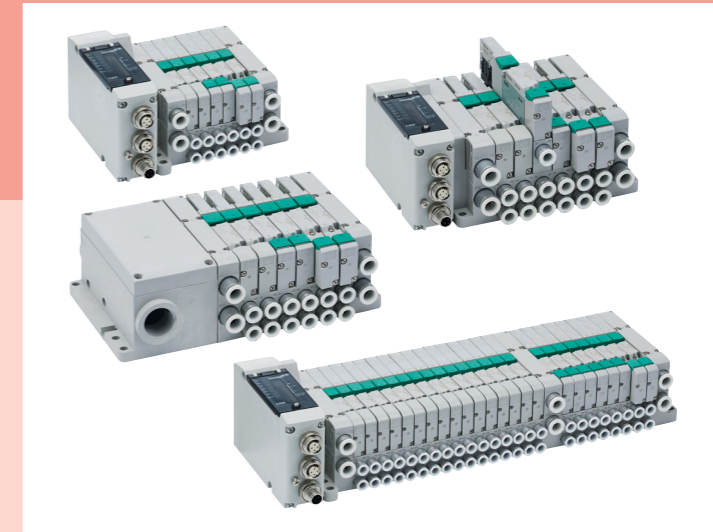


TVG

3, 5-port pilot operated valve, plug-in block manifold



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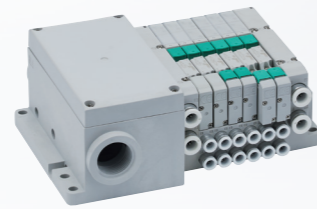
How to order solenoid valve manifold with reduced wiring/serial transmission device unit

The following 3 ordering methods are available.

Ordering method	Manifold specifications sheet	Customer assembly processes	Product delivery date
A Manifold assembly	Required	☆	○
B Easy assembly	Not required	◎	◎
C Discrete block	Not required	○	☆

☆: Excellent, ◎: Very good, ○: Good

Applicable solenoid valve



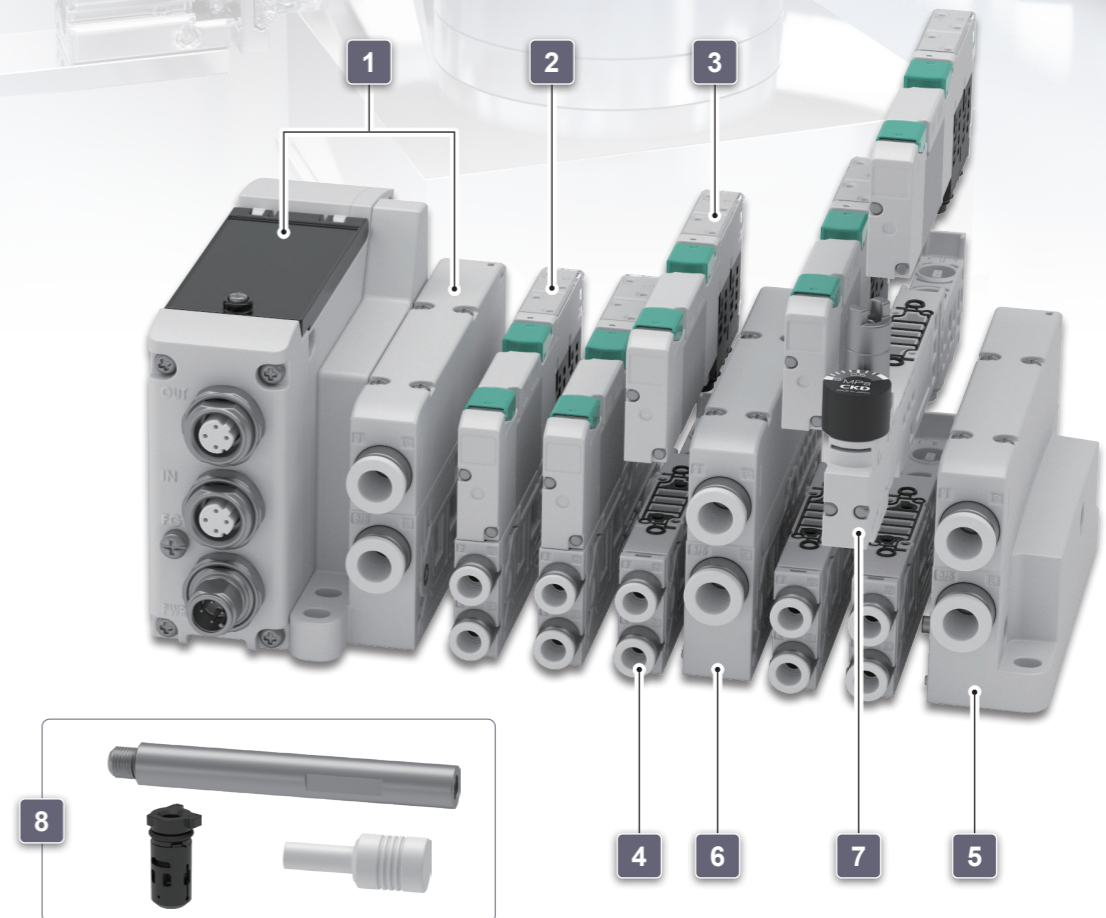
Reduced wiring



Serial transmission (output only)

C Discrete block

Each part is delivered separately. The customer must assemble the manifold by combining the parts. You can order the parts below with their model Nos.



A Manifold assembly

The units will be delivered with the specifications specified in the manifold specifications sheet. Can be ordered with model No. starting with TVG□M and a manifold specifications sheet.

TVG□M
□: Valve size

Page 9

Manifold specifications sheet

Page 103

B Easy assembly

The single solenoid valve and assembled manifold base will be delivered separately. The following parts model No. can be ordered. The customer is required to assemble a single solenoid valve and a manifold base.

Single solenoid valve
(For mounting base)

Specs not required

TVG□-
□: Valve size

Page 17

+

Assembled Manifold Base

Specs not required

TVG□B-
□: Valve size

Page 13

+

Spacer

Specs not required

TVG□P-
□: Valve size

Page 19

+

Exhaust malfunction Prevention valve

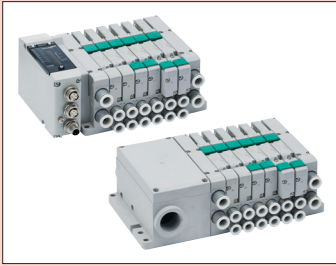
Specs not required

TVG□P-
□: Valve size

Page 49

No.	Name	Head model No.	Listed page
1	Wiring supply and exhaust block	TVG□P- □: Valve size	Page 35
2	Valve block with solenoid valve		Page 37
3	Solenoid valve discrete (for base mounting)	TVG□- □: Valve size	Page 17
4	Valve block		Page 41
5	End supply and exhaust block		Page 46
6	Intermediate supply and exhaust block	TVG□P- □: Valve size	Page 47
7	Spacer		Page 19
8	Tie rod, silencer, exhaust check valve		Page 45, 49
Other related parts			Page 49

*1. The manifold base is limited to options that can be manufactured without the need for specifications, such as double wiring and no malfunction prevention valve assembly.



Plug-in-type block manifolds Pilot operated 3, 5-port valve TVG1/TVG2 Series



TVG With reduced wiring/serial transmission device unit
TVG With interface for remote I/O connection
TVG -P4 Compatible with magnetic safety manufacturing process

Manifold common specifications

Item	Description
Manifold	Block manifold
Mounting method	Direct mounting
Air supply and exhaust method	Common supply/Common exhaust (With internal exhaust check valve)
Pilot exhaust method	Main valve/pilot valve common exhaust (Pilot exhaust check valve built-in)
Internal pilot (*5)	
Piping direction	Side direction of base
Valve and operation	Pilot operated soft spool valve
Working fluid	Compressed air
Max. working pressure MPa	0.7
Internal pilot	2-position double 0.1 (*7)
Minimum working pressure MPa	2-position single, 3-position 0.2
	3-port valve 0.2
External pilot min. working pressure kPa	-100 (Pilot pressure at 0.2MPa or more)
Proof pressure MPa	1.05
Ambient temperature °C	-5 to 55 (no freezing)
Fluid temperature °C	5 to 55
Manual override	Non-locking/Locking common (standard)
Lubrication (*1)	Not required
Degree of protection (*2)	IP65, IP67
Vibration resistance m/s ²	50 or less
Shock resistance m/s ²	300 or less
Atmosphere	Cannot be used in corrosive gas environments

Electrical specifications

Item	Common terminal block EA1□	Serial transmission JA□□, JB□□
Rated voltage V	24 DC	24 DC
Voltage fluctuation range (*3)	±10%	+10%, -5%
Holding current	Standard 0.017	
	With low exoergic/energy circuit A 0.005	
Power consumption	Standard 0.4	
	With low exoergic/energy circuit W 0.1	
Thermal class		B
Surge suppressor (*4)		Zener diode
Indicator		LED

- *1: Use turbine oil Class 1 ISO VG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.
- *2: Tested according to the test method for IP65 and IP67 (IEC 60529: 2001) standards. Refer to page 144 for details.
- *3: As the voltage drop occurs depending on the internal circuit of the serial transmission, pay attention to the voltage fluctuation range.
- *4: If low exoergic/energy circuit or surgeless types are selected, then it will be a diode.
- *5: The pilot exhaust method differs with the supply and exhaust block specification. Refer to page 48 for details.
- *6: Select the external pilot when using at low vacuum. Refer to page 146 for details.
- *7: At 0.2MPa with low exoergic/energy circuit.

Individual specifications

Item	TVG1		TVG2	
	Common terminal block EA1□	Serial transmission JA□□, JB□□	Common terminal block EA1□	Serial transmission JA□□, JB□□
Max. station No.	Standard wiring (double wiring) 10 stations	16 stations	10 stations	16 stations
	Single solenoid, double solenoid layout specification (Single wiring) 20 stations	24 stations	20 stations	24 stations
Max. number of solenoids	20 points	32 points	20 points	32 points
Port size	Metric fitting	Port A/B	Push-in fitting ø1.8, ø4, ø6	
		Port P/R	Push-in fitting ø8	
	Inch fitting	Port A/B	Push-in fitting ø1/8", ø5/32"	
		Port P/R	Push-in fitting ø1/4", ø5/16"	

Performance/characteristics by model

Item	Solenoid position	TVG1		TVG2		
		at ON	at OFF	at ON	at OFF	
Response time ms	Two 3-port valves integrated	15	25	20	37	
	2-position	Single	15	20	22	24
		Double	15	15	26	26
	3-position	20	30	25	35	

The response times are values with supply pressure of 0.5 MPa at 20°C and without lubrication. They depend on the pressure and the lubricant quality.

Flow characteristics

Model No.	Solenoid position	P → A/B		A/B → R	
		C [dm ³ /(s·bar)]	b	C [dm ³ /(s·bar)]	b
TVG1	Two 3-port valves integrated	0.77	0.37	1.1 (0.56)	0.34 (0.37)
	2-position	1.0	0.29	1.2 (0.59)	0.36 (0.41)
	3-position	All ports closed	0.96	0.33	1.0 -
ABR connection		0.96	0.32	1.3 (0.60)	0.38 (0.40)
	PAB connection	1.1	0.35	1.0 -	0.36 -
TVG2	Two 3-port valves integrated	1.7	0.44	2.2 (1.8)	0.43 (0.20)
	2-position	2.4	0.32	2.8 (2.0)	0.34 (0.19)
	3-position	All ports closed	2.2	0.35	2.5 -
ABR connection		2.2	0.32	2.9 (2.1)	0.40 (0.21)
PAB connection		2.6	0.34	2.5 -	0.37 -

*1: Effective cross-sectional area S and sonic conductance C are converted as $S = 5.0 \times C$.

*2: Values in () are with the exhaust check valve.

Reduced wiring specifications

* PNP specifications are Special-order product.

Item	EA1A	EA1B
Type	Common terminal block M3 thread	Common terminal block M3 thread
Output	NPN (plus common)	PNP (minus common)

Specifications of serial transmission device units (Refer to page 136 for the PLC compatibility table.)

* PNP specifications are Special-order product.

Item	JA1C	JA1D	JA2C	JA2D	JA3C	JA3D	JA4C	JA4D	JA5C	JA5D	JA6C	JA6D
Communication protocol	DeviceNet		CC-Link Ver.1.10		EtherCAT		EtherNet/IP		CC-Link IEF Basic		PROFINET	
Power supply voltage	Unit side 11 to 25 VDC*		24 VDC ±10%									
	Valve side		24 VDC ±10%, -5%									
Current consumption	Unit side 50 mA or less (all points ON: at 24 VDC)		90 mA or less (all points ON: at 24 VDC)									
	Valve side		15 mA or less (excluding load current)									
No. of output points	32 points											
Occupied number	4 bytes		1 station									
Operation display	LED (power supply and communication status)											
Output	NPN (Plus common)	PNP (Minus common)	NPN (Plus common)	PNP (Minus common)	NPN (Plus common)	PNP (Minus common)	NPN (Plus common)	PNP (Minus common)	NPN (Plus common)	PNP (Minus common)	NPN (Plus common)	PNP (Minus common)

* Indicates the voltage range of the communication power supply.

Item	JA7C	JA7D	JA8C	JA8D	JA9C	JA9D	JA9G	JA9H	JB1C	JB1D	
Communication protocol	CC-Link IE Field		CC-Link IE TSN		IO-Link			IO-Link Wireless			
Power supply voltage	Unit side 24 VDC ±10%		18 to 30 VDC		24 VDC ±10%						
	Valve side		24 VDC ±10%, -5%								
Current consumption	Unit side 100 mA or less (all points ON: at 24 VDC)		50 mA or less (all points ON: at 24 VDC)			35 mA or less (All points ON: at 24 VDC)					
	Valve side		15 mA or less (excluding load current)								
No. of output points	32 points										
Occupied number	1 station										
Operation display	LED (power supply and communication status)										
Output	NPN (Plus common)	PNP (Minus common)	NPN (Plus common)	PNP (Minus common)	NPN (Plus common)	PNP (Minus common)	NPN (Plus common)	PNP (Minus common)	NPN (Plus common)	PNP (Minus common)	

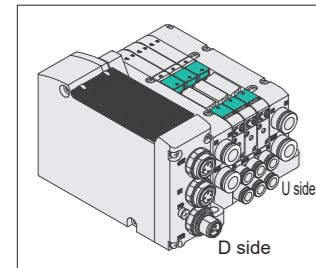
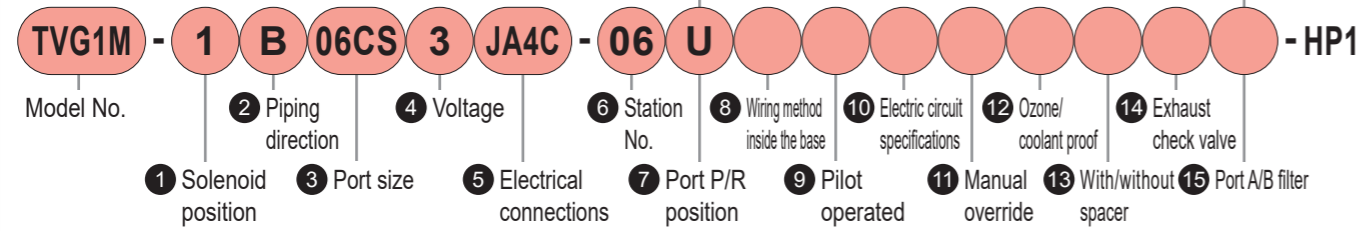
TVG With reduced wiring/serial transmission device unit
TVG With interface for remote I/O connection
TVG -P4 Compatible with magnetic safety manufacturing process

Manifold specs sheet
Technical data
Safety precautions

Manifold specs sheet
Technical data
Safety precautions

How to order
Manifold with solenoid valve

10 mm width (valve width)



1 Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
X	Mix manifold
A	Two 3-port valves
B	integrated*1
C	integrated*1

2 Piping direction

B	Side piping
---	-------------

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.

3 Port size (port A/B)

Metric fitting	
0ACS	ø1.8 push-in fitting (compatible tube UP-9402)**
04CS	ø4 push-in fitting
06CS	ø6 push-in fitting
0ACU	L-type upward ø1.8 push-in fitting (compatible tube UP-9402)**
04CU	ø4 push-in fitting
06CU	ø6 push-in fitting
0ACD	L-type downward ø1.8 push-in fitting (compatible tube UP-9402)**
04CD	ø4 push-in fitting
06CD	ø6 push-in fitting
99CX	Push-in fitting mix
*3 Single side plug specs	
*1	
Port A	
Port B	
0ACA	ø1.8 push-in fitting (compatible tube UP-9402)**
04CA	ø4 push-in fitting
06CA	ø6 push-in fitting
0ACF	Plug
04CF	ø1.8 push-in fitting (compatible tube UP-9402)**
06CF	ø4 push-in fitting
06CF	ø6 push-in fitting
0ACB	L-type upward ø1.8 push-in fitting (compatible tube UP-9402)**
04CB	ø4 push-in fitting
06CB	ø6 push-in fitting
0ACG	Plug
04CG	L-type upward ø1.8 push-in fitting (compatible tube UP-9402)**
06CG	ø4 push-in fitting
06CG	ø6 push-in fitting
0ACC	L-type downward ø1.8 push-in fitting (compatible tube UP-9402)**
04CC	ø4 push-in fitting
06CC	ø6 push-in fitting
0ACH	Plug
04CH	L-type downward ø1.8 push-in fitting (compatible tube UP-9402)**
06CH	ø4 push-in fitting
06CH	ø6 push-in fitting
Inch fitting	
03LS	ø1/8" push-in fitting
04LS	ø5/32" push-in fitting
03LU	L-type upward ø1/8" push-in fitting
04LU	ø5/32" push-in fitting
99LX	Push-in fitting mix
*3 Single side plug specs	
*1	
Port A	
Port B	
03LA	ø1/8" push-in fitting
04LA	ø5/32" push-in fitting
03LF	Plug
04LF	ø1/8" push-in fitting
04LF	ø5/32" push-in fitting
03LB	L-type upward ø1/8" push-in fitting
04LB	ø5/32" push-in fitting
03LG	Plug
04LG	L-type upward ø1/8" push-in fitting
04LG	ø5/32" push-in fitting

4 Voltage

3	24 VDC
---	--------

5 Electrical connections * PNP specifications are Special-order product.

Reduced wiring connection	
Common terminal block (M3 thread)	NPN EA1A
	PNP EA1B

Serial transmission

Communication protocol	Output	No. of output points	Code
DeviceNet	NPN	32 points	JA1C
	PNP		JA1D
CC-LINK	NPN	32 points	JA2C
	PNP		JA2D
EtherCAT	NPN	32 points	JA3C
	PNP		JA3D
EtherNet/IP	NPN	32 points	JA4C
	PNP		JA4D
CC-Link IEF Basic	NPN	32 points	JA5C
	PNP		JA5D
PROFINET	NPN	32 points	JA6C
	PNP		JA6D
CC-Link IE Field	NPN	32 points	JA7C
	PNP		JA7D
CC-Link IE TSN	NPN	32 points	JA8C
	PNP		JA8D
IO-Link	Class A	32 points	JA9C
	PNP		JA9D
IO-Link Wireless	Class B	32 points	JA9G
	PNP		JA9H
IO-Link Wireless	NPN	32 points	JB1C
	PNP		JB1D

*1: Ports A and B with one side plug specifications are available for 2-position single only.
*2: 3-position is not available for L-type upward push-in fittings.
*3: Port size mixtures of ports 4(A) and 2(B) are not available.
*4: Special-order product.

Specifications for rechargeable battery (Refer to page 80 for details.)

For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited

** - ** - ** - P4

6 Station No.

02	2 stations
to	to
24	24 stations (Max. □20 stations for EA1)

*1: EA1 □ has up to 20 solenoid points.

7 Port P/R position * Multiple selection is not possible.

U	U side	
D	D side	
B	U side, D side	
T	U side, D side, With intermediate supply and exhaust block	

*1: Fittings of port P/R are for the same direction as those of port A/B.
*2: Specify the specifications of the intermediate supply and exhaust block in the manifold specifications sheet.

10 Electric circuit specifications * Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

9 Pilot operated

Blank	Internal pilot
K	External pilot

12 Ozone/Coolant proof

Blank	Standard specifications
A	Ozone/Coolant proof (main valve fluorine specification)

13 With/Without spacer

Blank	Without spacer
Z	With spacer (Type and location are specified in the MF specifications sheet)

*1: Specify the spacer type and mounting position in manifold specifications sheet. Stacking of spacers is not possible. Combination with the blanking plate is not supported. Cannot be selected together with L-type upward push-in fitting.

15 Port A/B filter

Blank	None
F	Port A/B filter built in

*1: A filter is built into port P.

8 Wiring method inside the base *1

Blank	Double wiring
S	Single solenoid, double solenoid layout specification

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated. Refer to page 141 for details.

11 Manual override * Multiple selection is not possible.

Blank	Locking/Non-locking common, with misoperation prevention cover
M1	Non-locking, with misoperation prevention cover
M2	Locking/Non-locking common, tool operated, without cover
M3	Non-locking, tool operated, without cover

14 Exhaust check valve

Blank	None
H	With exhaust check valve

*1: Solenoid positions "3" and "5" cannot be selected. Refer to page 147 for details on the type with exhaust check valve.
*2: Specify the number of stations to install in the manifold specifications sheet.

TVG With reduced wiring serial transmission device unit

TVG With interface for remote I/O connection

TVG-P4 Compatible with rechargeable battery manufacturing process

Manifold specs sheet

Technical data

Safety precautions

TVG With reduced wiring serial transmission device unit

TVG With interface for remote I/O connection

TVG-P4 Compatible with rechargeable battery manufacturing process

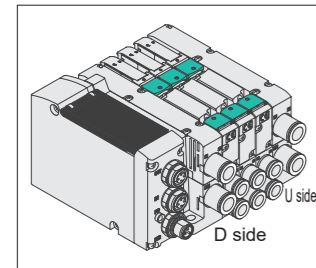
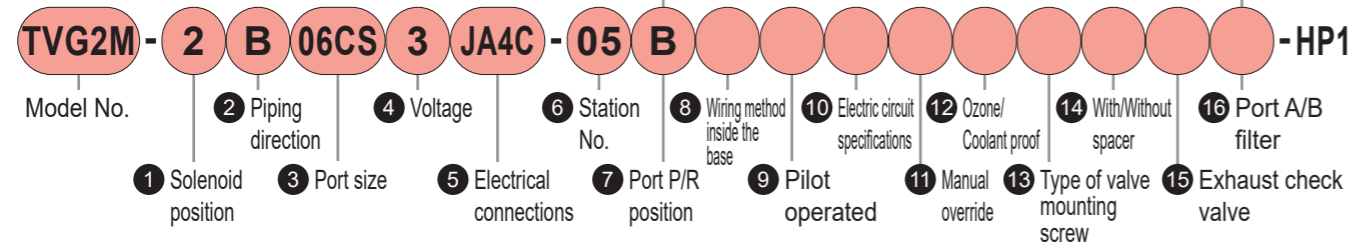
Manifold specs sheet

Technical data

Safety precautions

How to order
Manifold with solenoid valve

15 mm width (valve width)



1 Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
X	Mix manifold
A	Two 3-port valves inter-locked
B	Two 3-port valves inter-locked
C	Two 3-port valves inter-locked

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.

2 Piping direction

B	Side piping
---	-------------

3 Port size (port A/B)

Metric fitting		
04CS	ø4 push-in fitting	
06CS	ø6 push-in fitting	
08CS	ø8 push-in fitting	
06CU	L-type ø6 push-in fitting	
08CU	upward ø8 push-in fitting	
06CD	L-type ø6 push-in fitting	
08CD	downward ø8 push-in fitting	
99CX	Push-in fitting mix	
*3 Single side plug specs		
Port A		Port B
04CA	ø4 push-in fitting	Plug
06CA	ø6 push-in fitting	Plug
08CA	ø8 push-in fitting	Plug
04CF	ø4 push-in fitting	Plug
06CF	ø6 push-in fitting	Plug
08CF	ø8 push-in fitting	Plug
06CB	L-type ø6 push-in fitting	Plug
08CB	upward ø8 push-in fitting	Plug
06CG	L-type ø6 push-in fitting	Plug
08CG	upward ø8 push-in fitting	Plug
06CC	L-type ø6 push-in fitting	Plug
08CC	downward ø8 push-in fitting	Plug
06CH	L-type ø6 push-in fitting	Plug
08CH	downward ø8 push-in fitting	Plug

Inch fitting

06LS	ø1/4" push-in fitting	
08LS	ø5/16" push-in fitting	
06LU	L-type ø1/4" push-in fitting	
08LU	upward ø5/16" push-in fitting	
99LX	Push-in fitting mix	
*3 Single side plug specs		
Port A		Port B
06LA	ø1/4" push-in fitting	Plug
08LA	ø5/16" push-in fitting	Plug
06LF	ø1/4" push-in fitting	Plug
08LF	ø5/16" push-in fitting	Plug
06LB	L-type ø1/4" push-in fitting	Plug
08LB	upward ø5/16" push-in fitting	Plug
06LG	L-type ø1/4" push-in fitting	Plug
08LG	upward ø5/16" push-in fitting	Plug

4 Voltage

3	24 VDC
---	--------

5 Electrical connections * PNP specifications are Special-order product.

Reduced wiring connection		
Common terminal block (M3 thread)	NPN	EA1A
	PNP	EA1B

Serial transmission

Communication protocol	Output	No. of output points	Code
DeviceNet	NPN	32 points	JA1C
	PNP		JA1D
CC-LINK	NPN	32 points	JA2C
	PNP		JA2D
EtherCAT	NPN	32 points	JA3C
	PNP		JA3D
EtherNet/IP	NPN	32 points	JA4C
	PNP		JA4D
CC-Link IEF Basic	NPN	32 points	JA5C
	PNP		JA5D
PROFINET	NPN	32 points	JA6C
	PNP		JA6D
CC-Link IE Field	NPN	32 points	JA7C
	PNP		JA7D
CC-Link IE TSN	NPN	32 points	JA8C
	PNP		JA8D
IO-Link	Class A	NPN	JA9C
		PNP	JA9D
	Class B	NPN	JA9G
		PNP	JA9H
IO-Link Wireless	NPN	32 points	JB1C
	PNP		JB1D

*1: Ports A and B with one side plug specifications are available for 2-position Single only.
*2: 3-position is not available for push-in fitting L-type upward.
*3: Port size mixtures of ports 4(A) and 2(B) are not available.
*4: Special-order product.

Specifications for rechargeable battery (Refer to page 80 for details.)

For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited

** - ** - ** - P4

6 Station No.

02	2 stations
to	to
24	24 stations (Max. □20 stations for EA1)

*1: EA1 □ has up to 20 solenoid points.

7 Port P/R position * Multiple selection is not possible.

U	U side	
D	D side	
B	U side, D side	
T	U side, D side, With intermediate supply and exhaust block	

*1: Fittings of port P/R are for the same direction as those of port A/B.
*2: Specify the specifications of the intermediate supply and exhaust block in the manifold specifications sheet.

8 Wiring method inside the base *1

Blank	Double wiring
S	Single solenoid, double solenoid layout specification

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated.

9 Pilot operated

Blank	Internal pilot	
K	External pilot	

10 Electric circuit specifications

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

11 Manual override * Multiple selection is not possible.

Blank	Locking/Non-locking common/with misoperation prevention cover	
M1	Non-locking, with misoperation prevention cover	
M2	Locking/Non-locking common, tool operation, without cover	
M3	Non-locking, tool operation, without cover	

12 Ozone/Coolant proof

Blank	Standard specifications
A	Ozone/Coolant proof (main valve fluorine specification)

13 Type of valve mounting screw

Blank	Pan head machine screw with Phillips head/flathead
J	Hexagon socket head cap screw

Spacer: J cannot be selected when Z is selected.

14 With/Without spacer

Blank	Without spacer
Z	With spacer (type and location are specified on the MF specifications sheet)

*1: Specify the spacer type and mounting position in manifold specifications sheet. Stacking of spacers is not possible. Combination with the blanking plate is not supported. Cannot be selected together with L-type upward push-in fitting.

15 Exhaust check valve

Blank	None	
H	With exhaust check valve	

*1: Solenoid positions "3" and "5" cannot be selected. Refer to page 147 for details on the type with exhaust check valve.

*2: Specify the number of stations to install in the manifold specifications sheet.

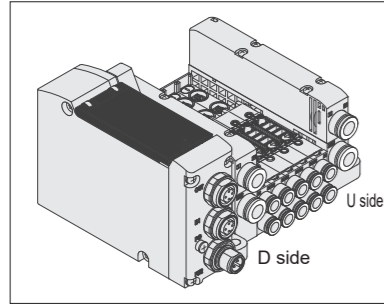
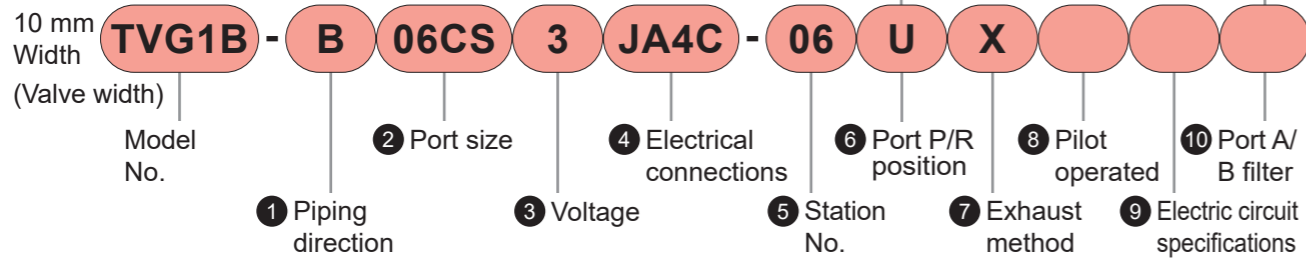
16 Port A/B filter

Blank	None	
F	Port A/B filter built in	

*1: A filter is built into port P.

How to order

Manifold base only * Solenoid valve is not included.



2 Port size (port A/B)

• Metric fitting

0ACS	∅1.8 push-in fitting (compatible tube UP-9402-**)
04CS	∅4 push-in fitting
06CS	∅6 push-in fitting
04ACU	L-type upward ∅1.8 push-in fitting (compatible tube UP-9402-**) *1
04CU	upward ∅4 push-in fitting
06CU	*1 ∅6 push-in fitting
04ACD	L-type downward ∅1.8 push-in fitting (compatible tube UP-9402-**) *1
04CD	downward ∅4 push-in fitting
06CD	∅6 push-in fitting

• Inch fitting

03LS	∅1/8" push-in fitting
04LS	∅5/32" push-in fitting
*2 03LU	L-type upward ∅1/8" push-in fitting
*2 04LU	*1 ∅5/32" push-in fitting

*1: 3-position is not available for L-type upward push-in fittings.
 *2: Special-order product.

1 Piping direction

B	Side piping
----------	-------------

3 Voltage

3	24 VDC
----------	--------

4 Electrical connections

* PNP specifications are Special-order product.

• Reduced wiring connection

Common terminal block (M3 thread)	NPN	EA1A	
	PNP	EA1B	

• Serial transmission

Communication protocol	Output	Number of points	Code	
DeviceNet	NPN	32 point output	JA1C	
	PNP		JA1D	
CC-LINK	NPN		JA2C	
	PNP		JA2D	
EtherCAT	NPN		JA3C	
	PNP		JA3D	
EtherNet/IP	NPN		JA4C	
	PNP		JA4D	
CC-Link IEF Basic	NPN		JA5C	
	PNP		JA5D	
PROFINET	NPN		JA6C	
	PNP		JA6D	
CC-Link IE Field	NPN		JA7C	
	PNP		JA7D	
CC-Link IE TSN	NPN		JA8C	
	PNP		JA8D	
IO-Link	ClassA	NPN	JA9C	
		PNP	JA9D	
	ClassB	NPN	JA9G	
		PNP	JA9H	
IO-Link Wireless	NPN	JB1C		
	PNP	JB1D		

5 Station No.

02	2 stations
to	to
16	16 stations (EA1A, EA1B: 10 stations)

*1: All the wiring inside the base is for double solenoid regardless of the type of valve mounted. The part with the single solenoid mounted will generate an empty number for one solenoid.

7 Exhaust method

Blank	Common exhaust (port R is a push-in fitting)	
X	Silencer integrated (port R is a plug, exhaust is released to atmosphere)	

* A silencer is built into the unit at the position selected with port P/R position.

9 Electric circuit specifications * Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

Specifications for rechargeable battery

(Refer to page 80 for details.)

● For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited

** - ** - ** - **P4**

• If an exhaust check valve is required, refer to page 49.

6 Port P/R position

(TVG1B: ∅8)

* Multiple selection is not possible.

U	U side	
D	D side	
B	U, D both sides	

*1: Fittings of port P/R are for the same as those of port A/B.
 *2: A filter is built into port P.

8 Pilot operated

Blank	Internal pilot	
K	External pilot	

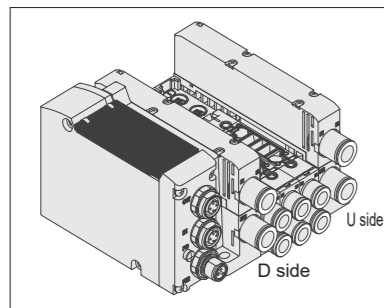
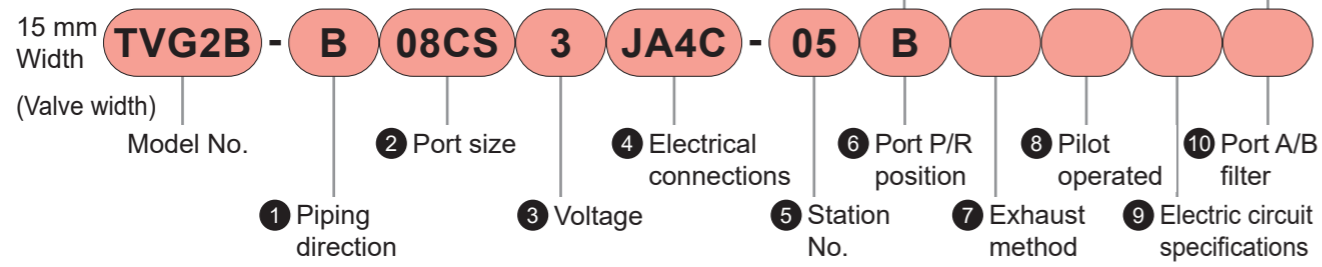
10 Port A/B filter

Blank	None	
F	Port A/B filter built in	

*1: A filter is built into port P.

How to order

Manifold base only * Solenoid valve is not included.



2 Port size (port A/B)

• Metric fitting

04CS	ø4 push-in fitting
06CS	ø6 push-in fitting
08CS	ø8 push-in fitting
06CU	L-type Upward ø6 push-in fitting
08CU	L-type Upward ø8 push-in fitting
06CD	L-type Downward ø6 push-in fitting
08CD	L-type Downward ø8 push-in fitting

• Inch fitting

06LS	ø1/4" push-in fitting
08LS	ø5/16" push-in fitting
*2 06LU	L-type Upward ø1/4" push-in fitting
*2 08LU	L-type Upward ø5/16" push-in fitting

*1: 3-position is not available for L-type upward push-in fittings.
*2: Special-order product.

1 Piping direction

B	Side piping
---	-------------

3 Voltage

3	24 VDC
---	--------

4 Electrical connections

* PNP specifications are Special-order product.

• Reduced wiring connection

Common terminal block (M3 thread)	NPN	EA1A	
	PNP	EA1B	

• Serial transmission

Communication protocol	Output	Number of points	Code				
DeviceNet	NPN	32 point output	JA1C				
	PNP		JA1D				
CC-LINK	NPN		JA2C				
	PNP		JA2D				
EtherCAT	NPN		JA3C				
	PNP		JA3D				
EtherNet/IP	NPN		JA4C				
	PNP		JA4D				
CC-Link IEF Basic	NPN		JA5C				
	PNP		JA5D				
PROFINET	NPN		JA6C				
	PNP		JA6D				
CC-Link IE Field	NPN		JA7C				
	PNP		JA7D				
CC-Link IE TSN	NPN		JA8C				
	PNP		JA8D				
IO-Link	ClassA	NPN	JA9C				
		PNP	JA9D				
	ClassB	NPN	JA9G				
		PNP	JA9H				
IO-Link Wireless	NPN	JB1C					
	PNP	JB1D					

5 Station No.

02	2 stations
to	to
16	16 stations (EA1A, EA1B: 10 stations)

*1: All the wiring inside the base is for double solenoid regardless of the type of valve mounted. The part with the single solenoid mounted will generate an empty number for one solenoid.

6 Port P/R position

(TVG2B: ø10)
* Multiple selection is not possible.

U	U side	
D	D side	
B	U, D both sides	

*1: Fittings of port P/R are for the same direction as those of port A/B.

*2: A filter is built into port P.

7 Exhaust method

Blank	Common exhaust (port R is push-in fitting)	
X	Silencer integrated (port R is plug, exhaust is released to atmosphere)	

*1: A silencer is built into the position selected with port P/R position.

8 Pilot operated

Blank	Internal pilot	
K	External pilot	

9 Electric circuit specifications

* Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

10 Port A/B filter

Blank	None	
F	Port A/B filter built in	

*1: A filter is built into port P.

Specifications for rechargeable battery

(Refer to page 80 for details.)

● For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited

** - ** - ** - P4

• If an exhaust check valve is required, refer to page 49.

TVG With reduced wiring serial transmission device unit

TVG With interface for remote I/O connection

TVG-P4 Compatible with rechargeable battery manufacturing process

Manifold specs sheet

Technical data

Safety precautions

TVG With reduced wiring serial transmission device unit

TVG With interface for remote I/O connection

TVG-P4 Compatible with rechargeable battery manufacturing process

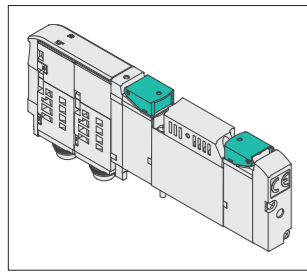
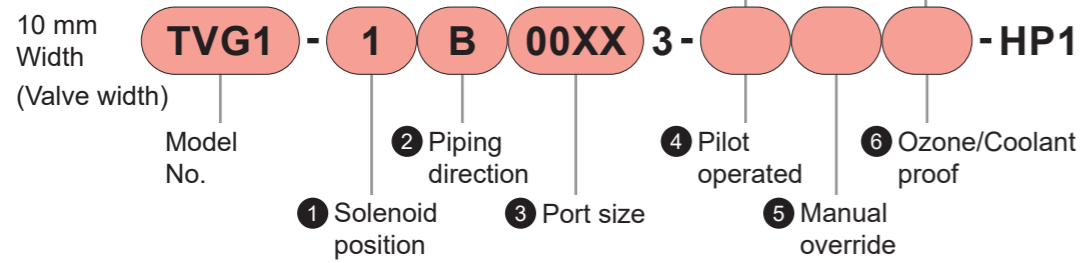
Manifold specs sheet

Technical data

Safety precautions

How to order

Discrete solenoid valve (for base mounting)



① Solenoid position

1	2-position single	
2	2-position double	
3	3-position all ports closed	
4	3-position ABR connection	
5	3-position PAB connection	
*1 A	3-port valve Two valves integrated	A valve side: Normally closed B valve side: Normally closed
*1 B		A valve side: Normally open B valve side: Normally open
*1 C		A valve side: Normally closed B valve side: Normally open

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position Double.

