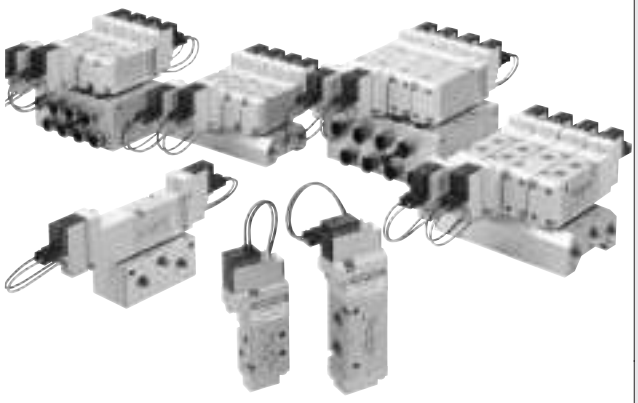
CAD drawing data catalog is available.



KOGANEI

VALVES GENERAL CATALOG

SOLENOID VALVES G110, G180 SERIES

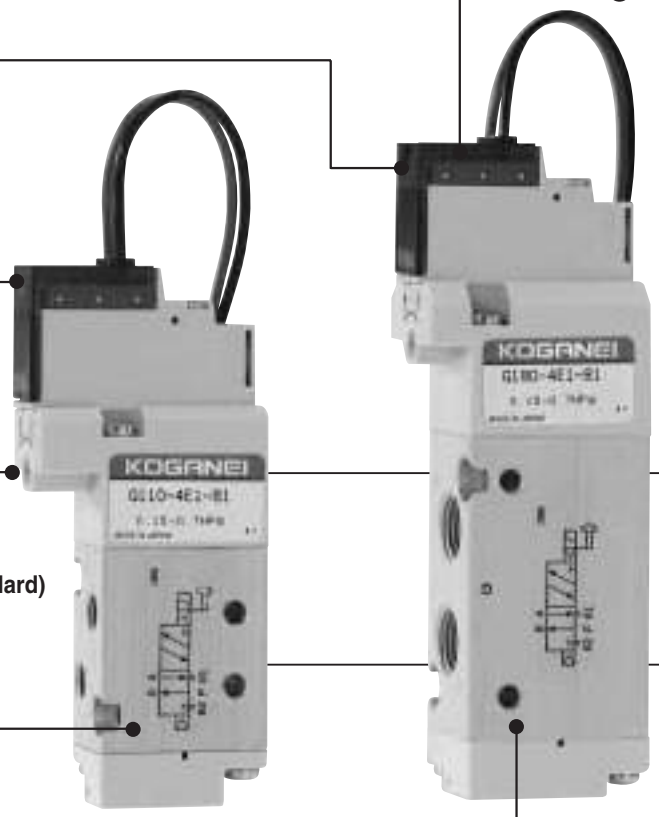
INDEX

SOLENOID VALVES G110, G180 SERIES

The high performance 110, 180 series solenoid valves, in combination with the low power consumption G010 solenoid valves achieve the basic performance required of a solenoid valve.

G010 series solenoid valves are used for the pilot valve. They achieve a low power consumption of 0.5W (DCV).

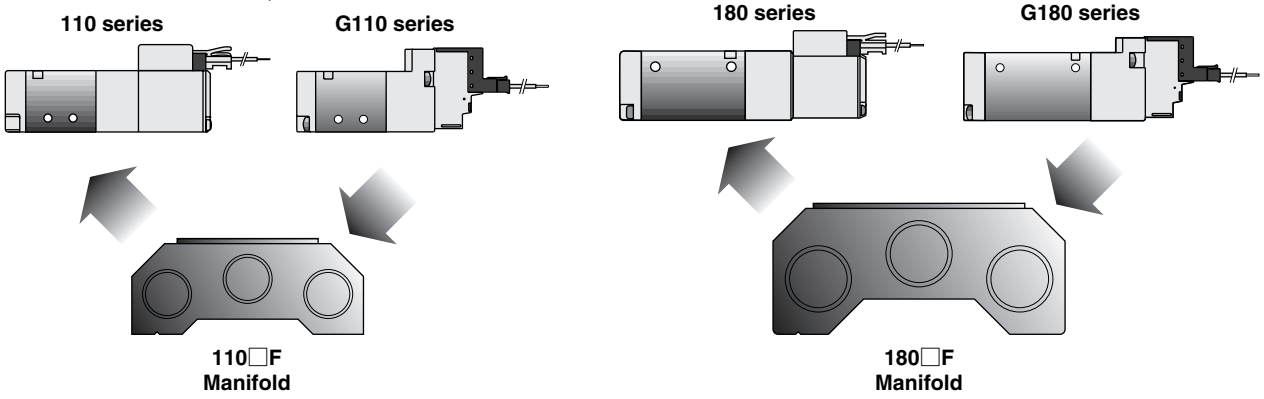
Wiring specifications:
Grommet (standard)
Straight connector, L connector (optional)
Lead wire length 1000mm [39in.], 3000mm [118in.] (made to order)



Manual override:
Non-locking type (standard)
Locking type (optional)

Standard type
Its clean lines emphasize basic performance, for versatile applications at the best price.

The solenoid valves of both the 100, 180 series and of the G110, G180 series can be mounted on the F, FE, A, and AJ type manifolds.
The G110, G180 series solenoid valves' mounting is compatible with the 100, 180 series manifolds.
(Note, however, that the outer shape of the G110, G180 series is different from that of the 110, 180 series. Confirm the outer dimensions before use.)

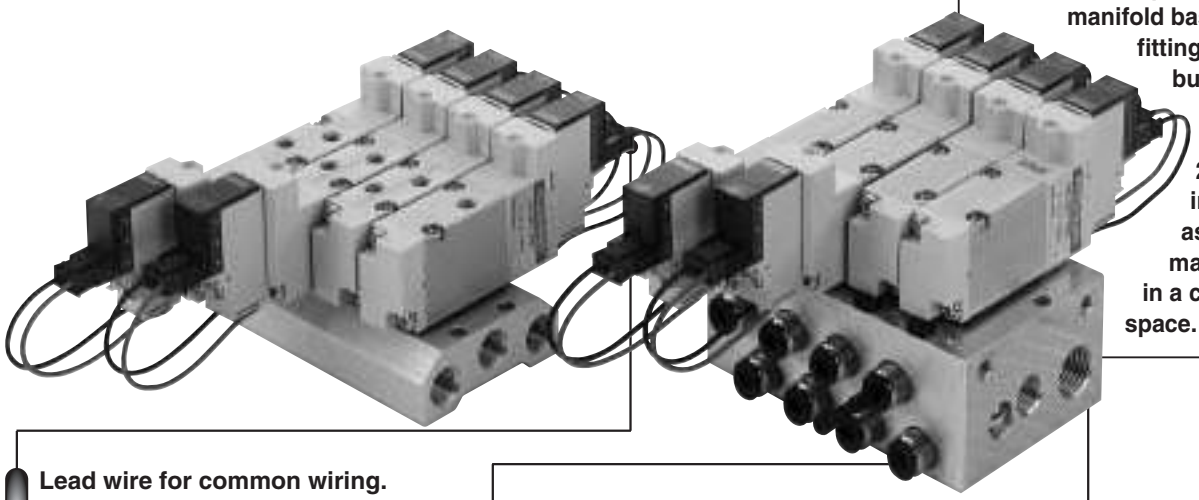


F type manifold

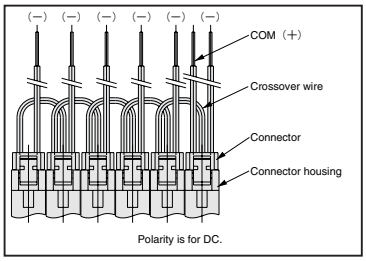
Direct piping type valves can be mounted directly on this manifold. An FE type manifold enabling collected pilot exhaust through its PR port is also available.

