



Discrete direct acting 3 port solenoid valve  
(general purpose valve)

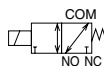
# AG31/AG41 Series

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



## JIS symbol

- AG31/41: Universal type



## Common specifications

Item	Standard specifications	Optional specifications	
Working fluid	Air/low, low vacuum (1.33 x 10 <sup>5</sup> Pa (abs)), water, kerosene, oil (50 mm <sup>2</sup> /s or less)	Hot water	Steam
Working pressure differential range MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)		
Max. working pressure MPa	1		
Withstanding pressure (water) MPa	25		
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90	-10 to 184
Ambient temperature °C	-20 to 60		
Heat proof class	B	H	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm <sup>3</sup> /min. (ANR)	0.2 or less (air)		300 or less (air)
Mounting attitude	Free		
Body, sealant	Brass, nitrile rubber	Brass, ethylene propylene diene rubber	Brass, PTFE

Note 1: No freezing

## Individual specifications

Item Model no.	Port size	Orifice (mm)		Max. working pressure differential (MPa)							Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
				Air		Water, hot water, kerosene		Oil (50 mm <sup>2</sup> /s)		Steam		Holding		Starting		AC	DC	
		TOP	BODY	AC	DC	AC	DC	AC	DC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	DC	
<b>AG31-01-1</b>	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	14	11	20	16	6/4.2	11 (8.1)	0.36
		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4	110 VAC 60 Hz							
<b>-02-1</b>	Rc1/4	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	0.7	200 VAC 50/60 Hz	22	17	35	27	8.3/6.2	11 (10.4)	0.45
		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4	12 VDC 24 VDC 48 VDC 100 VDC							
<b>AG41-02-1</b>	Rc1/4	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0	220 VAC 60 Hz	22	17	35	27	8.3/6.2	11 (10.4)	0.48
		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	0.7	12 VDC 24 VDC 48 VDC 100 VDC							
<b>-03-1</b>	Rc3/8	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)	0.48
		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 show the basic port size (Rc) and orifice diameter. 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 must be within ±10% of the rated voltage.

\*4: Values in ( ) are for the type with DIN terminal box and DC voltage specifications, and indicate the max. working pressure differential when pressurizing from the NO port.

\*5: When continuously energizing the valve, use a fluoro rubber seal.

\*6: When the sealant is PTFE, the NO port cannot be pressurized.

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber		PTFE	
	B	H	B	H	B	H
Coil (heat proof class)						
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90	-10 to 60	-10 to 90	-10 to 60	-10 to 184
Ambient temperature °C	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100 (Note 2)
Valve seat leakage <small>cm<sup>3</sup>/min. (ANR)</small>	0.2 or less (air)				300 or less (air)	

Note 1: No freezing

Note 2: The range is -20 to 80°C when using the HP terminal box with indicator light for the coil housing.

## Flow characteristics

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

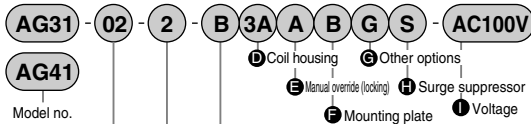
\*1: Effective sectional area S and sonic conductance C are converted as  $S = 5.0 \times C$ .

HNB/G  
USB/G  
FAB/G  
FGB/G  
FVB  
FWB/G  
FHB  
FLB  
AB  
AG  
AP/  
AD  
APK/  
ADK  
For  
dry air  
Explosion  
proof  
HVB/  
HVL  
SAB/  
SVB  
NP/NAP/  
NVP  
CHB/G  
MXB/G  
Other G.P.  
systems  
PD/FAD/  
PJ  
CVE/  
CVSE  
CPE/  
CPD  
Medical  
analysis  
Custom  
order

General purpose valve  
Direct acting 3 Port solenoid valve

# AG31/41 Series

How to order



Model no.	
AG31	AG41

Symbol	Descriptions	Symbol	Descriptions	Symbol	Descriptions		
<b>A Port size</b>							
01	Rc1/8	1G	G 1/8	1N	1/8NPT	●	
02	Rc1/4	2G	G 1/4	2N	1/4NPT	●	●
03	Rc3/8	3G	G 3/8	3N	3/8NPT		●

<b>B Orifice</b>							
AG31				AG41			
	TOP	BODY		TOP	BODY		
1	ø1.5	ø1.5		ø2.0	ø2.0	●	●
2	ø2.0	ø2.0		ø2.3	ø2.3	●	●

**C Body/sealant combination**  
\*1  
\*2  
\*3  
\*4

<b>C Body/sealant combination</b>							
	Body	Sealant	Treatment	Remarks			
Blank	Brass	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●	●	
		PTFE		Steam (up to 184°C *2)	●	●	
		Fluoro rubber		Vacuum inspection	Medium vacuum	●	●
D	Stainless steel	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●	●	
		PTFE		Steam (up to 184°C *2)	●	●	
		Fluoro rubber		Vacuum inspection	Medium vacuum	●	●
H	Brass	Nitrile rubber	Oil free	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●	●	
		PTFE		Steam (up to 184°C *2)	●	●	
		Ethylene propylene diene rubber		Hot water (up to 90°C *2)	●	●	
	Stainless steel	Nitrile rubber		Air, water, low vacuum, kerosene (up to 60°C)	●	●	
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●	●	
		PTFE		Steam (up to 184°C *2)	●	●	
		Ethylene propylene diene rubber		Hot water (up to 90°C *2)	●	●	

Refer to page 36 in the Introduction for details on the material combinations.

<b>D to I</b>
Refer to the following page for details on the coil housing, other options and voltage, etc.

<Example 1 of model number>

**AG31-02-1-AC100V**  
Model no.: AG31

- A** Port size: Rc1/4
  - B** Orifice: TOP - ø1.5, BODY - ø1.5
  - C** Body/sealant combination: Body - bronze, sealant - nitrile rubber
  - D** Coil housing: Grommet lead wire
  - E to H**: Blank
  - I** Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz
- The combinations indicated with ● in the above table are available.

<Example 2 of model number>

**AG41-03-2-000ABS-AC100V**  
Model no.: AG41

- A** Port size: Rc3/8
- B** Orifice: TOP - ø2.3, BODY - ø2.3
- C** Body/sealant combination: Body - bronze, sealant - nitrile rubber
- D** Coil housing: Grommet lead wire
- E** Manual override (locking): Selected
- F** Mounting plate: Selected
- G** Other options: Blank
- H** Surge suppressor: Selected
- I** Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

**Note on model no. selection**






**Note on C**

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


For ① to ④, the combinations indicated with symbols can be manufactured.  
Note that if options ⑤ to ⑧ are not required, no symbol is indicated.

④ Coil housing		⑤	⑥	⑦ Other options			⑧	⑨ Rated voltage			
Descriptions		Manual override (locking)	Mounting plate	Cable gland (Marine cable gland)			Conduit (Conduit pipe)		Surge suppressor	Descriptions	
				A-15a	A-15b	A-15c	CTC19	G1/2			
Blank	Grommet lead wire	A	B						S	100 VAC, 200 VAC	
2E	DIN terminal box (G1/2)									100 VAC, 200 VAC	
2G	DIN terminal box (Pg11)									12 VDC, 24 VDC, 48 VDC, 100 VDC	
2H	DIN terminal box + small light (Pg11)									100 VAC, 200 VAC, 24 VDC	
3A	Lead wire									G	H
3M	Open frame type	A	B	D E F			G H		S	12 VDC, 24 VDC, 48 VDC, 100 VDC	
3N										HP terminal box + light (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 terminal box + light (IP65 or equivalent) (G1/2)	100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A	Open frame type (heat proof class H)	A	B	D E F			G H		S	100 VAC, 200 VAC	
4M										HP terminal box (G1/2)	
4N	HP terminal box + light (G1/2)										
5A	Open frame type (diode integrated)	A	B	D E F			G H		S	100 VAC, 200 VAC	
5M										Lead wire	
5N										HP terminal box (G1/2)	
5I										HP terminal box (IP65 or equivalent) (G1/2)	
5J	HP terminal box + light (IP65 or equivalent) (G1/2)										

▲ Refer to the following precautions for ④ to ⑩.

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

\* Refer to page 122 for coil selection.

G H		● Conduit ● G (CTC19) ● H (G1/2)
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### ▲ Note on model no. selection

#### Note on ④

- \*5: Leave blank for the standard coil housing. However, to select options in ⑤ to ⑧, indicate 00 for ④.
- \*6: 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC with a diode.
- \*7: A DC coil for steam is available for AG41. Contact CKD for more information.

#### Note on ⑤ to ⑩

- \*8: When ④ is C, F, K, N, V or W, the manual override (⑤ A) is not available.
- \*9: Select one among D, E, F, G and H for ⑥.
- \*10: The surge suppressor is an accessory for the lead wire coil. When selecting a coil with terminal box, the surge suppressor is mounted in the terminal box.
- \*11: As standard, the surge suppressor is incorporated in the coil with diode and the 24 VDC coil (④ 2H), so the surge suppressor symbol S cannot be selected.
- \*12: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.  
Note that the tropicalization is not available when the manual override option A is selected.

#### Note on ⑩

- \*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. Note that the coils ⑩ 5A/5M/5N/5I/5J can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
- \*14: For voltages other than above, consult with 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.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CVE/  
CVSE

CPE/  
CPD

Medical  
analysis

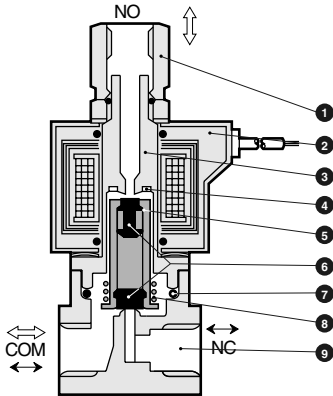
Custom  
order

General purpose valve  
Direct acting 3 Port Solenoid valve

# AG31/41 Series

## Internal structure and parts list

● AG31/41 Series



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

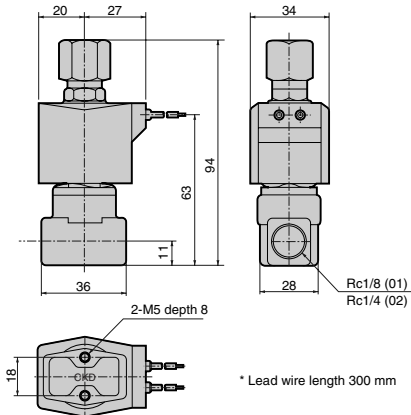
\*1: When the body/sealant combination symbol is other than blank or H, the material is SUS405 or equivalent, 316L, 430.

\*2: ( ) shows option.

## Dimensions: AG31 Series



● Grommet lead wire type  
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 de-energized:

COM → NO or NO → COM

When energized:

COM → NC or NC → COM

Note 1: The dimensions are the same for the G or NPT thread port size

\* Lead wire length 300 mm

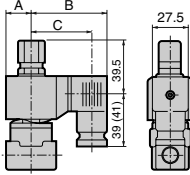
## Optional dimensions: AG31 Series



\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

● DIN terminal box

AG31-01/02-1 to 2-<sup>2E</sup>  
<sup>2G</sup>  
<sup>2H</sup>

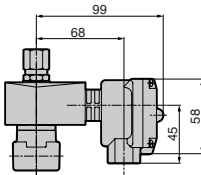


Dimensions shown in ( ) are for G1/2.

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

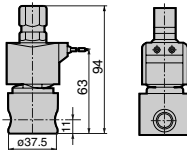
● Open frame type + HP terminal box

AG31-01/02-1 to 2-<sup>3</sup> M  
<sup>5</sup> N  
J



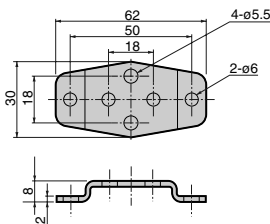
● Stainless steel body

AG31-01/02-1 to 2-<sup>D/E/F/R/W/L/M/N</sup>



● Mounting plate

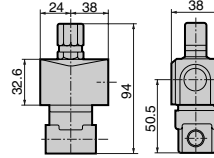
AG31-01/02-1 to 2-\*\*\*<sup>B</sup>



Mounting plate No. 1 GE-100106

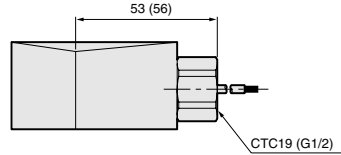
● Open frame type

AG31-01/02-1 to 2-<sup>3A</sup>  
<sup>4A</sup>  
<sup>5A</sup>



● Open frame type + conduit

AG31-01/02-1 to 2-<sup>3A</sup> G  
<sup>4A</sup> H  
<sup>5A</sup>

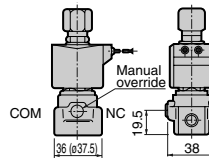


Dimensions shown in ( ) are for G1/2.

● Manual override (locking)

AG31-01/02-1 to 2-\*\*\*<sup>A</sup>

Figure shows the brass body.



Dimensions shown in ( ) are for stainless steel body.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

**AG**

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CVB/  
CVSE

CPE/  
CPD

Medical  
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Custom  
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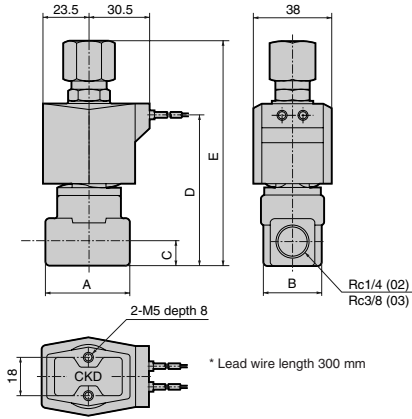
General purpose valve  
Direct acting 3 Port solenoid valve

# AG31/41 Series

## Dimensions: AG41 Series



- Grommet lead wire type  
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 de-energized:  
 COM → NO or NO → COM  
 When energized:  
 COM → NC or NC → COM

Note 1: The dimensions are the same for the G or NPT thread port size.

Model no.	A	B	C	D	E
<b>AG41-02-1 to 2</b>	36	28	11	68	99.5
<b>AG41-03-1 to 2</b>	40	28	12	71	106

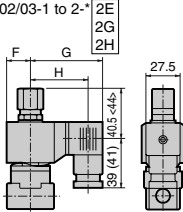
## Optional dimensions: AG41 Series



\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

### ● DIN terminal box

AG41-02/03-1 to 2-\*

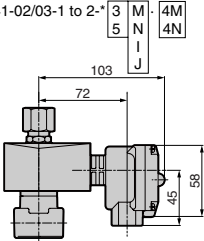


Dimensions shown in <> are for Rc3/8. Dimensions shown in ( ) are for G1/2.

Voltage	F	G	H
<b>AC</b>	23.5	65.5	54 (53.5)
<b>DC</b>	23.5	66	54.5 (54)

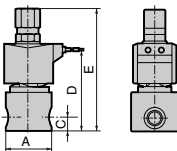
### ● Open frame type + HP terminal box

AG41-02/03-1 to 2-\*



### ● Stainless steel body

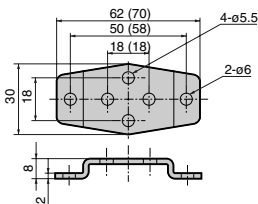
AG41-02/03-1 to 7-D/E/F/R/W/L/M/N



Model no.	A	C	D	E
<b>AG41-02-1 to 2-*</b>	ø37.5	11	68	99.5
<b>AG41-03-1 to 2-*</b>	ø45	12	71	106

### ● Mounting plate

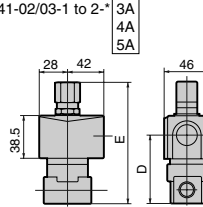
AG41-02/03-1 to 2-\*\*\*B



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

### ● Open frame lead wire type

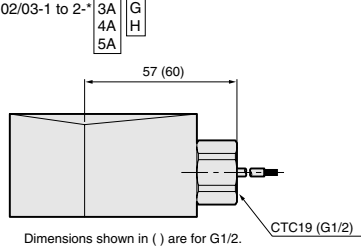
AG41-02/03-1 to 2-\*



Model no.	D	E
<b>AG41-02-1 to 2-***A</b>	52	99.5
<b>AG41-03-1 to 2-***A</b>	55	106

### ● Open frame type + conduit

AG41-02/03-1 to 2-\*

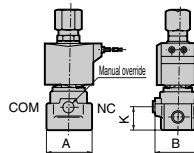


Dimensions shown in ( ) are for G1/2.

### ● Manual override (locking)

AG41-02/03-1 to 2-\*\*\*A

Figure shows the brass body.



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

Dimensions shown in ( ) are for stainless steel body.

