

Direct acting 2, 3 port solenoid valve BB41/BG41 Series



DIRECT ACTING 2, 3 PORT SOLENOID VALVE

Reliable Japan Quality

Basic model now available

Basic Model

New



Reliable Japan Quality

Better selectability and usability with the same quality level.

Basic model is now available for direct acting 2, 3 port solenoid valves.

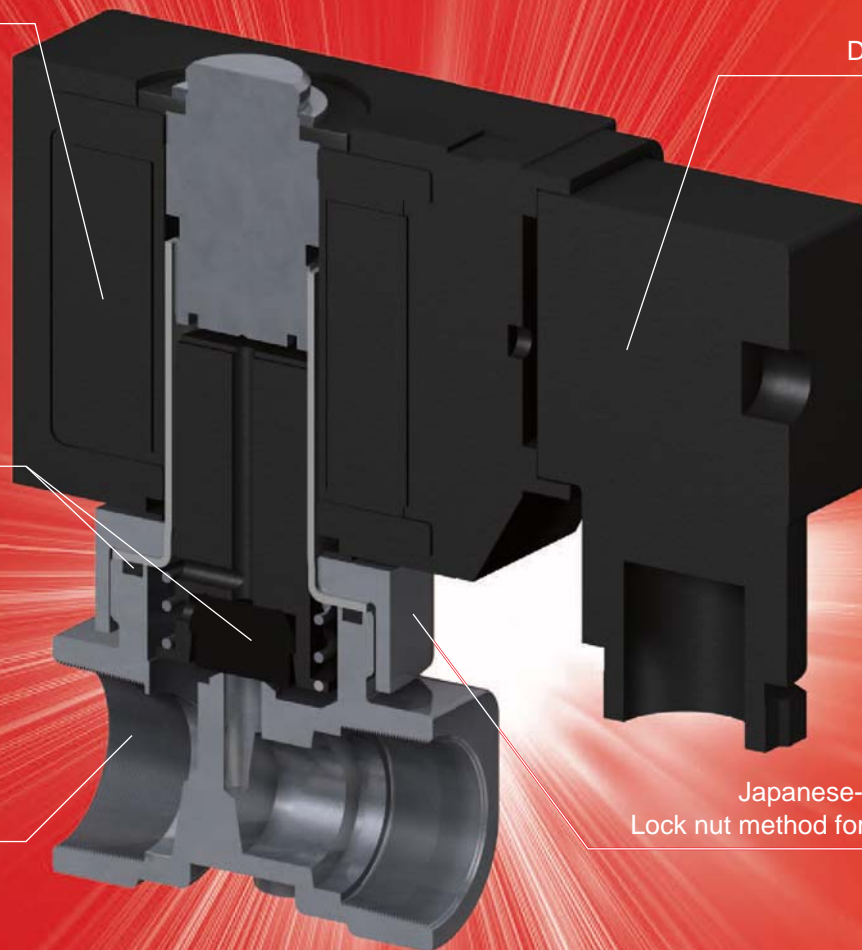
Special magnetic material with high corrosion resistance

DIN terminal box























Fluorine rubber as the standard material of the seal

Aluminum body

Japanese-made key parts
Lock nut method for core assembly



For easier selection of the target model, the standard specifications are frequently used by the customers.

	Orifice size	Cv	Port size	Body material		Voltage
				Brass	Aluminum	
BB41	2.0 2.5 4.0	0.14 0.23 0.53	Rc1/8 Rc1/4 Rc3/8	  	  	100 VAC (50/60 Hz) 110 VAC (50/60 Hz) 200 VAC (50/60 Hz) 220 VAC (50/60 Hz) 24 VAC
BG41	1.5 2.0 2.3	0.09 0.14 0.19	Rc1/8 Rc1/4 Rc3/8	  	  	
GBB41	2.0 2.5 4.0	0.14 0.23 0.53	- - -	  	  	
GBG41	1.5 2.0 2.3	0.09 0.14 0.19	Rc1/8 (NO port) Rc1/4 (NO port) Rc3/8 (NO port)	  	  	



Standard model

AB Series

Provides a rich variety of functions, performance levels, and materials. You can select a model tailored to your case.

Basic model

BB Series

Provides the essence of functions, performance levels, and materials frequently used by customers.

BB41/BG41 Series 3 points

1 Easy to select

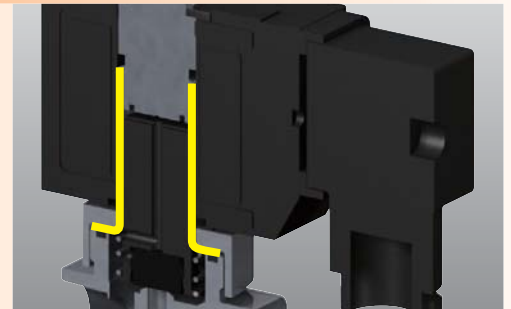
- **Support for wide ranges of fluid types and fluid temperatures**
The standard material of the seal is fluorine rubber.
- **Easy electrical connection and maintenance**
The DIN terminal box is used for the coil housing.
Earth connection of the grounding terminal provides electrical safety.



