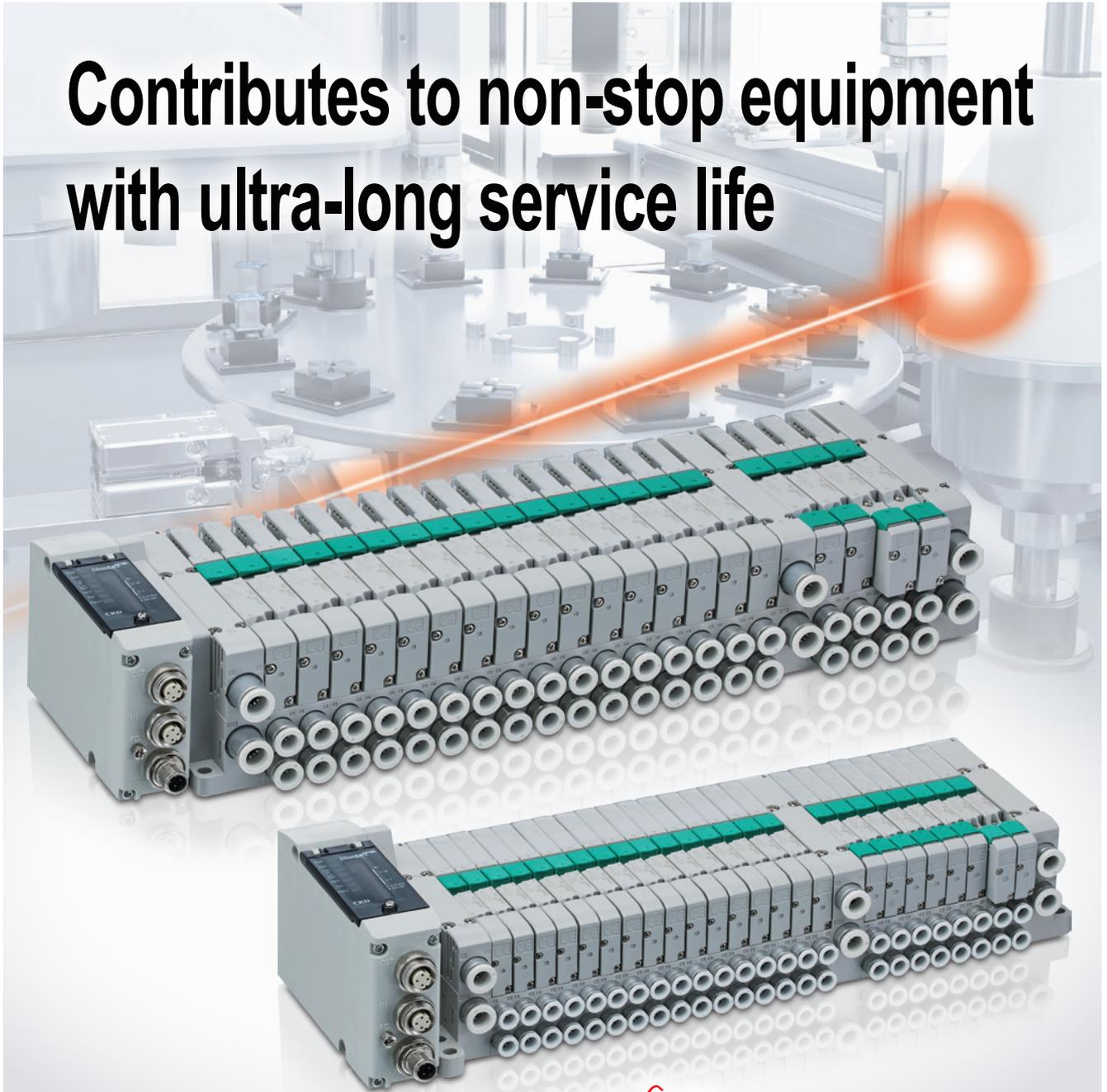


Pilot Operated 3, 5-Port Valve
Plug-in Block Manifold

TVG Series



Contributes to non-stop equipment
with ultra-long service life



IP65/IP67

HP

HIGH PRODUCTIVITY



Added direct piping, 100 VAC
voltage, nitrogen compatibility

Carbon neutrality begins with CO₂ emissions

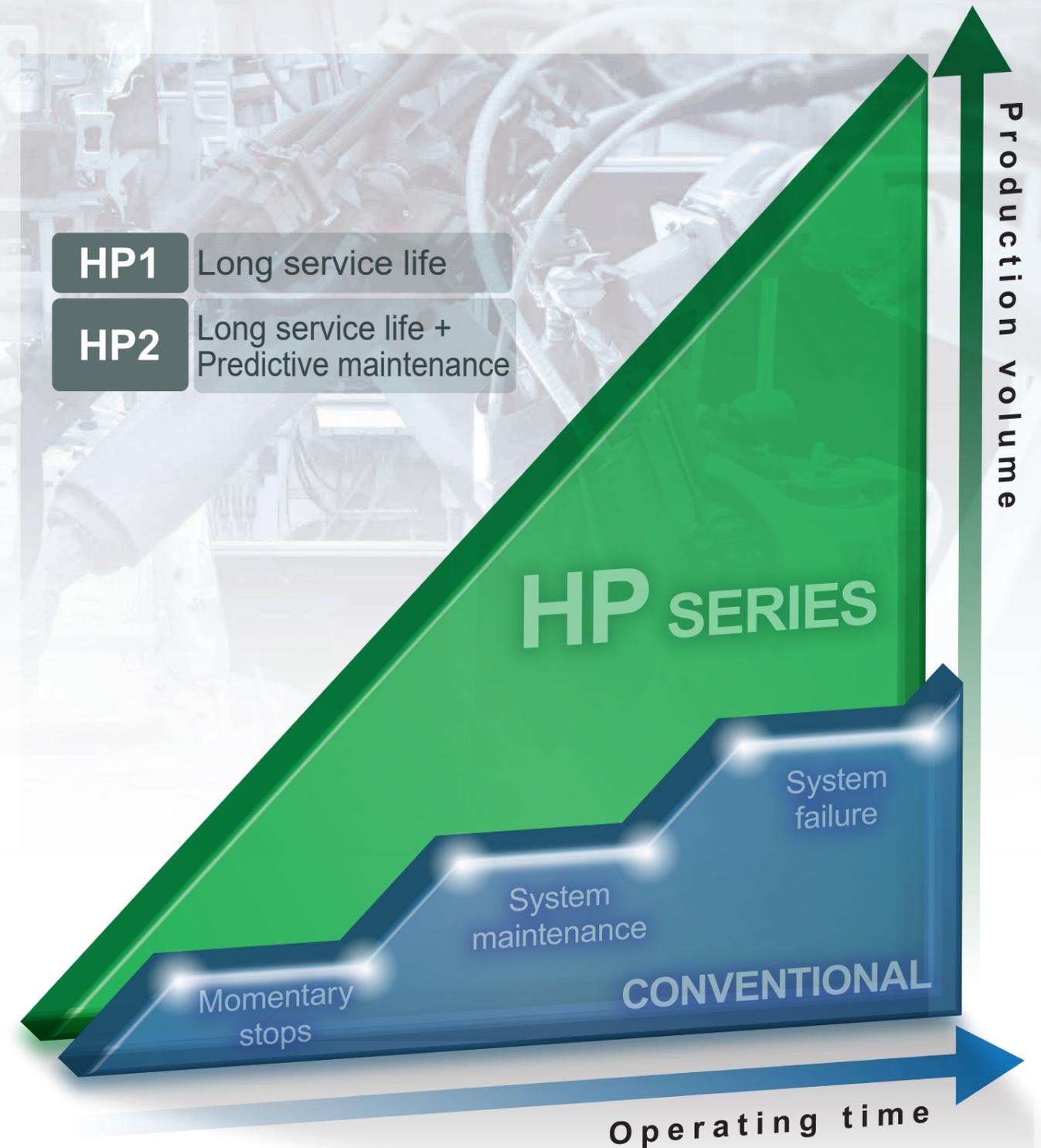
reduction through long service life products

What CKD considers "HIGH PRODUCTIVITY"

Reduced productivity leads to losses. In addition, parts requiring maintenance become waste. We believe that reducing maintenance contributes to carbon neutrality. The HP Series focuses on the fundamentals of manufacturing for equipment manufacturers. To improve productivity in high-frequency and high-stress environments, we contribute to "non-stop production equipment" and "realization of stable operation" with unprecedented long service life products.



- HP1** Long service life
- HP2** Long service life + Predictive maintenance



Carbon neutral

- Reduction of external leakage
- Power saving coil option (0.1 W)
- Use of recycled resin

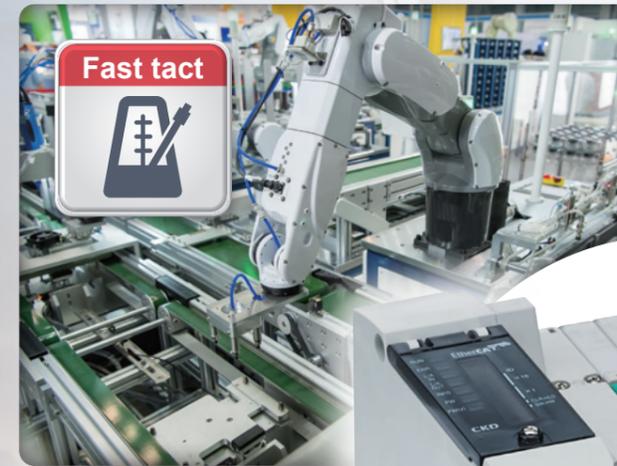
Plug-in valve

Easy to use

- Plug-in structure
- IP65/67
- Improved maintainability (gasket built-in)

High reliability

- Stable operation even with ultra-dry air
- High durability 120 million cycles or more (2x conventional)
- No minor stoppages



Plug-in to various devices

Contributes to carbon neutrality, equipment visualization through IoT, and control panel-less design

Global model serving as a key component of FA systems, supporting water resistance, robustness, high functionality, and Remote I/O

Pilot operated 3, 5-port solenoid valve Plug-in block manifold

TVG Series

[2024 Good Design Award Winner]

(Organizer: Japan Institute of Design Promotion)

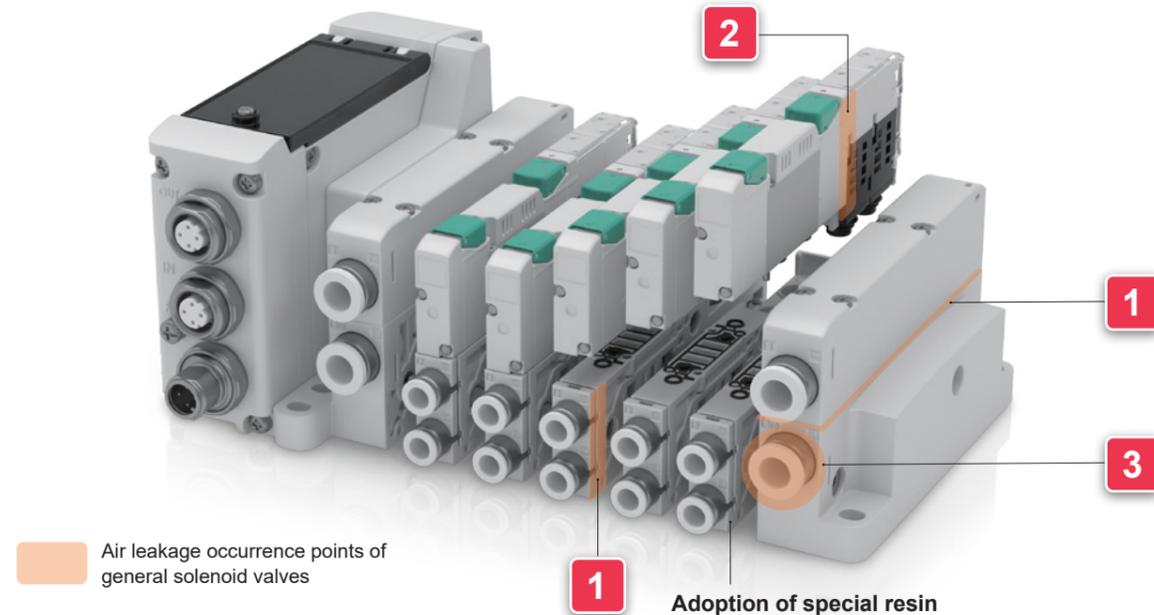
Carbon Neutral

High Reliability

Pursuit of air leakage reduction

Thorough improvement of parts where valve air leakage is likely to occur. A plug-in valve that gathers CKD's commitment to sustaining energy savings even after long-term use.

	Cause of air leakage	TVG's commitment
1	Reduced rigidity of resin material due to water adhesion during use and atmospheric moisture including during transportation/storage.	Seal design and special resin that withstand aging. Reduces air leakage through materials.
2	Thermal stress is repeatedly applied due to coil heat generation and ambient temperature changes, reducing rigidity of resin material.	Reduced coil temperature rise. Reduced air leakage with seal design that withstands aging and special resin material.
3	Due to spool packing wear, Supply air wraps around to exhaust port.	Through special treatment of spool packing and body interior Wear reduction.



Coil performance improvement

Continuous energization OK (With low heat generation/power saving circuit)

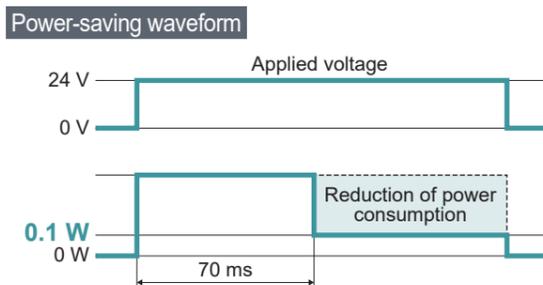
Adopted new coil actuator.

Power consumption

0.1 W (With low heat generation/energy saving circuit)

0.4 W (Standard product)

Power consumption reduction **83% Reduction**



Use of environmental load reducing materials

Biomass plastic

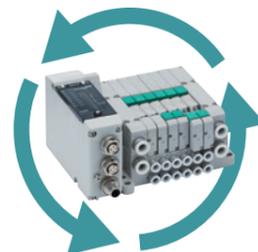
Protective cover*1 uses plant-derived biomass plastic.

*1. Since the protective cover cannot be closed when manual operation is enabled, it is ideal for preventing operators from forgetting to reset manual operation.



Recycled resin

Contributes to reducing environmental impact by using recycled resin.



Pursuit of stable operation

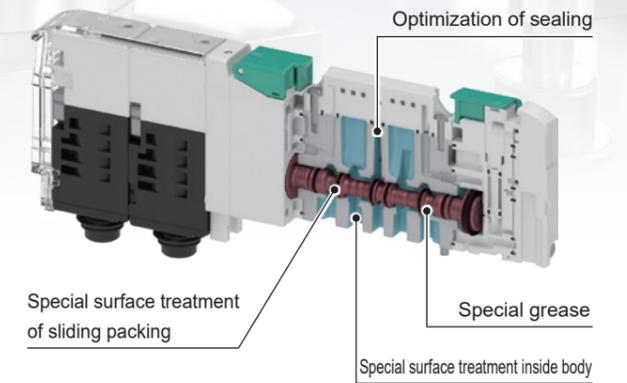
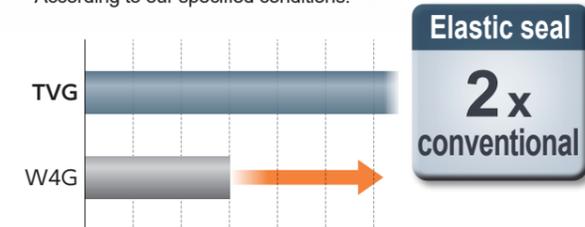
TVG series optimizes sliding parts, achieving durability of 120 million cycles or more* achieved. Stable operation through low friction supports reliable actuator operation, achieving stable equipment operation and quality variation reduction.

CO₂Emission (air leakage)
99.8% Reduction
At 120 million cycles operation

Low friction / Long service life

Mastered the sliding mechanism of the main valve to realize low friction and long service life. Elastic seal 120 million cycles. Achieves both long life and low air leakage.

Endurance cycles 120 million cycles or more*
* According to our specified conditions.



Improved response after sitting

Smooth start-up even after holidays. Effective for preventing "Monday morning syndrome" and minor stoppages.

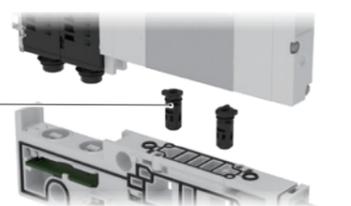
Adoption of special grease

Lubrication effect continues even with ultra-dry air.

Exhaust malfunction prevention valve (Option) PAT.P

Can be retrofitted even after installation.

Blocks even minute air bypass with an outer O-ring. Also prevents malfunctions of compact actuators



Guaranteed for use with "nitrogen" fluid

Since nitrogen does not contain moisture, there is a risk that the grease applied to the solenoid valve sliding parts will volatilize. The TVG adopts a special grease that resists volatilization even with nitrogen, realizing a guarantee for use with "nitrogen" fluid.

Comparison of grease state of samples after durability test

General grease

Oil content is depleted, almost powder state.



Special grease

Oil content remains, maintaining wet state.



TVG is also recommended for equipment supplying dry air passed through a heatless dryer.

*1 Durability test is conducted with nitrogen equivalent to JIS Class 1.

Easy to use

Selectable piping direction

Base piping



New

Direct piping

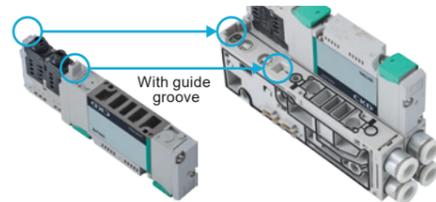
Piping method can be selected directly.



Plug-in valve with ultimate workability

1 Positioning support as standard PAT.P

Equipped with "Positioning Support" as standard, allowing anyone to easily align the valve and base.



2 Easy-to-assemble plug-in connection PAT.P

Wiring is completed by plug-in when adding actuators.



3 Connector connection for easy station addition/reduction

Internal wiring is completed simultaneously with manifold assembly.



4 Screw fall-out prevention as standard



5 No falling parts

Gasket is built into the base.



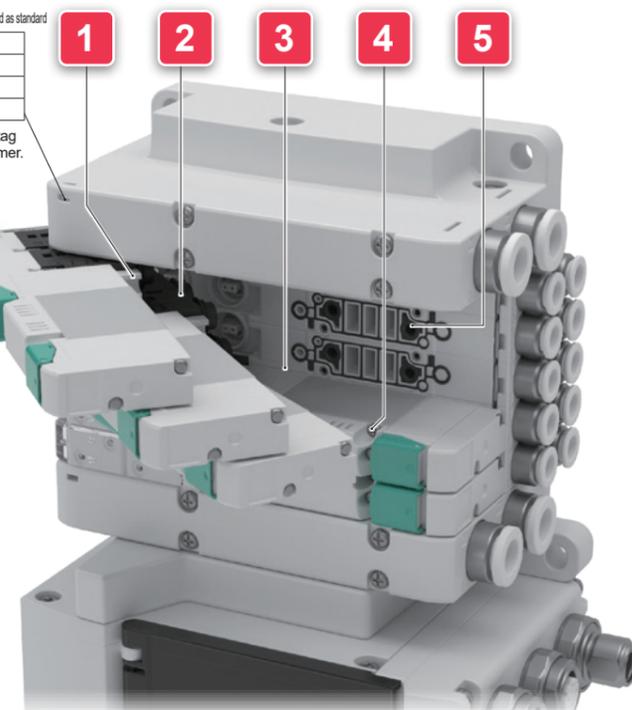
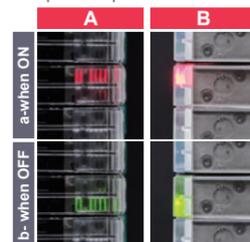
Tag nameplate mounting holes equipped as standard

1a	Shutter Close
1b	Shutter Open
2a	Chuck Close
2b	Chuck Open

* Please prepare the tag nameplate by customer.



Operation lamp visible from 2 directions



Improved environmental performance

Tough use IP65/IP67 (Dust-tight, Protected against water jets)

IP65/67

IP6□ : Dust does not penetrate inside

IP□5 : Not adversely affected by water jets from any direction

IP□7 : Water does not enter in amounts that cause harmful effects even when temporarily submerged in water under the prescribed pressure and time.

* The TVG can be used in both IP67 and IP65 environments. Refer to page 231 for IP performance.

Prevention of coil corrosion

Molded coil specifications resistant to corrosion. Prevents rust due to water adhesion during use or moisture during transportation/storage.

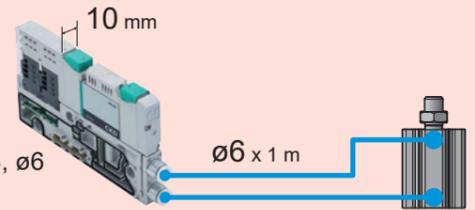


P4 series for rechargeable battery manufacturing equipment

Restricts use of inappropriate materials and surface treatments in rechargeable battery manufacturing process.

Compatible with valve width 10 mm, 15 mm

Our first! 10 mm width plug-in valve.

 <p>TVG1</p>	 <p>10 mm ø1.8, ø4, ø6 ø6 x 1 m At 300 mm/s ø40</p>
 <p>TVG2</p>	 <p>15 mm ø4, ø6, ø8, ø10 ø10 x 6 m At 300 mm/s ø63</p>

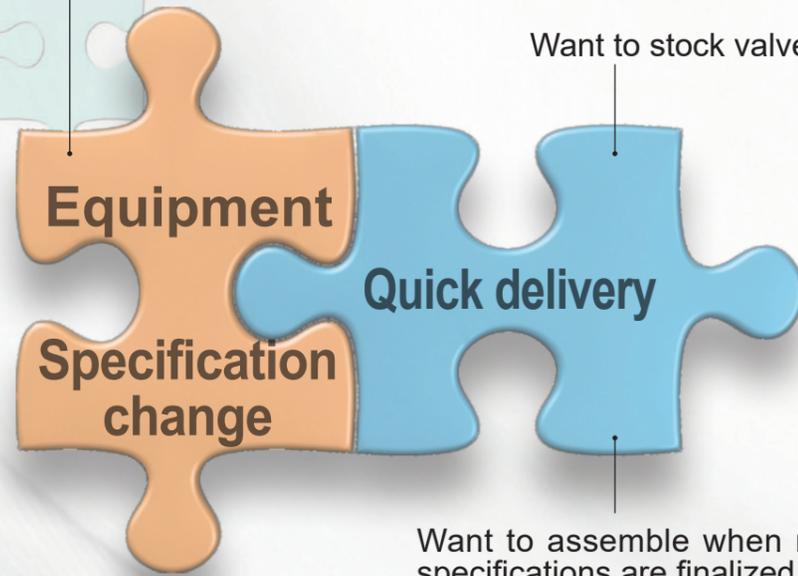
One Point! With ø10 fitting, cylinder speed can be increased even with long-distance piping!
The speed of an air cylinder decreases if the air piping is long or narrow. For high-speed operation with long-distance piping, a one-size larger ø10 fitting is recommended.

Easy to use (Spacer)

Recommended for such cases Plug-in structure spacer

Want to handle by changing valve side

Want to stock valve in parts state



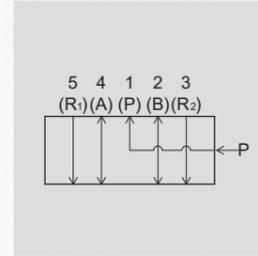
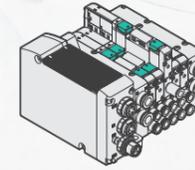
Want to assemble when manifold specifications are finalized



Spacer

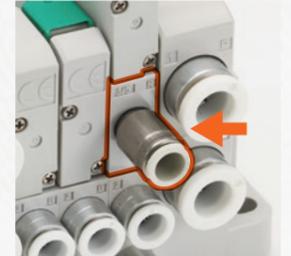
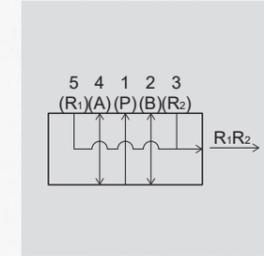
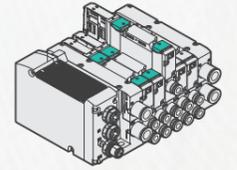
Supply spacer

Air can be supplied at different pressures for each valve. Ideal for adjusting cylinder thrust by increasing or decreasing the pressure of individual valves.

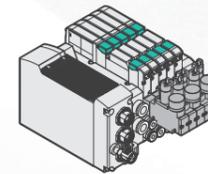


Exhaust spacer

Individual exhaust prevents malfunctions in single-acting cylinders, preventing personal injury and equipment damage.



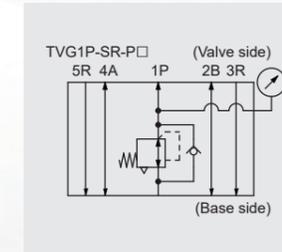
Spacer type regulator



Pressure can be regulated for each valve station. Since P, A, and B ports can be individually regulated by model selection, precise control of cylinders is possible.

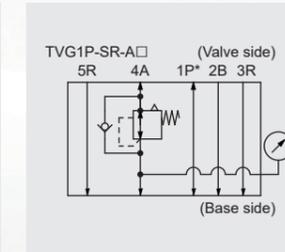
P pressure reduction

Reduces both A and B pressures for 1 station only.



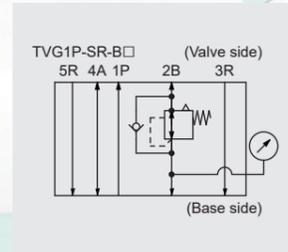
A pressure reduction

Reduces only the A-side supply pressure of the cylinder connected to the valve.



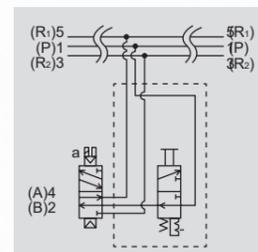
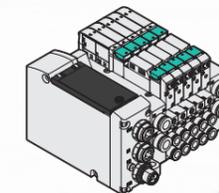
B pressure reduction

Reduces only the B-side supply pressure of the cylinder connected to the valve.



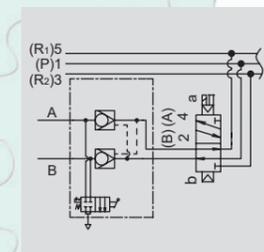
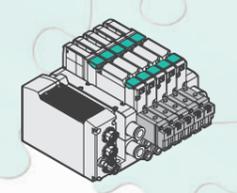
Spacer with in-stop valve

Air can be shut off for each valve. Valves can be replaced individually without stopping the production line.



Perfect spacer

Ideal for preventing cylinder drops over long periods and for intermediate stopping.

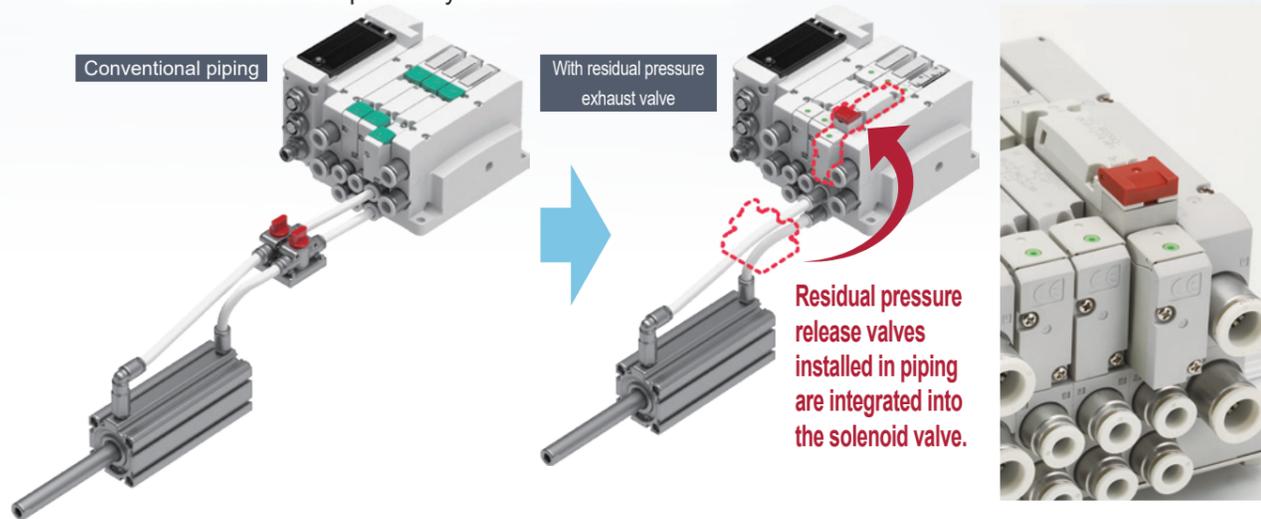


Easy to use (Option)

Option

With residual pressure exhaust valve

Residual pressure in ports A and B can be exhausted without shutting off the main pressure. Residual pressure exhaust devices that were previously added can be eliminated.



DIN rail mount type



TAG holder



With spacer

Without spacer

* It is the same TAG holder regardless of the presence or absence of a spacer.

100 VAC compatible*1

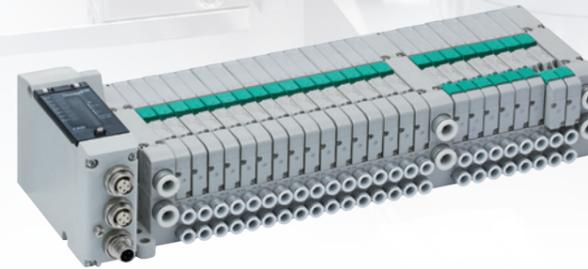
Reduced wiring type (Centralized terminal block, D-sub connector) supports 100 VAC. Energy-saving, ultra-long life TVG can be used for maintenance demand of old equipment etc.

Reduced wiring type (Centralized terminal block)	Reduced wiring type (D-sub connector)	Serial transmission (Output only)	For Remote I/O connection With interface
 100 VAC 24 VDC	 100 VAC 24 VDC	24 VDC	24 VDC
			

*1 100 VAC compatible with centralized terminal block and D-sub connector only. 100 VAC is Japan-limited sale.

Abundant communication support

Output device

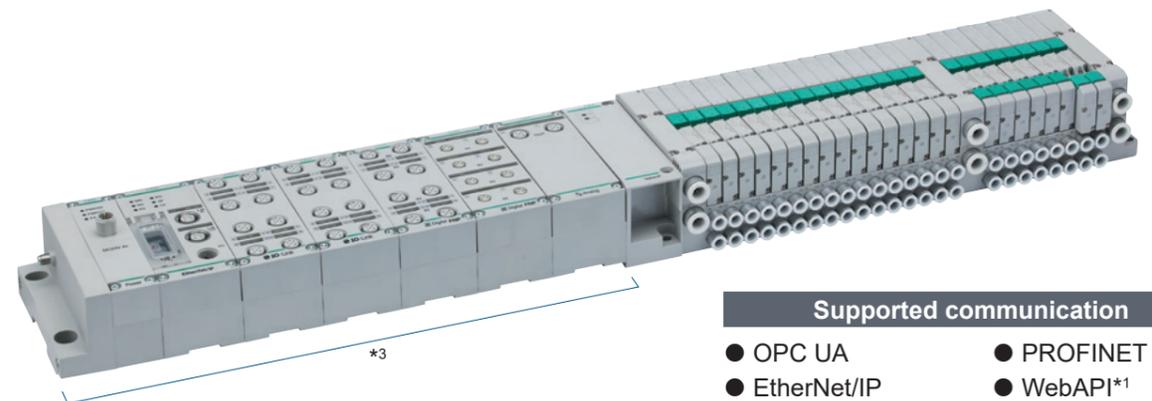


Supported communication

- EtherNet/IP
- CC-Link IE Field Basic
- DeviceNet
- CC-Link
- EtherCAT
- PROFINET
- CC-Link IE TSN
- IO-Link
- CC-Link IE Field
- IO-Link Wireless

Solenoid valve size	Max. points	Solenoid valve max. stations
TVG1, TVG2	Solenoid : 32 points	TVG1 : 24 stations TVG2 : 24 stations

Input/Output remote I/O device



Supported communication

- OPC UA
- PROFINET
- EtherNet/IP
- WebAPI*1
- EtherCAT

Solenoid valve size	Max. points	Solenoid valve max. stations
TVG1, TVG2	Solenoid : 32 points I/O : 4096 points*2	TVG1 : 24 stations TVG2 : 24 stations

*1. json format.

*2. 32 solenoid points are also included in 4096 I/O points.

*3. Remote I/O must be ordered separately. For details, refer to Remote I/O RT Series (Catalog No. CC-1557AA).

Compatible with global standards



Application (IO-Link Wireless)

Industry First

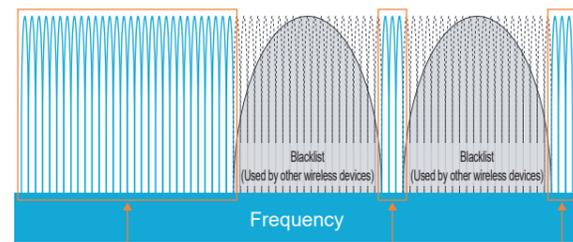
Open network IO-Link Wireless compatible solenoid valve*1

Uninterrupted wireless usable for control. Error occurrence rate 1 in 1 billion.*2

Item	Wireless LAN	Bluetooth	ZigBee	IO-Link Wireless
Standard	IEEE802.11b	IEEE802.15.1	IEEE802.15.4	IEEE802.15.1
Frequency	2.4 GHz	2.4 GHz	2.4 GHz	2.4 GHz
Communication distance	up to 100 m	up to 10 m	up to 100 m	up to 20 m
Transmission speed	11 Mbps	1 Mbps	250 kbps	21 kbps
Connected nodes	32	7	128	40
Delay time	50 ms	10 to 30 ms	100 ms	5 ms
Reliability	Low	Low	Medium	High

Blacklist function

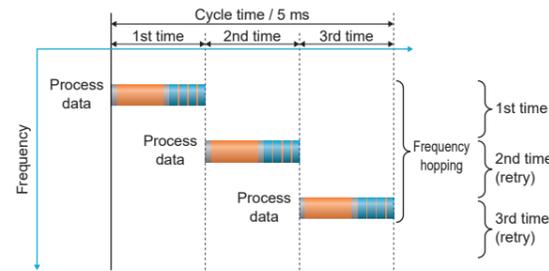
Avoids frequencies used by other wireless devices. Enables coexistence with other wireless devices.



Communicates using frequencies other than those on the blacklist

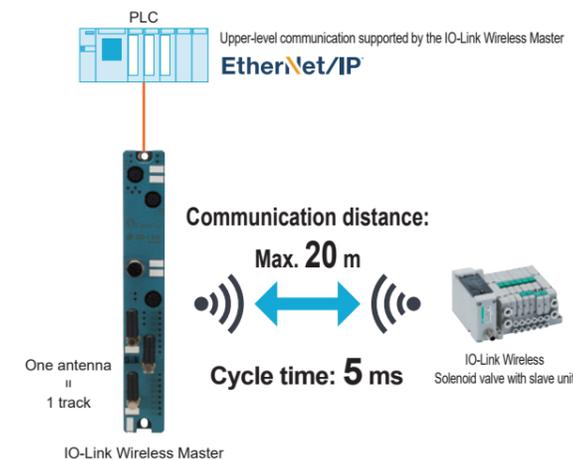
Frequency hopping function

Executes three retries per communication cycle. Retries are performed by switching frequency bands.



Achieves uninterrupted, low latency

IO-Link Wireless system configuration example

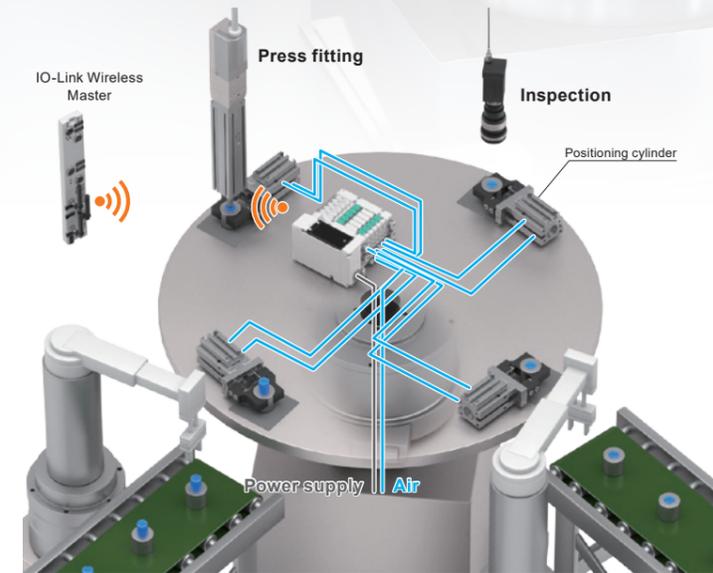


IO-Link Wireless Device Unit with Solenoid Valve Lineup

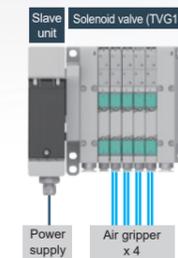
Solenoid valve appearance	Connected units per IO-Link master (1 track)	Cycle time
	1 to 6 units	5 ms
	7 to 8 units	10 ms
	32 points Output	

Assembly/Inspection (Rotary table)

Since signal lines are wireless, solenoid valve manifolds can be installed on rotary tables. This enables improved workpiece positioning accuracy and equipment design capable of handling high product variety.



Solenoid valve configuration



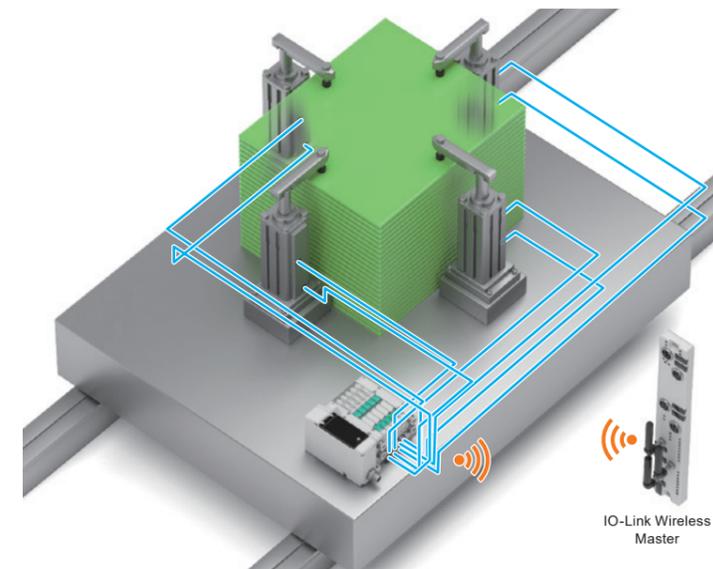
Device configuration

Air hand

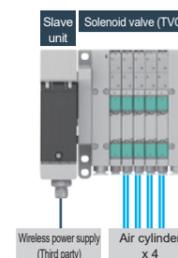


Pallet transfer

The solenoid valves for cylinder operation within the pallet are made wireless. Combining this with wireless power supply equipment allows for short-term workpiece holding via air sealing even during travel.



Solenoid valve configuration

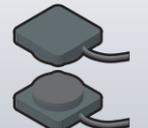


Device configuration

Rotary clamp cylinder



Wireless power supply (Other company)



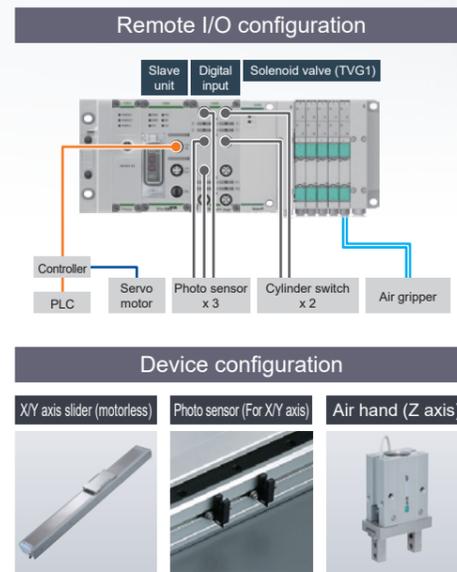
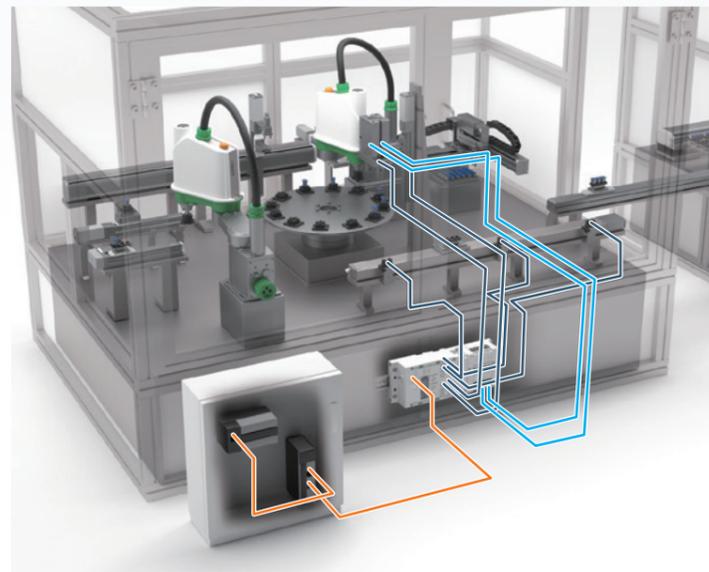
*1: Based on CKD research as of June 2023. Regions where CKD IO-Link Wireless equipment can be used: Japan, EU, and USA.

*2: Reliability equivalent to wired connections is achieved through blacklist and frequency hopping functions. Wireless quality suitable for control applications.

Application

Transfer device

Air piping and electrical wiring can be consolidated in mixed device of actuator driven by servo motor and air hand.



Rechargeable battery manufacturing process

Compatible with rechargeable battery manufacturing processes from electrode manufacturing to packaging. Lineup of P4 options compatible with material restrictions and ultra-dry air with dew point -70°C . Contributes to stable operation of equipment with long service life due to special grease that is hard to volatilize.

Rechargeable battery option:P4

- SUS fitting
- Electric circuit part IP65/67
- Flow path part material restriction

Material restrictions

- Cu** Restrict copper materials
- Zn** Restrict zinc materials
- Ni** Restrict nickel-based materials
- EZn** Restrict zinc plating
- ENi** Restrict electrolytic nickel Plating restriction

Dry environment

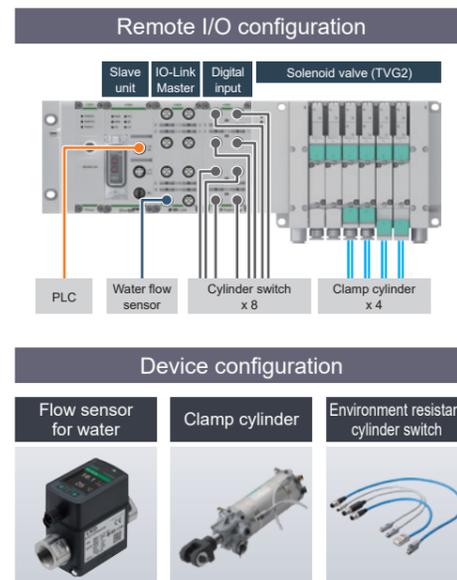
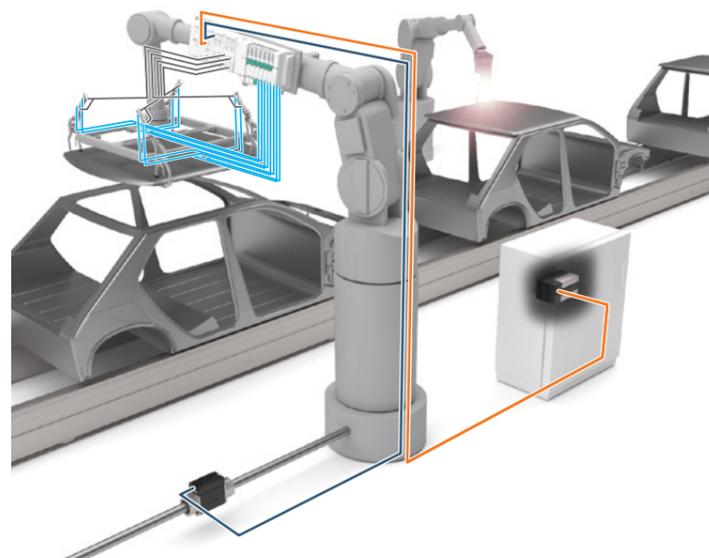
DEW POINT -80°C

Realized stable operation even at dew point -70°C by special grease adopted as standard.

Refer to Rechargeable Battery Compatible Components P4□ Series (CC-1226AA) for details.

Automobile body welding

Contributes to reduced wiring for cylinder drive solenoid valves and cylinder switch inputs. Wiring is completed from the PLC (Programmable Logic Controller) with a single Ethernet cable. This reduces equipment installation space, including for IO-Link devices, and improves wiring layouts.



Internal pressure explosion-proof panel

Ideal for applications where solenoid valves are installed inside pressurized explosion-proof control panels. Low air leakage minimizes the impact on pressure control within the panel, contributing to stable equipment operation.

Suppresses air leakage and maintains internal pressure

Internal pressure: 0.05 kPa or more

Hazardous area

Non-hazardous area

Pressurized enclosure

Protective monitoring panel

Power supply

Monitoring panel power supply

Continuous energization compatible

Power-saving coils (0.1 W) are available as an option, supporting continuous energization common in air-operated control. [Agent_10] Unit spacing applied (0.1 W).

Adoption of special resin

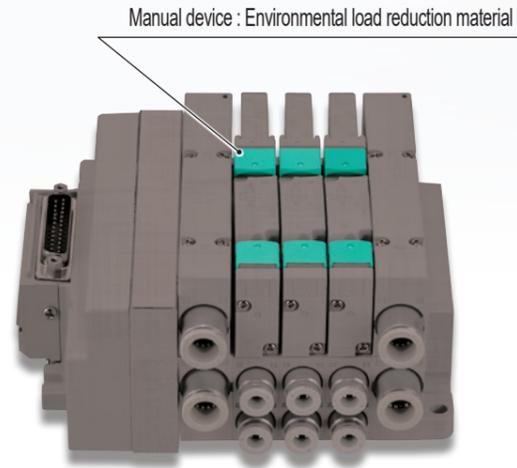
Standard special resin suppresses deterioration over time and long-term air leakage from the valve.

The solenoid valve alone does not have explosion-proof type certification. When used in pressurized explosion-proof applications, the customer is required to apply for and obtain type certification. Please perform installation in accordance with standards such as JNIOH-TR-46-3.

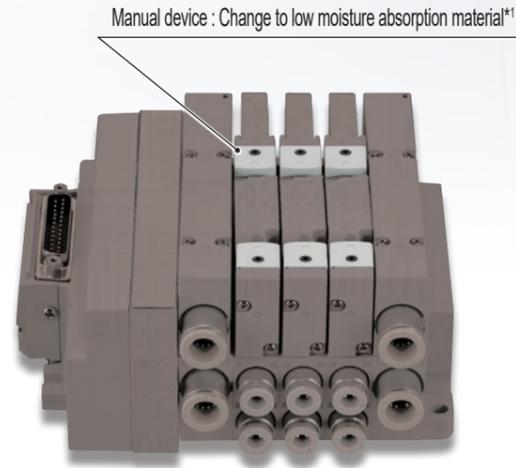
Special specification products

Low moisture absorption material compatible for low dew point environment

Standard product



Special specification products



Features

- All parts use materials with moisture absorption rate 0.25% or less
- Optimal when installing solenoid valve in ultra-dry environment

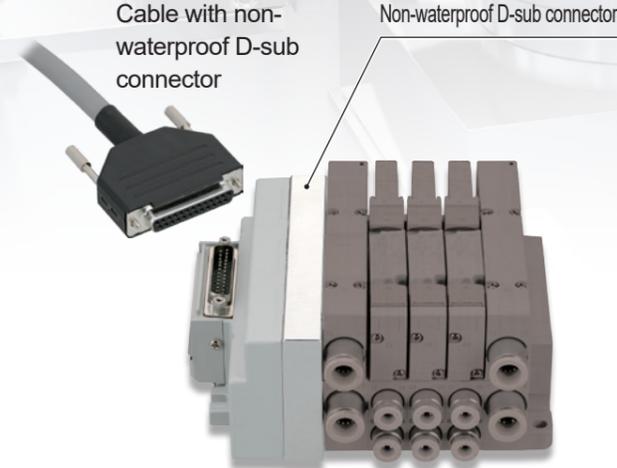
Applications

- Rechargeable battery manufacturing

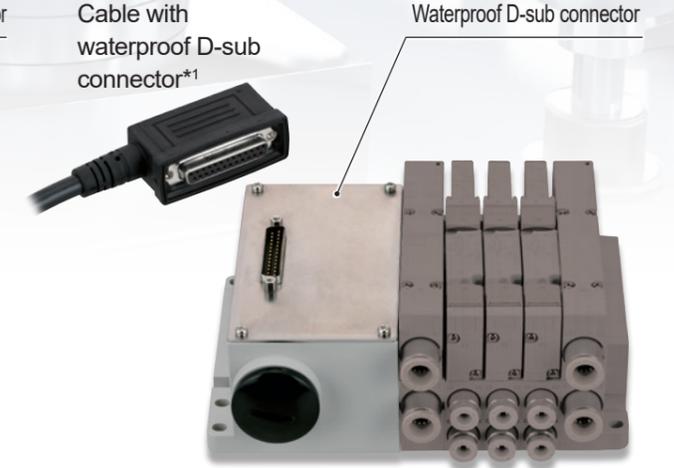
*1. Low moisture absorption material support is only for non-locking type, tool operation type, no cover (M3).

D-sub connector waterproof specification

Standard product



Special specification products



*1. Not sold by CKD.

Features

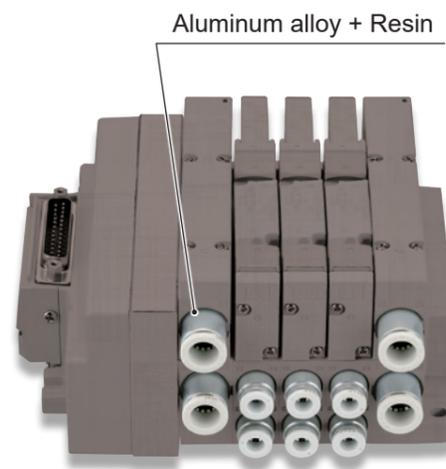
- IP65/IP67 compatible
- 25-pin (maximum 24 solenoid points)

Applications

- Automotive-related equipment
- Machine tools
- Food machinery

All stainless steel fitting compatible

Standard product



Special specification products



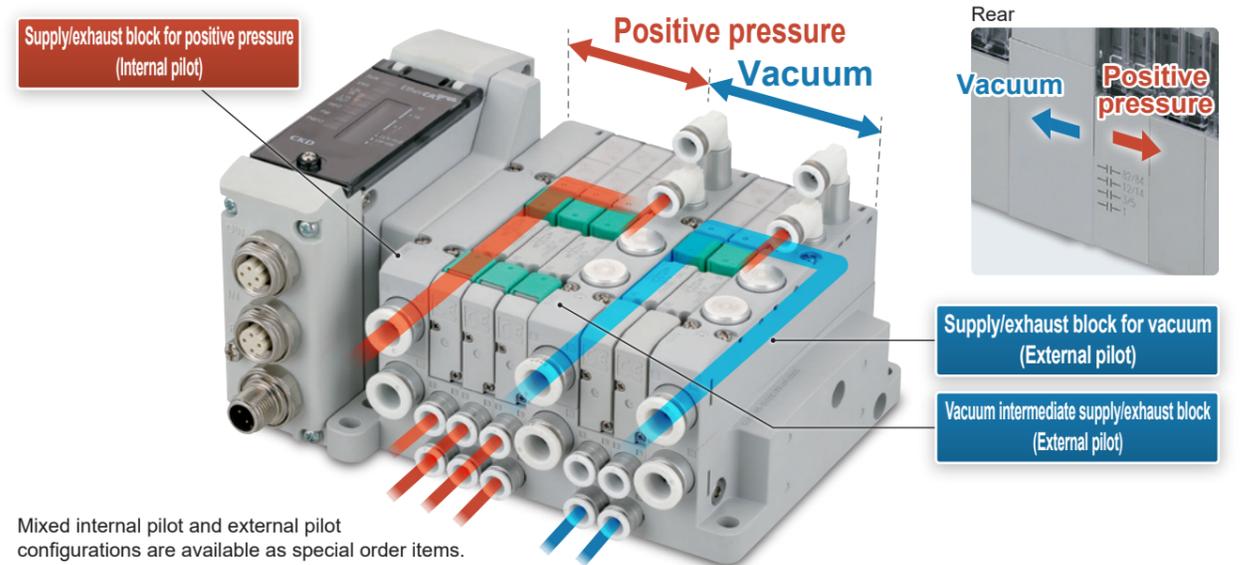
Features

- Improved water resistance
- SUS316L (packing FKM)

Applications

- Rechargeable battery manufacturing
- Food machinery

Positive pressure/Negative pressure mixed



Mixed internal pilot and external pilot configurations are available as special order items.

Features

- One communication device unit can mix positive and negative pressure
- Air and vacuum flow supply addition possible by adding intermediate supply/exhaust block
- Workpiece vacuum suction transfer possible with one manifold [Negative pressure] Vacuum suction [Positive pressure] Air cylinder control

Applications

- Automotive-related equipment
- Food machinery
- Electronic components

Pilot operated 3, 5-port valve Plug-in Valve Block Manifold **TVG**Series

	Page
Product Introduction	
Solenoid valve with reduced wiring / serial transmission device unit	
Manifold ordering method	2
Base piping TVG-B	5
Direct piping TVG-A	61
Technical data	210
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How to order solenoid valve manifold with reduced wiring / serial transmission device unit

The following 3 types of ordering methods are available.

Ordering method	Manifold Specification sheet	Assembly man-hours at customer	Product delivery time
A Manifold assembly	Required	☆	○
B Simple assembly	Not required	◎	◎
C Block single unit	Not required	○	☆

Applicable solenoid valve



Reduced wiring type

Serial transmission Device unit type

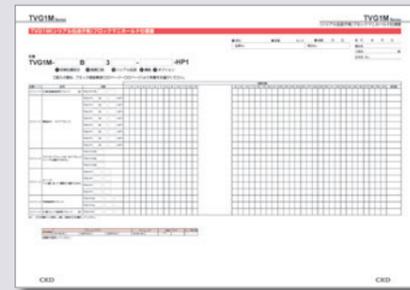
A Manifold assembly

We will deliver with the specifications designated in the manifold specifications. You can order with the model number starting with TVG□M and the manifold specification sheet.

TVG□M
□ : Valve size

P. 10

Manifold specifications



P. 188

B Simple assembly

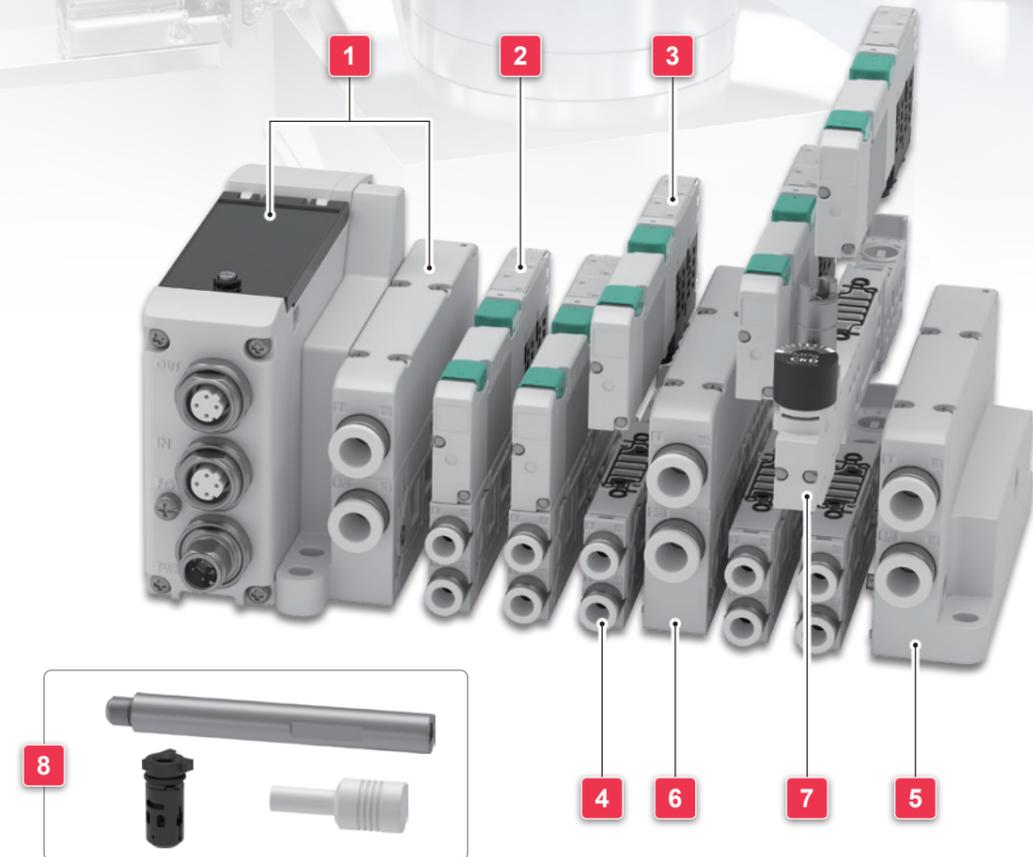
Pre-assembled manifold base and solenoid valves are delivered unassembled. Can be ordered by part number below. It is necessary for the customer to assemble the manifold base and solenoid valves, etc.

<p>Discrete solenoid valve (For base mounting) Specification sheet not required</p> <p>TVG□- □ : Valve size</p> <p>P. 18</p>	+	<p>Assembled manifold base Specification sheet not required</p> <p>TVG□B- □ : Valve size</p> <p>P. 14</p>	+	<p>Spacer Specification sheet not required</p> <p>TVG□P- □ : Valve size</p> <p>P. 48</p>	+	<p>Exhaust malfunction prevention valve Specification sheet not required</p> <p>TVG□P- □ : Valve size</p> <p>P. 55</p>
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*1. The manifold base is limited to options that can be produced without a specification sheet, such as double wiring and no malfunction prevention valve assembly.

C Block single unit

Parts are delivered separately. Customers must assemble the parts. You can order with the model numbers of the following parts.



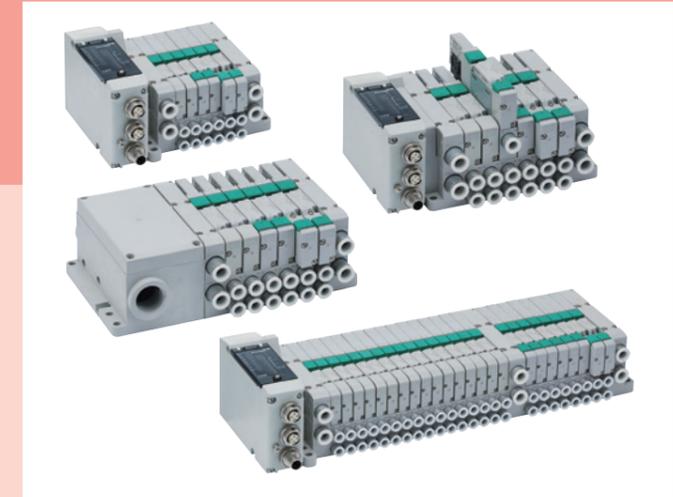
No.	Name	Head model number	Page
1	Wiring block	TVG□P- □ : Valve size	P. 34
2	Valve block with solenoid valve		P. 36
3	Solenoid valve single unit (for base mounting)		P. 18
4	Valve block		P. 40
5	End block		P. 45
6	Intermediate supply/exhaust block		P. 46
7	Spacer		P. 48
8	Tie rod, silencer, exhaust malfunction prevention valve		P. 44, 55
Other related parts			P. 54

TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with rechargeable battery manufacturing process
Manifold specifications
Technical data
Safety precautions

TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with rechargeable battery manufacturing process
Manifold specifications
Technical data
Safety precautions

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

Base piping



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● Internal structure and parts list	30
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② Precautions for wiring	214
③ Regarding malfunction prevention valve	234
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Plug-in block manifold
Pilot operated 3, 5-port valve Base piping

TVG1/TVG2 Series



Model performance/characteristics

Item	Switching position	TVG1		TVG2		
		ON	OFF	ON	OFF	
Response time ms	Dual 3-port valve built-in type	15	25	20	37	
	2-position	Single	15	20	22	24
		Double	15	15	26	26
	3-position	20	30	25	35	

Response time is the value at supply pressure 0.5 MPa, 20°C, and no lubrication. It depends on pressure and oil quality.

