VQC

SQ

VQ0

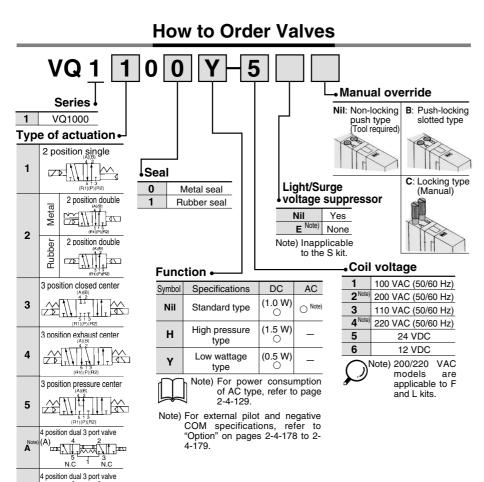
VQ4

VQ5

VQZ

VQD

Plug-in Unit Series VQ1000

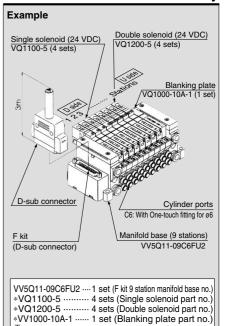


Note) Rubber seal type only

(B) A THE STATE OF N_{.O}

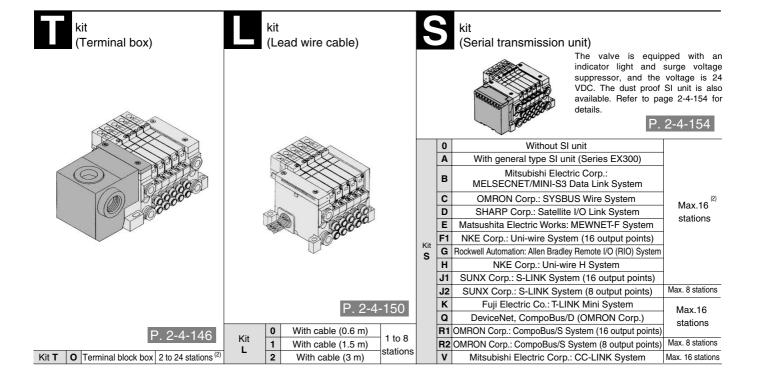
N.O position dual 3 port valve

How to Order Manifold Assembly



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

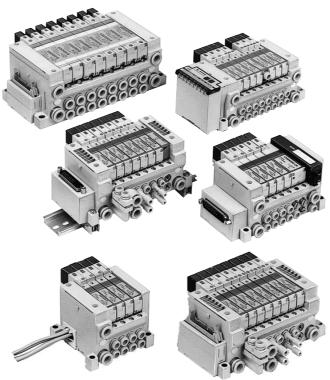
Specify the part numbers for valves and options together beneath the manifold base part number. Besides, when the arrangement will be complicated, specify them by means of the manifold specification sheet.