② Piping direction

B	Side piping
----------	-------------

④ Pilot operated

Blank	Internal pilot
K	External pilot

⑥ Ozone/Coolant proof

Blank	Standard specifications
A	Ozone/Coolant proof (main valve fluorine specification)

Solenoid valve mounting screws are included. The gasket is attached to the manifold base.

Specifications for rechargeable battery (Refer to page 80 for details.)

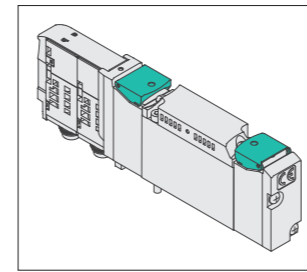
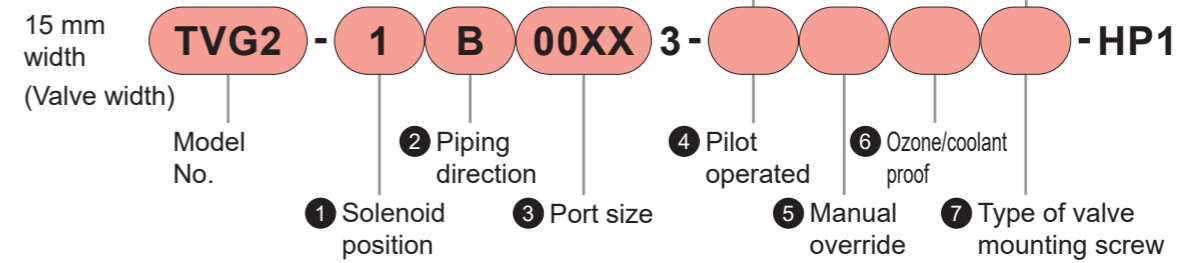
- For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited

** - ** - ** - **P4**

How to order (single solenoid valve)

How to order

Discrete solenoid valve (for base mounting)



① Solenoid position

1	2-position single	
2	2-position double	
3	3-position all ports closed	
4	3-position ABR connection	
5	3-position PAB connection	
*1 A	3-port valve Two valves integrated	A valve side: Normally closed B valve side: Normally closed
*1 B		A valve side: Normally open B valve side: Normally open
*1 C		A valve side: Normally closed B valve side: Normally open

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.

② Piping direction

B	Side piping
----------	-------------

④ Pilot operated

Blank	Internal pilot
K	External pilot

⑥ Ozone/Coolant proof

Blank	Standard specifications
A	Ozone/Coolant proof (main valve fluorine specification)

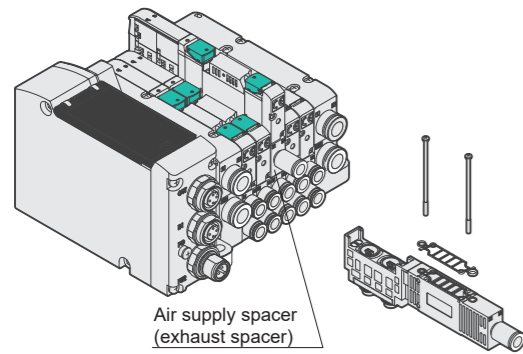
Specifications for rechargeable battery (Refer to page 80 for details.)

- For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited

** - ** - ** - **P4**

• If an exhaust check valve is required, refer to page 49.

Air supply spacer/exhaust spacer



Specifications

- Air supply spacer

Model No.	Weight g
TVG1P-P-□	31

- Exhaust spacer

Model No.	Weight g
TVG1P-R-□	31

Discrete model No.

- Air supply spacer

TVG1P - P - 04CS

① Port size

Code	Bore size	Description
04CS	ø4	ø4 push-in fitting
06CS	ø6	ø6 push-in fitting

- Exhaust spacer

TVG1P - R - 04CS

① Port size

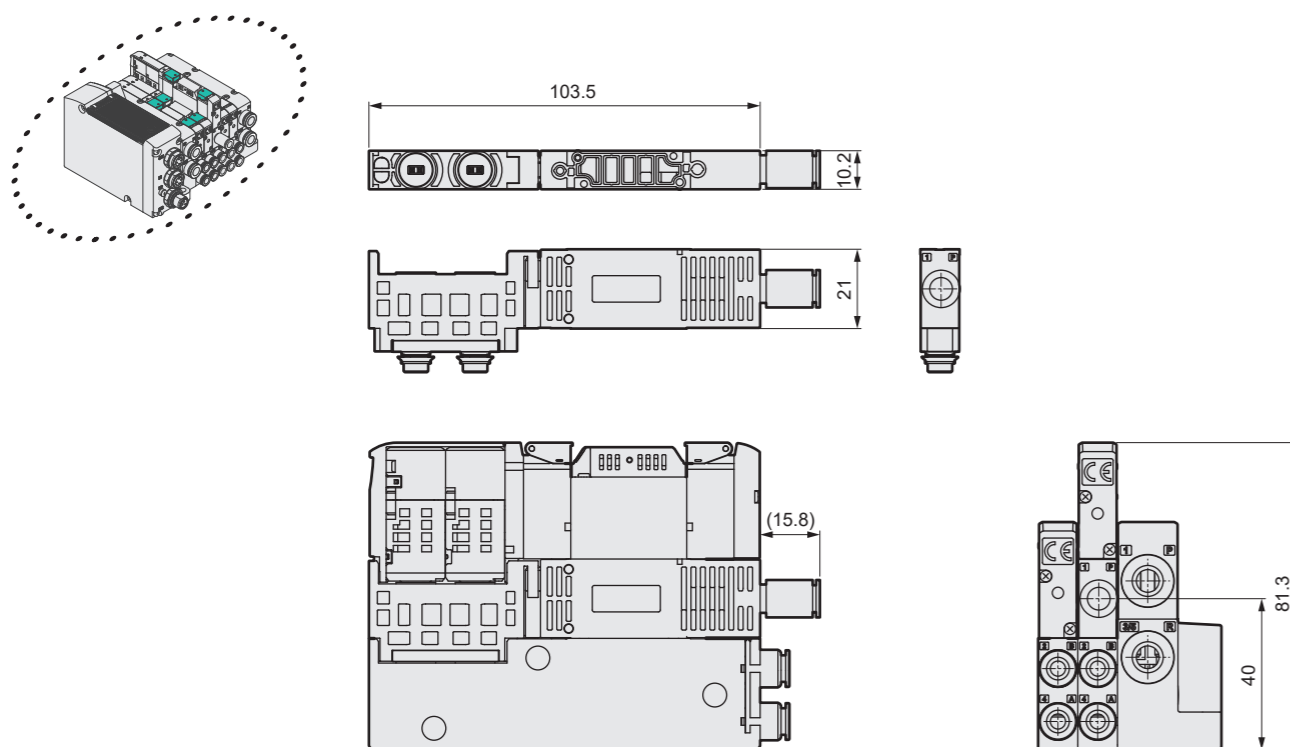
Code	Bore size	Description
04CS	ø4	ø4 push-in fitting
06CS	ø6	ø6 push-in fitting

⚠ Precautions for model No. selection

- *1: Specify the positions and quantity of spacers for manifold in the manifold specifications sheet (Pages 105 to 112).
- *2: Stacking of spacers is not possible.
- *3: A spacer cannot be combined with a blanking plate.
- *4: A spacer mounting screw and gasket are included.

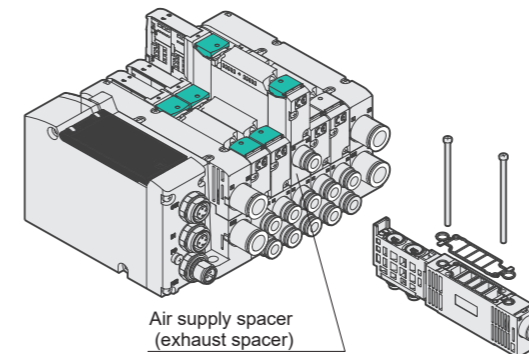
Dimensions

- Air supply spacer/exhaust spacer



Air supply spacer/exhaust spacer

Air supply spacer/exhaust spacer



Specifications

- Air supply spacer

Model No.	Weight g
TVG2P-P-□	56

- Exhaust spacer

Model No.	Weight g
TVG2P-R-□	56

Discrete model No.

- Air supply spacer

TVG2P - P - 06CS

① Port size

Code	Bore size	Description
06CS	ø6	ø6 push-in fitting
08CS	ø8	ø8 push-in fitting

- Exhaust spacer

TVG2P - R - 06CS

① Port size

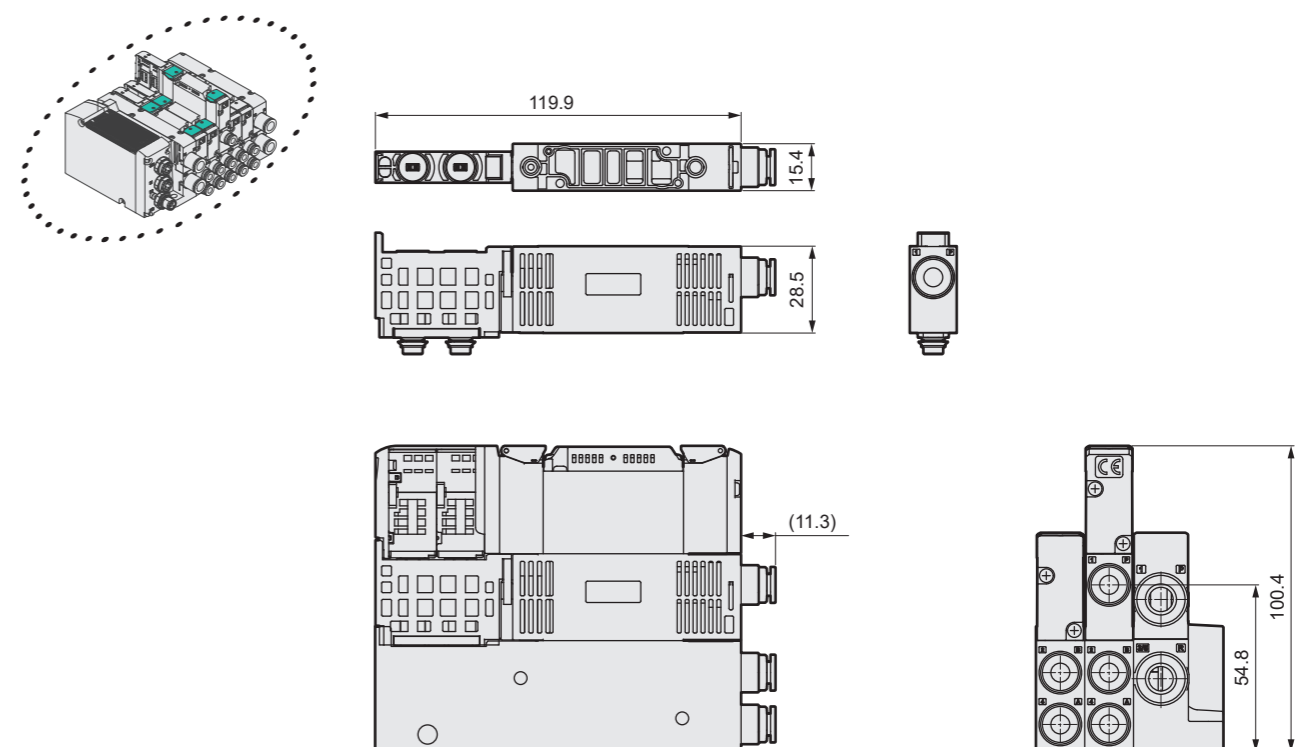
Code	Bore size	Description
06CS	ø6	ø6 push-in fitting
08CS	ø8	ø8 push-in fitting

⚠ Precautions for model No. selection

- *1: Specify the positions and quantity of spacers for manifold in the manifold specifications sheet (Pages 105 to 112).
- *2: Stacking of spacers is not possible.
- *3: A spacer cannot be combined with a blanking plate.
- *4: A spacer mounting screw and gasket are included.

Dimensions

- Air supply spacer/exhaust spacer



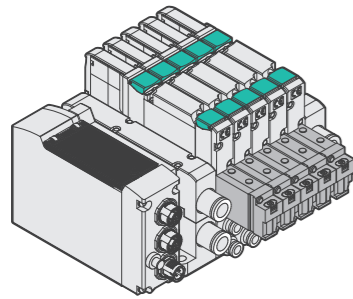
TVG With reduced wiring/serial transmission device unit
TVG With interface for remote I/O connection
TVG-P4 Compatible with micro-galvanic battery manufacturing process

TVG With reduced wiring/serial transmission device unit
TVG With interface for remote I/O connection
TVG-P4 Compatible with micro-galvanic battery manufacturing process

Manifold specs sheet
Technical data
Safety precautions

Manifold specs sheet
Technical data
Safety precautions

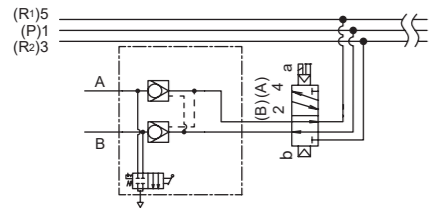
● Spacer pilot check valve



Specifications

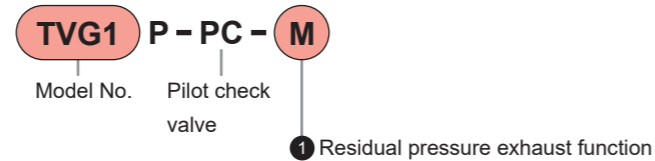
Item	TVG1P-PC-□	TVG2P-PC-□
Working fluid	Compressed air	
Max. working pressure	MPa	0.7
Minimum working pressure	MPa	0.2
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Working fluid temperature	°C	5 to 55
Atmosphere	Cannot be used in corrosive gas environment.	
Weight	g	34 73

JIS symbol



Note: Using a cylinder with a large bore size (more than ø50 as a guide) with little exhaust restriction (eg, no speed controller, no silencer) may lead to a decrease in intermediate stop accuracy and stopping error. Please be careful.

Discrete model No.



① Residual pressure exhaust function

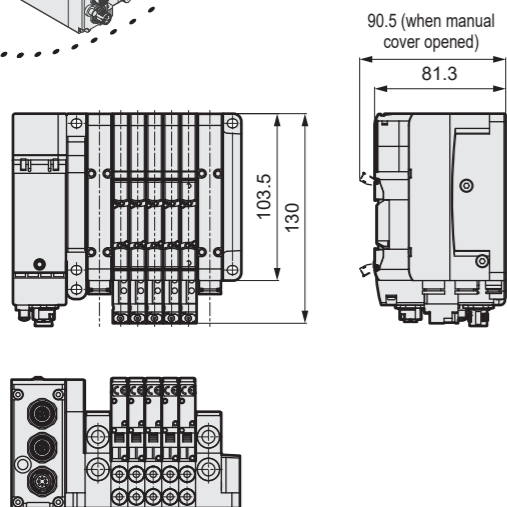
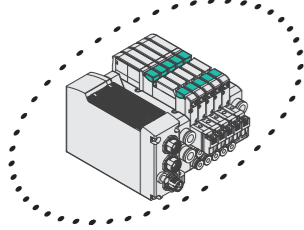
Code	Description
M	Manual override of non-locking
M1	Locking manual override
Blank	No residual pressure exhaust function

⚠ Precautions for model No. selection

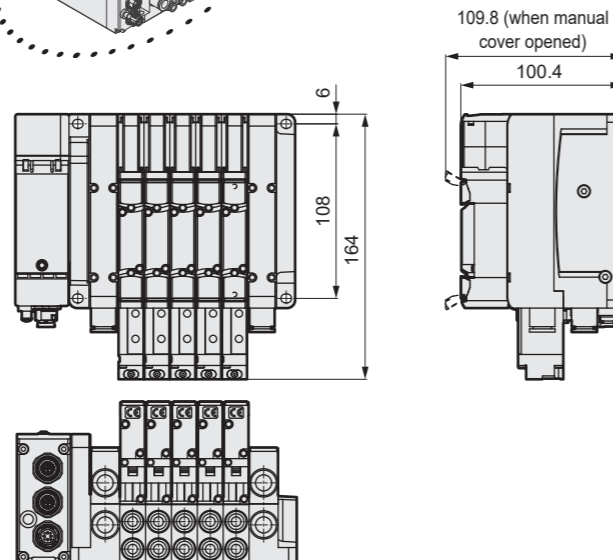
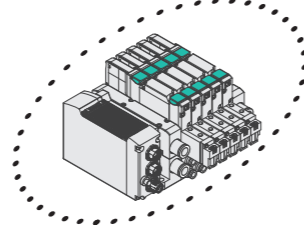
- *1: Specify the spacer mounting position and residual pressure exhaust function selection in manifold specifications sheet.
- *2: Spacer pilot check valve is not available when the fitting for port A/B is elbow.
- *3: Stacking of spacers is not possible.
- *4: A spacer cannot be combined with a blanking plate.
- *5: A spacer mounting screw and gasket are included.

Dimensions

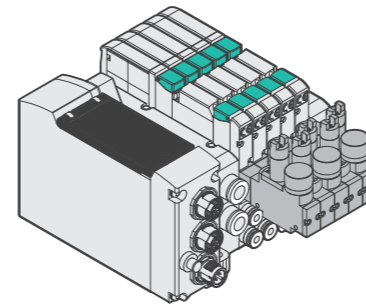
● TVG1



● TVG2



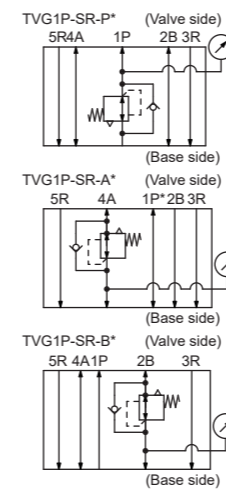
● Spacer regulator



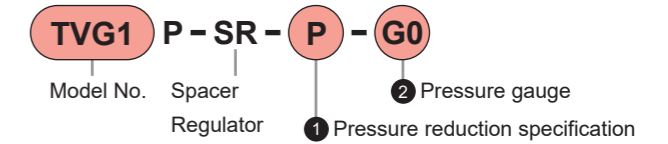
Specifications

Item	TVG1P-SR-□	
Pressure reduction port	P / A / B	
Working fluid	Compressed air	
Max. working pressure	MPa	0.7
Minimum working pressure	MPa	0.2
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Working fluid temperature	°C	5 to 55
Atmosphere	Cannot be used in corrosive gas environment.	
Weight	g	48

JIS symbol



Discrete model No.



① Pressure reduction specification

Code	Description
P	Port P regulator
A	Port A regulator
B	Port B regulator

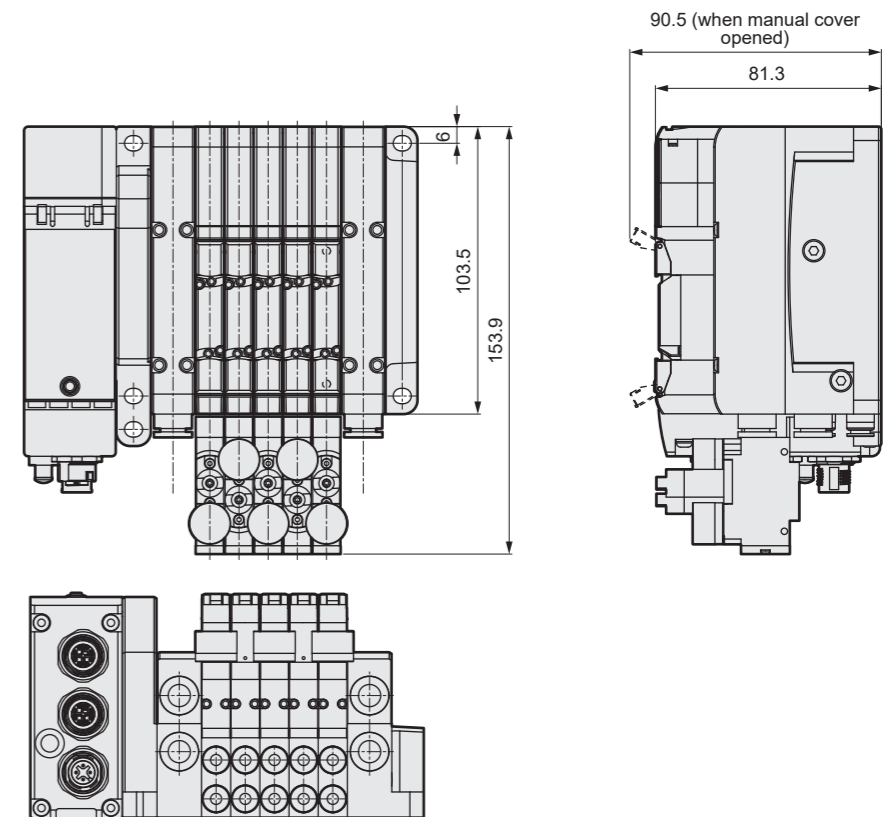
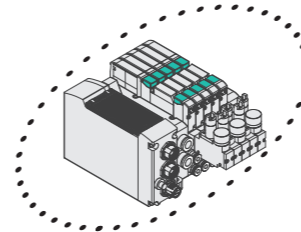
② Pressure gauge

Code	Description
G0	No pressure gauge
G1	With pressure gauge for odd No. stations
G2	With pressure gauge for even No. stations

⚠ Precautions for model No. selection

- *1: Specify the spacer positions in the manifold specifications sheet.
- *2: Spacer regulator is not available when the fitting for port A/B is elbow.
- *3: Stacking of spacers is not possible.
- *4: A spacer cannot be combined with a blanking plate.
- *5: A spacer mounting screw and gasket are included.

Dimensions



TVG With reduced wiring serial transmission device unit
TVG With interface for remote I/O connection
TVG-P4 Compatible with magnetic safety manufacturing process

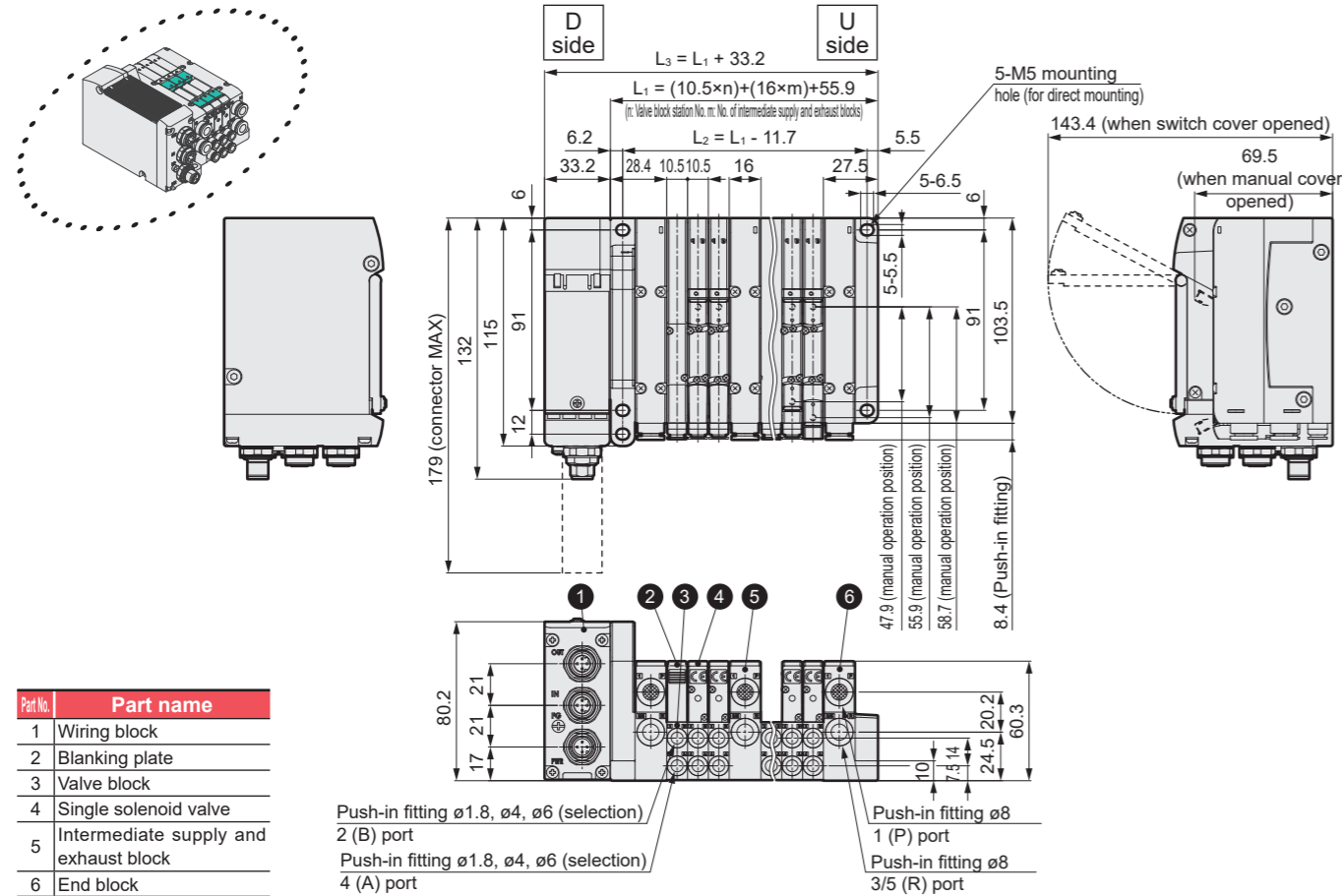
TVG With reduced wiring serial transmission device unit
TVG With interface for remote I/O connection
TVG-P4 Compatible with magnetic safety manufacturing process

Manifold specs sheet
Technical data
Safety precautions

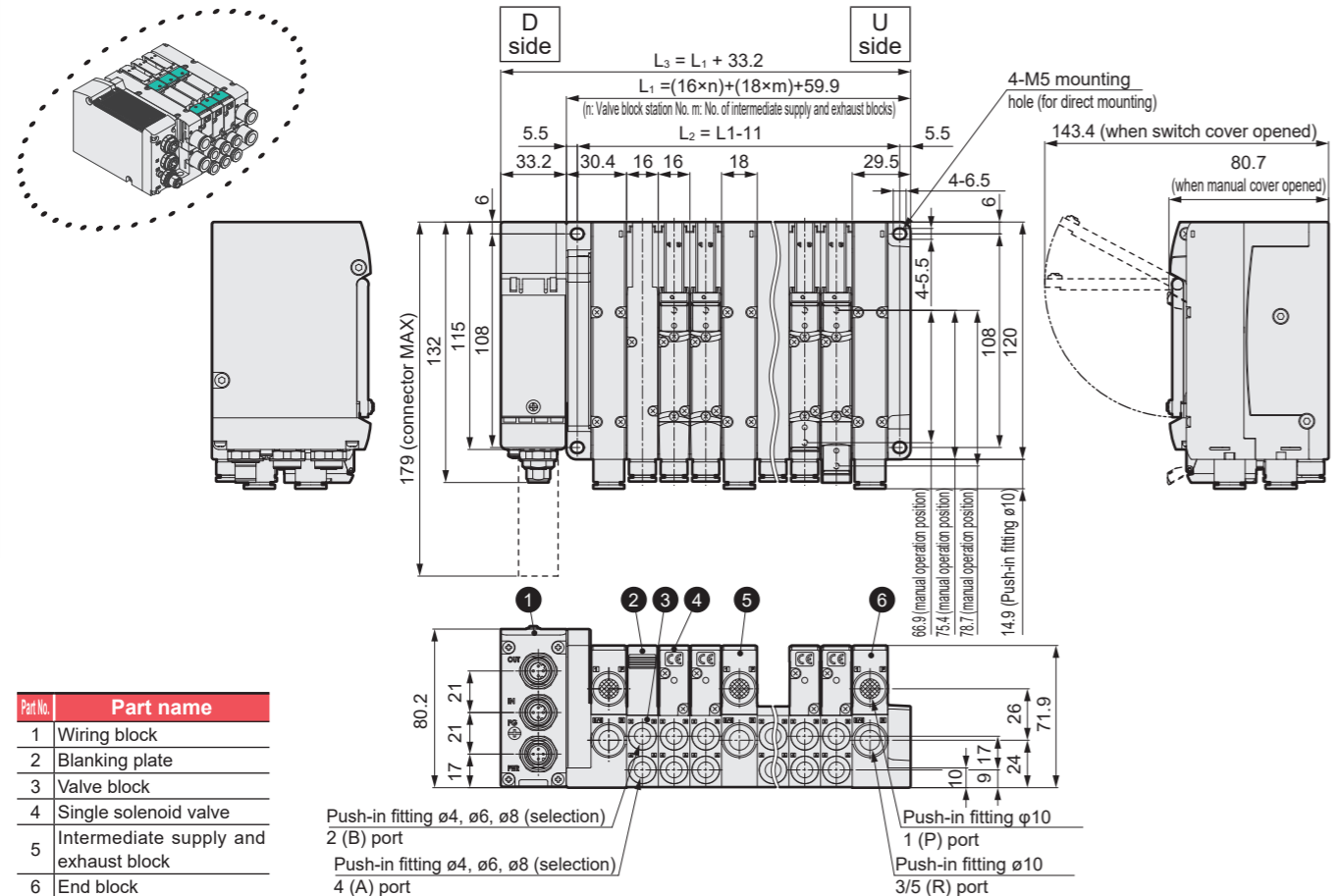
Manifold specs sheet
Technical data
Safety precautions

Dimensions (serial transmission device unit JA□ JB□)

TVG1M

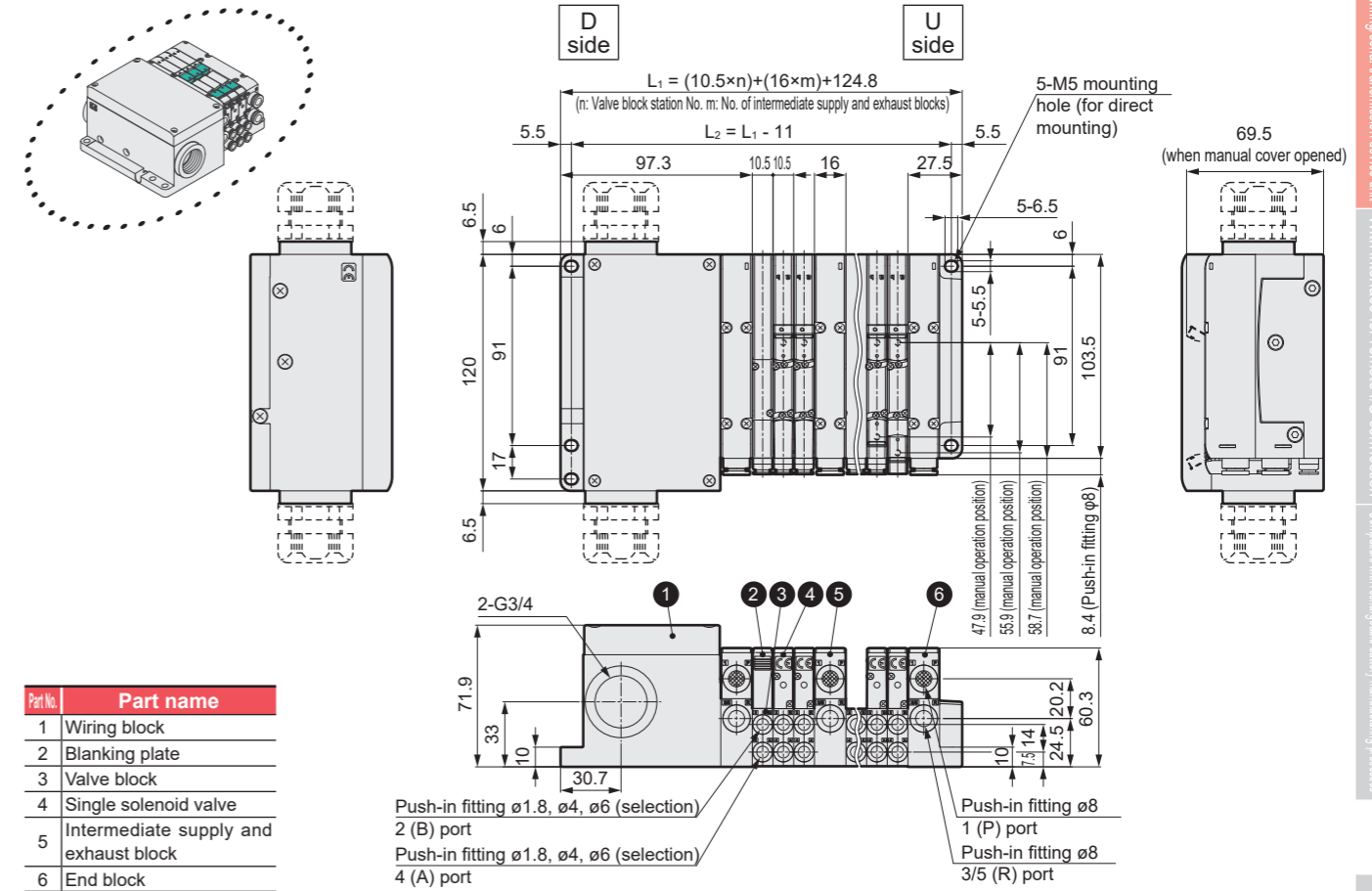


TVG2M

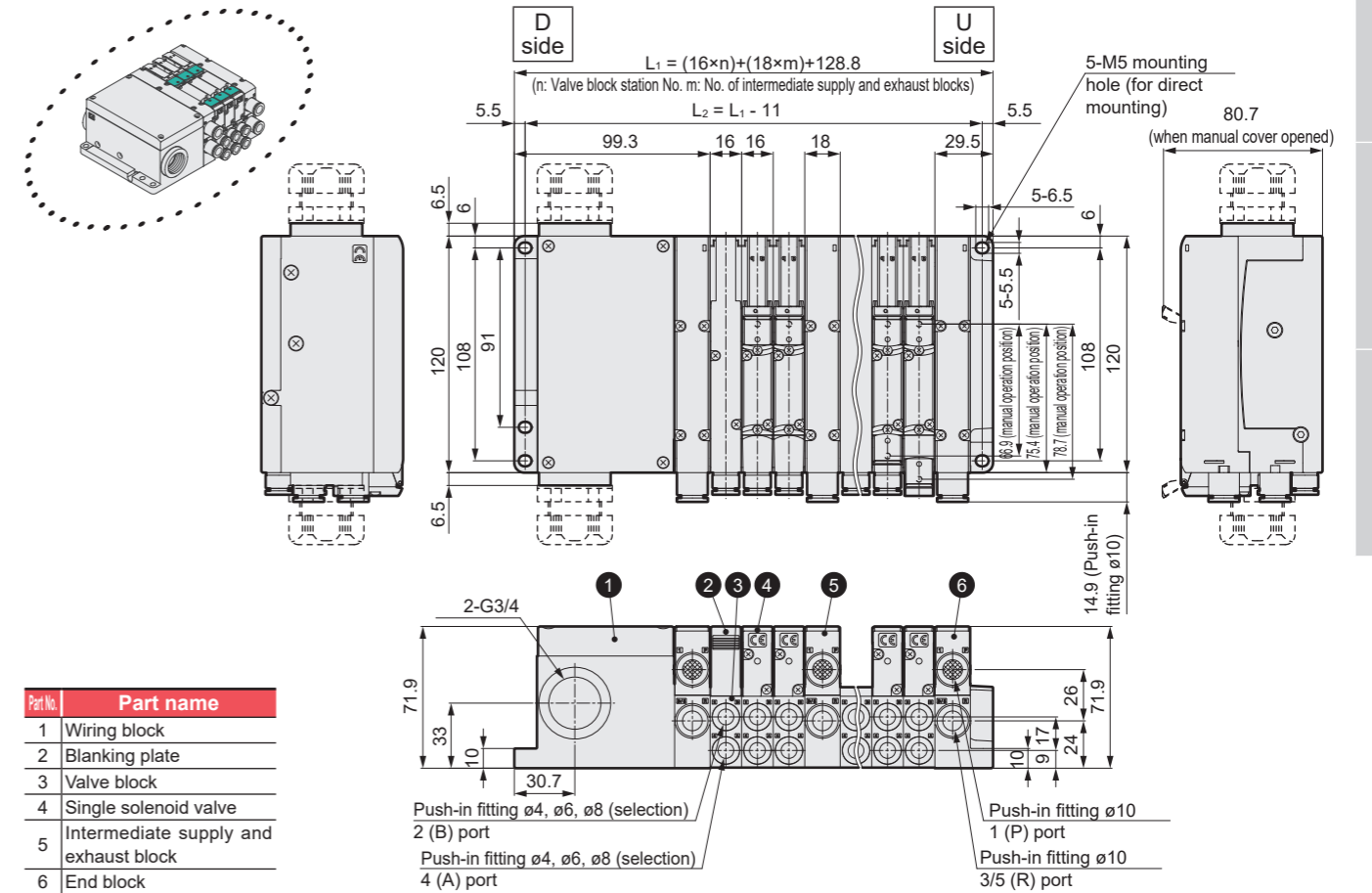


Dimensions (common terminal block EA1□)

TVG1M



TVG2M



TVG With reduced wiring serial transmission device unit

TVG With interface for remote I/O connection

TVG-P4 Compatible with microgate battery manufacturing process

Manifold specs sheet

Technical data

Safety precautions

TVG With reduced wiring serial transmission device unit

TVG With interface for remote I/O connection

TVG-P4 Compatible with microgate battery manufacturing process

Manifold specs sheet

Technical data

Safety precautions

Dimensions

TVG1M

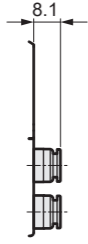
● Fitting straight
● $\phi 1.8$ (0ACS)



● $\phi 4$ (04CS)

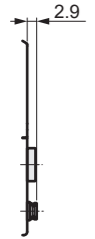


● $\phi 6$ (06CS)

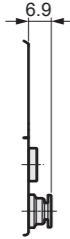


● Fitting straight, single plug

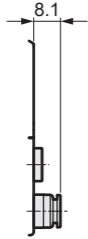
● $\phi 1.8$ (0ACA)



● $\phi 4$ (04CA)



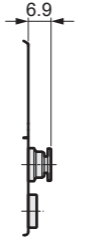
● $\phi 6$ (06CA)



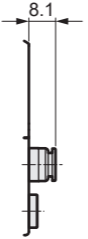
● $\phi 1.8$ (0ACF)



● $\phi 4$ (04CF)

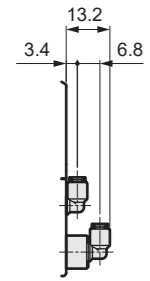


● $\phi 6$ (06CF)



● L-fitting (upward)

● $\phi 1.8$ (0ACU)



● $\phi 4$ (04CU)

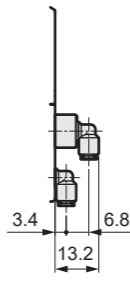


● $\phi 6$ (06CU)

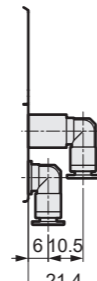


● L-fitting (downward)

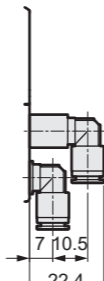
● $\phi 1.8$ (0ACD)



● $\phi 4$ (04CD)

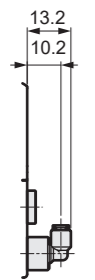


● $\phi 6$ (06CD)



● L-fitting (upward), single plug

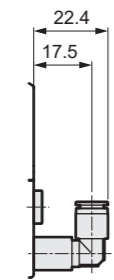
● $\phi 1.8$ (0ACB)



● $\phi 4$ (04CB)



● $\phi 6$ (06CB)



● $\phi 1.8$ (0ACG)



● $\phi 4$ (04CG)

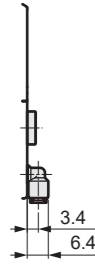


● $\phi 6$ (06CG)

