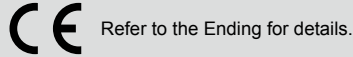




Direct acting 3-port solenoid valve, single unit
(General purpose valve)

AG31/AG41 Series

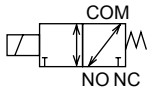
- Universal
- Port size: Rc1/8, Rc1/4, Rc3/8



- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- SAB/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combus
- Auto-Water
- SpecFld
- Custom
- Ending

JIS symbol

- AG31/41: Universal



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

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

*1 : No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Descriptions	Port size	Orifice size (mm)		Max. working pressure differential (MPa)							Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
		TOP	BODY	Air		Water(hot)/Kerosene		Oil (50 mm ² /s)		Steam		When holding		When starting		AC	DC	
				AC	DC	AC	DC	AC	DC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	DC	
AG31-01-1	Rc1/8	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6(0.5)	0.7	100 VAC 50/60 Hz *7 200 VAC 50/60 Hz *7	14	11	20	16	6/4.2	11 (8.1)	0.36
		2.0	2.0	0.4	0.4(0.35)	0.4	0.4	0.25	0.2(0.15)	0.4								
	Rc1/4	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6(0.5)	0.7		22	17	35	27	8.3/6.2	11 (10.4)	
		2.0	2.0	0.4	0.4(0.35)	0.4	0.4	0.25	0.2(0.15)	0.4								
AG41-02-1	Rc1/4	2.0	2.0	1.0	0.7(0.45)	1.0	0.7	0.4	0.3(0.25)	1.0	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)	0.45
		2.3	2.3	0.7	0.4(0.35)	0.7	0.4	0.25	0.15(0.1)	0.7								
	Rc3/8	2.0	2.0	1.0	0.7(0.45)	1.0	0.7	0.4	0.3(0.25)	1.0		0.48						
		2.3	2.3	0.7	0.4(0.35)	0.7	0.4	0.25	0.15(0.1)	0.7								

*1 : The model numbers above are for the basic port size (Rc) and orifice size. Refer to How to order for other combinations.

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

*3 : The voltage fluctuation range must be within ±10% of the rated voltage.

*4 : Values shown in () are for the DC voltage with DIN terminal box, indicating the max. working pressure differential when pressurized from the NO port.

*5 : When using in a continuously energized state, use fluoro rubber seal.

*6 : NO port pressurization is not possible for PTFE seal.

*7 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

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

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

*1 : No freezing.

*2 : -20 to 80°C when coil housing is HP terminal box with lamp.

*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

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

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

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S \diamond B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

AG31/41 Series

How to order

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

AG41
Model No.

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

A Port size

B Orifice size

C Body/sealant combination

- *1
- *2
- *3
- *4
- *5

Model No.

AG31 **AG41**

Code	Content	Code	Content	Code	Content		
A Port size							
01	Rc1/8	1G	G1/8	1N	1/8NPT	●	
02	Rc1/4	2G	G1/4	2N	1/4NPT	●	●
03	Rc3/8	3G	G3/8	3N	3/8NPT		●

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

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

Refer to Intro Page 39 for reference on material combinations.

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

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

[Example of model No. 1]

AG31-02-1-AC100V

Model : AG31

- A** Port size : Rc1/4
- B** Orifice size : TOP-φ1.5, BODY-φ1.5
- C** Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- D** Coil housing : Grommet lead wire
- E to H** : None
- I** Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

[Example of model No. 2]

AG41-03-2-000ABS-AC100V

Model : AG41

- A** Port size : Rc3/8
- B** Orifice size : TOP-φ2.3, BODY-φ2.3
- C** Body/sealant : Body - copper alloy/sealant - nitrile rubber
- D** Coil housing : Grommet lead wire
- E** Manual override (locking) : Selected
- F** Mounting plate : With mounting plate
- G** Other options : None
- H** Surge suppressor : With surge suppressor
- I** Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Precautions for model No. selection






Notes for C

- *1 : Leave blank for standard. However, to select options in **D**, **E**, **F**, **G** or **H**, indicate 0 for Item **C**.
- *2 : When Item **C** 4A/4M/4N is selected.
- *3 : The ethylene propylene rubber seal combination (Item **C** P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)
- *4 : For option codes **V** and **W**, vacuum is inspected at "leakage rate: 1.33 x 10⁻⁶ Pa·m³/s or less".
- *5 : For PTFE seal, O-ring material of socket will be FKM.


For Items ④ to ①, the combinations indicated with codes are available.
 Note that if options for Items ⑤ to ⑧ are not required, they should be left blank.

④ Coil housing		⑤	⑥	⑦ Other options					⑧	⑨ Rated voltage
Content	Std	Manual override (Locking)	Mounting plate	Cable gland			Conduit		With surge suppressor	Content
				(marine cable gland)	(conduit piping)					
				A-15a	A-15b	A-15c	CTC 19	G 1/2		
Blank	Grommet lead wire									100 VAC, 200 VAC
2E	With DIN terminal box (G1/2)	A	B						S	100 VAC, 200 VAC
2G	With DIN terminal box (Pg11)									12 VDC, 24 VDC, 48 VDC, 100 VDC
2H	DIN terminal box with small lamp (Pg11)							H		100 VAC, 200 VAC, 24 VDC
3A	Lead wire (IP65 or equivalent)							G		H
3M	With HP terminal box(G1/2)	A	B						S	12 VDC, 24 VDC, 48 VDC, 100 VDC
3N	HP terminal box with lamp (G1/2)			D	E	F				100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I	HP term box (IP65, equiv) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J	HP term box, lamp (IP65, equiv) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A	Lead wire									G
4M	With HP terminal box(G1/2)	A	B	D	E	F				100 VAC, 200 VAC
4N	HP terminal box with lamp (G1/2)									
5A	Lead wire (IP65 or equivalent)	A	B					G	H	100 VAC, 200 VAC
5M	With HP terminal box(G1/2)			D	E	F				
5N	HP terminal box with lamp (G1/2)									
5I	HP term box (IP65, equiv) (G1/2)									
5J	HP term box, lamp (IP65, equiv) (G1/2)									

⚠ Refer to the following cautions for Items ④ to ①.

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

Refer to page 148 for coil selection.

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

⚠ Precautions for model No. selection

Notes for ④

- *6 : Leave blank for the standard coil housing. However, to select options in ⑤, ⑥, ⑦ or ⑧, indicate 00 for Item ④.
- *7 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
- *8 : A DC coil for steam is available for AG41. Contact CKD for more information.

Notes for ⑤ to ⑧

- *9 : When Item ③ is C, F, K, N, V or W, the manual override (Item ⑤ A) is not available.
- *10 : For Item ⑦, select an option from D, E, F, G and H.
- *11 : The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
- *12 : As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item ④ 2H), so the surge suppressor S cannot be selected.
- *13 : Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information. Note that tropicalization is not available when the manual override option (A) is selected.

Notes for ⑨

- *14 : 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item ④ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
- *15 : For voltages other than above, contact CKD.
- *16 : The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

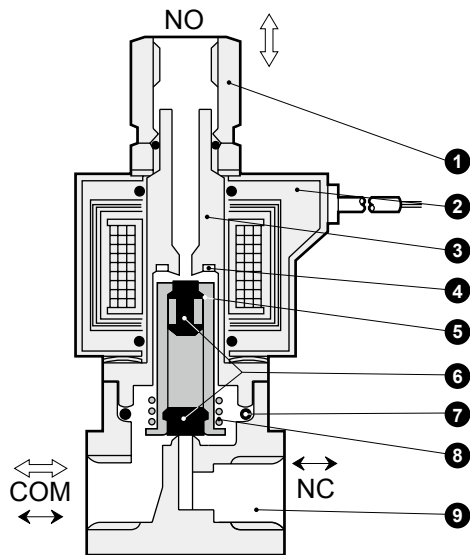
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
SΔB/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustCoil
CVE/CVSE
CCH / CPE/D
LifeSci
Gas-Combus
Auto-Water
SpecFld
Custom
Ending

AG31/41 Series

- EXA
- FWD
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- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/
AD
- APK/
ADK
- DryAir
- EX-
XPLNprf
- XPLNprf
- HVB/
HVL
- S \updownarrow B/
NAB
- LAD/
NAD
- Water-
Rela
- NP/NAP/
NVP
- SNP
- CHB/G
- MXB/G
- Other
valves
- SWD/
MWD
- DustColl
- CVE/
CVSE
- CCH /
CPE/D
- LifeSci
- Gas-
Combus
- Auto-
Water
- SpecFld
- Custom
- Ending

Internal structure and parts list

● AG31/41 Series



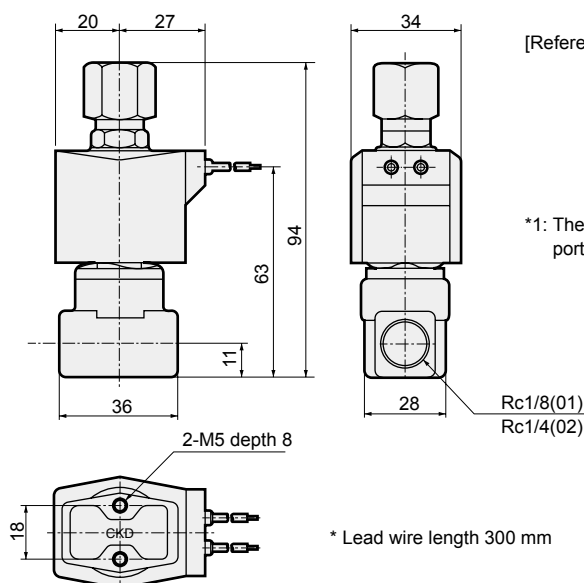
No.	Part name	Material
1	Socket	C3604(SUS303) Copper alloy (stainless steel)
2	Coil	- -
3	Core assembly	SUS405 or equiv./316L/403 *1 Stainless steel
4	Shading coil	Cu (Ag for stainless steel body) Copper (silver for stainless steel body)
5	Plunger	SUS405 or equiv. Stainless steel
6	Seal	NBR (FKM/EPDM/PTFE)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

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

Dimensions: AG31 Series



● Grommet lead wire
AG31-01/02-1 to 2



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

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

* Lead wire length 300 mm

Optional dimensions: AG31 Series

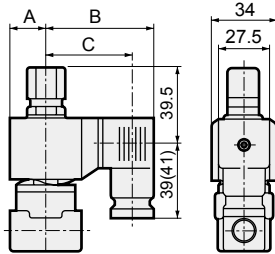


* Refer to the dimensions of grommet lead wire on the left page for common dimensions.

● With DIN terminal box

AG31-01/02-1 to 2-*

2E
2G
2H



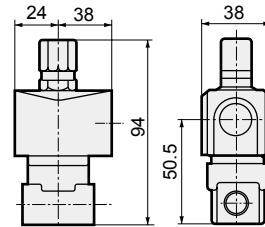
Dimensions shown in () are for G1/2.

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

● Open frame

AG31-01/02-1 to 2-*

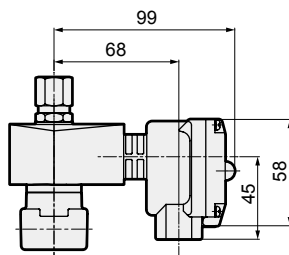
3A
4A
5A



● Open frame + HP terminal box

AG31-01/02-1 to 2-*

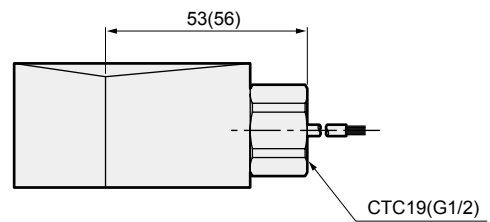
3	M	4M
5	N	4N
	I	
	J	



● Open frame + conduit

AG31-01/02-1 to 2-*

3A	G
4A	H
5A	

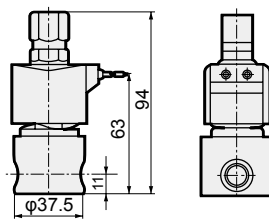


Dimensions shown in () are for G1/2.

● Stainless steel body + grommet lead wire

AG31-01/02-1 to 2-

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

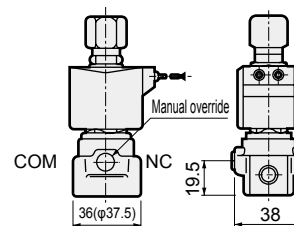


● Manual override (locking)

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

A

The figure shows copper alloy body.



