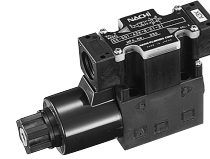


Photo	Type	Series	Description	Main Specifications
	Solenoid Valves	SS	Solenoid Valve	26.4 - 42.3gpm, 5000psi
	Solenoid Valves	SA	Solenoid Valve (DIN Connector Type)	26.4 - 42.3gpm, 5000psi
	Solenoid Valves	SE	Solenoid Valve (Low Current & Low Power Consumption Type)	7.9 - 26.4gpm 1428 - 3000psi
	Solenoid Valves	DSS (DSA)	Solenoid Controlled Pilot Operated Valve	158.5gpm, 4571psi
	Fine Solenoid Valves	SF	Fine Solenoid Valve (High-Low Valve)	2.6 - 10.6gpm, 3000psi
	Solenoid Valves	SAW	Solenoid Valve with Monitoring Switch	42.2gpm, 5076psi
	Manual Valves	DMA	Manually Operated Directional Valve	10.6 - 19.8gpm, 3571psi



Features

- ① Very long life
The movable iron core of the wet type solenoid is immersed in oil, which keeps it lubricated and cushions it from impact and vibration, ensuring very long life.
- ② Low switching noise
The wet-type solenoid valve provides very low core switching noise, for quiet operation.
- ③ High pressure, large capacity, with minimal pressure loss
Comprehensive fluid reaction force compensation and low pressure compensation construction provide large capacity and low pressure loss.
G01 : 35MPa{357kgf/cm²}100 ℓ /min
G03 : 35MPa{357kgf/cm²}160 ℓ /min
- ④ Easy connections
A special wiring box provides a COM port and indicator light as standard for simple wiring and maintenance.
- ⑤ Easy coil replacement
A plug-in type coil enables one-touch coil replacement.
- ⑥ Wide-ranging backward compatibility makes it simple to replace previous valve models with this one. Combining this valve with a modular valve contributes to the compact configuration of the overall device.
- ⑦ Global support (G01 size)
Meets overseas safety standards (CE, UL, and CSA). It can be safely used anywhere in the world. Contact your agent for certified products.

Specifications

Model No.		SS-G01				SS-G03					
		Standard Type		Shockless Type		Standard Type				Shockless Type	
		Maximum Flow Rate ℓ /min	Maximum Working Pressure MPa(kgf/cm ²)	Maximum Flow Rate ℓ /min	Maximum Working Pressure MPa(kgf/cm ²)	AC Solenoid Type		DC Solenoid Type (With built-in rectifier)			
Maximum Flow Rate ℓ /min	Maximum Working Pressure MPa(kgf/cm ²)					Maximum Flow Rate ℓ /min	Maximum Working Pressure MPa(kgf/cm ²)	Maximum Flow Rate ℓ /min	Maximum Working Pressure MPa(kgf/cm ²)		
	-A2X-	30 (7.9)	35 (5000)	30 (7.9)	25(255) (3571)	40 (10.6)	35(357) (5000)	85 (22.4)	35(357) (5000)	130 (34.3)	25(255) (35.71)
						-H2X-					
	-E2X-	80 (21.1)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-H3X-	100 (26.4)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-A3Z-	65 (17.1)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-E3Z-	50 (13.2)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-H4-	100 (26.4)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-A5-	100 (26.4)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-C2-	100 (26.4)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-C9-	100 (26.4)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-C6S-	100 (26.4)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-C6-	100 (26.4)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-C7Y-	50 (13.2)	35 (5000)	40 (10.6)	25(255) (3571)	70 (18.5)	25(255) (3571)	100 (26.4)	25(255) (3571)	85 (22.4)	25(255) (35.71)

Note) The maximum flow rate of each valve depends on the pressure. For details, see pages S-9 and S-10.

		SS-G01			SS-G03			
		AC Solenoid	DC Solenoid		AC Solenoid	DC Solenoid		
			Built-in Rectifier			Built-in Rectifier		
		C*	E*	D*	C*	E*	D*	
Maximum Working Pressure	P, A, B ports	35(25)MPa{357(255)kgf/cm ² }(Note1) (5000psi)						
Maximum Allowable Backpressure	T port	21MPa{214kgf/cm ² } (3000psi)			16MPa{163kgf/cm ² } (2285psi)			
Switches/min.	Standard Type	300	120	300	300	120	240	
	Shockless Type	—		120	—		120	
Standard	Indicator light	R			R			
Option	Shockless	—	F		—	F		
	Surgeless	G	—	G	G	—	G	
	With manual push-button	N			N			
	Quick Return	—	Q	—	—	Q	—	
Weight (kg)	Double Solenoid	1.8	2.0		4.2	5.5		
	Single Solenoid	1.4	1.5		3.5	4.1		
Operating Environment	Dust Resistance/Water Resistance Rank	JIS C 0920 IP64 (Dust-tight, Splash-proof)						
	Ambient Temperature	- 20 to 50°C						
	Operating Fluid	Temperature Range	- 20 to 70°C					
		Viscosity Range	15 to 300mm ² /s					
			25 microns or less					
Mounting bolt	Size × Length	M5 × 45 (Four) 10-24 × 1 3/4			M6 × 70 (Four) (M8 × 70 (Four)) 1/4-20 × 2 3/4			
	Tightening Torque	M5 5 to 7N·m{51 to 71kgf·cm} 10-24 3.6-5.1Lbs.ft.			M6 10 to 13N·m{102 to 133kgf·cm} (M8 20 to 25N·m{204 to 255kgf·cm}) 1/4-20 7.2-9.4Lbf.ft.			

Note) 1. Maximum operating pressure depends on the valve type. For details, see page S-1.
2. For mounting bolts, use 12T or equivalent.

Notes

- 1 Pipe system so that tank line is always filled with oil.
- 2 Surge pressure should be kept below maximum tank line back pressure rating.
- 3 When using a 4-way valve as a 2-way or 3-way and blocking unused ports lowers the maximum flow.
- 4 Keep hydraulic oil clean. (Degree of contamination: NAS grade 12 or better). When petroleum hydraulic oil is used, it should conform to ISO VG32, 46.
- 5 Do not exceed permissible voltage range of the coil used.
- 6 Do not supply electric power to the AC solenoid unless the coil is mounted to the valve.
- 7 Provide drain piping from the T port, when valve spool types are A2X, H2X, E2X.
- 8 If the changeover position is kept under high pressure for an extended period, malfunctions may occur due to hydraulic lock. Please consult us when you have such application.
- 9 When the detent-type (E2X, E3X, E3Z) is used, we recommend that the electric power supply be continuous in order that the changeover position may be firmly maintained.
- 10 Resistance force against the manual override pin changes, depending on the back pressure of the tank line.
- 11 Solenoid coil could be hot by continuous operation. Do not touch the coil directly by hand.
- 12 Gasket dimension
SA/SS-G01 = ISO 4401-03-02-0-94
SA/SS-G03 = ISO 4401-05-04-0-94

● Solenoid Assembly Specifications

Solenoid Type	Power Supply Type	Voltage (V)	Frequency (Hz)	For SS-G01				For SS-G03					
				Solenoid Coil Type	Drive Current (A)	Holding Current (A)	Holding Power (W)	Allowable Voltage Range (V)	Solenoid Coil Type	Drive Current (A)	Holding Current (A)	Holding Power (W)	Allowable Voltage Range (V)
AC	C1	AC100	50	EDC64-C1	2.2	0.52	25	80 to 110	ECB64-C1	5.4	0.92	36.0	90 to 110
			60		2.0	0.38	22	90 to 120		4.6	0.62	34.0	
		AC110	60		2.2	0.46	28			5.0	0.78	42.0	
	C115	AC110	50	EDC64-C115	2.0	0.47	25	90 to 120	ECB64-C115	5.0	0.85	36.0	90 to 120
			60		1.8	0.35	22	100 to 130		4.2	0.57	34.0	
		AC115	60		2.0	0.42	28			4.6	0.72	42.0	
	C2	AC200	50	EDC64-C2	1.1	0.26	25	160 to 220	ECB64-C2	2.7	0.46	36.0	160 to 220
			60		1.0	0.19	22	180 to 240		2.3	0.31	34.0	
		AC220	60		1.1	0.23	28			2.5	0.39	42.0	
	C230	AC220	50	EDC64-C230	1.0	0.24	25	180 to 240	ECB64-C230	2.5	0.42	36.0	180 to 240
			60		0.91	0.17	22	200 to 260		2.1	0.29	34.0	
		AC230	60		1.0	0.21	28			2.3	0.36	42.0	
DC with Built-in Rectifier	E1	AC100	50/60	EDC64-E1-1A	0.37		27	90 to 110	ECB64-E1	0.40		34.0	90 to 110
			AC110		0.26					0.33			
		AC115	50/60		EDC64-E115-1A	0.27				27	100 to 125		
	E2	AC200	50/60	EDC64-E2-1A	0.15		26	180 to 220	ECB64-E2	0.22		37.0	180 to 220
			AC220		0.12					0.16			
		AC230	50/60		EDC64-E230-1A	0.13				27	200 to 250		
DC	D1	DC12	—	EDC64-D1-1A	2.2		26	10.8 to 13.2	ECB64-D1	2.6		31.0	10.8 to 13.2
			D2		DC24	—				EDC64-D2-1A	1.1		

Understanding Model Numbers

SS - G 03 - A 3 X - * R - C2 - J21

Design number
 31: 01 size M5 bolt
 E31: 01 size 10–24 mounting bolt
 21: 03 size for mounting bolt M8
 J21: 03 size for mounting bolt M6
 E21: 03 size for mounting bolt 1/4-20

Power supply
 C: AC (50/60Hz) C1=AC100V C115=AC110V C2=AC200V C230=AC220V
 D: DC D1=DC12V D2=DC24V
 E: AC (Built-in rectifier; 50/60Hz)
 E1=AC100V E115=AC115V E2=AC200V E230=AC230V

With indicator light

Auxiliary symbol (Can be combined in alphabetic sequence.)
 F: Shockless type (Available with power supply D*, E)
 G: Surgeless type (Available with power supply C*, D*)
 N: With manual push-button
 Q: Quick return type (Available with power supply E*)

Transition Flow Path (Specify for A2X, H2X, E2X, *3*, C7Y only.)

X	Y	Z
Closed	Semi-open	Open

Center position

0	1	2	3	4	5
6	7	8	9	1S	6S

Note 1: P = Pressure port; A and B = Connection port to cylinder, etc.; T(R) = Connection port to tank

Operation Method

A	H	C	E
Spring Offset	Spring Center	Spring Center	Detent

Nominal diameter
 01 size
 03 size

Mounting method
 G: Cascade mounting

Wet type solenoid operated directional control valve

Options

(Auxiliary Symbol Explanations)

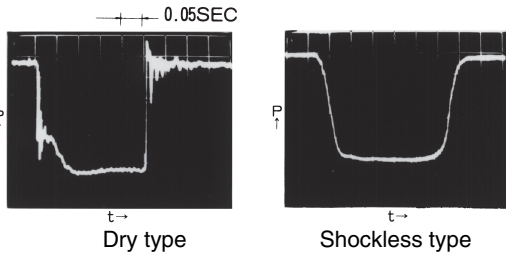
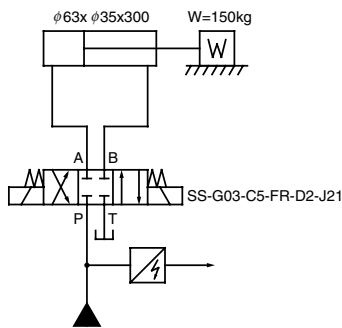
Shockless Type (Auxiliary Symbol: F)

Features

- Smooth start and stop performance
- Quiet operation
- Long life and reliable operations

Effects

- Eliminates shocks in the piping system.
- Prevents the piping connections from leaking oil.
- Extends the life of the hydraulic components.
- Maintenance-free operation of the hydraulic system.



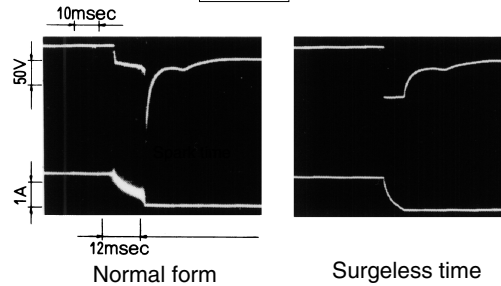
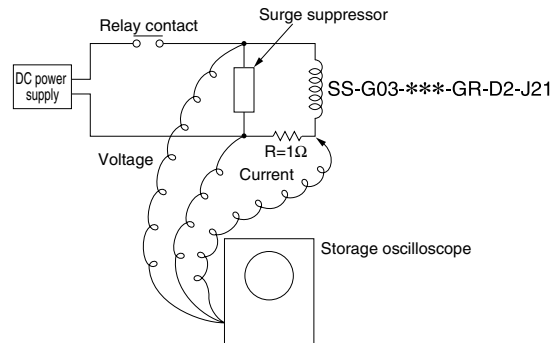
Surgeless type (Auxiliary Symbol: G)

Features

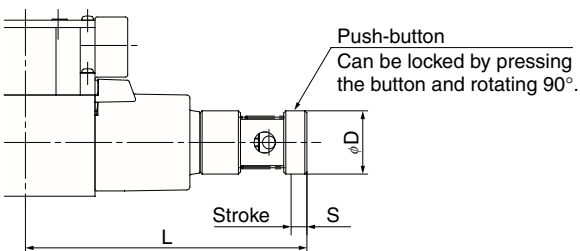
- Suppresses the surge voltage.
- Eliminates sparks between relay contacts.
- Extends the life of the relay contact.

Effects

- Improves the reliability of the control relay.
- Extends the life of conventional relays.
- Can be operated with a miniature relay.
- The RAC rectifier built-in DC model eliminate sparks at the control relay contact. It can be directly operated with a PLC (programmable logic controller).



Manual Button Type (Auxiliary Symbol: N)

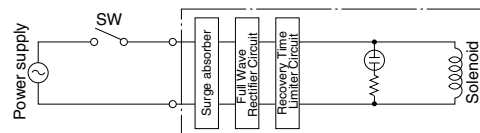


Model		L	S	D
SS-G01	AC solenoid	133.5 (5.26)	7.5 (0.30)	30 (1.18)
	DC solenoid	140.5 (5.53)		
SS-G03	AC solenoid	155.5 (6.12)	9.5 (0.37)	35 (1.38)
	DC solenoid	173.5 (6.83)		

Quick Return (Auxiliary Symbol: Q)

• Handling

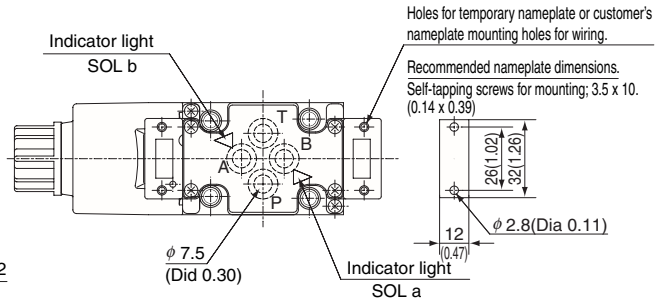
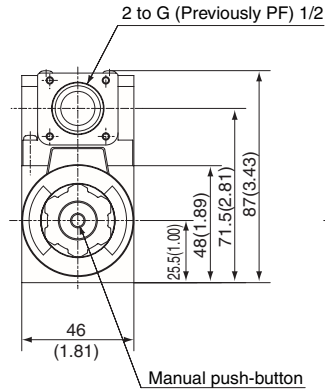
- 1 This type is used in the case of power supply type E* (with built-in rectifier) to shorten the spring return time. This also applies to D*.
- 2 The quick return mechanism is built in.



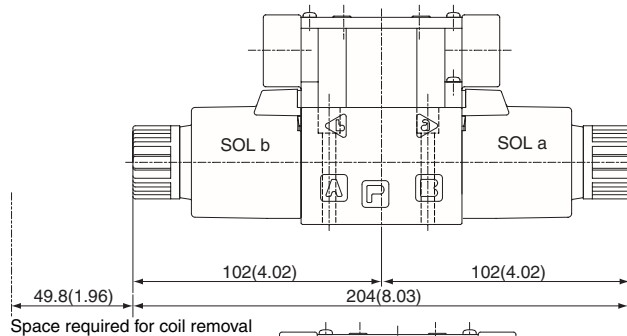
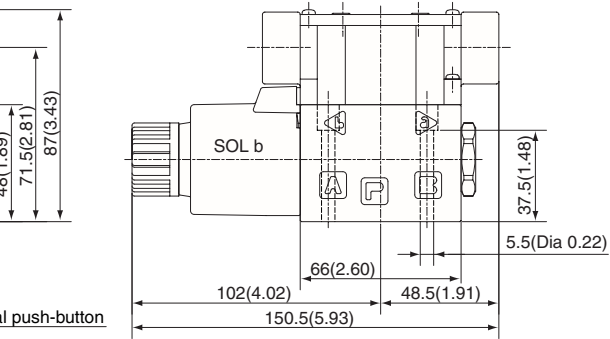
Installation Dimension Drawings

AC Solenoid
 SS-G01-A**-R-C*-E31
 SS-G01-H**-R-C*-E31

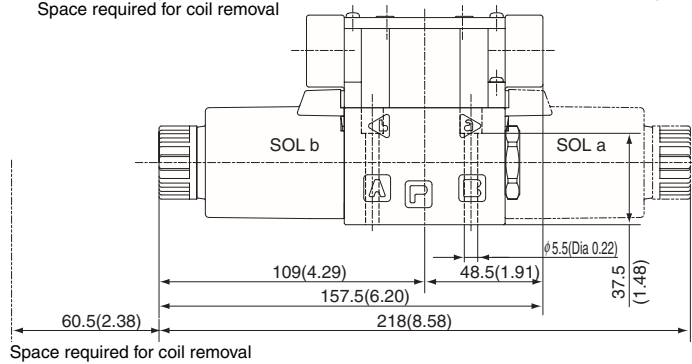
Note)
 SS-G01-H**-R**-E31
 The solenoid is on the opposite side of that shown for SOLa in the illustrations shown here.



SS-G01-C **-R-C*-E31
 SS-G01-E **-R-C*-E31



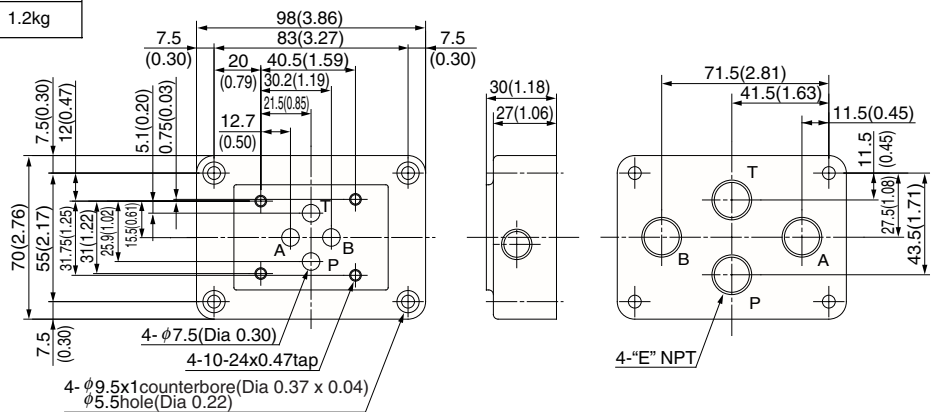
DC Solenoid and Rectifier
 SS-G01-A **-R-D/E*-E31
 SS-G01-H **-R-D/E*-E31
 SS-G01-C **-R-D/E*-E31
 SS-G01-E **-R-D/E*-E31



For sub plate SS-G01

Model No.	E	Weight
MSA-01X-E10	1/4	1.2kg
MSA-01Y-E10	3/8	1.2kg

Gasket Surface Dimensions
 (ISO 4401-03-02-0-94
 (JIS B 8355 D-03-02-0-94))



Installation Dimension Drawings

AC Solenoid

SS-G03-A**-R-C*-E21

SS-G03-H**-R-C*-E21

Note)

SS-G03-H**-R**-J21

The solenoid is on the opposite side of that shown for SOLa in the illustrations shown here.

