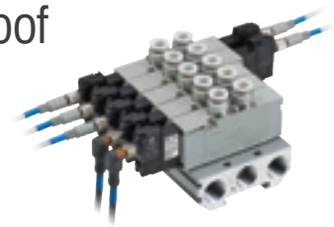
CKD

New Products

Intrinsically Safe Explosion-proof
Pilot Operated 3, 5-Port Valve

4GD/E EA Series



Smallest explosion-proof class

Intrinsically safe explosion-proof solenoid valves from 10 mm widths

4GD/E1 to 4

Explosion-proof performance II 2G Ex ib IIC T4 Gb

IBExU 19ATEX1035

CKD Corporation

CC-1458A 1

Smallest explosion-proof class

Intrinsically safe valve widths from 10mm Explosion-proof solenoid valve

4GD/E1 to 4 Series

Explosion-proof performance II 2G Ex ib IIC T4 Gb

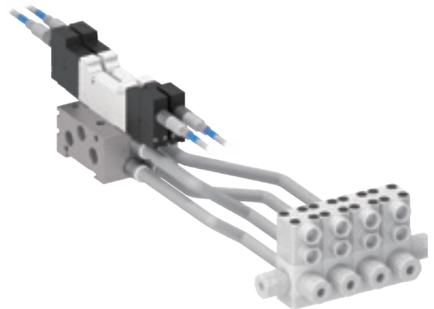
IBExU 19ATEX1035

Degree of protection

IP67

Space saving/lightweight Ideal for narrow explosion-proof areas.

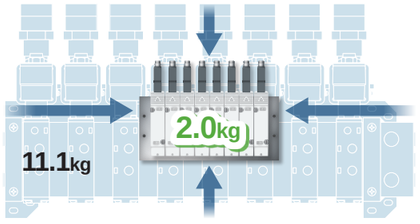
Two 3-port valves integrated type lined up



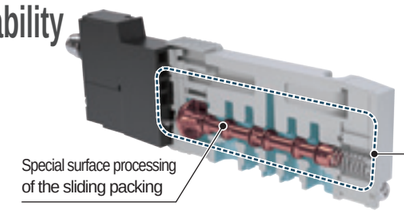
4GE3 and 4F3 footprint and weight comparison

Footprint	Ultra-lightweight
84% Reduced	82% Reduced

*Conventional 8-station model comparison



High durability

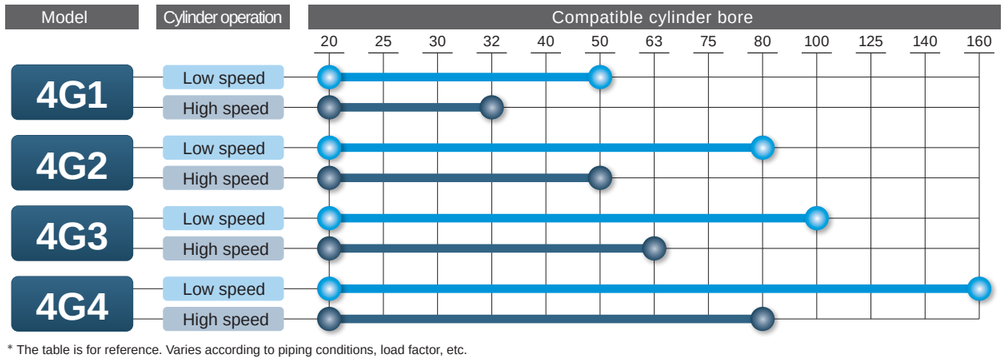


CAE analysis used to optimize seal function

Durability count

50 million

Wide-ranging series lineup



* The table is for reference. Varies according to piping conditions, load factor, etc.
For details of component selection, refer to Pneumatic Valves (No. CB-023SA) system selection.

High environmental performance, reliability and ease of use

Prevents manual misoperation

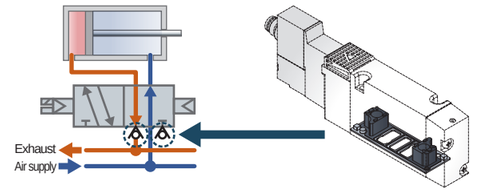
Manual override has a protective cover.

Helps prevent misoperation problems

[Exhaust check valve]

Equipped as standard with both metal base and resin block.

(4G*1 to 4G*3 EA compatible)



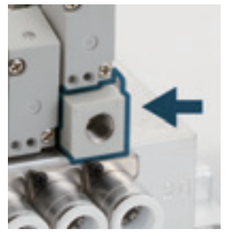
2-direction wiring outlet

Wiring direction can be selected according to the solenoid valve installation location.

Air supply/exhaust spacer

[Air supply spacer]
Pressure can be changed and air supplied for each valve.
Ideal for cylinder thrust adjustment by increasing/decreasing individual valve pressure.

[Exhaust spacer]
Individual exhaust prevents single acting cylinder malfunction.



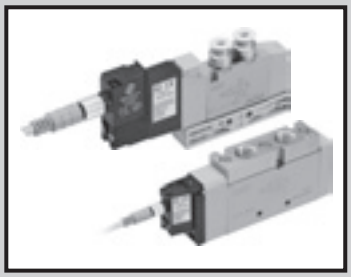
Applications Ideal explosion-proof specifications for narrow spaces

Coating equipment

Liquid conditioning equipment

Analysis equipment

Solenoid valve space can be greatly reduced when intrinsic safety explosion-proof structures are required.



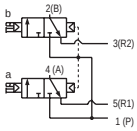
Discrete valve
Body piping

3GD1/2 / 4GD1/2/3 /4*0EA Series

● Applicable cylinder bore size: ø20 to ø140

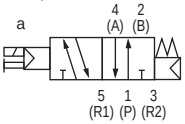
JIS symbol

● Two 3-port valves integrated
(A side valve: NC, B side valve: NC)

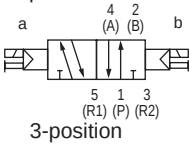


● 5-port valve

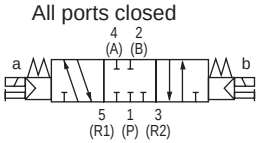
2 position single



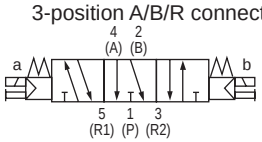
2-position double



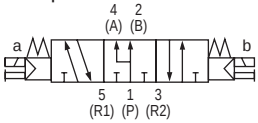
3-position
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Common specifications

Item	Description
Valve and operation	Pilot operated soft spool valve
Working fluid	Compressed air
Max. working pressure MPa	0.7
Min. working pressure MPa	0.2
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
Pilot exhaust method	Main valve/pilot valve common exhaust
Lubrication *1	Not required
Degree of protection *2	IP67
Vibration resistance m/s^2	50 or less
Shock resistance m/s^2	300 or less
Atmosphere	Cannot be used in corrosive gas environments

Solenoid specifications

Item	Description
Rated voltage V	DC12
Voltage fluctuation range	+10% −20%
Rated current A	0.05
Power consumption W	0.6
Thermal class	B

Note1 Use turbine oil Class 1 ISO VG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.

Note2 Tested according to the test method for IP67 (IEC60529) standards. Note that while the unit is protected from dust and water, it cannot be used immersed in water. Countermeasures such as covering the unit should also be taken if using in environments where it will be constantly exposed to dust or water.

Intrinsic safety explosion-proof specifications

Item	Description
Types of explosion-proof structures	Intrinsic safety explosion-proof structure (ib)
Target gas or above listed ignitability and flame-proof grade	II 2G Ex ib IIC T4 Gb
Barrier input voltage	24 VDC
Intrinsic safety circuit allowable voltage Ui	30V DC
Intrinsic safety circuit allowable currentIi	200mA
Intrinsic safety circuit allowable powerPi	0.68 W
Internal inductance Li	Value that can be ignored
Internal capacitance Ci	Value that can be ignored

Individual specifications

Port size	3GD1/4GD1	3GD2/4GD2	4GD3	4GD4
2/4-port (port A/B)	Push-in fitting ø4, ø6 M5	Push-in fitting ø4, ø6, ø8 G1/8	Push-in fitting ø6, ø8, ø10 G1/4	Push-in fitting ø8, ø10, ø12 G3/8
1, 3, 5-port (Port P/R1/R2)	M5	G1/8	G1/4	G1/4

Performance/characteristics by model

Item			3GD1		3GD2		4GD1		4GD2		4GD3		4GD4	
			ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
Response time ms	Two 3-port valves integrated		15	35	20	50	-	-	-	-	-	-	-	-
	2-position	Single	-	-	-	-	15	35	20	40	25	60	100	110
		Double	-	-	-	-	25	25	30	30	35	35	110	110
	3-position	ABR connection	-	-	-	-	20	40	25	45	35	60	100	160

The response times are values under continuous operation at supply pressure of 0.5 MPa, at rated voltage and at 20°C without lubrication. They depend on the pressure and the lubricant quality.

Weight

Item			4GD1	4GD2	4GD3	4GD4
Weightg	2-position	Single	61 (54)	120 (90)	155 (112)	296 (303)
		Double	81 (74)	140 (110)	176 (133)	329 (336)
	3-position	ABR connection	84 (77)	148 (118)	187 (143)	361 (367)

・( )Values in the do not include the pipe adaptor. These values include the M8 connector (straight).
・3 The weight of the two port valves integrated type is the same as that of 2-position double.

Flow characteristics

Model No.	Solenoid position		P → A/B		A/B → R1/R2	
			C[dm³/(s·bar)]	b	C[dm³/(s·bar)]	b
3GD1 4GD1	Two 3-port valves integrated		0.98	0.45	0.71	0.34
	2-position		1.2	0.47	0.72	0.37
	3-position	All ports closed	1.1	0.39	0.70	0.34
		ABR connection	1.1	0.33	0.72	0.34
		PAB connection	1.3	0.61	0.72	0.36
3GD2 4GD2	Two 3-port valves integrated		1.8	0.29	2.3	0.32
	2-position		2.4	0.33	2.8	0.30
	3-position	All ports closed	2.2	0.28	2.5	0.28
		ABR connection	2.3	0.26	2.8	0.27
		PAB connection	2.5	0.38	2.4	0.30
4GD3	2-position		3.4	0.29	4.0	0.24
	3-position	All ports closed	3.1	0.27	3.4	0.28
		ABR connection	3.1	0.33	4.1	0.20
		PAB connection	3.5	0.43	3.4	0.32
4GD4	2-position		8.1	0.4	8.0	0.31
	3-position	All ports closed	6.9	0.37	7.5	0.42
		ABR connection	6.9	0.38	8.4	0.34
		PAB connection	8.9	0.37	7.6	0.27

*1: Formula for converting effective cross-sectional area S and sonic conductance C is S ≈ 5.0×C.

3GD1/2 / 4GD1/2/3/4*0EA Series

Discrete valve; Body piping

How to order (solenoid valve single unit)

● Single unit

4GD1 1 0 EA - M5G - RN ( ) - 4

3GD1 66 0 EA - C4G - RN ( ) - 4

Ⓐ Model No.
Ⓑ Solenoid position
Ⓒ Explosion-proof Series
Ⓓ Port size
Ⓔ Electrical connections
Ⓕ Option
Ⓖ Voltage

Code	Description	Ⓐ Model No. 3GD1	3GD2	4GD1	4GD2	4GD3	4GD4
Ⓑ Solenoid position							
1	2 position single			●	●	●	●
2	2-position double			●	●	●	●
3	3-position all ports closed			●	●	●	●
4	3-position ABR connection			●	●	●	●
5	3-position PAB connection			●	●	●	●
66	3-port valve Two valves integrated Note1 — A valve side: Normally closed	●	●				
	3-port valve Two valves integrated Note1 — B valve side: Normally closed	●	●				
Ⓒ Explosion-proof Series							
EA	ATEX Directive compliant product	●	●	●	●	●	●
Ⓓ Port size {ports 4(A), 2(B)}							
Port	4(A)/2(B) port	Port P/R1/R2 (1)=M5 (2)=G1/8 (3)=G1/4					
C4G	ø4 push-in fitting	(1)	(2)	(1)	(2)		
C6G	ø6 push-in fitting	(1)	(2)	(1)	(2)	(3)	
C8G	ø8 push-in fitting		(2)		(2)	(3)	(3)
C10G	ø10 push-in fitting					(3)	(3)
C12G	ø12 push-in fitting						(3)
M5G	M5	(1)		(1)			
06G	G1/8		(2)		(2)		
08G	G1/4					(3)	
10G	G3/8						(3)
Ⓔ Electrical connections							***2**
RN	M8 connector without cable	●	●	●	●	●	●
R 1	M8 connector straight cable	●	●	●	●	●	●
R 2	M8 connector L-type cable	●	●	●	●	●	●
Ⓕ Option							
Blank	Manual override of non-locking/locking common (standard)	●	●	●	●	●	●
H	With exhaust check valve *3	●	●	●	●	●	
P	Mounting plate attached (for 2-position single only)			●	●	●	
F	Port A/B filter *4	●	●	●	●	●	●
Ⓖ Voltage							
4	12 VDC	●	●	●	●	●	●

⚠Precautions for model No. selection

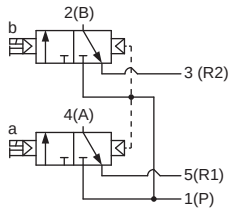
*1 Dimensions are the same as the respective 2-position double solenoid.
*2 M8 connector length is 300mm. Select other lengths from page 63 as needed.
*3 3-position all ports closed and PAB connection are not provided with exhaust check valve specifications (H).
*4 A filter is built into port P as standard.
*5 Explosion-proof barrier sold separately. Select from page 67.

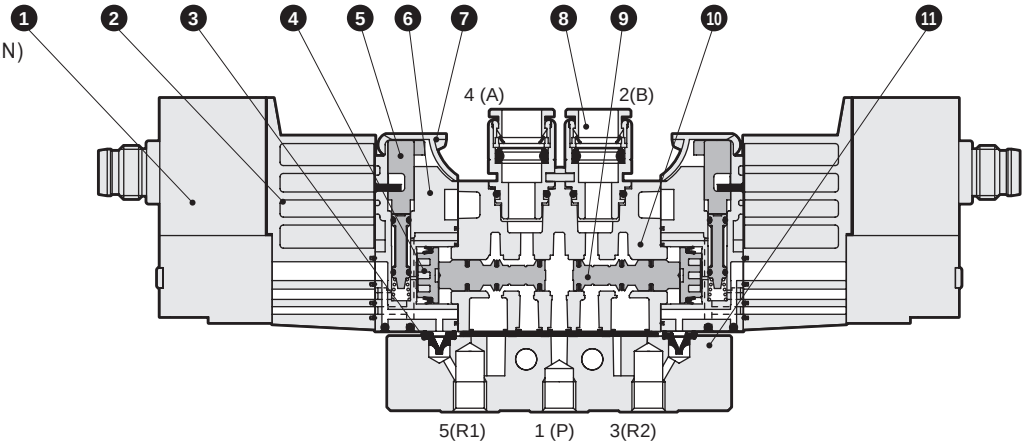
Internal structure diagram and parts list

3GD1660EA

● Two 3-port valves integrated
M8 connector without cable (RN)

A side valve: Normally closed,
B side valve: Normally closed

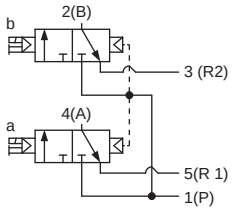


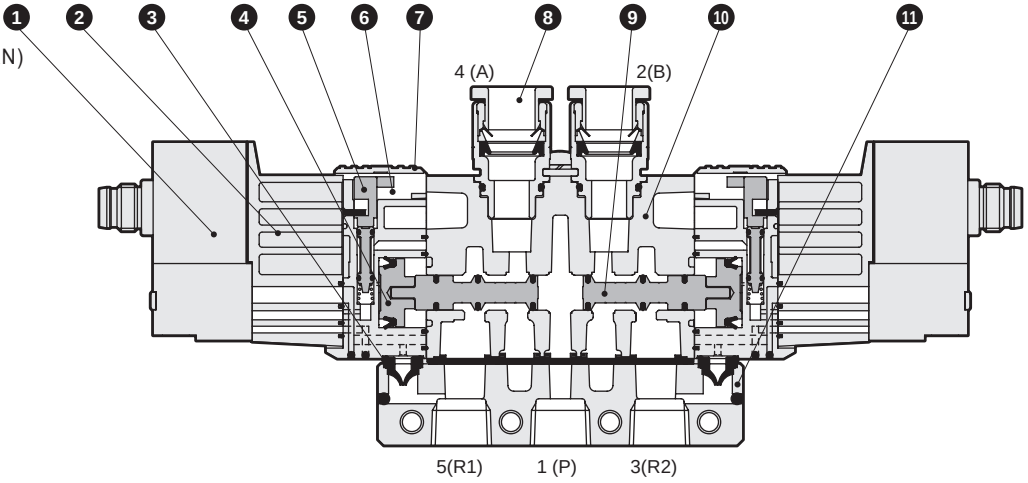


3GD2660EA

● Two 3-port valves integrated
M8 connector without cable (RN)

A side valve: Normally closed,
B side valve: Normally closed





Main parts list

Part number	Part name	Material
1	Coil assembly	-
2	Adapter	Resin
3	Pilot exhaust check valve	Hydrogenated nitrile rubber
4	Piston D assembly	-
5	Manual override	Resin
6	Piston chamber	Resin
7	Manual protection cover	Resin
8	Cartridge push-in fitting	-
9	Spool assembly	-
10	Body	Aluminum alloy die-casting
11	Pipe adaptor	Aluminum alloy die-casting

Parts list

Part number	Part name		Model No.
8	Cartridge push-in fitting and related parts	ø4 straight	4G1R-JOINT-C4
		ø6 straight	4G1R-JOINT-C6
		Plug cartridge	4G1R-JOINT-CPG

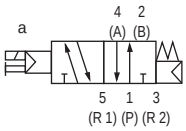
4GD1*0EA Series

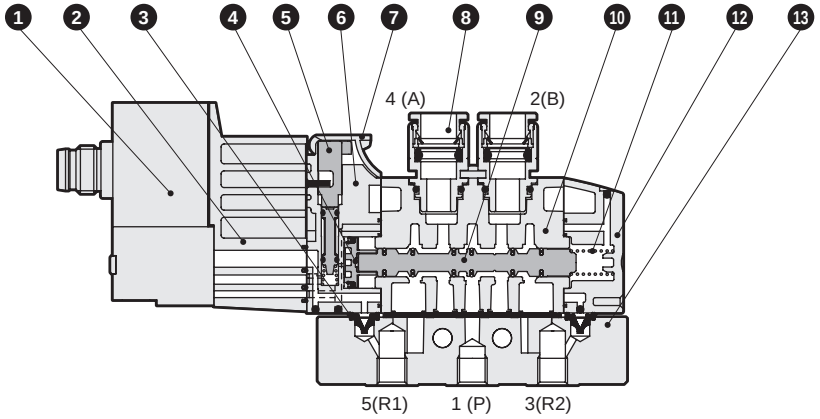
Discrete valve; Body piping

Internal structure diagram and parts list

4GD110EA

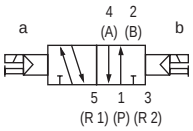
● 2 position single
M8 connector without cable (RN)

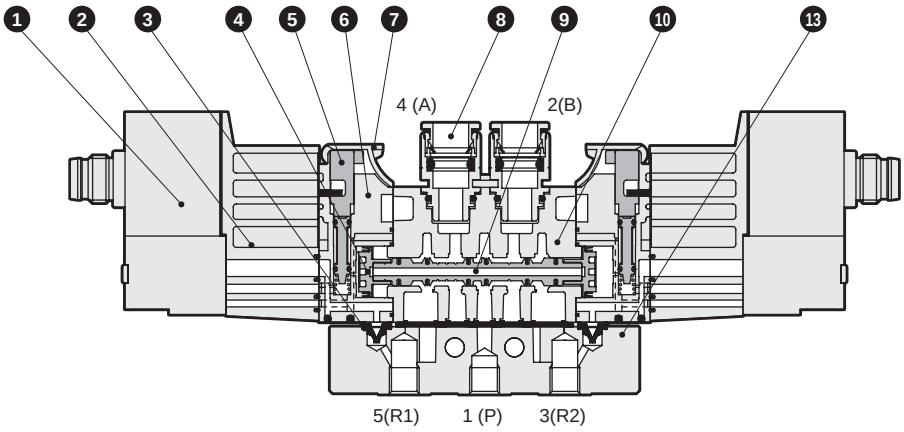




4GD120EA

● 2-position double
M8 connector without cable (RN)

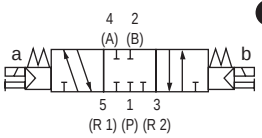




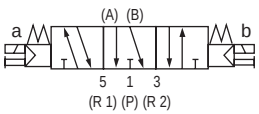
4GD1$^{3}_{4}_{5}$0EA

● 3-position
M8 connector without cable (RN)

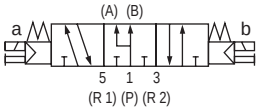
All ports closed

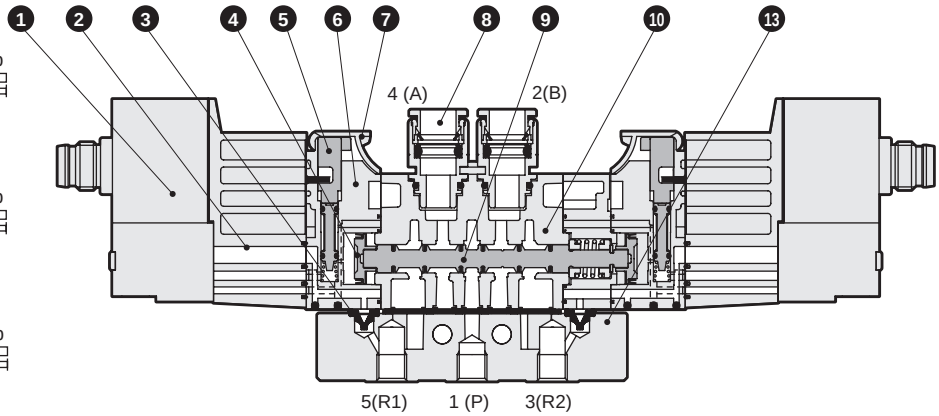


A/B/R connection



P/A/B connection





Main parts list

Part No.	Part name	Material
1	Coil assembly	-
2	Adapter	Resin
3	Pilot exhaust check valve	Hydrogenated nitrile rubber
4	Piston D assembly	-
5	Manual override	Resin
6	Piston chamber	Resin
7	Manual protection cover	Resin
8	Cartridge push-in fitting	-
9	Spool assembly	-
10	Body	Aluminum alloy die-casting
11	Spool spring	Stainless steel
12	Cap	Resin
13	Pipe adaptor	Aluminum alloy die-casting

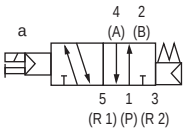
Parts list

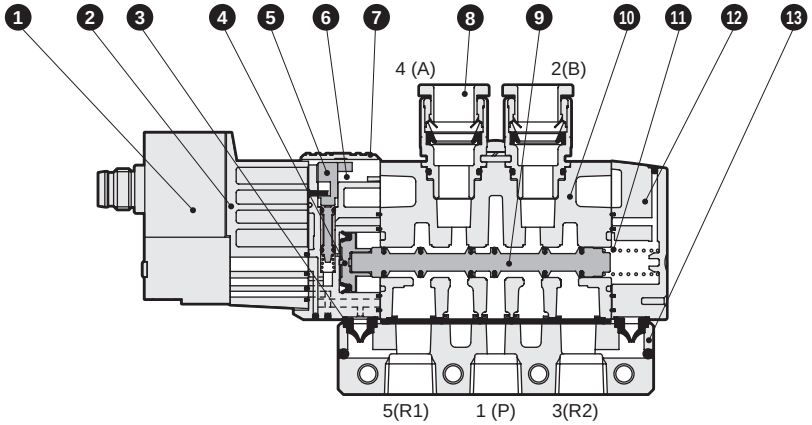
Part No.	Part name		Model No.
8	Cartridge push-in fitting and related parts	ø4 straight	4G1R-JOINT-C4
		ø6 straight	4G1R-JOINT-C6
		Plug cartridge	4G1R-JOINT-CPG

Internal structure diagram and parts list

4GD210EA/4GD310EA

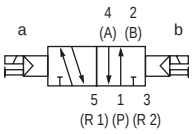
● 2 position single
M8 connector without cable (RN)

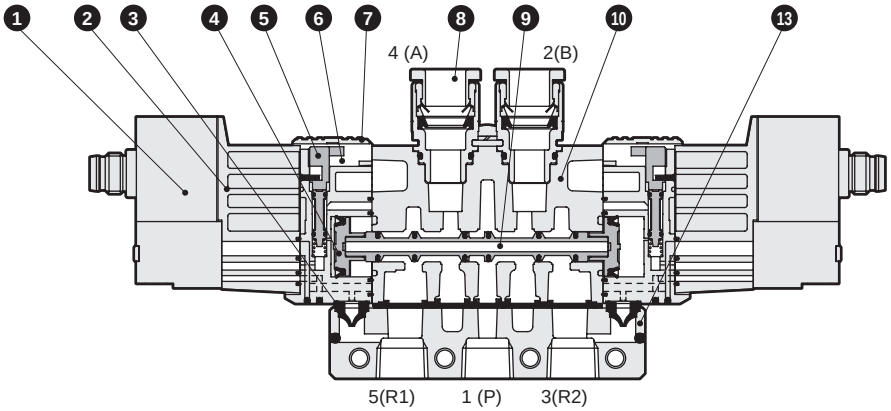




4GD220EA/4GD320EA

● 2-position double
M8 connector without cable (RN)

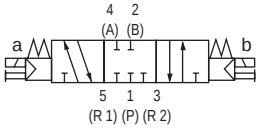




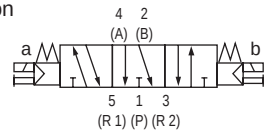
4GD2 $^{3}_{4}_{5}$0EA/4GD3 $^{3}_{4}_{5}$0EA

● 3-position
M8 connector without cable (RN)

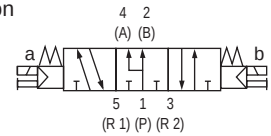
All ports closed

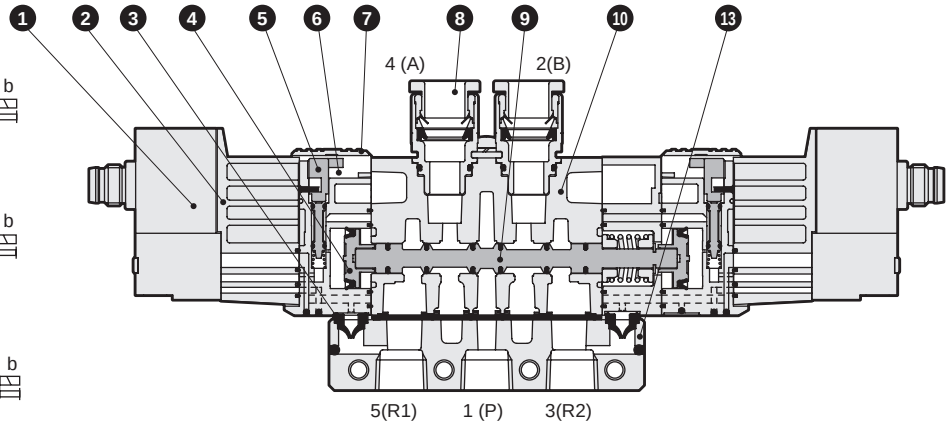


A/B/R connection



P/A/B connection





Main parts list

Part No.	Part name	Material
1	Coil assembly	-
2	Adapter	Resin
3	Pilot exhaust check valve	Hydrogenated nitrile rubber
4	Piston D assembly	-
5	Manual override	Resin
6	Piston chamber	Resin
7	Manual protection cover	Resin
8	Cartridge push-in fitting	-
9	Spool assembly	-
10	Body	Aluminum alloy die-casting
11	Spool spring	Stainless steel
12	Cap	Resin
13	Pipe adaptor	Aluminum alloy die-casting

Parts list

Part No.	Part name			Model No.
8	Cartridge push-in fitting and related parts	4G2	ø4 straight	4G2R-JOINT-C4
			ø6 straight	4G2R-JOINT-C6
			ø8 straight	4G2R-JOINT-C8
		4G3	ø6 straight	4G3R-JOINT-C6
			ø8 straight	4G3R-JOINT-C8
			ø10 straight	4G3R-JOINT-C10

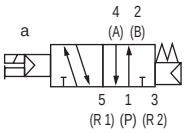
4GD4*0EA Series

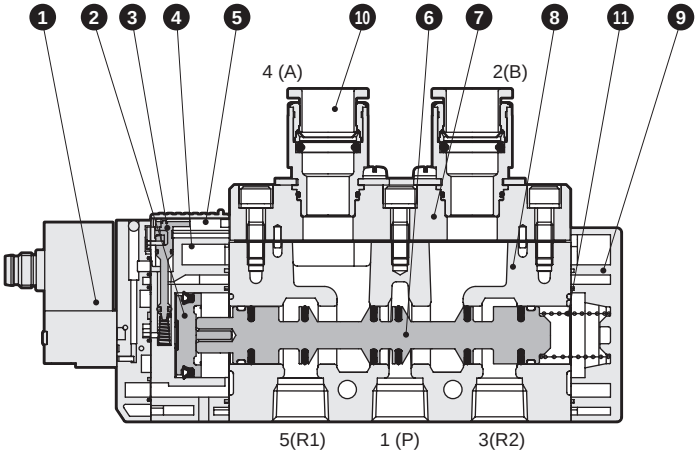
Discrete valve; Body piping

Internal structure diagram and parts list

4GD410EA

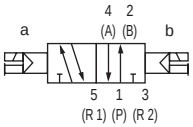
● 2 position single
M8 connector without cable (RN)

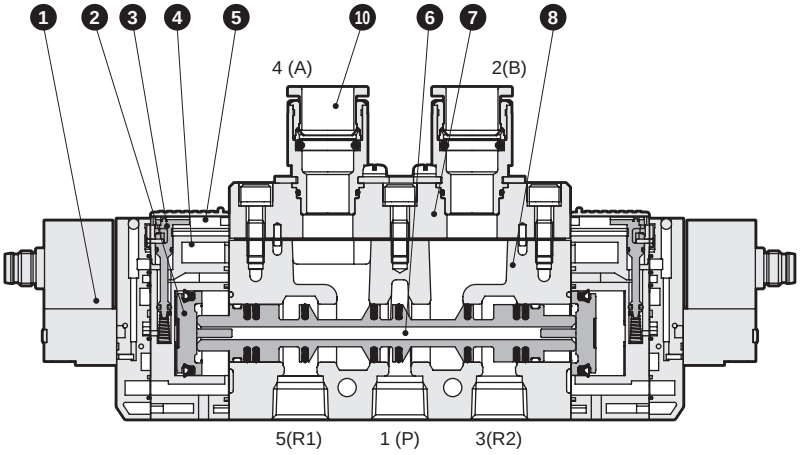




4GD420EA

● 2-position double
M8 connector without cable (RN)

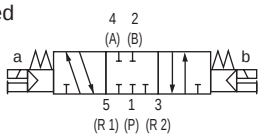




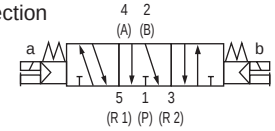
4GD4$^{3}_{4}_{5}$0EA

● 3-position
M8 connector without cable (RN)

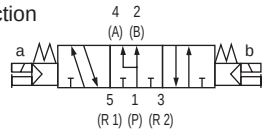
All ports closed

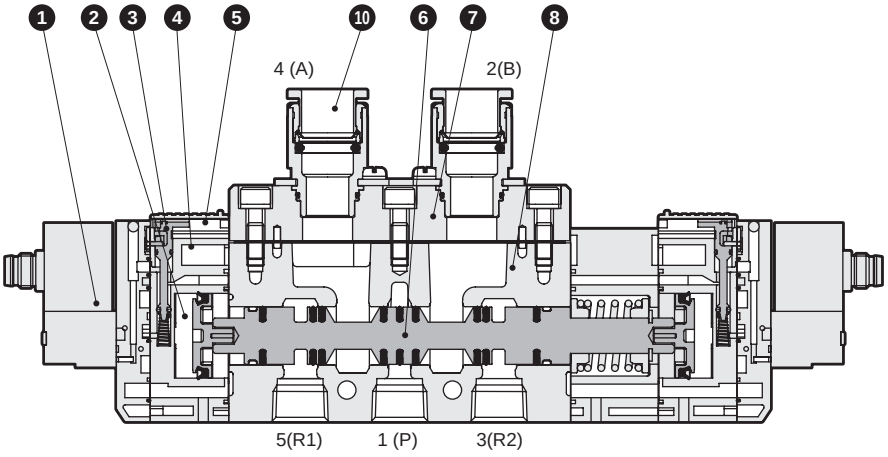


A/B/R connection



P/A/B connection





Main parts list

Part No.	Part name	Material
1	Coil assembly	-
2	Piston assembly	-
3	Manual override	Resin
4	Piston chamber	Resin
5	Manual protection cover	Resin
6	Spool assembly	-
7	Fitting adapter	Aluminum
8	Body	Aluminum alloy die-casting
9	Cap	Resin
10	Cartridge push-in fitting	-
11	Spool spring	Stainless steel

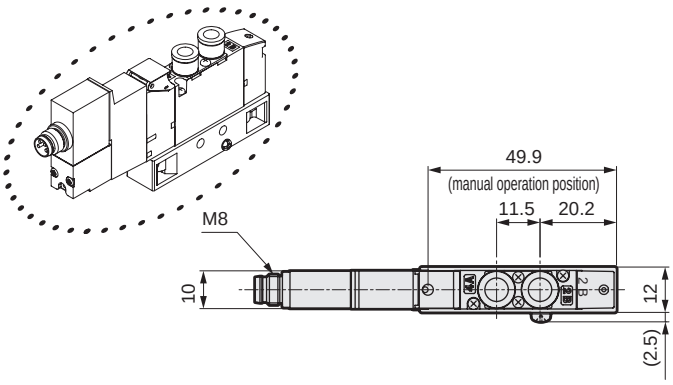
Parts list

Part No.	Part name		Model No.
-	Cartridge push-in fitting and related parts	ø8Straight	4G4-JOINT-C8
		ø10 Straight	4G4-JOINT-C10
		ø12 straight	4G4-JOINT-C12

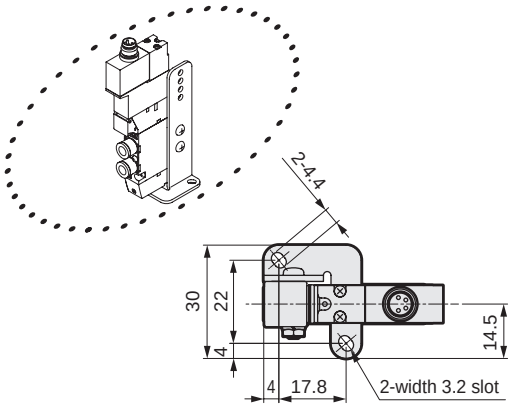
Dimensions

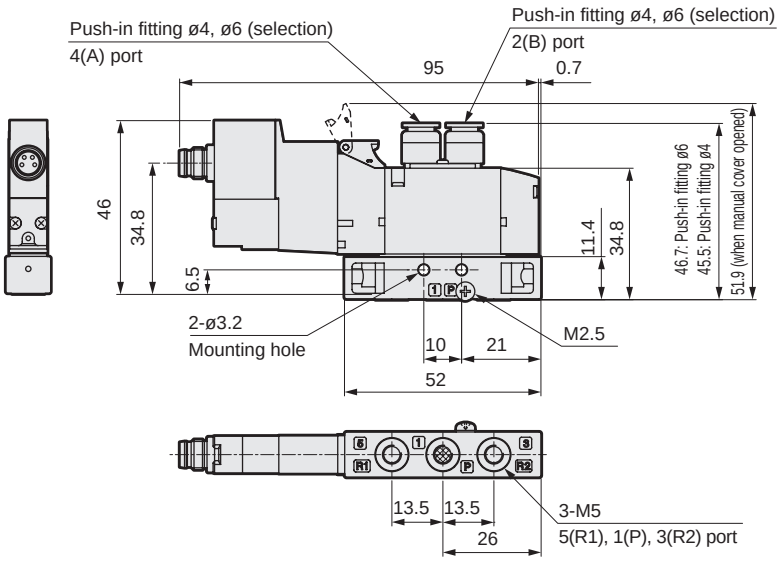
4GD110EA

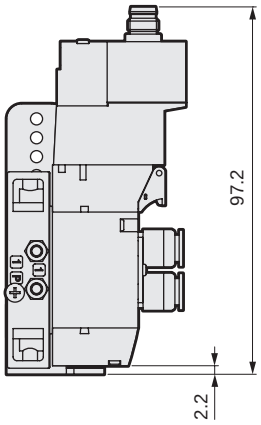
● 2-position single without connector (RN)



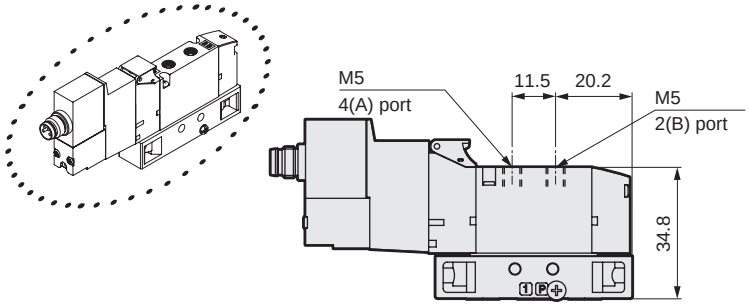
● Mounting plate (P)



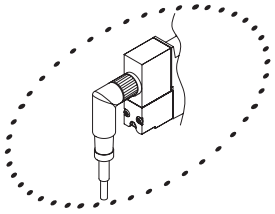




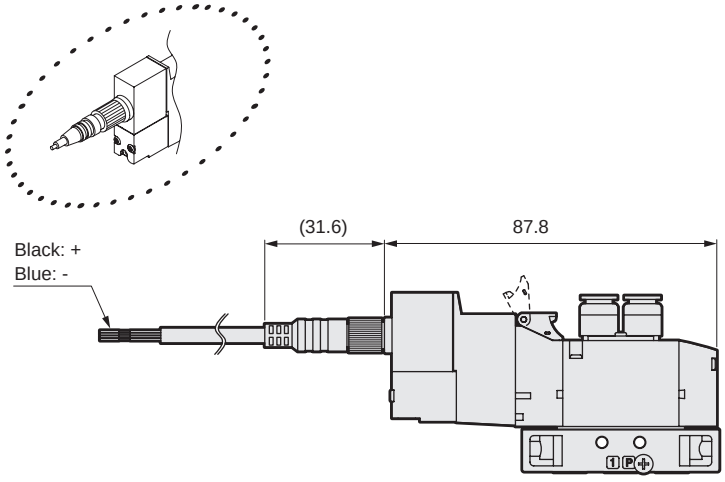
● M5 female thread (M5G)

