

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



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

### CE



#### JIS symbol • AG31/41: Universal type



### Common specifications

Item	Standard specifications	ecifications				
Working fluid	Airflow, low vacuum (1.33 x 10 <sup>2</sup> Pa (abs)), water, kerosene, oil (50 mm <sup>2</sup> /s or less)	Steam				
Working pressure differential range MPa	0 to 1 (refer to max. working pressure	differential in individu	al specifications.)			
Max. working pressure MPa	-	1				
Withstanding pressure (water) MPa	2	5				
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	В	ŀ	1			
Atmosphere	Place free of corrosive	gas and explosive g	as			
Valve structure	Direct acting po	oppet structure				
Valve seat leakage cmilmin. (ANR)	0.2 or less (air) 300 or less					
Mounting attitude	Free					
Body, sealant	Brass, nitrile rubber Brass, ethylene propylene diene rubber Brass, PTFF					

Note 1: No freezing

### Individual specifications

Item		Or	ifice	Max.	work	ing pre	ssure	differe	ential (	MPa)		Power consump	tion (W)					
	Port	(n	nm)	A	ir	Water, hot w	ater, kercsene	Oil (50	mm²/s)	Steam	Rated	Hol	ding	Star	rting	AC	DC	Weight
Model no.		TOP	BODY	AC	DC	AC	DC	AC	DC	AC	vollage	50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz		(Ky)
AG31-01-	1 <sub>De1/0</sub>	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	0.7	100 VAC							
-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	14	11	20	16	6/1 2	11	
-02-	1	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	0.7	60 Hz	14		20	10	0/4.2	(8.1)	0.30
-02-	2 <sup>RC1/4</sup>	2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4	200 VAC 50/60 Hz							
AG41-02-	1 <sub>De1/4</sub>	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0	220 VAC							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	60 HZ	00	17	25	07	0.0/6.0	11	0.45
-03-	1	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0	24 VDC	22		35	21	0.3/0.2	(10.4)	0.40
-03-	2 HC3/8	2.3	2.3	0.7	0.4	0.7	0.4	0.25	0.15	0.7	48 VDC 100 VDC							0.48

\*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 propyle	ene diene rubber	PTFE		
Coil (heat proof class)	В	Н	В	Н	В	Н	
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 (milmin, (ANR)		0.2 or le	ess (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

		Orifice	e (mm)	Flow characteristics								
Model no.	Port size	тор	PODV	C [dm <sup>3</sup>	C [dm³/(s·bar)]		c	Cv flow factor				
		IOF	BODT	TOP	BODY	TOP	BODY	TOP	BODY			
AG31-01-1	De1/9	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09			
-01-2	nc i/o	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15			
-02-1	5.44	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09			
-02-2	RC 1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15			
AG41-02-1	De1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15			
-02-2	RC 1/4	2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19			
-03-1	De2/9	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15			
-03-2	nu0/0	2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19			

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

### AG31/41 Series

#### How to order

AG31)-02	- 2 - B 3A	A		G	<b>S</b> -(A	C100V					
		housing		Ğο	ther options						
AG41		I I B Manual c	verride	e (locking)	Surge și	uppressor				Mode	el no.
Model no.		Ġ	м	ountin	<sub>a plate</sub> 🛈	Voltage					
		-								AG31	AG41
		Symb	ol rt o	De	scriptions	Symbol	Description	s Symbol	Descriptions		
(AP)	ort size	01	ns	ize	Do1/9	16	G 1/9	1N	1/9NIDT		
		02			Rc1/4	2G	G 1/4	2N	1/4NPT		•
		03			Rc3/8	3G	G 3/8	3N	3/8NPT	•	•
		BO	ifice	9							
	BOrifice				A	G31		۵	G41		
					TOP	BO	DY	TOP	BODY		
		1			ø1.5	ø1	.5	ø2.0	ø2.0	•	•
		2			ø2.0	ø2	.0	ø2.3	ø2.3	•	•
		C Bo	dy/	seala	nt combinati	on	-				
	combination	Blar	T	Body	Seala	nt	Treatment	Ale united is	Remarks		
	*1 *2	Biank	5	s	Fluoro rub	her	_	Air, water, low va	cuurn, kerosene (up to 60°C)	-	
	*3	c		Bras	PTFE	bei	_	Steam (up t	to 184°C *2)		•
	4	v			Fluoro rub	ber	Vacuum inspectior	Medium va	cuum	•	•
		D	1	lee	Nitrile rubb	ber		Air, water, low va	cuum, kerosene (up to 60°C)	•	•
		E		SS SI	Fluoro rub	ber	-	Air, low vacuum	n, kerosene (up to 90°C *2)	•	•
		F	5	ainle	PTFE			Steam (up	to 184°C *2)	•	•
		W U	ð	ۍ.	Fluoro rub	ber	vacuum inspectior	Medium va		•	•
				s	Fluoro rub	her		Air, water, low va	kerosene (up to 60 C)		•
		ĸ		Bras	PTFE	501		Steam (up	to 184°C *2)	•	•
		Р	1		Ethylene propyle	ene diene rubber		Hot water (	up to 90°C *2)	•	•
		L		teel	Nitrile rubb	ber	Oil free	Air, water, low va	cuum, kerosene (up to 60°C)	•	•
		M		SS S	Fluoro rub	ber		Air, low vacuum	n, kerosene (up to 90°C *2)	•	•
		N		ainle	PTFE			Steam (up	to 184°C *2)	•	•
		н		Ś	Enviene propys	erie dierie rubber		Hot water (	up to 90 C "2)	•	•
		Ref	er	to pa	age 36 in	the Intro	oduction for	or details of	on the material	combina	ations.
		D to	0								
<example 1="" of<="" th=""><th>model number&gt;</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></example>	model number>										
AG31-02-1-AG	C100V 31	Ref	ər ago	to th e, et	ie followii c.	ng page	for details	s on the co	il housing, othe	r option	s and
Port size:	Rc1/4	L The co	mb	inatio	ns indicated	d with 🗨 in	the above tal	ble are availa	ble.		
Orifice:	TOP - ø1.5, BODY - ø	1.5									
Body/sealant cor	nbination: Reduction:	o rubbor									
• Coil housina:	Grommet lead wire										
🖨 to 🕼 :	Blank										
Voltage:	100 VAC 50/60Hz, 11	0 VAC	60I	Ηz							
<example 2="" of<="" th=""><th>model number&gt;</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></example>	model number>										
AG41-03-2-00	0ABS-AC100V										
Model no.: AG	41										
Port size:	Rc3/8						_				
Orifice:     Body/sealant.co/	10P - Ø2.3, BODY - Ø mbination:	2.3					A Note on model no. selection				
C Douy/sealant CO	Body - bronze, sealan	t - nitril	e ru	ubber			Note on @	]			
Coil housing:	Grommet lead wire						*1: Leave bla	, ank for standard	. However, to select opti	ions in (1) to	(indicate)
Manual override	(locking):						0 for ©.	4M or 4N is or	elected for O		
	Gelecieu						. vvnen 4A	1, HIVI OF 41N IS SE			

- When 4A, 4M or 4N is selected for <sup>©</sup>.
   The ethylene propylene diene rubber seal combination (<sup>©</sup> 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 x 10<sup>-6</sup> Pa·m<sup>3</sup>/s or less".

168 **CKD** 

Voltage:

 Mounting plate: Selected G Other options: Blank

Surge suppressor: Selected

100 VAC 50/60Hz, 110 VAC 60Hz

HNB/G

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

	oil	housing	_		B	6	G	Other of	options		_	0	Rated voltage	USB/G		
					ide	ate	Cabl	e glano	d	Cond	uit	sor				
Deer					overri	g pla	(Marin	e cable	gland)	(Cond	uit pipe)	ppres	Descriptions	FAB/G		
Desc	rip	tions			king)	ntin	A 150	A 15b	A 150	CTC10	G1/2	ins af	Descriptions			
		-			Mar (loc	Moi	A-15a	A-150	A-150		G1/2	Surg		FGB/G		
Blank	ß	Gromme	et lead	wire									100 VAC, 200 VAC	EVB		
2E		DIN terr	ninal bo	ox (G1/2)	A	в						s	100 VAC, 200 VAC			
2G	-	DIN terr	ninai bo	DX (Pg11)	-					<u> </u>		-	12 VDC, 24 VDC, 48 VDC, 100 VDC	FWB/G		
21	-	Din termi	a box +	viro						- C			100 VAC, 200 VAC, 24 VDC			
3M			HP ter	minal box (G1/9)				<u> </u>		G	<u> </u>		100 VAC, 200 VAC	FHB		
3N	1	Open	HP termi	nal box + light (G1/2)	Δ	в							100 VAC 200 VAC 12 VDC 24 VDC 100 VDC			
31	1,	frame type	HP terminal b	ox (IP65 or equivalent) (G1/2)	1	-	D	E	F			3	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC	FLB		
3J	bij -		HP terminal box	+ light (IP65 or equivalent) (G1/2)	1								100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC	AB		
4A	10	Open	Lead	wire						G	н	S				
4M		frame type	HP ter	minal box (G1/2)	<b>A</b>	В	n	E	E				100 VAC, 200 VAC	AG		
4N		(heat proof class H)	HP termi	nal box + light (G1/2)					<u> </u>					AP/		
_5A			Lead	wire						G	н			AD		
5M		Open	HP ter	minal box (G1/2)		_							100.1/40.000.1/40	APK/		
5N	-	frame type	HP termi	nal box + light (G1/2)	A	В	D	E	F				100 VAC, 200 VAC	ADK		
51	+	(uuue megraieu)	HP terminal D	Linkt (IPto or equivalent) (G1/2)	-									For		
- 50	_		nr eillisitus	+ igic (irco o equivaleic) (G 1/2)								Defer	to the following pressuitions for (1) to (1)	Ury all		
											-	nelei	to the following precautions for (1) to (1).	proof		
	Ē													HVB/		
	L	COL.											Conduit	HVL		
Blank	L	K	5	Grommet le	ad wire	300 m	m				G		G (CTC19)	SAB/		
	L	0	1										• H (G1/2)	SVB		
	Ļ													NP/NAP/		
05	L	DAG	_											0110/0		
2E 2G	Ŀ			DIN termina	l box									CHB/G		
2H	L													MXB/G		
			0000													
											Note	on r	nodel no selection	Other G.P. systems		
ЗA	L	L'SE	~	<ul> <li>Open frame grommet les</li> </ul>	type ad wire	300 mr	n							PD/FAD/		
4A 5A			0	A (heat pro	oof clas	sH)				N	ote on	U		PJ		
					logiale	u)				*5:	Leave	blank f	or the standard coil housing. However, to select options	CVE/		
ЗM	Ē									*6:	5A, 5	M, 5N,	5I and 5J are coils for which AC power is converted to	CVSE		
3N		Contract of the		Open frame	HP ter	minal b	ox			*7.	DC wi	th a dic	nde. Ir steam is available for AG41. Contact CKD for more	CPE/ CPD		
4N	L			<ul> <li>4M, 4N (heat</li> <li>5M, 5N (dio</li> </ul>	at proof	class H	H)			A DC coil for steam is available for AG41. Contact CKD for more information.						
5M	L					gratea)			Note on <b>G</b> to <b>G</b>							
011	h									*8:	When	© is (	C. F. K. N. V or W. the manual override (Ê A) is not	Custom		
31				• Open from		minal	<u></u>			-ъ: vvnen C is C, F, K, N, V or W, the manual override (E A) is not available.						
3J	L			(IP65 or equ	uivalent	minai b )	OX			*9:	Select	t one ai	mong D, E, F, G and H for ©.	e/e		
5J				<ul> <li>5I, 5J (diode</li> </ul>	e integra	ated)				10	a coil v	with term	inal box, the surge suppressor is mounted in the terminal box.	val		
	1									*11	: As sta	andard,	the surge suppressor is incorporated in the coil with	oid		
											S can	not be :	selected.	ellen		
	*	Refer t	o pag	be 122 for	coil s	selec	tion			*12	: Tropic	alizatio	n (rust-proof coating) is available as a measure against	alve so		
		0.01 1	- pu	JO 122 101	2011 0						rust. C	ontact	UKD for more information.	iout e		

option A is selected.

#### Note on **①**

- \*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 (D) 5A/5M/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.

### AG31/41 Series

#### Internal structure and parts list

AG31/41 Series



CAD

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

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

\*2: () shows option.

#### **Dimensions: AG31 Series**

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



<Reference> As the JIS symbol flow shows, pressure can be applied from any of the three piping ports. Generally, two orifices (TOP, BODY) have the same values and rated pressure. When de-energized: COM → NO or NO → COM When energized: COM → NC or NC → COM

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

### AG31/41 Series

### Optional dimensions: AG31 Series

2G

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



Dimensions shown in ( ) are for G1/2.

