



Compact Direct acting 2, 3-port solenoid valve

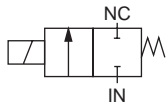
US(Resin body) Series

- NC, universal
- Port size: M6, barbed fitting(Compatible tube diameter $\phi 6 \times \phi 4$), 1/4-28UNF

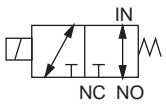


JIS symbol

- USB(2-port valve)
:NC (open when energized)



- USG(3-port valve)
: Universal



Common specifications

Item	USB/USG
Working fluid	Refer to the working fluid in individual specifications.
Working pressure differential MPa	0 to 0.9 (refer to max. working pressure differential in individual specifications.)
Proof pressure MPa	1.5(US*2), 2(US*3)(water pressure)
Fluid temperature °C	0 to 60 (no freezing)
Ambient temperature °C	0 to 50
Thermal class	Class 130 (B)
Atmosphere	No explosive or corrosive atmospheres
Valve seat leakage cm ³ /min	0.2 or less(in air)
Port size	1/4-28UNF M6/barbed fitting (compatible tube diameter $\phi 6 \times \phi 4$)
Mounting orientation	Unrestricted
Rated voltage	24 VDC/12 VDC
Treatment	Oil-prohibited

Individual specifications

Item Model No.	Working fluid	Orifice size [mm]	Cv	C[dm ³ /(s·bar)]	b	Max. working pressure differential [MPa]	Power consumption [W]	
2-port valve Item Wetted metal material: 2 (equivalent to SUS316)								
USB2-*	Water/pure water (*1)	-1	1	0.03	0.13	0.36	0.6	3
		-2	1.5	0.06	0.27	0.28	0.3	3
USB3-*		-1	1.6	0.08	0.32	0.30	0.7	4
		-2	2.3	0.13	0.45	0.30	0.3	4
3-port valve Item Wetted metal material: 2 (equivalent to SUS316)								
USG2-*	Water/pure water (*1)	-1	1	0.03	0.13	0.36	0.6 (0.2 for NO pressurization)	3
		-2	1.5	0.06	0.27	0.28	0.3 (when NO pressurized 0.1)	3
USG3-*		-1	1.6	0.08	0.32	0.30	0.2 (0.08 for NO pressurization)	4
		-1	1.6	0.08	0.32	0.30	0.2 (0.08 for NO pressurization)	4
2-port valve Item Wetted metal material: 1 (equivalent to SUS405)								
USB2-*	Air/water/ dry air/ low vacuum (1.33 x 10 ² Pa(abs)) (*1)	-1	1	0.03	0.13	0.36	0.7	3
		-2	1.5	0.06	0.27	0.28	0.3	3
USB3-*		-1	1.6	0.08	0.32	0.30	0.9	4
		-2	2.3	0.13	0.45	0.30	0.3	4
3-port valve Item Wetted metal material: 1 (equivalent to SUS405)								
USG2-*	Air/water/ dry air/ low vacuum (1.33 x 10 ² Pa(abs)) (*1)	-1	1	0.03	0.13	0.36	0.7 (0.3 for NO pressurization)	3
		-2	1.5	0.06	0.27	0.28	0.3 (when NO pressurized 0.1)	3
USG3-*		-1	1.6	0.08	0.32	0.30	0.3 (when NO pressurized 0.1)	4
		-1	1.6	0.08	0.32	0.30	0.3 (when NO pressurized 0.1)	4

*1: Check the compatibility between the wetted part material and working fluid before using chemical liquid for washing.

*2: When using a 3-port valve in a continuously energized state, select FKM for the sealant material.

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

*4: When using a 2-port valve at low vacuum, vacuum the NC port side.

*5: Make sure to read the safety precautions on pages 3 to 8 before use.

How to order

USB2 - M6 - 1 - S 2 - DC24V

A Model No.

B Port size

C Orifice size

D Body/sealant

E Wetted metal material

(*2)

F Voltage

A Model No.

