

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

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Direct acting 2, 3 port solenoid valve AB/AG	119
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For dry air	
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Explosion proof, general purpose	
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AB

AG

AP/

AD

APK/

ADK

For

dry air

Explosion

proof

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

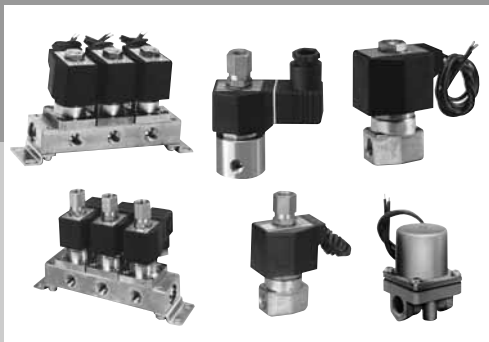
Various types of fluids can be handled by selecting the proper body material and sealant.

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.



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2 port solenoid valve

Discrete valve

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Manifold

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3 port solenoid valve

Discrete valve

● AG31/41	Universal type	166
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Manifold

● GAG31*41* (common supply / individual exhaust type)	Universal type	174
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⚠ Always read the precautions in the Introduction and page 124 before starting use.

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

CV/
CVSE

CPE/
CPD

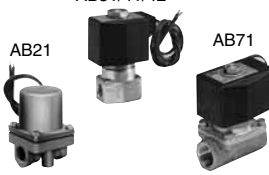


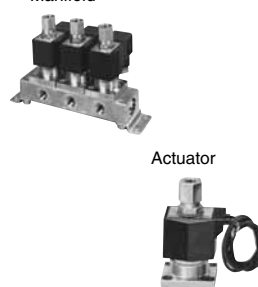
Medical
analysis

Custom
order

General purpose valve
Direct acting 2, 3 port solenoid valve

Series variation

General purpose direct acting 2, 3 port solenoid valve

No. of port	Model		Structure	Actuation		Air		
						Air	Low vacuum (1.33 x 10 ² Pa (abs))	
2 port		AB21	Discrete	NC (normally closed) type		●		
		AB31				●	●	
		AB41				●	●	
		AB42				●	●	
		AB71				●	●	
		GAB312	Manifold	NC (normally closed) type	Common supply	●	●	
		GAB352			Individual supply	●	●	
		GAB412			Common supply	●	●	
		GAB452			Individual supply	●	●	
		GAB422		NO (normally open) type	Common supply	●	●	
3 port		AG31	Discrete	Universal type		●	●	
		AG41				●	●	
		AG33		NC pressurization type	●	●		
		AG43			●	●		
		AG34		NO pressurization type	●	●		
		AG44			●	●		
		GAG31	Manifold	Universal type	Common supply / individual exhaust	●	●	
		GAG35			Common supply / separate flow	●	●	
		GAG41			Common supply / individual exhaust	●	●	
		GAG45			Common supply / separate flow	●	●	
		GAG33	NC pressurization type	Common supply / individual exhaust	●	●		
		GAG43			●	●		
		GAG34	Actuator	NO pressurization type	●	●		
		GAG44			●	●		

Working fluid					Port size						Page
Water	Kerosene	Oil (50 mm ² /s or less)	Hot water	Steam	Rc1/8	Rc1/4	Rc3/8	Rc1/2	Rc3/4	Rc1	
●		●			●	●					126
●	●	●	●	●	● ^{*4}	● ^{*4}					130
●	●	●	●	●		● ^{*4}	● ^{*4}	● ^{*4}			130
●	●	●	●	●		● ^{*4}	● ^{*4}				130
●	●	● ^{*1}						●	●	●	144
●	●	●	●	●		● ^{*2}	● ^{*2}				148
●	●	●	●	●		● ^{*2}	● ^{*2}				148
●	●	●	●	●		● ^{*2}	● ^{*2}				148
●	●	●	●	●		● ^{*2}	● ^{*2}				148
●	●	●	●	●		● ^{*2}	● ^{*2}				158
●	●	●	●	●	● ^{*4}	● ^{*4}					166
●	●	●	●	●		● ^{*4}	● ^{*4}				166
●	●	●	●	●	● ^{*4}	● ^{*4}					184
●	●	●	●	●		● ^{*4}	● ^{*4}				184
●	●	●	●	●	● ^{*4}	● ^{*4}					202
●	●	●	●	●		● ^{*4}	● ^{*4}				202
●	●	●	●	●	● ^{*2} ₃	● ^{*2} ₃					174
●	●	●	●	●	● ^{*2} ₃	● ^{*2} ₃					174
●	●	●	●	●		● ^{*2} ₃	● ^{*2} ₃				174
●	●	●	●	●		● ^{*2} ₃	● ^{*2} ₃				174
●	●	●	●	●	● ^{*2} ₃	● ^{*2} ₃					192
●	●	●	●	●		● ^{*2} ₃	● ^{*2} ₃				192
●	●	●	●	●	● ^{*2} ₃	● ^{*2} ₃					210
●	●	●	●	●		● ^{*2} ₃	● ^{*2} ₃				210

* Refer to page 122 for details on the coil system.

*1: 20 mm²/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.

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

CVB/
CVSE

CPE/
CPD

Medical
analysis

Custom
order

General purpose valve

Direct acting 2, 3 port solenoid valve













Coil selection guide

● Coil housing types and selection guide

A wide variety is available to match applications.

Refer to the structure and features to select the optimum model.

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

		Appearance					
			Blank 6C				
Coil variation	Open frame type	Heat proof class B mold	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Lead wire length 300 mm 		Blank 6C
		Heat proof class B mold	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Easy wiring and maintenance ● Reliable 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	<ul style="list-style-type: none"> ● 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 style="list-style-type: none"> ● Lead wire length 300 mm ● Conduit (CTC19) for direct conduit wiring can be mounted 		3A
		Heat proof class B mold	<ul style="list-style-type: none"> ● DC and AC (50/60 Hz common) ● Heat proof temperature 130 °C ● Protection property symbols: IP21 or equivalent ● Outdoor use not available 	HP terminal box	<ul style="list-style-type: none"> ● Easy wiring ● Light available (optional-100/200 VAC and 24/100 VDC only) 		3M 3N
		Heat proof class B mold	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Easy wiring ● Light available (optional-100/200 VAC and 24/100 VDC only) 		3I 3J
		Heat proof class H taped	<ul style="list-style-type: none"> ● 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 style="list-style-type: none"> ● Lead wire length 300 mm ● Conduit (CTC19) for direct conduit wiring can be mounted 		4A
		Heat proof class B mold with diode	<ul style="list-style-type: none"> ● A diode is mounted on the coil section for direct-current conversion (AC-DC conversion) ● Perfect for places where heat 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 style="list-style-type: none"> ● Lead wire length 300 mm ● Conduit (CTC19) for direct conduit wiring can be mounted 		4M 4N
		Heat proof class B mold with diode	<ul style="list-style-type: none"> ● A diode is mounted on the coil section for direct-current conversion (AC-DC conversion) ● Perfect for places where heat 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	<ul style="list-style-type: none"> ● Easy wiring ● Light available (optional-100/200 VAC only) 		5A
		Heat proof class B mold with diode	<ul style="list-style-type: none"> ● A diode is mounted on the coil section for direct-current conversion (AC-DC conversion) ● Perfect for places where heat 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	<ul style="list-style-type: none"> ● Easy wiring ● Light available (optional-100/200 VAC only) 		5M 5N
		Heat proof class B mold with diode	<ul style="list-style-type: none"> ● A diode is mounted on the coil section for direct-current conversion (AC-DC conversion) ● Perfect for places where heat 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 	HP terminal box	<ul style="list-style-type: none"> ● Easy wiring ● Light available (optional-100/200 VAC only) 		5I 5J
		Conduit	<ul style="list-style-type: none"> ● Use a conduit (CTC19 or G1/2) when using direct conduit wiring for the open frame lead wire. 		G H		

● Repair parts table per coil option

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

*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 AB41.

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 2, 3 port solenoid valve



Safety precautions

Always read this section before starting use.

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

Design & Selection

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.

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

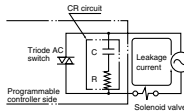
With the AC voltage specifications, a large suction sound may be heard momentarily after energizing. To avoid the suction sound, select the coil with diode or the DC voltage. The suction sound will drop.

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.



Voltage Model no.	AC		AC diode		DC	
	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

CAUTION

1 Piping

- (1) 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

- (1) Refer to page 53 in the Introduction for details on connecting the terminal box.

When Using

CAUTION

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.)



<For NO (normally open) type>

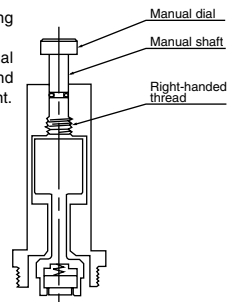
(1) Closing the valve with manual operations

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.



Maintenance

CAUTION

- 1 When disassembling or assembling, tighten the core assembly and socket with the following tightening torques.

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

Working environment

CAUTION

IP65 (IEC60529 (IEC529:1989-11)) standards are applied to the test. Avoid use in conditions where water or cutting oil could directly contact the valve.

Explanation of protection property symbols and examination method of IP65

● Protective structure

Note: IP-65 is a standard as followings.

■ IEC (International Electrotechnical Commission) standards

(IEC60529 (IEC529:1989-11))



1st characteristic number (protection grade for foreign solid)

2nd characteristic number (protection grade for entry of water)

Grade	Degree of protection	
6	Dust proof type 	Powder and dust do not enter inside.

Grade	Degree of protection		Overview of test method (fresh water is used)
5	Protection for jet 	No harmful effects occur even when water is sprayed with nozzles from all directions.	<p>Using the following test device, spray water for 1 minute per 1 m² of test sample (exterior) surface area from all directions, for a total of 3 minutes or more.</p> <div style="text-align: center;"> </div>

- 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
- CVB/CVSE
- CPE/CPD
- Medical analysis
- Custom order

General purpose valve
Direct acting 2-, 3 port solenoid valve



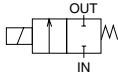
Direct acting 2 port solenoid valve
(general purpose valve)

AB21 Series

- NC (normally closed) type
- Port size: Rc1/8, Rc1/4



JIS symbol



Common specifications

Item	AB21
Working fluid	Air, water, kerosene, oil (50 mm ² /s or less)
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	3
Fluid temperature °C	-10 to 40 (no freezing)
Ambient temperature °C	-20 to 50
Heat proof class	B
Atmosphere	Place free of corrosive gas and explosive gas
Valve structure	Direct acting poppet structure
Valve seat leakage cm ³ /min. (NVR)	0.2 or less
Mounting attitude	Free

Individual specifications

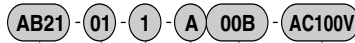
Item Model no.	Port size	Orifice (mm)	Max. working pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)	
			Air		Water, kerosene		Oil (50 mm ² /s)			Holding		Starting		AC 50/60 Hz	DC
			AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz		
AB21-01-1	Rc1/8	1.5	1.5	1.0	1.5	1.0	0.9	1.0	100 VAC 50/60 Hz	11	9	15.4	12.6	5.5/4.2	7
AB21-01-2		2.0	1.0	0.6	1.0	0.6	0.5	0.6							
AB21-01-3		3.0	0.7	0.2	0.4	0.2	0.25	0.2	110 VAC 60 Hz						
AB21-01-5		4.0	0.4	0.1	0.2	0.1	0.1	0.1							
AB21-02-1	Rc1/4	1.5	1.5	1.0	1.5	1.0	0.9	1.0	200 VAC 50/60 Hz	11	9	15.4	12.6	5.5/4.2	7
AB21-02-2		2.0	1.0	0.6	1.0	0.6	0.5	0.6							
AB21-02-3		3.0	0.7	0.2	0.4	0.2	0.25	0.2	220 VAC 60 Hz						
AB21-02-5		4.0	0.4	0.1	0.2	0.1	0.1	0.1							

Flow characteristics

Model no.	Port size	Orifice (mm)	Flow characteristics		
			C [dm ³ /(s·bar)]	b	Cv flow factor
NC (normally closed) type					
AB21-01-1	Rc1/8	1.5	0.29	0.51	0.1
AB21-01-2		2.0	0.53	0.55	0.15
AB21-01-3		3.0	1.1	0.52	0.3
AB21-01-5		4.0	1.8	0.35	0.4
AB21-02-1	Rc1/4	1.5	0.29	0.51	0.1
AB21-02-2		2.0	0.53	0.55	0.15
AB21-02-3		3.0	1.1	0.52	0.3
AB21-02-5		4.0	1.8	0.35	0.4

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

How to order



Symbol	Descriptions		
A Port size			
01	Rc1/8		
02	Rc1/4		
B Orifice			
1	ø1.5		
2	ø2		
3	ø3		
5	ø4		
C Body/sealant combination			
	Body	Sealant	Remarks
Blank	Aluminum	Nitrile rubber	Air, kerosene, oil
2	Option Brass	Fluoro rubber	Air, kerosene, oil
A		Nitrile rubber	Air, water, kerosene, oil
B		Fluoro rubber	Air, water, kerosene, oil
Refer to page 36 in the Introduction for details on the material combinations.			
D Option			
Blank	None		
00B	Mounting plate		
E Rated voltage			
AC100V	100 VAC 50/60 Hz, 110 VAC 60 Hz		Consult with CKD for other optional voltages.
AC200V	200 VAC 50/60 Hz, 220 VAC 60 Hz		

HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/
AD
APK/
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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

<Example of model number>

AB21-01-1-A00B-AC100V
Model no.: AB21

- A** Port size: Rc1/8
- B** Orifice: ø1.5
- C** Body/sealant combination:
: Body - brass, sealant - nitrile rubber
- D** Option: Mounting plate
- E** Rated voltage: 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Note on model no. selection

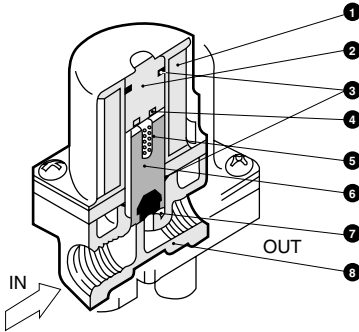
- *1: For **B** 1 (orifice ø1.5), only **C** A or B is available.
- *2: When using for water, select the brass (option symbol: A or B) body.
- *3: The voltage fluctuation must be within ±10% of the rated voltage.
- *4: Leave **C** blank for standard. However, to select 00B for **D**, indicate 0 for **C**.

