Flow rate

Av factor (For the 0.5 MPa specification)

SGC2 : 155

SGC3 : 284

SGC4 : 440

Service life: 5 million cycles or more

(based on SMC's test conditions)

With auto switches for verifying whether the valve is open/closed

Reduction of environmentally harmful chemical substances, Compliant with RoHS Directive

Power consumption: 0.35 W

(For 24 VDC)

CE

For 0.5 MPa/1.0 MPa/1.6 MPa

Coolant Valve

Series SGC

SMC

CAT.EUS70-32A-UK

Dry bearings

Prevents the shaft, which is a sliding part, from vibrating and this helps to extend the service life of the rubber components and improves the seal performance of the main valve.

Squeeze seal

Completely shuts off the leakage of liquid coolant and increases the scraper effect. These two safety features result in a dual advantage.

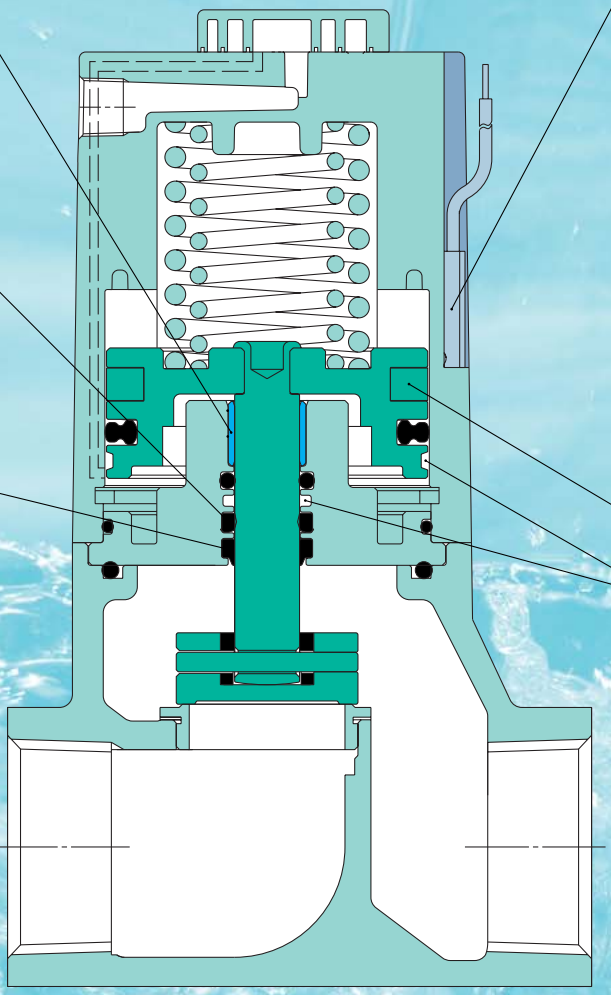
Scraper

Prevents foreign materials from entering, while the main valve is activated.

• **Choice of seal materials**

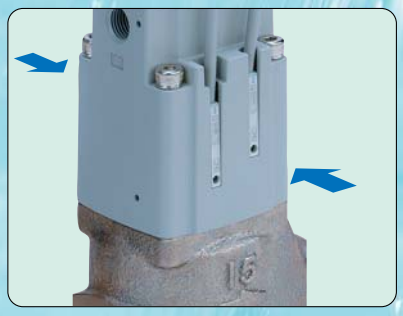
NBR, FKM

(For the air operated valve type)



Auto switch

Able to confirm whether the valve is open/closed.
Mountable on the 2 sides.



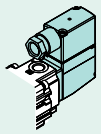
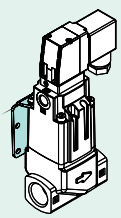
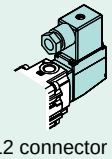
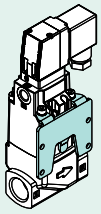
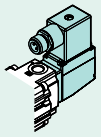
∗ When a bracket is fitted, auto switches are mounted on the opposite surface.

• **Magnet**

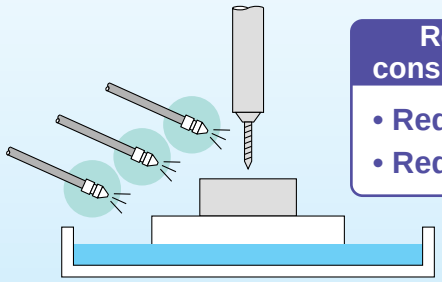
Grease channel

Prevents the loss of grease and helps to extend the service life.

Variation (Common specifications for solenoid valve and air operated valve)

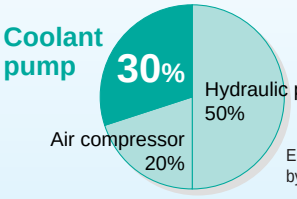
Series	Port size	Thread type	Type of actuation	Operating pressure range MPa	Av factor x $10^{-6}m^2$	Electrical entry (For the solenoid valve type)	Bracket
SGC2	3 / 8 (10A)	Rc G (ISO1179) NPT NPTF	N.C. / N.O.	0.5	110	• Conduit terminal 	• Bracket on the left side 
				1	85		
				1.6	30		
	1 / 2 (15A)			0.5	155		
				1	116	• DIN terminal 	
				1.6	64		
SGC3	3 / 4 (20A)			0.5	284		• Bracket on the right side 
				1	170		
				1.6	109	• M12 connector 	
SGC4	1 (25A)			0.5	440		
				1	265		
				1.6	174		

Coolant Flow Energy Saving



Reduction of electric power consumption by the coolant pump

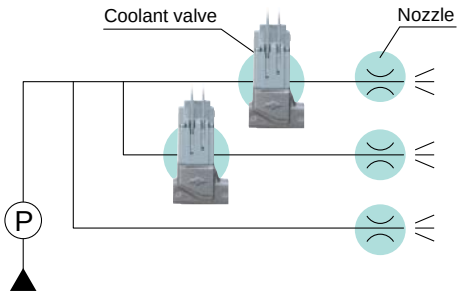
- Reducing the number of pumps
- Reducing the size of pumps



Electric power consumption by purpose (SMC research)

The research has revealed that coolant pumps account for 30% of the electric power consumption in a production facility.
By reducing the energy consumed by coolant pumps it will substantially contribute to the reduction of electricity in the whole factory.

Improvement Example case 1 Improvement of Pressure Loss

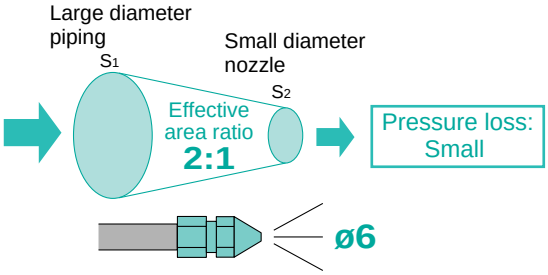


Before improvement

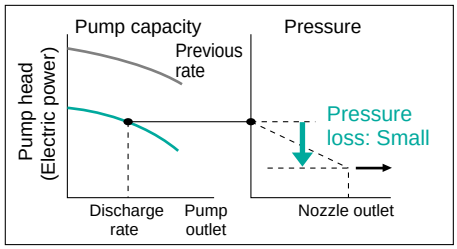
After improvement

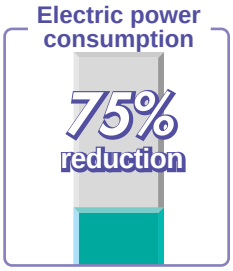
Pressure loss is improved by making the effective area ratio 2 : 1 between the upstream side and the nozzle.

- By making the effective area on the upstream side larger. (Changing to equipment with a larger effective area)
- Attaching a nozzle.

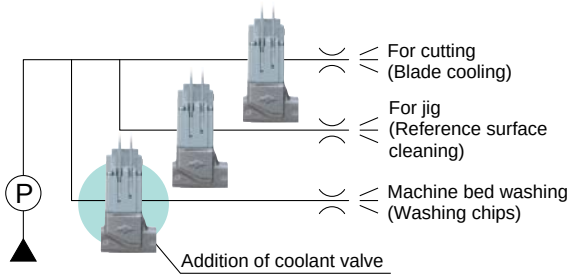


Effect of Energy Saving Improvement





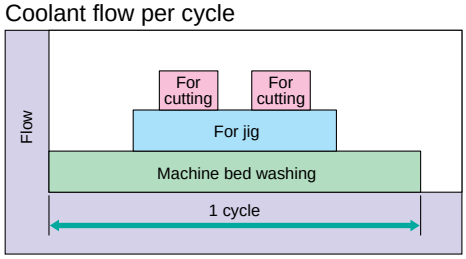
Improvement Example case 2 Intermittent Flow



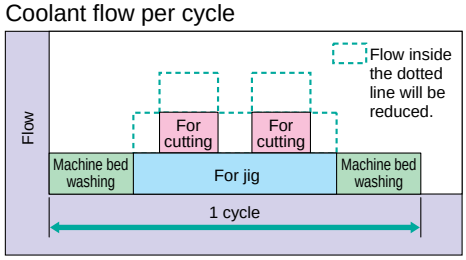
Stop machine bed-washing all the time.
Machine bed washing can be stopped when coolant is flowing for cutting or jig by means of an additional valve.

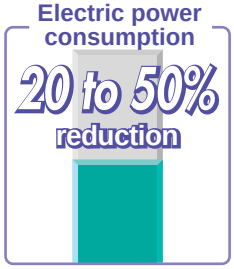
Effect of Energy Saving Improvement

Coolant flow per cycle



Coolant flow per cycle





Coolant Flow System / Related Equipment

Pressure Switches P.15

Coolant line pressure control

• 2-colour display digital pressure switch
ISE75/75H

• High precision digital pressure switch for general fluids
ISE50

• Genaral purpose pressure switch
ISG

Industrial Filters P.13

Coolant liquid filtration

• Industrial filter
FG

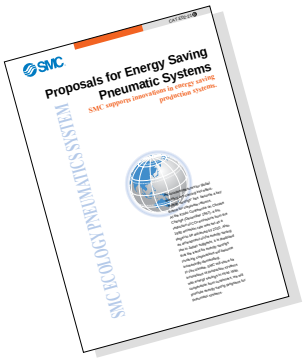
• Bag filter
FGF

• Low maintenance filter
FN

Nozzles for Flow P.12

• Nozzle for blow **KN**

Energy Saving Related Material



Proposals for Energy Saving Pneumatic Systems
(CAT. E02-21B)

Introducing our energy saving themes including case studies as well as our energy saving related equipment.