2-port valve

3-port valve

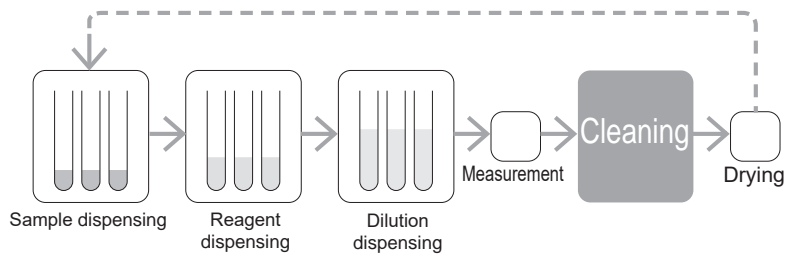
Code	Description	USB2	USB3	USG2	USG3
B Port size					
M6	M6	●	●	●(*1)	●
T6	Barbed fitting	●	●	●	●
4U	1/4-28UNF	●			
C Orifice size					
1	Refer to text at right	ø1	ø1.6	ø1	ø1.6
2	Refer to text at right	ø1.5	ø2.3	ø1.5	
D Body/sealant					
	Body	Seal			
G	PPS	NBR	●	●	●
S	PPS	FKM	●	●	●
E Wetted metal material					
1	SUS405 or equiv.	●	●	●	●
2	SUS316 or equiv.	●	●	●	●
F Voltage					
	DC12V	●	●	●	●
	DC24V	●	●	●	●

⚠ Precautions for model No. selection

*1: NO port of USG2 is M5.

*2: 12 VDC, For voltages other than 24 VDC, contact CKD.

Applications

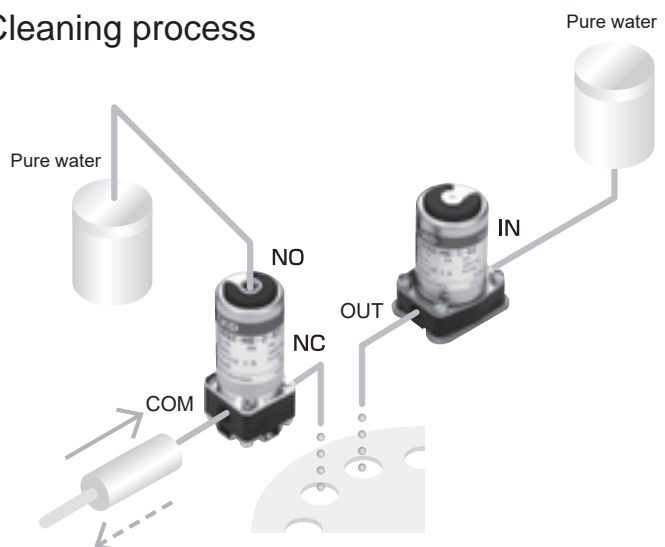


Wetted metal material
SUS316 or equiv.

Body material
PPS

Compatible with fittings used in the medical analysis industry

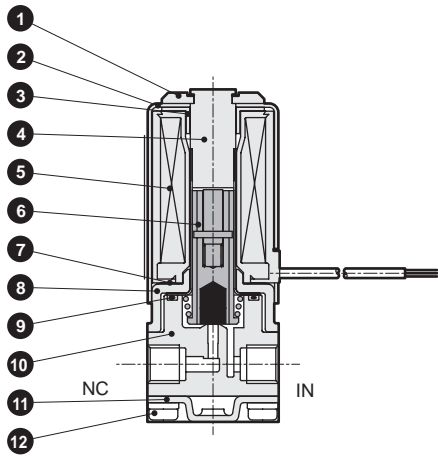
Cleaning process



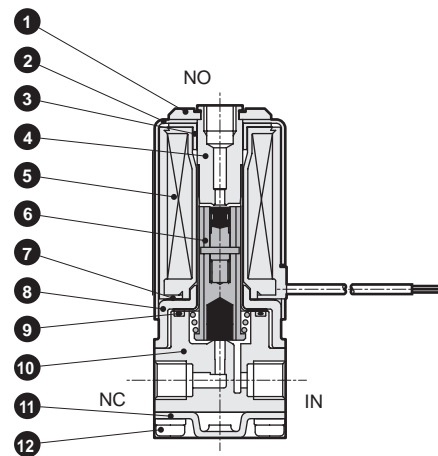
US^B_G 2(Resin body) Series

Internal structure and parts list

● USB2



● USG2

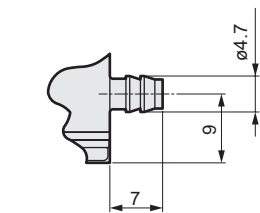
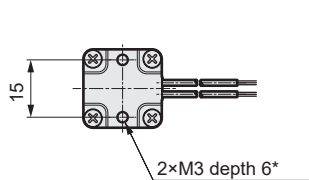
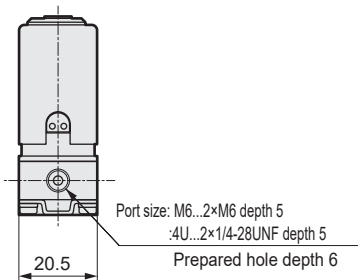
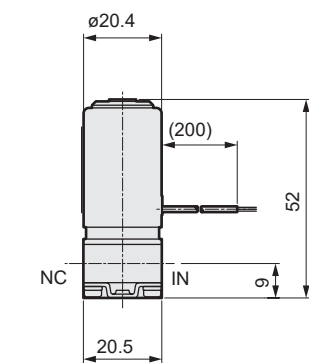