CAD

Voltage	А	В	С
AC	20	62	50.5 (50)
DC	21	63.5	52 (51.5)

 Open frame type + HP terminal box AG31-01/02-1 to 2-\* 3 M · 4M



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



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







### Dimensions: AG41 Series

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





- <Reference> As the JIS symbol flow shows, pressure can be applied from any of the three piping ports. Generally, two orifices (TOP, BODV) have the same values and rated pressure. When de-energized: COM → NO or NO → COM When energized: COM → NC or NC → COM
  - Note 1: The dimensions are the same for the G or NPT thread port size.

Model no.	А	В	С	D	Е
AG41-02-1 to 2	36	28	11	68	99.5
AG41-03-1 to 2	40	28	12	71	106

### AG31/41 Series

### **Optional dimensions: AG41 Series**

DIN terminal box



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

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

Open frame type + HP terminal box AG41-02/03-1 to 2-\* 3 M 4M



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



Model no.	А	С	D	Е
AG41-02-1 to 2-*	ø37.5	11	68	99.5
AG41-03-1 to 2-*	ø45	12	71	106

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



Code

GE-100106

GE-100159

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

CAD

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



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





Dimensions shown in ( ) are for G1/2.

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

Figure shows the brass body.



Model no.	Α	В	К				
AG41-02-1 to 2-***A	36 (ø37.5)	38	19.5				
AG41-03-1 to 2-***A	40 (ø45.0)	40	22.5				
Dimensions about in ( ) are far stainlass stand bady							

Dimensions shown in ( ) are for stainless steel body.

Applicable model

AG41-02-1 to 2-D/E/F/L/M/N/R/W

Mounting plate No. 1 AG41-02/03-1 to 2 Series Stainless steel body

Mounting plate No. 2 • Stainless steel body AG41-03-1 to 2-D/E/F/L/M/N/R/W

CKD	173



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



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





### Manifold circuit structure Common specifications

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



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



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

Note 1: No freezing

#### Individual specifications

Item	NO	Ori	fice	Max	. worki	ing pre	ssure	differe	ntial (N	MPa)		Арра	arent p	ower	(VA)	Power consum	ption (W)
	port	(m	ım)	A	ir	Water, hot w	ater, kerosene	Oil (50	mm²/s)	Steam	Kated	Hol	ding	Star	ting	AC	DC
Model no.	size	TOP	BODY	AC	DC	AC	DC	AC	DC	AC	vollage	50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	
GAG311-1	De1/9	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	0.7	100 VAC						
-2	nci/o	2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4	110 VAC			00	10	0/4.0	11
GAG312-1	D 4/4	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6 (0.5)	0.7	60 Hz	14		20	10	6/4.2	(8.1)
-2	HC1/4	2.0	2.0	0.4	0.4 (0.35)	0.4	0.4	0.25	0.2 (0.15)	0.4	200 VAC 50/60 Hz						
GAG412-1	De1/4	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0	220 VAC						
-2	nc1/4	2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	0.7	60 HZ						11
GAG413-1	D 0/0	2.0	2.0	1.0	0.7 (0.45)	1.0	0.7	0.4	0.3 (0.25)	1.0	24 VDC	22	17	35	27	8.3/6.2	(10.4)
-2	HC3/8	2.3	2.3	0.7	0.4 (0.25)	0.7	0.4	0.25	0.15 (0.1)	0.7	100 VDC						

\*1: The model numbers above show the basic NO port size and orifice diameter. Refer to How to order for other combinations.

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

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

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

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

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

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

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

Sealant	Fluoro	rubber	Ethylene propyle	ene diene rubber	PTFE		
Coil (heat proof class)	В	Н	В	Н	В	Н	
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 cm9min. (ANR)		0.2 or le	ess (air)		300 or l	ess (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

	- ·	Orifice	e (mm)	Flow characteristics							
Model no.	Port	тор	BODY	C [dm <sup>3</sup> /	/(s·bar)]		b	Cv flow factor			
	0120	TOP		TOP	BODY	TOP	BODY	TOP	BODY		
GAG311-1	D-1/0	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	D 4/4	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	De1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15		
-2	RC1/4	2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19		
GAG413-1	De2/9	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15		
-2	HC3/8	HC3/8	2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19	

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

### How to order



not oil-resistant.)

 Surge suppressor:
 Selected

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

CKD

176

													HNB/G
For (	) to	) (), the c	ombina s @ to	ations indicated with s	symbol	s can l bol is i	be mar	nufactu	ired.				USB/G
			3 @ 10	() are not required, i	lo sym		Diherre	su.	-				FAB/G
U	JOII	nousing			verride	Cable (Marin	e gland e cable	gland)	Condu (Condu	uit iit pipe)	pressor	Thateo voltage	FGB/G
Des	criptions			Manual o (locking)	A-15a	A-15b	A-15c	CTC19	G1/2	Surge sup	Descriptions	FVB	
Blan	K MS	Grommet	t lead w	lead wire								100 VAC, 200 VAC	FWB/G
2G		DIN term	inal boy	(G1/2)	A						s	12 VDC, 24 VDC, 48 VDC, 100 VDC	FHB
2H		DIN term	inal box	c + small light (Pg11)	1					н		100 VAC, 200 VAC, 24 VDC	
3A 3M	+		Lead v HP ter	vire minal box (G1/2)	-				G	н		100 VAC, 200 VAC 12 VDC, 24 VDC, 48 VDC, 100 VDC	FLB
3N		Open frame type	HP ter	minal box + light (G1/2)	A	п	-	F			s	100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC	AB
31		indinio type	HP termina	al box (IP65 or equivalent) (G1/2)			-	·				100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC	
3J	-li	-	HP terminal	box + light (IP65 or equivalent) (G1/2)					G	н	9	100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC	AG
4M 4N		Open frame type (heat proof class H)	HP ter	minal box (G1/2) minal box + light (G1/2)	A	D	E	F	u			100 VAC, 200 VAC	AP/ AD
5A			Lead v	vire					G	н			APK/
5M	-	Open frame type	HP ter	minal box (G1/2)	•							100 VAC 200 VAC	ADK
51	1	(diode integrated)	HP termina	al box (IP65 or equivalent) (G1/2)	1	D	E	F					dry air
5J			HP terminal	box + light (IP65 or equivalent) (G 1/2)	1					-			Explosion
										A	Refer	r to the following precautions for $\ensuremath{\mathbb{F}}$ to $\ensuremath{\mathbb{J}}.$	HVB/
													SAB/
Blank		1	3	Grommet lead wire	300 mr	n			C	à	100	Conduit	SVB
		6			000 111				F	1	9	• H (G1/2)	NP/NAP/ NVP
	Г												CHB/G
2E 2G 2H				DIN terminal box									MXB/G
211									Â	Note	on r	model no. selection	Other G.P.
ЗA		rure.		Open frame type	000	_			No	ote on	Ø		PD/FAD/ PJ
4A 54			0	4A (heat proof class     64 (diada integrate	300 mn s H) d)	n			*6:	Leave option	blank : s in ©,	for the standard coil housing. However, to select , $(\mathbb{H} \text{ or } \mathbb{O})$ , indicate 00 for $(\mathbb{E})$ .	CVE/
0/1				• SA (diode integrate	u)				*7:	5A, 5M	/I, 5N, 5	5I and 5J are coils for which AC power is converted to	CVSE
3M	Γ								*8:	A DC	coil for	steam is available for GAG4**. Contact CKD for more	CPE/ CPD
4M				<ul> <li>Open frame HP ten</li> <li>4M, 4N (heat proof</li> </ul>	minal bo class H	ox I)							Medical
5M	L		Τ.	<ul> <li>5M, 5N (diode integ</li> </ul>	grated)				No	ote on	G to	0	Custom
DIN	Ē								*9: *10: *11:	When Select	(E) is C one a	C, F, K or N, the manual override (ⓒ A) is not available. mong D, E, F, G and H for ⊕.	order
3I 3J 5I 5J				<ul> <li>Open frame HP ten (IP65 or equivalent</li> <li>51, 5J (diode integration)</li> </ul>	minal bo ) ated)	DX		<ol> <li>The surge suppressor is an accessory for the feat wife Coll. When Selecting a coll with feminal box, the surge suppressor is incorporated in the coll with diode and the 24 VDC coil (F 2H), so the surge suppressor symbol S cannot be selected.</li> <li>Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.</li> </ol>				<b>alve</b> solenoid valve	
	*	Refer to	o paę	ge 122 for coil s	select	tion.				Note t option	hat the A is se	tropicalization is not available when the manual override elected.	3 port
									No	ote on	0		purp
	Note on ● *14: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. Note that the coils © 5A/5M/5M/5/J can be used obt with 100 VAC 60/62 Hz conv Can be used								<b>General</b> Direct ac				

- \*14: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. Note that the coils (\*) 54/3M/5N/5/15J can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
   \*15: For voltages other than above, consult with CKD.
   \*16: The lead wire is available in the standard 300 mm length, and 500 mm tenders of 0/00 mm consult with the standard 300 mm length.
- mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

### Internal structure and parts list

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



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

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

\*2: ( ) shows option.

### Internal structure and parts list

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



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

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

\*2: ( ) shows option.

FWB/G FHB FLB AB AG AP/ AD APK/ ADK For dry air Explosion proof HVB/ HVL SAB/ SVB NP/NAP/ NVP CHB/G MXB/G Other G.P. systems PD/FAD/ PJ CVE/ CVSE CPE/ CPD Medical analysis Custom order General purpose valve Direct acting 3 port solenoid valve

HNB/G USB/G FAB/G FGB/G

FVB

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

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



CAD

n-Rc1/4 (n indicates the station number.)

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

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

 Actuator (grommet lead wire type) GAG3\*\*-1 to 2-0 Recommended dimensions for actuator mounting







Machining drawing when using 2 actuators

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB FLB

AB

AG

AP/ AD APK/ ADK For dry air Explosion

proof

HVB/ HVL

SAB/

SVB NP/NAP/

NVP

CHB/G MXB/G

Other G.P.

systems PD/FAD/

Custom

General purpose valve Direct acting 3 port solenoid valve

order

PJ CVE/ CVSE CPE/ CPD Medical analysis

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



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



CAD



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

(n indicates the station number. )

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

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

\*2: Dimensions in ( ) are for the open frame type.

\*3: The dimensions are the same for the G or NPT thread port size.

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





Recommended dimensions for actuator mounting

(Port A)



#### Machining drawing when using 2 actuators

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

CAD



38

42 44



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

AG33/AG43 Series

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

### CE



### JIS symbol

AG33/43: NC pressurization type



Item	Standard specifications	Optional sp	ecifications					
Working fluid	Airflow, low vacuum (1.33 x 10 <sup>2</sup> Pa (abs)), water, kerosene, oil (50 mm <sup>2</sup> /s or less)	Hot water	Steam					
Working pressure differential range MPa	0 to 1 (refer to max. working pressure differential in individual specific							
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	0 100						
Heat proof class	В	F	1					
Atmosphere	Place free of corrosive	gas and explosive g	as					
Valve structure	Direct acting poppet structure							
Valve seat leakage cm?/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

Common specifications

### Individual specifications

Itom		Or	ifice	М	ax. wor	king pre	essure o	different	ial (MP	a)		Арра	arent p	Power consumption (W)			
	Port	(n	nm)	A	lir	Water, hot wa	ater, kerosene	Oil (50	mm²/s)	Steam	Rated	Hol	ding	Star	ting	AC	DC
Model no.	size	TOP	BODY	AC	DC	AC	DC	AC	DC	AC	vollage	50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	
AG33-01-1	Do1/9	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	100 VAC						
-01-2	HC1/0	2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	110 VAC	14	11	20	16	6/1 2	11
-02-1	De1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	60 Hz	14	1	20		0/4.2	(8.1)
-02-2	nc1/4	2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	200 VAC 50/60 Hz						
AG43-02-4	De1/4	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	220 VAC						
-02-5	nc1/4	3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	60 Hz 12 VDC	22	17	25	27	0 2/6 2	11
-03-4	D-0/0	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	24 VDC	22		35	21	0.3/0.2	(10.4)
-03-5	HC3/8	3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	100 VDC						

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

\*2: Refer to DC column for the max. working pressure differential of coil with diode. \*3: The voltage fluctuation must be within ±10% of the rated voltage.