Flow characteristics

Model No.	Switching position	P → A/B			A/B → R			
		C[dm³/(s·bar)]	b	Q[L/min(ANR)]	C[dm³/(s·bar)]	b	Q[L/min(ANR)]	
TVG1	Dual 3-port valve built-in type	0.77	0.37	205	1.1 (0.56)	0.34 (0.37)	287 (149)	
	2-position	1.0	0.29	253	1.2 (0.59)	0.36 (0.41)	317 (162)	
	3-position	Closed center	0.96	0.33	249	1.0 -	0.35 -	263 -
		Exhaust center	0.96	0.32	247	1.3 (0.60)	0.38 (0.40)	349 (163)
		Pressure center	1.1	0.35	289	1.0 -	0.36 -	265 -
TVG2	Dual 3-port valve built-in type	1.7	0.44	476	2.2 (1.8)	0.43 (0.20)	612 (431)	
	2-position	2.4	0.32	618	2.8 (2.0)	0.34 (0.19)	731 (476)	
	3-position	Closed center	2.2	0.35	578	2.5 -	0.38 -	670 -
		Exhaust center	2.2	0.32	567	2.9 (2.1)	0.40 (0.21)	789 (506)
		Pressure center	2.6	0.34	678	2.5 -	0.37 -	666 -

*1 : Conversion between effective cross-sectional area S and sonic conductance C is $S \approx 5.0 \times C$.

*2 : Values in () are with exhaust malfunction prevention valve.

Reduced wiring specifications

Item	EA1A	EA1B	EA1C	FA1A	FA1B	GA1A	GA1B	GA1C
Type	Centralized terminal block M3 screw type			Multi-connector		D-sub connector		
Connecting connector	-			Hiros Electric Co., Ltd. RM21WTP-20S 20-pin		D-sub connector (Female) 25-pin		
Output type	NPN (Positive common)	PNP (Negative common)	- (100 VAC only)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	- (100 VAC only)

Serial transmission device station specifications (Compatible PLC table P. 223.)

Item	JA1A	JA1B	JA1C	JA1D	JA2C	JA2D	JA3C	JA3D	JA4C	JA4D	JA5C	JA5D
Communication system name	DeviceNet				CC-Link Ver.1.10		EtherCAT		EtherNet/IP		CC-Link IEF Basic	
Power supply voltage	11 to 25 VDC*				24 VDC±10%							
Current consumption	40 mA or less (All points ON : at 24 VDC)		50 mA or less (All stations ON : at 24 VDC)				90 mA or less (All stations ON : at 24 VDC)					
Output points	16 points				32 points							
Occupied points	2 bytes		4 bytes		1 station							
Operation display	LED (Power and communication status)											
Output type	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)

* Indicates communication power supply voltage range.

Item	JA6C	JA6D	JA7C	JA7D	JA8C	JA8D	JA9C	JA9D	JA9G	JA9H	JB1C	JB1D
Communication system name	PROFINET		CC-Link IE Field		CC-Link IE TSN		IO-Link		IO-Link Wireless			
Power supply voltage	24 VDC±10%				18 to 30 VDC				24 VDC±10%			
Current consumption	90 mA or less (All points ON : at 24 VDC)		100 mA or less (All stations ON : at 24 VDC)				50 mA or less (All stations ON : at 24 VDC)		35 mA or less (All points ON : at 24 VDC)			
Output points	32 points											
Occupied points	1 station											
Operation display	LED (Power and communication status)											
Output type	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)

Manifold common specifications

Item	Content
Manifold type	Block manifold
Mounting method	Direct mount type
Supply/exhaust method	Common supply / Common exhaust (Built-in exhaust malfunction prevention valve)
Pilot exhaust method	Main valve / Pilot valve common exhaust (Built-in pilot exhaust check valve)
Internal pilot (*5)	
Piping direction	Base side direction
Valve type and Operation method	Pilot operated soft spool valve
Operating fluid	Compressed air, Nitrogen
Max. Operating Pressure MPa	0.7
Internal pilot minimum Operating Pressure MPa	2-position double 0.1 (*7) 2-position single, 3-position 0.2 Dual 3-port valve built-in type 0.2
External Pilot Min. Operating Pressure kPa	-100 (Pilot pressure is 0.2 MPa or more)
Proof pressure MPa	1.05
Ambient temperature °C(*10)	-5 to 55 (no freezing)
Fluid temperature °C(*10)	5 to 55
Manual override	Non-locking/locking common type (standard)
Lubrication (*1)	Not required
Protection structure (*2)(*8)	IP65, IP67
Vibration resistance m/s² (*9)	50 or less
Shock resistance m/s²	300 or less
Atmosphere	Use in corrosive gas atmosphere is prohibited

Electrical specifications

Item	Reduced wiring connection		Serial transmission
	EA1□, 2, FA1□, 2, GA1□	JA□□, 2, JB□□	
Rated voltage V	100 AC	24 DC	24
Voltage variation range (*3)	±10%	±10%	+10%, -5%
Holding current A	Standard 0.019		0.017
Power consumption W	With low heat generation/energy saving circuit -		0.005
Apparent power VA	Standard -		0.4
Heat resistance class			B
Surge suppressor (*4)	Diode		Zener diode
Indicator			LED

*1 : If lubrication is used, use ISO VG32 turbine oil grade 1. Excessive or intermittent lubrication will cause unstable operation.

*2 : Test method per IP65, IP67 (IEC 60529 : 2001) standard. For details, see P. 231.

*3 : Note voltage fluctuation range as serial transmission type has voltage drop due to internal circuit.

*4 : Diode is used when low heat generation/energy saving circuit or surge suppressor is selected.

*5 : Pilot exhaust method differs for each supply/exhaust block specification. For details P. 47.

*6 : When used at low vacuum, select external pilot. For details, see P. 233.

*7 : 0.2 MPa for type with low heat generation/energy saving circuit.

*8 : D-sub connector(GA1□) protection structure is dustproof (IP40 equivalent). Use to avoid water droplets, oil, etc.

*9 : Regarding the vibration resistance of the DIN rail mount type, limit the vibration applied to the manifold to 20 m/s² or less for 2 to 12 stations, and 10 m/s² or less for 13 to 16 stations.

*10 : In the case of 100 VAC specifications, ensure that the ambient temperature and fluid temperature are 50°C or less.

Model specifications

Item	TVG1							
	Centralized terminal block EA1A, EA1B	Centralized terminal block EA1C	Multi-connector FA1□	D-sub connector GA1A, GA1B	D-sub connector GA1C	Serial transmission JA1A, JA1B	Serial transmission JA□C, 2, JA□D, JB□C, 2, JB□D	
Max. station No.	10 stations	8 stations	8 stations	12 stations	8 stations	8 stations	16 stations	
Max. number of solenoids	20 points	16 points	16 points	24 points	16 points	16 points	32 points	
Port size	Metric fitting	Push-in fitting ø1.8, ø4, ø6						
	P/R port	Push-in fitting ø6, ø8						
	Inch fitting	Push-in fitting ø1/8 inch, ø5/32 inch						
Port size	Metric fitting	Push-in fitting ø5/16 inch						
	P/R port							
	Inch fitting							
Item	TVG2							
	Centralized terminal block EA1A, EA1B	Centralized terminal block EA1C	Multi-connector FA1□	D-sub connector GA1A, GA1B	D-sub connector GA1C	Serial transmission JA1A, JA1B	Serial transmission JA□C, 2, JA□D, JB□C, 2, JB□D	
Max. station No.	10 stations	8 stations	8 stations	12 stations	8 stations	8 stations	16 stations	
Max. number of solenoids	20 points	16 points	16 points	24 points	16 points	16 points	32 points	
Port size	Metric fitting	Push-in fitting ø4, ø6, ø8, ø10						
	P/R port	Push-in fitting ø8, ø10						
	Inch fitting	Push-in fitting ø1/4 inch, ø5/16 inch						
Port size	Metric fitting	Push-in fitting ø3/8 inch						
	P/R port							
	Inch fitting							

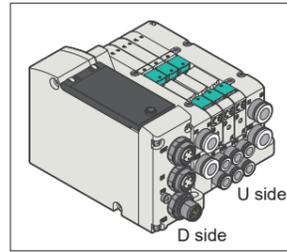
Model No. Notation

Manifold with solenoid valve : Base piping

10 mm width type (valve width)



- 1 Switching position
- 2 Piping direction
- 3 Port size
- 4 Voltage
- 5 Electrical connection
- 6 Station No.
- 7 P/R port position
- 8 Wiring method inside base
- 9 Pilot type
- 10 Electric circuit specifications
- 11 Manual override
- 12 Residual pressure release valve
- 13 Exhaust malfunction prevention valve
- 14 Spacer
- 15 A/B port filter
- 16 Mount type



1 Switching position

Code	Content
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center
X	Mix manifold
A	3-port valve A side valve : Normally closed / B side valve : Normally closed
B	3-port valve A side valve : Normally open / B side valve : Normally open
C	Dual built-in type *1 A side valve : Normally closed / B side valve : Normally open

*1 : Only internal pilot compatible. Dimensions are identical to 2-position double.

2 Piping direction

Code	Content
B	Side piping

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

Fitting type	A/B port	Code	
Push-in	ø1.8	0ACS	
	ø4	04CS	
	ø6	06CS	
L-type push-in fitting upward	ø1.8	0ACU	
	ø4	04CU	
	ø6	06CU	
L-type push-in fitting downward	ø1.8	0ACD	
	ø4	04CD	
	ø6	06CD	
Push-in	Mix	99CX	
Fitting type One side plug specification *1			
Push-in	A port	ø1.8	0ACA
		ø4	04CA
		ø6	06CA
	B port	ø1.8	0ACF
		ø4	04CF
		ø6	06CF
L-type push-in fitting upward	Plug	ø1.8	0ACB
		ø4	04CB
		ø6	06CB
	Plug	ø1.8	04CG
		ø4	04CG
		ø6	06CG
L-type push-in fitting downward	Plug	ø1.8	0ACC
		ø4	04CC
		ø6	06CC
	Plug	ø1.8	0ACH
		ø4	04CH
		ø6	06CH

• Inch Fitting

Fitting type	A/B port	Code	
Push-in	ø1/8 inch	03LS	
	ø5/32 inch	04LS	
L-type push-in fitting upward	ø1/8 inch	C3LU	
	ø5/32 inch	04LU	
Push-in	Mix	99LX	
Fitting type One side plug specification *1			
Push-in	A port	ø1/8 inch	03LA
		ø5/32 inch	04LA
		ø1/8 inch	03LB
	B port	ø1/8 inch	04LF
		ø5/32 inch	04LF
		ø1/8 inch	03LB
L-type push-in fitting upward	Plug	ø1/8 inch	04LB
		ø5/32 inch	03LG
		ø1/8 inch	04LG
	Plug	ø1/8 inch	04LG
		ø5/32 inch	04LG
		ø1/8 inch	04LG

*1 : A or B port one-side plug specification compatible with 2-position single only.
 *2 : L-type push-in fitting upward is not available for 3-position.
 *3 : Mixed port sizes for 4 (A) and 2 (B) ports are not available.
 *4 : The applicable tube for ø1.8 push-in fitting is "UP-9402-□□".
 *5 : Custom product.

4 Voltage

Code	Content
1	100 VAC
3	24 VDC

*1 : 100 VAC is only compatible with 5 electrical connections "EA1C" and "GA1C".

5 Electrical connection,
• Reduced wiring connection

Content	Output	Code
Centralized terminal block (M3 screw)	NPN	EA1A
	PNP	EA1B
	-	EA1C
Multi-connector	NPN	FA1A
	PNP	FA1B
	-	FA1C
D-sub connector	NPN	GA1A
	PNP	GA1B
	-	GA1C

• Serial transmission

Communication system	Output	Points	Code
DeviceNet	NPN	16 points	JA1A
	PNP	16 points	JA1B
	NPN	32 points	JA1C
	PNP	32 points	JA1D
CC-Link	NPN	32 points	JA2C
	PNP	32 points	JA2D
EtherCAT	NPN	32 points	JA3C
	PNP	32 points	JA3D
EtherNet/IP	NPN	32 points	JA4C
	PNP	32 points	JA4D
CC-Link IEF Basic	NPN	32 points	JA5C
	PNP	32 points	JA5D
PROFINET	NPN	32 points	JA6C
	PNP	32 points	JA6D
CC-Link IE Field	NPN	32 points	JA7C
	PNP	32 points	JA7D
CC-Link IE TSN	NPN	32 points	JA8C
	PNP	32 points	JA8D
IO-Link	Class A	NPN	JA9C
		PNP	JA9D
		PNP	JA9G
	Class B	NPN	JA9H
		PNP	JA9H
		PNP	JA9H
IO-Link Wireless	NPN	JB1C	
	PNP	JB1D	

6 Station No.

Code	Content
02	2 stations
to	to
24	24 stations

*1 : 1 : Varies depending on reduced wiring connection specifications. Refer to Individual Specifications (See P. 8).
 *2 : For 1 mount type "R" (DIN rail), the maximum number of stations is 16.

7 P/R port position* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side (Wiring block side)
B	U side, D side
T	U side, D side, with intermediate supply/exhaust block

*1 : Specify the intermediate supply/exhaust block in the manifold specifications.

9 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

10 Electric circuit specifications
* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : The combination of "E2" and PNP specifications is a custom-made product.
 *2 : Compatible only with 4 Voltage "3".

12 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/Coolant resistant (Main valve fluorine specification)

13 Residual pressure release valve

Code	Content
Blank	No residual pressure release valve
Y1	With non-locking type residual pressure release valve
Y2	With locking type residual pressure release valve

*1 : Compatible only with 1 Switching position "3" and "4".
 *2 : Compatible only with 11 Manual override "M2" and "M3".

15 Exhaust malfunction prevention valve

Code	Content
Blank	None
H	With exhaust malfunction prevention valve

*1 : 1 Switching position "3" and "5" cannot be selected. See P. 234 for the exhaust check valve. Please specify the number of stations on the manifold specifications sheet.

16 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

*1 : P port has a built-in filter.

8 Wiring method inside base *1

Code	Content
Blank	Double wiring
S	Single wiring specifying single/double solenoid arrangement

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

11 Manual override
* Multiple selections are not allowed.

Code	Content
Blank	Non-locking/locking common, with erroneous operation prevention cover
M1	Non-locking type, with erroneous operation prevention cover
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

14 Spacer

Code	Content
Blank	Without spacer
Z	With spacer (Specify type and location in MF specifications)

*1 : Please specify the spacer type and mounting position on the manifold specifications sheet. Stacking multiple spacers is not supported. Combination with a blanking plate is not supported. Cannot be selected simultaneously with L-type push-in fitting (upward).

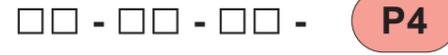
17 Mount type

Code	Content
Blank	Direct mount type
R	DIN rail mount type

Rechargeable battery compatible specification

(For details, P. 157.)

Materials for air paths and sliding parts are restricted for use in the rechargeable battery manufacturing process.



TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG-P4
Manifold specifications
Technical data
Safety precautions

TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG-P4
Manifold specifications
Technical data
Safety precautions

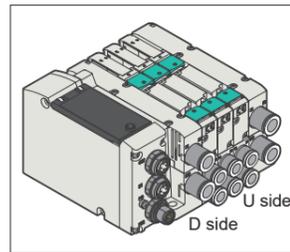
Model No. Notation

Manifold with solenoid valve ; Base piping

15 mm width type (valve width)



- 1 Switching position
- 2 Piping direction
- 3 Port size
- 4 Voltage
- 5 Electrical connection
- 6 Station No.
- 7 P/R port position
- 8 Wiring method inside base
- 9 Pilot type
- 10 Manual override
- 11 Residual pressure release valve
- 12 Spacer
- 13 A/B port filter
- 14 Mount type



1 Switching position

Code	Content
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center
X	Mix manifold
A	Dual 3-port valve
B	built-in type *1
C	built-in type *1

*1 : Supports internal pilot only. Dimensions are the same as 2-position double.

2 Piping direction

Code	Content
B	Side piping

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

Fitting type	A/B port	Code	
Push-in	ø4	04CS	
	ø6	06CS	
	ø8	08CS	
	ø10	10CS	
L-type push-in fitting upward	ø6	06CU	
	ø8	08CU	
L-type push-in fitting downward	ø6	06CD	
	ø8	08CD	
Push-in	Mix	99CX	
Fitting type	One side plug specification *1		
	A port	B port	Code
Push-in	Plug	ø4	04CA
		ø6	06CA
		ø8	08CA
		ø10	10CA
	Plug	ø4	04CF
		ø6	06CF
		ø8	08CF
		ø10	10CF
L-type push-in fitting upward	Plug	ø6	06CB
		ø8	08CB
	Plug	ø6	06CG
		ø8	08CG
L-type push-in fitting downward	Plug	ø6	06CC
		ø8	08CC
	Plug	ø6	06CH
		ø8	08CH

• Inch Fitting

Fitting type	A/B port	Code	
Push-in	ø1/4 inch	06LS	
	ø5/16 inch	08LS	
L-type push-in fitting upward	ø1/4 inch	06LU	
	ø5/16 inch	08LU	
Push-in	Mix	99LX	
Fitting type	One side plug specification *1		
	A port	B port	Code
Push-in	Plug	ø1/4 inch	06LA
		ø5/16 inch	08LA
		ø1/4 inch	06LF
		ø5/16 inch	08LF
	Plug	ø1/4 inch	06LB
		ø5/16 inch	08LB
		ø1/4 inch	06LG
		ø5/16 inch	08LG

- *1 : A or B port one-side plug specification compatible with 2-position single only.
- *2 : L-type push-in fitting upward is not available for 3-position.
- *3 : Mixed port sizes for 4 (A) and 2 (B) ports are not available.
- *4 : Custom product.

4 Voltage

Code	Content
1	100 VAC
3	24 VDC

*1 : 100 VAC is only compatible with 5 electrical connections "EA1C" and "GA1C".

5 Electrical connection
• Reduced wiring

Content	Output	Code
Centralized terminal block (M3 screw)	NPN	EA1A
	PNP	EA1B
	-	EA1C
Multi-connector	NPN	FA1A
	PNP	FA1B
	-	FA1C
D-sub connector	NPN	GA1A
	PNP	GA1B
	-	GA1C

• Serial transmission

Communication system	Output	Points	Code	
DeviceNet	NPN	16 points	JA1A	
			JA1B	
			JA1C	
	PNP	16 points	JA1D	
			JA2C	
			JA2D	
EtherCAT	NPN	32 points	JA3C	
			JA3D	
			JA4C	
EtherNet/IP	PNP	32 points	JA4D	
			JA5C	
			JA5D	
CC-Link IEF Basic	NPN	32 points	JA6C	
			PNP	JA6D
			PNP	JA7C
PROFINET	NPN	32 points	JA7D	
			PNP	JA8C
			PNP	JA8D
CC-Link IE Field	NPN	32 points	JA9C	
			PNP	JA9D
			PNP	JA9G
CC-Link IE TSN	NPN	32 points	JA9H	
			PNP	JA9H
			PNP	JA9H
IO-Link	Class A	NPN	JB1C	
			PNP	JB1D
IO-Link Wireless	Class B	NPN	JB1C	
			PNP	JB1D

6 Station No.

Code	Content
02	2 stations
to	to
24	24 stations

*1 : Varies depending on reduced wiring connection specifications. Refer to Individual Specifications (P. 8).

*2 : For 18 mount type "R" (DIN rail), the maximum number of stations is 16.

9 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

12 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

15 Spacer

Code	Content
Blank	Without spacer
Z	With spacer (Specify type and location in MF specifications)

*1 : Specify spacer type and mounting position in manifold specifications. Stacked spacers are not compatible. Combination with blanking plate is not supported. Cannot be selected simultaneously with L-type push-in fitting upward.

18 Mount type

Code	Content
Blank	Direct mount type
R	DIN rail mount type

Model No. Notation (Manifold with solenoid valve) ; Base piping

Rechargeable battery compatible specification (For details, P. 157.)

Materials for air paths and sliding parts are restricted for use in the rechargeable battery manufacturing process.



7 P/R port position* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side (Wiring block side)
B	U side, D side
T	U side, D side, with intermediate supply/exhaust block

*1 : Specify the intermediate supply/exhaust block in the manifold specifications.

8 Wiring method inside base *1

Code	Content
Blank	Double wiring
S	Single wiring specifying single/double solenoid arrangement

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

10 Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : The combination of "E2" and PNP specifications is a custom-made product.

*2 : Compatible only with 4 Voltage "3".

11 Manual override * Multiple selections are not allowed.

Code	Content
Blank	Non-locking/locking common, with erroneous operation prevention cover
M1	Non-locking type, with erroneous operation prevention cover
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

13 Residual pressure release valve

Code	Content
Blank	No residual pressure release valve
Y1	With non-locking type residual pressure release valve
Y2	With locking type residual pressure release valve

*1 : Compatible only with 1 Switching position "3" and "4".

*2 : Compatible only with 11 Manual override "M2" and "M3".

14 Valve mounting screw type

Code	Content
Blank	Pan head machine screw with plus/minus
J	Hexagon socket head bolt

*1 : When 15 spacer option "Z" is selected, "J" cannot be selected.

16 Exhaust malfunction prevention valve

Code	Content
Blank	None
H	With exhaust malfunction prevention valve

*1 : 1 Switching position "3" and "5" cannot be selected. See P. 234 for the exhaust check valve.

*2 : Please specify the number of stations on the manifold specifications sheet.

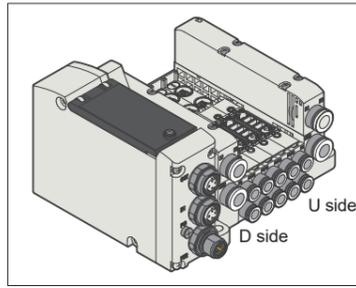
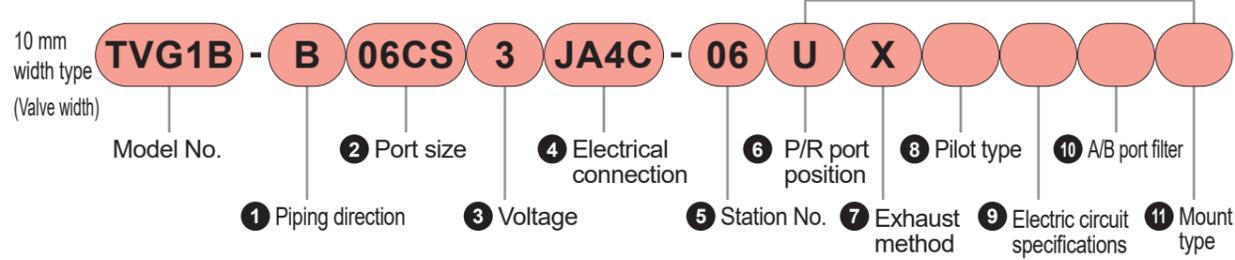
17 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

*1 : P port has a built-in filter.

Model No. Notation

Manifold base only; Base piping * Solenoid valves are not included.



2 Port size(A/B port)

• Metric fitting

Fitting type	A/B port	Code
Push-in	ø1.8	0ACS
	ø4	04CS
	ø6	06CS
L-type push-in fitting upward	ø1.8	0ACU
	ø4	04CU
	ø6	06CU
L-type push-in fitting downward	ø1.8	0ACD
	ø4	04CD
	ø6	06CD

• Inch Fitting

Fitting type	A/B port	Code
Push-in	ø1/8 inch	03LS
	ø5/32 inch	04LS
L-type push-in fitting upward	ø1/8 inch	C3LU
	ø5/32 inch	04LU

- *1 : L-type push-in fitting upward is not available for 3-position.
 *2 : The compatible tube for ø1.8 push-in fittings is "UP-9402-□□".
 *3 : Custom-made product.

1 Piping direction

Code	Content
B	Side piping

3 Voltage

Code	Content
1	100 VAC
3	24 VDC

*1 : 100 VAC is only compatible with 4 electrical connections "EA1C" and "GA1C".

4 Electrical connection

• Reduced wiring connection

Content	Output	Code
Centralized terminal block (M3 screw)	NPN	EA1A
	PNP	EA1B
	-	EA1C
Multi-connector	NPN	FA1A
	PNP	FA1B
	-	FA1C
D-sub connector	NPN	GA1A
	PNP	GA1B
	-	GA1C

• Serial transmission

Communication system	Output	Points	Code	
DeviceNet	NPN	16 points	JA1A	
	PNP		JA1B	
	NPN		JA1C	
	PNP		JA1D	
CC-Link	NPN	16 points	JA2C	
	PNP		JA2D	
EtherCAT	NPN	16 points	JA3C	
	PNP		JA3D	
EtherNet/IP	NPN	16 points	JA4C	
	PNP		JA4D	
CC-Link IEF Basic	NPN	16 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	ClassA	32 points	NPN	JA9C
			PNP	JA9D
	ClassB		NPN	JA9G
			PNP	JA9H
IO-Link Wireless	-	32 points	NPN	JB1C
			PNP	JB1D

5 Station No.

Code	Content
02	2 stations
to	to
16	16 stations

- *1 : Internal base wiring is all for double solenoid regardless of valve type mounted. Single solenoid mounted sections will have one solenoid blank number.
 *2 : Varies depending on reduced wiring connection specifications. Model-specific specifications (P. 8) please confirm.

7 Exhaust method

Code	Content
Blank	Common exhaust (R port is push-in fitting)
X	Built-in silencer (R port is plugged, exhaust is released to atmosphere)

*1 : Silencer is built in at position selected in P/R port position.

9 Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

- *1 : Combination of "E2" and PNP specification is a custom product.
 *2 : Compatible only with 3 Voltage "3".

11 Mount type

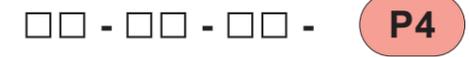
Code	Content
Blank	Direct mount type
R	DIN rail mount type

*1 : A standard length DIN rail is mounted. See P. 189 for the standard length calculation method.

Model No. Notation (Manifold base only) ; Base piping

Rechargeable battery compatible specification (For details, P. 157.)

- Materials for air paths and sliding parts are restricted for use in the rechargeable battery manufacturing process.



- When exhaust malfunction prevention valve is required, P. 55.

6 P/R port position (TVG1B : ø8)

* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side (Wiring block side)
B	U, D both sides

- *1 : P/R port fitting will be in the same direction as A/B port fitting.
 *2 : P port has a built-in filter.

8 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

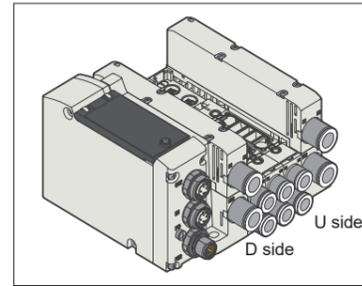
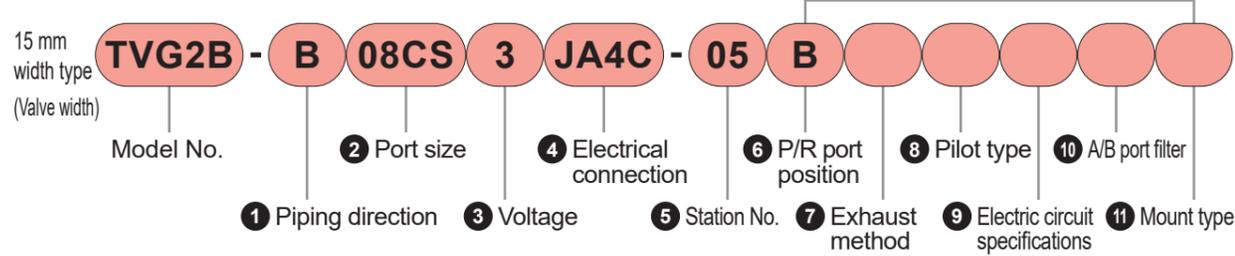
10 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

*1 : P port has a built-in filter.

Model No. Notation

Manifold base only; Base piping * Solenoid valves are not included.



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

Fitting type	A/B port	Code
Push-in	ø4	04CS
	ø6	06CS
	ø8	08CS
	ø10	10CS
L-type push-in fitting upward *1	ø6	06CU
	ø8	08CU
L-type push-in fitting downward	ø6	06CD
	ø8	08CD

• Inch Fitting

Fitting type	A/B port	Code
Push-in	ø1/4 inch	06LS
	ø5/16 inch	08LS
L-type push-in fitting upward *1	ø1/4 inch	06LU
	ø5/16 inch	08LU

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

1 Piping direction

Code	Content
B	Side piping

3 Voltage

Code	Content
1	100 VAC
3	24 VDC

*1 : 100 VAC is only compatible with 4 electrical connections "EA1C" and "GA1C".

4 Electrical connection • Reduced wiring

Content	Output	Code
Centralized terminal block (M3 screw)	NPN	EA1A
	PNP	EA1B
	-	EA1C
Multi-connector	NPN	FA1A
	PNP	FA1B
D-sub connector	NPN	GA1A
	PNP	GA1B
	-	GA1C

• Serial transmission

Communication system	Output	Points	Code	
DeviceNet	NPN	16 points	JA1A	
	PNP		JA1B	
	NPN		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	ClassA	32 points	JA9C	
			PNP	JA9D
	ClassB		NPN	JA9G
			PNP	JA9H
IO-Link Wireless	32 points	NPN	JB1C	
		PNP	JB1D	

5 Station No.

Code	Content
02	2 stations
to	to
16	16 stations

*1 : Internal base wiring is all for double solenoid regardless of valve type mounted. Single solenoid mounted sections will have one solenoid blank number.

*2 : Varies depending on reduced wiring connection specifications. Please confirm Model-specific specifications (P. 8).

7 Exhaust method

Code	Content
Blank	Common exhaust (R port is push-in fitting)
X	Built-in silencer (R port is plugged, exhaust is released to atmosphere)

*1 : Silencer is built in at location selected in 6 P/R port position.

9 Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : Combination of "E2" and PNP specification is a custom product.

*2 : Compatible only with 3 Voltage "3".

11 Mount type

Code	Content
Blank	Direct mount type
R	DIN rail mount type

*1 : Standard length DIN rail is assembled. For standard length calculation method P. 189.

Model No. Notation (Manifold base only) ; Base piping

Rechargeable battery compatible specification (For details, P. 157.)

Material restriction on air passage and sliding parts to enable use in rechargeable battery manufacturing process



When exhaust malfunction prevention valve is required, P. 55.

6 P/R port position (TVG2B : ø10)

* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side (Wiring block side)
B	U, D both sides

*1 : P/R port fitting will be in the same direction as A/B port fitting.
*2 : P port has a built-in filter.

8 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

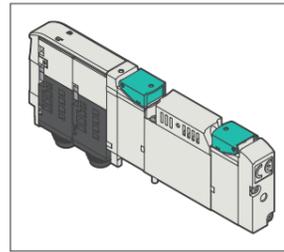
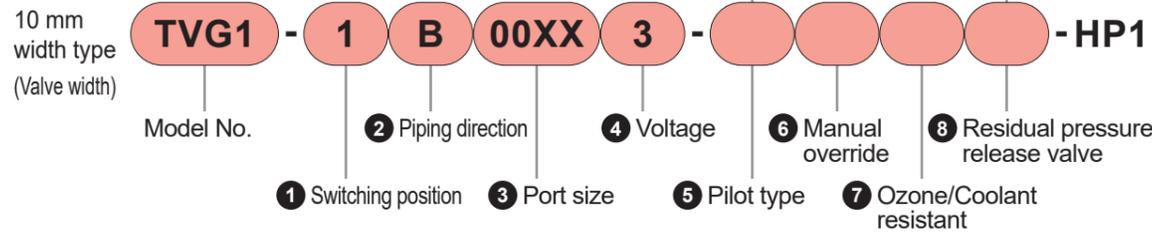
10 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

*1 : P port has a built-in filter.

Model No. Notation

Discrete solenoid valve (for base mounting);Base piping



Accessories
 • Valve mounting screws are included.
 • Gasket is included with manifold base.

1 Switching position

Code	Content	
1	2-position single	
2	2-position double	
3	3-position closed center	
4	3-position exhaust center	
5	3-position pressure center	
*1 A	Dual 3-port valve built-in type	A side valve:Normally closed B side valve:Normally closed
*1 B		A side valve:Normally open B side valve:Normally open
*1 C		A side valve:Normally closed B side valve:Normally open

*1 : Only internal pilot compatible. Dimensions are identical to 2-position double.

2 Piping direction

Code	Content
B	Side piping

3 Port size

Code	Content
00XX	Discrete solenoid valve for base mounting

4 Voltage

Code	Content
1	100 VAC
3	24 VDC

5 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

6 Manual override* Multiple selections are not allowed.

Code	Content	
Blank	Non-locking/locking common, with erroneous operation prevention cover	
M1	Non-locking type, with erroneous operation prevention cover	
M2	Non-locking/locking common, tool operation type, without cover	
M3	Non-locking type, tool operation type, without cover	

7 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

8 Residual pressure release valve

Code	Content	
Blank	No residual pressure release valve	
*1 *2 Y1	With non-locking type residual pressure release valve	
*1 *2 Y2	With locking type residual pressure release valve	

*1 : 1 Switching position "3" "4" Only Compatible.
 *2 : 5 Manual override "M2" "M3" Only Compatible.

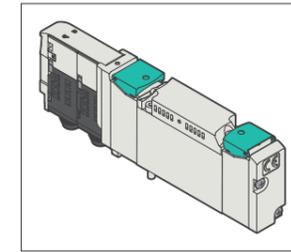
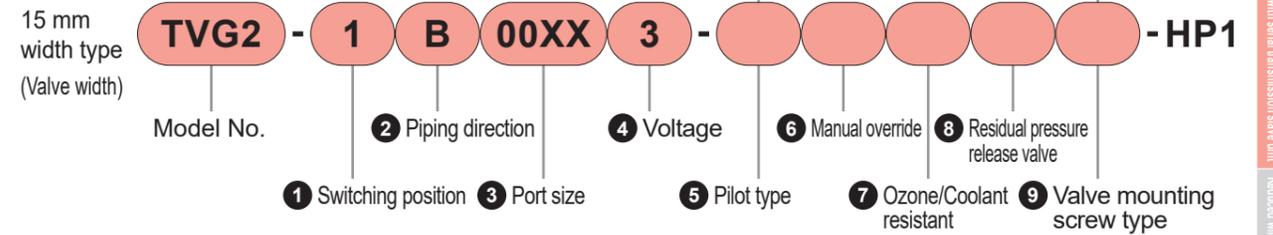
Rechargeable battery compatible specification (For details, P. 157.)

● Materials for air paths and sliding parts are restricted for use in the rechargeable battery manufacturing process.



Model No. Notation

Discrete solenoid valve (for base mounting);Base piping



Accessories
 • Valve mounting screws are included.
 • Gasket is included with manifold base.

1 Switching position

Code	Content	
1	2-position single	
2	2-position double	
3	3-position closed center	
4	3-position exhaust center	
5	3-position pressure center	
*1 A	Dual 3-port valve built-in type	A side valve:Normally closed B side valve:Normally closed
*1 B		A side valve:Normally open B side valve:Normally open
*1 C		A side valve:Normally closed B side valve:Normally open

*1 : Only internal pilot compatible. Dimensions are identical to 2-position double.

2 Piping direction

Code	Content
B	Side piping

3 Port size

Code	Content
00XX	Discrete solenoid valve for base mounting

4 Voltage

Code	Content
1	100 VAC
3	24 VDC

5 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

6 Manual override* Multiple selections are not allowed.

Code	Content	
Blank	Non-locking/locking common, with erroneous operation prevention cover	
M1	Non-locking type, with erroneous operation prevention cover	
M2	Non-locking/locking common, tool operation type, without cover	
M3	Non-locking type, tool operation type, without cover	

7 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

8 Residual pressure release valve

Code	Content	
Blank	No residual pressure release valve	
*1 *2 Y1	With non-locking type residual pressure release valve	
*1 *2 Y2	With locking type residual pressure release valve	

*1 : Compatible only with 1 Switching position "3" and "4".
 *2 : Compatible only with 5 Manual override "M2" and "M3".

9 Valve mounting screw type

Code	Content
Blank	Pan head machine screw with plus/minus
J	Hexagon socket head bolt

Accessories

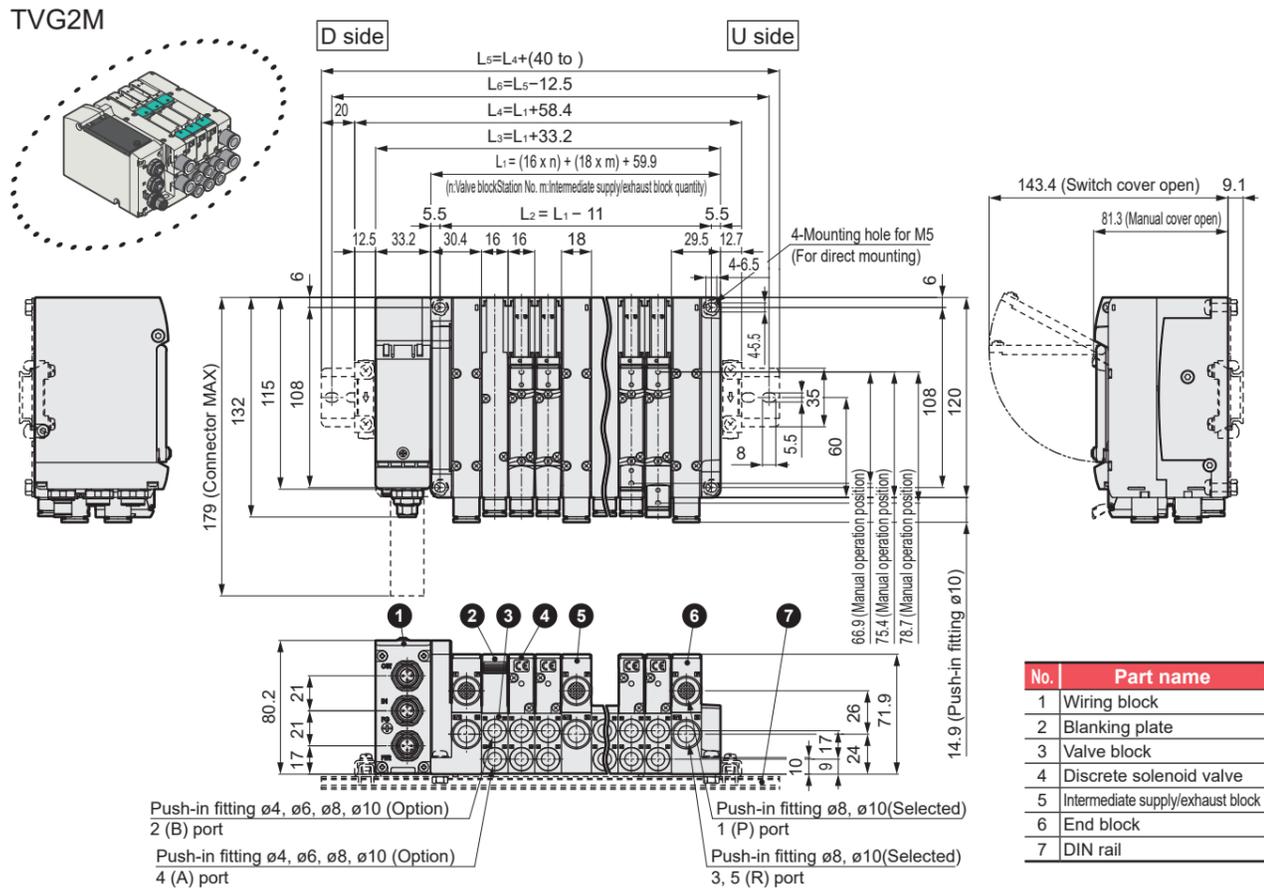
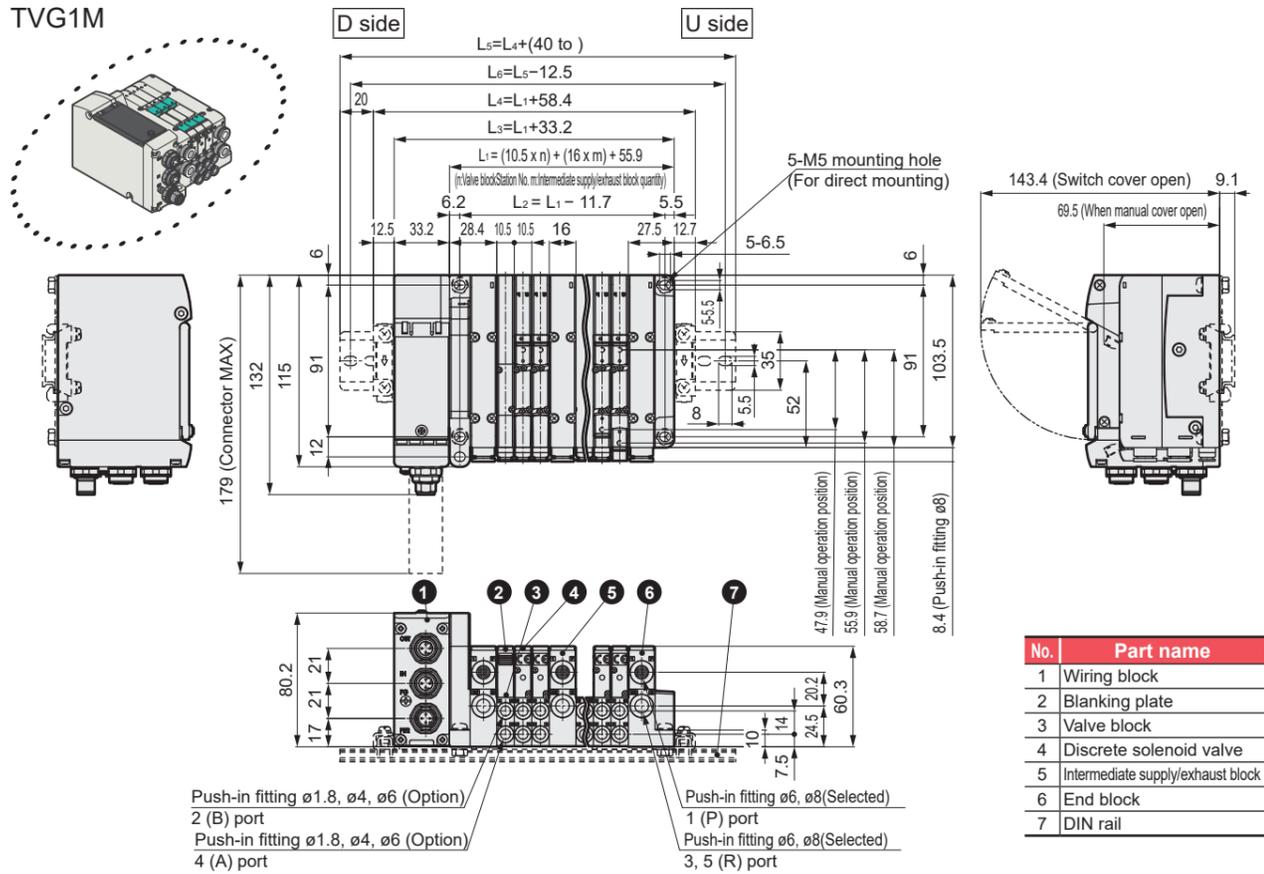
Rechargeable battery compatible specification (For details, P. 157.)

● Materials for air paths and sliding parts are restricted for use in the rechargeable battery manufacturing process.



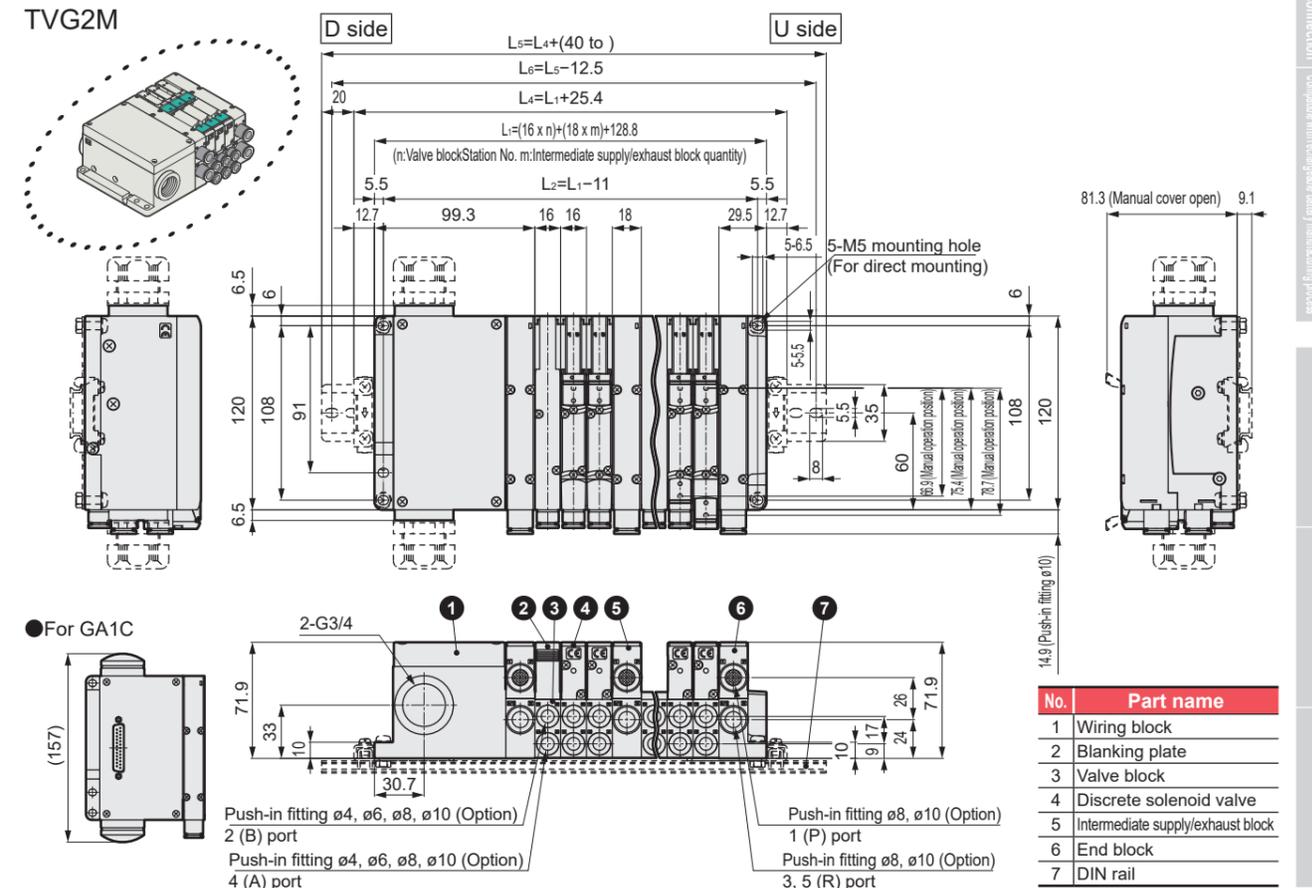
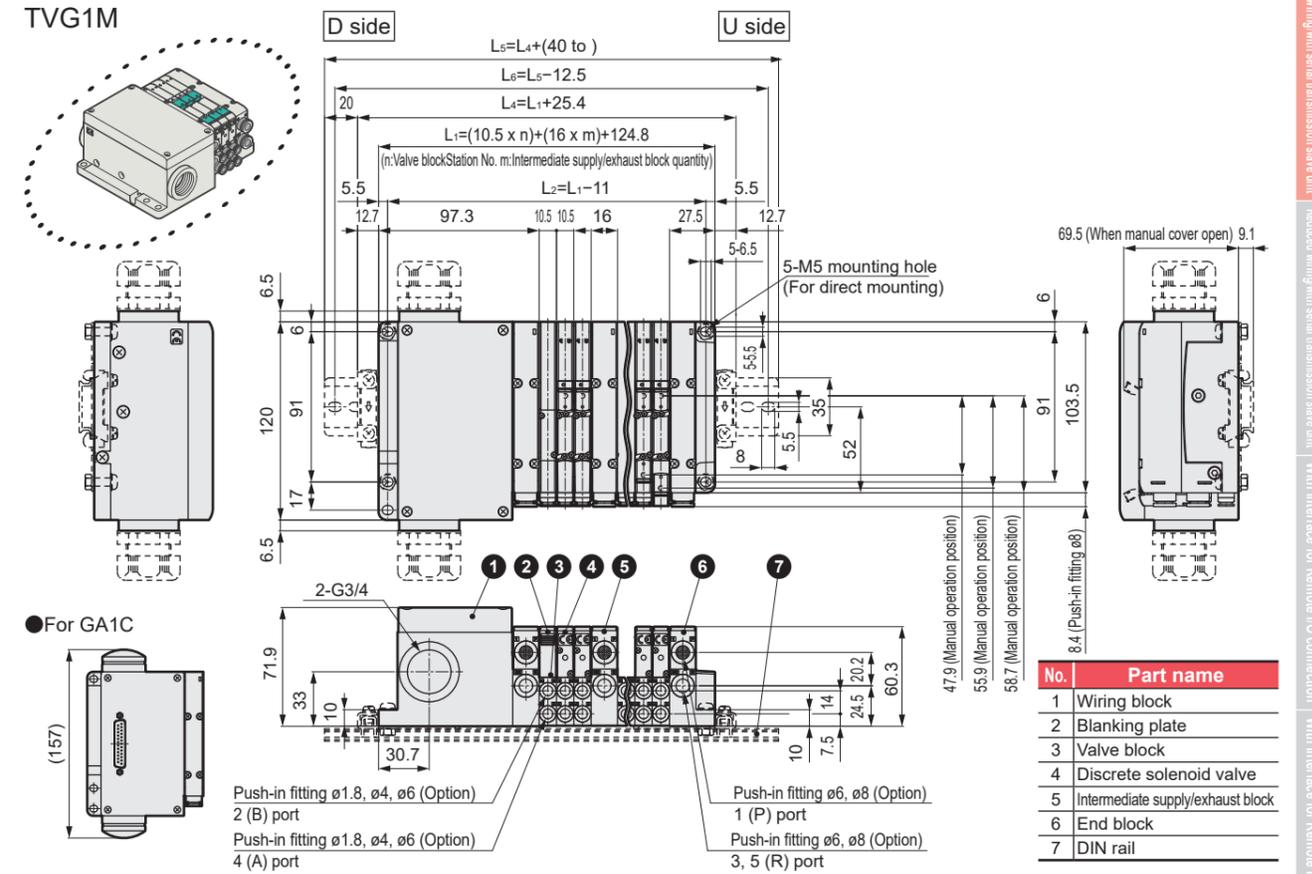
• When exhaust malfunction prevention valve is required, P. 55.

Dimensions (Serial transmission Device unit JA□ JB□)



Dimensions ; Base piping

Dimensions (Centralized terminal block EA1□)(D-sub connector GA1C(100 VAC Specifications))

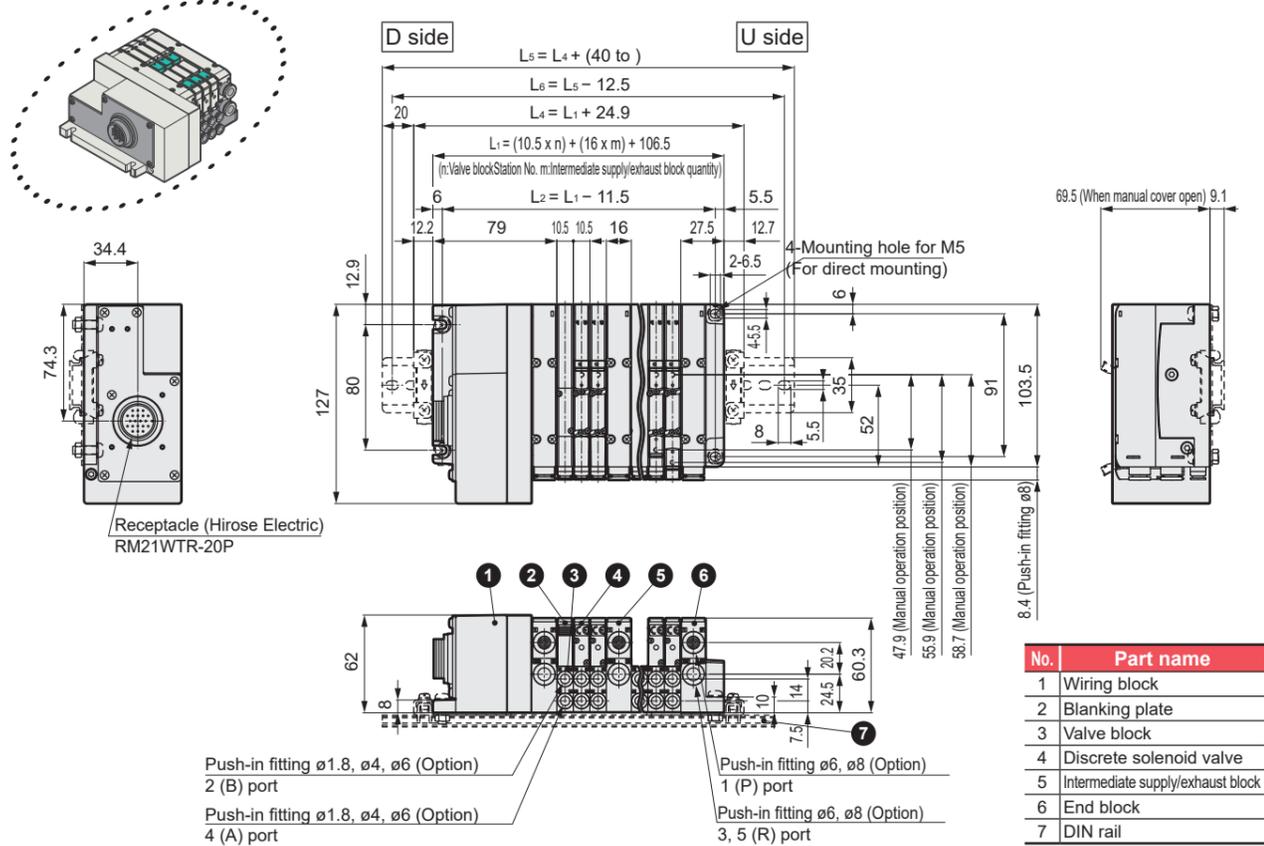


TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG-P4
Manifold specifications
Technical data
Safety precautions

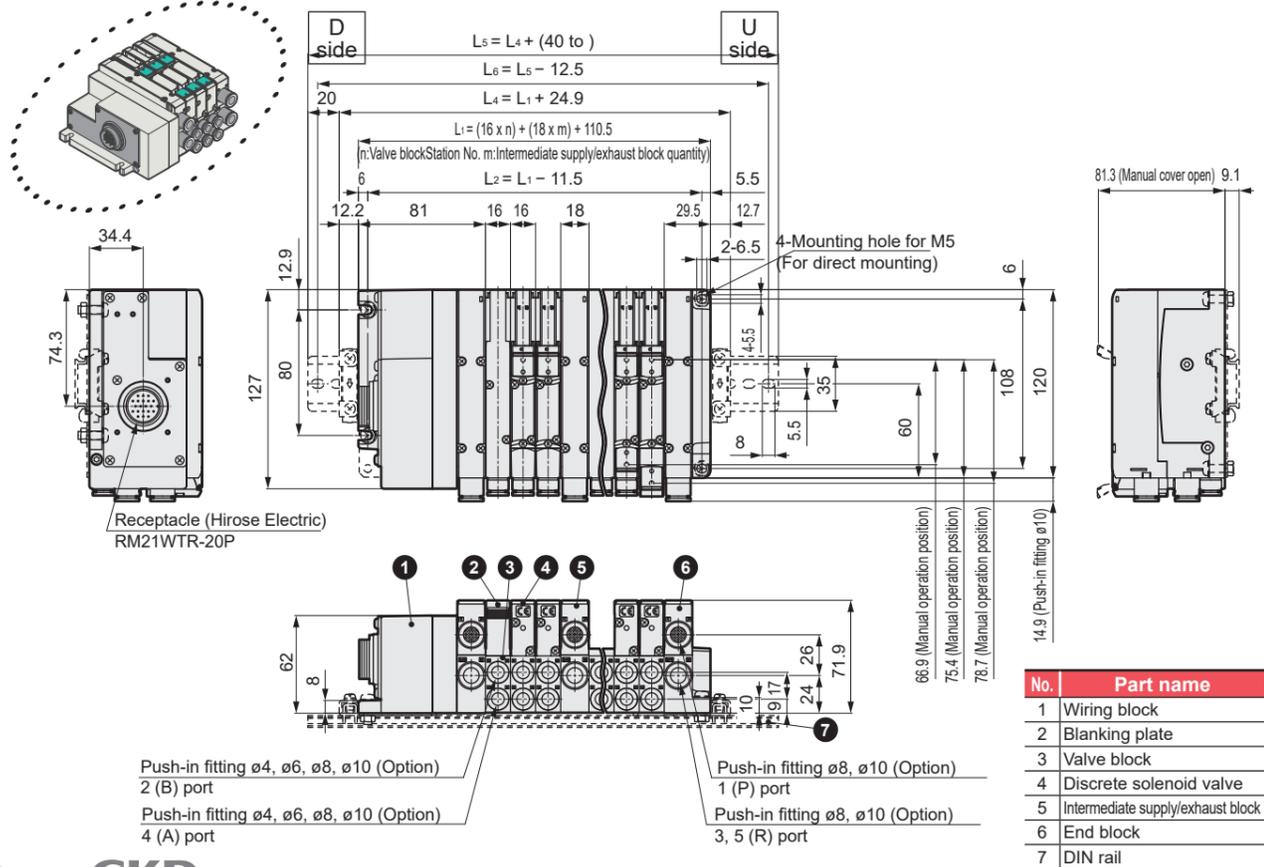
TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG-P4
Manifold specifications
Technical data
Safety precautions

Dimensions (Multi-connector FA1□)

TVG1M



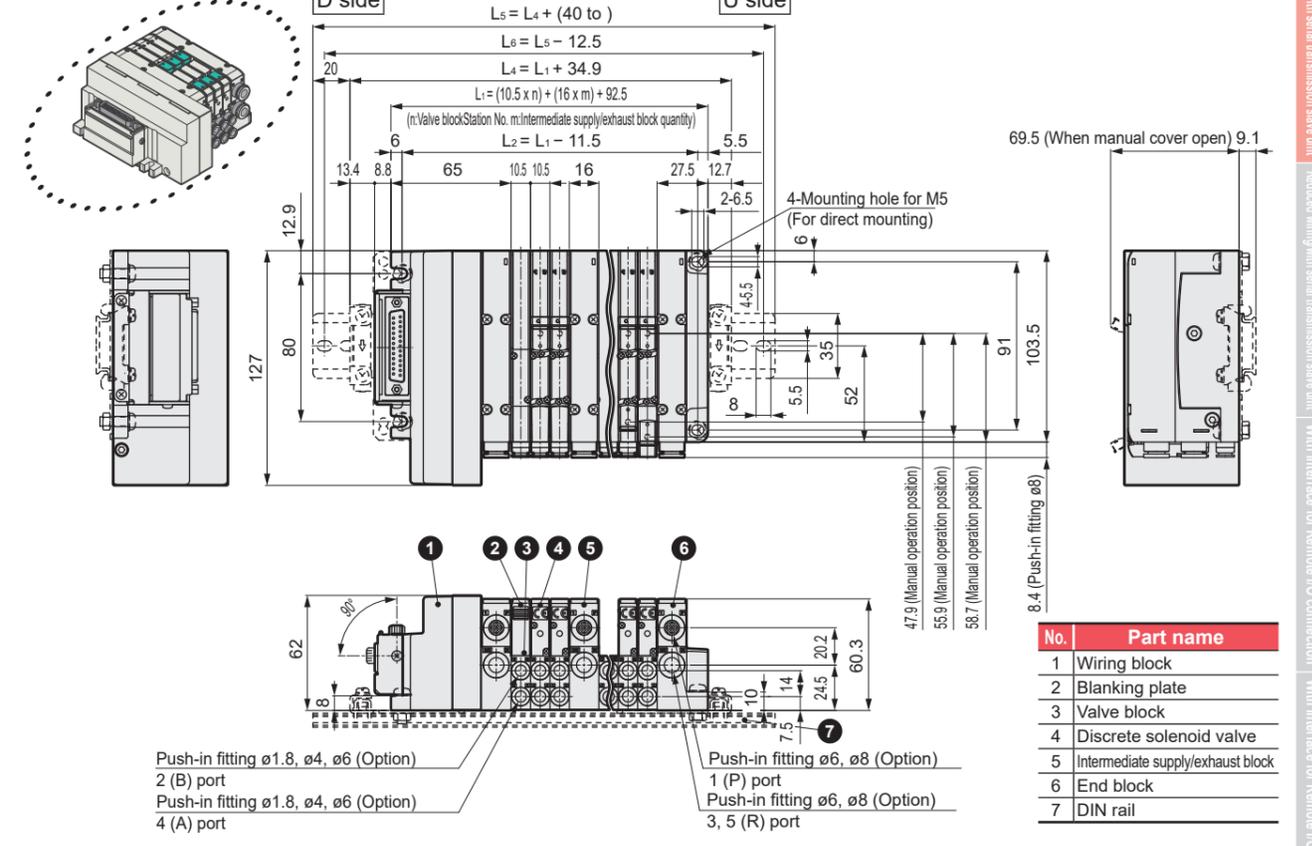
TVG2M



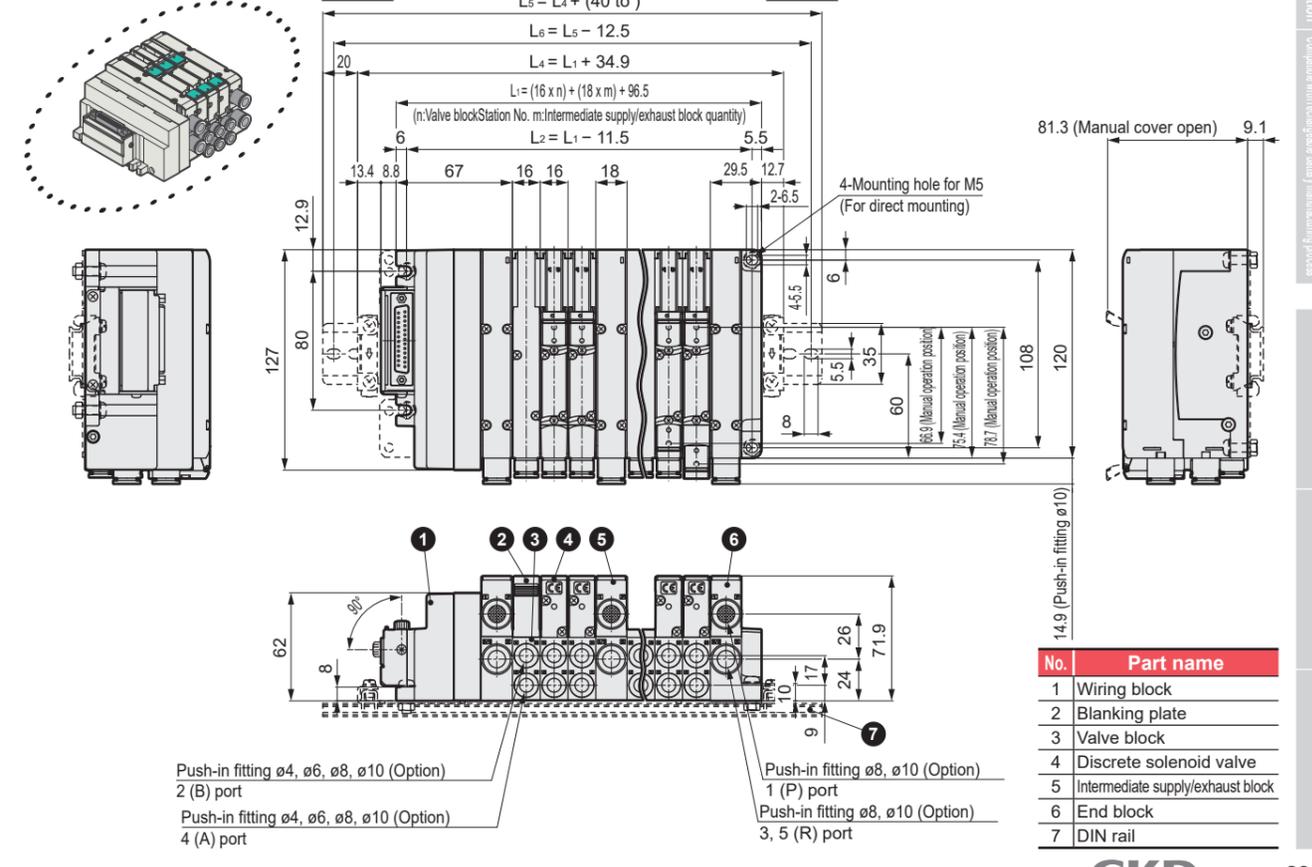
Dimensions ; Base piping

Dimensions (D-sub connector GA1A/B) * For GA1C (100 VAC specifications), the external dimensions are the same as EA1□ (See P. 21).