	SS-G03**-R**-J21	SS-G03**-R**-21
φD	φ6.8(Dia 0.27)	φ8.5(Dia 0.33)
L	60.5(2.38)	58(2.28)

SS-G03-C**-R-C*-E21

SS-G03-E**-R-C*-E21

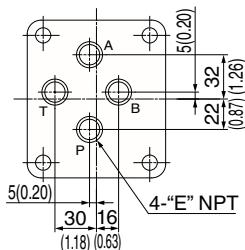
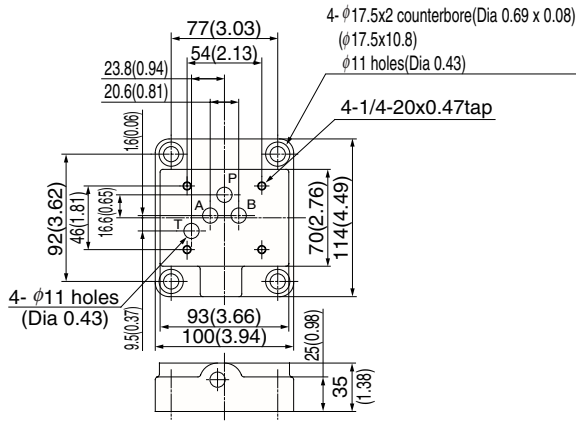
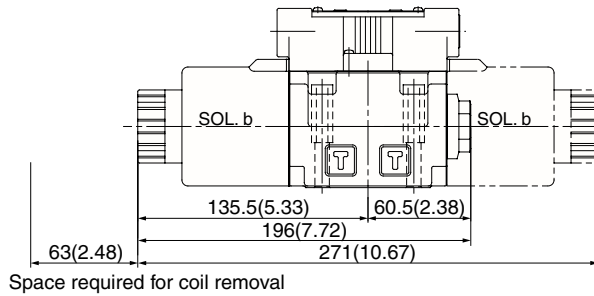
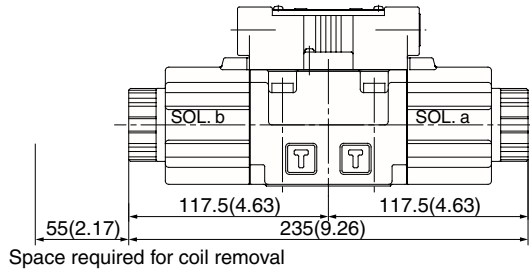
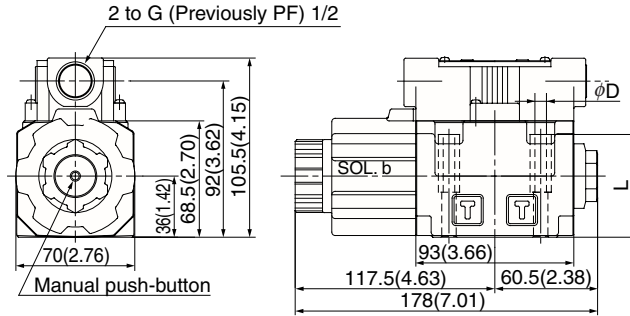
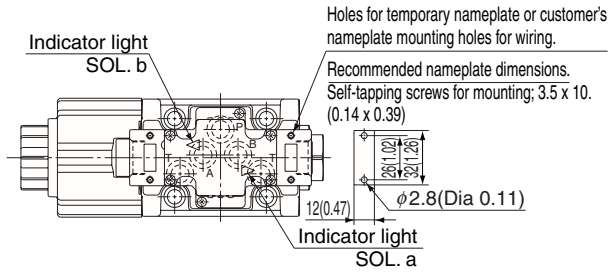
DC Solenoid and Rectifier

SS-G03-A **-R-D*/E*-E21

SS-G03-H **-R-D*/E*-E21

SS-G03-C **-R-D*/E*-E21

SS-G03-E **-R-D*/E*-E21

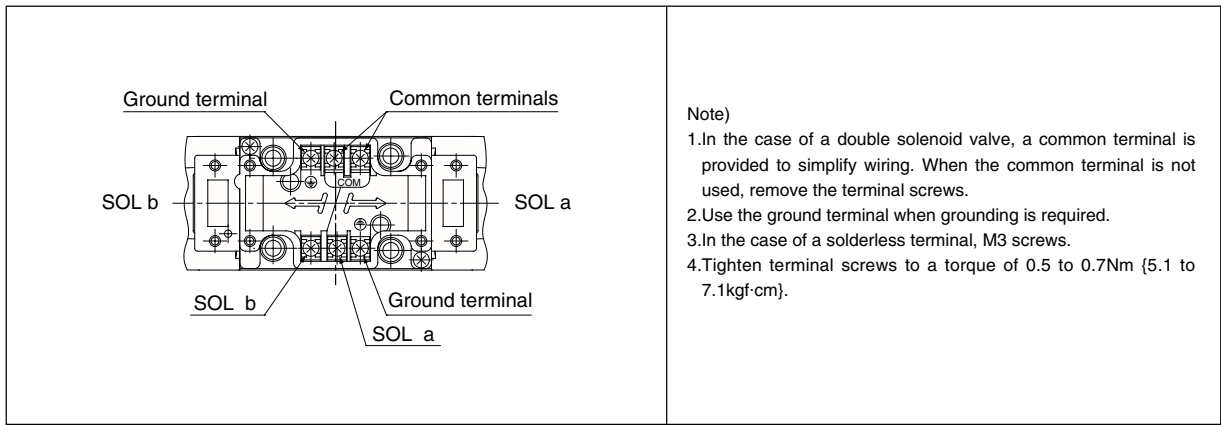


For sub plate SS-G03

Mounting bolt	Model No.	E	Weight
1/4-20	MSA-03-E10	3/8	2.3kg
	MSA-03X-E10	1/2	

Gasket surface dimensions
(ISO 4401-05-04-0-94
(JIS B 8355 D-05-04-0-94))

Wiring Diagram



Note)

1. In the case of a double solenoid valve, a common terminal is provided to simplify wiring. When the common terminal is not used, remove the terminal screws.
2. Use the ground terminal when grounding is required.
3. In the case of a solderless terminal, M3 screws.
4. Tighten terminal screws to a torque of 0.5 to 0.7Nm {5.1 to 7.1kgf-cm}.

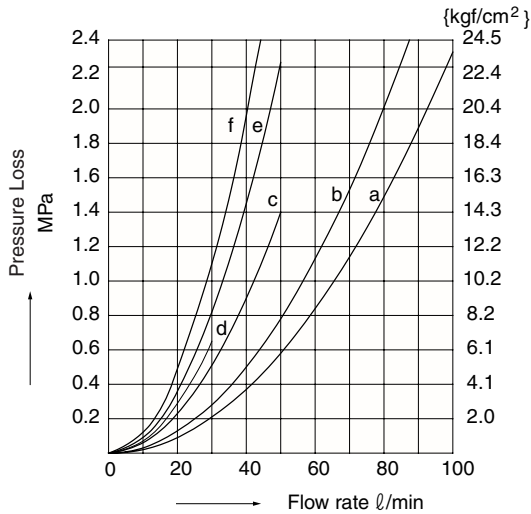
Electrical Circuit Diagram

Type	Model No.	Electrical Circuit
AC Solenoid	SS-G01-***-R-C* G03-E31 E21	
AC Solenoid Surgeless Type	SS-G01-***-GR-C* G03-E31 E21	
Built-in Rectifier	SS-G01-***-R-E* G03-E31 E21	
DC Solenoid	SS-G01-***-R-D* G03-E31 E21	
DC Solenoid Surgeless Type	SS-G01-***-GR-D* G03-E31 E21	
Built-in Rectifier Quick Return Type	SS-G01-***-QR-E* G03-E31 E21	See page E-4 for more information.

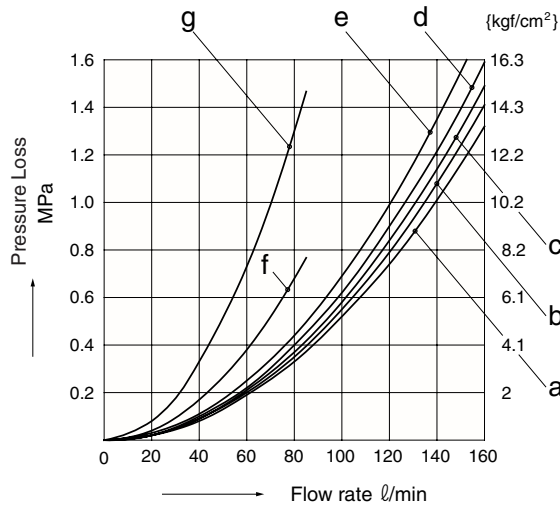
Performance Curves

Hydraulic Operating Fluid Viscosity 32mm²/s

Pressure Loss Characteristics



Pump Type	Flow Path	P→A	P→B	A→T	B→T	P→T
SS-G01	A2X, H2X, E2X	d	d	—	—	—
	A3X, H3X	b	b	b	b	—
	E3X	b	b	b	b	—
	A3Z, H3Z, E3Z	a	a	a	a	—
	A4, H4, C4	a	a	a	a	a
	A5, H5, C5, C6S	b	b	b	b	—
	C1, C1S	b	b	a	b	—
	C2	a	b	b	b	—
	C6	b	b	a	a	—
	C7Y	f	f	e	e	c
	C8	a	f	b	e	c
C9	a	a	b	b	—	



Pump Type	Flow Path	P→A	P→B	A→T	B→T	P→T
SS-G03	A2X, H2X, E2X	e	e	—	—	—
	A5	—	c	c	—	—
	H5	c	—	—	c	—
	A3X, H3X, E3X	c	c	d	d	—
	A3Z, H3Z	a	a	d	d	—
	E3Z	b	b	a	a	—
	C1	c	c	a	c	—
	C2	a	c	c	c	—
	A4, H4, C4	a	a	a	a	a
	C5, C1S, C6S	c	c	c	c	—
	C6	c	c	a	a	—
	C7Y	g	g	g	g	f
	C8	a	g	a	g	f
	C9	a	a	c	c	—

Switching Response Time

Model No.	Response Time (sec)		Measurement Conditions
	Solenoid ON	Spring Return	
SS-G01-**-R-C*-E31	0.02 to 0.03	0.02 to 0.03	14MPa{143kgf/cm ² } 30 l/min
SS-G01-**-(G)R-D*-E31	0.03 to 0.04	0.02 to 0.04	
SS-G01-**-R-E*-E31	0.03 to 0.04	0.07 to 0.10	
SS-G01-**-F(G)R-D*-E31	0.07 to 0.10	0.04 to 0.07	
SS-G01-**-FR-E*-E31	0.07 to 0.10	0.10 to 0.15	
SS-G03-**-R-C*-E21	0.02 to 0.03	0.02 to 0.03	14MPa{143kgf/cm ² } 70 l/min
SS-G03-**-(G)R-D*-E21	0.06 to 0.09	0.03 to 0.05	
SS-G03-**-R-E*-E21	0.07 to 0.10	0.10 to 0.15	
SS-G03-**-F(G)R-D*-E21	0.13 to 0.15	0.08 to 0.15	
SS-G03-**-FR-E*-E21	0.10 to 0.15	0.15 to 0.20	

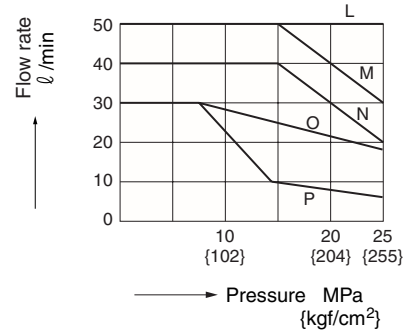
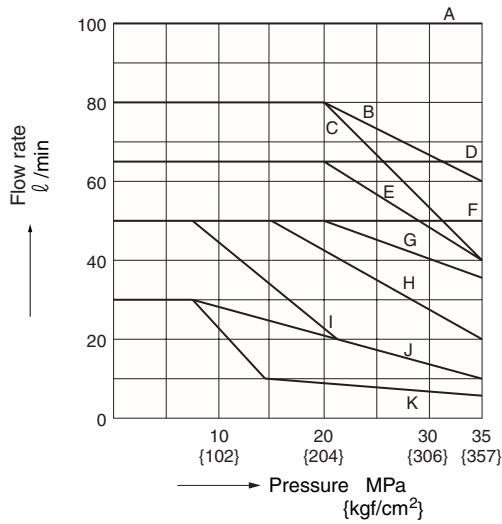
Note) 1.The switching response time changes slightly with operating conditions (pressure, flow rate, viscosity, etc.)
2.In the case of power supply type E* (with built-in rectifier), the spring return time using Quick Return (option symbol: Q) is the same as D*.

Pressure – Flow Volume Allowable Value

Size	Standard Form, with AC, DC solenoid SS/SA-G01-**-R**-E31		
	Operation Example	Operation Symbol	Operation Symbol
A2X, H2X	–	K	K
E2X	–	J	J
A3X, H3X	B	K	K
E3X	A	J	J
A3Z, H3Z	D	D	D
E3Z	D	D	D
A5	A	–	I
H5	A	I	–
C1, C6	Note1) C(E)	I	I
C1S, C5, C6S	A	I	I
C2, C9	A	K	K
A4	F	F	F
H4	F	F	F
C4	F	F	F
C7Y, C8	Note2) G(H)	K	K

Size	Shockless Type, with DC solenoid SS/SA-G01-**-FR**-E31		
	Operation Example	Operation Symbol	Operation Symbol
A2X, H2X	–	P	P
E2X	–	O	O
A3X, H3X	L	P	P
E3X	L	O	O
A3Z, H3Z	L	L	L
E3Z	L	L	L
A5	L	–	P
H5	L	P	–
C1, C6	M	P	P
C1S, C2, C5, C6S, C9	L	P	P
A4, H4	L	L	L
C4	L	L	L
C7Y, C8	N	P	P

Note) 1. Letter in parentheses is for AC solenoid.
 2. Letter in parentheses is for solenoid with built-in rectifier (E*), but without Quick Return, and for DC solenoid (D*) with surge voltage absorbing diode on the electrical circuit.



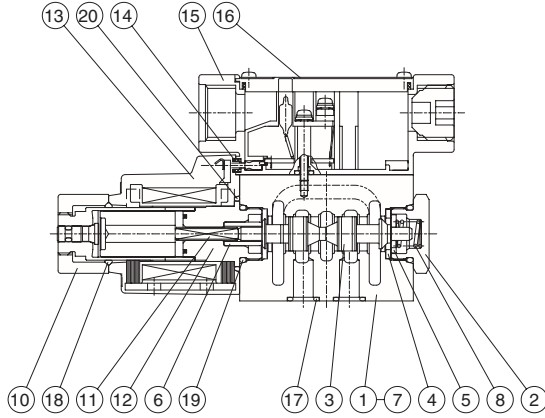
Pressure – Flow Volume Allowable Value

Model No.	Standard Form, with AC Solenoid			Standard Form, with DC Solenoid		
	SS-G03-**-R-C*-E21			SS-G03-**-R-**-E21		
Operation Example						
Operation Symbol						
A2X	—	F	E	—	E	F
H2X	—	E	F	—	F	E
E2X	—	C	C	—	C	C
A3X	A	E	E	A	D	F
H3X	A	E	E	A	F	D
A3Z	A	A	C	A	C	C
H3Z	A	C	A	A	C	C
E3X, E3Z	A	C	C	A	C	C
A5	A	—	D	A	—	E
H5	A	D	—	A	E	—
C1, C1S, C5, C6, C6S	A	D	D	A	E	E
C2	A	G	D	A	G	E
A4, H4, C4	A	A	A	A	A	A
C9	A	G	G	A	G	G
C7Y, C8	B	B	B	Note1) B(H)	B(H)	B(H)
Model No.	Shockless Type, with DC solenoid					
	SS-G03-**-FR-**-E21					
Operation Example						
Operation Symbol						
A2X	—	E	F			
H2X	—	F	E			
E2X	—	C	C			
A3X	A	D	F			
H3X	A	F	D			
A3Z	A	C	C			
H3Z	A	C	C			
E3X, E3Z	A	C	C			
A5	A	—	E			
H5	A	E	—			
C1, C1S, C5, C6, C6S	A	E	E			
C2	A	G	E			
A4, H4, C4	A	A	A			
C9	A	G	G			
C7Y, C8	Note1) B(H)	B(H)	B(H)			

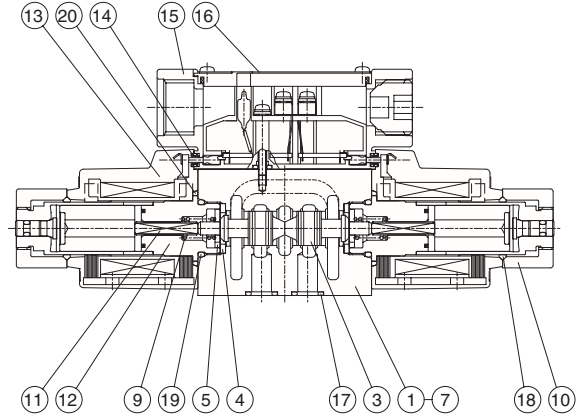
- Note) 1.Letter in parentheses is for solenoid with built-in rectifier (E*), but without Quick Return, and for DC solenoid (D*) with surge voltage absorbing diode on the electrical circuit.
 2.There is no shockless type for the AC solenoid (C*), so use a solenoid with built-in rectifier (E*) when shockless operation is required with an AC power supply.
 3.The maximum flow rate is the allowable value of each port.

Cross-sectional Drawing

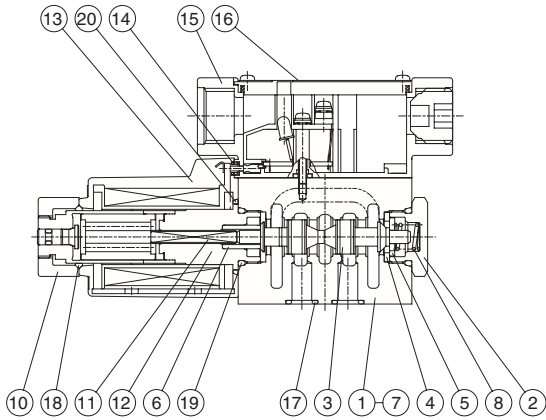
SS-G01-A**-R-C*-E31



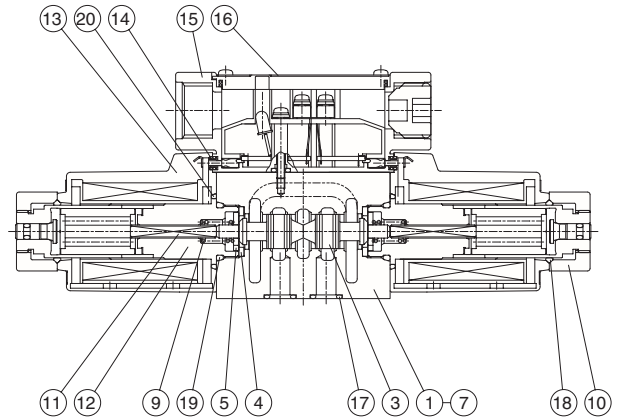
SS-G01-C**-R-C*-E31



SS-G01-A**-R-D/E*-E31



SS-G01-C**-R-D/E*-E31



List of Sealing Parts

Part No.	Part Name	Part Number	Q'ty	
			Single Solenoid	Double Solenoid
17	O-ring	AS568-012(Hs90)	4	4
18	O-ring	1A-P20	1	2
19	O-ring	1B-P18	2	2
20	O-ring	S-25	1	2

Note) 1A and 1B are JIS Standard B 2401, while AS568 is SAE standard.