Code	Applicable model
Mounting plate No. 1	● AG41-02/03-1 to 2 Series
<b>GE-100106</b>	● Stainless steel body
	AG41-02-1 to 2- <u>D/E/F/L/M/N/R/W</u>
Mounting plate No. 2	● Stainless steel body
<b>GE-100159</b>	AG41-03-1 to 2- <u>D/E/F/L/M/N/R/W</u>

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

**AG**

AP/

AD

APK/

ADK

For

dry air

Explosion

proof

HVB/

HVL

SAB/

SVB

NP/NAP/

NVP

CHB/G

MXB/G

Other G.P.

systems

PD/FAD/

PJ

CVE/

CVSE

CPE/

CPD

Medical

analysis

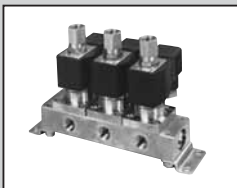
Custom

order

General purpose valve

Direct acting 3 Port solenoid valve





Direct acting 3 port solenoid valve, manifold and actuator  
(general purpose valve)

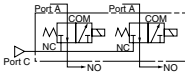
# GAG31\*/GAG35\*, GAG41\*/GAG45\* Series

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

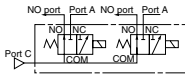


## Manifold circuit structure Common specifications

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



- GAG352/452  
(Common supply / separate flow type)



Item	Standard specifications		Optional specifications	
Working fluid	Airflow, low vacuum (1.33 x 10 <sup>5</sup> Pa (abs)), water, kerosene, oil (50 mm <sup>2</sup> /s or less)		Hot water	Steam
Working pressure differential range MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)			
Max. working pressure MPa	1			
Withstanding pressure (water) MPa	10			
Fluid temperature (Note 1) °C	-10 to 60		-10 to 90	-10 to 184
Ambient temperature °C	-20 to 60		-20 to 100	
Heat proof class	B		H	
Atmosphere	Place free of corrosive gas and explosive gas			
Valve structure	Direct acting poppet structure			
Valve seat leakage cm <sup>3</sup> /min. (ANR)	0.2 or less (air)		300 or less (air)	
Mounting attitude	Free			
Body, sealant	Brass, nitrile rubber		Brass, ethylene propylene diene rubber	Brass, PTFE

Note 1: No freezing

## Individual specifications

Item Model no.	NO port size	Orifice (mm)		Max. working pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)			
				Air		Water, hot water, kerosene		Oil (50 mm <sup>2</sup> /s)			Steam		Holding		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 -2	Rc1/8	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.15)	0.7	100 VAC 50/60 Hz	14	11	20	16	6/4.2	11 (8.1)	
		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4								110 VAC 60 Hz
GAG312-1 -2	Rc1/4	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.15)	0.7	200 VAC 50/60 Hz	14	11	20	16	6/4.2	11 (8.1)	
		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4								220 VAC 50/60 Hz
GAG412-1 -2	Rc1/4	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0	24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)	
		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	0.7								
GAG413-1 -2	Rc3/8	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)	
		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 show the basic NO port size and orifice diameter. Refer to How to order for other combinations.

\*2: Refer to How to order (page 176) and Dimensions (page 180) for the port sizes of port A and C.

\*3: Refer to DC column for the max. working pressure differential of coil with diode.

\*4: The voltage fluctuation must be within ±10% of the rated voltage.

\*5: Values in ( ) are for the type with DIN terminal box and DC voltage specifications, and indicate the max. working pressure differential when pressurizing from the NO port.

\*6: When continuously energizing the valve, use a fluoro rubber seal.

\*7: When the sealant is PTFE, the NO port cannot be pressurized.

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber		PTFE	
	B	H	B	H	B	H
Coil (heat proof class)	-10 to 60	-10 to 90	-10 to 60	-10 to 90	-10 to 60	-10 to 184
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90	-10 to 60	-10 to 90	-10 to 60	-10 to 184
Ambient temperature °C	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100 (Note 2)
Valve seat leakage cm <sup>3</sup> /min. (ANR)	0.2 or less (air)				300 or less (air)	

Note 1: No freezing

Note 2: The range is -20 to 80°C when using the HP terminal box with indicator light for the coil housing.

## Flow characteristics

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

\*1: Effective sectional area S and sonic conductance C are converted as S = 5.0 x C.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CVE/  
CVSE

CPE/  
CPD

Medical  
analysis

Custom  
order

General purpose valve  
Direct acting 3 Port solenoid valve

# GAG31\*/35\*/41\*/45\* Series

## How to order

- Common supply / individual exhaust type (port C pressurization)

**GAG31** **1** - **1** - **7** - **0** **3A** **A** **G** **S** - **AC100V**

- Common supply / separate flow type (port C pressurization)

**GAG35**

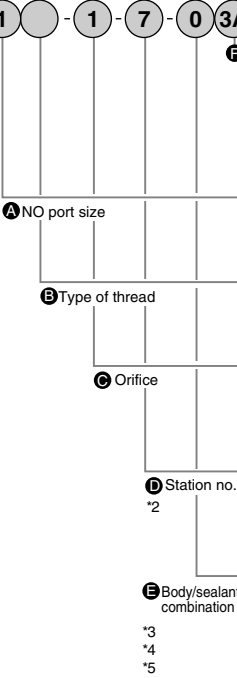
- Common supply / individual exhaust type (port C pressurization)

**GAG41**

- Common supply / separate flow type (port C pressurization)

**GAG45**

Model no.



		Model no.							
		GAG3**	GAG4**						
Symbol	Descriptions								
<b>A NO port size</b>									
1	1/8	●	●						
2	1/4	●	●						
3	3/8		●						
<b>B Type of thread</b>									
Blank	Rc	●	●						
G	G	●	●						
N	NPT	●	●						
<b>C Orifice</b>									
		<b>GAG3**</b>		<b>GAG4**</b>					
		TOP	BODY	TOP	BODY				
1	ø1.5	ø1.5	ø2.0	ø2.0	ø2.0	●	●		
2	ø2.0	ø2.0	ø2.3	ø2.3	ø2.3	●	●		
<b>D Station no.</b>									
2 to 10	2 stations to 10 stations			●	●				
0	Actuator only			●	●				
<b>E Body/sealant combination</b>									
Blank	Body	Sealant	Treatment	Remarks					
B C D E	Brass	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 90°C)				●	●
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)				●	●
		PTFE		Steam (up to 184°C *4)				●	●
		Nitrile rubber		Air, water, low vacuum, kerosene (up to 80°C)				●	●
F G H J K L M N R	Stainless steel	Fluoro rubber	-	Air, low vacuum, kerosene (up to 90°C *4)				●	●
		PTFE		Steam (up to 184°C *4)				●	●
		Ethylene propylene diene rubber		Hot water (up to 90°C *4)				●	●
		Nitrile rubber		Oil free	Air, water, low vacuum, kerosene (up to 80°C)				●
Fluoro rubber	Air, low vacuum, kerosene (up to 90°C *4)				●	●			
PTFE	Steam (up to 184°C *4)				●	●			
Ethylene propylene diene rubber	Hot water (up to 90°C *4)				●	●			

Refer to page 36 in the Introduction for details on the material combinations.

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

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

**Note on model no. selection**  
 \*1: Orders for only the masking plate and sub-plate are also available. Contact CKD for details.

**Note on D and E**  
 \*2: Consult with CKD about more than 10 stations manifold.  
 \*3: Leave blank for standard. However, to select options in (F) to (I), indicate 0 for (E).  
 \*4: When 4A, 4M or 4N is selected for (E).  
 \*5: The ethylene propylene diene rubber seal combination ((E) P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene diene rubber is not oil-resistant.)

### <Example 1 of model number>

- GAG311-1-4-AC200V**  
 Model no.: GAG311 (common supply / individual exhaust type / port C pressurization)
- A** NO port size: 1/8
  - B** Type of thread: Rc
  - C** Orifice: TOP - ø1.5, BODY - ø1.5
  - D** Station no.: 4 stations
  - E** Body/sealant combination:

- F** Coil housing: Body - bronze, sealant - nitrile rubber  
Grommet lead wire
- G** to **I**: Blank
- J** Voltage: 200 VAC 50/60Hz, 220 VAC 60Hz

### <Example 2 of model number>






- GAG352G-2-7-000AS-AC200V**  
 Model no.: GAG352 (common supply / separate flow type / port C pressurization)
- A** NO port size: 1/4
  - B** Type of thread: G
  - C** Orifice: TOP - ø2.0, BODY - ø2.0
  - D** Station no.: 7 stations
  - E** Body/sealant combination:

- Body - bronze, sealant - nitrile rubber
- F** Coil housing: Grommet lead wire
- G** Manual override (locking): Selected
- H** Other options: Blank
- I** Surge suppressor: Selected
- J** Voltage: 200 VAC 50/60Hz, 220 VAC 60Hz


For (F) to (J), the combinations indicated with symbols can be manufactured. Note that if options (G) to (I) are not required, no symbol is indicated.

(F) Coil housing		(G) (H) Other options		(I) (J) Rated voltage						
Descriptions		Manual override (locking)	Cable gland		Conduit		Surge suppressor	Descriptions		
			(Marine cable gland)		(Conduit pipe)					
			A-15a	A-15b	A-15c	CTC19	G1/2			
Blank	Grommet lead wire							100 VAC, 200 VAC		
2E	DIN terminal box (G1/2)	A						100 VAC, 200 VAC		
2G	DIN terminal box (Pg11)							12 VDC, 24 VDC, 48 VDC, 100 VDC		
2H	DIN terminal box + small light (Pg11)						H	100 VAC, 200 VAC, 24 VDC		
3A	Lead wire						G	H		
3M	Open frame type HP terminal box (G1/2)	A						100 VAC, 200 VAC		
3N	HP terminal box + light (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 terminal box + light (IP65 or equivalent) (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC	
4A	Open frame type Lead wire	A						G	H	S
4M	HP terminal box (G1/2)		D	E	F					100 VAC, 200 VAC
4N	HP terminal box + light (G1/2)									
5A	Lead wire								G	H
5M	Open frame type HP terminal box (G1/2)	A								
5N	HP terminal box + light (G1/2)		D	E	F					100 VAC, 200 VAC
5I	HP terminal box (IP65 or equivalent) (G1/2)									
5J	HP terminal box + light (IP65 or equivalent) (G1/2)									

⚠ Refer to the following precautions for (F) to (J).

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

\* Refer to page 122 for coil selection.

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

### ⚠ Note on model no. selection

#### Note on (G)

- \*6: Leave blank for the standard coil housing. However, to select options in (G), (H) or (I), indicate 00 for (F).
- \*7: 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC with a diode.
- \*8: A DC coil for steam is available for GAG4\*\*. Contact CKD for more information.

#### Note on (G) to (I)

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

#### Note on (J)

- \*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. Note that the coils ((F) 5A/5M/5N/5I/5J) can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
- \*15: For voltages other than above, consult with 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.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CVE/  
CVSE

CPE/  
CPD

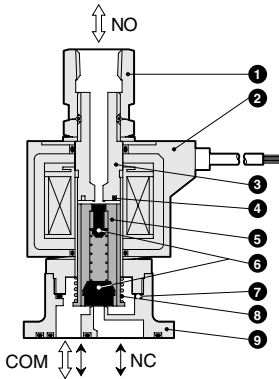
Medical  
analysis

Custom  
order

General purpose valve  
Direct acting 3 Port solenoid valve

## Internal structure and parts list

● GAG31\*/GAG35\*/GAG41\*/GAG45\* Actuator



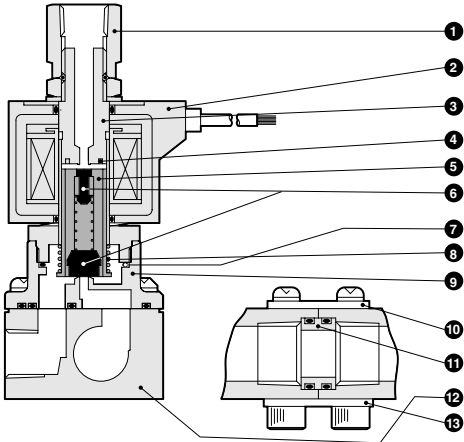
No.	Parts name	Material
1	Socket	C3604 (SUS303) / Brass (stainless steel)
2	Coil	— / —
3	Core assembly	SUS405 or equivalent, 316L, 403 *1 / Stainless steel
4	Shading coil	Cu (Ag for stainless steel body) / Copper (silver for stainless steel body)
5	Plunger	SUS405 or equivalent / Stainless steel
6	Sealant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

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

\*2: ( ) shows option.

## Internal structure and parts list

● GAG31\*/GAG35\*/GAG41\*/GAG45\* Manifold



No.	Parts name	Material
1	Socket	C3604 (SUS303) / Brass (stainless steel)
2	Coil	— / —
3	Core assembly	SUS405 or equivalent, 316L, 403 '1, / Stainless steel
4	Shading coil	Cu (Ag for stainless steel body) / Copper (silver for stainless steel body)
5	Plunger	SUS405 or equivalent / Stainless steel
6	Sealant	NBR (FKM, EPDM, PTFE) / NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene diene rubber PTFE: Tetrafluoroethylene resin
7	O ring	NBR (FKM, EPDM, PTFE) (size: AS568-G19)
8	Plunger spring	SUS304 / Stainless steel
9	Body	C3771 (SCS13) / Brass (stainless steel)
10	Holder	SPCC / Steel
11	Connector	C3604 (SUS304) / Brass (stainless steel)
12	Sub-plate	C3604 (SUS303) / Brass (stainless steel)
13	Connecting plate	SPCC / Steel

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

\*2: ( ) shows option.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CVB/  
CVSE

CPE/  
CPD

Medical  
analysis

Custom  
order

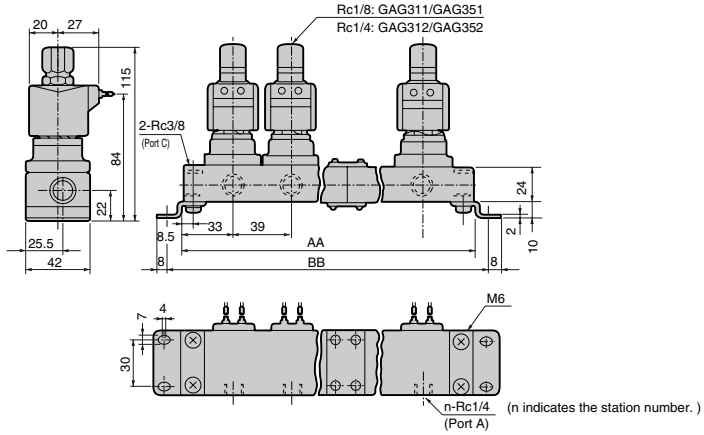
General purpose valve  
Direct acting 3 Port solenoid valve

# GAG31\*/35\*/41\*/45\* Series



## Dimensions: GAG31\*/GAG35\* Series

- Manifold (grommet lead wire type)  
GAG3\*\* -1 to 2-[2 to 10]

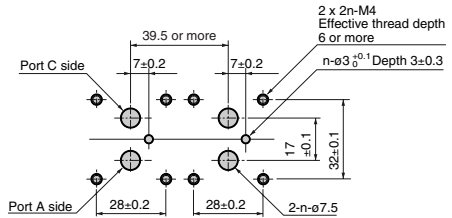
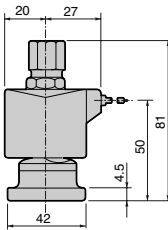


Station no.	AA	BB	Manifold structure	Station no.	AA	BB	Manifold structure
2	106	122	2 stations x 1	7	329	345	5 stations + 2 stations
3	145	161	3 stations x 1	8	368	384	5 stations + 3 stations
4	212	228	2 stations x 2	9	435	451	3 stations x 3
5	223	239	5 stations x 1	10	446	462	5 stations x 2
6	290	306	3 stations x 2	Consult with CKD about more than 10 stations manifold.			

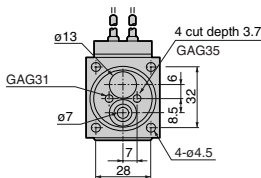
\*1: A manifold is configured by combining 2-, 3- and 5-station modules.  
\*2: The dimensions are the same for the G or NPT thread port size.

- Actuator (grommet lead wire type)  
GAG3\*\* -1 to 2-[0]

- Recommended dimensions for actuator mounting



- Machining drawing when using 2 actuators



## Optional dimensions: GAG31\*/GAG35\*

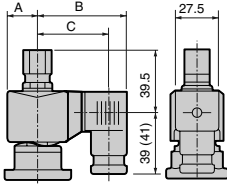


\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

### ● DIN terminal box

GAG3\*\* -1 to 2-0 to 10-<sup>\*</sup>  

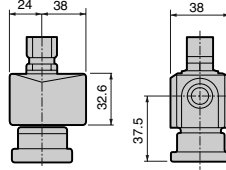
2E
2G
2H



### ● Open frame lead wire type

GAG3\*\* -1 to 2-0 to 10-<sup>\*</sup>  

3A
4A
5A



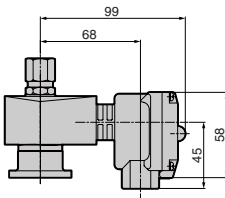
Dimensions shown in ( ) are for G1/2.

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

### ● Open frame type + HP terminal box

GAG3\*\* -1 to 2-0 to 10-<sup>\*</sup>  

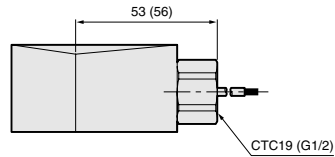
3	M	4M
5	N	4N
1	J	



### ● Open frame type + conduit

GAG3\*\* -1 to 2-0 to 10-<sup>\*</sup>  

3A	G
4A	H
5A	

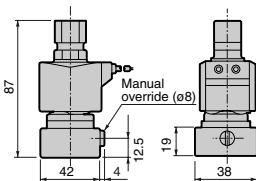


Dimensions shown in ( ) are for G1/2.