TVG1M



TVG2M



TVG Base piping
 Reduced wiring with serial transmission slave unit

TVG Direct piping
 Reduced wiring with serial transmission slave unit

TVG Base piping
 With interface for Remote I/O connection

TVG Direct piping
 With interface for Remote I/O connection

TVG Base piping
 With interface for Remote I/O connection

TVG Direct piping
 With interface for Remote I/O connection

TVG-P4
 Compatible with water-gas/biogas/biohydrogen process

Manifold specifications

Technical data

Safety precautions

TVG Base piping
 Reduced wiring with serial transmission slave unit

TVG Direct piping
 Reduced wiring with serial transmission slave unit

TVG Base piping
 With interface for Remote I/O connection

TVG Direct piping
 With interface for Remote I/O connection

TVG Base piping
 With interface for Remote I/O connection

TVG Direct piping
 With interface for Remote I/O connection

TVG-P4
 Compatible with water-gas/biogas/biohydrogen process

Manifold specifications

Technical data

Safety precautions

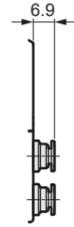
Dimensions

TVG1M

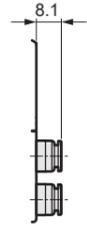
- Fitting straight
- $\phi 1.8$ (OACS)



- $\phi 4$ (O4CS)



- $\phi 6$ (O6CS)



- Fitting straight, one-side plug

- $\phi 1.8$ (OACA)



- $\phi 4$ (O4CA)



- $\phi 6$ (O6CA)



- $\phi 1.8$ (OACF)



- $\phi 4$ (O4CF)

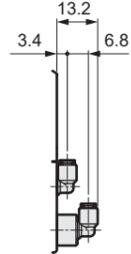


- $\phi 6$ (O6CF)

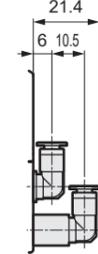


- Fitting L-shape (upward)

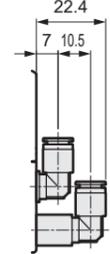
- $\phi 1.8$ (OACU)



- $\phi 4$ (O4CU)

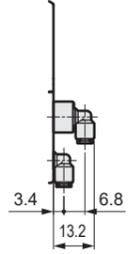


- $\phi 6$ (O6CU)



- Fitting L-shape (downward)

- $\phi 1.8$ (OACD)



- $\phi 4$ (O4CD)



- $\phi 6$ (O6CD)

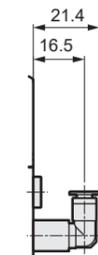


- Fitting L-shape (upward), one-side plug

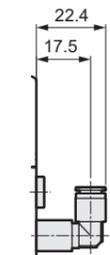
- $\phi 1.8$ (OACB)



- $\phi 4$ (O4CB)



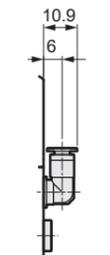
- $\phi 6$ (O6CB)



- $\phi 1.8$ (OACG)



- $\phi 4$ (O4CG)



- $\phi 6$ (O6CG)

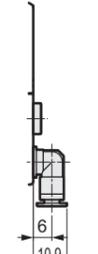


- Fitting L-shape (downward), one-side plug

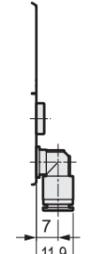
- $\phi 1.8$ (OACC)



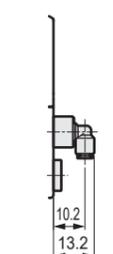
- $\phi 4$ (O4CC)



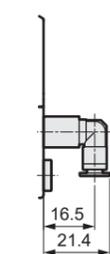
- $\phi 6$ (O6CC)



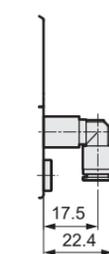
- $\phi 1.8$ (OACH)



- $\phi 4$ (O4CH)



- $\phi 6$ (O6CH)



Dimensions

TVG1M

- Fitting straight
- $\phi 1/8$ Inch (O3LS)



- $\phi 5/32$ Inch (O4LS)



- Fitting straight, one-side plug
- $\phi 1/8$ Inch (O3LA)



- $\phi 5/32$ Inch (O4LA)



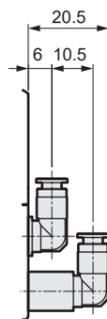
- $\phi 1/8$ Inch (O3LF)



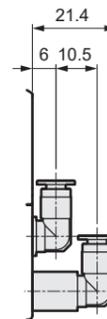
- $\phi 5/32$ Inch (O4LF)



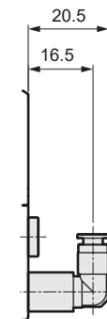
- Fitting L-shape (upward)
- $\phi 1/8$ Inch (O3LU)



- $\phi 5/32$ Inch (O4LU)



- Fitting L-shape (upward), one-side plug
- $\phi 1/8$ Inch (O3LB)



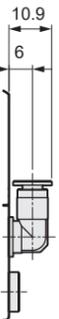
- $\phi 5/32$ Inch (O4LB)



- $\phi 1/8$ Inch (O3LG)



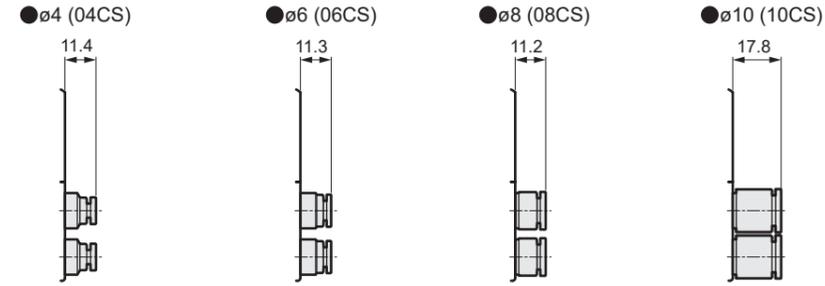
- $\phi 5/32$ Inch (O4LG)



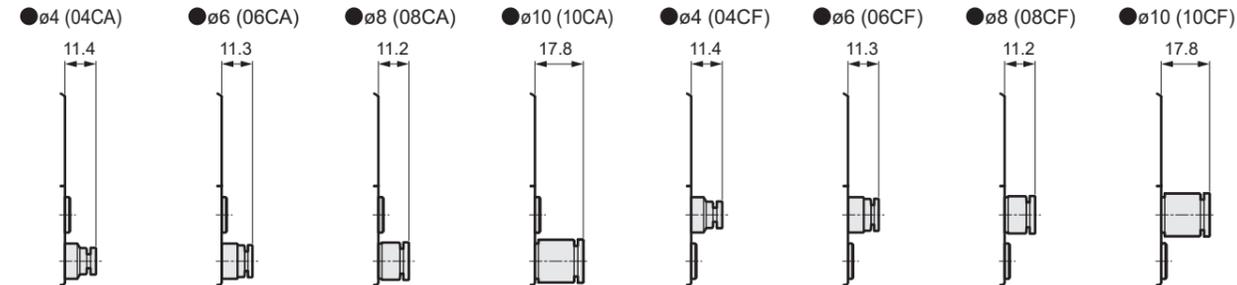
Dimensions

TVG2M

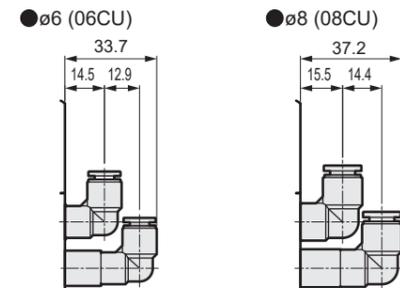
● Fitting straight



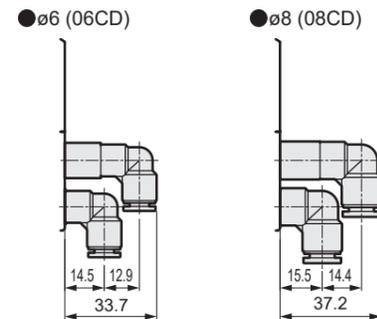
● Fitting straight, one-side plug



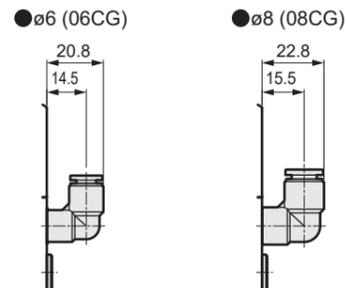
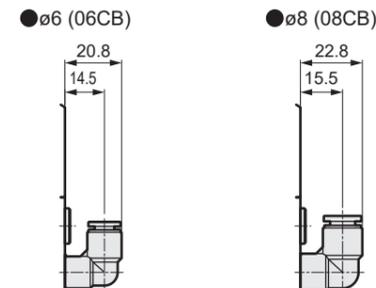
● Fitting L-shape (upward)



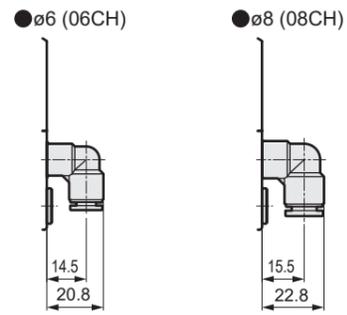
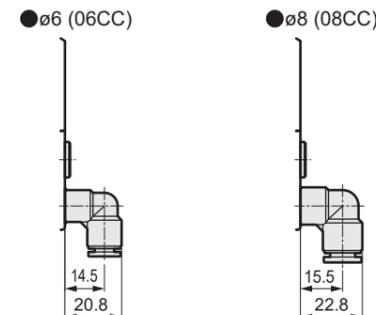
● Fitting L-shape (downward)



● Fitting L-shape (upward), one-side plug



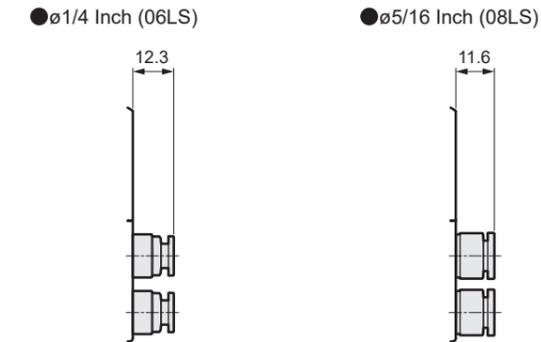
● Fitting L-shape (downward), one-side plug



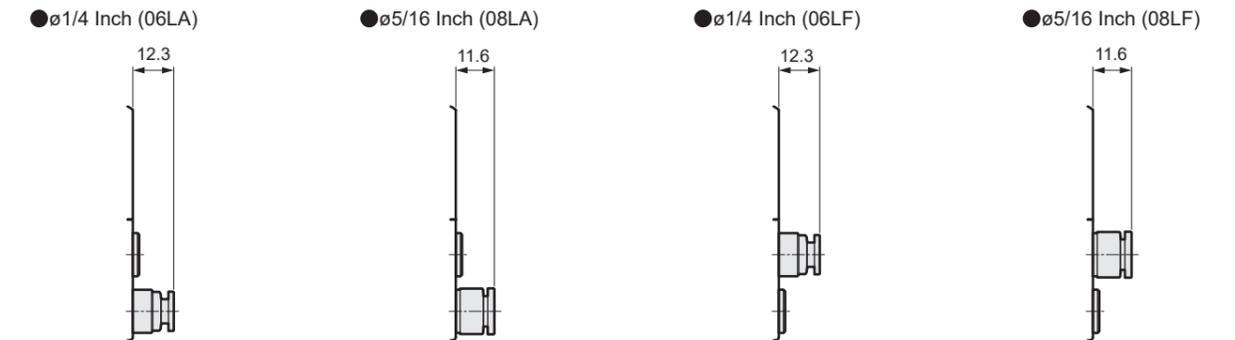
Dimensions

TVG2M

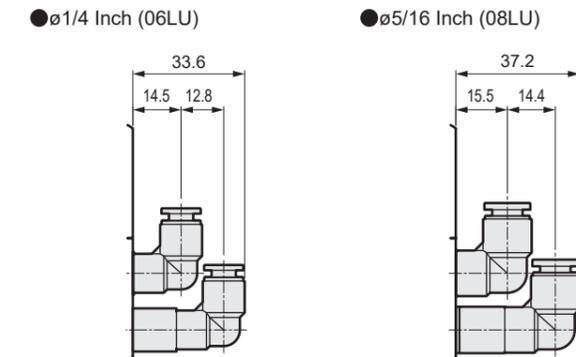
● Fitting straight



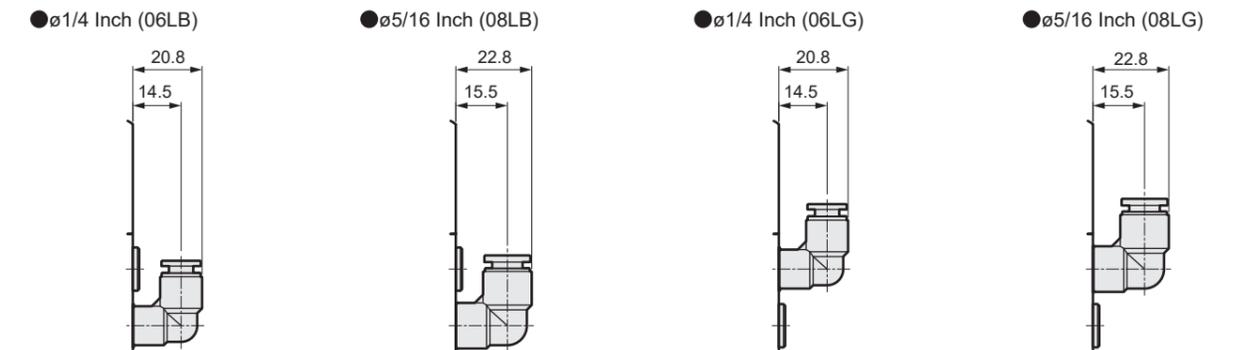
● Fitting straight, one-side plug



● Fitting L-shape (upward)

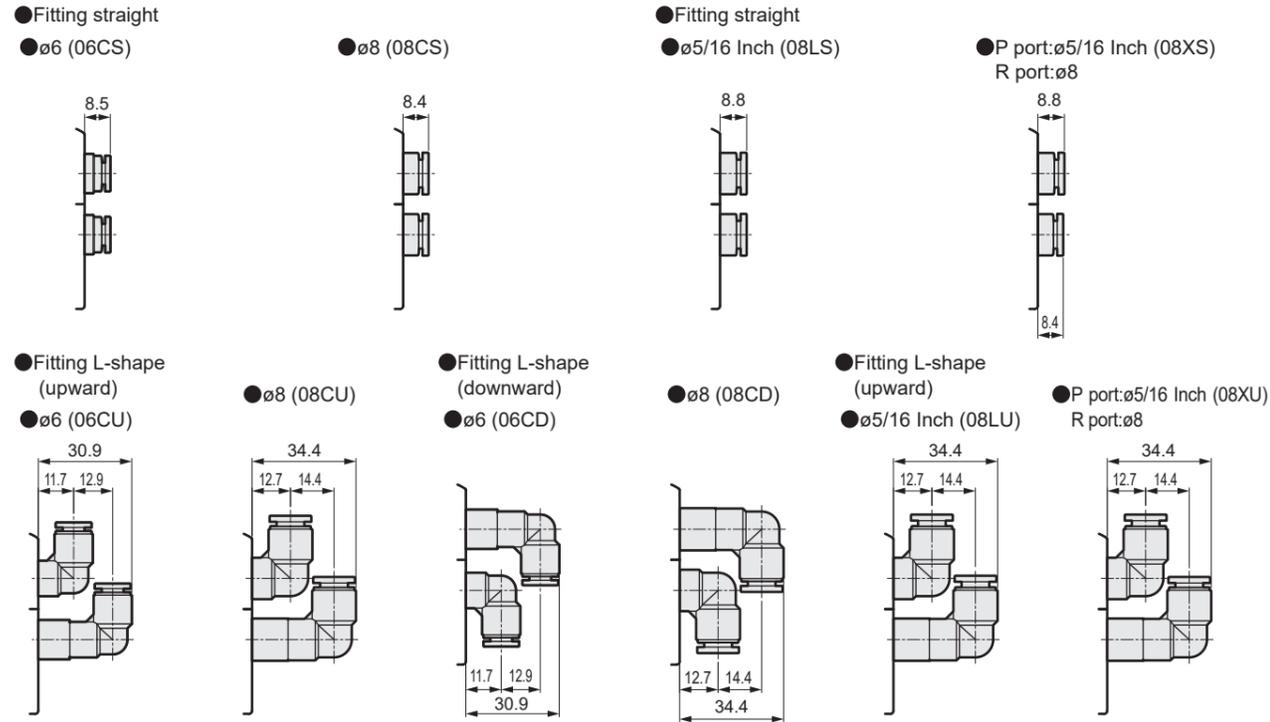


● Fitting L-shape (upward), one-side plug

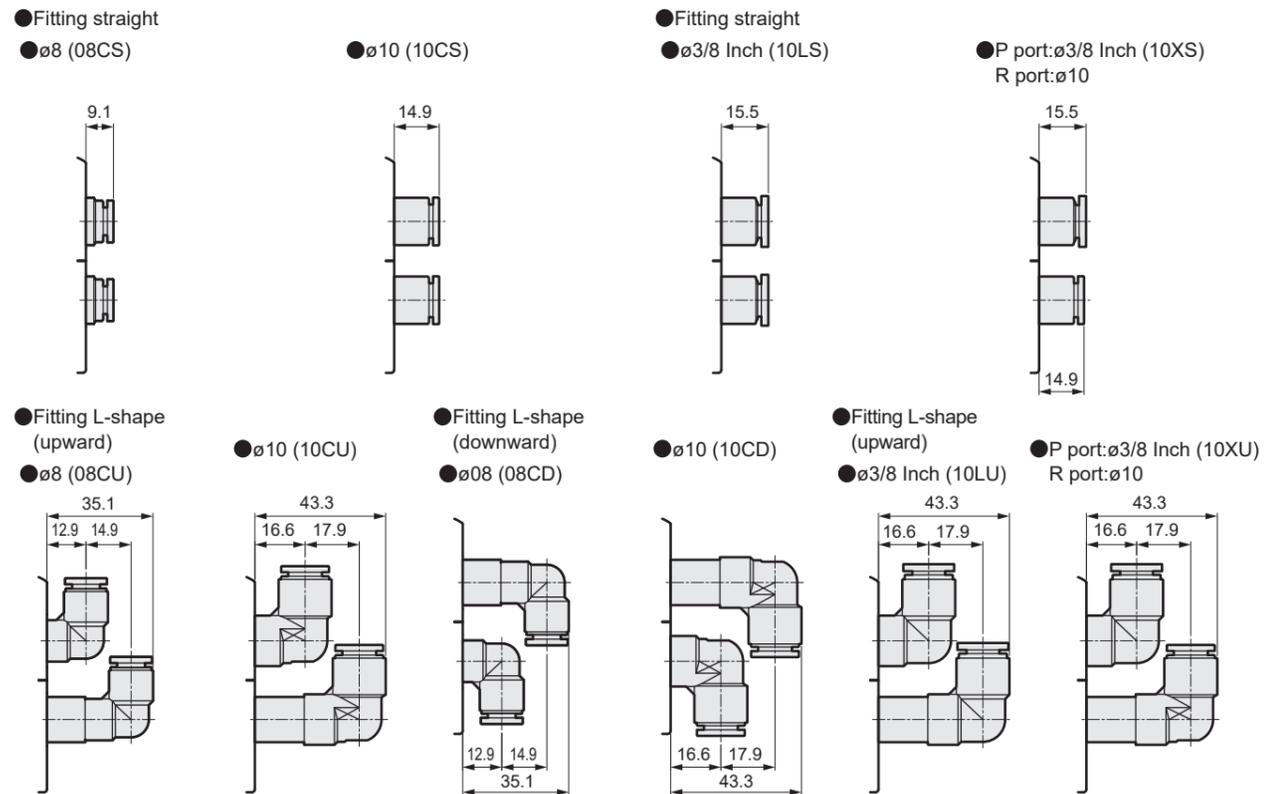


Dimensions

TVG1M Supply/exhaust block



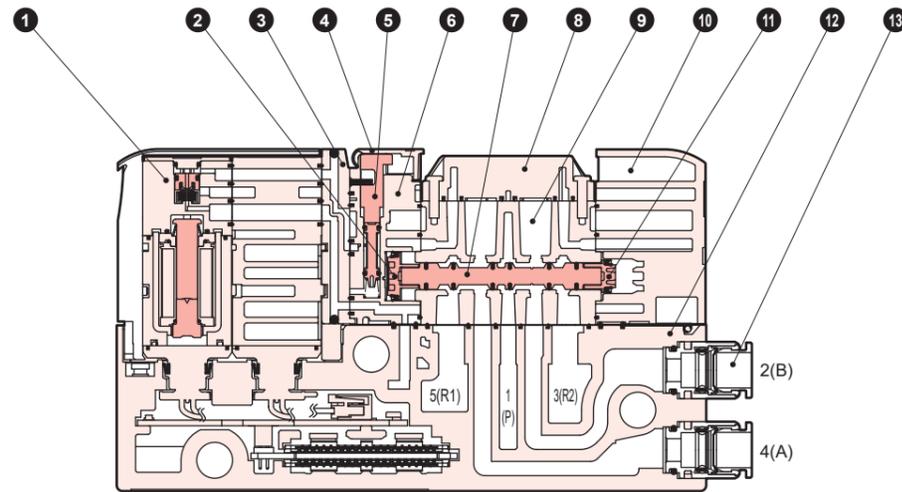
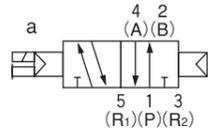
TVG2M Supply/exhaust block



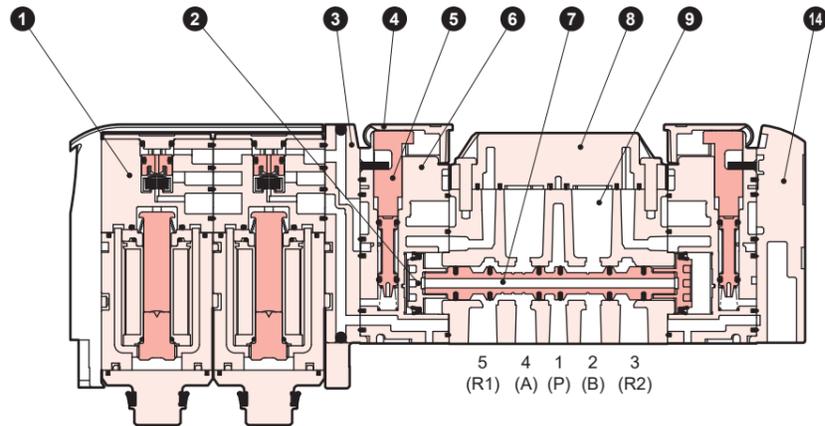
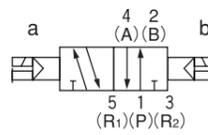
MEMO

Internal structure and parts list

●2-position single



●2-position double



Main parts list

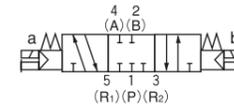
No.	Part name	Material	No.	Part name	Material
1	Coil assembly	-	8	Plate	Resin
2	Piston D assembly	-	9	Body	Aluminum alloy die-casting
3	Pilot plate	Resin	10	Piston chamber S	Resin
4	Manual protection cover	Resin	11	Piston S assembly	-
5	Manual override	Resin	12	Valve block	Resin
6	Piston chamber	Resin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

Internal structure and parts list ; Base piping

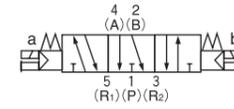
Internal structure and parts list

●3-position

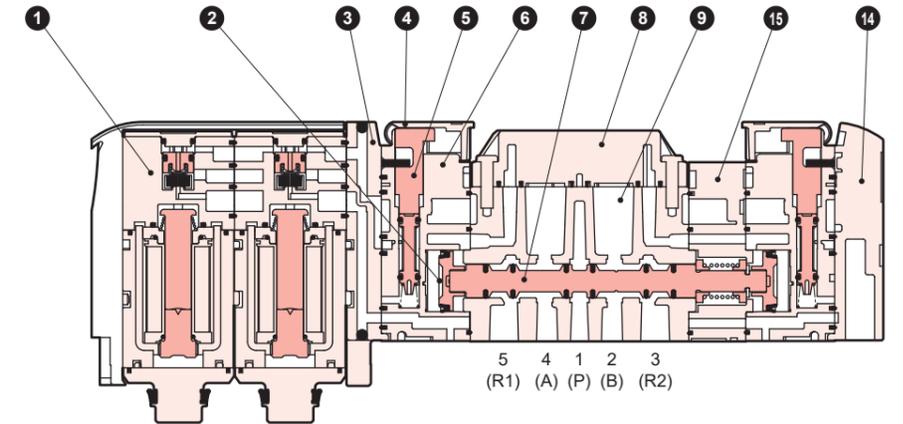
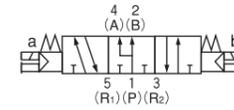
Closed center



Exhaust center

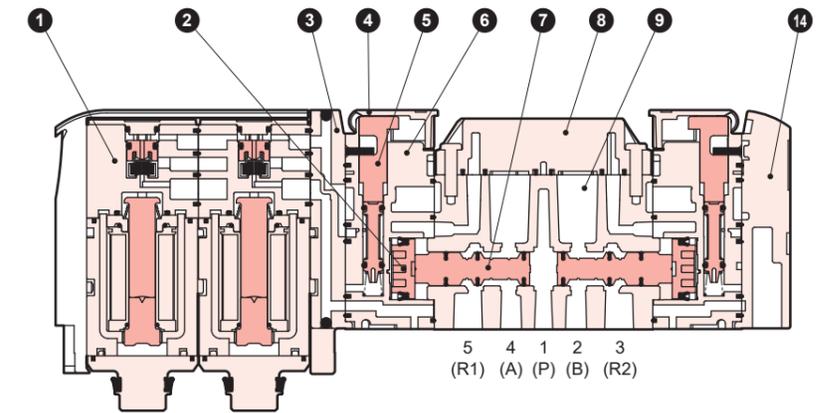
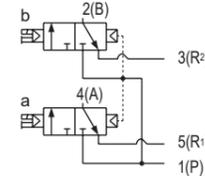


Pressure center



●Dual 3-port valve built-in type

A side valve:NC type
B side valve:NC type

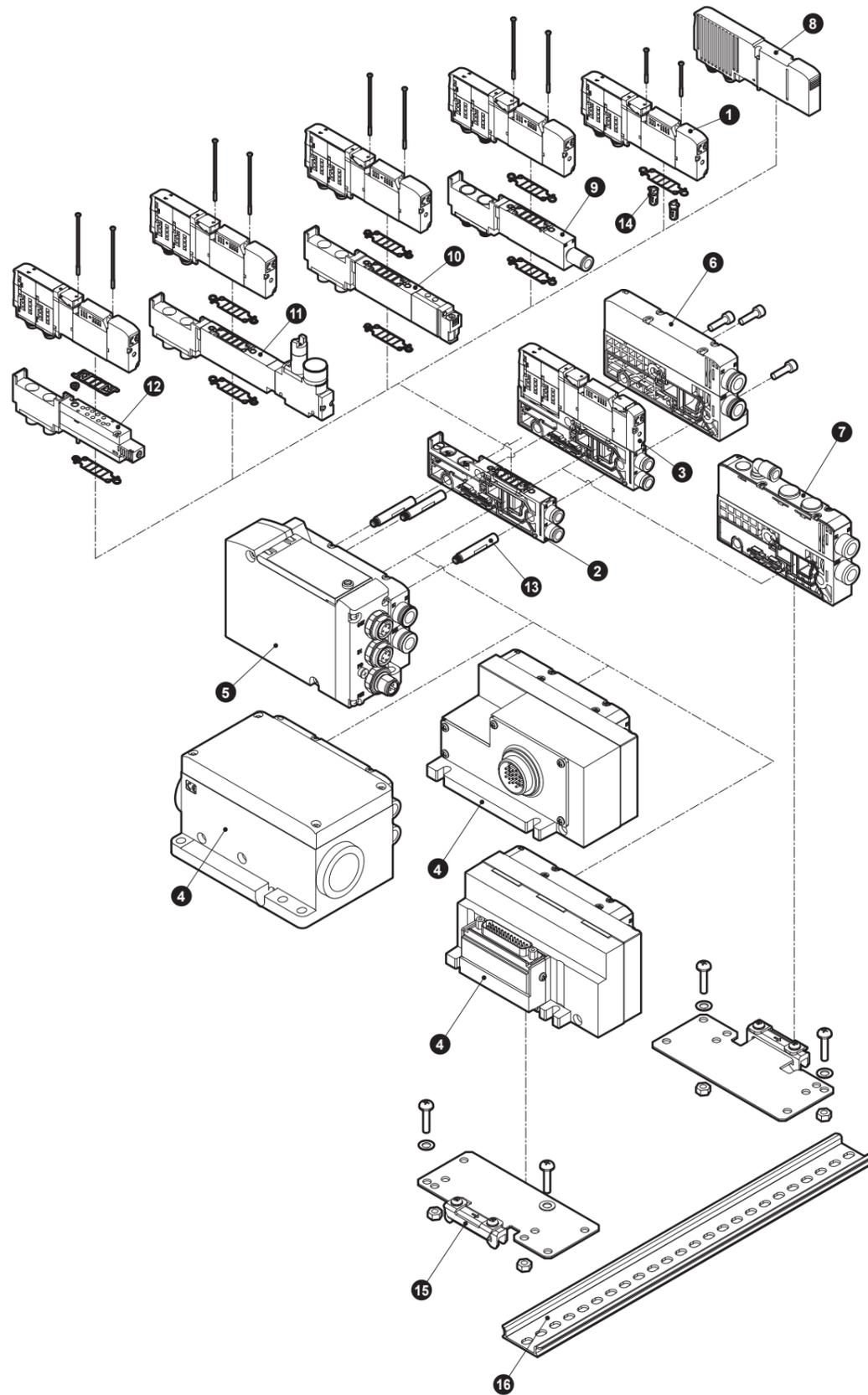


Main parts list

No.	Part name	Material	No.	Part name	Material
1	Coil assembly	-	9	Body	Aluminum alloy die-casting
2	Piston D assembly	-	10	Piston chamber S	Resin
3	Pilot plate	Resin	11	Piston S assembly	-
4	Manual protection cover	Resin	12	Valve block	Resin
5	Manual override	Resin	13	Cartridge push-in fitting	-
6	Piston chamber	Resin	14	Cap	Resin
7	Spool assembly	-	15	Body block	Resin
8	Plate	Resin			

Block manifold:Component configuration Base piping

Since it can be assembled easily and freely, increasing or decreasing the number of stations and maintenance are easy.



No.	Part name	Model No. example	Remarks	Page
1	Solenoid valve only (Base mounted)	TVG1-1B00XX3-HP1	A wide variety of solenoid valves are available. It is also possible to mix solenoid valves with different switching position classifications in the same manifold.	P. 18
2	Valve block	TVG1P-VB-06CS3	This block serves as the base for the solenoid valve. It can be arranged according to the required number of stations of solenoid valves. However, the maximum number of stations is determined by the wiring method. (P. 8,P. 108.) The flow path inside the manifold can also be partitioned by selecting an option.	P. 40
3	Valve block with solenoid valve	TVG1P-1B06CS3-HP1	-	P. 36
4	Wiring block (Terminal block box) Multi-connector D-sub connector	TVG1P-TB-08CS-EA1	This block performs electrical wiring to the manifold as well as air supply and exhaust.	P. 34
5	Wiring block (Serial transmission)	TVG1P-TB-08CS-JA1C		P. 34
6	End block	TVG1P-EB-08CS	This block supplies and exhausts air to the manifold. Install it on the opposite side of the wiring block.	P. 45
7	Intermediate supply/exhaust block	TVG1P-QB-08CS	This block supplies and exhausts air to the manifold. Use this when there is concern about insufficient supply flow rate when the number of valve stations increases.	P. 46
8	Blanking plate	TVG1P-BP	Assemble to a spare valve block in preparation for adding solenoid valves later.	P. 55
9	Supply spacer	TVG1P-P-06CS	Use this when supplying different pressures for each station.	P. 48
10	Exhaust spacer	TVG1P-R-06CS	Use this when exhausting individually. Use this to increase exhaust capacity and prevent malfunction due to exhaust back pressure.	P. 48
11	Perfect spacer	TVG1P-PC	Use this for intermediate stop and drop prevention of the cylinder.	P. 50
12	Spacer type regulator	TVG1P-SR-P-G1	Pressure can be adjusted individually for each station.PPort,A port, B port decompression types are available.	P. 51
13	In-stop valve spacer	TVG1P-IS	Air supply can be shut off individually for each station.	P. 52
14	Tie rod	TVG1P-TR-05	TVG1 is a set of 3, and TVG2 is a set of 2.	P. 44
15	Malfunction prevention valve	TVG1P-CHECK-VALVE	Prevents cylinder malfunction (jumping out phenomenon) due to exhaust back pressure.	P. 55
16	DIN rail mounting bracket kit	TVG1P-D	Direct mount type manifolds can be changed to DIN rail mount type.	P. 54
17	DIN rail	N4GR-BAA200	Standard length calculation method isPage 189.	P. 54

Weight

TVG1

Part name	Model No.	Weight [g]
Solenoid valve only (Base mounted)	TVG1-1B00XX3-HP1	55
	TVG1-2B00XX3-HP1	63
	TVG1-3/4/5B00XX3-HP1	66
	TVG1-A/B/CB00XX3-HP1	63
Blanking plate	TVG1P-BP	40
End block	TVG1P-EB-08CS	159
Valve block	TVG1P-VB-06CS3	31
	TVG1P-TB-08CS-E□	518
	TVG1P-TB-08CS-F□	850
Wiring block	TVG1P-TB-08CS-G□	706
	TVG1P-TB-08CS-J□	456
	TVG1P-TB-08CS-K□	280

TVG2

Part name	Model No.	Weight [g]
Solenoid valve only (Base mounted)	TVG2-1B00XX3-HP1	95
	TVG2-2B00XX3-HP1	101
	TVG2-3/4/5B00XX3-HP1	110
	TVG2-A/B/CB00XX3-HP1	101
Blanking plate	TVG2P-BP	69
End block	TVG2P-EB-10CS	224
Valve block	TVG2P-VB-08CS3	66
	TVG2P-TB-10CS-E□	580
Wiring block	TVG2P-TB-10CS-F□	912
	TVG2P-TB-10CS-G□	768
	TVG2P-TB-10CS-J□	529
	TVG2P-TB-10CS-K□	356

Parts list

TVG1

Part name	Model No.
Push-in fitting ø1.8	4G1R-JOINT-C18
Push-in fitting ø4	4G1R-JOINT-C4
Push-in fitting ø6	4G1R-JOINT-C6
L-shape push-in fitting ø1.8	4G1R-JOINT-CL18,CLL18
L-shape push-in fitting ø4	4G1R-JOINT-CL4,CLL4
L-shape push-in fitting ø6	4G1R-JOINT-CL6,CLL6
Push-in fitting ø1/8 inch	4G1R-JOINT-C3N
Push-in fitting ø5/32 inch	4G1R-JOINT-C4N
ø1/8 inch Push-in fittingLType	*1 4G1R-JOINT-CL3N,CLL3N
ø5/32 inch Push-in fittingLType	*1 4G1R-JOINT-CL4N,CLL4N
Plug cartridge	4G1R-JOINT-CPG

*1 : Custom-made product.

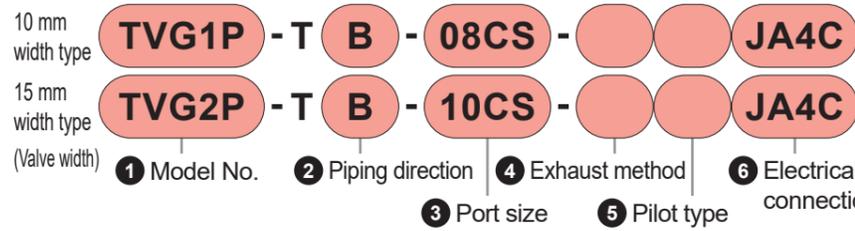
TVG2

Part name	Model No.
Push-in fitting ø4	4G2R-JOINT-C4
Push-in fitting ø6	4G2R-JOINT-C6
Push-in fitting ø8	4G2R-JOINT-C8
Push-in fitting ø10	TVG2P-JOINT-C10
L-shape push-in fitting ø6	4G2R-JOINT-CL6,CLL6
L-shape push-in fitting ø8	4G2R-JOINT-CL8,CLL8
Push-in fitting ø1/4 inch	4G2R-JOINT-C6N
Push-in fitting ø5/16 inch	4G2R-JOINT-C8N
ø1/4 inch Push-in fittingLType	*1 4G2R-JOINT-CL6N,CLL6N
ø5/16 inch Push-in fittingLType	*1 4G2R-JOINT-CL8N,CLL8N
Plug cartridge	4G2R-JOINT-CPG

*1 : Custom-made product.

Model No. Notation

Wiring block; Base piping



Rechargeable battery compatible specification

● Material restriction on air passage and sliding parts to enable use in rechargeable battery manufacturing process

□□ - □□ - □□ - **P4**

(For details, see P. 157.)

Accessories

Tie rod fixing nuts are built into the wiring block.

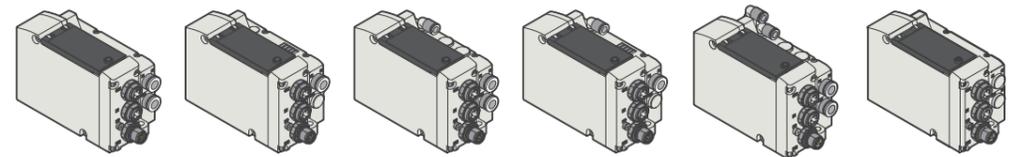
			① Model No.	
			TVG1P	TVG2P
●:Standard ○:Custom product				
③ Port size				
Metric fitting				
Fitting type	P/R port	Code		
Push-in	ø6	06CS	●	
	ø8	08CS	●	●
	ø10	10CS		●
L-type push-in fitting upward	ø6	06CU	●	
	ø8	08CU	●	●
	ø10	10CU		●
L-type push-in fitting downward	ø6	06CD	●	
	ø8	08CD	●	●
	ø10	10CD		●
*1 Inch fitting				
Fitting type	P/R port	Code		
Push-in	ø5/16 inch	08LS	●	
	ø3/8 inch	10LS		●
L-type push-in fitting upward	ø5/16 inch	08LU	○	
	ø3/8 inch	10LU		○
*3 P port:Inch fitting,R port:Metric fitting				
Fitting type	P port	R port	Code	
Push-in	ø5/16 inch	ø8	08XS	●
	ø3/8 inch	ø10	10XS	
L-type push-in fitting upward	ø5/16 inch	ø8	08XU	○
	ø3/8 inch	ø10	10XU	
Plug				
	P/R port		Code	
Plug			00XX	●

*1 : When using a silencer with inch fitting specifications, select 08XS, 10XS, 08XU, or 10XU. The R port and PR port (in the case of KZ) are metric fittings.

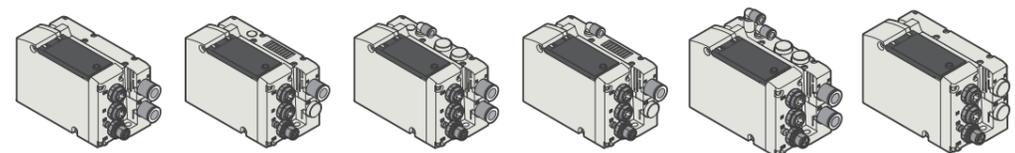
*2 : Pilot type K, KZ and 00XX cannot be selected simultaneously.

*3 : Cannot be selected simultaneously with exhaust type X.

- TVG1P-TB-08CS ● TVG1P-TB-08CS-X ● TVG1P-TB-08CS-K ● TVG1P-TB-08CS-XK ● TVG1P-TB-08CS-KZ ● TVG1P-TB-00XX



- TVG2P-TB-10CS ● TVG2P-TB-10CS-X ● TVG2P-TB-10CS-K ● TVG2P-TB-10CS-XK ● TVG2P-TB-10CS-KZ ● TVG2P-TB-00XX



② Piping direction

Code	Content
B	Side piping

④ Exhaust method

Code	Content
Blank	Common exhaust (R port is push-in fitting)
X	Exhaust to atmosphere, built-in silencer (R port is sealed.)

*1 : X cannot be selected for ③ Port size "00XX" and "□□X□".

*2 : X cannot be selected for pilot type KZ.

⑤ Pilot type

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

*1 : Cannot be selected for ③ Port size "00XX".

*2 : The external pilot port is a ø6 push-in fitting. In the case of □□□□, it is a ø5/32 inch fitting.

⑥ Electrical connection

• Reduced wiring connection

Content	Code
Centralized terminal block (M3 screw)	EA1 EA1C *2
Multi-connector	FA1
D-sub connector	GA1 GA1C *2

*1 : Can be used for both NPN and PNP.

*2 : "EA1C" and "GA1C" are for 100 VAC only.

• Serial transmission

Communication system	Output	Points	Code	
DeviceNet	NPN	16 points	JA1A	
	PNP		JA1B	
	NPN		JA1C	
CC-Link Ver.1.10	NPN	32 points	JA2C	
	PNP		JA2D	
	NPN		JA3C	
EtherCAT	NPN	32 points	JA4C	
	PNP		JA4D	
EtherNet/IP	NPN	32 points	JA5C	
	PNP		JA5D	
CC-Link IEF Basic	NPN	32 points	JA6C	
	PNP		JA6D	
PROFINET	NPN	32 points	JA7C	
	PNP		JA7D	
CC-Link IE Field	NPN	32 points	JA8C	
	PNP		JA8D	
CC-Link IE TSN	NPN	32 points	JA9C	
	PNP		JA9D	
IO-Link	ClassA	32 points	NPN	JA9G
			PNP	JA9H
	ClassB		NPN	JB1C
			PNP	JB1D
IO-Link Wireless	NPN	32 points	2WK	
	PNP		2WK-P	

Model No. Notation (Serial transmission Device unit) ; Base piping

Model No. Notation

Serial transmission Device station



Model No. ① Serial transmission

① Serial transmission

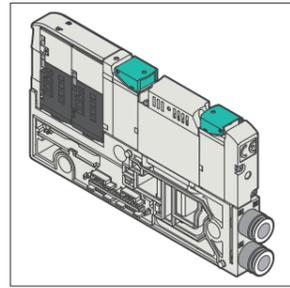
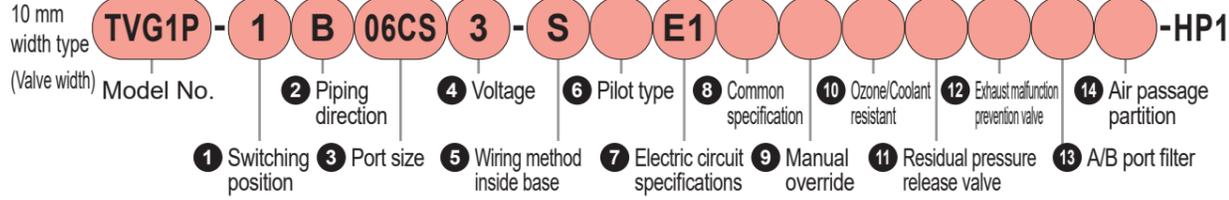
Communication system	Output	Points	Code	
DeviceNet	NPN	16 points	1D	
	PNP		1D-P	
	NPN		2D	
	PNP		2D-P	
CC-Link	NPN	32 points	2G	
	PNP		2G-P	
EtherCAT	NPN	32 points	2EC	
	PNP		2EC-P	
EtherNet/IP	NPN	32 points	2EN	
	PNP		2EN-P	
CC-Link IEF Basic	NPN	32 points	2EB	
	PNP		2EB-P	
PROFINET	NPN	32 points	2EP	
	PNP		2EP-P	
CC-Link IE Field	NPN	32 points	2EF	
	PNP		2EF-P	
CC-Link IE TSN	NPN	32 points	2TG	
	PNP		2TG-P	
IO-Link	ClassA	32 points	NPN	2KC-A
			PNP	2KC-PA
	ClassB		NPN	2KC-B
			PNP	2KC-PB
IO-Link Wireless	NPN	32 points	2WK	
	PNP		2WK-P	

Accessories

- OPP fixing bolt 2 pcs.
- Drip-proof gasket 1 pc.

Model No. Notation

Solenoid valve with valve block; Base piping



1 Switching position

Code	Content
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center
*1 A	3-port valve A side valve: Normally closed / B side valve: Normally closed
*1 B	Dual built-in type A side valve: Normally open / B side valve: Normally open
*1 C	Dual built-in type A side valve: Normally closed / B side valve: Normally open
*2 Z	With blanking plate

*1 : Compatible only with internal pilot. External dimensions are the same as 2-position double.
*2 : When Z is selected, "-HP1" is not attached to the model number.

2 Piping direction

Code	Content
B	Side piping

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

Fitting type	A/B port	Code	
Push-in	ø1.8	0ACS *3	
	ø4	04CS	
	ø6	06CS	
L-type push-in fitting upward	ø1.8	0ACU *3	
	ø4	04CU	
	ø6	06CU	
L-type push-in fitting downward	ø1.8	0ACD *3	
	ø4	04CD	
	ø6	06CD	
One side plug specification *1		Code	
Push-in	A port	B port	
	ø1.8	Plug	0ACA *3
	ø4		04CA
	ø6	06CA	
	Plug	ø1.8	0ACF *3
		ø4	04CF
ø6		06CF	
L-type push-in fitting upward	Plug	ø1.8	0ACB *3
		ø4	04CB
		ø6	06CB
	*2 Plug	ø1.8	0ACG *3
		ø4	04CG
		ø6	06CG
L-type push-in fitting downward	Plug	ø1.8	0ACC *3
		ø4	04CC
		ø6	06CC
	Plug	ø1.8	0ACH *3
		ø4	04CH
		ø6	06CH

• Inch fitting

Fitting type	A/B port	Code	
Push-in	ø1/8 inch	03LS	
	ø5/32 inch	04LS	
L-type push-in fitting upward *2	ø1/8 inch	C3LU *4	
	ø5/32 inch	04LU *4	
One side plug specification *1		Code	
Push-in	A port	B port	
	ø1/8 inch	Plug	03LA
	ø5/32 inch		04LA
	Plug	ø1/8 inch	03LF
		ø5/32 inch	04LF
	L-type push-in fitting upward *2	Plug	ø1/8 inch
ø5/32 inch			04LB *4
Plug	ø1/8 inch	03LG *4	
	ø5/32 inch	04LG *4	

*1 : A or B port one-side plug specification compatible with 2-position single only.
*2 : L-type push-in fitting upward is not available for 3-position.
*3 : The compatible tube for ø1.8 push-in fittings is "UP-9402-□□".
*4 : Custom product.

4 Voltage

Code	Content
1	100 VAC
3	24 VDC

Rechargeable battery compatible specification

(For details, P. 157.)

Materials for air paths and sliding parts are restricted for use in the rechargeable battery manufacturing process.



Tie rods are not included, so please order them separately. See P. 44 for details. Gaskets between blocks are included.

5 Wiring method inside base *1

Code	Content
Blank	Double wiring
S	Single solenoid dedicated wiring

*1 : Blank = wiring is for double solenoid regardless of valve type mounted. When single solenoid mounted, one solenoid blank number occurs.
S = Dedicated for single solenoid. Cannot be selected for 2-position double, 3-port valve 2-unit built-in type, or 3-position.

6 Pilot type *1

Code	Content
Blank	Internal pilot
K	External pilot

*1 : Switching position category "Z" cannot be selected.

7 Electric circuit specifications * Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
*2 E1	Low heat generation / Power saving circuit (Surge-less specifications)
*1 *2 E2	Surge-less

*1 : The combination of "E2" and PNP specifications is a custom-made product.
*2 : Compatible only with Voltage "3".

8 Common specification

Code	Content
Blank	NPN/Positive common specification
P	PNP/Negative common specification

*1 : Multiple options cannot be selected.
*2 : Select the same polarity as the wiring block.
*3 : In the case of Voltage "1", there is no polarity, so "P" cannot be selected. It becomes "Blank".

9 Manual override *1

Code	Content
Blank	Non-locking/locking common, with erroneous operation prevention cover
M1	Non-locking type, with erroneous operation prevention cover
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, Tool operation type

*1 : Switching position category "Z" cannot be selected.

10 Ozone/Coolant resistant *1

Code	Content
Blank	Standard specifications
A	Ozone/Coolant resistant (Main valve fluorine specification)

*1 : Switching position category "Z" cannot be selected.

11 Residual pressure release valve

Code	Content
Blank	No residual pressure release valve
*1 *2 Y1	With non-locking type residual pressure release valve
*1 *2 Y2	With locking type residual pressure release valve

*1 : Compatible only with Switching position "3" and "4".
*2 : Compatible only with Manual override "M2" and "M3".

12 Exhaust malfunction prevention valve

Code	Content
Blank	None
*1 H	With exhaust malfunction prevention valve

*1 : Switching position "3" and "5" cannot be selected. See P. 234 for the exhaust check valve.

13 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

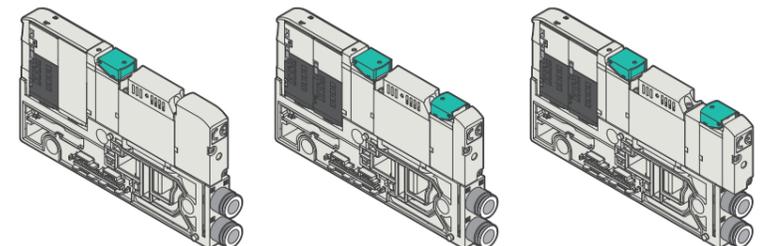
*1 : P port has a built-in filter.

14 Air passage partition For details, P. 41.

Code	Content
Blank	None
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

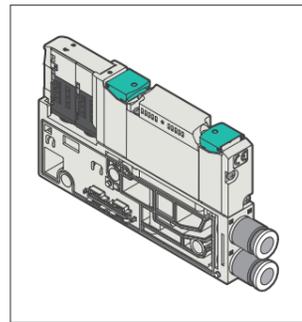
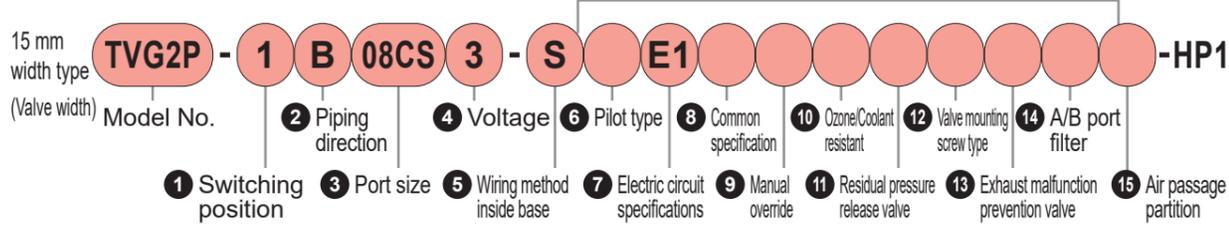
*1 : Blocks the flow path on the right side with the A/B port facing front.

- 2-position single
- 2-position double Dual 3-port valve built-in type
- 3-position exhaust center
- 3-position pressure center
- 3-position closed center



Model No. Notation

Solenoid valve with valve block; Base piping



1 Switching position

Code	Content
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center
*1 A	3-port valve A side valve: Normally closed / B side valve: Normally closed
*1 B	Dual built-in type A side valve: Normally open / B side valve: Normally open
*1 C	Dual built-in type A side valve: Normally closed / B side valve: Normally open
*2 Z	With blanking plate

*1 : Compatible only with internal pilot. External dimensions are the same as 2-position double.
*2 : When Z is selected, "-HP1" is not attached to the model number.

2 Piping direction

Code	Content
B	Side piping

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

Fitting type	A/B port	Code			
Push-in	ø4	04CS			
	ø6	06CS			
	ø8	08CS			
	ø10	10CS			
L-type push-in fitting upward	ø6	06CU			
	ø8	08CU			
L-type push-in fitting downward	ø6	06CD			
	ø8	08CD			
Fitting type	One side plug specification		Code		
	A port	B port			
Push-in	ø4	Plug	04CA		
			06CA		
			08CA		
			10CA		
	ø6	Plug	04CF		
			06CF		
			08CF		
			10CF		
			ø8	Plug	06CB
					08CB
L-type push-in fitting upward	ø6	Plug	06CG		
			08CG		
L-type push-in fitting downward	ø8	Plug	06CC		
			08CC		
L-type push-in fitting downward	ø6	Plug	06CH		
			08CH		

• Inch fitting

Fitting type	A/B port	Code	
Push-in	ø1/4 inch	06LS	
	ø5/16 inch	08LS	
L-type push-in fitting upward	ø1/4 inch	06LU	
	ø5/16 inch	08LU	
Fitting type	One side plug specification		Code
	A port	B port	
Push-in	ø1/4 inch	Plug	06LA
	ø5/16 inch	Plug	08LA
	Plug	ø1/4 inch	06LF
		ø5/16 inch	08LF
L-type push-in fitting upward	ø1/4 inch	Plug	06LB
			08LB
	ø5/16 inch	Plug	06LG
			08LG

*1 : A or B port one-side plug specification compatible with 2-position single only.
*2 : L-type push-in fitting upward is not available for 3-position.
*3 : Custom-made product.

4 Voltage

Code	Content
1	100 VAC
3	24 VDC

5 Wiring method inside base

Code	Content
Blank	Double wiring
S	Single solenoid dedicated wiring

*1 : Blank = wiring is for double solenoid regardless of valve type mounted. When single solenoid mounted, one solenoid blank number occurs.
S = Dedicated for single solenoid. Cannot be selected for 2-position double, 3-port valve 2-unit built-in type, or 3-position.

6 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

*1 : Switching position category "Z" cannot be selected.

7 Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
*2 E1	Low heat generation / Power saving circuit (Surge-less specifications)
*1 *2 E2	Surge-less

*1 : The combination of "E2" and PNP specifications is a custom-made product.
*2 : Compatible only with Voltage "3".

8 Common specification

Code	Content
Blank	NPN/Positive common specification
P	PNP/Negative common specification

*1 : Multiple options cannot be selected.
*2 : Select the same polarity as the wiring block.
*3 : In the case of Voltage "1", there is no polarity, so "P" cannot be selected. It becomes "Blank".

9 Manual override

Code	Content
Blank	Non-locking/locking common, with erroneous operation prevention cover
M1	Non-locking type, with erroneous operation prevention cover
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

*1 : Switching position category "Z" cannot be selected.

10 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/Coolant resistant (Main valve fluorine specification)

*1 : Switching position category "Z" cannot be selected.