AJ type manifold

Combines all ports into a manifold base. Quick fittings are built into the delivery ports (4(A), 2(B)), achieving easy assembly and maintenance in a confined space.



Lead wire for common wiring.
Using the lead wire for common wiring, provided as additional parts, saves wiring work.



For the delivery port quick fittings, select from ϕ4 or ϕ6 fittings for each station in accordance with actuator size.

Piping to the pilot exhaust ports is also possible to keep the control box interior and working environment from becoming contaminated. The built-in check mechanism prevents exhaust interference.

The solenoid, equipped with bridge diodes for AC and a flywheel diode for DC as standard features, offers complete surge suppression.

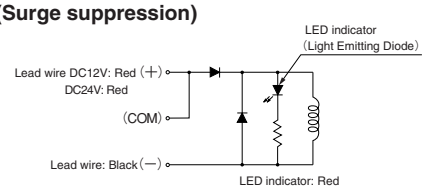
A manual override (non-locking type) is standard equipment and offers easy adjustment during assembly and maintenance.
A locking type manual override is also available as an option.

Solenoid

Internal circuit

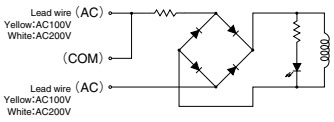
● **DC12V, DC24V**

Solenoid with LED indicator (Surge suppression)



● **AC100V, AC200V**

Solenoid with LED indicator (Surge suppression)

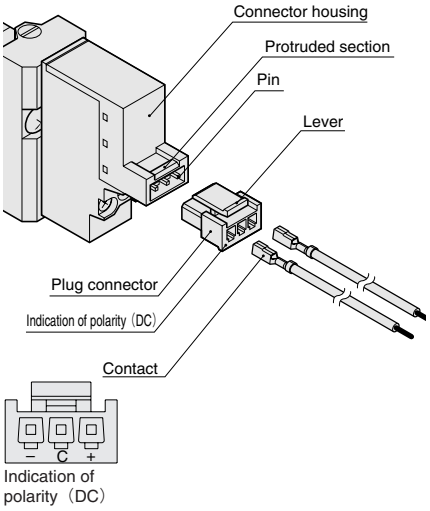


Cautions: 1. Do not apply megger between the lead wires.
2. The DC solenoid will not short circuit even if the wrong polarity is applied, but the valve will not operate.
3. Leakage current inside the circuit could result in failure of the solenoid valve to return, or in other erratic operation. Always use it within the range of the allowable leakage current. If circuit conditions, etc. cause the leakage current to exceed the allowable leakage current, consult us.
4. For double solenoid, avoid energizing both solenoids simultaneously. The valve could fall into a neutral position.

Plug connector

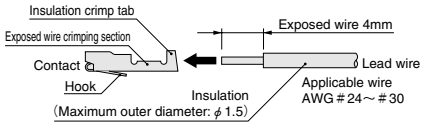
Attaching and removing plug connector

Use fingers to insert the connector into the pin, push it in until the lever claw latches onto the protruded section of the connector housing, and complete the connection.
To remove the connector, squeeze the lever along with the connector, lift the lever claw up from the protruded section of the connector housing, and pull it out.



Crimping of connecting lead wire and contact

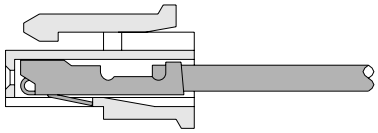
To crimp lead wires into contacts, strip off 4mm [0.16in.] of the insulation from the end of the lead wire, insert it into the contact, and crimp it. Be sure to avoid catching the insulation on the exposed wire crimping section.



Cautions 1. Do not pull hard on the lead wire.
2. Always use a dedicated tool for crimping of connecting lead wire and contact.
Contact: Model 706312-2MK
Manufactured by Sumiko Tech, Inc.
Crimping tool: Model F1
(for 706312-2MK)
Manufactured by Sumiko Tech, Inc.

Attaching and removing contact and connector

Insert the contact with lead wire into a plug connector □ hole until the contact hook latches on the connector and is secured to the plug connector. Confirm that the lead wire cannot be easily pulled out.
To remove it, insert a tool with a fine tip (such as a small screwdriver) into the rectangular hole on the bottom of the plug connector to push up on the hook, and then pull out the lead wire.

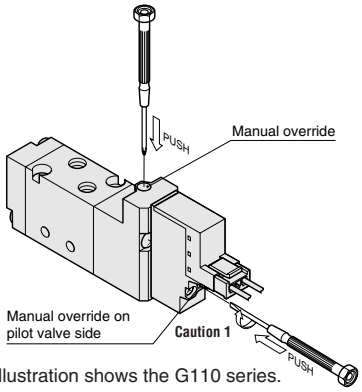


Cautions: 1. Do not pull hard on the lead wire. It could result in defective contacts, breaking wires, etc.
2. If the pin is bent, use a small screwdriver, etc. to gently straighten out the pin, and then complete the connection to the plug connector.
3. For crimping of connecting lead wire and contact, always use a dedicated crimping tool. If a crimping tool is required, consult us.

Manual override

Non-locking type

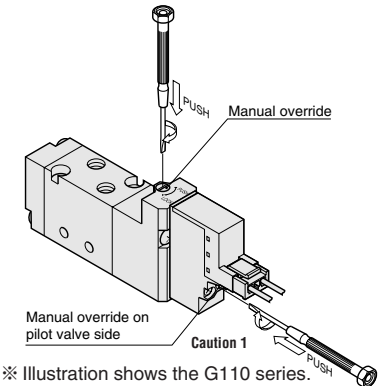
To operate the manual override, press it all the way down.The single solenoid valve works the same as when in the energized state as long as the manual override is pushed down, and returns to the normal position upon release.
For the double solenoid valve, pressing the manual override on the 14(SA) side switches the 14(SA) to enter the energized position, and the unit remains in that state even after the manual override is released. To return it to the normal position, operate the manual override on the 12(SB) side. This is the same for the solenoid 12(SB).



※ Illustration shows the G110 series.

Locking type

To lock the manual override, use a small screwdriver to push down on the manual override all the way and turn it clockwise 90 degrees. When locked, turning the manual override 90 degrees in the counterclockwise direction releases a spring on the manual override, returns it to the normal position, and releases the lock. When the manual override is not turned, this type acts just like the non-locking type, the valve enters the energized position as long as the manual override is pushed down, and returns to the normal position upon release.



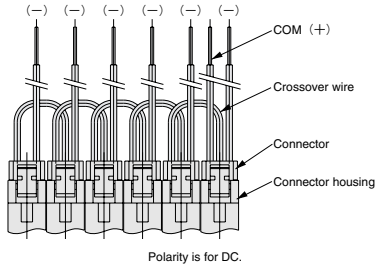
※ Illustration shows the G110 series.