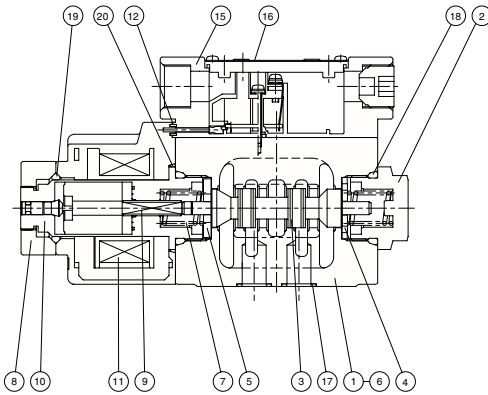
Seal Kit Number

Single Solenoid	Double Solenoid
EDCS-A	EDCS-C

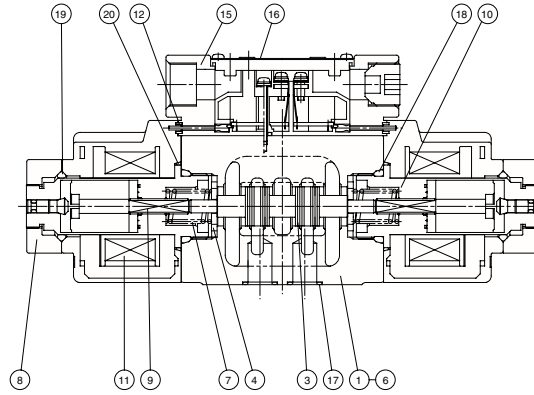
Part No.	Part Name	Part No.	Part Name
1	Body	11	Rod
2	Plug	12	Solenoid guide
3	Spool	13	Solenoid coil
4	Retainer A	14	Packing
5	Retainer B	15	Terminal box kit
6	Retainer C	16	Nameplate
7	Spacer	17	O-ring
8	Spring A	18	O-ring
9	Spring C	19	O-ring
10	Nut	20	O-ring

Cross-sectional Drawing

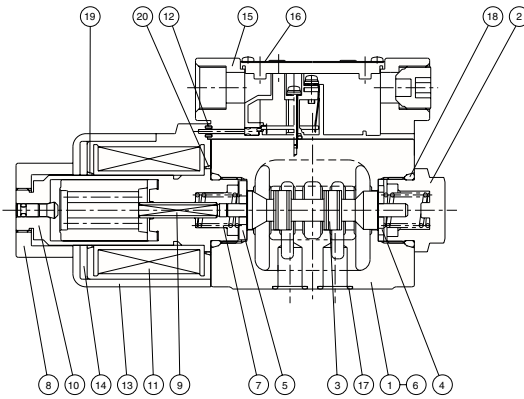
SS-G03-A**-R-C*-E21



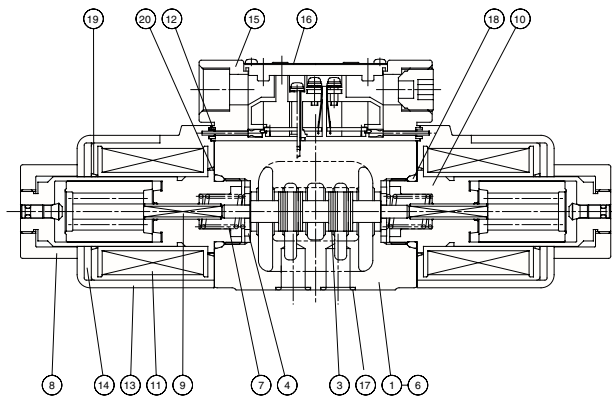
SS-G03-C**-R-C*-E21



SS-G03-A**-R-D/E*-E21



SS-G03-C**-R-D/E*-E21



List of Sealing Parts

Part No.	Part Name	Type/Part Number		Q'ty	
		AC SOL.	DC SOL.	Single Solenoid	Double Solenoid
17	O-ring	AS568-014(Hs90)		5	5
18	O-ring	1B-P28		2	2
19	O-ring	1A-P26	AS568-026	1	2
20	O-ring	AS568-029		2	2

Note) 1A and 1B** indicate JIS Standard B 2401-1A/1B-**.

Seal Kit Number

AC SOL.		DC SOL.	
Single Solenoid	Double Solenoid	Single Solenoid	Double Solenoid
ECBS-AA	ECBS-CA	ECBS-AD	ECBS-CD

Part No.	Part Name	Part No.	Part Name
1	Body	14	Coil yoke
2	Plug	15	Terminal box kit
3	Spool	16	Nameplate
4	Retainer	17	O-ring
5	Retainer B	18	O-ring
6	Spacer	19	O-ring
7	Spring	20	O-ring
8	Nut		
9	Rod		
10	Solenoid guide		
11	Solenoid coil		
12	Packing B		
13	Coil case		



SA Series (Wiring System: DIN Connector Type)
Wet Type Solenoid Valve

26.4 to 42.3gpm
5000psi

Features

- ① Very long life
The movable iron core of the wet type solenoid is immersed in oil, which keeps it lubricated and cushions it from impact and vibration, ensuring very long life.
- ② Low switching noise
The wet-type solenoid valve provides very low core switching noise, for quiet operation.
- ③ Shockless
A switching speed adjustment mechanism enables direct, shockless operation (Option F).
- ④ No surge voltage
Sparkling and surge voltage during solenoid switching is canceled for stable switching (Option G).
- ⑤ Easy coil replacement
A DIN connector type coil enables one-touch coil replacement.
- ⑥ Wide-ranging backward compatibility makes it simple to replace previous valve models with this one. Combining this valve with a modular valve contributes to the compact configuration of the overall device.
- ⑦ Global support (G01 size)
Meets overseas safety standards (CE, UL, and CSA). It can be safely used anywhere in the world. Contact your agent for certified products.

Specifications

Model No.		SA-G01				SA-G03					
		Standard Type		Shockless Type		Standard Type				Shockless Type	
		Maximum Flow Rate ℓ /min	Maximum Working Pressure MPa(kg/cm ²)	Maximum Flow Rate ℓ /min	Maximum Working Pressure MPa(kg/cm ²)	AC Solenoid Type		DC Solenoid Type (With built-in rectifier)			
Maximum Flow Rate ℓ /min	Maximum Working Pressure MPa(kg/cm ²)					Maximum Flow Rate ℓ /min	Maximum Working Pressure MPa(kg/cm ²)	Maximum Flow Rate ℓ /min	Maximum Working Pressure MPa(kg/cm ²)		
	-A2X-	30 (7.9)	35 (5000)	30 (7.9)	25(255) (3571)	40 (10.6)	35(357) (5000)	85 (22.4)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-H2X-					85 (22.4)					
	-E2X-	80 (21.1)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-A3X-										
	-E3X-	100 (26.4)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-A3Z-										
	-E3Z-	65 (17.1)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	--A4-										
	-A5-	50 (13.2)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-H5-										
	-C5-	100 (26.4)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-C9-										
	-C6S-	100 (26.4)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-C1-										
	-C4-	50 (13.2)	35 (5000)	50 (13.2)	25(255) (3571)	130 (34.3)	35(357) (5000)	160 (42.2)	35(357) (5000)	130 (34.3)	25(255) (35.71)
	-C7Y-										
	-C8-	50 (13.2)	35 (5000)	40 (10.6)	25(255) (3571)	70 (18.5)	35(357) (5000)	100 (26.4)	35(357) (5000)	85 (22.4)	25(255) (35.71)
	-C7-					-C8-					

Note) The maximum flow rate of each valve depends on the pressure. For details, see pages S-9 and S-10.

		SA-G01			SA-G03			
		AC Solenoid	DC Solenoid		AC Solenoid	DC Solenoid		
			Built-in Rectifier			Built-in Rectifier		
		C*	E*	D*	C*	E*	D*	
Maximum Working Pressure	P, A, B ports	35(25)MPa{357(255)kgf/cm ² }(Note 1)						
Maximum Allowable Backpressure	T port	21MPa{214kgf/cm ² }			16MPa{163kgf/cm ² }			
Switches/min.	Standard Type	300	120	300	240	120	240	
	Shockless Type	—		120	—		—	120
Option	Indicator light	R			R			
	Shockless	—	F		—	F		
	Surgeless	G	—	G	G	—	G	
	G Screw Connector	J	—	J	J	—	J	
	With manual push-button	N			N			
Weight (kg)	Quick Return	—	Q	—	—	Q	—	
	Double Solenoid	1.8	2.0		4.2	5.5		
	Single Solenoid	1.4	1.5		3.5	4.1		
	Operating Environment	Dust Resistance/Water Resistance Rank	JIS C 0920 IP65 (Dust-tight, Waterjet-proof) (Note 2)					
Operating Fluid		Ambient Temperature	- 20 to 50°C					
		Temperature Range	- 20 to 70°C					
		Viscosity Range	15 to 300mm ² /s					
	Filtration	25 microns or less						
Mounting bolt	Size × Length	M5 × 45 (Four) 10-24 × 1 3/4			M6 × 70 (Four) (M8 × 70 (Four)) 1/4-20 × 2 3/4			
	Tightening Torque	M5 5 to 7N·m{51 to 71kgf·cm} 10-24 to 3.6-5.1Lbs.ft.			M6 10 to 13N·m{102 to 133kgf·cm} (M8 20 to 25N·m{204 to 255kgf·cm}) 1/4-20 to 7.2-9.4Lbf.ft.			

- Note) 1.Maximum operating pressure depends on the valve type. For details, see page S-13.
2.The power supply type for E* is IP64 (dust-tight, splash-proof).
3.For mounting bolts, use 12T or equivalent.

Notes

- 1 Pipe system so that tank line is always filled with oil.
- 2 Surge pressure should be kept below maximum tank line back pressure rating.
- 3 When using a 4-way valve as a 2-way or 3-way and blocking unused ports lowers the maximum flow.
- 4 Keep hydraulic oil clean. (Degree of contamination: NAS grade 12 or better). When petroleum hydraulic oil is used, it should conform to ISO VG32, 46.
- 5 Do not exceed permissible voltage range of the coil used.
- 6 Do not supply electric power to the AC solenoid unless the coil is mounted to the valve.
- 7 Provide drain piping from the T port, when valve spool types are A2X, H2X, E2X.
- 8 If the changeover position is kept under high pressure for an extended period, malfunctions may occur due to hydraulic lock. Please consult us when you have such application.
- 9 When the detent-type (E2X, E3X, E3Z) is used, we recommend that the electric power supply be continuous in order that the changeover position may be firmly maintained.
- 10 Resistance force against the manual override pin changes, depending on the back pressure of the tank line.
- 11 Solenoid coil could be hot by continuous operation. Do not touch the coil directly by hand.
- 12 Gasket dimension
SA/SS-G01 = ISO 4401-03-02-0-94
SA/SS-G03 = ISO 4401-05-04-0-94

● Solenoid Assembly Specifications

Solenoid Type	Power Supply Type	Voltage (V)	Frequency (Hz)	For SA-G01				For SA-G03					
				Solenoid Coil Type	Drive Current (A)	Holding Current (A)	Holding Power (W)	Allowable Voltage Range (V)	Solenoid Coil Type	Drive Current (A)	Holding Current (A)	Holding Power (W)	Allowable Voltage Range (V)
AC	C1	AC100	50	EAC64-C1	2.2	0.52	25	80 to 110	EBB64-C1	5.4	0.92	36.0	80 to 110
			60		2.0	0.38	22			90 to 120	4.6	0.62	
		AC110	60		2.2	0.46	28	5.0			0.78	42.0	90 to 120
	C115	AC110	50	EAC64-C115	2.0	0.47	25	90 to 120	EBB64-C115	5.0	0.85	36.0	90 to 120
			60		1.8	0.35	22			100 to 130	4.2	0.57	
		AC115	60		2.0	0.42	28	4.6			0.72	42.0	100 to 130
	C2	AC200	50	EAC64-C2	1.1	0.26	25	160 to 220	EBB64-C2	2.7	0.46	36.0	160 to 220
			60		1.0	0.19	22			180 to 240	2.3	0.31	
	AC220	60	1.1		0.23	28	2.5	0.39			42.0	180 to 240	
	C230	AC220	50	EAC64-C230	1.0	0.24	25	180 to 240	EBB64-C230	2.5	0.42	36.0	180 to 240
			60		0.91	0.17	22			200 to 260	2.1	0.29	
		AC230	60		1.0	0.21	28	2.3			0.36	42.0	200 to 260
DC with Built-in Rectifier	E1	AC100	50/60	EAC64-E1-1A	0.31		27	90 to 110	EBB64-E1	0.40		34.0	90 to 110
	E115	AC110	50/60	EAC64-E115-1A	0.26		25	100 to 125	EBB64-E115	0.33		31.0	100 to 125
					0.27		27			0.34		34.0	
	E2	AC200	50/60	EAC64-E2-1A	0.15		26	180 to 220	EBB64-E2	0.22		37.0	180 to 220
	E230	AC220	50/60	EAC64-E230-1A	0.12		24	200 to 250	EBB64-E230	0.16		30.0	200 to 250
0.13					27	0.17				33.0			
DC	D1	DC12	—	EAC64-D1-1A	2.2		26	10.8 to 13.2	EBB64-D1	2.6		31.0	10.8 to 13.2
	D2	DC24	—	EAC64-D2-1A	1.1		26	21.6 to 26.4	EBB64-D2	1.5		36.0	21.6 to 26.4

Understanding Model Numbers

SA - G 01 - A 3 X - * * - C 2 - 31

Design number
 31: 01 size for mounting bolt M5
 E31: for mounting bolt 10-34
 21: 03 size for mounting bolt M8
 J21: 03 size for mounting bolt M6
 E21: 03 size for mounting bolt 1/4-20

Power supply
 C: AC (50/60Hz) C1=AC100V C115=AC110V C2=AC200V C230=AC220V
 D: DC D1=DC12V D2=DC24V
 E: AC (Built-in rectifier; 50/60Hz)
 E1=AC100V E115=AC115V E2=AC200V E230=AC230V

Auxiliary symbol (Can be combined in alphabetic sequence.)
 F : Shockless type (Available with power supply D*, E)
 GR: Surgeless type with indicator (Available with power supply C*, D*)
 J : G screw conversion adapter (For power supply C*, D*)
 N : With manual push-button
 Q : Quick return type (Available with power supply E*)
 R : With indicator light

Transition Flow Path (Specify for A2X, H2X, E2X, *3*, C7Y only.)

X	Y	Z
Closed	Semi-open	Open

Center position

0	1	2	3	4	5
6	7	8	9	1S	6S

Note 1: P=Pressure port; A and B=Connection port to cylinder, etc.; T(R)=Connection port to tank

Operation Method

A	H	C	E
Spring Offset	Spring Center	Spring Center	Detent

Nominal diameter
 01 size
 03 size

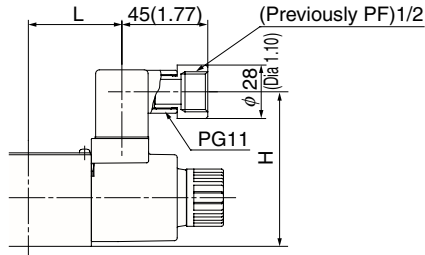
Mounting method
 G: Cascade mounting

Wet type solenoid operated directional control valve with DIN connector

Options

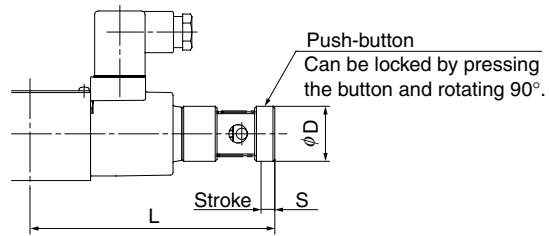
(Auxiliary Symbol Explanations)

G Screw Adapter (Auxiliary Symbol: J)



Model No.	L	H
SA-G01	49(1.92)	81(3.19)
SA-G03	60.5(2.38)	100.5(3.96)

With manual push-button (Auxiliary Symbol: N)

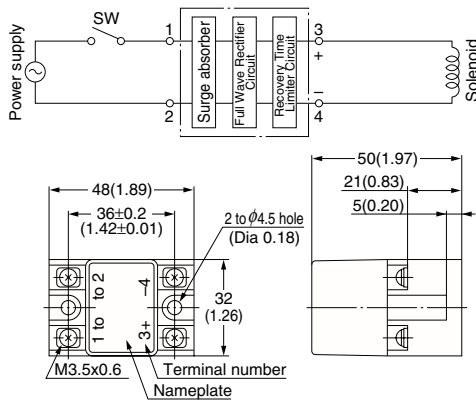


Model No.		L	S	D
SA-G01	AC Solenoid	133.5(5.26)	7.5(0.30)	30(1.18)
	DC Solenoid	140.5(5.53)		
SA-G03	AC Solenoid	155.5(6.12)	9.5(0.37)	35(1.38)
	DC Solenoid	173.5(6.83)		

Quick Return Type (Auxiliary Symbol: Q)

● Handling

- 1 This type is used in the case of power supply type E* (with built-in rectifier) to shorten the spring return time. This also applies to D*.
- 2 The Quick Return device is not built in. Mount to the electrical box, etc.
- 3 Even when power supply type E* is equipped with a Quick Return mechanism, response is not fast. (Replace the DIN connector with EA41-1A or EA41-R*-1C, without changing the coil.)
- 4 When multiple Quick Return devices are used, do not wire COM to the output side (pin number 3 and 4 side).



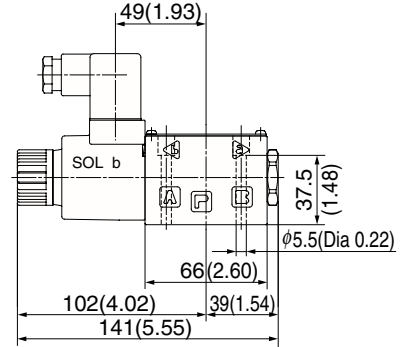
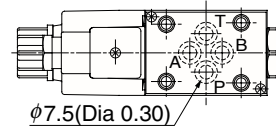
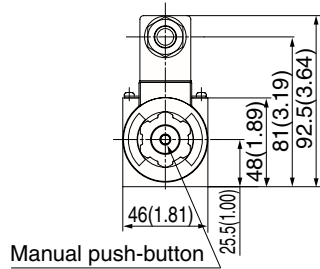
Other Options

Note) For information about the shockless and surgeless options, see page S-4.

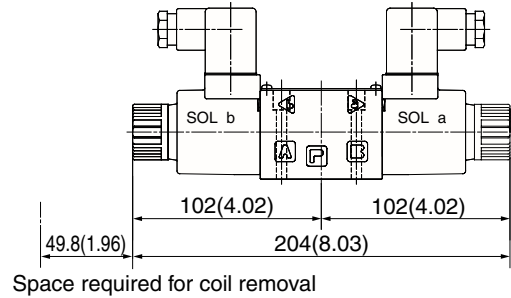
Installation Dimension Drawings

AC Solenoid
 SA-G01-A**-*-C*-E31
 SA-G01-H**-*-C*-E31

Note) SA-G01-H**-R**-31
 The solenoid is on the opposite side of that shown for SOLa in the illustrations shown here.