### ● Manual override (locking)

GAG3\*\* -1 to 2-0 to 10-<sup>\*\*\*</sup>  

A
---



- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/  
AD
- APK/  
ADK
- For  
dry air
- Explosion  
proof
- HVB/  
HVL
- SAB/  
SVB
- NP/NAP/  
NVP
- CHB/G
- MXB/G
- Other G.P.  
systems
- PD/FAD/  
PJ
- CVB/  
CVSE
- CPE/  
CPD
- Medical  
analysis
- Custom  
order

General purpose valve  
 Direct acting 3 Port solenoid valve

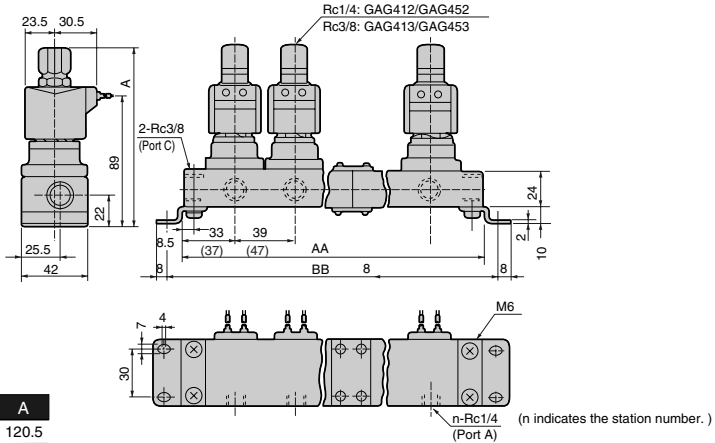


# GAG31\*/35\*/41\*/45\* Series



## Dimensions: GAG41\*/45\* Series

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



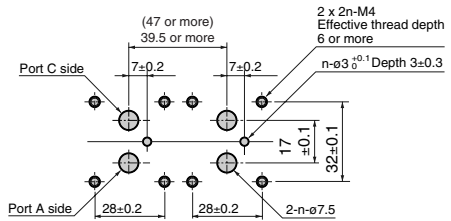
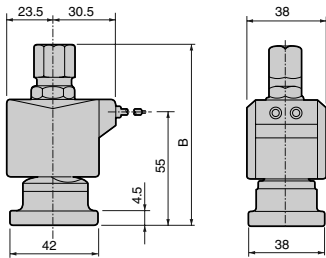
Model no.	A
<b>GAG412/452-1 to 2</b>	120.5
<b>GAG413/453-1 to 2</b>	124

Station no.	AA	BB	Manifold structure	Station no.	AA	BB	Manifold structure
<b>2</b>	106 (122)	122 (138)	2 stations x 1	<b>7</b>	329 (385)	345 (401)	5 stations + 2 stations
<b>3</b>	145 (169)	161 (185)	3 stations x 1	<b>8</b>	368 (432)	384 (448)	5 stations + 3 stations
<b>4</b>	212 (244)	228 (260)	2 stations x 2	<b>9</b>	435 (507)	451 (523)	3 stations x 3
<b>5</b>	223 (263)	239 (279)	5 stations x 1	<b>10</b>	446 (526)	462 (542)	5 stations x 2
<b>6</b>	290 (338)	306 (354)	3 stations x 2	Consult with CKD about more than 10 stations manifold.			

- \*1: A manifold is configured by combining 2-, 3- and 5-station modules.
- \*2: Dimensions in ( ) are for the open frame type.
- \*3: The dimensions are the same for the G or NPT thread port size.

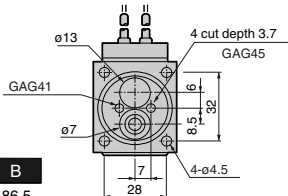
- Actuator (grommet lead wire type)  
GAG4\*\*-1 to 2-0

- Recommended dimensions for actuator mounting



■ Machining drawing when using 2 actuators

\* Lead wire length 300 mm



Model no.	B
<b>GAG412/452-1 to 2</b>	86.5
<b>GAG413/453-1 to 2</b>	90

## Optional dimensions: GAG41\*/45\* Series

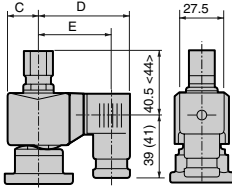


\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

● DIN terminal box

GAG4\*\* -1 to 2-0 to 10-\*  

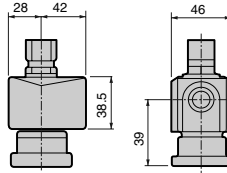
2E
2G
2H



● Open frame lead wire type

GAG4\*\* -1 to 2-0 to 10-\*  

3A
4A
5A



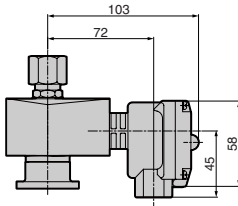
Dimensions shown in ( ) are for G1/2. Dimensions shown in <> are for Rc3/8.

Voltage	C	D	E
<b>AC</b>	23.5	65.5	54 (53.5)
<b>DC</b>	23.5	66	54.5 (54)

● Open frame type + HP terminal box

GAG4\*\* -1 to 2-0 to 10-\*  

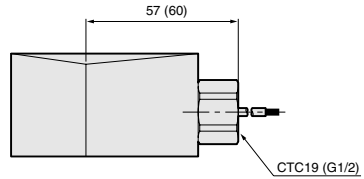
3	M	4M
5	N	4N
	1	
	J	



● Open frame type + conduit

GAG4\*\* -1 to 2-0 to 10-\*  

3A	G
4A	H
5A	

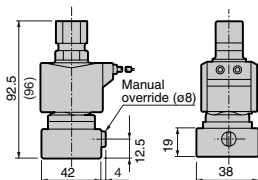


Dimensions shown in ( ) are for G1/2.

● Manual override (locking)

GAG4\*\* -1 to 2-0 to 10-\*  

A
---



- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/  
AD
- APK/  
ADK
- For  
dry air
- Explosion  
proof
- HVB/  
HVL
- SAB/  
SVB
- NP/NAP/  
NVP
- CHB/G
- MXB/G
- Other G.P.  
systems
- PD/FAD/  
PJ
- CVE/  
CVSE
- CPE/  
CPD
- Medical  
analysis
- Custom  
order

General purpose valve  
Direct acting 3 Port solenoid valve



Discrete direct acting 3 port solenoid valve  
(general purpose valve)

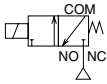
# AG33/AG43 Series

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



## JIS symbol

- AG33/43: NC pressurization type



## Common specifications

Item	Standard specifications		Optional specifications	
Working fluid	Airflow, low vacuum (1.33 x 10 <sup>5</sup> Pa (abs)), water, kerosene, oil (50 mm <sup>2</sup> /s or less)		Hot water	Steam
Working pressure differential range MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)			
Max. working pressure MPa	1			
Withstanding pressure (water) MPa	25			
Fluid temperature (Note 1) °C	-10 to 60		-10 to 90	-10 to 184
Ambient temperature °C	-20 to 60		-20 to 100	
Heat proof class	B		H	
Atmosphere	Place free of corrosive gas and explosive gas			
Valve structure	Direct acting poppet structure			
Valve seat leakage cm <sup>3</sup> /min. (ANR)	0.2 or less (air)			300 or less (air)
Mounting attitude	Free			
Body, sealant	Brass, nitrile rubber		Brass, ethylene propylene diene rubber	Brass, PTFE

Note 1: No freezing

## Individual specifications

Item Model no.	Port size	Orifice (mm)		Max. working pressure differential (MPa)							Rated voltage	Apparent power (VA)				Power consumption (W)			
				Air		Water, hot water, kerosene		Oil (50 mm <sup>2</sup> /s)				Steam	Holding		Starting	AC			
		TOP	BODY	AC	DC	AC	DC	AC	DC	AC		DC	AC	50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	AC
<b>AG33-01-1</b>	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	100 VAC	14	11	20	16	6/4.2	11	(8.1)
		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	110 VAC							
	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	60 Hz								
	2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	200 VAC								
<b>AG43-02-4</b>	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	0.7 (0.55)	220 VAC	22	17	35	27	8.3/6.2	11	(10.4)
		3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	60 Hz							
	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	12 VDC								
	3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	24 VDC								
<b>-03-4</b>	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	0.7 (0.55)	48 VDC	22	17	35	27	8.3/6.2	11	(10.4)
		3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	100 VDC							

\*1: The model numbers above show the basic port size (Rc) and orifice diameter. 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 must be within ±10% of the rated voltage.

\*4: Values in ( ) are for the type with DIN terminal box and DC voltage specifications.

\*5: When using with vacuum, vacuum the NO port side.

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber		PTFE	
	B	H	B	H	B	H
Coil (heat proof class)	-10 to 60	-10 to 90	-10 to 60	-10 to 90	-10 to 60	-10 to 184
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90	-10 to 60	-10 to 90	-10 to 60	-10 to 184
Ambient temperature °C	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100 (Note 2)
Valve seat leakage <small>cm<sup>3</sup>/min. (AIR)</small>	0.2 or less (air)				300 or less (air)	

Note 1: No freezing

Note 2: The range is -20 to 80°C when using the HP terminal box with indicator light for the coil housing.

## Flow characteristics

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

\*1: Effective sectional area S and sonic conductance C are converted as S = 5.0 x C.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CVE/  
CVSE

CPE/  
CPD

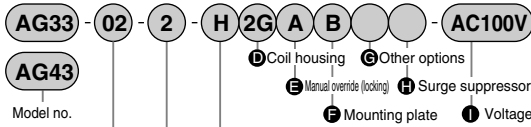
Medical  
analysis

Custom  
order

General purpose valve  
Direct acting 3 Port solenoid valve

# AG33/43 Series

How to order



① Port size

② Orifice

③ Body/sealant combination

\*1  
\*2  
\*3

						Model no.	
						AG33	AG43
Symbol	Descriptions	Symbol	Descriptions	Symbol	Descriptions		
① Port size							
01	Rc1/8	1G	G 1/8	1N	1/8NPT	●	
02	Rc1/4	2G	G 1/4	2N	1/4NPT	●	●
03	Rc3/8	3G	G 3/8	3N	3/8NPT		●

② Orifice							
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	-		●

③ Body/sealant combination							
	Body	Sealant	Treatment	Remarks			
Blank	Brass	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
B	Brass	Fluoro rubber	-	Air, low vacuum, kerosene (up to 90°C *2)	●	●	
C	Brass	PTFE	-	Steam (up to 184°C *2)	●	●	
D	Stainless steel	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
E	Stainless steel	Fluoro rubber	-	Air, low vacuum, kerosene (up to 90°C *2)	●	●	
F	Stainless steel	PTFE	-	Steam (up to 184°C *2)	●	●	
H	Option	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
J	Option	Fluoro rubber	-	Air, low vacuum, kerosene (up to 90°C *2)	●	●	
K	Option	PTFE	-	Steam (up to 184°C *2)	●	●	
P	Option	Ethylene propylene diene rubber	-	Hot water (up to 90°C *2)	●	●	
L	Stainless steel	Nitrile rubber	Oil free	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
M	Stainless steel	Fluoro rubber	Oil free	Air, low vacuum, kerosene (up to 90°C *2)	●	●	
N	Stainless steel	PTFE	Oil free	Steam (up to 184°C *2)	●	●	
R	Stainless steel	Ethylene propylene diene rubber	Oil free	Hot water (up to 90°C *2)	●	●	

Refer to page 36 in the Introduction for details on the material combinations.

④ to ①	
	Refer to the following page for details on the coil housing, other options and voltage, etc.

<Example 1 of model number>

**AG33-02-1-AC100V**  
Model no.: AG33

- ① Port size: Rc1/4  
 ② Orifice: TOP - ø1.5, BODY - ø1.5  
 ③ Body/sealant combination: Body - bronze, sealant - nitrile rubber  
 ④ Coil housing: Grommet lead wire  
 ⑤ to ⑥: Blank  
 ① Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

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

<Example 2 of model number>

**AG43-03-4-000ABS-AC100V**  
Model no.: AG43

- ① Port size: Rc3/8  
 ② Orifice: TOP - ø3.0, BODY - ø3.0  
 ③ Body/sealant combination: Body - bronze, sealant - nitrile rubber  
 ④ Coil housing: Grommet lead wire  
 ⑤ Manual override (locking): Selected  
 ⑥ Other options: Blank  
 ⑦ Surge suppressor: Selected  
 ① Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

## ▲ Note on model no. selection






### Note on ③

- \*1: Leave blank for standard. However, to select options in ④ to ⑥, indicate 0 for ③.  
 \*2: When 4A, 4M or 4N is selected for ③.  
 \*3: The ethylene propylene diene rubber seal combination (③ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene diene rubber is not oil-resistant.)


For ① to ④, the combinations indicated with symbols can be manufactured.  
Note that if options ⑤ to ⑧ are not required, no symbol is indicated.

① Coil housing		②	③	④ Other options			⑤	⑥	⑦ Rated voltage
Descriptions		Manual override (locking)	Mounting plate	Cable gland			Conduit		Descriptions
				(Marine cable gland)			(Conduit pipe)		
				A-15a	A-15b	A-15c	CTC19	G1/2	
<b>Blank</b>	Grommet lead wire								100 VAC, 200 VAC
<b>2E</b>	DIN terminal box (G12)								100 VAC, 200 VAC
<b>2G</b>	DIN terminal box (Pg11)								12 VDC, 24 VDC, 48 VDC, 100 VDC
<b>2H</b>	DIN terminal box + small light (Pg11)							<b>H</b>	100 VAC, 200 VAC, 24 VDC
<b>3A</b>	Lead wire							<b>G</b> <b>H</b>	100 VAC, 200 VAC
<b>3M</b>	HP terminal box (G12)								12 VDC, 24 VDC, 48 VDC, 100 VDC
<b>3N</b>	HP terminal box + light (G12)			<b>D</b>	<b>E</b>	<b>F</b>			100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
<b>3I</b>	HP terminal box (IP65 or equivalent) (G12)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
<b>3J</b>	HP terminal box + light (IP65 or equivalent) (G12)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
<b>4A</b>	Lead wire							<b>G</b> <b>H</b>	100 VAC, 200 VAC
<b>4M</b>	HP terminal box (G12)								100 VAC, 200 VAC
<b>4N</b>	HP terminal box + light (G12)			<b>D</b>	<b>E</b>	<b>F</b>			100 VAC, 200 VAC
<b>5A</b>	Lead wire							<b>G</b> <b>H</b>	100 VAC, 200 VAC
<b>5M</b>	HP terminal box (G12)								100 VAC, 200 VAC
<b>5N</b>	HP terminal box + light (G12)								100 VAC, 200 VAC
<b>5I</b>	HP terminal box (IP65 or equivalent) (G12)			<b>D</b>	<b>E</b>	<b>F</b>			100 VAC, 200 VAC
<b>5J</b>	HP terminal box + light (IP65 or equivalent) (G12)								100 VAC, 200 VAC

⚠ Refer to the following precautions for ① to ④.

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

\* Refer to page 122 for coil selection.

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

### ⚠ Note on model no. selection

#### Note on ①

- \*4: Leave blank for the standard coil housing. However, to select options in ② to ⑧, indicate 00 for ①.
- \*5: 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC with a diode.
- \*6: A DC coil for steam is available for AG43. Contact CKD for more information.

#### Note on ② to ⑧

- \*7: When ③ is C, F, K or N, the manual override (② A) is not available.
- \*8: Select one among D, E, F, G and H for ④.
- \*9: The surge suppressor is an accessory for the lead wire coil. When selecting a coil with terminal box, the surge suppressor is mounted in the terminal box.
- \*10: As standard, the surge suppressor is incorporated in the coil with diode and the 24 VDC coil (② 2H), so the surge suppressor symbol S cannot be selected.
- \*11: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.  
Note that the tropicalization is not available when the manual override option A is selected.

#### Note on ⑩

- \*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. Note that the coils ⑩ 5A/5M/5N/5I/5J can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
- \*13: For voltages other than above, consult with 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.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CV/  
CVSE

CPE/  
CPD

Medical  
analysis

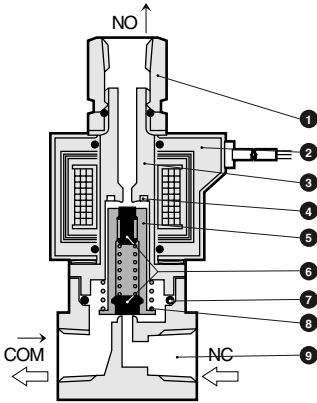
Custom  
order

General purpose valve

Direct acting 3 Port Solenoid valve

## Internal structure and parts list

● AG33/43 Series



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

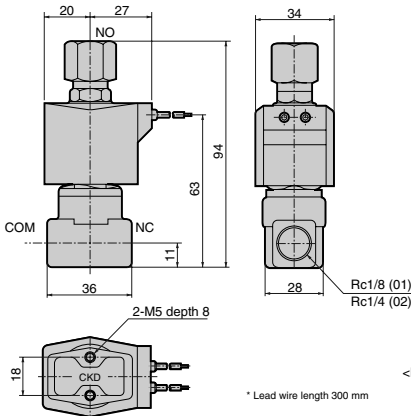
\*1: When the body/sealant combination symbol is other than blank or H, the material is SUS405 or equivalent, 316L, 430.

\*2: ( ) shows option.

## Dimensions: AG33 Series



● Grommet lead wire type  
AG33-01/02-1 to 2



<Reference> As the JIS symbol flow shows, this is dedicated for NC port pressurization. Pressure cannot be applied from the other connection ports.

When de-energized: COM → NO

When energized: NC → COM

Note 1: The dimensions are the same for the G or NPT thread port size.

## Optional dimensions: AG33 Series

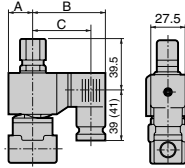


\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

### ● DIN terminal box

AG33-01/02-1 to 2-<sup>\*</sup>

2E
2G
2H



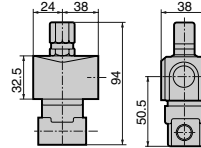
Dimensions shown in ( ) are for G1/2.