DIN terminal box for coil housing

2 High reliability

- **Japan quality**
Key parts that achieve basic performance are Japanese-made. We guarantee high precision and quality.
- **"Flare pipe shape"**
Proven and trusted "flare pipe shape" is chosen for the core assembly.
- **High corrosion resistance**
Special magnetic material achieves high corrosion resistance



Japanese-made key parts

3 Easy to use

- **Lightweight**
Aluminum body has achieved **20% reduction in weight** compared with the brass body.
*Brass body types are also available.
- **Easy assembly/disassembly**
Easy assembly/disassembly by the lock nut method
- **Manifold specifications also available**
The manifold base is the same as GAB/GAG series.



Aluminum body lock nut method



The same manifold base as GAB/GAG

BB41/BG41 Series

Direct acting 2, 3 port solenoid valve



Direct acting 2 port solenoid valve Discrete valve

BB41 Series

● NC (open during electrification) type

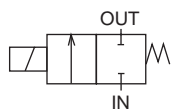
Direct acting 2 port solenoid valve Manifold actuator

GBB41 Series

● NC (open during electrification) type

RoHS

JIS symbol



Common specification

Item	Standard specification
Working fluid	Air pressure, water, oil (50 mm ² /s or less)
Working pressure differential MPa	0 to 1.6 (This depends on the model type, so find the max. working pressure differential for your target model.)
Proof pressure (water pressure) MPa	5.3
Fluid temperature °C	-10 to 60 (no freeze)
Ambient temperature °C	-20 to 60
Thermal class	Class 130 (B)
Atmosphere	Location without corrosive or explosive gas
Valve structure	Direct acting poppet structure
Valve seat leak cm ³ /min (ANR)	0.2 or less (air)
Mounting orientation	Free
Body seal material	Brass/aluminum die-cast, fluorine rubber

Model specifications

Item Model no.			Orifice size (mm)	Max. working pressure differential (MPa)		Max. working pressure (MPa)	Rated voltage	Apparent power (VA)				Power consumption (W)				
				AC 50/60 Hz	DC			When held		When activated		AC 50/60 Hz	DC			
								50 Hz	60 Hz	50 Hz	60 Hz					
BB41-01 02 03 GBB41-00	20	2.0	1.6	1.6	1.6	100 VAC 110 VAC 200 VAC 220 VAC (50/60 Hz)	20	17	34	28	9.2/7.9	11				
													25	2.5	1.0	1.0

* Use the instrument within the ±10% range of the rated voltage.

Weight

Model no.	Port size	Body material	
		Brass	Aluminum
BB41	Rc1/8	-	365
	Rc1/4	445	360
	Rc3/8	430	355
GBB41	-	410	350

*1: Weight for the rated voltage 220 VAC

*2: Add 25 g when including a DIN terminal box.

Flow characteristics

Item Model no.	Orifice size (mm)	Flow characteristics		
		C [dm ³ /(s · bar)]	b	Cv value
BB41- 01 02 03	20	0.50	0.53	0.14
GBB41- 00	25	0.80	0.52	0.23
	40	2.00	0.47	0.53

*1: The C value for the aluminum body.

*2: The Cv value for the brass body.

How to order

Discrete

BB41 - 01 20 A - AC 220 V

Model no.

A Port size

B Orifice size

C Body material

D Rated voltage

<Model no. example>

BB41-0120A-AC220V

Model name: Direct acting 2 port solenoid valve

- A** Port size: Rc 1/8
- B** Orifice size: ø2.0
- C** Body material: Aluminum
- D** Rated voltage: 220 VAC

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
B Orifice size (mm)					
20	ø2.0				
25	ø2.5				
40	ø4.0				
C Body material					
A	Aluminum				
C	Brass *1				
D Rated voltage					
AC 100 V	100 VAC (50/60 Hz)				
AC 110 V	110 VAC (50/60 Hz)				
AC 200 V	200 VAC (50/60 Hz)				
AC 220 V	220 VAC (50/60 Hz)				
DC 24 V	24 VDC				

*1: 01, 1G, and 1N cannot be selected for item A (port size) when C is selected for item C.

*2: Screws of port size G and NPT are custom order.

Manifold actuator

GBB41 - 00 20 A - AC 220 V

Model no.

A Port size

B Orifice size

C Body material

D Rated voltage

<Model no. example>

GBB41-0020A-AC220V

Model name: Direct acting 2 port solenoid valve, manifold actuator

- A** Port size: - (Only actuator)
- B** Orifice size: ø2.0
- C** Body material: Aluminum
- D** Rated voltage: 220 VAC

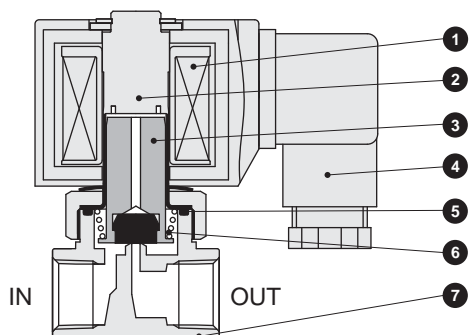
Symbol	Descriptions
A Port size	
00	- (Only actuator)
B Orifice size (mm)	
20	ø2.0
25	ø2.5
40	ø4.0
C Body material	
A	Aluminum
C	Brass
D Rated voltage	
AC 100 V	100 VAC (50/60 Hz)
AC 110 V	110 VAC (50/60 Hz)
AC 200 V	200 VAC (50/60 Hz)
AC 220 V	220 VAC (50/60 Hz)
DC 24 V	24 VDC

* Separate order is required for a sub-plate.

