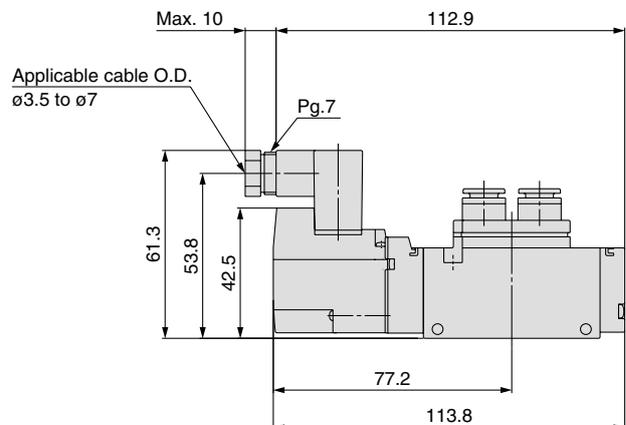


Note) For bracket assembly part no., refer to page 22.

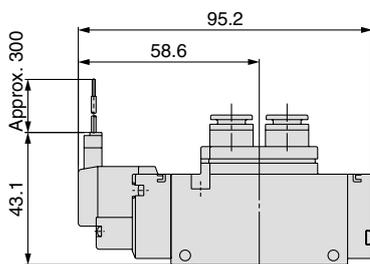
L plug connector (L): VQZ312  $\frac{0}{1}$ (R)-□L□1-C6, C8, C10, 02-Q



DIN terminal (Y): VQZ312  $\frac{0}{1}$ (R)-□Y□1-C6, C8, C10, 02-Q



M plug connector (M): VQZ312  $\frac{0}{1}$ (R)-□M□1-C6, C8, C10, 02-Q

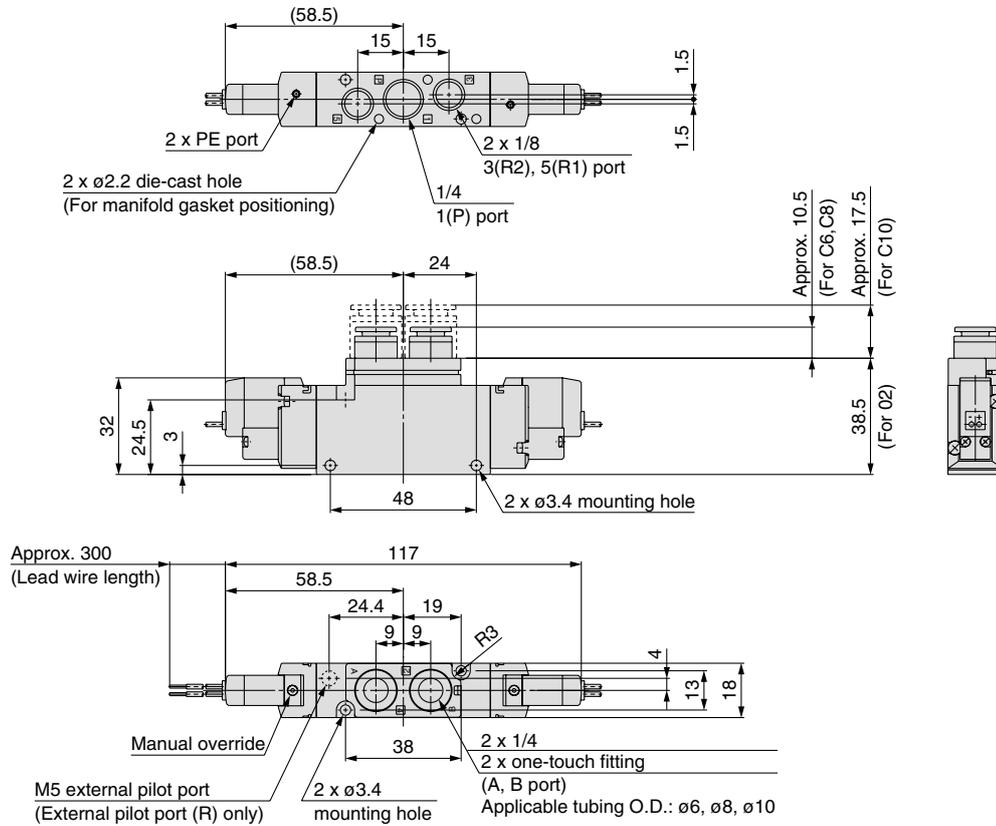


# Series VQZ1000/2000/3000

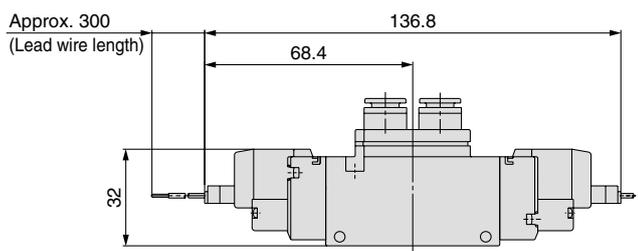
## Dimensions: VQZ3000

### 2 Position Double

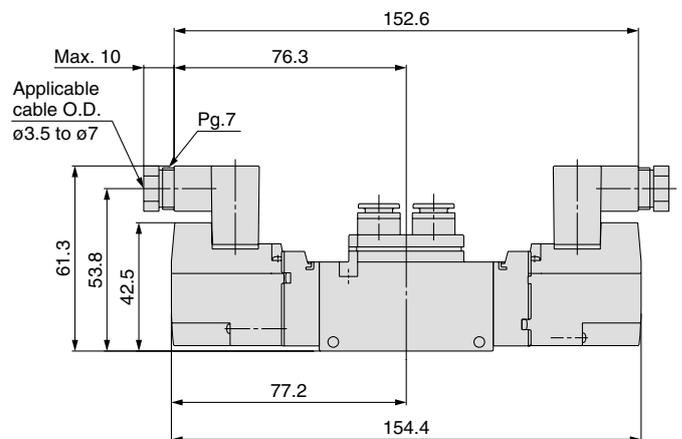
Grommet (G): VQZ322 <sup>0</sup>/<sub>1</sub> (R)-□G□1-C6, C8, C10, 02-Q



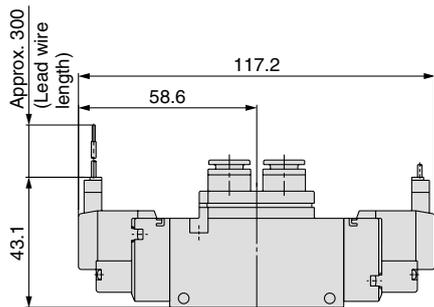
L plug connector (L): VQZ322 <sup>0</sup>/<sub>1</sub> (R)-□L□1-C6, C8, C10, 02-Q



DIN terminal (Y): VQZ322 <sup>0</sup>/<sub>1</sub> (R)-□Y□1-C6, C8, C10, 02-Q



M plug connector (M): VQZ322 <sup>0</sup>/<sub>1</sub> (R)-□M□1-C6, C8, C10, 02-Q





Body Ported  
Plug Lead Unit

# 5 Port Solenoid Valve

## Series VQZ1000/2000/3000

### Manifold

### Connector Kit



#### How to Order Manifold

**VV5QZ 1 2 - 08 C - [ ] - 00T - Q**

**Series**

1	VQZ1000
2	VQZ2000
3	VQZ3000

**Manifold type**

2	Body ported
---	-------------

**Stations**

02	2 stations
⋮	⋮
20	20 stations

**Option**

-	None
D	DIN rail mounting (With DIN rail in standard length)
D0	DIN rail mounting (Without DIN rail)

Note) Order DIN rail separately.  
For DIN rail part no., refer to page 18.

**Kit type**

C	Connector
---	-----------

**Thread type (1 (P), 3 (R2), 5 (R1) ports)**

-	Rc
00N	NPT
00T	NPTF
00F	G

Note) For 1(P), 3(R2) and 5(R1) ports with optional thread type (NPT, NPTF, G), refer to page 21.

#### How to Order Valve

**VQZ 1 1 2 1 [ ] - 5 M [ ] - 1 - C6 - Q**

**Series**

1	VQZ1000 body width 10 mm
2	VQZ2000 body width 15 mm
3	VQZ3000 body width 18 mm

**Type of actuation**

1	2 position single
2	2 position double
3	3 position closed centre
4	3 position exhaust centre
5	3 position pressure centre
8	3 port for mixed mounting N.C.
9	3 port for mixed mounting N.O.

Note 1) There is no 3 position pressure centre for the metal seal type of the VQZ1000 series.  
Note 2) The port plug of the 3-port mixing valve can be replaced with a fitting and the valve can be used as a 5 port single type valve. (Refer to back page 5.)

**Body type**

2	Body ported
---	-------------

**Seal**

0	Metal seal
1	Rubber seal

**Function**

Symbol	Specifications	DC	AC
-	Standard type	(0.35 W)	Note 4)
B	High speed response type	(0.9 W)	—
K	High pressure type (Metal seal type only)	(0.9 W)	—
R	External pilot type		
BR	High speed response/External pilot type	(0.9 W)	—
KR	High pressure/External pilot type (Metal seal type only)	(0.9 W)	—

Note 1) Option  
Note 2) For details on external pilot type, refer to page 21.  
Note 3) External pilot type is not applicable to VQZ1000.  
Note 4) For power consumption of AC specification, refer to page 2.

**IP65 compliant**

-	None
W	Compliant

Note) VQZ2000/3000 DIN terminal rubber seal type only (without external pilot). For details on IP65 enclosure, refer to page 21.

**Port size [4 (A), 2 (B) port]**

Symbol	Port size	VQZ1000	VQZ2000	VQZ3000
C3	ø3.2 one-touch fitting		—	—
C4	ø4 one-touch fitting			—
C6	ø6 one-touch fitting			
C8	ø8 one-touch fitting	—	—	
C10	ø10 one-touch fitting	—	—	
M5	M5 thread			—
O2	Rc 1/4	—	—	

Note) For inch size one-touch fittings and optional thread type (NPT, NPTF, G), refer to page 21.

**Manual override**

-	Non-locking push type (Tool required)
B	Locking type (Tool required)

**Electrical entry**

Symbol	Electrical entry	Light/surge voltage suppressor
G	Grommet (DC specification)	None
L	L plug connector with lead wire	Yes
LO	L plug connector without connector	
M	M plug connector with lead wire	
MO	M plug connector without connector	None
Y	DIN terminal	
YO	DIN terminal without connector	Yes
YZ	DIN terminal	Yes
YS	DIN terminal (DC specification)	Yes
YOS	DIN terminal without connector (DC specification)	(Without light)

Note 1) Applicable to VQZ2000/3000 only. For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.  
Note 2) Standard lead wire length: 300 mm

**Coil voltage**

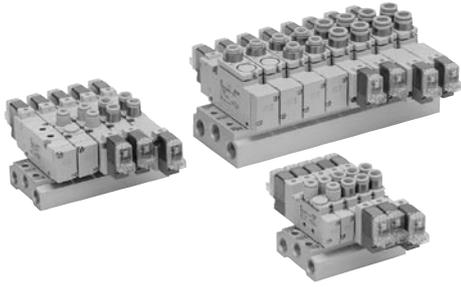
1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC [115 VAC] (50/60 Hz)
4	220 VAC [230 VAC] (50/60 Hz)
5	24 VDC
6	12 VDC



Use standard (DC) specification for continuous duty.

Note ) AC specification is only available with Y, YO, YZ type.

## Manifold Specifications



### Optional Specifications

High speed response type
High pressure type (Metal seal type only)
External pilot type (Except VQZ1000)*

\* For details on external pilot type, refer to page 21.

Series	Base model	Piping specifications		Applicable solenoid valve	Applicable station	Manifold base weight (g)
		Port location	Port size			
			1(P), 3/5(R)	4(A), 2(B)		
VQZ1000	VV5QZ12-□C-□-Q	Top	Rc 1/8	C3 (For ø3.2) C4 (For ø4) C6 (For ø6) M5 (M5 thread)	VQZ1□20 VQZ1□21	2 to 20 stations 2 stations: 64 Addition per station: 18
VQZ2000	VV5QZ22-□C-□-Q	Top	Rc 1/8	C4 (For ø4) C6 (For ø6) M5 (M5 thread)	VQZ2□20 VQZ2□21	2 to 20 stations 2 stations: 86 Addition per station: 26
VQZ3000	VV5QZ32-□C-□-Q	Top	Rc 1/4	C6 (For ø6) C8 (For ø8) C10 (For ø10) Rc 1/4	VQZ3□20 VQZ3□21	2 to 20 stations 2 stations: 181 Addition per station: 53

## How to Order Manifold Assembly (Example)

**Example**

VV5QZ22-05C-Q ..... 1 set C (C kit 5 station manifold base part no.)

- \* VVQZ2000-10A-2 ..... 1 set (Blanking plate assembly part no.)
- \* VQZ2120-5M1-C6-Q ..... 1 set (Single type part no.)
- \* VQZ2220-5M1-C6-Q ..... 2 sets (Double type part no.)
- \* VQZ2320-5M1-C6-Q ..... 1 set (3 position type part no.)

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

→ Enter in order starting from the first station on the D side.

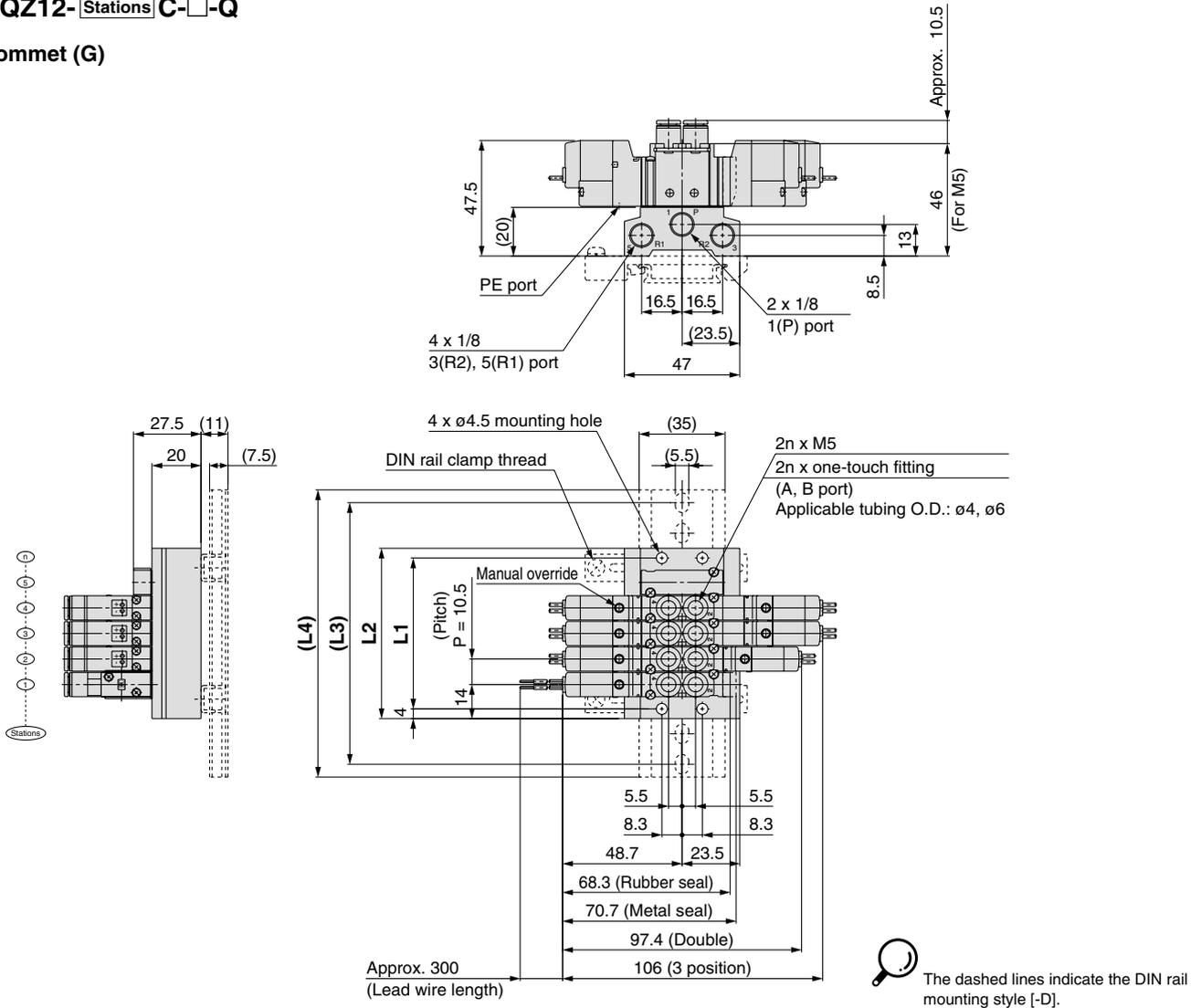
Add the valve and option part number under the manifold base part number.  
When entry of part numbers becomes complicated, indicate by using a manifold specification sheet.

# Series VQZ1000/2000/3000

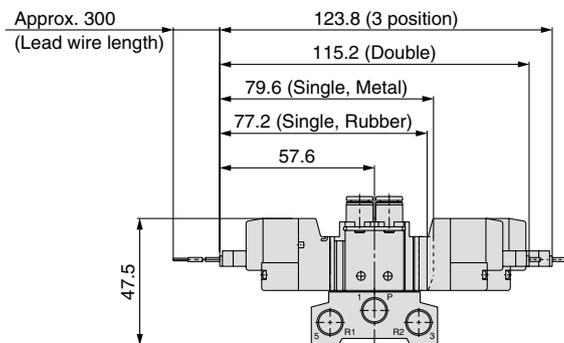
## Dimensions: VQZ1000

VV5QZ12- Stations C-□-Q

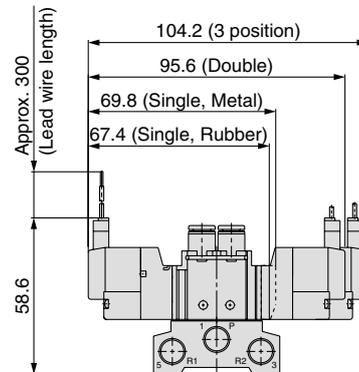
Grommet (G)



### L plug connector (L)



### M plug connector (M)



### Dimensions

Formula:  $L1 = 10.5n + 9.5$   $L2 = 10.5n + 17.5$  n: Stations (max. 20 stations)

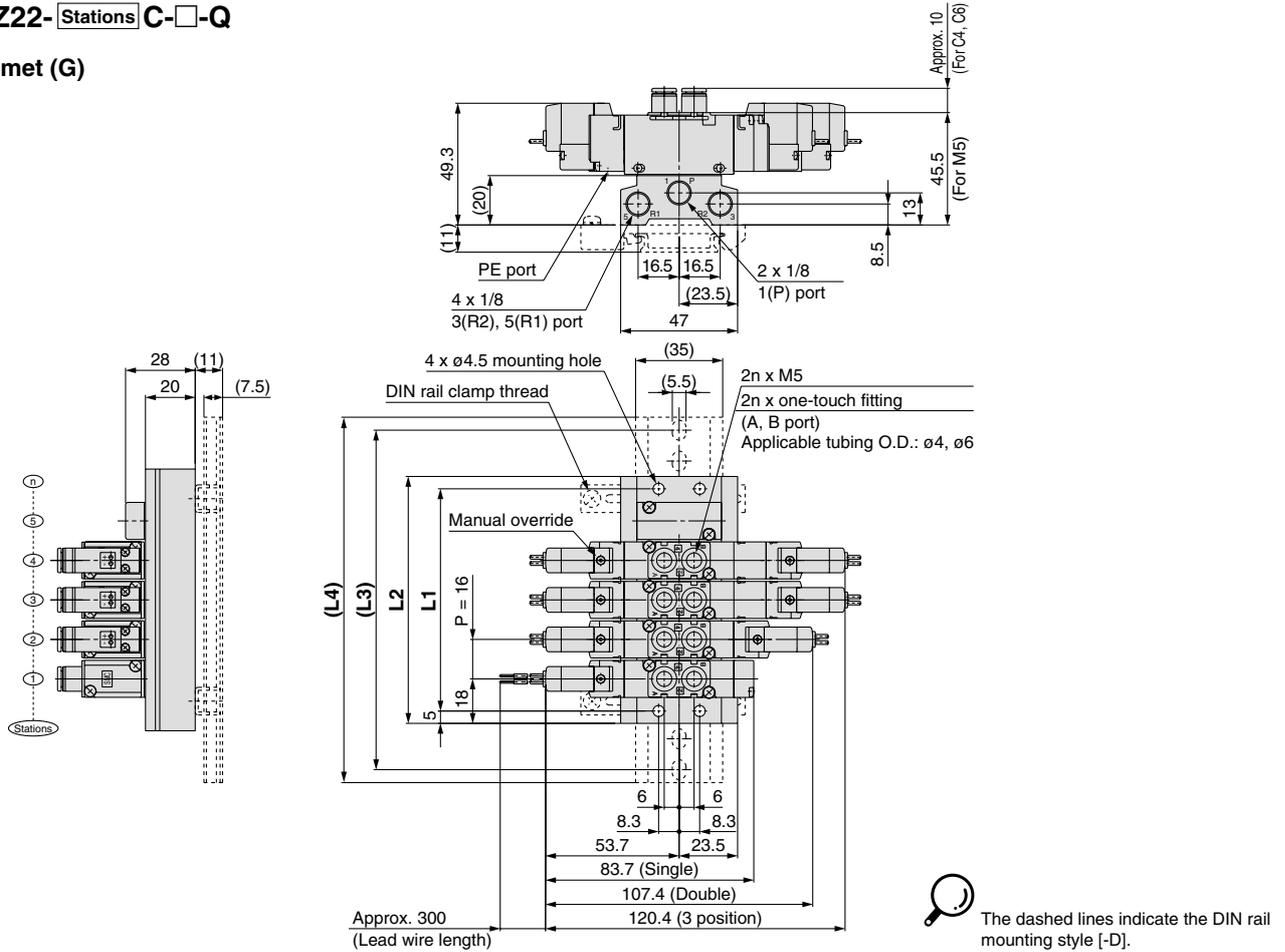
L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	30.5	41	51.5	62	72.5	83	93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5
L2	38.5	49	59.5	70	80.5	91	101.5	112	122.5	133	143.5	154	164.5	175	185.5	196	206.5	217	227.5
L3	62.5	75	87.5	100	100	112.5	125	137.5	150	162.5	175	175	187.5	200	212.5	225	237.5	237.5	250
L4	73	85.5	98	110.5	110.5	123	135.5	148	160.5	173	185.5	185.5	198	210.5	223	235.5	248	248	260.5

# Body Ported Series VQZ1000/2000/3000

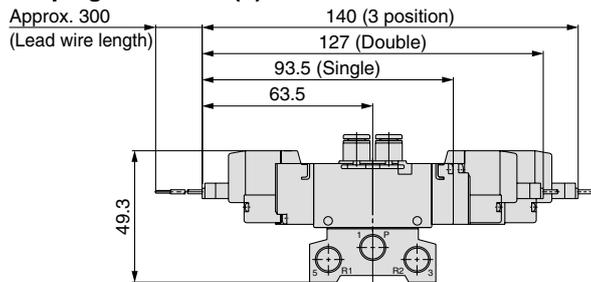
## Dimensions: VQZ2000

VV5QZ22- Stations C-□-Q

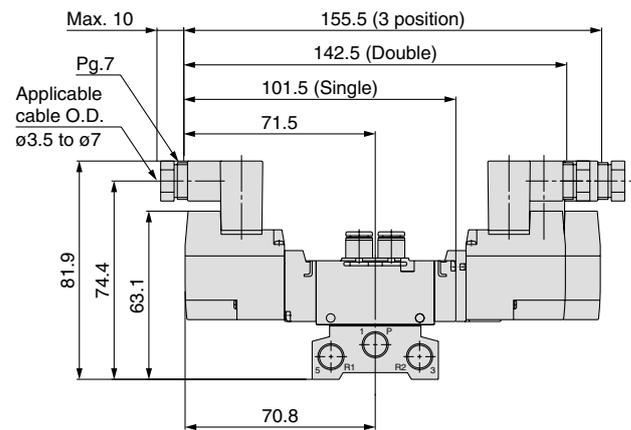
Grommet (G)



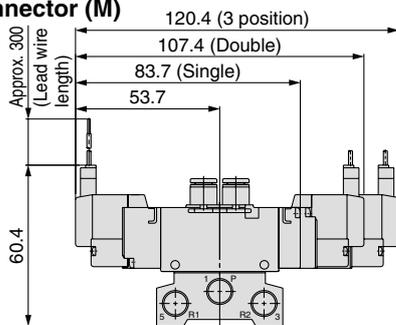
### L plug connector (L)



### DIN terminal (Y)



### M plug connector (M)



### Dimensions

Formula:  $L1 = 16n + 10$   $L2 = 16n + 20$  n: Stations (max. 20 stations)

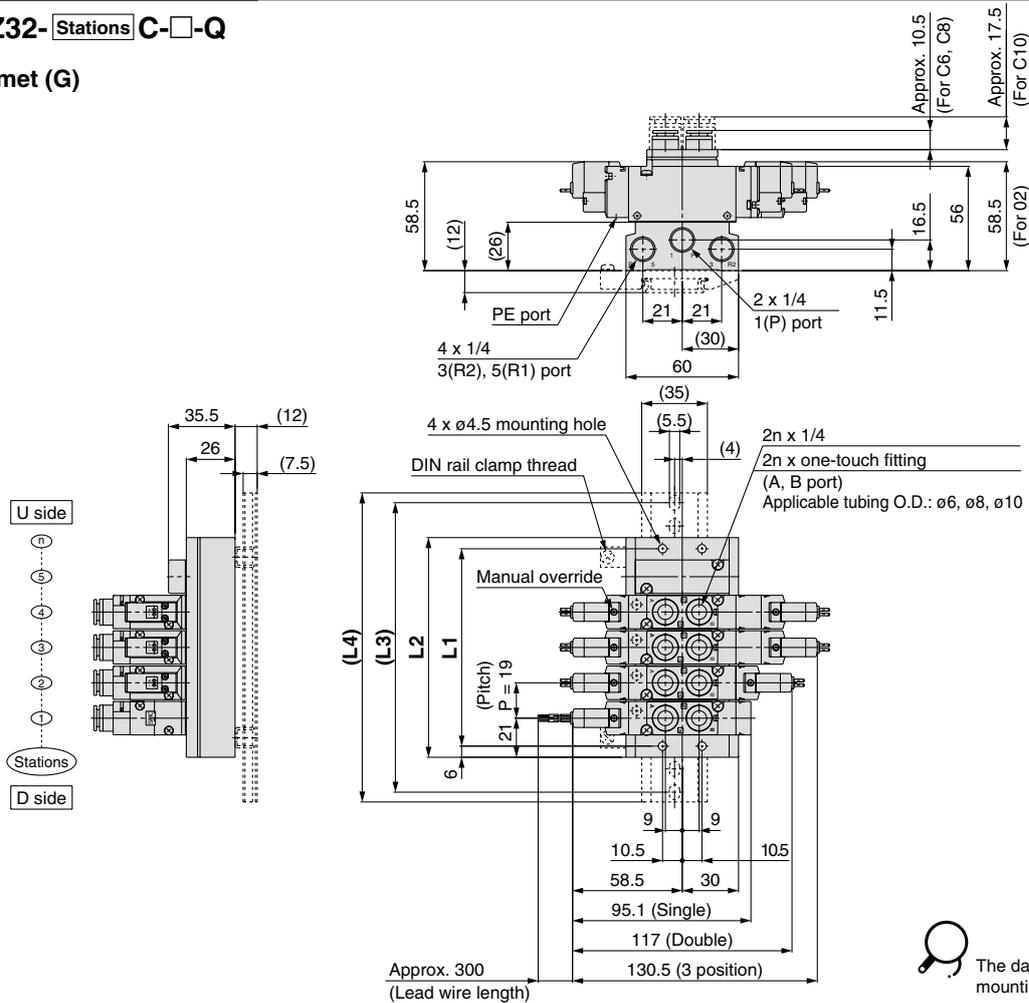
L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	42	58	74	90	106	122	138	154	170	186	202	218	234	250	266	282	298	314	330
L2	52	68	84	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324	340
L3	75	87.5	112.5	125	137.5	162.5	175	187.5	200	225	237.5	250	275	287.5	300	312.5	337.5	350	362.5
L4	85.5	98	123	135.5	148	173	185.5	198	210.5	235.5	248	260.5	285.5	298	310.5	323	348	360.5	373

# Series VQZ1000/2000/3000

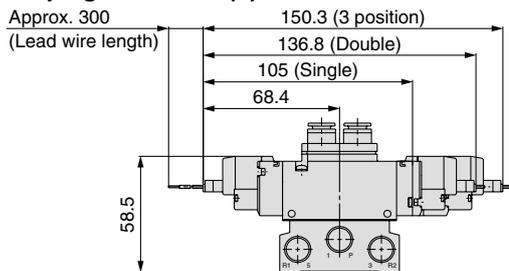
## Dimensions: VQZ3000

VV5QZ32- Stations C-□-Q

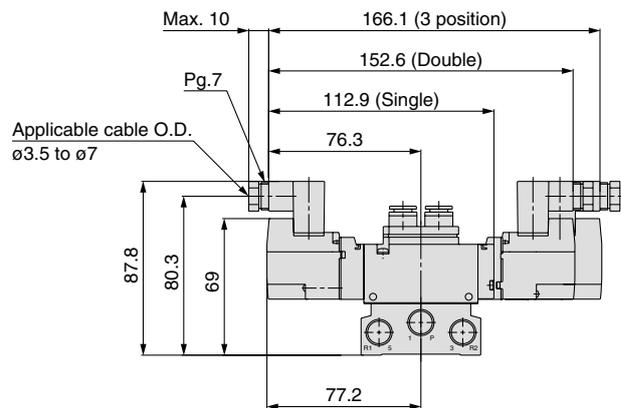
Grommet (G)



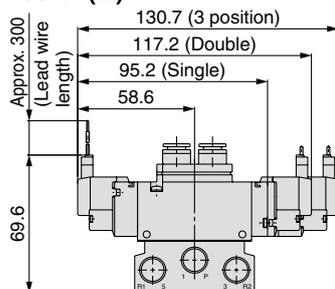
### L plug connector (L)



### DIN terminal (Y)



### M plug connector (M)



### Dimensions

Formula: L1 = 19n + 11 L2 = 19n + 23 n: Stations (max. 20 stations)

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	49	68	87	106	125	144	163	182	201	220	239	258	277	296	315	334	353	372	391
L2	61	80	99	118	137	156	175	194	213	232	251	270	289	308	327	346	365	384	403
L3	87.5	100	125	137.5	162.5	187.5	200	225	237.5	262.5	275	300	312.5	337.5	350	375	387.5	412.5	425
L4	98	110.5	135.5	148	173	198	210.5	235.5	248	273	285.5	310.5	323	348	360.5	385.5	398	423	435.5

## Manifold Options

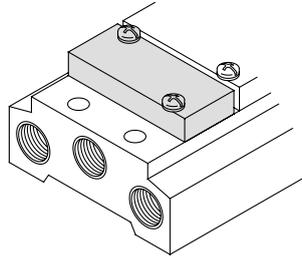
### Blanking plate assembly

**VVQZ1000-10A-2 (For VQZ1000)**

**VVQZ2000-10A-2 (For VQZ2000)**

**VVQZ3000-10A-2 (For VQZ3000)**

It is mounted on to the manifold block in preparation prepared for removing a valve for maintenance reasons or when planning to mount a spare valve, etc.