Cautions
1. While manual override operation is also possible on the pilot valve side, make sure to release the lock after completing the manual override operation. Moreover, always confirm that the lock on the pilot valve side has been released before operating the valve.
2. The G110 and G180 series valves are internal pilot type solenoid valves. As a result, the manual override cannot switch the main valve without air supplied from the 1(P) port.
3. Always release the lock of the locking type manual override before commencing normal operation.
4. Do not attempt to operate the manual override with a pin or other object having an extremely fine tip. It could damage the manual override button.

Lead wire for common wiring

Using the lead wire for common wiring, provided as additional parts, saves wiring work.

Common terminal wiring example for DC positive side and AC



Note: The above diagram shows a straight connector.

Mounting valves on manifold

When mounting valves on manifold, apply the following recommended tightening torque for the valve mounting screws:
G110 series: 39.2N・cm {4kgf・cm} [3.5in・lbf]
G180 series: 49N・cm {5kgf・cm} [4.3in・lbf]

SOLENOID VALVES G110 SERIES

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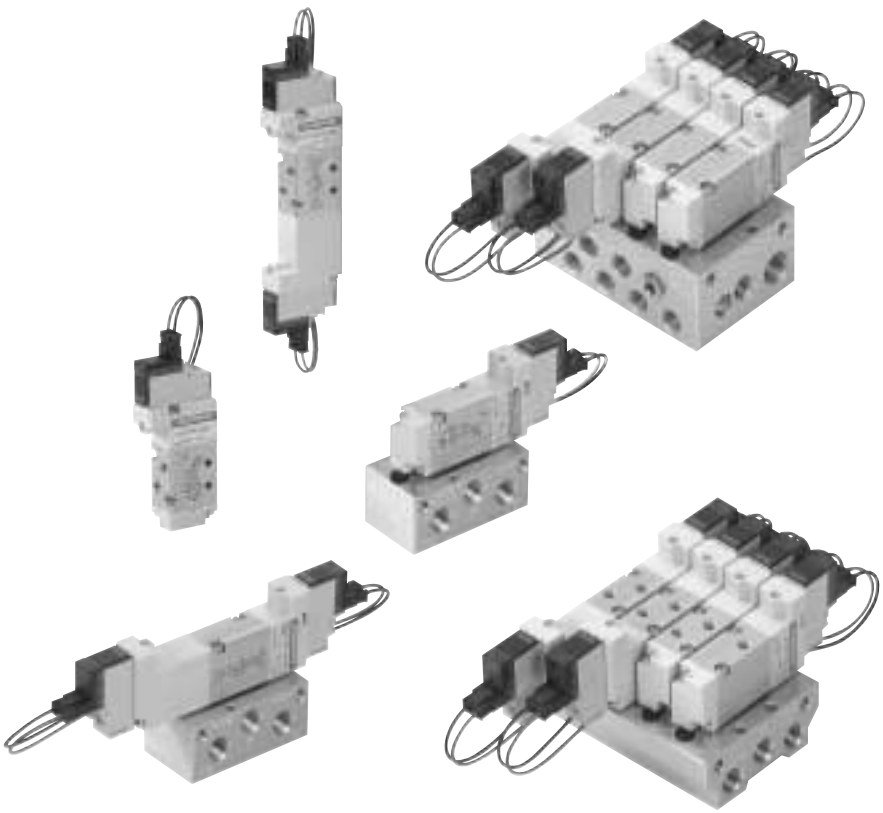


G110 Series Basic Models and Configuration

Single unit

5-port

Direct piping

2-position

Single solenoid

G110-4E1

Double solenoid

G110-4E2

3-position

Closed center

G113-4E2

Exhaust center

G113-4E2-13

Pressure center

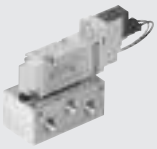
G113-4E2-14

Remark: The photos show wiring specification -PSL.

Sub-base piping

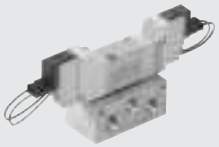
2-position

Single solenoid



GA110-4E1-25

Double solenoid



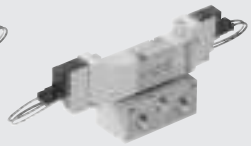
GA110-4E2-25

3-position

Closed center

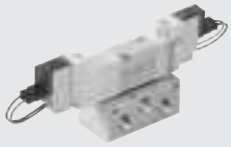
GA113-4E2-25

Exhaust center



GA113-4E2-13-25

Pressure center



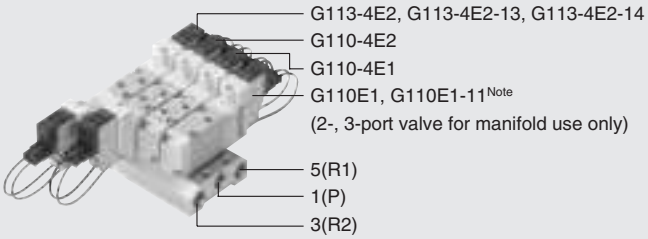
GA113-4E2-14-25

Remark: The photos show wiring specification -PSL.

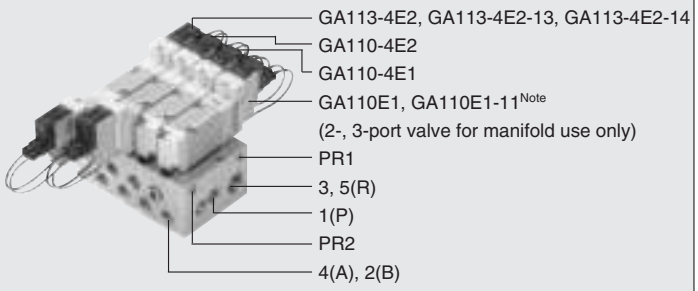
Manifold

Manifold for combination mounting of 2-, 3-, 5-port valves

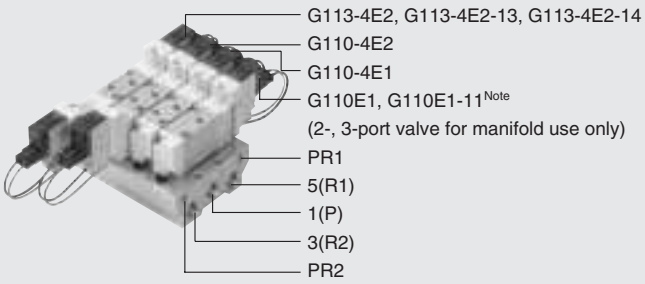
G110M□F—F type (1(P), 3(R2), 5(R1)) manifold



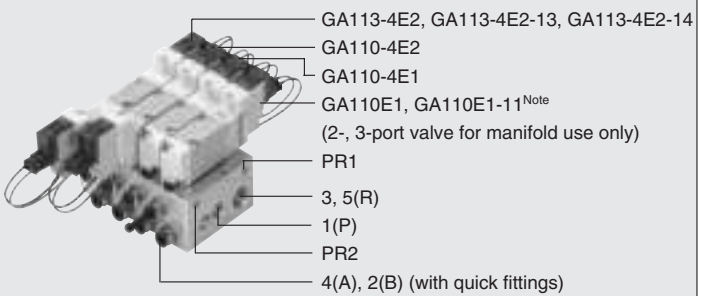
G110M□A—A type (all ports) manifold



G110M□FE—FE type (1(P), 3(R2), 5(R1)) manifold



G110M□AJ—AJ type (all ports, with quick fittings) manifold



Note: G110E1 and GA110E1 are dedicated valves for manifolds with combination mounting of 2-, 3-, 5-port valves. They cannot be used as single units.