BB41/GBB41 Series

Internal structure and parts list

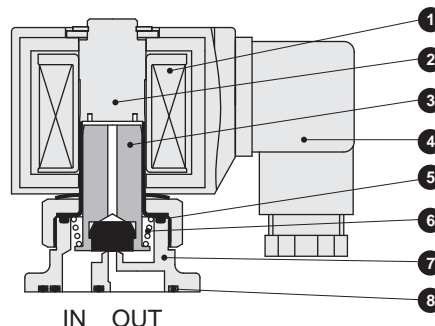
● BB41 Series



Parts list

No.	Parts name	Material
1	Coil	-
2	Core assembly	Equivalent to SUS430, 316L, Cu
3	Plunger assembly	Equivalent to SUS430, FKM
4	DIN terminal box	-
5	O-ring	FKM
6	Plunger spring	SUS304
7	Body	C3771, ADC12

● GBB41 Series

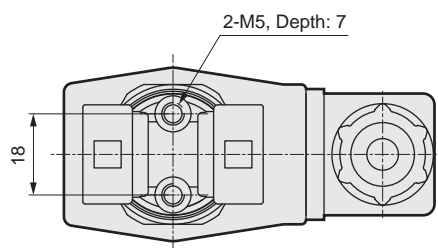
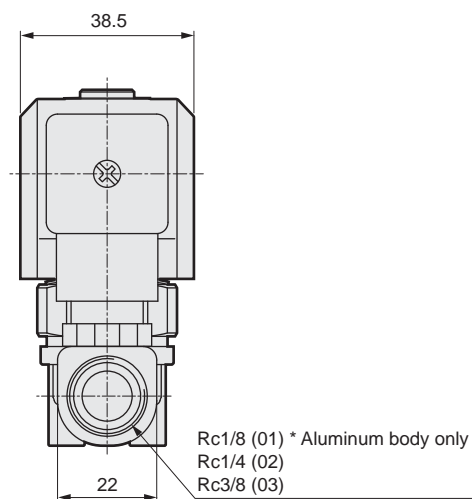
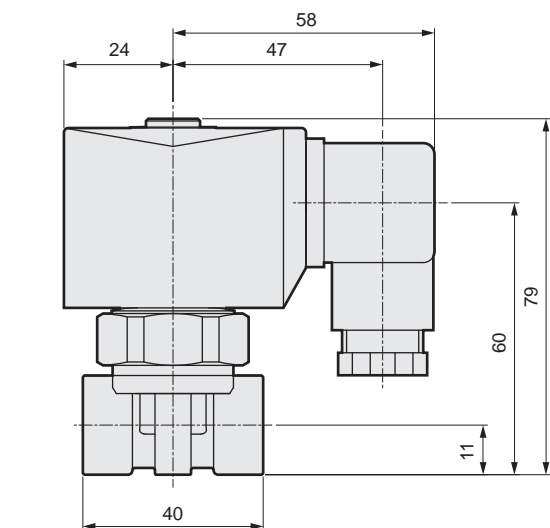


Parts list

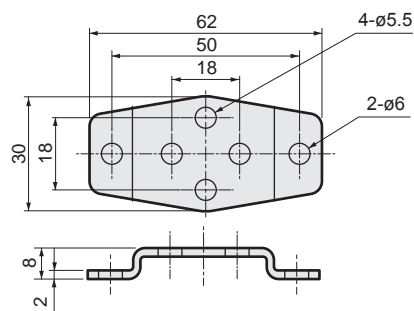
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4	DIN terminal box	-
5	O-ring	FKM
6	Plunger spring	SUS304
7	Body	C3771, ADC12
8	O-ring	FKM

Dimensions

● BB41 Series



● Dimensions of mounting plate (for reference)

