5 Port Solenoid Valve

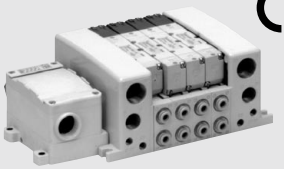
Series VQC4000

Metal Seal **Rubber Seal**

Compact and large flow

Type (Series)	Manifold pitch (mm)	Flow characteristics Note)						Applicable cylinder size (mm)
		Metal seal			Rubber seal			
		C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv	
VQC4000	25	6.9	0.17	1.7	7.3	0.38	2.0	to ø140

Note) Flow characteristics: 2 position single, 4/2 → 5/3 (A/B → R1/R2)



IP67 enclosure compatible Dusttight and immersible type

(Based on IEC60529) (For kits S, T, L and M)

Outstanding response times and long service life

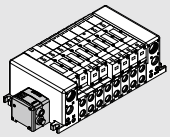
(Metal seal: Single type with light/surge voltage suppressor)

VQC4100: 17 ms ±3 ms; 100 million cycles

Connector type manifold

- The use of multi-pin connectors to replace wiring inside manifold blocks provides flexibility when adding stations or changing manifold configuration.
- All kits use multi-pin connectors, so switching from the F kit (D-sub connector) to the S kit (serial transmission) can be done simply by changing the kit section.

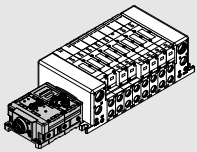
Accommodates gateway-type serial wiring



- Gateway unit types include DeviceNet, PROFIBUS DP, CC-Link, and EtherNet/IP.
- Because just one gateway unit controls up to 4 branch lines, it offers much more freedom in choosing valve mounting locations in comparison to other serial units.
- Manifolds and input blocks can be mounted near the actuator, allowing for use of short air piping or electric wiring.
- The package wiring with connector cable reduces the potential for incorrect wiring and improves wiring efficiency.
- A single cable from the gateway provides both signal and power to each branch, thus eliminating the need for separate power connections for each manifold valve and input block.
- The input block also employs a multi-pin connector so that the number of stations can be changed easily, as with the manifold.

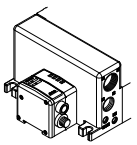
Applicable to EX600 (Input/Output) serial transmission system (Fieldbus system)

- Available for DeviceNet™, PROFIBUS DP, CC-Link, EtherNet/IP™ and EtherCAT Fieldbus protocols
- **Max. 9 units Note) can be connected in any order.**
  The unit to connect input device such as an auto switch, pressure switch and flow switch, and the unit to connect output device such as a solenoid valve, relay and indicator light can be connected in any order.
  Note) Except SI unit
- **Analogue Input Unit can be connected with analogue input device.**
  As well as a Digital (switch) Input/Output Unit, a unit applicable to analogue signal is provided, and can be connected with various device for control.
- **Self-diagnosis function**
  It is possible to ascertain the maintenance period and identify the parts that require maintenance, by an input (sensor) open circuit detecting function and an input/output signal of ON/OFF counter function. Also, the monitoring of input/output signal and the setting of parameters can be performed with a Handheld Terminal.



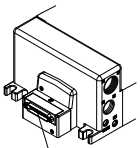
A wide variety of prepackaged wiring configurations

S Kit (Serial transmission)



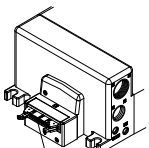
Protective enclosure conforms to IP 67

F Kit (D-sub connector)



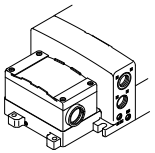
25 pins

P Kit (Flat ribbon cable)



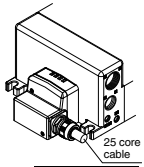
26 pins, 20 pins

T Kit (Terminal block box)



Protective enclosure conforms to IP 67

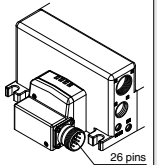
L Kit (Lead wire)



25 core cable

Protective enclosure conforms to IP 67

M Kit (Circular connector)



26 pins

Protective enclosure conforms to IP 67

- Our six standard wiring packages bring a world of ease to wiring and maintenance work, while the protective enclosures of four of them conform to IP67 standards.
- The S Kit is compatible with a combined I/O unit. (Not applicable to Gateway unit)

Series VQC4000
Base Mounted: Variations

			Sonic Conductance C[dm³/(s·bar)] (Values: CYL → EXH 4/2 → 5/3)		Applicable bore size	S Kit — Serial transmission				
			Single/Double	3 position (Closed center)		Compatible network • DeviceNet™ • PROFIBUS DP • CC-Link • EtherNet/IP™ • EtherCAT — I/O	Gateway application — Compatible network • DeviceNet™ • PROFIBUS DP • EtherNet/IP™ — Decentralized Serial Wiring	Compatible network • DeviceNet™ • PROFIBUS DP • CC-Link • EtherCAT • PROFINET — Output	Compatible network • DeviceNet™ • PROFIBUS DP • CC-Link • AS-Interface • CANopen • EtherNet/IP™ — I/O	Compatible network • CC-Link — Output
						Gateway application requires a gateway unit and communication cable separately. Please contact SMC for more details.				
						Serial unit: EX600 IP67 compliant	Serial unit: EX500 IP67 compliant	Serial unit: EX260 IP40 compliant IP67 compliant	Serial unit: EX250 IP67 compliant	Serial unit: EX126 IP67 compliant
Series VQC4000	Metal seal	VQC4□00	6.9	6.3	to ø140	○	○	○	○	○
	Rubber seal	VQC4□01	7.3	6.4						

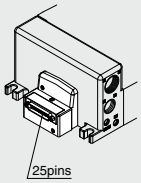
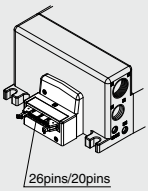
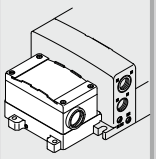
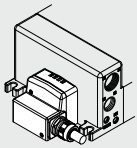
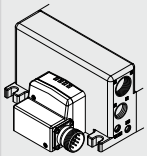
Cylinder Average Speed

This chart is provided as guidelines only.
For performance under various conditions, use SMC's Model Selection Program before making a judgment.

Series	Average speed (mm/s)	Bore size													
		Series CJ2 Pressure 0.5 MPa Load ratio 50% Stroke 60 mm			Series CM2 Pressure 0.5 MPa Load ratio 50% Stroke 300 mm				Series MB, CA2 Pressure 0.5 MPa Load ratio 50% Stroke 500 mm					Series CS1/CS2 Pressure 0.5 MPa Load ratio 50% Stroke 1000 mm		
		ø6	ø10	ø16	ø20	ø25	ø32	ø40	ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160
VQC4000	800															
	700															
	600															
	500															
	400															
	300															
	200															
	100															
	0															

Vertically upward
Horizontal

∗ Values at extension of a directly coupled cylinder when meter-out speed controllers are used with the needle full open.
∗ The average speed of the cylinder is obtained by dividing the stroke by the total stroke time.
∗ The load ratio is obtained by the following formula: ((Load mass x 9.8)/Theoretical output) x 100%

	F Kit	**P** Kit	**T** Kit	**L** Kit	**M** Kit	Port size	
	D-sub connector	**Flat ribbon cable**	**Terminal block box**	**Electrical entry**	**Circular connector**		
	D-sub connector Compatible with D-sub connector that complies with MIL standard.  25pins	**Flat ribbon cable** Compatible with flat ribbon cable connector that complies with MIL standard.  26pins/20pins	**Terminal block box** **(Terminal blocks)** Terminals are concentrated in compact clusters within the terminal block box.  **IP67 compliant**	**Lead wire** IP67 enclosure with use of multiple wire cable with sheath and waterproof connector  **IP67 compliant**	**Circular connector** IP67 enclosure with use of waterproof multiple connector  **IP67 compliant**	**SUP EXH port** **1, 3 (P, R)**	**Cylinder port** **2, 4 (A, B)**
	○	○	○	○	○	<SUP port> Rc 1/2 (NPT, NPTF, G) <EXH port> Rc 3/4 (NPT, NPTF, G)	C8 (For ø8) C10 (For ø10) C12 (For ø12) N7 (ø1/4") N9 (ø5/16") N11 (ø3/8") Rc 1/4 Rc 3/8 Rc 1/4 (Bottom ported) (NPT, NPTF, G)

Conditions

Base mounted		Series CJ2	Series CM2	Series MB, CA2	Series CS1/CS2
VQC4000	Tube x Length	T0604 x 1 m	T1075 x 1 m	T1209 x 1 m	
	Speed controller	AS3001F-06	AS4001F-10	AS4001F-12	
	Silencer	AN40-04			AN40-04

Conditions (With SGP (Stainless steel gas piping))

Body ported		Series MB, CA2	Series CS1/CS2
VQC4000	Tube x Length	SGP10A x 1 m	
	Speed controller	AS420-03	
	Silencer	AN40-04	

Base Mounted
Plug-in Unit
Series VQC4000

How to Order Manifold

VV5QC 4 1 – 08 02 ❸ TD0 ❹ ⋯⋯ ⓫ F·L·M / P·T Kit

VV5QC 4 1 – 16 02 ❸ SDQW ❺ ❻ ❼ ❽ ❾ ❿ – ⓫ S Kit

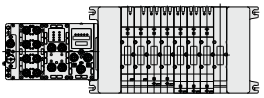
- **Series VQC4000**
- **Base mounted plug-in**
- **Enter EX600-compliant / Enter only for S kit** ❺ ❻ ❼ ❽ ❾ ❿
- **Enter EX250-compliant / Enter only for S kit** ⓫

❶ Stations

01	1 station
⋮	⋮
16	16 stations

The minimum or maximum number of stations differs depending on the electrical entry. (Refer to ④)

Note) In the case of compatibility with the S kit/As Interface Athe maximum number of solenoids is as shown below, so please be careful of the number of stations.
8 in/8 out: Maximum 8 solenoids
4 in/4 out: Maximum 4 solenoids



∗ Stations are counted from station 1 on the D-side.

❷ Cylinder port size

C8	With ø8 One-touch fitting
C10	With ø10 One-touch fitting
C12	With ø12 One-touch fitting
02	Rc 1/4 Note)
03	Rc 3/8 Note)
B	Bottom ported Rc 1/4 Note)
CM	Mixed

Note) Besides Rc, also compatible with G, NPT/NPTF. Part number displayed is as shown below.

❸ Thread type

Nil	Rc
F	G
T	NPT/NPTF

❺ End plate type

(Enter EX600-compliant S kit only.)

Nil	Without end plate
2	M12 connector power supply (Max. supply current 2A)
3	7/8 inch connector power supply (Max. supply current 8A)

Note) Without SI unit, the symbol is nil.

❻ SI unit output polarity

SI unit output polarity		EX250 integrated-type (for I/O) serial transmission system					
		DeviceNet™	PROFIBUS DP	CC-Link	AS-Interface	CANopen	EtherNet/IP™
Nil	+ COM	—	—	○	—	—	—
N	– COM	○	○	—	○	○	○

SI unit output polarity		EX260 integrated-type (for output) serial transmission system					
		DeviceNet™	PROFIBUS DP	CC-Link	EtherCAT	PROFINET	EtherNet/IP™
Nil	+ COM	○	○	○	○	○	○
N	– COM	○	○	○	○	○	○

SI unit output polarity		EX500 gateway-type serial transmission system		
		DeviceNet™	PROFIBUS DP	EtherNet/IP™
Nil	+ COM	○	○	○
N	– COM	○	○	○

SI unit output polarity		EX600 integrated-type (for I/O) serial transmission system (Fieldbus system)				
		DeviceNet™	PROFIBUS DP	CC-Link	EtherNet/IP™	EtherCAT
Nil	+ COM	○	○	○	○	○
N	– COM	○	○	○	○	○

Note) Leave the box blank for the SI unit COM without SI unit (SDO□).

❼ I/O unit stations

(Enter EX600-compliant S kit only.)

Nil	None
1	With 1 input block
⋮	⋮
9	With 9 input blocks

Note 1) Without SI unit, the symbol is nil.
Note 2) SI unit is not included in I/O unit stations.
Note 3) When I/O unit is selected, it is shipped separately, and assembled by customer. Refer to the attached operation manual for mounting method.
Note 4) Refer to page 1250 for details of the enclosure.

❽ Number of input blocks

(Enter only for S kit compliant with EX250)

Symbol	No. of blocks
Nil	Without SI unit (SD0)
0	Without input block
1	With 1 input block
⋮	⋮
4	With 4 input blocks
⋮	⋮
8	With 8 input blocks

❾ Number of input blocks

(Enter only for S kit compliant with EX250)

Nil	Without input block
1	M12, 2 inputs
2	M12, 4 inputs
3	M8, 4 inputs

❿ Input block COM

(Enter only for S kit compliant with EX250)

Nil	PNP sensor input or without input block
N	NPN sensor input

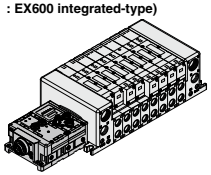
⓫ Option

Nil	None
K	Special wiring specifications (except for double wiring)
N	With name plate (available for T kit only)

❹ Kit Designation/Electrical Entry/Cable Length

∗ Numbers in parentheses represent the maximum number of solenoids in the case of mixed single and double wiring. The total number of solenoids determines the maximum number of stations. When ordering mixed wiring, please add the option symbol "-K".