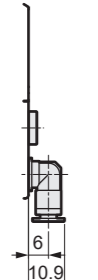


● L-fitting (downward), single plug

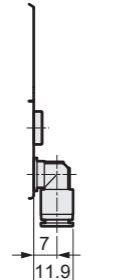
● $\phi 1.8$ (0ACC)



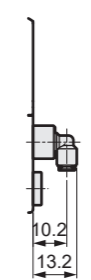
● $\phi 4$ (04CC)



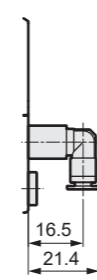
● $\phi 6$ (06CC)



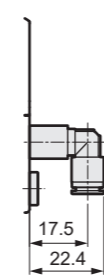
● $\phi 1.8$ (0ACH)



● $\phi 4$ (04CH)



● $\phi 6$ (06CH)



Dimensions

TVG1M

● Fitting straight
● $\phi 1/8$ " (03LS)



● $\phi 5/32$ " (04LS)



● Straight fitting, single plug
● $\phi 1/8$ " (03LA)



● $\phi 5/32$ " (04LA)



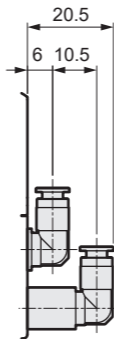
● $\phi 1/8$ " (03LF)



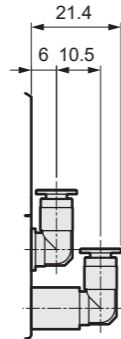
● $\phi 5/32$ " (04LF)



● L-fitting (upward)
● $\phi 1/8$ " (03LU)



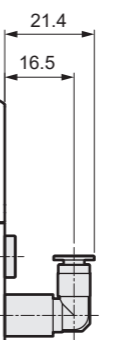
● $\phi 5/32$ " (04LU)



● L-fitting (upward), single plug
● $\phi 1/8$ " (03LB)



● $\phi 5/32$ " (04LB)



● $\phi 1/8$ inch (03LG)



● $\phi 5/32$ inch (04LG)



TVG
With reduced wiring/serial transmission device unit

TVG
With interface for remote I/O connection

TVG-P4
Compatible with rechargeable battery manufacturing process

Manifold specs sheet

Technical data

Safety precautions

TVG
With reduced wiring/serial transmission device unit

TVG
With interface for remote I/O connection

TVG-P4
Compatible with rechargeable battery manufacturing process

Manifold specs sheet

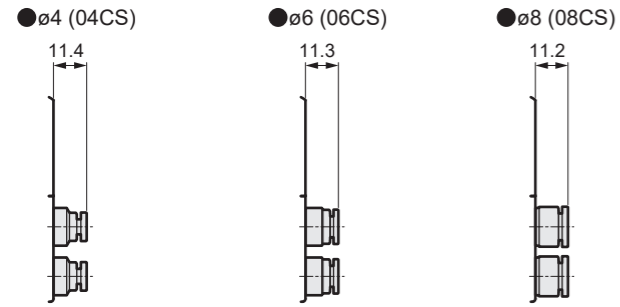
Technical data

Safety precautions

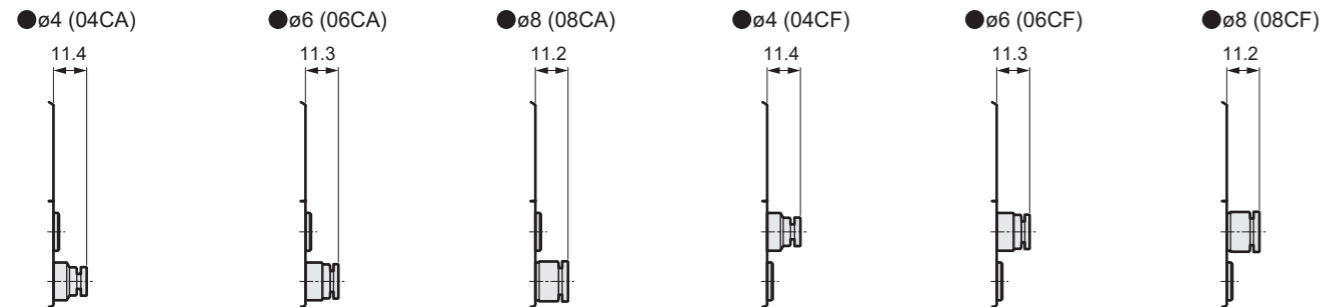
Dimensions

TVG2M

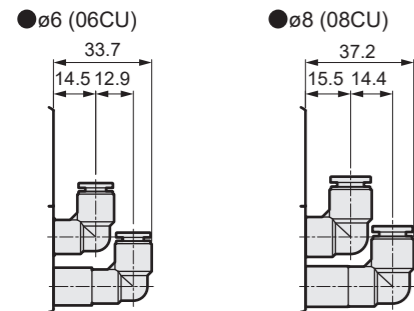
● Straight fitting



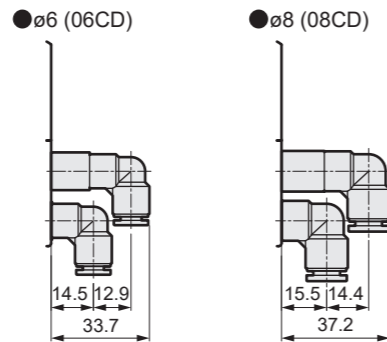
● Straight fitting, single plug



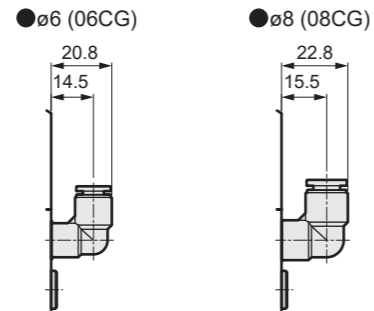
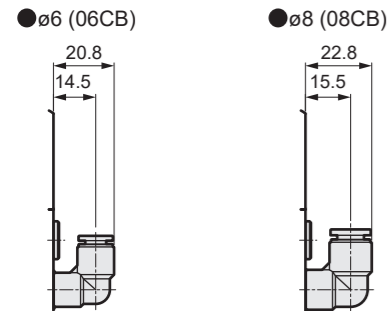
● L-fitting (upward)



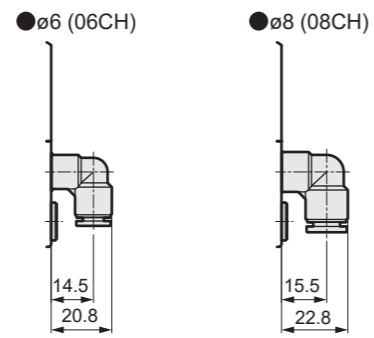
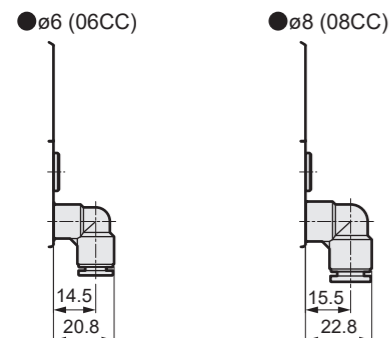
● L-fitting (downward)



● L-fitting (upward), single side plug



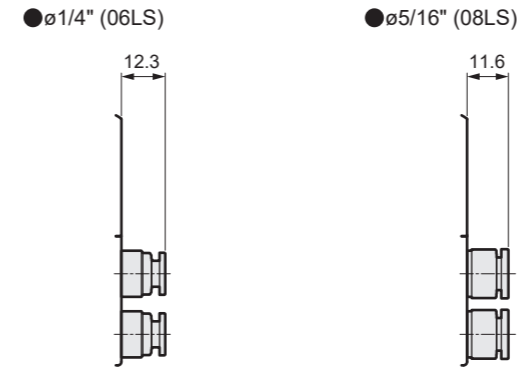
● L-fitting (downward), single side plug



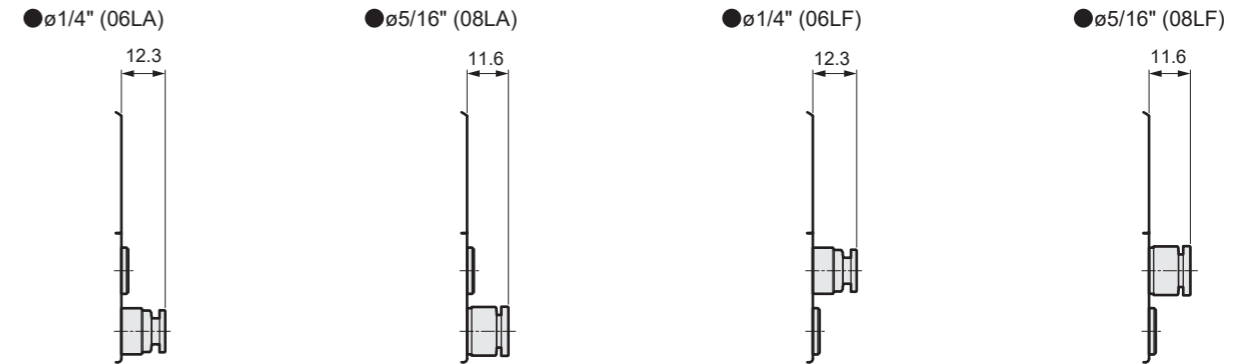
Dimensions

TVG2M

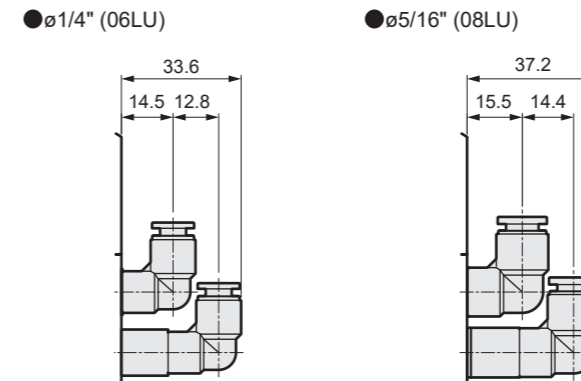
● Fitting straight



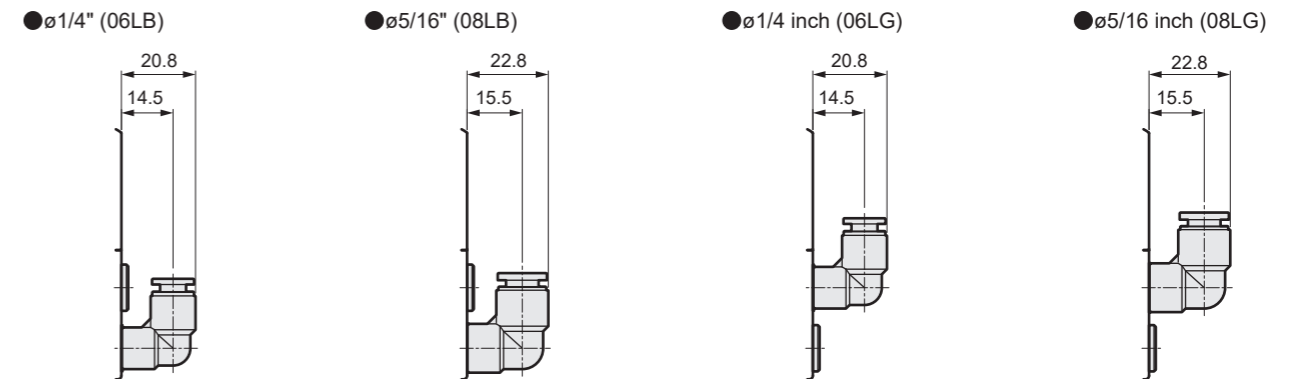
● Fitting straight, single side plug



● L-fitting (upward)



● L-fitting (upward), single side plug



TVG1M/TVG2M Series

Dimensions

TVG1M Supply and exhaust block

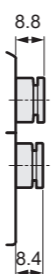
- Straight fitting
- $\phi 8$ (08CS)



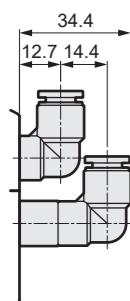
- Straight fitting
- $\phi 5/16"$ (08LS)



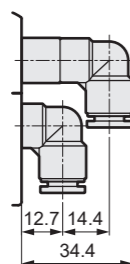
- Port P: $\phi 5/16"$ (08XS)
- Port R: $\phi 8$



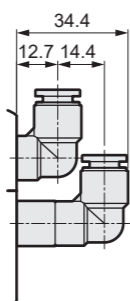
- L-fitting (upward)
- $\phi 8$ (08CU)



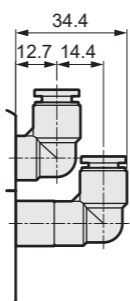
- L-fitting (downward)
- $\phi 8$ (08CD)



- L-fitting (upward)
- $\phi 5/16"$ (08LU)



- Port P: $\phi 5/16"$ (08XU)
- Port R: $\phi 8$



TVG2M Supply and exhaust block

- Straight fitting
- $\phi 10$ (10CS)



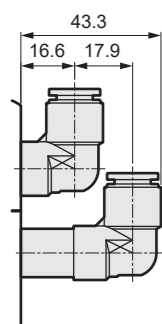
- Straight fitting
- $\phi 3/8"$ (10LS)



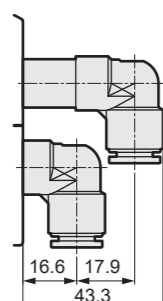
- Port P: $\phi 3/8"$ (10XS)
- Port R: $\phi 10$



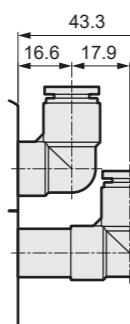
- L-fitting (upward)
- $\phi 10$ (10CU)



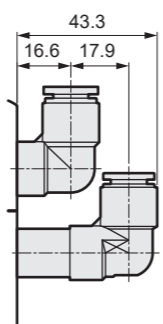
- L-fitting (downward)
- $\phi 10$ (10CD)



- L-fitting (upward)
- $\phi 3/8"$ (10LU)



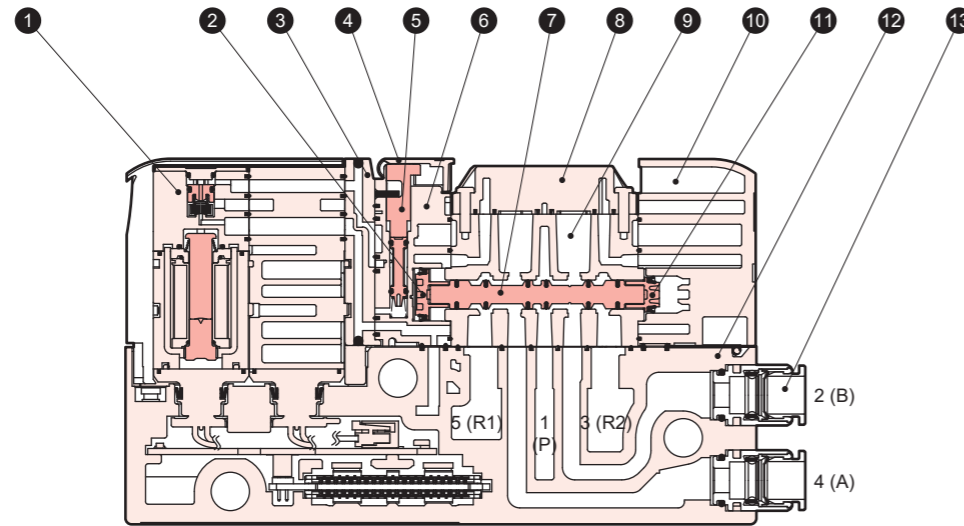
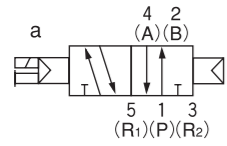
- Port P: $\phi 3/8"$ (10XU)
- Port R: $\phi 10$



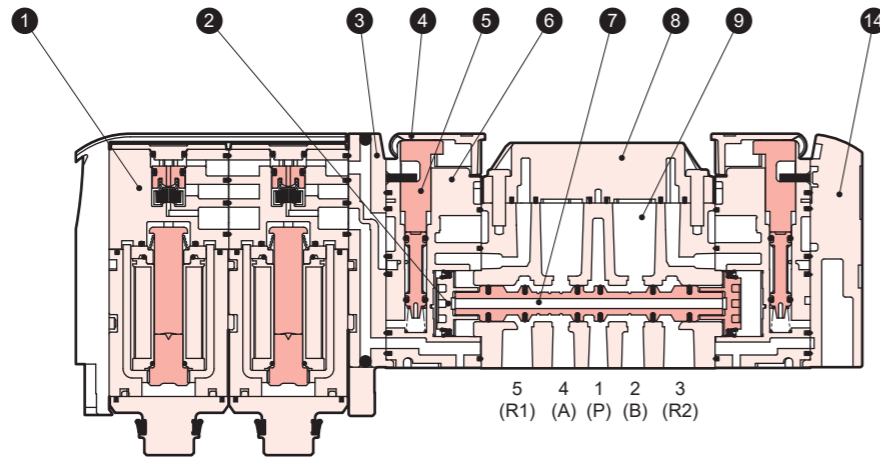
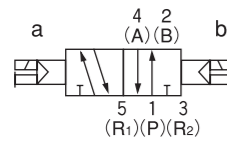
MEMO

Internal structure/material

● 2-position Single



● 2-position Double



Main parts list

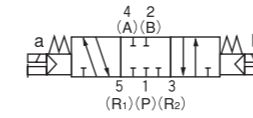
Part No.	Part name	Material	Part No.	Part name	Material
1	Coil assembly	-	8	Plate	Resin
2	Piston D assembly	-	9	Body	Aluminum alloy die-casting
3	Pilot plate	Resin	10	Piston chamber S	Resin
4	Manual protection cover	Resin	11	Piston S assembly	-
5	Manual override	Resin	12	Valve block	Resin
6	Piston chamber	Resin	13	Cartridge push-in fitting	-
7	Spool assembly	-	14	Cap	Resin

Internal structure/material

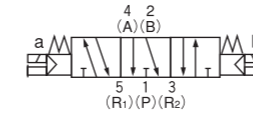
Internal structure/material

● 3-position

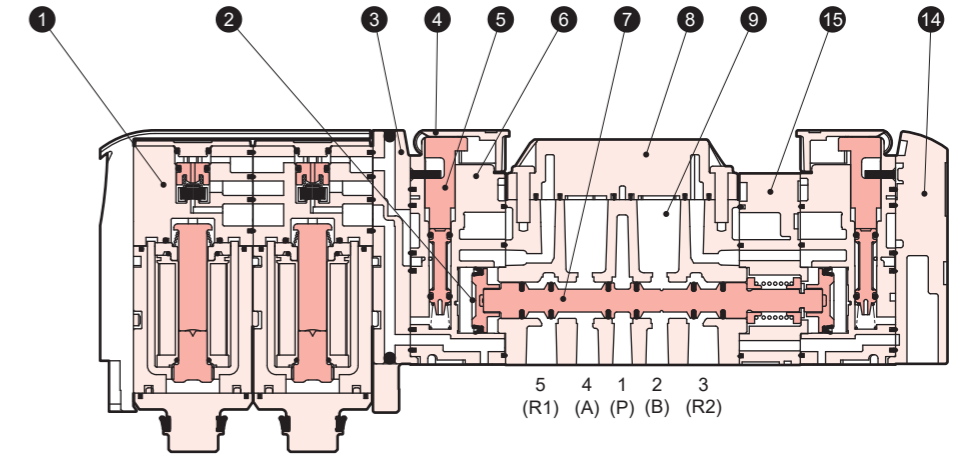
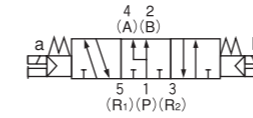
All ports closed



A/B/R connection

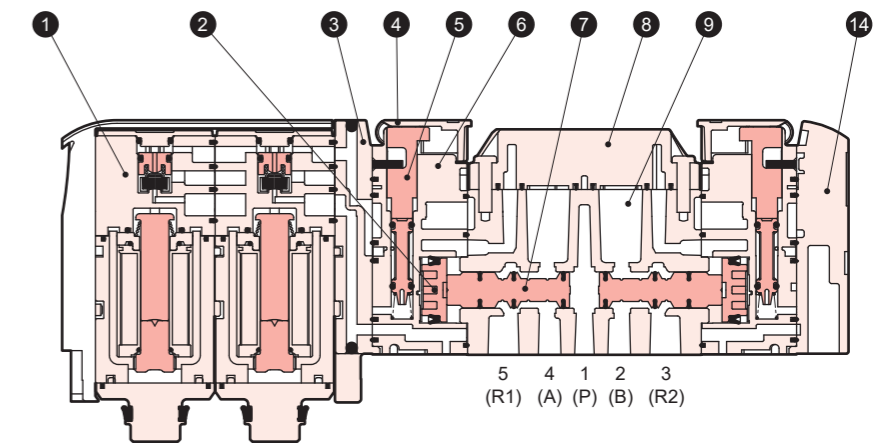
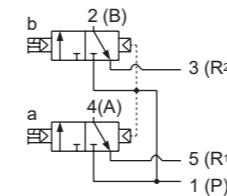


P/A/B connection



● Two 3-port valves integrated

A side valve: NC B side valve: NC



Main parts list

Part No.	Part name	Material	Part No.	Part name	Material
1	Coil assembly	-	8	Plate	Resin
2	Piston D assembly	-	9	Body	Aluminum alloy die-casting
3	Pilot plate	Resin	10	Piston chamber S	Resin
4	Manual protection cover	Resin	11	Piston S assembly	-
5	Manual override	Resin	12	Valve block	Resin
6	Piston chamber	Resin	13	Cartridge push-in fitting	-
7	Spool assembly	-	14	Cap	Resin

TVG With reduced wiring serial transmission device unit

TVG With interface for remote I/O connection

TVG-P4 Compatible with reconfigurable battery manufacturing process

Manifold specs sheet

Technical data

Safety precautions

TVG With reduced wiring serial transmission device unit

TVG With interface for remote I/O connection

TVG-P4 Compatible with reconfigurable battery manufacturing process

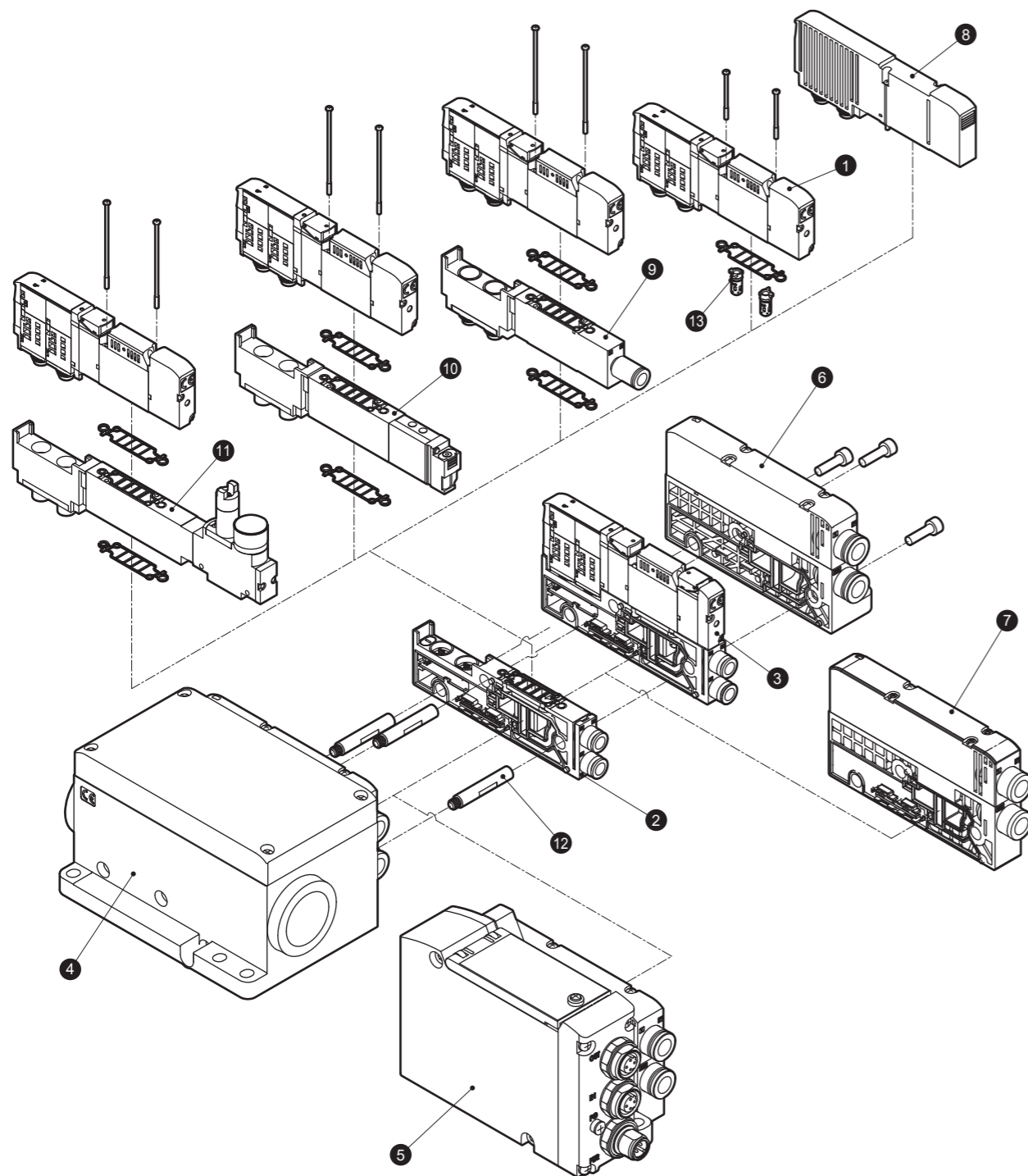
Manifold specs sheet

Technical data

Safety precautions

Block manifolds: Configurations

As it can be easily and flexibly assembled, it is easy to change the number of stations, perform maintenance, etc.



Part No.	Part name	Example of model No.	Note	Listed page
1	Discrete solenoid valve (for base mounting)	TVG1-1B00XX3-HP1	A wide variety of solenoid valves are available. Solenoid valves of different solenoid positions can be mixed within the same manifold.	Page 17
2	Valve block	TVG1P-VB-06CS-3	The block on which the solenoid valve is based. Mount the desired number of stations of solenoid valves. However, the number of stations depends on the wiring method. (Refer to pages 7 and 55.) It is also possible to partition the flow path in the manifold with optional selection.	Page 41
3	Valve block with solenoid valve	TVG1P-1B06CS3-HP1	-	Page 37
4	Wiring block (common terminal block)	TVG1P-TB-08CS-EA1	These blocks provide electrical wiring to the manifold and perform air supply and exhaust.	Page 35
5	Wiring block (serial transmission)	TVG1P-TB-08CS-JA1C		Page 35
6	End block	TVG1P-EB-08CS	A block that provides air supply and exhaust to the manifold. Mount the block on the opposite side of the wiring block.	Page 46
7	Intermediate supply and exhaust block	TVG1P-QB-08CS	A block that provides air supply and exhaust to the manifold. Use this when the number of valve stations increases, or when the supply flow rate shortage is a problem.	Page 47
8	Blanking plate	TVG1P-BP	Assemble the block to a spare valve block for use if you add the solenoid valve later.	Page 49
9	Air supply spacer	TVG1P-P-06CS	Use this when supplying different pressures per station.	Page 19
9	Exhaust spacer	TVG1P-R-06CS	Can be used for individual exhaust. Use this product to prevent malfunction due to increased exhaust performance or exhaust led in.	Page 19
10	Spacer pilot check valve	TVG1P-PC	Use the cylinder to prevent intermediate stop and position locking.	Page 21
11	Spacer regulator	TVG1P-SR-PG1	Pressure can be adjusted individually for each station. Port P, A and B pressure reduction types are available.	Page 22
12	Tie rod	TVG1P-TR-05	TVG1 comes in a set of 3, and TVG2 comes in a set of 2.	Page 45
13	Check valve	TVG1P-CHECK-VALVE	Prevents cylinder malfunction (popping out phenomenon) caused by exhaust air lead-in.	Page 49

Weight

TVG1

Part name	Model No.	Weight [g]
Valve block with solenoid valve	TVG1P-1B06CS3-HP1	86
	TVG1P-2B06CS3-HP1	93
	TVG1P-3/4/5B06CS3-HP1	96
	TVG1P-A/B/CB06CS3-HP1	94
Valve block with blanking plate	TVG1P-ZB06CS3	71
End block	TVG1P-EB-08CS	159
Valve block	TVG1P-VB-06CS3	31
Wiring block	TVG1P-TB-08CS-E*	518
	TVG1P-TB-08CS-J*	456
	TVG1P-TB-08CS-K*	280

TVG2

Part name	Model No.	Weight [g]
Valve block with solenoid valve	TVG2P-1B08CS3-HP1	160
	TVG2P-2B08CS3-HP1	167
	TVG2P-3/4/5B08CS3-HP1	176
	TVG2P-A/B/CB08CS3-HP1	167
Valve block with blanking plate	TVG2P-ZB06CS3	134
End block	TVG2P-EB-10CS	224
Valve block	TVG2P-VB-08CS3	66
Wiring block	TVG2P-TB-10CS-E*	580
	TVG2P-TB-10CS-J*	529
	TVG2P-TB-10CS-K*	356

Parts list

TVG1

Part name	Model No.
ø1.8 push-in fitting	4G1R-JOINT-C18
ø4 push-in fitting	4G1R-JOINT-C4
ø6 push-in fitting	4G1R-JOINT-C6
ø1.8 push-in L-fitting	4G1R-JOINT-CL18, CLL18
ø4 push-in L-fitting	4G1R-JOINT-CL4, CLL4
ø6 push-in L-fitting	4G1R-JOINT-CL6, CLL6
ø1/8" push-in fitting	4G1R-JOINT-CL6, CLL6
ø5/32" push-in fitting	4G1R-JOINT-C4N
ø1/8" push-in L-fitting *1	4G1R-JOINT-CL3N
ø5/32" push-in L-fitting *1	4G1R-JOINT-CL4N
Plug cartridge	4G1R-JOINT-CPG

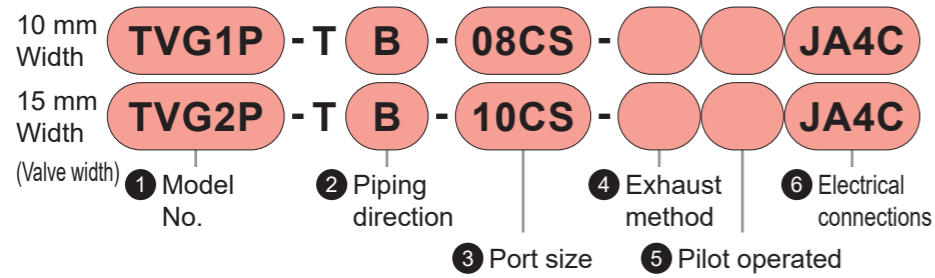
TVG2

Part name	Model No.
ø4 push-in fitting	4G2R-JOINT-C4
ø6 push-in fitting	4G2R-JOINT-C6
ø8 push-in fitting	4G2R-JOINT-C8
ø6 push-in L-fitting	4G2R-JOINT-CL6, CLL6
ø8 push-in L-fitting	4G2R-JOINT-CL8, CLL8
ø1/4" push-in fitting	4G2R-JOINT-C6N
ø5/16" push-in fitting	4G2R-JOINT-C8N
ø1/4" push-in L-fitting	*1 4G2R-JOINT-CL6N
ø5/16" push-in L-fitting	*1 4G2R-JOINT-CL8N
Plug cartridge	4G2R-JOINT-CPG

*1: Special-order product.

*1: Special-order product.

How to order Wiring block



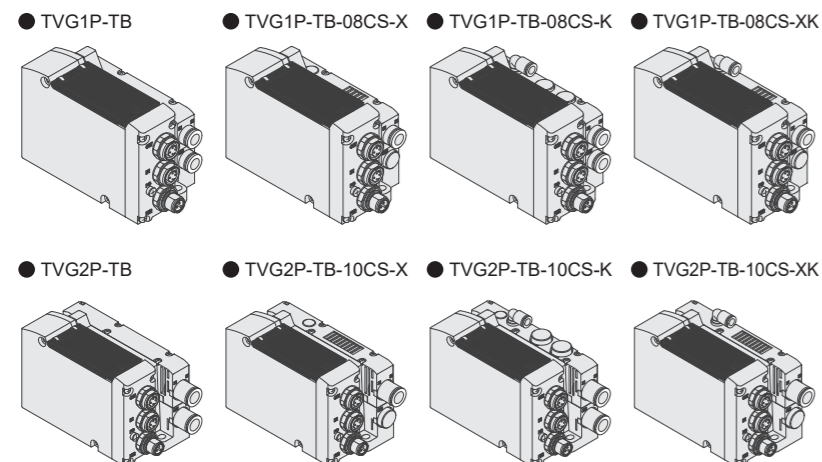
Specifications for rechargeable battery

- For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited
 - ** - ** - ** - **P4**
- (Refer to page 80 for details.)

Included
The tie rod fixing nut is built into the wiring block.

		① Model No.	
		TVG1P	TVG2P
③ Port size			
●: Standard compliance ○: Special-order product			
Metric fitting			
08CS	ø8 push-in fitting	●	
10CS	ø10 push-in fitting		●
08CU	ø8 push-in fitting L-type upward	●	
10CU	ø10 push-in fitting L-type upward		●
08CD	ø8 push-in fitting L-type downward	●	
10CD	ø10 push-in fitting L-type downward		●
*1 Inch fitting			
08LS	ø5/16" push-in fitting	●	
10LS	ø3/8" push-in fitting		●
08LU	ø5/16" push-in fitting L-type upward	○	
10LU	ø3/8" push-in fitting L-type upward		○
*3 Port P: Inch fitting, port R: Metric fitting			
08XS	Port P: ø5/16" push-in fitting Port R: ø8 push-in fitting	●	
10XS	Port P: ø3/8" push-in fitting Port R: ø10 push-in fitting		●
08XU	Port P: ø5/16" push-in fitting L-type upward Port R: ø8 push-in fitting L-type upward	○	
10XU	Port P: ø3/8" push-in L-upward Port R: ø10 push-in fitting L-type upward		○
Plug			
00XX	Port P, R plug	●	●

- *1: Select 08XS, 10XS, 08XU or 10XU when using a silencer with inch fitting specifications. Port R and PR (for KZ) are metric fittings.
*2: ● Pilot operated K, KZ and 00XX cannot be selected together.
*3: Cannot be selected together with exhaust method X.



② Piping direction

B Side piping

④ Exhaust method

Blank	Common exhaust (port R is a push-in fitting)
X	Exhaust is released to atmosphere, with built-in silencer (Port R is sealed.)

- *1: ● X is not available for port sizes "00XX" and "□□X□".
*2: X is not available for pilot operated KZ.

⑤ Pilot operated

Blank	Internal pilot
K	External pilot
KZ	External pilot (PA/PR separated)

- *1: ● Cannot be selected for port size "00XX".
*2: When the external pilot port is ø6 push-in fitting or **L*, it is ø5/32" fitting.

⑥ Electrical connections

* PNP specifications are Special-order product.

• Reduced wiring connection

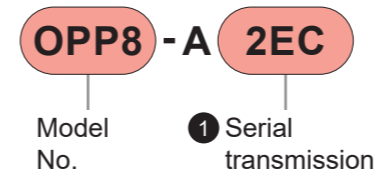
Description	Code
Common terminal block (M3 thread)	EA1

* Can be used with either NPN or PNP.

• Serial transmission

Communication protocol	Output	No. of points	Code
DeviceNet	NPN	32 point output	JA1C
	PNP		JA1D
CC-Link Ver. 1.10	NPN		JA2C
	PNP		JA2D
EtherCAT	NPN		JA3C
	PNP		JA3D
EtherNet/IP	NPN		JA4C
	PNP		JA4D
CC-Link IEF Basic	NPN		JA5C
	PNP		JA5D
PROFINET	NPN		JA6C
	PNP		JA6D
CC-Link IE Field	NPN	JA7C	
	PNP	JA7D	
CC-Link IE TSN	NPN	JA8C	
	PNP	JA8D	
IO-Link ClassA	NPN	JA9C	
	PNP	JA9D	
IO-Link ClassB	NPN	JA9G	
	PNP	JA9H	
IO-Link Wireless	NPN	JB1C	
	PNP	JB1D	

How to order Serial transmission device unit



① Serial transmission

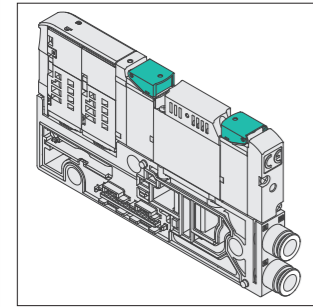
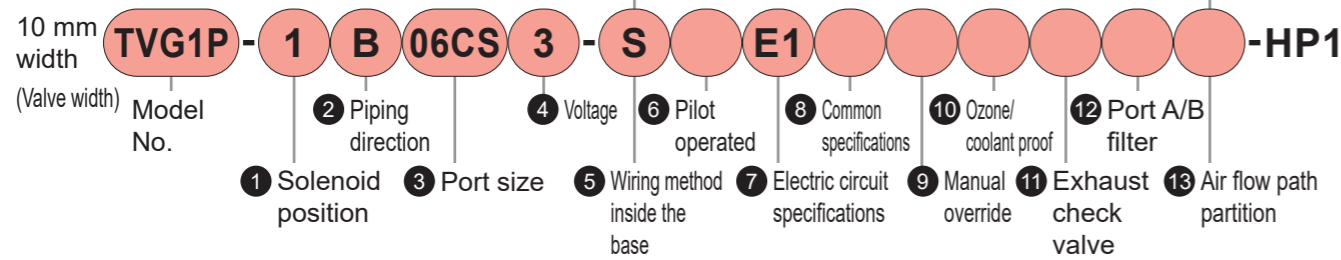
Communication protocol	Output	No. of points	Code
DeviceNet	NPN	32 point output	2D
	PNP		2D-P
CC-LINK	NPN		2G
	PNP		2G-P
EtherCAT	NPN		2EC
	PNP		2EC-P
EtherNet/IP	NPN		2EN
	PNP		2EN-P
CC-Link IEF Basic	NPN		2EB
	PNP		2EB-P
PROFINET	NPN		2EP
	PNP		2EP-P
CC-Link IE Field	NPN	2EF	
	PNP	2EF-P	
CC-Link IE TSN	NPN	2TG	
	PNP	2TG-P	
IO-Link ClassA	NPN	2KC-A	
	PNP	2KC-PA	
IO-Link ClassB	NPN	2KC-B	
	PNP	2KC-PB	
IO-Link Wireless	NPN	2WK	
	PNP	2WK-P	

*1: PNP specifications are Special-order products.

Included
• 2 pcs. OPP fixing bolts
• 1 pc. drip-proof gasket

How to order

Valve block with solenoid valve



1 Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
*1 A	3-port valve A valve side: Normally closed/B valve side: Normally closed
*1 B	Two valves A valve side: Normally open/B valve side: Normally open
*1 C	integrated A valve side: Normally closed/B valve side: Normally open
*2 Z	With blanking plate

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.
*2: "-HP1" is not included in the model No. when Z is selected.

