Discrete direct acting 2 port solenoid valve for dry air (special purpose valve)

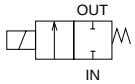
FGB Series

- NC (normally closed) type
- Port size: Rc1/8 to Rc1/2

CAD

JIS symbol

- NC (normally closed) type



Common specifications

Descriptions	FGB
Working fluid	Dry air, inert gas, low vacuum (up to 1.33 x 10^2Pa(abs))
Working pressure differential range MPa	0 to 1.4 (Refer to the maximum working pressure differential on the individual specifications)
Withstanding pressure (water pressure) MPa	2.1 (1.5 for FGB11/21)
Fluid temperature ℃	-10 to 40 (no freezing)
Ambient temperature ℃	-20 to 40
Heat proof class	B
Atmosphere	No corrosive gas and flammable
Valve structure	Direct acting poppet structure
Valve seat leakage cm^3/min. (ANR)	0.2 or less
Installation attitude	Free
Protective structure	IP65 or equivalent (Note 1)

Note 1: The T-type terminal box type is IP61 or equivalent.

Individual specifications

Descriptions / Model no.	Port size	Orifice (mm)	Flow characteristics C[dm^3/(s/bar)]	Flow characteristics b	Max. working pressure differential MPa AC	Max. working pressure differential MPa DC	Max. working pressure MPa	Rated voltage	Power consumption (W) AC	Power consumption (W) DC	Weight (kg)
NC (normally closed) type											
FGB21- 6 - 1	Rc 1/8	1.5	0.28	0.52	1.0	1.0	1.0		4.6	4	0.13
FGB21- 6 - 2	Rc 1/8	2	0.55	0.59	0.6	0.6	1.0		4.6	4	0.13
FGB31- 6 - 2	Rc 1/8	2	0.55	0.56	1.4	1.4	1.4	100 VAC 50/60Hz	6.2	6.5	0.22
FGB31- 8 - 2	Rc 1/8	2	0.55	0.56	1.4	1.4	1.4	100 VAC 50/60Hz	6.2	6.5	0.22
FGB31- 8 - 3	Rc 1/4	3	1.2	0.56	0.6	0.6	1.4	100 VAC 50/60Hz	6.2	6.5	0.22
FGB31- 8 - 6	Rc 1/4	5	3.1	0.50	0.15	0.15	1.4	100 VAC 50/60Hz	6.2	6.5	0.22
FGB41- 8 - 3	Rc 1/4	3	1.2	0.56	1.2	1.2	1.4	200 VAC 50/60Hz	8.7	8	0.39
FGB41- 10 - 3	Rc 1/4	3	1.2	0.56	1.2	1.2	1.4	200 VAC 50/60Hz	8.7	8	0.39
FGB41- 10 - 5	Rc 3/8	4	2.1	0.54	0.5	0.5	1.4	200 VAC 50/60Hz	8.7	8	0.39
FGB41- 10 - 7	Rc 3/8	7	5.7	0.48	0.1	0.1	1.4	200 VAC 50/60Hz	8.7	8	0.39
FGB51-10 - 5	Rc 3/8	4	2.1	0.54	1.0	1.2	1.4	24 VDC 12 VDC	10.7	11.5	0.62
FGB51-10 - 6	Rc 3/8	5	3.1	0.50	0.5	0.6	1.4	24 VDC 12 VDC	10.7	11.5	0.62
FGB51- 15 - 7	Rc 3/8	7	5.7	0.48	0.2	0.25	1.4	24 VDC 12 VDC	10.7	11.5	0.62
FGB51- 15 - 8	Rc 1/2	10	5.5	0.41	0.08	0.1	1.4	24 VDC 12 VDC	10.7	11.5	0.62

*1: Use the allowable voltage fluctuation range within ±10% of the rated voltage.
*2: The leakage current must be less than values given below.
*3: Effective sectional area S and sonic conductance C are converted as S ≒ 5.0 x C.

Leakage current: Voltage / Model no.	100 VAC	200 VAC	24 VDC	12 VDC
FGB**-	2mA or less	1mA or less	1mA or less	2mA or less

How to order

F G B 2 1 - 6 - 1 - 1 2CR A B - 1

- No. of port (2 port valve)
- Working fluid (Dry air)
- Ⓐ Size variation
- Ⓑ Actuation
- Ⓒ Port size
- Ⓓ Orifice *1
- Ⓔ Body, sealant combination
- Ⓕ Coil option *2 *3
- Ⓖ Manual override
- Ⓗ Other options
- Ⓘ Voltage *4

Symbol	Descriptions	FGB21	FGB31	FGB41	FGB51
Ⓐ Size variation					
2	22 mm	●			
3	28 mm		●		
4	34 mm			●	
5	40 mm				●
Ⓑ Actuation					
1	NC (normally closed) type	●	●	●	●
Ⓒ Port size					
6	Rc 1 / 8	●	●		
8	Rc 1 / 4		●	●	
10	Rc 3 / 8			●	●
15	Rc 1 / 2				●
Ⓓ Orifice					
1	ϕ 1.5	●			
2	ϕ 2	●	●		
3	ϕ 3		●	●	
5	ϕ 4			●	●
6	ϕ 5		●		●
7	ϕ 7			●	●
8	ϕ 10				●
Ⓔ Body, sealant combination					
	Body / Sealant				
1	Aluminum / NBR	●	●	●	●
Ⓕ Coil option					
When AC					
2CR	Standard: Grommet lead wire with all wave rectified bridge	●	●	●	●
3TR	Option: T type terminal box with all wave rectified bridge (G1/2)		●	●	●
3RR	Option: T type terminal box with light and all wave rectified bridge (G1/2)		●	●	●
When DC					
2C	Option: Grommet lead wire	●	●	●	●
2CS	Option: Grommet lead wire with surge suppressor	●	●	●	●
3T	Option: T type terminal box (G1/2)		●	●	●
3RS	Option: T type terminal box with light and surge suppressor (G1/2)		●	●	●
Ⓖ Manual override					
Blank	Standard: None	●	●	●	●
A	Option: Manual lock type	●	●	●	●
N	Option: Manual non-locking type		●	●	●
Ⓗ Other options					
Blank	Standard: None	●	●	●	●
B	Option: Mounting plate	●	●	●	●
Ⓘ Voltage					
1	100 VAC 50/60Hz	●	●	●	●
2	200 VAC 50/60Hz	●	●	●	●
3	24 VDC	●	●	●	●
4	12 VDC	●	●	●	●
For voltages other than the above, write in the voltage directly.					

Select from the combination of ● marks in the above table.

<Example of model number>

FGB21-6-1-12CRAB-1

Model: FGB

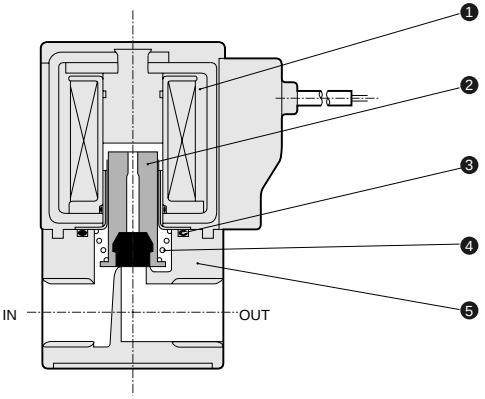
- Ⓐ Size variation : 22 mm
- Ⓑ Actuation : NC (normally closed) type
- Ⓒ Port size : Rc 1/8
- Ⓓ Orifice : ϕ1.5
- Ⓔ Body, sealant combination : Body - aluminum, sealant - NBR
- Ⓕ Coil option : Grommet lead wire with all wave rectified bridge
- Ⓖ Manual override : Manual lock type
- Ⓗ Other options : Mounting plate
- Ⓘ Voltage : 100 VAC 50/60Hz

⚠ Note on model no. selection

*1: For the FGB51 orifice ϕ4mm (item (D) 5), ϕ 5mm (item (D) 6), only the Rc3/8 (item (C) 10) bore size is available.
*2: For item (F) 2CR and 2CS, the all wave rectified bridge and surge suppressor are built into the coil, and for 3TR, 3RR, and 3RS, built into the terminal box.
*3: With the type with an all wave rectified bridge, the surge suppressor is built in as a standard.
*4: Consult with CKD for other voltages that cannot be manufactured.