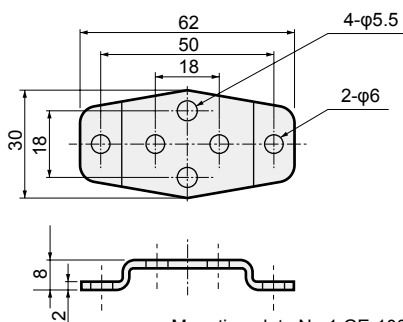
Dimensions shown in () are for stainless steel body.

● Mounting plate

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

B

Material : Steel
Zinc plated



Mounting plate No.1 GE-100106

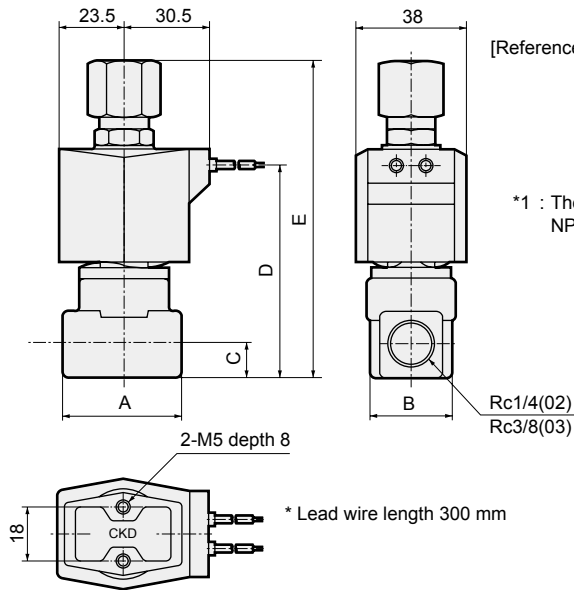
EXA
FWD
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USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
S/B/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustColl
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
SpecFld
Custom
Ending

AG31/41 Series



Dimensions: AG41 Series

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



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

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

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

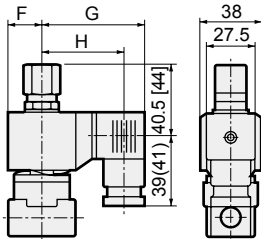
- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- S $\hat{\Delta}$ B/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH / CPE/D
- LifeSci
- Gas-Combus
- Auto-Water
- SpecFld
- Custom
- Ending

Optional dimensions: AG41 Series

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

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

2E
2G
2H

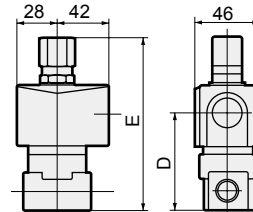


Dimensions shown in [] are for Rc3/8. Dimensions shown in () are for G1/2.

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

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

3A
4A
5A



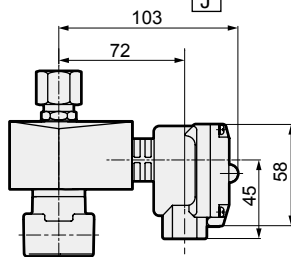
Model No.	D	E
AG41-02-1 to 2-**A	52	99.5
AG41-03-1 to 2-**A	55	106

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

3	M
5	N
	J

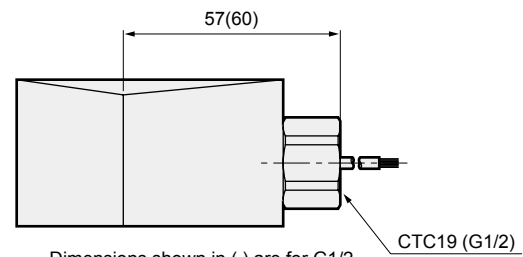
 /

4M
4N



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

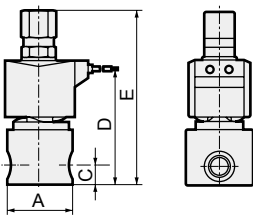
3A	G
4A	H
5A	



Dimensions shown in () are for G1/2.

- Stainless steel body + grommet lead wire
AG41-02/03-1 to 7-

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

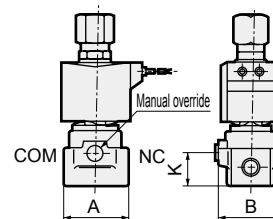


Model No.	A	C	D	E
AG41-02-1 to 2-*	φ37.5	11	68	99.5
AG41-03-1 to 2-*	φ45	12	71	106

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

A

The figure shows copper alloy body.



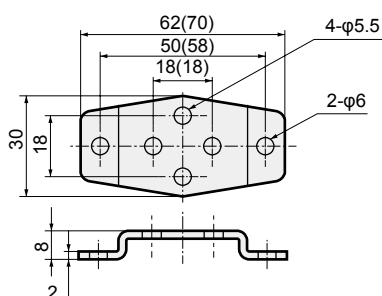
Model No.	A	B	K
AG41-02-1 to 2-***A	36(φ37.5)	38	19.5
AG41-03-1 to 2-***A	40(φ45.0)	40	22.5

Dimensions shown in () are for stainless steel body.

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

B

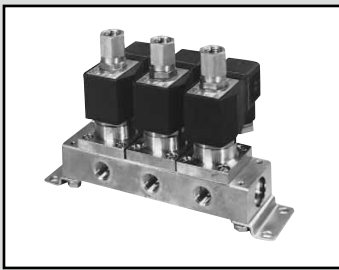
Material : Steel
Zinc plated



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

Category	Compatible model								
Mounting plate No. 1 GE-100106	● AG41-02/03-1 to 2 Series ● Stainless steel body AG41-02-1 to 2- <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>D</td><td>E</td><td>F</td><td>L</td><td>M</td><td>N</td><td>R</td><td>W</td></tr></table>	D	E	F	L	M	N	R	W
D	E	F	L	M	N	R	W		
Mounting plate No. 2 GE-100159	● Stainless steel body AG41-03-1 to 2- <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>D</td><td>E</td><td>F</td><td>L</td><td>M</td><td>N</td><td>R</td><td>W</td></tr></table>	D	E	F	L	M	N	R	W
D	E	F	L	M	N	R	W		

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S ∇ B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending



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

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

● Universal

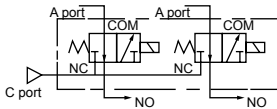
● Common supply/individual exhaust, common supply/separate flow

CE Refer to the Ending for details.

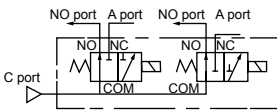


Manifold circuit configuration

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



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



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

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

*1 : No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Descriptions Model No.	NO port size	Orifice size (mm)		Max. working pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)		
				Air		Water(hot)/Kerosene		Oil (50 mm ³ /s)			Steam		When holding		AC	DC	
				TOP	BODY	AC	DC	AC	DC		AC	DC	AC	DC	50/60 Hz		
GAG311 -1 351 -2	Rc1/8	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	0.7	100 VAC 50/60 Hz *8	14	11	20	16	6/4.2	11 (8.1)
		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4							
GAG312 -1 352 -2	Rc1/4	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	0.7	200 VAC 50/60 Hz *8	22	17	35	27	8.3/6.2	11 (10.4)
		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4							
GAG412 -1 452 -2	Rc1/4	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)
		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	0.7							
GAG413 -1 453 -2	Rc3/8	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)
		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	0.7							

*1 : The model numbers above are for the basic NO port size (Rc) and orifice size. Refer to How to order for other combinations.

*2 : For A and C port sizes, refer to How to order (page 200) and dimensions (page 204).

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

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

*5 : Values shown in () are for the DC voltage type with DIN terminal box, indicating the max. working pressure when pressurized from the NO port.

*6 : When using in a continuously energized state, use a fluoro rubber seal.

*7 : NO port pressurization is not possible for PTFE seal.

*8 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Weight

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

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

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

*1 : No freezing.

*2 : -20 to 80°C when coil housing is HP terminal box with lamp.

*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

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

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

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S \diamond B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

GAG31*/35*/41*/45* Series

How to order

● Common supply/individual exhaust
(Port C pressurization)

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

● Common supply/separate flow
(Port C pressurization)

GAG35

● Common supply/individual exhaust
(Port C pressurization)

GAG41

● Common supply/separate flow
(Port C pressurization)

GAG45

Model No.

F Coil housing I With surge suppressor
G Manual override (locking) J Rated voltage
H Other options

A NO port size

B Thread

C Orifice size

D Manifold
*2 station No.

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

[Example of model No. 1]
GAG311-1-4-AC200V

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

- A NO port size : 1/8
- B Thread : Rc
- C Orifice size : TOP-φ1.5, BODY-φ1.5
- D Manifold station No. : 4 stations
- E Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- F Coil housing : Grommet lead wire
- G to I : None
- J Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

[Example of model No. 2]
GAG352G-2-7-000AS-AC200V

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

- A NO port size : 1/4
- B Thread : G
- C Orifice size : TOP-φ2.0, BODY-φ2.0
- D Manifold station No. : 7 stations
- E Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- F Coil housing : Grommet lead wire
- G Manual override (locking) : Selected
- H Other options : None
- I Surge suppressor : With surge suppressor
- J Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

Code		Content		Model No.	
				GAG3**	GAG4**
A NO port size					
1	1/8			●	
2	1/4			●	●
3	3/8				●
B Thread					
Blank	Rc			●	●
G	G			●	●
N	NPT			●	●
C Orifice size					
		GAG3**			
		TOP	BODY		
1		φ1.5	φ1.5	●	●
2		φ2.0	φ2.0	●	●
D Manifold station No.					
2	2 stations			●	●
to	to				
10	10 stations				
0	Actuator only			●	●
E Body/sealant combination					
		Body	Seal	Treatment	Remarks
Blank	Std	Copper alloy	Nitrile rubber	-	Air/water/low vac/kerosene (≤60°C)
B	Std	Copper alloy	Fluoro rubber -	-	Air/low vac/kerosene (≤90°C *4)
C	Std	Copper alloy	PTFE	-	Steam (up to 184°C *4)
D	Option	Stainless steel	Nitrile rubber	-	Air/water/low vac/kerosene (≤60°C)
E	Option	Stainless steel	Fluoro rubber -	-	Air/low vac/kerosene (≤90°C *4)
F	Option	Stainless steel	PTFE	-	Steam (up to 184°C *4)
H	Option	Copper alloy	Nitrile rubber	Oil free	Air/water/low vac/kerosene (≤60°C)
J	Option	Copper alloy	Fluoro rubber	Oil free	Air/low vac/kerosene (≤90°C *4)
K	Option	Copper alloy	PTFE	Oil free	Steam (up to 184°C *4)
P	Option	Copper alloy	Ethylene propylene rubber	Oil free	Hot water (up to 90°C *4)
L	Option	Stainless steel	Nitrile rubber	Oil free	Air/water/low vac/kerosene (≤60°C)
M	Option	Stainless steel	Fluoro rubber	Oil free	Air/low vac/kerosene (≤90°C *4)
N	Option	Stainless steel	PTFE	Oil free	Steam (up to 184°C *4)
R	Option	Stainless steel	Ethylene propylene rubber	Oil free	Hot water (up to 90°C *4)

Refer to Intro Page 39 for reference on 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 ● in the above table are available.

Precautions for model No. selection

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

Notes for D to E






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

GAG31*/35*/41*/45* Series


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

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

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

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

Refer to page 148 for coil selection.