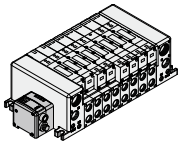
S Kit (Serial transmission kit (Fieldbus system) : EX600 integrated-type)



SI unit: **EX600** IP67 compliant

SD60	Serial kit without SI unit	1 to 16 stations (24)
SD6Q	Serial kit for DeviceNet™	
SD6N	Serial kit for PROFIBUS-DP	
SD6V	Serial kit for CC-LINK	
SD6ZE	EtherNet/IP	
SD6D	EtherCAT	

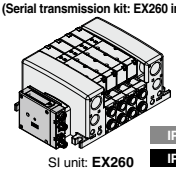
S Kit (Serial transmission kit: EX500 gateway-type)



SI unit: **EX500** IP67 compliant

SD0A	Serial kit without SI unit	1 to 16 stations (16)
SDA2	Device Net™, PROFIBUS DP, EtherNet/IP	

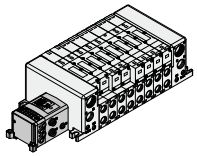
S Kit (Serial transmission kit: EX260 integrated-type (I/O))



IP40 compliant
SI unit: **EX260** IP67 compliant

Symbol	Protocol	Number of outputs	Communication connector	Stations
SD0A	Serial kit without SI unit			1 to 16 stations (24)
SQA	DeviceNet™	32	M12	
SQB		16		1 to 16 stations (16)
SNA	PROFIBUS DP	32	M12	1 to 16 stations (24)
SNB		16		1 to 16 stations (16)
SNC		32	D-sub[Note 2]	1 to 16 stations (24)
SND		16		1 to 16 stations (16)
SVA	CC-Link	32	M12	1 to 16 stations (24)
SVB		16		1 to 16 stations (16)
SDA	EtherCAT	32	M12	1 to 16 stations (24)
SDB		16		1 to 16 stations (16)
SFA	PROFINET	32	M12	1 to 16 stations (24)
SFB		16		1 to 16 stations (16)
SEA	EtherNet/IP™	32	M12	1 to 16 stations (24)
SEB		16		1 to 16 stations (16)

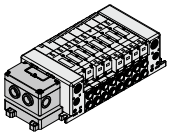
S Kit (Serial transmission kit: EX250 integrated-type (for I/O))



SI unit: **EX250** IP67 compliant

SD0	Serial kit without SI unit	1 to 16 stations (24)
SDQ	Serial kit for DeviceNet™	
SDN	Serial kit for PROFIBUS-DP	
SDV	Serial kit for CC-LINK	
SDTA	AS-i, 8 in/out, 31 slave modes, 2 power supply systems	1 to 8 stations (8)
SDTB	AS-i, 4 in/out, 31 slave modes, 2 power supply systems	1 to 4 stations (4)
SDTC Note 1)	AS-i, 8 in/out, 31 slave modes, 1 power supply systems	1 to 8 stations (8)
SDTD Note 1)	AS-i, 4 in/out, 31 slave modes, 1 power supply systems	1 to 4 stations (4)
SDY	For CANopen	1 to 16 stations (24)
SDZEN	For EtherNet/IP	

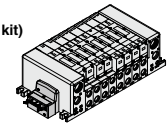
S Kit (Serial transmission kit: EX126 integrated-type (for output))



SI unit: **EX126** IP67 compliant

SDVB	Serial kit for CC-LINK	1 to 16 stations (16)

P Kit (Flat ribbon cable kit)

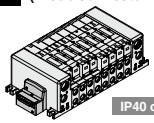


IP40 compliant

Note) For a 20P flat ribbon cable, the cable assembly must be ordered separately.

PD0	Flat ribbon cable kit (26P) without cable	1 to 16 stations (24)
PD1	Flat ribbon cable kit (26P) with 1.5 m cable	
PD2	Flat ribbon cable kit (26P) with 3.0 m cable	
PD3	Flat ribbon cable kit (26P) with 5.0 m cable	
PDC	Flat ribbon cable kit (20P) without cable (1)	1 to 16 stations (18)

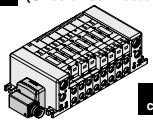
F Kit (D-sub connector kit)



IP40 compliant

FD0	D-sub connector kit (25P) without cable	1 to 16 stations (24)
FD1	D-sub connector kit (25P) with 1.5 m cable	
FD2	D-sub connector kit (25P) with 3.0 m cable	
FD3	D-sub connector kit (25P) with 5.0 m cable	

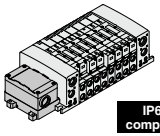
M Kit (Circular connector kit)



IP67 compliant

MD0	Circular connector kit (26P) without cable	1 to 16 stations (24)
MD1	Circular connector kit (26P) with 1.5 m cable	
MD2	Circular connector kit (26P) with 3.0 m cable	
MD3	Circular connector kit (26P) with 5.0 m cable	

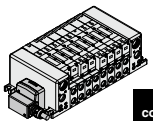
T Kit (Terminal block box kit)



IP67 compliant

TD0	Terminal block box kit	1 to 16 stations (20)

L Kit (Lead wire kit)



IP67 compliant

LD0	Lead wire kit (25 core) 0.6 m lead wire	1 to 16 stations (24)
LD1	Lead wire kit (25 core) 1.5 m lead wire	
LD2	Lead wire kit (25 core) 3.0 m lead wire	

∗ The maximum number of solenoids displayed in parentheses is applied to the special wiring specification (Option "-K").

Note 1) When selecting SI units with SDTC or SDTD specifications, there are limits to the supply current from the SI unit to the input block or valve. Refer to page 2077 for details.

Note 2) When selecting D-sub S kit specifications only, IP40 is compatible. (All other SI units are IP67 compliant.)

Note 3) For the SI unit part no., refer to page 1222.

How to Order Valves

VQC 4 1 0 0 □ – 5 □ □

Series VQC4000 (A) (B) (C) (D) (E) (F)

(A) Type of actuation

1	2 position single (A) (B) 4 2 5 1 3 (R1) (P) (R2)	**4**	3 position exhaust center (A) (B) 4 2 5 1 3 (R1) (P) (R2)
2	2 position double (metal) (A) (B) 4 2 5 1 3 (R1) (P) (R2)	**5**	3 position pressure center (A) (B) 4 2 5 1 3 (R1) (P) (R2)
	2 position double (rubber) (A) (B) 4 2 5 1 3 (R1) (P) (R2)	**6**	3 position perfect (A) (B) 4 2 5 1 3 (R1) (P) (R2)
3	3 position closed center (A) (B) 4 2 5 1 3 (R1) (P) (R2)		

(B) Seal type

0	Metal seal
1	Rubber seal

(C) Function

Nil	Standard type (1 W)
R	External pilot
Y	Low wattage type (0.5 W)

Note 1) When specifying more than one option, enter symbols in alphabetical order.
Note 2) Please select when you expect to energize the unit for extended periods of time. Refer to page 3 for details.

(D) Coil voltage

5	24 VDC Note)
6	12 VDC

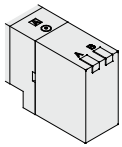
Note) S kit is only available for 24 VDC.

(E) Light/Surge voltage suppressor

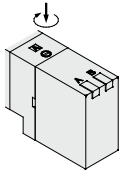
Nil	With
E	Without light, with surge voltage supressor

(F) Manual override

Nil: Non-locking push type (Tool required)



B: Locking type (Tool required)



SI unit Part No. Table

EX600

Symbol	Protocol type	Serial unit No.		Page
		– COM. (PNP)	+ COM. (NPN)	
SD6Q	DeviceNet™	EX600-SDN1A	EX600-SDN2A	P.1243
SD6N	PROFIBUS DP	EX600-SMJ1	EX600-SMJ2	
SD6V	CC-Link	EX600-SPR1A	EX600-SPR2A	
SD6ZE	EtherNet/IP™	EX600-SEN1	EX600-SEN2	
SD6D	EtherCAT	EX600-SEC1	EX600-SEC2	

EX260

Symbol	Protocol type	Number of outputs	Serial unit No.		Communication connector	Page
			– COM. (PNP)	+ COM. (NPN)		
SQA	DeviceNet™	32	EX260-SDN1	EX260-SDN2	M12	P.1243
SQB		16	EX260-SDN3	EX260-SDN4		
SNA	PROFIBUS DP	32	EX260-SPR1	EX260-SPR2		
SNB		16	EX260-SPR3	EX260-SPR4		
SNC		32	EX260-SPR5	EX260-SPR6	D-sub	
SND		16	EX260-SPR7	EX260-SPR8		
SVA	CC-Link	32	EX260-SMJ1	EX260-SMJ2	M12	
SVB		16	EX260-SMJ3	EX260-SMJ4		
SDA	EtherCAT	32	EX260-SEC1	EX260-SEC2	M12	
SDB		16	EX260-SEC3	EX260-SEC4		
SFA	PROFINET	32	EX260-SPN1	EX260-SPN2	M12	
SFB		16	EX260-SPN3	EX260-SPN4		
SEA	EtherNet/IP™	32	EX260-SEN1	EX260-SEN2	M12	
SEB		16	EX260-SEN3	EX260-SEN4		

EX126

Symbol	Protocol type	Serial unit No.	Page
SDVB	CC-Link (+ COM.) (NPN)	EX126D-SMJ1	P.1244

EX500

Symbol	Protocol type	Serial unit No.		Page
		+ COM. (NPN)	– COM. (PNP)	
SDA2	DeviceNet™	EX500-Q001	EX500-Q101	P.1243
	PROFIBUS DP			
	EtherNet/IP™			

EX250

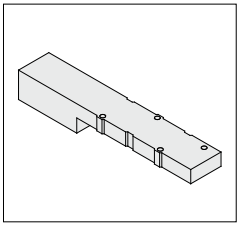
Symbol	Protocol type	Serial unit No.	Page
SDQ	DeviceNet™ (– COM.) (PNP)	EX250-SDN1	P.1244
SDN	PROFIBUS DP (– COM.) (PNP)	EX250-SPR1	
SDV	CC-Link (+ COM.) (NPN)	EX250-SMJ2	
SDTA	AS-Interface (– COM.) (PNP), (8 in/8 out, 31 slave modes, 2 power supply systems)	EX250-SAS3	
SDTB	AS-Interface (– COM.) (PNP), (4 in/4 out, 31 slave modes, 2 power supply systems)	EX250-SAS5	
SDTC	AS-Interface (– COM.) (PNP), (8 in/8 out, 31 slave modes, 1 power supply systems)	EX250-SAS7	
SDTD	AS-Interface (– COM.) (PNP), (4 in/4 out, 31 slave modes, 1 power supply systems)	EX250-SAS9	
SDY	CANopen (– COM.) (PNP)	EX250-SCA1A	
SDZEN	EtherNet/IP™ (– COM.) (PNP)	EX250-SEN1	

Refer to page 2087 and Operation Manual, for details on the EX600 integrated-type (I/O).
Refer to pages 2111, 2074, and 2055 and Operation Manual for details on the EX500 gateway-type serial transmission system, EX250 integrated-type (I/O) serial transmission system and EX126 integrated-type (for output) serial transmission system respectively.
For details about EX260 integrated type (for output), refer to page 2063 and Operation Manual. Please download the Operation Manual via SMC's website, http://www.smcworld.com

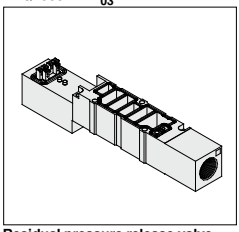
Manifold Options

Refer to the catalog of series VQ4000 for further information of options.

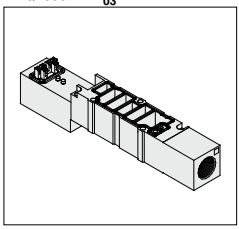
Blanking plate assembly
VVQ4000-10A-1



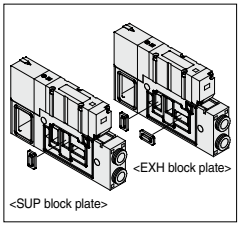
Individual SUP spacer
VVQ4000-P-1- $^{02}_{03}$



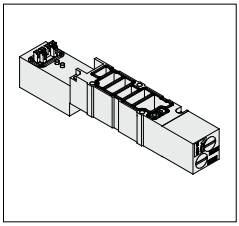
Individual EXH spacer
VVQ4000-R-1- $^{02}_{03}$



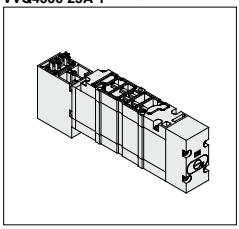
SUP/EXH block plate
VVQ4000-16A



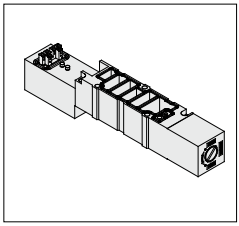
Throttle valve spacer
VVQ4000-20A-1



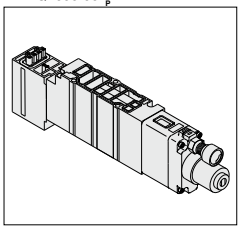
Residual pressure release valve perfect spacer
VVQ4000-25A-1 Note 1)



SUP stop valve spacer
VVQ4000-37A-1



Interface regulator
ARBQ4000-00- $^{B}_{P}$**-1**

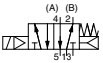


Note 1) Perfect spacers with residual pressure release valve cannot be combined with external pilot specifications.