Splash Proof Air Cylinders

Splash Proof Air Cylinders
(CAT. E244C)

Coolant Valve
Series SGC

How to Order

External pilot solenoid

SGC 2 2 1 A – 05 ☐ 10 Y – 1 T Z ☐ ☐ – A ☐ ☐

Air operated

SGCA 2 2 1 A – 05 ☐ 10 ☐ ☐ – A ☐ ☐

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

① Series

2	SGC200
3	SGC300
4	SGC400

② Valve type

1	Normally closed
2	Normally open

③ Seal material

A	NBR
B	FKM

④ Pressure range

05	Pressure range 0 to 0.5 MPa
10	Pressure range 0 to 1 MPa
16	Pressure range 0 to 1.6 MPa

⑤ Thread type

-	Rc
G	G (ISO1179)
N	NPT
T	NPTF

⑥ Port size

10	3/8	SGC200
15	1/2	
20	3/4	SGC300
25	1	SGC400

⑦ Pilot valve

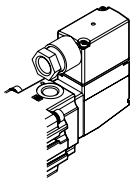
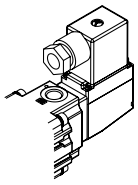
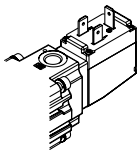
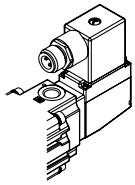
Y	V116

⑧ Rated voltage

1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	110 VAC [115 VAC] 50/60 Hz
4	220 VAC [230 VAC] 50/60 Hz
5	24 VDC
6	12 VDC

Note) Refer to back page 5 for use when energising for long periods of time.

⑨ Electrical entry

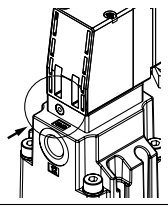
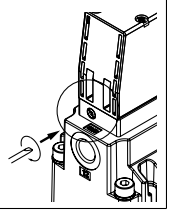
T: Conduit terminal	**D:** DIN terminal (Pitch between the terminals: 11 mm)	**DO:** DIN terminal without connector	**W:** M12 connector Note)
			

Note) Cable not attached. Please order them separately, referring to the options shown below.

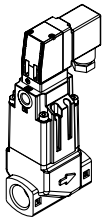
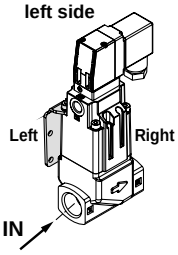
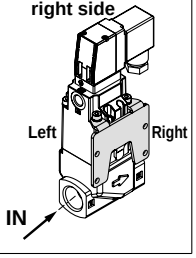
⑩ Light / surge voltage suppressor

-	None
S	With surge voltage suppressor
Z	With light / surge voltage suppressor

⑪ Manual override

-: Non-locking push type	**D:** Push-turn locking lever type
	

⑫ Bracket mounting position

-: Without bracket	**B1:** Bracket on the left side	**B2:** Bracket on the right side
		

Note) Bracket cannot be attached later.

⑬ Auto switches (for verifying whether the valve is open/closed)

-	Without auto switch (without magnet)
M	Without auto switch (with built-in magnet)
A	With auto switch Select a model, referring to the table "Applicable Auto Switches" below.
B	
C	
D	

∗ The auto switches are included when shipped (unmounted).

⑭ Lead wire length

-	0.5 m
L	3 m
Z	5 m

∗ 0.5 m is not available with D-F9BA.

⑮ Number of auto switches

-	2 pcs.
S	1 pc.

Option

(For detail, refer to page 6.)

Cable for M12 connector

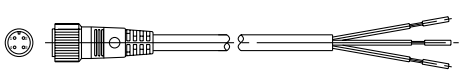
V100 – 200 – 1 – 4

Specification

1	For DC
2	For AC

Cable length (L)

4	1000 [mm]
8	3000 [mm]
9	5000 [mm]



Applicable auto switches / Refer to page 7 to 10 for detailed auto switch specifications.

Solid state switch

Symbol	Part no.	Electrical entry	Indicator light	Special function	Wiring (Output)	Load voltage DC		Applicable load	
A	**D-M9N**	Grommet	Yes	—	3-wire (NPN)	24 V	12 V	IC circuit	Relay, PLC
B	**D-M9P**				3-wire (PNP)				
C	**D-M9B**				2-wire			—	
D	**D-F9BA**			Water resistance (2-colour display)					

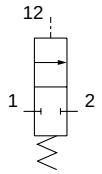
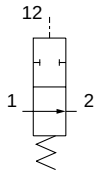
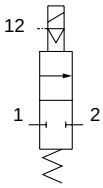
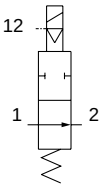
∗ Only in-line electrical entry is available.

Characteristics

Pressure specification	Model	Port size	Orifice size ø [mm]	Flow characteristics Av x 10^{-6} [m^2]	Cv factor converted	Weight [kg]	
						Air operated type	External pilot solenoid type
0.5 MPa	**SGC(A)22□□-05□10**	3/8	ø15	110	4.6	0.69 (0.74)	0.73 (0.78)
	SGC(A)22□□-05□15	1/2	ø15	155	6.5	0.69 (0.74)	0.73 (0.78)
	SGC(A)32□□-05□20	3/4	ø20	284	11.8	1.04 (1.11)	1.08 (1.15)
	SGC(A)42□□-05□25	1	ø25	440	18.3	1.70 (1.77)	1.74 (1.81)
1.0 MPa	**SGC(A)22□□-10□10**	3/8	ø12	85	3.5	0.69 (0.74)	0.73 (0.78)
	SGC(A)22□□-10□15	1/2	ø12	116	4.8	0.69 (0.74)	0.73 (0.78)
	SGC(A)32□□-10□20	3/4	ø14	170	7.1	1.04 (1.11)	1.08 (1.15)
	SGC(A)42□□-10□25	1	ø17	265	11.0	1.70 (1.77)	1.74 (1.81)
1.6 MPa	**SGC(A)22□□-16□10**	3/8	ø 9	30	1.25	0.69 (0.74)	0.73 (0.78)
	SGC(A)22□□-16□15	1/2	ø 9	64	2.7	0.69 (0.74)	0.73 (0.78)
	SGC(A)32□□-16□20	3/4	ø12	109	4.5	1.04 (1.11)	1.08 (1.15)
	SGC(A)42□□-16□25	1	ø15	174	7.3	1.70 (1.77)	1.74 (1.81)

∗ ( ): Weight including the bracket
∗ Add the weight of an auto switch and a bracket additionally.

JIS Symbol

Type of actuation	Normally closed	Normally open
	SGCA□21□	**SGCA□22□**
Air operated type		
	SGC□21□	**SGC□22□**
External pilot solenoid type		

Valve Specification

Operating fluid			Coolant
Fluid temperature	**SGC□□□□A, B**		–5 to 60°C∗
Ambient temperature			–5 to 50°C∗
Proof pressure			2.4 MPa
Leakage from the valve seat			20 cm^3/min or less (water pressure)
Operating pressure range	**SGC□□□□□-05**		0 to 0.5 MPa
	SGC□□□□□-10		0 to 1 MPa
	SGC□□□□□-16		0 to 1.6 MPa
External air operated	**Pres-sure**	**SGC□□□1**	0.25 to 0.7 MPa
		SGC□□□2	0.5 MPa specification: 0.25 MPa to 0.7 MPa 1.0, 1.6 MPa specification: 0.3 MPa to 0.7 MPa
	Lubrication		Not required (Use turbine oil Class 1 (ISO VG32), if lubricated.
	Temperature		–5 to 50°C∗

∗ No freezing

Pilot Solenoid Valve Specification

Pilot solenoid valve specification			**V116-□□□-1**
Electrical entry			Conduit terminal, DIN terminal, M12 connector
Coil rated voltage V		**DC**	12 V, 24 V
		AC (50/60 Hz)	100 V, 110 V, 200 V, 220 V
Allowable voltage fluctuation			±10% of rated voltage∗
Power consumption W	**DC**		0.35 W (With indicator light: 0.58 W)
Apparent voltage VA	**AC**	**100 V**	0.78 (With indicator light: 0.87)
		110 V [115 V]	0.86 (With indicator light: 0.97) 0.94 (With indicator light: 1.07)
		200 V	1.15 (With indicator light: 1.30)
		220 V [230 V]	1.27 (With indicator light: 1.46) 1.39 (With indicator light: 1.60)
Surge voltage suppressor			ZNR (Varistor)
Indicator light			LED (Neon bulb when AC with DIN terminal and M12 connector)

∗ In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.
∗ For 115 VAC and 230 VAC, the allowable voltage is –15% to +5% of rated voltage.

How to Order Pilot Valve

V116 – 5 T Z – 1
① ② ③

① Rated voltage

1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	110 VAC [115 VAC] 50/60 Hz
4	220 VAC [230 VAC] 50/60 Hz
5	24 VDC
6	12 VDC

② Electrical entry

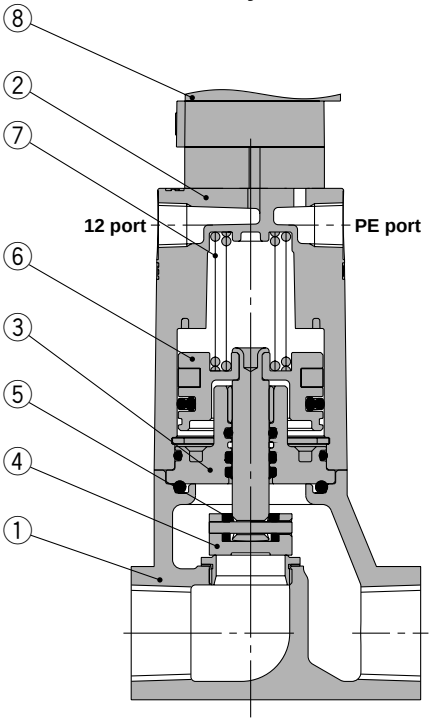
T	Conduit terminal
D	DIN terminal (with connector)
DO	DIN terminal (without connector)
W	M12 connector

③ Light / surge voltage suppressor

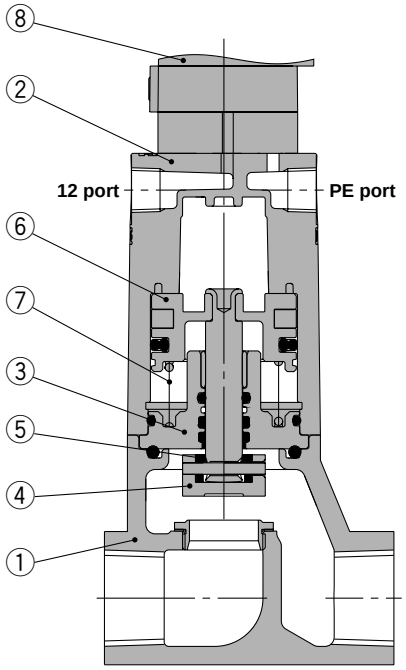
-	None
S	With surge voltage suppressor
Z	With light / surge voltage suppressor

