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

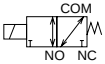
# AG31/41 Series

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

CE Refer to Ending 17 for more details. CAD

## JIS symbol

● AG31/41: Universal type




## Common specifications

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

Note 1: No freezing

## Individual specifications

| Descriptions / Model no. | Port size | Orifice (mm) | | Max. working pressure diff. (MPa) | | | | | | Rated voltage | Apparent power (VA) | | | | Power consumption (W) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Air | | Water, hot water, kerosene | | Oil (50 mm$^2$/s) | | | Holding | | Starting | | AC | DC | Mass (kg) |
| | | TOP | BODY | AC | DC | AC | DC | AC | DC | | 50Hz | 60Hz | 50Hz | 60Hz | 50/60Hz | | |
| **AG31-01-1** | Rc1/8 | 1.5 | 1.5 | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 (0.5) | 100 VAC 50/60Hz<br>110 VAC 60Hz<br>200 VAC 50/60Hz | 14 | 11 | 20 | 16 | 6/4.2 | 11 (8.1) | 0.36 |
| **-01-2** | | 2.0 | 2.0 | 0.4 | 0.4 (0.35) | 0.4 | 0.4 | 0.25 | 0.2 (0.15) | | | | | | | | |
| **-02-1** | Rc1/4 | 1.5 | 1.5 | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 (0.5) | | | | | | | | |
| **-02-2** | | 2.0 | 2.0 | 0.4 | 0.4 (0.35) | 0.4 | 0.4 | 0.25 | 0.2 (0.15) | | | | | | | | |
| **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) | 220 VAC 60Hz<br>12 VDC<br>24 VDC<br>48 VDC<br>100 VDC | 22 | 17 | 35 | 27 | 8.3/6.2 | 11 (10.4) | 0.45 |
| **-02-2** | | 2.3 | 2.3 | 0.7 | 0.4 (0.25) | 0.7 | 0.4 | 0.25 | 0.15 (0.1) | | | | | | | | |
| **-03-1** | Rc3/8 | 2.0 | 2.0 | 1.0 | 0.7 (0.45) | 1.0 | 0.7 | 0.4 | 0.3 (0.25) | | | | | | | | 0.48 |
| **-03-2** | | 2.3 | 2.3 | 0.7 | 0.4 (0.25) | 0.7 | 0.4 | 0.25 | 0.15 (0.1) | | | | | | | | |

*1: Models above show basic port size (Rc) and orifice. Refer to How to order about other combinations.
*2: Refer to DC column for maximum working pressure differential of coil with diode.
*3: Variation of rated voltage should be within ±10%.
*4: When DIN terminal box and DC voltage specifications, ( ) shows the maximum working pressure differential pressurized from NO port.
*5: When to be continuously energized, use fluoro rubber sealing.
*6: When PTFE resin sealing, NO port cannot be pressurized.

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

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

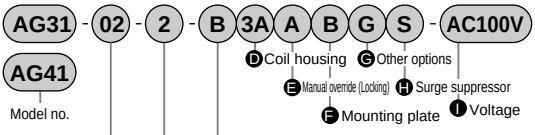
Note 1: No freezing
Note 2: The range is -20 to 80℃ when using the square terminal box with light for the coil housing.

## Flow characteristics

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

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

## How to order




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

**B Orifice**

| | AG31 | | AG41 | | | |
|---|---|---|---|---|---|---|
| | TOP | BODY | TOP | BODY | | |
| **1** | $\phi$1.5 | $\phi$1.5 | $\phi$2.0 | $\phi$2.0 | ● | ● |
| **2** | $\phi$2.0 | $\phi$2.0 | $\phi$2.3 | $\phi$2.3 | ● | ● |

**C Body, sealant combination**

| | | Body | Sealant | Treat | Remarks | | |
|---|---|---|---|---|---|---|---|
| **Blank** | Std. | Brass | Nitrile rubber | - | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **B** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *2) | ● | ● |
| **C** | | | PTFE | | Steam (up to 184℃ *2) | ● | ● |
| **V** | | | Fluoro rubber | Vac. Inspec. | Medium vacuum | ● | ● |
| **D** | Option | Stainless steel | Nitrile rubber | - | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **E** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *2) | ● | ● |
| **F** | | | PTFE | | Steam (up to 184℃ *2) | ● | ● |
| **W** | | | Fluoro rubber | Vac. Inspec. | Medium vacuum | ● | ● |
| **H** | | Brass | Nitrile rubber | Oil-prohibit | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **J** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *2) | ● | ● |
| **K** | | | PTFE | | Steam (up to 184℃ *2) | ● | ● |
| **P** | | | Ethylene propylene diene rubber | | Hot water (up to 90℃ *2) | ● | ● |
| **L** | | Stainless steel | Nitrile rubber | | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **M** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *2) | ● | ● |
| **N** | | | PTFE | | Steam (up to 184℃ *2) | ● | ● |
| **R** | | | Ethylene propylene diene rubber | | Hot water (up to 90℃ *2) | ● | ● |

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

**D to I**

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

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

<Example 1 of model number>
**AG31-02-1-AC100V**
Series : AG31
A Port size : Rc1/4
B Orifice : TOP - $\phi$1.5, BODY - $\phi$1.5
C Body, sealant combination
: Body - brass, sealant - nitrile rubber
D Coil housing : Grommet lead wire
E to H : Blank
I Rated voltage
: 100 VAC 50/60 Hz, 110 VAC 60 Hz

<Example 2 of model number>
**AG41-03-2-000ABS-AC100V**
Series: AG41
A Port size : Rc3/8
B Orifice : TOP - $\phi$2.3, BODY - $\phi$2.3
C Body, sealant combination
: Body - brass, sealant - nitrile rubber
D Coil housing : Grommet lead wire
E Manual override (Locking) : Selected
F Mounting plate : With mounting plate
G Other options : Blank
H Surge suppressor : With surge suppressor
I Rated voltage
:100 VAC 50/60 Hz, 110 VAC 60 Hz

### ⚠ Note on model no. selection

Note on (C)

*1: Standard is blank, however (D), (E), (F), (G) or (H) selected, complete (C) with 0.
*2: (C): When selecting 4A, 4K, 4H
*3: The ethylene propylene diene rubber seal combination ((C) P, R) cannot be used with air.(Compressed air contains oil, and ethylene propylene diene rubber is not oil-resistant.)
*4: For option symbol V or W, the vacuum inspection is carried out at "leakage: 1.33 x 10-6Pa·m³/s or less".

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

| (D) Coil housing | | | (E) Manual override (Locking) | (F) Mounting plate | (G) Other options | | | | | (H) Surge suppressor | (I) Rated voltage |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Descriptions | | | | | Cable gland (Marine cable gland) | | | Conduit (Conduit pipe) | | | Descriptions |
| | | | | | A-15a | A-15b | A-15c | CTC 19 | G 1 / 2 | | |
| **Blank** | Std. | Grommet lead wire | A | B | | | | | | S | 100 VAC, 200 VAC |
| **2E** | | DIN terminal box (G1/2) | | | | | | | | | 100 VAC, 200 VAC<br>12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **2G** | | DIN terminal box (Pg11) | | | | | | | | | |
| **2H** | | DIN terminal box + small light (Pg11) | | | | | | | H | | 100 VAC, 200 VAC, 24 VDC |
| **3A** | Option | Open frame type: Lead wire | A | B | | | | G | H | S | 100 VAC, 200 VAC<br>12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3K** | | Open frame type: Square terminal box (G1/2) | | | D | E | F | | | | |
| **3H** | | Open frame type: Square terminal box + light (G1/2) | | | | | | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **3P** | | Open frame type: Square terminal box (IP65 or equivalent) (G1/2) | | | | | | | | | 100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3Q** | | Open frame type: Square terminal box + light (IP65 or equivalent) (G1/2) | | | | | | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **4A** | | Open frame type (Heat proof class H): Lead wire | A | B | | | | G | H | S | 100 VAC, 200 VAC |
| **4K** | | Open frame type (Heat proof class H): Square terminal box (G1/2) | | | D | E | F | | | | |
| **4H** | | Open frame type (Heat proof class H): Square terminal box + light (G1/2) | | | | | | | | | |
| **5A** | | Open frame type (Diode integrated): Lead wire | A | B | | | | G | H | | 100 VAC, 200 VAC |
| **5K** | | Open frame type (Diode integrated): Square terminal box (G1/2) | | | D | E | F | | | | |
| **5H** | | Open frame type (Diode integrated): Square terminal box + light (G1/2) | | | | | | | | | |
| **5P** | | Open frame type (Diode integrated): Square terminal box (IP65 or equivalent) (G1/2) | | | | | | | | | |
| **5Q** | | Open frame type (Diode integrated): Square terminal box + light (IP65 or equivalent) (G1/2) | | | | | | | | | |

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

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

| | | |
|---|---|---|
| G<br>H |  | ● Conduit<br>● G (CTC19)<br>● H (G1/2) |

Refer to Page 122 for Coil selection.

## ⚠ Note on model no. selection

Note on (D)

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

Note on (E) to (H)

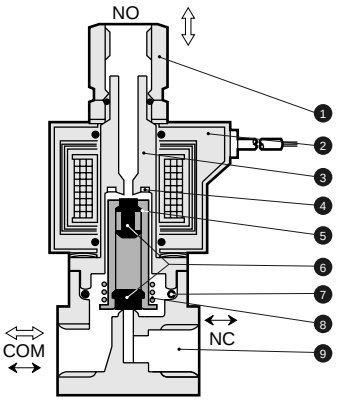
*8: When (C) is C, F, K, N, V, or W, manual override (item (E) A) is not available.
*9: Select one among D, E, F, G, H for (G).
*10: The surge suppressor is an accessory for the lead wire coil. When using the coil with terminal box, the surge suppressor is mounted in the terminal box.
*11: Surge suppressor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

Note on (I)

*13: 100 VAC coil is compatible with 100 VAC 50/60 Hz, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. However, use (D) 5A, 5K, 5H, 5P, 5Q coils only for 100 VAC 50/60 Hz, 200 VAC 50/60 Hz.
*14: Consult with CKD about other than above voltage.
*15: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

## Internal structure and main parts materials

● AG31/41 Series



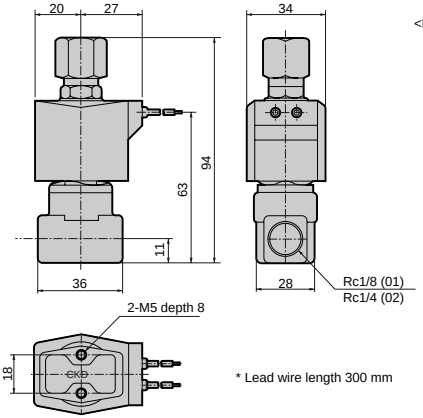

| No. | Parts name | Material | |
|---|---|---|---|
| 1 | Socket | C3604 (SUS303) | Brass (stainless steel) |
| 2 | Coil | — | — |
| 3 | Core assembly | SUS405 or equivalent, 316L, 403 *1 | Stainless steel |
| 4 | Shading coil | Cu (Ag when stainless steel body) | Copper (Silver when stainless steel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

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

## Dimensions: AG31 Series

CAD (Page 218)

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




* Lead wire length 300 mm

<References> Arrows of JIS symbol show either three ports can be pressurized, and generally two orifice (TOP, BODY) are same values and rated pressure.
When de-energized: COM → NO or NO → COM
When energized: COM → NC or NC → COM

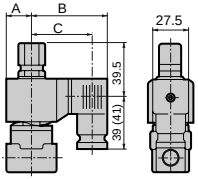
Note 1. The dimensions are the same for the G or NPT screw port size.

## Optional dimensions: AG31 Series

CAD (Page 218)

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

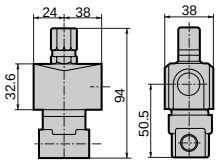
● DIN terminal box
AG31-01/02-1 to 2-* [2E / 2G / 2H]



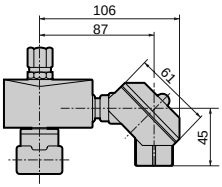

Dimensions shown in ( ) are for the G1/2.

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

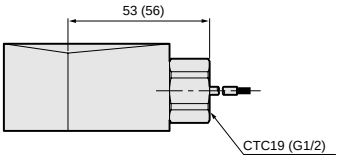
● Open frame type
AG31-01/02-1 to 2-* [3A / 4A / 5A]




● Open frame + square terminal box
AG31-01/02-1 to 2-* [3 / 5] [K / H / P / Q] [/4K / 4H]

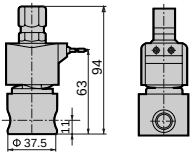



● Open frame type + conduit
AG31-01/02-1 to 2-* [3A / 4A / 5A] [G / H]



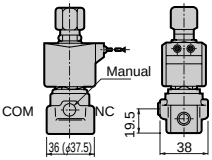

Dimensions shown in ( ) are for the G1/2.