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

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

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

Sealant	Fluoro	rubber	Ethylene propyle	ene diene rubber	PT	FE	
Coil (heat proof class)	В	Н	В	Н	В	Н	
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 cmilmin. (ANR)		0.2 or le	ess (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

		Orifice (mm)		Flow characteristics							
Model no.	Port	TOP	DODY	C [dm <sup>3</sup> /	′(s∙bar)]		b	Cv flow factor			
	size		BODT	TOP	BODY	TOP	BODY	TOP	BODY		
AG33-01-1	Po1/9	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	De1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09		
-02-2	nc1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15		
AG43-02-4	De1/4	3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31		
-02-5	nc 1/4	3.5	3.0	1.5	1.1	0.62	0.52	0.40	0.31		
-03-4	Po2/9	3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31		
-03-5	nu3/0	3.5	3.0	1.5	1.1	0.62	0.52	0.40	0.31		

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

How to order

AG33 - (02)	-(2)-(H)2G	A			)-(A	C100V)					
(AG43)		housir	g	Go	ther options					Mada	1
Model no.	· · · · · ·	9 Manual o G	Mernae	(iocxing) ountir	g plate	Voltage				NIOGE	ei no.
		Symt	ool	De	scriptions	Symbol	Description	is Symbol	Descriptions	AG33	AG43
A P	ort size	A Po	ort s	ize	Bc1/8	16	G 1/8	1N	1/8NPT		
	-				Rc1/4	2G	G 1/4	2N	1/4NPT	•	•
		03			Rc3/8	3G	G 3/8	3N	3/8NPT		•
		<b>B</b> 0	ifice	9							
					A	G33		TOP	AG43		
		1			ø1.5	Ø1	.5	-	-	•	
		2			ø2.0	ø2	.0	-	-	•	
		4			-	-		ø3.0	ø3.0		•
		5			-	-		ø3.5	ø3.0		•
	Body/sealant	C Bo	ody/	seala	nt combinatio	on					
	combination	Blank	1 <sup>j</sup>	Body	Sealar Nitrile rubbe	nt	Ireatment	Air water low	Hemarks		
	*1 *2	B	S	ass	Fluoro rubb	er	_	Air, water, iow	m. kerosene (up to 90°C *2)	•	•
	*3	C		ā	PTFE	-		Steam (up	to 184°C *2)	•	•
		D	1	steel	Nitrile rubbe	er		Air, water, low	vacuum, kerosene (up to 60°C)	•	•
		E		inless	Fluoro rubb	er	-	Air, low vacuu	m, kerosene (up to 90°C *2)	•	•
		F		Sta	PTFE Nitrile with a			Steam (up	to 184°C *2)	•	•
		<u> </u>	otion	ş	Fluoro rubb	er		Air, water, iow	m kerosene (up to 90°C *2)		
		ĸ	ŏ	Bras	PTFE			Steam (up	to 184°C *2)	•	•
		Р		-	Ethylene propyle	ne diene rubber		Hot water	up to 90°C *2)	•	•
		L		ess steel	Nitrile rubbe	er	Oil free	Air, water, low vacuum, kerosene (up to 60°C) Air, low vacuum, kerosene (up to 90°C *2)		•	•
		M			Fluoro rubb	er				•	•
		B		Stain	PIFE Ethylene propyle	na diana rubbar		Steam (up	to 184 C ^2)	•	-
		<u> </u>			23 Etnylene propylene diene						
		Rete	er t	o pa	age 36 in	the Intro	duction t	or details	on the material	combin	ations.
		D to	0								
<example 1="" of<="" td=""><td>model number&gt;</td><td>Refe</td><td>er t</td><td>o th</td><td>e followir</td><td>ia page</td><td>for details</td><td>s on the c</td><td>oil housing, othe</td><td>er optior</td><td>is and</td></example>	model number>	Refe	er t	o th	e followir	ia page	for details	s on the c	oil housing, othe	er optior	is and
AG33-02-1-A	C100V	volta	age	e, et	с.	9 2490	ioi dotain		en nederig, etn		
Port size:	Bc1/4	The ee	mhi	, notio	na indiaatad	with <b>A</b> in t		hla ara avail	able		
B Orifice:	TOP - ø1.5, BODY - ø	1.5	mp	natio	ns indicated	with $ullet$ in	ine above ta	Die are avail	adie.		
Body/sealant cor	mbination:										
	Body - bronze, sealan	t - nitril	e ru	lbber							
to (1):	Blank										
Voltage:	100 VAC 50/60Hz, 11	0 VAC	60ł	Ηz							
<example 2="" of<="" td=""><td>model number&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></example>	model number>										
AG43-03-4-00	0ABS-AC100V										
Port size:	Rc3/8										
B Orifice:	TOP - ø3.0, BODY - ø	3.0									
Body/sealant cor	mbination:						A N/ -				
Coil housing:	воdy - bronze, sealan Grommet lead wire	τ - nitril	e ru	ober			A Note o	on model	no. selection		

 Manual override (locking): Selected Mounting plate: Selected G Other options: Blank Surge suppressor: Selected Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

186 **CKD** 

### Note on 🔘

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

HNB/G

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

D	Coil	housing		9	6	G	Other	options	;		8	Rated voltage	USB/G
Desc	ript	ions		ual override (ing)	unting plate	Cabl (Marii	e glano	d gland)	Cond (Cond	duit uit pipe)	je suppressor	Descriptions	FAB/G
		1		Man (loc)	Wor	A-15a	A-150	A-150	101019	G1/2	Surg		FGB/G
Blank	Std.	Gromme	et lead wire	-								100 VAC, 200 VAC	EVB
2E		DIN tern	ninal box (G1/2)	A	в						s	100 VAC, 200 VAC	
2G 2H	1	DIN termin	nal box (Fy11)	-					<u> </u>	н			FWB/G
34	1	Direcontin	Lead wire						G	H H		100 VAC, 200 VAC, 24 VDC	
3M	1		HP terminal box (G1/2)	1						1		12 VDC, 24 VDC, 48 VDC, 100 VDC	FHB
3N	1	Open fromo tuno	HP terminal box + light (G1/2)	A	в		_	_			s	100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC	FLB
31		Iname type	HP terminal box (IP65 or equivalent) (G1/2)			טן	E	F				100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC	
3J	<u>i</u>		HP terminal box + light (IP65 or equivalent) (G 1/2)									100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC	AB
4A	0	Open	Lead wire				1	1	G	н	S		
4M		frame type (heat most class H)	HP terminal box (G1/2)	A	В	D	Е	F				100 VAC, 200 VAC	AG
4N		(namprosi alate il)	HP terminal box + light (G1/2)						0	1			AP/
54	1		Leau wire	-			1	1	G				AD
5N	1	Open frame type	HP terminal box + light (G1/2)	Δ	в							100 VAC. 200 VAC	APK/
51	1	(diode integrated)	HP terminal box (IP65 or equivalent) (G1/2)	1	-	D	E	F					For
5J	1		HP terminal box + light (IP65 or equivalent) (G1/2)										dry air
										Â	Refe	r to the following precautions for (1) to (1).	Explosion
													proof
	Γ	8/6371033											HVB/
Disale		2								G	nici.	Conduit	SAR/
Віапк			Grommet le	ead wire	300 m	m				н 🖂		■ G (CTC19) ● H (G1/2)	SVB
													NP/NAP/
	Ē												NVP
2E 2G		-	DIN termina	al box									CHB/G
2H													MXB/G
									Â	Note	e on i	model no. selection	Other G.P.
ЗA		TUE	Open frame     grommet le	e type ad wire	300 m	n			N	ote on	Ø		PD/FAD/
4A			• 4A (heat pr	oof clas	s H)				*4.	Leave	e blank	for the standard coil housing. However to select	PJ
5A			• 5A (diode in	negrate	u)				4.	optior	ns in (E)	to $\mathbb{H}$ , indicate 00 for $\mathbb{D}$ .	CVE/
3M	Ē								*5:	5A, 5	M, 5N, ith a div	5I and 5J are coils for which AC power is converted to	CVSE
3N		Floor L	Open frame	HP ter	minal h	ox			*6:	A DC	coil fo	r steam is available for AG43. Contact CKD for more	CPE/
4M 4N			• 4M, 4N (he	at proof	class I	H)				inforn	nation.		Madiaal
5M		•		ue meț	grateu)				N	lote on	<b>B</b> to	8	analysis
VIC	L								*7.	When		$\mathbf{\Psi}$	Custom
31		-							*8:	Selec	t one a	mong D, E, F, G and H for ©.	order
3J		10-124	Open frame     (IP65 or eq	e HP ter uivalent	minai b )	OX			*9:	The su	irge sup	pressor is an accessory for the lead wire coil. When selecting a	е/
51 5J			🐨 🗍 🗢 Śl, 5J (diod	e integra	ated)				*10	): As st	andard	, the surge suppressor is incorporated in the coil with	vah
										diode	and th	e 24 VDC coil (D 2H), so the surge suppressor symbol	piq
									*11	S can Tropi	not de calizati	selected. on (rust-proof coating) is available as a measure	lenc
*	R	efer to	page 122 for	coil	sele	ctior	ı.			again Note	st rust. that th	Contact CKD for more information.	/alve † so

Note that the tropicalization is not available when the manual override option A is selected.

### Note on **①**

- \*12: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. Note that the coils (0) 5A/SM/SN/SI/SJ can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
  \*13: For voltages other than above, consult with CKD.
  \*14: The lead wire is available in the standard 300 mm length, and 500 mm and 000 mm length and 500 mm control for the form and 200 mm length.
- mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

#### Internal structure and parts list

AG33/43 Series







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

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

188 **CKD** 

### Optional dimensions: AG33 Series





CAD

Dimensions shown in () are for G1/2.								
Voltage	А	В	С					
AC	20	62	50.5 (50)					

AC	20	62	50.5 (50)
DC	21	63.5	52 (51.5)

Open frame type + HP terminal box AG33-01/02-1 to 2-\* 3 M· 4M



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



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



Mounting plate No. 1 GE-100106



![](_page_23_Figure_14.jpeg)

![](_page_23_Figure_15.jpeg)

![](_page_23_Figure_16.jpeg)

![](_page_23_Figure_17.jpeg)

5A

CTC19 (G1/2) Dimensions shown in ( ) are for G1/2.

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

![](_page_23_Figure_20.jpeg)

Dimensions shown in ( ) are for stainless steel body.

USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
For dry air
Explosion proof
HVB/ HVL
SAB/ SVB
NP/NAP/ NVP
CHB/G
MXB/G
Other G.P. systems
PD/FAD/ PJ
CVE/ CVSE
CPE/ CPD
Medical analysis
Custom order
General purpose valve Direct acting 3 port solenoid valve

HNB/G

![](_page_24_Picture_0.jpeg)

### **Dimensions: AG43 Series**

CAD

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

![](_page_24_Figure_3.jpeg)

Model no.	А	В	С	D	Е
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

DIN terminal box

![](_page_25_Figure_3.jpeg)

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

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

 Open frame type + HP terminal box AG43-02/03-4 to 5-\* 3 M · 4M 5 N 4N

![](_page_25_Figure_7.jpeg)

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

![](_page_25_Picture_9.jpeg)

Model no.	А	С	D	Е
AG43-02-4 to 5-*	ø37.5	11	68	99.5
AG43-03-4 to 5-*	ø45	12	71	106

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

![](_page_25_Figure_12.jpeg)

Code

GE-100106

GE-100159

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

CAD	
Ŧ	

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

![](_page_25_Figure_16.jpeg)

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

![](_page_25_Figure_18.jpeg)

![](_page_25_Figure_19.jpeg)

 Manual override (locking) AG43-02/03-4 to 5\*\*\* A Figure shows the brass body

![](_page_25_Figure_21.jpeg)

AG43-02-4 to 5-***A	36 (ø37.5)	38	19.5
AG43-03-4 to 5-***A	40 (ø45.0)	40	22.5

Dimensions shown in ( ) are for stainless steel body.

Applicable model AG43-02/03-4 to 5 Series

AG43-02-4 to 5- D/E/F/L/M/N/R

AG43-03-4 to 5- D/E/F/L/M/N/R

Mounting plate No. 1 AG43-02/03-4 to 5 Stainless steel body

Mounting plate No. 2 Stainless steel body

![](_page_26_Picture_0.jpeg)

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

AG33\*/GAG43\* Series G

( (

- NC pressurization type
- Common supply / individual exhaust type

![](_page_26_Picture_5.jpeg)

### JIS symbol

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

![](_page_26_Figure_8.jpeg)

### Common specifications

Item	Standard specifications	Optional sp	l specifications							
Working fluid	Airflow, low vacuum (1.33 x 10 <sup>2</sup> Pa (abs)), water, kerosene, oil (50 mm <sup>2</sup> /s or less)	Hot water	Steam							
Working pressure differential range MPa	0 to 1 (refer to max. working pressure	differential in individ	ual specifications.)							
Max. working pressure MPa	1									
Withstanding pressure (water) MPa	10									
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90	-10 to 184							
Ambient temperature °C	-20 to 60	o 100								
Heat proof class	В	ŀ	1							
Atmosphere	Place free of corrosive	gas and explosive	gas							
Valve structure	Direct acting po	oppet structure								
Valve seat leakage cm9min. (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	NO	Ori	fice	Max	. worki	ing pre	ssure	differe	ntial (N	MPa)	Patod	Apparent power (VA)				Power consump	otion (W)
	port	(m	ım)	A	ir	Water, hot wa	ater, kerosene	Oil (50	mm²/s)	Steam	voltage	Hol	ding	Star	ting	AC	DC
Model no.	size	TOP	BODY	AC	DC	AC	DC	AC	DC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	
GAG331-1	Da1/9	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	100 VAC						11
-2	nc1/0	2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	110 VAC			00	16	6/4.0	
GAG332-1	D.4/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	60 Hz	14	''	20	10	6/4.2	(8.1)
-2	HC1/4	2.0	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	200 VAC 50/60 Hz						
GAG432-4	Dat/4	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	220 VAC						
-5	nc1/4	3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	60 Hz 12 VDC						11
GAG433-4	D.0/0	3.0	3.0	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	0.7 (0.55)	0.7	24 VDC	22	17	35	27	8.3/6.2	(10.4)
-5	Rc3/8	3.5	3.0	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	0.4 (0.25)	0.4	48 VDC 100 VDC						

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

Refer to How to order (page 194) and Dimensions (page 198) for the port sizes of port A and C.
 \*3: Refer to DC column for the max. working pressure differential of coil with diode.