Series VQ1000/2000

Base Mounted

Plug-in Unit



Model

						Flov	/ chara	cteristics (1)			Resp	onse time (m	s) ⁽²⁾	- Mai-
Series	1	lumber of Model solenoids		el	$1 \rightarrow 2/4 \ (P \rightarrow A/B)$ $2/4 \rightarrow 3/5 \ (A/B)$			$A/B \rightarrow R1/R2)$		Standard: 1 W	Low wattage:		Weight (g)	
	"	·		_	C [dm³/(s·bar)] b Cv C [dm		C [dm³/(s·bar)]	b Cv		H: 1.5 W	0.5 W	AC	(9)	
	_	0: 1	Metal seal	VQ1100	0.70	0.15	0.16	0.72	0.25	0.18	12 or less	15 or less	29 or less	64
	sition	Single	Rubber seal	VQ1101	0.85	0.20	0.21	1.0	0.30	0.25	15 or less	20 or less	34 or less	04
	2 position	Double	Metal seal	VQ1200	0.70	0.15	0.16	0.72	0.25	0.18	10 or less	13 or less	13 or less	
		Double	Rubber seal	VQ1201	0.85	0.20	0.21	1.0	0.30	0.25	15 or less	20 or less	20 or less	
		Closed	Metal seal	VQ1300	0.68	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	
VQ1000	ے	center	Rubber seal	VQ1301	0.70	0.20	0.16	0.65	0.42	0.18	25 or less	33 or less	47 or less	
VQ1000	position	Exhaust	Metal seal	VQ1400	0.68	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	78
	3 pc	center	Rubber seal	VQ1401	0.70	0.20	0.16	1.0	0.30	0.25	25 or less	33 or less	47 or less	
		Pressure center	Metal seal	VQ1500	0.70	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	
			Rubber seal	VQ1501	0.85	0.20	0.21	0.65	0.42	0.18	25 or less	33 or less	47 or less	
	4 position	Dual 3 port valve	Rubber seal	VQ1 ^A _C 01	0.70	0.20	0.16	0.70	0.20	0.16	25 or less	33 or less	47 or less	
	_	a	Metal seal	VQ2100	2.0	0.15	0.46	2.6	0.15	0.60	22 or less	29 or less	49or less	- 90
	itior	Single	Rubber seal	VQ2101	2.2	0.28	0.55	3.2	0.30	0.80	24 or less	31 or less	51or less	9
	2 position	Double	Metal seal	VQ2200	2.0	0.15	0.46	2.6	0.15	0.60	15 or less	20 or less	20 or less	
		Double	Rubber seal	VQ2201	2.2	0.28	0.55	3.2	0.30	0.80	20 or less	26 or less	26 or less	
		Closed	Metal seal	VQ2300	2.0	0.15	0.46	2.0	0.18	0.46	29 or less	38 or less	58 or less	
VQ2000	8	center	Rubber seal	VQ2301	2.0	0.28	0.49	2.2	0.31	0.60	34 or less	44 or less	64 or less	
VQ2000	position	Exhaust	Metal seal	VQ2400	2.0	0.15	0.46	2.6	0.15	0.60	29 or less	38 or less	58 or less	110
e e	3 p	center	Rubber seal	VQ2401	2.0	0.28	0.49	3.2	0.30	0.80	34 or less	44 or less	64 or less] ''
		Pressure	Metal seal	VQ2500	2.4	0.17	0.57	2.0	0.18	0.46	29 or less	38 or less	58 or less]
		center	Rubber seal	VQ2501	3.2	0.28	0.80	2.2	0.31	0.60	34 or less	44 or less	64 or less	
	Dual 3 port valve	Rubber seal	VQ2B01	1.8	0.28	0.46	1.8	0.28	0.46	34 or less	44 or less	64 or less		

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

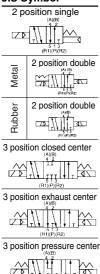
Note 2) As per JIS B 8375-1981 (Supply pressure; 0.5 MPa; with indicator light/surge voltage suppressor; clean air)

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



Plug-in Unit Series VQ1000/2000

JIS Symbol



Standard Specifications

	Valve construction		Metal seal	Rubber seal		
	Fluid		Air/Inert gas	Air/Inert gas		
	Maximum operating	n pressure	0.7 MPa (High pressure type: 0.8 MPa)			
દ	waxiinum operating		0.1 MPa	0.15 MPa		
ation	Minimum	Single				
iji Hi	operating pressure	Double	0.1 MPa	0.1 MPa		
960		3 position	0.1 MPa	0.2 MPa		
Valve specifications	Ambient and fluid to	emperature	-10 to	50°C ⁽¹⁾		
Valv	Lubrication		Not	required		
	Manual override		Push type/Locking type (Tool required, Manual type) Option			
	Impact/Vibration re	sistance (2)	150/30 m/s²			
	Enclosure		Dust-protected, Dust tight/Low jetproof type (IP65) (5)			
	Coil rated voltage		12 , 24 VDC, 100, 110, 200, 220 VAC (50/60 Hz)			
	Allowable voltage f	luctuation	±10% of rated voltage			
	Coil insulation type		Class B or equivalent			
ē		24 VDC	1 W DC (42 mA), 1.5 W DC	(63 mA) ⁽³⁾ , 0.5 W DC (21 mA) ⁽⁴⁾		
Solenoid		12 VDC	1 W DC (83 mA), 1.5 W DC ((125 mA) ⁽³⁾ , 0.5 W DC (42 mA) ⁽⁴⁾		
S	Power	100 VAC	Inrush 1.2 VA (12 mA), Holding 1.2 VA (12 mA)		
	consumption (Current)	110 VAC	Inrush 1.3 VA (12 mA), Holding 1.3 VA (12 mA)			
	, ,	200 VAC	Inrush 2.4 VA (12 mA), Holding 2.4 VA (12 mA)		
		220 VAC	Inrush 2.6 VA (12 mA), Holding 2.6 VA (12 mA)			