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



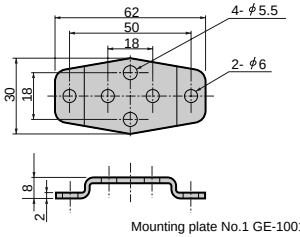

● Manual override (locking)
AG31-01/02-1 to 2-*** [A]

The illustration shows the brass body.




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

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

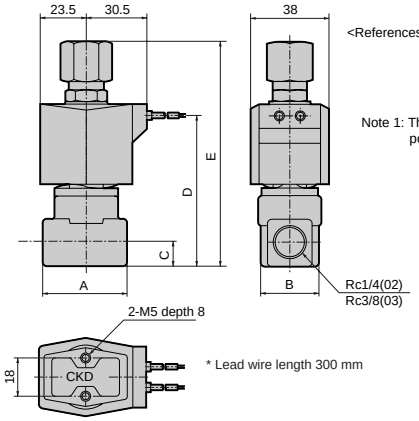



Mounting plate No.1 GE-100106

## Dimensions: AG41 Series

CAD (Page 218)

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




<References> Arrows of JIS symbol show either three ports can be pressurized, and generally two orifice (TOP, BODY) are same values and rated pressure.
When de-energized: COM → NO or NO → COM
When energized: COM → NC or NC → COM

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

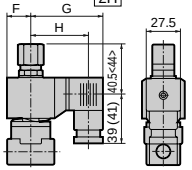
| Model no. | A | B | C | D | E |
|---|---|---|---|---|---|
| **AG41-02-1 to 2** | 36 | 28 | 11 | 68 | 99.5 |
| **AG41-03-1 to 2** | 40 | 28 | 12 | 71 | 106 |

## Optional dimensions: AG41 Series

CAD (Page 218)

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

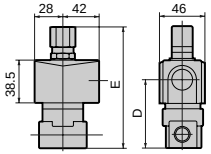
● DIN terminal box
AG41-02/03-1 to 2-* [2E / 2G / 2H]




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

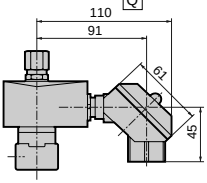
| Voltage | F | G | H |
|---|---|---|---|
| **AC** | 23.5 | 65.5 | 54 (53.5) |
| **DC** | 23.5 | 66 | 54.5 (54) |

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

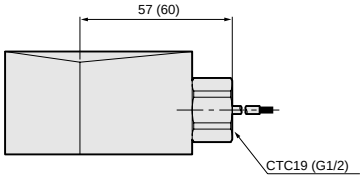



| Model no. | D | E |
|---|---|---|
| **AG41-02-1 to 2-**A** | 52 | 99.5 |
| **AG41-03-1 to 2-**A** | 55 | 106 |

● Open frame type + square terminal box
AG41-02/03-1 to 2-* [3 / 5] [K / H / P / Q] / [4K / 4H]

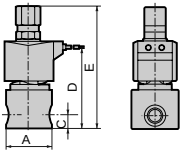



● Open frame type + conduit
AG41-02/03-1 to 2-* [3A / 4A / 5A] [G / H]




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

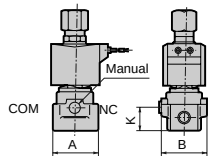
● Stainless steel body
AG41-02/03-1 to 7-[D/E/F/R/W/L/M/N]




| Model no. | A | C | D | E |
|---|---|---|---|---|
| AG41-02-1 to 2-* | 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]

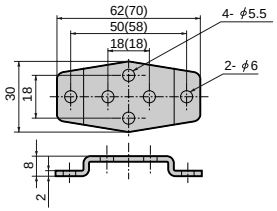
The illustration shows the brass body.




| 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 |

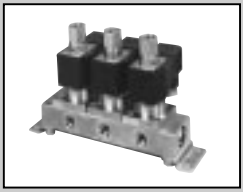
Dimensions shown in ( ) are for the stainless steel body.

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




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

| Code | Model |
|---|---|
| Mounting plate No. 1<br>**GE-100106** | ● AG41-02/03-1 to 2 Series<br>● Stainless steel body<br>AG41-02-1 to 2-[D/E/F/L/M/N/R/W] |
| Mounting plate No. 2<br>**GE-100159** | ● Stainless steel body<br>AG41-03-1 to 2-[D/E/F/L/M/N/R/W] |



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

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

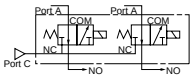
- Universal type
- Common supply, individual exhaust type, common supply, separate flow type

Refer to Ending 17 for more details.

## Manifold circuit structure

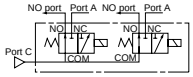
- GAG31*/41*

(Common supply/individual exhaust type)




- GAG352/452

(Common supply/separate flow type)




## Common specifications

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

Note 1: No freezing

## Individual specifications

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

*1: Models above show basic NO port size (Rc) and orifice. Refer to How to order about other combinations.
*2: Refer to How to order (page 176) and Dimensions (page 180) for port size of Port A and C.
*3: Refer to DC column for maximum working pressure differential of coil with diode.
*4: Variation of rated voltage should be within ±10%.
*5: When DIN terminal box and DC voltage specifications, ( ) shows the maximum working pressure differential pressurized from NO port.
*6: When to be continuously energized, use fluoro rubber sealing.
*7: When PTFE resin sealing, NO port cannot be pressurized.

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

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

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

## Flow characteristics

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

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

## How to order

● Common supply/individual exhaust (Port C pressurized)

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

- GAG31: ● Common supply/individual exhaust (Port C pressurized)
- GAG35: ● Common supply/separate flow (Port C pressurized)
- GAG41: ● Common supply/individual exhaust (Port C pressurized)
- GAG45: ● Common supply/separate flow (Port C pressurized)

Model no.

(A) NO port size

(B) Type of screw

(C) Orifice

(D) Station no. *2

(E) Body, sealant combination *3 *4 *5

(F) Coil housing

(G) Manual override (Locking)

(H) Other options

(I) Surge suppressor

(J) Voltage

| Symbol | Descriptions | Model no. GAG3** | Model no. GAG4** |
|---|---|---|---|
| **(A) NO port size** | | | |
| **1** | 1 / 8 | ● | |
| **2** | 1 / 4 | ● | ● |
| **3** | 3 / 8 | | ● |
| **(B) Type of screw** | | | |
| **Blank** | Rc | ● | ● |
| **G** | G | ● | ● |
| **N** | NPT | ● | ● |

**(C) Orifice**

| | GAG3** TOP | GAG3** BODY | GAG4** TOP | GAG4** BODY | GAG3** | GAG4** |
|---|---|---|---|---|---|---|
| **1** | ϕ1.5 | ϕ1.5 | ϕ2.0 | ϕ2.0 | ● | ● |
| **2** | ϕ2.0 | ϕ2.0 | ϕ2.3 | ϕ2.3 | ● | ● |

| **(D) Station no.** | | | |
|---|---|---|---|
| **2** to **10** | 2 stations to 10 stations | ● | ● |
| **0** | Actuator only | ● | ● |

**(E) Body, sealant combination**

| | | Body | Sealant | Treat | Remarks | GAG3** | GAG4** |
|---|---|---|---|---|---|---|---|
| **Blank** | Std. | Brass | Nitrile rubber | - | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **B** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *4) | ● | ● |
| **C** | | | PTFE | | Steam (up to 184℃ *4) | ● | ● |
| **D** | | Stainless steel | Nitrile rubber | - | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **E** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *4) | ● | ● |
| **F** | | | PTFE | | Steam (up to 184℃ *4) | ● | ● |
| **H** | Option | Brass | Nitrile rubber | Oil-prohibit | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **J** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *4) | ● | ● |
| **K** | | | PTFE | | Steam (up to 184℃ *4) | ● | ● |
| **P** | | | Ethylene propylene diene rubber | | Hot water (up to 90℃ *4) | ● | ● |
| **L** | | Stainless steel | Nitrile rubber | | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **M** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *4) | ● | ● |
| **N** | | | PTFE | | Steam (up to 184℃ *4) | ● | ● |
| **R** | | | Ethylene propylene diene rubber | | Hot water (up to 90℃ *4) | ● | ● |

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

**(F) to (J)**

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

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

### <Example 1 of model number>

**GAG311-1-4-AC200V**

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

- (A) NO port size : 1/8
- (B) Type of thread : Rc
- (C) Orifice : TOP - ϕ1.5, BODY - ϕ1.5
- (D) Station no. : 4 stations
- (E) Body, sealant combination : Body - brass, sealant - nitrile rubber
- (F) Coil housing : Grommet lead wire
- (G) to (I) : Blank
- (J) Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

### <Example 2 of model number>

**GAG352G-2-7-000AS-AC200V**

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

- (A) NO port size : 1/4
- (B) Type of thread : G
- (C) Orifice : TOP - ϕ2.0, BODY - ϕ2.0
- (D) Station no. : 7 stations
- (E) Body, sealant combination : Body - brass, sealant - nitrile rubber
- (F) Coil housing : Grommet lead wire
- (G) Manual override (locking) : Selected
- (H) Other options : Blank
- (I) Surge suppressor : With surge suppressor
- (J) Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

### ⚠ Note on model no. selection

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

Note on (D) to (E)

*2: Consult CKD about more than 11 stations manifold.
*3: Standard is blank, however (F), (G), (H) or (I) selected, complete (E) with 0.
*4: (E): When selecting 4A, 4K, 4H
*5: The ethylene propylene diene rubber seal combination ((E) P, R) cannot be used with air. (Compressed air contains oil, and ethylene propylene diene rubber is not oil-resistant.)

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

| (F) Coil housing | | | | (G) | (H) Other options | | | | | (I) | (J) Rated voltage |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Descriptions | | | | Manual override (Locking) | Cable gland (Marine cable gland) | | | Conduit (Conduit pipe) | | Surge suppressor | Descriptions |
| | | | | | A-15a | A-15b | A-15c | CTC 19 | G 1 / 2 | | |
| **Blank** | Std. | Grommet lead wire | | **A** | | | | | | **S** | 100 VAC, 200 VAC |
| **2E** | | DIN terminal box | (G1/2) | | | | | | | | 100 VAC, 200 VAC |
| **2G** | | DIN terminal box | (Pg11) | | | | | | | | 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **2H** | | DIN terminal box + small light | (Pg11) | | | | | | **H** | | 100 VAC, 200 VAC, 24 VDC |
| **3A** | Option | Open frame type | Lead wire | **A** | | | | **G** | **H** | **S** | 100 VAC, 200 VAC |
| **3K** | | | Square terminal box (G1/2) | | | | | | | | 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3H** | | | Square terminal box + light (G1/2) | | **D** | **E** | **F** | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **3P** | | | Square terminal box (IP65 or equivalent) (G1/2) | | | | | | | | 100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3Q** | | | Square terminal box + light (IP65 or equivalent) (G1/2) | | | | | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **4A** | | Open frame type (Heat proof class H) | Lead wire | **A** | | | | **G** | **H** | **S** | 100 VAC, 200 VAC |
| **4K** | | | Square terminal box (G1/2) | | **D** | **E** | **F** | | | | |
| **4H** | | | Square terminal box + light (G1/2) | | | | | | | | |
| **5A** | | Open frame type (Diode integrated) | Lead wire | **A** | | | | **G** | **H** | | 100 VAC, 200 VAC |
| **5K** | | | Square terminal box (G1/2) | | | | | | | | |
| **5H** | | | Square terminal box + light (G1/2) | | **D** | **E** | **F** | | | | |
| **5P** | | | Square terminal box (IP65 or equivalent) (G1/2) | | | | | | | | |
| **5Q** | | | Square terminal box + light (IP65 or equivalent) (G1/2) | | | | | | | | |

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

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

| | | |
|---|---|---|
| G<br>H |  | ●Conduit<br>●G (CTC19)<br>●H (G1/2) |

Refer to Page 122 for Coil selection.

## ⚠ Note on model no. selection

Note on (F)

*6: No symbol is indicated for the standard coil housing, but when using (G), (H) or (I), indicate 00 for (F).
*7: 5A, 5K, 5H, 5P and 5Q are coils which convert AC power to DC with a diode.
*8: A DC coil for steam is available for GAG4**. Contact CKD for more information.