General purpose valve
Direct acting 2 Port solenoid valve

AB21 Series

Internal structure and parts list

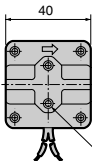
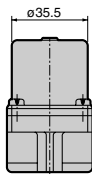
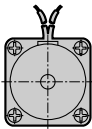
● AB21 Series



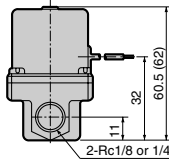
No.	Parts name	Material
1	Coil	—
2	Core assembly	Stainless steel
3	O ring	Fluoro rubber
4	Shading coil	Copper
5	Plunger spring	Stainless steel
6	Plunger	Stainless steel
7	Sealant	Nitrile or fluoro rubber
8	Body	Aluminum or brass

Dimensions

● AB21-01/02-1 to 5-*

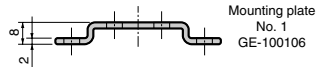
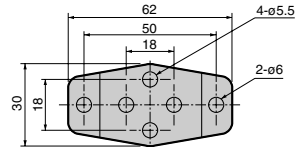


* Lead wire length 250 mm



Dimensions shown in () are for brass body.

● Mounting plate
AB21-01/02-1 to 5-*(00)☒



Mounting plate
No. 1
GE-100106



Discrete direct acting 2 port solenoid valve
(general purpose valve)

AB31·AB41 Series ● NC (normally closed) type

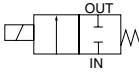
AB42 Series ● NO (normally open) type

● Port size: Rc1/8 to Rc1/2

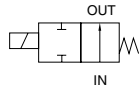


JIS symbol

● AB31/41: NC (normally closed) type



● AB42: NO (normally open) type



Common specifications

Item	Standard specifications	Optional specifications	
Working fluid	Air, low vacuum (1.33 x 10 ⁵ Pa (abs)), water, kerosene, oil (50 mm ² /s or less)	Hot water	Steam
Working pressure differential range MPa	0 to 5 (refer to max. working pressure differential in individual specifications.)		
Withstanding pressure (water) MPa	25		
Fluid temperature (Note 1) °C	-10 to 60	-10 to 90	-10 to 184
Ambient temperature °C	-20 to 60	-20 to 100	
Heat proof class	B	H	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm ³ /min. (ANR)	0.2 or less (air)	300 or less (air)	
Mounting attitude	Free		
Body, sealant	Brass, nitrile rubber	Brass, ethylene propylene diene rubber	Brass, PTFE

Note 1: No freezing

Individual specifications

Item Model no.	Port size	Orifice (mm)	Max. working pressure differential (MPa)								Max. working pressure (MPa)	Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
			Air		Water, hot water, kerosene		Oil (50 mm ² /s)		Steam	Holding			Starting	AC	DC				
			AC	DC	AC	DC	AC	DC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	DC			
NC (normally closed) type																			
AB31-01-1 -2 -3 -4 -5 -6	Rc1/8 Rc1/4	1.5	2.5	2.5	2.5	2.5	2.5	2.5	1.0	5 (fluid; 1 for steam)	100 VAC 50/60 Hz	12	10	17	14	5.2/3.8	11 (8.1) ⁵	0.35	
		2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.0										
		3.0	1.0	0.5	0.7	0.5	0.5	0.5	0.7										
		3.5	0.6	0.4	0.5	0.4	0.4	0.4	0.5										
		4.0	0.4	0.25	0.3	0.25	0.25	0.25	0.3										
		5.0	0.2	0.15	0.15	0.15	0.15	0.15	0.15										
AB41-02-1 -2 -3 -4 -5 -6 -7	Rc1/4 Rc3/8	1.5	5.0	4.0	4.5	4.0	4.0	4.0	1.0	5 (fluid; 1 for steam)	110 VAC 60 Hz	18	15	29	24	6.7/5.7	11 (10.4) ⁵ (7) ⁷	0.43 (Rc1/4)	
		2.0	3.0	2.5	2.7	2.5	2.5	2.5	1.0										
		3.0	1.5	0.9	1.3	0.9	0.9	0.9	1.0										
		3.5	1.2	0.6	0.9	0.6	0.6	0.6	0.9										
		4.0	1.0	0.5	0.7	0.5	0.5	0.5	0.7										
		5.0	0.6	0.25	0.4	0.25	0.25	0.25	0.4										
		7.0	0.25	0.1	0.2	0.1	0.15	0.1	0.2										
AB41-03-1 -8	Rc3/8 Rc1/2	10.0	0.1	0.05 (0.03) ⁸	0.1	0.05 (0.03) ⁸	0.05	0.05 (0.03) ⁸	0.1	2	220 VAC 60 Hz	12 VDC 24 VDC 48 VDC 100 VDC						0.54	
NO (normally open) type																			
AB42-02-1 -2 -3 -4 -5 -6 -7	Rc1/4 Rc3/8	1.5	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2 (fluid; 1 for steam)		22	18	35	29	8.7/6.7	15.5 (14) ⁵	0.50 (Rc1/4) 0.52 (Rc3/8)	
		2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0										
		3.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7										
		3.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5										
		4.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4										
		5.0	0.25	0.25	0.25	0.25	0.25	0.25	0.25										
		7.0	0.15	0.15	0.15	0.15	0.15	0.15	0.15										

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

*2: The port size symbol is 01 for Rc1/8 (6A), 02 for Rc1/4 (8A), 03 for Rc3/8 (10A) and 04 for Rc1/2 (15A).

*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: Power consumption of coil housing 2E/2G/2H is indicated.

*6: When using with a low vacuum, vacuum the OUT port side.

*7: Power consumption of coil housing 6C/6E/6G/6H is indicated.

*8: The DC voltage of coil housing 2E/2G/2H and the max. working pressure differential of coil housing 6C/6G/6H are indicated.

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

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

Note 1: No freezing

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

Flow characteristics

Model no.	Port size	Orifice (mm)	Flow characteristics		
			C [dm ³ /(s·bar)]	b	Cv flow factor
NC (normally closed) type					
AB31-01₀₂-1	Rc1/8 Rc1/4	1.5	0.29	0.53	0.1
-2		2.0	0.53	0.52	0.15
-3		3.0	1.1	0.52	0.31
-4		3.5	1.7 (1.5)	0.49 (0.47)	0.42 (0.40)
-5		4.0	2.1 (1.9)	0.48 (0.47)	0.54 (0.48)
-6		5.0	3.0 (2.6)	0.42 (0.38)	0.8 (0.62)
AB41-02₀₃-1		Rc1/4 Rc3/8	1.5	0.29	0.53
-2	2.0		0.53	0.52	0.15
-3	3.0		1.1	0.52	0.31
-4	3.5		1.7 (1.5)	0.49 (0.47)	0.42 (0.40)
-5	4.0		2.1 (1.9)	0.48 (0.47)	0.54 (0.48)
-6	5.0		3.0 (2.6)	0.42 (0.38)	0.8 (0.62)
-7	7.0		4.8 (4.6)	0.29 (0.37)	1.0 (0.82)
AB41-03₀₃-8	Rc3/8 Rc1/2	10.0	9.3 (8.1)	0.36 (0.31)	1.88 (1.5)
NO (normally open) type					
AB42-02₀₃-1	Rc1/4 Rc3/8	1.5	0.29	0.53	0.1
-2		2.0	0.53	0.52	0.15
-3		3.0	1.1	0.52	0.31
-4		3.5	1.7 (1.5)	0.49 (0.47)	0.4
-5		4.0	2.1 (1.9)	0.48 (0.47)	0.47
-6		5.0	3.0 (2.6)	0.42 (0.38)	0.63 (0.62)
-7		7.0	4.8 (4.6)	0.29 (0.37)	1.0 (0.82)

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

*2: Values shown in () are for stainless steel body.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/
AD

APK/
ADK

For
dry air

Explosion
proof

HVB/
HVL

SAB/
SVB

NP/NAP/
NVP

CHB/G

MXB/G

Other G.P.
systems

PD/FAD/
PJ

CVE/
CVSE

CPE/
CPD

Medical
analysis

Custom
order

General purpose valve

Direct acting 2 Port solenoid valve

AB31/41/42 Series

How to order

● NC (normally closed) type

AB31 - **02** - **3** - **0** **3A** **A** **B** **G** **S** - **AC100V**

AB41

Model no.

- D** Coil housing
- E** Manual override (locking)
- F** Mounting plate
- G** Other options
- H** Surge suppressor
- I** Voltage
- J** Copper and PTFE free

Model no.		
AB31	AB41	AB41 Low pressure large flow rate

A Port size

B Orifice

C Body/sealant combination

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

B Orifice								
1	ø1.5					●	●	
2	ø2					●	●	
3	ø3					●	●	
4	ø3.5					●	●	
5	ø4					●	●	
6	ø5					●	●	
7	ø7						●	
8	ø10							●

C Body/sealant combination		Body	Sealant	Treatment	Remarks				
*1 *2 *3 *4 *5 *6 *7	Blank	Zn/Ni	Nitrile rubber	-	Vacuum inspection	Air, water, low vacuum, kerosene (up to 60°C)	●	●	●
			Fluoro rubber			Air, low vacuum, kerosene (up to 90°C *2)	●	●	●
			PTFE			Steam (up to 184°C *2)	●	●	●
			Fluoro rubber			Medium vacuum	●	●	●
			Nitrile rubber			Air, water, low vacuum, kerosene (up to 60°C)	●	●	●
			Fluoro rubber			Air, low vacuum, kerosene (up to 90°C *2)	●	●	●
			PTFE			Steam (up to 184°C *2)	●	●	●
B C V D E F W H J K P L M N R	Option	Brass or bronze	Fluoro rubber	-	Vacuum inspection	Medium vacuum	●	●	●
			Fluoro rubber			Air, water, low vacuum, kerosene (up to 60°C)	●	●	●
			Nitrile rubber			Air, low vacuum, kerosene (up to 90°C *2)	●	●	●
			PTFE			Steam (up to 184°C *2)	●	●	●
			Ethylene propylene diene rubber			Hot water (up to 90°C *2)	●	●	●
			Nitrile rubber			Air, water, low vacuum, kerosene (up to 60°C)	●	●	●
			Fluoro rubber			Air, low vacuum, kerosene (up to 90°C *2)	●	●	●
Stainless steel	Option	Stainless steel	Fluoro rubber	-	Oil free	Medium vacuum	●	●	●
			Fluoro rubber			Air, water, low vacuum, kerosene (up to 60°C)	●	●	●
			PTFE			Air, low vacuum, kerosene (up to 90°C *2)	●	●	●
			Ethylene propylene diene rubber			Hot water (up to 90°C *2)	●	●	●
			Nitrile rubber			Air, water, low vacuum, kerosene (up to 60°C)	●	●	●
			Fluoro rubber			Air, low vacuum, kerosene (up to 90°C *2)	●	●	●
			PTFE			Steam (up to 184°C *2)	●	●	●
Ethylene propylene diene rubber	Hot water (up to 90°C *2)	●	●	●					

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

D to J

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

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

<Example 1 of model number>

AB31-02-3-AC100V

Model no.: AB31

- A** Port size: Rc1/4
- B** Orifice: ø3
- C** Body/sealant combination: Body - brass, sealant - nitrile rubber
- D** Coil housing: Grommet lead wire
- E** to **J**: Blank
- I** Rated voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

<Example 2 of model number>

AB41-02-3-AC100V

Model no.: AB41

- A** Port size: Rc1/4
- B** Orifice: ø3
- C** Body/sealant combination: Body - brass, sealant - nitrile rubber
- D** Coil housing: Grommet lead wire
- E** Manual override (locking): Selected
- F** to **H**: Blank
- I** Surge suppressor: Selected
- J** Rated voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

Note on model no. selection






Note on C

- *1: Leave blank for standard. However, to select options in **D** to **J**, indicate 0 for **C**.
- *2: When 4A, 4M or 4N is selected for **D**.
- *3: The body for the low pressure large flow rate AB41-~~03~~-8 is bronze (standard) or stainless steel (optional).
- *4: For option symbols V and W, vacuum is inspected at "leakage amount: 1.33 x 10⁻⁶ Pa·m³/s or less".
- *5: When **C** of the low pressure large flow rate AB41-~~03~~-8 is V or W, DC voltage is not available.
- *6: The ethylene propylene diene rubber seal combination (**C**) P/R cannot be used with air. (Compressed air contains oil, and ethylene propylene diene rubber is not oil-resistant.)
- *7: When **C** is C, F, K, P, N or R, the coil housings **D** 6C, 6E, 6G and 6H cannot be selected.