Part No.	Part name	Material	Part No.	Part name	Material
1	Clip	PBT	7	Wave washer	S65C
2	Bonnet	SPC	8	Core B	SPC
3	Sub core	SPC	9	O-ring	NBR (FKM)
4	Core assembly	SUS316 or equivalent (SUS405 or equivalent), SUS316L	10	Body	PPS
5	Coil assembly	-	11	Retainer plate	SPC
6	Plunger assembly	SUS316 or equivalent (SUS405 or equivalent), NBR (FKM)	12	Pan head machine screw	SWRM

Materials in () are selectable based on options.

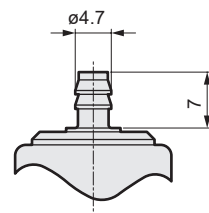
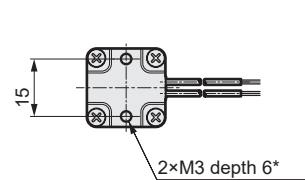
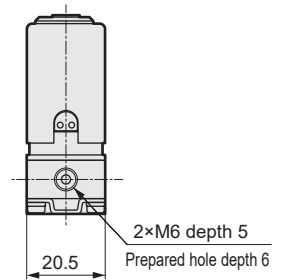
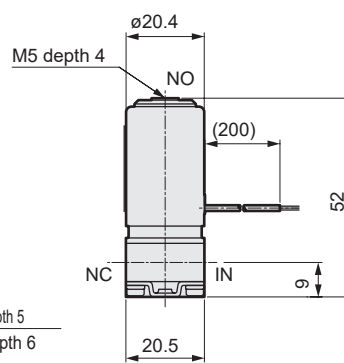
Dimensions

● USB2



[For option code "T6"]
Barbed fitting dimensions

● USG2

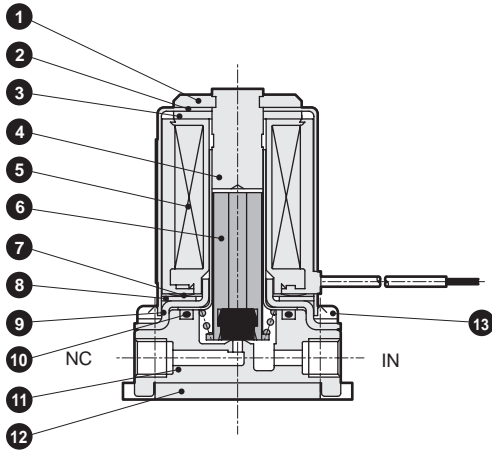


[For option code "T6"]
Barbed fitting dimensions of NO port
(IN and NC ports are the same as the 2-port valve)

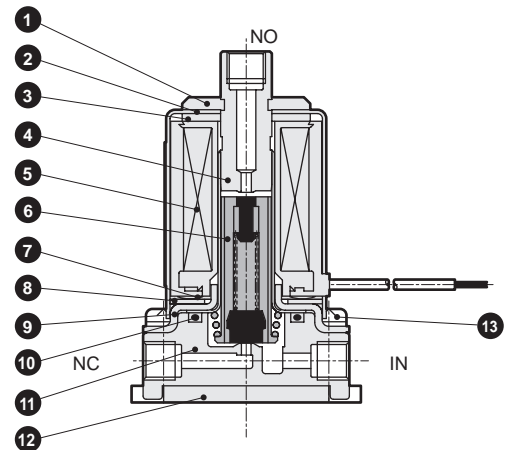
* Keep the product screw insertion depth to within 6 mm.