Note on (G) to (I)

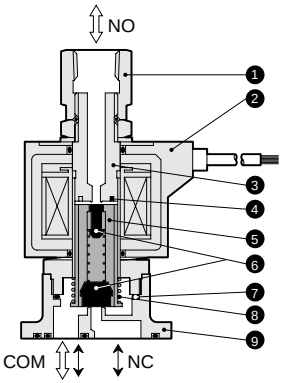
*9: When (E) is C, F, K or N, manual override (item (G) A) is not available.
*10: Select one among D, E, F, G and H for (H).
*11: The surge suppressor is an accessory for the lead wire coil. When using the coil with terminal box, the surge suppressor is mounted in the terminal box.
*12: Surge suppressor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

Note on (J)

*14: 100 VAC coil is compatible with 100 VAC 50/60 Hz, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. However, use (F) 5A, 5K, 5H, 5P, 5Q coils only for 100 VAC 50/60 Hz, 200 VAC 50/60 Hz.
*15: Consult with CKD about other than above voltage.
*16: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

## Internal structure and main parts materials

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

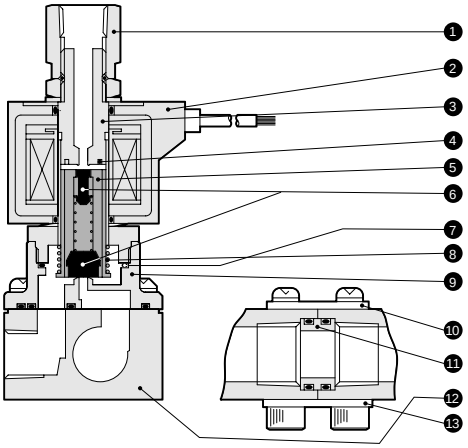



| No. | Parts name | Material | |
|---|---|---|---|
| 1 | Socket | C3604 (SUS303) | Brass (stainless steel) |
| 2 | Coil | — | — |
| 3 | Core assembly | SUS405 or equivalent, 316L, 403 *1 | Stainless steel |
| 4 | Shading coil | Cu (Ag when stainless steel body) | Copper (Silver when stainless steel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

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

## Internal structure and main parts materials

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



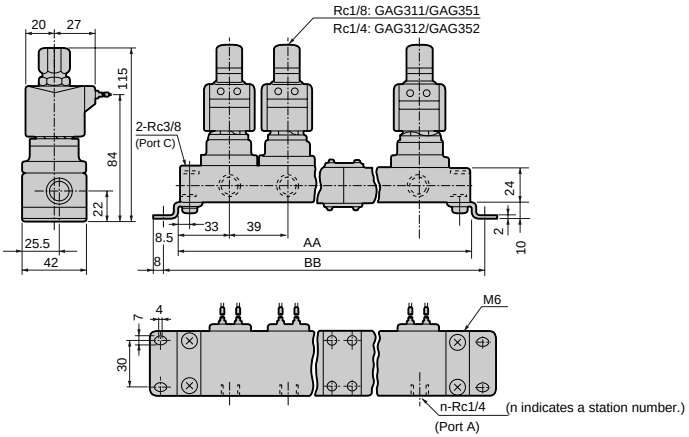

| No. | Parts name | Material | |
|---|---|---|---|
| 1 | Socket | C3604 (SUS303) | Brass (stainless steel) |
| 2 | Coil | — | — |
| 3 | Core assembly | SUS405 or equivalent, 316L, 403 *1 | Stainless steel |
| 4 | Shading coil | Cu (Ag when stainless steel body) | Copper (Silver when stainless steel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

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

## Dimensions: GAG31*/GAG35* Series

CAD (Page 218)

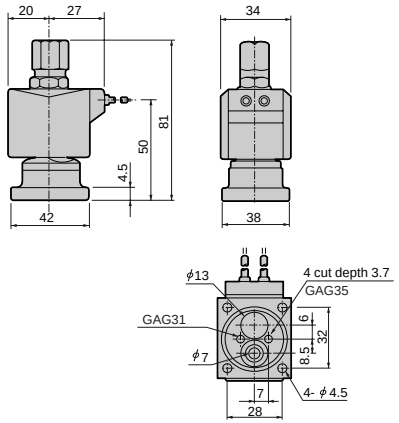
●Manifold (grommet lead wire)
GAG3**-1 to 2-2 to 10



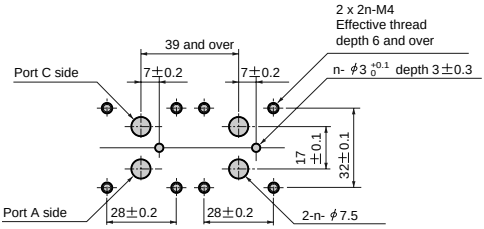

| Station number | AA | BB | Manifold structure | Station number | AA | BB | Manifold structure |
|---|---|---|---|---|---|---|---|
| **2** | 106 | 122 | 2 stations x 1 | **7** | 329 | 345 | 5 stations + 2 stations |
| **3** | 145 | 161 | 3 stations x 1 | **8** | 368 | 384 | 5 stations + 3 stations |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

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

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




●How to mount actuator



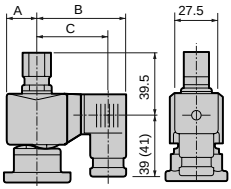

■This machining drawing applies when using two actuators.

## Optional dimensions: GAG31*/GAG35*

CAD (Page 218)

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

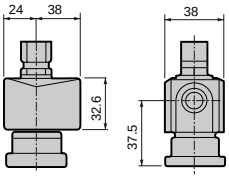
● DIN terminal box
GAG3**-1 to 2-0 to 10-* 2E / 2G / 2H



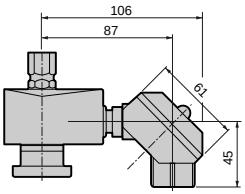

Dimensions shown in ( ) are for the G1/2.

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

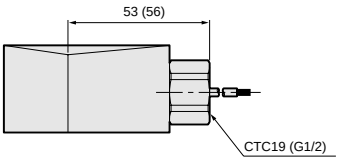
● Open frame lead wire type
GAG3**-1 to 2-0 to 10-* 3A / 4A / 5A




● Open frame + square terminal box
GAG3**-1 to 2-0 to 10-* 3 / 5 K / H / P / Q / 4K / 4H

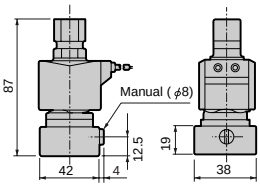



● Open frame type + conduit
GAG3**-1 to 2-0 to 10-* 3A / 4A / 5A G / H




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

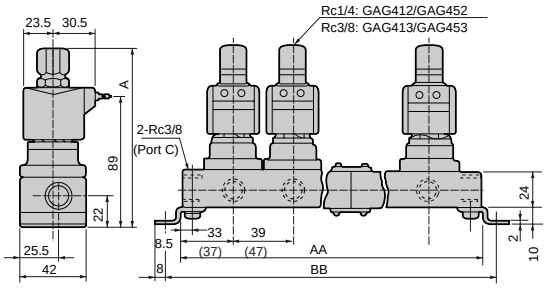
● Manual override (locking)
GAG3**-1 to 2-0 to 10-***A

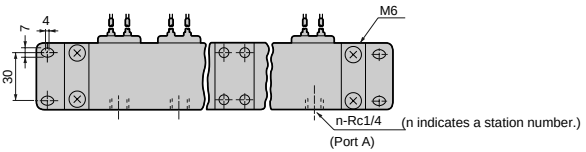


## Dimensions: GAG41*/45* Series

CAD (Page 218)

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



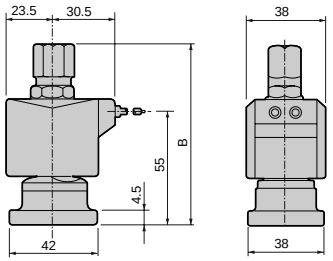




| Model no. | A |
|---|---|
| **GAG412/452-1 to 2** | 120.4 |
| **GAG413/453-1 to 2** | 124 |

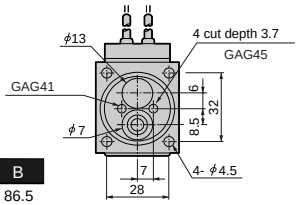
| Station number | AA | BB | Manifold structure | Station number | AA | BB | Manifold structure |
|---|---|---|---|---|---|---|---|
| **2** | 106 (122) | 122 (138) | 2 stations x 1 | **7** | 329 (385) | 345 (401) | 5 stations + 2 stations |
| **3** | 145 (169) | 161 (185) | 3 stations x 1 | **8** | 368 (432) | 384 (448) | 5 stations + 3 stations |
| **4** | 212 (244) | 228 (260) | 2 stations x 2 | **9** | 435 (507) | 451 (523) | 3 stations x 3 |
| **5** | 223 (263) | 239 (279) | 5 stations x 1 | **10** | 446 (526) | 462 (542) | 5 stations x 2 |
| **6** | 290 (338) | 306 (354) | 3 stations x 2 | Consult with CKD about more than 11 stations. | | | |

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

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

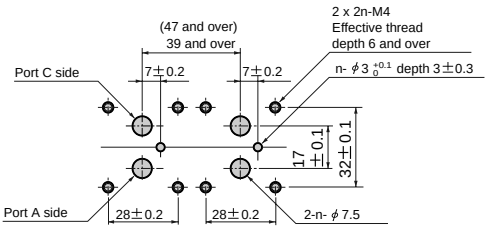



* Lead wire length 300 mm




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

● How to mount actuator



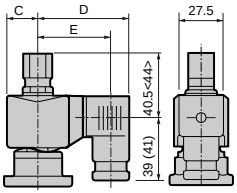

■This machining drawing applies when using two actuators.

## Optional dimensions: GAG41*/45* Series

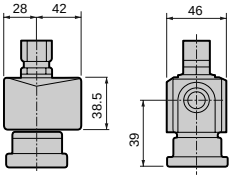
CAD (Page 218)

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

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



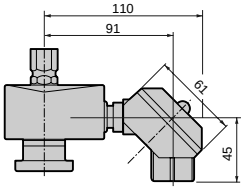

●Open frame lead wire type
GAG4**-1 to 2-0 to 10-* [3A / 4A / 5A]



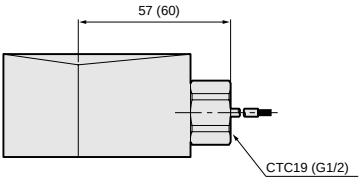

Dimensions shown in ( ) are for the G1/2. Dimensions shown in < > are for the Rc3/8.

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

●Open frame + square terminal box
GAG4**-1 to 2-0 to 10-* [3 / 5] [K / H / P / Q] / [4K / 4H]

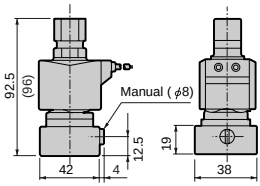



●Open frame type + conduit
GAG4**-1 to 2-0 to 10-* [3A / 4A / 5A] [G / H]




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

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



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

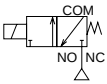
# AG33/43 Series

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

Refer to Ending 17 for more details.

## JIS symbol

●AG33/43:
NC pressurization type




## Common specifications

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

Note 1: No freezing

## Individual specifications

| Descriptions / Model no. | Port size | Orifice (mm) | | Max. working pressure diff. (MPa) | | | | | | Rated voltage | Apparent power (VA) | | | | Power consumption (W) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Air | | Water, hot water, kerosene | | Oil (50 mm$^2$/s) | | | Holding | | Starting | | AC | DC |
| | | TOP | BODY | AC | DC | AC | DC | AC | DC | | 50Hz | 60Hz | 50Hz | 60Hz | 50/60Hz | |
| **AG33-01-1** | Rc1/8 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 100 VAC 50/60Hz<br>110 VAC 60Hz<br>200 VAC 50/60Hz | 14 | 11 | 20 | 16 | 6/4.2 | 11 (8.1) |
| **-01-2** | | 2.0 | 2.0 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | | | | | | | |
| **-02-1** | Rc1/4 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | | | | | | | |
| **-02-2** | | 2.0 | 2.0 | 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) | 220 VAC 60Hz<br>12 VDC<br>24 VDC<br>48 VDC<br>100 VDC | 22 | 17 | 35 | 27 | 8.3/6.2 | 11 (10.4) |
| **-02-5** | | 3.5 | 3.0 | 0.4 | 0.4 (0.25) | 0.4 | 0.4 (0.25) | 0.4 | 0.4 (0.25) | | | | | | | |
| **-03-4** | Rc3/8 | 3.0 | 3.0 | 0.7 | 0.7 (0.55) | 0.7 | 0.7 (0.55) | 0.7 | 0.7 (0.55) | | | | | | | |
| **-03-5** | | 3.5 | 3.0 | 0.4 | 0.4 (0.25) | 0.4 | 0.4 (0.25) | 0.4 | 0.4 (0.25) | | | | | | | |

*1: Models above show basic port size (Rc) and orifice. Refer to How to order about other combinations.
*2: Refer to DC column for maximum working pressure differential of coil with diode.
*3: Variation of rated voltage should be within ±10%.
*4: ( ) shows DC DIN terminal box specifications.
*5: When using with the vacuum, vacuum the NO port side.