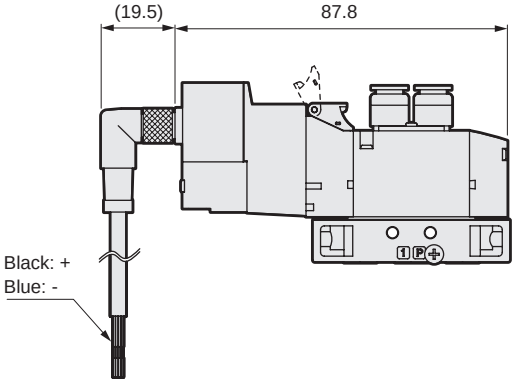


● M8 connector/L-type cable (R2)



● M8 connector/straight cable (R1)

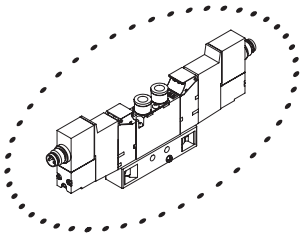


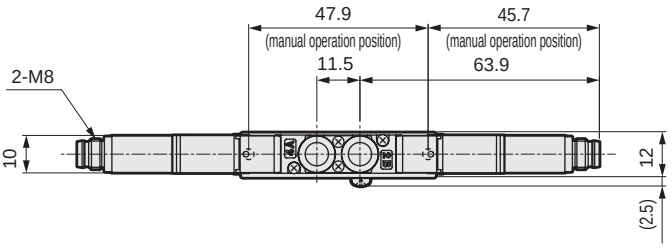


Dimensions

4GD120EA

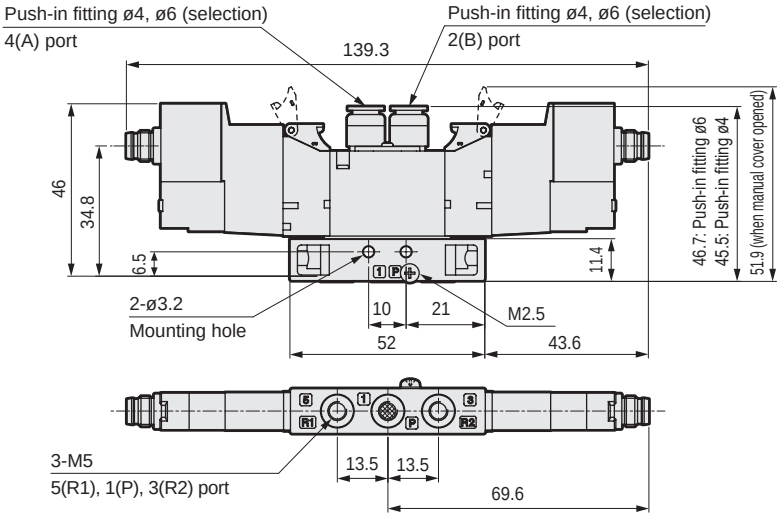
● 2-position double without connector (RN)



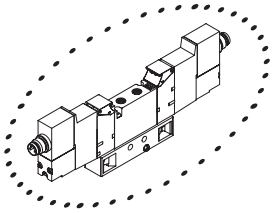


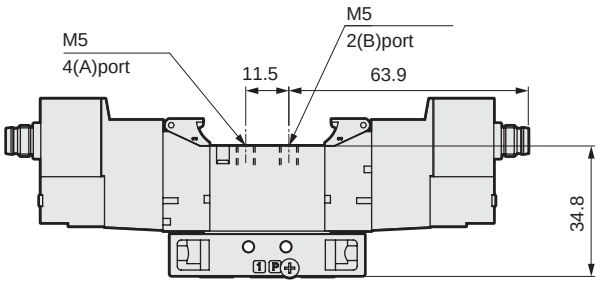
3GD1660EA

● Two 3-port valves integrated without connector (RN)

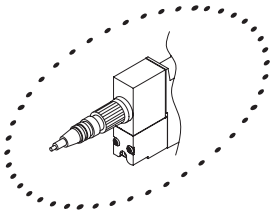


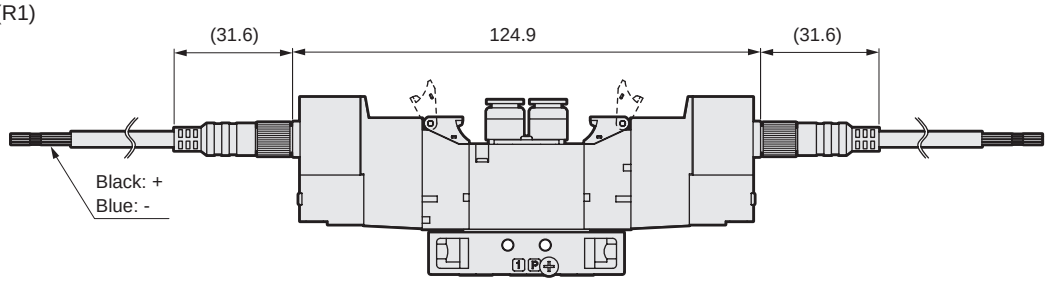
● M5 female thread (M5G)



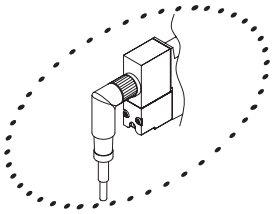


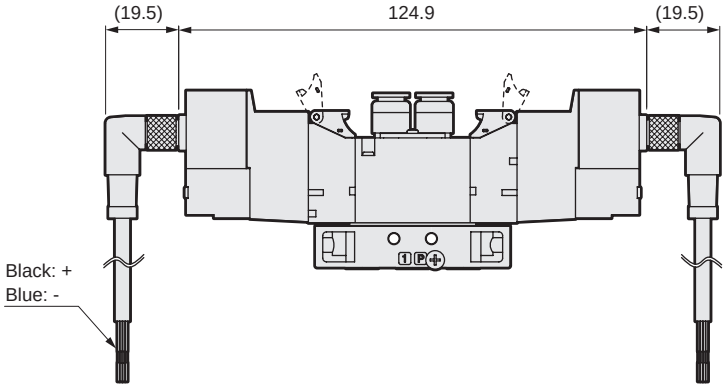
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

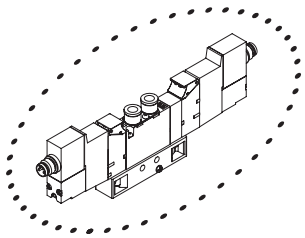


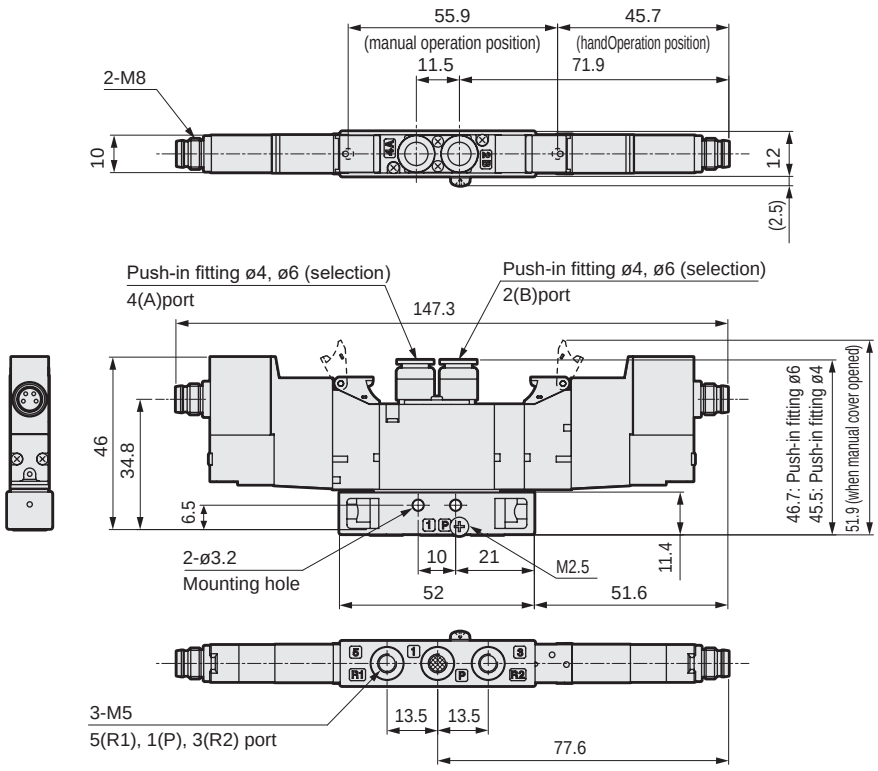


Dimensions

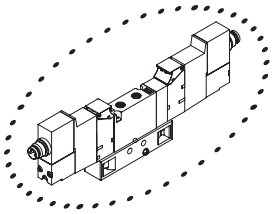
4GD1$^{3}_{4}_{5}$EA

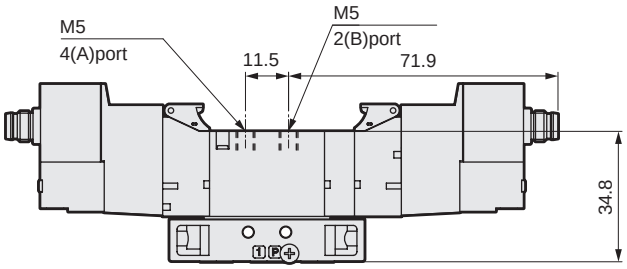
● 3-position without connector (RN)



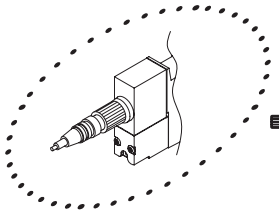


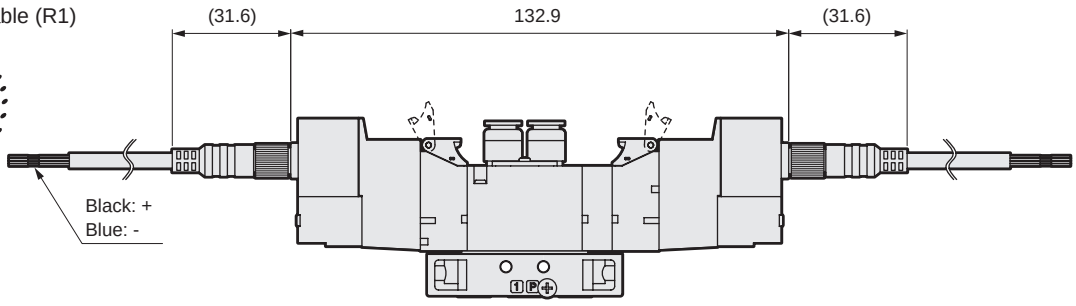
● M5 female thread (M5G)



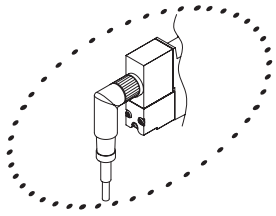


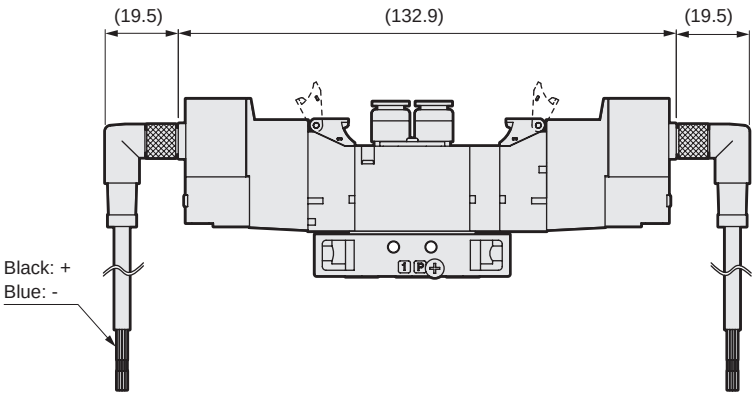
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

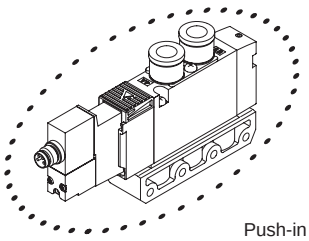


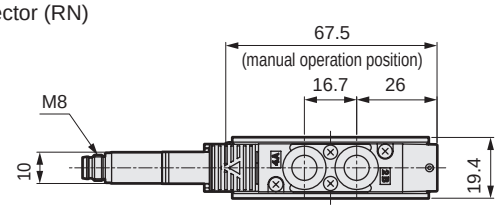


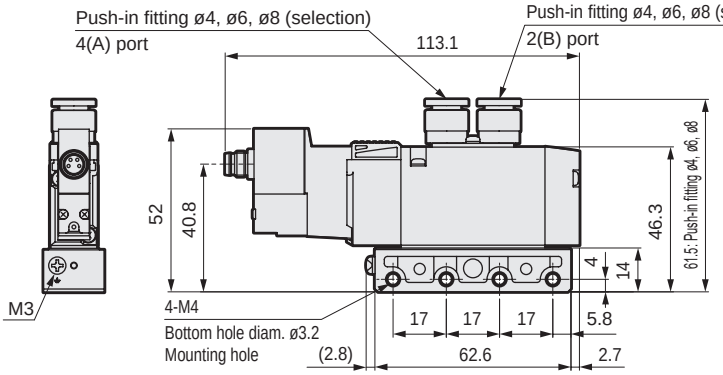
Dimensions

4GD210EA

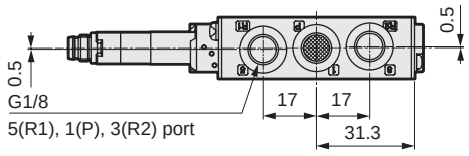
● 2-position single without connector (RN)



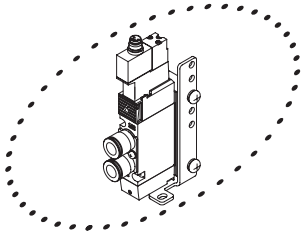


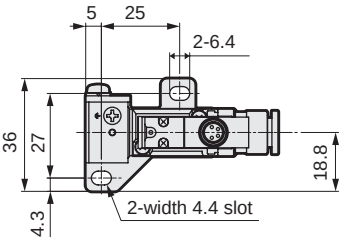


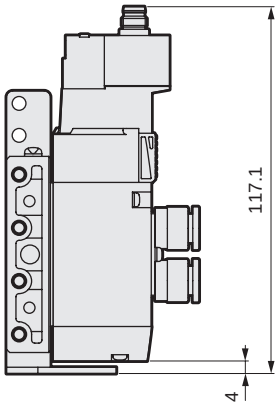
* Refer to page 78 for details on mounting holes.



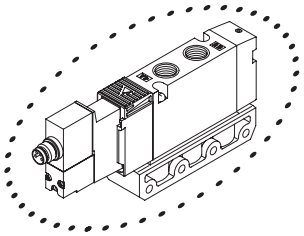
● Mounting plate (P)

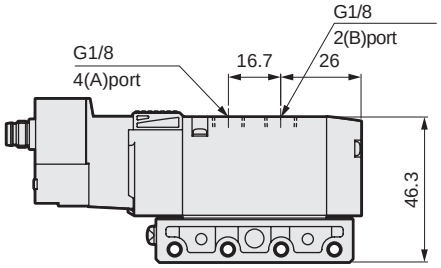




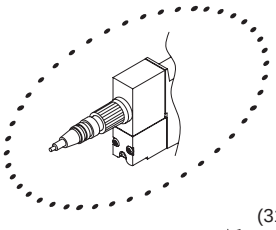


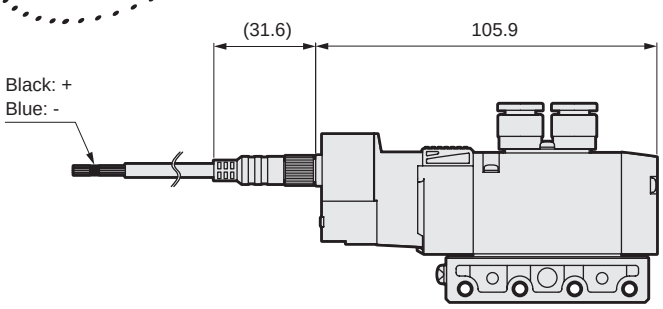
● G1/8 female thread (06G)



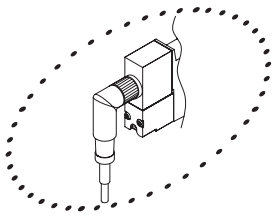


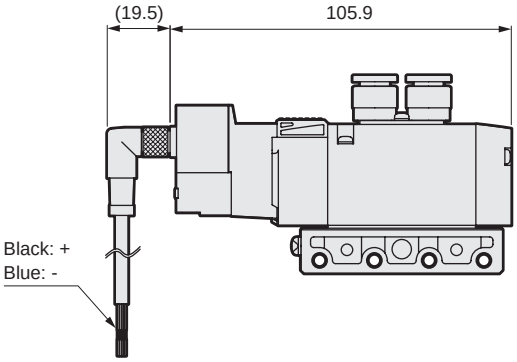
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)





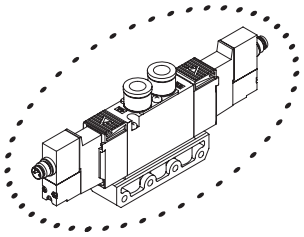
Dimensions

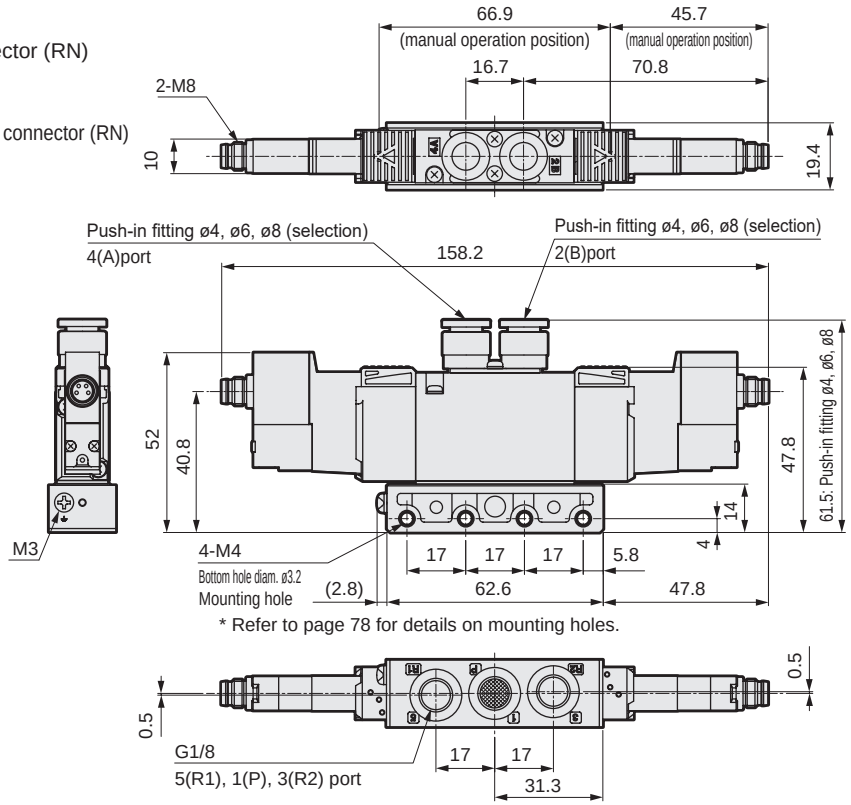
4GD220EA

● 2-position double without connector (RN)

3GD2660EA

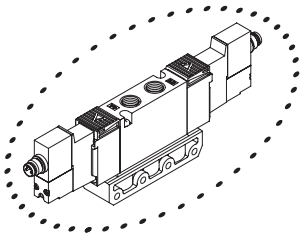
● Two 3-port valves integrated without connector (RN)

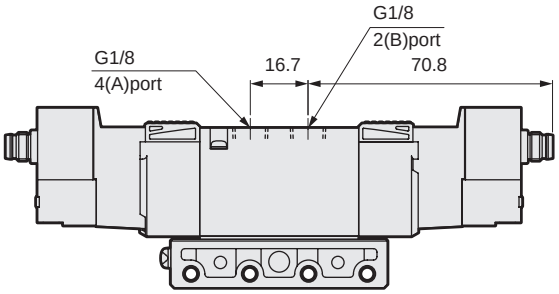




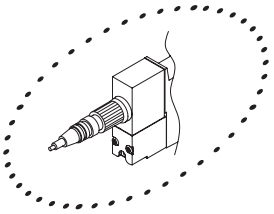
* Refer to page 78 for details on mounting holes.

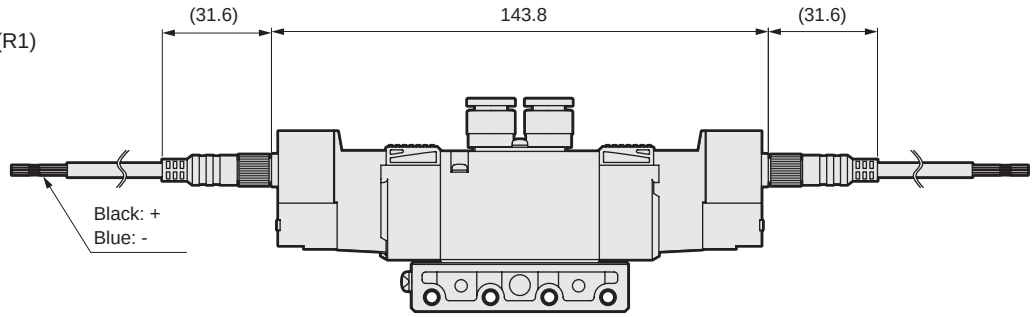
● G1/8 female thread (06G)



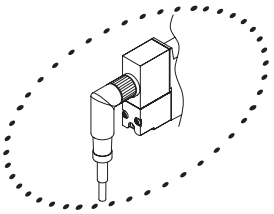


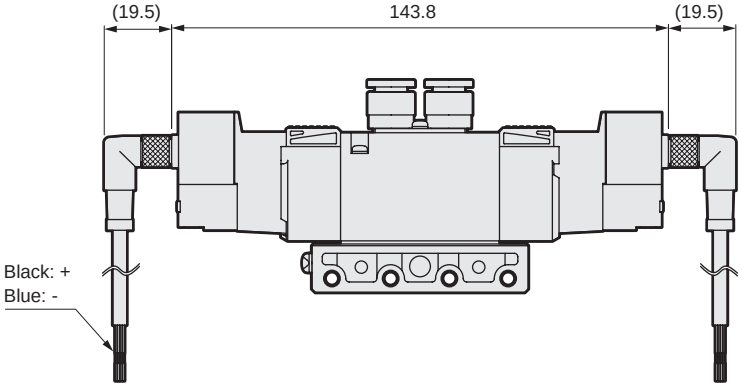
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

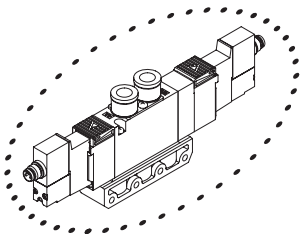


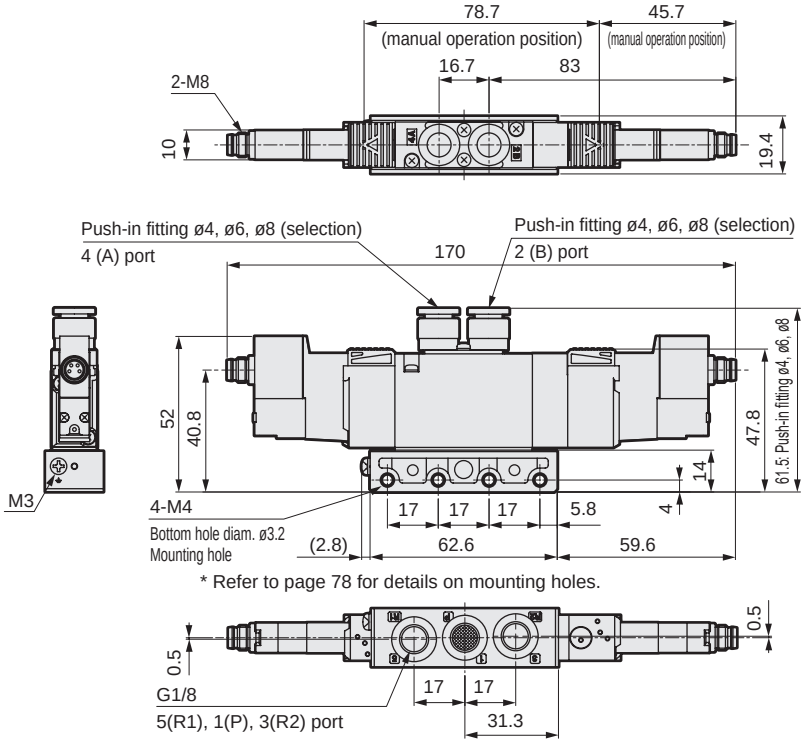


Dimensions

4GD2$^{3}_{4}_{5}$0EA

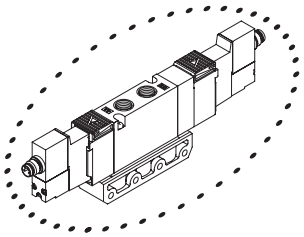
● 3-position without connector (RN)

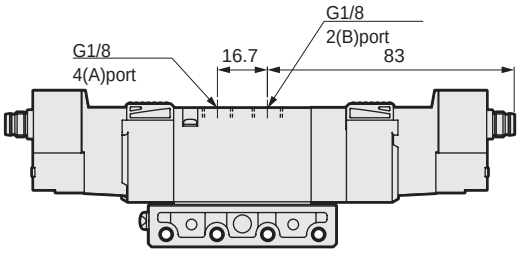




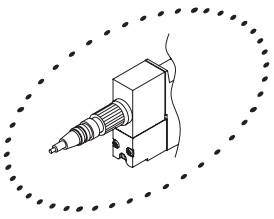
* Refer to page 78 for details on mounting holes.

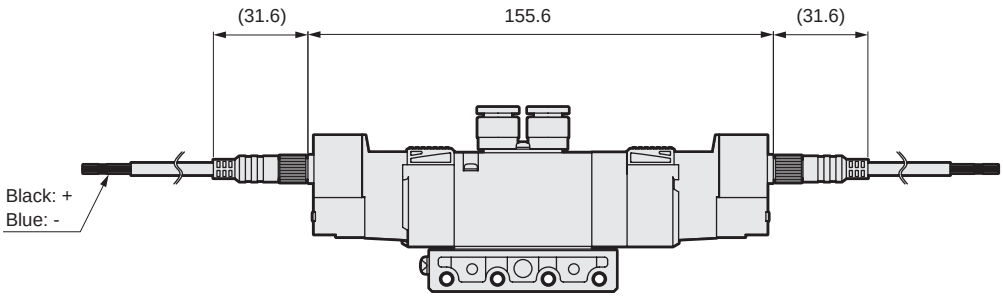
● G1/8 female thread (06G)



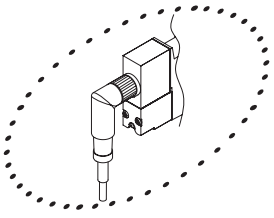


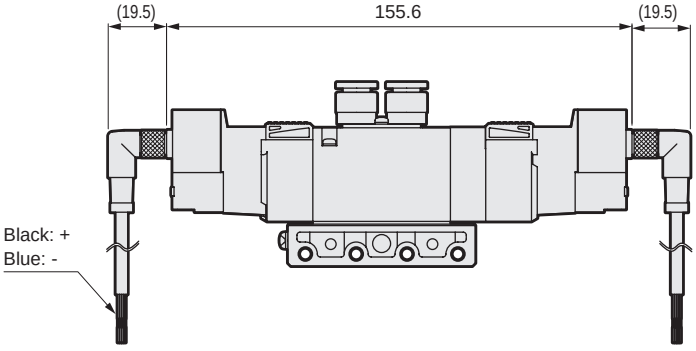
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

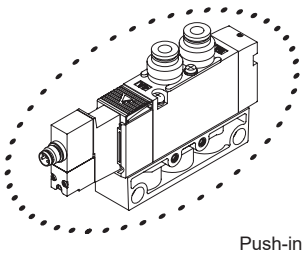


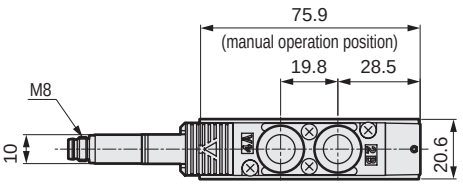


Dimensions

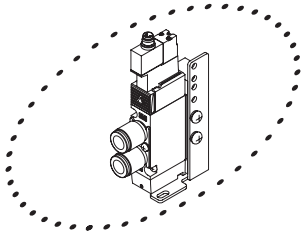
4GD310EA

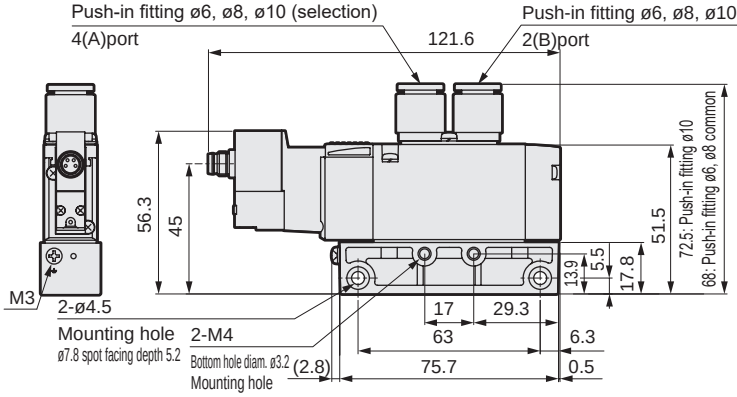
● 2-position single without connector (RN)

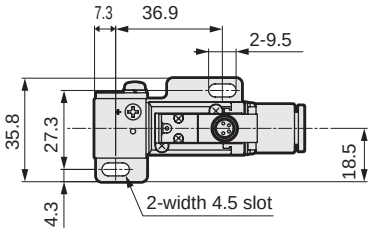




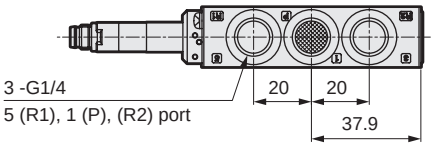
● Mounting plate (P)

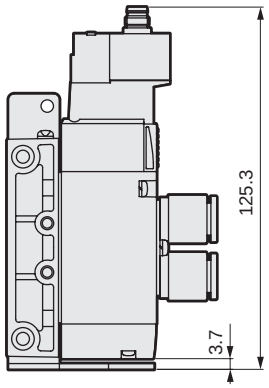




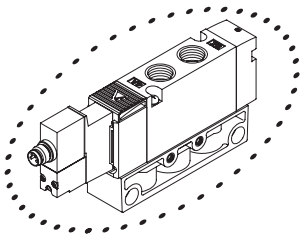


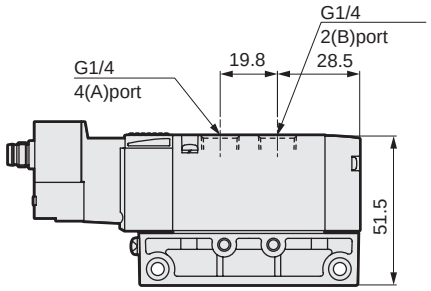
* Refer to page 78 for details on mounting holes.



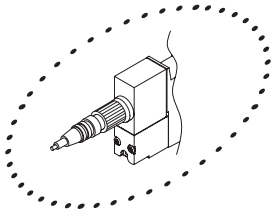


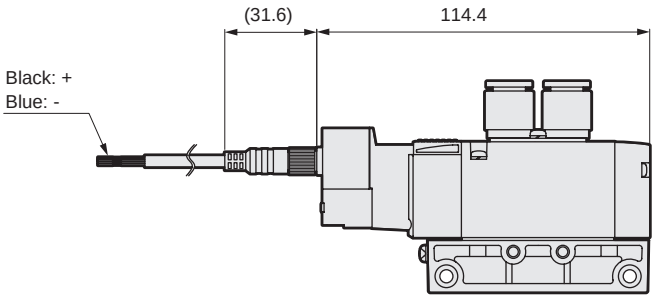
● G1/4 female thread (08G)



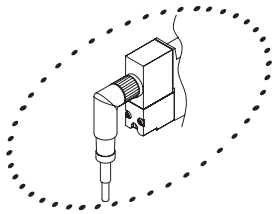


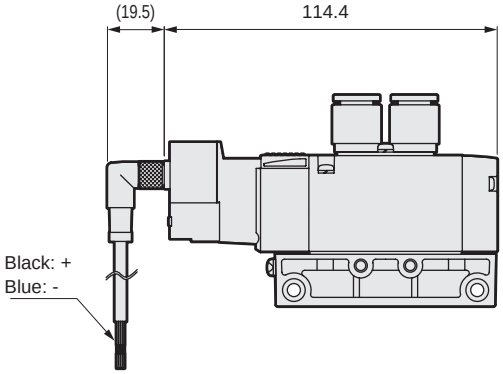
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

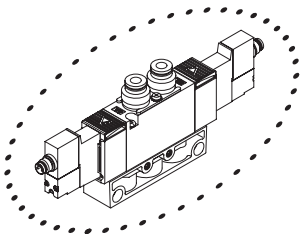


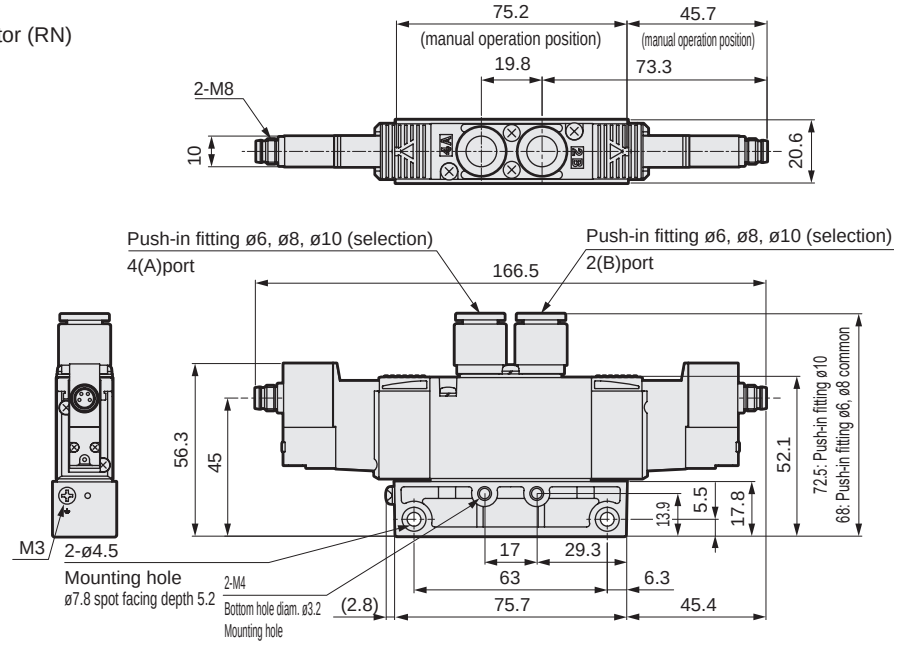


Dimensions

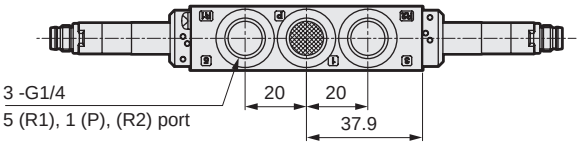
4GD320EA

● 2-position double without connector (RN)

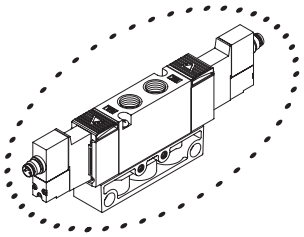


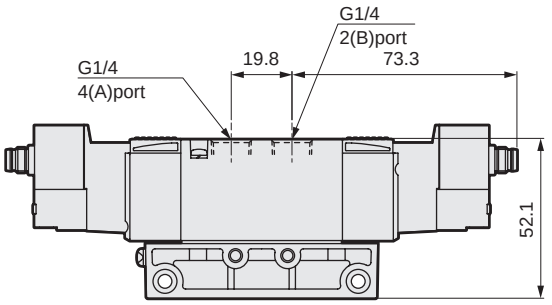


* Refer to page 78 for details on mounting holes.