Internal structure and parts list

●FGB series

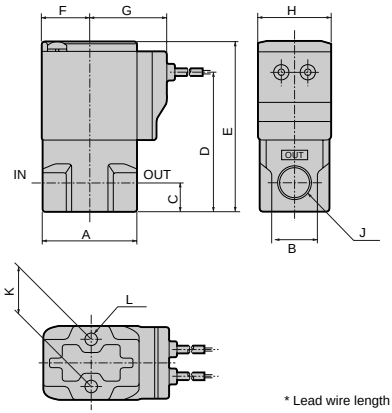


No.	Parts name	Materials	
1	Coil assembly	-	-
2	Plunger assembly	SUS, NBR	Stainless steel, nitrile rubber
3	O ring	NBR	Nitrile rubber
4	Spring	SUS	Stainless steel
5	Body	ADC	Aluminum alloy die-casting

Dimensions

CAD (Page 115)

●Grommet lead wire with all wave rectified bridge
FGB*1-*-*-*2CR



* Lead wire length 300mm

For the DC voltage and lead wire type, use the grommet lead (2C) or grommet lead with surge suppressor (2CS).

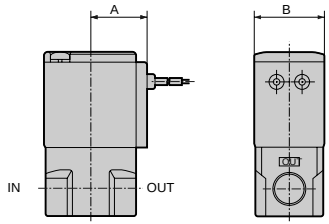
Model no.	A	B	C	D	E	F	G	H	J	K	L
FGB21	32	16	8	43	54	15.5	26.5	22	Rc1/8	15	M4 depth 6
FGB31	36	18	11	53.5	65.5	18.5	29.5	28	Rc1/8, Rc1/4	18	M5 depth 6
FGB41	40	25	12	62	76	22.5	34	34	Rc1/4, Rc3/8	18	M5 depth 7
FGB51	50	30	15	74.5	90.5	26	37.5	40	Rc3/8, Rc1/2	20	M5 depth 8

Optional dimensions

CAD (Page 115)

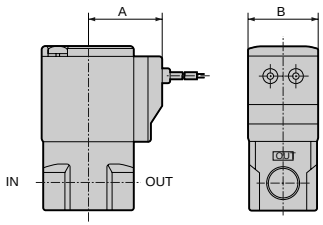
(For common dimensions, refer to the grommet lead wire with all wave rectified bridge dimensions on the left page.)

● Grommet lead wire
FGB*1-*-*-* 2C



Model no.	A	B
FGB21	19.5	22
FGB31	22.5	28
FGB41	26	34
FGB51	29.5	40

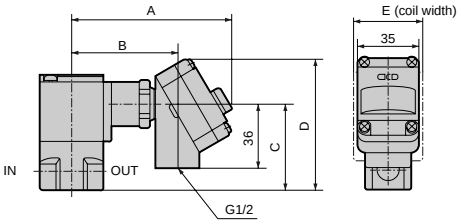
● Grommet lead wire with surge suppressor
FGB*1-*-*-* 2CS



Model no.	A	B
FGB21	26.5	22
FGB31	29.5	28
FGB41	34	34
FGB51	37.5	40

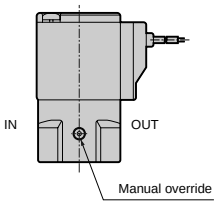
● T type terminal box (with light and surge suppressor) (G1/2)
FGB*1-*-*-* 3T
3RS

● T type terminal box with all wave rectified bridge (with light) (G1/2)
FGB*1-*-*-* 3TR
3RR



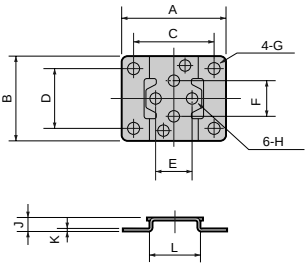
Model no.	A	B	C	D	E
FGB31	92	60.5	48.5	74.5	28
FGB41	96	64.5	57.5	83.5	34
FGB51	99.5	68	71.5	97.5	40

● Manual override locking/non-locking
FGB*1-*-*-** A
N

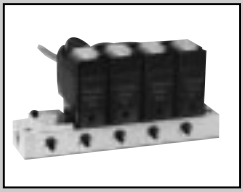


Note: Non-locking is available for size variation 3, 4 and 5.

● Mounting plate
FGB*1-*-*-***B



Model no.	A	B	C	D	E	F	G	H	J	K	L
FGB21	40	34	30	25	15	15	ϕ5	ϕ4.5	6	1.2	20
FGB31	52	42	40	30	18	18	ϕ6	ϕ5.5	7	1.6	25
FGB41	56	48	44	36	18	18	ϕ6	ϕ5.5	7	1.6	30
FGB51	62	50	50	38	20	20	ϕ6	ϕ5.5	7	1.6	36



Direct acting 2 port solenoid valve for dry air, manifold (special purpose valve)

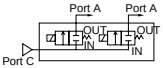
GFGB Series

- NC (normally closed) type
- Port size: Rc1/8, Rc1/4, Rc3/8

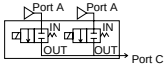
CAD

JIS symbol

- NC (normally closed) / common supply type (Port C pressurized)



- NC (normally closed) / individual supply type (Port A pressurized)



Common specifications

Descriptions	GFGB
Working fluid	Dry air, inert gas, low vacuum (up to 1.33 x 10^2Pa(abs))
Working pressure differential range MPa	0 to 1.4 (Refer to the maximum working pressure differential on the individual specifications)
Withstanding pressure (water pressure) MPa	2.1 (1.5 for GFGB2)
Fluid temperature ℃	-10 to 40 (no freezing)
Ambient temperature ℃	-20 to 40
Heat proof class	B
Atmosphere	No corrosive gas and flammable
Valve structure	Direct acting poppet structure
Valve seat leakage cm³/min. (ANR)	0.2 or less
Installation attitude	Free
Protective structure	IP65 or equivalent (Note 1)

Note 1: The T-type terminal box type is IP61 or equivalent.

Individual specifications

Descriptions / Model no.	Port size: Port A (Individual)	Port size: Port C (Common)	Orifice (mm)	Flow characteristics: C[dm³/(s·bar)]	Flow characteristics: b	Max. working pressure differential MPa: AC	Max. working pressure differential MPa: DC	Max. working pressure MPa	Rated voltage	Power consumption (W): AC	Power consumption (W): DC
GFGB 21/25 - 1	Rc1/8	Rc1/8	1.5	0.31	0.49	1.0	1.0	1.0	100 VAC 50/60Hz 200 VAC 50/60Hz 24 VDC 12 VDC	4.6	4
- 2			2	0.53	0.38	0.6	0.6				
GFGB 31/35 - 2	Rc1/4	Rc3/8	2	0.55	0.48	1.4	1.4	1.4		6.2	6.5
- 3			3	1.2	0.39	0.6	0.6				
- 6			5	2.1	0.27	0.15	0.15				
GFGB 41/45 - 3	Rc1/4	Rc3/8	3	1.2	0.39	1.2	1.2			8.7	8
- 5			4	2.1	0.34	0.5	0.5				
- 7			7	3.5	0.21	0.1	0.1				
GFGB 51/55 - 5	Rc1/4	Rc3/8	4	2.1	0.34	1.0	1.2			10.7	11.5
- 6			5	3.0	0.22	0.5	0.6				
- 7			7	4.4	0.18	0.2	0.25				

*1: Use the allowable voltage fluctuation range within ±10% of the rated voltage.
*2: The leakage current must be less than values given below.
*3: Effective sectional area S and sonic conductance C are converted as S ≒5.0 x C.

Leakage current: Voltage / Model no.	100 VAC	200 VAC	24 VDC	12 VDC
GFGB	2mA or less	1mA or less	1mA or less	2mA or less

How to order

● Manifold

GFGB31-2-7-12CN-3

● Manifold with masking plate

GFGB25-1-X-12CRN-2-52

No. of port (2 port valve)

Working fluid (Dry air)

Ⓐ Size variation

Ⓑ Circuit structure

Ⓒ Orifice

Ⓓ Station no. *1 *2

Ⓔ Body, sealant combination

Ⓕ Coil option *3 *4

Ⓖ Manual override

Ⓗ Voltage *5

Ⓘ Solenoid valve quantity *6

Ⓙ Masking plate quantity

Symbol	Descriptions	Model no. GFGB21 25	GFGB31 35	GFGB41 45	GFGB51 55
Ⓐ Size variation					
2	22 mm	●			
3	28 mm		●		
4	34 mm			●	
5	40 mm				●
Ⓑ Circuit structure					
1	NC (normally closed) / common supply type	●	●	●	●
5	NC (normally closed) / individual supply type	●	●	●	●
Ⓒ Orifice					
1	ϕ 1.5	●			
2	ϕ 2	●	●		
3	ϕ 3		●	●	
5	ϕ 4			●	●
6	ϕ 5		●		●
7	ϕ 7			●	●
Ⓓ Station no.					
2 to 10	2 stations to 10 stations	●	●	●	●
0	Actuator only	●	●	●	●
X	With masking plate	●	●	●	●
Ⓔ Body, sealant combination					
	Body: PPS / Sealant: NBR				
1	PPS / NBR	●	●	●	●
Ⓕ Coil option					
When AC					
2CR	Standard: Grommet lead wire	●	●	●	●
3TR	Option: T type terminal box with all wave rectified bridge (G1/2)			●	●
3RR	Option: T type terminal box with light and all wave rectified bridge (G1/2)			●	●
When DC					
2C	Option: Grommet lead wire	●	●	●	●
2CS	Option: Grommet lead wire with surge suppressor	●	●	●	●
3T	Option: T type terminal box (G1/2)			●	●
3RS	Option: T type terminal box with light and surge suppressor (G1/2)			●	●
Ⓖ Manual override					
Blank	Standard: None	●	●	●	●
N	Option: Manual non-locking type	●	●	●	●
Ⓗ Voltage					
1	100 VAC 50/60Hz	●	●	●	●
2	200 VAC 50/60Hz	●	●	●	●
3	24 VDC	●	●	●	●
4	12 VDC	●	●	●	●
For voltages other than the above, write in the voltage directly.					
Ⓘ Solenoid valve quantity					
Blank	No masking plate	●	●	●	●
1 to 9	One solenoid valve to Nine solenoid valves	●	●	●	●
Ⓙ Masking plate quantity					
Blank	No masking plate	●	●	●	●
1 to 9	One masking plate to Nine masking plates	●	●	●	●

Select from the combination of ● marks in the above table.

<Example of model number>

GFGB31-2-7-12CN-3

Model: GFGB

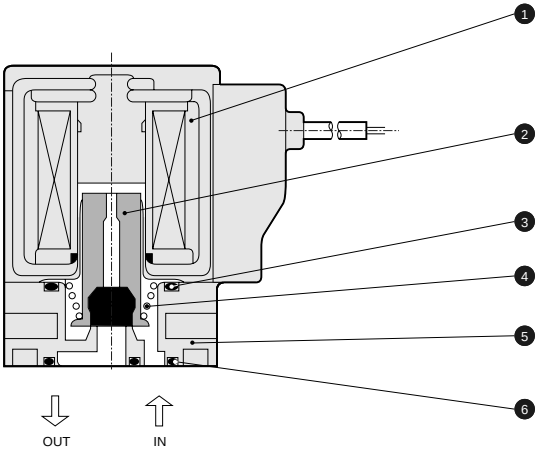
Ⓐ Size variation : 28 mm
Ⓑ Circuit structure : NC (normally closed) / common supply type
Ⓒ Orifice : ϕ 2
Ⓓ Station no. : 7 stations
Ⓔ Body, sealant combination : Body - PPS, sealant - NBR
Ⓕ Coil option : Grommet lead wire
Ⓖ Manual override : Manual non-locking
Ⓗ Voltage : 24 VDC
ⒾⒿ : No masking plate

⚠ Note on model no. selection

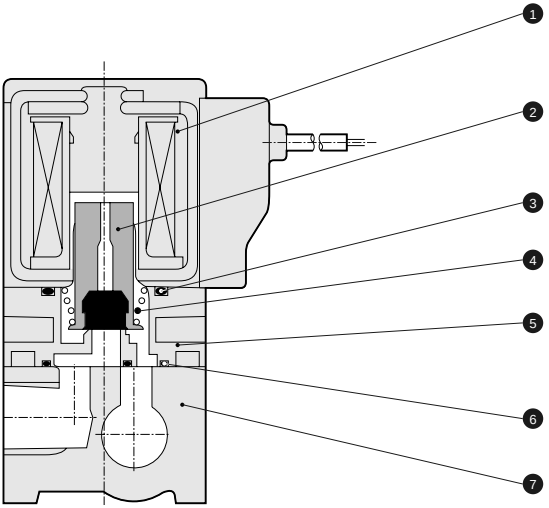
*1: For the number of manifold stations, select a number of stations from 2 to 10.
*2: For the type with masking plate, designate the item (D) as "X", then designate the number of (I) solenoid valves and (J) masking plates.
*3: For F item 2CR/2CS, the all wave rectified bridge and surge suppressor are built into the coil, and for the 3TR/3RR/3RS, built into the terminal box.
*4: With the type with an all wave rectified bridge, the surge suppressor is built in as a standard.
*5: Consult with CKD for other voltages that cannot be manufactured.
*6: Solenoid valves are arranged from the right side facing the sub-plate A (independent) port.
*7: Orders for only the masking plate and sub-plate are also available. Contact CKD for details.

Internal structure and parts list

● GFGB actuator



●GFGB manifold



No.	Parts name	Materials		No.	Parts name	Materials	
1	Coil assembly	-	-	**5**	Body	PPS	Polyphenylene sulfite
2	Plunger assembly	SUS, NBR	Stainless steel, nitrile rubber	**6**	Gasket	NBR	Nitrile rubber
3	O ring	NBR	Nitrile rubber	**7**	Sub-plate	A6063	Aluminum
4	Spring	SUS	Stainless steel				

Dimensions: Manifold

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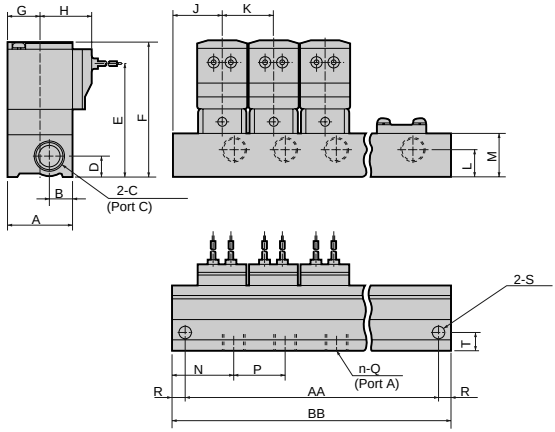
● Grommet lead wire with all wave rectified bridge
GFGB**-*-*-12CR



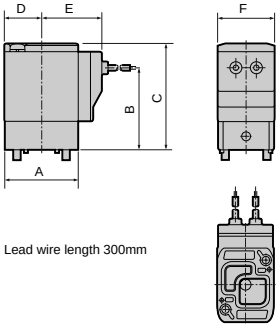
Lead wire length 300mm

Model no.	Stn. no. / Symbol	2	3	4	5	6	7	8	9	10
GFGB2	AA	58	84	110	136	162	188	214	240	266
	BB	68	94	120	146	172	198	224	250	276
GFGB3	AA	74	106	138	170	202	234	266	298	330
	BB	88	120	152	184	216	248	280	312	344
GFGB4	AA	86	124	162	200	238	276	314	352	390
	BB	100	138	176	214	252	290	328	366	404
GFGB5	AA	100	146	192	238	284	330	376	422	468
	BB	114	160	206	252	298	344	390	436	482

Model no.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
GFGB2	30	12	Rc1/8	8	49	60	15.5	26.5	21	26	8	16	25	26	Rc1/8	5	ϕ4.5	9
GFGB3	36	13	Rc3/8	12	64	76	18.5	29.5	28	32	15	24	34.5	32	Rc1/4	7	ϕ6.5	10
GFGB4	43	18	Rc3/8	12	71	85	22.5	34	31	38	15	24	31	38	Rc1/4	7	ϕ6.5	11.5
GFGB5	50	20	Rc3/8	12	79	95	26	37.5	34	46	12	24	34	46	Rc1/4	7	ϕ6.5	14

Dimensions: Actuator

●Grommet lead wire with all wave rectified bridge
GFGB**-*-0-12CR

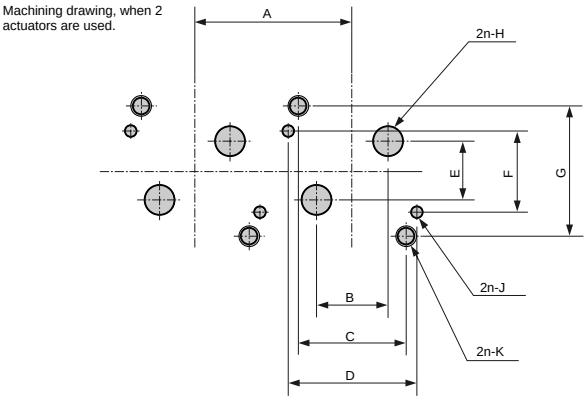


Lead wire length 300mm

Model no.	A	B	C	D	E	F
GFGB2	30	33	44	15.5	26.5	22
GFGB3	36	40	52	18.5	29.5	28
GFGB4	43	47	61	22.5	34	34
GFGB5	50	55	71	26	37.5	40

Actuator installation dimension drawing

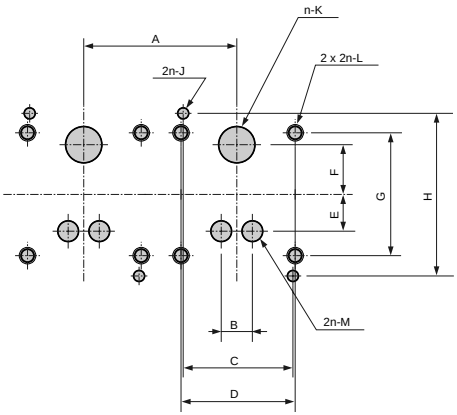
● GFGB2*/3*



Model no.	A	B	C	D	E	F	G	H	J	K
GFGB2	26 and over	8±0.15	15.5±0.1	18.4±0.1	10±0.15	12.4±0.1	19.4±0.1	ϕ3.5 or less	$\phi1.6^{+0.1}_{0}$ depth 2.5±0.5	M3 effective thread depth 6 and over
GFGB3	32 and over	13±0.15	20±0.1	23.6±0.1	11.4±0.15	15±0.1	24.2±0.1	ϕ5.5 or less	$\phi2.1^{+0.1}_{0}$ depth 2.5±0.5	M4 effective thread depth 5.5 and over

● GFGB4*5*

Machining drawing, when 2 actuators are used.



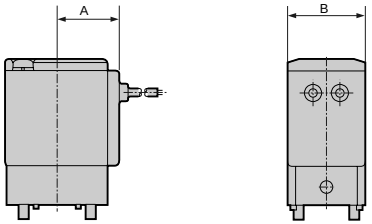
Model no.	A	B	C	D	E	F	G	H	J	K	L	M
GFGB4	38 and over	7±0.2	25±0.1	26±0.1	8.8±0.2	11±0.2	28±0.1	37±0.1	$\phi2.6^{+0.1}_{0}$ depth 2.5±0.5	ϕ8 or less	M4 effective thread depth 9 and over	ϕ5 or less
GFGB5	46 and over	8±0.2	30±0.1	30±0.1	11.5±0.2	14.5±0.2	33±0.1	43±0.1	$\phi2.6^{+0.1}_{0}$ depth 2.5±0.5	ϕ11 or less	M5 effective thread depth 8 and over	ϕ7 or less

Optional dimensions

CAD (Page 115)

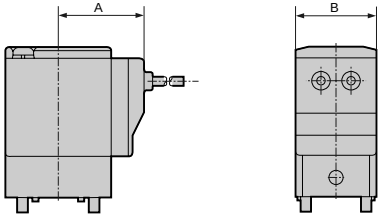
(For common dimensions, refer to the grommet lead wire actuator with all wave rectified bridge dimensions on page 55.)

●Grommet lead wire
GFGB**-*-*-1[2C]



Model no.	A	B
GFGB2	19.5	22
GFGB3	22.5	28
GFGB4	26	34
GFGB5	29.5	40

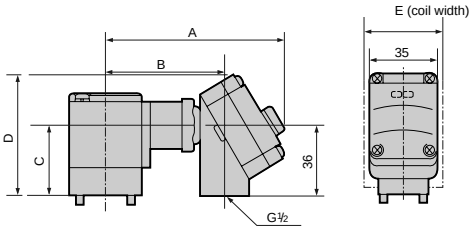
●Grommet lead wire with surge suppressor
GFGB**-*-*-1[2CS]



Model no.	A	B
GFGB2	26.5	22
GFGB3	29.5	28
GFGB4	34	34
GFGB5	37.5	40

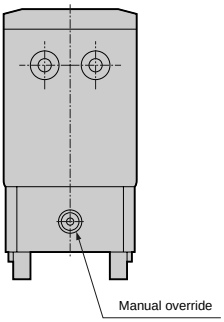
●T type terminal box (with light and surge suppressor) (G1/2)
GFGB**-*-*-1[3T]
[3RS]

●T type terminal box with all wave rectified bridge (with light) (G1/2)
GFGB**-*-*-1[3TR]
[3RR]



Model no.	A	B	C	D	E
GFGB4	96	64.5	42.5	68.5	34
GFGB5	99.5	68	52	78	40

●Manual override (non-locking)
GFGB**-*-*-1*[N]



Position of manual override
- Common supply type: Opposite side of Port A
- Individual supply type: Port A side

Discrete direct acting 3 port solenoid valve for dry air (special purpose valve)

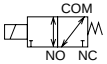
FGG Series

- Universal type, NC pressurization type
- Port size: Rc1/8, Rc1/4, Rc3/8

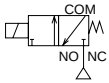
CAD

JIS symbol

- Universal type



- NC pressurization type



Common specifications

Descriptions	FGG
Working fluid	Dry air, inert gas, low vacuum (up to 1.33 x 10^2Pa(abs))
Working pressure differential range MPa	0 to 1.4 (Refer to the maximum working pressure differential on the individual specifications)
Withstanding pressure (water pressure) MPa	2.1 (1.5 for FGG2)
Fluid temperature ℃	-10 to 40 (no freezing)
Ambient temperature ℃	-20 to 40
Heat proof class	B
Atmosphere	No corrosive gas and flammable
Valve structure	Direct acting poppet structure
Valve seat leakage cm³/min. (ANR)	0.2 or less
Installation attitude	Free
Protective structure	IP65 or equivalent (Note 1)

Note 1: The T-type terminal box type is IP61 or equivalent.

Individual specifications

Descriptions / Model no.	Port size	Orifice (mm)	Flow characteristics C[dm³/(s/bar)]	Flow characteristics b	Max. working pressure differential MPa	Max. working pressure MPa	Rated voltage	Power consumption (W) AC	Power consumption (W) DC	Weight (kg)
● Universal type										
FGG21- 6 - Z	Rc 1/8	1	0.13	0.58	0.7	1.0	100 VAC 50/60Hz 200 VAC 50/60Hz 24 VDC 12 VDC	4.6	4	0.15
FGG21- - 1		2	0.52	0.54	0.15					
FGG31- 6/8 - 0	Rc 1/8 Rc 1/4	1.5	0.32	0.58	0.7	1.4		6.2	6.5	0.25
FGG31- - 1		2	0.55	0.48	0.4					
FGG31- - 4		3	1.2	0.57	0.2					
FGG41- 8/10 - 1	Rc 1/4 Rc 3/8	2	0.55	0.48	0.7			8.7	8	0.45
FGG41- - 4		3	1.2	0.57	0.3					
FGG41- - 8		4	2.1	0.48	0.15					
FGG51- 8/10 - 1	Rc 1/4 Rc 3/8	2	0.55	0.48	1.2 (0.6)			10.7	11.5	0.65
FGG51- - 4		3	1.2	0.57	0.6 (0.3)					
FGG51- - 8		4	2.1	0.48	0.3 (0.15)					
● NC pressurization type										
FGG33- 6/8 - 0	Rc 1/8 Rc 1/4	1.5	0.32	0.58	1.0	1.4	100 VAC 50/60Hz 200 VAC 50/60Hz 24 VDC 12 VDC	6.2	6.5	0.25
FGG33- - 1		2	0.55	0.48	0.7					
FGG33- - 4		3	1.2	0.57	0.3					
FGG43- 8/10 - 1	Rc 1/4 Rc 3/8	2	0.55	0.48	1.2			8.7	8	0.45
FGG43- - 4		3	1.2	0.57	0.6					
FGG43- - 8		4	2.1	0.48	0.3					

*1: Use the allowable voltage fluctuation range within ±10% of the rated voltage.
*2: The maximum working pressure differential at FGG51 NO pressurization is shown in parentheses.
*3: The leakage current must be less than values given below.
*4: Effective sectional area S and sonic conductance C are converted as S ≒ 5.0 x C.

Leakage current: Voltage / Model no.	100 VAC	200 VAC	24 VDC	12 VDC
FGG**	2mA or less	1mA or less	1mA or less	2mA or less

How to order

F G G 2 1 - 6 - Z - 1 2CR A B - 1

No. of port (3 port valve)

Working fluid (Dry air)

Ⓐ Size variation

Ⓑ Actuation

Ⓒ Port size

Ⓓ Orifice

Ⓔ Body, sealant combination

Ⓕ Coil option *1 *2

Ⓖ Manual override

Ⓗ Other options

Ⓘ Voltage *3

Symbol	Descriptions			Model no. FGG21	FGG31, 33	FGG41, 43	FGG51
Ⓐ	Size variation						
2	22 mm			●			
3	28 mm				●		
4	34 mm					●	
5	40 mm						●
Ⓑ	Actuation						
1	Universal type			●	●	●	●
3	NC pressurization type				●	●	
Ⓒ	Port size						
6	Rc 1 / 8			●	●		
8	Rc 1 / 4				●	●	●
10	Rc 3 / 8					●	●
Ⓓ	Orifice						
Z	ϕ 1			●			
0	ϕ 1.5				●		
1	ϕ 2			●	●	●	●
4	ϕ 3				●	●	●
8	ϕ 4					●	●
Ⓔ	Body, sealant combination						
	Body	Sealant					
1	Aluminum	NBR		●	●	●	●
Ⓕ	Coil option						
When AC							
2CR	Standard	Grommet lead wire with all wave rectified bridge		●	●	●	●
3TR	Option	T type terminal box with all wave rectified bridge (G1/2)			●	●	●
3RR	Option	T type terminal box with indicator light & all wave rectified bridge (G1/2)			●	●	●
When DC							
2C	Option	Grommet lead wire		●	●	●	●
2CS	Option	Grommet lead wire with surge suppressor		●	●	●	●
3T	Option	T type terminal box (G1/2)			●	●	●
3RS	Option	T type terminal box with light and surge suppressor (G1/2)			●	●	●
Ⓖ	Manual override						
Blank	Standard	None		●	●	●	●
A	Option	Manual lock type		●	●	●	●
N	Option	Manual non-locking type			●	●	●
Ⓗ	Other options						
Blank	Standard	None		●	●	●	●
B	Option	Mounting plate		●	●	●	●
Ⓘ	Voltage						
1	100 VAC 50/60Hz			●	●	●	●
2	200 VAC 50/60Hz			●	●	●	●
3	24 VDC			●	●	●	●
4	12 VDC			●	●	●	●
For voltages other than the above, write in the voltage directly.							

Select from the combination of ● marks in the above table.

<Example of model number>

FGG21-6-Z-12CRAB-1

Model: FGG

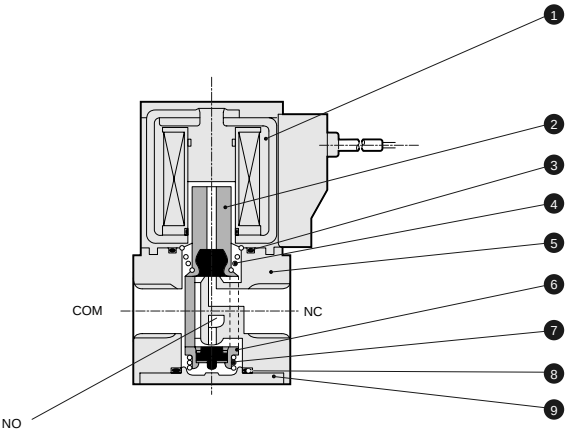
Ⓐ Size variation : 22 mm
Ⓑ Actuation : Universal type
Ⓒ Port size : Rc1/8
Ⓓ Orifice : ϕ1
Ⓔ Body, sealant combination
: Body - aluminum, sealant - NBR
Ⓕ Coil option : Grommet lead wire with all wave rectified bridge
Ⓖ Manual override : Manual lock type
Ⓗ Other options : Mounting plate
Ⓘ Voltage : 100 VAC 50/60Hz

⚠ Note on model no. selection

*1: For item (F) 2CR and 2CS, the all wave rectified bridge and surge suppressor are built into the coil, and for 3TR, 3RR, and 3RS, built into the terminal box.
*2: With an all wave rectified bridge integrated, the surge suppressor is built in as a standard.
*3: Consult with CKD for other voltages that cannot be manufactured.

Internal structure and parts list

●FGG*1/ *3 series

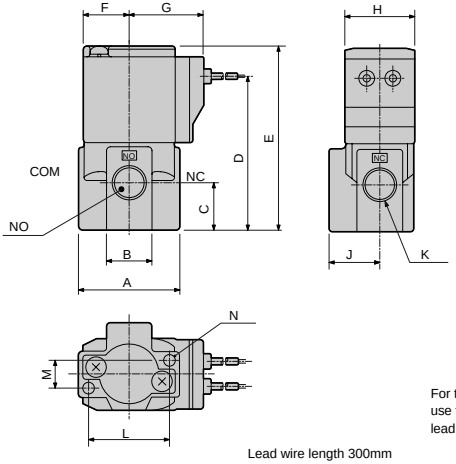


No.	Parts name	Materials		No.	Parts name	Materials	
1	Coil assembly	-	-	6	Valving element guide assembly	PPS, SUS, NBR	Polyphenylene sulfite, stainless steel, nitrile rubber
2	Plunger assembly	SUS, NBR	Stainless steel, nitrile rubber	7	Spring	SUS	Stainless steel
3	O ring	NBR	Nitrile rubber	8	O ring	NBR	Nitrile rubber
4	Spring	SUS	Stainless steel	9	Cover	ADC	Aluminum alloy die-casting
5	Body	ADC	Aluminum alloy die-casting				

Dimensions

(Page 115)

●Grommet lead wire with all wave rectified bridge
FGG**-*-*-12CR



For the DC voltage and lead wire type, use the grommet lead (2C) or grommet lead with surge suppressor (2CS).

Lead wire length 300mm

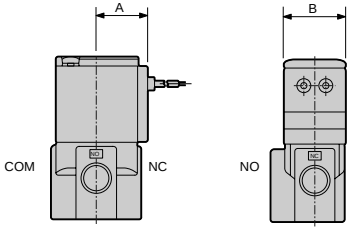
Model no.	A	B	C	D	E	F	G	H	J	K	L	M	N
FGG2	32	16	16.5	51	62	15.5	26.5	22	16	Rc1/8	25	8	M4 depth 6
FGG3	40	18	18.5	60.5	72.5	18.5	29.5	28	20	Rc1/8 Rc1/4	32	11	M5 depth 8
FGG4	45	25	25	74.5	88.5	22.5	34	34	21	Rc1/4 Rc3/8	35	15	M5 depth 8
FGG5	50	25	25	81	97	26	37.5	40	21	Rc1/4 Rc3/8	35	15	M5 depth 8

Optional dimensions

CAD (Page 115)

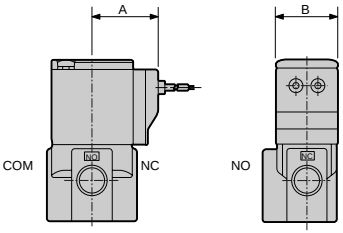
(For common dimensions, refer to the grommet lead wire with all wave rectified bridge dimensions on the left page.)

● Grommet lead wire
FGG**-*-*-1 2C



Model no.	A	B
FGG2	19.5	22
FGG3	22.5	28
FGG4	26	34
FGG5	29.5	40

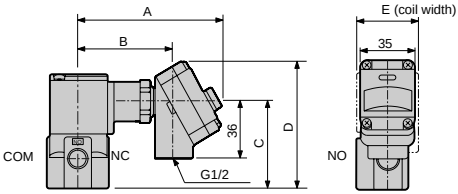
● Grommet lead wire with surge suppressor
FGG**-*-*-1 2CS



Model no.	A	B
FGG2	26.5	22
FGG3	29.5	28
FGG4	34	34
FGG5	37.5	40

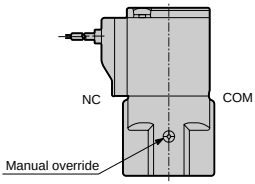
● T type terminal box (with light and surge suppressor) (G1/2)
FGG**-*-*-1 3T
3RS

● T type terminal box with all wave rectified bridge (with light) (G1/2)
FGG**-*-*-1 3TR
3RR



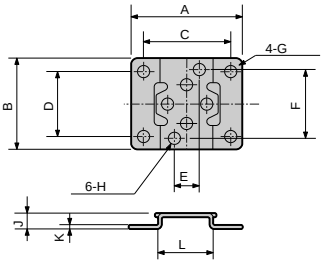
Model no.	A	B	C	D	E
FGG3	92	60.5	55.5	81.5	28
FGG4	96	64.5	70	96	34
FGG5	99.5	68	78	104	40

● Manual override (locking/non-locking)
FGG**-*-*-1* A
N

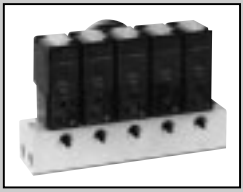


Note: Non-locking is available for size variation 3, 4 and 5.

● Mounting plate
FGG**-*-*-1** B



Model no.	A	B	C	D	E	F	G	H	J	K	L
FGG2	40	34	30	25	8	25	ϕ5	ϕ4.5	6	1.2	20
FGG3	52	42	40	30	11	32	ϕ6	ϕ5.5	7	1.6	25
FGG4	56	48	44	36	15	35	ϕ6	ϕ5.5	7	1.6	30
FGG5	62	50	50	38	15	35	ϕ6	ϕ5.5	7	1.6	36



Direct acting 3 port solenoid valve for dry air, manifold (special purpose valve)

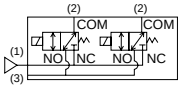
GFGG Series

- Universal type
- Port size: Rc1/8, Rc1/4

CAD

JIS symbol

- Common supply / common exhaust type



Common specifications

Descriptions	GFGG
Working fluid	Dry air, inert gas, low vacuum (up to 1.33 x 10^2Pa(abs))
Working pressure differential range MPa	0 to 1.2 (Refer to the maximum working pressure differential on the individual specifications)
Withstanding pressure (water pressure) MPa	1.8 (1.5 for GFGG$\frac{2}{3}$)
Fluid temperature ℃	-10 to 40 (no freezing)
Ambient temperature ℃	-20 to 40
Heat proof class	B
Atmosphere	No corrosive gas and flammable
Valve structure	Direct acting poppet structure
Valve seat leakage cm^3/min. (ANR)	0.2 or less
Installation attitude	Free
Protective structure	IP65 or equivalent (Note 1)

Note 1: The T-type terminal box type is IP61 or equivalent.

Individual specifications

Descriptions / Model no.	Port size: 2 port (Individual)	Port size: 1/3 port (Common)	Orifice (mm)	Flow characteristics: C[dm^3/(s·bar)]	Flow characteristics: b	Max. working pressure differential MPa	Max. working pressure MPa	Rated voltage	Power consumption (W): AC	Power consumption (W): DC
Universal type										
GFGG21-Z	Rc1/8	Rc1/8	1	0.12	0.44	0.7	1.0	100 VAC 50/60Hz 200 VAC 50/60Hz 24 VDC 12 VDC	4.6	4
-1			2	0.42	0.19	0.15				
GFGG31-0	Rc1/4	Rc1/4	1.5	0.28	0.46	0.7			6.2	6.5
-1			2	0.49	0.36	0.4				
-4			3	0.90	0.20	0.2				
GFGG41-1	Rc1/4	Rc1/4	2	0.50	0.31	0.7	1.2		8.7	8
-4			3	1.1	0.20	0.3				
-8			4	1.6	0.14	0.15				
GFGG51-1	Rc1/4	Rc1/4	2	0.50	0.31	1.2 (0.6)			10.7	11.5
-4			3	1.1	0.20	0.6 (0.3)				
-8			4	1.6	0.14	0.3 (0.15)				

*1: Use the allowable voltage fluctuation range within ±10% of the rated voltage.
*2: The maximum working pressure differential at GFGG51 NO pressurization is shown in parentheses.
*3: The leakage current must be less than values given below.
*4: Effective sectional area S and sonic conductance C are converted as S ≒5.0 x C.

Leakage current: Voltage / Model no.	100 VAC	200 VAC	24 VDC	12 VDC
GFGG	2mA or less	1mA or less	1mA or less	2mA or less

How to order

● Manifold

G F G G 2 1 - Z - 5 - 1 2C N - 3

● Manifold with masking plate

G F G G 3 1 - 1 - X - 1 3T N - 2 - 4 1

No. of port (3 port valve)

Working fluid (Dry air)

Ⓐ Size variation

Ⓑ Circuit structure

Ⓒ Orifice

Ⓓ Station no. *1 *2

Ⓔ Body, sealant combination

Ⓕ Coil option *3 *4

Ⓖ Manual override

Ⓗ Voltage *5

Ⓘ Solenoid valve quantity *6

Ⓙ Masking plate quantity

Symbol	Descriptions	Model no. GFGG21	GFGG31	GFGG41	GFGG51
Ⓐ Size variation					
2	22 mm	●			
3	28 mm		●		
4	34 mm			●	
5	40 mm				●
Ⓑ Circuit structure					
1	Common supply / common exhaust type	●	●	●	●
Ⓒ Orifice					
Z	φ1	●			
O	φ1.5		●		
1	φ2	●	●	●	●
4	φ3		●	●	●
8	φ4			●	●
Ⓓ Station no.					
2 to 10	2 stations to 10 stations	●	●	●	●
O	Actuator only	●	●	●	●
X	With masking plate	●	●	●	●
Ⓔ Body, sealant combination					
	Body / Sealant				
1	PPS / NBR	●	●	●	●
Ⓕ Coil option					
When AC					
2CR	Standard: Grommet lead wire with all wave rectified bridge	●	●	●	●
3TR	Option: T type terminal box with all wave rectified bridge (G1/2)			●	●
3RR	Option: T type terminal box with light and all wave rectified bridge (G1/2)			●	●
When DC					
2C	Option: Grommet lead wire	●	●	●	●
2CS	Option: Grommet lead wire with surge suppressor	●	●	●	●
3T	Option: T type terminal box (G1/2)			●	●
3RS	Option: T type terminal box with light and surge suppressor (G1/2)			●	●
Ⓖ Manual override					
Blank	Standard: None	●	●	●	●
N	Option: Manual non-locking type	●	●	●	●
Ⓗ Voltage					
1	100 VAC 50/60Hz	●	●	●	●
2	200 VAC 50/60Hz	●	●	●	●
3	24 VDC	●	●	●	●
4	12 VDC	●	●	●	●
For voltages other than the above, write in the voltage directly.					
Ⓘ Solenoid valve quantity					
Blank	No masking plate	●	●	●	●
1 to 9	One solenoid valve to Nine solenoid valves	●	●	●	●
Ⓙ Masking plate quantity					
Blank	No masking plate	●	●	●	●
1 to 9	One masking plate to Nine masking plates	●	●	●	●

Select from the combination of ● marks in the above table.

<Example of model number>

GFGG21-Z-5-12CN-3

Model: GFGG

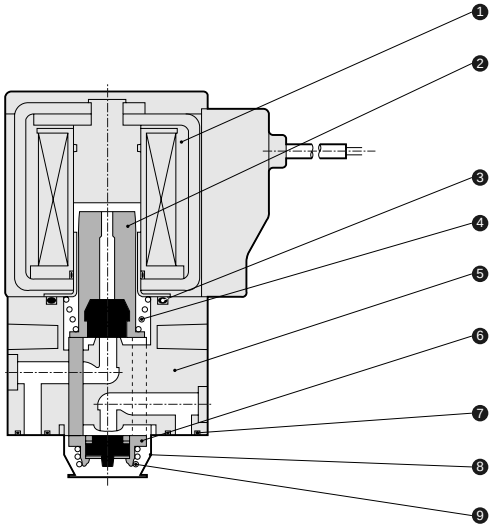
Ⓐ Size variation : 22 mm
Ⓑ Circuit structure : Common supply / common exhaust type
Ⓒ Orifice : φ1
Ⓓ Station no. : 5 stations
Ⓔ Body, sealant combination
: Body - PPS, sealant - NBR
Ⓕ Coil option : Grommet lead wire
Ⓖ Manual override: Manual non-locking
Ⓗ Voltage : 100 VAC 50/60Hz
ⒾⒿ : Without masking plate

⚠ Note on model no. selection

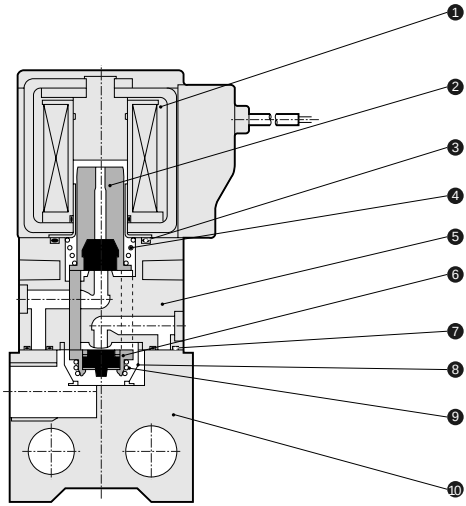
*1: For the number of manifold stations, select a number of stations from 2 to 10.
*2: For the type with masking plate, designate the item (D) as "X", then designate the number of (I) solenoid valves and (J) masking plates.
*3: For item (F) 2CR and 2CS, the all wave rectified bridge and surge suppressor are built into the coil, and for 3TR, 3RR, and 3RS, built into the terminal box.
*4: With the type with an all wave rectified bridge, the surge suppressor is built in as a standard.
*5: Consult with CKD for other voltages that cannot be manufactured.
*6: Solenoid valves are arranged from the right side facing the sub-plate A (independent) port.
*7: Orders for only the masking plate and sub-plate are also available. Contact CKD for details.

Internal structure and parts list

● GFGG actuator



● GFGG manifold



No.	Parts name	Materials		No.	Parts name	Materials	
1	Coil assembly	-	-	**6**	Valving element guide assembly	PPS, SUS, NBR	Polyphenylene sulfite, stainless steel, nitrile rubber
2	Plunger assembly	SUS, NBR	Stainless steel, nitrile rubber	**7**	Gasket	NBR	Nitrile rubber
3	O ring	NBR	Nitrile rubber	**8**	Holder	SUS	Stainless steel
4	Spring	SUS	Stainless steel	**9**	Spring	SUS	Stainless steel
5	Body	PPS	Polyphenylene sulfite	**10**	Sub-plate	A6063	Aluminum

Dimensions: Manifold

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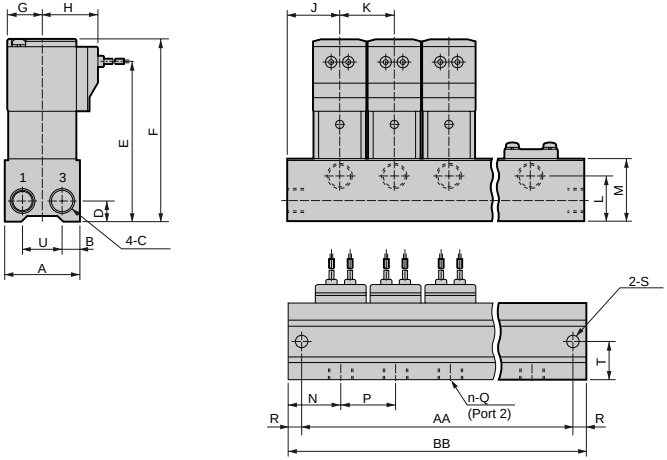
●Grommet lead wire with all wave rectified bridge
GFGG*1-*-*-12CR



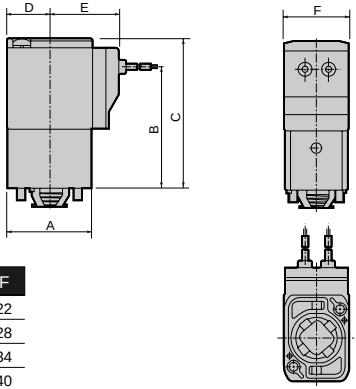
Model no.	Stn. no. / Symbol	2	3	4	5	6	7	8	9	10
GFGG2	AA	58	84	110	136	162	188	214	240	266
	BB	68	94	120	146	172	198	224	250	276
GFGG3	AA	74	106	138	170	202	234	266	298	330
	BB	88	120	152	184	216	248	280	312	344
GFGG4	AA	86	124	162	200	238	276	314	352	390
	BB	100	138	176	214	252	290	328	366	404
GFGG5	AA	100	146	192	238	284	330	376	422	468
	BB	114	160	206	252	298	344	390	436	482

Model no.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U
GFGG2	30	6.5	Rc1/8	8	70	81	15.5	26.5	21	26	18	27	20	26	Rc1/8	5	ϕ4.5	15	17
GFGG3	40	9	Rc1/4	11	84	96	18.5	29.5	28	32	24	33	27.5	32	Rc1/4	7	ϕ6.5	20	22
GFGG4	43	9	Rc1/4	11	93.5	107.5	22.5	34	31	38	24	33	34.5	38	Rc1/4	7	ϕ6.5	21.5	25
GFGG5	50	10	Rc1/4	11	100	116	26	37.5	34	46	24	33	38.5	46	Rc1/4	7	ϕ6.5	25	30

Dimensions: Actuator

CAD (Page 115)

●Grommet lead wire with all wave rectified bridge
GFGG*1-*-0-12CR



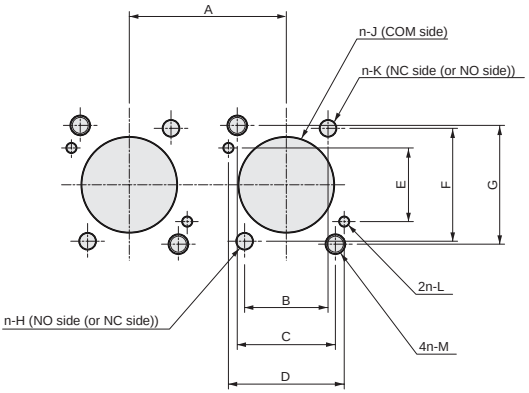
Model no.	A	B	C	D	E	F
GFGG2	30	43	54	15.5	26.5	22
GFGG3	36	51	63	18.5	29.5	28
GFGG4	43	60.5	74.5	22.5	34	34
GFGG5	50	67	83	26	37.5	40

Lead wire length 300mm

Actuator installation dimension drawing

●GFGG2*/3*

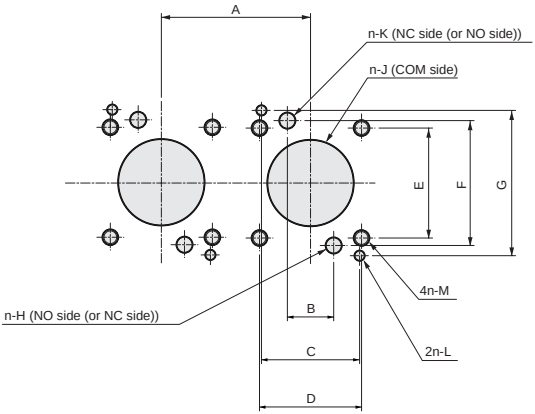
Machining drawing, when 2 actuators are used.



Model no.	A	B	C	D	E	F	G	H	J	K	L	M
GFGG2	26 and over	12±0.15	15.5±0.1	18.4±0.1	12.4±0.1	20±0.15	19.4±0.1	$\phi 2.5^{+0.1}_{0}$	ϕ14.5±0.1	$\phi 2.5^{+0.1}_{0}$	$\phi 1.6^{+0.1}_{0}$ depth 2.5±0.5	M3 effective thread depth 6 and over
GFGG3	32 and over	17±0.15	20±0.1	23.6±0.1	15±0.1	24±0.15	24.2±0.1	$\phi 3.4^{+0.1}_{0}$	ϕ19.5±0.1	$\phi 3.4^{+0.1}_{0}$	$\phi 2.1^{+0.1}_{0}$ depth 2.5±0.5	M4 effective thread depth 6 and over

●GFGG4*/5*

Machining drawing, when 2 actuators are used.



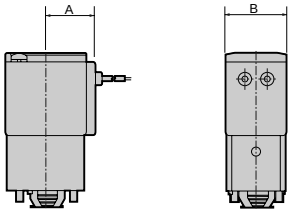
Model no.	A	B	C	D	E	F	G	H	J	K	L	M
GFGG4	38 and over	11.8±0.15	25±0.1	26±0.1	28±0.1	31.8±0.15	37±0.1	$\phi 4.1^{+0.1}_{0}$	ϕ22±0.15	$\phi 4.1^{+0.1}_{0}$	$\phi 2.6^{+0.1}_{0}$ depth 2.5±0.5	M4 effective thread depth 9 and over
GFGG5	46 and over	11.8±0.15	30±0.1	30±0.1	33±0.1	31.8±0.15	43±0.1	$\phi 4.1^{+0.1}_{0}$	ϕ22±0.15	$\phi 4.1^{+0.1}_{0}$	$\phi 2.6^{+0.1}_{0}$ depth 2.5±0.5	M5 effective thread depth 8 and over

Optional dimensions

CAD (Page 115)

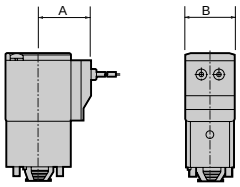
(For common dimensions, refer to the grommet lead wire actuator with all wave rectified bridge dimensions on page 65.)

● Grommet lead wire type
GFGG*1-*-*-1 2C



Model no.	A	B
GFGG2	19.5	22
GFGG3	22.5	28
GFGG4	26	34
GFGG5	29.5	40

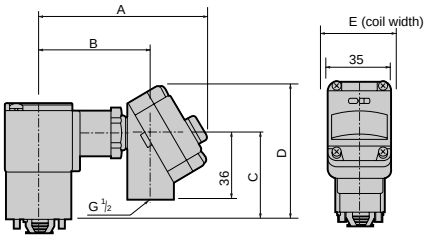
● Grommet lead wire with surge suppressor
GFGG*1-*-*-1 2CS



Model no.	A	B
GFGG2	26.5	22
GFGG3	29.5	28
GFGG4	34	34
GFGG5	37.5	40

● T type terminal box (with light and surge suppressor) (G1/2)
GFGG*1-*-*-1 3T
3RS

● T type terminal box with all wave rectified bridge (with light) (G1/2)
GFGG*1-*-*-1 3TR
3RR



Model no.	A	B	C	D	E
GFGG4	96	64.5	56	82	34
GFGG5	99.5	68	64	90	40

● Manual override (non-locking)
GFGG*1-*-*-** N