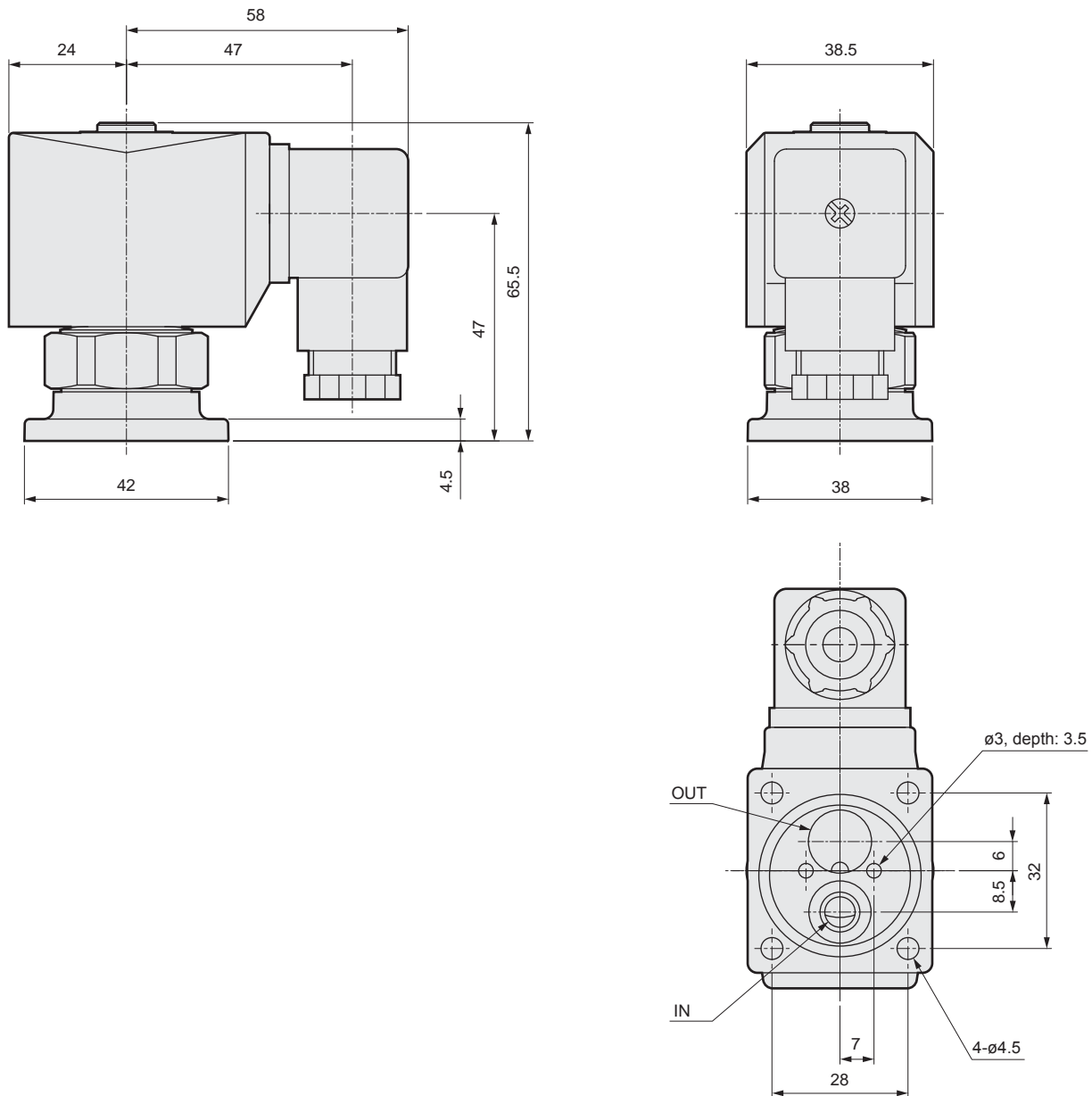


Mounting plate No.1 GE-100106

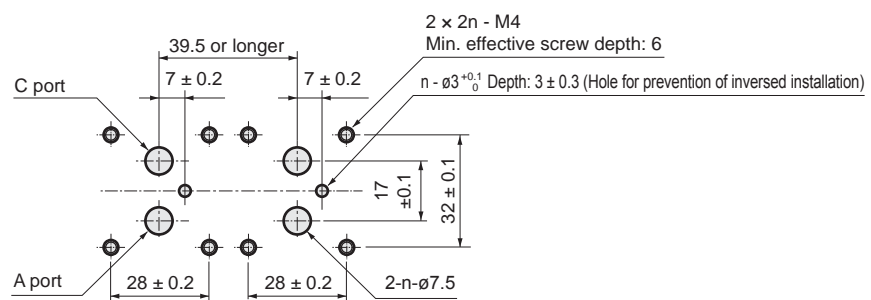
Place a separate order for mounting plates if required.
Model no.: AB4-GE-100106-MOUNT-PLATE-KIT

Dimensions

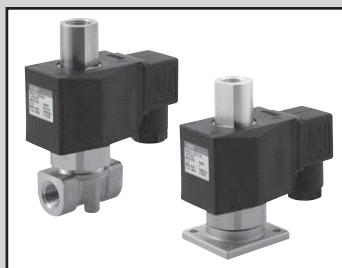
● GBB41 Series actuator



● Recommended dimensions when mounting an actuator



■ Machining dimensions for using n pieces of the actuator



Direct acting 3 port solenoid valve Discrete valve

BG41 Series

- Universal type

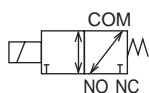
Direct acting 3 port solenoid valve Manifold actuator

