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

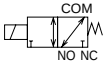
AG31/AG41 Series

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

CE RoHS CAD

JIS symbol

- AG31/41: Universal type



Common specifications

Item	Standard specifications	Optional specifications	
Working fluid	Airflow, low vacuum (1.33 x 10^2 Pa (abs)), water, kerosene, oil (50 mm^2/s or less)	Hot water	Steam
Working pressure differential range MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)		
Max. working pressure MPa	1		
Withstanding pressure (water) MPa	25		
Fluid temperature (Note 1) ˚C	-10 to 60	-10 to 90	-10 to 184
Ambient temperature ˚C	-20 to 60	-20 to 100	
Heat proof class	B	H	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm^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

Item / Model no.	Port size	Orifice (mm) TOP	Orifice (mm) BODY	Max. working pressure differential (MPa) Air AC	Air DC	Water, hot water, kerosene AC	Water, hot water, kerosene DC	Oil (50 mm^2/s) AC	Oil (50 mm^2/s) DC	Steam AC	Rated voltage	Apparent power (VA) Holding 50 Hz	Holding 60 Hz	Starting 50 Hz	Starting 60 Hz	Power consumption (W) AC 50/60 Hz	Power consumption (W) DC	Weight (kg)
AG31-01-1	Rc1/8	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	0.7	100 VAC 50/60 Hz	14	11	20	16	6/4.2	11 (8.1)	0.36
-01-2		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4	110 VAC 60 Hz							
-02-1	Rc1/4	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	0.7	200 VAC 50/60 Hz							
-02-2		2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4								
AG41-02-1	Rc1/4	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0	220 VAC 60 Hz	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)	0.7	12 VDC 24 VDC 48 VDC 100 VDC							
-03-1	Rc3/8	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0								0.48
-03-2		2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	0.7								

*1: The model numbers above show the basic port size (Rc) and orifice diameter. Refer to How to order for other combinations.
*2: Refer to DC column for the max. working pressure differential of coil with diode.
*3: The voltage fluctuation must be within ±10% of the rated voltage.
*4: Values in ( ) are for the type with DIN terminal box and DC voltage specifications, and indicate the max. working pressure differential when pressurizing from the NO port.
*5: When continuously energizing the valve, use a fluoro rubber seal.
*6: When the sealant is PTFE, the NO port cannot be pressurized.

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

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

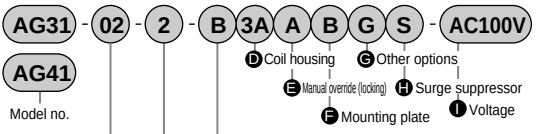
Note 1: No freezing
Note 2: The range is -20 to 80˚C when using the HP terminal box with indicator light for the coil housing.

Flow characteristics

Model no.	Port size	Orifice (mm)		Flow characteristics					
		TOP	BODY	C [dm³/(s·bar)]		b		Cv flow factor	
				TOP	BODY	TOP	BODY	TOP	BODY
AG31-01-1	Rc1/8	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-01-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-1	Rc1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-02-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
AG41-02-1	Rc1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19
-03-1	Rc3/8	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-03-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19

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

How to order



Ⓐ Port size

Ⓑ Orifice

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

Symbol	Descriptions	Symbol	Descriptions	Symbol	Descriptions	Model no. AG31	Model no. AG41
Ⓐ Port size							
01	Rc1/8	**1G**	G 1/8	**1N**	1/8NPT	●	
02	Rc1/4	**2G**	G 1/4	**2N**	1/4NPT	●	●
03	Rc3/8	**3G**	G 3/8	**3N**	3/8NPT		●

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

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

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

Ⓓ to Ⓘ

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

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

<Example 1 of model number>

AG31-02-1-AC100V
Model no.: AG31
Ⓐ Port size: Rc1/4
Ⓑ Orifice: TOP - ø1.5, BODY - ø1.5
Ⓒ Body/sealant combination:
Body - bronze, sealant - nitrile rubber
Ⓓ Coil housing: Grommet lead wire
Ⓔ to Ⓗ: Blank
Ⓘ Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

<Example 2 of model number>

AG41-03-2-000ABS-AC100V
Model no.: AG41
Ⓐ Port size: Rc3/8
Ⓑ Orifice: TOP - ø2.3, BODY - ø2.3
Ⓒ Body/sealant combination:
Body - bronze, sealant - nitrile rubber
Ⓓ Coil housing: Grommet lead wire
Ⓔ Manual override (locking):
Selected
Ⓕ Mounting plate: Selected
Ⓖ Other options: Blank
Ⓗ Surge suppressor: Selected
Ⓘ Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

⚠ Note on model no. selection

Note on Ⓒ

*1: Leave blank for standard. However, to select options in Ⓓ to Ⓗ, indicate 0 for Ⓒ.
*2: When 4A, 4M or 4N is selected for Ⓒ.
*3: The ethylene propylene diene rubber seal combination (Ⓒ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene diene rubber is not oil-resistant.)
*4: For option symbols V and W, vacuum is inspected at "leakage amount: 1.33×10^{-6} Pa·m³/s or less".

For Ⓓ to Ⓘ, the combinations indicated with symbols can be manufactured.
Note that if options Ⓔ to Ⓗ 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	CTC19	G1/2		
Blank	Std.	Grommet lead wire	**A**	**B**						**S**	100 VAC, 200 VAC
2E		DIN terminal box (G1/2)									100 VAC, 200 VAC 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 12 VDC, 24 VDC, 48 VDC, 100 VDC
3M		Open frame type — HP terminal box (G1/2)			**D**	**E**	**F**				
3N		Open frame type — HP terminal box + light (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I		Open frame type — HP terminal box (IP65 or equivalent) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J		Open frame type — HP terminal box + light (IP65 or equivalent) (G1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A		Open frame type (heat proof class H) — Lead wire	**A**	**B**				**G**	**H**	**S**	100 VAC, 200 VAC
4M		Open frame type (heat proof class H) — HP terminal box (G1/2)			**D**	**E**	**F**				
4N		Open frame type (heat proof class H) — HP terminal box + light (G1/2)									
5A		Open frame type (diode integrated) — Lead wire	**A**	**B**				**G**	**H**		100 VAC, 200 VAC
5M		Open frame type (diode integrated) — HP terminal box (G1/2)			**D**	**E**	**F**				
5N		Open frame type (diode integrated) — HP terminal box + light (G1/2)									
5I		Open frame type (diode integrated) — HP terminal box (IP65 or equivalent) (G1/2)									
5J		Open frame type (diode integrated) — HP terminal box + light (IP65 or equivalent) (G1/2)									

⚠ Refer to the following precautions for Ⓓ to Ⓘ.

Blank

● Grommet lead wire 300 mm

2E
2G
2H

● DIN terminal box

3A
4A
5A

● Open frame type grommet lead wire 300 mm
● 4A (heat proof class H)
● 5A (diode integrated)

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

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

3I
3J
5I
5J

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

* Refer to page 122 for coil selection.

G
H

● Conduit
● G (CTC19)
● H (G1/2)

⚠ Note on model no. selection

Note on Ⓓ

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

Note on Ⓔ to Ⓗ

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

Note on Ⓘ

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