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

| Sealant | Fluoro rubber | | Ethylene propylene diene rubber | | PTFE | |
|---|---|---|---|---|---|---|
| Coil (heat proof class) | B | H | B | H | B | H |
| Fluid temperature (Note 1) ℃ | -10 to 60 | -10 to 90 | -10 to 60 | -10 to 90 | -10 to 60 | -10 to 184 |
| Ambient temperature ℃ | -20 to 60 | -20 to 100 (Note 2) | -20 to 60 | -20 to 100 (Note 2) | -20 to 60 | -20 to 100 (Note 2) |
| Valve seat leakage cm³/min. (ANR) | 0.2 or less (air) | | | | 300 or less (air) | |

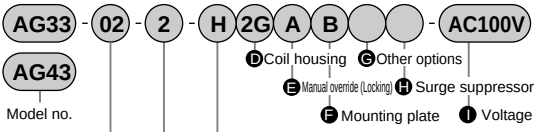
Note 1: No freezing
Note 2: The range is -20 to 80℃ when using the square terminal box with light for the coil housing.

## Flow characteristics

| Model no. | Port size | Orifice (mm) | | Flow characteristics | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | C[dm³/(s·bar)] | | b | | Cv flow factor | |
| | | TOP | BODY | TOP | BODY | TOP | BODY | TOP | BODY |
| **AG33-01-1** | Rc 1/8 | 1.5 | 1.5 | 0.29 | 0.29 | 0.64 | 0.53 | 0.09 | 0.09 |
| **-01-2** | | 2.0 | 2.0 | 0.53 | 0.53 | 0.54 | 0.52 | 0.15 | 0.15 |
| **-02-1** | Rc 1/4 | 1.5 | 1.5 | 0.29 | 0.29 | 0.64 | 0.53 | 0.09 | 0.09 |
| **-02-2** | | 2.0 | 2.0 | 0.53 | 0.53 | 0.54 | 0.52 | 0.15 | 0.15 |
| **AG43-02-4** | Rc 1/4 | 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** | Rc 3/8 | 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 sectional area S and sonic conductance C are converted as S ≒5.0 x C.

How to order




Ⓐ Port size

| Symbol | Descriptions | Symbol | Descriptions | Symbol | Descriptions | Model no. AG33 | Model no. AG43 |
|---|---|---|---|---|---|---|---|
| **01** | Rc 1 / 8 | **1G** | G 1 / 8 | **1N** | NPT 1 / 8 | ● | |
| **02** | Rc 1 / 4 | **2G** | G 1 / 4 | **2N** | NPT 1 / 4 | ● | ● |
| **03** | Rc 3 / 8 | **3G** | G 3 / 8 | **3N** | NPT 3 / 8 | | ● |

Ⓑ Orifice

| | AG33 | | AG43 | | | |
|---|---|---|---|---|---|---|
| | TOP | BODY | TOP | BODY | | |
| **1** | $\phi$1.5 | $\phi$1.5 | - | - | ● | |
| **2** | $\phi$2.0 | $\phi$2.0 | - | - | ● | |
| **4** | - | - | $\phi$ 3.0 | $\phi$ 3.0 | | ● |
| **5** | - | - | $\phi$ 3.5 | $\phi$ 3.0 | | ● |

Ⓒ Body, sealant combination

| | | Body | Sealant | Treat | Remarks | | |
|---|---|---|---|---|---|---|---|
| **Blank** | Std. | Brass | Nitrile rubber | - | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **B** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *2) | ● | ● |
| **C** | | | PTFE | | Steam (up to 184℃ *2) | ● | ● |
| **D** | | Stainless steel | Nitrile rubber | - | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **E** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *2) | ● | ● |
| **F** | | | PTFE | | Steam (up to 184℃ *2) | ● | ● |
| **H** | Option | Brass | Nitrile rubber | Oil-prohibit | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **J** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *2) | ● | ● |
| **K** | | | PTFE | | Steam (up to 184℃ *2) | ● | ● |
| **P** | | | Ethylene propylene diene rubber | | Hot water (up to 90℃ *2) | ● | ● |
| **L** | | Stainless steel | Nitrile rubber | | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| **M** | | | Fluoro rubber | | Air, low vacuum, kerosene (up to 90℃ *2) | ● | ● |
| **N** | | | PTFE | | Steam (up to 184℃ *2) | ● | ● |
| **R** | | | Ethylene propylene diene rubber | | Hot water (up to 90℃ *2) | ● | ● |

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

Ⓓ to Ⓘ

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

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

<Example 1 of model number>
**AG33-02-1-AC100V**
Series : AG33
Ⓐ Port size : Rc1/4
Ⓑ Orifice : TOP - $\phi$1.5, BODY - $\phi$1.5
Ⓒ Body, sealant combination
: Body - brass, sealant - nitrile rubber
Ⓓ Coil housing : Grommet lead wire
Ⓔ to Ⓗ : Blank
Ⓘ Voltage
: 100 VAC 50/60 Hz, 110 VAC 60 Hz

<Example 2 of model number>
**AG43-03-4-000ABS-AC100V**
Series : AG43
Ⓐ Port size : Rc3/8
Ⓑ Orifice : TOP - $\phi$3.0, BODY - $\phi$3.0
Ⓒ Body, sealant combination
: Body - brass, sealant - nitrile rubber
Ⓓ Coil housing : Grommet lead wire
Ⓔ Manual override (Locking) : Selected
Ⓕ Mounting plate : With mounting plate
Ⓖ Other options : Blank
Ⓗ Surge suppressor : With surge suppressor
Ⓘ Voltage
:100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Note on model no. selection

Note on (C)

*1: Standard is blank, however (D), (E), (F), (G) or (H) selected, complete (C) with 0.
*2: (C): When selecting 4A, 4K, 4H
*3: The ethylene propylene diene rubber seal combination ((C) P, R) cannot be used with air.(Compressed air contains oil, and ethylene propylene diene rubber is not oil-resistant.)

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

| Ⓓ Coil housing | | | | Ⓔ | Ⓕ | Ⓖ Other options | | | | | Ⓗ | Ⓘ Rated voltage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Descriptions | | | | Manual override (Locking) | Mounting plate | Cable gland (Marine cable gland) | | | Conduit (Conduit pipe) | | Surge suppressor | Descriptions |
| | | | | | | A-15a | A-15b | A-15c | CTC 19 | G 1 / 2 | | |
| **Blank** | Std. | Grommet lead wire | | **A** | **B** | | | | | | **S** | 100 VAC, 200 VAC |
| **2E** | | DIN terminal box | (G1/2) | | | | | | | | | 100 VAC, 200 VAC |
| **2G** | | DIN terminal box | (Pg11) | | | | | | | | | 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **2H** | | DIN terminal box + small light | (Pg11) | | | | | | | **H** | | 100 VAC, 200 VAC, 24 VDC |
| **3A** | Option | Open frame type | Lead wire | **A** | **B** | | | | **G** | **H** | **S** | 100 VAC, 200 VAC |
| **3K** | | | Square terminal box (G1/2) | | | | | | | | | 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3H** | | | Square terminal box + light (G1/2) | | | **D** | **E** | **F** | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **3P** | | | Square terminal box (IP65 or equivalent) (G1/2) | | | | | | | | | 100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3Q** | | | Square terminal box + light (IP65 or equivalent) (G1/2) | | | | | | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **4A** | | Open frame type (Heat proof class H) | Lead wire | **A** | **B** | | | | **G** | **H** | **S** | 100 VAC, 200 VAC |
| **4K** | | | Square terminal box (G1/2) | | | **D** | **E** | **F** | | | | |
| **4H** | | | Square terminal box + light (G1/2) | | | | | | | | | |
| **5A** | | Open frame type (Diode integrated) | Lead wire | **A** | **B** | | | | **G** | **H** | | 100 VAC, 200 VAC |
| **5K** | | | Square terminal box (G1/2) | | | | | | | | | |
| **5H** | | | Square terminal box + light (G1/2) | | | **D** | **E** | **F** | | | | |
| **5P** | | | Square terminal box (IP65 or equivalent) (G1/2) | | | | | | | | | |
| **5Q** | | | Square terminal box + light (IP65 or equivalent) (G1/2) | | | | | | | | | |

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

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

| | | |
|---|---|---|
| G<br>H |  | ●Conduit<br>●G (CTC19)<br>●H (G1/2) |

Refer to Page 122 for Coil selection.

## ⚠ Note on model no. selection

Note on (D)

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

Note on (E) to (H)

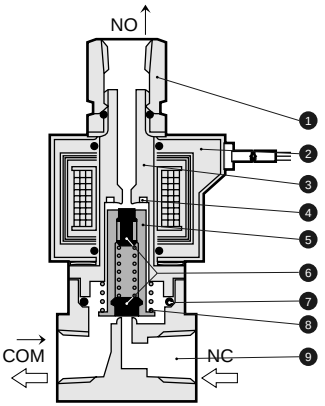
*7: When (C) is C, F, K or N, manual override (item (E) A) is not available.
*8: Select one among D, E, F, G and H for (G).
*9: The surge suppressor is an accessory for the lead wire coil. When using the coil with terminal box, the surge suppressor is mounted in the terminal box.
*10: Surge suppressor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

Note on (I)

*12: 100 VAC coil is compatible with 100 VAC 50/60 Hz, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. However, use (D) 5A, 5K, 5H, 5P, 5Q coils only for 100 VAC 50/60 Hz, 200 VAC 50/60 Hz.
*13: Consult with CKD about other than above voltage.
*14: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

## Internal structure and main parts materials

● AG33/43 Series



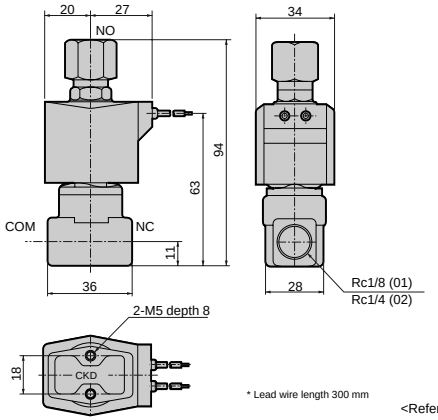

| No. | Parts name | Material | |
|---|---|---|---|
| 1 | Socket tightening torque | C3604 (SUS303) | Brass (stainless steel) |
| 2 | Coil | — | — |
| 3 | Core assembly | SUS405 or equivalent, 316L, 403 *1 | Stainless steel |
| 4 | Shading coil | Cu (Ag when stainless steel body) | Copper (Silver when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

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

## Dimensions: AG33 Series

CAD (Page 218)

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




* Lead wire length 300 mm

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

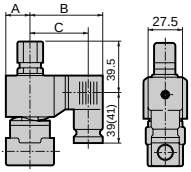
Note 1: The dimensions are the same for the G or NPT thread port size.

## Optional dimensions: AG33 Series

CAD (Page 218)

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

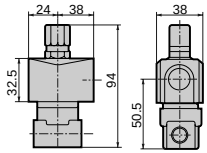
● DIN terminal box
AG33-01/02-1 to 2-* [2E / 2G / 2H]



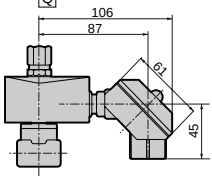

Dimensions shown in ( ) are for the G1/2.

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

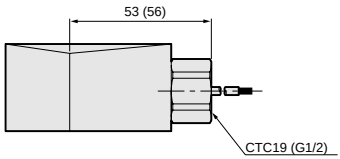
● Open frame lead wire type
AG33-01/02-1 to 2-* [3A / 4A / 5A]




● Open frame + square terminal box
AG33-01/02-1 to 2-* [3 / 5] [K / H / P / Q] / [4K / 4H]

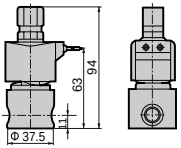



● Open frame type + conduit
AG33-01/02-1 to 2-* [3A / 4A / 5A] [G / H]

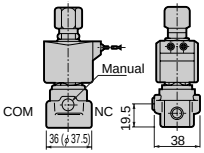



Dimensions shown in ( ) are for the G1/2.

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

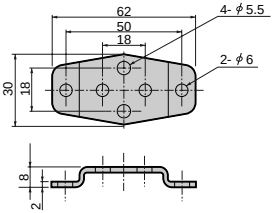



● Manual override (locking)
AG33-01/02-1 to 2-*** [A]
The illustration shows the brass body.