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

\*5: The voltage fluctuation must be within  $\pm 10\%$  of the rated voltage. \*6: When using with a low vacuum, vacuum the NO port side.

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

Sealant	Fluoro	rubber	Ethylene propyle	ene diene rubber	PTFE		
Coil (heat proof class)	В	Н	В	Н	В	Н	
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 cm9min. (ANR)		0.2 or le	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

		Orifice	e (mm)	Flow characteristics							
Model no.	Port	тор	BODY	C [dm <sup>3</sup>	/(s·bar)]		b	Cv flov	w factor		
	Size	TOP	BODT	TOP	BODY	TOP	BODY	TOP	BODY		
GAG331-1	Po1/9	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09		
-2	HC1/0	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15		
GAG332-1	De1/4	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	De1/4	3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31		
-5	nc1/4	3.5	3.0	1.5	1.1	0.62	0.52	0.4	0.31		
GAG433-4	Po2/9	3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31		
-5	nc3/0	3.5	3.0	1.5	1.1	0.62	0.52	0.4	0.31		

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

#### How to order Common supply / individual exhaust type

(port C pressuization)												
GAG33(1)	)-(2)-(6)-(E	3 44	X	Â	G S)-(	AC100	)V					
	$\gamma \gamma \gamma \gamma$	Ġ	Coi	hous	ing OSurg	e suppres	sor					
individual exhaust type		-		4	Ĭ	í L	/ . It					
(port C pressurization)				<b>G</b> Ma	nual override (loo	cking) 🛡 🕻	/oltage					
					Other opti	ons				Mod	el no.	
GAG43		Body/	sea	lant c	ombination					CAC22*	CAC42*	
		Symb					Desc	riptions		GAG35	GAG45	
Model no		AN	O n	ort si	78		Dese	inplions				
A	NO port size	1		1/8						•		
		2		1/4						•	•	
		3		3/8							•	
		BT	ype	of th	read							
	Blan	k	Rc						•	•		
		G			•	•						
		N		NPT								
	G Orifice	<b>O</b> 0	rific	е								
					GAG	33*		GAG	13*			
		-			TOP	BOE	DY	TOP	BODY			
		-			Ø1.5 Ø2.0	01.	0		_			
		4	_		-	- 02.	•	ø3.0	ø3.0	-		
		5			-	_		ø3.5	ø3.0		•	
		0.5	tatio	n no		ı	1					
	Station no.	2		2 st	ations							
	*2	to	to to									
		10	10 10 stations									
		0	0 Actuator only									
		E Body/sealant combination										
			_	Body	Sealant		Treatmen	t Re	emarks			
		Blank	Std.	ss	Nitrile rubbe	r		Air, water, low vacu	um, kerosene (up to 60°C)	•	•	
		B		Bra	Fluoro rubbe	er	-	Air, low vacuum, l	erosene (up to 90°C *4)	•	•	
					Nitrile rubbe	r		Air water low vacu	184 C -4)		•	
		F		SSS ST	Fluoro rubbe	er	_	Air, water, low vacuum k	erosene (un to 90°C *4)		•	
		F		Stainle	PTFE			Steam (up to	184°C *4)	•	•	
<example 1="" of<="" td=""><td>model number&gt;</td><td>н</td><td></td><td></td><td>Nitrile rubbe</td><td>r</td><td></td><td>Air, water, low vacu</td><td>um, kerosene (up to 60°C)</td><td>•</td><td>•</td></example>	model number>	н			Nitrile rubbe	r		Air, water, low vacu	um, kerosene (up to 60°C)	•	•	
GAG331-1-4-A	AC200V	J	Optio	ass	Fluoro rubbe	er		Air, low vacuum, l	erosene (up to 90°C *4)	•	•	
/lodel no.: GAG331 (common supply /	individual exhaust type / port C pressurization)	к	Ŭ	ä	PTFE			Steam (up to	184°C *4)	•	•	
NO port size:	1/8	P		7	Ethylene propylene	e diene rubber		Hot water (up	to 90°C *4)	•	•	
B Type of thread:	Rc			stee	Fluoro rubbe	r	Oil free	Air, water, low vacu	um, kerosene (up to 60°C)		•	
Orifice:	TOP - ø1.5, BODY - ø1.5	N		less	PTEE			Steam (up to	184°C *4)			
Station no.:	4 stations	B		Stain	Ethviene propylene	e diene rubber		Hot water (up	to 90°C *4)	•	•	
Bouy/sealant Cor	Rody - bronze cealant - nitrile rubber	Der.				le a lund	المعادية	,				
Coil housing	Grommet lead wire	Rete	er t	o pa	age 36 in t	ne intro	auction	for details or	the material	compina	ations.	
G to D:	Blank	G to	0			_	_					
Voltage:	100 VAC 50/60Hz, 110 VAC 60Hz											
- U		Ref	Refer to the following page for details on the coil housing, other options									
<example 2="" of<="" td=""><td>model number&gt;</td><td>and</td><td>VC</td><td>oltag</td><td>ge, etc.</td><td></td><td></td><td></td><td></td><td></td><td></td></example>	model number>	and	VC	oltag	ge, etc.							
GAG332G-2-7	-000AS-AC200V	The co	mb	inatio	ons indicated	with	the above	table are availa	ble.			

Model no.: GAG332 (common supply / individual exhaust type / port C pressurization) A NO port size: 1/4

194 **CKD** 

B Type of thread: G Orifice: TOP - ø2.0, BODY - ø2.0 Station no.: 7 stations Body/sealant combination: Body - bronze, sealant - nitrile rubber Coil housing: Grommet lead wire C Manual override (locking): Selected Other options: Blank Surge suppressor: Selected Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

### A Note on model no. selection

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

#### Note on D and D

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

_	_														HNB/G
For Not	(E) e th	to (J), the c lat if option	ombina s © to (	tions indicated wi	th syn d, no	nbols o symbo	can be I is ind	manuf licated	acture	d.					USB/G
6	Co	il housing				G	•	Other o	ptions			0	J Rate	ed voltage	FAB/G
De	scri	ptions				inual override cking)	Cable gland (Marine cable		d Conduit le gland) (Conduit pipe)		Jossaiddns abj	Descript	tions	FGB/G	
Bla	-	TI Cromme	*   a a a!	ine		Ma (loc	// loa	11.100	/1.00	0.010	02	Sun	100.1/40	200 1/40	FVB
2	пк =	DIN tern	DIN terminal box (G1/2										100 VAC	2,200 VAC	EN/D/O
20	3	DIN terminal box (Pg11			(Pa11)	A						s	12 VDC,	24 VDC, 48 VDC, 100 VDC	FWB/G
2	1	DIN tern	ninal box	+ small light (	(Pg11)						н		100 VAC	C, 200 VAC, 24 VDC	FHB
3/	۹.		Lead w	/ire						G	н		100 VAC	C, 200 VAC	
31	Λ	0000	HP ter	minal box	(G1/2)							-	12 VDC,	24 VDC, 48 VDC, 100 VDC	FLB
31	4	frame type	HP ter	minal box + light	(G1/2)	A	D	E	F			S	100 VAC	C, 200 VAC, 12 VDC, 24 VDC, 100 VDC	
3	-	-	HP termina	al box (IP65 or equivalent)	(G1/2)								100 VAC	, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC	AB
- 3		jā	I ood w	vice	(G1/2)					G	н	6	100 VAC	5, 200 VAC, 12 VDC, 24 VDC, 100 VDC	
4/	-	O Open frame type	HP ter	minal box	(G1/2)	Δ		1		u	1 11	Ŭ	100 VAC	200 VAC	AG
4	<u>,</u>	(heat proof class H)	HP ter	minal box + light	(G1/2)		D	E	F					, 200 1710	AP/
5/	1		Lead w	/ire	()					G	н				AD
51	Λ	Open	HP ter	minal box	(G1/2)										APK/
51	۱	frame type	HP ter	minal box + light	(G1/2)	A	п	F	F				100 VAC	C, 200 VAC	ADK
	<u> </u>	(diode integrated)	HP termina	al box (IP65 or equivalent)	(G1/2)		-	_	-						For
- 5	1		HP terminal	box + light (IP65 or equivalent)	(G1/2)						•				dry air
	Refer to the following precautions for (E) to (J).									Explosion proof					
		101	-								Conduit			Conduit	HVB/ HVL
Bla	nk		C	<ul> <li>Grommet lead</li> </ul>	d wire (	300 mn	ı			H			● G (CTC19) ● H (G1/2)	SAB/ SVB	
															NP/NAP/ NVP
21	3			<ul> <li>DIN terminal b</li> </ul>	хох										CHB/G
21	Η														MXB/G
3	Δ	rure		<ul> <li>Open frame ty</li> </ul>	/pe					Â	Note	on r	nodel r	no. selection	Other G.P. systems
4	4 4		0	grommet lead • 4A (heat proof • 5A (diode inte	f class arated	800 mm H) )	I			No	ote on	Ø			PD/FAD/ PJ
31	1		-11							*6:	Leave	blank f i or () 1 5N	for the star ), indicate ( 51 and 51	ndard coil housing. However, to select options 00 for (F). are coils for which AC power is converted to	CVE/ CVSE
3N 4N	1		ai i	<ul> <li>Open frame H</li> <li>4M, 4N (heat i</li> </ul>	IP tern proof c	ninal bo class H	x			*8:	DC wi A DC	th a dic coil for	ode. steam is a	available for GAG43**. Contact CKD for more	CPE/ CPD
4P 5N 5N	1			• 5M, 5N (diode	integr	ated)					inform	ation.			Medical analysis
3			_	• O						N *9:	ote on When	G to E is C	❶ ), F, K or №	I, the manual override ( $\widehat{\mathbb{G}}$ A) is not available.	Custom order
3. 51 5.	3J     ● Open frame HP terminal box       5I     ● Open frame HP terminal box       5I     ● Open frame HP terminal box       6     ● Open frame HP terminal box       7     ● Open frame HP terminal box       6     ● Open frame HP terminal box       6     ● Open frame HP terminal box       7     ● Open frame HP terminal box       7     ● Open frame HP terminal box       8     ● Open frame HP terminal box       8									*10 *11 *12	: Select : The su a coil v : As sta diode	one au rge sup vith term undard, and the	mong D, E pressor is a ninal box, the the surge a 24 VDC	;, F, G and H for ⊕. In accessory for the lead wire coil. When selecting e surge suppressor is mounted in the terminal box. s suppressor is incorporated in the coil with coil (⊕ 2H), so the surge suppressor symbol	noid valve
		* Ref	er to	page 122 fo	r co	il sel	ectio	n.		*13	S can Tropic: rust. C	not be : alizatio contact	selected. n (rust-pro CKD for m	of coating) is available as a measure against nore information.	valve rt solei

Note that the tropicalization is not available when the manual override option A is selected.

#### Note on **I**

- 14: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. Note that the coils (© 5A/5M/5N/5/1/5J can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
  15: For voltages other than above, consult with CKD.
  16: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.
- more information.

General purpose v Direct acting 3 por

### Internal structure and parts list

GAG33\*/GAG43\* Series Actuator

![](_page_30_Figure_3.jpeg)

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

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

\*2: ( ) shows option.

### Internal structure and parts list

GAG33\*/GAG43\* Manifold

![](_page_31_Figure_3.jpeg)

No.	Parts name	Material	
1	Socket	C3604 (SUS303)	Brass (stainless steel)
2	Coil	_	
3	Core assembly	SUS405 or equivalent, 316L, 403 *1	Stainless steel
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
5	Plunger	SUS405 or equivalent	Stainless steel
6	Sealant	NBR (FKM, EPDM, PTFE)	NBR: Nitrile rubber FKM: Fluoro rubber
7	O ring	NBR (FKM, EPDM, PTFE) (AS568/019)	EPDM: Ethylene propylene diene rubber PTFE: Tetrafluoroethylene resin
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771 (SCS13)	Brass (stainless steel)
10	Holder	SPCC	Steel
11	Connector	C3604 (SUS304)	Brass (stainless steel)
12	Sub-plate	C3604 (SUS303)	Brass (stainless steel)
13	Connecting plate	SPCC	Steel
*1.14/	han the hadu/a	adapt combination oumbo	is other than blank or H

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

\*2: ( ) shows option.