2 Piping direction

B	Side piping
---	-------------

3 Port size (port A/B)

• Metric fitting

0ACS	ø1.8 push-in fitting (compatible tube UP-9402-**)
04CS	ø4 push-in fitting
06CS	ø6 push-in fitting
0ACU	L-type ø1.8 push-in fitting (compatible tube UP-9402-**) Upward
04CU	ø4 push-in fitting
06CU	*2 ø6 push-in fitting
0ACD	L-type ø1.8 push-in fitting (compatible tube UP-9402-**) Downward
04CD	ø4 push-in fitting
06CD	ø6 push-in fitting

*1 Single side plug specifications		Port A	Port B
0ACA	Plug	ø1.8 push-in fitting (compatible tube UP-9402-**) Upward	Plug
04CA		ø4 push-in fitting	
06CA		ø6 push-in fitting	
0ACF	Plug	ø1.8 push-in fitting (compatible tube UP-9402-**) Upward	ø1.8 push-in fitting (compatible tube UP-9402-**) Upward
04CF		ø4 push-in fitting	
06CF		ø6 push-in fitting	
0ACB	L-type Upward	ø1.8 push-in fitting (compatible tube UP-9402-**) Upward	Plug
04CB		ø4 push-in fitting	
06CB		*2 ø6 push-in fitting	
0ACG	Plug	L-type ø1.8 push-in fitting (compatible tube UP-9402-**) Upward	L-type ø1.8 push-in fitting (compatible tube UP-9402-**) Upward
04CG		ø4 push-in fitting	
06CG		*2 ø6 push-in fitting	
0ACC	L-type Downward	ø1.8 push-in fitting (compatible tube UP-9402-**) Downward	Plug
04CC		ø4 push-in fitting	
06CC		ø6 push-in fitting	
0ACH	Plug	L-type ø1.8 push-in fitting (compatible tube UP-9402-**) Downward	L-type ø1.8 push-in fitting (compatible tube UP-9402-**) Downward
04CH		ø4 push-in fitting	
06CH		ø6 push-in fitting	

• Inch fitting

03LS	ø1/8" push-in fitting		
04LS	ø5/32" push-in fitting		
*3 03LU	L-type Upward ø1/8" push-in fitting		
*3 04LU	*2 ø5/32" push-in fitting		
*1	Single side plug specifications	Port A	Port B
03LA	Plug	ø1/8" push-in fitting	Plug
04LA		ø5/32" push-in fitting	
03LF	Plug	ø1/8" push-in fitting	ø1/8" push-in fitting
04LF		ø5/32" push-in fitting	
*3 03LB	L-type Upward	ø1/8" push-in fitting	Plug
*3 04LB		*2 ø5/32" push-in fitting	
*3 03LG	Plug	L-type ø1/8" push-in fitting Upward	ø1/8" push-in fitting
*3 04LG		*2 ø5/32" push-in fitting	

*1: Ports A and B with one side plug specifications are available for 2-position single only.
*2: 3-position is not available for push-in L-fittings upward.
*3: Special-order product.

4 Voltage

3	24 VDC
---	--------

Specifications for rechargeable battery (Refer to page 80 for details.)

● For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited

** - ** - ** - P4

• Tie rod is not included, and so order separately. Refer to page 45 for details. The gasket between blocks is included.

5 Wiring method inside the base *1

Blank	Double wiring
S	Single solenoid Dedicated wiring

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated. S = Dedicated for single solenoid. Cannot be selected with 2-position double solenoid, two 3-port valves integrated type and 3-position type.

6 Pilot operated *1

Blank	Internal pilot
K	External pilot

*1: 1 Solenoid position "Z" cannot be selected.

7 Electric circuit specifications

* Multiple selection is not possible.	
Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

8 Common specifications

Blank	NPN/plus common specifications
P	PNP/minus common specifications

*1: Multiple selection is not possible.
*2: Select the same polarity as that of the wiring block.
*3: The PNP specifications are Special-order products.

9 Manual override *1

Blank	Locking/Non-locking common, With misoperation prevention cover	
M1	Non-locking, with misoperation prevention cover	
M2	Locking/Non-locking common, Tool operated, without cover	
M3	Non-locking, tool operation	

*1: 1 Solenoid position "Z" cannot be selected.

10 Ozone/Coolant proof *1

Blank	Standard specifications
A	Ozone/Coolant proof (Main valve fluorine specification)

*1: 1 Solenoid position "Z" cannot be selected.

11 Exhaust check valve

Blank	None
*1 H	With exhaust check valve

*1: 1 Solenoid positions "3" and "5" cannot be selected. Refer to page 147 for details on the type with exhaust check valve.

12 Port A/B filter

Blank	None
F	Port A/B filter built in

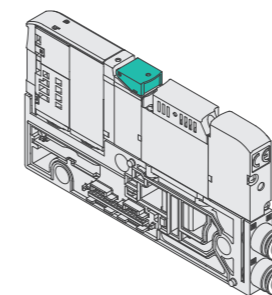
*1: A filter is built into port P.

13 Air flow path partition

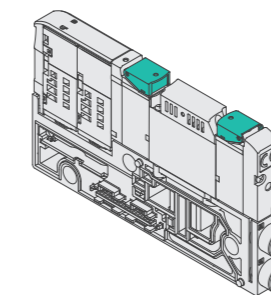
Refer to page 42 for details.	
Blank	No
T	P/R/PA/PR blocked
U	P/R blocked, PA/PR through
V	P blocked, R/PA/PR through
W	R blocked, P/PA/PR through

The right flow path is shut off with port A/B facing forward.

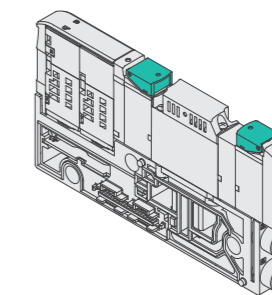
● 2-position Single



● 2-position Double Two 3-port valves integrated

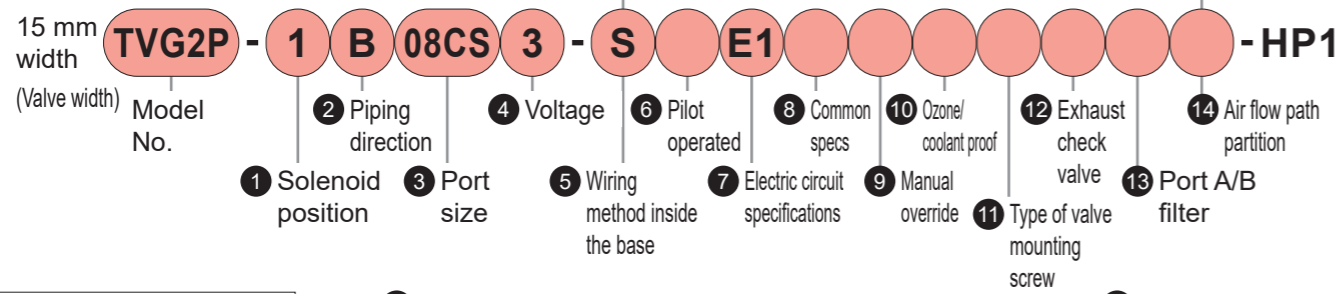


● 3-position ABR connection 3-position PAB connection 3-position all ports closed



How to order

Valve block with solenoid valve

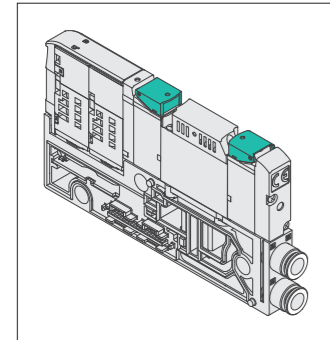


Specifications for rechargeable battery (Refer to page 80 for details.)

● For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited

** - ** - ** - **P4**

• Tie rod is not included, and so order separately. Refer to page 45 for details. The gasket between blocks is included.



1 Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
*1 A	Two A valve side: Normally closed/B valve side: Normally closed
*1 B	3-port A valve side: Normally open/B valve side: Normally open
*1 C	valves integrated A valve side: Normally closed/B valve side: Normally open
*2 Z	With blanking plate

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.
*2: "HP1" is not included in the model No. when Z is selected.

2 Piping direction

B	Side piping
---	-------------

6 Pilot operated *1

Blank	Internal pilot
K	External pilot

*1: Solenoid position "Z" cannot be selected.

7 Electric circuit specifications

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

* Multiple selection is not possible.
*1: E1 is not compatible with PNP specifications.

8 Common specifications

Blank	NPN/plus common specifications
P	PNP/minus common specifications

*1: Multiple selection is not possible.
*2: Select the same polarity as that of the wiring block.
*3: The PNP specifications are Special-order products.

9 Manual override *1

Blank	Locking/Non-locking common, With misoperation prevention cover	
M1	Non-locking, with misoperation prevention cover	
M2	Locking/Non-locking common, Tool operated, without cover	
M3	Non-locking, tool operation, Without cover	

*1: Solenoid position "Z" cannot be selected.

10 Ozone/Coolant proof *1

Blank	Standard specifications
A	Ozone/Coolant proof (Main valve fluorine specification)

*1: Solenoid position "Z" cannot be selected.

11 Type of valve mounting screw

Blank	Pan head machine screw with Phillips head/flathead
J	Hexagon socket head cap screw

3 Port size (port A/B)

Metric fitting		
04CS	ø4 push-in fitting	
06CS	ø6 push-in fitting	
08CS	ø8 push-in fitting	
06CU	L-type upward *2 ø6 push-in fitting	
08CU	upward *2 ø8 push-in fitting	
06CD	L-type downward ø6 push-in fitting	
08CD	Downward ø8 push-in fitting	
*1 Single side plug specifications	Port A	Port B
04CA	ø4 push-in fitting	Plug
06CA	ø6 push-in fitting	
08CA	ø8 push-in fitting	
04CF	Plug	ø4 push-in fitting
06CF		ø6 push-in fitting
08CF		ø8 push-in fitting
06CB	L-type upward ø6 push-in fitting	Plug
08CB	*2 ø8 push-in fitting	
06CG	Plug	L-type Upward ø6 push-in fitting
08CG		*2 ø8 push-in fitting
06CC	L-type downward ø6 push-in fitting	Plug
08CC	Downward ø8 push-in fitting	
06CH	Plug	L-type ø6 push-in fitting
08CH		Downward ø8 push-in fitting

Inch fitting		
06LS	ø1/4" push-in fitting	
08LS	ø5/16" push-in fitting	
*3 06LU	L-type upward ø1/4" push-in fitting	
*3 08LU	*2 ø5/16" push-in fitting	
*1 Single side plug specifications	Port A	Port B
06LA	ø1/4" push-in fitting	Plug
08LA	ø5/16" push-in fitting	
06LF	Plug	ø1/4" push-in fitting
08LF		ø5/16" push-in fitting
*3 06LB	L-type upward ø1/4" push-in fitting	Plug
*3 08LB	*2 ø5/16" push-in fitting	
*3 06LG	Plug	L-type upward ø1/4" push-in fitting
*3 08LG		*2 ø5/16" push-in fitting

*1: Ports A and B with one side plug specifications are available for 2-position single only.
*2: 3-position is not available for L-type upward push-in fittings.
*3: Special-order product.

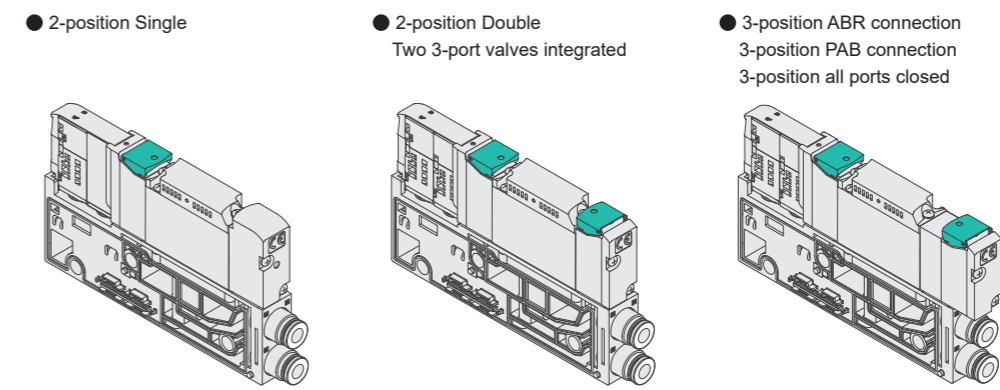
4 Voltage

3	24 VDC
---	--------

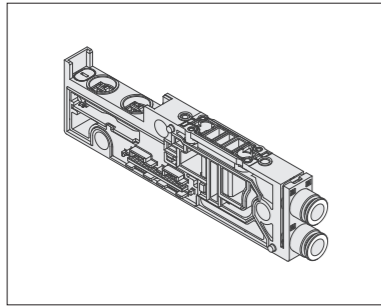
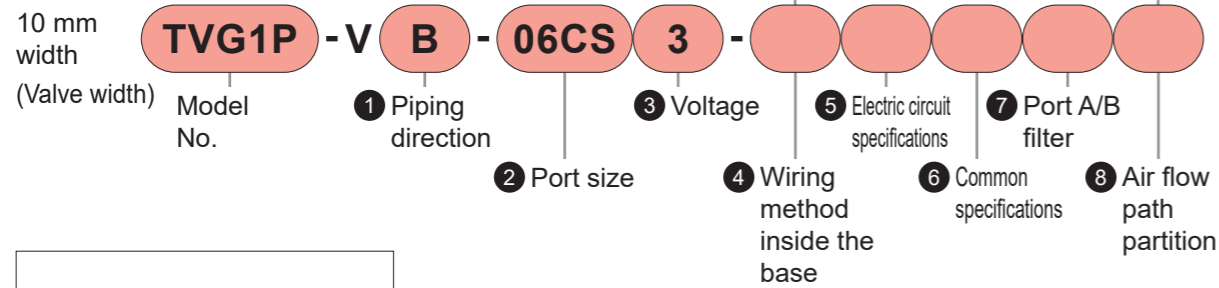
5 Wiring method inside the base *1

Blank	Double wiring
S	Single solenoid dedicated wiring

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated.
S = Dedicated for single solenoid. Cannot be selected with 2-position double solenoid, two 3-port valves integrated type and 3-position type.



How to order
Valve block



1 Piping direction

B	Side piping
---	-------------

2 Port size (port A/B)

• Metric fitting

0ACS	∅1.8 push-in fitting (compatible tube UP-9402-**)	
04CS	∅4 push-in fitting	
06CS	∅6 push-in fitting	
0ACU	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) Upward	
04CU	∅4 push-in fitting	
06CU	*2 ∅6 push-in fitting	
0ACD	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) Downward	
04CD	∅4 push-in fitting	
06CD	∅6 push-in fitting	
*1	Single side plug specifications	Port A Port B
0ACA	∅1.8 push-in fitting (compatible tube UP-9402-**) Plug	
04CA	∅4 push-in fitting	
06CA	∅6 push-in fitting	
0ACF	Plug	∅1.8 push-in fitting (compatible tube UP-9402-**) ∅4 push-in fitting ∅6 push-in fitting
04CF		
06CF		
0ACB	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) Upward	Plug
04CB	∅4 push-in fitting	
06CB	*2 ∅6 push-in fitting	
0ACG	Plug	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) Upward *2 ∅4 push-in fitting ∅6 push-in fitting
04CG		
06CG		
0ACC	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) Downward	Plug
04CC	∅4 push-in fitting	
06CC	∅6 push-in fitting	
0ACH	Plug	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) Downward ∅4 push-in fitting ∅6 push-in fitting
04CH		
06CH		

3 Voltage

3	24 VDC
---	--------

• Inch fitting

03LS	∅1/8" push-in fitting	
04LS	∅5/32" push-in fitting	
*3 03LU	L-type Upward ∅1/8" push-in fitting	
*3 04LU	*2 ∅5/32" push-in fitting	
*1	Single side plug specifications	Port A Port B
03LA	∅1/8" push-in fitting	Plug
04LA	∅5/32" push-in fitting	
03LF	Plug	∅1/8" push-in fitting
04LF		∅5/32" push-in fitting
*3 03LB	L-type Upward ∅1/8" push-in fitting	Plug
*3 04LB	*2 ∅5/32" push-in fitting	
*3 03LG	Plug	L-type Upward ∅1/8" push-in fitting
*3 04LG		*2 ∅5/32" push-in fitting

*1: Ports A and B with one side plug specifications are available for 2-position Single only.
*2: 3-position is not available for L-type upward push-in fittings.
*3: Special-order product.

4 Wiring method inside the base *1

Blank	Double wiring
S	Single solenoid dedicated wiring

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated.
S = Dedicated for single solenoid. Cannot be selected with 2-position double solenoid, two 3-port valves integrated type and 3-position type.

Specifications for rechargeable battery

(Refer to page 80 for details.)

● For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited

** - ** - ** - P4

• Tie rod is not included, and so order separately.
Refer to page 45 for details. The gasket between blocks is included.

5 Electric circuit specifications

* Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

6 Common specifications

Blank	NPN/plus common specifications
P	PNP/minus common specifications

*1: Multiple selection is not possible.

*2: Select the same polarity as that of the wiring block.

*3: The PNP specifications are Special-order products.

7 Port A/B filter

Blank	None
F	Port A/B filter built in

*1: A filter is built into port P.

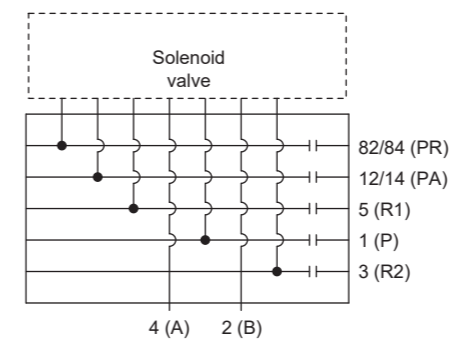
8 Air flow path partition

Refer to the following for details.

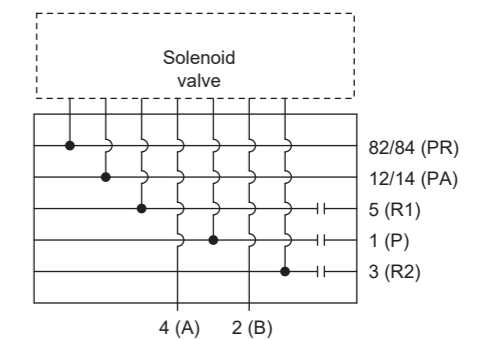
Blank	No
T	P/R/PA/PR blocked
U	P/R blocked, PA/PR through
V	P blocked, R/PA/PR through
W	R blocked, P/PA/PR through

Air flow path partition

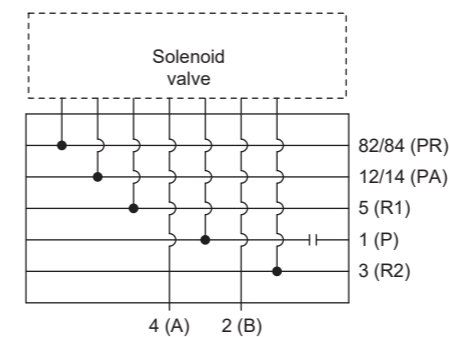
● Discrete valve block circuit diagram (T)



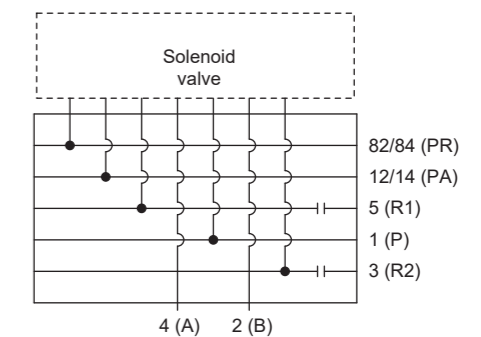
● Discrete valve block circuit diagram (U)



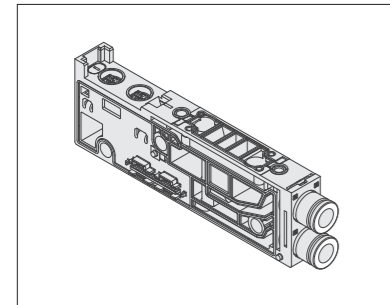
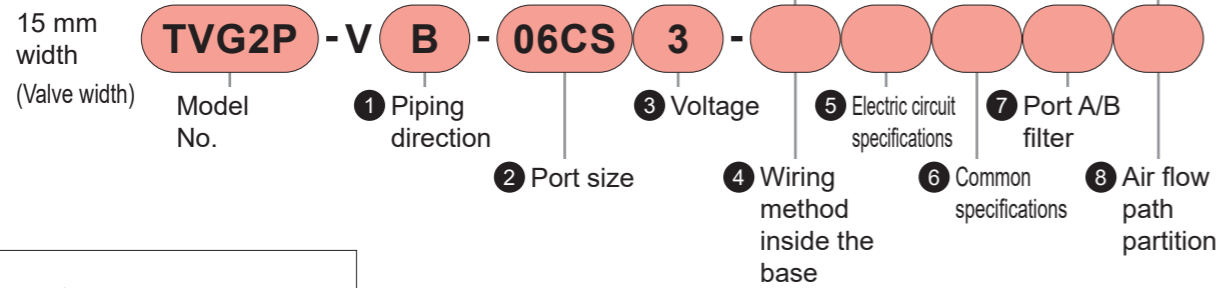
● Discrete valve block circuit diagram (V)



● Discrete valve block circuit diagram (W)



How to order
Valve block



1 Piping direction

B	Side piping
----------	-------------

2 Port size (port A/B)
• Metric fitting

04CS	ø4 push-in fitting	
06CS	ø6 push-in fitting	
08CS	ø8 push-in fitting	
06CU	L-type upward	ø6 push-in fitting
08CU	L-type upward	ø8 push-in fitting
06CD	L-type downward	ø6 push-in fitting
08CD	L-type downward	ø8 push-in fitting
*1 Single side plug specifications	Port A	Port B
	04CA	ø4 push-in fitting
06CA	ø6 push-in fitting	Plug
08CA	ø8 push-in fitting	Plug
04CF	Plug	ø4 push-in fitting
06CF	Plug	ø6 push-in fitting
08CF	Plug	ø8 push-in fitting
06CB	L-type upward	ø6 push-in fitting
08CB	L-type upward	ø8 push-in fitting
06CG	Plug	L-type upward ø6 push-in fitting
08CG	Plug	L-type upward ø8 push-in fitting
06CC	L-type downward	ø6 push-in fitting
08CC	L-type downward	ø8 push-in fitting
06CH	Plug	L-type downward ø6 push-in fitting
08CH	Plug	L-type downward ø8 push-in fitting

• Inch fitting

06LS	ø1/4" push-in fitting	
08LS	ø5/16" push-in fitting	
*3 06LU	L-type upward	ø1/4" push-in fitting
*3 08LU	L-type upward	ø5/16" push-in fitting
*1 Single side plug specifications	Port A	Port B
	06LA	ø1/4" push-in fitting
08LA	ø5/16" push-in fitting	Plug
06LF	Plug	ø1/4" push-in fitting
08LF	Plug	ø5/16" push-in fitting
*3 06LB	L-type upward	ø1/4" push-in fitting
*3 08LB	L-type upward	ø5/16" push-in fitting
*3 06LG	Plug	L-type upward ø1/4" push-in fitting
*3 08LG	Plug	L-type upward ø5/16" push-in fitting

*1: Ports A and B with one side plug specifications are available for 2-position Single only.
*2: 3-position is not available for L-type upward push-in fittings.
*3: Special-order product.

3 Voltage

3	24 VDC
----------	--------

4 Wiring method inside the base *1

Blank	Double wiring
S	Single solenoid dedicated wiring

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated.
S = Dedicated for single solenoid. Cannot be selected with 2-position double solenoid, two 3-port valves integrated type and 3-position type.

Specifications for rechargeable battery (Refer to page 80 for details.)

● For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited

** - ** - ** - **P4**

• Tie rod is not included, and so order separately.
Refer to page 45 for details. The gasket between blocks is included.

5 Electric circuit specifications

* Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

6 Common specifications

Blank	NPN/plus common specifications
P	PNP/minus common specifications

*1: Multiple selection is not possible.

*2: Select the same polarity as that of the wiring block.

*3: The PNP specifications are Special-order products.

7 Port A/B filter

Blank	None
F	Port A/B filter built in

*1: A filter is built into port P.

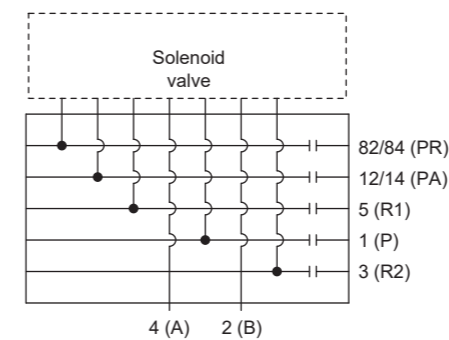
8 Air flow path partition

Refer to the following for details.

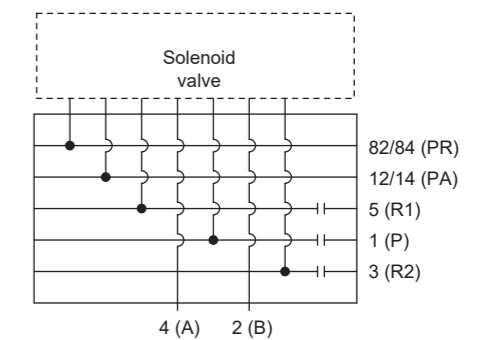
Blank	No
T	P/R/PA/PR blocked
U	P/R blocked, PA/PR through
V	P blocked, R/PA/PR through
W	R blocked, P/PA/PR through

Air flow path partition

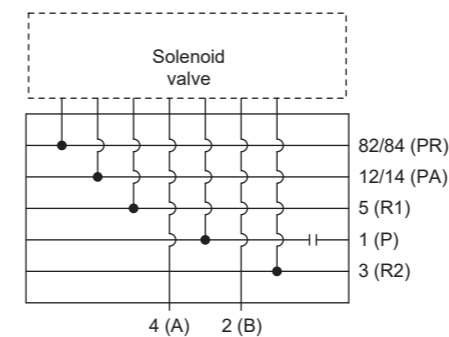
● Discrete valve block circuit diagram (T)



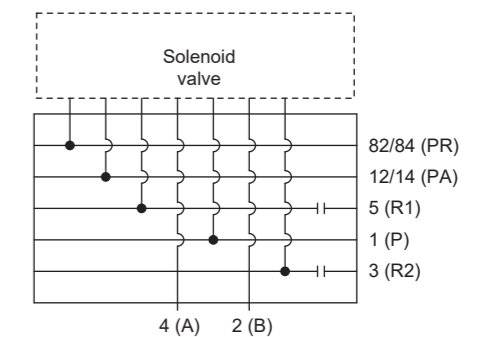
● Discrete valve block circuit diagram (U)



● Discrete valve block circuit diagram (V)



● Discrete valve block circuit diagram (W)



How to order

Tie rod

- For valve block

10 mm width **TVG1P - TR - 02**

15 mm width **TVG2P - TR - 02**

① Model No.

② Station No.

- For intermediate supply and exhaust block

10 mm width **TVG1P-TR-Q**

15 mm width **TVG2P-TR-Q**

- For valve block expansion

10 mm width **TVG1P-TR-01**

15 mm width **TVG2P-TR-01**

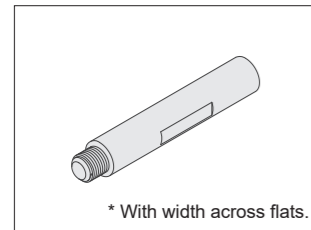
② Stations No.

02	For 2 stationss	14	For 14 stations
03	For 3 stationss	15	For 15 stations
04	For 4 stationss	16	For 16 stations
05	For 5 stationss	17	For 17 stations
06	For 6 stationss	18	For 18 stations
07	For 7 stationss	19	For 19 stations
08	For 8 stationss	20	For 20 stations
09	For 9 stations	21	For 21 stations
10	For 10 stations	22	For 22 stations
11	For 11 stations	23	For 23 stations
12	For 12 stations	24	For 24 stations
13	For 13 stations		

*1: TVG1P is available in sets of 3 and TVG2P in sets of 2.

Regarding expansion of stations

- With 2 to 17 stations, the manifold can be expanded by 3 stations. Up to a total of 3 stations can be expanded with valve blocks and intermediate supply and exhaust blocks. When expanding 18 or more stations of manifolds, use a tie rod that matches the station No. after expansion.
- Fix the tie rod for station expansion/tie rod for intermediate supply and exhaust to the wiring block. If installed on the end block side, it may not be possible to assemble correctly.



How to order (end block)

How to order

End block (U side)

A hexagon socket head cap screw for tie rod tightening and the gasket between the block are included.

10 mm Width **TVG1P - E B - 08CS**

15 mm Width **TVG2P - E B - 10CS**

(Valve width) ① Model No. ② Piping direction ③ Port size ④ Exhaust method ⑤ Pilot operated

Specifications for rechargeable battery (Refer to page 80 for details.)

- For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited

** - ** - ** - **P4**

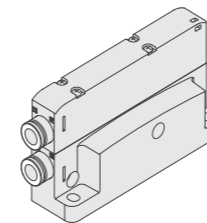
		① Model No.	
		TVG1P	TVG2P
③ Port size			
Metric fitting			
08CS	ø8 push-in fitting	●	
10CS	ø10 push-in fitting		●
08CU	ø8 push-in fitting L-type upward	●	
10CU	ø10 push-in fitting L-type upward		●
08CD	ø8 push-in fitting L-type downward	●	
10CD	ø10 push-in fitting L-type downward		●
*1 Inch fitting			
08LS	ø5/16" push-in fitting	●	
10LS	ø3/8" push-in fitting		●
08LU	ø5/16" push-in fitting L-type upward	○	
10LU	ø3/8" push-in fitting L-type upward		○
*3 Port P: Inch fitting, port R: Metric fitting			
08XS	Port P: ø5/16" push-in fitting Port R: ø8 push-in fitting	●	
10XS	Port P: ø3/8" push-in fitting Port R: ø10 push-in fitting		●
08XU	Port P: ø5/16" push-in fitting L-type upward Port R: ø8 push-in fitting L-type upward	○	
10XU	Port P: ø3/8" push-in fitting L-type upward Port R: ø10 push-in fitting L-type upward		○
Plug			
00XX	Port P, R plug	●	●

*1: Select 08XS, 10XS, 08XU or 10XU when using a silencer with inch fitting specifications. Port R and PR (for KZ) are metric fittings.

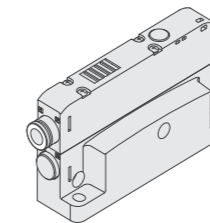
*2: ● Pilot operated K, KZ and 00XX cannot be selected together.

*3: Cannot be selected together with exhaust method X.

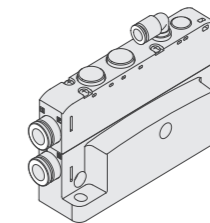
● TVG1P-EB-08CS



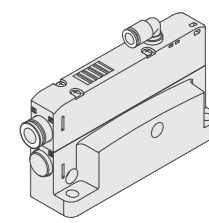
● TVG1P-EB-08CS-X



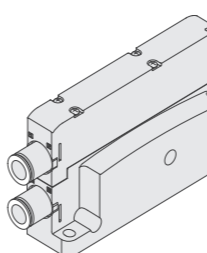
● TVG1P-EB-08CS-K



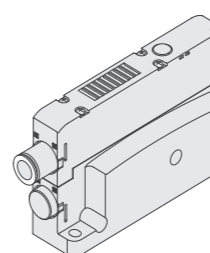
● TVG1P-EB-08CS-XK



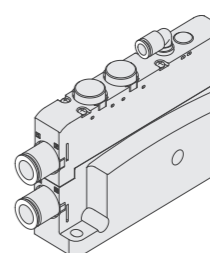
● TVG2P-EB-10CS



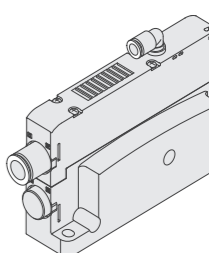
● TVG2P-EB-10CS-X



● TVG2P-EB-10CS-K



● TVG2P-EB-10CS-XK



② Piping direction

B Side piping

④ Exhaust method

Blank	Common exhaust (port R is a push-in fitting)
*1 X	Exhaust is released to atmosphere, with built-in silencer (Port R is sealed.)

*1: ● X is not available for port sizes "00XX" and "□□X□".

*2: X is not available for pilot operated KZ.

⑤ Pilot operated

Blank	Internal pilot
*1,*2 K	External pilot
*1,*2 KZ	External pilot (PA/PR separated)

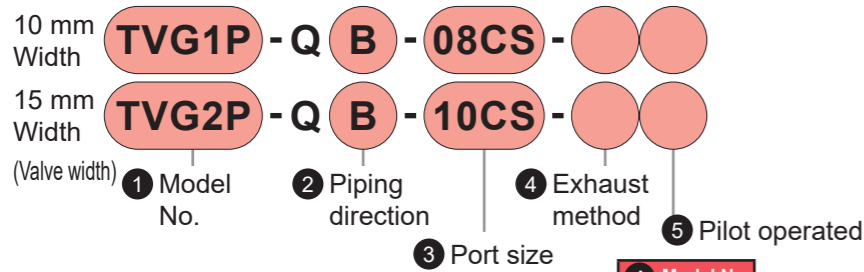
*1: ● Cannot be selected for port size "00XX".

*2: When the external pilot port is ø6 push-in fitting or **L*, it is ø5/32" fitting.

How to order

Intermediate supply and exhaust block

The intermediate supply and exhaust block can be installed between the valve block and the valve block. These blocks cannot be adjacent to each other. This block cannot be adjacent to an end supply and exhaust block or wiring block. The electrical internal wiring and the P.R.PA.PR port connect with the adjacent blocks.



Specifications for rechargeable battery

(Refer to page 80 for details.)
 ● For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited
 ** - ** - ** - P4

Port size	Model No.	
	TVG1P	TVG2P
3 Port size		
●: Standard compliance ○: Special-order product		
Metric fitting		
08CS	ø8 push-in fitting	●
10CS	ø10 push-in fitting	●
08CU	ø8 push-in fitting L-type upward	●
10CU	ø10 push-in fitting L-type upward	●
08CD	ø8 push-in fitting L-type downward	●
10CD	ø10 push-in fitting L-type downward	●
*1 Inch fitting		
08LS	ø5/16" push-in fitting	●
10LS	ø3/8" push-in fitting	●
08LU	ø5/16 push-in fitting L-type upward	○
10LU	ø3/8 push-in fitting L-type upward	○
*3 Port P: Inch fitting, port R: Metric fitting		
08XS	Port P: ø5/16" push-in fitting Port R: ø8 push-in fitting	●
10XS	Port P: ø3/8" push-in fitting Port R: ø10 push-in fitting	●
08XU	Port P: ø5/16" push-in fitting L-type upward Port R: ø8 push-in fitting L-type upward	○
10XU	Port P: ø3/8" push-in fitting L-type upward Port R: ø10 push-in fitting L-type upward	○

2 Piping direction

B Side piping

4 Exhaust method

Blank	Common exhaust (port R is a push-in fitting)
X	Exhaust is released to atmosphere, with built-in silencer (Port R is sealed.)

*1: X is not available for port size "□□X□".
 *2: X is not available for pilot operated Z and KZ.

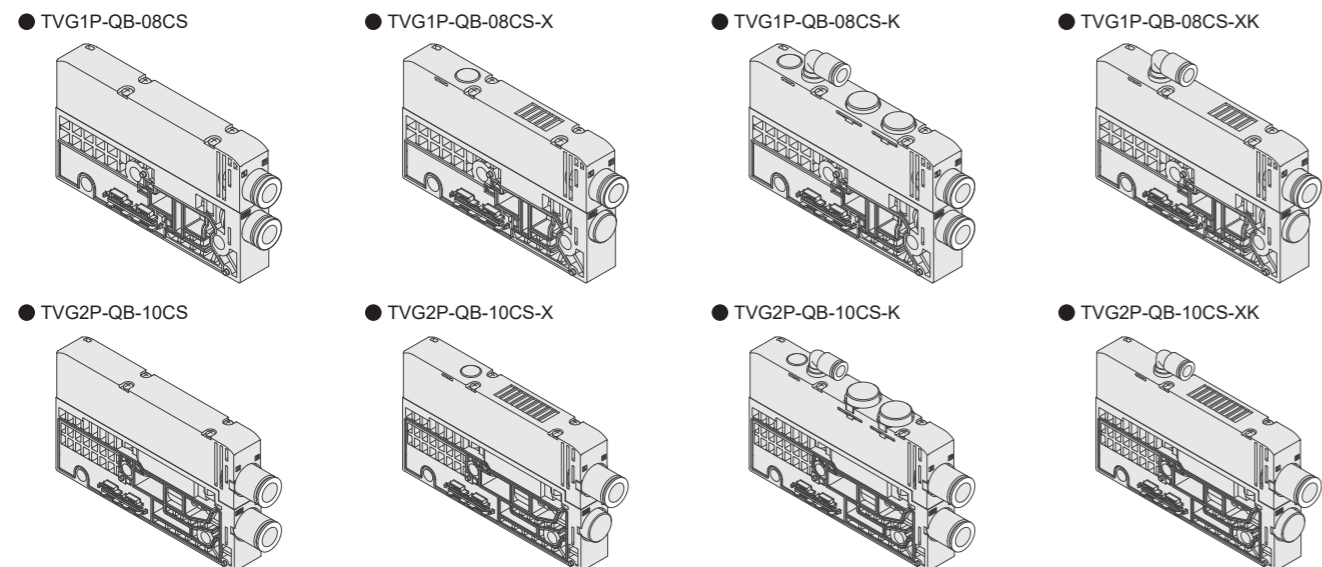
5 Pilot operated

Blank	Internal pilot
K	External pilot
Z	Multi-pressure circuit
KZ	External pilot (PA/PR separated)

*1: When the external pilot port is ø6 push-in fitting or **L*, it is ø5/32" fitting. Z cannot be used independently. Be sure to use with another type, blank, K or KZ.

Included

Manifold gasket: 1
 As the Tie rod is not included, please order separately. Refer to page 45 for details. The gasket between blocks is included.



List of supply and exhaust block specifications

Exhaust method	Pilot operated	D side Wiring/Supply and exhaust block	Intermediate supply and exhaust block	U side End supply and exhaust block
Blank Common exhaust	Blank Internal pilot			
Blank Common exhaust	K External pilot			
Blank Common exhaust	Z Multi-pressure circuit			
Blank Common exhaust	KZ External pilot (PA/PR separated)			
X Atmospheric release (Silencer integrated)	Blank Internal pilot			
X Atmospheric release (Silencer integrated)	K External pilot			

* Check valve between PR and R is for malfunction prevention. This product cannot be used for other applications.

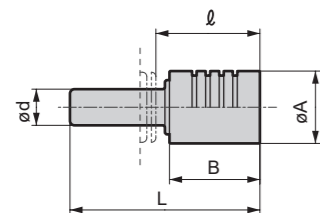
TVG With reduced wiring/serial transmission device unit
 TVG With interface for remote I/O connection
 TVG-P4 Compatible with rechargeable battery manufacturing process
 Manifold specs sheet
 Technical data
 Safety precautions

TVG With reduced wiring/serial transmission device unit
 TVG With interface for remote I/O connection
 TVG-P4 Compatible with rechargeable battery manufacturing process
 Manifold specs sheet
 Technical data
 Safety precautions

Related products

Silencer, blanking plate kit, exhaust check valve, cable clamp, waterproof cap, waterproof plug

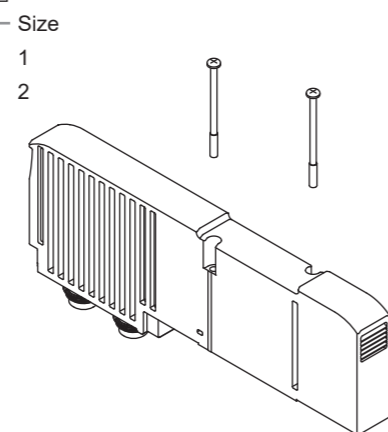
Silencer



Model No.	D	B	L	ℓ	A
SLW-H8	ø8	20	42	23	16
SLW-H10	ø10	27	53	31.5	20

Blanking plate kit

TVG P-BP

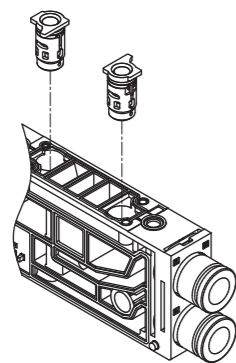


* Kit contents: Blanking plate, 2 mounting screws.
The gasket is included with the valve block.

