

5 Port Solenoid Valve

Body Ported

Plug Lead Unit: Single Unit

VQZ1000/2000/3000



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How to Order Valves

VQZ 1 1 2 1 5 M C6

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) (R1)(P)(R2)
2	2 position double (A)(B) (A)(B) (R1)(P)(R2) (R1)(P)(R2) Metal seal Rubber seal
3	3 position closed center (A)(B) (R1)(P)(R2)
4	3 position exhaust center (R1)(P)(R2)
5	3 position pressure center (A)(B) (R1)(P)(R2)

Note) Except VQZ1000 and metal seal type.

Body

2	Body ported
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Seal

0	Metal seal
1	Rubber seal

Function

Symbol	Specifications	DC	AC
Nil	Standard	(1.0 W) ○	(3) ○
K ⁽¹⁾	High pressure (Metal seal only)	(1.0 W) ○	—
Y	Low wattage type	(0.5 W) ○	—
R ⁽²⁾	External pilot	○	○

Note 1) Option
Note 2) For details about external pilot specifications except VQZ1000, refer to page 2-7-27.

Note 3) For power consumption of AC type, refer to page 2-7-7.

Note 4) When two or more symbols are specified, indicate them alphabetically.

For One-touch fittings to be mounted on this valve and the silencer part no., refer to page 2-7-5.

Bracket

Nil	None
F	With bracket (Applicable to single)

Port size {4(A), 2(B) port}

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

Note) For inch size and One-touch fittings, refer to page 2-7-27.

Manual override

Nil: Non-locking push type (Tool required)	B: Locking type (Tool required)
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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	YO: DIN terminal without connector	YZ: DIN terminal ⁽¹⁾	YOS: DIN terminal ⁽¹⁾ without connector	YS: DIN terminal ⁽¹⁾
		With light/surge voltage suppressor	With surge voltage suppressor	With surge voltage suppressor

Note 1) Applicable to VQZ2000 and 3000.
Note 2) Standard lead wire length: 300 mm

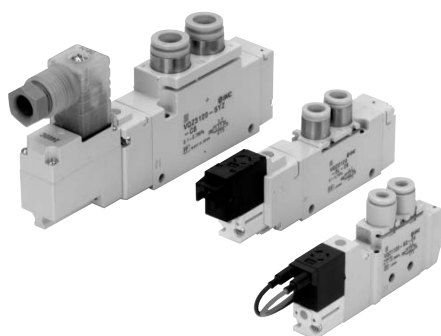
Coil voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)
4	220 VAC (50/60 Hz)
5	24 VDC
6	12 VDC
9 ^{Note)}	Other

Note) For the special voltages, please consult with SMC.

Plug Lead Unit: Single Unit Series VQZ1000/2000/3000

Standard Specifications



Note 1) Use dry air to prevent condensation when operating at low temperatures.

Note 2) Impact resistance:

No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance:

No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Valve specifications	Valve construction		Metal seal		Rubber seal		
	Fluid		Air/Inert gas		Air/Inert gas		
	Maximum operating pressure		0.7 MPa (High pressure type: 1.0 MPa)		0.7 MPa		
	Min. operating pressure	2 position	Single Double	0.1 MPa Only for VQZ3000, 3 position 0.15 MPa	0.15 MPa		
		3 position			0.1 MPa		
	Ambient and fluid temperaure		−10 to 50°C ⁽¹⁾		−10 to 50°C ⁽¹⁾		
	Max. operating frequency	2 position	Single Double	20 Hz		5 Hz	
		3 position		10 Hz		3 Hz	
	Pilot valve EXH			Individual EXH			
	Lubrication			Not required			
Pilot valve manual override			Push type/Locking type (Tool required) Option				
Shock/Vibration resistance ⁽²⁾			150/30 m/s ²				
Enclosure			Dustproof				
Electricity specifications	Coil rated voltage		12, 24 VDC and 100, 110, 200, 220 VAC				
	Allowable voltage fluctuation		±10% of rated voltage				
	Coil insulation type		Equivalent to class B				
	Power consumption (Current)	24 VDC	1 W DC (42 mA), 0.5 W DC (21 mA)				
		12 VDC	1 W DC (83 mA), 0.5 W DC (42 mA)				
		100 VAC	Inrush 0.5 VA (5 mA), Holding 0.5 VA (5 mA)				
		110 VAC	Inrush 0.55 VA (5 mA), Holding 0.55 VA (5 mA)				
200 VAC		Inrush 1.0 VA (5 mA), Holding 1.0 VA (5 mA)					
220 VAC	Inrush 1.1 VA (5 mA), Holding 1.1 VA (5 mA)						

VQC

SQ

VQ0

VQ4

VQ5

VQZ

VQD

Model

Series	Configuration		Model		Flow characteristics						Response time (ms) ⁽¹⁾			Weight (g) ⁽²⁾
					1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)			Standard: 1W	High pressure: 1W Low wattage: 0.5 W	AC	
					C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv				
VQZ1000	2 position	Single	Metal seal	VQZ1120	0.54	0.20	0.13	0.54	0.26	0.13	12 or less	15 or less	29 or less	42
			Rubber seal	VQZ1121	0.90	0.40	0.26	0.71	0.40	0.19	12 or less	15 or less	34 or less	
		Double	Metal seal	VQZ1220	0.54	0.20	0.13	0.54	0.26	0.13	10 or less	13 or less	13 or less	
			Rubber seal	VQZ1221	0.90	0.40	0.26	0.71	0.40	0.19	10 or less	13 or less	13 or less	
	3 position	Closed center	Metal seal	VQZ1320	0.55	0.29	0.13	0.50	0.25	0.08	20 or less	26 or less	40 or less	61
			Rubber seal	VQZ1321	0.87	0.38	0.23	0.68	0.39	0.18	25 or less	33 or less	47 or less	
		Exhaust center	Metal seal	VQZ1420	0.55	0.28	0.13	0.54	0.26	0.13	20 or less	26 or less	40 or less	
			Rubber seal	VQZ1421	0.87	0.38	0.23	0.71	0.40	0.19	25 or less	33 or less	47 or less	
		Pressure center	Rubber seal	VQZ1521	0.91	0.41	0.26	0.68	0.39	0.18	25 or less	33 or less	47 or less	
VQZ2000	2 position	Single	Metal seal	VQZ2120	1.2	0.21	0.30	1.4	0.20	0.32	14 or less	18 or less	34 or less	64
			Rubber seal	VQZ2121	1.7	0.39	0.45	1.6	0.35	0.44	15 or less	20 or less	36 or less	
		Double	Metal seal	VQZ2220	1.2	0.21	0.30	1.4	0.20	0.32	10 or less	13 or less	13 or less	
			Rubber seal	VQZ2221	1.7	0.39	0.45	1.6	0.35	0.44	12 or less	15 or less	15 or less	
	3 position	Closed center	Metal seal	VQZ2320	1.1	0.21	0.26	1.1	0.24	0.26	23 or less	30 or less	44 or less	88
			Rubber seal	VQZ2321	1.4	0.33	0.35	1.4	0.37	0.36	25 or less	33 or less	47 or less	
		Exhaust center	Metal seal	VQZ2420	1.1	0.23	0.28	1.4	0.20	0.32	23 or less	30 or less	44 or less	
			Rubber seal	VQZ2421	1.4	0.33	0.35	1.6	0.35	0.44	25 or less	33 or less	47 or less	
		Pressure center	Metal seal	VQZ2520	1.3	0.28	0.34	1.2	0.27	0.30	23 or less	30 or less	44 or less	
VQZ3000	2 position	Single	Metal seal	VQZ3120	2.4	0.23	0.56	2.4	0.19	0.54	17 or less	22 or less	34 or less	109
			Rubber seal	VQZ3121	3.1	0.34	0.79	3.2	0.38	0.81	25 or less	33 or less	57 or less	
		Double	Metal seal	VQZ3220	2.4	0.23	0.56	2.4	0.19	0.54	10 or less	13 or less	13 or less	
			Rubber seal	VQZ3221	3.1	0.34	0.79	3.2	0.38	0.81	15 or less	20 or less	20 or less	
	3 position	Closed center	Metal seal	VQZ3320	2.3	0.19	0.54	2.1	0.21	0.54	25 or less	33 or less	53 or less	134
			Rubber seal	VQZ3321	2.7	0.30	0.66	2.4	0.33	0.62	30 or less	39 or less	59 or less	
		Exhaust center	Metal seal	VQZ3420	2.3	0.19	0.54	2.4	0.19	0.54	25 or less	33 or less	53 or less	
			Rubber seal	VQZ3421	2.7	0.30	0.66	3.2	0.38	0.81	30 or less	39 or less	59 or less	
		Pressure center	Metal seal	VQZ3520	2.5	0.25	0.60	2.1	0.18	0.47	25 or less	33 or less	53 or less	
			Rubber seal	VQZ3521	3.2	0.38	0.82	2.4	0.33	0.62	30 or less	39 or less	59 or less	



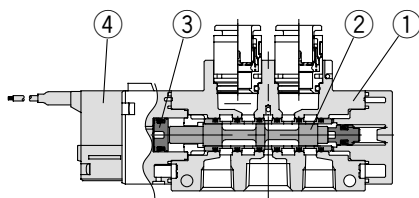
Note 1) Based on JIS B 8375-1981 (Supply pressure: 0.5 MPa; with light/surge voltage suppressor; clean air)

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

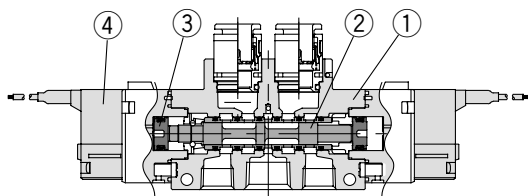
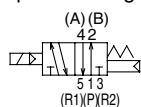
Note 2) Weight without sub-plate

Construction: VQZ1000/2000/3000

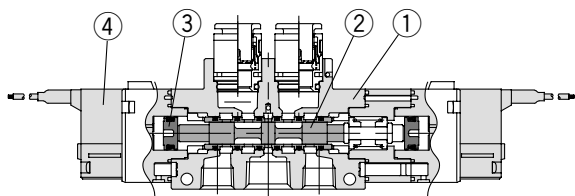
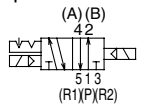
Metal seal type



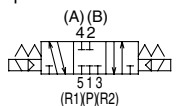
2 position single



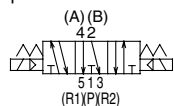
2 position double



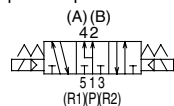
3 position closed center



3 position exhaust center

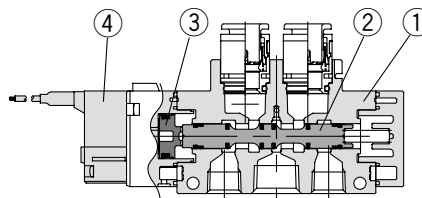


3 position pressure center

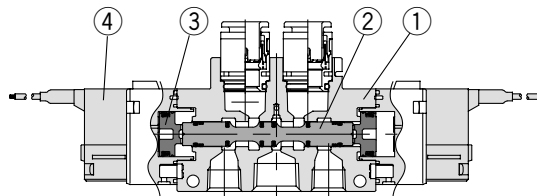
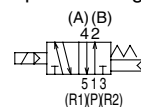


Note) Except VQZ1000 and metal seal type.

