



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

AG31/41 Series

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

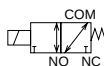


Refer to Ending 17 for more details.



JIS symbol

- AG31/41: Universal type



Common specifications

Descriptions	Standard specifications		Optional specifications	
Working fluid	Air/low vacuum (1.33×10 ⁵ Pa (abs)), water, kerosene, oil (50mm ² /s or less)		Hot water	Steam
Working pressure differential range MPa	0 to 1 (Refer to max. working pressure differential on 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 ³ /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

Descriptions Model no.	Port size	Orifice (mm)		Max. working pressure diff. (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)		
				Air		Water, hot water, kerosene		Oil (50 mm ² /s)			Holding		Starting		AC 50/60Hz	DC	Mass (kg)
		TOP	BODY	AC	DC	AC	DC	AC	DC		50Hz	60Hz	50Hz	60Hz			
AG31-01-1	Rc1/8	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	100 VAC	14	11	20	16	6/4.2	11 (8.1)	0.36
-01-2		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	50/60Hz							
-02-1	Rc1/4	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	110 VAC							
-02-2		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	60Hz							
AG41-02-1	Rc1/4	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	200 VAC	22	17	35	27	8.3/6.2	11 (10.4)	0.45
-02-2		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	50/60Hz							
-03-1	Rc3/8	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	24 VDC							
-03-2		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	48 VDC							
		2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	100 VDC							0.48
		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	100 VDC							

*1: Models above show basic port size (Rc) and orifice. Refer to How to order about other combinations.

*2: Refer to DC column for maximum working pressure differential of coil with diode.

*3: Variation of rated voltage should be within $\pm 10\%$.

*4: When DIN terminal box and DC voltage specifications, () shows the maximum working pressure differential pressurized from NO port.

*5: When to be continuously energized, use fluoro rubber sealing.

*6: When PTFE resin sealing, NO port cannot be pressurized.

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber		PTFE	
Coil (heat proof class)	B	H	B	H	B	H
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 cm³/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 square terminal box with light for the coil housing.

Flow characteristics

Model no.	Port size	Orifice (mm)		Flow characteristics					
		TOP	BODY	C[dm³/(s·bar)]		b		Cv flow factor	
				TOP	BODY	TOP	BODY	TOP	BODY
AG31-01-1	Rc 1/8	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-01-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-1	Rc 1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-02-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
AG41-02-1	Rc 1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19
-03-1	Rc 3/8	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-03-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19

*1: Effective 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

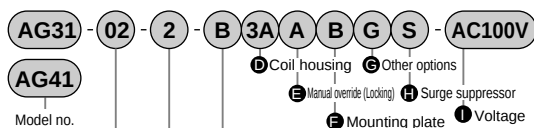
Medical analysis

Custom order

General purpose valve
Direct acting 3 port solenoid valve

AG31/41 Series

How to order



A Port size

B Orifice

C Body, sealant combination

*1
*2
*3
*4

						Model no.	
						AG31	AG41
Symbol	Descriptions	Symbol	Descriptions	Symbol	Descriptions		
A Port size							
01	Rc 1 / 8	1G	G 1 / 8	1N	NPT 1 / 8	●	
02	Rc 1 / 4	2G	G 1 / 4	2N	NPT 1 / 4	●	●
03	Rc 3 / 8	3G	G 3 / 8	3N	NPT 3 / 8		●

B Orifice							
AG31			AG41				
	TOP	BODY	TOP	BODY			
1	φ1.5	φ1.5	φ2.0	φ2.0	●	●	
2	φ2.0	φ2.0	φ2.3	φ2.3	●	●	

C Body, sealant combination							
	Body	Sealant	Treat	Remarks			
Blank	Std.	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		PTFE		Steam (up to 184°C *2)	●	●	
V	Option	Fluoro rubber	Vac. Inspec.	Medium vacuum	●	●	
D		Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
E		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●	●	
F		PTFE		Steam (up to 184°C *2)	●	●	
W		Fluoro rubber	Vac. Inspec.	Medium vacuum	●	●	
H	Option	Nitrile rubber	Oil-prohibit	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
J		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●	●	
K		PTFE		Steam (up to 184°C *2)	●	●	
P		Ethylene propylene diene rubber		Hot water (up to 90°C *2)	●	●	
L	Option	Nitrile rubber		Air, water, low vacuum, kerosene (up to 60°C)	●	●	
M		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●	●	
N		PTFE		Steam (up to 184°C *2)	●	●	
R		Ethylene propylene diene rubber		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 a ● in the above table can be manufactured.

<Example 1 of model number>

AG31-02-1-AC100V

Series : AG31

A Port size : Rc1/4

B Orifice : TOP - φ1.5, BODY - φ1.5

C Body, sealant combination

: Body - brass, sealant - nitrile rubber

D Coil housing : Grommet lead wire

E to H : Blank

I Rated voltage

: 100 VAC 50/60 Hz, 110 VAC 60 Hz

<Example 2 of model number>

AG41-03-2-000ABS-AC100V

Series : AG41

A Port size : Rc3/8

B Orifice : TOP - φ2.3, BODY - φ2.3

C Body, sealant combination

: Body - brass, sealant - nitrile rubber

D Coil housing : Grommet lead wire

E Manual override (Locking) : Selected

F Mounting plate : With mounting plate

G Other options : Blank

H Surge suppressor : With surge suppressor

I Rated voltage

: 100 VAC 50/60 Hz, 110 VAC 60 Hz

▲ Note on model no. selection

Note on (C)

*1: Standard is blank, however (D), (E), (F), (G) or (H) selected, complete (C) with 0.

*2: (C): When selecting 4A, 4K, 4H

*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 symbol V or W, the vacuum inspection is carried out at "leakage: 1.33 x 10⁻⁶ Pa·m³/s or less".

For (D) to (I), the combinations indicated with symbols can be manufactured.
Note that if the (E) to (H) options 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	CTC 19	G 1/2		
Blank	Std	Grommet lead wire									100 VAC, 200 VAC
2E	Option	DIN terminal box (G1/2)	A	B						S	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		Open frame type (lead not classified)									Lead wire
3K			Square terminal box (G1/2)	12 VDC, 24 VDC, 48 VDC, 100 VDC							
3H			Square terminal box + light (G1/2)	100 VAC, 200 VAC, 24 VDC, 100 VDC							
3P			Square terminal box (IP65 or equivalent) (G1/2)	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC							
3Q			Square terminal box + light (IP65 or equivalent) (G1/2)	100 VAC, 200 VAC, 24 VDC, 100 VDC							
4A			Open frame type (lead not classified)	Lead wire	G		H	S	100 VAC, 200 VAC		
4K		Square terminal box (G1/2)									
4H	Square terminal box + light (G1/2)										
5A	Open frame type (lead not classified)	Lead wire	A	B				G		H	100 VAC, 200 VAC
5K		Square terminal box (G1/2)									
5H		Square terminal box + light (G1/2)									
5P		Square terminal box (IP65 or equivalent) (G1/2)									
5Q		Square terminal box + light (IP65 or equivalent) (G1/2)									

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

Blank		● Grommet lead wire 300 mm
2E 2G 2H		● DIN terminal box
3A 4A 5A		● Open frame Grommet lead wire 300 mm ● 4A (Heat proof class H) ● 5A (Diode integrated)
3K 3H 4K 4H 5K 5H		● Open frame square terminal box ● 4K, 4H (Heat proof class H) ● 5K, 5H (Diode integrated)
3P 3Q 5P 5Q		● Open frame square terminal box (IP65 or equivalent) ● 5P, 5Q (Diode integrated)

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

Note on (D)

- *5: No symbol is indicated for the standard coil housing, but when using (E), (F), (G) or (H), indicate 00 for (D).
- *6: 5A, 5K, 5H, 5P and 5Q are coils which convert AC power to DC with a diode.
- *7: A DC coil for steam is available for AG41. Contact CKD for more information.

Note on (E) to (H)

- *8: When (C) is C, F, K, N, V, or W, manual override (item (E) A) is not available.
- *9: Select one among D, E, F, G, H for (G).
- *10: The surge suppressor is an accessory for the lead wire coil. When using the coil with terminal box, the surge suppressor is mounted in the terminal box.
- *11: Surge suppressor is incorporated in coil with diode and (D) 2H 24 VDC coil as standard.
- *12: Tropic care treatment (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that the tropic care treatment is not available when the manual override option (A) is selected.

Note on (I)

- *13: 100 VAC coil is compatible with 100 VAC 50/60 Hz, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. However, use (D) 5A, 5K, 5H, 5P, 5Q coils only for 100 VAC 50/60 Hz, 200 VAC 50/60 Hz.
- *14: Consult with CKD about other than above voltage.
- *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.

Refer to Page 122 for Coil selection.

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

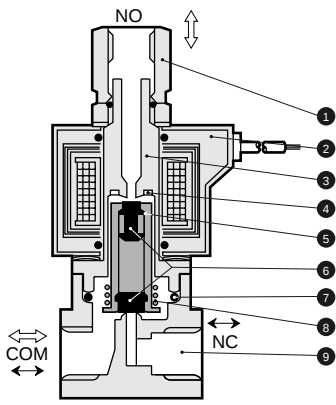
Custom
order

General purpose valve

Direct acting 3 port solenoid valve

Internal structure and main parts materials

AG31/41 Series



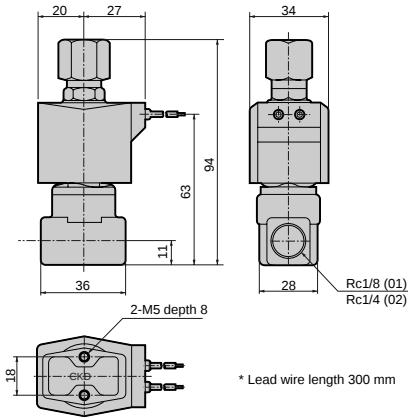
No.	Parts name	Material
1	Socket	C3604 (SUS303) Brass (stainless steel)
2	Coil	—
3	Core assembly	SUS405 or equivalent, 316L, 403*1 Stainless steel
4	Shading coil	Cu (Ag when stainless steel body) Copper (Silver when stainless steel body)
5	Plunger	SUS405 or equivalent Stainless steel
6	Sealing	NBR (FKM/EPDM/PTFE)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

*1: When the body and sealant combination symbol is no symbol or other than H, the material is SUS405 or equivalent, 316L, 430.
*2: () shows options.

Dimensions: AG31 Series



Grommet lead wire type
AG31-01/02-1 to 2



<References> Arrows of JIS symbol show either three ports can be pressurized, and generally two orifice (TOP, BODY) are 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 screw port size.

* Lead wire length 300 mm

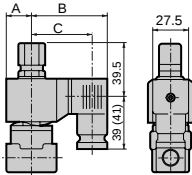
Optional dimensions: AG31 Series

 (Page 218)

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

- DIN terminal box
AG31-01/02-1 to 2-*

2E
2G
2H

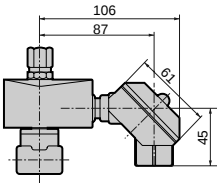


Dimensions shown in () are for the G1/2.

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

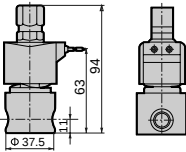
- Open frame + square terminal box
AG31-01/02-1 to 2-*

3	K	/4K
5	H	4H
	P	
	Q	



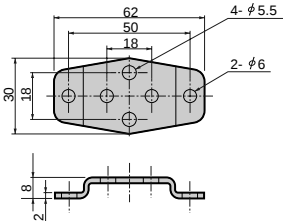
- Stainless steel body
AG31-01/02-1 to 2-***

D/E/F/R/W/L/M/N



- Mounting plate
AG31-01/02-1 to 2-***

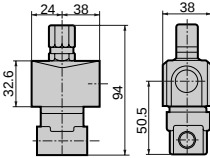
B



Mounting plate No.1 GE-100106

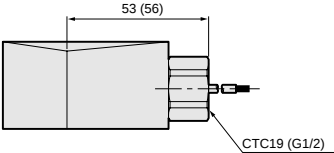
- Open frame type
AG31-01/02-1 to 2-*

3A
4A
5A



- Open frame type + conduit
AG31-01/02-1 to 2-*

3A	G
4A	H
5A	

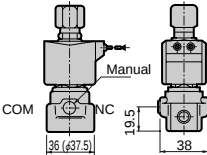


Dimensions shown in () are for the G1/2.

- Manual override (locking)
AG31-01/02-1 to 2-***

A

The illustration shows the brass body.