Exhaust check valve

TVG1P-CHECK-VALVE TVG2P-CHECK-VALVE

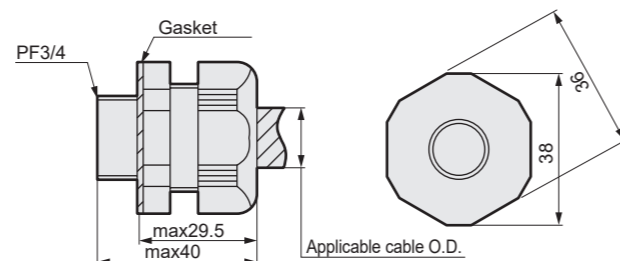
2 pcs. per set.



Parts kit for EA1 wiring block

● Cable clamp

Model No.	Applicable cable O.D.	Description
TVGP-SCL-18A	ø14.5 to 16.5	Used to protect cables from dust and water jets.
TVGP-SCL-18B	ø16.5 to 18.5	



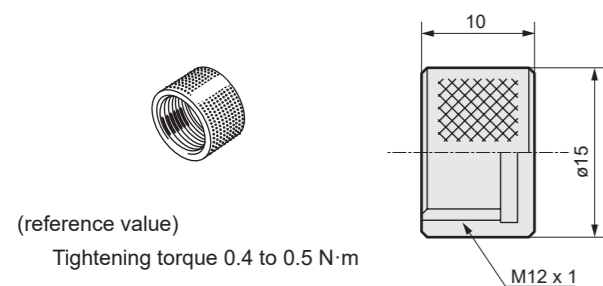
(reference value)

Body tightening torque	4.0 to 4.5 N·m
Cable clamp tightening torque	3.0 to 3.5 N·m

Parts for serial transmission device unit

● Waterproof cap

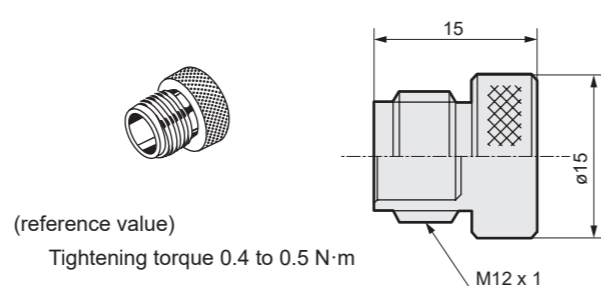
Model No.	Description
TVGP-XSZ-11	Provides water-jet protection of the power supply connector when the power supply is shared with the serial transmission device unit.



(reference value)
Tightening torque 0.4 to 0.5 N·m

● Waterproof plug

Model No.	Description
TVGP-XSZ-12	Provides water-jet protection of unused signal connectors.



(reference value)
Tightening torque 0.4 to 0.5 N·m

MEMO

TVG

3, 5-port pilot operated valve, plug-in block manifold

For remote I/O connection



CONTENTS

Product introduction	Intro
Series variation	1
● Order method	53
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● How to order	
• Manifold with solenoid valve	57
• Manifold base only	61
• Discrete solenoid valve	65
● Option	
• Air supply spacer/exhaust spacer	67
• Spacer pilot check valve	69
• Spacer regulator	70
● Dimension diagram	71
● Internal structure, material	31
● Valve interface	78
Block configurations	33
Related Components (silencer, blanking plate kit, exhaust check valve, etc.)	49
Manifold and wiring specifications sheet	103
Technical data	
① Pneumatic system selection guide	125
② Notes on wiring	129
③ Check valve	147
④ How to expand reduced wiring manifold	142
▲ Safety precautions	143

How to order solenoid valve manifold with interface for remote I/O connection

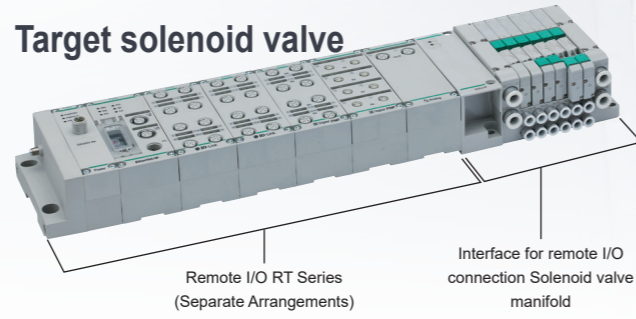
Remote I/O (RT Series) and solenoid valve (TVG Series) must be ordered separately. The customer is asked to assemble the RT and TVG.

The following 3 types of ordering methods are available.

Ordering method	Manifold specifications sheet	Customer assembly processes	Product delivery date
A Manifold assembly	Required	☆	○
B Easy assembly	Not required	◎	◎
C Discrete block	Not required	○	☆

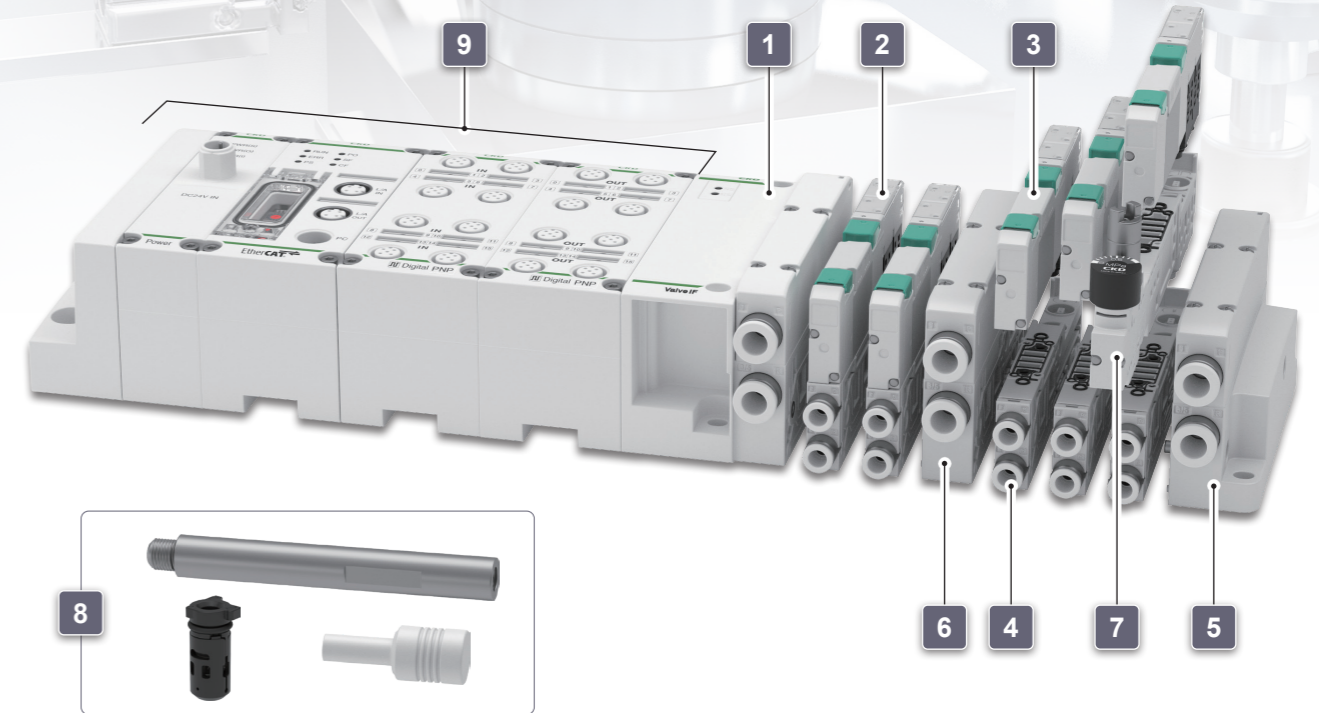
☆: Excellent, ◎: Very good, ○: Good

Target solenoid valve



C Discrete block

Each part is delivered separately. The customer must assemble the manifold by combining the parts. You can order the parts below with their model Nos.



A Manifold assembly

The units will be delivered with the specifications specified in the manifold specifications sheet. Can be ordered with model No. starting with TVG□M and a manifold specifications sheet.

Remote I/O
Specifications not required
RT Series
(Separate order)

Remote I/O RT Series
(CC-1557A)

+

Manifold with solenoid valve
(for remote I/O connection)
Specifications required

Page 57

+

Manifold specifications sheet

Page 103

- *1. The manifold base is only available with a valve interface.
- *2. The device unit is a remote I/O (RT Series) device unit.
- *3. Select the remote I/O in a separate catalog (RT Series).
- *4. The remote I/O and manifold with solenoid valve must be assembled by the customer. Refer to "Remote I/O RT Series (CC-1557A)" for how to assemble.

B Easy assembly

The single solenoid valve and assembled manifold base will be delivered separately. The following parts can be ordered with their model Nos. The customer is required to assemble the single solenoid valve and manifold base.

Remote I/O
Specs. not required
RT Series
(Separate catalog)

Remote I/O RT Series
(CC-1557A)

+

Discrete solenoid valve (for base mounting)
Specs. not required
TVG□-
□: Valve size

Page 65

+

Manifold base
Specs. not required
TVG□B-
□: Valve size

Page 61

+

Spacer
Specs. not required
TVG□P-
□: Valve size

Page 67

+

Exhaust check valve
Specs. not required
TVG□P-
□: Valve size

Page 49

*1. The manifold is limited to options that can be manufactured without a specification sheet, such as double wiring and no malfunction prevention valve assembly. Note: This catalog lists TVGs. Alone, the solenoid valve section does not work, so please assemble the remote I/O and solenoid valve.

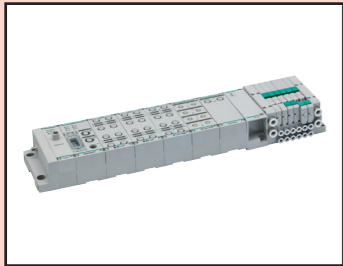
No.	Name	Head model No.	Listed page
1	Valve interface (supply and exhaust air)	TVG□P-	Page 78
2	Valve block with solenoid valve	□: Valve size	Page 37
3	Discrete solenoid valve (for base mounting)	TVG□-	Page 65
4	Valve block	□: Valve size	Page 41
5	End supply and exhaust block	TVG□P- □: Valve size	Page 46
6	Intermediate supply and exhaust block		Page 47
7	Spacer		Page 67
8	Tie rod, silencer, exhaust check valve		Page 45, 49
Other related parts			Page 49
9	Device unit	RT	Remote I/O RT Series (CC-1557A)
	Power supply unit		
	I/O unit		
	End unit (without supply and exhaust)		

TVG With reduced wiring/serial transmission device unit
TVG With interface for remote I/O connection
TVG -P4 Compatible with rechargeable battery/manufacturing processes

Manifold specs sheet
Technical data
Safety precautions

TVG With reduced wiring/serial transmission device unit
TVG With interface for remote I/O connection
TVG -P4 Compatible with rechargeable battery/manufacturing processes

Manifold specs sheet
Technical data
Safety precautions



Plug-in block manifold (for remote I/O connection)
Pilot operated 3, 5-port valve

TVG1/TVG2 Series



* Remote I/O must be prepared separately.

Manifold common specifications

Item	Description	
Manifold	Block manifold	
Mounting method	Direct mounting	
Air supply and exhaust method	Common supply/common exhaust (With internal exhaust check valve)	
Pilot exhaust method	Main valve/pilot valve common exhaust	
Internal pilot	(Pilot exhaust check valve built-in)	
Piping direction	Side direction of base	
Valve and operation	Pilot operated soft spool valve	
Working fluid	Compressed air	
Max. working pressure	MPa 0.7	
Internal pilot min. working pressure	2-position double	0.1 (*6)
	2-position single / 3-position	0.2
	Two 3-port valves integrated	0.2
External pilot min. working pressure	kPa (Pilot pressure is 0.2MPa or more)	-100
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Fluid temperature	°C	5 to 55
Manual override	Non-locking/locking common (standard)	
Lubrication	(*1)	Not required
Degree of protection	(*2)	IP65, IP67
Vibration resistance	m/s ²	50 or less
Shock resistance	m/s ²	294 or less
Atmosphere	Cannot be used in corrosive gas environments	

Electrical specifications

Item	KA1C	KA1D	
Output	NPN	PNP	
No. of output points	32 points (4 bytes)		
Response time ms	typ. ON delay 0.5 or less / OFF delay 1.0 or less		
Forced output setting	Output settable regardless of process data.		
Supply power V	24 DC		
Electrical specifications	Internal consumption Current mA	For unit/input	15 or less
		For output	75 or less
	Operation display	LED (for Component status display, 2 pcs)	

- *1: Use turbine oil Class 1 ISOVG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.
- *2: Tested according to the test method for IP65 (IEC 60529: 2001) standards. Refer to page 144 for details.
- *3: If low exoergic/energy circuit or surgeless types are selected then it will be a diode.
- *4: Pilot exhaust method differs with each supply and exhaust block used. Refer to page 48 for details.
- *5: Select external pilot when using at low vacuum. Refer to page 146 for details.
- *6: 0.2 MPa with low exoergic/energy circuit.

Individual specifications

Item	TVG1		TVG2	
	KA1□		KA1□	
Max. station No.	Standard wiring (double wiring)	16 stations	16 stations	
	Single solenoid, double solenoid layout specification	24 stations	24 stations	
	Single wiring			
Max. number of solenoids	32 points		32 points	
Port size	Metric fitting	Port A/B	Push-in fitting ø1.8, ø4, ø6	Push-in fitting ø4, ø6, ø8
		Port P/R	Push-in fitting ø8	Push-in fitting ø10
	Inch fitting	Port A/B	Push-in fitting ø1/8", ø5/32"	Push-in fitting ø1/4", ø5/16"
		Port P/R	Push-in fitting ø5/16"	Push-in fitting ø3/8"

TVG Series

Specifications (for remote I/O connection)

Performance/characteristics by model

Item	Solenoid position	TVG1		TVG2		
		at ON	at OFF	at ON	at OFF	
Response time ms	Two 3-port valves integrated	15	25	20	37	
	2-position	Single	15	20	22	24
		Double	15	15	26	26
	3-position ABR connection	20	30	25	35	

The response times are values with supply pressure of 0.5 MPa at 20°C and without lubrication. They depend on the pressure and the lubricant quality.

Flow characteristics

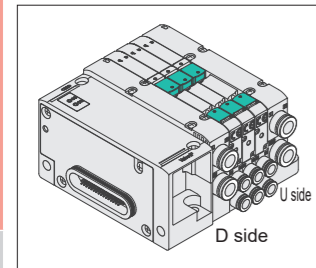
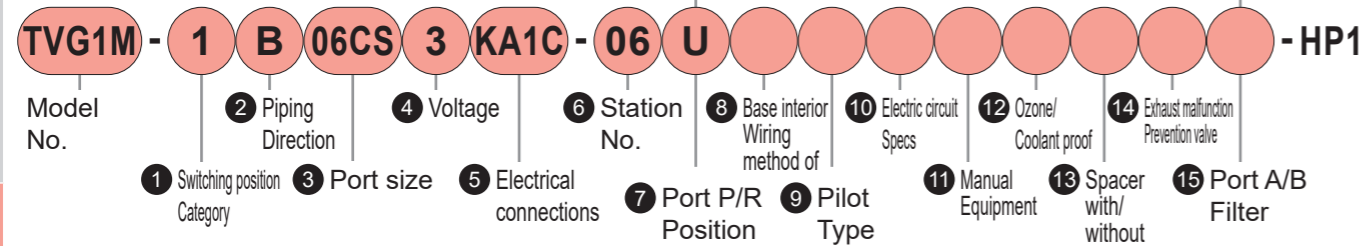
Model No.	Solenoid position	P → A/B		A/B → R		
		C [dm ³ /(s·bar)]	b	C [dm ³ /(s·bar)]	b	
TVG1	Two 3-port valves integrated	0.77	0.37	1.0 (0.56)	0.34 (0.37)	
	2-position	1.0	0.29	1.1 (0.59)	0.36 (0.41)	
	3-position	All ports closed	0.96	0.33	1.0	0.35
		ABR connection	0.96	0.32	1.2 (0.60)	0.38 (0.40)
	PAB connection	1.1	0.35	1.0	0.36	
TVG2	Two 3-port valves integrated	1.7	0.44	2.2 (1.8)	0.43 (0.20)	
	2-position	2.4	0.32	2.5 (2.0)	0.34 (0.19)	
	3-position all ports closed	2.2	0.35	2.3	0.38	
	ABR connection	2.2	0.32	2.5 (2.1)	0.40 (0.21)	
	PAB connection	2.6	0.34	2.3	0.37	

*1: Effective cross-sectional area S and sonic conductance C are converted as $S \approx 5.0 \times C$.

*2: Values in () are with the exhaust check valve.

How to order
Manifold with solenoid valve (for remote I/O connection)

10 mm width (valve width)



1 Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
X	Mix manifold
A	3-port valve A valve side: Normally closed/B valve side: Normally closed
B	Two valves A valve side: Normally open/B valve side: Normally open
C	integrated A valve side: Normally closed/B valve side: Normally open

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.

2 Piping direction

B	Side piping
---	-------------

7 Port P/R position * Multiple selection is not possible.

U	U side	
D	D side	
B	U side, D side	
T	With U side, D side, intermediate supply and exhaust block	

*1: Fittings of port P/R are for the same direction as those of port A/B.
*2: Specify the specifications of the intermediate supply and exhaust block in the manifold specifications sheet.

8 Wiring method inside the base *1

Blank	Double wiring
S	Single solenoid, double solenoid layout specification

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated.

9 Pilot operated

Blank	Internal pilot	
K	External pilot	

10 Electric circuit specifications

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

11 Manual override * Multiple selection is not possible.

Blank	Locking/Non-locking common/with misoperation prevention cover	
M1	Non-locking, with misoperation prevention cover	
M2	Locking/Non-locking common, Tool operated, without cover	
M3	Non-locking, tool operation, without cover	

13 With/Without spacer

Blank	Without spacer
Z	With spacer (type and location are specified on the MF specifications sheet)

*1: Specify the spacer type and mounting position in manifold specifications sheet. Stacking of spacers is not possible. Combination with the blanking plate is not supported. Cannot be selected together with push-in fitting L-type upward.

14 Exhaust check valve

Blank	None	
H	With exhaust check valve	

*1: Solenoid positions "3" and "5" cannot be selected. Refer to page 147 for details on the type with exhaust check valve. Specify the number of stations to install in the manifold specifications sheet.

15 Port A/B filter

Blank	None	
F	Port A/B filter built in	

*1: A filter is built into port P.

3 Port size (port A/B)

• Metric fitting

0ACS	∅1.8 push-in fitting (compatible tube UP-9402-**) *4	
04CS	∅4 push-in fitting	
06CS	∅6 push-in fitting	
0ACU	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) *4	
04CU	Upward ∅4 push-in fitting	
06CU	*2 ∅6 push-in fitting	
0ACD	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) *4	
04CD	Downward ∅4 push-in fitting	
06CD	∅6 push-in fitting	
99CX	Push-in fitting mix	
*1	Single side plug specifications	
	Port A	Port B
0ACA	∅1.8 push-in fitting (compatible tube UP-9402-**) *4	Plug
04CA	∅4 push-in fitting	
06CA	∅6 push-in fitting	
0ACF	Plug	∅1.8 push-in fitting (compatible tube UP-9402-**) *4
04CF		∅4 push-in fitting
06CF		∅6 push-in fitting
0ACB	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) *4	Plug
04CB	Upward ∅4 push-in fitting	
06CB	*2 ∅6 push-in fitting	
0ACG	Plug	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) *4
04CG		Upward ∅4 push-in fitting
06CG		*2 ∅6 push-in fitting
0ACC	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) *4	Plug
04CC	Downward ∅4 push-in fitting	
06CC	∅6 push-in fitting	
0ACH	Plug	L-type ∅1.8 push-in fitting (compatible tube UP-9402-**) *4
04CH		Downward ∅4 push-in fitting
06CH		∅6 push-in fitting

• Inch fitting

03LS	∅1/8" push-in fitting		
04LS	∅5/32" push-in fitting		
*4	03LU	L-type Upward ∅1/8" push-in fitting	
*4	04LU	*2 ∅5/32" push-in fitting	
*3	99LX	Push-in fitting mix	
*1	Single side plug specifications	Port A	Port B
03LA	∅1/8" push-in fitting		Plug
04LA	∅5/32" push-in fitting		
03LF	Plug		∅1/8" push-in fitting
04LF			∅5/32" push-in fitting
*4	03LB	L-type Upward ∅1/8" push-in fitting	Plug
*4	04LB	*2 ∅5/32" push-in fitting	
*4	03LG	Plug	L-type Upward ∅1/8" push-in fitting
*4	04LG		*2 ∅5/32" push-in fitting

*1: Ports A and B with one side plug specifications are available for 2-position Single only.

*2: 3-position is not available for push-in L-fittings upward.

*3: Port size mixtures of ports 4(A) and 2(B) are not available.

*4: Special-order product.

4 Voltage

3	24 VDC
---	--------

5 Electrical connections

Descriptions	Output	No. of points	Code
RT Series connection	NPN	32 points	KA1C
Interface	PNP	Output	KA1D

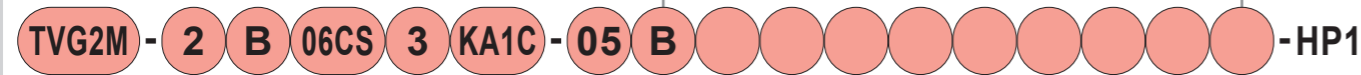
*1: PNP specifications are Special-order products.

6 Station No.

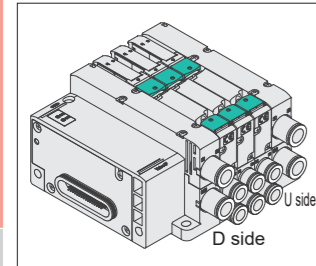
02	2 stations
to	to
24	24 stations

How to order
Manifold with solenoid valve (for remote I/O connection)

15 mm width (valve width)



- 1 Solenoid position
- 2 Piping direction
- 3 Port size
- 4 Voltage
- 5 Electrical connections
- 6 Station No.
- 7 Port P/R Position
- 8 Wiring method inside the base
- 9 Pilot operated
- 10 Electric circuit specifications
- 11 Manual override
- 12 Ozone/Coolant proof
- 13 Type of valve mounting screw
- 14 With/Without spacer
- 15 Exhaust check valve
- 16 Port A/B filter



1 Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
X	Mix manifold
A	3-port valve A valve side: Normally closed/B valve side: Normally closed
B	Two valves A valve side: Normally open/B valve side: Normally open
C	integrated *1 A valve side: Normally closed/B valve side: Normally open

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.

2 Piping direction

B	Side piping
---	-------------

7 Port P/R position * Multiple selection is not possible.

U	U side	
D	D side	
B	U side, D side	
T	With U side, D side, intermediate supply and exhaust block	

*1: Fittings of port P/R are for the same direction as those of port A/B.
*2: Specify the specifications of the intermediate supply and exhaust block in the manifold specifications sheet.

8 Wiring method inside the base *1

Blank	Double wiring
S	Single solenoid, double solenoid layout specification

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated.

9 Pilot operated

Blank	Internal pilot	
K	External pilot	

10 Electric circuit specifications

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

11 Manual override * Multiple selection is not possible.

Blank	Locking/Non-locking common/with misoperation prevention cover	
M1	Non-locking, with misoperation prevention cover	
M2	Locking/Non-locking common, Tool operated, without cover	
M3	Non-locking, tool operation, without cover	

13 Type of valve mounting screw

Blank	Pan head machine screw with Phillips head/flathead
J	Hexagon socket head cap screw

J cannot be selected when spacer Z is selected.

14 With/Without spacer

Blank	Without spacer
Z	With spacer (type and location are specified on the MF specifications sheet)

*1: Specify the spacer type and mounting position in manifold specifications sheet. Stacking of spacers is not possible. Combination with the blanking plate is not supported. Cannot be selected together with push-in fitting L-type upward.

15 Exhaust check valve

Blank	None	
H	With exhaust check valve	

*1: Solenoid positions "3" and "5" cannot be selected. Refer to page 147 for details on the type with exhaust check valve. Specify the number of stations to install in the manifold specifications sheet.

16 Port A/B filter

Blank	None	
F	Port A/B filter built in	

*1: A filter is built into port P.

3 Port size (port A/B)

• Metric fitting

04CS	ø4 push-in fitting	
06CS	ø6 push-in fitting	
08CS	ø8 push-in fitting	
06CU	L-type upward ø6 push-in fitting	
08CU	L-type upward *2 ø8 push-in fitting	
06CD	L-type downward ø6 push-in fitting	
08CD	L-type downward ø8 push-in fitting	
99CX	Push-in fitting mix	
*3	Single side plug specifications	
*1	Port A	Port B
04CA	ø4 push-in fitting	Plug
06CA	ø6 push-in fitting	Plug
08CA	ø8 push-in fitting	Plug
04CF	ø4 push-in fitting	Plug
06CF	ø6 push-in fitting	Plug
08CF	ø8 push-in fitting	Plug
06CB	L-type upward ø6 push-in fitting	Plug
08CB	L-type upward *2 ø8 push-in fitting	Plug
06CG	ø6 push-in fitting	L-type upward ø6 push-in fitting
08CG	ø8 push-in fitting	L-type upward *2 ø8 push-in fitting
06CC	L-type downward ø6 push-in fitting	Plug
08CC	L-type downward ø8 push-in fitting	Plug
06CH	ø6 push-in fitting	L-type downward ø6 push-in fitting
08CH	ø8 push-in fitting	L-type downward ø8 push-in fitting

• Inch fitting

06LS	ø1/4" push-in fitting	
08LS	ø5/16" push-in fitting	
*4	06LU L-type upward ø1/4" push-in fitting	
*4	08LU L-type upward *2 ø5/16" push-in fitting	
*3	99LX Push-in fitting mix	
*1	Single side plug specifications	
	Port A	Port B
06LA	ø1/4" push-in fitting	Plug
08LA	ø5/16" push-in fitting	Plug
06LF	Plug	ø1/4" push-in fitting
08LF	Plug	ø5/16" push-in fitting
*4	06LB L-type upward ø1/4" push-in fitting	Plug
*4	08LB L-type upward *2 ø5/16" push-in fitting	Plug
*4	06LG Plug	L-type Upward ø1/4" push-in fitting
*4	08LG Plug	L-type Upward *2 ø5/16" push-in fitting

*1: Ports A and B with one side plug specifications are available for 2-position single only.
*2: 3-position is not available for push-in L-fittings upward.
*3: Port size mixtures of ports 4(A) and 2(B) are not available.
*4: Special-order product.

4 Voltage

3	24 VDC
---	--------

5 Electrical connections

Descriptions	Output	No. of points	Code
Interface for RT Series	NPN	32 points	KA1C
	PNP	Output	KA1D

*1: PNP specifications are Special-order products.

6 Station No.

02	2 stations
to	to
24	24 stations

TVG With reduced wiring/serial transmission device unit

TVG With interface for remote I/O connection

TVG -P4 Compatible with rechargeable battery/manufacturing processes

Manifold specs sheet

Technical data

Safety precautions

TVG With reduced wiring/serial transmission device unit

TVG With interface for remote I/O connection

TVG -P4 Compatible with rechargeable battery/manufacturing processes

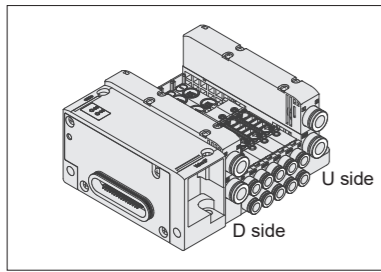
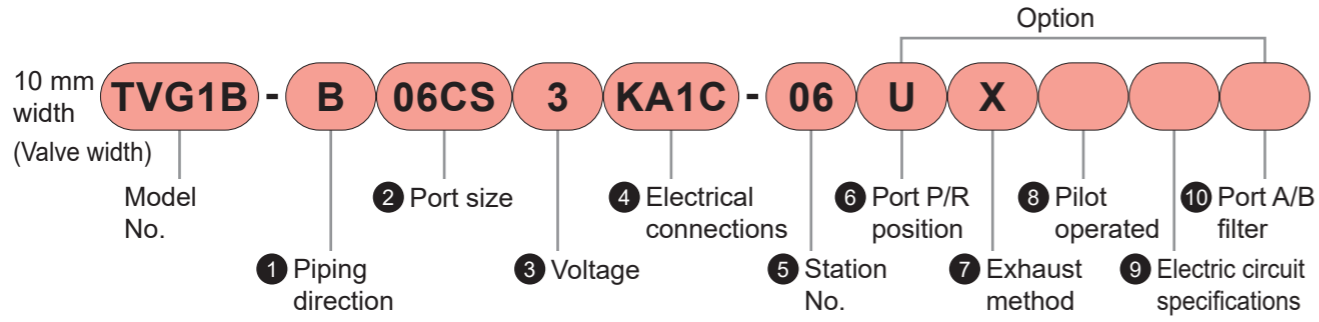
Manifold specs sheet

Technical data

Safety precautions

How to order

Manifold base for remote I/O connection only * valve is not included.



1 Piping direction

B	Side piping
----------	-------------

• Inch fitting

03LS	ø1/8" push-in fitting
04LS	ø5/32" push-in fitting
*2 03LU	L-type upward ø1/8" push-in fitting
*2 04LU	*1 ø5/32" push-in fitting

*1: 3-position is not available for push-in fitting L-type upward.
*2: Special-order product.

4 Electrical connections

Descriptions	Output	No. of points	Code
Interface for RT Series	NPN	32 points	KA1C
	PNP	Output	KA1D

6 Port P/R position (TVG1B: ø8)

* Multiple selection is not possible.

U	U side	
D	D side	
B	U, D both sides	

*1: Fittings of port P/R are for the same direction as those of port A/B.
*2: A port P filter is integrated.

2 Port size (port A/B)

• Metric fitting

0ACS	ø1.8 push-in fitting (compatible tube UP-9402-**)
04CS	ø4 push-in fitting
06CS	ø6 push-in fitting
0ACU	L-type ø1.8 push-in fitting (compatible tube UP-9402-**)
04CU	upward ø4 push-in fitting
06CU	*1 ø6 push-in fitting
0ACD	L-type ø1.8 push-in fitting (compatible tube UP-9402-**)
04CD	downward ø4 push-in fitting
06CD	ø6 push-in fitting

3 Voltage

3	24 VDC
----------	--------

5 Station No.

02	2 stations
to	to
16	16 stations

*1: All the wiring inside the base is for double solenoid regardless of the type of valve mounted. The part with the single solenoid mounted will generate an empty number for one solenoid.

How to order (manifold base only for remote I/O connection)

• Refer to Remote I/O RT Series (Catalog No.CC-1557A) for the RT Series (remote I/O).

7 Exhaust method

Blank	Common exhaust (port R is a push-in fitting)	
X	Silencer integrated (port R is a plug, exhaust is released to atmosphere)	

* A silencer is built into the unit at the position selected with port P/R position.

8 Pilot operated

Blank	Internal pilot	
K	External pilot	

9 Electric circuit specifications * Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low dust generation/energy saving circuit (surgeless specifications)
E2	Surgeless

*1:E1 is not compatible with PNP specifications.

10 Port A/B filter

Blank	None	
F	Port A/B filter built in	

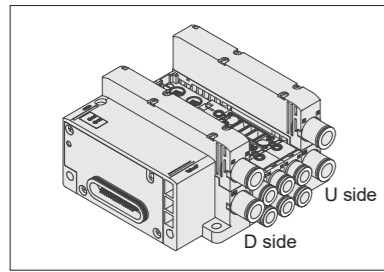
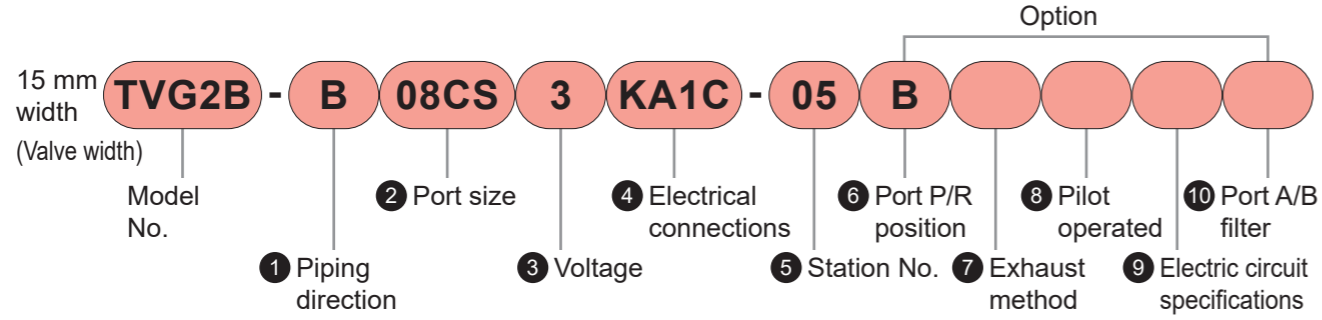
*1: A filter is built into port P.

TVG With reduced wiring/serial transmission device unit
TVG With interface for remote I/O connection
TVG -P4 Compatible with rechargeable battery manufacturing processes
Manifold specs sheet
Technical data
Safety precautions

TVG With reduced wiring/serial transmission device unit
TVG With interface for remote I/O connection
TVG -P4 Compatible with rechargeable battery manufacturing processes
Manifold specs sheet
Technical data
Safety precautions

How to order

Manifold base for remote I/O connection only * Solenoid valve is not included.



2 Port size (port A/B)

• Metric fitting

04CS	ø4 push-in fitting
06CS	ø6 push-in fitting
08CS	ø8 push-in fitting
06CU	L-type upward ø6 push-in fitting
08CU	*1 ø8 push-in fitting
06CD	L-type downward ø6 push-in fitting
08CD	ø8 push-in fitting

• Inch fitting

06LS	ø1/4" push-in fitting
08LS	ø5/16" push-in fitting
*2 06LU	L-type upward ø1/4" push-in fitting
*2 08LU	*1 ø5/16" push-in fitting

*1: 3-position is not available for push-in fitting L-type upward.
*2: Special-order product.

3 Voltage

3	24 VDC
---	--------

4 Electrical connections

Descriptions	Output	No. of points	Code
Interface for RT Series	NPN	32 point output	KA1C
	PNP		KA1D

5 Station No.

02	2 stations
to	to
16	16 stations

*1: All the wiring inside the base is for double solenoid regardless of the type of valve mounted. The part with the single solenoid mounted will generate an empty number for one solenoid.

6 Port P/R position (TVG2B: ø10)

* Multiple selection is not possible.

U	U side	
D	D side	
B	U, D both sides	

*1: Fittings of port P/R are for the same direction as those of port A/B.
*2: A port P filter is integrated.

1 Piping direction

B	Side piping
---	-------------

7 Exhaust method

Blank	Common exhaust (port R is a push-in fitting)	
X	Silencer integrated (port R is a plug, exhaust is released to atmosphere)	

*1: A silencer is built into the position selected with port P/R position.

8 Pilot operated

Blank	Internal pilot	
K	External pilot	

9 Electric circuit specifications * Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low dust generation/energy saving circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

10 Port A/B filter

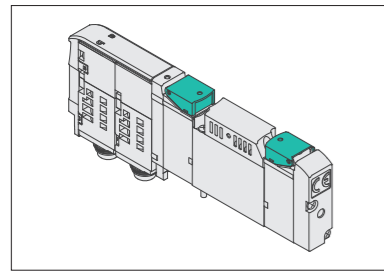
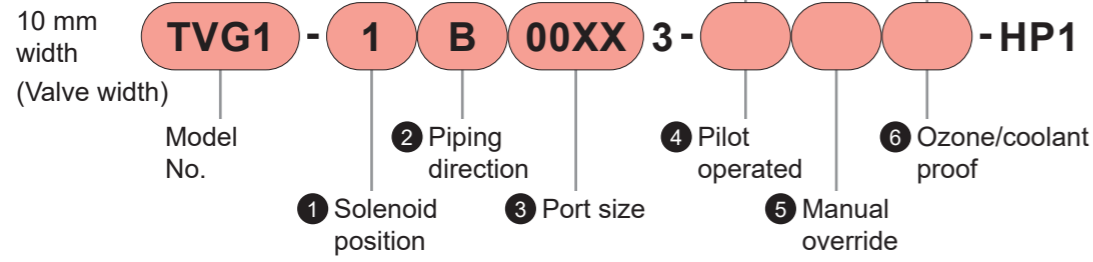
Blank	None	
F	Port A/B filter built in	

*1: A filter is built into port P.

• Refer to Remote I/O RT Series (Catalog No.CC-1557A) for the RT Series (remote I/O).

How to order

Discrete solenoid valve (for base mounting)



① Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
*1 A	3-port valve A valve side: Normally closed B valve side: Normally closed
*1 B	Two valves integrated A valve side: Normally open B valve side: Normally open
*1 C	Two valves integrated A valve side: Normally closed B valve side: Normally open

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position Double.

② Piping direction

B	Side piping
----------	-------------

③ Port size

00XX	Discrete solenoid valve for base mounting
-------------	---

④ Pilot operated

Blank	Internal pilot
K	External pilot

⑤ Manual override * Multiple selection is not possible.

Blank	Locking/Non-locking common with misoperation prevention cover	
M1	Non-locking with misoperation prevention cover	
M2	Locking/Non-locking common, tool operation without cover	
M3	Non-locking, tool operation without cover	

⑥ Ozone/Coolant proof

Blank	Standard specifications
A	Ozone/Coolant proof (main valve fluorine specification)

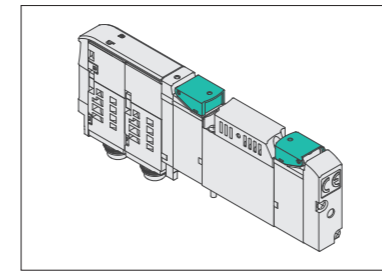
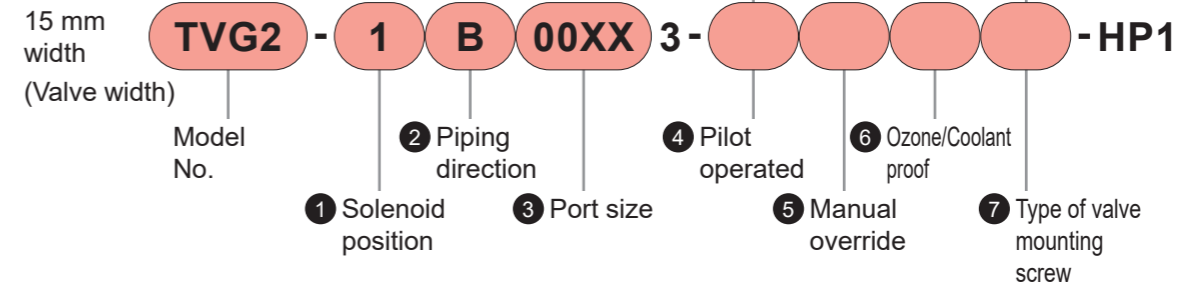
Solenoid valve mounting screws are included. The gasket is attached to the manifold base.