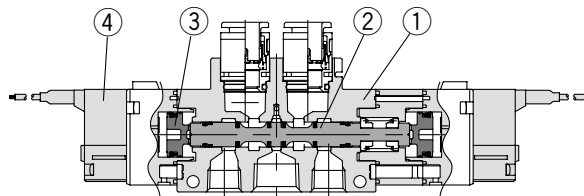
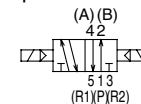
Rubber seal type



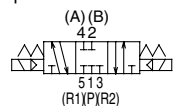
2 position single



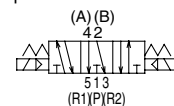
2 position double



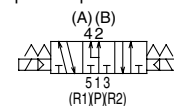
3 position closed center



3 position exhaust center



3 position pressure center



Component Parts

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



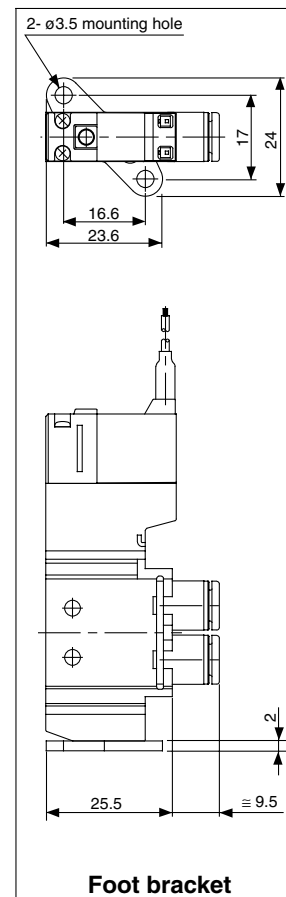
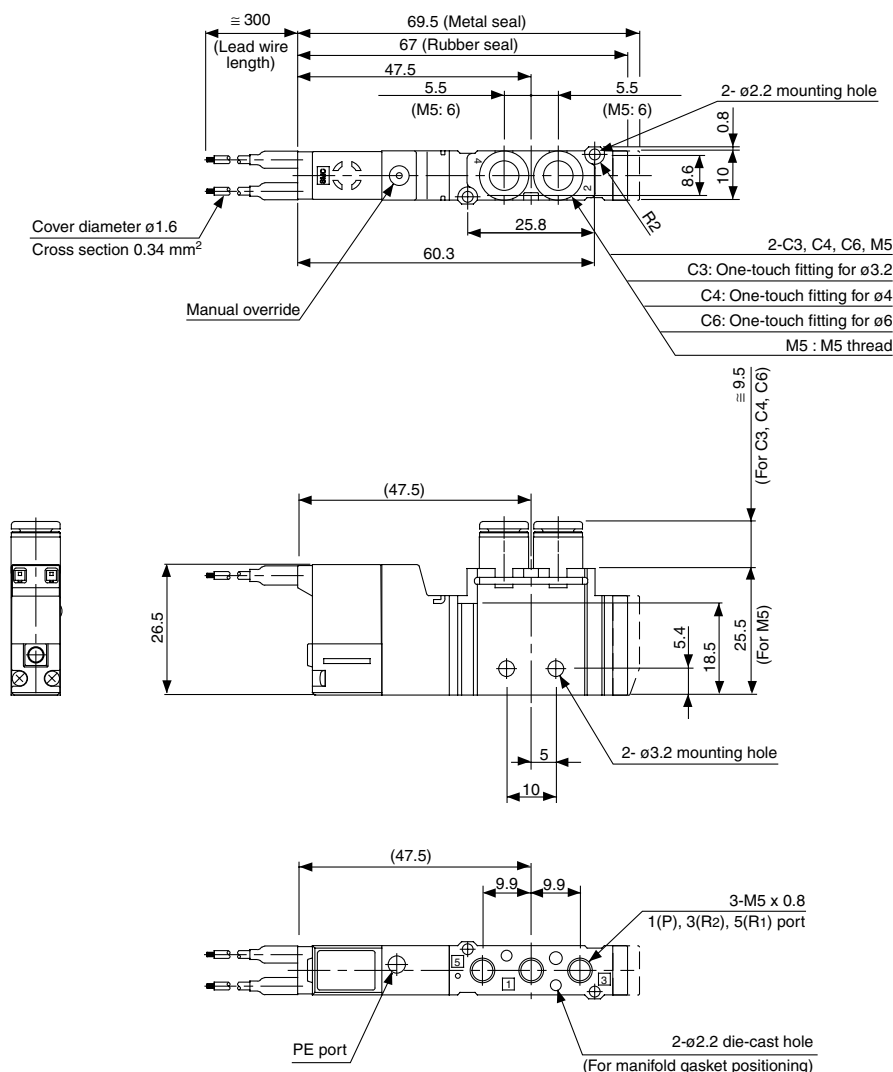
Refer to page 2-7-28 for Pilot Valve Assembly.

Plug Lead Unit: Single Unit Series VQZ1000/2000/3000

Dimensions: VQZ1000

2 position single

Grommet (G): VQZ112⁰-□G□-C3/C4/C6/M5



Foot bracket

For bracket assembly modes, refer to page 2-7-28.

VQC

SQ

VQ0

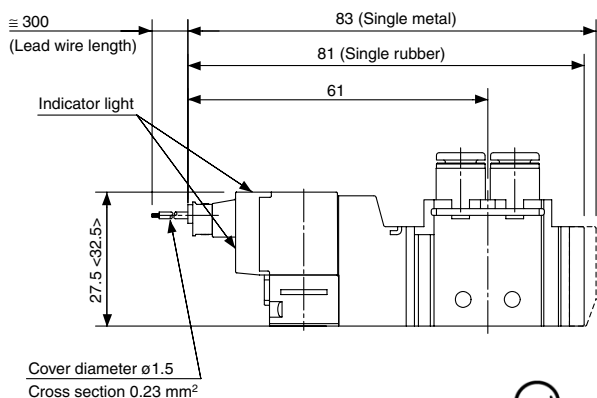
VQ4

VQ5

VQZ

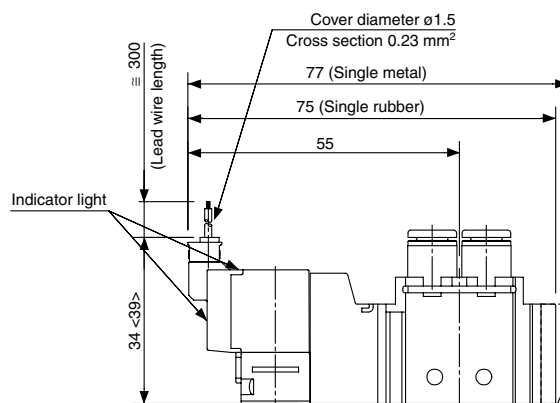
VQD

L plug connector (L): VQZ112⁰-□L□-C3/C4/C6/M5



< >: AC

M plug connector (M): VQZ112⁰-□M□-C3/C4/C6/M5

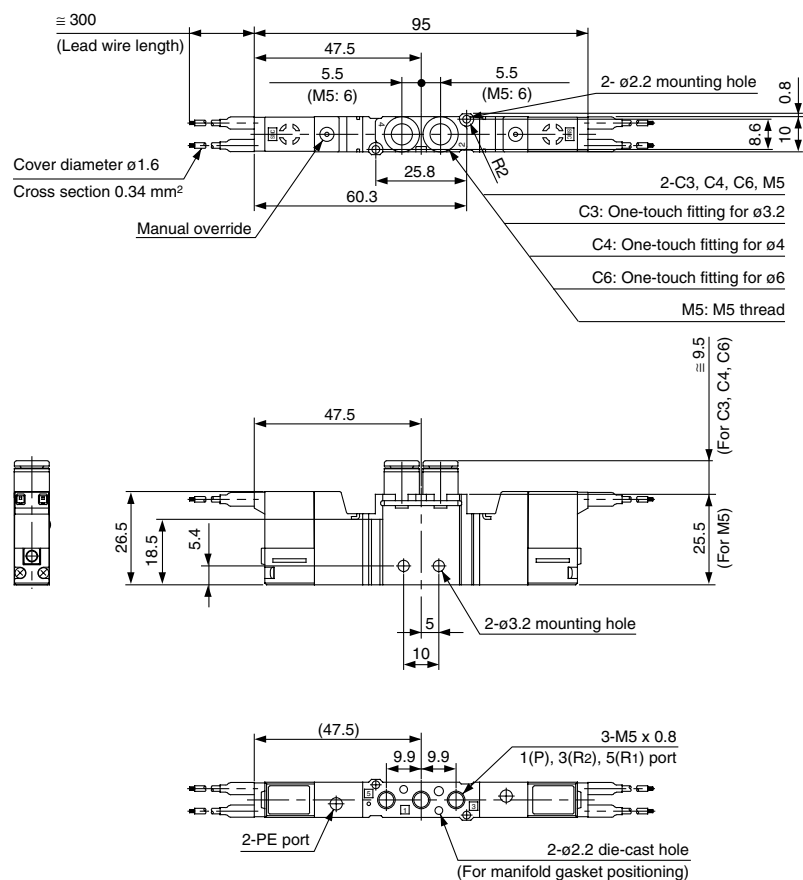


< >: AC

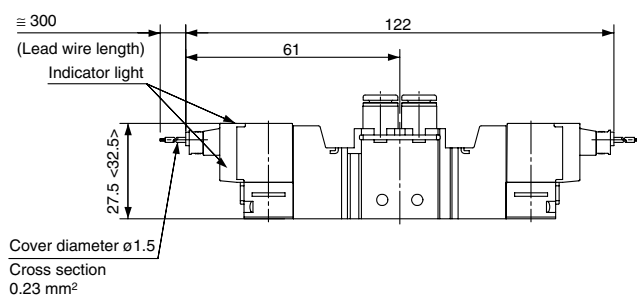
Dimensions: VQZ1000

2 position double

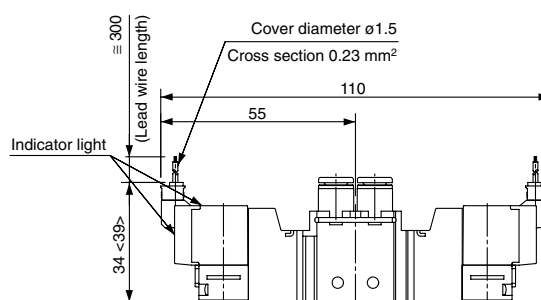
Grommet (G): VQZ122⁰-□G□-C3/C4/C6/M5



L plug connector (L): VQZ122⁰-□L□-C3/C4/C6/M5



M plug connector (M): VQZ122⁰-□M□-C3/C4/C6/M5



< >: AC



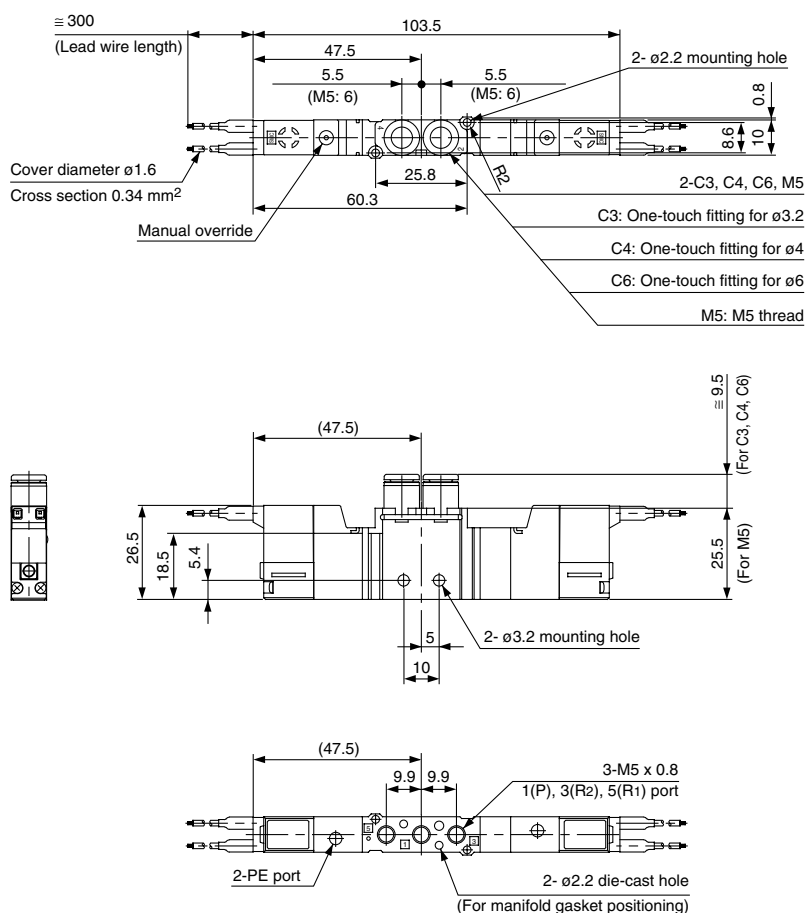
< >: AC

Plug Lead Unit: Single Unit Series VQZ1000/2000/3000

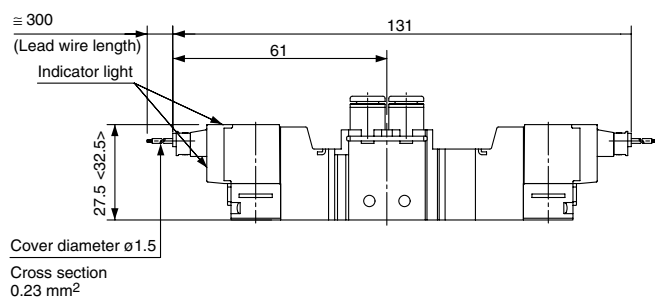
VQZ1000

3 position closed center/exhaust center/pressure center (Except metal seal type)