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

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

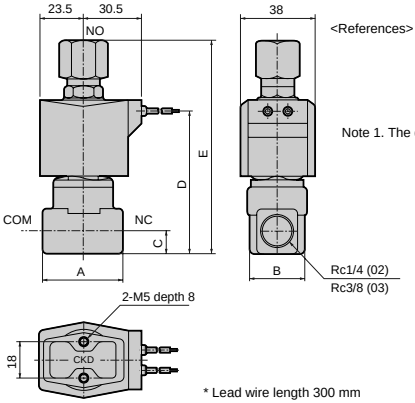



Mounting plate No.1 GE-100106

## Dimensions: AG43 Series

CAD (Page 218)

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




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

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

* Lead wire length 300 mm

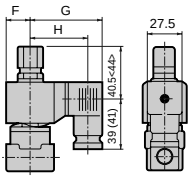
| Model no. | A | B | C | D | E |
|---|---|---|---|---|---|
| **AG43-02-4 to 5** | 36 | 28 | 11 | 68 | 99.5 |
| **AG43-03-4 to 5** | 40 | 28 | 12 | 71 | 106 |

## Optional dimensions: AG43 Series

CAD (Page 218)

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

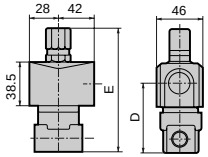
● DIN terminal box
AG43-02/03-4 to 5-* 2E / 2G / 2H




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

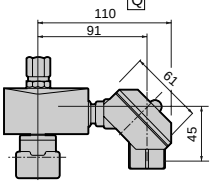
| Voltage | F | G | H |
|---|---|---|---|
| **AC** | 23.5 | 65.5 | 54 (53.5) |
| **DC** | 23.5 | 66 | 54.5 (54) |

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

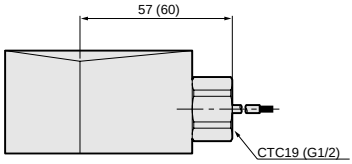



| Model no. | D | E |
|---|---|---|
| **AG43-02-4 to 5-**A** | 52.0 | 99.5 |
| **AG43-03-4 to 5-**A** | 55.0 | 106 |

● Open frame + square terminal box
AG43-02/03-4 to 5-* 3 / 5 K / H / P / Q / 4K / 4H

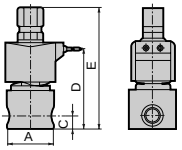



● Open frame type + conduit
AG43-02/03-4 to 5-* 3A / 4A / 5A G / H




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

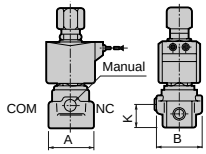
● Stainless steel body
AG43-02/03-4 to 5- D/E/F/R/L/M/N




| 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 |

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

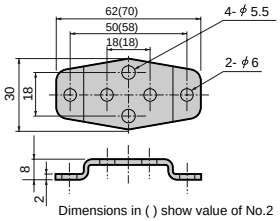
The illustration shows the brass body.




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

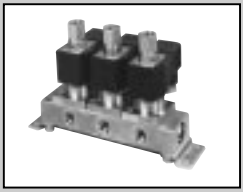
Dimensions shown in ( ) are for the stainless steel body.

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




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

| Code | Model |
|---|---|
| **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 |



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

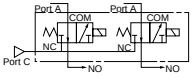
# GAG33*/GAG43* Series

- NC pressurization type
- Common supply, individual exhaust type

Refer to Ending 17 for more details.

## JIS symbol

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




## Common specifications

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

Note 1: No freezing

## Individual specifications

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

*1: Models above show basic NO port size (Rc) and orifice. Refer to How to order about other combinations.
*2: For the port A and port C size, refer to How to order (page 194) and the dimensions (page 198).
*3: Refer to DC column for maximum working pressure differential of coil with diode.
*4: Values in ( ) apply when using the DC voltage with DIN terminal box.
*5: Keep the voltage fluctuation to within ±10% of the rated voltage.
*6: When using with the low vacuum, vacuum the NO port side.

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

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

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

## Flow characteristics

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

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

## How to order

● Common supply/individual exhaust (Port C pressurized)

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

- GAG33 / GAG43: Model no.
- 1 / ( ): Ⓐ NO port size
- 2: Ⓑ Type of screw
- 6: Ⓒ Orifice
- B: Ⓔ Body, sealant combination
- 4A: Ⓕ Coil housing
- A: Ⓓ Station no. *2
- G: Ⓖ Manual override (Locking)
- S: Ⓘ Surge suppressor
- AC100V: Ⓙ Voltage
- Ⓗ Other options

● Common supply/individual exhaust (Port C pressurized)

GAG43 — Model no.

| Symbol | Descriptions | Model no. GAG33* | Model no. GAG43* |
|---|---|---|---|
| **Ⓐ NO port size** | | | |
| 1 | 1 / 8 | ● | |
| 2 | 1 / 4 | ● | ● |
| 3 | 3 / 8 | | ● |
| **Ⓑ Type of screw** | | | |
| Blank | Rc | ● | ● |
| G | G | ● | ● |
| N | NPT | ● | ● |

**Ⓒ Orifice**

| | GAG33* TOP | GAG33* BODY | GAG43* TOP | GAG43* BODY | GAG33* | GAG43* |
|---|---|---|---|---|---|---|
| 1 | ϕ 1.5 | ϕ 1.5 | - | - | ● | |
| 2 | ϕ 2.0 | ϕ 2.0 | - | - | ● | |
| 4 | - | - | ϕ 3.0 | ϕ 3.0 | | ● |
| 5 | - | - | ϕ 3.5 | ϕ 3.0 | | ● |

**Ⓓ Station no.**

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

**Ⓔ Body, sealant combination**

| | | Body | Sealant | Treat | Remarks | | |
|---|---|---|---|---|---|---|---|
| Blank | Std. | Brass | Nitrile rubber | - | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| B | Option | Brass | Fluoro rubber | - | Air, low vacuum, kerosene (up to 90℃ *4) | ● | ● |
| C | Option | Brass | PTFE | - | Steam (up to 184℃ *4) | ● | ● |
| D | Option | Stainless steel | Nitrile rubber | - | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| E | Option | Stainless steel | Fluoro rubber | - | Air, low vacuum, kerosene (up to 90℃ *4) | ● | ● |
| F | Option | Stainless steel | PTFE | - | Steam (up to 184℃ *4) | ● | ● |
| H | Option | Brass | Nitrile rubber | Oil-prohibit | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| J | Option | Brass | Fluoro rubber | Oil-prohibit | Air, low vacuum, kerosene (up to 90℃ *4) | ● | ● |
| K | Option | Brass | PTFE | Oil-prohibit | Steam (up to 184℃ *4) | ● | ● |
| P | Option | Brass | Ethylene propylene diene rubber | Oil-prohibit | Hot water (up to 90℃ *4) | ● | ● |
| L | Option | Stainless steel | Nitrile rubber | Oil-prohibit | Air, water, low vacuum, kerosene (up to 60℃) | ● | ● |
| M | Option | Stainless steel | Fluoro rubber | Oil-prohibit | Air, low vacuum, kerosene (up to 90℃ *4) | ● | ● |
| N | Option | Stainless steel | PTFE | Oil-prohibit | Steam (up to 184℃ *4) | ● | ● |
| R | Option | Stainless steel | Ethylene propylene diene rubber | Oil-prohibit | Hot water (up to 90℃ *4) | ● | ● |

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

**Ⓕ to Ⓙ**

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

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

<Example 1 of model number>
**GAG331-1-4-AC200V**

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

- Ⓐ NO port size : 1/8
- Ⓑ Type of thread : Rc
- Ⓒ Orifice : TOP - ϕ1.5, BODY - ϕ1.5
- Ⓓ Station no. : 4 stations
- Ⓔ Body, sealant combination : Body - brass, sealant - nitrile rubber
- Ⓕ Coil housing : Grommet lead wire
- Ⓖ to Ⓘ : Blank
- Ⓙ Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

<Example 2 of model number>
**GAG332G-2-7-000AS-AC200V**

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

- Ⓐ NO port size : 1/4
- Ⓑ Type of thread : G
- Ⓒ Orifice : TOP - ϕ2.0, BODY - ϕ2.0
- Ⓓ Station no. : 7 stations
- Ⓔ Body, sealant combination : Body - brass, sealant - nitrile rubber
- Ⓕ Coil housing : Grommet lead wire
- Ⓖ Manual override (locking) : Selected
- Ⓗ Other options : Blank
- Ⓘ Surge suppressor : With surge suppressor
- Ⓙ Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

### ⚠ Note on model no. selection

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

Note on (D) to (E)

*2: Consult with CKD about more than 11 stations manifold.
*3: Standard is blank, however (F), (G), (H) or (I) selected, complete (E) with 0.
*4: (E): When selecting 4A, 4K, 4H
*5: The ethylene propylene diene rubber seal combination ((E) P, R) cannot be used with air.(Compressed air contains oil, and ethylene propylene diene rubber is not oil-resistant.)

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

| (F) Coil housing | | | | (G) Manual override (Locking) | (H) Other options: Cable gland (Marine cable gland) A-15a | A-15b | A-15c | Conduit (Conduit pipe) CTC 19 | G 1 / 2 | (I) Surge suppressor | (J) Rated voltage |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank** | Std. | Grommet lead wire | | A | | | | | | S | 100 VAC, 200 VAC |
| **2E** | | DIN terminal box | (G1/2) | | | | | | | | 100 VAC, 200 VAC |
| **2G** | | DIN terminal box | (Pg11) | | | | | | | | 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **2H** | | DIN terminal box + small light | (Pg11) | | | | | | H | | 100 VAC, 200 VAC, 24 VDC |
| **3A** | Option | Open frame type: Lead wire | | A | D | E | F | G | H | S | 100 VAC, 200 VAC |
| **3K** | | Open frame type: Square terminal box | (G1/2) | | | | | | | | 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3H** | | Open frame type: Square terminal box + light | (G1/2) | | | | | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **3P** | | Open frame type: Square terminal box (IP65 or equivalent) | (G1/2) | | | | | | | | 100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3Q** | | Open frame type: Square terminal box + light (IP65 or equivalent) | (G1/2) | | | | | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **4A** | | Open frame type (Heat proof class H): Lead wire | | A | D | E | F | G | H | S | 100 VAC, 200 VAC |
| **4K** | | Open frame type (Heat proof class H): Square terminal box | (G1/2) | | | | | | | | |
| **4H** | | Open frame type (Heat proof class H): Square terminal box + light | (G1/2) | | | | | | | | |
| **5A** | | Open frame type (Diode integrated): Lead wire | | A | D | E | F | G | H | | 100 VAC, 200 VAC |
| **5K** | | Open frame type (Diode integrated): Square terminal box | (G1/2) | | | | | | | | |
| **5H** | | Open frame type (Diode integrated): Square terminal box + light | (G1/2) | | | | | | | | |
| **5P** | | Open frame type (Diode integrated): Square terminal box (IP65 or equivalent) | (G1/2) | | | | | | | | |
| **5Q** | | Open frame type (Diode integrated): Square terminal box + light (IP65 or equivalent) | (G1/2) | | | | | | | | |

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

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

| | | |
|---|---|---|
| G<br>H |  | ● Conduit<br>● G (CTC19)<br>● H (G1/2) |

Refer to Page 122 for Coil selection.

## ⚠ Note on model no. selection

Note on (F)

*6: No symbol is indicated for the standard coil housing, but when using (G), (H) or (I), indicate 00 for (F).
*7: 5A, 5K, 5H, 5P and 5Q are coils which convert AC power to DC with a diode.
*8: A DC coil for steam is available for GAG43*. Contact CKD for more information.