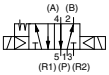
Series VQC4000 Base Mounted
Plug-in Unit

Symbol

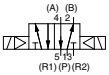
2 position single



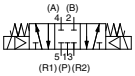
2 position double (metal)



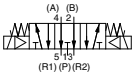
2 position double (rubber)



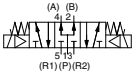
3 position closed center



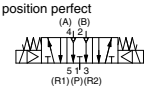
3 position exhaust center



3 position pressure center



3 position perfect



Model

Series	No. of solenoids		Model		Flow characteristics 1 → 4, 2 (P → A, B) C[dm³/(s·bar)]	b	Cv	Flow characteristics 4, 2 → 5, 3 (A, B → R1, R2) C[dm³/(s·bar)]	b	Cv	Response time (ms) Note 2) Standard: 1 W	Response time (ms) Note 2) Low wattage	Weight (g)
VQC4000	2 position	Single	Metal seal	VQC4100	6.2	0.19	1.5	6.9	0.17	1.7	20 or less	22 or less	230
			Rubber seal	VQC4101	7.2	0.43	2.1	7.3	0.38	2.0	25 or less	27 or less	
		Double	Metal seal	VQC4200	6.2	0.19	1.5	6.9	0.17	1.7	12 or less	12 or less	260
			Rubber seal	VQC4201	7.2	0.43	2.1	7.3	0.38	2.0	15 or less	15 or less	
	3 position	Closed center	Metal seal	VQC4300	5.9	0.23	1.5	6.3	0.18	1.6	45 or less	47 or less	280
			Rubber seal	VQC4301	7.0	0.34	1.9	6.4	0.42	1.9	50 or less	52 or less	
		Exhaust center	Metal seal	VQC4400	6.2	0.18	1.5	6.9	0.17	1.7	45 or less	47 or less	
			Rubber seal	VQC4401	7.0	0.38	1.9	7.3	0.38	2.0	50 or less	52 or less	
		Pressure center	Metal seal	VQC4500	6.2	0.18	1.9	6.4	0.18	1.6	45 or less	47 or less	
			Rubber seal	VQC4501	7.0	0.38	1.9	7.1	0.38	2.0	50 or less	52 or less	
		Perfect	Metal seal	VQC4600	2.7	—	—	3.7	—	—	55 or less	57 or less	500
			Rubber seal	VQC4601	2.8	—	—	3.9	—	—	62 or less	64 or less	

Note 1) VQC4000: Cylinder port size Rc 3/8

Note 2) Values represented in this column are based on JIS B 8375-1981 (operating with clean air and a supply pressure of 0.5 MPa. Equipped with light/surge voltage suppressor. Values vary depending on the pressure as well as the air quality.) Values for double types are when the switch is ON.

Standard Specifications

Valve specifications	Valve Configuration		Metal seal	Rubber seal
	Fluid		Air/Inert gas	
	Max. operating pressure Note 3)		1.0 MPa (0.7 MPa)	
	Min. operating pressure	Single	0.15 MPa	0.2 MPa
		Double	0.15 MPa	
		3 position	0.15 MPa	0.2 MPa
	Proof pressure		1.5 MPa	
	Ambient and fluid temperature		–10 to 50°C Note 1)	
	Lubrication		Not required	
	Manual override		Push type/Locking type (tool required) option	
	Impact/Vibration resistance		150/30 m/s² Note 2)	
	Enclosure		Dust proof (IP67 compliant)	
Electrical specifications	Rated coil voltage		24 VDC	
	Allowable voltage fluctuation		±10% of rated voltage	
	Coil insulation type		Equivalent to B type	
	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)	

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

Note 2) **Impact resistance:** No malfunction resulted from the impact test using a drop impact tester. The test was performed one time each in the axial and right angle directions of the main valve and armature, for both energized and de-energized states.

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000Hz. Test was performed in the axial and right angle directions of the main valve and armature for both energized and de-energized states.

Note 3) Values in ( ) are for the low wattage (0.5 W) specification.

Manifold Specifications

Series	Base model	Connection type	Piping specifications: Port direction	Piping specifications: Port size Note 1) 1, 3 (P, R)	Piping specifications: Port size Note 1) 2, 4 (A, B)	Applicable stations Note 2)	Applicable solenoid valves	5 station weight (g)
VQC4000	VV5QC41-□□□	■ F Kit: D-sub connector ■ P Kit: Flat cable ■ T Kit: Terminal block box ■ S Kit: Serial transmission ■ L Kit: Lead wire ■ M Kit: Circular connector	Side	P: Rc 1/2 R: Rc 3/4	C8 (For ø8) C10 (For ø10) C12 (For ø12) Rc 1/4 Rc 3/8	(F, L, M and P kits 1 to 16 stations) (T kit 1 to 16 stations) (S kit 1 to 16 stations: EX250 1 to 16 stations: EX500)	VQC4□00-5 VQC4□01-5	4150 • S kit (without unit) • Solenoid weight is not included.
			Bottom		Rc 1/4			

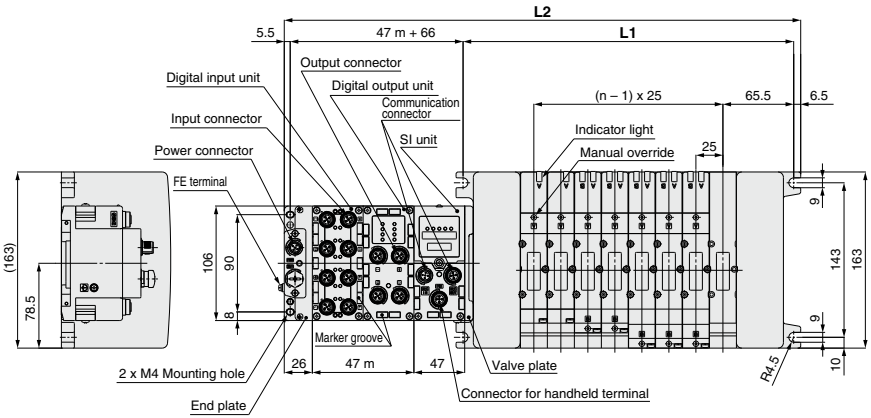
Note 1) One-touch fittings in inch sizes are also available.

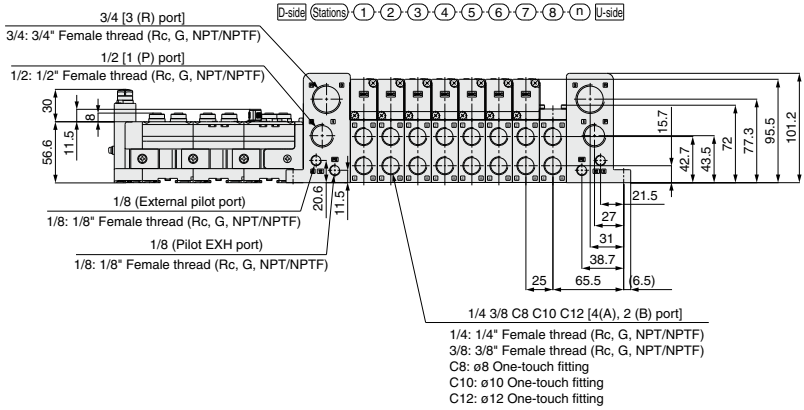
Note 2) An optional specification for special wiring is available to increase the maximum number of stations.

S VQC4000

kit (Serial transmission): For EX600 Integrated-type (I/O) Serial Transmission System IP67 compliant

VV5QC41
S Kit (Serial transmission kit: EX250)
Power supply with M12 connector





Formulas
L1 = 25n + 106
L2 = 25n + 184
L2 dimension: Without I/O unit For additional I/O unit, add 47 mm.
m: I/O unit stations

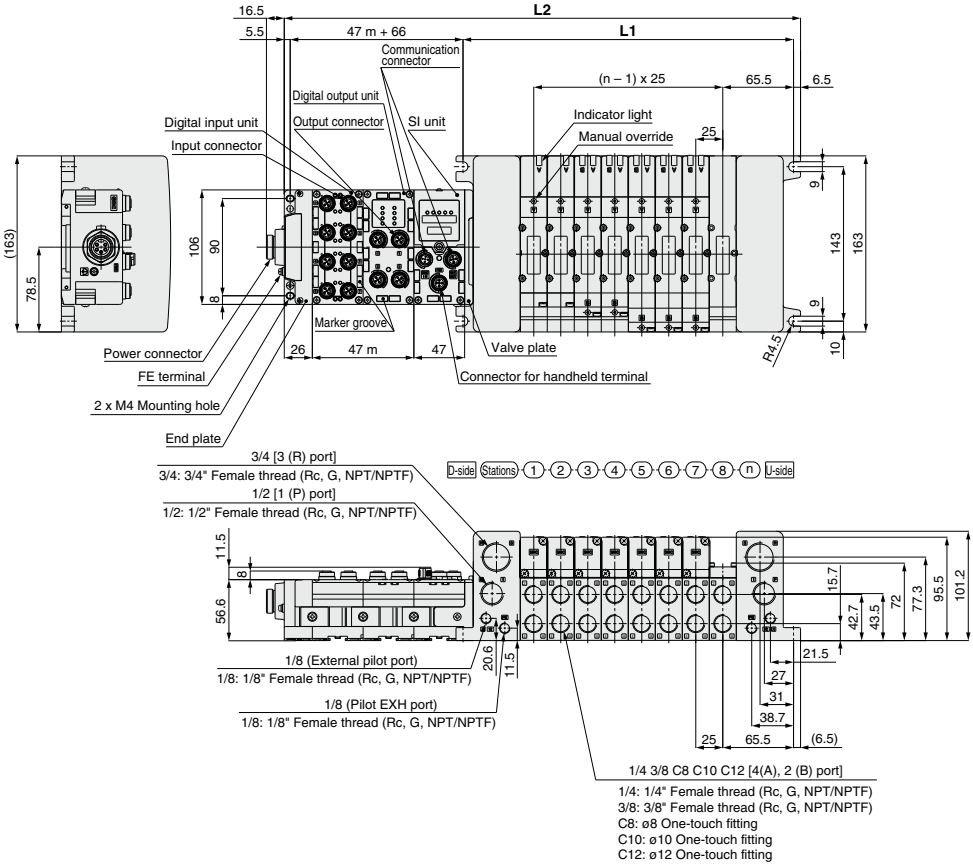
Dimensions n: Stations (Maximum 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	209	234	259	284	309	334	359	384	409	434	459	484	509	534	559	584

S *VQC4000*

kit (Serial transmission): For EX600 Integrated-type (I/O) Serial Transmission System **IP67 compliant**

VV5QC41
S Kit (Serial transmission kit: EX600)
Power supply with M12 connector



Formulas
L1 = 25n + 106
L2 = 25n + 184
L2 dimension: Without I/O unit For additional I/O unit, add 47 mm.
m: I/O unit stations

Dimensions

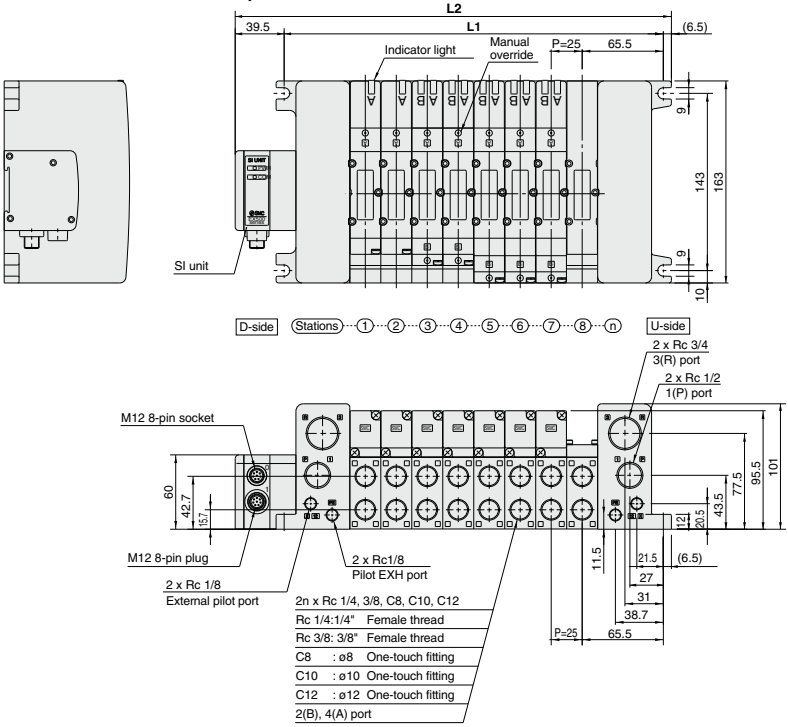
n: Stations (Maximum 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	209	234	259	284	309	334	359	384	409	434	459	484	509	534	559	584

S *VQC4000*

kit (Serial transmission kit): For EX500 Gateway-type Serial Transmission System **IP67 compliant**

VV5QC41
S Kit (Serial transmission kit: EX500)



Formulas: L1 = 25n + 106, L2 = 25n + 152 n: Stations (Maximum 16 stations)