11 Residual pressure release valve

Code	Content
Blank	No residual pressure release valve
*1 *2 Y1	With non-locking type residual pressure release valve
*1 *2 Y2	With locking type residual pressure release valve

*1 : Compatible only with Switching position "3" and "4".
*2 : Compatible only with Manual override "M2" and "M3".

12 Valve mounting screw type

Code	Content
Blank	Pan head machine screw with plus/minus
J	Hexagon socket head bolt

13 Exhaust malfunction prevention valve

Code	Content
Blank	None
H	With exhaust malfunction prevention valve

*1 : Switching position "3" and "5" cannot be selected. See P. 234 for the exhaust check valve.

14 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

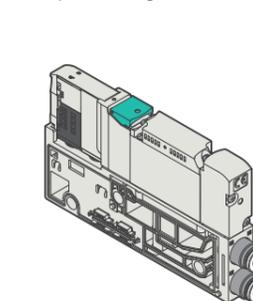
*1 : P port has a built-in filter.

15 Air passage partition For details, see P. 43.

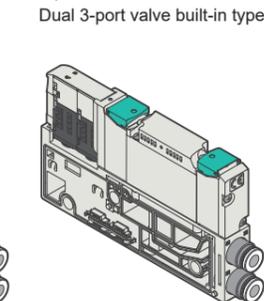
Code	Content
Blank	None
T	P/R/PA/PR blocked
U	P/R blocked, PA/PR through
V	P blocked, R/PA/PR through
W	R blocked, P/PA/PR through

*1 : Blocks the flow path on the right side with A/B ports facing forward.

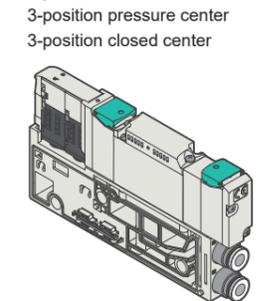
● 2-position single



● 2-position double

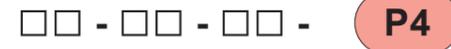


● 3-position exhaust center



Rechargeable battery compatible specification (For details, P. 157.)

● Materials for air paths and sliding parts are restricted for use in the rechargeable battery manufacturing process.



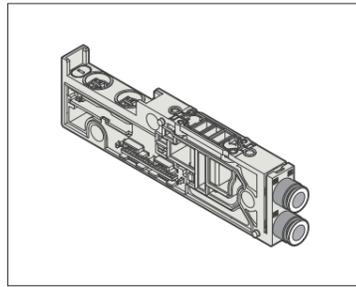
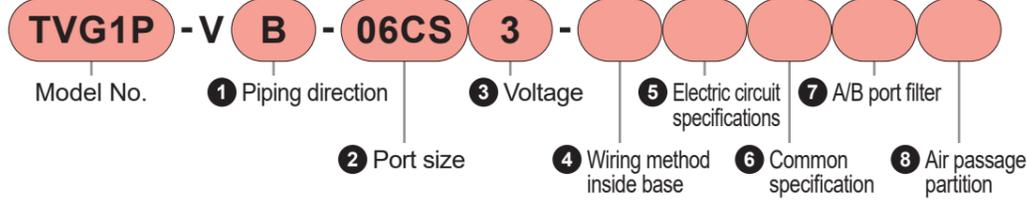
● Tie rods are not included, so please order them separately. See P. 44 for details. Gaskets between blocks are included.

TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with rechargeable battery manufacturing process
Manifold specifications
Technical data
Safety precautions

TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with rechargeable battery manufacturing process
Manifold specifications
Technical data
Safety precautions

Model No. Notation
Valve block;Base piping

10 mm width type
(Valve width)



1 Piping direction

Code	Content
B	Side piping

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

Fitting type	A/B port	Code			
Push-in	ø1.8	0ACS	*3		
	ø4	04CS			
	ø6	06CS			
L-type push-in fitting upward	ø1.8	0ACU	*3		
	ø4	04CU			
	ø6	06CU			
L-type push-in fitting downward	ø1.8	0ACD	*3		
	ø4	04CD			
	ø6	06CD			
Fitting type		One side plug specification			
	A port	B port	Code		
Push-in	ø1.8	Plug	0ACA	*3	
			04CA		
			06CA		
	ø4	ø1.8	0ACF	*3	
			ø4	04CF	
			ø6	06CF	
L-type push-in fitting upward	ø1.8	Plug	0ACB	*3	
			04CB		
			06CB		
	ø4	ø1.8	0ACG	*3	
			ø4	04CG	
			ø6	06CG	
L-type push-in fitting downward	ø1.8	Plug	0ACC	*3	
			04CC		
			06CC		
	ø4	ø1.8	0ACH	*3	
			ø4	04CH	
			ø6	06CH	

3 Voltage

Code	Content
1	100 VAC
3	24 VDC

• Inch fitting

Fitting type	A/B port	Code	
Push-in	ø1/8 inch	03LS	
	ø5/32 inch	04LS	
L-type push-in fitting upward	ø1/8 inch	C3LU	
	ø5/32 inch	04LU	
Fitting type		Code	
One side plug specification			
Push-in	ø1/8 inch	Plug	03LA
		ø5/32 inch	04LA
	ø1/8 inch	Plug	03LF
		ø5/32 inch	04LF
	ø5/32 inch	Plug	03LB
			04LB
L-type push-in fitting upward	ø1/8 inch	03LG	
	ø5/32 inch	04LG	

*1 : A or B port one-side plug specification compatible with 2-position single only.
*2 : L-type push-in fitting upward is not available for 3-position.
*3 : The compatible tube for ø1.8 push-in fittings is "UP-9402-□□".
*4 : Custom product.

4 Wiring method inside base *1

Code	Content
Blank	Double wiring
S	Single solenoid dedicated wiring

*1 : Blank = Double solenoid wiring regardless of the mounted valve type. If a single solenoid is mounted, an empty signal for one solenoid is generated. S = Dedicated for single solenoid. Cannot be selected for 2-position double, 3-port valve built-in type, or 3-position.

Rechargeable battery compatible specification (For details,P. 157.)

Materials for air paths and sliding parts are restricted for use in the rechargeable battery manufacturing process.



Tie rods are not included, so please order them separately. See P. 44 for details. Gaskets between blocks are included.

5 Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : The combination of "E2" and PNP specifications is a custom-made product.
*2 : Compatible only with Voltage "3".

6 Common specification

Code	Content
Blank	NPN/Positive common specification
P	PNP/Negative common specification

*1 : Multiple selections not possible.
*2 : Select the same polarity as the wiring block.
*3 : In the case of Voltage "1", there is no polarity, so "P" cannot be selected. It becomes "Blank".

7 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

*1 : P port has a built-in filter.

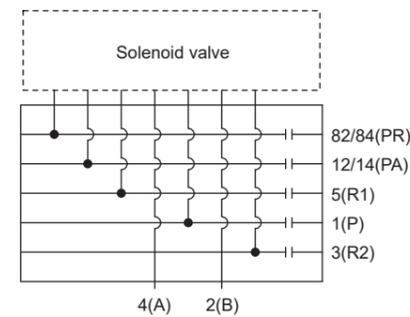
8 Air passage partitionFor details refer to below.

Code	Content
Blank	None
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

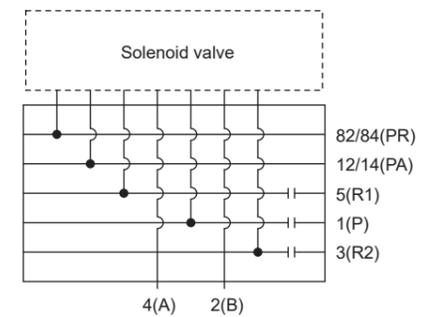
*1 : Blocks the flow path on the right side with A/B ports facing forward.

About air passage partition

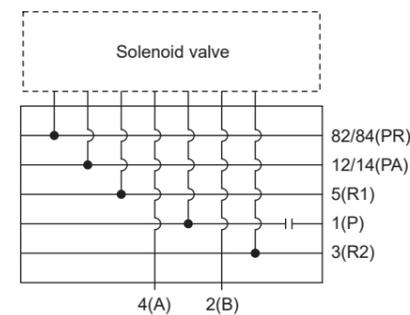
● Valve block unit circuit diagram (T)



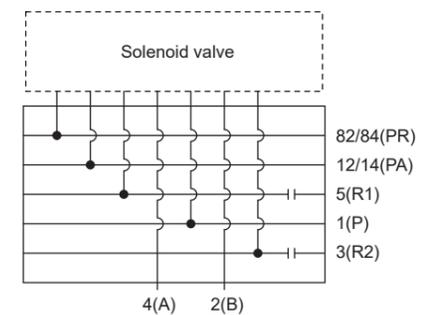
● Valve block unit circuit diagram (U)



● Valve block unit circuit diagram (V)

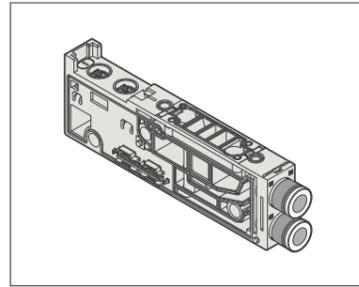
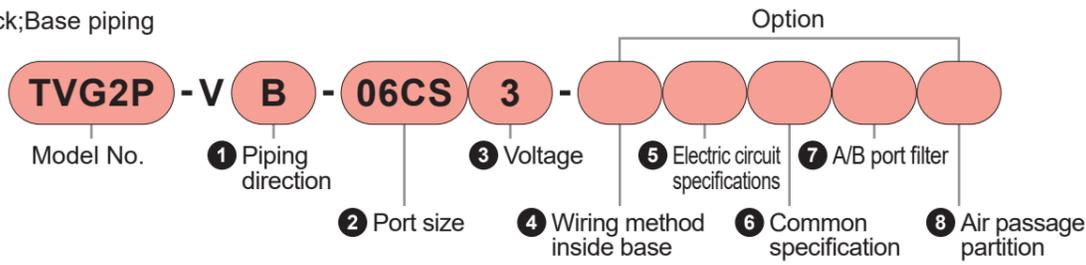


● Valve block unit circuit diagram (W)



Model No. Notation
Valve block;Base piping

15 mm width type
(Valve width)



1 Piping direction

Code	Content
B	Side piping

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

Fitting type	A/B port	Code	
Push-in	ø4	04CS	
	ø6	06CS	
	ø8	08CS	
	ø10	10CS	
L-type push-in fitting upward	ø6	06CU	
	ø8	08CU	
L-type push-in fitting downward	ø6	06CD	
	ø8	08CD	
Fitting type	One side plug specification		
	A port	B port	Code
Push-in	ø4	Plug	04CA
			06CA
			08CA
			10CA
	ø6	Plug	04CF
			06CF
			08CF
			10CF
			06CB
			08CB
L-type push-in fitting upward	Plug	06CG	
		08CG	
		06CC	
		08CC	
L-type push-in fitting downward	Plug	06CH	
		08CH	

• Inch fitting

Fitting type	A/B port	Code		
Push-in	ø1/4 inch	06LS		
	ø5/16 inch	08LS		
L-type push-in fitting upward	ø1/4 inch	06LU		
	ø5/16 inch	08LU		
Fitting type	One side plug specification			
	A port	B port	Code	
Push-in	ø1/4 inch	Plug	06LA	
			08LA	
	ø5/16 inch	Plug	06LF	
			08LF	
	L-type push-in fitting upward	ø1/4 inch	Plug	06LB
				08LB
ø5/16 inch		Plug	06LG	
			08LG	

*1 : A or B port one-side plug specification compatible with 2-position single only.
*2 : L-type push-in fitting upward is not available for 3-position.
*3 : Custom-made product.

3 Voltage

Code	Content
1	100 VAC
3	24 VDC

4 Wiring method inside base

Code	Content
Blank	Double wiring
S	Single solenoid dedicated wiring

*1 : Blank = Double solenoid wiring regardless of the mounted valve type. If a single solenoid is mounted, an empty signal for one solenoid is generated. S = Dedicated for single solenoid. Cannot be selected for 2-position double, 3-port valve built-in type, or 3-position.

Rechargeable battery compatible specification (For details,P. 157.)

Materials for air paths and sliding parts are restricted for use in the rechargeable battery manufacturing process.



Tie rods are not included, so please order them separately. See P. 44 for details. Gaskets between blocks are included.

5 Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : The combination of "E2" and PNP specifications is a custom-made product.
*2 : Compatible only with Voltage "3".

6 Common specification

Code	Content
Blank	NPN/Positive common specification
P	PNP/Negative common specification

*1 : Multiple selections not possible.
*2 : Select the same polarity as the wiring block.
*3 : In the case of Voltage "1", there is no polarity, so "P" cannot be selected. It becomes "Blank".

7 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

*1 : P port has a built-in filter.

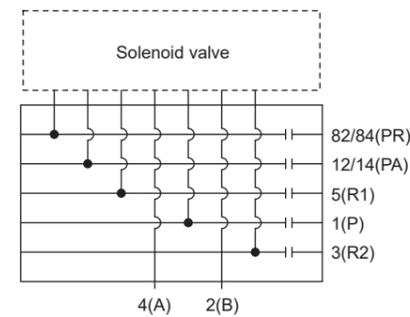
8 Air passage partition For details refer to lower section.

Code	Content
Blank	None
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

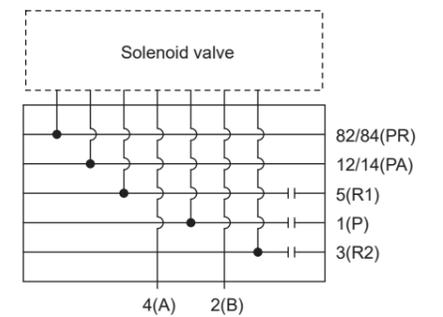
*1 : Blocks the flow path on the right side with A/B ports facing forward.

About air passage partition

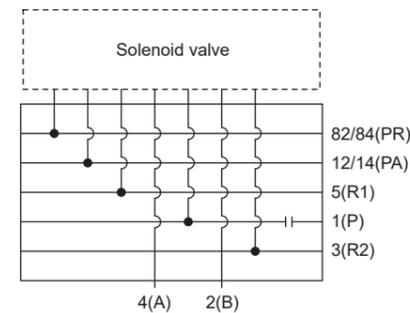
●Valve block unit circuit diagram (T)



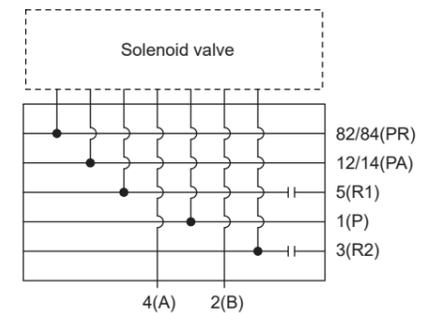
●Valve block unit circuit diagram (U)



●Valve block unit circuit diagram (V)



●Valve block unit circuit diagram (W)



Model No. Notation

Tie rod

● For valve block

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

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

① Model No.

② Station No.

● For intermediate supply/exhaust block

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

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

● For valve block expansion

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

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

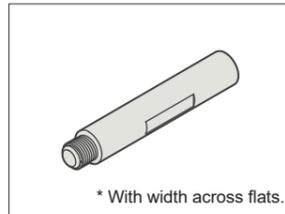
② Station No.

Code	Content	Code	Content
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 : Set of 3.

About expansion

- For 2-17 station manifolds, 3 stations can be added. Can add up to total 3 stations of valve blocks and intermediate supply/exhaust blocks. When adding to 18-station or larger manifold, use tie rod matching number of stations after addition.
- Fix expansion tie rod/intermediate supply-exhaust tie rod to wiring block. Installing on end block side may prevent proper assembly.



Model No. Notation

End block (U side);Base piping

Hexagon socket head cap screws for tie rod fastening and gaskets between blocks are included.

10 mm width type **TVG1P - E B - 08CS**

15 mm width type **TVG2P - E B - 10CS**

(Valve width)

① Model No.

② Piping direction

④ Exhaust method

③ Port size

⑤ Pilot type

Rechargeable battery compatible specification (For details,P.157.)

- Material restriction on air passage and sliding parts to enable use in rechargeable battery manufacturing process

□□ - □□ - □□ - **P4**

② Piping direction

Code	Content
B	Side piping

④ Exhaust method

Code	Content
Blank	Common exhaust (R port is push-in fitting)
X	Exhaust to atmosphere, built-in silencer (R port is sealed.)

*1 : ③ Port size "00XX", "□□X□" X cannot be selected.

*2 : In the case of pilot method KZ, X cannot be selected.

⑤ Pilot type

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

*1 : ③ Cannot be selected for connection bore size "00XX".

*2 : The external pilot port is ø6 push-in fitting ; in case of □□L□, it is ø5/32 inch fitting.

③ Port size

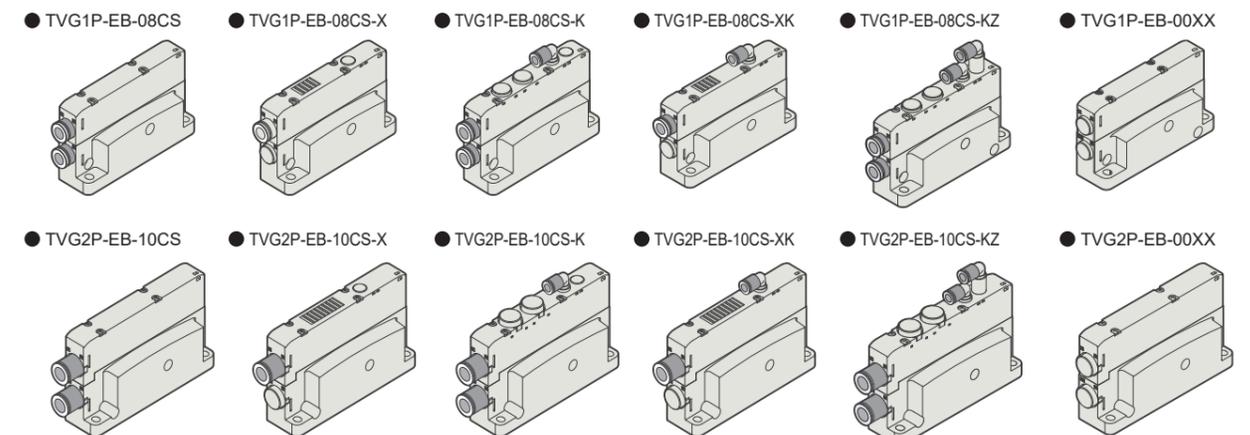
●:Standard
○:Custom product

			① Model No.	
			TVG1P	TVG2P
Metric fitting				
Fitting type	P/R port	Code		
Push-in	ø6	06CS	●	
	ø8	08CS	●	●
	ø10	10CS		●
L-type push-in fitting upward	ø6	06CU	●	
	ø10	10CU	●	●
L-type push-in fitting downward	ø6	06CD	●	
	ø8	08CD	●	●
	ø10	10CD		●
*1 Inch fitting				
Fitting type	P/R port	Code		
Push-in	ø5/16 inch	08LS	●	
	ø3/8 inch	10LS		●
L-type push-in fitting upward	ø5/16 inch	08LU	○	
	ø3/8 inch	10LU		○
*3 P port:Inch fitting,R port:Metric fitting				
Fitting type	P port	R port	Code	
Push-in	ø5/16 inch	ø8	08XS	●
	ø3/8 inch	ø10	10XS	
L-type push-in fitting upward	ø5/16 inch	ø8	08XU	○
	ø3/8 inch	ø10	10XU	
Plug				
P/R port			Code	
Plug			00XX	● ●

*1:When using silencer with inch fitting specification, select 08XS, 10XS, 08XU, 10XU. R port, PR port (for KZ) become metric fittings.

*2: Pilot type K, KZ and 00XX cannot be selected simultaneously.

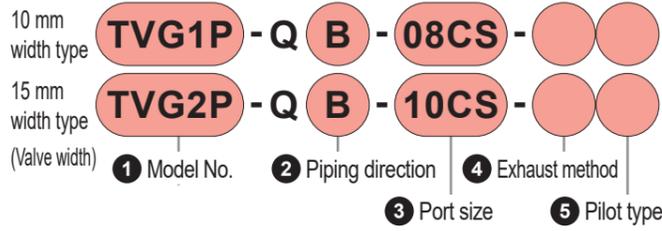
*3: Cannot be selected simultaneously with exhaust method X.



Model No. Notation

Intermediate supply/exhaust block;Base piping

Intermediate supply/exhaust block can be installed between valve blocks. These blocks cannot be adjacent to each other. Also cannot be adjacent to end block or wiring block. Electrical internal wiring and P, R, PA, PR ports communicate with adjacent blocks.



Rechargeable battery compatible specification

(For details,P.157.)

● Material restriction on air passage and sliding parts to enable use in rechargeable battery manufacturing process

□□ - □□ - □□ - P4

			1 Model No.	
			TVG1P	TVG2P
●:Standard ○:Custom product				
3 Port size				
Metric fitting				
Fitting type	P/R port	Code		
Push-in	ø6	06CS	●	
	ø8	08CS	●	●
	ø10	10CS		●
L-type push-in fitting upward	ø6	06CU	●	
	ø8	08CU	●	●
	ø10	10CU		●
L-type push-in fitting downward	ø6	06CD	●	
	ø8	08CD	●	●
	ø10	10CD		●
*1 Inch fitting				
Fitting type	P/R port	Code		
Push-in	ø5/16 inch	08LS	●	
	ø3/8 inch	10LS		●
L-type push-in fitting upward	ø5/16 inch	08LU		○
	ø3/8 inch	10LU		○
*3 P port:Inch fitting,R port:Metric fitting				
Fitting type	P port	R port	Code	
Push-in	ø5/16 inch	ø8	08XS	●
	ø3/8 inch	ø10	10XS	
L-type push-in fitting upward	ø5/16 inch	ø8	08XU	○
	ø3/8 inch	ø10	10XU	

*1 : When using silencer with inch fitting specification, select 08XS, 10XS, 08XU, 10XU. R port, PR port (for KZ) become metric fittings.

*2 : A filter is built into the P port to prevent entry of foreign matter.

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

2 Piping direction

Code	Content
B	Side piping

4 Exhaust method

Code	Content
Blank	Common exhaust (R port is push-in fitting)
X	Exhaust to atmosphere, built-in silencer (R port is sealed.)

*1, *2

*1 : Port size "□□X□" X cannot be selected.

*2 : In the case of pilot method Z or KZ, X cannot be selected.

5 Pilot type

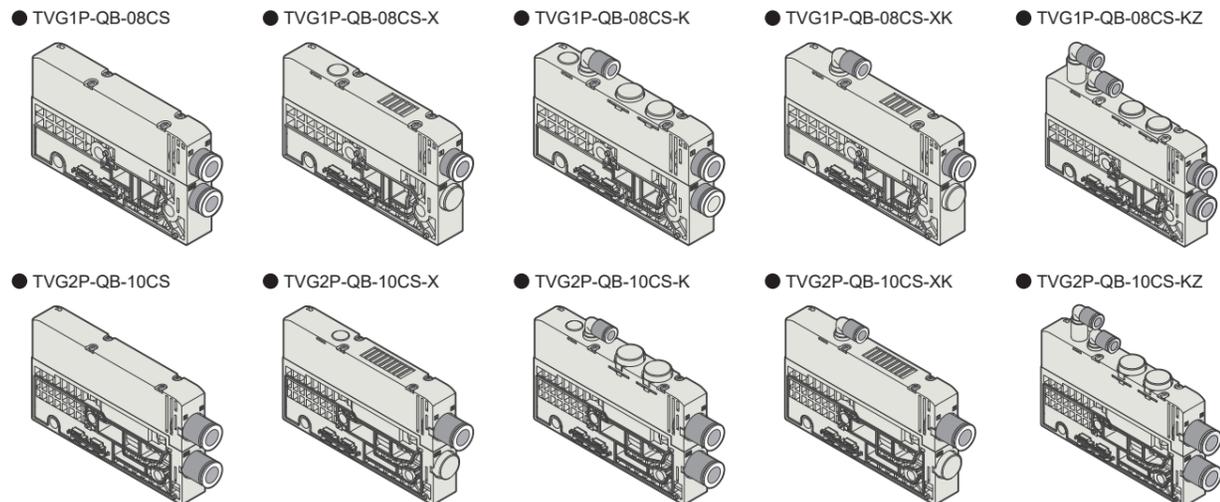
Code	Content
Blank	Internal pilot
K	External pilot
Z	Different pressure circuit
KZ	External pilot (PA/PR separated)

*1 : External pilot port is ø6 push-in fitting, for □□□ becomes ø5/32 inch fitting.Z cannot be used alone. Must be used in combination with other types, Blank, K, or KZ.

Accessories

Manifold gasket:1 pc.

Tie rods not included, please order separately. For detailsP. 44.Gaskets between blocks are included.

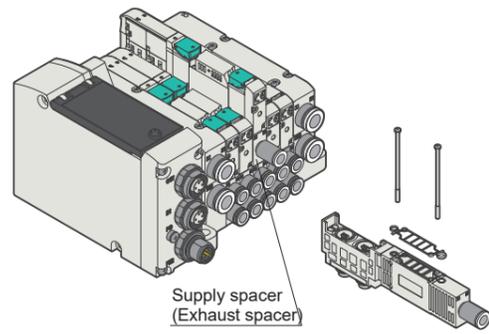


List of supply/exhaust block specifications

Exhaust method	Pilot type	D side wiring supply/exhaust block	Intermediate supply/exhaust block	U side end supply/exhaust block
Blank Centralized exhaust	Blank Internal pilot			
Blank Centralized exhaust	K External pilot			
Blank Centralized exhaust	Z Different pressure circuit			
Blank Centralized exhaust	KZ External pilot (PA/PR separation)			
X Atmospheric release (Built-in silencer)	Blank Internal pilot			
X Atmospheric release (Built-in silencer)	K External pilot			

* Check valve between PR and R is for malfunction prevention. Cannot be used for other purposes.

Supply spacer/Exhaust spacer



Specifications

●Supply spacer

Model No.	Weight g
TVG1P-P-□	31

●Exhaust spacer

Model No.	Weight g
TVG1P-R-□	31

Single unit Model No.

●Supply spacer

TVG1P - P - **04CS**
① Port size

Code	Port size	Content
04CS	ø4	Push-in fitting ø4
06CS	ø6	Push-in fitting ø6

●Exhaust spacer

TVG1P - R - **04CS**
① Port size

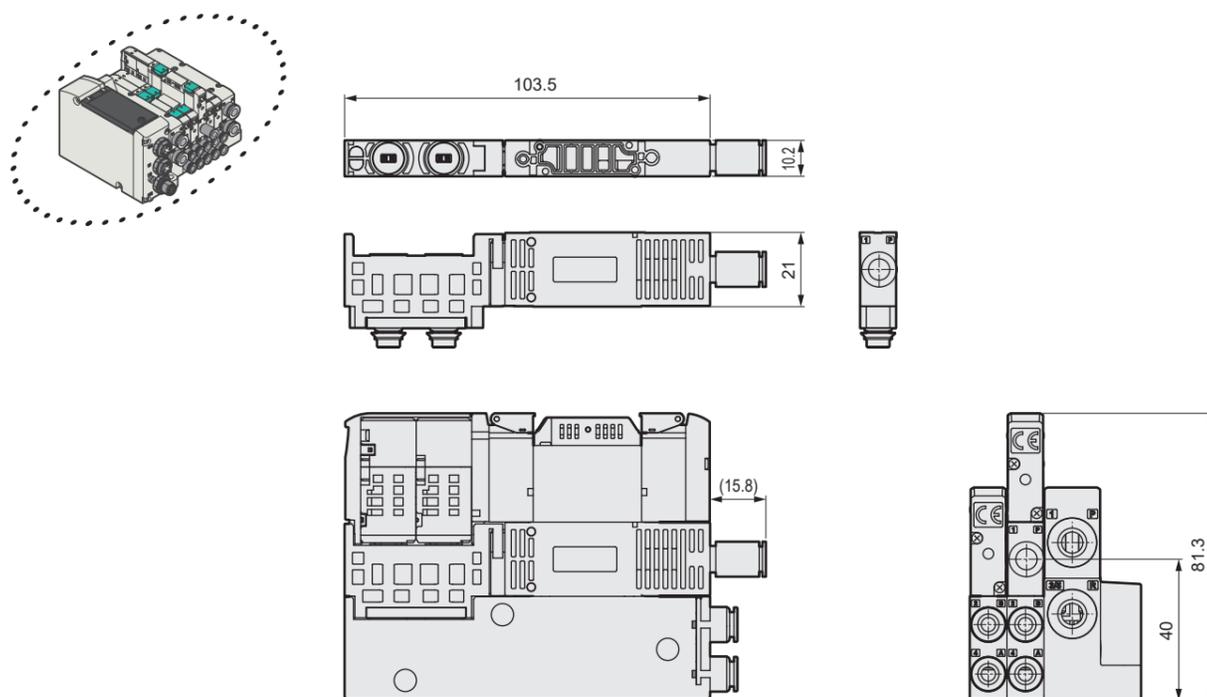
Code	Port size	Content
04CS	ø4	Push-in fitting ø4
06CS	ø6	Push-in fitting ø6

⚠ Precautions for Model No. selection

- *1 : Please specify the spacer mounting position and quantity for manifolds on the manifold specifications sheet (P. 190-197).
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Spacer mounting screws and gasket are included.
- *5 : If A/B port fitting is elbow type upward, spacer cannot be selected.

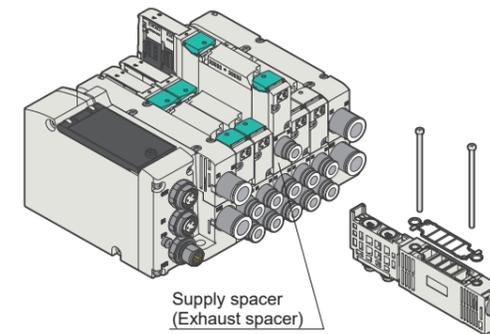
Dimensions

●Supply spacer/Exhaust spacer



Supply spacer/Exhaust spacer ; Base piping

Supply spacer/Exhaust spacer



Specifications

●Supply spacer

Model No.	Weight g
TVG2P-P-□	56

●Exhaust spacer

Model No.	Weight g
TVG2P-R-□	56

Single unit Model No.

●Supply spacer

TVG2P - P - **06CS**
① Port size

Code	Port size	Content
06CS	ø6	Push-in fitting ø6
08CS	ø8	Push-in fitting ø8
10CS	ø10	Push-in fitting ø10

●Exhaust spacer

TVG2P - R - **06CS**
① Port size

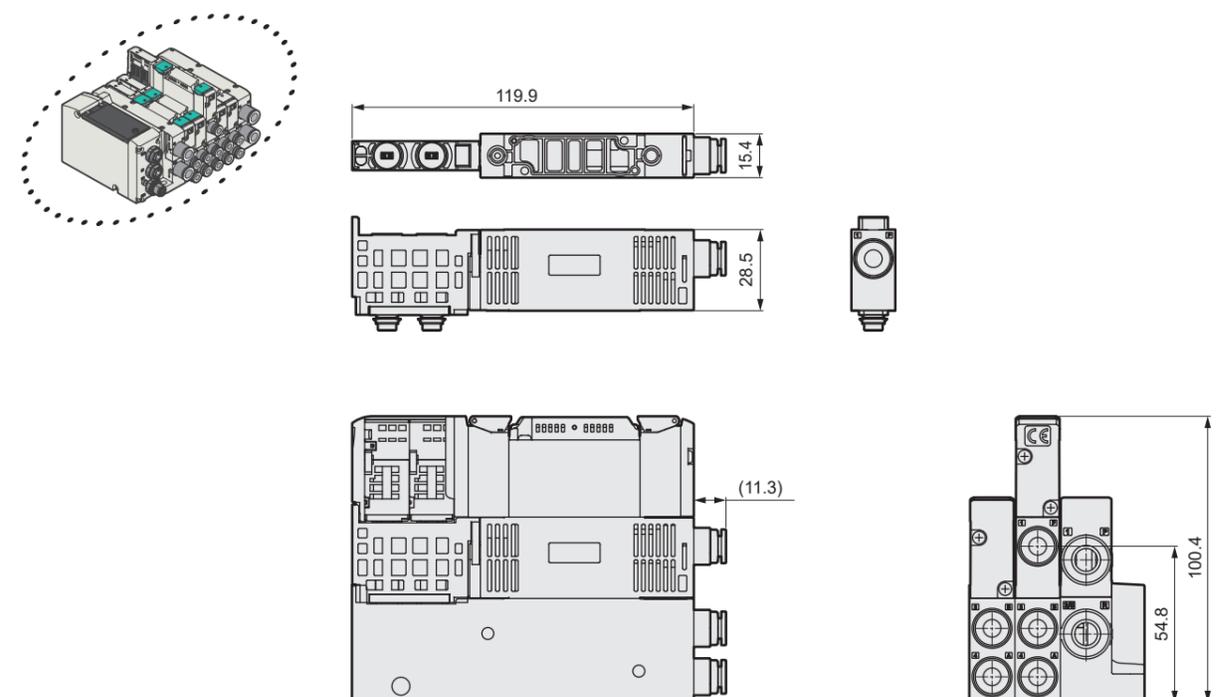
Code	Port size	Content
06CS	ø6	Push-in fitting ø6
08CS	ø8	Push-in fitting ø8
10CS	ø10	Push-in fitting ø10

⚠ Precautions for Model No. selection

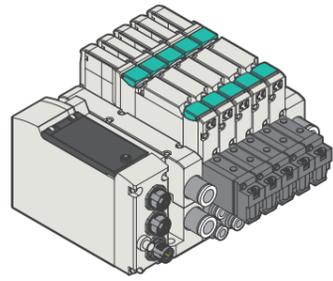
- *1: Please specify the spacer mounting position and quantity for manifolds on the manifold specifications sheet (P. 190-197).
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Spacer mounting screws and gasket are included.
- *5 : If A/B port fitting is elbow type upward, spacer cannot be selected.

Dimensions

●Supply spacer/Exhaust spacer



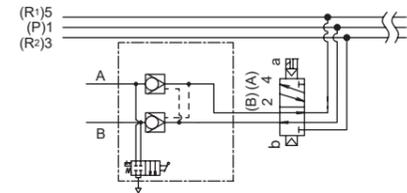
Perfect spacer (Spacer type pilot check valve)



Specifications

Item	TVG1P-PC-□	TVG2P-PC-□
Working fluid	Compressed air	
Max. operating pressure	MPa	0.7
Min. operating pressure	MPa	0.2
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Fluid temperature	°C	5 to 55
Atmosphere	Use in corrosive gas atmosphere is prohibited	
Weight	g	34 73

Circuit diagram Code



Note) Be careful that using a large bore cylinder (approx. $\phi 50$ or more) with little restriction on the exhaust side (e.g., without speed controller or silencer) may lead to decreased intermediate stop accuracy and intermediate stop failure.

Single unit Model No.

TVG1 P-PC-M

- 1 Model No. Perfect spacer
- 2 Residual pressure release function

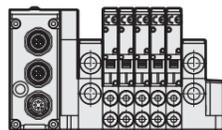
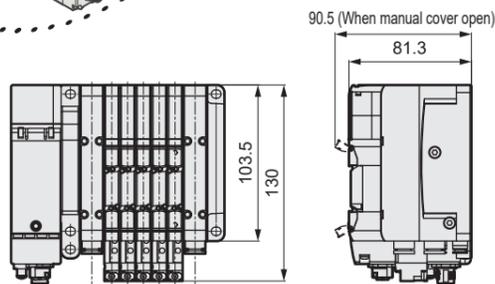
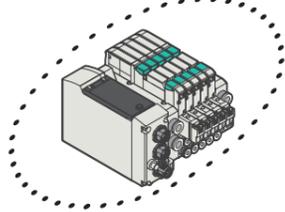
1 Model No.		2 Residual pressure release function	
Code	Content	Code	Content
TVG1	10 mm width type (valve width)	M	Non-locking type manual override
TVG2	15 mm width type (valve width)	M1	Locking type manual override
		Blank	No residual pressure release function

Precautions for Model No. selection

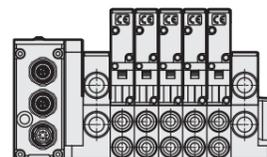
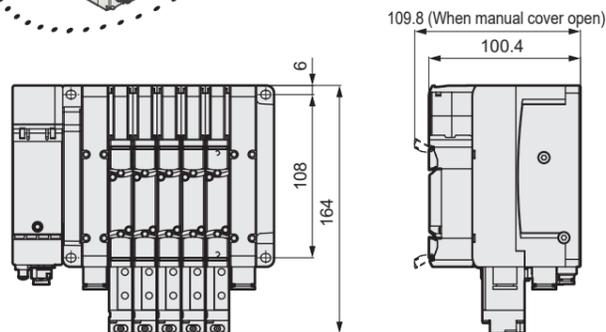
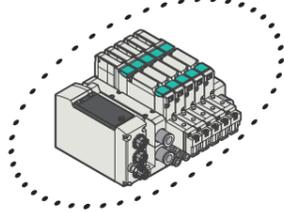
- *1: Specify the spacer mounting position and selection of residual pressure release function in the manifold specifications.
- *2: If A/B port fitting is elbow type upward, spacer cannot be selected.
- *3: Stacking of spacers is not supported.
- *4: Spacer cannot be combined with blanking plate.
- *5: Spacer mounting screws and gasket included.
- *6: Cannot be used for direct piping.

Dimensions

● TVG1

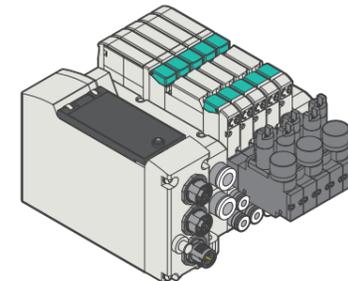


● TVG2



Spacer type regulator ; Base piping

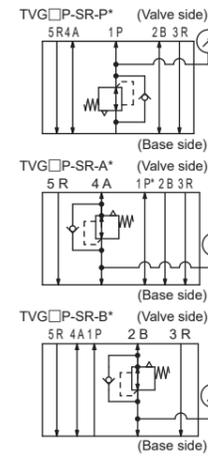
Spacer type regulator



Specifications

Item	TVG1P-SR-□	TVG2P-SR-□
Pressure reducing port	P / A / B	
Working fluid	Compressed air	
Max. operating pressure	MPa	0.7
Min. operating pressure	MPa	0.1
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Fluid temperature	°C	5 to 55
Atmosphere	Use in corrosive gas atmosphere is prohibited	
Weight	g	48 110

Circuit diagram Code



Single unit Model No.

TVG1 P-SR-P-G0

- 1 Model No. Spacer type regulator
- 2 Pressure reducing specifications
- 3 Pressure gauge

2 Pressure reducing specifications	
Code	Content
*6 P	P port pressure reducing
*6 A	A port pressure reducing
*6 B	B port pressure reducing

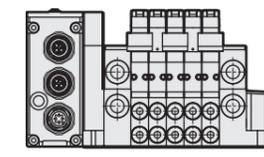
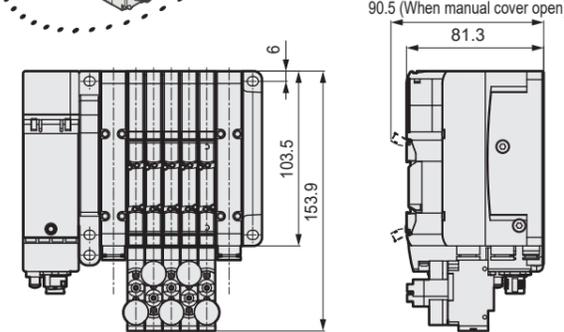
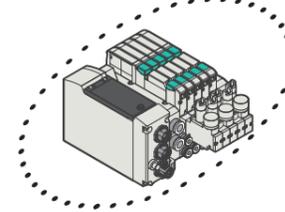
3 Pressure gauge		1 Model No.	
Code	Content	TVG1	TVG2
G0	No pressure gauge	●	●
G1	With pressure gauge for odd number station	●	
G2	With pressure gauge for even number station	●	
G3	With pressure gauge for odd/even number station (shared)		●

Precautions for Model No. selection

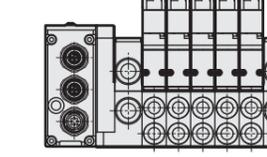
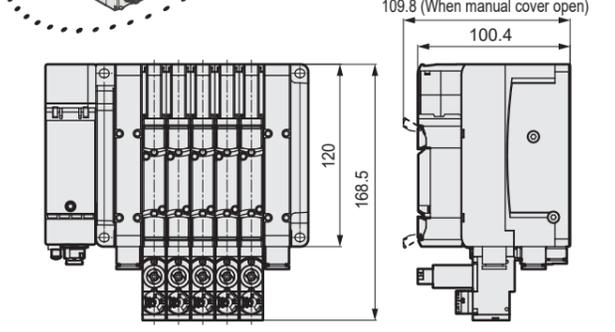
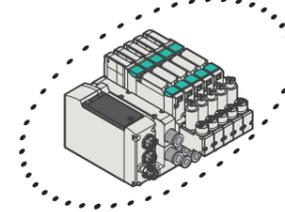
- *1: Specify the spacer mounting position in the manifold specifications.
- *2: If A/B port fitting is elbow type upward, spacer cannot be selected.
- *3: Stacking of spacers is not supported.
- *4: Spacer cannot be combined with blanking plate.
- *5: Spacer mounting screws and gasket included.
- *6: For direct piping, only P port pressure reduction specification can be selected.

Dimensions

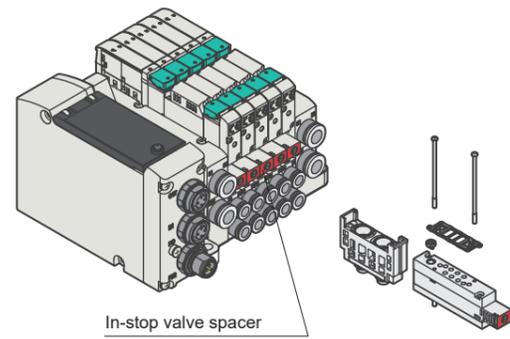
● TVG1



● TVG2



In-stop valve spacer



In-stop valve spacer

Specifications

Item	TVG1P-IS	TVG2P-IS
Working fluid	Compressed air	
Max. operating pressure	MPa	0.7
Min. operating pressure	MPa	0.1
Proof pressure	MPa	1.05
Ambient temperature	°C	
		-5 to 55 (no freezing)
Fluid temperature	°C	
		5 to 55
Atmosphere	Use in corrosive gas atmosphere is prohibited	
Weight	g	35
		71

Single unit Model No.

TVG1 P-IS

① Model No. In-stop valve spacer

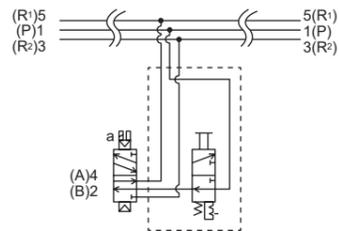
① Model No.

Code	Content
TVG1	10 mm width type (valve width)
TVG2	15 mm width type (valve width)

⚠ Precautions for Model No. selection

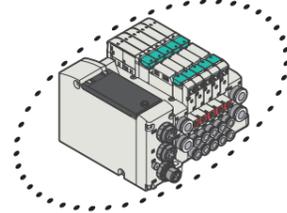
- *1 : Specify the spacer mounting position in the manifold specifications.
- *2 : If A/B port fitting is elbow type upward, spacer cannot be selected.
- *3 : Stacking of spacers is not supported.
- *4 : Spacer cannot be combined with blanking plate.
- *5 : Combination with external pilot (K) is not supported.

Circuit diagram Code

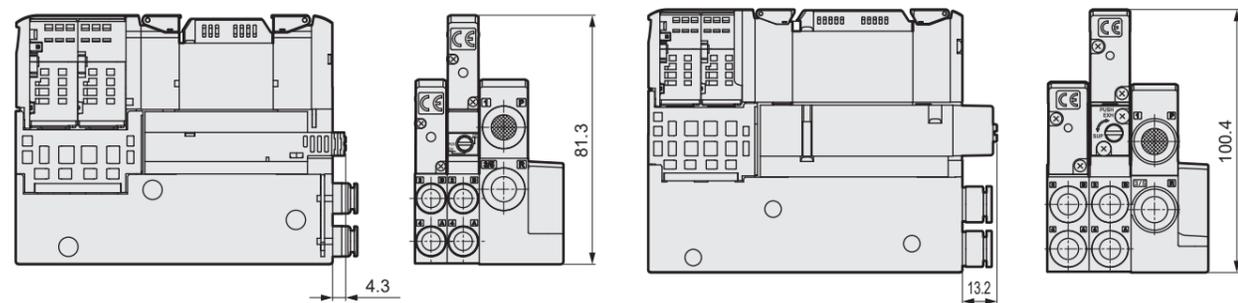
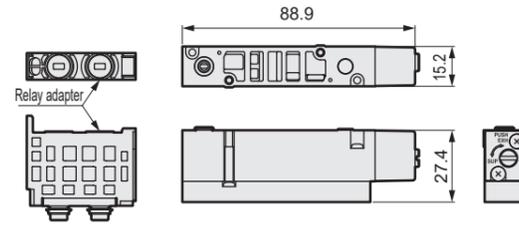
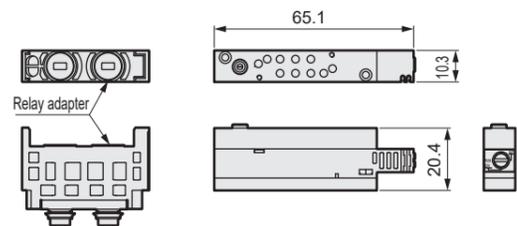
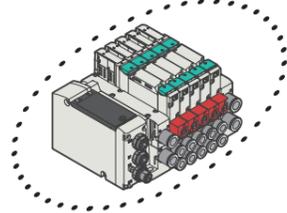


Dimensions

● TVG1



● TVG2



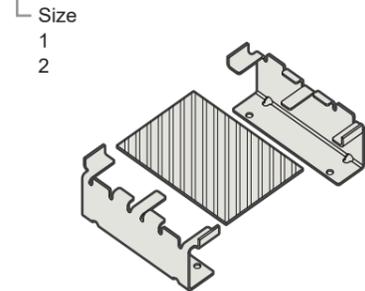
MEMO

Related components Tag plate (tag holder, tag plate), DIN rail, DIN rail mounting bracket kit

Tag plate Shipped attached to the manifold with solenoid valves. If necessary, please mark the tag plate column in the manifold specifications sheet (P. 190-209). Cannot be used with direct piping.

Tag holder

TVG P-TAG-HOLDER



Tag plate

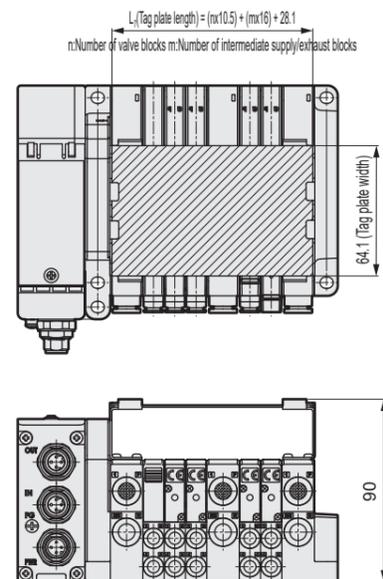
TVGP-TAG-PLATE-B-

Length (mm)
200
300
400

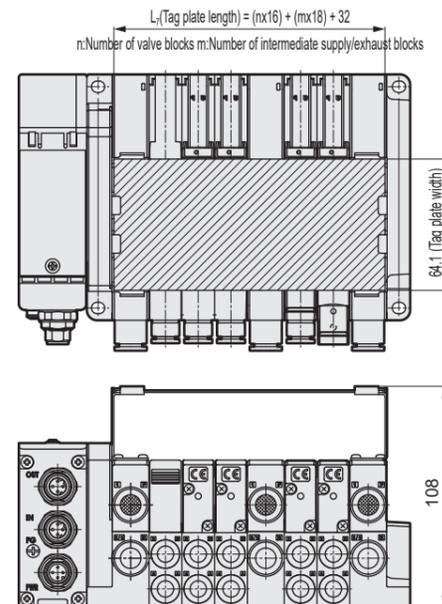
- *1 : In the case of exhaust type "X", the tag plate cannot be mounted.
- *2 : In the case of pilot type "K" and "KZ", the tag plate cannot be mounted
- *3 : In the case of a combination of a spacer and residual pressure exhaust valve, the tag plate cannot be mounted.
- *4 : When purchasing the plate individually, please cut it to match the product length.

Dimensions

● TVG1



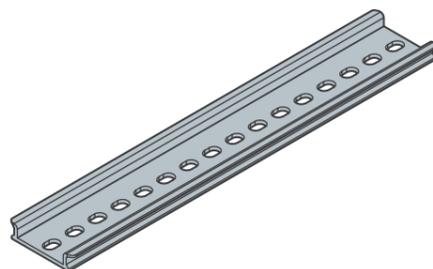
● TVG2



DIN rail

N4GR-BAA

Length

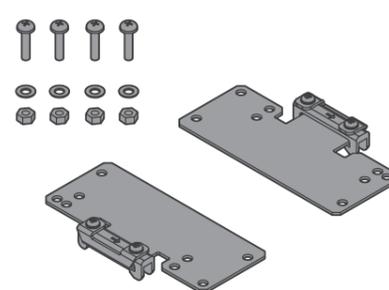


*1: Set the DIN rail length referring to the calculation formula on P. 189.

DIN rail mounting bracket kit

TVG P-D

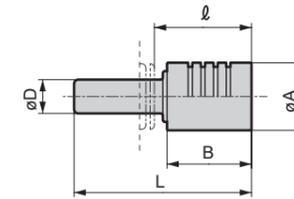
Size
1
2



* Kit contents: 2 mounting brackets, 4 mounting screws.

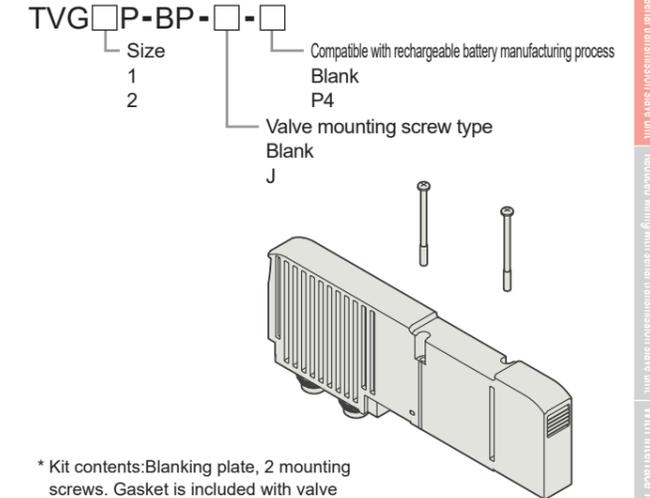
Related components Silencer, blanking plate kit, exhaust check valve, cable clamp, waterproof cap, waterproof plug

Silencer



Model No.	D	B	L	l	A
SLW-H6	ø6	20	41	23.5	16
SLW-H8	ø8	20	42	23	16
SLW-H10	ø10	27	53	31.5	20

Blanking plate kit

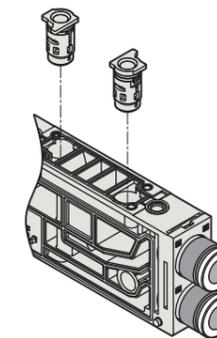


* Kit contents: Blanking plate, 2 mounting screws. Gasket is included with valve block.

Exhaust malfunction prevention valve

TVG1P-CHECK-VALVE TVG2P-CHECK-VALVE

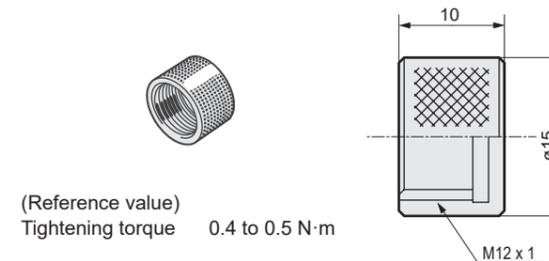
Set of 2.



Parts for serial transmission Device unit

● Waterproof cap

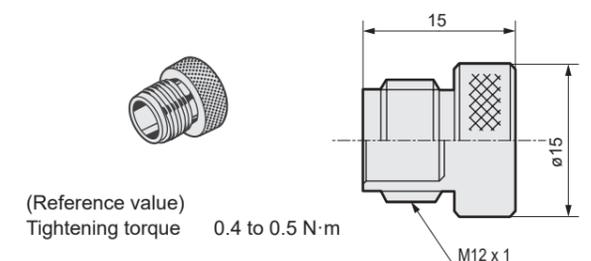
Model No.	Content
TVGP-XSZ-11	Used for jet proof protection of unused signal connectors.



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

● Waterproof plug

Model No.	Content
TVGP-XSZ-12	Used for jet proof protection of unused signal connectors.

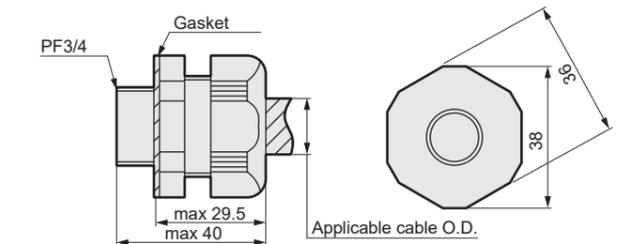


(Reference value)
Tightening torque 0.4 to 0.5 N·m

Wiring block Parts kit for EA1

● Cable clamp

Model No.	Applicable cable O.D.	Content
TVGP-SCL-18A	ø14.5 to 16.5	Used for dust and water jet protection of cables.
TVGP-SCL-18B	ø16.5 to 18.5	



(Reference value)
Body tightening torque 4.0-4.5 N·m
Cable clamp tightening torque 3.0-3.5 N·m

Cable for serial transmission Device unit

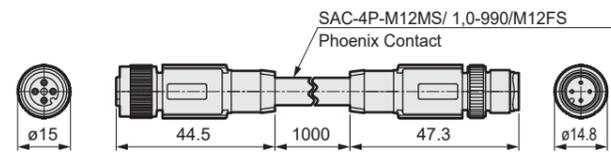
● Communication cable

For CC-Link

[Cable with connectors on both ends (M12 socket - M12 plug, 1 m)]

TVGP - CABLE - G - M12M12 - 1

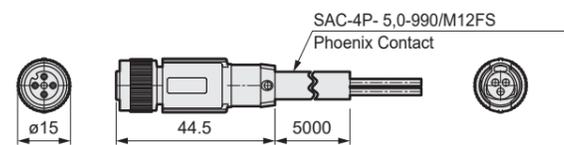
Signal name	Function	Connector 1	Connector 2
		M12, 4-pole- Socket, A-code	M12, 4-pole plug, A-coded
		Pin No.	Pin No.
SLD	Ground wire (Shield)	1	1
DB	Differential signal B (Inverted)	2	2
DG	Signal ground	3	3
DA	Differential signal A (Non-inverted)	4	4



[Cable with connector on one end for IN (M12 socket - Loose wire, 5 m)]

TVGP - CABLE - G - M12FS - 5

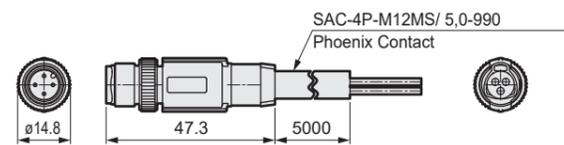
Signal name	Function	Connector 1	Cable
		M12, 4-pole- Socket, A-code	5 m
		Pin No.	Insulator color
SLD	Ground wire (Shield)	1	-
DB	Differential signal B (Inverted)	2	White
DG	Signal ground	3	Yellow
DA	Differential signal A (Non-inverted)	4	Blue



[Cable with connector on one end for OUT (M12 plug - Loose wire, 5 m)]

TVGP - CABLE - G - M12MS - 5

Signal name	Function	Connector 1	Cable
		M12, 4-pole plug, A-coded	5 m
		Pin No.	Insulator color
SLD	Ground wire (Shield)	1	-
DB	Differential signal B (Inverted)	2	White
DG	Signal ground	3	Yellow
DA	Differential signal A (Non-inverted)	4	Blue

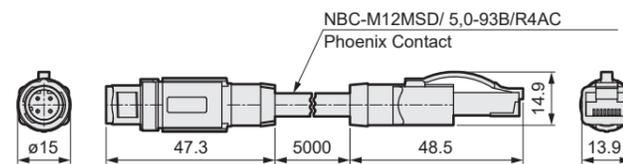


For EtherCAT, EtherNet/IP, PROFINET, CC-Link IEF Basic

[Cable with connectors on both ends (M12 plug - RJ45 plug, 5 m)]

TVGP - CABLE - M12R4 - 5

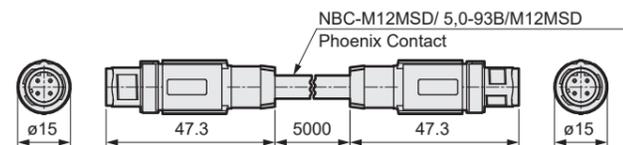
Signal name	Function	Connector 1	Connector 2
		M12, 4-pole plug, D-coded	RJ45 Plug
		Pin No.	Pin No.
TD+	Transmission data, plus	1	1
RD+	Reception data, plus	2	3
TD-	Transmission data, minus	3	2
RD-	Reception data, minus	4	6



[Cable with connectors on both ends (M12 plug - M12 plug, 5 m)]

TVGP - CABLE - M12M12 - 5

Signal name	Function	Connector 1	Connector 2
		M12, 4-pole plug, D-coded	M12, 4-pole plug, D-coded
		Pin No.	Pin No.
TD+	Transmission data, plus	1	1
RD+	Reception data, plus	2	2
TD-	Transmission data, minus	3	3
RD-	Reception data, minus	4	4

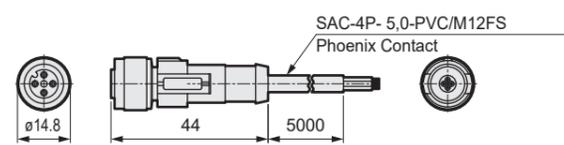


● Power cable

[Cable with connector on one end (M12 socket - Loose wire, 5 m)]

TVGP - CABLE - M12SAC - 5

Signal name	Function	Connector 1	Cable
		M12, 4-pole- Socket, A-code	5 m
		Pin No.	Insulator color
Unit power	+ Side:24 V	1	Brown
Valve power	+ Side:24 V	2	White
Unit power	- Side:0 V	3	Blue
Valve power	- Side:0 V	4	Black



Parts for multi-connector

● Cable for multi-connector type (wiring method FA1)

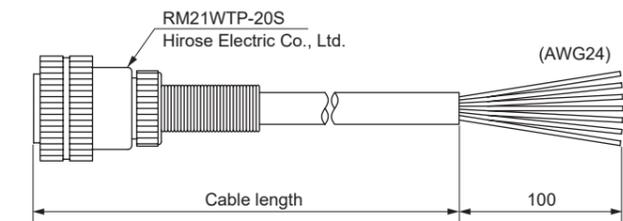
[Cable with connector]

TVGP - RMC - 3

① Cable length

① Cable length

Code	Content
1	1 m
3	3 m
5	5 m



Correspondence between terminal No. and wire core

Terminal No.	1	2	3	4	5	6	7	8	9	10	
Wire core identification	Wire color	White	Brown	Green	Yellow	Gray	Pink	Blue	Red	Black	Purple
	Mark tube No.	1	2	3	4	5	6	7	8	9	10
Terminal No.	11	12	13	14	15	16	17	18	19	20	
Wire core identification	Wire color	Gray/Pink	Red/Blue	White/Green	Brown/Green	White/Yellow	Yellow/Brown	White/Gray	Gray/Brown	(None)	(None)
	Mark tube No.	11	12	13	14	15	16	17	18	(None)	(None)

[Connector only]

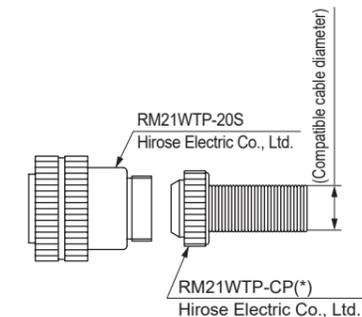
TVGP-RM21WTP-10

① Compatible cable diameter

① Compatible cable diameter

Code	Content
8	ø8
10	ø10
12	ø12

Note) Suitable cable diameter varies in clamping force and waterproofing by cable type, so confirm before use.