Note on (G) to (I)

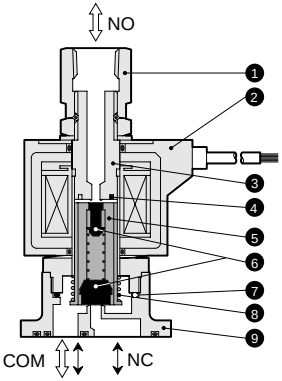
*9: When (E) is C, F, K or N, manual override (item (G) A) is not available.
*10: Select one among D, E, F, G and H for (H).
*11: The surge suppressor is an accessory for the lead wire coil. When using the coil with terminal box, the surge suppressor is mounted in the terminal box.
*12: Surge suppressor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

Note on (J)

*14: 100 VAC coil is compatible with 100 VAC 50/60 Hz, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. However, use (F) 5A, 5K, 5H, 5P, 5Q coils only for 100 VAC 50/60 Hz, 200 VAC 50/60 Hz.
*15: Consult with CKD about other than above voltage.
*16: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

## Internal structure and main parts materials

● GAG33*/GAG43* Series actuator

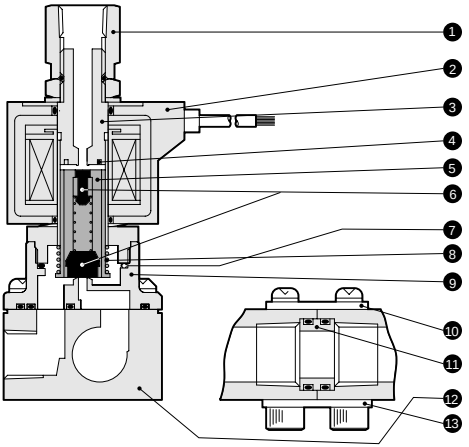



| No. | Parts name | Material | |
|---|---|---|---|
| 1 | Socket tightening torque | C3604 (SUS303) | Brass (stainless steel) |
| 2 | Coil | — | — |
| 3 | Core assembly | SUS405 or equivalent, 316L, 403 *1 | Stainless steel |
| 4 | Shading coil | Cu (Ag when stainless steel body) | Copper (Silver when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

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

## Internal structure and main parts materials

● GAG33*/GAG43* manifold



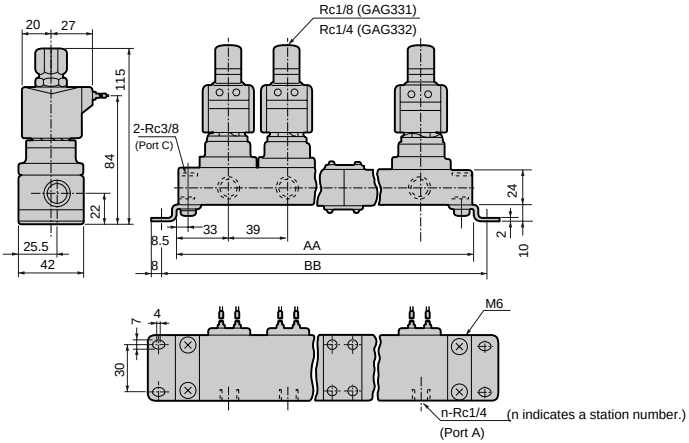

| No. | Parts name | Material | |
|---|---|---|---|
| 1 | Socket tightening torque | C3604 (SUS303) | Brass (stainless steel) |
| 2 | Coil | — | — |
| 3 | Core assembly | SUS405 or equivalent, 316L, 403 *1 | Stainless steel |
| 4 | Shading coil | Cu (Ag when stainless steel body) | Copper (Silver when stainless steel body) |
| 5 | Plunger | SUS405 or equivalent | Stainless steel |
| 6 | Sealing | NBR (FKM/EPDM/PTFE) | NBR: Nitrile rubber<br>FKM: Fluoro rubber<br>EPDM: Ethylene propylene rubber<br>PTFE: Tetrafluoroethylene resin |
| 7 | O ring | NBR (FKM/EPDM/PTFE) (AS568/019) | |
| 8 | Plunger spring | SUS304 | Stainless steel |
| 9 | Body | C3771 (SCS13) | Brass (stainless steel) |
| 10 | Holder | SPCC | Steel |
| 11 | Connector | C3604 (SUS304) | Brass (stainless steel) |
| 12 | Sub-plate | C3604 (SUS303) | Brass (stainless steel) |
| 13 | Connecting plate | SPCC | Steel |

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

## Dimensions: GAG331/GAG332 Series

CAD (Page 218)

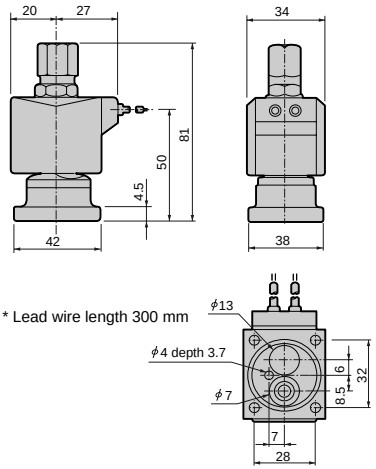
● Manifold (grommet lead wire)
GAG33*-1 to 2-[2 to 10]



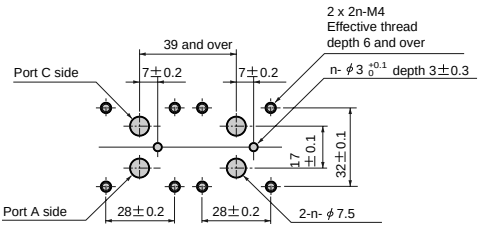

| Station number | AA | BB | Manifold structure | Station number | AA | BB | Manifold structure |
|---|---|---|---|---|---|---|---|
| **2** | 106 | 122 | 2 stations x 1 | **7** | 329 | 345 | 5 stations + 2 stations |
| **3** | 145 | 161 | 3 stations x 1 | **8** | 368 | 384 | 5 stations + 3 stations |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

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

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




● How to mount actuator



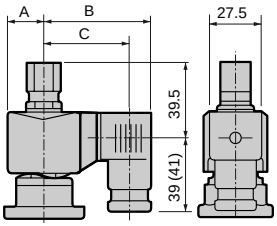

■ This machining drawing applies when using two actuators.

## Optional dimensions: GAG331/GAG332 Series

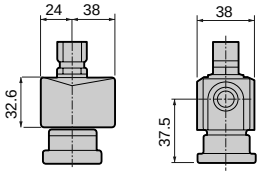
CAD (Page 218)

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

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



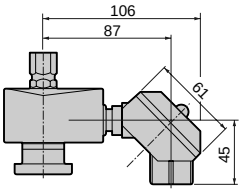

● Open frame lead wire type
GAG33*-1 to 2-0 to 10-* [3A / 4A / 5A]



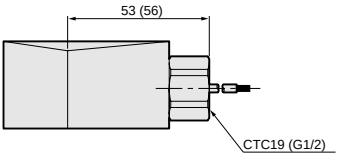

Dimensions shown in ( ) are for the G1/2.

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

● Open frame type + square terminal box
GAG33*-1 to 2-0 to 10-* [3 / 5] [K / H / P / Q] / [4K / 4H]

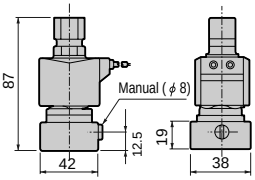



● Open frame type + conduit
GAG33*-1 to 2-0 to 10-* [3A / 4A / 5A] [G / H]




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

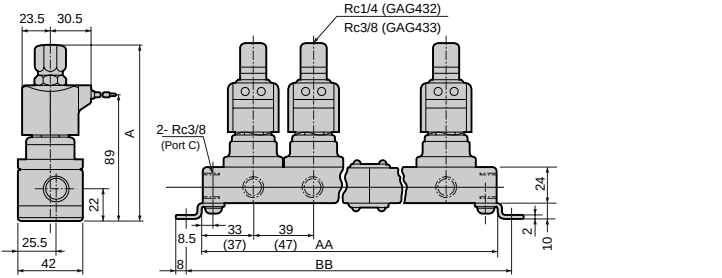
● Manual override (locking)
GAG33*-1 to 2-0 to 10-***[A]



## Dimensions: GAG432/GAG433 Series

CAD (Page 218)

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



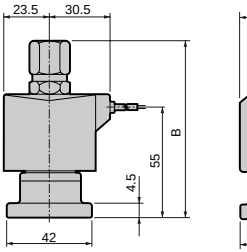

(n indicates a station number.)

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

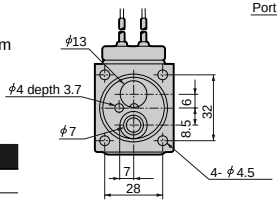
| Station number | AA | BB | Manifold structure | Station number | AA | BB | Manifold structure |
|---|---|---|---|---|---|---|---|
| **2** | 106 (122) | 122 (138) | 2 stations x 1 | **7** | 329 (385) | 345 (401) | 5 stations + 2 stations |
| **3** | 145 (169) | 161 (185) | 3 stations x 1 | **8** | 368 (432) | 384 (448) | 5 stations + 3 stations |
| **4** | 212 (244) | 228 (260) | 2 stations x 2 | **9** | 435 (507) | 451 (523) | 3 stations x 3 |
| **5** | 223 (263) | 239 (279) | 5 stations x 1 | **10** | 446 (526) | 462 (542) | 5 stations x 2 |
| **6** | 290 (338) | 306 (354) | 3 stations x 2 | Consult with CKD about more than 11 stations. | | | |

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

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

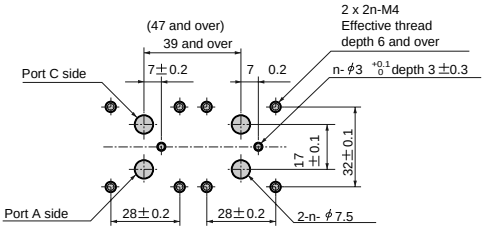



* Lead wire length 300 mm




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

● How to mount actuator



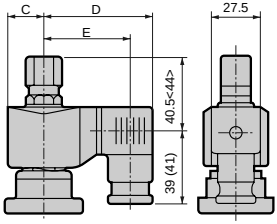

■ This machining drawing applies when using two actuators.

## Optional dimensions: GAG432/GAG433 Series

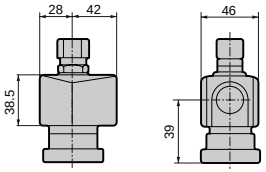
CAD (Page 218)

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

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




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

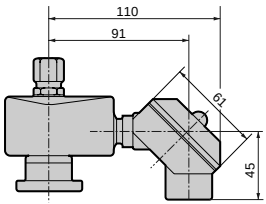



Dimensions shown in < > are for the Rc3/8.

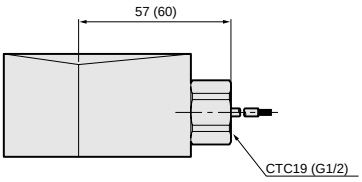
Dimensions shown in ( ) are for the G1/2.

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

● Open frame type + square terminal box
GAG43*-4 to 5-0 to 10-* 3 / 5 K / H / P / Q / 4K / 4H

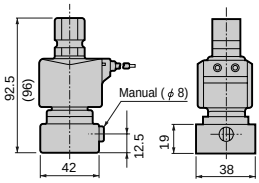



● Open frame type + conduit
GAG43*-4 to 5-0 to 10-* 3A / 4A / 5A G / H




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

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




Dimension in ( ) show value of GAG433.

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

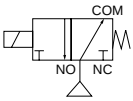
# AG34/AG44 Series

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

Refer to Ending 17 for more details.

## JIS symbol

- AG34/44:
  NO pressurization type




## Common specifications

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

Note 1: No freezing

## Individual specifications

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

*1: Models above show basic port size (Rc) and orifice. Refer to How to order about other combinations.
*2: Refer to DC column for maximum working pressure differential of coil with diode.
*3: Variation of rated voltage should be within ±10%.
*4: ( ) shows the value of DIN terminal box and DC voltage specifications.
*5: When using with the low vacuum, vacuum the NC port side.

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

| Sealant | Fluoro rubber | | Ethylene propylene diene rubber | |
|---|---|---|---|---|
| Coil (heat proof class) | B | H | B | H |
| Fluid temperature (Note 1) ℃ | -10 to 60 | -10 to 90 | -10 to 60 | -10 to 90 |
| Ambient temperature ℃ | -20 to 60 | -20 to 100 (Note 2) | -20 to 60 | -20 to 100 |
| Valve seat leakage $cm^3$/min. (ANR) | 0.2 or less (air) | | | |

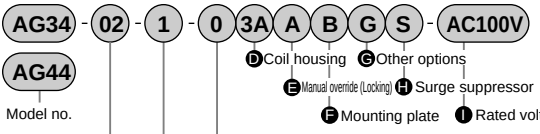
Note 1: No freezing
Note 2: The range is -20 to 80℃ when using the square terminal box with light for the coil housing.