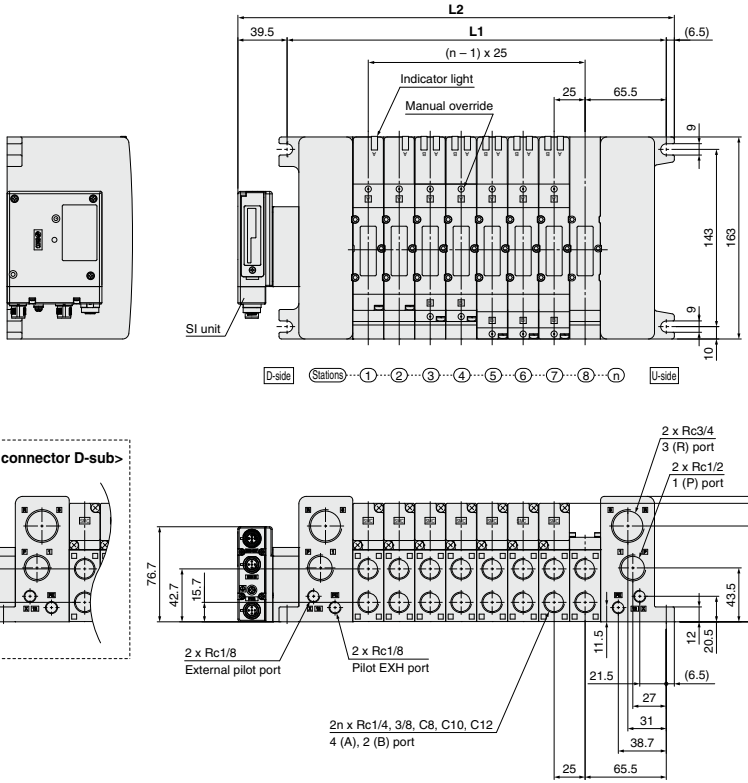
L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	177	202	227	252	277	302	327	352	377	402	427	452	477	502	527	552

S *VQC4000*

kit (Serial transmission): For EX260 Integrated-type (I/O) Serial Transmission System

IP40 compliant
IP67 compliant

VV5QC41
S Kit (Serial transmission kit: EX260)



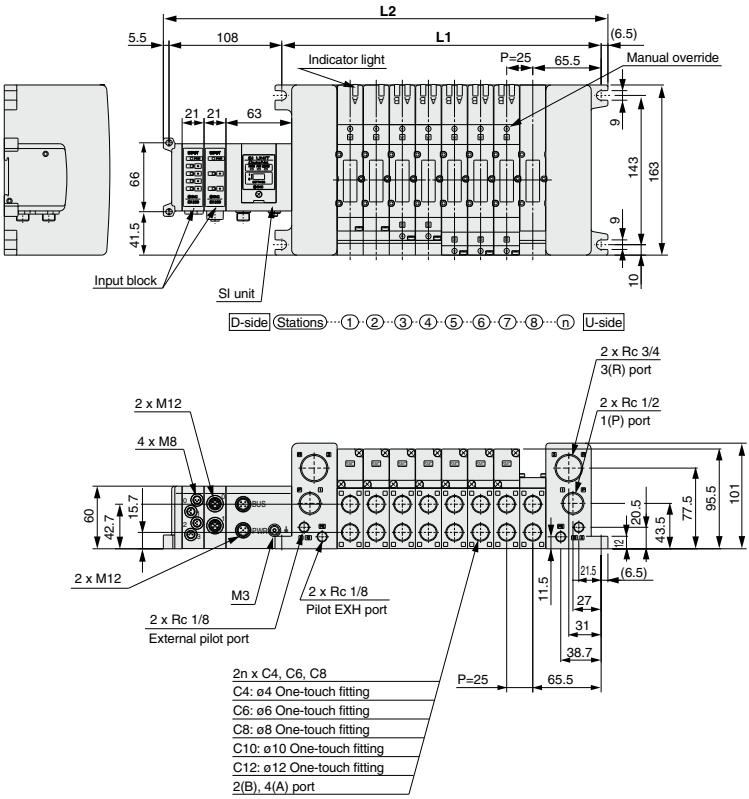
n: Stations (Maximum 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	177	202	227	252	277	302	327	352	377	402	427	452	477	502	527	552

S VQC4000

kit (Serial transmission kit): For EX250 Integrated-type (I/O) Serial Transmission System IP67 compliant

VV5QC41
S Kit
(Serial transmission kit: EX250)



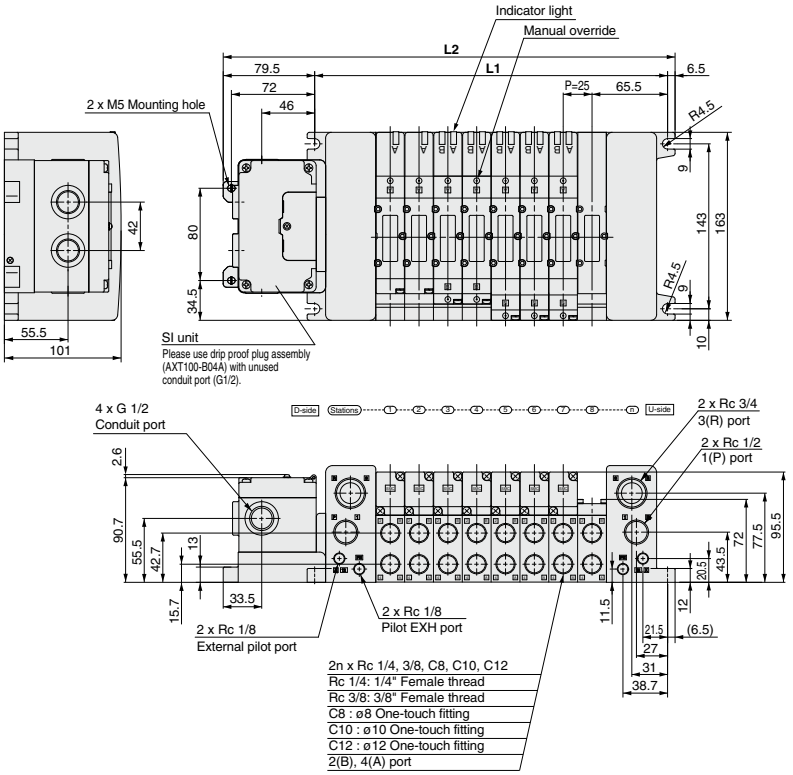
Formulas: L1 = 25n + 106, L2 = 25n + 205 (For one input block. Add 21 mm for each additional input block.) n: Stations (Maximum 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	230	255	280	305	330	355	380	405	430	455	480	505	530	555	580	605

S *VQC4000*

kit (Serial transmission kit): For EX126 Integrated-type (Output) Serial Transmission System **IP67 compliant**

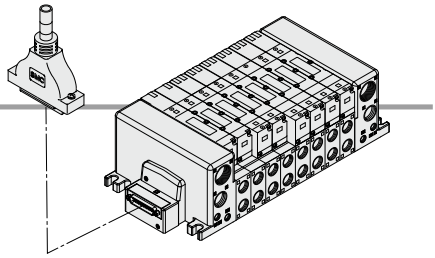
VV5QC41
S Kit (Serial transmission kit: EX126)



Formulas: L1 = 25n + 106, L2 = 25n + 192 n: Stations (Maximum 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	217	242	267	292	317	342	367	392	417	442	467	492	517	542	567	592

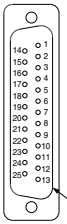
F *VQC4000*
kit (D-sub connector kit) IP40 compliant



- **Using our D-sub connector for electrical connections greatly reduces labor, while it also minimizes wiring and saves space.**
- **We use a D-sub connector (25P) that conforms to MIL standards and is therefore widely compatible with many standard commercial models.**
- **Top or side entry for the connector can be changed freely, allowing for changes even after mounting, to meet any changing needs for space.**

Electrical Wiring Specifications

D-sub connector



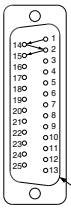
As the standard electrical wiring specification used is for 12 stations or less, double wiring (connected to SOL. A and SOL. B) is used for the internal wiring of each station regardless of valve and option types.
Mixed single and double wiring are available as options.
Refer to special wiring specifications (options) below.

Lead wire colors for D-sub connector assemblies (AXT100-DS25-$^{015}_{030}_{050}$)

Standard wiring	Terminal no.	Lead wire color	Dot marking
Station 1 SOL.A	1	Black	None
Station 1 SOL.B	14	Yellow	Black
Station 2 SOL.A	2	Brown	None
Station 2 SOL.B	15	Pink	Black
Station 3 SOL.A	3	Red	None
Station 3 SOL.B	16	Blue	White
Station 4 SOL.A	4	Orange	None
Station 4 SOL.B	17	Purple	None
Station 5 SOL.A	5	Yellow	None
Station 5 SOL.B	18	Gray	None
Station 6 SOL.A	6	Pink	None
Station 6 SOL.B	19	Orange	Black
Station 7 SOL.A	7	Blue	None
Station 7 SOL.B	20	Red	White
Station 8 SOL.A	8	Purple	White
Station 8 SOL.B	21	Brown	White
Station 9 SOL.A	9	Gray	Black
Station 9 SOL.B	22	Pink	Red
Station 10 SOL.A	10	White	Black
Station 10 SOL.B	23	Gray	Red
Station 11 SOL.A	11	White	Red
Station 11 SOL.B	24	Black	White
Station 12 SOL.A	12	Yellow	Red
Station 12 SOL.B	25	White	None
COM.	13	Orange	Red

Special Wiring Specifications (Options)

(For 25P)

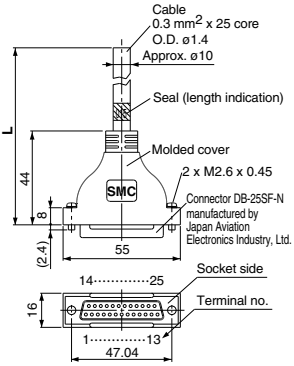


Mixed single and double wiring are available as options. The maximum number of manifold stations is determined by the number of solenoids. Count one point for a single solenoid type and two points for a double solenoid type. The total number of solenoids (points) must not exceed 24.

Cable Assembly

AXT100-DS25-$^{015}_{030}_{050}$

D-sub connector cable assemblies can be ordered with manifolds. Refer to manifold ordering.



D-sub connector cable assemblies

Cable length (**L**)	Part no.	Note
1.5 m	AXT100-DS25-015	Cable 0.3 mm² x 25 cores
3 m	AXT100-DS25-030	
5 m	AXT100-DS25-050	

∗ When using a standard commercial connector, use a type 25P female connector conforming to MIL-C-24308.
∗ Cannot be used for transfer wiring.
∗ Lengths other than the above is also available. Please contact SMC for details.

Lead wire colors for D-sub connector cable assembly terminal numbers

Terminal no.	Lead wire color	Dot marking
1	Black	None
2	Brown	None
3	Red	None
4	Orange	None
5	Yellow	None
6	Pink	None
7	Blue	None
8	Purple	White
9	Gray	Black
10	White	Black
11	White	Red
12	Yellow	Red
13	Orange	Red
14	Yellow	Black
15	Pink	Black
16	Blue	White
17	Purple	None
18	Gray	None
19	Orange	Black
20	Red	White
21	Brown	White
22	Pink	Red
23	Gray	Red
24	Black	White
25	White	None

Electrical characteristics

Item	Characteristic
Conductor resistance Ω/km, 20°C	65 or less
Voltage limit V, 1 minute, AC	1000
Insulation resistance MΩ/km, 20°C	5 or more

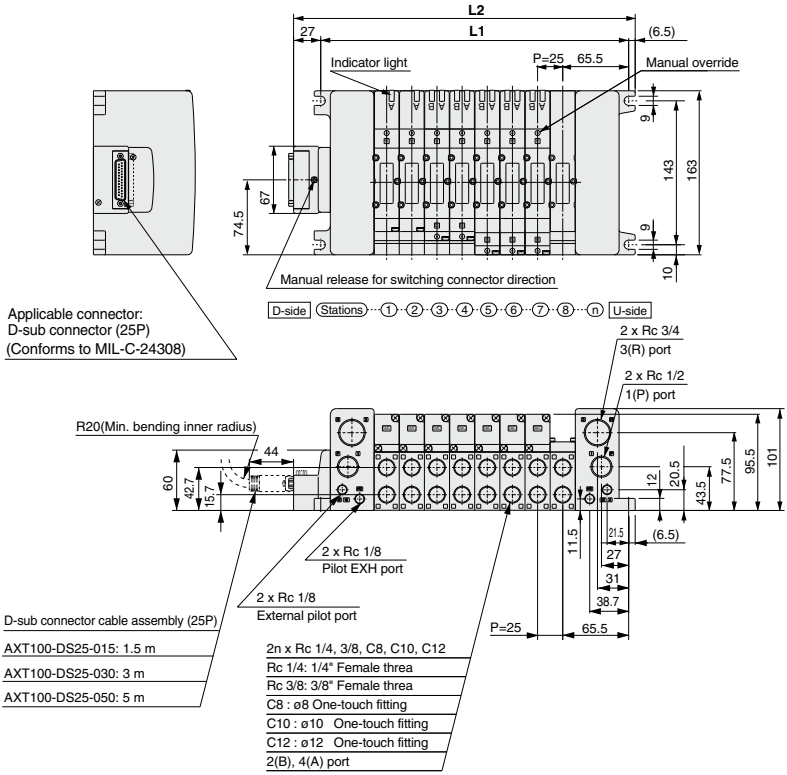
Note) The minimum bending radius for D-sub connector cables is 20 mm.

Some connector manufacturers:

- Fujitsu, Ltd.
- Japan Aviation Electronics Industry, Ltd.
- J.S.T. Mfg. Co., Ltd.
- HIROSE ELECTRIC CO., LTD.