Internal structure and parts list

● USB3



● USG3

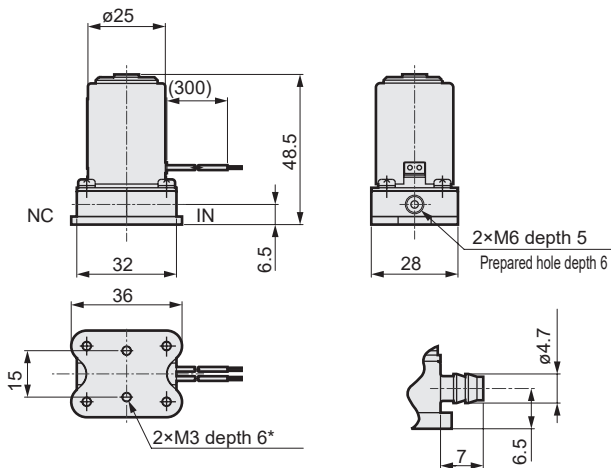


Part No.	Part name	Material	Part No.	Part name	Material
1	Clip	PBT	8	Sub core	SPC
2	Bonnet	SPC	9	Core B	SPC
3	Bonnet piece	SPC	10	O-ring	NBR (FKM)
4	Core assembly	SUS316 or equivalent (SUS405 or equivalent), SUS316L	11	Body	PPS
5	Coil assembly	-	12	Retainer plate	SPC
6	Plunger assembly	SUS316 or equivalent (SUS405 or equivalent), NBR (FKM)	13	Pan head machine screw	SWRM
7	Wave washer	S65C			

Materials in () are selectable based on options.

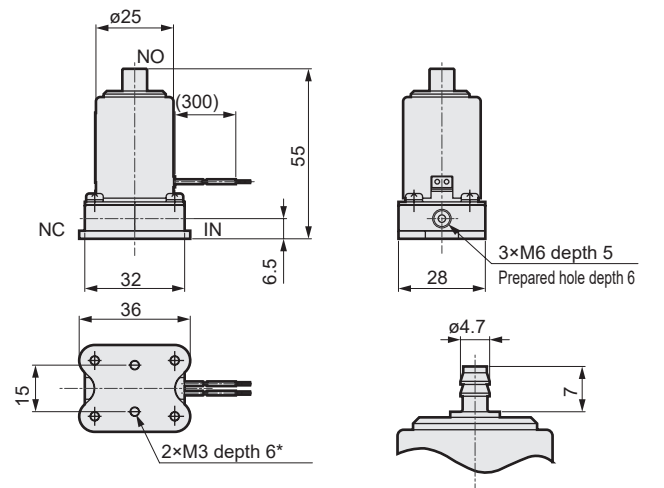
Dimensions

● USB3



[For option code "T6"]
Barbed fitting dimensions

● USG3



[For option code "T6"]
Barbed fitting dimensions of NO port
(IN and NC ports are the same as the 2-port valve)

* Keep the product screw insertion depth to within 6 mm.



Compact direct acting 2-port solenoid valve

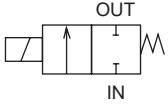
USB2 Series

- NC (normally closed)
- Working fluids: Air, water, dry air, low vacuum
- Port size: M5



JIS symbol

- NC (normally closed)



Specifications

Item	USB2-M5-1	USB2-M5-2
Working fluid	Air/water/dry air/low vacuum (1.33x10 ² Pa(abs))	
Working pressure differential MPa	0 to 0.7	0 to 0.3
Proof pressure MPa	1.5	
Fluid temperature °C	-10 to 60(no freezing)	
Ambient temperature °C	-20 to 50	
Valve seat leakage cm ³ /min	0.2andDown(in air)	
Mounting orientation	Unrestricted	
Weight kg	0.07	
Port size	M5	M5
Orifice size mm	1	1.5
Cv	0.03	0.06
C[dm ³ /(s·bar)]	0.13	0.28
b	0.57	0.46

Electrical specifications

Rated voltage	12 VDC, 24 VDC(Option: 100 VAC 50/60Hz, 200 VAC 50/60Hz)	
Voltage fluctuation range	±10%	
Power consumption W	DC	3
	AC	4
Thermal class	Class 130 (B)	

*1: If the solenoid valve is not operated for long periods with water, the high corrosion resistant solenoid valve HB Series (page 59) is recommended.

*2: Formula to calculate sonic conductance C from effective cross-sectional area S is $S=5.0xC$.

*3: When using at low vacuum, vacuum the OUT port side.

*4: Make sure to read the safety precautions on pages 3 to 8 before use.

How to order

USB2 - M5 - 1 - 0 - DC24V

Model No.