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

⚠ Precautions for model No. selection

Notes for (F)

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

Notes for (G) to (I)

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

Notes for (J)

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

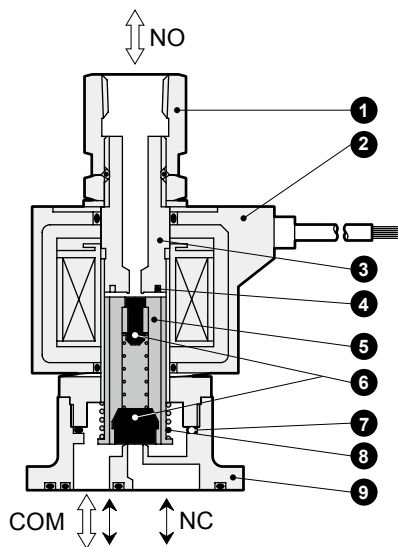
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/
AD
APK/
ADK
DryAir
EX-
XPLNprf
XPLNprf
HVB/
HVL
SAB/
NAB
LAD/
NAD
Water-
Rela
NP/NAP/
NVP
SNP
CHB/G
MXB/G
Other
valves
SWD/
MWD
DustCoil
CVE/
CVSE
CCH /
CPE/D
LifeSci
Gas-
Combus
Auto-
Water
SpecFld
Custom
Ending

GAG31*/35*/41*/45* Series

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/
AD
- APK/
ADK
- DryAir
- EX-
XPLNprf
- XPLNprf
- HVB/
HVL
- S \updownarrow B/
NAB
- LAD/
NAD
- Water-
Rela
- NP/NAP/
NVP
- SNP
- CHB/G
- MXB/G
- Other
valves
- SWD/
MWD
- DustColl
- CVE/
CVSE
- CCH /
CPE/D
- LifeSci
- Gas-
Combus
- Auto-
Water
- SpecFld
- Custom
- Ending

Internal structure and parts list

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



No.	Part name	Material
1	Socket	C3604(SUS303) Copper alloy (stainless steel)
2	Coil	-
3	Core assembly	SUS405 or equiv./316L/403 *1 Stainless steel
4	Shading coil	Cu (Ag for stainless steel body) Copper (silver for stainless steel body)
5	Plunger	SUS405 or equiv. Stainless steel
6	Seal	NBR (FKM/EPDM/PTFE) NBR: Nitrile rubber FKM: Fluoro rubber
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) Copper alloy (stainless steel)

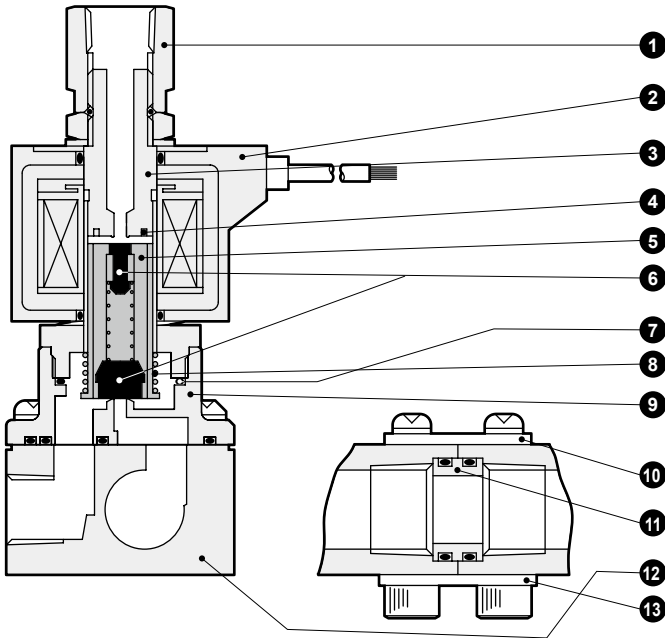
*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.

*2 : () shows options.

*3 : 4 body mounting screws and 2 O-rings are attached to the actuator only.

Internal structure and parts list

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



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

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

*2 : () shows options.

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S◇B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

GAG31*/35*/41*/45* Series

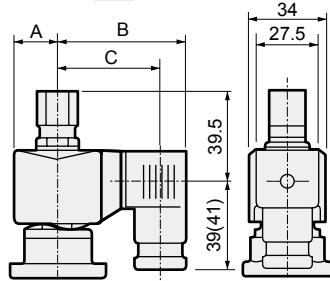
Optional dimensions: GAG31*/GAG35*



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

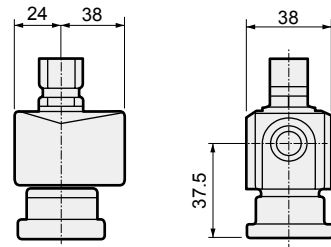
- With DIN terminal box
GAG3**-1 to 2-0 to 10-*

2E
2G
2H



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

3A
4A
5A

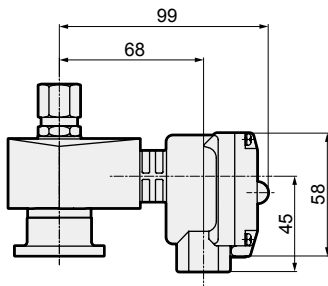


Dimensions shown in () are for G1/2.

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

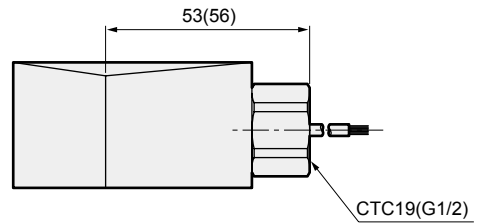
- Open frame + HP terminal box
GAG3**-1 to 2-0 to 10-*

3 M / 4M
5 N / 4N
I
J



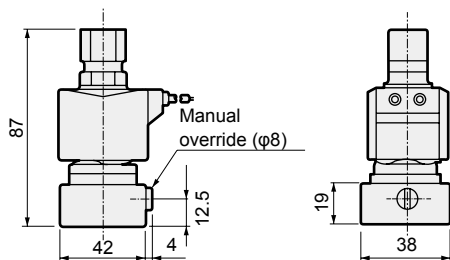
- Open frame + conduit
GAG3**-1 to 2-0 to 10-*

3A G
4A H
5A



Dimensions shown in () are for G1/2.

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



EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
SAB/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

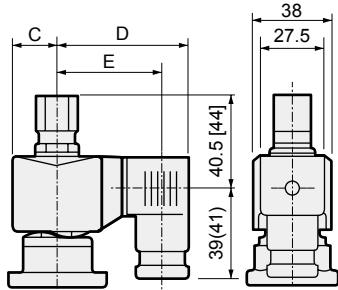


Optional dimensions: GAG41*/45* Series

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

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

2E
2G
2H



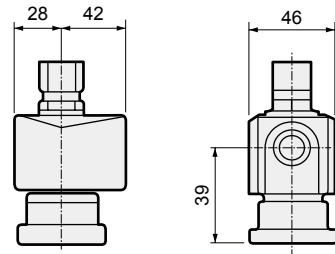
Dimensions shown in () are for G1/2.
Dimensions shown in [] are for Rc3/8.

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

- Open frame lead wire

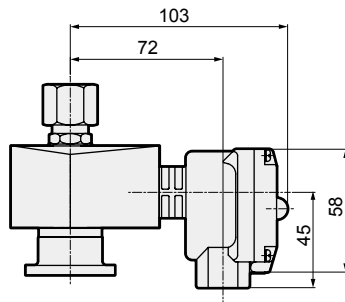
GAG4**-1 to 2-0 to 10-*

3A
4A
5A



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

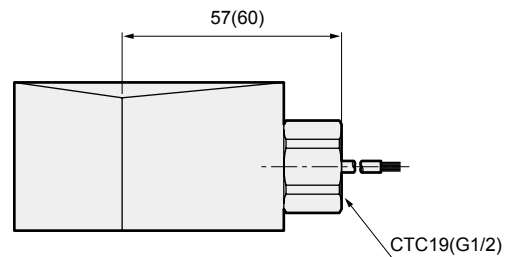
3 M / 4M
5 N / 4N
I
J



- Open frame + conduit

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

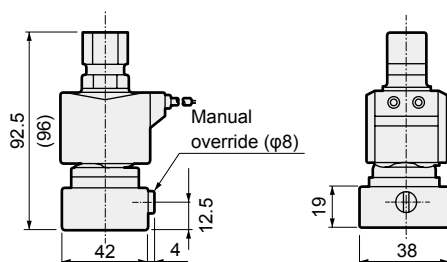
3A G
4A H
5A



Dimensions shown in () are for G1/2.

- Manual override (locking)

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



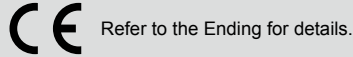
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending



Direct acting 3-port solenoid valve, single unit
(general purpose valve)

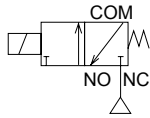
AG33/AG43 Series

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



JIS symbol

- AG33/43: NC pressurization



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

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

*1: No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Descriptions	Port size	Orifice size (mm)		Max. working pressure differential (MPa)								Rated voltage	Apparent power (VA)				Power consump (W)		Weight (kg)
		(mm)		Air		Water(hot)/Kerosene		Oil (50 mm ² /s)		Steam			When holding		When starting		AC	DC	
		TOP	BODY	AC	DC	AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz		
AG33-01-1	Rc1/8	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	100 VAC 50/60 Hz *6 200 VAC 50/60 Hz *6 12 VDC 24 VDC 48 VDC 100 VDC	14	11	20	16	6/4.2	11 (8.1)	0.36	
		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7									
	Rc1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0									
		2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7									
AG43-02-4	Rc1/4	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)	0.45	
		3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4									
	Rc3/8	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7									
		3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4									

*1 : The model numbers above show the basic port size (Rc) and orifice size. Refer to How to order for other combinations.

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

*3 : The voltage fluctuation range must be within ±10% of the rated voltage.

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

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

*6 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

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

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

*1 : No freezing.

*2 : -20 to 80°C when coil housing is HP terminal box with lamp.

*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

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

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

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S \diamond B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

AG33/43 Series

How to order

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

AG43
Model No.

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

A Port size

B Orifice size

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

Model No.

AG33 AG43

Code	Content	Code	Content	Code	Content		
A Port size							
01	Rc1/8	1G	G1/8	1N	1/8NPT	●	
02	Rc1/4	2G	G1/4	2N	1/4NPT	●	●
03	Rc3/8	3G	G3/8	3N	3/8NPT		●

	AG33		AG43			
	TOP	BODY	TOP	BODY		
1	φ1.5	φ1.5	-	-	●	
2	φ2.0	φ2.0	-	-	●	
4	-	-	φ3.0	φ3.0		●
5	-	-	φ3.5	φ3.0		●

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

Refer to Intro Page 39 for reference on material combinations.

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

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

[Example of model No. 1]

AG33-02-1-AC100V

Model: AG33

- A** Port size : Rc1/4
- B** Orifice size : TOP-φ1.5, BODY-φ1.5
- C** Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- D** Coil housing : Grommet lead wire
- E to H** : None
- I** Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

[Example of model No. 2]

AG43-03-4-000ABS-AC100V

Model: AG43

- A** Port size : Rc 3/8
- B** Orifice size : TOP-φ3.0, BODY-φ3.0
- C** Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- D** Coil housing : Grommet lead wire
- E** Manual override (locking) : Selected
- F** Mounting plate : With mounting plate
- G** Other options : None
- H** Surge suppressor : With surge suppressor
- I** Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Precautions for model No. selection






Notes for **C**

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


For Items ④ to ①, the combinations indicated with codes are available.
 Note that if options for Items ⑤ to ⑧ are not required, they should be left blank.

④ Coil housing		⑤	⑥	⑦ Other options				⑧	⑨ Rated voltage		
Content	Std.	Manual override (Locking)	Mounting plate	Cable gland			Conduit		With surge suppressor	Content	
				(marine cable gland)	(conduit piping)						
				A-15a	A-15b	A-15c	CTC19	G1/2			
Blank	Grommet lead wire	A	B						S	100 VAC, 200 VAC	
2E	With DIN terminal box (G1/2)									100 VAC, 200 VAC	
2G	With DIN terminal box (Pg11)									12 VDC, 24 VDC, 48 VDC, 100 VDC	
2H	DIN terminal box with small lamp(Pg11)							H		100 VAC, 200 VAC, 24 VDC	
3A	Open frame	A	B				G	H	S	100 VAC, 200 VAC	
3M				Lead wire (IP65 or equivalent)							12 VDC, 24 VDC, 48 VDC, 100 VDC
3N				With HP terminal box(G1/2)							100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I				HP terminal box with lamp(G1/2)	D	E	F			100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC	
3J				HP term box (IP65, equiv) (G1/2)							100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A	Open frame (Thermal class 180 (H))	A	B				G	H	S	100 VAC, 200 VAC	
4M				Lead wire							
4N				With HP terminal box(G1/2)	D	E	F				
5A	Open frame (diode integrated)	A	B				G	H	S	100 VAC, 200 VAC	
5M				Lead wire (IP65 or equivalent)							
5N				With HP terminal box(G1/2)	D	E	F				
5I				HP terminal box with lamp(G1/2)							
5J				HP term box (IP65, equiv) (G1/2)							

Refer to the following cautions for Items ④ to ①.