GBG41 Series

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RoHS

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Common specification

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Atmosphere	Location without corrosive or explosive gas
Valve structure	Direct acting poppet structure
Valve seat leak cm ³ /min (ANR)	0.2 or less (air)
Mounting orientation	Free
Body seal material	Brass/aluminum die-cast, fluorine rubber

Model specifications

Item			Orifice size (mm)	Max. working pressure differential (MPa)		Max. working pressure (MPa)	Rated voltage	Apparent power (VA)				Power consumption (W)	
				AC 50/60 Hz	DC			When held		When activated		AC 50/60 Hz	DC
Model no.	50 Hz	60 Hz						50 Hz	60 Hz				
BG41-01	02	15	1.5	1.6	1.0	1.6	100 VAC 110 VAC 200 VAC 220 VAC (50/60 Hz) 24 VDC	22	18	44	37	9.6/8.1	11
GBG41-01													
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* Use the instrument within the ±10% range of the rated voltage.

Weight

Model no.	Port size	Body material	
		Brass	Aluminum
BG41	Rc1/8	-	385
	Rc1/4	490	380
	Rc3/8	475	375
GBG41	Rc1/8	-	385
	Rc1/4	470	385
	Rc3/8	490	395

*1: Weight for the rated voltage 220 VAC

*2: Add 25 g when including a DIN terminal box.

Flow characteristics

Item			Orifice size (mm)	Flow characteristics		
Model no.		C [dm³/(s • bar)]		b	Cv value	
BG41-	01	15	1.5	0.29	0.53	0.09
	02					
	03					
GBG41-	01	20	2.0	0.52	0.53	0.14
	02					
	03					
		23	2.3	0.74	0.52	0.19

*1: The C value for the aluminum body.

*2: The Cv value for the brass body.

How to order

Discrete

BG41 - **01** **20** **A** - **AC 220 V**

Model no.

A Port size

B Orifice size

C Body material

D Rated voltage

<Model no. example>

BG41-0120A-AC220V

Model name: Direct acting 3 port solenoid valve

- A** Port size: Rc 1/8
- B** Orifice size: ø2.0
- C** Body material: Aluminum
- D** Rated voltage: 220 VAC

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
B Orifice size (mm)					
15	ø1.5				
20	ø2.0				
23	ø2.3				
C Body material					
A	Aluminum				
C	Brass *1				
D Rated voltage					
AC 100 V	100 VAC (50/60 Hz)				
AC 110 V	110 VAC (50/60 Hz)				
AC 200 V	200 VAC (50/60 Hz)				
AC 220 V	220 VAC (50/60 Hz)				
DC 24 V	24 VDC				

*1: 01, 1G, and 1N cannot be selected for item A (port size) when C is selected for item C.

*2: Screws of port size G and NPT are custom order.

Manifold actuator

GBG41 - **01** **20** **A** - **AC 220 V**

Model no.

A NO port size

B Orifice size

C Body material

D Rated voltage

<Model no. example>

GBG41-0120A-AC220V

Model name: Direct acting 3 port solenoid valve, manifold actuator

- A** NO port size: Rc 1/8
- B** Orifice size: ø2.0
- C** Body material: Aluminum
- D** Rated voltage: 220 VAC

Symbol	Descriptions
A NO port size	
01	Rc1/8
02	Rc1/4
03	Rc3/8
B Orifice size	
15	ø1.5
20	ø2.0
23	ø2.3
C Body material	
A	Aluminum
C	Brass *1
D Rated voltage	
AC 100 V	100 VAC (50/60 Hz)
AC 110 V	110 VAC (50/60 Hz)
AC 200 V	200 VAC (50/60 Hz)
AC 220 V	220 VAC (50/60 Hz)
DC 24 V	24 VDC

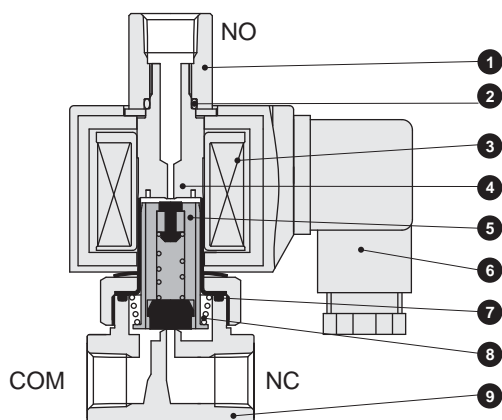
*1: 01 cannot be selected for item A (NO port size) when C is selected for item C.

*2: Separate order is required for a sub-plate.