F VQC4000
kit (D-sub connector kit) IP40 compliant

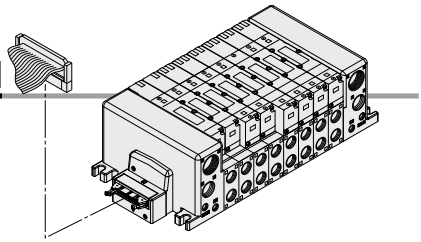
VV5QC41



Formulas: L1 = 25n + 106, L2 = 25n + 139.5 n: Stations (Maximum 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	164.5	189.5	214.5	239.5	264.5	289.5	314.5	339.5	364.5	389.5	414.5	439.5	464.5	489.5	514.5	539.5

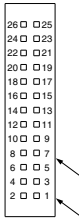
P *VQC4000*
kit (Flat ribbon cable kit) IP40 compliant



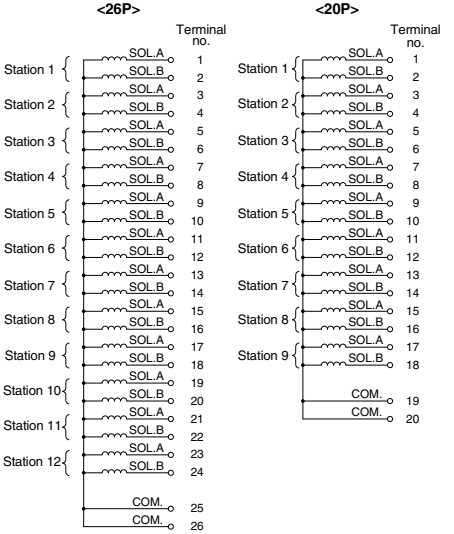
- **Using our flat ribbon cable for electrical connections greatly reduces labour, while it also minimizes wiring and saves space.**
- **We use flat ribbon cables whose connectors (26P and 20P) conform to MIL standards, and are therefore widely compatible with many standard commercial models.**
- **Top or side entry for the connector can be changed freely, allowing for changes even after mounting, to meet any changing needs for space.**

Electrical Wiring Specifications

Flat ribbon cable connector



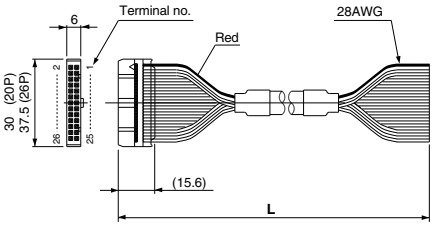
Double wiring (connected to SOL. A and SOL. B) is used for the internal wiring of each station regardless of valve and option types.
Mixed single and double wiring are available as options.
Refer to special wiring specifications (options) below.



Cable Assembly

AXT100-FC $\begin{matrix}20\\26\end{matrix}$ **-** $\begin{matrix}1\\2\\3\end{matrix}$

Type 26P flat ribbon cable connector assemblies can be ordered with manifolds. Refer to manifold ordering.



Flat ribbon cable connector assemblies

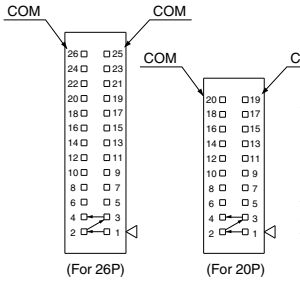
Cable length (**L**)	Part no.	
	26P	20P
1.5 m	AXT100-FC26-1	AXT100-FC20-1
3 m	AXT100-FC26-2	AXT100-FC20-2
5 m	AXT100-FC26-3	AXT100-FC20-3

∗ When using a standard commercial connector, use a type 26P connector conforming to MIL-C-83503 or a type 20P with strain relief.
∗ Cannot be used for transfer wiring.
∗ Lengths other than the above is also available. Please contact SMC for details.

Connector Manufacturers Example:

· Hirose Electric CO., Ltd.
· Sumitomo/3M Limited
· Fujitsu, Ltd.
· Japan Aviation Electronics Industry, Ltd.
· J.S.T. Mfg. Co., Ltd.
· Oki Electric Cable Co., Ltd.

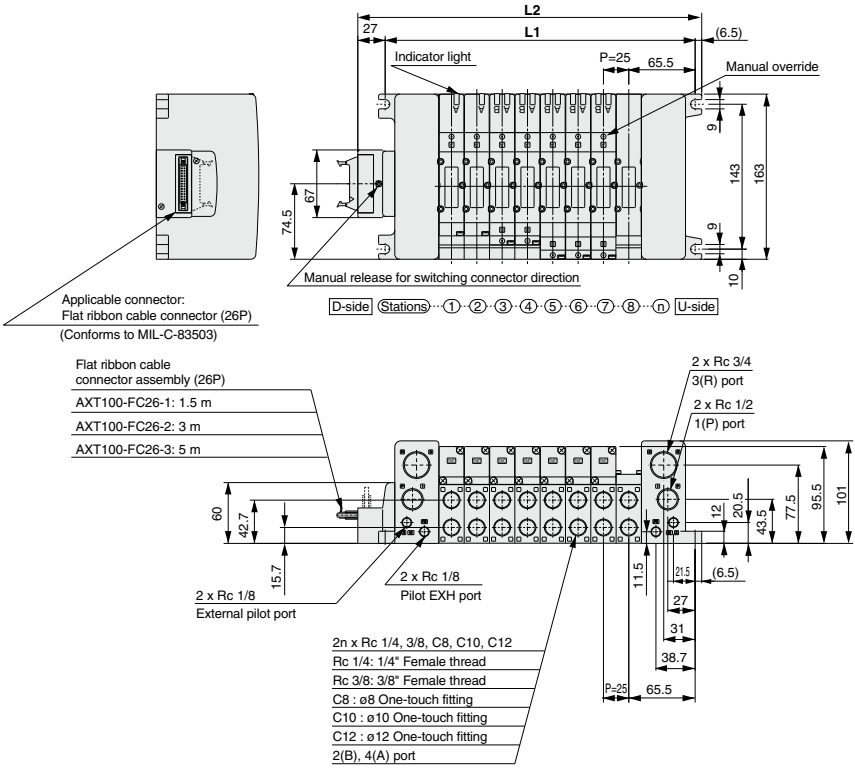
Special Wiring Specifications (Option)



Mixed single and double wiring are available as options. The maximum number of manifold stations is determined by the number of solenoids. Count one point for a single solenoid type and two points for a double solenoid type. The total number of solenoids (points) must not exceed 24.

P VQC4000
kit (Flat ribbon cable kit) IP40 compliant

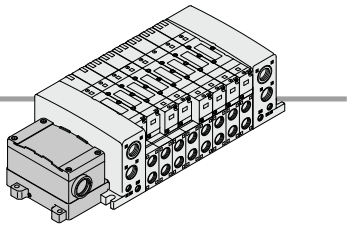
VV5QC41



Formulas: L1 = 25n + 106, L2 = 25n + 139.5 n: Stations (Maximum 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	164.5	189.5	214.5	239.5	264.5	289.5	314.5	339.5	364.5	389.5	414.5	439.5	464.5	489.5	514.5	539.5

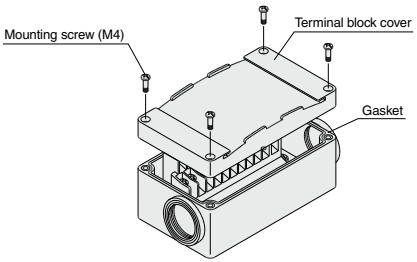
T VQC4000
kit (Terminal block box kit) IP67 compliant



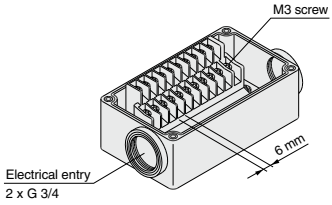
- **This kit has a small terminal block inside a junction box. The provision of a G 3/4 electrical entry allows connection of conduit fittings.**

Terminal Block Connection

Step 1. How to remove terminal block cover
Loosen the 4 mounting screws (M4) and remove the terminal block cover.



Step 2. The diagram below shows the terminal block wiring.
All stations are provided with double wiring regardless of the valves which are mounted.
Connect each wire to the power supply side, according to the markings provided inside the terminal block.

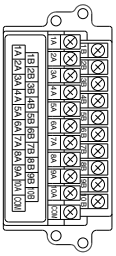


Step 3. How to replace the terminal block cover
Securely tighten the screws to the torque shown in the table below, after confirming that the gasket is installed correctly.

Proper tightening torque (N·m)
0.7 to 1.2

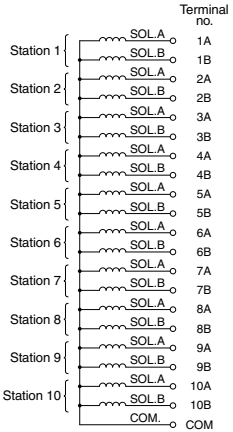
- Applicable crimped terminal: 1.25-3S,1.25Y-3,1.25Y-3N,1.25Y-3.5
- Name plate: VVQ5000-N-T
- Drip proof plug assembly (for G 3/4): AXT100-B06A

Electrical Wiring Specifications (Conforms to IP67)



The internal wiring is double (connected to SOL. A and SOL. B) for all stations regardless of the type of valve or options.
Mixed single and double wiring are available as options.

Standard wiring

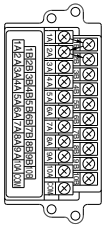


Special Wiring Specifications (Option)

Mixed single and double wiring are available as options. The maximum number of manifold stations is determined by the number of solenoids. Count one point for a single solenoid type and two points for a double solenoid type. The total number of solenoids (points) must not exceed 20.

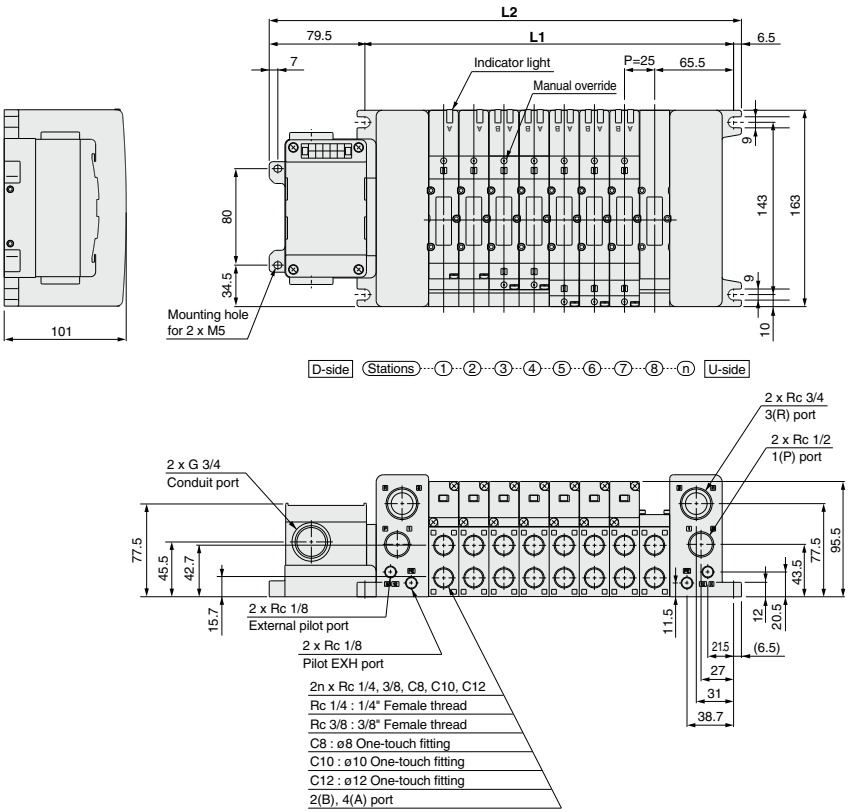
1. How to order
Indicate option symbol "-K" in the manifold part number and be sure to specify station positions for single or double wiring on the manifold specification sheet.

2. Wiring specifications
Connector terminal numbers are connected from solenoid station 1 on the A side in the order indicated by the arrows without skipping any terminal numbers.



T VQC4000
kit (Terminal block box kit) IP67 compliant

VV5QC41

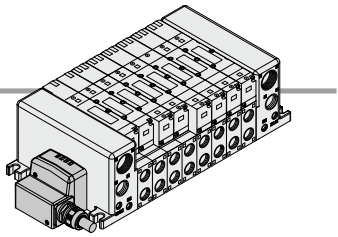


Formulas: L1 = 25n + 106, L2 = 25n + 192 n: Stations (Maximum 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	217	242	267	292	317	342	367	392	417	442	467	492	517	542	567	592

L *VQC4000*

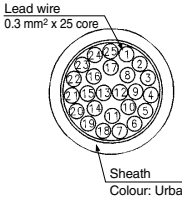
kit (Lead wire kit) **IP67 compliant**



- **Direct electrical entry type.**
- **IP67 enclosure is available with use of cables with sheath and waterproof connectors.**

Electrical Wiring Specifications

Lead wire specifications



As the standard electrical wiring specification used is for 12 stations or less, double wiring (connected to SOL. A and SOL. B) is used for the internal wiring of each station regardless of valve and option types.
Mixed single and double wiring are available as options.
Refer to special wiring specifications (options) below.