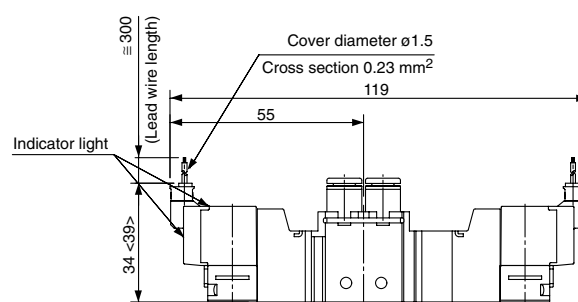
Grommet (G): VQZ1 $\frac{3}{5}$ 2 $\frac{0}{1}$ -□G□-C3/C4/C6/M5



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



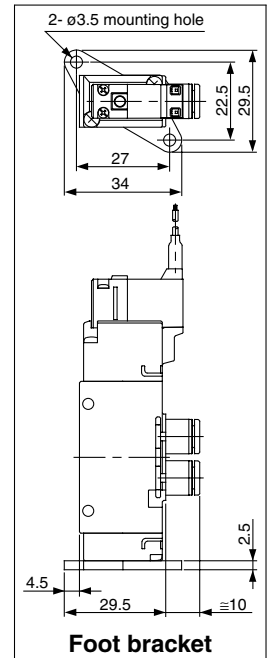
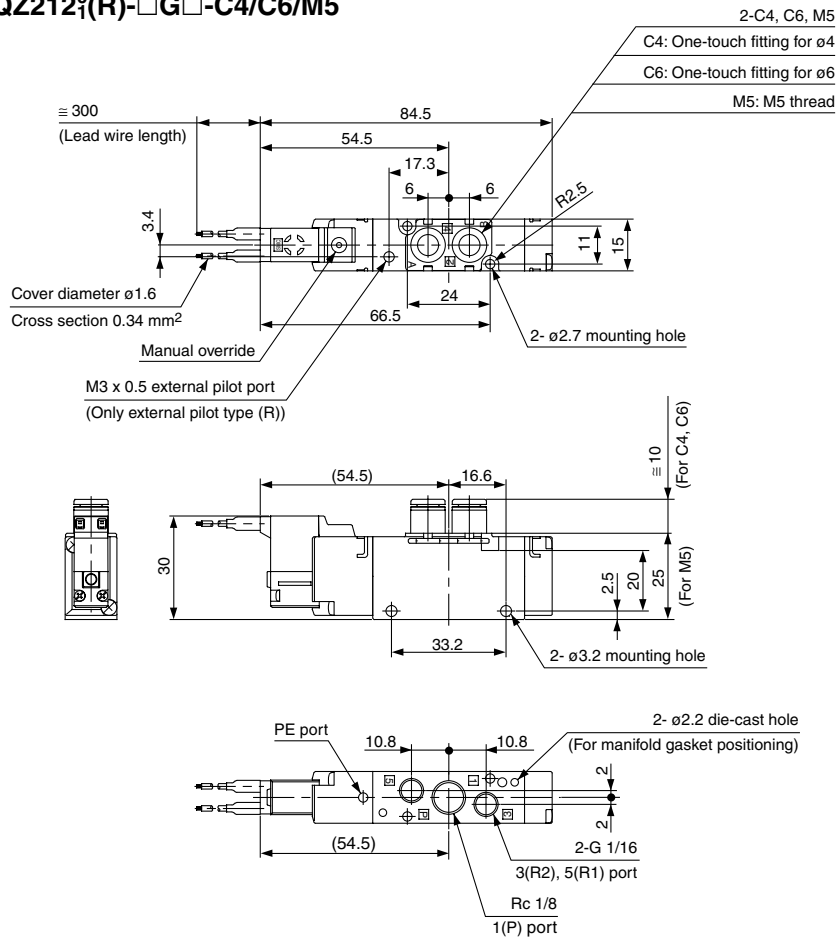
M plug connector (M): VQZ1 $\frac{3}{5}$ 2 $\frac{0}{1}$ -□M□-C3/C4/C6/M5



Dimensions: VQZ2000

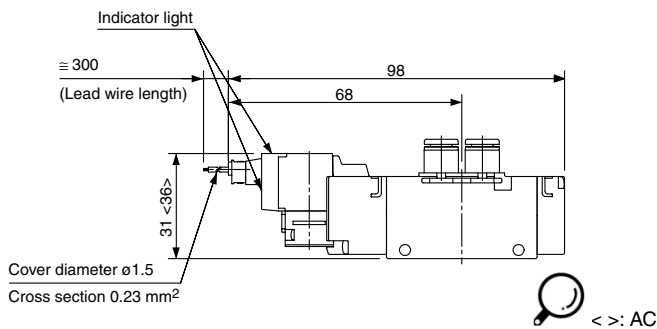
2 position single

Grommet (G): VQZ212⁰(R)-□G□-C4/C6/M5

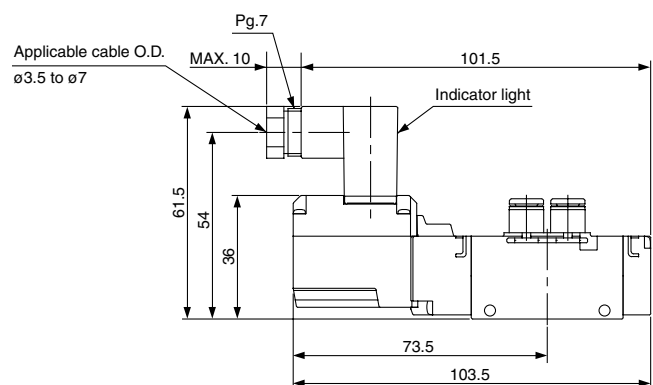


For bracket assembly modes, refer to page 2-7-28.
For model no. for One-touch fittings for P, R port and silencer, refer to page 2-7-5.

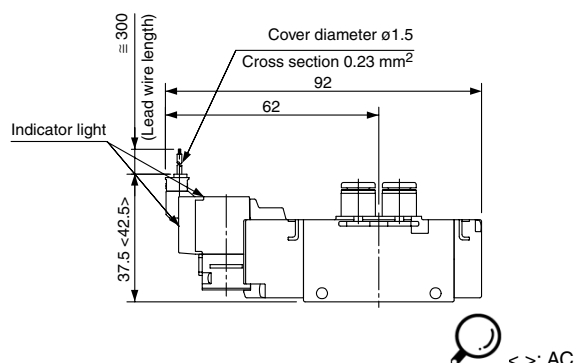
L plug connector (L): VQZ212⁰(R)-□L□-C4/C6/M5



DIN terminal (Y): VQZ212⁰(R)-□Y□-C4/C6/M5



M plug connector (M): VQZ212⁰(R)-□M□-C4/C6/M5

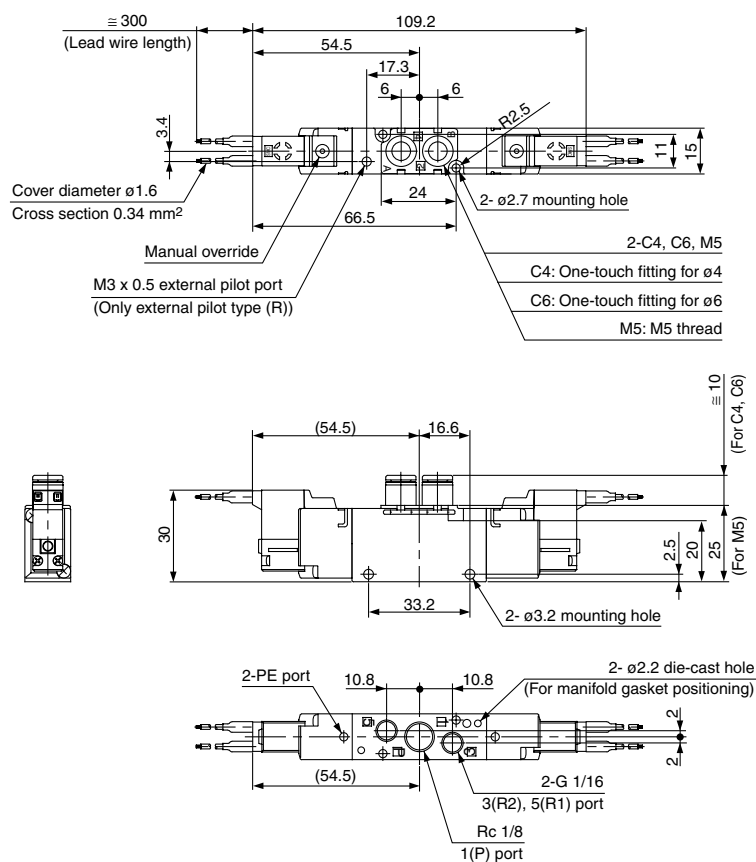


Plug Lead Unit: Single Unit Series VQZ1000/2000/3000

VQZ2000

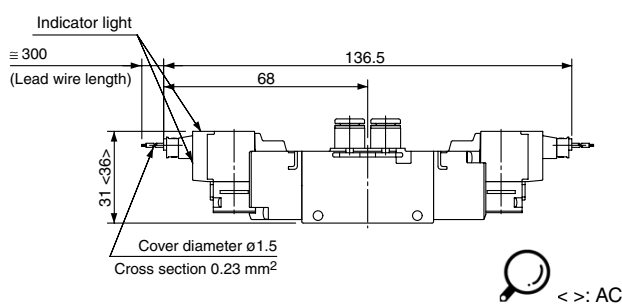
2 position double

Grommet (G): VQZ222⁰(R)-□G□-C4/C6/M5

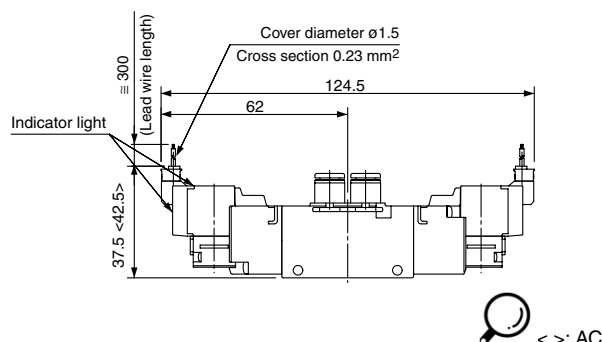


For model no. for One-touch fittings for P, R port and silencer, refer to page 2-7-5.

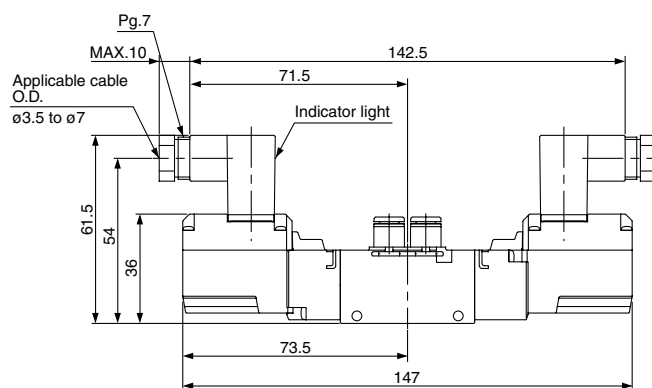
L plug connector (L): VQZ222⁰(R)-□L□-C4/C6/M5



M plug connector (M): VQZ222⁰(R)-□M□-C4/C6/M5



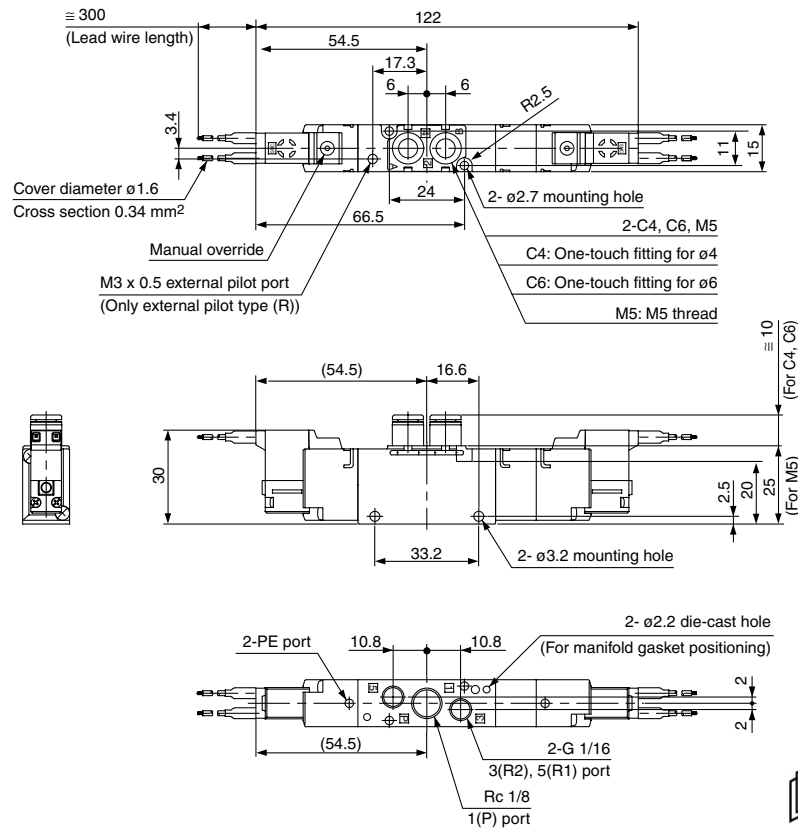
DIN terminal (Y): VQZ222⁰(R)-□Y□-C4/C6/M5