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

Refer to page 148 for coil selection.

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

Precautions for model No. selection

Notes for ④

- *5 : Leave blank for the standard coil housing. However, to select options in ⑤, ⑥, ⑦ or ⑧, indicate 00 for Item ④.
- *6 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
- *7 : A DC coil for steam is available for AG43. Contact CKD for more information.

Notes for ⑤ to ⑧

- *8 : When Item ③ is C, F, K or N, the manual override (Item ⑤A) is not available.
- *9 : For ⑦, select an option from D, E, F, G and H.
- *10 : The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
- *11 : As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item ④ 2H), so the surge suppressor S cannot be selected.
- *12 : Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information. Note that tropicalization is not available when the manual override option (A) is selected.

Notes for ⑨

- *13 : 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item ④ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
- *14 : For voltages other than above, contact CKD.
- *15 : The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

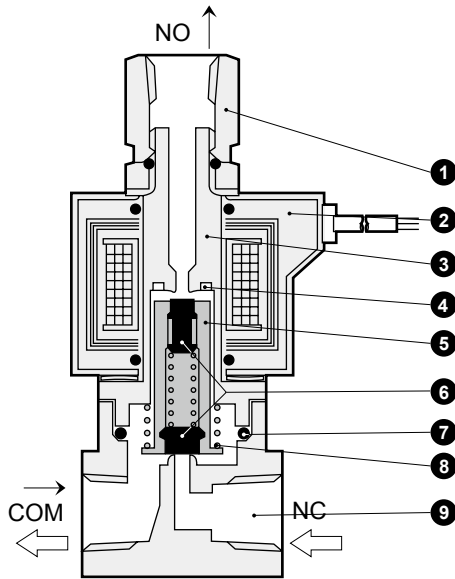
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
SAB/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustCoil
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
SpecFld
Custom
Ending

AG33/43 Series

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/
AD
- APK/
ADK
- DryAir
- EX-
XPLNprf
- XPLNprf
- HVB/
HVL
- S Δ B/
NAB
- LAD/
NAD
- Water-
Rela
- NP/NAP/
NVP
- SNP
- CHB/G
- MXB/G
- Other
valves
- SWD/
MWD
- DustColl
- CVE/
CVSE
- CCH /
CPE/D
- LifeSci
- Gas-
Combus
- Auto-
Water
- SpecFld
- Custom
- Ending

Internal structure and parts list

● AG33/43 Series



No.	Part name	Material
1	Socket	C3604(SUS303) Copper alloy (stainless steel)
2	Coil	-
3	Core assembly	SUS405 or equiv./316L/403 *1 Stainless steel
4	Shading coil	Cu (Ag for stainless steel body) Copper (silver for stainless steel body)
5	Plunger	SUS405 or equiv. Stainless steel
6	Seal	NBR (FKM/EPDM/PTFE) NBR: Nitrile rubber FKM: Fluoro rubber
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(SUS303) Copper alloy (stainless steel)

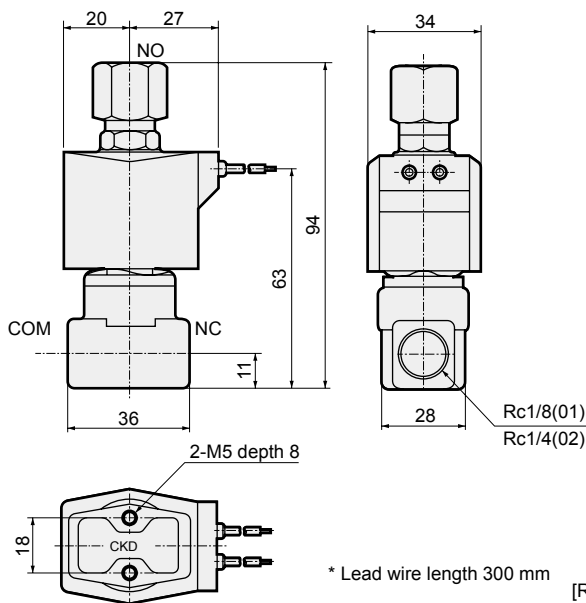
*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.

*2 : () shows options.

Dimensions: AG33 Series



● Grommet lead wire
AG33-01/02-1 to 2



* Lead wire length 300 mm

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

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

Optional dimensions: AG33 Series

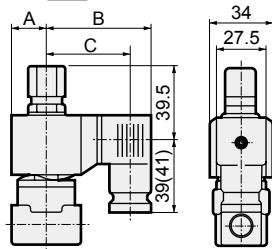


* Refer to the dimensions of grommet lead wire on the left page for common dimensions.

● With DIN terminal box

AG33-01/02-1 to 2-*

2E
2G
2H



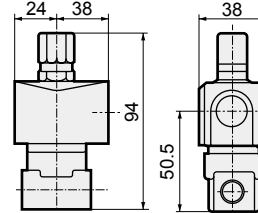
Dimensions shown in () are for G1/2.

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

● Open frame lead wire

AG33-01/02-1 to 2-*

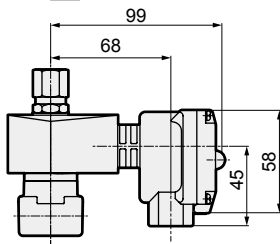
3A
4A
5A



● Open frame + HP terminal box

AG33-01/02-1 to 2-*

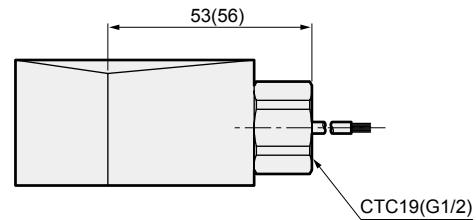
3	M	4M
5	N	4N
	J	



● Open frame + conduit

AG33-01/02-1 to 2-*

3A	G
4A	H
5A	

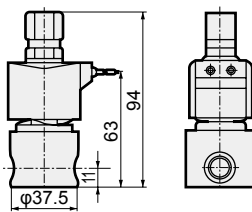


Dimensions shown in () are for G1/2.

● Stainless steel body + grommet lead wire

AG33-01/02-1 to 2-

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

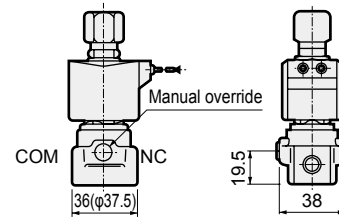


● Manual override (locking)

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

A

The figure shows copper alloy body.



Dimensions shown in () are for stainless steel body.

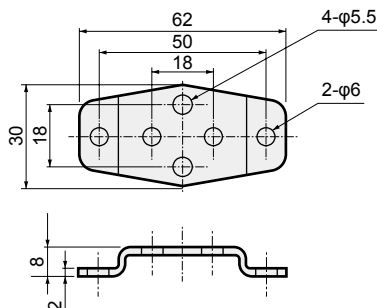
● Mounting plate

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

B

Material: Steel

Zinc plated



Mounting plate No.1 GE-100106

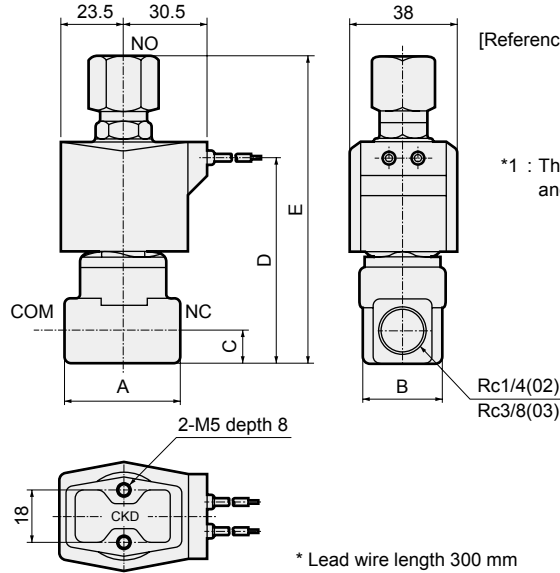
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
S/B/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustColl
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
SpecFld
Custom
Ending

AG33/43 Series



Dimensions: AG43 Series

● Grommet lead wire
AG43-02/03-4 to 5



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

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

* Lead wire length 300 mm

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

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/
AD
- APK/
ADK
- DryAir
- EX-
XPLNprf
- XPLNprf
- HVB/
HVL
- S Δ B/
NAB
- LAD/
NAD
- Water-
Rela
- NP/NAP/
NVP
- SNP
- CHB/G
- MXB/G
- Other
valves
- SWD/
MWD
- DustColl
- CVE/
CVSE
- CCH /
CPE/D
- LifeSci
- Gas-
Combus
- Auto-
Water
- SpecFld
- Custom
- Ending

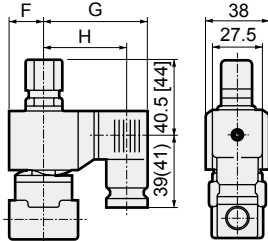
Optional dimensions: AG43 Series



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

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

2E
2G
2H

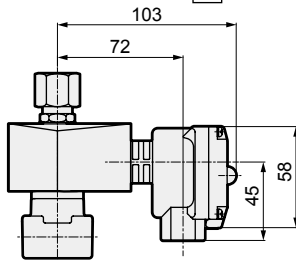


Dimensions shown in [] are for Rc3/8.
Dimensions shown in () are for G1/2.

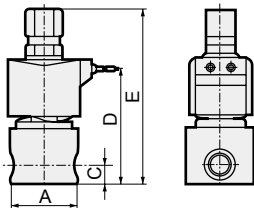
Voltage	F	G	H
AC	23.5	65.5	54(53.5)
DC	23.5	66	54.5(54)

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

3 M / 4M
5 N / 4N
I
J



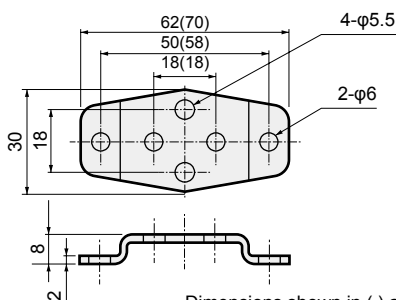
- Stainless steel body + grommet lead wire
AG43-02/03-4 to 5- [D/E/F/R/L/M/N]



Model No.	A	C	D	E
AG43-02-4 to 5-*	φ37.5	11	68	99.5
AG43-03-4 to 5-*	φ45	12	71	106

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

Material: Steel
Zinc plated

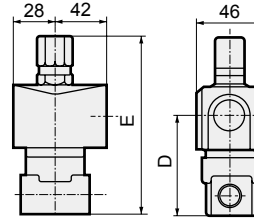


Dimensions shown in () are for mounting plate No. 2.

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

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

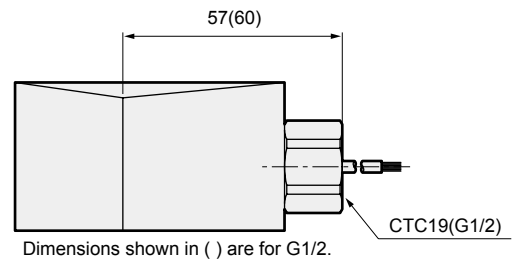
3A
4A
5A



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

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

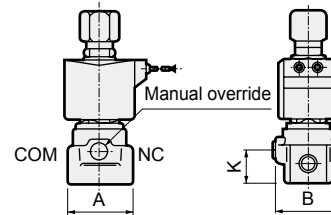
3A [G]
4A [H]
5A



Dimensions shown in () are for G1/2.

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

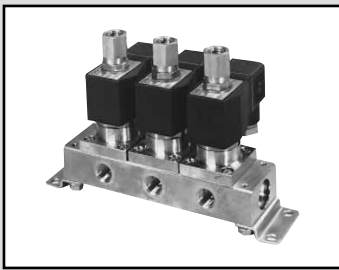
The figure shows copper alloy body.



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

Dimensions shown in () are for stainless steel body.