SOLENOID VALVES
G110 SERIES

Specifications

Basic Models and Functions

Item \ Basic model				
	Direct piping, F,FE type manifolds	**G110E1**[Note]	**G110-4E1 G110-4E2**	**G113-4E2**
	Sub-base piping, A, AJ type manifolds	**GA110E1**[Note]	**GA110-4E1 GA110-4E2**	**GA113-4E2**
Number of positions		2 positions		3 positions
Number of ports		2, 3 ports	5 ports	
Valve function		Normally closed (NC, standard) or Normally open (NO, optional)	Single solenoid or Double solenoid	Closed center (standard), Exhaust center (optional) or Pressure center (optional)

Remark: For optional specifications and order codes, see p.273～274.
Note: G110E1 and GA110E1 are dedicated valves for manifolds with combination mounting of 2-, 3-, 5-port valves. They cannot be used as single units.

Specifications

Item \ Basic model					
	Direct piping, F,FE type manifolds		**G110E1**	**G110-4E1 G110-4E2**	**G113-4E2**
	Sub-base piping, A, AJ type manifolds		**GA110E1**	**GA110-4E1 GA110-4E2**	**GA113-4E2**
Media			Air		
Operation type			Internal pilot type		
Effective area〔Cv〕[Note 1] mm²			4.2〔0.23〕		3.8〔0.21〕
Port size [Note 2]			M5×0.8		
Lubrication			Not required		
Operating pressure range MPa {kgf/cm²} [psi.]			0.15～0.7 {1.5～7.1} [22～102]		
Proof pressure MPa {kgf/cm²} [psi.]			1.05 {10.7} [152]		
Response time [Note 3] ms ON/OFF		DC12V, DC24V	15/25	15/25, 〔20〕	15/40
		AC100V, AC200V	15/15	15/20, 〔15〕	15/35
Maximum operating frequency Hz			5		
Minimum time to energize for self holding ms			—	50(□110-4E2)	—
Operating temperature range (atmosphere and media) ℃ [°F]			5～50 [41～122]		
Shock resistance m/s² {G}			1373.0 {140.0} (Pilot valve axial direction 294.2 {30})		294.2 {30.0}
Mounting direction			Any		

Notes: 1. For details, see the effective area on p.271.
2. For details, see the port size on p.271.
3. Values when air pressure is 0.5MPa {5.1kgf/cm²} [73psi.]. Due to switching phase timing, add a maximum of 5ms to the response time for AC specifications. Values in brackets 〔 〕are for G110-4E2. In addition, values for G113-4E2 are those of the closed center valve when switching from the neutral position.

Solenoid Specifications

Item \ Rated voltage	**DC12V**	**DC24V**	**AC100V** [Note]		**AC200V** [Note]	
Operating voltage range V	10.8～13.2 (12±10%)	21.6～26.4 (24±10%)	90～110 (100±10%)		180～220 (200±10%)	
Rated frequency Hz	—	—	50	60	50	60
Current (when rated voltage is applied) mA (r.m.s)	42	21	11		8	
Power consumption	0.5W	0.5W	1.1VA		1.6VA	
Allowable leakage current mA	1.0	1.0	1.0		1.0	
Insulation resistance MΩ	Over 100 (value at DC500V megger)					
Wiring type and lead wire length	Grommet type: 300mm [11.8in.], Plug connector type: 300mm [11.8in.]					
Color of lead wire	Red (+), Black (−)		Yellow		White	
Color of LED indicator	Red					
Surge suppression (as standard)	Flywheel diode		Bridge diode			

Notes: 1. Since the AC types have built-in bridge diodes, the starting current value and energizing current value are virtually the same.
2. For long-time continuous energizing in the AC types, consult us.
3. For the AC types, provide heat radiation measures to ensure that the ambient temperature (or when used in a control box, the internal temperature of the box) always remains within the temperature range specifications.

Effective Area〔Cv〕

mm²〔CV〕

Basic model	Standard (Single valve)	Built-in quick fittings	Remarks
G110E1 **G110-4E1** **G110-4E2**	4.2 〔0.23〕	—	● Attaching TS4-M5 to the 1(P), 4(A), 2(B) ports gives the value 1.8. ● On the F type manifold, attaching TS4-M5 to the 4(A), 2(B) ports gives the value 2.1.
G113-4E2	3.8 〔0.21〕		
GA110E1 **GA110-4E1** **GA110-4E2**	4.0 〔0.22〕	-J4□: 3.6〔0.20〕 -J6□: 4.0〔0.22〕	● When mounting on a sub-base or manifold. ● Attaching TS4-01 to the 1(P), 4(A), 2(B) ports on the sub-base gives the value 3.2.
GA113-4E2	3.6 〔0.20〕	3.6 〔0.20〕	

Solenoid Valve Port Size

Basic model	Port specification		Port size
G110E1 Note	Standard	Female thread	M5×0.8
G110-4E1 **G110-4E2** **G113-4E2**	Standard	Female thread	M5×0.8
GA110-4E1-25 **GA110-4E2-25** **GA113-4E2-25**	1(P)	Female thread	Rc1/8
	4(A),2(B)		
	3(R2),5(R1)		
	PR	Female thread	M5×0.8

Note: Since G110E1 is for the manifold use only, piping to the 1(P) port with a fitting is not possible.

Manifold Connection Port Size

Manifold model	Port	Location of piping ports	Port size
G110M□F	1(P)	Manifold	Rc1/8
	4(A), 2(B)	Valve	M5×0.8
	3(R2), 5(R1)	Manifold	Rc1/8
G110M□FE	1(P)	Manifold	Rc1/8
	4(A), 2(B)	Valve	M5×0.8
	3(R2), 5(R1)	Manifold	Rc1/8
	PR		M5×0.8
G110M□A	1(P)	Manifold	Rc1/8
	4(A), 2(B)		
	3, 5(R)		Rc1/4
	PR		M5×0.8
G110M□AJ	1(P)	Manifold	Rc1/8
	4(A), 2(B)		Quick fittings for ϕ4 or ϕ6
	3, 5(R)		Rc1/4
	PR		M5×0.8

Solenoid Valve Mass

g [oz.]

Basic model	Mass
G110E1	53 [1.87]
G110-4E1	52 [1.83]
G110-4E2	72 [2.54]
G113-4E2	79 [2.79]
GA110E1	54 [1.90] (149 [5.26])
GA110-4E1	53 [1.87] (148 [5.22])
GA110-4E2	73 [2.57] (168 [5.93])
GA113-4E2	81 [2.86] (176 [6.21])

Remark: Figures in parentheses ( ) are the mass with sub-base: -25.

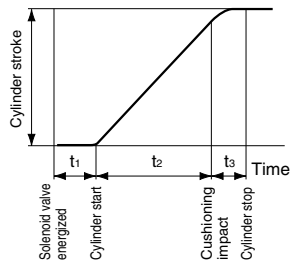
Manifold Mass

g [oz.]