Dimensions shown in () are for the 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

CVE/CVSE

CPE/CPD

Medical analysis

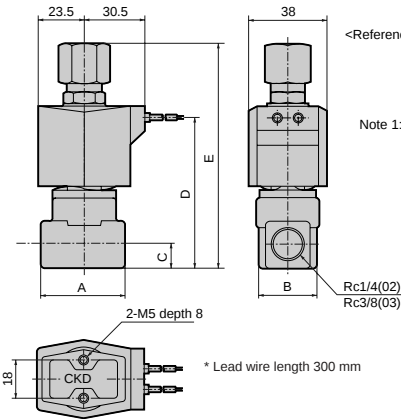
Custom order

General purpose valve
Direct acting 3 port solenoid valve

Dimensions: AG41 Series



- Grommet lead wire type
AG41-02/03-1 to 2



<References> Arrows of JIS symbol show either three ports can be pressurized, and generally two orifice (TOP, BODY) are 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
AG41-02-1 to 2	36	28	11	68	99.5
AG41-03-1 to 2	40	28	12	71	106

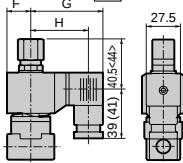
Optional dimensions: AG41 Series

 (Page 218)

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

- DIN terminal box
AG41-02/03-1 to 2-*

2E
2G
2H



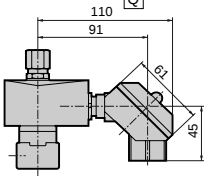
Dimensions shown in < > are for the R3/8. Dimensions shown in () are for the G1/2.

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

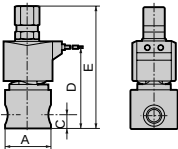
- Open frame type + square terminal box
AG41-02/03-1 to 2-*

3 K
5 H
P
Q

4 K
4 H

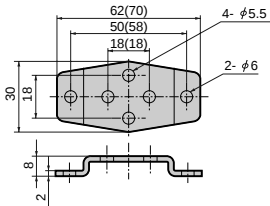


- Stainless steel body
AG41-02/03-1 to 7-D/E/F/R/W/L/M/N



Model no.	A	C	D	E
AG41-02-1 to 2-*	φ 37.5	11	68	99.5
AG41-03-1 to 2-*	φ 45	12	71	106

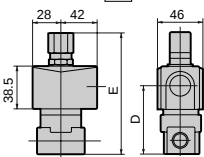
- Mounting plate
AG41-02/03-1 to 2-***B



Dimensions in () show value of No.2 mounting plate.

- Open frame lead wire type
AG41-02/03-1 to 2-*

3A
4A
5A

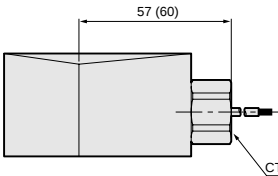


Model no.	D	E
AG41-02-1 to 2-***A	52	99.5
AG41-03-1 to 2-***A	55	106

- Open frame type + conduit
AG41-02/03-1 to 2-*

3A
4A
5A

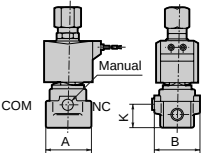
G
H



Dimensions shown in () are for the G1/2.

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

The illustration shows the brass body.



Model no.	A	B	K
AG41-02-1 to 2-***A	36 (φ 37.5)	38	19.5
AG41-03-1 to 2-***A	40 (φ 45.0)	40	22.5

Dimensions shown in () are for the stainless steel body.

Code	Model
Mounting plate No. 1	● AG41-02/03-1 to 2 Series
GE-100106	● 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
GE-100159	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/actuator
(general purpose valve)

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

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



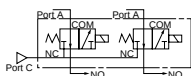
Refer to Ending 17 for more details.



Manifold circuit structure

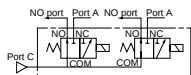
● GAG31*/41*

(Common supply/individual exhaust type)



● GAG352/452

(Common supply/separate flow type)



Common specifications

Descriptions	Standard specifications		Optional specifications	
Working fluid	Air/low vacuum (1.33 x 10 ⁵ Pa (abs)), water, kerosene, oil (50mm ² /s or less)		Hot water	Steam
Working pressure differential range	MPa	0 to 1 (Refer to max. working pressure differential on 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 ³ /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

Descriptions	NO Port Port size	Orifice (mm)		Max. working pressure diff. (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)								
Air				Water, hot water, kerosene		Oil (50 mm²/s)		Holding			Starting		AC	DC									
Model no.		TOP	BODY	AC	DC	AC	DC	AC	DC		50Hz	60Hz	50Hz	60Hz	50/60Hz								
GAG311-1	Rc1/8	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	100 VAC 50/60Hz 110 VAC 60Hz 200 VAC 50/60Hz 220 VAC 60Hz	14	11	20	16	6/4.2	11 (8.1)							
-2		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)														
GAG312-1	Rc1/4	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)								12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)
-2		2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)														
GAG412-1	Rc1/4	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)							
-2		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)														
GAG413-1	Rc3/8	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)								12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)
-2		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)														

*1: Models above show basic NO port size (Rc) and orifice. Refer to How to order about other combinations.

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

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

*4: Variation of rated voltage should be within ±10%.

*5: When DIN terminal box and DC voltage specifications, () shows the maximum working pressure differential pressurized from NO port.

*6: When to be continuously energized, use fluoro rubber sealing.

*7: When PTFE resin sealing, NO port cannot be pressurized.

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber		PTFE	
Coil (heat proof class)	B	H	B	H	B	H
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 ³ /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 square terminal box with light for the coil housing.

Flow characteristics

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

*1: Effective 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

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

How to order

- Common supply/individual exhaust (Port C pressurized)

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

- Common supply/separate flow (Port C pressurized)

GAG35

- Common supply/individual exhaust (Port C pressurized)

GAG41

- Common supply/separate flow (Port C pressurized)

GAG45

Model no.

A NO port size

B Type of screw

C Orifice

D Station no.

*2

E Body, sealant combination

*3

*4

*5

<Example 1 of model number>

GAG311-1-4-AC200V

Series : GAG311 (common supply/individual exhaust/Port C pressurized)

- A** NO port size : 1/8
B Type of thread : Rc
C Orifice : TOP - ϕ 1.5, BODY - ϕ 1.5
D Station no. : 4 stations
E Body, sealant combination
: Body - brass, sealant - nitrile rubber
F Coil housing : Grommet lead wire
G to **I** : Blank
J Rated voltage
: 200 VAC 50/60 Hz, 220 VAC 60 Hz

<Example 2 of model number>

GAG352G-2-7-000AS-AC200V

Series : GAG352 (common supply/separate flow type C port pressurized)

- A** NO port size : 1/4
B Type of thread : G
C Orifice : TOP - ϕ 2.0, BODY - ϕ 2.0
D Station no. : 7 stations
E Body, sealant combination
: Body - brass, sealant - nitrile rubber
F Coil housing : Grommet lead wire
G Manual override (locking) : Selected
H Other options : Blank
I Surge suppressor : With surge suppressor
J Rated voltage
: 200 VAC 50/60 Hz, 220 VAC 60 Hz

- F** Coil housing **I** Surge suppressor
G Manual override (Locking) **J** Voltage
H Other options

		Model no.	
		GAG3**	GAG4**
Symbol	Descriptions		
A NO port size			
1	1 / 8	●	
2	1 / 4	●	●
3	3 / 8		●
B Type of screw			
Blank	Rc		●
G	G	●	●
N	NPT	●	●
C Orifice			
		GAG3**	
		TOP	BODY
1	ϕ 1.5	ϕ 1.5	ϕ 2.0
2	ϕ 2.0	ϕ 2.0	ϕ 2.3
D Station no.			
2	2 stations		●
10	10 stations		●
0	Actuator only	●	●
E Body, sealant combination			
		Remarks	
Blank	Std.		
B	Brass	Nitrile rubber	Air, water, low vacuum, kerosene (up to 60°C)
		Fluoro rubber	Air, low vacuum, kerosene (up to 90°C *4)
		PTFE	Steam (up to 184°C *4)
D	Stainless steel	Nitrile rubber	Air, water, low vacuum, kerosene (up to 60°C)
		Fluoro rubber	Air, low vacuum, kerosene (up to 90°C *4)
		PTFE	Steam (up to 184°C *4)
F	Option	Nitrile rubber	Air, water, low vacuum, kerosene (up to 60°C)
		Fluoro rubber	Air, low vacuum, kerosene (up to 90°C *4)
		PTFE	Steam (up to 184°C *4)
H	Brass	Nitrile rubber	Air, water, low vacuum, kerosene (up to 60°C)
		Fluoro rubber	Air, low vacuum, kerosene (up to 90°C *4)
		PTFE	Steam (up to 184°C *4)
L	Stainless steel	Ethylene propylene diene rubber	Hot water (up to 90°C *4)
		Nitrile rubber	Air, water, low vacuum, kerosene (up to 60°C)
		Fluoro rubber	Air, low vacuum, kerosene (up to 90°C *4)
		PTFE	Steam (up to 184°C *4)
R	Option	Ethylene propylene diene rubber	Hot water (up to 90°C *4)

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

F to **J**

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

The combinations indicated with a ● in the above table can be manufactured.

Note on model no. selection

*1: Discrete masking plate and sub-plate are available.

Note on (D) to (E)

*2: Consult CKD about more than 11 stations manifold.

*3: Standard is blank, however (F), (G), (H) or (I)

selected, complete (E) with 0.

*4: (E): When selecting 4A, 4K, 4H

*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 the (G) to (I) options are not required, no symbol is indicated.

F Coil housing			G Manual override (Locking)	H Other options					I Surge suppressor	J Rated voltage	
Descriptions				Cable gland			Conduit			Descriptions	
				(Marine cable gland)			(Conduit pipe)				
			A-15a	A-15b	A-15c	CTC 19	G 1/2				
Blank	Std.	Grommet lead wire	A						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	Open frame type	Lead wire								100 VAC, 200 VAC	
3K		Square terminal box (G1/2)	12 VDC, 24 VDC, 48 VDC, 100 VDC								
3H		Square terminal box + light (G1/2)	100 VAC, 200 VAC, 24 VDC, 100 VDC								
3P		Square terminal box (IP65 or equivalent) (G1/2)	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC								
3Q		Square terminal box + light (IP65 or equivalent) (G1/2)	100 VAC, 200 VAC, 24 VDC, 100 VDC								
4A	Open frame type (Heat proof class H)	Lead wire	A				G	H	S	100 VAC, 200 VAC	
4K		Square terminal box (G1/2)									
4H		Square terminal box + light (G1/2)									
5A	Open frame type (Diode integrated)	Lead wire	A				G	H		100 VAC, 200 VAC	
5K		Square terminal box (G1/2)									
5H		Square terminal box + light (G1/2)									
5P		Square terminal box (IP65 or equivalent) (G1/2)									
5Q		Square 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 Grommet lead wire 300 mm ● 4A (Heat proof class H) ● 5A (Diode integrated)
3K 3H 4K 5K 5H		● Open frame square terminal box ● 4K, 4H (Heat proof class H) ● 5K, 5H (Diode integrated)
3P 3Q 5P 5Q		● Open frame square terminal box (IP65 or equivalent) ● 5P, 5Q (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 (F)

- *6: No symbol is indicated for the standard coil housing, but when using (G), (H) or (I), indicate 00 for (F).
*7: 5A, 5K, 5H, 5P and 5Q are coils which convert AC power 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 (E) is C, F, K or N, manual override (item G) A is not available.
*10: Select one among D, E, F, G and H for (H).
*11: The surge suppressor is an accessory for the lead wire coil. When using the coil with terminal box, the surge suppressor is mounted in the terminal box.
*12: Surge suppressor is incorporated in coil with diode and (F) 2H 24 VDC coil as standard.
*13: Tropic care treatment (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that the tropic care treatment 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, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. However, use (F) 5A, 5K, 5H, 5P, 5Q coils only for 100 VAC 50/60 Hz, 200 VAC 50/60 Hz.
*15: Consult with CKD about other than above voltage.
*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

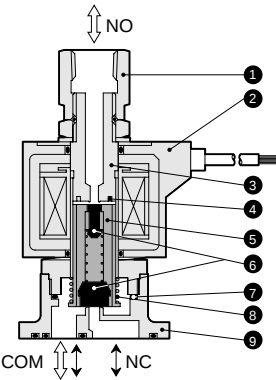
Custom
order

General purpose valve

Direct acting 3 port solenoid valve

Internal structure and main parts materials

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

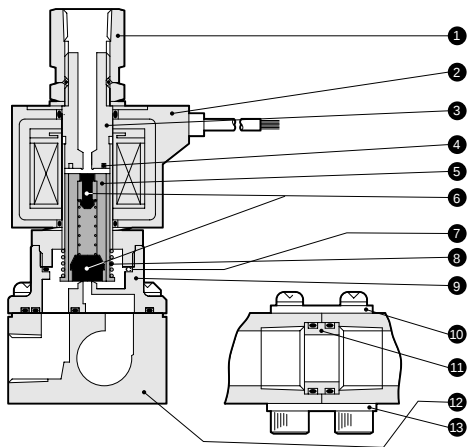


No.	Parts name	Material
1	Socket	C3604 (SUS303) Brass (stainless steel)
2	Coil	— —
3	Core assembly	SUS405 or equivalent, 316L, 403 *1 Stainless steel
4	Shading coil	Cu (Ag when stainless steel body) Copper (Silver when stainless steel body)
5	Plunger	SUS405 or equivalent Stainless steel
6	Sealing	NBR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

*1: When the body and sealant combination symbol is no symbol or other than H, the material is SUS405 or equivalent, 316L, 430.
*2: () shows options.