BG41/GBG41 Series

Internal structure and parts list

● BG41 Series

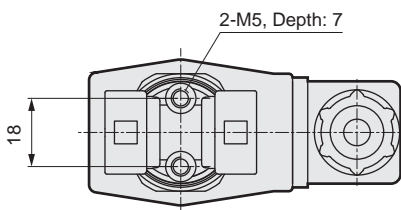
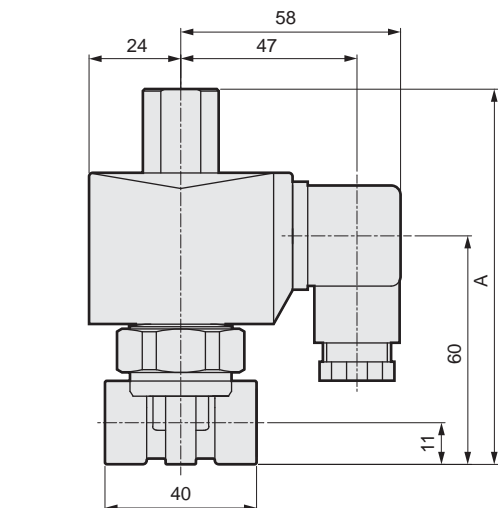


Parts list

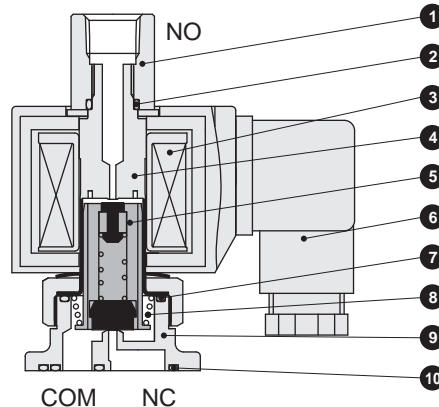
No.	Parts name	Material	
1	Socket	S3604, A5056	Brass, aluminum
2	O-ring	FKM	Fluoro rubber
3	Coil	-	-
4	Core assembly	Equivalent to SUS430, 316L, Cu	Stainless steel, copper
5	Plunger assembly	Equivalent to SUS430, FKM	Stainless steel, fluorine rubber
6	DIN terminal box	-	-
7	O-ring	FKM	Fluoro rubber
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771, ADC12	Brass, aluminum die-cast

Dimensions

● BG41 Series

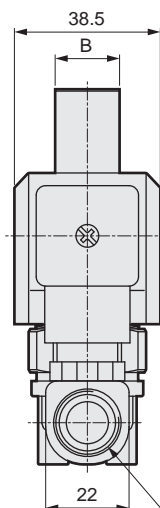


● GBG41 Series



Parts list

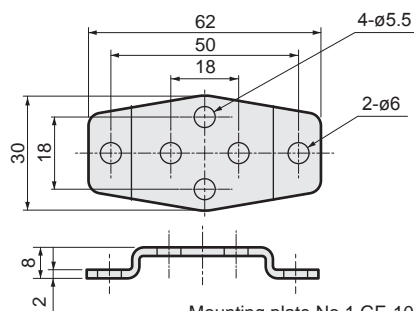
No.	Parts name	Material	
1	Socket	C3604, A5056	Brass, aluminum
2	O-ring	FKM	Fluoro rubber
3	Coil	-	-
4	Core assembly	Equivalent to SUS430, 316L, Cu	Stainless steel, copper
5	Plunger assembly	Equivalent to SUS430, FKM	Stainless steel, fluorine rubber
6	DIN terminal box	-	-
7	O-ring	FKM	Fluoro rubber
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771, ADC12	Brass, aluminum die-cast
10	O ring	FKM	Fluoro rubber



Port size	A	B
01 (Rc1/8)	99	17
02 (Rc1/4)	99	17
03 (Rc3/8)	99.5	22

Rc1/8 (01) * Aluminum body only
Rc1/4 (02)
Rc3/8 (03)

● Dimensions of mounting plate (for reference)

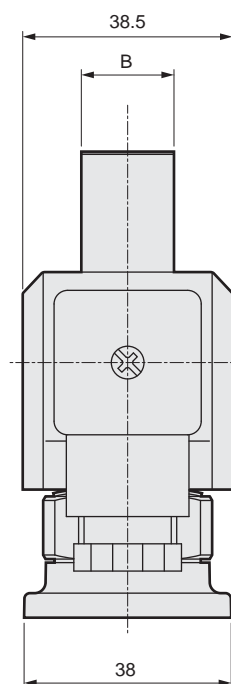
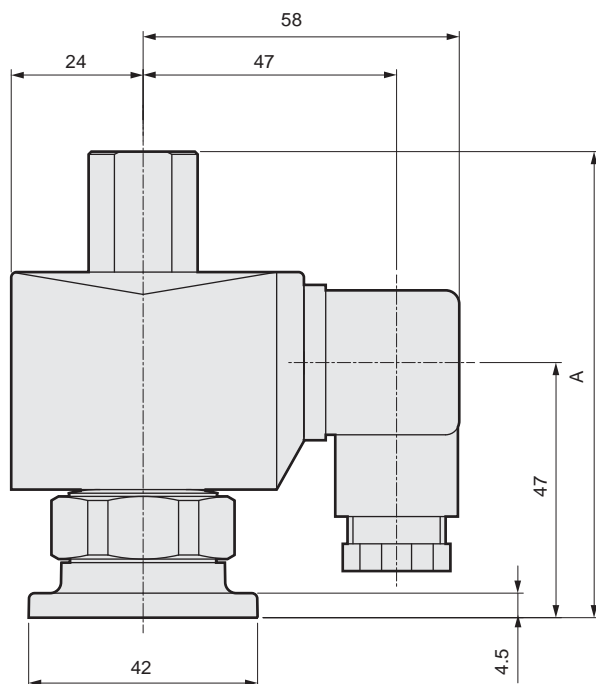