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

D		Coil housing		E	F	G Other options						H	I	J	Rated voltage		
Descriptions		Manual override (locking)	Mounting plate	Cable gland			Conduit			Surge suppressor	Copper and PTFE ties	Descriptions					
				(Marine cable gland)			(Conduit pipe)										
				A-15a	A-15b	A-15c	CTC19	G1/2									
Blank	32	Grommet lead wire												100 VAC, 200 VAC			
2E		DIN terminal box (G1/2)		A	B					S	P6			100 VAC, 200 VAC			
2G		DIN terminal box (Pg11)											H			12 VDC, 24 VDC, 48 VDC, 100 VDC	
2H		DIN terminal box + small light (Pg11)												100 VAC, 200 VAC, 24 VDC			
3A		Lead wire							G	H				100 VAC, 200 VAC			
3M	Open frame type	HP terminal box (G1/2)		A	B					S	P6			12 VDC, 24 VDC, 48 VDC, 100 VDC			
3N		HP terminal box + light (G1/2)					D	E	F							100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC	
3I		HP terminal box (IP65 or equivalent) (G1/2)															100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J		HP terminal box + light (IP65 or equivalent) (G1/2)															100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A	Option	Lead wire							G	H	S						
4M		HP terminal box (G1/2)		A	B		D	E	F			P6		100 VAC, 200 VAC			
4N	HP terminal box + light (G1/2)																
5A	Open frame type (diode integrated)	Lead wire							G	H							
5M		HP terminal box (G1/2)		A	B					S	P6			100 VAC, 200 VAC			
5N		HP terminal box + light (G1/2)					D	E	F								
5I		HP terminal box (IP65 or equivalent) (G1/2)															
5J	HP terminal box + light (IP65 or equivalent) (G1/2)																
6C		Grommet lead wire 7W															
6E		DIN terminal box (G1/2) 7W		A	B					S	P6			12 VDC, 24 VDC			
6G		DIN terminal box (Pg11) 7W															
6H		DIN terminal box + small light (Pg11) 7W											H				24 VDC

▲ Refer to the following precautions for Ⓓ to Ⓙ.

Blank 6C		● Grommet lead wire 300 mm
2E 2G 2H 6E 6G 6H		● DIN terminal box
3A 4A 5A		● Open frame type grommet lead wire 300 mm ● 4A (heat proof class H) ● 5A (diode integrated)
3M 3N 4M 4N 5M 5N		● Open frame HP terminal box ● 4M, 4N (heat proof class H) ● 5M, 5N (diode integrated)
3I 3J 5I 5J		● Open frame HP terminal box (IP65 or equivalent) ● 5I, 5J (diode integrated)

Refer to page 122 for coil selection.

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

▲ Note on model no. selection

Note on Ⓓ

- *8: Leave blank for the standard coil housing. However, to select options in Ⓔ to ①, indicate 00 for Ⓓ.
- *9: 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC with a diode.
- *10: A DC coil for steam is available for AB41. Contact CKD for more information.
- *11: 6C, 6E, 6G or 6H can be selected for only AB41.
- *12: The coil housings 6C, 6E and 6G are 12 VDC and 24 VDC dedicated. 6H is 24 VDC dedicated.

Note on Ⓔ to ①

- *13: The manual override (Ⓔ A) is not available for the low pressure large flow rate AB41-8.
- *14: When Ⓒ is C, F, K, N, V or W, the manual override (Ⓔ A) is not available.
- *15: Select one among D, E, F, G and H for Ⓔ.
- *16: 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.
- *17: As standard, the surge suppressor is incorporated in the coil with diode and the 24 VDC coil (Ⓓ 2H/6H), so the surge suppressor symbol S cannot be selected.
- *18: ① P6 is available only when Ⓒ is L, M or R.
- *19: 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 and the coil option 6C/6E/6G/6H are selected.

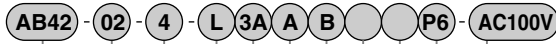
Note on ①

- *20: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. Note that the coils Ⓓ 5A/5M/5N/5I/5J can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
- *21: For voltages other than above, consult with CKD.
- *22: 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.

AB31/41/42 Series

How to order

● NO (normally open) type



Model no.

A Port size

B Orifice

C Body/sealant combination

*1

*2

*3

*4

Symbol	Descriptions	Symbol	Descriptions	Symbol	Descriptions
A Port size					
02	Rc1/4	2G	G 1/4	2N	1/4NPT
03	Rc3/8	3G	G 3/8	3N	3/8NPT

B Orifice	
1	ø1.5
2	ø2
3	ø3
4	ø3.5
5	ø4
6	ø5
7	ø7

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

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

D to J

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

<Example 1 of model number>

AB42-02-1-AC100V

Model no.: AB42

- A** Port size: Rc1/4
B Orifice: ø1.5
C Body/sealant combination: Body - brass, sealant - nitrile rubber
D Coil housing: Grommet lead wire
E to **I**: Blank
J Rated voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

<Example 2 of model number>

AB42-03-6-000AS-AC100V

Model no.: AB42

- A** Port size: Rc3/8
B Orifice: ø5
C Body/sealant combination: Body - brass, sealant - nitrile rubber
D Coil housing: Grommet lead wire
E Manual override (locking): Selected
F **G**: Blank
H Surge suppressor: Selected
J Rated voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

▲ Note on model no. selection

Note on **C**

*1: Leave blank for standard. However, to select options in **D** to **I**, indicate 0 for **C**.

*2: When 4A, 4M or 4N is selected for **D**.






*3: For option symbols V and W, vacuum is inspected at "leakage amount: 1.33×10^{-6} Pa·m³/s or less".

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


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

(D) Coil housing		(E) Manual override (locking)	(F) Mounting plate	(G) Other options						(H) Surge suppressor	(I) Copper and PTFE line	(J) Rated voltage
Descriptions		A	B	Cable gland (Marine cable gland)			Conduit (Conduit pipe)		S	P6	Descriptions	
				A-15a	A-15b	A-15c	CTC19	G1/2				H
Blank	Grommet lead wire										100 VAC, 200 VAC	
2E	DIN terminal box (G1/2)										100 VAC, 200 VAC	
2G	DIN terminal box (Pg11)										12 VDC, 24 VDC, 48 VDC, 100 VDC	
2H	DIN terminal box + small light (Pg11)							H			100 VAC, 200 VAC, 24 VDC	
3A	Open frame type	A	B	Lead wire			G	H	S	P6	100 VAC, 200 VAC	
3M				HP terminal box (G1/2)							12 VDC, 24 VDC, 48 VDC, 100 VDC	
3N				HP terminal box + light (G1/2)							100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC	
3I				HP terminal box (IP65 or equivalent) (G1/2)			D	E			F	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J				HP terminal box + light (IP65 or equivalent) (G1/2)								100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A	Open frame type (heat proof class H)	A	B	Lead wire			G	H	S	P6	100 VAC, 200 VAC	
4M				HP terminal box (G1/2)							100 VAC, 200 VAC	
4N				HP terminal box + light (G1/2)			D	E			F	
5A	Open frame type (diode integrated)	A	B	Lead wire			G	H	S	P6	100 VAC, 200 VAC	
5M				HP terminal box (G1/2)								
5N				HP terminal box + light (G1/2)			D	E			F	
5I				HP terminal box (IP65 or equivalent) (G1/2)								
5J	HP terminal box + light (IP65 or equivalent) (G1/2)											

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

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

* Refer to page 122 for coil selection.

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

⚠ Note on model no. selection

Note on (D)

- *5: Leave blank for the standard coil housing. However, to select options in (E) to (I), indicate 00 for (D).
- *6: 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC with a diode.

Note on (E) to (I)

- *7: When (C) is C, F, K, N, V or M, the manual override ((E) A) is not available.
- *8: Select one among D, E, F, G and H for (G).
- *9: The surge suppressor is an accessory for the lead wire coil. When 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 be selected.
- *11: (I) P6 is available only when (C) is L.
- *12: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information. Note that the tropicalization is not available when the manual override option A is selected.

Note on (J)

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

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

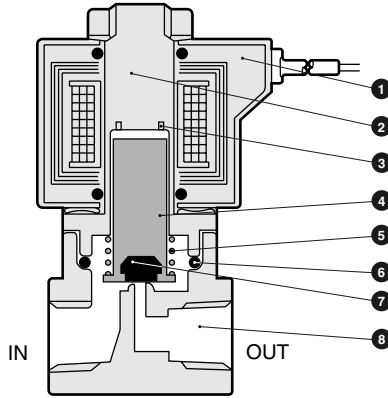
Medical
analysis
Custom
order

General purpose valve
Direct acting 2 Port Solenoid valve

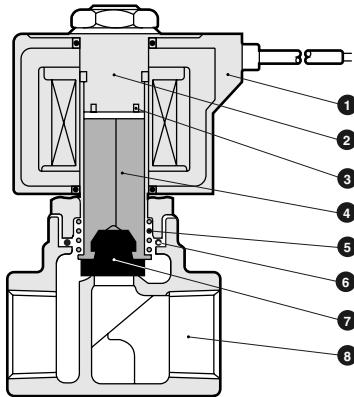
AB31/41/42 Series

Internal structure and parts list

- AB31 Series
- AB41-02/03-1 to 7



- AB41-03/04-8



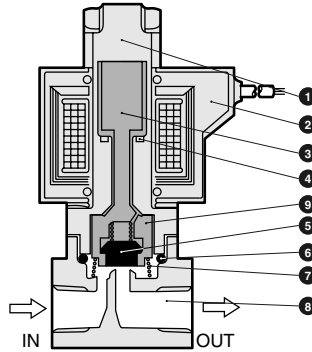
No.	Parts name	Material	No.	Parts name	Material
1	Coil	—	5	Plunger spring	SUS304
2	Core assembly	SUS405 or equivalent, 316L, 403 *1	6	O ring	NBR (FKM, EPDM, PTFE) (size: ASS68-019)
3	Shading coil	Cu (Ag for stainless steel body), Copper (silver for stainless steel body)	7	Sealant	NBR (FKM, EPDM, PTFE)
4	Plunger	SUS405 or equivalent	8	Body	C3771 or CAC408 (SCS13)
		Stainless steel			Stainless steel

*1: When the body/sealant combination symbol is other than blank or H, or when the coil housing is 6C, 6E, 6G or 6H, the material is SUS405 or equivalent, 316L, 430.

*2: () shows option. Note that PTFE is not available for AB41-8-8.

Internal structure and parts list

● AB42



No.	Parts name	Material	No.	Parts name	Material
1	Core assembly	SUS405 or equivalent, 316L, 304	6	O ring	NBR (FKM, EPDM, PTFE) (size: AS568-019)
2	Coil	—	7	Spring	SUS304
3	Plunger	SUS405 or equivalent	8	Body	C3771 (SUS303)
4	Shading coil	Cu (Ag for stainless steel body)	9	NO valve	POM (SUS303, PFA)
5	Sealant	NBR (FKM, EPDM, PTFE)			

Stainless steel
 —
 Stainless steel
 Copper (silver for stainless steel body)
 NBR: Nitrile rubber (EPDM: Ethylene propylene diene rubber)
 (FKM: Fluoro rubber) (PTFE: Tetrafluoroethylene resin)

NBR: Nitrile rubber (EPDM: Ethylene propylene diene rubber)
 (FKM: Fluoro rubber) (PTFE: Tetrafluoroethylene resin)

NBR: Nitrile rubber (EPDM: Ethylene propylene diene rubber)
 (FKM: Fluoro rubber) (PTFE: Tetrafluoroethylene resin)

Option symbol
 : Blank/O/D/H/L/V/W - polyacetal resin
 : Other than above - stainless steel, perfluoralkoxy resin

() shows option.