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

### ● Open frame lead wire type

AG33-01/02-1 to 2-<sup>\*</sup>

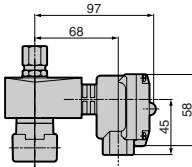
3A
4A
5A



### ● Open frame type + HP terminal box

AG33-01/02-1 to 2-<sup>\*</sup>

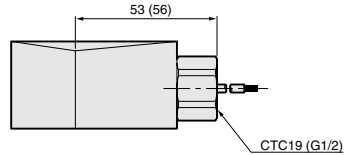
3	M	4M
5	N	4N
	I	J



### ● Open frame type + conduit

AG33-01/02-1 to 2-<sup>\*</sup>

3A	G
4A	H
5A	

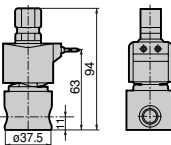


Dimensions shown in ( ) are for G1/2.

### ● Stainless steel body

AG33-01/02-1 to 2-<sup>\*</sup>

D	E	F	L	M	N
---	---	---	---	---	---

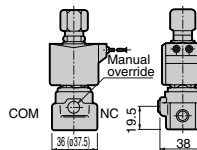


### ● Manual override (locking)

AG33-01/02-1 to 2-<sup>\*</sup>

A
---

Figure shows the brass body.

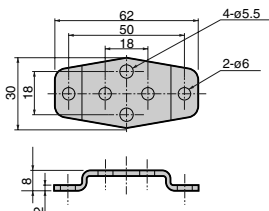


Dimensions shown in ( ) are for stainless steel body.

### ● Mounting plate

AG33-01/02-1 to 2-<sup>\*</sup>

B
---



Mounting plate No. 1 GE-100106

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

**AG**

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CVB/  
CVSE

CPE/  
CPD

Medical  
analysis

Custom  
order

General purpose valve

Direct acting 3 Port solenoid valve

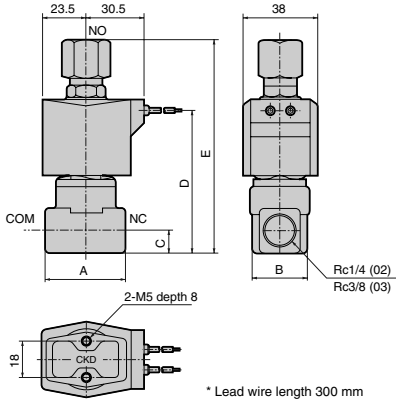


# AG33/43 Series

## Dimensions: AG43 Series



- Grommet lead wire type  
AG43-02/03-4 to 5



<Reference> As the JIS symbol flow shows, this is dedicated for NC port pressurization. Pressure cannot be applied from the other connection ports.  
When de-energized: COM → NO  
When energized: NC → COM

Note 1: The dimensions are the same for the G or NPT thread port size.

Model no.	A	B	C	D	E
<b>AG43-02-4 to 5</b>	36	28	11	68	99.5
<b>AG43-03-4 to 5</b>	40	28	12	71	106

## Optional dimensions: AG43 Series

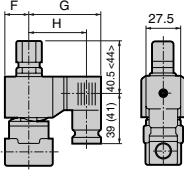


\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

### ● DIN terminal box

AG43-02/03-4 to 5-<sup>\*\*</sup>

2E
2G
2H



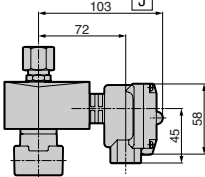
Dimensions shown in <math>\langle \rangle</math> are for Rc3/8. Dimensions shown in ( ) are for G1/2.

Voltage	F	G	H
<b>AC</b>	23.5	65.5	54 (53.5)
<b>DC</b>	23.5	66	54.5 (54)

### ● Open frame type + HP terminal box

AG43-02/03-4 to 5-<sup>\*\*</sup>

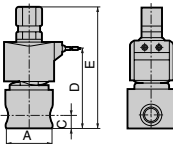
3	M	4M
5	N	4N



### ● Stainless steel body

AG43-02/03-4 to 5-<sup>\*\*</sup>

D	E	F	R	L	M	N
---	---	---	---	---	---	---

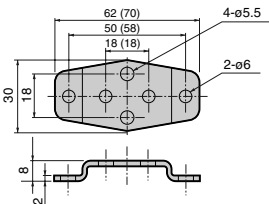


Model no.	A	C	D	E
AG43-02-4 to 5- <sup>**</sup>	ø37.5	11	68	99.5
AG43-03-4 to 5- <sup>**</sup>	ø45	12	71	106

### ● Mounting plate

AG43-02/03-4 to 5-<sup>\*\*</sup>

B
---

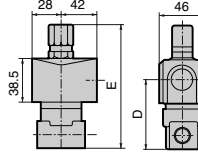


Dimensions shown in ( ) are for mounting plate No. 2.

### ● Open frame lead wire type

AG43-02/03-4 to 5-<sup>\*\*</sup>

3A
4A
5A

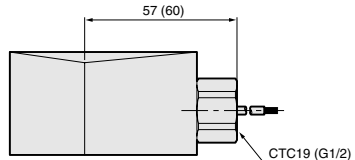


Model no.	D	E
AG43-02-4 to 5- <sup>**</sup> A	52.0	99.5
AG43-03-4 to 5- <sup>**</sup> A	55.0	106

### ● Open frame type + conduit

AG43-02/03-4 to 5-<sup>\*\*</sup>

3A	G
4A	H
5A	



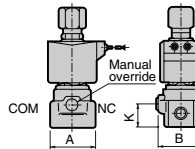
Dimensions shown in ( ) are for G1/2.

### ● Manual override (locking)

AG43-02/03-4 to 5-<sup>\*\*</sup>

A
---

Figure shows the brass body.



Model no.	A	B	K
AG43-02-4 to 5- <sup>**</sup> A	36 (ø37.5)	38	19.5
AG43-03-4 to 5- <sup>**</sup> A	40 (ø45.0)	40	22.5

Dimensions shown in ( ) are for stainless steel body.

Code	Applicable model
Mounting plate No. 1	● AG43-02/03-4 to 5 Series
GE-100106	● Stainless steel body AG43-02-4 to 5- <u>D/E/F/L/M/N/R</u>
Mounting plate No. 2	● Stainless steel body
GE-100159	AG43-03-4 to 5- <u>D/E/F/L/M/N/R</u>

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CV/  
CVSE

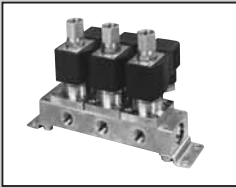
CPE/  
CPD

Medical  
analysis

Custom  
order

General purpose valve

Direct acting 3 Port Solenoid valve



Direct acting 3 port solenoid valve, manifold and actuator  
(general purpose valve)

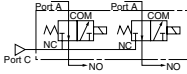
# GAG33\*/GAG43\* Series

- NC pressurization type
- Common supply / individual exhaust type



## JIS symbol

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



## Common specifications

Item	Standard specifications		Optional specifications	
	Working fluid	Airflow, low vacuum ( $1.33 \times 10^4$ Pa (abs)), water, kerosene, oil (50 mm <sup>2</sup> /s or less)		Hot water
Working pressure differential range MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)			
Max. working pressure MPa	1			
Withstanding pressure (water) MPa	10			
Fluid temperature (Note 1) °C	-10 to 60		-10 to 90	-10 to 184
Ambient temperature °C	-20 to 60		-20 to 100	
Heat proof class	B		H	
Atmosphere	Place free of corrosive gas and explosive gas			
Valve structure	Direct acting poppet structure			
Valve seat leakage cm <sup>3</sup> /min. (ANR)	0.2 or less (air)			300 or less (air)
Mounting attitude	Free			
Body, sealant	Brass, nitrile rubber		Brass, ethylene propylene diene rubber	Brass, PTFE

Note 1: No freezing

## Individual specifications

Item Model no.	NO port size	Orifice (mm)		Max. working pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)		
		TOP	BODY	Air		Water, hot water, kerosene		Oil (50 mm <sup>2</sup> /s)			Steam		Holding		AC 50/60 Hz	DC	
				AC	DC	AC	DC	AC	DC		AC	DC	50 Hz	60 Hz			50 Hz
GAG331-1 -2	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	14	11	20	16	6/4.2	11 (8.1)
		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7							
GAG332-1 -2	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	110 VAC 60 Hz	14	11	20	16	6/4.2	11 (8.1)
		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7							
GAG432-4 -5	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	200 VAC 50/60 Hz	14	11	20	16	6/4.2	11 (8.1)
		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 -5	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	220 VAC 60 Hz	22	17	35	27	8.3/6.2	11 (10.4)
		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 NO port size (Rc) and orifice diameter. Refer to How to order for other combinations.

\*2: Refer to How to order (page 194) and Dimensions (page 198) for the port sizes of port A and C.

\*3: Refer to DC column for the max. working pressure differential of coil with diode.

\*4: Values in ( ) are for the type with DIN terminal box and DC voltage specifications.

\*5: The voltage fluctuation must be within  $\pm 10\%$  of the rated voltage.

\*6: When using with a low vacuum, vacuum the NO port side.

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber		PTFE	
	B	H	B	H	B	H
Coil (heat proof class)						
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90	-10 to 60	-10 to 90	-10 to 60	-10 to 184
Ambient temperature °C	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100 (Note 2)
Valve seat leakage cm <sup>3</sup> /min. (ANR)	0.2 or less (air)				300 or less (air)	

Note 1: No freezing

Note 2: The range is -20 to 80°C when using the HP terminal box with indicator light for the coil housing.

## Flow characteristics

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

\*1: Effective sectional area S and sonic conductance C are converted as S = 5.0 x C.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CVE/  
CVSE

CPE/  
CPD

Medical  
analysis

Custom  
order

General purpose valve

Direct acting 3 Port solenoid valve

# GAG33\*/43\* Series

## How to order

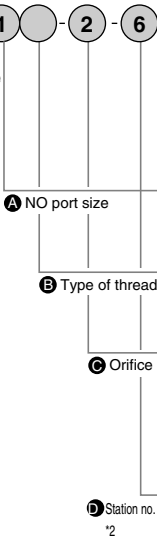
- Common supply / individual exhaust type (port C pressurization)

**GAG33** 1 - 2 - 6 - **B** **4A** **A** **G** **S** - **AC100V**

- Common supply / individual exhaust type (port C pressurization)

**GAG43**

Model no.



- Ⓕ Coil housing
- Ⓖ Surge suppressor
- Ⓖ Manual override (locking)
- Ⓖ Voltage
- Ⓖ Other options
- Ⓔ Body/sealant combination

Model no.	
GAG33*	GAG43*

Symbol	Descriptions	GAG33*	GAG43*
<b>A NO port size</b>			
1	1/8	●	
2	1/4	●	●
3	3/8		●

<b>B Type of thread</b>			
Blank	Rc		
G	G	●	●
N	NPT	●	●

	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		●

<b>D Station no.</b>			
2	2 stations		
to	to		
10	10 stations	●	●
0	Actuator only	●	●

<b>E Body/sealant combination</b>							
Blank	Body	Sealant	Treatment	Remarks			
B	Brass	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
C		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)	●	●	
D	Stainless steel	PTFE	-	Steam (up to 184°C *4)	●	●	
E		Nitrile rubber		Air, water, low vacuum, kerosene (up to 60°C)	●	●	
F		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)	●	●	
G	Option	Brass	Oil free	Steam (up to 184°C *4)	●	●	
H				Nitrile rubber	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)	●	●	
L	Stainless steel	Ethylene propylene diene rubber	-	Hot water (up to 90°C *4)	●	●	
M		Nitrile rubber		Air, water, low vacuum, kerosene (up to 60°C)	●	●	
N		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)	●	●	
P	Option	Brass	-	Steam (up to 184°C *4)	●	●	
R				Ethylene propylene diene rubber	Hot water (up to 90°C *4)	●	●

### <Example 1 of model number>

#### GAG331-1-4-AC200V

Model no.: GAG331 (common supply / individual exhaust type / port C pressurization)

- A** NO port size: 1/8
- B** Type of thread: Rc
- C** Orifice: TOP - ø1.5, BODY - ø1.5
- D** Station no.: 4 stations
- E** Body/sealant combination:

Body - bronze, sealant - nitrile rubber

- F** Coil housing: Grommet lead wire
- G** to **I**: Blank
- I** Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

### <Example 2 of model number>

#### GAG332G-2-7-000AS-AC200V

Model no.: GAG332 (common supply / individual exhaust type / port C pressurization)

- A** NO port size: 1/4
- B** Type of thread: G
- C** Orifice: TOP - ø2.0, BODY - ø2.0
- D** Station no.: 7 stations
- E** Body/sealant combination:

Body - bronze, sealant - nitrile rubber

- F** Coil housing: Grommet lead wire
- G** Manual override (locking): Selected
- H** Other options: Blank
- I** Surge suppressor: Selected
- I** Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

Refer to page 36 in the Introduction for details on the material combinations.

#### **F to I**

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

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

### ▲ Note on model no. selection

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






#### Note on **D** and **E**

- \*2: Consult with CKD when more than 10 stations manifold.
- \*3: Leave blank for standard. However, to select options in **F** to **I**, indicate 0 for **E**.
- \*4: When 4A, 4M or 4N is selected for **E**.
- \*5: The ethylene propylene diene rubber seal combination (**E** P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene diene rubber is not oil-resistant.)


For (F) to (J), the combinations indicated with symbols can be manufactured.  
 Note that if options (G) to (I) are not required, no symbol is indicated.

(F) Coil housing		Descriptions	(G) Manual override (locking)	(H) Other options			(I) Surge suppressor		(J) Rated voltage	Descriptions	
				A-15a	A-15b	A-15c	CTC19	G1/2			
<b>Blank</b>	Option	Grommet lead wire	A						S	100 VAC, 200 VAC	
<b>2E</b>		DIN terminal box (G1/2)								100 VAC, 200 VAC	
<b>2G</b>	DIN terminal box (Pg11)						12 VDC, 24 VDC, 48 VDC, 100 VDC				
<b>2H</b>	DIN terminal box + small light (Pg11)						100 VAC, 200 VAC, 24 VDC				
<b>3A</b>	Open frame type	Lead wire					(G) (H)			S	100 VAC, 200 VAC
<b>3M</b>		HP terminal box (G1/2)									12 VDC, 24 VDC, 48 VDC, 100 VDC
<b>3N</b>		HP terminal box + light (G1/2)		D	E	F					100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
<b>3I</b>		HP terminal box (IP65 or equivalent) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
<b>3J</b>	Open frame type (heat proof class H)	HP terminal box + light (G1/2)								S	100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
<b>4A</b>		Lead wire					(G) (H)				100 VAC, 200 VAC
<b>4M</b>	Open frame type (diode integrated)	HP terminal box (G1/2)	D	E	F			S	100 VAC, 200 VAC		
<b>4N</b>		HP terminal box + light (G1/2)							100 VAC, 200 VAC		
<b>5A</b>	Open frame type (diode integrated)	Lead wire				(G) (H)		S	100 VAC, 200 VAC		
<b>5M</b>		HP terminal box (G1/2)							100 VAC, 200 VAC		
<b>5N</b>		HP terminal box + light (G1/2)	D	E	F				100 VAC, 200 VAC		
<b>5I</b>		HP terminal box (IP65 or equivalent) (G1/2)							100 VAC, 200 VAC		
<b>5J</b>		HP terminal box + light (IP65 or equivalent) (G1/2)									

▲ Refer to the following precautions for (F) to (J).

Blank		● Grommet lead wire 300 mm
2E 2G 2H		● DIN terminal box
3A 4A 5A		<ul style="list-style-type: none"> <li>● Open frame type grommet lead wire 300 mm</li> <li>● 4A (heat proof class H)</li> <li>● 5A (diode integrated)</li> </ul>
3M 3N 4M 5M 5N		<ul style="list-style-type: none"> <li>● Open frame HP terminal box</li> <li>● 4M, 4N (heat proof class H)</li> <li>● 5M, 5N (diode integrated)</li> </ul>
3I 3J 5I 5J		<ul style="list-style-type: none"> <li>● Open frame HP terminal box (IP65 or equivalent)</li> <li>● 5I, 5J (diode integrated)</li> </ul>

\* Refer to page 122 for coil selection.

G H		<ul style="list-style-type: none"> <li>● Conduit</li> <li>● G (CTC19)</li> <li>● H (G1/2)</li> </ul>
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### ▲ Note on model no. selection

#### Note on (F)

- \*6: Leave blank for the standard coil housing. However, to select options in (G), (H) or (I), indicate 00 for (F).
- \*7: 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC with a diode.
- \*8: A DC coil for steam is available for GAG43\*\*. Contact CKD for more information.

#### Note on (G) to (I)

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

#### Note on (J)

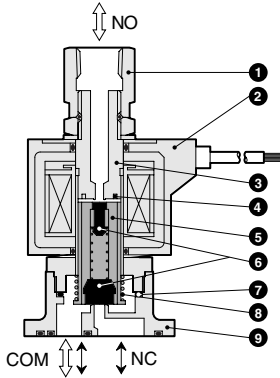
- \*14: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. Note that the coils ((F) 5A/5M/5N/5I/5J) can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
- \*15: For voltages other than above, consult with 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.