## Flow characteristics

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

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

How to order




| Symbol | Descriptions | Symbol | Descriptions | Symbol | Descriptions | Model no. AG34 | Model no. AG44 |
|---|---|---|---|---|---|---|---|
| Ⓐ Port size | | | | | | | |
| **01** | Rc 1 / 8 | **1G** | G 1 / 8 | **1N** | NPT 1 / 8 | ● | |
| **02** | Rc 1 / 4 | **2G** | G 1 / 4 | **2N** | NPT 1 / 4 | ● | ● |
| **03** | Rc 3 / 8 | **3G** | G 3 / 8 | **3N** | NPT 3 / 8 | | ● |

Ⓐ Port size

Ⓑ Orifice

| | AG34 TOP | AG34 BODY | AG44 TOP | AG44 BODY | | |
|---|---|---|---|---|---|---|
| **1** | $\phi$ 1.5 | $\phi$ 1.5 | $\phi$ 2.0 | $\phi$ 2.0 | ● | ● |
| **2** | $\phi$ 2.0 | $\phi$ 2.0 | - | - | ● | |
| **3** | - | - | $\phi$ 2.0 | $\phi$ 3.0 | | ● |
| **4** | - | - | $\phi$ 3.0 | $\phi$ 3.0 | | ● |

Ⓒ Body, sealant combination

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

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

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

Ⓓ to Ⓘ

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

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

<Example 1 of model number>
**AG34-1G-1-AC100V**
Series: AG34
Ⓐ Port size : G 1/8
Ⓑ Orifice : TOP - $\phi$1.5, BODY - $\phi$1.5
Ⓒ Body, sealant combination
: Body - brass, sealant - nitrile rubber
Ⓓ Coil housing : Grommet lead wire
Ⓔ to Ⓗ : Blank
Ⓘ Rated voltage
: 100 VAC 50/60 Hz, 110 VAC 60 Hz

<Example 2 of model number>
**AG44-03-4-000ABS-AC100V**
Series: AG44
Ⓐ Port size : Rc3/8
Ⓑ Orifice : TOP - $\phi$3.0, BODY - $\phi$3.0
Ⓒ Body, sealant combination
: Body - brass, sealant - nitrile rubber
Ⓓ Coil housing : Grommet lead wire
Ⓔ Manual override (Locking) : Selected
Ⓕ Mounting plate : With mounting plate
Ⓖ Other options : Blank
Ⓗ Surge suppressor : With surge suppressor
Ⓘ Rated voltage
:100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Note on model no. selection

Note on (C)

*1: Standard is blank, however (D), (E), (F), (G) or (H) selected, complete (C) with 0.
*2: (C): When selecting 4A, 4K, 4H
*3: The ethylene propylene diene rubber seal combination ((C) P, R) cannot be used with air. (Compressed air contains oil, and ethylene propylene diene rubber is not oil-resistant.)
*4: Even when nitrile rubber is selected for the sealant, the NO side sealant is fluoro rubber.

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

| Ⓓ Coil housing | | | | Ⓔ | Ⓕ | Ⓖ Other options | | | | | Ⓗ | Ⓘ Rated voltage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Descriptions | | | | Manual override (Locking) | Mounting plate | Cable gland (Marine cable gland) | | | Conduit (Conduit pipe) | | Surge suppressor | Descriptions |
| | | | | | | A-15a | A-15b | A-15c | CTC 19 | G 1 / 2 | | |
| **Blank** | Std. | Grommet lead wire | | **A** | **B** | | | | | | **S** | 100 VAC, 200 VAC |
| **2E** | | DIN terminal box (G1/2) | | | | | | | | | | 100 VAC, 200 VAC |
| **2G** | | DIN terminal box (Pg11) | | | | | | | | | | 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **2H** | | DIN terminal box + small light (Pg11) | | | | | | | | **H** | | 100 VAC, 200 VAC, 24 VDC |
| **3A** | Option | Open frame type | Lead wire | **A** | **B** | | | | **G** | **H** | **S** | 100 VAC, 200 VAC |
| **3K** | | | Square terminal box (G1/2) | | | | | | | | | 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3H** | | | Square terminal box + light (G1/2) | | | **D** | **E** | **F** | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **3P** | | | Square terminal box (IP65 or equivalent) (G1/2) | | | | | | | | | 100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3Q** | | | Square terminal box + light (IP65 or equivalent) (G1/2) | | | | | | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **4A** | | Open frame type (Heat proof class H) | Lead wire | **A** | **B** | | | | **G** | **H** | **S** | 100 VAC, 200 VAC |
| **4K** | | | Square terminal box (G1/2) | | | **D** | **E** | **F** | | | | |
| **4H** | | | Square terminal box + light (G1/2) | | | | | | | | | |
| **5A** | | Open frame type (Diode integrated) | Lead wire | **A** | **B** | | | | **G** | **H** | | 100 VAC, 200 VAC |
| **5K** | | | Square terminal box (G1/2) | | | | | | | | | |
| **5H** | | | Square terminal box + light (G1/2) | | | **D** | **E** | **F** | | | | |
| **5P** | | | Square terminal box (IP65 or equivalent) (G1/2) | | | | | | | | | |
| **5Q** | | | Square terminal box + light (IP65 or equivalent) (G1/2) | | | | | | | | | |

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

Blank

● Grommet lead wire 300 mm

2E
2G
2H

● DIN terminal box

3A
4A
5A

● Open frame
Grommet lead wire 300 mm
● 4A (Heat proof class H)
● 5A (Diode integrated)

3K
3H
4K
4H
5K
5H

● Open frame square terminal box
● 4K, 4H (Heat proof class H)
● 5K, 5H (Diode integrated)

3P
3Q
5P
5Q

● Open frame square terminal box
(IP65 or equivalent)
● 5P, 5Q (Diode integrated)

Refer to Page 122 for Coil selection.

G
H

● Conduit
● G (CTC19)
● H (G1/2)

## ⚠ Note on model no. selection

Note on (D)

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

Note on (E) to (H)

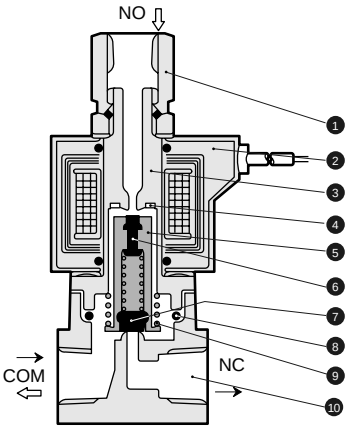
*8: Select one among D, E, F, G, H for (G).
*9: The surge suppressor is an accessory for the lead wire coil. When using the coil with terminal box, the surge suppressor is mounted in the terminal box.
*10: Surge suppressor is incorporated in coil with diode and (D) 2H 24 VDC coil as standard.
*11: Tropic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

Note on (I)

*12: 100 VAC coil is compatible with 100 VAC 50/60 Hz, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. However, use (D) 5A, 5K, 5H, 5P, 5Q coils only for 100 VAC 50/60 Hz, 200 VAC 50/60 Hz.
*13: Consult with CKD about other than above voltage.
*14: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

## Internal structure and main parts materials

● AG34/AG44 Series



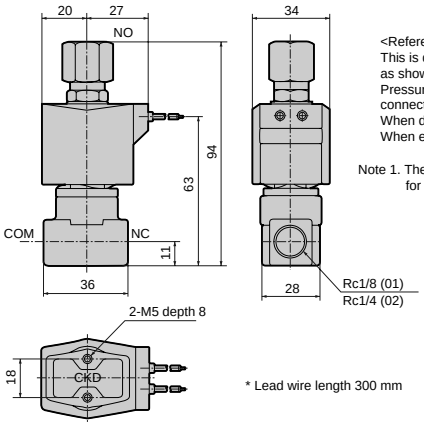

| No. | Parts name | Material | |
|---|---|---|---|
| **1** | Socket | C3604 (SUS303) | Brass (stainless steel) |
| **2** | Coil | — | — |
| **3** | Core assembly | SUS405 or equivalent, 316L, 403 *1 | Stainless steel |
| **4** | Shading coil | Cu (Ag when stainless steel body) | Copper (Silver when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

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

## Dimensions: AG34 Series

CAD (Page 218)

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




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

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

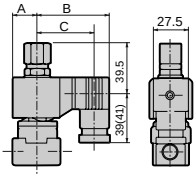
* Lead wire length 300 mm

## Optional dimensions: AG34 Series

CAD (Page 218)

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

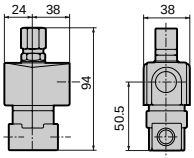
● DIN terminal box
AG34-01/02-1 to 2-* [2E / 2G / 2H]



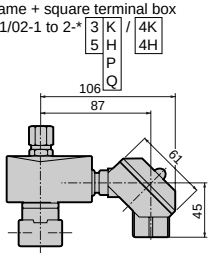

Dimensions shown in ( ) are for the G1/2.

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

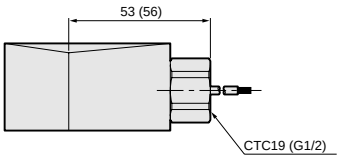
● Open frame lead wire type
AG34-01/02-1 to 2-* [3A / 4A / 5A]




● Open frame + square terminal box
AG34-01/02-1 to 2-* [3 / 5] [K / H / P / Q] / [4K / 4H]

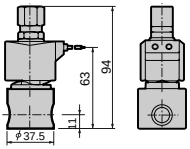



● Open frame type + conduit
AG34-01/02-1 to 2-* [3A / 4A / 5A] [G / H]

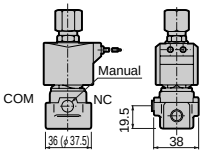



Dimensions shown in ( ) are for the G1/2.

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

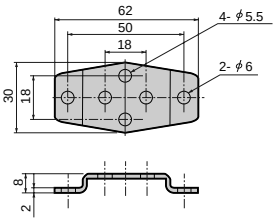



● Manual override (locking)
AG34-01/02-1 to 2-*** [A]
The illustration shows the brass body.




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

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

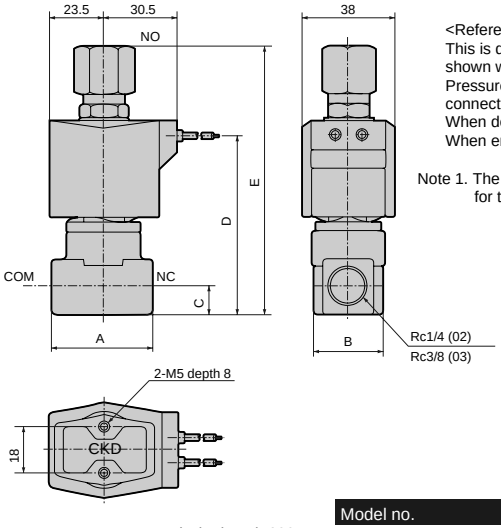



Mounting plate No.1 GE-100106

## Dimensions: AG44 Series

CAD (Page 218)

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




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

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

* Lead wire length 300 mm

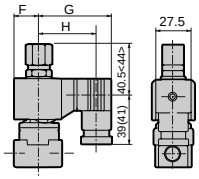
| Model no. | A | B | C | D | E |
|---|---|---|---|---|---|
| **AG44-02-1 to 4** | 36 | 28 | 11 | 68 | 99.5 |
| **AG44-03-1 to 4** | 40 | 28 | 12 | 71 | 106 |

## Optional dimensions: AG44 Series

CAD (Page 218)

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

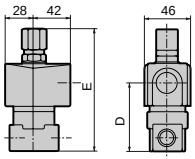
● DIN terminal box
AG44-02/03-1/3/4-* 2E / 2G / 2H




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

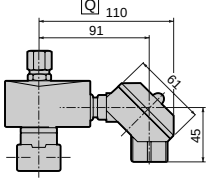
| Voltage | F | G | H |
|---|---|---|---|
| **AC** | 23.5 | 65.5 | 54 (53.5) |
| **DC** | 23.5 | 66 | 54.5 (54) |

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

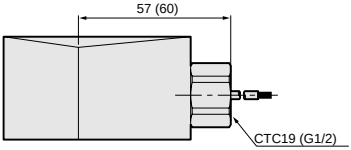



| Model no. | D | E |
|---|---|---|
| **AG44-02-1 to 4-*□A** | 52.0 | 99.5 |
| **AG44-03-1 to 4-*□A** | 55.0 | 106 |

● Open frame + square terminal box
AG44-02/03-1/3/4-* 3 / 5 K H P Q / 4K 4H

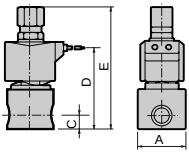



● Open frame type + conduit
AG44-02/03-1/3/4-* 3A / 4A / 5A G H




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

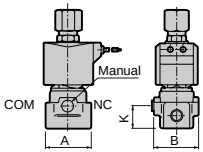
● Stainless steel body
AG44-02/03-1 to 4-D/E/L/M/R




| 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

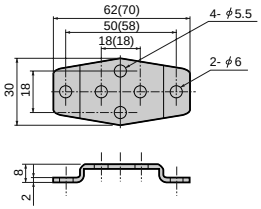
The illustration shows the brass body.




| 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 |

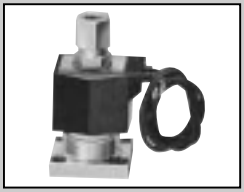
Dimensions shown in ( ) are for the stainless steel body.

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




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

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



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

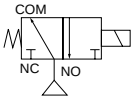
# GAG34*/GAG44* Series

● NO pressurization type

CE Refer to Ending 17 for more details. CAD

## JIS symbol

●GAG34*/44*:
NO pressurization type




## Common specifications

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

Note 1: No freezing

## Individual specifications

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

*1: Models above show basic NO port size (Rc) and orifice. Refer to How to order about other combinations.
*2: Refer to DC column for maximum working pressure differential of coil with diode.
*3: Variation of rated voltage should be within ±10%.
*4: ( ) shows the value of DIN terminal box and DC voltage specifications.
*5: When using with the low vacuum, vacuum the NC port side.