Dimensions: VQZ2000

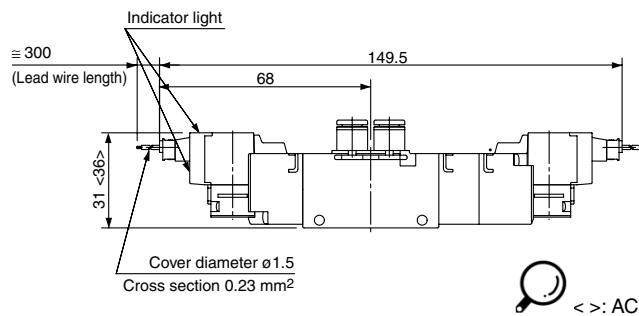
3 position closed center/exhaust center/pressure center

Grommet (G): VQZ2 $\frac{3}{4}$ 2 $\frac{0}{5}$ (R)-□G□-C4/C6/M5

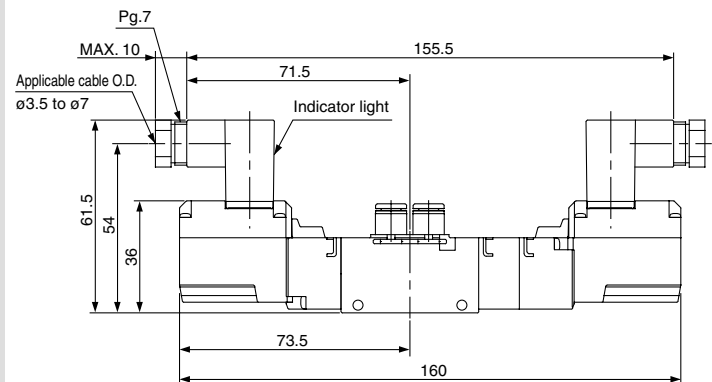


For model no. for One-touch fittings for P, R port and silencer, refer to page 2-7-5.

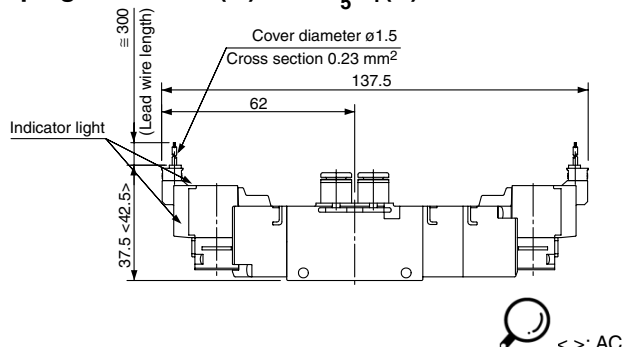
L plug connector (L): VQZ2 $\frac{3}{4}$ 2 $\frac{0}{5}$ (R)-□L□-C4/C6/M5



DIN terminal(Y): VQZ2 $\frac{3}{4}$ 2 $\frac{0}{5}$ (R)-□Y□-C4/C6/M5



M plug connector (M): VQZ2 $\frac{3}{4}$ 2 $\frac{0}{5}$ (R)-□M□-C4/C6/M5

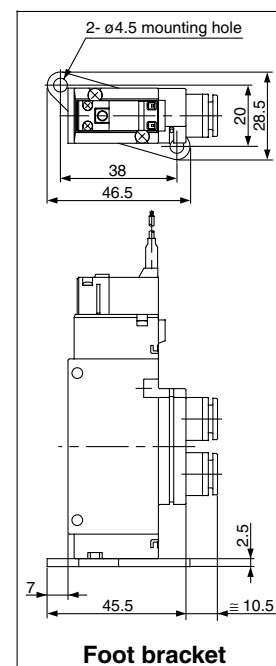
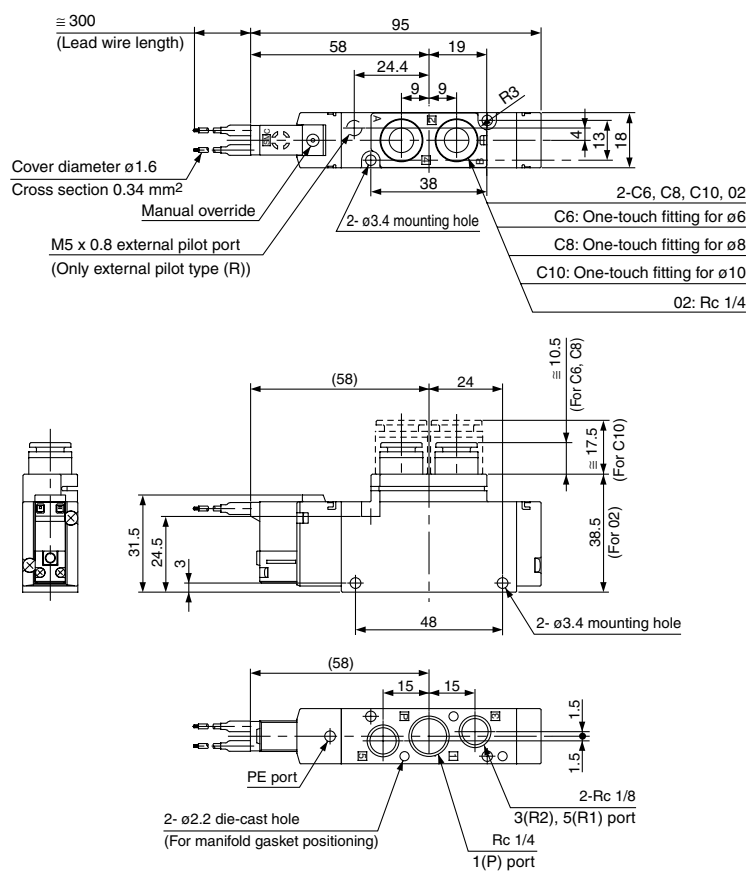


Plug Lead Unit: Single Unit Series VQZ1000/2000/3000

VQZ3000

2 position single

Grommet (G): VQZ312⁰(R)-□G□-C6/C/C10/02



VQC

SQ

VQ0

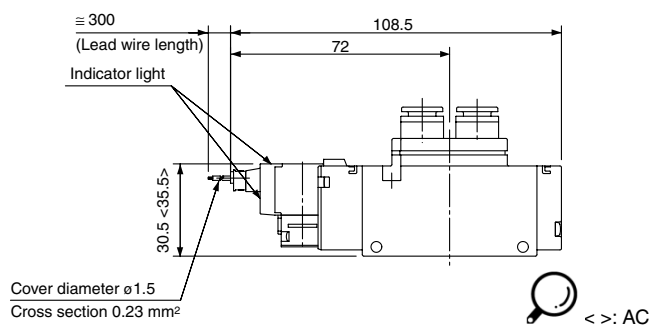
VQ4

VQ5

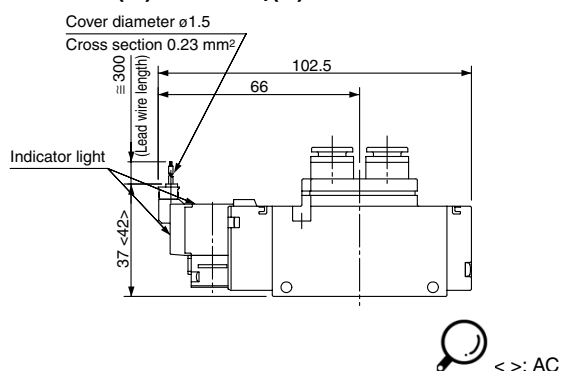
VQZ

VQD

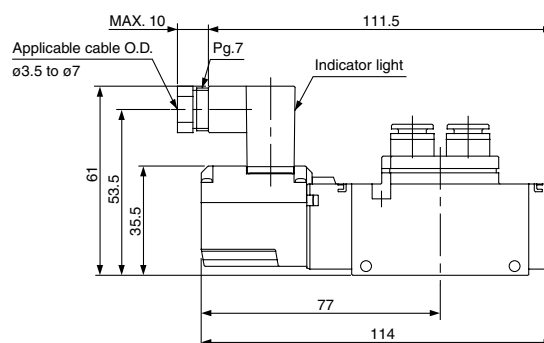
L plug connector (L): VQZ312⁰(R)-□L□-C6/C8/C10/02



M plug connector (M): VQZ312⁰(R)-□M□-C6/C8/C10/02



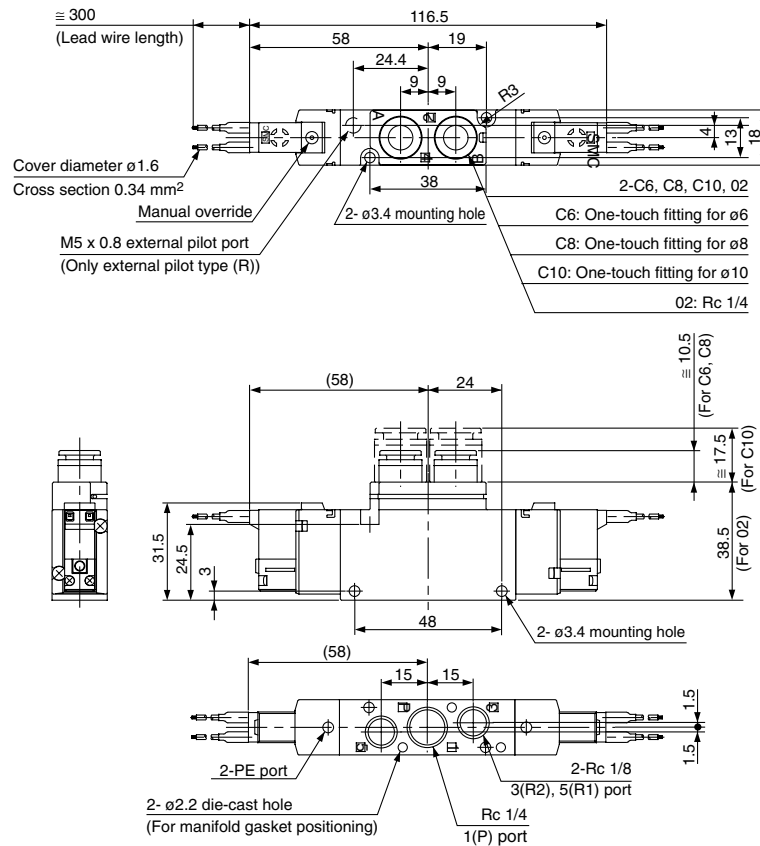
DIN terminal (Y): VQZ312⁰(R)-□Y□-C6/C8/C10/02



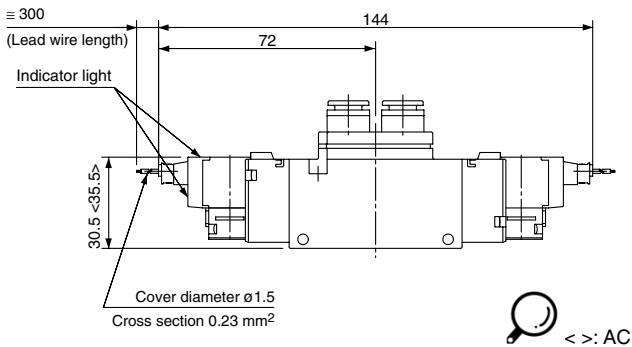
Dimensions: VQZ3000

2 position double

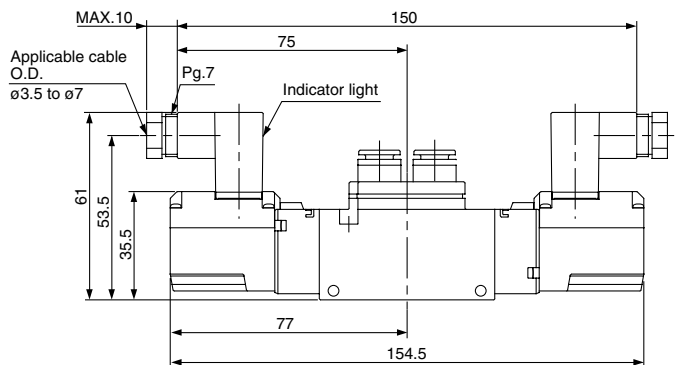
Grommet (G): VQZ322⁰(R)-□G□-C6/C8/C10/02