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S/B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH/ CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending



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

GAG33*/GAG43* Series

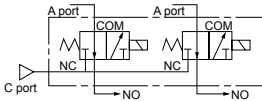
- NC pressurization
- Common supply/individual exhaust

Refer to the Ending for details.



JIS symbol

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



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

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

*1 :No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

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

*1 : The model numbers above are for the basic NO port size (Rc) and orifice size. Refer to How to order for other combinations.

*2 : For A and C port sizes, refer to How to order (page 218) and dimensions (page 222).

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

*4 : Values shown in () are for the DC voltage with DIN terminal box.

*5 : The voltage fluctuation range must be ±10% of the rated voltage.

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

*7 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5J.

Weight

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

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

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

*1 : No freezing.

*2 : -20 to 80°C when coil housing is HP terminal box with lamp.

*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

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

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

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S [◇] B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

GAG33*/43* Series

How to order

● Common supply/individual exhaust (Port C pressurization)

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

● Common supply/individual exhaust (Port C pressurization)

GAG43

F Coil housing **I** With surge suppressor

G Manual override (locking) **J** Rated voltage

H Other options

E Body/sealant combination

Model No.

A NO port size

B Thread

C Orifice size

D Manifold station No.
*2

[Example of model No. 1]

GAG331-1-4-AC200V

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

- A** NO port size : 1/8
- B** Thread : Rc
- C** Orifice size : TOP-φ1.5, BODY-φ1.5
- D** Manifold station No.: 4 stations
- E** Body/sealant combination

: Body - copper alloy, sealant - nitrile rubber

F Coil housing : Grommet lead wire

G to **I** : None

J Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

[Example of model No. 2]

GAG332G-2-7-000AS-AC200V

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

- A** NO port size : 1/4
- B** Thread : G
- C** Orifice size : TOP-φ2.0, BODY-φ2.0
- D** Manifold station No. : 7 stations
- E** Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- F** Coil housing : Grommet lead wire
- G** Manual override (locking) : Selected
- H** Other options : None
- I** Surge suppressor : With surge suppressor
- J** Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

Code	Content	GAG33*	GAG43*
A NO port size			
1	1/8	●	
2	1/4	●	●
3	3/8		●

B Thread		GAG33*	GAG43*
Blank	Rc	●	●
G	G	●	●
N	NPT	●	●

	GAG33*		GAG43*			
	TOP	BODY	TOP	BODY		
1	φ1.5	φ1.5	-	-	●	
2	φ2.0	φ2.0	-	-	●	
4	-	-	φ3.0	φ3.0		●
5	-	-	φ3.5	φ3.0		●

D Manifold station No.		GAG33*	GAG43*
2 to 10	2 stations to 10 stations	●	●
0	Actuator only	●	●

E Body/sealant combination					*3*5*6	
	Body	Seal	Treatment	Remarks		
Blank	Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
B		Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *4)	●	●
C		PTFE		Steam (up to 184°C *4)	●	●
D	Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
E		Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *4)	●	●
F		PTFE		Steam (up to 184°C *4)	●	●
H	Option	Nitrile rubber	Oil free	Air/water/low vacuum/kerosene (up to 60°C)	●	●
J		Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *4)	●	●
K		PTFE		Steam (up to 184°C *4)	●	●
P	Copper alloy	Ethylene propylene rubber	Oil free	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	Stainless steel	Ethylene propylene rubber	Oil free	Hot water (up to 90°C *4)	●	●

Refer to Intro Page 39 for reference on 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 ● in the above table are available.

⚠ Precautions for model No. selection

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

Notes for **D** to **E**

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

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

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






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

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


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

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

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

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

Refer to page 148 for coil selection.

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

⚠ Precautions for model No. selection

Notes for (F)

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

Notes for (G) to (I)

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

Notes for (J)

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

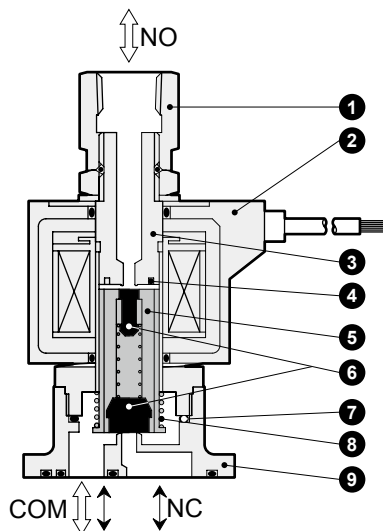
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
SAB/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustCoil
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

GAG33*/43* Series

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/
AD
- APK/
ADK
- DryAir
- EX-
XPLNprf
- XPLNprf
- HVB/
HVL
- S $\hat{\Delta}$ B/
NAB
- LAD/
NAD
- Water-
Rela
- NP/NAP/
NVP
- SNP
- CHB/G
- MXB/G
- Other
valves
- SWD/
MWD
- DustColl
- CVE/
CVSE
- CCH /
CPE/D
- LifeSci
- Gas-
Combus
- Auto-
Water
- SpecFld
- Custom
- Ending

Internal structure and parts list

● GAG33*/GAG43* Series actuator



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

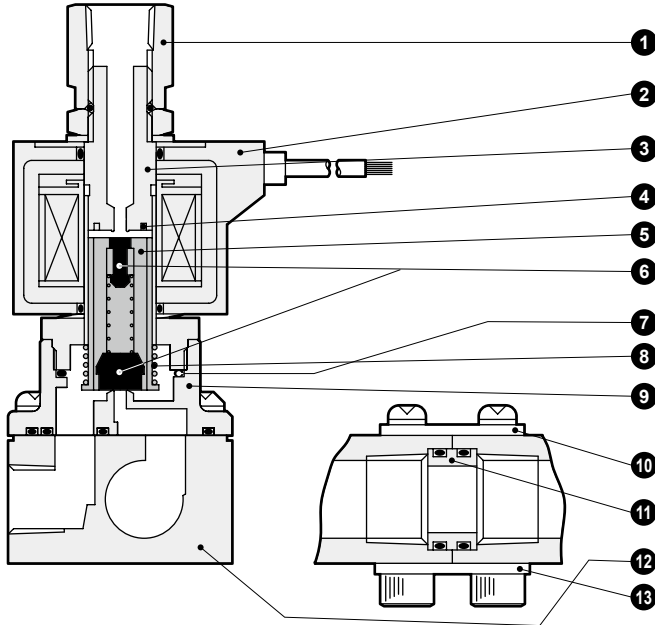
*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.

*2 : () shows options.

*3 : 4 body mounting screws and 2 O-rings are attached to the actuator only.

Internal structure and parts list

● GAG33*/GAG43* manifold



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

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

*2 : () shows options.

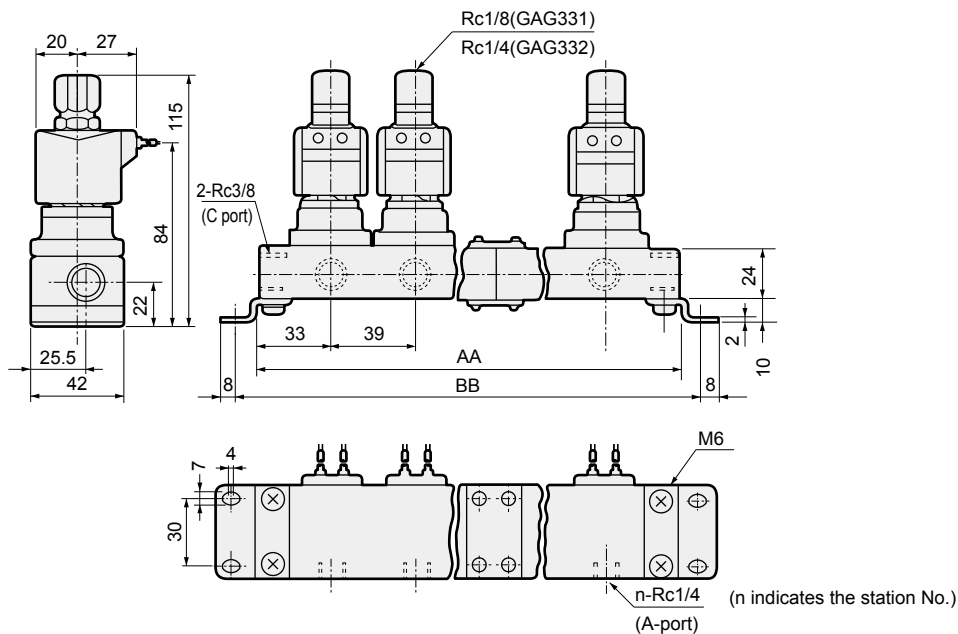
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S◇B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

GAG33*/43* Series



Dimensions: GAG331/GAG332 Series

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

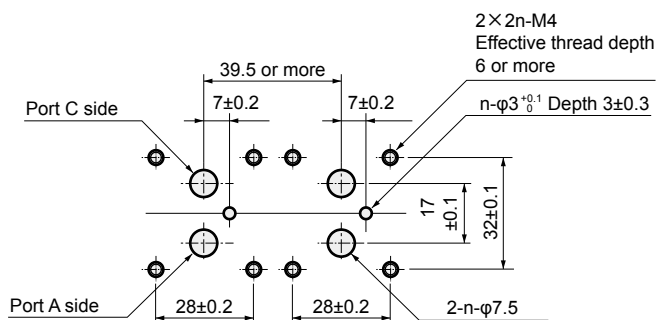
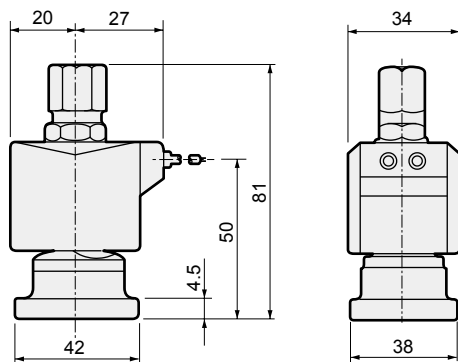


Station No.	AA	BB	Manifold configuration	Station No.	AA	BB	Manifold configuration
2	106	122	2 stations x 1	7	329	345	5 stations + 2 stations
3	145	161	3 stations x 1	8	368	384	5 stations + 3 stations
4	212	228	2 stations x 2	9	435	451	3 stations x 3
5	223	239	5 stations x 1	10	446	462	5 stations x 2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

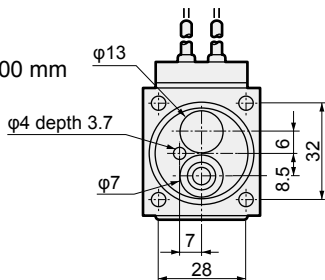
- *1 : Manifold configuration combines 2-station, 3-station and 5-station units.
- *2 : The dimensions are the same for port sizes of G and NPT threads.

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

- Recommended dimensions for actuator mounting



* Lead wire length 300 mm



■ Machining drawing when using 2 actuators

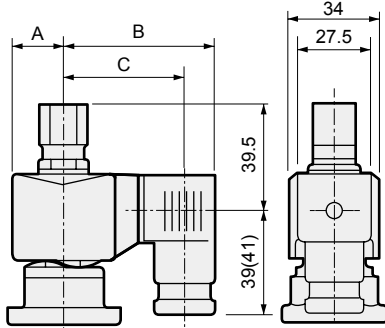
Optional dimensions: GAG331/GAG332 Series



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

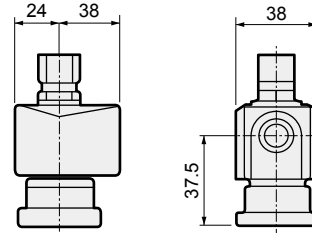
- With DIN terminal box
GAG33*-1 to 2-0 to 10-*

2E
2G
2H



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

3A
4A
5A

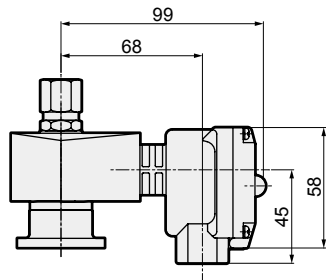


Dimensions shown in () are for G1/2.