Port size
M5

A Orifice size

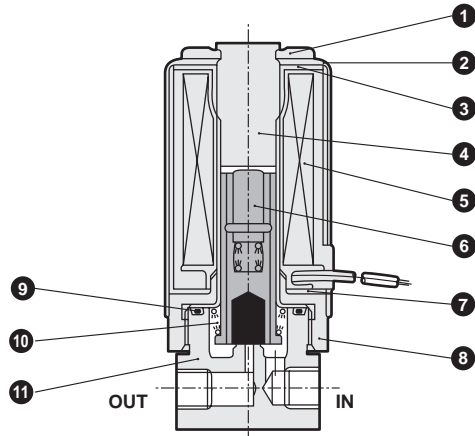
B Body/
Sealant combination

C Rated voltage

Code	Description		
A Orifice size			
1	ø1.0		
2	ø1.5		
B Body/sealant combination			
	Body	Seal	Treatment
Blank	Stainless steel	Nitrile rubber	-
L			Oil-prohibited
0	Copper alloy		-
C Rated voltage			
DC12V	Standard	12 VDC	
DC24V		24 VDC	
AC100V	Option	100 VAC 50/60Hz	
AC200V		200 VAC 50/60Hz	

Internal structure and parts list

● USB2-M5



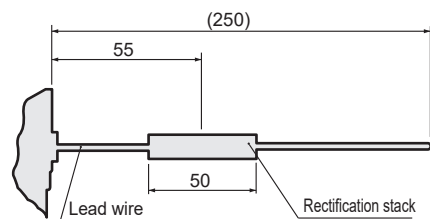
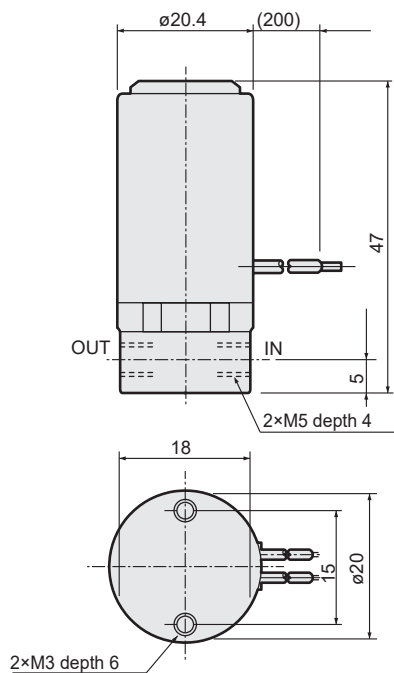
Part No.	Part name	Material	
1	Clip	PBT	Polybutylene terephthalate
2	Bonnet	SPC	Steel
3	Sub core	SPC	Steel
4	Core assembly	SUS405 or equiv., SUS316L	Stainless steel
5	Coil assembly	-	-
6	Plunger assembly	SUS405 or equiv., SUS303, NBR	Stainless steel, nitrile rubber
7	Wave washer	S65CM	Steel
8	Core B	SUM22	Free-cutting steel
9	O-ring	NBR	Nitrile rubber
10	Plunger spring	SUS304	Stainless steel
11	Body	SUS303(C3604)	Stainless steel (Copper alloy)

() shows options.

Dimensions



● USB2-M5



At alternating current (AC), a rectification stack is assembled into the lead wire for the alternating current (AC) type.



Compact direct acting 2-port solenoid valve

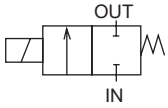
USB3 Series

- NC (normally closed)
- Working fluids: Air, water, dry air, low vacuum
- Port size: Rc1/8



JIS symbol

- NC (normally closed)



Specifications

Item	USB3-6-1	USB3-6-2	USB3-6-3
Working fluid	Air, Water, Dry air, Low vacuum (1.33 x 10 ² Pa (abs))		
Working pressure differential MPa	0 to 0.9	0 to 0.4	0 to 0.1
Proof pressure 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 (air)		
Mounting orientation	Unrestricted		
Weight kg	0.13		
Port size	Rc1/8	Rc1/8	Rc1/8
Orifice size mm	1.6	2.3	3.2
Cv	0.09	0.18	0.3
C[dm ³ /(s·bar)]	0.34	0.64	1.2
b	0.56	0.51	0.48

Electrical specifications

Rated voltage	12 VDC, 24 VDC (Option: 100 VAC 50/60Hz, 200 VAC 50/60Hz)	
Voltage fluctuation range	±10%	
Power consumption W	DC	4
	AC	4
Thermal class	Class 120 (E)(Molded coil: Class 130 (B))	

*1: If the solenoid valve is not operated for long periods with water, the high corrosion resistant solenoid valve HB Series (page 59) is recommended.

*2: Formula to calculate sonic conductance C from effective cross-sectional area S is $S \approx 5.0 \times C$.

*3: When using at low vacuum, vacuum the OUT port side.

*4: Make sure to read the safety precautions on pages 3 to 8 before use.

How to order

USB3 - 6 - 1 - B - DC24V

Model No.

