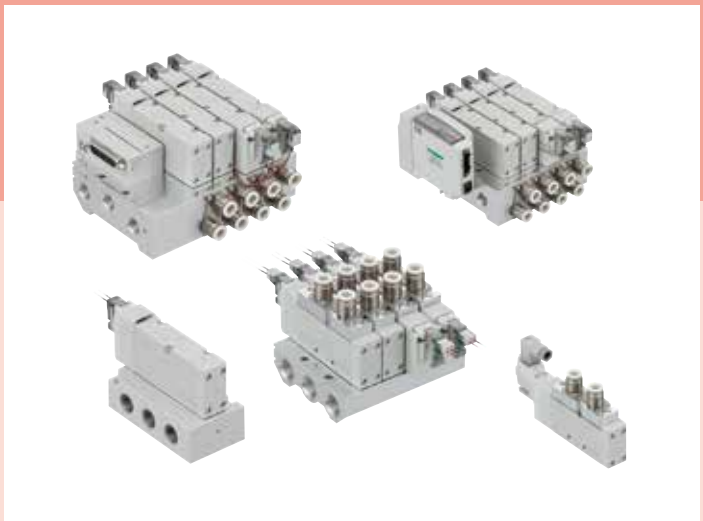
4GA4 / 4GB4

Metal base

Pilot operated 5-port valve



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Individual wiring manifold

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Reduced wiring manifolds

● Body piping (M4GA4-T∗)
• Common terminal block/D-sub-connector/flat cable connector 1030
• Serial transmission 1040
● Base piping (M4GB4-T∗)
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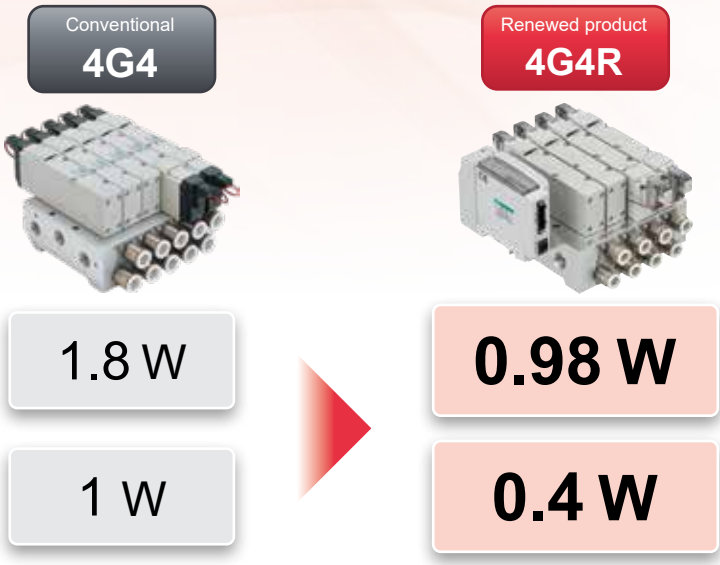
Large flow rate/Energy saving/Continuous energization*

The 4G1/2/3R Series energy saving coil was mounted on the 4G4 and has been upgraded to 4G4R. Large cylinders up to ø140 can also be driven with a low power consumption of 0.1 W.

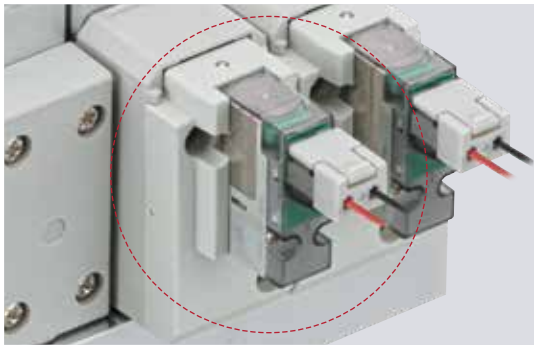


*With low exoergic/energy saving circuit can be energized continuously

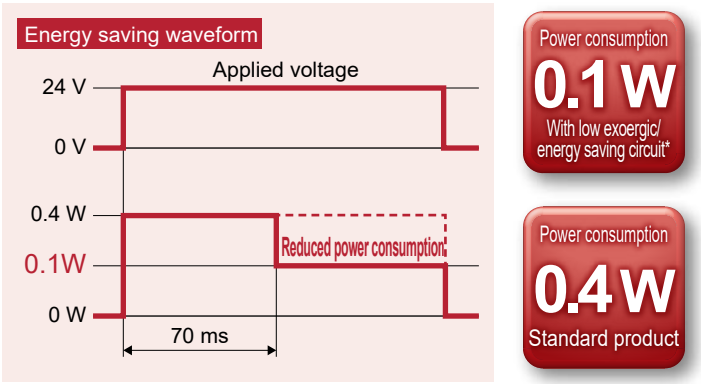
Environmental performance

Continuous energizing OK (With low exoergic/energy saving circuit)

Uses a new coil actuator



Reduced power consumption



*With low exoergic/energy saving circuit can be energized continuously

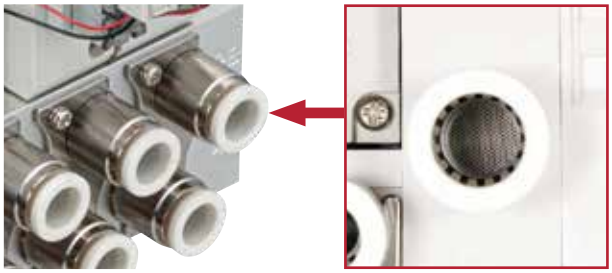
Safety

Prevents manual misoperation

Manual override has a protective cover

Prevents problems with foreign matter

● Air supply filter equipped as standard
(ports A/B equipped as option)

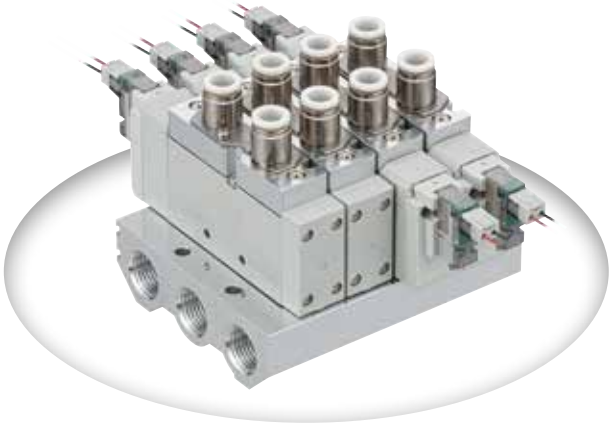


A diverse lineup (Discrete / manifold / reduced wiring)

Single valve / body piping / base piping

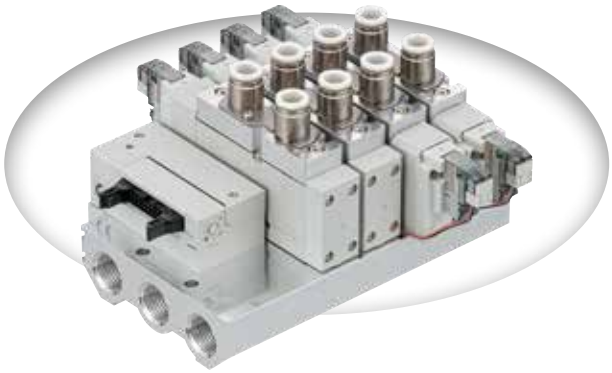
4G$^{A}_{B}$4 Series

Max. C value of 15 with a compact body



M4G$^{A}_{B}$4 Series

Manifold max. C value of 9.5



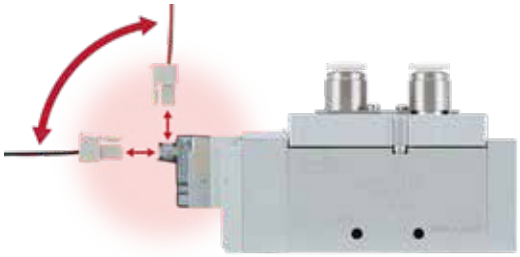
Reduced wiring manifolds

M4G$^{A}_{B}$4-T* Series

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

Upward/Lateral common wiring connector

Switch easily between upward and lateral facing, just by changing the connector insert position.



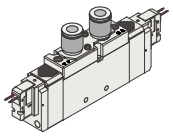
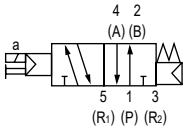
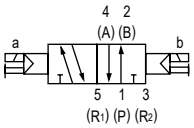
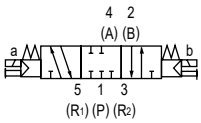
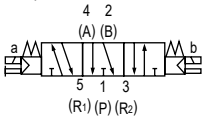
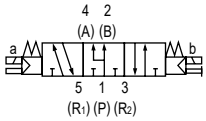
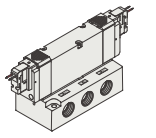
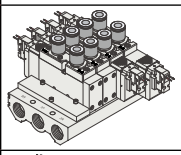
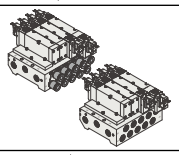
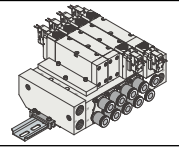
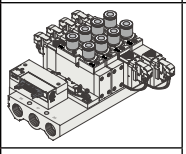
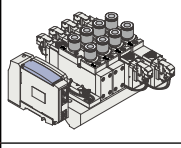
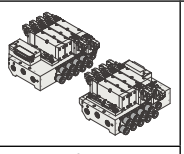
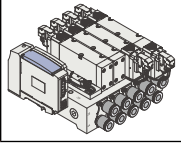
Easy to use

Compatible with global standards

CE UKCA cULus RoHS

Series Variation

4GA4 / 4GB4 Series

Series external appearance					Model No.	Position Number of solenoid valves Circuit diagram symbol	Valve performance		Voltage (v)	Switching position	
							Flow Characteristics C [dm³/(s·bar)] (✱1)	Cylinder bore size (ø)		2-position	
										Single	Double
Single unit		Body piping	5-port		4GA4	● 5-port valve 2-position single  2-position double  3-positionAll ports closed  3-position A/B/R connection  3-position P/A/B connection 	7.5 to 8.7	100 to 140	100 AC 110 AC 200 AC 24 DC 12 DC	●	●
		Base piping	5-port		4GB4		12 to 15	125 to 160		●	●
Individual wiring manifold (metal base)		Body piping	Direct mount		M4GA4		8.2 to 9.3	100 to 140	100 AC 110 AC 200 AC 24 DC 12 DC	●	●
		Base piping	Direct mount		M4GB4 (✱2)		6.8 to 7.1 8.7 to 9.5 (✱3)	100 to 140		●	●
			DIN rail Mount (-QD)		M4GB4		6.8 to 7.1	100 to 125		●	●
Reduced wiring manifold (metal base)		Body piping	Direct mount	Common terminal block (-T1✱) D-sub-connector (-T30) Flat cable connector (-T5✱)	M4GA4		8.2 to 9.3	100 to 140	24 DC 12 DC	●	●
				Serial transmission (-T8□)			6.8 to 7.1 8.7 to 9.5 (✱3)	100 to 140	24 DC	●	●
		Base piping	Direct mount	Common terminal block (-T1✱) D-sub-connector (-T30) Flat cable connector (-T5✱)	M4GB4 (✱2)		8.2 to 9.3	100 to 140	24 DC 12 DC	●	●
				Serial transmission (-T8□)			6.8 to 7.1 8.7 to 9.5 (✱3)	100 to 140	24 DC	●	●

✱1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.
✱2: Two types of bases are available. Dimensions differ by bore size of port P/R1/R2.
✱3: Values apply when the port size (ports A/B) is Rc1/2, G1/2, or NPT1/2.

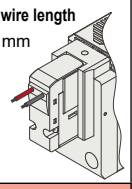
	Switching position				A/B piping connection port												Electrical connections										page
	3-position			Mix	Push-in fitting			Female thread																			
	All ports closed	A/B/R connection	P/A/B connection		ø8	ø10	ø12	Rc 1/4	Rc 3/8	Rc 1/2	G 1/4	G 3/8	G 1/2	NPT 1/4	NPT 3/8	NPT 1/2	Grommet lead	E-connector	EJ- connector	A-connector	DIN terminal box	Common terminal block	D-sub-connector	Flat cable with power supply terminal	Flat cable without power supply terminal	Serial transmission	
					C8	C10	C12	08	10	15	08G	10G	15G	08 N	10N	15N	Blank	E□	E□J	A2N	B□	T1□	T30	T50	T5□	T8□	
	●	●	●		●	●	●		●			●			●		●	●	●		●						998
	●	●	●						●	●		●	●		●	●	●	●	●		●						998
	●	●	●	●	●	●	●		●			●			●		●	●	●		●						1008
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●						1016
	●	●	●	●	●	●	●	●	●		●	●		●	●		●	●	●		●						
	●	●	●	●	●	●	●		●			●			●					● Built-in valve		●	●	●	●		1030
	●	●	●	●	●	●	●		●			●			●					● Built-in valve						●	1040
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				● Built-in valve		●	●	●	●		1046
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				● Built-in valve						●	1056

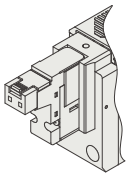
Electrical connections

Discrete valve/individual wiring manifold

Blank Grommet Lead wire Ⓐ

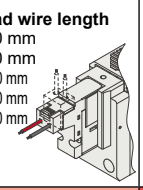
● Lead wire length
300 mm

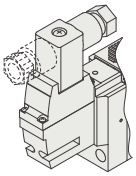




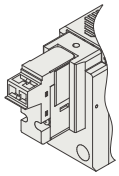
E0✻ E-connector Ⓐ

● Lead wire length
300 mm
500 mm
1000 mm
2000 mm
3000 mm

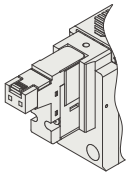




E0N E-connector without socket

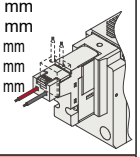


E1 E-connector with socket/terminal

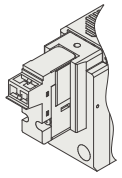


E2✻ E-connector ⒶⒷⒸ

● Lead wire length
300 mm
500 mm
1000 mm
2000 mm
3000 mm



E2N E-connector without socket ⒷⒸ



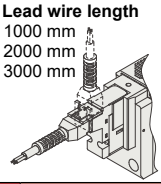
Discrete valve/individual wiring manifold

E3 E-connector with socket/terminal ⒷⒸ

B **BN** DIN terminal box (BN: Without terminal box)

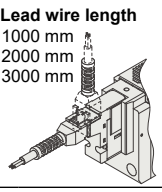
E0✻J EJ-connector Ⓐ

● Lead wire length
1000 mm
2000 mm
3000 mm



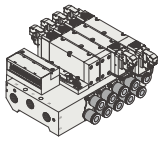
E2✻J EJ-connector ⒶⒷⒸ

● Lead wire length
1000 mm
2000 mm
3000 mm

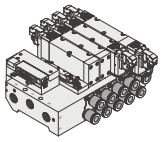


Reduced wiring manifolds

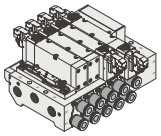
T10 **T11** Common terminal block (left side) M3 thread specifications/ clamping specifications



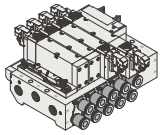
T51 **T52** **T53** Flat cable without power supply terminal (left side)



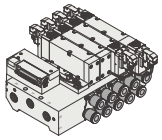
T10R **T11R** Common terminal block (right-side) M3 thread specifications/ clamping specifications



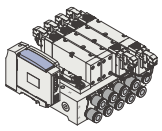
T51R **T52R** **T53R** Flat cable without power supply terminal (right side)



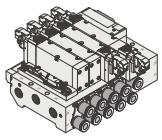
T30 D-sub-connector (left)



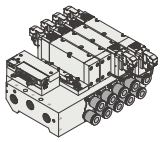
T8□ Serial transmission (32 points)



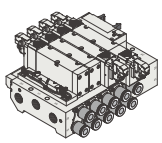
T30R D-sub-connector (right)



T50 Flat cable with power supply terminal (left side)

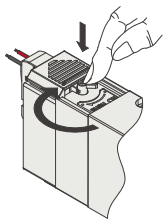


T50R Flat cable with power supply terminal (right side)



Manual override

● **Non-locking**
Locking common (standard)

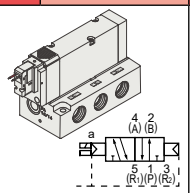


①For non-locking, Push to turn ON
Release to turn OFF

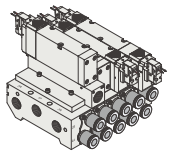
②For locking, PUSH and turn 90° clockwise to hold the on state. Turn counterclockwise to unlock OFF

Other options

K External pilot



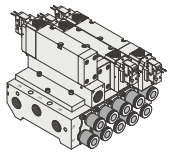
Z1 Air supply spacer



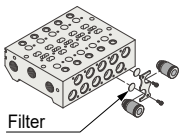
A Coolant proof

Select for coolant inflow and ozone measures.

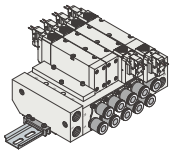
Z3 Exhaust spacer



F Port A/B filter integrated

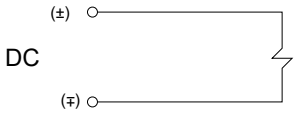
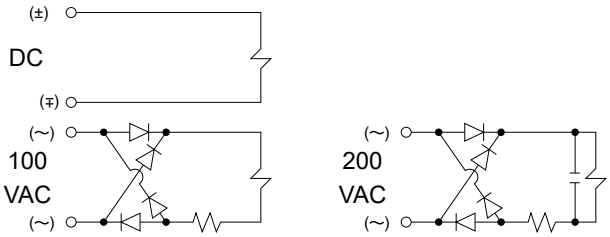
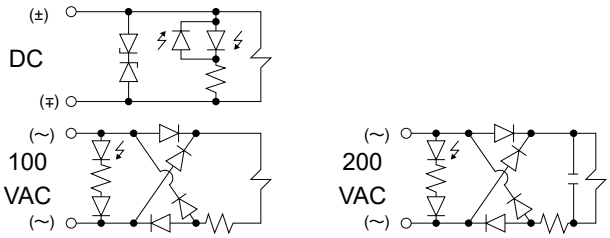
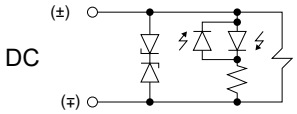
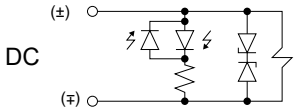
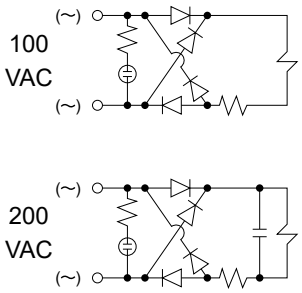
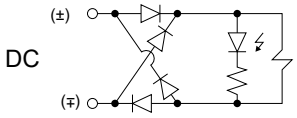
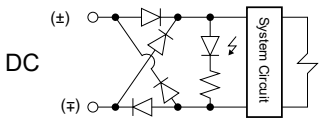


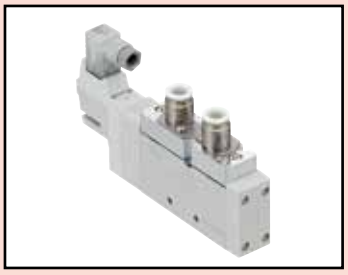
D DIN rail Mount



Ⓐ: With lead wire
Ⓑ: With indicator lamp
Ⓒ: With surge suppressor

Electrical connection circuit diagram

	Electrical connections		Without lead wire	With lead wire	With indicator lamp	With surge suppressor	Without socket	Circuit diagram
	Blank	Grommet lead wire		●				
	E0	E-connector		●				
	E0∗J	EJ-connector		●				
	E0N	E-connector					●	
	E1	E-connector	●					
	E2	E-connector		●	●	●		
	E2∗J	EJ-connector		●	●	●		
	E2N	E-connector			●	●	●	
	E3	E-connector	●		●	●		
	A2N	A-connector			●	●	●	
	B	DIN terminal box	●		●	●		
	BN	DIN terminal box (without terminal box)	●			●		
Option S	E2	E-connector		●	●	●		
	E2∗J	EJ-connector		●	●	●		
	E2N	E-connector			●	●	●	
Option E	E2	E-connector		●	●	●		
	E2∗J	EJ-connector		●	●	●		
	E2N	E-connector			●	●	●	



Discrete valve
Body piping

4GA4 Series

● Cylinder bore size: ø100 to ø140

Refer to the CKD website for detailed compatible model Nos.

How to Order

●Pilot operated 5-port valve

●5-port valve for integrated base

4GA4 1 0R - 10 - E2 A - 3

4GA4 1 9R - 10 - E2 A - 3

Model No. | ❶ Solenoid position | Solenoid valve operation classification | ❷ Port size | ❸ Electrical connections | ❹ Option | ❺ Voltage

❶ Solenoid position

Code	Description
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position A/B/R connection
5	3-position P/A/B connection

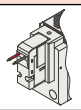
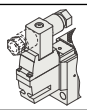
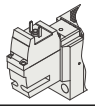
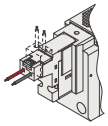
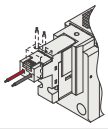
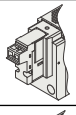
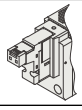
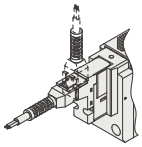
❷ Port size

Type	Port A/B	P/R Port	Code	
Push-in Fitting	ø8	Rc1/4	C8	
	ø10		C10	
	ø12		C12	
Female thread	Rc3/8		10	
	G3/8		10G	∗1
	NPT3/8		10N	∗2

∗1: Port P/R is G1/4.
∗2: Port P/R is NPT1/4.

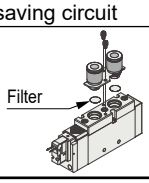
❸ Electrical connections

∗For details, see circuit diagram with surge suppressor/lamp page 987

Type	Lead wire (mm)	Surge suppressor	Lamp	Code		
Grommet lead wire	300			Blank		∗1
DIN terminal box (Pg7)		●	●	B		∗2 ∗3
		●		BN		∗2 ∗3
E-connector (Lead wire upward/lateral common)	300			E0		
	500			E00		
	1000			E01		
	2000			E02		
	3000			E03		
	300	●	●	E2		
	500	●	●	E20		
	1000	●	●	E21		
	2000	●	●	E22		
	3000	●	●	E23		
				E0N	 Socket None	
		●	●	E2N		
				E1	 Socket / With terminal	
		●	●	E3		
EJ-connector (With cover Socket, upward/lateral common)	1000			E01J		
	2000			E02J		
	3000			E03J		
	1000	●	●	E21J		
	2000	●	●	E22J		
	3000	●	●	E23J		

∗1: The grommet lead wire specifications are compatible with DC voltage only.
∗2: A lamp comes with the terminal box.
∗3: The terminal box conforms to EN175301-8037TypeC (former DIN43650-C).
See CKD components product website (https://www.ckd.co.jp/kiki/jp/en/) → "Model No.→ Instruction manual for details.

❹ Option

Code	Description		
Blank	No option		
A	Coolant proof		
S	Surgeless	∗1	
E	Low exoergic/energy saving circuit	∗1, ∗2	
F	Port A/B Filter integrated	 Filter	

∗1: ❸Only the electrical connections of E2∗, E2∗J, ❺ voltage "3" 24 VDC, and "4" 12 VDC are supported. In addition, surgeless "S" and low exoergic/energy saving circuit "E" cannot be selected together.
∗2: Surgeless specifications.

❺ Voltage

Code	Description
1	100 VAC
2	200 VAC
3	24 VDC
4	12 VDC
5	110 VAC

CE marking specifications — Refer to the CKD website for detailed compatible model Nos.

∗∗ - Voltage - ST

- Standard 24 VDC below the voltage are CE marking-compatible even if "ST" is not indicated in the model No.

Specifications for rechargeable battery (Catalog No.CC-1226A)

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

∗∗ - Voltage - P4

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
Lubrication (∗1)	Not required
Degree of Protection (∗2)	Dust-proof [IP40 equivalent (DIN terminal box: IP65)]
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 ISOVG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.
∗2: Avoid water drops or oil, etc., during use. IP65 (water jet proof) or equivalent applies for DIN terminal box specifications. However, the specified outer diameter of the cord and tightening torque must be used for fixing in place.

Electrical Specifications

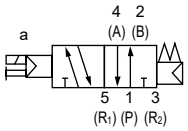
Item		Description						
Rated voltage V		24 DC	12 DC	5 DC	3 DC	100 AC	110 AC	200 AC
Voltage fluctuation range		±10%						
Holding current (A) (∗3)	Standard	0.015 (0.017)	0.030 (0.034)	0.072 (0.082)	0.120 (0.136)	0.009 (0.009)		0.006 (0.006)
	With low exoergic/ energy saving circuit	0.005	0.010	-		-		
Power consumption W (∗3)	Standard	0.35 (0.40)		0.35 (0.40)		-		
	With low exoergic/ energy saving circuit	0.1		-		-		
Apparent power VA (∗3)	Standard	-		-		0.93 (0.98)		1.20 (1.40)
Heat Resistant Class		B						
Surge suppressor		Option						
Indicator		Lamp (option)						

∗3: Values in ( ) apply when lamp is included. In addition, the type with low exoergic/energy saving circuit is only available with lamp.

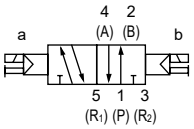
Circuit diagram symbol

● 5-port valve

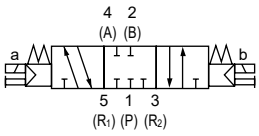
2-position single



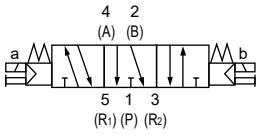
2-position double



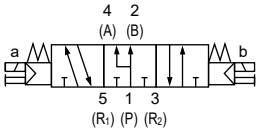
3-position
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Individual specifications

Item		4GA4
Port size	Port A/B	Push-in fitting ø8, ø10, ø12 Rc3/8, G3/8, NPT3/8
	Port P/R1/R2	Rc1/4, G1/4, NPT1/4

Performance/characteristics by model

Item			4GA4	
			at ON	at OFF
Response time ms	2-position	Single	40 (45)	60 (60)
		Double	50 (55)	50 (55)
	3-position	A/B/R connection	30 (35)	80 (80)

Values with lamp/surge suppressor are shown. The response times are values with working pressure of 0.5 MPa at 20°C, without lubrication. They depend on the pressure and the lubricant quality. Values in ( ) are for AC.

Weight

Item				4GA4
Weight g	2-position	Single	Grommet lead wire	284 (293)
			E-connector	286 (295)
			DIN terminal box	314 (323)
		Double	Grommet lead wire	318 (327)
			E-connector	322 (331)
			DIN terminal box	378 (387)
	3-position	All ports closed	Grommet lead wire	349 (358)
			E-connector	353 (362)
			DIN terminal box	409 (418)

Values in ( ) include the mounting screw and gasket. Values for the E-connector include the socket assembly (with 300 mm lead wire). For the EJ-connector, add 16 g/connector to the E-connector weight.

Flow Characteristics

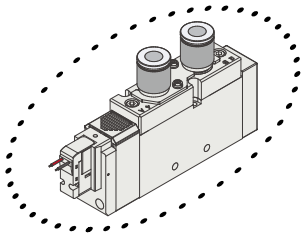
Model No.	Solenoid position		P → A/B			A/B→R1/R2		
			C[dm^3/(s·bar)]	b	Q [L/min(ANR)]	C[dm^3/(s·bar)]	b	Q [L/min(ANR)]
4GA4	2-position		8.1	0.40	2203	8.0	0.31	2047
	3-position	All ports closed	6.9	0.37	1838	7.5	0.42	2070
		A/B/R connection	6.8	0.40	1850	8.7	0.37	2317
		P/A/B connection	8.9	0.37	2370	7.6	0.27	1897

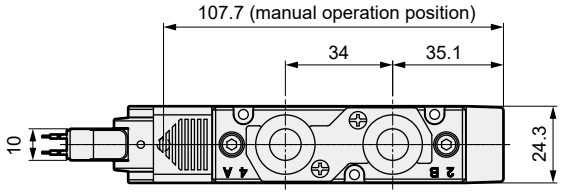
∗1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

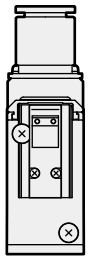
Dimensions

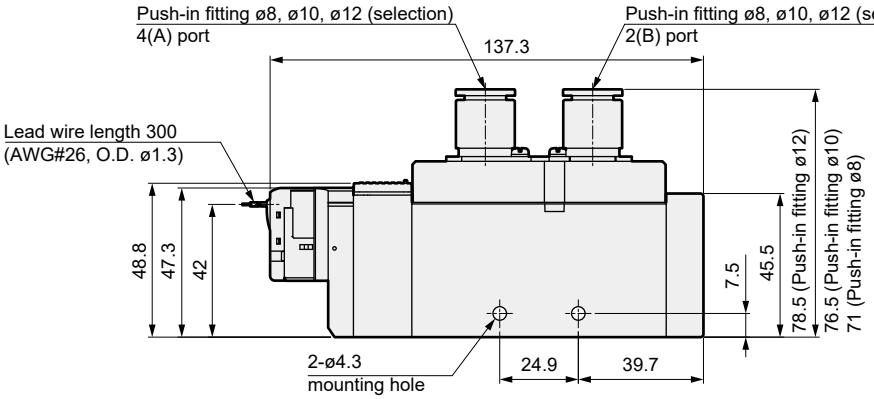
4GA410

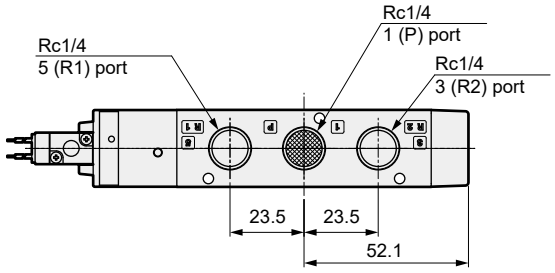
● 2-position single grommet lead wire (blank)



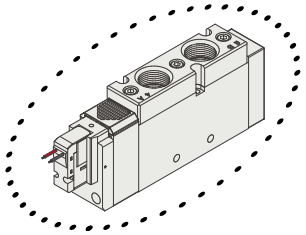


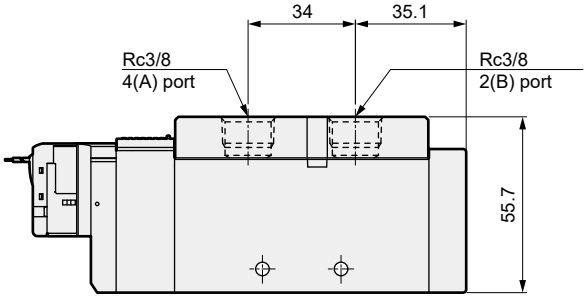






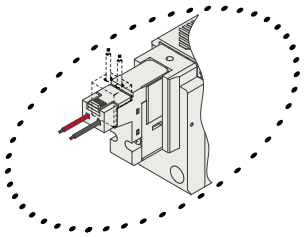
● Rc3/8 female thread (10)

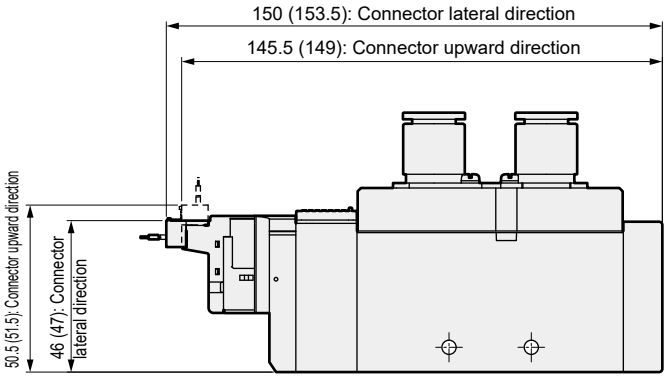




Dimensions

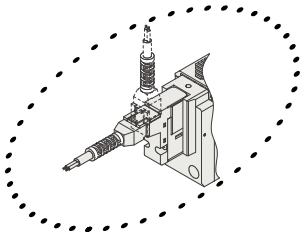
● E-connector (E)

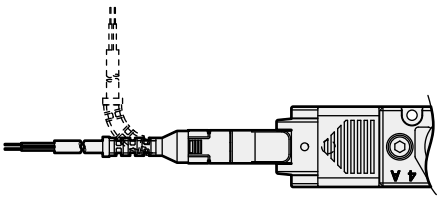


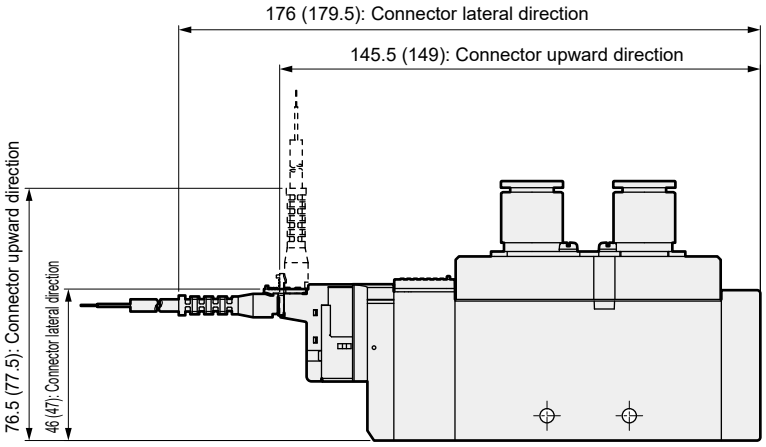


Note: Values in ( ) are for AC voltage.

● EJ-connector (E∗∗J)

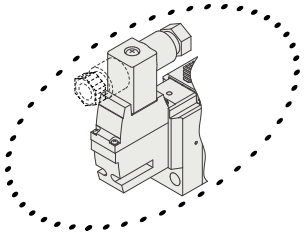


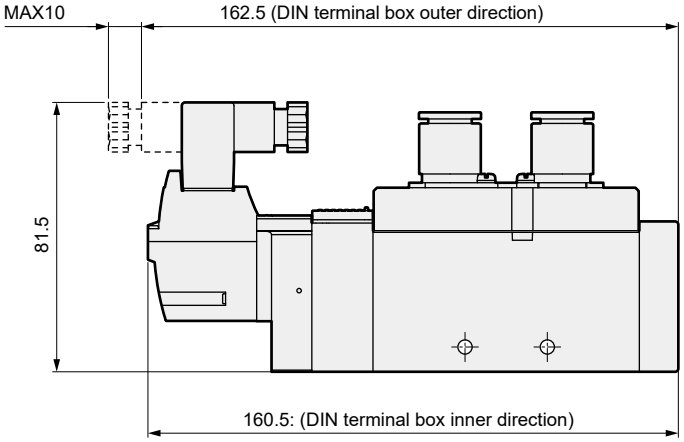




Note: Values in ( ) are for AC voltage.

● DIN terminal box (B)



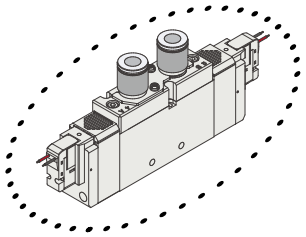


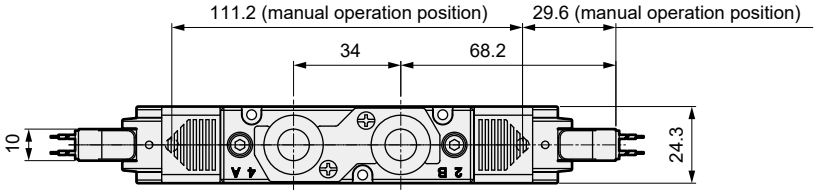
Note: DIN terminal box assembly is shipped facing inward.

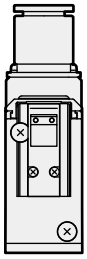
Dimensions

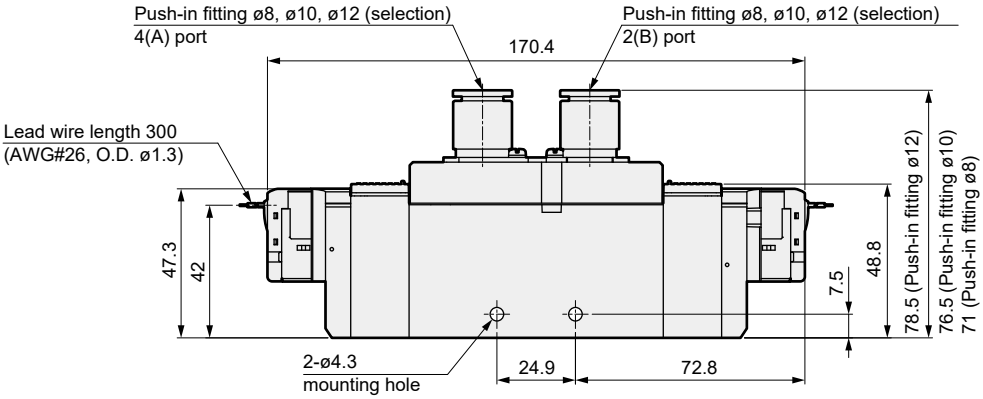
4GA420

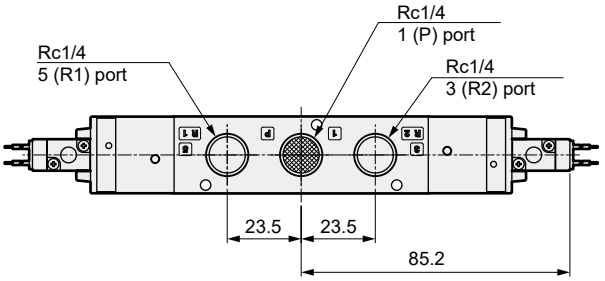
● 2-position double grommet lead wire (blank)



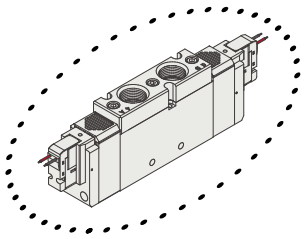


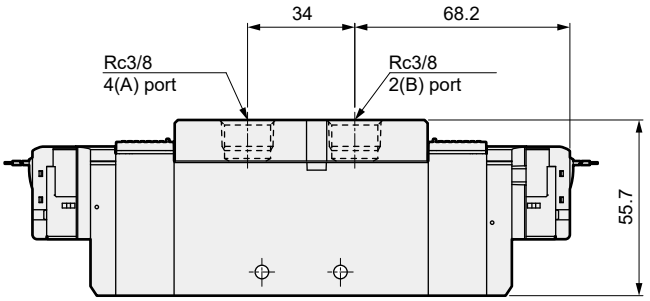






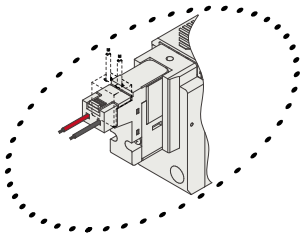
● Rc3/8 female thread (10)

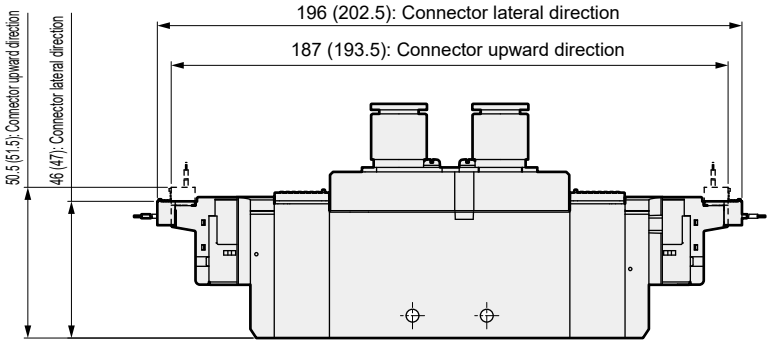




Dimensions

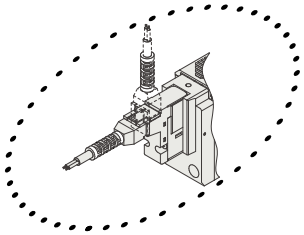
● E-connector (E)

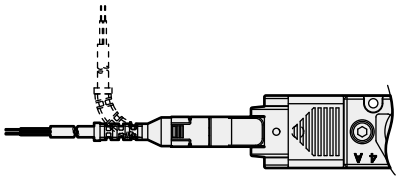


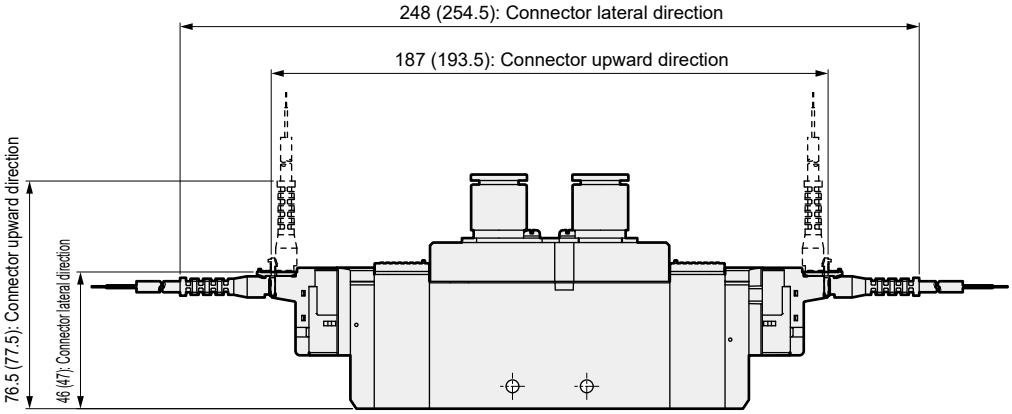


Note: Values in ( ) are for AC voltage.