* Refer to P. 224-227 for connectors for serial transmission slave units and I/O blocks.

- Cable with D-sub connector

Model No. Notation

Model No. of cable with D-sub connector

TVGP - CABLE - D 0 0 - 1

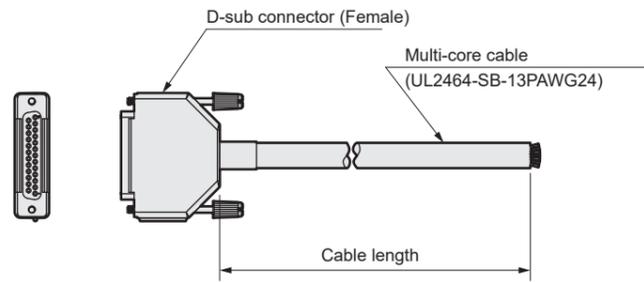
- ① User side connection method
- ② Cable length

① User side connection method		Model No.
Code	Content	TVGP
0	Cut only	●
1	With round terminal for M3.5 screw	●

② Cable length		Model No.
Code	Content	TVGP
1	1 m	●
3	3 m	●
5	5 m	●

Correspondence between D-sub connector terminal No. and wire core

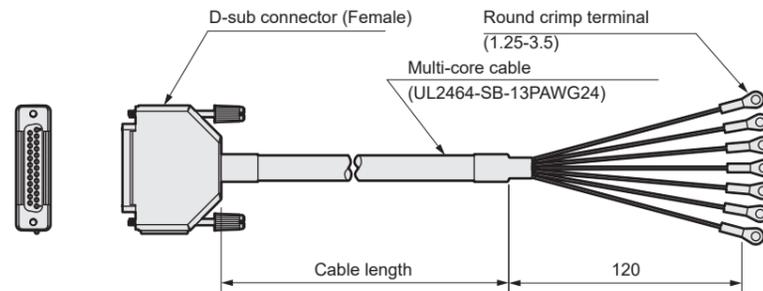
TVGP-CABLE-D00-②



D-sub connector terminal No.		1	2	3	4	5	6	7	8	9	10	11	12	13
Wire core identification	Insulator color	Black	Yellow/ Green	Brown	Brown/ Black	Red	Red/ Black	Orange	Orange/ Black	Yellow	Yellow/ Black	Green	Green/ Black	Blue

D-sub connector terminal No.		14	15	16	17	18	19	20	21	22	23	24	25	-
Wire core identification	Insulator color	Blue/ Black	Purple	Purple/ Black	Gray	Gray/ Black	White	White/ Black	Pink	Pink/ Black	Yellow green	Yellow green/ Black	Light blue	Light blue/ Black

TVGP-CABLE-D01-②



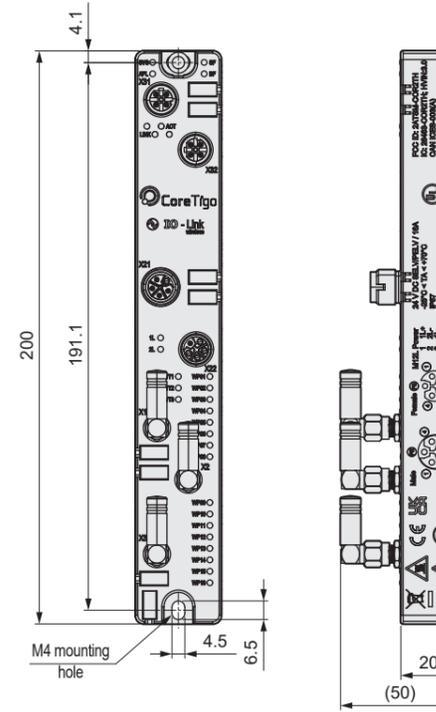
D-sub connector terminal No.		1	2	3	4	5	6	7	8	9	10	11	12	13
Wire core identification	Insulator color	Black	Yellow/ Green	Brown	Brown/ Black	Red	Red/ Black	Orange	Orange/ Black	Yellow	Yellow/ Black	Green	Green/ Black	Blue
Mark tube No.		1	2	3	4	5	6	7	8	9	10	11	12	13

D-sub connector terminal No.		14	15	16	17	18	19	20	21	22	23	24	25	-
Wire core identification	Insulator color	Blue/ Black	Purple	Purple/ Black	Gray	Gray/ Black	White	White/ Black	Pink	Pink/ Black	Yellow green	Yellow green/ Black	Light blue	Light blue/ Black
Mark tube No.		14	15	16	17	18	19	20	21	22	23	24	25	-

* Up to 24 points can be used. Remove excess points before use.

Connected units per

TIGOMASTER2TH-EIP



Supplier: Toho Technology Corp.

Specifications

Item	Content
Frequency	2401 MHz to 2480 MHz(80 ch)
Transmission power	10 dBm MAX
Modulation method	GFSK
Applicable standards	FCC,CE
Cycle time	Min. 5 ms
Communication distance	Max. 20 m
Power supply voltage	18 to 31.2 VDC
Current consumption	0.2 A
Mounting method	Nominal screw size M4 (Torque 1.2 N·m)
Power cable specifications	M12 L-coded
Communication cable specifications	M12 D-coded
Communication I/F	*1 EtherNet/IP
Operating temperature range	-25 to 55°C
Protection structure	IP67

*1 : EtherCAT, PROFINET are special specification products.

Cable specifications

Content	Model No.	Specifications
Power cable	TIGOCABLEPOW1.5	Length 1.5 m, one side M12 female, L-code, one side flying leads
Communication cable	TIGOCABLENET-1	Length 1.0 m, one side M12, D-code, one side RJ45

TVG

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

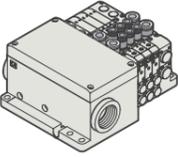
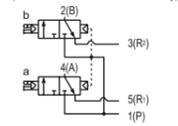
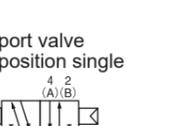
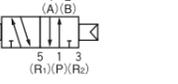
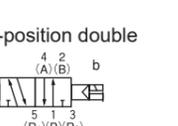
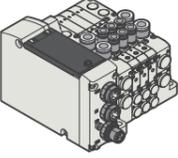
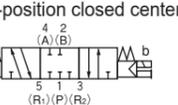
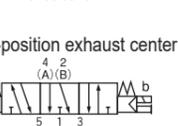
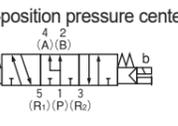
Direct piping



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Series Variation TVG1/TVG2 Series Direct piping

Series appearance	Mounted valve Model No.	Position, Solenoid, Circuit diagram Code	Valve specifications		Switching position							A/B piping port (mm)			Electrical connection				Voltage	Spacer			Page				
			Flow characteristics (dm ³ /(s·bar))	Applicable cylinder bore size(ø) *1	2-position		3-position			Dual 3-port valve built-in type	Mix	Push-in fitting			Reduced wiring connection		Serial transmission	Supply, Exhaust		Regulator	In-stop valve						
					Single	Double	Closed center	Exhaust center	Pressure center			ø4	ø6	ø8	Centralized terminal block	Multi-connector						D-sub connector		OPP8			
Reduced wiring type 	3-port	TVG1	● Dual 3-port valve built-in type (Example: A side valve: NC, B side valve: NC type) 	0.55 to 0.78	to ø50																						
		TVG2		1.7 to 1.9	to ø80																						
	5-port	TVG1	● 5-port valve 2-position single 	0.56 to 0.85	to ø50	●	●	●	●	●	●																
		TVG2	● 2-position double 	1.9 to 2.5	to ø80	●	●	●	●	●	●																
	Serial transmission 	3-port	TVG1	● 3-position closed center 	0.55 to 0.78	to ø50																					
			TVG2		1.7 to 1.9	to ø80																					
		5-port	TVG1	● 3-position exhaust center 	0.56 to 0.85	to ø50	●	●	●	●	●	●															
			TVG2	● 3-position pressure center 	1.9 to 2.5	to ø80	●	●	●	●	●	●															

*1 : For details, P. 212.

TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
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 Manifold specifications
 Technical data
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TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG-P4
 Manifold specifications
 Technical data
 Safety precautions



Plug-in block manifold
Pilot operated 3, 5-port valve Direct piping

TVG1/TVG2 Series



Model performance/characteristics

Item	Switching position	TVG1		TVG2		
		ON	OFF	ON	OFF	
Response time ms	Dual 3-port valve built-in type	15	25	20	37	
	2-position	Single	15	20	22	24
		Double	15	15	26	26
	3-position	20	30	25	35	

Response time is the value at supply pressure 0.5 MPa, 20°C, and no lubrication. It depends on pressure and oil quality.

Flow characteristics

Model No.	Switching position	P → A/B			A/B → R			
		C[dm³/(s·bar)]	b	Q[L/min(ANR)]	C[dm³/(s·bar)]	b	Q[L/min(ANR)]	
TVG1	Dual 3-port valve built-in type	0.62	0.51	184	0.78 (0.55)	0.33 (0.30)	202 (140)	
	2-position	Single	0.66	0.56	204	0.85 (0.56)	0.30 (0.33)	216 (145)
		Double	0.64	0.54	195	0.79 -	0.34 -	206 -
	3-position	Exhaust center	0.64	0.54	195	0.85 (0.56)	0.32 (0.32)	219 (144)
		Pressure center	0.68	0.59	217	0.81 -	0.36 -	214 -
		Center	0.68	0.59	217	0.81 -	0.36 -	214 -
TVG2	Dual 3-port valve built-in type	1.7	0.29	430	1.9 (1.7)	0.38 (0.20)	510 (407)	
	2-position	Single	2.1	0.35	552	2.5 (1.9)	0.32 (0.18)	644 (450)
		Double	2.0	0.35	525	2.2 -	0.32 -	567 -
	3-position	Exhaust center	1.9	0.34	496	2.5 (2.0)	0.33 (0.19)	648 (476)
		Pressure center	2.1	0.36	555	2.2 -	0.32 -	567 -
		Center	2.1	0.36	555	2.2 -	0.32 -	567 -

*1 : Conversion between effective cross-sectional area S and sonic conductance C is $S \approx 5.0 \times C$.

*2 : Values in () are with exhaust malfunction prevention valve.

Reduced wiring specifications

Item	EA1A	EA1B	EA1C	FA1A	FA1B	GA1A	GA1B	GA1C
Type	Centralized terminal block M3 screw type			Multi-connector		D-sub connector		
Connecting connector	-			Hirose Electric Co., Ltd. RM21WTP-20S 20-pin		D-sub connector (Female) 25-pin		
Output	NPN (Positive common)	PNP (Negative common)	- (100 VAC only)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	- (100 VAC only)

Serial transmission Device station specifications(Compatible PLC tableP. 223.)

Item	JA1A	JA1B	JA1C	JA1D	JA2C	JA2D	JA3C	JA3D	JA4C	JA4D	JA5C	JA5D
Communication system name	DeviceNet				CC-Link Ver.1.10		EtherCAT		EtherNet/IP		CC-Link IEF Basic	
Power supply	11 to 25 VDC*				24 VDC±10%							
Unit side	40 mA or less (All points ON:at 24 VDC)				50 mA or less (All stations ON:at 24 VDC)				90 mA or less (All stations ON:at 24 VDC)			
Valve side	15 mA or less (Excluding load current)											
Points	16 points				32 points							
Occupied points	2 bytes		4 bytes		1 station							
Operation display	LED (Power and communication status)											
Output	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)

* Indicates communication power supply voltage range.

Item	JA6C	JA6D	JA7C	JA7D	JA8C	JA8D	JA9C	JA9D	JA9G	JA9H	JB1C	JB1D
Communication system name	PROFINET		CC-Link IE Field		CC-Link IE TSN		IO-Link		IO-Link Wireless			
Power supply	24 VDC±10%						18 to 30 VDC			24 VDC±10%		
Unit side	90 mA or less (All points ON:at 24 VDC)		100 mA or less (All stations ON:at 24 VDC)		50 mA or less (All stations ON:at 24 VDC)		35 mA or less (All points ON:at 24 VDC)					
Valve side	15 mA or less (Excluding load current)											
Points	32 points											
Occupied points	1 station											
Operation display	LED (Power and communication status)											
Output	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)

Manifold common specifications

Item	Content	
Manifold type	Block manifold	
Mounting method	Direct mount type	
Supply/exhaust method	Common supply / Common exhaust (Built-in exhaust malfunction prevention valve)	
Pilot exhaust method	Main valve / Pilot valve common exhaust	
Internal pilot	(*5) (Built-in pilot exhaust check valve)	
Piping direction	Base side direction	
Valve type and operation method	Pilot operated soft spool valve	
Working fluid	Compressed air, Nitrogen	
Max. operating pressure	MPa 0.7	
Internal pilot minimum operating pressure	2-position double	0.1 (*7)
	2-position single, 3-position	0.2
	3-port valve Dual built-in type	0.2
External pilot min. operating pressure	kPa -100 (Pilot pressure is 0.2 MPa or more)	
Proof pressure	MPa 1.05	
Ambient temperature	°C(*10) -5 to 55 (no freezing)	
Fluid temperature	°C(*10) 5 to 55	
Manual override	Non-locking/locking common type (standard)	
Lubrication	(*1) Not required	
Protection structure	(*2)(*8) IP65, IP67	
Vibration resistance	m/s²(*9) 50 or less	
Shock resistance	m/s² 300 or less	
Atmosphere	Use in corrosive gas atmosphere is prohibited	

Electrical specifications

Item	Reduced wiring connection		Serial transmission
	EA1□, FA1□, GA1□	JA□□, JB□□	JA□□, JB□□
Rated voltage V	100 AC	24 DC	24 DC
Voltage variation range (*3)	±10%	±10%	+10%, -5%
Holding current	Standard	0.019	0.017
	With low heat generation/energy saving circuit	-	0.005
Power consumption	Standard	-	0.4
	With low heat generation/energy saving circuit	-	0.1
Apparent power	VA 1.92	-	-
Heat resistance class	B		
Surge suppressor (*4)	Diode	Zener diode	
Indicator	LED		

*1 : If lubrication is used, use ISO VG32 turbine oil grade 1. Excessive or intermittent lubrication will cause unstable operation.

*2 : Test method per IP65, IP67 (IEC 60529 : 2001) standard. For details, P. 231.

*3 : Note voltage fluctuation range as serial transmission type has voltage drop due to internal circuit.

*4 : Diode is used when low heat generation/energy saving circuit or surge suppressor is selected.

*5 : Pilot exhaust method differs for each supply/exhaust block specification. For details P. 95.

*6 : When used at low vacuum, select external pilot. For details, P. 233.

*7 : 0.2 MPa for type with low heat generation/energy saving circuit.

*8 : D-sub connector(GA1□) protection structure is dustproof (IP40 equivalent). Use to avoid water droplets, oil, etc.

*9 : Regarding the vibration resistance of the DIN rail mount type, limit the vibration applied to the manifold to 20 m/s² or less for 2 to 12 stations, and 10 m/s² or less for 13 to 16 stations.

*10 : For 100 VAC specifications, keep ambient and fluid temperatures at 50°C or less.

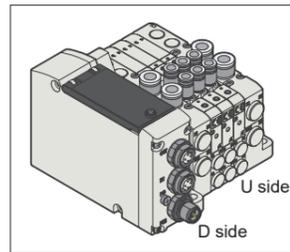
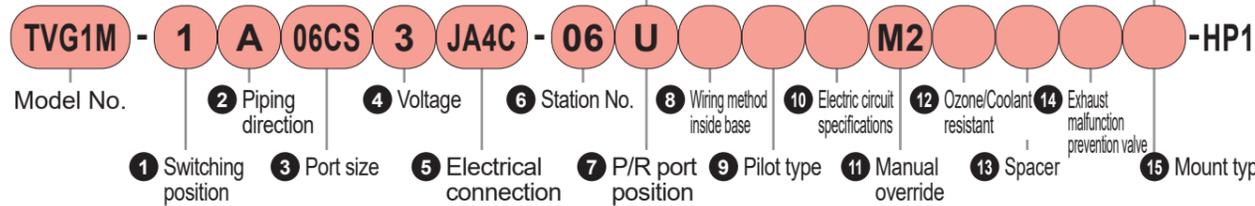
Model specifications

Item	TVG1								
	Centralized terminal block EA1A EA1B	Centralized terminal block EA1C	Multi-connector FA1□	D-sub connector GA1A GA1B	D-sub connector GA1C	Serial transmission JA1A JA1B	Serial transmission JA□C, JA□D JB□C, JB□D		
Max. station No.	10 stations	8 stations	8 stations	12 stations	8 stations	8 stations	16 stations		
Standard wiring (Double wiring)	10 stations	8 stations	8 stations	12 stations	8 stations	8 stations	16 stations		
Single wiring specifying single/double solenoid arrangement (Single wiring)	20 stations	16 stations	16 stations	24 stations	16 stations	16 stations	24 stations		
Max. number of solenoids	20 points	16 points	16 points	24 points	16 points	16 points	32 points		
Port size	Metric fitting	A/B port	Push-in fitting ø4, ø6, M5						
		P/R port	Push-in fitting ø6, ø8						
Item	TVG2								
	Centralized terminal block EA1A EA1B	Centralized terminal block EA1C	Multi-connector FA1□	D-sub connector GA1A GA1B	D-sub connector GA1C	Serial transmission JA1A JA1B	Serial transmission JA□C, JA□D JB□C, JB□D		
Max. station No.	10 stations	8 stations	8 stations	12 stations	8 stations	8 stations	16 stations		
Standard wiring (Double wiring)	10 stations	8 stations	8 stations	12 stations	8 stations	8 stations	16 stations		
Single wiring specifying single/double solenoid arrangement (Single wiring)	20 stations	16 stations	16 stations	24 stations	16 stations	16 stations	24 stations		
Max. number of solenoids	20 points	16 points	16 points	24 points	16 points	16 points	32 points		
Port size	Metric fitting	A/B port	Push-in fitting ø6, ø8						
		P/R port	Push-in fitting ø8, ø10						

Model No. Notation

Solenoid valve with manifold; Direct piping

10 mm width type (valve width)



1 Switching position

Code	Content
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center
X	Mix manifold
A	Dual 3-port valve A side valve: Normally closed / B side valve: Normally closed
B	built-in type A side valve: Normally open / B side valve: Normally open
C	*1 A side valve: Normally closed / B side valve: Normally open

*1 : Supports internal pilot only. Dimensions are the same as 2-position double.

2 Piping direction

Code	Content
A	Top piping

6 Station No.

Code	Content
02	2 stations
to	to
*1 2 24	24 stations

*1 : Varies depending on the reduced wiring connection specifications. Check the model specifications (page 64).

*2 : In the case of 15 mount type "R" (DIN rail), the maximum number of stations is 16.

7 P/R port position* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side (Wiring block side)
B	U side, D side
*1 T	U side, D side, with intermediate supply/exhaust block

*1 : Specify the intermediate supply/exhaust block in the manifold specifications.

8 Wiring method inside base *1

Code	Content
Blank	Double wiring
S	Single wiring specifying single/double solenoid arrangement

*1 : Blank = wiring is for double solenoid regardless of valve type mounted. When single solenoid mounted, one solenoid blank number occurs.

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

Fitting type	A/B port	Code	
Push-in	ø4	04CS	
	ø6	06CS	
	Mix	99CX	
Female thread	M5	05MS	
*2			
Fitting type	One side plug specification *1		
	A port	B port	
Push-in	ø4	Plug	04CA
	ø6	Plug	06CA
	Plug	ø4	04CF
		ø6	06CF
Female thread	M5	Plug	05MA
	Plug	M5	05MF

*1 : A or B port one-side plug specification compatible with 2-position single only.

*2 : Mixed port sizes for 4 (A) and 2 (B) ports are not available.

4 Voltage

Code	Content
1	100 VAC
3	24 VDC

*1 : 100 VAC is only compatible with 5 electrical connections "EA1C" and "GA1C".

5 Electrical connection
• Reduced wiring connection

Content	Output	Code
Centralized terminal block (M3 screw)	NPN	EA1A
	PNP	EA1B
	-	EA1C
Multi-connector	NPN	FA1A
	PNP	FA1B
	-	GA1C
D-sub connector	NPN	GA1A
	PNP	GA1B
	-	GA1C

• Serial transmission

Communication system	Output	Points	Code
DeviceNet	NPN	16 points	JA1A
	PNP		JA1B
	NPN		JA1C
	PNP		JA1D
CC-Link	NPN	16 points	JA2C
	PNP		JA2D
EtherCAT	NPN	16 points	JA3C
	PNP		JA3D
EtherNet/IP	NPN	16 points	JA4C
	PNP		JA4D
CC-Link IEF Basic	NPN	16 points	JA5C
	PNP		JA5D
PROFINET	NPN	32 points	JA6C
	PNP		JA6D
CC-Link IE Field	NPN	16 points	JA7C
	PNP		JA7D
CC-Link IE TSN	NPN	16 points	JA8C
	PNP		JA8D
IO-Link	Class A	NPN	JA9C
		PNP	JA9D
	Class B	NPN	JA9G
		PNP	JA9H
IO-Link Wireless	NPN	16 points	JB1C
	PNP		JB1D

9 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

10 Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
*2 E2	Surge-less

*1 : The combination of "E2" and PNP specifications is a custom product.

*2 : Only compatible with 3 voltage "3".

12 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/Coolant resistant (Main valve fluorine specification)

13 Spacer

Code	Content
Blank	Without spacer
Z	With spacer (Specify type and location in MF specifications)

*1 : Specify spacer type and mounting position in manifold specifications. Stacked spacers are not compatible. Combination with blanking plate is not supported.

11 Manual override * Multiple selections are not allowed.

Code	Content
Blank	Non-locking/locking common, with erroneous operation prevention cover
M1	Non-locking type, with erroneous operation prevention cover
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

14 Exhaust malfunction prevention valve

Code	Content
Blank	None
H	With exhaust malfunction prevention valve

*1 : 1 Switching position classifications "3" and "5" cannot be selected. Refer to page 234 for details on the exhaust malfunction prevention valve. Specify the number of stations to be installed in the manifold specification sheet.

15 Mount type

Code	Content
Blank	Direct mount type
R	DIN rail mount type

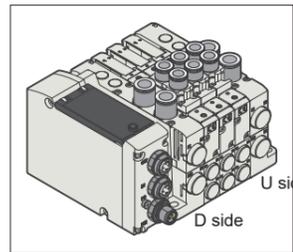
Model No. Notation

Solenoid valve with manifold ; Direct piping

15 mm width type (valve width)



- 1 Switching position
- 2 Piping direction
- 3 Port size
- 4 Voltage
- 5 Electrical connection
- 6 Station No.
- 7 P/R port position
- 8 Wiring method inside base
- 9 Pilot type
- 10 Manual override
- 11 Electric circuit specifications
- 12 Ozone/Coolant resistant
- 13 Valve mounting screw type
- 14 Spacer
- 15 Exhaust malfunction prevention valve
- 16 A/B port filter
- 17 Mount type



1 Switching position

Code	Content
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center
X	Mix manifold
A	Dual 3-port valve
B	built-in type
C	*1

*1 : Supports internal pilot only. Dimensions are the same as 2-position double.

2 Piping direction

Code	Content
A	Top piping

6 Station No.

Code	Content
02	2 stations
to	to
*1 *2 24	24 stations

*1 : Depends on reduced wiring connection specifications. Model specifications (P. 64) please confirm.
*2 : In the case of 17 mount type "R" (DIN rail), the maximum number of stations is 16.

7 P/R port position* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side (Wiring block side)
B	U side, D side
*1 T	U side, D side, with intermediate supply/exhaust block

*1 : Specify the intermediate supply/exhaust block in the manifold specifications.

8 Wiring method inside base *1

Code	Content
Blank	Double wiring
S	Single wiring specifying single/double solenoid arrangement

*1 : Blank = wiring is for double solenoid regardless of valve type mounted. When single solenoid mounted, one solenoid blank number occurs.

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

Fitting type	A/B port	Code	
Push-in	ø6	06CS	
Push-in	ø8	08CS	
Push-in	Mix	99CX	
*2			
Fitting type	One side plug specification *1		Code
	A port	B port	
Push-in	ø6	Plug	06CA
Push-in	ø8	Plug	08CA
Push-in	ø6	Plug	06CF
Push-in	ø8	Plug	08CF

*1 : A or B port one-side plug specification compatible with 2-position single only.
*2 : Mixed port sizes for 4 (A) and 2 (B) ports are not available.

4 Voltage

Code	Content
1	100 VAC
3	24 VDC

*1 : 100 VAC is only compatible with 5 electrical connections "EA1C" and "GA1C".

5 Electrical connection • Reduced wiring connection

Content	Output	Code
Centralized terminal block (M3 screw)	NPN	EA1A
	PNP	EA1B
	-	EA1C
Multi-connector	NPN	FA1A
	PNP	FA1B
D-sub connector	NPN	GA1A
	PNP	GA1B
	-	GA1C

• Serial transmission

Communication system	Output	Points	Code	
DeviceNet	NPN	16 points	JA1A	
	PNP		JA1B	
	NPN		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	NPN	JA9C
			PNP	JA9D
	Class B		NPN	JA9G
			PNP	JA9H
IO-Link Wireless	32 points	NPN	JB1C	
		PNP	JB1D	

9 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

10 Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
*2 E2	Surge-less

*1 : The combination of "E2" and PNP specifications is a custom product.
*2 : Only compatible with 4 voltage "3".

12 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

13 Valve mounting screw type

Code	Content
Blank	Pan head machine screw with plus/minus
J	Hexagon socket head bolt

*1 : When spacer option "Z" is selected, "J" cannot be selected.

11 Manual override * Multiple selections are not allowed.

Code	Content
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

14 Spacer

Code	Content
Blank	Without spacer
Z	With spacer (Specify type and location in MF specifications)

*1 : Specify spacer type and mounting position in manifold specifications. Stacked spacers are not compatible. Combination with blanking plate is not supported. Cannot be selected simultaneously with L-type push-in fitting upward.

15 Exhaust malfunction prevention valve

Code	Content
Blank	None
H	With exhaust malfunction prevention valve

*1 : 1 Switching position classifications "3" and "5" cannot be selected. Refer to page 234 for details on the exhaust malfunction prevention valve.
*2 : Specify the number of stations to be installed in the manifold specification sheet.

16 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

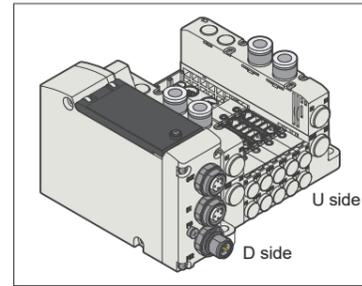
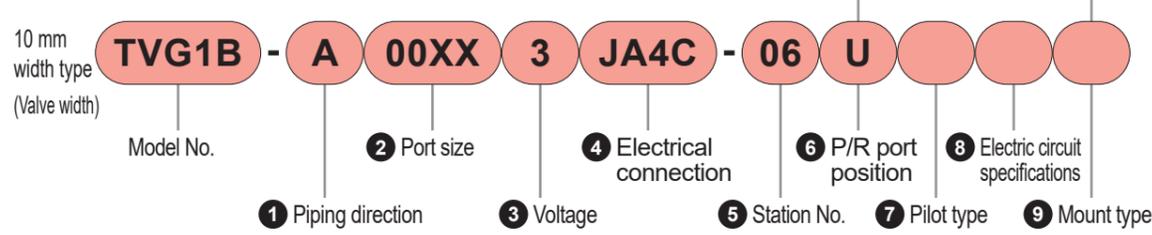
*1 : P port has a built-in filter.

17 Mount type

Code	Content
Blank	Direct mount type
R	DIN rail mount type

Model No. Notation

Manifold base only; Direct piping * Solenoid valves are not included.



① Piping direction

Code	Content
A	Top piping

② Port size

Code	Content
00XX	Valve block for direct piping

③ Voltage

Code	Content
1	100 VAC
3	24 VDC

*1 : 100 VAC is only compatible with ④ electrical connections "EA1C" and "GA1C".

④ Electrical connection

• Reduced wiring connection

Content	Output	Code	
Centralized terminal block (M3 screw)	NPN	EA1A	
	PNP	EA1B	
	-	EA1C	
Multi-connector	NPN	FA1A	
	PNP	FA1B	
D-sub connector	NPN	GA1A	
	PNP	GA1B	
	-	GA1C	

• Serial transmission

Communication system	Output	Points	Code		
DeviceNet	NPN	16 points	JA1A		
	PNP		JA1B		
	NPN		JA1C		
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	ClassA	32 points	JA9C		
			PNP		JA9D
	ClassB		NPN		JA9G
			PNP		JA9H
IO-Link Wireless	NPN	32 points	JB1C		
	PNP		JB1D		

⑤ Station No.

Code	Content
02 to 16	2 stations to 16 stations

*1 : Internal base wiring is all for double solenoid regardless of valve type mounted. If a single solenoid is mounted, one solenoid signal will be empty.
*2 : Varies depending on the reduced wiring connection specifications. Check the model specifications (page 64).

⑥ P/R port position

(TVG1B : ø8)
* Multiple selections are not allowed.

Code	Content	
U	U side (End block side)	
D	D side (Wiring block side)	
B	U, D both sides	

*1: P port has a built-in filter.

⑦ Pilot type

Code	Content	
Blank	Internal pilot	
K	External pilot	

⑧ Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 *2 : Combination of "E2" and PNP specification is a custom product.
*2 : Only compatible with ③ voltage "3".

⑨ Mount type

Code	Content
Blank	Direct mount type
R	DIN rail mount type

*1 : Standard length DIN rail is assembled. For standard length calculation method, see P. 189.

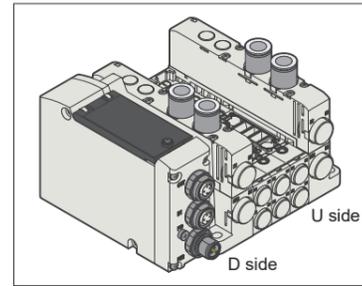
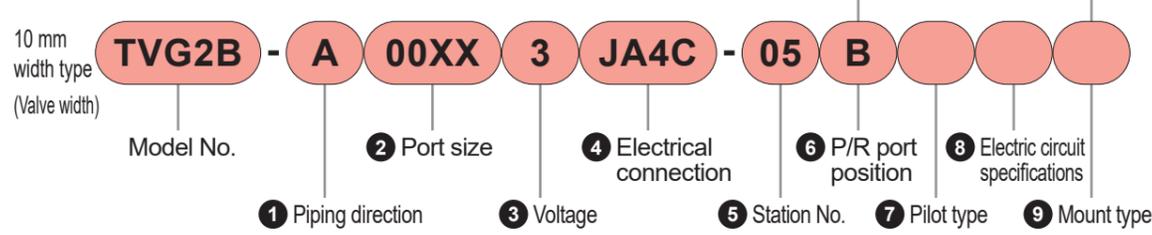
• When exhaust malfunction prevention valve is required, see P. 55.

TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with rechargeable battery manufacturing process
Manifold specifications
Technical data
Safety precautions

TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with rechargeable battery manufacturing process
Manifold specifications
Technical data
Safety precautions

Model No. Notation

Manifold base only; Direct piping * Solenoid valves are not included.



1 Piping direction

Code	Content
A	Top piping

2 Port size

Code	Content
00XX	Valve block for direct piping

3 Voltage

Code	Content
1	100 VAC
3	24 VDC

*1 : 100 VAC is only compatible with 4 electrical connections "EA1C" and "GA1C".

4 Electrical connection

• Reduced wiring connection

Content	Output	Code	
Centralized terminal block (M3 screw)	NPN	EA1A	
	PNP	EA1B	
	-	EA1C	
Multi-connector	NPN	FA1A	
	PNP	FA1B	
D-sub connector	NPN	GA1A	
	PNP	GA1B	
	-	GA1C	

• Serial transmission

Communication system	Output	Points	Code	
DeviceNet	NPN	16 points	JA1A	
	PNP		JA1B	
	NPN		JA1C	
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 ClassA	NPN	32 points	JA9C	
	PNP		JA9D	
IO-Link ClassB	NPN	32 points	JA9G	
	PNP		JA9H	
IO-Link Wireless	NPN	32 points	JB1C	
	PNP		JB1D	

5 Station No.

Code	Content
02 to 16	2 stations to 16 stations

*1 : Internal base wiring is all for double solenoid regardless of valve type mounted. If a single solenoid is mounted, one solenoid signal will be empty.

*2 : Varies depending on reduced wiring connection specifications. Please confirm Model-specific specifications (P. 64)

6 P/R port position

(TVG2B : $\phi 10$)

* Multiple selections are not allowed.

Code	Content	
U	U side (End block side)	
D	D side (Wiring block side)	
B	U, D both sides	

*1 : P port has a built-in filter.

7 Pilot type

Code	Content	
Blank	Internal pilot	
K	External pilot	

8 Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 *2 : Combination of "E2" and PNP specification is a custom product.

*2 : Only compatible with 3 voltage "3".

9 Mount type

Code	Content
Blank	Direct mount type
R	DIN rail mount type

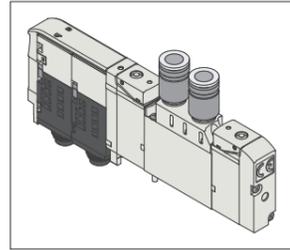
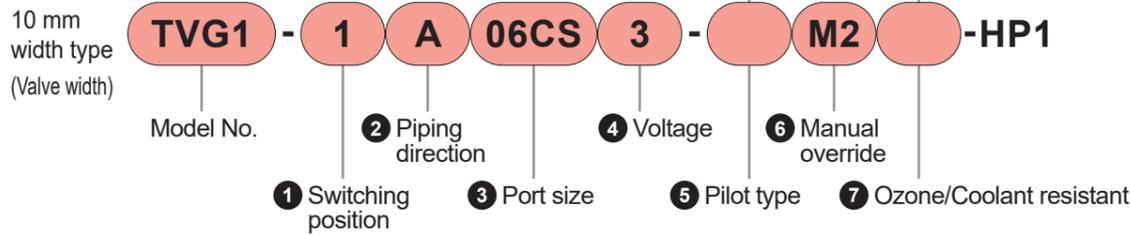
*1 : Standard length DIN rail is assembled. For standard length calculation method, see P. 189.

Model No. Notation (Manifold base only) ; Direct piping

• When exhaust malfunction prevention valve is required, see P. 55.

Model No. Notation

Discrete solenoid valve (for base mounting);Direct piping



Accessories
 • Valve mounting screws are included.
 • Gasket is included with manifold base.

1 Switching position

Code	Content	
1	2-position single	
2	2-position double	
3	3-position closed center	
4	3-position exhaust center	
5	3-position pressure center	
*1 A	Dual 3-port valve built-in type	A side valve:Normally closed B side valve:Normally closed
*1 B		A side valve:Normally open B side valve:Normally open
*1 C		A side valve:Normally closed B side valve:Normally open

*1 : Only internal pilot compatible. Dimensions are identical to 2-position double.

2 Piping direction

Code	Content
A	Top piping

3 Port size

Fitting type	A/B port	Code	
Push-in	ø4	04CS	
	ø6	06CS	
Female thread	M5	05MS	
Fitting type	One side plug specification *1		Code
	A port	B port	
Push-in	ø4	Plug	04CA
			06CA
	ø6	Plug	04CF
			06CF
Female thread	M5	Plug	05MA
			05MF

*1 : A or B port one-side plug specification compatible with 2-position single only.

4 Voltage

Code	Content
1	100 VAC
3	24 VDC

5 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

6 Manual override* Multiple selections are not allowed.

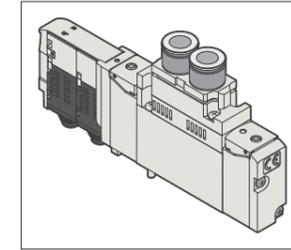
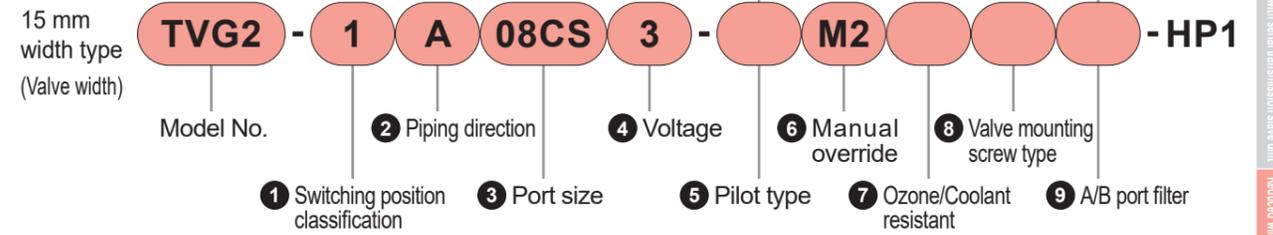
Code	Content
Blank	Non-locking/locking common, with erroneous operation prevention cover
M1	Non-locking type, with erroneous operation prevention cover
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

7 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

Model No. Notation

Discrete solenoid valve (for base mounting);Direct piping



Accessories
 • Valve mounting screws are included.
 • Gasket is included with manifold base.

1 Switching position

Code	Content	
1	2-position single	
2	2-position double	
3	3-position closed center	
4	3-position exhaust center	
5	3-position pressure center	
*1 A	3-port valve Dual built-in type	A side valve:Normally closed B side valve:Normally closed
*1 B		A side valve:Normally open B side valve:Normally open
*1 C		A side valve:Normally closed B side valve:Normally open

*1 : Only internal pilot compatible. Dimensions are identical to 2-position double.

2 Piping direction

Code	Content
A	Top piping

3 Port size

Fitting type	A/B port	Code	
Push-in	ø6	06CS	
	ø8	08CS	
Fitting type	One side plug specification *1		Code
	A port	B port	
Push-in	ø6	Plug	06CA
			08CA
	ø8	Plug	06CF
			08CF

*1 : A or B port one-side plug specification compatible with 2-position single only.

4 Voltage

Code	Content
1	100 VAC
3	24 VDC

5 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

6 Manual override* Multiple selections are not allowed.

Code	Content
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

7 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

8 Valve mounting screw type

Code	Content
Blank	Pan head machine screw with plus/minus
J	Hexagon socket head bolt

Accessories

9 A/B port filter

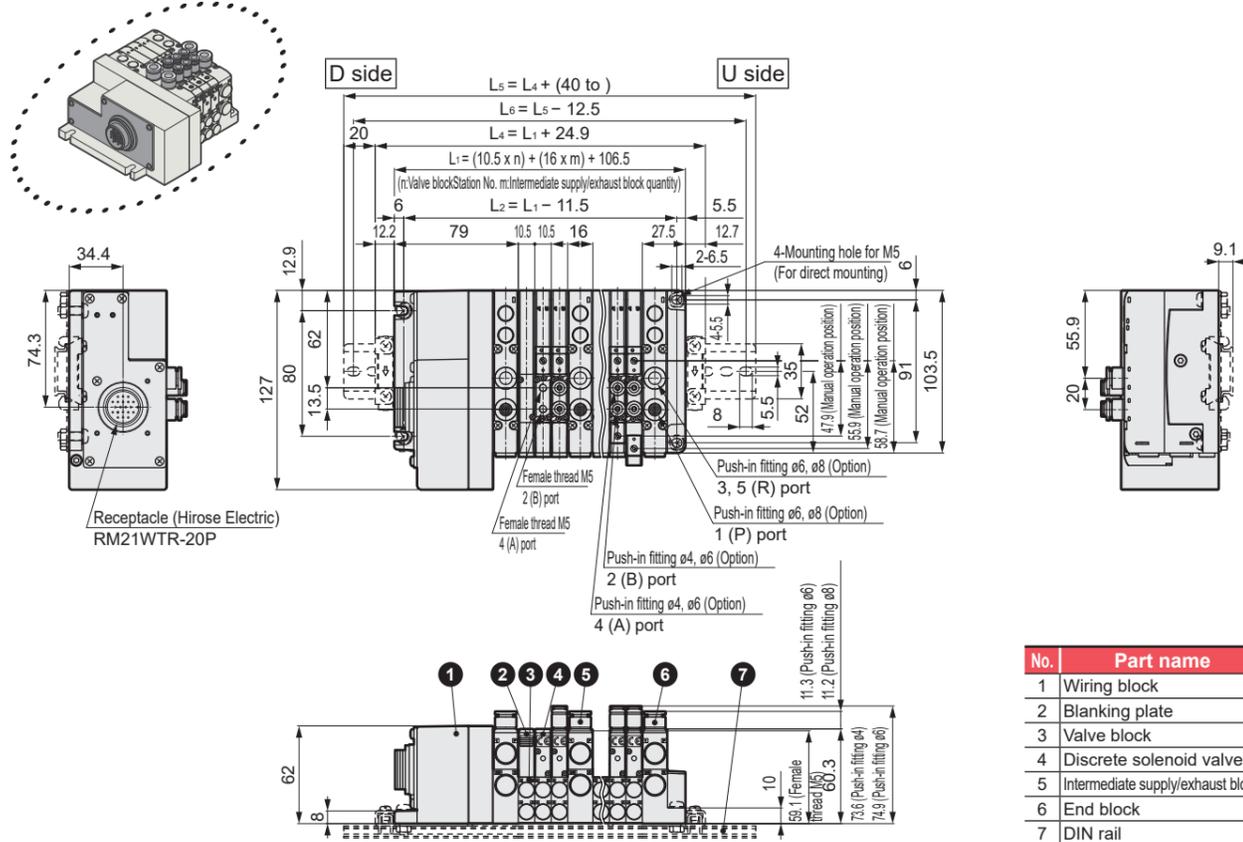
Code	Content
Blank	None
F	Built-in A/B port filter

*1 : The P port of the base has a built-in filter as standard.

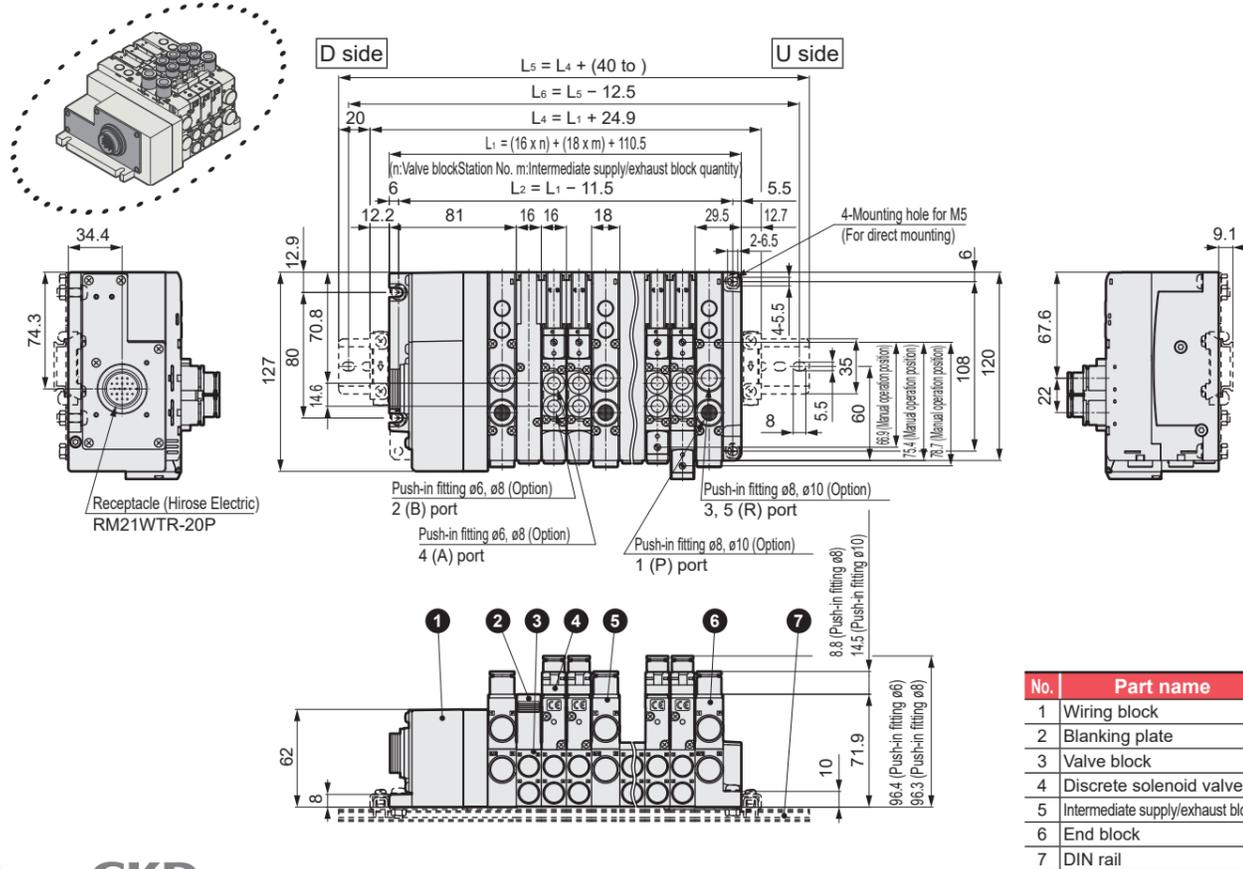
• When exhaust malfunction prevention valve is required, see P. 55.

Dimensions (Multi-connector FA1□)

TVG1M



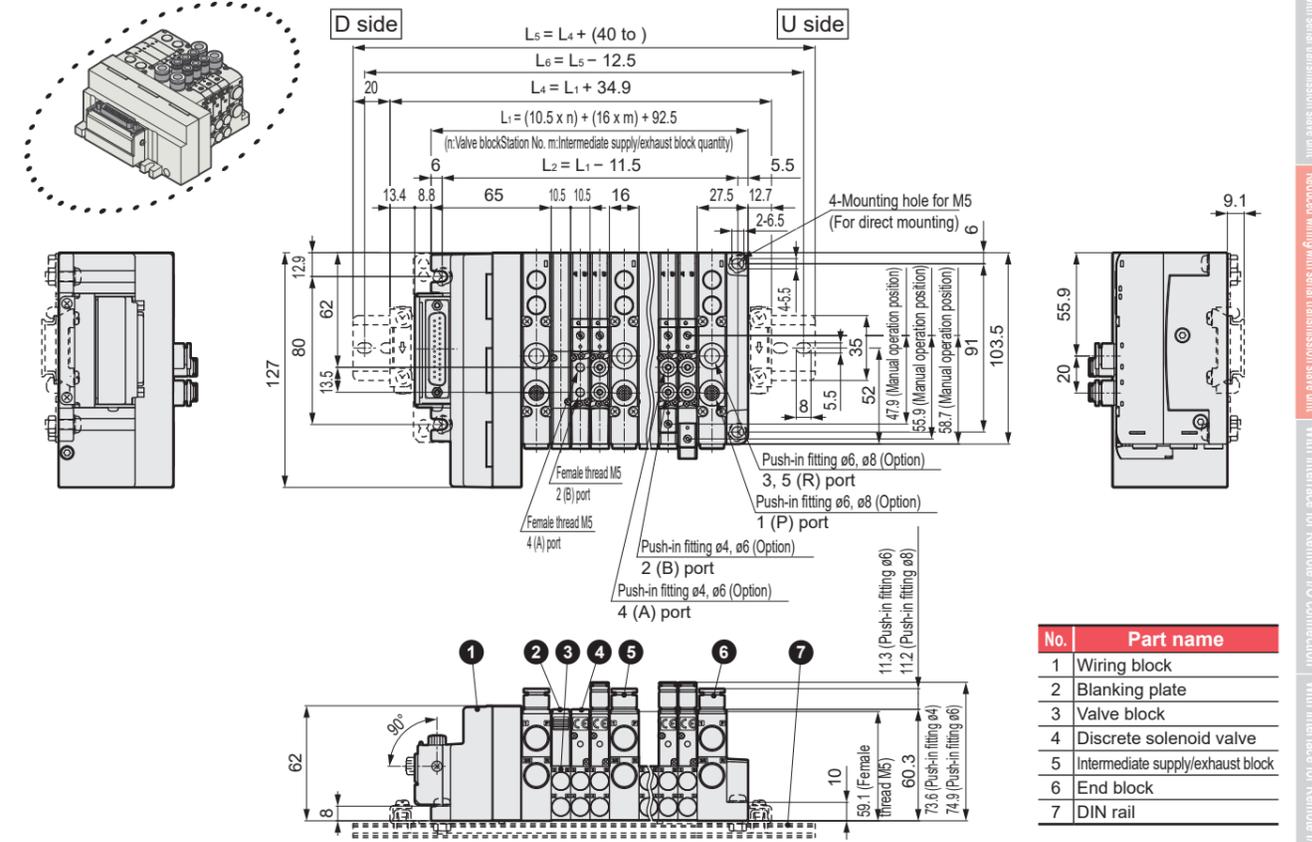
TVG2M



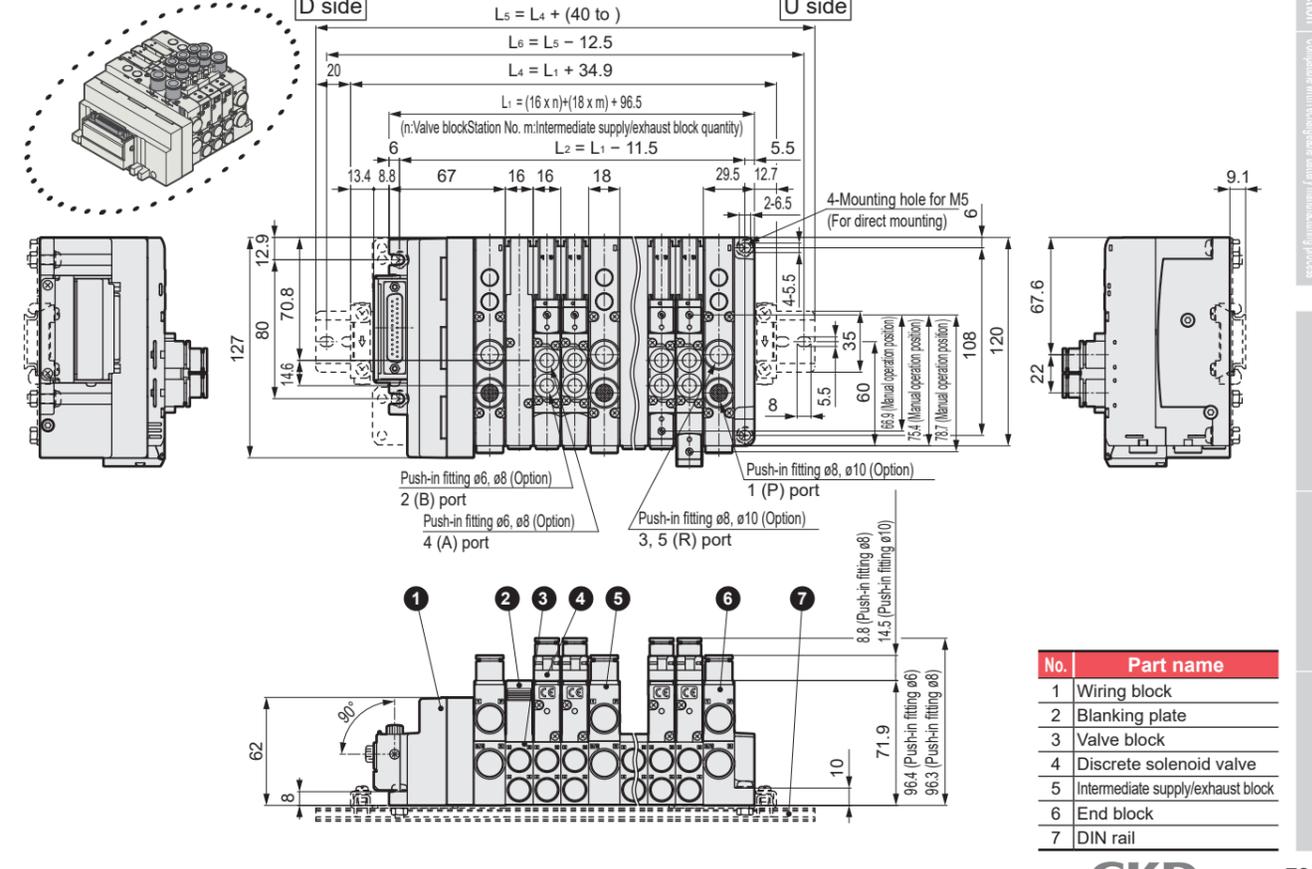
Dimensions ; Direct piping

Dimensions (D-sub connector GA1A/B) * For GA1C (100 VAC specifications), the dimensions are the same as EA1□ (page 77).

TVG1M



TVG2M

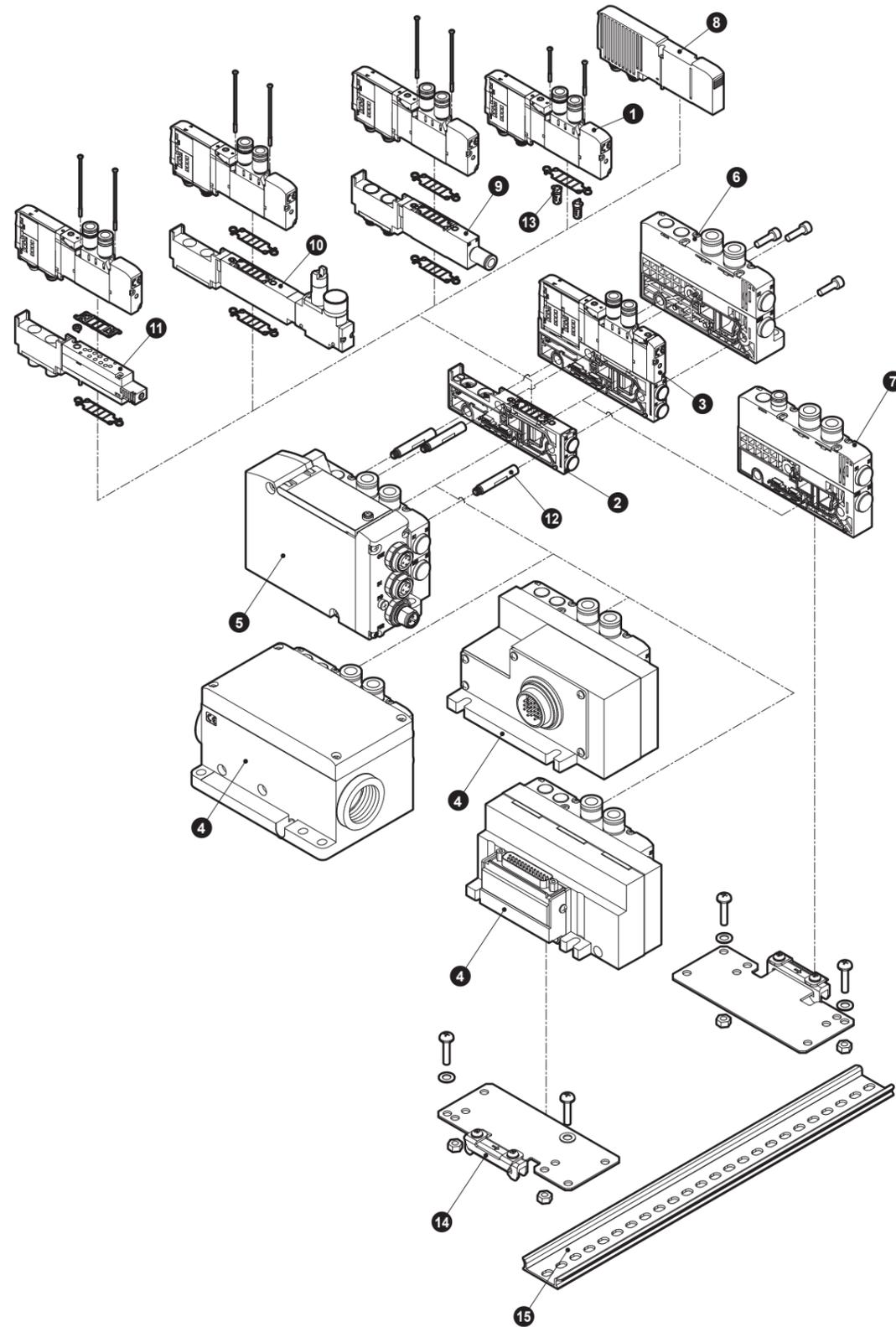


TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG-P4
 Manifold specifications
 Technical data
 Safety precautions

TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG-P4
 Manifold specifications
 Technical data
 Safety precautions

Block manifold:Component configuration;Direct piping

Since it can be assembled easily and freely, increasing or decreasing the number of stations and maintenance are easy.



No.	Part name	Model No. example	Remarks	Page
1	Solenoid valve only (Base mounted)	TVG1-1A06CS3-M2-HP1	A wide variety of solenoid valves are available. It is also possible to mix solenoid valves with different switching position classifications in the same manifold.	P. 74
2	Valve block	TVG1P-VA-00XX3	This block serves as the base for the solenoid valve. It can be arranged according to the required number of stations of solenoid valves. However, the maximum number of stations is determined by the wiring method. (P. 64, 138) The flow path inside the manifold can also be partitioned by selecting an option.	P. 88
3	Valve block with solenoid valve	TVG1P-1A06CS3-M2-HP1	-	P. 84
4	Wiring block (Terminal block box)	TVG1P-TA-08CS-EA1	This block performs electrical wiring to the manifold as well as air supply and exhaust.	P. 82
5	Wiring block (Serial transmission)	TVG1P-TA-08CS-JA1C		P. 82
6	End block	TVG1P-EA-08CS	This block supplies and exhausts air to the manifold. Install it on the opposite side of the wiring block.	P. 93
7	Intermediate supply/exhaust block	TVG1P-QA-08CS	This block supplies and exhausts air to the manifold. Use this when there is concern about insufficient supply flow rate when the number of valve stations increases.	P. 94
8	Blanking plate	TVG1P-BP	Assemble to a spare valve block in preparation for adding solenoid valves later.	P. 55
9	Supply spacer	TVG1P-P-06CS	Use this when supplying different pressures for each station.	P. 96
10	Exhaust spacer	TVG1P-R-06CS	Use when individual exhaust desired. Use for exhaust capacity increase and malfunction prevention from exhaust wrap-around.	P. 96
11	Spacer type regulator	TVG1P-SR-P-G1	Pressure can be adjusted individually for each station.	P. 98
12	In-stop valve spacer	TVG1P-IS	Air supply can be shut off individually for each station.	P. 99
13	Tie rod	TVG1P-TR-05	TVG1 is a set of 3, and TVG2 is a set of 2.	P. 92
14	Malfunction prevention valve	TVG1P-CHECK-VALVE	Prevents cylinder malfunction (jumping out phenomenon) due to exhaust back pressure.	P. 55
15	DIN rail mounting bracket kit	TVG1P-D	Direct mount type manifolds can be changed to DIN rail mount type.	P. 54
	DIN rail	N4GR-BAA200	Standard length calculation method, see P. 189.	P. 54

Weight

TVG1

Part name	Model No.	Weight [g]
Solenoid valve only (Base mounted)	TVG1-1A06CS3-HP1	63
	TVG1-2A06CS3-HP1	71
	TVG1-3/4/5A06CS3-HP1	74
	TVG1-A/B/CA06CS3-HP1	71
Blanking plate	TVG1P-BP	40
End block	TVG1P-EA-08CS	168
Valve block	TVG1P-VA-06CS3	32
Wiring block	TVG1P-TA-08CS-E□	527
	TVG1P-TA-08CS-F□	859
	TVG1P-TA-08CS-G□	715
	TVG1P-TA-08CS-J□	465
	TVG1P-TA-08CS-K□	289

TVG2

Part name	Model No.	Weight [g]
Solenoid valve only (Base mounted)	TVG2-1A08CS3-HP1	112
	TVG2-2A08CS3-HP1	118
	TVG2-3/4/5A08CS3-HP1	127
	TVG2-A/B/CA08CS3-HP1	118
Blanking plate	TVG2P-BP	69
End block	TVG2P-EA-10CS	239
Valve block	TVG2P-VA-08CS3	64
Wiring block	TVG2P-TA-10CS-E□	595
	TVG2P-TA-10CS-F□	927
	TVG2P-TA-10CS-G□	783
	TVG2P-TA-10CS-J□	544
	TVG2P-TA-10CS-K□	371

Parts list

TVG1

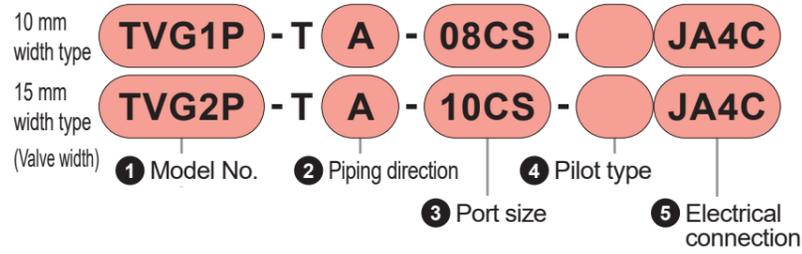
Part name	Model No.
Push-in fitting ø4	GWS4-M5-S
Push-in fitting ø6	GWS6-M5-S
Plug	FPL-M5

TVG2

Part name	Model No.
Push-in fitting ø6	4G2R-JOINT-C6
Push-in fitting ø8	4G2R-JOINT-C8
Plug cartridge	4G2R-JOINT-CPG

Model No. Notation

Wiring block; Direct piping



Accessories
Tie rod fixing nuts are built into the wiring block.