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 2 Port solenoid valve

AB31/41/42 Series

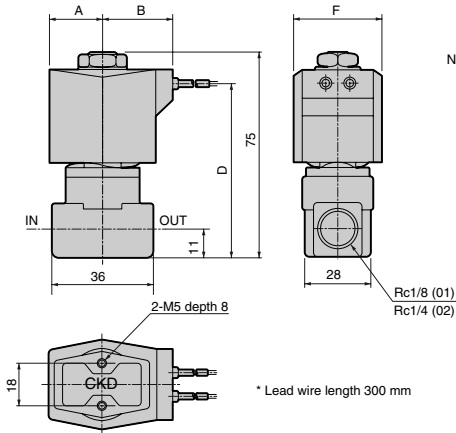
Dimensions: AB31 Series



- Grommet lead wire type
AB31-01/02-1 to 6-Blank

Note 1: The AB31 Series is an open when energized type 2 port solenoid valve. The body and sealant materials are combined according to the working fluid, and the orifice and pressure are selected according to the relation of the required flow rate and pressure. The coil specifications are determined according to the fluid temperature and ambient conditions, allowing the optimum valve to be selected.

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



Model no.	A	B	D	F
AB31-01-1 to 6-AC	20	27	63	34
-02-1 to 6-AC				

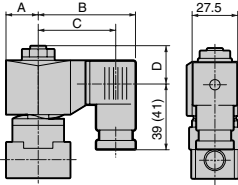
Optional dimensions: AB31 Series



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

● DIN terminal box

AB31-01/02-1 to 6-**[E]**
[G]
[H]

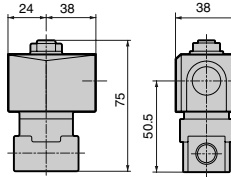


Dimensions shown in () are for G1/2.

Voltage	A	B	C	D
AC (2E/2G/2H)	20	62	50.5 (50)	20.5
DC (2E/2G/2H)	21	63.5	52 (51.5)	20.5

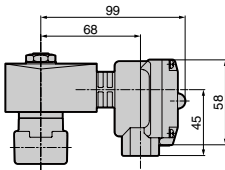
● Open frame lead wire type

AB31-01/02-1 to 6-**[3A]**
[4A]
[5A]



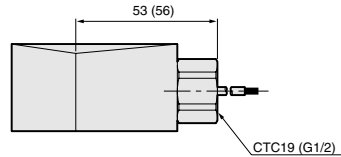
● Open frame type + HP terminal box

AB31-01/02-1 to 6-**[3M]** · **[4M]**
[5N] | **[4N]**
[J]



● Open frame type + conduit

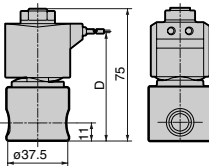
AB31-01/02-1 to 6-**[3A]** **[G]**
[4A] **[H]**
[5A]



Dimensions shown in () are for G1/2.

● Stainless steel body

AB31-01/02-1 to 6-**[D/E/F/R/W/L/M/N]**

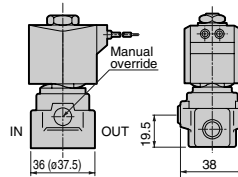


Model no.	D
Blank	63

● Manual override (locking)

AB31-01/02-1 to 6-**[A]**

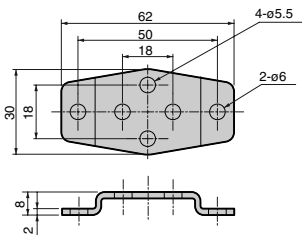
Figure shows the brass body.



Dimensions shown in () are for stainless steel body.

● Mounting plate

AB31-01/02-1 to 6-**[B]**



Mounting plate No. 1 GE-100106

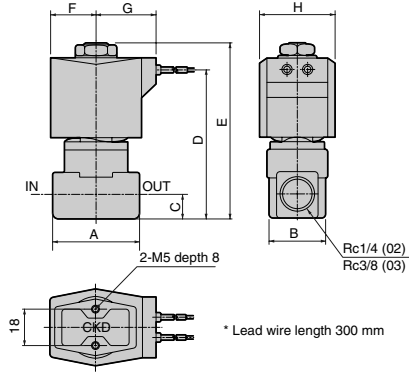
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
For dry air
Explosion proof
HVB/HVL
SAB/SVB
NP/NAP/NVP
CHB/G
MXB/G
Other G.P. systems
PD/FAD/PJ
CVB/CVSE
CPE/CPD
Medical analysis
Custom order

AB31/41/42 Series

Dimensions: AB41 Series

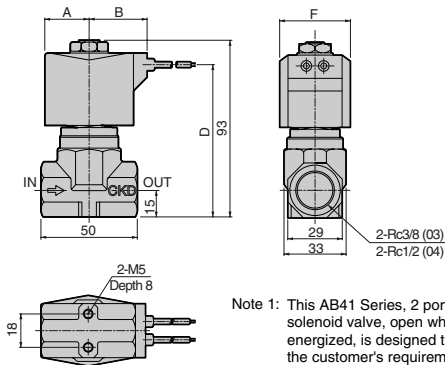


- Grommet lead wire type
AB41-02/03-1 to 7-Blank·6C



Model no.	A	B	C	D	E	F	G	H
AB41-02-1 to 6-AC	36	28	11	68	80.5	23.5	30.5	38
AB41-02-7-AC -03-1 to 7-AC	40	28	12	71	83.5	23.5	30.5	38
AB41-02-1 to 6-6C-DC	36	28	11	68	80.5	24	30.5	39
AB41-02-7-6C-DC -03-1 to 7-6C-DC	40	28	12	71	83.5	24	30.5	39

- Grommet lead wire type
AB41-03/04-8-Blank·6C



Model no.	A	B	D	F
AB41-03-8-AC -04-8-AC	23.5	30.5	80	38
AB41-03-8-6C-DC -04-8-6C-DC	24	30.5	80	38

Note 1: This AB41 Series, 2 port solenoid valve, open when energized, is designed to meet the customer's requirement according to working fluid, body and seal materials, relation between flow rate and the required pressure (converted to orifice diameter and pressure), and ambient temperature and conditions (converted to coil specifications).

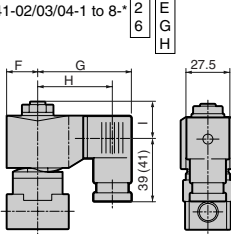
Note 2: The dimensions are the same for the G or NPT thread port size.

Optional dimensions: AB41 Series



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

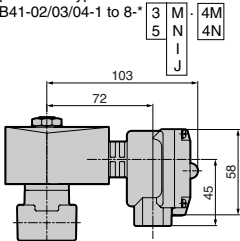
- DIN terminal box
AB41-02/03/04-1 to 8-*



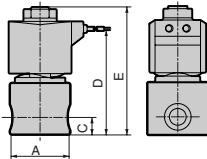
Dimensions shown in () are for G1/2.

Voltage	F	G	H	I
AC (2E/2G/2H)	23.5	65.5	54 (53.5)	22
DC (2E/2G/2H)	23.5	66	54.5 (54)	22
DC (6E/6G/6H)	24	68	56.5 (56)	22

- Open frame type + HP terminal box
AB41-02/03/04-1 to 8-*



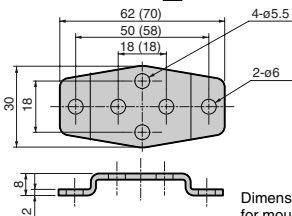
- Stainless steel body
AB41-02/03/04-1 to 8-**D/F/R/W/L/M/N/E**



Model no.	A	C	D	E
AB41-02-1 to 6-AC	ø37.5	11	68	80.5
AB41-02-7-AC -03-1 to 7-AC	ø45.0	12	71	83.5
AB41-03-8-AC -04-8-AC	50*1	15	80	93

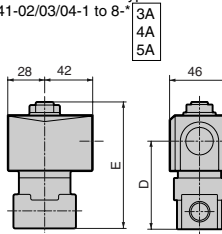
*1: The max. dimension is ø54.

- Mounting plate
AB41-02/03/04-1 to 8-*****B**



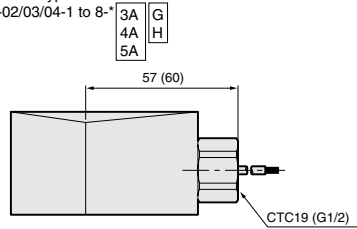
Dimensions shown in () are for mounting plate No. 2.

- Open frame lead wire type
AB41-02/03/04-1 to 8-*



Model no.	D	E
AB41-02-1 to 6-** A	52.0	80.5
AB41-02-7-*** A -03-1 to 7-*** A	55.0	83.5
AB41-03/04-8-*** A	64	93

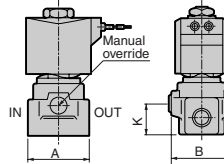
- Open frame type + conduit
AB41-02/03/04-1 to 8-*



Dimensions shown in () are for G1/2.

- Manual override (locking)
AB41-02/03-1 to 7-*****A**

Figure shows the brass body.



Note: No manual override is available for AB41-03/04-8.

Model no.	A	B	K
AB41-02-1 to 6-***A	36 (ø37.5)	38	19.5
AB41-02-7-***A -03-1 to 7-***A	40 (ø45.0)	40	22.5

Dimensions shown in () are for stainless steel body.

Model no.	Applicable model
Mounting plate No. 1	● AB41-02/03-1 to 7 Series ● Stainless steel body
GE-100106	AB41-02-1 to 6- D/E/F/L/M/N/R/W
Mounting plate No. 2	● AB41-03/04-8 Series ● Stainless steel body
GE-100159	AB41-03-7- D/E/F/L/M/N/R/W AB41-03-1 to 7- D/E/F/L/M/N/R/W

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

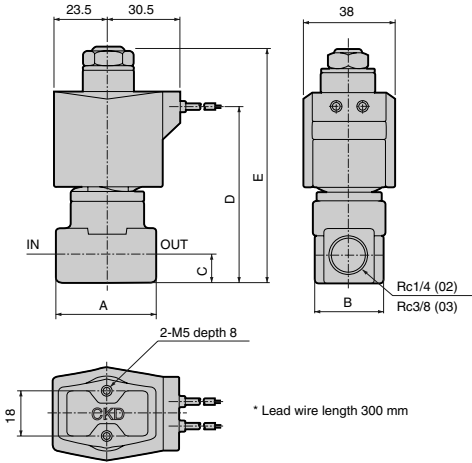
General purpose valve
Direct acting 2 Port solenoid valve

AB31/41/42 Series

Dimensions: AB42 Series



- Grommet lead wire type
AB42-02/03-1 to 7



* Lead wire length 300 mm

<Reference> 2 port direct acting valve, closed when energized, is open when de-energized. This type is commonly used to be continuously energized. The dimensions are the same for the G or NPT thread port size.

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

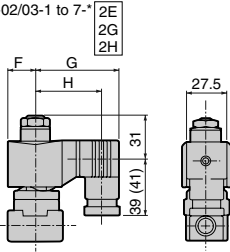
Model no.	A	B	C	D	E
AB42-02-1 to 6	36	28	11	72	94
AB42-02-7	40	28	12	75	97
AB42-03-1 to 7	40	28	12	75	97

Optional dimensions: AB42 Series



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

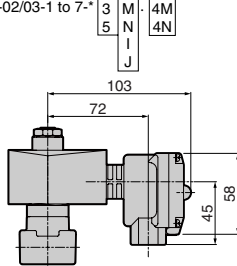
- DIN terminal box
AB42-02/03-1 to 7-*



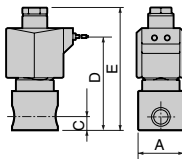
Dimensions shown in () are for G1/2.