● EJ-connector (E∗∗J)

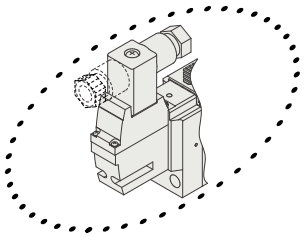


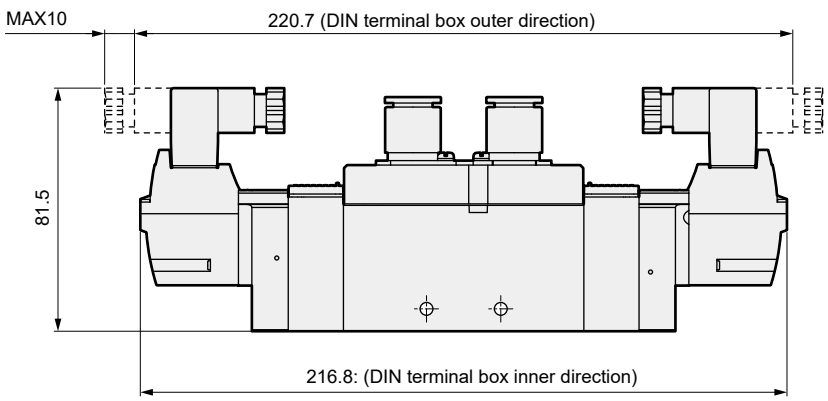




Note: Values in ( ) are for AC voltage.

● DIN terminal box (B)



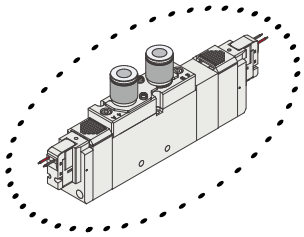


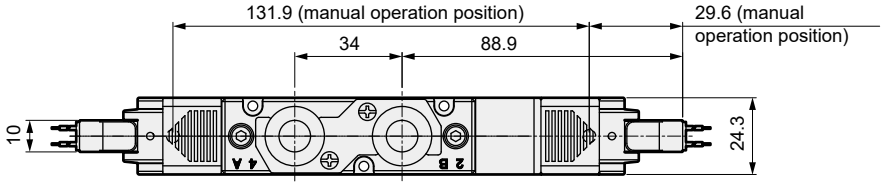
Note: DIN terminal box assembly is shipped facing inward.

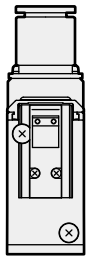
Dimensions

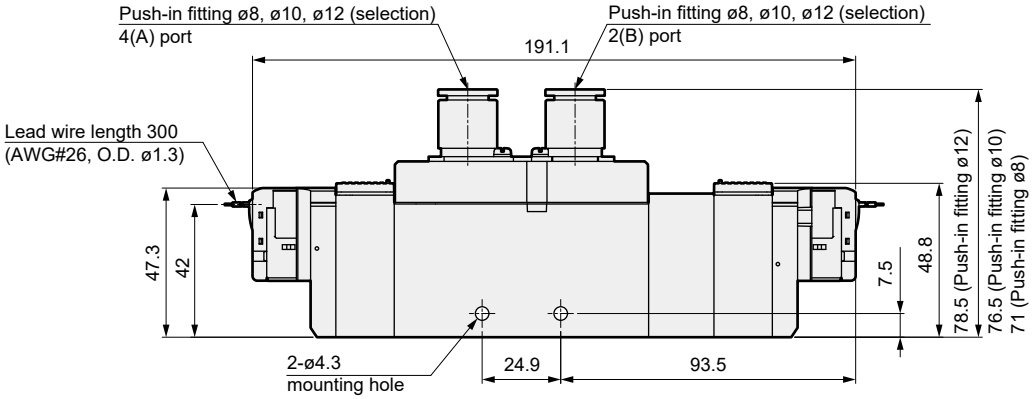
4GA4$^{3}_{5}$0

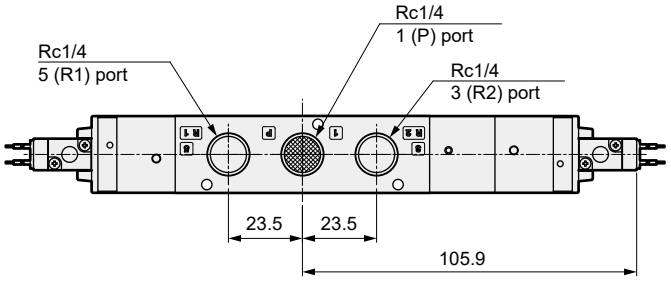
● 3-position grommet lead wire (blank)



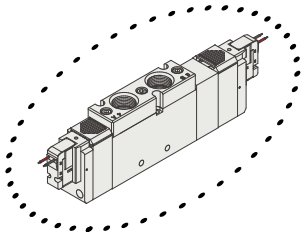


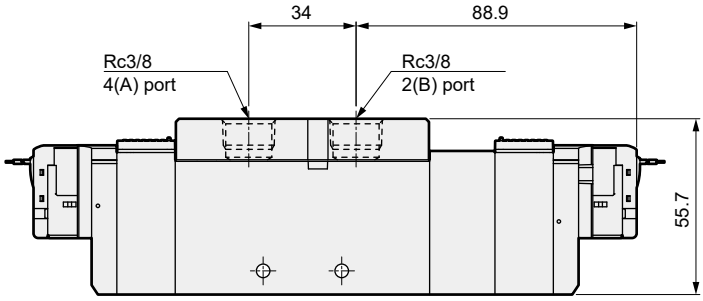






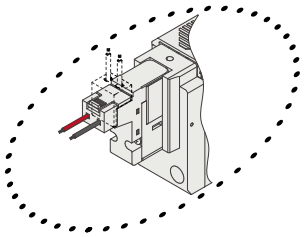
● Rc3/8 female thread (10)

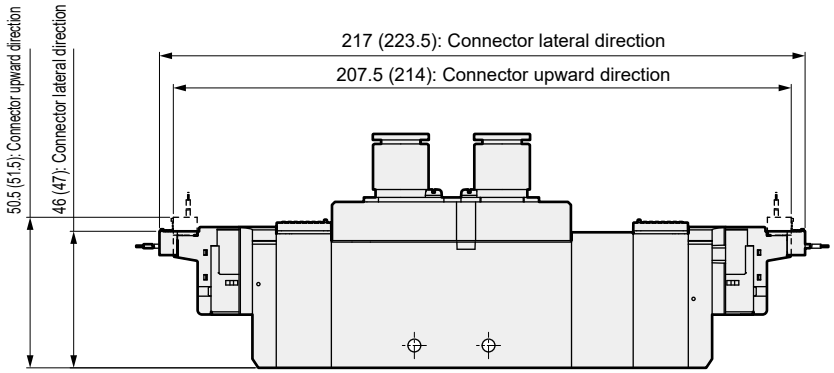




Dimensions

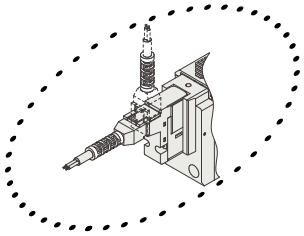
● E-connector (E)

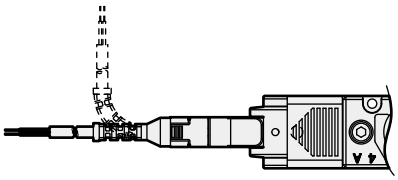


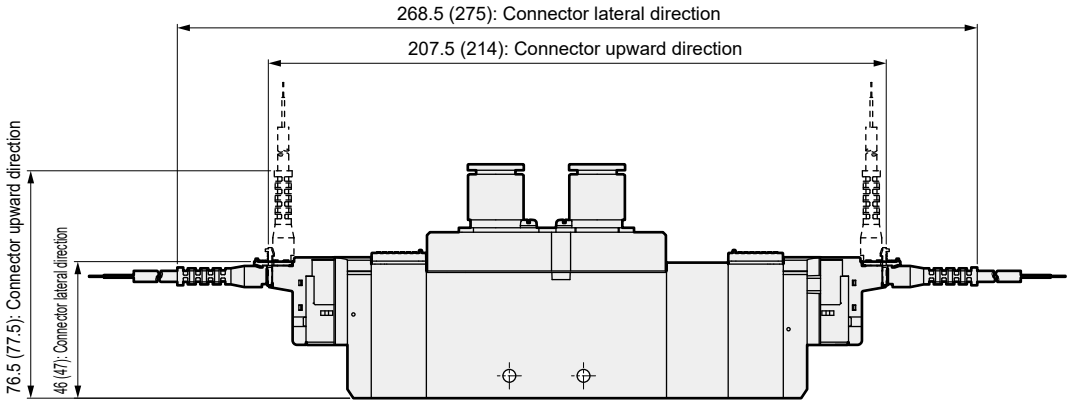


Note: Values in ( ) are for AC voltage.

● EJ-connector (E∗∗J)

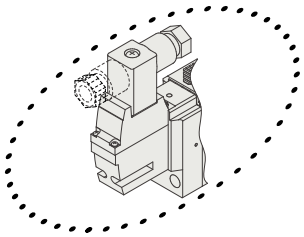


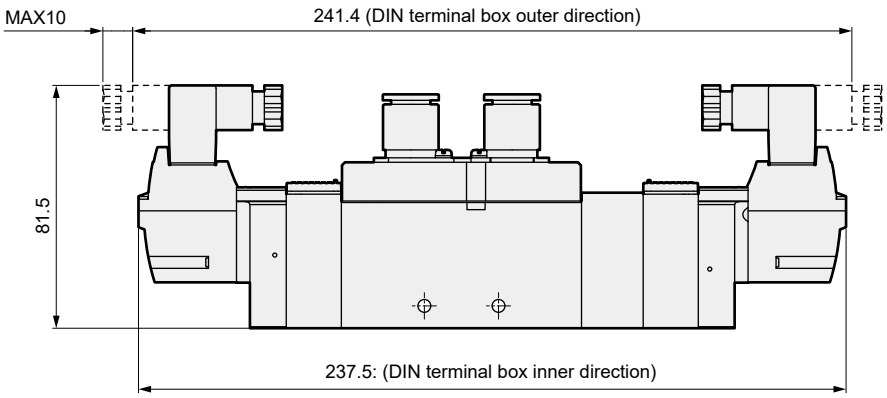




Note: Values in ( ) are for AC voltage.

● DIN terminal box (B)



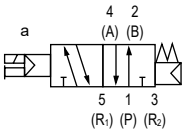


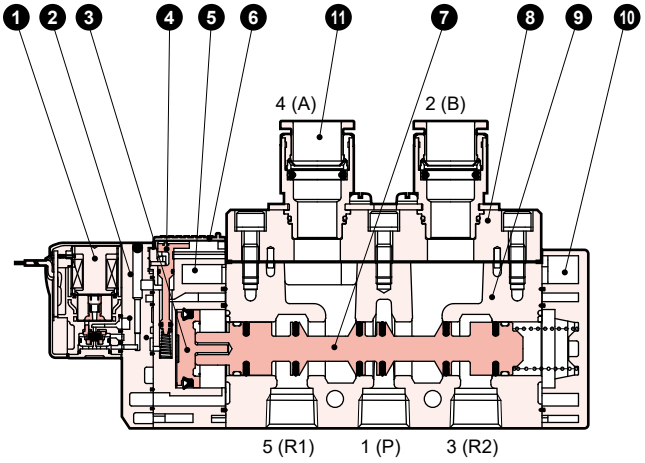
Note: DIN terminal box assembly is shipped facing inward.

Internal Structure Diagram / Material

4GA410

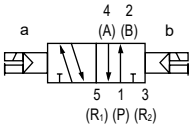
● 2-position single
Grommet lead wire (blank)

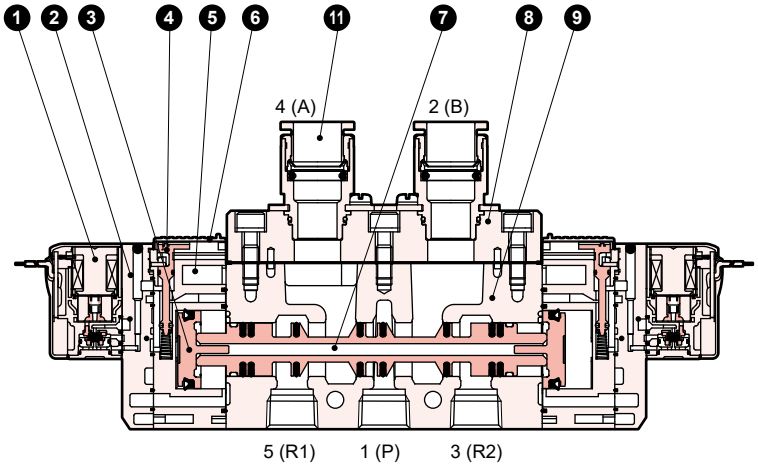




4GA420

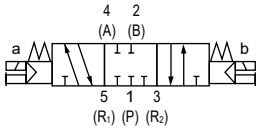
● 2-position double
Grommet lead wire (blank)

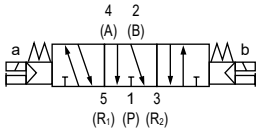


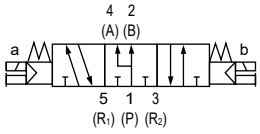


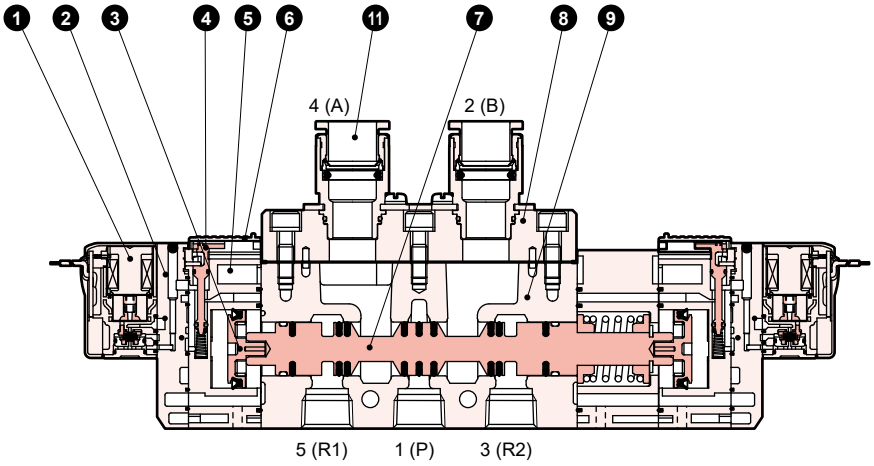
4GA4$^{3}_{5}$0

● 3-position
Grommet lead wire (blank)







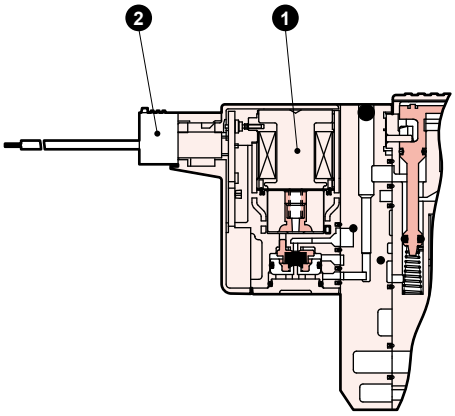


Main parts list

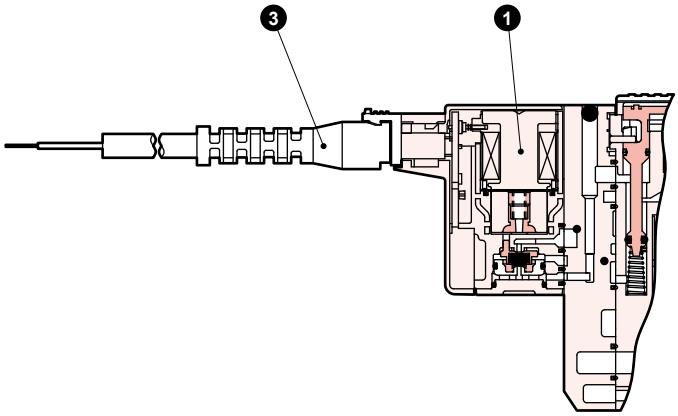
Part No.	Part name	Material	Part No.	Part name	Material
1	Coil assembly	-	7	Spool assembly	-
2	Connection adaptor	PA	8	Fitting adapter	Aluminum
3	Piston assembly	-	9	Body	Aluminum
4	Manual override	-	10	Cap	PA
5	Piston chamber	PBT	11	Cartridge push-in fitting	-
6	Manual protection cover	PBT			

Internal structure/material (electrical connections section)

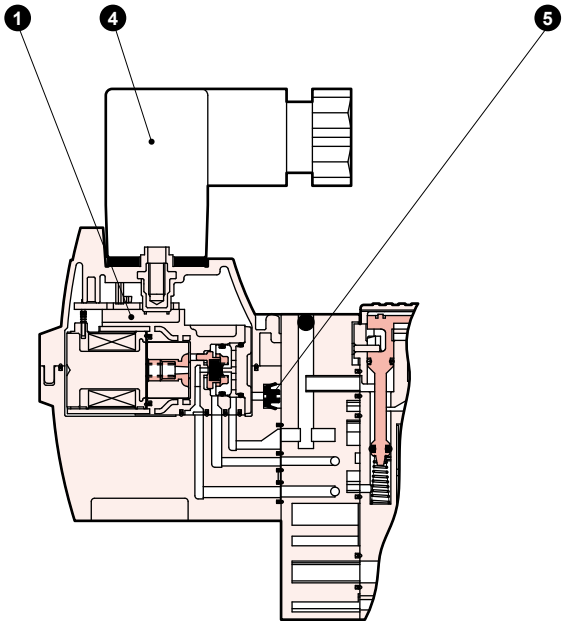
● E-connector E□□



● EJ-connector E□□J



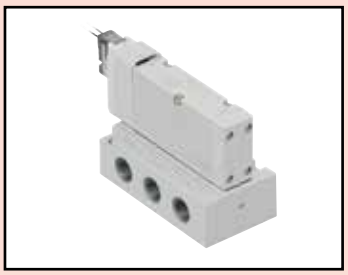
● DIN terminal box B



Main parts list

Part No.	Part name	Material	Part No.	Part name	Material
1	Coil assembly	-	4	DIN terminal box assembly	-
2	E-connector socket assembly	-	5	Check valve	NBR
3	Socket assembly with cover	-			

For maintenance parts, refer to CKD components product website (https://www.ckd.co.jp/kiki/jp/en/) → "Model No."→ Maintenance parts for details.



Discrete valve
Base piping

4GB4 Series

● Cylinder bore size: ø125 to ø160

Refer to the CKD website for detailed compatible model Nos.

How to Order

●Pilot operated 5-port valve

●5-port valve for integrated base

4GB4 1 0R - 10 - E2 A - 3

4GB4 1 9R - 00 - E2 A - 3

Model No. | ❶ Solenoid position | Solenoid valve operation classification | ❷ Port size | ❸ Electrical connections | ❹ Option | ❺ Voltage

❶ Solenoid position

Code	Description
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position A/B/R connection
5	3-position P/A/B connection

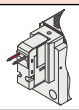
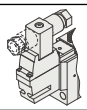
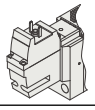
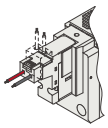
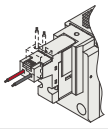
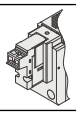
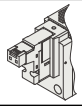
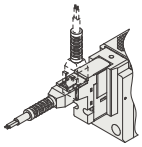
❷ Port size

Type	Port A/B	P/R Port	Code	
Female thread	Rc3/8	Rc3/8	10	
	Rc1/2	Rc1/2	15	
	G3/8	Rc3/8	10G	✳1
	G1/2	Rc1/2	15G	✳1
	NPT3/8	Rc3/8	10N	✳2
	NPT1/2	Rc1/2	15G	✳2

✳1: Port P/R is G thread.
✳2: Port P/R is NPT thread.

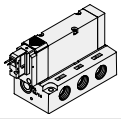
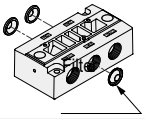
❸ Electrical connections

✳For details, see circuit diagram with surge suppressor/lamp page 987

Type	Lead wire (mm)	Surge suppressor	Lamp	Code		
Grommet lead wire	300			Blank		✳1
DIN terminal box (Pg7)		●	●	B		✳2 ✳3
		●		BN		✳2 ✳3
E-connector (Lead wire upward/lateral common) upward/lateral common)	300			E0		
	500			E00		
	1000			E01		
	2000			E02		
	3000			E03		
	300	●	●	E2		
	500	●	●	E20		
	1000	●	●	E21		
	2000	●	●	E22		
	3000	●	●	E23		
				E0N	 Socket None	
		●	●	E2N		
				E1	 Socket / With terminal	
		●	●	E3		
EJ-connector (With cover Socket, upward/lateral common)	1000			E01J		
	2000			E02J		
	3000			E03J		
	1000	●	●	E21J		
	2000	●	●	E22J		
	3000	●	●	E23J		

✳1: The grommet lead wire specifications are compatible with DC voltage only.
✳2: A lamp comes with the terminal box.
✳3: The terminal box conforms to EN175301-8037TypeC (former DIN43650-C). See CKD components product website (https://www.ckd.co.jp/kiki/en/) → "Model No.→ Instruction manual for details.

❹ Option

Code	Description	
Blank	No option	
K	External pilot	
A	Coolant proof	
✳1 S	Surgeless	
✳1,✳2 E	Low exoergic/energy saving circuit	
F	Port A/B Filter integrated	

✳1: ❸Only the electrical connections of E2✳, E2✳J, ❺ voltage "3" 24 VDC, and "4" 12 VDC are supported. In addition, surgeless "S" and low exoergic/energy saving circuit "E" cannot be selected together.
✳2: Surgeless specifications.

❺ Voltage

Code	Description
1	100 VAC
2	200 VAC
3	24 VDC
4	12 VDC
5	110 VAC

CE marking specifications

Refer to the CKD website for detailed compatible model Nos.

✳✳ - Voltage - ST

• Standard 24 VDC below the voltage are CE marking-compatible even if "ST" is not indicated in the model No.

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 (✳3)
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	Internal pilot	Main valve/pilot valve common exhaust
	External pilot	Main valve/pilot valve individual exhaust
Lubrication (✳1)		Not required
Degree of Protection (✳2)		Dust-proof [IP40 equivalent (DIN terminal box: IP65)]
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: Avoid water drops or oil, etc., during use. IP65 (water jet proof) or equivalent applies for DIN terminal box specifications. However, the specified outer diameter of the cord and tightening torque must be used for fixing in place.
✳3: The working pressure range is 0 to 0.7 MPa when the external pilot (option code: K) is selected. Also, set the external pilot pressure between 0.2 and 0.7 MPa.

Electrical Specifications

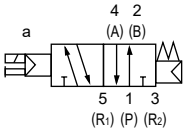
Item		Description						
Rated voltage V		24 DC	12 DC	5 DC	3 DC	100 AC	110 AC	200 AC
Voltage fluctuation range		±10%						
Holding current (A) (✳4)	Standard	0.015 (0.017)	0.030 (0.034)	0.072 (0.082)	0.120 (0.136)	0.009 (0.009)		0.006 (0.006)
	With low exoergic/ energy saving circuit	0.005	0.010	-		-		
Power consumption W (✳4)	Standard	0.35 (0.40)		0.35 (0.40)		-		
	With low exoergic/ energy saving circuit	0.1		-		-		
Apparent power VA (✳4)	Standard	-		-		0.93 (0.98)		1.20 (1.40)
Heat Resistant Class		B						
Surge suppressor		Option						
Indicator		Lamp (option)						

✳4: Values in ( ) apply when lamp is included. In addition, the type with low exoergic/energy saving circuit is only available with lamp.

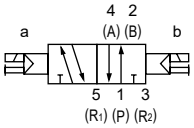
Circuit diagram symbol

● 5-port valve

2-position single

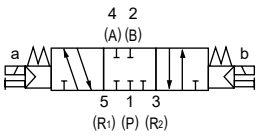


2-position double

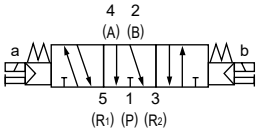


3-position

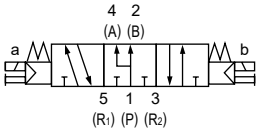
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Individual specifications

Item		4GB4
Port size	Port A/B	Rc3/8, Rc1/2, G3/8, G1/2, NPT3/8, NPT1/2
	Port P/R1/R2	Rc3/8, Rc1/2, G3/8, G1/2, NPT3/8, NPT1/2

Performance/characteristics by model

Item			4GB4	
			at ON	at OFF
Response time ms	2-position	Single	40 (45)	60 (60)
		Double	50 (55)	50 (55)
	3-position	A/B/R connection	30 (35)	80 (80)

Values with lamp/surge suppressor are shown. The response times are values with working pressure of 0.5 MPa at 20°C, without lubrication. They depend on the pressure and the lubricant quality. Values in ( ) are for AC.

Weight

Item				4GB4
Weight g	2-position	Single	Grommet lead wire	537 (230)
			E-connector	539 (232)
			DIN terminal box	661 (354)
		Double	Grommet lead wire	567 (260)
			E-connector	571 (264)
			DIN terminal box	627 (320)
	3-position	All ports Block	Grommet lead wire	602 (295)
			E-connector	606 (299)
			DIN terminal box	662 (355)

Values in ( ) do not include the single sub-plate. Values for the E-connector include the socket assembly (with 300 mm lead wire). For the EJ-connector, add 16 g/connector to the E-connector weight.

Flow Characteristics

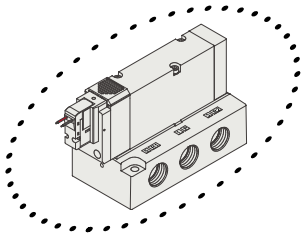
Model No.	Solenoid position		P → A/B			A/B→R1/R2		
			C[dm^3/(s·bar)]	b	Q[L/min(ANR)]	C[dm^3/(s·bar)]	b	Q[L/min(ANR)]
4GB4	2-position		11	0.19	2620	13	0.19	3096
	3-position	All ports closed	9.1	0.11	2077	12	0.27	2995
		A/B/R connection	9.2	0.11	2100	15	0.22	3634
		P/A/B connection	10	0.06	2226	12	0.24	2941

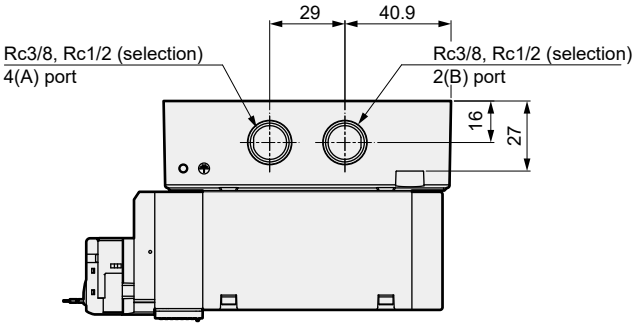
✳1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

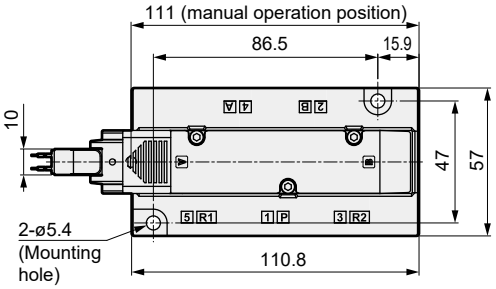
Dimensions

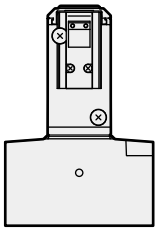
4GB410

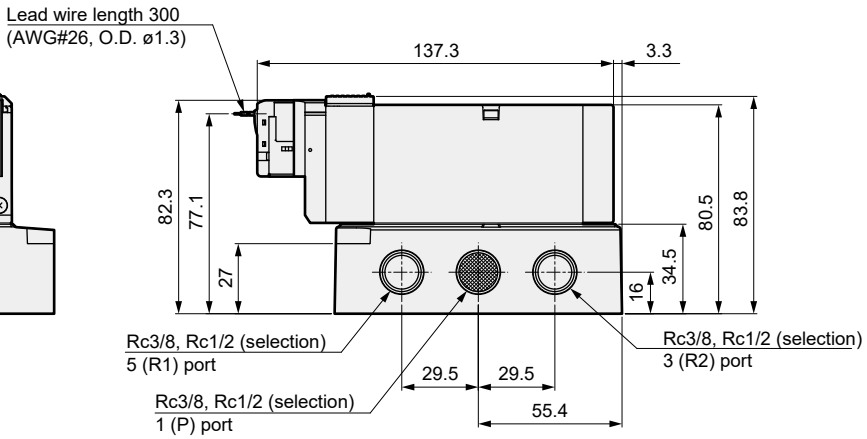
● 2-position single grommet lead wire (blank)



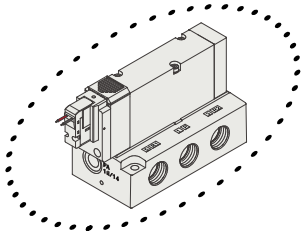


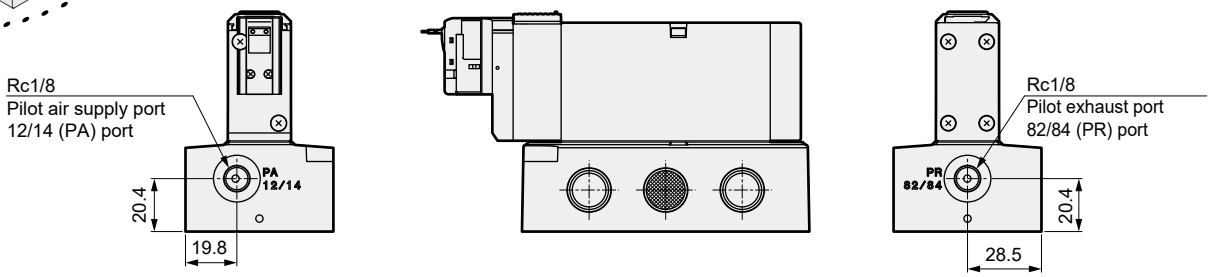






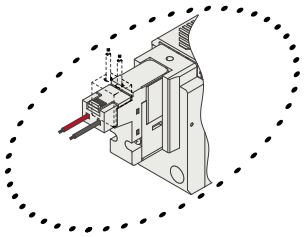
● External pilot (K)

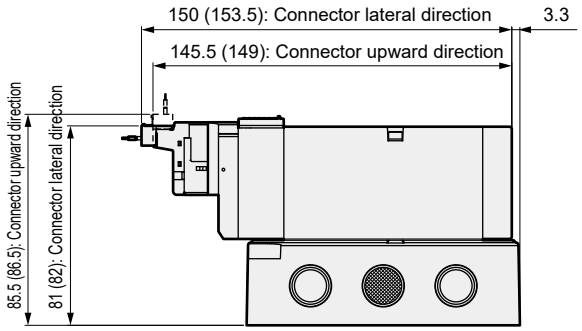




Dimensions

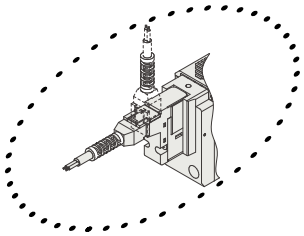
● E-connector (E)

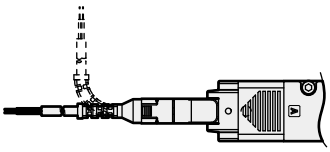


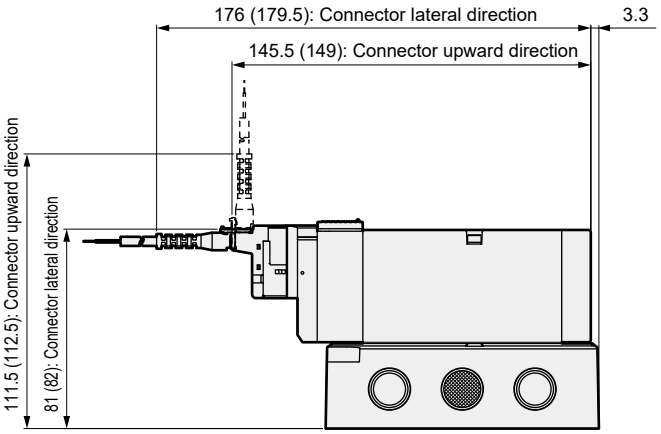


Note: Values in ( ) are for AC voltage.

● EJ-connector (E✳✳J)

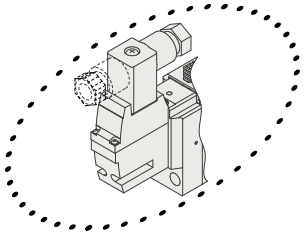


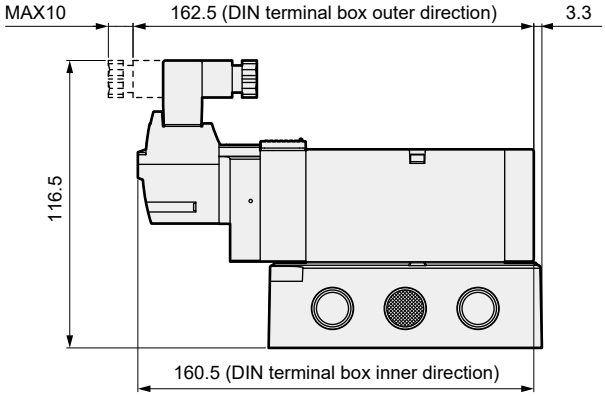




Note: Values in ( ) are for AC voltage.

● DIN terminal box (B)



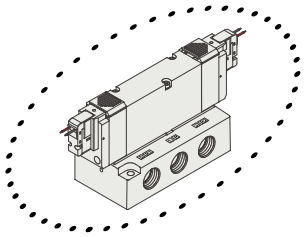


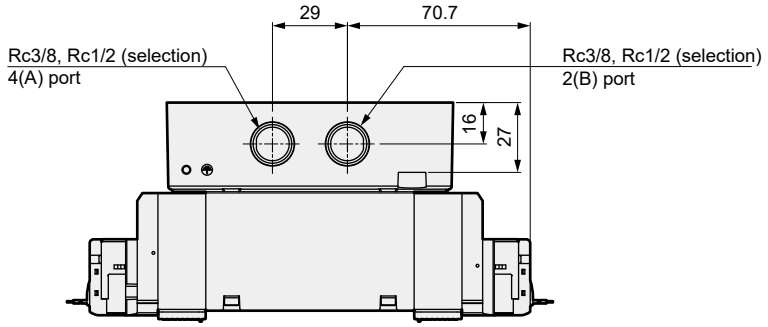
Note: DIN terminal box assembly is shipped facing inward.

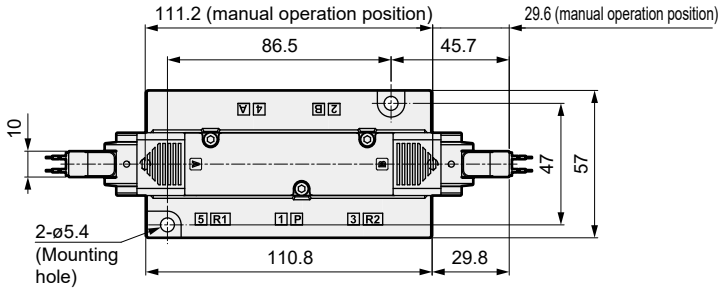
Dimensions

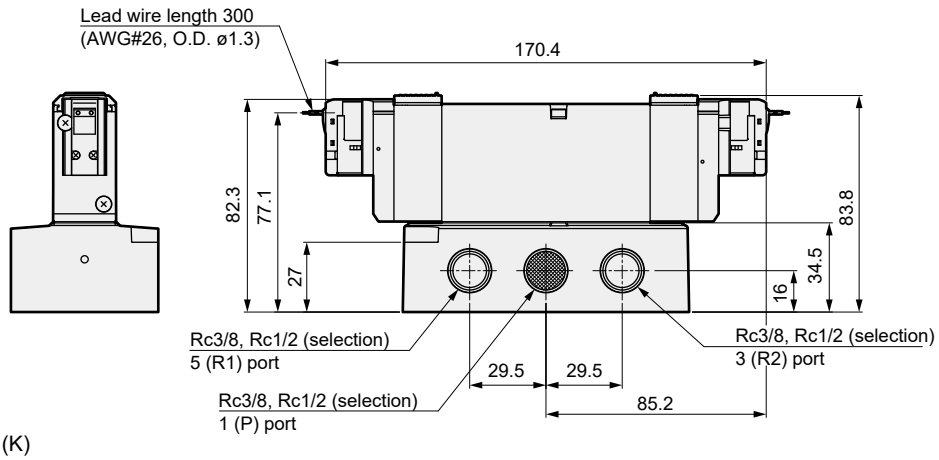
4GB420

● 2-position double Grommet lead wire (blank)

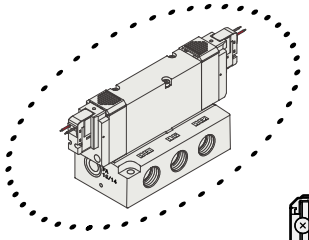


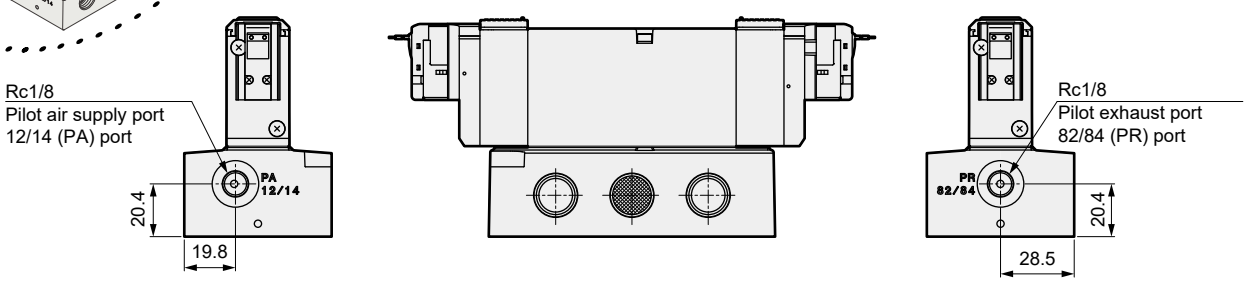






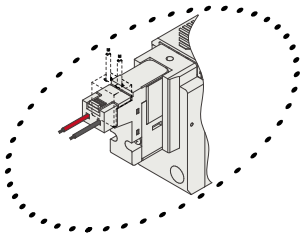
● External pilot (K)

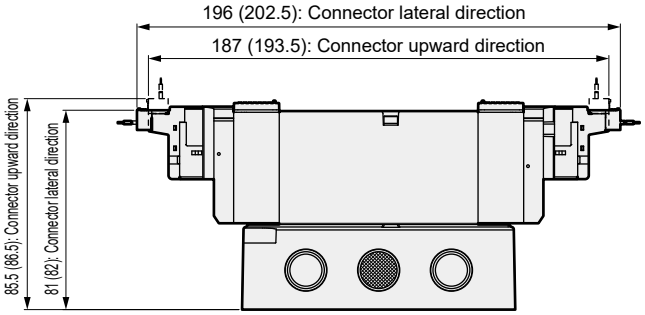




Dimensions

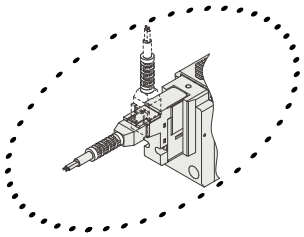
● E-connector (E)

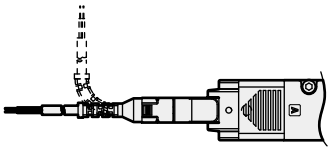


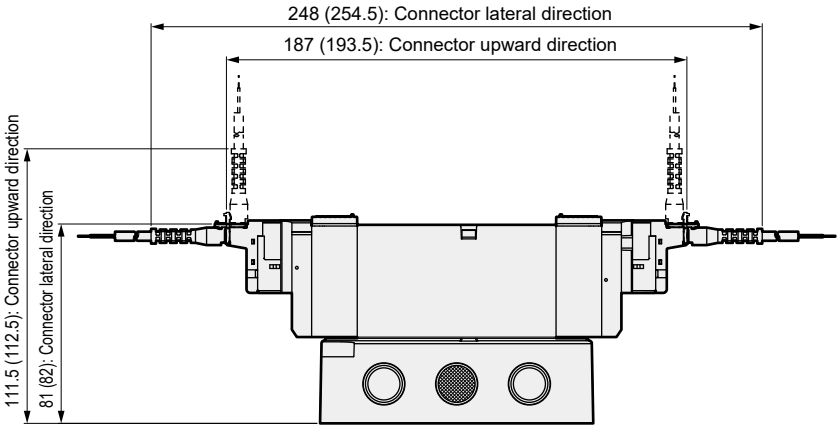


Note: Values in ( ) are for AC voltage.