Port size
Rc1/8

A Orifice size

B Body/sealant/coil combination

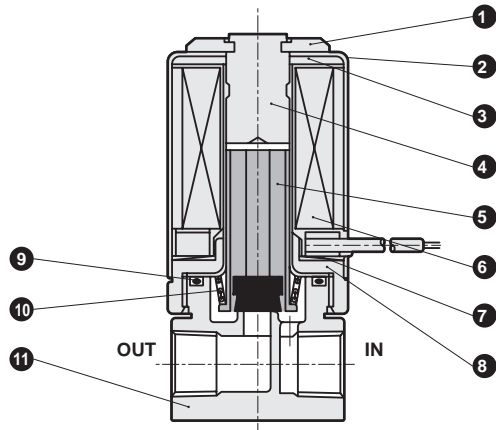
C Rated voltage

Code	Description				
A Orifice size					
1	ø1.6				
2	ø2.3				
3	ø3.2				
B Body/sealant/coil combination					
		Body	Seal	Coil	Treatment
Blank	Standard	Copper alloy	Nitrile rubber	Taped	-
B	Option	Copper alloy	Fluoro rubber	Mold Coil	Vacuum inspection (Note)
V			Nitrile rubber		-
D		Stainless steel	Fluoro rubber		Vacuum inspection (Note)
E			Nitrile rubber	-	
W		Copper alloy	Nitrile rubber	Taped	Oil-prohibited
H			Fluoro rubber	Mold Coil	
J	Nitrile rubber				
L	Fluoro rubber				
M	Stainless steel	Fluoro rubber	Coil		
C Rated voltage					
DC12V	Standard	12 VDC			
DC24V		24 VDC			
AC100V	Option	100 VAC 50/60Hz			
AC200V		200 VAC 50/60Hz			

Note: Option code: For V and W, vacuum inspection is performed with "leakage amount: 1.33x10⁻⁶ Pa·m³s or less".

Internal structure and parts list

● USB3-6



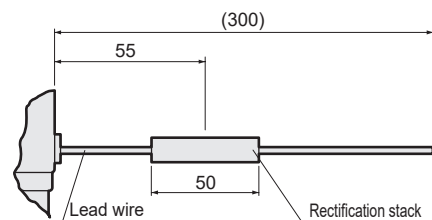
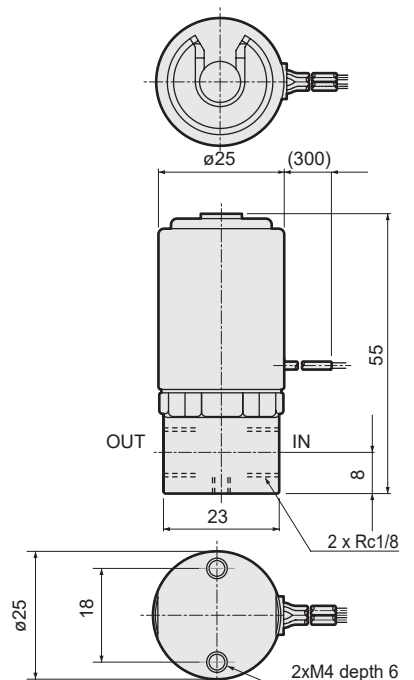
Part No.	Part name	Material	
1	Clip	PBT	Polybutylene terephthalate
2	Bonnet	SPC	Steel
3	Bonnet piece	SPC	Steel
4	Core assembly	SUS316, SUS405 or equivalent	Stainless steel
5	Plunger assembly	SUS405 or equivalent, NBR (FKM)	Stainless steel, nitrile rubber (fluoro rubber)
6	Coil assembly	-	-
7	Wave washer	S65CM	Steel
8	Core B	SUM22	Free-cutting steel
9	O-ring	NBR(FKM)	Nitrile rubber(Fluoro rubber)
10	Plunger spring	SUS304	Stainless steel
11	Body	C3604(SUS303)	Copper alloy(Stainless steel)

() shows options.

Dimensions



● USB3-6



At alternating current (AC), a rectification stack is assembled into the lead wire for the alternating current (AC) type.