		Terminal no.	Lead wire colour	Dot marking
Station 1	SOL.A	1	Black	None
	SOL.B	14	Yellow	Black
Station 2	SOL.A	2	Brown	None
	SOL.B	15	Pink	Black
Station 3	SOL.A	3	Red	None
	SOL.B	16	Blue	White
Station 4	SOL.A	4	Orange	None
	SOL.B	17	Purple	None
Station 5	SOL.A	5	Yellow	None
	SOL.B	18	Grey	None
Station 6	SOL.A	6	Pink	None
	SOL.B	19	Orange	Black
Station 7	SOL.A	7	Blue	None
	SOL.B	20	Red	White
Station 8	SOL.A	8	Purple	White
	SOL.B	21	Brown	White
Station 9	SOL.A	9	Grey	Black
	SOL.B	22	Pink	Red
Station 10	SOL.A	10	White	Black
	SOL.B	23	Grey	Red
Station 11	SOL.A	11	White	Red
	SOL.B	24	Black	White
Station 12	SOL.A	12	Yellow	Red
	SOL.B	25	White	None
	COM.	13	Orange	Red

Lead wire length

VV5QC41−08 C12 LD [0]

Lead wire length

0	0.6 m
1	1.5 m
2	3.0 m

Electrical characteristics

Item	Characteristic
Conductor resistance Ω/km, 20°C	65 or less
Withstand pressure V, 1 minute, AC	1000
Insulation resistance MΩ/km, 20°C	5 or more

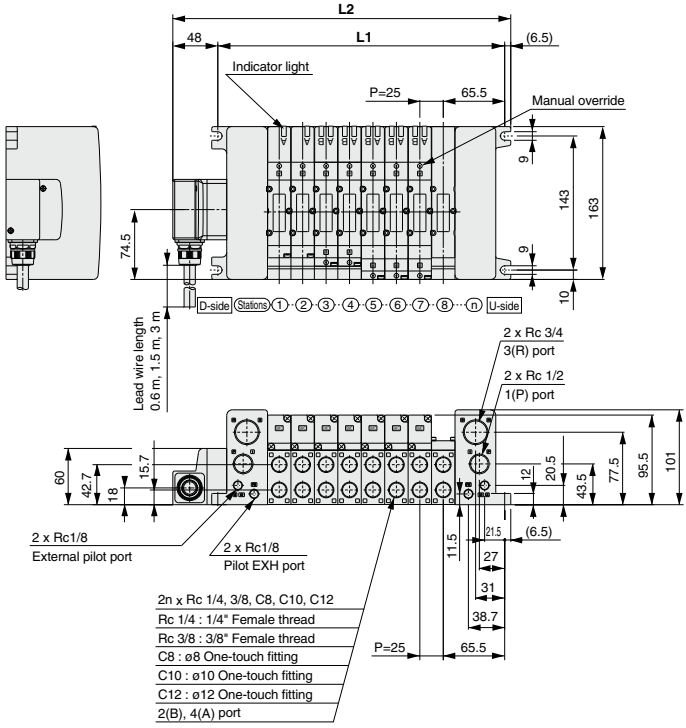
Note) Cannot be used for transfer wiring.
The minimum bending radius for cables is 20 mm.

Special Wiring Specifications (Option)

Mixed single and double wiring are available as options. The maximum number of manifold stations is determined by the number of solenoids. Count one point for a single solenoid type and two points for a double solenoid type. The total number of solenoids (points) must not exceed 24.

L *VQC4000*
kit (Lead wire kit) IP67 compliant

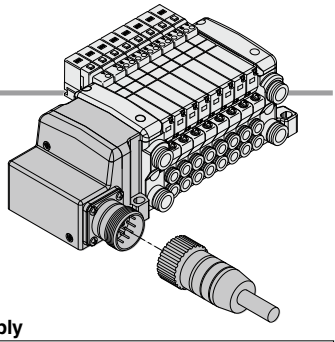
VV5QC41



Formulas: L1 = 25n + 106, L2 = 25n + 160.5 n: Stations (Maximum 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	185.5	210.5	235.5	260.5	285.5	310.5	335.5	360.5	385.5	410.5	435.5	460.5	485.5	510.5	535.5	560.5

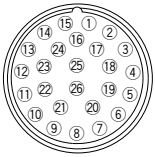
M VQC4000
kit (Circular connector kit) IP67 compliant



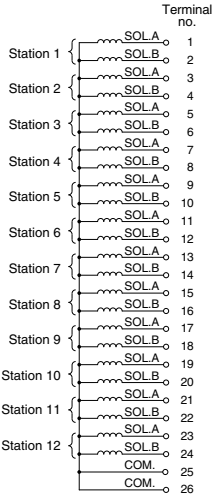
- **Use of circular connectors helps streamline wiring procedure to save labor.**
- **IP67 enclosure is available with use of waterproof multiple connectors.**

Electrical Wiring Specifications

Multiple connector



Double wiring(connected to SOL.A and SOL.B) is used for the internal wiring of each staion regardless of valve and option types. Mixed single and double wiring are available as options. Refer to special wiring specifications(options) below.



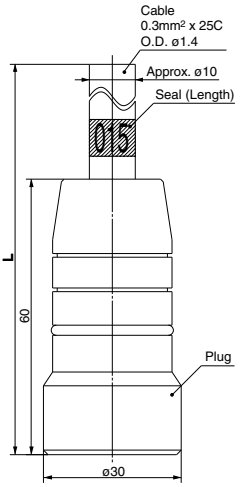
Special Wiring Specifications (Option)

Mixed single and double wiring are available as an option. The maximum number of manifold stations is determined by the number of solenoids. Count one point for a single solenoid type and two points for a double solenoid type. The total number of solenoids (points) must not exceed 24.

Cable Assembly

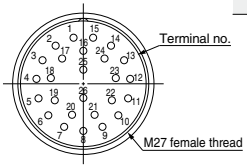
AXT100-MC26- 015 / 030 / 050

(Type 26P circular connector cable assemblies can be ordered with manifolds. Refer to manifolds ordering.)



Lead wire colors for circular connector cable assembly terminal numbers

Terminal no.	Lead wire color	Dot marking
1	Black	None
2	Brown	None
3	Red	None
4	Orange	None
5	Yellow	None
6	Pink	None
7	Blue	None
8	Purple	White
9	Gray	Black
10	White	Black
11	White	Red
12	Yellow	Red
13	Orange	Red
14	Yellow	Black
15	Pink	Black
16	Blue	White
17	Purple	None
18	Gray	None
19	Orange	Black
20	Red	White
21	Brown	White
22	Pink	Red
23	Gray	Red
24	Black	White
25	White	None
26	White	None



Electric characteristics

Item	Property
Conductor resistance Ω/km, 20 C	65 or less
Voltage limit V, 1 minute, AC	1000
Insulation resistance MΩ/km, 20 C	5 or more

Note) The minimum bending radius of the multiple connector cable is 20 mm.

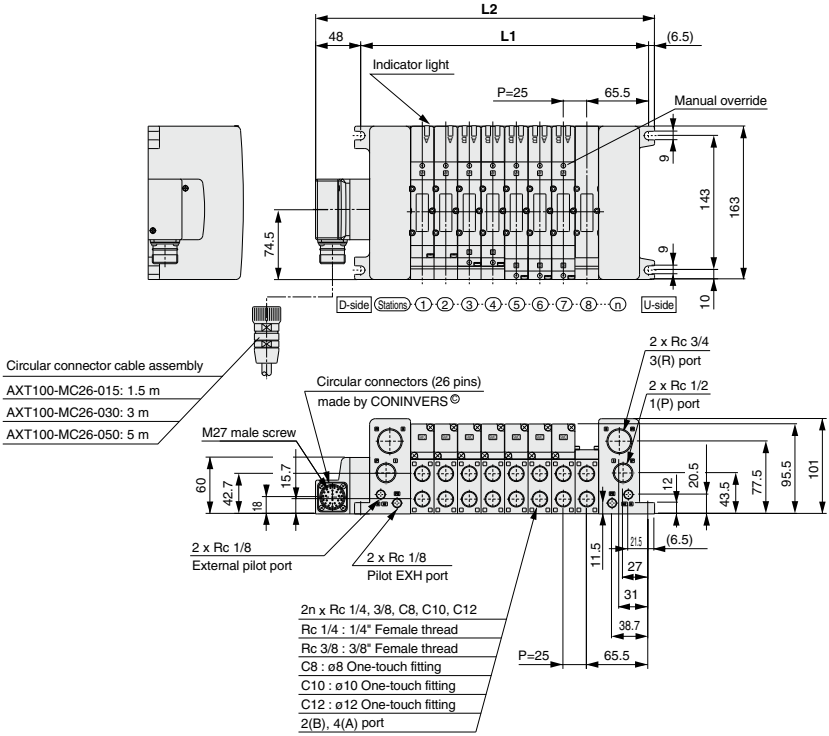
Circular connector cable assemblies

Cable length (**L**)	Assembly no.
	26P
1.5 m	AXT100-MC26-015
3 m	AXT100-MC26-030
5 m	AXT100-MC26-050

∗ Cannot be used for transfer wiring.
∗ Lengths other than the above is also available. Please contact SMC for details.

M *VQC4000*
kit (Circular connector kit) IP67 compliant

VV5QC41

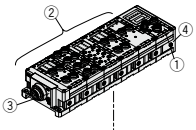
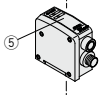
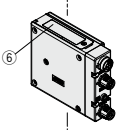
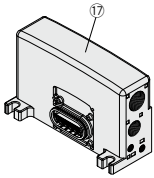
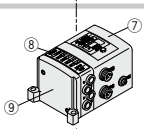
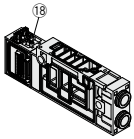
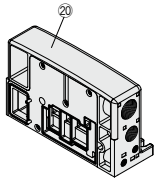
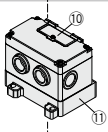
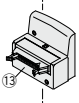
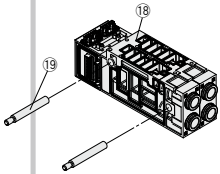
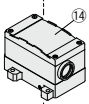
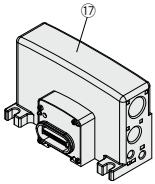
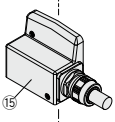
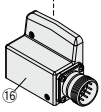


Formulas: L1 = 25n + 106, L2 = 25n + 150.5 n: Stations (Maximum 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	185.5	210.5	235.5	260.5	285.5	310.5	335.5	360.5	385.5	410.5	435.5	460.5	485.5	510.5	535.5	560.5

Series *VQC4000*

Exploded View of Manifold

	Housing assembly and SI unit	D-side end plate assembly	Manifold block assembly	U-side end plate assembly
S Kit (Serial) EX600				
S Kit (Serial) EX500				
S Kit (Serial) EX260		Corresponding kit S(EX600, EX250, EX126).F.P.T 		
S Kit (Serial) EX250				
S Kit (Serial) EX126				
F Kit (D-sub connector)				
P Kit (Flat ribbon cable)				
T Kit S Kit (Serial) (Terminal block)				
L Kit (Lead wire)		Corresponding kit S(EX500, EX260).L.M		
M Kit (Multiple connector)				

Note) There are two kinds of manifold blocks available, 2 stations integrated type and 1 station type. 2 stations integrated type is used for even stations while 2 stations integrated type and 1 station type are combined for odd stations.

D side ..... U side

1.....2.....3.....4.....5.....6.....

5 stations (Odd number) | 2 stations | 2 stations | 1 station |

6 stations (Even number) | 2 stations | 2 stations | 2 stations |

Manifold Assembly Part No.