② Piping direction

Code	Content
A	Top piping

③ Port size

●: Standard

Metric fitting			TVG1P		TVG2P	
Fitting type	P/R port	Code	●	●	●	●
Push-in	ø6	06CS	●			
	ø8	08CS	●	●		
	ø10	10CS			●	
Plug			TVG1P		TVG2P	
	P/R port	Code	●	●	●	●
	Plug	00XX	●		●	

*1 : ●Pilot type K, KZ and 00XX cannot be selected simultaneously.

④ Pilot type

Code	Content
Blank	Internal pilot
K	External pilot
KZ	External pilot (PA/PR separation)

*1 : Cannot be selected when
● Connection port size is "00XX".

*2 : External pilot port is ø6 push-in fitting.

⑤ Electrical connection

• Reduced wiring connection

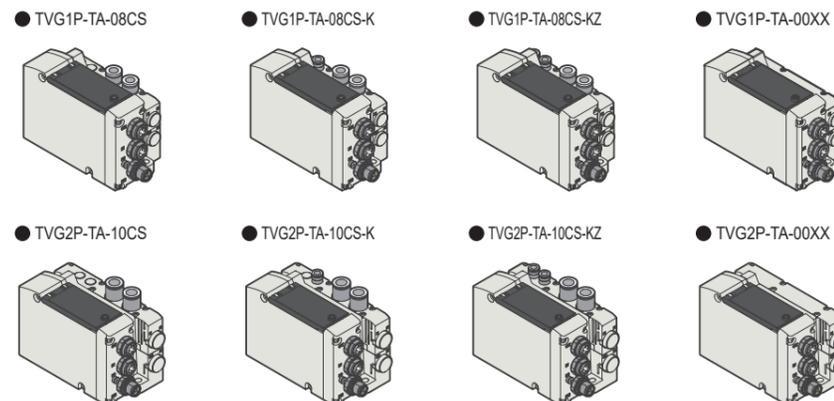
Content	Code
Centralized terminal block (M3 screw)	EA1
Multi-connector	EA1C
	FA1
D-sub connector	GA1
	GA1C

*1 : Can be used for both NPN and PNP.

*2 : "EA1C" and "GA1C" are for 100 VAC only.

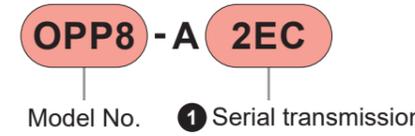
• Serial transmission

Communication system	Output	Points	Code	Communication system	Output	Points	Code
DeviceNet	NPN	16 points	JA1A	PROFINET	NPN	32 points	JA6C
	PNP		JA1B		PNP		JA6D
	NPN	JA1C	CC-Link IE Field	NPN	JA7C		
	PNP	JA1D		PNP	JA7D		
CC-Link Ver. 1.10	NPN	32 points	JA2C	CC-Link IE TSN	NPN	32 points	JA8C
	PNP		JA2D		PNP		JA8D
EtherCAT	NPN	32 points	JA3C	IO-Link	ClassA	32 points	JA9C
	PNP		JA3D				PNP
EtherNet/IP	NPN	32 points	JA4C	ClassB	32 points	32 points	JA9G
	PNP		JA4D				PNP
CC-Link IEF Basic	NPN	32 points	JA5C	IO-Link Wireless	NPN	32 points	JB1C
	PNP		JA5D		PNP		JB1D



Model No. Notation

Serial transmission Device station



① Serial transmission

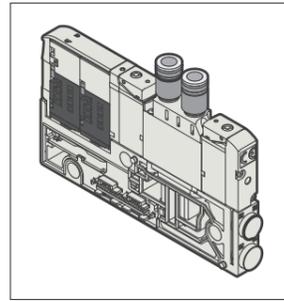
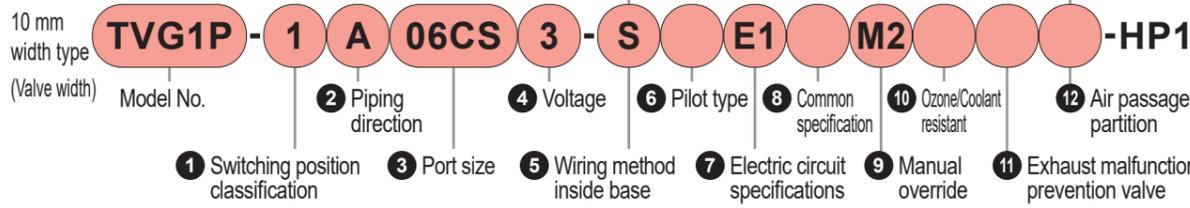
Communication system	Output	Points	Code		
DeviceNet	NPN	16 points	1D		
	PNP		1D-P		
	NPN	2D			
	PNP	2D-P			
CC-Link	NPN	32 points	2G		
	PNP		2G-P		
EtherCAT	NPN	32 points	2EC		
	PNP		2EC-P		
EtherNet/IP	NPN	32 points	2EN		
	PNP		2EN-P		
CC-Link IEF Basic	NPN	32 points	2EB		
	PNP		2EB-P		
PROFINET	NPN	32 points	2EP		
	PNP		2EP-P		
CC-Link IE Field	NPN	32 points	2EF		
	PNP		2EF-P		
CC-Link IE TSN	NPN	32 points	2TG		
	PNP		2TG-P		
IO-Link	ClassA	32 points	2KC-A		
			PNP		2KC-PA
	ClassB		NPN	2KC-B	
			PNP	2KC-PB	
IO-Link Wireless	NPN	32 points	2WK		
	PNP		2WK-P		

Accessories

- OPP fixing bolt 2 pcs.
- Drip-proof gasket 1 pc.

Model No. Notation

Solenoid valve with valve block; Direct piping



1 Switching position

Code	Content	
1	2-position single	
2	2-position double	
3	3-position closed center	
4	3-position exhaust center	
5	3-position pressure center	
*1 A	Dual 3-port	A side valve: Normally closed / B side valve: Normally closed
*1 B	valve built-	A side valve: Normally open / B side valve: Normally open
*1 C	in type	A side valve: Normally closed / B side valve: Normally open
*2 Z	With blanking plate	

*1 : Only internal pilot compatible. Dimensions are identical to 2-position double.
*2 : When Z is selected, "-HP1" is not added to the model number.

2 Piping direction

Code	Content
A	Top piping

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

Fitting type	A/B port	Code	
Push-in	ø4	04CS	
	ø6	06CS	
Female thread	M5	05MS	
Fitting type	One side plug specification *1		Code
Push-in	A port	B port	04CA
	ø4	Plug	
	ø6	Plug	06CA
		ø4	04CF
ø6	ø4	06CF	
	ø6	06CF	
Female thread	M5	Plug	05MA
	Plug	M5	05MF
Fitting type	A/B port	Code	
-	Plug	00XX	

*1 : A or B port one-side plug specification compatible with 2-position single only.
*2 : For 1 switching position category "Z", connection bore size is "00XX".

6 Pilot type *1

Code	Content
Blank	Internal pilot
K	External pilot

*1 : 1 switching position category "Z" cannot be selected.

7 Electric circuit specifications *Multiple selections not possible.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
*1 *2 E2	Surge-less

*1 : The combination of "E2" and PNP specification is a custom product.
*2 : Only 4 voltage "3" is supported.

5 Wiring method inside base *1

Code	Content
Blank	Double wiring
S	Single solenoid dedicated wiring

*1 : Blank = Wiring is for double solenoid regardless of the type of valve mounted. If a single solenoid is mounted, there will be an empty number for one solenoid. S = Dedicated to single solenoid. Cannot be selected for 2-position double, dual 3-port valve, or 3-position.

8 Common specification

Code	Content
Blank	NPN/Positive common specification
P	PNP/Negative common specification

*1 : Multiple selections not possible.
*2 : Select the same polarity as the wiring block.
*3 : When 4 voltage is "1", there is no polarity, so "P" cannot be selected. It becomes "Blank".

9 Manual override *1

Code	Content	
Blank	Non-locking/locking common, with erroneous operation prevention cover	
M1	Non-locking type, with erroneous operation prevention cover	
M2	Non-locking/locking common, tool operation type, without cover	
M3	Non-locking type, Tool operation type	

*1 : 1 switching position category "Z" cannot be selected.

10 Ozone/Coolant resistant *1

Code	Content
Blank	Standard specifications
A	Ozone/Coolant resistant (Main valve fluorine specification)

*1 : 1 switching position category "Z" cannot be selected.

11 Exhaust malfunction prevention valve *1

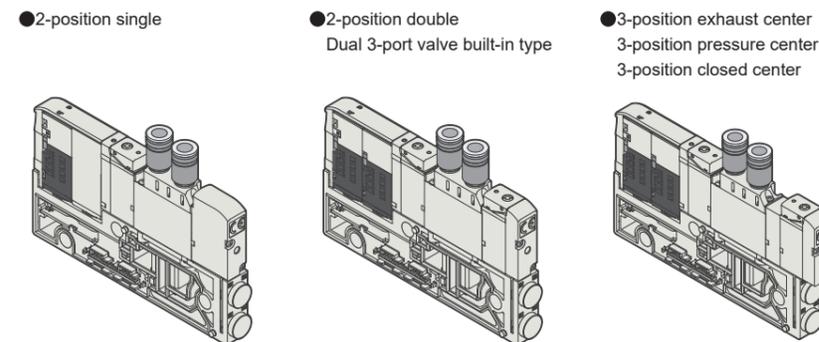
Code	Content	
Blank	None	
*1 H	With exhaust malfunction prevention valve	

*1 : 1 switching position classifications "3" and "5" cannot be selected. Refer to page 234 for details on the exhaust malfunction prevention valve.

12 Air passage partition For details, P. 89.

Code	Content
Blank	None
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

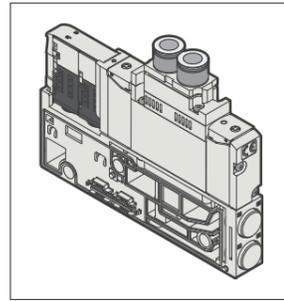
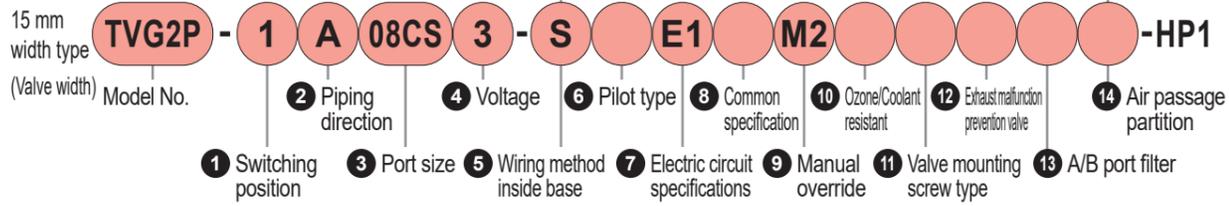
*1 : The flow path on the side close to the end block is blocked.



• Tie rods are not included, so please order them separately. Refer to page 92 for details. Gaskets between blocks are included.

Model No. Notation

Solenoid valve with valve block; Direct piping



1 Switching position

Code	Content	
1	2-position single	
2	2-position double	
3	3-position closed center	
4	3-position exhaust center	
5	3-position pressure center	
*1 A	Dual 3-port	A side valve:Normally closed / B side valve:Normally closed
*1 B	valve built-in type	A side valve:Normally open / B side valve:Normally open
*1 C	in type	A side valve:Normally closed / B side valve:Normally open
*2 Z	With blanking plate	

*1 : Only internal pilot compatible. Dimensions are identical to 2-position double.
*2 : When Z is selected, "-HP1" is not added to the model number.

2 Piping direction

Code	Content
A	Top piping

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

Fitting type	A/B port	Code	
Push-in	ø6	06CS	
	ø8	08CS	
Fitting type	One side plug specification		
	A port	B port	Code
Push-in	ø6	Plug	06CA
			08CA
	ø8	Plug	06CF
			08CF
Fitting type	A/B port	Code	
	Plug	00XX	

*1 : A or B port one-side plug specification compatible with 2-position single only.
*2 : For 1 switching position category "Z", connection bore size is "00XX".

4 Voltage

Code	Content
1	100 VAC
3	24 VDC

5 Wiring method inside base *1

Code	Content
Blank	Double wiring
S	Single Solenoid dedicated wiring

*1 : Blank = Wiring is for double solenoid regardless of the type of valve mounted. If a single solenoid is mounted, there will be an empty number for one solenoid. S = Dedicated to single solenoid. Cannot be selected for 2-position double, dual 3-port valve, or 3-position.

6 Pilot type *1

Code	Content
Blank	Internal pilot
K	External pilot

*1 : 1 switching position category "Z" cannot be selected.

7 Electric circuit specifications*Multiple selections not possible.

Code	Content
Blank	With surge suppressor, lamp
*2 E1	Low heat energy saving circuit (surge-less specification)
*1 *2 E2	Surge-less

*1 : The combination of "E2" and PNP specification is a custom product.
*2 : Only 4 voltage "3" is supported.

8 Common specification

Code	Content
Blank	NPN/Positive common specification
P	PNP/Negative common specification

*1 : Multiple selections not possible.
*2 : Select the same polarity as the wiring block.
*3 : When 4 voltage is "1", there is no polarity, so "P" cannot be selected. It becomes "Blank".

9 Manual override *1

Code	Content
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

*1 : 1 switching position category "Z" cannot be selected.

10 Ozone/Coolant resistant *1

Code	Content
Blank	Standard specifications
A	Ozone/Coolant resistant (Main valve fluorine specification)

*1 : 1 switching position category "Z" cannot be selected.

11 Valve mounting screw type

Code	Content
Blank	Pan head machine screw with plus/minus
J	Hexagon socket head bolt

12 Exhaust malfunction prevention valve

Code	Content
Blank	None
H	With exhaust malfunction prevention valve

*1 : 1 switching position classifications "3" and "5" cannot be selected. Refer to page 234 for details on the exhaust malfunction prevention valve.

13 A/B port filter

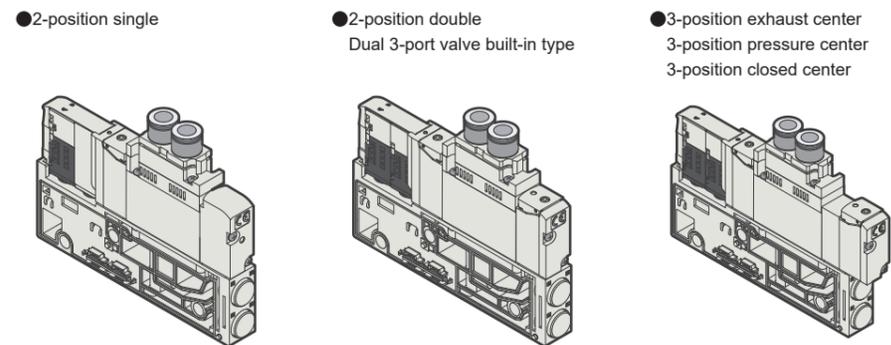
Code	Content
Blank	None
*2 F	Built-in A/B port filter

*1 : P port has a built-in filter.
*2 : 1 switching position category "Z" cannot be selected.

14 Air passage partition For details, P. 91.

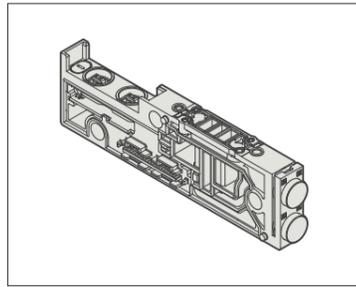
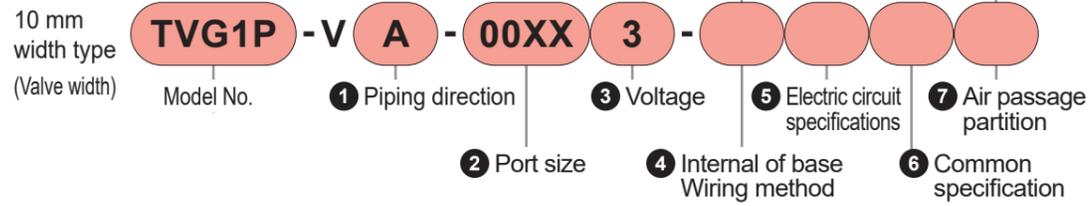
Code	Content
Blank	None
T	P/R/PA/PR blocked
U	P/R blocked, PA/PR through
V	P blocked, R/PA/PR through
W	R blocked, P/PA/PR through

*1 : The flow path on the side close to the end block is blocked.



• Tie rods are not included, so please order them separately. Refer to P. 92 for details. Gaskets between blocks are included.

Model No. Notation
Valve block;Direct piping



• Tie rods are not included, so please order them separately. Refer to page 92 for details. Gaskets between blocks are included.

1 Piping direction

Code	Content
A	Top piping

2 Port size

Code	Content
00XX	Valve block for direct piping

3 Voltage

Code	Content
1	100 VAC
3	24 VDC

4 Wiring method inside base

Code	Content
Blank	Double wiring
S	Single solenoid dedicated wiring

*1 : Blank = wiring is for double solenoid regardless of valve type mounted. When single solenoid mounted, one solenoid blank number occurs.
S = Dedicated for single solenoid. Cannot be selected for 2-position double, 3-port valve 2-unit built-in type, or 3-position.

5 Electric circuit specifications * Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : The combination of "E2" and PNP specification is a custom product.
*2 : Only 3 voltage "3" is supported.

6 Common specification

Code	Content
Blank	NPN/Positive common specification
P	PNP/Negative common specification

*1 : Multiple selections not possible.
*2 : Select the same polarity as the wiring block.
*3 : When 1 voltage is "1", there is no polarity, so "P" cannot be selected. It becomes "Blank".

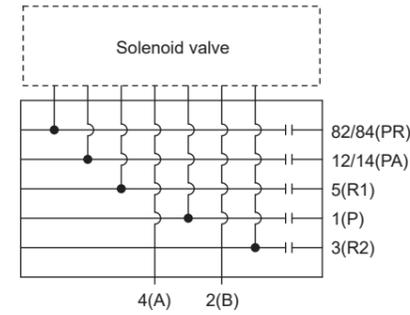
7 Air passage partition For details refer to below.

Code	Content
Blank	None
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

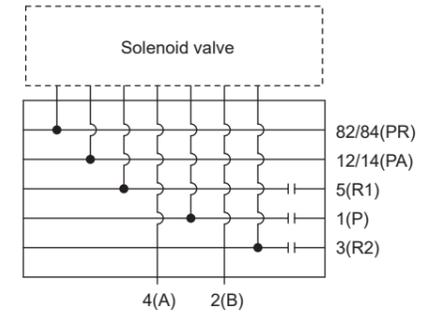
*1 : Blocks the flow path on the side closest to the end block.

About air passage partition

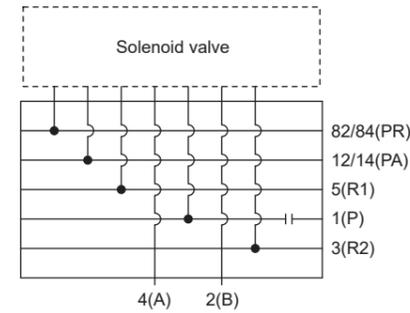
●Valve block unit circuit diagram (T)



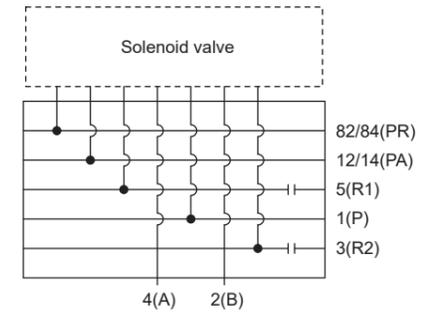
●Valve block unit circuit diagram (U)



●Valve block unit circuit diagram (V)



●Valve block unit circuit diagram (W)



TVG Base piping
Reduced wiring with serial transmission slave unit

TVG Direct piping
Reduced wiring with serial transmission slave unit

TVG Base piping
With interface for Remote I/O connection

TVG Direct piping
With interface for Remote I/O connection

TVG-P4
Compatible with rechargeable battery manufacturing process

Manifold specifications

Technical data

Safety precautions

TVG Base piping
Reduced wiring with serial transmission slave unit

TVG Direct piping
Reduced wiring with serial transmission slave unit

TVG Base piping
With interface for Remote I/O connection

TVG Direct piping
With interface for Remote I/O connection

TVG-P4
Compatible with rechargeable battery manufacturing process

Manifold specifications

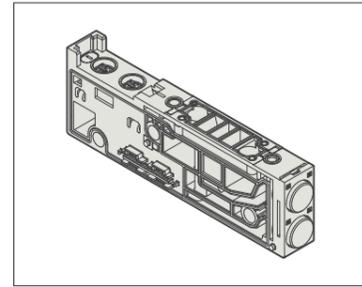
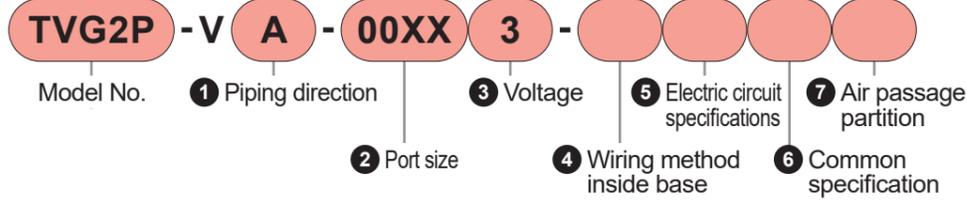
Technical data

Safety precautions

Model No. Notation

Valve block;Direct piping

15 mm width type (Valve width)



• Tie rods are not included, so please order them separately. Refer to page 92 for details. Gaskets between blocks are included.

1 Piping direction

Code	Content
A	Top piping

2 Port size

Code	Content
00XX	Valve block for direct piping

3 Voltage

Code	Content
1	100 VAC
3	24 VDC

4 Wiring method inside base

Code	Content
Blank	Double wiring
S	Single solenoid dedicated wiring

*1 : Blank = wiring is for double solenoid regardless of valve type mounted. When single solenoid mounted, one solenoid blank number occurs. S = Dedicated for single solenoid. Cannot be selected for 2-position double, 3-port valve 2-unit built-in type, or 3-position.

5 Electric circuit specifications * Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : Combination of "E2" and PNP specification is a custom product.
*2 : Only 3 voltage "3" is supported.

6 Common specification

Code	Content
Blank	NPN/Positive common specification
P	PNP/Negative common specification

*1 : Multiple selections not possible.
*2 : Select the same polarity as the wiring block.
*3 : When 1 voltage is "1", there is no polarity, so "P" cannot be selected. It becomes "Blank".

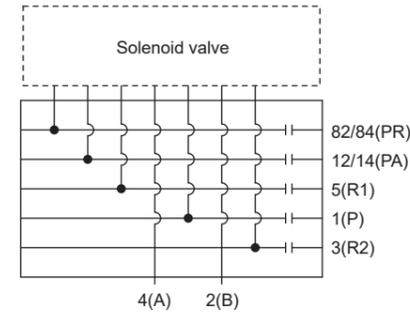
7 Air passage partition For details refer to lower section.

Code	Content
Blank	None
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

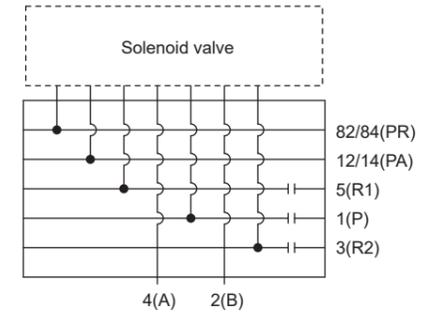
*1 : Blocks the flow path on the side closest to the end block.

About air passage partition

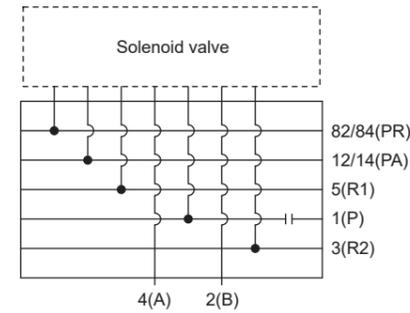
●Valve block unit circuit diagram (T)



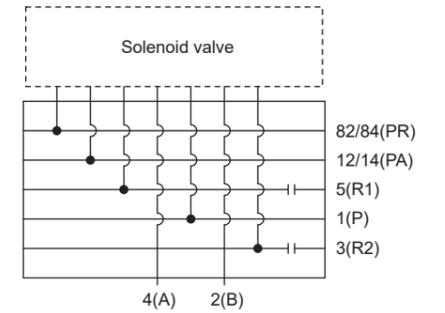
●Valve block unit circuit diagram (U)



●Valve block unit circuit diagram (V)



●Valve block unit circuit diagram (W)



TVG Base piping

TVG Direct piping

TVG Base piping

TVG Direct piping

TVG-P4

Manifold specifications

Technical data

Safety precautions

TVG Base piping

TVG Direct piping

TVG Base piping

TVG Direct piping

TVG-P4

Manifold specifications

Technical data

Safety precautions

Model No. Notation

Tie rod

● For valve block

● For intermediate supply/exhaust block

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

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

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

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

① Model No.

② Station No.

● For valve block expansion

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

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

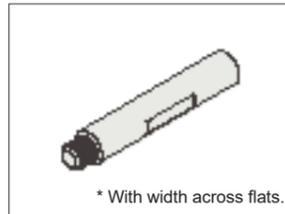
② Station No.

Code	Content	Code	Content
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 : Set of 3.

About expansion

- For 2-17 station manifolds, 3 stations can be added. Can add up to total 3 stations of valve blocks and intermediate supply/exhaust blocks. When adding to 18-station or larger manifold, use tie rod matching number of stations after addition.
- Fix expansion tie rod/intermediate supply-exhaust tie rod to wiring block. Installing on end block side may prevent proper assembly.



Model No. Notation

End block (U side); Direct piping

Hexagon socket head cap screws for tie rod fastening and gaskets between blocks are included.

10 mm width type **TVG1P - E A - 08CS -**

15 mm width type **TVG2P - E A - 10CS -**

(Valve width)

① Model No.

② Piping direction

④ Pilot type

③ Port size

② Piping direction

Code	Content
A	Top piping

③ Port size

● Standard

		① Model No.	
		TVG1P	TVG2P
Metric fitting			
Fitting type	P/R port	Code	
Push-in	ø6	06CS	●
	ø8	08CS	●
	ø10	10CS	●
Plug			
	P/R port	Code	
Plug		00XX	●

*1 : ④ Pilot type K, KZ and 00XX cannot be selected simultaneously.

④ Pilot type

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

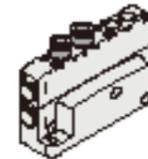
*1 *2

*1 *2

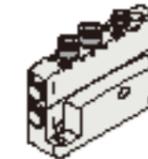
*1 : ④ Cannot be selected for connection bore size "00XX".

*2 : External pilot port is ø6 push-in fitting.

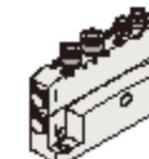
● TVG1P-EA-08CS



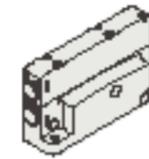
● TVG1P-EA-08CS-K



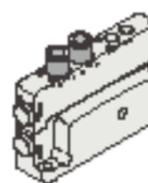
● TVG1P-EA-08CS-KZ



● TVG1P-EA-00XX



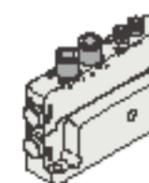
● TVG2P-EA-10CS



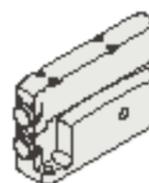
● TVG2P-EA-10CS-K



● TVG2P-EA-10CS-KZ



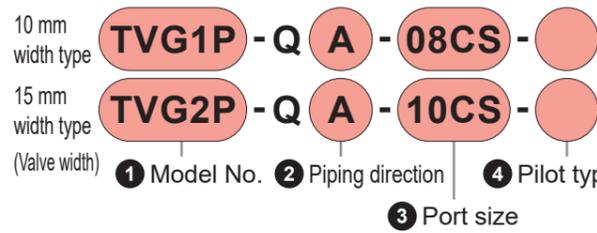
● TVG2P-EA-00XX



Model No. Notation

Intermediate supply/exhaust block; Direct piping

Intermediate supply/exhaust block can be installed between valve blocks. These blocks cannot be adjacent to each other. Also cannot be adjacent to end block or wiring block. Electrical internal wiring and P, R, PA, PR ports communicate with adjacent blocks.



② Piping direction

Code	Content
A	Top piping

③ Port size

		●:Standard		① Model No.	
		TVG1P	TVG2P	TVG1P	TVG2P
Metric fitting					
Fitting type	P/R port	Code			
	ø6	06CS	●		
	ø8	08CS	●	●	
	ø10	10CS			●

*1 : A filter is built into the P port to prevent entry of foreign matter.

④ Pilot type

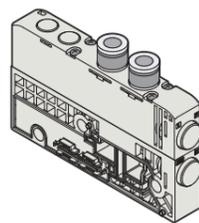
Code	Content
Blank	Internal pilot
*1 K	External pilot
*1 Z	Different pressure circuit
*1 KZ	External pilot (PA/PR separated)

*1 : External pilot port is ø6 push-in fitting. Z cannot be used alone. Must be used in combination with other types, Blank, K, or KZ.

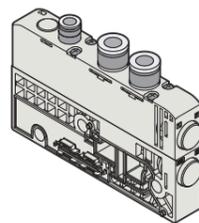
Accessories

Manifold gasket: 1 pc.
Tie rods not included, please order separately. For details P. 92. Gaskets between blocks are included.

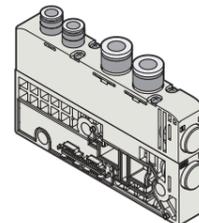
● TVG1P-QA-08CS



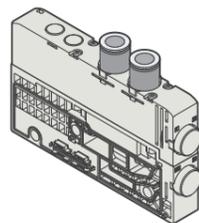
● TVG1P-QA-08CS-K



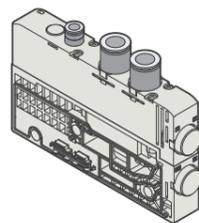
● TVG1P-QA-08CS-KZ



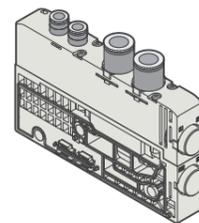
● TVG2P-QA-10CS



● TVG2P-QA-10CS-K



● TVG2P-QA-10CS-KZ

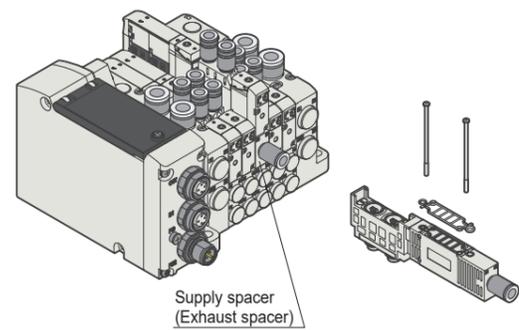


List of supply/exhaust block specifications

Exhaust method	Pilot type	D side wiring supply/exhaust block	Intermediate supply/exhaust block	U side end supply/exhaust block
Blank Centralized exhaust	Blank Internal pilot			
Blank Centralized exhaust	K External pilot			
Blank Centralized exhaust	Z Different pressure circuit			
Blank Centralized exhaust	KZ External pilot (PA/PR separation)			

* Check valve between PR and R is for malfunction prevention. Cannot be used for other purposes.

Supply spacer/Exhaust spacer



Specifications

●Supply spacer

Model No.	Weight g
TVG1P-P-□	31

●Exhaust spacer

Model No.	Weight g
TVG1P-R-□	31

Single unit Model No.

●Supply spacer

TVG1P - P - **04CS**
① Port size

Code	Port size	Content
04CS	ø4	Push-in fitting ø4
06CS	ø6	Push-in fitting ø6

●Exhaust spacer

TVG1P - R - **04CS**
① Port size

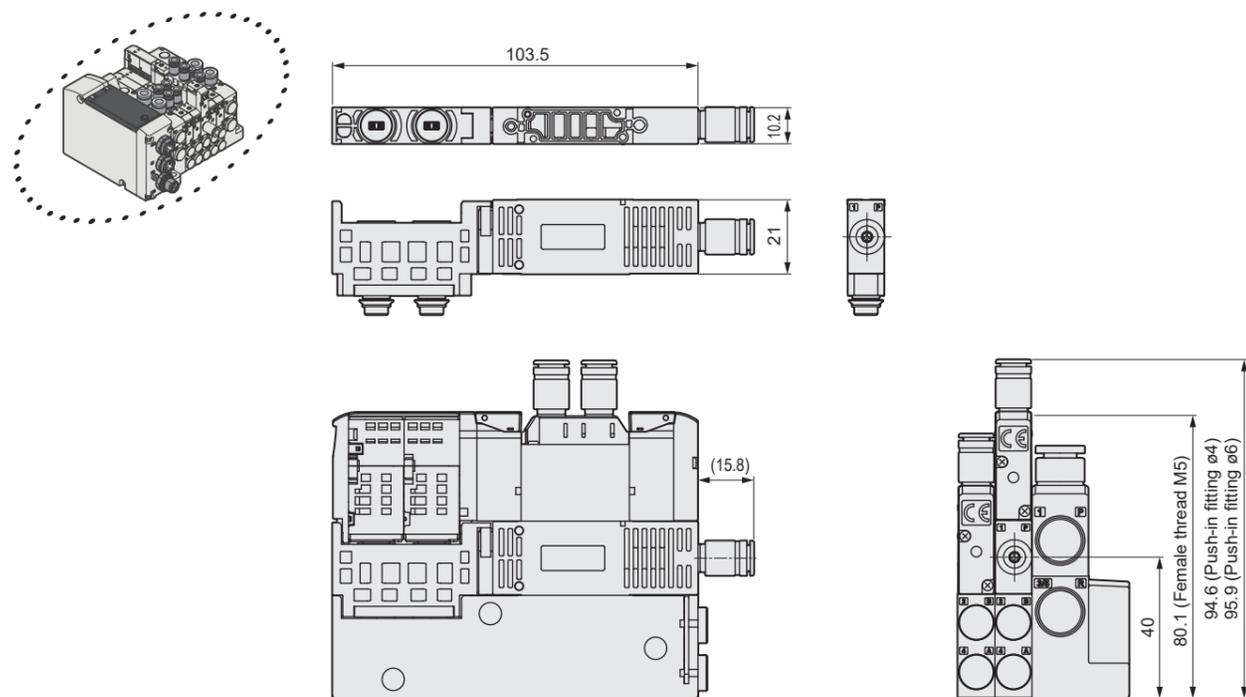
Code	Port size	Content
04CS	ø4	Push-in fitting ø4
06CS	ø6	Push-in fitting ø6

⚠ Precautions for Model No. selection

- *1 : Specify the mounting position and quantity of spacers for manifolds in the manifold specification sheet (pages 190 to 197).
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Spacer mounting screws and gasket are included.

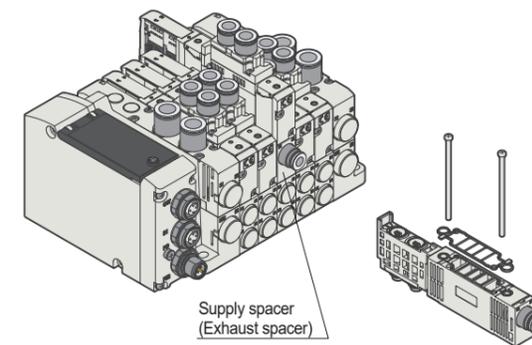
Dimensions

●Supply spacer/Exhaust spacer



Supply spacer / Exhaust spacer ; Direct piping

Supply spacer/Exhaust spacer



Specifications

●Supply spacer

Model No.	Weight g
TVG2P-P-□	56

●Exhaust spacer

Model No.	Weight g
TVG2P-R-□	56

Single unit Model No.

●Supply spacer

TVG2P - P - **06CS**
① Port size

Code	Port size	Content
06CS	ø6	Push-in fitting ø6
08CS	ø8	Push-in fitting ø8
10CS	ø10	Push-in fitting ø10

●Exhaust spacer

TVG2P - R - **06CS**
① Port size

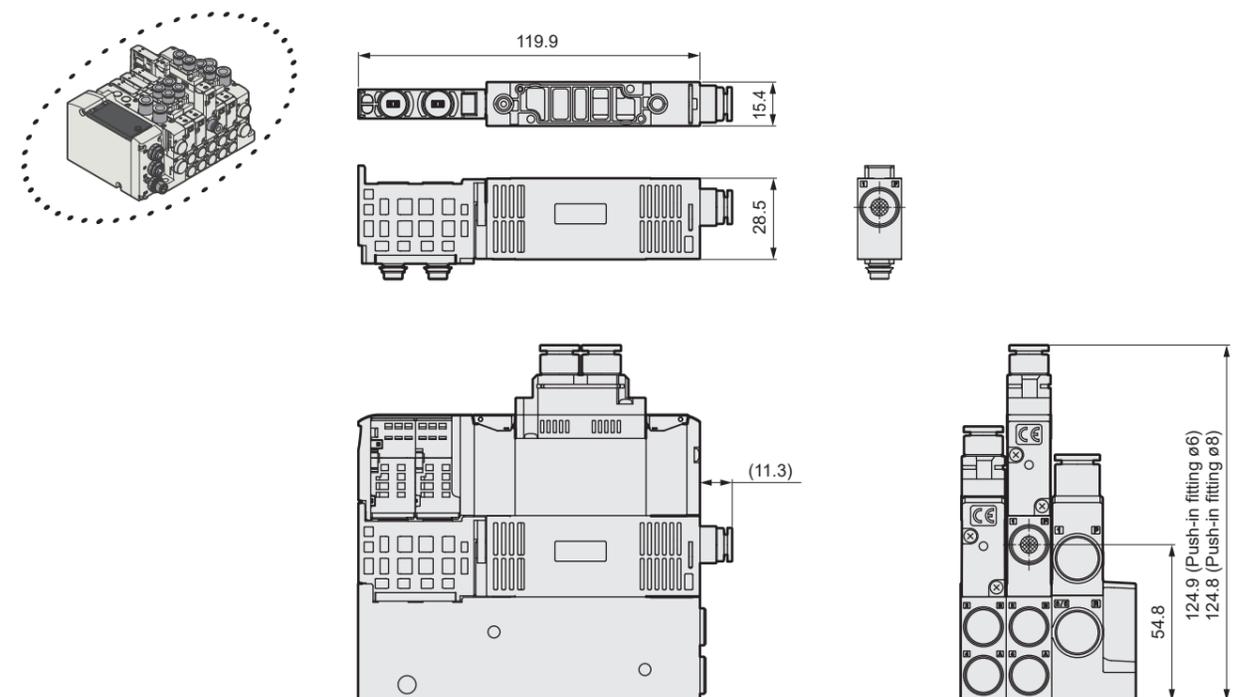
Code	Port size	Content
06CS	ø6	Push-in fitting ø6
08CS	ø8	Push-in fitting ø8
10CS	ø10	Push-in fitting ø10

⚠ Precautions for Model No. selection

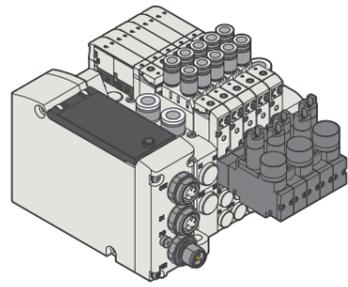
- *1 : Specify the mounting position and quantity of spacers for manifolds in the manifold specification sheet (pages 190 to 197).
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Spacer mounting screws and gasket are included.

Dimensions

●Supply spacer/Exhaust spacer



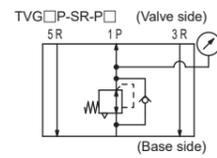
Spacer type regulator



Specifications

Item	TVG1P-SR-□	TVG2P-SR-□
Pressure reducing port	P	
Working fluid	Compressed air	
Max. operating pressure	MPa	0.7
Min. operating pressure	MPa	0.1
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Fluid temperature	°C	5 to 55
Atmosphere	Use in corrosive gas atmosphere is prohibited	
Weight	g	48 / 110

Circuit diagram Code



Single unit Model No.

TVG1 P-SR-P-G0

1 Model No. Spacer type Regulator
2 Pressure reducing specifications
3 Pressure gauge

Code	Content
P	P port pressure reducing

3 Pressure gauge

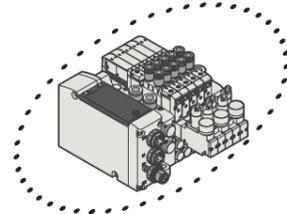
Code	Content	TVG1	TVG2
G0	No pressure gauge	●	●
G1	With pressure gauge for odd number station	●	
G2	With pressure gauge for even number station	●	
G3	With pressure gauge for odd/even number station (shared)		●

Precautions for Model No. selection

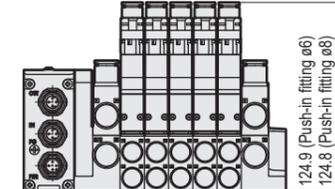
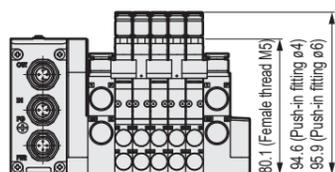
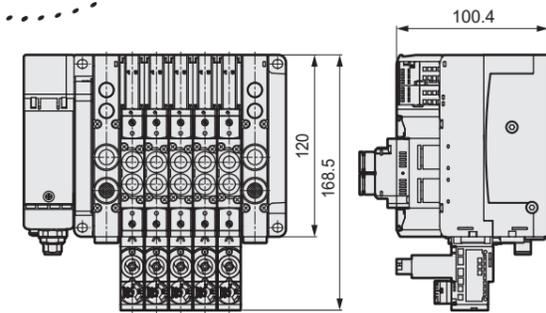
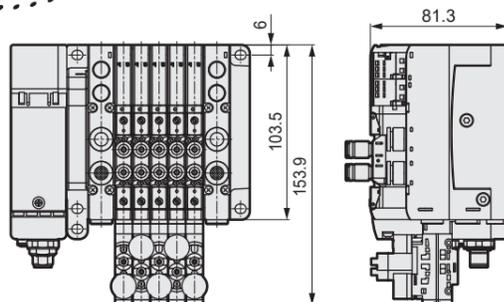
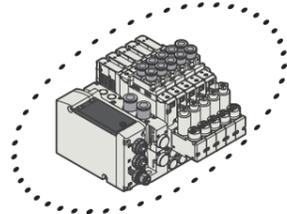
- *1 : Specify the spacer mounting position in the manifold specifications.
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Spacer mounting screws and gasket included.

Dimensions

● TVG1

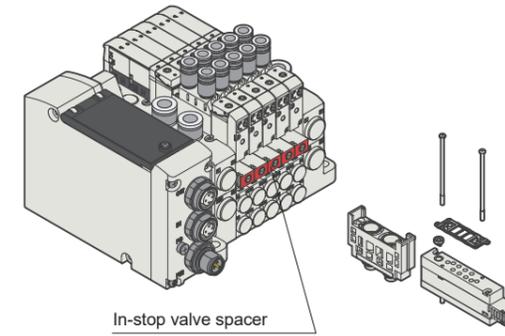


● TVG2



In-stop valve spacer ; Direct piping

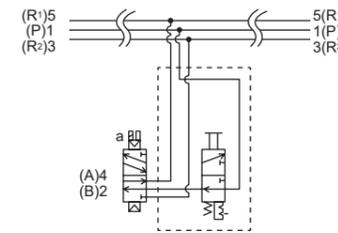
In-stop valve spacer



Specifications

Item	TVG1P-IS	TVG2P-IS
Working fluid	Compressed air	
Max. operating pressure	MPa	0.7
Min. operating pressure	MPa	0.1
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Fluid temperature	°C	5 to 55
Atmosphere	Use in corrosive gas atmosphere is prohibited	
Weight	g	35 / 71

Circuit diagram Code



Single unit Model No.

TVG1 P-IS

1 Model No. In-stop valve spacer

1 Model No.

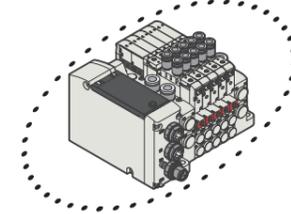
Code	Content
TVG1	10 mm width type (valve width)
TVG2	15 mm width type (valve width)

Precautions for Model No. selection

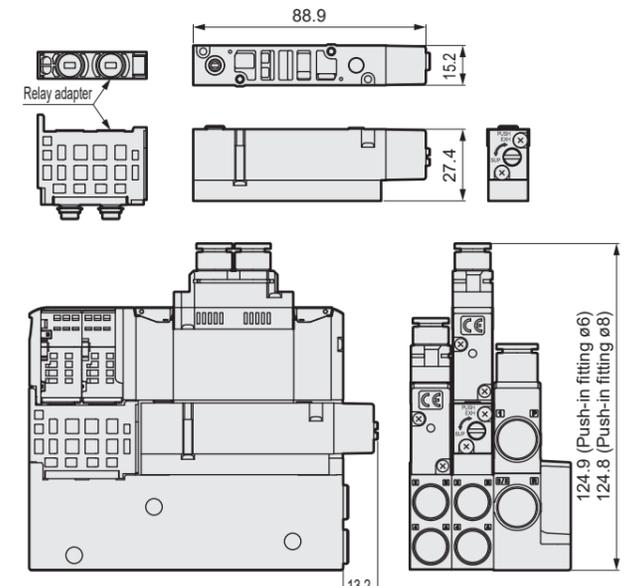
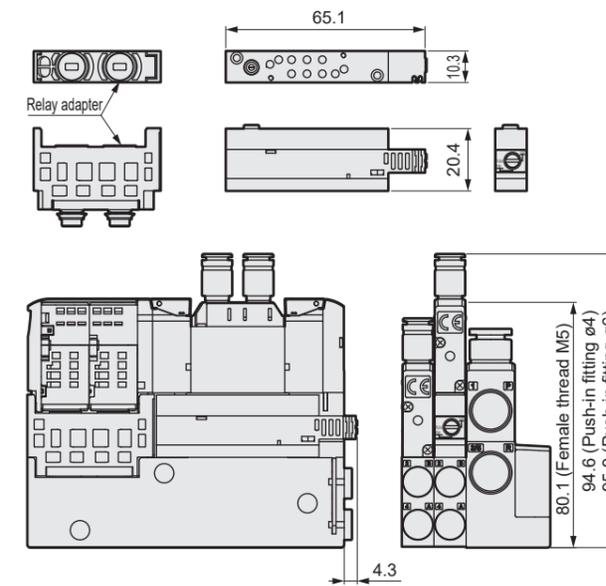
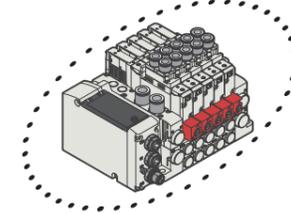
- *1 : Specify the spacer mounting position in the manifold specifications.
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Combination with external pilot (K) is not supported.

Dimensions

● TVG1



● TVG2



Pilot operated 3, 5-port valve Plug-in Valve Block Manifold **TVG Series**

■ For remote I/O connection

	Page
Product Introduction	
Solenoid valve with reduced wiring, serial transmission, Device unit	
Manifold ordering method	102
<hr/>	
Base piping	
TVG-B	105
<hr/>	
Direct piping	
TVG-A	135
<hr/>	
Technical data	210
⚠ Safety precautions	230

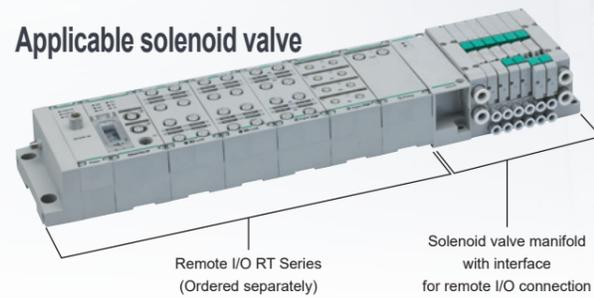
Ordering method of solenoid valve manifold with interface for remote I/O connection

Remote I/O (RT series) and solenoid valve (TVG series) are ordered separately. Please assemble RT and TVG by yourself.

The following 3 types of ordering methods are available.

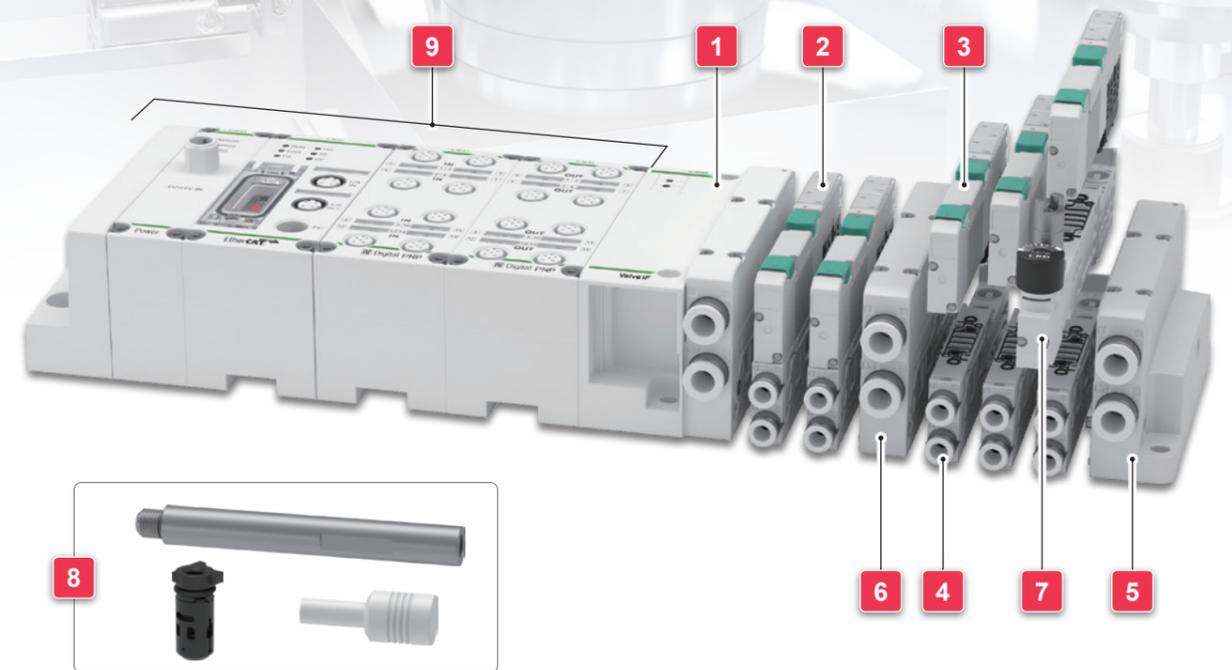
Ordering method	Manifold Specifications	Assembly man-hours at customer	Product delivery time
A Manifold assembly	Required	☆	○
B Simple assembly	Not required	◎	◎
C Block single unit	Not required	○	☆

Applicable solenoid valve



C Block single unit

Parts are delivered separately. Customer must assemble the parts. You can order with the model numbers of the following parts.



A Manifold assembly

We will deliver with the specifications designated in the manifold specifications. You can order with the model number starting with TVG□M and the manifold specification sheet.

Remote I/O
Specification sheet not required
RT Series
(Ordered separately)

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

+

Solenoid valve with manifold
(For remote I/O connection)
Specifications required

P. 110

+

Manifold specifications

P. 188

- *1. The manifold base is available only with a valve interface.
- *2. The device station is a Remote I/O (RT Series) device station.
- *3. Please select the Remote I/O from the separate catalog (RT Series).
- *4. Assembly of the Remote I/O and the manifold with solenoid valves is to be performed by the customer. Refer to "Remote I/O RT Series (CC-1557AA)" for the assembly method.

B Simple assembly

Assembled manifold base and solenoid valve delivered unassembled. Can be ordered by model number of parts below. It is necessary for the customer to assemble the manifold base and solenoid valves, etc.

Remote I/O
Specification sheet not required
RT Series

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

+

Discrete solenoid valve
(For base mounting)
Specification sheet not required
TVG□-
□ : Valve size

P. 118

+

Manifold base
Specification sheet not required
TVG□B-
□ : Valve size

P. 114

+

Spacer
Specification sheet not required
TVG□P-
□ : Valve size

P. 128

+

Exhaust malfunction prevention valve
Specification sheet not required
TVG□P-
□ : Valve size

P. 55

*1. Manifolds are limited to options that can be manufactured without specifications, such as double wiring and no malfunction prevention valve assembly.

* This catalog features TVG. Solenoid valve section alone will not operate, so please assemble Remote I/O and solenoid valve for use.

No.	Name	Head model number	Page
1	Valve interface (with supply/exhaust)	TVG□P- □ : Valve size	P. 127
2	Valve block with solenoid valve		P. 36
3	Solenoid valve only (Base mounted)		P. 118
4	Valve block		P. 40
5	End block		P. 45
6	Intermediate supply/exhaust block		P. 46
7	Spacer		P. 128
8	Tie rod, silencer, exhaust malfunction prevention valve		P. 44, 55
Other related parts			P. 54
9	Device unit	RT	Remote I/O RT Series (CC-1557AA)
	Power supply unit		
	I/O unit		
	End unit (No supply/exhaust)		

TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG-P4
 TVG-P4
 Manifold specifications
 Technical data
 Safety precautions

TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG-P4
 TVG-P4
 Manifold specifications
 Technical data
 Safety precautions

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

Base piping

For Remote I/O connection



* Remote I/O must be ordered separately.

CONTENTS

Product Introduction	Intro
Series Variation	106
● Ordering method	102
● Specifications	108
● Model No. Notation	
• Manifold with solenoid valve	110
• Manifold base only	114
• Discrete solenoid valve	118
● Dimensions	120
● Internal structure and parts list	30
Block component configuration	32
• Solenoid valve with Valve block	36
• Valve block	40
• End block	45
• Intermediate supply/exhaust block	46
• Valve interface	127
• Supply spacer, Exhaust spacer	128
• Perfect spacer	130
• Spacer type Regulator	131
• In-stop valve Spacer	132
Related components (Tag nameplate, DIN rail, Silencer, Blanking plate kit, Exhaust malfunction prevention valve, etc.)	54
Connected units per	59
Manifold specifications, Wiring specifications	188
Technical data	
① Pneumatic system selection guide	210
② Precautions for wiring	214
③ Regarding malfunction prevention valve	234
④ Reduced wiring manifold expansion method	229
⚠ Safety precautions	230



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

TVG1/TVG2 Series



* Remote I/O must be ordered separately.

Manifold common specifications

Item	Content	
Manifold type	Block manifold	
Mounting method	Direct mount type	
Supply/exhaust method	Common supply / Common exhaust (Built-in exhaust malfunction prevention valve)	
Pilot exhaust method	Main valve / Pilot valve common exhaust (*4) (Built-in pilot exhaust check valve)	
Piping direction	Base side direction	
Valve type and operation method	Pilot operated soft spool valve	
Working fluid	Compressed air, Nitrogen	
Max. operating pressure MPa	0.7	
Internal pilot pressure MPa	2-position double	0.1 (*6)
	2-position single / 3-position	0.2
	Dual 3-port valve built-in type	0.2
External pilot min. operating pressure kPa	-100 (Pilot pressure is 0.2 MPa 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 type (standard)	
Lubrication (*1)	Not required	
Protection structure (*2)	IP65, IP67	
Vibration resistance m/s ²	50 or less	
Shock resistance m/s ²	300 or less	
Atmosphere	Use in corrosive gas atmosphere is prohibited	

Electrical specifications

Item	KA1C	KA1D	
Output specifications	Output type	NPN	PNP
	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 can be set regardless of process data.	
Electrical specifications	Supply voltage V	24 DC	
	Internal current consumption mA	For unit/input	15 or less
		For output	75 or less
	Operation display	LED (For equipment status display, 2 pcs.)	

- *1 : Use turbine oil Class 1 ISO VG32 for lubrication. Excessive or intermittent lubrication may result in unstable operation.
- *2 : Test method per IP65 (IEC 60529 : 2001) standard. For details, see P. 231.
- *3 : When low heat energy saving circuit or surge-less is selected, it will be a diode.
- *4 : The pilot exhaust method differs for each supply/exhaust block used. For details, see P. 47.
- *5 : When used in low vacuum, select external pilot. For details, see P. 233.
- *6 : 0.2 MPa for low heat energy saving circuit.

Model specifications

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

Model performance/characteristics

Item	Switching position	TVG1		TVG2		
		ON	OFF	ON	OFF	
Response time ms	Dual 3-port valve built-in type	15	25	20	37	
	2-position	Single	15	20	22	24
		Double	15	15	26	26
	3-position	20	30	25	35	

Response time is the value at supply pressure 0.5 MPa, 20°C, and no lubrication. It varies depending on the pressure and oil quality.

Flow characteristics

Model No.	Switching position	P → A/B			A/B → R			
		C[dm ³ /(s·bar)]	b	Q[L/min(ANR)]	C[dm ³ /(s·bar)]	b	Q[L/min(ANR)]	
TVG1	Dual 3-port valve built-in type	0.77	0.37	205	1.0 (0.56)	0.34 (0.37)	287 (149)	
	2-position	1.0	0.29	253	1.1 (0.59)	0.36 (0.41)	317 (162)	
	3-position	Closed center	0.96	0.33	249	1.0 -	0.35 -	263 -
		Exhaust center	0.96	0.32	247	1.2 (0.60)	0.38 (0.40)	349 (163)
	Pressure center	1.1	0.35	289	1.0 -	0.36 -	265 -	
TVG2	Dual 3-port valve built-in type	1.7	0.44	476	2.2 (1.8)	0.43 (0.20)	612 (431)	
	2-position	2.4	0.32	618	2.5 (2.0)	0.34 (0.19)	731 (476)	
	3-position	Closed center	2.2	0.35	578	2.3 -	0.38 -	670 -
		Exhaust center	2.2	0.32	567	2.5 (2.1)	0.40 (0.21)	789 (506)
Pressure center		2.6	0.34	678	2.3 -	0.37 -	666 -	

*1 : Conversion between effective cross-sectional area S and sonic conductance C is S ≈ 5.0 x C.

*2 : Values in () are for the type with exhaust malfunction prevention valve.

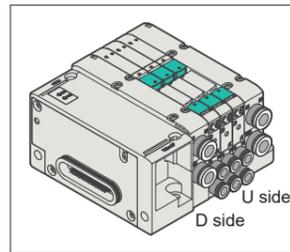
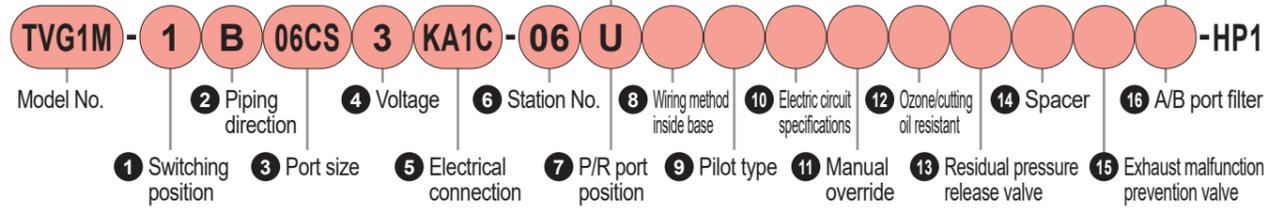
TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with electrically driven manufacturing process
Manifold specifications
Technical data
Safety precautions

TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with electrically driven manufacturing process
Manifold specifications
Technical data
Safety precautions

Model No. Notation

Manifold with solenoid valve (for Remote I/O connection);Base piping

10 mm width type (valve width)



1 Switching position

Code	Content
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center
X	Mix manifold
A	Dual 3-port valve A side valve:Normally closed / B side valve:Normally closed
B	built-in type A side valve:Normally open / B side valve:Normally open
C	*1 A side valve:Normally closed / B side valve:Normally open

*1 : Supports internal pilot only.
Dimensions are the same as 2-position double.