FLB AB AG AP/ AD APK/ ADK For dry air Explosion proof HVB/ HVL SAB/ SVB NP/NAP/ NVP CHB/G MXB/G Other G.P. systems

HNB/G USB/G FAB/G

FGB/G

FVB

FWB/G

FHB

CPD Medical analysis Custom order PAIRA Pioue

PD/FAD/ PJ CVE/ CVSE CPE/

### Dimensions: GAG331/GAG332 Series

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

![](_page_32_Figure_3.jpeg)

CAD

![](_page_32_Figure_4.jpeg)

(n indicates the station number. )

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

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

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

 Actuator (grommet lead wire type) GAG33\*-1 to 2-0 Recommended dimensions for actuator mounting

![](_page_32_Figure_11.jpeg)

![](_page_32_Figure_12.jpeg)

Machining drawing when using 2 actuators

### Optional dimensions: GAG331/GAG332 Series

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

![](_page_33_Figure_3.jpeg)

Dimensions shown in ( ) are for G1/2.

Voltage	А	В	С
AC	20	62	50.5 (50)
DC	21	63.5	52 (51.5)

 Open frame type + HP terminal box GAG33\*-1 to 2-0 to 10-\* 3 M · 4M 5 N 4N Т J

![](_page_33_Figure_7.jpeg)

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

![](_page_33_Figure_9.jpeg)

![](_page_33_Figure_10.jpeg)

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

# GAG33\*-1 to 2-0 to 10-\* 3A 5A

![](_page_33_Figure_13.jpeg)

![](_page_33_Picture_14.jpeg)

 Open frame type + conduit GAG33\*-1 to 2-0 to 10-\* 3A G 4A || H 5A 53 (56)

CTC19 (G1/2)

Dimensions shown in ( ) are for G1/2.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG AP/ AD APK/ ADK For dry air Explosion

proof

HVB/

HVL

### Dimensions: GAG432/GAG433 Series

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

![](_page_34_Figure_3.jpeg)

CAD

![](_page_34_Figure_4.jpeg)

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

(n indicates the station number.)

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

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

\*2: Dimensions shown in ( ) are for the open frame type.

\*3: The dimensions are the same for the G or NPT thread port size.

 Actuator (grommet lead wire type) GAG43\*-4 to 5-0 Recommended dimensions for actuator mounting

![](_page_34_Figure_13.jpeg)

\* Lead wire length 300 mm

![](_page_34_Figure_15.jpeg)

86.5

90

![](_page_34_Figure_16.jpeg)

7

28

4-ø4.5

38

![](_page_34_Figure_17.jpeg)

Machining drawing when using 2 actuators

GAG432-4 to 5

GAG433-4 to 5

### Optional dimensions: GAG432/GAG433 Series

CAD

![](_page_35_Figure_3.jpeg)

![](_page_35_Figure_4.jpeg)

Dimensions shown in ( ) are for GAG433.

CKD 201

![](_page_36_Picture_0.jpeg)

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

## AG34/AG44 Series

- NO pressurization type
  Port size: Rc1/8, Rc1/4, Rc3/8
  - ં૮૬

![](_page_36_Picture_5.jpeg)

### JIS symbol

AG34/44: NO pressurization type

![](_page_36_Figure_8.jpeg)

### Common specifications

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

Note 1: No freezing

#### Individual specifications

Item		Ori	fice	Max.	working	g pressi	ure diffe	erential	(MPa)		Apparent power (VA)				Power consumption (W)	
	Port	(m	ım)	A	ir	Water, hot w	ater, kerosene	Oil (50	mm²/s)	Rated	Hole	ding	Star	ting	AC	DC
Model no.	SIZE	TOP	BODY	AC	DC	AC	DC	AC	DC	vollage	50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	
AG34-01-1	D-1/0	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	100 VAC						
-01-2	HC1/8	2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2	50/60 Hz				10	0/4.0	11
-02-1	D.4/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	110 VAC	14	11	20	16	6/4.2	(8.1)
-02-2	HC1/4	2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2	200 VAC						
AG44-02-1		2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	50/60 Hz						
-02-3	Rc1/4	2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45	220 VAC						
-02-4		3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)	60 Hz						11
-03-1		2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	12 VDC 24 VDC	22	17	35	27	8.3/6.2	(10.4)
-03-3	Rc3/8	2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45	48 VDC						
-03-4		3.0	3.0	04	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)	100 VDC						

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

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

\*3: The voltage fluctuation must be within  $\pm 10\%$  of the rated voltage.

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

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

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

Sealant	Fluoro	rubber	Ethylene propylene diene rubber			
Coil (heat proof class)	В	Н	В	Н		
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90	-10 to 60	-10 to 90		
Ambient temperature °C	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100		
Valve seat leakage cm9min. (ANR)	0.2 or less (air)					

Note 1: No freezing

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

### Flow characteristics

	_	Orifice	e (mm)	Flow characteristics						
Model no.	Port size	TOP	BODY	C [dm <sup>3</sup>	/(s·bar)]		b	Cv flow factor		
				TOP	BODY	TOP	BODY	TOP	BODY	
AG34-01-1	De1/9	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09	
-01-2	HC1/8	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15	
-02-1	D-1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09	
-02-2	RC 1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15	
AG44-02-1		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15	
-02-3	Rc1/4	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		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15	
-03-3	Rc3/8	2.0	3.0	0.53	1.1	0.54	0.52	0.15	0.31	
-03-4		3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31	

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

#### How to order

AG34)-(0	)2-1-0	)3A A (	В	G	S-(A(	C100V						
(AG44)			ng	<b>G</b> o	ther options						Mad	-1
											IVIOD	ei no.
Model no.			<b>G</b> M	ountin	g plate	Rated vol	tage				AG34	AG44
		Syn	nbol	De	scriptions	Symbol	Descript	tions	Symbol	Descriptions		
		A	Port	size								
	A Port size	0	1		Rc1/8	1G	G 1/8	8	1N	1/8NPT	•	
		0	2		Rc1/4	2G	G 1/4	4	2N	1/4NPT	•	•
		0	3		Rc3/8	3G	G 3/8	8	3N	3/8NPT		•
		B	Orifi	се								
	Orific	e	-		A	G34			A	G44		
					TOP	BO	DY		TOP	BODY		
			1	$\square$	ø1.5	ø1	.5		ø2.0	ø2.0	•	•
			2		ø2.0	øź	2.0		-	-	•	
			3		-	-	-		ø2.0	ø3.0		•
			4		-	-	-		ø3.0	ø3.0		•
	L		Bod	v/seala	ant combinat	ion						
	Boo	ly/sealant		Body	Sealar	nt	Treatme	ent	B	emarks		
	*1	Blar	ık ∄	8	Nitrile rubb	er			Air. water. low vac	uum, kerosene (up to 60°C)	•	•
	*2	В		Bra:	Fluoro rub	ber	1 -	5	Air, low vacuum,	kerosene (up to 90°C *2)	•	•
	*3	D		steel	Nitrile rubb	er			Air, water, low vac	uum, kerosene (up to 60°C)	•	•
	*4	E		Series	Fluoro rub	ber	1 -		Air, low vacuum,	kerosene (up to 90°C *2)	•	•
		н		s	Nitrile rubb	er			Air, water, low vac	uum, kerosene (up to 60°C)	•	•
		J	Dtio	ras	Fluoro rub	ber	1		Air, low vacuum,	kerosene (up to 90°C *2)	•	•
		Р	70	-	Ethylene propyle	ne diene rubbei		. 1	Hot water (u	p to 90°C *2)	•	•
		L		lee	Nitrile rubb	er		e [	Air, water, low vac	uum, kerosene (up to 60°C)	•	•
		м		less s	Fluoro rub	ber	1	1	Air, low vacuum,	kerosene (up to 90°C *2)	•	٠
		R		Stain	Ethylene propyle	ne diene rubbei	r	Ī	Hot water (u	p to 90°C *2)		•
		Re	fer	to pa	age 36 in	the Intr	oductio	n fo	r details o	on the material	combin	ations.

D to 1

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

The combinations indicated with 
in the above table are available. <Example 1 of model number>

### AG34-1G-1-AC100V

Model no.: AG34 Port size: G 1/8 Portifice: TOP - ø1.5, BODY - ø1.5 Body/sealant combination: Body - bronze, sealant - nitrile rubber Coil housing: Grommet lead wire to the Blank Rated voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

#### <Example 2 of model number>

### AG44-03-4-000ABS-AC100V

Model IIO Ad-	++
Port size:	Rc3/8
Orifice:	TOP - ø3.0, BODY - ø3.0
Body/sealant con	nbination:
	Body - bronze, sealant - nitrile rubber
Coil housing:	Grommet lead wire
Manual override	(locking):
	Selected
Mounting plate:	Selected
G Other options:	Blank
Surge suppressor:	Selected
Rated voltage:	100 VAC 50/60Hz, 110 VAC 60Hz

#### A Note on model no. selection

#### Note on O

- \*1: Leave blank for standard. However, to select options in 0 to E, indicate 0 for C.
- \*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: Even if nitrile rubber is selected for the sealant, the NO side sealant will be fluoro rubber.

![](_page_38_Picture_17.jpeg)

Ξ Rated voltage D Coil housing E) G Other options Cable gland Conduit olate overni (Marine cable gland) (Conduit pipe) Descriptions Mounting Descriptions (lockina) Manual A-15a A-15b A-15c CTC19 G1/2 Surge Blank ਤੋਂ Grommet lead wire 100 VAC, 200 VAC 2F DIN terminal box (G1/2) 100 VAC, 200 VAC s Α R 12 VDC, 24 VDC, 48 VDC, 100 VDC 2G DIN terminal box (Pg11) 2H DIN terminal box + small light (Pg11) н 100 VAC, 200 VAC, 24 VDC G н 34 Lead wire 100 VAC, 200 VAC HP terminal box (G1/2) 12 VDC, 24 VDC, 48 VDC, 100 VDC 3M Open HP terminal box + light (G1/2) Α в 100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC 3N s D Е F frame type HP terminal box (IP65 or equivalent) (G1/2) 31 100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC HP terminal box + light (IP65 or equivalent) (G1/2) 3.1 Option 100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC н s 4A Lead wire G Open 100 VAC, 200 VAC frame type HP terminal box (G1/2) в 4M Δ D F F (heat proof class H) HP terminal box + light (G1/2) 4N G н 54 Lead wire 5M HP terminal box(G1/2) Open 100 VAC, 200 VAC 5N frame type HP terminal box + light (G1/2) Α в D Е F (diode integrated) HP terminal box (IP65 or equivalent) (G1/2) 51 HP terminal box + light (IP65 or equivalent) (G1/2) 5J A Refer to the following precautions for D to 1. Conduit
 G (CTC19) G Blank Grommet lead wire 300 mm н • H (G1/2) 2E 2G DIN terminal box 2Н Open frame type 3A grommet lead wire 300 mm 4A (heat proof class H) Note on model no. selection 4A 5A 5A (diode integrated) Note on D \*5: 3M (E) to (H), indicate 00 for (H). 3N 4M Open frame HP terminal box \*6: 4M, 4N (heat proof class H) with a diode 4N 5M, 5N (diode integrated) \*7: 5M 5N information Note on G to G 31 Open frame HP terminal box \*8: Select one among D, E, F, G and H for G. 3J 51 (IP65 or equivalent) \*9: 5I, 5J (diode integrated) 5J be selected.

For (D) to (1), the combinations indicated with symbols can be manufactured. Note that if options (E) to (H) are not required, no symbol is indicated.

\* Refer to page 122 for coil selection.

- Leave blank for the standard coil housing. However, to select options in
- 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC
- A DC coil for steam is available for AG44. Contact CKD for more
- The surge suppressor is an accessory for the lead wire coil. When selecting a coil with terminal box, the surge suppressor is mounted in the terminal box.
- \*10: As standard, the surge suppressor is incorporated in the coil with diode and the 24 VDC coil (D 2H), so the surge suppressor symbol S cannot
- \*11: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information. Note that the tropicalization is not available when the manual override option A is selected.

#### Note on 🕕

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

![](_page_40_Picture_0.jpeg)

#### Internal structure and parts list

AG34/AG44 Series

![](_page_40_Figure_3.jpeg)

CAD

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

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

\*2: ( ) shows option.