Voltage	F	G	H
AC	23.5	65.5	54 (53.5)
DC	28	72	60.5 (60)

- Open frame type + HP terminal box
AB42-02/03-1 to 7-*

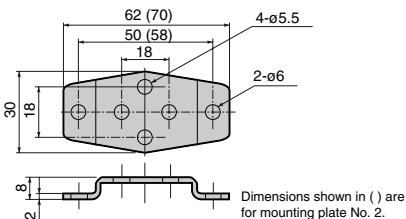


- Stainless steel body
AB42-02/03-1 to 7-*

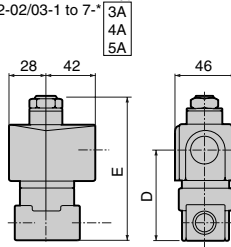


Model no.	A	C	D	E
AB42-02-1 to 6	ø37.5	11	72	94
AB42-02-7	ø45.0	12	75	97
AB42-03-1 to 7	ø45.0	12	75	97

- Mounting plate
AB42-02/03-1 to 7-***

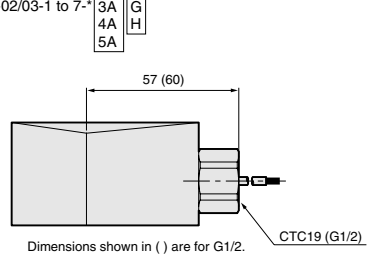


- Open frame lead wire type
AB42-02/03-1 to 7-*

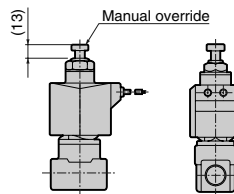


Model no.	D	E
AB42-02-1 to 6	56	94
AB42-02-7	59	97
AB42-03-1 to 7	59	97

- Open frame type + conduit
AB42-02/03-1 to 7-*



- Manual override (locking)
AB42-02/03-1 to 7-***



Code	Applicable model
Mounting plate No. 1	● AB42-02/03-1 to 7 Series
GE-100106	● Stainless steel body AB42-02-1 to 6- <u>D/E/F/L/M/N/R/W</u>
Mounting plate No. 2	● Stainless steel body AB42-02-7- <u>D/E/F/L/M/N/R/W</u>
GE-100159	AB42-03-1 to 7- <u>D/E/F/L/M/N/R/W</u>

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

General purpose valve
Direct acting 2 Port Solenoid valve



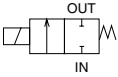
Large bore size direct acting 2 port solenoid valve
(general purpose valve)

AB71 Series

- NC (normally closed) type
- Port size: Rc1/2, Rc3/4, Rc1



JIS symbol



Specifications

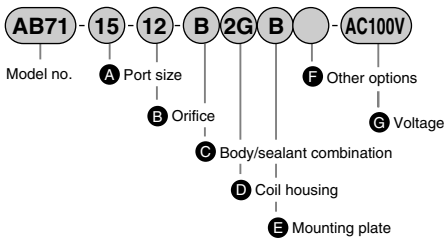
Item	AB71-15-12	AB71-20-15	AB71-25-18
Working fluid	Air, water, kerosene, oil (20 mm ² /s)		
Working pressure range	Air AC: 0 to 100, DC: 0 to 80 Water, kerosene, oil kPa AC: 0 to 80, DC: 0 to 80	AC: 0 to 70, DC: 0 to 40 AC: 0 to 50, DC: 0 to 40	AC: 0 to 40, DC: 0 to 30 AC: 0 to 30, DC: 0 to 30
Withstanding pressure (water) MPa	1		
Fluid viscosity mm ² /s	20 or less		
Fluid temperature °C	-5 to 60 (no freezing)		
Ambient temperature °C	-10 to 60		
Valve seat leakage cm ³ /min. (AIR)	0.2 or less (air)		
Port size	Rc1/2	Rc3/4	Rc1
Orifice mm	12	15	18
Mounting attitude	Limited to vertical position with coil facing upward to horizontal position		
Electric specifications			
Rated voltage	100 VAC 50/60 Hz, 200 VAC 50/60 Hz, 110 VAC 60 Hz, 220 VAC 60 Hz, 12 VDC, 24 VDC, 48 VDC, 100 VDC		
Apparent power VA	Holding (50/60 Hz)	32/26	
Starting (50/60 Hz)	123/106		
Power consumption W	AC: 13/11 (50/60 Hz), DC: 20		

Flow characteristics

Model no.	Port size	Orifice (mm)	Flow characteristics			
			C [dm ³ /(s·bar)]	b	Cv flow factor	S (mm ²)
AB71-15-12	Rc1/2	12	15	0.21	2.8	-
AB71-20-15	Rc3/4	15	-	-	4.3	106
AB71-25-18	Rc1	18	-	-	6.3	148

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

How to order



Symbol	Descriptions			
A	Port size			
15	Rc1/2			
20	Rc3/4			
25	Rc1			
B	Orifice			
12	ø12 (only AB71-15 (port size Rc1/2))			
15	ø15 (only AB71-20 (port size Rc3/4))			
18	ø18 (only AB71-25 (port size Rc1))			
C	Body/sealant combination			
	Body	Stuffing	Sealant	Treatment
B	Bronze	Brass	Fluoro rubber	D
J	Bronze	Brass	Fluoro rubber	Oil free

<Example of model number>

AB71-15-12-B2GB-AC100V
Model no.: AB71

- A** Port size: Rc1/2
- B** Orifice: ø12
- C** Body/sealant combination: Body - bronze, stuffing - brass, sealant - fluoro rubber
- D** Coil housing: DIN terminal box (G1/2)
- E** Mounting plate: Selected
- F** Other options: Blank
- G** Rated voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

D Coil housing			E Mounting plate	F Other options			G Rated voltage					
Descriptions			Mounting plate	Cable gland (Marine cable gland)			Conduit (Conduit pipe)					
				A-15a	A-15b	A-15c	CTC19	G1/2	Descriptions			
2C	Std.	Grommet lead wire	B							100 VAC, 200 VAC		
2E	Option	DIN terminal box (G1/2)										
2G		DIN terminal box (Pg11)										
2H		DIN terminal box + small light (Pg11)										
3A	Open frame type	Lead wire	B				G H			100 VAC, 200 VAC		
3M		HP terminal box (G1/2)		D E F						12 VDC, 24 VDC, 48 VDC, 100 VDC		
3N		HP terminal box + light (G1/2)								100 VAC, 200 VAC, 24 VDC, 100 VDC		
5A	Open frame type (diode integrated)	Lead wire	B				G H			100 VAC, 200 VAC		
5M		HP terminal box (G1/2)		D E F								
5N		HP terminal box + light (G1/2)										

For **①** to **⑥**, the combinations indicated with symbols can be manufactured.
Note that if options **⑤** and **⑥** are not required, no symbol is indicated.

⚠ Note on model no. selection

Note on **①**

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

Note on **②**

- *2: Refer to page 4 for coil selection.
- *3: 5A, 5M and 5N are coils for which AC power is converted to DC with a diode.
- *4: When working fluid is air, type 5A is recommended.
- *5: Contact CKD for details on the heat proof class H coil.

Note on **⑥**

*6: Select one among D, E, F, G and H for **⑥**.

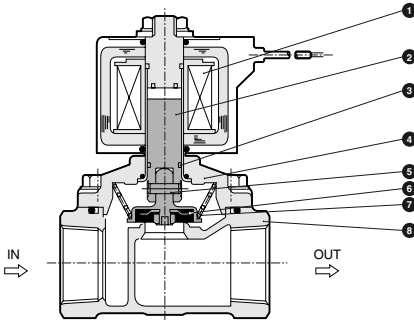
Note on **⑦**

- *7: 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 **⑦** 5A/5K/5H can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
- *8: For voltages other than above, consult with CKD.
- *9: Lead wire length is 300 mm. Additional lengths are available in 500 mm increments. Contact CKD for details.

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
CV/E/ CVSE
CPE/CPD
Medical analysis
Custom order

General purpose valve
Discrete direct acting 2 port solenoid valve

Internal structure and parts list



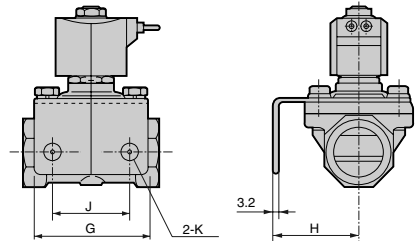
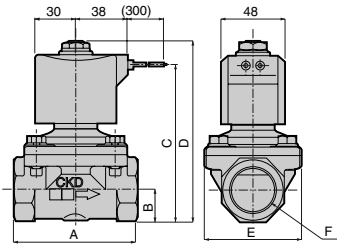
No.	Parts name	Material	
1	Coil	—	—
2	Plunger	SUS405	Stainless steel
3	Wear ring	PTFE	Tetrafluoroethylene resin
4	Stuffing assembly (Core assembly)	C3771	Brass
		SUS405, Cu	Stainless steel, copper
5	Spring pin	SUS420	Stainless steel
6	Main valve	SUS304, FKM	Stainless steel, fluoro rubber
7	Main valve spring	SUS304	Stainless steel
8	Body	CAC407	Bronze

Dimensions



- Grommet lead wire type
AB71-**-**2C

- Mounting plate
AB71-**-**B



Model no.	A	B	C	D	E	F	G	H	J	K
AB71-15-12	71	14.5	95	110.5	50	Rc1/2	56	45	40	ø9
AB71-20-15	80	17.5	101	116	60	Rc3/4	63	50	45	ø9
AB71-25-18	90	22.5	111	126	71	Rc1	75	56	50	ø11

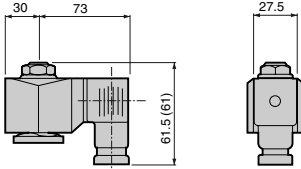
Optional dimensions



● DIN terminal box

AB71-**-**2

E
G
H

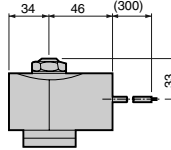


Dimensions shown in () are for G1/2.

● Open frame lead wire type

AB71-**-**

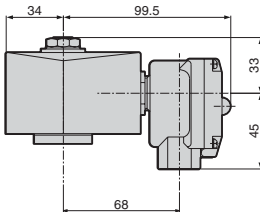
3A
5A



● Open frame type + HP terminal box

AB71-**-**

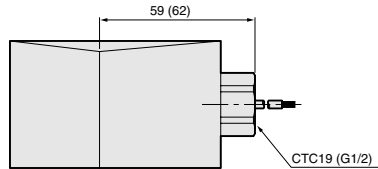
3	M
5	N



● Open frame type + conduit

AB71-**-**

3A	G
5A	H



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

SAB/
SVB

NP/NAP/
NVP

CHB/G

MXB/G

Other G.P.
systems

PD/FAD/
PJ

CVB/
CVSE

CPE/
CPD

Medical
analysis

Custom
order

Custom
order

Custom
order

Custom
order

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General purpose valve
 Discrete direct acting 2 port solenoid valve



Direct acting 2 port solenoid valve, manifold and actuator
(general purpose valve)

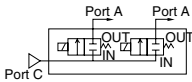
GAB312/GAB352/GAB412/GAB452 Series

- NC (normally closed) type
- Common supply type (port C pressurization), individual supply type (port A pressurization)

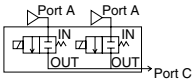


JIS symbol

- GAB312/412
(Common supply type / port C pressurization)



- GAB352/452
(Individual supply type / port A pressurization)



Common specifications

Item	Standard specifications	Optional specifications	
Working fluid	Airflow, low vacuum (1.33×10^5 Pa (abs)), water, kerosene, oil (50 mm ² /s or less)	Hot water	Steam
Working pressure differential range MPa	0 to 5 (refer to max. working pressure differential in individual specifications.)		
Max. working pressure MPa	5	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		
Heat proof class	B	H	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm ³ /min. (AIR)	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

Model no.	Port size	Orifice (mm)	Max. working pressure differential (MPa)							Rated voltage	Apparent power (VA)				Power consumption (W)		
			Air		Water, hot water, kerosene		Oil (50 mm ² /s)		Steam		Holding		Starting		AC 50/60 Hz	DC	
			AC	DC	AC	DC	AC	DC			AC	DC	50 Hz	60 Hz			50 Hz
GAB312/352-1	—	1.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	1.0	100 VAC 50/60 Hz	12	10	17	14	5.2/3.8	11 (8.1) *5
		-2	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.0							
		-3	3.0	1.0	0.5	0.7	0.5	0.5	0.5	0.7							
		-4	3.5	0.6	0.4	0.5	0.4	0.4	0.4	0.5							
		-5	4.0	0.4	0.25	0.3	0.25	0.25	0.25	0.3							
		-6	5.0	0.2	0.15	0.15	0.15	0.15	0.15	0.15							
GAB412/452-1	—	1.5	5.0	4.0	4.5	4.0	4.0	4.0	1.0	220 VAC 50/60 Hz	18	15	29	24	6.7/5.7	11 (10.4) *5 (7) *7	
		-2	2.0	3.0	2.5	2.7	2.5	2.5	2.5								1.0
		-3	3.0	1.5	0.9	1.3	0.9	0.9	0.9								1.0
		-4	3.5	1.2	0.6	0.9	0.6	0.6	0.6								0.9
		-5	4.0	1.0	0.5	0.7	0.5	0.5	0.5								0.7
		-6	5.0	0.6	0.25	0.4	0.25	0.25	0.25								0.4
		-7	7.0	0.25	0.1	0.2	0.1	0.15	0.1								0.2
		100 VDC															

*1: The model numbers above show the basic orifice diameter. Refer to How to order for other combinations (e.g., for steam).

*2: Refer to How to order (page 150) and Dimensions (page 154) for the port size.

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

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

*5: Power consumption of coil housing 2E/2G/2H is indicated.

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

*7: Power consumption of coil housing 6C/6E/6G/6H is indicated.