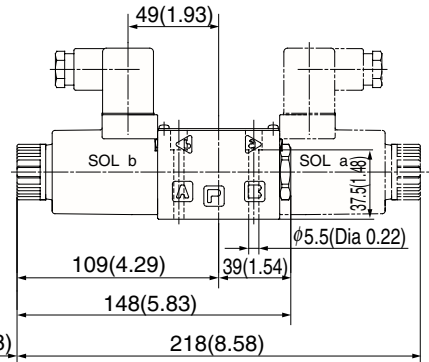
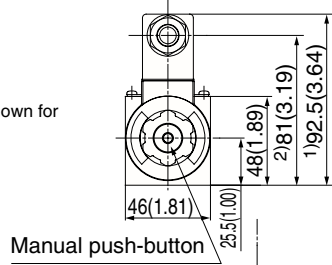


SA-G01-C**-R*-E31
 SA-G01-E**-R*-E31



DC Solenoid and Rectifier
 SA-G01-A**-D*/E*-E31
 SA-G01-H**-D*/E*-E31
 SA-G01-C**-D*/E*-E31
 SA-G01-E**-D*/E*-E31

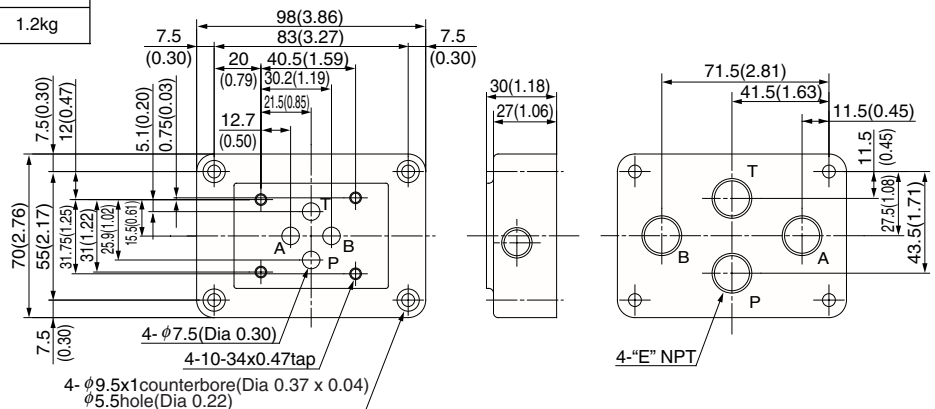
Note) 1.SA-G01-H**-D*/E*-E31
 The solenoid is on the opposite side of that shown for SOLa in the illustrations shown here.
 2.SA-G01-E*-E*-E31
 Dimension 1 is 96.
 Dimension 2 is 73.



For sub plate SA-G01

Model No.	E	Weight
MSA-01X-E10	1/4	1.2kg
MSA-01Y-E10	3/8	1.2kg

Gasket Surface Dimensions
 (ISO 4401-03-02-0-94
 JIS B 8355 D-03-02-0-94)

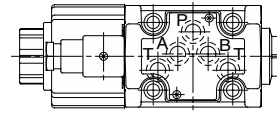


Installation Dimension Drawings

AC Solenoid

SA-G03-A**-*-C*-E21

SA-G03-H**-*-C*-E21



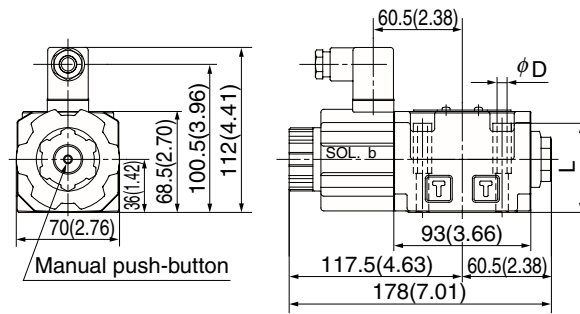
Note) SA-G03-H**-*-C*-E21

The solenoid is on the opposite side of that shown for SOLa in the illustrations shown here.

	SA-G03**-*-E21	SA-G03**-*-E21
φD	φ6.8(Dia 0.27)	φ8.5(Dia 0.33)
L	60.5(2.38)	58(2.28)

SA-G03-C**-*-C*-E21

SA-G03-E**-*-C*-E21



DC Solenoid and Rectifier

SA-G03-A**-*-D*/E*-E21

SA-G03-H**-*-D*/E*-E21

SA-G03-C**-*-D*/E*-E21

SA-G03-E**-*-D*/E*-E21

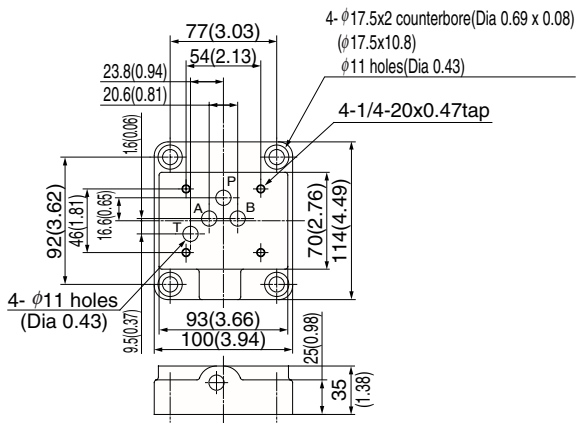
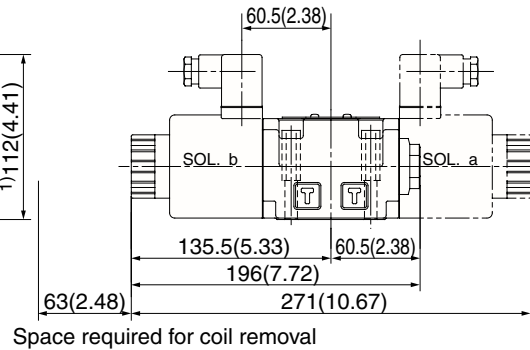
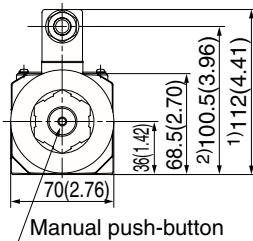
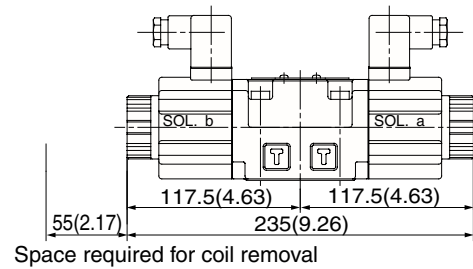
Note) 1.SA-G03-H**-*-D*/E*-E21

The solenoid is on the opposite side of that shown for SOLa in the illustrations shown here.

2.SA-G03**-*-E*-E21

Dimension 1 is 115.5 (4.55)

Dimension 2 is 92.5 (3.64)

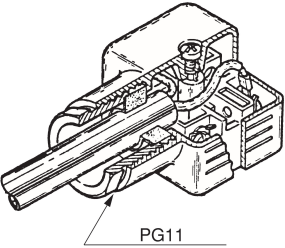
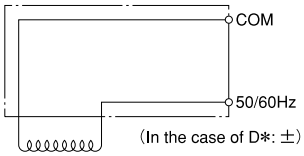
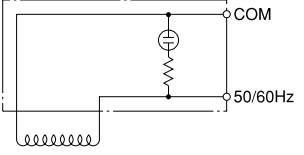
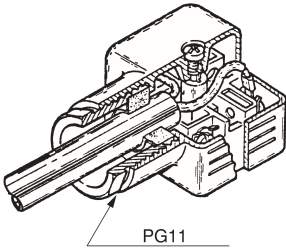
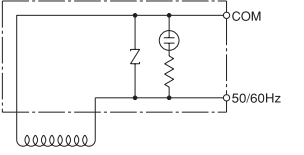
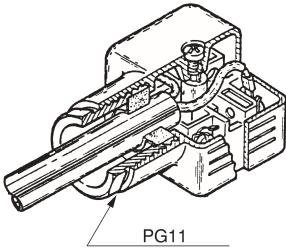
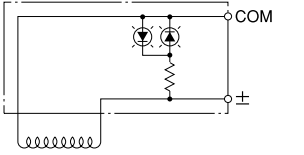
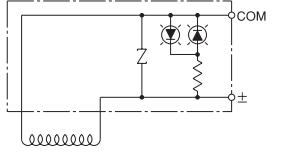
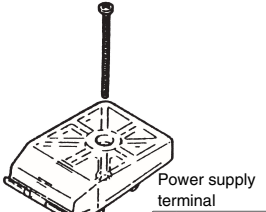
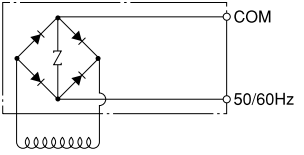
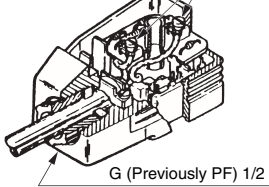
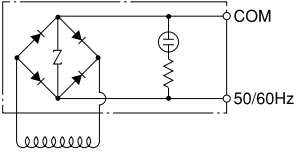


For sub plate SA-G03

Mounting bolt	Model No.	E	Weight
1/4-20	MSA-03-E10	3/8	2.3kg
M6	MSA-03X-E10	1/2	

M6 gasket surface dimensions
(ISO 4401-05-04-0-94
JIS B 8355 D-05-04-0-94)

● Connectors

Model No.	Wiring	Electrical Circuit Diagram
<p>SA-G01-***-C* E31 G03-D*(J)E21 (EA41-1A)</p>	 <p>PG11</p>	 <p>(In the case of D*: ±)</p>
<p>SA-G01-***-R-C* E31 G03-(J)E21 (EA41-R*1C)</p>		
<p>SA-G01-***-GR-C* E31 G03-(J)E21 (EA41-GRC*1C)</p>	 <p>PG11</p>	
<p>SA-G01-***-R-D* E31 G03-(J)E21 (EA41-DR*1C)</p>	 <p>PG11</p>	
<p>SA-G01-***-GR-D* E31 G03-(J)E21 (EA41-GRD*1C)</p>		
<p>SA-G01-***-E* E31 G03-(J)E21 (EA42-1B)</p>	 <p>Power supply terminal</p>	
<p>SA-G01-***-R-E* E31 G03-(J)E21 (EA42-R*1B)</p>	 <p>G (Previously PF) 1/2</p>	

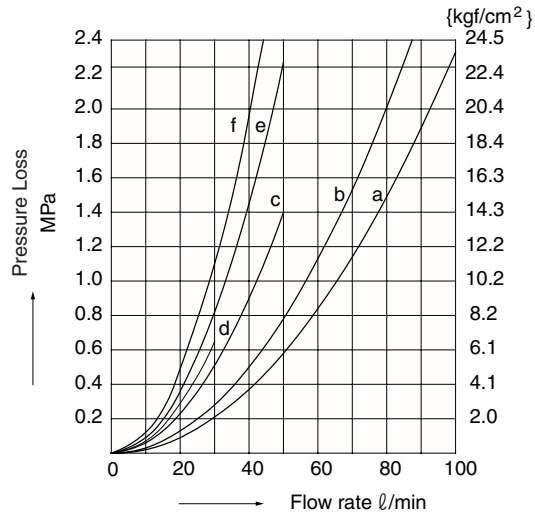
Symbols in parentheses indicate connector configuration.

- Note) 1. Asterisks in the connector configuration and power supply symbols are fillers for the voltage symbol (1 or 2).
 2. The connector cord diameter is ϕ 8 to 10. Anything outside this range causes water tightness to be lost.
 3. The orientation of the connectors can be changed in 90° increments by changing the terminal block.
 4. The cover cannot be removed unless the installation screws are removed.
 5. When J is specified for the auxiliary symbol, a G screw conversion adapter is attached to the connector, and the wiring port is a G (previously PF) 1/2 screw (standard: PG11). EA42 and EA42-R* also have a G (previously PF) wiring port.
 6. Use M3 for round type and Y type solderless terminals.
 7. Tighten the M3 screws that secure connectors and terminals to a torque of 0.3 to 0.5Nm (3.1 to 5.1kgf·cm).
 8. An EA-41-1A or EA41-R*1C connector is used in the case of power supply type E* with Quick Return type Q.

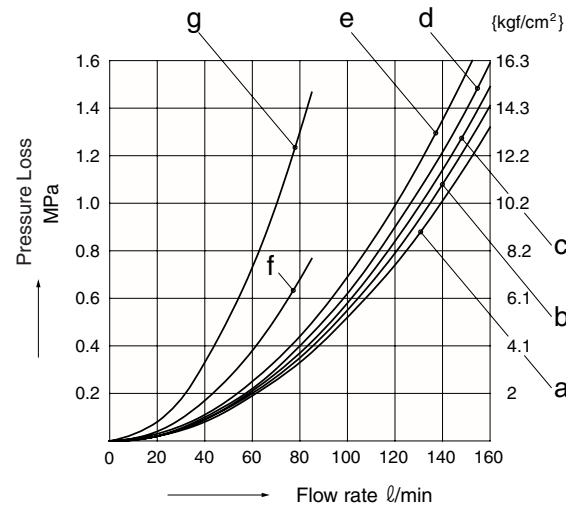
Performance Curves

Hydraulic Operating Fluid Viscosity 32mm²/s

Pressure Loss Characteristics



Pump Type	Flow Path	P→A	P→B	A→T	B→T	P→T
SA-G01	A2X, H2X, E2X	d	d	—	—	—
	A3X, H3X	b	b	b	b	—
	E3X	b	b	b	b	—
	A3Z, H3Z, E3Z	a	a	a	a	—
	A4, H4, C4	a	a	a	a	a
	A5, H5, C5, C6S	b	b	b	b	—
	C1, C1S	b	b	a	b	—
	C2	a	b	b	b	—
	C6	b	b	a	a	—
	C7Y	f	f	e	e	c
	C8	a	f	b	e	c
C9	a	a	b	b	—	



Pump Type	Flow Path	P→A	P→B	A→T	B→T	P→T
SA-G03	A2X, H2X, E2X	e	e	—	—	—
	A5	—	c	c	—	—
	H5	c	—	—	c	—
	A3X, H3X, E3X	c	c	d	d	—
	A3Z, H3Z	a	a	d	d	—
	E3Z	b	b	a	a	—
	C1	c	c	a	c	—
	C2	a	c	c	c	—
	A4, H4, C4	a	a	a	a	a
	C5, C1S, C6S	c	c	c	c	—
	C6	c	c	a	a	—
	C7Y	g	g	g	g	f
	C8	a	g	a	g	f
C9	a	a	c	c	—	

Switching Response Time

Model No.	Response Time (sec)		Measurement Conditions
	Solenoid ON	Spring Return	
SA-G01-**-*(GR)-C*-E31	0.02 to 0.03	0.02 to 0.03	14MPa{143kgf/cm ² } 30 l /min
SA-G01-**-*(GR)-D*-E31	0.03 to 0.04	0.02 to 0.04	
SA-G01-**-*(R)-E*-E31	0.03 to 0.04	0.07 to 0.10	
SA-G01-**-*(F)(GR)-D*-E31	0.07 to 0.10	0.04 to 0.07	
SA-G01-**-*(F)(R)-E*-E31	0.07 to 0.10	0.10 to 0.15	
SA-G03-**-*(GR)-C*-E21	0.02 to 0.03	0.02 to 0.03	14MPa{143kgf/cm ² } 70 l /min
SA-G03-**-*(GR)-D*-E21	0.06 to 0.09	0.03 to 0.05	
SA-G03-**-*(R)-E*-E21	0.07 to 0.10	0.10 to 0.15	
SA-G03-**-*(F)(GR)-D*-E21	0.13 to 0.15	0.08 to 0.15	
SA-G03-**-*(F)(R)-E*-E21	0.10 to 0.15	0.15 to 0.20	

Note) 1.The switching response time changes slightly with operating conditions (pressure, flow rate, viscosity, etc.)

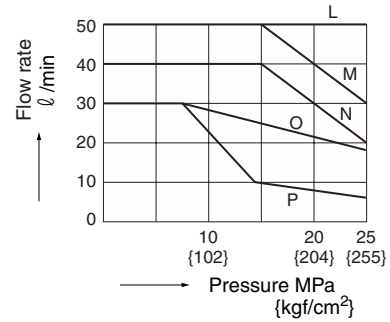
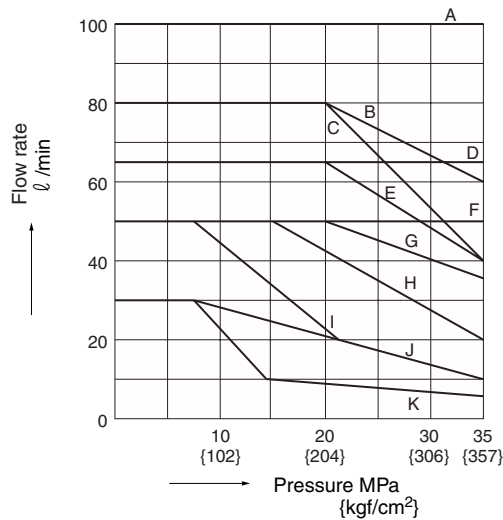
2.In the case of power supply type E* (with built-in rectifier), the spring return time using Quick Return (option symbol: Q) is the same as D*.

Pressure – Flow Volume Allowable Value

Size	Standard Form, with AC, DC solenoid		
	SS/SA-G01-**-R**-E31		
Operation Example Operation Symbol			
A2X, H2X	-	K	K
E2X	-	J	J
A3X, H3X	B	K	K
E3X	A	J	J
A3Z, H3Z	D	D	D
E3Z	D	D	D
A5	A	-	I
H5	A	I	-
C1, C6	Note1) C(E)	I	I
C1S, C5, C6S	A	I	I
C2, C9	A	K	K
A4	F	F	F
H4	F	F	F
C4	F	F	F
C7Y, C8	Note2) G(H)	K	K

Size	Shockless Type, with DC solenoid		
	SS/SA-G01-**-FR**-E31		
Operation Example Operation Symbol			
A2X, H2X	-	P	-
E2X	-	O	P
A3X, H3X	L	P	P
E3X	L	O	L
A3Z, H3Z	L	L	L
E3Z	L	L	P
A5	L	-	-
H5	L	P	-
C1, C6	M	P	-
C1S, C2, C5, C6S, C9	L	P	-
A4, H4	L	L	-
C4	L	L	-
C7Y, C8	N	P	-

Note) 1. Letter in parentheses is for AC solenoid.
 2. Letter in parentheses is for solenoid with built-in rectifier, but without Quick Return, and for DC solenoid with surge voltage absorbing diode on the electrical circuit.