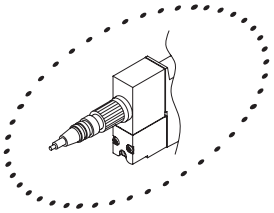


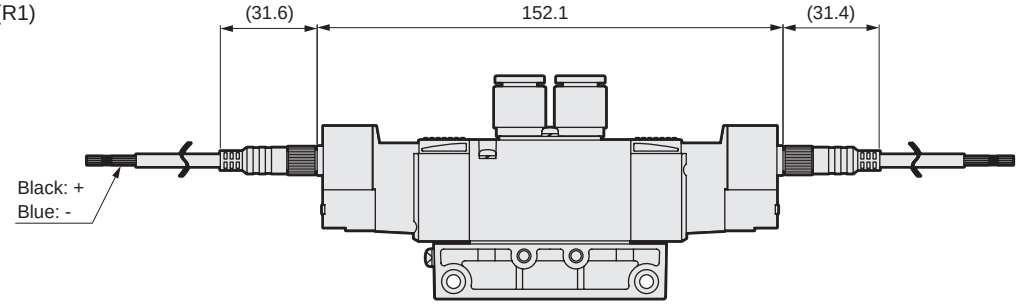
● G1/4 female thread (08G)



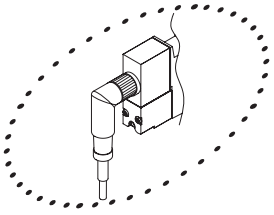


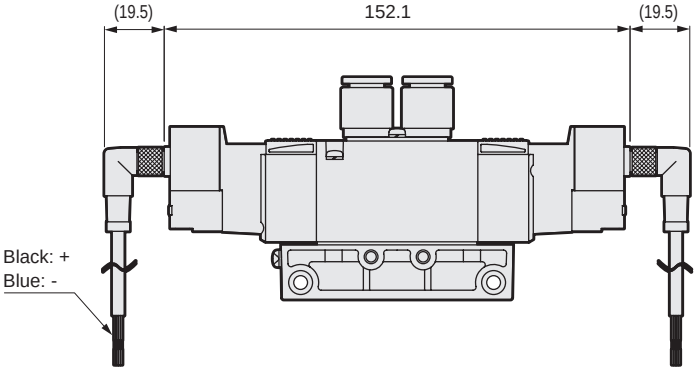
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

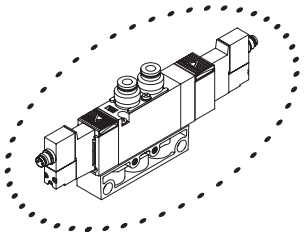


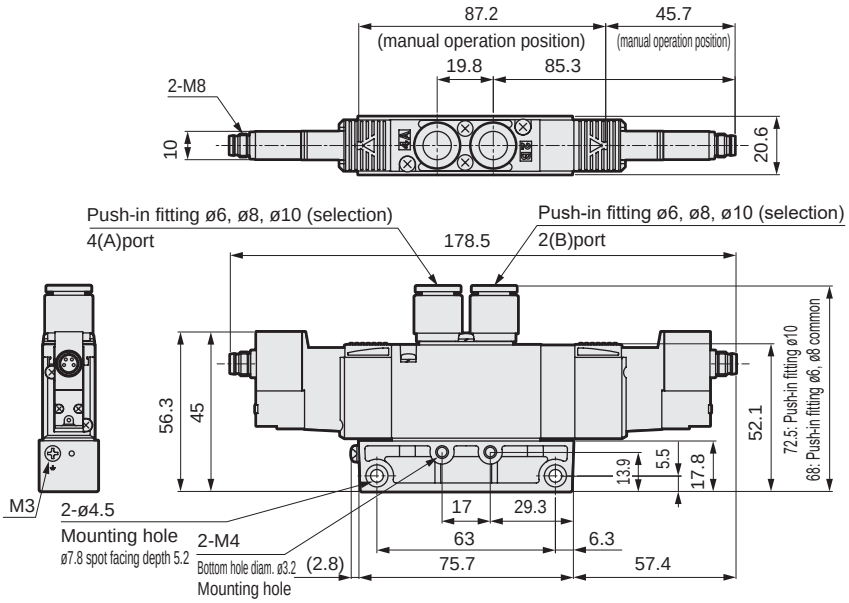


Dimensions

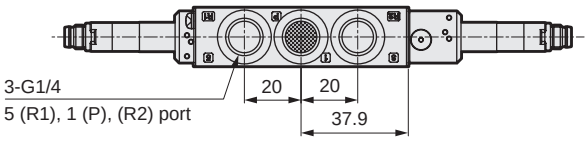
4GD3$^{3}_{4}_{5}$0EA

● 3-position without connector (RN)

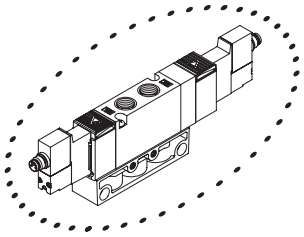


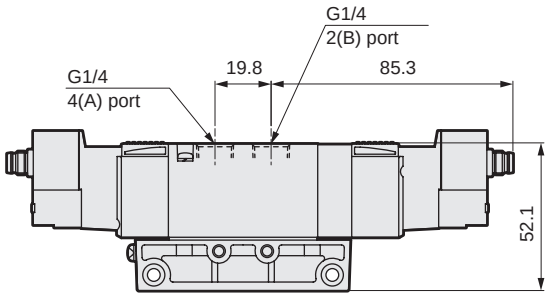


* Refer to page 78 for details on mounting holes.

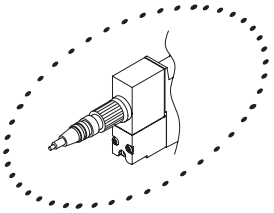


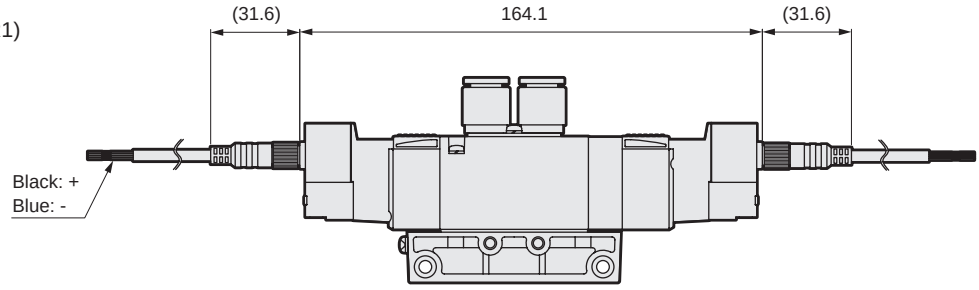
● G1/4 female thread (08G)



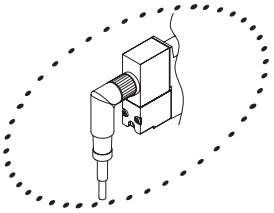


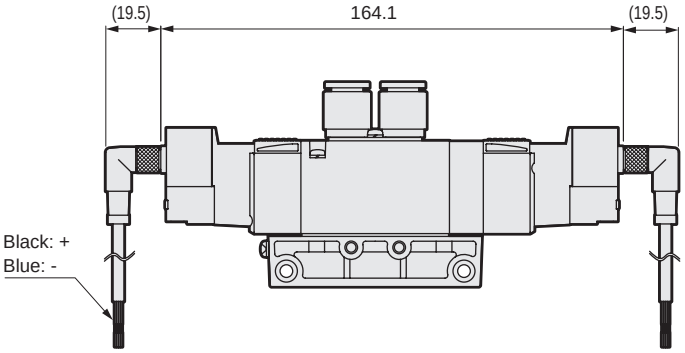
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

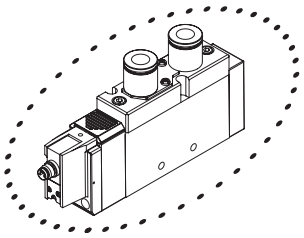


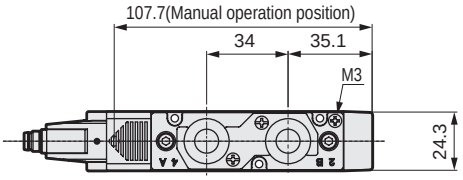


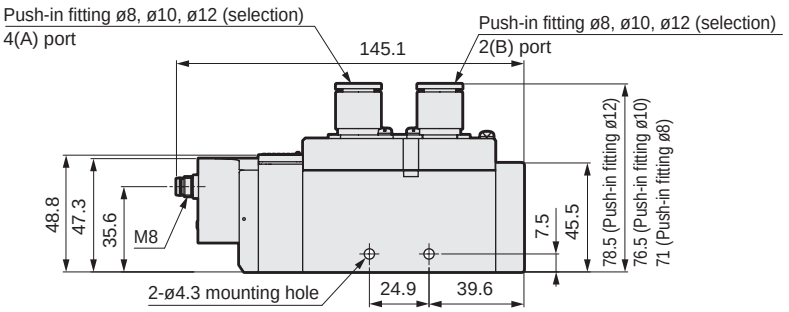
Dimensions

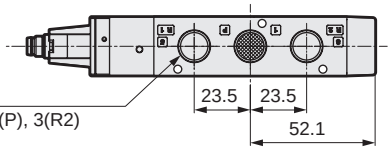
4GD410EA

● 2-position single Without connector (RN)

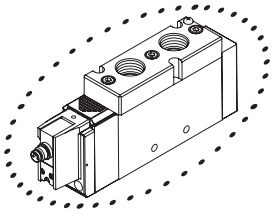


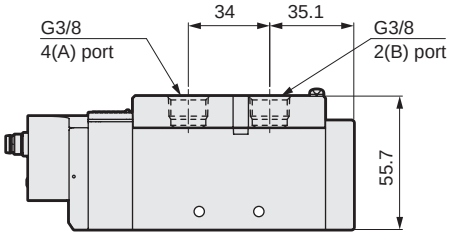




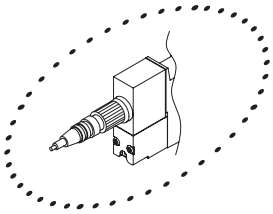


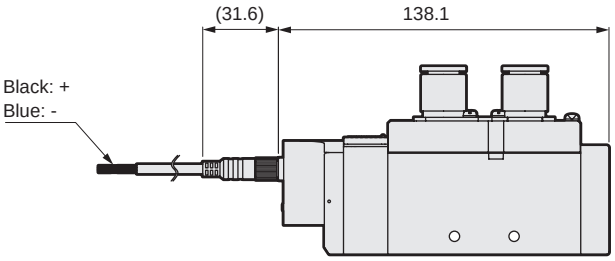
● G3/8 female thread (10G)



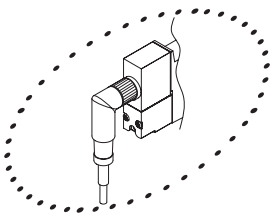


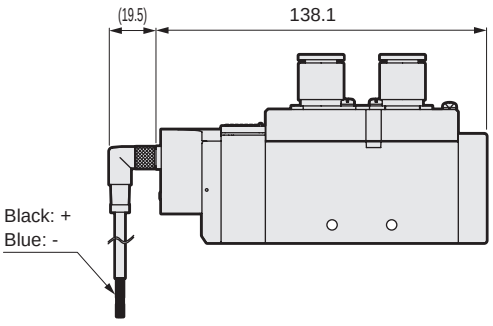
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

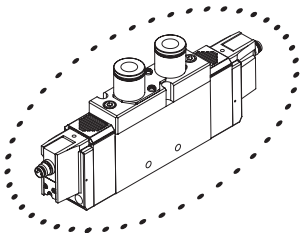


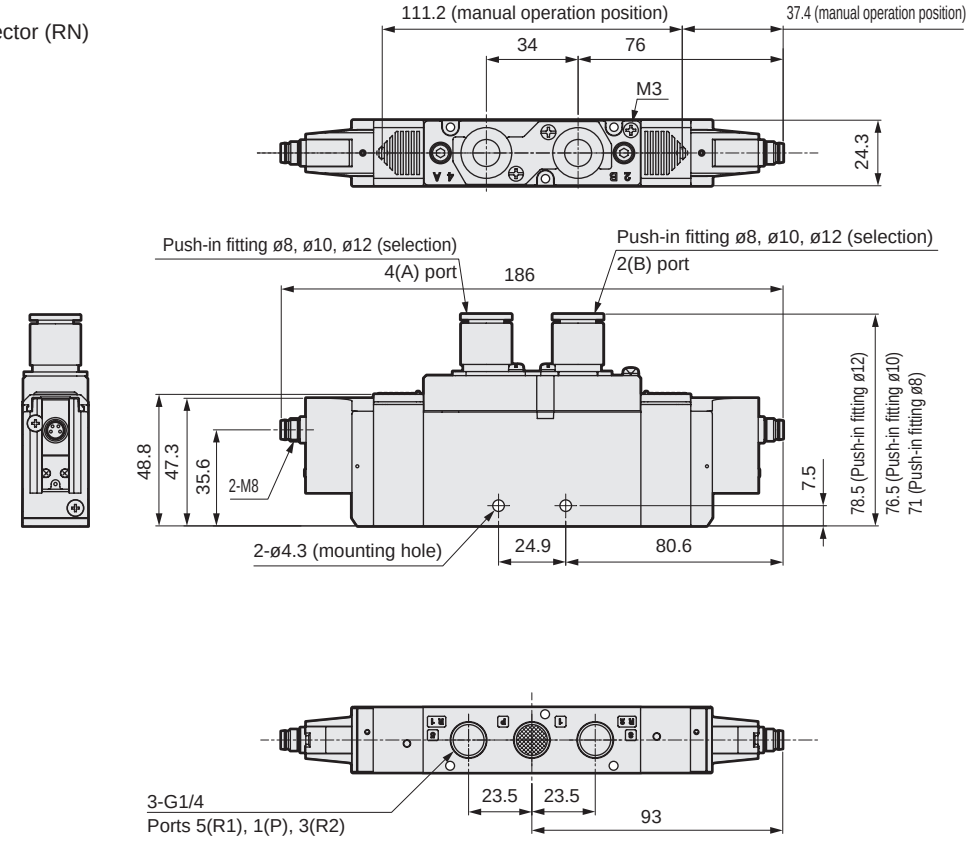


Dimensions

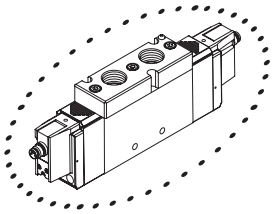
4GD420EA

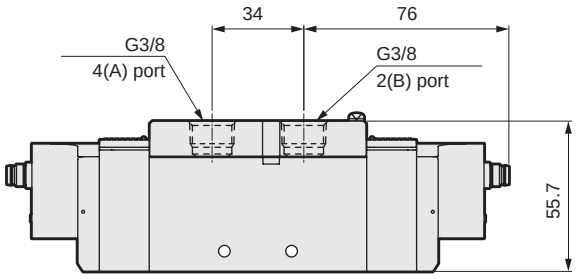
● 2-position double Without connector (RN)



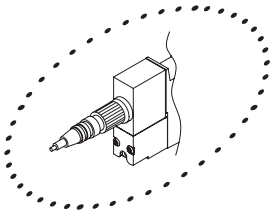


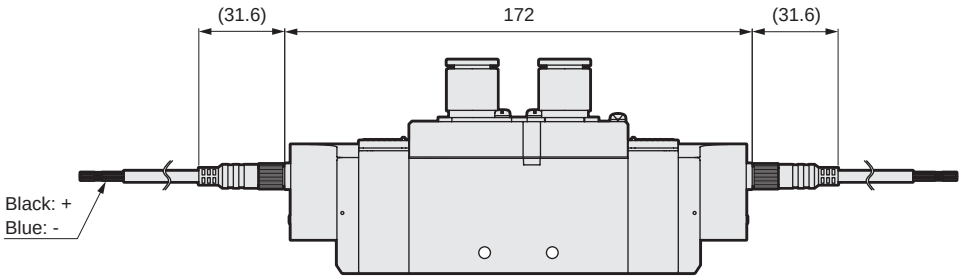
● G3/8 female thread (10G)



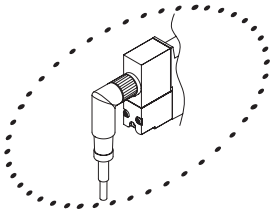


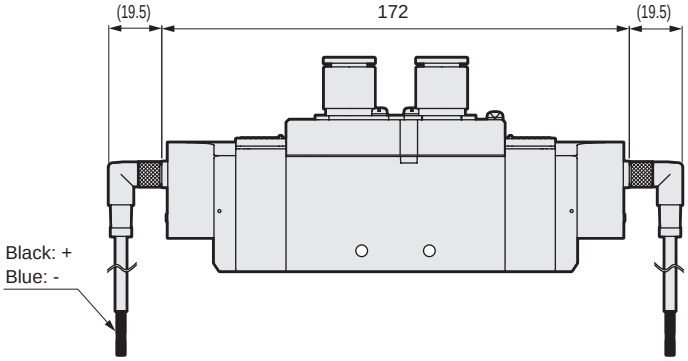
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

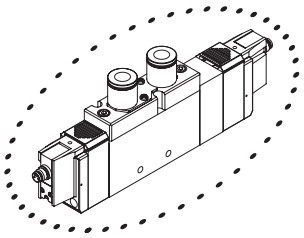


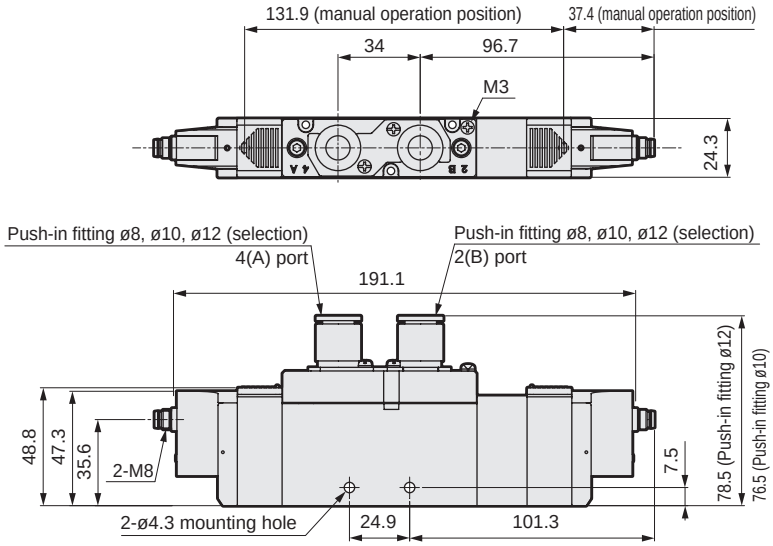


Dimensions

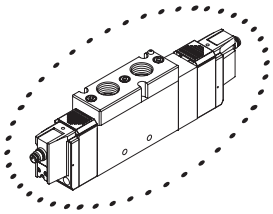
4GD4$^{3}_{4}_{5}$0EA

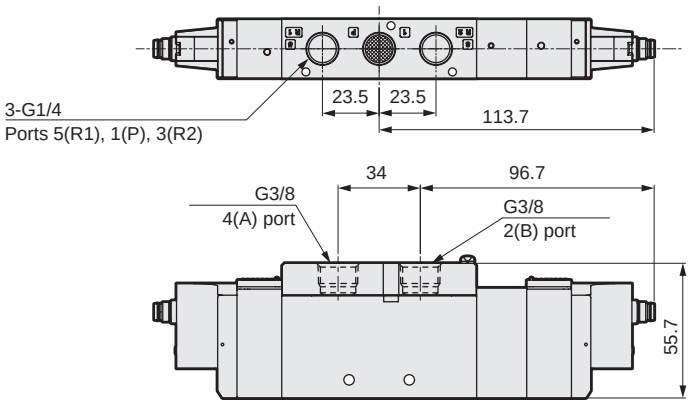
● 3-position without connector (RN)



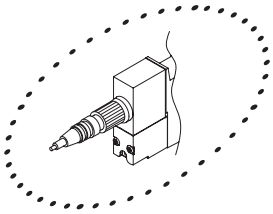


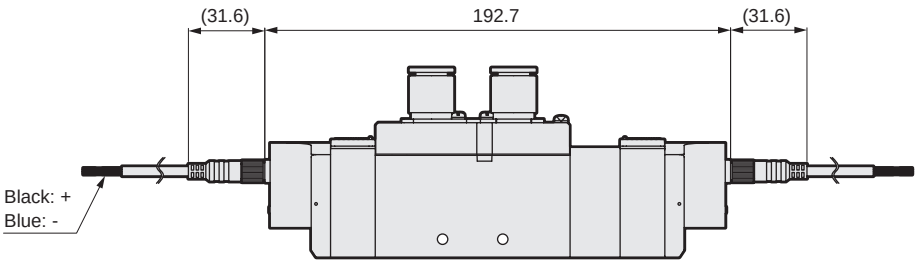
● G3/8 female thread (10G)



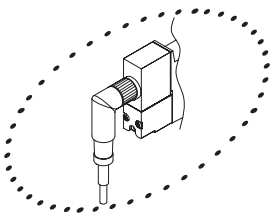


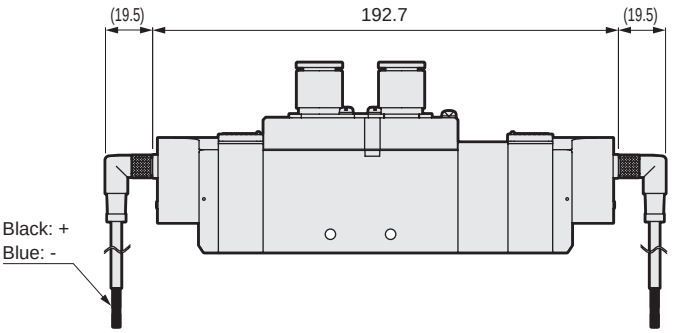
● M8 connector/straight cable (R1)



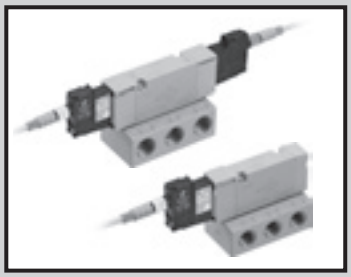


● M8 connector/L-type cable (R2)





MEMO



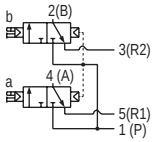
Discrete valve
Base piping

3GE1/2 / 4GE1/2/3/4*0EA Series

● Applicable cylinder bore size: ø20 to ø160

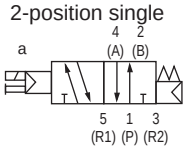
JIS symbol

● Two 3-port valves integrated
(A side valve: NC, B side valve: NC)

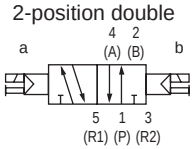


● 5-port valve

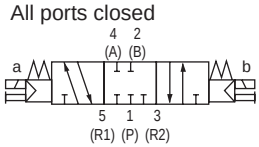
2-position single



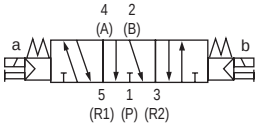
2-position double



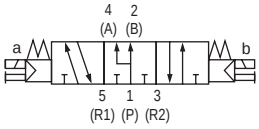
3 PositionMounting
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Common specifications

Item		Description
Valve and operation		Pilot operated soft spool valve
Working fluid		Compressed air
Max. working pressure MPa		0.7
Min. working pressure MPa		0.2
Proof pressure MPa		1.05
Ambient temperature °C		−5 to 55 (no freezing)
Fluid temperature °C		5 to 55
Manual override		NNlock/lock common (standard)
Pilot exhaust method	Internal pilot	Main valve/pilot valve common exhaust
Lubrication *1		Not required
Degree of protection *2		IP67
Vibration resistance m/s²		50 or less
Shock resistance m/s²		300 or less
Atmosphere		Cannot be used in corrosive gas environments

Solenoid specifications

Item	Description
Rated voltage V	DC12
Voltage fluctuation range	+10% −20%
Rated current A	0.05
Power consumption W (*3)	0.6
Thermal class	B

*1 Use turbine oil Class 1 ISO VG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.
*2 Tested according to the test method for IP67 (IEC60529) standards. Note that while the unit is protected from dust and water, it cannot be used immersed in water. Countermeasures such as covering the unit should also be taken if using in environments where it will be constantly exposed to dust or water.

Intrinsic safety explosion-proof specifications

Item	Description
Types of explosion-proof structures	Intrinsic safety explosion-proof structure (ib)
Target gas or above listed ignitability and flame-proof grade	II 2G Ex ib IIC T4 Gb
Barrier input voltage	24 VDC
Intrinsic safety circuit allowable voltage Ui	30V DC
Intrinsic safety circuit allowable currentIi	200mA
Intrinsic safety circuit allowable powerPi	0.68 W
Internal inductance Li	Value that can be ignored
Internal capacitance Ci	Value that can be ignored

Individual specifications

Port size	3GE1/4GE1	3GE2/4GE2	4GE3	4GE4
2/4-port (port A/B)	G1/8	G1/4	G1/4, G3/8	G3/8, G1/2
1, 3, 5-port (Port P/R1/R2)	G1/8	G1/4	G1/4, G3/8	G3/8, G1/2

Performance/characteristics by model

Item			3GE1		3GE2		4GE1		4GE2		4GE3		4GE4	
			ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
Response time ms	Two 3-port valves integrated		15	35	20	50	-	-	-	-	-	-	-	-
	2-position	Single	-	-	-	-	15	35	20	40	25	60	100	110
		Double	-	-	-	-	25	25	30	30	35	35	110	110
	3-position	ABR connection	-	-	-	-	20	40	25	45	35	60	100	160

The response times are values under continuous operation at supply pressure of 0.5 MPa, at rated voltage and at 20°C without lubrication. They depend on the pressure and the lubricant quality.

Weight

Item			4GE1	4GE2	4GE3	4GE4
Weight g	2-position	Single	97	173	246	551(241)
		Double	118	194	267(138)	584(275)
	3-position	ABR connection	120	202(120)	277(148)	616(306)

·( )Values in the do not include the pipe adaptor. These values include the M8 connector (straight).
·The weight of the two 3-port valves integrated type is the same as that of 2-position double.

Flow characteristics

Model No.	Solenoid position		P → A/B		A/B → R1/R2	
			C[dm³/(s·bar)]	b	C[dm³/(s·bar)]	b
3GE1 4GE1	Two 3-port valves integrated		0.8	0.20	1.0	0.13
	2-position		1.1	0.16	1.1	0.10
	3-position	All ports closed	1.0	0.15	1.1	0.10
		ABR connection	1.0	0.15	1.2	0.09
		PAB connection	1.2	0.20	1.1	0.10
3GE2 4GE2	Two 3-port valves integrated		1.7	0.42	2.1	0.26
	2-position		2.6	0.20	2.6	0.19
	3-position	All ports closed	2.3	0.32	2.2	0.22
		ABR connection	2.2	0.23	2.6	0.16
		PAB connection	2.4	0.10	2.4	0.22
4GE3	2-position		4.3	0.24	4.2	0.24
	3-position	All ports closed	3.3	0.40	3.4	0.27
		ABR connection	3.3	0.36	4.2	0.18
		PAB connection	4.5	0.28	3.4	0.30
4GE4	2-position		11.0	0.19	13.0	0.19
	3-position	All ports closed	9.1	0.11	12.0	0.27
		ABR connection	8.8	0.28	13.9	0.25
		PAB connection	10.0	0.06	12.0	0.24

*1: Formula for converting effective cross-sectional area S and sonic conductance C is S≈5.0×C.

3GE1/2 / 4GE1/2/3/4*0EA Series

Discrete valve; Base piping

How to order (solenoid valve single unit)

● Single unit

4GE1 1 0 EA - 06G - RN ( ) - 4

3GE2 66 0 EA - 08G - RN ( ) - 4

Ⓐ Model No.
Ⓑ Solenoid position
Ⓒ Explosion-proof Series
Ⓓ Port size
Ⓔ Electrical connections
Ⓕ Option
Ⓖ Voltage

Code	Description	Ⓐ Model No. 3GE1	3GE2	4GE1	4GE2	4GE3	4GE4
Ⓑ Solenoid position							
1	2 position single			●	●	●	●
2	2-position double			●	●	●	●
3	3-position all ports closed			●	●	●	●
4	3-position ABR connection			●	●	●	●
5	3-position PAB connection			●	●	●	●
66	3-port valve Two valves integrated *1 — A valve side: Normally closed / B valve side: Normally closed	●	●				
Ⓒ Explosion-proof Series							
EA	ATEX Directive compliant product	●	●	●	●	●	●
Ⓓ Port size {ports 4(A), 2(B)}							
Port	4(A)/2(B) port	Port P/R1/R2 (2)=G1/8 (3)=G1/4 (4)=G3/8 (1/2) = G1/4					
06G	G1/8	(2)		(2)			
08G	G1/4		(3)		(3)	(3)	
10G	G3/8					(4)	(4)
15G	G1/2						(5)
00	Valve for base mounting	●	●	●	●	●	●
Ⓔ Electrical connections							***2**
RN	M8 connector without cable	●	●	●	●	●	●
R 1	M8 connector straight cable	●	●	●	●	●	●
R 2	M8 connector L-type cable	●	●	●	●	●	●
Ⓕ Option							
Blank	Manual override of non-locking/locking common (standard)	●	●	●	●	●	●
H	With exhaust check valve *3	●	●	●	●	●	
F	Port A/B filter *4	●	●	●	●	●	●
Ⓖ Voltage							
4	12 VDC	●	●	●	●	●	●

⚠Precautions for model No. selection

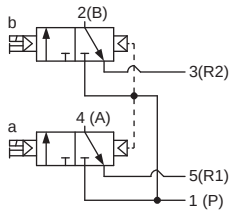
*1 Dimensions are the same as the respective 2-position double solenoid.
*2 M8 connector length is 300mm. Select other lengths from page 63 as needed.
*3 The 3-position all ports closed and PAB connection are not provided with exhaust check valve specifications (H).
*4 A filter is built into port P as standard.
*5 Explosion-proof barrier sold separately. Select from page 67.

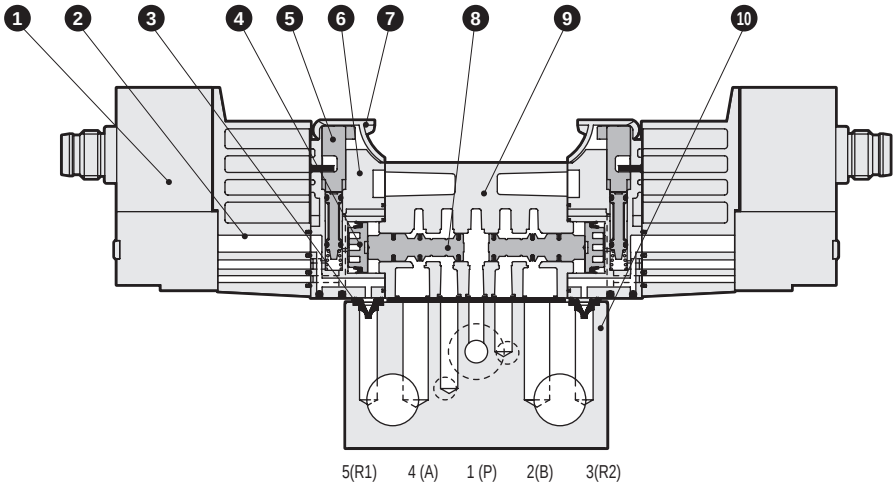
Internal structure diagram and parts list

3GE1660EA

● Two 3-port valves integrated
M8 connector without cable (RN)

A side valve: Normally closed,
B side valve: Normally closed
NC/NC

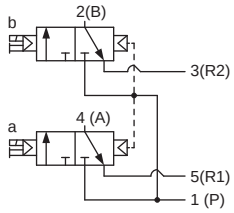


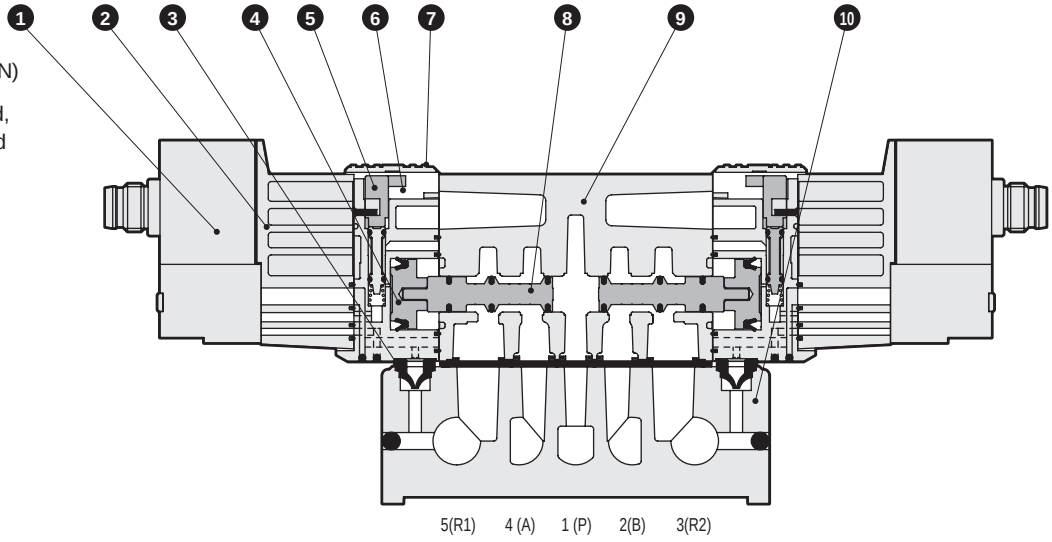


3GE2660EA

● Two 3-port valves integrated
M8 connector without cable (RN)

A side valve: Normally closed,
B side valve: Normally closed
NC/NC





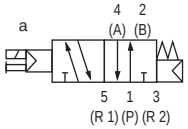
Main parts list

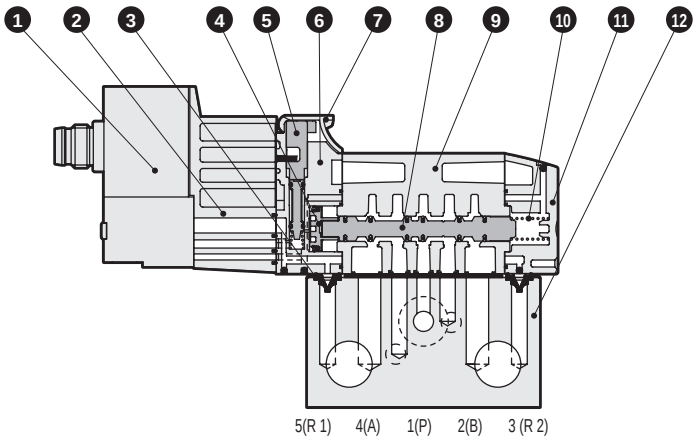
Part No.	Part name	Material	Part No.	Part name	Material
1	Coil assembly	-	6	Piston chamber	Resin
2	Adapter	Resin	7	Manual protection cover	Resin
3	Pilot exhaust check valve	Hydrogenated nitrile rubber	8	Spool assembly	-
4	Piston assembly	-	9	Body	Aluminum alloy die-casting
5	Manual override	Resin	10	Sub-plate	Aluminum alloy die-casting

Internal structure diagram and parts list

4GE110EA

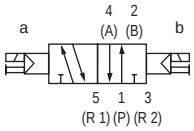
● 2-position single
M8 connector without cable (RN)

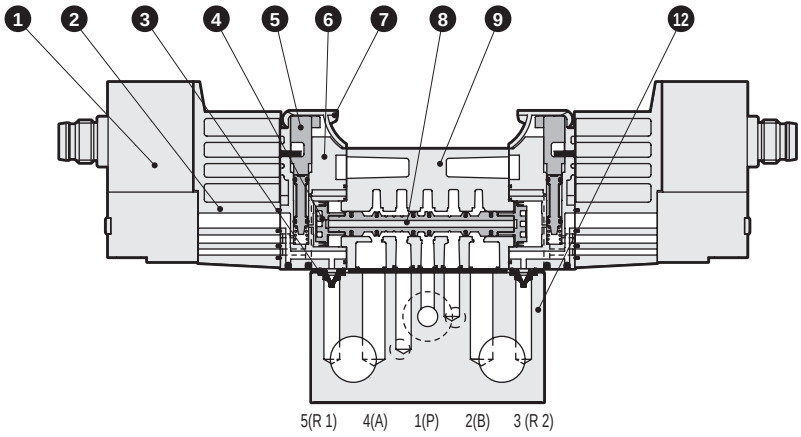




4GE120EA

● 2-position double
M8 connector without cable (RN)

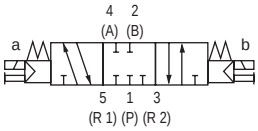




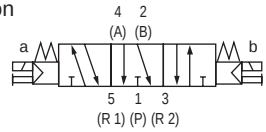
4GE1$^{3}_{4}_{5}$0EA

● 3-position
M8 connector without cable (RN)

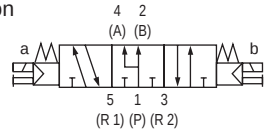
All ports closed

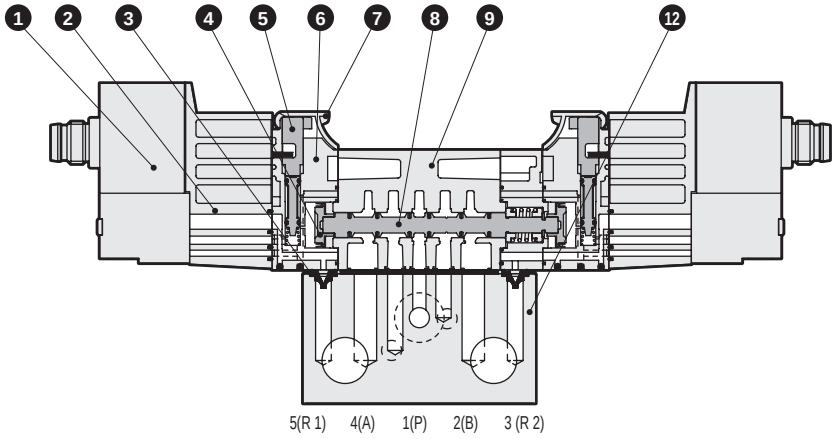


A/B/R connection



P/A/B connection





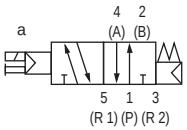
Main parts list

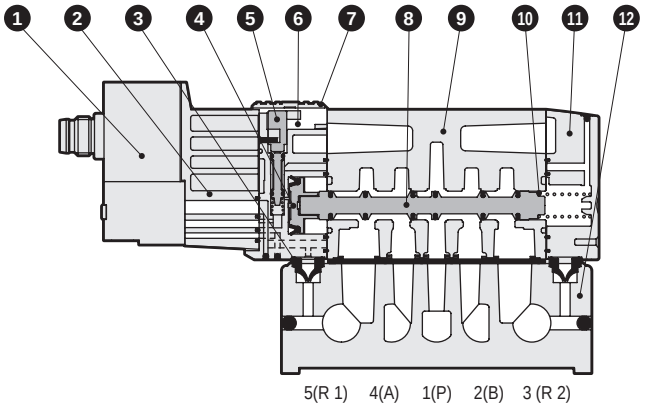
Part No.	Part name	Material	Part No.	Part name	Material
1	Coil assembly	-	7	Manual protection cover	Resin
2	Adapter	Resin	8	Spool assembly	-
3	Pilot exhaust check valve	Hydrogenated nitrile rubber	9	Body	Aluminum alloy die-casting
4	Piston D assembly	-	10	Spool spring	Stainless steel
5	Manual override	Resin	11	Cap	Resin
6	Piston chamber	Resin	12	Sub-plate	Aluminum alloy

Internal structure diagram and parts list

4GE210EA/4GE310EA

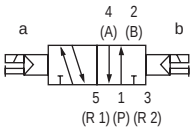
● 2-position single
M8 connector without cable (RN)