Construction

Normally closed



Normally open

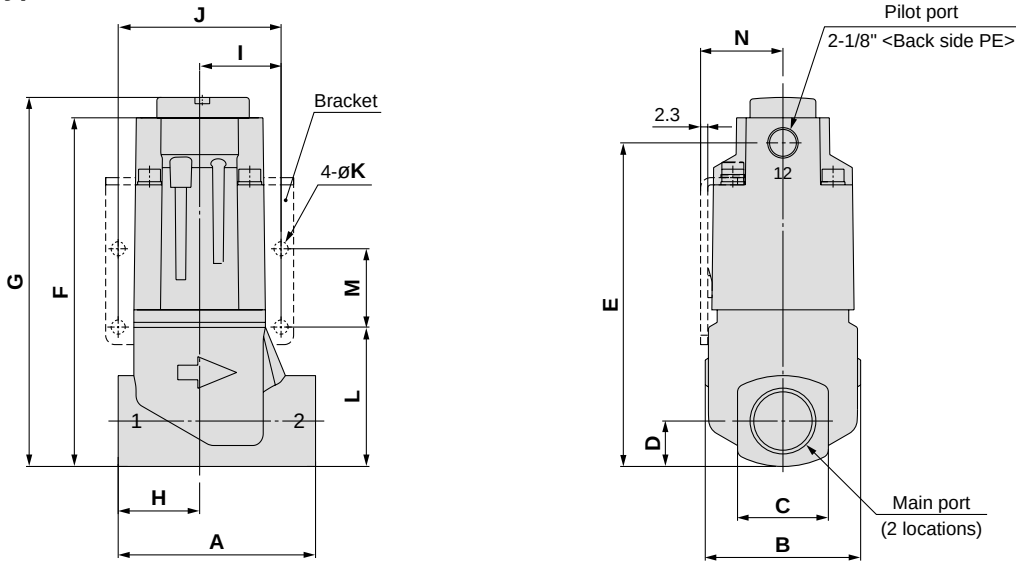


Component Parts

No.	Description	Material	Note
1	**Body assembly**	Cast iron	Plated
2	**Cover assembly**	Aluminum die-casted	White
3	**Plate assembly**	Iron	Valve component, NBR, FKM
4	**Valve body**	Stainless steel	
5	**Valve cover**	NBR, FKM	
6	**Piston assembly**	Stainless steel, Aluminum	
7	**Return spring**	Stainless steel, Piano wire	
8	**Pilot solenoid valve**	—	

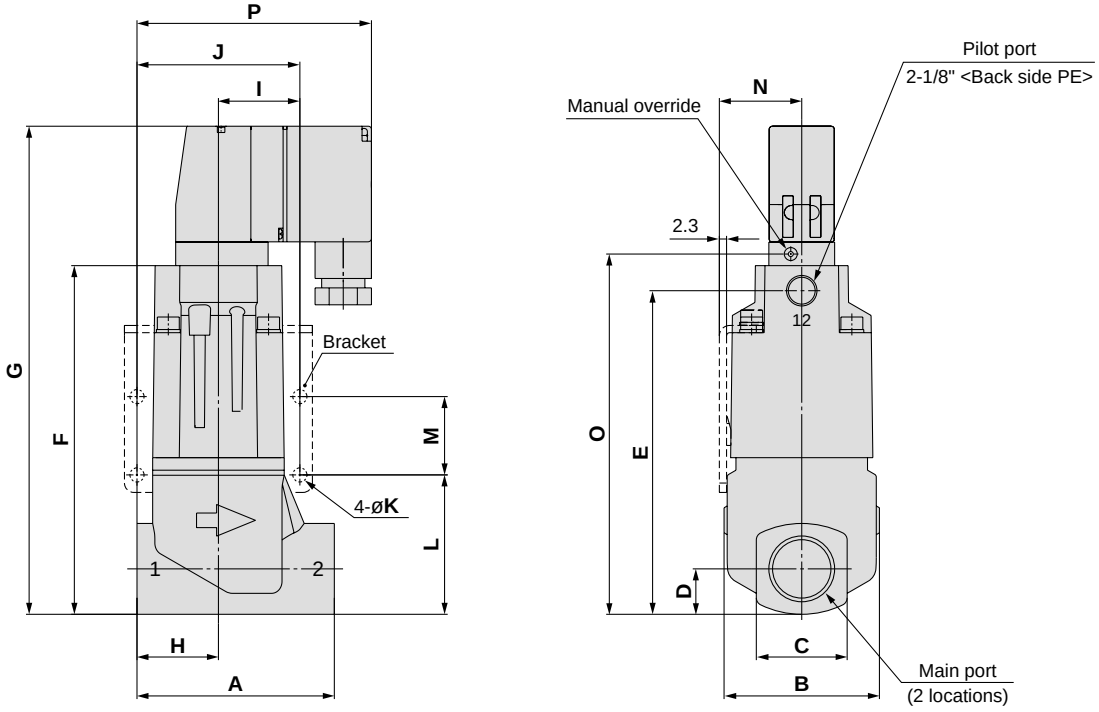
Dimensions

Air operated type



Model	Main port	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SGCA2□□□-□□10	3/8	63	49.6	29	14.5	103.3	111.3	117.8	26	26	52	4.5	44.5	25	26.3
SGCA2□□□-□□15	1/2	63	49.6	29	14.5	103.3	111.3	117.8	26	26	52	4.5	44.5	25	26.3
SGCA3□□□-□□20	3/4	80	59	35	17.5	112	120.5	127	35	31	62	5.5	48	30	31
SGCA4□□□-□□25	1	90	74	44	22	135.9	144.5	151	40	36	72	6.5	60	35	39.5

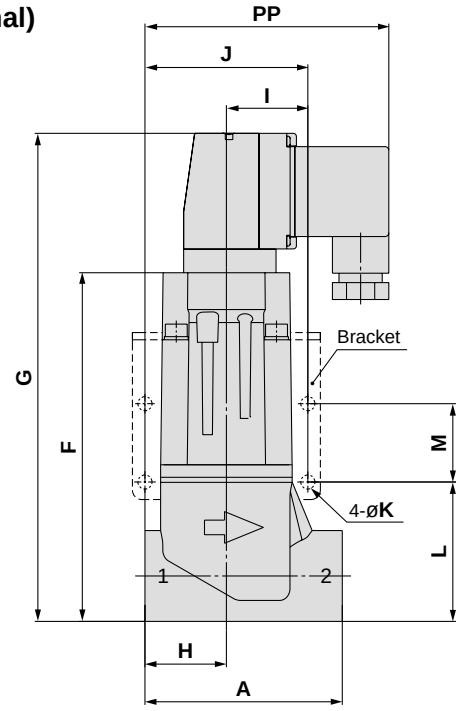
External pilot solenoid type (Conduit terminal)

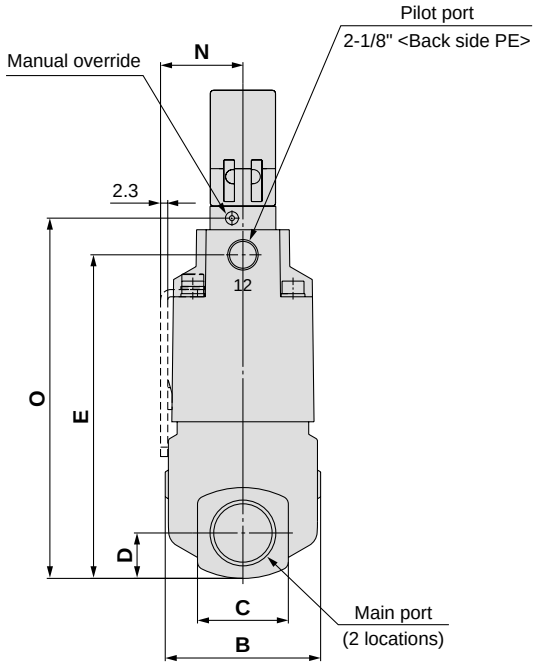


Model	Main port	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
SGC2□□□-□□10	3/8	63	49.6	29	14.5	103.3	111.3	155.8	26	26	52	4.5	44.5	25	26.3	115	74.9
SGC2□□□-□□15	1/2	63	49.6	29	14.5	103.3	111.3	155.8	26	26	52	4.5	44.5	25	26.3	115	74.9
SGC3□□□-□□20	3/4	80	59	35	17.5	112	120.5	165	35	31	62	5.5	48	30	31	124.2	86.8
SGC4□□□-□□25	1	90	74	44	22	135.9	144.5	189	40	36	72	6.5	60	35	39.5	148.2	97.8

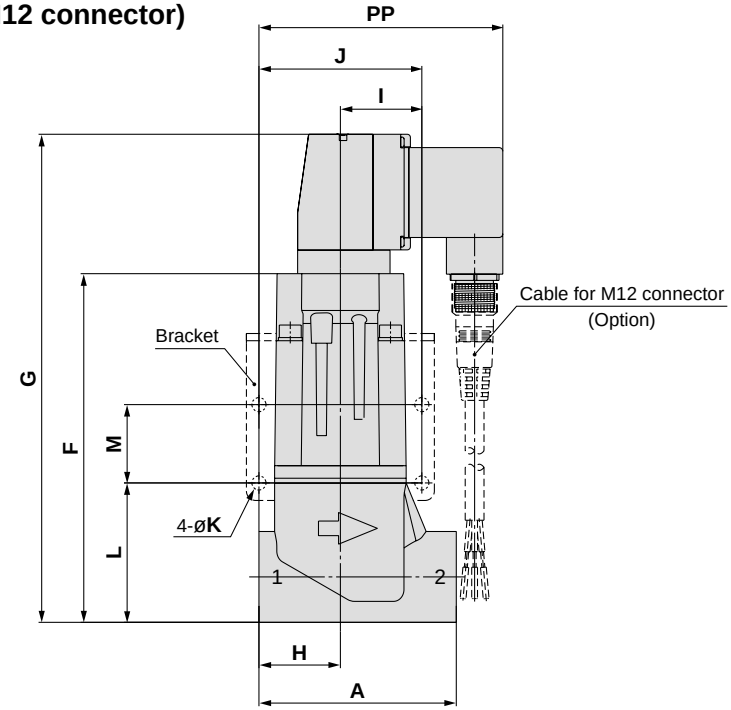
Dimensions

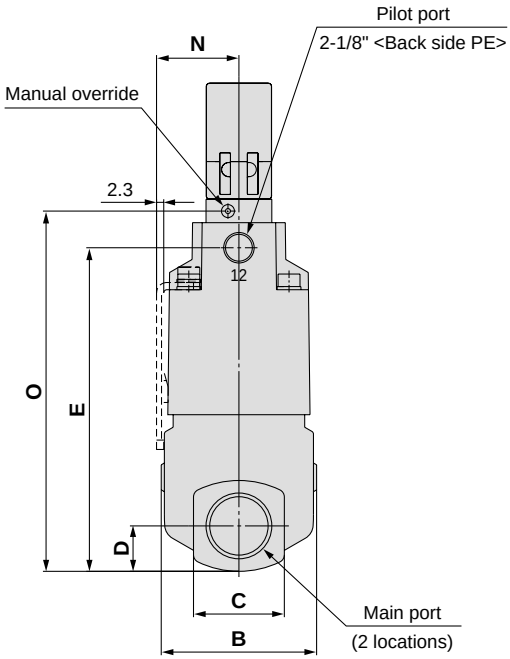
External pilot solenoid type (DIN terminal)





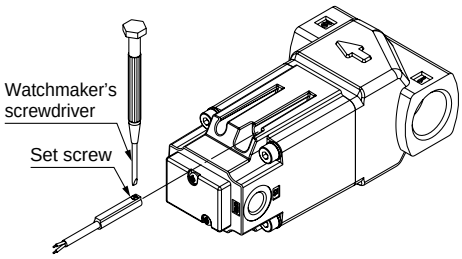
External pilot solenoid type (M12 connector)





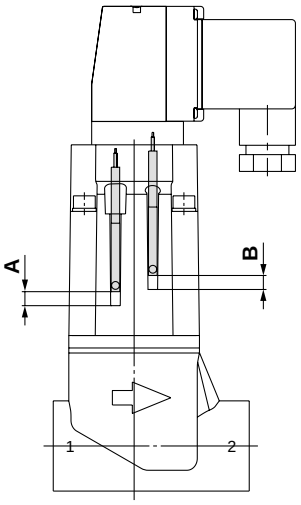
Model	Main port	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	PP
SGC2□□□-□□10	3/8	63	49.6	29	14.5	103.3	111.3	155.8	26	26	52	4.5	44.5	25	26.3	115	77.9
SGC2□□□-□□15	1/2	63	49.6	29	14.5	103.3	111.3	155.8	26	26	52	4.5	44.5	25	26.3	115	77.9
SGC3□□□-□□20	3/4	80	59	35	17.5	112	120.5	165	35	31	62	5.5	48	30	31	124.2	83.8
SGC4□□□-□□25	1	90	74	44	22	135.9	144.5	189	40	36	72	6.5	60	35	39.5	148.2	94.8

How to Fix an Auto Switch



When tightening the auto switch mounting screw, use a watchmaker's screwdriver with a handle of approximately 5 to 6 mm in diameter. Furthermore, use a tightening torque of approximately 0.10 to 0.20 N•m.