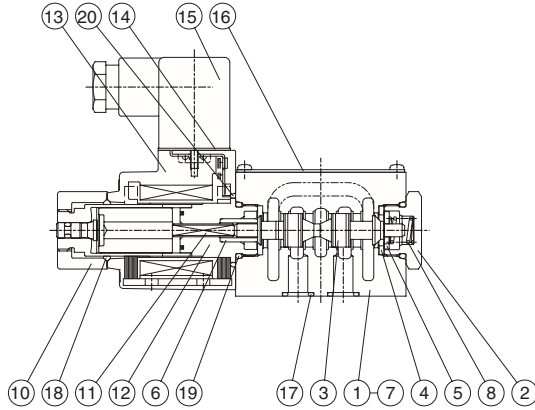
Pressure – Flow Volume Allowable Value

Model No.	Standard Form, with AC, DC solenoid			Standard Form, with DC solenoid		
	SA-G03-**-C*-E21			SA-G03-**-**-E21		
Operation Example						
Operation Symbol						
A2X	—	F	E	—	E	F
H2X	—	E	F	—	F	E
E2X	—	C	C	—	C	C
A3X	A	E	E	A	D	F
H3X	A	E	E	A	F	D
A3Z	A	A	C	A	C	C
H3Z	A	C	A	A	C	C
E3X, E3Z	A	C	C	A	C	C
A5	A	—	D	A	—	E
H5	A	D	—	A	E	—
C1, C1S, C5, C6, C6S	A	D	D	A	E	E
C2	A	G	D	A	G	E
A4, H4, C4	A	A	A	A	A	A
C9	A	G	G	A	G	G
C7Y, C8	B	B	B	Note1) B(H)	B(H)	B(H)
Model No.	Shockless Type, with DC solenoid					
	SA-G03-**-F**-E21					
Operation Example						
Operation Symbol						
A2X	—	E	F			
H2X	—	F	E			
E2X	—	C	C			
A3X	A	D	F			
H3X	A	F	D			
A3Z	A	C	C			
H3Z	A	C	C			
E3X, E3Z	A	C	C			
A5	A	—	E			
H5	A	E	—			
C1, C1S, C5, C6, C6S	A	E	E			
C2	A	G	E			
A4, H4, C4	A	A	A			
C9	A	G	G			
C7Y, C8	Note1) B(H)	B(H)	B(H)			

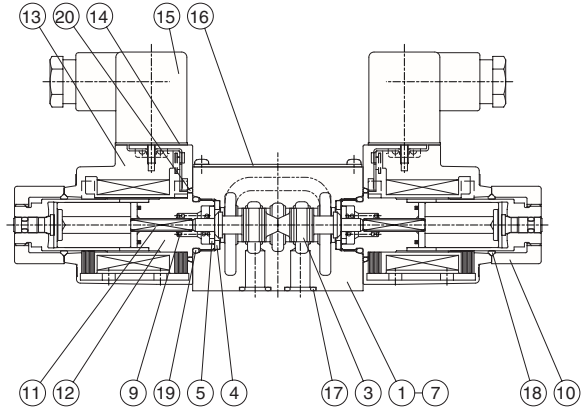
- Note) 1. Letter in parentheses is for solenoid with built-in rectifier (E*), but without Quick Return, and for DC solenoid (D*) with surge voltage absorbing diode on the electrical circuit.
 2. There is no shockless type for the AC solenoid (C*), so use a solenoid with built-in rectifier (E*) when shockless operation is required with an AC power supply.
 3. The maximum flow rate is the allowable value of each port.

Cross-sectional Drawing

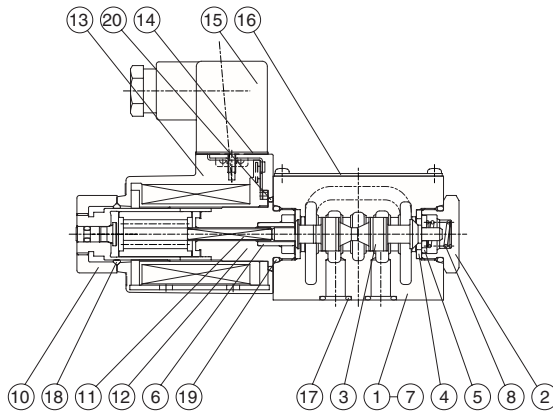
SA-G01-A**-C*-E31



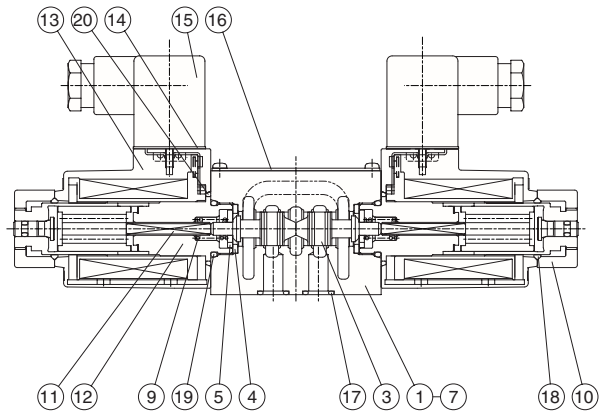
SA-G01-C**-C*-E31



SA-G01-A**-D/E*-E31



SA-G01-C**-D/E*-E31



List of Sealing Parts

Part No.	Part Name	Part Number	Q'ty	
			Single Solenoid	Double Solenoid
17	O-ring	AS568-012(Hs90)	4	4
18	O-ring	1A-P20	1	2
19	O-ring	1B-P18	2	2
20	O-ring	S-25	1	2

Note) 1A and 1B are JIS Standard B 2401, while AS568 is SAE standard.

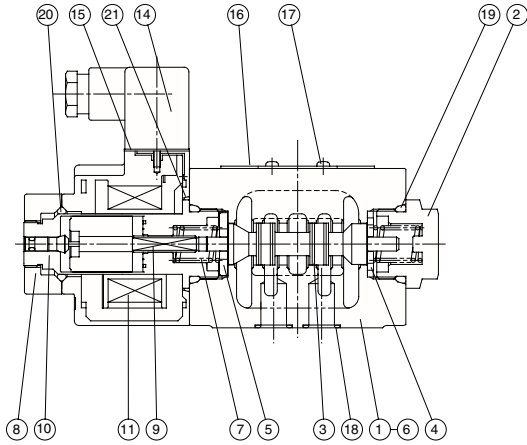
Seal Kit Number

Single Solenoid	Double Solenoid
EDCS-A	EDCS-C

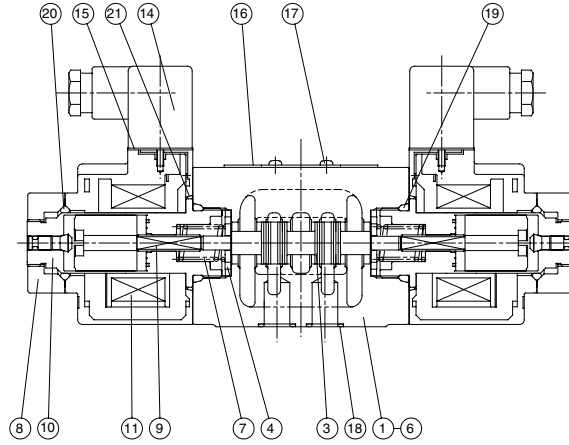
Part No.	Part Name	Part No.	Part Name
1	Body	11	Rod
2	Plug	12	Solenoid guide
3	Spool	13	Solenoid coil
4	Retainer A	14	Connector
5	Retainer B	15	Nameplate
6	Retainer C	16	Screw
7	Spacer	17	O-ring
8	Spring A	18	O-ring
9	Spring C	19	O-ring
10	Nut	20	O-ring

Cross-sectional Drawing

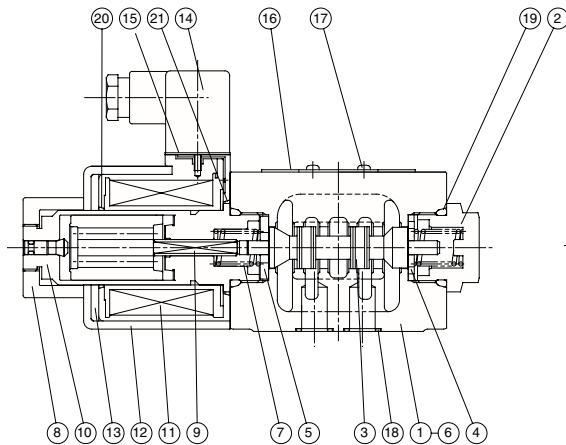
SA-G03-A**-C*-(J)E21



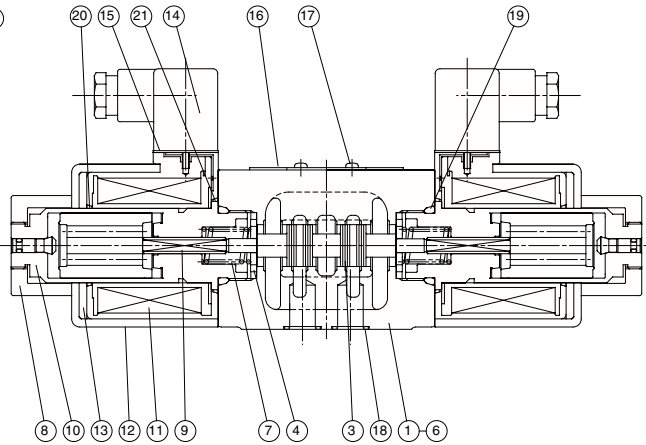
SA-G03-C**-C*-(J)E21



SA-G03-A**-D/E*-(J)E21



SA-G03-C**-D/E*-(J)E21



List of Sealing Parts

Part No.	Part Name	Type/Part Number		Q'ty	
		AC SOL.	DC SOL.	Single Solenoid	Double Solenoid
18	O-ring	AS568-014(Hs90)		5	5
19	O-ring	1B-P28		2	2
20	O-ring	1A-P26	AS568-026	1	2
21	O-ring	AS568-029		1	2

Note) O-ring 1A/B-*** refers to JIS B2401-1A/B.

Part No.	Part Name	Part No.	Part Name
1	Body	11	Solenoid coil
2	Plug	12	Coil case
3	Spool	13	Coil yoke
4	Retainer	14	Connector
5	Retainer B	15	Connector packing
6	Spacer	16	Nameplate
7	Spring	17	Screw
8	Nut	18	O-ring
9	Rod	19	O-ring
10	Solenoid guide	20	O-ring
		21	O-ring

Seal Kit Number

AC SOL.		DC SOL.	
Single Solenoid	Double Solenoid	Single Solenoid	Double Solenoid
ECBS-AA	ECBS-CA	ECBS-AD	ECBS-CD



Features

① Low current, low power

The SE series magnetic switching valve's solenoid has significantly lower power consumption.

② Directly drivable by a programmable controller

Low-current operation means not only allows direct drive by a programmable controller (PC) output circuit, it also enables the use of a compact and simple control circuit.

③ Little coil temperature rise

Low power operation means there is little heat generated from the coil, which minimizes the effects of heat on mechanisms. Even with the AC solenoid, there is little chance of coil burnout.

Specifications

Operation Symbol	SE-G01-**-GR-**-30			SE-G03-**-GR-**-J 20			
	JIS Symbol	Rated Flow Rate -Maximum Flow Rate ℓ/min(gpm)	Maximum Working Pressure MPa(psi)	JIS Symbol	Rated Flow Rate -Maximum Flow Rate ℓ/min(gpm)	Maximum Working Pressure MPa(psi)	
A2X		30 (7.9)	10 (1428)		100 (26.4)	21 (3000)	
A3X		35 (9.2)			80 (21.1)		
H2X	/				100 (26.4)		
H3X					80 (21.1)		
E3X		30 (7.9)	10 (1428)		100 (26.4)		
C4				40 (10.6)			40 (10.6)
C5		40 (10.6)					
C6							
C6S	/						
C7Y					40 (10.6)		
C1	/				100 (26.4)		

Note) The maximum flow rate of each valve depends on the pressure. For details, see page S-29.

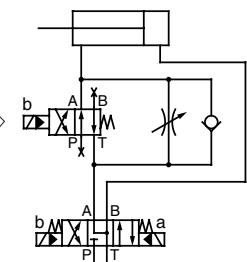
• Precautions During Use

The SE Series is an internal pilot and internal drain type valve, so the following precautions must be observed whenever using it.

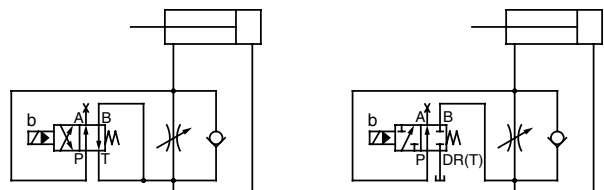
- 1) A pressure of 0.4MPa {57psi} or greater is required at the P port for valve switching and holding.
- 2) For valve switching, a pressure of 0.4MPa {57psi} or greater must be maintained between PT (DR) as minimum pilot pressure. In this case, make sure that P port pressure is always greater than T (DR) port pressure.
- 3) Never close the T (DR) port. Be sure to run piping from it.
- 4) A resistance valve is built in for flow paths C4 and C7Y, so there is no need to provide an external check valve.
- 5) Generally, operating fluid flow in the following directions: P→A, P→B, A→T, P→T. Do not configure for reverse flow.

Example of Non-allowed Circuits

When fast feed is done while SOL is ON, the valve does not switch because the pilot pressure cannot be obtained in the internal pilot.



The following shows the required circuit configurations in this case.

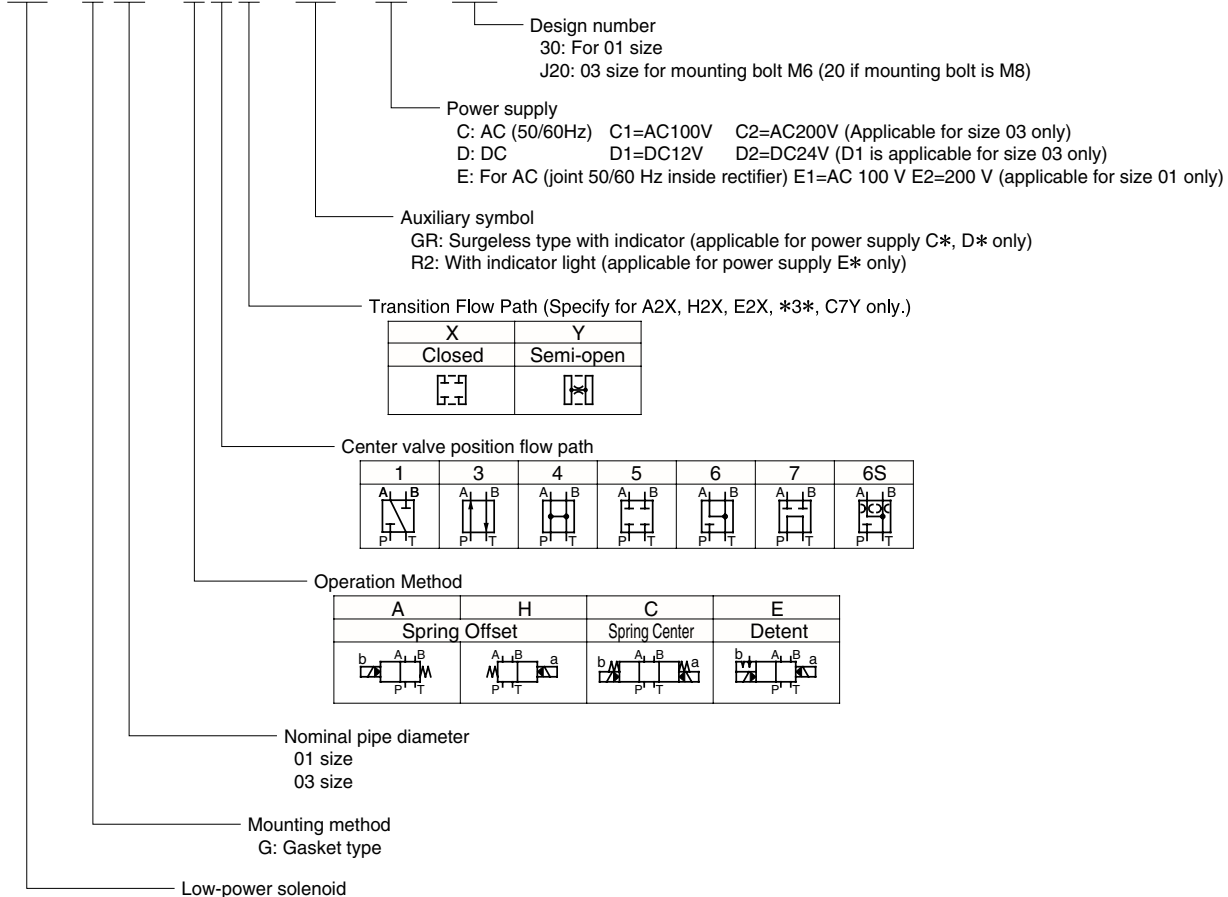


Solenoid Type		SE-G01-30			SE-G03-20				
		DC Solenoid		Internal DC solenoid for rectifier	AC Solenoid		DC Solenoid		
		D2	E1	E2	C1	C2	D1	D2	
Maximum Working Pressure	P, A, B Ports	10MPa {1428psi}			21MPa {3000psi}				
Maximum Allowable Backpressure	T port	10MPa {1428psi} (In the case of 2MPa {300psi} operation symbol E3X)			7MPa {1000psi} (In the case of 2MPa {300psi} operation symbol E3X)				
Pilot Pressure (P-T Port Pressure)					0.4MPa{4kgf/cm ² } minimum				
Changeover Frequency (per minute)		120			120				
Standard	Indicator light Surgeless	GR		R		GR			
Weight (kg)	Double Solenoid	2.5			3.5				
	Single Solenoid	1.8			3.3				
Operating Environment	Dust Resistance/Water Resistance Rank	JIS C0920 IP55 (Dust-tight, Rain-proof)			JIS C0920 IP63 (Dust-tight, Rain-proof)				
	Ambient Temperature	-20 to 50°C							
	Operating Fluid	Temperature Range	-20 to 70°C						
		Viscosity Range	15 to 300mm ² /s						
Filtration	25 microns or less								
Bundled Accessories	Mounting bolt	M5 x 30 (Four)			M5 x 35 (Four) (M8 x 70 (Four))				
	Tightening Torque	5 to 7N·m{51 to 71kgf·cm}			M6 10 to 13N·m {102 to 133kgf·cm} M8 20 to 25N·m {204 to 255kgf·cm}				

Note) For mounting bolts, use 12T or equivalent.

Understanding Model Numbers

SE - G 03 - A 3 X - GR - C2 - J20

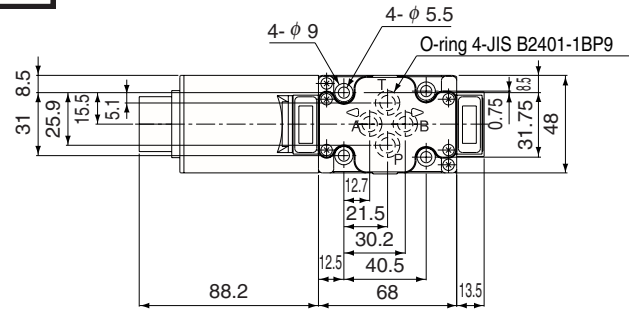


● Solenoid Assembly Specifications

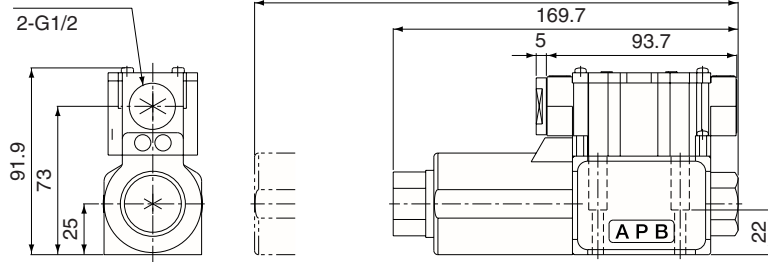
Solenoid Type	Power Supply Type	Voltage (V)	Frequency (Hz)	For SE-G01				For SE-G03					
				Solenoid Coil Type	Holding Current (A)	Holding Power (W)	Allowable Voltage Range (V)	Solenoid Coil Type	Drive Current (A)	Holding Current (A)	Holding Power (W)	Allowable Voltage Range (V)	
AC	C1	AC100	50	/				EE64-01C1-1A	0.29	0.19	6.1	80 to 110	
			60						0.24	0.135	4.1	90 to 120	
		AC110	60						0.265	0.165	5.3		
	C2	AC200	50						EE64-01C2-1A	0.145	0.095	6.1	160 to 220
			60							0.12	0.07	4.1	180 to 240
		AC220	60							0.135	0.085	5.3	
Built-in rectifier type AC	E1	AC100	50	SLH1-025B-R1-01	0.07	6.5	/	80 to 110					
			60					90 to 120					
		AC110	60		0.08	7.9		160 to 220					
			E2		AC200	50		SLH1-025B-R2-01	0.05	8.1	180 to 240		
	60	0.05		9.87									
	AC220	60		EE64-01D1-1A	0.4	4.8	10.8 to 13.2						
		DC							DC12	-	/	EE64-01D2-1A	0.2
	DC24		-		SLH1-025B-D2-01	0.2	4.8	21.6 to 26.4					

Installation Dimension Drawings

DC Solenoid
SE-G01-A***-GR-**-30

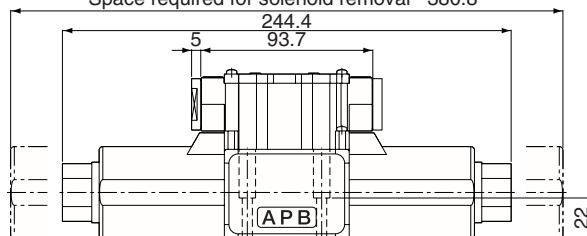


Space required for solenoid removal 237.9



SE-G01-C**-GR-**-30
SE-G01-E3X-GR-**-30

Space required for solenoid removal 380.8



Note) Gasket surface dimensions and the sub plate are the same as those for SS-G01. See page S-5 for more information.