### DIN rail

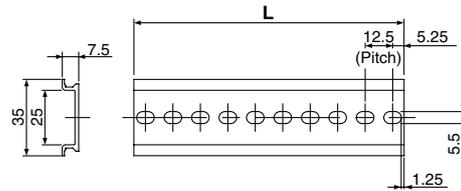
**AXT100-DR-□**

\* As for □, enter the number from the DIN rail dimensions table.  
For L dimension, refer to the dimensions of each kit.

Each manifold can be mounted on a DIN rail.

Insert "D" at the end of the manifold part number.

The DIN rail is approximately 30 mm longer than the length of manifold.



#### L Dimension

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L dimension	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5

No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L dimension	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

$L = 12.5n + 10.5$

### Blanking plug

**KQP-23-X19**

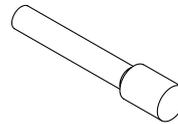
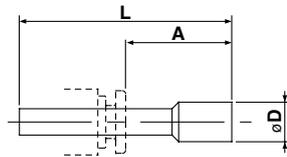
**KQP-04-X19**

**KQP-06-X19**

**KQP-08-X19**

**KQP-10-X19**

● Colour: White

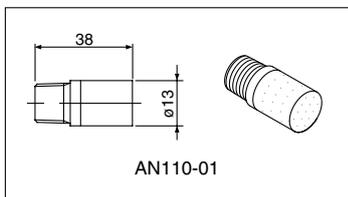


#### Dimensions

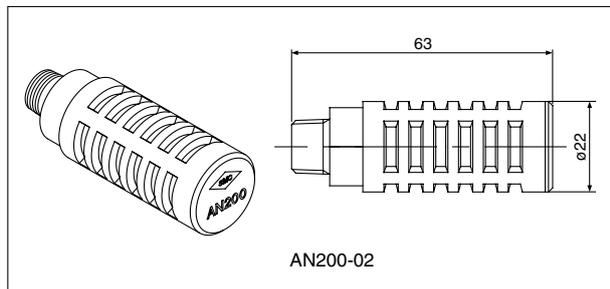
Applicable fittings size ød	Model	A	L	D
3.2	<b>KQP-23-X19</b>	16	31.5	3.2
4	<b>KQP-04-X19</b>	16	32	6
6	<b>KQP-06-X19</b>	18	35	8
8	<b>KQP-08-X19</b>	20.5	39	10
10	<b>KQP-10-X19</b>	22	43	12

### Silencer (For manifold EXH port)

Silencer can be installed in the manifold EXH port.



AN110-01



AN200-02

#### Dimensions

Model	Silencer part no.
<b>VQZ1000</b>	AN110-01
<b>VQZ2000</b>	AN110-01
<b>VQZ3000</b>	AN200-02



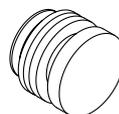
For a silencer to be mounted on a single valve unit, refer to back page 4.

### Port plug

**VVQZ100-CP (For VQZ1000 / 2000)**

**VVQZ2000-CP (For VQZ3000)**

Used to block a cylinder port when changing 5 port valves into 3 port valves, etc.





## Manifold Options

### Double check block (Separated): For VQZ2000 / 3000

VQ2000-FPG-□□-□

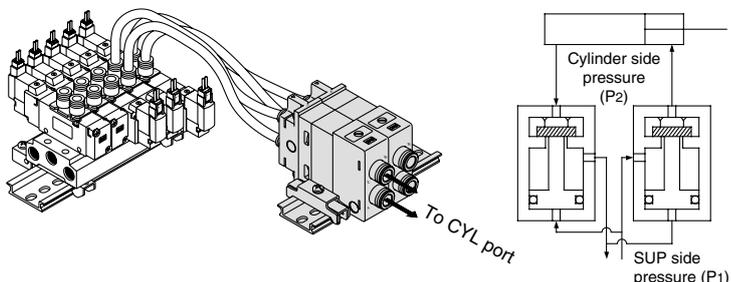
It is used on the outlet side piping to keep the cylinder in the intermediate position for a long time. Combining the double check block with a built-in pilot type double check valve and a 3 position exhaust centre solenoid valve will enable the cylinder to stop in the middle or maintain its position for a long time. The combination of a 2 position single or double solenoid with a double check block will prevent the cylinder from "dropping" at stroke end when residual supply pressure is released.

#### Specifications

Maximum operating pressure	0.8 MPa
Minimum operating pressure	0.15 MPa
Ambient and fluid temperature	-5 to 50°C
Flow characteristics: C	3.0 dm <sup>3</sup> /(s·bar)
Max. operating frequency	180 c.p.m

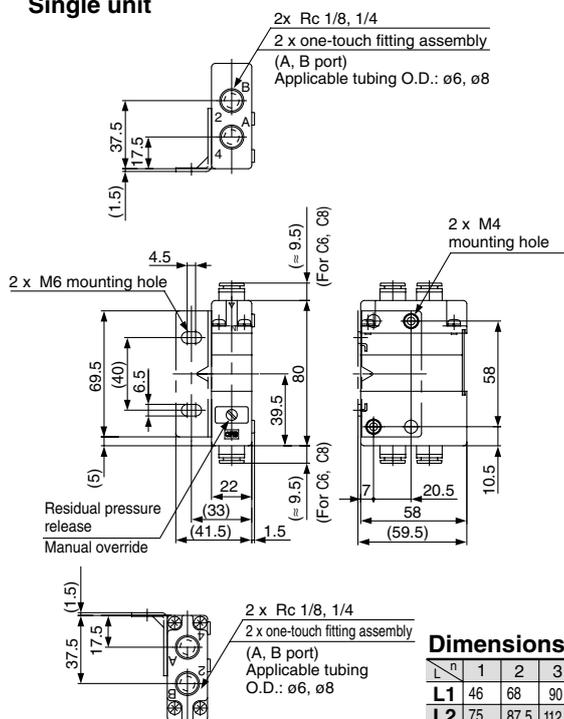
Note) Based on JIS B 8375-1981  
(Supply pressure: 0.5 MPa)

#### <Check valve operation principle>



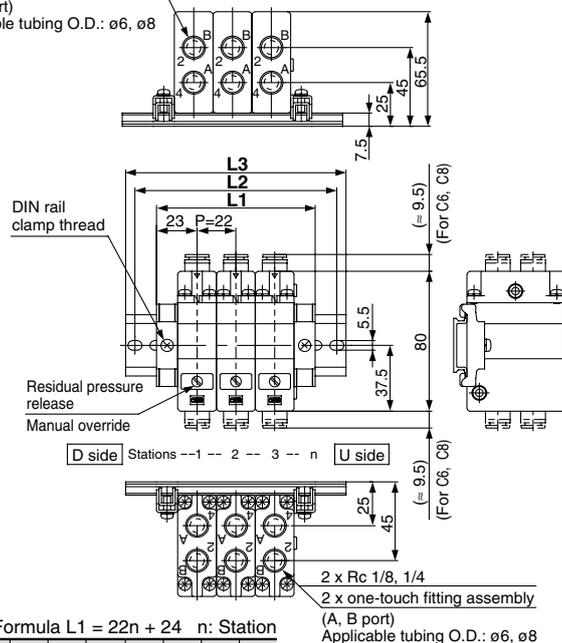
## Dimensions

### Single unit



### Manifold

2 x Rc 1/8, 1/4  
2 x one-touch fitting assembly  
(A, B port)  
Applicable tubing O.D.: ø6, ø8



#### Dimensions

Formula L1 = 22n + 24 n: Station

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	46	68	90	112	134	156	178	200	222	244	266	288	310	332	354	376
L2	75	87.5	112.5	137.5	162.5	175	200	225	250	262.5	287.5	312.5	337.5	362.5	375	400
L3	85.5	98	123	148	173	185.5	210.5	235.5	260.5	273	298	323	348	373	385.5	410.5

## How to Order

### Double check block

VQ2000-FPG-01 01-F

#### IN side port size

01	Rc 1/8
02	Rc 1/4
C6	ø6 one-touch fitting
C8	ø8 one-touch fitting

#### OUT side port size

01	Rc 1/8
02	Rc 1/4
C6	ø6 one-touch fitting
C8	ø8 one-touch fitting

#### Option

-	None
D	DIN rail mounting (For manifold)
F	With bracket
N	Name plate

### Manifold

VVQ2000-FPG-06

#### Stations

01	1 station
⋮	⋮
16	16 stations

#### <Ordering Example>

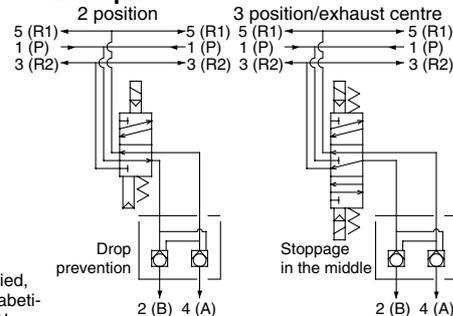
VVQ2000-FPG-06 .... 6 stations of manifold  
\* VQ2000-FPG-C6C6-D, 3 sets Double check block  
\* VQ2000-FPG-C8C8-D, 3 sets block

### Caution

- Air leakage from the pipe between the valve and cylinder or from the fittings will prevent the cylinder from stopping for a long time. Check for air leakage using neutral household detergent, such as dish washing soap. Also check the cylinder's tube gasket, piston packing and rod packing for air leakage.
- Since one-touch fittings allow slight air leakage, screw piping is recommended when stopping the cylinder in an intermediate position for a long time.
- Combining a double check block with a 3 position closed centre or pressure centre valve will not work.
- When screwing the fittings in the double check block, proper tightening torque is shown to the right.
- Set the cylinder load so that the cylinder pressure will be within two times that of the supply pressure.
- If the exhaust of the double check block is throttled too much, intermediate stopping accuracy will decrease.

Connection threads	Proper tightening torque (N·m)
Rc 1/8	7 to 9
Rc 1/4	12 to 14

### <Example>



### <Bracket assembly>

Part no.	Tightening torque (Note)
VQ2000-FPG-FB	0.8 to 1.0 N·m

Note) This is the tightening torque for mounting a bracket to the double check block.

## Options

### External Pilot Specification (Except VQZ1000)

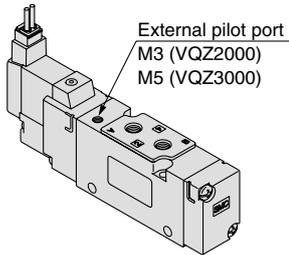
The external pilot specification is used when the operating pressure is below the minimum operating pressure of 0.1 to 0.2 MPa or when the valve is used for a vacuum application.

Order a valve by adding the external pilot specification [R] to the part number.

#### How to Order Valve

**VQZ2120R—5M1—C6—Q**

• External pilot specification



### Pressure Specifications

Series		VQZ2000/3000		
		2 position single	2 position double	3 position
External pilot pressure range	Metal seal	0.1 to 0.7 MPa (VQZ3000, 3 position only) 0.15 to 0.7 MPa		
	Rubber seal	0.15 to 0.7 MPa	0.1 to 0.7 MPa	0.2 to 0.7 MPa
Operating pressure range		-100 kPa to 0.7 MPa		

Note) In the case of the high pressure type, upper limit of max. operating pressure and external pilot pressure range is 1 MPa.

### Inch-size One-touch Fittings and Option Thread

Inch size one-touch fittings and NPT, NPTF and G thread are available.

#### How to Order Valve

**VQZ2120—5M1—N7 T—Q**

• Thread type (Cylinder port and 1 (P), 3 (R2), 5 (R1) ports)

-	Rc
N	NPT
T	NPTF
F	G

Note 1) 3(R2), 5(R1) port of the VQZ2000 is only G 1/16.  
Note 2) Except VQZ1000.

• Cylinder port

Symbol	N1	N3	N7	N9	N11	M5	O2
Applicable tubing O.D. (Inch)	ø1/8"	ø5/32"	ø1/4"	ø5/16"	ø3/8"	M5 thread	1/4 thread
A, B port	VQZ1000	●	●	—	—	●	—
	VQZ2000	—	●	●	—	—	—
	VQZ3000	—	—	●	●	—	●

Note) Metric size one-touch fittings (C□) are also available.

#### How to Order Manifold

(Suffix each symbol to the end of part number.)

**VV5QZ22—05C—00T—Q**

• Thread type (1 (P), 3 (R2), 5 (R1) ports)

-	Rc
00N	NPT
00T	NPTF
00F	G

### IP65 Enclosure (Based on IEC529)

DIN terminal is available with IP65 enclosure.

#### How to Order Single Valve

(Applicable to the VQZ2000/3000 rubber seal type only without the external pilot type optional)

**VQZ3121—5YZB W 1—02—Q**

• IP65 compliant

-	No (Standard)
W Note)	Compliant

Note) The pilot exhaust IP65 valves is common with main valve exhaust. (The standard valve has an individual exhaust for the pilot valve.)

## Replacement Parts

### One-touch Fitting Assembly (For cylinder port)

Fitting size	C3	C4	C6	C8	C10
Model					
VQZ1000/2000	VVQ1000-50A-C3	VVQ1000-50A-C4	VVQ1000-50A-C6	—	—
VQZ3000	—	—	VVQ1000-51A-C6	VVQ1000-51A-C8	VVQ1000-51A-C10

Note) Purchasing order is available in units of 10 pieces.

### <Plug connector assembly>

For DC: SY100-30-4A-□

Without lead wire: SY100-30-1  
(with connector and 2 sockets only)

Lead wire length

Lead wire length	Part no.
-	300 mm
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
25	2500 mm
30	3000 mm
50	5000 mm

### How to Order

Include the connector assembly part number together with the part number for the plug connector's solenoid valve without connector.

EX.) In case of 2000 mm of lead wire

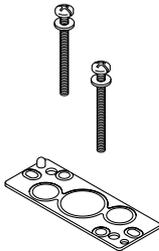
### For DC

VQZ1120-5LO1-M5-Q  
SY100-30-4A-20

### <Gasket and screw assembly>

Model	Part no.
VQZ1000	VQZ1000-GS-2
VQZ2000	VQZ2000-GS-2
VQZ3000	VQZ3000-GS-2

Note) Above part number consists of 10 units. Each unit has one gasket and two screws. Purchasing order is available in units of 10 pieces.



### <Pilot valve assembly>

V111 □ — 5 G — □

Symbol	Specifications	DC
-	Standard type	(0.35 W) ○
B <small>Note)</small>	High speed response type	(0.9 W) ○
K <small>Note)</small>	High pressure type (Metal seal type only)	(0.9 W) ○

Note) Option

Coil voltage

5	24 VDC
6	12 VDC

Applicable model (Length of screws attached is different from each other.)

-	VQZ2000/3000
4	A and B side of VQZ1000 single, double solenoid type A side of VQZ1000 3 position
5	B side of VQZ1000 3 position

Electrical entry

Symbol	Electrical entry	Light/surge voltage suppressor
DC		
G	Grommet (DC specification)	None
LU	L plug connector with lead wire	Yes
LOU	L plug connector without connector	
MU	M plug connector with lead wire	
MOU	M plug connector without connector	

### <DIN terminal type (Applicable to the VQZ2000/3000)>

V115 □ — 5 Y — X110

Symbol	Specifications	DC	AC
-	Standard type	(0.35 W) ○	○
B <small>Note)</small>	High speed response type	(0.9 W) ○	—
K <small>Note)</small>	High pressure type (Metal seal type only)	(0.9 W) ○	—

Note) Option

Coil voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC [115 VAC] (50/60 Hz)
4	220 VAC [230 VAC] (50/60 Hz)
5	24 VDC
6	12 VDC

Electrical entry

Symbol	Electrical entry	Light/surge voltage suppressor
Y	DIN terminal	None
YO	DIN terminal without connector	
YZ	DIN terminal with light/surge voltage suppressor	Yes
YS	DIN terminal with surge voltage suppressor (DC specification)	Yes (With indicator light)
YOS	DIN terminal with surge voltage suppressor, without connector (DC specification)	

Note) For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.

### <Bracket assembly>

Model	Part no.	Tightening torque (N·m) <small>Note)</small>
VQZ1000	Metal seal	0.2 to 0.26
	Rubber seal	
VQZ2000	VQZ2000-FB	0.25 to 0.35
VQZ3000	VQZ3000-FB	0.25 to 0.35

Note) When adding a bracket assembly later, remove the end plate screws and fasten the end plate and bracket at the tightening torque shown in the table, using the screws attached to the bracket assembly. Place the spring inside the end plate in its original position so that it does not get lost.

### ⚠ Caution

When replacing the pilot valve assembly, use caution because it is not possible to convert to a V115 (DIN terminal) from a V111 (grommet, L type, M type), or vice versa.

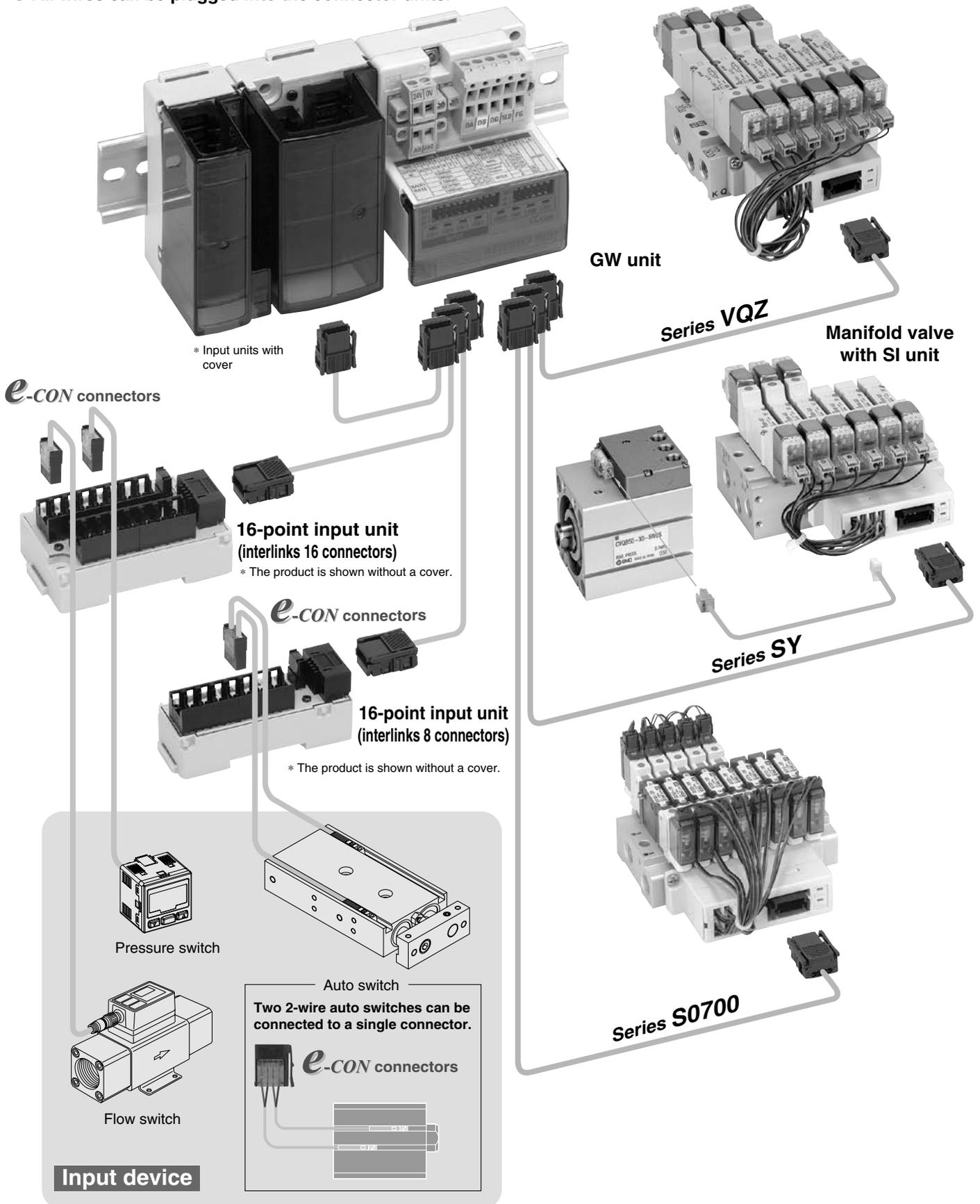
# Series VQZ



For details of "Gateway System Serial Transmission System, Series EX510", refer to CAT.E02-22B catalogue.

## Gateway System Serial Transmission System EX510 Series

- All wires can be plugged into the connector units.

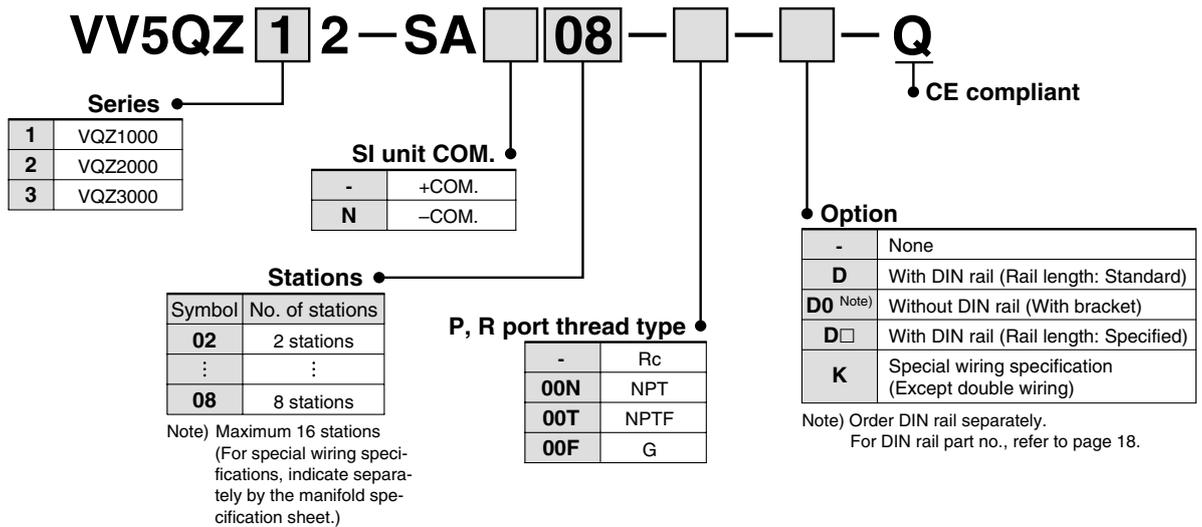


# EX510 Serial Wiring

# Series VQZ1000/2000/3000 Body Ported Manifold



## How to Order Manifold



## How to Order Valve Manifold Assembly (Example)

**Example**

Cylinder port size  
C6: With one-touch fitting for ø6

VV5QZ22-SA07-Q

VQZ2120-5L01-C6-Q

VQZ2220-5L01-C6-Q

VQZ2320-5L01-C6-Q

U side | 7...6...5...4...3...2...1...Stations | D side

VV5QZ22-SA07-Q ..... 1 set (Type SA, 7 station manifold base part no.)

\* VQZ2120-5L01-C6-Q ..... 2 sets (Single solenoid part no.)

\* VQZ2220-5L01-C6-Q ..... 3 sets (Double solenoid part no.)

\* VQZ2320-5L01-C6-Q ..... 2 sets (3 position type no.)

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

→ Enter in order starting from the first station on the D side.

Add the valve and option part number under the manifold base part number.  
When entry of part numbers becomes complicated, indicate by using a manifold specification sheet. For a manifold for EX510, the length of the lead wire for a connector assembly depends on the number of stations. Therefore, the manifold assembly is shipped with the valves (including blanking plates) and connector assembly mounted on it, as the standard specification. Be sure to specify the part nos. of the solenoid valves to be mounted.

# Series VQZ1000/2000/3000

## How to Order Valve

VQZ 1 1 2 1 — 5 MO 1 — C6 — Q

### Series

1	VQZ1000
2	VQZ2000
3	VQZ3000

### Type of actuation

1	2 position single
2	2 position double
3	3 position closed centre
4	3 position exhaust centre
5 Note 1)	3 position pressure centre
8 Note 2)	3 port for mixed mounting N.C.
9 Note 2)	3 port for mixed mounting N.O.

Note 1) There is no 3 position pressure centre for the metal seal type of the VQZ1000 series.

Note 2) The port plug of the 3-port mixing valve can be replaced with a fitting and the valve can then be used as a 5 port single type valve. (Refer to back page 5.)

### Seal

0	Metal seal
1	Rubber seal

### Function

Symbol	Specifications	DC
-	Standard type	(0.35 W) ○
B Note 1)	High speed response type	(0.9 W) ○
K Note 1)	High pressure type (Metal seal type only)	(0.9 W) ○
R Note 1, 2, 3)	External pilot type	○
BR Note 1, 2, 3)	High speed response/External pilot type	(0.9 W) ○
KR Note 1, 2, 3)	High pressure/External pilot type (Metal seal type only)	(0.9 W) ○

Note 1) Option

Note 2) For details on external pilot type, refer to page 21.

Note 3) External pilot type is not applicable to VQZ1000.