Auto Switch Proper Mounting Position



(mm)

Model		D-M9□	D-F9BAL
SGC(A)2□□□-05□10, 15	A	5	4
	B	5	4
SGC(A)2□□□-10□10, 15	A	6	5
	B	5	4
SGC(A)2□□□-16□10, 15	A	7	6
	B	5	4
SGC(A)3□□□-05□20	A	4	3
	B	4	3
SGC(A)3□□□-10□20	A	6	5
	B	4	3
SGC(A)3□□□-16□20	A	7	6
	B	4	3
SGC(A)4□□□-05□25	A	3	2
	B	3	2
SGC(A)4□□□-10□25	A	6	5
	B	3	2
SGC(A)4□□□-16□25	A	7	6
	B	3	2

∗ The above dimensions for the proper mounting position of an auto switch are for reference only. Please be sure that the auto switch works appropriately.

Option

Cable for M12 connector (Female connector with cable)

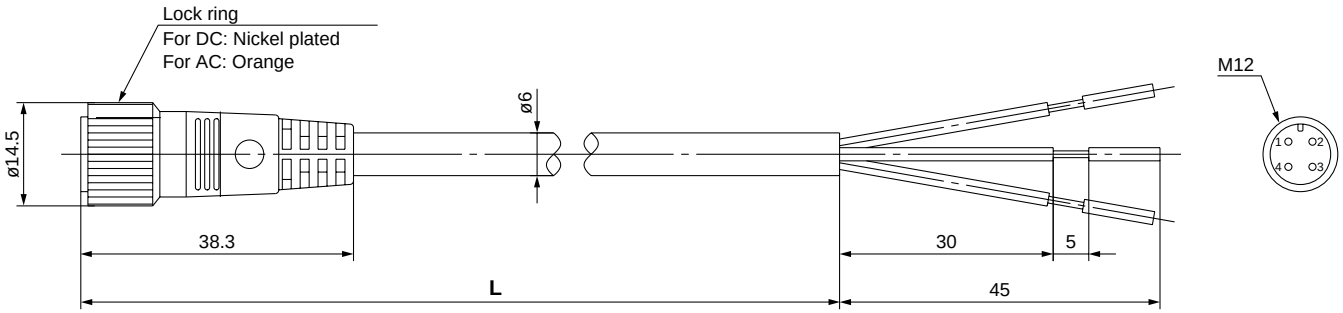
V100 − 200 − 1 − 4

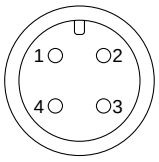
Specification

1	For DC
2	For AC

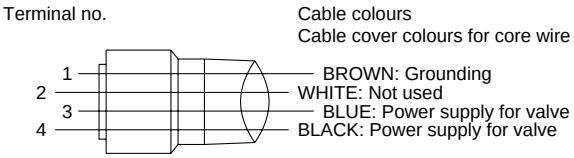
Cable length (L)

4	1000 [mm]
8	3000 [mm]
9	5000 [mm]





Socket pin connector pin assignment



Connections

Series SGC
Auto Switch Specifications

Auto Switch Common Specifications

Type	**Solid state switch**
Leakage current	3-wire: 100 μA or less 2-wire: 0.8 mA or less
Operating time	1 ms or less
Impact resistance	1000 m/s^2
Insulation resistance	50 MΩ or more at 500 VDC Mega (between lead wire and case)
Withstand voltage	1000 VAC for 1 minute (between lead wire and case)
Ambient temperature	–10 to 60°C
Enclosure	IEC529 standard IP67, JIS C 0920 waterproof construction

Lead Wire Length

Lead wire length indication

(Example) **D-M9P L**

Lead wire length

-	0.5 m
L	3 m
Z	5 m

Note 1) Applicable auto switch with 5 m lead wire "Z"
Solid state switch: Manufactured upon receipt of order as standard.
Note 2) To designate solid state switches with flexible specifications, add "-61" after the lead wire length.

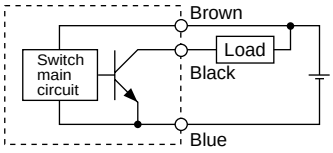
(Example) D-M9PVL- 61

Flexible specification

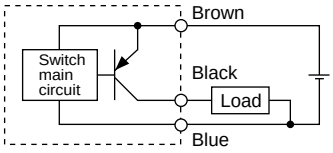
Series SGC
Auto Switch Connections and Examples

Basic Wiring

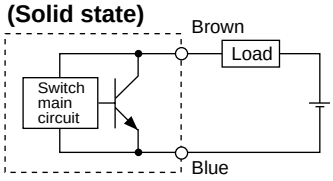
Solid state 3-wire, NPN



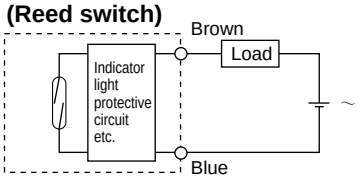
Solid state 3-wire, PNP



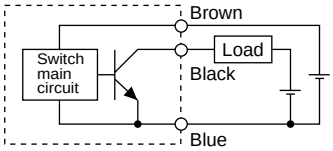
2-wire (Solid state)

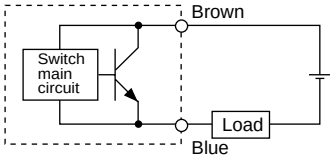


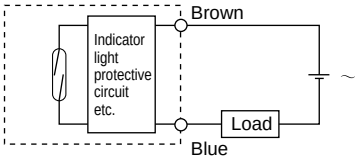
2-wire (Reed switch)



(Power supplies for switch and load are separate.)

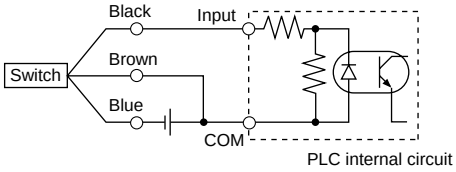




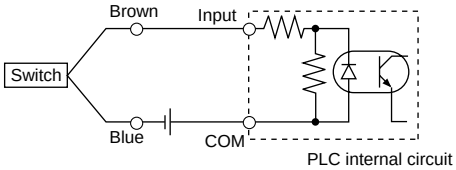


Example of Connection to PLC (Programmable Logic Controller)

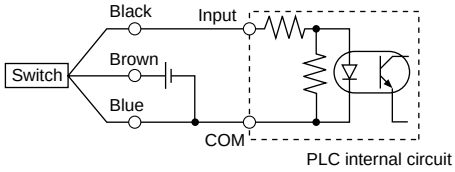
• Sink input specifications
3-wire, NPN



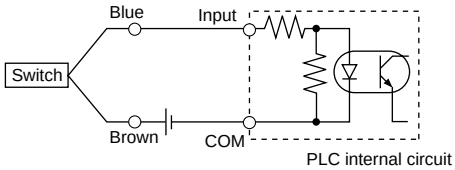
2-wire



• Source input specifications
3-wire, PNP



2-wire

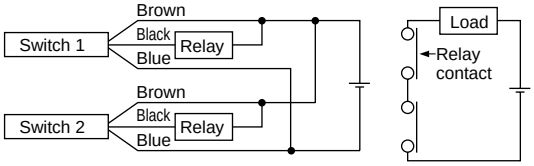


Connect according to the applicable PLC input specifications, since the connection method will vary depending on the PLC input specifications.

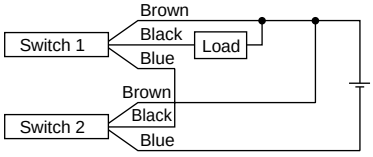
Example of AND (Serial) and OR (Parallel) Connection

● **3-wire**

AND connection for NPN output (using relays)

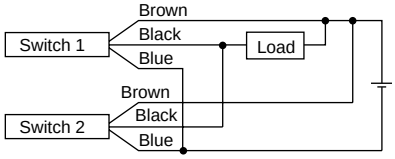


AND connection for NPN output (performed with switches only)

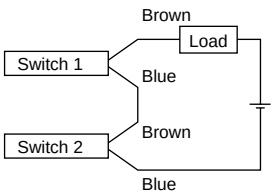


The indicator lights will illuminate when both switches are turned ON.

OR connection for NPN output



2-wire with 2-switch AND connection

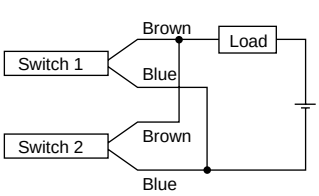


When two switches are connected in series, a load may malfunction because the load voltage will decrease when in the ON state.
The indicator lights will illuminate if both of the switches are in the ON state.

Load voltage at ON = (Power supply voltage − Residual voltage) x 2 pcs.
= 24 V - 4 V x 2 pcs.
= 16 V

Example: Power supply is 24 VDC.
Internal voltage drop in switch is 4 V.

2-wire with 2-switch OR connection



(Solid state)
When two switches are connected in parallel, a malfunction may occur because the load voltage will increase when in the OFF state.

Load voltage at OFF = Leakage current x 2 pcs. x Load impedance
= 1 mA x 2 pcs. x 3 kΩ
= 6 V

Example: Load impedance is 3 kΩ.
Leakage current from switch is 1 mA.

(Reed switch)
Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of switches in the ON state, the indicator lights may sometimes dim or not light because of the dispersion and reduction of the current flowing to the switches.