![](_page_40_Figure_7.jpeg)

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

![](_page_40_Figure_9.jpeg)

### Optional dimensions: AG34 Series

#### DIN terminal box

![](_page_41_Figure_3.jpeg)

CAD

Dimensions shown in ( ) are for G1/2.

Voltage	А	В	С
AC	20	62	50.5 (50)
DC	21	63.5	52 (51.5)

• Open frame type + HP terminal box AG34-01/02-1 to 2-\* 3 M· 4M

![](_page_41_Figure_7.jpeg)

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

![](_page_41_Figure_9.jpeg)

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

![](_page_41_Figure_11.jpeg)

Mounting plate No. 1 GE-100106

![](_page_41_Figure_13.jpeg)

![](_page_41_Figure_14.jpeg)

![](_page_41_Figure_15.jpeg)

CTC19 (G1/2)

Dimensions shown in ( ) are for  ${\rm G1/2}$ 

 Manual override (locking) AG34-01/02-1 to 2-\*\*\* Figure shows the brass body.

![](_page_41_Figure_19.jpeg)

Dimensions shown in ( ) are for stainless steel body.

	FWB/G
	FHB
	FLB
	AB
	AG
	AP/ AD
	APK/ ADK
	For dry air
	Explosion proof
	HVB/ HVL
	SAB/ SVB
2.	NP/NAP/ NVP
	CHB/G
	MXB/G
	Other G.P.
	systems
	PD/FAD/ PJ
	CVE/ CVSE
	CPE/ CPD
	Medical analysis
	Custom
	order
	<b>alve</b> t solenoid valve
	se v
	g 3
	ctin ctin
	era ct a
	Direc

USB/G

FAB/G

FGB/G

FVB

![](_page_42_Picture_0.jpeg)

### **Dimensions: AG44 Series**

CAD

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

![](_page_42_Figure_3.jpeg)

* Lead	l wire	length	300	mm	AG4

Model no.	А	В	С	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

#### DIN terminal box

![](_page_43_Figure_3.jpeg)

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

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

 Open frame type + HP terminal box AG44-02/03-1/3/4-\*
 3 M 5 N
 4M 4N

![](_page_43_Figure_7.jpeg)

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

	╞╧
<u>}{</u>	

Model no.	А	С	D	Е
AG44-02-1 to 4-*	ø37.5	11	68	99.5
AG44-03-1 to 4-*	ø45	12	71	106

Mounting plate

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

![](_page_43_Figure_13.jpeg)

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

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

![](_page_43_Figure_16.jpeg)

CAD

![](_page_43_Figure_17.jpeg)

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

![](_page_43_Figure_20.jpeg)

![](_page_43_Figure_21.jpeg)

Dimensions shown in ( ) are for G1/2.

 Manual override (locking) AG44-02/03-1 to 4-\*\*\* A Figure shows the brass body.

![](_page_43_Figure_24.jpeg)

Model no.	А	В	К
AG44-02-1 to 4-***A	36 (ø37.5)	38	19.5
AG44-03-1 to 4-***A	40 (ø45.0)	40	22.5

Dimensions shown in ( ) are for stainless steel body.

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

HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
For dry air
Explosion proof
HVB/ HVL
SAB/ SVB
NP/NAP/ NVP
CHB/G
MXB/G
Other G.P. systems
PD/FAD/ PJ
CVE/ CVSE
CPE/ CPD
Medical analysis
Custom order
General purpose valve Direct acting 3 port solenoid valve

![](_page_44_Picture_0.jpeg)

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

AG34\*/GAG44\* Series G

NO pressurization type

CE

![](_page_44_Picture_5.jpeg)

### JIS symbol

GAG34\*/44\*: NO pressurization type

![](_page_44_Figure_8.jpeg)

### Common specifications

Item	Standard specifications	Optional specifications				
Working fluid	Airflow, low vacuum (1.33 x 10 <sup>2</sup> Pa (abs)), water, kerosene, oil (50 mm <sup>2</sup> /s or less) Hot water					
Working pressure differential range MPa	0 to 1.5 (refer to max. working pressure	differential in individual specifications.)				
Max. working pressure MPa	1.	5				
Withstanding pressure (water) MPa	1	0				
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90				
Ambient temperature °C	-20 to 60	-20 to 100				
Heat proof class	В	Н				
Atmosphere	Place free of corrosive	gas and explosive gas				
Valve structure	Direct acting po	oppet structure				
Valve seat leakage cm9min. (ANR)	0.2 or le	ess (air)				
Mounting attitude	Free					
Body, sealant	Brass, nitrile rubber	Brass, ethylene propylene diene rubber				
		-				

Note 1: No freezing

#### Individual specifications

Item	NO	Ori	fice	Max. v	working	pressu	ire diffe	rential	(MPa)		Apparent power (VA)				Power consumption (W)	
	port	(m	m)	A	\ir	Water, hot wa	ater, kerosene	Oil (50	mm²/s)	Rated	Hol	ding	Star	ting	AC	DC
Model no.	size	TOP	BODY	AC	DC	AC	DC	AC	DC	vollage	50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	
GAG341-1	Po1/9	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	100 VAC						
-2	HC 1/0	2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2	50/60 Hz				10	0/4.0	11
GAG342-1	D-1/4	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.7	110 VAC	14	11	20	10	6/4.2	(8.1)
-2	RCI/4	2.0	2.0	0.7	0.45	0.7	0.6 (0.45)	0.3	0.2	60 Hz						
GAG442-1		2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	50/60 Hz						
-3	Rc1/4	2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45	220 VAC						
-4		3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)	60 Hz	22	17	35	27	0.0/0.0	11
GAG443-1		2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	24 VDC	22	11	55	21	0.0/0.2	(10.4)
-3	Rc3/8	2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45	48 VDC	48 VDC					
-4		3.0	3.0	0.4	0.3 (0.25)	0.5	0.3	0.3	0.2 (0.15)	100 VDC						

\*1: The model numbers above show the basic NO port size (Rc) and orifice diameter. Refer to How to order for other combinations.
\*2: Refer to DC column for the max. working pressure differential of coil with diode.
\*3: The voltage fluctuation must be within ±10% of the rated voltage.
\*4: Values in () are for the type with DIN terminal box and DC voltage specifications.
\*5: When using with a low vacuum, vacuum the NC port side.

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

Sealant	Fluoro	rubber	Ethylene propylene diene rubber		
Coil (heat proof class)	В	Н	В	Н	
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90	-10 to 60	-10 to 90	
Ambient temperature °C	-20 to 60	-20 to 100 (Note 2)	-20 to 60	-20 to 100 (Note 2)	
Valve seat leakage cm9min. (ANR)		0.2 or le	ess (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

	_	Orifice (mm)		Flow characteristics								
Model no.	Port	тор	BODY	C [dm <sup>3</sup>	/(s·bar)]	l	b	Cv flow factor				
	0120			TOP	BODY	TOP	BODY	TOP	BODY			
GAG341-1	D-1/0	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09			
-2	HC1/8	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15			
GAG342-1	Rc1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09			
-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15			
GAG442-1		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15			
-3	Rc1/4	2.0	3.0	0.53	1.1	0.54	0.52	0.15	0.31			
-4	1	3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31			
GAG443-1		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15			
-3	Rc3/8	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.

	USB/G
-	FAB/G
-	FGB/G
-	FVB
	FWB/G
	FHB
	FLB
	AB
	AG
	AP/ AD
	APK/ ADK
	For dry air
Ī	Explosion proof
-	HVB/ HVL
-	SAB/ SVB
-	NP/NAP/ NVP
-	CHB/G
	MXB/G
	Other G.P. systems
-	PD/FAD/ PJ
-	CVE/ CVSE
-	CPE/ CPD
-	Medical analysis
-	Custom order
-	<b>General purpose valve</b> Direct acting 3 port solenoid valve

HNB/G

How to order

GAG34 1	- 1 - 0 -(	B	2H		HS	- AC1	00V					
GAG44	GAG44											
				G		e (locking)	voltag	e				
					C Other	options						
Madalina	Actuator onl	y										
Wodel no.											Mod	el no.
		<b>U</b> B	oay/	seal	ant combinati	on						
		Current	-				D				GAG34*	GAG44*
		Symu		ort o	70		De	escri	puons			
A N	O port size	1	Οp	1/8	ze							
		2	-	1/4							•	•
		3		3/8							-	•
		ßT	vpe	of th	read							
	B Type of thread	Blar	ık	Rc							•	•
		G		G							•	•
		N		NP	Г						•	•
		COC	Orific	е								
	Orifice				GAG	34*			GAG4	14*		
					TOP	BO	DY		TOP	BODY		
		1	_		ø1.5	ø1	.5		ø2.0	ø2.0	•	•
		2	_		ø2.0	ø2	.0		-	-	•	-
		3	_		-	-			ø2.0	ø3.0		•
		4			-				Ø3.0	Ø3.0		•
		UB	ody	/seal	ant combinatio	n +	Treatm	ont	De	marka		
		Blank	ţ	Son Son	Nitrile rubbe	r	Treatin	ent	Air water low vacu	im kerosene (un to 60°C)	•	•
		B	S	Bras	Fluoro rubbe	ər	-		Air, low vacuum, k	erosene (up to 90°C *2)	•	•
		D		steel	Nitrile rubbe	r			Air, water, low vacu	um, kerosene (up to 60°C)	•	•
		E		Stainless	Fluoro rubbe	ər	-		Air, low vacuum, k	erosene (up to 90°C *2)	•	•
		н	Ē	ŝ	Nitrile rubbe	r			Air, water, low vacu	um, kerosene (up to 60°C)	•	•
		J	Optic	Bras	Fluoro rubbe	ər			Air, low vacuum, k	erosene (up to 90°C *2)	•	•
		P		_	Ethylene propylene	e diene rubber	Oil fre	е	Hot water (up	o to 90°C *2)	•	•
<example 1="" of<="" td=""><td>model number&gt;</td><td></td><td>-  </td><td>s stee</td><td>Nitrile rubbe</td><td>r</td><td></td><td></td><td>Air, water, low vacu</td><td>um, kerosene (up to 60°C)</td><td>•</td><td>•</td></example>	model number>		-	s stee	Nitrile rubbe	r			Air, water, low vacu	um, kerosene (up to 60°C)	•	•
GAG341-1-0-/	AC200V			ainles	Fluoro rubbe	er e diono rubbor			Air, iow vacuum, k	eroserie (up to 90 C "2)	-	•
Model no.: GA	G341			55					TIOL WALET (U	10 90 0 2)		
NO port size:	1/8	Ref	er t	ор	age 36 in t	he Intro	oductio	n fo	or details or	n the material	combin	ations.
Orifice:	HC TOP- a1 5 BODV - a1 5	🕞 to	•									
Body/sealant cor	mbination:	D (			<b>6</b> H							
- ,	Body - bronze,	Ret	er t	o tr	e tollowing	g page	for det	alls	on the coll	nousing, othe	er optior	ns and
<b>A a a a a</b>	sealant - nitrile rubber	voit	age	e, e	с.							
Coil housing:	Grommet lead wire -	The co	mbi	inatio	ons indicated v	with ● in	the above	e tab	le are availabl	e.		
Voltage:	200 VAC 50/60Hz, 220	0 VAC	60	Ηz								
•	··· · · · · · · · ,											
<example 2="" of<="" td=""><td>model number&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></example>	model number>											
GAG342G-2-0	-000AS-AC200V	/										
NO port size:	1/4											
wind puit size.												
B Type of thread:	G						Δ ΝΙ-4			anlanting		

- Body/sealant combination: Body - bronze, sealant - nitrile rubber Coil housing: Grommet lead wire Manual override (locking): Selected
- G Other options: Blank Surge suppressor: Selected

212 CKD

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

#### Note on D

- \*1: Leave blank for standard. However, to select options in E to H,indicate 0 for ©. \*2: When 4A, 4M or 4N is selected for <sup>®</sup>.
- \*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.