HNB/G  
 USB/G  
 FAB/G  
 FGB/G  
 FVB  
 FWB/G  
 FHB  
 FLB  
 AB  
 AG  
 AP/  
 AD  
 APK/  
 ADK  
 For  
 dry air  
 Explosion  
 proof  
 HVB/  
 HVL  
 SAB/  
 SVB  
 NP/NAP/  
 NVP  
 CHB/G  
 MXB/G  
 Other G.P.  
 systems  
 PD/FAD/  
 PJ  
 CVE/  
 CVSE  
 CPE/  
 CPD  
 Medical  
 analysis  
 Custom  
 order

General purpose valve  
 Direct acting 3 Port solenoid valve

## Internal structure and parts list

● GAG33\*/GAG43\* Series Actuator



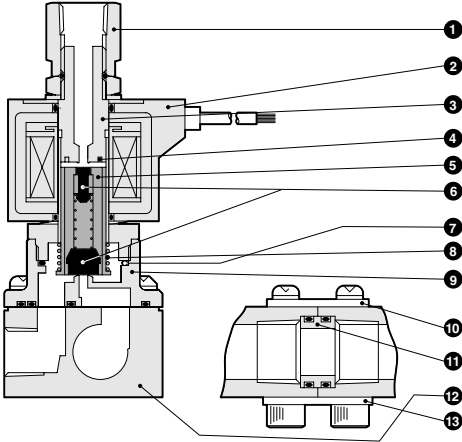
No.	Parts name	Material
1	Socket	C3604 (SUS303)   Brass (stainless steel)
2	Coil	—   —
3	Core assembly	SUS405 or equivalent, 316L, 403 *1   Stainless steel
4	Shading coil	Cu (Ag for stainless steel body)   Copper (silver for stainless steel body)
5	Plunger	SUS405 or equivalent   Stainless steel
6	Sealant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

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

\*2: ( ) shows option.

## Internal structure and parts list

### ● GAG33\*/GAG43\* Manifold



No.	Parts name	Material	
1	Socket	C3604 (SUS303)	Brass (stainless steel)
2	Coil	—	—
3	Core assembly	SUS405 or equivalent, 316L, 403 *1	Stainless steel
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
5	Plunger	SUS405 or equivalent	Stainless steel
6	Sealant	NBR (FKM, EPDM, PTFE)	NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene diene rubber PTFE: Tetrafluoroethylene resin
7	O ring	NBR (FKM, EPDM, PTFE) (ASS68/019)	
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771 (SCS13)	Brass (stainless steel)
10	Holder	SPCC	Steel
11	Connector	C3604 (SUS304)	Brass (stainless steel)
12	Sub-plate	C3604 (SUS303)	Brass (stainless steel)
13	Connecting plate	SPCC	Steel

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

\*2: ( ) shows option.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CV/  
CVSE

CPE/  
CPD

Medical  
analysis

Custom  
order

General purpose valve  
Direct acting 3 Port solenoid valve

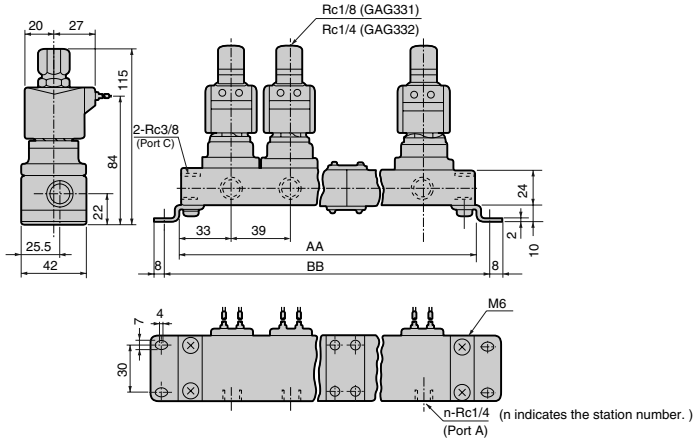


# GAG33\*/43\* Series

## Dimensions: GAG331/GAG332 Series



- Manifold (grommet lead wire type)  
GAG33\*-1 to 2-[2 to 10]



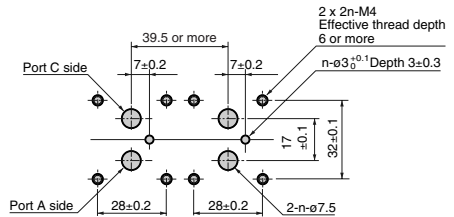
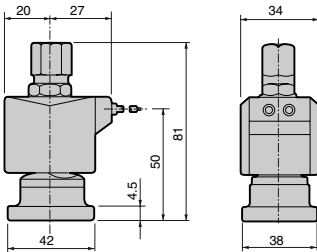
Station no.	AA	BB	Manifold structure	Station no.	AA	BB	Manifold structure
<b>2</b>	106	122	2 stations x 1	<b>7</b>	329	345	5 stations + 2 stations
<b>3</b>	145	161	3 stations x 1	<b>8</b>	368	384	5 stations + 3 stations
<b>4</b>	212	228	2 stations x 2	<b>9</b>	435	451	3 stations x 3
<b>5</b>	223	239	5 stations x 1	<b>10</b>	446	462	5 stations x 2
<b>6</b>	290	306	3 stations x 2	Consult with CKD about more than 10 stations manifold.			

\*1: A manifold is configured by combining 2-, 3- and 5-station modules.

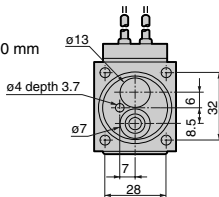
\*2: The dimensions are the same for the G or NPT thread port size.

- Actuator (grommet lead wire type)  
GAG33\*-1 to 2-[0]

- Recommended dimensions for actuator mounting



\* Lead wire length 300 mm



■ Machining drawing when using 2 actuators

## Optional dimensions: GAG331/GAG332 Series

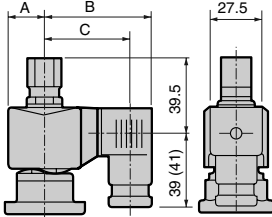


\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

● DIN terminal box

GAG33\*-1 to 2-0 to 10-\*\*\*  

2E
2G
2H



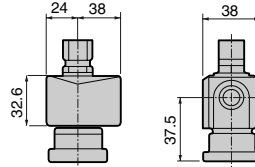
Dimensions shown in ( ) are for G1/2.

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

● Open frame lead wire type

GAG33\*-1 to 2-0 to 10-\*\*\*  

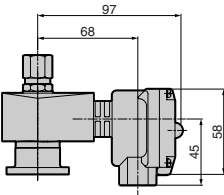
3A
4A
5A



● Open frame type + HP terminal box

GAG33\*-1 to 2-0 to 10-\*\*\*  

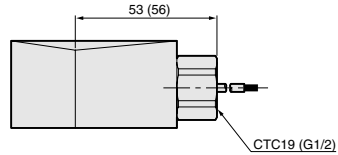
3	M	4M
5	N	4N
	I	
	J	



● Open frame type + conduit

GAG33\*-1 to 2-0 to 10-\*\*\*  

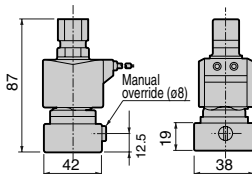
3A	G
4A	H
5A	



Dimensions shown in ( ) are for G1/2.

● Manual override (locking)

GAG33\*-1 to 2-0 to 10-\*\*\***A**



HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
<b>AG</b>
AP/ AD
APK/ ADK
For dry air
Explosion proof
HVB/ HVL
SAB/ SVB
NP/NAP/ NVP
CHB/G
MXB/G
Other G.P. systems
PD/FAD/ PJ
CVE/ CVSE
CPE/ CPD
Medical analysis
Custom order

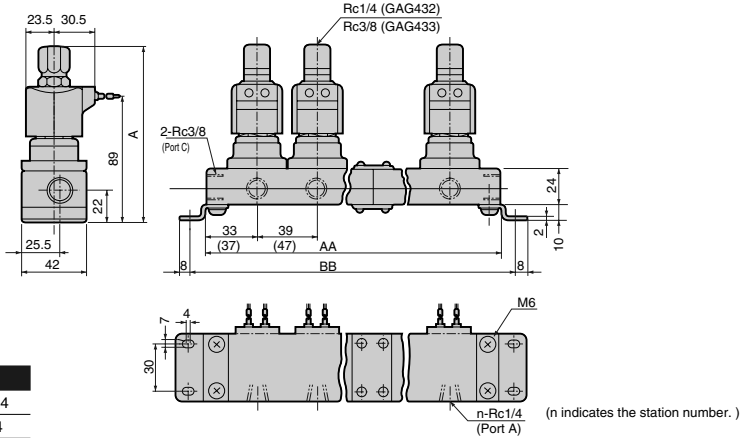
General purpose valve  
Direct acting 3 Port solenoid valve

# GAG33\*/43\* Series

## Dimensions: GAG432/GAG433 Series



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



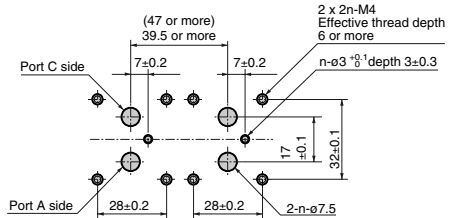
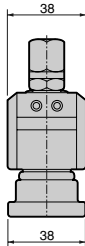
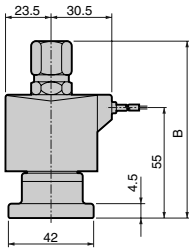
Model no.	A
GAG432-4 to 5	120.4
GAG433-4 to 5	124

Station no.	AA	BB	Manifold structure	Station no.	AA	BB	Manifold structure
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	Consult with CKD about more than 10 stations manifold.			

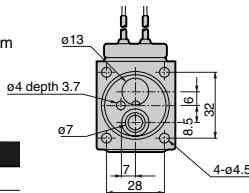
- \*1: A manifold is configured by combining 2-, 3- and 5-station modules.
- \*2: Dimensions shown in ( ) are for the open frame type.
- \*3: The dimensions are the same for the G or NPT thread port size.

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

- Recommended dimensions for actuator mounting



\* Lead wire length 300 mm



■ Machining drawing when using 2 actuators

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

## Optional dimensions: GAG432/GAG433 Series

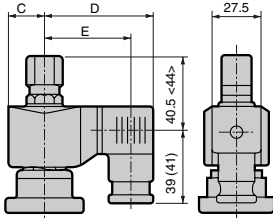


\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

● DIN terminal box

GAG43\*-4 to 5-0 to 10-\*

2E
2G
2H



Dimensions shown in <math>< ></math> are for Rc3/8.

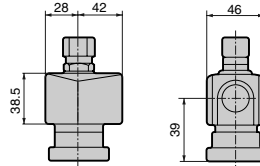
Dimensions shown in ( ) are for G1/2.

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

● Open frame lead wire type

GAG43\*-4 to 5-0 to 10-\*

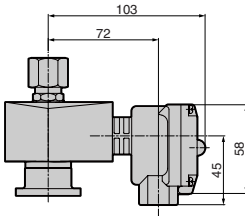
3A
4A
5A



● Open frame type + HP terminal box

GAG43\*-4 to 5-0 to 10-\*

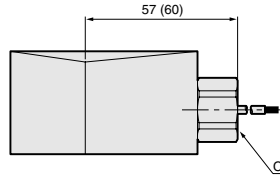
3	M	4M
5	N	4N
J		



● Open frame type + conduit

GAG43\*-4 to 5-0 to 10-\*

3A	G
4A	H
5A	

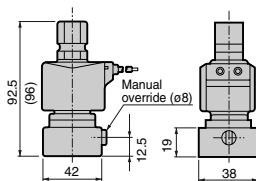


Dimensions shown in ( ) are for G1/2.

● Manual override (locking)

GAG43\*-4 to 5-0 to 10-\*\*\*

A
---



Dimensions shown in ( ) are for GAG433.

- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/AD
- APK/ADK
- For dry air
- Explosion proof
- HVB/HVL
- SAB/SVB
- NP/NAP/NVP
- CHB/G
- MXB/G
- Other G.P. systems
- PD/FAD/PJ
- CVE/CVSE
- CPE/CPD
- Medical analysis
- Custom order

General purpose valve  
Direct acting 3 Port solenoid valve



Discrete direct acting 3 port solenoid valve  
(general purpose valve)

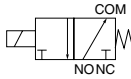
# AG34/AG44 Series

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



## JIS symbol

- AG34/44: NO pressurization type



## Common specifications

Item	Standard specifications	Optional specifications
Working fluid	Airflow, low vacuum ( $1.33 \times 10^5$ Pa (abs)), water, kerosene, oil (50 mm <sup>2</sup> /s or less)	Hot water
Working pressure differential range MPa	0 to 1.5 (refer to max. working pressure differential in individual specifications.)	
Max. working pressure MPa	1.5	
Withstanding pressure (water) MPa	25	
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90
Ambient temperature °C	-20 to 60	-20 to 100
Heat proof class	B	H
Atmosphere	Place free of corrosive gas and explosive gas	
Valve structure	Direct acting poppet structure	
Valve seat leakage cm <sup>3</sup> /min. (ANR)	0.2 or less (air)	
Mounting attitude	Free	
Body, sealant	Brass, nitrile rubber	Brass, ethylene propylene diene rubber

Note 1: No freezing

## Individual specifications

Item Model no.	Port size	Orifice (mm)		Max. working pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)	
				Air		Water, hot water, kerosene		Oil (50 mm <sup>2</sup> /s)			Holding		Starting		AC	DC
				TOP	BODY	AC	DC	AC	DC		AC	DC	50 Hz	60 Hz	50 Hz	60 Hz
<b>AG34-01-1</b>	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	100 VAC 50/60 Hz	14	11	20	16	6/4.2	11 (8.1)
<b>-01-2</b>		2.0	2.0	0.7	0.45	0.7	0.7	0.6 (0.45)	0.3							
<b>-02-1</b>	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	110 VAC 60 Hz	14	11	20	16	6/4.2	11 (8.1)
<b>-02-2</b>		2.0	2.0	0.7	0.45	0.7	0.7	0.6 (0.45)	0.3							
<b>AG44-02-1</b>	Rc1/4	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	200 VAC 50/60 Hz	22	17	35	27	8.3/6.2	11 (10.4)
<b>-02-3</b>		2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45							
<b>-02-4</b>	Rc3/8	3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)
<b>-03-1</b>		2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45							
<b>-03-3</b>	Rc3/8	2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)
<b>-03-4</b>		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 show the basic port size (Rc) and orifice diameter. 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 must be within  $\pm 10\%$  of the rated voltage.

\*4: Values in ( ) are for the type with DIN terminal box and DC voltage specifications.

\*5: When using with a low vacuum, vacuum the NC port side.

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber	
	B	H	B	H
Coil (heat proof class)				
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90	-10 to 60	-10 to 90
Ambient temperature °C	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100
Valve seat leakage cm <sup>3</sup> /min. (AIR)	0.2 or less (air)			

Note 1: No freezing

Note 2: The range is -20 to 80°C when using the HP terminal box with indicator light for the coil housing.

## Flow characteristics

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

\*1: Effective sectional area S and sonic conductance C are converted as  $S \approx 5.0 \times C$ .

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CVE/  
CVSE

CPE/  
CPD

Medical  
analysis

Custom  
order

General purpose valve  
Direct acting 3 Port solenoid valve

# AG34/44 Series

How to order

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

**AG44** Model no.  
**D** Coil housing **G** Other options  
**E** Manual override (locking) **H** Surge suppressor  
**F** Mounting plate **I** Rated voltage

**A** Port size

**B** Orifice

**C** Body/sealant combination  
 \*1  
 \*2  
 \*3  
 \*4

Model no.	
AG34	AG44

Symbol	Descriptions	Symbol	Descriptions	Symbol	Descriptions		
<b>A</b> Port size							
<b>01</b>	Rc1/8	<b>1G</b>	G 1/8	<b>1N</b>	1/8NPT	●	
<b>02</b>	Rc1/4	<b>2G</b>	G 1/4	<b>2N</b>	1/4NPT	●	●
<b>03</b>	Rc3/8	<b>3G</b>	G 3/8	<b>3N</b>	3/8NPT		●

	AG34		AG44			
	TOP	BODY	TOP	BODY		
<b>1</b>	ø1.5	ø1.5	ø2.0	ø2.0	●	●
<b>2</b>	ø2.0	ø2.0	-	-	●	
<b>3</b>	-	-	ø2.0	ø3.0		●
<b>4</b>	-	-	ø3.0	ø3.0		●

		Body	Sealant	Treatment	Remarks																								
<b>C</b>	<b>Blank</b>	Option	Brass	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●	●																					
									Stainless steel	Fluoro rubber	-	Air, water, low vacuum, kerosene (up to 90°C *2)	●	●															
															Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●	●										
																				Fluoro rubber	-	Air, low vacuum, kerosene (up to 90°C *2)	●	●					
																									Nitrile rubber	Oil free	Air, water, low vacuum, kerosene (up to 60°C)	●	●
			Ethylene propylene diene rubber	Oil free	Hot water (up to 90°C *2)	●	●																						
								Nitrile rubber	Oil free	Air, water, low vacuum, kerosene (up to 60°C)	●	●																	
													Fluoro rubber	Oil free	Air, low vacuum, kerosene (up to 90°C *2)	●	●												
																		Ethylene propylene diene rubber	Oil free	Hot water (up to 90°C *2)	●	●							

Refer to page 36 in the Introduction for details on the material combinations.

**D to I**  
 Refer to the following page for details on the coil housing, other options and voltage, etc.

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

<Example 1 of model number>

**AG34-1G-1-AC100V**

Model no.: AG34

- A** Port size: G 1/8
- B** Orifice: TOP - ø1.5, BODY - ø1.5
- C** Body/sealant combination:  
 Body - bronze, sealant - nitrile rubber
- D** Coil housing: Grommet lead wire
- E** to **H**: Blank
- I** Rated voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

<Example 2 of model number>

**AG44-03-4-000ABS-AC100V**

Model no.: AG44

- A** Port size: Rc3/8
- B** Orifice: TOP - ø3.0, BODY - ø3.0
- C** Body/sealant combination:  
 Body - bronze, sealant - nitrile rubber
- D** Coil housing: Grommet lead wire
- E** Manual override (locking): Selected
- F** Mounting plate: Selected
- G** Other options: Blank
- H** Surge suppressor: Selected
- I** Rated voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

## ▲ Note on model no. selection






Note on **C**

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


For ② to ①, the combinations indicated with symbols can be manufactured.  
Note that if options ⑤ to ④ are not required, no symbol is indicated.

D Coil housing		E	F	G Other options				H	I Rated voltage									
Descriptions		Manual override (locking)	Mounting plate	Cable gland			Conduit		Surge suppressor	Descriptions								
				(Marine cable gland)			(Conduit pipe)											
				A-15a	A-15b	A-15c	CTC19	G1/2										
Blank	Grommet lead wire	A	B				G H		S	100 VAC, 200 VAC								
2E	DIN terminal box (G1/2)									100 VAC, 200 VAC								
2G	DIN terminal box (Pg11)								S	12 VDC, 24 VDC, 48 VDC, 100 VDC								
2H	DIN terminal box + small light (Pg11)									H		100 VAC, 200 VAC, 24 VDC						
3A	Lead wire	A	B				G H		S	100 VAC, 200 VAC								
3M	HP terminal box (G1/2)									12 VDC, 24 VDC, 48 VDC, 100 VDC								
3N	HP terminal box + light (G1/2)									D E F							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 terminal box + light (IP65 or equivalent) (G1/2)												G H		S		100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC	
4A	Lead wire	100 VAC, 200 VAC																
4M	HP terminal box (G1/2)	D E F							S	100 VAC, 200 VAC								
4N	HP terminal box + light (G1/2)									100 VAC, 200 VAC								
5A	Lead wire	A	B				G H		S	100 VAC, 200 VAC								
5M	HP terminal box (G1/2)									100 VAC, 200 VAC								
5N	HP terminal box + light (G1/2)									D E F							S	100 VAC, 200 VAC
5I	HP terminal box (IP65 or equivalent) (G1/2)																	100 VAC, 200 VAC
5J	HP terminal box + light (IP65 or equivalent) (G1/2)				G H		S		100 VAC, 200 VAC									

⚠ Refer to the following precautions for ② to ①.

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

\* Refer to page 122 for coil selection.

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

### ⚠ Note on model no. selection

#### Note on ②

- \*5: Leave blank for the standard coil housing. However, to select options in ⑤ to ④, indicate 00 for ④.
- \*6: 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC with a diode.
- \*7: A DC coil for steam is available for AG44. Contact CKD for more information.

#### Note on ⑤ to ④

- \*8: Select one among D, E, F, G and H for ⑥.
- \*9: The surge suppressor is an accessory for the lead wire coil. When selecting a coil with terminal box, the surge suppressor is mounted in the terminal box.
- \*10: As standard, the surge suppressor is incorporated in the coil with diode and the 24 VDC coil (② 2H), so the surge suppressor symbol S cannot be selected.
- \*11: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information. Note that the tropicalization is not available when the manual override option A is selected.

#### Note on ①

- \*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. Note that the coils ② 5A/5M/5N/5I/5J can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
- \*13: For voltages other than above, consult with 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.

HNB/G  
USB/G  
FAB/G  
FGB/G  
FVB  
FWB/G  
FHB  
FLB  
AB  
AG  
AP/  
AD  
APK/  
ADK  
For  
dry air  
Explosion  
proof  
HVB/  
HVL  
SAB/  
SVB  
NP/NAP/  
NVP  
CHB/G  
MXB/G  
Other G.P.  
systems  
PD/FAD/  
PJ  
CVE/  
CVSE  
CPE/  
CPD  
Medical  
analysis  
Custom  
order

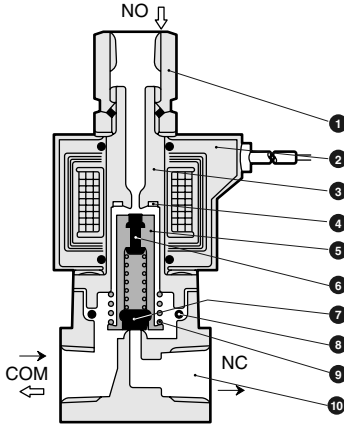
General purpose valve  
Direct acting 3 Port solenoid valve



# AG34/44 Series

## Internal structure and parts list

● AG34/AG44 Series



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

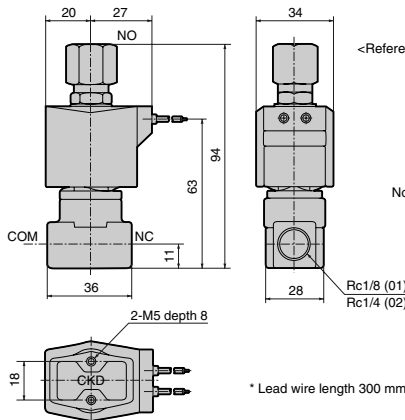
\*1: When the body/sealant combination symbol is other than blank or H, the material is SUS405 or equivalent, 316L, 430.

\*2: ( ) shows option.

## Dimensions: AG34 Series



● Grommet lead wire type  
AG34-01/02-1 to 2



<Reference> As the JIS symbol flow shows, this is dedicated for NO port pressurization. Pressure cannot be applied from the other connection ports.  
When de-energized:  
NO → COM  
When energized:  
COM → NC

Note 1: The dimensions are the same for the G or NPT thread port size.

\* Lead wire length 300 mm

## Optional dimensions: AG34 Series

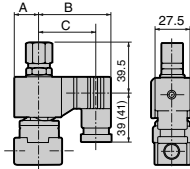


\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

● DIN terminal box

AG34-01/02-1 to 2-<sup>+</sup>  

2E
2G
2H



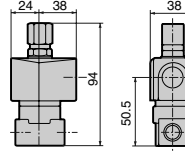
Dimensions shown in ( ) are for G1/2.

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

● Open frame lead wire type

AG34-01/02-1 to 2-<sup>+</sup>  

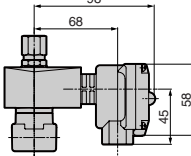
3A
4A
5A



● Open frame type + HP terminal box

AG34-01/02-1 to 2-<sup>+</sup>  

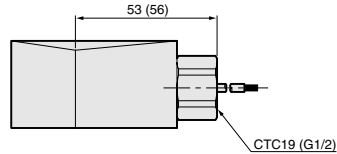
3	M	4M
5	N	4N
J		



● Open frame type + conduit

AG34-01/02-1 to 2-<sup>+</sup>  

3A	G
4A	H
5A	

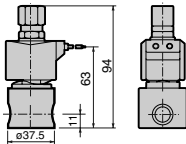


Dimensions shown in ( ) are for G1/2.

● Stainless steel body

AG34-01/02-1 to 2-<sup>+</sup>  

D/E/R/L/M
-----------

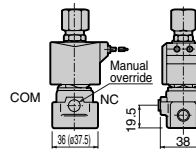


● Manual override (locking)

AG34-01/02-1 to 2-<sup>+</sup>  

A
---

Figure shows the brass body.

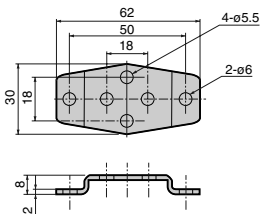


Dimensions shown in ( ) are for stainless steel body.

● Mounting plate

AG34-01/02-1 to 2-<sup>+</sup>  

B
---



Mounting plate No. 1 GE-100106

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

**AG**

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CVB/  
CVSE

CPE/  
CPD

Medical  
analysis

Custom  
order

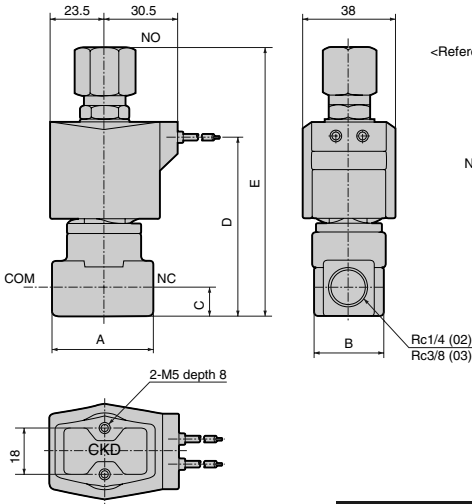
General purpose valve  
Direct acting 3 Port solenoid valve

# AG34/44 Series

## Dimensions: AG44 Series



- Grommet lead wire type  
AG44-02/03-1/3/4



<Reference> As the JIS symbol flow shows, this is dedicated for NO port pressurization. Pressure cannot be applied from the other connection ports.  
When de-energized: NO → COM  
When energized: COM → NC

Note 1: The dimensions are the same for the G or NPT thread port size.

\* Lead wire length 300 mm

Model no.	A	B	C	D	E
<b>AG44-02-1 to 4</b>	36	28	11	68	99.5
<b>AG44-03-1 to 4</b>	40	28	12	71	106

## Optional dimensions: AG44 Series

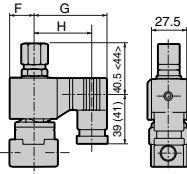


\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

### ● DIN terminal box

AG44-02/03-1/3/4-<sup>1</sup>  

2E
2G
2H



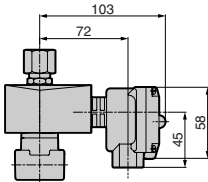
Dimensions shown in <> are for Rc3/8. Dimensions shown in ( ) are for G1/2.

Voltage	F	G	H
<b>AC</b>	23.5	65.5	54 (53.5)
<b>DC</b>	23.5	66	54.5 (54)

### ● Open frame type + HP terminal box

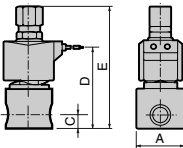
AG44-02/03-1/3/4-<sup>1</sup>  

3M	4M
5N	4N
I	J



### ● Stainless steel body

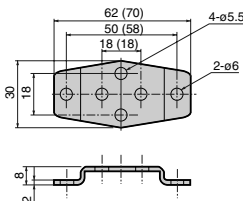
AG44-02/03-1 to 4-<sup>1</sup>**[D/E/L/M/R]**



Model no.	A	C	D	E
<b>AG44-02-1 to 4-<sup>1</sup></b>	ø37.5	11	68	99.5
<b>AG44-03-1 to 4-<sup>1</sup></b>	ø45	12	71	106

### ● Mounting plate

AG44-02/03-1 to 4-<sup>1</sup>**\*\*[B]**

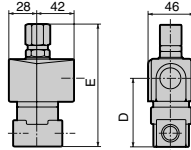


Dimensions shown in ( ) are for mounting plate No. 2.

### ● Open frame lead wire type

AG44-02/03-1/3/4-<sup>1</sup>  

3A
4A
5A

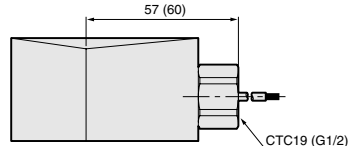


Model no.	D	E
<b>AG44-02-1 to 4-<sup>1</sup>** A</b>	52.0	99.5
<b>AG44-03-1 to 4-<sup>1</sup>** A</b>	55.0	106

### ● Open frame type + conduit

AG44-02/03-1/3/4-<sup>1</sup>  

3A	G
4A	H
5A	

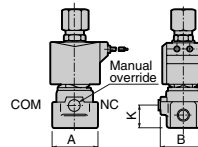


Dimensions shown in ( ) are for G1/2.

### ● Manual override (locking)

AG44-02/03-1 to 4-<sup>1</sup>**\*\*[A]**

Figure shows the brass body.



Model no.	A	B	K
<b>AG44-02-1 to 4-<sup>1</sup>**A</b>	36 (ø37.5)	38	19.5
<b>AG44-03-1 to 4-<sup>1</sup>**A</b>	40 (ø45.0)	40	22.5

Dimensions shown in ( ) are for stainless steel body.

Code	Applicable model
Mounting plate No. 1	● AG44-02/03-1 to 4 Series
<b>GE-100106</b>	● Stainless steel body AG44-02-1 to 4- <b>[D/E/L/M/R]</b>
Mounting plate No. 2	● Stainless steel body
<b>GE-100159</b>	AG44-03-1 to 4- <b>[D/E/L/M/R]</b>

HNB/G  
 USB/G  
 FAB/G  
 FGB/G  
 FVB  
 FWB/G  
 FHB  
 FLB  
 AB  
**AG**  
 AP/  
 AD  
 APK/  
 ADK  
 For  
 dry air  
 Explosion  
 proof  
 HVB/  
 HVL  
 SAB/  
 SVB  
 NP/NAP/  
 NVP  
 CHB/G  
 MXB/G  
 Other G.P.  
 systems  
 PD/FAD/  
 PJ  
 CVE/  
 CVSE  
 CPE/  
 CPD  
 Medical  
 analysis  
 Custom  
 order

General purpose valve  
 Direct acting 3 Port solenoid valve



Direct acting 3 port solenoid valve, actuator  
(general purpose valve)

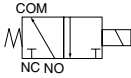
# GAG34\*/GAG44\* Series

● NO pressurization type



## JIS symbol

● GAG34\*/44\*: NO pressurization type



## Common specifications

Item	Standard specifications	Optional specifications
Working fluid	Air/low, low vacuum (1.33 x 10 <sup>5</sup> Pa (abs)), water, kerosene, oil (50 mm <sup>2</sup> /s or less)	Hot water
Working pressure differential range MPa	0 to 1.5 (refer to max. working pressure differential in individual specifications.)	
Max. working pressure MPa	1.5	
Withstanding pressure (water) MPa	10	
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90
Ambient temperature °C	-20 to 60	-20 to 100
Heat proof class	B	H
Atmosphere	Place free of corrosive gas and explosive gas	
Valve structure	Direct acting poppet structure	
Valve seat leakage <small>cm<sup>3</sup>/min. (AIR)</small>	0.2 or less (air)	
Mounting attitude	Free	
Body, sealant	Brass, nitrile rubber	Brass, ethylene propylene diene rubber

Note 1: No freezing

## Individual specifications

Item Model no.	NO port size	Orifice (mm)		Max. working pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)	
				Air		Water, hot water, kerosene		Oil (50 mm <sup>2</sup> /s)			Holding		Starting		AC 50/60 Hz	DC
				AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz		
<b>GAG341-1</b> -2	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	100 VAC 50/60 Hz	14	11	20	16	6/4.2	11 (8.1)
		2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2							
<b>GAG342-1</b> -2	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	110 VAC 60 Hz	14	11	20	16	6/4.2	11 (8.1)
		2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2							
<b>GAG442-1</b> -3	Rc1/4	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	200 VAC 50/60 Hz	22	17	35	27	8.3/6.2	11 (10.4)
		3.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45							
<b>GAG443-1</b> -4	Rc3/8	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)
		3.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45							
<b>GAG443-1</b> -3	Rc3/8	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)
		3.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45							
<b>GAG443-1</b> -4	Rc3/8	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)
		3.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45							

\*1: The model numbers above show the basic NO port size (Rc) and orifice diameter. 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 must be within ±10% of the rated voltage.

\*4: Values in ( ) are for the type with DIN terminal box and DC voltage specifications.

\*5: When using with a low vacuum, vacuum the NC port side.

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber	
	B	H	B	H
Coil (heat proof class)				
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90	-10 to 60	-10 to 90
Ambient temperature °C	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100 (Note 2)
Valve seat leakage cm <sup>3</sup> /min. (AIR)	0.2 or less (air)			

Note 1: No freezing

Note 2: The range is -20 to 80°C when using the HP terminal box with indicator light for the coil housing.

## Flow characteristics

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

\*1: Effective sectional area S and sonic conductance C are converted as S = 5.0 x C.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CVE/  
CVSE

CPE/  
CPD

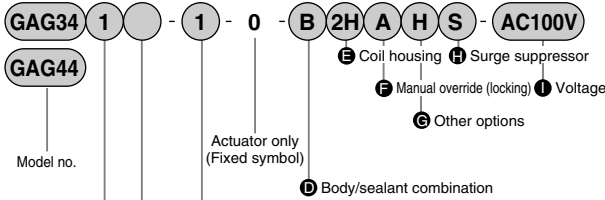
Medical  
analysis

Custom  
order

General purpose valve  
Direct acting 3 Port solenoid valve

# GAG34\*/44\* Series

How to order



		Model no.		
		GAG34*	GAG44*	
Symbol	Descriptions			
<b>A NO port size</b>				
1	1/8	●		
2	1/4	●	●	
3	3/8		●	
<b>B Type of thread</b>				
Blank	Rc	●	●	
G	G	●	●	
N	NPT	●	●	
<b>C Orifice</b>				
	GAG34*		GAG44*	
	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
<b>D Body/sealant combination</b>				
	Body	Sealant	Treatment	Remarks
Blank	Stainless steel	Nitrile rubber	—	Air, water, low vacuum, kerosene (up to 60°C)
B		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)
D		Nitrile rubber		Air, water, low vacuum, kerosene (up to 60°C)
E		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)
H	Option Brass	Nitrile rubber	Oil free	Air, water, low vacuum, kerosene (up to 60°C)
J		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)
P		Ethylene propylene diene rubber		Hot water (up to 90°C *2)
L		Nitrile rubber		Air, water, low vacuum, kerosene (up to 60°C)
M	Stainless steel	Fluoro rubber	—	Air, low vacuum, kerosene (up to 90°C *2)
R		Ethylene propylene diene rubber		Hot water (up to 90°C *2)

Refer to page 36 in the Introduction for details on the material combinations.

**E to I**  
Refer to the following page for details on the coil housing, other options and voltage, etc.

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

<Example 1 of model number>

**GAG341-1-0-AC200V**  
Model no.: GAG341

- A** NO port size: 1/8
- B** Type of thread: Rc
- C** Orifice: TOP - ø1.5, BODY - ø1.5
- D** Body/sealant combination:  
Body - bronze, sealant - nitrile rubber
- E** Coil housing: Grommet lead wire
- F** to **H**: Blank
- I** Voltage: 200 VAC 50/60Hz, 220 VAC 60Hz

<Example 2 of model number>

**GAG342G-2-0-000AS-AC200V**  
Model no.: GAG342

- A** NO port size: 1/4
- B** Type of thread: G
- C** Orifice: TOP - ø2.0, BODY - ø2.0
- D** Body/sealant combination:  
Body - bronze, sealant - nitrile rubber
- E** Coil housing: Grommet lead wire
- F** Manual override (locking): Selected
- G** Other options: Blank
- H** Surge suppressor: Selected
- I** Voltage: 200 VAC 50/60Hz, 220 VAC 60Hz

## ▲ Note on model no. selection






### Note on **D**

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


For (E) to (I), the combinations indicated with symbols can be manufactured.  
Note that if options (F) to (H) are not required, no symbol is indicated.

(E) Coil housing		(F)	(G) Other options				(H)	(I) Rated voltage
Descriptions		Manual override (locking)	Cable gland		Conduit		Surge suppressor	Descriptions
			(Marine cable gland)		(Conduit pipe)			
			A-15a	A-15b	A-15c	CTC19	G1/2	
<b>Blank</b>	Grommet lead wire	A						100 VAC, 200 VAC
<b>2E</b>	DIN terminal box (G1/2)							100 VAC, 200 VAC
<b>2G</b>	DIN terminal box (Pg11)							12 VDC, 24 VDC, 48 VDC, 100 VDC
<b>2H</b>	DIN terminal box + small light (Pg11)						H	100 VAC, 200 VAC, 24 VDC
<b>3A</b>	Lead wire						G H	100 VAC, 200 VAC
<b>3M</b>	Open frame type HP terminal box (G1/2)	A	D	E	F			S
<b>3N</b>	HP terminal box + light (G1/2)							
<b>3I</b>	HP terminal box (IP65 or equivalent) (G1/2)							
<b>3J</b>	HP terminal box + light (IP65 or equivalent) (G1/2)							
<b>4A</b>	Open frame type Lead wire	A					G H	S
<b>4M</b>	HP terminal box (G1/2)		D	E	F			
<b>4N</b>	HP terminal box + light (G1/2)							
<b>5A</b>	Open frame type Lead wire	A					G H	S
<b>5M</b>	HP terminal box (G1/2)		D	E	F			
<b>5N</b>	HP terminal box + light (G1/2)							
<b>5I</b>	HP terminal box (IP65 or equivalent) (G1/2)							
<b>5J</b>	HP terminal box + light (IP65 or equivalent) (G1/2)					G H	100 VAC, 200 VAC	

⚠ Refer to the following precautions for (E) to (I).

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

\* Refer to page 122 for coil selection.

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

### ⚠ Note on model no. selection

#### Note on (E)

- \*5: Leave blank for the standard coil housing. However, to select options in (F), (G) or (H), indicate 00 for (E).
- \*6: 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC with a diode.
- \*7: A DC coil for steam is available for GAG44. Contact CKD for more information.

#### Note on (E) to (I)

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

#### Note on (I)

- \*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. Note that the coils (E) 5A/5M/5N/5I/5J can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
- \*13: For voltages other than above, consult with 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.

HNB/G  
USB/G  
FAB/G  
FGB/G  
FVB  
FWB/G  
FHB  
FLB  
AB  
AG  
AP/  
AD  
APK/  
ADK  
For  
dry air  
Explosion  
proof  
HVB/  
HVL  
SAB/  
SVB  
NP/NAP/  
NVP  
CHB/G  
MXB/G  
Other G.P.  
systems  
PD/FAD/  
PJ  
CVE/  
CVSE  
CPE/  
CPD  
Medical  
analysis  
Custom  
order

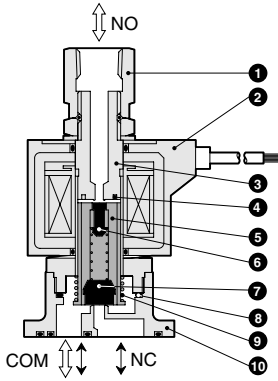
General purpose valve  
Direct acting 3 Port Solenoid valve



# GAG34\*/44\* Series

## Internal structure and parts list

● GAG34\*/GAG44\* Actuator



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

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

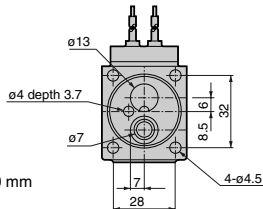
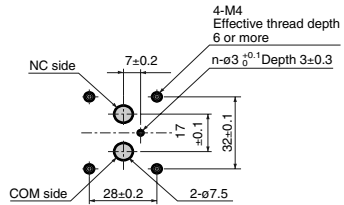
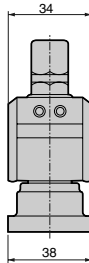
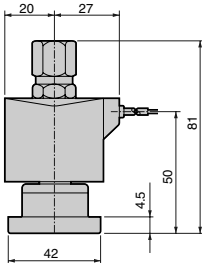
\*2: ( ) shows option.

## Dimensions: GAG341/GAG342 Series



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

● Recommended dimensions for actuator mounting



\* Lead wire length 300 mm

## Optional dimensions: GAG341/GAG342 Series

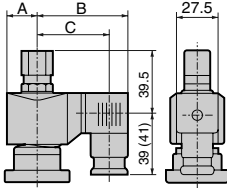


\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

● DIN terminal box

GAG34\*-1 to 2-0-\*  

2E
2G
2H



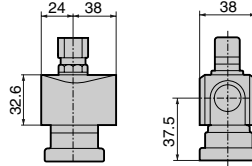
Dimensions shown in ( ) are for G1/2.

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

● Open frame lead wire type

GAG34\*-1 to 2-0-\*  

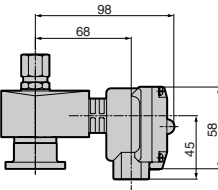
3A
4A
5A



● Open frame type + HP terminal box

GAG34\*-1 to 2-0-\*  

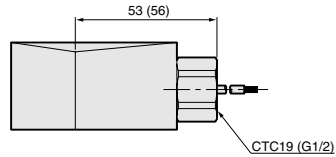
3	M
4	N
5	



● Open frame type + conduit

GAG34\*-1 to 2-0-\*  

3A	G
4A	H
5A	

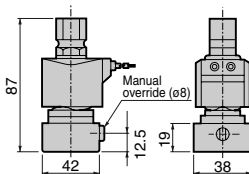


Dimensions shown in ( ) are for G1/2.

● Manual override (locking)

GAG34\*-1 to 2-0-\*\*\*  

A
---



- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/  
AD
- APK/  
ADK
- For  
dry air
- Explosion  
proof
- HVB/  
HVL
- SAB/  
SVB
- NP/NAP/  
NVP
- CHB/G
- MXB/G
- Other G.P.  
systems
- PD/FAD/  
PJ
- CVB/  
CVSE
- CPE/  
CPD
- Medical  
analysis
- Custom  
order

General purpose valve  
 Direct acting 3 Port Solenoid valve

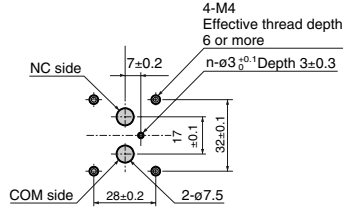
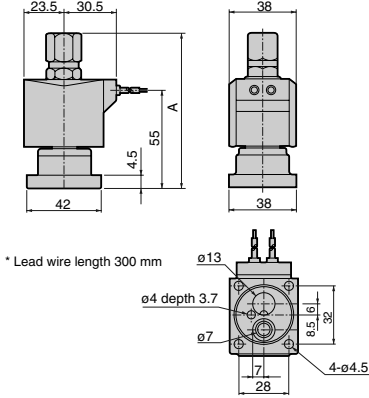
# GAG34\*/44\* Series

## Dimensions: GAG442/GAG443 Series



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

- Recommended dimensions for actuator mounting



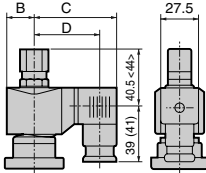
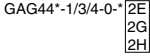
Model no.	A
<b>GAG442-1/3/4</b>	86.5
<b>GAG443-1/3/4</b>	90

## Optional dimensions: GAG442/GAG443 Series

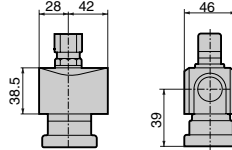
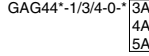


\* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

● DIN terminal box



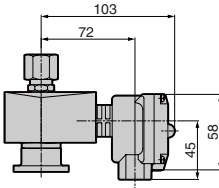
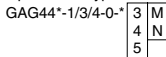
● Open frame lead wire type



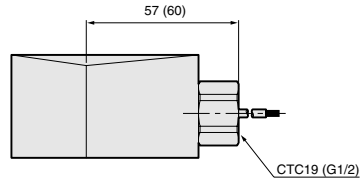
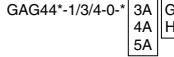
Dimensions shown in ( ) are for G1/2. Dimensions shown in < > are for Rc3/8.

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

● Open frame type + HP terminal box

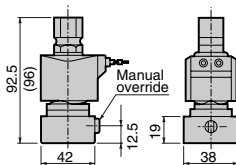
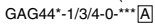


● Open frame type + conduit



Dimensions shown in ( ) are for G1/2.

● Manual override (locking)



Dimension shown in ( ) is for G1/2.

- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/AD
- APK/ADK
- For dry air
- Explosion proof
- HVB/HVL
- SAB/SVB
- NP/NAP/NVP
- CHB/G
- MXB/G
- Other G.P. systems
- PD/FAD/PJ
- CVF/CVSE
- CPE/CPD
- Medical analysis
- Custom order

General purpose valve  
Direct acting 3 Port Solenoid valve

# Direct acting 2, 3 port solenoid valve (general purpose valve)

## Electronic Catalog file list

General purpose direct acting 2, 3 port solenoid valve (general purpose valve)

### 2 port solenoid valve AB

Electronic Catalog file list is applied to "CAD DATA 2006".

Model no.	DXF		MICRO CADAM	
	Folder name	Filename	Filename (GROUP: CAD, USER: STDLIB)	
● Discrete valve AB: Pages 138 to 143				
AB31	AB	ab31	CKD-AB31	
AB41-02		ab41_02	CKD-AB41-02	
AB41-02-7/03		ab41_02_7_03	CKD-AB41-02-7/03	
AB41-03 04-8		ab41_03_04_8	CKD-AB41-03 04-8	
AB42-02		ab42_02	CKD-AB42-02	
AB42-02-7/03		ab42_02_7_03	CKD-AB42-02-7/03	
AB31-A		ab31_a	CKD-AB31-A	
AB41-A-02		ab41_a_02	CKD-AB41-A-02	
AB41-A-02-7/03		ab41_a_02_7_03	CKD-AB41-A-02-7/03	
AB42-A-02		ab42_a_02	CKD-AB42-A-02	
AB42-A-02-7/03		ab42_a_02_7_03	CKD-AB42-A-02-7/03	
● Discrete large bore valve AB71: Pages 146 to 147				
AB71-15		AB71	ab71_15	CKD-AB71-15
AB71-20			ab71_20	CKD-AB71-20
AB71-25	ab71_25		CKD-AB71-25	
● Manifold GAB: Pages 154 to 157, 164 to 165				
GAB3	AB	gab3	CKD-GAB3	
GAB4		gab4	CKD-GAB4	
GAB4-OPEN		gab4_open	CKD-GAB4-OPEN	
GAB42		gab42	CKD-GAB42	
GAB42-OPEN		gab42_open	CKD-GAB42-OPEN	
GAB3-A		gab3_a	CKD-GAB3-A	
GAB4-A		gab4_a	CKD-GAB4-A	
GAB4-A-OPEN		gab4_a_open	CKD-GAB4-A-OPEN	
GAB42-A		gab42_a	CKD-GAB42-A	
GAB42-A-OPEN		gab42_a_open	CKD-GAB42-A-OPEN	
● Accessory				
Common accessory		AB	a_other_f	CKD-A-OTHER-F
Accessory for AB3/GAB3	a3_f		CKD-A3-F	
Accessory for AB4/GAB4	a4_f		CKD-A4-F	
Accessory for AB7	AB71	a7_f	CKD-A7-F	

### 3 port solenoid valve AG

Model no.	DXF		MICRO CADAM	
	Folder name	Filename	Filename (GROUP: CAD, USER: STDLIB)	
● Discrete valve AG: Pages 170 to 173, 188 to 191, 206 to 209				
AG3	AG	ag3	CKD-AG3	
AG4-02		ag4_02	CKD-AG4-02	
AG4-03		ag4_03	CKD-AG4-03	
AG3-A		ag3_a	CKD-AG3-A	
AG4-A-02		ag4_a_02	CKD-AG4-A-02	
AG4-A-03		ag4_a_03	CKD-AG4-A-03	
● Manifold GAG: Pages 180 to 183, 198 to 201, 214 to 217				
GAG3		AG	gag3	CKD-GAG3
GAG34	gag34		CKD-GAG34	
GAG4	gag4		CKD-GAG4	
GAG4-OPEN	gag4_open		CKD-GAG4-OPEN	
GAG44	gag44		CKD-GAG44	
GAG3-A	gag3_a		CKD-GAG3-A	
GAG34-A	gag34_a		CKD-GAG34-A	
GAG4-A	gag4_a		CKD-GAG4-A	
GAG4-A-OPEN	gag4_a_open		CKD-GAG4-A-OPEN	
GAG44-A	gag44_a		CKD-GAG44-A	
● Accessory				
Accessory for AG3/GAG3	AG	a3_f	CKD-A3-F	
Accessory for AG4/GAG4		a4_f	CKD-A4-F	
Common accessory		a_other_f	CKD-A-OTHER-F	

# General purpose direct acting 2, 3 port solenoid valve (General purpose valve)

	Page
<b>General purpose</b>	
Direct acting 2, 3 port solenoid valve <b>AB/AG</b>	119
Pilot operated/pilot kick type 2 port solenoid valve <b>AP/AD/APK/ADK</b>	219
<b>For dry air</b>	
Direct acting 2, 3 port solenoid valve <b>AB-Z/AG-Z</b>	303
Pilot kick type 2 port solenoid valve <b>ADK-Z</b>	303
<b>Explosion proof, general purpose</b>	
Direct acting 2, 3 port solenoid valve <b>AB*E/AG*E</b>	355
Pilot operated 2 port solenoid valve <b>AP*E</b>	355
Pilot kick type 2 port solenoid valve <b>ADK*E</b>	355

AB

AG

AP/

AD

APK/

ADK

For

dry air

Explosion

proof



# AB/AG

(General purpose valve)

## General purpose direct acting 2, 3 port solenoid valve

■ For air, vacuum, water, oil

### Overview

The general purpose valve series enables control of various types of fluids including water, air, oil and vacuums. In addition to the high reliability and high quality of the valve, a variety of options and variations are available.

### Features

#### Various working fluids control

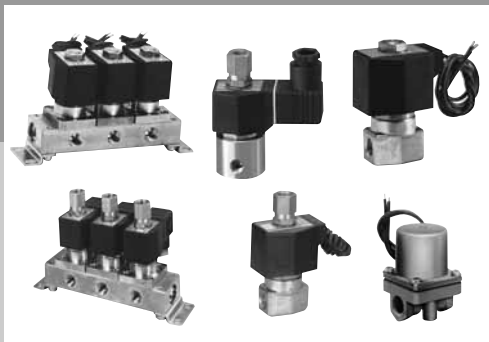
Various types of fluids can be handled by selecting the proper body material and sealant.

#### Wide option range

Including open frame, coil with diode and terminal boxes.

#### A great variety of series and variations

Including direct acting compact type Rc1/8 (port size) to Rc1.