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-

2 to 20 stations

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 Note 3) Value for high voltage type (1.5 W)
Note 4) Value for low voltage type (0.5 W)
Note 5) Dustlight/Low jetproof type (IP65) is available on T, L, S and M kits of VQ2000.

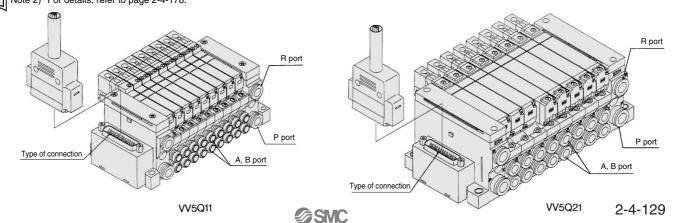
Manifold Specifications

				rung specificatio	115	(2)		5 station	
Series	Base model	Type of connection	David In antinu	Port	size (1)	Applicable stations	Applicable solenoid valve	weight	
			Port location	1(P), 3(R)	4(A), 2(B)	Stations	Soleliold valve	(g)	
		■ F kit–D-sub connector							
		■ P kit–Flat ribbon cable connector		00 (-0)	00 (0.0)	F, P, T kits			
		■ J kit–Flat ribbon cable connector (20P)		C8 (Ø8) Option Built-in silencer,	C3 (ø3.2)	2 to 24 stations		628	
VQ1000	VV5Q11-□□□	 ■ G kit-Flat ribbon cable connector with terminal block ■ T kit-Terminal box 	Side		C4(Ø4) C6 (Ø6) M5 (M5 thread) C4(Ø4) C5 (Ø6) C6 (Ø6) C6 (Ø6) C7 (D4) C8 thit C9 (D4) C9	2 to 16 stations	VQ1□00 VQ1□01	(Single) 759 (Double,	
		■ L kit–Lead wire cable		\ direct exhaust /			3 position)		
		■ S kit–Serial transmission unit				,			
		■ F kit-D-sub connector ■ P kit-Flat ribbon cable connector		242 (42)		F, P kits 2 to 24 stations			
		■ J kit–Flat ribbon cable connector (20P)		C10 (ø10)	C4 (ø4)	/ J, G, S kit \		1051	
VQ2000	VV5Q21-□□□	■ G kit-Flat ribbon cable connector with terminal block	Side	Option Built-in	C6 (ø6)	2 to 16 stations	VQ2□00	(Single) 1144	
		■ T kit–Terminal box		silencer,	C8 (ø8)	L kit 1 to 8 stations	VQ2□01	(Double,	
		■ L kit-Lead wire cable		\ direct exhaust /	()	/ T kit \	<u>'</u>	3 position)	

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

■ S kit-Serial transmission unit

■ M kit-Multi-connector



VQC

SQ

VQ0 VQ4

VQ5

VQZ

VQD

VQC

SQ

VQ0

VQ4

VQ5

VQZ

VQD

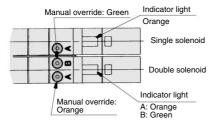
⚠ Precautions 1

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

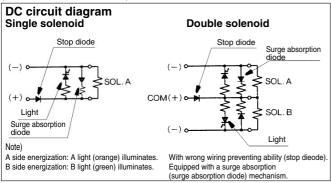
Light/Surge Voltage Suppressor

⚠ Caution

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



(DWG shows a VQ1000 case.)