● EJ-connector (E✳✳J)

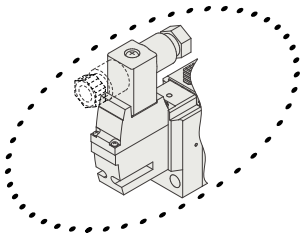


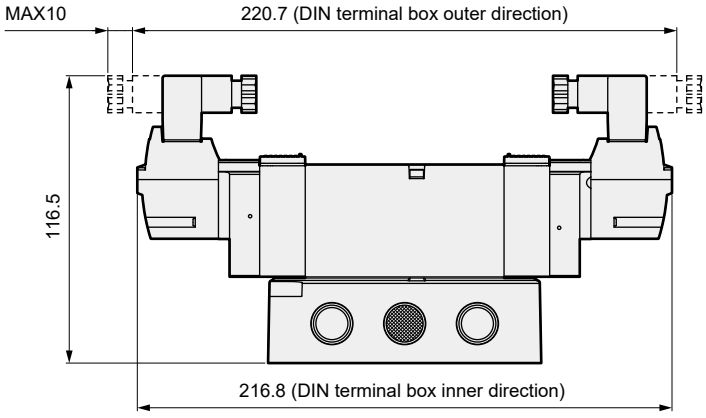




Note: Values in ( ) are for AC voltage.

● DIN terminal box (B)



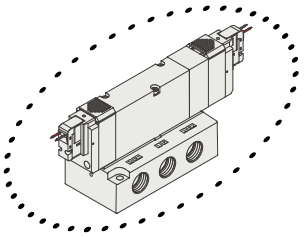


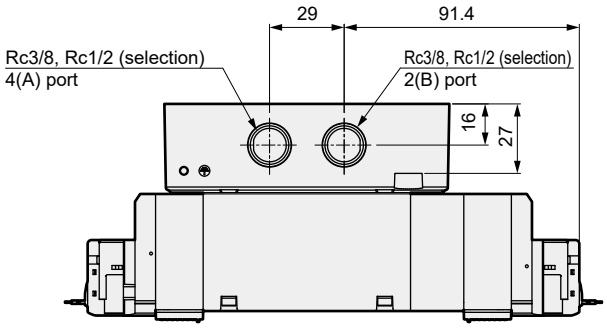
Note: DIN terminal box assembly is shipped facing inward.

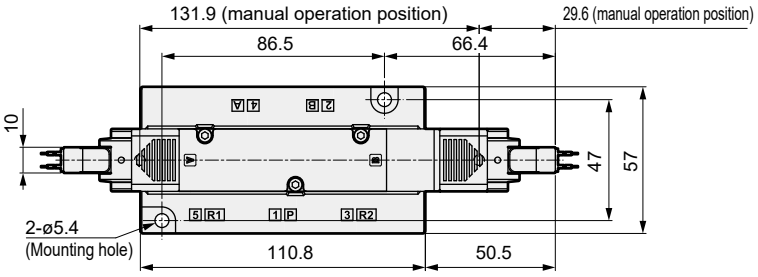
Dimensions

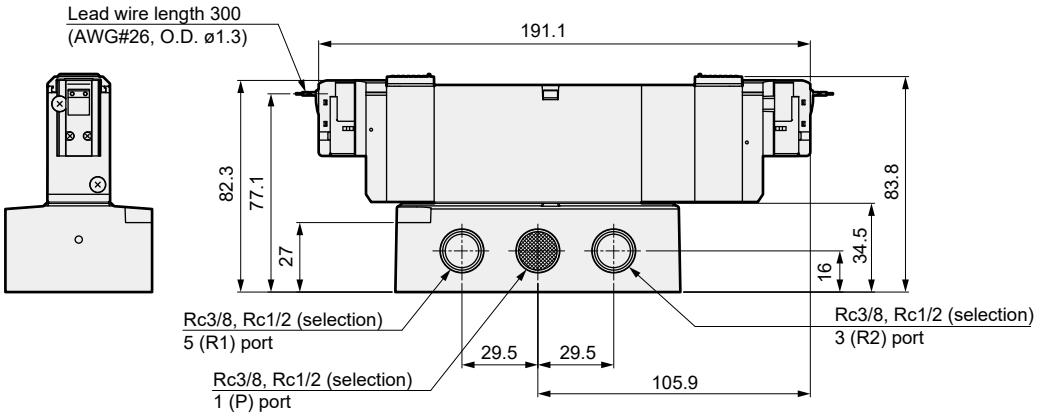
4GB4 $^{3}_{4}_{5}$0

● 3-position Grommet lead wire (blank)

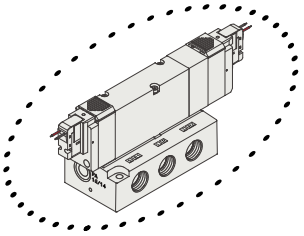


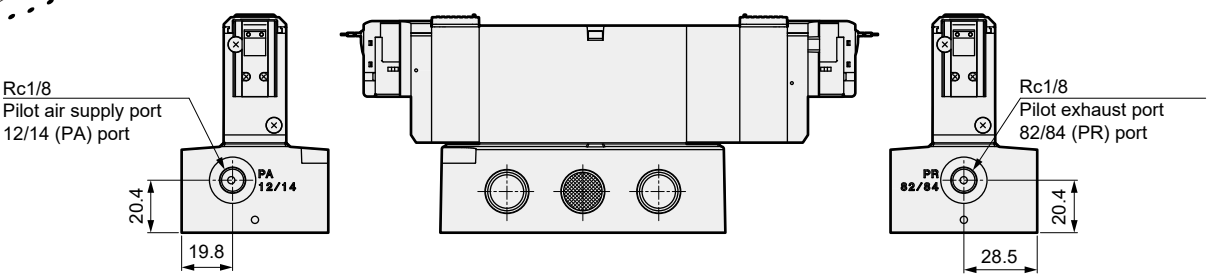






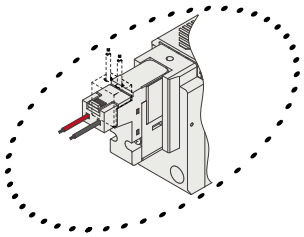
● External pilot (K)

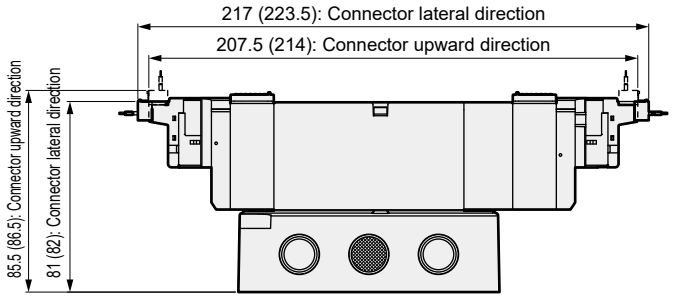




Dimensions

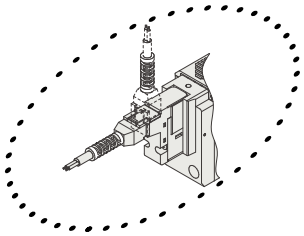
● E-connector (E)

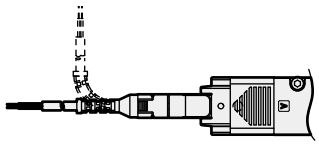


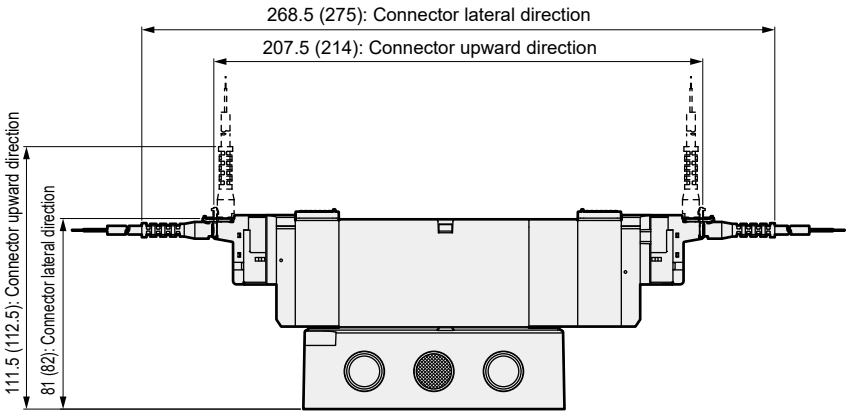


Note: Values in ( ) are for AC voltage.

● EJ-connector (E✳✳J)

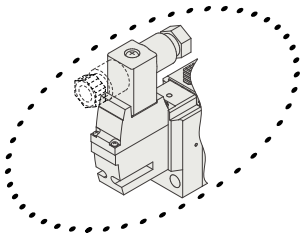


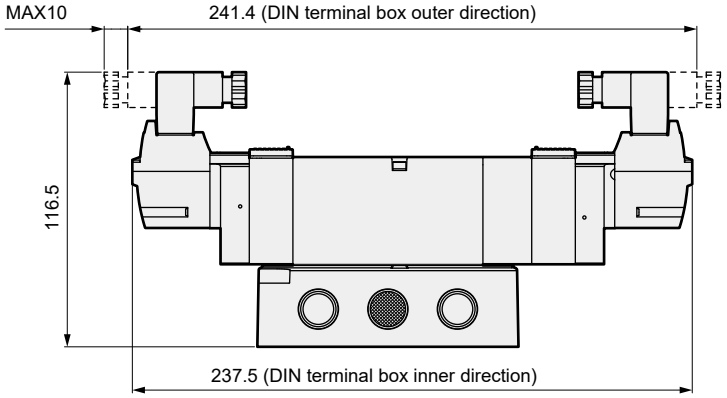




Note: Values in ( ) are for AC voltage.

● DIN terminal box (B)



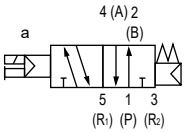


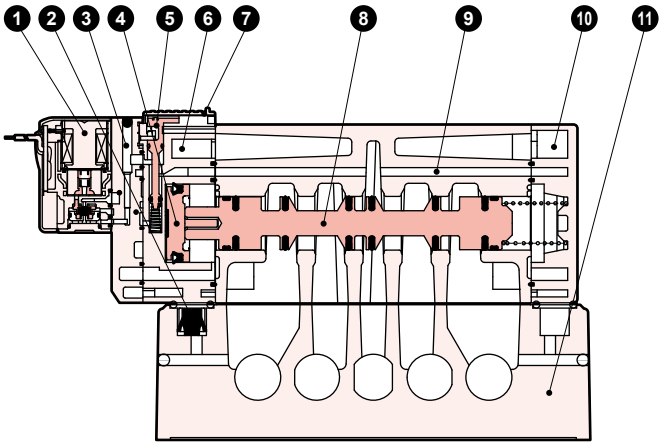
Note: DIN terminal box assembly is shipped facing inward.

Internal Structure Diagram / Material

4GB410

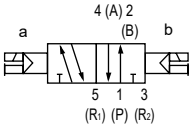
● 2-position single
Grommet lead wire (blank)

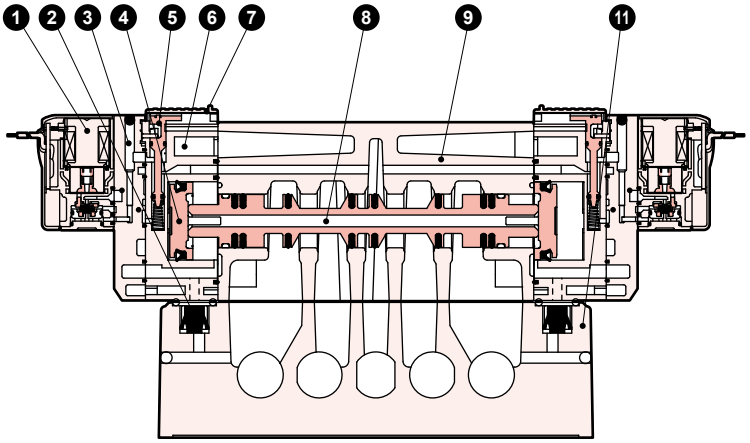




4GB420

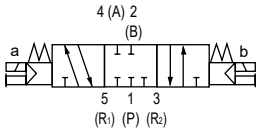
● 2-position double
Grommet lead wire (blank)

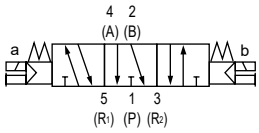


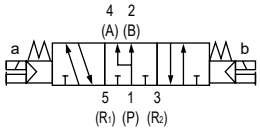


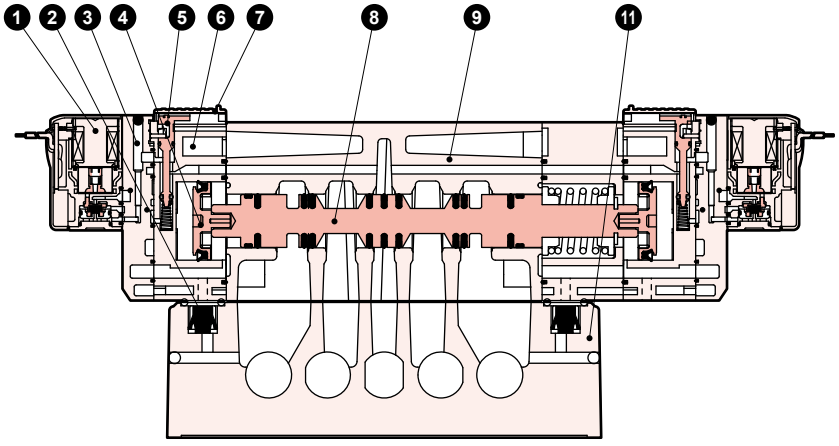
4GB4$^{3}_{5}$0

● 3-position
Grommet lead wire (blank)







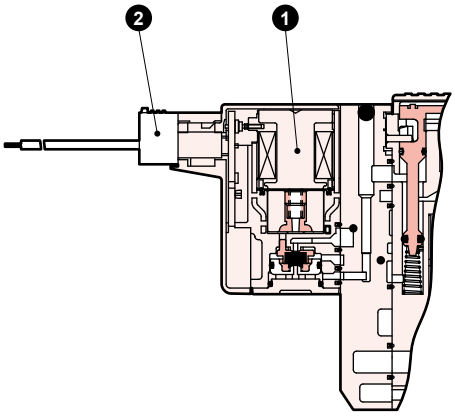


Main parts list

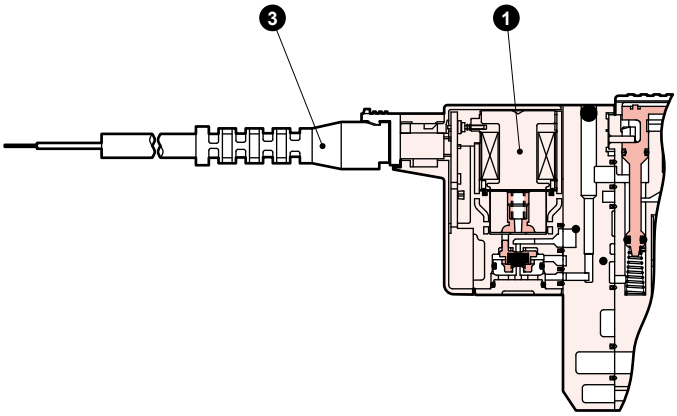
Part No.	Part name	Material	Part No.	Part name	Material
1	Coil assembly	-	7	Manual protection cover	PBT
2	Check valve	H-NBR	8	Spool assembly	-
3	Connection adaptor	PA	9	Body	Aluminum
4	Piston assembly	-	10	Cap	PA
5	Manual override	-	11	Discrete sub-plate	Aluminum
6	Piston chamber	PBT			

Internal structure/material (electrical connections)

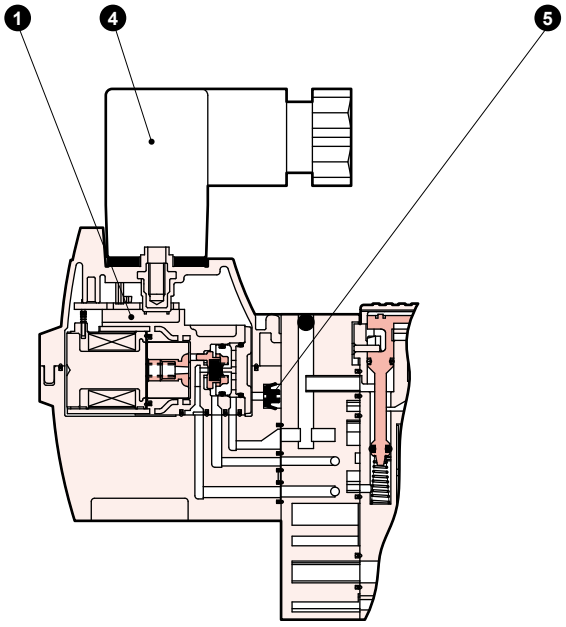
● E-connector E□□



● EJ-connector E□□J



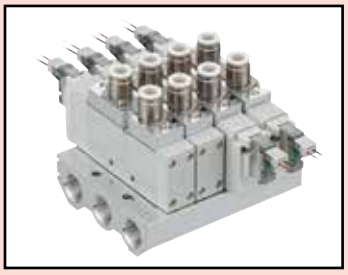
● DIN terminal box B



Main parts list

Part No.	Part name	Material	Part No.	Part name	Material
1	Coil assembly	-	4	DIN terminal box assembly	-
2	E-connector socket assembly	-	5	Check valve	NBR
3	Socket assembly with cover	-			

For maintenance parts, refer to CKD components product website (https://www.ckd.co.jp/kiki/en/) → "Model No."→ Maintenance parts for details.



Individual wiring manifold
Body piping
Direct mount

M4GA4 Series

● Cylinder bore size: ø100 to ø140

Refer to the CKD website for detailed compatible model Nos.

How to Order

●Manifold

M 4GA4 1 0R - 10 - E2 A - 3 - 3

●Single solenoid valve for manifold

4GA4 1 9R - 10 - E2 A — 3

Model No. | Operation Solenoid valve | ❸ Electrical connections | ❺ Station No.

❶ Solenoid position | ❷ Port size | ❹ Option | ❻ Voltage

❶ Solenoid position

Code	Description
1	2-position single
2	2-position double
3	3-positionAll ports closed
4	3-position A/B/R connection
5	3-position P/A/B connection
8	Mix manifold (when there are multiple solenoid positions)

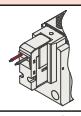
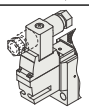
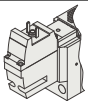
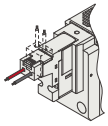
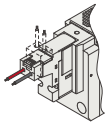
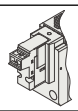
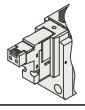
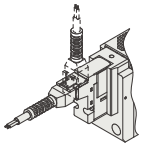
❷ Port size

Type	Port A/B	Port P/R1/R2	Code	
Push-in Fitting	ø8	Rc1/2	C8	
	ø10		C10	
	ø12		C12	
	Mix		CX	✶1
Female thread	Rc3/8		10	
	G3/8	G1/2	10G	
	NPT3/8	NPT1/2	10N	

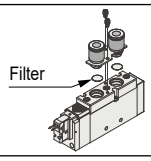
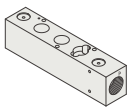
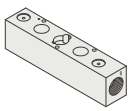
✶1: The push-in fitting cannot be mixed with the discrete valve's 4(A) or 2(B) port.

❸ Electrical connections

✶For details, see circuit diagram with surge suppressor/lamp page 987

Type	Lead wire (mm)	Surge Absorber	Lamp	Code		
Grommet lead wire	300			Blank		✶1
DIN terminal box (Pg7)		●	●	B		✶2 ✶3
		●		BN		✶2 ✶3
E-connector (Lead wire upward/lateral common)	300			E0		
	500			E00		
	1000			E01		
	2000			E02		
	3000			E03		
	300	●	●	E2		
	500	●	●	E20		
	1000	●	●	E21		
	2000	●	●	E22		
	3000	●	●	E23		
				E0N	 Socket None	
		●	●	E2N		
				E1	 Socket / With terminal	
		●	●	E3		
EJ-type connector (With cover Socket, upward/lateral common)	1000			E01J		
	2000			E02J		
	3000			E03J		
	1000	●	●	E21J		
	2000	●	●	E22J		
	3000	●	●	E23J		

❹ Option

	Code	Description	
	Blank	No option	
✶1	A	Coolant proof	
✶1	S	Surgeless	
✶1, ✶2	E	Low exoergic/energy saving circuit	
	F	Port A/B filter built in	 Filter
✶3	Z1	Air supply spacer	
✶3	Z3	Exhaust spacer	

✶1: ❸Only the electrical connections of E2✶, E2✶J, ❻voltage "3" 24 VDC, and "4" 12 VDC are supported. In addition, surgeless "S" and low exoergic/energy saving circuit "E" cannot be selected together.
✶2: Surgeless specifications.
✶3: Specify the spacer mounting position/quantity in the manifold specifications sheet. For details, see pages 1064, 1065.

✶1: The grommet lead wire specifications are compatible with DC voltage only.
✶2: A lamp comes with the terminal box.
✶3: The terminal box conforms to EN175301-8037TypeC (former DIN43650-C). For details CKD Components Product Website (https://www.ckd.co.jp/kiki/en/) →[Model No.] → Instruction manual for details.

∗Be sure to fill-in the Manifold Specifications sheet (pages 1078 to 1081).

❺ Station No.

Code	Description
2	2 stations
to	to
15	15 stations

❻ Voltage

Code	Description
1	100 VAC
2	200 VAC
3	24 VDC
4	12 VDC
5	110 VAC

CE marking specifications Refer to the CKD website for detailed compatible model Nos.

∗∗ - Voltage - ST

- ST can be selected for the model No. only of the 100 VAC terminal box.
- Standard 24 VDC below the voltage are CE marking-compatible even if "ST" is not indicated in the model No.

Specifications for rechargeable battery (Catalog No.CC-1226A)

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

∗∗ - Voltage - P4

M4GA4 Series

Individual wiring manifold; body piping

Manifold common specifications

Item	Description
Manifold	Integrated base
Mounting method	Direct mount
Air supply and exhaust method	Common supply/common exhaust
Pilot exhaust method	Main valve/pilot valve common exhaust (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)	Dust-proof [IP40 equivalent (DIN terminal box: IP65)]
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 ISOVG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.

∗2: Avoid water drops or oil, etc., during use. IP65 (water jet proof) or equivalent applies for DIN terminal box specifications. However, the specified outer diameter of the cord and tightening torque must be used for fixing in place.

Electrical Specifications

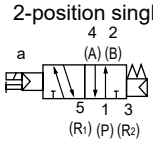
Item		Description						
Rated voltage V		24 DC	12 DC	5 DC	3 DC	100 AC	110 AC	200 AC
Voltage fluctuation range		±10%						
Holding current (A) (∗3)	Standard	0.015 (0.017)	0.030 (0.034)	0.072 (0.082)	0.120 (0.136)	0.009 (0.009)		0.006 (0.006)
	With low exoergic/ energy saving circuit	0.005	0.010	-		-		
Power consumption W (∗3)	Standard	0.35 (0.40)		0.35 (0.40)		-		
	With low exoergic/ energy saving circuit	0.1		-		-		
Apparent power VA (∗3)	Standard	-		-		0.93 (0.98)		1.20 (1.40)
Heat Resistant Class		B						
Surge suppressor		Option						
Indicator		Lamp (option)						

∗3: Values in ( ) apply when lamp is included. In addition, the type with low exoergic/energy saving circuit is only available with lamp.

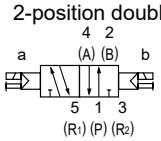
Circuit diagram symbol

● 5-port valve

2-position single

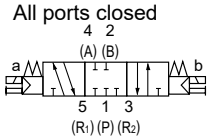


2-position double

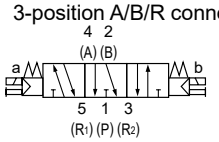


3-position

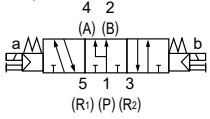
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Individual specifications

Item			M4GA4 Direct mount
Max. station No.			15 stations
Port size	Port A/B		Push-in fitting ø8, ø10, ø12 Rc3/8, G3/8, NPT3/8
	Port P/R1/R2		Rc1/2, G1/2, NPT1/2
Manifold base		Standard	150n+199
Weight calculation formula (n: station No.) g		External pilot	379n+617

If air supply/exhaust flow rate is insufficient due to simultaneous operation of multiple stations, use ports on both sides for air supply and exhaust, or consider the use of an air supply/exhaust spacer. The manifold base weight is the value for screw specifications.

Performance/characteristics by model

Item			M4GA4	
			at ON	at OFF
Response time ms	2-position	Single	40 (45)	60 (60)
		Double	50 (55)	50 (55)
	3-position	A/B/R connection	30 (35)	80 (80)

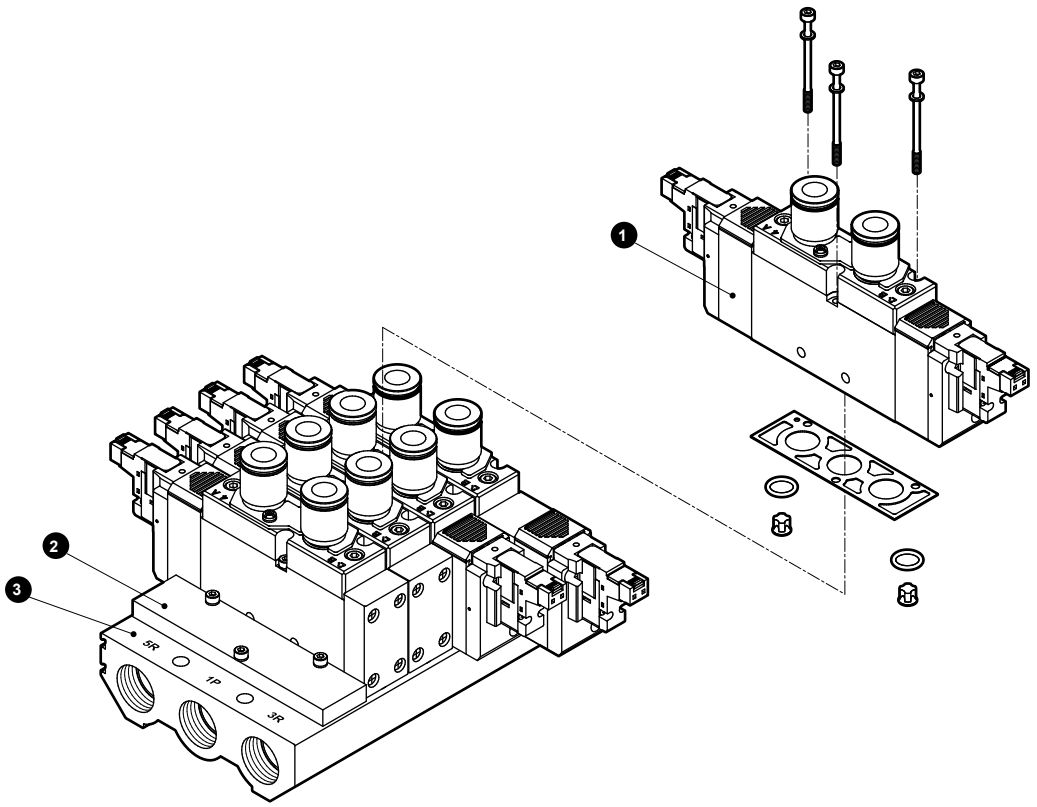
Values with lamp/surge suppressor are shown. The response times are values with working pressure of 0.5 MPa at 20°C, without lubrication. They depend on the pressure and the lubricant quality. Values in ( ) are for AC.

Flow Characteristics

Model No.	Solenoid position		P → A/B			A/B→R1/R2		
			C[dm³/(s·bar)]	b	Q[L/min(ANR)]	C[dm³/(s·bar)]	b	Q[L/min(ANR)]
M4GA4	2-position		7.3	0.12	1675	9.0	0.17	2120
	3-position	All ports closed	6.4	0.15	1492	8.2	0.22	1987
		A/B/R connection	6.4	0.16	1500	9.3	0.19	2215
		P/A/B connection	8.0	0.08	1798	8.3	0.22	2011

∗1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

Manifold configuration parts



Main configuration parts list

Part No.	Configuration parts name	Model No.	Description	Remarks
1	Discrete valve for integrated base	4GA4□9R - Port size - Electrical connections - Option - Voltage Solenoid position	Discrete valve Gasket Mounting screw 3 O-ring 2 Check valve 2 (1)	Size / Tightening torque (N·m): 4GA4 — M3 — 1.7
2	Masking plate	4GA4-MP	Masking plate Gasket Mounting screw 3 O-ring 2 Check valve 2	
3	Manifold base assembly	M4GA4 - Port size - Option - Station No.	Manifold base	Port size: 00 — Rc1/2; 00G — G1/2; 00 N — NPT1/2

( ) applies when 4GA419R is selected.

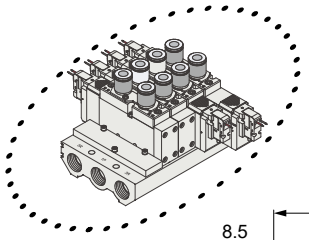
For maintenance parts, refer to the CKD Components Product site (https://www.ckd.co.jp/kiki/jp/en/)→"Model No."→ Maintenance parts for details.

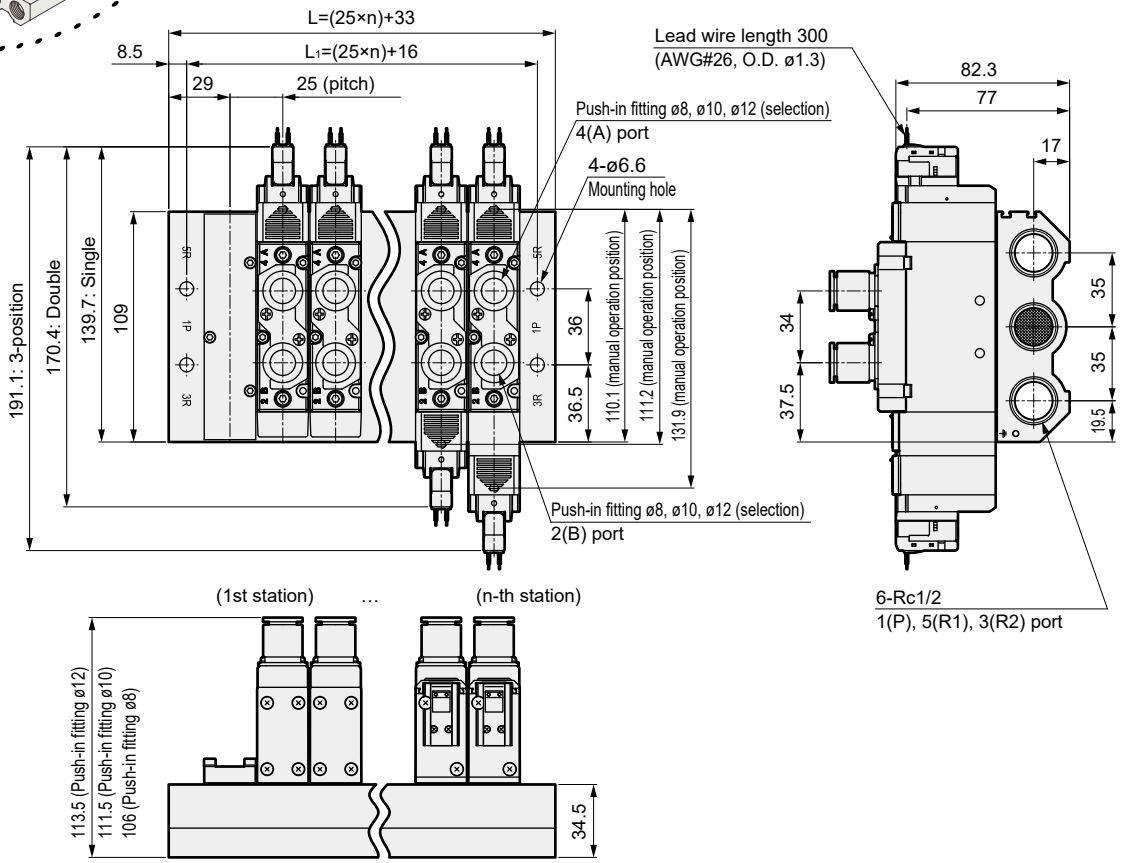
MEMO

Dimensions

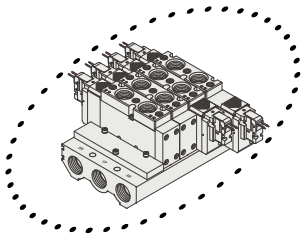
M4GA4

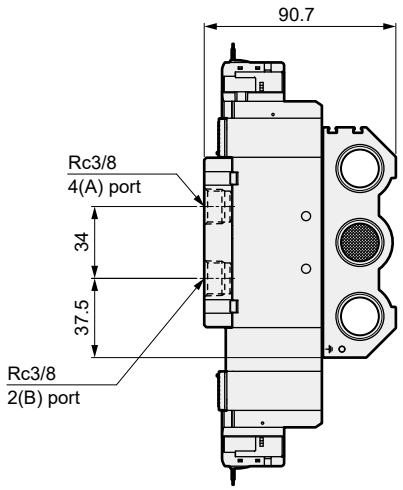
● Grommet lead wire (blank)





● Rc3/8 female thread (10)

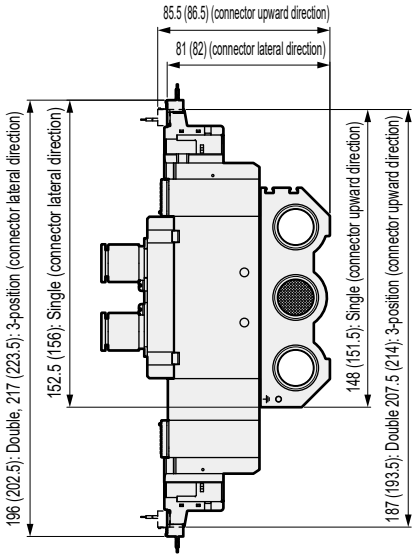




Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15
L	83	108	133	158	183	208	233	258	283	308	333	358	383	408
L_1	66	91	116	141	166	191	216	241	266	291	316	341	366	391

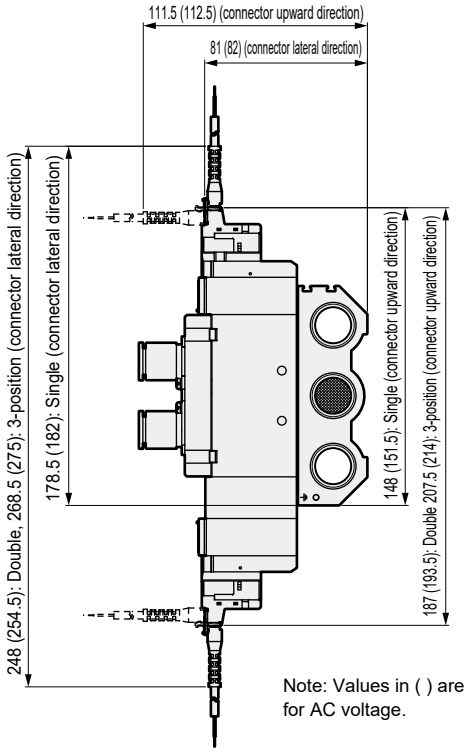
Dimensions

● E-connector (E)



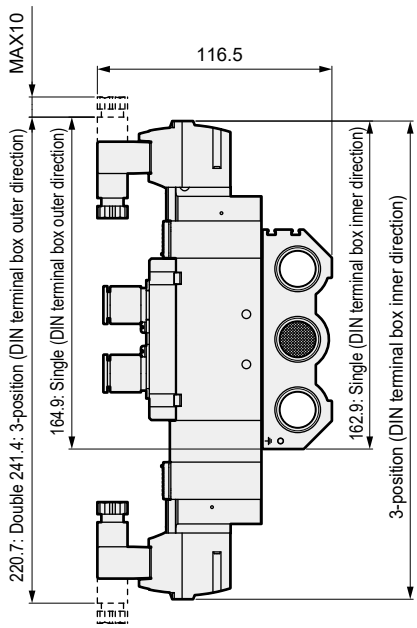
Note: Values in ( ) are for AC voltage.

● EJ-connector (E**J)



Note: Values in ( ) are for AC voltage.

● DIN terminal box (B)



Note: DIN terminal box assembly is shipped facing inward.

Individual wiring manifold
Base piping
Direct mount

M4GB4-(D) Series

● Cylinder bore size: ø100 to ø140

Refer to the CKD website for detailed compatible model Nos.

