



Compact direct acting 3 port solenoid valve

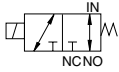
USG2 Series

- Universal type
- Port size: M5



JIS symbol

- Universal type



Specifications

Item	USG2-M5-1	USG2-M5-2
Working fluid	Air, water, dry air, low vacuum (1.33×10^2 Pa (abs))	
Working pressure differential range MPa	0 to 0.7 (0 to 0.3 when NO pressurized)	0 to 0.3 (0 to 0.1 when NO pressurized)
Withstanding pressure (water) MPa	1.5	
Fluid temperature °C	-10 to 60 (no freezing)	
Ambient temperature °C	-20 to 50	
Valve seat leakage cm^3/min	0.2 or less (pneumatic pressure)	
Mounting attitude	Free	
Weight kg	0.07	
Port size	M5	M5
Orifice mm	1	1.5
Cv flow factor	0.03	0.06
C [$\text{dm}^3/(\text{s}\cdot\text{bar})$]	0.13	0.28
b	0.57	0.46
Electric specifications		
Rated voltage	12 VDC, 24 VDC (option: 100 VAC 50/60 Hz, 200 VAC 50/60 Hz)	
Allowable voltage fluctuation	±10%	
Power consumption W	DC	3
	AC	4
Heat proof class	B	

*1: Contact CKD when using water and the solenoid valve is not used for a long time.

*2: When using in a continuous energized state, use a fluoro rubber seal. Contact CKD for details.

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

How to order

USG2 - M5 - 1 - 0 - DC24V

Model no.

Port size
M5

A Orifice

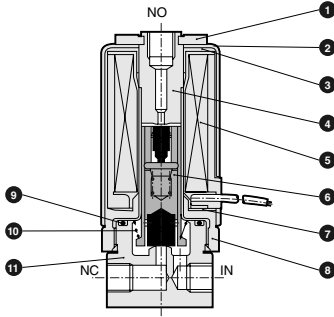
B Body/sealant combination

C Voltage

Symbol	Descriptions	
A Orifice		
1	ø1.0	
2	ø1.5	
B Body/sealant combination		
	Body	Sealant
Blank	Stainless steel	Nitrile rubber
0	Brass	Nitrile rubber
C Voltage		
DC12V	Std.	12 VDC
DC24V	Std.	24 VDC
AC100V	Option	100 VAC 50/60 Hz
AC200V	Option	200 VAC 50/60 Hz

Internal structure and parts list

● USG2-M5

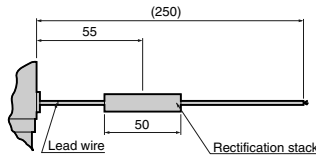
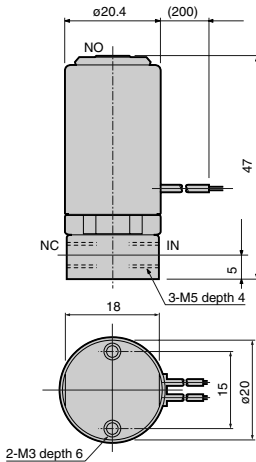


No.	Parts name	Material	
1	Clip	PBT	PBT
2	Bonnet	SPC	Steel
3	Sub core	SPC	Steel
4	Core assembly	SUS316, SUS405 or equivalent	Stainless steel
5	Coil assembly	-	-
6	Plunger assembly	SUS405 or equivalent, NBR	Stainless steel, nitrile rubber
7	Waving washer	S65CM	Steel
8	Core B	SUM22	Free cutting steel
9	O ring	NBR	Nitrile rubber
10	Plunger spring	SUS304	Stainless steel
11	Body	SUS303 (C3604)	Stainless steel (brass)

() shows option.

Dimensions (Page 20)

● USG2-M5



The alternating current (AC) type has a rectification stack assembled into the lead wire.

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

Compact direct acting 3 port solenoid valve



Compact direct acting 3 port solenoid valve

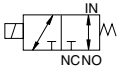
USG3 Series

- Universal type
- Port size: Rc1/8



JIS symbol

- Universal type



Specifications

Item	USG3-6-1	USG3-6-2
Working fluid	Air, water, dry air, low vacuum (1.33×10^2 Pa (abs))	
Working pressure differential range MPa	0 to 0.7 (0 to 0.3 when NO pressurized)	0 to 0.3 (0 to 0.1 when NO pressurized)
Withstanding pressure (water) MPa	2	
Fluid temperature °C	-10 to 60 (no freezing)	
Ambient temperature °C	-20 to 50	
Valve seat leakage cm ³ /min.	0.2 or less (pneumatic pressure)	
Mounting attitude	Free	
Weight kg	0.14	
Port size	Rc1/8	Rc1/8
Orifice mm	1.2	1.8
Cv flow factor	0.05	0.1
C [dm ³ /(s·bar)]	0.19	0.42
b	0.57	0.5
Electric specifications		
Rated voltage	12 VDC, 24 VDC (option: 100 VAC 50/60 Hz, 200 VAC 50/60 Hz)	
Allowable voltage fluctuation	±10%	
Power consumption W	DC	4
	AC	4
Heat proof class	E (molded coil: B)	

*1: Contact CKD when using water and the solenoid valve is not used for a long time.