														TIND/G
For	) to	① tha a	ombies	tions indicated with a	umbel	e	ha mar	ufeet	urad					USB/G
Note	that	t if options	s 🕞 to	(i) are not required, r	io sym	bol is i	indicate	ed.	irea.					FAB/G
<b>()</b>	Coil	housing			F	G	Other o	ptions	Cond	luit	6	1 Rate	ed voltage	FGB/G
Desc	crip	tions			al overrid 1g)	(Marin	e gianc ne cable	gland)	(Condu	uit pipe)	seuddins	Descrip	tions	FVB
					Manua (lockir	A-15a	A-15b	A-15c	CTC19	G1/2	Surge			FWB/G
Blank	Std.	Gromme	et lead	wire (G1/2)								100 VA	C, 200 VAC	FHB
2G	-	DIN tern	ninal bo	x (Pq11)	A						s	12 VDC	, 24 VDC, 48 VDC, 100 VDC	
2H		DIN tern	ninal bo	ox + small light (Pg11)						н	1	100 VA	C, 200 VAC, 24 VDC	FLB
3A			Lead v	wire			1		G	н		100 VA	C, 200 VAC	AB
<u>3M</u>		Onen	HP ter	minal box (G1/2)								12 VDC	, 24 VDC, 48 VDC, 100 VDC	AD
<u>3N</u>	-	frame type	HP ter	minal box + light (G1/2)	A	D	E	F			s	100 VA0	C, 200 VAC, 12 VDC, 24 VDC, 100 VDC	AG
31	ç		HP terminal	al Dox (IP65 or equivalent) (G 1/2)								100 VAC	200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC	AP/
44	- btio	0	Lead	wire					G	н	s	100 14	5, 200 VAO, 12 VDO, 24 VDO, 100 VDO	AD
4M	ľ	frame type	HP ter	minal box (G1/2)	Α	-	_	-	-		-	100 VA	C, 200 VAC	APK/
4N		(heat proof class H)	HP ten	minal box + light (G1/2)		U	E	F						ADK
5A			Lead v	wire					G	н				For dry air
5M	_	Open	HP ter	minal box (G1/2)										Explosion
	-	frame type	HP ter	minal box + light (G1/2)	A	D	E	F				100 VA	J, 200 VAC	proof
5J	-	(,	HP terminal	a box (1P65 of equivalent) (G1/2) box + light (1P65 or equivalent) (G1/2)										HVB/
A Refer to the following precautions for (E) to ().								SAB/ SVB						
								NP/NAP/						
Blank			C	<ul> <li>Grommet lead wire</li> </ul>	300 mr	n		G H H G (CTC19) H (G1/2)					CHB/G	
	L													MXB/G
2E 2G	L	-		DIN terminal box										Other G.P. systems
2H									Â	Note	e on r	nodel r	no. selection	PD/FAD/ PJ
									No	ote on	8			CVE/
ЗA		CUTE:	~	<ul> <li>Open frame type grommet lead wire</li> </ul>	300 mn	n			*5:	Leave	blank	for the star	ndard coil housing. However, to select	CPE/
4A 5A	1		0	<ul> <li>4A (heat proof class</li> <li>5A (diode integrate</li> </ul>	s H) d)				<ul> <li>options in (P) (© or (H), indicate 00 for (E).</li> <li>*6: 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC with a diade</li> </ul>					
3M									*7:	A DC inforn	coil for ation.	steam is a	vailable for GAG44. Contact CKD for more	analysis
3N 4M 4N	L			<ul> <li>Open frame HP ten</li> <li>4M, 4N (heat proof</li> <li>5M, 5N (diada inter</li> </ul>	ninal bo class H	) )			N	ote on	G to	•		order
5M 5N		- 1		שוט, אוכ ש (diode integ	pated)				*8: *9:	Select The su a coil	t one ai irge sup vith term	mong D, E pressor is a iinal box, the	, F, G and H for G. n accessory for the lead wire coil. When selecting e surge suppressor is mounted in the terminal box.	valve
31		man .		Open frame HB ter	minal b	~~~			-10	: As st diode	andard, and the	the surge a 24 VDC (	e suppressor is incorporated in the coil with coil (È 2H), so the surge suppressor symbol	pior
3J SI SI SI							***	S can	not be	selected.		ve oler		
5J				<ul> <li>5I, 5J (diode integra</li> </ul>	ated)			*11: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.					valv ert si	
										Note	hat the	tropicaliza	tion is not available when the manual override	s po
opuon A is selected.						odur 3								
* Refer to page 122 for coil selection.							al pu							
*12: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 H 220 VAC 60 Hz. Note that the coils (E) 5A/5M/5N/5I/5J can be only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz								table with 100 VAC 50/60 Hz and 110 VAC bill is compatible with 200 VAC 50/60 Hz and hat the coils $(E)$ 5A/5M/5N/5I/5J can be used 0 Hz or 200 VAC 50/60 Hz	Genera Direct a					

- \*12: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. Note that the coils (5 54/5/M/SV/SUS and be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
   \*13: For voltages other than above, consult with CKD.
   \*14: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.
- more information.

#### Internal structure and parts list

### GAG34\*/GAG44\* Actuator

![](_page_48_Figure_3.jpeg)

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

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

\*2: ( ) shows option.

CAD

### Dimensions: GAG341/GAG342 Series

 Actuator (grommet lead wire type) GAG34\*-1 to 2-0 Recommended dimensions for actuator mounting

![](_page_48_Figure_10.jpeg)

![](_page_48_Figure_11.jpeg)

![](_page_48_Figure_12.jpeg)

### Optional dimensions: GAG341/GAG342 Series

- DIN terminal box
  - GAG34\*-1 to 2-0-\* 2E 2G 2H

Dimensions shown in ( ) are for G1/2.

Voltage	А	В	С
AC	20	62	50.5 (50)
DC	21	63.5	52 (51.5)

 Open frame type + HP terminal box GAG34\*-1 to 2-0-\*
 3 M 4 N 5

![](_page_49_Figure_8.jpeg)

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

![](_page_49_Figure_10.jpeg)

![](_page_49_Figure_11.jpeg)

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

Open frame lead wire type
GAG34\*-1 to 2-0-\* [3A]

4A 5A

32.6

![](_page_49_Figure_14.jpeg)

FGB/G FVB FWB/G FHB FLB

AB

AG AP/ AD APK/ ADK For

dry air

proof HVB/ HVL

SAB/ SVB

NP/NAP/

NVP CHB/G MXB/G

Explosion

USB/G

FAB/G

• Open frame type + conduit GAG34\*-1 to 2-0-\* 3A G 4A H 5A

![](_page_49_Figure_17.jpeg)

CTC19 (G1/2)

Dimensions shown in ( ) are for G1/2.

### Dimensions: GAG442/GAG443 Series

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

![](_page_50_Figure_3.jpeg)

![](_page_50_Figure_4.jpeg)

CAD

Recommended dimensions for actuator mounting

![](_page_50_Figure_6.jpeg)

Model no.	А
GAG442-1/3/4	86.5
GAG443-1/3/4	90

### Optional dimensions: GAG442/GAG443 Series

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

![](_page_51_Figure_5.jpeg)

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

Voltage	В	С	D
AC	23.5	65.5	54 (53.5)
DC	23.5	66	54.5 (54)

 Open frame type + HP terminal box GAG44\*-1/3/4-0-\* 3 M 4 N 5

![](_page_51_Figure_9.jpeg)

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

![](_page_51_Figure_11.jpeg)

Dimension shown in ( ) is for G1/2.

![](_page_51_Figure_13.jpeg)

\* Refer to the grommet lead wire type dimensions on the left page for common dimensions. Open frame lead wire type HNB/G GAG44\*-1/3/4-0-\* 3A 4A USB/G 5A FAB/G

![](_page_51_Figure_15.jpeg)

FGB/G FVB FWB/G FHB FLB

AB

AG AP/ AD APK/ ADK For dry air

Explosion

proof

HVB/ HVL SAB/

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

![](_page_51_Figure_18.jpeg)

Dimensions shown in ( ) are for G1/2.

### Electronic Catalog file list

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

### 2 port solenoid valve AB

		Ele	ectronic Catalog file list is applied to "CAD DATA 2006".					
Madal na	D.	XF	MICRO CADAM					
woder no.	Folder name	Filename	Filename (GROUP: CAD, USER: STDLIB)					
<ul> <li>Discrete valve AB: Pages 138 to 143</li> </ul>								
AB31	AB	ab31	CKD-AB31					
AB41-02		ab41_02	CKD-AB41-02					
AB41-02-7/03		ab41_02_7_03	CKD-AB41-02-7/03					
AB41-03 04-8		ab41_03_04_8	CKD-AB41-03 04-8					
AB42-02		ab42_02	CKD-AB42-02					
AB42-02-7/03	1	ab42_02_7_03	CKD-AB42-02-7/03					
AB31-A	1	ab31_a	CKD-AB31-A					
AB41-A-02	1	ab41_a_02	CKD-AB41-A-02					
AB41-A-02-7/03	1	ab41_a_02_7_03	CKD-AB41-A-02-7/03					
AB42-A-02	1	ab42_a_02	CKD-AB42-A-02					
AB42-A-02-7/03	1	ab42_a_02_7_03	CKD-AB42-A-02-7/03					
Discrete large bore valve AB71: Pages 146 to 147								
AB71-15	AB71	ab71_15	CKD-AB71-15					
AB71-20	1	ab71_20	CKD-AB71-20					
AB71-25	1	ab71_25	CKD-AB71-25					
<ul> <li>Manifold GAB: Pages 154 to 157, 164 to</li> </ul>	o 165							
GAB3	AB	gab3	CKD-GAB3					
GAB4	]	gab4	CKD-GAB4					
GAB4-OPEN	]	gab4_open	CKD-GAB4-OPEN					
GAB42	]	gab42	CKD-GAB42					
GAB42-OPEN	]	gab42_open	CKD-GAB42-OPEN					
GAB3-A	]	gab3_a	CKD-GAB3-A					
GAB4-A	]	gab4_a	CKD-GAB4-A					
GAB4-A-OPEN	1	gab4_a_open	CKD-GAB4-A-OPEN					
GAB42-A	1	gab42_a	CKD-GAB42-A					
GAB42-A-OPEN	1	gab42_a_open	CKD-GAB42-A-OPEN					
Accessory								
Common accessory	AB	a_other_f	CKD-A-OTHER-F					
Accessory for AB3/GAB3	]	a3_f	CKD-A3-F					
Accessory for AB4/GAB4	]	a4_f	CKD-A4-F					
Accessory for AB7	AB71	a7_f	CKD-A7-F					

3 port solenoid valve AG

Madalina	D	XF	MICRO CADAM					
	Folder name	Filename	Filename (GROUP: CAD, USER: STDLIB)					
Discrete valve AG: Pages 170 to 173, 18	38 to 191, 206 to 209							
AG3	AG	ag3	CKD-AG3					
AG4-02		ag4_02	CKD-AG4-02					
AG4-03		ag4_03	CKD-AG4-03					
AG3-A		ag3_a	CKD-AG3-A					
AG4-A-02		ag4_a_02	CKD-AG4-A-02					
AG4-A-03		ag4_a_03	CKD-AG4-A-03					
Manifold GAG: Pages 180 to 183, 198 to	o 201, 214 to 217							
GAG3	AG	gag3	CKD-GAG3					
GAG34		gag34	CKD-GAG34					
GAG4		gag4	CKD-GAG4					
GAG4-OPEN		gag4_open	CKD-GAG4-OPEN					
GAG44		gag44	CKD-GAG44					
GAG3-A		gag3_a	CKD-GAG3-A					
GAG34-A		gag34_a	CKD-GAG34-A					
GAG4-A		gag4_a	CKD-GAG4-A					
GAG4-A-OPEN		gag4_a_open	CKD-GAG4-A-OPEN					
GAG44-A		gag44_a	CKD-GAG44-A					
<ul> <li>Accessory</li> </ul>	• Accessory							
Accessory for AG3/GAG3	AG	a3_f	CKD-A3-F					
Accessory for AG4/GAG4		a4_f	CKD-A4-F					
Common accessory		a_other_f	CKD-A-OTHER-F					

![](_page_52_Picture_7.jpeg)

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

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

**CKD** 

# AB/AG (General purpose valve)

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

### For air, vacuum, water, oil

#### Overview

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

#### Features

### Various working fluids control

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

Wide option range Including open frame, coil with diode and terminal boxes.

### A great variety of series and variations

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

![](_page_55_Picture_11.jpeg)

СОΝТЕ	NTS	
Series variation		120
Coil selection guide		122
A Safety precautions		124
2 port solenoid valve		
Discrete valve		$\supset$
• AB21	NC (normally closed) type	126
AB31/41	NC (normally closed) type	130
• AB42	NO (normally open) type	130
<ul> <li>AB71 (large bore size)</li> </ul>	NC (normally closed) type	144
Manifold		$\supset$
● GAB312/352, GAB412/452	NC (normally closed) type	148
• GAB422	NO (normally open) type	158
3 port solenoid valve		
Discrete valve		$\supset$
• AG31/41	Universal type	166
• AG33/43	NC pressurization type	184
• AG34/44	NO pressurization type	202
Manifold		$\supset$
GAG31*/41* (common supply / individual exhaust	t type) Universal type	174
GAG35*/45* (common supply / separate flow type	e) Universal type	174
GAG33*/43* (common supply / individual exhaust	t type) NC pressurization type	192
<ul> <li>GAG34*/44* (actuator)</li> </ul>	NO pressurization type	210
Electronic Catalog file list		218

Always read the precautions in the Introduction and page 124 before starting use.