How to Order

●Manifold 5-port valve

●5-port valve for Discrete base mounting

M	4GB4	1	0R	-	10	-	E2	QD	-	3	-	3
	4GB4	1	9R	-	00	-	E2	A				3

Model No. / ❶ Solenoid position / Solenoid valve operation class / ❷ Port size / ❸ Electrical connections / ❹ Option / ❺ Mount type / ❻ Station No. / ❼ Voltage

❶ Solenoid position

Code	Description
1	2-position single
2	2-position double
3	3-positionAll ports closed
4	3-position A/B/R connection
5	3-position P/A/B connection
8	Mix manifold (when there are multiple solenoid positions)

❷ Port size

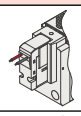
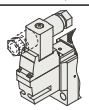
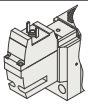
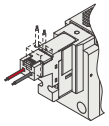
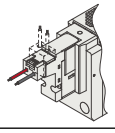
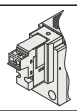
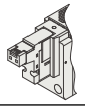
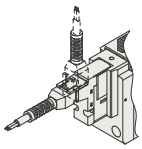
Type	A/B Port	Port P/R1/R2 ∗1 ❹Option Other than "K"	Port P/R1/R2 ∗1 ❹Option "K"	Code
Push-in fitting	ø8	Rc3/8	Rc1/2	C8
	ø10			C10
	ø12			C12
	Mix			CX

Type	A/B Port	Port P/R1/R2 ∗1 ❹Option Other than "K"	Port P/R1/R2 ∗1 ❹Option "K"	Code
Female thread	Rc1/4	Rc3/8	Rc1/2	08
	Rc3/8			10
	Rc1/2	Rc1/2		15
	G1/4	G3/8	G1/2	08G
	G3/8			10G
	G1/2	G1/2		15G
	NPT1/4	NPT3/8	NPT1/2	08N
	NPT3/8			10N
	NPT1/2	NPT1/2		15N

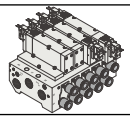
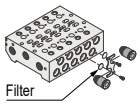
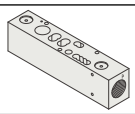
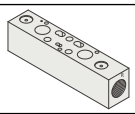
∗1: Two types of bases are available. Dimensions differ by bore size of port P/R1/R2.

❸ Electrical connections

∗For details, see circuit diagram with surge suppressor/lamp page 987

Type	Lead wire (mm)	Surge Absorber	Lamp	Code		
Grommet lead wire	300			Blank		∗1
DIN terminal box (Pg7)		●	●	B		∗2 ∗3
		●		BN		∗2 ∗3
E-connector (Lead wire upward/lateral common)	300			E0		
	500			E00		
	1000			E01		
	2000			E02		
	3000			E03		
	300	●	●	E2		
	500	●	●	E20		
	1000	●	●	E21		
	2000	●	●	E22		
	3000	●	●	E23		
				E0N	 Socket None	
		●	●	E2N		
				E1	 Socket / With terminal	
		●	●	E3		
EJ-type connector (With cover Socket, upward/lateral common)	1000			E01J		
	2000			E02J		
	3000			E03J		
	1000	●	●	E21J		
	2000	●	●	E22J		
	3000	●	●	E23J		

❹ Option

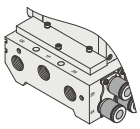
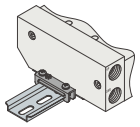
	Code	Description	
	Blank	No option	
∗1	K	External pilot	
	A	Coolant proof	
∗2	S	Surgeless	
∗2,∗3	E	Low exoergic/energy saving circuit	
	F	Port A/B Filter integrated	 Filter
∗4 ∗5	Z1	Air supply spacer	
∗4 ∗5	Z3	Exhaust spacer	

∗1: Consult with CKD for vacuum specifications.
∗2: ❸Only the electrical connections of E2∗, E2∗J, ❻voltage "3" 24 VDC, and "4" 12 VDC are supported. In addition, surgeless "S" and low exoergic/energy saving circuit "E" cannot be selected together.
∗3: Surgeless specifications.
∗4: Specify the spacer mounting position/quantity in the manifold specifications sheet. For details, see pages 1064, 1065.
∗5: Cannot be selected with discrete valve for integrated base.

∗1: The grommet lead wire specifications are compatible with DC voltage only.
∗2: A lamp comes with the terminal box.
∗3: The terminal box conforms to EN175301-8037TypeC (former DIN43650-C). See CKD components product website (https://www.ckd.co.jp/kiki/jp/en/) → "Model No.→ Instruction manual for details.

∗Be sure to fill-in the Manifold Specifications sheet (pages 1078 to 1081).

❺ Mount type

Code	Description	
Blank	Direct mount	
∗1, ∗2 QD	DIN rail mount	

∗1: DIN rail mounting is only for the port P/R Rc3/8 base. ❹Option "K" external pilot is not available.
∗2: Cannot be selected with discrete valve for integrated base.

❻ Station No.

Code	Description
2	2 stations
to	to
15	15 stations

∗1: Refer to page 1018 for the max. station number per port size.

❼ Voltage

Code	Description
1	100 VAC
2	200 VAC
3	24 VDC
4	12 VDC
5	110 VAC

CE marking specifications Refer to the CKD website for detailed compatible model Nos.

∗∗ - Voltage - ST

- ST can be selected for the model No. only of the 100 VAC terminal box.
- Standard 24 VDC below the voltage are CE marking-compatible even if "ST" is not indicated in the model No.

Specifications for rechargeable battery (Catalog No.CC-1226A)

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

∗∗ - Voltage- P4

M4GB4 Series

Individual wiring manifold; base piping

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 (Pilot exhaust check valve built-in)
	External pilot	Main valve/pilot valve individual exhaust
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 (∗3)
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)		Dust-proof [IP40 equivalent (DIN terminal box: IP65)]
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 ISOVG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.

∗2: Avoid water drops or oil, etc., during use. IP65 (water jet proof) or equivalent applies for DIN terminal box specifications. However, the specified outer diameter of the cord and tightening torque must be used for fixing in place.

∗3: The working pressure range is 0 to 0.7 MPa when the external pilot (option code: K) is selected. Also, set the external pilot pressure between 0.2 and 0.7 MPa.

Electrical Specifications

Item		Description						
Rated voltage V		24 DC	12 DC	5 DC	3 DC	100 AC	110 AC	200 AC
Voltage fluctuation range		±10%						
Holding current (A) (∗4)	Standard	0.015 (0.017)	0.030 (0.034)	0.072 (0.082)	0.120 (0.136)	0.009 (0.009)		0.006 (0.006)
	With low exoergic/energy saving circuit	0.005	0.010	-		-		
Power consumption W (∗4)	Standard	0.35 (0.40)		0.35 (0.40)		-		
	With low exoergic/energy saving circuit	0.1		-		-		
Apparent power VA (∗4)	Standard	-		-		0.93 (0.98)		1.20 (1.40)
Heat Resistant Class		B						
Surge suppressor		Option						
Indicator		Lamp (option)						

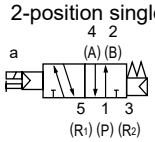
∗4 : Values in ( ) apply when lamp is included. In addition, the type with low exoergic/energy saving circuit is only available with lamp.

Vibration/impact
For DIN rail mount, use with vibration of 30 m/s^2 or less and impact of 150 m/s^2 or less.

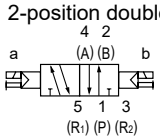
Circuit diagram symbol Individual specifications

● 5-port valve

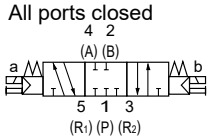
2-position single



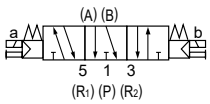
2-position double



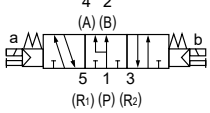
3-position
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Item		M4GB4			
		Direct mount			DIN rail mount (∗4)
Pilot operated		Standard (Internal pilot)		External pilot (∗3)	Standard (Internal pilot)
Max. station No.		15 stations	12 stations		5 stations
Port size	Port A/B	Push-in fitting ø8, ø10, ø12 Rc1/4, Rc3/8 G1/4, G3/8 NPT1/4, NPT3/8	Rc1/2, G1/2, NPT1/2	Push-in fitting ø8, ø10, ø12 Rc1/4, Rc3/8, Rc1/2 G1/4, G3/8, G1/2 NPT1/4, NPT3/8, NPT1/2	Push-in fitting ø8, ø10, ø12 Rc1/4, Rc3/8 G1/4, G3/8 NPT1/4, NPT3/8
	Port P/R1/R2	Rc3/8, G3/8, NPT3/8 (∗1)	Rc1/2, G1/2, NPT1/2(∗2)		Rc3/8, G3/8, NPT3/8
Manifold base Weight calculation formula (n: station No.) g		273n+329	391n+560	392n+555	278n+1082

Refer to (CKD components Products website (https://www.ckd.co.jp/kiki/jp/)→ "Model No." → Instruction manual for details on "Cautions for mounting the DIN rail", before selecting the manifold.

If air supply/exhaust flow rate is insufficient due to simultaneous operation of multiple stations, use ports on both sides for air supply and exhaust, or consider the use of an air supply/exhaust spacer. The manifold base weight is the value for screw specifications.

Dimensions of port sizes (port P/R1/R2) of Rc3/8 and Rc1/2 are different.

∗1: Refer to dimensions diagram of port size Rc3/8 pages 1022, 1023, 1028, 1029 for details.
∗2: Refer to dimensions diagram of port size Rc1/2 pages 1024, 1025 for details.
∗3: Refer to dimensions diagram of the external pilot (option code: K) pages 1026, 1027 for details.
∗4: Refer to dimensions diagram for the DIN rail mount (option code: QD) pages 1028, 1029 for details.

Performance/characteristics by model

Item			M4GB4	
			at ON	at OFF
Response time ms	2-position	Single	40 (45)	60 (60)
		Double	50 (55)	50 (55)
	3-position	A/B/R connection	30 (35)	80 (80)

Values with lamp/surge suppressor are shown. The response times are values with working pressure of 0.5 MPa at 20°C, without lubrication. They depend on the pressure and the lubricant quality. Values in ( ) are for AC.

Flow Characteristics

Model Model No.	Port size P, R1, R2	Solenoid position		P → A/B			A/B→R1/R2		
				C[dm³/(s·bar)]	b	Q [L/min(ANR)]	C[dm³/(s·bar)]	b	Q [L/min(ANR)]
M4GB4	(∗1) Rc3/8 G3/8 NPT3/8	2-position		6.4	0.42	1767	6.9	0.12	1583
		3-position	All ports closed	6.0	0.37	1598	6.8	0.12	1560
			A/B/R connection	6.1	0.38	1636	7.1	0.15	1655
			P/A/B connection	6.0	0.37	1598	6.8	0.13	1568
	(∗2) Rc1/2 G1/2 NPT1/2	2-position		8.3	0.23	2023	9.0	0.21	2168
		3-position	All ports closed	7.4	0.15	1725	8.8	0.19	2096
			A/B/R connection	7.5	0.15	1748	9.5	0.21	2288
			P/A/B connection	7.7	0.21	1855	8.7	0.18	2061

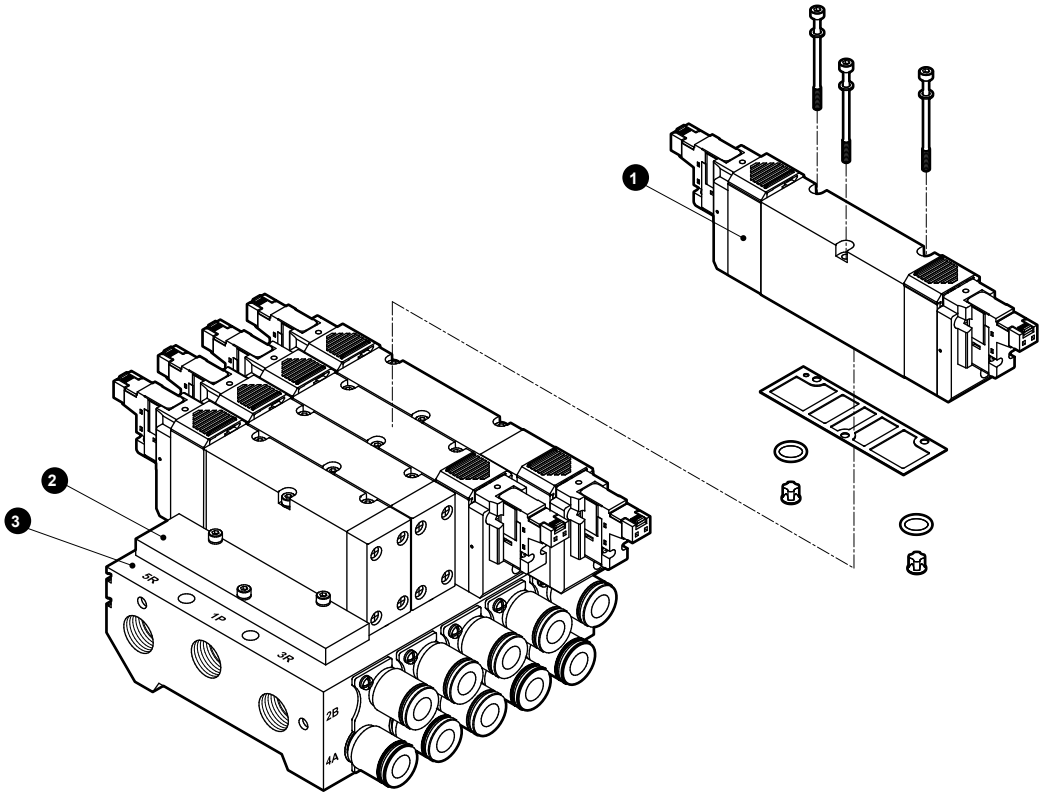
Dimensions of port sizes (port P/R1/R2) of Rc3/8 and Rc1/2 are different.

∗1: Refer to dimensions diagram of port size Rc3/8 pages 1022, 1023, 1028, 1029 for details.

∗2: Refer to dimensions diagram of port size Rc1/2 pages 1024, 1025 for details.

∗3: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

Manifold configuration explanation



Main configuration parts list

Part No.	Configuration parts name	Model No.	Description	Remarks
1	Discrete valve for integrated base	4GB4□9R-00- [Electrical connections] [Option] [Voltage] [Solenoid position]	Discrete valve Gasket Mounting screw 3 O-ring 2 Check valve 2 (1)	See table below
2	Masking plate	4GB4-MP	Masking plate Gasket Mounting screw 3 O-ring 2 Check valve 2	
3	Manifold base assembly	M4GB4- [Port size] - [Option] [QD] - [Station No.] [Mount type]	Manifold base	If "QD" is selected, shipment is made with a DIN rail mounted.

	Size	Tightening torque (N·m)
4GB4	M3	1.7

( ) applies when 4GB419R is selected.

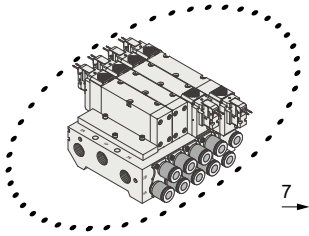
For maintenance parts, refer to CKD components product website (https://www.ckd.co.jp/kiki/en/) → "Model No."→ [Maintenance parts] for details.

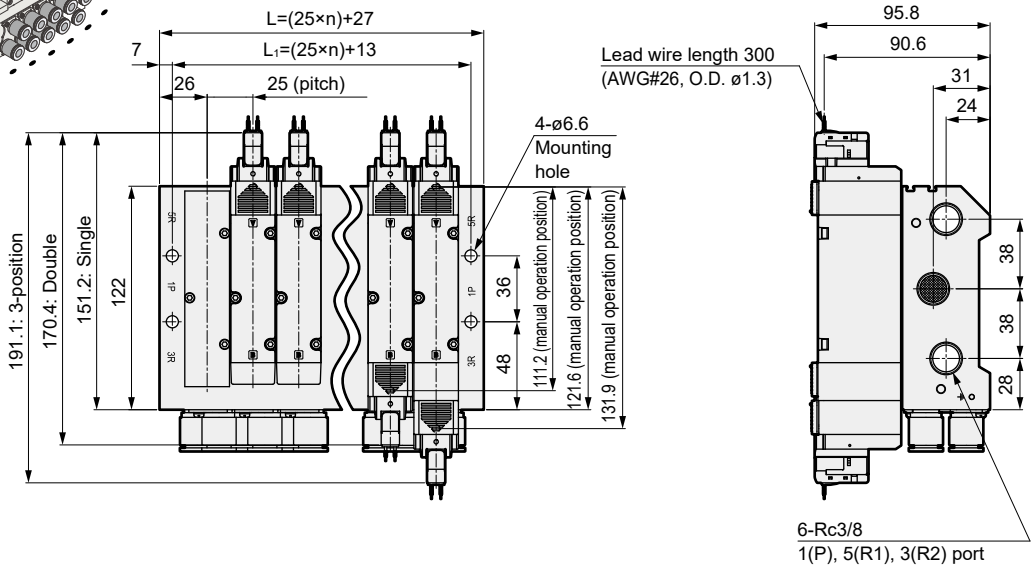
MEMO

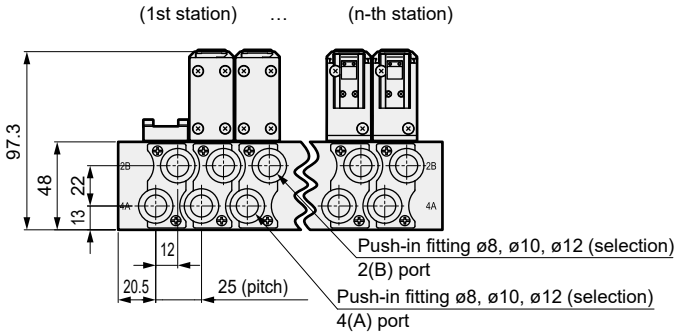
Dimensions

M4GB4

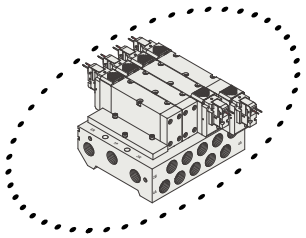
● Grommet lead wire (blank)

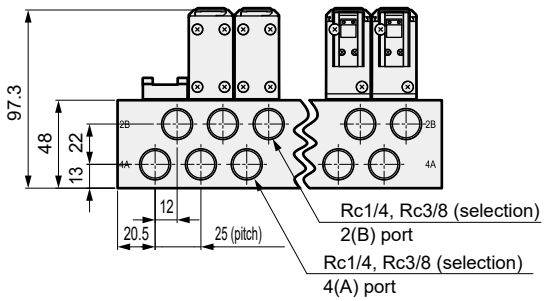






● Rc1/4, Rc3/8 female thread (08,10)

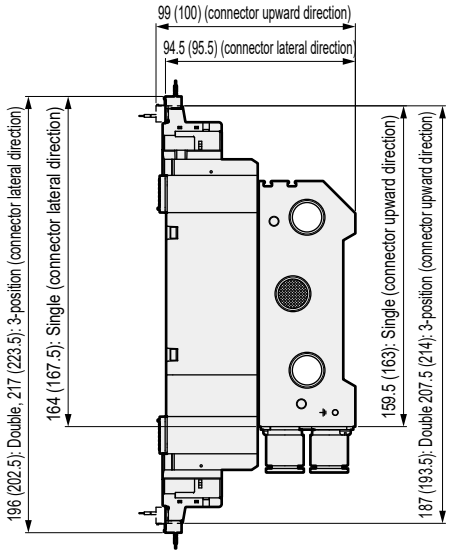




Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15
L	77	102	127	152	177	202	227	252	277	302	327	352	377	402
L1	63	88	113	138	163	188	213	238	263	288	313	338	363	388

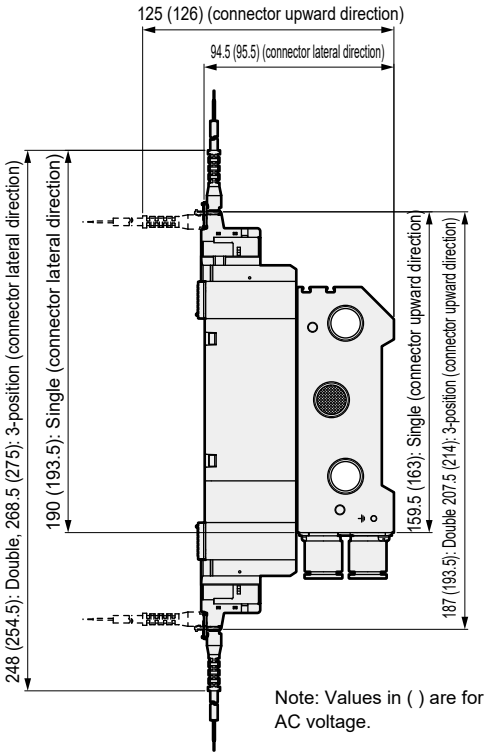
Dimensions

● E-connector (E)



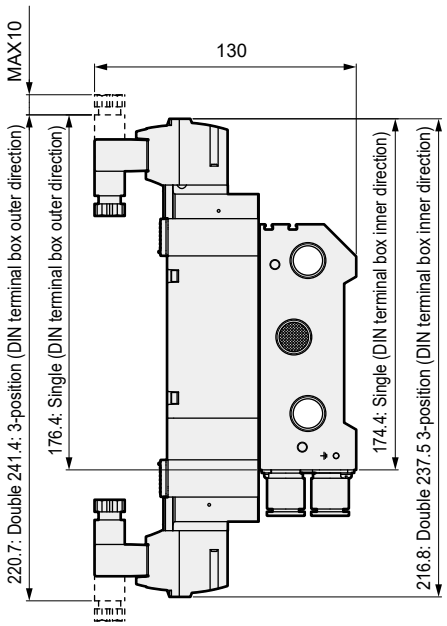
Note: Values in ( ) are for AC voltage.

● EJ-connector (E**J)



Note: Values in ( ) are for AC voltage.

● DIN terminal box (B)

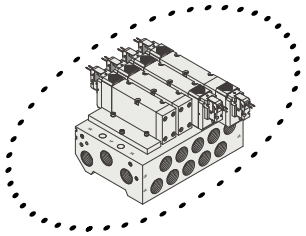


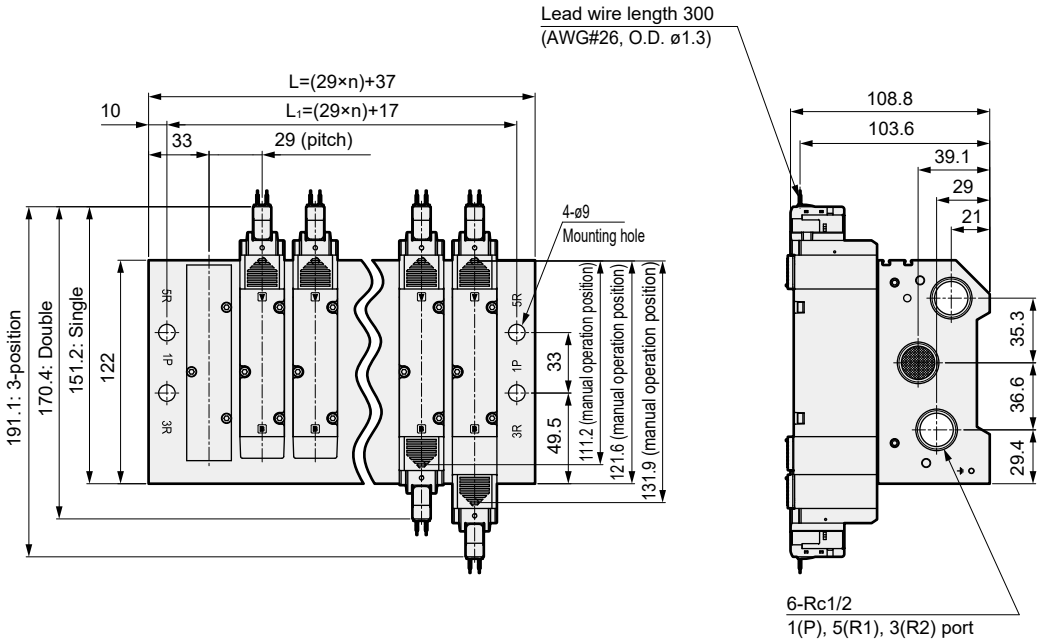
Note: DIN terminal box assembly is shipped facing inward.

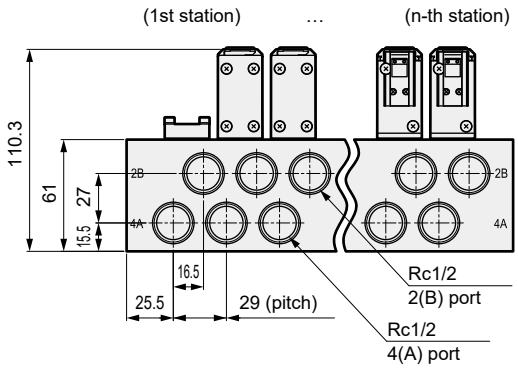
Dimensions

M4GB4

● Rc1/2 female thread (15)
Grommet lead wire (blank)



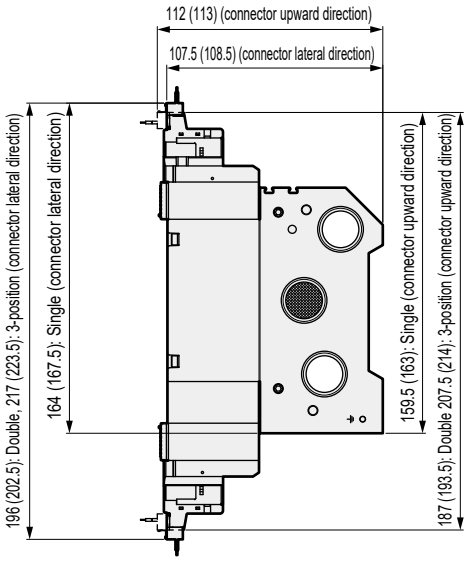




Station No.	2	3	4	5	6	7	8	9	10	11	12
L	95	124	153	182	211	240	269	298	327	356	385
L_1	75	104	133	162	191	220	249	278	307	336	365

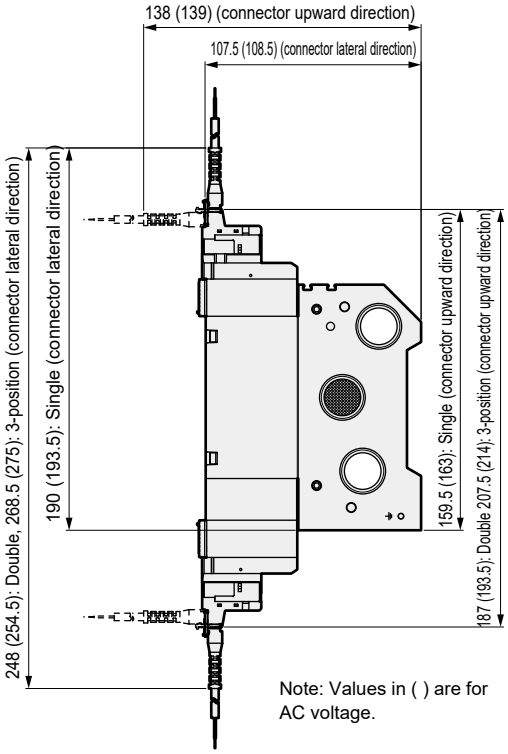
Dimensions

● Rc1/2 female thread (15)
E-connector (E)



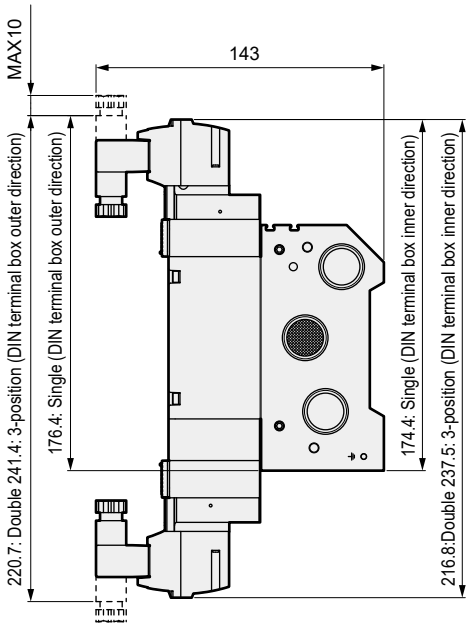
Note: Values in ( ) are for AC voltage.

● Rc1/2 female thread (15)
EJ-connector (E**J)



Note: Values in ( ) are for AC voltage.

● Rc1/2 female thread (15)
DIN terminal box (B)

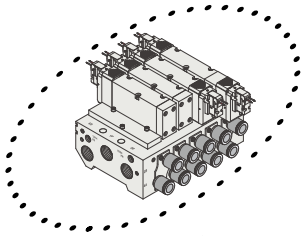


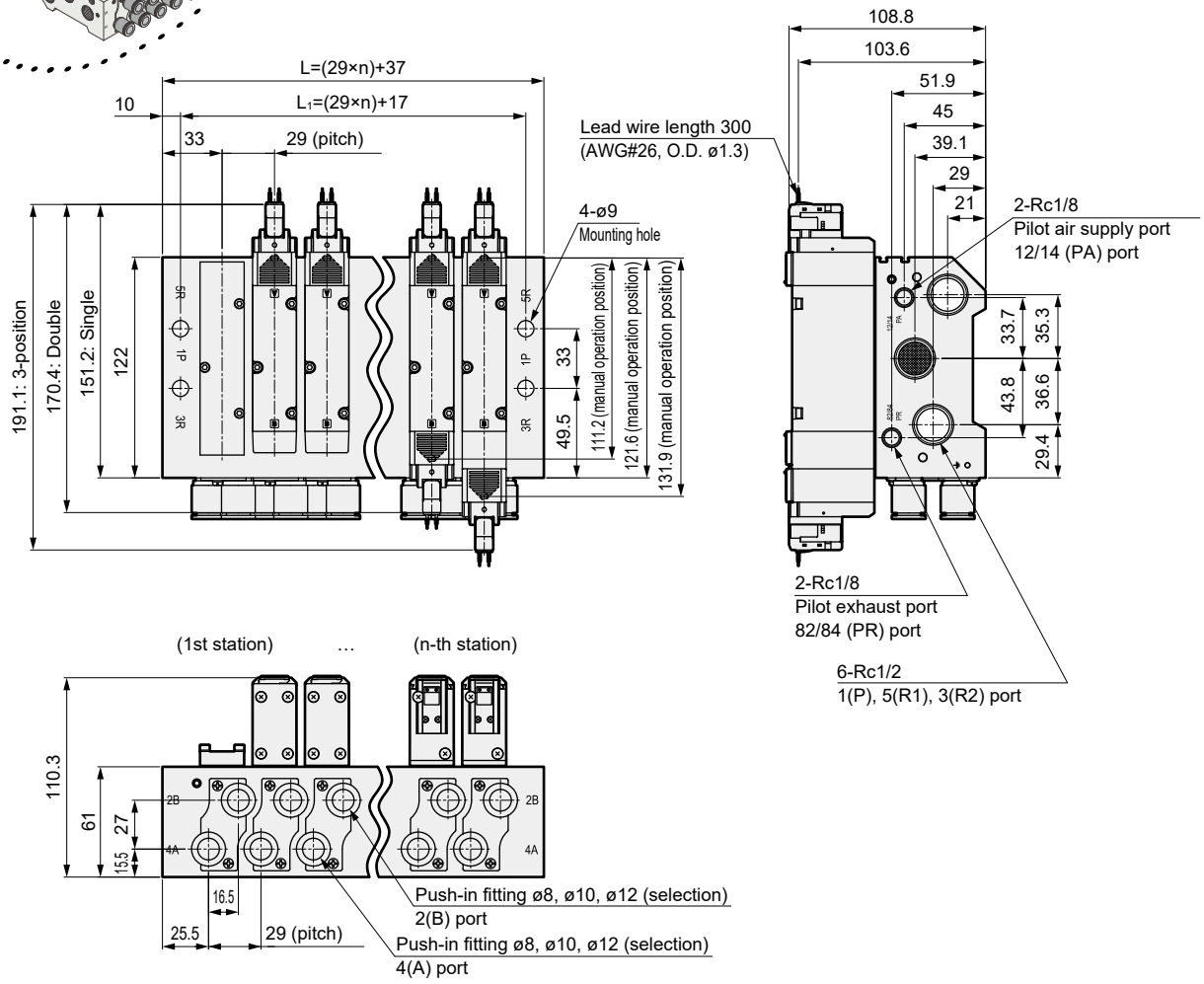
Note: DIN terminal box assembly is shipped facing inward.

Dimensions

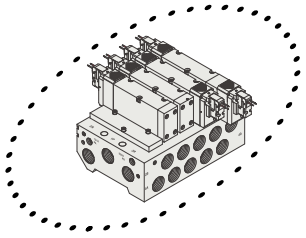
M4GB4

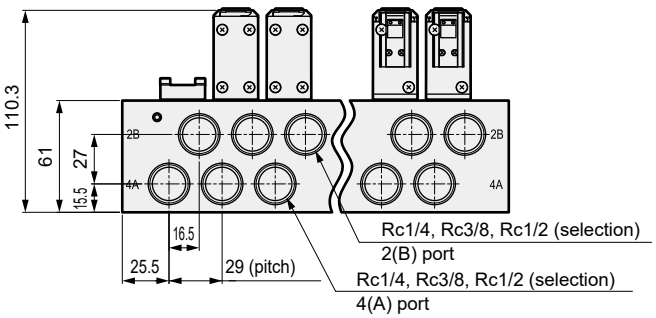
● External pilot (K)
Grommet lead wire (blank)





● External pilot (K)
Rc1/4, Rc3/8, Rc1/2 female thread (08, 10,15)

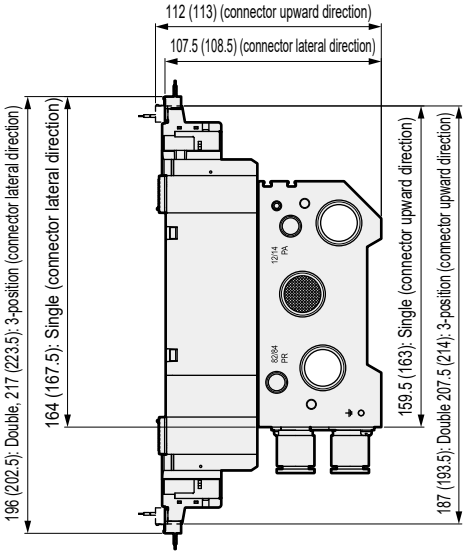




Station No.	2	3	4	5	6	7	8	9	10	11	12
L	95	124	153	182	211	240	269	298	327	356	385
L_1	75	104	133	162	191	220	249	278	307	336	365

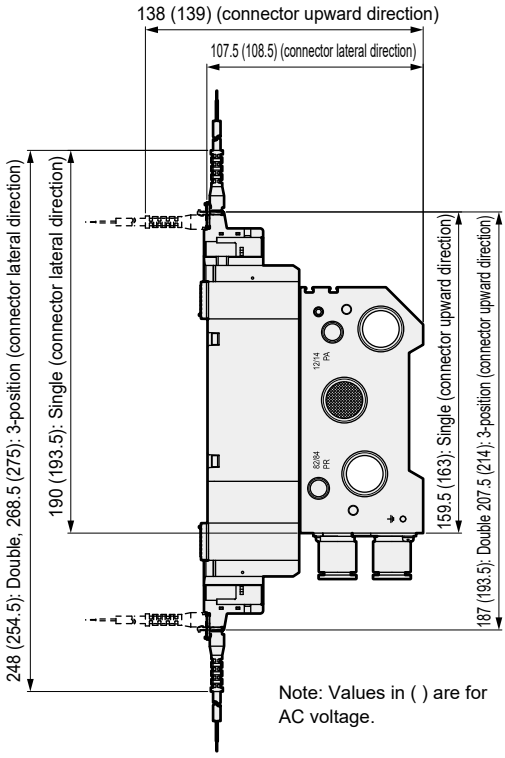
Dimensions

● External pilot (K)
E-connector (E)



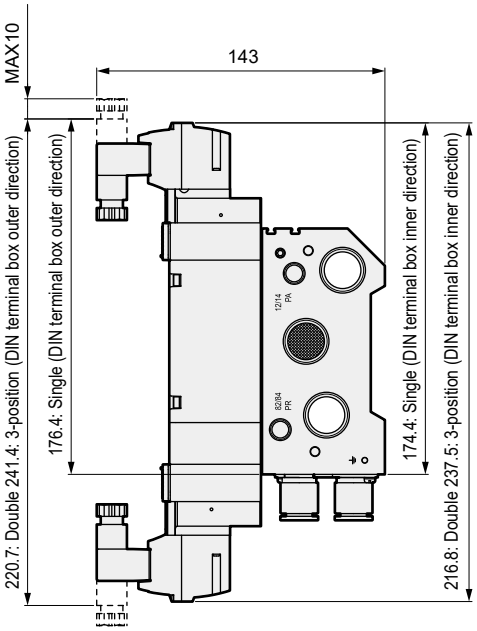
Note: Values in ( ) are for AC voltage.

● External pilot (K)
EJ-connector (E**J)



Note: Values in ( ) are for AC voltage.

● External pilot (K)
DIN terminal box (B)

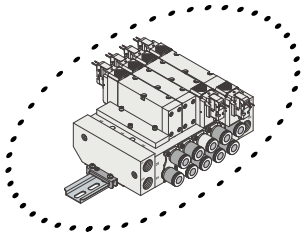


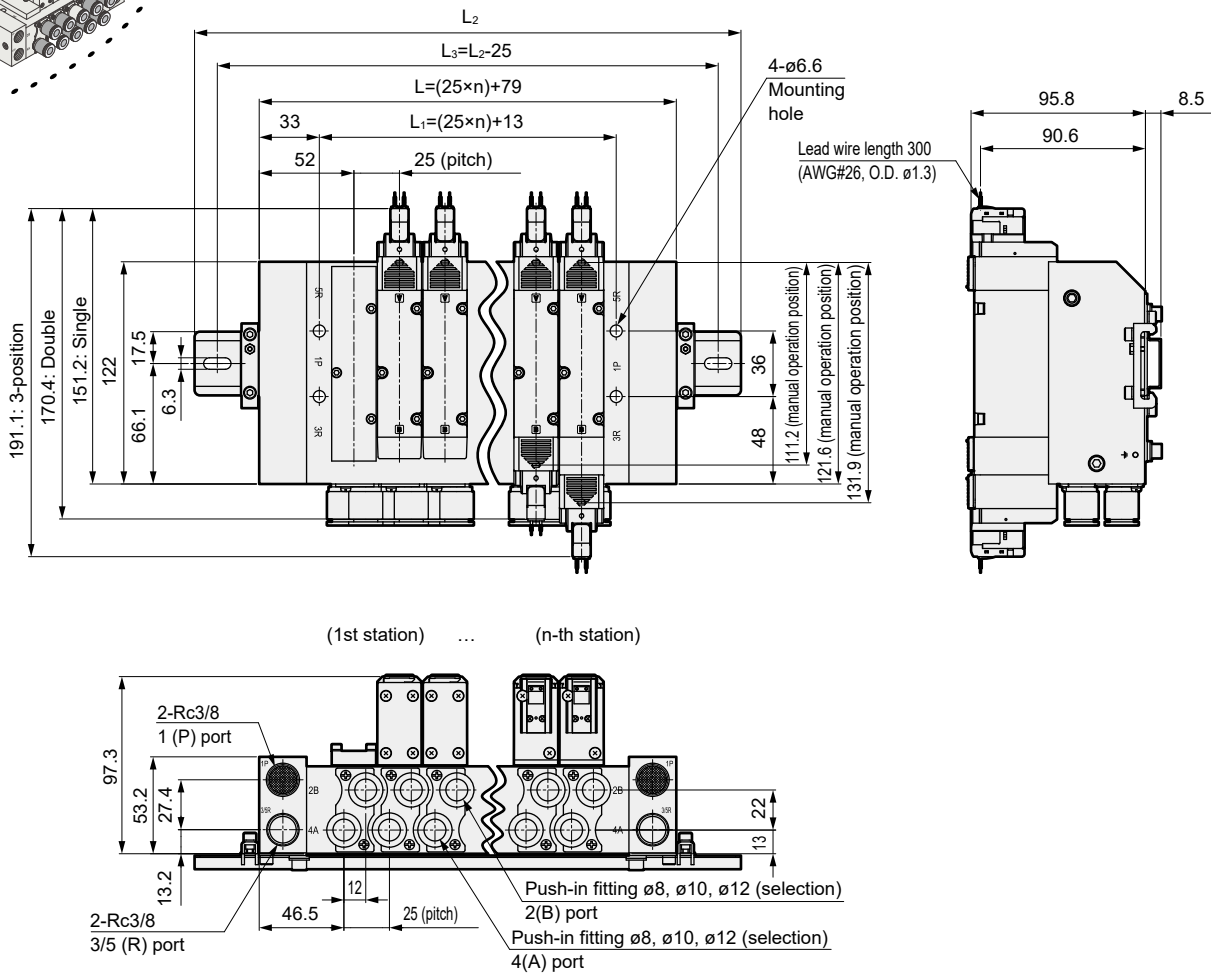
Note: DIN terminal box assembly is shipped facing inward.