Manual Override

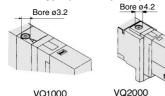
⚠ Warning

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

Push type is standard. (Tool required)

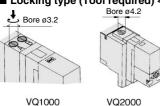
Option: Locking type (Tool required/Manual)

■ Push type (Tool required)



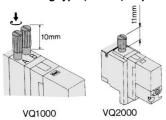
Push down on the manual override button with a small screwdriver until it stops. Release the screwdriver and the manual override will return.

■ Locking type (Tool required) <Option>



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

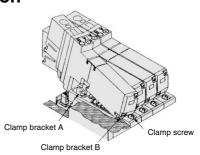
■ Locking type (Manual) <Option>



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

How to Mount/Remove Solenoid Valve

⚠ Caution



Removing

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

Mounting

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

⚠ Caution

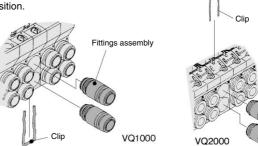
Dust on the sealing surface of the gasket or solenoid valve can cause air leakage.

Replacement of Cylinder Port Fittings

The cylinder port fittings are a cassette for easy replacement.

The fittings are blocked by a clip inserted from the top of manifold. Remove the clip with a screwdriver to remove fittings.

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



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

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

⚠ Caution

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

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

Fittings assembly

⚠ Precautions 2

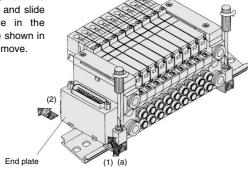
Be sure to read before handling. For Safety Instructions and Solenoid Valve Precautions, refer to page 2-9-2.

Mounting/Removing from the DIN Rail

⚠ Caution

Removing

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

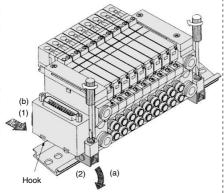


Mounting

- Hook side (b) of the manifold base on the DIN rail.
- 2. Press down side (a) and mount the end plate on the DIN rail.

Tighten the clamp screw on side (a) of the end plate.

The proper tightening torque for screws is 0.4 to 0.6 N·m.



Enclosure IP65

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

Built-in Silencer Replacement Element

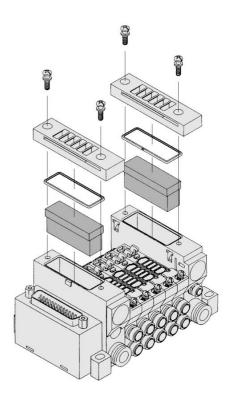
A silencer element is incorporated in the end plate on both sides of the A dirty and choked element may reduce cylinder speed or cause malfunction. Clean or replace the dirty element.

Element Part No.

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

* The minimum order quantity is 10 pcs.

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



How to Calculate the Flow Rate

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

VQC

SQ

VQ0

VQ4

VQ5

VQZ

VQD

Option

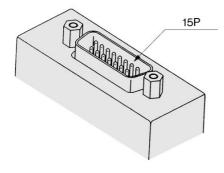
Different Number of Connector Pins

F and P kits with the following number of pins are available besides the standard number (F = 25; P = 26). Select the desired number of pins and cable length from the cable assembly list.

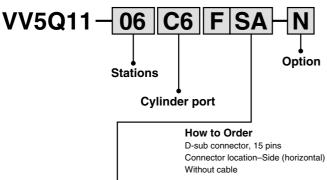




kit (D-sub connector) 15 pins



How to order manifold

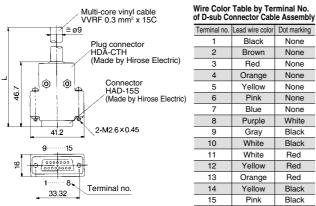


Kit/Electrical entry

Pins Location	Top e	entry	Side entry		
15P (Max. 7 stations)	Kit F	UA	Kit F	SA	

Wiring Specifications

* In the same way as the 25-pin models (standard), the terminal no. 1 is for SOL.A at the 1st station, the terminal no. 9 for SOL.B at the 1st station, and the terminal no. 8 for COM.