Solid State Switch: Direct Mounting Style
D-M9N/D-M9P/D-M9B

Grommet

- **2-wire load current is reduced (2.5 to 40 mA)**
- **Lead free**
- **UL certified (style 2844) lead cable is used.**

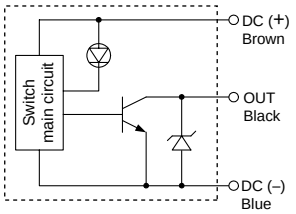
⚠Caution

Operating Precautions

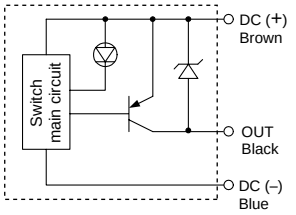
Fix the switch with the existing screw installed on the switch body. The switch may be damaged if a screw other than the one supplied, is used.

Auto Switch Internal Circuit

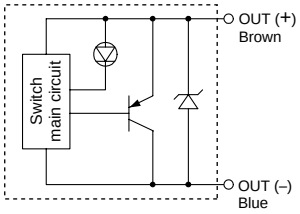
D-M9N



D-M9P



D-M9B



Auto Switch Specifications

For details about certified products conforming to international standards, visit us at www.smcworld.com.

PLC: Programmable Logic Controller

D-M9□ (With indicator light)			
Auto switch part no.	D-M9N	D-M9P	D-M9B
Electrical entry direction	In-line		
Wiring type	3-wire		2-wire
Output type	NPN	PNP	—
Applicable load	IC circuit, Relay, PLC		24 VDC relay, PLC
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)		—
Current consumption	10 mA or less		—
Load voltage	28 VDC or less	—	24 VDC (10 to 28 VDC)
Load current	40 mA or less		2.5 to 40 mA
Internal voltage drop	0.8 V or less		4 V or less
Leakage current	100 μA or less at 24 VDC		0.8 mA or less
Indicator light	Red LED illuminates when turned ON.		

● Lead wires
Oilproof heavy-duty vinyl cable: 2.7 x 3.2 ellipse
D-M9B 0.15 mm² x 2 cores
D-M9N, D-M9P 0.15 mm² x 3 cores

Note 1) Refer to page 7 for solid state switch common specifications.
Note 2) Refer to page 7 for lead wire lengths.

Weight

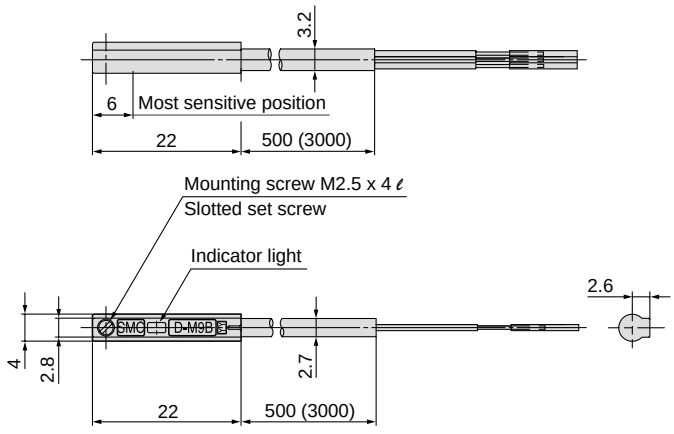
(g)

Auto switch part no.		D-M9N	D-M9P	D-M9B
Lead wire length (m)	0.5	8	8	7
	3	41	41	38
	5	68	68	63

Dimensions

(mm)

D-M9□



Water Resistant 2-colour Indication Solid State Switch: Direct Mounting Style
D-F9BAL

Grommet

Water (coolant) resistant type

⚠Caution

Operating Precautions

Please consult with SMC if using coolant liquid other than water based solutions.

Auto Switch Specifications

For details about certified products conforming to international standards, visit us at www.smcworld.com.

PLC: Programmable Logic Controller

D-F9BAL (With indicator light)	
Auto switch part no.	**D-F9BAL**
Wiring type	2-wire
Output type	–
Applicable load	24 VDC relay, PLC
Power supply voltage	–
Current consumption	–
Load voltage	24 VDC (10 to 28 VDC)
Load current	5 to 30 mA
Internal voltage drop	5 V or less
Leakage current	1 mA or less at 24 VDC
Indicator light	Operating position ····· Red LED illuminates. Optimum operating position ····· Green LED illuminates.

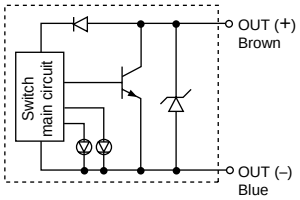
● Lead wires —— Oilproof heavy-duty vinyl cable: ø2.7, 2 cores (Brown, Blue), 0.18 mm², 3 m
Note 1) Refer to page 7 for solid state switch common specifications.
Note 2) Refer to page 7 for lead wire lengths.

Weight

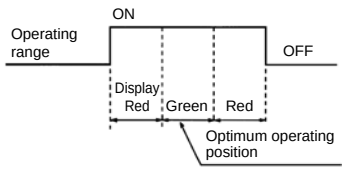
(g)

Auto switch part no.		**D-F9BA**
Lead wire length (m)	0.5	—
	3	37
	5	57

Auto Switch Internal Circuit

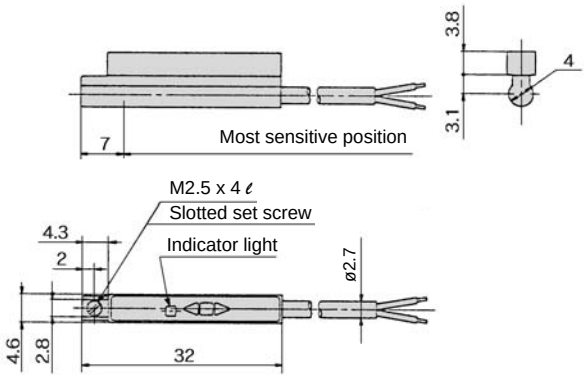


Indicator light/Display method



Dimensions

(mm)



SMC

Made to Order
Pilot Valve: SF4

SGC 2 2 1 A – 05 G 10 □ – 1 T Z □ – B1 – A L S – X1

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

Pilot valve: SF4

⑦ Pilot valve

-	SF4

⑧ Rated voltage

1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	110 VAC 50/60 Hz
4	220 VAC 50/60 Hz
5	24 VDC
6	12 VDC
7	240 VAC 50/60 Hz
9	Others

⑪ Manual override

-	Push type (Safety type)
B	Locking type (Tool required)

Equivalent to the standard models except for ⑦, ⑧, ⑪. Refer to page 1.

Pilot Solenoid Valve Specification

Pilot solenoid valve specification			SF4-□□□-X240
Electrical entry			Conduit terminal, DIN terminal, M12 connector
Coil rated voltage V		DC	24 V, Other (Option)
		AC (50/60 Hz)	100 V, 200, Other (Option)
Allowable voltage fluctuation			–15 to 10% of rated voltage
Power consumption W	DC		1.8 W (With indicator light: 2 W)
Apparent voltage VA	AC	Inrush	5.6 VA (50 Hz) 5.0 VA (60 Hz)
		Holding	3.4 VA (50 Hz) 2.3 VA (60 Hz)
Light / surge voltrage suppressor		DC	ZNR (Varistor), LED (Neon bulb for 100 V or more)
		AC	ZNR (Varistor), Neon bulb (LED for less than 100 V)

How to Order Pilot Valve

SF4 – 5 T Z □ – X240

① ② ③ ④

① Rated voltage

1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	110 VAC 50/60 Hz
4	220 VAC 50/60 Hz
5	24 VDC
6	12 VDC
7	240 VAC 50/60 Hz
9	Others

② Electrical entry

T	Conduit terminal
D	DIN terminal (with connector)
DO	DIN terminal (without connector)
W	M12 connector

④ Manual override

-	Push type (Safety type)
B	Locking type (Tool required)

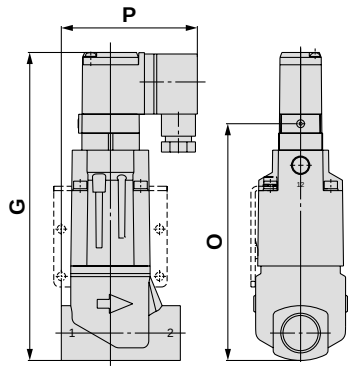
③ Light / surge voltage suppressor

-	None
S	With surge voltage suppressor
Z	With light / surge voltage suppressor

Dimensions

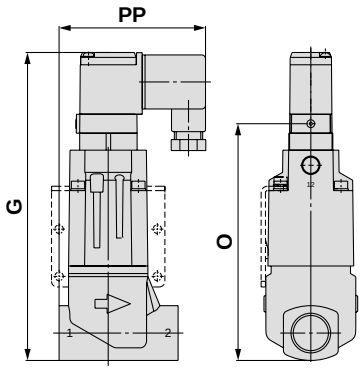
Equivalent to the standard models except the dimensions given in the diagram.

Conduit terminal



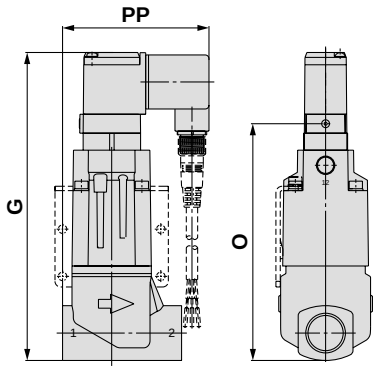
Model	Main port	G	O	P
SGC2□□□-□□10	3/8	164	125.3	73.6
SGC2□□□-□□15	1/2	164	125.3	73.6
SGC3□□□-□□20	3/4	173.2	134.5	79.5
SGC4□□□-□□25	1	197.2	158.5	90.5

DIN terminal



Model	Main port	G	O	PP
SGC2□□□-□□10	3/8	164	125.3	78.6
SGC2□□□-□□15	1/2	164	125.3	78.6
SGC3□□□-□□20	3/4	173.2	134.5	84.5
SGC4□□□-□□25	1	197.2	158.5	95.5

M12 connector



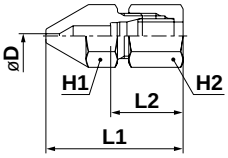
Model	Main port	G	O	PP
SGC2□□□-□□10	3/8	164	125.3	78.6
SGC2□□□-□□15	1/2	164	125.3	78.6
SGC3□□□-□□20	3/4	173.2	134.5	84.5
SGC4□□□-□□25	1	197.2	158.5	95.5

Related Products
Nozzles for Spraying

Nozzle with Self-Align Fitting / KN

(mm)

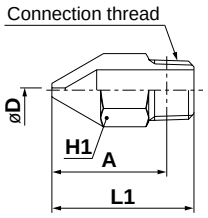
Model	Nozzle diameter **D**	Connection size	With across flats		**L1**	**L2**
			H1	**H2**		
KN-10-400	ø4	ø10	14	17	29.5	17
KN-10-600	ø6	ø10	14	17	27.7	17
KN-12-400	ø4	ø12	17	19	41.3	17
KN-12-600	ø6	ø12	17	19	31.2	17
KN-16-400	ø4	ø16	22	24	40.1	17
KN-16-600	ø6	ø16	22	24	38.4	17
KN-20-400	ø4	ø20	26	27	45.6	17
KN-20-600	ø6	ø20	26	27	43.9	17