Dimensions

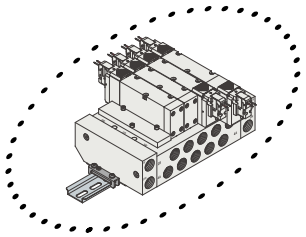
M4GB4

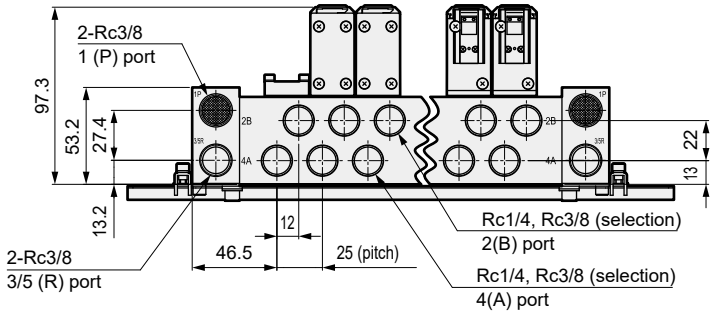
● DIN rail mount (QD)
Grommet lead wire (blank)





● DIN rail mount (QD)
Rc1/4, Rc3/8 female thread (08,10)

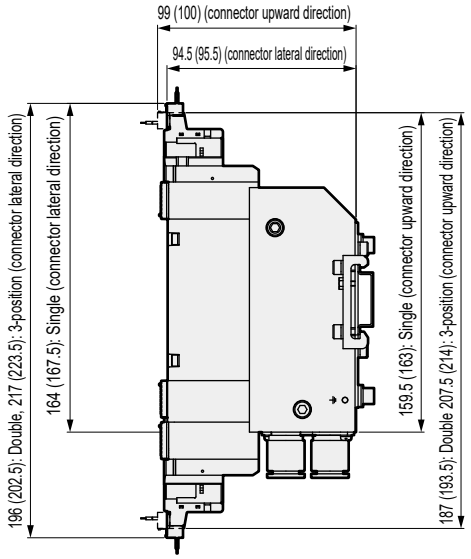




Station No.	2	3	4	5
L	129	154	179	204
L_1	63	88	113	138
L_2	200	225	250	275
L_3	175	200	225	250

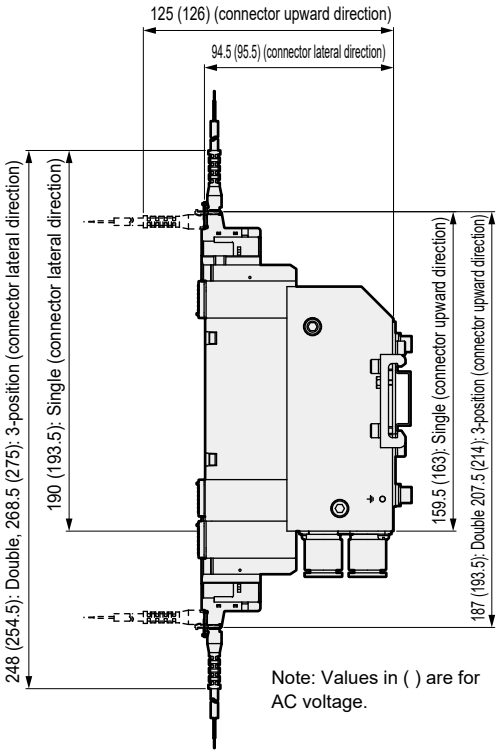
Dimensions

● DIN rail mount (QD)
E-connector (E)



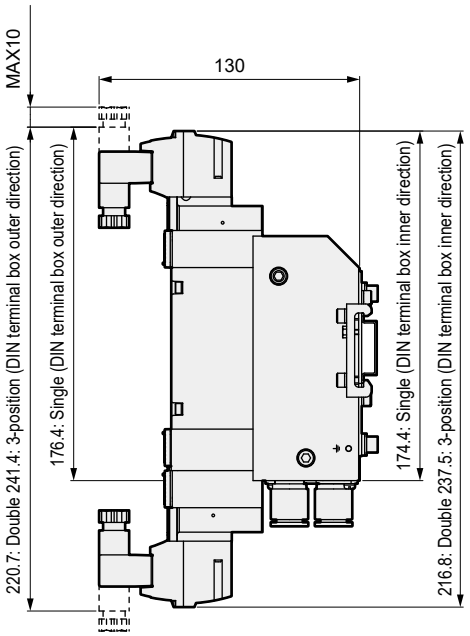
Note: Values in ( ) are for AC voltage.

● DIN rail mount (QD)
EJ-connector (E✱✱J)

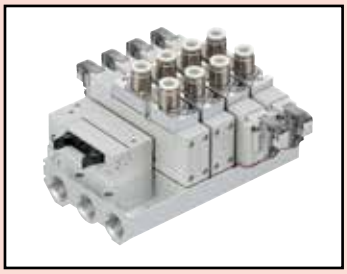


Note: Values in ( ) are for AC voltage.

● DIN rail mount (QD)
DIN terminal box (B)



Note: DIN terminal box assembly is shipped facing inward.



Reduced wiring manifold (Common terminal block/D-sub-connector/flat cable connector)
Body piping
Direct mount

M4GA4-T∗ Series

● Cylinder bore size: ø100 to ø140

∗Refer to page 1040 for serial transmission.

Refer to the CKD website for detailed compatible model Nos.

How to Order (Common terminal block/D-sub-connector/flat cable connector)

●Manifold 5-port valve

●5-port valve for Discrete base mounting

M 4GA4 1 0R - 10 - T10 W A - 3 - 3

4GA4 1 9R - 10 - A2N∗1 A — 3

- 4GA4 / 1: Model No.
- 9R: Solenoid valve operation class
- 10: ❷ Port size
- A2N∗1: ❸ Reduced wiring connection
- T10: ❹ Terminal/Connector pin
- W: ❺ Option
- A: ❶ Solenoid position
- 3: ❻ Station No.
- 3: ❼ Voltage

∗1: "A2N" indicates the A-connector (downward), with lamp/surge suppressor and no lead wire.

❶ Solenoid position

Code	Description
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position A/B/R connection
5	3-position P/A/B connection
8	Mix manifold (when there are multiple solenoid positions)

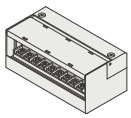
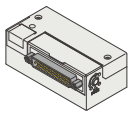
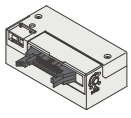
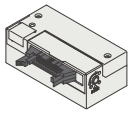
❷ Port size

Type	Port A/B	Port P/R1/R2	Code	
Push-in Fitting	ø8	Rc1/2	C8	
	ø10		C10	
	ø12		C12	
	Mix		CX	∗1
Female thread	Rc3/8		10	
	G3/8	G1/2	10G	
	NPT3/8	NPT1/2	10N	

∗1: The push-in fitting cannot be mixed with the discrete valve's 4(A) or 2(B) port.

❸ Reduced wiring connection

∗Refer to page 1087 for the model No. of cables with D-sub-connector.

Reduced wiring type	Installation position	Code	
Common terminal block (M3 thread)	Left	T10	
	Right	T10R	
Common terminal block (clamping)	Left	T11	
	Right	T11R	
D-sub-connector	Left	T30	
	Right	T30R	
20-pin flat cable connector (with power supply terminal)	Left	T50	
	Right	T50R	
20-pin flat cable connector (without power supply terminal)	Left	T51	
	Right	T51R	
10-pin flat cable connector (without power supply terminal)	Left	T52	
	Right	T52R	
26-pin flat cable connector (without power supply terminal)	Left	T53	
	Right	T53R	

❹ Terminal/Connector pin array

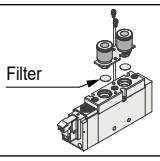
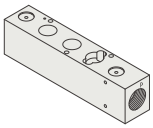
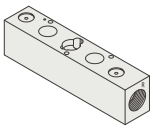
	Code	Description
∗1	Blank	Standard wiring
∗1, ∗2	W	Double wiring

∗1: Blank...The wiring will be based on the type of valve mounted.
W...All wired as double solenoid regardless of the type of valve used.

∗2: When changing from a single valve for W wiring specifications to a double or 3-position valve, the A-connector socket assembly needs to be purchased separately.

∗Be sure to fill-in the Manifold Specifications sheet (pages 1078 to 1081).

❺ Option

	Code	Description	
	Blank	No option	
	A	Coolant proof	
∗1	S	Surgeless	
∗1, ∗2	E	Low exoergic/energy saving circuit	
	F	Port A/B filter built in	
∗3 ∗4	Z1	Air supply spacer	
∗3 ∗4	Z3	Exhaust spacer	

∗1: In addition, surgeless "S" and low exoergic/energy saving circuit cannot be selected together.
∗2: Surgeless specifications.
∗3: Specify the spacer mounting position/quantity in the manifold specifications sheet. For details, see pages 1064,1065.
∗4: Cannot be selected with discrete valve for integrated base.

❻ Station No.

Code	Description
2	2 stations
to	to
11	11 stations

❼ Voltage

Code	Description
3	24 VDC
4	12 VDC

Specifications for rechargeable battery (Catalog No.CC-1226A)

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

∗∗ -Voltage- P4

M4GA4-T∗ Series

Reduced wiring manifold; body piping

Manifold common specifications

Item	Description
Manifold	Reduced wiring integrated base
Mounting method	Direct mount
Air supply and exhaust method	Common supply/common exhaust
Pilot exhaust method	Main valve/pilot valve common exhaust (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 (∗3)
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)	Dust-proof (IP40 equivalent)
Vibration resistance m/s²	50 or less
Shock resistance m/s²	300 or less
Atmosphere	Cannot be used in corrosive gas environments

∗1: Use turbine oil Class 1 ISOVG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.
∗2: Avoid water drops or oil, etc., during use.
∗3: The working pressure range is 0 to 0.7 MPa when the external pilot (option code: K) is selected. Also, set the external pilot pressure between 0.2 and 0.7 MPa.

Electrical Specifications

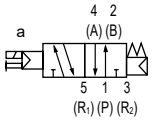
Item		Description	
		T1□, T30□, T5□	
Rated voltage V		24 DC	12 DC
Voltage fluctuation range		±10%	
Holding current A	Standard	0.017	0.034
	With low heat generation and power saving circuit	0.005	0.010
Power consumption W	Standard	0.4	
	With low heat generation and power saving circuit	0.1	
Heat Resistant Class		B	
Surge suppressor (∗4)		Zener diode	
Indicator		LED	

∗4: When low heat/power saving circuit or surge-less is selected, it becomes a diode.

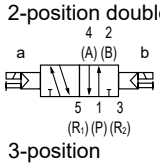
Circuit diagram symbol

● 5-port valve

2-position single

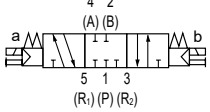


2-position double

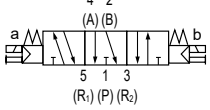


3-position

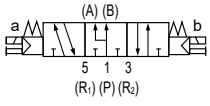
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Individual specifications

Item			M4GA4 Direct mount
Max. station No.			11 stations
Port size	Port A/B		Push-in fitting ø8, ø10, ø12 Rc3/8, G3/8, NPT3/8
	Port P/R1/R2		Rc1/2, G1/2, NPT1/2
Manifold base		Standard	150n+530
Weight calculation formula (n: station No.) g		External pilot	379n+1122

If air supply/exhaust flow rate is insufficient due to simultaneous operation of multiple stations, use ports on both sides for air supply and exhaust, or consider the use of an air supply/exhaust spacer. The manifold base weight is the value for screw specifications. Note that the maximum number of stations in the manifold is also limited by the maximum number of solenoid points per wiring specification as shown on the right.

Performance/characteristics by model

Item			M4GA4 at ON	M4GA4 at OFF
Response time ms	2-position	Single	40	60
		Double	50	50
	3-position	A/B/R connection	30	80

Values with lamp/surge suppressor are shown. The response times are values with working pressure of 0.5 MPa at 20°C, without lubrication. They depend on the pressure and the lubricant quality.

Flow Characteristics

Model No.	Solenoid position		P → A/B			A/B→R1/R2		
			C[dm³/(s·bar)]	b	Q [L/min(ANR)]	C[dm³/(s·bar)]	b	Q [L/min(ANR)]
M4GA4	2-position		7.3	0.12	1675	9.0	0.17	2120
	3-position	All ports closed	6.4	0.15	1492	8.2	0.22	1987
		A/B/R connection	6.4	0.16	1500	9.3	0.19	2215
		P/A/B connection	8.0	0.08	1798	8.3	0.22	2011

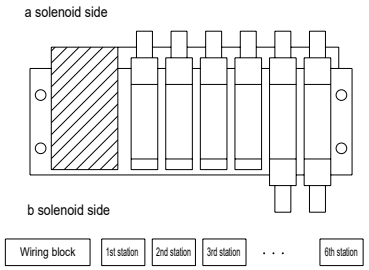
∗1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

Wiring specifications

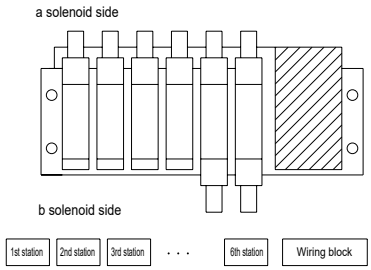
Item	T10□ Common terminal block	T11□ Common terminal block	T30□ D-sub-connector	T50□ Flat cable 20-pin	T51□ Flat cable 20-pin	T52□ Flat cable 10-pin	T53□ Flat cable 26-pin
Connector and terminal block specifications	M3 thread tightening Terminal count 18	Clamping Terminal count 26	D-sub-connectors 25 terminals	MIL-C-83503 standard compliant Pressure welding socket 20-pin	MIL-C-83503 standard compliant Pressure welding socket 20-pin	MIL-C-83503 standard compliant Pressure welding socket 10-pin	MIL-C-83503 standard compliant Pressure welding socket 26-pin
Max. number of solenoids	16 points	24 points	24 points	16 points	18 points	8 points	24 points
Manifold internal wiring	For details, see page 1084 to page 1091						

Wiring block position
Blank: Left side
R: Right side

Left side: T□



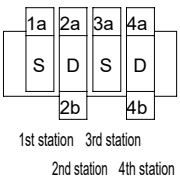
Right side: T□R



Array method
Blank: Standard sequential
W: Double wiring

(Ex.) In the case of T50□

Manifold specifications



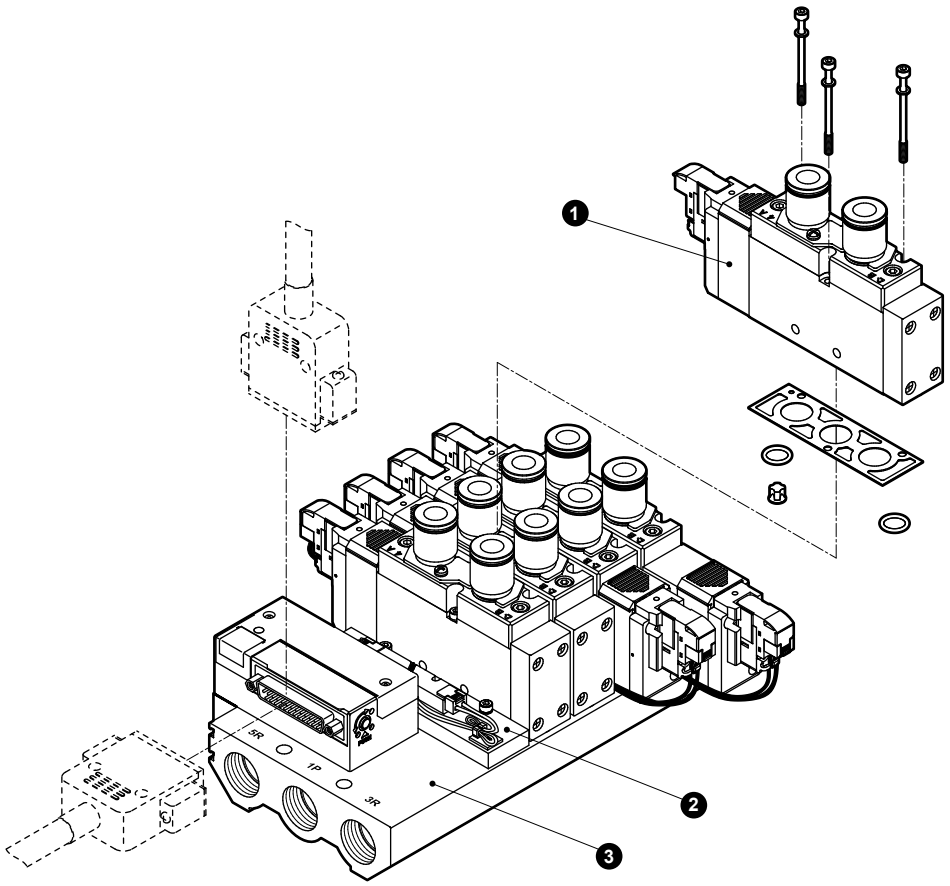
Standard wiring (sequential): Blank

Connector pin No.	1	2	3	4	5	6
Valve solenoid No.	1a	2a	2b	3a	4a	4b

Double wiring: W

Connector pin No.	1	2	3	4	5	6	7	8
Valve solenoid No.	1a	Blank	2a	2b	3a	Blank	4a	4b

Manifold configuration explanation



Main configuration parts list

Part No.	Configuration parts name	Model No.	Description	Remarks
1	Discrete valve for integrated base	4GA4□9R- Port size -A2N Option - Voltage Solenoid position	Discrete valve Gasket Mounting screw 3 O-ring 2 Check valve 2 (1)	Size: 4GA4 / M3; Tightening torque (N·m): 1.7
2	Masking plate	4GA4-MPC	Masking plate for reduced wiring Gasket Mounting screw 3 O-ring 2 Check valve 2	
3	Manifold base assembly	M4GA4- Port size - Reduced wiring connection Option - Station No.	Manifold base Wiring block	Port size: Port 00 / Ports P, R1, R2: Rc1/2; Port 00G: G1/2; Port 00 N: NPT1/2

( ) applies when 4GA419R is selected.

For maintenance parts, refer to CKD components product website (https://www.ckd.co.jp/kiki/jp/en/) → "Model No."→ Maintenance parts for details.

MEMO

M4GA4-T∗ Series

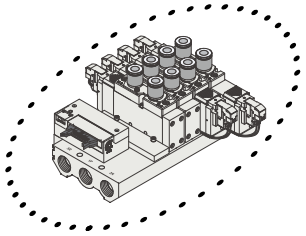
Reduced wiring manifold; body piping

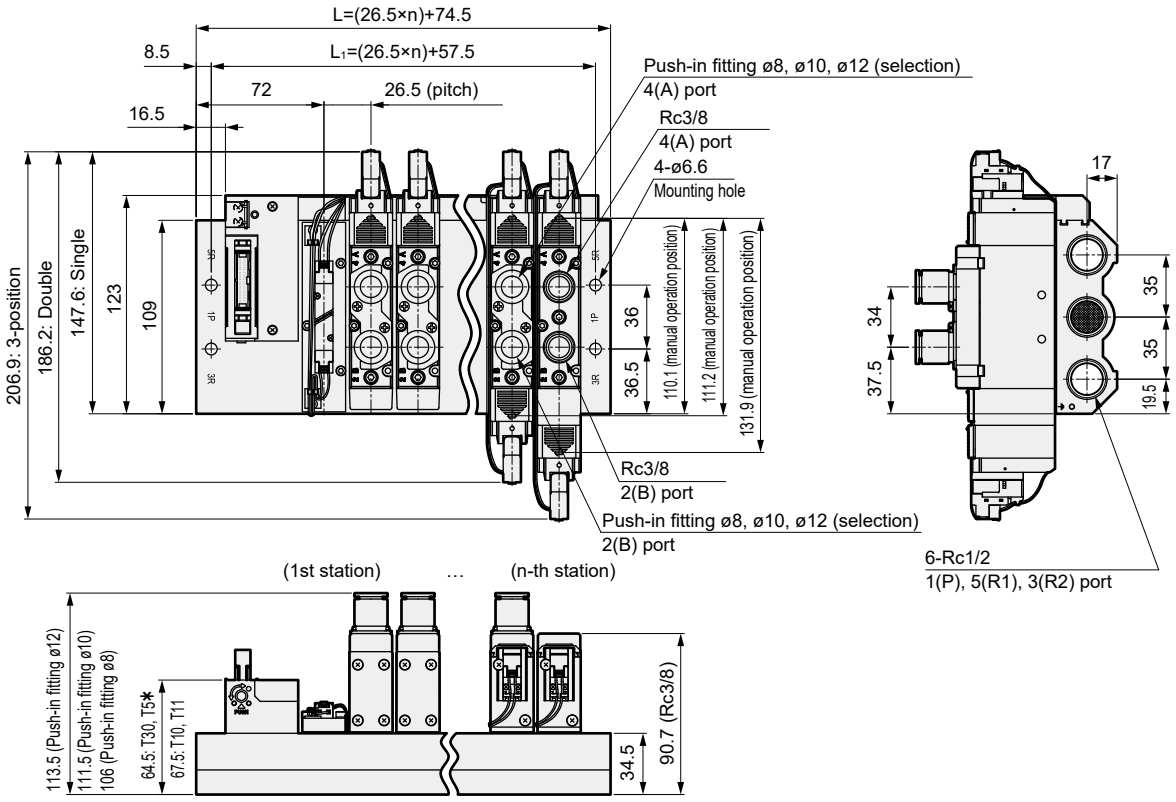
Dimensions

M4GA4

● Reduced wiring Left side type (T10/T11/T30/T50/T51/T52/T53)

∗Figure shows T50. For detailed wiring block dimensions, see pages 1038, 1039 for details.



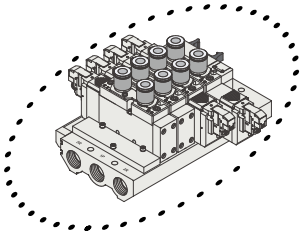


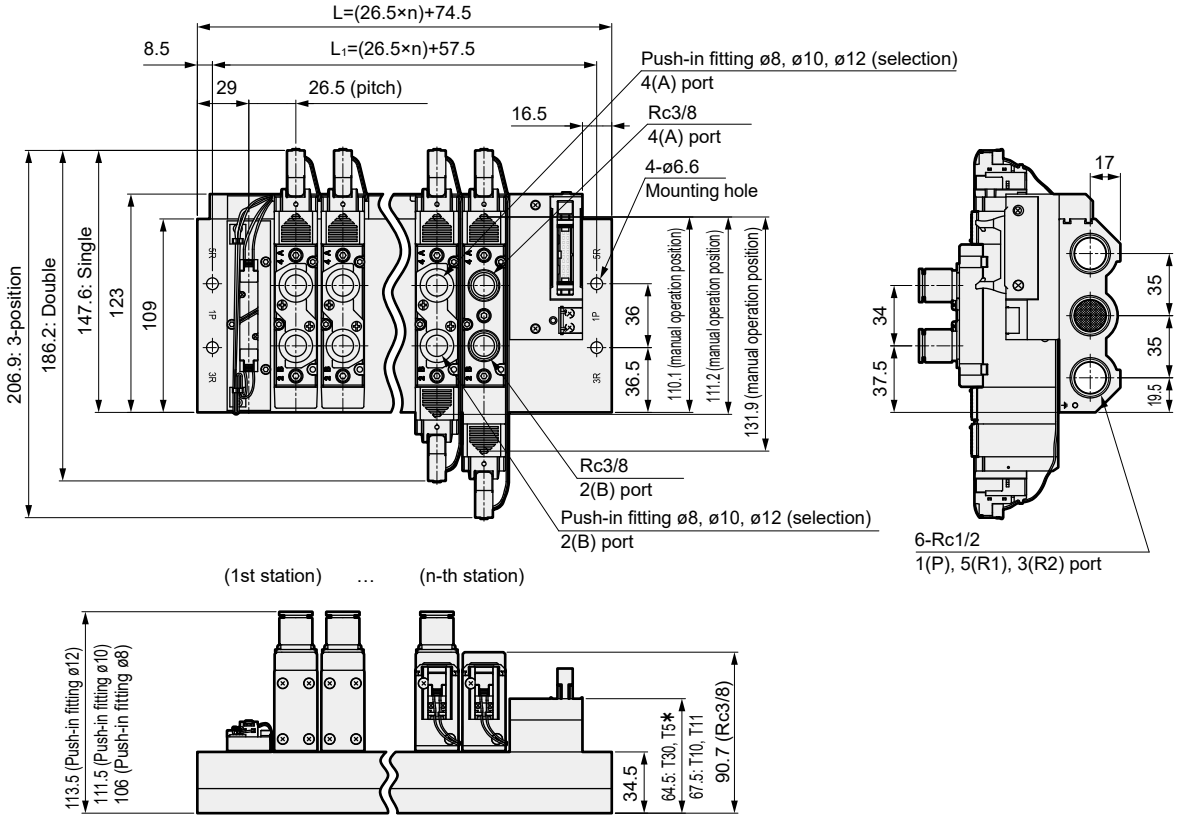
Station No.	2	3	4	5	6	7	8	9	10	11
L	127.5	154	180.5	207	233.5	260	286.5	313	339.5	366
L_1	110.5	137	163.5	190	216.5	243	269.5	296	322.5	349

Dimensions

M4GA4

● Reduced wiring right side type (T10R/T11R/T30R/T50R/T51R/T52R/T53R)

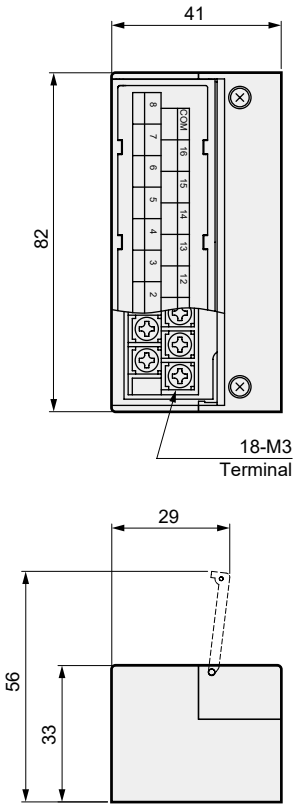




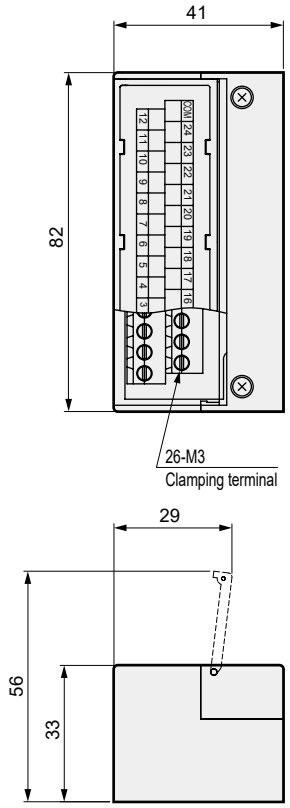
Station No.	2	3	4	5	6	7	8	9	10	11
L	127.5	154	180.5	207	233.5	260	286.5	313	339.5	366
L_1	110.5	137	163.5	190	216.5	243	269.5	296	322.5	349

Wiring block part: Dimensions

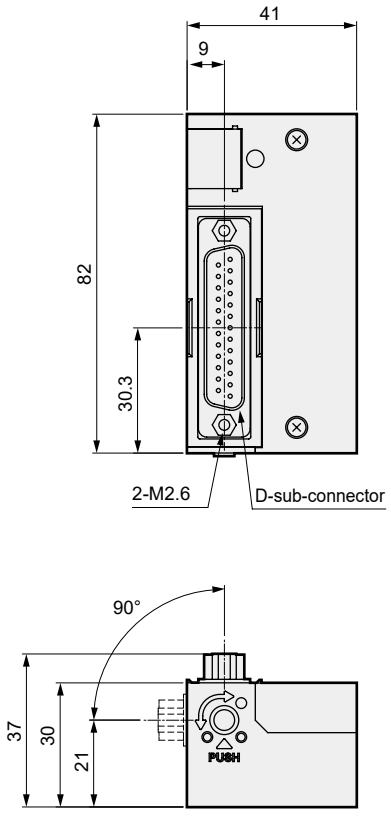
● Common terminal block (M3 thread) T10



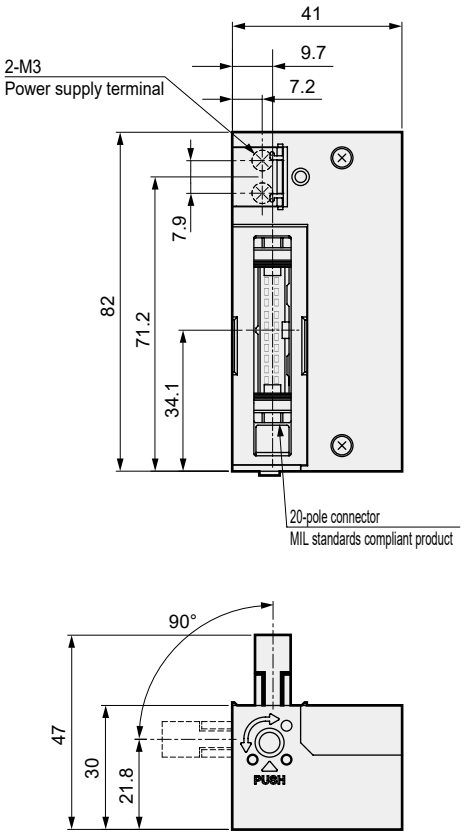
● Common terminal block (clamping) T11



• D-sub-connector T30

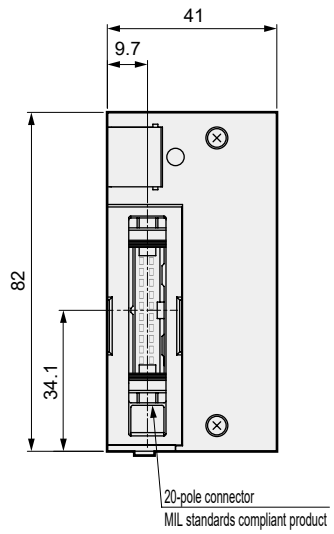


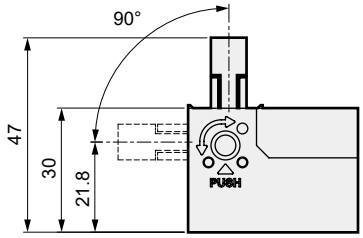
• 20-pin flat cable connector (with power supply terminal) T50



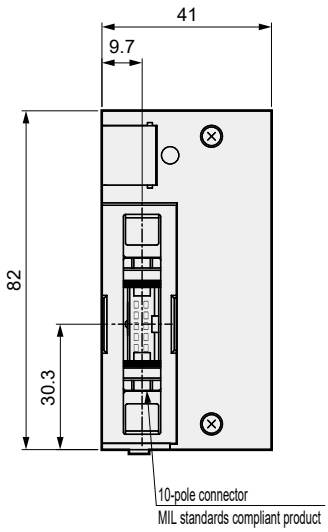
Wiring block part: Dimensions

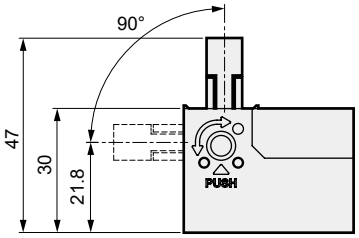
● 20-pin flat cable connector (without power supply terminal)
T51



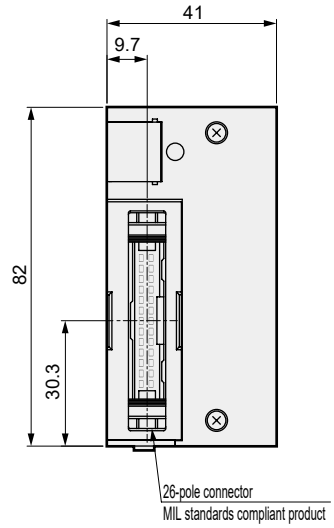


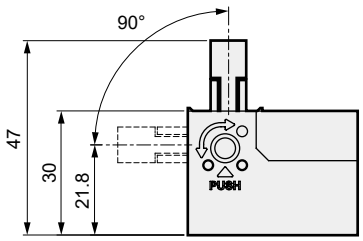
● 10-pin flat cable connector (without power supply terminal)
T52





• 26-pin flat cable connector (without power supply terminal)
T53





Reduced wiring manifold (serial transmission)
Body piping
Direct mount

M4GA4-T8∗ Series

● Cylinder bore size: ø100 to ø140

Refer to the CKD website for detailed compatible model Nos.

How to Order (serial transmission)

●Manifold 5-port valve

M 4GA4 1 0R - 10 - T8G2 W A - 3 - 3

●5-port valve for Discrete base mounting

4GA4 1 9R - 10 - A2N∗1 A — 3

Model No. | Solenoid valve operation classification | ❸ Serial transmission | ❺ Option | Voltage: 24 VDC

❶ Solenoid position | ❷ Port size | ❹ Terminal/Connector pin array | ❻ Station No.

∗1: "A2N" indicates the A-connector (downward), with lamp/surge suppressor and no lead wire.

❶ Solenoid position

Code	Description
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position A/B/R connection
5	3-position P/A/B connection
8	Mix manifold (when there are multiple solenoid positions)

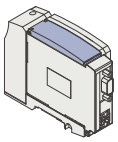
❷ Port size

Type	Port A/B	Port P/R1/R2	Code	
Push-in Fitting	ø8	Rc1/2	C8	
	ø10		C10	
	ø12		C12	
	Mix		CX	∗1
Female thread	Rc3/8		10	
	G3/8	G1/2	10G	
	NPT3/8	NPT1/2	10N	

∗1: The push-in fitting cannot be mixed with the discrete valve's 4(A) or 2(B) port.

❸ Serial transmission (lamp/surge suppressor provided as standard)

Communication protocol	Output	No. of output points	Code
CC-LINK	NPN	32 points	T8G2
	PNP		T8GP2
PROFIBUS-DP	NPN		T8P2
	PNP		T8PP2
EtherCAT	NPN		T8EC2
	PNP		T8ECP2
EtherNet/IP	NPN		T8EN2
	PNP		T8ENP2
DeviceNet	NPN		T8D2
	PNP		T8DP2
CC-Link IEF Basic	NPN		T8EB2
	PNP		T8EBP2
CC-Link IE Field	NPN		T8EF2
	PNP		T8EFP2
PROFINET	NPN		T8EP2
	PNP		T8EPP2
IO-Link	NPN		T8KC2
	PNP		T8KCP2
CC-Link IE TSN	NPN		T8TG2
	PNP		T8TGP2



❹ Terminal/Connector pin array

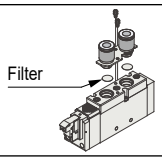
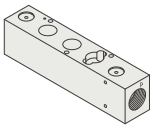
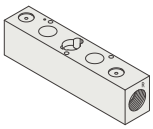
	Code	Description
∗1	Blank	Standard wiring
∗1, ∗2	W	Double wiring

∗1: Blank...The wiring will be based on the type of valve mounted.
W...All wired as double solenoid regardless of the type of valve used.

∗2: When changing from a single valve for W wiring specifications to a double or 3-position valve, the A-type connector socket assembly needs to be purchased separately.

∗Be sure to fill-in the Manifold Specifications sheet (page 1078 to page 1081).

❺ Option

	Code	Description	
	Blank	No option	
	A	Coolant proof	
∗1	S	Surgeless	
∗1, ∗2	E	Low exoergic/energy saving circuit	
	F	Port A/B filter built in	
∗3 ∗4	Z1	Air supply spacer	
∗3 ∗4	Z3	Exhaust spacer	

∗1: In addition, surgeless “S” and low exoergic/energy saving circuit ”E” cannot be selected together.
∗2: Surgeless specifications.
∗3: Specify the spacer mounting position/quantity in the manifold specifications sheet. For details, see page 1064, page 1065.
∗4: Cannot be selected with discrete valve for integrated base.

❻ Station No.

Code	Description
2	2 stations
to	to
15	15 stations

Specifications for rechargeable battery (Catalog No.CC-1226A)

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

∗∗ - Voltage - P4

M4GA4-T8∗ Series

Reduced wiring manifold; body piping; serial transmission

Manifold common specifications

Item	Description
Manifold	Serial transmission integrated base
Mounting method	Direct mount
Air supply and exhaust method	Common supply/common exhaust
Pilot exhaust method	Main valve/pilot valve common exhaust (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 (∗3)
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)	Dust-proof (IP40 equivalent)
Vibration resistance m/s²	50 or less
Shock resistance m/s²	300 or less
Atmosphere	Cannot be used in corrosive gas environments

∗1: Use turbine oil Class 1 ISOVG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.
∗2: Avoid water drops or oil, etc., during use.
∗3: The working pressure range is 0 to 0.7 MPa when the external pilot (option code: K) is selected. Also, set the external pilot pressure between 0.2 to 0.7 MPa.

Electrical Specifications

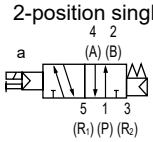
Item		Description
		T8□
Rated voltage V		24 DC
Voltage fluctuation range (∗4)		+10%, -5%
Holding current A	Standard	0.017
	With low heat generation and power saving circuit	0.005
Power consumption W	Standard	0.4
	With low heat generation and power saving circuit	0.1
Heat Resistant Class		B
Surge suppressor (∗5)		Zener diode
Indicator		LED

∗4: T8□ (serial transmission type) has a voltage drop due to internal circuitry, so pay attention to the voltage fluctuation range.
∗5: When low heat/power saving circuit or surge-less is selected, it becomes a diode.

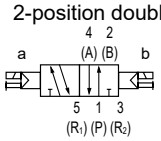
Circuit diagram symbol

● 5-port valve

2-position single

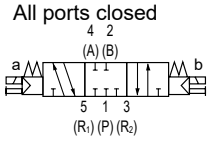


2-position double

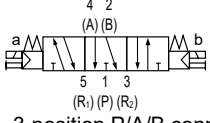


3-position

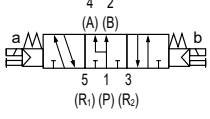
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Individual specifications

Item		M4GA4 Direct mount
Max. station No.		15 stations
Port size	Port A/B	Push-in fitting ø8, ø10, ø12 Rc3/8, G3/8, NPT3/8
	Port P/R1/R2	Rc1/2, G1/2, NPT1/2
Manifold base Weight calculation formula (n: station No.) g	Standard	150n+1016
	External pilot	379n+2391

For 5 or more manifold station No., use ports on both sides for air supply and exhaust. The manifold base weight is the value for screw specifications.

Performance/characteristics by model

Item			M4GA4 at ON	M4GA4 at OFF
Response time ms	2-position	Single	40	60
		Double	50	50
	3-position	A/B/R connection	30	80

Values with lamp/surge suppressor are shown. The response times are values with working pressure of 0.5 MPa at 20°C, without lubrication. They depend on the pressure and the lubricant quality.

Flow Characteristics

Model No.	Solenoid position		P → A/B			A/B→R1/R2		
			C[dm³/(s·bar)]	b	Q[L/min(ANR)]	C[dm³/(s·bar)]	b	Q[L/min(ANR)]
M4GA4	2-position		7.3	0.12	1675	9.0	0.17	2120
	3-position	All ports closed	6.4	0.15	1492	8.2	0.22	1987
		A/B/R connection	6.4	0.16	1500	9.3	0.19	2215
		P/A/B connection	8.0	0.08	1798	8.3	0.22	2011

∗1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

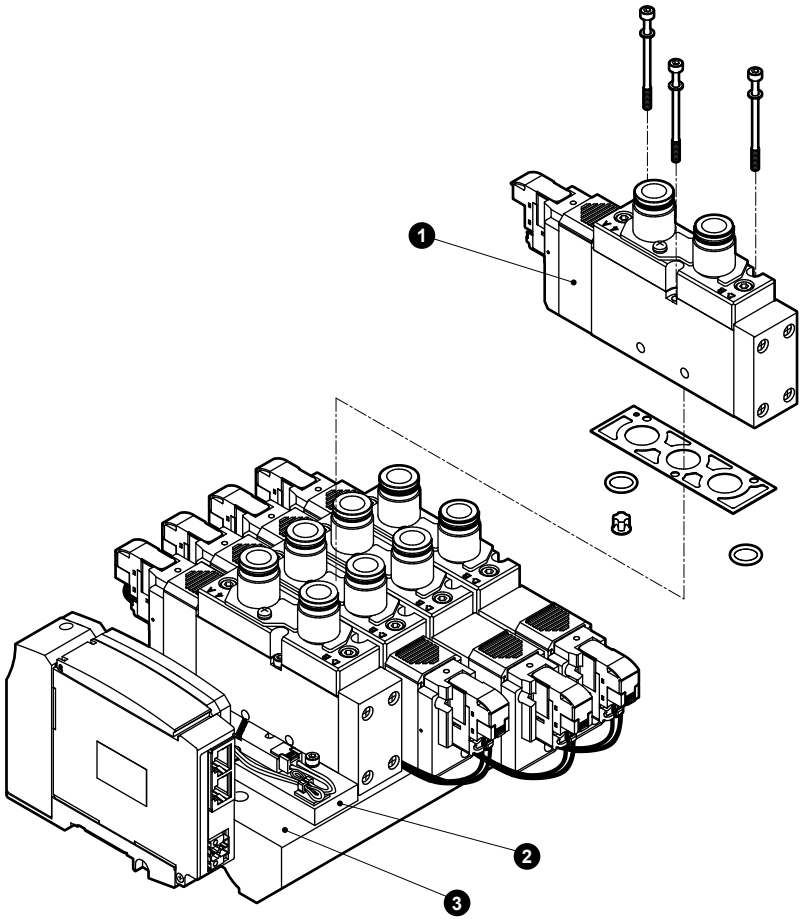
Serial transmission device unit specifications

Download the communication setting file from the CKD website (https://www.ckd.co.jp/en/).

Item		T8G2	T8GP2	T8P2	T8PP2	T8EC2	T8ECP2	T8EN2	T8ENP2	T8D2	T8DP2
Communication protocol		CC-Link ver. 1.10		PROFIBUS-DP		EtherCAT		EtherNet/IP		DeviceNet	
Power Supply Voltage	Unit side	24 VDC ±10% (11 to 25 VDC for T8D∗ only)									
	Valve side	24 VDC +10%, -5%									
Consumption Current	Unit side (when all output points are ON)	60 mA or less		60 mA or less		110 mA or less		90 mA or less		70 mA or less	
	Valve side (when all output points are ON)	20 mA or less Load current is not included						15 mA or less Load current is not included			
No. of output points		32 points									
Occupied number		1 station									
Operation display		LED (power supply and communication status)									
Output		NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP

Item		T8EB2	T8EBP2	T8EF2	T8EFP2	T8EP2	T8EPP2	T8KC2	T8KCP2	T8TG2	T8TGP2
Communication protocol		CC-Link IEF Basic		CC-Link IE Field		PROFINET		IO-Link		CC-Link IE TSN	
Power Supply Voltage	Unit side	24 VDC ±10%									
	Valve side	24 VDC +10%, -5%									
Consumption Current	Unit side (when all output points are ON)	130 mA or less		140 mA or less		130 mA or less		50 mA or less		140 mA or less	
	Valve side (when all output points are ON)	15 mA or less Load current is not included									
No. of output points		32 points									
Occupied number		1 station									
Operation display		LED (power supply and communication status)									
Output		NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP

Manifold configuration explanation



Main configuration parts list

Part No.	Configuration parts name	Model No.	Description	Remarks
1	Discrete valve for integrated base	4GA4□9R-[Port size]-A2N [Option] - [Voltage] [Solenoid position]	Discrete valve Gasket Mounting screw 3 O-ring 2 Check valve 2 (1)	Size / Tightening torque (N·m): 4GA4 / M3 / 1.7
2	Masking plate	4GA4-MPC	Masking plate for reduced wiring Gasket Mounting screw 3 O-ring 2 Check valve 2	
3	Manifold base assembly	M4GA4-[Port size]-T8 [Option] - [Station No.]	Manifold base Wiring block	Port size: 00 / Rc1/2; 00G / G1/2; 00 N / NPT1/2

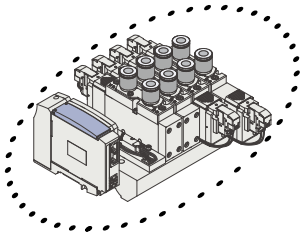
( ) applies when 4GA419R is selected.

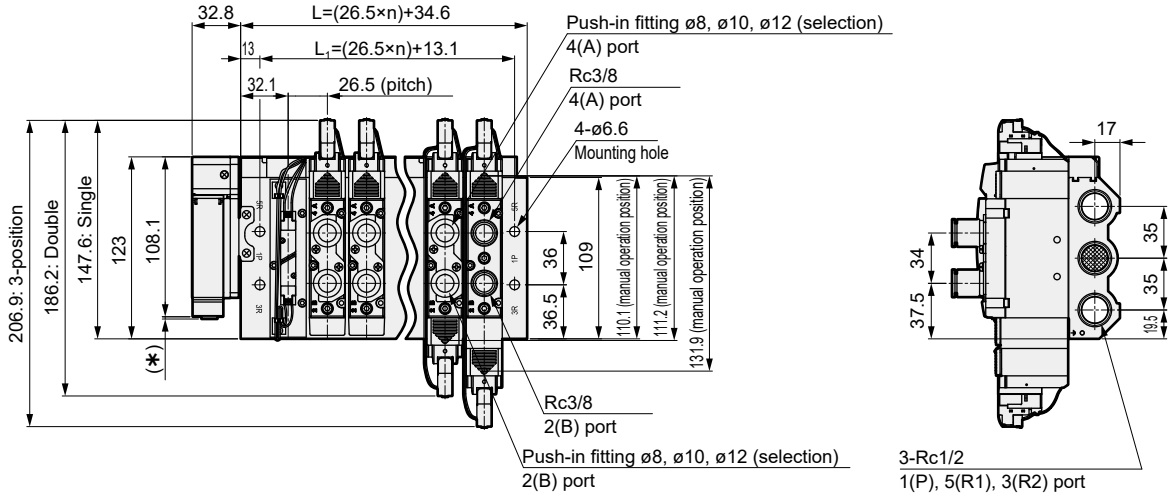
For maintenance parts, refer to CKD components product website (https://www.ckd.co.jp/kiki/jp/en/) → "Model No."→ [Maintenance parts] for details.

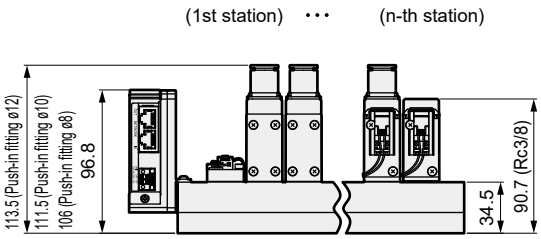
Dimensions

M4GA4

● Serial transmission (T8□)







Serial transmission	(∗) Dimensions
T8G□	1.0
T8P□	4.9
T8E□	1.5
T8D□	1.0
T8K□	1.0
T8T□	1.5

Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15
L	87.6	114.1	140.6	167.1	193.6	220.1	246.6	273.1	299.6	326.1	352.6	379.1	405.6	432.1
L_1	66.1	92.6	119.1	145.6	172.1	198.6	225.1	251.6	278.1	304.6	331.1	357.6	384.1	410.6

Reduced wiring manifold (Common terminal block/D-sub-connector/flat cable connector)
Base piping
Direct mount

M4GB4-T∗ Series

● Cylinder bore size: ø100 to ø140

∗Refer to page 1056 for serial transmission.

Refer to the CKD website for detailed compatible model Nos.

How to Order (Common terminal block/D-sub-connector/flat cable connector)

●Manifold 5-port valve

M 4GB4 1 0R - 10 - T10 W A - 3 - 3

●5-port valve for Discrete base mounting

4GB4 1 9R - 00 - A2N∗1 A — 3

4GB4	1	9R	00	A2N∗1	A	3
Model No.	❶ Solenoid position	Solenoid valve operation class	❷ Port size	❸ Reduced wiring connection	❺ Option	❼ Voltage

M	4GB4	1	0R	10	T10	W	A	3	3
	Model No.	❶ Solenoid position		❷ Port size	❹ Terminal/connector Pin array method		❺ Option	❻ Station No.	❼ Voltage

∗1: "A2N" indicates the A-connector (downward), with lamp/surge suppressor and no lead wire.

❶ Solenoid position

Code	Description
1	2-position single
2	2-position double
3	3-positionAll ports closed
4	3-position A/B/R connection
5	3-position P/A/B connection
8	Mix manifold (when there are multiple solenoid positions)

❷ Port size

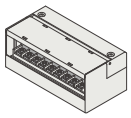
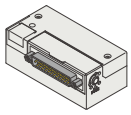
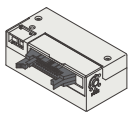
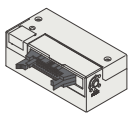
Type	A/B Port	Port P/R1/R2 ∗1 ❹Option Other than "K"	Port P/R1/R2 ∗1 ❹Option "K"	Code
Push-in fitting	ø8	Rc3/8	Rc1/2	C8
	ø10			C10
	ø12			C12
	Mix			CX

∗1: Two types of bases are available. Dimensions differ by bore size of port P/R1/R2.

Type	A/B Port	Port P/R1/R2 ∗1 ❹Option Other than "K"	Port P/R1/R2 ∗1 ❹Option "K"	Code
Female thread	Rc1/4	Rc3/8	Rc1/2	08
	Rc3/8			10
	Rc1/2	Rc1/2		15
	G1/4	G3/8	G1/2	08G
	G3/8			10G
	G1/2	G1/2		15G
	NPT1/4	NPT3/8	NPT1/2	08N
	NPT3/8			10N
	NPT1/2	NPT1/2		15N

❸ Reduced wiring connection

∗Refer to page 1087 for the model No. of cables with D-sub-connector.

Reduced wiring type	Installation position	Code	
Common terminal block (M3 thread)	Left	T10	
	Right	T10R	
Common terminal block (clamping)	Left	T11	
	Right	T11R	
D-sub-connector	Left	T30	
	Right	T30R	
20-pin flat cable Connector (with power supply terminal)	Left	T50	
	Right	T50R	
20-pin flat cable connector (without power supply terminal)	Left	T51	
	Right	T51R	
10-pin flat cable connector (without power supply terminal)	Left	T52	
	Right	T52R	
26-pin flat cable connector (without power supply terminal)	Left	T53	
	Right	T53R	

❹ Terminal / Connector pin array

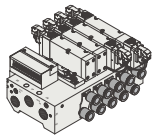
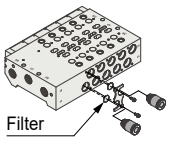
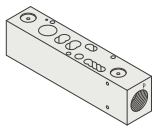
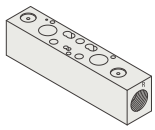
	Code	Description
∗1	Blank	Standard wiring
∗1,∗2	W	Double wiring

∗1: Blank...The wiring will be based on the type of valve mounted.
W...All wired as double solenoid regardless of the type of valve used.

∗2: When changing from a single valve for W wiring specifications to a double or 3-position valve, the A-type connector socket assembly needs to be purchased separately.

∗Be sure to fill-in the Manifold Specifications sheet (pages 1078 to 1081).

❺ Option

	Code	Description	
	Blank	No option	
∗1	K	External pilot	
	A	Coolant proof	
∗2	S	Surgeless	
∗2,∗3	E	Low exoergic/energy saving circuit	
	F	Port A/B filter built in	
∗4 ∗5	Z1	Air supply spacer	
∗4 ∗5	Z3	Exhaust spacer	

∗1: Consult with CKD for vacuum specifications.
∗2: In addition, surgeless “S” and low exoergic/energy saving circuit "E" cannot be selected together.
∗3: Surgeless specifications.
∗4: Specify the spacer mounting position/quantity in the manifold specifications sheet. For details, see pages 1064, 1065.
∗5: Cannot be selected with discrete valve for integrated base.

❻ Station No.

Code	Description
2	2 stations
to	to
11	11 stations

❼ Voltage

Code	Description
3	24 VDC
4	12 VDC

Specifications for rechargeable battery (Catalog No.CC-1226A)

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

∗∗ - Voltage - P4

M4GB4-T∗ Series

Reduced wiring manifold; base piping

Manifold common specifications

Item		Description
Manifold		Reduced wiring 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 (Pilot exhaust check valve built-in)
	External pilot	Main valve/pilot valve individual exhaust
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 (∗3)
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)		Dust-proof (IP40 equivalent)
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 ISOVG32 for lubrication. Excessive or intermittent lubrication results in unstable operation.
∗2: Avoid water drops or oil, etc., during use.
∗3: The working pressure range is 0 to 0.7 MPa when the external pilot (option code: K) is selected. Set the external pilot pressure between 0.2 to 0.7 MPa.

Electrical Specifications

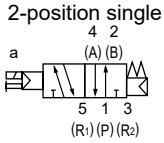
Item		Description
		T8□
Rated voltage V		24 DC
Voltage fluctuation range (∗4)		+10%, -5%
Holding current A	Standard	0.017
	With low heat generation and power saving circuit	0.005
Power consumption W	Standard	0.4
	With low heat generation and power saving circuit	0.1
Heat Resistant Class		B
Surge suppressor (∗5)		Zener diode
Indicator		LED

∗4: T8□ (serial transmission type) has a voltage drop due to internal circuitry, so pay attention to the voltage fluctuation range.
∗5: When low heat/power saving circuit or surge-less is selected, it becomes a diode.

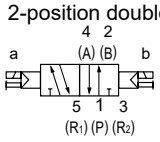
Circuit diagram symbol

● 5-port valve

2-position single

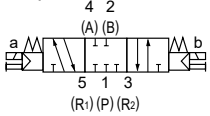


2-position double

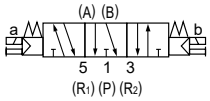


3-position

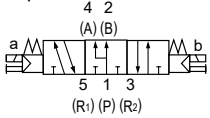
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Individual specifications

Item		M4GB4 Direct mount		
Pilot operated		Standard (Internal pilot)		External pilot (∗3)
Max. station No.		11 stations		
Port size	Port A/B	Push-in fitting ø8, ø10, ø12 Rc1/4, Rc3/8 G1/4, G3/8 NPT1/4, NPT3/8	Rc1/2, G1/2, NPT1/2	Push-in fitting ø8, ø10, ø12 Rc1/4, Rc3/8, Rc1/2 G1/4, G3/8, G1/2 NPT1/4, NPT3/8, NPT1/2
	Port P/R1/R2	Rc3/8, G3/8, NPT3/8 (∗1)	Rc1/2, G1/2, NPT1/2 (∗2)	
Manifold base Weight calculation formula (n: station No.) g		292n+907	391n+1119	392n+1060

For 5 or more manifold station No., use ports on both sides for air supply and exhaust. The manifold base weight is the value for screw specifications. Note that the maximum number of stations in the manifold is also limited by the maximum number of solenoid points per wiring specification as shown on the right. Dimensions of port sizes (port P/R1/R2) of Rc3/8 and Rc1/2 are different.

∗1: Refer to page 1051 for dimensions of port size Rc3/8.
∗2: Refer to page 1052 for dimensions of port size Rc1/2.
∗3: Refer to page 1053 for dimensions of the external pilot (option code: K).

Performance/characteristics by model

Item			M4GB4 at ON	M4GB4 at OFF
Response time ms	2-position	Single	40	60
		Double	50	50
	3-position	A/B/R connection	30	80

Values with lamp/surge suppressor are shown. The response times are values with working pressure of 0.5 MPa at 20°C, without lubrication. They depend on the pressure and the lubricant quality. Values in ( ) are for AC.

Flow Characteristics

Model No.	Port size P, R1, R2	Solenoid position		P → A/B C[dm³/(s·bar)]	P → A/B b	P → A/B Q [L/min(ANR)]	A/B→R1/R2 C[dm³/(s·bar)]	A/B→R1/R2 b	A/B→R1/R2 Q [L/min(ANR)]
M4GB4	(∗1) Rc3/8 G3/8 NPT3/8	2-position		6.4	0.42	1767	6.9	0.12	1583
		3-position	All ports closed	6.0	0.37	1598	6.8	0.12	1560
			A/B/R connection	6.1	0.38	1636	7.1	0.15	1655
			P/A/B connection	6.0	0.37	1598	6.8	0.13	1568
	(∗2) Rc1/2 G1/2 NPT1/2	2-position		8.3	0.23	2023	9.0	0.21	2168
		3-position	All ports closed	7.4	0.15	1725	8.8	0.19	2096
			A/B/R connection	7.5	0.15	1748	9.5	0.21	2288
			P/A/B connection	7.7	0.21	1855	8.7	0.18	2061

Dimensions of port sizes (port P/R1/R2) of Rc3/8 and Rc1/2 are different.

∗1: Refer to page 1051 for dimensions of port size Rc3/8.

∗2: Refer to page 1052 for dimensions of port size Rc1/2.

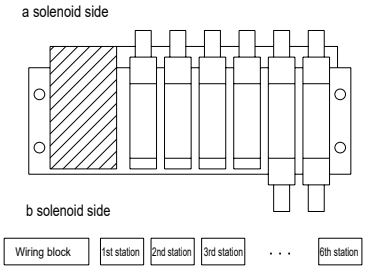
∗3: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

Wiring specifications

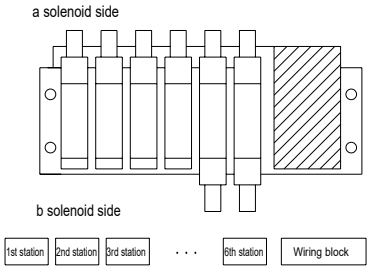
Item	T10□ Common terminal block	T11□ Common terminal block	T30□ D-sub-connector	T50□ Flat cable 20-pin	T51□ Flat cable 20-pin	T52□ Flat cable 10-pin	T53□ Flat cable 26-pin
Connector and terminal block specifications	M3 thread tightening Terminal count 18	Clamping Terminal count 26	D-sub-connectors 25 terminals	MIL-C-83503 standard compliant Pressure welding socket 20-pin	MIL-C-83503 standard compliant Pressure welding socket 20-pin	MIL-C-83503 standard compliant Pressure welding socket 10-pin	MIL-C-83503 standard compliant Pressure welding socket 26-pin
Max. number of solenoids	16 points	24 points	24 points	16 points	18 points	8 points	24 points
Manifold internal wiring	For details, see page 1084 to page 1091						

Wiring block position
Blank: Left side
R: Right side

Left side: T□



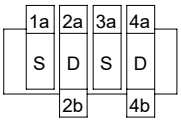
Right side: T□R



Array method
Blank: Standard sequential
W: Double wiring

(Ex.) In the case of T50□

Manifold specifications



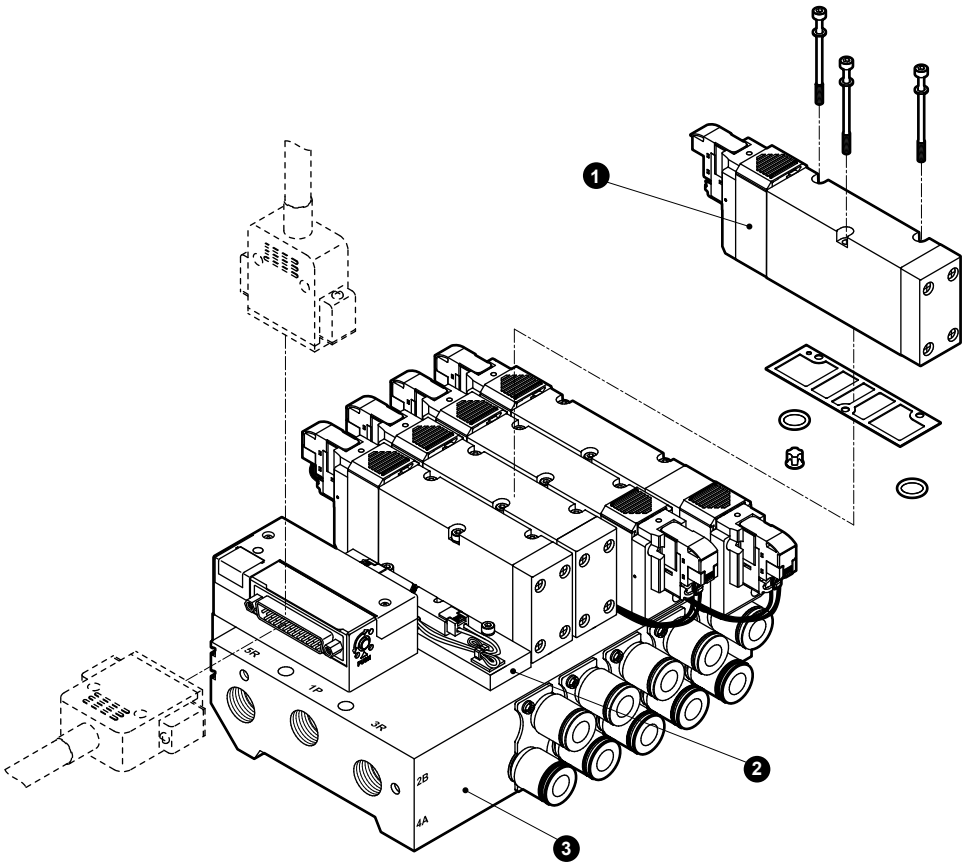
Standard wiring (sequential): Blank

Connector pin No.	1	2	3	4	5	6
Valve solenoid No.	1a	2a	2b	3a	4a	4b

Double wiring: W

Connector pin No.	1	2	3	4	5	6	7	8
Valve solenoid No.	1a	Blank	2a	2b	3a	Blank	4a	4b

Manifold configuration explanation



Main configuration parts list

Part No.	Configuration parts name	Model No.	Description	Remarks
1	Discrete valve for integrated base	4GB4□9R-00-A2N [Option] - [Voltage] [Solenoid position]	Discrete valve Gasket Mounting screw 3 O-ring 2 Check valve 2 (1)	See table below
2	Masking plate	4GB4-MPC	Masking plate for reduced wiring Gasket Mounting screw 3 O-ring 2 Check valve 2	
3	Manifold base assembly	M4GB4- [Port size] - [Reduced wiring connection] [Option] - [Station No.]	Manifold base Wiring block	

	Size	Tightening torque (N·m)
4GB4	M3	1.7

( ) applies when 4GB419R is selected.

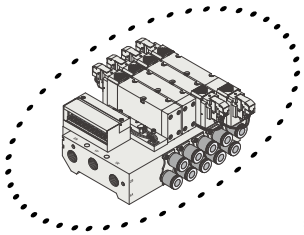
For maintenance parts, refer to CKD components product website (https://www.ckd.co.jp/kiki/jp/en/) → "Model No."→ [Maintenance parts] for details.

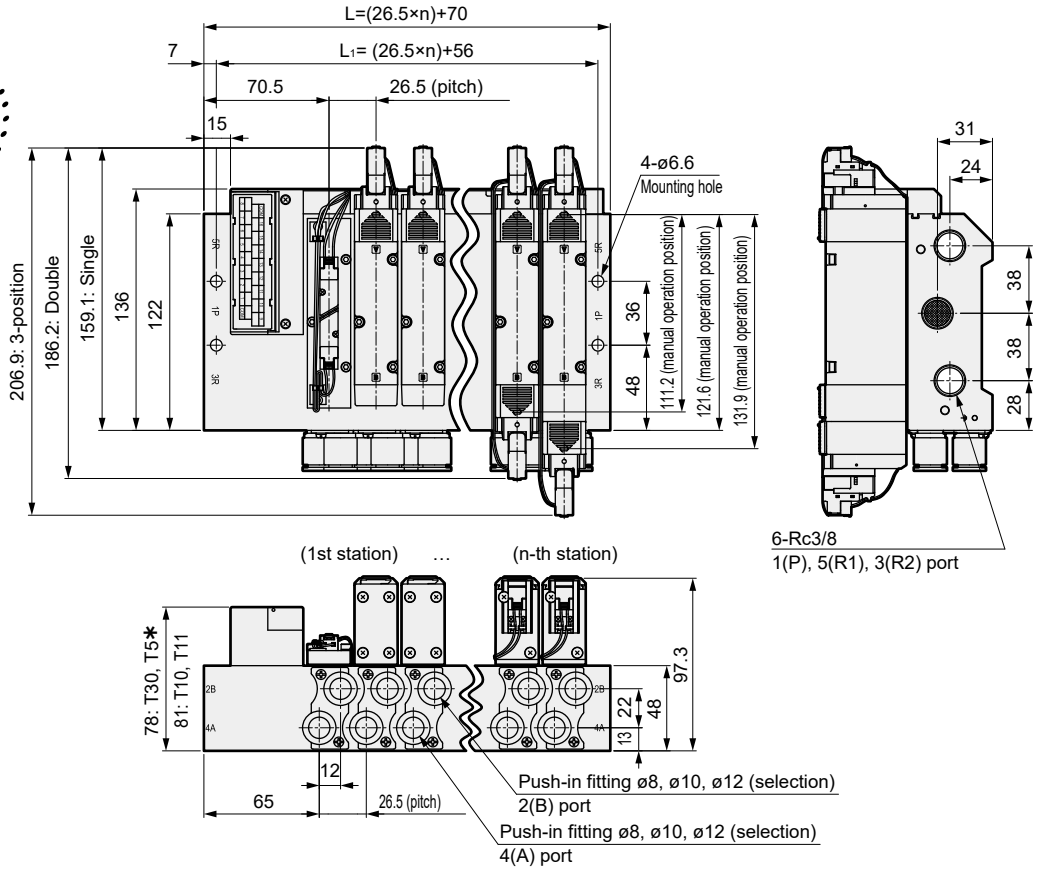
Dimensions

M4GB4

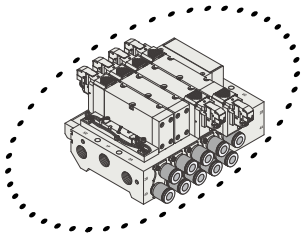
∗Figure shows T10. For detailed wiring block dimensions, see pages 1054, 1055 for details.

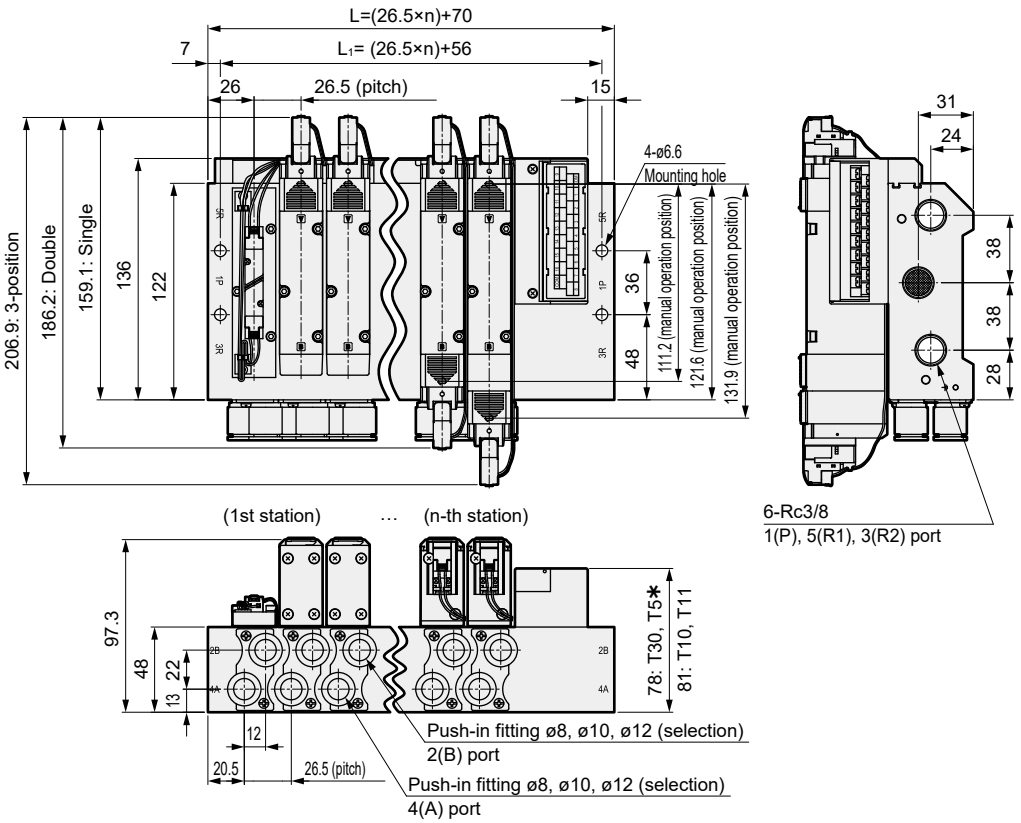
● Reduced wiring Left side type (T10/T11/T30/T50/T51/T52/T53)





● Reduced wiring right side type (T10R/T11R/T30R/T50R/T51R/T52R/T53R)





Station No.	2	3	4	5	6	7	8	9	10	11
L	123	149.5	176	202.5	229	255.5	282	308.5	335	361.5
L1	109	135.5	162	188.5	215	241.5	268	294.5	321	347.5

M4GB4-T∗ Series

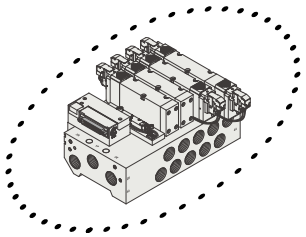
Reduced wiring manifold; base piping

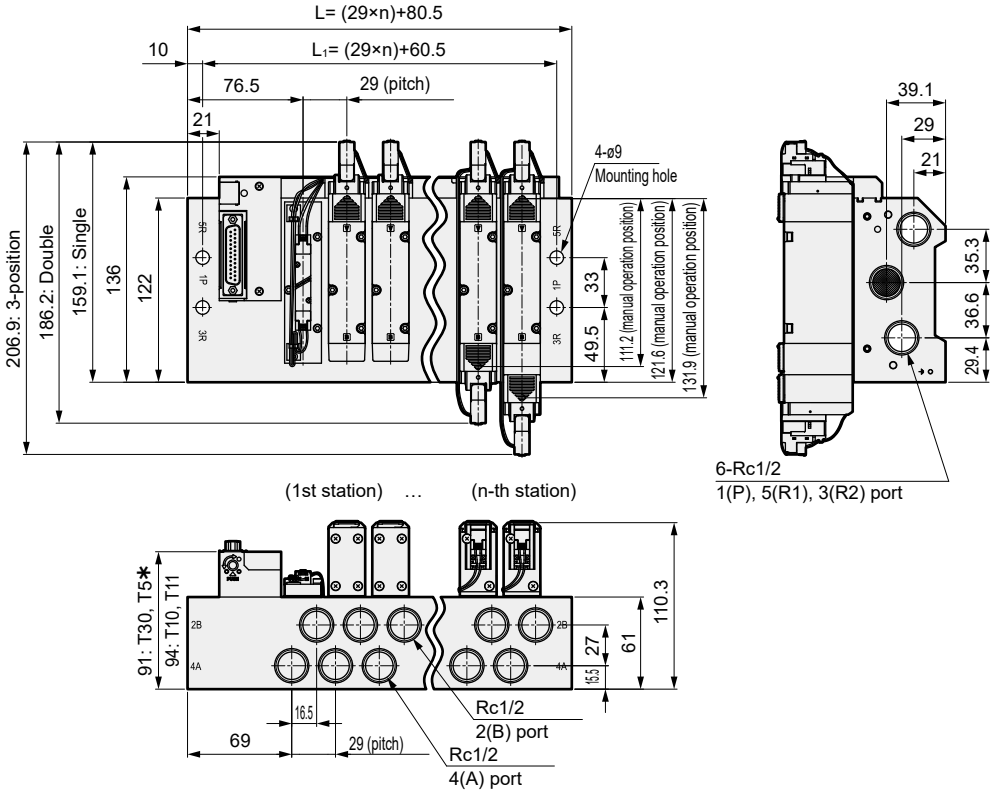
Dimensions

M4GB4

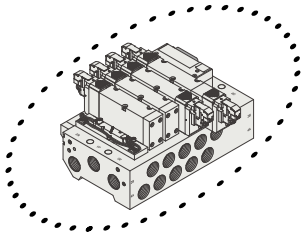
∗Figure shows T30. For detailed wiring block dimensions, see pages 1054, 1055 for details.

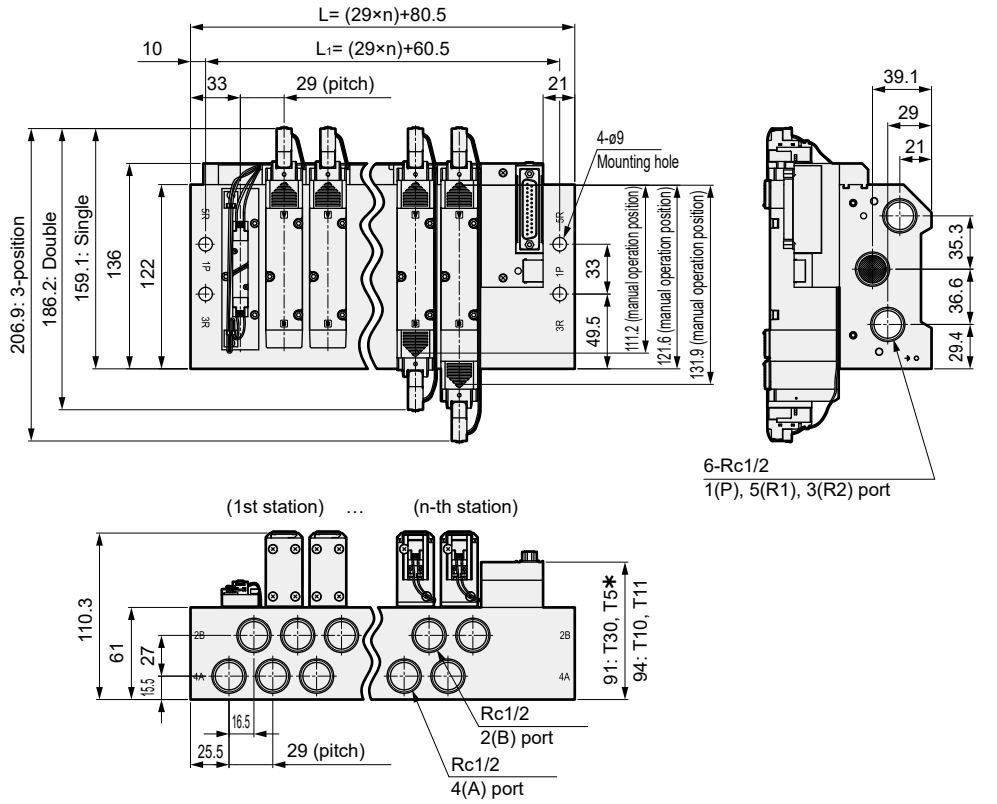
● Reduced wiring Left side type (T10/T11/T30/T50/T51/T52/T53)
Rc1/2 female thread (15)





● Reduced wiring right side type (T10R/T11R/T30R/T50R/T51R/T52R/T53R)
Rc1/2 female thread (15)





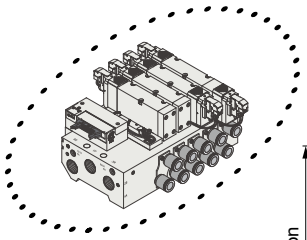
Station No.	2	3	4	5	6	7	8	9	10	11
L	138.5	167.5	196.5	225.5	254.5	283.5	312.5	341.5	370.5	399.5
L_1	118.5	147.5	176.5	205.5	234.5	263.5	292.5	321.5	350.5	379.5

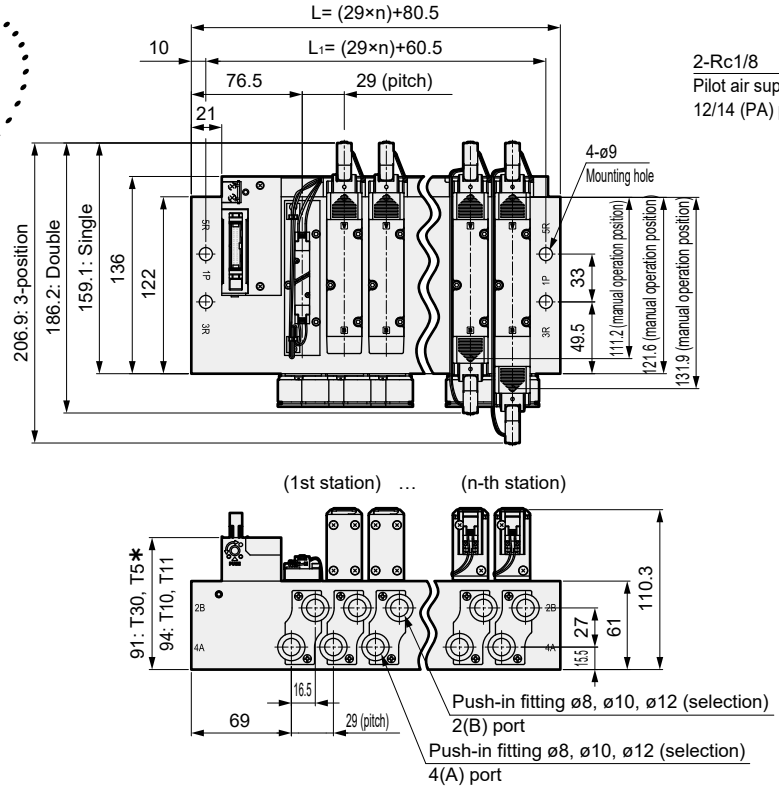
Dimensions

M4GB4

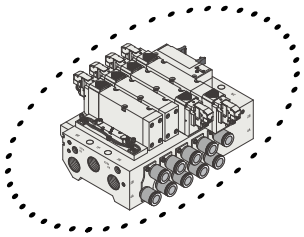
∗Figure shows T50. For detailed wiring block dimensions, see pages 1054, 1055 for details.

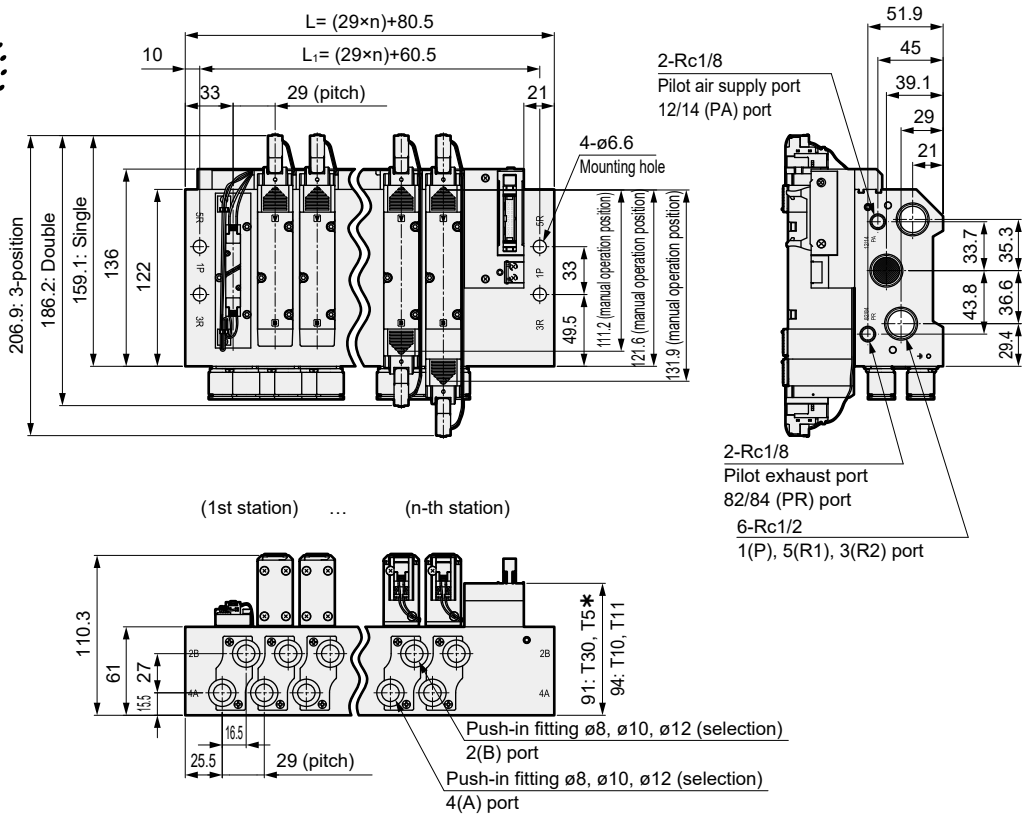
● Reduced wiring Left side type (T10/T11/T30/T50/T51/T52/T53)
External pilot (K)





● Reduced wiring right side type (T10R/T11R/T30R/T50R/T51R/T52R/T53R)
External pilot (K)

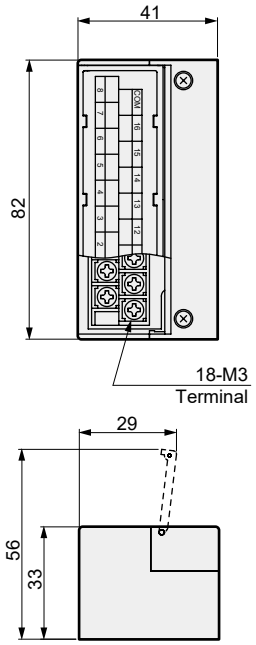




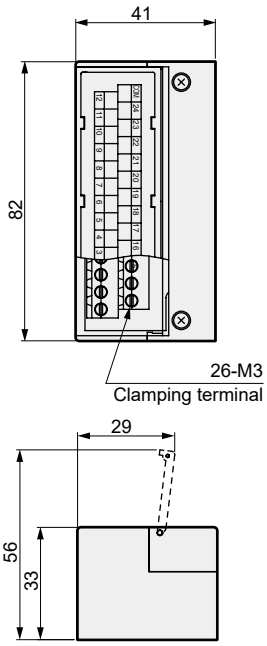
Station No.	2	3	4	5	6	7	8	9	10	11
L	138.5	167.5	196.5	225.5	254.5	283.5	312.5	341.5	370.5	399.5
L1	118.5	147.5	176.5	205.5	234.5	263.5	292.5	321.5	350.5	379.5

Reduced wiring part: Dimensions diagram

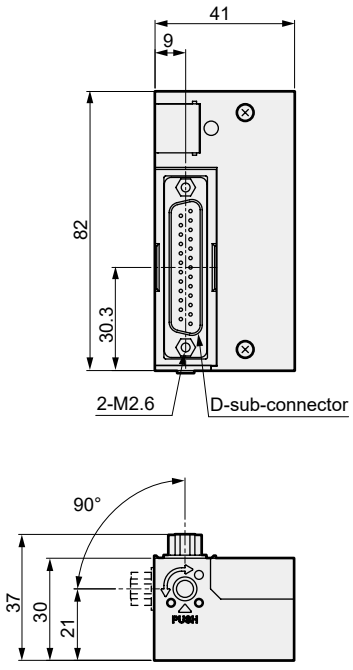
● Common terminal block (M3 thread)
T10



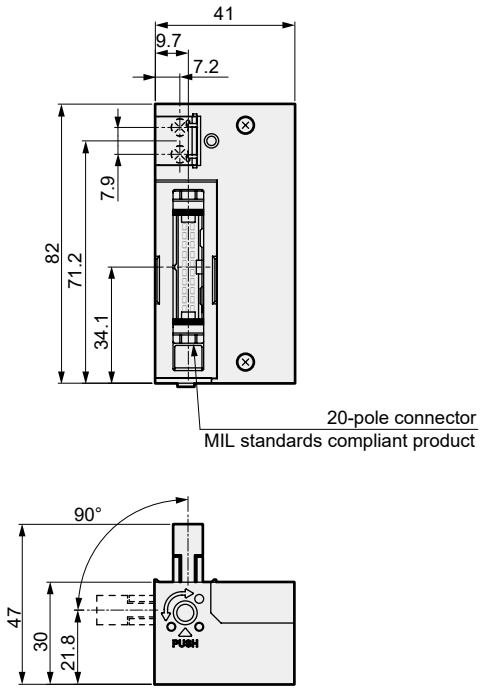
● Common terminal block (clamping)
T11



● D-sub-connector
T30

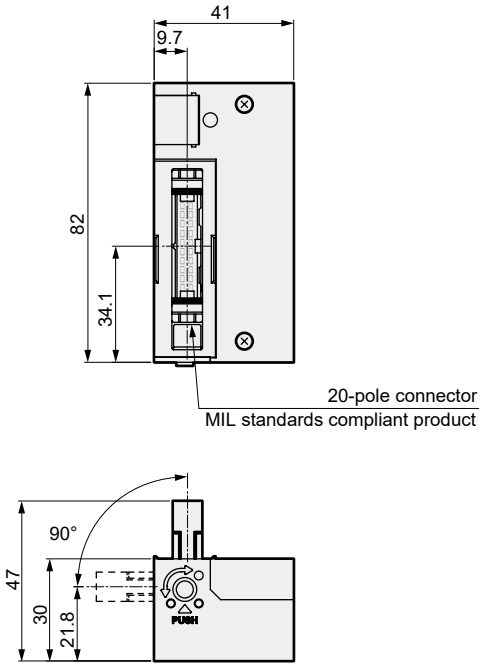


● 20-pin flat cable connector (with power supply terminal)
T50

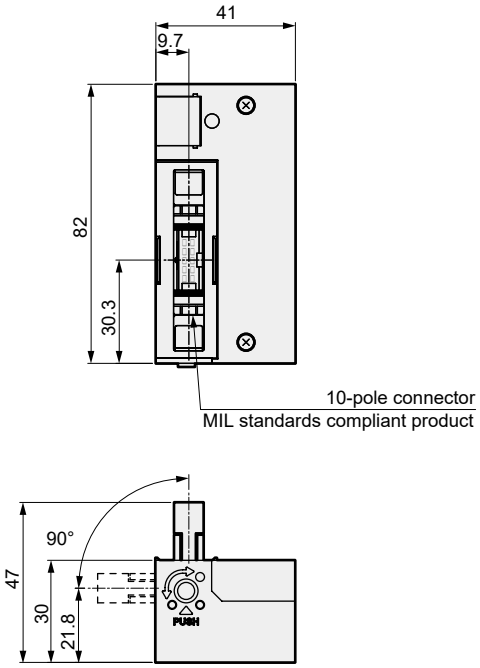


Reduced wiring part: Dimensions diagram

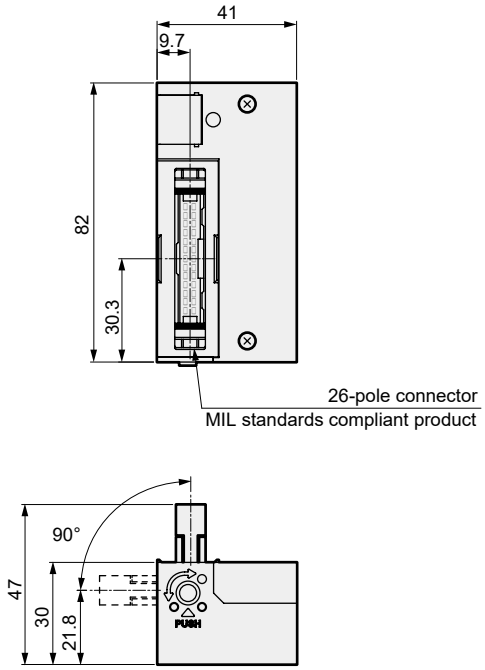
● 20-pin flat cable connector (without power supply terminal)
T51



● 10-pin flat cable connector (without power supply terminal)
T52



● 26-pin flat cable connector (without power supply terminal)
T53



Reduced wiring manifold (serial transmission)
Base piping
Direct mount

M4GB4-T8∗ Series

● Cylinder bore size: ø100 to ø140

Refer to the CKD website for detailed compatible model Nos.

How to Order(serial transmission)

●Manifold 5-port valve

M 4GB4 1 0R - 10 - T8G2 W A - 3 - 3

●5-port valve for Discrete base mounting

4GB4 1 9R - 00 - A2N∗1 A — 3

Model No. | ❶ Solenoid position | Solenoid valve operation class | ❷ Port size | ❸ Serial transmission | ❹ Terminal / Connector pin | ❺ Option | ❻ Station No. | Voltage: 24 VDC

∗1: "A2N" indicates the A-connector (downward), with lamp/surge suppressor and no lead wire.

❶ Solenoid position

Code	Description
1	2-position single
2	2-position double
3	3-positionAll ports closed
4	3-position A/B/R connection
5	3-position P/A/B connection
8	Mix manifold (when there are multiple solenoid positions)

❷ Port size

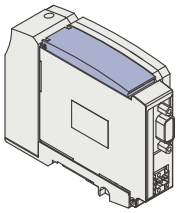
Type	A/B Port	Port P/R1/R2 ∗1 ❹Option Other than "K"	Port P/R1/R2 ∗1 ❹Option "K"	Code
Push-in fitting	ø8	Rc3/8	Rc1/2	C8
	ø10			C10
	ø12			C12
	Mix			CX

∗1:Two types of bases are available. Dimensions differ by bore size of port P/R1/R2.

Type	A/B Port	Port P/R1/R2 ∗1 ❹Option Other than "K"	Port P/R1/R2 ∗1 ❹Option "K"	Code
Female thread	Rc1/4	Rc3/8	Rc1/2	08
	Rc3/8			10
	Rc1/2	Rc1/2		15
	G1/4	G3/8	G1/2	08G
	G3/8			10G
	G1/2	G1/2		15G
	NPT1/4	NPT3/8	NPT1/2	08N
	NPT3/8			10N
	NPT1/2	NPT1/2		15N

❸ Serial transmission (lamp/surge suppressor provided as standard)

Communication protocol	Output	No. of output points	Code
CC-LINK	NPN	32 points	T8G2
	PNP		T8GP2
PROFIBUS-DP	NPN		T8P2
	PNP		T8PP2
EtherCAT	NPN		T8EC2
	PNP		T8ECP2
EtherNet/IP	NPN		T8EN2
	PNP		T8ENP2
DeviceNet	NPN		T8D2
	PNP		T8DP2
CC-Link IEF Basic	NPN		T8EB2
	PNP		T8EBP2
CC-Link IE Field	NPN		T8EF2
	PNP		T8EFP2
PROFINET	NPN		T8EP2
	PNP		T8EPP2
IO-Link	NPN		T8KC2
	PNP		T8KCP2
CC-Link IE TSN	NPN		T8TG2
	PNP		T8TGP2



❹ Terminal / Connector pin array

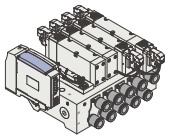
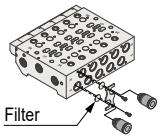
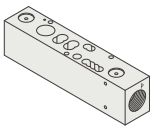
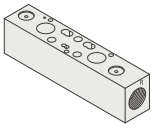
	Code	Description
∗1	Blank	Standard wiring
∗1,∗2	W	Double wiring

∗1: Blank...The wiring will be based on the type of valve mounted.
W…All wired as double solenoid regardless of the type of valve used.

∗2: When changing from a single valve for W wiring specifications to a double or 3-position valve, the A-type connector socket assembly needs to be purchased separately.

∗Be sure to fill-in the Manifold Specifications sheet (pages 1078 to 1071).

❺ Option

	Code	Description	
	Blank	No option	
∗1	K	External pilot	
	A	Coolant proof	
∗2	S	Surgeless	
∗2,∗3	E	Low exoergic/energy saving circuit	
	F	Port A/B filter built in	
∗4 ∗5	Z1	Air supply spacer	
∗4 ∗5	Z3	Exhaust spacer	

∗1: Consult with CKD for vacuum specifications.
∗2: In addition, surgeless "S" and low exoergic/energy saving circuit cannot be selected together.
∗3: Surgeless specifications.
∗4: Specify the spacer mounting position/quantity in the manifold specifications sheet. For details, see pages 1064, 1065.
∗5: Cannot be selected with discrete valve for integrated base.

❻ Station No.

Code	Description
2	2 stations
to	to
15	15 stations

∗1: Refer to page 1058 for the max. station number per port size.

Specifications for rechargeable battery (Catalog No.CC-1226A)

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

∗∗ - Voltage - P4

M4GB4-T8∗ Series

Reduced wiring manifolds: Base piping; serial transmission

Manifold common specifications

Item		Description
Manifold		Serial transmission 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 (Pilot exhaust check valve built-in)
	External pilot	Main valve/pilot valve individual exhaust
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 (∗3)
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)		Dust-proof (IP40 equivalent)
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: Avoid water drops or oil, etc., during use.
∗3: The working pressure range is 0 to 0.7 MPa when the external pilot (option code: K) is selected. Also, set the external pilot pressure between 0.2 to 0.7 MPa.

Electrical Specifications

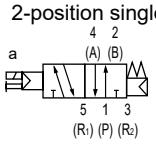
Item		Description
		T8□
Rated voltage V		24 DC
Voltage fluctuation range (∗4)		+10%, -5%
Holding current A	Standard	0.017
	With low heat generation and power saving circuit	0.005
Power consumption W	Standard	0.4
	With low heat generation and power saving circuit	0.1
Heat Resistant Class		B
Surge suppressor (∗5)		Zener diode
Indicator		LED

∗4: T8□ (serial transmission type) has a voltage drop due to internal circuitry, so pay attention to the voltage fluctuation range.
∗5: When low heat/power saving circuit or surge-less is selected, it becomes a diode.

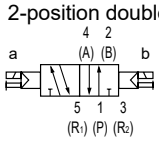
Circuit diagram symbol

● 5-port valve

2-position single

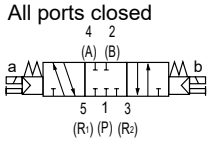


2-position double

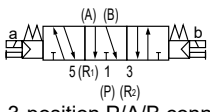


3-position

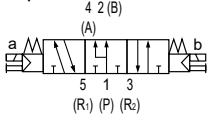
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Individual specifications

Item		M4GB4 Direct mount		
Pilot operated		Standard (Internal pilot)		External pilot (∗3)
Max. station No.		15 stations	12 stations	
Port size	Port A/B	Push-in fitting ø8, ø10, ø12 Rc1/4, Rc3/8 G1/4, G3/8 NPT1/4, NPT3/8	Rc1/2, G1/2, NPT1/2	Push-in fitting ø8, ø10, ø12 Rc1/4, Rc3/8, Rc1/2 G1/4, G3/8, G1/2 NPT1/4, NPT3/8, NPT1/2
	Port P/R1/R2	Rc3/8, G3/8, NPT3/8 (∗1)	Rc1/2, G1/2, NPT1/2 (∗2)	
Manifold base Weight calculation formula (n: station No.) g		292n+1864	391n+2432	392n+2329

For 5 or more manifold station No., use ports on both sides for air supply and exhaust. The manifold base weight is the value for screw specifications. Dimensions of port sizes (port P/R1/R2) of Rc3/8 and Rc1/2 are different.

∗1: Refer to the top figure on the page 1062 for Dimensions diagram of port size Rc3/8.
∗2: Refer to the figure below on the page 1062 for Dimensions diagram of port size Rc1/2.
∗3: Refer to the page 1063 for the Dimensions diagram of the external pilot (option code: K).

Performance/characteristics by model

Item			M4GB4 at ON	M4GB4 at OFF
Response time ms	2-position	Single	40	60
		Double	50	50
	3-position	A/B/R connection	30	80

Values with lamp/surge suppressor are shown. The response times are values with working pressure of 0.5 MPa at 20°C, without lubrication. They depend on the pressure and the lubricant quality.

Flow Characteristics

Model / Model No.	Port size P, R1, R2	Solenoid position		P → A/B C[dm³/(s·bar)]	P → A/B b	P → A/B Q[L/min (ANR)]	A/B→R1/R2 C[dm³/(s·bar)]	A/B→R1/R2 b	A/B→R1/R2 Q[L/min (ANR)]
M4GB4	(∗1) Rc3/8 G3/8 NPT3/8	2-position		6.4	0.42	1767	6.9	0.12	1583
		3-position	All ports closed	6.0	0.37	1598	6.8	0.12	1560
			A/B/R connection	6.1	0.38	1636	7.1	0.15	1655
			P/A/B connection	6.0	0.37	1598	6.8	0.13	1568
	(∗2) Rc1/2 G1/2 NPT1/2	2-position		8.3	0.23	2023	9.0	0.21	2168
		3-position	All ports closed	7.4	0.15	1725	8.8	0.19	2096
			A/B/R connection	7.5	0.15	1748	9.5	0.21	2288
			P/A/B connection	7.7	0.21	1855	8.7	0.18	2061

Dimensions of port sizes (port P/R1/R2) of Rc3/8 and Rc1/2 are different.
∗1: Refer to the top figure on the page 1062 for Dimensions diagram of port size Rc3/8.
∗2: Refer to the figure below on the page 1062 for Dimensions diagram of port size Rc1/2.
∗3: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

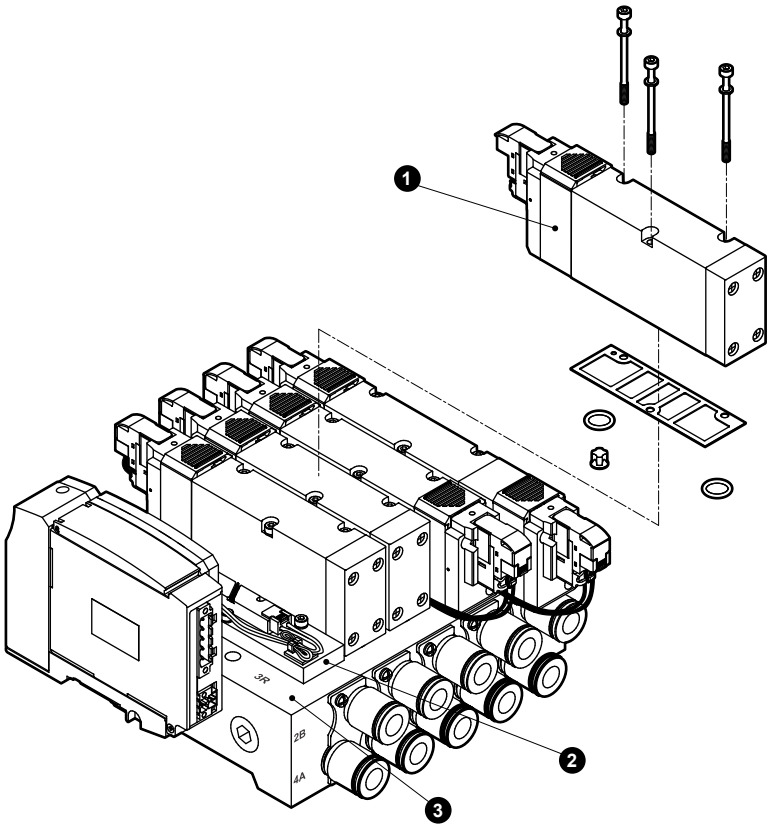
Serial transmission device unit specifications

Download the communication setting file from the CKD website (https://www.ckd.co.jp/en/).

Item		T8G2	T8GP2	T8P2	T8PP2	T8EC2	T8ECP2	T8EN2	T8ENP2	T8D2	T8DP2
Communication protocol		CC-Link ver. 1.10		PROFIBUS-DP		EtherCAT		EtherNet/IP		DeviceNet	
Power Supply Voltage	Unit side	24 VDC ±10% (11 to 25 VDC for T8D∗ only)									
	Valve side	24 VDC +10%, -5%									
Consumption Current	Unit side (when all output points are ON)	60 mA or less		60 mA or less		110 mA or less		90 mA or less		70 mA or less	
	Valve side (when all output points are ON)	20 mA or less Load current is not included						15 mA or less Load current is not included			
No. of output points		32 points									
Occupied number		1 station									
Operation display		LED (power supply and communication status)									
Output		NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP

Item		T8EB2	T8EBP2	T8EF2	T8EFP2	T8EP2	T8EPP2	T8KC2	T8KCP2	T8TG2	T8TGP2
Communication protocol		CC-Link IEF Basic		CC-Link IE Field		PROFINET		IO-Link		CC-Link IE TSN	
Power Supply Voltage	Unit side	24 VDC ±10%									
	Valve side	24 VDC +10%, -5%									
Consumption Current	Unit side (when all output points are ON)	130 mA or less		140 mA or less		130 mA or less		50 mA or less		140 mA or less	
	Valve side (when all output points are ON)	15 mA or less Load current is not included									
No. of output points		32 points									
Occupied number		1 station									
Operation display		LED (power supply and communication status)									
Output		NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP

Manifold configuration explanation



Main configuration parts list

Part No.	Configuration parts name	Model No.	Description	Remarks
1	Discrete valve for integrated base	4GB4□9R-00-A2N Option - Voltage Solenoid position	Discrete valve Gasket Mounting screw 3 O-ring 2 Check valve 2 (1)	Size: 4GB4 — M3; Tightening torque (N·m): 1.7
2	Masking plate	4GB4-MPC	Masking plate for reduced wiring Gasket Mounting screw 3 O-ring 2 Check valve 2	
3	Manifold base assembly	M4GB4- Port size -T8 Option - Station No.	Manifold base Wiring block	

( ) applies when 4GB419R is selected.

For maintenance parts, refer to CKD components product website (https://www.ckd.co.jp/kiki/jp/en/) → "Model No."→ Maintenance parts for details.

MEMO

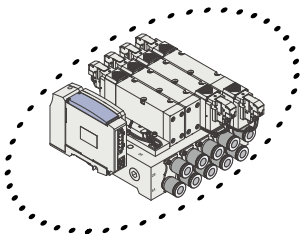
M4GB4-T8∗ Series

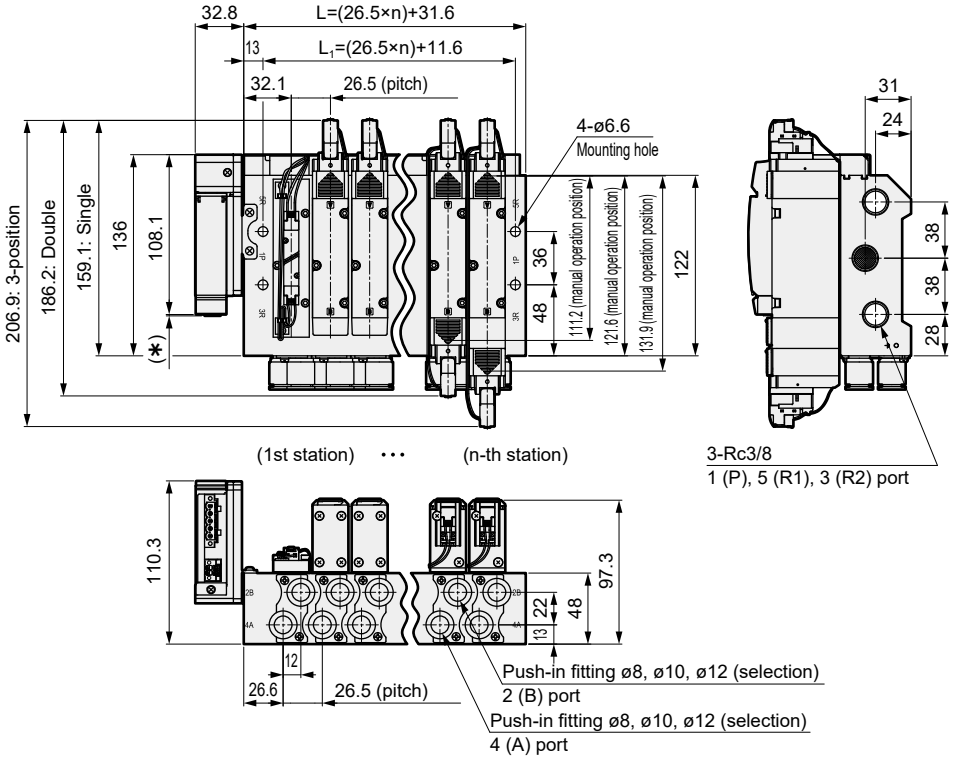
Reduced wiring manifolds: Base piping; serial transmission

Dimensions

M4GB4

● Serial transmission (T8□)

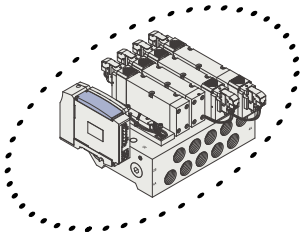


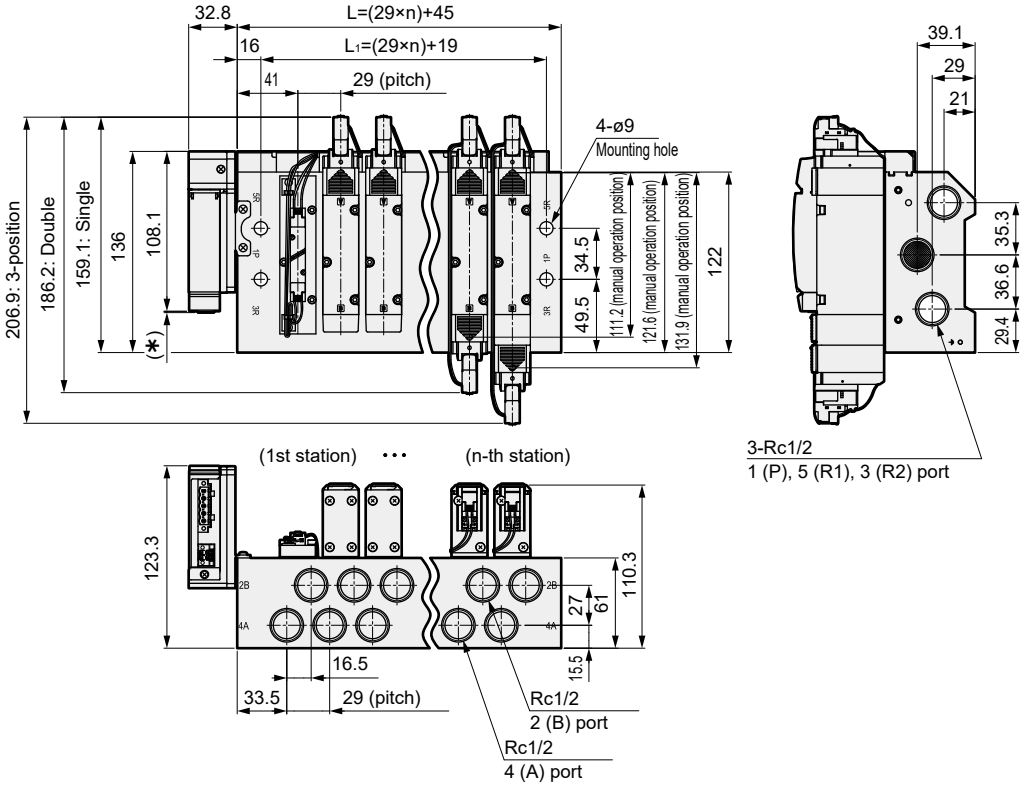


Serial transmission	(∗) Dimensions
T8G□	1.0
T8P□	4.9
T8E□	1.5
T8D□	1.0
T8K□	1.0
T8T□	1.5

Station No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15
L	84.6	111.1	137.6	164.1	190.6	217.1	243.6	270.1	296.6	323.1	349.6	376.1	402.6	429.1
L_1	64.6	91.1	117.6	144.1	170.6	197.1	223.6	250.1	276.6	303.1	329.6	356.1	382.6	409.1

● Serial transmission (T8□)
Rc1/2 female thread (15)





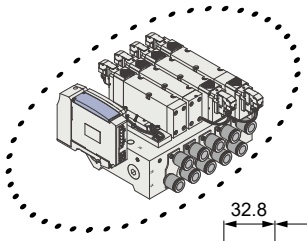
Serial transmission	(∗) Dimensions
T8G□	1.0
T8P□	4.9
T8E□	1.5
T8D□	1.0
T8K□	1.0
T8T□	1.5

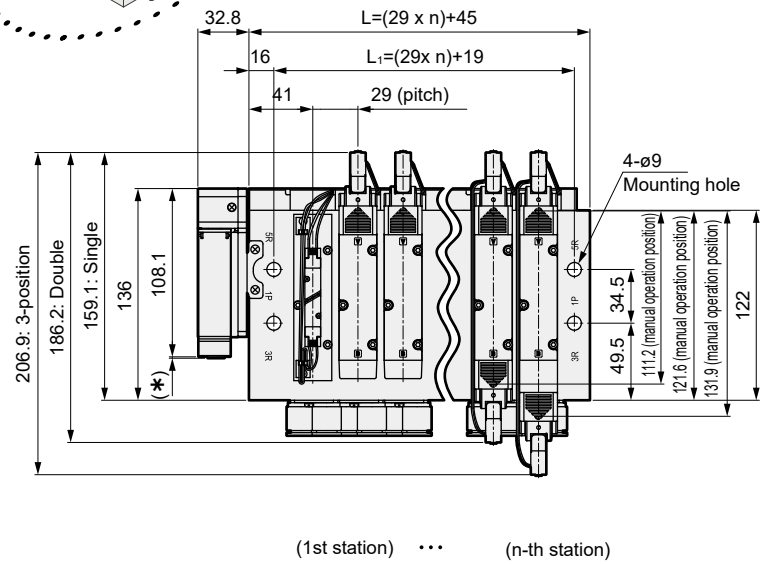
Station No.	2	3	4	5	6	7	8	9	10	11	12
L	103	132	161	190	219	248	277	306	335	364	393
L_1	77	106	135	164	193	222	251	280	309	338	367

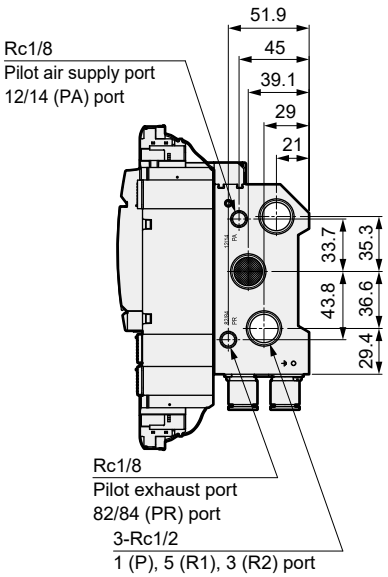
Dimensions

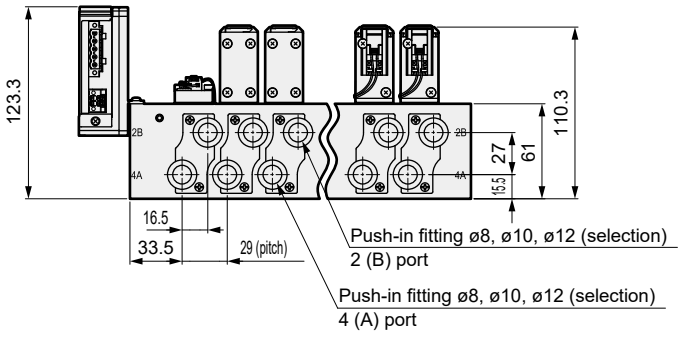
M4GB4

● Serial transmission (T8□)
External pilot (K)







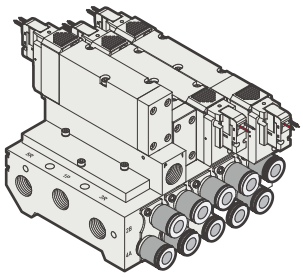


Serial transmission	(∗) Dimensions
T8G□	1.0
T8P□	4.9
T8E□	1.5
T8D□	1.0
T8K□	1.0
T8T□	1.5

Station No.	2	3	4	5	6	7	8	9	10	11	12
L	103	132	161	190	219	248	277	306	335	364	393
L_1	77	106	135	164	193	222	251	280	309	338	367

Related products

● Air supply spacer



Specifications

Item		4GA4	4GB4
Flow Characteristics C[dm3/(s·bar)] (✱1)	P → A/B	6.4	5.6 (✱2)
	A/B→R	8.0	6.6 (✱2)
Weight	g	208	198

✱1: This is the value when a single solenoid is installed.
✱2: This is the value when installing to a manifold base port size Rc3/8.
✱3: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

How to order discrete units

4GA4 - P - 10

Model No. | Port size

Port size		Model No.	
Code	Description	4GA4	4GB4
10	Rc3/8	●	●
10G	G3/8	●	●
10N	NPT3/8	●	●

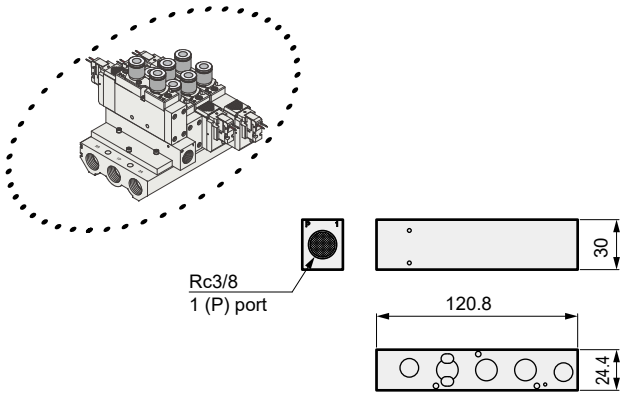
Attachments: 3 mounting screws, 2 O-rings, 1 body gasket

⚠ Precautions for model No. selection

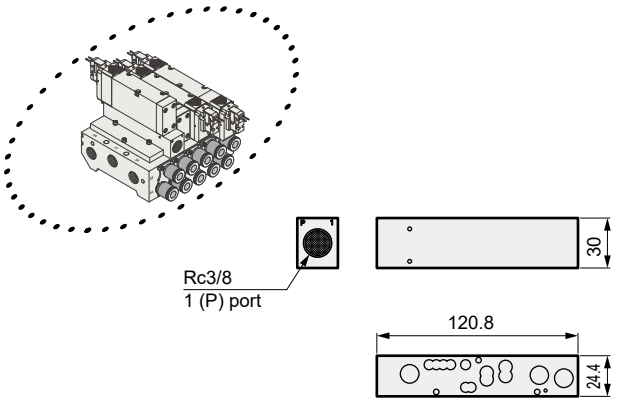
✱1: Specify the air supply spacer mounting position and quantity in manifold specifications sheets of each catalog.
✱2: Combination with the masking plate is not supported.

Dimensions

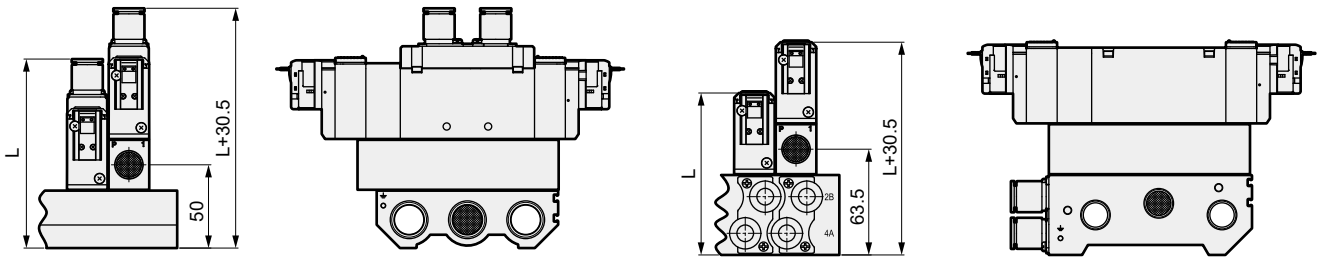
● 4GA4



● 4GB4

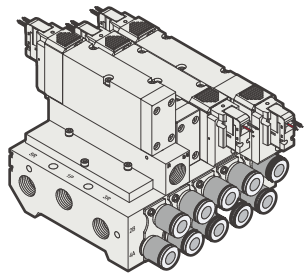


Dimensions when mounted



Related products

● Exhaust spacer



Specifications

Item		4GA4	4GB4
Flow Characteristics C[dm3/(s·bar)] (∗1)	P → A/B	6.3	5.4 (∗2)
	A/B→R	6.9	5.7 (∗2)
Weight g		206	197

∗1: This is the value when a single solenoid is installed.
∗2: This is the value when installing to a manifold base port size Rc3/8.
∗3: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

How to order discrete units

4GA4 - R - 10

Model No. Port size

Port size		Model No.	
Code	Description	4GA4	4GB4
10	Rc3/8	●	●
10G	G3/8	●	●
10N	NPT3/8	●	●

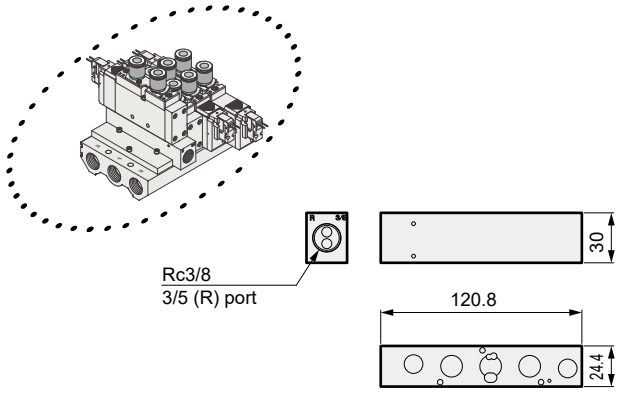
Attachments: 3 mounting screws, 2 O-rings, 1 body gasket

⚠ Precautions for model No. selection

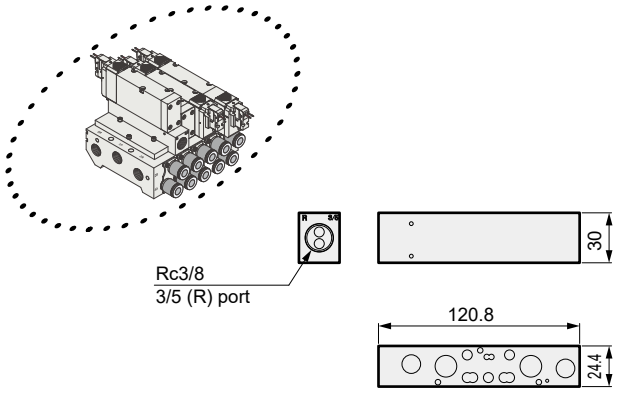
∗1: Specify the air supply spacer mounting position and quantity in manifold specifications sheets of each catalog.
∗2: Combination with the masking plate is not supported.
∗3: When mounting an exhaust spacer on the type A or type B manifold (port P Rc3/8 specifications), connect a push-in fitting.