Installation Dimension Drawings

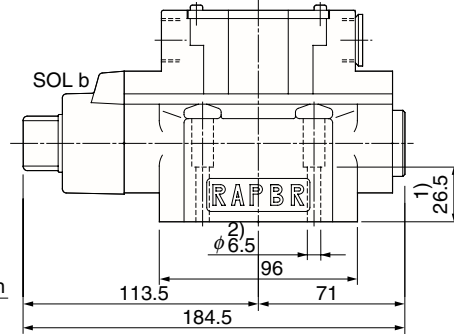
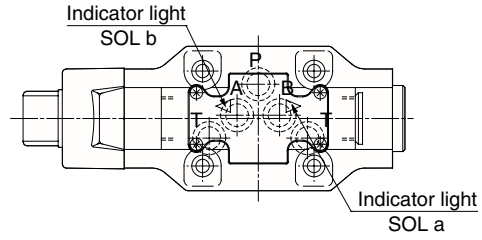
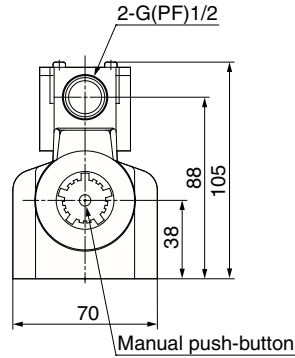
AC Solenoid

SE-G03-A**-GR-C*-J20

SE-G03-H**-GR-C*-J20

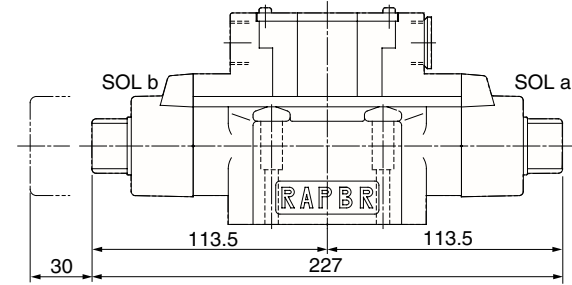
Note)

1. SE-G03-H**-GR-C*-J20
The solenoid is on the opposite side of that shown for SOLa in the illustrations shown here.
2. M8 mounting bolts
Dimension 1 is 59.
Dimension 2 is $\phi 8.5$.



SE-G03-C**-GR-C*-J20

SE-G03-E**-GR-C*-J20



Space required for coil removal

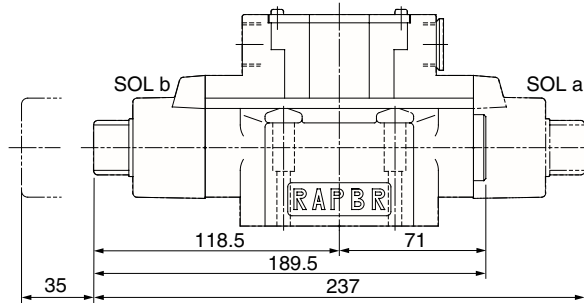
DC Solenoid

SE-G03-A**-GR-D*-J20

SE-G03-H**-GR-D*-J20

SE-G03-C**-GR-D*-J20

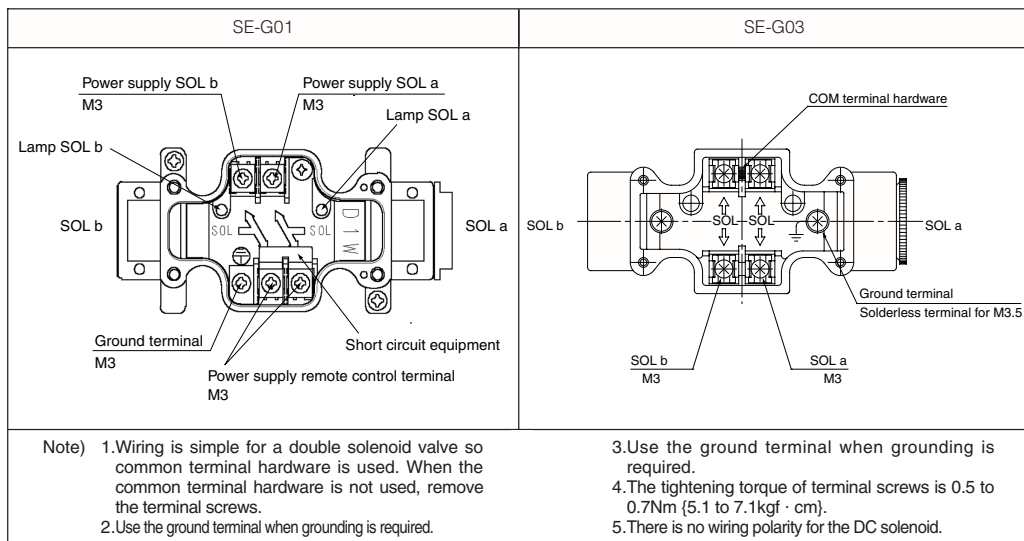
SE-G03-E**-GR-D*-J20



Space required for coil removal

Note) Gasket surface dimensions and the sub plate are the same as those for SS-G03. See page S-6 for more information.

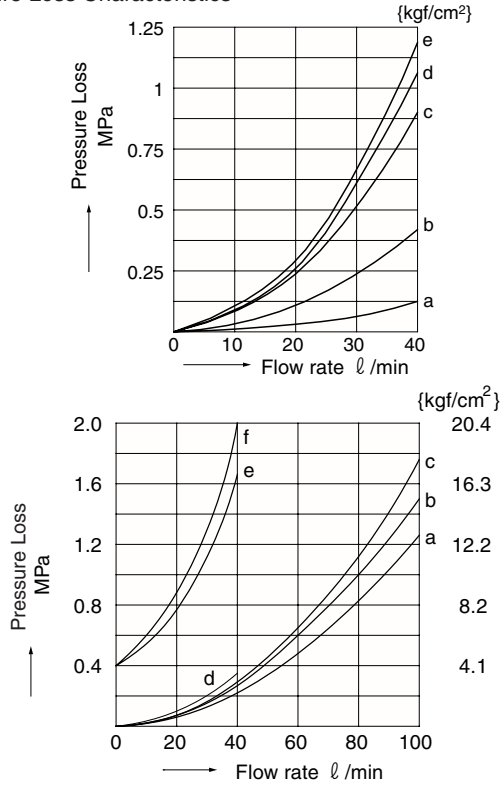
Wiring Diagram



Performance Curves

Differential Hydraulic Fluid Viscosity 32mm²/s

Pressure Loss Characteristics



Pump Type	Flow Path	P→A	P→B	A→T	B→T	P→T
SE-G01	A2X	e	e	—	—	—
	A3X	e	e	d	d	—
	E3X	e	e	d	d	—
	C4	a	a	a	a	a
	C5	e	e	c	c	—
	C6	e	e	b	b	—

Pump Type	Flow Path	P→A	P→B	A→T	B→T	P→T
SE-G03	A2X, H2X	b	b	—	—	—
	A3X, H3X	b	b	c	c	—
	C1	b	b	a	b	—
	C4	e	e	a	a	e
	E3X, C5, C6S	b	b	b	b	—
	C6	b	b	a	a	—
	C7Y	f	f	d	d	e

Pressure - Flow Volume Allowable Value

Pump Type	SE-G01			SE-G03		
	Operation Example	Operation symbol	Operation symbol	Operation symbol	Operation symbol	Operation symbol
A2X	—	E	A	—	K	J
H2X	—	—	—	—	J	K
A3X	D	C	A	J	K	J
H3X	—	—	—	J	J	K
E3X	B	A	A	L	L	L
C1	—	—	—	J	J	J
C4	B	B	B	M	M	M
C5	A	B	B	J	J	J
C6	A	B	B	J	J	J
C6S	—	—	—	J	J	J
C7Y	—	—	—	M	M	M

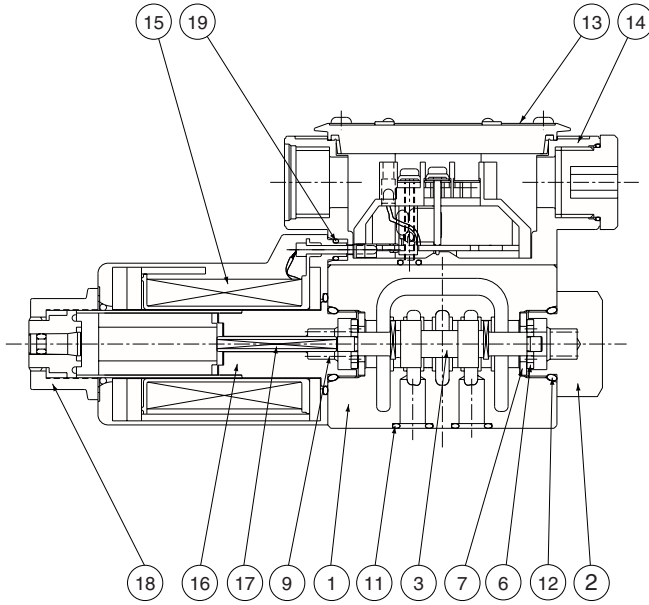
Flow rate (l/min)	Pressure (MPa) (kgf/cm ²)	Operation symbol
50	10	A
40	6	D
30	6	B
20	10	C
10	10	E

Flow rate (l/min)	Pressure (MPa) (kgf/cm ²)	Operation symbol
120	21	J
100	7	L
80	14	M
60	21	K
40	14	M
20	7	K

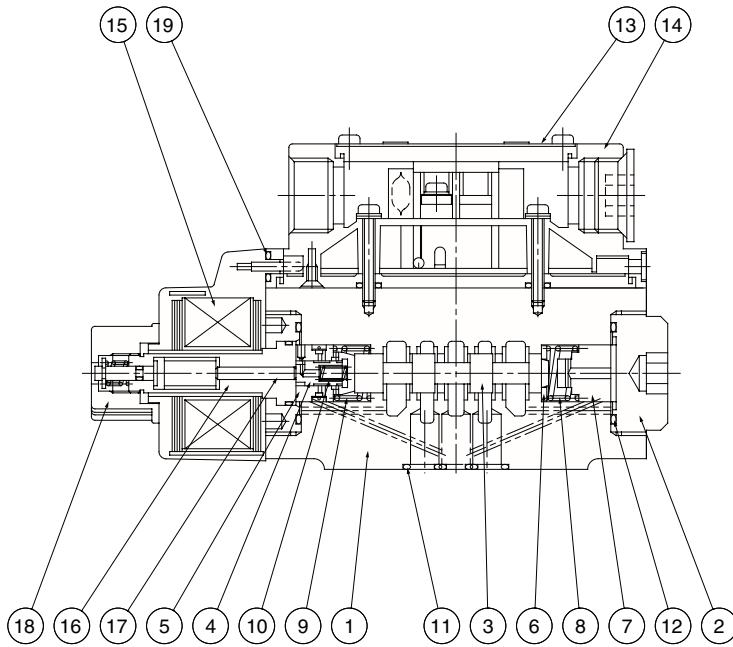
Note) 1. The maximum flow rate is the value when a rated 90%V is applied following solenoid temperature rise and saturation.
 2. The maximum flow rate is the allowable value of each port.

Cross-sectional Drawing

SE-G03-A3X-GR-**-30



SE-G03-A3X-GR-**-20



Part No.	Part Name
1	Body
2	Plug
3	Spool
4	Piston
5	Sleeve
6	Retainer
7	Stopper
8	Spring
9	Spring
10	Spring
11	O-ring
12	O-ring
13	Nameplate
14	Terminal box
15	Coil
16	Guide
17	Rod
18	Nut
19	O-ring

List of Sealing Parts

Part No.	Part Name	SE-G01		SE-G03			
		Part Number	Q'ty		Part Number	Q'ty	
			Single Solenoid	Double Solenoid		Single Solenoid	Double Solenoid
11	O-ring	IB-P9	4	4	IB-P12	5	5
12	O-ring	IB-P18	2	2	S25(Hs90)	2	2
19	O-ring	S4	2	4	IA-P4	2	4

Note) O-ring 1A-**-** and 1B-**-** indicate JIS Standard B 2401-1A-**-** and 1B-**-**.

Seal Kit Number

SE-G01		SE-G03	
Single Solenoid	Double Solenoid	Single Solenoid	Double Solenoid
EECS-01A	EECS-01C	EES-03A-1A	EES-03C-1A

DSS (DSA) 22 Design Series Solenoid Control Valve

158.5gpm
4571psi



Features

- ① Long-life operation is ensured by use of the high-performance, renowned SS (SA)-G01 wet solenoid valve as the pilot valve.
- ② High pressure, high capacity
The 06 size delivers up to 600 ℓ /min.
- ③ Low pressure loss
An original flow path design provides wide-ranging low pressure loss and enhanced system circuit efficiency.
- ④ Internal modification of the pilot and drain can be accomplished without removing the valve by simply connecting and disconnecting plugs.
- ⑤ Built-in pilot pressure check valve
When tandem center type valve is used for the internal pilot valve (option), pilot pressure required for switching is self-maintained.

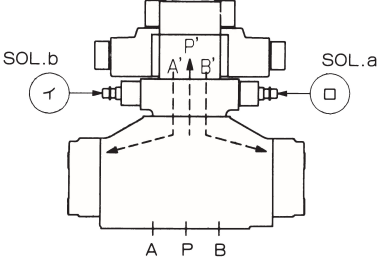
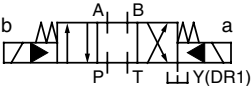
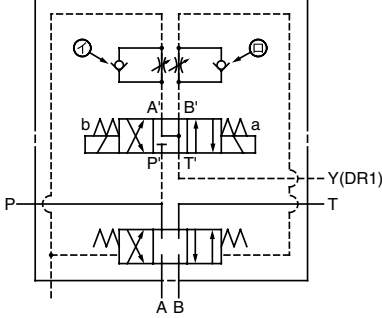
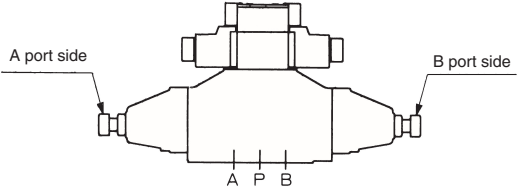
Specifications

Valve Size		06 Size		
Valve Model Number		DSS(DSA)-G06-***-R-**-E22		
Maximum Working Pressure MPa{kgf/cm ² } (psi)	P.A.B. Ports		32{326} (4570)	
	T Port	Internal Drain Type	16{163} (2286)	
		External Drain Type	21{214} (3000)	
Maximum Flow Rate ℓ /min (gpm)		600(158.3)		
Rated Flow Rate ℓ /min (gpm)		300(79.2)		
Maximum Pilot Pressure MPa{kgf/cm ² } (psi)		25{255} (3571)		
Minimum pilot pressure MPa{kgf/cm ² }(psi)	A** (Spring Offset Type)		0.8{8.2}{117.1}	
	E** (No-spring Detent Type)			
	C** (Spring Center Type)			
	D** (Pressure Center Type)		1.2{12.2}{174.3}	
	Built-in Pilot Pressure Check Valve Type (For Internal Pilot)		0.45 [4.6]{65.7} (for *3Z, *4, *7*, *8 pilot pressure generation)	
Maximum Changeover Frequency (per minute)		120		
Pilot Volume (cm ³){in ³ }	A** (Spring Offset Type)		20.0(1.22)	
	C** (Spring Center Type)		10.0(2.44)	
Weight (kg)	A** (Spring Offset Type)		14.5(15.4)	
	E** (No-spring Detent Type)		15.0(15.9)	
	C** (Spring Center Type)			
	D** (Pressure Center Type)		16.5	
Operating Environment	Dust-resistance/Water-resistance Rank JIS C 0920		DSS: IP64 (Dust-tight, Splash-proof) DSA: IP65 (Dust-tight, Waterjet-proof)	
	Ambient Temperature		-20 to 50°C	
	Operating Fluid	Temperature Range		-20 to 70°C
		Viscosity Range		15 to 300mm ² /s
		Filtration		25 microns or less
Bundled Accessories	Mounting bolt		1/2 × 2 1/2 (UNC)	
	Tightening Torque N-m{kgf-cm} (Lbs.ft.)		M12 60 to 70{612 to 714} (44-51)	

- Note) 1.The maximum flow rate of each valve depends on the pressure. For details, see pages S-42.
 2.Weight in parentheses is for stroke adjustment type.
 3.Solenoid specifications are the same as those for SS (SA)-G01. For more information, see pages S-3 and S-15.

● Handling

- 1 Pilot pressure values show the differential pressure between the pilot port and tank port or drain port. In the case of the pressure center, they show differential pressure between the pilot and drain ports (DR₁, DR₂).
- 2 The standard configuration is internal pilot and external drain, but other configurations are possible when required. See page S-43 for more information.
- 3 For the PT mounting type DSS (DSA)-G**-C7*-*-22, open cross over with restrictor C7Y is standard.
- 4 When adjustable spool stroke is desired, specify L in the auxiliary symbol position of the model number. Note, however, that this is not available with the pressure center type.
- 5 When using a detent type (E3*), use constant energization in order to securely maintain the switching position.
- 6 Use of the pressure center type is recommended for large-volume flow control.
- 7 For the all ports open center type (A3Z, E3Z, C4, D4), PT mounting type (C7X, C7Y, D7X, D7Y), and PAT mounting type, use the type with built-in external pilot pressure check valve.
- 8 The coil surface temperature increases if this valve is kept continuously energized. Install the valve so there is no chance of it being touched directly by hand.