HNB/G

### Series variation

# General purpose direct acting 2, 3 port solenoid valve

No. of				A stratter				
port	Model		Structure	Actu	ation	Air	Low vacuum (1.33 x 10 <sup>2</sup> Pa (abs))	
2 port	AB31/41/42	AB21	Discrete	NC (normally	closed) type	•		
	AB21 AB71	AB31					$\bullet$	
		AB41				•	•	
		AB42		NO (normally	open) type		$\bullet$	
		AB71		NC (normally	closed) type			
		GAB312	Manifold	NC	Common supply	$\bullet$	•	
	E E E	GAB352		(normally closed)	Individual supply	$\bullet$	•	
	PROFESSION STATES	GAB412			Common supply	$\bullet$	•	
	A & & &	GAB452			Individual supply	$\bullet$	•	
		GAB422		NO (normally open) type	Common supply	$\bullet$	•	
3 port	ort	AG31	Discrete	Universal type		$\bullet$	•	
		AG41				$\bullet$	•	
		AG33		NC pressurization type		ullet	•	
		AG43				$\bullet$	●	
		AG34		NO pressurization type		ullet	•	
		AG44				$\bullet$	•	
	Manifold	GAG31	Manifold	Universal type	Common supply / individual exhaust	$\bullet$	•	
	LLL.	GAG35			Common supply / separate flow	ullet	•	
	N. W. W.	GAG41			Common supply / individual exhaust	$\bullet$	•	
	· · · ·	GAG45			Common supply / separate flow	$\bullet$	•	
	Actuator	GAG33		NC pressurization type	Common supply /	ullet		
		GAG43			individual exhaúst	•		
		GAG34	Actuator	NO pressuriz	ation type			
		GAG44				•		

Hot Norless         Hot Water         Steam         Rc1/8         Rc1/4         Rc3/8         Rc1/2         Rc3/4         Rc1         Page         HNBG           II         I         I         III         IIII         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII													
Hot soriess       Water       Steam       Rc1/8       Rc1/4       Rc3/8       Rc1/2       Rc3/4       Rc1       Page       Usac FABro         Image: Steam	Working	g fluid					Port size						HN
So ress       Value       •       •       •       •       126       FGBU         •       •       •       •       •       •       •       126       FGBU         •       •       •       •       •       •       •       130       FVB         •       •       •       •       •       •       •       130       FVB         •       •       •       •       •       •       •       130       FVB         •       •       •       •       •       •       •       •       FVB         •       •       •       •       •       •       •       •       FVB         •       •       •       •       •       •       •       •       •       •       •       •         •	Water	Kerosene	Oil	Hot	Steam	Rc1/8	Rc1/4	Rc3/8	Rc1/2	Rc3/4	Rc1	Page	USI FAI
•       •       •       •       •       •       •       130       FVB         •       •       •       •       •       •       •       •       130       FVB         •       •       •       •       •       •       •       130       FVB         •       •       •       •       •       •       130       FVB         •       •       •       •       •       •       144       FVB         •       •       •       •       •       •       144       FUB         •       •       •       •       •       •       144       FUB         •       •       •       •       •       •       144       FUB         •       •       •       •       •       •       148       AB         •       •       •       •       •       •       •       •       AB         •       •       •       •       •       •       •       •       AB         •       •       •       •       •       •       •       AB         • <t< td=""><td>•</td><td></td><td>(50 mm²/s or less)</td><td>water</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>126</td><td>FG</td></t<>	•		(50 mm²/s or less)	water								126	FG
•       •	•	•		•	•	•*4	•*4					130	
•       •       •       •       •       •       130       FHE         •       •       •       •       •       •       144       FLE         •       •       •       •       •       •       144       FLE         •       •       •       •       •       148       AB         •       •       •       •       •       148       AB         •       •       •       •       •       148       AB         •       •       •       •       •       •       •       AB      <	•	•	•	•	•		•*4	• <sup>*4</sup>	• <sup>*4</sup>			130	FW
'1       I	•	•		•	•		•*4	•*4				130	FH
•       •       •       •       •       •       148         •       •       •       •       •       •       148         •       •       •       •       •       148       A         •       •       •       •       •       •       A       A         •       •       •       •       •       •       A       A         •       •       •       •       •       •       A       A       A         •       •       •       •       •       •       •       A       A       A         •       •       •       •       •       •       •       •       A       A       A       A       A       A </td <td>•</td> <td>•</td> <td>• *1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>•</td> <td>•</td> <td>•</td> <td>144</td> <td>FLE</td>	•	•	• *1						•	•	•	144	FLE
•       •       •       •       •       •       148         •       •       •       •       •       •       148         •       •       •       •       •       148       A         •       •       •       •       •       166       A         •       •       •       •       •       184       A         •       •       •       •       •       184       A         •       •       •       •       •       •       •       •         • <td>•</td> <td>•</td> <td></td> <td>•</td> <td>•</td> <td></td> <td>•*2</td> <td>•*2</td> <td></td> <td></td> <td></td> <td>148</td> <td>AB</td>	•	•		•	•		•*2	•*2				148	AB
Image: state of the state	•	•	•	•	•		•*2	•*2				148	AC
Image: Constraint of the second state of the second st	•	•	•	•	•		• <sup>*2</sup>	•*2				148	AF AE
•       •	•	•	•	•	•		•*2	•*2				148	AF AE
•       •	•	•	•	•	•		• <sup>*2</sup>	• <sup>*2</sup>				158	Fo dr
Image: Constraint of the second state of the second st	•	•	•	•	•	•*4	• <sup>*4</sup>					166	Ex pr
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	•	•	•	•	•		•*4	•*4				166	H' H'
•       •	•	•	•	•	•	•*4	•*4	-				184	. S. S'
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	•	•	•	•	•		•*4	•*4				184	N N
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	•	•	•	•	-	• <sup>*4</sup>	• <sup>*4</sup>	-				202	c
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	•	•	•	•		-	•*4	•*4				202	M
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	•	•		•		•*2	•*2	-				174	Sy St
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	•	•	•	•	•	• <sup>3</sup>	• *3					174	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	•			•	•	- 3	• *3	• <sup>*2</sup>				174	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	•			•			• <sup>*3</sup>	• <sup>*2</sup>				174	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$						•* <sup>2</sup>	•3	3				192	an 
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							•3	•*2				192	or
						• <sup>*2</sup>	•*3	•*3				210	
						•*3	*3	*2				210	

#### $^{\ast}$ Refer to page 122 for details on the coil system.

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

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

\*3: • indicates the NO port.

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

# • Coil selection guide

Coll housing types and selection guide
 A wide variety is available to match applications.
 Refer to the structure and features to select the optimum model.

D	Direct acting 2, 3 port solenoid valve						B/GAB/AG/GAG)	Appearance			
			Heat proof class B mold	DC and AC (50/60 Hz common)     Heat proof temperature 130°C     Protection property symbols: IP61 or equivalent     Outdoor use not available		Grommet lead wire	Lead wire length 300 mm	Blank 6C			
			Heat proof class B mold	DC and AC (50/60 Hz common)     Heat proof temperature 130 C     Protection property symbols: IP61 or equivalent     Outdoor use not available		DIN terminal box	Easy wiring and maintenance     Feliable electric protection (ground terminal)     Light available (optional-100/200 VAC and 24     VDC only)	2E 2G 2H 6E 6G 6H			
		[	Heat proof class B mold	DC and AC (50/60 Hz common)     Heat proof temperature 130 C     Protection property symbols: IP65 or equivalent     Outdoor use not available		Lead wire	<ul> <li>Lead wire length 300 mm</li> <li>Conduit (CTC19) for direct conduit wiring can be mounted</li> </ul>	AC ACT			
			Heat proof class B mold	DC and AC (50/60 Hz common)     Heat proot temperature 130°C     Protection property symbols: IP21 or equivalent     Outdoor use not available		HP terminal box	Easy wiring     Light available (optional-100/200 VAC and 24/100 VDC only)	3M 3N			
		-	-	-		s H Heat proof class B mold	DC and AC (50/60 Hz common)     Heat proof temperature 130°C     Protection property symbols: IP65 or equivalent     Outdoor use not available		HP terminal box	Easy wiring     Light available (optional-100/200 VAC and 24/100 VDC only)	
Coil variation			Heat proof class H taped	AC dedicated (50/60 Hz common)     High temperature fluid and high ambient     temperature available     Heat proof temperature 180°C     Protection property symbols: IP00     Outdoor use not available		Lead wire	<ul> <li>Lead wire length 300 mm</li> <li>Conduit (CTC19) for direct conduit wiring can be mounted</li> </ul>	44			
	n frame type	_	_		_				HP terminal box	Easy wiring     Light available (optional-100/200 VAC only)	4M 4N
	Oper		Heat proof class B mold with diode	A diode is mounted on the coil section for direct-current conversion (AC-DC conversion) Perfect for places where beat can be a problem AC dedicated (50/60 Hz common) Heat proof temperature 130 C Protection property symbols: IP65 or equivalent Outdoor use not available		Lead wire	<ul> <li>Lead wire length 300 mm</li> <li>Conduit (CTC19) for direct conduit wiring can be mounted</li> </ul>	5A			
		_	Heat proof class B mold with diode	A diode is mounted on the coil selection for direct-current conversion (AC-DC conversion) Perfect for places where beat can be a problem AC dedicated (50/60 Hz common) Heat proof temperature 130 C Protection property symbols: IP21 or equivalent Outdoor use not available		HP terminal box	Easy wiring     Light available (optional-100/200 VAC only)	5M 5N			
			Heat proof class B mold with diode	A diode is mounted on the coil selection for direct-current conversion (AC-DC conversion) Perfect for places where beat can be a problem AC dedicated (50/80 Hz common) Heat proof temperature 130 C Protection property symbols: IP65 or equivalent Outdoor use not available		HP terminal box	Easy wiring     Light available (optional-100/200 VAC only)				
						Conduit	<ul> <li>Use a conduit (CTC19 or G1/2) when using direct conduit wiring for the open frame lead wire.</li> </ul>	G H			

### • Repair parts table per coil option

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

\*1: The actuator assembly includes the coil assembly, core assembly and plunger assembly. '2: As 6C, 6E, 6G and 6H are dedicated parts, they are provided as part of the actuator assembly. '3: It is available only for AP41.

![](_page_60_Picture_0.jpeg)

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

### **Design & Selection**

### A WARNING

### 1 Working fluid

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

### A Caution

#### 1 Continuous energizing

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

#### 2 Suction sound

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

#### 3 Fluid viscosity

The fluid viscosity must be 50 mm²/s or less. Malfunctions could occur if the viscosity is higher than 50 mm²/s.

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

When operating the solenoid valve with a programmable controller, etc., check that the

output leakage current from the programmable controller is within the following specifications. Failure to observe this could lead to malfunctions.

![](_page_60_Figure_19.jpeg)

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

### Installation, Piping & Wiring

### 

### 1 Piping

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

#### 2 Wiring

 Refer to page 53 in the Introduction for details on connecting the terminal box.

### When Using

### 1 Manual operation

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

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

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

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

![](_page_60_Figure_35.jpeg)

![](_page_60_Figure_36.jpeg)

![](_page_60_Picture_37.jpeg)

<For NO (normally open) type>

(1) Closing the valve with manual operations

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

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

(2) Resetting (when not using manual override) Always rotate the manual dial counterclockwise and return it to the highest point.

![](_page_60_Figure_43.jpeg)

### Maintenance

### 

When disassembling or assembling, tighten the core assembly and socket with the following tightening torgues.

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

![](_page_60_Picture_48.jpeg)

				HNB/G
Wo	orking environm	nent		USB/G
				FAB/G
IP65 (IEC60529 (IEC529:1989-11)) standards are app	plied to the test. Avoid us	e in conditions wh	ere water or cutting oil could directly	FGB/G
contact the valve.				FVB
Explanation of protection pro	porty symbols and	d ovamination	mothod of IP65	FWB/G
Protective structure	perty symbols and			FHB
Note: IP-65 is a standard as followings.				FLB
■ IEC (International Electrotechnical Commission) sta	ndards		(IEC60529 (IEC529:1989-11))	АВ
<u>I</u> P-**				٨G
	- Protection property sym	bols (International	Protection)	AP/ AD
				APK/ ADK
1st characteristic number (protection grade for foreign solid)	2nd characteristic number	r (protection grade fo	or entry of water)	For
Grade Degree of protection Dust proof type Powder and dust	Grade Degree of Protection for jet	protection No harmful effects	Overview of test method (fresh water is used) Using the following test device, spray water	Explosion
do not enter inside.		occur even when water is sprayed	for 1 minute per 1 m <sup>2</sup> of test sample (exterior) surface area from	HVB/
6	5	with nozzles from all directions.	all directions, for a total of 3 minutes	SAB/
				NP/NAP/
			Spray nozzie inter diameter. 20.3 mm	NVP
				Other G.P.
				systems PD/FAD/
				PJ CVE/
				CVSE
				CPE/ CPD
				Medical analysis
				Custom order
				General purpose valve Direct acting 2, 3 port solenoid valve