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

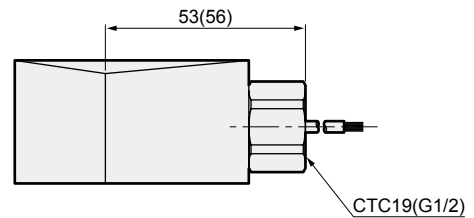
- Open frame + HP terminal box
GAG33*-1 to 2-0 to 10-*

3 M / 4M
5 N / 4N
I
J



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

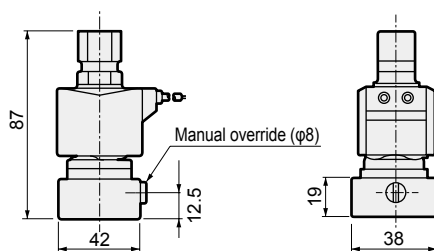
3A G
4A H
5A



Dimensions shown in () are for G1/2.

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

A



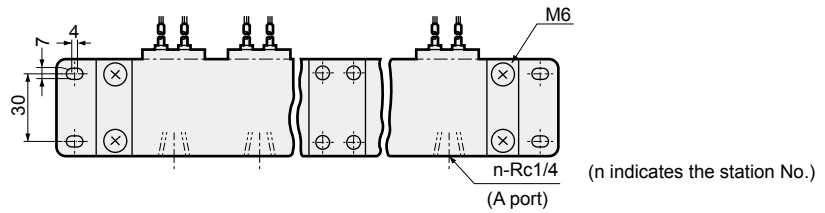
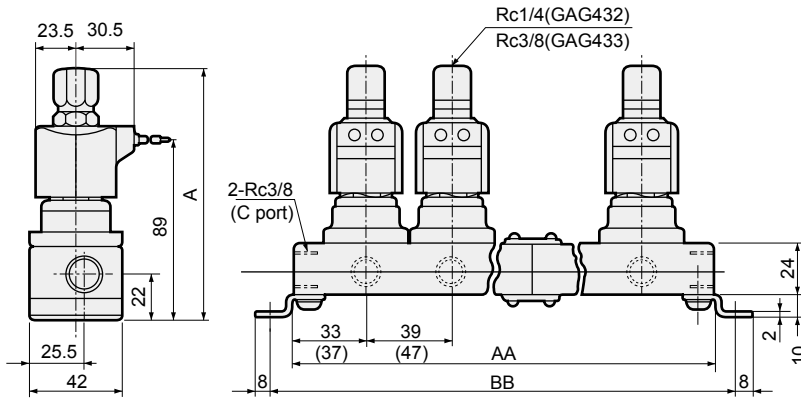
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S/B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

GAG33*/43* Series



Dimensions: GAG432/GAG433 Series

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



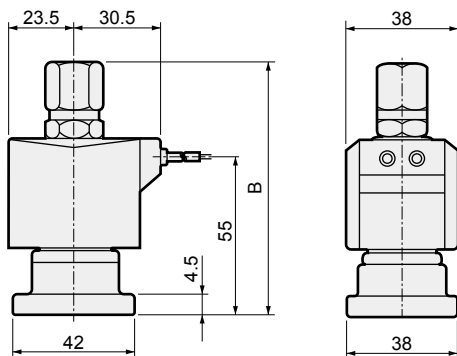
Model No.	A
GAG432-4 to 5	120.5
GAG433-4 to 5	124

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

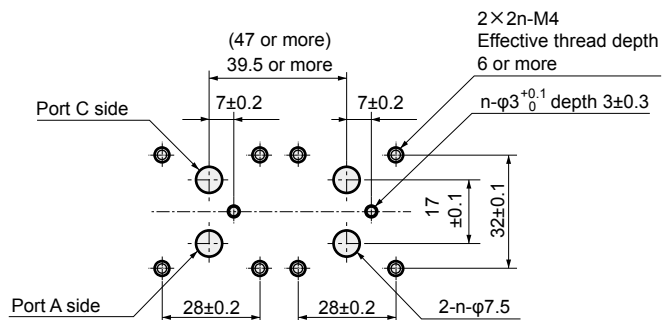
- *1 : Manifold configuration combines 2-station, 3-station and 5-station units.
- *2 : Dimensions shown in () are for open frame.
- *3 : The dimensions are the same for port sizes of G and NPT threads.

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

- Recommended dimensions for actuator mounting

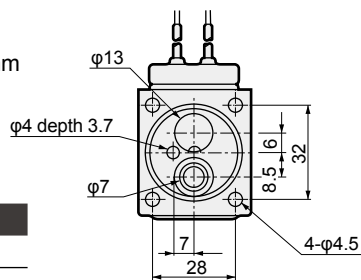


* Lead wire length 300 mm



■ Machining drawing when using 2 actuators

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



Optional dimensions: GAG432/GAG433 Series

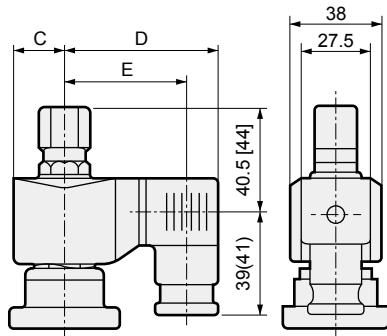


* Refer to the dimensions of grommet lead wire on the left page for common dimensions.

- With DIN terminal box

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

2E
2G
2H



Dimensions shown in [] are for Rc3/8.

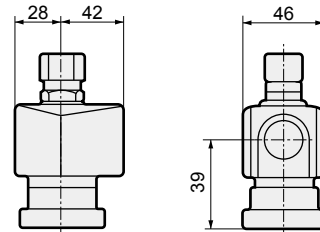
Dimensions shown in () are for G1/2.

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

- Open frame lead wire

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

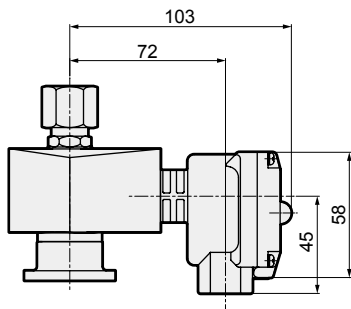
3A
4A
5A



- Open frame + HP terminal box

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

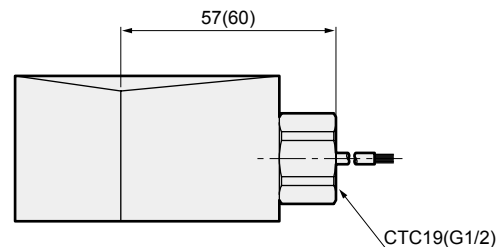
3 M	4M
5 N	4N
I	
J	



- Open frame + conduit

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

3A	G
4A	H
5A	

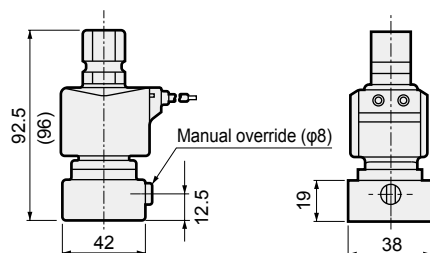


Dimensions shown in () are for G1/2.

- Manual override (locking)

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

A



Dimensions shown in () are for GAG433.

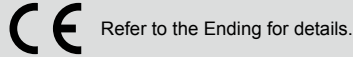
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
SAB/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustColl
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
SpecFld
Custom
Ending



Direct acting 3-port solenoid valve, single unit
(general purpose valve)

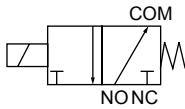
AG34/AG44 Series

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



JIS symbol

- AG34/44: NO pressurization



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

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

*1 : No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

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

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

*3 : The voltage fluctuation range must be within ±10% of the rated voltage.

*4 : Values shown in () are for the DC voltage with DIN terminal box.

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

*6 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

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

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

*1 : No freezing.

*2 : -20 to 80°C when coil housing is HP terminal box with lamp.

*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

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

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

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S \diamond B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

AG34/44 Series

How to order

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

AG44
Model No.

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

Model No.

AG34 **AG44**

Code	Content	Code	Content	Code	Content		
A Port size							
01	Rc1/8	1G	G1/8	1N	1/8NPT	●	
02	Rc1/4	2G	G1/4	2N	1/4NPT	●	●
03	Rc3/8	3G	G3/8	3N	3/8NPT		●

	AG34		AG44			
	TOP	BODY	TOP	BODY		
	1	φ1.5	φ1.5	φ2.0		
2	φ2.0	φ2.0	-	-	●	
3	-	-	φ2.0	φ3.0		●
4	-	-	φ3.0	φ3.0		●

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

Refer to Intro Page 39 for reference on material combinations.

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

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

[Example of model No. 1]

AG34-1G-1-AC100V

Model: AG34

- A** Port size : G1/8
- B** Orifice size : TOP-φ1.5, BODY-φ1.5
- C** Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- D** Coil housing : Grommet lead wire
- E to H** : None
- I** Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

[Example of model No. 2]

AG44-03-4-000ABS-AC100V

Model: AG44

- A** Port size : Rc 3/8
- B** Orifice size : TOP-φ3.0, BODY-φ3.0
- C** Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- D** Coil housing : Grommet lead wire
- E** Manual override (locking) : Selected
- F** Mounting plate : With mounting plate
- G** Other options : None
- H** Surge suppressor : With surge suppressor
- I** Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Precautions for model No. selection






Notes for **C**

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


For Items ④ to ①, the combinations indicated with codes are available.
 Note that if options for Items ⑤ to ⑧ are not required, they should be left blank.

④ Coil housing		⑤	⑥	⑦ Other options			⑧	⑨ Rated voltage		
Content	Std	Manual override (locking)	Mounting plate	Cable gland		Conduit		With surge suppressor	Content	
				(marine cable gland)			(conduit piping)			
				A-15a	A-15b	A-15c	CTC19			G1/2
Blank	Grommet lead wire	A	B					S	100 VAC, 200 VAC	
2E	With DIN terminal box (G1/2)								100 VAC, 200 VAC	
2G	With DIN terminal box (Pg11)								12 VDC, 24 VDC, 48 VDC, 100 VDC	
2H	DIN terminal box with small lamp (Pg11)								100 VAC, 200 VAC, 24 VDC	
3A	Open frame	A	B	D E F			G H	S	100 VAC, 200 VAC	
3M									Lead wire (IP65 or equivalent)	12 VDC, 24 VDC, 48 VDC, 100 VDC
3N									With HP terminal box (G1/2)	100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I									HP terminal box with lamp (G1/2)	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J									HP terminal box (IP65 or equivalent) (G1/2)	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
4A	Open frame (Thermal class 180 (H))	A	B	D E F			G H	S	100 VAC, 200 VAC	
4M									Lead wire	
4N									With HP terminal box (G1/2)	
5A	Open frame (diode integrated)	A	B	D E F			G H	S	100 VAC, 200 VAC	
5M									Lead wire (IP65 or equivalent)	
5N									With HP terminal box (G1/2)	
5I									HP terminal box with lamp (G1/2)	
5J									HP terminal box (IP65 or equivalent) (G1/2)	

Refer to the following cautions for Items ④ to ①.

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

Refer to page 148 for coil selection.

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

⚠ Precautions for model No. selection

Notes for ④

- *5 : Leave blank for the standard coil housing. However, to select options in ⑤, ⑥, ⑦ or ⑧, indicate 00 for Item ④.
- *6 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
- *7 : A DC coil for steam is available for AG44. Contact CKD for more information.

Notes for ⑤ to ⑧

- *8 : For Item ⑦, select an option from D, E, F, G and H.
- *9 : The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
- *10 : As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item ④ 2H), so the surge suppressor S cannot be selected.
- *11 : Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information. Note that tropicalization is not available when the manual override option (A) is selected.