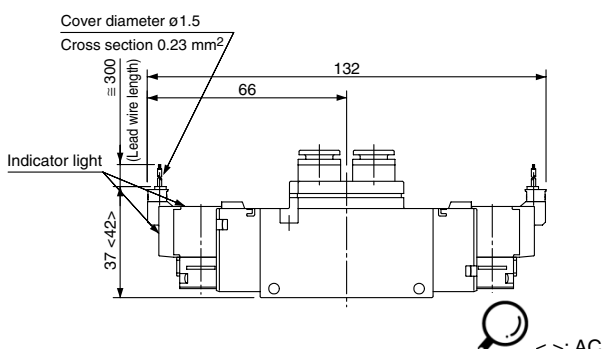
L plug connector (L): VQZ322⁰(R)-□L□-C6/C8/C10/02



DIN terminal (Y): VQZ322⁰(R)-□Y□-C6/C8/C10/02



M plug connector (M): VQZ322⁰(R)-□M□-C6/C8/C10/02



Grommet (G): VQZ₃⁴₅2₁⁰(R)-□G□-C6/C8/C10/02



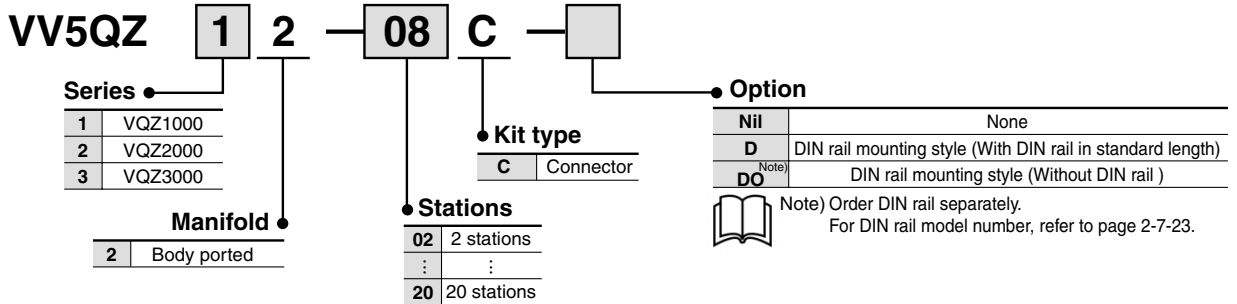
5 Port Solenoid Valve

Body Ported

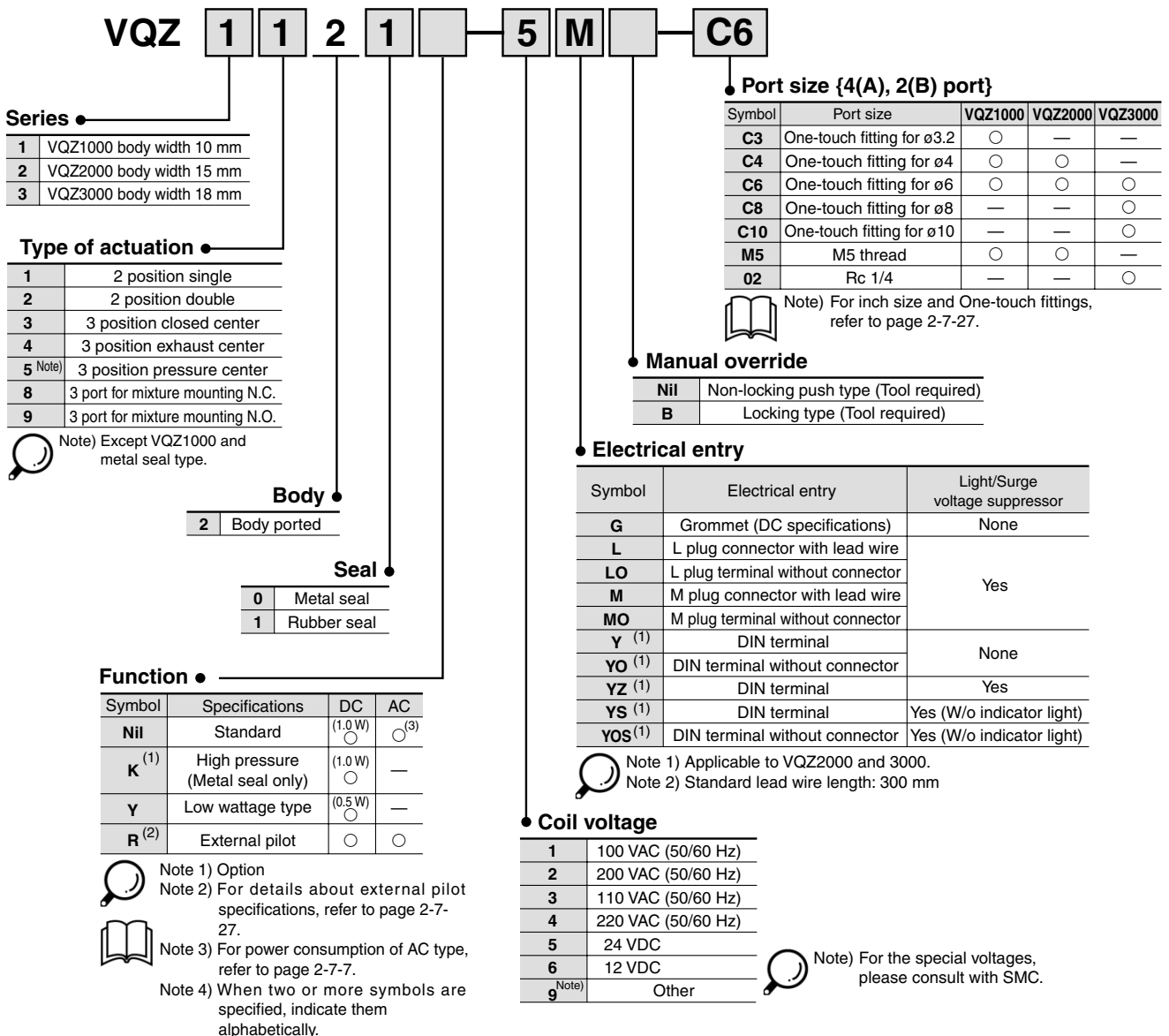
Plug Lead Unit: Manifold (Connector Kit)

VQZ1000/2000/3000

How to Order Manifold

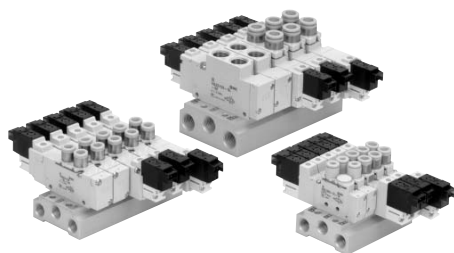


How to Order Valves



Plug Lead Unit: Manifold Series VQZ1000/2000/3000

Manifold Specifications



Series	Base model	Porting specifications			Applicable solenoid valve	Applicable stations	Manifold base weight (g)
		Port location	Port size				
			1(P), 3/5(R)	4(A), 2(B)			
VQZ1000	VV5QZ12-□□□	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-□□□	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-□□□	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

VQC

SQ

VQ0

VQ4

VQ5

VQZ

VQD

How to Order Valve Manifold Assembly (Example)

VQZ2120-5M-C6
 VQZ2220-5M-C6
 VQZ2320-5M-C6
 VVQZ2000-10A-2
 C6: One-touch fitting for ø6
 VV5QZ22-05C

D side 1 2 3 4 5
 U side

VV5QZ22-05C..... 1 set (C kit 5 stations manifold base)
 *VVQZ2000-10A-2..... 1 set (Blanking plate assembly)
 *VQZ2120-5M-C6..... 1 set (Single solenoid part no.)
 *VQZ2220-5M-C6..... 2 sets (Double solenoid part no.)
 *VQZ2320-5M-C6..... 1 set (3 position part no.)

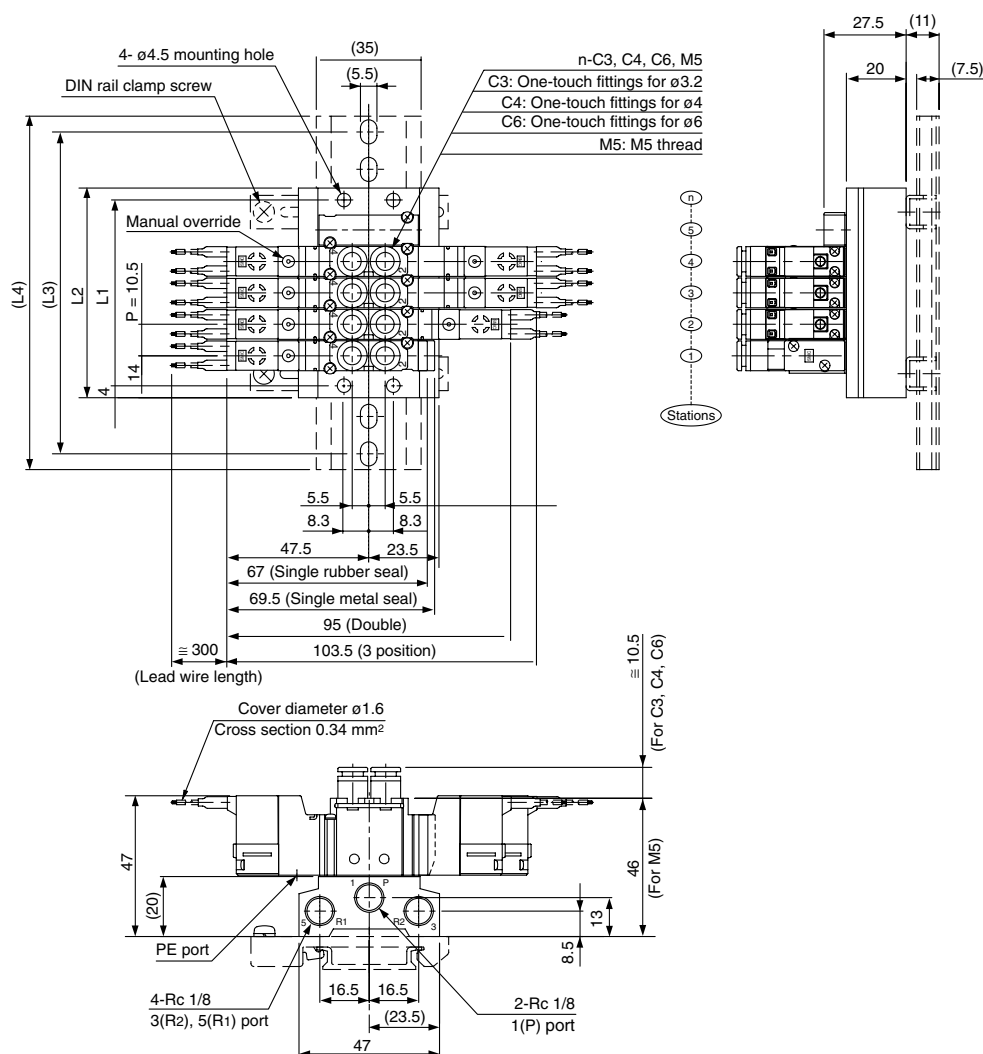
The asterisk denotes the symbol for assembly.
 Prefix it to the part nos. of the solenoid valve, etc.
 Enter in order starting from the first station on the D side.

Specify the part numbers for valves and options together beneath the manifold base part number.
 When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

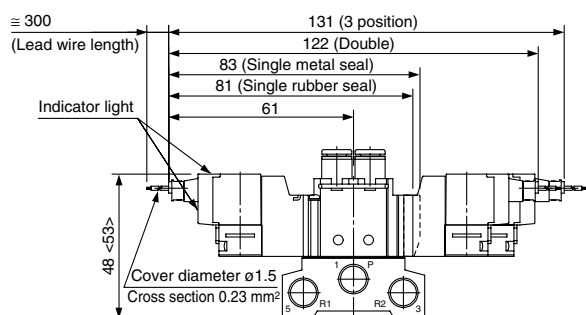
Dimensions: VQZ1000

VV5QZ12- Stations C

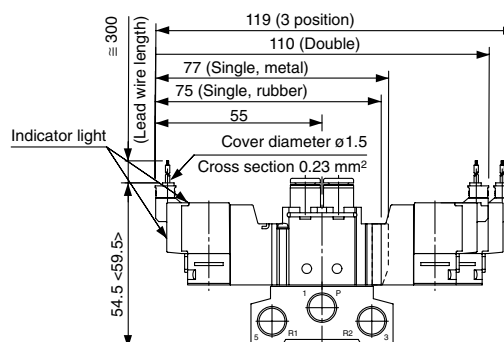
Grommet (G)



L plug connector (L)



M plug connector (M)



Dimensions

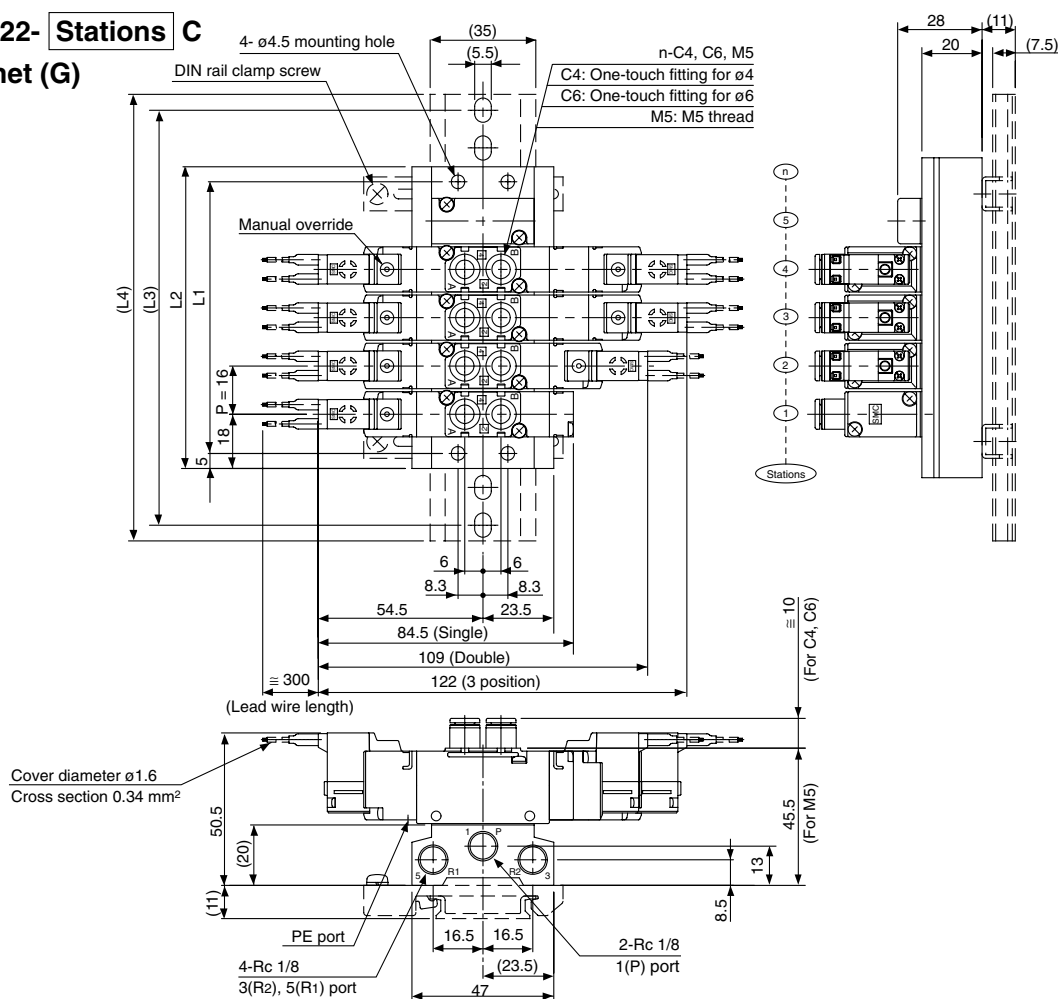
Formula $L1 = 10.5n + 9.5$, $L2 = 10.5n + 17.5$ n: Stations (Maximum 20 stations)

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

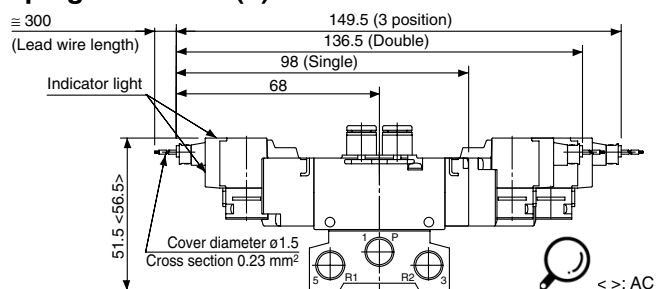
Plug Lead Unit: Manifold Series VQZ1000/2000/3000

VQZ2000

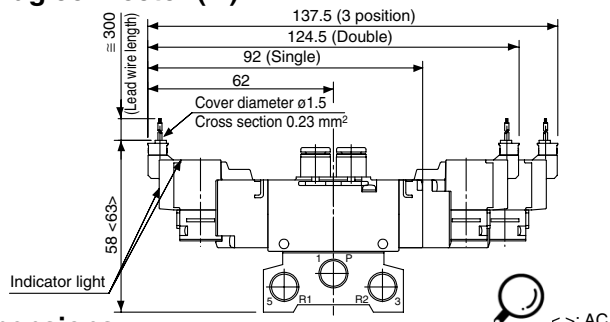
VV5QZ22- Stations C Grommet (G)



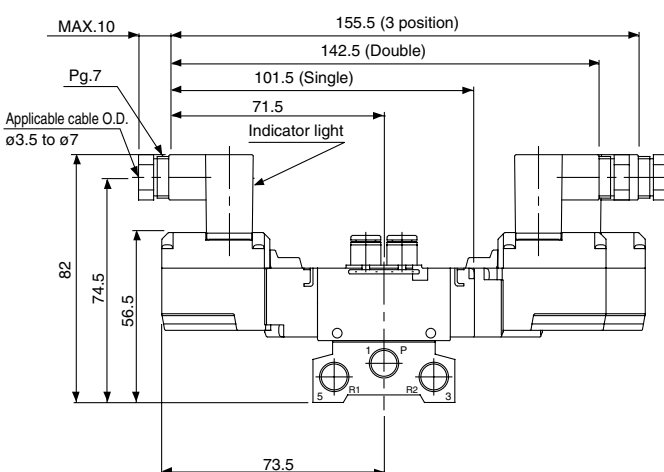
L plug connector (L)



M plug connector (M)



DIN terminal (Y)



Dimensions

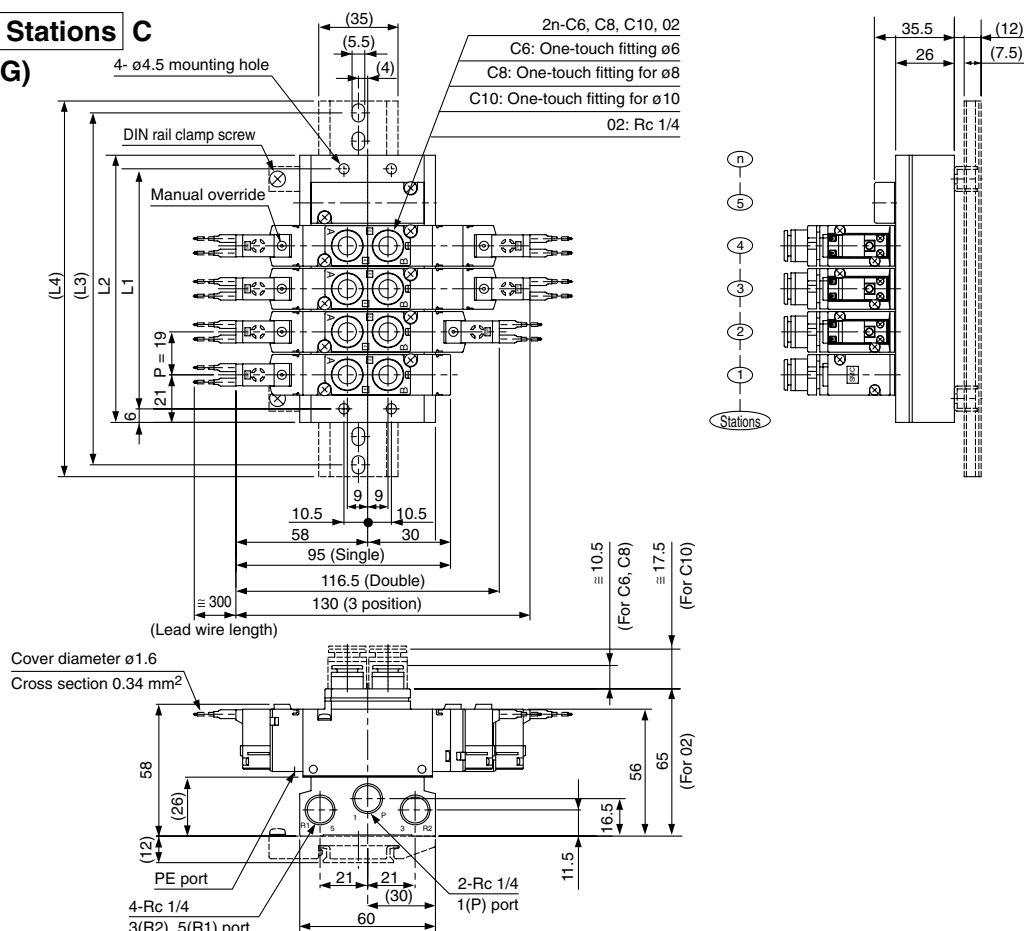
L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	42	58	74	90	106	122	138	154	170	186	202	218	234	250	266	282	298	314	330
L2	52	68	84	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324	340
L3	75	87.5	112.5	125	137.5	162.5	175	187.5	200	225	237.5	250	275	287.5	300	312.5	337.5	350	362.5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

Formula L1 = $16n + 10$, L2 = $16n + 20$ n: Stations (Maximum 20 stations)

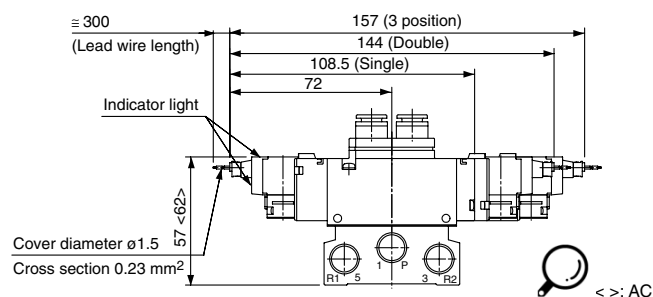
Dimensions: VQZ3000

VV5QZ32- Stations C

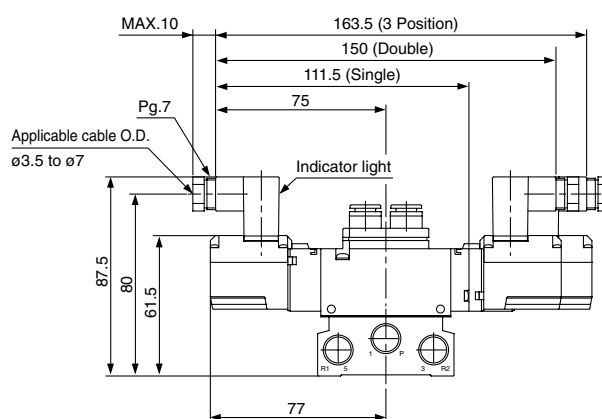
Grommet (G)



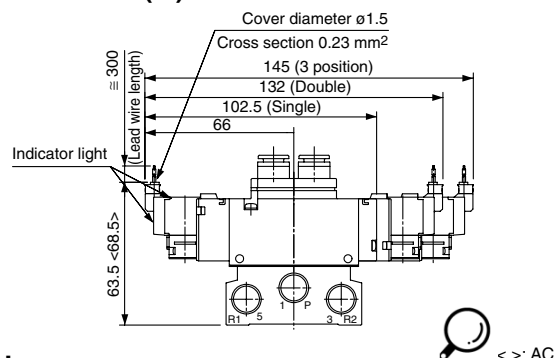
L plug connector (L)



DIN terminal (Y)



M plug connector (M)



Dimensions

Formula $L1 = 19n + 11$, $L2 = 19n + 23$ n: Stations (Maximum 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

Plug Lead Unit: Manifold Series VQZ1000/2000/3000

Manifold Option

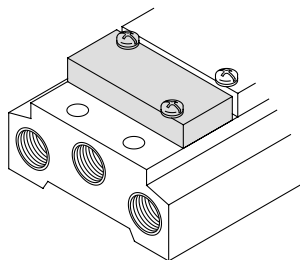
Blanking plate assembly

VVQZ1000-10A-2 (For VQZ1000)

VVQZ2000-10A-2 (For VQZ2000)

VVQZ3000-10A-2 (For VQZ3000)

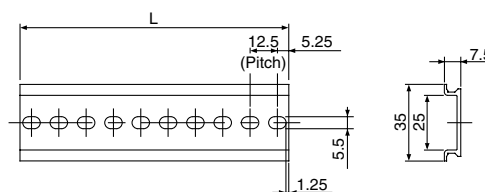
It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.