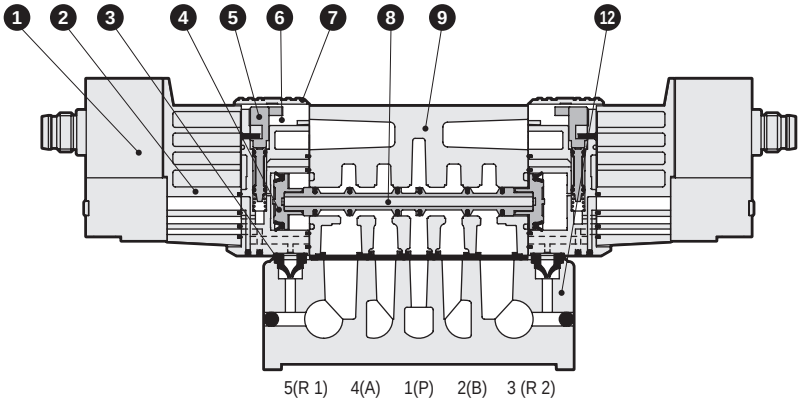




4GE220EA/4GE320EA

● 2-position double
M8 connector without cable (RN)

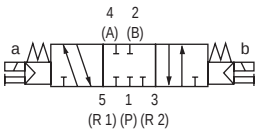




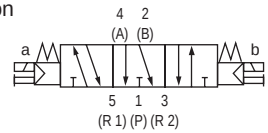
4GE2 $^{3}_{4}_{5}$0EA/4GE3 $^{3}_{4}_{5}$0EA

● 3-position
M8 connector without cable (RN)

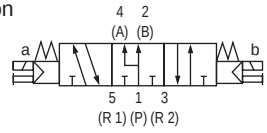
All ports closed

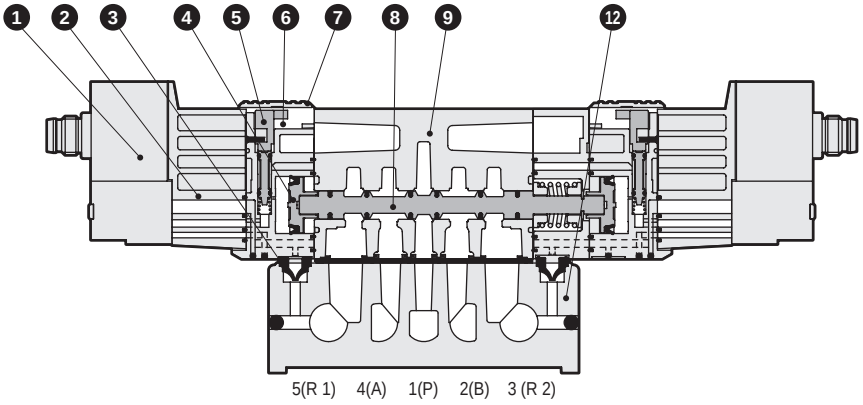


A/B/R connection



P/A/B connection





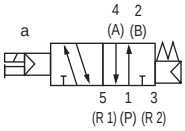
Main parts list

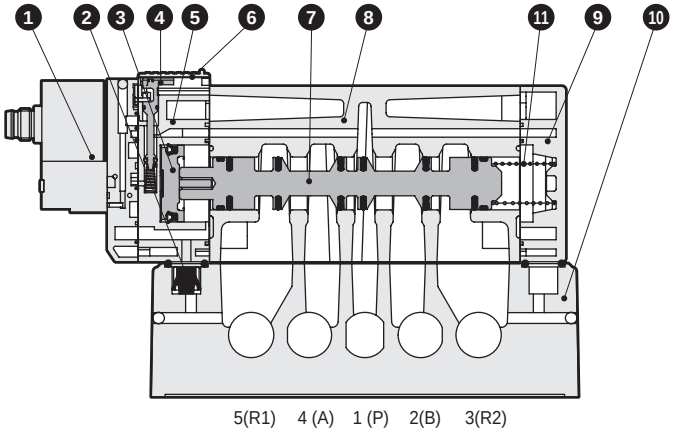
Part No.	Part name	Material	Part No.	Part name	Material
1	Coil assembly	-	7	Manual protection cover	Resin
2	Adapter	Resin	8	Spool assembly	-
3	Pilot exhaust check valve	Hydrogenated nitrile rubber	9	Body	Aluminum alloy die-casting
4	Piston D assembly	-	10	Spool spring	Stainless steel
5	Manual override	Resin	11	Cap	Resin
6	Piston chamber	Resin	12	Sub-plate	Aluminum alloy die-casting

Internal structure diagram and parts list

4GE410EA

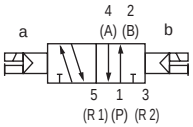
● 2-position single
M8 connector without cable (RN)

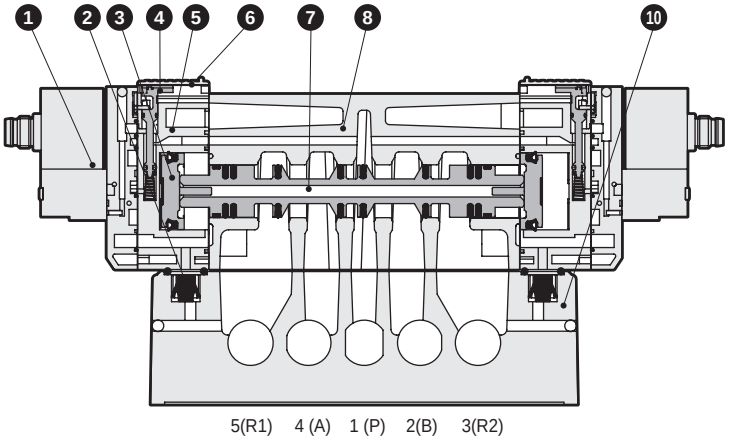




4GE420EA

● 2-position double
M8 connector without cable (RN)

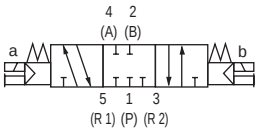




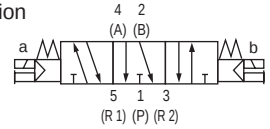
4GE4$^{3}_{4}_{5}$0EA

● 3-position
M8 connector without cable (RN)

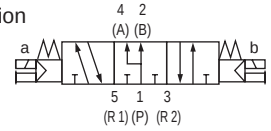
All ports closed

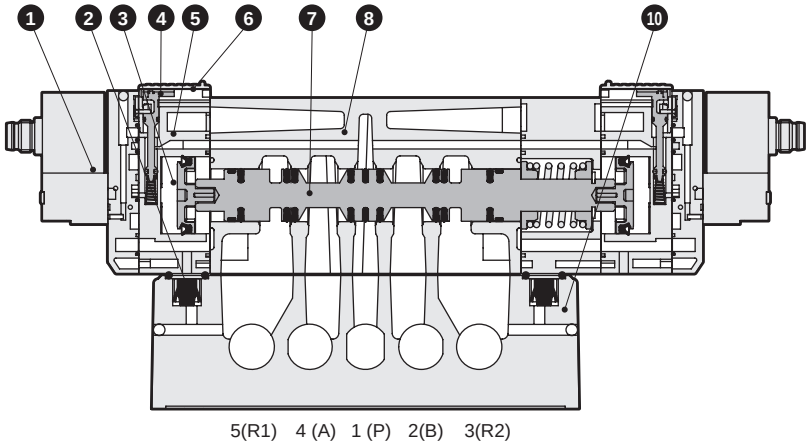


A/B/R connection



P/A/B connection





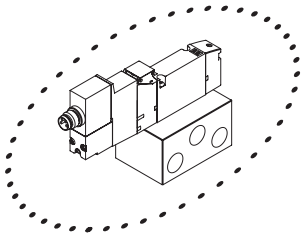
Main parts list

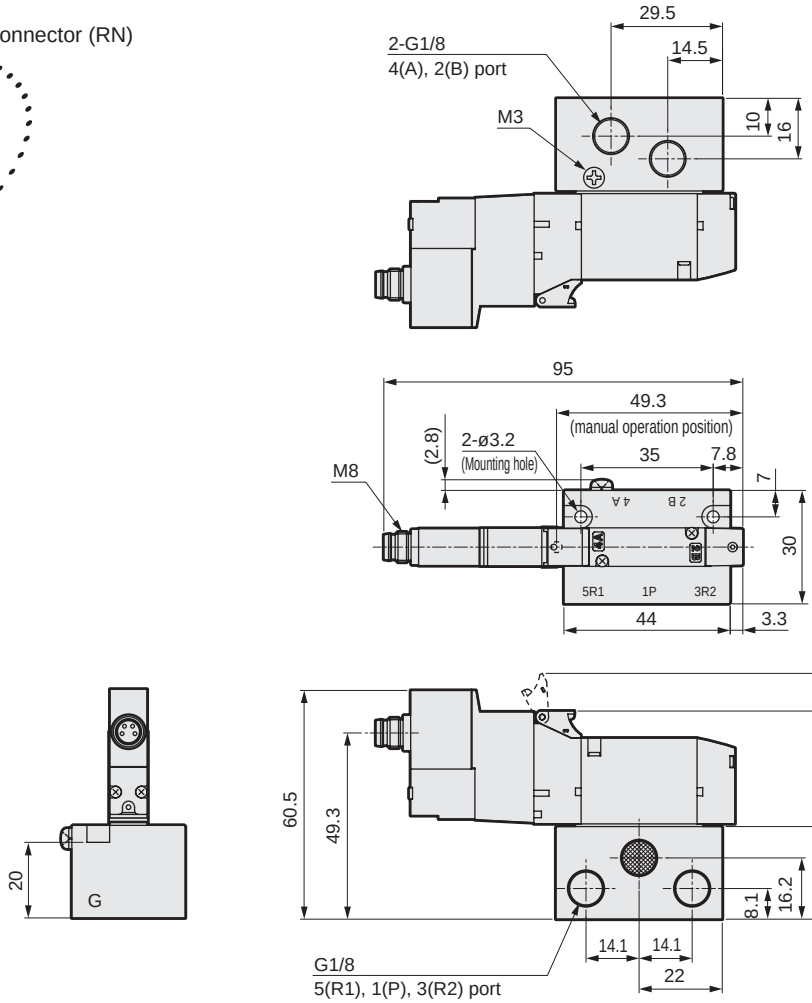
Part No.	Part name	Material	Part No.	Part name	Material
1	Coil assembly	-	6	Manual protection cover	Resin
2	Check valve	Hydrogenated nitrile rubber	7	Spool assembly	-
3	Piston assembly	-	8	Body	Aluminum alloy die-casting
4	Manual override	Resin	9	Cap	Resin
5	Piston chamber	Resin	10	Discrete sub-plate	Aluminum alloy die-casting
			11	Spool spring	Stainless steel

Dimensions

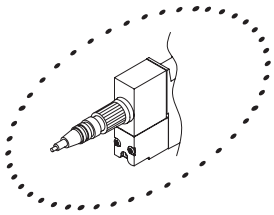
4GE110EA

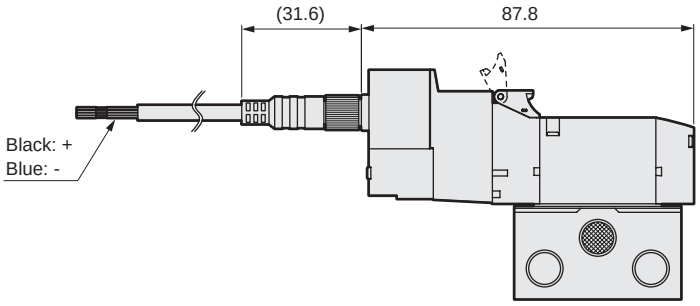
● 2-position single without connector (RN)



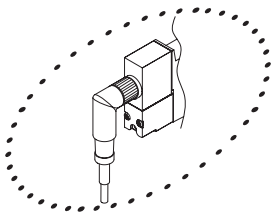


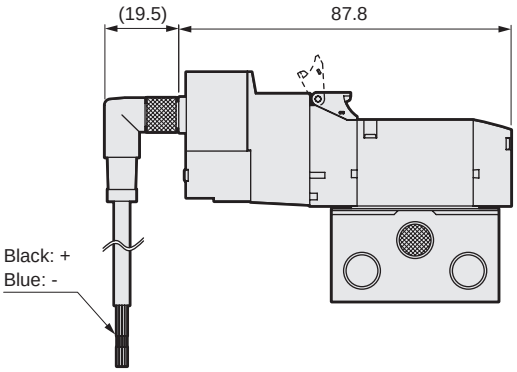
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)





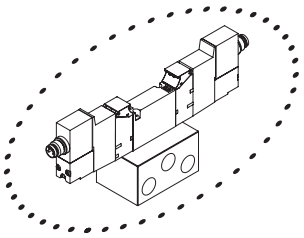
Dimensions

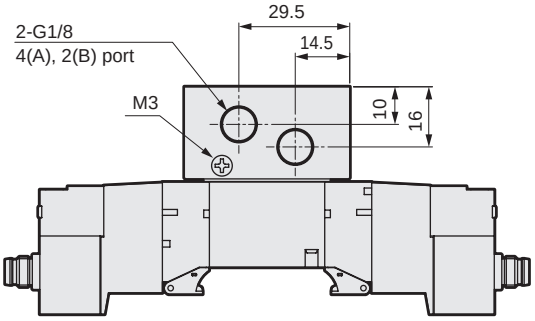
4GE120EA

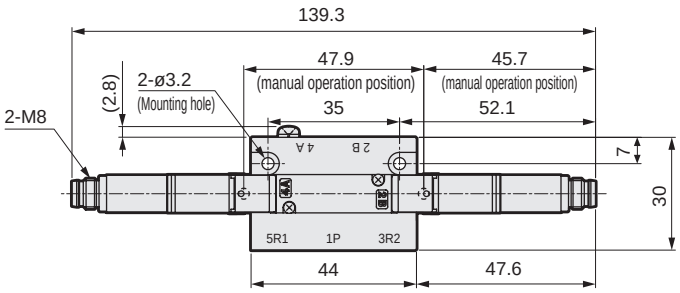
● 2-position double without connector (RN)

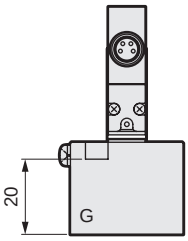
3GE1660EA

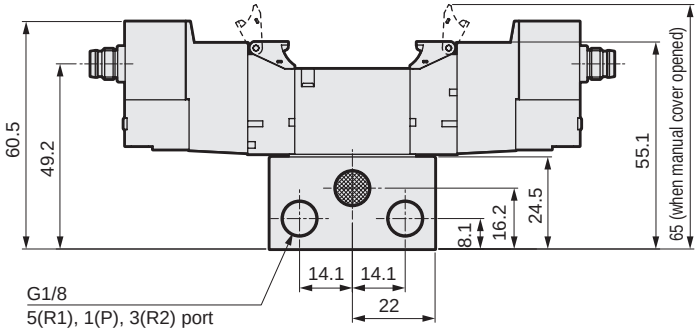
● Two 3-port valves integrated without connector (RN)



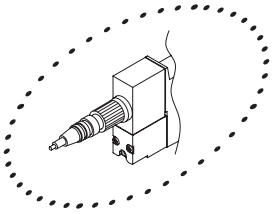


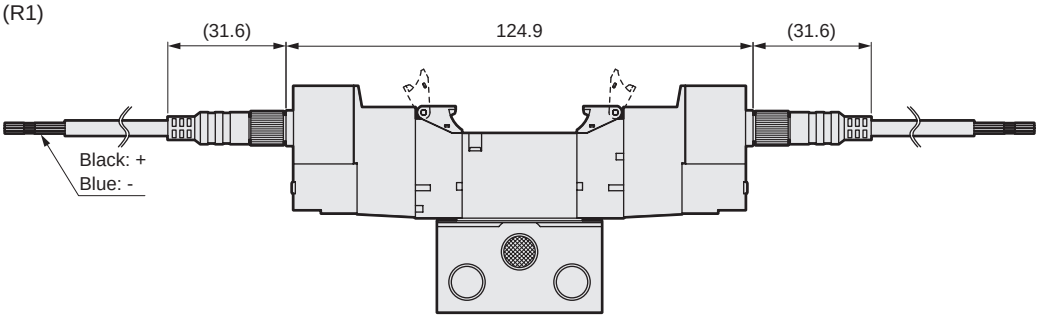




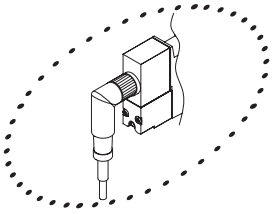


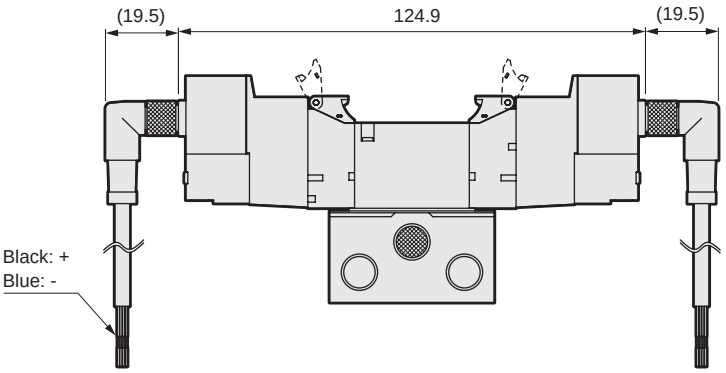
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

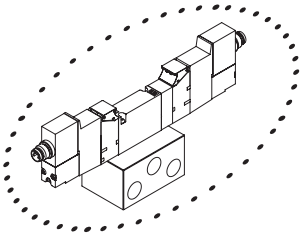


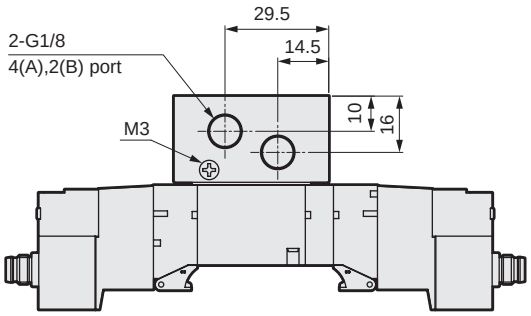


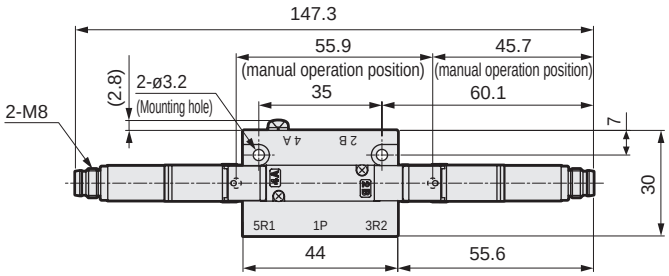
Dimensions

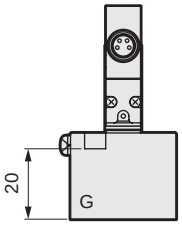
4GE1$^{3}_{4,5}$0EA

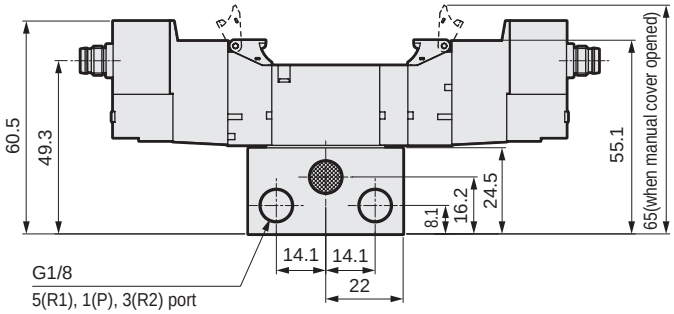
● 3-position without connector (RN)



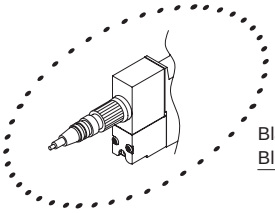


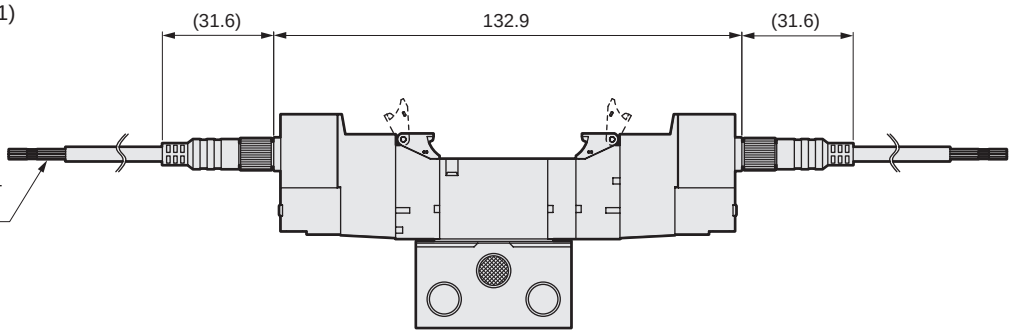




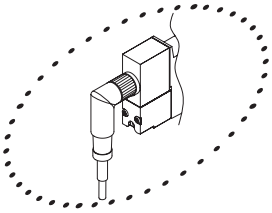


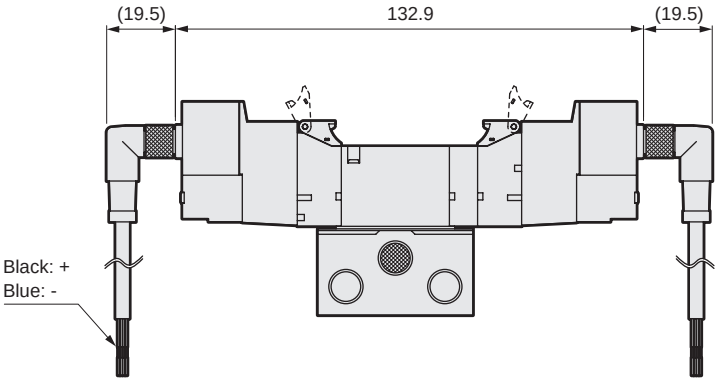
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

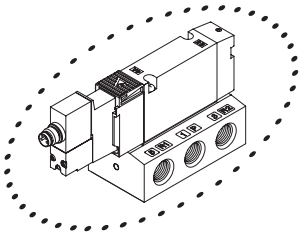


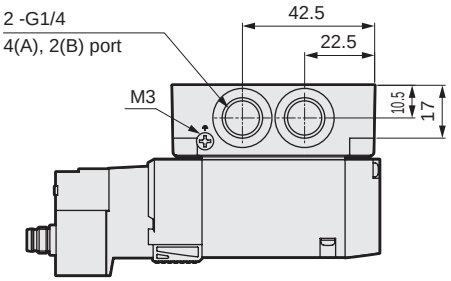


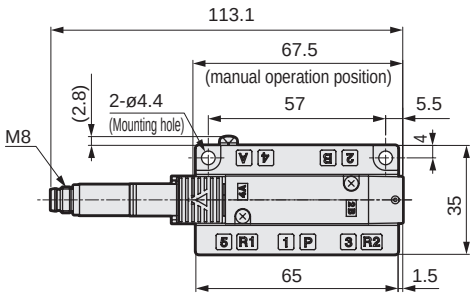
Dimensions

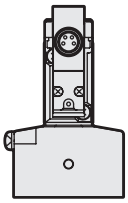
4GE210EA

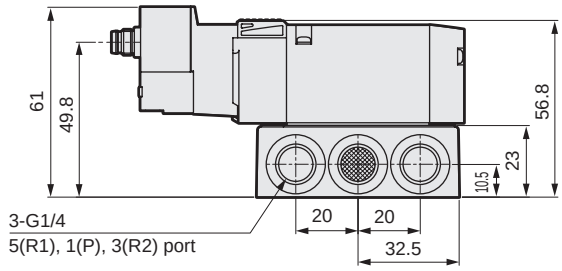
● 2-position single without connector (RN)



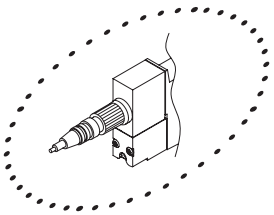


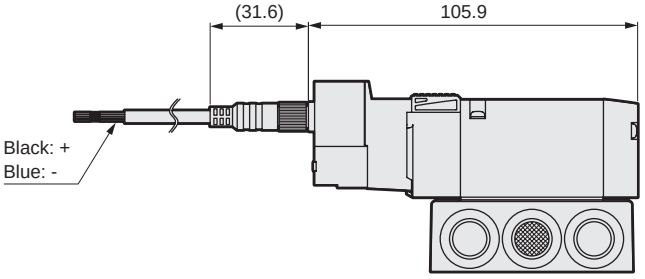




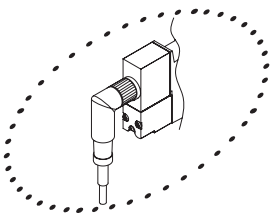


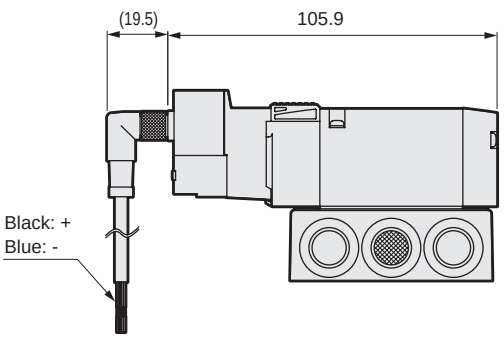
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)





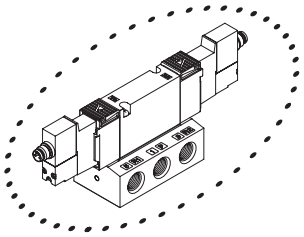
Dimensions

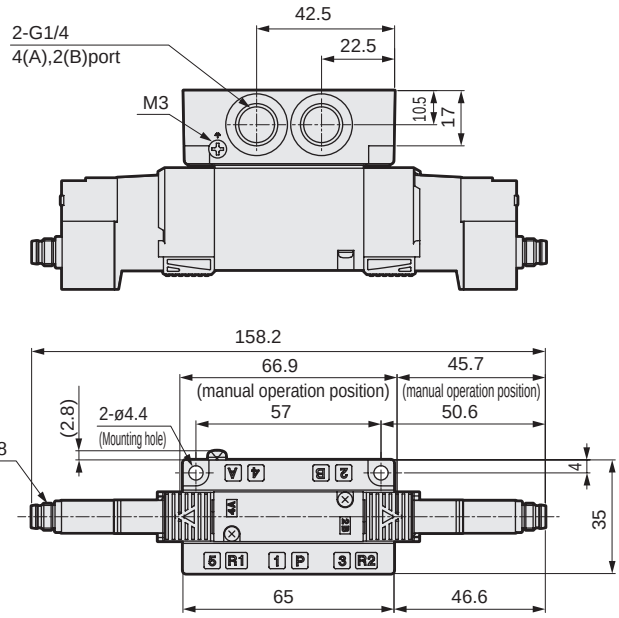
4GE220EA

● 2-position double without connector (RN)

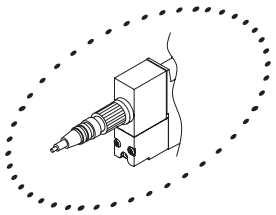
3GE2660EA

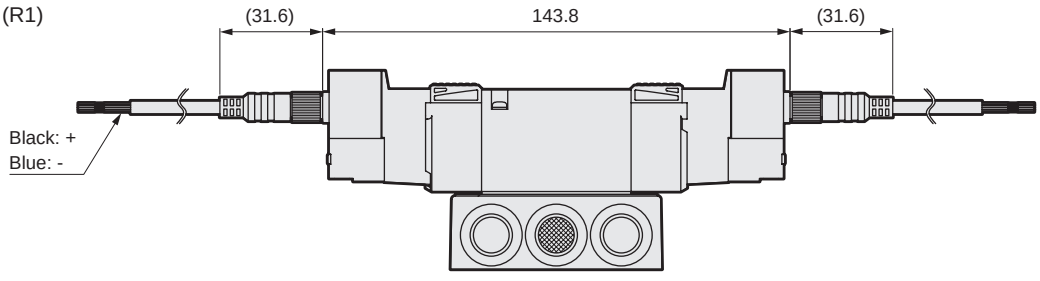
● Two 3-port valves integrated without connector (RN)



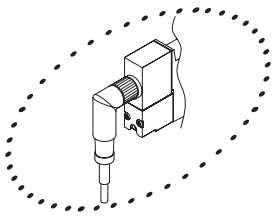


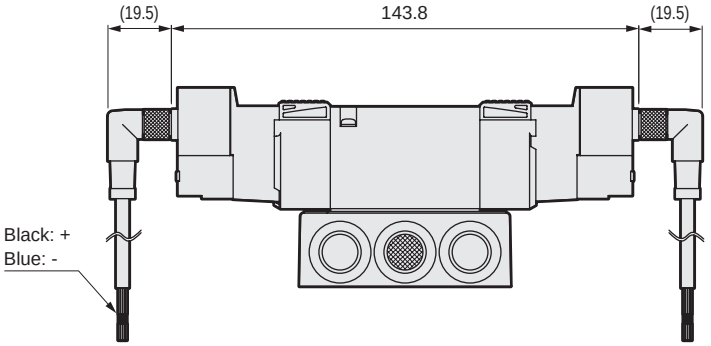
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

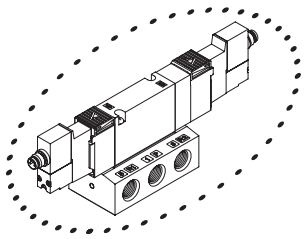


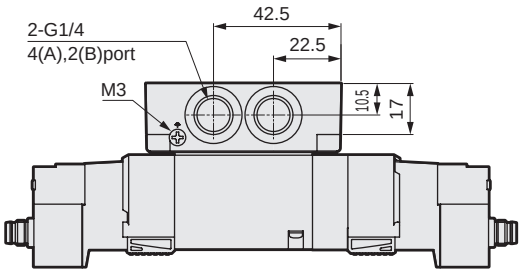


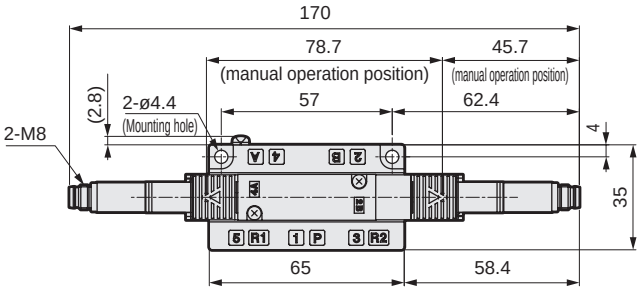
Dimensions

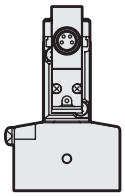
4GE2$^{3}_{5}$0EA

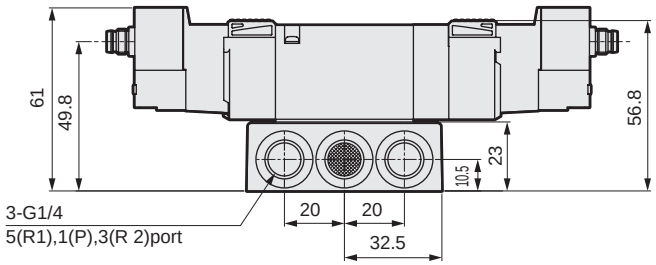
● 3-position without connector (RN)



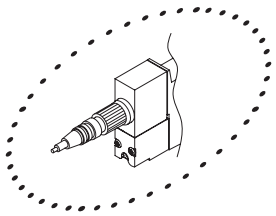


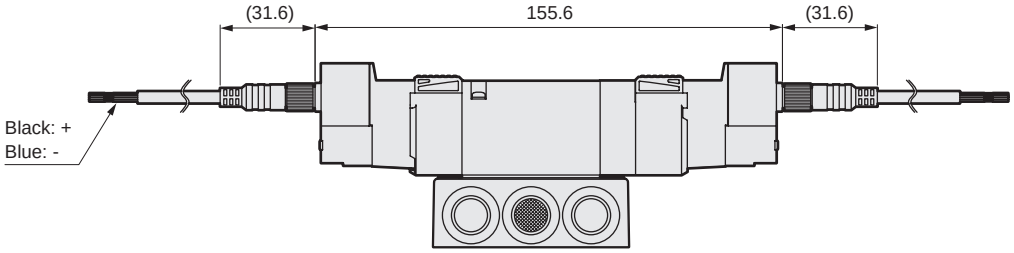




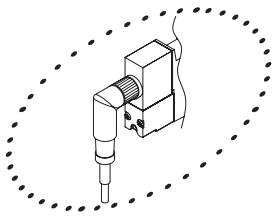


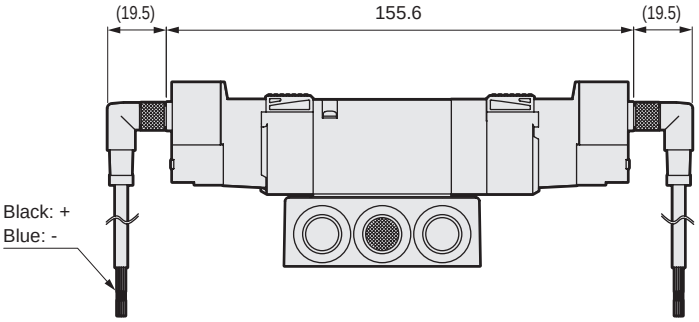
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

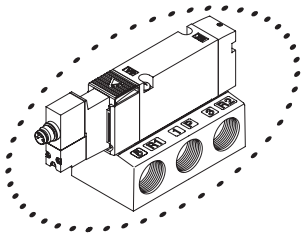


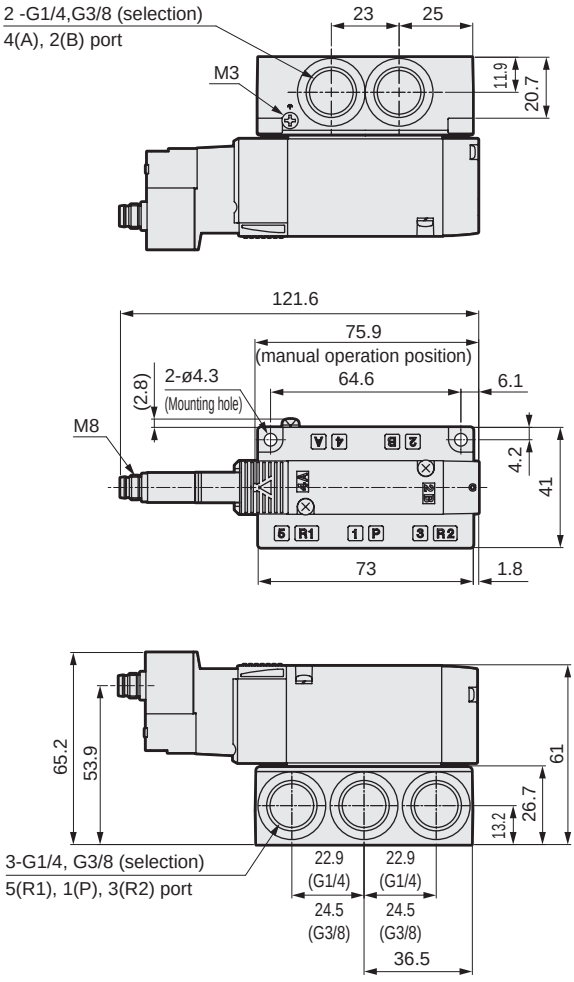


Dimensions

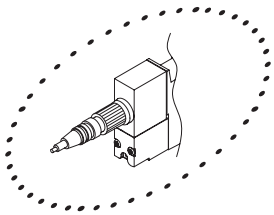
4GE310EA

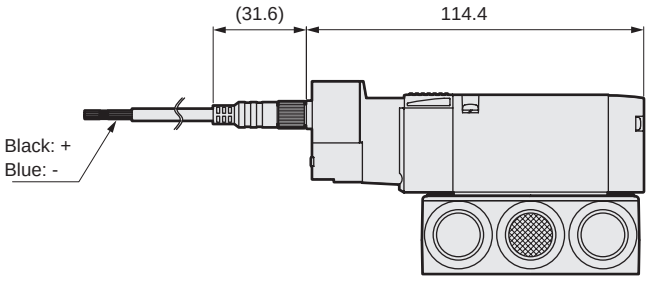
● 2-position single without connector (RN)



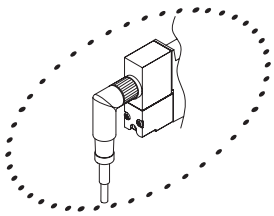


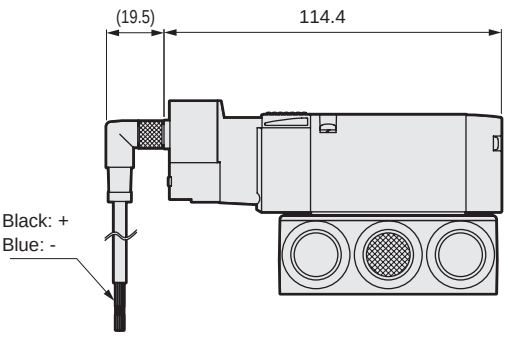
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

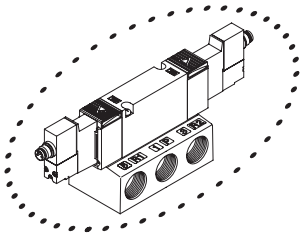


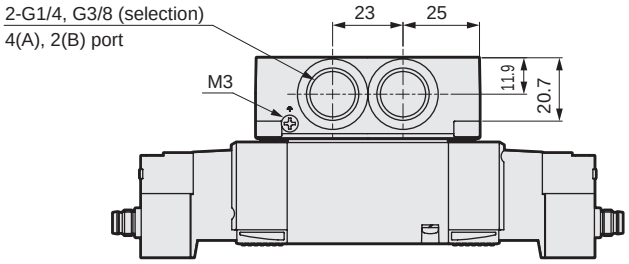


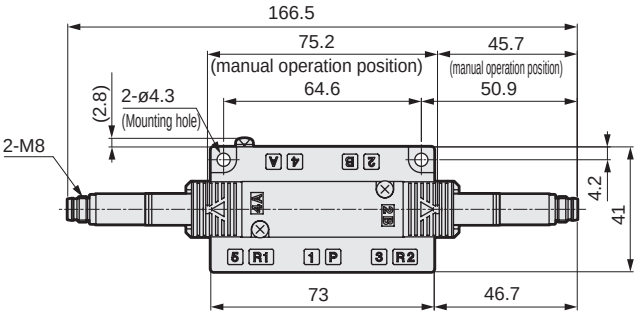
Dimensions

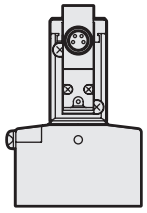
4GE320EA

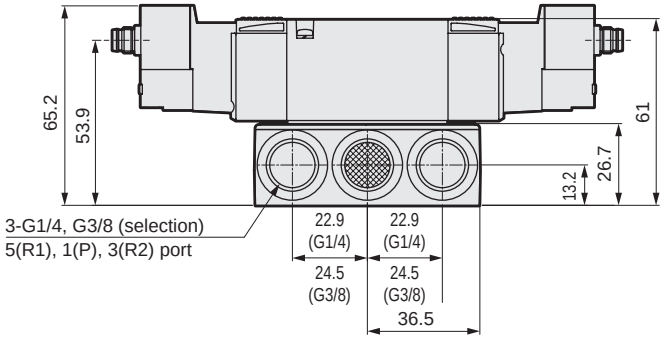
● 2-position double without connector (RN)