Valve Model Number	DSS(DSA)-G06
Front Position	
Simplified Symbols	
Detailed Symbols	
Flow Regulator Adjusting Screw Positions	<p>A Port Restrictor: Left side A B Port Restrictor: Right side B</p>
Adjustable Stroke Adjusting Screw Positions	<p>A Port Side: P→A, B→T flow rate adjustment (For C7Y, P→B, A→T) B Port Side: P→B, A→T flow rate adjustment (For C7Y, P→A, B→T)</p> 

Understanding Model Numbers

DSS - G 06 - C 7 Y C - **R* - C2 - E22

Design number

Power supply

C: AC (50/60Hz) C1=AC100V C115=AC110V C2=AC200V C230=AC220V
 D: DC D1=DC12V D2=DC24V
 E: AC (Built-in rectifier; 50/60Hz)
 E1=AC100V E115=AC115V E2=AC200V E230=AC230V

Auxiliary symbol (For multiple specifications, use alphabetic sequence.)

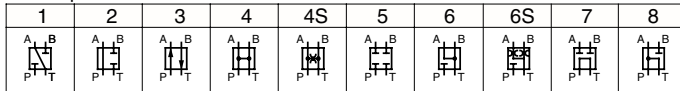
A: Internal drain
 E: External pilot
 L: Spool stroke limiter
 P: Flow regulator valve to restrict P port
 Y: With meter-out flow regulator valve
 R: With indicator light
 N: With manual lock
 G: Surgeless type
 Q: Quick return type

Pilot pressure check valve
 None: No check valve
 C: Built-in check valve

Transition flow path (Specify for *3*, *7* only.)
 X: Closed Y: Restrictor open Z: Open

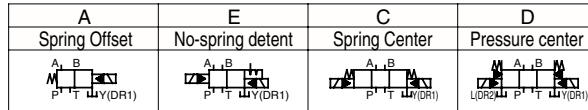
X	Y	Z
Closed	Semi-open	Open

Center valve position flow path
 1, 2, 3, 4, 4S, 5, 6, 6S, 7, 8



Operation Method

A: Spring offset
 E: No-spring detent
 C: Spring center
 D: Pressure center



Nominal diameter 06 size

Mounting method G: Gasket type

Pump Type DSS: Central terminal box solenoid control valve
 DSA: DIN connector type solenoid control valve

Pilot (PP), Drain (DR)

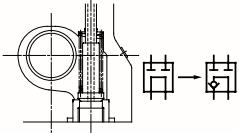
*High Pilot Pressure
 Use at pressures that do not exceed 25MPa(255kgf/cm²)
 *Internal PP, external DR are Nachi-Fujikoshi standards.
 For external PP: Built-in stopper plug (Option E)
 For internal DR: Stopper plug modification (Option A)
 * Internal DR Precautions
 Make sure that the differential pressure between the pilot pressure and tank back pressure is greater than the minimum pilot pressure.
 Do not connect any pipe that generates sudden surge pressure.

Built-in Pilot Solenoid Valve

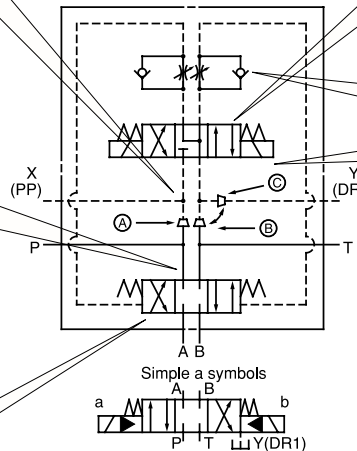
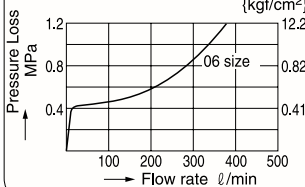
Valve Model Number	For G06
DSS(DSA)-G**-A**	SS(SA)-G01-H3X
DSS(DSA)-G**-E**	SS(SA)-G01-E3X
DSS(DSA)-G**-C**	SS(SA)-G01-C6
DSS(DSA)-G**-D**	SS(SA)-G01-C9

Built-in Pilot Pressure Check Valve

*Like the C7Y, this internal PP type is used in a flow path configuration where maintenance of pilot pressure is required.



Check Valve Pressure Loss



Note) Above symbols are for DSS(DSA)-G06.

Flow Regulator Valve

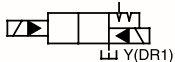
*Rotating the adjusting screw clockwise (rightward) slows the main spool switching speed.
 P: Excitation of the solenoid (starting of the actuator) causes a restrictor effect.
 Y: The restrictor effect can be obtained especially when the solenoid is de-excited (actuator stopped).

Pilot Valve Mounting Bolts

Standard	M5 x 45 (four)
Stage 1	M5 x 85 (four)
Stage 2	M5 x 125 (four)
Stage 3	M5 x 165 (four)

(Tightening Torque: 5 to 7N·m(51 to 71kgf-cm))

Detent Type Installation



*Install the valve in a horizontal configuration.
 *Provide constant energization for secure holding.

Adjustable Stroke Type

*Tightening the adjusting screw makes the main spool stroke smaller, which restricts flow.

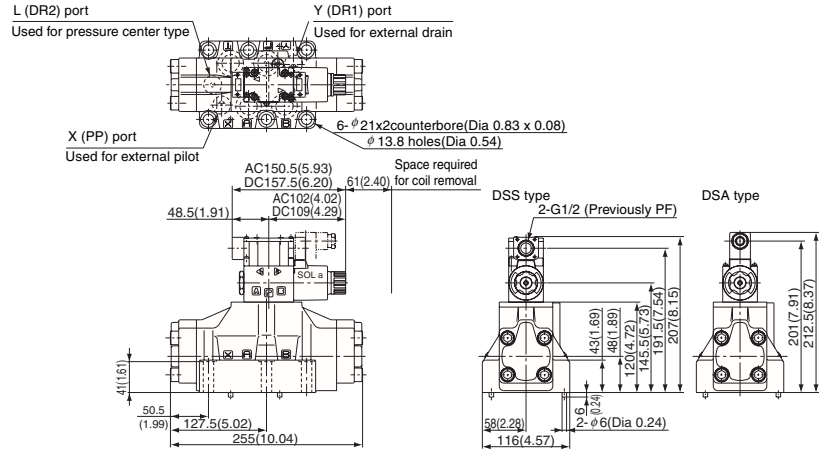
Pressure center

*Use this valve in a high-pressure, large-volume circuit to ensure reliable return of the main spool to the neutral position.

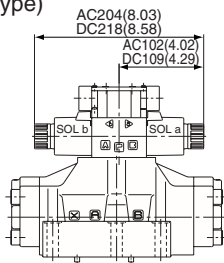
Sub Plate Number

Size	Model No.	Connecting Pipe Diameter	Weight (kgf)
For G06	MDS-06-E30	3/4 NPT	5.2
	MDS-06X-E30	1 NPT	

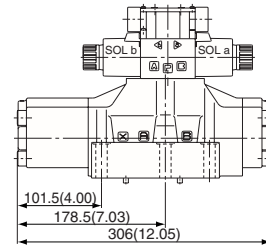
DSS(DSA)-G06-A**-R**-E22
(Spring Offset Type)



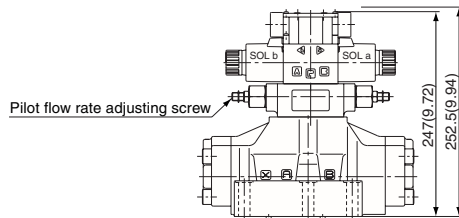
DSS(DSA)-G06-^EC**-R**-E22
(No-spring Detent Type)
(Spring Center Type)



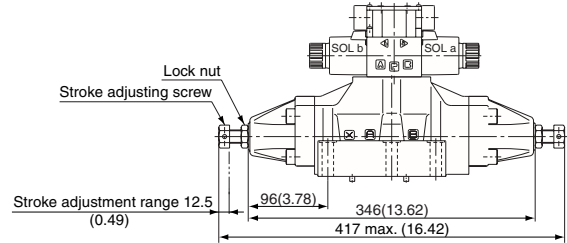
DSS(DSA)-G06-D**-R**-E22
(Pressure Center Type)



DSS(DSA)-G06-^A_E^C-**_D-RY**-E22
(Flow Regulator Type)



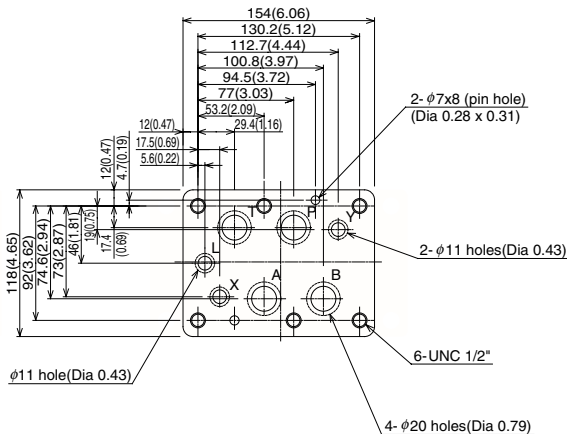
DSS(DSA)-G06-^A_E^C-**_C-LR**-E22
(Adjustable Stroke Type)



Dimensions in the parentheses are for the DSA-G06-**-RY**-21.

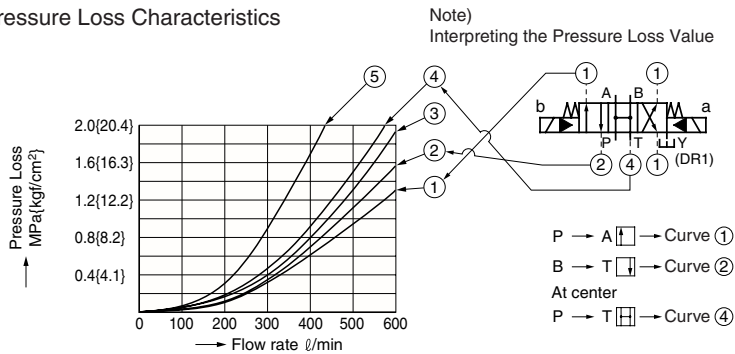
Gasket Surface Dimensions

(ISO 4401-08-07-0-94
JIS B 8355 D-08-07-0-94)



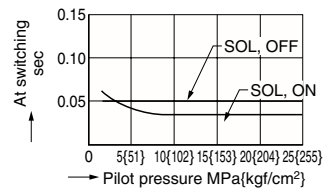
Model No.		JIS Symbol	Pressure - Flow Rate Allowable Value	Model No.		JIS Symbol	Pressure - Flow Rate Allowable Value
2-Position Spring Offset Type	DSS(DSA) -G06 -A3X-			2-Position Spring Offset Type	DSS(DSA) -G06 -E3X-		
	-A3Z-				-E3Z-		
	-A3Y-				-E3Y-		
3-Position Spring Center Type	DSS(DSA) -G06 -C1-		 PP-0.8MPa{8.2kgf/cm ² } PP-1.2MPa{12.2kgf/cm ² }	3-Position Spring Center Type	DSS(DSA) -G06 -D1-		 Pressure MPa(kgf/cm ²)
	-C2-				-D2-		
	-C5-				-D5-		
	-C6-				-D6-		
	-C6S-				-D6S-		
	-C4S-				-D4S-		
	-C4-				-D4-		
	-C8-				-D8-		
	-C7X- -C7Y-				-D7X- -D7Y-		

Pressure Loss Characteristics



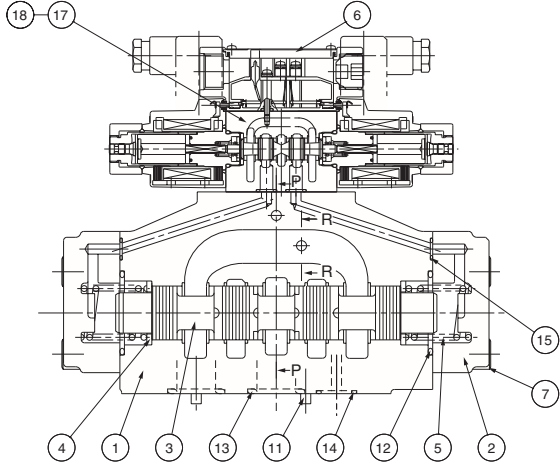
Switching Response Time

Model No. : DSS-G06-C5
 Voltage Symbol: C1 (AC Solenoid)

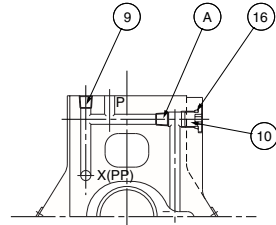


Cross-sectional Drawing

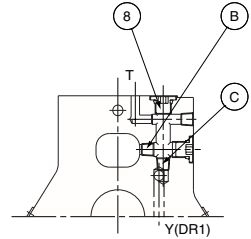
DSS(DSA)-G06-C**-R-C*-E22



Pilot, Drain System Change



Cross-sectional P-P



Cross-sectional R-R

Part No.	Part Name	Part No.	Part Name	Part No.	Part Name
1	Body	8	Plug	14	O-ring
2	Cover	9	Plug	15	O-ring
3	Spool	10	Plug	16	O-ring
4	Ring	11	Pin	17	Solenoid Valves
5	Spring	12	O-ring	18	Screw
6	Nameplate	13	O-ring		
7	Screw				

Changing the Pilot and Drain Connections

After Change		Hexagon Socket Head Plug
Pilot	Internal	Remove from (A).
	External	Insert into (A)
Drain	Internal	Switch from (B) to (C).
	External	Switch from (C) to (B).

Note) A single hex head plug (NPTF 1/16) is required when changing to external pilot.

List of Sealing Parts

Part No.	Part Name	Part Number	
			Q'ty
		06 Size	
12	O-ring	1B-G45	2
13	O-ring	1B-P28	4
14	O-ring	1B-P20	2
15	O-ring	1B-P10	2
16	O-ring	1B-P8	3

Note) 1.O-ring 1A/1B/4D-** indicate JIS Standard B 2401-1A/1B/4D-**. 2.See SS/SA-G01**-31 for information about the seal part for the pilot solenoid valve.

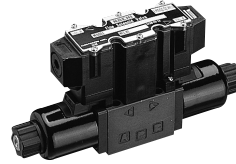
Seal Kit Number

06 Size	
Single Solenoid	Double Solenoid
EDBS-06AA-1A	EDBS-06CA-1A

Note) The seal kit includes a seal for the pilot solenoid valve.

Fine Solenoid Valve SF Series

2.6 to 10.6gpm
3000psi



Features

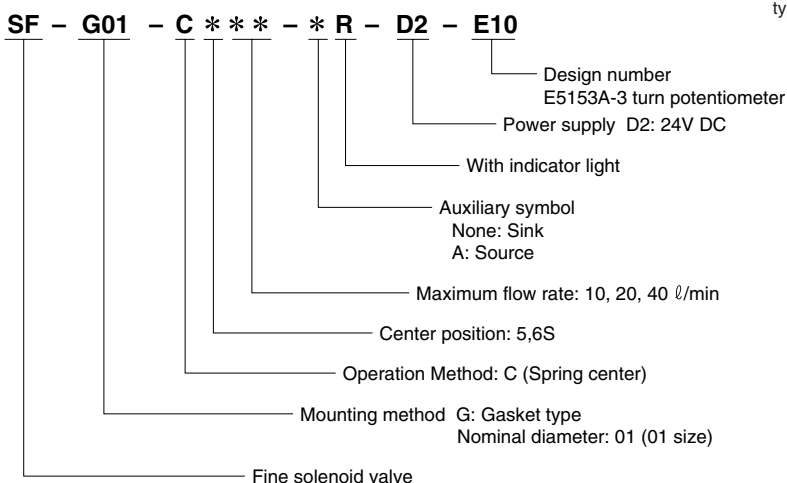
- ① The function of two valves in one
A two-speed controller provides smooth speed adjustment from low speed to high, and from high-speed to low.
- ② Quiet starts and stops
A low-speed startup and stop feature makes startups and stops smooth and soft.
- ③ Separate control of forward and back cylinder movement
There are five volume settings for high-speed flow rate and acceleration/deceleration times that can be independently adjusted SOL.a and SOL.b (ON side, OFF side).

Specifications

Item	Model No.	SF-G01 -C*10-D2-E10	SF-G01 -C*20-D2-E10	SF-G01 -C*40-D2-E10
Valve Maximum Operating Pressure MPa(psi)		21(3000)		
Maximum Flow Rate ℓ/min(Note1)(gpm)		10(2.6)	20(5.3)	40(10.6)
High-speed Flow Rate ℓ/min(Note1)(gpm)		5 to 10(1.3 to 2.6)	10 to 20(2.6 to 5.3)	20 to 40(5.3 to 10.6)
Low-speed Flow Rate ℓ/min(Note1)(gpm)		0.5 to 4(0.1 to 1.0)	2 to 8(0.5 to 2.1)	4 to 16(1.0 to 4.2)
Maximum Allowable Pressure MPa(psi)		7(1000)		
Acceleration/Deceleration Time Adjustment Range SEC		0.1 to 2		
Hysteresis (Note 2)		7%		
Repeatability (Note 2)		3%		
Power Supply Voltage V		D2: 24V DC regulated DC power supply		
Maximum Power Consumption W		36W		
Operating Environment	Dust Resistance/Water Resistance Rank	JIS C0920 IP63 (Dust-tight, Rain-proof)		
	Ambient Temperature	5 to 50°C		
	Operating Fluid	Temperature Range	5 to 60°C	
		Viscosity Range	15 to 300mm ² /s	
	Filtration	25 microns or less		
Mounting bolt	Size x Length	10-24 x 1 3/4		
	Tightening Torque	5 to 7N-m{51 to 71kgf-cm} 3.6-5.1Lbs.ft.		

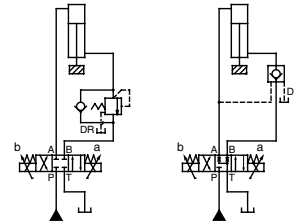
- Note) 1.The above high-speed and low-speed flow rates are obtained with a differential pressure (PA, PB) of 1.0MPa {146psi}. The flow rates depend on differential pressure.
2.Hysteresis and repeatability values are those at maximum flow rate.
3.For mounting bolts, use 12T or equivalent.
4.Mounting bolts are not included.

Understanding Model Numbers



Handling

- 1 Valve differential pressure
Volume adjustment becomes sensitive when P→A (B) and B(A)→T differential pressure is large. Maintain the pressure differential so it is no greater than 3.5MPa {35.7kgf/cm²}.
- 2 Low-speed flow rate
The spool may not move if the low-speed flow rate is below the minimum. Use this valve only within the allowable minimum low-speed flow rate range.
- 3 Deceleration circuit
 - Use a C5** spool for the deceleration circuit. Deceleration is difficult with the C6S** spool.
 - When large deceleration is required or for a system that uses a vertical cylinder, equip an external drain type counter balance valve. See the illustration below.
- 4 Pilot check circuit
 - For a circuit with a pilot check valve, knocking may occur in the pilot check valve due to large load inertia and circuit pressure loss. In cases like this, use an external drain type pilot check valve. See the illustration below.



When large brake pressure is required (Use an external drain type counter valve.)

When there is the possibility of pilot check valve knocking (Use an external drain type pilot check valve.)

5 Environmental conditions

- The IC circuit board is located inside the central control box, so care must be exercised concerning water-resistance and ambient temperature.
- Water: Cover the box so there is no direct splashing with water.
- Ambient Temperature: Use in an area where the temperature is 5°C to 50°C.

6 Operating Fluid

- Always keep the operating fluid clean. Allowable contamination is class NAS11 or less.
 - Use oil-based hydraulic operating fluid.
 - Contact your agent when you want to use fire-resistant hydraulic fluid.
- (Continued on following page)

7 Note the following points to optimize operation.

(1) Control fluid temperature when using this valve. Since the valve perform restrictor valve control on all processes, temperature differential changes flow volume and acceleration/deceleration time. The recommended temperature range is 30°C to 60°C.