• Refer to Remote I/O RT Series (Catalog No.CC-1557A) for the RT Series (remote I/O).
• If an exhaust check valve is required, refer to page 49.

How to order (single solenoid valve)

How to order

Discrete solenoid valve (for base mounting)



① Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
*1 A	3-port valve A valve side: Normally closed B valve side: Normally closed
*1 B	Two valves integrated A valve side: Normally open B valve side: Normally open
*1 C	Two valves integrated A valve side: Normally closed B valve side: Normally open

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position Double.

② Piping direction

B	Side piping
----------	-------------

③ Port size

00XX	Discrete solenoid valve for base mounting
-------------	---

④ Pilot operated

Blank	Internal pilot
K	External pilot

⑤ Manual override * Multiple selection is not possible.

Blank	Locking/Non-locking common with misoperation prevention cover	
M1	Non-locking with misoperation prevention cover	
M2	Locking/Non-locking common, tool operation type, Without cover	
M3	Non-locking, tool operation without cover	

⑥ Ozone/Coolant proof

Blank	Standard specifications
A	Ozone/Coolant proof (main valve fluorine specification)

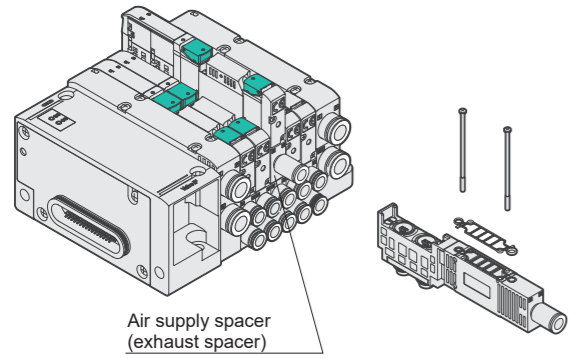
⑦ Type of valve mounting screw

Blank	Pan head machine screw with Phillips head/flathead
J	Hexagon socket head cap screw

*1: Valve mounting screws are included. The gasket is attached to the manifold base.

• Refer to Remote I/O RT Series (Catalog No.CC-1557A) for the RT Series (remote I/O).
• If an exhaust check valve is required, refer to page 49.

Air supply spacer/exhaust spacer



Specifications

- Air supply spacer

Model No.	Weight g
TVG1P-P-□	31

- Exhaust spacer

Model No.	Weight g
TVG1P-R-□	31

Discrete model No.

- Air supply spacer

TVG1P - P - **04CS**
 ① Port size

Code	Bore size	Description
04CS	ø4	ø4 push-in fitting
06CS	ø6	ø6 push-in fitting

- Exhaust spacer

TVG1P - R - **04CS**
 ① Port size

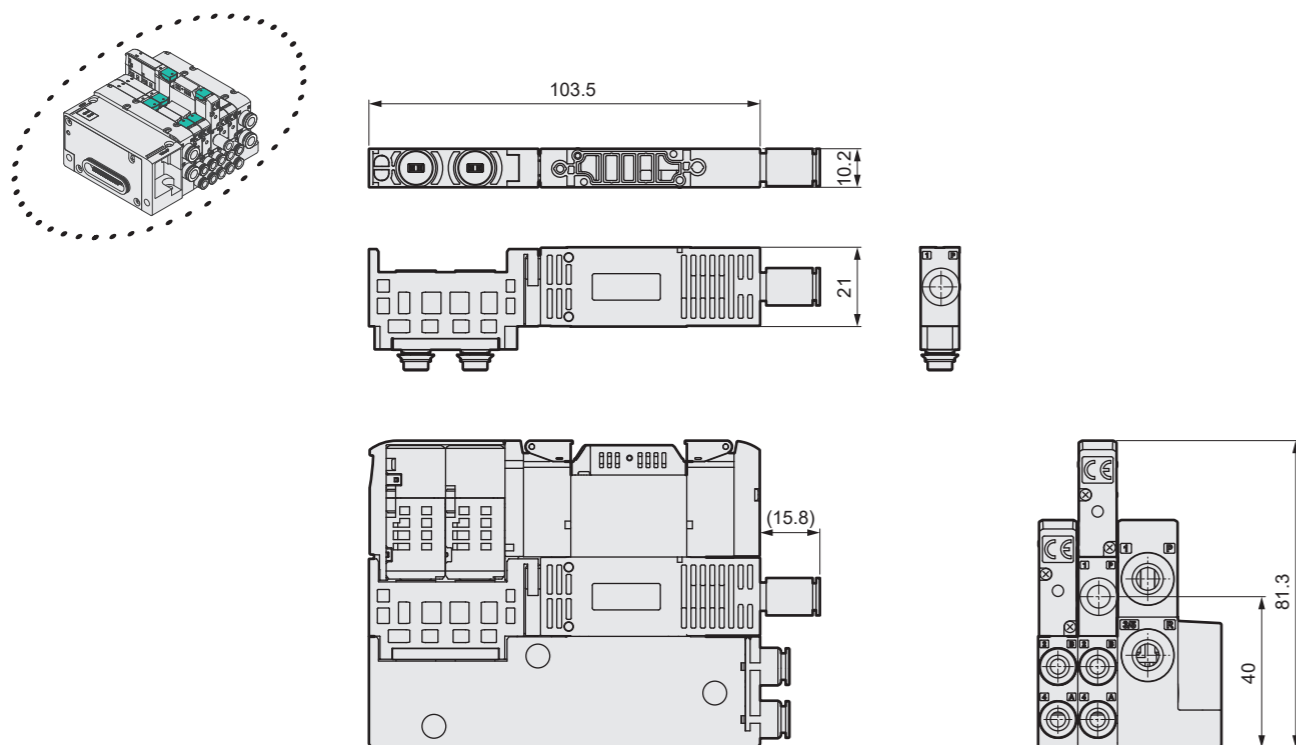
Code	Bore size	Description
04CS	ø4	ø4 push-in fitting
06CS	ø6	ø6 push-in fitting

⚠ Precautions for model No. selection

- *1: Specify the positions and quantity of spacers for manifold in the manifold specifications sheet (Pages 113 to 116).
- *2: Stacking of spacers is not possible.
- *3: A spacer cannot be combined with a blanking plate.
- *4: A spacer mounting screw and gasket are included.

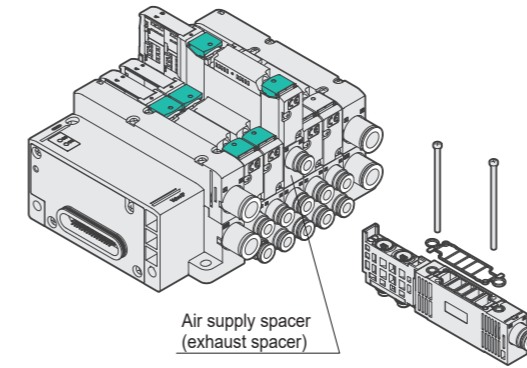
Dimensions

- Air supply spacer/exhaust spacer



Air supply spacer/exhaust spacer

Air supply spacer/exhaust spacer



Specifications

- Air supply spacer

Model No.	Weight g
TVG2P-P-□	56

- Exhaust spacer

Model No.	Weight g
TVG2P-R-□	56

Discrete model No.

- Air supply spacer

TVG2P - P - **06CS**
 ① Port size

Code	Bore size	Description
06CS	ø6	ø6 push-in fitting
08CS	ø8	ø8 push-in fitting

- Exhaust spacer

TVG2P - R - **06CS**
 ① Port size

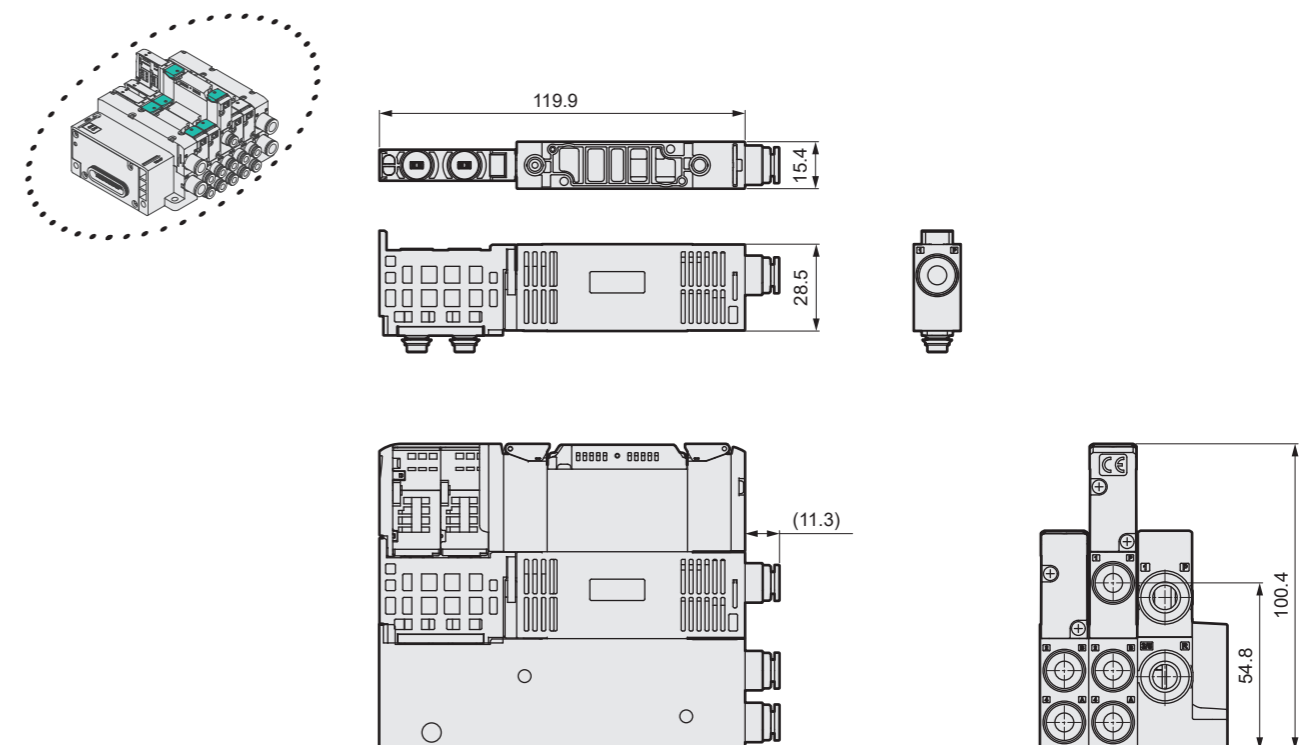
Code	Bore size	Description
06CS	ø6	ø6 push-in fitting
08CS	ø8	ø8 push-in fitting

⚠ Precautions for model No. selection

- *1: Specify the positions and quantity of spacers for manifold in the manifold specifications sheet (Pages 113 to 116).
- *2: Stacking of spacers is not possible.
- *3: A spacer cannot be combined with a blanking plate.
- *4: A spacer mounting screw and gasket are included.

Dimensions

- Air supply spacer/exhaust spacer



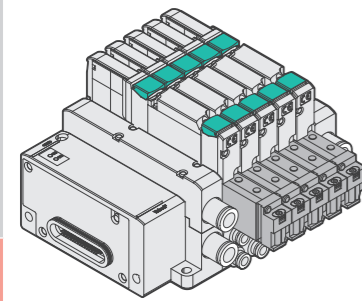
TVG With reduced wiring/serial transmission device unit
 TVG With interface for remote I/O connection
 TVG -P4 Compatible with reconfigurable/manufacturing processes

Manifold specs sheet
 Technical data
 Safety precautions

TVG With reduced wiring/serial transmission device unit
 TVG With interface for remote I/O connection
 TVG -P4 Compatible with reconfigurable/manufacturing processes

Manifold specs sheet
 Technical data
 Safety precautions

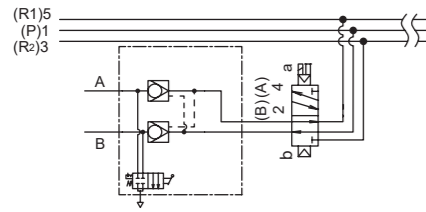
● Spacer pilot check valve



Specifications

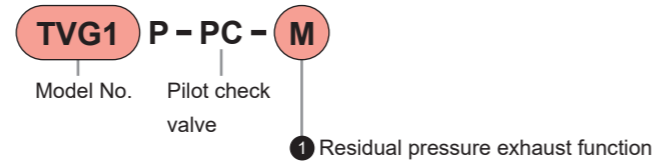
Item	TVG1P-PC-□	TVG2P-PC-□
Working fluid	Compressed air	
Max. working pressure	MPa	0.7
Minimum working pressure	MPa	0.2
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Working fluid temperature	°C	5 to 55
Atmosphere	Cannot be used in corrosive gas environment.	
Weight	g	34 73

JIS symbol



Note: Using a cylinder with a large bore size (more than ø50 as a guide) with little exhaust restriction (eg, no speed controller, no silencer) may lead to a decrease in intermediate stop accuracy and stopping error. Please be careful.

Discrete model No.



① Residual pressure exhaust function

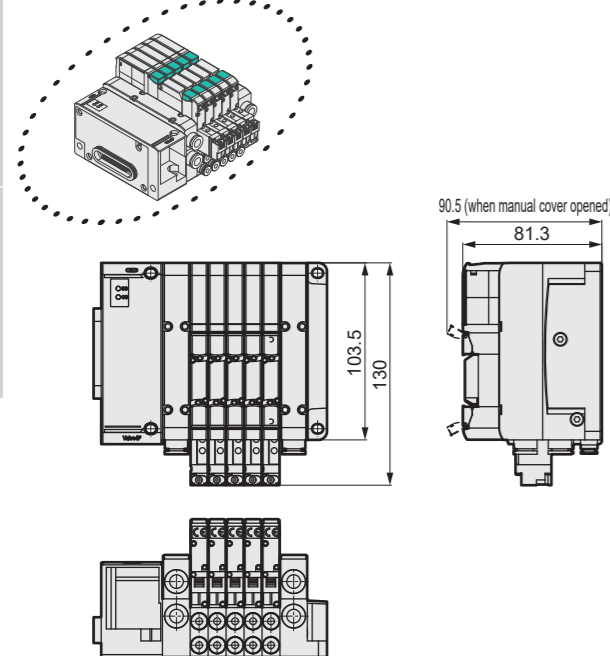
Code	Description
M	Manual override of non-locking
M1	Locking manual override
Blank	No residual pressure exhaust function

⚠ Precautions for model No. selection

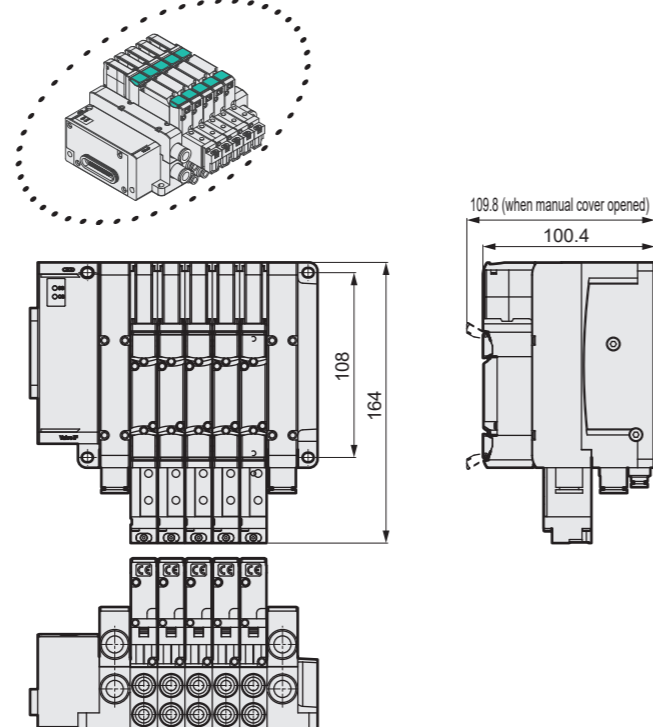
- *1: Specify the spacer mounting position and residual pressure exhaust function selection in manifold specifications sheet.
- *2: Spacer pilot check valve is not available when the fitting for port A/B is elbow.
- *3: Stacking of spacers is not possible.
- *4: A spacer cannot be combined with a blanking plate.
- *5: A spacer mounting screw and gasket are included.

Dimensions

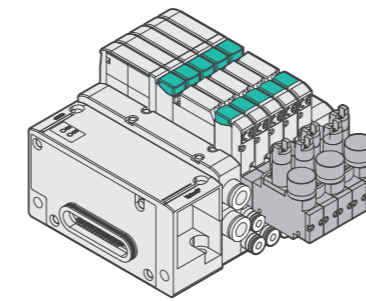
● TVG1



● TVG2



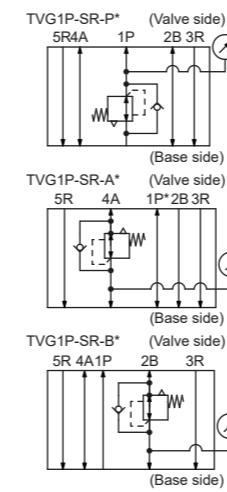
● Spacer regulator



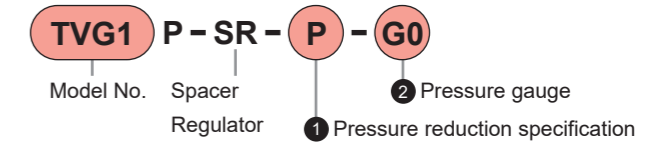
Specifications

Item	TVG1P-SR-□	
Pressure reduction port	P / A / B	
Working fluid	Compressed air	
Max. working pressure	MPa	0.7
Minimum working pressure	MPa	0.2
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Working fluid temperature	°C	5 to 55
Atmosphere	Cannot be used in corrosive gas environment.	
Weight	g	48

JIS symbol



Discrete model No.



① Pressure reduction specification

Code	Description
P	Port P regulator
A	Port A regulator
B	Port B regulator

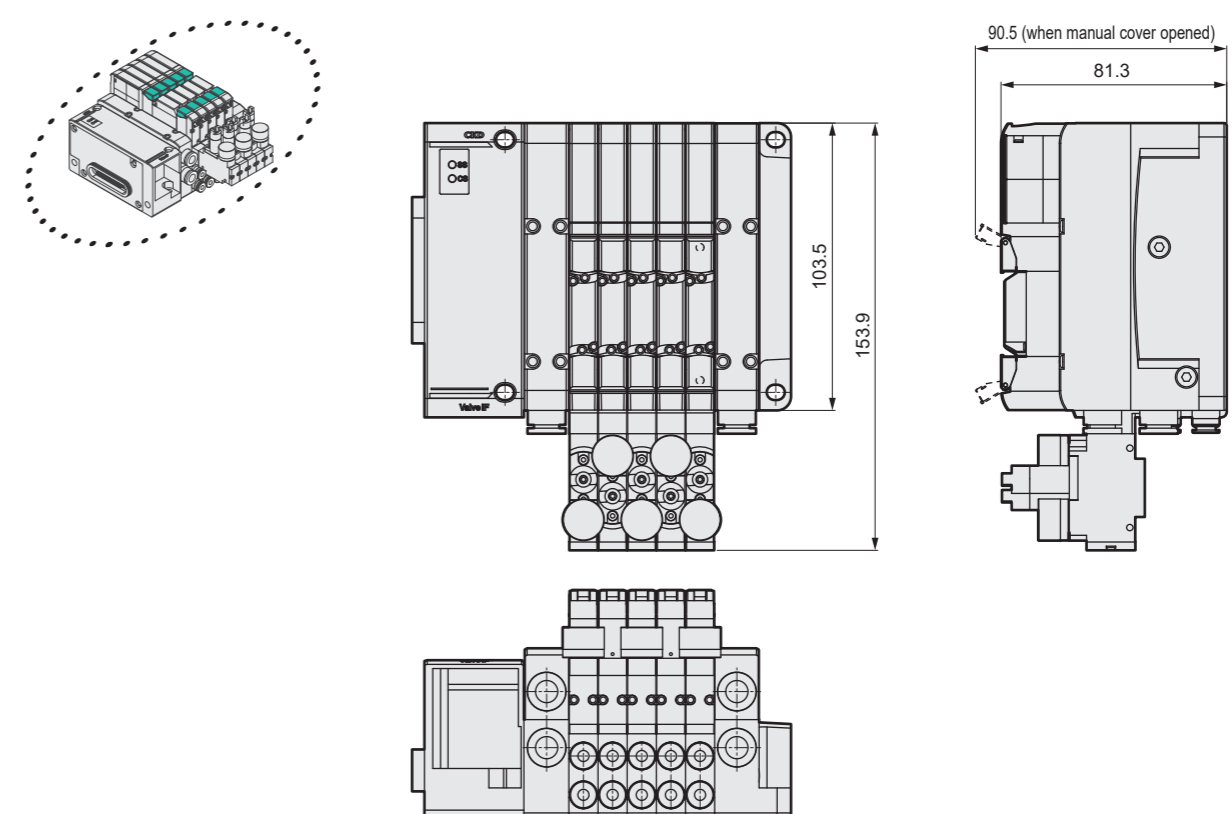
② Pressure gauge

Code	Description
G0	No pressure gauge
G1	With pressure gauge for odd No. stations
G2	With pressure gauge for even No. stations

⚠ Precautions for model No. selection

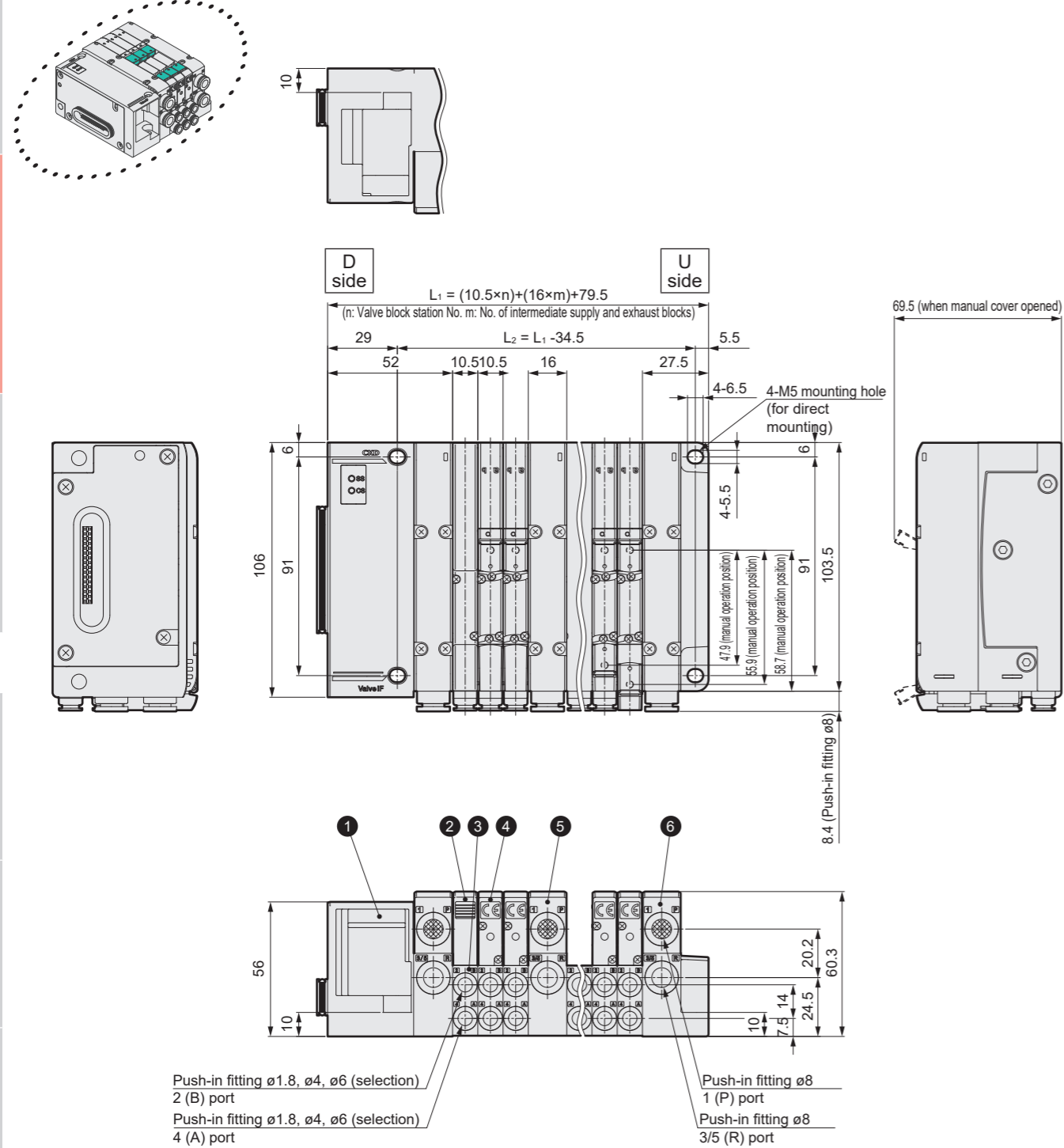
- *1: Specify the spacer positions in the manifold specifications sheet.
- *2: Spacer regulator is not available when the fitting for port A/B is elbow.
- *3: Stacking of spacers is not possible.
- *4: A spacer cannot be combined with a blanking plate.
- *5: A spacer mounting screw and gasket are included.

Dimensions



Dimensions

TVG1M for remote I/O connection



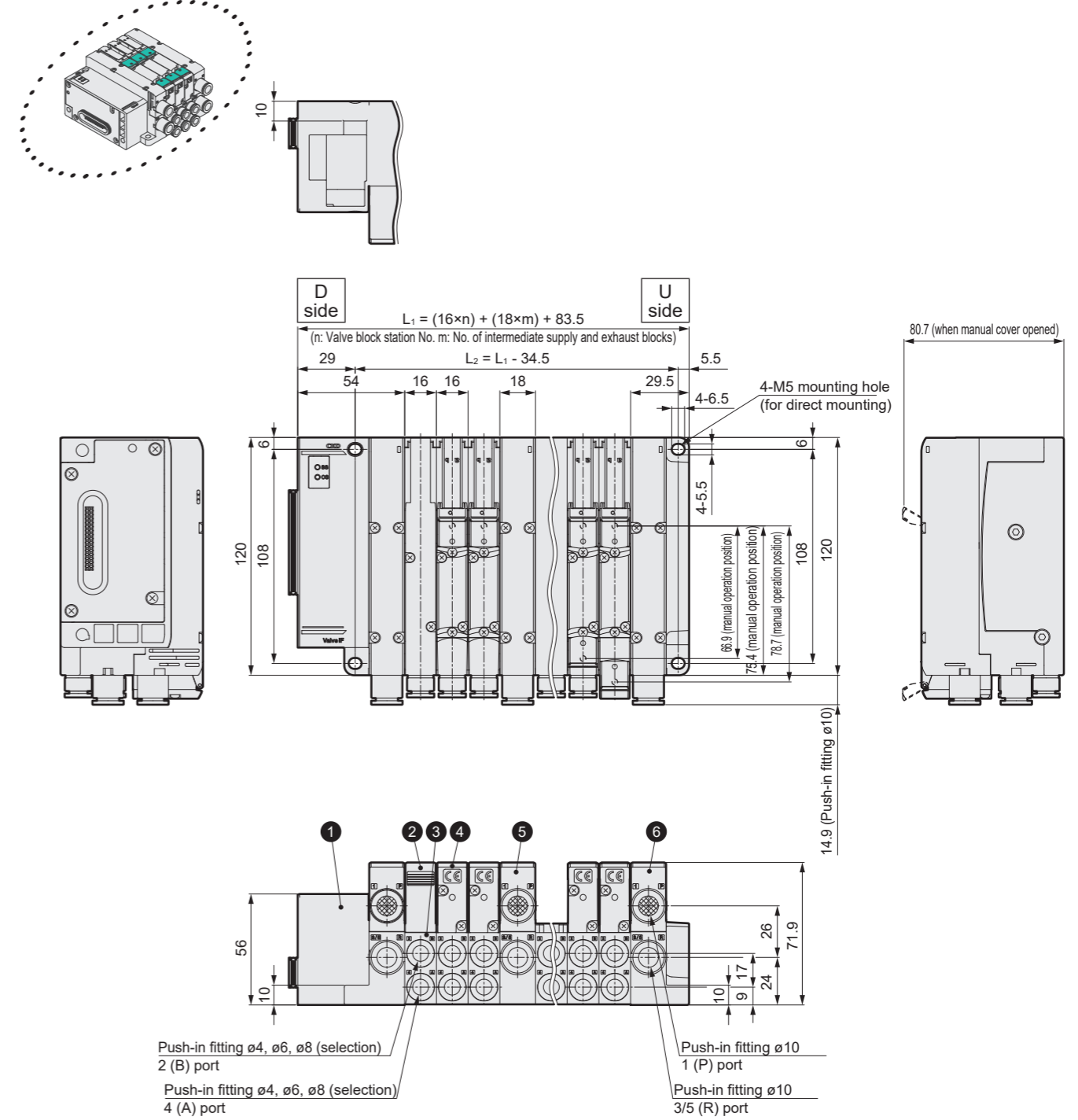
Part No.	Part name
1	Valve interface
2	Blanking plate
3	Valve block
4	Single solenoid valve
5	Intermediate supply and exhaust block
6	End block

* Tie rods (2 pcs.) for connecting the valve interface and RT Series are attached.

Dimensions (for remote I/O connection)

Dimensions

TVG2M for remote I/O connection

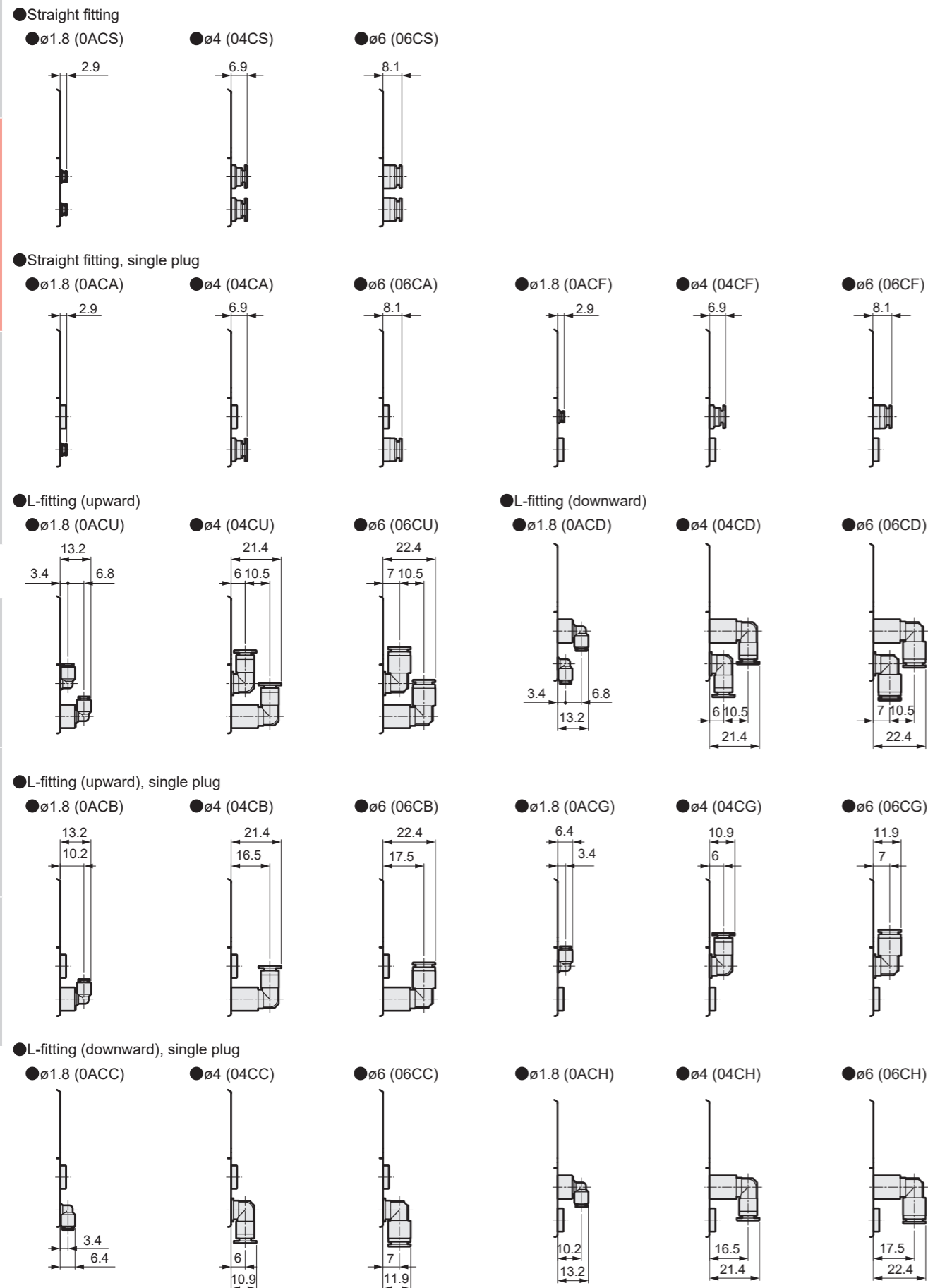


Part No.	Part name
1	Valve interface
2	Blanking plate
3	Valve block
4	Single solenoid valve
5	Intermediate supply and exhaust block
6	End block

* Tie rods (2 pcs.) for connecting the valve interface and RT Series are attached.

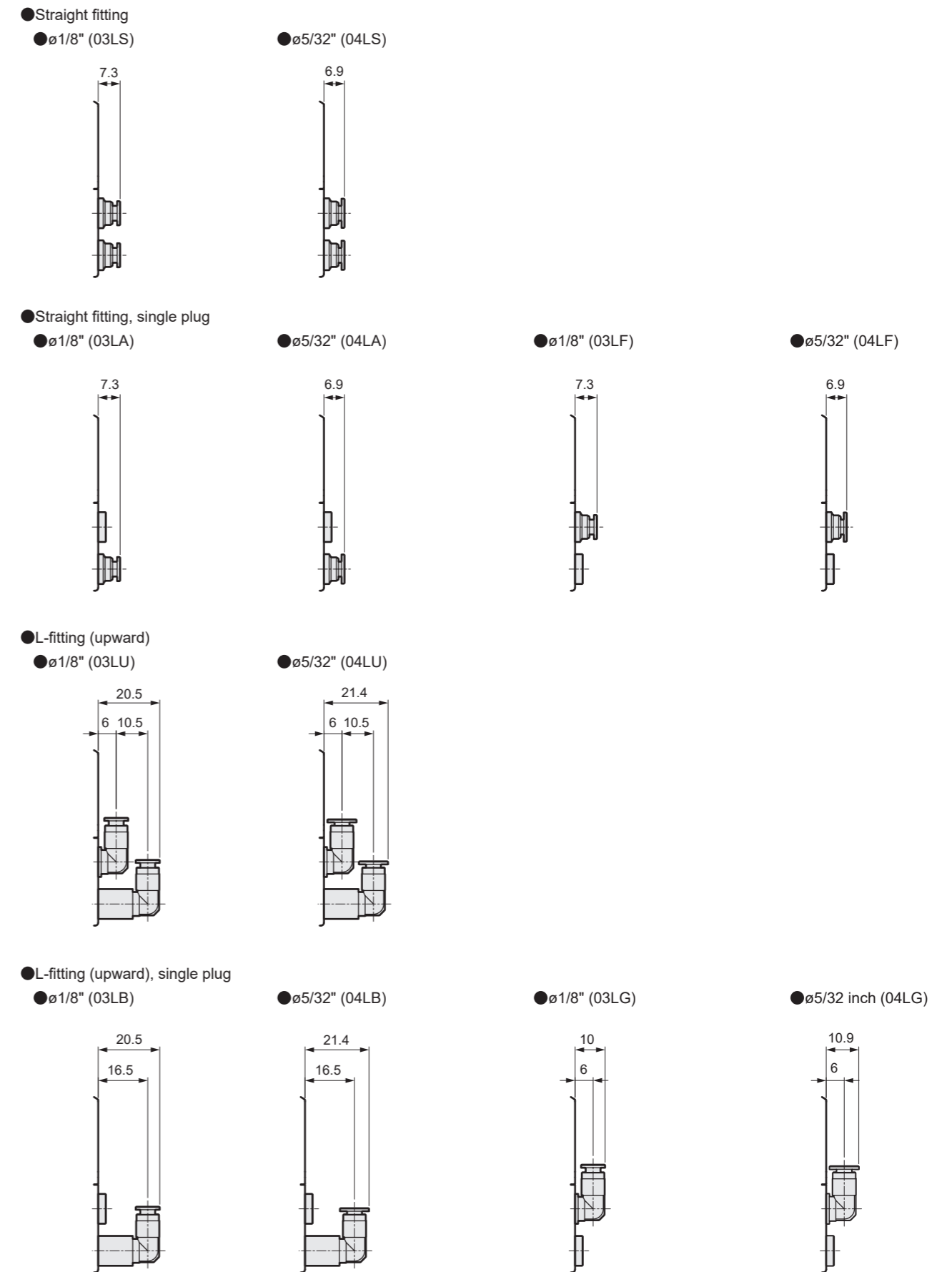
Dimensions

TVG1M



Dimensions

TVG1M



TVG
With reduced wiring/serial transmission device unit

TVG
With interface for remote I/O connection

TVG -P4
Compatible with rechargeable battery/manufacturing processes

Manifold specs sheet

Technical data

Safety precautions

TVG
With reduced wiring/serial transmission device unit

TVG
With interface for remote I/O connection

TVG -P4
Compatible with rechargeable battery/manufacturing processes

Manifold specs sheet

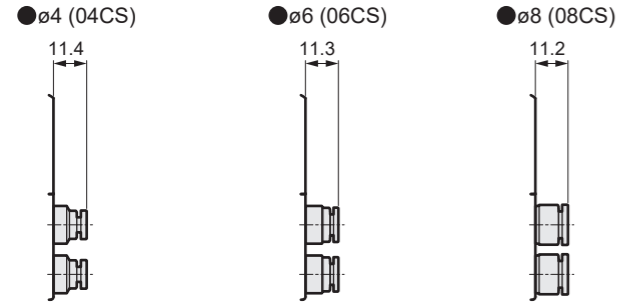
Technical data

Safety precautions

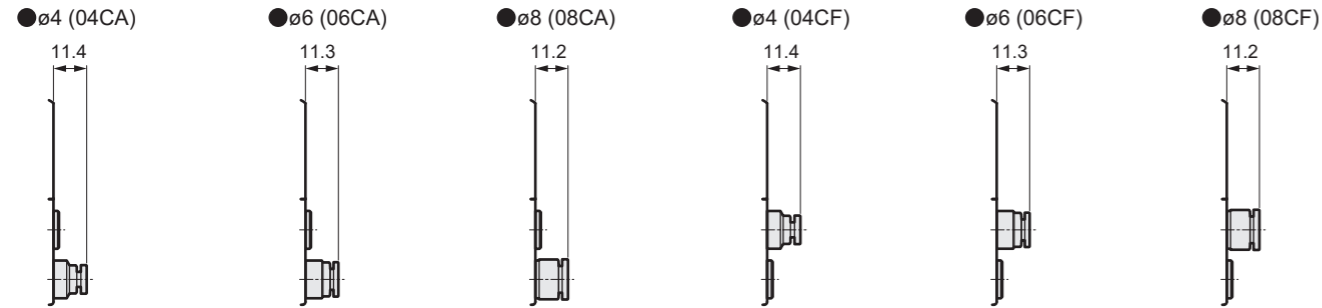
Dimensions

TVG2M

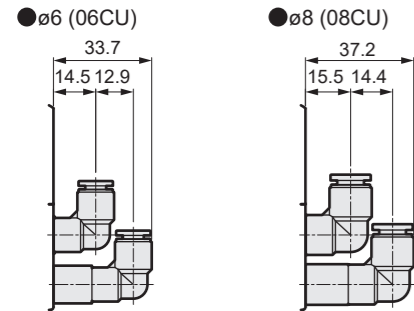
● Straight fitting



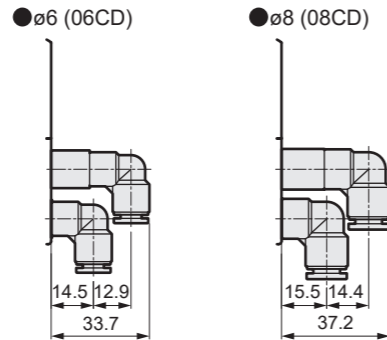
● Straight fitting, single plug



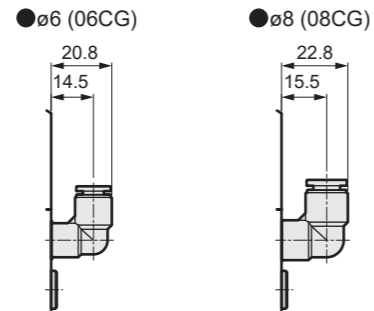
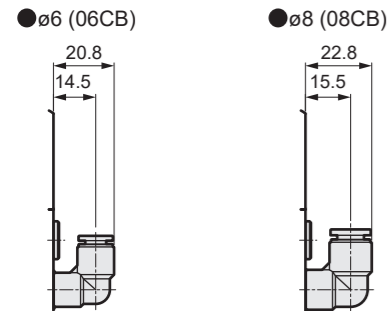
● L-fitting (upward)