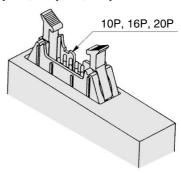


D-sub Connector Cable Assembly

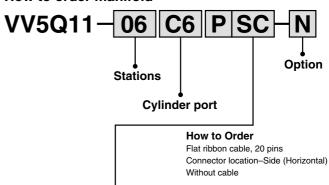
Cable length (L)	15P						
1.5 m	AXT100-DS15-1						
3 m	AXT100-DS15-2						
5 m	AXT100-DS15-3						

^{*} For other commercial connectors, use a type conforming to MIL-C-24308.

kit (Flat ribbon cable connector) 10 pins, 16 pins, 20 pins



How to order manifold

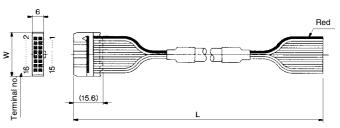


Kit/Electrical entry

Pins	Top entry		Side	entry
10P (Max. 4 stations)	Kit	UA	Kit	SA
16P (Max. 7 stations)	NIL D	UB	D	SB
20P (Max. 9 stations)	F'	UC	, r	SC

Wiring Specifications

* In the same way as the 26-pin models (standard), the terminal no. 1 is for SOL.A at the 1st station, the terminal no. 2 for SOL.B at the 1st station, and two pins from the max. terminal numbers are for COM.



Flat Ribbon Cable Assembly

Cable length (L)	10P	16P	20P
1.5 m	AXT100-FC10-1	AXT100-FC16-1	AXT100-FC20-1
3 m	AXT100-FC10-2	AXT100-FC16-2	AXT100-FC20-2
5 m	AXT100-FC10-3	AXT100-FC16-3	AXT100-FC20-3
Connector width (W)	17.2	24.8	30

^{*} For other commercial connectors, use a type with strain relief conforming to MIL-C-83503.

Series VQ1000/2000

Option

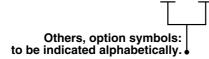
Special Wiring Specifications

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

1. How to Order

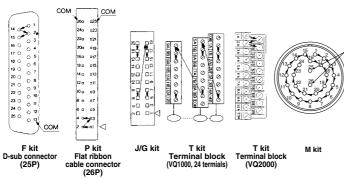
Indicate an option symbol "-K", for the manifold no. and be sure to specify the mounting position and number of stations of the single and double wiring by means of the manifold specification sheet.

Example) VV5Q11-08C6FU1-D K S



2. Wiring specifications

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



3. Max. number of stations

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

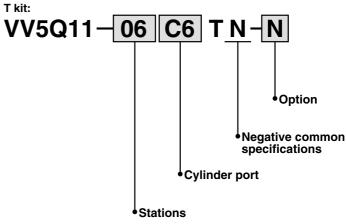
Kit		(D-sub nector)	ca	P Flat riable co	ibbon	r)	J kit (Flat ribbon cable connector)		G kit (Flat ribbon cable with terminal block)
Туре	F _S [25F	F _S A 15P	P _S □ 26P	PSC 20P	P S B 16P	P S / 10F		J ^U □ 20P	G
Max. points	24	14	24	18	14	8		16	16
Kit		(Te	T ki rminal	t block)		(Seria	S kit al transmission)	M kit (Circular connector)
Туре	00100 te	2 rows rminal b		termin	ows of al bloc 24	ks	. S□		M□
Max.	l'	10	20		<u> </u>	+		16	24

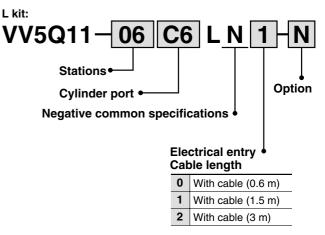
Negative Common Specifications

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



How to order negative COM manifold





External Pilot Specifications

When the supply air pressure is lower than the required minimum operating pressure (0.1 to 0.2 MPa) for the solenoid valve (or when the valve is used for vacuum), specify an external pilot model. Order a manifold or valve by suffixing the external pilot specification, "R".