Housing Assembly and SI Unit/Input Block

No.	Description	Part no.	Note
1	SI unit	EX600-SDN1A	DeviceNet™ PNP (Negative common)
		EX600-SDN2A	DeviceNet™ NPN (Positive common)
		EX600-SMJ1	CC-Link PNP (Negative common)
		EX600-SMJ2	CC-Link NPN (Positive common)
		EX600-SPR1A	PROFIBUS DP (Negative common)
		EX600-SPR2A	PROFIBUS DP (Positive common)
		EX600-SEN1	EtherNet/IP™ (Negative common)
		EX600-SEN2	EtherNet/IP™ (Positive common)
		EX600-SEC1	EtherCAT PNP (Negative common)
		EX600-SEC2	EtherCAT NPN (Positive common)
2	Digital Input Unit	EX600-DXNB	NPN input, M12 connector, 5 pins (4 pcs.), 8 inputs
		EX600-DXPB	PNP input, M12 connector, 5 pins (4 pcs.), 8 inputs
		EX600-DXNC	NPN input, M8 connector, 3 pins (8 pcs.), 8 inputs
		EX600-DXNC1	NPN input, M8 connector, 3 pins (8 pcs.), 8 inputs, with open circuit detection
		EX600-DXPC	PNP input, M8 connector, 3 pins (8 pcs.), 8 inputs
		EX600-DXPC1	PNP input, M8 connector, 3 pins (8 pcs.), 8 inputs, with open circuit detection
		EX600-DXND	NPN input, M12 connector, 5 pins (8 pcs.), 16 inputs
		EX600-DXPD	PNP input, M12 connector, 5 pins (8 pcs.), 16 inputs
		EX600-DXNE	NPN input, D-sub connector, 25 pins, 16 inputs
		EX600-DXPE	PNP input, D-sub connector, 25 pins, 16 inputs
		EX600-DXNF	NPN input, Spring type terminal box, 32 pins, 16 inputs
		EX600-DXPF	PNP input, Spring type terminal box, 32 pins, 16 inputs
	Digital Output Unit	EX600-DYNB	NPN output, M12 connector, 5 pins (4 pcs.), 8 outputs
		EX600-DYPB	PNP output, M12 connector, 5 pins (4 pcs.), 8 outputs
		EX600-DYNE	NPN output, D-sub connector, 25 pins, 16 outputs
		EX600-DYPE	PNP output, D-sub connector, 25 pins, 16 outputs
		EX600-DYNF	NPN output, Spring type terminal box, 32 pins, 16 outputs
		EX600-DYPF	NPN output, Spring type terminal box, 32 pins, 16 outputs
	Digital Input/Output	EX600-DMNE	NPN input/output, D-sub connector, 25 pins, 8 inputs/outputs
		EX600-DMPE	PNP input/output, D-sub connector, 25 pins, 8 inputs/outputs
		EX600-DMNF	NPN input/output, Spring type terminal box, 32 pins, 8 inputs/outputs
		EX600-DMPF	PNP input/output, Spring type terminal box, 32 pins, 8 inputs/outputs
	Analog Input Unit	EX600-AXA	M12 connector, 5 pins (2 pcs.), 2-channel input
	Analog Output Unit	EX600-AYA	M12 connector, 5 pins (2 pcs.), 2-channel output
	Analog Input/Output Unit	EX600-AMB	M12 connector, 5 pins (4 pcs.), 2-channel inputs/outputs
3	End plate	EX600-ED2	M12 connector, 5 pins, Max. supply current 2 A
		EX600-ED2-2	M12 connector, 5 pins, Max. supply current 2 A, with DIN rail mounting bracket
		EX600-ED3	7/8 inch connector, 5 pins, Max. supply current 8 A
		EX600-ED3-2	7/8 inch connector, 5 pins, Max. supply current 8 A, with DIN rail mounting bracket
4	Valve Plate	EX600-ZMV1	Enclosed parts: round head screws (M4 x 6) 2 pcs., round head screws (M3 x 8) 4 pcs.
5	SI unit	EX500-Q001	EX500 NPN (Positive common)
		EX500-Q101	EX500 PNP (Negative common)
6	SI unit	EX260-SDN1	DeviceNet™, M12 connector, 32 outputs PNP (Negative common)
		EX260-SDN2	DeviceNet™, M12 connector, 32 outputs NPN (Positive common)
		EX260-SDN3	DeviceNet™, M12 connector, 16 outputs PNP (Negative common)
		EX260-SDN4	DeviceNet™, M12 connector, 16 outputs NPN (Positive common)
		EX260-SRP1	PROFIBUS DP, M12 connector, 32 outputs PNP (Negative common)
		EX260-SRP2	PROFIBUS DP, M12 connector, 32 outputs NPN (Positive common)
		EX260-SRP3	PROFIBUS DP, M12 connector, 16 outputs PNP (Negative common)
		EX260-SRP4	PROFIBUS DP, M12 connector, 16 outputs NPN (Positive common)
		EX260-SRP5	PROFIBUS DP, D-sub connector, 32 outputs PNP (Negative common)
		EX260-SRP6	PROFIBUS DP, D-sub connector, 32 outputs NPN (Positive common)
		EX260-SRP7	PROFIBUS DP, D-sub connector, 16 outputs PNP (Negative common)
		EX260-SRP8	PROFIBUS DP, D-sub connector, 16 outputs NPN (Positive common)
		EX260-SMJ1	CC-Link, M12 connector, 32 outputs PNP (Negative common)
		EX260-SMJ2	CC-Link, M12 connector, 32 outputs NPN (Positive common)
		EX260-SMJ3	CC-Link, M12 connector, 16 outputs PNP (Negative common)
		EX260-SMJ4	CC-Link, M12 connector, 16 outputs NPN (Positive common)
		EX260-SEC1	EtherCAT, M12 connector, 32 outputs PNP (Negative common)
		EX260-SEC2	EtherCAT, M12 connector, 32 outputs NPN (Positive common)
		EX260-SEC3	EtherCAT, M12 connector, 16 outputs PNP (Negative common)
		EX260-SEC4	EtherCAT, M12 connector, 16 outputs NPN (Positive common)
		EX260-SPN1	PROFINET, M12 connector, 32 outputs PNP (Negative common)
		EX260-SPN2	PROFINET, M12 connector, 32 outputs NPN (Positive common)
		EX260-SPN3	PROFINET, M12 connector, 16 outputs PNP (Negative common)
		EX260-SPN4	PROFINET, M12 connector, 16 outputs NPN (Positive common)
		EX260-SEN1	EtherNet/IP™, 32 outputs PNP (Negative common)
		EX260-SEN2	EtherNet/IP™, 32 outputs NPN (Positive common)
		EX260-SEN3	EtherNet/IP™, 16 outputs PNP (Negative common)
		EX260-SEN4	EtherNet/IP™, 16 outputs NPN (Positive common)

Manifold Assembly Part No.

Housing Assembly and SI Unit/Input Block

No.	Description	Part no.	Note
7	SI Unit	EX250-SPR1	PROFIBUS DP PNP (Negative common)
		EX250-SMJ2	CC-LinkNPN (Positive common)
		EX250-SAS3	AS-Interface, 8 in/8 out, 31 slave modes, 2 power supply systems PNP (Negative common)
		EX250-SAS5	AS-Interface, 4 in/4 out, 31 slave modes, 2 power supply systems PNP (Negative common)
		EX250-SAS7	AS-Interface, 8 in/8 out, 31 slave modes, 1 power supply system PNP (Negative common)
		EX250-SAS9	AS-Interface, 4 in/4 out, 31 slave modes, 1 power supply system PNP (Negative common)
		EX250-SCA1A	CANopen PNP (Negative common)
		EX250-SDN1	DeviceNet™ PNP (Negative common)
		EX250-SEN1	EtherNet/IP™ PNP (Negative common)
8	Input block	EX250-IE1	M12, 2 inputs
		EX250-IE2	M12, 4 inputs
		EX250-IE3	M8, 4 inputs
9	End plate assembly	EX250-EA1	Direct mounting
		EX250-EA2	DIN rail mounting
10	SI unit	EX126D-SMJ1	CC-Link NPN (Positive common)
11	Terminal plate	VVQC1000-74A-2	For EX126 SI unit mounting
12	D-sub connector housing assembly	VVQC1000-F25-1	F kit, 25 pins
13	Flat ribbon cable housing assembly	VVQC1000-P26-1	P kit, 26 pins
		VVQC1000-P20-1	P kit, 20 pins
14	Terminal block box housing assembly	VVQC1000-T0-1	T kit
15	Lead wire housing assembly	VVQC1000-L25-0-1	L kit with 0.6 m lead wire
		VVQC1000-L25-1-1	L kit with 1.5 m lead wire
		VVQC1000-L25-2-1	L kit with 3.0 m lead wire
16	Multiple connector housing assembly	VVQC1000-M26-1	M kit 26 pins

Manifold Assembly Part No.

D-side end plate assembly

⑰**D-side end plate assembly part no.**

VVQC4000-3A-2 □

Thread type

Nil	Rc
F	G
T	NPT/NPTF

Kit type

2	F, P, T, S (EX126, EX250, EX600) kit
3	L, M, S (EX260, EX500) kit

U-side end plate assembly

⑳**U-side end plate assembly part no.**

VVQC4000-2A– 1 □

Thread type

Nil	Rc
F	G
T	NPT/NPTF

Manifold block assembly

⑱**Manifold block assembly part no.**

VVQC4000-1 A-D-C6 □

Type

A	For 1 station
C	For 2 stations Note 2)

Note 1) Tie-rods (2 pcs.) for additional stations included.
Note 2) Bottom ported type is available only for 1 station.

Wiring Specifications

D	Double wiring
S	Single wiring

Thread type (Thread port only)

Nil	Rc
F	G
T	NPT/NPTF

Port size

Symbol	Port size
C8	For ø8
C10	For ø10
C12	For ø12
N7	For ø1/4"
N9	For ø5/16"
N11	For ø3/8"
02	Rc 1/4"
03	Rc 3/8"
B	Rc 1/4" bottom ported

Replacement parts

Pilot valve assembly

VQC4000	VQZ111P□-□-□ A: A side (Indicator light: Orange) B: B side (Indicator light: Green) E: Without indicator light (In common for A side and B side) 5: 24 VDC 6: 12 VDC Nil: standard (1 W) Y : Low wattage (0.5 W)

⑲**Tie-rod assembly part no. (2 units)**

VQC4000	VVQC4000-TR-□

Note 1) Please order when reducing the number of manifold stations. When increasing the number of stations, additional orders are not required since they are included in the manifold block assembly.
Note 2) Number of stations, 02 to 16

Specific Product Precautions 1

Be sure to read this before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valve Precautions.

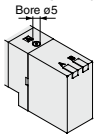
Manual Override

⚠Warning

Since connected equipment will operate when the manual override is activated, confirm that conditions are safe prior to activation.
Push type (tool required) is standard, and locking type (tool required) is optional.

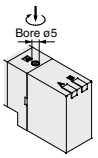
■VQC4000

Push type (Tool required)

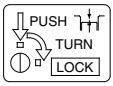


Push down the manual override button with a small screwdriver, etc., until it stops.
The manual override will return when released.

Locking type (Tool required)
<Option>



Push down the manual override button with a small flat head screwdriver or with your finger until it stops, and turn it clockwise 90° to lock it.
Turn it counterclockwise to release it.

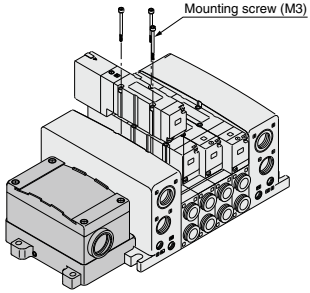


Valve Mounting

⚠Caution

After confirming that the gasket is installed correctly, securely tighten the mounting screws according to the tightening torque shown below.

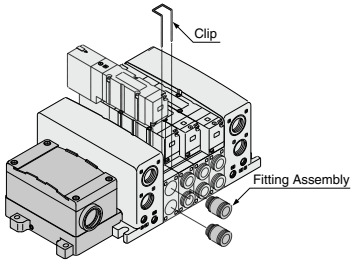
Proper tightening torque (N·m)
0.8 to 1.2



Replacing One-touch Fittings

⚠Caution

Cylinder port fittings are available in cassette type and can be replaced easily. Fittings are secured with a retaining clip that is inserted from the top side of the valve. After removing the valve,remove the clip with a flat head screw driver to replace the fittings. To mount a fitting, insert the fitting assembly until it stops and reinsert the retaining clip to its designated position.



Applicable tube O.D.	Fitting assembly part no.
	VQC4000
ø8	VVQ4000-50B-C8
ø10	VVQ4000-50B-C10
ø12	VVQ4000-50B-C12
ø1/4"	VVQ4000-50B-N7
ø5/16"	VVQ4000-50B-N9
ø3/8"	VVQ4000-50B-N11

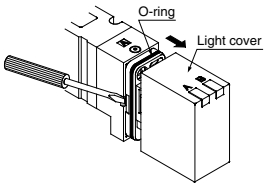
Installation and Removal of Light Cover

⚠Caution

Installation/Removal of light cover

● **Removal**
Open the cover by inserting a small flat head screwdriver into the slot on the side of the pilot assembly (see drawing below), lift the cover out about 1 mm and then pull off. If it is pulled off at an angle, the pilot valve may be damaged or the protective O-ring may be scratched.

● **Installation**
Place the cover straight over the pilot assenmbly so that the pilot valve is not touched,and push it until the cover hook locks without twisting the protective O-ring. (When pushed in, the hook opens and locks automatically.)



Specific Product Precautions 2

Be sure to read this before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valve Precautions.

Replacement of Pilot Valve

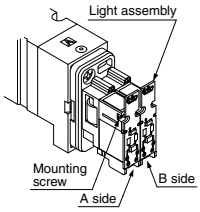
⚠ Caution

● **Removal**

1) Remove the mounting screw that holds the pilot valve using a small screwdriver.

● **Installation**

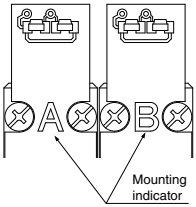
1) After confirming the gasket is correctly placed under the valve, securely tighten the bolts with the proper torque shown in the table below.



∗ Refer to page 1245 for pilot valve assembly part number.

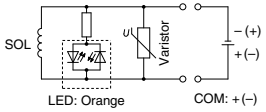
Proper tightening torque (N·m)
0.1 to 0.13

Note) The light circuit boards: A side is orange and the B side is green. It must be mounted on the pilot valve in accordance with the mounting indicators.

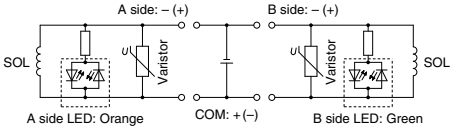


Internal Wiring Specifications

⚠ Caution



DC: Single



DC: Double

Note) Coil surge voltage generated when OFF is about -60V. Please contact SMC separately for further suppression of the coil surge voltage.

How to Calculate the Flow Rate

Refer to front matters 42 to 45.

Series VQC4000
Specific Product Precautions 3

Be sure to read this before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valve Precautions.