Nozzle with Male Thread / KN

(mm)

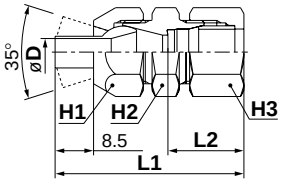
Model	Nozzle diameter **D**	Connection size	With across flats	**L1**	**A**
			H1		
KN-R02-600	ø6	R1/4	14	27	21.1
KN-R03-400	ø4	R3/8	17	32	25.4
KN-R03-600	ø6	R3/8	17	30	23.7
KN-R04-400	ø4	R1/2	22	42	33.6
KN-R04-600	ø6	R1/2	22	40	31.8
KN-R06-600	ø6	R3/4	27	50	40.1
KN-R06-800	ø8	R3/4	27	48	38
KN-R10-800	ø8	R1	36	63	52.3



Pivoting Nozzle with Self-Align Fitting / KNK

(mm)

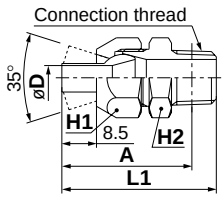
Model	Nozzle diameter **D**	Connection size	With across flats			**L1**	**L2**
			H1	**H2**	**H3**		
KNK-10-600	ø6	ø10	17	17	17	41.7	17
KNK-12-600	ø6	ø12	17	17	19	41.2	17
KNK-16-600	ø6	ø16	17	24	24	41.8	17
KNK-20-600	ø6	ø20	17	27	27	43.8	17



Pivoting Nozzle with Male Thread / KNK

(mm)

Model	Nozzle diameter **D**	Connection size	With across flats		**L1**	**A**
			H1	**H2**		
KNK-R02-600	ø6	R1/4	17	17	38	31.9
KNK-R03-400	ø4	R3/8	17	17	39	32.4
KNK-R04-400	ø4	R1/2	17	22	42.2	34.1



Related Products
Industrial Filters

Note) All industrial filters shown are for use with fluids. Please contact SMC about use with gases.

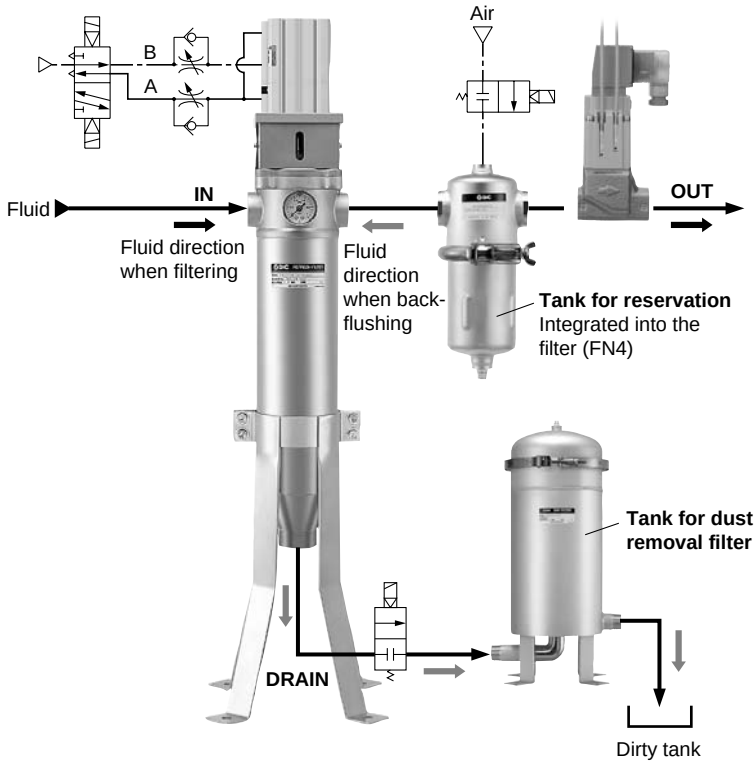
Low Maintenance Filter *FN*

FN1 FN4

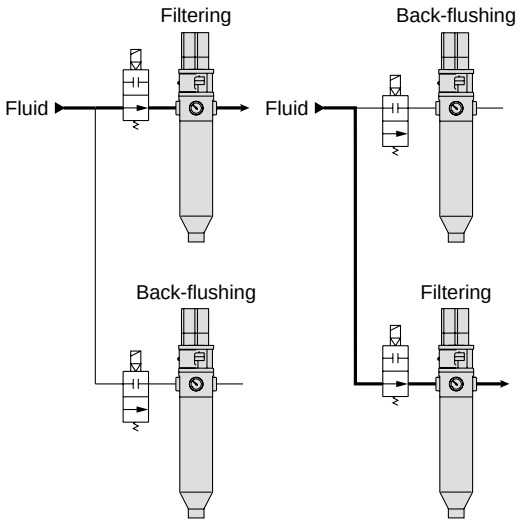
Series	Port size	Temperature (°C)
FN1	Rc 1	Max. 80
FN4	Rc 2	
Features	Element replacement and daily maintenance inspections are not required. No industrial waste created by elements, etc.	

Automatic back-flushing

System circuit allows for automatic back-flushing when the element is clogged.



Setting up the filters in parallel and then alternating the fluid flushing allows for continuous operation during back-flushing.



Quick Change Filter for Cleaning Solvent *FQ1*

Series	Port size	Temperature (°C)
FQ1	Rc1/2, 3/4, 1	Max. 80
Features	No tools required. Takes only 60 seconds for element replacement.	

Related Products

Industrial Filter (Vessel type) *FGD*

Series	Port size	Temperature (°C)
FGD	Rc 3/8, 1/2, 3/4	Max. 80
Features	Ideal for filtration of low flow rates.	

Industrial Filter (Vessel type) *FGE*

Series	Port size	Temperature (°C)
FGE	R1, 2	Max. 80
Features	Ideal for filtration of medium flows rates.	

Industrial Filter (Vessel type) *FGG*

Series	Port size	Temperature (°C)
FGG	Rc 2	Max. 80
Features	Ideal for filtration of large flows rates.	

Industrial Filter (Vessel type) *FGA*

Series	Port size	Temperature (°C)
FGA	Flange: JIS 10K 1^{B} to 6^{B}	Max. 80
Features	Large flow vertical element type.	

Industrial Filter (Vessel type) *FGB*

Series	Port size	Temperature (°C)
FGB	Flange: JIS 10K 1^{B} to 6^{B}	Max. 80
Features	Large flow suspended type.	

Industrial Filter (Vessel type) *FGC*

Series	Port size	Temperature (°C)
FGC	Flange: JIS and ANSI $1/2^{B}$ to 1^{B}	Max. 80
Features	High pressure and low flow rate type.	

Bag Filter *FGF*

Series	Port size	Temperature (°C)
FGF	Rc 2, 4^{B} Flange, 6^{B} Flange	Max. 80
Features	Highly effective for filtration of high temperature and high viscosity fluids Ideal for filtration of large flow rates. Easy handling of filtered impurities.	

Related Products

Pressure Switches

General Purpose High Accuracy Digital Pressure Switch *ISE*

Series	Set pressure
ISE50	–0.1 to 1 MPa
Features	Possible to detect pressures of various fluids.

10 MPa/15 MPa 2-colour Display Digital Pressure Switch *ISE*

ISE75H

Series	Set pressure
ISE75	0.4 to 10 MPa
ISE75H	0.5 to 15 MPa
Features	2-colour display (Green and Red) • Irregular value at a glance Metal body type (Die-cast aluminum)

General Purpose Pressure Switch *ISG*

Series	Set pressure
ISG11□, 21□	0.02 to 0.3 MPa
ISG12□, 22□	0.05 to 0.7 MPa
ISG13□, 23□	0.1 to 1.0 MPa
Features	For various fluids and waterproof

Series SGC
Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by labels of **"Caution", "Warning"** or **"Danger"**. To ensure safety, be sure to observe ISO 4414 Note 1) and other safety practices.

⚠ Caution : Operator error could result in injury or equipment damage.

⚠ Warning : Operator error could result in serious injury or loss of life.

⚠ Danger : In extreme conditions, there is a possible result of serious injury or loss of life.

Note 1) ISO 4414: Pneumatic fluid power--Recommendations for the application of equipment to transmission and control systems.

⚠ Warning

1. **The compatibility of the pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.**
   Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or post analysis and/or tests to meet the specific requirements. The expected performance and safety assurance are the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalogue information with a view to giving due consideration to any possibility of equipment failure when configuring a system.
2. **Only trained personnel should operate pneumatically operated machinery and equipment.**
   The fluid can be dangerous if handled incorrrectly. Assembly, handling or repair of the systems using pneumatic equipment should be performed by trained and experienced operators.
3. **Do not service machinery/equipment or attempt to remove components until safety is confirmed.**
   1. Inspection and maintenance of machinery/equipment should only be performed once measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When equipment is removed, confirm the safety process as mentioned above. Turn off the supply pressure for this equipment and exhaust all residual compressed air in the system.
   3. Carefully restart the machinery, confirming that safety measures are being implemented.
4. **Contact SMC if the product will be used in any of the following conditions:**
   1. Conditions and environments beyond the given specifications, or if product is used outdoors.
   2. With fluids whose application causes concern due to the type of fluid or additives, etc.
   3. An application which has the possibility of having negative effects on people, property, requiring special safety analysis.

■ Exemption from Liability

1. **SMC, its officers and employees shall be exempted from liability for any loss or damage arising out of earthquakes or fire, action by a third person, accidents, customer error with or without intention, product misuse, and any other damages caused by abnormal operating conditions.**
2. **SMC, its officers and employees shall be exempted from liability for any direct or indirect loss or damage, including consequential loss or damage, loss of profits, or loss of chance, claims, demands, proceedings, costs, expenses, awards, judgments and any other liability whatsoever including legal costs and expenses, which may be suffered or incurred, whether in tort (including negligence), contract, breach of statutory duty, equity or otherwise.**
3. **SMC is exempted from liability for any damages caused by operations not contained in the catalogues and/or instruction manuals, and operations outside of the specification range.**
4. **SMC is exempted from liability for any loss or damage whatsoever caused by malfunctions of its products when combined with other devices or software.**

2 Port Solenoid Valve for Fluid Control/Precautions 1

Be sure to read this before handling.

Design

⚠Warning

1. Cannot be used as an emergency shutoff valve, etc.

The valves presented in this catalogue are not designed for safety applications such as an emergency shutoff valve. If the valves are used in this type of system, other reliable safety assurance measures should also be adopted.

2. Extended periods of continuous energisation

Please consult with SMC when using with energisation for long periods of time.

3. This solenoid valve cannot be used for explosion proof applications.

4. Maintenance space

The installation should allow sufficient space for maintenance activities (removal of valve, etc.).

5. Liquid rings

In cases with a flowing liquid, provide a by-pass valve in the system to prevent the liquid from entering the liquid seal circuit.

6. Actuator drive

When an actuator, such as a cylinder, is to be driven using a valve, take appropriate measures to prevent potential danger caused by actuator operation.

7. Pressure (including vacuum) holding

It is not usable for an application such as holding the pressure (including vacuum) inside of a pressure vessel because some leakage is entailed in the valve.