Notes for ⑨

- *12 : 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item ④ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
- *13 : For voltages other than above, contact CKD.
- *14 : The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

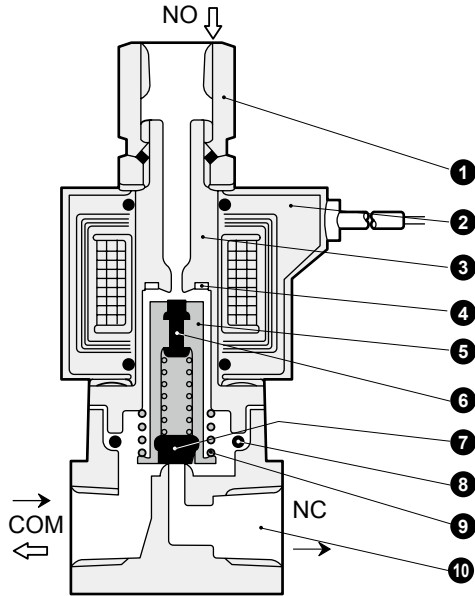
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
S/B/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustCoil
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
SpecFld
Custom
Ending

AG34/44 Series

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/
AD
- APK/
ADK
- DryAir
- EX-
XPLNprf
- XPLNprf
- HVB/
HVL
- S \updownarrow B/
NAB
- LAD/
NAD
- Water-
Rela
- NP/NAP/
NVP
- SNP
- CHB/G
- MXB/G
- Other
valves
- SWD/
MWD
- DustColl
- CVE/
CVSE
- CCH /
CPE/D
- LifeSci
- Gas-
Combus
- Auto-
Water
- SpecFld
- Custom
- Ending

Internal structure and parts list

● AG34/AG44 Series



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

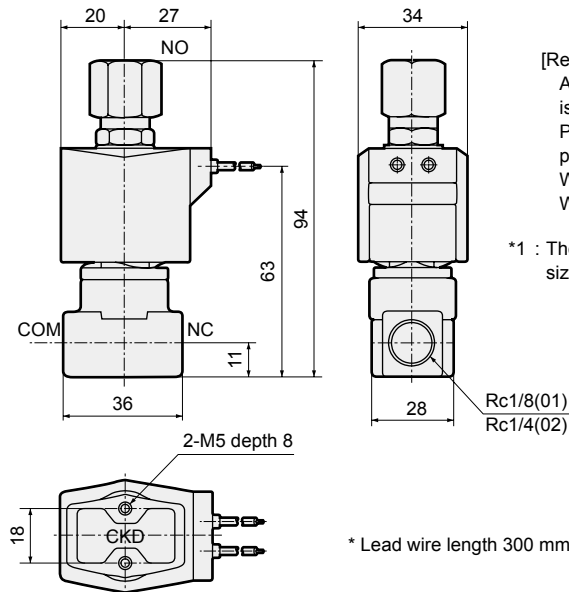
*1 : When the body/sealant combination code is other than blank and H, the material is SUS405 or equivalent/316L/430.

*2 : () shows options.

Dimensions: AG34 Series



● Grommet lead wire
AG34-01/02-1 to 2



[Reference]

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

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

* Lead wire length 300 mm

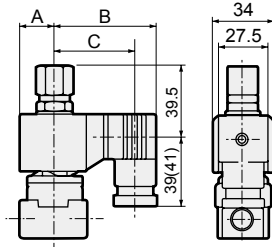
Optional dimensions: AG34 Series



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

- With DIN terminal box
AG34-01/02-1 to 2-*

2E
2G
2H

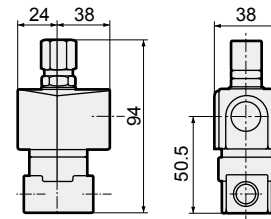


Dimensions shown in () are for G1/2.

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

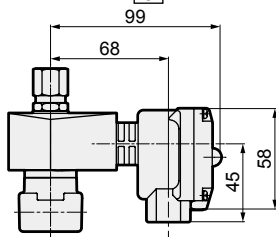
- Open frame lead wire
AG34-01/02-1 to 2-*

3A
4A
5A



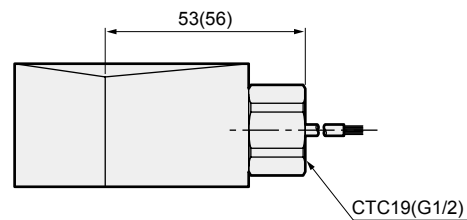
- Open frame + HP terminal box
AG34-01/02-1 to 2-*

3 M / 4M
5 N / 4N
I
J



- Open frame + conduit
AG34-01/02-1 to 2-*

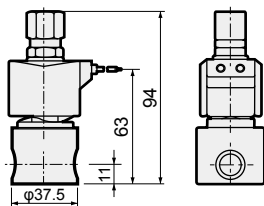
3A G
4A H
5A



Dimensions shown in () are for G1/2.

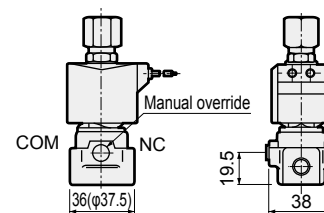
- Stainless steel body + grommet lead wire
AG34-01/02-1 to 2-*

D/E/R/L/M



- Manual override (locking)
AG34-01/02-1 to 2-***

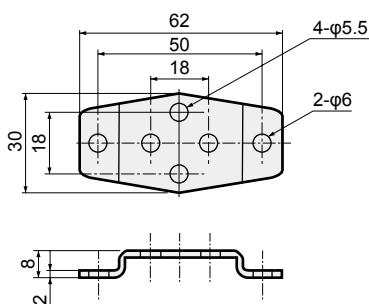
The figure shows copper alloy body.



Dimensions shown in () are for stainless steel body.

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

Material: Steel
Zinc plated



Mounting plate No.1 GE-100106

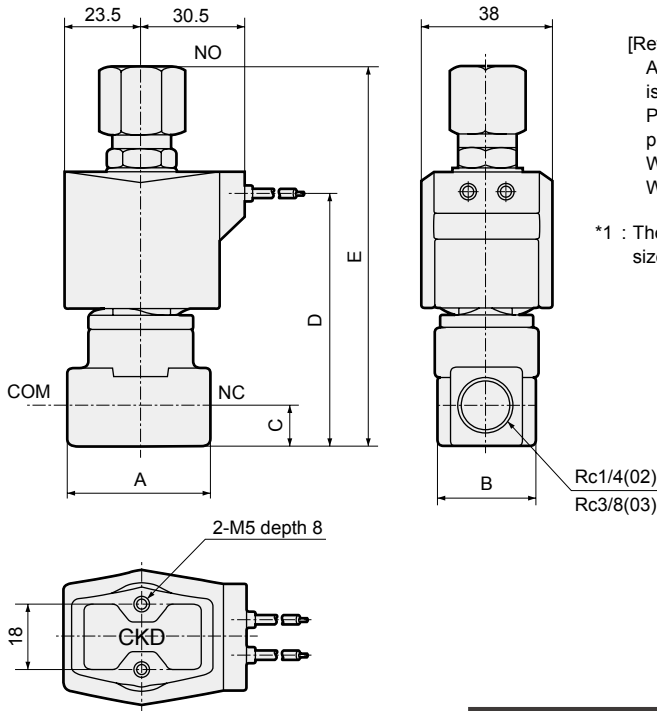
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S/B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

AG34/44 Series

Dimensions: AG44 Series



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



[Reference]

As the JIS symbol flow shows, this type is dedicated for NO port pressurization. Pressurization from other ports is not possible.

When not energized: NO → COM
When energized : COM → NC

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

* Lead wire length 300 mm

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

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- SAB/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combus
- Auto-Water
- SpecFld
- Custom
- Ending

Optional dimensions: AG44 Series

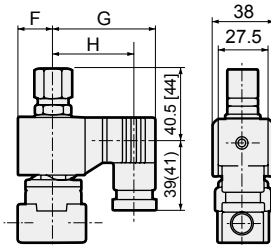


* Refer to the dimensions of grommet lead wire on the left page for common dimensions.

● With DIN terminal box

AG44-02/03-1/3/4-*

2E
2G
2H



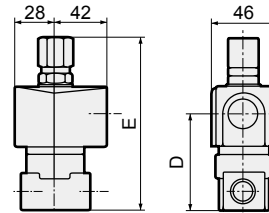
Dimensions shown in [] are for Rc3/8.
Dimensions shown in () are for G1/2.

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

● Open frame lead wire

AG44-02/03-1/3/4-*

3A
4A
5A

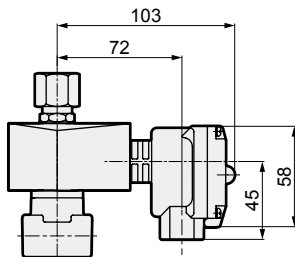


Model No.	D	E
AG44-02-1 to 4-*□A	52.0	99.5
AG44-03-1 to 4-*□A	55.0	106

● Open frame + HP terminal box

AG44-02/03-1/3/4-*

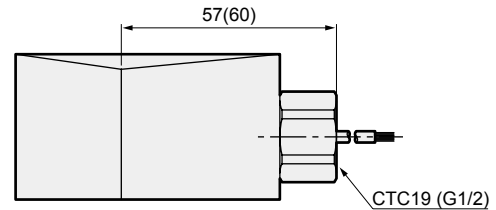
3	M	4M
5	N	4N
	I	
	J	



● Open frame + conduit

AG44-02/03-1/3/4-*

3A	G
4A	H
5A	

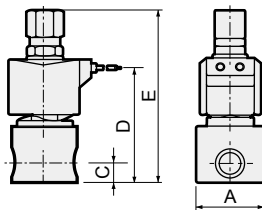


Dimensions shown in () are for G1/2.

● Stainless steel body + grommet lead wire

AG44-02/03-1 to 4-

D/E/L/M/R



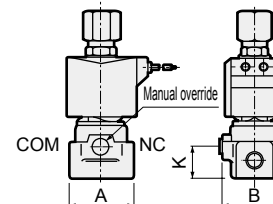
Model No.	A	C	D	E
AG44-02-1 to 4-*	φ37.5	11	68	99.5
AG44-03-1 to 4-*	φ45	12	71	106

● Manual override (locking)

AG44-02/03-1 to 4-***

A

The figure shows copper alloy body.



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

Dimensions shown in () are for stainless steel body.

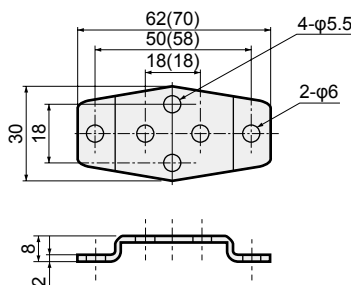
● Mounting plate

AG44-02/03-1 to 4-***

B

Material: Steel

Zinc plated



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

Category	Compatibility	
Mounting plate No. 1 GE-100106	● AG44-02/03-1 to 4 Series ● Stainless steel body AG44-02-1 to 4- <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>D/E/L/M/R</td></tr></table>	D/E/L/M/R
D/E/L/M/R		
Mounting plate No. 2 GE-100159	● Stainless steel body AG44-03-1 to 4- <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>D/E/L/M/R</td></tr></table>	D/E/L/M/R
D/E/L/M/R		

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
S◇B/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustColl
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
SpecFld
Custom
Ending



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

GAG34*/GAG44* Series

● NO pressurization

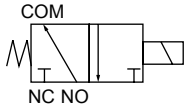
CE Refer to the Ending for details.



- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/
AD
- APK/
ADK
- DryAir
- EX-
XPLNprf
- XPLNprf
- HVB/
HVL
- SΔB/
NAB
- LAD/
NAD
- Water-
Rela
- NP/NAP/
NVP
- SNP
- CHB/G
- MXB/G
- Other
valves
- SWD/
MWD
- DustColl
- CVE/
CVSE
- CCH /
CPE/D
- LifeSci
- Gas-
Combus
- Auto-
Water
- SpecFld
- Custom
- Ending

JIS symbol

● GAG34*/44*: NO pressurization



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

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

*1 : No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

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

*1 : The model numbers above are for the basic NO port size (Rc) and orifice size. Refer to How to order for other combinations.

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

*3 : The voltage fluctuation range must be within ±10% of the rated voltage.

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

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

*6 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

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

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

*1 : No freezing.

*2 : -20 to 80°C when coil housing is HP terminal box with lamp.