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

$$L = 12.5n + 10.5$$

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

Blanking plug

KQP-23-X19

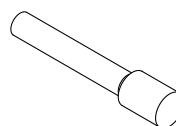
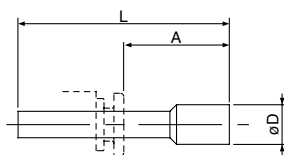
KQP-04-X19

KQP-06-X19

KQP-08-X19

KQP-10-X19

● Color: White

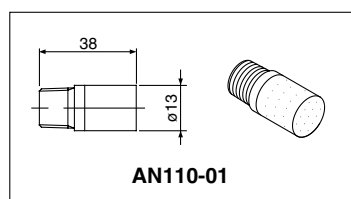


Dimensions

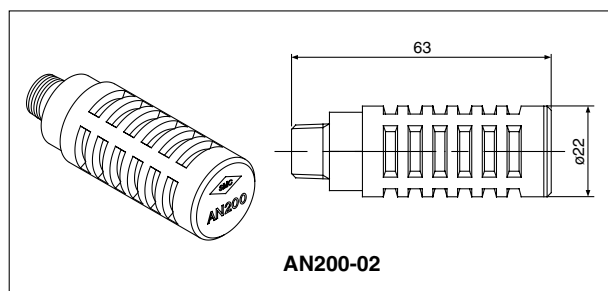
Applicable fittings size ød	Model	A	L	D
3.2	KQP-23-X19	16	31.5	3.2
4	KQP-04-X19	16	32	6
6	KQP-06-X19	18	35	8
8	KQP-08-X19	20.5	39	10
10	KQP-10-X19	22	43	12

Silencer (For EXH port)

Silencer is installed in the EXH port.



AN110-01



AN200-02

Dimensions

Model	Silencer P/N
VQZ1000	AN110-01
VQZ2000	AN110-01
VQZ3000	AN200-02



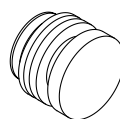
For a silencer to be mounted in a single valve unit, refer to page 2-7-5.

Port plug

VVQZ100-CP (For VQZ1000/VQZ2000)

VVQZ2000-CP (For VQZ3000)

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



Manifold Option

Double check block (Externally placed downstream): For VQZ1000 only

VQ1000-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 center 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.

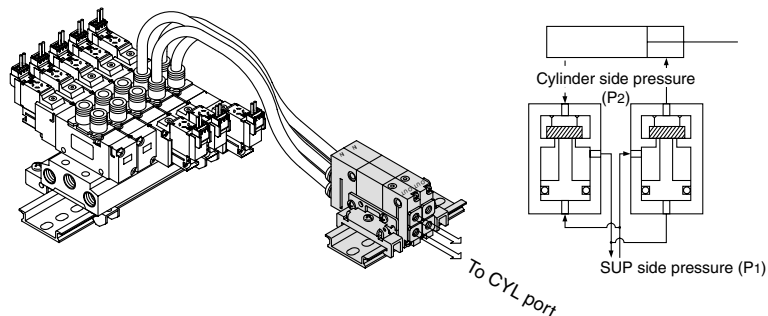
Specifications

Maximum operating pressure	0.8 MPa
Minimum operating pressure	0.15 MPa
Ambient and fluid temp.	-5 to 50°C
Flow characteristics: C	0.60 dm ³ /(s·bar)
Max. operating frequency	180 c.p.m



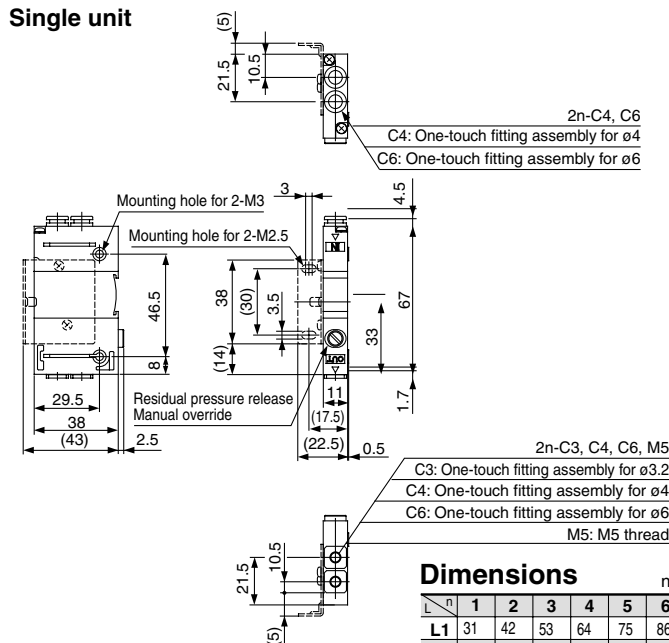
Note) Based on JIS B 8375-1981
(Supply pressure: 0.5 MPa)

<Check valve operation principle>

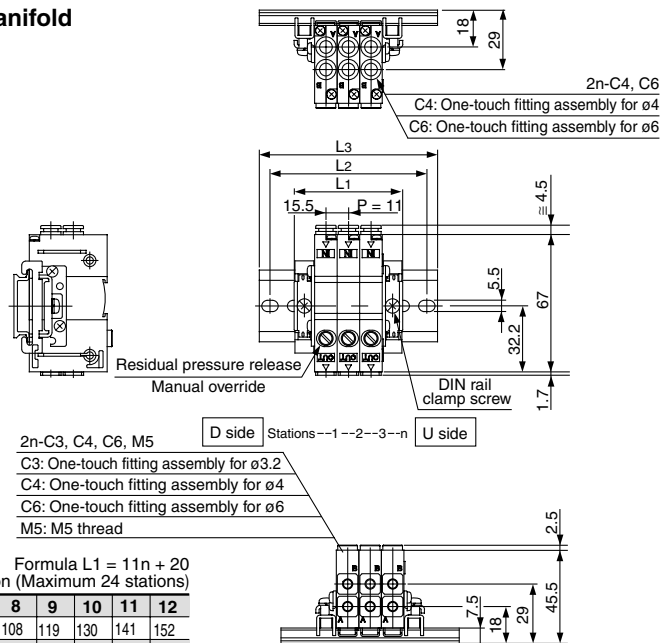


Dimensions

Single unit



Manifold



Dimensions

n	1	2	3	4	5	6	7	8	9	10	11	12
L1	31	42	53	64	75	86	97	108	119	130	141	152
L2	50	62.5	75	87.5	100	112.5	125	137.5	150	162.5	175	
L3	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	

n	13	14	15	16	17	18	19	20	21	22	23	24
L1	163	174	185	196	207	218	229	240	251	262	273	284
L2	187.5	197.5	207.5	217.5	227.5	237.5	247.5	257.5	267.5	277.5	287.5	300
L3	198	208	218	228	238	248	258	268	278	288	298	310.5

How to Order

Double check block

VQ1000-FPG-**C4** **M5** **F**

IN side port size

C4	One-touch fitting for ø4
C6	One-touch fitting for ø6

OUT side port size

M5	M5 thread
C3	One-touch fitting for ø3.2
C4	One-touch fitting for ø4
C6	One-touch fitting for ø6

Manifold

VVQ1000-FPG-**06**

Stations

01	1 station
...	...
16	16 stations

<Ordering Example>

VVQ1000-FPG-06... 6 stations of manifold
*VQ1000-FPG-C4M5-D: 3 sets } Double check
*VQ1000-FPG-C6M5-D: 3 sets } block

Option

Nil	None
D	DIN rail mount style (For manifold)
F	With bracket
N	Name plate

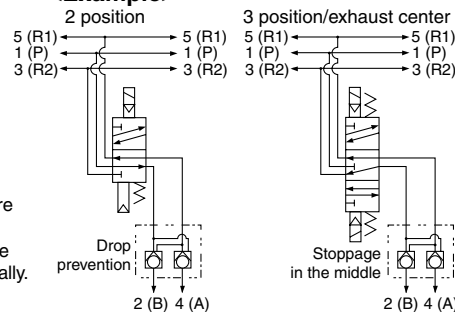


Note) When two or more symbols are specified, indicate them alphabetically.
Example) -DN

Caution

- Since 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 (with M5 thread) is recommended when stopping the cylinder in the middle for a long time.
- Combining double check block with 3 position closed center or pressure center solenoid valve will not work.
- A M5 fitting assembly is attached, without being incorporated in the double After screwing in the fittings, mount the assembly on the double check block. (Tightening torque: 0.8 to 1.2 N·m)
- If exhaust side of double check block is narrowed down too much intermediate stopping accuracy will be decreased.

<Example>



Bracket Assembly

Part no.	Tightening torque (Note)
VQ1000-FPG-FB	0.22 to 0.25 N·m



Note) It is the tightening torque for mounting a bracket for the perfect block.

Plug Lead Unit: Manifold Series VQZ1000/2000/3000

Manifold Option

Double check block (Externally placed downstream): For VQZ2000, 3000 only VQ2000-FPG-□□-□

<Check valve operation principle>

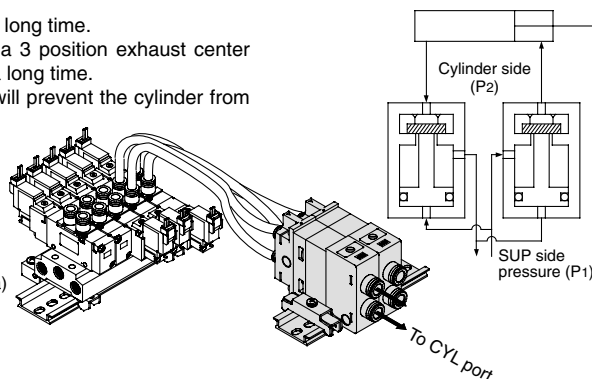
It is used on the outlet side piping to keep the cylinder in the intermediate position for a long time.
Combining the double check block with a built-in pilot type double check valve and a 3 position exhaust center solenoid valve will enable the cylinder to stop in the middle or maintain its position 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 dm³/(s·bar)
Max. operating frequency	180 c.p.m

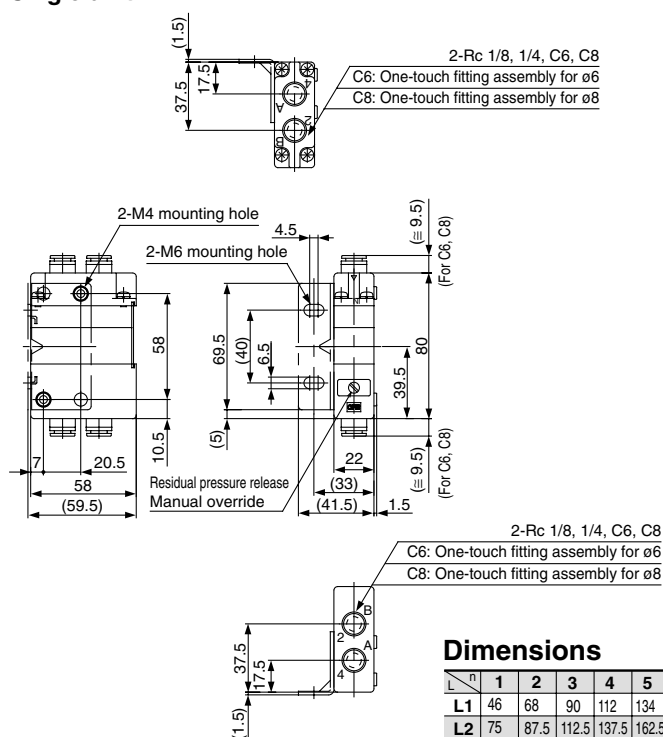


Note) Based on JIS B 8375-1981
(Supply pressure: 0.5 MPa)