Compact Direct acting 3-port solenoid valve

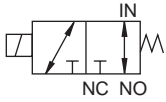
USG2 Series

- Universal
- Working fluids: Air, water, dry air, low vacuum
- Port size: M5



JIS symbol

- Universal



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 MPa	0 to 0.7 (0 to 0.3 when NO pressurized)	0 to 0.3 (0 to 0.1 when NO pressurized)
Proof pressure 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 (air)	
Mounting orientation	Unrestricted	
Weight kg	0.07	
Port size	M5	M5
Orifice size mm	1	1.5
Cv	0.03	0.06
C[dm ³ /(s·bar)]	0.13	0.28
b	0.57	0.46

Electrical specifications

Rated voltage	12 VDC, 24 VDC (Option: 100 VAC 50/60 Hz, 200 VAC 50/60 Hz)	
Voltage fluctuation range	±10%	
Power consumption W	DC	3
	AC	4
Thermal class	Class 130 (B)	

*1: Contact CKD if the solenoid valve is not operated for long periods with water.

*2: Contact CKD when using in a continuously energized state.

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

*4: Make sure to read the safety precautions on pages 3 to 8 before use.

How to order

USG2 - M5 - 1 - 0 - DC24V

Model No.

Port size
M5

A Orifice size

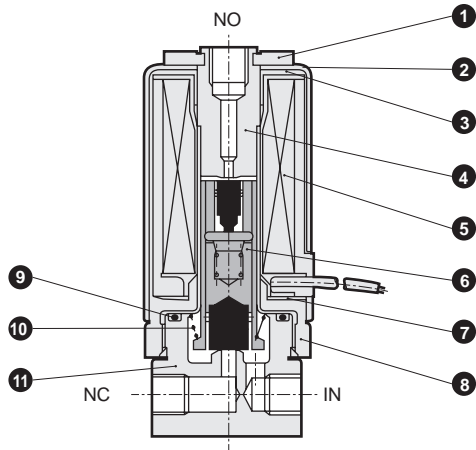
B Body/sealant combination

C Rated voltage

Code	Description	
A Orifice size		
1	ø1.0	
2	ø1.5	
B Body/sealant combination		
	Body	Seal
Blank	Stainless steel	Nitrile rubber
0	Copper alloy	Nitrile rubber
C Rated voltage		
DC12V	Standard	12 VDC
DC24V		24 VDC
AC100V	Option	100 VAC 50/60Hz
AC200V		200 VAC 50/60Hz

Internal structure and parts list

● USG2-M5

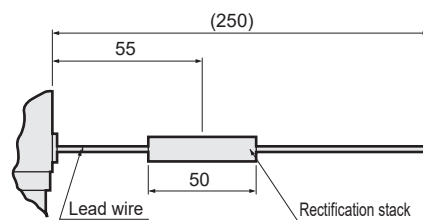
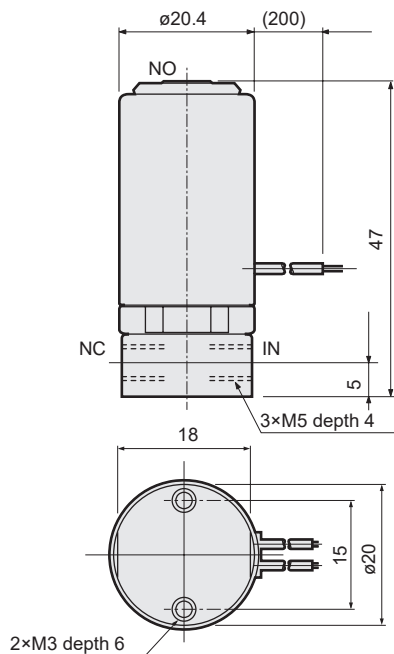


Part No.	Part name	Material	
1	Clip	PBT	Polybutylene terephthalate
2	Bonnet	SPC	Steel
3	Sub core	SPC	Steel
4	Core assembly	SUS316, SUS405 or equivalent	Stainless steel
5	Coil assembly	-	-
6	Plunger assembly	SUS405 or equivalent, NBR	Stainless steel, nitrile rubber
7	Wave washer	S65CM	Steel
8	Core B	SUM22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

() shows options.

Dimensions

● USG2-M5



At alternating current (AC), a rectification stack is assembled into the lead wire for the alternating current (AC) type.



Compact direct acting 3-port solenoid valve

USG3 Series

- Universal
- Working fluids: Air, water, dry air, low vacuum
- Port size: Rc1/8



JIS symbol

- Universal



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 MPa	0 to 0.7 (0 to 0.3 when NO pressurized)	0 to 0.3 (0 to 0.1 when NO pressurized)
Proof pressure 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 (air)	
Mounting orientation	Unrestricted	
Weight kg	0.14	
Port size	Rc1/8	Rc1/8
Orifice size mm	1.2	1.8
Cv	0.05	0.1
C[dm ³ /(s·bar)]	0.19	0.42
b	0.57	0.5

Electrical specifications

Rated voltage	12 VDC, 24 VDC (Option: 100 VAC 50/60 Hz, 200 VAC 50/60 Hz)	
Voltage fluctuation range	±10%	
Power consumption W	DC	4
	AC	4
Thermal class	Class 120 (E)(Molded coil: Class 130 (B))	

*1: Contact CKD if the solenoid valve is not operated for long periods with water.