Manifold model	Mass calculation of each unit (n=number of units)		Block-off plate
G110M□F	(20×n)+30	[(0.71×n)+1.06]	6 [0.21]
G110M□FE	(40×n)+50	[(1.41×n)+1.76]	11 [0.39]
G110M□A	(60×n)+60	[(2.12×n)+2.12]	
G110M□AJ	-J4: (67×n)+60 -J6: (64×n)+60	[(2.36×n)+2.12] [(2.26×n)+2.12]	

Cylinder Operating Speed

How to obtain cylinder speed

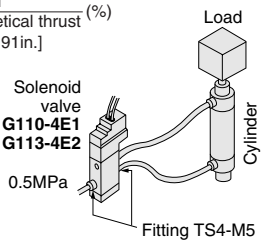


To obtain the time required for the cylinder to complete 1 stroke, add cylinder's delay time t_1 (time between energizing of the solenoid valve and actual starting of the cylinder), to the cylinder's max. speed operating time t_2.
When a cushion is used, add the cushioning time t_3, to the above calculation. The standard cushioning time t_3 is approximately 0.2 seconds.

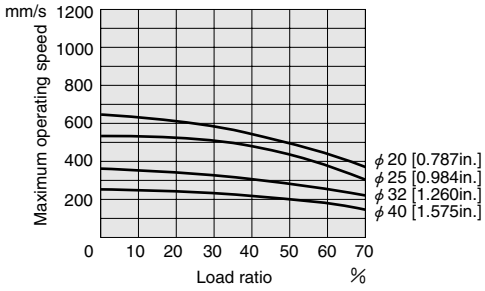
G110-4E1
G113-4E2

●Measurement conditions

●Air pressure: 0.5MPa {5.1kgf/cm²} [73psi.]
●Piping inner diameter and length: ϕ2.5 [0.10in.]×1000mm [39in.]
●Fitting: Quick fitting TS4-M5
●Load ratio= $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
●Cylinder stroke: 150mm [5.91in.]

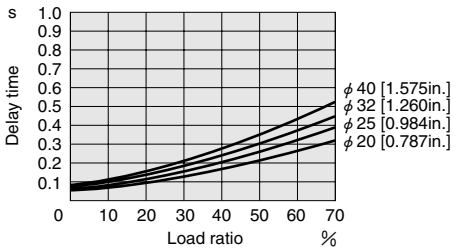


Maximum operating speed



1mm/s = 0.0394in./sec.

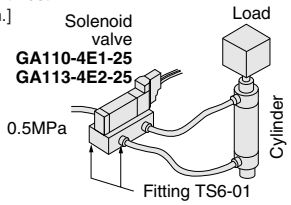
Delay time



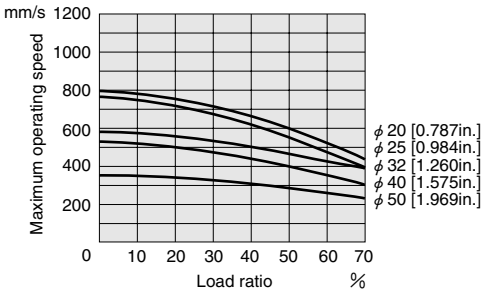
GA110-4E1-25
GA113-4E2-25

●Measurement conditions

●Air pressure: 0.5MPa {5.1kgf/cm²} [73psi.]
●Piping inner diameter and length: ϕ4 [0.16in.]×1000mm [39in.]
●Fitting: Quick fitting TS6-01
●Load ratio= $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
●Cylinder stroke: 150mm [5.91in.]

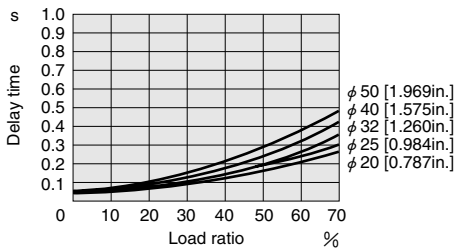


Maximum operating speed

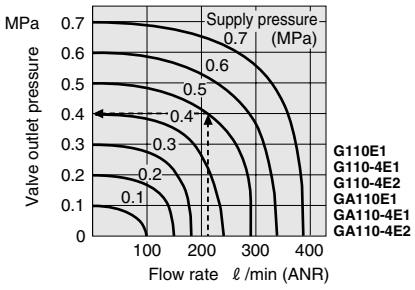


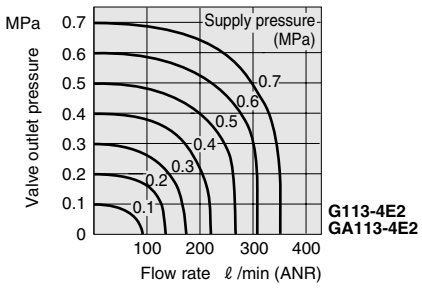
1mm/s = 0.0394in./sec.

Delay time



Flow Rate





How to read the graph

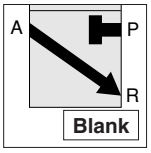
When the supply pressure is 0.5MPa [73psi.] and the flow rate is 214 ℓ/min [7.55 ft³/min.] (ANR), the valve outlet pressure becomes 0.4MPa [58psi.].

1MPa = 145psi., 1 ℓ/min = 0.0353 ft³/min.

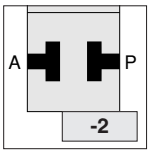
G110 Series Solenoid Valve Order Codes

■2-, 3-port valve Number of ports

3-port

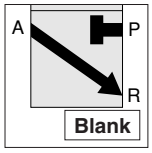


2-port

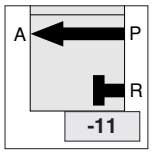


■2-, 3-port valve Valve function

Normally closed (NC)

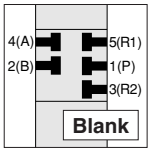


Normally open (NO)

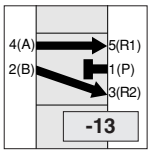


■3-position valve Valve function

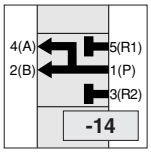
Closed center



Exhaust center

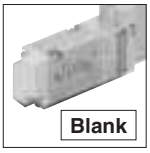


Pressure center

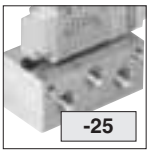


■Sub-base

Without sub-base



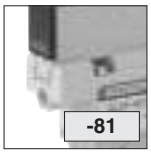
With sub-base



■Manual override

Non-locking type

Locking type



■Wiring type

●Lead wire length: 300mm [11.8in.] is standard.

Grommet type with LED indicator

Straight connector with LED indicator

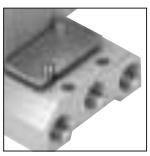
L connector with LED indicator

		Basic model						Voltage[Note 2]
Direct piping	5-port single solenoid	G110-4E1				-81	-PSL -PLL	DC12V DC24V AC100V AC200V
	5-port double solenoid	G110-4E2						
	5-port 3-position	G113-4E2			-13,-14			
Sub-base piping	5-port single solenoid	GA110-4E1				-81	-PSL -PLL	DC12V DC24V AC100V AC200V
	5-port double solenoid	GA110-4E2			-25			
	5-port 3-position	GA113-4E2			-13,-14			
For manifold with combination mounting of 2-, 3-, 5-port valves only[Note 1]	2-, 3-port for G110M□F, FE	G110E1	-2	-11		-81	-PSL -PLL	DC12V DC24V AC100V AC200V
	2-, 3-port for G110M□A, AJ	GA110E1	-2	-11	-25			

Notes: 1. They cannot be used as single units.
2. For AC110V～120V or AC220V～240V specifications, consult us.

■Additional Parts (To be ordered separately)

Block-off plate



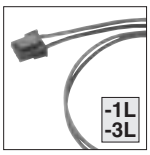
● G 110 M F -BP
110—For G110M
F —For F type manifold
FE—For FE type manifold
A —For A type, AJ type manifolds

Lead wire for common wiring

● For **-PSL**, **-PLL** (Set of 10 pcs.)

■Made to Order (After the wiring order code, enter the codes below.)

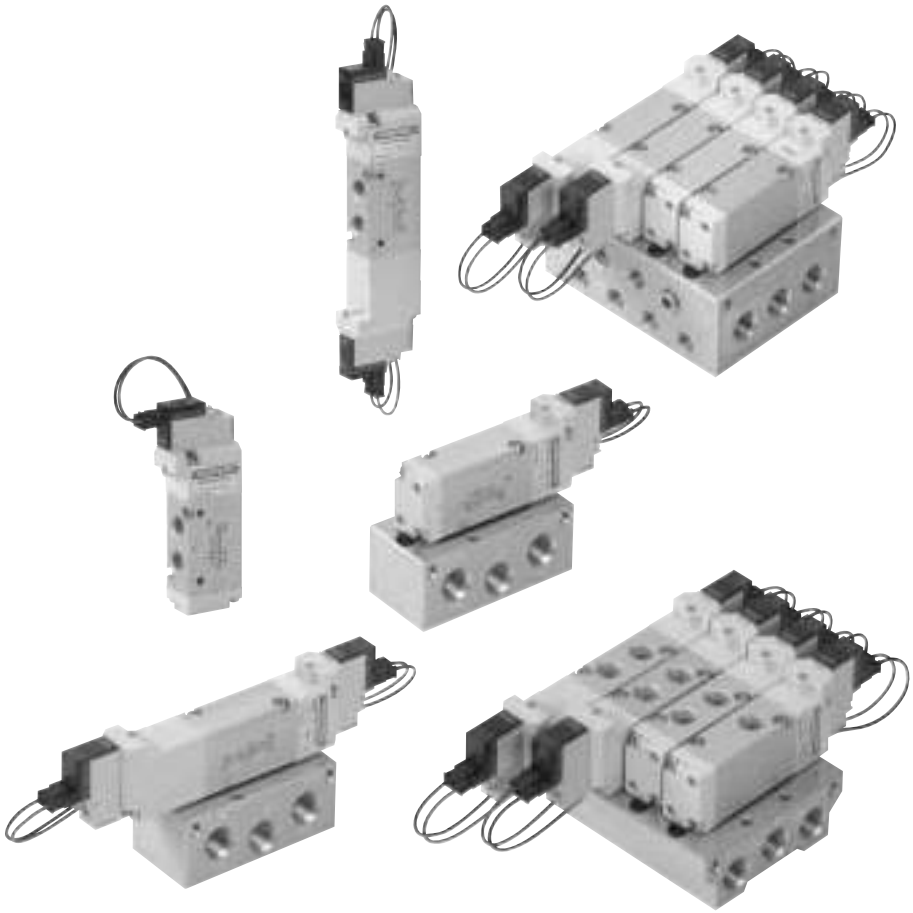
Lead wire length



● For plug connector
● Length (mm) **-1L**: 1000 [39in.]
-3L: 3000 [118in.]

SOLENOID VALVES G180 SERIES

INDEX



Single unit

5-port

Direct piping

2-position

Single solenoid

G180-4E1

Double solenoid

G180-4E2

3-position

Closed center

G183-4E2

Exhaust center

G183-4E2-13

Pressure center

G183-4E2-14

Remark: The photos show wiring specification -PSL.

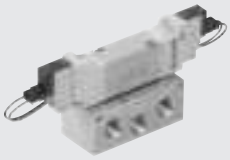
Sub-base piping

2-position

Single solenoid

GA180-4E1-25

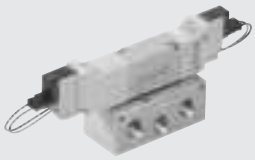
Double solenoid



GA180-4E2-25

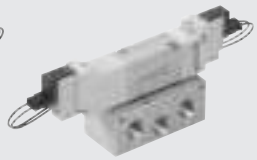
3-position

Closed center



GA183-4E2-25

Exhaust center



GA183-4E2-13-25

Pressure center

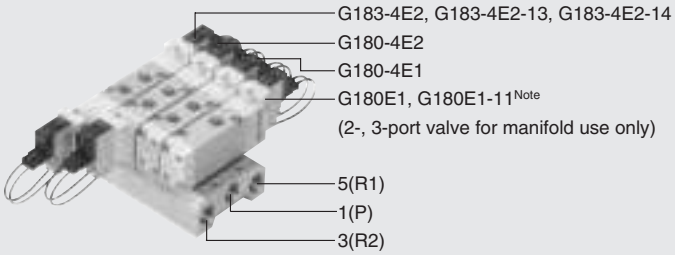
GA183-4E2-14-25

Remark: The photos show wiring specification -PSL.

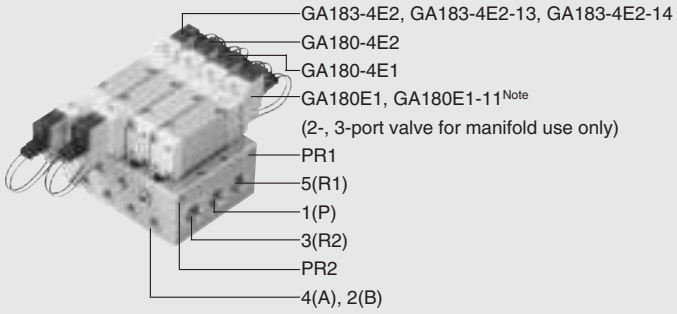
Manifold

Manifold for combination mounting of 2-, 3-, 5-port valves

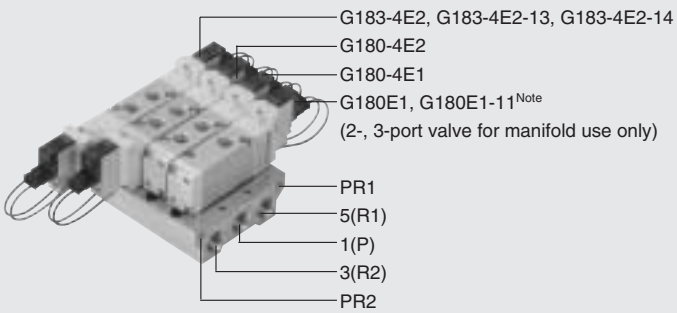
G180M□F—F type (1(P), 3(R2), 5(R1)) manifold



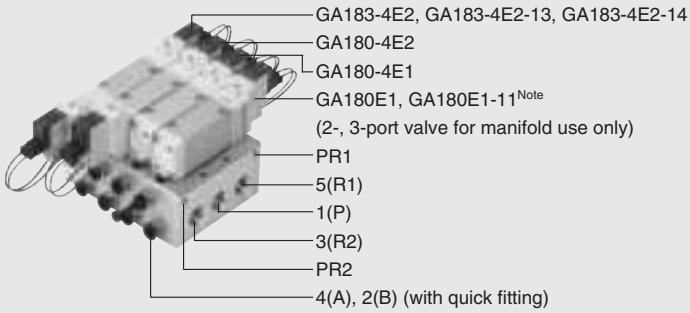
G180M□A—A type (all ports) manifold



G180M□FE—FE type (1(P), 3(R2), 5(R1)) manifold



G180M□AJ—AJ type (all ports, with quick fittings) manifold



Remark: The wiring specifications of solenoid valves in photos are -PSL.

Note: G180E1 and GA180E1 are dedicated valves for manifolds with combination mounting of 2-, 3-, 5-port valves. They cannot be used as single units.

SOLENOID VALVES
G180 SERIES

Specifications

Basic Models and Functions

Item \ Basic model	Direct piping, F, FE type manifolds	G180E1 Note	G180-4E1 G180-4E2	G183-4E2
	Sub-base piping, A, AJ type manifolds	GA180E1 Note	GA180-4E1 GA180-4E2	GA183-4E2
Number of positions		2 positions		3 positions
Number of ports		2, 3 ports	5 ports	
Valve function		Normally closed (NC, standard) or Normally open (NO, optional)	Single solenoid or Double solenoid	Closed center (standard), Exhaust center or Pressure center (optional)

Remark: For optional specifications and order codes, see p.285～286.
Note: G180E1 and GA180E1 are dedicated valves for manifolds with combination mounting of 2-, 3-, 5-port valves. They cannot be used as single units.

Specifications

Item \ Basic model		Direct piping, F, FE type manifolds	G180E1	G180-4E1 G180-4E2	G183-4E2
		Sub-base piping, A, AJ type manifolds	GA180E1	GA180-4E1 GA180-4E2	GA183-4E2
Media			Air		
Operation type			Internal pilot type		
Effective area〔Cv〕 Note 1 mm²			10.2〔0.57〕		9.0〔0.50〕
Port size Note 2			Rc1/8		
Lubrication			Not required		
Operating pressure range MPa {kgf/cm²} [psi.]			0.15～0.7 {1.5～7.1} [22～102]		
Proof pressure MPa {kgf/cm²} [psi.]			1.05 {10.7} [152]		
Response time Note 3 ms ON/OFF	DC12V, DC24V		20/30	20/30, 〔20〕	20/65
	AC100V, AC200V		20/25	20/25, 〔20〕	20/55
Maximum operating frequency Hz			5		
Minimum time to energize for self holding ms			—	50（□180-4E2）	—
Operating temperature range (atmosphere and media) °C [°F]			5～50 [41～122]		
Shock resistance m/s² {G}			1373.0 {140.0} (Pilot valve axial direction 294.2 {30.0})		294.2 {30.0}
Mounting direction			Any		

Notes: 1. For details, see the effective area on p.283.
2. For details, see the port size on p.283.
3. Values when air pressure is 0.5MPa {5.1kgf/cm²} [73psi.]. Due to switching phase timing, add a maximum of 5ms to the response time for AC specifications.
Values in brackets 〔 〕 are for G180-4E2. In addition, values for G183-4E2 are those of the closed center valve when switching from the neutral position.

Solenoid specifications

Item \ Rated voltage	DC12V	DC24V	AC100V Note		AC200V Note	
Operating voltage range V	10.8～13.2 (12±10%)	21.6～26.4 (24±10%)	90～110 (100±10%)		180～220 (200±10%)	
Rated frequency Hz	—	—	50	60	50	60
Current (when rated voltage is applied) mA (r.m.s)	42	21	11		8	
Power consumption	0.5W	0.5W	1.1VA		1.6VA	
Allowable leakage current mA	1.0	1.0	1.0		1.0	
Insulation resistance MΩ	Over 100 (value at DC500V megger)					
Wiring type and lead wire length	Grommet type: 300mm [11.8in.], Plug connector type: 300mm [11.8in.]					
Color of lead wire	Red (+), Black (−)		Yellow		White	
Color of LED indicator	Red					
Surge suppression (as standard)	Flywheel diode		Bridge diode			

Notes :1. Since the AC types have built-in bridge diodes, the starting current value and energizing current value are virtually the same.
2. For long-time continuous energizing in the AC types, consult us.
3. For the AC types, provide heat radiation measures to ensure that the ambient temperature (or when used in a control box, the internal temperature of the box) always remains within the temperature range specifications.

Effective Area〔Cv〕

mm²〔CV〕

Basic model	Standard (Single valve)	Built-in quick fittings	Remarks
G180E1 **G180-4E1** **G180-4E2**	10.2 〔0.57〕	—	—
G183-4E2	9.0 〔0.50〕		
GA180E1 **GA180-4E1** **GA180-4E2** **GA183-4E2**	8.2 〔0.46〕	-J4: 4.4〔0.24〕 -J6: 7.9〔0.44〕	●When mounting on a sub-base or manifold. ●Attaching TS6-02 to the 1(P), 4(A), 2(B) ports on the sub-base gives the value 7.5.

Solenoid Valve Port Size

Basic model	Port specification		Port size
G180E1 Note	Standard	Female thread	Rc1/8
G180-4E1 **G180-4E2** **G183-4E2**	Standard	Female thread	Rc1/8
GA180-4E1-25 **GA180-4E2-25** **GA183-4E2-25**	1(P)	Female thread	Rc1/4
	4(A), 2(B)		
	3(R2), 5(R1)		
	PR	Female thread	M5×0.8

Note: Since G180E1 is for the manifold use only, piping to the 1(P) port with a fitting is not possible.

Manifold Connection Port Size

Manifold model	Port	Location of piping ports	Port size
G180M□F	1(P)	Manifold	Rc1/4
	4(A), 2(B)	Valve	Rc1/8
	3(R2), 5(R1)	Manifold	Rc1/4
G180M□FE	1(P)	Manifold	Rc1/4
	4(A), 2(B)	Valve	Rc1/8
	3(R2), 5(R1)	Manifold	Rc1/4
	PR		M5×0.8
G180M□A	1(P)	Manifold	Rc1/4
	4(A), 2(B)		Rc1/8
	3(R2), 5(R1)		Rc1/4
	PR		M5×0.8
G180M□AJ	1(P)	Manifold	Rc1/4
	4(A), 2(B)		Quick fittings for ϕ4 or ϕ6
	3(R2), 5(R1)		Rc1/4
	PR		M5×0.8

Solenoid Valve Mass

g [oz.]

Basic model	Mass
G180E1	85 [3.00]
G180-4E1	80 [2.82]
G180-4E2	101 [3.56]
G183-4E2	111 [3.92]
GA180E1	86 [3.03]〈246 [8.68]〉
GA180-4E1	85 [3.00]〈245 [8.64]〉
GA180-4E2	106 [3.74]〈266 [9.38]〉
GA183-4E2	115 [4.06]〈275 [9.70]〉

Remark: Figures in parentheses ( ) are the mass with sub-base: -25.

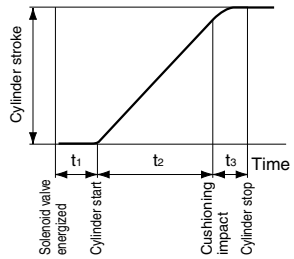
Manifold Mass

g [oz.]

Manifold model	Mass calculation of each unit (n=number of units)		Block-off plate
G180M□F	(42×n)+40	[(1.48×n)+1.41]	19 [0.67]
G180M□FE	(60×n)+70	[(2.12×n)+2.47]	30 [1.06]
G180M□A	(120×n)+120	[(4.23×n)+4.23]	
G180M□AJ	-J4: (135×n)+120	[(4.76×n)+4.23]	
	-J6: (138×n)+120	[(4.87×n)+4.23]	

Cylinder Operating Speed

How to obtain cylinder speed

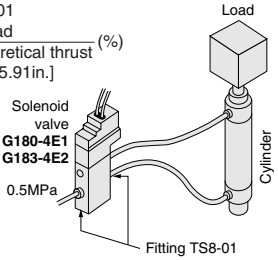


To obtain the time required for the cylinder to complete 1 stroke, add cylinder's delay time t_1 (time between energizing of the solenoid valve and actual starting of the cylinder), to the cylinder's max. speed operating time t_2.
When a cushion is used, add the cushioning time t_3, to the above calculation. The standard cushioning time t_3 is approximately 0.2 seconds.

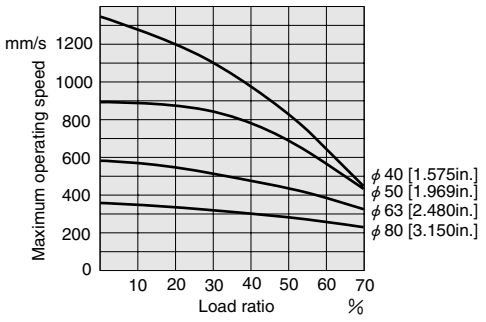
G180-4E1
G183-4E2

●Measurement conditions

●Air pressure: 0.5MPa {5.1kgf/cm²} [73psi.]
●Piping inner diameter and length: ϕ 6 [0.24in.]×1000mm [39in.]
●Fitting: Quick fitting TS8-01
●Load ratio= $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
●Cylinder stroke: 150mm [5.91in.]

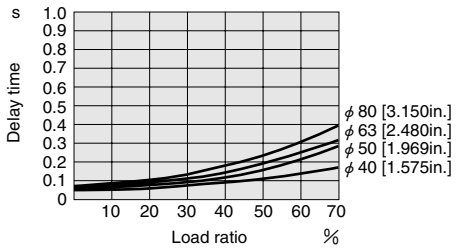


Maximum operating speed



1mm/s = 0.0394in./sec.

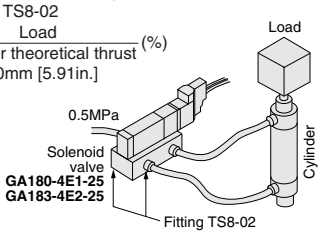
Delay time



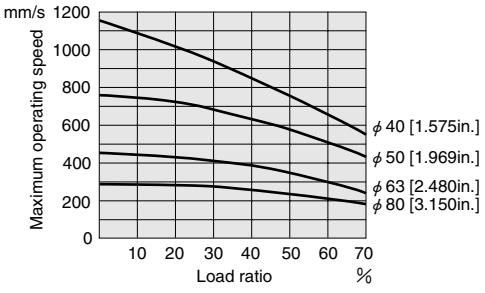
GA180-4E1-25
GA183-4E2-25

●Measurement conditions

●Air pressure: 0.5MPa {5.1kgf/cm²} [73psi.]
●Piping inner diameter and length: ϕ 6 [0.24in.]×1000mm [39in.]
●Fitting: Quick fitting TS8-02
●Load ratio= $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
●Cylinder stroke: 150mm [5.91in.]

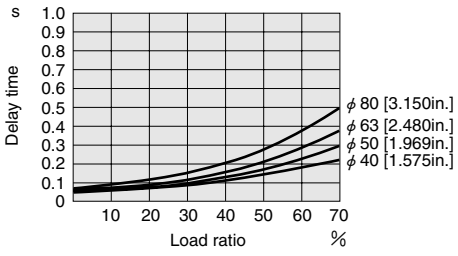


Maximum operating speed

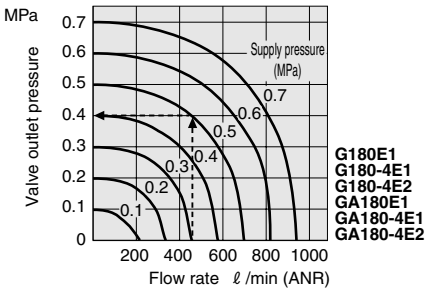


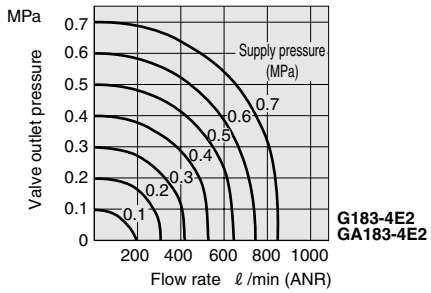
1mm/s = 0.0394in./sec.

Delay time



Flow Rate





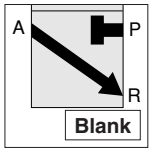
How to read the graph
When the supply pressure is 0.5MPa [73psi.] and the flow rate is 460 ℓ/min [16.2ft³/min.] (ANR), the valve outlet pressure becomes 0.4MPa [58psi.].

1MPa = 145psi., 1 ℓ/min. = 0.0353ft³/min.

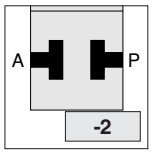
G180 Series Solenoid Valve Order Codes

■2-, 3-port valve Number of ports

3-port

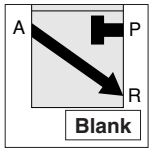


2-port

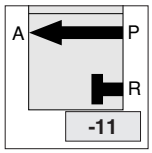


■2-, 3-port valve Valve function

Normally closed (NC)

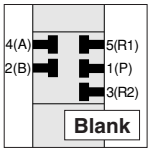


Normally open (NO)

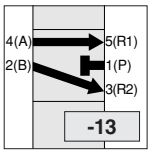


■3-position valve Valve function

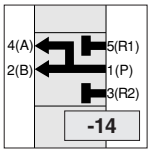
Closed center



Exhaust center



Pressure center



■Sub-base

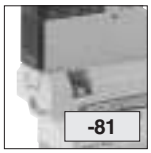
Without sub-base

With sub-base

■Manual override

Non-locking type

Locking type



■Wiring type

●Lead wire length: 300mm [11.8in.] is standard.

Grommet type with LED indicator

Straight connector with LED indicator

L connector with LED indicator

		Basic model						Voltage [Note 2]
Direct piping	5-port single solenoid	G180-4E1				-81	-PSL -PLL	DC12V DC24V AC100V AC200V
	5-port double solenoid	G180-4E2						
	5-port 3-position	G183-4E2			-13,-14			
Sub-base piping	5-port single solenoid	GA180-4E1			-25	-81	-PSL -PLL	DC12V DC24V AC100V AC200V
	5-port double solenoid	GA180-4E2						
	5-port 3-position	GA183-4E2			-13,-14			
For manifold with combination mounting of 2-, 3-, 5-port valves only [Note 1]	2-, 3-port for G180□F, FE	G180E1	-2	-11		-81	-PSL -PLL	DC12V DC24V AC100V AC200V
	2-, 3-port for G180□A, AJ	GA180E1	-2	-11	-25			

Notes: 1. They cannot be used as single units.
2. For AC 110V～120V or AC 220V～240V specifications, consult us.

■Additional Parts (To be ordered separately)

Block-off plate

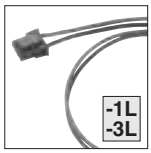
● G 180 M F -BP
- **180**—For G180M
- **F** —For F type manifold
- **FE**—For FE type manifold
- **A** —For A type, AJ type manifolds

Lead wire for common wiring

● For **-PSL**, **-PLL**
(Set of 10 pcs.)

■Made to Order (After the wiring order code, enter the codes below.)

Lead wire length



● For plug connector
● Length **-1L**: 1000 [39in.] (mm) **-3L**: 3000 [118in.]