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

| Sealant | Fluoro rubber | | Ethylene propylene diene rubber | |
|---|---|---|---|---|
| Coil (heat proof class) | B | H | B | H |
| Fluid temperature (Note 1) ℃ | -10 to 60 | -10 to 90 | -10 to 60 | -10 to 90 |
| Ambient temperature ℃ | -20 to 60 | -20 to 100 (Note 2) | -20 to 60 | -20 to 100 (Note 2) |
| Valve seat leakage $cm^3$/min. (ANR) | 0.2 or less (air) | | | |

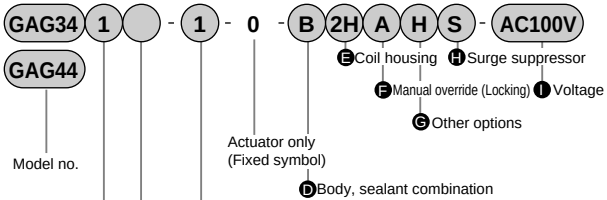
Note 1: No freezing
Note 2: The range is -20 to 80℃ when using the square terminal box with light for the coil housing.

## Flow characteristics

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

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

## How to order




| Symbol | Descriptions | Model no. GAG34* | Model no. GAG44* |
|---|---|---|---|
| **A NO port size** | | | |
| **1** | 1 / 8 | ● | |
| **2** | 1 / 4 | ● | ● |
| **3** | 3 / 8 | | ● |
| **B Type of screw** | | | |
| **Blank** | Rc | ● | ● |
| **G** | G | ● | ● |
| **N** | NPT | ● | ● |

**C Orifice**

| | GAG34* | | GAG44* | | | |
|---|---|---|---|---|---|---|
| | TOP | BODY | TOP | BODY | | |
| **1** | $\phi$ 1.5 | $\phi$ 1.5 | $\phi$ 2.0 | $\phi$ 2.0 | ● | ● |
| **2** | $\phi$ 2.0 | $\phi$ 2.0 | - | - | ● | |
| **3** | - | - | $\phi$ 2.0 | $\phi$ 3.0 | | ● |
| **4** | - | - | $\phi$ 3.0 | $\phi$ 3.0 | | ● |

**D Body, sealant combination**

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

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

**E to I**

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

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

<Example 1 of model number>
**GAG341-1-0-AC200V**
Series: GAG341
A NO port size : 1/8
B Type of thread : Rc
C Orifice : TOP - $\phi$ 1.5, BODY - $\phi$ 1.5
D Body, sealant combination
: Body - brass, sealant - nitrile rubber
E Coil housing : Grommet lead wire
F to H : Blank
I Rated voltage
: 200 VAC 50/60 Hz, 220 VAC 60 Hz

<Example 2 of model number>
**GAG342G-2-0-000AS-AC200V**
Series: GAG342
A NO port size : 1/4
B Type of thread : G
C Orifice : TOP - $\phi$ 2.0, BODY - $\phi$ 2.0
D Body, sealant combination
: Body - brass, sealant - nitrile rubber
E Coil housing : Grommet lead wire
F Manual override (locking) : Selected
G Other options : Blank
H Surge suppressor : With surge suppressor
I Rated voltage
: 200 VAC 50/60 Hz, 220 VAC 60 Hz

### ⚠ Note on model no. selection

Note on (D)

*1: Standard is blank, however (E), (F), (G) or (H) selected, complete (C) with 0.
*2: (D): When selecting 4A, 4K, 4H
*3: The ethylene propylene diene rubber seal combination ((D) P, R) cannot be used with air.(Compressed air contains oil, and ethylene propylene diene rubber is not oil-resistant.)
*4: Even when nitrile rubber is selected for the sealant, the NO side sealant is fluoro rubber.

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

| Ⓔ Coil housing | | | | Ⓕ | Ⓖ Other options | | | | | Ⓗ | Ⓘ Rated voltage |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Descriptions | | | | Manual override (Locking) | Cable gland (Marine cable gland) | | | Conduit (Conduit pipe) | | Surge suppressor | Descriptions |
| | | | | | A-15a | A-15b | A-15c | CTC 19 | G 1 / 2 | | |
| **Blank** | Std. | Grommet lead wire | | **A** | | | | | | **S** | 100 VAC, 200 VAC |
| **2E** | | DIN terminal box | (G1/2) | | | | | | | | 100 VAC, 200 VAC |
| **2G** | | DIN terminal box | (Pg11) | | | | | | | | 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **2H** | | DIN terminal box + small light | (Pg11) | | | | | | **H** | | 100 VAC, 200 VAC, 24 VDC |
| **3A** | Option | Open frame type | Lead wire | **A** | | | | **G** | **H** | **S** | 100 VAC, 200 VAC |
| **3K** | | | Square terminal box (G1/2) | | **D** | **E** | **F** | | | | 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3H** | | | Square terminal box + light (G1/2) | | | | | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **3P** | | | Square terminal box (IP65 or equivalent) (G1/2) | | | | | | | | 100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC |
| **3Q** | | | Square terminal box + light (IP65 or equivalent) (G1/2) | | | | | | | | 100 VAC, 200 VAC, 24 VDC, 100 VDC |
| **4A** | | Open frame type (Heat proof class H) | Lead wire | **A** | | | | **G** | **H** | **S** | 100 VAC, 200 VAC |
| **4K** | | | Square terminal box (G1/2) | | **D** | **E** | **F** | | | | |
| **4H** | | | Square terminal box + light (G1/2) | | | | | | | | |
| **5A** | | Open frame type (Diode integrated) | Lead wire | **A** | | | | **G** | **H** | | 100 VAC, 200 VAC |
| **5K** | | | Square terminal box (G1/2) | | **D** | **E** | **F** | | | | |
| **5H** | | | Square terminal box + light (G1/2) | | | | | | | | |
| **5P** | | | Square terminal box (IP65 or equivalent) (G1/2) | | | | | | | | |
| **5Q** | | | Square terminal box + light (IP65 or equivalent) (G1/2) | | | | | | | | |

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

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

| | | |
|---|---|---|
| G<br>H |  | ● Conduit<br>● G (CTC19)<br>● H (G1/2) |

Refer to Page 122 for Coil selection.

## ⚠ Note on model no. selection

Note on (E)

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

Note on (F) to (H)

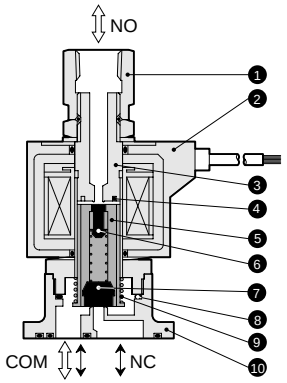
*8: Select one among D, E, F, G and H for (G).
*9: The surge suppressor is an accessory for the lead wire coil. When using the coil with terminal box, the surge suppressor is mounted in the terminal box.
*10: Surge suppressor is incorporated in coil with diode and (E) 2H 24 VDC coil as standard.
*11: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

Note on (I)

*12: 100 VAC coil is compatible with 100 VAC 50/60 Hz, 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz, 220 VAC 60 Hz. Note that coil for 5A, 5K, 5H, 5P or 5Q in item (D) must be used for 100 VAC50/60Hz and 200 VAC 50/60Hz.
*13: Consult with CKD about other than above voltage.
*14: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

## Internal structure and main parts materials

● GAG34*/GAG44* actuator



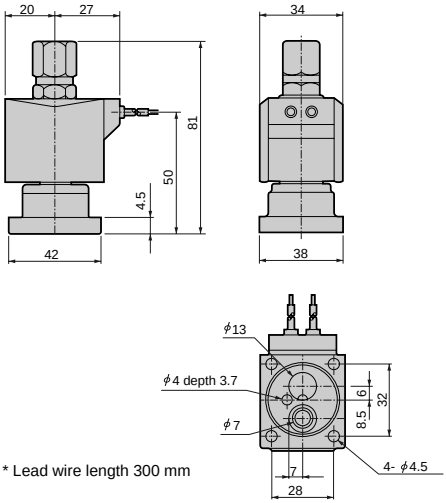

| No. | Parts name | Material | |
|---|---|---|---|
| 1 | Socket | C3604 (SUS303) | Brass (stainless steel) |
| 2 | Coil | — | — |
| 3 | Core assembly | SUS405 or equivalent, 316L, 403 *1 | Stainless steel |
| 4 | Shading coil | Cu (Ag when stainless steel body) | Copper (Silver when stainless steel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

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

## Dimensions: GAG341/GAG342 Series

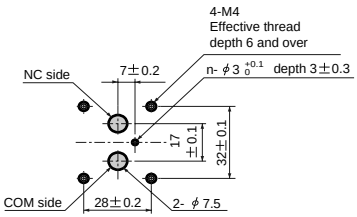
CAD (Page 218)

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




* Lead wire length 300 mm

● How to mount actuator

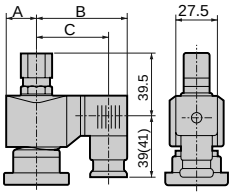


## Optional dimensions: GAG341/GAG342 Series

CAD (Page 218)

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

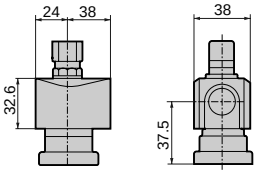
● DIN terminal box
GAG34*-1 to 2-0-* [2E / 2G / 2H]



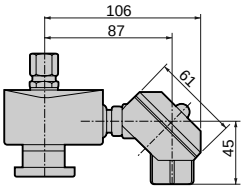

Dimensions shown in ( ) are for the G1/2.

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

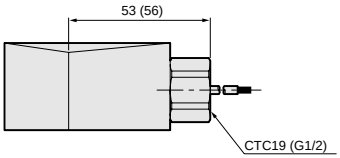
● Open frame lead wire type
GAG34*-1 to 2-0-* [3A / 4A / 5A]




● Open frame + square terminal box
GAG34*-1 to 2-0-* [3 / 4 / 5] [K / H]

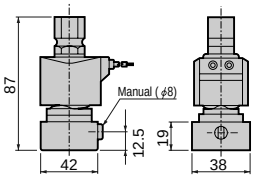



● Open frame type + conduit
GAG34*-1 to 2-0-* [3A / 4A / 5A] [G / H]




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

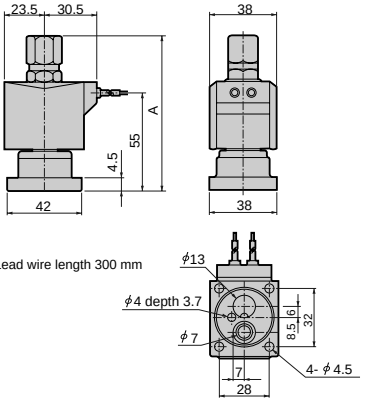
● Manual override (locking)
GAG34*-1 to 2-0-***[A]



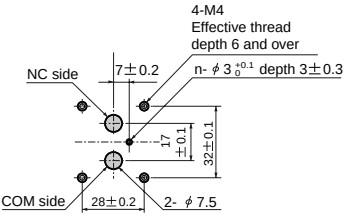
## Dimensions: GAG442/GAG443 Series

CAD (Page 218)

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




● How to mount actuator



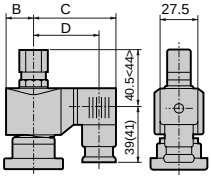

| Model no. | A |
|---|---|
| **GAG442-1·3·4** | 86.5 |
| **GAG443-1·3·4** | 90 |

## Optional dimensions: GAG442/GAG443 Series

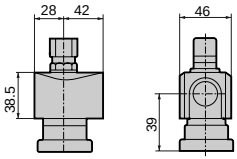
CAD (Page 218)

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

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



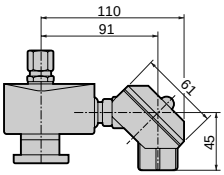

● Open frame lead wire type
GAG44*-1/3/4-0-* 3A / 4A / 5A



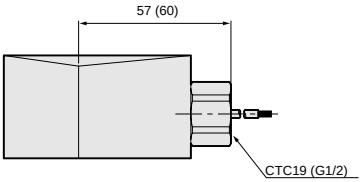

Dimensions shown in ( ) are for the G1/2. Dimensions shown in < > are for the Rc3/8.

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

● Open frame type + square terminal box
GAG44*-1/3/4-0-* 3 / 4 / 5 K / H

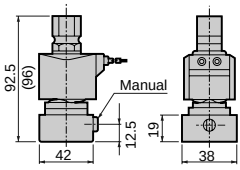



● Open frame type + conduit
GAG44*-1/3/4-0-* 3A / 4A / 5A G / H




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

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




Dimension in ( ) show value of GAG443.