Rated voltage: 24 VDC

CE compliant

### Thread type

-	Rc
N	NPT
T	NPTF
F	G

### Manual override

-	Non-locking push type (Tool required)
B	Locking type (Tool required)

### Electrical entry

LO	L plug connector without connector
MO	M plug connector without connector

Note) With light/surge voltage suppressor

### A, B port size

#### Thread piping

Symbol	Port size	VQZ1000	VQZ2000	VQZ3000
M5	M5	○	○	—
02	1/4	—	—	○

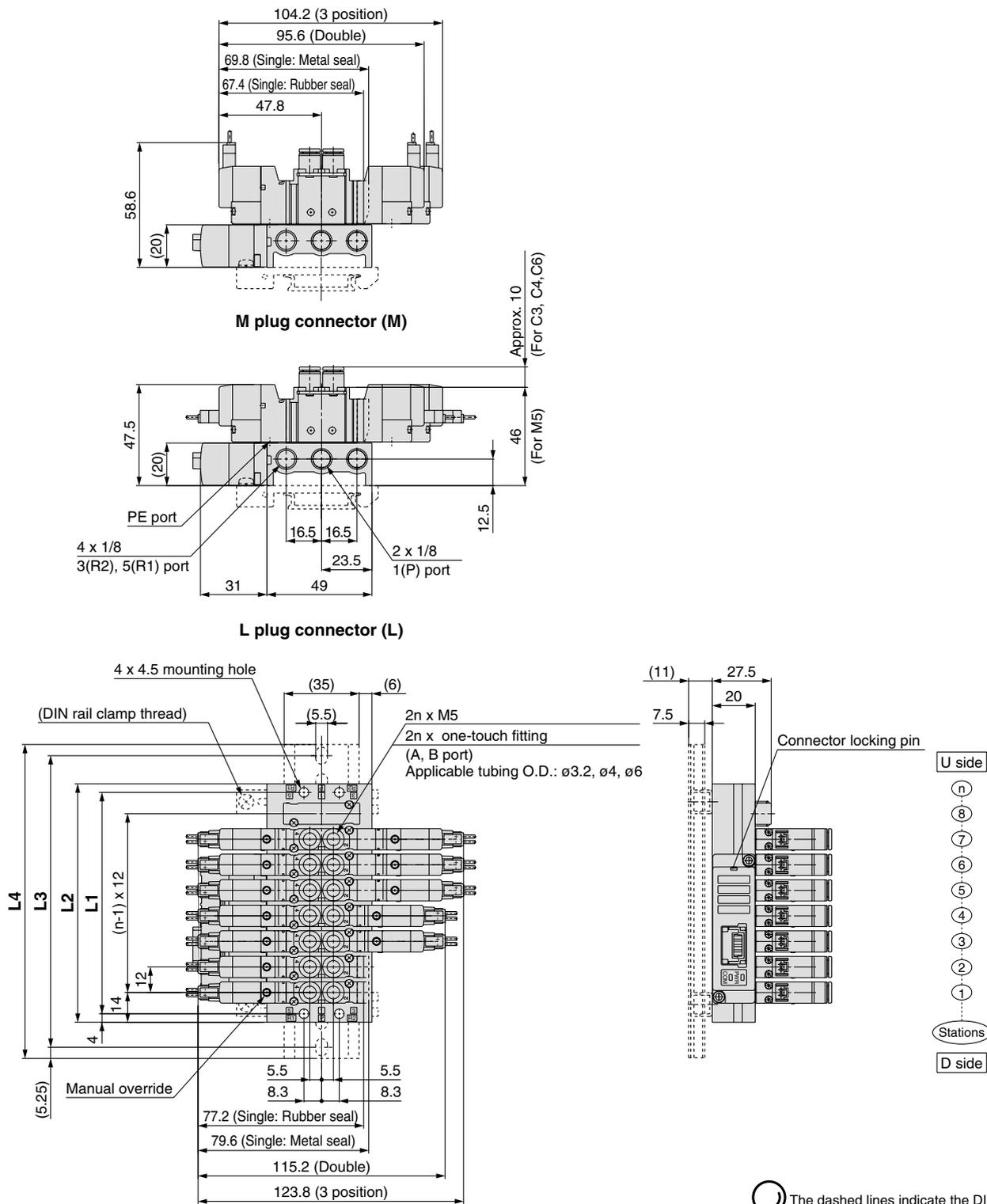
#### One-touch fitting (Metric size)

Symbol	Port size	VQZ1000	VQZ2000	VQZ3000
C3	ø3.2 one-touch fitting	○	—	—
C4	ø4 one-touch fitting	○	○	—
C6	ø6 one-touch fitting	○	○	○
C8	ø8 one-touch fitting	—	—	○
C10	ø10 one-touch fitting	—	—	○

#### One-touch fitting (Inch size)

Symbol	Port size	VQZ1000	VQZ2000	VQZ3000
N1	ø1/8" one-touch fitting	○	—	—
N3	ø5/32" one-touch fitting	○	○	—
N7	ø1/4" one-touch fitting	○	○	○
N9	ø5/16" one-touch fitting	—	—	○
N11	ø3/8" one-touch fitting	—	—	○

**Dimensions: VQZ1000-SA□ (EX510 Serial Wiring)**



The dashed lines indicate the DIN rail mounting style [-D].

**Dimensions**

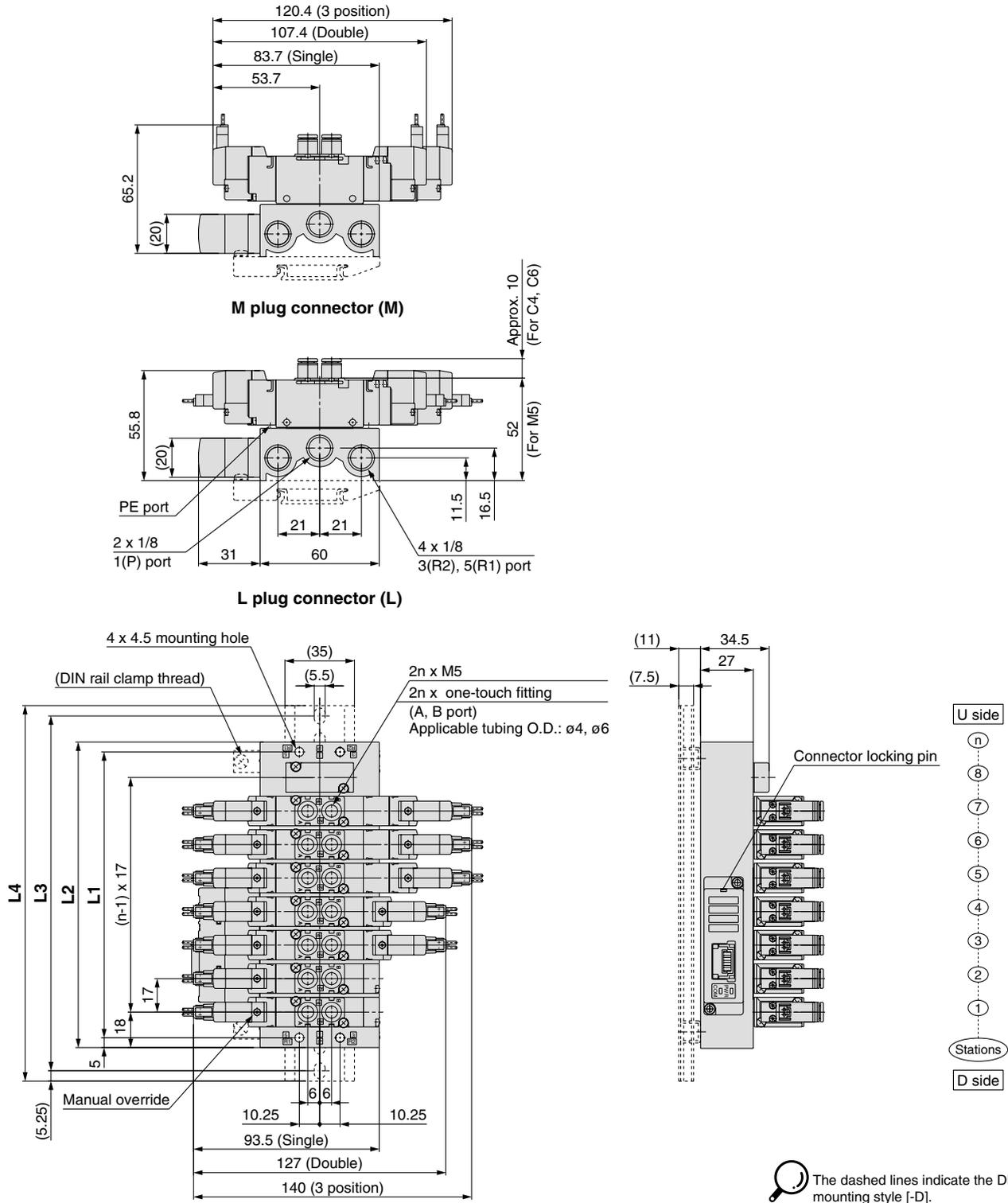
Max. 16 stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	80	80	80	80	80	92	104	116	128	140	152	164	176	188	200
L2	88	88	88	88	88	100	112	124	136	148	160	172	184	196	208
L3	112.5	112.5	112.5	112.5	112.5	125	137.5	150	162.5	175	187.5	200	212.5	225	237.5
L4	123	123	123	123	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248

Note) The L dimension of 2 to 6 stations is the same. Valves are numbered from the D side according up to the number of stations.

# Series VQZ1000/2000/3000

## Dimensions: VQZ2000-SA□ (EX510 Serial Wiring)



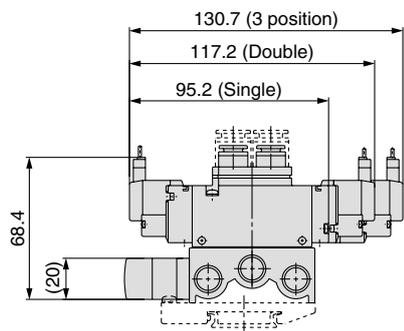
### Dimensions

Max. 16 stations

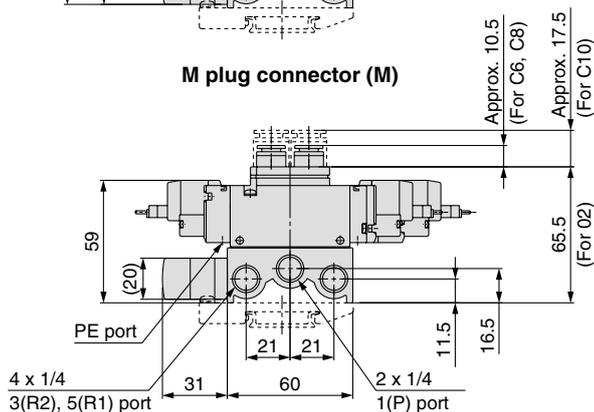
L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	94	94	94	94	111	128	145	162	179	196	213	230	247	264	281
L2	104	104	104	104	121	138	155	172	189	206	223	240	257	274	291
L3	125	125	125	125	150	162.5	175	200	200	237.5	250	262.5	287.5	300	312.5
L4	135.5	135.5	135.5	135.5	160.5	173	185.5	210.5	210.5	248	260.5	273	298	310.5	323

Note) The L dimension of 2 to 5 stations is the same. Valves are numbered from the D side according up to the number of stations.

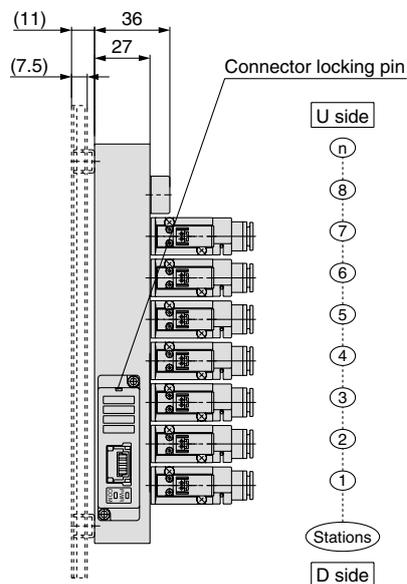
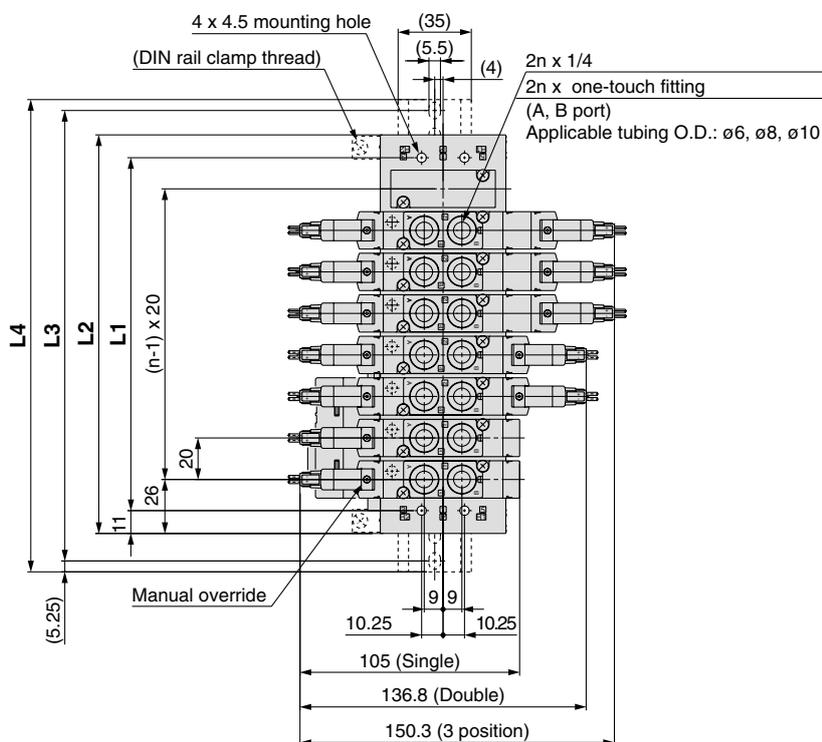
**Dimensions: VQZ3000-SA□ (EX510 Serial Wiring)**



**M plug connector (M)**



**L plug connector (L)**



The dashed lines indicate the DIN rail mounting style [-D].

**Dimensions**

Max. 16 stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>L1</b>	70	70	90	110	130	150	170	190	210	230	250	270	290	310	330
<b>L2</b>	92	92	112	132	152	172	192	212	232	252	272	292	312	332	352
<b>L3</b>	112.5	112.5	137.5	162.5	175	200	212.5	237.5	262.5	275	300	312.5	337.5	362.5	375
<b>L4</b>	123	123	148	173	185.5	210.5	223	248	273	285.5	310.5	323	348	373	385.5

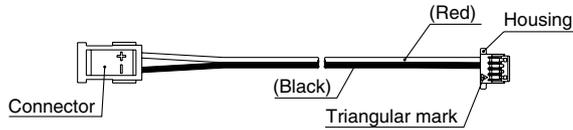
Note) The L dimension of 2 to 3 stations is the same. Valves are numbered from the D side according up to the number of stations.

# Series VQZ1000/2000/3000

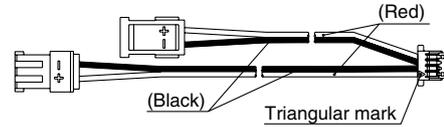
## Manifold Options (EX510 Serial Wiring)

### Connector assembly

For single solenoid (SY3000-37-81A-□-N)



For double solenoid (SY3000-37-81A-□-□)



### How to Order Connector Assembly (for a manifold with 8 stations or less with an unspecified layout)

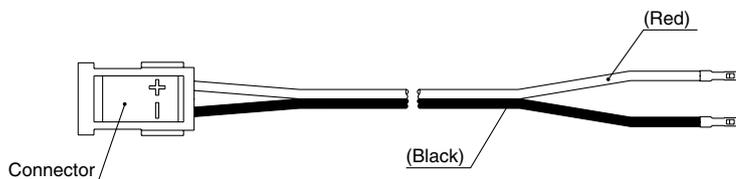
#### Bar Stock Type

Model	Assembly part no.	Connector mounting position
VV5QZ12	SY3000-37-81A-3-N	Single: for 1 to 4 stations
	SY3000-37-81A-3-6	Double/3 position: for 1 to 4 stations
	SY3000-37-81A-2-N	Single: for 5 to 8 stations
	SY3000-37-81A-3-6	Double/3 position: for 5 to 8 stations
VV5QZ22	SY3000-37-81A-3-N	Single: for 1 to 8 stations
	SY3000-37-81A-3-6	Double/3 position: for 1 to 8 stations
VV5QZ32	SY3000-37-81A-3-N	Single: for 1 to 4 stations
	SY3000-37-81A-3-6	Double/3 position: for 1 to 4 stations
	SY3000-37-81A-4-N	Single: for 5 to 8 stations
	SY3000-37-81A-4-7	Double/3 position: for 5 to 8 stations

Note) Since these connector assemblies are used when adding stations or for maintenance, there are no part nos. on them.

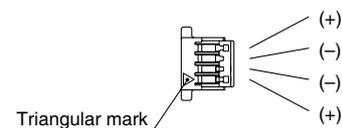
### Connector assembly

SY3000-37-80A-□



### Housing (1 set: 8 pieces)

SY3000-44-3A



### How to Order Connector Assembly (for a manifold with a specified layout)

Model	Assembly part no.	Connector mounting position
VV5QZ12	SY3000-37-80A-3	A side
	SY3000-37-80A-6	B side
	SY3000-37-80A-4	A side
	SY3000-37-80A-7	B side
VV5QZ22	SY3000-37-80A-3	A side
	SY3000-37-80A-6	B side
	SY3000-37-80A-7	A side
	SY3000-37-80A-9	B side
VV5QZ32	SY3000-37-80A-4	A side
	SY3000-37-80A-7	B side
	SY3000-37-80A-8	A side
	SY3000-37-80A-11	B side

Note 1) Since these connector assemblies are used when adding stations or for maintenance, there are no part nos. on them.

Note 2) After inserting the connector assembly into the housing, slightly pull the lead wire to make sure it does not pull out. Do not reuse the lead wire once it has been inserted.

Note 3) Please note that the wires are longer than the actual wiring distance.

Base Mounted  
Plug Lead Unit

# 5 Port Solenoid Valve

## Series VQZ1000/2000/3000

### Single Unit



### How to Order Valve

VQZ 1 1 5 1 — 5 M — 1 — 01 — Q

**Series**

1	VQZ1000 body width 10 mm
2	VQZ2000 body width 15 mm
3	VQZ3000 body width 18 mm

**Type of actuation**

1	2 position single 	5	3 position pressure centre 
2	2 position double  Metal seal Rubber seal	8	3 port for mixed mounting (N.C.) 
3	3 position closed centre 	9	3 port for mixed mounting (N.O.) 
4	3 position exhaust centre 		

Note) There is no 3 position pressure centre for the metal seal type of the VQZ1000 series.

**Body type**

5	Base mounted
---	--------------

**Seal**

0	Metal seal
1	Rubber seal

**Function**

Symbol	Specifications	DC (0.35 W)	AC Note 3)
-	Standard type	○	○
B Note 1)	High speed response type	(0.9 W) ○	—
K Note 1)	High pressure type (Metal seal type only)	(0.9 W) ○	—
R Note 1, 2)	External pilot type	○	○
BR Note 1, 2)	High speed response/External pilot type	(0.9 W) ○	—
KR Note 1, 2)	High pressure/External pilot type (Metal seal type only)	(0.9 W) ○	—

Note 1) Option  
Note 2) For details on external pilot type, refer to page 53.  
Note 3) For power consumption of AC specification, refer to page 31.



**Caution**  
Use standard (DC) specification for continuous duty.

**IP65 compliant**

Nil	None
W Note)	Compliant

Note) VQZ2000/3000 DIN terminal rubber seal type only (without external pilot). For details on IP65 enclosure, refer to page 53.

**Manual override**

-: Non-locking push type (Tool required)	B: Locking type (Tool required)

**Port size**

Symbol	Port size	VQZ1000	VQZ2000	VQZ3000
-	Without sub-plate	○	○	○
01	Rc 1/8	○	○	—
02	Rc 1/4	—	○	○
03	Rc 3/8	—	—	○

Note) For optional thread type (NPT, NPTF, G), refer to page 53.

**Electrical entry**

G: Grommet (DC specification)	L: L plug connector with lead wire	LO: L plug connector without connector	M: M plug connector with lead wire	MO: M plug connector without connector
	With light/surge voltage suppressor	With light/surge voltage suppressor	With light/surge voltage suppressor	With light/surge voltage suppressor
Y: DIN terminal Note 1)	YO: DIN terminal without connector Note 1)	YZ: DIN terminal Note 1)	YOS: DIN terminal without connector (DC specification) Note 1)	YS: DIN terminal (DC specification) Note 1)
		With light/surge voltage suppressor	With surge voltage suppressor	With surge voltage suppressor

Note 1) Applicable to VQZ2000/3000 only. For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.

Note 2) Standard lead wire length: 300 mm

**Coil voltage**

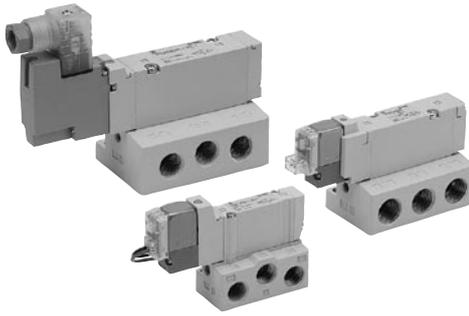
1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC [115 VAC] (50/60 Hz)
4	220 VAC [230 VAC] (50/60 Hz)
5	24 VDC
6	12 VDC

Note) AC specification is only available with Y, YO, YZ type.

Note) For sub-plate part no., refer to page 54.



# Series VQZ1000/2000/3000



## Specifications

Type		Metal seal	Rubber seal
Fluid		Air, Inert gas	
Max. operating pressure (MPa)		0.7 (High pressure type: 1.0)	
Min. operating pressure (MPa)	2 position	0.1	0.15
	3 position	VQZ3000, 3 position only	
Ambient and fluid temperature (°C)		-10 to 50 (No freezing)	
Max. operating frequency (Hz)	2 position single, double	20	5
	3 position	10	3
Manual override		Non-locking push type, Locking type (Tool required)	
Pilot exhaust method		Individual exhaust	
Lubrication		Not required	
Mounting orientation		Free	
Shock/Vibration resistance (m/s <sup>2</sup> ) <small>Note)</small>		150/30	
Enclosure		Dust-tight (DIN terminal: IP65*)	



\* Based on IEC60529.

Note) 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 energised and de-energised states every once for each condition. (Value in the initial state)

Vibration resistance: No malfunction occurred in one sweep test between 45 and 2000 Hz. Test was performed to axis and right angle directions of the main valve and armature when pilot signal is ON and OFF. (Value in the initial state)

## Optional Specifications

High speed response type
High pressure type (Metal seal type only)
External pilot type*

\* For details on external pilot type, refer to page 53.

## Solenoid Specifications

Electrical entry	Grommet (G)		M plug connector (M)	
	L plug connector (L)	DIN terminal (Y)	DIN terminal (Y)	
	G, L, M		Y	
Coil rated voltage (V)	DC		24, 12	
	AC 50/60 Hz		100, 110, 200, 220*	
Allowable voltage fluctuation ±10% of rated voltage				
Power consumption (W)	DC	Standard	0.35 (With light: 0.4 (DIN terminal with light: 0.45))	
		High speed response, high pressure	0.9 (With light: 0.95 (DIN terminal with light: 1.0))	
Apparent power (VA)*	AC	100V	-	0.78 (With light: 0.87)
		110V	-	0.86 (With light: 0.87)
		[115V]	-	[0.94 (With light: 1.07)]
		200V	-	1.15 (With light: 1.30)
		220V [230V]	-	0.86 (With light: 0.89) [1.39 (With light: 1.60)]
Surge voltage suppressor		Diode (DIN terminal, Varistor when non-polar types)		
Indicator light		LED (Neon light when AC with DIN terminal)		



\* In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

\* For 115 VAC and 230 VAC, the allowable voltage is -15% to +5% of rated voltage.

## Flow Characteristics

Series	Configuration	Model	Flow characteristics						Response time (ms) <small>Note 1)</small>				<small>Note 2)</small> Weight (g)		
			1→4/2 (P→A/B)			4/2→5/3 (A/B→EA/EB)			Standard: 0.35 W	High speed: 0.9 W	High pressure: 0.9 W	AC			
			C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv							
VQZ1000	2 position	Single	Metal seal VQZ1150	0.70	0.21	0.17	0.70	0.21	0.17	17 or less	12 or less	15 or less	-	40	
			Rubber seal VQZ1151	1.2	0.35	0.30	1.3	0.24	0.32	17 or less	12 or less	15 or less	-		
	Double	Metal seal VQZ1250	0.70	0.21	0.17	0.70	0.21	0.17	10 or less	10 or less	13 or less	-			
		Rubber seal VQZ1251	1.2	0.35	0.30	1.3	0.24	0.32	10 or less	10 or less	13 or less	-			
	3 position	Closed centre	Metal seal VQZ1350	0.56	0.20	0.13	0.57	0.22	0.14	25 or less	20 or less	26 or less	-		60
			Rubber seal VQZ1351	1.1	0.33	0.27	1.0	0.38	0.27	30 or less	25 or less	33 or less	-		
Exhaust centre		Metal seal VQZ1450	0.56	0.20	0.13	0.70	0.21	0.17	25 or less	20 or less	26 or less	-			
		Rubber seal VQZ1451	1.1	0.33	0.27	1.3	0.24	0.32	30 or less	25 or less	33 or less	-			
Pressure centre	Rubber seal VQZ1551	1.4	0.20	0.34	1.0	0.38	0.27	30 or less	25 or less	33 or less	-				
VQZ2000	2 position	Single	Metal seal VQZ2150	1.6	0.13	0.36	1.9	0.16	0.40	18 or less	14 or less	18 or less	34 or less	61	
			Rubber seal VQZ2151	2.0	0.35	0.51	2.3	0.29	0.53	20 or less	15 or less	20 or less	36 or less		
		Double	Metal seal VQZ2250	1.6	0.13	0.36	1.9	0.16	0.40	10 or less	10 or less	13 or less	13 or less		
			Rubber seal VQZ2251	2.0	0.35	0.51	2.3	0.29	0.53	12 or less	12 or less	15 or less	15 or less		
	3 position	Closed centre	Metal seal VQZ2350	1.5	0.16	0.35	1.3	0.26	0.32	28 or less	23 or less	30 or less	44 or less	87	
			Rubber seal VQZ2351	1.7	0.27	0.39	1.7	0.28	0.39	30 or less	25 or less	33 or less	47 or less		
		Exhaust centre	Metal seal VQZ2450	1.5	0.16	0.35	1.9	0.16	0.40	28 or less	23 or less	30 or less	44 or less		
			Rubber seal VQZ2451	1.7	0.27	0.39	2.3	0.29	0.53	30 or less	25 or less	33 or less	47 or less		
		Pressure centre	Metal seal VQZ2550	1.8	0.13	0.39	1.5	0.26	0.36	28 or less	23 or less	30 or less	44 or less		
			Rubber seal VQZ2551	2.0	0.35	0.50	1.7	0.28	0.39	30 or less	25 or less	33 or less	47 or less		
VQZ3000	2 position	Single	Metal seal VQZ3150	2.6	0.12	0.60	3.0	0.15	0.74	21 or less	17 or less	22 or less	34 or less	93	
			Rubber seal VQZ3151	3.9	0.29	1.0	4.6	0.26	1.2	33 or less	25 or less	33 or less	57 or less		
		Double	Metal seal VQZ3250	2.6	0.12	0.60	3.0	0.15	0.74	10 or less	10 or less	13 or less	13 or less		
			Rubber seal VQZ3251	3.9	0.29	1.0	4.6	0.26	1.2	15 or less	15 or less	20 or less	20 or less		
	3 position	Closed centre	Metal seal VQZ3350	2.4	0.12	0.58	2.8	0.16	0.65	33 or less	25 or less	33 or less	53 or less	121	
			Rubber seal VQZ3351	3.1	0.33	0.82	3.6	0.35	0.97	35 or less	30 or less	39 or less	59 or less		
		Exhaust centre	Metal seal VQZ3450	2.4	0.12	0.58	3.0	0.15	0.74	33 or less	25 or less	33 or less	53 or less		
			Rubber seal VQZ3451	3.9	0.33	0.82	4.6	0.26	1.2	35 or less	30 or less	39 or less	59 or less		
		Pressure centre	Metal seal VQZ3550	3.0	0.12	0.69	2.9	0.16	0.65	33 or less	25 or less	33 or less	53 or less		
			Rubber seal VQZ3551	4.4	0.27	1.1	3.6	0.35	0.97	35 or less	30 or less	39 or less	59 or less		



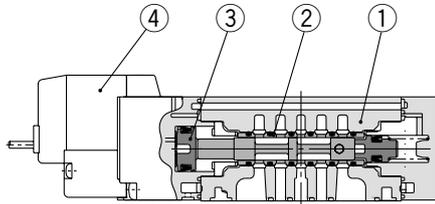
Note 1) Based on JIS B 8375-1981 (Supply pressure: 0.5 MPa; with light/surge voltage suppressor: clean air)

Response time values will change depending on pressure and air quality. The values at the time of ON are given for double types.

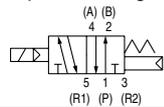
Note 2) Weight without sub-plate

## Construction: VQZ1000/2000/3000

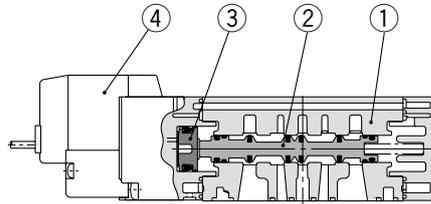
### Metal seal type



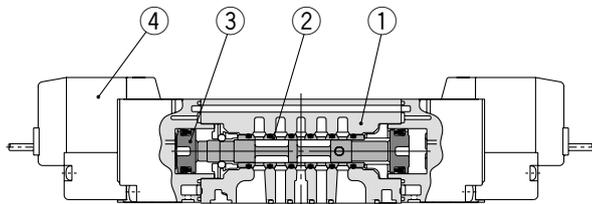
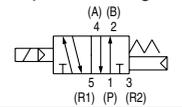
2 position single



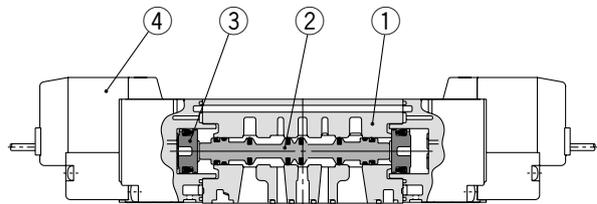
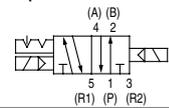
### Rubber seal type



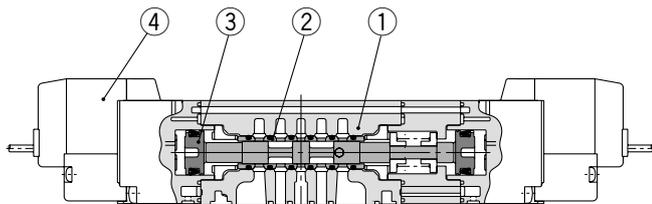
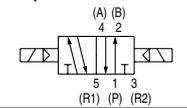
2 position single



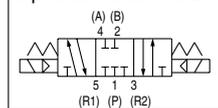
2 position double



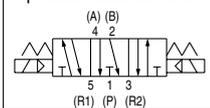
2 position double



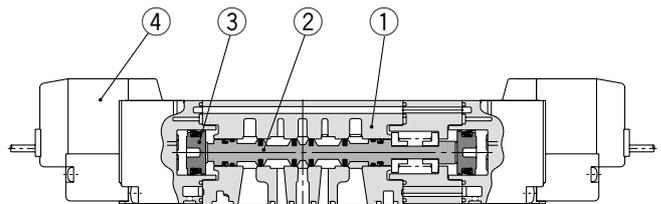
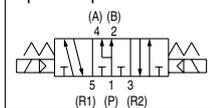
3 position closed centre



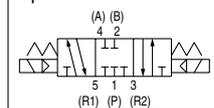
3 position exhaust centre



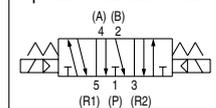
3 position pressure centre



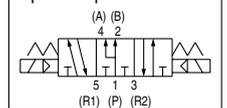
3 position closed centre



3 position exhaust centre



3 position pressure centre



 Note) Except metal seal type of the VQZ1000.

### Component Parts

No.	Description	Material	Note
1	<b>Body</b>	Aluminum die-casted	
2	<b>Spool, Sleeve</b>	Stainless steel	Metal seal
	<b>Spool valve</b>	Aluminum/HNBR	Rubber seal
3	<b>Piston</b>	Resin	
4	<b>Pilot valve assembly</b>	—	

Note) For "How to Order" of the pilot valve assembly, refer to page 54.



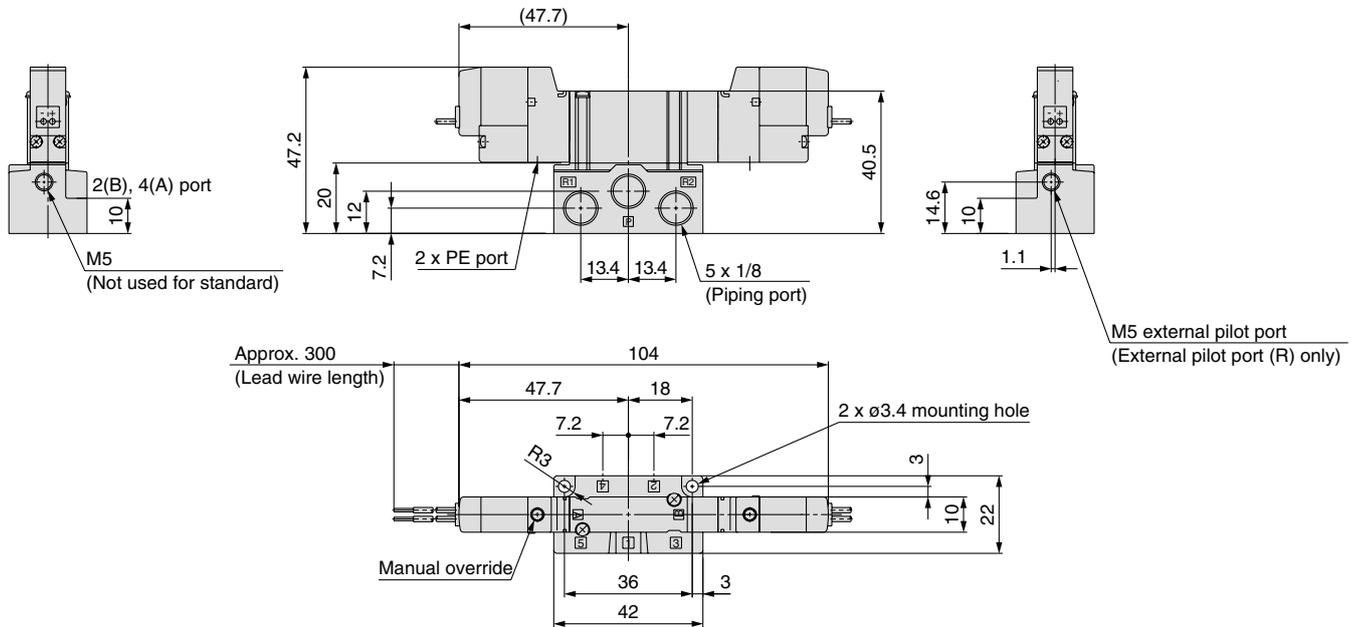


# Series VQZ1000/2000/3000

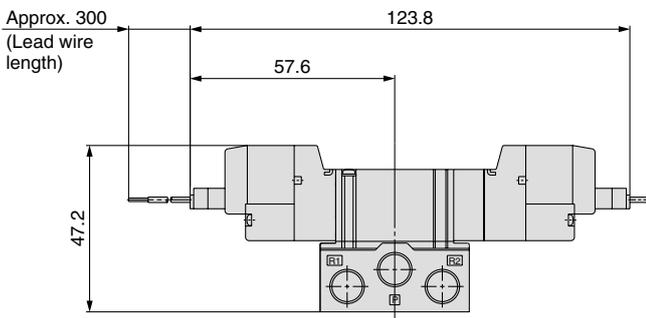
## Dimensions: VQZ1000

### 3 Position Closed Centre/Exhaust Centre/Pressure Centre (Except Metal Seal Type)

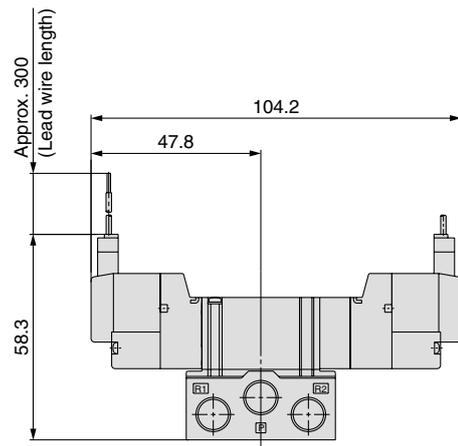
Grommet (G): VQZ1  $\frac{3}{4}$  5  $\frac{0}{1}$  (R)-□G□1-01-Q



L plug connector (L): VQZ1  $\frac{3}{4}$  5  $\frac{0}{1}$  (R)-□L□1-01-Q



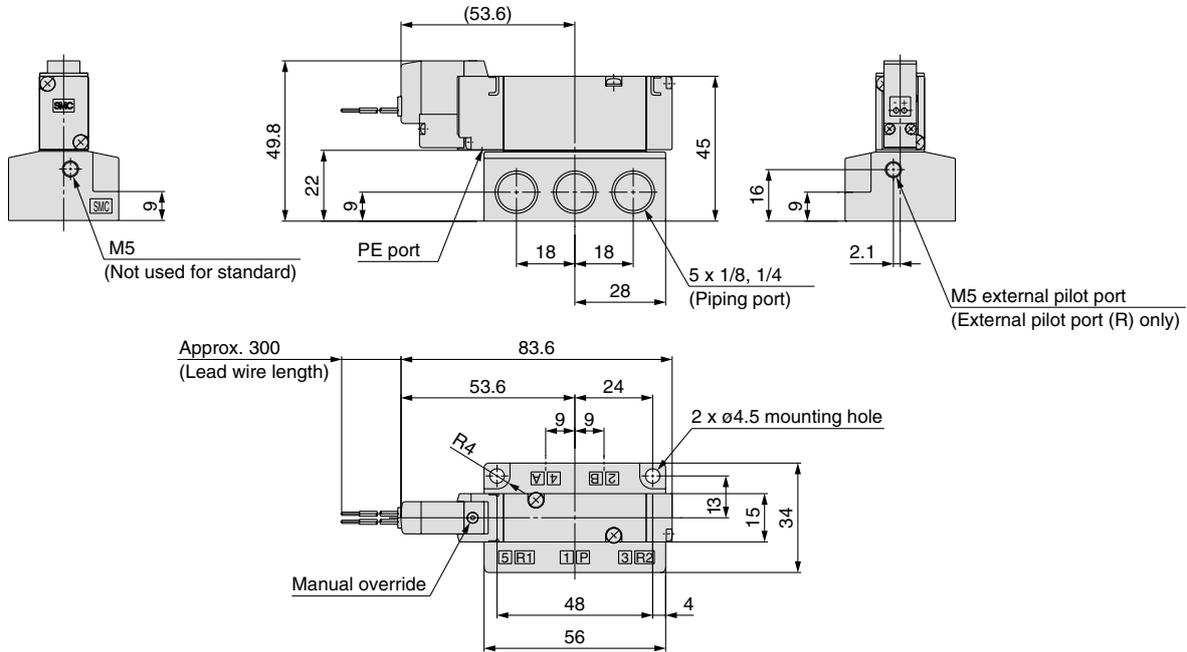
M plug connector (M): VQZ1  $\frac{3}{4}$  5  $\frac{0}{1}$  (R)-□M□1-01-Q



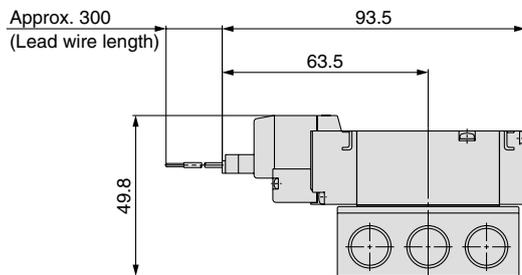
## Dimensions: VQZ2000

### 2 Position Single

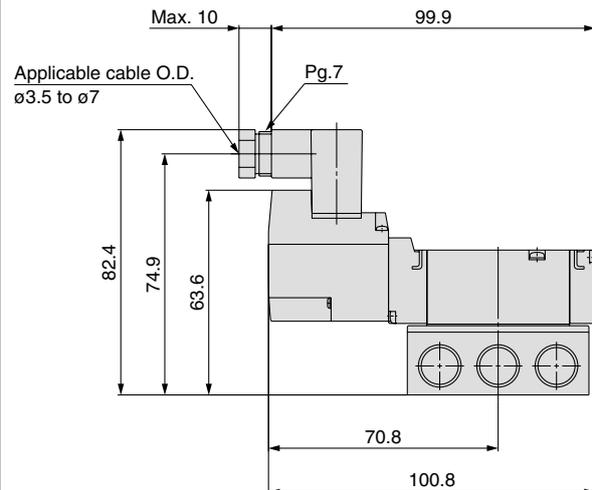
Grommet (G): VQZ215<sup>0</sup><sub>1</sub> (R)-□G□1-0<sup>01</sup><sub>02</sub>-Q



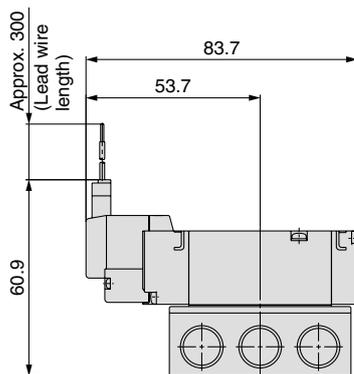
L plug connector (L): VQZ215<sup>0</sup><sub>1</sub> (R)-□L□1-0<sup>01</sup><sub>02</sub>-Q



DIN terminal (Y): VQZ215<sup>0</sup><sub>1</sub> (R)-□Y□1-0<sup>01</sup><sub>02</sub>-Q



M plug connector (M): VQZ215<sup>0</sup><sub>1</sub> (R)-□M□1-0<sup>01</sup><sub>02</sub>-Q

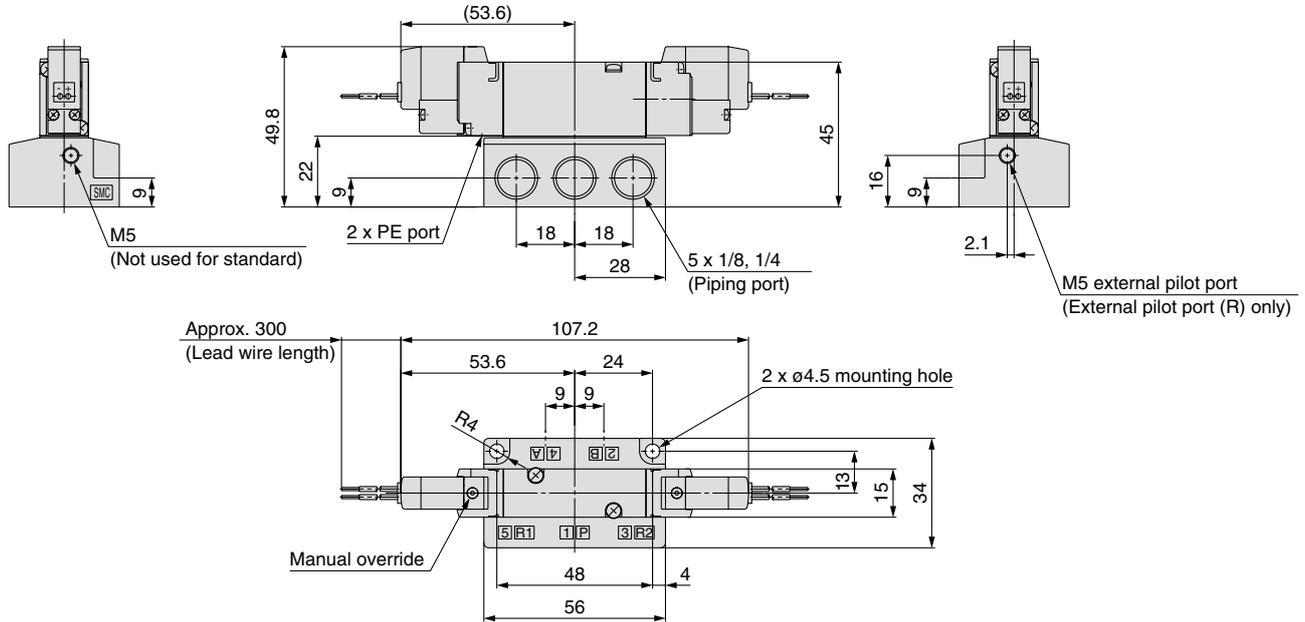


# Series VQZ1000/2000/3000

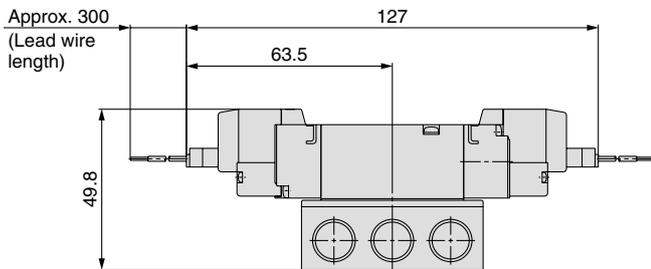
## Dimensions: VQZ2000

### 2 Position Double

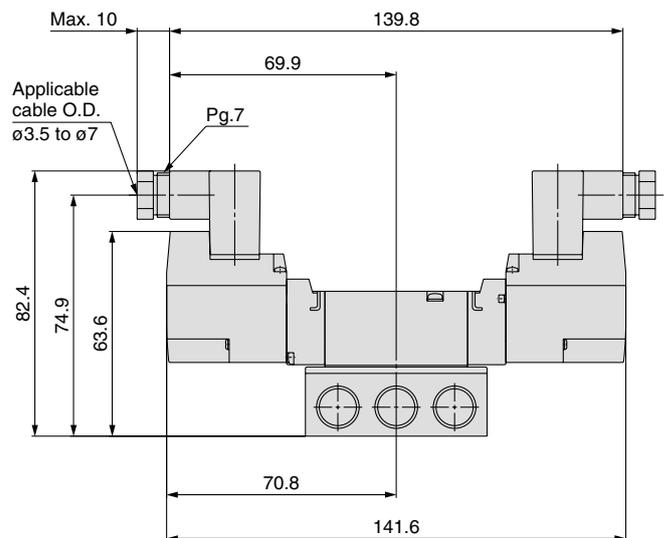
Grommet (G): VQZ225 <sup>0</sup>/<sub>1</sub> (R)-□G□1-0<sup>1</sup>/<sub>02</sub>-Q



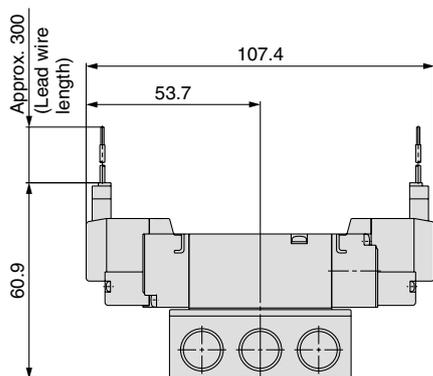
L plug connector (L): VQZ225 <sup>0</sup>/<sub>1</sub> (R)-□L□1-0<sup>1</sup>/<sub>02</sub>-Q



DIN terminal (Y): VQZ225 <sup>0</sup>/<sub>1</sub> (R)-□Y□1-0<sup>1</sup>/<sub>02</sub>-Q



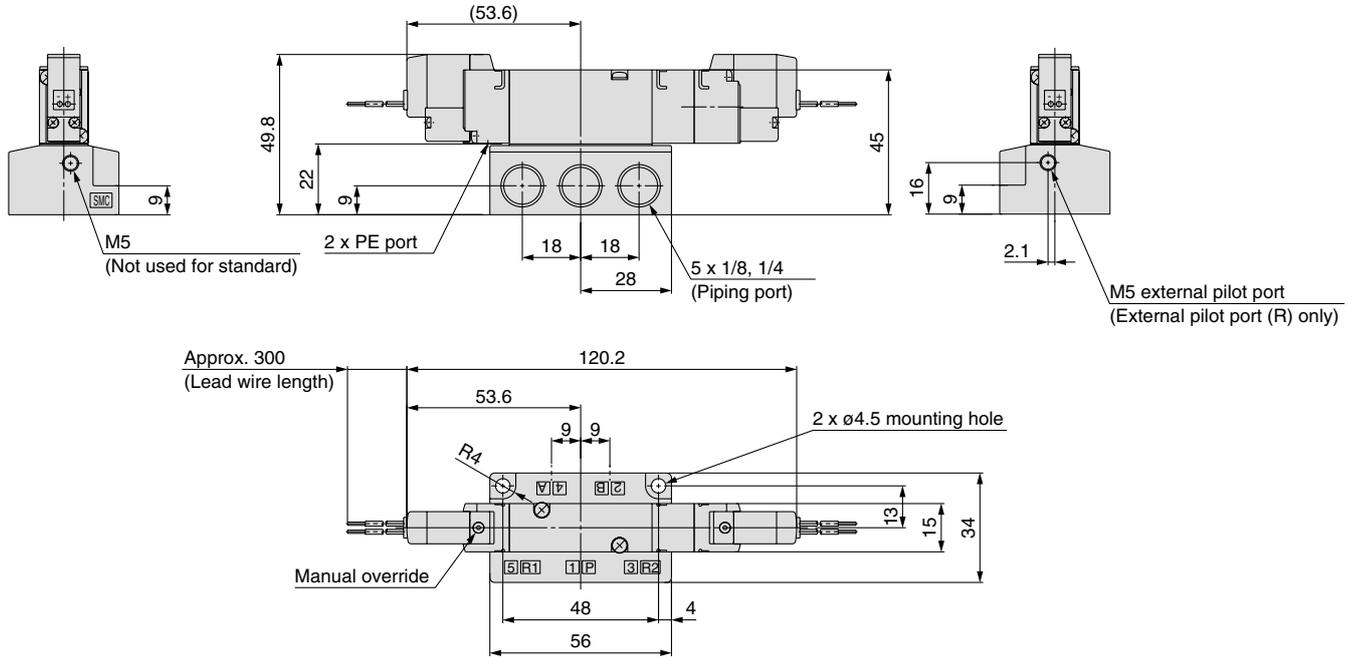
M plug connector (M): VQZ225 <sup>0</sup>/<sub>1</sub> (R)-□M□1-0<sup>1</sup>/<sub>02</sub>-Q



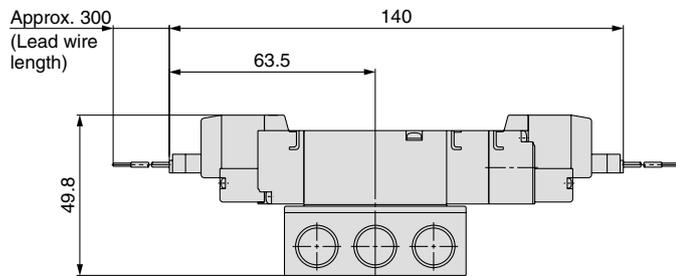
## Dimensions: VQZ2000

### 3 Position Closed Centre/Exhaust Centre/Pressure Centre

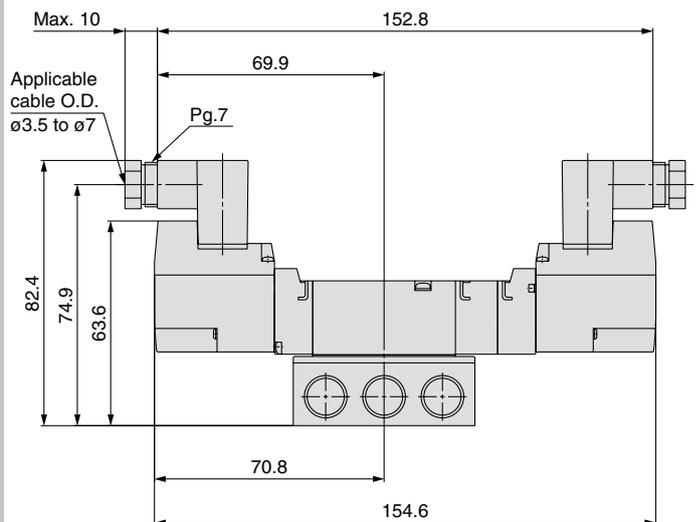
Grommet (G): VQZ2  $\frac{3}{5}$   $\frac{4}{5}$  (R)-□G□1-0<sub>1</sub><sup>01</sup>-Q



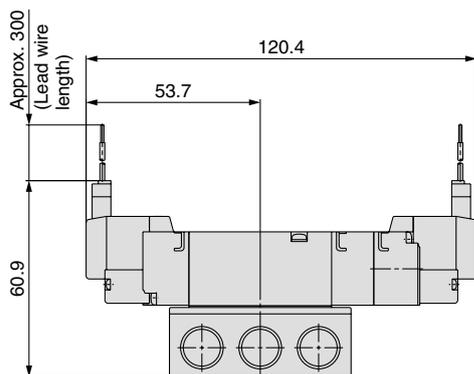
L plug connector (L): VQZ2  $\frac{3}{5}$   $\frac{4}{5}$  (R)-□L□1-0<sub>1</sub><sup>01</sup>-Q



DIN terminal (Y): VQZ2  $\frac{3}{5}$   $\frac{4}{5}$  (R)-□Y□1-0<sub>1</sub><sup>01</sup>-Q



M plug connector (M): VQZ2  $\frac{3}{5}$   $\frac{4}{5}$  (R)-□M□1-0<sub>1</sub><sup>01</sup>-Q

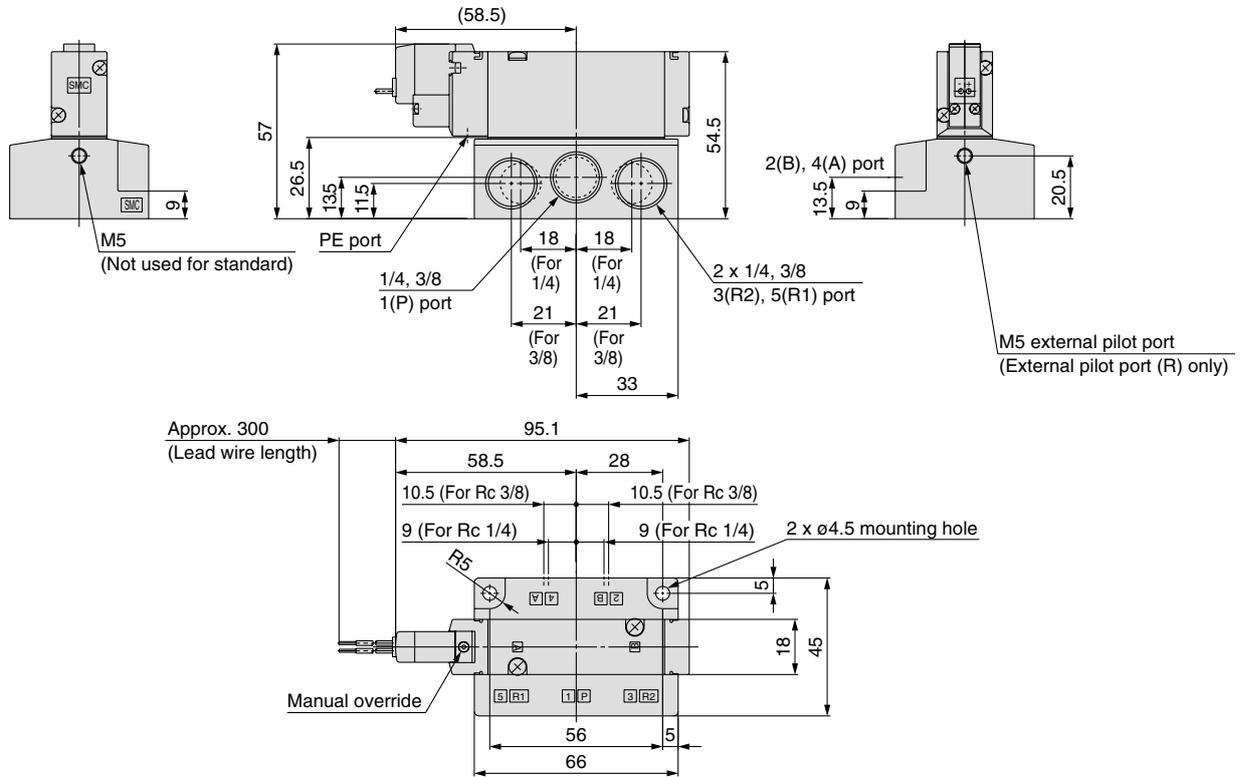


# Series VQZ1000/2000/3000

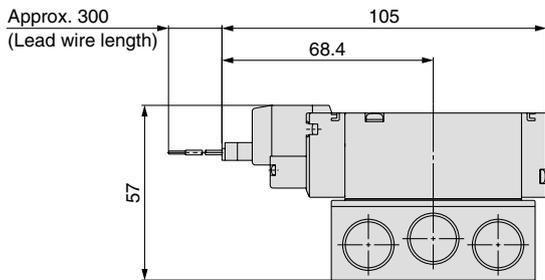
## Dimensions: VQZ3000

### 2 Position Single

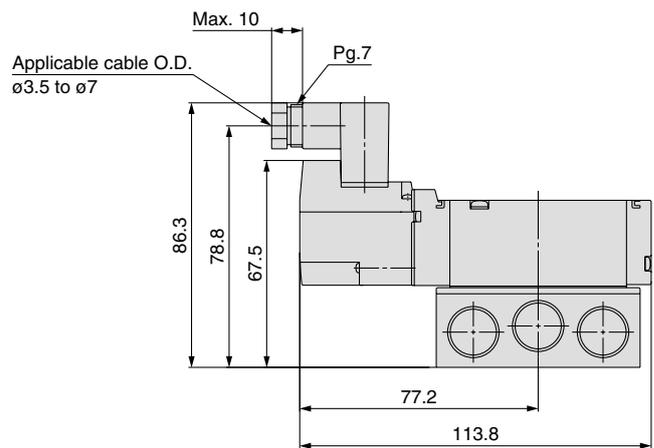
Grommet (G): VQZ315<sup>0</sup><sub>1</sub> (R)-□G□1-0<sup>2</sup><sub>03</sub>-Q



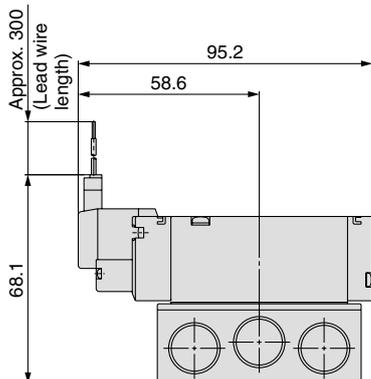
L plug connector (L): VQZ315<sup>0</sup><sub>1</sub> (R)-□L□1-0<sup>2</sup><sub>03</sub>-Q



DIN terminal (Y): VQZ315<sup>0</sup><sub>1</sub> (R)-□Y□1-0<sup>2</sup><sub>03</sub>-Q



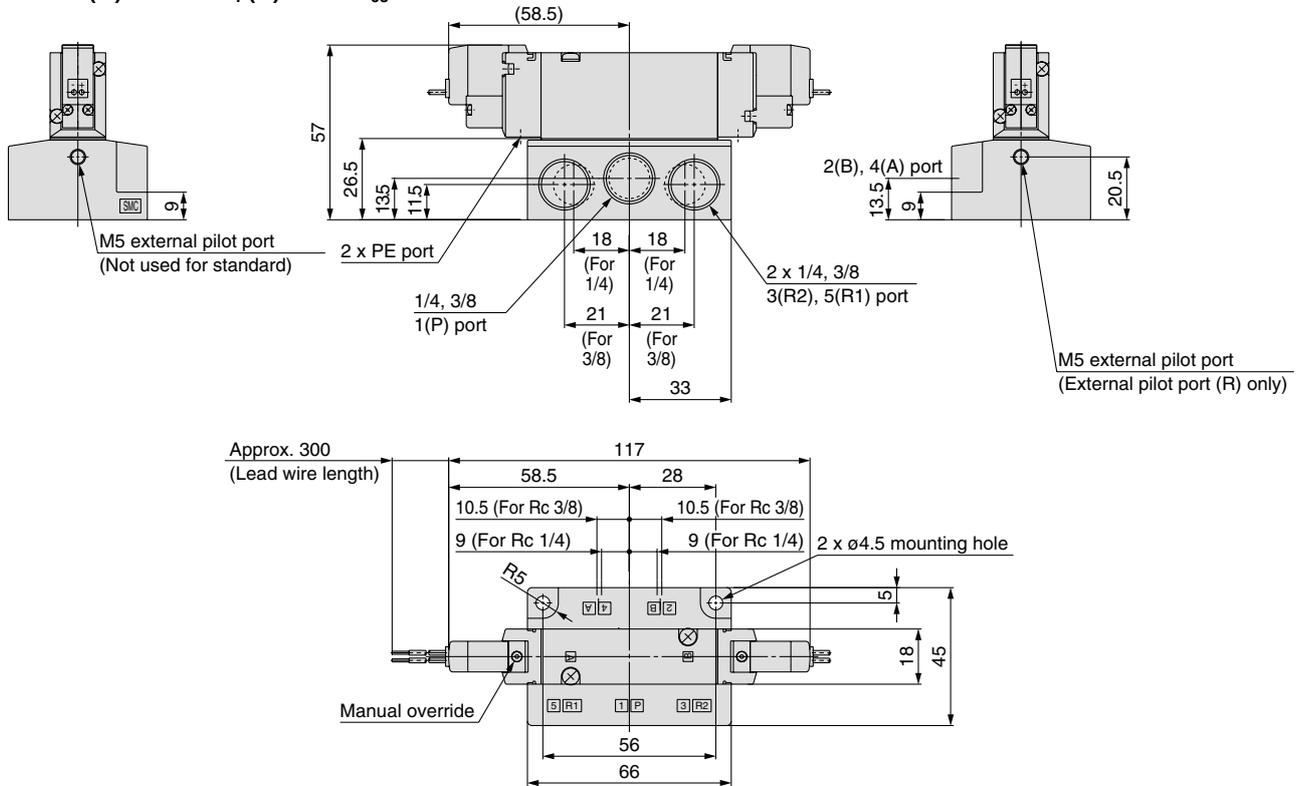
M plug connector (M): VQZ315<sup>0</sup><sub>1</sub> (R)-□M□1-0<sup>2</sup><sub>03</sub>-Q



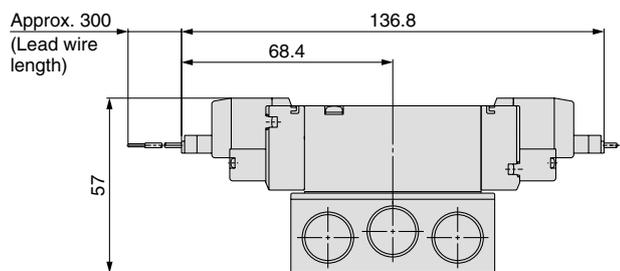
## Dimensions: VQZ3000

### 2 Position Double

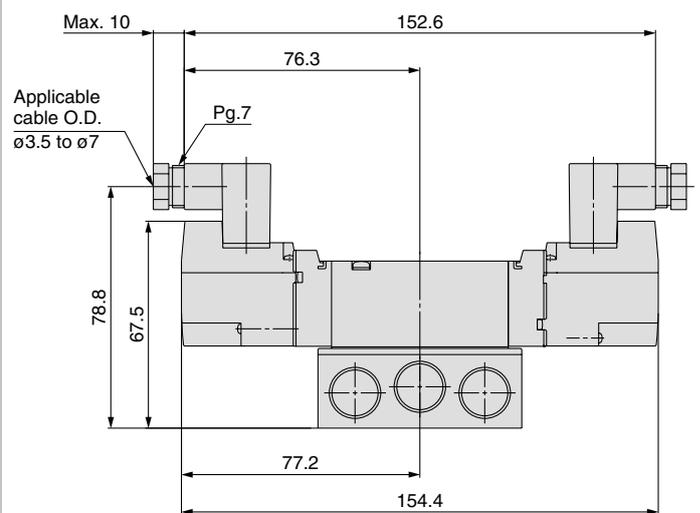
Grommet (G): VQZ325<sup>0</sup><sub>1</sub>(R)-□G□1-0<sup>2</sup><sub>03</sub>-Q



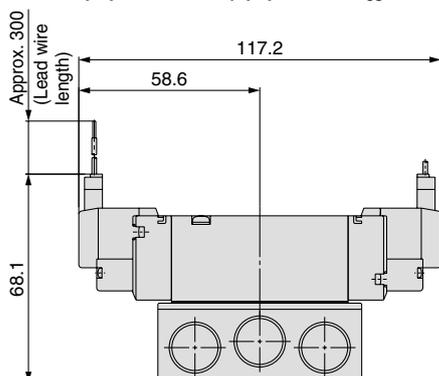
L plug connector (L): VQZ325<sup>0</sup><sub>1</sub>(R)-□L□1-0<sup>2</sup><sub>03</sub>-Q



DIN terminal (Y): VQZ325<sup>0</sup><sub>1</sub>(R)-□Y□1-0<sup>2</sup><sub>03</sub>-Q



M plug connector (M): VQZ325<sup>0</sup><sub>1</sub>(R)-□M□1-0<sup>2</sup><sub>03</sub>-Q

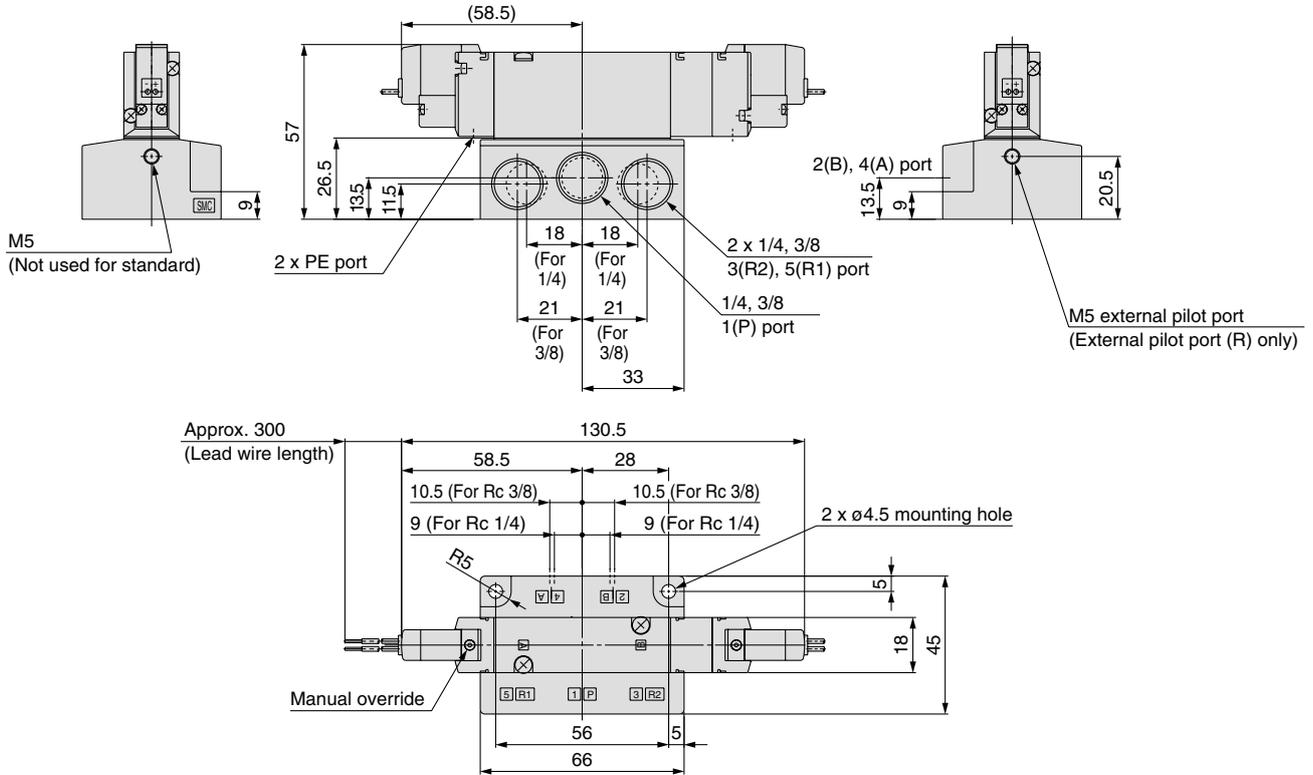


# Series VQZ1000/2000/3000

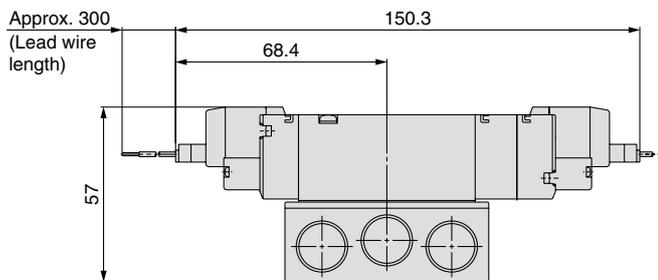
## Dimensions: VQZ3000

### 3 Position Closed Centre/Exhaust Centre/Pressure Centre

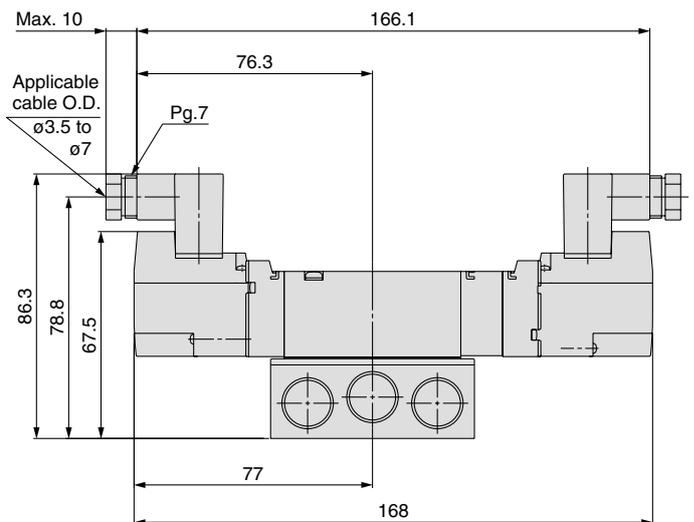
Grommet (G): VQZ3 $\frac{3}{4}$  5 $\frac{0}{1}$  (R)-□G□1-0 $\frac{02}{03}$ -Q



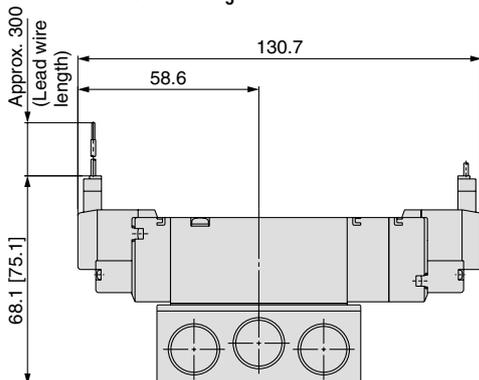
L plug connector (L): VQZ3 $\frac{3}{4}$  5 $\frac{0}{1}$  (R)-□L□1-0 $\frac{02}{03}$ -Q



DIN terminal (Y): VQZ3 $\frac{3}{4}$  5 $\frac{0}{1}$  (R)-□Y□1-0 $\frac{02}{03}$ -Q



M plug connector (M): VQZ3 $\frac{3}{4}$  5 $\frac{0}{1}$  (R)-□M□1-0 $\frac{02}{03}$ -Q



# 5 Port Solenoid Valve Series VQZ1000/2000/3000 Manifold

## Connector Kit



### How to Order Manifold

VV5QZ 1 5 - 08 C6 C - N - Q

**Series**

1	VQZ1000
2	VQZ2000
3	VQZ3000

**Manifold type**

5	Base mounted
---	--------------

**Stations**

02	2 stations
⋮	⋮
20	20 stations

**Port size [4(A), 2(B) port]**

Symbol	Port size	VQZ1000	VQZ2000	VQZ3000
C3	ø3.2 one-touch fitting	○	—	—
C4	ø4 one-touch fitting	○	○	—
C6	ø6 one-touch fitting	○	○	○
C8	ø8 one-touch fitting	—	○	○
C10	ø10 one-touch fitting	—	—	○
M5	M5 thread	○	—	—
01	Rc 1/8	—	○	—
02	Rc 1/4	—	—	○
CM <sup>Note 1)</sup>	Mixture of port sizes	○	○	○

**CE compliant**

**Option**

-	None
D	DIN rail mounting (With DIN rail in standard length)
D0 <sup>Note 1)</sup>	DIN rail mounting (Without DIN rail)
N	Name plate (Except VQZ1000)
R <sup>Note 1)</sup>	External pilot type



Note 1) Order DIN rail separately.

For DIN rail part no., refer to page 48.

Note 2) For details on options and external pilot type, refer to page 53.

**Kit type**

C	Connector
---	-----------



Note 1) Specify a mixture of port sizes/plugs by using a manifold specification sheet.

A mixture of port sizes/plug are available only for the one-touch fitting type.

Note 2) For inch size one-touch fittings and optional thread type (NPT, NPTF, G), refer to page 53.

### How to Order Valve

VQZ 1 1 5 1 - 5 M - 1 - Q

**Series**

1	VQZ1000 body width 10 mm
2	VQZ2000 body width 15 mm
3	VQZ3000 body width 18 mm

**Type of actuation**

1	2 position single
2	2 position double
3	3 position closed centre
4	3 position exhaust centre
5 <sup>Note)</sup>	3 position pressure centre
8	3 port for mixed mounting N.C.
9	3 port for mixed mounting N.O.

**Body type**

5	Mase mounted
---	--------------

**Seal**

0	Metal seal
1	Rubber seal

**Function**

Symbol	Specifications	DC (0.35 W)	AC (Note 3)
-	Standard type	○	○
B <sup>Note 1)</sup>	High speed response type	(0.9 W) ○	—
K <sup>Note 1)</sup>	High pressure type (Metal seal type only)	(0.9 W) ○	—
R <sup>Note 1, 2)</sup>	External pilot type	○	○
BR <sup>Note 1, 2)</sup>	High speed response/ External pilot type	(0.9 W) ○	—
KR <sup>Note 1, 2)</sup>	High pressure/External pilot type (Metal seal type only)	(0.9 W) ○	—



Note 1) Option

Note 2) For details on external pilot type, refer to page 53.

Note 3) For power consumption of AC specification, refer to page 31.

Note) AC specification is only available with Y, YO, YZ type.

**Manual override**

-	Non-locking push type (Tool required)
B	Locking type (Tool required)

**Electrical entry**

Symbol	Electrical entry	Light/surge voltage suppressor
G	Grommet (DC specification)	None
L	L plug connector with lead wire	Yes
LO	L plug connector without connector	
M	M plug connector with lead wire	
MO	M plug connector without connector	None
Y <sup>Note 1)</sup>	DIN terminal	
YO <sup>Note 1)</sup>	DIN terminal without connector	
YZ <sup>Note 1)</sup>	DIN terminal	Yes
YS <sup>Note 1)</sup>	DIN terminal (DC specification)	Yes
YOS <sup>Note 1)</sup>	DIN terminal without connector (DC specification)	(Without light)



Note 1) Applicable to VQZ2000/3000 only. For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.

Note 2) Standard lead wire length: 300 mm

**Coil voltage**

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC [115 VAC] (50/60 Hz)
4	220 VAC [230 VAC] (50/60 Hz)
5	24 VDC
6	12 VDC

**IP65 compliant**

-	None
W <sup>Note)</sup>	Compliant

Note) VQZ2000/3000 DIN terminal rubber seal type only (without external pilot). For details on IP65 enclosure, refer to page 53.

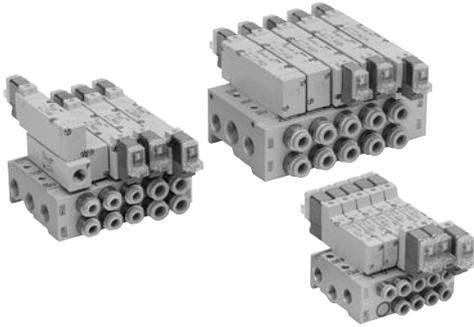


**Caution**  
Use standard (DC) specification for continuous duty.



# Series VQZ1000/2000/3000

## Manifold Specifications



### Optional Specifications

High speed response type
High pressure type (Metal seal type only)
External pilot type*

\* For details on external pilot type, refer to page 53.

Series	Base model	Piping specifications		Applicable solenoid valve	Applicable station	Note) Manifold base weight (g)
		Port location	Port size			
			1(P), 3/5(R)	4(A), 2(B)		
VQZ1000	VV5QZ15-□□C-□-Q	Side	Rc1/8	C3 (For ø3.2) C4 (For ø4) C6 (For ø6) M5 (M5 thread)	VQZ1□50 VQZ1□51	2 to 20 stations 2 stations: 105 Addition per station: 27
VQZ2000	VV5QZ25-□□C-□-Q	Side	Rc1/4	C4 (For ø4) C6 (For ø6) C8 (For ø8) Rc 1/8	VQZ2□50 VQZ2□51	2 to 20 stations 2 stations: 193 Addition per station: 54
VQZ3000	VV5QZ35-□□C-□-Q	Side	1(P) port Rc 3/8 3/5(R) port Rc 1/4	C6 (For ø6) C8 (For ø8) C10 (For ø10) Rc 1/4	VQZ3□50 VQZ3□51	2 to 20 stations 2 stations: 398 Addition per station: 102



Note) Weight without sub-plate.

## How to Order Manifold Assembly (Example)

### Example

**VV5QZ25-05C6C-Q...1 set C (C kit 5 station manifold base part no.)**

- \* VVQZ2000-10A-5...1 set (Blanking plate assembly part no.)
- \* VQZ2150-5L1-Q...1 set (Single type part no.)
- \* VQZ2250-5L1-Q...2 sets (Double type part no.)
- \* VQZ2350-5L1-Q...1 set (3 position type part no.)

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

→ Enter in order starting from the first station on the D side.

Add the valve and option part number under the manifold base part number.  
When entry of part numbers becomes complicated, indicate by using a manifold specification sheet.

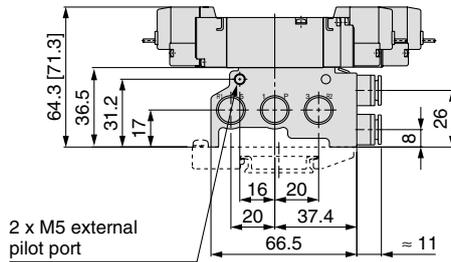


# Series VQZ1000/2000/3000

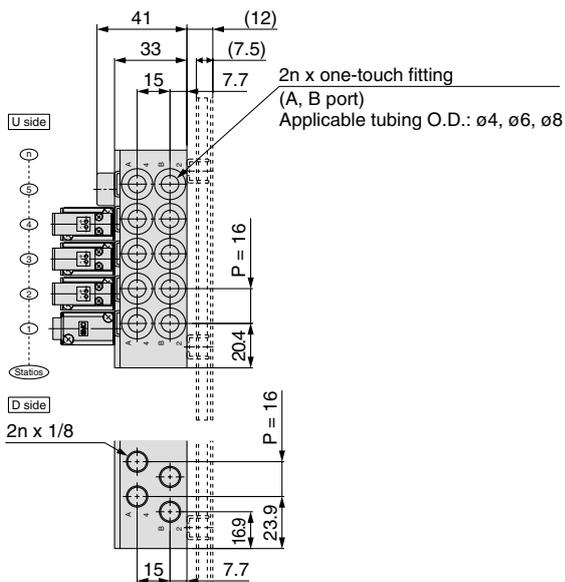
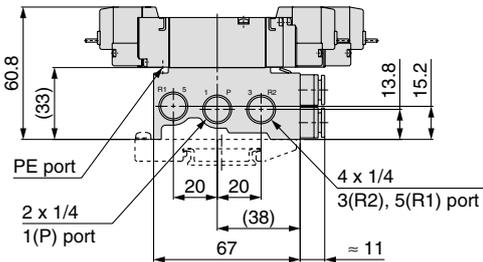
## Dimensions: VQZ2000

VV5QZ25- Stations Port size C-□-Q

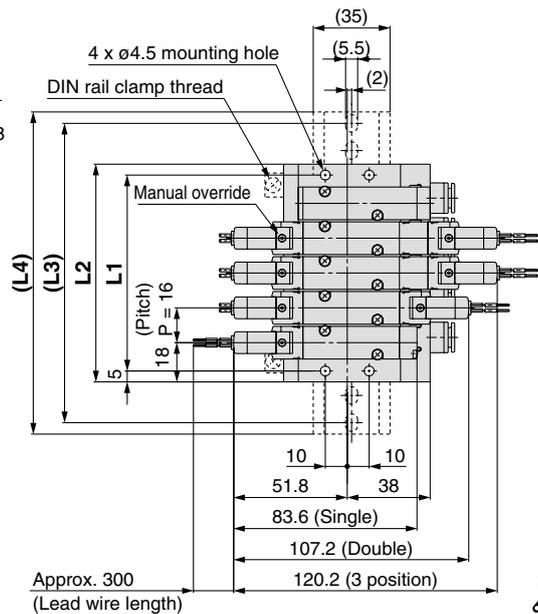
### Grommet (G)



For external pilot specification

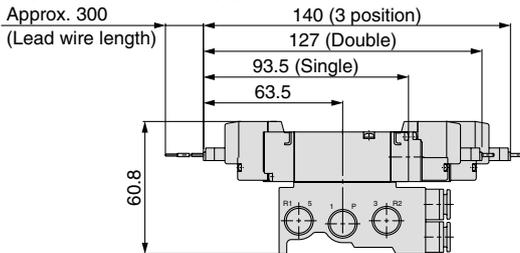


For 1/8

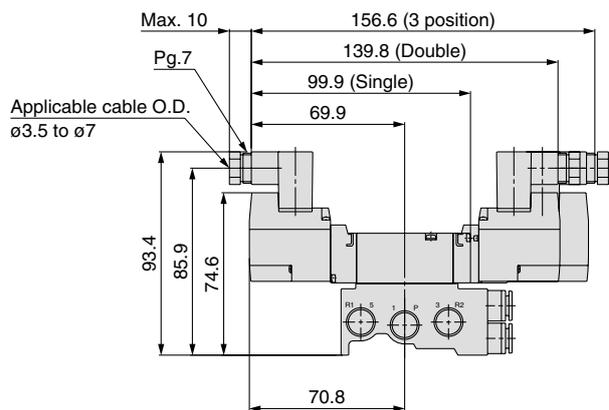


The dashed lines indicate the DIN rail mounting style [-D].

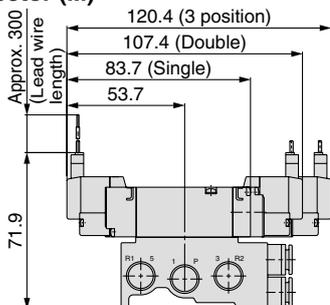
### L plug connector (L)



### DIN terminal (Y)



### M plug connector (M)



## Dimensions

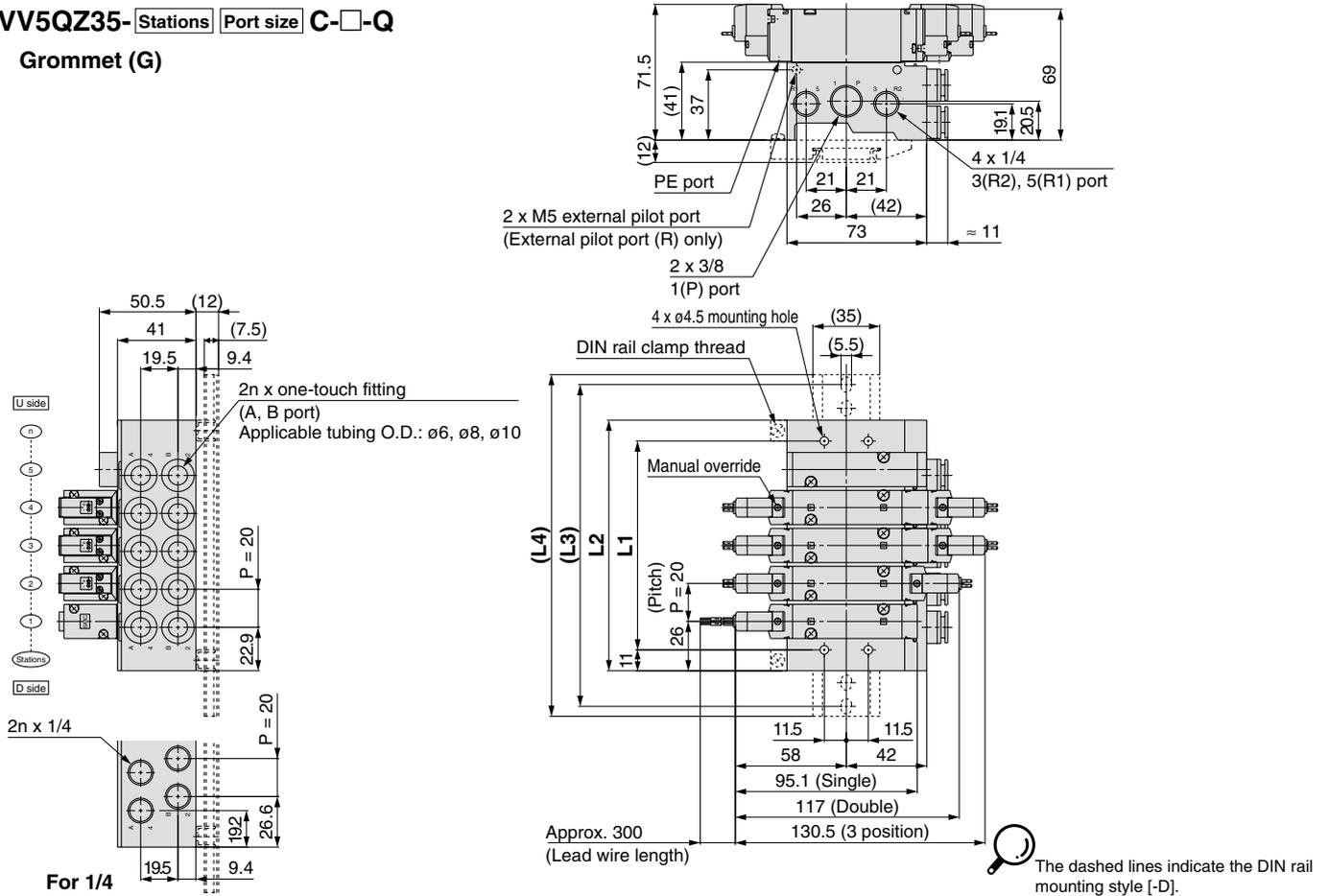
Formula: L1 = 16n + 10 L2 = 16n + 20 n: Stations (max. 20 stations)

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	42	58	74	90	106	122	138	154	170	186	202	218	234	250	266	282	298	314	330
L2	52	68	84	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324	340
L3	75	87.5	112.5	125	137.5	162.5	175	187.5	200	225	237.5	250	275	287.5	300	312.5	337.5	350	362.5
L4	85.5	98	123	135.5	148	173	185.5	198	210.5	235.5	248	260.5	285.5	298	310.5	323	348	360.5	373

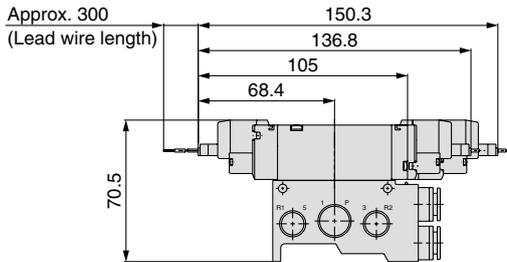
## Dimensions: VQZ3000

VV5QZ35- Stations Port size C-□-Q

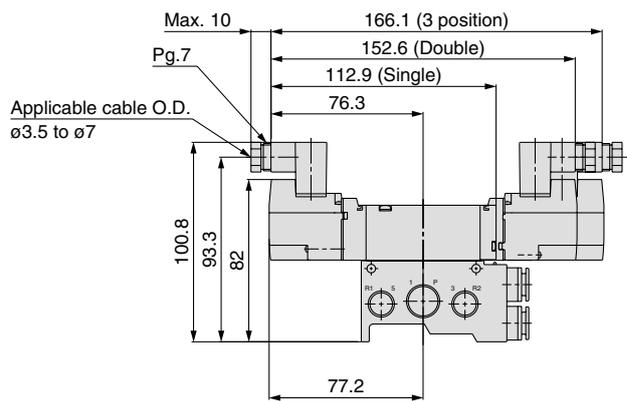
Grommet (G)



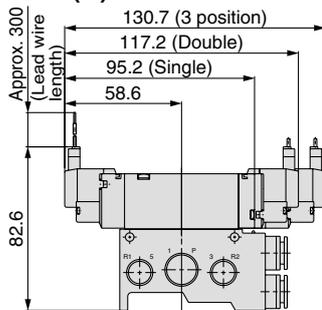
### L plug connector (L)



### DIN terminal (Y)



### M plug connector (M)



### Dimensions

Formula:  $L1 = 20n + 10$   $L2 = 20n + 32$  n: Stations (max. 20 stations)

n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	50	70	90	110	130	150	170	190	210	230	250	270	290	310	330	350	370	390	410
L2	72	92	112	132	152	172	192	212	232	252	272	292	312	332	352	372	392	412	432
L3	100	112.5	137.5	162.5	175	200	212.5	237.5	262.5	275	300	312.5	337.5	362.5	375	400	412.5	437.5	462.5
L4	110.5	123	148	173	185.5	210.5	223	248	273	285.5	310.5	323	348	373	385.5	410.5	423	448	473

# Series VQZ1000/2000/3000

## Manifold Options

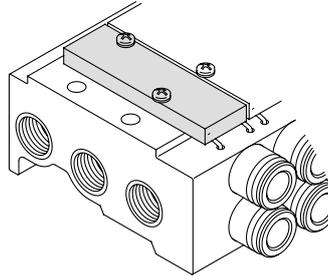
### Blanking plate assembly

**VVQZ1000-10A-5 (For VQZ1000)**

**VVQZ2000-10A-5 (For VQZ2000)**

**VVQZ3000-10A-5 (For VQZ3000)**

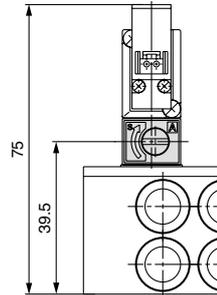
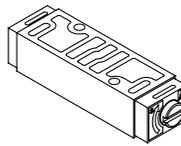
It is mounted on to the manifold block in preparation for removing a valve for maintenance reasons or when planning to mount a spare valve, etc.



### Restrictor spacer (Applicable to VQZ2000)

**VVQZ2000-20A-5**

Mount a restrictor spacer between the manifold base and the valve, and thus making it possible to control cylinder speed by meter-out.



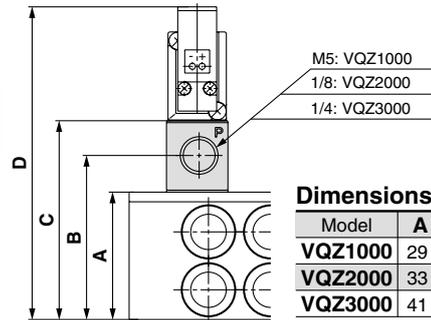
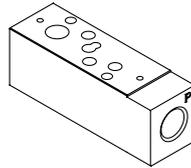
### Individual SUP spacer

**VVQZ1000-P-5-M5 (For VQZ1000)**

**VVQZ2000-P-5-01□ (For VQZ2000)**

**VVQZ3000-P-5-02□ (For VQZ3000)**

Supply port can be installed individually by mounting an individual supply spacer onto the manifold block. It is used for cases when different pressures should be supplied into each valve, etc.



#### Dimensions

Model	A	B	C	D (Note)
<b>VQZ1000</b>	29	35	40	67
<b>VQZ2000</b>	33	43	52	81
<b>VQZ3000</b>	41	52	63	93

Note) For grommet

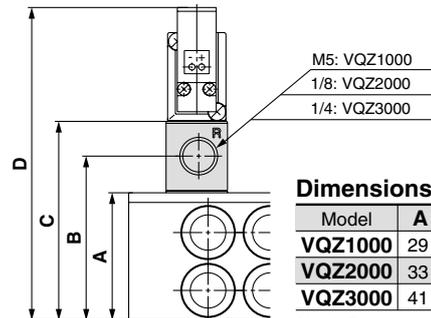
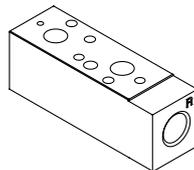
### Individual EXH spacer

**VVQZ1000-R-5-M5 (For VQZ1000)**

**VVQZ2000-R-5-01□ (For VQZ2000)**

**VVQZ3000-R-5-02□ (For VQZ3000)**

Exhaust port can be installed individually by mounting an individual exhaust spacer on to the manifold block. It is used for cases when valve exhaust is likely to affect other stations due to circuit, etc.



#### Dimensions

Model	A	B	C	D (Note)
<b>VQZ1000</b>	29	35	40	67
<b>VQZ2000</b>	33	43	52	81
<b>VQZ3000</b>	41	52	63	93

Note) For grommet

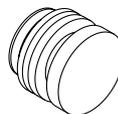
### Port plug

**VVQZ1000-CP (For VQZ1000)**

**VVQZ2000-CP (For VQZ2000)**

**VVQZ3000-CP (For VQZ3000)**

Used to block a cylinder port when changing 5 port valves into 3 port valves, etc.



## Manifold Options

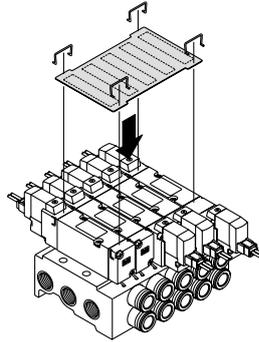
### Name plate [-N] (Applicable to VQZ2000 / 3000)

**VVQZ2000-N5-** Stations (For VQZ2000)

**VVQZ3000-N5-** Stations (For VQZ3000)

It is a transparent resin plate for placing a label that indicates solenoid valve function, etc. Insert it into the groove on the side of the end plate and bend it as shown in the figure.

- To order a manifold with nameplate already attached, insert "N" at the end of the manifold number.



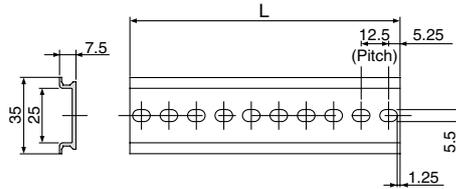
\* 4 clips are attached for name plate mounting.

### DIN rail

#### AXT100-DR-□

\* As for □, enter the number from the DIN rail dimensions table. For L dimension, refer to the dimensions of each kit.

Each manifold can be mounted on a DIN rail. Order it by indicating the option symbol for DIN rail mounting style, -D. The DIN rail is approximately 30 mm longer than the length of manifold.



#### L Dimension

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L dimension	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5

No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L dimension	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

$L = 12.5n + 10.5$

### Blanking plug

**KQP-23-X19**

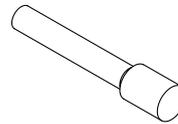
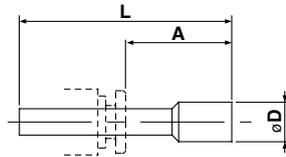
**KQP-04-X19**

**KQP-06-X19**

**KQP-08-X19**

**KQP-10-X19**

● Colour: White

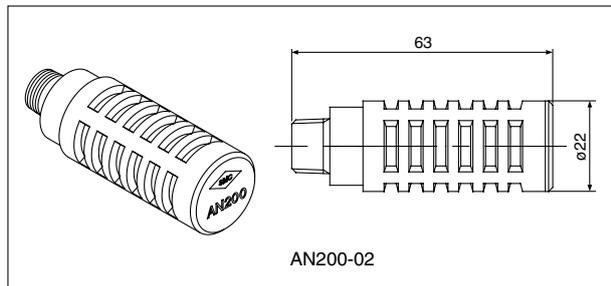
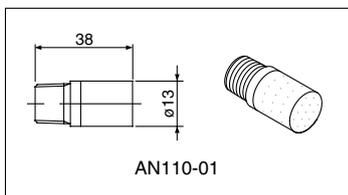


#### Dimensions

Applicable fittings size ød	Model	A	L	D
3.2	<b>KQP-23-X19</b>	16	31.5	3.2
4	<b>KQP-04-X19</b>	16	32	6
6	<b>KQP-06-X19</b>	18	35	8
8	<b>KQP-08-X19</b>	20.5	39	10
10	<b>KQP-10-X19</b>	22	43	12

### Silencer (For manifold EXH port)

Silencer can be installed in the manifold EXH port.



Model	Silencer part no.
<b>VQZ1000</b>	AN110-01
<b>VQZ2000</b>	AN200-02
<b>VQZ3000</b>	AN200-02



## Manifold Options

### Double check block (Separated): For VQZ2000 / 3000

VQ2000-FPG-□□-□

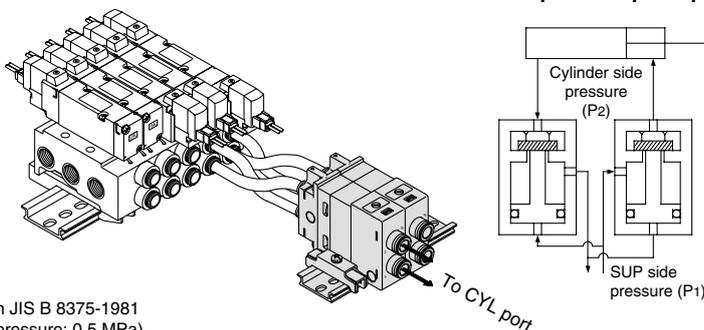
It is used on the outlet side piping to keep the cylinder in the intermediate position for a long time. Combining the double check block with a built-in pilot type double check valve and a 3 position exhaust centre solenoid valve will enable the cylinder to stop in the middle or maintain its position for a long time. The combination of a 2 position single or double solenoid with a double check block will prevent the cylinder from "dropping" at stroke end when residual supply pressure is released.

#### Specifications

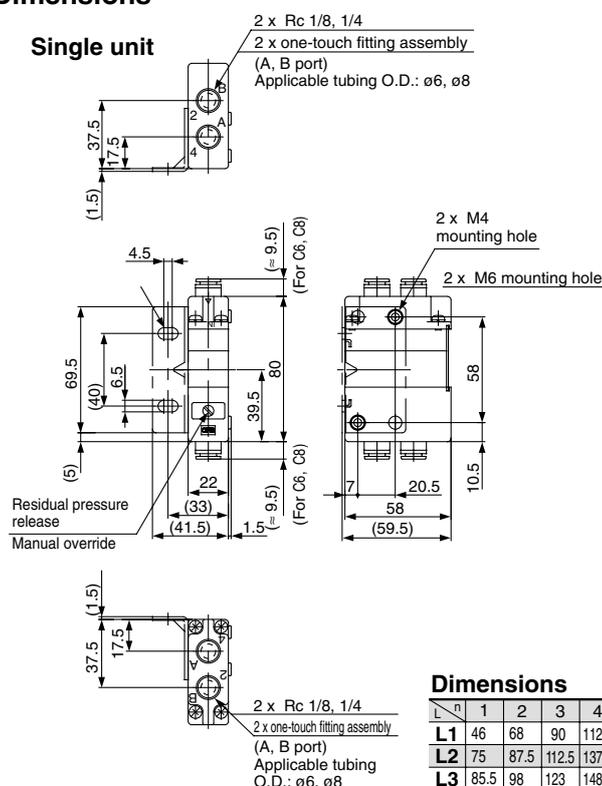
Maximum operating pressure	0.8 MPa
Minimum operating pressure	0.15 MPa
Ambient and fluid temperature	-5 to 50°C
Flow characteristics: C	3.0 dm <sup>3</sup> /(s·bar)
Max. operating frequency	180 c.p.m

Note) Based on JIS B 8375-1981 (Supply pressure: 0.5 MPa)

#### <Check valve operation principle>



## Dimensions



#### Dimensions

Formula  $L1 = 22n + 24$  n: Station

L	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1		46	68	90	112	134	156	178	200	222	244	266	288	310	332	354	376
L2		75	87.5	112.5	137.5	162.5	175	200	225	250	262.5	287.5	312.5	337.5	362.5	375	400
L3		85.5	98	123	148	173	185.5	210.5	235.5	260.5	273	298	323	348	373	385.5	410.5

## How to Order

### Double check block

VQ2000-FPG-01 01-F

IN side port size	OUT side port size
01 Rc 1/8	01 Rc 1/8
02 Rc 1/4	02 Rc 1/4
C6 ø6 one-touch fitting	C6 ø6 one-touch fitting
C8 ø8 one-touch fitting	C8 ø8 one-touch fitting

Option	Description
-	None
F	With bracket
D	DIN rail mounting (For manifold)
N	Name plate

### Manifold

VVQ2000-FPG-06

Stations	Description
01	1 station
⋮	⋮
16	16 stations

#### <Ordering Example>

VVQ2000-FPG-06 ... 6 stations of manifold

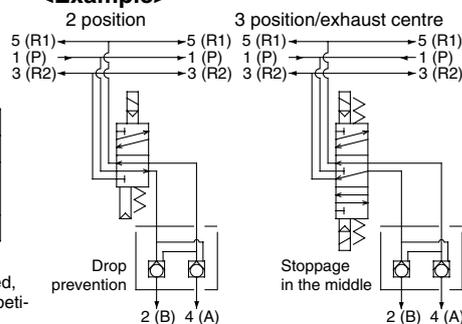
- \* VQ2000-FPG-C6C6-D, 3 sets } Double check block
- \* VQ2000-FPG-C8C8-D, 3 sets }

#### ⚠ Caution

- Air leakage from the pipe between the valve and cylinder or the fittings will prevent the cylinder from stopping for a long time. Check for air leakage using neutral household detergent, such as dish washing soap. Also check the cylinder's tube gasket, piston packing and rod packing for air leakage.
- Since one-touch fittings allow slight air leakage, screw piping is recommended when stopping the cylinder in an intermediate position for a long time.
- Combining double check block with 3 position closed centre or pressure centre valve will not work.
- When screwing the fittings in the double check block, proper tightening torque for screws is as shown at the right.
- Set the cylinder load so that the cylinder pressure will be within two times that of the supply pressure.
- If exhaust side of double check block is throttled too much, intermediate stopping accuracy will decrease.

Connection threads	Proper tightening torque (N·m)
Rc 1/8	7 to 9
Rc 1/4	12 to 14

#### <Example>



#### <Bracket assembly>

Part no.	Tightening torque (Note)
VQ2000-FPG-FB	0.8 to 1.0 N·m

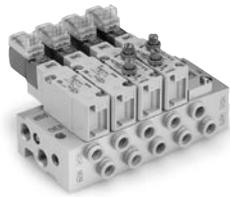
Note) This is the tightening torque for mounting a bracket to the double check block.

# Series VQZ1000/2000/3000



## Compact Body Type with Restrictor: For VQZ2000

- Restrictors are built into the valve body, making it easier to adjust the cylinder speed.
- Needle valve is equipped with a retainer to prevent accidental needle loss.

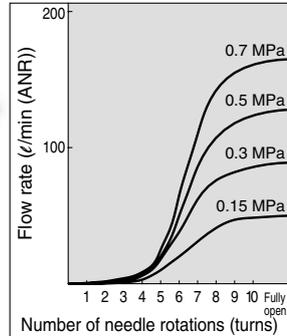


### JIS Symbol



(Single)

### Flow Characteristics



### Specifications

Number of solenoids	Model	Flow characteristics						Response time (ms) <sup>Note 1)</sup>		Weight <sup>Note 2)</sup> g		
		1→4/2 (P→A/B)			4/2→5/3 (A/B→EA/EB)			Stand- ard: 0.35 W	High pressure: 0.9 W			
		C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv					
2 position	Single	Metal (Without restrictor)	VQZ2150-□-C-Q	0.74	0.19	0.17	0.63	0.19	0.16	16 or less	15 or less	40
		Rubber seal (Without restrictor)	VQZ2151-□-C-Q	1.2	0.17	0.26	1.0	0.20	0.24	20 or less	20 or less	
		Rubber seal (With restrictor)	VQZ2151S-□-C-Q	1.2	0.13	0.27	0.40	0.25	0.10	20 or less	20 or less	44
2 position	Double	Metal (Without restrictor)	VQZ2250-□-C-Q	0.74	0.19	0.17	0.63	0.19	0.16	10 or less	13 or less	54
		Rubber seal (Without restrictor)	VQZ2251-□-C-Q	1.2	0.17	0.26	1.0	0.20	0.24	15 or less	20 or less	
		Rubber seal (With restrictor)	VQZ2251S-□-C-Q	1.2	0.13	0.27	0.40	0.25	0.10	15 or less	20 or less	58
3 position	Closed centre	Metal (Without restrictor)	VQZ2350-□-C-Q	0.47	0.23	0.11	0.41	0.28	0.10	25 or less	26 or less	54
		Rubber seal (Without restrictor)	VQZ2351-□-C-Q	0.53	0.42	0.15	0.62	0.31	0.16	30 or less	33 or less	
		Rubber seal (With restrictor)	VQZ2351S-□-C-Q	0.59	0.33	0.15	0.35	0.28	0.09	30 or less	33 or less	58
	Exhaust centre	Metal (Without restrictor)	VQZ2450-□-C-Q	0.50	0.29	0.12	0.65	0.13	0.15	25 or less	26 or less	54
		Rubber seal (Without restrictor)	VQZ2451-□-C-Q	0.53	0.42	0.15	1.1	0.16	0.24	30 or less	33 or less	
		Rubber seal (With restrictor)	VQZ2451S-□-C-Q	0.53	0.34	0.13	0.42	0.35	0.10	30 or less	33 or less	58

- Note 1) Valve with restrictors is available on rubber seal models only.
- Note 2) Since the body (of this type) is made compact, there is no interchangeability with the standard VQZ2000.
- Note 3) Tightening torque of needle valve lock nut should not exceed 0.3 N·m.

- Note 1) Based on JIS B 8375-1981 (Value for supply pressure of 0.5 MPa, with light/surge voltage suppressor, when using clean air). Response time values will change depending on pressure and air quality. The values at the time of ON are given for double styles.
- Note 2) Weight without sub-plate

### Manifold

**VV5QZ25C-05C4C-D-Q**

- Series:** 2 VQZ2000
- Compact body:** (Implied by model name)
- Manifold type:** 5 Base mounted
- Stations:** 02 2 stations, 20 20 stations
- Port size [4 (A), 2 (B) port]:**
  - C3 ø3.2 one-touch fitting
  - C4 ø4 one-touch fitting
  - C6 ø6 one-touch fitting
  - 01 Rc 1/8
- Option:**
  - None
  - D DIN rail mounting (With DIN rail in standard length)
  - D0 <sup>Note)</sup> DIN rail mounting (Without DIN rail)
- CE compliant**

Note 1) The one-touch fittings on the compact manifold are pressed in and therefore cannot be changed and optional thread type (NPT, NPTF, G).

Note 2) For inch size one-touch fittings, refer to page 53.

Note) Order DIN rail separately. For DIN rail part no., refer to page 48.

### Valve model

**VQZ2 1 5 1 □ □ - 5 M □ 1 - □ - C - Q**

- Symbol:**
  - 1 2 position single
  - 2 2 position double
  - 3 3 position closed centre
  - 4 3 position exhaust centre
- Body type:** 5 Base mounted
- Seal:**
  - 0 Metal seal
  - 1 Rubber seal
- Restrictor:**
  - None
  - S <sup>Note)</sup> With

Note) Available with rubber seal valve only.
- Function:**
  - Standard type (0.35 W)
  - K <sup>Note 1)</sup> High pressure type (Metal seal type only) (0.9 W)
- Port size:**
  - Without sub-plate
  - 01 Rc 1/8

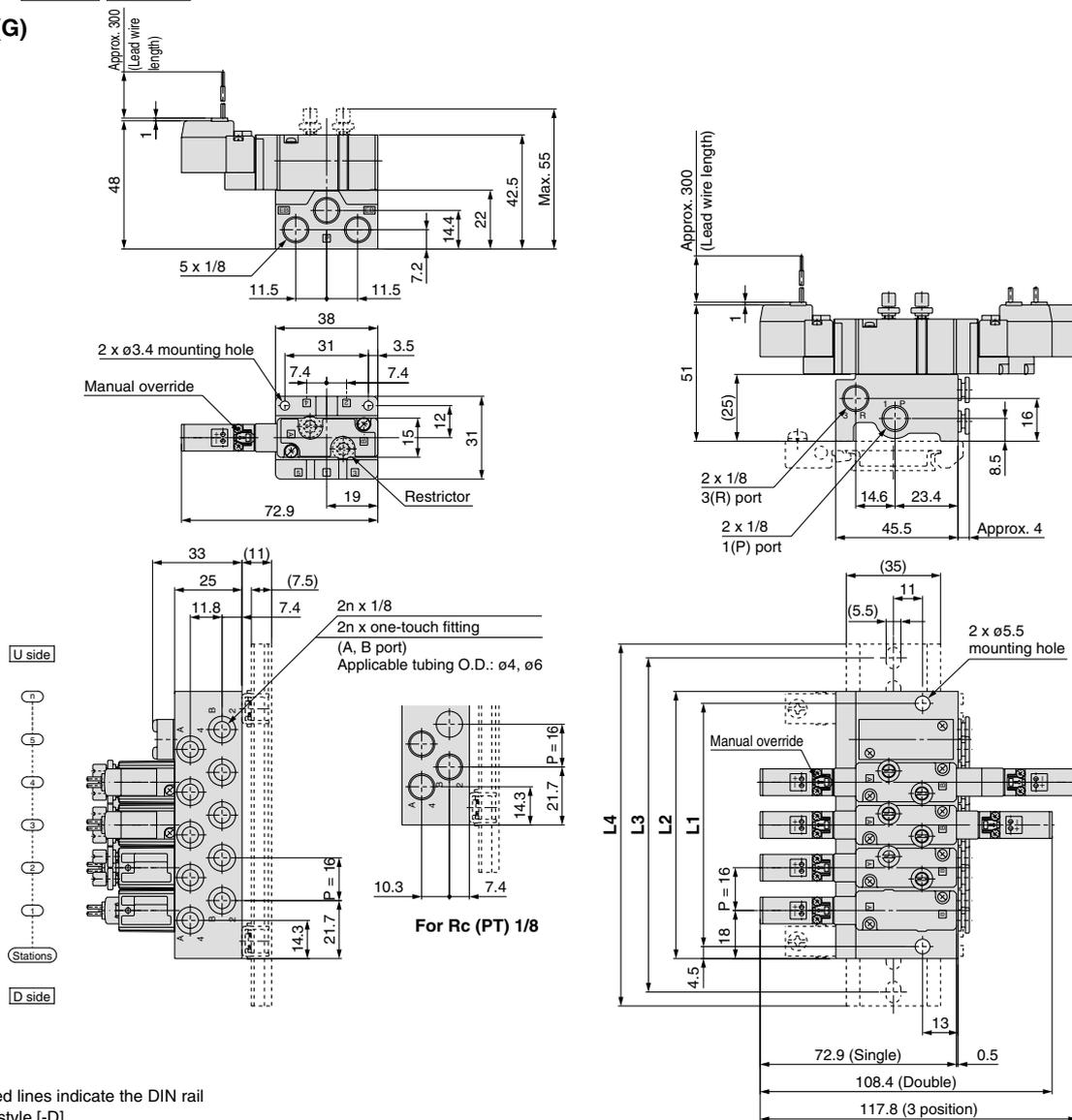
Note) For inch size one-touch fittings AND OPTIONAL THREAD TYPE (NPT, NPTF, G), refer to page 53.
- Manual override:**
  - Non-locking push type (Tool required)
  - B Locking type (Tool required)
- Coil voltage:**
  - 5 24 VDC
  - 6 12 VDC
- Electrical entry:**
  - G Grommet (DC specification)
  - L <sup>Note)</sup> L plug connector with lead wire
  - LO <sup>Note)</sup> L plug connector without connector
  - M <sup>Note)</sup> M plug connector with lead wire
  - MO <sup>Note)</sup> M plug connector without connector

Note) With light/surge voltage suppressor for L, LO, M, MO
- Sub-plate Part No. Blanking Plate Assembly:**
  - VQZ2000C-S-01□\* (Thread type)
  - VVQZ2000C-10A-5

## Dimensions: VQZ2000 (Compact Body Type)

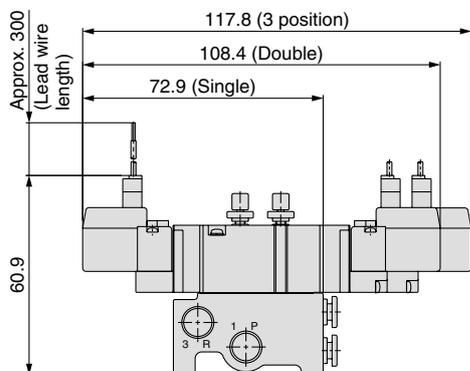
VV5QZ25C- Stations Port size C-□-Q

Grommet (G)

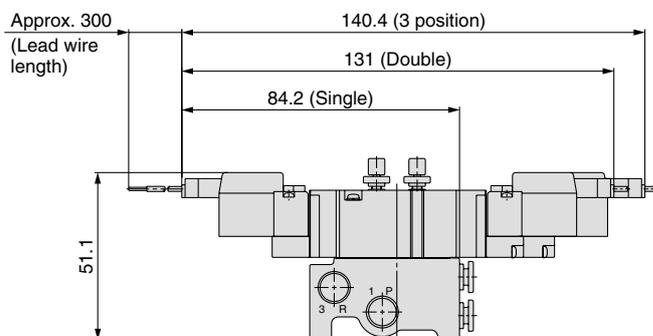


The dashed lines indicate the DIN rail mounting style [-D].

### L plug connector (L)



### M plug connector (M)



### Dimensions

Formula:  $L1 = 16n + 11$   $L2 = 16n + 20$  n: Stations (max. 20 stations)

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	43	59	75	91	107	123	139	155	171	187	203	219	235	251	267	283	299	315	331
L2	52	68	84	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324	340
L3	75	87.5	112.5	125	137.5	162.5	175	187.5	200	225	237.5	250	275	287.5	300	312.5	337.5	350	362.5
L4	85.5	98	123	135.5	148	173	185.5	198	210.5	235.5	248	260.5	285.5	298	310.5	323	348	360.5	373

# Series VQZ Base Mounted

## Options

### External Pilot Specification

The external pilot specification is used when the operating pressure is below the minimum operating pressure of 0.1 to 0.2 MPa or when the valve is used for a vacuum application.

Order a valve by adding the external pilot specification [R] to the part number.

#### How to Order Valve

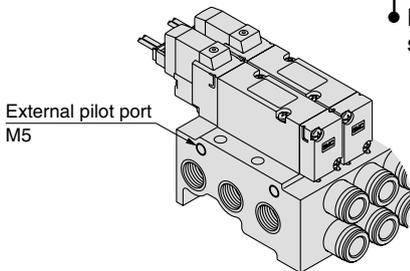
**VQZ2150R—5M1—02—Q**

External pilot specification

#### How to Order Manifold

**VV5QZ25—06C6C—R—Q**

External pilot specification



### Pressure Specifications

Series		VQZ1000/2000/3000		
		2 position single	2 position double	3 position
External pilot pressure range <sup>Note)</sup>	Metal seal	0.1 to 0.7 MPa (VQZ3000, 3 position only) 0.15 to 0.7 MPa		
	Rubber seal	0.15 to 0.7 MPa	0.1 to 0.7 MPa	0.2 to 0.7 MPa
Operating pressure range <sup>Note)</sup>		-100 kPa to 0.7 MPa		

Note) In the case of the high pressure type, upper limit of max. operating pressure and external pilot pressure range is 1 MPa.

### Inch-size One-touch Fittings and Option Thread

Inch size one-touch fittings and NPT, NPTF and G thread are available.

#### How to Order Manifold

**VV5QZ15—08 N7 T C—N—Q**

Thread type (Cylinder port and 1 (P), 3 (R2), 5 (R1) ports)

-	Rc
N	NPT
T	NPTF
F	G

Cylinder port

Symbol	N1	N3	N7	N9	N11	NM <sup>Note 1)</sup>	M5	01	02
Applicable tubing O.D. (Inch)	ø1/8"	ø5/32"	ø1/4"	ø5/16"	ø3/8"	Mixed	M5 thread	1/8 thread	1/4 thread
Cylinder port	VQZ1000	●	●	●	—	—	●	—	—
	VQZ2000	—	●	●	●	—	●	—	—
	VQZ2000 (Compact)	●	●	●	—	—	—	●	—
	VQZ3000	—	—	●	●	●	—	—	●

Note 1) Mixing one-touch fittings and thread types is impossible.  
Note 2) Metric size one-touch fittings (C□) are also available.

### International Thread Standards Other than Rc

Rc specifications are standard for all ports, however, NPT, NPTF and G are available for international markets. Add the appropriate symbol following the port size in the standard part number.

#### How to Order Valve

**VQZ2151—5M1—02 T—Q**

Thread type (Cylinder port and 1 (P), 3 (R2), 5 (R1) ports)

-	Rc
N	NPT
T	NPTF
F	G

### IP65 Enclosure (Based on IEC529)

DIN terminal is available with IP65 enclosure.

#### How to Order Single Valve

(Applicable to the VQZ2000/3000 rubber seal type only without the external pilot type option)

**VQZ3151—5YZB W 1—03—Q**

IP65 compliant

-	No (Standard)
W <sup>Note)</sup>	Compliant

Note) The pilot exhaust IP65 valves is common with main valve exhaust. (The standard valve has an individual exhaust for the pilot valve.)

## Replacement Parts

### One-touch Fitting Assembly (For cylinder port)

Fitting size	C3	C4	C6	C8	C10
<b>VQZ1000</b>	VVQ1000-50A-C3	VVQ1000-50A-C4	VVQ1000-50A-C6	—	—
<b>VQZ2000</b>	—	VVQ1000-51A-C4	VVQ1000-51A-C6	VVQ1000-51A-C8	—
<b>VQZ3000</b>	—	—	VVQ2000-51A-C6	VVQ2000-51A-C8	VVQ2000-51A-C10

Note) Purchasing order is available in units of 10 pieces.

### <Plug connector assembly>

For DC: SY100-30-4A-□

Without lead wire: SY100-30-1  
(with connector and 2 sockets only)

#### Lead wire length

-	300 mm
<b>6</b>	600 mm
<b>10</b>	1000 mm
<b>15</b>	1500 mm
<b>20</b>	2000 mm
<b>25</b>	2500 mm
<b>30</b>	3000 mm
<b>50</b>	5000 mm

### How to Order

Include the connector assembly part number together with the part number for the plug connector's solenoid valve without connector.

EX.) In case of 2000 mm of lead wire

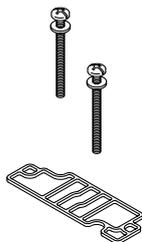
### For DC

VQZ1150-5LO1-M5-Q  
SY100-30-4A-20

### <Gasket and screw assembly>

	Part no.
<b>VQZ1000</b>	VQZ1000-GS-5
<b>VQZ2000</b>	VQZ2000-GS-5
<b>VQZ3000</b>	VQZ3000-GS-5

Note) Above part number consists of 10 units.  
Each unit has one gasket and two screws. Purchasing order is available in units of 10 pieces.



### <Pilot valve assembly>

V111 □ — 5 G — □

#### Function

Symbol	Specifications	DC
-	Standard type	(0.35 W) ○
<b>B</b> <small>Note)</small>	High speed response type	(0.9 W) ○
<b>K</b> <small>Note)</small>	High pressure type (Metal seal type only)	(0.9 W) ○

Note) Option

#### Coil voltage

<b>5</b>	24 VDC
<b>6</b>	12 VDC

#### Applicable model (Length of screws attached is different from each other.)

-	VQZ2000/3000
<b>4</b>	A and B side of VQZ1000 single, double solenoid type A side of VQZ1000 3 position
<b>5</b>	B side of VQZ1000 3 position

#### Electrical entry

Symbol	Electrical entry	Light/surge voltage suppressor
DC		
<b>G</b>	Grommet (DC specification)	None
<b>LU</b>	L plug connector with lead wire	Yes
<b>LOU</b>	L plug connector without connector	
<b>MU</b>	M plug connector with lead wire	
<b>MOU</b>	M plug connector without connector	

### <DIN terminal type (Applicable to the VQZ2000/3000)>

V115 □ — 5 Y — X110

#### Function

Symbol	Specifications	DC	AC
-	Standard type	(0.35 W) ○	○
<b>B</b> <small>Note)</small>	High speed response type	(0.9 W) ○	—
<b>K</b> <small>Note)</small>	High pressure type (Metal seal type only)	(0.9 W) ○	—

Note) Option

#### Coil voltage

<b>1</b>	100 VAC (50/60 Hz)
<b>2</b>	200 VAC (50/60 Hz)
<b>3</b>	110 VAC [115 VAC] (50/60 Hz)
<b>4</b>	220 VAC [230 VAC] (50/60 Hz)
<b>5</b>	24 VDC
<b>6</b>	12 VDC

#### Electrical entry

Symbol	Electrical entry	Light/surge voltage suppressor
<b>Y</b>	DIN terminal	None
<b>YO</b>	DIN terminal without connector	
<b>YZ</b>	DIN terminal with light/surge voltage suppressor	Yes
<b>YS</b>	DIN terminal with surge voltage suppressor (DC specification)	Yes (With light)
<b>YOS</b>	DIN terminal with surge voltage suppressor, without connector (DC specification)	

Note) For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.

### <Sub-plate>

Model	Sub-plate part no.
<b>VQZ1000</b>	VQZ1000-S-01* <sub>1</sub> -Q
<b>VQZ2000</b>	VQZ2000-S-01* <sub>2</sub> -Q
<b>VQZ3000</b>	VQZ3000-S-02* <sub>3</sub> -Q

\* Thread type

### ⚠ Caution

When replacing the pilot valve assembly, use caution because it is not possible to convert to a V115 (DIN terminal) from a V111 (grommet, L type, M type), or vice versa.

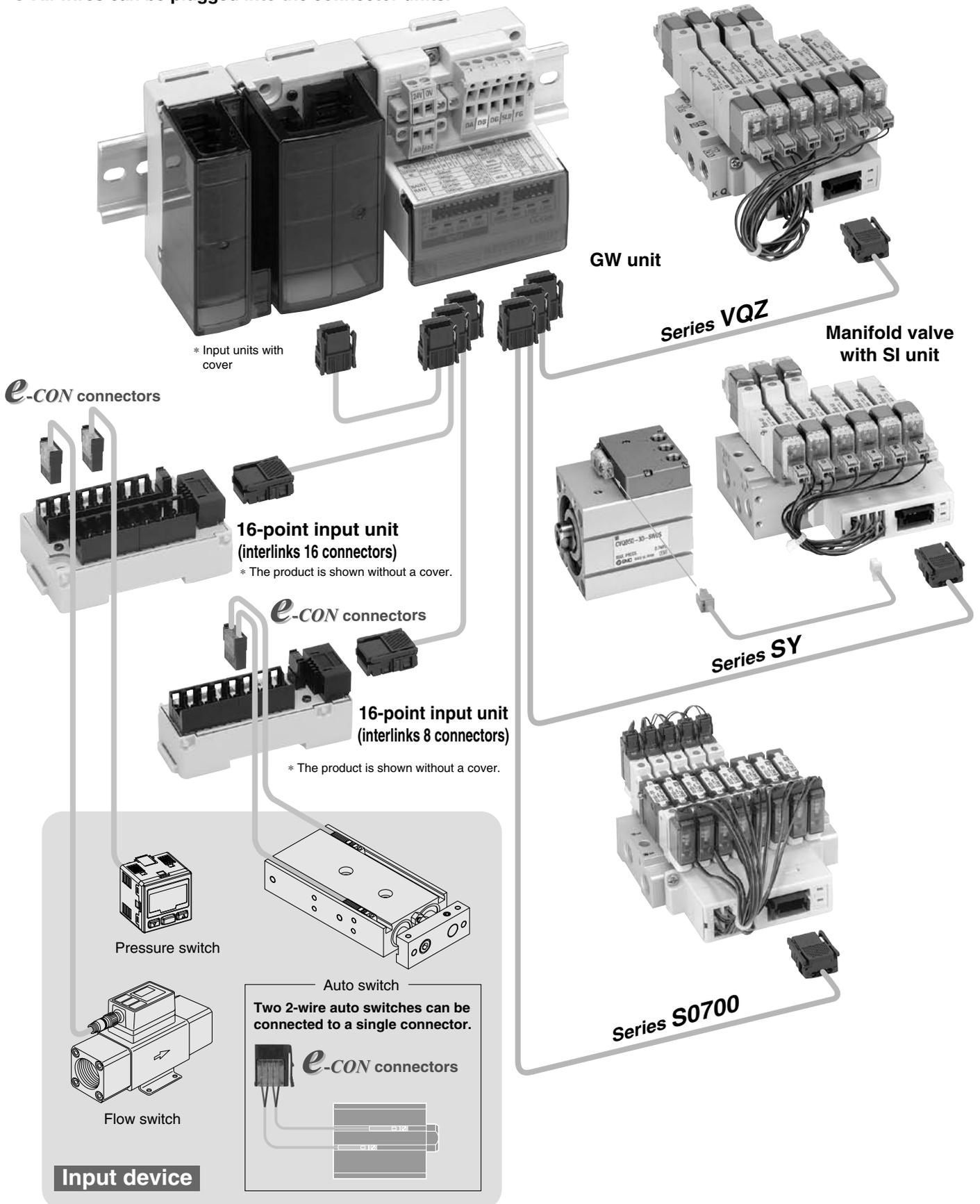
# Series VQZ



For details of "Gateway System Serial Transmission System, Series EX510", refer to CAT.E02-22B catalogue.

## Gateway System Serial Transmission System EX510 Series

- All wires can be plugged into the connector units.



# EX510 Serial Wiring

# Series VQZ1000/2000/3000 Base Mounted Manifold



## How to Order Manifold

VV5QZ 1 5 - SA [ ] 08 C4 [ ] - [ ] - Q

**Series**

1	VQZ1000
2	VQZ2000
3	VQZ3000

**SI unit COM.**

-	+COM.
N	-COM.

**Stations**

Symbol	No. of stations
02	2 stations
⋮	⋮
08	8 stations

Note) Maximum 16 stations  
(For special wiring specifications, indicate separately by the manifold specification sheet.)

• CE compliant

**Option**

-	None
D	With DIN rail (Rail length: Standard)
DO <sup>Note 1)</sup>	Without DIN rail (With bracket)
D□	With DIN rail (Rail length: Specified)
N <sup>Note 2)</sup>	Name plate (Except VQZ1000)
K	Special wiring specification (Except double wiring)
R <sup>Note 2)</sup>	External pilot type (Except VQZ1000)

Note 1) Order DIN rail separately.

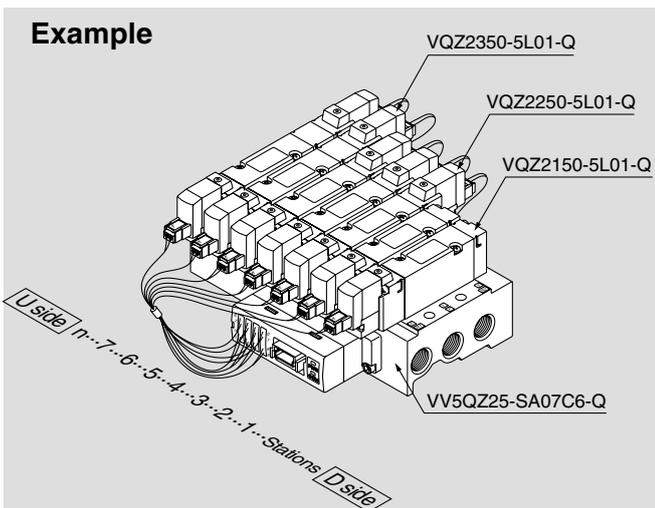
For DIN rail part no., refer to page 48.

Note 2) For details on options and external pilot type, refer to page 53.

**Thread type**

-	Rc
N	NPT
T	NPTF
F	G

## How to Order Valve Manifold Assembly (Example)



VV5QZ25-SA07C6-Q ··· 1 set (Type SA, 7 station manifold base part no.)  
 \* VQZ2150-5L01-Q ····· 2 sets (Single solenoid part no.)  
 \* VQZ2250-5L01-Q ····· 3 sets (Double solenoid part no.)  
 \* VQZ2350-5L01-Q ····· 2 sets (3 position type no.)

→ The asterisk denotes the symbol for assembly.  
 Prefix it to the part nos. of the solenoid valve, etc.  
 → Enter in order starting from the first station on the D side.

Add the valve and option part number under the manifold base part number.  
 When entry of part numbers becomes complicated, indicate by using a manifold specification sheet. For a manifold for EX510, the length of the lead wire for a connector assembly depends on the number of stations. Therefore, the manifold assembly is shipped with the valves (including blanking plates) and connector assembly mounted on it, as the standard specification. Be sure to specify the part nos. of the solenoid valves to be mounted.

**A, B port size**

**Thread piping**

Symbol	Port size	VQZ1000	VQZ2000	VQZ3000
M5	M5	○	—	—
01	1/8	—	○	—
02	1/4	—	—	○

**One-touch fitting (Metric size)**

Symbol	Port size	VQZ1000	VQZ2000	VQZ3000
C3	ø3.2 one-touch fitting	○	—	—
C4	ø4 one-touch fitting	○	○	—
C6	ø6 one-touch fitting	○	○	○
C8	ø8 one-touch fitting	—	○	○
C10	ø10 one-touch fitting	—	—	○
CM	Mixture of port sizes	○	○	○

**One-touch fitting (Inch size)**

Symbol	Port size	VQZ1000	VQZ2000	VQZ3000
N1	ø1/8" one-touch fitting	○	—	—
N3	ø5/32" one-touch fitting	○	○	—
N7	ø1/4" one-touch fitting	○	○	○
N9	ø5/16" one-touch fitting	—	○	○
N11	ø3/8" one-touch fitting	—	—	○
NM	Mixture of port sizes	○	○	○

# Series VQZ1000/2000/3000

## How to Order Valve

VQZ 1 1 5 1 [ ] - 5 MO [ ] 1 - Q

### Series

1	VQZ1000
2	VQZ2000
3	VQZ3000

### Type of actuation

1	2 position single
2	2 position double
3	3 position closed centre
4	3 position exhaust centre
5 <sup>Note 1)</sup>	3 position pressure centre
8	3 port for mixed mounting N.C.
9	3 port for mixed mounting N.O.

Note) There is no 3 position pressure centre for the metal seal type of the VQZ1000 series.

### Seal

0	Metal seal
1	Rubber seal

### Function

Symbol	Specifications	DC
-	Standard type	(0.35 W) ○
B <sup>Note 1)</sup>	High speed response type	(0.9 W) ○
K <sup>Note 1)</sup>	High pressure type (Metal seal type only)	(0.9 W) ○
R <sup>Note 1, 2)</sup>	External pilot type	○
BR <sup>Note 1, 2)</sup>	High speed response/External pilot type	(0.9 W) ○
KR <sup>Note 1, 2)</sup>	High pressure/External pilot type (Metal seal type only)	(0.9 W) ○

Note 1) Option

Note 2) For details on external pilot type, refer to page 53.

• CE compliant

### Manual override

-	Non-locking push type (Tool required)
B	Locking type (Tool required)

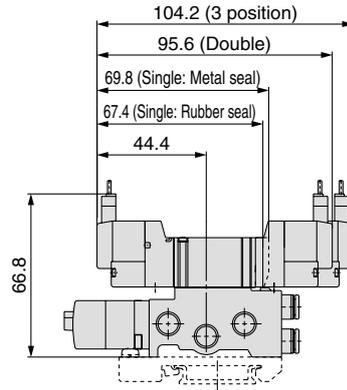
### Electrical entry

LO	L plug connector without connector
MO	M plug connector without connector

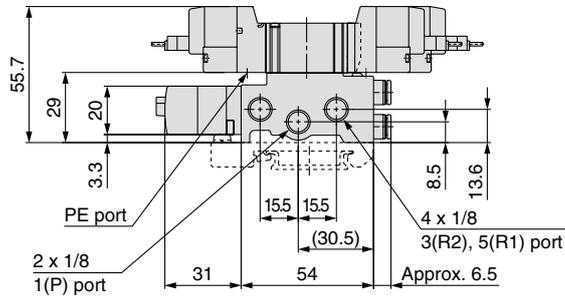
Note) With light/surge voltage suppressor

• Rated voltage: 24 VDC

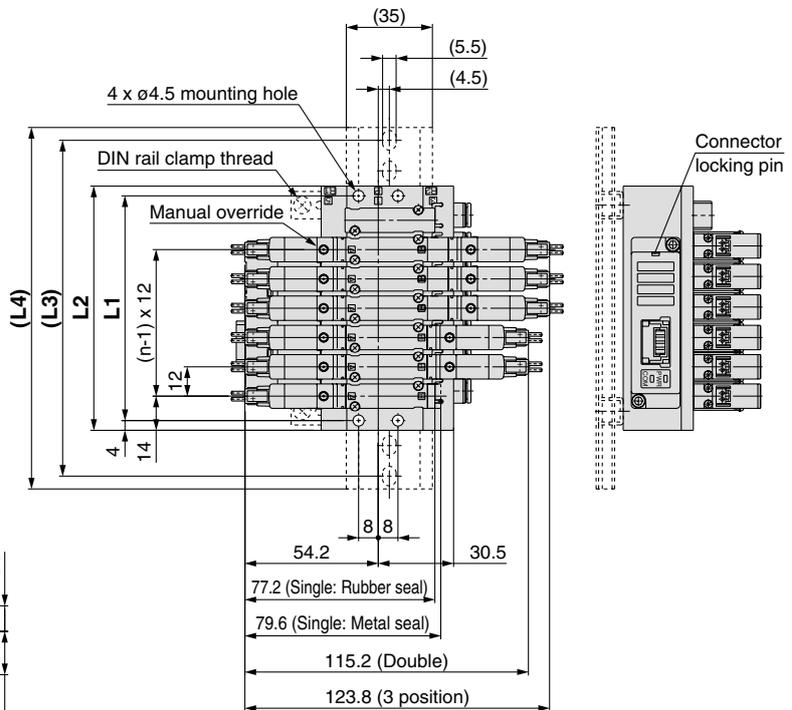
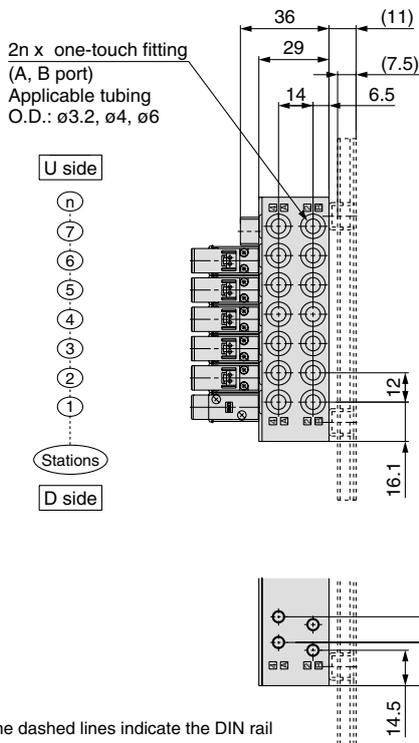
**Dimensions: VQZ1000-SA□ (EX510 Serial Wiring)**



**M plug connector (M)**



**L plug connector (L)**



The dashed lines indicate the DIN rail mounting style [-D].

**For M5**

**Dimensions**

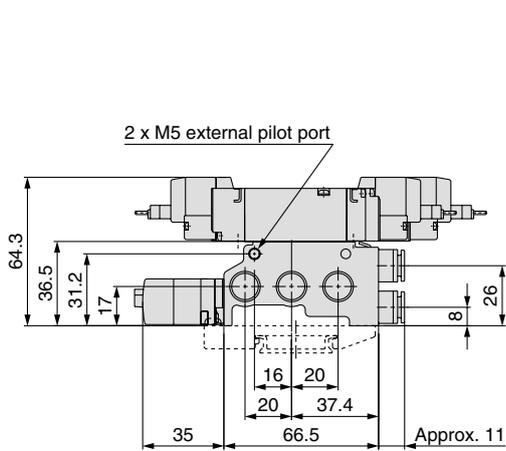
Max. 16 stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>L1</b>	80	80	80	80	80	92	104	116	128	140	152	164	176	188	200
<b>L2</b>	88	88	88	88	88	100	112	124	136	148	160	172	184	196	208
<b>L3</b>	112.5	112.5	112.5	112.5	112.5	125	137.5	150	162.5	175	187.5	200	212.5	225	237.5
<b>L4</b>	123	123	123	123	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248

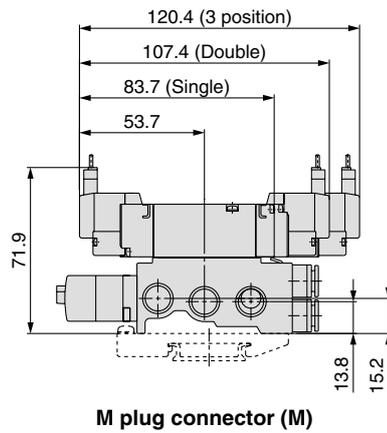
Note) The L dimension of 2 to 6 stations is the same. Valves are numbered from the D side according up to the number of stations.

# Series VQZ1000/2000/3000

## Dimensions: VQZ2000-SA□ (EX510 Serial Wiring)



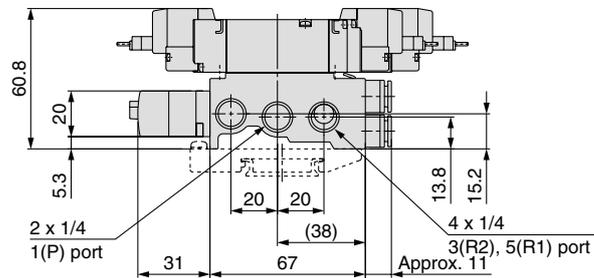
For external pilot specification



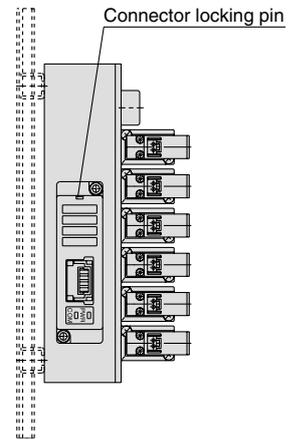
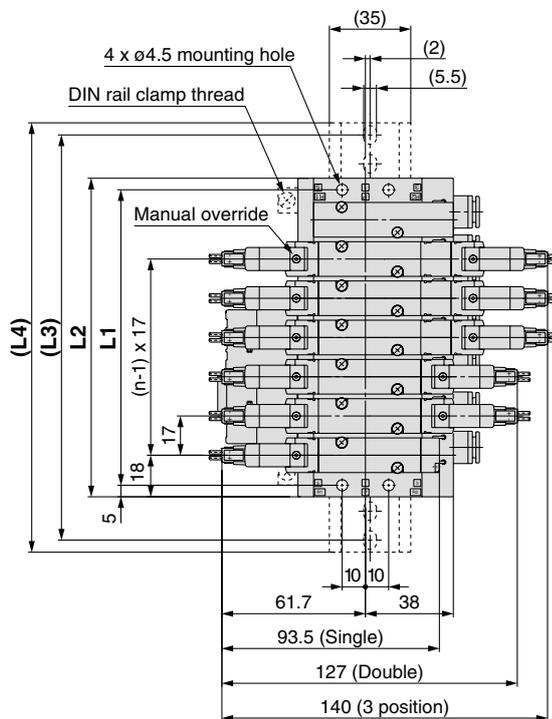
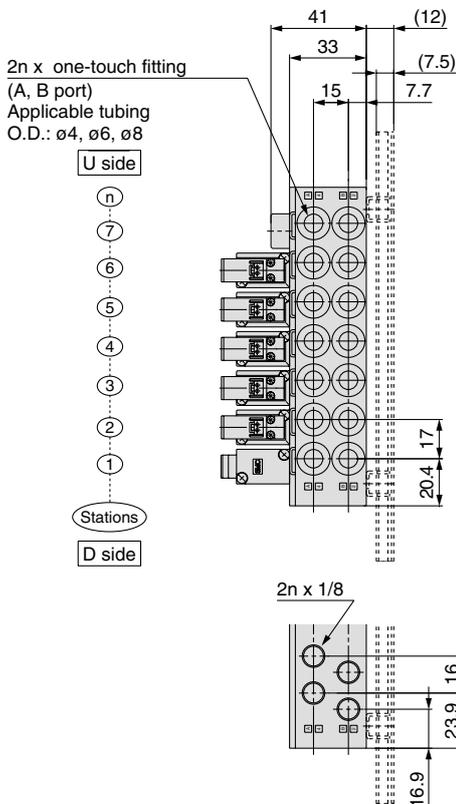
M plug connector (M)



The dashed lines indicate the DIN rail mounting style [-D].



L plug connector (L)



### Dimensions

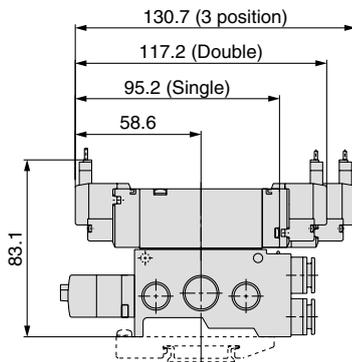
For 1/8

Max. 16 stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	94	94	94	94	111	128	145	162	179	196	213	230	247	264	281
L2	104	104	104	104	121	138	155	172	189	206	223	240	257	274	291
L3	125	125	125	125	150	162.5	175	200	212.5	237.5	250	259.5	287.5	300	312.5
L4	135.5	135.5	135.5	135.5	160.5	173	185.5	210.5	223	248	260.5	270	298	310.5	323

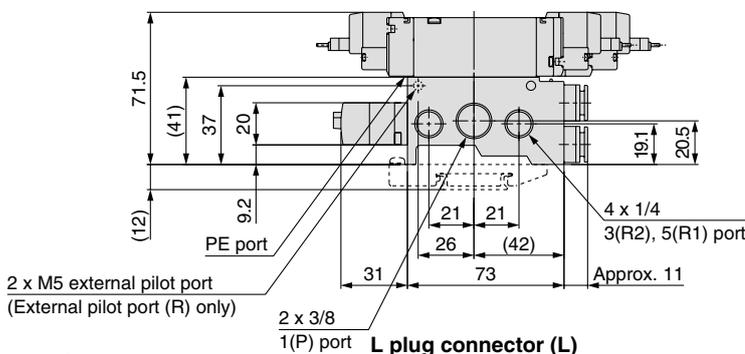
Note) The L dimension of 2 to 5 stations is the same. Valves are numbered from the D side according up to the number of stations.

**Dimensions: VQZ3000-SA□ (EX510 Serial Wiring)**

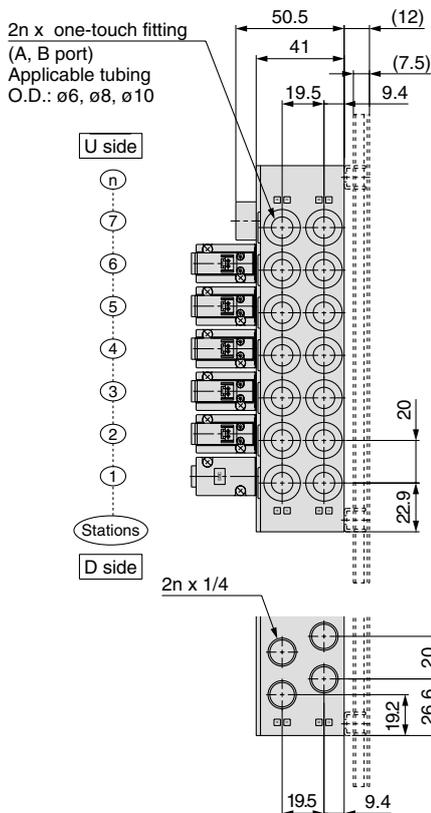


**M plug connector (M)**

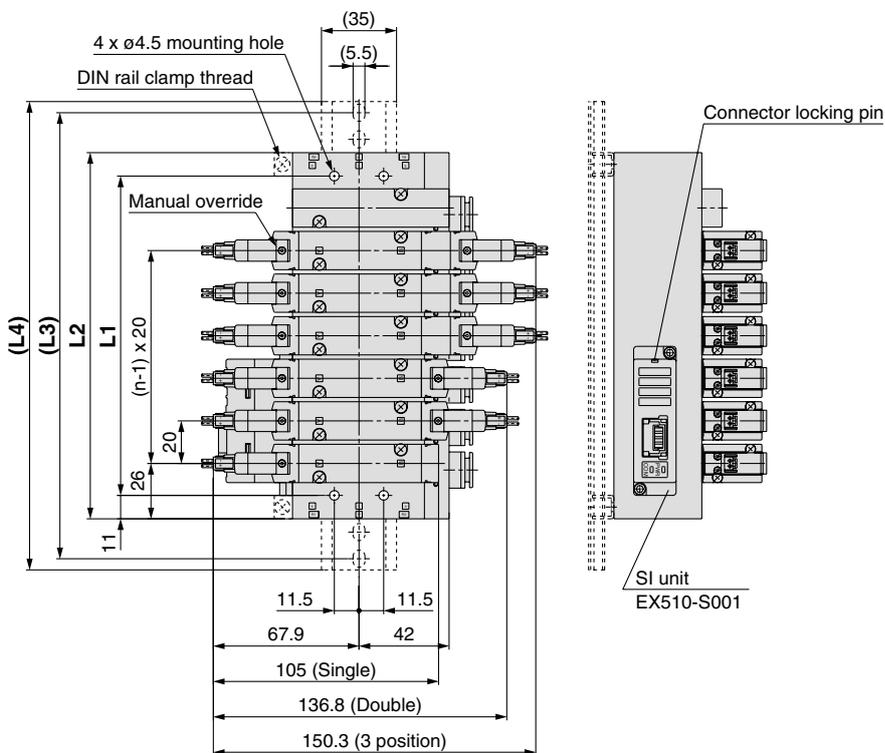
The dashed lines indicate the DIN rail mounting style [-D].



**L plug connector (L)**



**For 1/4**



**Dimensions**

Max. 16 stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>L1</b>	70	70	90	110	130	150	170	190	210	230	250	270	290	310	330
<b>L2</b>	92	92	112	132	152	172	192	212	232	252	272	292	312	332	352
<b>L3</b>	112.5	112.5	137.5	162.5	175	200	212.5	237.5	262.5	275	300	312.5	337.5	362.5	375
<b>L4</b>	123	123	148	173	185.5	210.5	223	248	273	285.5	310.5	323	348	373	385.5

Note) The L dimension of 2 to 3 stations is the same. Valves are numbered from the D side according up to the number of stations.

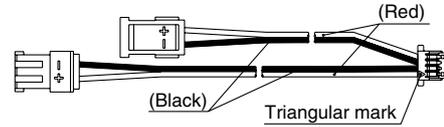
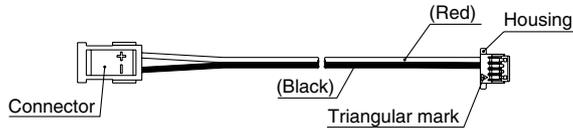
# Series VQZ1000/2000/3000

## Manifold Options (EX510 Serial Wiring)

### Connector assembly

For single solenoid (SY3000-37-81A-□-N)

For double solenoid (SY3000-37-81A-□-□)



### How to Order Connector Assembly (for a manifold with 8 stations or less with an unspecified layout)

#### Bar Stock Type

Model	Assembly part no.	Connector mounting position
VV5QZ12	SY3000-37-81A-3-N	Single: for 1 to 4 stations
	SY3000-37-81A-3-6	Double/3 position: for 1 to 4 stations
	SY3000-37-81A-2-N	Single: for 5 to 8 stations
	SY3000-37-81A-3-6	Double/3 position: for 5 to 8 stations
VV5QZ22	SY3000-37-81A-3-N	Single: for 1 to 8 stations
	SY3000-37-81A-3-6	Double/3 position: for 1 to 8 stations
VV5QZ32	SY3000-37-81A-3-N	Single: for 1 to 4 stations
	SY3000-37-81A-3-6	Double/3 position: for 1 to 4 stations
	SY3000-37-81A-4-N	Single: for 5 to 8 stations
	SY3000-37-81A-4-7	Double/3 position: for 5 to 8 stations

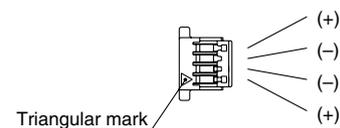
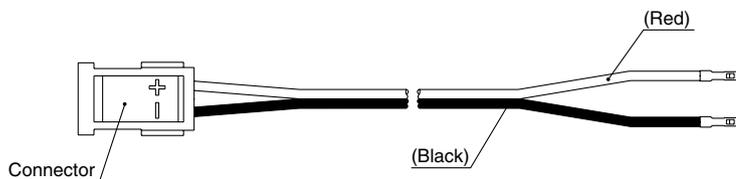
Note) Since these connector assemblies are used when adding stations or for maintenance, there are no part nos. on them.

### Connector assembly

SY3000-37-80A-□

### Housing (1 set: 8 pieces)

SY3000-44-3A



### How to Order Connector Assembly (for a manifold with a specified layout)

Model	Assembly part no.	Connector mounting position
VV5QZ12	SY3000-37-80A-3	A side
	SY3000-37-80A-6	B side
	SY3000-37-80A-4	A side
	SY3000-37-80A-7	B side
VV5QZ22	SY3000-37-80A-3	A side
	SY3000-37-80A-6	B side
	SY3000-37-80A-7	A side
	SY3000-37-80A-9	B side
VV5QZ32	SY3000-37-80A-4	A side
	SY3000-37-80A-7	B side
	SY3000-37-80A-8	A side
	SY3000-37-80A-11	B side

Note 1) Since these connector assemblies are used when adding stations or for maintenance, there are no part nos. on them.

Note 2) After inserting the connector assembly into the housing, slightly pull the lead wire to make sure it does not pull out. Do not reuse the lead wire once it has been inserted.

Note 3) Please note that the wires are longer than the actual wiring distance.



Series VQZ

# 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 <sup>Note 1)</sup>, JIS B 8370 <sup>Note 2)</sup> and other safety practices.

## ■ Explanation of the Labels

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

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 hospitalisation 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 catalogue information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

### 2. Only trained personnel should operate pneumatically operated 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 machinery/equipment or attempt to remove components until safety is confirmed.

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

### 4. Contact SMC if the product will be used in any of the following conditions:

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, its officers and employees shall be exempted from liability for any loss or damage arising out of earthquakes or fire, action by a third person, accidents, customer error with or without intention, product misuse, and any other damages caused by abnormal operating conditions.

2. SMC, its officers and employees shall be exempted from liability for any direct or indirect loss or damage, including consequential loss or damage, loss of profits, or loss of chance, claims, demands, proceedings, costs, expenses, awards, judgments and any other liability whatsoever including legal costs and expenses, which may be suffered or incurred, whether in tort (including negligence), contract, breach of statutory duty, equity or otherwise.

3. SMC is exempted from liability for any damages caused by operations not contained in the catalogues and/or instruction manuals, and operations outside of the specification range.

4. SMC is exempted from liability for any loss or damage whatsoever caused by malfunctions of its products when combined with other devices or software.



# Series VQZ Specific Product Precautions 1

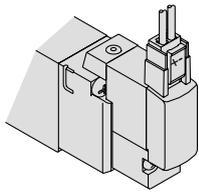
Be sure to read this before handling.  
For Safety Instructions and Common Precautions, refer to "Precautions for Handling Pneumatic Devices" (M-03-E3A).

## Manual Override Operation

### ⚠ Caution

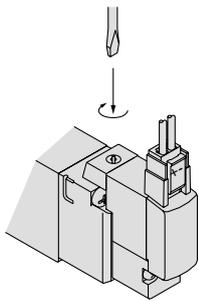
Without an electric signal for the solenoid valve the manual override is used for switching the main valve. Push type is standard. Locking type (Tool required) is available as an option.

#### Push type (Tool required)



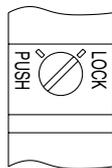
Push down on the manual override button with a small screwdriver until it stops. Release the screwdriver and the manual override will return.

#### Locking type (Tool required)



Push down completely on the manual override button with a small screwdriver. While pushing down, turn clockwise 90° to lock it. Turn it counterclockwise to release it.

#### Locked position



### Precautions

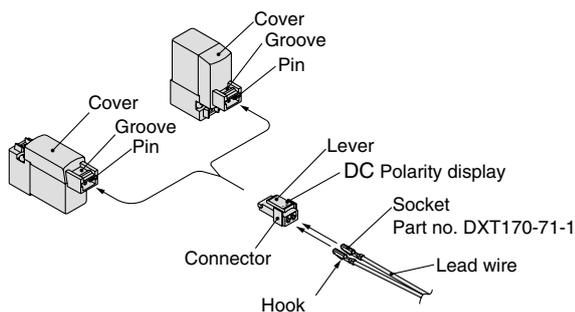
When operating with a screw driver, turn it gently using a watchmaker's screwdriver. (Torque: less than 0.1 N·m)

## How to Use L/M Plug Connector

### ⚠ Caution

#### 1. Attaching and detaching connectors

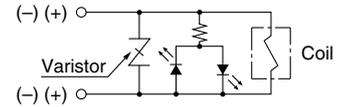
- To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.
- To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb,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



## Light/surge Voltage Suppressor

### ⚠ Caution

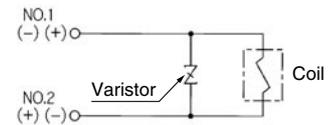
#### 1. L and M plug connector <For DC>



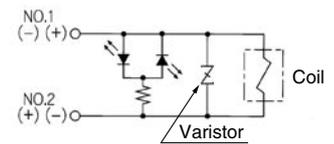
#### 2. DIN terminal

<For DC>

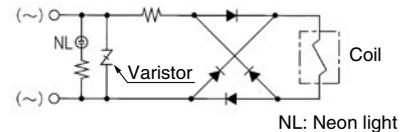
With light/surge voltage suppressor (YS, YOS)



Light/surge voltage suppressor (YZ)



<For AC>  
With light (YZ)

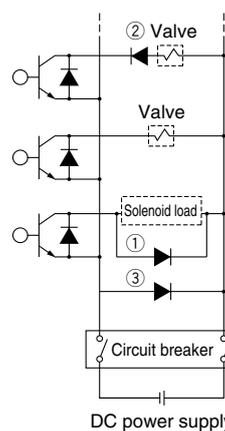


Note) The varistor of the surge voltage suppressor has residual voltage corresponding to the protective element and rated voltage; therefore, protect the controller side from the surge.

#### 3. Surge voltage countermeasures

When shutting off the DC power supply using an emergency circuit breaker, the valve may operate incorrectly due to surge voltage generated by other electric parts (e.g., the solenoid). To ensure that surge does not affect the valve, take anti-surge measures (diode for surge protection, etc.) or use a valve with diode to prevent reverse current. (For the model number, consult with SMC.)

#### Example



- ①, ③: Examples of anti-surge measures  
② : Valve equipped with diode to prevent reverse current



# Series VQZ Specific Product Precautions 2

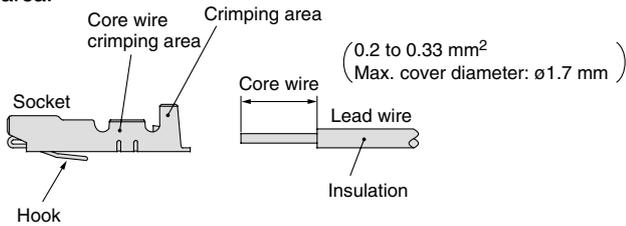
Be sure to read this before handling.  
For Safety Instructions and Common Precautions, refer to “Precautions for Handling Pneumatic Devices” (M-03-E3A).

## Connection of Lead Wire

### ⚠ Caution

#### 1. Crimping of lead wires and sockets

Not necessary if ordering the model with a pre-connected lead wire. Strip 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area.



Crimping tool, Part no. DXT170-75-1

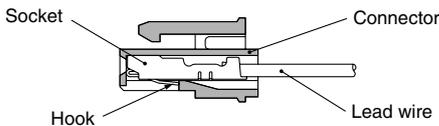
#### 2. Attaching and detaching sockets with lead wires

##### Attaching

Insert the sockets into the square holes of the connector (⊕, ⊖ indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.

##### Detaching

To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (approx. 1 mm). If the socket will be used again, first spread the hook outward.



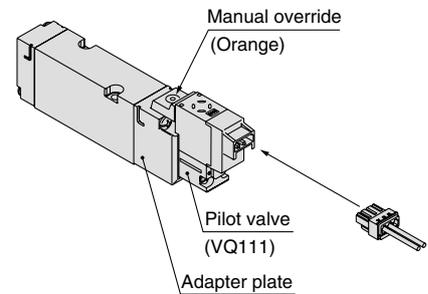
## Replacement of Valve and Pilot Valve

### ⚠ Caution

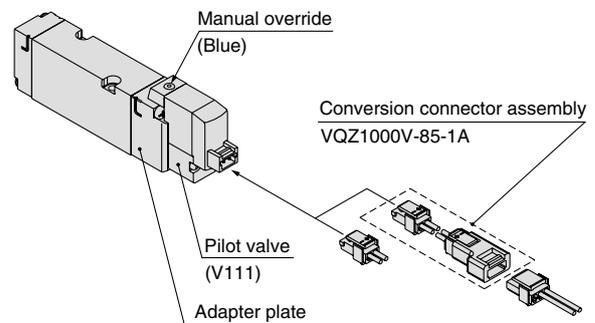
#### 1. When replacing an old type VQZ valve with a new type for maintenance or other reasons, a “conversion connector assembly” is necessary to convert the connector from 3 terminals to 2 terminals and must be ordered separately. (When ordering, refer to the part no. below.)

For pilot valves, there is no compatibility between the old type and new type. When replacing a pilot valve, be sure to confirm whether it is the new type or the old type before hand.

##### [Old type]



##### [New type]





# Series VQZ Specific Product Precautions 3

Be sure to read this before handling.  
For Safety Instructions and Common Precautions, refer to “Precautions for Handling Pneumatic Devices” (M-03-E3A).

## How to Use DIN Terminal

### 1. Conforming to ISO#: EN-175301-803C (Previous DIN 43650C) (8 mm between pins)

The DIN terminal type with an IP65 enclosure is protected against dust and water, however, it must not be used in water.

### 2. Connection

- Loosen the holding screw and pull the connector out of the solenoid valve terminal block.
- After removing the holding screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
- Loosen the terminal screws (slotted screws) on the terminal block, insert the cores of the lead wires into the terminals according to the connection method, and fasten them securely with the terminal screws.
- Secure the cord by fastening the ground nut.

### 3. Changing the entry direction

After separating the terminal block and housing, the cord entry can be changed by attaching the housing in the desired direction (4 directions at 90° intervals).

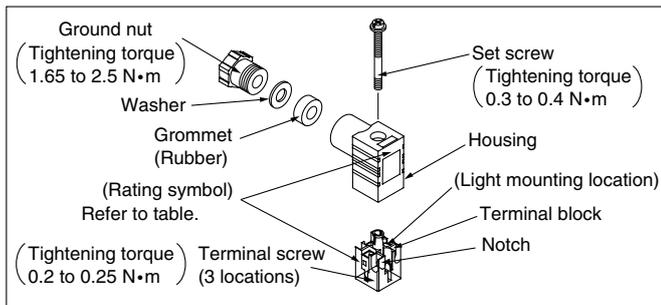
\* When equipped with a light, be careful not to damage the light with the cord's lead wires.

### 4. Precautions

Plug in and pull out the connector vertically without tilting to one side.

### 5. Compatible cable

Cable O.D.:  $\phi 3.5$  to  $\phi 7$   
(Reference)  $0.5 \text{ mm}^2$ , 2-core or 3-core, equivalent to JIS C 3306



## DIN Connector Part No.

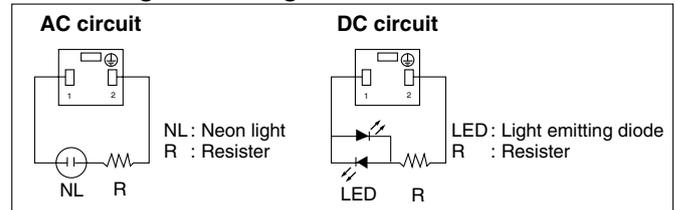
### Without light

Rated voltage	Voltage symbol	Part no.
All voltages	None	SY100-82-1

### With light

Rated voltage	Voltage symbol	Part no.
24 VDC	24 V	SY100-82-3-05
12 VDC	12 V	SY100-82-3-06
100 VAC	100 V	SY100-82-2-01
200 VAC	200 V	SY100-82-2-02
110 VAC (115 VAC)	110 V	SY100-82-2-03
220 VAC (230 VAC)	220 V	SY100-82-2-04

### Circuit diagram with light

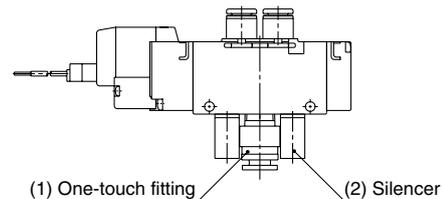


## One-Touch Fitting and Silencer Part No. for P, R Ports When Using Valve as an Individual Unit

Part no. for one-touch fitting for 1(P) port and silencer for 3 (R2, R), 5 (R1) port

Series	(1) One-touch fitting for 1(P) port	(2) Silencer for 3(R2, R), 5(R1)	
		Silencer	One-touch fitting
VQZ1000	KQ2H06-M5	AN120-M5	KJS04-M5
VQZ2000	KQ2S06-01S	INA-25-46	IN-457-32L (For $\phi 6$ )
VQZ3000	KQ2H08-02S	AN101-01	KQ2H06-01S

The diameter of the above fittings and silencers are the maximum diameters to fit in the EXH port.





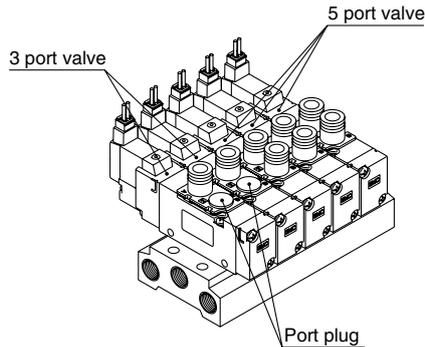
# Series VQZ Specific Product Precautions 4

Be sure to read this before handling.  
For Safety Instructions and Common Precautions, refer to "Precautions for Handling Pneumatic Devices" (M-03-E3A).

## 3 Port for Mixed Mounting

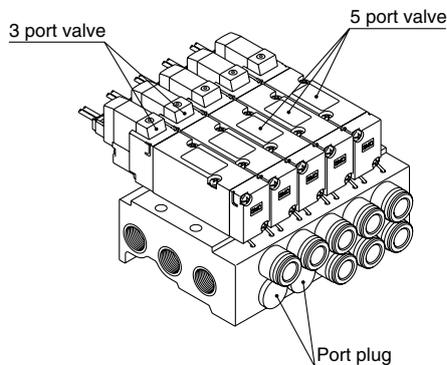
### 1. Body ported (VQZ $\frac{1}{3}$ 82 $^{\circ}$ , N.C./VQZ $\frac{1}{3}$ 92 $^{\circ}$ , N.O.)

Even though the 3 port valves have the same construction as the 5 port single solenoid valves, the port plug is installed in the 2(B) port for N.C. type, and 4(A) port or N.O. type. By changing the port plug into a fitting, it can be used as the 5 port single solenoid valve, as well.



### 2. Base mounted (VQZ $\frac{1}{3}$ 85 $^{\circ}$ , N.C./VQZ $\frac{1}{3}$ 95 $^{\circ}$ , N.O.)

3 port valves have the same external appearance as the 5 port valves. When using this type, 4(A) port on the 3 port valves can be used as 4(A) port on the 5 port valves' manifold, as well. Additionally, there's no problem, when the 2(B) port is either plugged or unplugged.



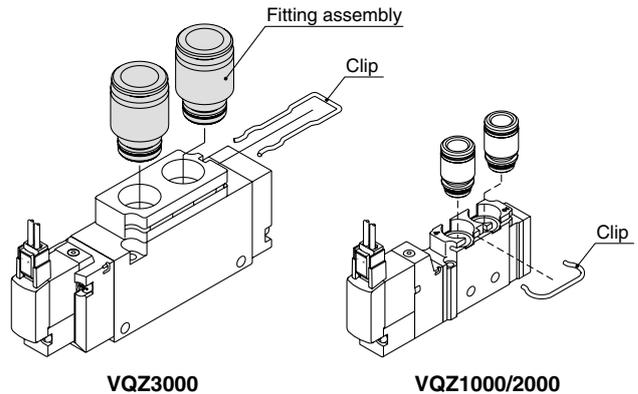
When a port plug is used on the 2 (B) port, indicate CM in manifold part no. and port size, and specify the port plug location by using a manifold specification sheet.

## Changing the One-touch Fittings

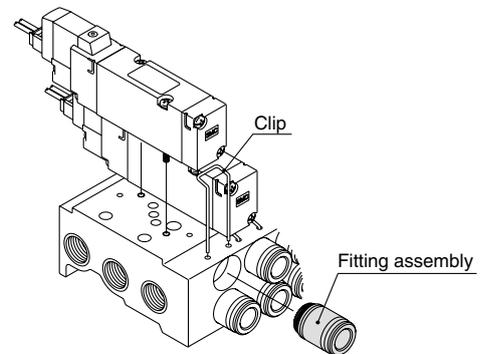
### ⚠ Caution

The built-in fittings on the manifold can be changed easily. Simply remove the corresponding valve and take out the fitting clip underneath.

Take out the clip with a screwdriver, etc., then replace the fittings. For mounting the fittings, insert the fitting until it stops, then put the clip into the prescribed position.



VQZ1000/2000: Clipped parallel to the valve body  
VQZ3000: Clipped perpendicular to the valve body



### Precautions

When pulling the fitting assembly away from the valve base, remove the clip, then connect a tube or plug (KQP-□□) with the one-touch fitting and pull it out holding the tube or plug. Do not hold the release bushing to avoid damage.



## Series VQZ

# Specific Product Precautions 5

Be sure to read this before handling.

For 5 Port Solenoid Valve and Common Precautions, refer to “Precautions for Handling Pneumatic Devices” (M-03-E3A).

### DIN Rail Removal/Mounting

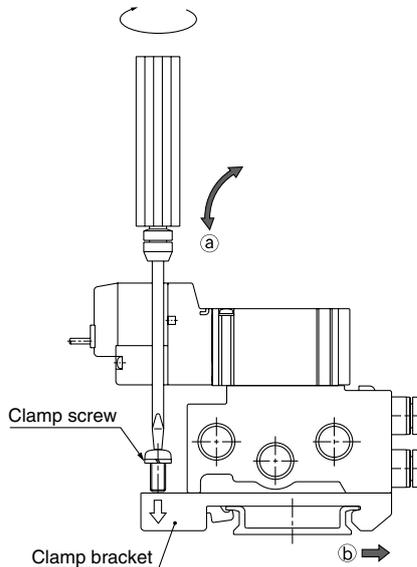
#### ⚠ Caution

##### 1. Removing

- 1) Loosen the clamp screw on the (a) side of both ends of the manifold.
- 2) Lift the (a) side → of the manifold off the DIN rail and slide it in the direction of the (b) side.

##### 2. Mounting

- 1) Catch the hook of the DIN rail bracket on the (b) side on the DIN rail.
- 2) Push side (a) onto the DIN rail and tighten the clamp screw. The proper tightening torque for screws is 0.3 to 0.4 N·m.

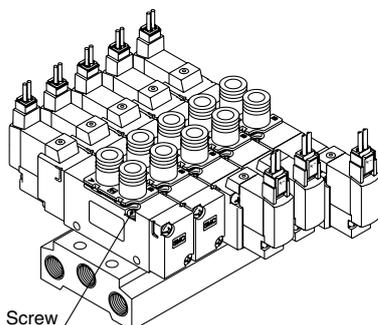


### Valve Mounting

#### ⚠ Caution

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

Model	Proper tightening torque
VQZ1000	0.18 to 0.25 N·m
VQZ2000	0.25 to 0.35 N·m
VQZ3000	0.5 to 0.7 N·m



### Serial Wiring EX510 Precautions

#### Caution on Design and Selection

#### ⚠ Warning

##### 1. Use within the allowable voltage range.

Using beyond the allowable voltage range is likely to cause the units and connecting devices to be damaged or to malfunction.

##### 2. Do not use beyond the specified range.

Using beyond the specified range is likely to cause a fire, malfunction, or breakdown in the units and connecting devices. Check the specifications before handling.

##### 3. Establish a backup system beforehand, which employs fail-safe concepts such as multiple equipment and devices to prevent breakage or malfunction of this product.

##### 4. Provide an external emergency stop circuit that will immediately stop an operation and cut off the power supply.

##### 5. When using in an interlock circuit:

- Provide a double interlock which is operated by another system (such mechanical protection function).
- Perform an inspection to check that the interlock circuit is working properly because it can cause possible injuries.



# Series VQZ

## Specific Product Precautions 6

Be sure to read this before handling.

For 5 Port Solenoid Valve and Common Precautions, refer to “Precautions for Handling Pneumatic Devices” (M-03-E3A).

### Serial Wiring EX510 Precautions

#### Caution on Design and Selection

##### ⚠ Caution

#### 1. Keep the surrounding space free for maintenance.

When designing a system, take into consideration the amount of free space needed for performing maintenance.

#### 2. Use the following UL approved products for DC power supply combinations.

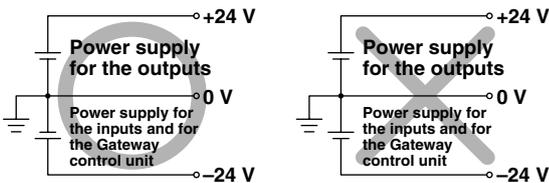
- 1) Controlled voltage current circuit conforming to UL508  
A Circuit that uses the secondary coil of an isolated transformer as the power supply, satisfying the following conditions.
  - Max. voltage (with no load): 30 Vrms (42.4 V peak) or less
  - Max. current: (1) 8 A or less (including shorts), and  
(2) When controlled by a circuit protector (fuse, etc.) with the following rating

No-load voltage (V peak)	Max. current rating
0 to 20 [V]	5.0
Over 20 [V] to 30 [V]	100 Peak voltage value

- 2) A circuit (class 2 circuit) with maximum 30 Vrms (42.4 V peak) or less, and a power supply consisting of a class 2 power supply unit conforming to UL1310, or a class 2 transformer conforming to UL1585

#### 3. This product is one of the components that is installed into a final piece of equipment. The customer has to confirm that the whole equipment conforms to the EMC directive.

#### 4. The power supply for the Gateway unit should be 0 V as standard for both the power supply for the outputs as well as the power supply for the inputs and for the Gateway control unit.



#### Mounting

##### ⚠ Caution

#### 1. Do not drop, bump, or apply excessive impact.

Otherwise, the unit can become damaged, malfunction, or fail to function.

#### 2. Hold the body while handling this product.

Otherwise, the unit can become damaged, malfunction, or fail to function.

#### 3. Observe the tightening torque range.

Tightening outside of the allowable torque range will likely damage the product.

#### 4. Do not install a unit in a place where it can be used as a scaffold.

Applying any excessive load such as stepping on the unit by mistake or placing a foot on it, will cause it to break.

#### Wiring

##### ⚠ Warning

#### 1. Avoid miswiring.

If miswired, there is a probability of damaging units or connecting devices.

#### 2. Do not wire while energising the product.

It is likely to damage the units or connecting devices.

#### 3. Avoid wiring power and high tension lines in the same wiring route as the unit.

Noise or surge produced in the signal line from the power line or high tension line could cause a malfunction. Wiring of the reduced-wiring system and the power line or high pressure line should be separated from each other.

#### 4. Confirm the wiring insulation.

Inferior insulation (contact with other circuit, insulation between terminals, etc.) will likely cause damage to the units or connecting devices due to excessive voltage or the influx of current.

##### ⚠ Caution

#### 1. Take measures to avoid applying repeated bending forces or pulling forces to the cable.

Also, pay attention not to place any heavy matter on the cable or clipping. It is likely to cause a broken wire.

#### 2. Confirm grounding to maintain the safety of the reduced-wiring system and for anti-noise performance.

Grounding should be close to units and keep the grounding distance short.



# Series VQZ

## Specific Product Precautions 7

Be sure to read this before handling.

For 5 Port Solenoid Valve and Common Precautions, refer to “Precautions for Handling Pneumatic Devices” (M-03-E3A).

### Serial Wiring EX510 Precautions

#### Operating Environment

##### Warning

- 1. Do not use this product in the presence of dust, particles, water, chemicals, and oil.**  
Use with such materials is likely to cause a malfunction or breakage.
- 2. Do not use this product in the presence of a magnetic field.**  
Use in such an environment is likely to cause a malfunction.
- 3. Do not use this product in an atmosphere containing an inflammable gas, explosive gas, or corrosive gas.**  
Use in such an atmosphere is likely to cause a fire, explosion, or corrosion.  
This reduced-wiring system is not explosion-proof.
- 4. Do not use this product in places where there are cyclic temperature changes.**  
In case that the cyclic temperature is beyond normal temperature changes, the internal unit is likely to be adversely affected.
- 5. Do not use this product in places where there is radiated heat around it.**  
Such a place is likely to cause a malfunction or breakage.
- 6. Even though this product is CE-marked, do not use it near sources that generate a surge which exceeds the benchmark test.**  
The internal circuit components are likely to deteriorate or become damaged when there are equipment (solenoid type lifter, high frequency guided furnace, motor, etc.) which generate a large surge around the reduced wiring system. Take measures to prevent an electrical surge and avoid having the wires touch each other.
- 7. Use a product type that has an integrated surge absorption element when directly driving a load which generates a surge voltage such as relays or solenoid valves.**
- 8. The reduced wiring system should be installed in places with no vibration or shock.**  
If installed in a place with vibration or shock, a malfunction or breakage is likely to occur.

#### Adjustment and Operation

##### Warning

- 1. Do not short-circuit a load.**  
If a load is short-circuited, excessive current can cause damage to the connected devices. The fuse of the input unit will melt and blow. The output and SI units will activate their overcurrent protection function. However, they cannot cover all modes, so damage is likely to occur.
- 2. Do not manipulate or perform settings with wet hands.**  
Performing such activity will likely cause an electrical shock.

##### Caution

- 1. DIP switches and rotary switches should be set with a small watchmaker's screwdriver.**

#### Maintenance

##### Warning

- 1. Do not disassemble, modify (including circuit board replacement) or repair this product.**  
Such actions are likely to cause injuries or breakage.
- 2. Perform periodic inspection.**  
Confirm that wiring or screws are not loose.  
Otherwise, unpredicted malfunction in the system composition devices is likely to occur.
- 3. When an inspection is performed.**
  - Turn off the power supply.
  - Stop the supplied fluid and discharge the fluid in the piping and confirm the release to the atmosphere before performing an inspection. Otherwise injuries are likely to occur.

##### Caution

- 1. Do not wipe this product with chemicals such as benzene or thinner.**  
Using such chemicals is likely to cause damage.





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