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber		PTFE	
	B	H	B	H	B	H
Coil (heat proof class)						
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 <small>cm³/min. (NVR)</small>	0.2 or less (air)				300 or less (air)	

Note 1: No freezing

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

Flow characteristics

Model no.	Port size	Orifice (mm)	Flow characteristics		
			C [dm ³ /(s·bar)]	b	Cv flow factor
GAB312/352-1	-	1.5	0.29	0.53	0.10
		2.0	0.53	0.52	0.15
		3.0	1.1	0.52	0.31
		3.5	1.5	0.47	0.40
		4.0	1.9	0.47	0.48
		5.0	2.6	0.38	0.62
GAB412/452-1	-	1.5	0.29	0.53	0.10
		2.0	0.53	0.5	0.15
		3.0	1.1	0.52	0.31
		3.5	1.5	0.47	0.40
		4.0	1.9	0.47	0.48
		5.0	2.6	0.38	0.62
		7.0	4.6	0.37	0.82

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

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

General purpose valve
Discrete direct acting 2 port solenoid valve

GAB312/352/412/452 Series

How to order

- Common supply type (port C pressurization)

GAB312 - **1** - **5** - **B** **3A** **A** **G** **S** - **AC100V**

- Individual supply type (port A pressurization)

GAB352

- Common supply type (port C pressurization)

GAB412

A Type of thread

- Individual supply type (port A pressurization)

GAB452

B Orifice

Model no.

C Station no.
*2

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

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

		Model no.	
		GAB312	GAB412
Symbol	Descriptions	GAB352	GAB452
A Type of thread			
Blank	Rc	●	●
G	G	●	●
N	NPT	●	●

B Orifice			
1	ø1.5	●	●
2	ø2	●	●
3	ø3	●	●
4	ø3.5	●	●
5	ø4	●	●
6	ø5	●	●
7	ø7	●	●

C Station no.			
2	2 stations		
to			
10	10 stations		
0	Actuator only	●	●

D Body/sealant combination					
	Body	Sealant	Treatment	Remarks	
Blank	Brass	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)	●
		PTFE		Steam (up to 184°C *4)	●
D	Stainless steel	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)	●
		PTFE		Steam (up to 184°C *4)	●
H	Option	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)	●
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)	●
		PTFE		Steam (up to 184°C *4)	●
P	Option	Ethylene propylene diene rubber	Oil free	Hot water (up to 90°C *4)	●
		Nitrile rubber		Air, water, low vacuum, kerosene (up to 60°C)	●
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)	●
M	Stainless steel	PTFE	-	Steam (up to 184°C *4)	●
		Ethylene propylene diene rubber		Hot water (up to 90°C *4)	●
		PTFE		Steam (up to 184°C *4)	●
R	Stainless steel	Ethylene propylene diene rubber	-	Hot water (up to 90°C *4)	●

<Example 1 of model number>

GAB312G-1-3-AC200V

Model no.: GAB312 (common supply type / port C pressurization)

- A** Type of thread: G
- B** Orifice: ø1.5
- C** Station no.: 3 stations
- D** Body/sealant combination:

Body - brass, sealant - nitrile rubber

- E** Coil housing: Grommet lead wire
- F** to **H**: Blank
- I** Rated voltage: 200 VAC 50/60Hz, 220 VAC 60Hz

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

E to **I**

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

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

<Example 2 of model number>

GAB352-5-2-000AS-AC200V

Model no.: GAB352 (individual supply type / port A pressurization)

- A** Type of thread: Rc
- B** Orifice: ø4
- C** Station no.: 2 stations
- D** Body/sealant combination:

Body - brass, sealant - nitrile rubber

- E** Coil housing: Grommet lead wire
- F** Manual override (locking): Selected
- G** Other options: Blank
- H** Surge suppressor: Selected
- I** Rated voltage: 200 VAC 50/60Hz, 220 VAC 60Hz

▲ Note on model no. selection

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

Note on **C** and **D**

*2: Consult with CKD about more than 10 stations manifold.

*3: Leave blank for standard. However, to select options in **E** to **H**, indicate 0 for **D**.

*4: When 4A, 4M or 4N is selected for **D**.






*5: 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.)

*6: When **D** is C, F, K, P, N or R, the coil housings **E** 6C, 6E, 6G and 6H cannot be selected.


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

E Coil housing		F Manual override (locking)			G Other options			H Surge suppressor		I Rated voltage	
Descriptions		Cable gland (Marine cable gland)			Conduit (Conduit pipe)				Descriptions		
		A-15a	A-15b	A-15c	CTC19	G1/2					
Blank	Grommet lead wire	A							S		100 VAC, 200 VAC
2E	DIN terminal box (G1/2)								S		100 VAC, 200 VAC
2G	DIN terminal box (Pg11)	A							S		12 VDC, 24 VDC, 48 VDC, 100 VDC
2H	DIN terminal box + small light (Pg11)								S		100 VAC, 200 VAC, 24 VDC
3A	Lead wire	A			D E F		G H		S		100 VAC, 200 VAC
3M	HP terminal box (G1/2)						S		12 VDC, 24 VDC, 48 VDC, 100 VDC		
3N	HP terminal box + light (G1/2)	A			D E F				S		100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I	HP terminal box (IP65 or equivalent) (G1/2)								S		100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J	HP terminal box + light (IP65 or equivalent) (G1/2)	A			D E F				S		100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A	Lead wire								S		100 VAC, 200 VAC
4M	HP terminal box (G1/2)	A			D E F				S		100 VAC, 200 VAC
4N	HP terminal box + light (G1/2)								S		
5A	Lead wire	A			D E F		G H		S		100 VAC, 200 VAC
5M	HP terminal box (G1/2)						S				
5N	HP terminal box + light (G1/2)	A			D E F				S		100 VAC, 200 VAC
5I	HP terminal box (IP65 or equivalent) (G1/2)								S		
5J	HP terminal box + light (IP65 or equivalent) (G1/2)	A			D E F				S		12 VDC, 24 VDC
6C	Grommet lead wire 7W								S		24 VDC
6E	DIN terminal box (G1/2) 7W	A							S		12 VDC, 24 VDC
6G	DIN terminal box (Pg11) 7W								S		
6H	DIN terminal box + small light (Pg11) 7W	A					H		S		24 VDC

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

Blank 6C		● Grommet lead wire 300 mm
2E 2G 2H 6E 6G 6H		● DIN terminal box
3A 4A 5A		● Open frame type grommet lead wire 300 mm ● 4A (heat proof class H) ● 5A (diode integrated)
3M 3N 4M 4N 5M 5N		● Open frame HP terminal box ● 4M, 4N (heat proof class H) ● 5M, 5N (diode integrated)
3I 3J 5I 5J		● Open frame HP terminal box (IP65 or equivalent) ● 5I, 5J (diode integrated)

* Refer to page 122 for coil selection.

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

Note on (E)

- Leave blank for the standard coil housing. However, to select options in (F), (G) or (H), indicate 00 for (E).
- 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC with a diode.
- A DC coil for steam is available for GAB4*2. Contact CKD for more information.
- The coil housings 6C, 6E and 6G are 12 VDC and 24 VDC dedicated. 6H is 24 VDC dedicated.
- 6C, 6E, 6G or 6H is available only for GAB412.

Note on (F) to (H)

- When (I) is C, F, K or N, the manual override ((F) A) is not available.
- Select one among D, E, F, G and H for (G).
- 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.
- As standard, the surge suppressor is incorporated in the coil with diode and the 24 VDC coil ((E) 2H/6H), so the surge suppressor symbol S cannot be selected.
- Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
- The tropicalization is not available when the manual override option A and the coil option 6C/6E/6G/6H are selected.

Note on (I)

- 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 ((E) 5A/5M/5N/5I/5J) can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
- For voltages other than above, consult with CKD.
- The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/
AD

APK/
ADK

For
dry air

Explosion
proof

HVB/
HVL

SAB/
SVB

NP/NAP/
NVP

CHB/G

MXB/G

Other G.P.
systems

PD/FAD/
PJ

CVB/
CVSE

CPE/
CPD

Medical
analysis

Custom
order

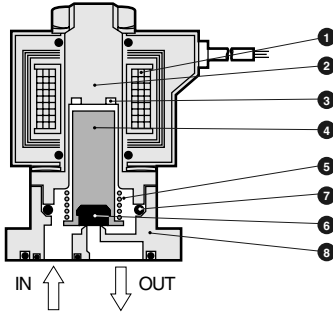
General purpose valve

Discrete direct acting 2 port solenoid valve

GAB312/352/412/452 Series

Internal structure and parts list

● GAB312/GAB352/GAB412/GAB452 Actuator



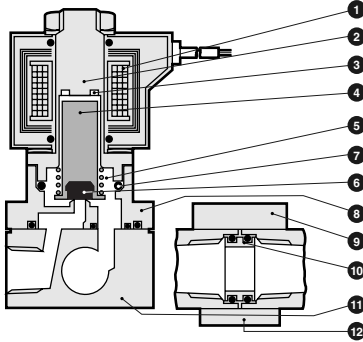
No.	Parts name	Material
1	Coil	—
2	Core assembly	SUS405 or equivalent, 316L, 403 *1
3	Shading coil	Cu (Ag for stainless steel body), Copper (silver for stainless steel body)
4	Plunger	SUS405 or equivalent
5	Plunger spring	SUS304
6	Sealant	NBR (FKM, EPDM, PTFE)
7	O ring	NBR (FKM, EPDM, PTFE) (size: AS568-019)
8	Body	C3771 (SCS13)

*1: When the body/sealant combination symbol is other than blank or H, or when the coil housing is 6C, 6E, 6G or 6H, the material is SUS405 or equivalent, 316L, 430.

*2: () shows option.

Internal structure and parts list

● GAB312/GAB352/GAB412/GAB452 Manifold



No.	Parts name	Material
1	Coil	—
2	Core assembly	SUS405 or equivalent, 316L, 403 *1 Stainless steel
3	Shading coil	Cu (Ag for stainless steel body) Copper (silver for stainless steel body)
4	Plunger	SUS405 or equivalent Stainless steel
5	Plunger spring	SUS304 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	Body	C3771 (SCS13) Brass (stainless steel)
9	Holder	SPCC Steel
10	Connector	C3604 (SUS304) Brass (stainless steel)
11	Sub-plate	C3604 (SUS303) Brass (stainless steel)
12	Connecting plate	SPCC Steel

*1: When the body/sealant combination symbol is other than blank or H, or when the coil housing is 6C, 6E, 6G or 6H, the material is SUS405 or equivalent, 316L, 430.

*2: () shows option.

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

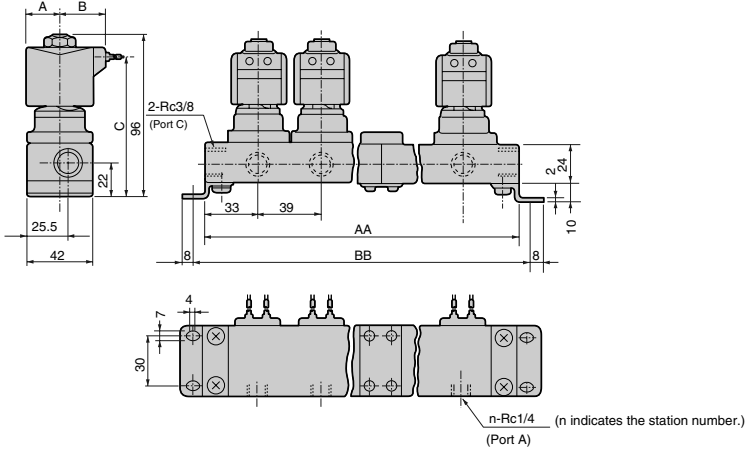
Discrete direct acting 2 port solenoid valve

GAB312/352/412/452 Series

Dimensions: GAB312/352 Series



- Manifold (grommet lead wire type)
GAB312/352-1 to 6-[2 to 10]-*[Blank]



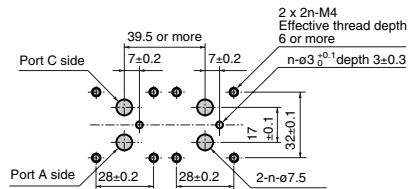
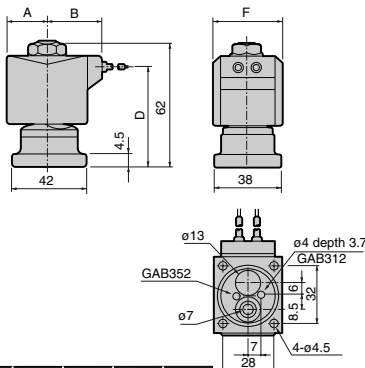
Station no.	AA	BB	Manifold structure	Station no.	AA	BB	Manifold structure
2	106	122	2 stations x 1	7	329	345	5 stations + 2 stations
3	145	161	3 stations x 1	8	368	384	5 stations + 3 stations
4	212	228	2 stations x 2	9	435	451	3 stations x 3
5	223	239	5 stations x 1	10	446	462	5 stations x 2
6	290	306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

Model no.	A	B	C
Blank	20	27	84

*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)
GAB312/352-1 to 6-[0]-*[Blank]

- Recommended dimensions for actuator mounting



■ Machining drawing when using 2 actuators

Model no.	A	B	D	F
Blank	20	27	50	34

Optional dimensions: GAB312/352 Series

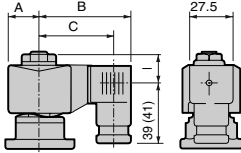


* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

● DIN terminal box

GAB312/352-1 to 6-0 to 10-^{*}

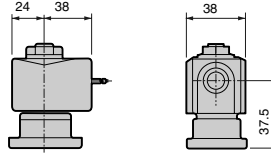
2	E
G	
H	



● Open frame lead wire type

GAB312/352-1 to 6-0 to 10-^{*}

3A	
4A	G
5A	H



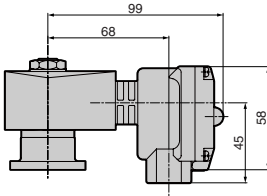
Dimensions shown in () are for G1/2.

Voltage	A	B	C	I
AC (2E/2G/2H)	20	62	50.5 (50)	20.5
DC (2E/2G/2H)	21	63.5	52 (51.5)	20.5

● Open frame type + HP terminal box

GAB312/352-1 to 6-0 to 10-^{*}

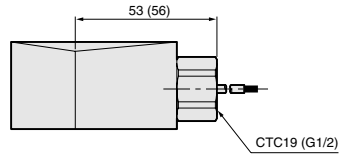
3	M	4M
5	N	4N
	I	
	J	



● Open frame type + conduit

GAB312/352-1 to 6-0 to 10-^{*}

3A	G
4A	H
5A	

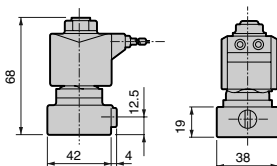


Dimensions shown in () are for G1/2.

● Manual override (locking)

GAB312/352-1 to 6-0 to 10-^{***}

A



HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/
AD

APK/
ADK

For
dry air

Explosion
proof

HVB/
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SVB

NP/NAP/
NVP

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PD/FAD/
PJ

CVB/
CVSE

CPE/
CPD

Medical
analysis

Custom
order

General purpose valve
 Discrete direct acting 2 port solenoid valve

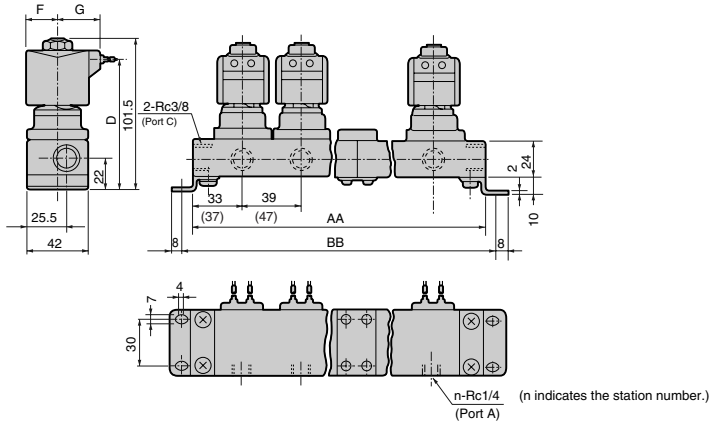
GAB312/352/412/452 Series

Dimensions: GAB412/452 Series



● Manifold (grommet lead wire type)

GAB412/452-1 to 7-**[2 to 10]**-**[Blank]**·**[6C]**



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 manifold.			

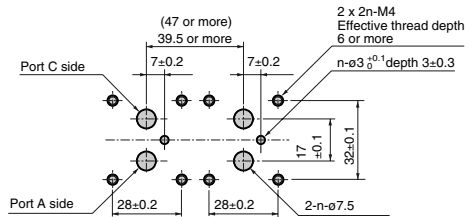
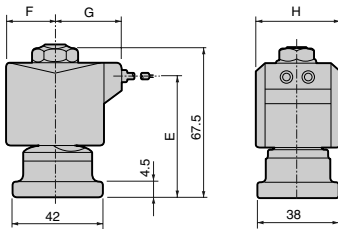
Model no.	F	G	D
Blank	23.5	30.5	89
6C	24	30.5	87.5

*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.

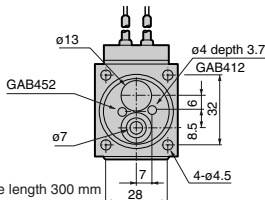
● Actuator (grommet lead wire type)

GAB412/452-1 to 7-0-**[Blank]**·**[6C]**

● Recommended dimensions for actuator mounting



■ Machining drawing when using 2 actuators



* Lead wire length 300 mm

Model no.	F	G	E	H
Blank	23.5	30.5	55	38
6C	24	30.5	55	39

Optional dimensions: GAB412/452 Series

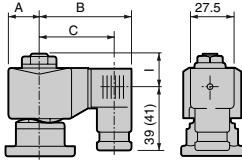


* Refer to the grommet lead wire type dimensions on the left page for common dimensions.

● DIN terminal box

GAB412/452-1 to 7-0 to 10-^{*}

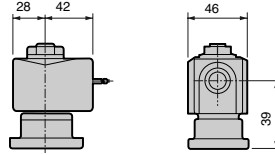
2	E
6	G
	H



● Open frame lead wire type

GAB412/452-1 to 7-0 to 10-^{*}

3A
4A
5A



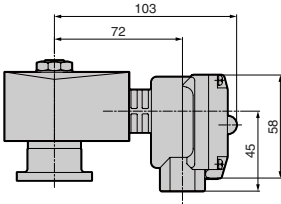
Dimensions shown in () are for G1/2.

Voltage	A	B	C	I
AC (2E/2G/2H)	23.5	65.5	54 (53.5)	22
DC (2E/2G/2H)	23.5	66	54.5 (54)	22
DC (6E/6G/6H)	24	68	56.5 (56)	22

● Open frame type + HP terminal box

GAB412/452-1 to 7-0 to 10-^{*}

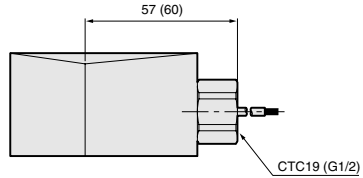
3	M	4M
5	N	4N
	I	J



● Open frame type + conduit

GAB412/452-1 to 7-0 to 10-^{*}

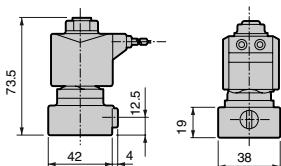
3A	G
4A	H
5A	



Dimensions shown in () are for G1/2.

● Manual override (locking)

GAB412/452-1 to 7-0 to 10-****^A



HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/
AD

APK/
ADK

For
dry air

Explosion
proof

HVB/
HVL

SAB/
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NVP

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MXB/G

Other G.P.
systems

PD/FAD/
PJ

CVB/
CVSE

CPE/
CPD

Medical
analysis

Custom
order

General purpose valve
Discrete direct acting 2 port solenoid valve



Direct acting 2 port solenoid valve, manifold and actuator
(general purpose valve)

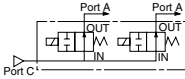
GAB422 Series

- NO (normally closed) type
- Common supply type (port C pressurization)



Manifold circuit structure Common specifications

- GAB422
(Common supply type / port C pressurization)



Item	Standard specifications	Optional specifications	
Working fluid	Airflow, low vacuum (1.33 x 10 ⁵ Pa (abs)), water, kerosene, oil (50 mm ² /s or less)	Hot water	Steam
Working pressure differential range MPa	0 to 2 (refer to max. working pressure differential in individual specifications.)		
Max. working pressure MPa	2		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		
Heat proof class	B	H	
Atmosphere	Place free of corrosive gas and explosive gas		
Valve structure	Direct acting poppet structure		
Valve seat leakage cm ³ /min. (ANR)	0.2 or less (air)		300 or less (air)
Mounting attitude	Free		
Body, sealant	Brass, nitrile rubber	Brass, ethylene propylene diene rubber	Brass, PTFE

Note 1: No freezing

Individual specifications

Item Model no.	Port size	Orifice (mm)	Max. working pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)			
			Air		Water, hot water, kerosene		Oil (50 mm ² /s)			Steam		Holding		Starting		AC 50/60 Hz	DC
			AC	DC	AC	DC	AC	DC		AC	DC	50 Hz	60 Hz	50 Hz	60 Hz		
GAB422-1	—	1.5	2.0	2.0	2.0	2.0	2.0	2.0	1.0	100 VAC 50/60 Hz 110 VAC 60 Hz 200 VAC 50/60 Hz 220 VAC 60 Hz 12 VDC 24 VDC 48 VDC 100 VDC	22	18	35	29	8.7/6.7	15.5 (14)	
GAB422-2		2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0								
GAB422-3		3.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7								
GAB422-4		3.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5								
GAB422-5		4.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4								
GAB422-6		5.0	0.25	0.25	0.25	0.25	0.25	0.25	0.25								
GAB422-7		7.0	0.15	0.15	0.15	0.15	0.15	0.15	0.15								

*1: The model numbers above show the basic orifice diameter. Refer to How to order for other combinations.

*2: Refer to How to order (page 160) and Dimensions (page 164) for the port size.

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

*6: When using with a low vacuum, vacuum the OUT port side.

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

Sealant	Fluoro rubber		Ethylene propylene diene rubber		PTFE	
	B	H	B	H	B	H
Coil (heat proof class)						
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 $\text{cm}^3/\text{min. (AIR)}$	0.2 or less (air)				300 or less (air)	

Note 1: No freezing

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

Flow characteristics

Model no.	Port size	Orifice (mm)	Flow characteristics		
			C [dm ³ /(s·bar)]	b	Cv flow factor
GAB422-1	-	1.5	0.29	0.53	0.10
-2		2.0	0.53	0.52	0.15
-3		3.0	1.1	0.52	0.31
-4		3.5	1.5	0.47	0.40
-5		4.0	1.9	0.47	0.47
-6		5.0	2.6	0.38	0.62
-7		7.0	4.6	0.37	0.82

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

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

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ADK

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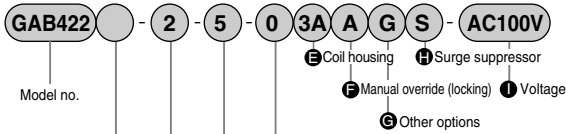
Medical
analysis

Custom
order

General purpose valve
Direct acting 2 Port solenoid valve

GAB422 Series

How to order



Symbol	Descriptions			
A Type of thread				
Blank	Rc			
G	G			
N	NPT			
B Orifice				
1	ø1.5			
2	ø2			
3	ø3			
4	ø3.5			
5	ø4			
6	ø5			
7	ø7			
C Station no.				
2	2 stations			
to				
10	10 stations			
0	Actuator only			
D Body/sealant combination				
	Body	Sealant	Treatment	Remarks
Blank	Brass	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)
		PTFE		Steam (up to 184°C *4)
D	Stainless steel	Nitrile rubber	-	Air, water, low vacuum, kerosene (up to 60°C)
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)
		PTFE		Steam (up to 184°C *4)
H	Option Brass	Nitrile rubber	Oil free	Air, water, low vacuum, kerosene (up to 60°C)
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)
		PTFE		Steam (up to 184°C *4)
L	Stainless steel	Ethylene propylene diene rubber	Oil free	Hot water (up to 90°C *4)
		Nitrile rubber		Air, water, low vacuum, kerosene (up to 60°C)
		Fluoro rubber		Air, low vacuum, kerosene (up to 90°C *4)
M	Stainless steel	Fluoro rubber	Oil free	Air, low vacuum, kerosene (up to 90°C *4)
		PTFE		Steam (up to 184°C *4)
N	Stainless steel	PTFE	Oil free	Steam (up to 184°C *4)
R	Stainless steel	Ethylene propylene diene rubber	Oil free	Hot water (up to 90°C *4)
Refer to page 36 in the Introduction for details on the material combinations.				
E to I				
Refer to the following page for details on the coil housing, other options and voltage, etc.				

<Example 1 of model number>

GAB422N-2-6-AC100V

Model no.: GAB422 (normally open / common supply type)

- A** Type of thread: NPT
- B** Orifice: ø2
- C** Station no.: 6 stations
- D** Body/sealant combination:
Body - bronze, sealant - nitrile rubber
- E** Coil housing: Grommet lead wire
- F** to **H**: Blank
- I** Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

<Example 2 of model number>

GAB422-3-0-000AS-AC100V

Model no.: GAB422 (normally open / common supply type)

- A** Type of thread: Rc
- B** Orifice: ø3
- C** Station no.: Actuator only
- D** Body/sealant combination:
Body - bronze, sealant - nitrile rubber
- E** Coil housing: Grommet lead wire
- F** Manual override (locking): Selected
- G** Other options: Blank
- H** Surge suppressor: Selected
- I** Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

▲ Note on model no. selection

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






Note on **C** and **D**


- *2: Consult with CKD about more than 10 stations manifold.
- *3: Leave blank for standard. However, to select options in **E** to **H**, indicate 0 for **D**.
- *4: When 4A, 4M or 4N is selected for **D**.
- *5: 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.)

For ⑥ to ①, the combinations indicated with symbols can be manufactured.
 Note that if options ⑥ to ⑨ are not required, no symbol is indicated.

E Coil housing		F	G Other options					H	I Rated voltage
Descriptions		Manual override (locking)	Cable gland		Conduit		Surge suppressor	Descriptions	
			(Marine cable gland)		(Conduit pipe)				
			A-15a	A-15b	A-15c	CTC19	G1/2		
Blank	Grommet lead wire	A						100 VAC, 200 VAC	
2E	DIN terminal box (G1/2)							100 VAC, 200 VAC	
2G	DIN terminal box (Pg11)							12 VDC, 24 VDC, 48 VDC, 100 VDC	
2H	DIN terminal box + small light (Pg11)						H	100 VAC, 200 VAC, 24 VDC	
3A	Lead wire						G H	100 VAC, 200 VAC	
3M	HP terminal box (G1/2)	A						12 VDC, 24 VDC, 48 VDC, 100 VDC	
3N	HP terminal box + light (G1/2)		D	E	F			100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC	
3I	HP terminal box (IP65 or equivalent) (G1/2)							100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC	
3J	HP terminal box + light (IP65 or equivalent) (G1/2)							100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC	
4A	Lead wire	A					G H S	100 VAC, 200 VAC	
4M	HP terminal box (G1/2)		D	E	F				
4N	HP terminal box + light (G1/2)								
5A	Lead wire	A					G H	100 VAC, 200 VAC	
5M	HP terminal box (G1/2)		D	E	F				
5N	HP terminal box + light (G1/2)								
5J	HP terminal box (IP65 or equivalent) (G1/2)								
5I	HP terminal box + light (IP65 or equivalent) (G1/2)								

⚠ Refer to the following precautions for ⑥ to ①.

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

G H		● Conduit ● G (CTC19) ● H (G1/2)
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* Refer to page 122 for coil selection.

⚠ Note on model no. selection

Note on ⑥

- *6: Leave blank for the standard coil housing. However, to select options in ⑥, ⑧ or ⑨, indicate 00 for ⑥.
- *7: 5A, 5M, 5N, 5I and 5J are coils for which AC power is converted to DC with a diode.

Note on ⑦ to ⑩

- *8: When ① is C, F, K or N, the manual override (⑦ A) is not available.
- *9: Select one among D, E, F, G and H for ⑧.
- *10: The surge suppressor is an accessory for the lead wire coil. When selecting a coil with terminal box, the surge suppressor is mounted in the terminal box.
- *11: As standard, the surge suppressor is incorporated in the coil with diode and the 24 VDC coil (⑥ 2H), so the surge suppressor symbol S cannot be selected.
- *12: Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
Note that the tropicalization is not available when the manual override option A is selected.

Note on ①

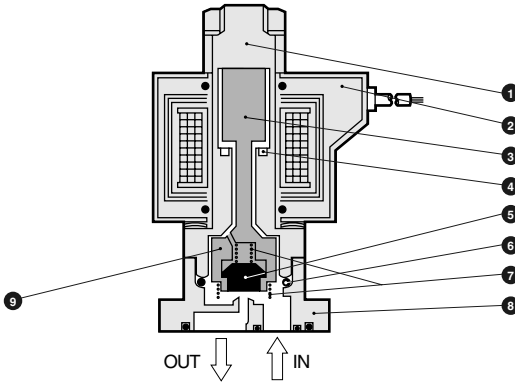
- *13: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz.
Note that the coils ⑥ 5A/5M/5N/5I/5J can be used only with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
- *14: For voltages other than above, consult with CKD.
- *15: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

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 2 Port Solenoid valve

Internal structure and parts list

● GAB422 Actuator

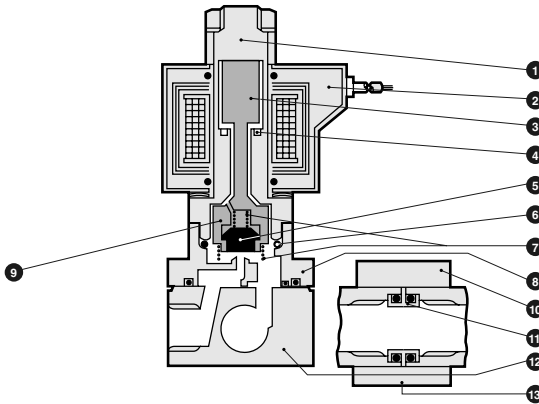


No.	Parts name	Material	No.	Parts name	Material
1	Core assembly	SUS405 or equivalent, 316L, 304	8	Body	C3771 (SCS13)) Brass (stainless steel)
2	Coil	—	9	NO valve	POM (SUS303, PFA)) Option symbol : Blank/D/HL - polyacetal resin : Other than above - stainless steel, perfluoroalkoxy resin
3	Plunger	SUS405 or equivalent			
4	Shading coil	Cu (Ag for stainless steel body)			
5	Sealant	NBR (FKM, EPDM, PTFE)			
6	O ring	NBR (FKM, EPDM, PTFE) (size: AS568-019)			
7	Spring	SUS304			

() shows option.

Internal structure and parts list

● GAB422 Manifold



No.	Parts name	Material	No.	Parts name	Material
1	Core assembly	SUS405 or equivalent, 316L, 304	8	Body	C3771 (SCS13) Brass (stainless steel)
2	Coil	—	9	NO valve	POM (SUS303, PFA) Option symbol : Blank/D/H/L - polyacetal resin : Other than above - stainless steel, perfluoralkoxy resin
3	Plunger	SUS405 or equivalent	10	Holder	SPCC Steel
4	Shading coil	Cu (Ag for stainless steel body)	11	Connector	C3604 (SUS304) Brass (stainless steel)
5	Sealant	NBR (FKM, EPDM, PTFE)	12	Sub-plate	C3604 (SUS303) Brass (stainless steel)
6	O ring	NBR (FKM, EPDM, PTFE) (size: AS568-019)	13	Connecting plate	SPCC Steel
7	Spring	SUS304			

() shows option.

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

CVB/
CVSE

CPE/
CPD

Medical
analysis

Custom
order

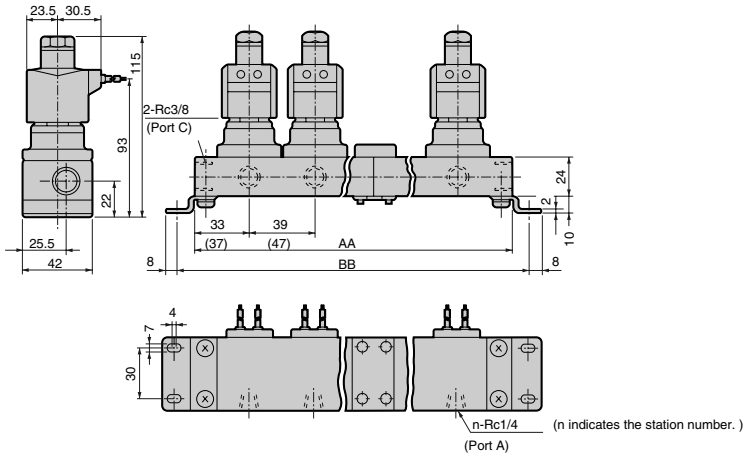
General purpose valve
Direct acting 2 Port solenoid valve

GAB422 Series

Dimensions: Manifold



- Grommet lead wire type
GAB422-1 to 7-2 to 10



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 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: GAB422 Series with DIN terminal box and DC voltage specifications has the same dimensions as the open frame type.

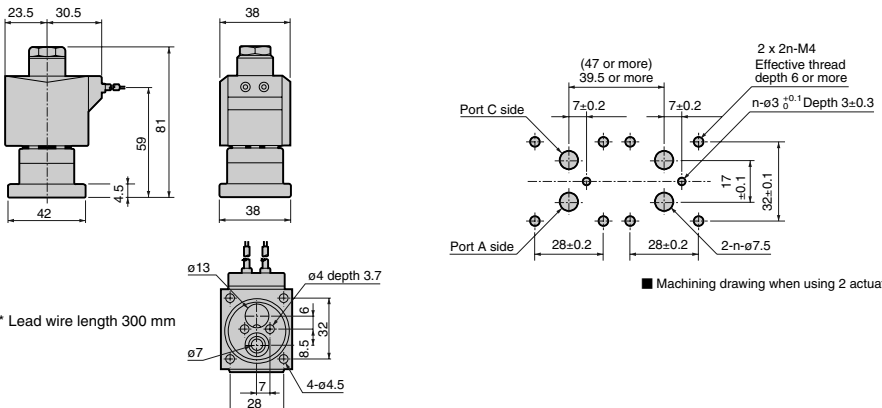
*4: The dimensions are the same for the G or NPT thread port size.

Dimensions: Actuator



- Grommet lead wire type
GAB422-1 to 7-0

- Recommended dimensions for actuator mounting



* Lead wire length 300 mm

Optional dimensions

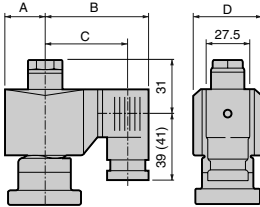


* Refer to the dimensions for grommet lead wire with all wave rectifier on the left page for common dimensions.

● DIN terminal box

GAB422-1 to 7-0 to 10-⁴

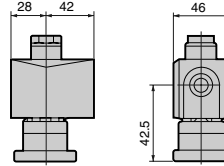
2E
2G
2H



● Open frame lead wire type

GAB422-1 to 7-0 to 10-⁴

3A
4A
5A



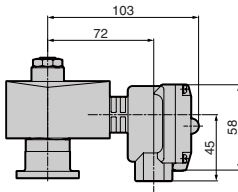
Dimensions shown in () are for G1/2.

Voltage	A	B	C	D
AC	23.5	65.5	54 (53.5)	38
DC	28	72	60.5 (60)	46

● Open frame type + HP terminal box

GAB422-1 to 7-0 to 10-⁴

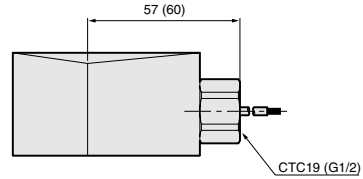
3	M	4M
5	N	4N
	I	
	J	



● Open frame type + conduit

GAB422-1 to 7-0 to 10-⁴

3A	G
4A	H
5A	

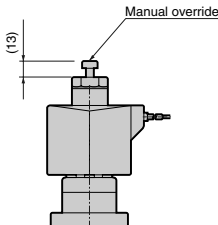


Dimensions shown in () are for G1/2.

● Manual override (locking)

GAB422-1 to 7-0 to 10-⁴

A



HNB/G
 USB/G
 FAB/G
 FGB/G
 FVB
 FWB/G
 FHB
 FLB

AB
 AG
 AP/
 AD
 APK/
 ADK
 For
 dry air
 Explosion
 proof
 HVB/
 HVL
 SAB/
 SVB
 NP/NAP/
 NVP
 CHB/G
 MXB/G
 Other G.P.
 systems
 PD/FAD/
 PJ
 CVE/
 CVSE
 CPE/
 CPD
 Medical
 analysis
 Custom
 order

General purpose valve
 Direct acting 2 Port solenoid valve

Direct acting 2, 3 port solenoid valve (general purpose valve)

Electronic Catalog file list

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

2 port solenoid valve AB

Electronic Catalog file list is applied to "CAD DATA 2006".

Model no.	DXF		MICRO CADAM	
	Folder name	Filename	Filename (GROUP: CAD, USER: STDLIB)	
● Discrete valve AB: Pages 138 to 143				
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		ab42_02_7_03	CKD-AB42-02-7/03	
AB31-A		ab31_a	CKD-AB31-A	
AB41-A-02		ab41_a_02	CKD-AB41-A-02	
AB41-A-02-7/03		ab41_a_02_7_03	CKD-AB41-A-02-7/03	
AB42-A-02		ab42_a_02	CKD-AB42-A-02	
AB42-A-02-7/03		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			ab71_20	CKD-AB71-20
AB71-25	ab71_25		CKD-AB71-25	
● Manifold GAB: Pages 154 to 157, 164 to 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		gab4_a_open	CKD-GAB4-A-OPEN	
GAB42-A		gab42_a	CKD-GAB42-A	
GAB42-A-OPEN		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

Model no.	DXF		MICRO CADAM	
	Folder name	Filename	Filename (GROUP: CAD, USER: STDLIB)	
● Discrete valve AG: Pages 170 to 173, 188 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 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	
● 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	