2 Piping direction

Code	Content
B	Side piping

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

Fitting type	A/B port	Code	
Push-in	ø1.8	0ACS *4	
	ø4	04CS	
	ø6	06CS	
L-type push-in fitting upward	ø1.8	0ACU *4	
	ø4	04CU	
	ø6	06CU	
L-type push-in fitting downward	ø1.8	0ACD *4	
	ø4	04CD	
	ø6	06CD	
Push-in	Mix	99CX *3	
Fitting type	One side plug specification *1		
	A port	B port	
	ø1.8	Plug	0ACA *4
	ø4	Plug	04CA
Push-in	ø6	06CA	
	Plug	ø1.8	0ACF *4
		ø4	04CF
	ø6	06CF	
L-type push-in fitting upward	ø1.8	0ACB *4	
	ø4	04CB	
	ø6	06CB	
Plug	ø1.8	0ACG *4	
	ø4	04CG	
	ø6	06CG	
L-type push-in fitting downward	ø1.8	0ACC *4	
	ø4	04CC	
	ø6	06CC	
Plug	ø1.8	0ACH *4	
	ø4	04CH	
	ø6	06CH	

• Inch fitFitting

Fitting type	A/B port	Code		
Push-in	ø1/8 inch	03LS		
	ø5/32 inch	04LS		
L-type push-in fitting upward	ø1/8 inch	C3LU *5		
	ø5/32 inch	04LU *5		
Push-in	Mix	99LX *3		
Fitting type	One side plug specification *1			
	A port	B port		
	ø1/8 inch	Plug	03LA	
	ø5/32 inch	Plug	04LA	
Push-in	Plug	ø1/8 inch	03LF	
		ø5/32 inch	04LF	
	L-type push-in fitting upward	Plug	ø1/8 inch	03LB *5
			ø5/32 inch	04LB *5
Plug	ø1/8 inch	03LG *5		
	ø5/32 inch	04LG *5		

*1 : A or B port one-side plug specification compatible with 2-position single only.
*2 : L-type push-in fitting upward is not available for 3-position.
*3 : Mixed port sizes for 4 (A) and 2 (B) ports are not available.
*4 : Compatible tube for ø1.8 push-in fitting is "UP-9402-□□".
*5 : Custom product.

4 Voltage

Code	Content
3	24 VDC

5 Electrical connection

Content	Output	Points	Code
Interface for RT Series connection	NPN	32	KA1C
	PNP	points	KA1D

6 Station No.

Code	Content
02	2 stations
to	to
24	24 stations

7 P/R port position* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side (Valve interface side)
B	U side, D side
T	U side, D side, with intermediate supply/exhaust block

*1 : Specify the intermediate supply/exhaust block in the manifold specifications.

9 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

11 Manual override * Multiple selections are not allowed.

Code	Content
Blank	Non-locking/locking common, with erroneous operation prevention cover
M1	Non-locking type, with erroneous operation prevention cover
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

13 Residual pressure release valve

Code	Content
Blank	No residual pressure release valve
Y1	With non-locking type residual pressure release valve
Y2	With locking type residual pressure release valve

*1 : Only compatible with 1 Switching position classifications "3" and "4".
*2 : Only compatible with 1 Manual overrides "M2" and "M3".

15 Exhaust malfunction prevention valve

Code	Content
Blank	None
H	With exhaust malfunction prevention valve

*1 : 1 Switching position category "3" "5" cannot be selected. For with exhaust malfunction prevention valve, see P. 234 Please refer to. Specify number of installed stations in manifold specification sheet.

8 Wiring method inside base *1

Code	Content
Blank	Double wiring
S	Single wiring specifying single/double solenoid arrangement

*1 : Blank = Wiring is for double solenoid regardless of the type of valve mounted. If a single solenoid is mounted, there will be an empty number for one solenoid.

10 Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : Combination of "E2" and PNP specification is a custom product.

12 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

14 Spacer

Code	Content
Blank	Without spacer
Z	With spacer (Specify type and location in MF specifications)

*1 : Specify spacer type and mounting position in manifold specifications. Stacked spacers are not compatible. Combination with blanking plate is not supported. Cannot be selected simultaneously with L-type push-in fitting upward.

16 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

*1 : P port has a built-in filter.

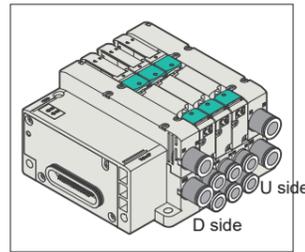
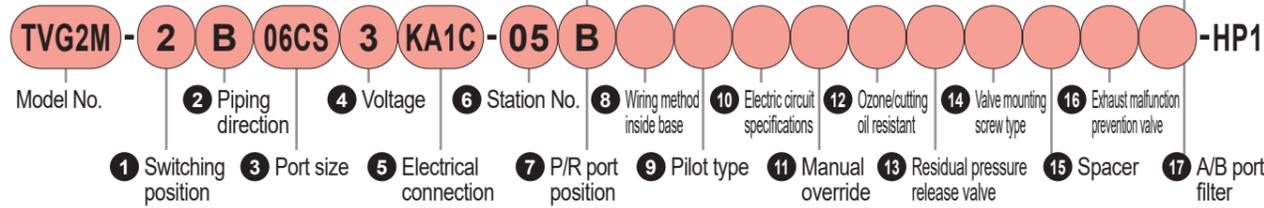
TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG-P4
Manifold specifications
Technical data
Safety precautions

TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG-P4
Manifold specifications
Technical data
Safety precautions

Model No. Notation

Manifold with solenoid valve (for Remote I/O connection); Base piping

15 mm width type (valve width)



1 Switching position

Code	Content
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center
X	Mix manifold
A	Dual 3-port valve built-in type
B	A side valve: Normally closed / B side valve: Normally closed
C	A side valve: Normally open / B side valve: Normally open
	*1 A side valve: Normally closed / B side valve: Normally open

*1 : Supports internal pilot only. Dimensions are the same as 2-position double.

2 Piping direction

Code	Content
B	Side piping

3 Port size(A/B port)

• Metric fitting

Fitting type	A/B port	Code			
Push-in	ø4	04CS			
	ø6	06CS			
	ø8	08CS			
	ø10	10CS			
L-type push-in fitting upward *2	ø6	06CU			
	ø8	08CU			
L-type push-in fitting downward	ø6	06CD			
	ø8	08CD			
Push-in	Mix	99CX			
Fitting type	One side plug specification *1				
	A port	B port	Code		
Push-in	Plug	ø4	04CA		
		ø6	06CA		
		ø8	08CA		
		ø10	10CA		
	Plug	ø4	04CF		
		ø6	06CF		
		ø8	08CF		
		ø10	10CF		
		L-type push-in fitting upward *2	Plug	ø6	06CB
			Plug	ø8	08CB
L-type push-in fitting downward	Plug	ø6	06CG		
	Plug	ø8	08CG		
L-type push-in fitting downward	Plug	ø6	06CC		
	Plug	ø8	08CC		
L-type push-in fitting downward	Plug	ø6	06CH		
	Plug	ø8	08CH		

• Inch fitting

Fitting type	A/B port	Code		
Push-in	ø1/4 inch	06LS		
	ø5/16 inch	08LS		
L-type push-in fitting upward *2	ø1/4 inch	06LU		
	ø5/16 inch	08LU		
Push-in	Mix	99LX		
Fitting type	One side plug specification *1			
	A port	B port	Code	
Push-in	Plug	ø1/4 inch	06LA	
		ø5/16 inch	08LA	
	Plug	ø1/4 inch	06LF	
		ø5/16 inch	08LF	
	L-type push-in fitting upward *2	Plug	ø1/4 inch	06LB
			ø5/16 inch	08LB
L-type push-in fitting downward	Plug	ø1/4 inch	06LG	
		ø5/16 inch	08LG	

*1 : A or B port one-side plug specification compatible with 2-position single only.
 *2 : L-type push-in fitting upward is not available for 3-position.
 *3 : Mixed port sizes for 4 (A) and 2 (B) ports are not available.
 *4 : Custom product.

4 Voltage

Code	Content
3	24 VDC

5 Electrical connection

Content	Output	Points	Code
Interface for RT Series	NPN	32	KA1C
	PNP	points	KA1D

6 Station No.

Code	Content
02	2 stations
to	to
24	24 stations

Model No. Notation (Manifold with solenoid valve for Remote I/O connection) ; Base piping

- For RT Series (Remote I/O), refer to Remote I/O RT Series (Catalog No. CC-1557AA).
- When exhaust malfunction prevention valve is required, see P. 55.

7 P/R port position

* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side (Valve interface side)
B	U side, D side
T	U side, D side, with intermediate supply/exhaust block

*1 : Specify the intermediate supply/exhaust block in the manifold specifications.

9 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

11 Manual override

* Multiple selections are not allowed.

Code	Content
Blank	Non-locking/locking common, with erroneous operation prevention cover
M1	Non-locking type, with erroneous operation prevention cover
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

13 Residual pressure release valve

Code	Content
Blank	No residual pressure release valve
Y1	With non-locking type residual pressure release valve
Y2	With locking type residual pressure release valve

*1 : Only compatible with 1 Switching position classifications "3" and "4".
 *2 : Only compatible with 11 Manual overrides "M2" and "M3".

15 Spacer

Code	Content
Blank	Without spacer
Z	With spacer (Specify type and location in MF specifications)

*1 : Specify spacer type and mounting position in manifold specifications. Stacked spacers are not compatible. Combination with blanking plate is not compatible. Cannot be selected simultaneously with L-type push-in fitting upward.

17 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

*1 : P port has a built-in filter.

8 Wiring method inside base

*1

Code	Content
Blank	Double wiring
S	Single wiring specifying single/double solenoid arrangement

*1 : Blank = Wiring is for double solenoid regardless of the type of valve mounted. If a single solenoid is mounted, there will be an empty number for one solenoid.

10 Electric circuit specifications

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : Combination of "E2" and PNP specification is a custom product.

12 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

14 Valve mounting screw type

Code	Content
Blank	Pan head machine screw with plus/minus
J	Hexagon socket head bolt

*1 : 14 When spacer option "Z" is selected, "J" cannot be selected.

16 Exhaust malfunction prevention valve

Code	Content
Blank	None
H	With exhaust malfunction prevention valve

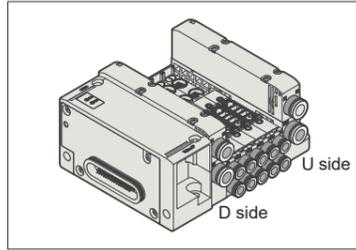
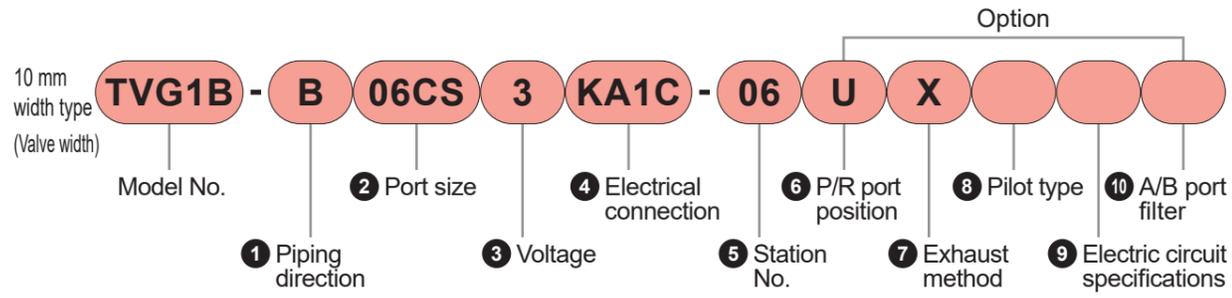
*1 : 1 Switching position "3" and "5" cannot be selected. See P. 234 for the exhaust check valve. Please specify the number of stations on the manifold specifications sheet.

TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG-P4
 Manifold specifications
 Technical data
 Safety precautions

TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG-P4
 Manifold specifications
 Technical data
 Safety precautions

Model No. Notation

Manifold base only for Remote I/O connection; Base piping * Solenoid valve is not included.



① Piping direction

Code	Content
B	Side piping

② Port size(A/B port)

• Metric fitting

Fitting type	A/B port	Code
Push-in	ø1.8	0ACS *2
	ø4	04CS
	ø6	06CS
L-type push-in fitting upward	ø1.8	0ACU *2
	ø4	04CU
	ø6	06CU *1
L-type push-in fitting downward	ø1.8	0ACD *2
	ø4	04CD
	ø6	06CD

③ Voltage

Code	Content
3	24 VDC

⑤ Station No.

Code	Content
02	2 stations
to	to
16	16 stations

*1 : Internal base wiring is all for double solenoid regardless of valve type mounted.
If a single solenoid is mounted, one solenoid signal will be empty.

• Inch fitFitting

Fitting type	A/B port	Code
Push-in	ø1/8 inch	03LS
	ø5/32 inch	04LS
L-type push-in fitting upward	ø1/8 inch	C3LU *3
	ø5/32 inch	04LU *3

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

④ Electrical connection

Content	Output	Points	Code
Interface for RT Series	NPN	32	KA1C
	PNP	points	KA1D

⑥ P/R port position

(TVG1B : ø8)
* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side(Valve interface side)
B	U, D both sides

*1 : P/R port fitting will be in the same direction as A/B port fitting.
*2 : P port filter is built-in.

⑦ Exhaust method

Code	Content
Blank	Common exhaust (R port is push-in fitting)
X	Built-in silencer (R port is plugged, exhaust to atmosphere)

*1 : Silencer is built in at position selected in P/R port position.

⑨ Electric circuit specifications* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : Combination of "E2" and PNP specification is a custom product.

• For RT Series (Remote I/O), refer to Remote I/O RT Series(Catalog No. CC-1557AA).

⑧ Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

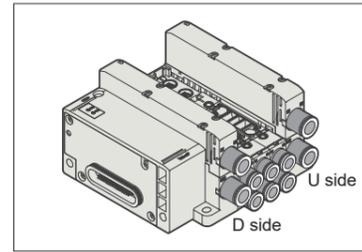
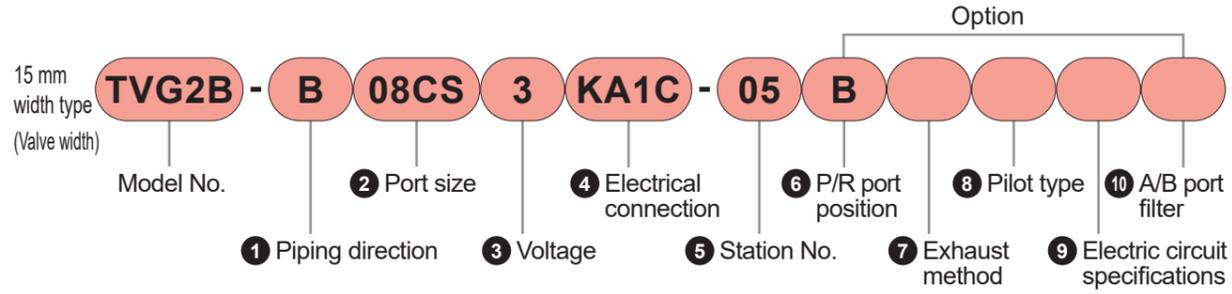
⑩ A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

*1 : P port has a built-in filter.

Model No. Notation

Manifold base only for Remote I/O connection; Base piping * Solenoid valve is not included.



1 Piping direction

Code	Content
B	Side piping

• Inch fitting

Fitting type	A/B port	Code
Push-in	ø1/4 inch	06LS
	ø5/16 inch	08LS
L-type push-in fitting upward	ø1/4 inch	06LU
	ø5/16 inch	08LU

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

4 Electrical connection

Content	Output	Points	Code
Interface for RT Series	NPN	32	KA1C
	PNP	points	KA1D

6 P/R port position

(TVG2B : ø10)
* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side (Valve interface side)
B	U, D both sides

*1 : P/R port fitting will be in the same direction as A/B port fitting.

*2 : P port filter is built-in.

2 Port size(A/B port)

• Metric fitting

Fitting type	A/B port	Code
Push-in	ø4	04CS
	ø6	06CS
	ø8	08CS
	ø10	10CS
L-type push-in fitting upward	ø6	06CU
	ø8	08CU
L-type push-in fitting downward	ø6	06CD
	ø8	08CD

3 Voltage

Code	Content
3	24 VDC

5 Station No.

Code	Content
02	2 stations
to	to
16	16 stations

*1 : Internal base wiring regardless of valve type mounted. All wiring is for double solenoid.
If a single solenoid is mounted, one solenoid signal will be empty.

7 Exhaust method

Code	Content
Blank	Common exhaust (R port is push-in fitting)
X	Built-in silencer (R port is plugged, exhaust to atmosphere)

*1 : Silencer is built in at position selected in P/R port position.

9 Electric circuit specifications

* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : Combination of "E2" and PNP specification is a custom product.

• For RT Series (Remote I/O), refer to Remote I/O RT Series (Catalog No. CC-1557AA).

8 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

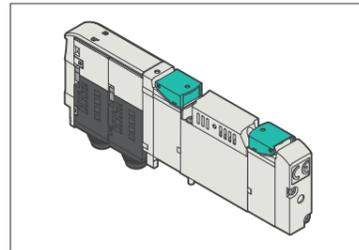
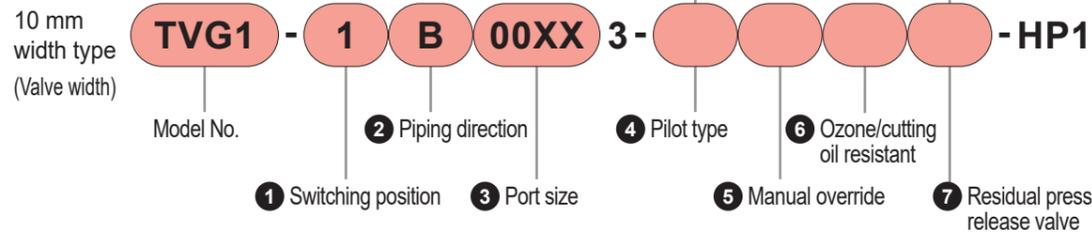
10 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

*1 : P-port has a built-in filter.

Model No. Notation

Discrete solenoid valve (for base mounting);Base piping



Accessories
 • Valve mounting screws are included.
 • Gasket is included with manifold base.

1 Switching position

Code	Content	
1	2-position single	
2	2-position double	
3	3-position closed center	
4	3-position exhaust center	
5	3-position pressure center	
*1 A	Dual 3-port valve built-in type	A side valve:Normally closed B side valve:Normally closed
*1 B		A side valve:Normally open B side valve:Normally open
*1 C		A side valve:Normally closed B side valve:Normally open

*1 : Supports internal pilot only. Dimensions are the same as 2-position double.

2 Piping direction

Code	Content
B	Side piping

3 Port size

Code	Content
00XX	Discrete solenoid valve for base mounting

4 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

5 Manual override * Multiple selections are not allowed.

Code	Content	
Blank	Non-locking/locking common, with erroneous operation prevention cover	
M1	Non-locking type, with erroneous operation prevention cover	
M2	Non-locking/locking common, tool operation type, without cover	
M3	Non-locking type, tool operation type, without cover	

6 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

7 Residual pressure release valve

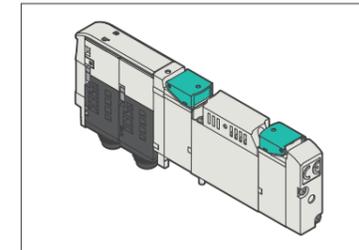
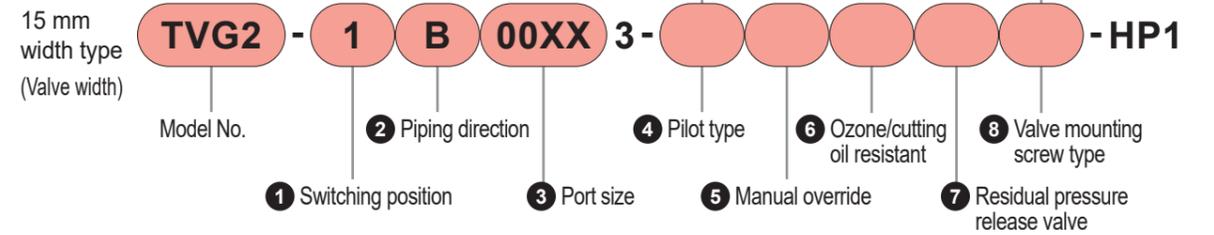
Code	Content	
Blank	No residual pressure release valve	
*1 *2 Y1	With non-locking type residual pressure release valve	
*1 *2 Y2	With locking type residual pressure release valve	

*1 : Only compatible with 1 Switching position classifications "3" and "4".
 *2 : Only compatible with 5 Manual overrides "M2" and "M3".

• For RT Series (Remote I/O), refer to Remote I/O RT Series (Catalog No. CC-1557AA).
 • When exhaust malfunction prevention valve is required, see P. 55.

Model No. Notation

Discrete solenoid valve (for base mounting);Base piping



Accessories
 • Valve mounting screws are included.
 • Gasket is included with manifold base.

1 Switching position

Code	Content	
1	2-position single	
2	2-position double	
3	3-position closed center	
4	3-position exhaust center	
5	3-position pressure center	
*1 A	Dual 3-port valve built-in type	A side valve:Normally closed B side valve:Normally closed
*1 B		A side valve:Normally open B side valve:Normally open
*1 C		A side valve:Normally closed B side valve:Normally open

*1 : Supports internal pilot only. Dimensions are the same as 2-position double.

2 Piping direction

Code	Content
B	Side piping

3 Port size

Code	Content
00XX	Discrete solenoid valve for base mounting

4 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

5 Manual override* Multiple selections are not allowed.

Code	Content	
Blank	Non-locking/locking common, with erroneous operation prevention cover	
M1	Non-locking type, with erroneous operation prevention cover	
M2	Non-locking/locking common, tool operation type, without cover	
M3	Non-locking type, tool operation type, without cover	

6 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

7 Residual pressure release valve

Code	Content	
Blank	No residual pressure release valve	
*1 *2 Y1	With non-locking type residual pressure release valve	
*1 *2 Y2	With locking type residual pressure release valve	

*1 : Only compatible with 1 Switching position classifications "3" and "4".
 *2 : Only compatible with 5 Manual overrides "M2" and "M3".

8 Valve mounting screw type

Code	Content
Blank	Pan head machine screw with plus/minus
J	Hexagon socket head bolt

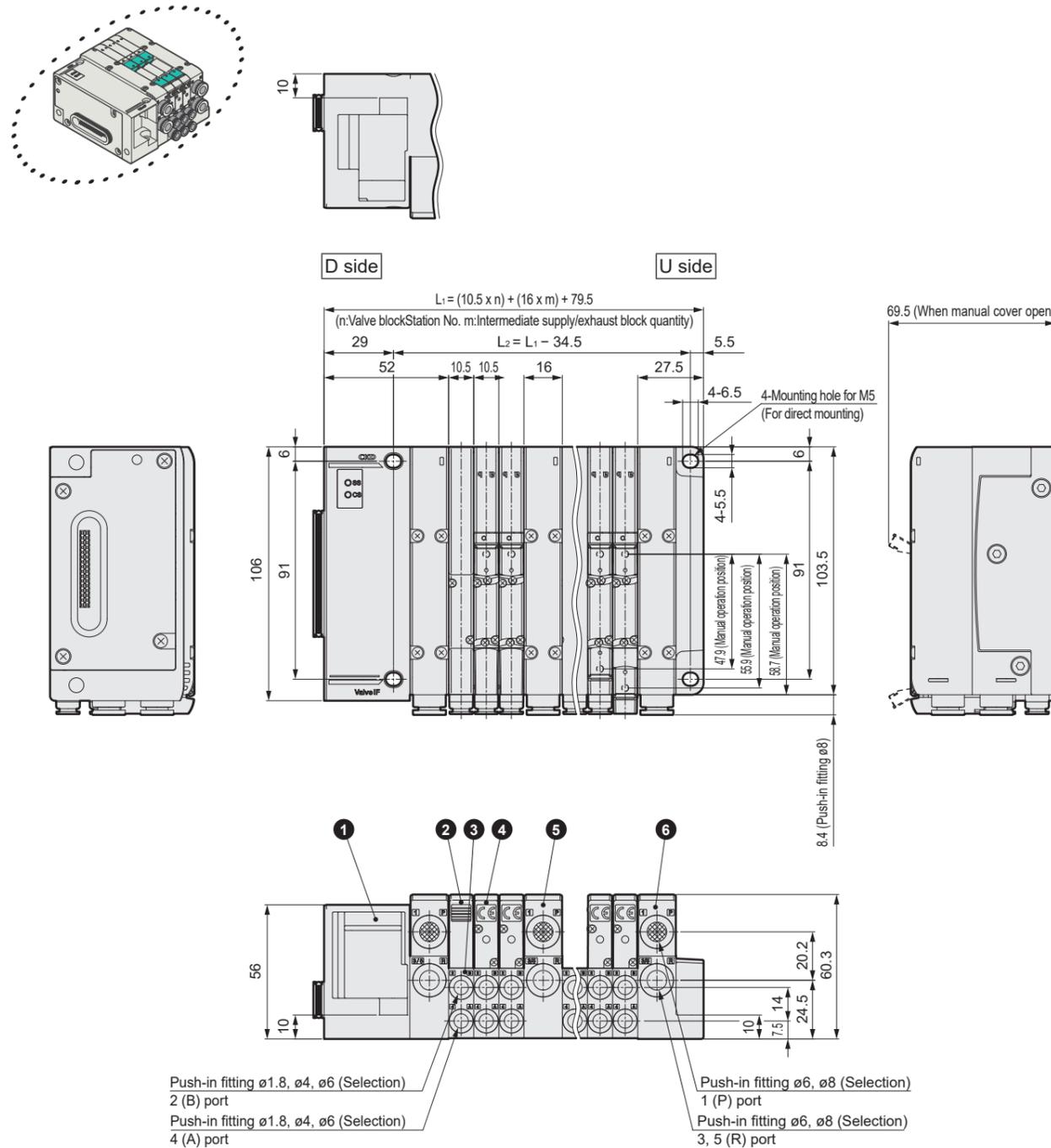
• For RT Series (Remote I/O), refer to Remote I/O RT Series (Catalog No. CC-1557AA).
 • When exhaust malfunction prevention valve is required, see P. 55.

TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG-P4
 Manifold specifications
 Technical data
 Safety precautions

TVG Base piping
 TVG Direct piping
 TVG Base piping
 TVG Direct piping
 TVG-P4
 Manifold specifications
 Technical data
 Safety precautions

Dimensions

TVG1M For Remote I/O connection



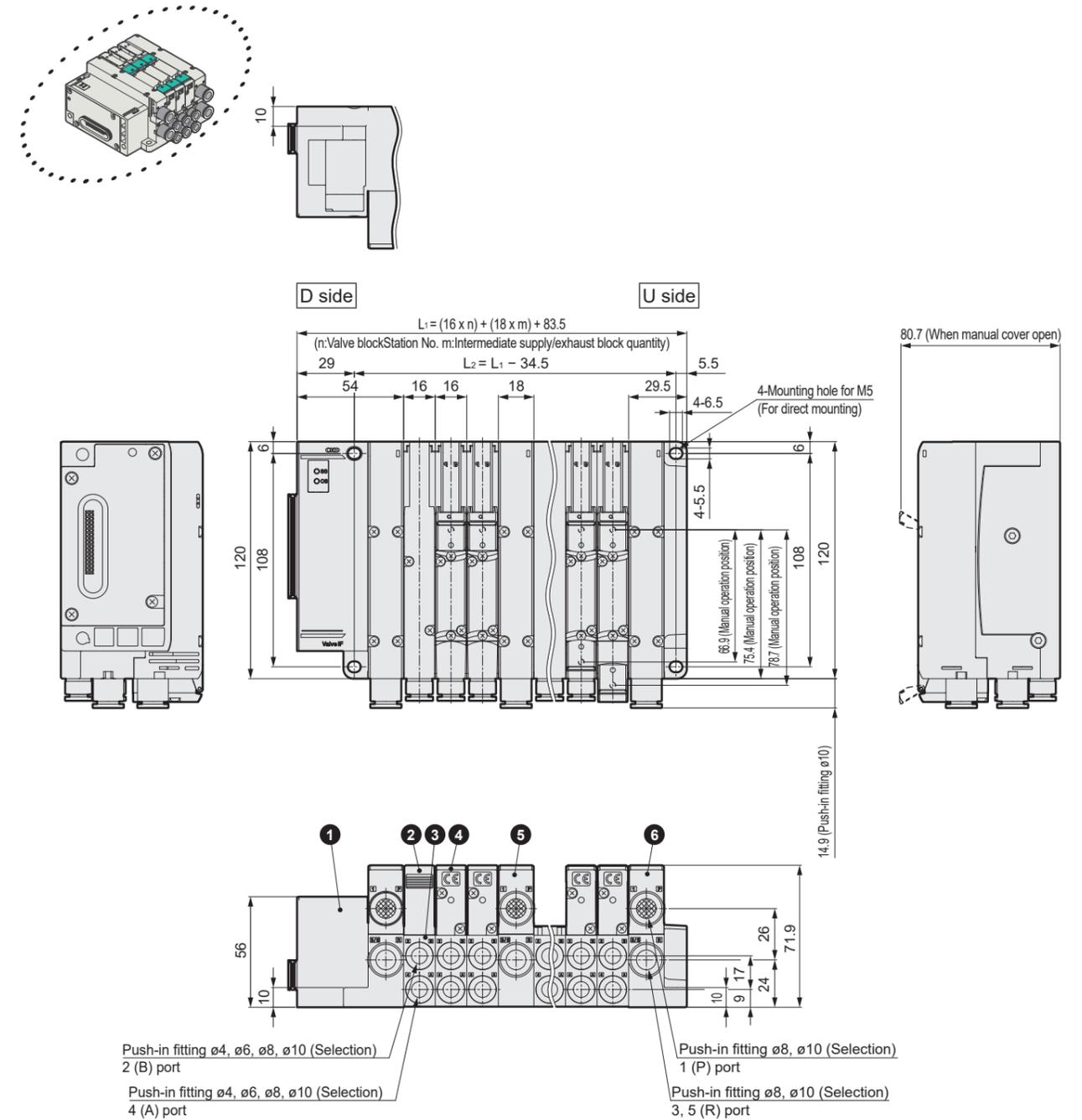
No.	Part name
1	Valve interface
2	Blanking plate
3	Valve block
4	Discrete solenoid valve
5	Intermediate supply/exhaust block
6	End block

* Tie rods (2 pcs.) connecting valve interface and RT Series are included.

Dimensions (For Remote I/O connection) ; Base piping

Dimensions

TVG2M For Remote I/O connection



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

* Tie rods (2 pcs.) connecting valve interface and RT Series are included.

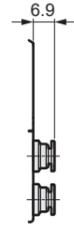
Dimensions

TVG1M

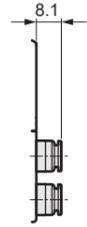
- Fitting straight
- $\phi 1.8$ (OACS)



- $\phi 4$ (O4CS)



- $\phi 6$ (O6CS)



- Fitting straight, one-side plug

- $\phi 1.8$ (OACA)



- $\phi 4$ (O4CA)



- $\phi 6$ (O6CA)



- $\phi 1.8$ (OACF)



- $\phi 4$ (O4CF)

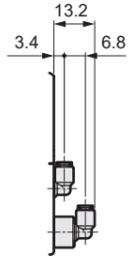


- $\phi 6$ (O6CF)

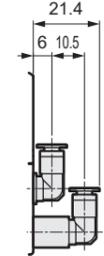


- Fitting L-shape (upward)

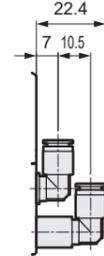
- $\phi 1.8$ (O4CU)



- $\phi 4$ (O4CU)

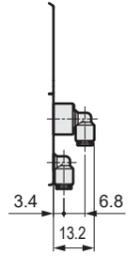


- $\phi 6$ (O6CU)

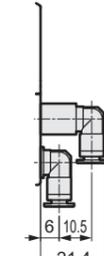


- Fitting L-shape (downward)

- $\phi 1.8$ (O4CD)



- $\phi 4$ (O4CD)



- $\phi 6$ (O6CD)

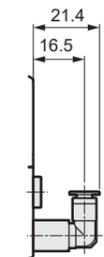


- Fitting L-shape (upward), one-side plug

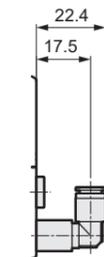
- $\phi 1.8$ (O4CB)



- $\phi 4$ (O4CB)



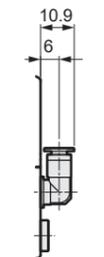
- $\phi 6$ (O6CB)



- $\phi 1.8$ (O4CG)



- $\phi 4$ (O4CG)



- $\phi 6$ (O6CG)

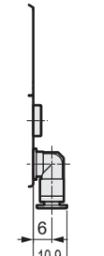


- Fitting L-shape (downward), one-side plug

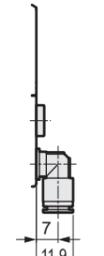
- $\phi 1.8$ (O4CC)



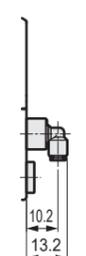
- $\phi 4$ (O4CC)



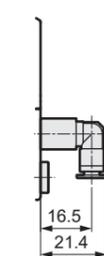
- $\phi 6$ (O6CC)



- $\phi 1.8$ (O4CH)



- $\phi 4$ (O4CH)



- $\phi 6$ (O6CH)



Dimensions

TVG1M

- Fitting straight
- $\phi 1/8$ Inch (O3LS)



- $\phi 5/32$ Inch (O4LS)



- Fitting straight, one-side plug
- $\phi 1/8$ inch (O3LA)



- $\phi 5/32$ Inch (O4LA)



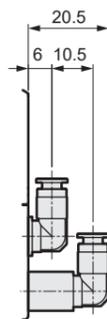
- $\phi 1/8$ inch (O3LF)



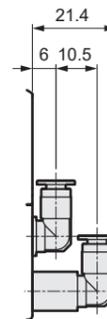
- $\phi 5/32$ Inch (O4LF)



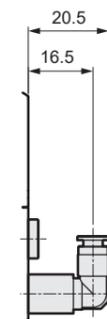
- Fitting L-shape (upward)
- $\phi 1/8$ Inch (O3LU)



- $\phi 5/32$ Inch (O4LU)



- Fitting L-shape (upward), one-side plug
- $\phi 1/8$ inch (O3LB)



- $\phi 5/32$ Inch (O4LB)



- $\phi 1/8$ inch (O3LG)



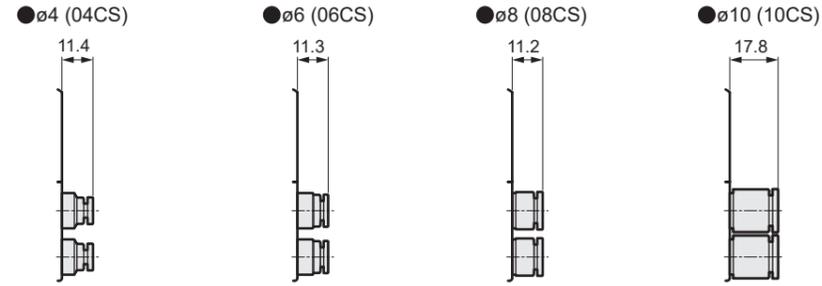
- $\phi 5/32$ Inch (O4LG)



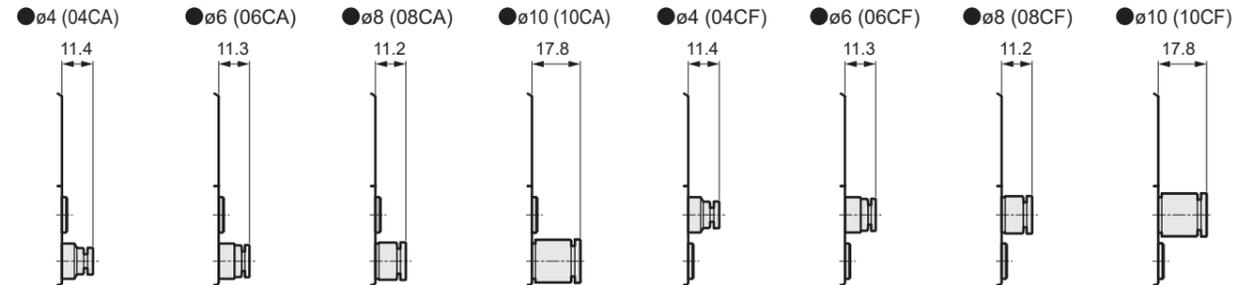
Dimensions

TVG2M

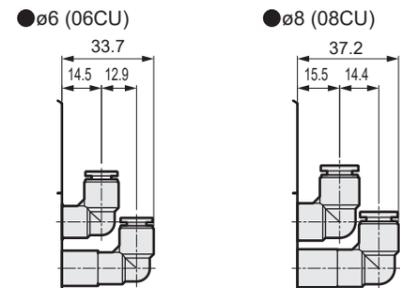
● Fitting straight



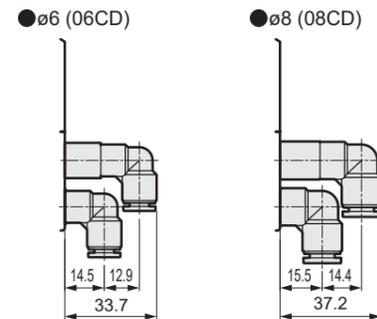
● Fitting straight, one-side plug



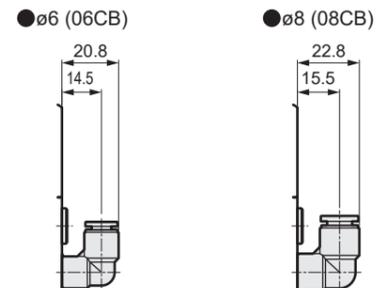
● Fitting L-shape (upward)



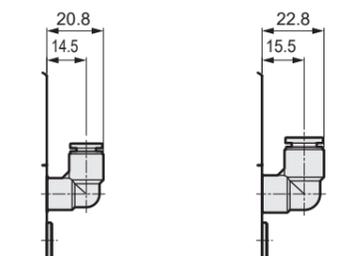
● Fitting L-shape (downward)



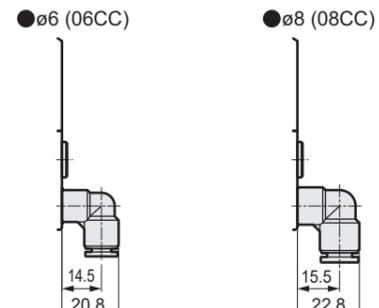
● Fitting L-shape (upward), one-side plug



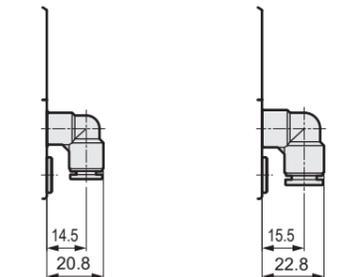
●ø6 (06CG) ●ø8 (08CG)



● Fitting L-shape (downward), one-side plug



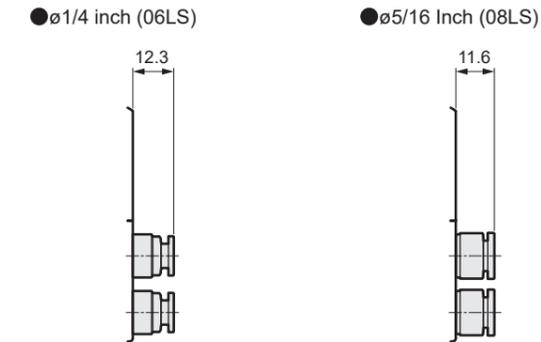
●ø6 (06CH) ●ø8 (08CH)



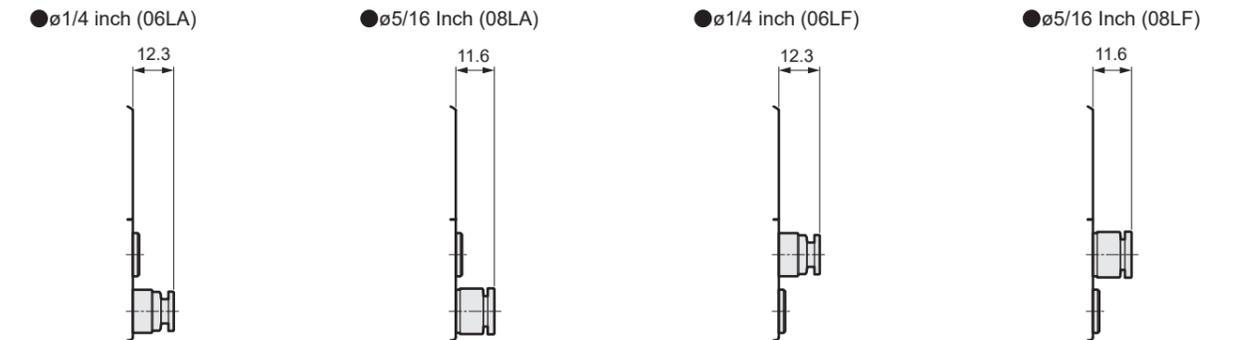
Dimensions

TVG2M

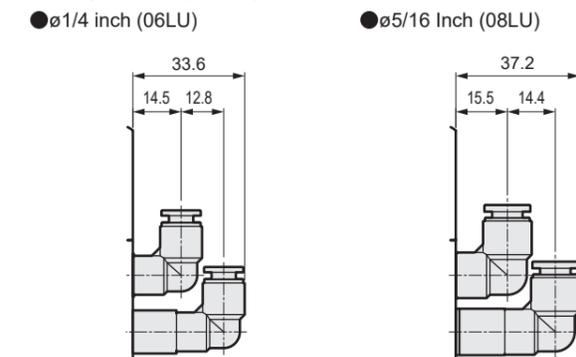
● Fitting straight



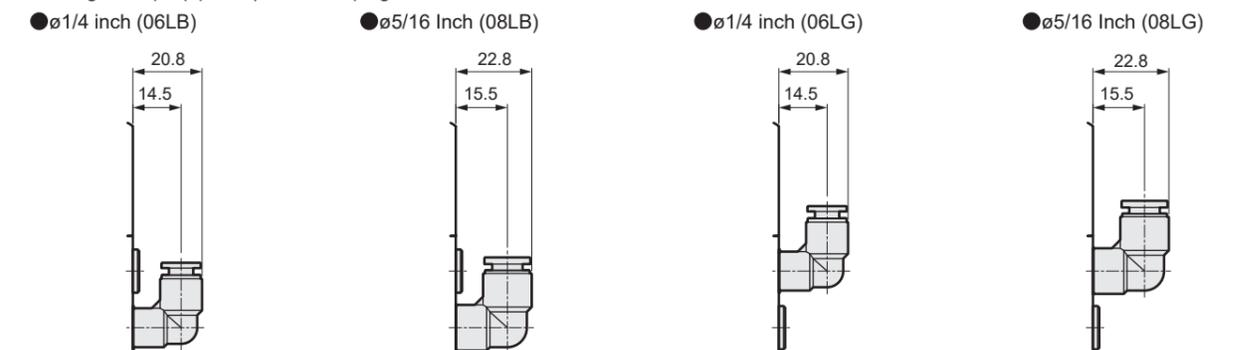
● Fitting straight, one-side plug



● Fitting L-shape (upward)

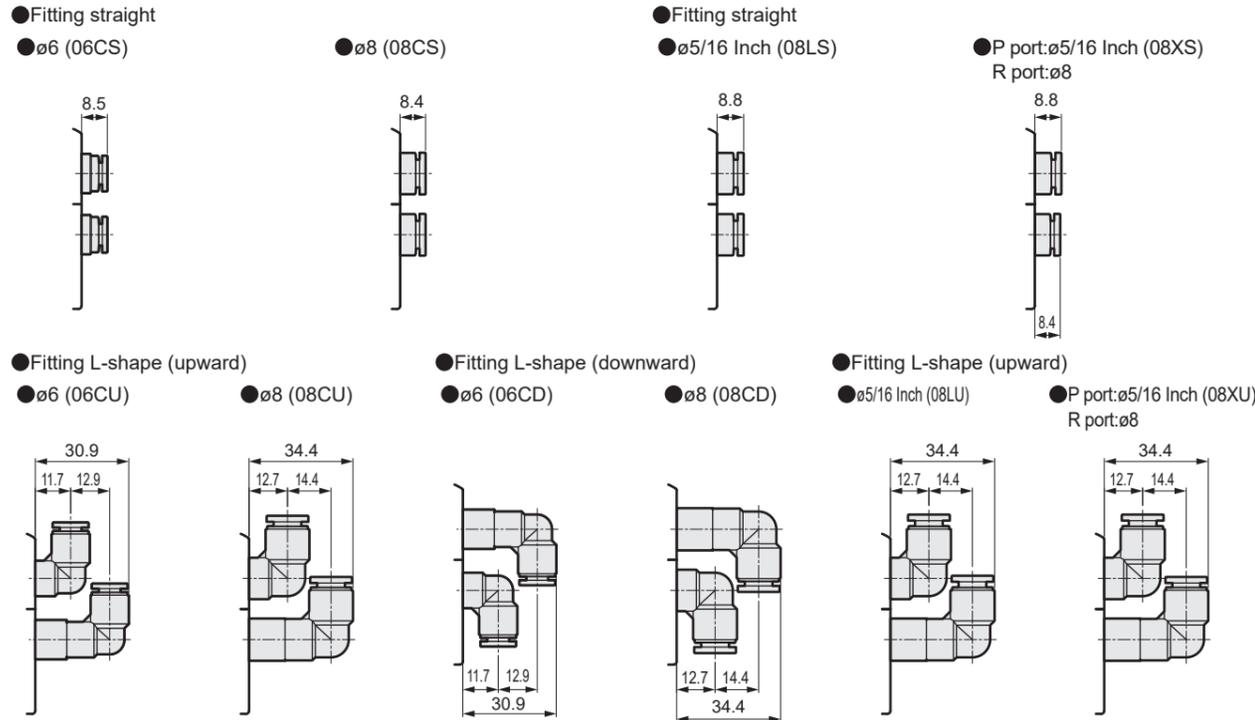


● Fitting L-shape (upward), one-side plug

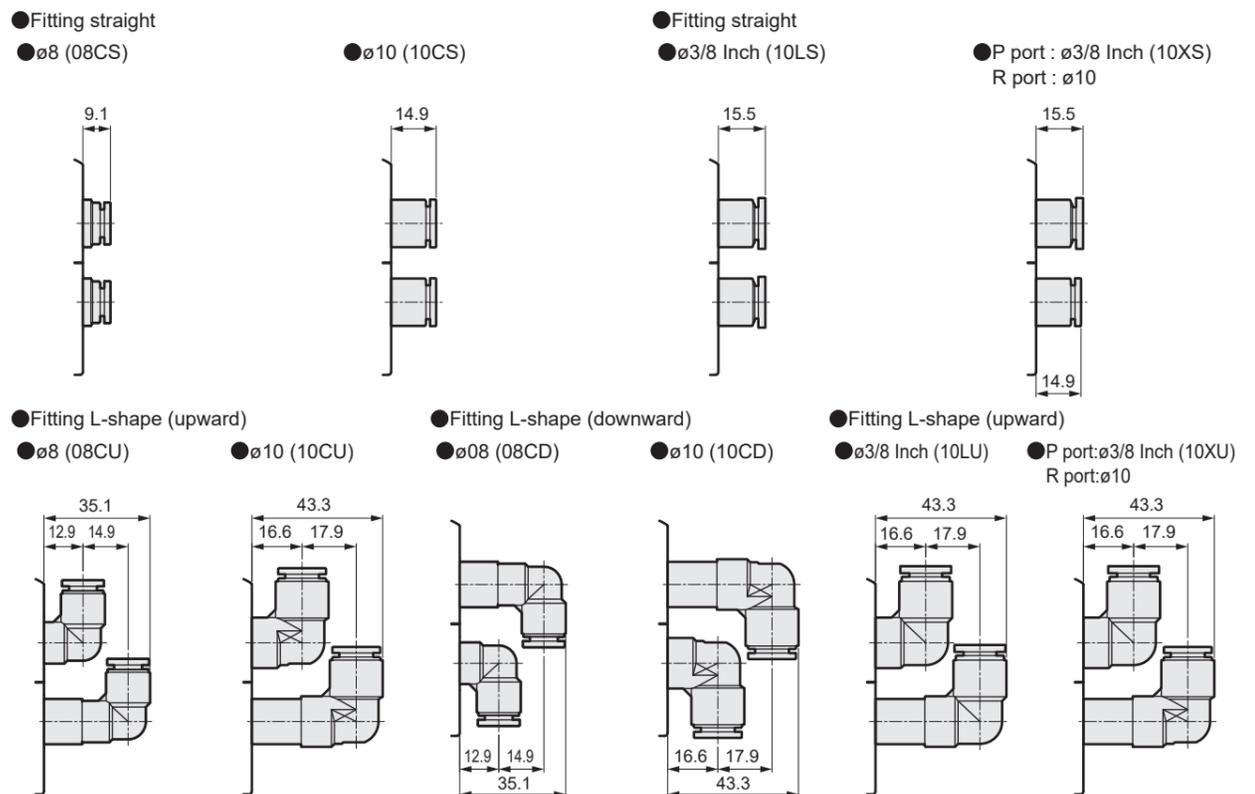


Dimensions

TVG1M Supply/exhaust block

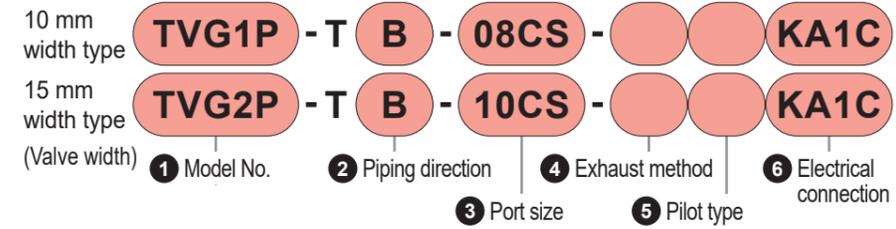


TVG2M Supply/exhaust block



Model No. Notation

Valve interface (with supply/exhaust); Base piping



Accessories

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

			1 Model No.	
			TVG1P	TVG2P
3 Port size			●: Standard ○: Custom product	
Metric fitting				
Fitting type	P/R port	Code		
Push-in	ø6	06CS	●	
	ø8	08CS	●	●
	ø10	10CS		●
L-type push-in fitting upward	ø6	06CU	●	
	ø8	08CU	●	●
	ø10	10CU		●
L-type push-in fitting downward	ø6	06CD	●	
	ø8	08CD	●	●
	ø10	10CD		●
*1 Inch fitting				
Fitting type	P/R port	Code		
Push-in	ø5/16 inch	08LS	●	
	ø3/8 inch	10LS		●
L-type push-in fitting upward	ø5/16 inch	08LU	○	
	ø3/8 inch	10LU		○
*3 P port: Inch fitting, R port: Metric fitting				
Fitting type	P port	R port	Code	
Push-in	ø5/16 inch	ø8	08XS	●
	ø3/8 inch	ø10	10XS	
L-type push-in fitting upward	ø5/16 inch	ø8	08XU	○
	ø3/8 inch	ø10	10XU	
Plug				
P/R port		Code		
Plug		00XX	●	●

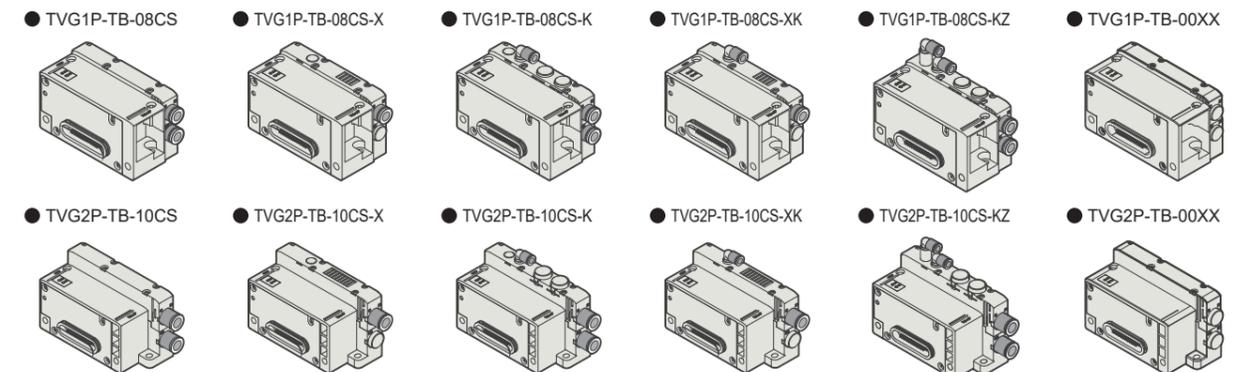
2 Piping direction	
Code	Content
B	Side piping

4 Exhaust method	
Code	Content
Blank	Common exhaust (R port is push-in fitting)
X	Exhaust to atmosphere, built-in silencer (R port is sealed.)

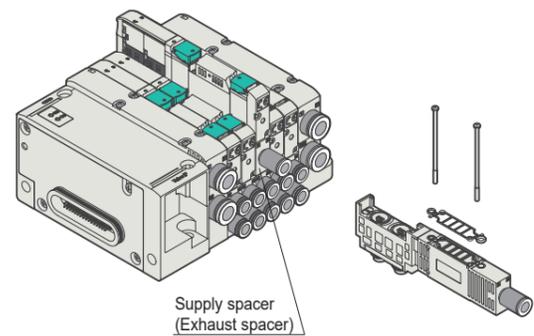
5 Pilot type	
Code	Content
Blank	Internal pilot
K	External pilot
KZ	External pilot (PA/PR separated)

6 Electrical connection		
Content		Code
Valve interface	NPN	KA1C
	PNP	KA1D

*1 : When using silencer with inch fitting specification, select 08XS, 10XS, 08XU, 10XU. R port, PR port (for KZ) become metric fittings.
*2 : Pilot type K, KZ and 00XX cannot be selected simultaneously.
*3 : Cannot be selected simultaneously with exhaust method X.



Supply spacer/Exhaust spacer



Specifications

●Supply spacer

Model No.	Weight g
TVG1P-P-□	31

●Exhaust spacer

Model No.	Weight g
TVG1P-R-□	31

Single unit Model No.

●Supply spacer
TVG1P - P - 04CS
 ① Port size

Code	Port size	Content
04CS	ø4	Push-in fitting ø4
06CS	ø6	Push-in fitting ø6

●Exhaust spacer
TVG1P - R - 04CS
 ① Port size

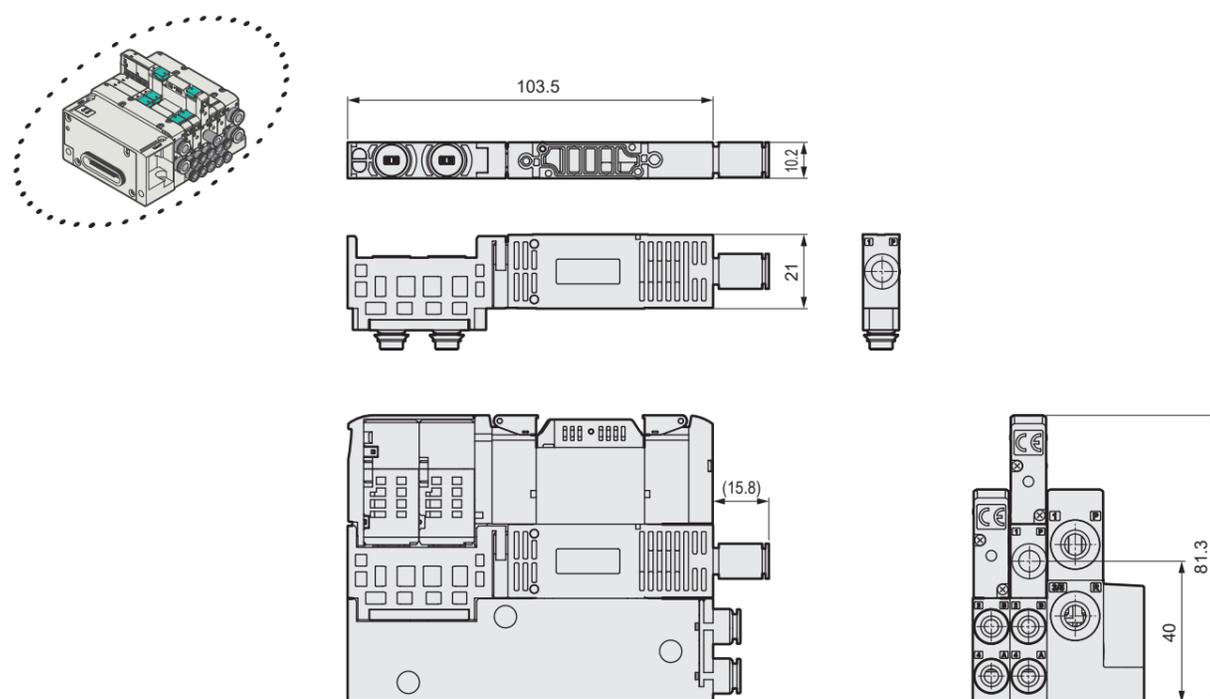
Code	Port size	Content
04CS	ø4	Push-in fitting ø4
06CS	ø6	Push-in fitting ø6

⚠ Precautions for Model No. selection

- *1 : Specify the mounting position and quantity of spacers for manifolds in the manifold specification sheet (pages 198 to 201).
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Spacer mounting screws and gasket are included.
- *5 : If A/B port fitting is elbow type upward, spacer cannot be selected.

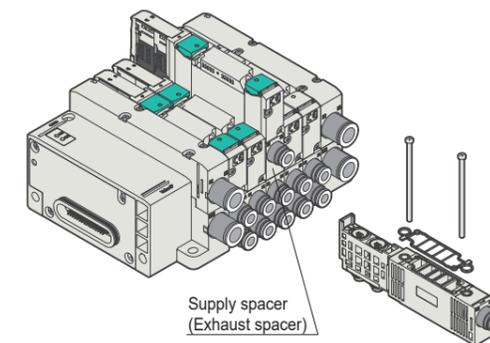
Dimensions

●Supply spacer/Exhaust spacer



Supply spacer/Exhaust spacer ; Base piping

Supply spacer/Exhaust spacer



Specifications

●Supply spacer

Model No.	Weight g
TVG2P-P-□	56

●Exhaust spacer

Model No.	Weight g
TVG2P-R-□	56

Single unit Model No.