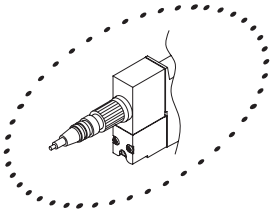


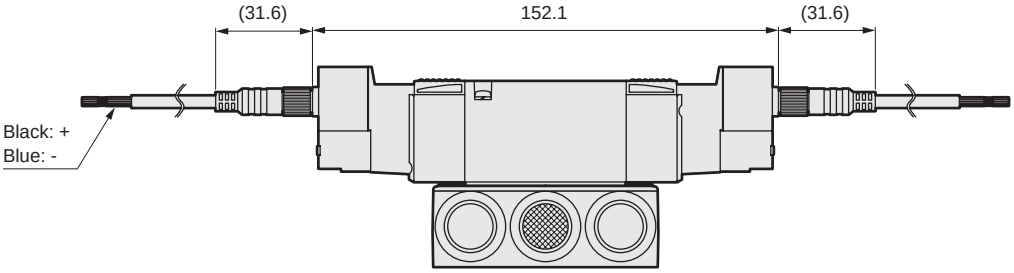




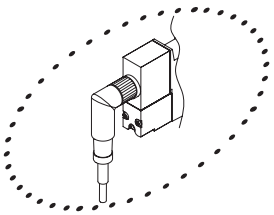


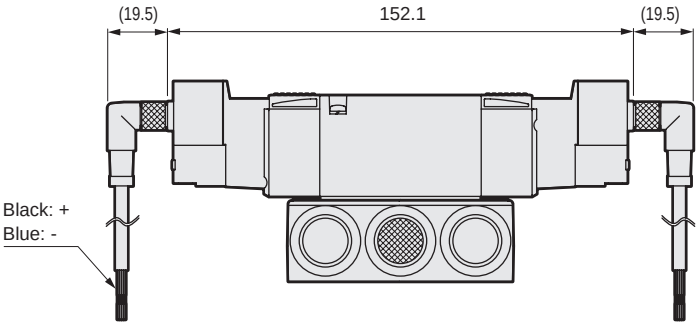
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

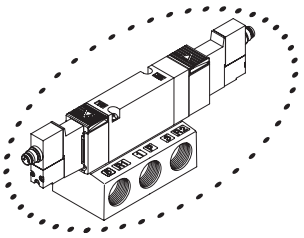


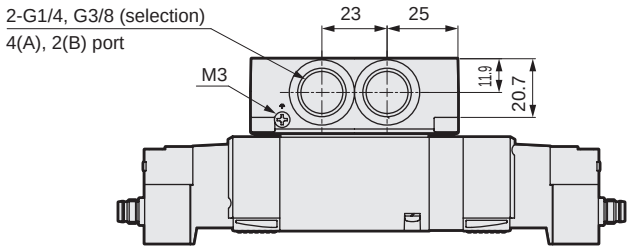


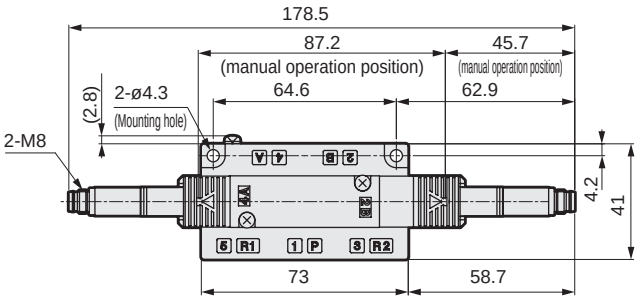
Dimensions

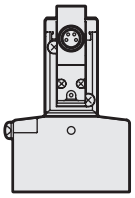
4GE3$^{3}_{5}$0EA

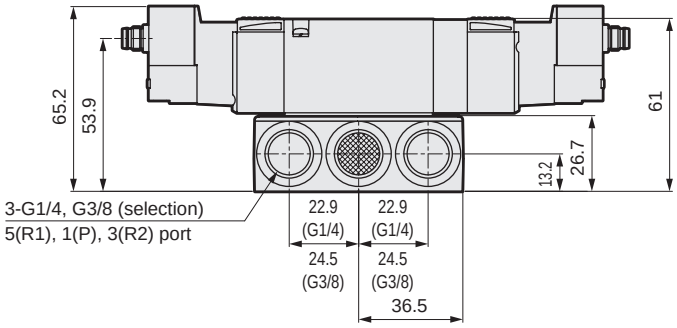
● 3-position without connector (RN)



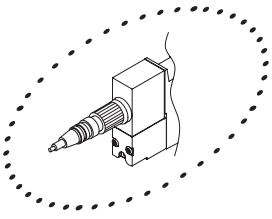


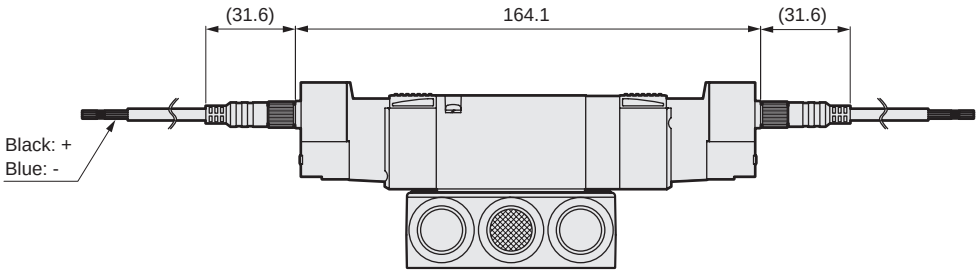




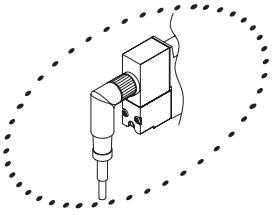


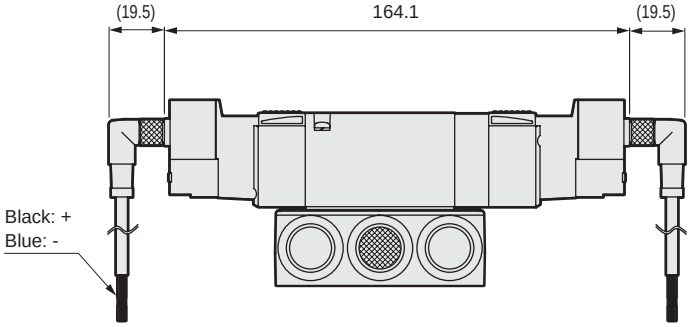
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

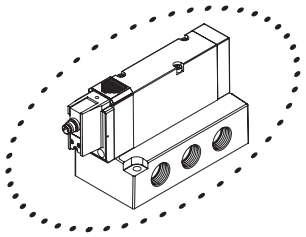


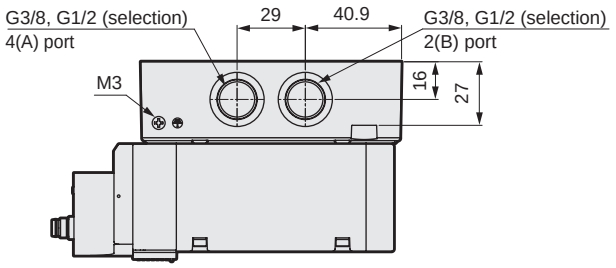


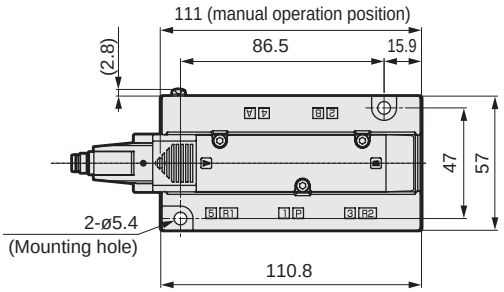
Dimensions

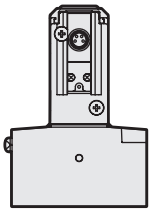
4GE410EA

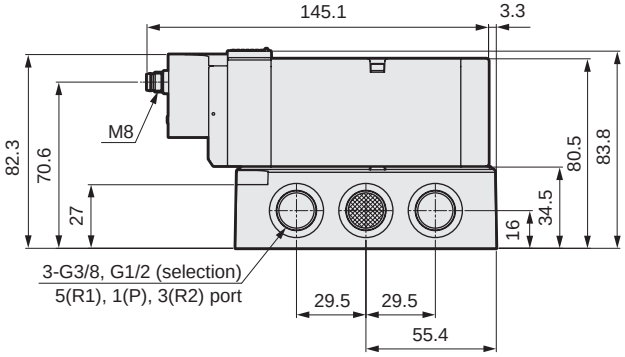
● 2-position single without connector (RN)



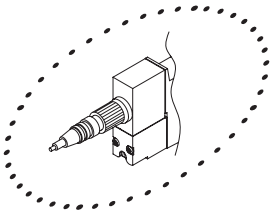


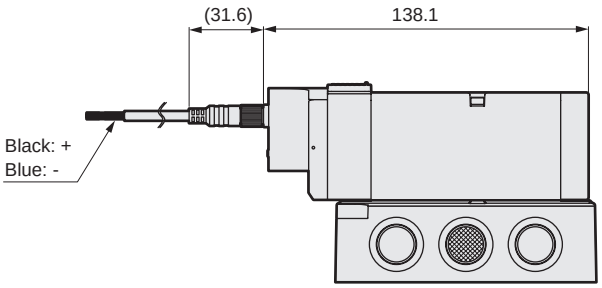




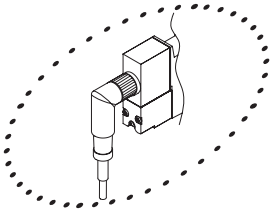


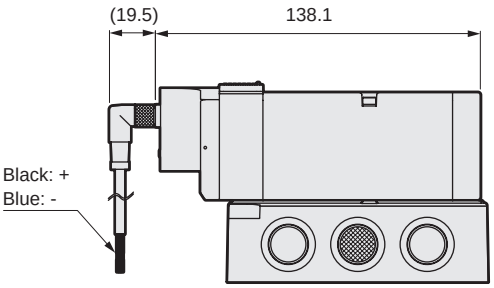
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

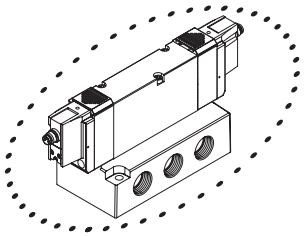


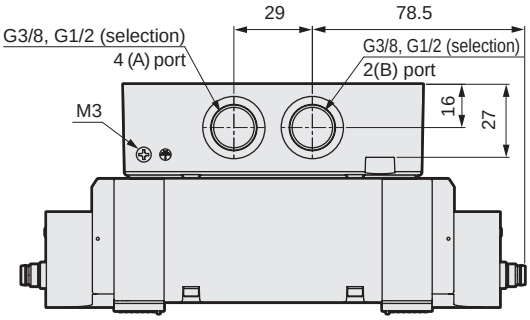


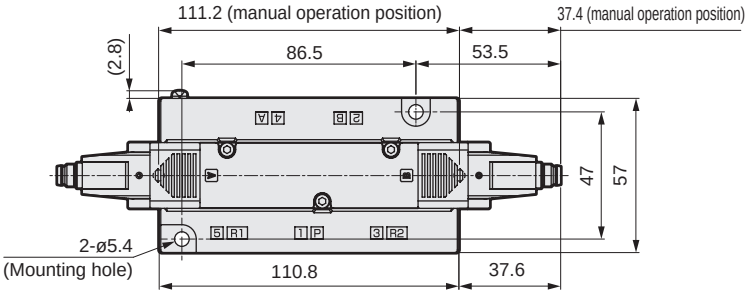
Dimensions

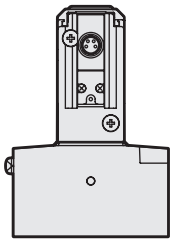
4GE420EA

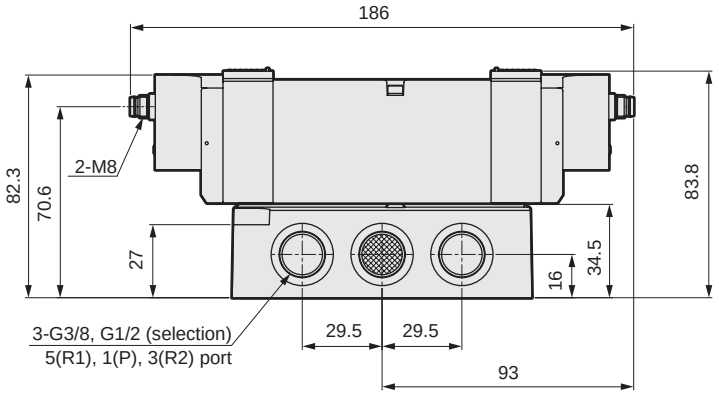
● 2-position double without connector (RN)



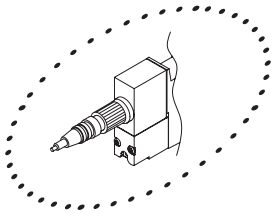


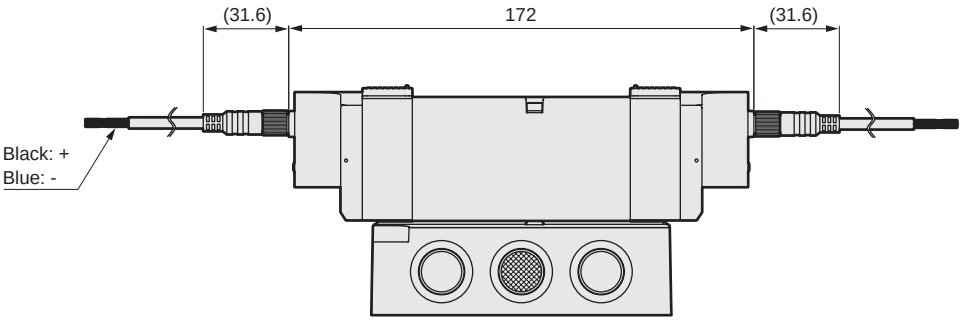




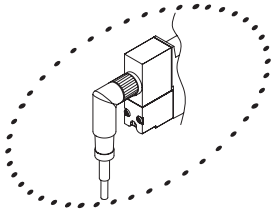


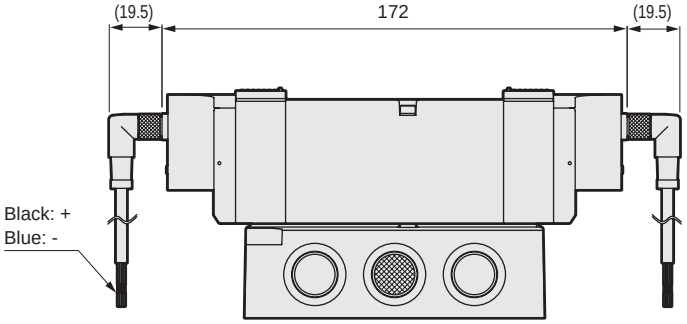
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)

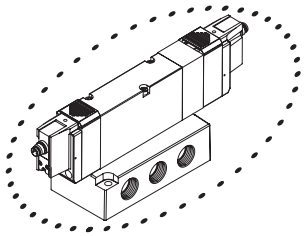


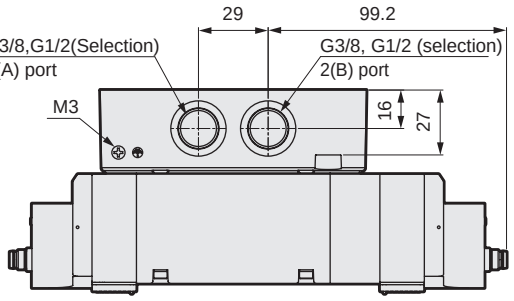


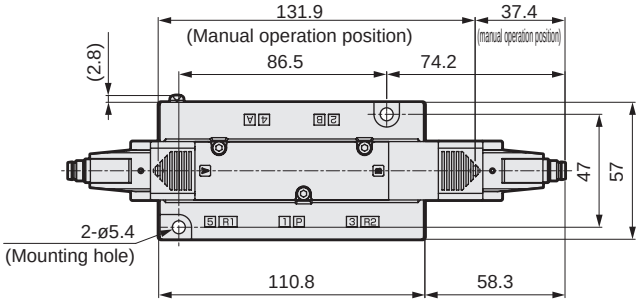
Dimensions

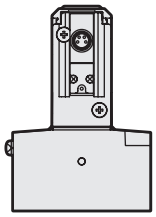
4GE4$^{3}_{5}$0EA

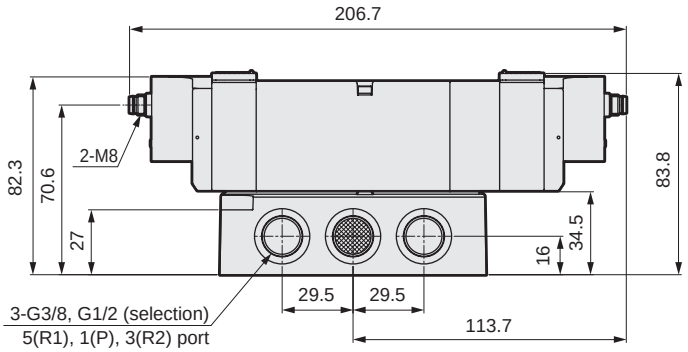
● 3-position Without connector (RN)



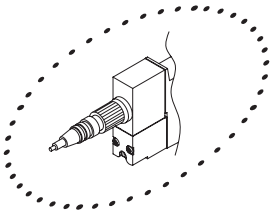


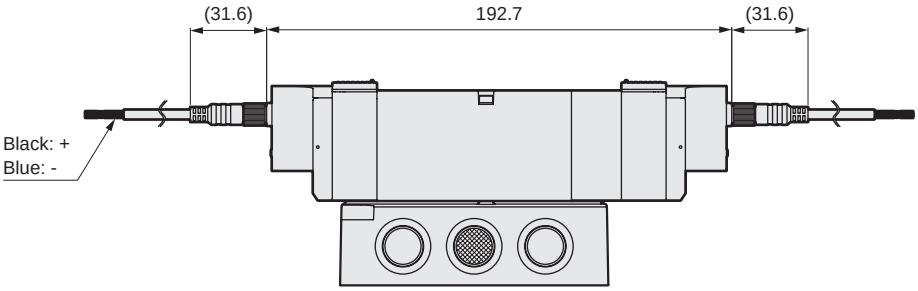




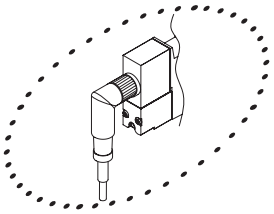


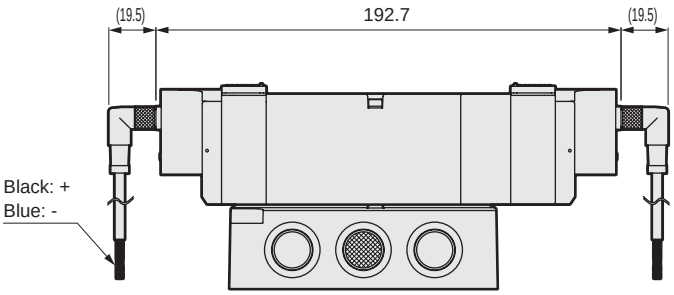
● M8 connector/straight cable (R1)





● M8 connector/L-type cable (R2)





MEMO

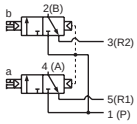
Individual wiring manifold
Body piping
Direct mount

M3GD1/2EA/M4GD1/2/3 /4EA Series

● Applicable cylinder bore size: ø20 to ø140

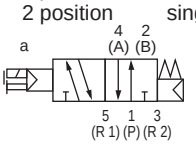
JIS symbol

● Two 3-port valves integrated
(A sideValve: NC, B sideValve: NC)

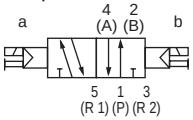


● 5-port valve

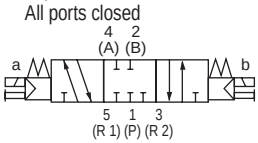
2 position single



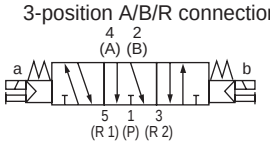
2-position double



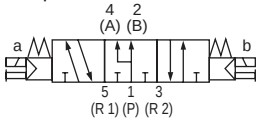
3-position
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Manifold common specifications

Item		Description
Manifold		Integrated base
Mounting method		Direct mount
Air supply and exhaust method		Common supply/common exhaust
Pilot exhaust method	Internal pilot	Main valve/pilot valve common exhaust(Standard) (Pilot exhaust check valve built-in)
Piping direction		Valve top direction
Valve and operation		Pilot operated soft spool valve
Working fluid		Compressed air
Max. working pressure MPa		0.7
Min. working pressure MPa		0.2
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
Lubrication *1		Not required
Degree of protection *2		IP67
ResistanceVibration m/s^2		50 or less
ResistanceImpact m/s^2		300 or less
Atmosphere		Cannot be used in corrosive gas environments

*1 Use turbine oil Class 1 ISO VG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.

*2 Tested according to the test method for IP67 (IEC60529) standards. Note that while the unit is protected from dust and water, it cannot be used immersed in water. Countermeasures such as covering the unit should also be taken if using in environments where it will be constantly exposed to dust or water.

SolenoidSpecifications

Item		Content	Volume
Rated voltage	V	DC12	
Voltage fluctuation range		+10% -20%	
Rated current	A	0.05	
Power consumption	W	0.6	
Thermal class		B	

Individual specifications

Port size	M3GD1/M4GD1	M3GD2/M4GD2	M4GD3	M4GD4
Max. station No.	20 stations	20 stations	20 stations	15 stations
2/4-port (port A/B)	Push-in fitting ø4,ø6 M5	Push-in fitting ø4,ø6,ø8 G1/8	Push-in fitting ø6,ø8,ø10 G1/4	Push-in fitting ø8,ø10,ø12 G3/8
1, 3, 5-port (Port P/R1/R2)	G1/8	G1/4	G3/8	G1/2
Manifold base Weight calculation formula (n: station No.) g	23n+52	47n+64	74n+88	150n+199

For 10 or more manifold station No. (5 stations for 4G3 and 4G4), use ports on both sides for air supply and exhaust. The manifold base weight is the value for screw specifications.

Flow characteristics

Model No.	Solenoid position		P → A/B		A/B → R1/R2			
			C[dm³/(s·bar)]	b	C[dm³/(s·bar)]		b	
M3GD1 M4GD1	Two 3-port valves integrated		0.86	0.31	1.1	(0.66)	0.19	(0.22)
	2-position		0.99	0.20	1.2	(0.70)	0.20	(0.12)
	3-position	All ports closed	0.94	0.23	1.1	-	0.20	-
		ABR connection	0.93	0.18	1.3	(0.70)	0.23	(0.02)
		PAB connection	1.1	0.28	1.1	-	0.23	-
M3GD2 M4GD2	Two 3-port valves integrated		1.7	0.40	2.3	(1.7)	0.29	(0.32)
	2-position		2.3	0.36	2.9	(1.7)	0.24	(0.33)
	3-position	All ports closed	2.1	0.35	2.5	-	0.32	-
		ABR connection	2.2	0.37	2.9	(1.8)	0.32	(0.29)
		PAB connection	2.4	0.34	2.5	-	0.33	-
M4GD3	2-position		3.2	0.37	3.8	(2.5)	0.13	(0.28)
	3-position	All ports closed	2.9	0.35	3.3	-	0.35	-
		ABR connection	3.0	0.34	3.8	(2.6)	0.12	(0.27)
		PAB connection	3.3	0.30	3.3	-	0.32	-
M4GD4	2-position		7.3	0.12	9.0	-	0.17	-
	3-position	All ports closed	6.4	0.15	8.2	-	0.22	-
		ABR connection	6.3	0.33	8.9	-	0.26	-
		PAB connection	8.0	0.08	8.3	-	0.22	-

*1: Effective cross-sectional area S and sonic conductance C use the conversion formula S ≈ 5.0 × C.
*2: Values in ( ) are with the exhaust check valve.

How to order

Manifold model No.

M 4GD1 1 0 EA - C4G RN H ( ) - 6 - 4

3-port manifold model No.

M 3GD1 66 0 EA - M5G RN H ( ) - 2 - 4

Discrete valve for integrated base

4GD1 1 9 EA - C6G RN H —— 4

3-port discrete valve for integrated base

3GD1 66 9 EA - M5G RN H —— 4

Ⓐ Model No.

Ⓑ Solenoid position

Ⓒ Explosion-proof Series

Ⓓ Port size

Ⓔ Electrical connections

Ⓕ Option

Ⓖ Mount type

Ⓗ Station No.

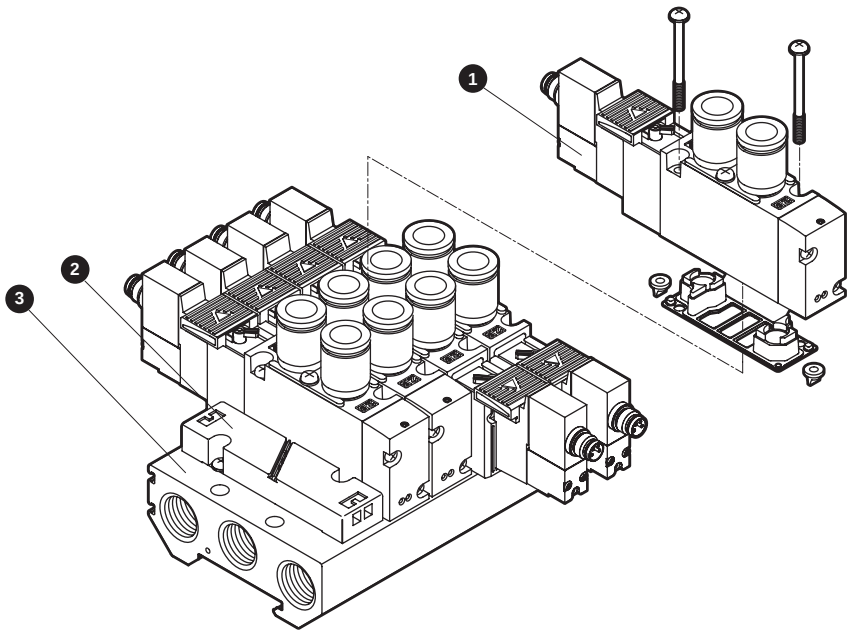
Ⓘ Voltage

Code	Description	Ⓐ Model No. 3GD1	3GD2	4GD1	4GD2	4GD3	4GD4
Ⓑ Solenoid position							
1	2-position single			●	●	●	●
2	2-position double			●	●	●	●
3	3-position all ports closed			●	●	●	●
4	3-position ABR connection			●	●	●	●
5	3-position PAB connection			●	●	●	●
66	3-port valve Two valves integrated *1/2 — A valve side: Normally closed	●	●				
	3-port valve Two valves integrated *1/2 — B valve side: Normally closed	●	●				
8	Mix manifold (when there are multiple solenoid positions)	●	●	●	●	●	●
Ⓒ Explosion-proof Series							
EA	ATEX Directive compliant product	●	●	●	●	●	●
Ⓓ Port size {2(B), 4(A) port}							
Port	4(A)/2(B) port	Port P/R1/R2 (2)=G1/8 (3)=G1/4 (4)=G3/8 (1/2) = G1/4					
C4G	ø4 push-in fitting	(2)	(3)	(2)	(3)		
C6G	ø6 push-in fitting	(2)	(3)	(2)	(3)	(4)	
C8G	ø8 push-in fitting		(3)		(3)	(4)	(5)
C10G	ø10 push-in fitting					(4)	(5)
C12G	ø12 push-in fitting						(5)
CX	Push-in fitting mix *3	(2)	(3)	(2)	(3)	(4)	(5)
M5G	M5	(2)		(2)			
06G	G1/8		(3)		(3)		
08G	G1/4					(4)	
10G	G3/8						(5)
Ⓔ Electrical connections							
RN	M8 connector without cable	●	●	●	●	●	●
R 1	M8 connector Straight cable *4	●	●	●	●	●	●
R 2	M8 connector L-type cable *4	●	●	●	●	●	●
Ⓕ Option							
Blank	Manual override of non-locking/locking common (standard)	●	●	●	●	●	●
H	With exhaust check valve *5,*7	●	●	●	●	●	
F	Port A/B filter *6	●	●	●	●	●	●
Z1	Air supply spacer *7,*8	●	●	●	●	●	
Z3	Exhaust spacer *7,*8	●	●	●	●	●	
Ⓖ Mount type							
Blank	Direct mount	●	●	●	●	●	●
Ⓗ Station No.							
2 to 20	2 stations to 20 stations(Refer to page 41 for the max. station number)	●	●	●	●	●	2 to 15
Ⓘ Voltage							
4	12 VDC	●	●	●	●	●	●

⚠ Precautions for model No. selection

*1 M4G for a mixture of 3, 5-port valvesD*80 EA. M3GD for a mix with the masking plate*80 EA.
*2 Dimensions are the same as the respective 2-position double solenoid.
*3 The push-in fitting cannot be mixed with the single valve's 4(A) or 2(B) port.
*4 M8 connector length is 300mm. Select other lengths from page 63 as needed.
*5 The 3-position all ports closed and PAB connection are not provided with exhaust check specifications (H). Refer to page 76 for details on the exhaust check valve.
*6 A filter is built into port P as standard.
*7 4G4 cannot be selected for exhaust check valves (H), air supply spacers (Z1), or exhaust spacers (Z3).
*8 Specify the spacer mounting position/quantity in the manifold specifications sheet. Stacking of spacers is not possible. Combination with the masking plate is not supported. Refer to pages 58 to 61 for details.
*9 Explosion-proof barrier sold separately. Select from page 67.

Manifold configuration explanation and parts list



Main configuration parts list

Part number	Configuration parts name		Model No.	Description	Remarks
1	Discrete valve for integrated base		4GD□□9EA- Port size - Electric wire Connection Option Voltage Solenoid position Series flow rate size	Discrete valve Gasket Mounting screws 2 (PR check valve 2)	Details on page 43
2	Masking plate	3G1/4G1	4G1R-MP	Masking plate Gasket Mounting screws 2	*Two PR check valves are attached with 4G3/4G4.
		3G2/4G2	4G2R-MP		
		4G3	4G3R-MP		
		4G4	4GA4-MP		
3	Manifold base assembly		M4GD□R00G- Option Station No. Series flow rate size	Manifold base	

Parts list

Part number	Part name	Model No.
-	M8 connector cable	4GEX-M8CC- Direction - Length *Details on page 63
-	Explosion-proof barrier	Details on pages 67 to 69

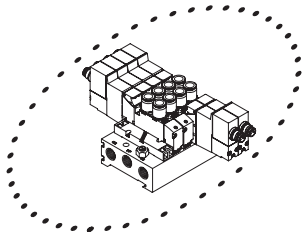
Part number	Part name			Model No.
-	Cartridge push-in fitting and related parts	4G1	ø4 straight	4G1R-JOINT-C4
			ø6 straight	4G1R-JOINT-C6
		4G2	ø4 straight	4G2R-JOINT-C4
			ø6 straight	4G2R-JOINT-C6
			ø8 straight	4G2R-JOINT-C8
		4G3	ø6 straight	4G3R-JOINT-C6
			ø8 straight	4G3R-JOINT-C8
			ø10 straight	4G3R-JOINT-C10
		4G4	ø8 straight	4G4-JOINT-C8
			ø10 straight	4G4-JOINT-C10
			ø12 straight	4G4-JOINT-C12

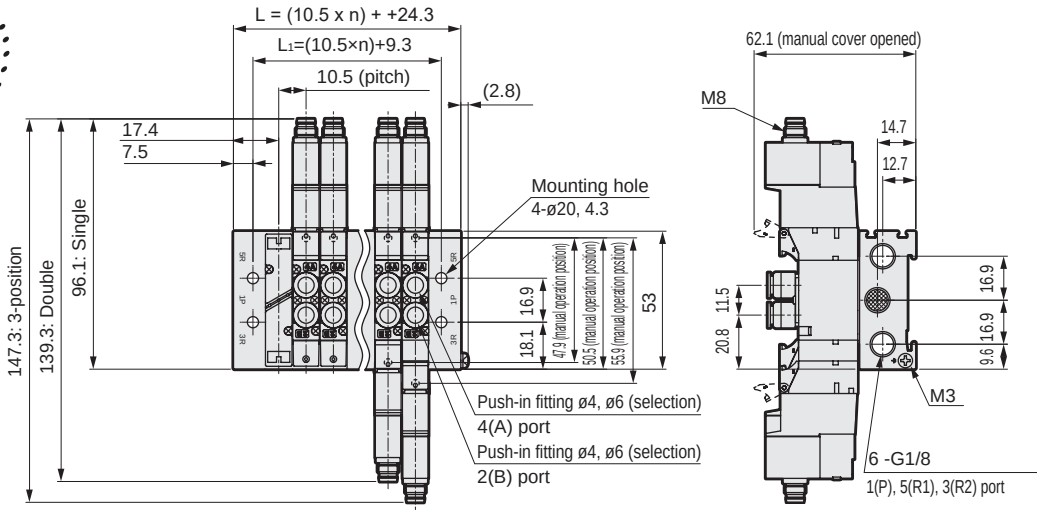
Dimensions

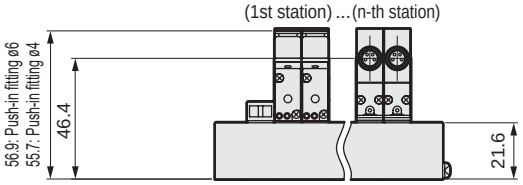
M4GD1*0EA

*The two 3-port valve built-in type has the same dimensions as the double model.

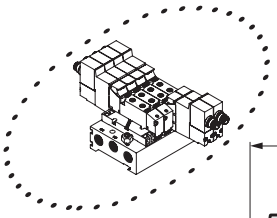
● Without connector (RN)

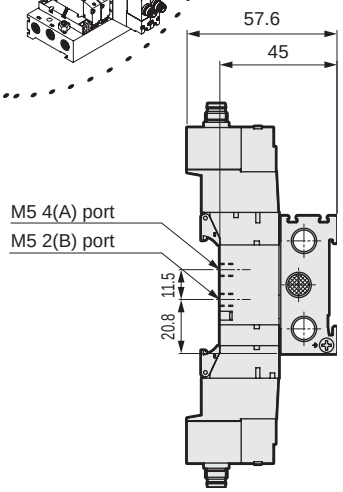




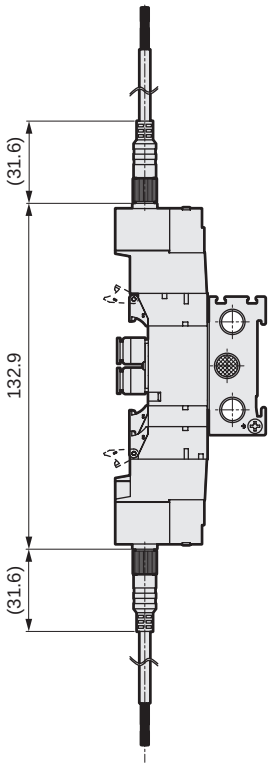


● M5 female thread (M5G)

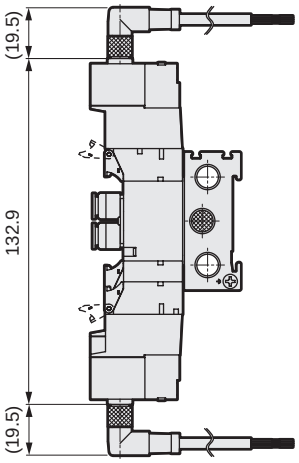




● M8 connector/straight cable (R1)



● M8 connector/L-type cable (R2)



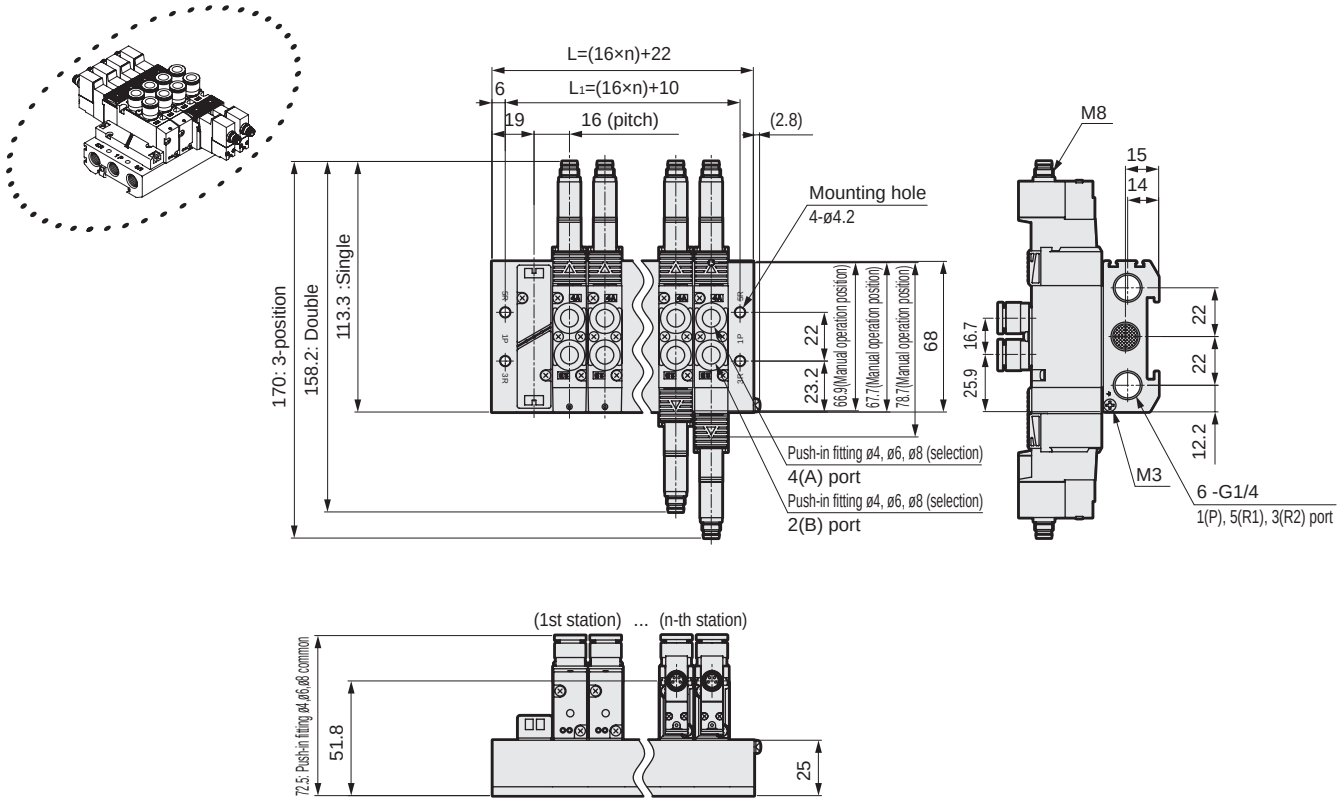
Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	45.3	55.8	66.3	76.8	87.3	97.8	108.3	118.8	129.3	139.8	150.3	160.8	171.3	181.8	192.3	202.8	213.3	223.8	234.3
L_1	30.3	40.8	51.3	61.8	72.3	82.8	93.3	103.8	114.3	124.8	135.3	145.8	156.3	166.8	177.3	187.8	198.3	208.8	219.3

Dimensions

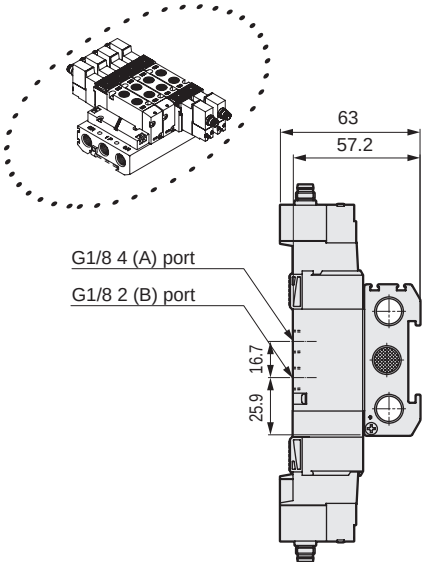
M4GD2*0EA

● Without connector (RN)

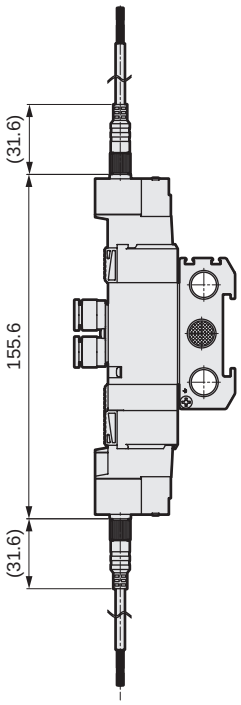
*The two 3-port valve built-in type has the same dimensions as the double model.



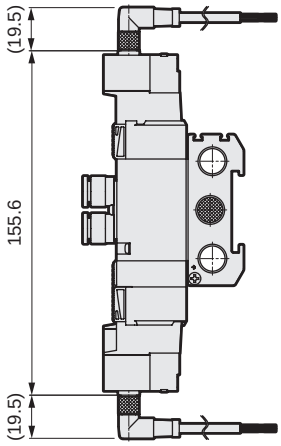
● G1/8 female thread (06G)



● M8 connector/straight cable (R1)



● M8 connector/L-type cable (R2)

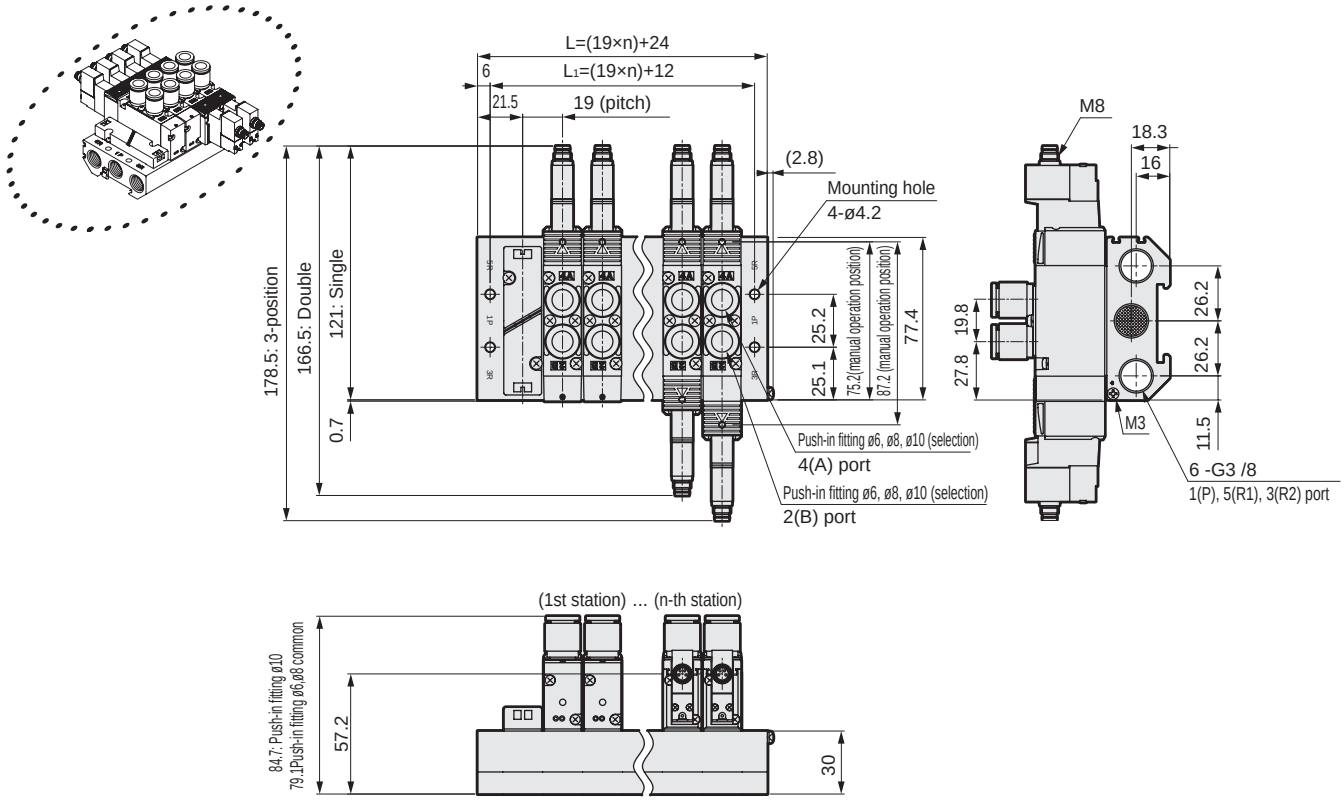


Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	54.0	70.0	86.0	102.0	118.0	134.0	150.0	166.0	182.0	198.0	214.0	230.0	246.0	262.0	278.0	294.0	310.0	326.0	342.0
L1	42.0	58.0	74.0	90.0	106.0	122.0	138.0	154.0	170.0	186.0	202.0	218.0	234.0	250.0	266.0	282.0	298.0	314.0	330.0

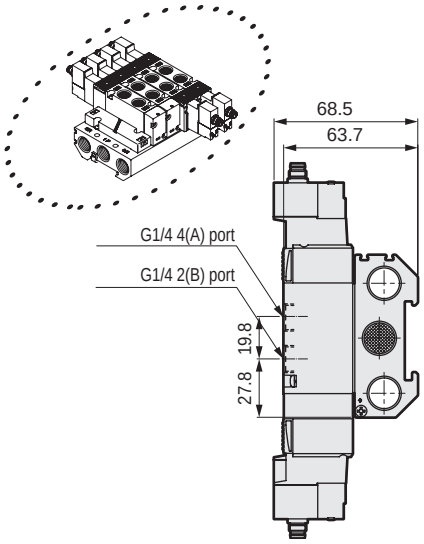
Dimensions

M4GD3*0EA

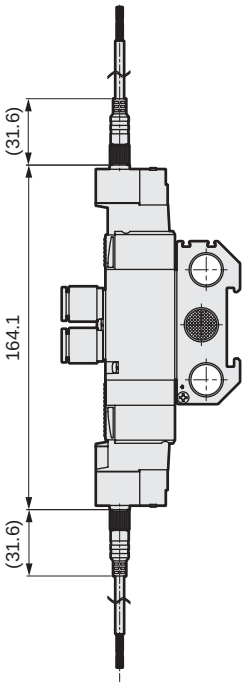
● Without connector (RN)



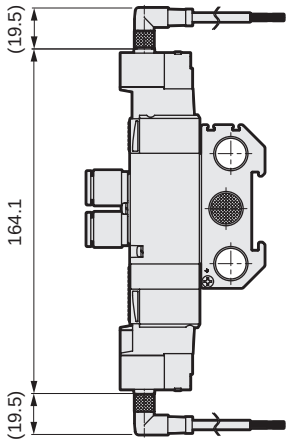
● G1/4 female thread (08G)



● M8 connector/straight cable (R1)



● M8 connector/L-type cable (R2)

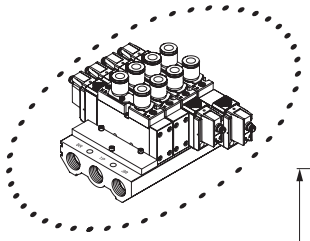


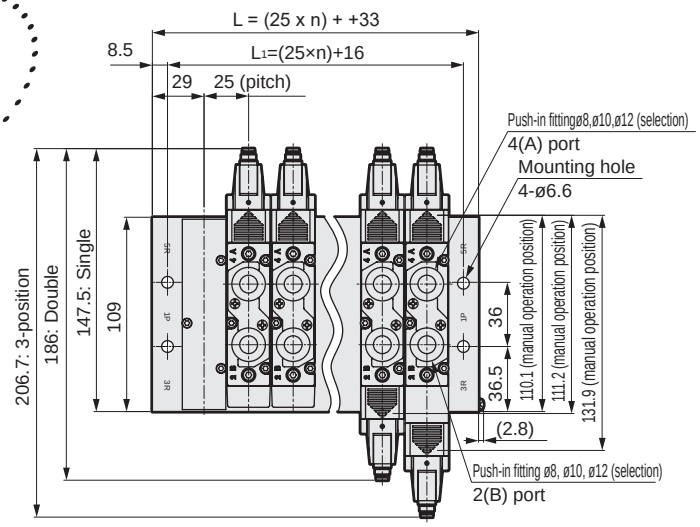
Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	62.0	81.0	100.0	119.0	138.0	157.0	176.0	195.0	214.0	233.0	252.0	271.0	290.0	309.0	328.0	347.0	366.0	385.0	404.0
L1	50.0	69.0	88.0	107.0	126.0	145.0	164.0	183.0	202.0	221.0	240.0	259.0	278.0	297.0	316.0	335.0	354.0	373.0	392.0

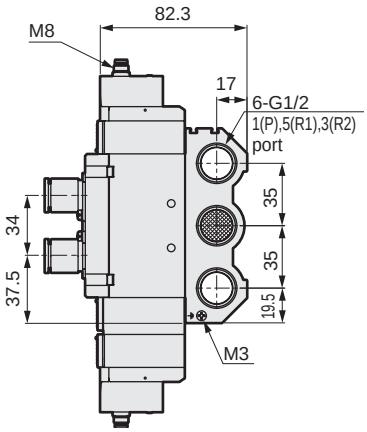
Dimensions

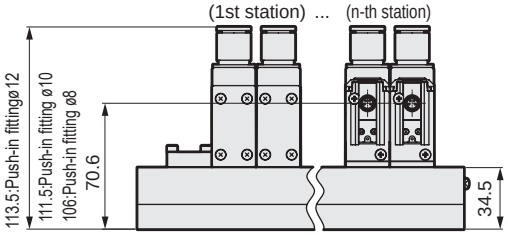
M4GD4*0EA

● Without connector (RN)

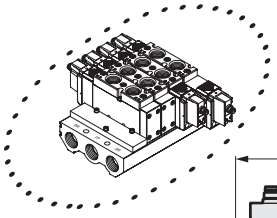


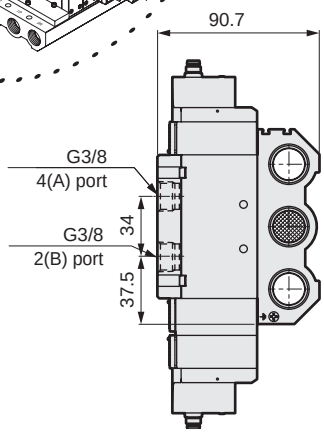




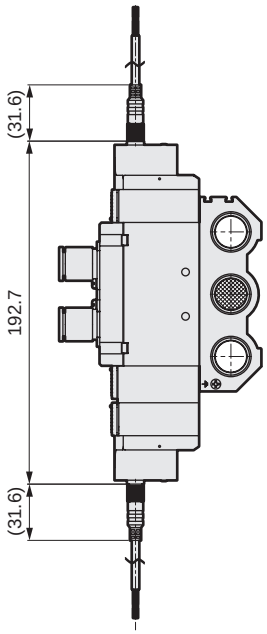


● G3/8 female thread (10G)

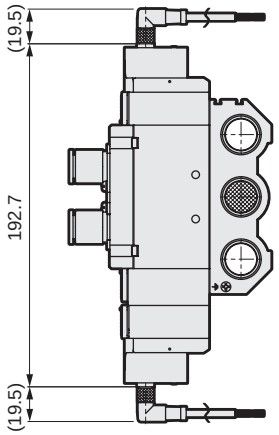




● M8 connector/straight cable (R1)



● M8 connector/L-type cable (R2)



Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15
L	83	108	133	158	183	208	233	258	283	308	333	358	383	408
L_1	66	91	116	141	166	191	216	241	266	291	316	341	366	391

Individual wiring manifold
Base piping
Direct mount

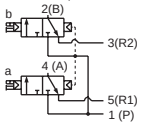
M3GE1/2EA / M4GE1/2/3 /4EA Series

● Applicable cylinder bore size: ø20 to ø140

CE RoHS CAD

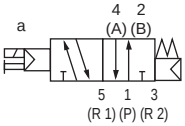
JIS symbol

● Two 3-port valves integrated
(A side valve: NCB side valve: NC)

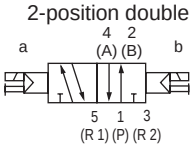


● 5-port valve

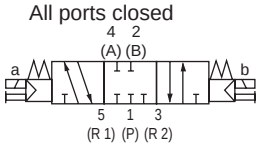
2 position single



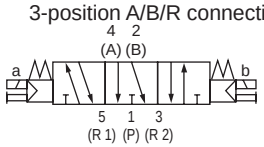
2-position double



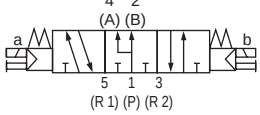
3-position
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Manifold common specifications

Item		Description
Manifold		Integrated base
Mounting method		Direct mount
Air supply and exhaust method		Common supply/common exhaust
Pilot exhaust method	Internal pilot	Main valve/pilot valve common exhaust (Standard) (Pilot exhaust check valve built-in)
Piping direction		Side direction of base
Valve and operation		Pilot operated soft spool valve
Working fluid		Compressed air
Max. working pressure MPa		0.7
Min. working pressure MPa		0.2
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
Lubrication *1		Not required
Degree of protection *2		IP67
Vibration resistance m/s^2		50 or less
Shock resistance m/s^2		300 or less
Atmosphere		Cannot be used in corrosive gas environments

*1 Use turbine oil Class 1 ISO VG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.

*2 Tested according to the test method for IP67 (IEC60529) standards. Note that while the unit is protected from dust and water, it cannot be used immersed in water. Countermeasures such as covering the unit should also be taken if using in environments where it will be constantly exposed to dust or water.

SolenoidSpecifications

Item		Content Volume
Rated voltage	V	DC12
Voltage fluctuation range		+10% -20%
Holding current	A	0.05
Power consumption	W	0.6
Thermal class		B

Individual specifications

Port size	M3GE1/M4GE1	M3GE2/M4GE2	M4GE3	M4GE4	
				G1/4 G3/8	G1/2
Max. station No.	20 stations	20 stations	20 stations	15 stations	12 stations
2/4-port (Port A/B)	Push-in fitting ø4,ø6 M5	Push-in fitting ø4,ø6,ø8 G1/8	Push-in fitting ø6,ø8,ø10 G1/4	Push-in fitting ø8,ø10,ø12 G1/4,G3/8	G1/2
1, 3, 5-port (Port P/R1/R2)	G1/8	G1/4	G3/8	G3/8	G1/2
Manifold base Weight calculation formula (n: station No.) g	35n+61	71n+106	113n+170	273n+329	391n+560

For 10 or more manifold station No. (5 stations for 4G3 and 4G4), use ports on both sides for air supply and exhaust. The manifold base weight is the value for screw specifications.

Flow characteristics

Model No.	Solenoid position		P → A/B		A/B → R1/R2			
			C[dm³/(s·bar)]	b	C[dm³/(s·bar)]		b	
M3GE1 M4GE1	Two 3-port valves integrated		0.86	0.35	1.1	(0.67)	0.22	(0.23)
	2-position		1.1	0.22	1.2	(0.70)	0.20	(0.10)
	3-position	All ports closed	0.98	0.22	1.1	-	0.24	-
		ABR connection	0.97	0.35	1.3	(0.68)	0.22	(0.24)
		PAB connection	1.1	0.38	1.1	-	0.21	-
M3GE2 M4GE2	Two 3-port valves integrated		1.7	0.44	2.1	(1.6)	0.32	(0.30)
	2-position		2.4	0.34	2.7	(1.7)	0.24	(0.31)
	3-position	All ports closed	2.2	0.34	2.4	-	0.29	-
		ABR connection	2.2	0.34	2.8	(1.8)	0.24	(0.27)
		PAB connection	2.4	0.29	2.4	-	0.29	-
M4GE3	2-position		3.5	0.34	3.8	(2.6)	0.11	(0.27)
	3-position	All ports closed	3.1	0.33	3.3	-	0.22	-
		ABR connection	3.0	0.30	3.8	(2.7)	0.11	(0.22)
		PAB connection	3.6	0.36	3.3	-	0.28	-
M4GE4 1-port size G3/8	2-position		6.4	0.42	6.9	-	0.12	-
	3-position	All ports closed	6.0	0.37	6.8	-	0.12	-
		ABR connection	6.0	0.31	7.1	-	0.11	-
		PAB connection	6.0	0.37	6.8	-	0.13	-
M4GE4 1-port size G1/2	2-position		8.3	0.23	9.0	-	0.21	-
	3-position	All ports closed	7.4	0.15	8.8	-	0.19	-
		ABR connection	7.5	0.28	9.4	-	0.17	-
		PAB connection	7.7	0.21	8.7	-	0.18	-

*1: Effective cross-sectional area S and sonic conductance C use the conversion formula S ≈ 5.0 × C.
*2: Values in ( ) are with the exhaust check valve.

M3GE1/2/M4GE1/2/3 /4*0EA Series

Individual wiring manifold; BasePiping

How to order

Manifold model No.

M 4GE1 1 0 EA - C4G RN H ○ - 6 - 4

3-port manifold model No.

M 3GE1 66 0 EA - M5G RN H ○ - 2 - 4

Discrete valve for integrated base

4GE1 1 9 EA - 00 RN H — 4

3-port discrete valve for integrated base

3GE1 66 9 EA - 00 RN H — 4

Ⓐ Model No.

Ⓑ Solenoid position

Ⓒ Explosion-proof Series

Ⓓ Port size

Ⓔ Electrical connections

Ⓕ Option

Ⓖ Mount type

Ⓗ Station No.

Ⓘ Voltage

Code	Description	Ⓐ Model No. 3GE1	3GE2	4GE1	4GE2	4GE3	4GE4
Ⓑ Solenoid position							
1	2 position single			●	●	●	●
2	2-position double			●	●	●	●
3	3-position all ports closed			●	●	●	●
4	3-position ABR connection			●	●	●	●
5	3-position PAB connection			●	●	●	●
66	3-port valve Two valves integrated *1 *2 — A valve side: Normally closed	●	●				
	3-port valve Two valves integrated *1 *2 — B valve side: Normally closed	●	●				
8	Mix manifold (when there are multiple solenoid positions)	●	●	●	●	●	●
Ⓒ Explosion-proof Series							
EA	ATEX Directive compliant product	●	●	●	●	●	●
Ⓓ Port size {2(B), 4(A) port}							
Port	4(A)/2(B) port	Port P/R1/R2 (2)=G1/8 (3)=G1/4 (4)=G3/8 (1/2) = G1/4					
C4G	ø4 push-in fitting	(2)	(3)	(2)	(3)		
C6G	ø6 push-in fitting	(2)	(3)	(2)	(3)	(4)	
C8G	ø8 push-in fitting		(3)		(3)	(4)	(4)
C10G	ø10 push-in fitting					(4)	(4)
C12G	ø12 push-in fitting						(4)
CXG	Push-in fitting mix	(2)	(3)	(2)	(3)	(4)	(4)
M5G	M5	(2)		(2)			
06G	G1/8		(3)		(3)		
08G	G1/4					(4)	(4)
10G	G3/8						(4)
15G	G1/2						(5)
00	Valve for base mounting	●	●	●	●	●	●
Ⓔ Electrical connections							
RN	M8 connector without cable	●	●	●	●	●	●
R 1	M8 connector Straight cable *3	●	●	●	●	●	●
R 2	M8 connector L-type cable *3	●	●	●	●	●	●
Ⓕ Option							
Blank	Manual override of non-locking/locking common (standard)	●	●	●	●	●	●
H	With exhaust check valve *4, *6	●	●	●	●	●	
F	Port A/B filter *5	●	●	●	●	●	●
Z1	Air supply spacer *6, *7	●	●	●	●	●	
Z3	Exhaust spacer *6, *7	●	●	●	●	●	
Ⓖ Mount type							
Blank	Direct mount *8	●	●	●	●	●	●
Ⓗ Station No.							*8
2 to 20	2 stations to 20 stations(Refer to page 49 for the max. station number)	●	●	●	●	●	2 to 15
Ⓘ Voltage							
4	12 VDC	●	●	●	●	●	●

⚠ Precautions for model No. selection

*1 M4GE*80EA when using a mixture of 3, 5-port valves. When using a mixture with the masking plate, M3GE*80EA.

*2 Dimensions are the same as the respective 2-position double solenoid.

*3 M8 connector length is 300mm. Select other lengths from page 63 as needed.

*4 3-position all ports closed and PAB connection are not provided with exhaust check valve specifications (H). Refer to page 76 for details on the exhaust check valve.

*5 A filter is built into port P as standard.

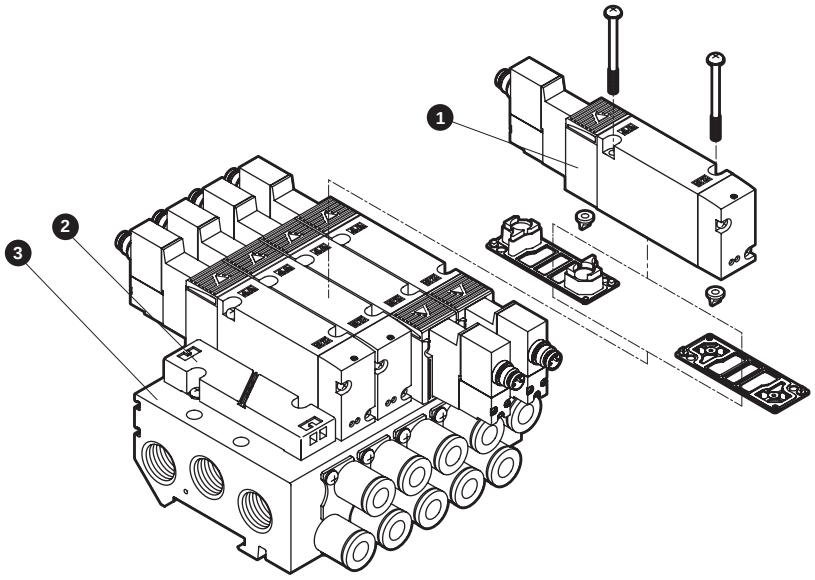
*6 4G4 cannot be selected for exhaust check valves (H), air supply spacers (Z1), or exhaust spacers (Z3).

*7 Specify the spacer mounting position/quantity in the manifold specifications sheet. Stacking of spacers is not possible. Combination with the masking plate is not supported. Refer to pages 58 to 61 for details.

*8 The manifold max. station No. for port size 12 M4GE4 is 12.

*9 Explosion-proof barrier sold separately. Select from page 67.

Manifold configuration explanation and parts list



Main configuration parts list

Part number	Configuration parts name		Model No.	Description	Remarks
1	Discrete valve for integrated base		4GE □□9EA - 00 - Electric wire Connection / Option - Voltage Solenoid position Series flow rate size	Discrete valve Gasket Mounting screws 2 (2 PR check valves)	Details on page 51
2	Masking plate	3G1/4G1	4G1R-MP	Masking plate Gasket Mounting screws 2	*Two PR check valves are attached with 4G3/4G4.
		3G2/4G2	4G2R-MP		
		4G3	4G3R-MP		
		4G4	4GB4-MP		
3	Manifold base assembly		M4GE □R - Connection Bore size - Option - Station No. Series flow rate size	Manifold base	

Parts list

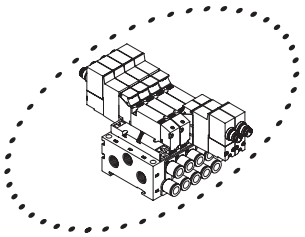
Part number	Part name	Model No.
-	M8 connector cable	4GEX-M8CC- Direction - Length * Details on page 63
-	Explosion-proof barrier	Details on pages 67 to 69

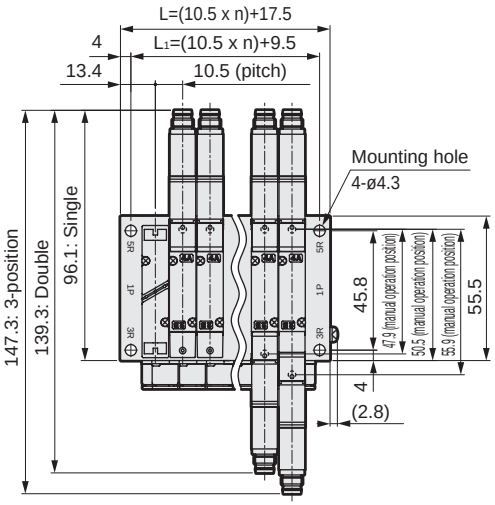
Part number	Part name			Model No.
-	Cartridge push-in fitting and related parts	4G1	ø4 straight	4G1R-JOINT-C4
			ø6 straight	4G1R-JOINT-C6
			Plug cartridge	4G1R-JOINT-CPG
		4G2	ø4 straight	4G2R-JOINT-C4
			ø6 straight	4G2R-JOINT-C6
			ø8 straight	4G2R-JOINT-C8
			Plug cartridge	4G2R-JOINT-CPG
		4G3	ø6 straight	4G3R-JOINT-C6
			ø8 straight	4G3R-JOINT-C8
			ø10 straight	4G3R-JOINT-C10
			Plug cartridge	4G3R-JOINT-CPG
		4G4	ø8 straight	4G4-JOINT-C8
			ø10 straight	4G4-JOINT-C10
			ø12 straight	4G4-JOINT-C12

Dimensions

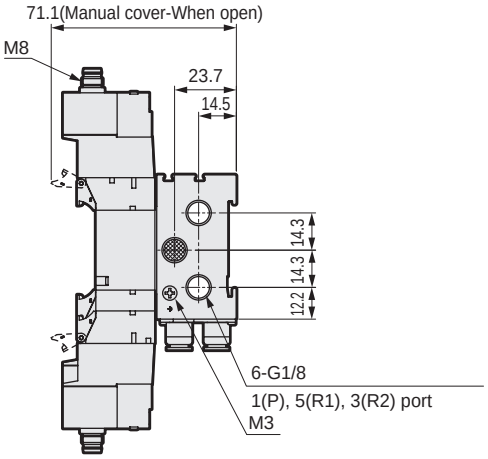
M4GE1*0EA

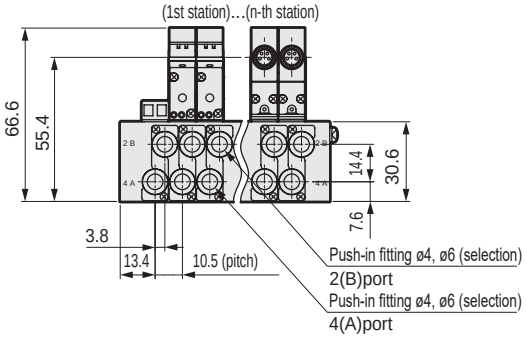
● Direct mount installation
Without connector (RN)



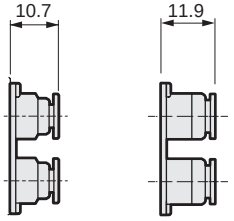


Note The two 3-port valve built-in type has the same dimensions as the double model.

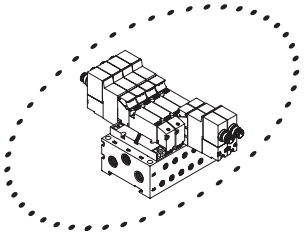


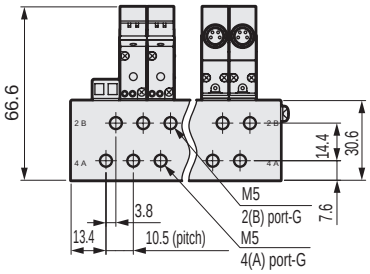


● ø4(C4) ● ø6(C6)

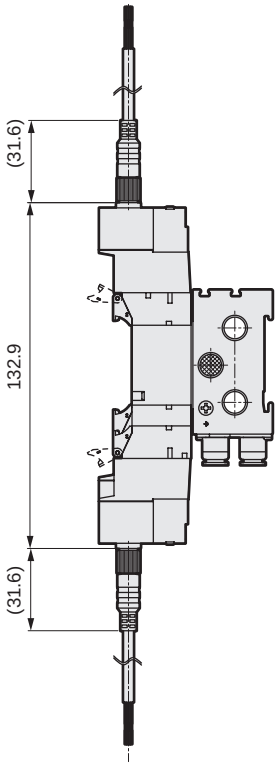


● M5 female thread (M5G)

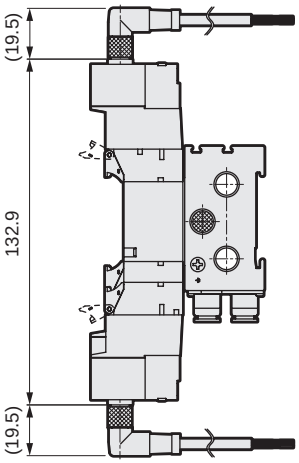




● M8 connector/straight cable (R1)



● M8 connector/L-type cable (R2)



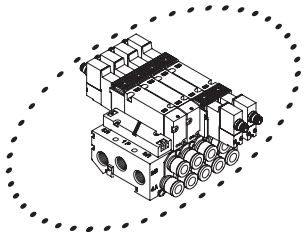
Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	38.5	49.0	59.5	70.0	80.5	91.0	101.5	112.0	122.5	133.0	143.5	154.0	164.5	175.0	185.5	196.0	206.5	217.0	227.5
L_1	30.5	41.0	51.5	62.0	72.5	83.0	93.5	104.0	114.5	125.0	135.5	146.0	156.5	167.0	177.5	188.0	198.5	209.0	219.5

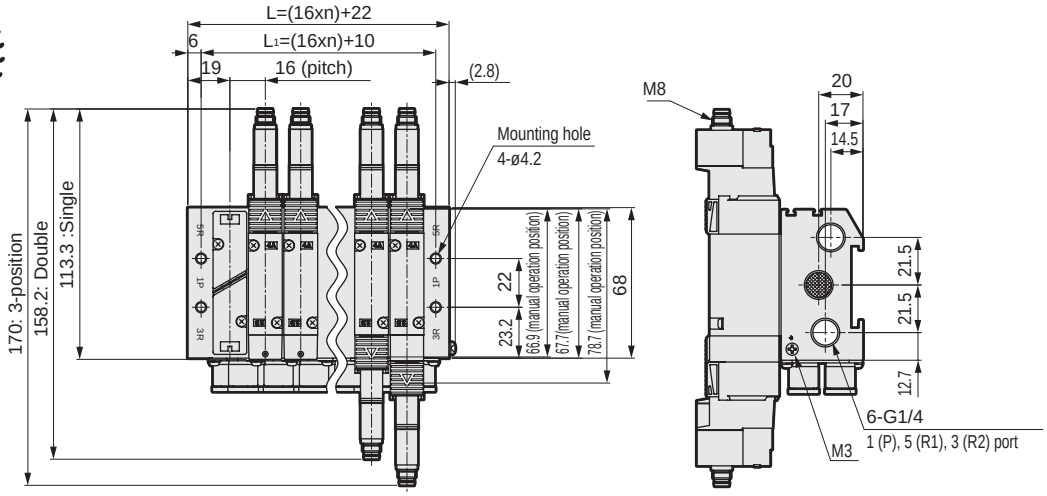
Dimensions

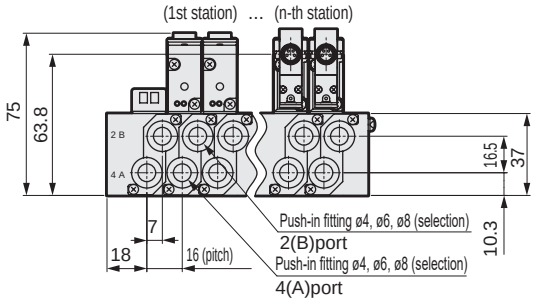
M4GE2*0EA

● Without connector (RN)

Note The two 3-port valve built-in type has the same dimensions as the double model.

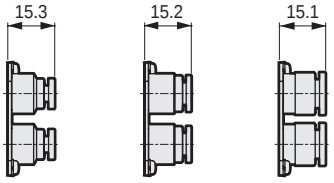




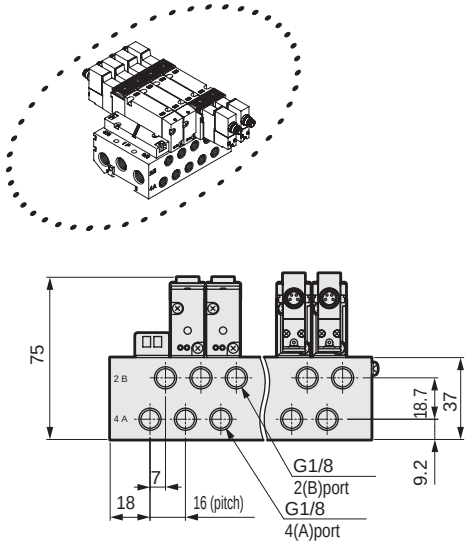


● Fitting straight

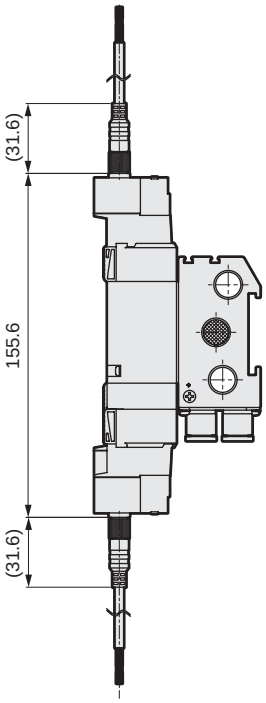
● ø4(C4) ● ø6(C6) ● ø8(C8)



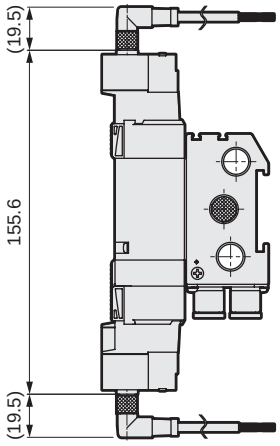
● G1/8 female thread (06G)



● M8 connector/straight cable (R1)



● M8 connector/L-type cable (R2)

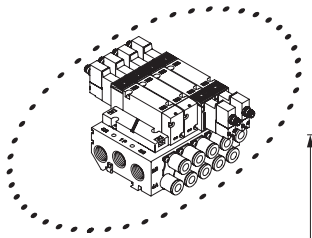


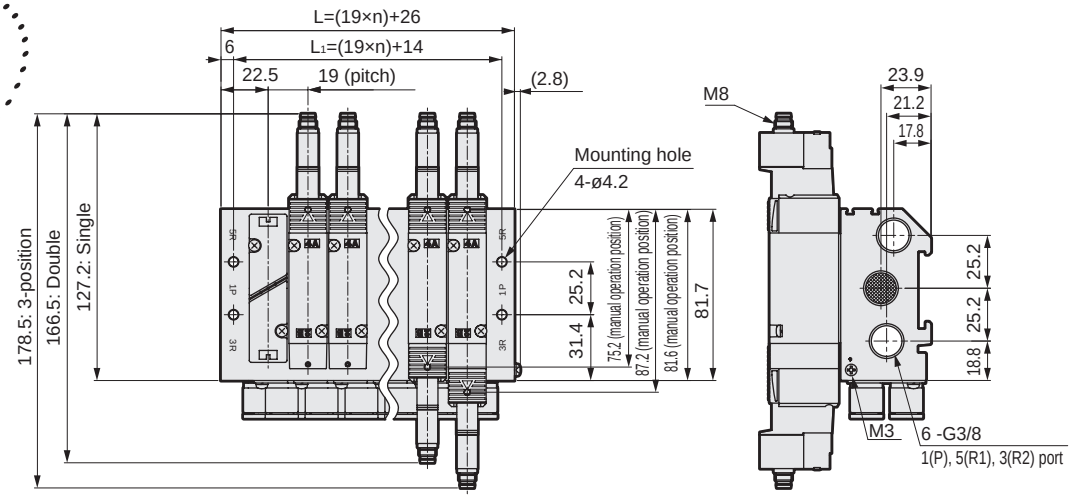
Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	54.0	70.0	86.0	102.0	118.0	134.0	150.0	166.0	182.0	198.0	214.0	230.0	246.0	262.0	278.0	294.0	310.0	326.0	342.0
L1	42.0	58.0	74.0	90.0	106.0	122.0	138.0	154.0	170.0	186.0	202.0	218.0	234.0	250.0	266.0	282.0	298.0	314.0	330.0

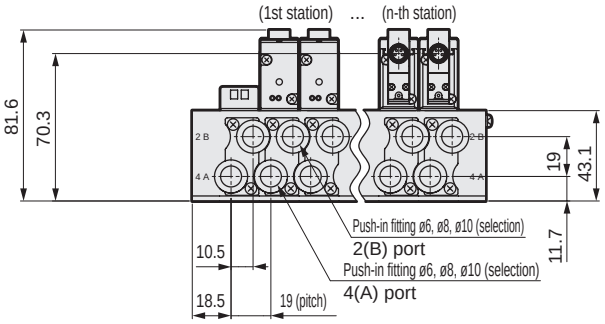
Dimensions

M4GE3*0EA

● Without connector (RN)

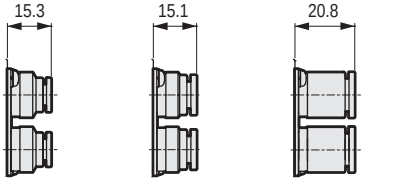




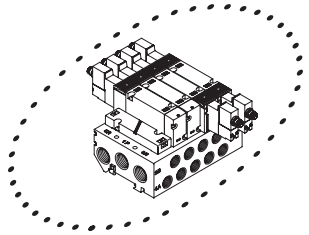


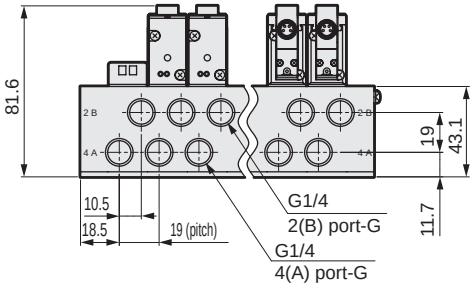
● Fitting straight

● ø6(C6) ● ø8(C8) ● ø10 (C10)

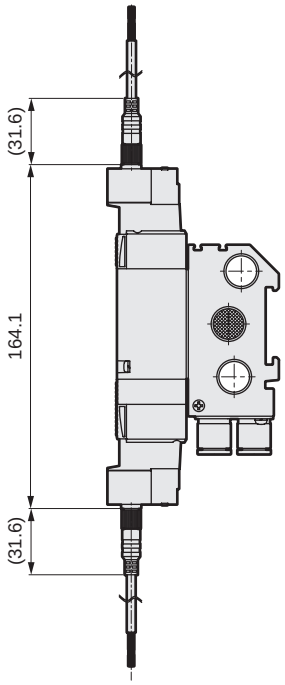


● G1/4 female thread (08G)

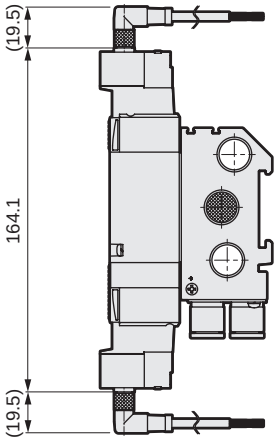




● M8 connector/straight cable (R1)



● M8 connector/L-type cable (R2)

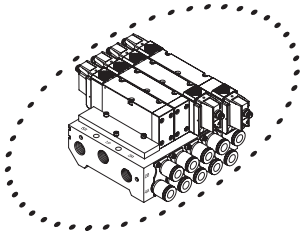


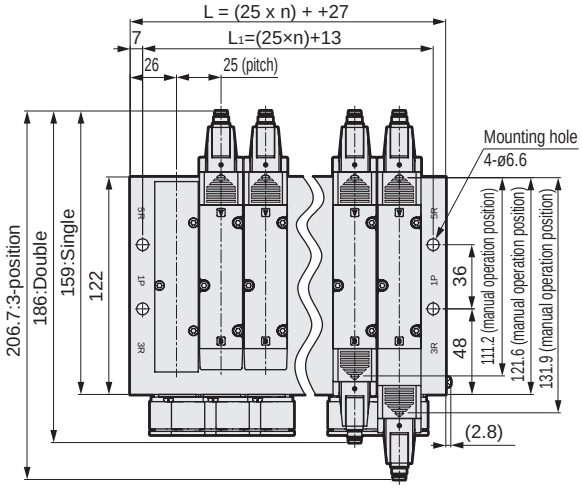
Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	64.0	83.0	102.0	121.0	140.0	159.0	178.0	197.0	216.0	235.0	254.0	273.0	292.0	311.0	330.0	349.0	368.0	387.0	406.0
L_1	52.0	71.0	90.0	109.0	128.0	147.0	166.0	185.0	204.0	223.0	242.0	261.0	280.0	299.0	318.0	337.0	356.0	375.0	394.0

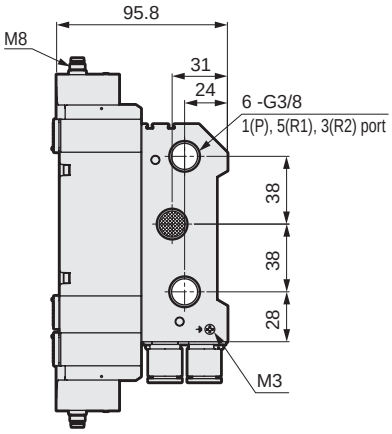
Dimensions

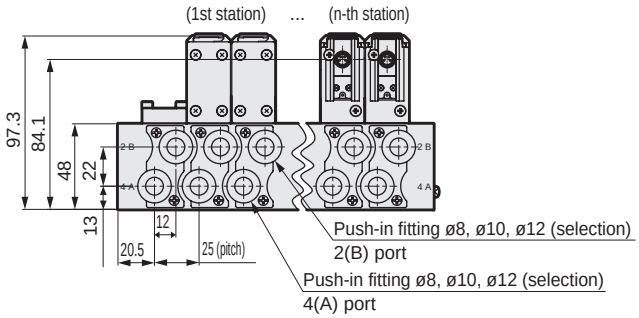
M4GE4*0EA

● Without connector (RN)

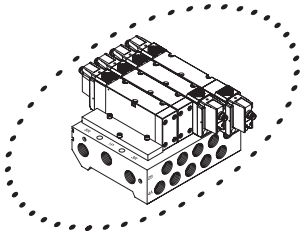


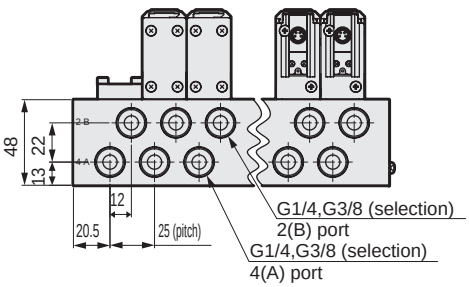




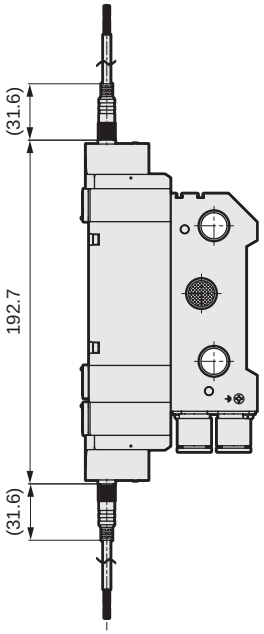


● G1/4, G3/8 female thread (08G, 10G)

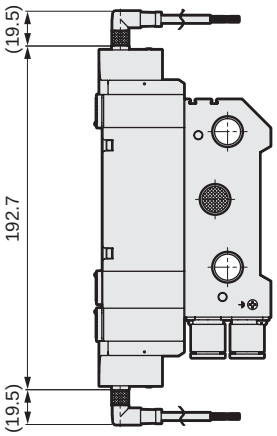




● M8 connector/straight cable (R1)



● M8 connector/L-type cable (R2)

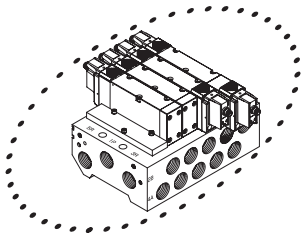


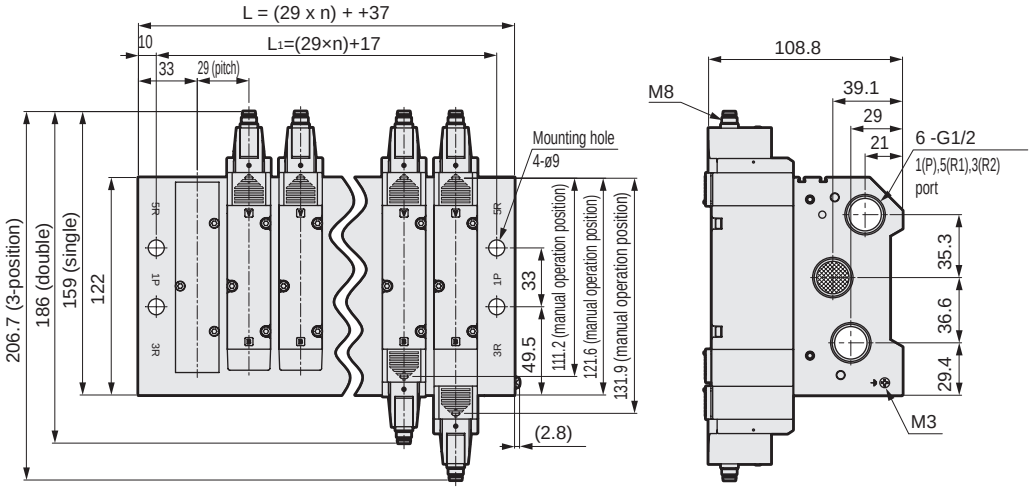
Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15
L	77	102	127	152	177	202	227	252	277	302	327	352	377	402
L1	63	88	113	138	163	188	213	238	263	288	313	338	363	388

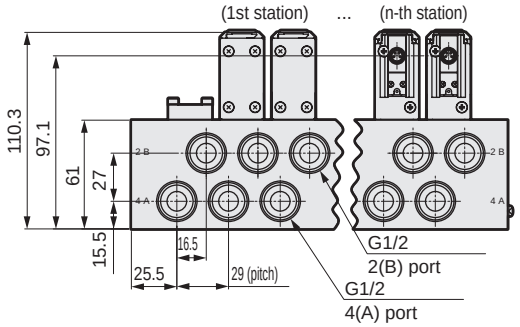
Dimensions

M4GE4*0EA

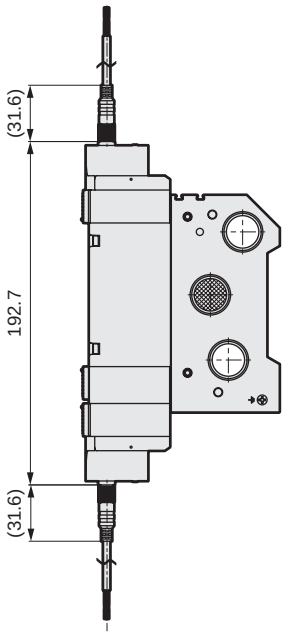
● G1/2 female thread (15G)
Without connector (RN)



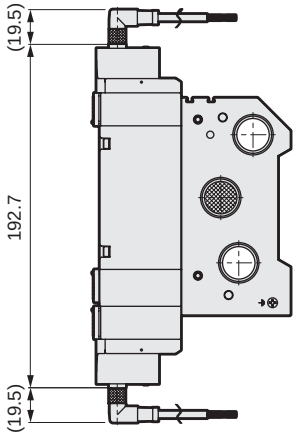




● M8 connector/straight cable (R1)



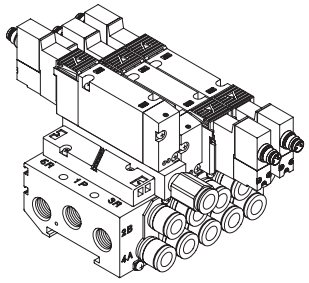
● M8 connector/L-type cable (R2)



Station No.	2	3	4	5	6	7	8	9	10	11	12
L	95	124	153	182	211	240	269	298	327	356	385
L_1	75	104	133	162	191	220	249	278	307	336	365

Related products

● Air supply spacer



Specifications

Model No.	P → A/B		A/B → R		Weight g
	C(dm³/(s·bar))	b	C(dm³/(s·bar))	b	
4G1	0.70	0.23	0.93	0.16	8
4G2	1.6	0.17	1.8	0.16	35
4G3	2.6	0.22	3.1	0.14	56

*1: Values are when a valve is mounted.
*2:Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

How to order discrete units

● Air supply spacer

Air supply spacer model No.

4G 3 E - P - GWS10

Ⓐ Air supply spacer model No.

Ⓑ Port size *1

Code	Description	Valve model No. 4G1	4G2	4G3
Ⓐ Air supply spacer model No.				
1	For 4G1	●		
2	For 4G2		●	
3	For 4G3			●
Ⓑ Port size				
Blank	M5	●		
06G	G1/8		●	
08G	G1/4			●
GWS4	ø4 fitting	●		
GWS6	ø6 fitting	●	●	
GWS8	ø8 fitting		●	●
GWS10	ø10 fitting			●

is not available.

Accessories:2 mounting screws, 2 PR check valves, 1 body gasket

⚠ Precautions for model No. selection

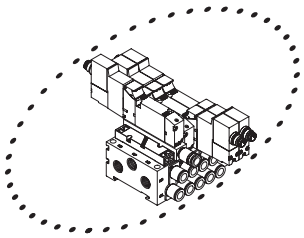
*1: Specify the air supply spacer built-in position and quantity on the manifold specifications sheet of each catalog.
*2: Combination with the masking plate is not supported.
*3 4G4 air supply spacers are made to order products. Contact CKD for details.

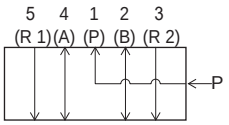
Related products

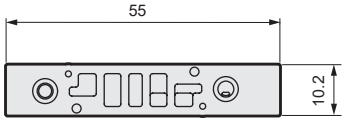
● Air supply spacer

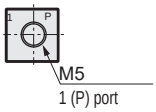
Dimensions

● 4G1

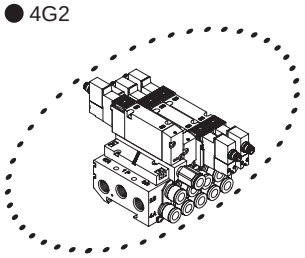


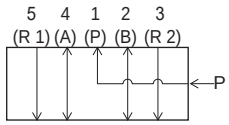


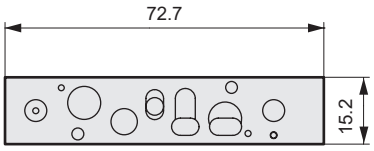


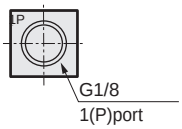


● 4G2

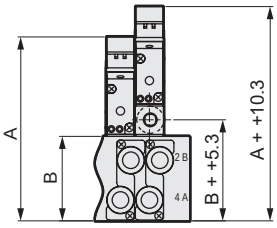


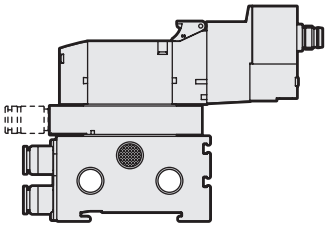




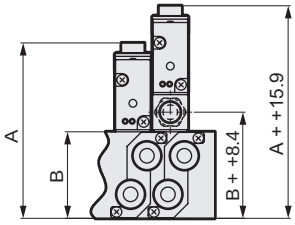


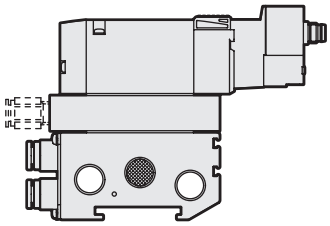
Dimensions when mounted



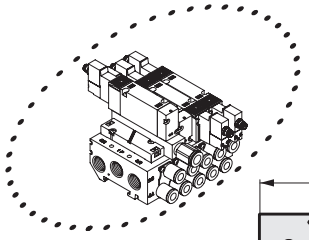


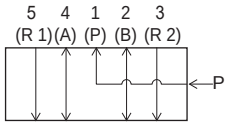
Dimensions when mounted

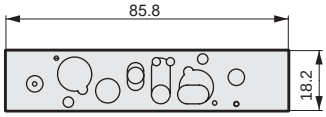


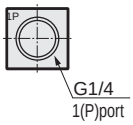


● 4G3

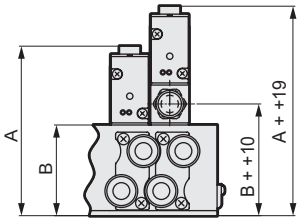


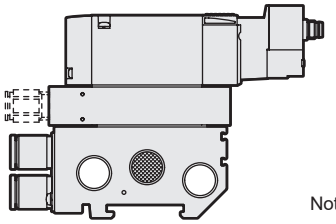






Dimensions when mounted

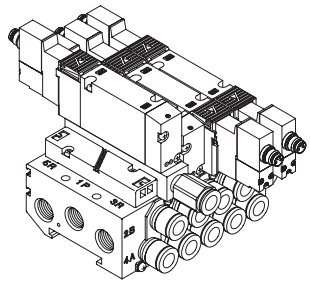




Note: For A and B dimensions, check the dimensions of the respective specifications.

Related products

● Exhaust spacer



Specifications

Model No.	P → A/B		A/B→R		Weight g
	C(dm³/(s·bar))	b	C(dm³/(s·bar))	b	
4G1	0.94	0.28	0.68	0.33	7
4G2	1.5	0.24	1.9	0.24	34
4G3	3.4	0.21	2.9	0.27	58

*1: Values are when a valve is mounted.
*2:Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

How to order discrete units

● Exhaust spacer

Exhaust spacer model No.

4G 3 E - R - GWS10

Ⓐ Exhaust spacer model No.

Ⓑ Port size *1

Code	Description	Valve model No. 4G1	4G2	4G3
Ⓐ Exhaust spacer model No.				
1	For 4G1	●		
2	For 4G2		●	
3	For 4G3			●
Ⓑ Port size				
Blank	M5	●		
06G	G1/8		●	
08G	G1/4			●
GWS4	ø4 fitting	●		
GWS6	ø6 fitting	●	●	
GWS8	ø8 fitting		●	●
GWS10	ø10 fitting			●

is not available.

Accessories:2 mounting screws (*2), 2 PR check valves, 1 body gasket

⚠ Precautions for model No. selection

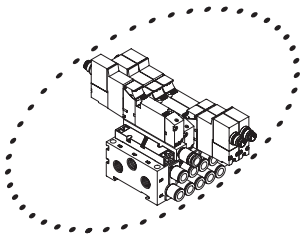
*1: Specify the exhaust spacer built-in position and quantity on the manifold specifications sheet of each catalog.
*2: Combination with the masking plate is not supported.
*3: 4G4 exhaust spacers are made to order products. Contact CKD for details.

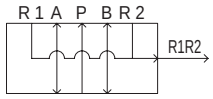
Related products

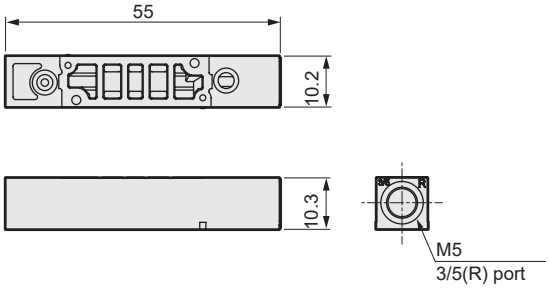
● Exhaust spacer

Dimensions

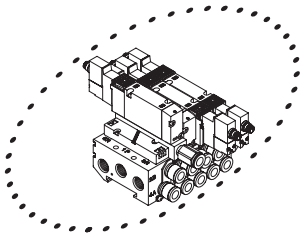
● 4G1

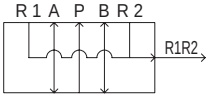


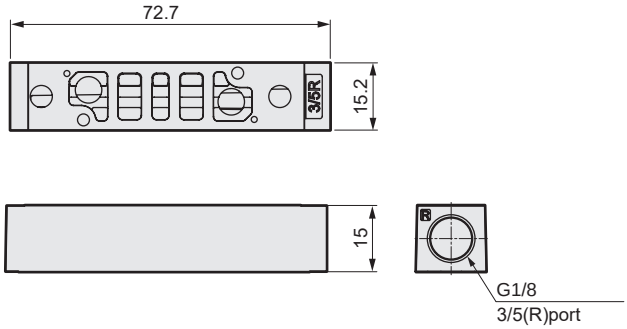




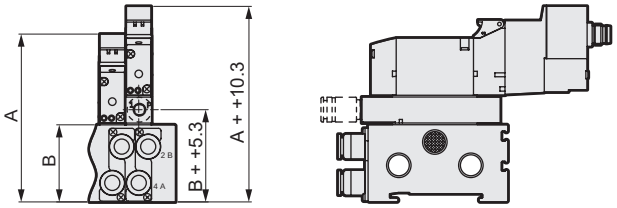
● 4G2



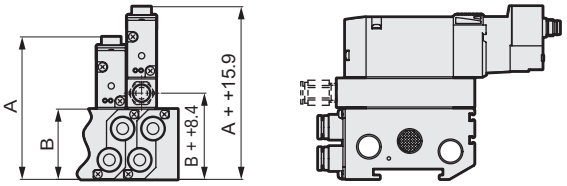




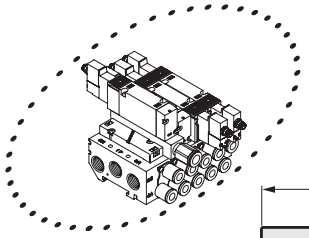
Dimensions when mounted

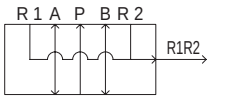


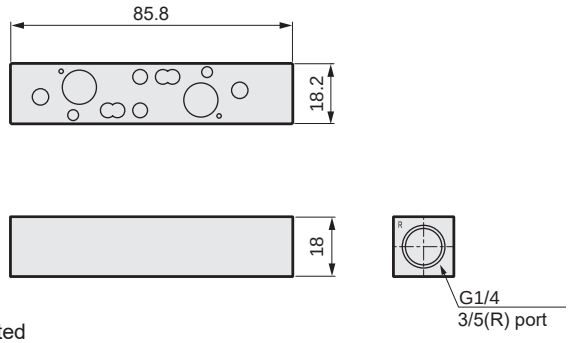
Dimensions when mounted



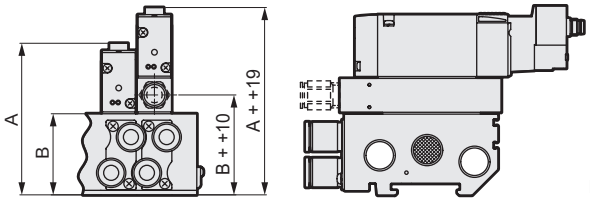
● 4G3







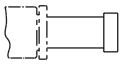
Dimensions when mounted



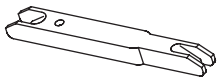
Note: For A and B dimensions, check the dimensions of the respective specifications.

Related products

● Plug type

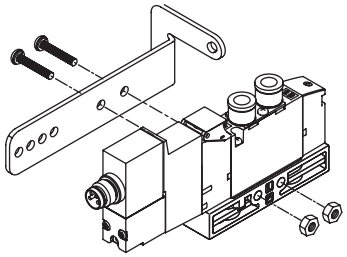
Part name	Model No.	Compatible bore size	Appearance
Blanking plug	GWP4-B	ø4	
	GWP6-B	ø6	
	GWP8-B	ø8	
	GWP10-B	ø10	
	GWP12-B	ø12	
Threaded plug	4G1R-M5P	M5	 (FPL-M5)
	4G2R-06GP	G1/8	 Hexagon socket plug
	4G3R-08GP	G1/4	
	4G3R-10GP	G3/8	
	4G4-15GP	G1/2	

● Push-in fitting tube remover
For ø4/ø6 push-in fittings
4GR-EOT4-6



Related parts

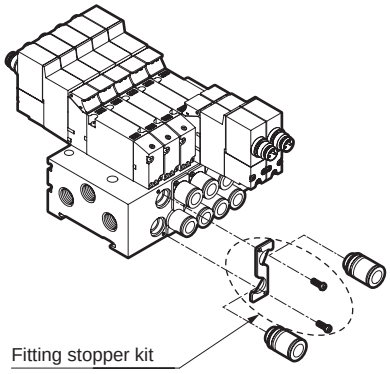
(1) Mounting plate (P) kit



Mounting (P) kit

Model	Kit model No.	Set parts
4GD1	4G1R-MOUNT-PLATE-KIT	Mounting plate, 2 mounting screws, 2 nuts
4GD2	4G2R-MOUNT-PLATE-KIT	Mounting plate, 2 mounting screws
4GD3	4G3R-MOUNT-PLATE-KIT	Mounting plate, 2 mounting screws

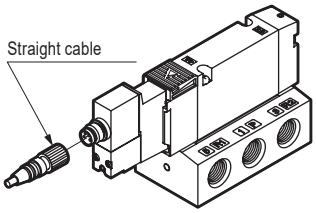
(2) Cartridge push-in fitting related parts Discrete



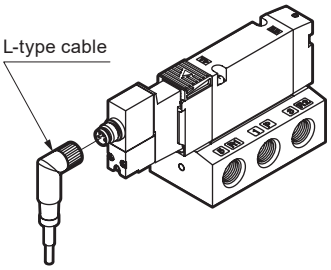
Fitting stopper plate kit

Model	Kit model No.
M4G1	4G1R-JNT-STP-PLATE-KIT
M4G2	4G2R-JNT-STP-PLATE-KIT
M4G3	4G3R-JNT-STP-PLATE-KIT
M4G4	4GB4-JNT-STP-PLATE-KIT

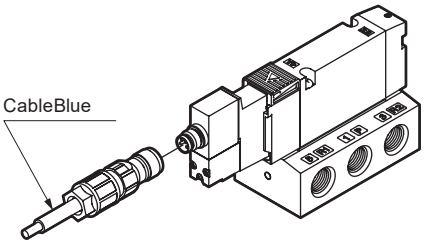
(3) M8 connector cable



Straight cable (R1)



L-type cable (R2)



Straight cable (R3)

◆Cable Capacitance and Inductance

Type	Capacitance [nF/m] at 1kHz	Inductance [mH/m] at 1kHz
Straight (R1)	0.058	0.003
L type (R2)	0.125	0.003
Straight (R3)	0.065	0.002

◆Minimum bending radius of cable

Type	No load [mm]	With load [mm]
Straight (R1)	20.0	36.0
L type (R2)	23.5	42.3
Straight (R3)	20.0	-

4GEX - M8CC - R1 - 300

Ⓐ Direction　Ⓑ Length

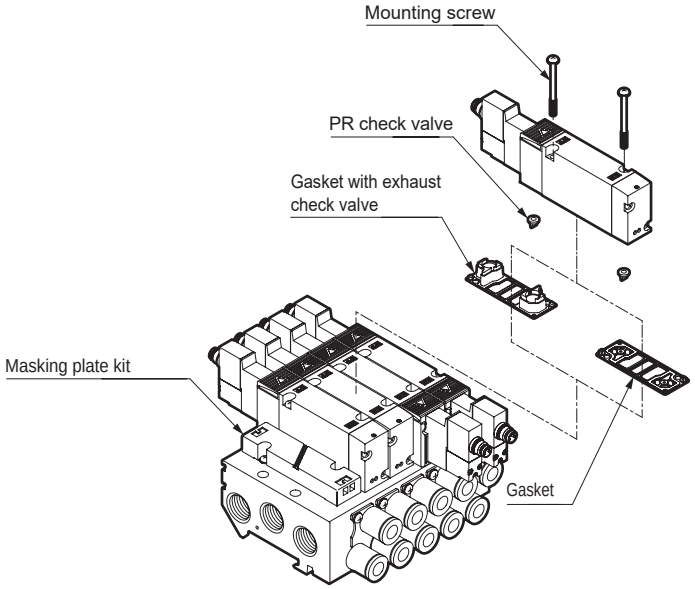
Ⓐ Direction		4G1	4G2	4G3	4G4
R 1 *1	Straight cable (color: gray)	●	●	●	●
R 2 *1	L type cable (color: black)	●	●	●	●
R 3 *2	Straight cable (color: blue)		●	●	●

Ⓑ Length	
300	Cable length 300mm
500	Cable length 500mm
1000	Cable length 1000mm
3000	Cable length 3000mm

*1:R1 and R2 types come with a blue marker for identification.
*2: Available as made to order.

Related parts

(3) Manifold related parts



Masking plate kit

Model	Model No.	Description	Remarks
M3G1/M4G1	4G1R-MP	Masking plate Gasket 2 Mounting screws	4G3/4G4 has two PR check valves attached
M3G2/M4G2	4G2R-MP		
M4G3	4G3R-MP		
M4GD4	4GA4-MP		
M4GE4	4GB4-MP		

Gasket

Model	Part model No.
3G1/4G1	4G1R-GASKET
3G1/4G1 (For masking plate)	4G1R-MP-GASKET
3G2/4G2	4G2R-GASKET
3G2/4G2 (For masking plate)	4G2R-MP-GASKET
4G3	4G3R-GASKET
4GD4	4GA4-GASKET
4GE4	4GB4-GASKET

Gasket with exhaust check valve

Model	Part model No.
3G1/4G1	4G1R-CHECK-VALVE
3G2/4G2	4G2R-CHECK-VALVE
4G3	4G3R-CHECK-VALVE

Note: 4G4 does not have a gasket with check valve.

PR check valve kit (2 per set)

Model	Kit model No.
3G1/4G1	4G1R-PR
3G2/4G2	4G2R-PR
4G3	4G3R-PR
4G4	4G4-PR

Mounting screw (10 per set)

Model	Part model No.
3G1/4G1	4G1R-SET-SCREW
3G2/4G2	4G2R-SET-SCREW
4G3	4G3R-SET-SCREW
4G4	4G4-SET-SCREW

Related parts

(4) Sub-plate

How to order

● 4GD piping adapter

4G1 R-ADAPTOR-M5G-○

Ⓐ Model No.

Code	Content Volume	Ⓐ Model No. 3G1	3G2	4G1	4G2	4G3
Ⓑ Port size (Port P/R1/R2)						
M5G	M5	●		●		
06G	G1/8		●		●	
08G	G1/4					●
Ⓒ Option						
P	With mounting plate (included)	●	●	●	●	●

is not available.

Note: For 4G4, there is no piping adapter.

● 4GE discrete sub-plate

4G1 R-SUB-BASE-06G-○

Ⓐ Model No.

Code	Content Volume	Ⓐ Model No. 3G1	3G2	4G1	4G2	4G3	4G4
Ⓑ Port size (Port A/B/P/RI/R2)							
06G	G1/8	●		●			
08G	G1/4		●		●	●	
10G	G3/8					●	●
15G	G1/2						●
Ⓒ Option							
F	A/B port filter integrated *1	●	●	●	●	●	●

*1: A filter is built into port P as standard.

is not available.

Related parts

(5) Manifold sub-plate kit individual wiring

● M4GD sub-plate

M4GD1 R - 00G - 2

Ⓐ Model No.

Code	Content Volume
Ⓐ Model No.	
M4GD1	Metal base, 4G1 size, body piping
M4GD2	Metal base, 4G2 size, body piping
M4GD3	Metal base, 4G3 size, body piping
M4GD4	Metal base, 4G4 size, body piping
Ⓓ Station No.	
2	2 stations
to	to
20	Refer to the specifications page for the max. station number.

● M4GE1 sub-plate

M4GE1R - C4G - - - 2

Ⓐ Port size
Ⓑ Option
Ⓒ Mount type
Ⓓ Station No.

Code	Content Volume	
Ⓐ Port size		
Port	**4(A), 2(B) port**	**Port P/R1/R2**
C4G	ø4 push-in fitting	G1/8
C6G	ø6 push-in fitting	
M5G	M5	
Ⓑ Option		
Blank		
F	Port A/B filter built in *1	
Ⓒ Mount type		
Blank	Direct mount	
Ⓓ Station No.		
2	2 stations	
to	to	
20	Refer to the specifications page for the max. station number.	

*1: A filter is built into port P as standard.

● M4GE2/3 sub-plate

M4GE2 R - C4G - - 2

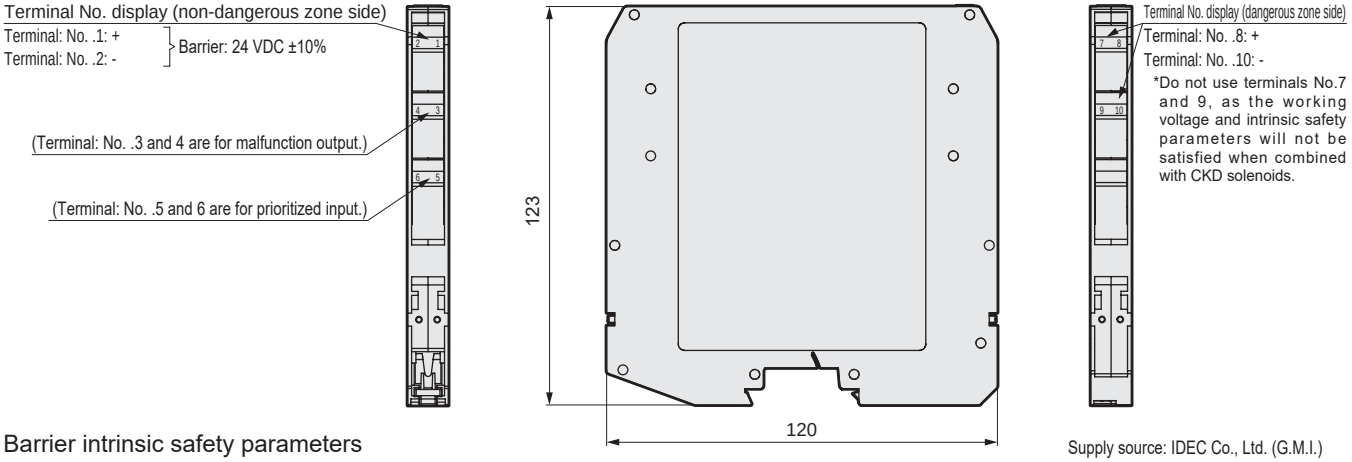
Ⓐ Model No.
Ⓑ Port size
Ⓒ Option
Ⓓ Station No.

Code	Description	Ⓐ Model No.	
		M4GE2	**M4GE3**
Ⓑ Port size			
Port	**4(A), 2(B) port**	**Port P/R1/R2 (1)=G1/4 (2)=G3/8**	
C4G	ø4 push-in fitting	(1)	
C6G	ø6 push-in fitting	(1)	(2)
C8G	ø8 push-in fitting	(1)	(2)
C10G	ø10 push-in fitting		(2)
06G	G1/8	(1)	
08G	G1/4		(3)
Ⓒ Option			
Blank			
F	Port A/B filter built in *1		
Ⓓ Station No.			
2	2 stations		
to	to		
20	Refer to the specifications page for the max. station number.		

*1: A filter is built into port P as standard.

INSULATED EXPLOSION PROOF BARRIER Dimensions

Model No.: **D5048S**



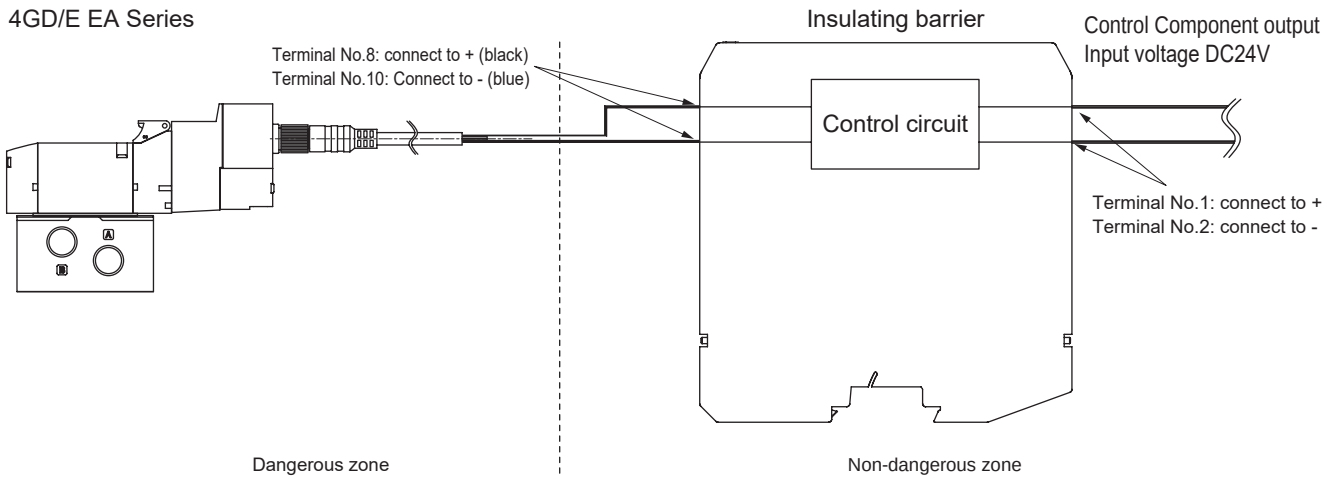
Barrier intrinsic safety parameters

Item	Between terminals No. -10
Intrinsic safety circuit max. voltage Uo	24.8V
Intrinsic safety circuit max. current Io	108mA
Intrinsic safety circuit max. power Po	667mW
Intrinsic safety circuit allowable capacitance Co	0.113 µF
Intrinsic safety circuit allowable inductance Lo	1.42mH
Operating ambient temperature range	-40 to 70°C

Supply source: IDEC Co., Ltd. (G.M.I.)
Refer to the catalog of IDEC or G.M.I for detailed specifications.
Refer to the catalog.

*1: Always use valves in combination with a barrier.
*2: Connection terminals are polarized. Take care to prevent incorrect wiring.
*3: Compliant electric wire is 0.25 to 2.5mm^2.
*4. Recommended terminal tightening torque is 0.5 to 0.6N•m.
*5: Barrier degree of protection is IP20.

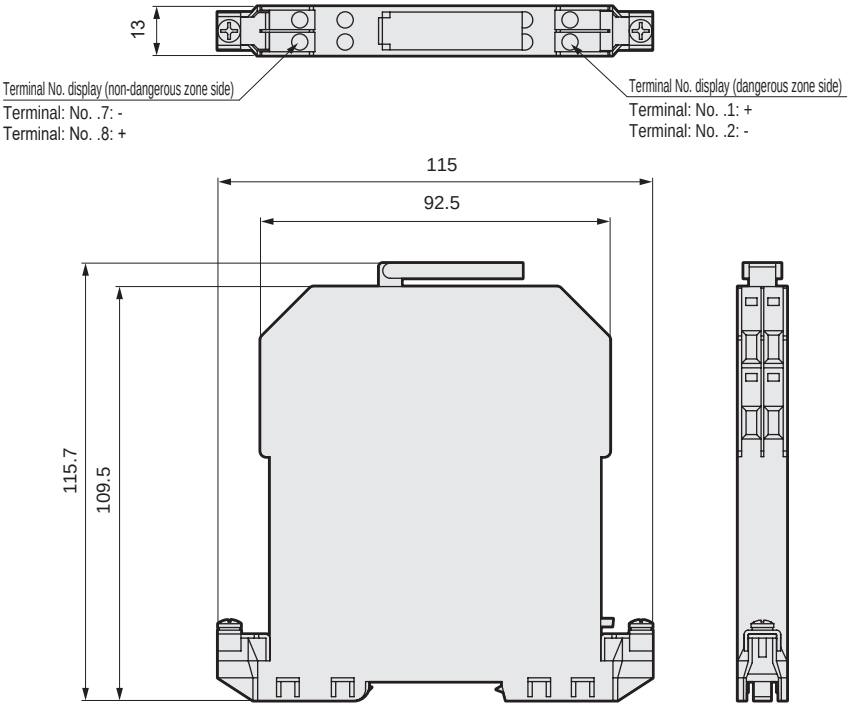
About Valve and Barrier Connections



* A voltage equivalent to DC12V is supplied to the valve via an insulating barrier.

Zener barrier (1CH) Dimensions

Model No.: **Z728**



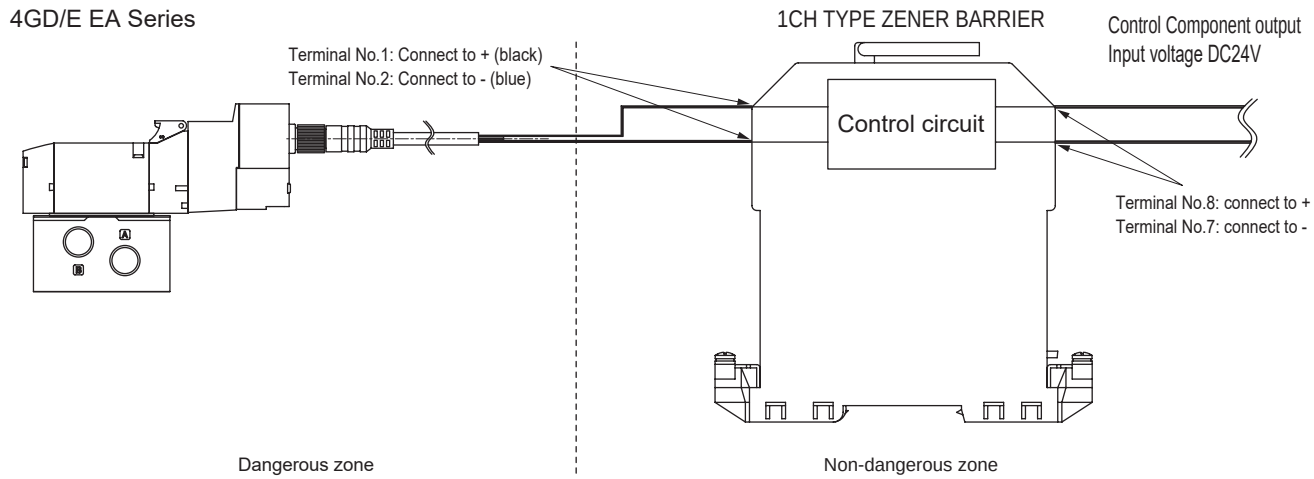
Supply sources:Pepperl+Fuchs Inc.
Refer to the Pepperl+Fuchs Inc. catalog for detailed specifications.

Barrier intrinsic safety parameters

Item	Description
Intrinsic safety circuit max. voltage Uo	28V
Intrinsic safety circuit max. current Io	93mA
Intrinsic safety circuit max. power Po	0.65 W
Intrinsic safety circuit allowable capacitance Co	0.083 μF
Intrinsic safety circuit allowable inductance Lo	3.05mH
Operating ambient temperature range	-20 to 60°C
Current limiting resistor	300 Ω

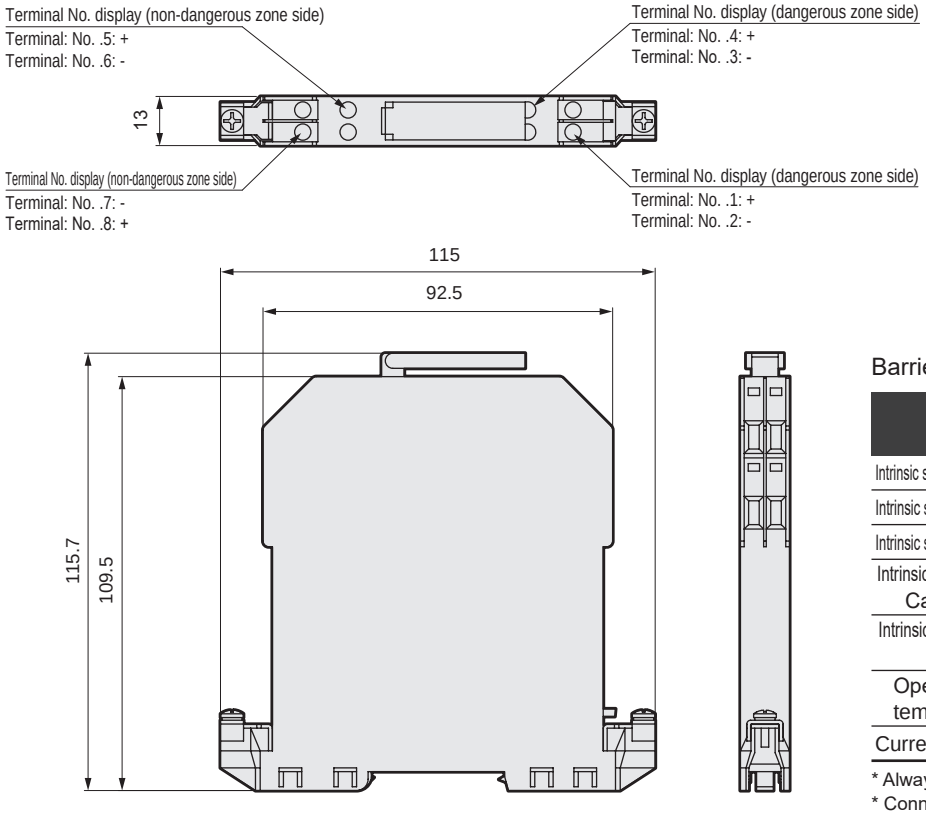
* Always use valves in combination with a barrier.
* Connection terminals are polarized.
  Incorrect wiring leads to breakdown of the barrier.
* compliant wire has a allowable area of 2.5mm^2.
* Barrier degree of protection is IP20.
* Type A grounding is required for barrier installation.

About Valve and Barrier Connections



Zener barrier (2CH) Dimensions

Model No.: **Z779**



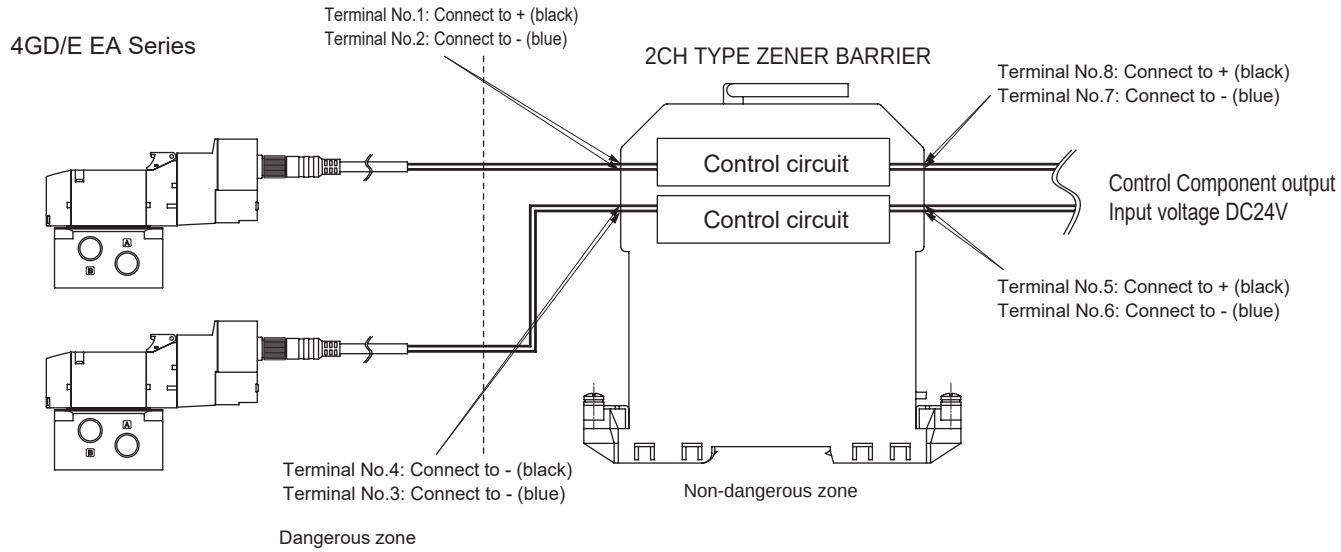
Supply sources:Pepperl+Fuchs Inc.
Refer to the Pepperl+Fuchs Inc. catalog for detailed specifications.

Barrier intrinsic safety parameters

Item	Description	
	CH1	CH2
Intrinsic safety circuit max. voltage Uo	28V	28V
Intrinsic safety circuit max. current Io	93mA	93mA
Intrinsic safety circuit max. power Po	0.65 W	0.65 W
Intrinsic safety circuit allowable Capacitance Co	0.083 μF	0.083 μF
Intrinsic safety circuit allowable Inductance Lo	3.05mH	3.05mH
Operating ambient temperature range	-20 to 60°C	-20 to 60°C
Current limiting resistor	301 Ω	301 Ω

* Always use valves in combination with a barrier.
* Connection terminals are polarized.
  Incorrect wiring leads to breakdown of the barrier.
* Compliant wire has a allowable area of 2.5mm^2.
* Barrier degree of protection is IP20.
* Type A grounding is required for barrier installation.

About Valve and Barrier Connections



MEMO

M4G 1/2/3 Individual wiring

M4G D/E 1/2/3 Manifold specifications sheet

Date issued / /

Company

Contact

Order No.

● Contact ● Quantity set(s) ● Delivery date /

Slip No.	Order No.

● Manifold model No.

M□G D/E □□0EA-□-□□□□-□-□

Solenoid valves / Solenoid position / Port size / Electrical connections / Other options / Mount type / Station No. / Voltage

Solenoid valve model No.	Fitting CX		Valve installation position																							Quantity
	A	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
4G□□□9EA-□																											
4G□□□9EA-□																											
4G□□□9EA-□																											
4G□□□9EA-□																											
4G□□□9EA-□																											
3G□□□9EA-□																											
3G□□□9EA-□																											
Masking plate 4G□R-MP-□																											
Air supply spacer 4G□E-P-□																											
Exhaust spacer 4G□E-R-□																											

Included parts	Blanking plug								For M□G D/E 1□0EA
	GWP 4-B		GWP 6-B		GWP 8-B		GWP 10-B		Push-in fitting tube remover (Standard attachment) □Not availableRequired(Check)
	Threaded plug								
	4G1R-M5P		4G2R-06GP		4G3R-08GP				

M4G4 individual wiring

M4G$^{D}_{E}$4Manifold specifications sheet

Date issued / /

Company

Contact

Order No.

● Contact ● Quantity set(s) ● Delivery date /

Slip No.	Order No.

● Manifold model No.

M4G$^{D}_{E}$4 [ ] 0 E A - [ ] - [ ] [ ] [ ] - [ ] - [ ]

Solenoid position / Port size / Electrical connections / Option / Mount type / Station No. / Voltage

Solenoid valve model No.	Fitting CX		Valve installation position																						Quantity
	A	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
4G [ ] 4 [ ] 9EA- [ ]																											
4G [ ] 4 [ ] 9EA- [ ]																											
4G [ ] 4 [ ] 9EA- [ ]																											
4G [ ] 4 [ ] 9EA- [ ]																											
4G [ ] 4 [ ] 9EA- [ ]																											
Masking plate 4G [ ] 4-MP																											

Included parts	Blanking plug						Threaded plug					
	GWP 8-B		GWP 10-B		GWP 12-B		4G4-08GP		4G4-10GP		4G4-15GP	

Safety Precautions

Be sure to read this section before use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.
It is important to select, use, handle and maintain the product appropriately to ensure that the CKD product is used safely.
Observe warnings and precautions to ensure device safety.
Check that device safety is ensured, and manufacture a safe device.

WARNING

1 This product is designed and manufactured as a general industrial machine part.
It must be handled by an operator having sufficient knowledge and experience.

2 Use this product in accordance with specifications.

This product must be used within its stated specifications. In addition, never modify or additionally machine this product.
This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments.
(Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)

❶ Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
❷ Use for applications where life or assets could be significantly affected, and special safety measures are required.

3 Observe organization standards and regulations, etc., related to the safety of device design and control, etc.

ISO4414, JIS B 8370 (Pneumatics fluid power - General rules and safety requirements for systems and their components)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.

4 Do not handle, pipe, or remove devices before confirming safety.

❶ Inspect and service the machine and devices after confirming safety of all systems related to this product.
❷ Note that there may be hot or charged sections even after operation is stopped.
❸ When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility.Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.
❹ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

5 Observe warnings and cautions in the following pages to prevent accidents.

■ The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

DANGER: When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, and when there is a high degree of emergency to a warning.

WARNING: If handled incorrectly, a dangerous situation may occur, resulting in death or serious injury.

CAUTION: When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation.
Every item provides important information and must be observed.

Warranty

1 Warranty period

The product specified herein is warranted for one (1) year from the date of delivery to the location specified by the customer.

2 Warranty coverage

If the product specified herein fails for reasons attributable to CKD within the warranty period specified above, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge.
However, following failures are excluded from this warranty:
1) Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or the Instruction Manual.
2) Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
3) Failure not caused by the product.
4) Failure caused by use not intended for the product.
5) Failure caused by modifications/alterations or repairs not carried out by CKD.
6) Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
7) Failure caused by acts of nature and disasters beyond control of CKD.
The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.
Note: For details on the durability and consumable parts, contact your nearest CKD sales office.

3 Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

Pneumatic components

Safety Precautions

Be sure to read this section before use.
For general precautions for valves,"Pneumatic Valves (No. CB-023SA)"for details.

Product-specific cautions: Pilot operated explosion-proof 3.5-port valve 4G*/M4G* EA Series

Design/selection

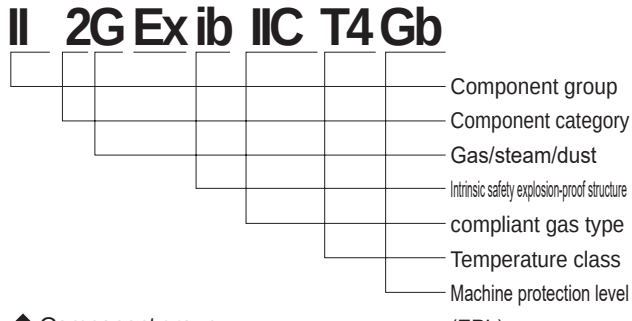
WARNING

- Usable in Class 1 and 2 danger zones (Zones 1 and 2) where there is combustible gas or steam. Cannot be used in Class 0 special danger zone.
- Explosion-proof performance is II 2G Ex ib IIC T4 Gb.
- Use in combination with a barrier. Valves cannot be used independently in dangerous zones.

CAUTION

■ Explosion-proof classification

According to the ATEX Directive, electrical components of explosion-proof structures must be indicated using the component group, category, gas/dust, explosion-proof structure, type of compliant gas, temperature class, and equipment protection level. For example, the explosion-proof solenoid valve II 2G Ex ib IIC T4 Gb means the following classification.



◆ Component group

I: Underground mines and related underground facilities
II: All other ground facilities

◆ Component category

1:Zone0, Zone20 Components
2:Zone1, Zone21 Components
3:Zone2, Zone22 Components

◆ Compliant gas type and temperature class

Indicates the classification of gases according to IEC60079-20-1 with a compliant category of IIC and class T4 that are compatible with the product. Less dangerous gases are also listed that are guaranteed to be explosion-proof.
compliant gas types indicate the risk of fire leaping to the exterior from small gaps, and are classified into the following categories according to applications and gaps.

Group I: For coal mines
Group II: Gas and steam other than coal mines
Group III: Dust other than for coal mines

Group II is subdivided into IIA, IIB, and IIC according to the degree of ignition/propagation easiness.

Table 1: compliant gas type

Gas, steam Category	minimum ignition current ratio (*1)	Maximum safety clearance (Unit: mm) (*2)
II A	Over 0.8	0.9 and over
II B	0.45 to 0.8	Less than 0.5 to 0.9
II C	Less than 0.45	0.5 or less

High risk

(*1)MIC: Minimum ignition current. Ignition current ratio where minimum ignition current of methane is assumed to 1
(*2)MESG: Maximum Experimental Safe Gap. Max. clearance for preventing ignition at clearance depth of 25mm

● Temperature class refers to the degree of ignition risk, and is classified into six classes according to the ignition point. It defines the maximum component temperature corresponding to each class (Table 2). Higher numbers indicate a higher risk that the gas will ignite at low igniting temperatures.

Table 2: Temperature class

Item	Code	Provision
Temperature class	T1	Max. surface temperature 450°C
	T2	300°C
	T3	200°C
	T4	135°C
	T5	100°C
	T6	85°C

■ Dangerous zone

Zones where explosive gases and air mix at a high enough level to cause an explosion or fire, and where hazardous atmospheres could be generated, are classified as listed below in the ATEX Directive.

Zone	Gas/ Steam/ dust	EPL	Explanation of danger zone class
Zone0	Gas	Ga	Zones where explosive atmospheres are present continuously or for long periods
Zone1	Gas	Gb	Zones where explosive atmospheres may be generated during normal operation of the plant, etc.
Zone2	Gas	Gc	Zones in which explosive atmospheres are not likely to be generated during normal operation of a plant or the like and are only present for a short time even if they are generated
Zone20	Steam/ dust	Da	Zones where explosive atmospheres are present continuously or for long periods
Zone21	Steam/ dust	Db	Zones where explosive atmospheres may be generated during normal operation of the plant, etc.
Zone22	Steam/ dust	Dc	Zones in which explosive atmospheres are not likely to be generated during normal operation of a plant or the like and are only present for a short time even if they are generated

1. Prohibition of Disassembly and Modification

WARNING

■ Disassembly of pilot valves or barriers not only leads to the risk of decreased explosion-proof performances but may also cause accidents.
Accordingly, customers are asked not to disassemble or modify their units.

2. Intrinsic safety explosion-proof circuit wiring

⚠ WARNING

■ The intrinsic safety explosion-proof circuit wiring should not be mixed with other circuitry, nor should it be installed so as to be affected by static induction or electromagnetic induction from other circuits.

Intrinsic safety-related Components (safety retainer, barrier) and intrinsic safety components (4G EA Series) must meet the explosion-proof specifications below, as well as the safety retention ratings and parameters.

Intrinsic safety component	Combination conditions	Intrinsic safety related component
Explosion-proof structure and category: ia, ib, ic	≦	Explosion-proof structure and category: ia, ib, ic
Electrical Component group: IIA, IIB, IIC	≦	Electrical Component group: IIA, IIB, IIC
Ui: Intrinsic safety circuit allowable voltage (max. applicable voltage)	≧	Uo: Max. voltage (max. output voltage)
Ii: Intrinsic safety circuit allowable current (max. applicable current)	≧	Io: Max. current (max. output current)
Pi: Intrinsic safety circuit allowable power (max. input power)	≧	Po: Max. power (max. output power)
Ci+Cw Ci: Intrinsic Component's internal capacitance Cw: Intrinsic safety circuit wiring max. capacitance	≦	Co:Allowable capacitance (maximum connectable capacitance)
Li+Lw Li: Intrinsic Component's internal inductance Lw: Intrinsic safety circuit wiring max. inductance	≦	Lo:Allowable inductance (maximum connectable inductance)

The length of the intrinsic safety circuit external wiring can be calculated using the method below, in accordance with the above connection conditions.
Wiring capacitance and inductance are Co ≧ Ci+Cw and Lo ≧ Li+Lw.
The allowable wiring length must be less than or equal to the value of either (Co-Ci)/Cc or (Lo-Li)/Lc, whichever is smaller.
Cc: Capacitance per unit length, Lc: Inductance per unit length

3 .When using the product in combination with low friction cylinders

■ Malfunctions could occur because of the exhaust pressure. Contact CKD.

4.Degree of protection IP67

■ 4GD/E* The EA Series supports IP67 as standard and is protected from dust and water, but cannot be used immersed in water. Countermeasures such as a protective cover for the unit should also be taken if using in environments where it will be constantly exposed to dust or water.

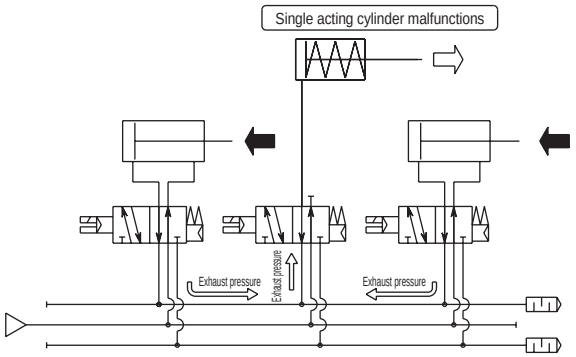
■ Barrier degree of protection is IP20.

5.Exhaust check valve

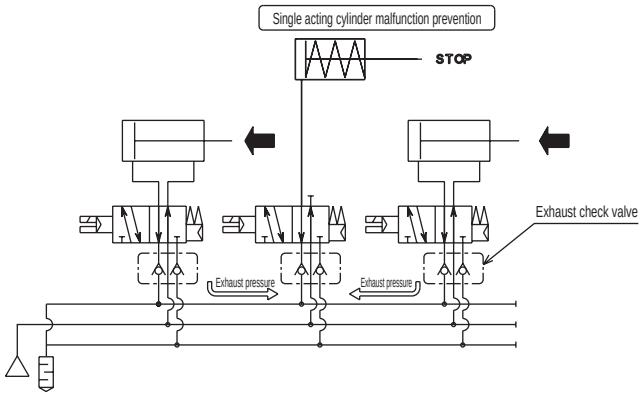
CAUTION:The exhaust check valve is a check valve. If the cylinder rod is manually operated directly without pressurization, the check valve opens and the air flow is shut off, preventing cylinder rod adjustment.

Generally, the double acting cylinder connected at the manifold to direct acting cylinders or ABR connection valves may malfunction when adversely affected by the exhaust pressure led in by operation of other cylinders. For the manifold of 4G Series, the "exhaust check valve" integrated to prevent this malfunction can be selected, except for all ports closed valves and PAB connection valves. However, with components that are affected by a small amount of leakage or pressure of low friction cylinders, etc., the functions may not operate properly. Moreover, 4G4 is not compatible with check valves.

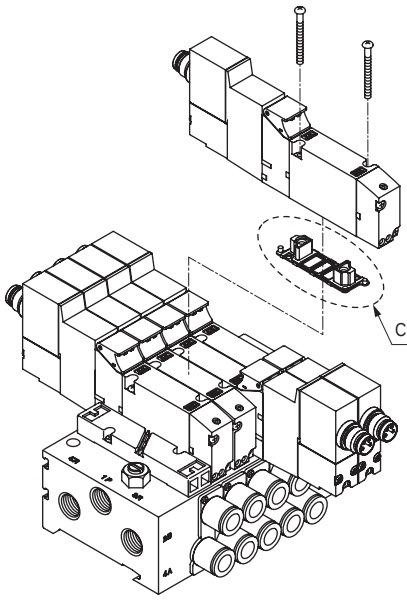
Example of pneumatic pressure system that may malfunction



4G Series pneumatic pressure system



Internal structure

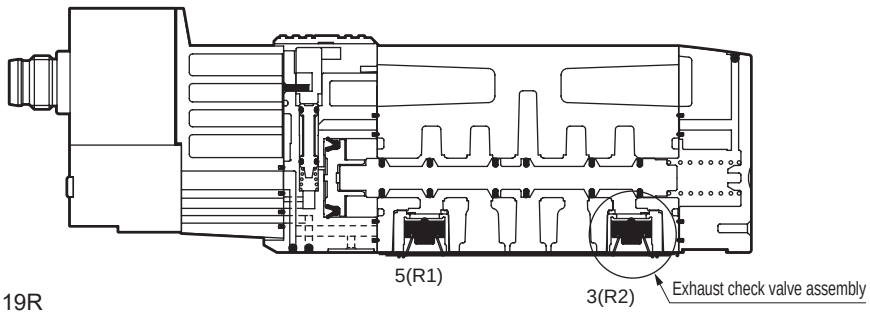


This figure is for 4GE119R

Standard specifications of check valve

Model No.	Flow path switching	Option (H) Selection
3G D/E *669EA	Two 3-port valves integrated NC/NC	Yes
4G D/E *19EA	2 position single	Yes
4G D/E *29EA	2-position double	Yes
4G D/E *39EA	3-position all ports closed	No
4G D/E *49EA	3-position ABR connection	Yes
4G D/E *59EA	3-position PAB connection	No

Note:Because 3-position all ports closed type and PAB connection type are not adversely affected by the exhaust pressure led in from other cylinders at the neutral position, installation of a check valve is not required.



Mounting, installation and adjustment

1.Body piping (D) Discrete installation method

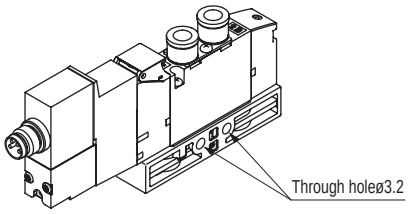
⚠CAUTION

■ When directly installing the manifold

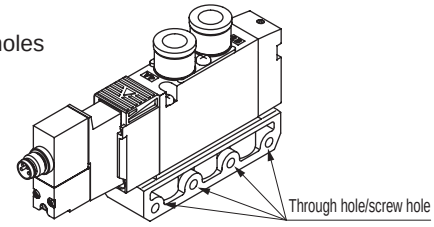
- The discrete body piping 4GD Series can be installed using the (a) through hole or (b) screw hole. When using the screw holes, be careful of the tightening torque.

Screw hole Tightening torque 0.7 to 1.2 N·m

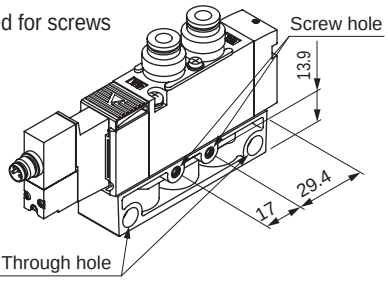
4 GD1 Series
(a) 2 through holes



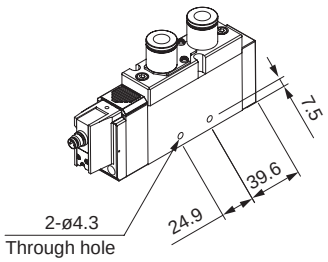
4 GD2 Series
(a) Through hole
(b) 4 common screw holes



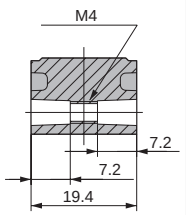
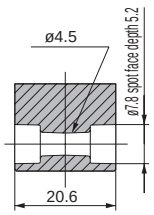
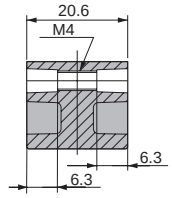
4 GD3 Series
(a) Through hole
(b) 2 places each, dedicated for screws



4 GD4 Series
(a) 2 through holes



Mounting hole shape

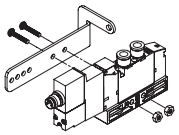
	4GD2	4GD3	
	(a) (b) Common use	(a) Through hole	(b) Screw hole
Sectional view of mounting hole			

■ When installing the manifold with mounting plate (P)

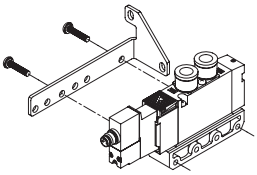
- Be careful of the mounting direction and orientation, as damage may result from incorrect mounting of body piping single mounting plate (P).

■ How to mount mounting plate (P)

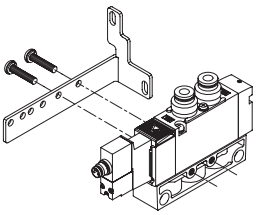
4GD1



4GD2



4GD3



Mounting plate (P) kit

	Kit model No.	Set parts
4GD1	4G1R-MOUNT-PLATE-KIT	Mounting plate, 2 mounting screws, 2 nuts
4GD2	4G2R-MOUNT-PLATE-KIT	Mounting plate, 2 mounting screws
4GD3	4G3R-MOUNT-PLATE-KIT	Mounting plate, 2 mounting screws

*Mounting plate is compatible only with single type. Moreover, 4G4 is not compatible.

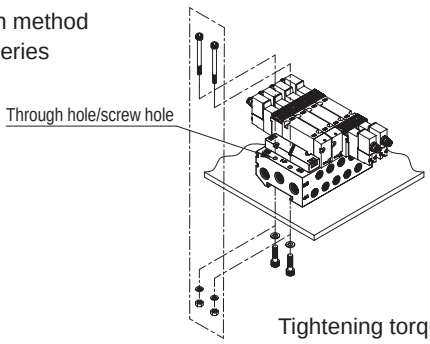
2. How to install manifold (Metal base 4G$^{D}_{E}$ Series)

⚠CAUTION

■ When directly installing the manifold

- For installation of the M4G2/3 Series, there are two methods of tightening the manifold with bolts: after passing it through the upper side of the manifold base and after tightening it with the bolts from the back side. When using a female thread as shown in the table below, check the thread depth, select a mounting bolt with 10 screw-in threads or more, and be careful with the tightening torque. The screw could be damaged if incorrectly installed.

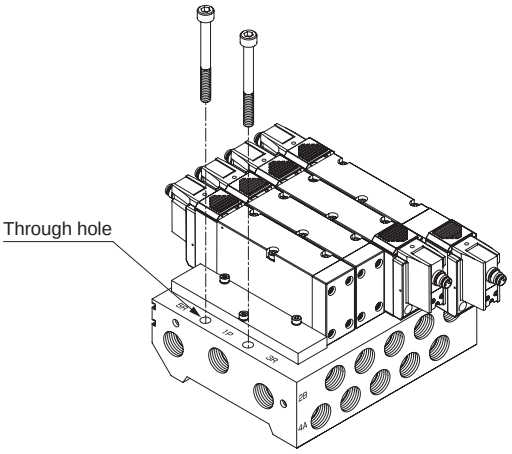
Installation method
M4G2/3 Series



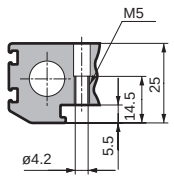
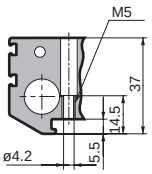
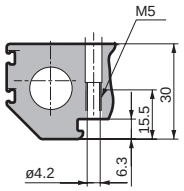
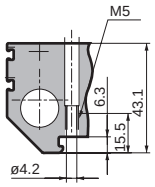
Tightening torque
1 to 1.5 N·m

M4G4 Series

● M4G$^{D}_{E}$ For installation of Series 4, tighten the manifold with bolts after passing them through the upper side of the manifold base.



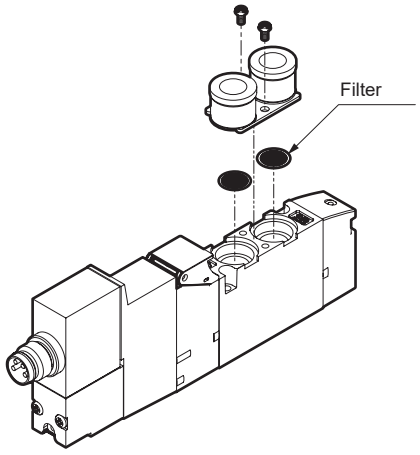
Mounting hole shape (sectional view)

	Standard manifold	
	M4GD (body piping)	M4GE (Base piping)
M4G2		
M4G3		

3. Port filter

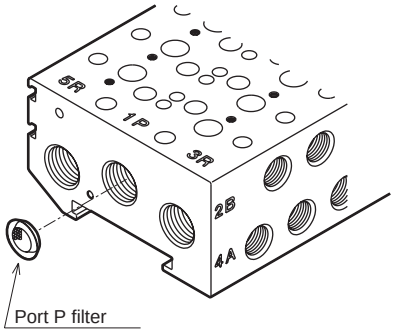
⚠ CAUTION

■ The port filter prevents the entry of foreign matter, and prevents problems from occurring in the valve. As this does not improve the quality of the compressed air, read Warnings and Precautions on the Intro pages of "Pneumatic Valves (No. CB-023SA)," then mount, install, and adjust accordingly. Do not detach or press down the port filter forcibly. The filter could deform, causing problems. If contaminants and foreign matter are found on the filter surface, blow them off lightly with air, or remove them with tweezers, etc.



Example of A/B port filter option combination

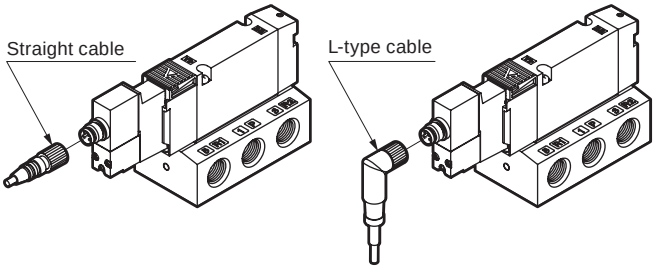
M4G Series



Port P filter (standard) example of embedding

4. M8 Connector cable

M8 connector tightening torque is 0.38 to 0.42N·m. The degree of protection (IP67) will not be upheld if not tightened to the appropriate torque.



Straight cable L-type cable

Wire the attached M8 connector cable as below.
- Black: 12 V
- Blue: 0 V
- Brown and white: Not used.

Be careful as the solenoid has polarity.

Use/maintenance

1. Continuous energizing

⚠CAUTION

■ If a valve is used in a continuously energized state for long periods, the valve performance may deteriorate more quickly. Furthermore, use caution under the following working conditions likewise.

- When the energized time exceeds non-energized time in intermittent operation
- When one energizing session exceeds 30min in intermittent energizing

Give sufficient consideration to heat dissipation when installing the product.

2. Manual override

⚠WARNING

■ The 4G Series is an internal pilot solenoid valve. If air is not supplied to port P, the main valve will not be switched even if the manual override is operated.

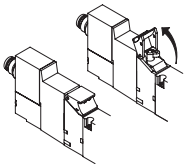
■ A manual protection cover is provided as standard. The manual protective cover is closed when the valve is shipped to protect it, which cannot be seen when delivered. Open the protective cover and operate the manual override. Note that the protective cover will not close unless the locking manual override is released.

■ Manual override is used for both non-locking and locking. The lock is applied by pressing down and turning the manual override. For locking, be sure to press down and turn. If manual override is turned without being pressed down, it could be damaged or air could leak.

■ Opening and closing the manual protection cover

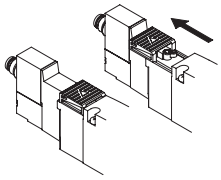
Do not excessively force the manual protection cover when opening and closing it. Excessive external force can cause breakdown.(Below 5 N)

4G1 Series



Rotary

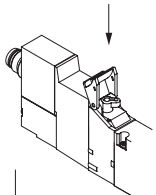
4G2 to 4 Series



Sliding

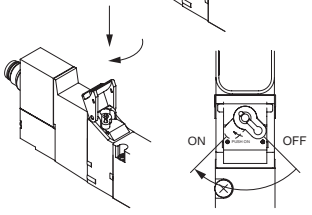
■ How to operate manual override

- Push & non-locking operation Push straight in the direction of the arrow until it stops. Release to cancel.



- Push locking operation

Push and hold the button and turn it 90° in the direction of the arrow. The function is not canceled even when the button is released.



■ When conducting manual operations, make sure that there are no people near the operating cylinder.

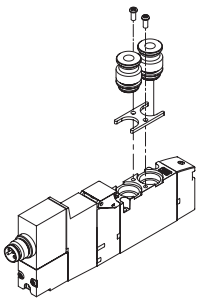
3. How to replace the cartridge fitting

⚠CAUTION

■ Check procedures before changing the push-in fitting size. If installed incorrectly, or if the tightening of the mounting screw is insufficient, air leakage could occur.

■ Body piping (D)

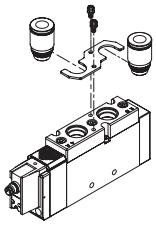
4 G 1, 2, 3



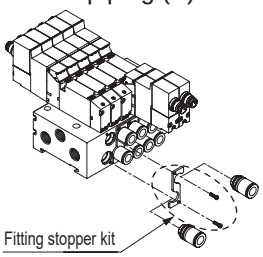
① Remove the mounting screw.
② Pull out the stopper plate and fitting together.
③ Align the groove of the replacement fitting with the stopper plate and assemble them temporarily.
④ Assemble the stopper plate with the fitting, and tighten the mounting screw.Pull on the fitting to confirm that it is properly installed.

	Size	Tightening torque (N·m)
4G1	M1.7	0.18 to 0.22
4G2	M2.5	0.25 to 0.30
4G3	M3	0.6 to 0.7
4G4	M3	0.6 ~0.7

4 G 4



■ Base piping (E)



①Remove the mounting screw.
②Pull out the stopper plate and fitting together.
③ Align the groove of the replacement fitting with the stopper plate and assemble them temporarily.
④Assemble the stopper plate with the fitting, and tighten the mounting screw. Pull on the fitting to confirm that it is properly installed.

Model No. of cartridge push-in fitting

Model	Part name	Model No.
4G1	ø4 straight	4G1R-JOINT-C4
	ø6 straight	4G1R-JOINT-C6
	Plug cartridge	4G1R-JOINT-CPG
4G2	ø4 straight	4G2R-JOINT-C4
	ø6 straight	4G2R-JOINT-C6
	ø8 straight	4G2R-JOINT-C8
	Plug cartridge	4G2R-JOINT-CPG
4G3	ø6 straight	4G3R-JOINT-C6
	ø8 straight	4G3R-JOINT-C8
	ø10 straight	4G3R-JOINT-C10
	Plug cartridge	4G3R-JOINT-CPG
4G4	ø8 straight	4G4-JOINT-C8
	ø10 straight	4G4-JOINT-C10
	ø12 straight	4G4-JOINT-C12

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Revision details
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