*2: When using in a continuous energized state, use a fluoro rubber seal.

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

How to order

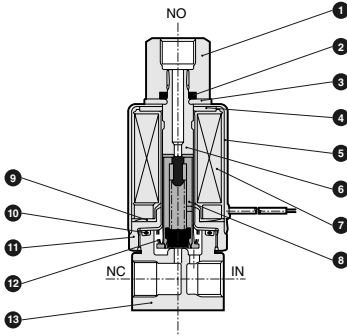


Symbol	Descriptions								
A Orifice									
1	ø1.2								
2	ø1.8								
B Body/sealant/coil combination									
	Body	Sealant	Coil	Treatment					
Blank	Std.	Nitrile rubber	Taped	-					
B	Option	Brass	Fluoro rubber	Molded coil					
V					Stainless steel	Nitrile rubber	Vacuum inspection ⁴		
D								Fluoro rubber	-
E									
W	Brass	Nitrile rubber							
H			Fluoro rubber	Oil free					
J					Stainless steel	Molded coil			
L							Nitrile rubber		
M	Fluoro rubber								
C Voltage									
DC12V	Std.	12 VDC							
DC24V	Std.	24 VDC							
AC100V	Option	100 VAC 50/60 Hz							
AC200V	Option	200 VAC 50/60 Hz							

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

Internal structure and parts list

● USG3-6

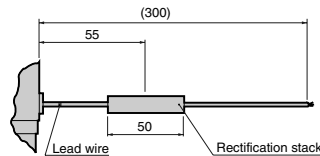
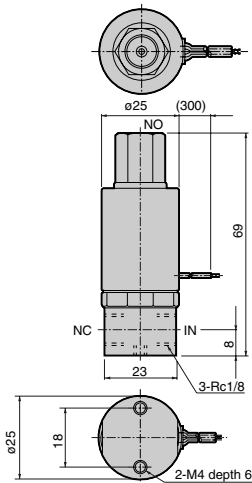


No.	Parts name	Material	
1	Socket	C3604 (SUS303)	Brass (stainless steel)
2	O ring	NBR (FKM)	Nitrile rubber (fluoro rubber)
3	Washer	SPC	Steel
4	Bonnet piece	SPC	Steel
5	Bonnet	SPC	Steel
6	Core assembly	SUS316, SUS405 or equivalent	Stainless steel
7	Coil assembly	-	-
8	Plunger assembly	SUS405 or equivalent, NBR (FKM)	Stainless steel, nitrile rubber (fluoro rubber)
9	Waving washer	S65CM	Steel
10	O ring	NBR (FKM)	Nitrile rubber (fluoro rubber)
11	Core B	SUM22	Free cutting steel
12	Plunger spring	SUS304	Stainless steel
13	Body	C3604 (SUS303)	Brass (stainless steel)

() shows option.

Dimensions (Page 20)

● USG3-6



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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

Compact direct acting 3 port solenoid valve



Safety precautions

Always read this section before starting use.

Compact direct acting 2, 3 port solenoid valve

Design & Selection

WARNING

1 Working fluid

- (1) When using this valve for dry air, the life can be shortened considerably due to wear. Use a valve for dry air.
- (2) This valve cannot be used for maintaining the vacuum. Consult with CKD when the vacuum needs to be maintained.

CAUTION

1 Continuous energizing

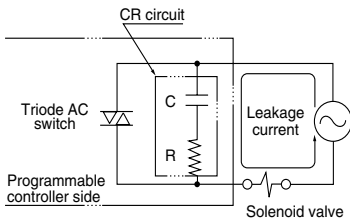
Consult with CKD when using the 3 port valve in a continuously energized state.

2 Fluid viscosity

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

3 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.



Model no.	Voltage		AC		AC diode		DC	
	100 V	200 V	100 V	200 V	12 V	24 V	12 V	24 V
USB, USG	—	—	0.2 mA or less	0.1 mA or less	2 mA or less	1 mA or less	1 mA or less	1 mA or less
HNB, HNG	—	—	—	—	1 mA or less	1 mA or less	1 mA or less	1 mA or less

Installation, Piping & Wiring

CAUTION

1 Piping

Always hold the socket with a spanner, etc., if the NO side is a socket.

Maintenance

CAUTION

1 For USB/USG

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

Model no.	Core assembly tightening torque	Socket tightening torque
USB2	10 to 22 N·m	-
USG2	10 to 22 N·m	-
USB3	18 to 32 N·m	-
USG3	18 to 32 N·m	4 to 8 N·m

<<Precautions for each model>>

USB/USG (resin body type)

CAUTION

1 Metal is wetted. (This is not a metal free valve.)

Do not use a metal (M6) joint because it could damage the port.

2 Use a PP or fluorine resin joint. Refer to the recommended torque below.

Recommended tightening torque: 0.1 to 0.15 N·m