Mounting plate No.1 GE-100106

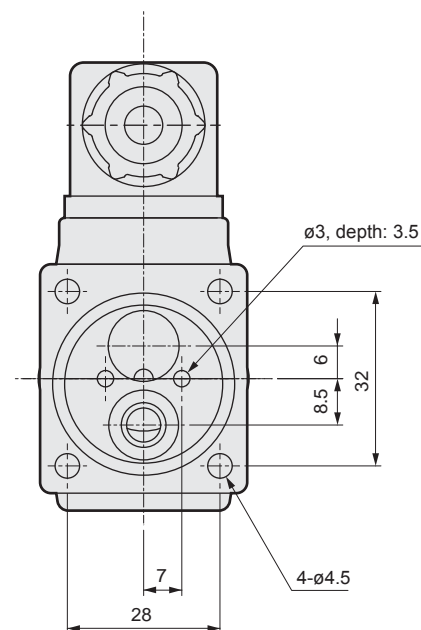
Place a separate order for mounting plates if required.
Model no.: AB4-GE-100106-MOUNT-PLATE-KIT

Dimensions

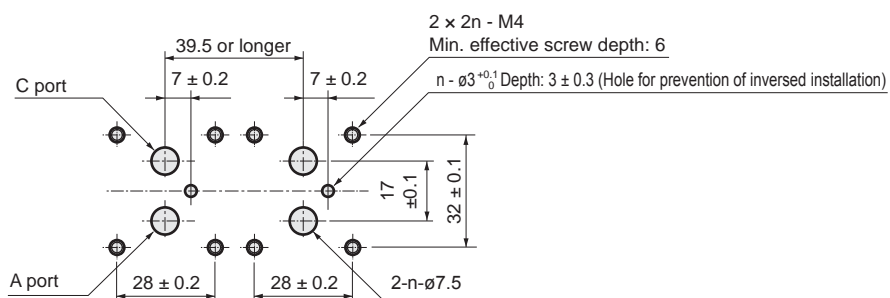
● GBG41 Series actuator



Port size	A	B
01 (Rc1/8)	85.5	17
02 (Rc1/4)	85.5	17
03 (Rc3/8)	86	22



● Recommended dimensions when mounting an actuator



■ Machining dimensions for using n pieces of the actuator



Safety information

Always read before use

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.

It is important to select, use, handle, and maintain the product appropriately to ensure that the CKD product is used safely. Observe warnings and precautions to ensure device safety.

Check that device safety is ensured, and manufacture a safe device.

WARNING

1 This product was designed and manufactured for use as equipment and parts for general industrial machinery. It must be handled by an operator having sufficient knowledge and experience in handling.

2 Please use only in accordance with product specifications.

This product must be used within its stated specifications. Do not attempt to modify or additionally machine the product. This product is intended for use as a general-purpose industrial device or part. It is not intended for use outdoors (except for models for outdoor use) or for use under the following conditions or environment.

(Note that this product can be used when CKD is consulted prior to use and the customer consents to CKD product specifications. The customer must provide safety measures to avoid risks in the event of problems.)

① Use for special applications requiring safety including nuclear energy, railroad, aviation, ship, vehicle, medical equipment, equipment or applications coming into contact with beverage or food, amusement equipment, emergency shutoff circuits, press machine, brake circuits, or for safeguard.

② Use for applications where life or assets could be adversely affected, and special safety measures are required.

3 Observe corporate standards and regulations, etc., related to the safety of device design and control, etc.

ISO 4414, JIS B 8370 (pneumatic system rules)

JFPS 2008 (Principles for pneumatic cylinder selection and use)

Including High Pressure Gas Maintenance Law, Occupational Safety and Sanitation Laws, other safety rules, body standards and regulations, etc.

4 Do not handle, pipe, or remove devices before confirming safety.

① Inspect and service the machine and devices after confirming safety of the entire system related to this product.

② Note that there may be hot or charged sections even after operation is stopped.

③ When inspecting or servicing the device, turn off the energy source (air supply or water supply), and turn off power to the facility. Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.

④ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

5 Observe warnings and cautions on the pages below to prevent accidents.

■ The safety cautions are ranked as “DANGER”, “WARNING” and “CAUTION” in this section.

⚠ DANGER: When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, or when there is a high degree of emergency to a warning.

⚠ WARNING: When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries.

⚠ CAUTION: When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as “CAUTION” may lead to serious results depending on the situation. Important details are listed for each; please make sure to follow them.

Disclaimer

1 Warranty period

“Warranty Period” is one (1) year from the first delivery to the customer.