●Supply spacer
TVG2P - P - 06CS
 ① Port size

Code	Port size	Content
06CS	ø6	Push-in fitting ø6
08CS	ø8	Push-in fitting ø8
10CS	ø10	Push-in fitting ø10

●Exhaust spacer
TVG2P - R - 06CS
 ① Port size

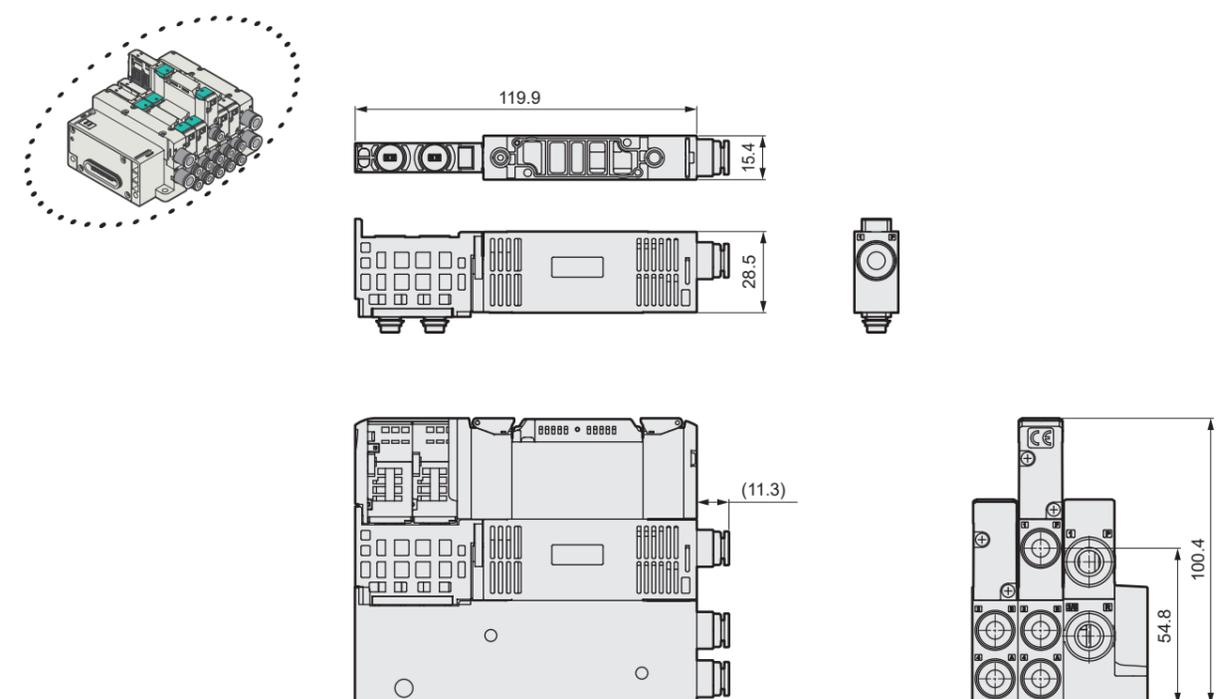
Code	Port size	Content
06CS	ø6	Push-in fitting ø6
08CS	ø8	Push-in fitting ø8
10CS	ø10	Push-in fitting ø10

⚠ Precautions for Model No. selection

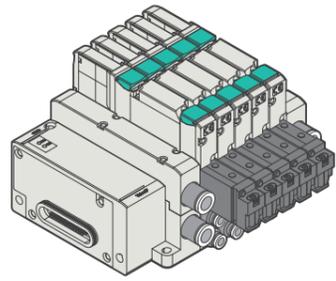
- *1 : Specify the mounting position and quantity of spacers for manifolds in the manifold specification sheet (pages 198 to 201).
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Spacer mounting screws and gasket are included.
- *5 : If A/B port fitting is elbow type upward, spacer cannot be selected.

Dimensions

●Supply spacer/Exhaust spacer



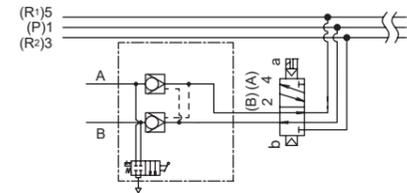
Perfect spacer (Spacer type pilot check valve)



Specifications

Item	TVG1P-PC-□	TVG2P-PC-□
Working fluid	Compressed air	
Max. operating pressure	MPa	0.7
Min. operating pressure	MPa	0.2
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Fluid temperature	°C	5 to 55
Atmosphere	Use in corrosive gas atmosphere is prohibited	
Weight	g	34

Circuit diagram Code



Note) Please note that using a large bore size cylinder (approx. Ø50 or larger) with almost no restriction on the exhaust side (e.g., no speed controller, no silencer) may lead to reduced intermediate stopping accuracy and intermediate stopping failure.

Single unit Model No.

TVG1 P-PC-M

- 1 Model No. Perfect spacer
- 2 Residual pressure release function

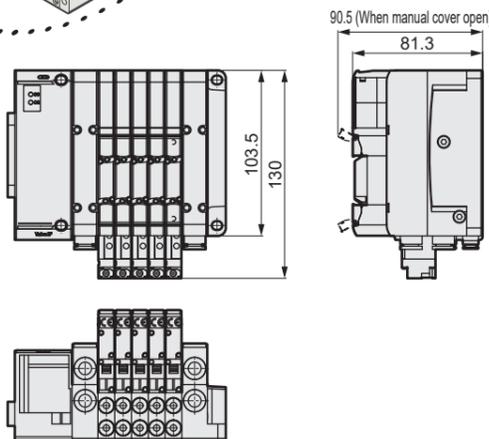
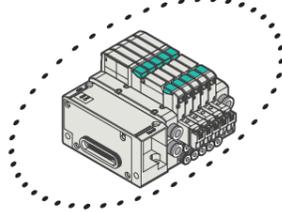
1 Model No.		2 Residual pressure release function	
Code	Content	Code	Content
TVG1	10 mm width type (valve width)	M	Non-locking type manual override
TVG2	15 mm width type (valve width)	M1	Locking type manual override
		Blank	No residual pressure release function

⚠ Precautions for Model No. selection

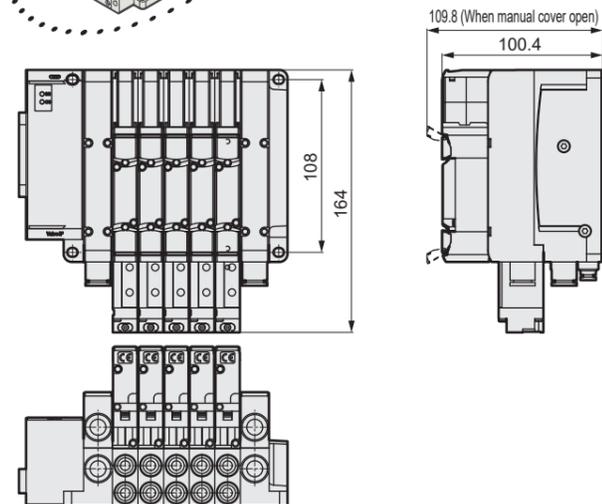
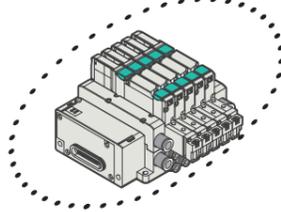
- *1 : Specify the spacer mounting position and selection of residual pressure release function in the manifold specifications.
- *2 : If A/B port fitting is elbow type upward, spacer cannot be selected.
- *3 : Stacking of spacers is not supported.
- *4 : Spacer cannot be combined with blanking plate.
- *5 : Spacer mounting screws and gasket included.
- *6 : Cannot be used for direct piping.

Dimensions

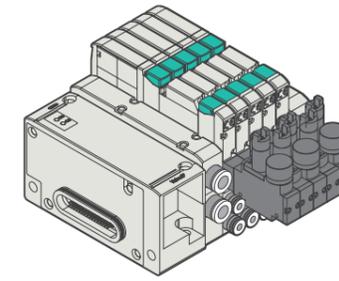
● TVG1



● TVG2



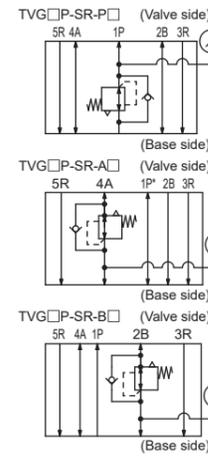
Spacer type regulator



Specifications

Item	TVG1P-SR-□	TVG2P-SR-□
Pressure reducing port	P / A / B	
Working fluid	Compressed air	
Max. operating pressure	MPa	0.7
Min. operating pressure	MPa	0.1
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Fluid temperature	°C	5 to 55
Atmosphere	Use in corrosive gas atmosphere is prohibited	
Weight	g	48

Circuit diagram Code



Single unit Model No.

TVG1 P-SR-P-G0

- 1 Model No. Spacer type regulator
- 2 Pressure reducing specifications
- 3 Pressure gauge

2 Pressure reducing specifications	
Code	Content
*6 P	P port pressure reducing
*6 A	A port pressure reducing
*6 B	B port pressure reducing

3 Pressure gauge	
Code	Content
G0	No pressure gauge
G1	With pressure gauge for odd number station
G2	With pressure gauge for even number station
G3	With pressure gauge for odd/even number station (shared)

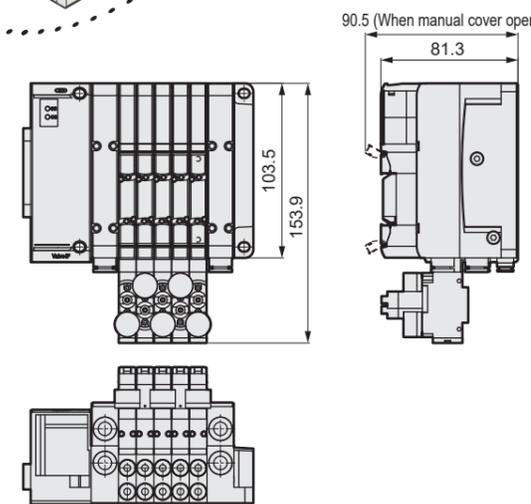
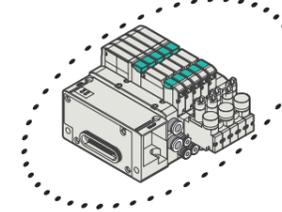
1 Model No.	
TVG1	TVG2
●	●
●	●
●	●
●	●

⚠ Precautions for Model No. selection

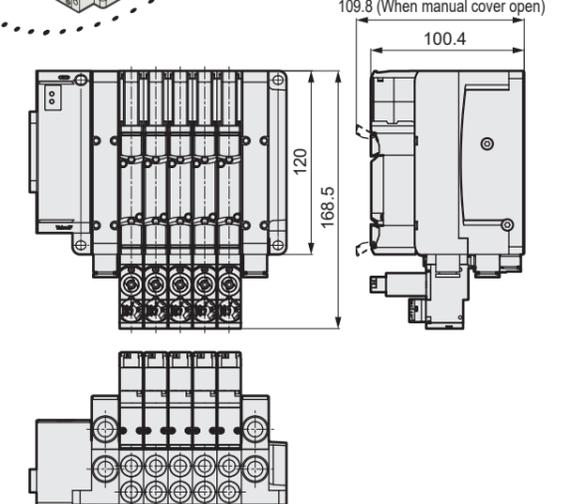
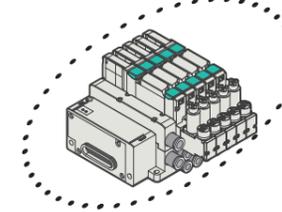
- *1 : Specify the spacer mounting position in the manifold specifications.
- *2 : If A/B port fitting is elbow type upward, spacer cannot be selected.
- *3 : Stacking of spacers is not supported.
- *4 : Spacer cannot be combined with blanking plate.
- *5 : Spacer mounting screws and gasket included.
- *6 : For direct piping, only P port pressure reduction specification can be selected.

Dimensions

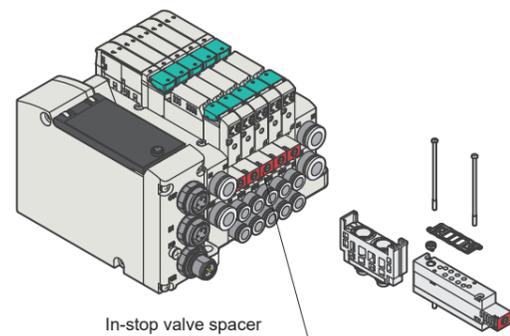
● TVG1



● TVG2



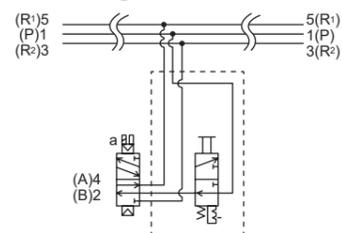
In-stop valve spacer



Specifications

Item	TVG1P-IS	TVG2P-IS
Working fluid	Compressed air	
Max. operating pressure	MPa	0.7
Min. operating pressure	MPa	0.1
Proof pressure	MPa	1.05
Ambient temperature	°C -5 to 55 (no freezing)	
Fluid temperature	°C 5 to 55	
Atmosphere	Use in corrosive gas atmosphere is prohibited	
Weight	g 35	71

Circuit diagram Code



Single unit Model No.

TVG1 P-IS

① Model No. In-stop valve spacer

① Model No.

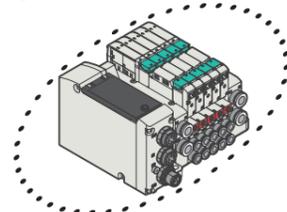
Code	Content
TVG1	10 mm width type (valve width)
TVG2	15 mm width type (valve width)

⚠ Precautions for Model No. selection

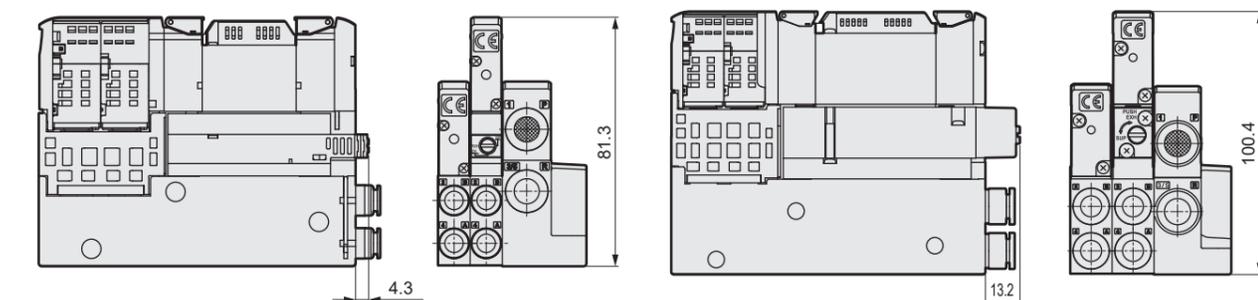
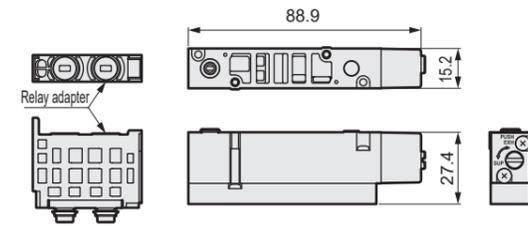
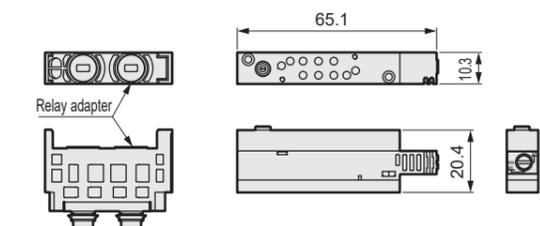
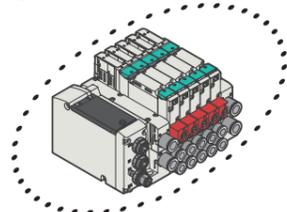
- *1 : Specify the spacer mounting position in the manifold specifications.
- *2 : If A/B port fitting is elbow type upward, spacer cannot be selected.
- *3 : Stacking of spacers is not supported.
- *4 : Spacer cannot be combined with blanking plate.
- *5 : Combination with external pilot (K) is not supported.

Dimensions

● TVG1



● TVG2



MEMO

TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with rechargeable battery manufacturing process
Manifold specifications
Technical data
Safety precautions

TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with rechargeable battery manufacturing process
Manifold specifications
Technical data
Safety precautions

TVG

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

Direct piping

For Remote I/O connection

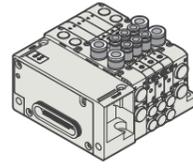
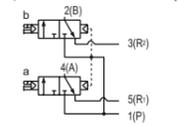
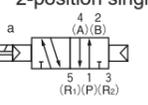
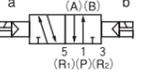
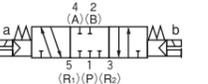


* Remote I/O must be ordered separately.

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Series Variation

Series appearance	Mounted valve Model No.	Position, Solenoid, Circuit diagram Code	Valve specifications		Switching position							A/B piping port (mm)			Electrical connection	Voltage	Spacer			Page	
			Flow characteristics (dm ³ /(s·bar))	Applicable cylinder bore size (ø) *1	2-position		3-position			Push-in fitting			Serial transmission	Supply, Exhaust	Regulator		In-stop valve				
					Single	Double	Closed center	Exhaust center	Pressure center	Dual 3-port valve built-in type	Mix	ø4	ø6					ø8	RT		
Reduced wiring manifold Direct piping  With interface for Remote I/O connection Remote I/O (RT Series) must be ordered separately.	3-port	● Dual 3-port valve built-in type (Example: A side valve: NC, B side valve: NC type) 	0.55 to 0.78	to ø50																	
		● 5-port valve 2-position single 	1.7 to 1.9	to ø80																	
	5-port	● 2-position double 	0.56 to 0.85	to ø50	●	●	●	●	●	●											
		● 3-position closed center 	1.9 to 2.5	to ø80	●	●	●	●	●	●											

*1 : For details, see P. 212.

TVG Base piping
 TVG Direct piping
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 TVG Base piping
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 Safety precautions



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

TVG1/TVG2 Series



* Remote I/O must be ordered separately.

Manifold common specifications

Item	Content	
Manifold type	Block manifold	
Mounting method	Direct mount type	
Supply/exhaust method	Common supply/Common exhaust (Built-in exhaust malfunction prevention valve)	
Pilot exhaust method	Main valve/Pilot valve common exhaust	
Internal pilot	(*4) (Built-in pilot exhaust check valve)	
Piping direction	Base side direction	
Valve type and operation method	Pilot operated soft spool valve	
Working fluid	Compressed air, Nitrogen	
Max. operating pressure MPa	0.7	
Internal pilot Min. operating pressure MPa	2-position double	0.1 (*6)
	2-position single / 3-position	0.2
	Dual 3-port valve built-in type	0.2
External pilot min. operating pressure kPa	-100 (Pilot pressure is 0.2 MPa 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 type (standard)	
Lubrication (*1)	Not required	
Protection structure (*2)	IP65, IP67	
Vibration resistance m/s ²	50 or less	
Shock resistance m/s ²	300 or less	
Atmosphere	Use in corrosive gas atmosphere is prohibited	

Electrical specifications

Item	KA1C	KA1D	
Output specifications	Output	NPN	PNP
	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 can be set regardless of process data.	
	Supply voltage V	24 DC	
Electrical specifications	Internal current consumption mA	15 or less	
	For unit/ input		
	For output	75 or less	
Operation display	LED (For equipment status display, 2 pcs.)		

- *1 : Use turbine oil Class 1 ISO VG32 for lubrication. Excessive or intermittent lubrication may result in unstable operation.
- *2 : Test method per IP65 (IEC 60529 : 2001) standard. For details, see P. 231.
- *3 : When low heat energy saving circuit or surge-less is selected, it will be a diode.
- *4 : The pilot exhaust method differs for each supply/exhaust block used. For details, see P. 95.
- *5 : When used in low vacuum, select external pilot. For details, see P. 233.
- *6 : 0.2 MPa for low heat energy saving circuit.

Model specifications

Item	TVG1		TVG2	
	KA1□	KA1□	KA1□	KA1□
Max. station No.	Standard wiring (Double wiring) Single wiring specifying single/double solenoid arrangement		16 stations	16 stations
Max. number of solenoids	32 points		32 points	32 points
Port size	Metric fitting	A/B port	Push-in fitting ø4, ø6, M5	Push-in fitting ø6, ø8
		P/R port	Push-in fitting ø6, ø8	Push-in fitting ø8, ø10

Model performance/characteristics

Item	Switching position	TVG1		TVG2		
		ON	OFF	ON	OFF	
Response time ms	Dual 3-port valve built-in type	15	25	20	37	
	2-position	Single	15	20	22	24
		Double	15	15	26	26
3-position	20	30	25	35		

Response time is the value at supply pressure 0.5 MPa, 20°C, and no lubrication. It varies depending on the pressure and oil quality.

Flow characteristics

Model No.	Switching position	P → A/B			A/B → R			
		C [dm ³ /(s·bar)]	b	Q [L/min(ANR)]	C [dm ³ /(s·bar)]	b	Q [L/min(ANR)]	
TVG1	Dual 3-port valve built-in type	0.62	0.51	184	0.78 (0.55)	0.33 (0.30)	202 (140)	
	2-position	0.66	0.56	204	0.85 (0.56)	0.30 (0.33)	216 (145)	
	3-position	Closed center	0.64	0.54	195	0.79 -	0.34 -	206 -
		Exhaust center	0.64	0.54	195	0.85 (0.56)	0.32 (0.32)	219 (144)
TVG2	Dual 3-port valve built-in type	1.7	0.29	430	1.9 (1.7)	0.38 (0.20)	510 (407)	
	2-position	2.1	0.35	552	2.5 (1.9)	0.32 (0.18)	644 (450)	
	3-position	Closed center	2.0	0.35	525	2.2 -	0.32 -	567 -
		Exhaust center	1.9	0.34	496	2.5 (2.0)	0.33 (0.19)	648 (476)
		Pressure center	2.1	0.36	555	2.2 -	0.32 -	567 -

*1 : Conversion between effective cross-sectional area S and sonic conductance C is S ≈ 5.0 x C.

*2 : Values in () are for the type with exhaust malfunction prevention valve.

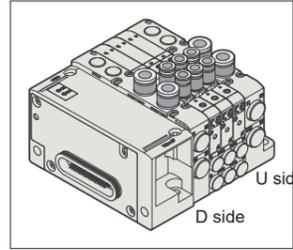
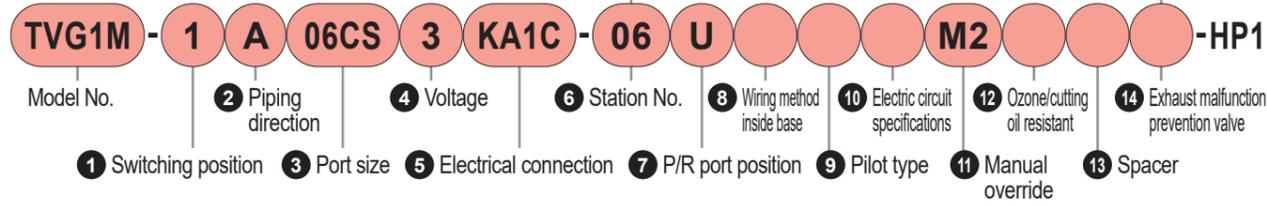
TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
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With interface for Remote I/O connection
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Compatible with rechargeable battery manufacturing process
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With interface for Remote I/O connection
TVG-P4
Compatible with rechargeable battery manufacturing process
Manifold specifications
Technical data
Safety precautions

Model No. Notation

Manifold with solenoid valve (for Remote I/O connection);Direct piping

10 mm width type (valve width)



1 Switching position

Code	Content
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center
X	Mix manifold
A	3-port valve A side valve:Normally closed / B side valve:Normally closed
B	Dual built-in type A side valve:Normally open / B side valve:Normally open
C	*1 A side valve:Normally closed / B side valve:Normally open

*1 : Supports internal pilot only. Dimensions are the same as 2-position double.

2 Piping direction

Code	Content
A	Top piping

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

Fitting type	A/B port	Code	
Push-in	ø4	04CS	
	ø6	06CS	
	Mix	99CX	
Female thread	M5	05MS	
Fitting type	One side plug specification *1		Code
Push-in	ø4	Plug	04CA
			06CA
	ø6	Plug	04CF
			06CF
Female thread	M5	Plug	05MA
		Plug	05MF

*1 : A or B port one-side plug specification compatible with 2-position single only.

*2 : Mixed port sizes for 4 (A) and 2 (B) ports are not available.

5 Electrical connection

Content	Output	Points	Code
For RT Series connection Interface	NPN	32 points	KA1C
	PNP	points	KA1D

4 Voltage

Code	Content
3	24 VDC

6 Station No.

Code	Content
02	2 stations
to	to
24	24 stations

7 P/R port position

* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side (Valve interface side)
B	U side, D side
T	U side, D side, with intermediate supply/exhaust block

*1 : Specify the intermediate supply/exhaust block in the manifold specifications.

9 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

11 Manual override * Multiple selections are not allowed.

Code	Content
Blank	Non-locking/locking common, with erroneous operation prevention cover
M1	Non-locking type, with erroneous operation prevention cover
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

13 Spacer

Code	Content
Blank	Without spacer
Z	With spacer (Specify type and location in MF specifications)

*1 : Specify spacer type and mounting position in manifold specifications. Stacked spacers are not compatible. Combination with blanking plate is not supported.

8 Wiring method inside base

*1

Code	Content
Blank	Double wiring
S	Single wiring specifying single/double solenoid arrangement

*1 : Blank = Wiring is for double solenoid regardless of the type of valve mounted. If a single solenoid is mounted, there will be an empty number for one solenoid.

10 Electric circuit specifications * Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : Combination of "E2" and PNP specification is a custom product.

12 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

14 Exhaust malfunction prevention valve

Code	Content
Blank	None
H	With exhaust malfunction prevention valve

*1 : 1 Switching position classifications "3" and "5" cannot be selected. Refer to page 234 for details on the exhaust malfunction prevention valve. Specify the number of stations to be installed in the manifold specification sheet.

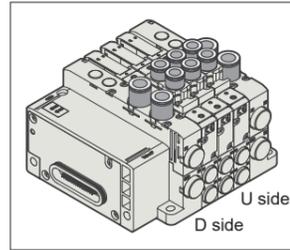
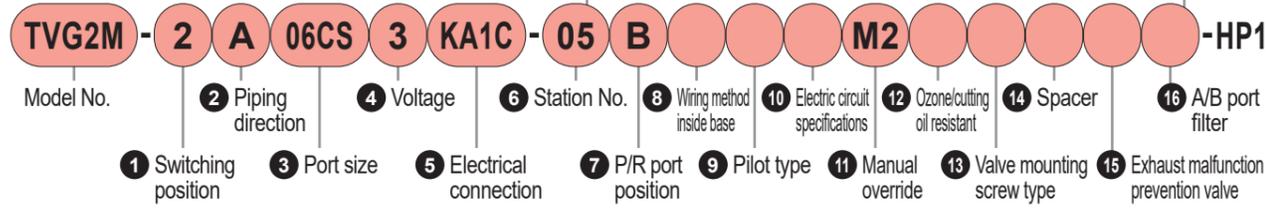
TVG Base piping
TVG Direct piping
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TVG Base piping
TVG Direct piping
TVG Base piping
TVG Direct piping
TVG-P4
Manifold specifications
Technical data
Safety precautions

Model No. Notation

Manifold with solenoid valve (for Remote I/O connection);Direct piping

15 mm width type (valve width)



1 Switching position

Code	Content
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center
X	Mix manifold
A	3-port valve A side valve:Normally closed / B side valve:Normally closed
B	Dual built-in type A side valve:Normally open / B side valve:Normally open
C	*1 A side valve:Normally closed / B side valve:Normally open

*1 : Supports internal pilot only. Dimensions are the same as 2-position double.

2 Piping direction

Code	Content
A	Top piping

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

Fitting type	A/B port	Code
Push-in	ø6	06CS
	ø8	08CS
	Mix	99CX

*2

Fitting type	One side plug specification *1		Code
	A port	B port	
Push-in	ø6	Plug	06CA
	ø8		08CA
	Plug	ø6	06CF
		ø8	08CF

*1 : A or B port one-side plug specification compatible with 2-position single only.

*2 : Mixed port sizes for 4 (A) and 2 (B) ports are not available.

5 Electrical connection

Content	Output	Points	Code
Interface for RT Series	NPN	32	KA1C
	PNP	points	KA1D

6 Station No.

Code	Content
02	2 stations
to	to
24	24 stations

7 P/R port position

* Multiple selections are not allowed.

Code	Content
U	U side (End block side)
D	D side (Valve interface side)
B	U side, D side
T	U side, D side, with intermediate supply/exhaust block

*1 : Specify the intermediate supply/exhaust block in the manifold specifications.

9 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

11 Manual override

* Multiple selections are not allowed.

Code	Content
M2	Non-locking/locking common, tool operation type, without cover
M3	Non-locking type, tool operation type, without cover

13 Valve mounting screw type

Code	Content
Blank	Pan head machine screw with plus/minus
J	Hexagon socket head bolt

*1 : When spacer option "Z" is selected, "J" cannot be selected.

15 Exhaust malfunction prevention valve

Code	Content
Blank	None
H	With exhaust malfunction prevention valve

*1 : Switching position category "3" "5" cannot be selected. For with exhaust malfunction prevention valve, see P. 234 Please refer to. Specify number of installed stations in manifold specification sheet.

- For RT Series (Remote I/O), refer to Remote I/O RT Series (Catalog No. CC-1557AA).
- When exhaust malfunction prevention valve is required, P. 55.

8 Wiring method inside base

*1

Code	Content
Blank	Double wiring
S	Single wiring specifying single/double solenoid arrangement

*1 : Blank = Wiring is for double solenoid regardless of the type of valve mounted. If a single solenoid is mounted, there will be an empty number for one solenoid.

10 Electric circuit specifications

* Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1 : Combination of "E2" and PNP specification is a custom product.

12 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

14 Spacer

Code	Content
Blank	Without spacer
Z	With spacer (Specify type and location in MF specifications)

*1 : Specify spacer type and mounting position in manifold specifications. Stacked spacers are not compatible. Combination with blanking plate is not supported.

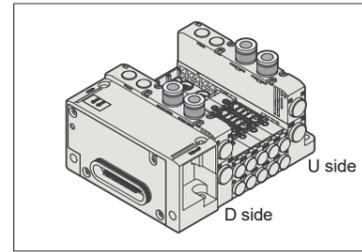
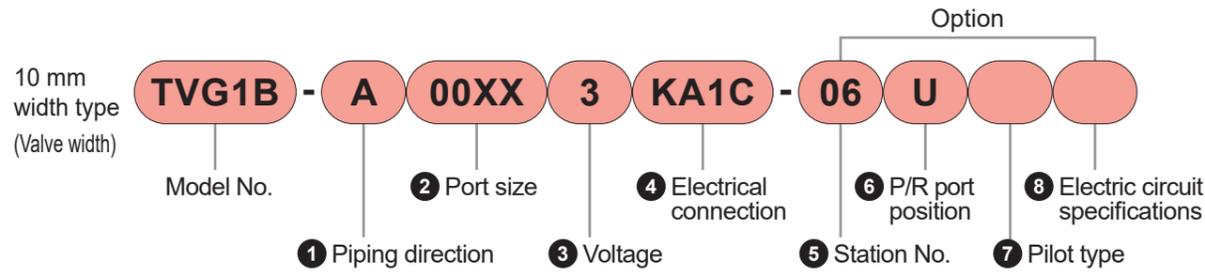
16 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

*1 : P port has a built-in filter.

Model No. Notation

Manifold base only for Remote I/O connection; Direct piping * Solenoid valve is not included.



• For RT Series (Remote I/O), refer to Remote I/O RT Series (Catalog No. CC-1557AA).

1 Piping direction

Code	Content
A	Top piping

2 Port size

Code	Content
00XX	Valve block for direct piping

3 Voltage

Code	Content
3	24 VDC

4 Electrical connection

Content	Output	Points	Code
Interface for RT Series	NPN	32	KA1C
	PNP	points	KA1D

5 Station No.

Code	Content
02	2 stations
to	to
16	16 stations

*1 : The internal wiring of the base is for double solenoids regardless of the type of valve mounted. If a single solenoid is mounted, there will be an empty number for one solenoid.

6 P/R port position

(TVG1B : $\varnothing 8$)
* Multiple selections are not allowed.

Code	Content	
U	U side (End block side)	
D	D side (Valve interface side)	
B	U, D both sides	

*1 : P port filter is built-in.

8 Electric circuit specifications * Multiple selections are not allowed.

Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

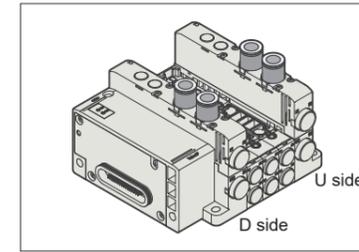
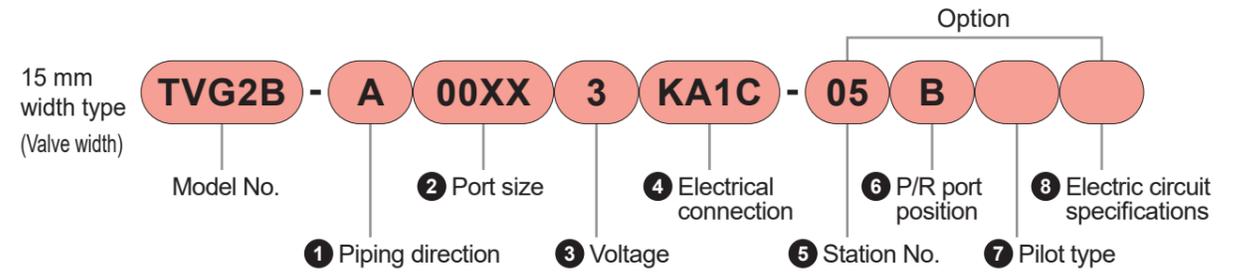
*1

*1 : Combination of "E2" and PNP specification is a custom product.

Model No. Notation (Manifold base only for Remote I/O connection) ; Direct piping

Model No. Notation

Manifold base only for Remote I/O connection; Direct piping * Solenoid valve is not included.



• For RT Series (Remote I/O), refer to Remote I/O RT Series (Catalog No. CC-1557AA).

1 Piping direction

Code	Content
A	Top piping

2 Port size

Code	Content
00XX	Valve block for direct piping

3 Voltage

Code	Content
3	24 VDC

4 Electrical connection

Content	Output	Points	Code
Interface for RT Series	NPN	32	KA1C
	PNP	points	KA1D

5 Station No.

Code	Content
02	2 stations
to	to
16	16 stations

*1 : The internal wiring of the base is for double solenoids regardless of the type of valve mounted. If a single solenoid is mounted, there will be an empty number for one solenoid.

6 P/R port position

(TVG2B : $\varnothing 10$)
* Multiple selections are not allowed.

Code	Content	
U	U side (End block side)	
D	D side (Valve interface side)	
B	U, D both sides	

*1 : P port filter is built-in.

8 Electric circuit specifications * Multiple selections are not allowed.

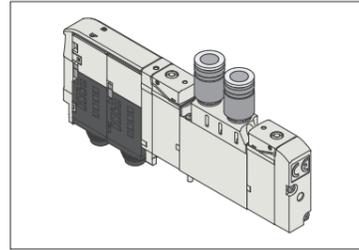
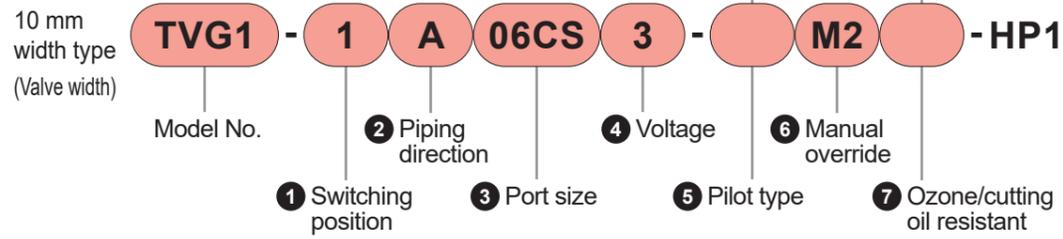
Code	Content
Blank	With surge suppressor, lamp
E1	Low heat energy saving circuit (surge-less specification)
E2	Surge-less

*1

*1 : Combination of "E2" and PNP specification is a custom product.

Model No. Notation

Discrete solenoid valve (for base mounting);Direct piping



Accessories
 • Valve mounting screws are included.
 • Gasket is included with manifold base.

1 Switching position

Code	Content	
1	2-position single	
2	2-position double	
3	3-position closed center	
4	3-position exhaust center	
5	3-position pressure center	
*1 A	Dual 3-port valve built-in type	A side valve:Normally closed B side valve:Normally closed
*1 B		A side valve:Normally open B side valve:Normally open
*1 C		A side valve:Normally closed B side valve:Normally open

*1 : Supports internal pilot only. Dimensions are the same as 2-position double.

2 Piping direction

Code	Content
A	Top piping

3 Port size

Fitting type	A/B port		Code
Push-in	ø4		04CS
	ø6		06CS
Female thread	M5		05MS
Fitting type	One side plug specification		Code
Push-in	A port	B port	
	ø4	Plug	04CA
			06CA
	ø6	Plug	04CF
06CF			
Female thread	M5	Plug	05MA
	Plug	M5	05MF

4 Voltage

Code	Content
3	24 VDC

5 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

6 Manual override* Multiple selections are not allowed.

Code	Content	
Blank	Non-locking/locking common, with erroneous operation prevention cover	
M1	Non-locking type, with erroneous operation prevention cover	
M2	Non-locking/locking common, tool operation type, without cover	
M3	Non-locking type, tool operation type, without cover	

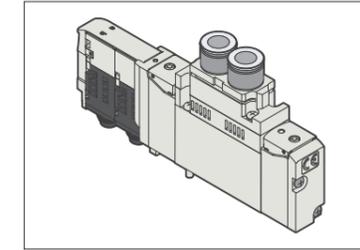
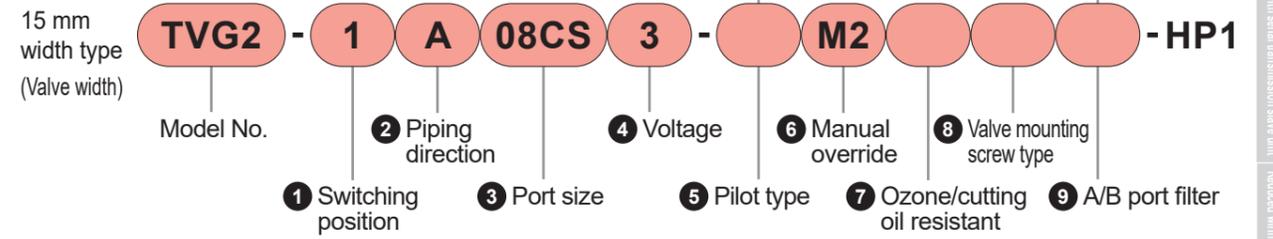
7 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

• For RT Series (Remote I/O), refer to Remote I/O RT Series (Catalog No. CC-1557AA).
 • When exhaust malfunction prevention valve is required, see P. 55.

Model No. Notation

Discrete solenoid valve (for base mounting);Direct piping



Accessories
 • Valve mounting screws are included.
 • Gasket is included with manifold base.

1 Switching position

Code	Content	
1	2-position single	
2	2-position double	
3	3-position closed center	
4	3-position exhaust center	
5	3-position pressure center	
*1 A	3-port valve Dual built-in type	A side valve:Normally closed B side valve:Normally closed
*1 B		A side valve:Normally open B side valve:Normally open
*1 C		A side valve:Normally closed B side valve:Normally open

*1 : Supports internal pilot only. Dimensions are the same as 2-position double.

2 Piping direction

Code	Content
A	Top piping

3 Port size

Fitting type	A/B port		Code
Push-in	ø6		06CS
	ø8		08CS
Fitting type	One side plug specification		Code
Push-in	A port	B port	
	ø6	Plug	06CA
			08CA
	ø8	Plug	06CF
08CF			

4 Voltage

Code	Content
3	24 VDC

5 Pilot type

Code	Content
Blank	Internal pilot
K	External pilot

6 Manual override * Multiple selections are not allowed.

Code	Content	
M2	Non-locking/locking common, tool operation type, without cover	
M3	Non-locking type, tool operation type, without cover	

7 Ozone/Coolant resistant

Code	Content
Blank	Standard specifications
A	Ozone/cutting oil resistant (Main valve fluoro rubber specification)

8 Valve mounting screw type

Code	Content
Blank	Pan head machine screw with plus/minus
J	Hexagon socket head bolt

9 A/B port filter

Code	Content
Blank	None
F	Built-in A/B port filter

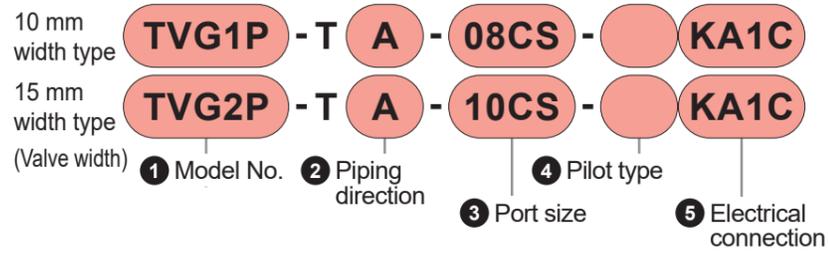
*1 : The P port of the base has a built-in filter as standard.

• For RT Series (Remote I/O), refer to Remote I/O RT Series (Catalog No. CC-1557AA).
 • When exhaust malfunction prevention valve is required, see P. 55.

TVG1P/TVG2P Series

Model No. Notation

Valve interface (with supply/exhaust) ; Direct piping



Accessories

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

		① Model No.	
		TVG1P	TVG2P
③ Port size ● : Standard			
Metric fitting			
Fitting type	P/R port	Code	
Push-in	ø6	06CS	●
	ø8	08CS	●
	ø10	10CS	●
Plug			
	P/R port	Code	
Plug		00XX	●

*1 : ● Pilot type K, KZ and 00XX cannot be selected simultaneously.

② Piping direction	
Code	Content
A	Top piping

④ Pilot type	
Code	Content
Blank	Internal pilot
K	External pilot
KZ	External pilot (PA/PR separated)

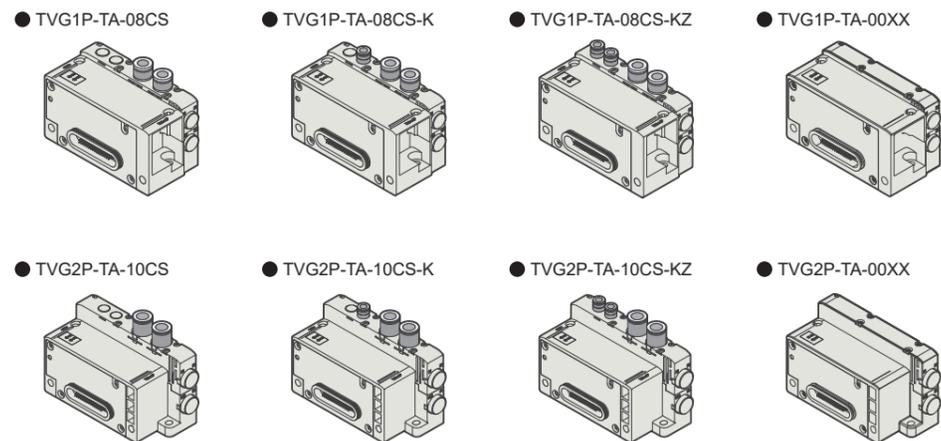
*1 *2

*1 *2

*1 : ● Port size "00XX", "□□X□" cannot be selected.

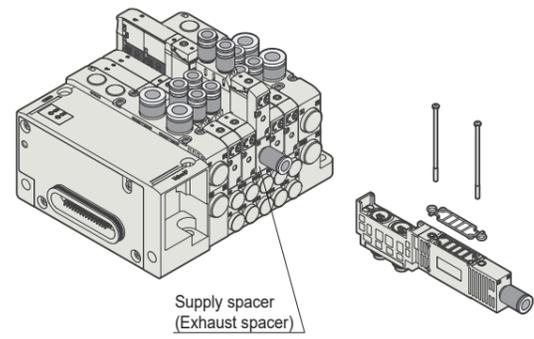
*2 : External pilot port is ø6 Push-in fitting.

⑤ Electrical connection		
Content		Code
Valve interface	NPN	KA1C
	PNP	KA1D



MEMO

Supply spacer/Exhaust spacer



Specifications

●Supply spacer

Model No.	Weight g
TVG1P-P-□	31

●Exhaust spacer

Model No.	Weight g
TVG1P-R-□	31

Single unit Model No.

●Supply spacer

TVG1P - P - **04CS**
① Port size

Code	Port size	Content
04CS	ø4	Push-in fitting ø4
06CS	ø6	Push-in fitting ø6

●Exhaust spacer

TVG1P - R - **04CS**
① Port size

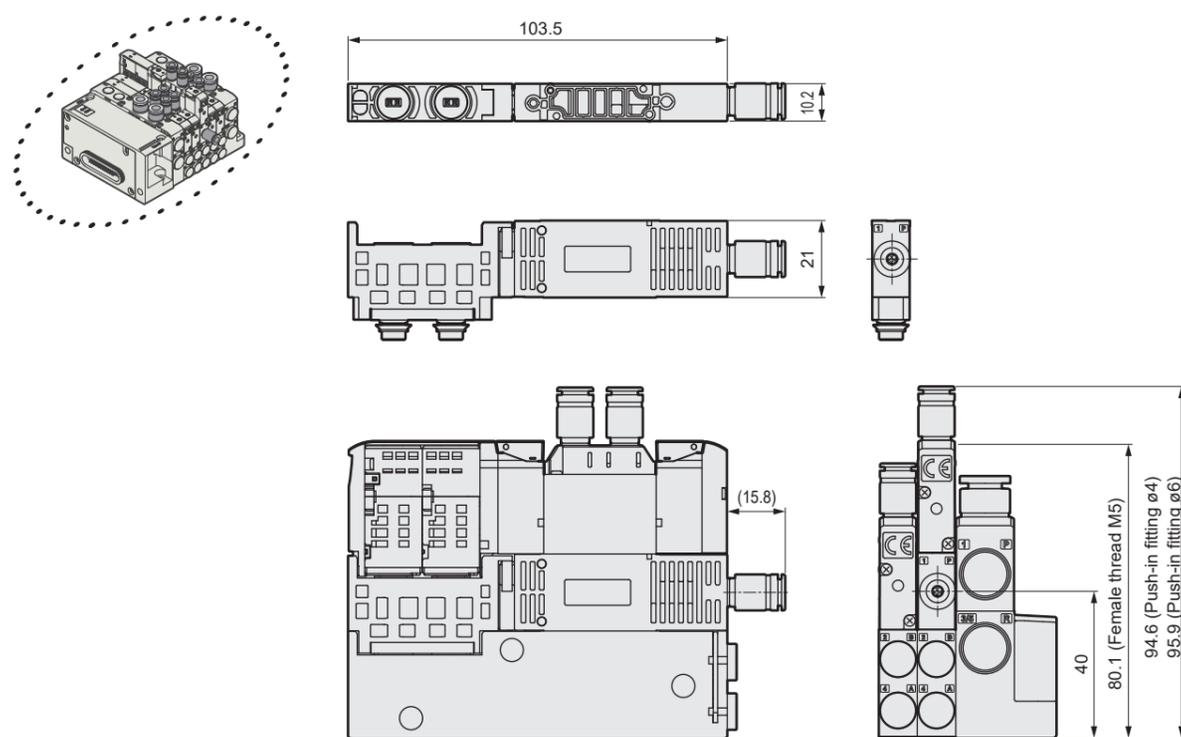
Code	Port size	Content
04CS	ø4	Push-in fitting ø4
06CS	ø6	Push-in fitting ø6

⚠ Precautions for Model No. selection

- *1 : Specify the mounting position and quantity of spacers for manifolds in the manifold specification sheet (pages 198 to 201).
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Spacer mounting screws and gasket are included.

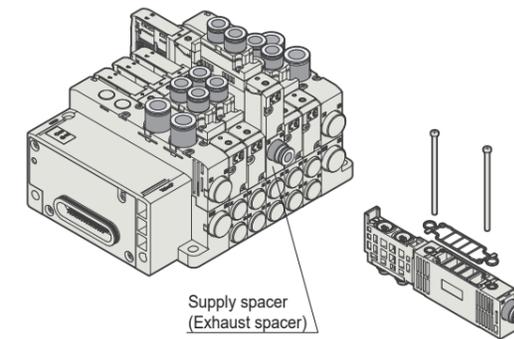
Dimensions

●Supply spacer/Exhaust spacer



Supply spacer / Exhaust spacer ; Direct piping

Supply spacer/Exhaust spacer



Specifications

●Supply spacer

Model No.	Weight g
TVG2P-P-□	56

●Exhaust spacer

Model No.	Weight g
TVG2P-R-□	56

Single unit Model No.

●Supply spacer

TVG2P - P - **06CS**
① Port size

Code	Port size	Content
06CS	ø6	Push-in fitting ø6
08CS	ø8	Push-in fitting ø8
10CS	ø10	Push-in fitting ø10

●Exhaust spacer

TVG2P - R - **06CS**
① Port size

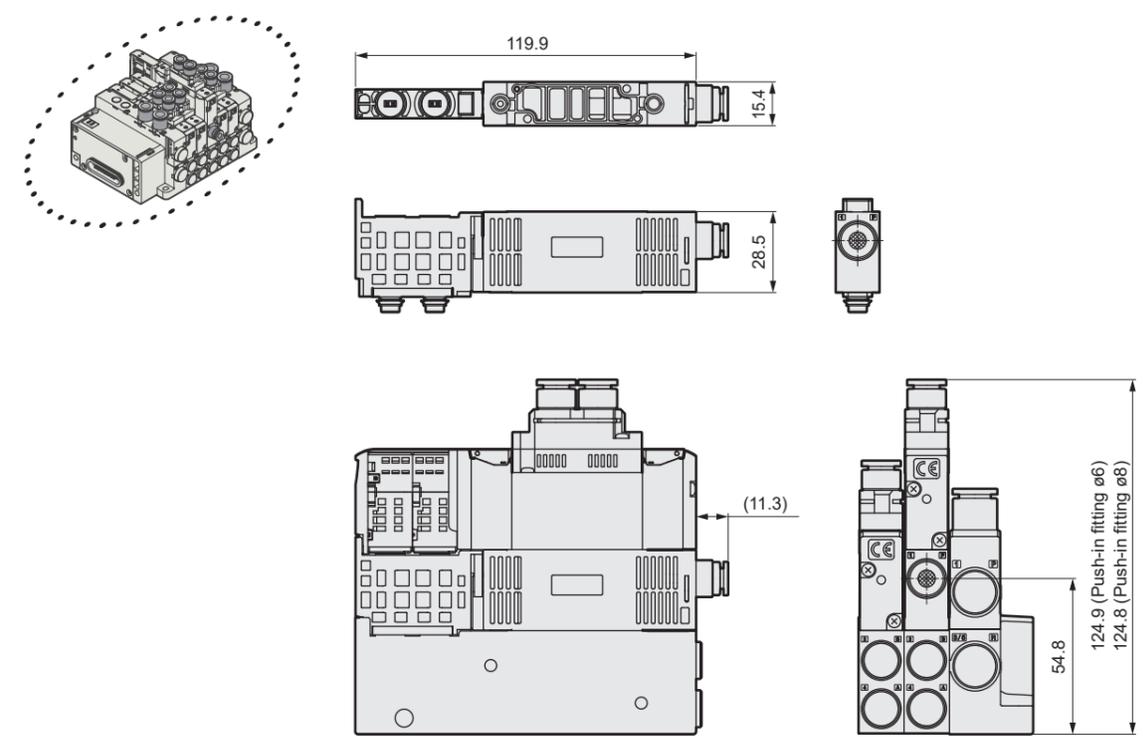
Code	Port size	Content
06CS	ø6	Push-in fitting ø6
08CS	ø8	Push-in fitting ø8
10CS	ø10	Push-in fitting ø10

⚠ Precautions for Model No. selection

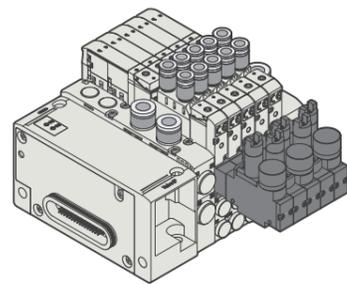
- *1 : Specify the mounting position and quantity of spacers for manifolds in the manifold specification sheet (pages 198 to 201).
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Spacer mounting screws and gasket are included.

Dimensions

●Supply spacer/Exhaust spacer



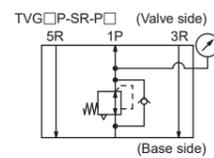
Spacer type regulator



Specifications

Item	TVG1P-SR-□	TVG2P-SR-□
Pressure reducing port	P	
Working fluid	Compressed air	
Max. operating pressure	MPa	0.7
Min. operating pressure	MPa	0.1
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Fluid temperature	°C	5 to 55
Atmosphere	Use in corrosive gas atmosphere is prohibited	
Weight	g	48 / 110

Circuit diagram Code



Single unit Model No.



1 Model No. Spacer type regulator
2 Pressure reducing specifications
3 Pressure gauge

Code	Content
P	P port pressure reducing

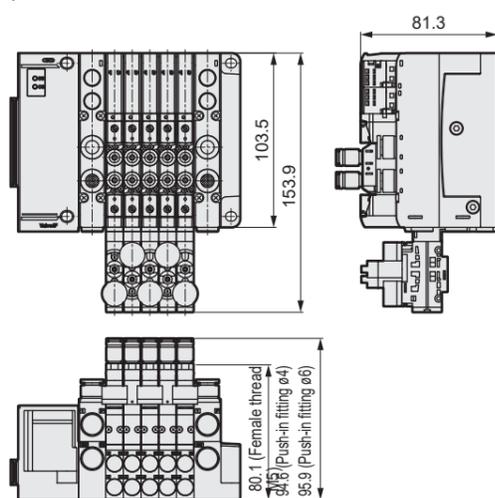
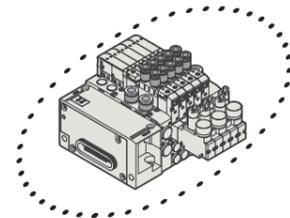
3 Pressure gauge		1 Model No.	
Code	Content	TVG1	TVG2
G0	No pressure gauge	●	●
G1	With pressure gauge for odd number station	●	
G2	With pressure gauge for even number station	●	
G3	With pressure gauge for odd/even number station (shared)		●

Precautions for Model No. selection

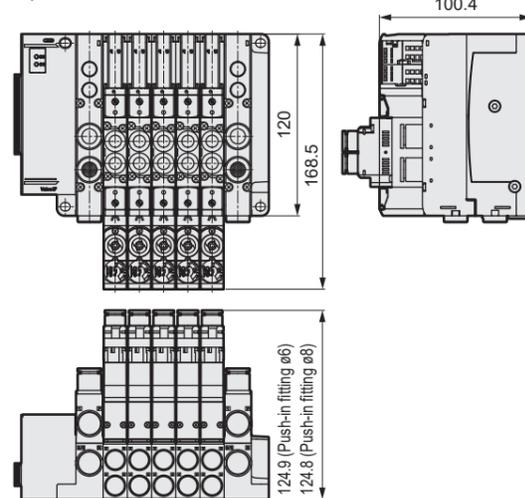
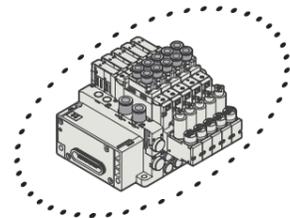
- *1 : Specify the spacer mounting position in the manifold specifications.
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Spacer mounting screws and gasket included.

Dimensions

● TVG1

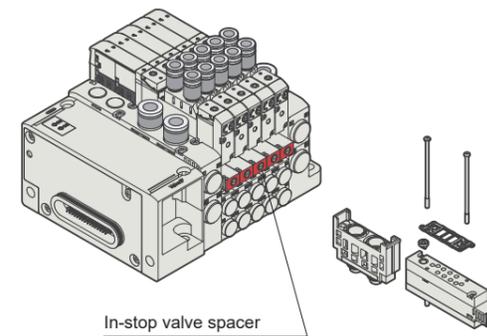


● TVG2



In-stop valve spacer ; Direct piping

In-stop valve spacer

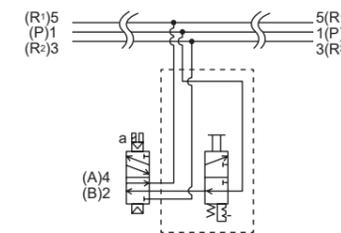


In-stop valve spacer

Specifications

Item	TVG1P-IS	TVG2P-IS
Working fluid	Compressed air	
Max. operating pressure	MPa	0.7
Min. operating pressure	MPa	0.1
Proof pressure	MPa	1.05
Ambient temperature	°C	-5 to 55 (no freezing)
Fluid temperature	°C	5 to 55
Atmosphere	Use in corrosive gas atmosphere is prohibited	
Weight	g	35 / 71

Circuit diagram Code



Single unit Model No.



1 Model No. In-stop valve spacer

1 Model No.

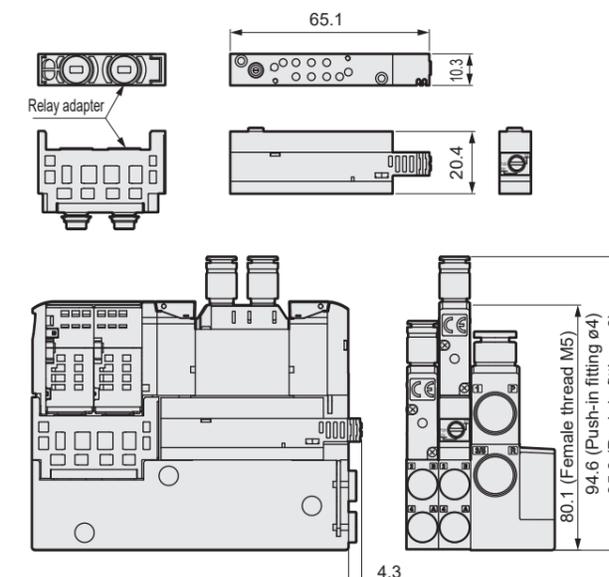
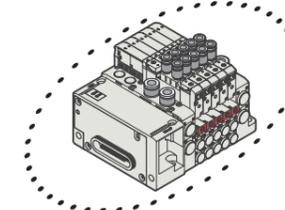
Code	Content
TVG1	10 mm width type (valve width)
TVG2	15 mm width type (valve width)

Precautions for Model No. selection

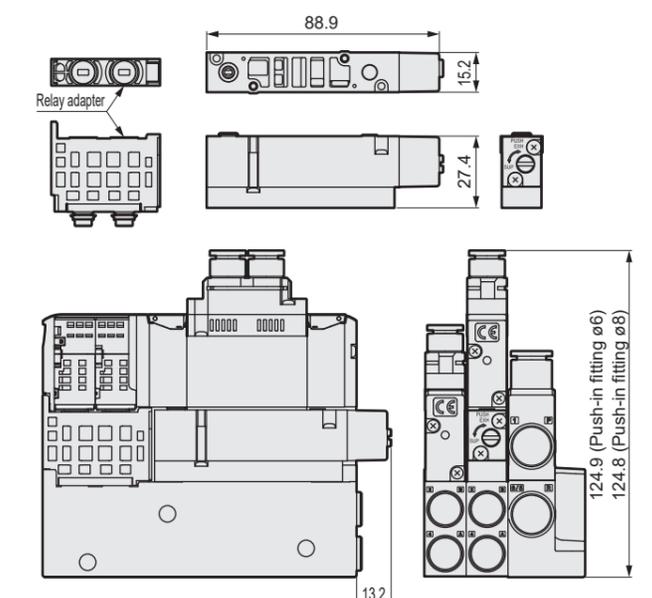
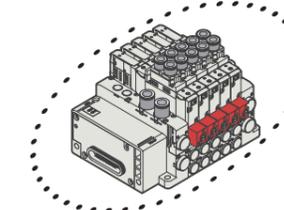
- *1 : Specify the spacer mounting position in the manifold specifications.
- *2 : Stacking of spacers is not supported.
- *3 : Spacer cannot be combined with blanking plate.
- *4 : Combination with external pilot (K) is not supported.

Dimensions

● TVG1



● TVG2



TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with electrically battery manufacturing process
Manifold specifications
Technical data
Safety precautions

TVG Base piping
Reduced wiring with serial transmission slave unit
TVG Direct piping
Reduced wiring with serial transmission slave unit
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG Base piping
With interface for Remote I/O connection
TVG Direct piping
With interface for Remote I/O connection
TVG-P4
Compatible with electrically battery manufacturing process
Manifold specifications
Technical data
Safety precautions