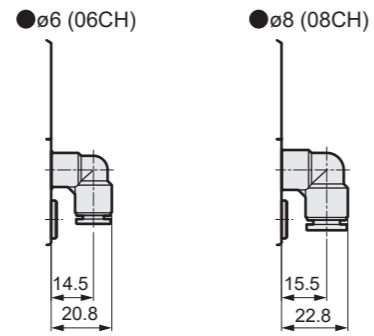
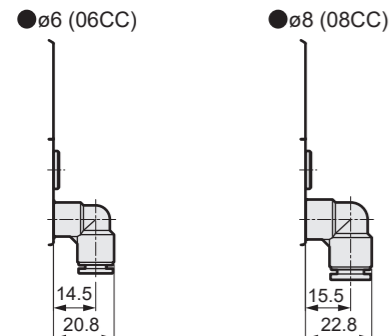
● L-fitting (downward)



● L-fitting (upward), single plug



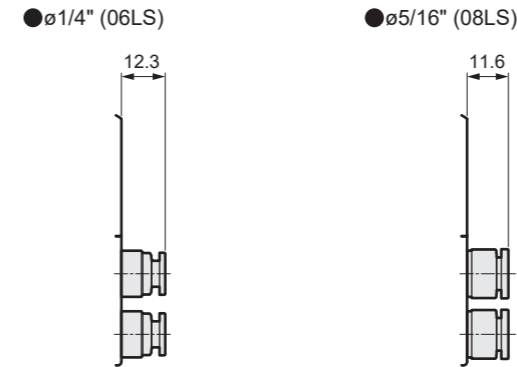
● L-fitting (downward), single plug



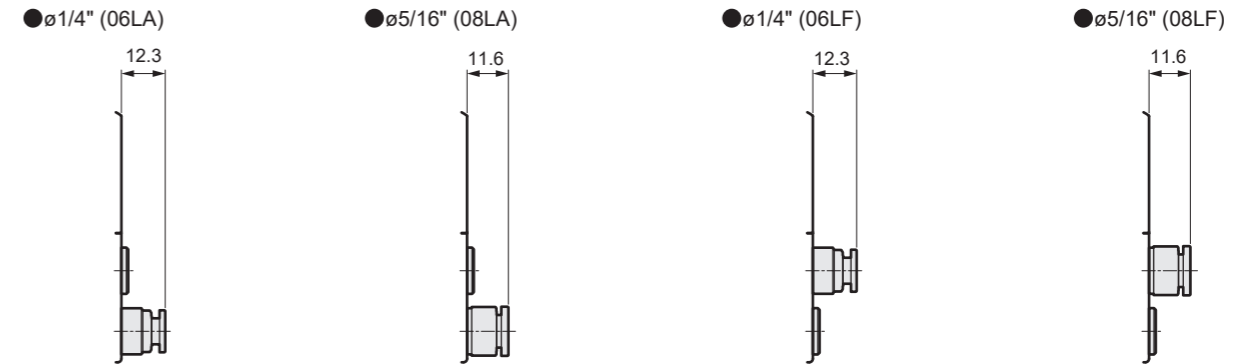
Dimensions

TVG2M

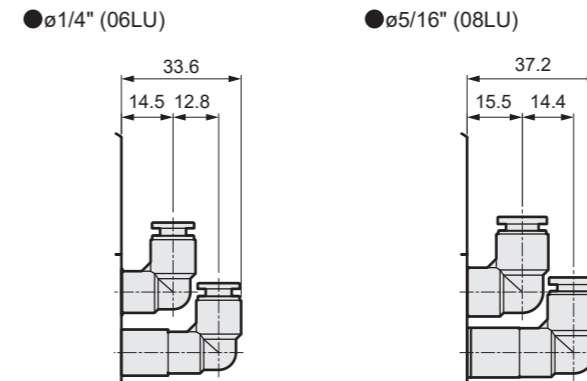
● Straight fitting



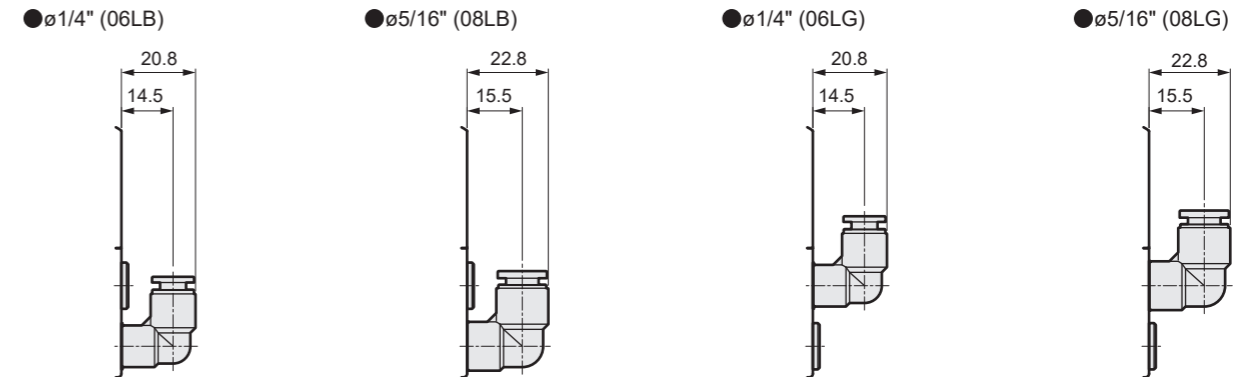
● Straight fitting, single plug



● L-fitting (upward)

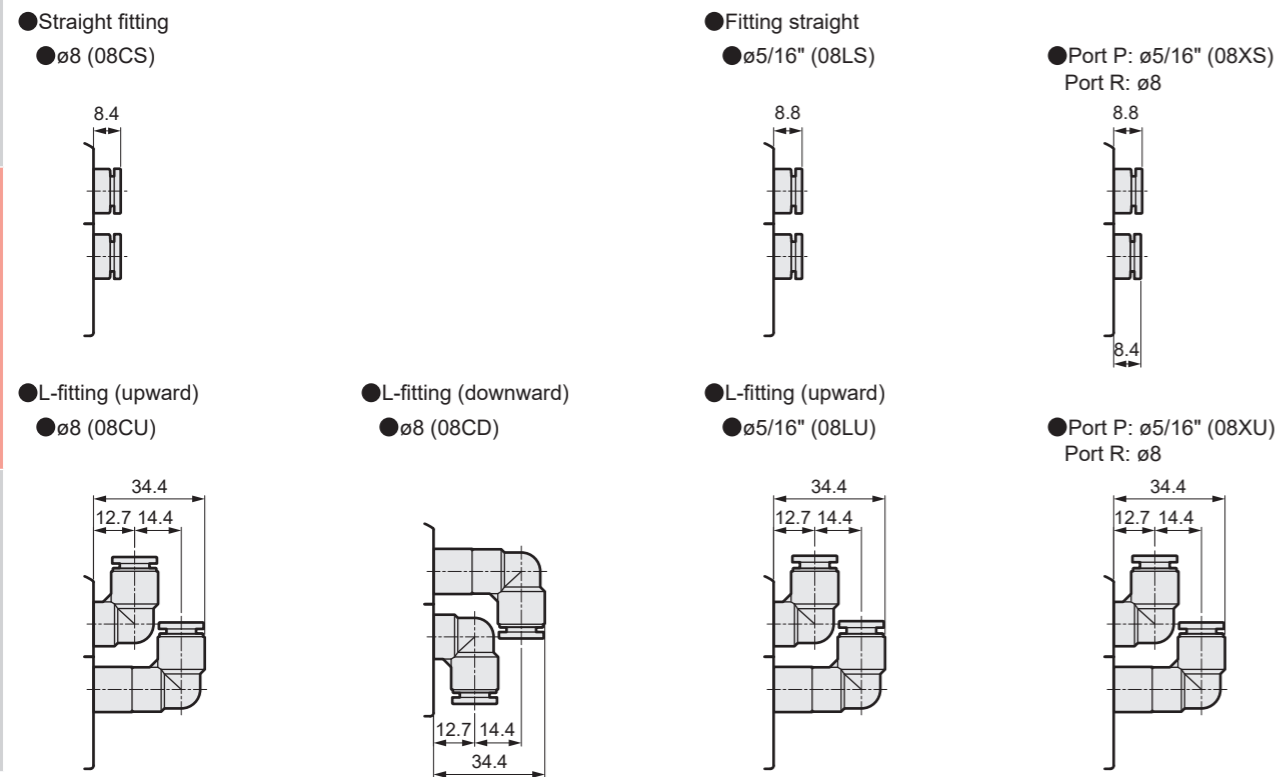


● L-fitting (upward), single plug

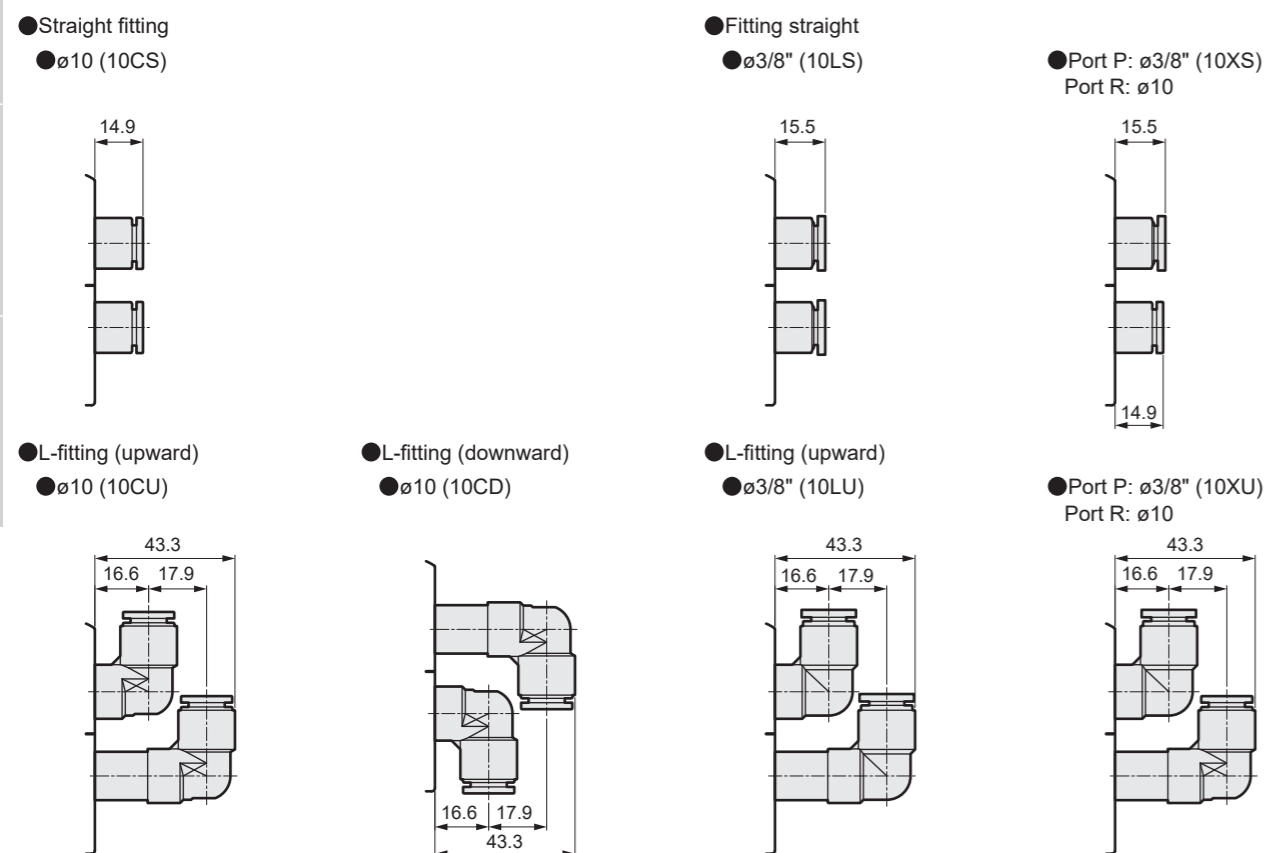


Dimensions

TVG1M Supply and exhaust block

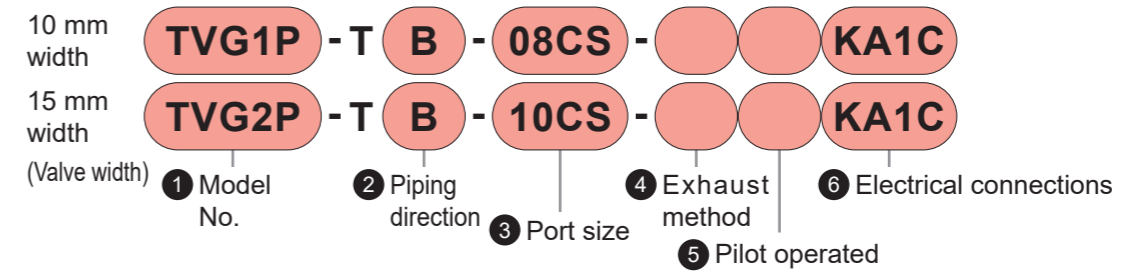


TVG2M Supply and exhaust block



How to order

Valve interface (supply and exhaust air)



Included

- The nut for fixing the tie rod is built into the valve interface.
- Two tie rods to connect the valve interface and RT Series are included.

		1 Model No.	
		TVG1P	TVG2P
3 Port size			
Metric fitting			
08CS	ø8 push-in fitting	●	
10CS	ø10 push-in fitting		●
08CU	ø8 push-in fitting L-type upward	●	
10CU	ø10 push-in fitting L-type upward		●
08CD	ø8 push-in fitting L-type downward	●	
10CD	ø10 push-in fitting L-type downward		●
*1 Inch fitting			
08LS	ø5/16" push-in fitting	●	
10LS	ø3/8" push-in fitting		●
08LU	ø5/16" push-in fitting L-type upward	○	
10LU	ø3/8" push-in fitting L-type upward		○
*3 Port P: Inch fitting, port R: Metric fitting			
08XS	Port P: ø5/16" push-in fitting Port R: ø8 push-in fitting	●	
10XS	Port P: ø3/8" push-in fitting Port R: ø10 push-in fitting		●
08XU	Port P: ø5/16" push-in fitting L-type upward Port R: ø8 push-in fitting L-type upward	○	
10XU	Port P: ø3/8" push-in fitting L-type upward Port R: ø10 push-in fitting L-type upward		○
Plug			
00XX	Port P, R plug	●	●

●: Standard compliance
○: Special-order product

- *1: Select 08XS, 10XS, 08XU or 10XU when using a silencer with inch fitting specifications. Port R and PR (for KZ) are metric fittings.
*2: Pilot operated K, KZ and 00XX cannot be selected together.
*3: Cannot be selected together with exhaust method X.

2 Piping direction

B Side piping

4 Exhaust method

Blank	Common exhaust (port R is a push-in fitting)
X	Exhaust is released to atmosphere, with built-in silencer (Port R is sealed.)

- *1: X is not available for port size "00XX".
*2: X is not available for pilot operated KZ.

5 Pilot operated

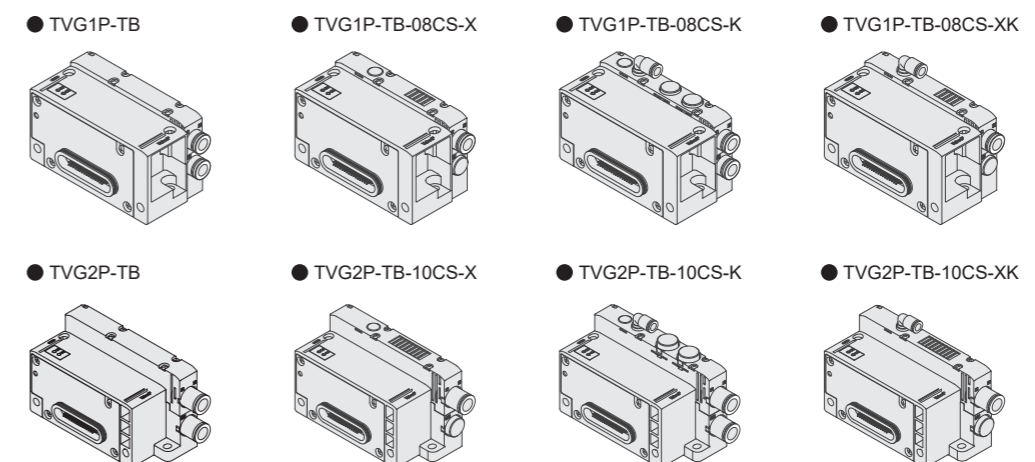
Blank	Internal pilot
K	External pilot
KZ	External pilot (PA/PR separated)

- *1, *2: Cannot be selected for port size "00XX" and "□□X□".
*2: When the external pilot port is ø6 push-in fitting or "L", it is ø5/32" fitting.

6 Electrical connections

* PNP specifications are Special-order product.

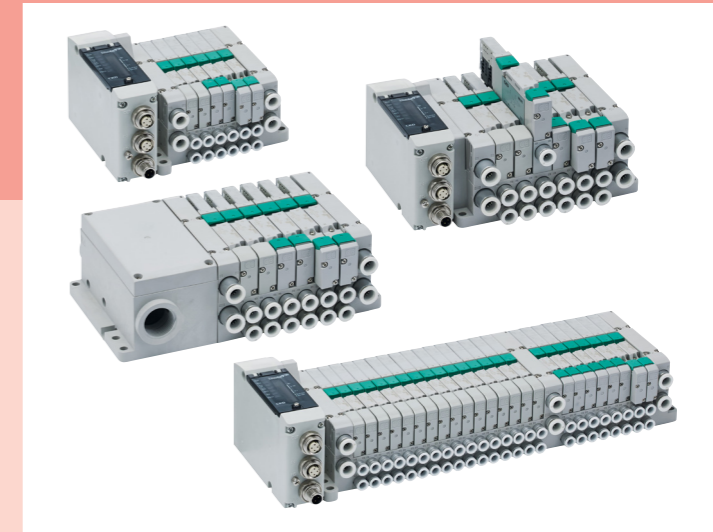
Description	NPN	Code
Valve interface	PNP	KA1C
	PNP	KA1D



TVG

3, 5-port pilot operated valve, plug-in block manifold

Specifications for rechargeable battery manufacturing process



CONTENTS

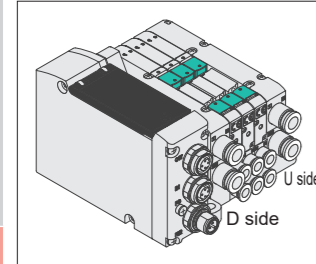
Product introduction	Intro
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• Discrete solenoid valve	87
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• Spacer pilot check valve	91
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● Internal structure, material	31
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② Notes on wiring	129
③ Check valve	147
④ How to expand reduced wiring manifold	142
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How to order
Manifold with solenoid valve

10 mm width (valve width)



- 1 Solenoid position
- 2 Piping direction
- 3 Port size
- 4 Voltage
- 5 Electrical connections
- 6 Station No.
- 7 Port P/R position
- 8 Wiring method inside the base
- 9 Pilot operated
- 10 Electric circuit specs
- 11 Manual override
- 12 Ozone/coolant
- 13 With/Without spacer
- 14 Exhaust check valve
- 15 Port A/B filter



1 Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
X	Mix manifold
A	3-port valve A valve side: Normally closed/B valve side: Normally closed
B	Two valves A valve side: Normally open/B valve side: Normally open
C	integrated *1 A valve side: Normally closed/B valve side: Normally open

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.

2 Piping direction

B	Side piping
---	-------------

3 Port size (port A/B)

• Metric fitting

04CS	ø4 push-in fitting
06CS	ø6 push-in fitting
99CX	Push-in fitting mix
*1	
*2	Single side plug specs
	Port A
	Port B
04CA	ø4 push-in fitting
06CA	ø6 push-in fitting
04CF	Plug
06CF	Plug

*1: Port size mixtures of ports 4(A) and 2(B) are not available.
*2: Ports A and B with one side plug specifications are available for 2-position single only.

5 Electrical connections

* PNP specifications are Special-order product.

• Reduced wiring connection

Common terminal block (M3 thread)	NPN	EA1A
	PNP	EA1B

• Serial transmission

Communication protocol	Output	Output pts.	Code
DeviceNet	NPN	32 points	JA1C
	PNP		JA1D
CC-LINK	NPN	32 points	JA2C
	PNP		JA2D
EtherCAT	NPN	32 points	JA3C
	PNP		JA3D
EtherNet/IP	NPN	32 points	JA4C
	PNP		JA4D
CC-Link IEF Basic	NPN	32 points	JA5C
	PNP		JA5D
PROFINET	NPN	32 points	JA6C
	PNP		JA6D
CC-Link IE Field	NPN	32 points	JA7C
	PNP		JA7D
CC-Link IE TSN	NPN	32 points	JA8C
	PNP		JA8D
IO-Link	Class A	NPN	JA9C
		PNP	JA9D
	Class B	NPN	JA9G
		PNP	JA9H
IO-Link Wireless	NPN	JB1C	
	PNP	JB1D	

4 Voltage

3	24 VDC
---	--------

6 Station No.

02 to 24	2 stations to 24 stations (EA1□ has max. 20 stations)
----------	---

*1: EA1□ has up to 20 solenoid points.

7 Port P/R position

* Multiple selection is not possible.

U	U side	
D	D side	
B	U side, D side	
T	With U side, D side, intermediate supply and exhaust block	

*1: Port P/R fittings are fittings of the same direction as port A/B.

*2: Specify the specifications of the intermediate supply and exhaust block in the manifold specifications sheet.

*3: The atmosphere release (internal silencer) type does not support P4 specifications.

10 Electric circuit specifications

* Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

13 With/Without spacer

Blank	Without spacer
Z	With spacer (Type and location are specified in the MF specifications sheet)

*1: Specify the spacer type and mounting position in manifold specifications sheet. Stacking of spacers is not possible. Combination with the blanking plate is not supported. The spacer regulator does not support P4 specifications.

8 Wiring method inside the base

*1

Blank	Double wiring
S	Single solenoid, double solenoid layout specification

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated.

9 Pilot operated

Blank	Internal pilot
K	External pilot

11 Manual override

* Multiple selection is not possible.

Blank	Locking/Non-locking common/with misoperation prevention cover	
M1	Non-locking, with misoperation prevention cover	
M2	Locking/Non-locking common, tool operation, without cover	
M3	Non-locking, tool operation, without cover	

12 Ozone/Coolant proof

Blank	Standard specifications
A	Ozone/Coolant proof (Main valve fluorine specification)

14 Exhaust check valve

Blank	None
H	With exhaust check valve

*1: 1 Solenoid positions "3" and "5" cannot be selected. Refer to page 147 for details on the type with exhaust check valve. Specify the number of stations to install in the manifold specifications sheet.

15 Port A/B filter

Blank	None
F	Port A/B filter built in

*1: A filter is built into port P.

• If an exhaust check valve is required, refer to page 49.

TVG With reduced wiring/serial transmission device unit

TVG With interface for remote I/O connection

TVG -P4 Compatible with rechargeable battery manufacturing process

Manifold specs sheet

Technical data

Safety precautions

TVG With reduced wiring/serial transmission device unit

TVG With interface for remote I/O connection

TVG -P4 Compatible with rechargeable battery manufacturing process

Manifold specs sheet

Technical data

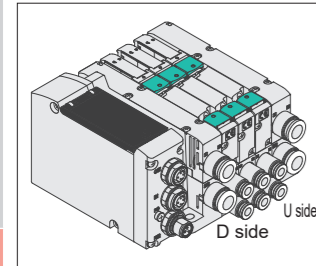
Safety precautions

How to order
Manifold with solenoid valve

15 mm width (valve width)



- 1 Solenoid position
- 2 Piping direction
- 3 Port size
- 4 Voltage
- 5 Electrical connections
- 6 Station No.
- 7 Port P/R position
- 8 Wiring method inside the base
- 9 Pilot operated
- 10 Electric circuit specifications
- 11 Manual override
- 12 Ozone/Coolant proof
- 13 Type of valve mounting screw
- 14 With/Without spacer
- 15 Exhaust check valve
- 16 Port A/B filter



1 Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
X	Mix manifold
A	3-port valve A valve side: Normally closed/B valve side: Normally closed
B	Two valves A valve side: Normally open/B valve side: Normally open
C	integrated *1 A valve side: Normally closed/B valve side: Normally open

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.

2 Piping direction

B	Side piping
---	-------------

3 Port size (port A/B)

• Metric fitting

04CS	ø4 push-in fitting
06CS	ø6 push-in fitting
08CS	ø8 push-in fitting
99CX	Push-in fitting mix
*1	Single side plug specs
*2	Port A
04CA	ø4 push-in fitting
06CA	ø6 push-in fitting
08CA	ø8 push-in fitting
04CF	ø4 push-in fitting
06CF	ø6 push-in fitting
08CF	ø8 push-in fitting

*1: Port size mixtures of ports 4(A) and 2(B) are not available.
*2: Ports A and B with one side plug specifications are available for 2-position single only.

5 Electrical connections * PNP specifications are Special-order product.

• Reduced wiring connection

Common terminal block (M3 thread)	NPN	EA1A
	PNP	EA1B

• Serial transmission

Communication protocol	Output	No. of output points	Code
DeviceNet	NPN	32 points	JA1C
	PNP		JA1D
CC-LINK	NPN	32 points	JA2C
	PNP		JA2D
EtherCAT	NPN	32 points	JA3C
	PNP		JA3D
EtherNet/IP	NPN	32 points	JA4C
	PNP		JA4D
CC-Link IEF Basic	NPN	32 points	JA5C
	PNP		JA5D
PROFINET	NPN	32 points	JA6C
	PNP		JA6D
CC-Link IE Field	NPN	32 points	JA7C
	PNP		JA7D
CC-Link IE TSN	NPN	32 points	JA8C
	PNP		JA8D
IO-Link	Class A	NPN	JA9C
		PNP	JA9D
	Class B	NPN	JA9G
		PNP	JA9H
IO-Link Wireless	NPN	JB1C	
	PNP	JB1D	

4 Voltage

3	24 VDC
---	--------

6 Station No.

02 to 24	2 stations to 24 stations (EA1□ has max. 20 stations)
----------	---

*1: EA1□ has up to 20 solenoid points.

7 Port P/R position

* Multiple selection is not possible.

U	U side	
D	D side	
B	U side, D side	
T	U side, D side, With intermediate supply and exhaust block	

*1: Port P/R fittings are fittings of the same direction as port A/B.

*2: Specify the specifications of the intermediate supply and exhaust block in the manifold specifications sheet.

*3: The atmosphere release (internal silencer) type does not support P4 specifications.

10 Electric circuit specifications

* Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

8 Wiring method inside the base

*1

Blank	Double wiring
S	Single solenoid, Double solenoid layout specification

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated.

9 Pilot operated

Blank	Internal pilot
K	External pilot

11 Manual override

* Multiple selection is not possible.

Blank	Locking/Non-locking common/with misoperation prevention cover	
M1	Non-locking with misoperation prevention cover	
M2	Locking/Non-locking common, tool operation without cover	
M3	Non-locking, tool operation without cover	

12 Ozone/Coolant proof

Blank	Standard specifications
A	Ozone/Coolant proof (main valve fluorine specification)

13 Type of valve mounting screw

Blank	Pan head machine screw with Phillips head/flathead
J	Hexagon socket head cap screw

Spacer: J cannot be selected when Z is selected.

14 With/Without spacer

Blank	Without spacer
Z	With spacer (Type and location are specified in the MF specifications sheet)

*1: Specify the spacer type and mounting position in manifold specifications sheet. Stacking of spacers is not possible. Combination with the blanking plate is not supported. Cannot be selected together with push-in fitting L-type upward. The spacer regulator does not support P4 specifications.

15 Exhaust check valve

Blank	None
H	With exhaust check valve

*1: Solenoid positions "3" and "5" cannot be selected. Refer to page 147 for details on the type with exhaust check valve. Specify the number of stations to install in the manifold specifications sheet.

16 Port A/B filter

Blank	None
F	Port A/B filter built in

*1: A filter is built into port P.

• If an exhaust check valve is required, refer to page 49.

TVG With reduced wiring/serial transmission device unit
TVG With interface for remote I/O connection
TVG -P4 Compatible with rechargeable battery/manufacturing process

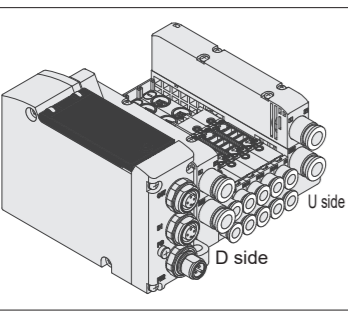
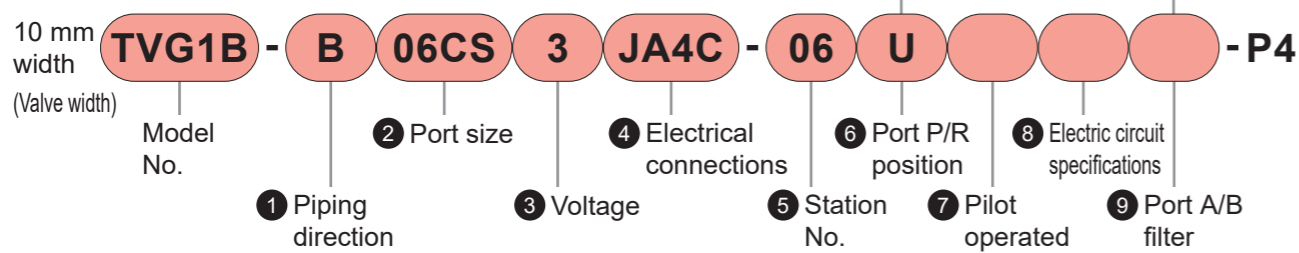
Manifold specs sheet
Technical data
Safety precautions

TVG With reduced wiring/serial transmission device unit
TVG With interface for remote I/O connection
TVG -P4 Compatible with rechargeable battery/manufacturing process

Manifold specs sheet
Technical data
Safety precautions

How to order

Manifold base only * Solenoid valve is not included.



1 Piping direction
B Side piping

2 Port size (port A/B) • Metric fitting	
04CS	ø4 push-in fitting
06CS	ø6 push-in fitting
*1 99CX	Push-in fitting mix
*2	Single side plug specs
	Port A
	Port B
04CA	ø4 push-in fitting
06CA	ø6 push-in fitting
04CF	Plug
06CF	Plug

*1: Port size mixtures of ports 4(A) and 2(B) are not available.
*2: Ports A and B with one side plug specifications are available for 2-position single only.

5 Station No.	
02	2 stations
to	to
16	16 stations

*1: All the wiring inside the base is for double solenoid regardless of the type of valve mounted. The part with the single solenoid mounted will generate an empty number for one solenoid.

6 Port P/R position (TVG1B: ø8)	
* Multiple selection is not possible.	
U	U side
D	D side
B	U, D both sides

*1: Fittings of port P/R are for the same direction as those of port A/B.

7 Pilot operated	
Blank	Internal pilot
K	External pilot

8 Electric circuit specifications	
* Multiple selection is not possible.	
Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

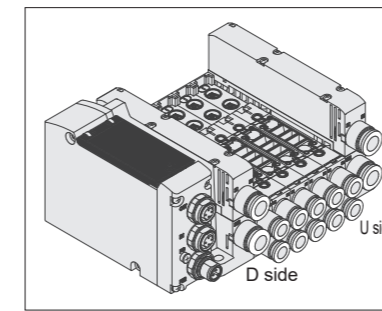
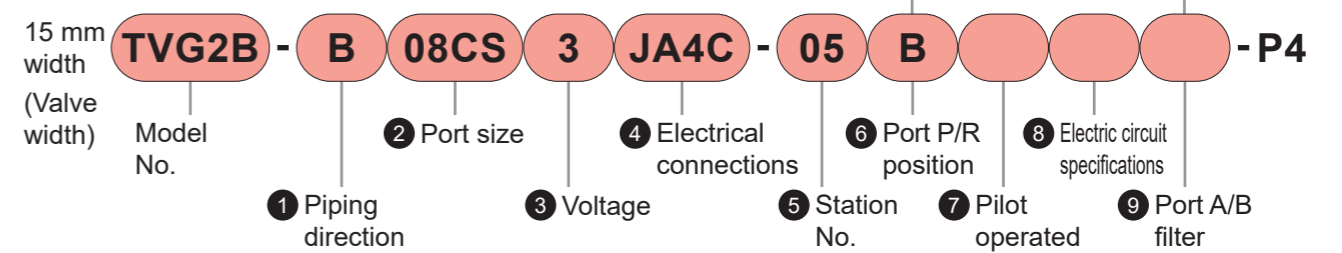
9 Port A/B filter	
Blank	None
F	Port A/B filter built in

*1: A filter is built into port P.

How to order (manifold base only)

How to order

Manifold base only * Solenoid valve is not included.



1 Piping direction
B Side piping

2 Port size (port A/B) • Metric fitting	
04CS	ø4 push-in fitting
06CS	ø6 push-in fitting
08CS	ø8 push-in fitting
*1 99CX	Push-in fitting mix
*2	Single side plug specs
	Port A
	Port B
04CA	ø4 push-in fitting
06CA	ø6 push-in fitting
08CA	ø8 push-in fitting
04CF	Plug
06CF	Plug
08CF	Plug

*1: Port size mixtures of ports 4(A) and 2(B) are not available.
*2: Ports A and B with one side plug specifications are available for 2-position single only.

3 Voltage	
3	24 VDC

4 Electrical connections	
* PNP specifications are Special-order product.	
• Reduced wiring connection	

Common terminal block (M3 thread)	NPN	EA1A	
	PNP	EA1B	

• Serial transmission				
Communication protocol	Output	No. of points	Code	
DeviceNet	NPN	32 point output	JA1C	
	PNP		JA1D	
CC-LINK	NPN	32 point output	JA2C	
	PNP		JA2D	
EtherCAT	NPN	32 point output	JA3C	
	PNP		JA3D	
EtherNet/IP	NPN	32 point output	JA4C	
	PNP		JA4D	
CC-Link IEF Basic	NPN	32 point output	JA5C	
	PNP		JA5D	
PROFINET	NPN	32 point output	JA6C	
	PNP		JA6D	
CC-Link IE Field	NPN	32 point output	JA7C	
	PNP		JA7D	
CC-Link IE TSN	NPN	32 point output	JA8C	
	PNP		JA8D	
IO-Link	ClassA	32 point output	NPN	JA9C
			PNP	JA9D
	ClassB		NPN	JA9G
			PNP	JA9H
IO-Link Wireless	32 point output	NPN	JB1C	
		PNP	JB1D	

5 Station No.	
02	2 stations
to	to
16	16 stations

*1: All the wiring inside the base is for double solenoid regardless of the type of valve mounted. The part with the single solenoid mounted will generate an empty number for one solenoid.

6 Port P/R position (TVG2Bø10)	
* Multiple selection is not possible.	
U	U side
D	D side
B	U, D both sides

*1: Fittings of port P/R are for the same direction as those of port A/B.
*2: A filter is built into port P.

7 Pilot operated	
Blank	Internal pilot
K	External pilot

8 Electric circuit specifications	
* Multiple selection is not possible.	
Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

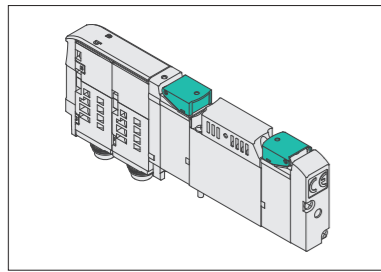
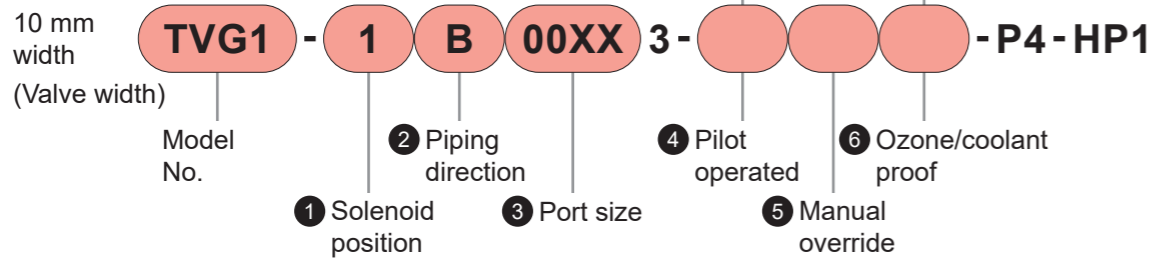
*1: E1 is not compatible with PNP specifications.

9 Port A/B filter	
Blank	None
F	Port A/B filter built in

*1: A filter is built into port P.

How to order

Discrete solenoid valve (for base mounting)



① Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
*1 A	3-port valve A valve side: Normally closed B valve side: Normally closed
*1 B	Two valves integrated A valve side: Normally open B valve side: Normally open
*1 C	Two valves integrated A valve side: Normally closed B valve side: Normally open

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.

② Piping direction

B	Side piping
----------	-------------

③ Port size

00XX	Discrete solenoid valve for base mounting
-------------	---

④ Pilot operated

Blank	Internal pilot
K	External pilot

⑤ Manual override * Multiple selection is not possible.

Blank	Locking/Non-locking common/with misoperation prevention cover	
M1	Non-locking, with misoperation prevention cover	
M2	Locking/Non-locking common, tool operation type, Without cover	
M3	Non-locking, tool operation without cover	

⑥ Ozone/Coolant proof

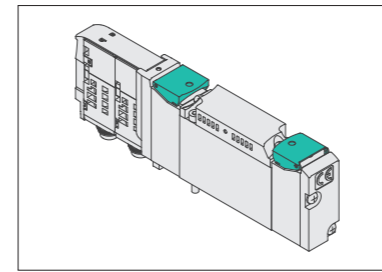
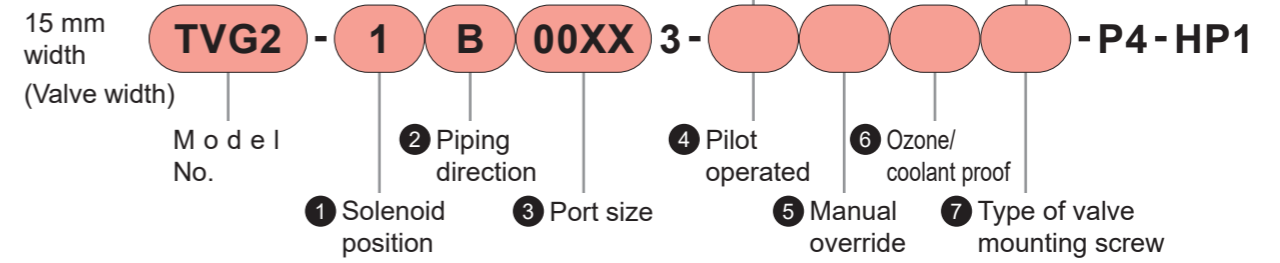
Blank	Standard specifications
A	Ozone/Coolant proof (main valve fluorine specification)

Solenoid valve mounting screws are included. The gasket is attached to the manifold base.

How to order (discrete valve)

How to order

Discrete solenoid valve (for base mounting)



① Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
*1 A	3-port valve A valve side: Normally closed B valve side: Normally closed
*1 B	Two valves integrated A valve side: Normally open B valve side: Normally open
*1 C	Two valves integrated A valve side: Normally closed B valve side: Normally open

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.

② Piping direction

B	Side piping
----------	-------------

③ Port size

00XX	Discrete solenoid valve for base mounting
-------------	---

④ Pilot operated

Blank	Internal pilot
K	External pilot

⑤ Manual override * Multiple selection is not possible.

Blank	Locking/Non-locking common/with misoperation prevention cover	
M1	Non-locking with misoperation prevention cover	
M2	Locking/Non-locking common, tool operation without cover	
M3	Non-locking, tool operation without cover	

⑥ Ozone/Coolant proof

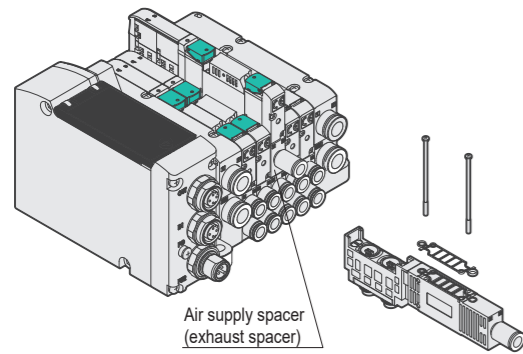
Blank	Standard specifications
A	Ozone/Coolant proof (main valve fluorine specification)

⑦ Type of valve mounting screw

Blank	Pan head machine screw with plus/minus
J	Hexagon socket head cap screw

*1: Valve mounting screws are included. The gasket is attached to the manifold base.

Air supply spacer/exhaust spacer



Specifications

- Air supply spacer

Model No.	Weight g
TVG1P-P-□	33

- Exhaust spacer

Model No.	Weight g
TVG1P-R-□	33

Discrete model No.

- Air supply spacer

TVG1P - P - **04CS** - P4

① Port size

Code	Bore size	Description
04CS	ø4	ø4 push-in fitting

- Exhaust spacer

TVG1P - R - **04CS** - P4

① Port size

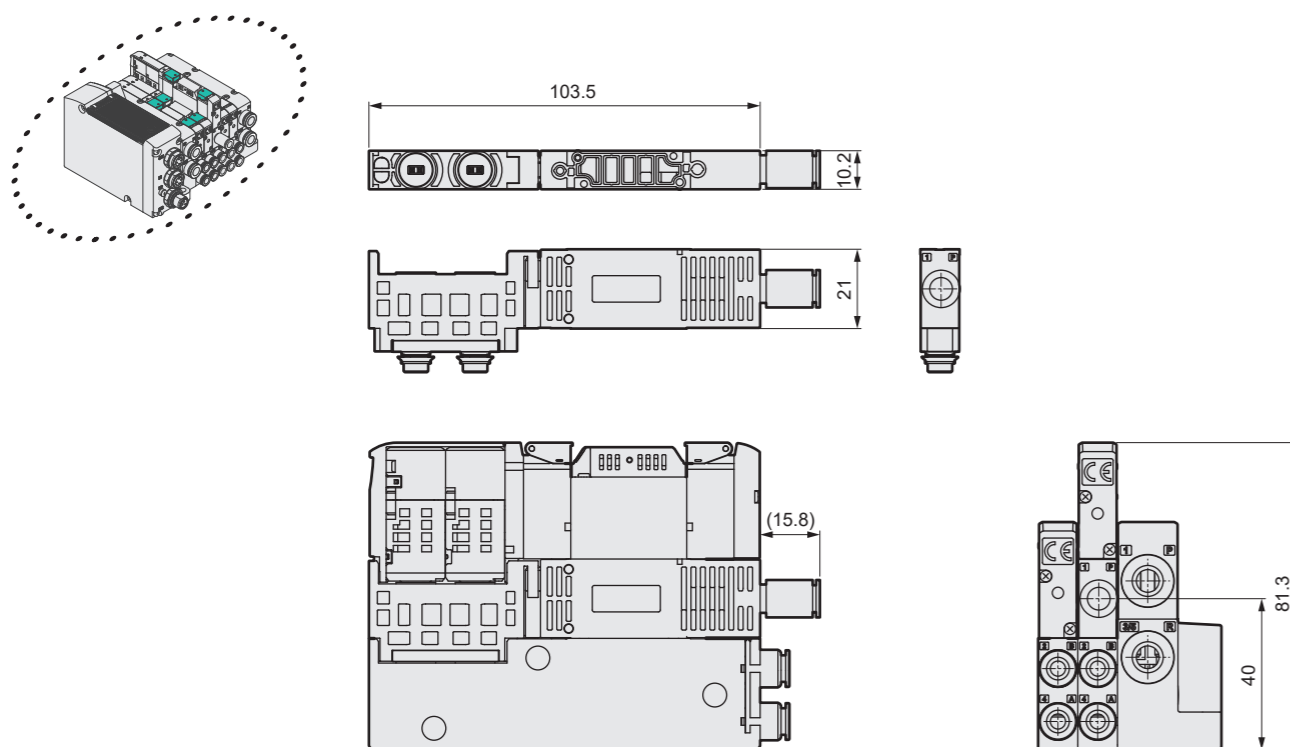
Code	Bore size	Description
04CS	ø4	ø4 push-in fitting

⚠ Precautions for model No. selection

- *1: Specify the positions and quantity of spacers for manifold in the manifold specifications sheet (Pages 117 to 124).
- *2: Stacking of spacers is not possible.
- *3: A spacer cannot be combined with a blanking plate.

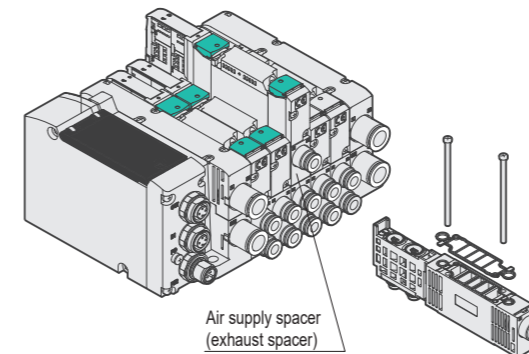
Dimensions

- Air supply spacer/exhaust spacer



Air supply spacer/exhaust spacer

Air supply spacer/exhaust spacer



Specifications

- Air supply spacer

Model No.	Weight g
TVG2P-P-□	66

- Exhaust spacer

Model No.	Weight g
TVG2P-R-□	66

Discrete model No.

- Air supply spacer

TVG2P - P - **06CS** - P4

① Port size

Code	Bore size	Description
06CS	ø6	ø6 push-in fitting
08CS	ø8	ø8 push-in fitting

- Exhaust spacer

TVG2P - R - **06CS** - P4

① Port size

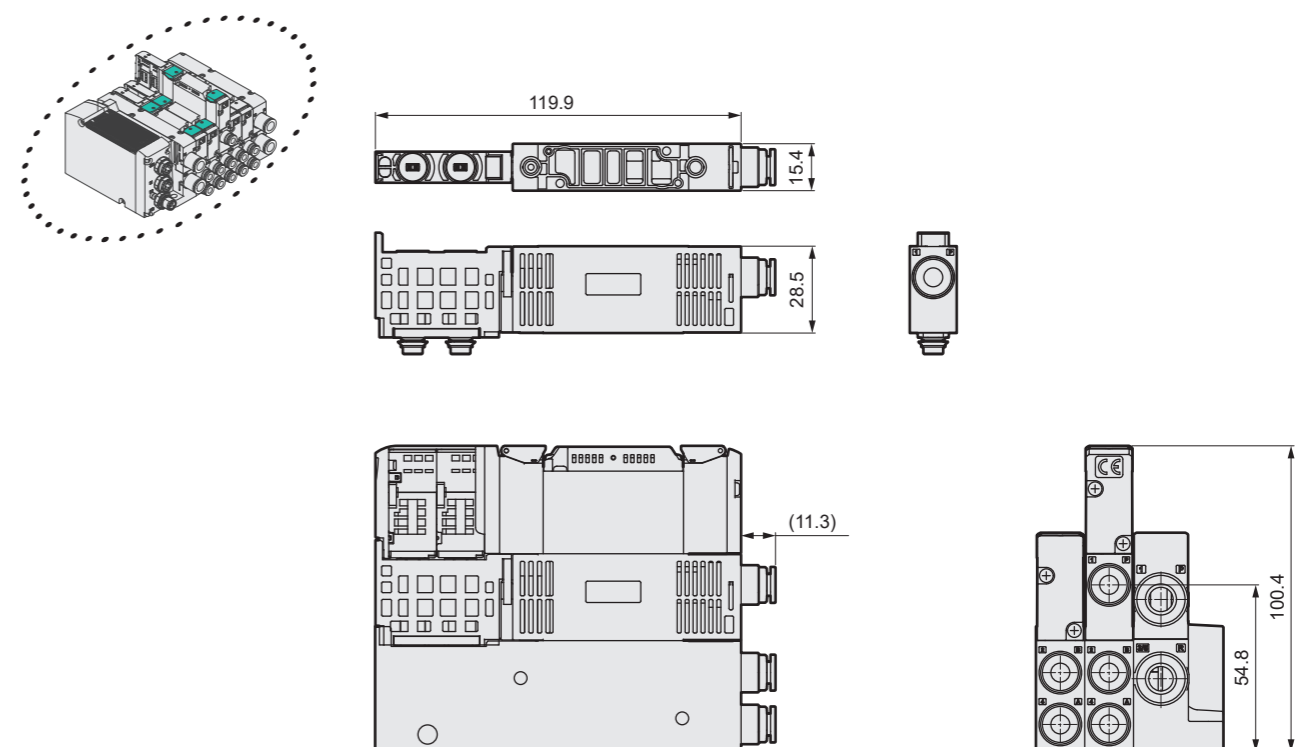
Code	Bore size	Description
06CS	ø6	ø6 push-in fitting
08CS	ø8	ø8 push-in fitting

⚠ Precautions for model No. selection

- *1: Specify the positions and quantity of spacers for manifold in the manifold specifications sheet (Pages 117 to 124).
- *2: Stacking of spacers is not possible.
- *3: A spacer cannot be combined with a blanking plate.

Dimensions

- Air supply spacer/exhaust spacer



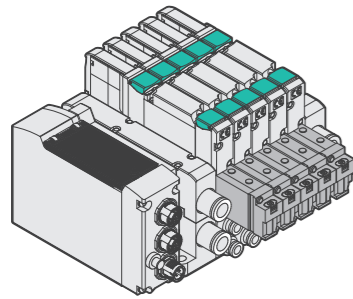
TVG With reduced wiring/serial transmission device unit With interface for remote I/O connection With interface for remote I/O connection TVG -P4 Compatible with rechargeable battery manufacturing process

TVG With reduced wiring/serial transmission device unit With interface for remote I/O connection With interface for remote I/O connection TVG -P4 Compatible with rechargeable battery manufacturing process

Manifold specs sheet Technical data Safety precautions

Manifold specs sheet Technical data Safety precautions

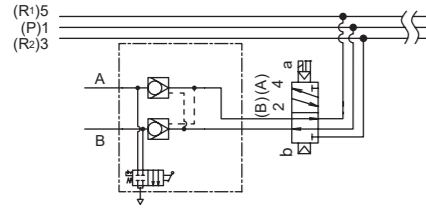
● Spacer pilot check valve



Specifications

Item	TVG1P-PC-P4	TVG2P-PC-P4
Working fluid	Compressed air	
Max. working pressure MPa	0.7	
Minimum working pressure MPa	0.2	
Proof pressure MPa	1.05	
Ambient temperature °C	-5 to 55 (no freezing)	
Working fluid temperature °C	5 to 55	
Atmosphere	Cannot be used in corrosive gas environment.	
Weight g	34	73

JIS symbol



Note: Using a cylinder with a large bore size (more than ø50 as a guide) with little exhaust restriction (eg, no speed controller, no silencer) may lead to a decrease in intermediate stop accuracy and stopping error. Please be careful.

Discrete model No.

TVG1 P - PC - P4

Model No. Pilot Check valve

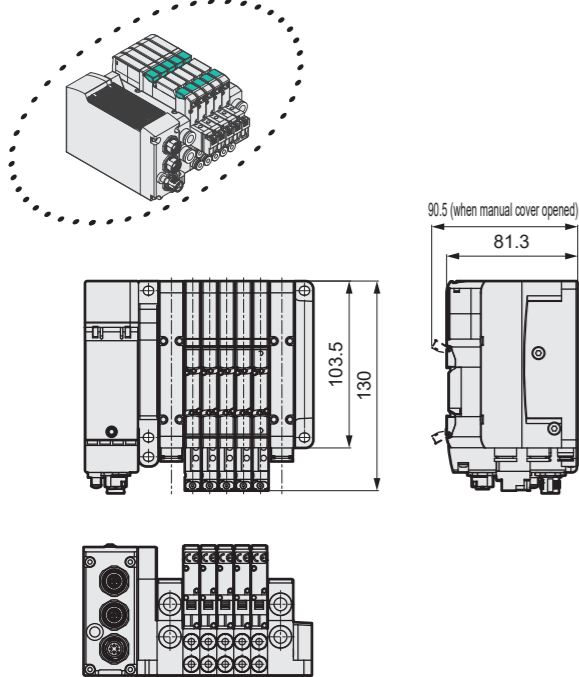
* Residual pressure release function is not available.

⚠ Precautions for model No. selection

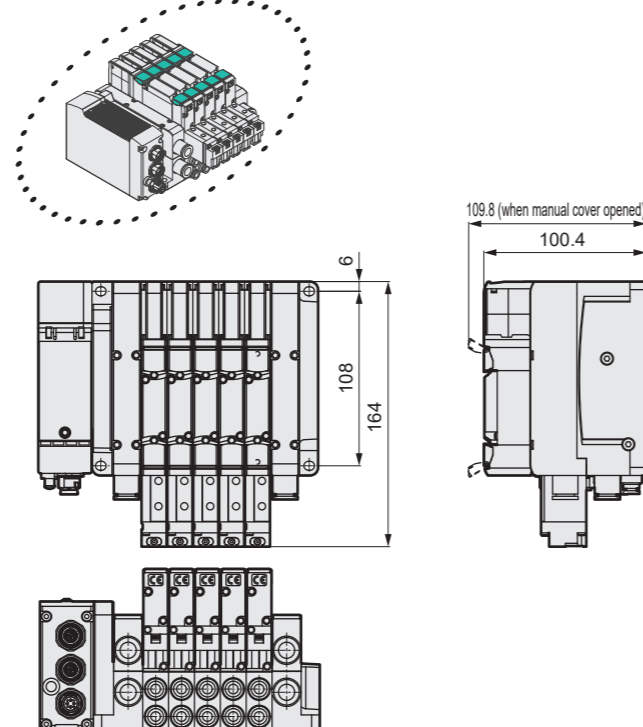
- *1: Specify the spacer positions in the manifold specifications sheet.
- *2: Spacer pilot check valve is not available when the fitting for port A/B is elbow.
- *3: Stacking of spacers is not possible.
- *4: A spacer cannot be combined with a blanking plate.
- *5: A spacer mounting screw and gasket are included.

Dimensions

● TVG1



● TVG2



How to order

How to order

Wiring block (wiring and supply/exhaust blocks and wiring block)

10 mm width **TVG1P** - T **B** - **08CS** - **JA4C** - P4

15 mm width **TVG2P** - T **B** - **10CS** - **JA4C** - P4

(Valve width) ① Model No. ② Piping direction ③ Port size ④ Pilot operated ⑤ Electrical connections

② Piping direction

B Side piping

⑤ Electrical connections

* PNP specifications are Special-order product.

• Reduced wiring connection

Description	Code
Common terminal block (M3 thread)	EA1

* Can be used with either NPN or PNP.

Included
The tie rod fixing nut is built into the wiring block.

• Serial transmission

Communication protocol	Output	No. of points	Code	
DeviceNet	NPN	32 points Output	JA1C	
	PNP		JA1D	
CC-LINK	NPN		JA2C	
	PNP		JA2D	
EtherCAT	NPN		JA3C	
	PNP		JA3D	
EtherNet/IP	NPN		JA4C	
	PNP		JA4D	
CC-Link IEF Basic	NPN		JA5C	
	PNP		JA5D	
PROFINET	NPN		JA6C	
	PNP		JA6D	
CC-Link IE Field	NPN		JA7C	
	PNP		JA7D	
CC-Link IE TSN	NPN		JA8C	
	PNP		JA8D	
IO-Link	ClassA		NPN	JA9C
			PNP	JA9D
	ClassB		NPN	JA9G
			PNP	JA9H
IO-Link Wireless	NPN		JB1C	
	PNP		JB1D	

③ Port size

Metric fitting	TVG1P	TVG2P
08CS ø8 push-in fitting	●	
10CS ø10 push-in fitting		●
Plug		
00XX Port P, R plug	●	●

④ Pilot operated

Blank	Internal pilot
K	External pilot
KZ	External pilot (PA/PR separated)

*1,*2

*1,*2

- *1: ● Cannot be selected for port size "00XX".
- *2: The external pilot port is a ø6 push-in fitting.

How to order

Serial transmission device unit

OPP8 - A **2EC** - P4

Model No. ① Serial transmission

Included
• 2 OPP fixing bolts
• 1 drip-proof gasket

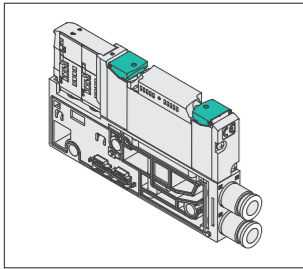
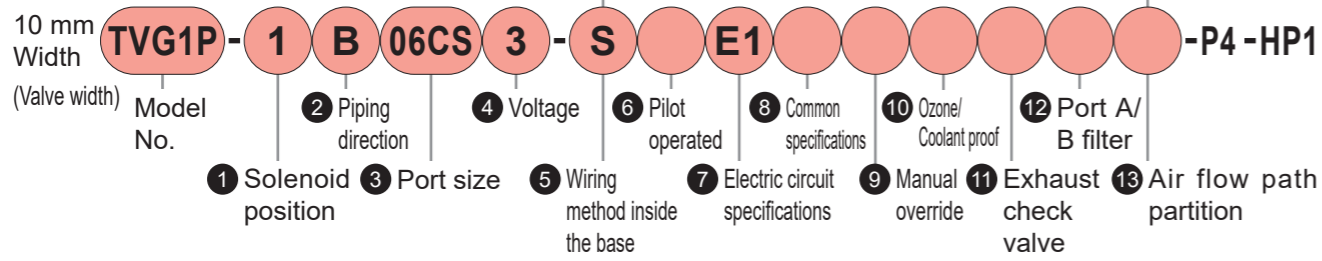
① Serial transmission

Communication protocol	Output	No. of points	Code	
DeviceNet	NPN	32 points Output	2D	
	PNP		2D-P	
CC-LINK	NPN		2G	
	PNP		2G-P	
EtherCAT	NPN		2EC	
	PNP		2EC-P	
EtherNet/IP	NPN		2EN	
	PNP		2EN-P	
CC-Link IEF Basic	NPN		2EB	
	PNP		2EB-P	
PROFINET	NPN		2EP	
	PNP		2EP-P	
CC-Link IE Field	NPN		2EF	
	PNP		2EF-P	
CC-Link IE TSN	NPN		2TG	
	PNP		2TG-P	
IO-Link	ClassA		NPN	2KC-A
			PNP	2KC-PA
	ClassB		NPN	2KC-B
			PNP	2KC-PB
IO-Link Wireless	NPN		2WK	
	PNP		2WK-P	

*1: PNP specifications are Special-order products.

How to order

Valve block with solenoid valve



1 Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
*1 A	3-port valve A valve side: Normally closed/B valve side: Normally closed
*1 B	Two valves A valve side: Normally open/B valve side: Normally open
*1 C	integrated A valve side: Normally closed/B valve side: Normally open
Z	With blanking plate

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position double.

2 Piping direction

B	Side piping
---	-------------

9 Manual override

Blank	Locking/Non-locking common, With misoperation prevention cover	
M1	Non-locking, with misoperation prevention cover	
M2	Locking/Non-locking common, Tool operated, without cover	
M3	Non-locking, tool operation, without cover	

*1: Solenoid position "Z" cannot be selected.

10 Ozone/Coolant proof

Blank	Standard specifications
A	Ozone/Coolant proof (main valve fluorine specification)

*1: Solenoid position "Z" cannot be selected.

11 Exhaust check valve

Blank		
*1 H	With exhaust check valve	

*1: Solenoid positions "3" and "5" cannot be selected. Refer to page 147 for details on the type with exhaust check valve.

12 Port A/B filter

Blank	None	
F	Port A/B filter built in	

*1: A filter is built into port P.

13 Air flow path partition

Refer to page 42 for details.

Blank	No
T	P/R/PA/PR blocked
U	P/R blocked, PA/PR through
V	P blocked, R/PA/PR through
W	R blocked, P/PA/PR through

The right flow path is shut off with port A/B facing forward.

3 Port size (port A/B)

• Metric fitting

04CS	ø4 push-in fitting	
06CS	ø6 push-in fitting	
*1 Single side plug specs	Port A	Port B
04CA	ø4 push-in fitting	Plug
06CA	ø6 push-in fitting	Plug
04CF	Plug	ø4 push-in fitting
06CF	Plug	ø6 push-in fitting

*1: Ports A and B with one side plug specifications are available for 2-position single only.

4 Voltage

3	24 VDC
---	--------

5 Wiring method inside the base

Blank	Double wiring
S	Single solenoid dedicated wiring

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated. S = Dedicated for single solenoid. Cannot be selected with 2-position double solenoid, two 3-port valves integrated type and 3-position type.

6 Pilot operated

Blank	Internal pilot
K	External pilot

*1: Solenoid position "Z" cannot be selected.

7 Electric circuit specifications

* Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

8 Common specifications

Blank	NPN, plus common specifications
P	PNP, minus common specifications

*1: Multiple selection is not possible.

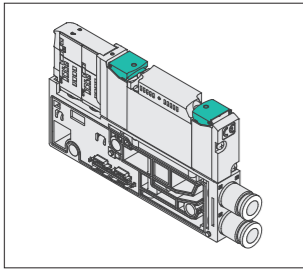
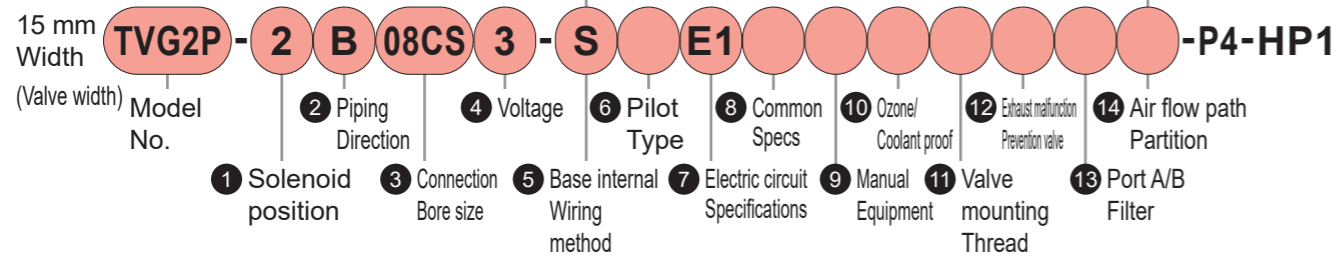
*2: Select the same polarity as that of the wiring block.

*3: PNP specifications are Special-order products.

How to order (valve block with solenoid valve)

How to order

Valve block with solenoid valve



1 Solenoid position

1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
*1 A	3-port valve A valve side: Normally closed/B valve side: Normally closed
*1 B	Two valves A valve side: Normally open/B valve side: Normally open
*1 C	integrated A valve side: Normally closed/B valve side: Normally open
Z	With blanking plate

*1: Only compatible with internal pilot. Dimensions is the same as the 2-position Double.

2 Piping direction

B	Side piping
---	-------------

9 Manual override

Blank	Locking/Non-locking common/with misoperation prevention cover	
M1	Non-locking, with misoperation prevention cover	
M2	Locking/Non-locking common, tool operation, without cover	
M3	Non-locking, tool operation, without cover	

*1: Solenoid position "Z" cannot be selected.

10 Ozone/Coolant proof

Blank	Standard specifications
A	Ozone/Coolant proof (main valve fluorine specification)

*1: Solenoid position "Z" cannot be selected.

11 Type of valve mounting screw

Blank	Pan head machine screw with Phillips head/flathead
J	Hexagon socket head cap screw

12 Exhaust check valve

Blank	None	
*1 H	With exhaust check valve	

*1: Solenoid positions "3", "4", and "5" cannot be selected. Refer to page 147 for details on the type with exhaust check valve.

13 Port A/B filter

Blank	None	
F	Port A/B filter built in	

*1: A filter is built into port P.

14 Air flow path partition

Refer to page 44 for details.

Blank	No
T	P/R/PA/PR blocked
U	P/R blocked, PA/PR through
V	P blocked, R/PA/PR through
W	R blocked, P/PA/PR through

The right flow path is shut off with port A/B facing forward.

3 Port size (port A/B)

• Metric fitting

04CS	ø4 push-in fitting
06CS	ø6 push-in fitting
08CS	ø8 push-in fitting
*1 Single side plug specifications	
Port A	
04CA	ø4 push-in fitting
06CA	ø6 push-in fitting
08CA	ø8 push-in fitting
Port B	
04CF	ø4 push-in fitting
06CF	ø6 push-in fitting
08CF	ø8 push-in fitting

*1: Radial push-in fittings upward are not compatible with 3-position.

4 Voltage

3	24 VDC
---	--------

5 Wiring method inside the base

Blank	Double wiring
S	Single solenoid Dedicated wiring

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated.

S = Dedicated for single solenoid. Cannot be selected with 2-position double solenoid, two 3-port valves integrated type and 3-position type.

6 Pilot operated

Blank	Internal pilot
K	External pilot

*1: Solenoid position "Z" cannot be selected.

7 Electric circuit specifications

* Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

8 Common specifications

Blank	NPN, plus common specifications
P	PNP/minus common specifications

*1: Multiple selection is not possible.

*2: Select the same polarity as that of the wiring block.

How to order (valve block with solenoid valve)

TVG With reduced wiring/serial transmission device unit

TVG With interface for remote I/O connection

TVG -P4 Compatible with rechargeable battery manufacturing processes

Manifold specs sheet

Technical data

Safety precautions

TVG With reduced wiring/serial transmission device unit

TVG With interface for remote I/O connection

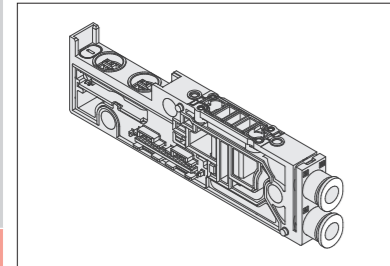
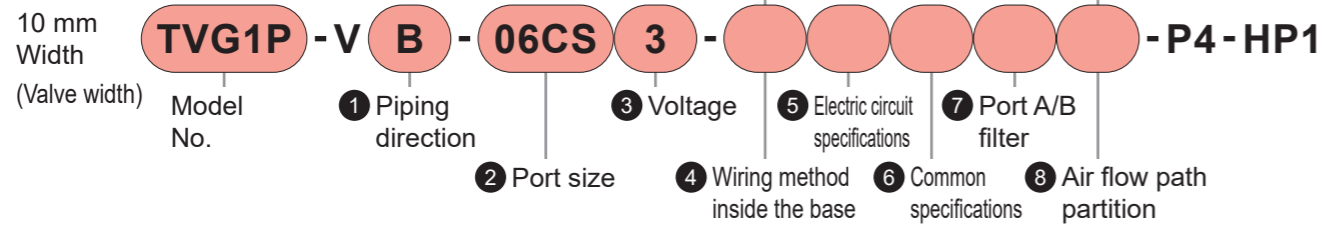
TVG -P4 Compatible with rechargeable battery manufacturing processes

Manifold specs sheet

Technical data

Safety precautions

How to order Valve block



• Tie rod is not included. Order separately. Refer to page 45 for details. The gasket between blocks is included.

① Piping direction

B	Side piping
----------	-------------

② Port size (port A/B) • Metric fitting

04CS	ø4 push-in fitting	
06CS	ø6 push-in fitting	
*1 Single side plug specs	Port A	Port B
04CA	ø4 push-in fitting	Plug
06CA	ø6 push-in fitting	
04CF	Plug	ø4 push-in fitting
06CF		ø6 push-in fitting

*1: Ports A and B with one side plug specifications are available for 2-position single only.

③ Voltage

3	24 VDC
----------	--------

④ Wiring method inside the base *1

Blank	Double wiring
S	Single solenoid dedicated wiring

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated.

S = Dedicated for single solenoid. Cannot be selected with 2-position double solenoid, two 3-port valves integrated type and 3-position type.

⑤ Electric circuit specifications

* Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

⑦ Port A/B filter

Blank	None
F	Port A/B filter built in

*1: A filter is built into port P.

⑥ Common specifications

Blank	NPN, plus common specifications
P	PNP/minus common specifications

*1: Multiple selection is not possible.

*2: Select the same polarity as that of the wiring block. PNP specifications are Special-order product.

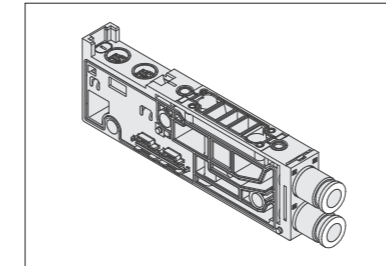
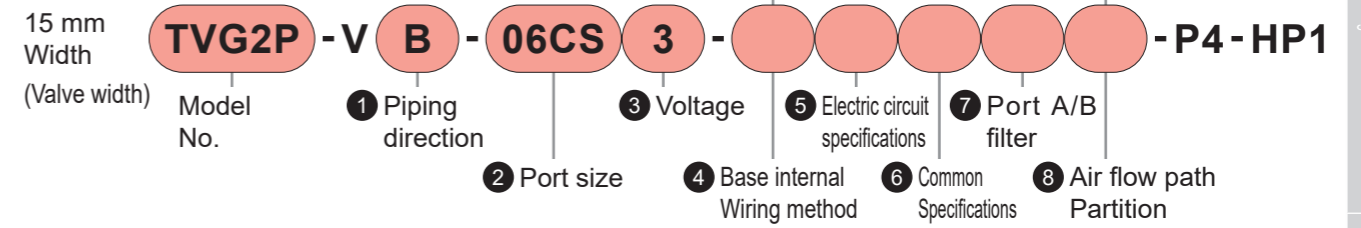
⑧ Air flow path partition

Refer to page 42 for details.

Blank	No
T	P/R/PA/PR blocked
U	P/R blocked, PA/PR through
V	P blocked, R/PA/PR through
W	R blocked, P/PA/PR through

How to order (valve block)

How to order Valve block



• Tie rod is not included. Order separately. Refer to page 45 for details. The gasket between blocks is included.

① Piping direction

B	Side piping
----------	-------------

② Port size (port A/B) • Metric fitting

06CS	ø6 push-in fitting	
08CS	ø8 push-in fitting	
*1 Single side plug specs	Port A	Port B
06CA	ø6 push-in fitting	Plug
08CA	ø8 push-in fitting	
06CF	Plug	ø6 push-in fitting
08CF		ø8 push-in fitting

*1: Ports A and B with one side plug specifications are available for 2-position single only.

③ Voltage

3	24 VDC
----------	--------

④ Wiring method inside the base *1

Blank	Double wiring
S	Single solenoid dedicated wiring

*1: Blank = Double solenoid wiring regardless of the type of valve used. If a single solenoid is mounted, an empty number for one solenoid will be generated.

S = Dedicated for single solenoid. Cannot be selected with 2-position double solenoid, two 3-port valves integrated type and 3-position type.

⑤ Electric circuit specifications

* Multiple selection is not possible.

Blank	With surge suppressor and indicator lamp
E1	Low exoergic/energy circuit (surgeless specifications)
E2	Surgeless

*1: E1 is not compatible with PNP specifications.

⑦ Port A/B filter

Blank	None
F	Port A/B filter built in

*1: A filter is built into port P.

⑥ Common specifications

Blank	NPN, plus common specifications
P	PNP/minus common specifications

*1: Multiple selection is not possible.

*2: Select the same polarity as that of the wiring block. PNP specifications are Special-order product.

⑧ Air flow path partition

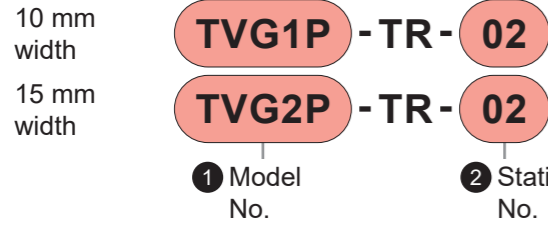
Refer to page 44 for details.

Blank	No
T	P/R/PA/PR blocked
U	P/R blocked, PA/PR through
V	P blocked, R/PA/PR through
W	R blocked, P/PA/PR through

How to order

Tie rod

- For valve block



- For intermediate supply and exhaust block



- For valve block expansion



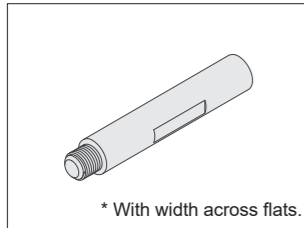
② Station No.

02	For 2 stations	14	For 14 stations
03	For 3 stations	15	For 15 stations
04	For 4 stations	16	For 16 stations
05	For 5 stations	17	For 17 stations
06	For 6 stations	18	For 18 stations
07	For 7 stations	19	For 19 stations
08	For 8 stations	20	For 20 stations
09	For 9 stations	21	For 21 stations
10	For 10 stations	22	For 22 stations
11	For 11 stations	23	For 23 stations
12	For 12 stations	24	For 24 stations
13	For 13 stations		

*1: TVG1P is available in sets of 3 and TVG2P in sets of 2.

Regarding expansion of stations

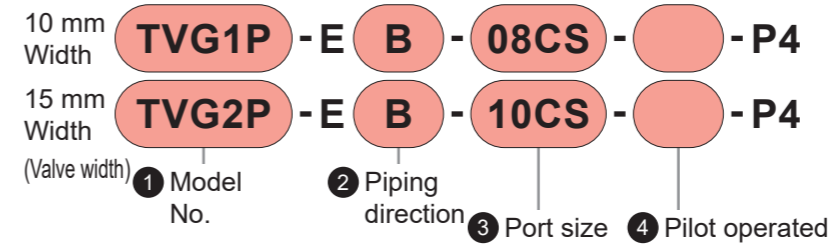
- With 2 to 17 stations, the manifold can be expanded by 3 stations. Up to a total of 3 stations can be expanded with valve blocks and intermediate supply and exhaust blocks. When expanding 18 or more stations of manifolds, use a tie rod that matches the station No. after expansion.
- Fix the tie rod for station expansion/tie rod for intermediate supply and exhaust to the wiring block. If installed on the end block side, it may not be possible to assemble correctly.



How to order

End supply and exhaust block (U side)

A hexagon socket head cap screw for tie rod tightening and the gasket between the block are included.



② Piping direction

B	Side piping
----------	-------------

④ Pilot operated

Blank	Internal pilot
K	External pilot
KZ	External pilot (PA/PR separated)

*1,*2

*1,*2

*1: ● Cannot be selected for port size "00XX".

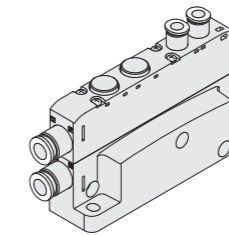
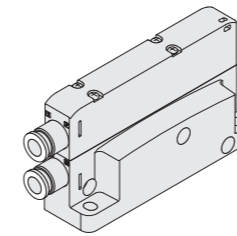
*2: The external pilot port is a ø6 push-in fitting.

③ Port size

	TVG1P	TVG2P
Metric fitting		
08CS	●	
10CS		●
Plug		
00XX	●	●

● TVG1P-EB-08CS-P4

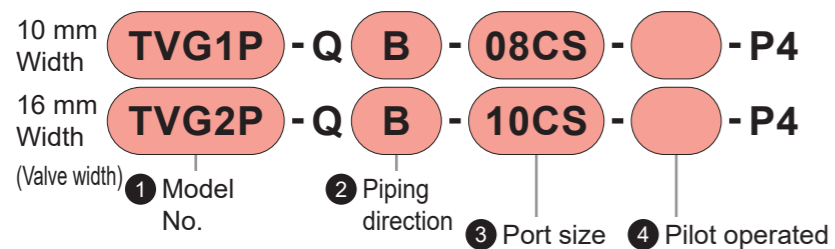
● TVG1P-EB-08CS-KZ-P4



How to order

Intermediate supply and exhaust block

The intermediate supply and exhaust block can be installed between the valve block and the valve block. These blocks cannot be adjacent to each other. This block cannot be adjacent to an end supply and exhaust block or wiring block. The electrical internal wiring and the P.R.PA.PR port connect with the adjacent blocks.



② Piping direction

B	Side piping
----------	-------------

④ Pilot operated

	Blank	Internal pilot
*1,*2	K	External pilot
	Z	Multi-pressure circuit
*1,*2	KZ	External pilot (PA/PR separated)

*1: ④ Cannot be selected for port size "00XX".

*2: The external pilot port is a ø6 push-in fitting.

*3: Z cannot be used independently. Be sure to use with another type, blank, K and KZ.

③ Port size

Metric fitting		TVG1P	TVG2P
08CS	ø8 push-in fitting	●	●
10CS	ø10 push-in fitting	●	●

Note: These blocks cannot be adjacent to each other. This block cannot be adjacent to an end supply and exhaust block or wiring and supply/exhaust block.

Included

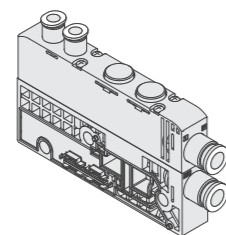
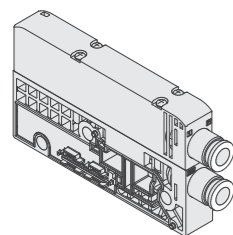
Manifold gasket: 1

Tie rod is not included. Order separately.

Refer to page 99 for details. The gasket between blocks is included.

● TVG1P-QB-08CS-P4

● TVG1P-QB-08CS-KZ-P4



MEMO