Selection

⚠Warning

1. Confirm the specifications.

Give careful consideration to the operating conditions such as the application, fluid and environment, and use within the operating ranges specified in this catalogue.

2. Fluid quality

The use of a fluid which contains foreign matter can cause problems such as malfunction and seal failure by promoting wear of the valve seat and armature, and by sticking to the sliding parts of the armature, etc. Install a suitable filter (strainer) immediately upstream from the valve

3. Air quality

1) Use clean air.

Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt or corrosive gases, etc., as it can cause damage or malfunction.

2) Install air filters.

Install air filters close to valves at their upstream side. A filtration degree of 5 μm or less should be selected.

3) Install an air dryer or after-cooler, etc.

Compressed air that includes excessive drainage may cause malfunction of valves and other pneumatic equipment. To prevent this, install an air dryer or after-cooler, etc.

4) If excessive carbon powder is generated, eliminate it by installing mist separators at the upstream side of valves.

If excessive carbon powder is generated by the compressor, it may adhere to the inside of the valves and cause malfunction.

Refer to SMC's Best Pneumatics catalogue for further details on compressed air quality.

4. Ambient environment

Use within the operable ambient temperature range. Confirm the compatibility between the product's composition materials and the ambient atmosphere. Be sure that the fluid used does not touch the external surface of the product.

5. Countermeasures against static electricity

Take measures to prevent static electricity since some fluids can cause static electricity.

2 Port Solenoid Valve for Fluid Control/Precautions 2

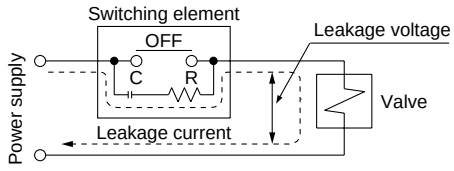
Be sure to read this before handling.

Selection

⚠Caution

1. Leakage voltage

Particularly when using a resistor in parallel with a switching element and using a C-R element (surge voltage suppressor) to protect the switching element, take note that leakage current will flow through the resistor, C-R element, etc., creating a possible danger that the valve may not turn off.



AC coil: 8% or less of rated voltage
DC coil: 3% or less of rated voltage

2. Low temperature operation

1. The valve can be used in an ambient temperature of –5°C, however take measures to prevent freezing or solidification of impurities, etc.
2. When using valves for water application in cold climates, take appropriate countermeasures to prevent the water from freezing in tubing after cutting the water supply from the pump, by draining the water, etc. When heating by steam, be careful not to expose the coil portion to steam. Installation of a dryer, or heat retaining of the body is recommended to prevent a freezing condition for when the dew point temperature is high and the ambient temperature is low, and the large flow runs.

Mounting

⚠Warning

1. If air leakage increases or equipment does not operate properly, stop operation.

After mounting is completed, confirm that the work has been done correctly by performing a suitable function test.

2. Do not apply external force to the coil section.

When tightening is performed, apply a wrench or other tool to the outside of the piping connection parts.

3. Do not warm the coil assembly with a heat insulator, etc.

Use tape, heaters, etc., for freeze prevention on the piping and body only. They can cause the coil to burn out.

4. Secure with brackets, except in the case of steel piping and copper fittings.

5. Avoid sources of vibration, or adjust the arm from the body to the minimum length so that resonance will not occur.

6. Instruction manual

The product should be mounted and operated after the instruction manual is thoroughly read and its contents are understood. Keep the instruction manual where it can be referred to as needed.

7. Painting and coating

Warnings or specifications printed or labelled on the product should not be erased, removed or covered up.

Piping

⚠Caution

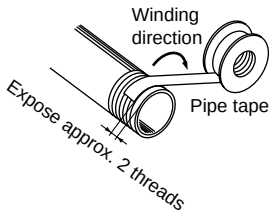
1. Preparation before piping

Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

2. Wrapping of pipe tape

When connecting pipes, fittings, etc., be sure that chips from the pipe threads and sealing material do not enter the valve.

Furthermore, when pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.



3. Avoid connecting ground lines to piping, as this may cause electric corrosion of the system.

4. Always tighten threads with the proper tightening torque.

When attaching fittings to valves, tighten with the proper tightening torque shown below.

Tightening Torque for Piping

Connection threads	Proper tightening torque N•m
Rc 1/8	7 to 9
Rc 3/8	22 to 24
Rc 1/2	28 to 30
Rc 3/4	28 to 30
Rc 1	36 to 38

5. Connection of piping to products

When connecting piping to a product, refer to the instruction manual to avoid mistakes regarding the supply port, etc.

Wiring

⚠Caution

1. Use electrical circuits which do not generate chattering in their contacts.

2. Use voltage which is within ±10% of the rated voltage.

3. When a surge from the solenoid affects the electrical circuitry, adopt an option that comes with the surge voltage protection circuit.

Back page 3

2 Port Solenoid Valve for Fluid Control/Precautions 3

Be sure to read this before handling.

Operating Environment

⚠ Warning

1. **Do not use the valves in an atmosphere having corrosive gases, chemicals, salt water, water, steam, or where there is direct contact with any of these.**
2. **Do not use in explosive atmospheres.**
3. **Do not use in locations subject to vibration or impact.**
4. **Do not use in locations where radiated heat will be received from nearby heat sources.**
5. **Employ suitable protective measures in locations where there is contact with water droplets, oil or welding spatter, etc.**

Lubrication

⚠ Caution

1. **This solenoid valve can be operated without lubrication.**

   If a lubricant is used in the system, use turbine oil Class 1, ISO VG32 (with no additive).
   Refer to the table of brand name of lubricants compliant with Class 1 turbine oil (with no additive), ISO VG32.

Class 1 Turbine Oil (with no additive), ISO VG32

Classification of viscosity (cst) (40°C)	Viscosity according to ISO Grade	32
Idemitsu Kosan Co.,Ltd.		Turbine oil P-32
Nippon Oil Corp.		Turbine oil 32
Cosmo Oil Co.,Ltd.		Cosmo turbine 32
Japan Energy Corp.		Kyodo turbine 32
Kygnus Oil Co.		Turbine oil 32
Kyushu Oil Co.		Stork turbine 32
Nippon Oil Corp.		Mitsubishi turbine 32
Showa Shell Sekiyu K.K.		Turbine 32
Tonen General Sekiyu K.K.		General R turbine 32
Fuji Kosan Co.,Ltd.		Fucoal turbine 32

Please contact SMC regarding Class 2 turbine oil (with additives), ISO VG32.

Maintenance

⚠ Warning

1. Removing the product

Confirm that the valve temperature has dropped sufficiently before performing work. If it is touched inadvertently, there is a danger of being burned.

1. Shut off the fluid supply and release the fluid pressure in the system.
2. In the case of air pilot or air-operated type, shut off the supply air source and discharge the compressed air inside the pilot piping.
3. Shut off the power supply.
4. Dismount the product.

2. Low frequency operation

Switch valves at least once every 30 days to prevent malfunction. Also, in order to use it under the optimum state, conduct a regular inspection once every six months.

3. Manual override

When the manual override is operated, connected equipment will be actuated.
Operate after safety is confirmed.

4. Do not disassemble the product. Products which have been disassembled cannot be guaranteed.

If disassembly is necessary, please contact SMC.

⚠ Caution

1. Filters and strainers

1. Be careful regarding clogging of filters and strainers.
2. Replace filter elements after one year of use, or earlier if the pressure drop reaches 0.1 MPa.
3. Clean strainers when the pressure drop reaches 0.1 MPa.

2. Lubrication

When using after lubricating, never forget to lubricate continuously.

3. Storage

In case of long term storage after use with heated water, thoroughly remove all moisture to prevent rust and deterioration of rubber materials, etc.

4. Exhaust the drain from an air filter periodically.

Operating Precautions

⚠ Warning

1. **Valves will reach high temperatures from high temperature fluids. Use caution, as there is a danger of being burned if a valve is touched directly.**

Series SGC
Specific Product Precautions 1

Be sure to read this before handling.
Refer to back page 1 for the Safety Instructions and back pages 2 through to 4 for the 2 Port Solenoid Valve for Fluid Control / Precautions.

Design

⚠ Warning

2. Extended periods of continuous energisation

If a valve is continuously energised for long periods, heat generation from the coil may result in reduced performance and shorter service life. This may also have an adverse effect on the peripheral equipment in close proximity. Should a valve be continuously energised for long periods, or its daily energised state exceeds its non energised state, please use an energy saving type valve with DC specifications. Additionally, when using with AC, energising for long periods of time continously, with AC voltage select the air-operated valve and use a continuous duty type of the VT307 for a pilot valve.

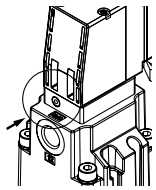
Manual Override

⚠ Warning

Since connected equipment will be actuated when the manual override is operated, first confirm that conditions are safe.

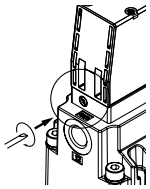
■ **Non-locking push type**

Press in the direction of the arrow.



■ **Push-turn locking slotted type [D type]**

While pressing, turn in the direction of the arrow (90° clockwise). If it is not turned, it can be operated the same way as the non-locking type.



⚠ Caution

When operating the locking type D with a screwdriver, turn it gently using a flat head watchmaker's screwdriver. [Torque: Less than 0.1 N•m]

When locking the manual override on the push-turn locking type (D), be sure to push it down before turning. Turning without first pushing it down can cause damage to the manual override and trouble such as air leakage, etc.

Mounting

⚠ Warning

1. Do not apply external force to the coil section.

When tightening is performed, apply a wrench or other tool to the outside of the piping connection parts.

Mounting

⚠ Warning

2. Do not warm the coil assembly with a heat insulator, etc.

Use tape, heaters, etc., for freeze prevention on the piping and body only. They can cause the coil to burn out.

3. Secure with brackets, except in the case of steel piping and copper fittings.

4. Avoid sources of vibration, or adjust the piping arm from the body to the minimum length so that resonance will not occur.

Wiring

⚠ Caution

1. Applied voltage

When electric power is connected to a solenoid valve, be careful to apply the proper voltage. Improper voltage may cause malfunction or coil damage.

2. Confirm the connections.

After completing the wiring, confirm that the connections are correct.

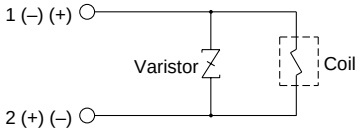
Light / Surge Voltage Suppressor

⚠ Caution

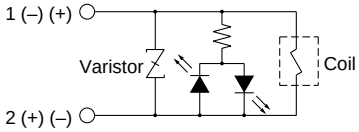
<For DC>

Conduit terminal, DIN terminal (non-polar type)

Surge voltage suppressor (TS/DS)

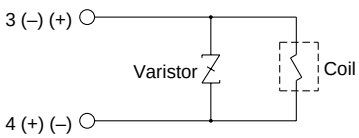


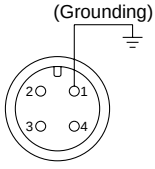
Light / surge voltage suppressor (TZ/DZ)



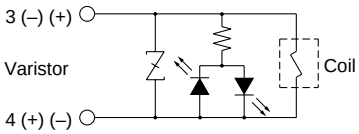
M12 connector (non-polar type)

Surge voltage suppressor (WS)





Light / surge voltage suppressor (WZ)



Back page 5

Series SGC
Specific Product Precautions 2

Be sure to read this before handling.
Refer to back page 1 for the Safety Instructions and back pages 2 through to 4 for the 2 Port Solenoid Valve for Fluid Control / Precautions.

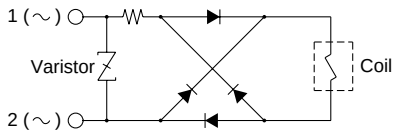
Light / Surge Voltage Suppressor

⚠ Caution

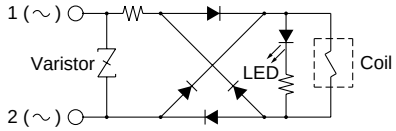
<For AC>

Conduit terminal

Surge voltage suppressor (TS)

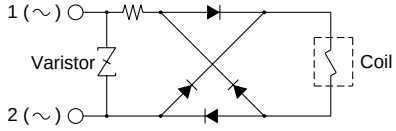


Light / surge voltage suppressor (TZ)

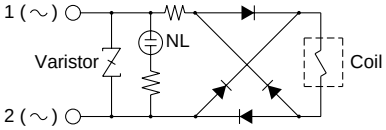


DIN terminal

Surge voltage suppressor (DS)

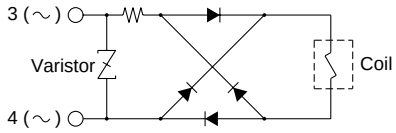


Light / surge voltage suppressor (DZ)

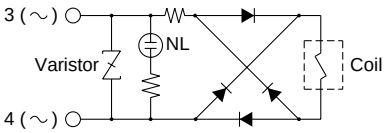


M12 connector

Surge voltage suppressor (WS)



Light / surge voltage suppressor (WZ)

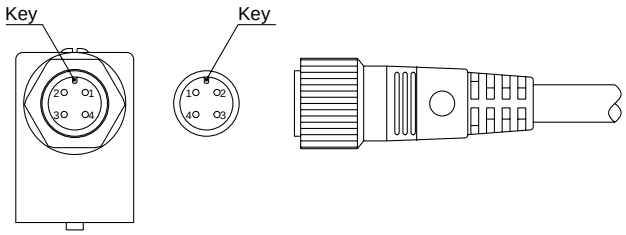


M12 Connector

⚠ Caution

1. **M12 connector types have an IP65 (enclosure) rating, offering protection from dust and water. However, please note that these products are not intended for use in water.**
2. **Do not use a tool to mount the connector, as this may cause damage. Only tighten by hand. (0.4 to 0.6 N•m)**
3. **Excessive stress to the cable connector may result in it not being able to satisfy the IP65 rating. Please use caution and do not apply a stress of 30 N or greater.**

M12 connector **Female connector with cable**



Note) For connecting a female connector with cable, adjust the connector key to the M12 connector key in the valve side since there is an orientation.
Be careful not to squeeze it in the wrong direction, as problems such as pin damage may occur.

Series SGC
Specific Product Precautions 3

Be sure to read this before handling.
Refer to back page 1 for the Safety Instructions and back pages 2 through to 4 for the 2 Port Solenoid Valve for Fluid Control / Precautions.

M12 Connector

⚠ Caution

M12 connector part no.

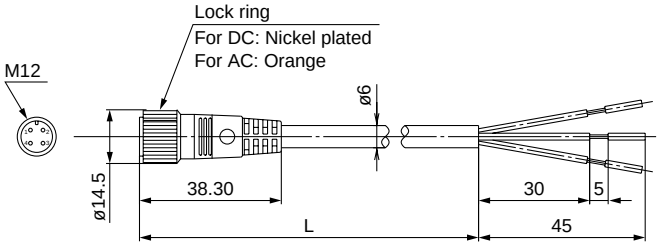
V100 − 200 − □ − □

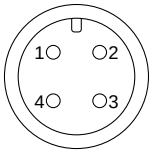
Specification

1	For DC
2	For AC

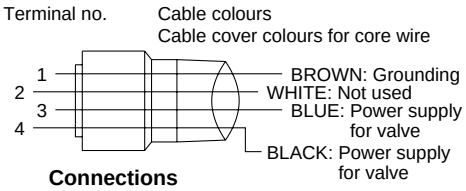
Cable length (L)

4	1000 [mm]
8	2000 [mm]
9	5000 [mm]





Socket pin connector pin assignment



Connections

How to Order

Include the part number of the female connector with cable together with the part number for the solenoid valve.

Example) In case of lead wire length, 1,000 mm

For DC	For AC
SGC221A-0510-5WZ	SGC221A-0510-1WZ
V100-200-1-4	V100-200-2-4

How to Use Conduit Terminal

⚠ Caution

Connection

1. **Loosen the set screw and remove the cover from the terminal block.**
2. **Loosen the screw in the terminal block. Insert the lead core wires or crimped terminals to the terminals, and secure the wires by re-tightening the terminal screw.**
3. **Secure the cord by fastening the ground nut.**

When making connections, take note that using card other than the supported size (ø4.5 to ø7) heavy duty cord will not satisfy IP65 (enclosure) standards. Also, be sure to tighten the ground nut and holding screw within their specified torque ranges.

How to Use Conduit Terminal

⚠ Caution

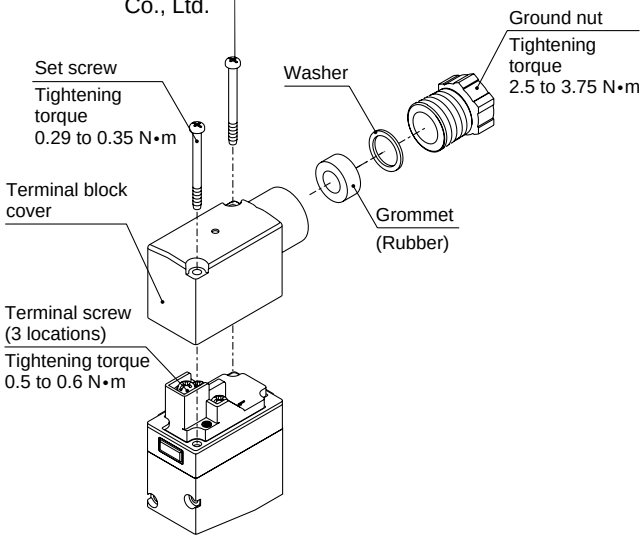
Compatible cable

Cord O.D.: ø4.5 to ø7

(Reference) 0.5 to 1.5 mm², 2-core or 3-core, equivalent to JIS C 3306

Applicable crimped terminals

O-terminals: Equivalent to R1.25-3 defined in the JIS C2805
Y-terminals: Equivalent to 1.25-3 manufactured by J.S.T. Mfg. Co., Ltd.



How to Use DIN Terminal

⚠ Caution

Connection

1. **Loosen the set screw and pull the connector out of the solenoid valve terminal block.**
2. **After removing the set screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.**
3. **Loosen the screw (slotted screws) in the terminal block. Insert the lead core wires or crimped terminals to the terminals according to the connection method, and secure the wires by re-tightening the terminal screw.**
4. **Secure the cord by fastening the ground nut.**

When making connections, take note that using card other than the supported size (ø4.5 to ø7) heavy duty cord will not satisfy IP65 (enclosure) standards. Also, be sure to tighten the ground nut and holding screw within their specified torque ranges.

Changing the entry direction

After separating the terminal block and housing, the cord entry can be changed by attaching the housing in the opposite direction 180°.

∗ Be careful not to damage the element, etc. with the cord's lead wires.

Series SGC
Specific Product Precautions 4

Be sure to read this before handling.
Refer to back page 1 for the Safety Instructions and back pages 2 through to 4 for the 2 Port Solenoid Valve for Fluid Control / Precautions.

How to Use DIN Terminal

⚠ Caution

Plug in and pull out the connector vertically without tilting to one side.

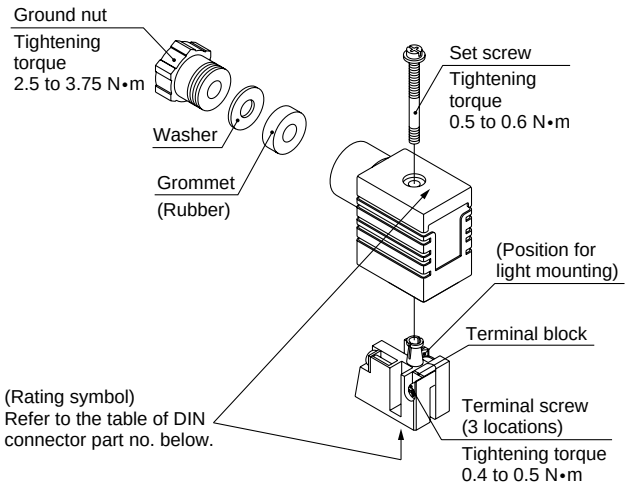
Compatible cable

Cord O.D.: ø4.5 to ø7

(Reference) 0.5 to 1.5 mm², 2-core or 3-core, equivalent to JIS C 3306

Applicable crimped terminals

O-terminals: Equivalent to R1.25-3 as defined by JIS C2805
Y-terminals: Equivalent to 1.25-3 manufactured by J.S.T. Mfg. Co., Ltd.



DIN Connector Part No.

Without light	V100-61-1

With Surge Voltage Suppressor

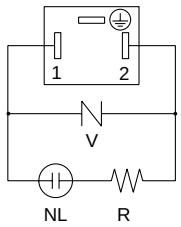
Rated voltage	Voltage symbol	Model no.
24 VDC	DC 24 VS	V100-61-5-05
12 VDC	DC 12 VS	V100-61-5-06
100 VAC	100/110 VS	V100-61-4-01
200 VAC	200/220 VS	V100-61-4-02
110 VAC	100/110 VS	V100-61-4-01
220 VAC	200/220 VS	V100-61-4-02
240 VAC	240 VS	V100-61-4-07

With Light / Surge Voltage Suppressor

Rated voltage	Voltage symbol	Model no.
24 VDC	DC 24 VZ	V100-61-3-05
12 VDC	DC 12 VZ	V100-61-3-06
100 VAC	100/110 VZ	V100-61-2-01
200 VAC	200/220 VZ	V100-61-2-02
110 VAC	100/110 VZ	V100-61-2-01
220 VAC	200/220 VZ	V100-61-2-02
240 VAC	240 VZ	V100-61-2-07

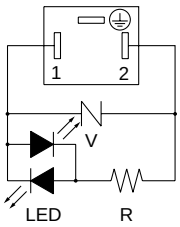
Circuit Diagram with Light / Surge Voltage Suppressor

AC circuit diagram



NL: Neon bulb, R: Resister
V: Varistor

DC circuit diagram



LED: Emitting diode, R: Resister
V: Varistor

Operating Environment

⚠ Caution

Products with IP65 enclosures (based on IEC60529) are protected against dust and water, however, these products cannot be used in water.

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