Serial Wiring EX500/EX260/EX250/EX126 Precautions

⚠Warning

1. **These products are intended for use in general factory automation equipment.**
   Avoid using these products in machinery/equipment which affects human safety, and in cases where malfunction or failure can result in extensive damage.
2. **Do not use in explosive environments, in the presence of inflammable gases, or in corrosive environments. This can cause injury or fire.**
3. **Work such as transporting, installing, piping, wiring, operation, control and maintenance should be performed by knowledgeable and qualified personnel only. As handling involves the risk of a danger of electrocution, injury or fire.**
4. **Install an external emergency stop circuit that can promptly stop operation and shut off the power supply.**
5. **Do not modify these products. Modifications done to these products carry the risk of injury and damage.**

⚠Caution

1. **Read the instruction manual carefully, strictly observe the precautions and operate within the range of the specifications.**
2. **Do not drop these products or submit them to strong impacts. This can cause damage, failure or malfunction.**
3. **In locations with poor electrical conditions, take steps to ensure a steady flow of the rated power supply. Use of a voltage outside of the specifications can cause malfunction, damage to the unit, electrocution or fire.**
4. **Do not touch connector terminals or internal circuit elements when current is being supplied. There is a danger of malfunction, damage to the unit or electrocution if connector terminals or internal circuit elements are touched when current is being supplied.**
   Be sure that the power supply is OFF when adding or removing manifold valves or input blocks or when connecting or disconnecting connectors.
5. **Operate at an ambient temperature that is within the specifications. Even when the ambient temperature range is within the specifications, do not use in locations where there are rapid temperature changes.**
6. **Keep wire scraps and other extraneous materials from getting inside these products. This can cause fire, failure or malfunction.**
7. **Give consideration to the operating environment depending on the type of enclosure being used.**
   To achieve IP67 protection, provide appropriate wiring between all units using electrical wiring cables, communication connectors and cables with M12 connectors. Also, provide waterproof caps when there are unused ports, and perform proper mounting of input units, input blocks, SI units and manifold valves. Provide a cover or other protection for applications in which there is constant exposure to water.
8. **Use the proper tightening torques.**
   There is a possibility of damaging threads if tightening exceeds the tightening torque range.
9. **Provide adequate protection when operating in locations such as the following:**
   · Where noise is generated by static electricity
   · Where there is a strong electric field
   · Where there is a danger of exposure to radiation
   · When in close proximity to power supply lines

⚠Caution

10. **When these products are installed in equipment, provide adequate protection against noise by using noise filters.**
11. **Since these products are components whose end usage is obtained after installation in other equipment, the customer should confirm conformity to EMC directives for the finished product.**
12. **Do not remove the name plate.**
13. **Perform periodic inspections and confirm normal operation, otherwise it may be impossible to guarantee safety due to unexpected malfunction or erroneous operation.**
14. **Take great care since the SI unit side surface of the EX260-SPN□ may become hot, causing burn hazard.**
15. **Do not use in places where there are cyclic temperature changes.**
    In case that the cyclic temperature is beyond normal temperature changes, the inside product unit is likely to be adversely effected.
16. **Do not use in direct sunlight.**
    Do not use in direct sunlight. It may cause malfunction or damage.
17. **Do not use in places where there is radiated heat around it.**
    Such a place is likely to cause malfunction.

Power Supply Safety Instructions

⚠Caution

1. **Operation is possible with a single power supply or a separate power supply. However, be sure to provide two wiring systems (one for solenoid valves, and one for input and control units). When it is UL compliant, use a class 2 power supply unit in accordance with UL1310 for a combined direct current power supply.**
2. **Select the proper type of enclosure according to the environment of operation.**
   IP65/67 protection class is achieved when the following conditions are met.
   1) The units are connected properly with wiring cable for power supply, communication connector, and cable with M12 connector.
   2) Suitable mounting of each unit and manifold valve.
   3) Be sure to mount a seal cap on any unused connectors.
   If using in an environment that is exposed to water splashes, please take measures such as using a cover.
   For IP40 protection class, do not use in atmospheres with corrosive gas, chemicals, sea water, water, steam, or where there is direct contact with any of these.
   When EX260-SPR5/6/7/8 are connected, the enclosure of the manifold should be IP40.

Cable Safety Instructions

⚠Caution

1. **Avoid miswiring, as this can cause malfunction, damage and fire in the unit.**
2. **To prevent noise and surge in signal lines, keep all wiring separate from power lines and high voltage lines. Otherwise, this can cause a malfunction.**
3. **Check wiring insulation, as defective insulation can cause damage to the unit when excessive voltage or current is applied.**
4. **Do not bend or pull cables repeatedly, and do not place heavy objects on them or allow them to be pinched. This can cause broken lines.**

Series VQC4000
Specific Product Precautions 4

Be sure to read before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valves Precautions.

EX600 Precautions

Design/Selection

⚠Warning

1. Use this product within the specification range.

Using beyond the specified specifications range can cause fire, malfunction, or damage to the system.
Confirm the specifications when operating.

2. When using for an interlock circuit:

- **Provide a multiple interlock system which is operated by another system (such as mechanical protection function).**
- **Perform an inspection to check that it is working properly.**

This may cause possible injury due to malfunction.

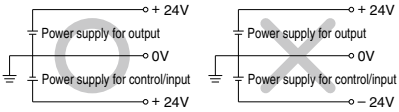
⚠Caution

1. When it is UL compliant, use a class 2 power supply unit in accordance with UL1310 for a combined direct current power supply.

2. Use this product within the specified voltage range.

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

3. The power supply for the unit should be 0 V as the standard for both power supply for output as well as power supply for control/input.



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

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

5. Keep the surrounding space free for maintenance.

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

6. Do not remove the name plate.

Improper maintenance or incorrect use of operation manual can cause failure and malfunction.
Also, there is a risk of losing conformity with safety standards.

7. Beware of inrush current when the power supply is turned on.

Some connected loads can apply an initial charge current which will trigger the over current protection function, causing the unit to malfunction.

Mounting

⚠Caution

1. When handling and assembling units:

- **Do not touch the sharp metal parts of the connector or plug.**
- **Do not apply excessive force to the unit.**

The connecting portions of the unit are firmly joined with seals.

- **When joining units, take care not to get fingers caught between units.**

Injury can result.

Mounting

⚠Caution

2. Do not drop, bump, or apply excessive impact.

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.

IP67 protection class cannot be guaranteed if the screws are not tightened to the specified torque.

4. When lifting a large size manifold solenoid valve unit, take care to avoid causing stress to the valve connection joint.

The connection parts of the unit may be damaged.

Because the unit may be heavy, carrying and installation should be performed by more than one operator to avoid strain or injury.

5. When placing a manifold, mount it on a flat surface.

Torsion in the whole manifold can lead to trouble such as air leakage or defective insulation.

Wiring

⚠Caution

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

Provide a specific grounding as close to the unit as possible to minimize the distance to grounding.

2. Avoid repeatedly bending or stretching the cable and applying a heavy object or force to it.

Wiring applying repeated bending and tensile stress to the cable can break the circuit.

3. Avoid miswiring.

If miswired, there is a danger of malfunction or damage to the reduced wiring system.

4. Do not wire while energizing the product.

There is a danger of malfunction or damage to the reduced wiring system or input/output equipment.

5. Avoid wiring the power line and high-pressure line in parallel.

Noise or surge produced by signal line resulting from the power line or high pressure line could cause malfunction.

Wiring of the reduced wiring system or input/output device and the power line or high-pressure line should be separated from each other.

6. Confirm the wiring insulation.

Defective insulation (contact with other circuits, improper insulation between terminals, etc.) may cause damage to the reduced wiring system or input/output device due to excessive voltage or current.

Series VQC4000
Specific Product Precautions 5

Be sure to read before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valves Precautions.

EX600 Precautions

Wiring

⚠Caution

7. When a reduced wiring system is installed in machinery/equipment, provide adequate protection against noise by using noise filters, etc.

Noise in signal lines may cause malfunction.

8. When connecting wires of input/output device or handheld terminal, prevent water, solvent or oil from entering inside from the connecter section.

This can cause damage, equipment failure, or malfunction.

9. Avoid wiring patterns in which excessive stress is applied to the connector.

This may cause malfunction or damage to the unit due to contact failure.

Operating Environment

⚠Warning

1. Do not use in an atmosphere containing an inflammable gas or explosive gas.

Use in such an atmosphere is likely to cause a fire or explosion. This system is not explosion-proof.

⚠Caution

1. Select the proper type of enclosure according to the environment of operation.

IP65/67 protection class is achieved when the following conditions are met.

1) The units are connected properly with wiring cable for power supply, communication connector, and cable with M12 connector.
2) Suitable mounting of each unit and manifold valve.
3) Be sure to mount a seal cap on any unused connectors.

If using in an environment that is exposed to water splashes, please take measures such as using a cover.

For IP40 protection class, do not use in atmospheres with corrosive gas, chemicals, sea water, water, steam, or where there is direct contact with any of these.

When EX600-D□□E or EX600-D□□F are connected, the enclosure of the manifold should be IP40.

Also, the Handheld Terminal confirms to IP20, so prevent foreign matter from entering inside, and water, solvent or oil from coming in direct contact with it.

2. Provide adequate protection when operating in locations such as follows.

Failure to do so may cause damage or malfunction.

The effect of countermeasures should be checked in individual equipment and machine.

1) Where noise is generated by static electricity, etc.
2) Where there is a strong electric field
3) Where there is a danger of exposure to radiation
4) When in close proximity to power supply lines

Operating Environment

⚠Caution

3. Do not use in an environment where oil and chemicals are used.

Operating in environments with coolants, cleaning solvents, various oils or chemicals may cause adverse effects (damage, malfunction) to the unit even in a short period of time.

4. Do not use in an environment where the product could be exposed to corrosive gas or liquid.

This may damage the unit and cause it to malfunction.

5. Do not use in locations with sources of surge generation.

Installation of the unit in an area around the equipment (electromagnetic lifters, high frequency induction furnaces, welding machine, motors etc.), which generates the large surge voltage could cause to deteriorate an internal circuitry element of the unit or result in damage. Implement countermeasures against the surge from the generating source, and avoid touching the lines with each other.

6. Use the product type that has an integrated surge absorption element when directly driving a load which generates surge voltage by relay, solenoid valves or lamp.

When a surge generating load is directly driven, the unit may be damaged.

7. The product is CE marked, but not immune to lightning strikes. Take measures against lightning strikes in your system.

8. Keep dust, wire scraps and other extraneous material from getting inside the product.

This may cause malfunction or damage.

9. Mount the unit in such locations, where no vibration or shock is affected.

This may cause malfunction or damage.

10. Do not use 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 effected.

11. Do not use in direct sunlight.

Do not use in direct sunlight. It may cause malfunction or damage.

12. Use this product within the specified ambient temperature range.

This may cause malfunction.

13. Do not use in places where there is radiated heat around it.

Such a place is likely to cause malfunction.

Specific Product Precautions 6

Be sure to read before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valves Precautions.

EX600 Precautions

Adjustment/Operation

⚠Warning

1. Do not perform operation or setting with wet hands.

There is a risk of electrical shock.

<Handheld Terminal>

2. Do not apply pressure to the LCD display.

There is a possibility of the crack of LCD display and injuring.

3. The forced input/output function is used to change the signal status forcibly. When operating this function, be sure to check the safety of the surroundings and installation.

Otherwise, injury or equipment damage could result.

4. Incorrect setting of parameters can cause malfunction. Be sure to check the settings before use.

This may cause injury or equipment damage.

⚠Caution

1. Use a watchmaker's screwdriver with thin blade for the setting of each switch of the SI unit.
When setting the switch, do not touch other unrelated parts.

This may cause parts damage or malfunction due to a short circuit.

2. Provide adequate setting for the operating conditions.

Failure to do so could result in malfunction.
Refer to the operation manual for setting of the switches.

3. For the details of programming and address setting, refer to the manual from the PLC manufacturer.

The content of programming related to protocol is designed by the manufacturer of the PLC used.

<Handheld Terminal>

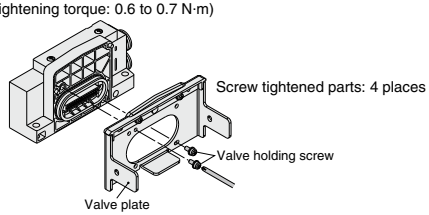
4. Do not press the setting buttons with a sharp pointed object.

This may cause damage or malfunction.

5. Do not apply excessive load and impact to the setting buttons.

This may cause damage, equipment failure or malfunction.

When the order does not include the SI unit, the valve plate to connect the manifold and SI unit is not mounted. Use attached valve fixing screws and mount the valve plate.
(Tightening torque: 0.6 to 0.7 N·m)



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. When an inspection is performed,

- **Turn off the power supply.**
- **Stop the air supply, exhaust the residual pressure in piping and verify that the air is released before performing maintenance work.**

Unexpected malfunction of system components and injury can result.

⚠Caution

1. When handling and replacing the unit:

- **Do not touch the sharp metal parts of the connector or plug.**
- **Do not apply excessive force to the unit.**

The connecting portions of the unit are firmly joined with seals.

- **When joining units, take care not to get fingers caught between units.**

Injury can result.

2. Perform periodic inspection.

Unexpected malfunction in the system composition devices is likely to occur due to malfunction of machinery or equipment.

3. After maintenance, make sure to perform an appropriate functionality inspection.

In cases of abnormality such as faulty operation, stop operation. Unexpected malfunction in the system composition devices is likely to occur.

4. Do not use benzene and thinner for cleaning units.

Damage to the surface or erasure of the display can result.
Wipe off any stains with a soft cloth.
If the stain is persistent, wipe off with a cloth soaked in a dilute solution of neutral detergent and wrung out tightly, and then finish with a dry cloth.

Other

⚠Caution

1. For precautions and product specific precautions for manifold solenoid valves, refer to the catalog that includes each product series.