*2: When using a product with continuous energization, select FKM for the sealant material.

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

*4: Make sure to read the safety precautions on pages 3 to 8 before use.

How to order

USG3 - 6 - 1 - B - DC24V

Model No.

Port size
Rc1/8

A Orifice size

B Body/sealant/coil
Combination

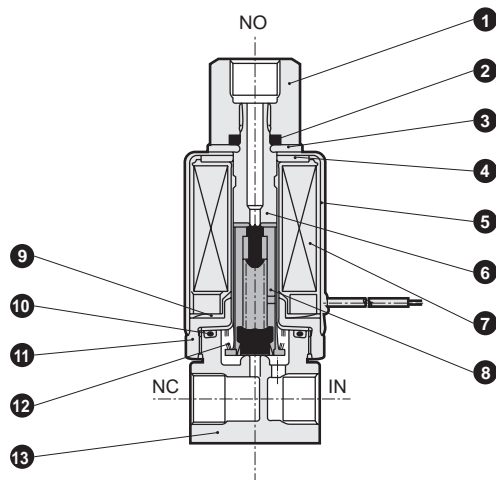
C Rated voltage

Code	Description					
A Orifice size						
1	ø1.2					
2	ø1.8					
B Body/sealant/coil combination						
	Body	Seal	Coil	Treatment		
Blank	Standard	Nitrile rubber	Taped	-		
B	Option	Copper alloy	Molded coil	Vacuum inspection(Note)		
V				Fluoro rubber	-	
D		Stainless steel		Nitrile rubber	-	
E				Fluoro rubber	Vacuum inspection(Note)	
W	Option	Copper alloy	Molded coil	Oil-prohibited		
H				Nitrile rubber	-	
J		Fluoro rubber		-		
L		Stainless steel		Nitrile rubber	-	
M	Fluoro rubber		-			
C Rated voltage						
DC12V	Standard	12 VDC				
DC24V		24 VDC				
AC100V	Option	100 VAC 50/60Hz				
AC200V		200 VAC 50/60Hz				

Note: For option codes V and W, vacuum inspection is performed with "leakage amount: 1.33×10⁻⁶Pa·m³/s or less".

Internal structure and parts list

● USG3-6



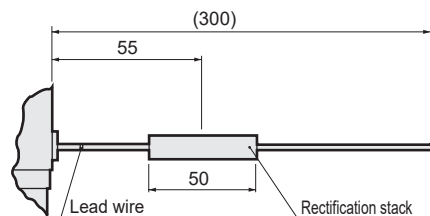
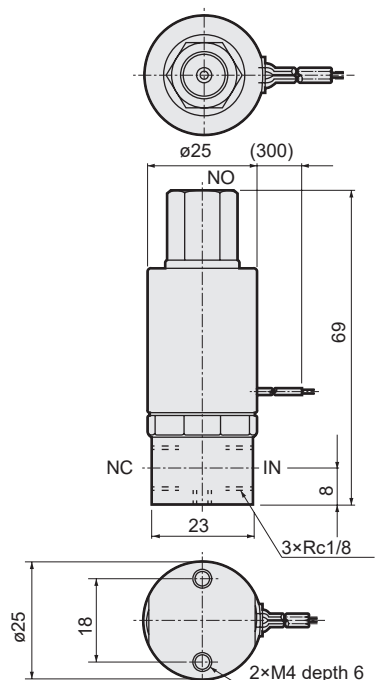
Part No.	Part name	Material	
1	Socket	C3604 (SUS303)	Copper alloy (stainless steel)
2	O-ring	NBR (FKM)	Nitrile rubber (fluoro rubber)
3	Washer	SPC	Steel
4	Bonnet piece	SPC	Steel
5	Bonnet	SPC	Steel
6	Core assembly	SUS316, SUS405 or equivalent	Stainless steel
7	Coil assembly	-	-
8	Plunger assembly	SUS405 or equivalent, NBR (FKM)	Stainless steel, nitrile rubber (fluoro rubber)
9	Wave 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)	Copper alloy (stainless steel)

() shows options.

Dimensions



● USG3-6



At alternating current (AC), a rectification stack is assembled into the lead wire for the alternating current (AC) type.