Internal structure and main parts materials

● 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 when stainless steel body) *1	Copper (Silver when stainless steel body)
5	Plunger	SUS405 or equivalent	Stainless steel
6	Sealing	NBR (FKM/EPDM/PTFE)	NBR: Nitrile rubber FKM: Fluoro rubber
7	O ring	NBR (FKM/EPDM/PTFE) (Size: ASS68-G19)	EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin
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 and sealant combination symbol is no symbol or other than H, the material is SUS405 or equivalent, 316L, 430.
*2: () shows options.

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

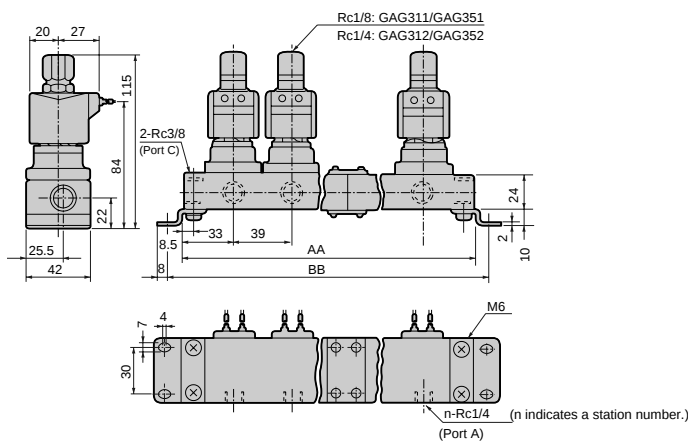
Custom
order

General purpose valve
Direct acting 3 port solenoid valve

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

Dimensions: GAG31*/GAG35* Series  (Page 218)

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

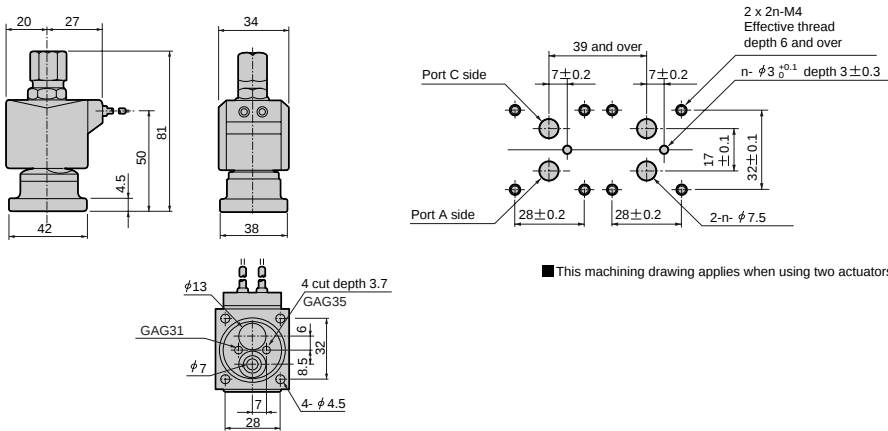


Station number	AA	BB	Manifold structure	Station number	AA	BB	Manifold structure
2	106	122	2 stations x 1	7	329	345	5 stations + 2 stations
3	145	161	3 stations x 1	8	368	384	5 stations + 3 stations
4	212	228	2 stations x 2	9	435	451	3 stations x 3
5	223	239	5 stations x 1	10	446	462	5 stations x 2
6	290	306	3 stations x 2	Consult with CKD about more than 11 stations.			

*1: Manifold structured by basic combination of 2, 3 and 5 stations.
*2: The dimensions are the same for the G or NPT thread port size.

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

- How to mount actuator



■ This machining drawing applies when using two actuators.

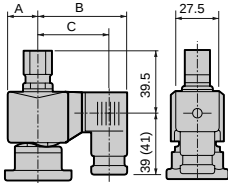
Optional dimensions: GAG31*/GAG35*



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

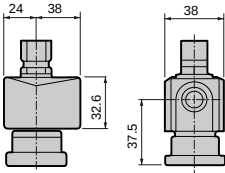
- DIN terminal box
GAG3**-1 to 2-0 to 10-*

2E
2G
2H



- Open frame lead wire type
GAG3**-1 to 2-0 to 10-*

3A
4A
5A

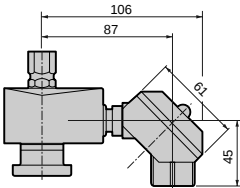


Dimensions shown in () are for the G1/2.

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

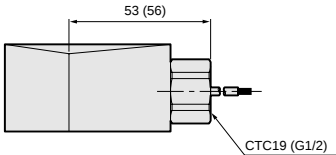
- Open frame + square terminal box
GAG3**-1 to 2-0 to 10-*

3	K	4K
5	H	4H
	P	
	Q	



- Open frame type + conduit
GAG3**-1 to 2-0 to 10-*

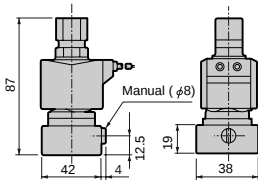
3A	G
4A	H
5A	



Dimensions shown in () are for the G1/2.

- Manual override (locking)
GAG3**-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

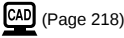
Medical analysis

Custom order

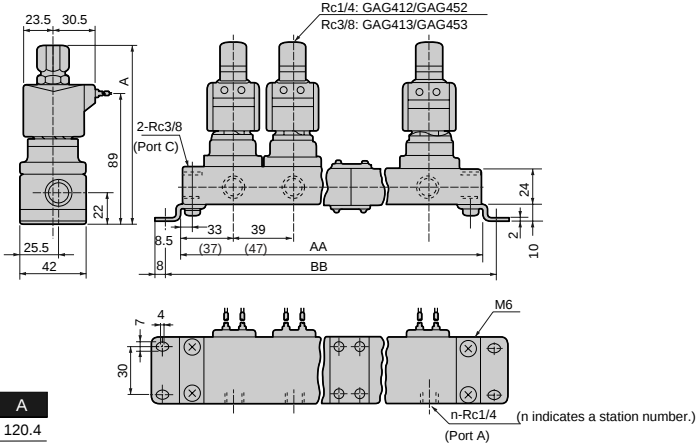
General purpose valve
Direct acting 3 port solenoid valve

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

Dimensions: GAG41*/45* Series



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



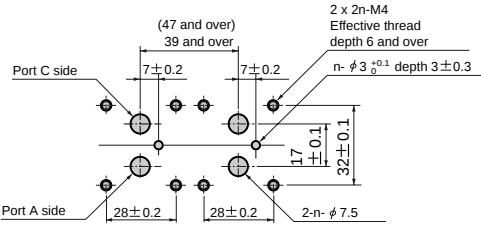
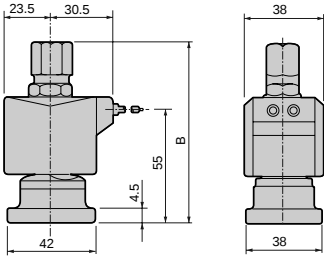
Model no.	A
GAG412/452-1 to 2	120.4
GAG413/453-1 to 2	124

Station number	AA	BB	Manifold structure	Station number	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 11 stations.			

- *1: Manifold structured by basic combination of 2, 3 and 5 stations.
- *2: Dimensions in () show open frame type.
- *3: The dimensions are the same for the G or NPT thread port size.

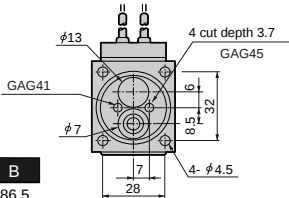
- Actuator (grommet lead wire)
GAG4**-1 to 2-0

- How to mount actuator



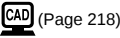
■ This machining drawing applies when using two actuators.

* Lead wire length 300 mm



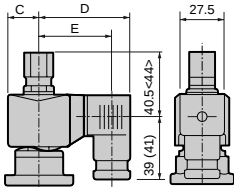
Model no.	B
GAG412/452-1 to 2	86.5
GAG413/453-1 to 2	90

Optional dimensions: GAG41*/45* Series

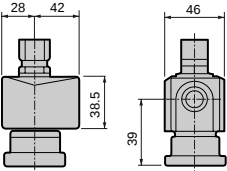


* Refer to the grommet lead wire type dimensions on the left page for the common dimensions.

- DIN terminal box
GAG4**-1 to 2-0 to 10-*



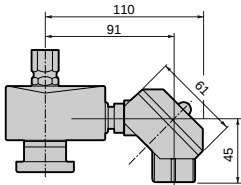
- Open frame lead wire type
GAG4**-1 to 2-0 to 10-*



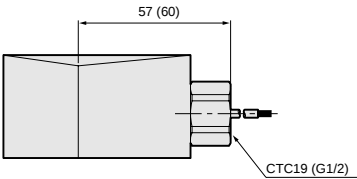
Dimensions shown in () are for the G1/2. Dimensions shown in < > are for the Rc3/8.

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

- Open frame + square terminal box
GAG4**-1 to 2-0 to 10-*

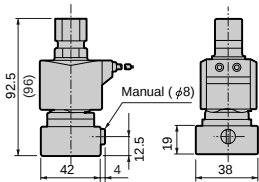


- Open frame type + conduit
GAG4**-1 to 2-0 to 10-*



Dimensions shown in () are for the G1/2.

- Manual override (locking)
GAG4**-1 to 2-0 to 10-***



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)

AG33/43 Series

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

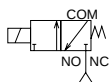


Refer to Ending 17 for more details.



JIS symbol

- AG33/43:
NC pressurization type



Common specifications

Descriptions	Standard specifications		Optional specifications	
Working fluid	Air/low vacuum (1.33 × 10 ² Pa (abs)), water, kerosene, oil (50mm ² /s or less)		Hot water	Steam
Working pressure differential range MPa	0 to 1 (Refer to max. working pressure differential on 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 ³ /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

Descriptions	Port size	Orifice (mm)		Max. working pressure diff. (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)	
				Air		Water, hot water, kerosene		Oil (50 mm²/s)			Holding		Starting		AC	DC
		Model no.	TOP	BODY	AC	DC	AC	DC	AC		DC	50Hz	60Hz	50Hz		
AG33-01-1	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	100 VAC 50/60Hz	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	110 VAC 60Hz						
	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	200 VAC 50/60Hz						
		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	220 VAC 60Hz						
AG43-02-4	Rc1/4	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	12 VDC 24 VDC 48 VDC 100 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)							
	Rc3/8	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)							
		3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)							

*1: Models above show basic port size (Rc) and orifice. Refer to How to order about other combinations.

*2: Refer to DC column for maximum working pressure differential of coil with diode.

*3: Variation of rated voltage should be within $\pm 10\%$.

*4: () shows DC DIN terminal box specifications.

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

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber		PTFE	
Coil (heat proof class)	B	H	B	H	B	H
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 cm³/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 square terminal box with light for the coil housing.

Flow characteristics

Model no.	Port size	Orifice (mm)		Flow characteristics					
				C[dm³/(s·bar)]		b		Cv flow factor	
		TOP	BODY	TOP	BODY	TOP	BODY	TOP	BODY
AG33-01-1	Rc 1/8	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
	Rc 1/4	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
AG43-02-4	Rc 1/4	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	0.40	0.31
	Rc 3/8	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	0.40	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

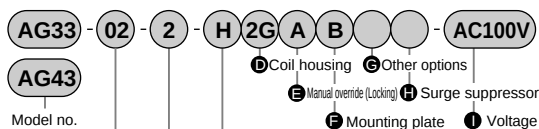
Medical analysis

Custom order

General purpose valve
Direct acting 3 port solenoid valve

AG33/43 Series

How to order



A Port size

B Orifice

C Body, sealant combination

*1

*2

*3

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

B Orifice							
AG33			AG43				
	TOP	BODY	TOP	BODY			
1	φ 1.5	φ 1.5	-	-	●		
2	φ 2.0	φ 2.0	-	-	●		
4	-	-	φ 3.0	φ 3.0			●
5	-	-	φ 3.5	φ 3.0			●

C Body, sealant combination							
	Body	Sealant	Treat	Remarks			
Blank	Std.	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		PTFE		Steam (up to 184°C *2)	●	●	●
D	Stainless steel	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
E		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●	●	●
F		PTFE		Steam (up to 184°C *2)	●	●	●
H	Option	Nitrile rubber	Oil-prohibit	Air, water, low vacuum, kerosene (up to 60°C)	●	●	
J		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●	●	●
K		PTFE		Steam (up to 184°C *2)	●	●	●
P	Stainless steel	Ethylene propylene diene rubber		Hot water (up to 90°C *2)	●	●	
L		Nitrile rubber		Air, water, low vacuum, kerosene (up to 60°C)	●	●	
M		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●	●	●
N		PTFE		Steam (up to 184°C *2)	●	●	●
R		Ethylene propylene diene rubber		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 a ● in the above table can be manufactured.

<Example 1 of model number>

AG33-02-1-AC100V

Series : AG33

A Port size : Rc1/4

B Orifice : TOP - φ 1.5, BODY - φ 1.5

C Body, sealant combination

: Body - brass, sealant - nitrile rubber

D Coil housing : Grommet lead wire

E to H : Blank

I Voltage

: 100 VAC 50/60 Hz, 110 VAC 60 Hz

<Example 2 of model number>

AG43-03-4-000ABS-AC100V

Series : AG43

A Port size : Rc3/8

B Orifice : TOP - φ 3.0, BODY - φ 3.0

C Body, sealant combination

: Body - brass, sealant - nitrile rubber

D Coil housing : Grommet lead wire

E Manual override (Locking) : Selected

F Mounting plate : With mounting plate

G Other options : Blank

H Surge suppressor : With surge suppressor

I Voltage

: 100 VAC 50/60 Hz, 110 VAC 60 Hz

▲ Note on model no. selection

Note on (C)

*1: Standard is blank, however (D), (E), (F), (G) or (H) selected, complete (C) with 0.

*2: (C): When selecting 4A, 4K, 4H

*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.)

For (D) to (I), the combinations indicated with symbols can be manufactured.
Note that if the (E) to (H) options 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	CTC 19	G 1 / 2						
Blank	Std.	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	Option	Open frame type (Heat proof class H)	A	B				G	H	S	100 VAC, 200 VAC				
3K								Lead wire	12 VDC, 24 VDC, 48 VDC, 100 VDC						
3H								Square terminal box (G1/2)	100 VAC, 200 VAC, 24 VDC, 100 VDC						
3P								Square terminal box + light (G1/2)	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC						
3Q		Square terminal box (PG5 or equivalent) (G1/2)	A	B	D	E	F				S	100 VAC, 200 VAC, 24 VDC, 100 VDC			
4A		Square terminal box + light (PG5 or equivalent) (G1/2)										100 VAC, 200 VAC, 24 VDC, 100 VDC			
4K		Lead wire										G	H	100 VAC, 200 VAC	
4H		Square terminal box (G1/2)										D	E	F	
5A	Option	Open frame type (Diode integrated)	A	B				G	H	S	100 VAC, 200 VAC				
5K								Lead wire							
5H								Square terminal box (G1/2)	D			E	F		
5P								Square terminal box + light (G1/2)							
5Q		Square terminal box (PG5 or equivalent) (G1/2)	A	B	D	E	F								
5R		Square terminal box + light (PG5 or equivalent) (G1/2)													

▲ Refer to the following precautions for (D) to (I).

Blank		● Grommet lead wire 300 mm
2E 2G 2H		● DIN terminal box
3A 4A 5A		● Open frame Grommet lead wire 300 mm ● 4A (Heat proof class H) ● 5A (Diode integrated)
3K 3H 4K 4H 5K 5H		● Open frame square terminal box ● 4K, 4H (Heat proof class H) ● 5K, 5H (Diode integrated)
3P 3Q 5P 5Q		● Open frame square terminal box (IP65 or equivalent) ● 5P, 5Q (Diode integrated)

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

▲ Note on model no. selection

Note on (D)

- *4: No symbol is indicated for the standard coil housing, but when using (E), (F), (G) or (H), indicate 00 for (D).
- *5: 5A, 5K, 5H, 5P and 5Q are coils which convert AC power to DC with a diode.
- *6: A DC coil for steam is available for AG43. Contact CKD for more information.

Note on (E) to (H)

- *7: When (C) is C, F, K or N, manual override (item E) A) is not available.
- *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 using the coil with terminal box, the surge suppressor is mounted in the terminal box.
- *10: Surge suppressor is incorporated in coil with diode and (D) 2H 24 VDC coil as standard.
- *11: Tropic care treatment (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that the tropic care treatment 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, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. However, use (D) 5A, 5K, 5H, 5P, 5Q coils only for 100 VAC 50/60 Hz, 200 VAC 50/60 Hz.
- *13: Consult with CKD about other than above voltage.
- *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.

Refer to Page 122 for Coil selection.

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

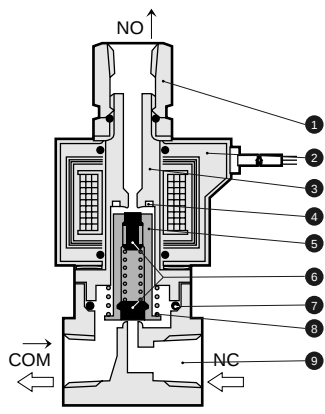
Custom order

General purpose valve

Direct acting 3 port solenoid valve

Internal structure and main parts materials

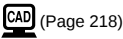
AG33/43 Series



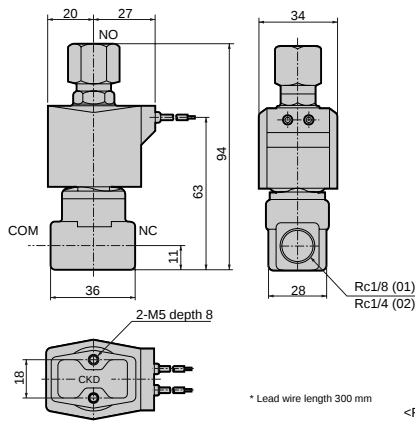
No.	Parts name	Material
1	Socket tightening torque	C3604 (SUS303) Brass (stainless steel)
2	Coil	—
3	Core assembly	SUS405 or equivalent, 316L, 403 ^{*1} Stainless steel
4	Shading coil	Cu (Ag when stainless steel body) [*] Copper (Silver when stainless steel body)
5	Plunger	SUS405 or equivalent [*] Stainless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

^{*1}: When the body and sealant combination symbol is no symbol or other than H, the material is SUS405 or equivalent, 316L, 430.
^{*2}: () shows options.

Dimensions: AG33 Series



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



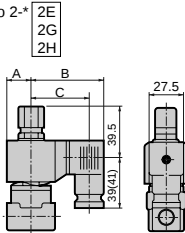
<References> This is dedicated for NC port pressurizing as shown with the flow of JIS symbols.
Pressure cannot be applied from other connection ports.
When de-energized : COM → NO
When energized : NC → COM
Note 1: The dimensions are the same for the G or NPT thread port size.

Optional dimensions: AG33 Series

 (Page 218)

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

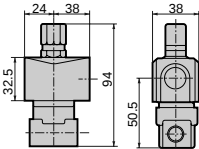
- DIN terminal box
AG33-01/02-1 to 2-*



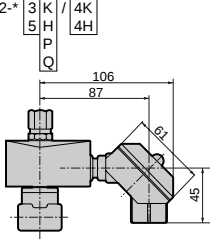
Dimensions shown in () are for the G1/2.

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

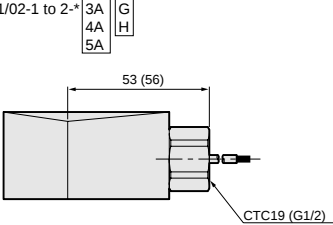
- Open frame lead wire type
AG33-01/02-1 to 2-*



- Open frame + square terminal box
AG33-01/02-1 to 2-*

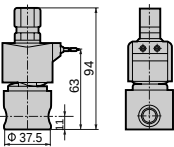


- Open frame type + conduit
AG33-01/02-1 to 2-*

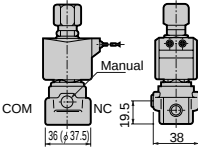


Dimensions shown in () are for the G1/2.

- Stainless steel body
AG33-01/02-1 to 2-*/D/E/F/R/L/M/N/

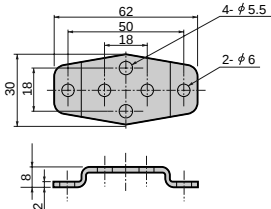


- Manual override (locking)
AG33-01/02-1 to 2-*/A/
- The illustration shows the brass body.



Dimensions shown in () are for the stainless steel body.

- Mounting plate
AG33-01/02-1 to 2-*/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

CVE/CVSE

CPE/CPD

Medical analysis

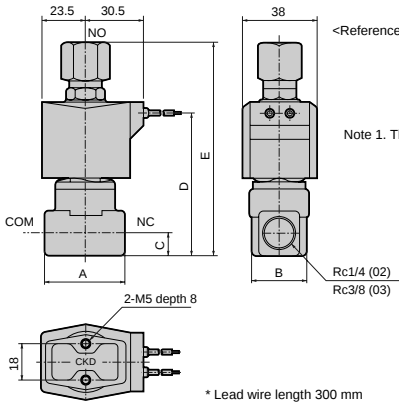
Custom order

General purpose valve
Direct acting 3 port solenoid valve

Dimensions: AG43 Series

 (Page 218)

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

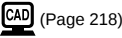


<References> Arrows of JIS symbol show either three ports can be pressurized, and generally two orifice (TOP, BODY) are same values and rated pressure.
Pressure cannot be applied from other connection ports.
When de-energized: COM → NO
When energized : NC → COM

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

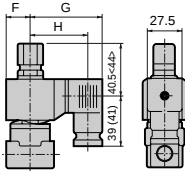
Model no.	A	B	C	D	E
AG43-02-4 to 5	36	28	11	68	99.5
AG43-03-4 to 5	40	28	12	71	106

Optional dimensions: AG43 Series



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

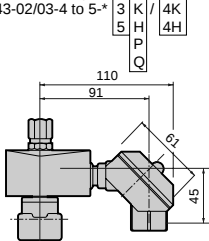
- DIN terminal box
AG43-02/03-4 to 5-*



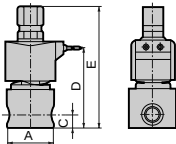
Dimensions shown in < > are for the Rc3/8. Dimensions shown in () are for the G1/2.

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

- Open frame + square terminal box
AG43-02/03-4 to 5-*

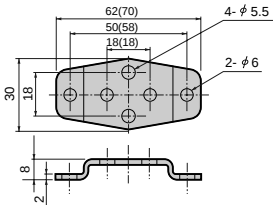


- Stainless steel body
AG43-02/03-4 to 5-*



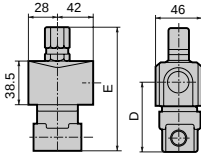
Model no.	A	C	D	E
AG43-02-4 to 5-*	Φ 37.5	11	68	99.5
AG43-03-4 to 5-*	Φ 45	12	71	106

- Mounting plate
AG43-02/03-4 to 5-***



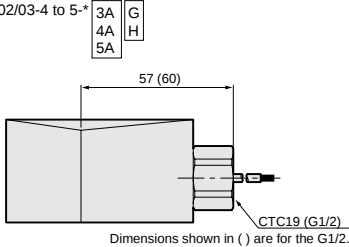
Dimensions in () show value of No.2 mounting plate.

- Open frame lead wire type
AG43-02/03-4 to 5-*



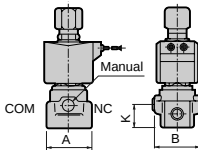
Model no.	D	E
AG43-02-4 to 5-**A	52.0	99.5
AG43-03-4 to 5-**A	55.0	106

- Open frame type + conduit
AG43-02/03-4 to 5-*



- Manual override (locking)
AG43-02/03-4 to 5-***

The illustration shows the brass body.



Model no.	A	B	K
AG43-02-4 to 5-***A	36 (φ37.5)	38	19.5
AG43-03-4 to 5-***A	40 (φ45.0)	40	22.5

Dimensions shown in () are for the stainless steel body.

Code	Model
Mounting plate No. 1 GE-100106	● AG43-02/03-4 to 5 Series ● Stainless steel body AG43-02-4 to 5-*
Mounting plate No. 2 GE-100159	● Stainless steel body AG43-03-4 to 5-*

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/actuator
(general purpose valve)

GAG33*/GAG43* Series

- NC pressurization type
- Common supply, individual exhaust type

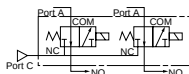


Refer to Ending 17 for more details.



JIS symbol

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



Common specifications

Descriptions	Standard specifications		Optional specifications	
Working fluid	Air/low vacuum (1.33 x 10 ⁵ Pa (abs)), water, kerosene, oil (50mm ² /s or less)		Hot water	Steam
Working pressure differential range MPa	0 to 1 (Refer to max. working pressure differential on 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 ³ /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

Descriptions	NO Port Port Size	Orifice (mm)		Max. working pressure diff. (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)	
				Air		Water, hot water, kerosene		Oil (50 mm ² /s)			Holding		Starting		AC	DC
		TOP	BODY	AC	DC	AC	DC	AC	DC		50Hz	60Hz	50Hz	60Hz	50/60Hz	
GAG331-1	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	100 VAC 50/60Hz	14	11	20	16	6/4.2	11 (8.1)
-2		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	110 VAC 60Hz						
GAG332-1	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	200 VAC 50/60Hz	22	17	35	27	8.3/6.2	11 (10.4)
-2		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	120 VAC 60Hz						
GAG432-4	Rc1/4	3.0	3.0	0.7 (0.55)	0.7 (0.55)	0.7 (0.55)	0.7 (0.55)	0.7 (0.55)	0.7 (0.55)	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)
-5		3.5	3.0	0.4 (0.25)	0.4 (0.25)	0.4 (0.25)	0.4 (0.25)	0.4 (0.25)	0.4 (0.25)							
GAG433-4	Rc3/8	3.0	3.0	0.7 (0.55)	0.7 (0.55)	0.7 (0.55)	0.7 (0.55)	0.7 (0.55)	0.7 (0.55)	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)
-5		3.5	3.0	0.4 (0.25)	0.4 (0.25)	0.4 (0.25)	0.4 (0.25)	0.4 (0.25)	0.4 (0.25)							

*1: Models above show basic NO port size (Rc) and orifice. Refer to How to order about other combinations.

*2: For the port A and port C size, refer to How to order (page 194) and the dimensions (page 198).

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

*4: Values in () apply when using the DC voltage with DIN terminal box.

*5: Keep the voltage fluctuation to within $\pm 10\%$ of the rated voltage.

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

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber		PTFE	
Coil (heat proof class)	B	H	B	H	B	H
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 ³ /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 square terminal box with light for the coil housing.

Flow characteristics

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

*1: Effective 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

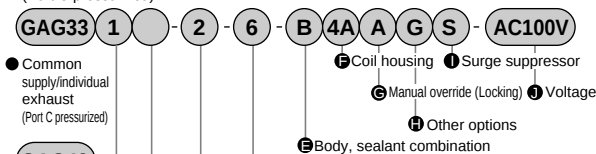
General purpose valve

Direct acting 3 port solenoid valve

GAG33*/43*Series

How to order

- Common supply/individual exhaust (Port C pressurized)



GAG43

Model no.

A NO port size

B Type of screw

C Orifice

D Station no.
*2

<Example 1 of model number>

GAG331-1-4-AC200V

Series: GAG331 (common supply/individual exhaust type C port pressurization)

- A** NO port size : 1/8
- B** Type of thread : Rc
- C** Orifice : TOP - ϕ 1.5, BODY - ϕ 1.5
- D** Station no. : 4 stations
- E** Body, sealant combination
: Body - brass, sealant - nitrile rubber
- F** Coil housing : Grommet lead wire
- G** to **I**: Blank
- J** Rated voltage
: 200 VAC 50/60 Hz, 220 VAC 60 Hz

<Example 2 of model number>

GAG332G-2-7-000AS-AC200V

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

- A** NO port size : 1/4
- B** Type of thread : G
- C** Orifice : TOP - ϕ 2.0, BODY - ϕ 2.0
- D** Station no. : 7 stations
- E** Body, sealant combination
: Body - brass, sealant - nitrile rubber
- F** Coil housing : Grommet lead wire
- G** Manual override (locking) : Selected
- H** Other options : Blank
- I** Surge suppressor : With surge suppressor
- J** Rated voltage
: 200 VAC 50/60 Hz, 220 VAC 60 Hz

		Model no.	
		GAG33*	GAG43*
Symbol	Descriptions		
A NO port size			
1	1 / 8	●	
2	1 / 4	●	●
3	3 / 8		●
B Type of screw			
Blank	Rc	●	●
G	G	●	●
N	NPT	●	●
C Orifice			
		GAG33*	
	TOP	BODY	
1	ϕ 1.5	ϕ 1.5	●
2	ϕ 2.0	ϕ 2.0	●
4	-	-	●
5	-	-	●
D Station no.			
2	2 stations to 10 stations	●	●
10	10 stations		
0	Actuator only	●	●
E Body, sealant combination			
	Body	Sealant	Treat
			Remarks
Blank	Std.	Nitrile rubber	Air, water, low vacuum, kerosene (up to 60°C)
B	Brass	Fluoro rubber	Air, low vacuum, kerosene (up to 90°C *4)
C		PTFE	Steam (up to 184°C *4)
D	Stainless steel	Nitrile rubber	Air, water, low vacuum, kerosene (up to 60°C)
E		Fluoro rubber	Air, low vacuum, kerosene (up to 90°C *4)
F		PTFE	Steam (up to 184°C *4)
H	Option	Nitrile rubber	Air, water, low vacuum, kerosene (up to 60°C)
J	Brass	Fluoro rubber	Air, low vacuum, kerosene (up to 90°C *4)
K		PTFE	Steam (up to 184°C *4)
P		Ethylene propylene diene rubber	Hot water (up to 90°C *4)
L	Stainless steel	Nitrile rubber	Air, water, low vacuum, kerosene (up to 60°C)
M		Fluoro rubber	Air, low vacuum, kerosene (up to 90°C *4)
N		PTFE	Steam (up to 184°C *4)
R		Ethylene propylene diene rubber	Hot water (up to 90°C *4)

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 a ● in the above table can be manufactured.

▲ Note on model no. selection

*1: Discrete masking plate and sub-plate are available.

Note on (D) to (E)

*2: Consult with CKD about more than 11 stations manifold.

*3: Standard is blank, however (F), (G), (H) or (I) selected, complete (E) with 0.

*4: (E): When selecting 4A, 4K, 4H

*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 the (G) to (I) options 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	G 1/2									
Blank	Std	Grommet lead wire			A							S	100 VAC, 200 VAC					
2E	Option	Open frame type	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		100 VAC, 200 VAC													
3K	Option		Open frame type	Square terminal box (G1/2)		A	G						H	S	12 VDC, 24 VDC, 48 VDC, 100 VDC			
3H		Square terminal box + light (G1/2)		100 VAC, 200 VAC, 24 VDC, 100 VDC														
3P		Square terminal box (IP65 or equivalent) (G1/2)		100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC														
3Q		Square terminal box + light (IP65 or equivalent) (G1/2)		100 VAC, 200 VAC, 24 VDC, 100 VDC														
4A	Option	Open frame type (Heat proof class H)		Lead wire		A	G						H	S	100 VAC, 200 VAC			
4K			Square terminal box (G1/2)															
4H			Square terminal box + light (G1/2)															
5A			Lead wire															
5K	Option		Open frame type (Diode integrated)	Square terminal box (G1/2)		A	G						H		100 VAC, 200 VAC			
5H		Square terminal box + light (G1/2)																
5P		Square terminal box (IP65 or equivalent) (G1/2)																
5Q		Square 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 Grommet lead wire 300 mm ● 4A (Heat proof class H) ● 5A (Diode integrated)
3K 3H 4H 5K 5H		● Open frame square terminal box ● 4K, 4H (Heat proof class H) ● 5K, 5H (Diode integrated)
3P 5P 5Q		● Open frame square terminal box (IP65 or equivalent) ● 5P, 5Q (Diode integrated)

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

Note on model no. selection

Note on (F)

- *6: No symbol is indicated for the standard coil housing, but when using (G), (H) or (I), indicate 00 for (F).
- *7: 5A, 5K, 5H, 5P and 5Q are coils which convert AC power 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, manual override (item G) A) is not available.
- *10: Select one among D, E, F, G and H for (H).
- *11: The surge suppressor is an accessory for the lead wire coil. When using the coil with terminal box, the surge suppressor is mounted in the terminal box.
- *12: Surge suppressor is incorporated in coil with diode and (F) 2H 24 VDC coil as standard.
- *13: Tropic care treatment (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that the tropic care treatment 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, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. However, use (F) 5A, 5K, 5H, 5P, 5Q coils only for 100 VAC 50/60 Hz, 200 VAC 50/60 Hz.
- *15: Consult with CKD about other than above voltage.
- *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.

Refer to Page 122 for Coil selection.

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

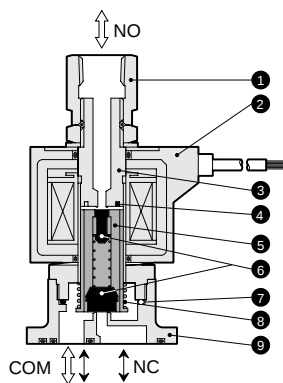
Custom order

General purpose valve

Direct acting 3 port solenoid valve

Internal structure and main parts materials

● GAG33*/GAG43* Series actuator

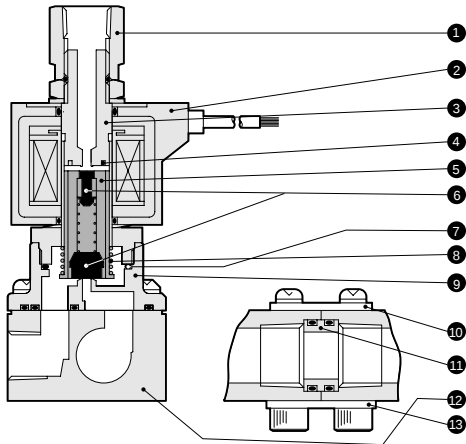


No.	Parts name	Material
1	Socket tightening torque	C3604 (SUS303) Brass (stainless steel)
2	Coil	— —
3	Core assembly	SUS405 or equivalent, 316L, 403 *1 Stainless steel
4	Shading coil	Cu (Ag when stainless steel body) * Copper (Silver when stainless steel body)
5	Plunger	SUS405 or equivalent Stainless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

*1: When the body and sealant combination symbol is no symbol or other than H, the material is SUS405 or equivalent, 316L, 430.
*2: () shows options.

Internal structure and main parts materials

● GAG33*/GAG43* manifold



No.	Parts name	Material	
1	Socket tightening torque	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 when stainless steel body)
5	Plunger	SUS405 or equivalent	Stainless steel
6	Sealing	NBR (FKM/EPDM/PTFE)	NBR: Nitrile rubber FKM: Fluoro rubber EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin
7	O ring	NBR (FKM/EPDM/PTFE) (AS568/019)	
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771 (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 and sealant combination symbol is no symbol or other than H, the material is SUS405 or equivalent, 316L, 430.

*2: () shows options.

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

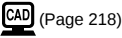
CPE/
CPD

Medical
analysis

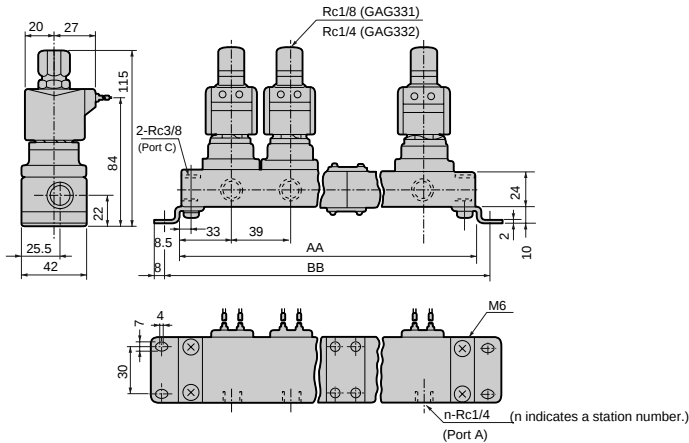
Custom
order

General purpose valve
Direct acting 3 port solenoid valve

Dimensions: GAG331/GAG332 Series



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

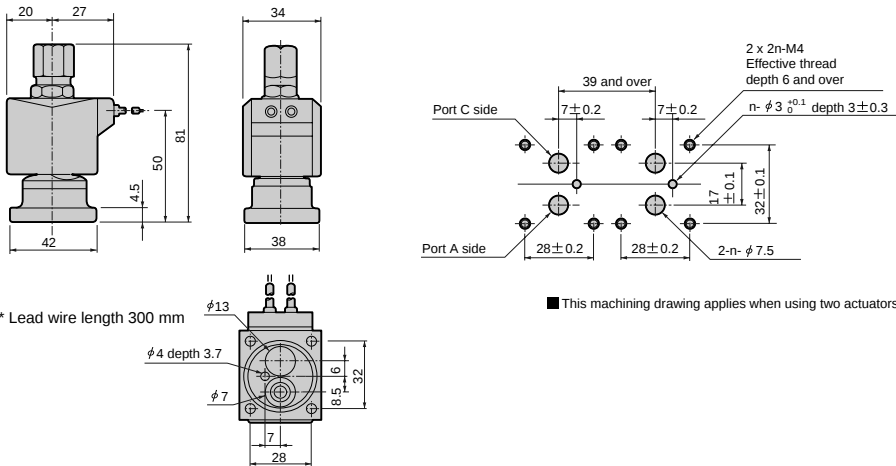


Station number	AA	BB	Manifold structure	Station number	AA	BB	Manifold structure
2	106	122	2 stations x 1	7	329	345	5 stations + 2 stations
3	145	161	3 stations x 1	8	368	384	5 stations + 3 stations
4	212	228	2 stations x 2	9	435	451	3 stations x 3
5	223	239	5 stations x 1	10	446	462	5 stations x 2
6	290	306	3 stations x 2	Consult with CKD about more than 11 stations.			

*1: Manifold structured by basic combination of 2, 3 and 5 stations.
*2: The dimensions are the same for the G or NPT thread port size.

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

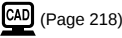
- How to mount actuator



* Lead wire length 300 mm

■ This machining drawing applies when using two actuators.

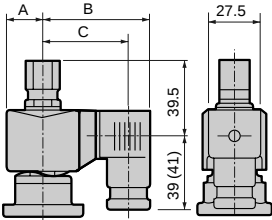
Optional dimensions: GAG331/GAG332 Series



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

- DIN terminal box
GAG33*-1 to 2-0 to 10-*

2E
2G
2H

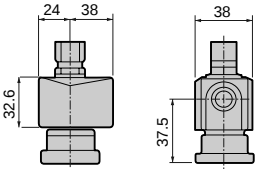


Dimensions shown in () are for the G1/2.

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

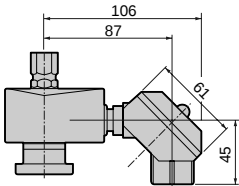
- Open frame lead wire type
GAG33*-1 to 2-0 to 10-*

3A
4A
5A



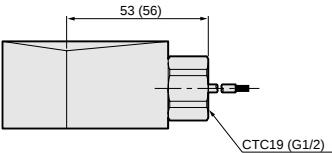
- Open frame type + square terminal box
GAG33*-1 to 2-0 to 10-*

3K	4K
5H	4H
P	
Q	



- Open frame type + conduit
GAG33*-1 to 2-0 to 10-*

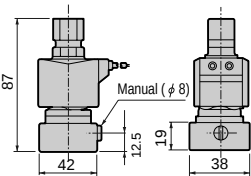
3A	G
4A	H
5A	



Dimensions shown in () are for the G1/2.

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

A



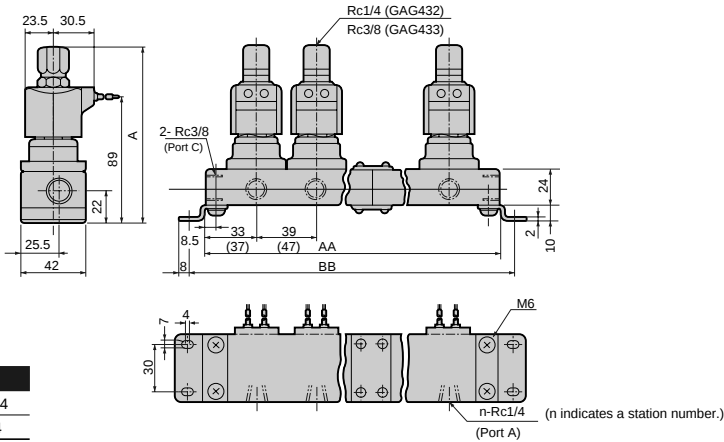
General purpose valve
Direct acting 3 port solenoid valve

GAG33*/43*Series

Dimensions: GAG432/GAG433 Series



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



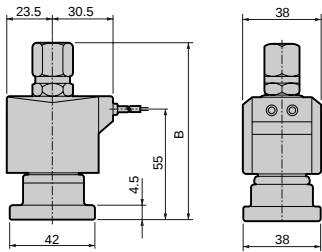
Model no.	A
GAG432-4 to 5	120.4
GAG433-4 to 5	124

Station number	AA	BB	Manifold structure	Station number	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 11 stations.			

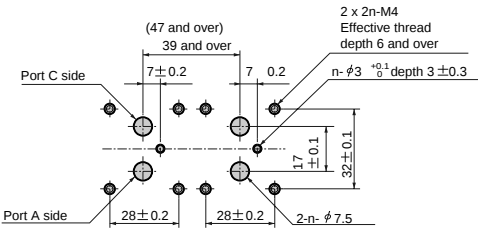
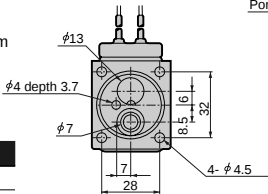
*1: Manifold structured by basic combination of 2, 3 and 5 stations.
*2: Dimensions in () show open frame type.
*3: The dimensions are the same for the G or NPT thread port size.

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

- How to mount actuator



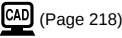
* Lead wire length 300 mm



■ This machining drawing applies when using two actuators.

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

Optional dimensions: GAG432/GAG433 Series



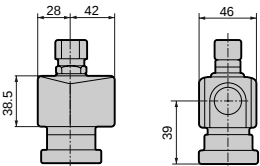
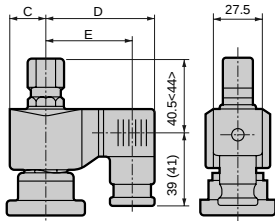
* Refer to the grommet lead wire type dimensions on the left page for the common dimensions.

- DIN terminal box
GAG43*-4 to 5-0 to 10-*

2E
2G
2H

- Open frame lead wire type
GAG43*-4 to 5-0 to 10-*

3A
4A
5A



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

Dimensions shown in () are for the G1/2.

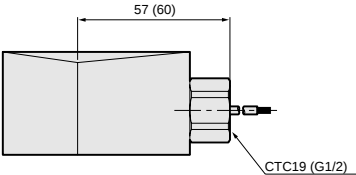
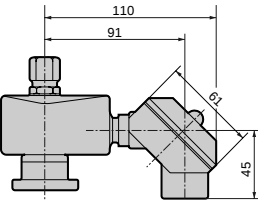
Voltage	C	D	E
AC	23.5	65.5	54 (53.5)
DC	23.5	66	54.5 (54)

- Open frame type + square terminal box
GAG43*-4 to 5-0 to 10-*

3 K	4 K
5 H	4 H
P	
Q	

- Open frame type + conduit
GAG43*-4 to 5-0 to 10-*

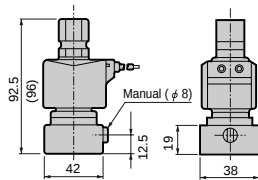
3A	G
4A	H
5A	



Dimensions shown in () are for the G1/2.

- Manual override (locking)
GAG43*-4 to 5-0 to 10-***

A



Dimension in () show value of 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

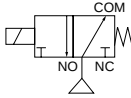


Refer to Ending 17 for more details.



JIS symbol

- AG34/44:
NO pressurization type



Common specifications

Descriptions	Standard specifications		Optional specifications	
Working fluid	Air/low vacuum (1.33 x 10 ³ Pa (abs)), water, kerosene, oil (50mm ² /s or less)			Hot water
Working pressure differential range MPa	0 to 1.5 (Refer to max. working pressure differential on 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 ³ /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

Descriptions	Port size	Orifice (mm)		Max. working pressure diff. (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)	
Model no.				Air		Water, hot water, kerosene		Oil (50 mm²/s)			Holding		Starting		AC	DC
		TOP	BODY	AC	DC	AC	DC	AC	DC		50Hz	60Hz	50Hz	60Hz	50/60Hz	DC
AG34-01-1	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	100 VAC 50/60Hz	14	11	20	16	6/4.2	11 (8.1)
-01-2		2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2							
-02-1	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	110 VAC 60Hz						
-02-2		2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2	200 VAC 50/60Hz						
AG44-02-1	Rc1/4	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	220 VAC 60Hz	22	17	35	27	8.3/6.2	11 (10.4)
-02-3		2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45	12 VDC 24 VDC 48 VDC 100 VDC						
-02-4	3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)								
-03-1	Rc3/8	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45							
-03-3		2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45							
-03-4		3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)							

*1: Models above show basic port size (Rc) and orifice. Refer to How to order about other combinations.

*2: Refer to DC column for maximum working pressure differential of coil with diode.

*3: Variation of rated voltage should be within $\pm 10\%$.

*4: () shows the value of DIN terminal box and DC voltage specifications.

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

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber	
Coil (heat proof class)	B	H	B	H
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 ³ /min. (ANR)	0.2 or less (air)			

Note 1: No freezing

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

Flow characteristics

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

*1: Effective 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

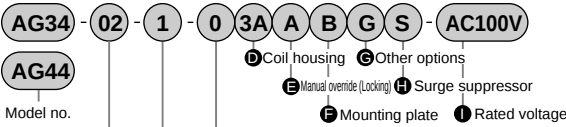
Medical analysis

Custom order

General purpose valve
Direct acting 3 port solenoid valve

AG34/44 Series

How to order



A Port size

B Orifice

C Body, sealant combination
 *1
 *2
 *3
 *4

Model no.	
AG34	AG44

Symbol	Descriptions	Symbol	Descriptions	Symbol	Descriptions
A Port size					
01	Rc 1 / 8	1G	G 1 / 8	1N	NPT 1 / 8
02	Rc 1 / 4	2G	G 1 / 4	2N	NPT 1 / 4
03	Rc 3 / 8	3G	G 3 / 8	3N	NPT 3 / 8

B Orifice					
AG34			AG44		
	TOP	BODY	TOP	BODY	
1	φ 1.5	φ 1.5	φ 2.0	φ 2.0	●
2	φ 2.0	φ 2.0	-	-	●
3	-	-	φ 2.0	φ 3.0	●
4	-	-	φ 3.0	φ 3.0	●

C Body, sealant combination					
Blank	Body	Sealant	Treat	Remarks	
B D E H J P L M R	Brass	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●
		Fluoro rubber		Air, 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)	●
J P L M R	Stainless steel	Nitrile rubber	Oil-prohibit	Air, water, low vacuum, kerosene (up to 60°C)	●
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●
		Ethylene propylene diene rubber		Hot water (up to 90°C *2)	●
		Nitrile rubber		Air, water, low vacuum, kerosene (up to 60°C)	●
M R	Stainless steel	Fluoro rubber		Air, low vacuum, kerosene (up to 90°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.

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

The combinations indicated with a ● in the above table can be manufactured.

<Example 1 of model number>

AG34-1G-1-AC100V

Series: AG34

- A Port size : G 1/8
- B Orifice : TOP - φ 1.5, BODY - φ 1.5
- C Body, sealant combination : Body - brass, sealant - nitrile rubber
- D Coil housing : Grommet lead wire
- E to H : Blank
- I Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

<Example 2 of model number>

AG44-03-4-000ABS-AC100V

Series: AG44

- A Port size : Rc3/8
- B Orifice : TOP - φ 3.0, BODY - φ 3.0
- C Body, sealant combination : Body - brass, sealant - nitrile rubber
- D Coil housing : Grommet lead wire
- E Manual override (Locking) : Selected
- F Mounting plate : With mounting plate
- G Other options : Blank
- H Surge suppressor : With surge suppressor
- I Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

▲ Note on model no. selection

Note on (C)

- *1: Standard is blank, however (D), (E), (F), (G) or (H) selected, complete (C) with 0.
- *2: (C): When selecting 4A, 4K, 4H
- *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 when nitrile rubber is selected for the sealant, the NO side sealant is fluoro rubber.

For (D) to (I), the combinations indicated with symbols can be manufactured.
Note that if the (E) to (H) options 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 (Marine cable gland)			Conduit (Conduit pipe)		Surge suppressor		Descriptions	
						A-15a	A-15b	A-15c	CTC 19	G 1 / 2				
Blank	Std.	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	Option	Open frame type (Heat proof class H)	Lead wire	A	B				G	H	S	100 VAC, 200 VAC		
3K			Square terminal box (G1/2)						12 VDC, 24 VDC, 48 VDC, 100 VDC					
3H			Square terminal box + light (G1/2)						100 VAC, 200 VAC, 24 VDC, 100 VDC					
3P			Square terminal box (PG5 or equivalent) (G1/2)						100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC					
3Q			Square terminal box + light (PG5 or equivalent) (G1/2)						100 VAC, 200 VAC, 24 VDC, 100 VDC					
4A	Option	Open frame type (Heat proof class H)	Lead wire	A	B				G	H	S	100 VAC, 200 VAC		
4K			Square terminal box (G1/2)											
4H			Square terminal box + light (G1/2)											
5A			Lead wire											
5K	Option	Open frame type (Diode integrated)	Square terminal box (G1/2)	A	B				G	H		100 VAC, 200 VAC		
5H			Square terminal box + light (G1/2)											
5P			Square terminal box (PG5 or equivalent) (G1/2)											
5Q			Square terminal box + light (PG5 or equivalent) (G1/2)											

Refer to the following precautions for (D) to (I).

Blank		● Grommet lead wire 300 mm
2E 2G 2H		● DIN terminal box
3A 4A 5A		● Open frame Grommet lead wire 300 mm ● 4A (Heat proof class H) ● 5A (Diode integrated)
3K 3H 4K 4H 5K 5H		● Open frame square terminal box ● 4K, 4H (Heat proof class H) ● 5K, 5H (Diode integrated)
3P 3Q 5P 5Q		● Open frame square terminal box (IP65 or equivalent) ● 5P, 5Q (Diode integrated)

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

Note on model no. selection

Note on (D)

- *5: No symbol is indicated for the standard coil housing, but when using (E), (F), (G) or (H), indicate 00 for (G).
- *6: 5A, 5K, 5H, 5P and 5Q are coils which convert AC power to DC with a diode.
- *7: A DC coil of for steam is available for at AG44, so consult with CKD.

Note on (E) to (H)

- *8: Select one among D, E, F, G, H for (G).
- *9: The surge suppressor is an accessory for the lead wire coil. When using the coil with terminal box, the surge suppressor is mounted in the terminal box.
- *10: Surge suppressor is incorporated in coil with diode and (D) 2H 24 VDC coil as standard.
- *11: Tropic care treatment (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that the tropic care treatment 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, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. However, use (D) 5A, 5K, 5H, 5P, 5Q coils only for 100 VAC 50/60 Hz, 200 VAC 50/60 Hz.
- *13: Consult with CKD about other than above voltage.
- *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.

Refer to Page 122 for Coil selection.

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

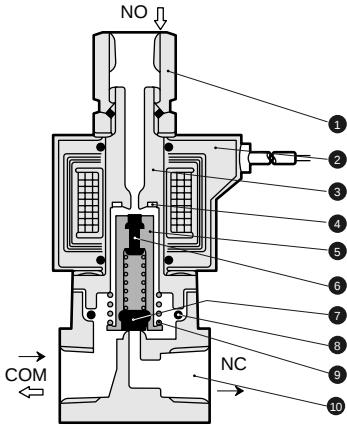
Custom order

General purpose valve

Direct acting 3 port solenoid valve

Internal structure and main parts materials

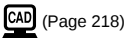
● AG34/AG44 Series



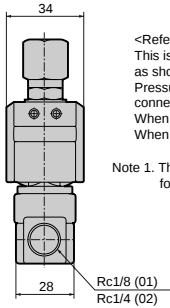
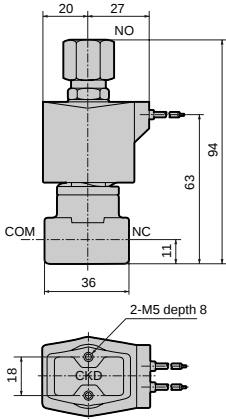
No.	Parts name	Material
1	Socket	C3604 (SUS303) Brass (stainless steel)
2	Coil	—
3	Core assembly	SUS405 or equivalent, 316L, 403 *1, Stainless steel
4	Shading coil	Cu (Ag when stainless steel body) * Copper (Silver when stainless steel body)
5	Plunger	SUS405 or equivalent * Stainless steel
6	NO valve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

*1: When the body and sealant combination symbol is no symbol or other than H, the material is SUS405 or equivalent, 316L, 430.
*2: () shows options.

Dimensions: AG34 Series



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



<References>
This is dedicated for NO port pressurizing as shown with the flow of JIS symbols. Pressure cannot be applied from other connection ports.
When de-energized: NO → COM
When energized: COM → NC

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

* Lead wire length 300 mm

Optional dimensions: AG34 Series

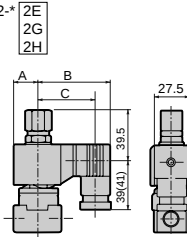


(Page 218)

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

● DIN terminal box

AG34-01/02-1 to 2-*

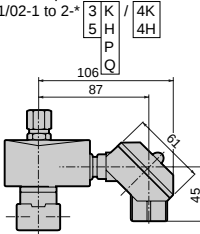


Dimensions shown in () are for the G1/2.

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

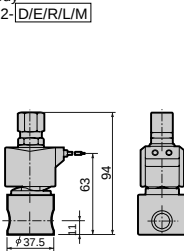
● Open frame + square terminal box

AG34-01/02-1 to 2-*



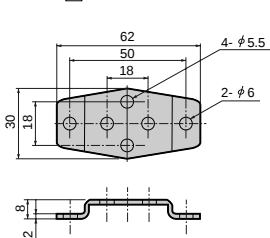
● Stainless steel body

AG34-01/02-1 to 2-***



● Mounting plate

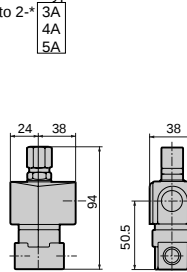
AG34-01/02-1 to 2-***



Mounting plate No.1 GE-100106

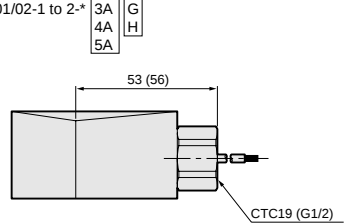
● Open frame lead wire type

AG34-01/02-1 to 2-*



● Open frame type + conduit

AG34-01/02-1 to 2-*

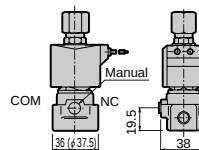


Dimensions shown in () are for the G1/2.

● Manual override (locking)

AG34-01/02-1 to 2-***

The illustration shows the brass body.



Dimensions shown in () are for the 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

CVE/CVSE

CPE/CPD

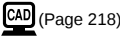
Medical analysis

Custom order

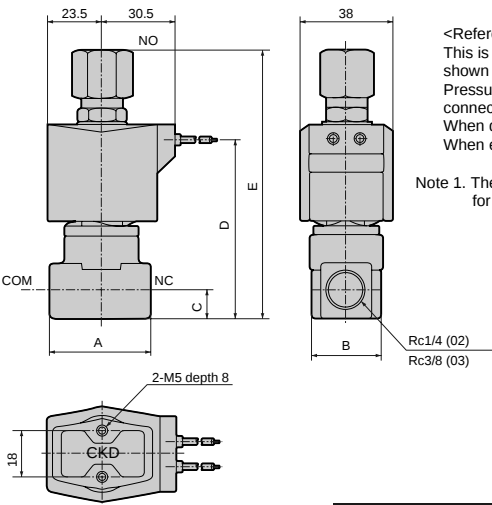
General purpose valve

Direct acting 3 port solenoid valve

Dimensions: AG44 Series



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



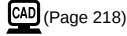
<References>
This is dedicated for NO port pressurizing as shown with the flow of JIS symbols.
Pressure cannot be applied from other connection ports.
When de-energized: NO → COM
When energized: COM → NC

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

* Lead wire length 300 mm

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

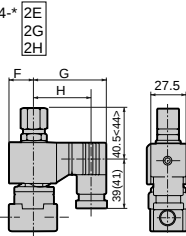
Optional dimensions: AG44 Series



(Page 218)

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

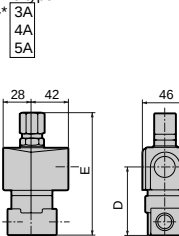
- DIN terminal box
AG44-02/03-1/3/4-*



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

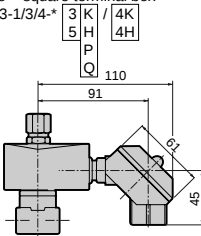
Voltage	F	G	H
AC	23.5	65.5	54 (53.5)
DC	23.5	66	54.5 (54)

- Open frame lead wire type
AG44-02/03-1/3/4-*

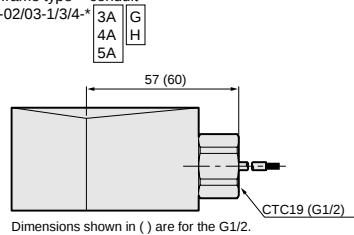


Model no.	D	E
AG44-02-1 to 4-***A	52.0	99.5
AG44-03-1 to 4-***A	55.0	106

- Open frame + square terminal box
AG44-02/03-1/3/4-*

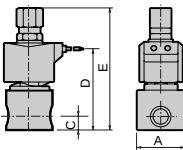


- Open frame type + conduit
AG44-02/03-1/3/4-*



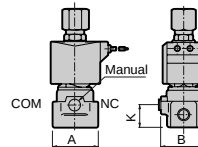
Dimensions shown in () are for the G1/2.

- Stainless steel body
AG44-02/03-1 to 4-D/E/L/M/R



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

The illustration shows the brass body.

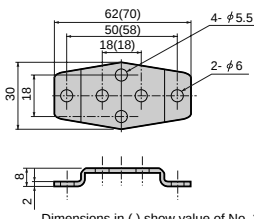


Model no.	A	C	D	E
AG44-02-1 to 4-***	φ37.5	11	68	99.5
AG44-03-1 to 4-***	φ45	12	71	106

Model no.	A	B	K
AG44-02-1 to 4-***A	36 (φ37.5)	38	19.5
AG44-03-1 to 4-***A	40 (φ45.0)	40	22.5

Dimensions shown in () are for the stainless steel body.

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



Code	Model
Mounting plate No. 1	● AG44-02/03-1 to 4 Series
GE-100106	● Stainless steel body AG44-02-1 to 4-D/E/L/M/R
Mounting plate No. 2	● Stainless steel body AG44-03-1 to 4-D/E/L/M/R
GE-100159	

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



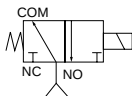
Refer to Ending 17 for more details.



JIS symbol

● GAG34*/44*:

NO pressurization type



Common specifications

Descriptions	Standard specifications	Optional specifications
Working fluid	Air/low vacuum (1.33×10^5 Pa (abs)), water, kerosene, oil (50mm ² /s or less)	Hot water
Working pressure differential range MPa	0 to 1.5 (Refer to max. working pressure differential on 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 cm ³ /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

Descriptions Model no.	NO Port Port size	Orifice (mm)		Max. working pressure diff. (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)	
				Air		Water, hot water, kerosene		Oil (50 mm²/s)			Holding		Starting		AC	DC
		TOP	BODY	AC	DC	AC	DC	AC	DC		50Hz	60Hz	50Hz	60Hz	50/60Hz	
GAG341-1	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	100 VAC 50/60Hz	14	11	20	16	6/4.2	11 (8.1)
-2		2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2							
GAG342-1	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	110 VAC 60Hz						
-2		2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2							
GAG442-1	Rc1/4	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	200 VAC 50/60Hz 220 VAC 60Hz	22	17	35	27	8.3/6.2	11 (10.4)
-3		2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45							
-4		3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)							
GAG443-1	Rc3/8	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	12 VDC 24 VDC 48 VDC 100 VDC						
-3		2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45							
-4		3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)							

*1: Models above show basic NO port size (Rc) and orifice. Refer to How to order about other combinations.

*2: Refer to DC column for maximum working pressure differential of coil with diode.

*3: Variation of rated voltage should be within $\pm 10\%$.

*4: () shows the value of DIN terminal box and DC voltage specifications.

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

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber	
Coil (heat proof class)	B	H	B	H
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 cm³/min. (ANR)	0.2 or less (air)			

Note 1: No freezing
Note 2: The range is -20 to 80 °C when using the square terminal box with light for the coil housing.

Flow characteristics

Model no.	Port size	Orifice (mm)		Flow characteristics					
		TOP	BODY	C[dm³/(s·bar)]		b		Cv flow factor	
				TOP	BODY	TOP	BODY	TOP	BODY
GAG341-1	Rc 1/8	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
GAG342-1	Rc 1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
GAG442-1	Rc 1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-3		2.0	3.0	0.53	1.1	0.54	0.52	0.15	0.31
-4		3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31
GAG443-1	Rc 3/8	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-3		2.0	3.0	0.53	1.1	0.54	0.52	0.15	0.31
-4		3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31

*1: Effective 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

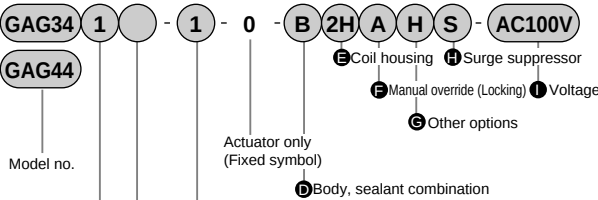
Medical analysis

Custom order

General purpose valve
Direct acting 3 port solenoid valve

GAG34*/I44* Series

How to order



A NO port size

B Type of screw

C Orifice

<Example 1 of model number>

GAG341-1-0-AC200V

Series: GAG341

A NO port size : 1/8

B Type of thread : Rc

C Orifice : TOP - ϕ 1.5, BODY - ϕ 1.5

D Body, sealant combination

: Body - brass, sealant - nitrile rubber

E Coil housing : Grommet lead wire

F to H : Blank

I Rated voltage

: 200 VAC 50/60 Hz, 220 VAC 60 Hz

<Example 2 of model number>

GAG342G-2-0-000AS-AC200V

Series: GAG342

A NO port size : 1/4

B Type of thread : G

C Orifice : TOP - ϕ 2.0, BODY - ϕ 2.0

D Body, sealant combination

: Body - brass, sealant - nitrile rubber

E Coil housing : Grommet lead wire

F Manual override (locking) : Selected

G Other options : Blank

H Surge suppressor : With surge suppressor

I Rated voltage

: 200 VAC 50/60 Hz, 220 VAC 60 Hz

Model no.

GAG34*GAG44*

Symbol	Descriptions		
A NO port size			
1	1 / 8	●	
2	1 / 4	●	●
3	3 / 8		●

B Type of screw			
Blank	Rc	●	●
G		●	●
N	NPT	●	●

C Orifice						
	GAG34*		GAG44*			
	TOP	BODY	TOP	BODY		
1	φ 1.5	φ 1.5	φ 2.0	φ 2.0	●	●
2	φ 2.0	φ 2.0	-	-	●	
3	-	-	φ 2.0	φ 3.0		●
4	-	-	φ 3.0	φ 3.0		●

D Body, sealant combination						
	Std.	Body	Sealant	Treat	Remarks	
Blank	Stainless steel	Brass	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-prohibit	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		Stainless steel	Nitrile rubber		Air, water, low vacuum, kerosene (up to 60°C)	●
M			Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *2)	●
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 a ● in the above table can be manufactured.

Note on model no. selection

Note on (D)

*1: Standard is blank, however (E), (F), (G) or (H) selected, complete (C) with 0.

*2: (D): When selecting 4A, 4K, 4H

*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 the (F) to (H) options are not required, no symbol is indicated.

E Coil housing			F	G Other options					H	I Rated voltage	
Descriptions			Manual override (Locking)	Cable gland (Marine cable gland)			Conduit (Conduit pipe)		Surge suppressor	Descriptions	
				A-15a	A-15b	A-15c	CTC 19	G 1 / 2			
Blank	Std	Grommet lead wire		A					S	100 VAC, 200 VAC	
2E	Option	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		Open frame type type (Heat proof class H)					G	H	100 VAC, 200 VAC		
3K									12 VDC, 24 VDC, 48 VDC, 100 VDC		
3H									100 VAC, 200 VAC, 24 VDC, 100 VDC		
3P									100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC		
3Q		Square terminal box (IP65 or equivalent) (G1/2)							100 VAC, 200 VAC, 24 VDC, 100 VDC		
4A	Square terminal box + light (IP65 or equivalent) (G1/2)							100 VAC, 200 VAC, 24 VDC, 100 VDC			
4A	Option	Lead wire		A				G	H	S	100 VAC, 200 VAC
4K		Square terminal box (G1/2)									
4H		Square terminal box + light (G1/2)									
5A		Lead wire									
5K		Square terminal box (G1/2)		A	D	E	F		G	H	100 VAC, 200 VAC
5H		Square terminal box + light (G1/2)									
5P		Square terminal box (IP65 or equivalent) (G1/2)									
5Q		Square terminal box + light (IP65 or equivalent) (G1/2)									

⚠ 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 grommet lead wire 300 mm ● 4A (Heat proof class H) ● 5A (Diode integrated)
3K 3H 4K 4H 5K 5H		● Open frame square terminal box ● 4K, 4H (Heat proof class H) ● 5K, 5H (Diode integrated)
3P 3Q 5P 5Q		● Open frame square terminal box (IP65 or equivalent) ● 5P, 5Q (Diode integrated)

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

⚠ Note on model no. selection

Note on (E)

- *5: No symbol is indicated for the standard coil housing, but when using (F), (G) or (H), indicate 00 for (D).
- *6: 5A, 5K, 5H, 5P and 5Q are coils which convert AC power to DC with a diode.
- *7: A DC coil of for steam is available for at GAG44 so, consult with CKD.

Note on (F) to (H)

- *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 using the coil with terminal box, the surge suppressor is mounted in the terminal box.
- *10: Surge suppressor is incorporated in coil with diode and (E) 2H 24 VDC coil as standard.
- *11: Tropic care treatment (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that the tropic care treatment 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, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. Note that coil for 5A, 5K, 5H, 5P or 5Q in item (D) must be used for 100 VAC50/60Hz and 200 VAC 50/60Hz.
- *13: Consult with CKD about other than above voltage.
- *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.

Refer to Page 122 for Coil selection.

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

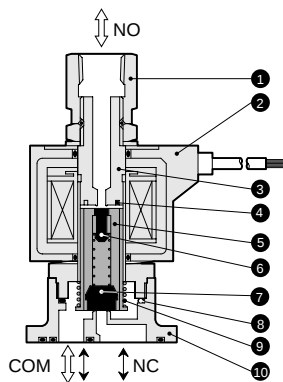
General purpose valve

Direct acting 3 port solenoid valve

GAG34*/I44* Series

Internal structure and main parts materials

● 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 when stainless steel body)
5	Plunger	SUS405 or equivalent, Stainless steel
6	NO valve sealing	FKM (FKM/EPDM) , NBR: Nitrile rubber FKM: Fluoro rubber
7	NC valve sealing	NBR (FKM/EPDM) , EPDM: Ethylene propylene rubber
8	O ring	NBR (FKM/EPDM) (Size: AS568-019)
9	Plunger spring	SUS304 , Stainless steel
10	Body	C3771 (SUS303) , Brass (stainless steel)

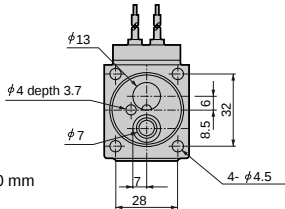
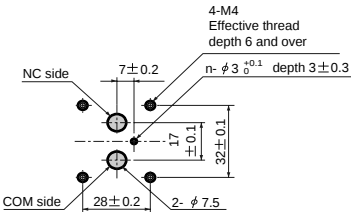
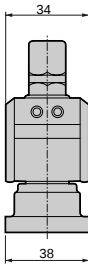
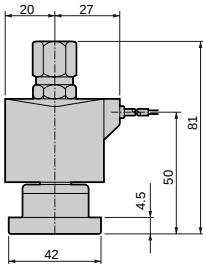
*1: When the body and sealant combination symbol is no symbol or other than H, the material is SUS405 or equivalent, 316L, 430.
*2: () shows options.

Dimensions: GAG341/GAG342 Series



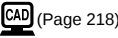
● Actuator (grommet lead wire)
GAG34*-1 to 2-0

● How to mount actuator



* Lead wire length 300 mm

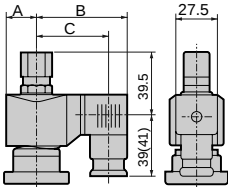
Optional dimensions: GAG341/GAG342 Series



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

- DIN terminal box
GAG34*-1 to 2-0-*

2E
2G
2H

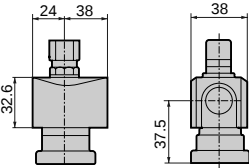


Dimensions shown in () are for the G1/2.

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

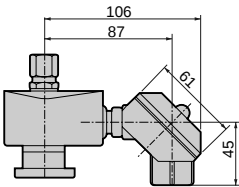
- Open frame lead wire type
GAG34*-1 to 2-0-*

3A
4A
5A



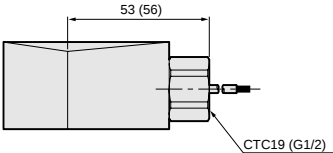
- Open frame + square terminal box
GAG34*-1 to 2-0-*

3	K
4	H
5	



- Open frame type + conduit
GAG34*-1 to 2-0-*

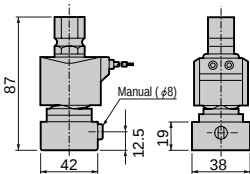
3A	G
4A	H
5A	



Dimensions shown in () are for the 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

CVE/CVSE

CPE/CPD

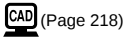
Medical analysis

Custom order

General purpose valve
Direct acting 3 port solenoid valve

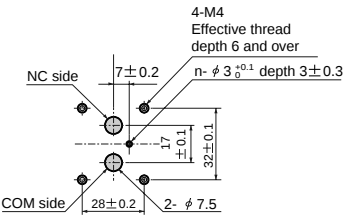
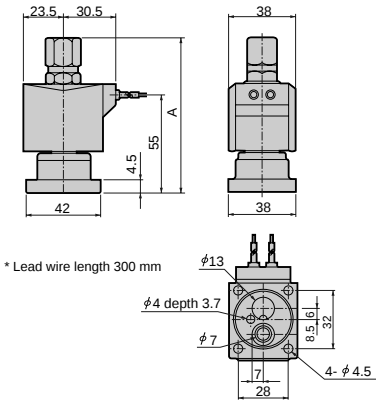
GAG34*/44* Series

Dimensions: GAG442/GAG443 Series



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

- How to mount actuator



Model no.	A
GAG442-1·3·4	86.5
GAG443-1·3·4	90

Optional dimensions: GAG442/GAG443 Series

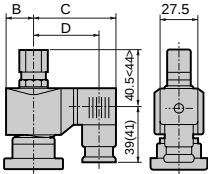


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* Refer to the grommet lead wire type dimensions on the left page for the common dimensions.

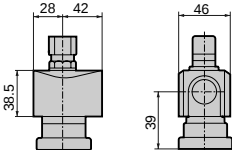
- DIN terminal box
GAG44*-1/3/4-0-*

2E
2G
2H



- Open frame lead wire type
GAG44*-1/3/4-0-*

3A
4A
5A

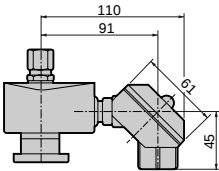


Dimensions shown in () are for the G1/2. Dimensions shown in < > are for the Rc3/8.

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

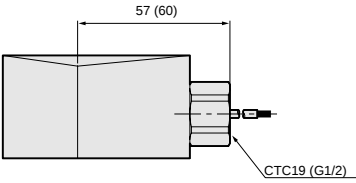
- Open frame type + square terminal box
GAG44*-1/3/4-0-*

3K
4H
5



- Open frame type + conduit
GAG44*-1/3/4-0-*

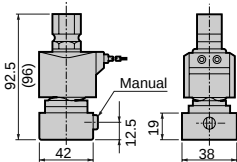
3A
4A
5A
G
H



Dimensions shown in () are for the G1/2.

- Manual override (locking)
GAG44*-1/3/4-0-***

A



Dimension in () show value of GAG443.

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

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