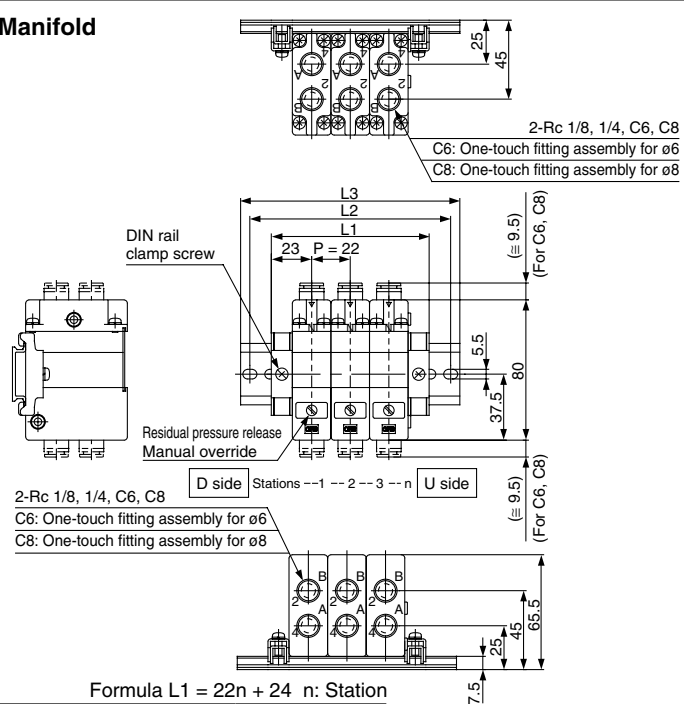


Dimensions

Single unit



Manifold



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

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

OUT side port size

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

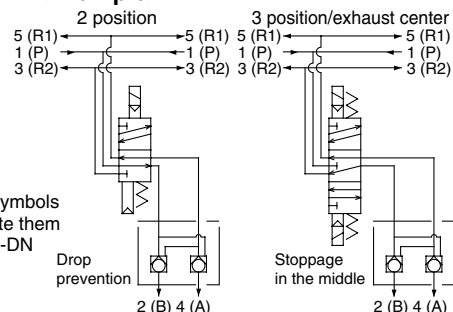
Option

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



Note) When two or more symbols are specified, indicate them alphabetically. Ex.) -DN

<Example>



Manifold

VVQ2000-FPG-06

Stations

01	1 station
...	...
16	16 stations

<Ordering Example>

VVQ2000-FPG-06---6 stations manifold
* VQ2000-FPG-C6C6-D: 3 sets } Double check
* VQ2000-FPG-C8C8-D: 3 sets } block

Caution

- Since 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 the middle for a long time.
- Combining perfect block with 3 position closed center or pressure center solenoid 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 narrowed down too much, intermediate stopping accuracy will be decreased.

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

Bracket Assembly

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

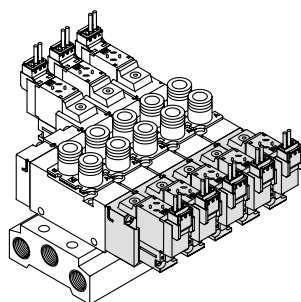


Note) It is the tightening torque for mounting a bracket for the perfect block.

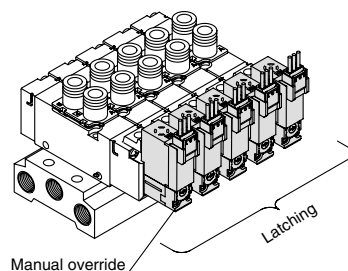
One Side Solenoid (Latching solenoid)

The standard 2 position double solenoid valve has two solenoids, one on each end of the valve body.

The latching solenoid option (with self holding mechanism) functions in the same manner as a 2 position double solenoid but uses only one solenoid to do the job.

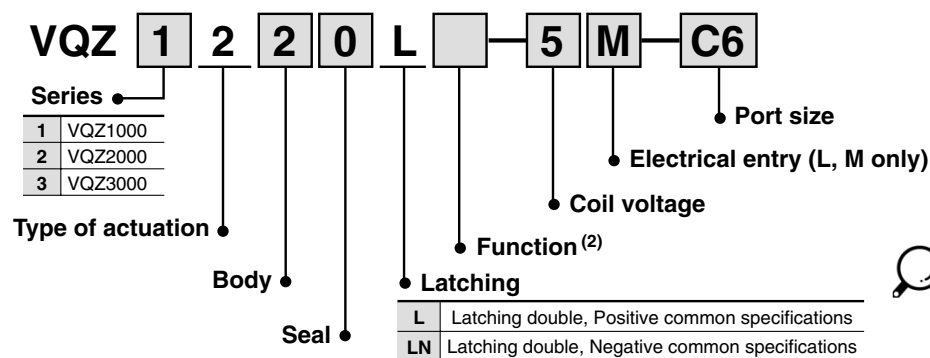


Existing model



One side solenoid (Latching solenoid)

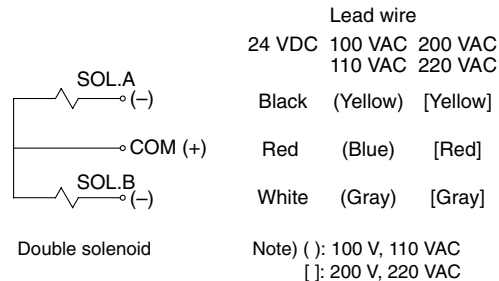
How to Order Latching Solenoid Valves



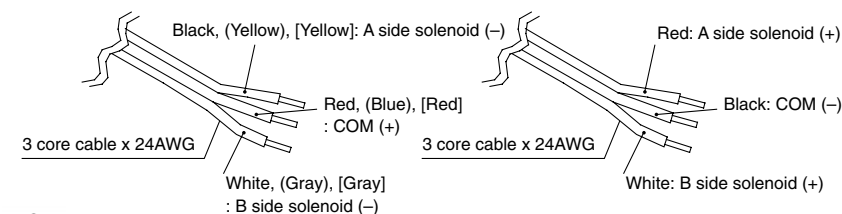
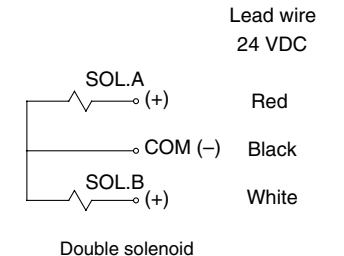
Wiring

Lead wires are connected to the valve as shown below. Connect them with the power supply.

Positive common specifications



Negative common specifications



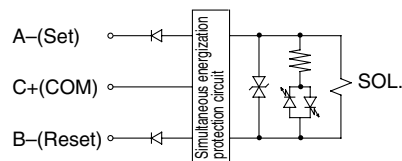
Caution

Cautions for Latching Use

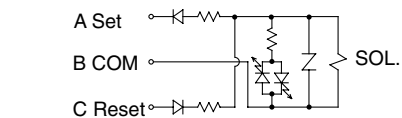
1. Use a circuit in which the ON and OFF signals are not simultaneously energized.
2. Minimum energization time for self holding is 20 ms.
3. Avoid using the latching solenoid valves in environment where impacts or collisions (30/150 m/s² or more) exist. Also, do not use in places where the strong magnetic fields are present.
4. Even though the armature in the solenoid of this valve is held on to B side, ON position (Reset), verify either A side, ON position or B side, ON position by energizing prior to use.
5. Please consult with SMC for extended energization applications.

Electrical Circuit

Latching solenoid (DC)



Latching solenoid (AC)



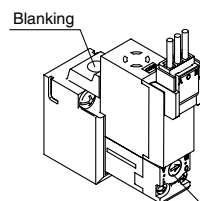
- Note 1**
- Set side in energized state: Lighting (Orange)
 - Reset side in energized state: Lighting (Green)
 - With miss-wiring preventing function (Stop diode)
 - With surge absorption function (ZNR/Surge absorption diode)

Note 2 Flow direction: P → A {A (set) side in energized state}
Flow direction: A → R {B (reset) side in energized state}

Note 3 Negative common specifications is available.

Manual Override

The manual override is on the pilot valve for latching solenoid valves. Besides, manual on the main body cannot be used.



- If the manual override is turned by 180° clockwise and the ► mark is adjusted to A, then pushed in the direction of an arrow (►), it will be locked in the set condition. (passage P → A)
- If the manual override is turned by 180° counterclockwise and the ► mark is adjusted to B, then pushed in the direction of an arrow (►), it will be back to the reset condition. (passage P → B). (It is in the reset state at the time of shipment.)

Caution

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

Series VQZ Body Ported Option

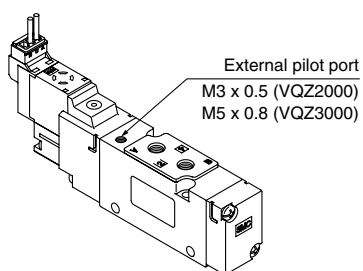
External Pilot Specifications (Except VQZ1000)

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

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

How to Order Manifold VQZ2120R—5M—C6

- External pilot specifications



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 Only VQZ3000, 3 position 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 sizes of One-touch fittings and NPT, NPTF and G thread are available.

How to Order Manifold

VQZ2120—5M—N7 T

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

Nil	Rc
N	NPT
T	NPTF
F	G

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

Note 2) Except VQZ1000

- Cylinder port

Symbol	N1	N3	N7	N9	N11	M5	02
Applicable tubing O.D. (Inch)	ø 1/8"	ø 5/32"	ø 1/4"	ø 5/16"	ø 3/8"	M5 thread	1/4 thread
A, B port	VQZ1000	●	●	●	—	●	—
	VQZ2000	—	●	●	—	●	—
	VQZ3000	—	—	●	●	—	●

Note) Metric sizes of One-touch fittings (C□) are also available.

How to Order Manifold

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

VV5QZ22—05C—00T

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

Nil	Rc
00N	NPT
00T	NPTF
00F	G

Dusttight/Low Jetproof Type (IP65)

DIN terminal is available with Dusttight/Low jetproof (IP65) type.

How to Order Valves

(Applicable to VQZ2000/3000 rubber seal with the exception of the external pilot type)

VQZ3121—5YZB W—02

- IP65 compliant

Nil	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>

DC positive common

- Single AXT661-14A-□
- Latching AXT661-13A-□
- DC (—COM)
- Latching AXT661-13AN-□
- For 100 V, 110 VAC
- Single AXT661-31A-□
- Latching AXT661-32A-□
- For 200 V, 220 VAC
- Single AXT661-34A-□
- Latching AXT661-35A-□
- Only connector and sockets (3 pcs.)
- AXT661-12A

Lead wire length

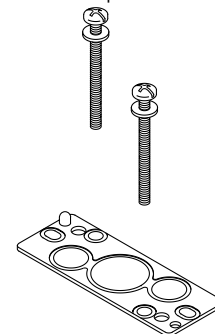
Nil	300 mm
6	600 mm
10	1000 mm
20	2000 mm
30	3000 mm
50	5000 mm

Standard wire length of valve with plug connector is 300 mm.
When requiring valve with 600 mm length lead wire specify the model number of valve without plug connector and plug connector assembly.

Gasket and Screw Assembly

	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>

VQ11 1 □ 5 G □

Series

1	VQZ1000/2000/3000
0	Latching

Function

Symbol	Specifications	DC	AC
Nil	Standard	(1.0 W)	○
K ⁽¹⁾	High pressure (Metal seal only)	(1.0 W)	—
Y	Low wattage type	(0.5 W)	—
L ⁽³⁾	Latching type	(1.0 W)	○
N ⁽⁴⁾	Negative common type	○	—

Note 1) Option
Note 2) When two or more symbols are specified, indicate them alphabetically.

Note 3) K (High pressure) and Y (Low wattage) are not available.
Electrical entry: L/M plug connector only.

Note 4) Applicable to latching type.

Coil voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)
4	220 VAC (50/60 Hz)
5	24 VDC
6	12 VDC
9 ^{Note)}	Other

Note) For the special voltages, please consult with SMC.

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

Nil	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
G	Grommet (DC specifications)	None
L	L plug connector with lead wire	Yes
LO	L plug terminal without connector	
M	M plug connector with lead wire	
MO	M plug terminal without connector	None
Y ^{Note)}	DIN terminal	
YO ^{Note)}	DIN terminal without connector	
YZ ^{Note)}	DIN terminal with light/surge voltage suppressor	Yes
YS ^{Note)}	DIN terminal with surge voltage suppressor	Yes (W/o indicator light)
YOS ^{Note)}	DIN terminal with surge voltage suppressor, without connector	Yes (W/o indicator light)

Note) DIN is applicable to VQZ2000/3000.

Bracket Assembly

	Part no.	Tightening torque ^{Note)} (N·m)
VQZ1000	Metal seal VQZ1000-FB-M	0.2 to 0.26
	Rubber seal VQZ1000-FB-R	
VQZ2000	VQZ2000-FB	0.25 to 0.35
VQZ3000	VQZ3000-FB	0.25 to 0.35

Note) Tightening torque when mounting a bracket on the valve.