## CONTENTS

Series variation	120
Coil selection guide	122
⚠ Safety precautions	124

### 2 port solenoid valve

#### Discrete valve

● AB21	NC (normally closed) type	126
● AB31/41	NC (normally closed) type	130
● AB42	NO (normally open) type	130
● AB71 (large bore size)	NC (normally closed) type	144

#### Manifold

● GAB312/352, GAB412/452	NC (normally closed) type	148
● GAB422	NO (normally open) type	158

### 3 port solenoid valve

#### Discrete valve

● AG31/41	Universal type	166
● AG33/43	NC pressurization type	184
● AG34/44	NO pressurization type	202

#### Manifold

● GAG31*41* (common supply / individual exhaust type)	Universal type	174
● GAG35*45* (common supply / separate flow type)	Universal type	174
● GAG33*43* (common supply / individual exhaust type)	NC pressurization type	192
● GAG34*44* (actuator)	NO pressurization type	210

Electronic Catalog file list	218
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⚠ Always read the precautions in the Introduction and page 124 before starting use.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

MXB/G

Other G.P.  
systems

PD/FAD/  
PJ

CV/  
CVSE

CPE/  
CPD

Medical  
analysis

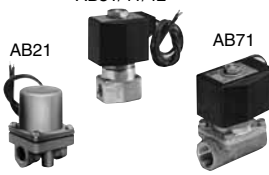


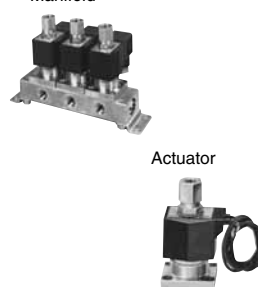
Custom  
order

General purpose valve  
Direct acting 2, 3 port solenoid valve



# Series variation

# General purpose direct acting 2, 3 port solenoid valve

No. of port	Model		Structure	Actuation		Air		
						Air	Low vacuum (1.33 x 10 <sup>2</sup> Pa (abs))	
2 port		AB21	Discrete	NC (normally closed) type		●		
		AB31				●	●	
		AB41				●	●	
		AB42				●	●	
		AB71				●	●	
		GAB312	Manifold	NC (normally closed) type	Common supply	●	●	
		GAB352			Individual supply	●	●	
		GAB412			Common supply	●	●	
		GAB452			Individual supply	●	●	
		GAB422		NO (normally open) type	Common supply	●	●	
3 port		AG31	Discrete	Universal type		●	●	
		AG41				●	●	
		AG33		NC pressurization type	●	●		
		AG43			●	●		
		AG34		NO pressurization type	●	●		
		AG44			●	●		
		GAG31	Manifold	Universal type	Common supply / individual exhaust	●	●	
		GAG35			Common supply / separate flow	●	●	
		GAG41			Common supply / individual exhaust	●	●	
		GAG45			Common supply / separate flow	●	●	
		GAG33	Actuator	NO pressurization type	Common supply / individual exhaust	●	●	
		GAG43			●	●		
		GAG34			●	●		
		GAG44			●	●		

Working fluid					Port size						Page
Water	Kerosene	Oil (50 mm <sup>2</sup> /s or less)	Hot water	Steam	Rc1/8	Rc1/4	Rc3/8	Rc1/2	Rc3/4	Rc1	
●		●			●	●					126
●	●	●	●	●	● <sup>*4</sup>	● <sup>*4</sup>					130
●	●	●	●	●		● <sup>*4</sup>	● <sup>*4</sup>	● <sup>*4</sup>			130
●	●	●	●	●		● <sup>*4</sup>	● <sup>*4</sup>				130
●	●	● <sup>*1</sup>						●	●	●	144
●	●	●	●	●		● <sup>*2</sup>	● <sup>*2</sup>				148
●	●	●	●	●		● <sup>*2</sup>	● <sup>*2</sup>				148
●	●	●	●	●		● <sup>*2</sup>	● <sup>*2</sup>				148
●	●	●	●	●		● <sup>*2</sup>	● <sup>*2</sup>				148
●	●	●	●	●		● <sup>*2</sup>	● <sup>*2</sup>				158
●	●	●	●	●	● <sup>*4</sup>	● <sup>*4</sup>					166
●	●	●	●	●		● <sup>*4</sup>	● <sup>*4</sup>				166
●	●	●	●	●	● <sup>*4</sup>	● <sup>*4</sup>					184
●	●	●	●	●		● <sup>*4</sup>	● <sup>*4</sup>				184
●	●	●	●	●	● <sup>*4</sup>	● <sup>*4</sup>					202
●	●	●	●	●		● <sup>*4</sup>	● <sup>*4</sup>				202
●	●	●	●	●	● <sup>*2</sup> <sub>*3</sub>	● <sup>*2</sup> <sub>*3</sub>					174
●	●	●	●	●	● <sup>*2</sup> <sub>*3</sub>	● <sup>*2</sup> <sub>*3</sub>					174
●	●	●	●	●		● <sup>*2</sup> <sub>*3</sub>	● <sup>*2</sup> <sub>*3</sub>				174
●	●	●	●	●		● <sup>*2</sup> <sub>*3</sub>	● <sup>*2</sup> <sub>*3</sub>				174
●	●	●	●	●	● <sup>*2</sup> <sub>*3</sub>	● <sup>*2</sup> <sub>*3</sub>					192
●	●	●	●	●		● <sup>*2</sup> <sub>*3</sub>	● <sup>*2</sup> <sub>*3</sub>				192
●	●	●	●	●	● <sup>*2</sup> <sub>*3</sub>	● <sup>*2</sup> <sub>*3</sub>					210
●	●	●	●	●		● <sup>*2</sup> <sub>*3</sub>	● <sup>*2</sup> <sub>*3</sub>				210

\* Refer to page 122 for details on the coil system.

\*1: 20 mm<sup>2</sup>/s for AB71 Series.

\*2: Port A: Rc1/4, port C: Rc3/8

\*3: ● indicates the NO port.

\*4: Refer to each How to order column for the thread types.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/  
AD

APK/  
ADK

For  
dry air

Explosion  
proof

HVB/  
HVL

SAB/  
SVB

NP/NAP/  
NVP

CHB/G

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Other G.P.  
systems

PD/FAD/  
PJ

CVB/  
CVSE

CPE/  
CPD

Medical  
analysis

Custom  
order

General purpose valve

Direct acting 2, 3 port solenoid valve












# Coil selection guide

## ● Coil housing types and selection guide

A wide variety is available to match applications.

Refer to the structure and features to select the optimum model.

### Direct acting 2, 3 port solenoid valve (AB/GAB/AG/GAG)

		Appearance					
Coil variation	Open frame type	Heat proof class B mold	<ul style="list-style-type: none"> <li>● DC and AC (50/60 Hz common)</li> <li>● Heat proof temperature 130 °C</li> <li>● Protection property symbols: IP61 or equivalent</li> <li>● Outdoor use not available</li> </ul>	Grommet lead wire	<ul style="list-style-type: none"> <li>● Lead wire length 300 mm</li> </ul>		Blank 6C
		Heat proof class B mold	<ul style="list-style-type: none"> <li>● DC and AC (50/60 Hz common)</li> <li>● Heat proof temperature 130 °C</li> <li>● Protection property symbols: IP61 or equivalent</li> <li>● Outdoor use not available</li> </ul>	DIN terminal box	<ul style="list-style-type: none"> <li>● Easy wiring and maintenance</li> <li>● Reliable electric protection (ground terminal)</li> <li>● Light available (optional-100/200 VAC and 24 VDC only)</li> </ul>		2E 2G 2H 6E 6G 6H
		Heat proof class B mold	<ul style="list-style-type: none"> <li>● DC and AC (50/60 Hz common)</li> <li>● Heat proof temperature 130 °C</li> <li>● Protection property symbols: IP65 or equivalent</li> <li>● Outdoor use not available</li> </ul>	Lead wire	<ul style="list-style-type: none"> <li>● Lead wire length 300 mm</li> <li>● Conduit (CTC19) for direct conduit wiring can be mounted</li> </ul>		3A
		Heat proof class B mold	<ul style="list-style-type: none"> <li>● DC and AC (50/60 Hz common)</li> <li>● Heat proof temperature 130 °C</li> <li>● Protection property symbols: IP21 or equivalent</li> <li>● Outdoor use not available</li> </ul>	HP terminal box	<ul style="list-style-type: none"> <li>● Easy wiring</li> <li>● Light available (optional-100/200 VAC and 24/100 VDC only)</li> </ul>		3M 3N
		Heat proof class B mold	<ul style="list-style-type: none"> <li>● DC and AC (50/60 Hz common)</li> <li>● Heat proof temperature 130 °C</li> <li>● Protection property symbols: IP65 or equivalent</li> <li>● Outdoor use not available</li> </ul>	HP terminal box	<ul style="list-style-type: none"> <li>● Easy wiring</li> <li>● Light available (optional-100/200 VAC and 24/100 VDC only)</li> </ul>		3I 3J
		Heat proof class H taped	<ul style="list-style-type: none"> <li>● AC dedicated (50/60 Hz common)</li> <li>● High temperature fluid and high ambient temperature available</li> <li>● Heat proof temperature 180 °C</li> <li>● Protection property symbols: IP00</li> <li>● Outdoor use not available</li> </ul>	Lead wire	<ul style="list-style-type: none"> <li>● Lead wire length 300 mm</li> <li>● Conduit (CTC19) for direct conduit wiring can be mounted</li> </ul>		4A
		Heat proof class B mold with diode	<ul style="list-style-type: none"> <li>● A diode is mounted on the coil section for direct-current conversion (AC-DC conversion)</li> <li>● Perfect for places where heat can be a problem</li> <li>● AC dedicated (50/60 Hz common)</li> <li>● Heat proof temperature 130 °C</li> <li>● Protection property symbols: IP65 or equivalent</li> <li>● Outdoor use not available</li> </ul>	HP terminal box	<ul style="list-style-type: none"> <li>● Easy wiring</li> <li>● Light available (optional-100/200 VAC only)</li> </ul>		4M 4N
		Heat proof class B mold with diode	<ul style="list-style-type: none"> <li>● A diode is mounted on the coil section for direct-current conversion (AC-DC conversion)</li> <li>● Perfect for places where heat can be a problem</li> <li>● AC dedicated (50/60 Hz common)</li> <li>● Heat proof temperature 130 °C</li> <li>● Protection property symbols: IP21 or equivalent</li> <li>● Outdoor use not available</li> </ul>	Lead wire	<ul style="list-style-type: none"> <li>● Lead wire length 300 mm</li> <li>● Conduit (CTC19) for direct conduit wiring can be mounted</li> </ul>		5A
		Heat proof class B mold with diode	<ul style="list-style-type: none"> <li>● A diode is mounted on the coil section for direct-current conversion (AC-DC conversion)</li> <li>● Perfect for places where heat can be a problem</li> <li>● AC dedicated (50/60 Hz common)</li> <li>● Heat proof temperature 130 °C</li> <li>● Protection property symbols: IP21 or equivalent</li> <li>● Outdoor use not available</li> </ul>	HP terminal box	<ul style="list-style-type: none"> <li>● Easy wiring</li> <li>● Light available (optional-100/200 VAC only)</li> </ul>		5M 5N
		Heat proof class B mold with diode	<ul style="list-style-type: none"> <li>● A diode is mounted on the coil section for direct-current conversion (AC-DC conversion)</li> <li>● Perfect for places where heat can be a problem</li> <li>● AC dedicated (50/60 Hz common)</li> <li>● Heat proof temperature 130 °C</li> <li>● Protection property symbols: IP65 or equivalent</li> <li>● Outdoor use not available</li> </ul>	HP terminal box	<ul style="list-style-type: none"> <li>● Easy wiring</li> <li>● Light available (optional-100/200 VAC only)</li> </ul>		5I 5J
		Conduit	<ul style="list-style-type: none"> <li>● Use a conduit (CTC19 or G1/2) when using direct conduit wiring for the open frame lead wire.</li> </ul>		G H		

● Repair parts table per coil option

Coil option symbol	Voltage	Repair parts			
		Plunger assembly	Core assembly	Coil assembly	Actuator assembly *1
0 or blank	AC	○	○	○	○
6C *2, *3	DC	—	—	—	○
2E 2G 2H	AC	○	○	○	○
2E 2G 2H	DC	○	○	○	○
6E 6G 6H *2, *3	DC	—	—	—	○
3A	AC	○	○	○	○
	DC		○	○	○
3M 3N	AC	○	○	○	○
	DC		○	○	○
3I 3J	AC	○	○	○	○
	DC		○	○	○
4A	AC	○	○	○	○
4M 4N	AC	○	○	○	○
5A	AC	○	○	○	○
5M 5N	AC	○	○	○	○
5I 5J	AC	○	○	○	○

\*1: The actuator assembly includes the coil assembly, core assembly and plunger assembly.

\*2: As 6C, 6E, 6G and 6H are dedicated parts, they are provided as part of the actuator assembly.

\*3: It is available only for AB41.

HNB/G  
USB/G  
FAB/G  
FGB/G  
FVB  
FWB/G  
FHB  
FLB  
AB  
AG  
AP/  
AD  
APK/  
ADK  
For  
dry air  
Explosion  
proof  
HVB/  
HVL  
SAB/  
SVB  
NP/NAP/  
NVP  
CHB/G  
MXB/G  
Other G.P.  
systems  
PD/FAD/  
PJ  
CVE/  
CVSE  
CPE/  
CPD  
Medical  
analysis  
Custom  
order

General purpose valve  
Direct acting 2, 3 port solenoid valve



# Safety precautions

Always read this section before starting use.

## Direct acting 2, 3 port solenoid valve (AB/GAB/AG/GAG)

### Design & Selection

#### WARNING

##### 1 Working fluid

- (1) Consult with CKD before using this valve for active gas (combustion gas, acetylene gas, etc.).
- (2) Valves for LPG (propane gas, butane gas) are available as custom order, so consult with CKD.
- (3) When using this valve for dry air or inert gas, the life can be shortened considerably due to wear. Use a valve for dry air.
- (4) This valve cannot be used for maintaining the vacuum. Consult with CKD when the vacuum needs to be maintained.

#### Caution

##### 1 Continuous energizing

Use the NO pressurization type when using the 3 port valve in a continuously energized state with the NO port pressurized. When continuously energizing the universal or NC pressurization type, use a fluoro rubber seal.

##### 2 Suction sound

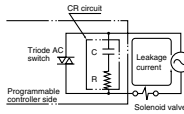
With the AC voltage specifications, a large suction sound may be heard momentarily after energizing. To avoid the suction sound, select the coil with diode or the DC voltage. The suction sound will drop.

##### 3 Fluid viscosity

The fluid viscosity must be 50 mm<sup>2</sup>/s or less. Malfunctions could occur if the viscosity is higher than 50 mm<sup>2</sup>/s.

##### 4 Leakage current from other fluid control components

When operating the solenoid valve with a programmable controller, etc., check that the output leakage current from the programmable controller is within the following specifications. Failure to observe this could lead to malfunctions.



Voltage Model no.	AC		AC diode		DC	
	100 V	200 V	100 V	200 V	12 V	24 V
AB, AG	6 mA or less	3 mA or less	2 mA or less	1 mA or less	2 mA or less	1 mA or less

### Installation, Piping & Wiring

#### CAUTION

##### 1 Piping

- (1) Always hold the socket with a spanner, etc., if the NO side is a socket.
- (2) When passing steam, steam generated from a boiler will contain a large amount of drainage. Always install a drain trap.
- (3) When passing steam, water replenished to the boiler will contain matters such as "calcium salt" and "magnesium salt". These matters will react with oxygen and carbon oxide causing scales and sludge, so always install a "water softener" and a filter for steam.

##### 2 Wiring

- (1) Refer to page 53 in the Introduction for details on connecting the terminal box.

### When Using

#### CAUTION

##### 1 Manual operation

Always observe the following points when using a manual override.  
<For NC (normally closed) type>

Opening: Insert a flat-tip screwdriver into the slit on the manual shaft, and turn it approx. 120° to the right or left. The plunger will rise up and the valve will open. (For the 3 port valve, the NC side valve seat will open and the NO side valve seat will close.)

The open state is held even when the screwdriver is removed. Always return the valve to the original position after use.

Closing: Turn the manual shaft from the open position to the vertical position. The plunger will lower and the valve will close. (For the 3 port valve, the NC side valve seat will close and the NO side valve seat will open.) (Refer to the following drawings.)



Valve closed



Valve opened



Valve opened

<For NO (normally open) type>

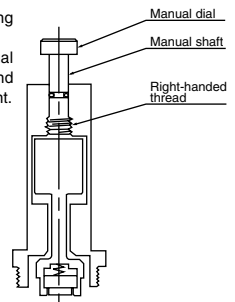
##### (1) Closing the valve with manual operations

The manual shaft is threaded, so hold the manual dial and rotate the shaft clockwise.

When the manual dial has been rotated downward 5 to 6 mm and no longer rotates, the solenoid valve will switch to closing operation.

##### (2) Resetting (when not using manual override)

Always rotate the manual dial counterclockwise and return it to the highest point.



### Maintenance

#### CAUTION

- 1 When disassembling or assembling, tighten the core assembly and socket with the following tightening torques.

Model no.	Core assembly tightening torque	Socket tightening torque	Nut tightening torque
AB	30 to 45 N·m	-	8 to 16 N·m
AG	30 to 45 N·m	8 to 16 N·m	8 to 16 N·m

## Working environment

### CAUTION

IP65 (IEC60529 (IEC529:1989-11)) standards are applied to the test. Avoid use in conditions where water or cutting oil could directly contact the valve.

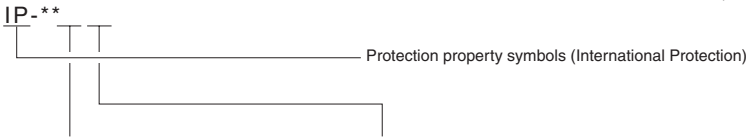
#### Explanation of protection property symbols and examination method of IP65

● Protective structure

Note: IP-65 is a standard as followings.


■ IEC (International Electrotechnical Commission) standards


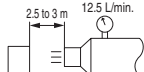
(IEC60529 (IEC529:1989-11))



1st characteristic number (protection grade for foreign solid)

2nd characteristic number (protection grade for entry of water)

Grade	Degree of protection	
6	Dust proof type 	Powder and dust do not enter inside.

Grade	Degree of protection		Overview of test method (fresh water is used)
5	Protection for jet 	No harmful effects occur even when water is sprayed with nozzles from all directions.	Using the following test device, spray water for 1 minute per 1 m <sup>2</sup> of test sample (exterior) surface area from all directions, for a total of 3 minutes or more.  Spray nozzle inner diameter: ø6.3 mm

- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK
- For dry air
- Explosion proof
- HVB/HVL
- SAB/SVB
- NP/NAP/NVP
- CHB/G
- MXB/G
- Other G.P. systems
- PD/FAD/PJ
- CVB/CVSE
- CPE/CPD
- Medical analysis
- Custom order

General purpose valve  
Direct acting 2, 3 port solenoid valve