2 Scope of warranty

In case any defect attributable to CKD is found during the Warranty Period, CKD shall, at its own discretion, repair the defect or replace the relevant product in whole or in part, according to its own judgement.

Note that the following faults are excluded from the warranty term:

(1) Product abuse/misuse contrary to conditions/environment recommended in its catalogs/specifications

(2) Failure caused by other than the delivered product

(3) Use other than original design purposes.

(4) Third-party repair/modification

(5) Faults caused by reason that is unforeseeable with technology put into practical use at the time of delivery.

(6) Failure attributable to force majeure.

In no event shall CKD be liable for business interruptions, loss of profits, personal injury, costs of delay or for any other special, indirect, incidental or consequential losses, costs or damages.

3 Compatibility confirmation

In no event shall CKD be liable for merchantability or fitness for a particular purpose, notwithstanding any disclosure to CKD of the use to which the product is to be put.



For safety

Control devices: Warnings and precautions

Be sure to read the instructions before use.

Also read the usage precautions in Fluid Control Valves (Catalog No. CB-03-1SA).

Model specific precautions

Direct acting 2, 3 port solenoid valve (BB, GBB, BG, GBG)

For designing and selection

⚠ WARNING

■ Working fluid

- Use this product only for air, water, and oil.
- Dry air or inactive gas may significantly shorten the product lifetime. Use valves designed for dry air.
- This product cannot be used for vacuum retention. For vacuum retention, use valves designed for vacuum.

⚠ CAUTION

■ Continuous electrification

A 3 port valve cannot be used with continuous electrification for applying pressure on the NO side.
Use a NO-side pressure type valve.

■ Suction noise

Models of the AC voltage specification produce a short large suction noise just after electrification.
Use DC voltage if you do not want this suction noise. The DC voltage does not produce a loud noise.

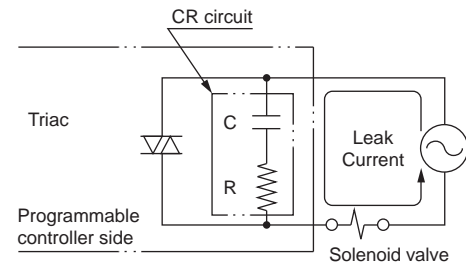
■ Fluid viscosity

Use a fluid with a viscosity of 50 mm²/s or less.
A viscosity larger than 50 mm²/s may cause malfunction.

■ Leak current from other control devices

When you operate solenoid valves with a programmable controller, ensure that the leak current from the programmable controller satisfies the following specification.

Voltage Model no.	AC		DC
	100 V 110 V	200 V 220 V	24 V
BB/GBG, BG/GBG	6 mA or less	3 mA or less	1 mA or less



In installation

⚠ CAUTION

■ Piping

If the ON side is a socket, fit in the pipe while holding the socket with a tool such as a wrench.

During Servicing & Maintenance

⚠ CAUTION

When you tighten together the core assembly and the body or the core assembly and the socket, temporarily fit the core assembly until it hits the O ring, and then tighten it with the following torque values. This prevents the spring (plunger spring) from being pinched.

Model no.	Core assembly Tightening torque	Socket Tightening torque
BB/GBB	21 to 31 Nm	-
BG/GBG	21 to 31 Nm	10 to 14 Nm

MEMO

Related products

2, 3 port solenoid valve for control of multiple fluid types

AB, AG, AP, AD, ADK Series

- Support for multiple fluids by combinations of body materials and seal material
- Port sizes from Rc1/8 to 50F
- Rich variety of options
 - Open frame
 - Coil with built-in diode
 - Terminal box, etc.

Catalog No.CB-03-1SA

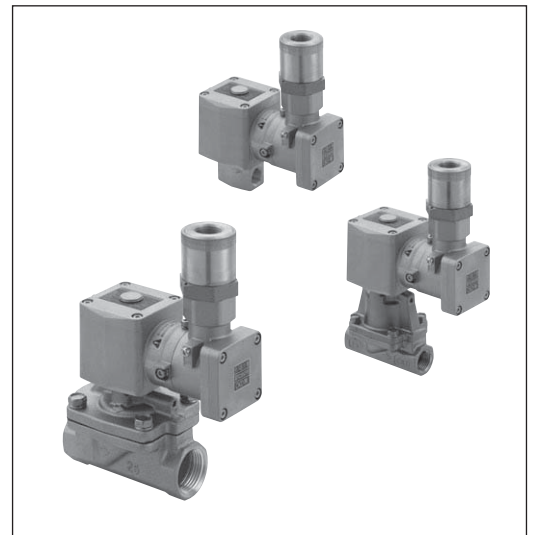


Explosion proof 2, 3 port solenoid valve

Multilex valve EX Series

- Support for safe use in a dangerous atmosphere
- Conformance to the international explosion proof standard
- Support for outdoor use
- Wider range of options of cable diameters

Catalog No.CC-1175A



Air operated 2 port valve (cylinder valve)

SAB Series

- Support for use with multiple fluid types
- Energy and space saving
- Support for use in an explosive atmosphere



CKD