Dimensions

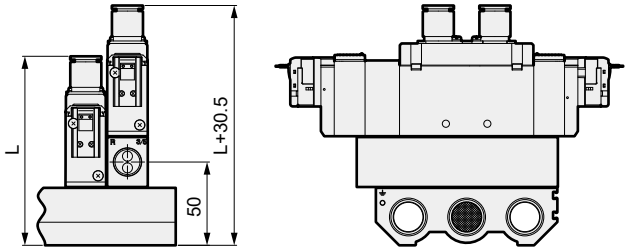
● 4GA4

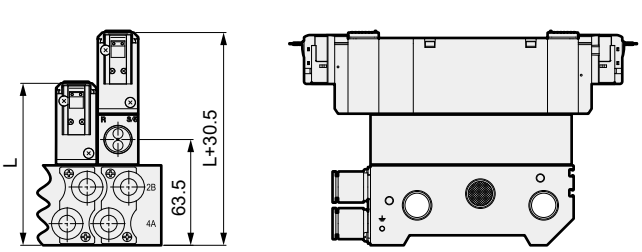


● 4GB4



Dimensions when mounted

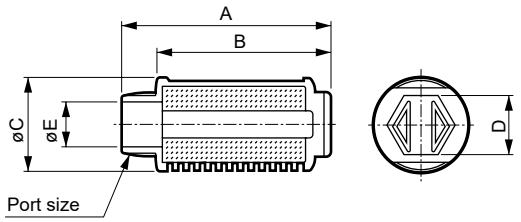




Related products

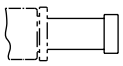
● Silencer

● SLW-□A, □L



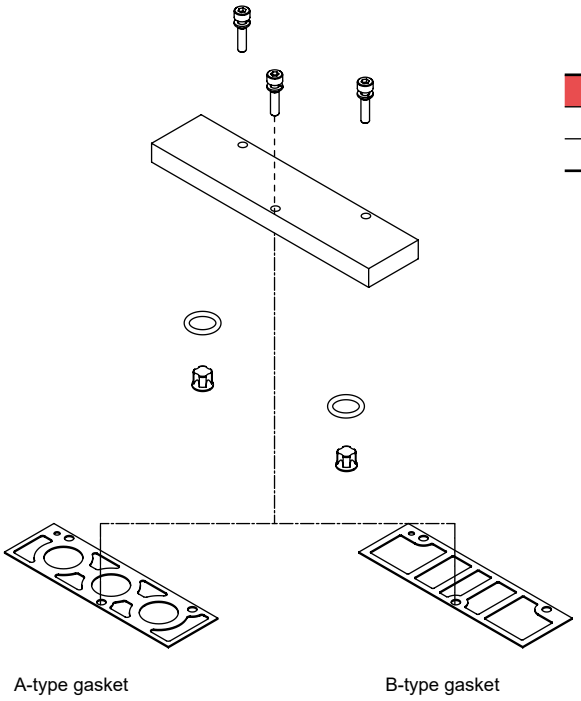
Code / Model No.	Noise reduction effect dB (A)	Effective cross-sectional area mm²	Port size	A	B	C	D	E
SLW-10A	30 or more	30	R 3/8	58.5	48.5	25.5	17	12
SLW-10L	30 or more	60	R 3/8	68.2	58.4	28	19	12
SLW-15A	30 or more	75	R 1/2	71.4	58.4	28	19	15

● Plug type

Part name	Model No.	Compatible bore size	Appearance
Blank Plug	GWP8-B	ø8	
	GWP10-B	ø10	
	GWP12-B	ø12	
Threaded plug	4G4-8P	Rc1/4	 Hexagon socket plug
	4G4-10P	Rc3/8	
	4G4-15P	Rc1/2	
	4G4-8NP	NPT1/4	
	4G4-10NP	NPT3/8	
	4G4-15NP	NPT1/2	
	4G4-8GP	G1/4	
	4G4-10GP	G3/8	
	4G4-15GP	G1/2	

Related products

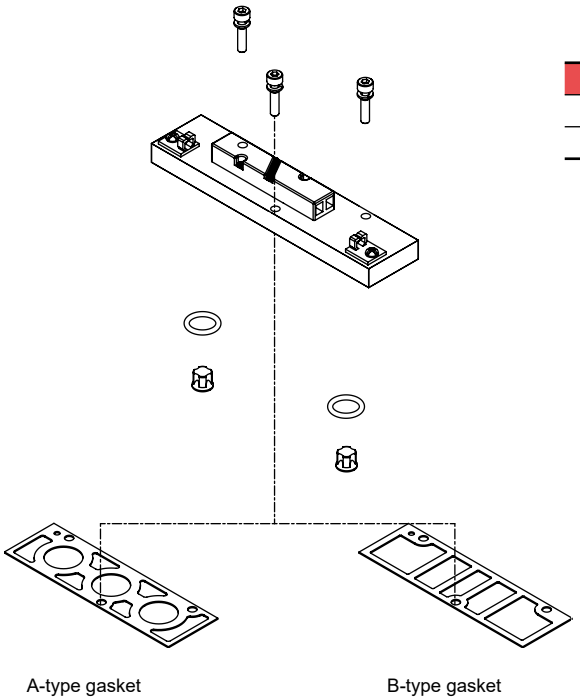
● Masking plate kit (individual wiring)



Model	Part model No.
4GA4	4GA4-MP
4GB4	4GB4-MP

∗Kit contents: Masking plate, gasket (select from A-type and B-type), 3 mounting screws, 2 O-rings, 2 check valves

● Masking plate kit (reduced wiring)

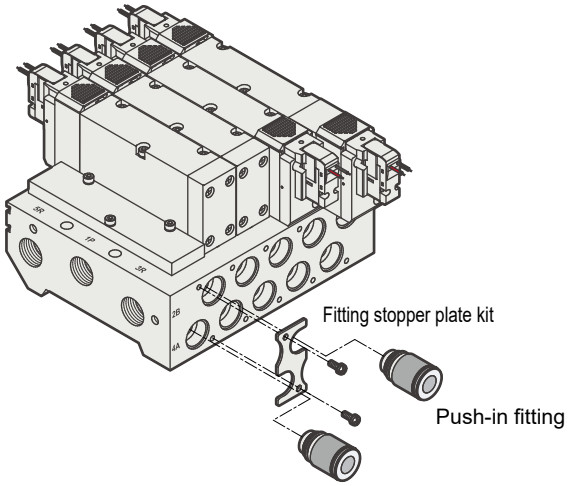


Model	Part model No.
4GA4	4GA4-MPC
4GB4	4GB4-MPC

∗Kit contents: Masking plate, gasket (select from A-type and B-type), 3 mounting screws, 2 O-rings, 2 check valves

Parts list

(1) Cartridge push-in fitting and related discrete parts (1)



(1)-1 Push-in fitting model No.

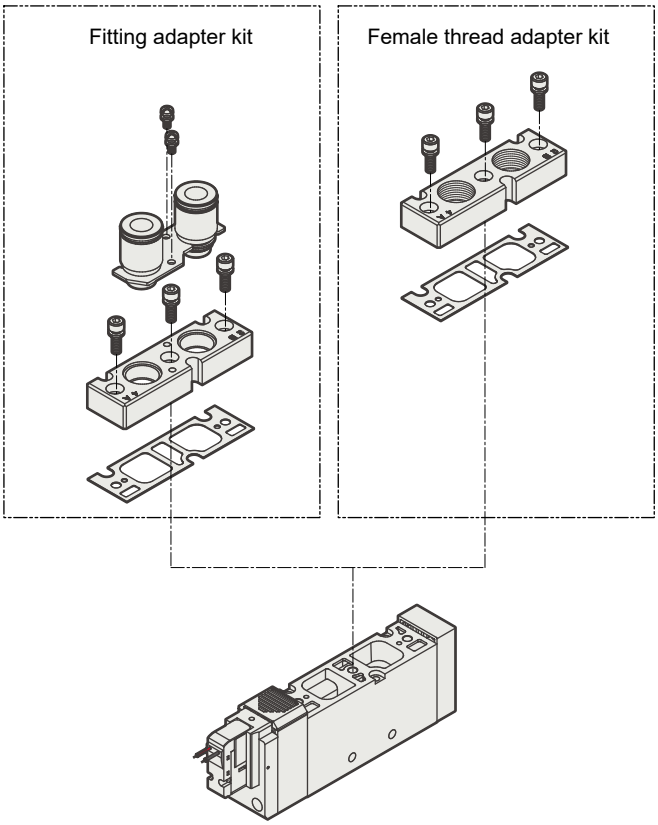
Model	Part name	Model No.
4G4	ø8 straight	4G4-JOINT-C8
	ø10 straight	4G4-JOINT-C10
	ø12 straight	4G4-JOINT-C12

(1)-2 Fitting stopper plate kit

Model	Kit model No.
4GA4	4GA4 - JNT - STP - PLATE - KIT
4GB4	4GB4 - JNT - STP - PLATE - KIT - 1 (✱1)
	4GB4 - JNT - STP - PLATE - KIT - 2 (✱1)

✱1: When the manifold port P/R is Rc3/8, NPT3/8, or G3/8, select "…-1".
When the manifold port P/R is Rc1/2, NPT1/2, or G1/2, select "…-2".

(2) Adaptor related kit



Fitting adapter kit

Model	Part name	Kit model No.	Set parts
4GA4	ø8 fitting Adaptor kit	4GA4 - JNT - ADAPTOR - KIT - C8 - option	Fitting adapter 2 Push-in fittings Fitting stopper plate Gasket 2 Mounting screws 3 Adaptor mounting screws
	ø10 fitting Adaptor kit	4GA4 - JNT - ADAPTOR - KIT - C10 - option	
	ø12 fitting Adaptor kit	4GA4 - JNT - ADAPTOR - KIT - C12 - option	

Specify the option "F" when using the port A/B filter integrated type.

Female thread adapter kit

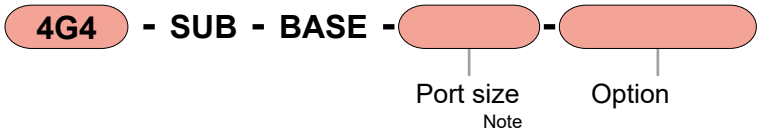
Model	Kit model No.	Set parts
4GA4	4GA4 - FML - ADAPTOR - KIT - Bore size - Option	Female thread adaptor, gasket, 3 adaptor mounting screws

Specify the option "F" when using the port A/B filter integrated type.

Parts list

(3) Single valve sub-plate kit individual wiring

● 4GB4 sub-plate



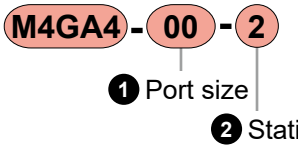
❶ Option

Code	Description
Blank	
K	External pilot
F	Port P/A/B filter integrated

Note: Select from the port size ❷ on the page 998.

(4) Manifold sub-plate kit individual wiring

● M4GA4 sub-plate



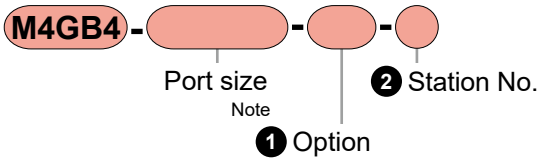
❶ Port size

Code	Description
00	Rc thread
00 N	NPT thread
00G	G thread

❷ Station No.

Code	Description
2	2 stations
to	to
15	15 stations

● M4GB4 sub-plate: Direct mount



Note: Select from the port size ❸ on the page 1016.
Note that "CX" cannot be selected.

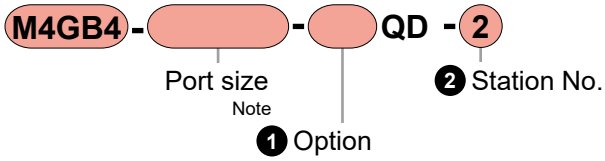
❶ Option

Code	Description
Blank	
K	External pilot
F	Port A/B filter built in

❷ Station No.

Code	Description
2	2 stations
to	to
15	Refer to the specifications page 1018 for the max. station number.

● M4GB4 sub-plate: DIN rail mount



Note: Select from the port size ❸ on the page 1016.
Note that "CX" cannot be selected.

❶ Option

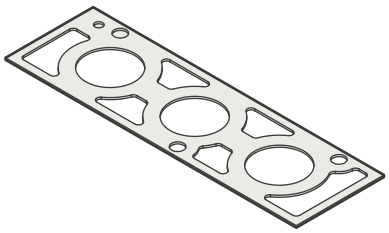
Code	Description
Blank	
F	Port A/B filter built in

❷ Station No.

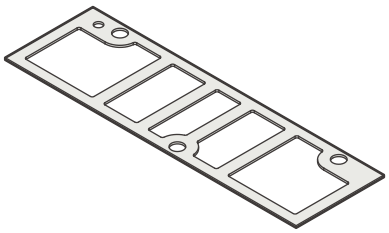
Code	Description
2	2 stations
to	to
5	5 stations

Parts list

(5)Manifold related parts



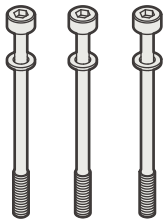
Gasket (4GA4)



Gasket (4GB4)

PR check valve kit

Mounting screw [for solenoid valve installation]



Gasket

Model	Part model No.
4GA4	4GA4-GASKET
4GB4	4GB4-GASKET

PR check valve kit (2 per set)

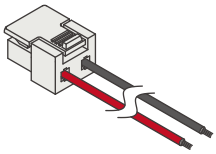
Kit model No.
4G4-PR

Mounting screw [for solenoid valve installation] (10 per set)

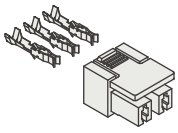
Part model No.
4G4-SET-SCREW

(6)Lead wire related parts

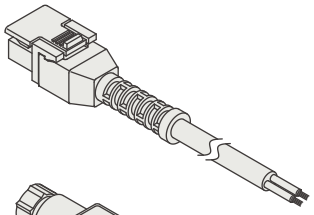
(1)



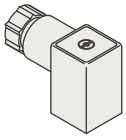
(2)



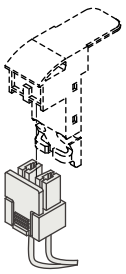
(3)



(4)



(5)



(1) E-connector socket assembly

Part model No.
4GR-SOCKET-ASSY-[∗1]-[∗2], lead wire 300 mm
4GR-SOCKET-ASSY-[∗1]-[∗2], lead wire 500 mm
4GR-SOCKET-ASSY-[∗1]-[∗2], lead wire 1000 mm
4GR-SOCKET-ASSY-[∗1]-[∗2], lead wire 2000 mm
4GR-SOCKET-ASSY-[∗1]-[∗2], lead wire 3000 mm

∗1 electrical connections (E0, E00, E01, E02, E03, E2, E20, E21, E22, E23)
∗2 Voltage ("3", "4" when specified with 24 VDC/12 VDC, lead wire color is red/black. "1", "5" when specified with 100 VAC/110 VAC, lead wire color is blue.)

(2) Socket set

Part model No.
4GR-SOCKET-SET

(3) EJ-connector socket assembly

Part model No.
4GR-SOCKET-ASSY-[∗1]

∗1 Electrical connections (E01J, E02J, E03J, E21J, E22J, E23J)

(4) DIN terminal box

Basic price model No.
4G-TERMINAL-BOX-[∗2]

∗2 Voltage (1 = 100 VAC, 3 = 24 VDC, 4 = 12 VDC, 5 = 110 VAC)

(5) A-connector socket assembly

Part model No.
4G4 - SOCKET - ASSY - A∗∗ - (row No.)

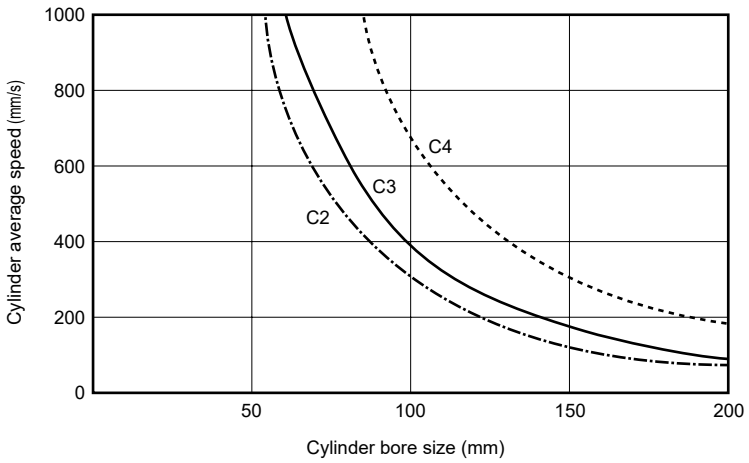
MEMO

Technical data❶Pneumatic system selection guide

①The cylinder average speed is obtained from the combination of 4G4 Series and piping system. It is expressed as the cylinder's piston speed calculated by dividing the stroke by the time that the piston rod takes from start to end of movement with the cylinder rod installed facing upward. When the load factor is 50%, the average speed should be approximately the cylinder's piston speed multiplied by 0.5.
②The cylinder average speed described in "Pneumatic System Components Selection Guide" is that when one cylinder is operated independently.
③The effective cross-sectional area of the solenoid valve used for the calculation below is the 2-position value.
④This selection guide is for reference. With the CKD sizing program, confirm actual conditions that will be used.
⑤Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

Standard system table

Valve	System No.	Speed controller	Silencer	Piping	Combination Composite effective sectional area (mm²) Pipe length 1 m
4GA410	C2	SC1-10	SLW-8A	ø10 x ø7.2	12.3
4GB410	C3	SC1-10	SLW-10A	Rc3/8 steel pipe	15.9
	C4	SC1-15	SLW-15A	Rc1/2 steel pipe	24.8



How to use the guide

Device selection guide is used to select the optimum model at a glance.

● Fluid control components selection

Whether the cylinder bore size and cylinder being used are driven with relative high or low speed is determined as a condition. Using the table shown below as a reference, select the theoretical reference speed of the cylinder.

Degree of cylinder speed	Theoretical reference speed (mm/s)
Low speed	250
Medium speed	500
High speed	750
Ultra high speed	1,000

Using the table in the components selection guide-1 (next page), select the equivalent bore size of cylinder tube and the proper standard system No. corresponding to theoretical reference speed.

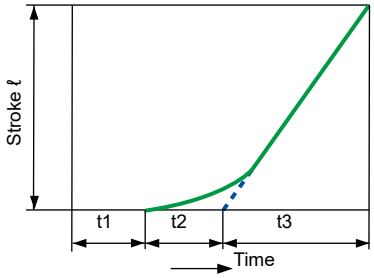
Explanation of technical terms

● Theoretical reference speed: indicates degree of cylinder speed, expressed as the following formula. (This value matches speed with no load. When load is applied, speed drops considerably.)

$$vo=1920\times\frac{S}{A}=2445\times\frac{S}{D^2} \quad (1)$$

vo: Theoretical reference speed (mm/s)
A: Cylinder sectional area (cm²)
S: Composite effective cross-sectional area of circuit (exhaust air side) (mm²)
D: Cylinder bore size (cm)

When expressed as a graph, the theoretical reference speed is the speed within the range where the cylinder moves at a uniform speed:



$$vo=\frac{\ell}{t3}\ (A/s)$$

t1: Time until movement starts
t2: Time of primary delay
t3: Operating time with constant velocity
ℓ: Stroke

● Note: t1 and t2 differ depending on load.
Can be effectively ignored with no load.

● Required flow rate: Instantaneous flow rate for operating a cylinder with velocity vo, expressed with the following formula. Values in the table are when P = 0.5 MPa. The required flow rate is a value necessary to select clean air system components.

$$Q=\frac{Avo\,(P+0.101)\times60}{0.101\times10^4}=\left\{\frac{Avo\,(P+1.03)\times60}{1.03\times10^4}\right\} \quad (2)$$

Q: Required flow rate (L/min)(ANR)
P: Supply pressure (MPa)

● Required effective sectional area: Composite effective cross-sectional area for the exhaust circuit required for moving the cylinder at speed vo. (Composite effective cross-sectional area of valve, speed controller, silencer or piping) Effective cross-sectional area S and sonic conductance C are converted as S≈5.0×C.

● Proper standard system: indicates the most appropriate combination of valve, speed controller, silencer and bore size for operating a cylinder with velocity vo. The combination in the table is for a pipe length of 1 m.

Calculation method of flow rate

Depending on the actual unit, they are shown as follows.

$\frac{P_2+0.1}{P_1+0.1}$ Choked flow when ≤ b

$$Q=600\times C\,(P_1+0.1)\sqrt{\frac{293}{273+t}} \quad (1)$$

$\frac{P_2+0.1}{P_1+0.1}$ Subsonic flow when >b

$$Q=600\times C\,(P_1+0.1)\sqrt{1-\left[\frac{\frac{P_2+0.1}{P_1+0.1}-b}{1-b}\right]^2}\sqrt{\frac{293}{273+t}} \quad (2)$$

Q : Air flow rate [dm³/min (ANR)], dm³ for SI units (cubic decimeter) can also be expressed with L (liter). 1 dm³= 1 L
C : Sonic conductance [dm³/(s·bar)]
b : Critical pressure ratio [-]
P_1 : Upstream pressure [MPa]
P_2 : Downstream pressure [MPa]
t : Temperature (°C)

When calculating with effective cross-sectional area S, substitute value C obtained with C = S/5 in the above formula. For subsonic flow, substitute b = 0.5 in formula (2).

The flow rate values of each model are calculated under the following conditions.

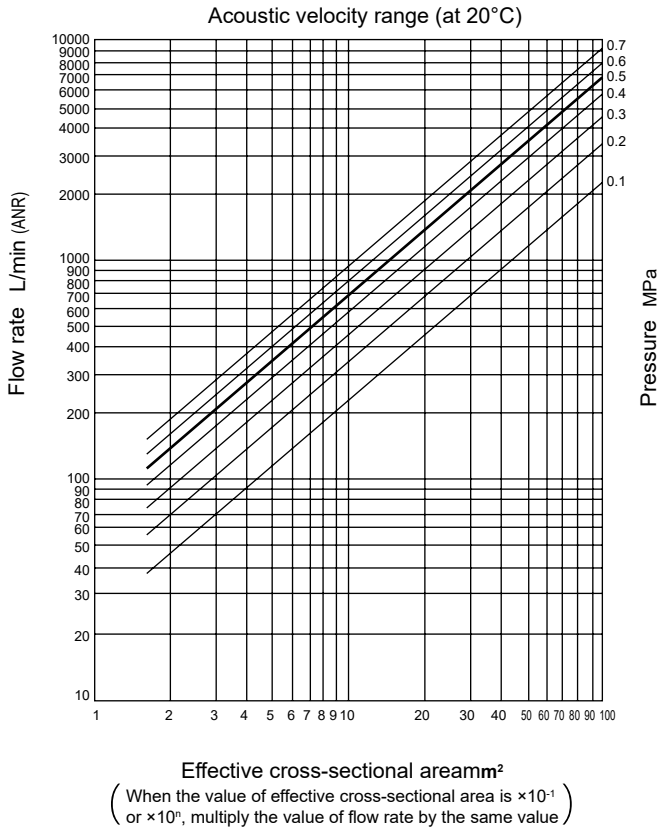
- Primary pressure 0.6 MPa, secondary pressure 0.5 MPa
- Standard temperature 20°C [293K] (subsonic velocity)

[Device selection guide 1]

Cylinder bore size (mm)	Theoretical reference speed (mm/s)	Required flow rate (L/min)(ANR)	Required effective sectional area (mm²)	System No. Exhaust with silencer
ø50	250	175	2.6	A
	500	350	5.1	B
	750	526	7.7	C1
	1000	701	10.2	C2
ø63	250	278	4.1	B
	500	556	8.1	C2
	750	834	12.2	C2
	1000	1112	16.2	C3
ø80	250	448	6.5	C1
	500	897	13.1	C2
	750	1345	19.6	C3
	1000	1794	26.2	C4
ø100	250	701	10.2	C2
	500	1401	20.4	C3
	750	2102	30.7	C4
	1000	2803	40.9	D1
ø125	250	1095	16.0	C3
	500	1401	31.9	C4
	750	2102	47.9	D1
	1000	2803	63.9	D2
ø140	250	1373	20.0	C3
	500	2747	40.1	D1
	750	4120	60.1	D1
	1000	5493	80.1	D3
ø160	250	1794	26.2	C4
	500	3587	52.3	D1
	750	5381	78.5	D3
	1000	7175	104.7	D3

✱Refer to page 1072 for the system No.

[Effective cross-sectional area]



(When the value of effective cross-sectional area is ×10⁻¹ or ×10ⁿ, multiply the value of flow rate by the same value)

[Clean Air System Components]

Clean Air System Components

Part name	Model No.	Port size	Max. flow rate (L/min atmospheric pressure conversion)
F.R.L. Kit	C1000-6-W	Rc1/8	450
	C1000-8-W	Rc1/4	630
	C3000-8-W	Rc1/4	1280
	C3000-10-W	Rc3/8	1750
	C4000-8-W	Rc1/4	1430
	C4000-10-W	Rc3/8	2400
	C4000-15-W	Rc1/2	3000
	C6500-20-W	Rc3/4	4500
	C6500-25-W	Rc1	5000
	C8000-20-W	Rc3/4	7000
	C8000-25-W	Rc1	7500
F.R. Unit	W1000-6-W	Rc1/8	800
	W1000-8-W	Rc1/4	1150
	W3000-8-W	Rc1/4	2150
	W3000-10-W	Rc3/8	2430
	W4000-8-W	Rc1/4	2500
	W4000-10-W	Rc3/8	4350
	W4000-15-W	Rc1/2	4750
	W8000-20-W	Rc3/4	10000
	W8000-25-W	Rc1	10000
Air Filters (F)	F1000-6-W	Rc1/8	460
	F1000-8-W	Rc1/4	610
	F3000-8-W	Rc1/4	1230
	F3000-10-W	Rc3/8	1500
	F4000-8-W	Rc1/4	1320
	F4000-10-W	Rc3/8	2140
	F4000-15-W	Rc1/2	3000
	F6000-20-W	Rc3/4	5600
	F6000-25-W	Rc1	6200
	F8000-20-W	Rc3/4	6400
	F8000-25-W	Rc1	6800

Part name	Model No.	Port size	Max. flow rate (L/min atmospheric pressure conversion)
Regulator (R)	R1000-6-W	Rc1/8	770
	R1000-8-W	Rc1/4	1350
	R3000-8-W	Rc1/4	2000
	R3000-10-W	Rc3/8	2600
	R4000-8-W	Rc1/4	2500
	R4000-10-W	Rc3/8	4400
	R4000-15-W	Rc1/2	5000
	R6000-20-W	Rc3/4	7000
	R6000-25-W	Rc1	7700
	R8000-20-W	Rc3/4	14000
	R8000-25-W	Rc1	11000
Lubricator (L)	L1000-6-W	Rc1/8	550
	L1000-8-W	Rc1/4	700
	L3000-8-W	Rc1/4	1100
	L3000-10-W	Rc3/8	2250
	L4000-8-W	Rc1/4	1000
	L4000-10-W	Rc3/8	1700
	L4000-15-W	Rc1/2	2700
	L8000-20-W	Rc3/4	6300
	L8000-25-W	Rc1	10000

✱) Max. flow rate: Flow rates for F.R.L., FR and R when the primary pressure is 0.7 MPa, set pressure is 0.5 MPa, and pressure drop is 0.1 MPa. For air filter, flow rate at 0.7 MPa primary pressure, 0.02 MPa pressure drop. For lubricator, flow rate at 0.5 MPa primary pressure, 0.03 MPa pressure drop.

MEMO

M4GA4 / M4GB4 Series

How to fill out metal base M4G4 Series manifold specifications sheet

● Manifold model No. (example)

M4G(A/B)4 [8] 0R- [CX] - [T30] [ ] [ ] - [9] - [3]

Solenoid position	Port size	Reduced wiring connection	Terminal / Connector pin array	Option	Station No.	Voltage

Precautions for fitting mix CX

The port A/B fitting can be selected freely by indicating "CX" in the port size area.
(Note) The M4GA4 type is not supported.

Selectable cartridge fittings

4G4: C8, C10, C12

For female thread specifications, indicate the required number of plugs in the "Thread plug" area at the end. Female threads and cartridge fitting cannot be used together in one manifold set.

Solenoid valve model No.	Fitting CX A	Fitting CX B	Valve installation position 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Qty.
4G B 4 1 9R- C8			○	○																							2
4G B 4 2 9R- C8					○	○																					2
4G B 4 3 9R- C8							○	○																			2
4G B 4 5 9R- CX	C8	C10							○	○																	2
4G 4 9R-																											
Masking plate 4G B 4-MP (S)											○																1
Masking plate 4G 4-MP (D)																											
Air supply spacer 4G 4-P-																											
Exhaust spacer 4G 4-R-																											

Fill in "CX" when changing the fitting combination

Included Part	Blanking Plug			Silencer	
	GWP8-B	GWP10-B	GWP12-B	SLW-10	SLW-15
	Threaded plug			Cable with D-sub-connector	4GR-CABLE-D -[ ]
	4G4-8 P	4G4-10 P	4G4-15 P		

From the manifold specifications for each model, select and fill out the appropriate form.

● Individual wiring…page 1078

● Reduced wiring
- Common terminal block (T1✱), D-sub-connector (T30) : page 1079
- Flat cable connector (✱T5) : page 1080
- Serial transmission (T8✱) : page 1081

How to fill out wiring specifications sheet

Not required for standard wiring and double wiring.

● Wiring specifications sheet (example)

Complete these specifications when specifying the wiring order and additional cables.

Connector pin No.		Installation position																
T30/T30R	T50/T50R/T6∗	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	1	a																
14	2		a															
2	3			a														
15	4			(b)														
3	5				a													
16	6				(b)													
4	7					a												
17	8					b												
5	9 -Power Supply						a											
18	10+(COM) Power supply						b											
6	11							a										
19	12							b										
7	13								a									
20	14								b									
8	15									a								
21	16									b								
9	17																	
22	18																	
10	19 -Power Supply																	
23	20+(COM) Power supply																	
11																		
24																		
12																		
25																		
13 (COM)																		

Spare cable wiring Precautions (1)

Spare cable wiring Precautions (2)

∗:Note that when the wiring method is T50 type, the COM polarity will be + (positive).
∗:When T50 wiring is used, the connector pin NO.9, 10, 19, 20 cannot be specified, because it is for the external input power supply.

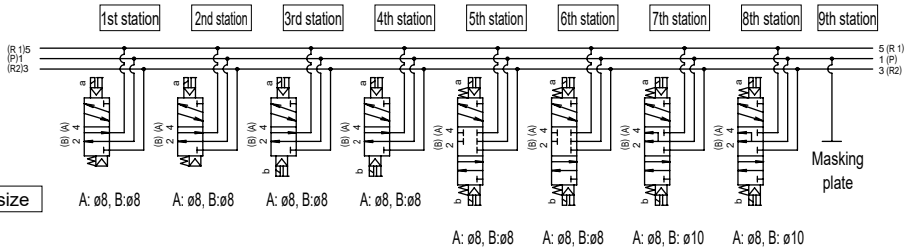
Precautions regarding spare wiring

①With the T30/T50/T51 types, as it is possible for the unit to be equipped with spare wiring in advance to permit modification from a single Sol to a double Sol, consult CKD. Specify the position for expansion (modification area from single to double Sol). Mark a circle in the wiring specification column as an indication of spare wiring, while also filling in the a sol side/b sol side categories.

②Spare wiring will be installed on the masking plate. (Reference page 1104.)
The number of wires for spare wiring can be specified by selecting the masking plate within the specifications.
(∗When not specified, the spare wiring will be 2 wires (MPD).)
4G∗4-MP (S)...1 pc.
4G∗4-MP (D)...2 pcs.

Reference circuit diagram

The simplified circuit diagram of the manifold model No. (example) on the previous page is shown below.



∗The manifold station numbers are set in order from the left with the piping port facing forward.

Individual wiring

M4G A/B 4 Be sure to fill-in the Manifold Specifications sheet

Date issued / /

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

Company

Contact

Slip No.	Order No.

Order No.

● Manifold model No.

M4G A/B 4 ☐ 0R- ☐ - ☐ ☐ ☐ - ☐ - ☐

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

Solenoid valve model No.	Fitting CX		Valve installation position																							Qty.
	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 ☐ 9R- ☐																											
4G ☐ 4 ☐ 9R- ☐																											
4G ☐ 4 ☐ 9R- ☐																											
4G ☐ 4 ☐ 9R- ☐																											
4G ☐ 4 ☐ 9R- ☐																											
Masking plate 4G ☐ 4-MP																											
Air supply spacer 4G ☐ 4-P- ☐																											
Exhaust spacer 4G ☐ 4-R- ☐																											

Mounting Rail	L_2= ☐	Included Part	Blanking Plug						Silencer			
			GWP8-B ☐	GWP10-B ☐	GWP12-B ☐				SLW-10 ☐ ☐	SLW-15 ☐ ☐		
			Threaded plug									
			4G4-8 ☐ P	4G4-10 ☐ P	4G4-15 ☐ P							

Reduced wiring

M4G A/B 4-T1/3 Be sure to fill-in the Manifold Specifications sheet

Date issued / /

Company

Contact

Order No.

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

Slip No.	Order No.

● Manifold model No.

M4G A/B 4 [ ] 0R- [ ] - [ ] [ ] [ ] - [ ] - [ ]

Solenoid position / Port size / Reduced wiring connection / Terminal / Connector pin array / Option / Station No. / Voltage

Solenoid valve model No.	Fitting CX		Valve installation position																							Qty.
	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 [ ] 9R- [ ]																											
4G [ ] 4 [ ] 9R- -																											
4G [ ] 4 [ ] 9R- [ ]																											
4G [ ] 4 [ ] 9R- [ ]																											
4G [ ] 4 [ ] 9R- [ ]																											
Masking plate 4G [ ] 4-MP (S)																											
Masking plate 4G [ ] 4-MP (D)																											
Air supply spacer 4G [ ] 4-P- [ ]																											
Exhaust spacer 4G [ ] 4-R- [ ]																											

Included Part	Blanking Plug			Silencer	
	GWP8-B	GWP10-B	GWP12-B	SLW-10 [ ]	SLW-15 [ ]
	Threaded plug			With D-sub-connector Cable	
	4G4-8 [ ] P	4G4-10 [ ] P	4G4-15 [ ] P	4GR-CABLE-D [ ] - [ ]	

● Wiring specifications sheet (Not required for standard wiring/double wiring. Complete these specifications when specifying the wiring order and additional cables)

Connector pin No.			Installation position																						
T10/T10R	T11/T11R	T30/T30R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	1	1																								
2	2	14																								
3	3	2																								
4	4	15																								
5	5	3																								
6	6	16																								
7	7	4																								
8	8	17																								
9	9	5																								
10	10	18																								
11	11	6																								
12	12	19																								
13	13	7																								
14	14	20																								
COM	15	8																								
COM	16	21																								
	17	9																								
	18	22																								
	19	10																								
	20	23																								
	21	11																								
	22	24																								
	23	12																								
	24	25																								
	COM	13 (COM)																								
	COM																									

Reduced wiring

M4G $^{A}_{B}$ 4-T5 Be sure to fill-in the Manifold Specifications sheet

Date issued / /

Company

Contact

Order No.

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

Slip No.	Order No.

● Manifold model No.

M4G $^{A}_{B}$ 4 ☐ 0R- ☐ - ☐ ☐ ☐ - ☐ - ☐

Solenoid position / Port size / Reduced wiring connection / Terminal / Connector pin array / Option / Station No. / Voltage

Solenoid valve model No.	Fitting CX		Valve installation position																							Qty.
	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 ☐ 9R- ☐																											
4G ☐ 4 ☐ 9R- ☐																											
4G ☐ 4 ☐ 9R- ☐																											
4G ☐ 4 ☐ 9R- ☐																											
4G ☐ 4 ☐ 9R- ☐																											
Masking plate 4G ☐ 4-MP (S)																											
Masking plate 4G ☐ 4-MP (D)																											
Air supply spacer 4G ☐ 4-P- ☐																											
Exhaust spacer 4G ☐ 4-R- ☐																											

Included Part	Blanking Plug			Silencer	
	GWP8-B	GWP10-B	GWP12-B	SLW-10 ☐	SLW-15 ☐
	Threaded plug				
	4G4-8 ☐ P	4G4-10 ☐ P	4G4-15 ☐ P		

● Wiring specifications sheet (Not required for standard wiring/double wiring. Complete these specifications when specifying the wiring order and additional cables)

Connector pin No.				Installation position																						
T50/T50R	T51/T51R	T52/T52R	T53/T53R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	1	1	1																								
2	2	2	2																								
3	3	3	3																								
4	4	4	4																								
5	5	5	5																								
6	6	6	6																								
7	7	7	7																								
8	8	8	8																								
9-Power Supply	9	9 COM	9																								
10+(COM) Power supply	10	10 COM	10																								
11	11		11																								
12	12		12																								
13	13		13																								
14	14		14																								
15	15		15																								
16	16		16																								
17	17		17																								
18	18		18																								
19-Power Supply	19 COM		19																								
20+(COM) Power supply	20 COM		20																								
			21																								
			22																								
			23																								
			24																								
			25 COM																								
			26 COM																								

✱: Note that when the wiring method is T50 type, the COM polarity will be + (positive).

✱: When T50 wiring is used, the connector pin NO.9, 10, 19, 20 cannot be specified, because it is for the external input power supply.

Serial transmission

M4G$^{A}_{B}$4-T8 Be sure to fill-in the Manifold Specifications sheet

Date issued / /

Company

Contact

Order No.

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

Slip No.	Order No.

● Manifold model No.

M4G$^{A}_{B}$4 [ ] 0R-[ ] - [ ] [ ] [ ] - [ ] - [ ]

Solenoid position / Port size / Serial transmission / Terminal / Connector pin array / Option / Station No. / Voltage

Solenoid valve model No.	Fitting CX		Valve installation position																								Qty.
	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 [ ] 9R- [ ]																											
4G [ ] 4 [ ] 9R- [ ]																											
4G [ ] 4 [ ] 9R- [ ]																											
4G [ ] 4 [ ] 9R- [ ]																											
4G [ ] 4 [ ] 9R- [ ]																											
Masking plate 4G [ ] 4-MP (S)																											
Masking plate 4G [ ] 4-MP (D)																											
Air supply spacer 4G [ ] 4-P- [ ]																											
Exhaust spacer 4G [ ] 4-R- [ ]																											

Included Part	Blanking Plug			Silencer	
	GWP8-B	GWP10-B	GWP12-B	SLW-10 [ ]	SLW-15 [ ]
	Threaded plug				
	4G4-8 [ ] P	4G4-10 [ ] P	4G4-15 [ ] P		

● Wiring specifications sheet (Not required for standard wiring/double wiring. Complete these specifications when specifying the wiring order and additional cables)

Connector pin No.				Installation position															
T8∗				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
T8G2	CC-Link ver. 1.10	NPN	32 points																
T8GP2		PNP	32 points																
T8P2	PROFIBUS-DP	NPN	32 points																
T8PP2		PNP	32 points																
T8EC2	EtherCAT	NPN	32 points																
T8ECP2		PNP	32 points																
T8EN2	EtherNet/IP	NPN	32 points																
T8ENP2		PNP	32 points																
T8D2	DeviceNet	NPN	32 points																
T8DP2		PNP	32 points																
T8EB2	CC-Link IEF Basic	NPN	32 points																
T8EBP2		PNP	32 points																
T8EF2	CC-Link IE Field	NPN	32 points																
T8EFP2		PNP	32 points																
T8EP2	PROFINET	NPN	32 points																
T8EPP2		PNP	32 points																
T8KC2	IO-Link	NPN	32 points																
T8KCP2		PNP	32 points																
T8TG2	CC-Link IE TSN	NPN	32 points																
T8TGP2		PNP	32 points																