The X-port of the manifold base is equipped with One-touch fittings for external pilot.

VQ1000: C4 (One-touch fitting for Ø4) VQ2000: C6 (One-touch fitting for Ø6)

How to order manifold

VV5Q11-08C6FU1-R S

Others, option symbols: to be indicated alphabetically.

How to order valves

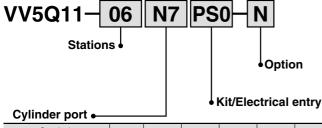


Note 1) When low wattage type is also desired, specify as "RY". Note 2) In this valve pilot exhaust is connected to the EA passage of the

Note 2) In this valve pilot exhaust is connected to the EA passage of the manifold. Therefore, it is not possible to supply air from EXH port, nor vacuum from ports other than SUP port.

Inch-size One-touch Fittings

The valve with inch-size One-touch fittings is shown below.



Syr	mbol	N1	N3	N7	N9	M5T	NM
Applicable tub	ing O.D. (Inch)	ø1/8"	ø5/32"	ø1/4"	ø5/16"	10-32UNF (M5 thread)	Mixed
4(A), 2(B)	VQ1000	•	•	•	_	•	•
port	VQ2000	_	•	•	•		•

Note) When inch-size fittings are selected for the cylinder port, use inch size fittings for both P and R port.

1(P), 3(R) port size VQ1000 ········ ø5/16" (N9) VQ2000 ······· ø3/8" (N11) VQC

SQ

VQ0

VQ4

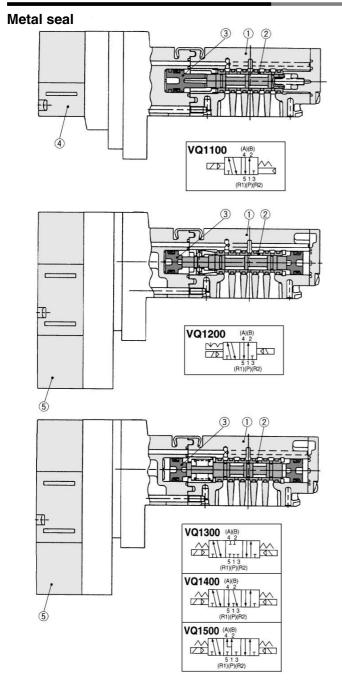
VQ5

VQZ

VQD

Series VQ Construction Main Parts, Replacement Parts

Construction: VQ1000/Plug-in Unit

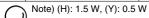


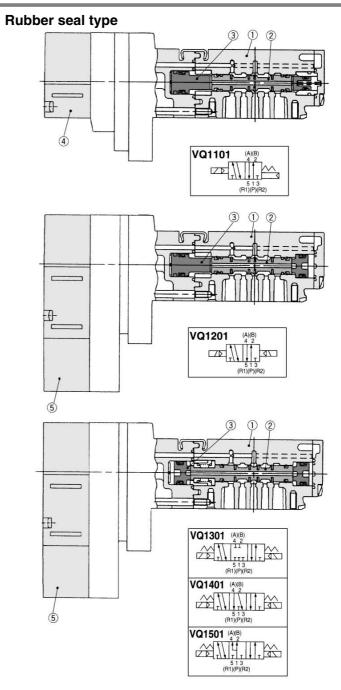
Component Parts

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

Replacement Parts

4	Pilot valve assembly	VQ111 (H)1 -1 Voltage1 to 6	Single
(5)	Pilot valve assembly	(II) Note)	Double/3 position





Component Parts

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

Replacement Parts

4	Pilot valve assembly	VQ111 (H)1 -1 Voltage1 to 6	Single
(5)	Pilot valve assembly	VQ131 ^(H) _(Y) -\(-1 \) Voltage1 to 6	Double/3 position