*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

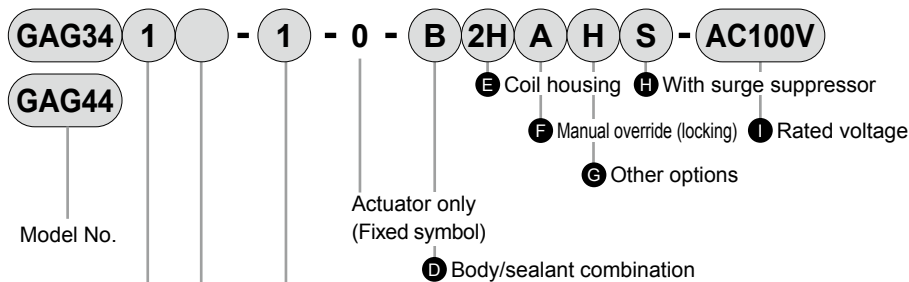
Model No.	Port size	Orifice size (mm)		Flow characteristics					
		TOP	BODY	C[dm ³ /(s·bar)]		b		Cv	
				TOP	BODY	TOP	BODY	TOP	BODY
GAG341-1	Rc1/8	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
GAG342-1	Rc1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
		2.0	2.0	0.53	0.53	0.54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

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

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S \diamond B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

GAG34*/44* Series

How to order



A NO port size

B Thread

C Orifice size

[Example of model No. 1]

GAG341-1-0-AC200V

Model: GAG341

- A** NO port size : 1/8
- B** Thread : Rc
- C** Orifice size : TOP-φ1.5, BODY-φ1.5
- D** Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- E** Coil housing : Grommet lead wire
- F** to **H** : None
- I** Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

[Example of model No. 2]

GAG342G-2-0-000AS-AC200V

Model: GAG342

- A** NO port size : 1/4
- B** Thread : G
- C** Orifice size : TOP-φ2.0, BODY-φ2.0
- D** Body/sealant combination : Body - copper alloy, sealant - nitrile rubber
- E** Coil housing : Grommet lead wire
- F** Manual override (locking) : Selected
- G** Other options : None
- H** Surge suppressor : With surge suppressor
- I** Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

Code		Content	Model No.	
			GAG34*	GAG44*
A NO port size				
1	1/8		●	
2	1/4		●	●
3	3/8			●

B Thread				
Blank	Rc		●	●
G	G		●	●
N	NPT		●	●

	GAG34*		GAG44*			
	TOP	BODY	TOP	BODY		
1	φ1.5	φ1.5	φ2.0	φ2.0	●	●
2	φ2.0	φ2.0	-	-	●	
3	-	-	φ2.0	φ3.0		●
4	-	-	φ3.0	φ3.0		●

D Body/sealant combination					*1*3*4	
	Body	Seal	Treatment	Remarks		
Blank	Std. Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
B	Copper alloy	Fluoro rubber	-	Air/low vacuum/kerosene (up to 90°C *2)	●	●
D	Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
E	Stainless steel	Fluoro rubber	-	Air/low vacuum/kerosene (up to 90°C *2)	●	●
H	Option Copper alloy	Nitrile rubber	Oil free	Air/water/low vacuum/kerosene (up to 60°C)	●	●
J	Copper alloy	Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●
P	Copper alloy	Ethylene propylene rubber		Hot water (up to 90°C *2)	●	●
L	Stainless steel	Nitrile rubber		Air/water/low vacuum/kerosene (up to 60°C)	●	●
M	Stainless steel	Fluoro rubber		Air/low vacuum/kerosene (up to 90°C *2)	●	●
R	Stainless steel	Ethylene propylene rubber		Hot water (up to 90°C *2)	●	●

Refer to Intro Page 39 for reference on material combinations.

E to I

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

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

⚠ Precautions for model No. selection






Notes for **D**

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


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

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

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

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

Refer to page 148 for coil selection.

G H		● Conduit ● G(CTC19) ● H(G1/2)
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⚠ Precautions for model No. selection

Notes for (E)

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

Notes for (F) to (H)

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

Notes for (I)

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

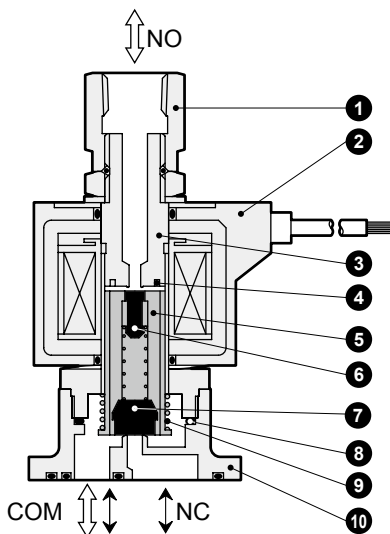
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S ^Δ B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustCoil
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

GAG34*/44* Series

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- SAB/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combust
- Auto-Water
- SpecFld
- Custom
- Ending

Internal structure and parts list

● GAG34*/GAG44* actuator



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

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

*2 : () shows options.

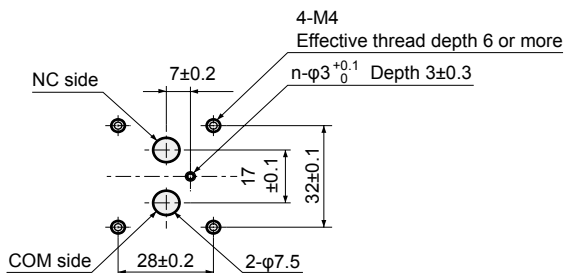
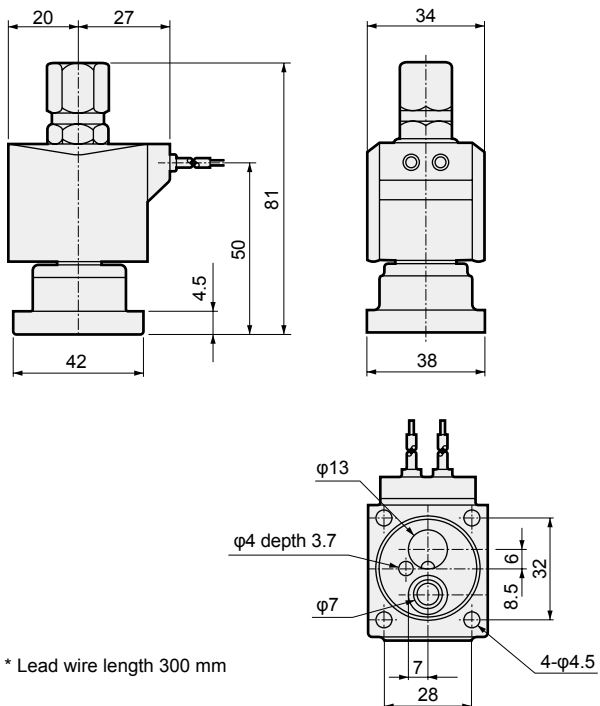
*3 : 4 body mounting screws and 2 O-rings are attached.

Dimensions: GAG341/GAG342 Series



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

● Recommended dimensions for actuator mounting



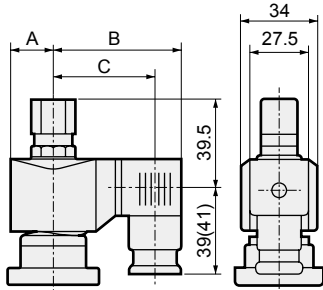
Optional dimensions: GAG341/GAG342 Series



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

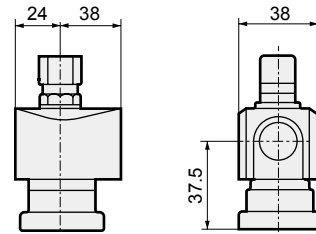
- With DIN terminal box
GAG34*-1 to 2-0-*

2E
2G
2H



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

3A
4A
5A

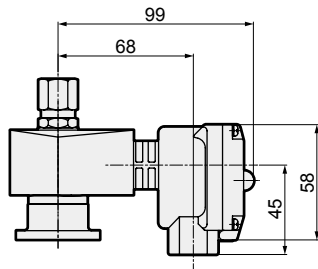


Dimensions shown in () are for G1/2.

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

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

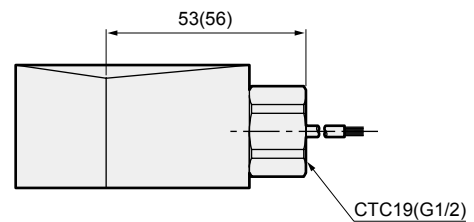
3 M
4 N
5



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

3A
4A
5A

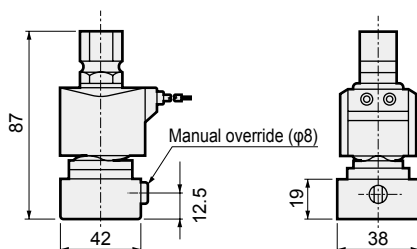
G
H



Dimensions shown in () are for G1/2.

- Manual override (locking)
GAG34*-1 to 2-0-***

A



EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S/B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

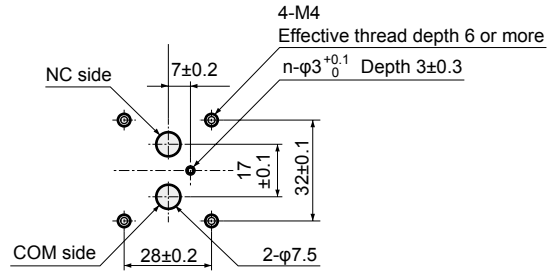
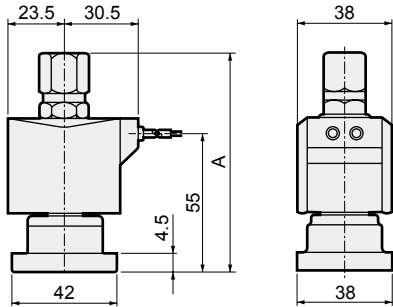
GAG34*/44* Series

Dimensions: GAG442/GAG443 Series

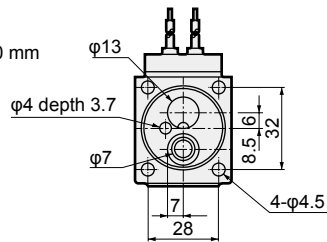


● Actuator (grommet lead wire)
GAG44*-1/3/4-0

● Recommended dimensions for actuator mounting



* Lead wire length 300 mm



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

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG**
- AP/
AD
- APK/
ADK
- DryAir
- EX-
XPLNprf
- XPLNprf
- HVB/
HVL
- S $\hat{\Delta}$ B/
NAB
- LAD/
NAD
- Water-
Rela
- NP/NAP/
NVP
- SNP
- CHB/G
- MXB/G
- Other
valves
- SWD/
MWD
- DustColl
- CVE/
CVSE
- CCH /
CPE/D
- LifeSci
- Gas-
Combus
- Auto-
Water
- SpecFld
- Custom
- Ending

Optional dimensions: GAG442/GAG443 Series



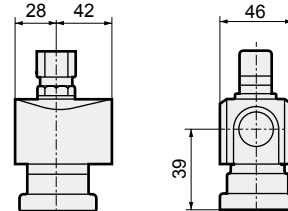
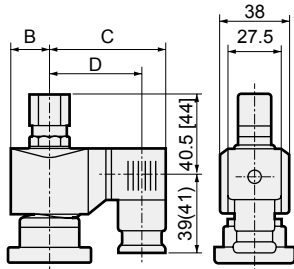
* Refer to the dimensions of grommet lead wire on the left page for common dimensions.

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

2E
2G
2H

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

3A
4A
5A



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

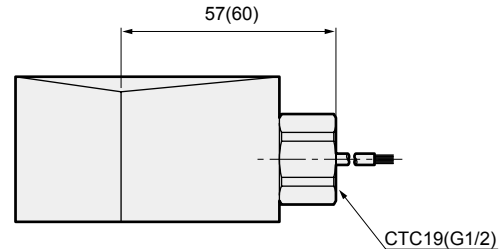
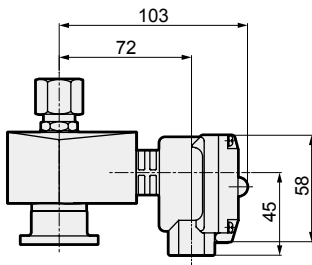
Voltage	B	C	D
AC	23.5	65.5	54(53.5)
DC	23.5	66	54.5(54)

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

3 M
4 N
5

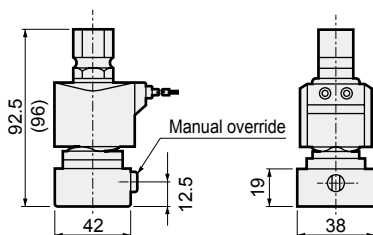
- Open frame + conduit
GAG44*-1/3/4-0-*

3A
4A
5A



Dimensions shown in () are for G1/2.

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



Dimensions shown in () are for GAG443.

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
SAB/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending