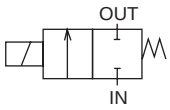
Direct acting 2-port solenoid valve
General purpose

AB21 Series

- NC (open when energized)
- Port size: Rc1/8, Rc1/4

RoHS CAD

JIS symbol



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	AB21
Working fluid	Air/water/kerosene/oil (50 mm^2/s or less)
Working pressure differential MPa	0 to 1.5 (refer to max. working pressure differential in individual specifications)
Max. working pressure MPa	1.5 (≈220 psi, 15 bar)
Proof pressure (water pressure) MPa	3 (≈440 psi, 30 bar)
Fluid temperature °C	-10 (14°F) to 40 (104°F) (no freezing)
Ambient temperature °C	-20 (-4°F) to 50 (122°F)
Thermal class	Class 130 (B)
Atmosphere	Place free of corrosive gas and explosive gas
Valve structure	Direct acting poppet structure
Valve seat leakage cm^3/min(ANR)	0.2 or less
Mounting orientation	Unrestricted

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item / Model No.	Port size	Orifice size (mm)	Max. working pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
			Air		Water/kerosene		Oil (50 mm^2/s)			When holding		When starting		AC	DC	
			AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz		
AB21-01-1	Rc1/8	1.5	1.5	1.0	1.5	1.0	0.9	1.0	100 VAC 50/60 Hz *2 200 VAC 50/60 Hz *2 24 VDC	11	9	15.4	12.6	5.5/4.2	7	0.23 (Aluminum) 0.36 (Copper alloy)
AB21-01-2		2.0	1.0	0.6	1.0	0.6	0.5	0.6								
AB21-01-3		3.0	0.7	0.2	0.4	0.2	0.25	0.2								
AB21-01-5		4.0	0.4	0.1	0.2	0.1	0.1	0.1								
AB21-02-1	Rc1/4	1.5	1.5	1.0	1.5	1.0	0.9	1.0								
AB21-02-2		2.0	1.0	0.6	1.0	0.6	0.5	0.6								
AB21-02-3		3.0	0.7	0.2	0.4	0.2	0.25	0.2								
AB21-02-5		4.0	0.4	0.1	0.2	0.1	0.1	0.1								

Flow characteristics

Model No.	Port size	Orifice size (mm)	Flow characteristics		
			C[dm^3/(s·bar)]	b	Cv
NC (open when energized)					
AB21-01-1	Rc1/8	1.5	0.29	0.51	0.1
AB21-01-2		2.0	0.53	0.55	0.15
AB21-01-3		3.0	1.1	0.52	0.3
AB21-01-5		4.0	1.8	0.35	0.4
AB21-02-1	Rc1/4	1.5	0.29	0.51	0.1
AB21-02-2		2.0	0.53	0.55	0.15
AB21-02-3		3.0	1.1	0.52	0.3
AB21-02-5		4.0	1.8	0.35	0.4

*1 : Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.
*2 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz).

How to order

AB21 - 01 - 1 - A 00B - AC100V

- AB21 — Model No.
- 01 — Ⓐ Port size
- 1 — Ⓑ Orifice size
- A — Ⓒ Body/sealant combination *1 *2 *4
- 00B — Ⓓ Option
- AC100V — Ⓔ Rated voltage *3

Code	Description
Ⓐ Port size	
01	Rc1/8
02	Rc1/4
Ⓑ Orifice size	
1	ø1.5
2	ø2
3	ø3
5	ø4

Ⓒ Body/sealant combination

		Body	Seal	Remarks
Blank	Std.	Aluminum	Nitrile rubber	Air/kerosene/oil
2	Std.	Aluminum	Fluoro rubber	Air/kerosene/oil
A	Option	Copper alloy	Nitrile rubber	Air/water/kerosene/oil
B	Option	Copper alloy	Fluoro rubber	Air/water/kerosene/oil

Refer to Intro Page 39 for reference on material combinations.

Ⓓ Option		
Blank	None	
00B	With mounting plate	

Ⓔ Rated voltage		
AC100V	100 VAC 50/60 Hz, 110 VAC 60 Hz	For other voltages, contact CKD.
AC200V	200 VAC 50/60 Hz, 220 VAC 60 Hz	
DC24V	24 VDC	

[Example of model No.]

AB21-01-1-A00B-AC100V

Model: AB21

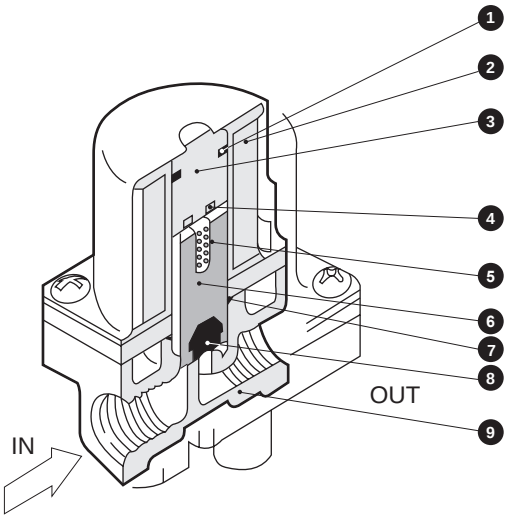
- Ⓐ Port size : Rc1/8
- Ⓑ Orifice size : ø1.5
- Ⓒ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓓ Option : Mounting plate
- Ⓔ Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Precautions for model No. selection

*1 : For Ⓑ 1 (ø1.5 orifice), only Item Ⓒ A/B are available.
*2 : When the fluid is water, select the copper alloy (option code: A or B) body.
*3 : The voltage fluctuation range must be within ±10% of the rated voltage.
*4 : Leave Item Ⓒ blank for standard. However, to select 00B for Item Ⓓ, indicate 0 for Item Ⓒ.

Internal structure and parts list

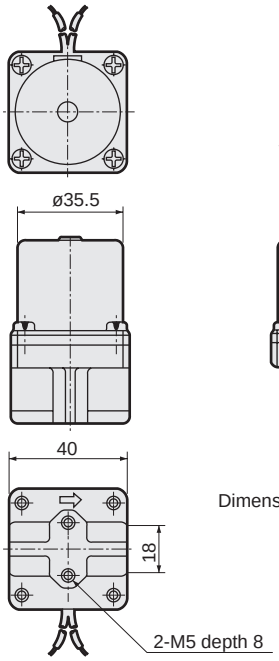
● AB21 Series



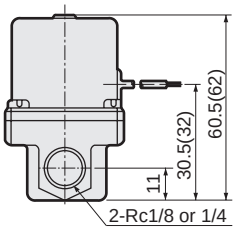
No.	Part name	Material
1	O-ring	Fluoro rubber
2	Coil	-
3	Core assembly	Stainless steel
4	Shading coil	Copper
5	Plunger spring	Stainless steel
6	Plunger	Stainless steel
7	O-ring	Nitrile or fluoro rubber
8	Seal	Nitrile or fluoro rubber
9	Body	Aluminum or copper alloy

Dimensions CAD

● AB21-01/02-1 to 5-*

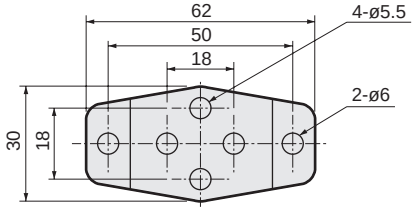


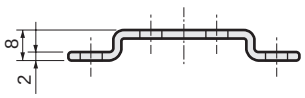
* Lead wire length
250 mm



Dimensions shown in ( ) are for copper alloy body.

● Mounting plate
AB21-01/02-1 to 5-*00B





Mounting plate
No,1
GE-100106

MEMO

Direct acting 2-port solenoid valve, single unit
General purpose

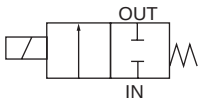
AB31/AB41 Series ● NC (open when energized)
AB42 Series ● NO (closed when energized)

● Port size: Rc1/8 to Rc1/2

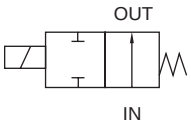
CE Refer to the Ending for details. RoHS CAD

JIS symbol

● AB31/41: NC (open when energized)



● AB42: NO (closed when energized)



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Standard specifications	Optional specifications	
Working fluid	Air/low vacuum [1.33 x 10^2 Pa (abs)]/water/kerosene/oil (50 mm^2/s or less)	Hot water	Steam
Working pressure differential MPa	0 to 5 (refer to max. working pressure differential in individual specifications.)		
Proof pressure (water pressure) MPa	25 (≈3600 psi, 250 bar)		
Fluid temperature (*1) °C	-10 (14°F) to 60 (140°F)	-10 (14°F) to 90 (194°F)	-10 (14°F) to 184 (363.2°F)
Ambient temperature °C	-20 (-4°F) to 60 (140°F)	-20 (-4°F) to 100 (212°F)	
Thermal class	Class 130 (B)	Class 180 (H)	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)		300 or less (air)
Mounting orientation	Unrestricted		
Body/seal material	Copper alloy/nitrile rubber	Copper alloy/EPM rubber	Copper alloy/PTFE

*1: No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item / Model No.	Port size	Orifice size (mm)	Max. working pressure differential (MPa) Air AC	Air DC	Water/hot water/kerosene AC	Water/hot water/kerosene DC	Oil (50 mm^2/s) AC	Oil (50 mm^2/s) DC	Steam AC	Max. working pressure (MPa)	Rated voltage	Apparent power (VA) Holding 50 Hz	Holding 60 Hz	Starting 50 Hz	Starting 60 Hz	Power consump (W) AC 50/60 Hz	DC	Weight (kg)
NC (open when energized)																		
AB31- 01/02 -1	Rc1/8 Rc1/4	1.5	2.5	2.5	2.5	2.5	2.5	2.5	1.0	5 (≈730 psi, 50 bar) (Fluid: Steam For 1)	100 VAC 50/60 Hz *9 200 VAC 50/60 Hz *9 12 VDC 24 VDC 48 VDC 100 VDC	12	10	17	14	5.2/3.8	11 (8.1)*5	0.35
-2		2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.0									
-3		3.0	1.0	0.5	0.7	0.5	0.5	0.5	0.7									
-4		3.5	0.6	0.4	0.5	0.4	0.4	0.4	0.5									
-5		4.0	0.4	0.25	0.3	0.25	0.25	0.25	0.3									
-6		5.0	0.2	0.15	0.15	0.15	0.15	0.15	0.15									
AB41- 02/03 -1	Rc1/4 Rc3/8	1.5	5.0	4.0	4.5	4.0	4.0	4.0	1.0			18	15	29	24	6.7/5.7	11 (10.4)*5 (7)*7	0.43 (Rc1/4) 0.45 (Rc3/8)
-2		2.0	3.0	2.5	2.7	2.5	2.5	2.5	1.0									
-3		3.0	1.5	0.9	1.3	0.9	0.9	0.9	1.0									
-4		3.5	1.2	0.6	0.9	0.6	0.6	0.6	0.9									
-5		4.0	1.0	0.5	0.7	0.5	0.5	0.5	0.7									
-6		5.0	0.6	0.25	0.4	0.25	0.25	0.25	0.4									
-7		7.0	0.25	0.1	0.2	0.1	0.15	0.1	0.2									
AB41- 03/04 -8	Rc3/8 Rc1/2	10.0	0.1	0.05 (0.03) *8	0.1	0.05 (0.03) *8	0.05	0.05 (0.03) *8										0.54
NO (closed when energized)																		
AB42- 02/03 -1	Rc1/4 Rc3/8	1.5	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2 (≈290 psi, 20 bar) (Fluid: Steam For 1)		22	18	35	29	8.7/6.7	15.5 (14)*5	0.50 (Rc1/4) 0.52 (Rc3/8)
-2		2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0									
-3		3.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7									
-4		3.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5									
-5		4.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4									
-6		5.0	0.25	0.25	0.25	0.25	0.25	0.25	0.25									
-7		7.0	0.15	0.15	0.15	0.15	0.15	0.15	0.15									

*1 : The model numbers above are for the basic port size (Rc) and orifice size. Refer to How to order for other combinations (e.g., for steam).
*2 : The port size model No. is 01 for Rc1/8 (6A), 02 for Rc1/4 (8A), 03 for Rc3/8 (10A) and 04 for Rc1/2 (15A).
*3 : Refer to DC column for the max. working pressure differential of coil with diode.
*4 : The voltage fluctuation range must be within ±10% of the rated voltage.
*5 : Power consumption of coil housings 2E/2G/2H.
*6 : When using at low vacuum, vacuum the OUT port side.
*7 : Power consumption of coil housings 6C/6E/6G/6H.
*8 : DC voltage of coil housings 2E/2G/2H, and max. working pressure differential of coil housings 6C/6E/6G/6H.
*9 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Optional specifications (fluid temperature, ambient temperature, valve seat leakage)

Sealant	Fluoro rubber		Ethylene propylene rubber		PTFE	
Coil (thermal class)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature (*1) °C	-10 to 60	-10 to 90	0 to 60 (*3)	0 to 90 (*3)	-10 to 60	-10 to 184
Ambient temperature °C	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)				300 or less (air)	

*1 : No freezing.
*2 : -20 to 80°C when coil housing is HP terminal box with lamp.
*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

Model No.	Port size	Orifice size (mm)	Flow characteristics		
			C[dm^3/(s·bar)]	b	Cv
NC (open when energized)					
AB31-$^{01}_{02}$-1	Rc1/8 Rc1/4	1.5	0.29	0.53	0.1
-2		2.0	0.53	0.52	0.15
-3		3.0	1.1	0.52	0.31
-4		3.5	1.7 [1.5]	0.49 [0.47]	0.42 [0.40]
-5		4.0	2.1 [1.9]	0.48 [0.47]	0.54 [0.48]
-6		5.0	3.0 [2.6]	0.42 [0.38]	0.8 [0.62]
AB41-$^{02}_{03}$-1	Rc1/4 Rc3/8	1.5	0.29	0.53	0.1
-2		2.0	0.53	0.52	0.15
-3		3.0	1.1	0.52	0.31
-4		3.5	1.7 [1.5]	0.49 [0.47]	0.42 [0.40]
-5		4.0	2.1 [1.9]	0.48 [0.47]	0.54 [0.48]
-6		5.0	3.0 [2.6]	0.42 [0.38]	0.8 [0.62]
-7		7.0	4.8 [4.6]	0.29 [0.37]	1.0 [0.82]
AB41-$^{03}_{04}$-8	Rc3/8 Rc1/2	10.0	9.3 [8.1]	0.36 [0.31]	1.88 [1.5]
NO (closed when energized)					
AB42-$^{02}_{03}$-1	Rc1/4 Rc3/8	1.5	0.29	0.53	0.1
-2		2.0	0.53	0.52	0.15
-3		3.0	1.1	0.52	0.31
-4		3.5	1.7 [1.5]	0.49 [0.47]	0.42 [0.40]
-5		4.0	2.1 [1.9]	0.48 [0.47]	0.54 [0.48]
-6		5.0	3.0 [2.6]	0.42 [0.38]	0.8 [0.62]
-7		7.0	4.8 [4.6]	0.29 [0.37]	1.0 [0.82]

*1 : Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.
*2 : Dimensions shown in [ ] are for stainless steel body.

How to order

● NC (open when energized)

AB31 - 02 - 3 - 0 3A A B G S - AC100V

AB41

Model No.

Ⓓ Coil housing Ⓖ Other options Ⓘ Rated voltage

Ⓔ Manual override (locking) Ⓗ With surge suppressor

Ⓕ Mounting plate

Ⓐ Port size

Ⓑ Orifice size

Ⓒ Body/sealant combination

*1
*2
*3
*4
*5
*6
*7

Code	Description	Code	Description	Code	Description	Model No. AB31	AB41	AB41 Low pressure large flow
Ⓐ Port size								
01	Rc1/8	**1G**	G1/8	**1N**	1/8NPT	●		
02	Rc1/4	**2G**	G1/4	**2N**	1/4NPT	●	●	
03	Rc3/8	**3G**	G3/8	**3N**	3/8NPT		●	●
04	Rc1/2	**4G**	G1/2	**4N**	1/2NPT			●
Ⓑ Orifice size								
1	ø 1.5					●	●	
2	ø 2					●	●	
3	ø 3					●	●	
4	ø 3.5					●	●	
5	ø 4					●	●	
6	ø 5					●	●	
7	ø 7						●	
8	ø10							●

Ⓒ Body/sealant combination

		Body	Seal	Treatment	Remarks			
Blank	Std.	Copper alloy or bronze	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●	●
B	Option		Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●	●
C			PTFE		Steam (up to 184°C *2)	●	●	
V			Fluoro rubber	Vacuum inspection	Low vacuum	●	●	●
D		Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●	●
E			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●	●
F			PTFE		Steam (up to 184°C *2)	●	●	
W			Fluoro rubber	Vacuum inspection	Low vacuum	●	●	●
H		Copper alloy	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)	●	●	●
J			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●	●
K			PTFE		Steam (up to 184°C *2)	●	●	
P			Ethylene propylene rubber		Hot water (up to 90°C *2)	●	●	●
L		Stainless steel	Nitrile rubber		Air/water/low vacuum/kerosene (up to 60°C)	●	●	●
M			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●	●
N			PTFE		Steam (up to 184°C *2)	●	●	
R			Ethylene propylene rubber		Hot water (up to 90°C *2)	●	●	●

Refer to Intro Page 39 for reference on material combinations.

Ⓓ Coil housing

Description					
Blank	Std.	Grommet lead wire		●	●	●
2E	Option	With DIN terminal box	(G1/2)	●	●	●
2G		With DIN terminal box	(Pg11)	●	●	●
2H		DIN terminal box with small lamp	(Pg11)	●	●	●
3A		Open frame	Lead wire	●	●	●
3M			With HP terminal box (G1/2)	●	●	●
3N			HP terminal box with lamp (G1/2)	●	●	●
3I			HP terminal box (IP65 or equivalent) (G1/2)	●	●	●
3J			HP terminal box with lamp (IP65 or equivalent) (G1/2)	●	●	●
4A		Open frame (Thermal class 180 (H))	Lead wire	●	●	●
4M			With HP terminal box (G1/2)	●	●	●
4N			HP terminal box with lamp (G1/2)	●	●	●
5A		Open frame (diode integrated)	Lead wire	●	●	●
5M			With HP terminal box (G1/2)	●	●	●
5N			HP terminal box with lamp (G1/2)	●	●	●
5I			HP terminal box (IP65 or equivalent) (G1/2)	●	●	●
5J			HP terminal box with lamp (IP65 or equivalent) (G1/2)	●	●	●
6C		Grommet lead wire	7W		●	●
6E		With DIN terminal box	(G1/2) 7W		●	●
6G		With DIN terminal box	(Pg11) 7W		●	●
6H		DIN terminal box with small lamp	(Pg11) 7W		●	●

The combinations indicated with ● in the above table are available.

[Example of model No. 1]

AB41-02-3-000AS-AC100V

Model: AB41

Ⓐ Port size : Rc1/4
Ⓑ Orifice size : ø3
Ⓒ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
Ⓓ Coil housing : Grommet lead wire
Ⓔ Manual override (locking) : With
Ⓕ /Ⓖ /Ⓗ : None
Ⓗ Surge suppressor : With surge suppressor
Ⓘ Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Precautions for model No. selection

Notes for Ⓒ

*1 : Leave blank for standard. However, to select options in Ⓓ, Ⓔ, Ⓕ, Ⓖ or Ⓗ, indicate 0 for Item Ⓒ.
*2 : When Item Ⓓ 4A/4M/4N is selected.
*3 : The body for low pressure large flow rate AB41-$^{03}_{04}$-8 is bronze (standard) or stainless steel (optional).
*4 : For option codes V and W, vacuum is inspected at "leakage rate: 1.33 x 10^{-6} Pa·m^3/s or less".
*5 : When using low pressure large flow rate AB41-$^{03}_{04}$-8 with Item Ⓒ V/W, DC voltage type and Item Ⓓ 5A/5M/5N/5I/5J are not available.
*6 : The ethylene propylene rubber seal combination (Item Ⓒ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)
*7 : When Item Ⓒ is C, F, K, P, N or R, the Item Ⓓ coil housings 6C, 6E, 6G and 6H cannot be selected.

Notes for Ⓓ

*8 : Leave blank for the standard coil housing. However, to select options in Ⓔ, Ⓕ, Ⓖ or Ⓗ, indicate 00 for Item Ⓓ.
*9 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
*10 : A DC coil for steam is available for AB41. Contact CKD for more information.
*11 : For 6C/6E/6G/6H, only AB41 is available.
*12 : The coil housings 6C, 6E and 6G are 12 VDC and 24 VDC dedicated. 6H is 24 VDC dedicated.

Code	Description		Model No. AB31	AB41	AB41 Low pressure large flow
Ⓔ Manual override (locking)					
Blank	None		●	●	●
A	With manual override		●	●	
Ⓕ Mounting plate					
Blank	None		●	●	●
B	With mounting plate		●	●	●
Ⓖ Cable gland/conduit		For combinations, refer to the compatible coil housings below.			
Blank	None		●	●	●
D	A-15a	Marine cable gland	●	●	●
E	A-15b	Marine cable gland	●	●	●
F	A-15c	Marine cable gland	●	●	●
G	CTC19	Conduit piping	●	●	●
H	G1/2	Conduit piping	●	●	●
Ⓗ For surge suppressor combinations, refer to the compatible coil housings below.					
Blank	Without surge suppressor		●	●	●
S	With surge suppressor		●	●	●
Ⓘ Rated voltage					
Refer to the table on the right for the voltage.			●	●	●

Ⓘ Rated voltage	
Blank	100 VAC, 200 VAC
2E	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
2G	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
2H	100 VAC, 200 VAC, 24 VDC
3A	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3M	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3N	100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J	100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A	100 VAC, 200 VAC
4M	100 VAC, 200 VAC
4N	100 VAC, 200 VAC
5A	100 VAC, 200 VAC
5M	100 VAC, 200 VAC
5N	100 VAC, 200 VAC
5I	100 VAC, 200 VAC
5J	100 VAC, 200 VAC
6C	12 VDC, 24 VDC
6E	12 VDC, 24 VDC
6G	12 VDC, 24 VDC
6H	24 VDC

● Compatible coil housing

		Blank	2E	2G	2H	3A	3M	3N	3I	3J	4A	4M	4N	5A	5M	5N	5I	5J	6C	6E	6G	6H
Ⓖ Cable gland/conduit																						
D	A-15a						●	●	●	●		●	●		●	●	●	●				
E	A-15b						●	●	●	●		●	●		●	●	●	●				
F	A-15c						●	●	●	●		●	●		●	●	●	●				
G	CTC19					●					●			●								
H	G1/2				●	●					●			●								●
Ⓗ For surge suppressor compatible coil housings, refer to page 156.																						
S	With surge suppressor	●	●	●	●	●	●	●	●	●	●								●	●	●	

⚠ Precautions for model No. selection

Notes for Ⓔ to Ⓗ

*13: Manual override (Item Ⓔ A) cannot be mounted on the low pressure large flow rate AB41-$^{03}_{04}$-8.

*14: When Item Ⓒ is C, F, K, N, V or W, the manual override (Item Ⓔ A) is not available.

*15: For Ⓖ, select an option from D, E, F, G and H.

*16: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.

*17: As standard, the surge suppressor is built into the the coil with diode and the 24 VDC coil (Item Ⓓ 2H/6H), so the surge suppressor code S cannot be selected.

*18: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that tropicalization is not available when the manual override option (A) and the coil option 6C/6E/6G/6H are selected.

Notes for Ⓘ

*19: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item Ⓓ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.

*20: For voltages other than above, contact CKD.

*21: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

Blank 6C		● Grommet lead wire 300 mm
2E 2G 2H 6E 6G 6H		● DIN terminal box
3A 4A 5A		● Open frame Lead wire 300 mm ● 4A (Thermal class 180 (H)) ● 5A (diode integrated)
3M 3N 4M 4N 5M 5N		● Open frame HP terminal box ● 4M, 4 N (Thermal class 180 (H)) ● 5M, 5N (diode integrated)
3I 3J 5I 5J		● Open frame HP terminal box (IP65 or equivalent) ● 5I, 5J (diode integrated)
G H		● Conduit ● G (CTC19) ● H (G1/2)

Refer to page 148 for coil selection.

How to order

● NO (closed when energized)

AB42 - 02 - 4 - L 3A A B □ □ - AC100V

- AB42: Model No.
- 02: Ⓐ Port size
- 4: Ⓑ Orifice size
- L: Ⓒ Body/sealant combination *1 *2 *3 *4
- 3A: Ⓓ Coil housing
- A: Ⓔ Manual override (locking)
- B: Ⓕ Mounting plate
- □: Ⓖ Other options
- □: Ⓗ With surge suppressor
- AC100V: Ⓘ Rated voltage

Code	Description	Code	Description	Code	Description
Ⓐ Port size					
02	Rc1/4	**2G**	G1/4	**2N**	1/4NPT
03	Rc3/8	**3G**	G3/8	**3N**	3/8NPT

Ⓑ Orifice size	
1	ø1.5
2	ø2
3	ø3
4	ø3.5
5	ø4
6	ø5
7	ø7

Ⓒ Body/sealant combination

		Body	Seal	Treatment	Remarks
Blank	Std.	Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)
B			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)
C			PTFE		Steam (up to 184°C *2)
V			Fluoro rubber	Vacuum inspection	Low vacuum
D		Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)
E			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)
F			PTFE		Steam (up to 184°C *2)
W			Fluoro rubber	Vacuum inspection	Low vacuum
H	Option	Copper alloy	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)
J			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)
K			PTFE		Steam (up to 184°C *2)
P			Ethylene propylene rubber		Hot water (up to 90°C *2)
L		Stainless steel	Nitrile rubber		Air/water/low vacuum/kerosene (up to 60°C)
M			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)
N			PTFE		Steam (up to 184°C *2)
R			Ethylene propylene rubber		Hot water (up to 90°C *2)

Refer to Intro Page 39 for reference on material combinations.

Ⓓ to Ⓘ

Refer to page 159 for details on the coil housing, other options and voltage, etc.

[Example of model No. 1]
AB42-02-1-AC100V

Model: AB42
- Ⓐ Port size : Rc1/4
- Ⓑ Orifice size : ø1.5
- Ⓒ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓓ Coil housing : Grommet lead wire
- Ⓔ to Ⓗ : None
- Ⓘ Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

[Example of model No. 2]
AB42-03-6-000AS-AC100V

Model: AB42
- Ⓐ Port size : Rc3/8
- Ⓑ Orifice size : ø5
- Ⓒ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓓ Coil housing : Grommet lead wire
- Ⓔ Manual override (locking) : Selected
- Ⓕ/Ⓖ : None
- Ⓗ Surge suppressor : With surge suppressor
- Ⓘ Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Precautions for model No. selection

Notes for Ⓒ

*1 : Leave blank for standard. However, to select options in Ⓓ,Ⓔ,Ⓕ,Ⓖ or Ⓗ, indicate 0 for Item Ⓒ.
*2 : When Item Ⓓ 4A/4M/4N is selected.
*3 : For option codes V and W, vacuum is inspected at "leakage rate: 1.33 x 10^{-6} Pa·m^3/s or less".
*4 : The ethylene propylene rubber seal combination (Item Ⓒ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)

For Items Ⓓ to Ⓘ, the combinations indicated with codes are available.
Note that if options for Items Ⓔ to Ⓗ are not required, they should be left blank.

Ⓓ Coil housing				Ⓔ	Ⓕ	Ⓖ Other options					Ⓗ	Ⓘ Rated voltage
Description				Manual override (Locking)	Mounting plate	Cable gland (marine cable gland)			Conduit (conduit piping)		With surge suppressor	Description
						A-15a	A-15b	A-15c	CTC19	G1/2		
Blank	Std.	Grommet lead wire		A	B						S	100 VAC, 200 VAC
2E		With DIN terminal box	(G1/2)									100 VAC, 200 VAC
2G		With DIN terminal box	(Pg11)									12 VDC, 24 VDC, 48 VDC, 100 VDC
2H		DIN terminal box with small lamp	(Pg11)							H		100 VAC, 200 VAC, 24 VDC
3A	Option	Open frame	Lead wire (IP 65 or equiv.)	A	B				G	H	S	100 VAC, 200 VAC
3M			With HP terminal box (G1/2)			D	E	F				12 VDC, 24 VDC, 48 VDC, 100 VDC
3N			HP terminal box with lamp (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I			With HP terminal box(IP 65 or equiv.)(G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J			HP terminal box with lamp(IP 65 or equiv.) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A		Open frame (Thermal class 180 (H))	Lead wire	A	B				G	H	S	100 VAC, 200 VAC
4M			With HP terminal box (G1/2)			D	E	F				
4N			HP terminal box with lamp (G1/2)									
5A		Open frame (diode integrated)	Lead wire (IP 65 or equiv.)	A	B				G	H		100 VAC, 200 VAC
5M			With HP terminal box (G1/2)			D	E	F				
5N			HP terminal box with lamp (G1/2)									
5I			With HP terminal box(IP 65 or equiv.)(G1/2)									
5J			HP terminal box with lamp(IP 65 or equiv.) (G1/2)									

⚠ Refer to the following cautions for Items Ⓓ to Ⓘ.

Blank

● Grommet lead wire 300 mm

2E 2G 2H

● DIN terminal box

3A 4A 5A

● Open frame
Lead wire 300 mm
● 4A(Thermal class 180(H))
● 5A(diode integrated)

3M 3 N 4M 4 N 5M 5 N

● Open frame HP terminal box
● 4M, 4 N(Thermal class 180(H))
● 5M, 5N(diode integrated)

3I 3J 5I 5J

● Open frame HP terminal box
(IP65 or equivalent)
● 5I, 5J(diode integrated)

G H

● Conduit
● G (CTC19)
● H (G1/2)

Refer to page 148 for coil selection.

⚠ Precautions for model No. selection

Notes for Ⓓ

*5 : Leave blank for the standard coil housing. However, to select options in Ⓔ, Ⓕ, Ⓖ or Ⓗ, indicate 00 for Item Ⓓ.
*6 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.

Notes for Ⓔ to Ⓗ

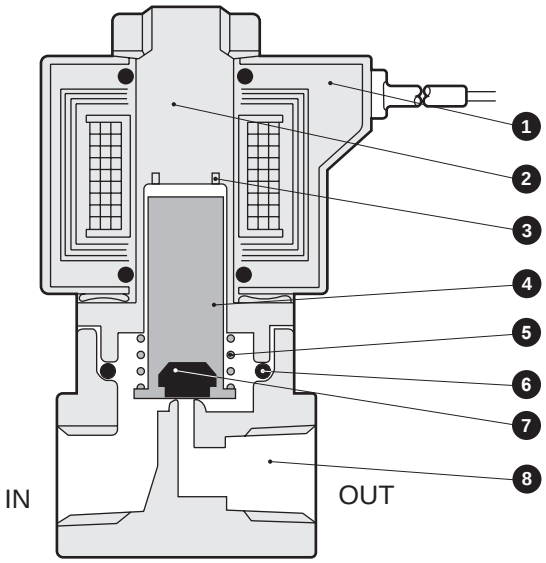
*7 : When Item Ⓒ is C, F, K, N, V or W, the manual override (Item Ⓔ A) is not available.
*8 : For Item Ⓖ, select an option from D, E, F, G and H.
*9 : The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*10: As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item Ⓓ 2H), so the surge suppressor S cannot be selected.
*11: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information. Note that tropicalization is not available when the manual override option (A) is selected.

Notes for Ⓘ

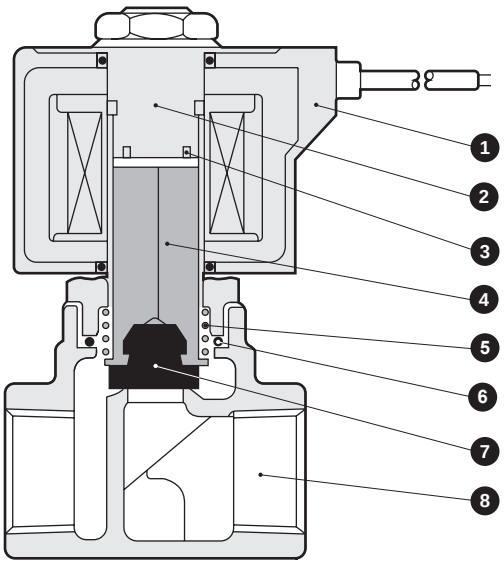
*13: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item Ⓓ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
*14: For voltages other than above, contact CKD.
*15: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

Internal structure and parts list

● AB31 Series
● AB41-02/03-1 to 7



● AB41-03/04-8

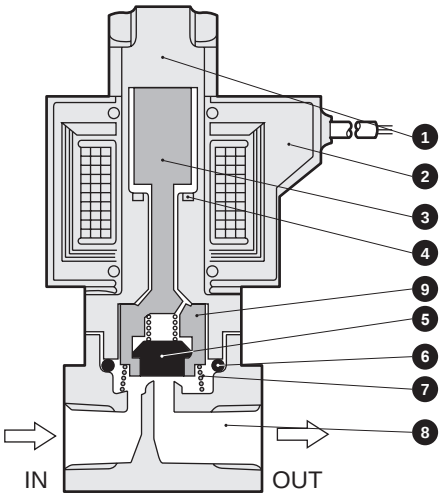


No.	Part name	Material		No.	Part name	Material	
1	Coil	-	-	5	Plunger spring	SUS304	Stainless steel
2	Core assembly	SUS405 or equivalent/316L/403 *1	Stainless steel	6	O-ring	NBR (FKM/EPDM/PTFE) (Size: AS568-019)	(NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin)
3	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)	7	Seal	NBR (FKM/EPDM/PTFE)	
4	Plunger	SUS405 or equiv.	Stainless steel	8	Body	C3771 or CAC408*3 (SUS303)	Copper alloy or bronze *3 (stainless steel)

*1 : When the body/sealant combination code is other than blank and H, or the coil housing code is 6C, 6E, 6G or 6H, the material is SUS405 or equivalent/SUS316L/SUS430.
*2 : ( ) shows options. However, AB41-$^{03}_{04}$-8 PTFE is not available.
*3 : CAC408 for AB41-$^{03}_{04}$-8 (bronze)

Internal structure and parts list

● AB42



No.	Part name	Material		No.	Part name	Material	
1	Core assembly	SUS405 or equiv./316L/304	Stainless steel	7	Spring	SUS304	Stainless steel
2	Coil	-	-	8	Body	C3771(SUS303)	Copper alloy (stainless steel)
3	Plunger	SUS405 or equiv.	Stainless steel	9	NO Valve	POM (PPS/SUS303/PFA)	Body/sealant combination When Blank/O/D/H/L/V/W: Polyacetal resin When B/E/J/M/P/R: Polyphenylene sulfide resin When C/F/K/N: Stainless steel/perfluoroalkoxy resin
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)				
5	Seal	NBR (FKM/EPDM/PTFE)	NBR: nitrile rubber (EPDM: ethylene propylene rubber) (FKM: fluoro rubber) (PTFE: tetrafluoroethylene resin)				
6	O-ring	NBR (FKM/EPDM/PTFE) (Size: AS568-019)	NBR: nitrile rubber (EPDM: ethylene propylene rubber) (FKM: fluoro rubber) (PTFE: tetrafluoroethylene resin)				

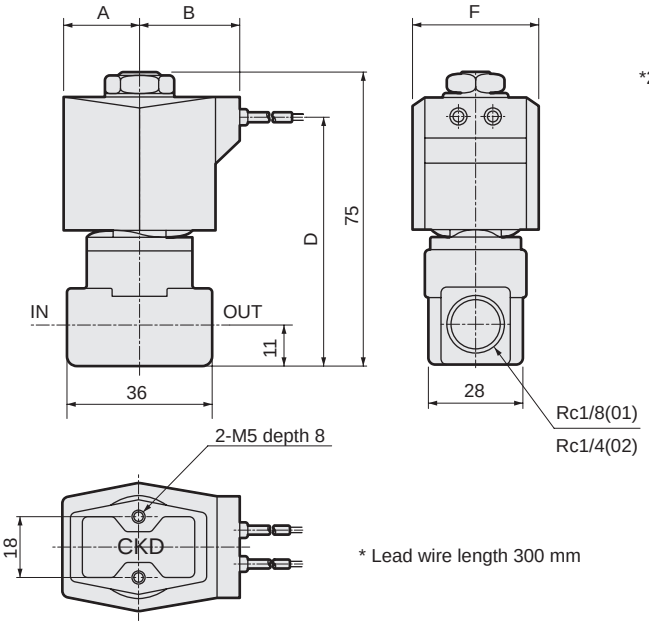
( ) shows options.

Dimensions: AB31 Series

● Grommet lead wire
AB31-01/02-1 to 6-* Blank

*1 : The AB31 Series is an NC 2-port solenoid valve. The body and sealant materials are combined according to the working fluid, and the orifice and pressure are selected according to the relation of the required flow rate and pressure. The coil specifications are determined according to the fluid temperature and ambient conditions, allowing the optimum valve to be selected.

*2 : The dimensions are the same for port sizes of G and NPT threads.



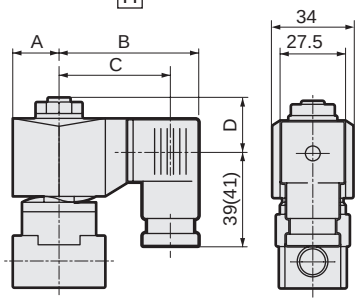
* Lead wire length 300 mm

Model No.	A	B	D	F
AB31-01-1 to 6-AC -02-1 to 6-AC	20	27	63	34

Optional dimensions: AB31 Series

* Refer to the dimensions of grommet lead wire on page 162 for common dimensions.

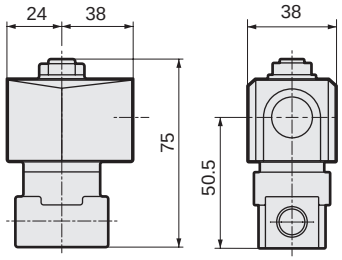
● With DIN terminal box
AB31-01/02-1 to 6-* 2 E G H



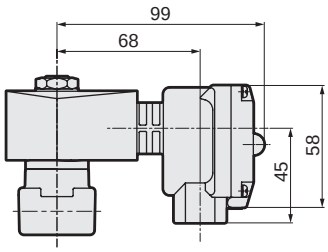
Dimensions shown in ( ) are for G1/2.

Voltage	A	B	C	D
AC (2E/2G/2H)	20	62	50.5 (50)	20.5
DC (2E/2G/2H)	21	63.5	52 (51.5)	20.5

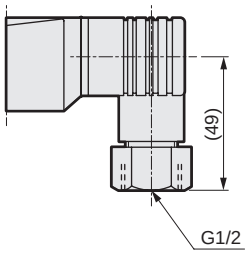
● Open frame lead wire
AB31-01/02-1 to 6-* 3A 4A 5A



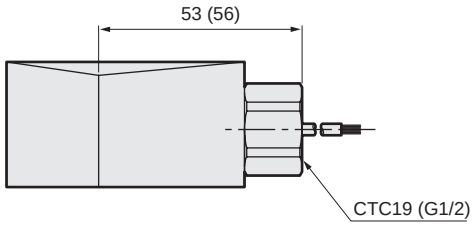
● Open frame + HP terminal box
AB31-01/02-1 to 6-* 3 5 M N I J / 4M 4N



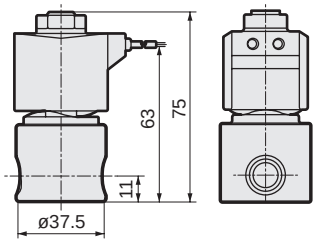
● DIN terminal box with small lamp + conduit (G1/2)
AB31-02/03-1 to 6-* 2H H



● Open frame + conduit
AB31-01/02-1 to 6-* 3A 4A 5A G H



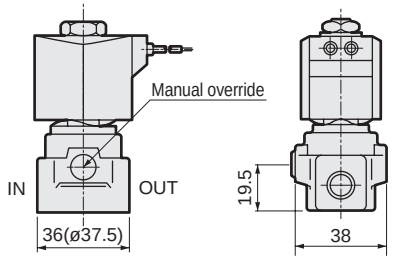
● Stainless steel body + grommet lead wire
AB31-01/02-1 to 6- D/E/F/R/W/L/M/N



Dimensions shown in ( ) are for G1/2.

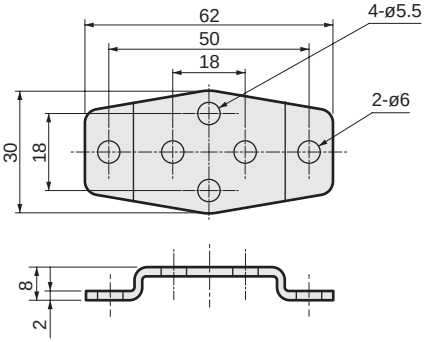
● Manual override (locking)
AB31-01/02-1 to 6-*** A

The figure shows copper alloy body.



Dimensions shown in ( ) are for stainless steel body.

● Mounting plate
AB31-01/02-1 to 6-*** B

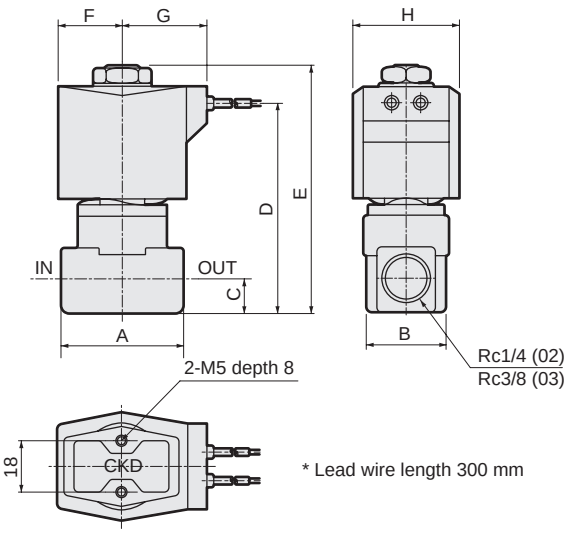


Mounting plate model	Compatibility
AB3-GE-100106-MOUNT-PLATE-KIT (Mounting plate No.1)	● All of AB31 Series

* Material: Steel/Zinc plated

Dimensions: AB41 Series

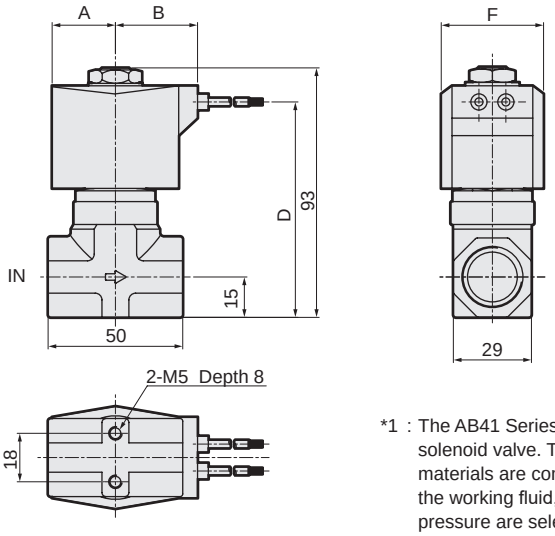
● Grommet lead wire
AB41-02/03-1 to 7-* Blank / 6C



* Lead wire length 300 mm

Model No.	A	B	C	D	E	F	G	H
AB41-02-1 to 6-AC	36	28	11	68	80.5	23.5	30.5	38
AB41-02-7-AC -03-1 to 7-AC	40	28	12	71	83.5	23.5	30.5	38
AB41-02-1 to 6-6C-DC	36	28	11	68	80.5	24	30.5	39
AB41-02-7-6C-DC -03-1 to 7-6C-DC	40	28	12	71	83.5	24	30.5	39

● Grommet lead wire
AB41-03/04-8-* Blank / 6C



Model No.	A	B	D	F
AB41-03-8-AC -04-8-AC	23.5	30.5	80	38
AB41-03-8-6C-DC -04-8-6C-DC	24	30.5	80	39

*1 : The AB41 Series is an NC 2-port solenoid valve. The body and sealant materials are combined according to the working fluid, and the orifice and pressure are selected according to the relation of the required flow rate and pressure. The coil specifications are determined according to the fluid temperature and ambient conditions, allowing the optimum valve to be selected.

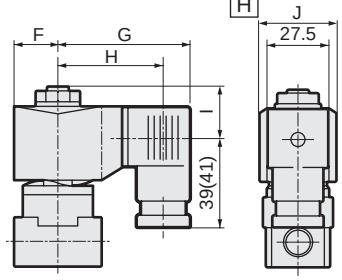
*2 : The dimensions are the same for port sizes of G and NPT threads.

Optional dimensions: AB41 Series

CAD

* Refer to the dimensions of grommet lead wire on page 164 for common dimensions.

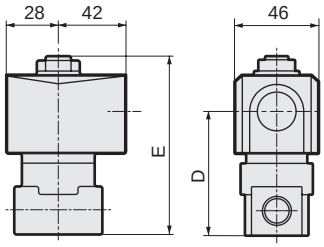
● With DIN terminal box
AB41-02/03/04-1 to 8-* 2 6 E G H



Dimensions shown in ( ) are for G1/2.

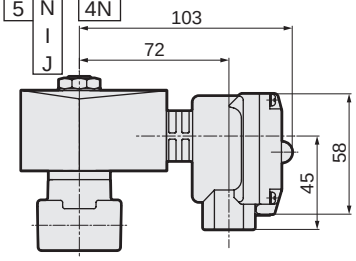
Voltage	F	G	H	I	J
AC (2E/2G/2H)	23.5	65.5	54 (53.5)	22	38
DC (2E/2G/2H)	23.5	66	54.5 (54)	22	38
DC (6E/6G/6H)	24	68	56.5 (56)	22	39

● Open frame lead wire
AB41-02/03/04-1 to 8-* 3A 4A 5A

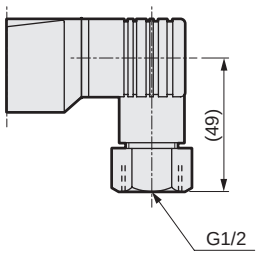


Model No.	D	E
AB41-02-1 to 6-*□A	52.0	80.5
AB41-02-7-*□A -03-1 to 7-*□A	55.0	83.5
AB41-03/04-8-*□A	64	93

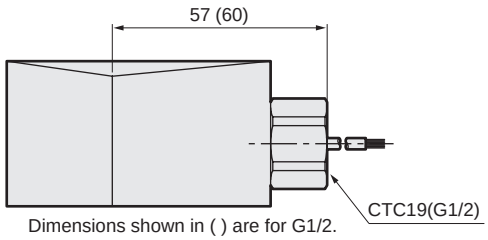
● Open frame + HP terminal box
AB41-02/03/04-1 to 8-* 3 5 M N I J · 4M 4N



● DIN terminal box with small lamp + conduit (G1/2)
AB41-02/03/04-1 to 8-* 2H H

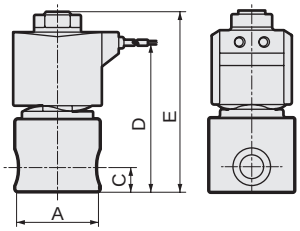


● Open frame + conduit
AB41-02/03/04-1 to 8-* 3A 4A 5A G H



Dimensions shown in ( ) are for G1/2.

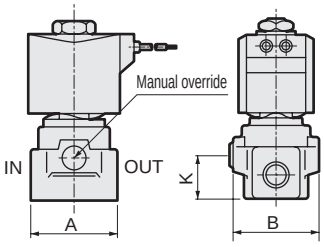
● Stainless steel body + grommet lead wire
AB41-02/03/04-1 to 8- D/F/R/W/L/M/N/E



Model No.	A	C	D	E
AB41-02-1 to 6-AC	ø37.5	11	68	80.5
AB41-02-7-AC -03-1 to 7-AC	ø45.0	12	71	83.5
AB41-03-8-AC -04-8-AC	50*1	15	80	93

*1: The max. dimension is ø54.

● Manual override (locking)
AB41-02/03-1 to 7-*** A
The figure shows copper alloy body.



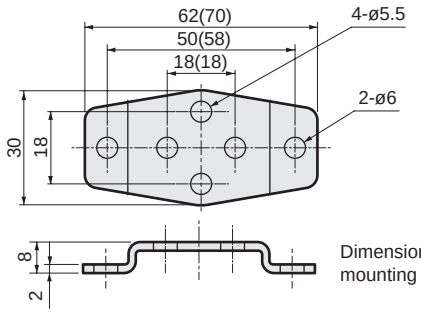
Note: The manual override is not supplied with AB41-03/04-8.

Model No.	A	B	K
AB41-02-1 to 6-***A	36(ø37.5)	38	19.5
AB41-02-7-***A -03-1 to 7-***A	40(ø45.0)	40	22.5

Dimensions shown in ( ) are for stainless steel body.

Optional dimensions: AB41 Series

● Mounting plate
AB41-02/03/04-1 to 8-*** B



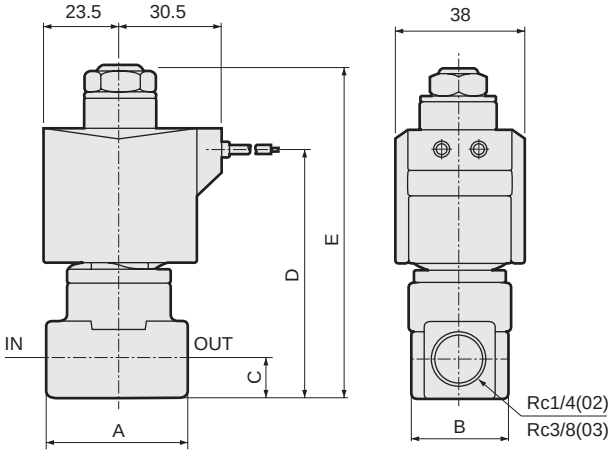
Dimensions shown in ( ) are for mounting plate No. 2.

Mounting plate model	Compatibility
AB4-GE-100106-MOUNT-PLATE-KIT (Mounting plate No.1)	● AB41-02/03-1 to 7 Series ● Stainless steel body AB41-02-1 to 6-D/E/F/L/M/N/R/W
AB4-GE-100159-MOUNT-PLATE-KIT (Mounting plate No.2)	● AB41-03/04-8 Series ● Stainless steel body AB41-02-7-D/E/F/L/M/N/R/W AB41-03-1 to 7-D/E/F/L/M/N/R/W

* Material: Steel/Zinc plated

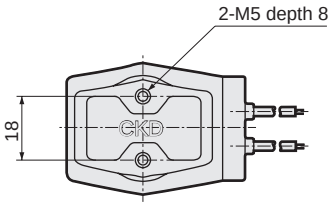
Dimensions: AB42 Series

● Grommet lead wire
AB42-02/03-1 to 7



[Reference] Normally-open direct acting 2-port valve is open when not energized and closed when energized. This structure is suitable for use in the open state for long periods.

*1 : The dimensions are the same for port sizes of G and NPT threads.



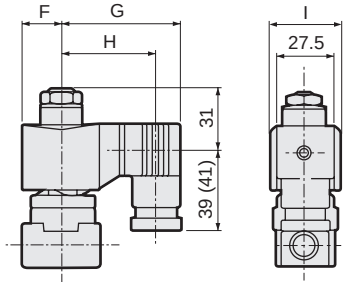
* Lead wire length 300 mm

Model No.	A	B	C	D	E
AB42-02-1 to 6	36	28	11	72	94
AB42-02-7	40	28	12	75	97
AB42-03-1 to 7	40	28	12	75	97

Optional dimensions: AB42 Series

* Refer to the dimensions of grommet lead wire above for common dimensions.

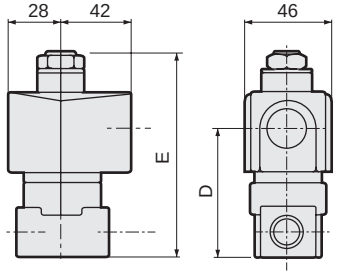
● With DIN terminal box
AB42-02/03-1 to 7-* 2E 2G 2H



Dimensions shown in ( ) are for G1/2.

Voltage	F	G	H	I
AC	23.5	65.5	54(53.5)	38
DC	28	72	60.5(60)	46

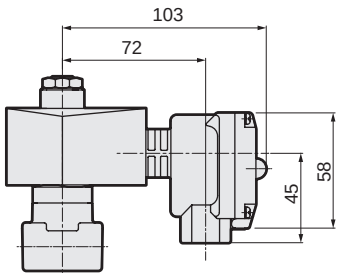
● Open frame lead wire
AB42-02/03-1 to 7-* 3A 4A 5A



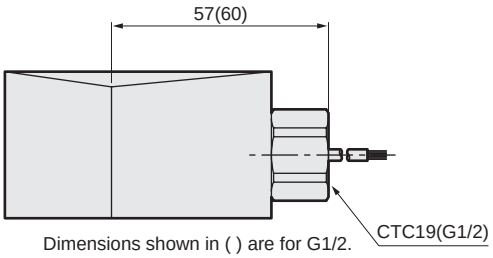
Model No.	D	E
AB42-02-1 to 6	56	94
AB42-02-7	59	97
AB42-03-1 to 7	59	97

Optional dimensions: AB42 Series

● Open frame + HP terminal box
AB42-02/03-1 to 7-* [3 5] [M N I J] · [4M 4N]

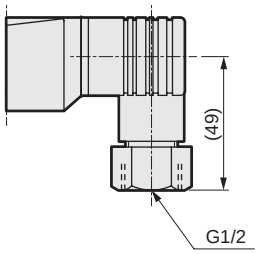


● Open frame + conduit
AB42-02/03-1 to 7-* [3A 4A 5A] [G H]

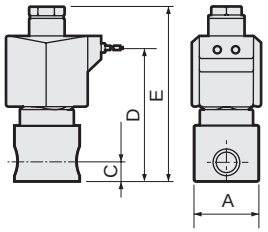


Dimensions shown in ( ) are for G1/2.

● DIN terminal box with small lamp + conduit (G1/2)
AB42-02/03-1 to 7-* [2H] [H]

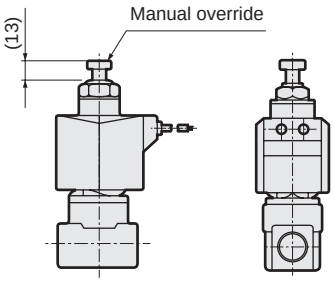


● Stainless steel body + grommet lead wire
AB42-02/03-1 to 7- [D/E/F/R/W/L/M/N]

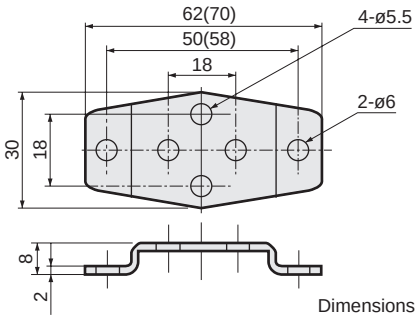


Model No.	A	C	D	E
AB42-02-1 to 6	ø37.5	11	72	94
AB42-02-7	ø45.0	12	75	97
AB42-03-1 to 7	ø45.0	12	75	97

● Manual override (locking)
AB42-02/03-1 to 7-*** [A]



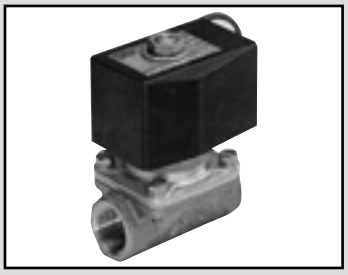
● Mounting plate
AB42-02/03-1 to 7-*** [B]



Dimensions shown in ( ) are for mounting plate No. 2.

Mounting plate model	Compatibility
AB4-GE-100106-MOUNT-PLATE-KIT (Mounting plate No.1)	● AB42-02/03-1 to 7 Series ● Stainless steel body AB42-02-1 to 6-[D/E/F/L/M/N/R/W]
AB4-GE-100159-MOUNT-PLATE-KIT (Mounting plate No.2)	● Stainless steel body AB42-02-7-[D/E/F/L/M/N/R/W] AB42-03-1 to 7-[D/E/F/L/M/N/R/W]

* Material: Stee/Zinc plated



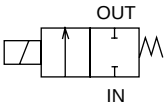
Large bore size direct acting 2-port solenoid valve
General purpose

AB71 Series

- NC (open when energized)
- Port size: Rc1/2, Rc3/4, Rc1

RoHS CAD

JIS symbol



Specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

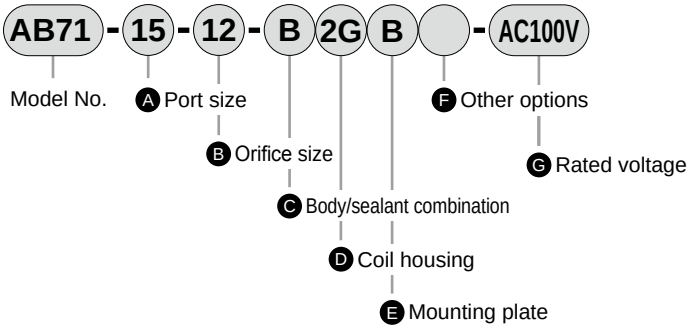
Item		AB71-15-12	AB71-20-15	AB71-25-18
Working fluid		Air/water/kerosene/oil (20 mm^2/s)		
Working pressure differential MPa	Air	AC:0 to 0.1, DC:0 to 0.08	AC:0 to 0.07, DC:0 to 0.04	AC:0 to 0.04, DC:0 to 0.03
	Fluids	AC:0 to 0.08, DC:0 to 0.08	AC:0 to 0.05, DC:0 to 0.04	AC:0 to 0.03, DC:0 to 0.03
Proof pressure (water pressure) MPa		1 (≈150 psi, 10 bar)		
Fluid viscosity mm^2/s		20 or less		
Fluid temperature °C		-5 (23°F) to 60 (140°F) (no freezing)		
Ambient temperature °C		-10 (14°F) to 60 (140°F)		
Valve seat leakage cm^3/min(ANR)		0.2 or less (air)		
Port size		Rc1/2	Rc3/4	Rc1
Orifice size mm		12	15	18
Mounting orientation		Limited to the range of vertical direction with the coil on top to horizontal direction.		
Weight kg		1.0	1.2	1.6
Electrical specifications				
Rated voltage		100 VAC50/60 Hz, 200 VAC50/60 Hz, 110 VAC60 Hz, 220 VAC60 Hz, 12 VDC, 24 VDC, 48 VDC, 100 VDC		
Apparent power VA	When holding (50/60 Hz)	32/26		
	When starting (50/60 Hz)	123/106		
Power consumption W		AC:13/11(50/60 Hz), DC:20		

Flow characteristics

Model No.	Port size	Orifice size (mm)	Flow characteristics			
			C[$dm^3/(s\cdot bar)$]	b	Cv	S(mm^2)
AB71-15-12	Rc1/2	12	15	0.21	2.8	-
AB71-20-15	Rc3/4	15	-	-	4.3	106
AB71-25-18	Rc1	18	-	-	6.3	148

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

How to order



Code	Description
A Port size	
15	Rc1/2
20	Rc3/4
25	Rc1

B Orifice size	
12	ø12 (AB71-15 [port size Rc1/2] only)
15	ø15 (AB71-20 [port size Rc3/4] only)
18	ø18 (AB71-25 [port size Rc1] only)

C Body/sealant combination

	Body	Body	Seal	Treatment
B	Bronze	Copper alloy	Fluoro rubber	-
J	Bronze	Copper alloy	Fluoro rubber	Oil-prohibited

[Example of model No.]

AB71-15-12-B2EB-AC100V

Model: AB71

- A Port size : Rc1/2
- B Orifice size : ø12
- C Body/sealant combination : Body - bronze, stuffing - copper alloy, seal - fluoro rubber
- D Coil housing : With DIN terminal box (G1/2)
- E Mounting plate : With
- F Other options : None
- G Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

D Coil housing				E	F Other options					G Rated voltage
Description				Mounting plate	Cable gland (marine cable gland)			Conduit (conduit piping)		Description
					A-15a	A-15b	A-15c	CTC19	G1/2	
2C	Std.	Grommet lead wire		**B**						100 VAC, 200 VAC
2E	Option	With DIN terminal box (G1/2)		**B**						100 VAC, 200 VAC
2G	Option	With DIN terminal box (Pg11)		**B**						100 VAC, 200 VAC
2H	Option	DIN terminal box with small lamp (Pg11)		**B**					**H**	100 VAC, 200 VAC
3A	Option	Open Frame	Lead wire (IP65 or equivalent)	**B**				**G**	**H**	100 VAC, 200 VAC
3M	Option	Open Frame	With HP terminal box (G1/2)	**B**	**D**	**E**	**F**			12 VDC, 24 VDC, 48 VDC, 100 VDC
3N	Option	Open Frame	HP terminal box with lamp (G1/2)	**B**	**D**	**E**	**F**			100 VAC, 200 VAC, 24 VDC, 100 VDC
5A	Option	Open Frame (diode integrated)	Lead wire (IP65 or equivalent)	**B**				**G**	**H**	100 VAC, 200 VAC
5M	Option	Open Frame (diode integrated)	With HP terminal box (G1/2)	**B**	**D**	**E**	**F**			100 VAC, 200 VAC
5N	Option	Open Frame (diode integrated)	HP terminal box with lamp (G1/2)	**B**	**D**	**E**	**F**			100 VAC, 200 VAC

For Items Ⓓ to Ⓖ, the combinations indicated with codes are available.
Note that if options for Items Ⓔ and Ⓕ are not required, they should be left blank.

⚠ Precautions for model No. selection

Notes for C

*1 : Refer to Intro Page 39 for reference on material combinations.

Notes for D

*2 : Refer to page 148 for coil selection.
*3 : Coils for 5A/5M/5N have a diode to convert AC to DC voltage.
*4 : When the fluid is air, 5A type is recommended.
*5 : For availability of coil of thermal class H, contact CKD.

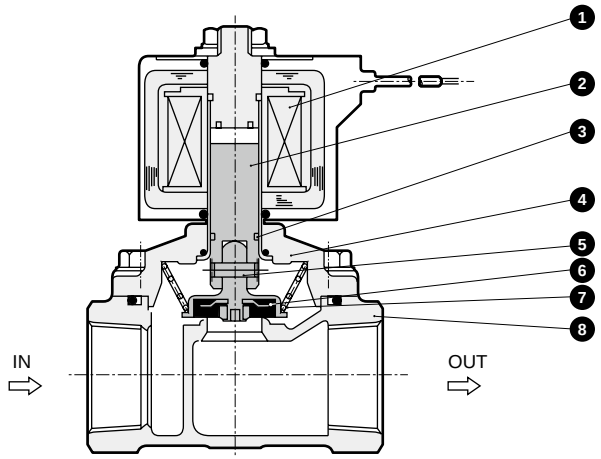
Notes for F

*6 : For Item Ⓕ, select an option from D, E, F, G and H.

Notes for G

*7 : 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, Ⓓ 5A/5K/5H coils can be used with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
*8 : For voltages other than above, contact CKD.
*9 : The lead wire is available in 300 mm length (standard) and 500 mm length. Contact CKD for more information.

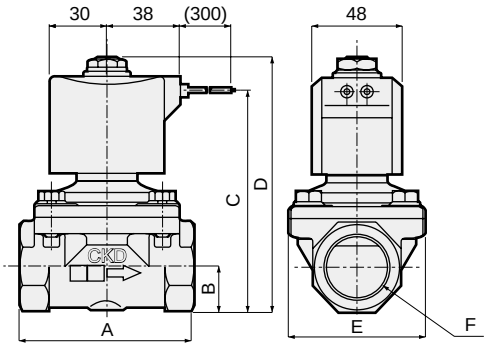
Internal structure and parts list



No.	Part name	Material	
1	Coil	-	-
2	Plunger	SUS405	Stainless steel
3	Wear ring	PTFE	Tetrafluoroethylene resin
4	Stuffing assembly (Core assembly)	C3771	Copper alloy
		SUS405, Cu	Stainless steel, copper
5	Spring pin	SUS420	Stainless steel
6	Main valve	SUS304, FKM	Stainless steel, fluoro rubber
7	Main valve spring	SUS304	Stainless steel
8	Body	CAC407	Bronze

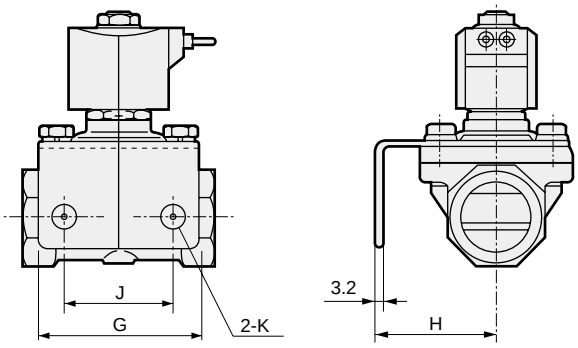
Dimensions CAD

● Grommet lead wire
AB71-*-*-*2C



● With mounting plate
AB71-*-*-** B

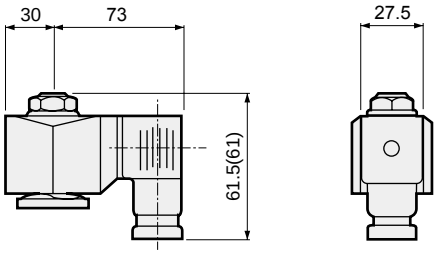
Material: Steel
Zinc plated



Model No.	A	B	C	D	E	F	G	H	J	K
AB71-15-12	71	14.5	95	110.5	50	Rc1/2	56	45	40	ø9
AB71-20-15	80	17.5	101	116	60	Rc3/4	63	50	45	ø9
AB71-25-18	90	22.5	111	126	71	Rc1	75	56	50	ø11

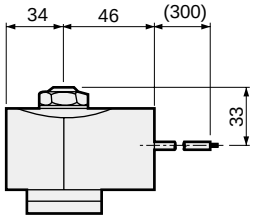
Optional dimensions

● With DIN terminal box
AB71-*-*-*2 [E G H]

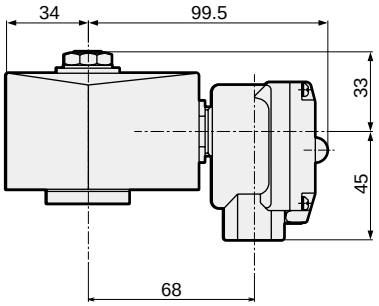


Dimensions shown in ( ) are for G1/2.

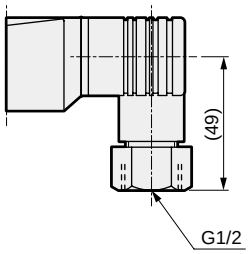
● Open frame lead wire
AB71-*-*-* [3A 5A]



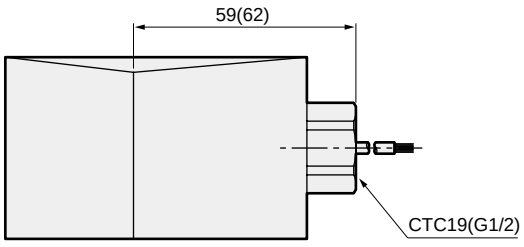
● Open frame + HP terminal box
AB71-*-*-* [3 5] [M N]



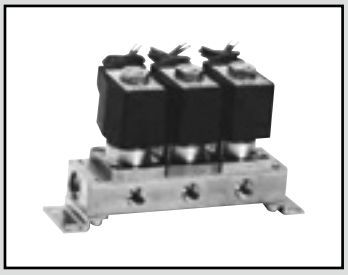
● DIN terminal box with small lamp + conduit (G1/2)
AB71-*-*-* [2H] [H]



● Open frame + conduit
AB71-*-*-* [3A 5A] [G H]



Dimensions shown in ( ) are for G1/2.



Direct acting 2-port solenoid valve, manifold/actuator
General purpose

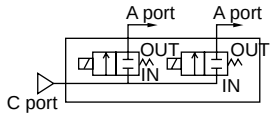
GAB312/GAB352/GAB412/GAB452 Series

- NC (open when energized)
- Common supply (port C pressurization), individual supply (port A pressurization)

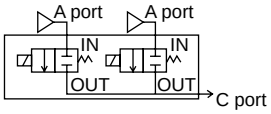
CE Refer to the Ending for details. RoHS CAD

JIS symbol

- GAB312/412
  (Common supply/port C pressurization)



- GAB352/452
  (Individual supply/port A pressurization)



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Standard specifications	Optional specifications	
Working fluid	Air/low vacuum [1.33 x 10^2 Pa (abs)]/water/kerosene/oil (50 mm^2/s or less)	Hot water	Steam
Working pressure differential MPa	0 to 5 (refer to max. working pressure differential in individual specifications.)		
Max. working pressure MPa	5 (≈730 psi, 50 bar)		1 (≈150 psi, 10 bar)
Proof pressure (water pressure) MPa	10 (≈1500 psi, 100 bar)		
Fluid temperature (*1) °C	-10 (14°F) to 60 (140°F)	-10 (14°F) to 90 (194°F)	-10 (14°F) to 184 (363.2°F)
Ambient temperature °C	-20 (-4°F) to 60 (140°F)	-20 (-4°F) to 100 (212°F)	
Thermal class	Class 130 (B)	Class 180 (H)	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)		300 or less (air)
Mounting orientation	Unrestricted		
Body/seal material	Copper alloy/nitrile rubber	Copper alloy/EPM rubber	Copper alloy/PTFE

*1: No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Model No.	Port size	Orifice size (mm)	Max. working pressure differential (MPa)							Rated voltage	Apparent power (VA)				Power consumption (W)	
			Air		Water(hot)/Kerosene		Oil (50 mm^2/s)		Steam		When holding		When starting		AC 50/60 Hz	DC
			AC	DC	AC	DC	AC	DC	AC		50 Hz	60 Hz	50 Hz	60 Hz		
GAB312/352-1	-	1.5	2.5	2.5	2.5	2.5	2.5	2.5	1.0	100 VAC 50/60 Hz *8 200 VAC 50/60 Hz *8 12 VDC 24 VDC 48 VDC 100 VDC	12	10	17	14	5.2/3.8	11 (8.1)*5
-2		2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.0							
-3		3.0	1.0	0.5	0.7	0.5	0.5	0.5	0.7							
-4		3.5	0.6	0.4	0.5	0.4	0.4	0.4	0.5							
-5		4.0	0.4	0.25	0.3	0.25	0.25	0.25	0.3							
-6		5.0	0.2	0.15	0.15	0.15	0.15	0.15	0.15							
GAB412/452-1	-	1.5	5.0	4.0	4.5	4.0	4.0	4.0	1.0		18	15	29	24	6.7/5.7	11 (10.4)*5 (7)*7
-2		2.0	3.0	2.5	2.7	2.5	2.5	2.5	1.0							
-3		3.0	1.5	0.9	1.3	0.9	0.9	0.9	1.0							
-4		3.5	1.2	0.6	0.9	0.6	0.6	0.6	0.9							
-5		4.0	1.0	0.5	0.7	0.5	0.5	0.5	0.7							
-6		5.0	0.6	0.25	0.4	0.25	0.25	0.25	0.4							
-7		7.0	0.25	0.1	0.2	0.1	0.15	0.1	0.2							

*1 : The model numbers above are for basic orifice sizes. Refer to How to order for other combinations (e.g., for steam).
*2 : For port size, refer to How to order (page 174) and dimensions (page 178).
*3 : Refer to DC column for the max. working pressure differential of coil with diode.
*4 : The voltage fluctuation range must be within ±10% of the rated voltage.
*5 : Power consumption of coil housings 2E/2G/2H.
*6 : When using at low vacuum, vacuum the OUT port side.
*7 : Power consumption of coil housings 6C/6E/6G/6H.
*8 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Weight

Model No.	Weight (kg)									
	Actuator only	2 stations	3 stations	4 stations	5 stations	6 stations	7 stations	8 stations	9 stations	10 stations
GAB312 GAB352	0.34	1.4	2.0	2.8	3.2	4.0	4.6	5.2	6.0	6.3
GAB412 GAB452	0.42	1.6	2.2	3.1	3.6	4.5	5.1	5.8	6.7	7.1

Optional specifications (fluid temperature, ambient temperature, valve seat leakage)

Sealant		Fluoro rubber		Ethylene propylene rubber		PTFE	
Coil (thermal class)		Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature (*1)	°C	-10 to 60	-10 to 90	0 to 60 (*3)	0 to 90 (*3)	-10 to 60	-10 to 184
Ambient temperature	°C	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)
Valve seat leakage	cm^3/min(ANR)	0.2 or less (air)				300 or less (air)	

*1 : No freezing.
*2 : -20 to 80°C when coil housing is HP terminal box with lamp.
*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

Model No.	Port size	Orifice size (mm)	Flow characteristics		
			C[dm^3/(s·bar)]	b	Cv
GAB312/352-1	-	1.5	0.29	0.53	0.10
-2		2.0	0.53	0.52	0.15
-3		3.0	1.1	0.52	0.31
-4		3.5	1.5	0.47	0.40
-5		4.0	1.9	0.47	0.48
-6		5.0	2.6	0.38	0.62
GAB412/452-1	-	1.5	0.29	0.53	0.10
-2		2.0	0.53	0.5	0.15
-3		3.0	1.1	0.52	0.31
-4		3.5	1.5	0.47	0.40
-5		4.0	1.9	0.47	0.48
-6		5.0	2.6	0.38	0.62
-7		7.0	4.6	0.37	0.82

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

How to order

● Common supply (port C pressurization)

GAB312 ○ - **1** - **5** - **B** **3A** **A** **G** **S** - **AC100V**

- ● Individual supply (port A pressurization) → **GAB352**
- ● Common supply (port C pressurization) → **GAB412**
- ● Individual supply (port A pressurization) → **GAB452**

Model No.

Ⓐ Thread
Ⓑ Orifice size
Ⓒ Manifold station No. *2
Ⓓ Body/sealant combination *3 *4 *5 *6 *7
Ⓔ Coil housing
Ⓕ Manual override (locking)
Ⓖ Other options
Ⓗ With surge suppressor
Ⓘ Rated voltage

Code	Description	Model No. GAB312 GAB352	Model No. GAB412 GAB452
Ⓐ Thread			
Blank	Rc	●	●
G	G	●	●
N	NPT	●	●
Ⓑ Orifice size			
1	ø1.5	●	●
2	ø2	●	●
3	ø3	●	●
4	ø3.5	●	●
5	ø4	●	●
6	ø5	●	●
7	ø7		●
Ⓒ Manifold station No.			
2 to 10	2 stations to 10 stations	●	●
0	Actuator only	●	●

Ⓓ Body/sealant combination

		Body	Seal	Treatment	Remarks		
Blank	Std.	Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
B	Option		Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *4)	●	●
C			PTFE		Steam (up to 184°C *4)	●	●
D		Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
E			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *4)	●	●
F			PTFE		Steam (up to 184°C *4)	●	●
H		Copper alloy	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)	●	●
J			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *4)	●	●
K			PTFE		Steam (up to 184°C *4)	●	●
P			Ethylene propylene rubber		Hot water (up to 90°C *4)	●	●
L		Stainless steel	Nitrile rubber		Air/water/low vacuum/kerosene (up to 60°C)	●	●
M			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *4)	●	●
N			PTFE		Steam (up to 184°C *4)	●	●
R			Ethylene propylene rubber		Hot water (up to 90°C *4)	●	●

Refer to Intro Page 39 for reference on material combinations.

Ⓔ to Ⓘ

Refer to page 175 for details on the coil housing, other options and voltage, etc.

The combinations indicated with ● in the above table are available.

[Example of model No. 1]
GAB312G-1-3-AC200V
Model: GAB312 (common supply, port C pressurization)

- Ⓐ Thread : G
- Ⓑ Orifice size : ø1.5
- Ⓒ Manifold station No. : 3 stations
- Ⓓ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓔ Coil housing : Grommet lead wire
- Ⓕ to Ⓗ : None
- Ⓖ Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

[Example of model No. 2]
GAB352-5-2-000AS-AC200V
Model: GAB352 (individual supply/port A pressurization)

- Ⓐ Thread : Rc
- Ⓑ Orifice size : ø4
- Ⓒ Manifold station No. : 2 stations
- Ⓓ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓔ Coil housing : Grommet lead wire
- Ⓕ Manual override (locking) : Selected
- Ⓖ Other options : None
- Ⓗ Surge suppressor : With surge suppressor
- Ⓘ Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

⚠ Precautions for model No. selection

*1 : Orders for only the masking plate and sub-plate are also available. Contact CKD for details.

Notes for Ⓒ to Ⓓ

*2 : For 11 or more manifold station No., contact CKD.
*3 : Leave blank for standard. However, to select options in Ⓔ, Ⓕ, Ⓖ or Ⓗ, indicate 0 for Item Ⓓ.
*4 : When Item Ⓓ 4A/4M/4N is selected.
*5 : The ethylene propylene rubber seal combination (Item Ⓓ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)
*6 : When Item Ⓓ is C, F, K, P, N or R, the Item Ⓔ coil housings 6C, 6E, 6G and 6H cannot be selected.
*7 : For PTFE seal, O-ring material of sub-plate connection will be FKM.

For Items Ⓔ to Ⓘ, the combinations indicated with codes are available.
Note that if options for Items Ⓕ to Ⓗ are not required, they should be left blank.

Ⓔ Coil housing				Ⓕ	Ⓖ Other options					Ⓗ	Ⓘ Rated voltage
Description				Manual override (Locking)	Cable gland (marine cable gland)			Conduit (conduit piping)		With surge suppressor	Description
					A-15a	A-15b	A-15c	CTC19	G1/2		
Blank	Std.	Grommet lead wire		**A**						**S**	100 VAC, 200 VAC
2E		With DIN terminal box	(G1/2)								100 VAC, 200 VAC
2G		With DIN terminal box	(Pg11)								12 VDC, 24 VDC, 48 VDC, 100 VDC
2H		DIN terminal box with small lamp	(Pg11)						**H**		100 VAC, 200 VAC, 24 VDC
3A	Option	Open frame	Lead wire (IP65 or equivalent)	**A**				**G**	**H**	**S**	100 VAC, 200 VAC
3M			With HP terminal box (G1/2)		**D**	**E**	**F**				12 VDC, 24 VDC, 48 VDC, 100 VDC
3N			HP terminal box with lamp (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I			HP terminal box (IP65 or equivalent) (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J			HP term box, lamp (IP65, equiv) (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A		Open frame (Thermal class 180 (H))	Lead wire	**A**				**G**	**H**	**S**	100 VAC, 200 VAC
4M			With HP terminal box (G1/2)		**D**	**E**	**F**				
4N			HP terminal box with lamp (G1/2)								
5A		Open frame (diode integrated)	Lead wire (IP65 or equivalent)	**A**				**G**	**H**		100 VAC, 200 VAC
5M			With HP terminal box (G1/2)		**D**	**E**	**F**				
5N			HP terminal box with lamp (G1/2)								
5I			HP terminal box (IP65 or equivalent) (G1/2)								
5J			HP term box, lamp (IP65, equiv) (G1/2)								
6C		Grommet lead wire	7W	**A**						**S**	12 VDC, 24 VDC
6E		With DIN terminal box	(G1/2) 7W								
6G		With DIN terminal box	(Pg11) 7W								
6H		DIN terminal box with small lamp	(Pg11) 7W						**H**		24 VDC

⚠ Refer to the following cautions for Items Ⓔ to Ⓘ.

Blank, 6C

● Grommet lead wire 300 mm

2E, 2G, 2H, 6E, 6G, 6H

● DIN terminal box

3A, 4A, 5A

● Open frame lead wire 300 mm
● 4A (Thermal class 180 (H))
● 5A (diode integrated)

3M, 3N, 4M, 4N, 5M, 5N

● Open frame HP terminal box
● 4M, 4N (Thermal class 180 (H))
● 5M, 5N (diode integrated)

3I, 3J, 5I, 5J

● Open frame HP terminal box (IP65 or equivalent)
● 5I, 5J (diode integrated)

Refer to page 148 for coil selection.

G, H

● Conduit
● G(CTC19)
● H(G1/2)

⚠ Precautions for model No. selection

Notes for Ⓔ

*8 : Leave blank for the standard coil housing. However, to select options in Ⓕ, Ⓖ or Ⓗ, indicate 00 for Item Ⓔ.
*9 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
*10: A DC coil for steam is available for GAB4*2. Contact CKD for more information.
*11: The coil housings 6C, 6E and 6G are 12 VDC and 24 VDC dedicated. 6H is 24 VDC dedicated.
*12: For 6C/6E/6G/6H, only GAB4*2 is available.

Notes for Ⓕ to Ⓗ

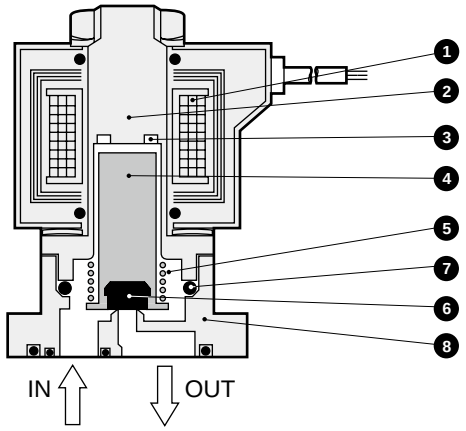
*13: When Item Ⓓ is C, F, K or N, the manual override (Item ⒻA) is not available.
*14: For Item Ⓖ, select an option from D, E, F, G and H.
*15: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*16: As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item Ⓔ 2H/6H), so surge suppressor code S cannot be selected.
*17: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information. Note that tropicalization is not available when the manual override option (A) and the coil option 6C/6E/6G/6H are selected.

Notes for Ⓘ

*18: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item Ⓔ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
*19: For voltages other than above, contact CKD.
*20: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

Internal structure and parts list

● GAB312/GAB352/GAB412/GAB452 actuator

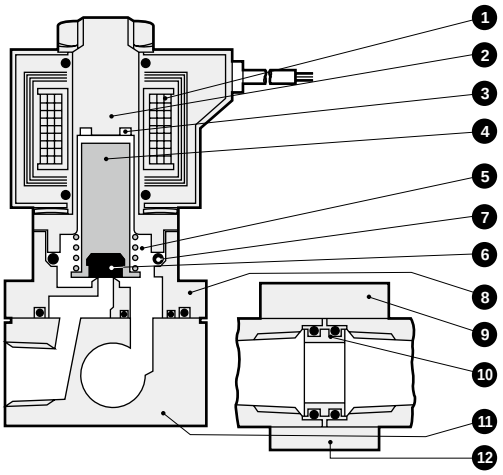


No.	Part name	Material	
1	Coil	-	-
2	Core assembly	SUS405 or equiv./316L/403 *1	Stainless steel
3	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
4	Plunger	SUS405 or equiv.	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Seal	NBR (FKM/EPDM/PTFE)	(NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin)
7	O-ring	NBR (FKM/EPDM/PTFE) (Size: AS568-019)	
8	Body	C3771(SCS13)	Copper alloy (stainless steel)

*1 : When the body/sealant combination code is other than blank and H, or the coil housing code is 6C, 6E, 6G or 6H, the material is SUS405 or equivalent/SUS316L/SUS430.
*2 : ( ) shows options.
*3 : 4 body mounting screws and 2 O-rings are attached to the actuator only.

Internal structure and parts list

● GAB312/GAB352/GAB412/GAB452 manifold



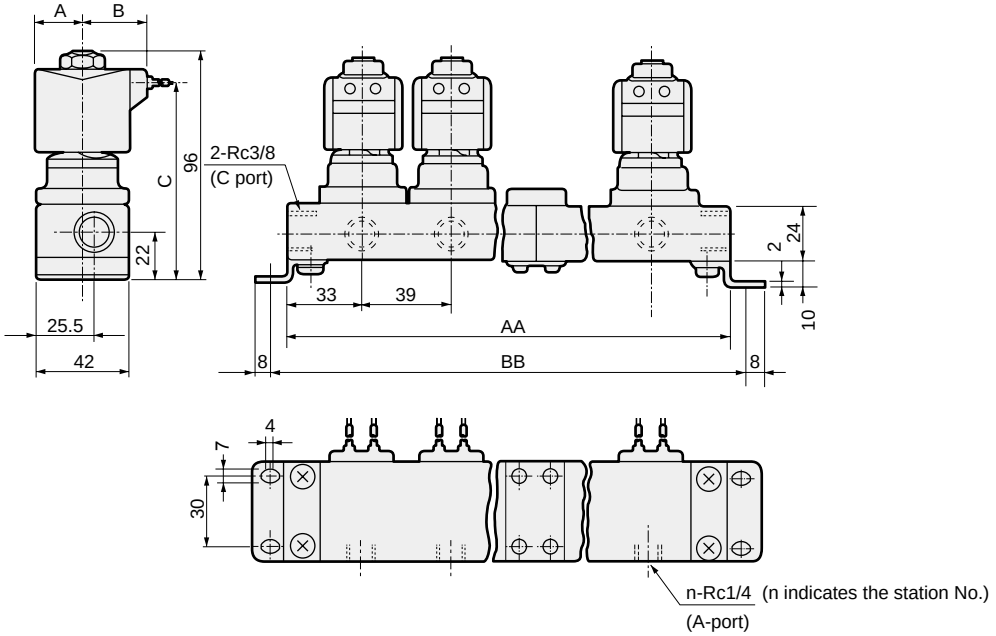
No.	Part name	Material	
1	Coil	-	-
2	Core assembly	SUS405 or equiv./316L/403 *1	Stainless steel
3	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
4	Plunger	SUS405 or equiv.	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Seal	NBR (FKM/EPDM/PTFE)	(NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin)
7	O-ring	NBR (FKM/EPDM/PTFE) (Size: AS568-019)	
8	Body	C3771(SCS13)	Copper alloy (stainless steel)
9	Holder	SPCC	Steel
10	Connector	C3604(SUS304)	Copper alloy (stainless steel)
11	Sub-plate	C3604(SUS303)	Copper alloy (stainless steel)
12	Connecting plate	SPCC	Steel

*1 : When the body/sealant combination code is other than blank and H, or the coil housing code is 6C, 6E, 6G or 6H, the material is SUS405 or equivalent/SUS316L/SUS430.

*2 : ( ) shows options.

Dimensions: GAB312/352 Series

● Manifold (grommet lead wire)
GAB312/352-1 to 6- [2 to 10] -* [Blank]

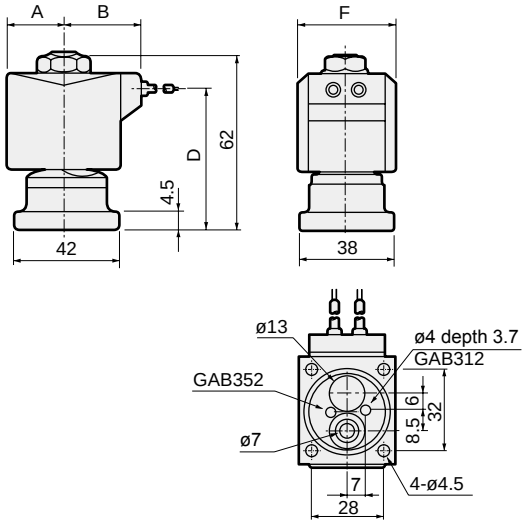


Station No.	AA	BB	Manifold configuration	Station No.	AA	BB	Manifold configuration
2	106	122	2 stations x 1	7	329	345	5 stations + 2 stations
3	145	161	3 stations x 1	8	368	384	5 stations + 3 stations
4	212	228	2 stations x 2	9	435	451	3 stations x 3
5	223	239	5 stations x 1	10	446	462	5 stations x 2
6	290	306	3 stations x 2	Contact CKD for 11 stations or more.			

Model No.	A	B	C
Blank	20	27	84

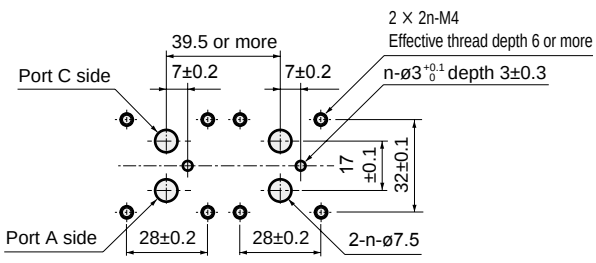
*1 : Manifold configuration combines 2-station, 3-station and 5-station units.
*2 : The dimensions are the same for port sizes of G and NPT threads.

● Actuator (grommet lead wire)
GAB312/352-1 to 6- [0] -* [Blank]



Model No.	A	B	D	F
Blank	20	27	50	34

● Recommended dimensions for actuator mounting



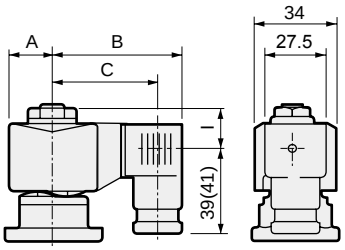
■ Machining drawing when using 2 actuators

Optional dimensions: GAB312/352 Series

CAD

* Refer to the dimensions of grommet lead wire on page 178 for common dimensions.

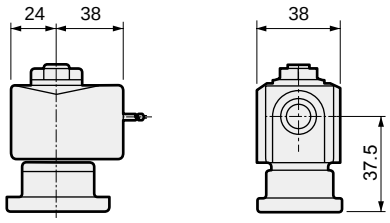
● With DIN terminal box
GAB312/352-1 to 6-0 to 10-* 2 E G H



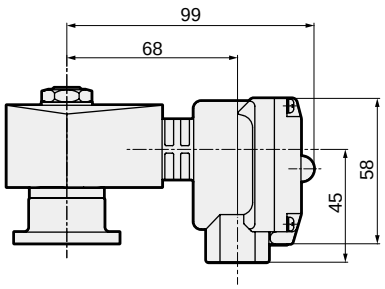
Dimensions shown in ( ) are for G1/2.

Voltage	A	B	C	I
AC (2E/2G/2H)	20	62	50.5(50)	20.5
DC (2E/2G/2H)	21	63.5	52(51.5)	20.5

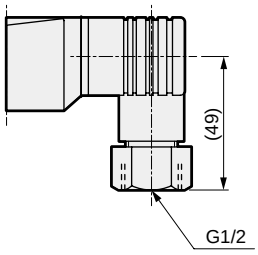
● Open frame lead wire
GAB312/352-1 to 6-0 to 10-* 3A 4A 5A



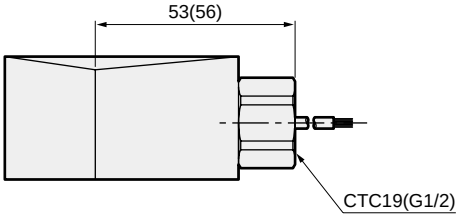
● Open frame + HP terminal box
GAB312/352-1 to 6-0 to 10-* 3 5 M N I J · 4M 4N



● DIN terminal box with small lamp + conduit (G1/2)
GAB312/352-1 to 6-0 to 10-* 2H H

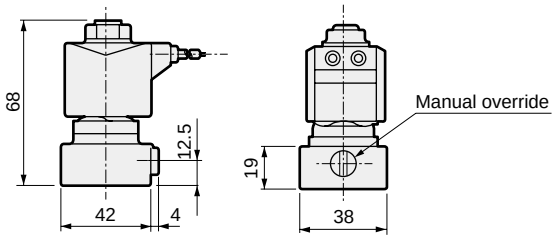


● Open frame + conduit
GAB312/352-1 to 6-0 to 10-* 3A 4A 5A G H



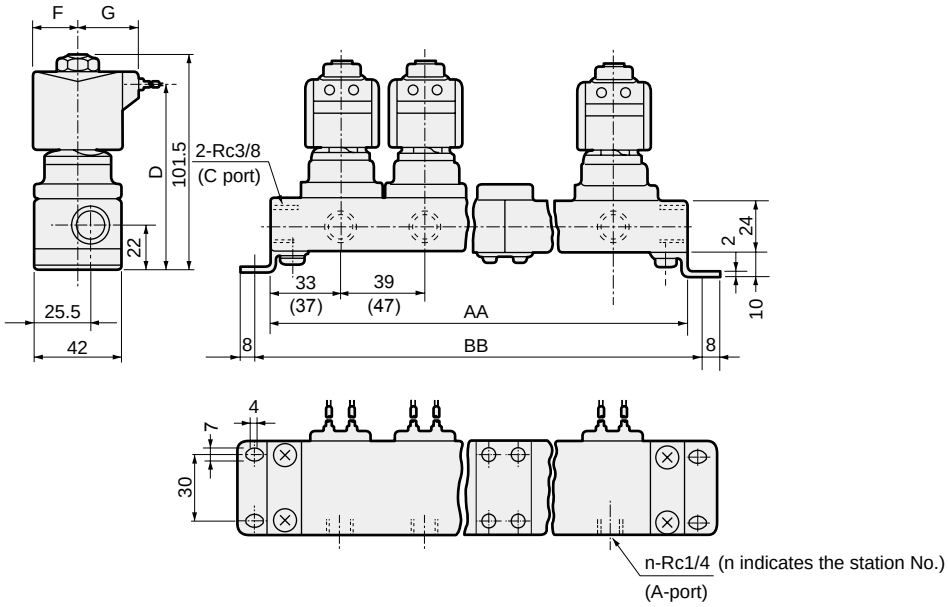
Dimensions shown in ( ) are for G1/2.

● Manual override (locking)
GAB312/352-1 to 6-0 to 10-*** A



Dimensions: GAB412/452 Series

● Manifold (grommet lead wire)
GAB412/452-1 to 7- 2 to 10 -* Blank / 6C

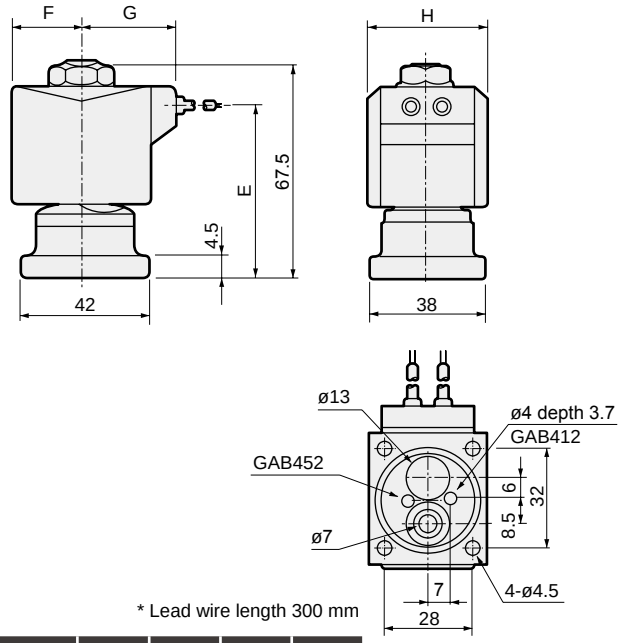


Station No.	AA	BB	Manifold configuration	Station No.	AA	BB	Manifold configuration
2	106(122)	122(138)	2 stations x 1	7	329(385)	345(401)	5 stations + 2 stations
3	145(169)	161(185)	3 stations x 1	8	368(432)	384(448)	5 stations + 3 stations
4	212(244)	228(260)	2 stations x 2	9	435(507)	451(523)	3 stations x 3
5	223(263)	239(279)	5 stations x 1	10	446(526)	462(542)	5 stations x 2
6	290(338)	306(354)	3 stations x 2	Contact CKD for 11 stations or more.			

Model No.	F	G	D
Blank	23.5	30.5	89
6C	24	30.5	89

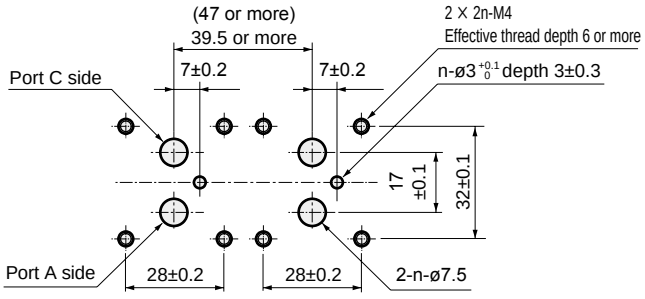
*1 : Manifold configuration combines 2-station, 3-station and 5-station units.
*2 : Dimensions shown in ( ) are for open frame.
*3 : The dimensions are the same for port sizes of G and NPT threads.

● Actuator (grommet lead wire)
GAB412/452-1 to 7-0 -* Blank / 6C



Model No.	F	G	E	H
Blank	23.5	30.5	55	38
6C	24	30.5	55	39

● Recommended dimensions for actuator mounting

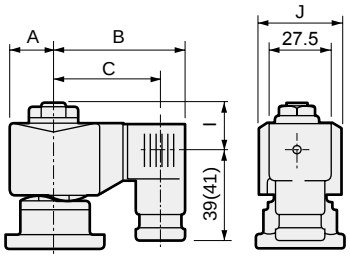


■ Machining drawing when using 2 actuators

Optional dimensions: GAB412/452 Series

* Refer to the dimensions of grommet lead wire on page 180 for common dimensions.

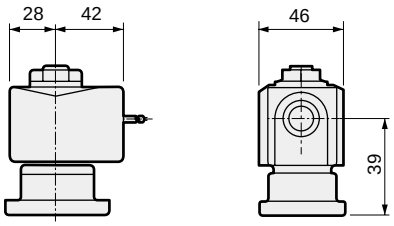
● With DIN terminal box
GAB412/452-1 to 7-0 to 10-* [2 6] [E G H]



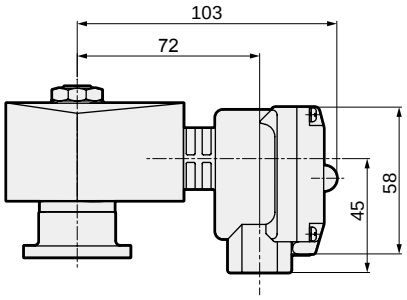
Dimensions shown in ( ) are for G1/2.

Voltage	A	B	C	I	J
AC (2E/2G/2H)	23.5	65.5	54(53.5)	22	38
DC (2E/2G/2H)	23.5	66	54.5(54)	22	38
DC (6E/6G/6H)	24	68	56.5(56)	22	39

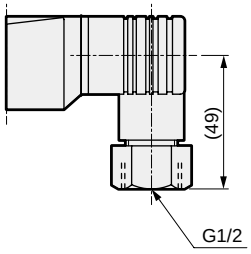
● Open frame lead wire
GAB412/452-1 to 7-0 to 10-* [3A 4A 5A]



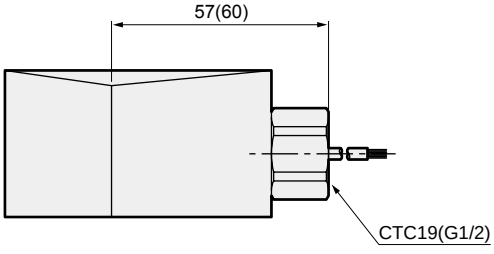
● Open frame + HP terminal box
GAB412/452-1 to 7-0 to 10-* [3 5] [M N I J] / [4M 4N]



● DIN terminal box with small lamp + conduit (G1/2)
GAB412/452-1 to 7-0 to 10-* [2H] [H]

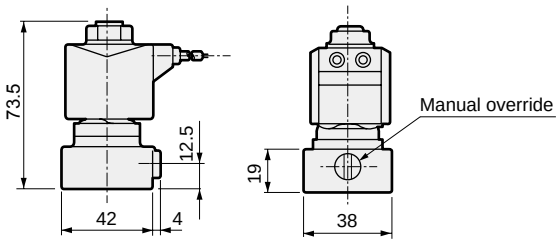


● Open frame + conduit
GAB412/452-1 to 7-0 to 10-* [3A 4A 5A] [G H]



Dimensions shown in ( ) are for G1/2.

● Manual override (locking)
GAB412/452-1 to 7-0 to 10-*** [A]



Direct acting 2-port solenoid valve, manifold/actuator
General purpose

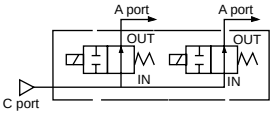
GAB422 Series

- NO (closed when energized)
- Common supply (port C pressurization)

Refer to the Ending for details.

Manifold circuit configuration

- GAB422
  (Common supply/port C pressurization)



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Standard specifications	Optional specifications	
Working fluid	Air/low vacuum [1.33 x 10^2 Pa (abs)]/water/kerosene/oil (50 mm^2/s or less)	Hot water	Steam
Working pressure differential MPa	0 to 2 (refer to max. working pressure differential in individual specifications.)		
Max. working pressure MPa	2 (≈290 psi, 20 bar)		1 (≈150 psi, 10 bar)
Proof pressure (water pressure) MPa	10 (≈1500 psi, 100 bar)		
Fluid temperature (*1) °C	-10 (14°F) to 60 (140°F)	-10 (14°F) to 90 (194°F)	-10 (14°F) to 184 (363.2°F)
Ambient temperature °C	-20 (-4°F) to 60 (140°F)	-20 (-4°F) to 100 (212°F)	
Thermal class	Class 130 (B)	Class 180 (H)	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)		300 or less (air)
Mounting orientation	Unrestricted		
Body/seal material	Copper alloy/nitrile rubber	Copper alloy/EPM rubber	Copper alloy/PTFE

*1 : No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item / Model No.	Port size	Orifice size (mm)	Max. working pressure differential (MPa)							Rated voltage	Apparent power (VA)				Power consumption (W)	
			Air		Water(hot)/Kerosene		Oil (50 mm^2/s)		Steam		When holding		When starting		AC	DC
			AC	DC	AC	DC	AC	DC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	
GAB422-1	-	1.5	2.0	2.0	2.0	2.0	2.0	2.0	1.0	100 VAC 50/60 Hz *7 200 VAC 50/60 Hz *7 12 VDC 24 VDC 48 VDC 100 VDC	22	18	35	29	8.7/6.7	15.5 (14)
GAB422-2		2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0							
GAB422-3		3.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7							
GAB422-4		3.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5							
GAB422-5		4.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4							
GAB422-6		5.0	0.25	0.25	0.25	0.25	0.25	0.25	0.25							
GAB422-7		7.0	0.15	0.15	0.15	0.15	0.15	0.15	0.15							

*1 : The model numbers above are for basic orifice sizes. Refer to How to order for other combinations.
*2 : For port size, refer to How to order (page 184) and dimensions (page 188).
*3 : The voltage fluctuation range must be within ±10% of the rated voltage.
*4 : Values shown in ( ) are for the DC voltage type with DIN terminal box.
*5 : Refer to DC column for the max. working pressure differential of coil with diode.
*6 : When using at low vacuum, vacuum the OUT port side.
*7 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Weight

Model No.	Weight (kg)									
	Actuator only	2 stations	3 stations	4 stations	5 stations	6 stations	7 stations	8 stations	9 stations	10 stations
GAB422	0.47	1.7	2.4	3.3	3.8	4.8	5.5	6.2	7.2	7.6

Optional specifications (fluid temperature, ambient temperature, valve seat leakage)

Sealant		Fluoro rubber		Ethylene propylene rubber		PTFE	
Coil (thermal class)		Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature (*1)	°C	-10 to 60	-10 to 90	0 to 60 (*3)	0 to 90 (*3)	-10 to 60	-10 to 184
Ambient temperature	°C	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)
Valve seat leakage	cm^3/min(ANR)	0.2 or less (air)				300 or less (air)	

*1 : No freezing.
*2 : -20 to 80°C when coil housing is HP terminal box with lamp.
*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

Model No.	Port size	Orifice size (mm)	Flow characteristics		
			C[dm^3/(s·bar)]	b	Cv
GAB422-1	-	1.5	0.29	0.53	0.10
-2		2.0	0.53	0.52	0.15
-3		3.0	1.1	0.52	0.31
-4		3.5	1.5	0.47	0.40
-5		4.0	1.9	0.47	0.48
-6		5.0	2.6	0.38	0.62
-7		7.0	4.6	0.37	0.82

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

How to order

GAB422 ( ) - 2 - 5 - 0 3A A G S - AC100V

- GAB422: Model No.
- ( ): Ⓐ Thread
- 2: Ⓑ Orifice size
- 5: Ⓒ Manifold station No. *2
- 0: Ⓓ Body/sealant combination *3 *4 *5 *6
- 3A: Ⓔ Coil housing
- A: Ⓕ Manual override (locking)
- G: Ⓖ Other options
- S: Ⓗ With surge suppressor
- AC100V: Ⓘ Rated voltage

Code	Description
Ⓐ Thread	
Blank	Rc
G	G
N	NPT
Ⓑ Orifice size	
1	ø1.5
2	ø2
3	ø3
4	ø3.5
5	ø4
6	ø5
7	ø7
Ⓒ Manifold station No.	
2	2 stations
to	to
10	10 stations
0	Actuator only

Ⓓ Body/sealant combination

		Body	Seal	Treatment	Remarks
Blank	Std.	Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)
B	Option	Copper alloy	Fluoro rubber	-	Air/low vacuum/kerosene (up to 90°C *4)
C	Option	Copper alloy	PTFE	-	Steam (up to 184°C *4)
D	Option	Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)
E	Option	Stainless steel	Fluoro rubber	-	Air/low vacuum/kerosene (up to 90°C *4)
F	Option	Stainless steel	PTFE	-	Steam (up to 184°C *4)
H	Option	Copper alloy	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)
J	Option	Copper alloy	Fluoro rubber	Oil-prohibited	Air/low vacuum/kerosene (up to 90°C *4)
K	Option	Copper alloy	PTFE	Oil-prohibited	Steam (up to 184°C *4)
P	Option	Copper alloy	Ethylene propylene rubber	Oil-prohibited	Hot water (up to 90°C *4)
L	Option	Stainless steel	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)
M	Option	Stainless steel	Fluoro rubber	Oil-prohibited	Air/low vacuum/kerosene (up to 90°C *4)
N	Option	Stainless steel	PTFE	Oil-prohibited	Steam (up to 184°C *4)
R	Option	Stainless steel	Ethylene propylene rubber	Oil-prohibited	Hot water (up to 90°C *4)

Refer to Intro Page 39 for reference on material combinations.

Ⓔ to Ⓘ

Refer to page 185 for details on the coil housing, other options and voltage, etc.

[Example of model No. 1]

GAB422N-2-6-AC100V

Model : GAB422 (normally open/common supply)

- Ⓐ Thread : NPT
- Ⓑ Orifice size : ø2
- Ⓒ Manifold station No. : 6 stations
- Ⓓ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓔ Coil housing : Grommet lead wire
- Ⓕ to Ⓗ : None
- Ⓘ Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

[Example of model No. 2]

GAB422-3-0-000AS-AC100V

Model : GAB422 (normally open/common supply)

- Ⓐ Thread : Rc
- Ⓑ Orifice size : ø3
- Ⓒ Manifold station No. : Actuator only
- Ⓓ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓔ Coil housing : Grommet lead wire
- Ⓕ Manual override (locking) : Selected
- Ⓖ Other options : None
- Ⓗ Surge suppressor : With surge suppressor
- Ⓘ Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Precautions for model No. selection

*1 : Orders for only the masking plate and sub-plate are also available. Contact CKD for details.

Notes for Ⓒ to Ⓓ

*2 : For 11 or more manifold station No., contact CKD.
*3 : Leave blank for standard. However, to select options in Ⓔ,Ⓕ,Ⓖ or Ⓗ, indicate 0 for Item Ⓓ.
*4 : When Item Ⓓ 4A/4M/4N is selected.
*5 : The ethylene propylene rubber seal combination (Item Ⓓ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)
*6 : For PTFE seal, O-ring material of sub-plate connection will be FKM.

For Items Ⓔ to Ⓘ, the combinations indicated with codes are available.
Note that if options for Items Ⓕ to Ⓗ are not required, they should be left blank.

Ⓔ Coil housing				Ⓕ	Ⓖ Other options					Ⓗ	Ⓘ Rated voltage
Description				Manual override (Locking)	Cable gland (marine cable gland)			Conduit (conduit piping)		With surge suppressor	Description
					A-15a	A-15b	A-15c	CTC 19	G 1/2		
Blank	Std.	Grommet lead wire		**A**						**S**	100 VAC, 200 VAC
2E	Option	With DIN terminal box	(G1/2)								100 VAC, 200 VAC
2G		With DIN terminal box	(Pg11)								12 VDC, 24 VDC, 48 VDC, 100 VDC
2H		DIN terminal box with small lamp	(Pg11)						**H**		100 VAC, 200 VAC, 24 VDC
3A		Open frame	Lead wire (IP65 or equivalent)	**A**				**G**	**H**	**S**	100 VAC, 200 VAC
3M			With HP terminal box	(G1/2)	**D**	**E**	**F**				12 VDC, 24 VDC, 48 VDC, 100 VDC
3N			HP terminal box with lamp	(G1/2)							100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I			HP terminal box (IP65 or equivalent)	(G1/2)							100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J			HP term box, lamp (IP65, equiv)	(G1/2)							100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A		Open frame (Thermal class 180 (H))	Lead wire		**A**			**G**	**H**	**S**	100 VAC, 200 VAC
4M			With HP terminal box	(G1/2)	**D**	**E**	**F**				
4N			HP terminal box with lamp	(G1/2)							
5A		Open frame (diode integrated)	Lead wire (IP65 or equivalent)		**A**			**G**	**H**		100 VAC, 200 VAC
5M			With HP terminal box	(G1/2)	**D**	**E**	**F**				
5N			HP terminal box with lamp	(G1/2)							
5I			HP terminal box (IP65 or equivalent)	(G1/2)							
5J			HP term box, lamp (IP65, equiv)	(G1/2)							

⚠ Refer to the following cautions for Items Ⓔ to Ⓘ.

Blank

● Grommet lead wire 300 mm

2E 2G 2H

● DIN terminal box

3A 4A 5A

● Open frame lead wire 300 mm
● 4A (Thermal class 180 (H))
● 5A (diode integrated)

3M 3N 4M 4N 5M 5N

● Open frame HP terminal box
● 4M, 4N (Thermal class 180 (H))
● 5M, 5N (diode integrated)

3I 3J 5I 5J

● Open frame HP terminal box (IP65 or equivalent)
● 5I, 5J (diode integrated)

Refer to page 148 for coil selection.

G H

● Conduit
● G(CTC19)
● H(G1/2)

⚠ Precautions for model No. selection

Notes for Ⓔ

*7 : Leave blank for the standard coil housing. However, to select options in Ⓕ, Ⓖ or Ⓗ, indicate 00 for Item E.
*8 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.

Notes for Ⓕ to Ⓗ

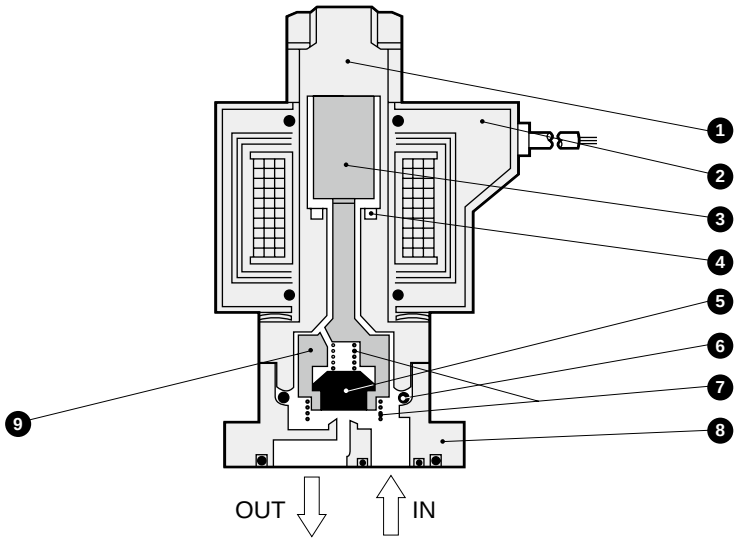
*9 : When Item Ⓓ is C, F, K or N, the manual override (Item ⒻA) is not available.
*10: For Item Ⓖ, select an option from D, E, F, G and H.
*11: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*12: As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item Ⓔ2H), so the surge suppressor S cannot be selected.
*13: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information. Note that tropicalization is not available when the manual override option (A) is selected.

Notes for Ⓘ

*14: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item Ⓔ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
*15: For voltages other than above, contact CKD.
*16: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

Internal structure and parts list

● GAB422 actuator



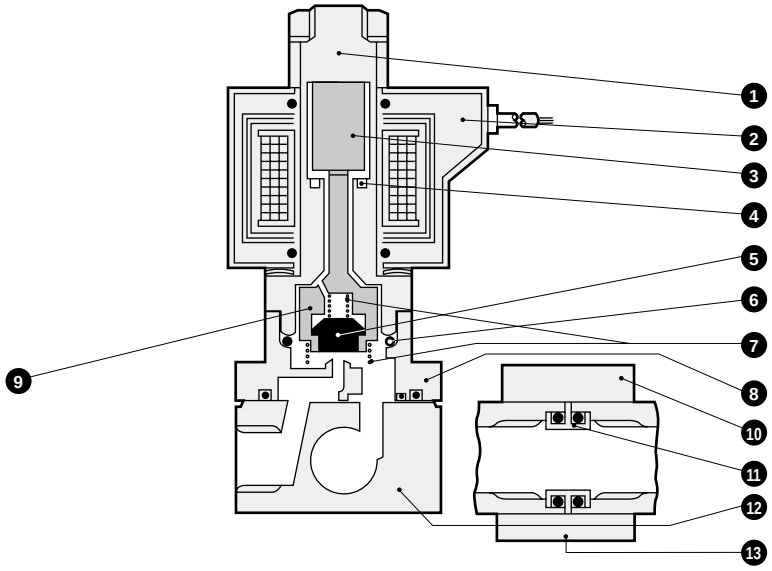
No.	Part name	Material		No.	Part name	Material	
1	Core assembly	SUS405 or equiv./316L/304	Stainless steel	8	Body	C3771(SCS13)	Copper alloy (stainless steel)
2	Coil	-	-	9	NO Valve	POM (PPS/SUS303/PFA)	Body/sealant combination When Blank/O/D/H/L/V/W: Polyacetal resin When B/E/J/M/P/R: Polyphenylene sulfide resin When C/F/K/N: Stainless steel/ perfluoroalkoxy resin
3	Plunger	SUS405 or equiv.	Stainless steel				
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)				
5	Seal	NBR (FKM/EPDM/PTFE)	(NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin)				
6	O-ring	NBR (FKM/EPDM/PTFE) (Size: AS568-019)					
7	Spring	SUS304	Stainless steel				

* 4 body mounting screws and 2 O-rings are attached to the actuator only.

( ) shows options.

Internal structure and parts list

● GAB422 manifold

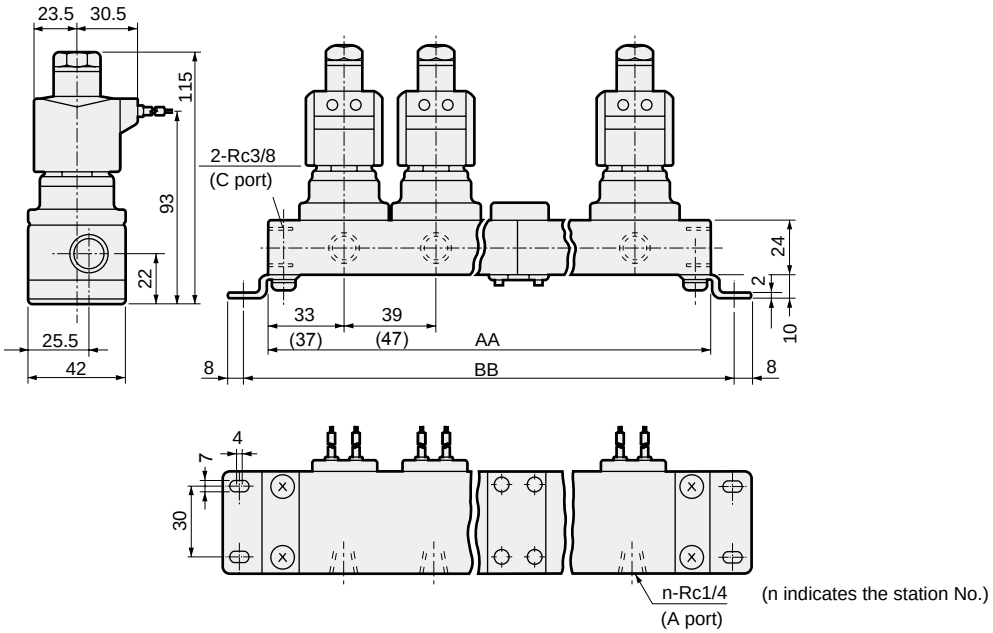


No.	Part name	Material		No.	Part name	Material	
1	Core assembly	SUS405 or equiv./316L/304	Stainless steel	9	NO Valve	POM (PPS/SUS303/PFA)	Body/sealant combination When Blank/O/D/H/L/V/W: Polyacetal resin When B/E/J/M/P/R: Polyphenylene sulfide Resin When C/F/K/N: Stainless steel/ perfluoroalkoxy resin
2	Coil	-	-				
3	Plunger	SUS405 or equiv.	Stainless steel				
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)				
5	Seal	NBR (FKM/EPDM/PTFE)	(NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin)	10	Holder	SPCC	Steel
6	O-ring	NBR (FKM/EPDM/PTFE) (Size: AS568-019)		11	Connector	C3604(SUS304)	Copper alloy (stainless steel)
7	Spring	SUS304	Stainless steel	12	Sub-plate	C3604(SUS303)	Copper alloy (stainless steel)
8	Body	C3771(SCS13)	Copper alloy (stainless steel)	13	Connecting plate	SPCC	Steel

( ) shows options.

Dimensions: Manifold

● Grommet lead wire
GAB422-1 to 7-2 to 10

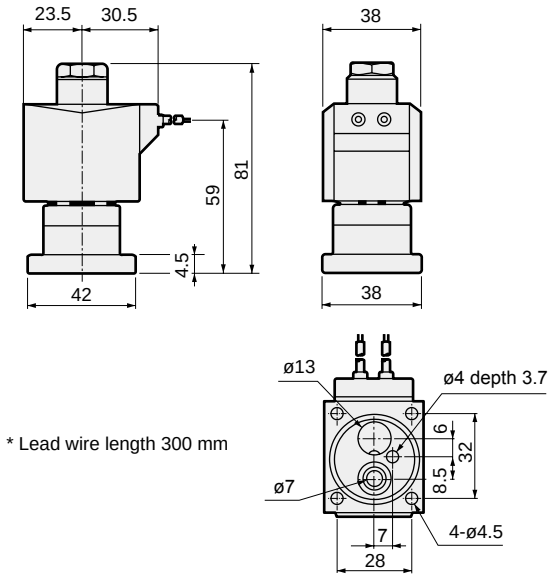


Station No.	AA	BB	Manifold configuration	Station No.	AA	BB	Manifold configuration
2	106(122)	122(138)	2 stations x 1	7	329(385)	345(401)	5 stations + 2 stations
3	145(169)	161(185)	3 stations x 1	8	368(432)	384(448)	5 stations + 3 stations
4	212(244)	228(260)	2 stations x 2	9	435(507)	451(523)	3 stations x 3
5	223(263)	239(279)	5 stations x 1	10	446(526)	462(542)	5 stations x 2
6	290(338)	306(354)	3 stations x 2	Contact CKD for 11 stations or more.			

*1 : Manifold configuration combines 2-station, 3-station and 5-station units.
*2 : Dimensions shown in ( ) are for open frame.
*3 : Dimensions for open frame will be applied to the DC voltage type of GAB422 Series with DIN terminal box.
*4 : The dimensions are the same for port sizes of G and NPT threads.

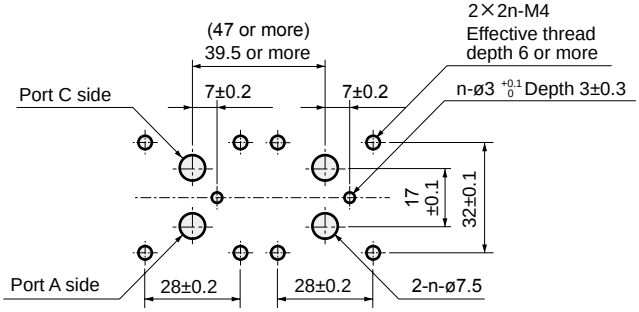
Dimensions: Actuator

● Grommet lead wire
GAB422-1 to 7-0



* Lead wire length 300 mm

● Recommended dimensions for actuator mounting



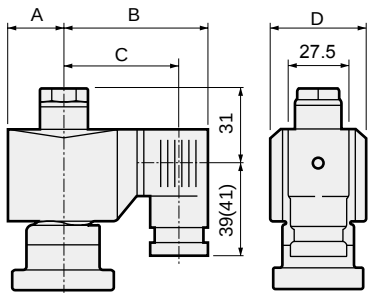
■ Machining drawing when using 2 actuators

Optional dimensions

CAD

* Refer to the dimensions of grommet lead wire on page 188 for common dimensions.

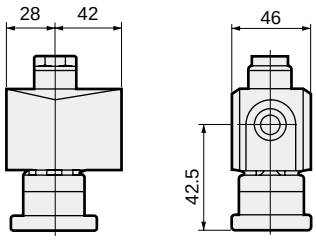
● With DIN terminal box
GAB422-1 to 7-0 to 10-* 2E / 2G / 2H



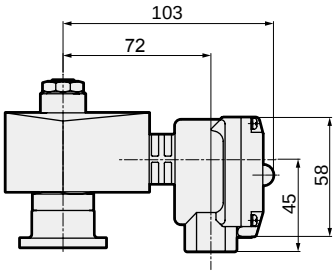
Dimensions shown in ( ) are for G1/2.

Voltage	A	B	C	D
AC	23.5	65.5	54(53.5)	38
DC	28	72	60.5(60)	46

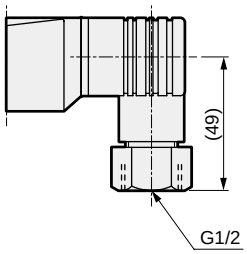
● Open frame lead wire
GAB422-1 to 7-0 to 10-* 3A / 4A / 5A



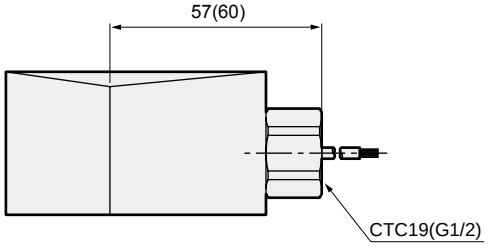
● Open frame + HP terminal box
GAB422-1 to 7-0 to 10-* 3 / 5 M / N / I / J / 4M / 4N



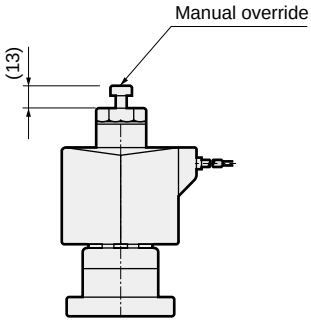
● DIN terminal box with small lamp + conduit (G1/2)
GAB422-1 to 7-0 to 10-* 2H H



● Open frame + conduit
GAB422-1 to 7-0 to 10-* 3A / 4A / 5A G H



● Manual override (locking)
GAB422-1 to 7-0 to 10-***A



Dimensions shown in ( ) are for G1/2.

Direct acting 3-port solenoid valve, single unit
General purpose

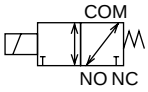
AG31/AG41 Series

- Universal
- Port size: Rc1/8, Rc1/4, Rc3/8

CE Refer to the Ending for details. RoHS CAD

JIS symbol

- AG31/41: Universal



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Standard specifications	Optional specifications	
Working fluid	Air/low vacuum [1.33 x 10^2 Pa (abs)]/water/kerosene/oil (50 mm^2/s or less)	Hot water	Steam
Working pressure differential MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)		
Max. working pressure MPa	1 (≈150 psi, 10 bar)		
Proof pressure (water pressure) MPa	25 (≈3700 psi, 250 bar)		
Fluid temperature (*1) °C	-10 (14°F) to 60 (140°F)	-10 (14°F) to 90 (194°F)	-10 (14°F) to 184 (363.2°F)
Ambient temperature °C	-20 (-4°F) to 60 (140°F)	-20 (-4°F) to 100 (212°F)	
Thermal class	Class 130 (B)	Class 180 (H)	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)		300 or less (air)
Mounting orientation	Unrestricted		
Body/seal material	Copper alloy/nitrile rubber	Copper alloy/EPM rubber	Copper alloy/PTFE

*1 : No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item / Model No.	Port size	Orifice size (mm)		Max. working pressure differential (MPa)							Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
				Air		Water(hot)/Kerosene		Oil (50 mm^2/s)		Steam		When holding		When starting		AC	DC	
		TOP	BODY	AC	DC	AC	DC	AC	DC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz		
AG31-01-1	Rc1/8	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6(0.5)	0.7	100 VAC 50/60 Hz *7 200 VAC 50/60 Hz *7 12 VDC 24 VDC 48 VDC 100 VDC	14	11	20	16	6/4.2	11 (8.1)	0.36
-01-2		2.0	2.0	0.4	0.4(0.35)	0.4	0.4	0.25	0.2(0.15)	0.4								
-02-1	Rc1/4	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6(0.5)	0.7								
-02-2		2.0	2.0	0.4	0.4(0.35)	0.4	0.4	0.25	0.2(0.15)	0.4								
AG41-02-1	Rc1/4	2.0	2.0	1.0	0.7(0.45)	1.0	0.7	0.4	0.3(0.25)	1.0		22	17	35	27	8.3/6.2	11 (10.4)	0.45
-02-2		2.3	2.3	0.7	0.4(0.35)	0.7	0.4	0.25	0.15(0.1)	0.7								
-03-1	Rc3/8	2.0	2.0	1.0	0.7(0.45)	1.0	0.7	0.4	0.3(0.25)	1.0								0.48
-03-2		2.3	2.3	0.7	0.4(0.35)	0.7	0.4	0.25	0.15(0.1)	0.7								

*1 : The model numbers above are for the basic port size (Rc) and orifice size. Refer to How to order for other combinations.
*2 : Refer to DC column for the max. working pressure differential of coil with diode.
*3 : The voltage fluctuation range must be within ±10% of the rated voltage.
*4 : Values shown in ( ) are for the DC voltage with DIN terminal box, indicating the max. working pressure differential when pressurized from the NO port.
*5 : When using in a continuously energized state, use fluoro rubber seal.
*6 : NO port pressurization is not possible for PTFE seal.
*7 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Optional specifications (fluid temperature, ambient temperature, valve seat leakage)

Sealant		Fluoro rubber		Ethylene propylene rubber		PTFE	
Coil (thermal class)		Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature (*1)	°C	-10 to 60	-10 to 90	0 to 60 (*3)	0 to 90 (*3)	-10 to 60	-10 to 184
Ambient temperature	°C	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)
Valve seat leakage	cm^3/min(ANR)	0.2 or less (air)				300 or less (air)	

*1 : No freezing.
*2 : -20 to 80°C when coil housing is HP terminal box with lamp.
*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

Model No.	Port size	Orifice size (mm)		Flow characteristics					
				C[dm^3/(s·bar)]		b		Cv	
		TOP	BODY	TOP	BODY	TOP	BODY	TOP	BODY
AG31-01-1	Rc1/8	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-01-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-1	Rc1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-02-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
AG41-02-1	Rc1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19
-03-1	Rc3/8	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-03-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19

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

How to order

AG31 - **02** - **2** - **B** **3A** **A** **B** **G** **S** - **AC100V**

AG41

Model No.

Ⓓ Coil housing Ⓖ Other options
Ⓔ Manual override (locking) Ⓗ With surge suppressor
Ⓕ Mounting plate Ⓘ Rated voltage

Ⓐ Port size
Ⓑ Orifice size
Ⓒ Body/sealant combination
*1
*2
*3
*4
*5

Code	Description	Code	Description	Code	Description	Model No. AG31	Model No. AG41
Ⓐ Port size							
01	Rc1/8	**1G**	G1/8	**1N**	1/8NPT	●	
02	Rc1/4	**2G**	G1/4	**2N**	1/4NPT	●	●
03	Rc3/8	**3G**	G3/8	**3N**	3/8NPT		●

Ⓑ Orifice size

	AG31		AG41			
	TOP	BODY	TOP	BODY		
1	ø1.5	ø1.5	ø2.0	ø2.0	●	●
2	ø2.0	ø2.0	ø2.3	ø2.3	●	●

Ⓒ Body/sealant combination

		Body	Seal	Treatment	Remarks		
Blank	Std.	Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
B	Option		Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●
C			PTFE		Steam (up to 184°C *2)	●	●
V			Fluoro rubber	Vacuum inspection	Low vacuum	●	●
D		Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
E			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●
F			PTFE		Steam (up to 184°C *2)	●	●
W			Fluoro rubber	Vacuum inspection	Low vacuum	●	●
H		Copper alloy	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)	●	●
J			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●
K			PTFE		Steam (up to 184°C *2)	●	●
P			Ethylene propylene rubber		Hot water (up to 90°C *2)	●	●
L		Stainless steel	Nitrile rubber		Air/water/low vacuum/kerosene (up to 60°C)	●	●
M			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●
N			PTFE		Steam (up to 184°C *2)	●	●
R			Ethylene propylene rubber		Hot water (up to 90°C *2)	●	●

Refer to Intro Page 39 for reference on material combinations.

Ⓓ to Ⓘ

Refer to page 193 for details on the coil housing, other options and voltage, etc.

The combinations indicated with ● in the above table are available.

[Example of model No. 1]

AG31-02-1-AC100V

Model : AG31
Ⓐ Port size : Rc1/4
Ⓑ Orifice size : TOP-ø1.5, BODY-ø1.5
Ⓒ Body/sealant combination
: Body - copper alloy, sealant - nitrile rubber
Ⓓ Coil housing : Grommet lead wire
Ⓔ to Ⓗ : None
Ⓘ Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

[Example of model No. 2]

AG41-03-2-000ABS-AC100V

Model : AG41
Ⓐ Port size : Rc3/8
Ⓑ Orifice size : TOP-ø2.3, BODY-ø2.3
Ⓒ Body/sealant : Body - copper alloy/sealant - nitrile rubber
Ⓓ Coil housing : Grommet lead wire
Ⓔ Manual override (locking) : Selected
Ⓕ Mounting plate : With mounting plate
Ⓖ Other options : None
Ⓗ Surge suppressor : With surge suppressor
Ⓘ Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Precautions for model No. selection

Notes for Ⓒ

*1 : Leave blank for standard. However, to select options in Ⓓ, Ⓔ, Ⓕ, Ⓖ or Ⓗ, indicate 0 for Item Ⓒ.
*2 : When Item Ⓒ 4A/4M/4N is selected.
*3 : The ethylene propylene rubber seal combination (Item Ⓒ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)
*4 : For option codes V and W, vacuum is inspected at "leakage rate: 1.33 x 10^{-6} Pa·m^3/s or less".
*5 : For PTFE seal, O-ring material of socket will be FKM.

For Items Ⓓ to Ⓘ, the combinations indicated with codes are available.
Note that if options for Items Ⓔ to Ⓗ are not required, they should be left blank.

Ⓓ Coil housing			Ⓔ	Ⓕ	Ⓖ Other options					Ⓗ	Ⓘ Rated voltage
Description			Manual override (Locking)	Mounting plate	Cable gland (marine cable gland)			Conduit (conduit piping)		With surge suppressor	Description
					A-15a	A-15b	A-15c	CTC 19	G 1/2		
Blank	Std.	Grommet lead wire	**A**	**B**						**S**	100 VAC, 200 VAC
2E		With DIN terminal box (G1/2)									100 VAC, 200 VAC
2G		With DIN terminal box (Pg11)									12 VDC, 24 VDC, 48 VDC, 100 VDC
2H		DIN terminal box with small lamp (Pg11)							**H**		100 VAC, 200 VAC, 24 VDC
3A	Option	Open Frame — Lead wire (IP65 or equivalent)	**A**	**B**				**G**	**H**	**S**	100 VAC, 200 VAC
3M		Open Frame — With HP terminal box (G1/2)			**D**	**E**	**F**				12 VDC, 24 VDC, 48 VDC, 100 VDC
3N		Open Frame — HP terminal box with lamp (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I		Open Frame — HP term box (IP65, equiv) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J		Open Frame — HP term box, lamp (IP65, equiv) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A		Open Frame (Thermal class 180 (H)) — Lead wire	**A**	**B**				**G**	**H**	**S**	100 VAC, 200 VAC
4M		Open Frame (Thermal class 180 (H)) — With HP terminal box (G1/2)			**D**	**E**	**F**				
4N		Open Frame (Thermal class 180 (H)) — HP terminal box with lamp (G1/2)									
5A		Open Frame (diode integrated) — Lead wire (IP65 or equivalent)	**A**	**B**				**G**	**H**		100 VAC, 200 VAC
5M		Open Frame (diode integrated) — With HP terminal box (G1/2)			**D**	**E**	**F**				
5N		Open Frame (diode integrated) — HP terminal box with lamp (G1/2)									
5I		Open Frame (diode integrated) — HP term box (IP65, equiv) (G1/2)									
5J		Open Frame (diode integrated) — HP term box, lamp (IP65, equiv) (G1/2)									

⚠ Refer to the following cautions for Items Ⓓ to Ⓘ.

Blank		● Grommet lead wire 300 mm
2E 2G 2H		● DIN terminal box
3A 4A 5A		● Open frame Lead wire 300mm ● 4A (Thermal class 180 (H)) ● 5A (diode integrated)
3M 3N 4M 4N 5M 5N		● Open frame HP terminal box ● 4M, 4N (Thermal class 180 (H)) ● 5M, 5N (diode integrated)
3I 3J 5I 5J		● Open frame HP terminal box (IP65 or equivalent) ● 5I, 5J (diode integrated)

G H		● Conduit ● G(CTC19) ● H(G1/2)

Refer to page 148 for coil selection.

⚠ Precautions for model No. selection

Notes for Ⓓ

*6 : Leave blank for the standard coil housing. However, to select options in Ⓔ, Ⓕ, Ⓖ or Ⓗ, indicate 00 for Item Ⓓ.
*7 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
*8 : A DC coil for steam is available for AG41. Contact CKD for more information.

Notes for Ⓔ to Ⓗ

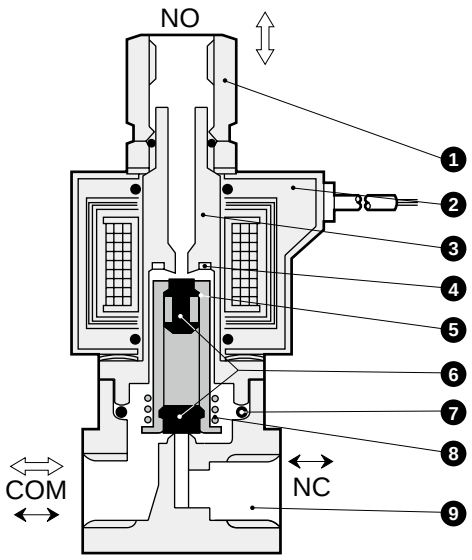
*9 : When Item Ⓒ is C, F, K, N, V or W, the manual override (Item ⒺA) is not available.
*10: For Item Ⓖ, select an option from D, E, F, G and H.
*11: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*12: As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item Ⓓ 2H), so the surge suppressor S cannot be selected.
*13: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that tropicalization is not available when the manual override option (A) is selected.

Notes for Ⓘ

*14: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item Ⓓ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
*15: For voltages other than above, contact CKD.
*16: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

Internal structure and parts list

● AG31/41 Series

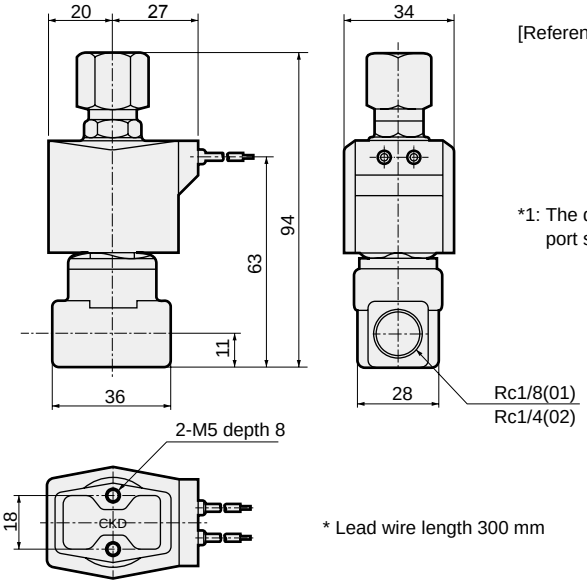


No.	Part name	Material	
1	Socket	C3604(SUS303)	Copper alloy (stainless steel)
2	Coil	-	-
3	Core assembly	SUS405 or equiv./316L/403 *1	Stainless steel
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
5	Plunger	SUS405 or equiv.	Stainless steel
6	Seal	NBR (FKM/EPDM/PTFE)	NBR : Nitrile rubber FKM : Fluoro rubber EPDM : ethylene propylene rubber PTFE : tetrafluoroethylene resin
7	O-ring	NBR (FKM/EPDM/PTFE) (AS568/019)	
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771(SUS303)	Copper alloy (stainless steel)

*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.
*2 : ( ) shows options.

Dimensions: AG31 Series CAD

● Grommet lead wire
AG31-01/02-1 to 2



[Reference] As the JIS symbol flow shows, pressure can be applied from any of the three piping ports. Generally, two orifices (TOP, BODY) have the same values and rated pressure.
When not energized : COM → NO or NO → COM
When energized : COM → NC or NC → COM

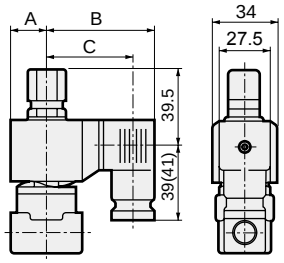
*1: The dimensions are the same for port sizes of G and NPT threads.

* Lead wire length 300 mm

Optional dimensions: AG31 Series

* Refer to the dimensions of grommet lead wire on page 194 for common dimensions.

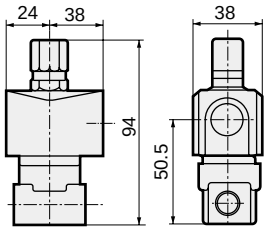
● With DIN terminal box
AG31-01/02-1 to 2-* [2E / 2G / 2H]



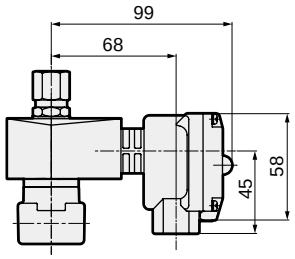
Dimensions shown in ( ) are for G1/2.

Voltage	A	B	C
AC	20	62	50.5(50)
DC	21	63.5	52(51.5)

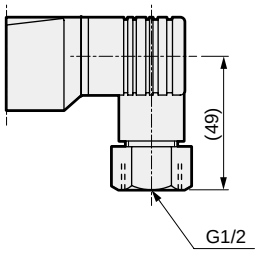
● Open frame
AG31-01/02-1 to 2-* [3A / 4A / 5A]



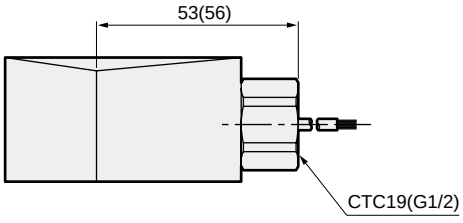
● Open frame + HP terminal box
AG31-01/02-1 to 2-* [3 / 5] [M / N / I / J] / [4M / 4N]



● DIN terminal box with small lamp + conduit (G1/2)
AG31-01/02-1 to 2-* [2H] [H]

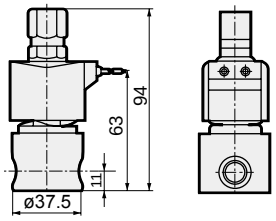


● Open frame + conduit
AG31-01/02-1 to 2-* [3A / 4A / 5A] [G / H]



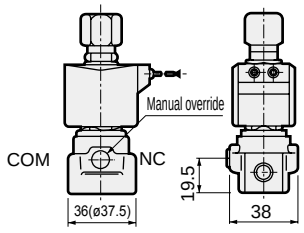
Dimensions shown in ( ) are for G1/2.

● Stainless steel body + grommet lead wire
AG31-01/02-1 to 2-[D/E/F/R/W/L/M/N]



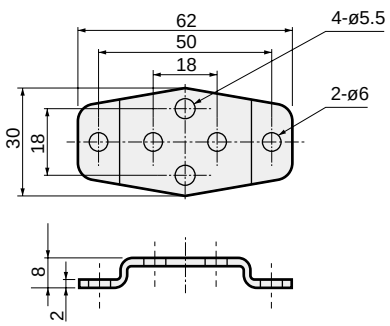
● Manual override (locking)
AG31-01/02-1 to 2-*** [A]

The figure shows copper alloy body.



Dimensions shown in ( ) are for stainless steel body.

● Mounting plate
AG31-01/02-1 to 2-*** [B]

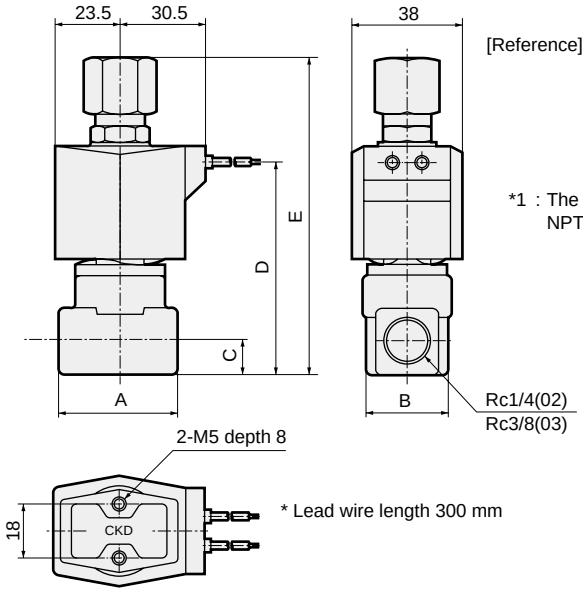


Mounting plate model	Compatibility
AG3-GE-100106-MOUNT-PLATE-KIT (Mounting plate No.1)	● All of AG31 Series

* Material: Steel/Zinc plated

Dimensions: AG41 Series

● Grommet lead wire
AG41-02/03-1 to 2



[Reference] As the JIS symbol flow shows, pressure can be applied from any of the three piping ports. Generally, two orifices (TOP, BODY) have the same values and rated pressure.
When not energized : COM → NO or NO → COM
When energized : COM → NC or NC → COM

*1 : The dimensions are the same for port sizes of G and NPT threads.

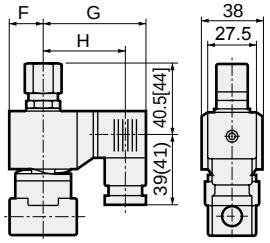
* Lead wire length 300 mm

Model No.	A	B	C	D	E
AG41-02-1 to 2	36	28	11	68	99.5
AG41-03-1 to 2	40	28	12	71	106

Optional dimensions: AG41 Series

* Refer to the dimensions of grommet lead wire above for common dimensions.

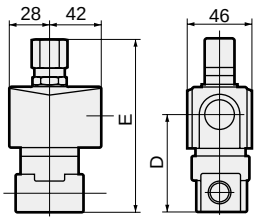
● With DIN terminal box
AG41-02/03-1 to 2-* 2E / 2G / 2H



Dimensions shown in [ ] are for Rc3/8. Dimensions shown in ( ) are for G1/2.

Voltage	F	G	H
AC	23.5	65.5	54(53.5)
DC	23.5	66	54.5(54)

● Open frame lead wire
AG41-02/03-1 to 2-* 3A / 4A / 5A

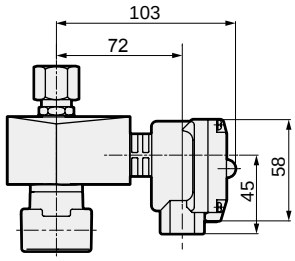


Model No.	D	E
AG41-02-1 to 2-**A	52	99.5
AG41-03-1 to 2-**A	55	106

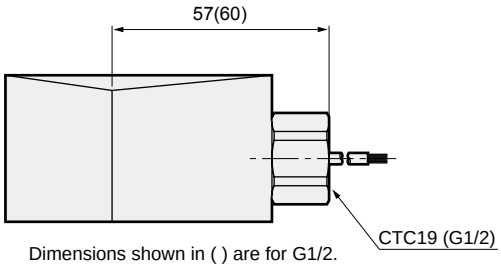
Optional dimensions: AG41 Series

* Refer to the dimensions of grommet lead wire on page 196 for common dimensions.

● Open frame + HP terminal box
AG41-02/03-1 to 2-* [3 / 5] [M / N / I / J] / [4M / 4N]



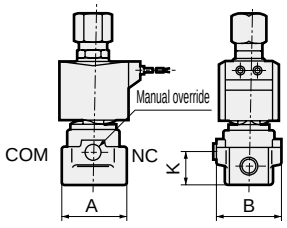
● Open frame + conduit
AG41-02/03-1 to 2-* [3A / 4A / 5A] [G / H]



Dimensions shown in ( ) are for G1/2.

● Manual override (locking)
AG41-02/03-1 to 2***[A]

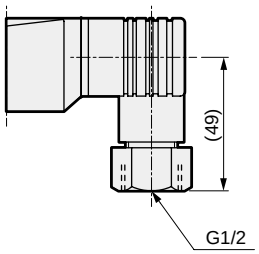
The figure shows copper alloy body.



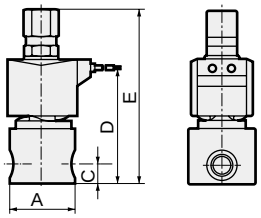
Model No.	A	B	K
AG41-02-1 to 2-***A	36(ø37.5)	38	19.5
AG41-03-1 to 2-***A	40(ø45.0)	40	22.5

Dimensions shown in ( ) are for stainless steel body.

● DIN terminal box with small lamp + conduit (G1/2)
AG41-02/03-1 to 2-* [2H] [H]

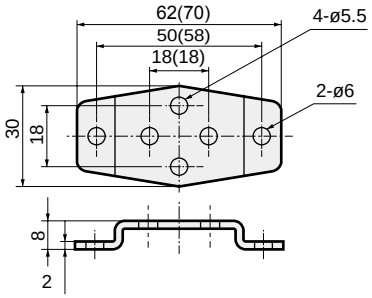


● Stainless steel body + grommet lead wire
AG41-02/03-1 to 7- [D/E/F/R/W/L/M/N]



Model No.	A	C	D	E
AG41-02-1 to 2-*	ø37.5	11	68	99.5
AG41-03-1 to 2-*	ø45	12	71	106

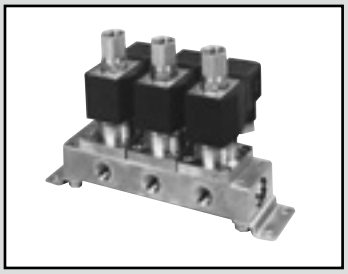
● Mounting plate
AG41-02/03-1 to 2***[B]



Dimensions shown in ( ) are for mounting plate No. 2.

Mounting plate model	Compatibility
AG4-GE-100106-MOUNT-PLATE-KIT (Mounting plate No.1)	● AG41-02/03-1 to 2 Series ● Stainless steel body AG41-02-1 to 2-[D/E/F/L/M/N/R/W]
AG4-GE-100159-MOUNT-PLATE-KIT (Mounting plate No.2)	● Stainless steel body AG41-03-1 to 2-[D/E/F/L/M/N/R/W]

* Material: Steel/Zinc plated



Direct acting 3-port solenoid valve, manifold/actuator
General purpose

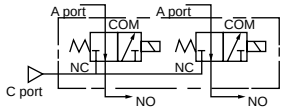
GAG31*/GAG35*, GAG41*/GAG45* Series

- Universal
- Common supply/individual exhaust, common supply/separate flow

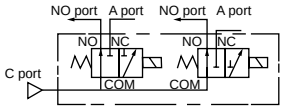
CE Refer to the Ending for details. RoHS CAD

Manifold circuit configuration

- GAG31*/41* (Common supply/individual exhaust)



- GAG35*/45* (Common supply/separate flow)



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Standard specifications	Optional specifications	
Working fluid	Air/low vacuum [1.33 x 10^2 Pa (abs)]/water/kerosene/oil (50 mm^2/s or less)	Hot water	Steam
Working pressure differential MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)		
Max. working pressure MPa	1 (≈150 psi, 10 bar)		
Proof pressure (water pressure) MPa	10 (≈1500 psi, 100 bar)		
Fluid temperature (*1) °C	-10 (14°F) to 60 (140°F)	-10 (14°F) to 90 (194°F)	-10 (14°F) to 184 (363.2°F)
Ambient temperature °C	-20 (-4°F) to 60 (140°F)	-20 (-4°F) to 100 (212°F)	
Thermal class	Class 130 (B)	Class 180 (H)	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)		300 or less (air)
Mounting orientation	Unrestricted		
Body/seal material	Copper alloy/nitrile rubber	Copper alloy/EPM rubber	Copper alloy/PTFE

*1 : No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item / Model No.	NO port size	Orifice size (mm)		Max. working pressure differential (MPa)							Rated voltage	Apparent power (VA)				Power consumption (W)	
				Air		Water(hot)/Kerosene		Oil (50 mm^2/s)		Steam		When holding		When starting		AC	DC
		TOP	BODY	AC	DC	AC	DC	AC	DC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	
GAG311 -1	Rc1/8	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	0.7	100 VAC 50/60 Hz *8 200 VAC 50/60 Hz *8 12 VDC 24 VDC 48 VDC 100 VDC	14	11	20	16	6/4.2	11 (8.1)
351 -2		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4							
GAG312 -1	Rc1/4	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	0.7							
352 -2		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4							
GAG412 -1	Rc1/4	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0		22	17	35	27	8.3/6.2	11 (10.4)
452 -2		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	0.7							
GAG413 -1	Rc3/8	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0							
453 -2		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	0.7							

*1 : The model numbers above are for the basic NO port size (Rc) and orifice size. Refer to How to order for other combinations.
*2 : For A and C port sizes, refer to How to order (page 200) and dimensions (page 204).
*3 : Refer to DC column for the max. working pressure differential of coil with diode.
*4 : The voltage fluctuation range must be within ±10% of the rated voltage.
*5 : Values shown in ( ) are for the DC voltage type with DIN terminal box, indicating the max. working pressure when pressurized from the NO port.
*6 : When using in a continuously energized state, use a fluoro rubber seal.
*7 : NO port pressurization is not possible for PTFE seal.
*8 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Weight

Model No.	Weight (kg)									
	Actuator only	2 stations	3 stations	4 stations	5 stations	6 stations	7 stations	8 stations	9 stations	10 stations
GAG31* GAG35*	0.35	1.4	2.0	2.8	3.2	4.0	4.6	5.2	6.1	6.4
GAG412 GAG452	0.44	1.6	2.3	3.2	3.7	4.6	5.3	6.0	6.9	7.3
GAG413 GAG453	0.45	1.6	2.3	3.2	3.7	4.6	5.3	6.0	7.0	7.4

Optional specifications (fluid temperature, ambient temperature, valve seat leakage)

Sealant	Fluoro rubber		Ethylene propylene rubber		PTFE	
Coil (thermal class)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature (*1) °C	-10 to 60	-10 to 90	0 to 60 (*3)	0 to 90 (*3)	-10 to 60	-10 to 184
Ambient temperature °C	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)				300 or less (air)	

*1 : No freezing.
*2 : -20 to 80°C when coil housing is HP terminal box with lamp.
*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

Model No.	Port size	Orifice size (mm)		Flow characteristics					
		TOP	BODY	C[dm^3/(s·bar)]		b		Cv	
				TOP	BODY	TOP	BODY	TOP	BODY
GAG311-1	Rc1/8	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
GAG312-1	Rc1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
GAG412-1	Rc1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19
GAG413-1	Rc3/8	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19

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

How to order

● Common supply/individual exhaust (Port C pressurization)

GAG31 1 ( ) - 1 - 7 - 0 3A A G S - AC100V

● Common supply/separate flow (Port C pressurization)

GAG35

● Common supply/individual exhaust (Port C pressurization)

GAG41

● Common supply/separate flow (Port C pressurization)

GAG45

Model No.

Ⓐ NO port size

Ⓑ Thread

Ⓒ Orifice size

Ⓓ Manifold *2 station No.

Ⓔ Body/sealant combination *3 *4 *5 *6

Ⓕ Coil housing

Ⓖ Manual override (locking)

Ⓗ Other options

Ⓘ With surge suppressor

Ⓙ Rated voltage

Code	Description	Model No. GAG3**	Model No. GAG4**
Ⓐ NO port size			
1	1/8	●	
2	1/4	●	●
3	3/8		●
Ⓑ Thread			
Blank	Rc	●	●
G	G	●	●
N	NPT	●	●

Ⓒ Orifice size

	GAG3**		GAG4**			
	TOP	**BODY**	**TOP**	**BODY**		
1	ø1.5	ø1.5	ø2.0	ø2.0	●	●
2	ø2.0	ø2.0	ø2.3	ø2.3	●	●

Ⓓ Manifold station No.			
2 to 10	2 stations to 10 stations	●	●
0	Actuator only	●	●

Ⓔ Body/sealant combination

		Body	Seal	Treatment	Remarks		
Blank	Std.	Copper alloy	Nitrile rubber	-	Air/water/low vac/kerosene (≤60°C)	●	●
B	Option	Copper alloy	Fluoro rubber -	-	Air/low vac/kerosene (≤90°C *4)	●	●
C	Option	Copper alloy	PTFE	-	Steam (up to 184°C *4)	●	●
D	Option	Stainless steel	Nitrile rubber	-	Air/water/low vac/kerosene (≤60°C)	●	●
E	Option	Stainless steel	Fluoro rubber -	-	Air/low vac/kerosene (≤90°C *4)	●	●
F	Option	Stainless steel	PTFE	-	Steam (up to 184°C *4)	●	●
H	Option	Copper alloy	Nitrile rubber	Oil-prohibited	Air/water/low vac/kerosene (≤60°C)	●	●
J	Option	Copper alloy	Fluoro rubber	Oil-prohibited	Air/low vac/kerosene (≤90°C *4)	●	●
K	Option	Copper alloy	PTFE	Oil-prohibited	Steam (up to 184°C *4)	●	●
P	Option	Copper alloy	Ethylene propylene rubber	Oil-prohibited	Hot water (up to 90°C *4)	●	●
L	Option	Stainless steel	Nitrile rubber	Oil-prohibited	Air/water/low vac/kerosene (≤60°C)	●	●
M	Option	Stainless steel	Fluoro rubber	Oil-prohibited	Air/low vac/kerosene (≤90°C *4)	●	●
N	Option	Stainless steel	PTFE	Oil-prohibited	Steam (up to 184°C *4)	●	●
R	Option	Stainless steel	Ethylene propylene rubber	Oil-prohibited	Hot water (up to 90°C *4)	●	●

Refer to Intro Page 39 for reference on material combinations.

Ⓕ to Ⓙ

Refer to page 201 for details on the coil housing, other options and voltage, etc.

The combinations indicated with ● in the above table are available.

[Example of model No. 1]

GAG311-1-4-AC200V

Model: GAG311 (common supply/individual exhaust, port C pressurization)

- Ⓐ NO port size : 1/8
- Ⓑ Thread : Rc
- Ⓒ Orifice size : TOP-ø1.5, BODY-ø1.5
- Ⓓ Manifold station No. : 4 stations
- Ⓔ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓕ Coil housing : Grommet lead wire
- Ⓖ to Ⓘ : None
- Ⓙ Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

[Example of model No. 2]

GAG352G-2-7-000AS-AC200V

Model: GAG352 (common supply/separate flow, port C pressurization)

- Ⓐ NO port size : 1/4
- Ⓑ Thread : G
- Ⓒ Orifice size : TOP-ø2.0, BODY-ø2.0
- Ⓓ Manifold station No. : 7 stations
- Ⓔ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓕ Coil housing : Grommet lead wire
- Ⓖ Manual override (locking) : Selected
- Ⓗ Other options : None
- Ⓘ Surge suppressor : With surge suppressor
- Ⓙ Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

⚠ Precautions for model No. selection

*1 : Orders for only the masking plate and sub-plate are also available. Contact CKD for details.

Notes for Ⓓ to Ⓔ

*2 : For 11 or more manifold station No., contact CKD.

*3 : Leave blank for standard. However, to select options in Ⓕ, Ⓖ, Ⓗ or Ⓘ, indicate 0 for Item Ⓔ.

*4 : When Item E 4A/4M/4N is selected.

*5 : The ethylene propylene rubber seal combination (Item Ⓔ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)

*6 : For PTFE seal, O-ring material for socket and sub-plate connection will be FKM.

For Items Ⓕ to Ⓙ, the combinations indicated with codes are available.
Note that if options for Items Ⓖ to Ⓘ are not required, they should be left blank.

Ⓕ Coil housing				Ⓖ	Ⓗ Other options					Ⓘ	Ⓙ Rated voltage
Description				Manual override (Locking)	Cable gland (marine cable gland)			Conduit (conduit piping)		With surge suppressor	Description
					A-15a	A-15b	A-15c	CTC19	G1/2		
Blank	Std.	Grommet lead wire		**A**						**S**	100 VAC, 200 VAC
2E	Option	With DIN terminal box	(G1/2)								100 VAC, 200 VAC
2G		With DIN terminal box	(Pg11)								12 VDC, 24 VDC, 48 VDC, 100 VDC
2H		DIN terminal box with small lamp	(Pg11)						**H**		100 VAC, 200 VAC, 24 VDC
3A		Open frame	Lead wire (IP65 or equivalent)					**G**	**H**		100 VAC, 200 VAC
3M			With HP terminal box (G1/2)								12 VDC, 24 VDC, 48 VDC, 100 VDC
3N			HP terminal box with lamp (G1/2)		**D**	**E**	**F**			**S**	100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I			HP terminal box (IP65 or equivalent) (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J			HP term box, lamp (IP65, equiv) (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A		Open frame (Thermal class 180 (H))	Lead wire					**G**	**H**	**S**	
4M			With HP terminal box (G1/2)		**D**	**E**	**F**				100 VAC, 200 VAC
4N			HP terminal box with lamp (G1/2)								
5A		Open frame (diode integrated)	Lead wire (IP65 or equivalent)					**G**	**H**		
5M			With HP terminal box (G1/2)								
5N			HP terminal box with lamp (G1/2)		**D**	**E**	**F**				100 VAC, 200 VAC
5I			HP terminal box (IP65 or equivalent) (G1/2)								
5J			HP term box, lamp (IP65, equiv) (G1/2)								

⚠ Refer to the following cautions for Items Ⓕ to Ⓙ.

Blank

● Grommet lead wire 300 mm

2E 2G 2H

● DIN terminal box

3A 4A 5A

● Open frame
Lead wire 300 mm
● 4A (Thermal class 180 (H))
● 5A (diode integrated)

3M 3N 4M 4N 5M 5N

● Open frame HP terminal box
● 4M, 4N (Thermal class 180 (H))
● 5M, 5N (diode integrated)

3I 3J 5I 5J

● Open frame HP terminal box (IP65 or equivalent)
● 5I, 5J (diode integrated)

Refer to page 148 for coil selection.

G H

● Conduit
● G(CTC19)
● H(G1/2)

⚠ Precautions for model No. selection

Notes for Ⓕ

*7 : Leave blank for the standard coil housing. However, to select options in Ⓖ, Ⓗ or Ⓘ, indicate 00 for Item Ⓕ.
*8 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
*9 : A DC coil for steam is available for GAG4**. Contact CKD for more information.

Notes for Ⓖ to Ⓘ

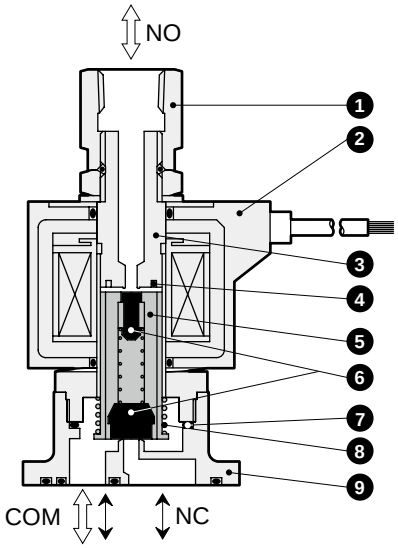
*10: When Item Ⓔ is C, F, K or N, the manual override (Item Ⓖ A) is not available.
*11: For Item Ⓗ, select an option from D, E, F, G and H.
*12: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*13: As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item Ⓕ 2H), so the surge suppressor S cannot be selected.
*14: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that tropicalization is not available when the manual override option (A) is selected.

Notes for Ⓙ

*15: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item Ⓕ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
*16: For voltages other than above, contact CKD.
*17: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

Internal structure and parts list

● GAG31*/GAG35*/GAG41*/GAG45* actuator

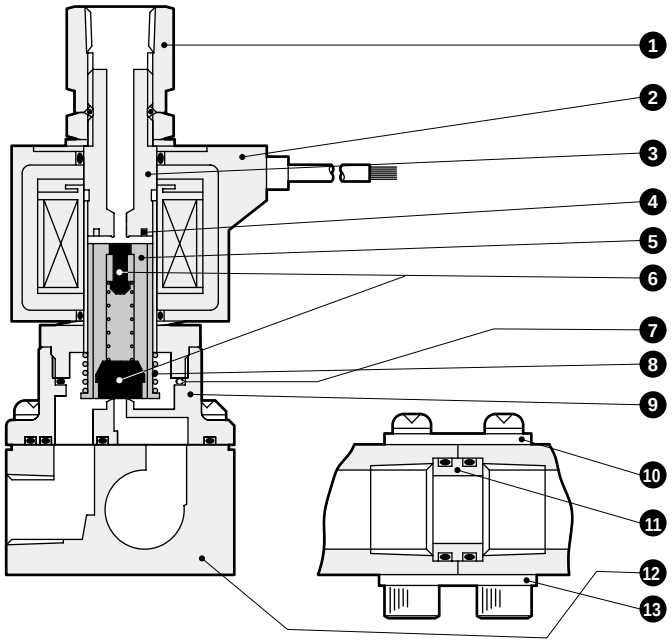


No.	Part name	Material	
1	Socket	C3604(SUS303)	Copper alloy (stainless steel)
2	Coil	-	-
3	Core assembly	SUS405 or equiv./316L/403 *1	Stainless steel
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
5	Plunger	SUS405 or equiv.	Stainless steel
6	Seal	NBR (FKM/EPDM/PTFE)	(NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin)
7	O-ring	NBR (FKM/EPDM/PTFE) (Size: AS568-019)	
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771(SCS13)	Copper alloy (stainless steel)

*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.
*2 : ( ) shows options.
*3 : 4 body mounting screws and 2 O-rings are attached to the actuator only.

Internal structure and parts list

● GAG31*/GAG35*/GAG41*/GAG45* manifold



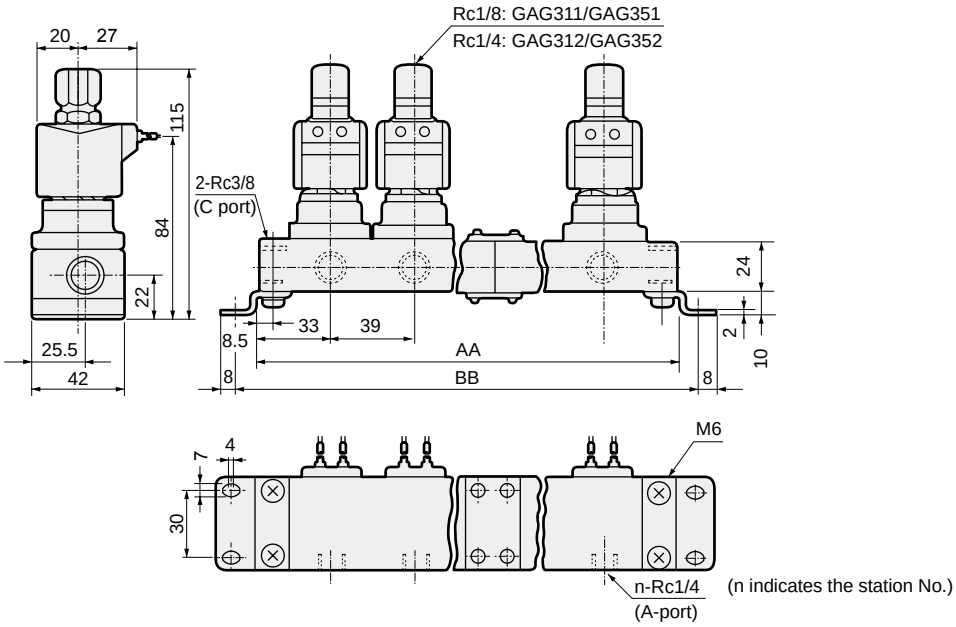
No.	Part name	Material	
1	Socket	C3604(SUS303)	Copper alloy (stainless steel)
2	Coil	-	-
3	Core assembly	SUS405 or equiv./316L/403 *1	Stainless steel
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
5	Plunger	SUS405 or equiv.	Stainless steel
6	Seal	NBR (FKM/EPDM/PTFE)	(NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin)
7	O-ring	NBR (FKM/EPDM/PTFE) (Size: AS568-019)	
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771(SCS13)	Copper alloy (stainless steel)
10	Holder	SPCC	Steel
11	Connector	C3604(SUS304)	Copper alloy (stainless steel)
12	Sub-plate	C3604(SUS303)	Copper alloy (stainless steel)
13	Connecting plate	SPCC	Steel

*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.

*2 : ( ) shows options.

Dimensions: GAG31*/GAG35* Series

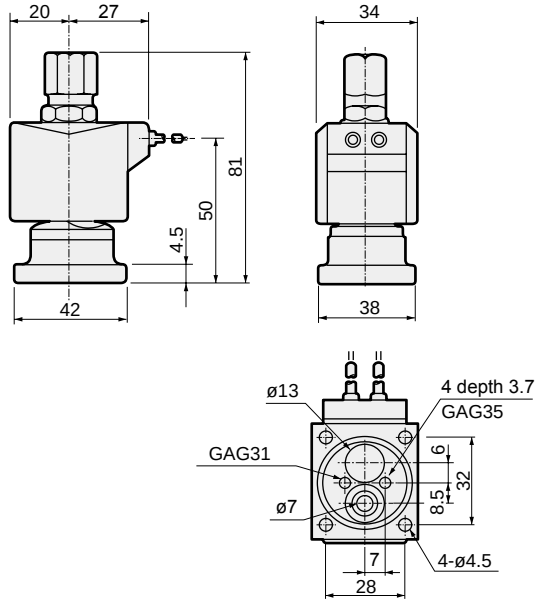
● Manifold (grommet lead wire)
GAG3**-1 to 2- 2 to 10



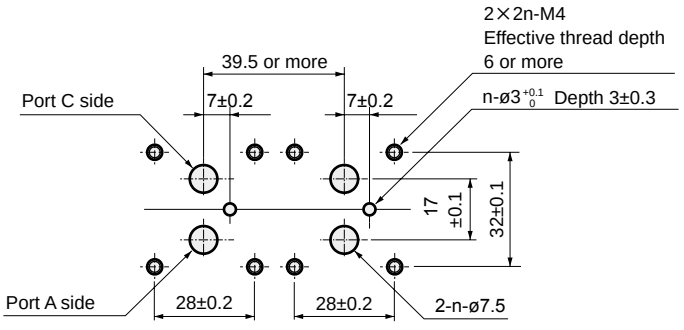
Station No.	AA	BB	Manifold configuration	Station No.	AA	BB	Manifold configuration
2	106	122	2 stations x 1	7	329	345	5 stations + 2 stations
3	145	161	3 stations x 1	8	368	384	5 stations + 3 stations
4	212	228	2 stations x 2	9	435	451	3 stations x 3
5	223	239	5 stations x 1	10	446	462	5 stations x 2
6	290	306	3 stations x 2	Contact CKD for 11 stations or more.			

*1 : Manifold configuration combines 2-station, 3-station and 5-station units.
*2 : The dimensions are the same for port sizes of G and NPT threads.

● Actuator (grommet lead wire)
GAG3**-1 to 2- 0



● Recommended dimensions for actuator mounting

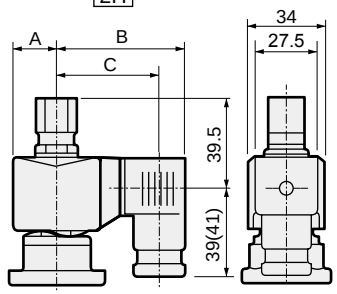


■ Machining drawing when using 2 actuators

Optional dimensions: GAG31*/GAG35*

* Refer to the dimensions of grommet lead wire on page 204 for common dimensions.

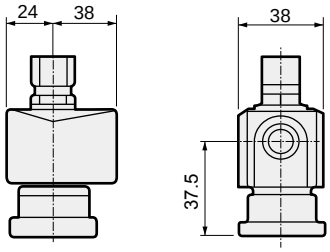
● With DIN terminal box
GAG3**-1 to 2-0 to 10-* [2E] [2G] [2H]



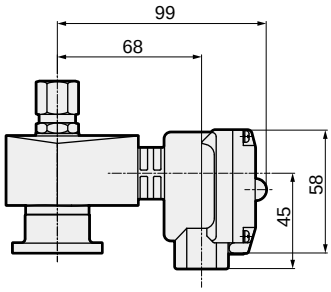
Dimensions shown in ( ) are for G1/2.

Voltage	A	B	C
AC	20	62	50.5(50)
DC	21	63.5	52(51.5)

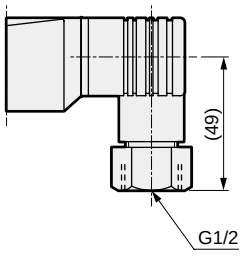
● Open frame lead wire
GAG3**-1 to 2-0 to 10-* [3A] [4A] [5A]



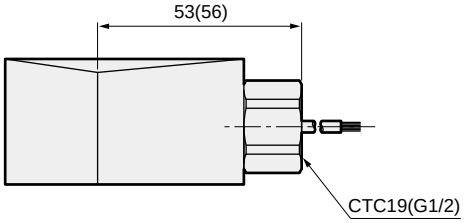
● Open frame + HP terminal box
GAG3**-1 to 2-0 to 10-* [3 5] [M N I J] / [4M 4N]



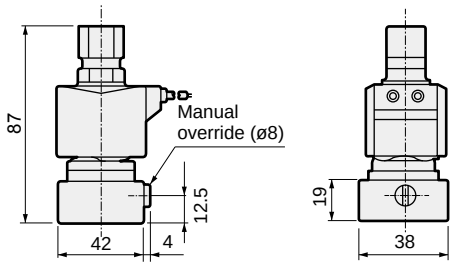
● DIN terminal box with small lamp + conduit (G1/2)
GAG3**-1 to 2-0 to 10-* [2H] [H]



● Open frame + conduit
GAG3**-1 to 2-0 to 10-* [3A 4A 5A] [G H]



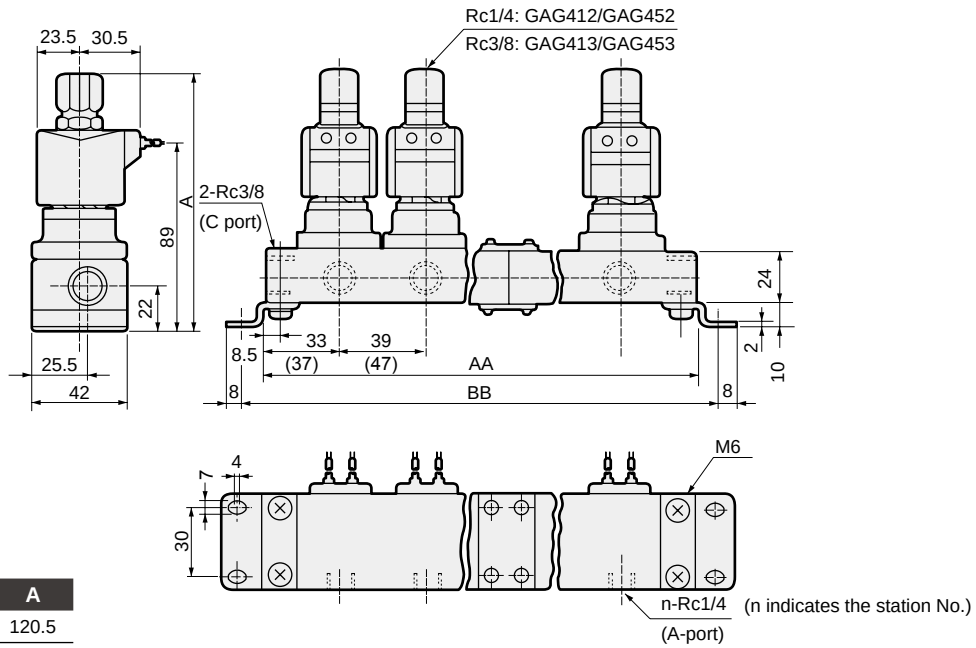
● Manual override (locking)
GAG3**-1 to 2-0 to 10-*** [A]



Dimensions shown in ( ) are for G1/2.

Dimensions: GAG41*/45* Series

● Manifold (grommet lead wire)
GAG4**-1 to 2- 2 to 10

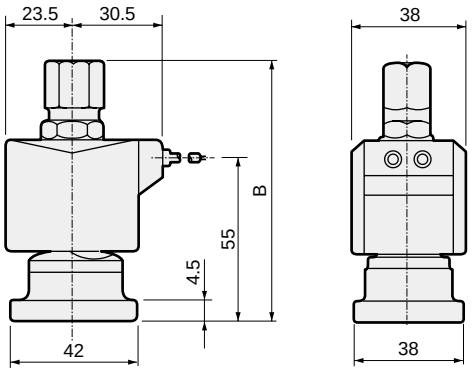


Model No.	A
GAG412/452-1 to 2	120.5
GAG413/453-1 to 2	124

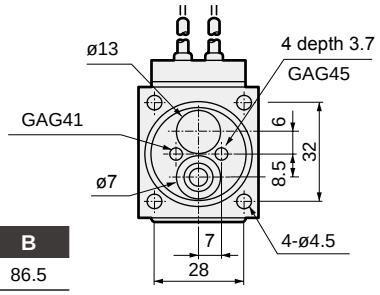
Station No.	AA	BB	Manifold configuration	Station No.	AA	BB	Manifold configuration
2	106(122)	122(138)	2 stations x 1	7	329(385)	345(401)	5 stations + 2 stations
3	145(169)	161(185)	3 stations x 1	8	368(432)	384(448)	5 stations + 3 stations
4	212(244)	228(260)	2 stations x 2	9	435(507)	451(523)	3 stations x 3
5	223(263)	239(279)	5 stations x 1	10	446(526)	462(542)	5 stations x 2
6	290(338)	306(354)	3 stations x 2	Contact CKD for 11 stations or more.			

*1 : Manifold configuration combines 2-station, 3-station and 5-station units.
*2 : Dimensions shown in ( ) are for open frame.
*3 : The dimensions are the same for port sizes of G and NPT threads.

● Actuator (grommet lead wire)
GAG4**-1 to 2- 0

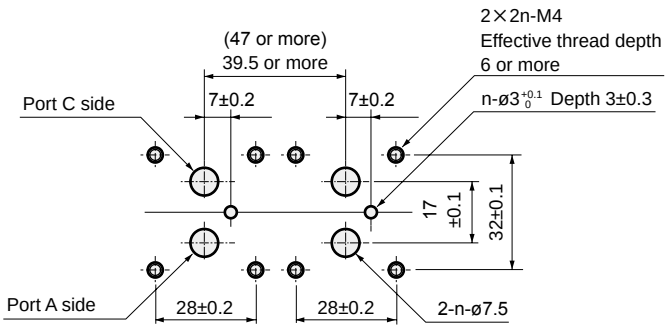


* Lead wire length 300 mm



Model No.	B
GAG412/452-1 to 2	86.5
GAG413/453-1 to 2	90

● Recommended dimensions for actuator mounting



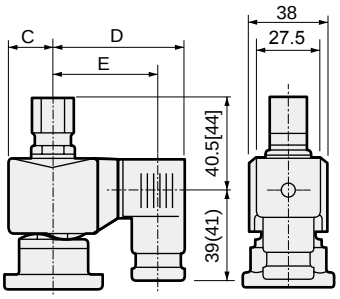
■ Machining drawing when using 2 actuators

Optional dimensions: GAG41*/45* Series

CAD

* Refer to the dimensions of grommet lead wire on page 206 for common dimensions.

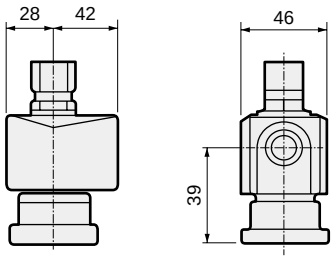
● With DIN terminal box
GAG4**-1 to 2-0 to 10-* [2E / 2G / 2H]



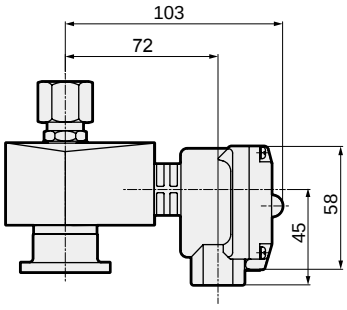
Dimensions shown in ( ) are for G1/2.
Dimensions shown in [ ] are for Rc3/8.

Voltage	C	D	E
AC	23.5	65.5	54(53.5)
DC	23.5	66	54.5(54)

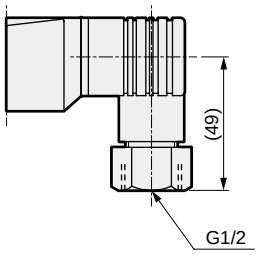
● Open frame lead wire
GAG4**-1 to 2-0 to 10-* [3A / 4A / 5A]



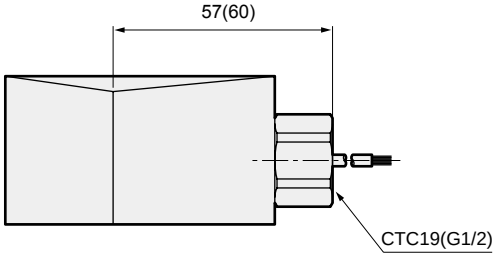
● Open frame + HP terminal box
GAG4**-1 to 2-0 to 10-* [3 / 5] [M / N / I / J] / [4M / 4N]



● DIN terminal box with small lamp + conduit (G1/2)
GAG4**-1 to 2-0 to 10-* [2H] [H]

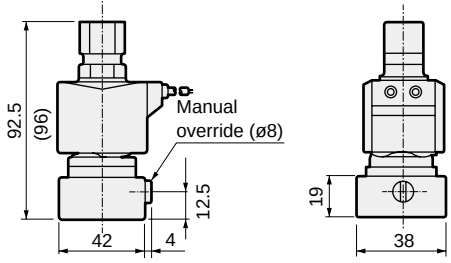


● Open frame + conduit
GAG4**-1 to 2-0 to 10-* [3A / 4A / 5A] [G / H]



Dimensions shown in ( ) are for G1/2.

● Manual override (locking)
GAG4**-1 to 2-0 to 10-*** [A]



Direct acting 3-port solenoid valve, single unit
General purpose

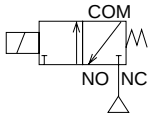
AG33/AG43 Series

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

CE Refer to the Ending for details. RoHS CAD

JIS symbol

- AG33/43: NC pressurization



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Standard specifications	Optional specifications	
Working fluid	Air/low vacuum [1.33 x 10^2 Pa (abs)]/water/kerosene/oil (50 mm^2/s or less)	Hot water	Steam
Working pressure differential MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)		
Max. working pressure MPa	1 (≈150 psi, 10 bar)		
Proof pressure (water pressure) MPa	25 (≈3700 psi, 250 bar)		
Fluid temperature (*1) °C	-10 (14°F) to 60 (140°F)	-10 (14°F) to 90 (194°F)	-10 (14°F) to 184 (363.2°F)
Ambient temperature °C	-20 (-4°F) to 60 (140°F)	-20 (-4°F) to 100 (212°F)	
Thermal class	Class 130 (B)	Class 180 (H)	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)		300 or less (air)
Mounting orientation	Unrestricted		
Body/seal material	Copper alloy/nitrile rubber	Copper alloy/EPM rubber	Copper alloy/PTFE

*1: No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item / Model No.	Port size	Orifice size (mm)		Max. working pressure differential (MPa)							Rated voltage	Apparent power (VA)				Power consump (W)		Weight (kg)
				Air		Water(hot)/Kerosene		Oil (50 mm^2/s)		Steam		When holding		When starting		AC	DC	
		TOP	BODY	AC	DC	AC	DC	AC	DC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz		
AG33-01-1	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	100 VAC 50/60 Hz *6 200 VAC 50/60 Hz *6 12 VDC 24 VDC 48 VDC 100 VDC	14	11	20	16	6/4.2	11 (8.1)	0.36
-01-2		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7								
-02-1	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0								
-02-2		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7								
AG43-02-4	Rc1/4	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7		22	17	35	27	8.3/6.2	11 (10.4)	0.45
-02-5		3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4								
-03-4	Rc3/8	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7								0.48
-03-5		3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4								

*1 : The model numbers above show the basic port size (Rc) and orifice size. Refer to How to order for other combinations.
*2 : Refer to DC column for the max. working pressure differential of coil with diode.
*3 : The voltage fluctuation range must be within ±10% of the rated voltage.
*4 : Values shown in ( ) are for the DC voltage type with DIN terminal box.
*5 : When using in vacuum, vacuum the NO port side.
*6 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Optional specifications (fluid temperature, ambient temperature, valve seat leakage)

Sealant	Fluoro rubber		Ethylene propylene rubber		PTFE	
Coil (thermal class)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature (*1) °C	-10 to 60	-10 to 90	0 to 60 (*3)	0 to 90 (*3)	-10 to 60	-10 to 184
Ambient temperature °C	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)				300 or less (air)	

*1 : No freezing.
*2 : -20 to 80°C when coil housing is HP terminal box with lamp.
*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

Model No.	Port size	Orifice size (mm)		Flow characteristics					
		TOP	BODY	C[dm^3/(s·bar)]		b		Cv	
				TOP	BODY	TOP	BODY	TOP	BODY
AG33-01-1	Rc1/8	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-01-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-1	Rc1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-02-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
AG43-02-4	Rc1/4	3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31
-02-5		3.5	3.0	1.5	1.1	0.62	0.52	0.40	0.31
-03-4	Rc3/8	3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31
-03-5		3.5	3.0	1.5	1.1	0.62	0.52	0.40	0.31

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

How to order

AG33 - **02** - **2** - **H** **2G** **A** **B** ** ** ** ** - **AC100V**

AG43

Model No.

Ⓓ Coil housing
Ⓖ Other options
Ⓔ Manual override (locking)
Ⓗ With surge suppressor
Ⓕ Mounting plate
Ⓘ Rated voltage

Ⓐ Port size
Ⓑ Orifice size
Ⓒ Body/sealant combination
*1
*2
*3
*4

Code	Description	Code	Description	Code	Description	Model No. AG33	Model No. AG43
Ⓐ Port size							
01	Rc1/8	**1G**	G1/8	**1N**	1/8NPT	●	
02	Rc1/4	**2G**	G1/4	**2N**	1/4NPT	●	●
03	Rc3/8	**3G**	G3/8	**3N**	3/8NPT		●

Ⓑ Orifice size

	AG33		AG43			
	TOP	BODY	TOP	BODY		
1	ø1.5	ø1.5	-	-	●	
2	ø2.0	ø2.0	-	-	●	
4	-	-	ø3.0	ø3.0		●
5	-	-	ø3.5	ø3.0		●

Ⓒ Body/sealant combination

		Body	Seal	Treatment	Remarks		
Blank	Std.	Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
B	Option		Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●
C			PTFE		Steam (up to 184°C *2)	●	●
D		Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
E			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●
F			PTFE		Steam (up to 184°C *2)	●	●
H		Copper alloy	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)	●	●
J			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●
K			PTFE		Steam (up to 184°C *2)	●	●
P			Ethylene propylene rubber		Hot water (up to 90°C *2)	●	●
L		Stainless steel	Nitrile rubber		Air/water/low vacuum/kerosene (up to 60°C)	●	●
M			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●
N			PTFE		Steam (up to 184°C *2)	●	●
R			Ethylene propylene rubber		Hot water (up to 90°C *2)	●	●

Refer to Intro Page 39 for reference on material combinations.

Ⓓ to Ⓘ

Refer to page 211 for details on the coil housing, other options and voltage, etc.

The combinations indicated with ● in the above table are available.

[Example of model No. 1]
AG33-02-1-AC100V
Model: AG33
Ⓐ Port size : Rc1/4
Ⓑ Orifice size : TOP-ø1.5, BODY-ø1.5
Ⓒ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
Ⓓ Coil housing : Grommet lead wire
Ⓔ to Ⓗ : None
Ⓘ Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

[Example of model No. 2]
AG43-03-4-000ABS-AC100V
Model: AG43
Ⓐ Port size : Rc 3/8
Ⓑ Orifice size : TOP-ø3.0, BODY-ø3.0
Ⓒ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
Ⓓ Coil housing : Grommet lead wire
Ⓔ Manual override (locking) : Selected
Ⓕ Mounting plate : With mounting plate
Ⓖ Other options : None
Ⓗ Surge suppressor : With surge suppressor
Ⓘ Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Precautions for model No. selection

Notes for Ⓒ

*1 : Leave blank for standard. However, to select options in Ⓓ, Ⓔ, Ⓕ, Ⓖ or Ⓗ, indicate 0 for Item Ⓒ.
*2 : When Item Ⓒ 4A/4M/4N is selected.
*3 : The ethylene propylene rubber seal combination (Item Ⓒ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)
*4 : For PTFE seal, O-ring material of socket will be FKM.

For Items Ⓓ to Ⓘ, the combinations indicated with codes are available.
Note that if options for Items Ⓔ to Ⓗ are not required, they should be left blank.

Ⓓ Coil housing				Ⓔ	Ⓕ	Ⓖ Other options					Ⓗ	Ⓘ Rated voltage
Description				Manual override (Locking)	Mounting plate	Cable gland (marine cable gland)			Conduit (conduit piping)		With surge suppressor	Description
						A-15a	A-15b	A-15c	CTC19	G1/2		
Blank	Std.	Grommet lead wire		**A**	**B**						**S**	100 VAC, 200 VAC
2E	Option	With DIN terminal box (G1/2)										100 VAC, 200 VAC
2G		With DIN terminal box (Pg11)										12 VDC, 24 VDC, 48 VDC, 100 VDC
2H		DIN terminal box with small lamp(Pg11)								**H**		100 VAC, 200 VAC, 24 VDC
3A		Open frame	Lead wire (IP65 or equivalent)	**A**	**B**				**G**	**H**	**S**	100 VAC, 200 VAC
3M			With HP terminal box(G1/2)			**D**	**E**	**F**				12 VDC, 24 VDC, 48 VDC, 100 VDC
3N			HP terminal box with lamp(G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I			HP term box (IP65, equiv) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J			HP term box, lamp (IP65, equiv) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A		Open frame (Thermal class 180 (H))	Lead wire	**A**	**B**				**G**	**H**	**S**	100 VAC, 200 VAC
4M			With HP terminal box(G1/2)			**D**	**E**	**F**				
4N			HP terminal box with lamp(G1/2)									
5A		Open frame (diode integrated)	Lead wire (IP65 or equivalent)	**A**	**B**				**G**	**H**		100 VAC, 200 VAC
5M			With HP terminal box(G1/2)			**D**	**E**	**F**				
5N			HP terminal box with lamp(G1/2)									
5I			HP term box (IP65, equiv) (G1/2)									
5J			HP term box, lamp (IP65, equiv) (G1/2)									

⚠ Refer to the following cautions for Items Ⓓ to Ⓘ.

Blank		● Grommet lead wire 300 mm
2E **2G** **2H**		● DIN terminal box
3A **4A** **5A**		● Open frame Lead wire 300 mm ● 4A (Thermal class 180 (H)) ● 5A (diode integrated)
3M **3N** **4M** **4N** **5M** **5N**		● Open frame HP terminal box ● 4M, 4N (Thermal class 180 (H)) ● 5M, 5N (diode integrated)
3I **3J** **5I** **5J**		● Open frame HP terminal box (IP65 or equivalent) ● 5I, 5J (diode integrated)

G **H**		● Conduit ● G(CTC19) ● H(G1/2)

Refer to page 148 for coil selection.

⚠ Precautions for model No. selection

Notes for Ⓓ

*5 : Leave blank for the standard coil housing. However, to select options in Ⓔ, Ⓕ, Ⓖ or Ⓗ, indicate 00 for Item Ⓓ.
*6 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
*7 : A DC coil for steam is available for AG43. Contact CKD for more information.

Notes for Ⓔ to Ⓗ

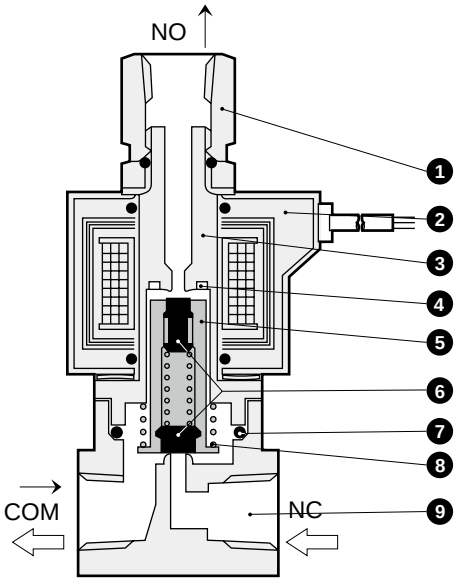
*8 : When Item Ⓒ is C, F, K or N, the manual override (Item Ⓔ A) is not available.
*9 : For Ⓖ, select an option from D, E, F, G and H.
*10: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*11: As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item Ⓓ 2H), so the surge suppressor S cannot be selected.
*12: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that tropicalization is not available when the manual override option (A) is selected.

Notes for Ⓘ

*13: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item Ⓓ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
*14: For voltages other than above, contact CKD.
*15: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

Internal structure and parts list

● AG33/43 Series



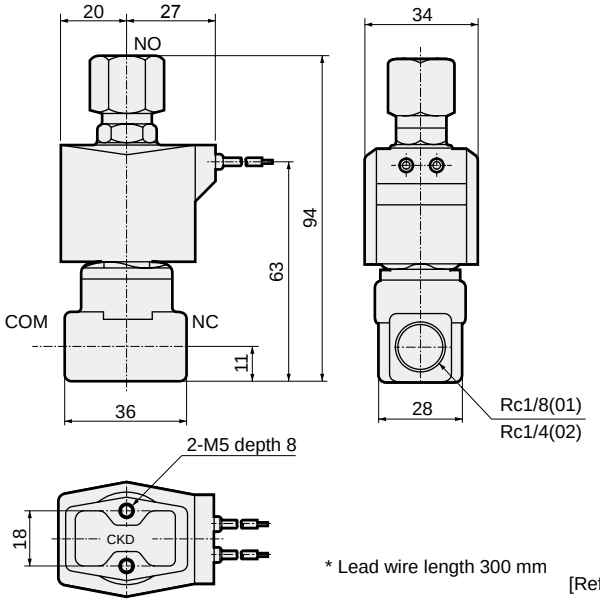
No.	Part name	Material	
1	Socket	C3604(SUS303)	Copper alloy (stainless steel)
2	Coil	-	-
3	Core assembly	SUS405 or equiv./316L/403 *1	Stainless steel
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
5	Plunger	SUS405 or equiv.	Stainless steel
6	Seal	NBR (FKM/EPDM/PTFE)	NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin
7	O-ring	NBR (FKM/EPDM/PTFE) (Size: AS568-019)	
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771(SUS303)	Copper alloy (stainless steel)

*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.
*2 : ( ) shows options.

Dimensions: AG33 Series

CAD

● Grommet lead wire
AG33-01/02-1 to 2



* Lead wire length 300 mm

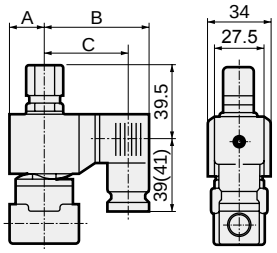
[Reference] As the JIS symbol flow shows, this is dedicated for NC port pressurization.
Pressurization from other ports is not possible.
When not energized : COM → NO
When energized : NC → COM

*1 : The dimensions are the same for port sizes of G and NPT threads.

Optional dimensions: AG33 Series

* Refer to the dimensions of grommet lead wire on page 212 for common dimensions.

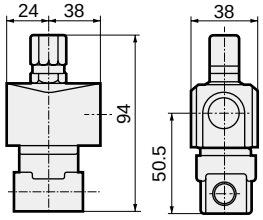
● With DIN terminal box
AG33-01/02-1 to 2-* [2E / 2G / 2H]



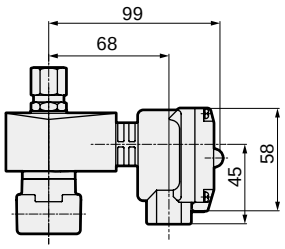
Dimensions shown in ( ) are for G1/2.

Voltage	A	B	C
AC	20	62	50.5(50)
DC	21	63.5	52(51.5)

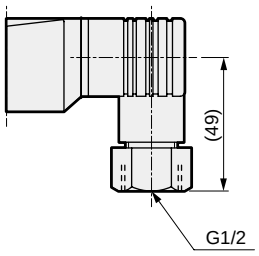
● Open frame lead wire
AG33-01/02-1 to 2-* [3A / 4A / 5A]



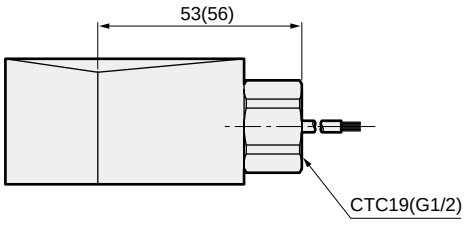
● Open frame + HP terminal box
AG33-01/02-1 to 2-* [3 / 5] [M / N / I / J] / [4M / 4N]



● DIN terminal box with small lamp + conduit (G1/2)
AG33-01/02-1 to 2-* [2H] [H]

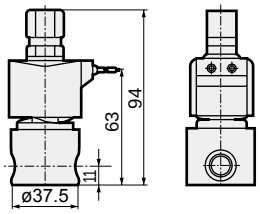


● Open frame + conduit
AG33-01/02-1 to 2-* [3A / 4A / 5A] [G / H]

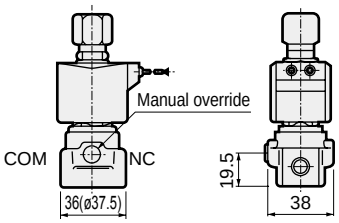


Dimensions shown in ( ) are for G1/2.

● Stainless steel body + grommet lead wire
AG33-01/02-1 to 2- [D/E/F/R/L/M/N]

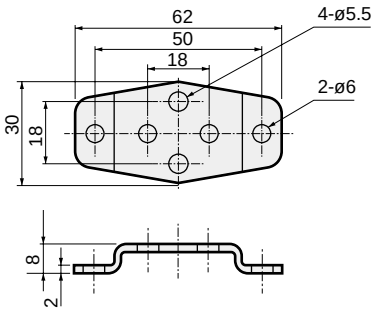


● Manual override (locking)
AG33-01/02-1 to 2-***[A]
The figure shows copper alloy body.



Dimensions shown in ( ) are for stainless steel body.

● Mounting plate
AG33-01/02-1 to 2-***[B]

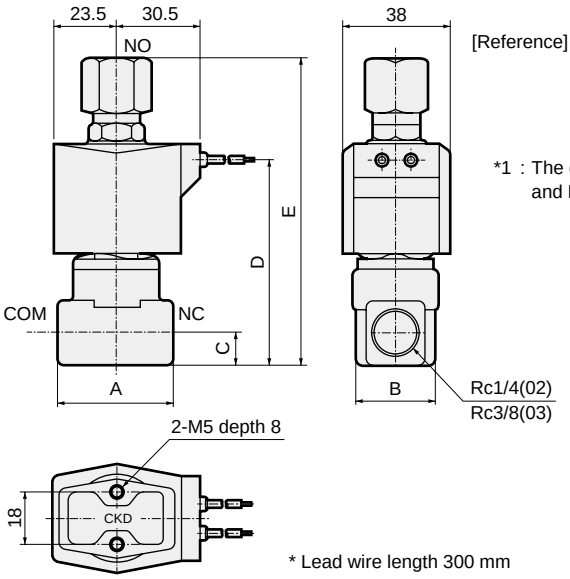


Mounting plate model	Compatibility
AG3-GE-100106-MOUNT-PLATE-KIT (Mounting plate No.1)	● All of AG33 Series

* Material: Steel/Zinc plated

Dimensions: AG43 Series

● Grommet lead wire
AG43-02/03-4 to 5



[Reference] As the JIS symbol flow shows, this is dedicated for NC port pressurization. Pressurization from other ports is not possible.
When not energized: COM → NO
When energized: NC → COM

*1 : The dimensions are the same for port sizes of G and NPT threads.

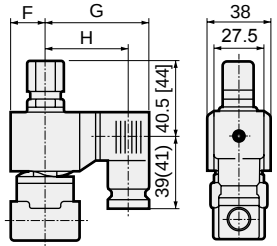
* Lead wire length 300 mm

Model No.	A	B	C	D	E
AG43-02-4 to 5	36	28	11	68	99.5
AG43-03-4 to 5	40	28	12	71	106

Optional dimensions: AG43 Series

* Refer to the dimensions of grommet lead wire above for common dimensions.

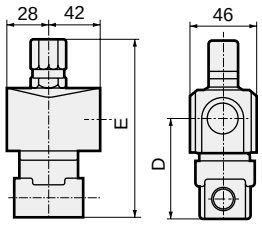
● With DIN terminal box
AG43-02/03-4 to 5-* 2E / 2G / 2H



Dimensions shown in [ ] are for Rc3/8.
Dimensions shown in ( ) are for G1/2.

Voltage	F	G	H
AC	23.5	65.5	54(53.5)
DC	23.5	66	54.5(54)

● Open frame lead wire
AG43-02/03-4 to 5-* 3A / 4A / 5A

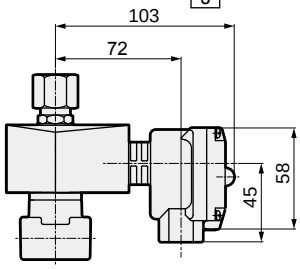


Model No.	D	E
AG43-02-4 to 5-**A	52.0	99.5
AG43-03-4 to 5-**A	55.0	106

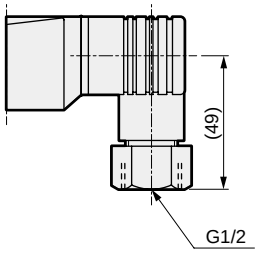
Optional dimensions: AG43 Series

* Refer to the dimensions of grommet lead wire on page 214 for common dimensions.

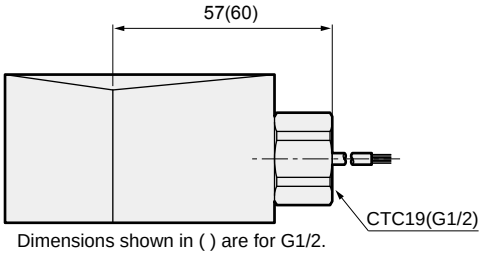
● Open frame + HP terminal box
AG43-02/03-4 to 5-* [3 / 5] [M / N / I / J] / [4M / 4N]



● DIN terminal box with small lamp + conduit (G1/2)
AG43-02/03-4 to 5-* [2H] [H]

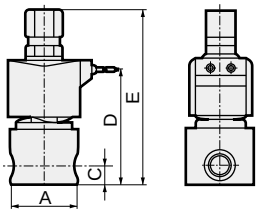


● Open frame + conduit
AG43-02/03-4 to 5-* [3A / 4A / 5A] [G / H]



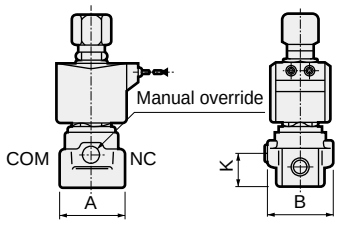
Dimensions shown in ( ) are for G1/2.

● Stainless steel body + grommet lead wire
AG43-02/03-4 to 5- [D/E/F/R/L/M/N]



Model No.	A	C	D	E
AG43-02-4 to 5-*	ø37.5	11	68	99.5
AG43-03-4 to 5-*	ø45	12	71	106

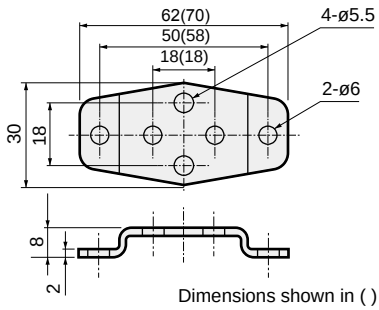
● Manual override (locking)
AG43-02/03-4 to 5***[A]
The figure shows copper alloy body.



Model No.	A	B	K
AG43-02-4 to 5-***A	36(ø37.5)	38	19.5
AG43-03-4 to 5-***A	40(ø45.0)	40	22.5

Dimensions shown in ( ) are for stainless steel body.

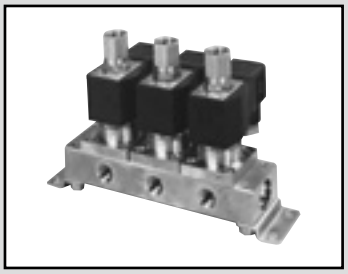
● Mounting plate
AG43-02/03-4 to 5-***[B]



Dimensions shown in ( ) are for mounting plate No. 2.

Mounting plate model	Compatibility
AG4-GE-100106-MOUNT-PLATE-KIT (Mounting plate No.1)	● AG43-02/03-4 to 5 Series ● Stainless steel body AG43-02-4 to 5-[D/E/F/L/M/N/R]
AG4-GE-100159-MOUNT-PLATE-KIT (Mounting plate No.2)	● Stainless steel body AG43-03-4 to 5-[D/E/F/L/M/N/R]

* Material: Steel/Zinc plated



Direct acting 3-port solenoid valve, manifold/actuator
General purpose

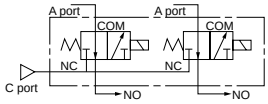
GAG33*/GAG43* Series

- NC pressurization
- Common supply/individual exhaust

CE Refer to the Ending for details. RoHS CAD

JIS symbol

- GAG33*/GAG43*
  (Common supply/individual exhaust)



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Standard specifications	Optional specifications	
Working fluid	Air/low vacuum [1.33 x 10^2 Pa (abs)]/water/kerosene/oil (50 mm^2/s or less)	Hot water	Steam
Working pressure differential MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)		
Max. working pressure MPa	1 (≈150 psi, 10 bar)		
Proof pressure (water pressure) MPa	10 (≈1500 psi, 100 bar)		
Fluid temperature (*1) °C	-10 (14°F) to 60 (140°F)	-10 (14°F) to 90 (194°F)	-10 (14°F) to 184 (363.2°F)
Ambient temperature °C	-20 (-4°F) to 60 (140°F)	-20 (-4°F) to 100 (212°F)	
Thermal class	Class 130 (B)	Class 180 (H)	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)		300 or less (air)
Mounting orientation	Unrestricted		
Body/seal material	Copper alloy/nitrile rubber	Copper alloy/EPM rubber	Copper alloy/PTFE

*1 :No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item / Model No.	NO port size	Orifice size (mm)		Max. working pressure differential (MPa)							Rated voltage	Apparent power (VA)				Power consump (W)	
				Air		Water(hot)/Kerosene		Oil (50 mm^2/s)		Steam		When holding		When starting		AC	DC
		TOP	BODY	AC	DC	AC	DC	AC	DC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	
GAG331-1	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	100 VAC 50/60 Hz *7 200 VAC 50/60 Hz *7 12 VDC 24 VDC 48 VDC 100 VDC	14	11	20	16	6/4.2	11 (8.1)
-2		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7							
GAG332-1	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0							
-2		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7							
GAG432-4	Rc1/4	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7		22	17	35	27	8.3/6.2	11 (10.4)
-5		3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4							
GAG433-4	Rc3/8	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7							
-5		3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4							

*1 : The model numbers above are for the basic NO port size (Rc) and orifice size. Refer to How to order for other combinations.
*2 : For A and C port sizes, refer to How to order (page 218) and dimensions (page 222).
*3 : Refer to DC column for the max. working pressure differential of coil with diode.
*4 : Values shown in ( ) are for the DC voltage with DIN terminal box.
*5 : The voltage fluctuation range must be ±10% of the rated voltage.
*6 : When using at low vacuum, vacuum the NO port side.
*7 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Weight

Model No.	Weight (kg)									
	Actuator only	2 stations	3 stations	4 stations	5 stations	6 stations	7 stations	8 stations	9 stations	10 stations
GAG33*	0.35	1.4	2.0	2.8	3.2	4.0	4.6	5.2	6.1	6.4
GAG432	0.44	1.6	2.3	3.2	3.7	4.6	5.3	6.0	6.9	7.3
GAG433	0.45	1.6	2.3	3.2	3.7	4.6	5.3	6.0	7.0	7.4

Optional specifications (fluid temperature, ambient temperature, valve seat leakage)

Sealant		Fluoro rubber		Ethylene propylene rubber		PTFE	
Coil (thermal class)		Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature (*1)	°C	-10 to 60	-10 to 90	0 to 60 (*3)	0 to 90 (*3)	-10 to 60	-10 to 184
Ambient temperature	°C	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)
Valve seat leakage	cm^3/min(ANR)	0.2 or less (air)				300 or less (air)	

*1 : No freezing.
*2 : -20 to 80°C when coil housing is HP terminal box with lamp.
*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

Model No.	Port size	Orifice size (mm)		Flow characteristics					
				C[dm^3/(s·bar)]		b		Cv	
		TOP	BODY	TOP	BODY	TOP	BODY	TOP	BODY
GAG331-1	Rc1/8	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
GAG332-1	Rc1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
GAG432-4	Rc1/4	3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31
-5		3.5	3.0	1.5	1.1	0.62	0.52	0.4	0.31
GAG433-4	Rc3/8	3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31
-5		3.5	3.0	1.5	1.1	0.62	0.52	0.4	0.31

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

How to order

● Common supply/individual exhaust (Port C pressurization)

GAG33 1 ( ) - 2 - 6 - B 4A A G S - AC100V

- GAG33 / GAG43: Model No.
- 1 / ( ): ● Common supply/individual exhaust (Port C pressurization)
- 2: Ⓐ NO port size
- 6: Ⓑ Thread
- B: Ⓒ Orifice size
- 4A: Ⓓ Manifold station No. *2
- A: Ⓔ Body/sealant combination
- G: Ⓕ Coil housing
- S: Ⓘ With surge suppressor
- AC100V: Ⓙ Rated voltage
- Ⓖ Manual override (locking)
- Ⓗ Other options

Code	Description	Model No. GAG33*	Model No. GAG43*
Ⓐ NO port size			
1	1/8	●	
2	1/4	●	●
3	3/8		●
Ⓑ Thread			
Blank	Rc	●	●
G	G	●	●
N	NPT	●	●

Ⓒ Orifice size

	GAG33*		GAG43*			
	TOP	**BODY**	**TOP**	**BODY**		
1	ø1.5	ø1.5	-	-	●	
2	ø2.0	ø2.0	-	-	●	
4	-	-	ø3.0	ø3.0		●
5	-	-	ø3.5	ø3.0		●

Ⓓ Manifold station No.

2 to 10	2 stations to 10 stations	●	●
0	Actuator only	●	●

Ⓔ Body/sealant combination *3*5*6

		Body	Seal	Treatment	Remarks		
Blank	Std.	Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
B			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *4)	●	●
C			PTFE		Steam (up to 184°C *4)	●	●
D		Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
E			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *4)	●	●
F			PTFE		Steam (up to 184°C *4)	●	●
H	Option	Copper alloy	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)	●	●
J			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *4)	●	●
K			PTFE		Steam (up to 184°C *4)	●	●
P			Ethylene propylene rubber		Hot water (up to 90°C *4)	●	●
L		Stainless steel	Nitrile rubber		Air/water/low vacuum/kerosene (up to 60°C)	●	●
M			Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *4)	●	●
N			PTFE		Steam (up to 184°C *4)	●	●
R			Ethylene propylene rubber		Hot water (up to 90°C *4)	●	●

Refer to Intro Page 39 for reference on material combinations.

Ⓕ to Ⓙ

Refer to page 219 for details on the coil housing, other options and voltage, etc.

The combinations indicated with ● in the above table are available.

[Example of model No. 1]
GAG331-1-4-AC200V

Model: GAG331 (common supply/individual exhaust, port C pressurization)

- Ⓐ NO port size : 1/8
- Ⓑ Thread : Rc
- Ⓒ Orifice size : TOP-ø1.5, BODY-ø1.5
- Ⓓ Manifold station No. : 4 stations
- Ⓔ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓕ Coil housing : Grommet lead wire
- Ⓖ to Ⓘ : None
- Ⓙ Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

[Example of model No. 2]
GAG332G-2-7-000AS-AC200V

Model: GAG332 (common supply/individual exhaust, port C pressurization)

- Ⓐ NO port size : 1/4
- Ⓑ Thread : G
- Ⓒ Orifice size : TOP-ø2.0, BODY-ø2.0
- Ⓓ Manifold station No. : 7 stations
- Ⓔ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓕ Coil housing : Grommet lead wire
- Ⓖ Manual override (locking) : Selected
- Ⓗ Other options : None
- Ⓘ Surge suppressor : With surge suppressor
- Ⓙ Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

⚠ Precautions for model No. selection

*1 : Orders for only the masking plate and sub-plate are also available. Contact CKD for details.

Notes for Ⓓ to Ⓔ

*2 : For 11 or more manifold station No., contact CKD.
*3 : Leave blank for standard. However, to select options in Ⓕ, Ⓖ, Ⓗ or Ⓘ, indicate 0 for Item Ⓔ.
*4 : When Item Ⓔ 4A/4M/4N is selected.
*5 : The ethylene propylene rubber seal combination (Item Ⓔ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)
*6 : For PTFE seal, O-ring material for socket and sub-plate connection will be FKM.

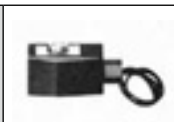
For Items Ⓕ to Ⓙ, the combinations indicated with codes are available.
Note that if options for Items Ⓖ to Ⓘ are not required, they should be left blank.

Ⓕ Coil housing				Ⓖ	Ⓗ Other options					Ⓘ	Ⓙ Rated voltage
Description				Manual override (locking)	Cable gland (marine cable gland) A-15a	Cable gland (marine cable gland) A-15b	Cable gland (marine cable gland) A-15c	Conduit (conduit piping) CTC19	Conduit (conduit piping) G1/2	With surge suppressor	Description
Blank	Std.	Grommet lead wire		**A**						**S**	100 VAC, 200 VAC
2E		With DIN terminal box	(G1/2)								100 VAC, 200 VAC
2G		With DIN terminal box	(Pg11)								12 VDC, 24 VDC, 48 VDC, 100 VDC
2H		DIN terminal box with small lamp	(Pg11)						**H**		100 VAC, 200 VAC, 24 VDC
3A	Option	Open frame	Lead wire	**A**				**G**	**H**	**S**	100 VAC, 200 VAC
3M			With HP terminal box (G1/2)		**D**	**E**	**F**				12 VDC, 24 VDC, 48 VDC, 100 VDC
3N			HP terminal box with lamp (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I			HP terminal box (IP65 or equivalent) (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J			HP term box, lamp (IP65, equiv) (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A		Open frame (Thermal class 180 (H))	Lead wire	**A**				**G**	**H**	**S**	100 VAC, 200 VAC
4M			With HP terminal box (G1/2)		**D**	**E**	**F**				
4N			HP terminal box with lamp (G1/2)								
5A		Open frame (diode integrated)	Lead wire	**A**				**G**	**H**		100 VAC, 200 VAC
5M			With HP terminal box (G1/2)		**D**	**E**	**F**				
5N			HP terminal box with lamp (G1/2)								
5I			HP terminal box (IP65 or equivalent) (G1/2)								
5J			HP term box, lamp (IP65, equiv) (G1/2)								

⚠ Refer to the following cautions for Items Ⓕ to Ⓙ.

Blank		● Grommet lead wire 300 mm
2E **2G** **2H**		● DIN terminal box
3A **4A** **5A**		● Open frame Lead wire 300 mm ● 4A (Thermal class 180 (H)) ● 5A (diode integrated)
3M **3N** **4M** **4N** **5M** **5N**		● Open frame HP terminal box ● 4M, 4N (Thermal class 180 (H)) ● 5M, 5N (diode integrated)
3I **3J** **5I** **5J**		● Open frame HP terminal box (IP65 or equivalent) ● 5I, 5J (diode integrated)

Refer to page 148 for coil selection.

G **H**		● Conduit ● G(CTC19) ● H(G1/2)

⚠ Precautions for model No. selection

Notes for Ⓕ

*7 : Leave blank for the standard coil housing. However, to select options in Ⓖ, Ⓗ or Ⓘ, indicate 00 for Item Ⓕ.
*8 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
9 : A DC coil for steam is available for GAG43. Contact CKD for more information.

Notes for Ⓖ to Ⓘ

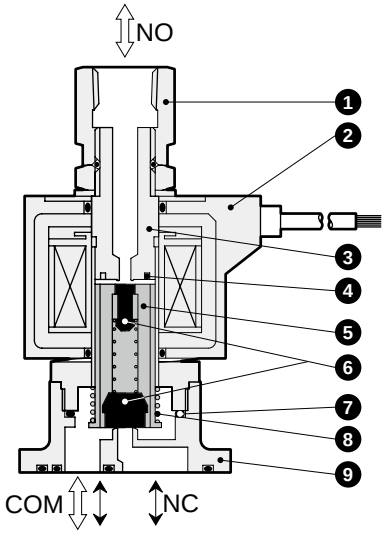
*10: When Item E is Ⓒ, Ⓕ, Ⓚ or Ⓝ, the manual override (Item Ⓖ A) is not available.
*11: For Item Ⓗ, select an option from D, E, F, G and H.
*12: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*13: As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item Ⓕ 2H), so the surge suppressor S cannot be selected.
*14: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that tropicalization is not available when the manual override option (A) is selected.

Notes for Ⓙ

*15: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item Ⓕ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
*16: For voltages other than above, contact CKD.
*17: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

Internal structure and parts list

● GAG33*/GAG43* Series actuator

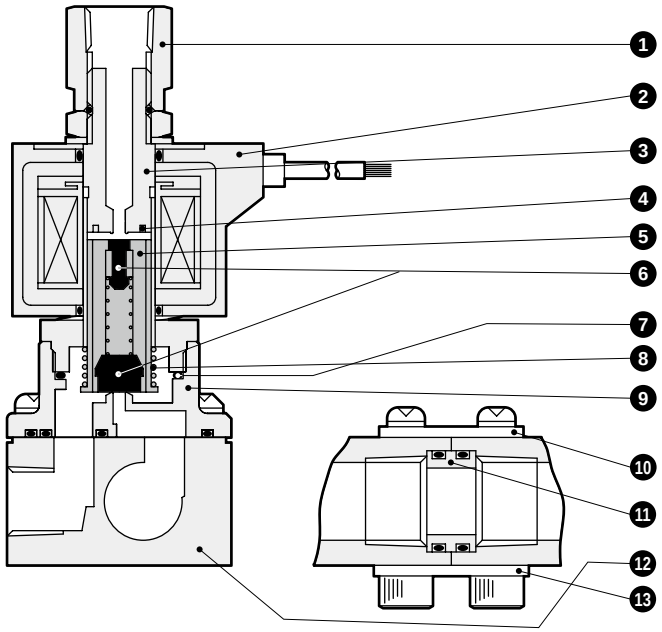


No.	Part name	Material	
1	Socket	C3604(SUS303)	Copper alloy (stainless steel)
2	Coil	-	-
3	Core assembly	SUS405 or equiv./316L/403 *1	Stainless steel
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
5	Plunger	SUS405 or equiv.	Stainless steel
6	Seal	NBR (FKM/EPDM/PTFE)	NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin
7	O-ring	NBR (FKM/EPDM/PTFE) (Size: AS568-019)	( )
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771(SCS13)	Copper alloy (stainless steel)

*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.
*2 : ( ) shows options.
*3 : 4 body mounting screws and 2 O-rings are attached to the actuator only.

Internal structure and parts list

● GAG33*/GAG43* manifold



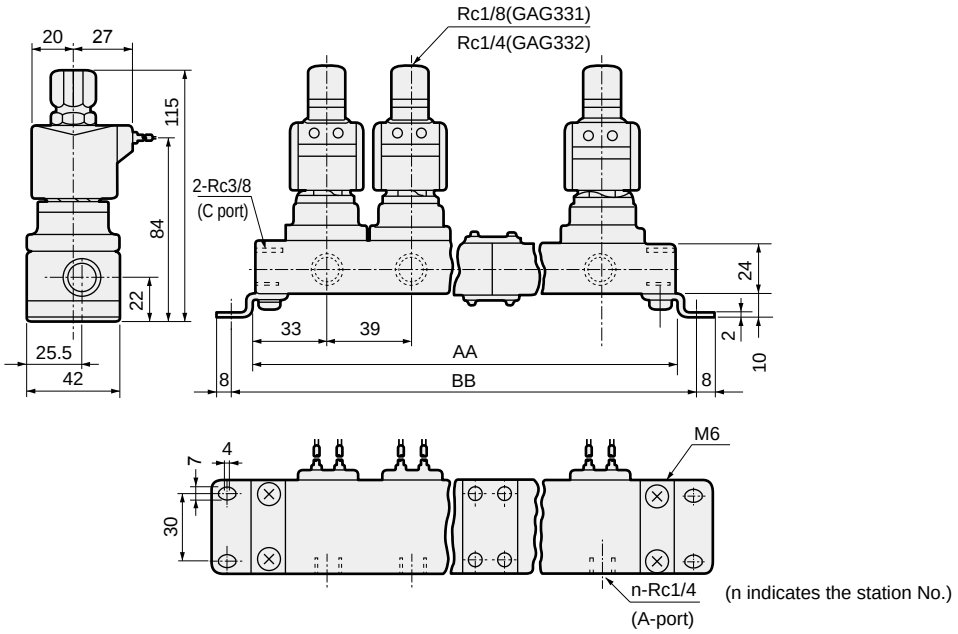
No.	Part name	Material	
1	Socket	C3604(SUS303)	Copper alloy (stainless steel)
2	Coil	-	-
3	Core assembly	SUS405 or equiv./316L/403 *1	Stainless steel
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
5	Plunger	SUS405 or equiv.	Stainless steel
6	Seal	NBR (FKM/EPDM/PTFE)	NBR: Nitrile rubber FKM: Fluoro rubber
7	O-ring	NBR (FKM/EPDM/PTFE) (AS568/019)	EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771(SCS13)	Copper alloy (stainless steel)
10	Holder	SPCC	Steel
11	Connector	C3604(SUS304)	Copper alloy (stainless steel)
12	Sub-plate	C3604(SUS303)	Copper alloy (stainless steel)
13	Connecting plate	SPCC	Steel

*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.

*2 : ( ) shows options.

Dimensions: GAG331/GAG332 Series

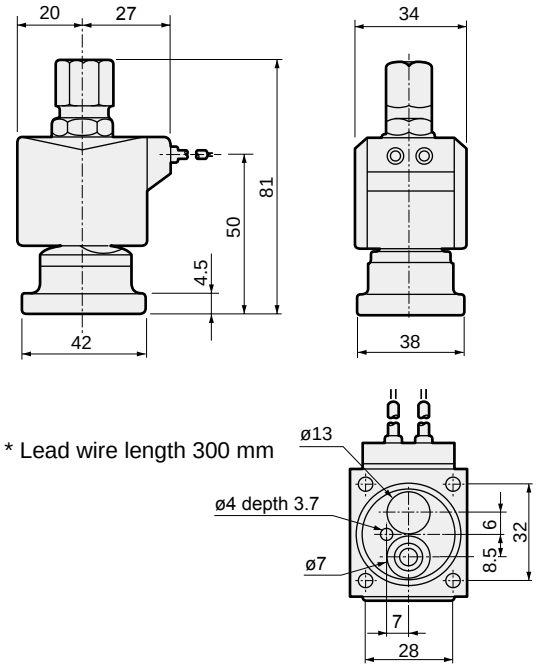
● Manifold (grommet lead wire)
GAG33*-1 to 2- 2 to 10



Station No.	AA	BB	Manifold configuration	Station No.	AA	BB	Manifold configuration
2	106	122	2 stations x 1	7	329	345	5 stations + 2 stations
3	145	161	3 stations x 1	8	368	384	5 stations + 3 stations
4	212	228	2 stations x 2	9	435	451	3 stations x 3
5	223	239	5 stations x 1	10	446	462	5 stations x 2
6	290	306	3 stations x 2	Contact CKD for 11 stations or more.			

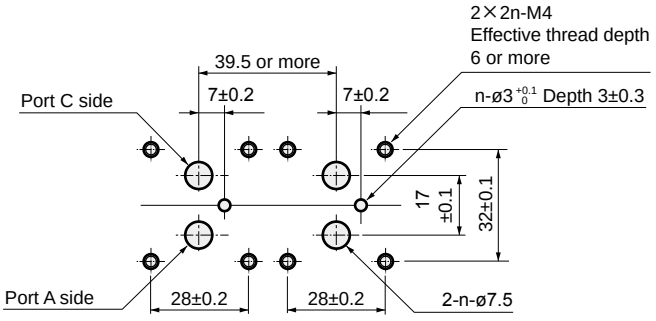
*1 : Manifold configuration combines 2-station, 3-station and 5-station units.
*2 : The dimensions are the same for port sizes of G and NPT threads.

● Actuator (grommet lead wire)
GAG33*-1 to 2-0



* Lead wire length 300 mm

● Recommended dimensions for actuator mounting



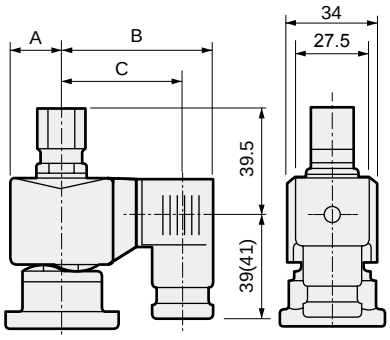
■ Machining drawing when using 2 actuators

Optional dimensions: GAG331/GAG332 Series

CAD

* Refer to the dimensions of grommet lead wire on page 222 for common dimensions.

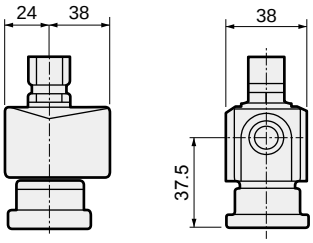
● With DIN terminal box
GAG33*-1 to 2-0 to 10-* 2E / 2G / 2H



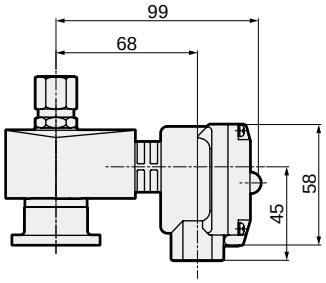
Dimensions shown in ( ) are for G1/2.

Voltage	A	B	C
AC	20	62	50.5(50)
DC	21	63.5	52(51.5)

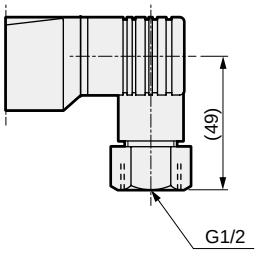
● Open frame lead wire
GAG33*-1 to 2-0 to 10-* 3A / 4A / 5A



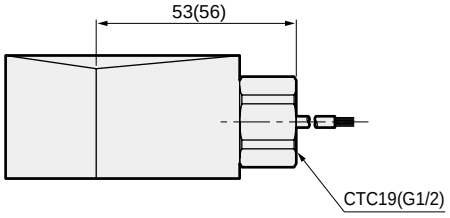
● Open frame + HP terminal box
GAG33*-1 to 2-0 to 10-* 3 / 5 M / N / I / J / 4M / 4N



● DIN terminal box with small lamp + conduit (G1/2)
GAG33*-1 to 2-0 to 10-* 2H H

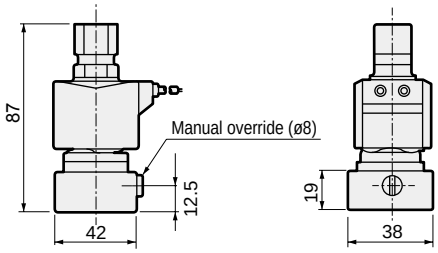


● Open frame + conduit
GAG33*-1 to 2-0 to 10-* 3A / 4A / 5A G / H



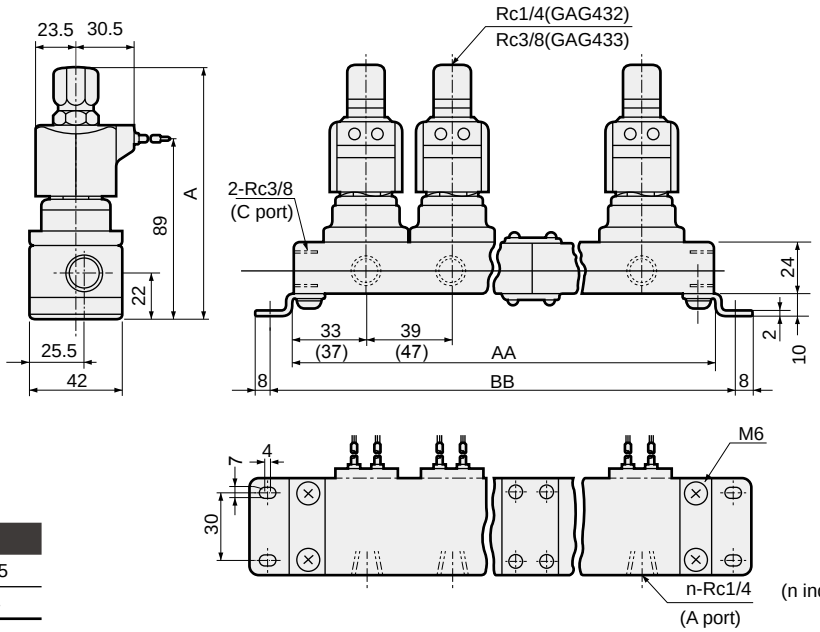
Dimensions shown in ( ) are for G1/2.

● Manual override (locking)
GAG33*-1 to 2-0 to 10-*** A



Dimensions: GAG432/GAG433 Series

● Manifold (grommet lead wire)
GAG43*-4 to 5-[2 to 10]



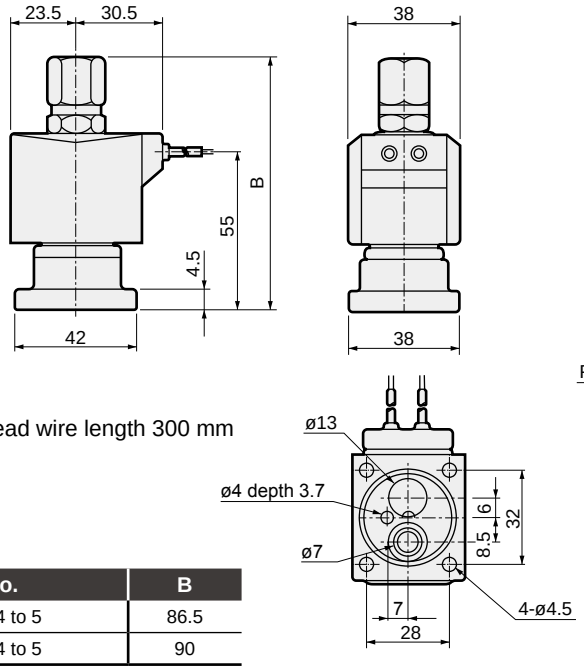
(n indicates the station No.)

Model No.	A
GAG432-4 to 5	120.5
GAG433-4 to 5	124

Station No.	AA	BB	Manifold configuration	Station No.	AA	BB	Manifold configuration
2	106(122)	122(138)	2 stations x 1	7	329(385)	345(401)	5 stations + 2 stations
3	145(169)	161(185)	3 stations x 1	8	368(432)	384(448)	5 stations + 3 stations
4	212(244)	228(260)	2 stations x 2	9	435(507)	451(523)	3 stations x 3
5	223(263)	239(279)	5 stations x 1	10	446(526)	462(542)	5 stations x 2
6	290(338)	306(354)	3 stations x 2	Contact CKD for 11 stations or more.			

*1 : Manifold configuration combines 2-station, 3-station and 5-station units.
*2 : Dimensions shown in ( ) are for open frame.
*3 : The dimensions are the same for port sizes of G and NPT threads.

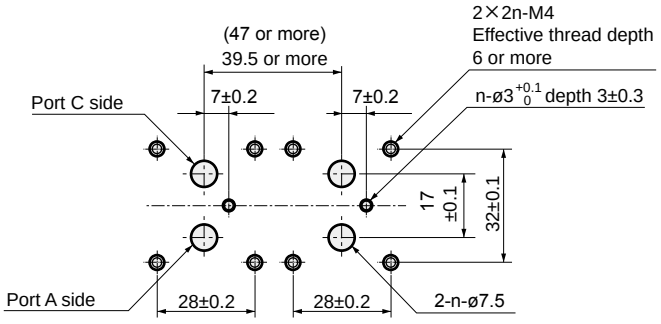
● Actuator (grommet lead wire)
GAG43*-4 to 5-[0]



* Lead wire length 300 mm

Model No.	B
GAG432-4 to 5	86.5
GAG433-4 to 5	90

● Recommended dimensions for actuator mounting

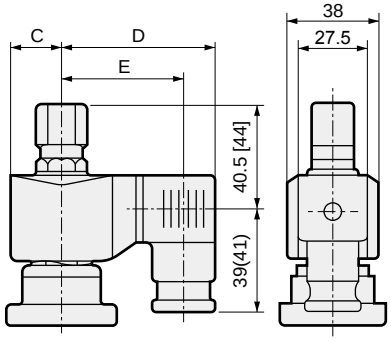


■ Machining drawing when using 2 actuators

Optional dimensions: GAG432/GAG433 Series

* Refer to the dimensions of grommet lead wire on page 224 for common dimensions.

● With DIN terminal box
GAG43*-4 to 5-0 to 10-* [2E / 2G / 2H]

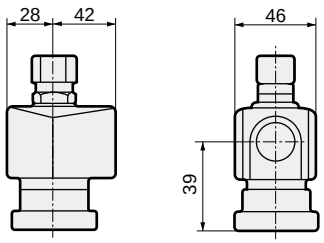


Dimensions shown in [ ] are for Rc3/8.

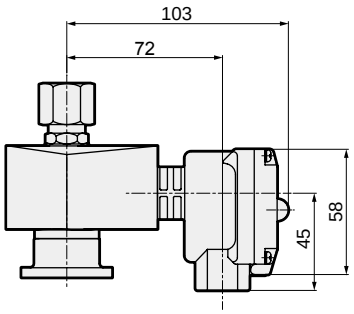
Dimensions shown in ( ) are for G1/2.

Voltage	C	D	E
AC	23.5	65.5	54(53.5)
DC	23.5	66	54.5(54)

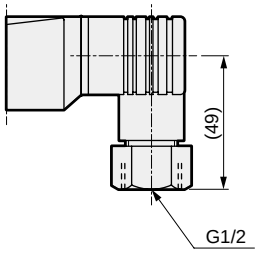
● Open frame lead wire
GAG43*-4 to 5-0 to 10-* [3A / 4A / 5A]



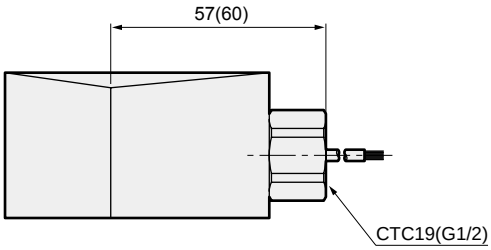
● Open frame + HP terminal box
GAG43*-4 to 5-0 to 10-* [3 / 5] [M / N / I / J] / [4M / 4N]



● DIN terminal box with small lamp + conduit (G1/2)
GAG43*-4 to 5-0 to 10-* [2H] [H]

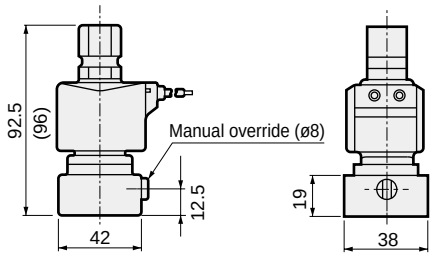


● Open frame + conduit
GAG43*-4 to 5-0 to 10-* [3A / 4A / 5A] [G / H]



Dimensions shown in ( ) are for G1/2.

● Manual override (locking)
GAG43*-4 to 5-0 to 10-*** [A]



Dimensions shown in ( ) are for GAG433.

Direct acting 3-port solenoid valve, single unit
General purpose

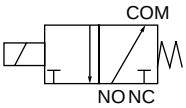
AG34/AG44 Series

- NO pressurization
- Port size: Rc1/8, Rc1/4, Rc3/8

CE Refer to the Ending for details. RoHS CAD

JIS symbol

- AG34/44: NO pressurization



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Standard specifications	Optional specifications
Working fluid	Air/low vacuum [1.33 x 10^2 Pa (abs)]/water/kerosene/oil (50 mm^2/s or less)	Hot water
Working pressure differential MPa	0 to 1.5 (refer to max. working pressure differential in individual specifications.)	
Max. working pressure MPa	1.5 (≈220 psi, 15 bar)	
Proof pressure (water pressure) MPa	25 (≈3600 psi, 250 bar)	
Fluid temperature (*1) °C	-10 (14°F) to 60 (140°F)	-10 (14°F) to 90 (194°F)
Ambient temperature °C	-20 (-4°F) to 60 (140°F)	-20 (-4°F) to 100 (212°F)
Thermal class	Class 130 (B)	Class 180 (H)
Atmosphere	Place free of corrosive gas and explosive gas	
Valve structure	Direct acting poppet structure	
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)	
Mounting orientation	Unrestricted	
Body/seal material	Copper alloy/nitrile rubber	Copper alloy/ethylene propylene rubber

*1 : No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item / Model No.	Port size	Orifice size (mm)		Max. working pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consump (W)		Weight (kg)
				Air		Water(hot)/Kerosene		Oil (50 mm^2/s)			When holding		When starting		AC	DC	
		TOP	BODY	AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz		
AG34-01-1	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	100 VAC 50/60 Hz *6 200 VAC 50/60 Hz *6 12 VDC 24 VDC 48 VDC 100 VDC	14	11	20	16	6/4.2	11 (8.1)	0.36
-01-2		2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2								
-02-1	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7								
-02-2		2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2								
AG44-02-1	Rc1/4	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45		22	17	35	27	8.3/6.2	11 (10.4)	0.45
-02-3		2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45								
-02-4		3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)								
-03-1	Rc3/8	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45								0.48
-03-3		2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45								
-03-4		3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)								

*1 : The model numbers above are for the basic port size (Rc) and orifice size. Refer to How to order for other combinations.
*2 : Refer to DC column for the max. working pressure differential of coil with diode.
*3 : The voltage fluctuation range must be within ±10% of the rated voltage.
*4 : Values shown in ( ) are for the DC voltage with DIN terminal box.
*5 : When using at low vacuum, vacuum the NC port side.
*6 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Optional specifications (fluid temperature, ambient temperature, valve seat leakage)

Sealant		Fluoro rubber		Ethylene propylene rubber	
Coil (thermal class)		Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature (*1)	°C	-10 to 60	-10 to 90	0 to 60 (*3)	0 to 90 (*3)
Ambient temperature	°C	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100
Valve seat leakage	cm^3/min(ANR)	0.2 or less (air)			

*1 : No freezing.
*2 : -20 to 80°C when coil housing is HP terminal box with lamp.
*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

Model No.	Port size	Orifice size (mm)		Flow characteristics					
				C[dm^3/(s·bar)]		b		Cv	
		TOP	BODY	TOP	BODY	TOP	BODY	TOP	BODY
AG34-01-1	Rc1/8	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-01-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-1	Rc1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-02-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
AG44-02-1	Rc1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-3		2.0	3.0	0.53	1.1	0.54	0.52	0.15	0.31
-02-4		3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31
-03-1	Rc3/8	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-03-3		2.0	3.0	0.53	1.1	0.54	0.52	0.15	0.31
-03-4		3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31

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

How to order

AG34 - **02** - **1** - **0** **3A** **A** **B** **G** **S** - **AC100V**

AG44

Model No.

Ⓓ Coil housing Ⓖ Other options
Ⓔ Manual override (locking) Ⓗ With surge suppressor
Ⓕ Mounting plate Ⓘ Rated voltage

Ⓐ Port size
Ⓑ Orifice size
Ⓒ Body/sealant combination
*1
*2
*3
*4

Code	Description	Code	Description	Code	Description	Model No. AG34	Model No. AG44
Ⓐ Port size							
01	Rc1/8	**1G**	G1/8	**1N**	1/8NPT	●	
02	Rc1/4	**2G**	G1/4	**2N**	1/4NPT	●	●
03	Rc3/8	**3G**	G3/8	**3N**	3/8NPT		●

Ⓑ Orifice size

	AG34		AG44			
	TOP	**BODY**	**TOP**	**BODY**		
1	ø1.5	ø1.5	ø2.0	ø2.0	●	●
2	ø2.0	ø2.0	-	-	●	
3	-	-	ø2.0	ø3.0		●
4	-	-	ø3.0	ø3.0		●

Ⓒ Body/sealant combination

		Body	Seal	Treatment	Remarks		
Blank	Std.	Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
B	Option	Copper alloy	Fluoro rubber	-	Air/low vacuum/kerosene (up to 90°C *2)	●	●
D	Option	Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
E	Option	Stainless steel	Fluoro rubber	-	Air/low vacuum/kerosene (up to 90°C *2)	●	●
H	Option	Copper alloy	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)	●	●
J	Option	Copper alloy	Fluoro rubber	Oil-prohibited	Air/low vacuum/kerosene (up to 90°C *2)	●	●
P	Option	Copper alloy	Ethylene propylene rubber	Oil-prohibited	Hot water (up to 90°C *2)	●	●
L	Option	Stainless steel	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)	●	●
M	Option	Stainless steel	Fluoro rubber	Oil-prohibited	Air/low vacuum/kerosene (up to 90°C *2)	●	●
R	Option	Stainless steel	Ethylene propylene rubber	Oil-prohibited	Hot water (up to 90°C *2)	●	●

Refer to Intro Page 39 for reference on material combinations.

Ⓓ to Ⓘ

Refer to page 229 for details on the coil housing, other options and voltage, etc.

The combinations indicated with ● in the above table are available.

[Example of model No. 1]
AG34-1G-1-AC100V
Model: AG34
Ⓐ Port size : G1/8
Ⓑ Orifice size : TOP-ø1.5, BODY-ø1.5
Ⓒ Body/sealant combination
: Body - copper alloy, sealant - nitrile rubber
Ⓓ Coil housing : Grommet lead wire
Ⓔ to Ⓗ : None
Ⓘ Rated voltage :100 VAC 50/60 Hz, 110 VAC 60 Hz

[Example of model No. 2]
AG44-03-4-000ABS-AC100V
Model: AG44
Ⓐ Port size : Rc 3/8
Ⓑ Orifice size : TOP-ø3.0, BODY-ø3.0
Ⓒ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
Ⓓ Coil housing : Grommet lead wire
Ⓔ Manual override (locking) : Selected
Ⓕ Mounting plate : With mounting plate
Ⓖ Other options : None
Ⓗ Surge suppressor : With surge suppressor
Ⓘ Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Precautions for model No. selection

Notes for Ⓒ

*1 : Leave blank for standard. However, to select options in Ⓓ,Ⓔ, Ⓕ,Ⓖ or Ⓗ, indicate 0 for Item Ⓒ.
*2 : When Item Ⓒ 4A/4M/4N is selected.
*3 : The ethylene propylene rubber seal combination (Item Ⓒ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)
*4 : Even if nitrile rubber seal is selected, the seal material on the NO side will be fluoro rubber.

For Items Ⓓ to Ⓘ, the combinations indicated with codes are available.
Note that if options for Items Ⓔ to Ⓗ are not required, they should be left blank.

Ⓓ Coil housing				Ⓔ	Ⓕ	Ⓖ Other options					Ⓗ	Ⓘ Rated voltage
Description				Manual override (locking)	Mounting plate	Cable gland (marine cable gland)			Conduit (conduit piping)		With surge suppressor	Description
						A-15a	A-15b	A-15c	CTC19	G1/2		
Blank	Std.	Grommet lead wire		**A**	**B**						**S**	100 VAC, 200 VAC
2E		With DIN terminal box	(G1/2)									100 VAC, 200 VAC
2G		With DIN terminal box	(Pg11)									12 VDC, 24 VDC, 48 VDC, 100 VDC
2H		DIN terminal box with small lamp	(Pg11)							**H**		100 VAC, 200 VAC, 24 VDC
3A	Option	Open frame	Lead wire (IP65 or equivalent)	**A**	**B**				**G**	**H**	**S**	100 VAC, 200 VAC
3M			With HP terminal box (G1/2)			**D**	**E**	**F**				12 VDC, 24 VDC, 48 VDC, 100 VDC
3N			HP terminal box with lamp (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I			HP terminal box (IP65 or equivalent) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J			HP term box, lamp (IP65, equiv) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A		Open frame (Thermal class 180 (H))	Lead wire	**A**	**B**				**G**	**H**	**S**	100 VAC, 200 VAC
4M			With HP terminal box (G1/2)			**D**	**E**	**F**				
4N			HP terminal box with lamp (G1/2)									
5A		Open frame (diode integrated)	Lead wire (IP65 or equivalent)	**A**	**B**				**G**	**H**		100 VAC, 200 VAC
5M			With HP terminal box (G1/2)			**D**	**E**	**F**				
5N			HP terminal box with lamp (G1/2)									
5I			HP terminal box (IP65 or equivalent) (G1/2)									
5J			HP term box, lamp (IP65, equiv) (G1/2)									

⚠ Refer to the following cautions for Items Ⓓ to Ⓘ.

Blank

● Grommet lead wire 300 mm

2E 2G 2H

● DIN terminal box

3A 4A 5A

● Open frame
Lead wire 300 mm
● 4A (Thermal class 180 (H))
● 5A (diode integrated)

3M 3N 4M 4N 5M 5N

● Open frame HP terminal box
● 4M, 4N (Thermal class 180 (H))
● 5M, 5N (diode integrated)

3I 3J 5I 5J

● Open frame HP terminal box (IP65 or equivalent)
● 5I, 5J (diode integrated)

Refer to page 148 for coil selection.

G H

● Conduit
● G(CTC19)
● H(G1/2)

⚠ Precautions for model No. selection

Notes for Ⓓ

*5 : Leave blank for the standard coil housing. However, to select options in Ⓔ, Ⓕ, Ⓖ or Ⓗ, indicate 00 for Item Ⓓ.
*6 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
*7 : A DC coil for steam is available for AG44. Contact CKD for more information.

Notes for Ⓔ to Ⓗ

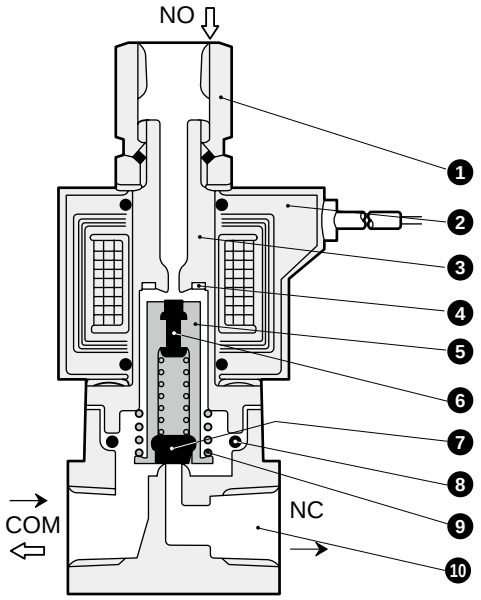
*8 : For Item Ⓖ, select an option from D, E, F, G and H.
*9 : The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*10: As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item Ⓓ 2H), so the surge suppressor S cannot be selected.
*11: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that tropicalization is not available when the manual override option (A) is selected.

Notes for Ⓘ

*12: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item Ⓓ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
*13: For voltages other than above, contact CKD.
*14: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

Internal structure and parts list

● AG34/AG44 Series

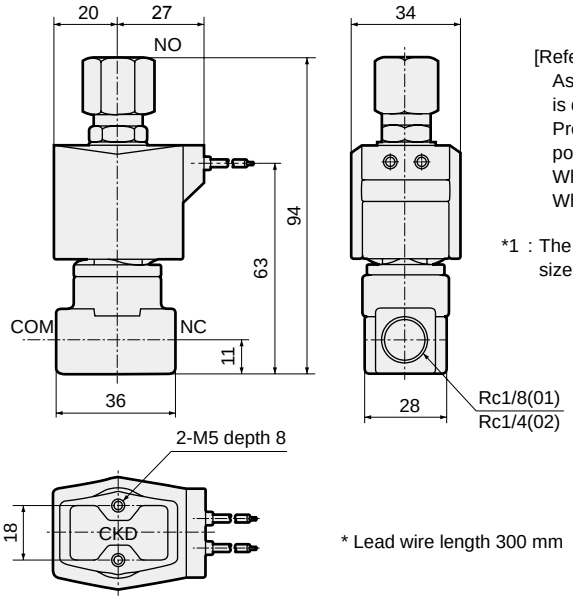


No.	Part name	Material	
1	Socket	C3604(SUS303)	Copper alloy (stainless steel)
2	Coil	-	-
3	Core assembly	SUS405 or equiv./316L/403 *1	Stainless steel
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
5	Plunger	SUS405 or equiv.	Stainless steel
6	NO valve sealant	FKM (FKM/EPDM)	NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber ( )
7	NC valve sealant	NBR (FKM/EPDM)	
8	O-ring	NBR (FKM/EPDM) (Size: AS568-019)	
9	Plunger spring	SUS304	Stainless steel
10	Body	C3771(SUS303)	Copper alloy (stainless steel)

*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.
*2 : ( ) shows options.

Dimensions: AG34 Series

● Grommet lead wire
AG34-01/02-1 to 2



[Reference]
As the JIS symbol flow shows, this type is dedicated for NO port pressurization. Pressurization from other ports is not possible.
When not energized: NO → COM
When energized : COM → NC

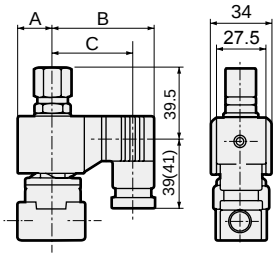
*1 : The dimensions are the same for port sizes of G and NPT threads.

* Lead wire length 300 mm

Optional dimensions: AG34 Series

* Refer to the dimensions of grommet lead wire on page 230 for common dimensions.

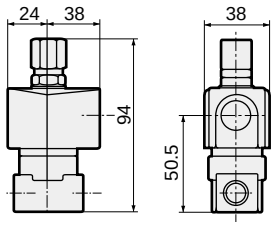
● With DIN terminal box
AG34-01/02-1 to 2-* [2E] [2G] [2H]



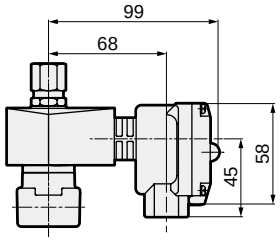
Dimensions shown in ( ) are for G1/2.

Voltage	A	B	C
AC	20	62	50.5(50)
DC	21	63.5	52(51.5)

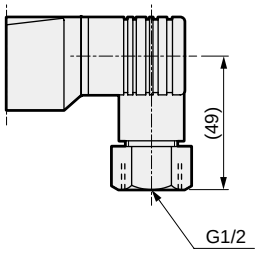
● Open frame lead wire
AG34-01/02-1 to 2-* [3A] [4A] [5A]



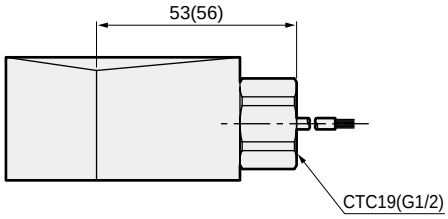
● Open frame + HP terminal box
AG34-01/02-1 to 2-* [3] [5] [M] [N] [I] [J] / [4M] [4N]



● DIN terminal box with small lamp + conduit (G1/2)
AG34-01/02-1 to 2-* [2H] [H]

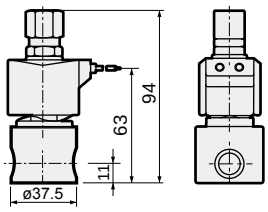


● Open frame + conduit
AG34-01/02-1 to 2-* [3A] [4A] [5A] [G] [H]

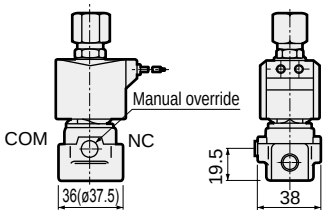


Dimensions shown in ( ) are for G1/2.

● Stainless steel body + grommet lead wire
AG34-01/02-1 to 2- [D/E/R/L/M]

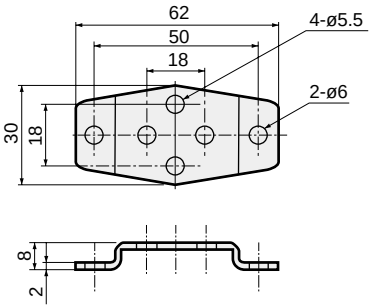


● Manual override (locking)
AG34-01/02-1 to 2-*** [A]
The figure shows copper alloy body.



Dimensions shown in ( ) are for stainless steel body.

● Mounting plate
AG34-01/02-1 to 2-*** [B]

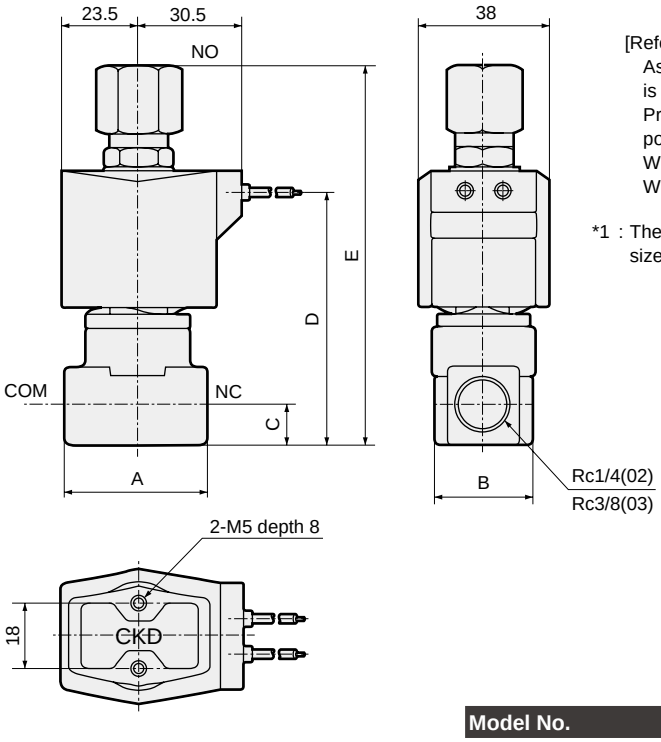


Mounting plate model	Compatibility
AG3-GE-100106-MOUNT-PLATE-KIT (Mounting plate No.1)	● All of AG34 Series

* Material: Steel/Zinc plated

Dimensions: AG44 Series

● Grommet lead wire
AG44-02/03-1/3/4



[Reference]
As the JIS symbol flow shows, this type is dedicated for NO port pressurization. Pressurization from other ports is not possible.
When not energized: NO → COM
When energized : COM → NC

*1 : The dimensions are the same for port sizes of G and NPT threads.

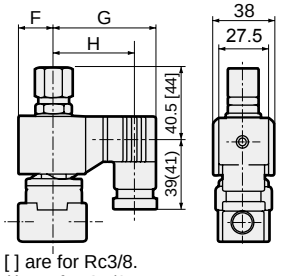
* Lead wire length 300 mm

Model No.	A	B	C	D	E
AG44-02-1 to 4	36	28	11	68	99.5
AG44-03-1 to 4	40	28	12	71	106

Optional dimensions: AG44 Series

* Refer to the dimensions of grommet lead wire above for common dimensions.

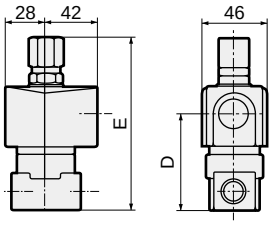
● With DIN terminal box
AG44-02/03-1/3/4-* 2E / 2G / 2H



Dimensions shown in [ ] are for Rc3/8.
Dimensions shown in ( ) are for G1/2.

Voltage	F	G	H
AC	23.5	65.5	54(53.5)
DC	23.5	66	54.5(54)

● Open frame lead wire
AG44-02/03-1/3/4-* 3A / 4A / 5A

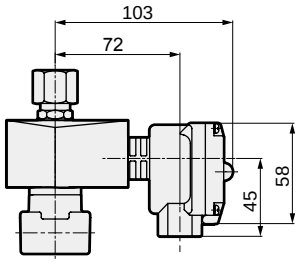


Model No.	D	E
AG44-02-1 to 4-*□A	52.0	99.5
AG44-03-1 to 4-*□A	55.0	106

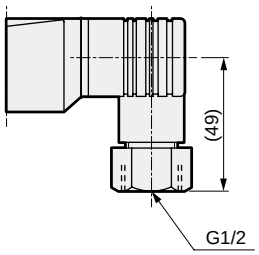
Optional dimensions: AG44 Series

* Refer to the dimensions of grommet lead wire on page 232 for common dimensions.

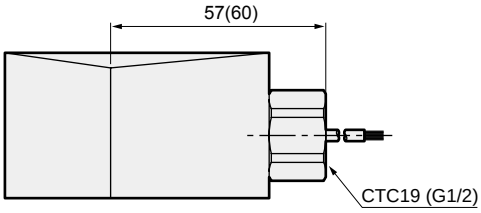
● Open frame + HP terminal box
AG44-02/03-1/3/4-* [3 / 5] [M / N / I / J] / [4M / 4N]



● DIN terminal box with small lamp + conduit (G1/2)
AG44-02/03-1/3/4-* [2H] [H]

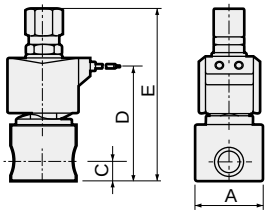


● Open frame + conduit
AG44-02/03-1/3/4-* [3A / 4A / 5A] [G / H]



Dimensions shown in ( ) are for G1/2.

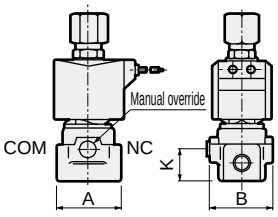
● Stainless steel body + grommet lead wire
AG44-02/03-1 to 4- [D/E/L/M/R]



Model No.	A	C	D	E
AG44-02-1 to 4-*	ø37.5	11	68	99.5
AG44-03-1 to 4-*	ø45	12	71	106

● Manual override (locking)
AG44-02/03-1 to 4-*** [A]

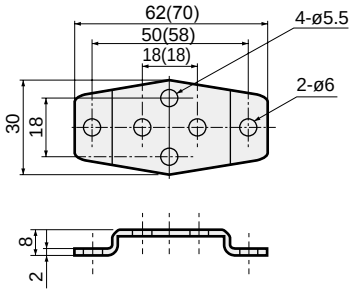
The figure shows copper alloy body.



Model No.	A	B	K
AG44-02-1 to 4-***A	36(ø37.5)	38	19.5
AG44-03-1 to 4-***A	40(ø45.0)	40	22.5

Dimensions shown in ( ) are for stainless steel body.

● Mounting plate
AG44-02/03-1 to 4-*** [B]



Dimensions shown in ( ) are for mounting plate No. 2.

Mounting plate model	Compatibility
AG4-GE-100106-MOUNT-PLATE-KIT (Mounting plate No.1)	● AG44-02/03-1 to 4 Series ● Stainless steel body AG44-02-1 to 4- [D/E/L/M/R]
AG4-GE-100159-MOUNT-PLATE-KIT (Mounting plate No.2)	● Stainless steel body AG44-03-1 to 4- [D/E/L/M/R]

* Material: Steel/Zinc plated

Direct acting 3-port solenoid valve, actuator
General purpose

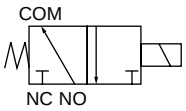
GAG34*/GAG44* Series

● NO pressurization

CE Refer to the Ending for details. RoHS CAD

JIS symbol

● GAG34*/44*: NO pressurization



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Standard specifications	Optional specifications
Working fluid	Air/low vacuum [1.33 x 10^2 Pa (abs)]/water/kerosene/oil (50 mm^2/s or less)	Hot water
Working pressure differential MPa	0 to 1.5 (refer to max. working pressure differential in individual specifications.)	
Max. working pressure MPa	1.5 (≈220 psi, 15 bar)	
Proof pressure (water pressure) MPa	10 (≈1500 psi, 100 bar)	
Fluid temperature (*1) °C	-10 (14°F) to 60 (140°F)	-10 (14°F) to 90 (194°F)
Ambient temperature °C	-20 (-4°F) to 60 (140°F)	-20 (-4°F) to 100 (212°F)
Thermal class	Class 130 (B)	Class 180 (H)
Atmosphere	Place free of corrosive gas and explosive gas	
Valve structure	Direct acting poppet structure	
Valve seat leakage cm^3/min(ANR)	0.2 or less (air)	
Mounting orientation	Unrestricted	
Body/seal material	Copper alloy/nitrile rubber	Copper alloy/ethylene propylene rubber

*1 : No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item / Model No.	NO port size	Orifice size (mm)		Max. working pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consump (W)		Weight (kg)
				Air		Water(hot)/Kerosene		Oil (50 mm^2/s)			When holding		When starting		AC	DC	
		TOP	BODY	AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz		
GAG341-1	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	100 VAC 50/60 Hz *6 200 VAC 50/60 Hz *6 12 VDC 24 VDC 48 VDC 100 VDC	14	11	20	16	6/4.2	11 (8.1)	0.35
-2		2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2								
GAG342-1	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7								
-2		2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2								
GAG442-1	Rc1/4	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45		22	17	35	27	8.3/6.2	11 (10.4)	0.44
-3		2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45								
-4		3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)								
GAG443-1	Rc3/8	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45								0.45
-3		2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45								
-4		3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)								

*1 : The model numbers above are for the basic NO port size (Rc) and orifice size. Refer to How to order for other combinations.
*2 : Refer to DC column for the max. working pressure differential of coil with diode.
*3 : The voltage fluctuation range must be within ±10% of the rated voltage.
*4 : Values shown in ( ) are for the DC voltage type with DIN terminal box.
*5 : When using at low vacuum, vacuum the NC port side.
*6 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Optional specifications (fluid temperature, ambient temperature, valve seat leakage)

Sealant		Fluoro rubber		Ethylene propylene rubber	
Coil (thermal class)		Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature (*1)	°C	-10 to 60	-10 to 90	0 to 60 (*3)	0 to 90 (*3)
Ambient temperature	°C	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)
Valve seat leakage	cm^3/min(ANR)	0.2 or less (air)			

*1 : No freezing.
*2 : -20 to 80°C when coil housing is HP terminal box with lamp.
*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

Model No.	Port size	Orifice size (mm)		Flow characteristics					
		TOP	BODY	C[dm^3/(s·bar)]		b		Cv	
				TOP	BODY	TOP	BODY	TOP	BODY
GAG341-1	Rc1/8	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
GAG342-1	Rc1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
GAG442-1	Rc1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-3		2.0	3.0	0.53	1.1	0.54	0.52	0.15	0.31
-4		3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31
GAG443-1	Rc3/8	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-3		2.0	3.0	0.53	1.1	0.54	0.52	0.15	0.31
-4		3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31

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

How to order

GAG34 / GAG44 **1** ( ) - **1** - **0** - **B** **2H** **A** **H** **S** - **AC100V**

- GAG34 / GAG44 : Model No.
- (1) : Ⓐ NO port size
- (1) : Ⓑ Thread
- (1) : Ⓒ Orifice size
- 0 : Actuator only (Fixed symbol)
- B : Ⓓ Body/sealant combination
- 2H : Ⓔ Coil housing
- A : Ⓕ Manual override (locking)
- H : Ⓖ Other options
- S : Ⓗ With surge suppressor
- AC100V : Ⓘ Rated voltage

Code	Description	Model No. GAG34*	Model No. GAG44*
Ⓐ NO port size			
1	1/8	●	
2	1/4	●	●
3	3/8		●
Ⓑ Thread			
Blank	Rc	●	●
G	G	●	●
N	NPT	●	●

Ⓒ Orifice size

	GAG34* TOP	GAG34* BODY	GAG44* TOP	GAG44* BODY	GAG34*	GAG44*
1	ø1.5	ø1.5	ø2.0	ø2.0	●	●
2	ø2.0	ø2.0	-	-	●	
3	-	-	ø2.0	ø3.0		●
4	-	-	ø3.0	ø3.0		●

Ⓓ Body/sealant combination *1*3*4

		Body	Seal	Treatment	Remarks	GAG34*	GAG44*
Blank	Std.	Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
B	Option	Copper alloy	Fluoro rubber	-	Air/low vacuum/kerosene (up to 90°C *2)	●	●
D	Option	Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
E	Option	Stainless steel	Fluoro rubber	-	Air/low vacuum/kerosene (up to 90°C *2)	●	●
H	Option	Copper alloy	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)	●	●
J	Option	Copper alloy	Fluoro rubber	Oil-prohibited	Air/low vacuum/kerosene (up to 90°C *2)	●	●
P	Option	Copper alloy	Ethylene propylene rubber	Oil-prohibited	Hot water (up to 90°C *2)	●	●
L	Option	Stainless steel	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)	●	●
M	Option	Stainless steel	Fluoro rubber	Oil-prohibited	Air/low vacuum/kerosene (up to 90°C *2)	●	●
R	Option	Stainless steel	Ethylene propylene rubber	Oil-prohibited	Hot water (up to 90°C *2)	●	●

Refer to Intro Page 39 for reference on material combinations.

Ⓔ to Ⓘ

Refer to page 237 for details on the coil housing, other options and voltage, etc.

The combinations indicated with ● in the above table are available.

[Example of model No. 1]
GAG341-1-0-AC200V
Model: GAG341
- Ⓐ NO port size : 1/8
- Ⓑ Thread : Rc
- Ⓒ Orifice size : TOP-ø1.5, BODY-ø1.5
- Ⓓ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓔ Coil housing : Grommet lead wire
- Ⓕ to Ⓗ : None
- Ⓘ Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

[Example of model No. 2]
GAG342G-2-0-000AS-AC200V
Model: GAG342
- Ⓐ NO port size : 1/4
- Ⓑ Thread : G
- Ⓒ Orifice size : TOP-ø2.0, BODY-ø2.0
- Ⓓ Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- Ⓔ Coil housing : Grommet lead wire
- Ⓕ Manual override (locking) : Selected
- Ⓖ Other options : None
- Ⓗ Surge suppressor : With surge suppressor
- Ⓘ Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

⚠ Precautions for model No. selection

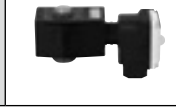
Notes for Ⓓ

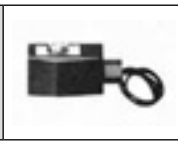
*1 : Leave blank for standard. However, to select options in Ⓔ, Ⓕ, Ⓖ or Ⓗ, indicate 0 for Item Ⓒ.
*2 : When Item Ⓓ 4A/4M/4N is selected.
*3 : The ethylene propylene rubber seal combination (Item Ⓓ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)
*4 : Even if nitrile rubber seal is selected, the seal material on the NO side will be fluoro rubber.

For Items Ⓔ to Ⓘ, the combinations indicated with codes are available.
Note that if options for Items Ⓕ to Ⓗ are not required, they should be left blank.

Ⓔ Coil housing				Ⓕ	Ⓖ Other options					Ⓗ	Ⓘ Rated voltage
Description				Manual override (locking)	Cable gland (marine cable gland)			Conduit (conduit piping)		With surge suppressor	Description
					A-15a	A-15b	A-15c	CTC19	G1/2		
Blank	Std.	Grommet lead wire		**A**						**S**	100 VAC, 200 VAC
2E		With DIN terminal box	(G1/2)								100 VAC, 200 VAC
2G		With DIN terminal box	(Pg11)								12 VDC, 24 VDC, 48 VDC, 100 VDC
2H		DIN terminal box with small lamp	(Pg11)						**H**		100 VAC, 200 VAC, 24 VDC
3A	Option	Open frame	Lead wire (IP65 or equivalent)	**A**				**G**	**H**	**S**	100 VAC, 200 VAC
3M			With HP terminal box (G1/2)		**D**	**E**	**F**				12 VDC, 24 VDC, 48 VDC, 100 VDC
3N			HP terminal box with lamp (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I			HP terminal box (IP65 or equivalent) (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J			HP term box, lamp (IP65, equiv) (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A		Open frame (Thermal class 180 (H))	Lead wire	**A**				**G**	**H**	**S**	100 VAC, 200 VAC
4M			With HP terminal box (G1/2)		**D**	**E**	**F**				
4N			HP terminal box with lamp (G1/2)								
5A		Open frame (diode integrated)	Lead wire (IP65 or equivalent)	**A**				**G**	**H**		100 VAC, 200 VAC
5M			With HP terminal box (G1/2)		**D**	**E**	**F**				
5N			HP terminal box with lamp (G1/2)								
5I			HP terminal box (IP65 or equivalent) (G1/2)								
5J			HP term box, lamp (IP65, equiv) (G1/2)								

⚠ Refer to the following cautions for Items Ⓔ to Ⓘ.

Blank		● Grommet lead wire 300 mm
2E 2G 2H		● DIN terminal box
3A 4A 5A		● Open frame Lead wire 300 mm ● 4A (Thermal class 180 (H)) ● 5A (diode integrated)
3M 3N 4M 4N 5M 5N		● Open frame HP terminal box ● 4M, 4N (Thermal class 180 (H)) ● 5M, 5N (diode integrated)
3I 3J 5I 5J		● Open frame HP terminal box (IP65 or equivalent) ● 5I, 5J (diode integrated)

G H		● Conduit ● G(CTC19) ● H(G1/2)

Refer to page 148 for coil selection.

⚠ Precautions for model No. selection

Notes for Ⓔ

*5 : Leave blank for the standard coil housing. However, to select options in Ⓕ, Ⓖ or Ⓗ, indicate 00 for Item Ⓔ.
*6 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
*7 : A DC coil for steam is available for GAG44. Contact CKD for more information.

Notes for Ⓕ to Ⓗ

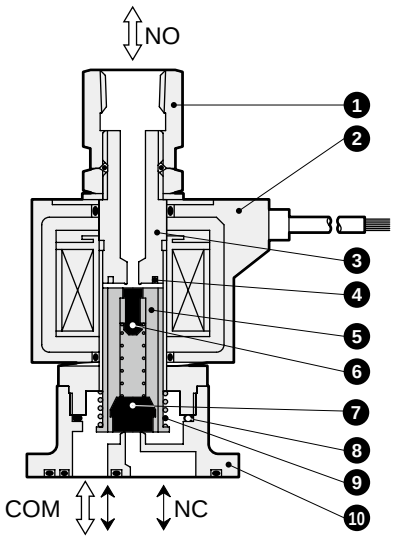
*8 : For Item Ⓖ, select an option from D, E, F, G and H.
*9 : The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*10: As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item Ⓔ 2H), so the surge suppressor S cannot be selected.
*11: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that tropicalization is not available when the manual override option (A) is selected.

Notes for Ⓘ

*12: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item Ⓔ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
*13: For voltages other than above, contact CKD.
*14: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

Internal structure and parts list

● GAG34*/GAG44* actuator

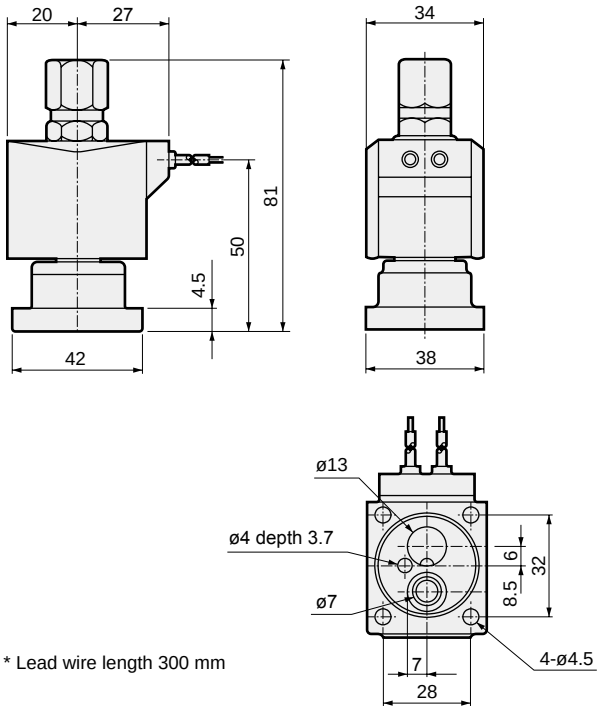


No.	Part name	Material	
1	Socket	C3604(SUS303)	Copper alloy (stainless steel)
2	Coil	-	-
3	Core assembly	SUS405 or equiv./316L/403 *1	Stainless steel
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
5	Plunger	SUS405 or equiv.	Stainless steel
6	NO valve sealant	FKM (FKM/EPDM)	NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber
7	NC valve sealant	NBR (FKM/EPDM)	
8	O-ring	NBR (FKM/EPDM) (Size: AS568-019)	
9	Plunger spring	SUS304	Stainless steel
10	Body	C3771(SUS303)	Copper alloy (stainless steel)

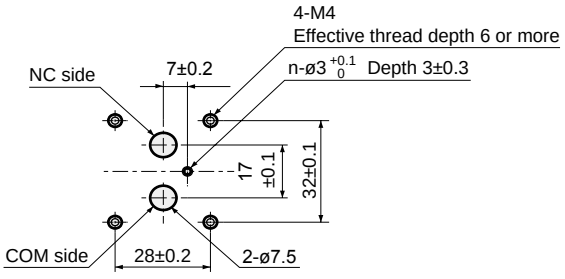
*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.
*2 : ( ) shows options.
*3 : 4 body mounting screws and 2 O-rings are attached.

Dimensions: GAG341/GAG342 Series

● Actuator (grommet lead wire)
GAG34*-1 to 2-0



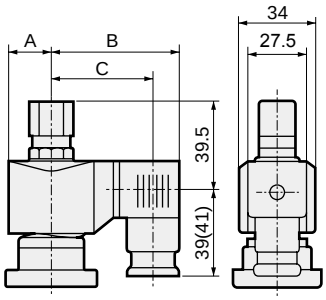
● Recommended dimensions for actuator mounting



Optional dimensions: GAG341/GAG342 Series

* Refer to the dimensions of grommet lead wire on page 238 for common dimensions.

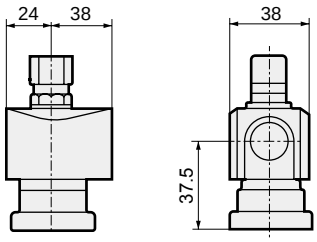
● With DIN terminal box
GAG34*-1 to 2-0-* [2E] [2G] [2H]



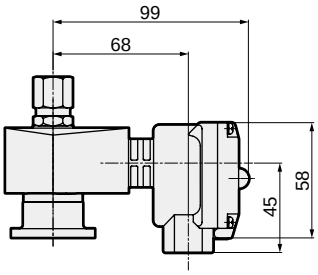
Dimensions shown in ( ) are for G1/2.

Voltage	A	B	C
AC	20	62	50.5(50)
DC	21	63.5	52(51.5)

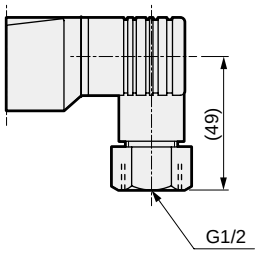
● Open frame lead wire
GAG34*-1 to 2-0-* [3A] [4A] [5A]



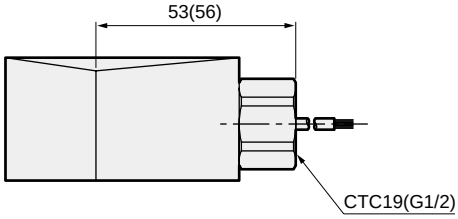
● Open frame + HP terminal box
GAG34*-1 to 2-0-* [3] [4] [5] [M] [N]



● DIN terminal box with small lamp + conduit (G1/2)
GAG34*-1 to 2-0-* [2H] [H]

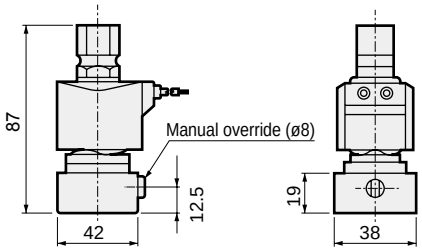


● Open frame + conduit
GAG34*-1 to 2-0-* [3A] [4A] [5A] [G] [H]



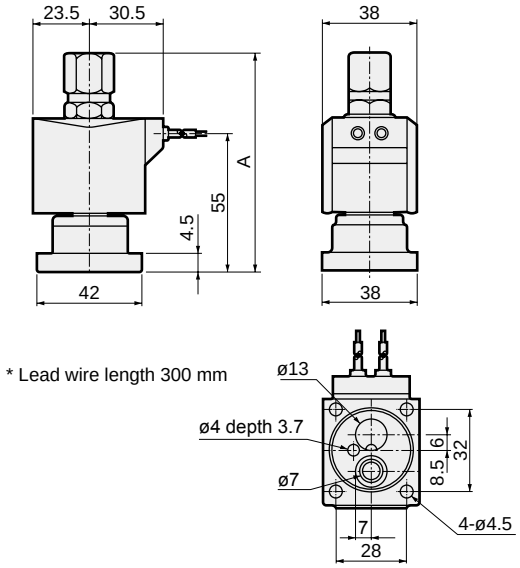
Dimensions shown in ( ) are for G1/2.

● Manual override (locking)
GAG34*-1 to 2-0-*** [A]



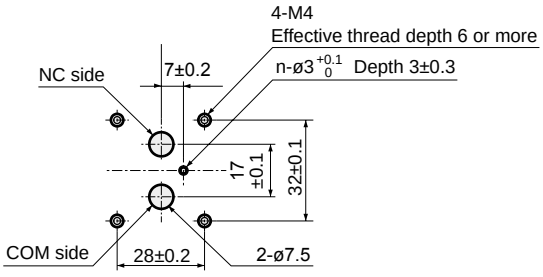
Dimensions: GAG442/GAG443 Series

● Actuator (grommet lead wire)
GAG44*-1/3/4-0



Model No.	A
GAG442-1/3/4	86.5
GAG443-1/3/4	90

● Recommended dimensions for actuator mounting

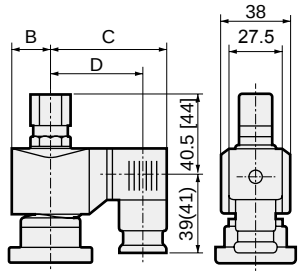


Optional dimensions: GAG442/GAG443 Series

CAD

* Refer to the dimensions of grommet lead wire on page 240 for common dimensions.

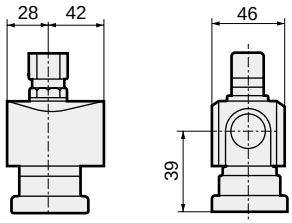
● With DIN terminal box
GAG44*-1/3/4-0-* [2E / 2G / 2H]



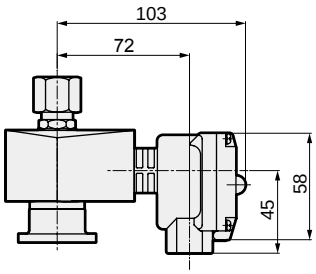
Dimensions shown in ( ) are for G1/2.
Dimensions shown in [ ] are for Rc3/8.

Voltage	B	C	D
AC	23.5	65.5	54(53.5)
DC	23.5	66	54.5(54)

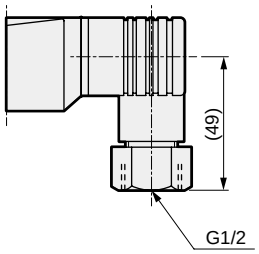
● Open frame lead wire
GAG44*-1/3/4-0-* [3A / 4A / 5A]



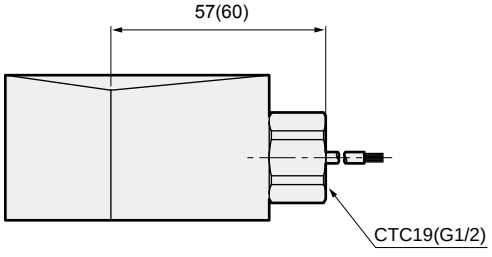
● Open frame + HP terminal box
GAG44*-1/3/4-0-* [3 / 4 / 5] [M / N]



● DIN terminal box with small lamp + conduit (G1/2)
GAG44*-1/3/4-0-* [2H] [H]

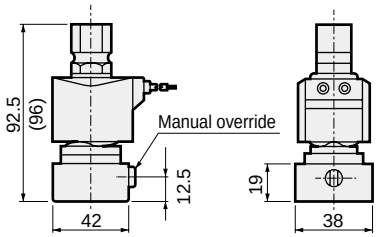


● Open frame + conduit
GAG44*-1/3/4-0-* [3A / 4A / 5A] [G / H]



Dimensions shown in ( ) are for G1/2.

● Manual override (locking)
GAG44*-1/3/4-0-***[A]



Dimensions shown in ( ) are for GAG443.