(2) During the positioning operation following deceleration, make sure that sufficient low-speed running is provided following

deceleration before stopping operation. If low-speed operation time is too short can cause stopping during deceleration and shock problems due to fluctuation in load, etc.

Spool Type and JIS Symbols

Spool Type	C5**	C6S**
JIS Symbol		

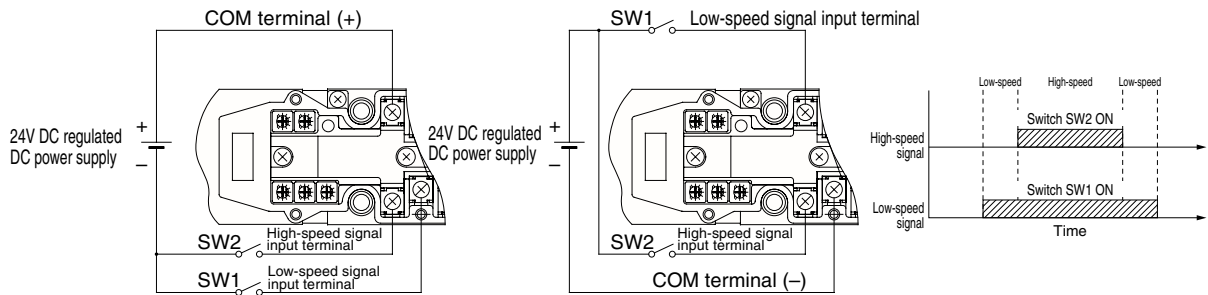
Electrical Wiring

● Sink Type (Auxiliary Symbol: None)

Switches on load and power supply minus side

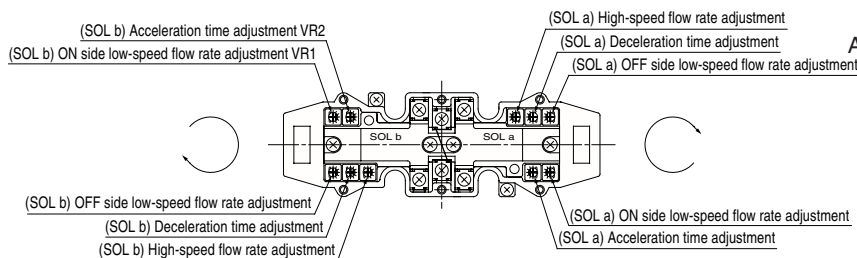
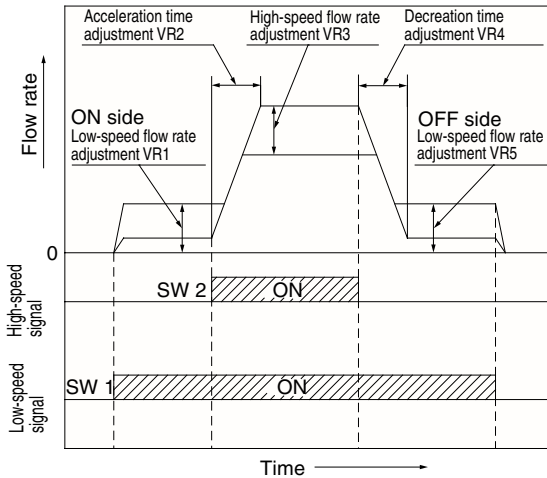
● Source Type (Auxiliary Symbol: A)

Switches on load and power supply plus side



Adjustment Elements

Control Pattern



Electrical Control Precautions

● Do not introduce a high-speed signal prior to a low-speed signal. Make sure the two signals are introduced simultaneously or that the low-speed signal is introduced first.

(1) Repeatedly introducing the high-speed signal first in a source type configuration can damage the IC board.

(2) The valve will not operate on the high-speed signal only.

● The following adjustments in the range of VR1 through VR5 can be made independently for SOL.a and SOL.b. You can make adjustments for the best conditions for forward and back operations when considering the cylinder operations.

● Adjustment volume is arranged in from VR1 through VR5 in clockwise (rightward) rotation sequence when viewed from the coil side.

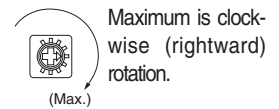
● The following are the factory default volume settings.

VR1 · 2 · 4 · 5

— Minimum setting

VR3 — Maximum setting

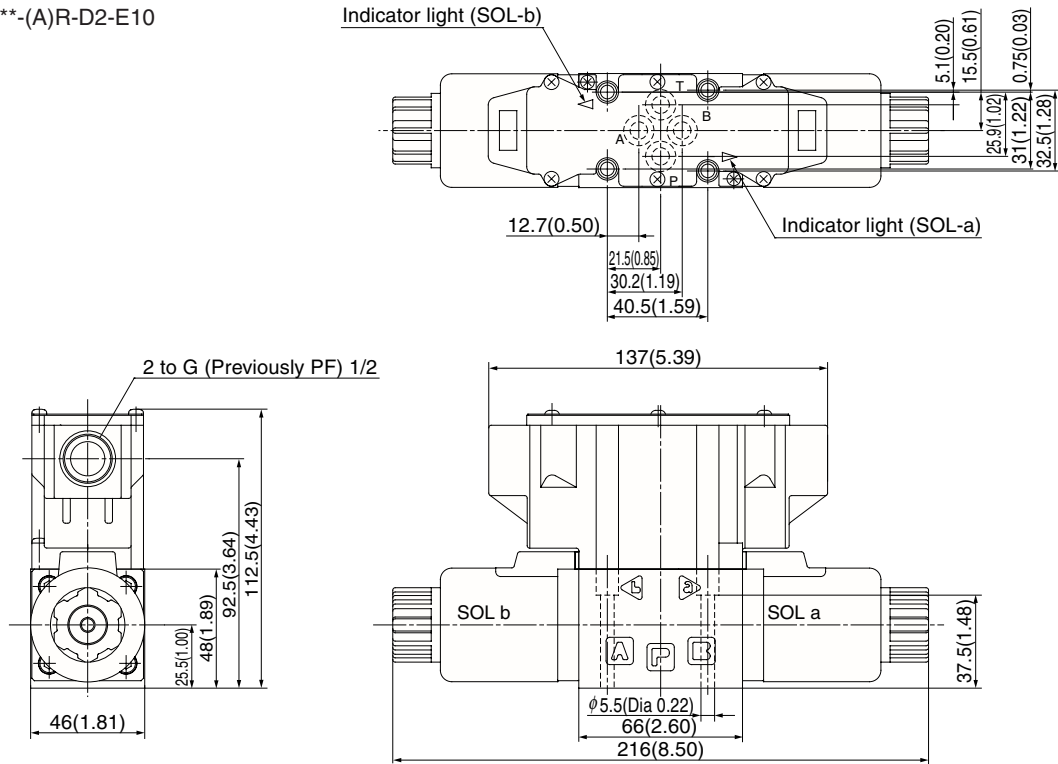
All Adjustment VRs



● The volume rotation angle is 270°. Contact your agent about a three-rotation type adjuster for fine adjustment.

Installation Dimension Drawings

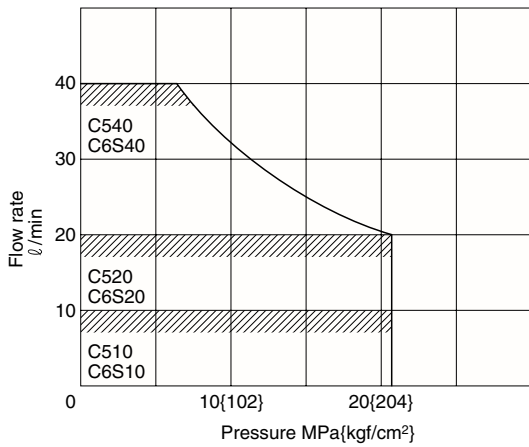
SF-G01-C***-(A)R-D2-E10



Performance Curves

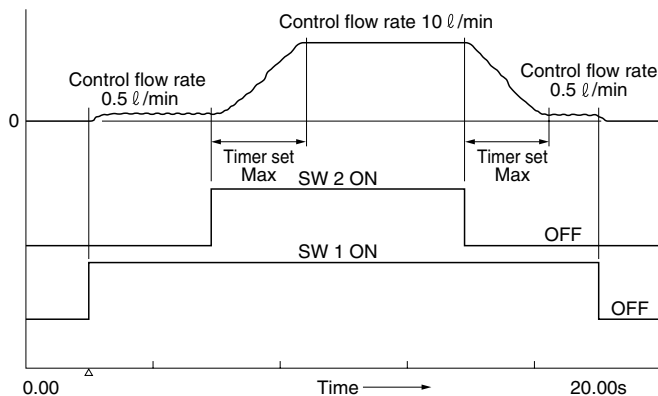
Hydraulic Operating Fluid Viscosity 32mm²/s

• Pressure - Flow Rate Characteristics

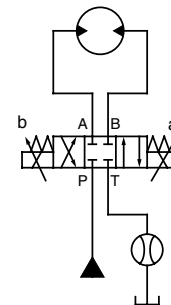


- Use the valve within the allowable flow rate range shown by the graph to the right.
- There are no operational problems within the allowable flow rate range, even when one-pass is used.

• Control Waveform Example

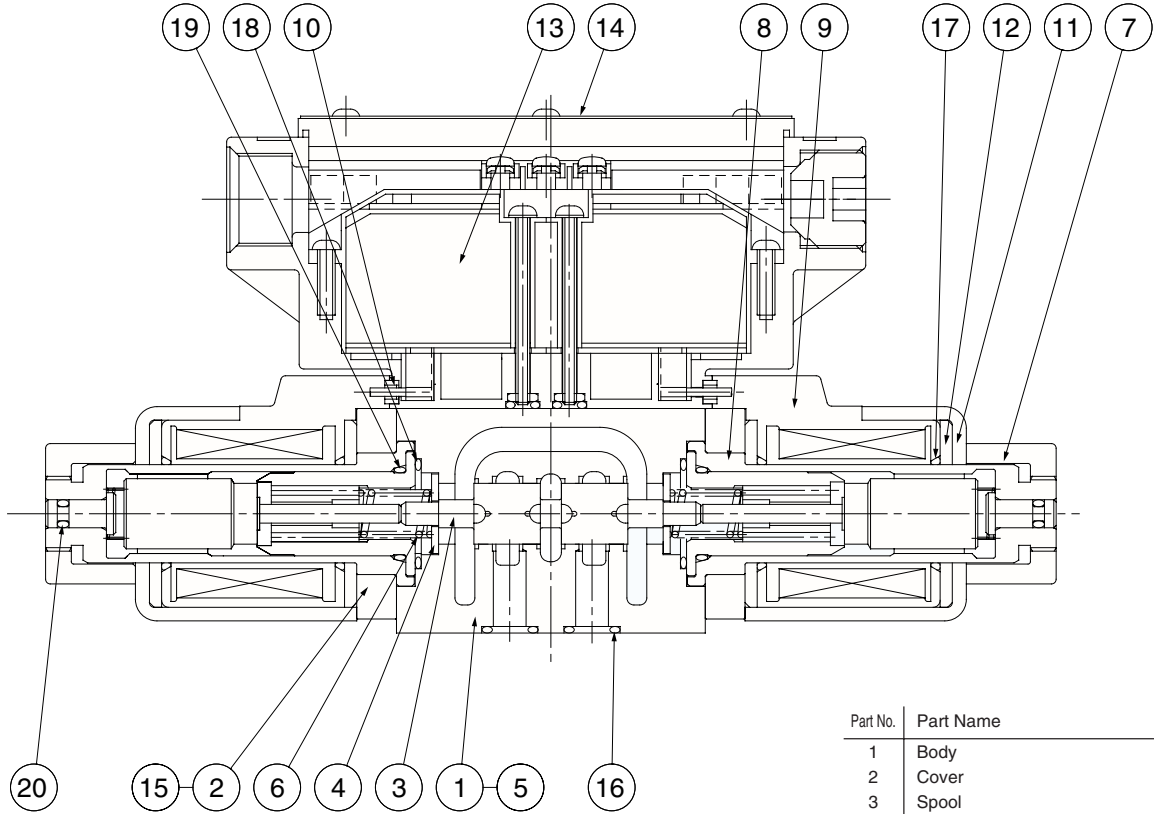


- Valve: SF-G01-C510-R-D2-E10
- Supply Pressure: 21MPa{214kgf/cm²}
- Hydraulic Circuit



Cross-sectional Drawing

SF-G01-C***-(A)R-D2-E10



Part No.	Part Name
1	Body
2	Cover
3	Spool
4	Retainer
5	Spacer
6	Spring
7	Nut
8	Solenoid guide
9	Solenoid coil
10	Packing B
11	Coil case
12	Coil yoke
13	Central terminal box kit
14	Nameplate
15	Hexagon Socket Head Bolt
16	O-ring
17	O-ring
18	O-ring
19	O-ring
20	O-ring

Seal Part List (Kit Model Number EFS)

Part No.	Part Name	Type/Part Number	Q'ty
16	O-ring	AS568-012(Hs90)	4
17	O-ring	AS568-019	4
18	O-ring	AS568-019(Hs90)	2
19	O-ring	AS568-017(Hs90)	2
20	O-ring	P3 Note2	2

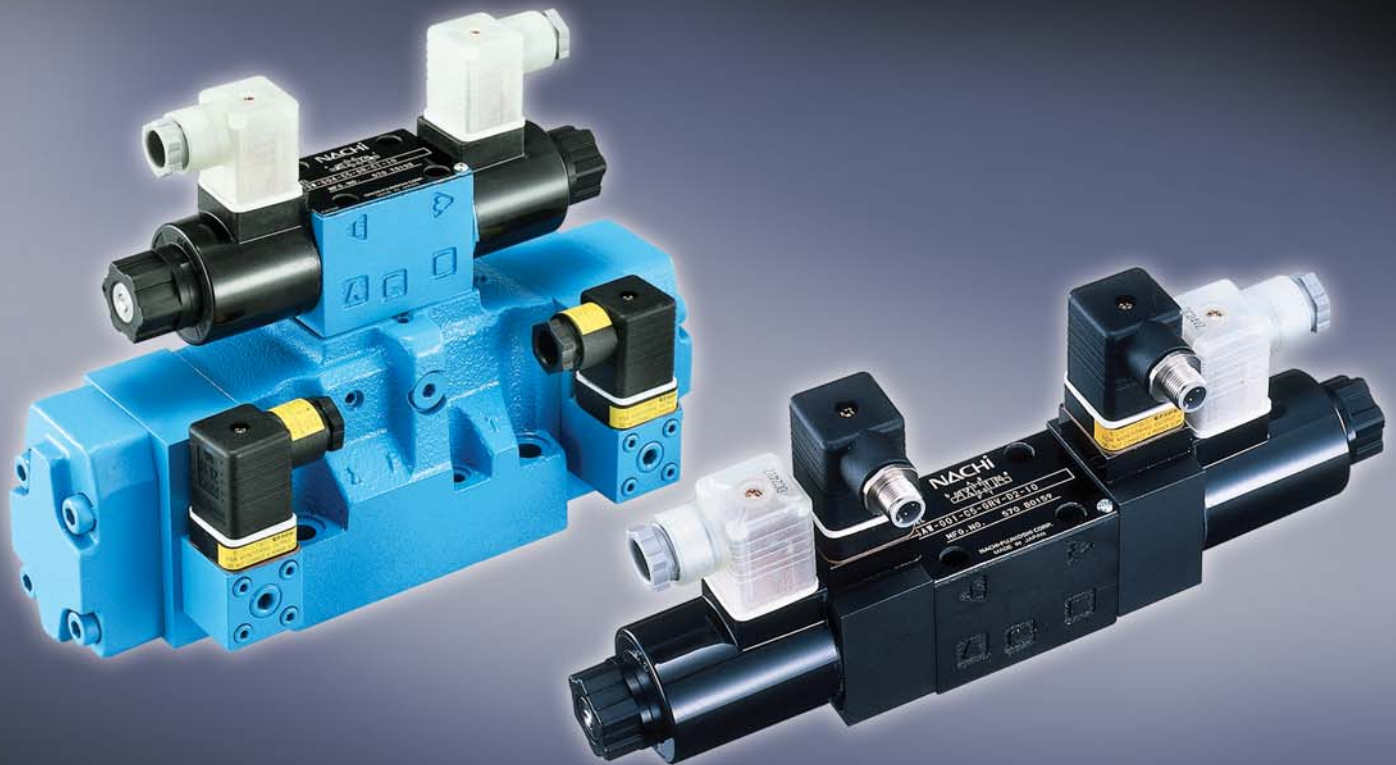
Note) 1.O-ring 1B-** refers to JIS B 2401-1B-**.
 2.Special flurorubber is used (Part Number: RO-P3-VS).

NACHI

Legato

SAW/DSW Series

*Solenoid Valve with Monitoring Switch
For Press Safety Confirming Systems*



SAW/DSW Series

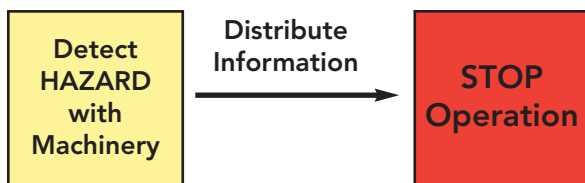
Solenoid Valve with Monitoring Switch For Press Safety Confirming Systems



Safety is critical in the manufacturing industry. Today, most manufacturers rely on a conventional system that detects danger and stops a machine during operation. In Japan, however, the trend is to utilize a Safety Monitoring System to monitor safety and allow a machine to operate after safety is confirmed. As new global safety standards are established, it is predicted that these Safety Monitoring Systems will be included in machine specifications at the design stage. Our Solenoid Valve with Monitoring Switch, Japan's first Safety Monitoring System, is specially designed to meet the requirements of machine integration and safety.

ISO 12100 will change the industry's perception of mechanical hazard protection. In the future, machines will require safety standards compliant with ISO 12100.

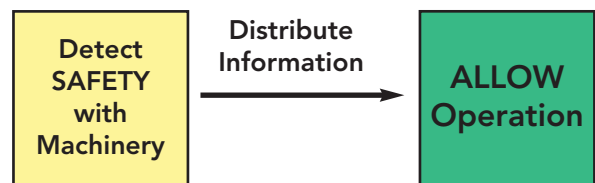
Hazard Detecting Type System (Conventional)



When hazard is detected, machine operation is not allowed and stopped.

(Accidents cannot be avoided due to machine not stopping, even after danger occurs when sensor breaks down or signal wire is disconnected.)

Safety Confirming Type System (Intrinsic Safety Design)



When safety is detected, machine operation is allowed.

(Accidents can be avoided due to machine not being allowed to operate when sensor breaks down or signal wire is disconnected.)

Features

This valve mechanically detects the movement of the solenoid valve spool to activate the switch and to transmit an electrical ON/OFF signal. In other words, this valve monitors a spool operating condition and can be used for sequence control according to its ON/OFF signal. It is also an information source for confirming safety conditions.

Fig.1 and 2 show the simplified actuation structure of a solenoid valve with monitoring switch. When the spool is in center position, the fixed contact (blue) contacts the traveling contact (red) and the both contacts become in conducting condition (Switch ON). When the solenoid is energized and the spool moves right, the traveling contact (red) detaches from the fixed contact (blue) in conjunction with the spool movement and both contacts become in non-conducting condition (Switch OFF).

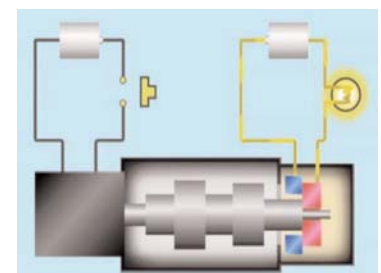


Fig.1 Solenoid not energized
(Switch ON)

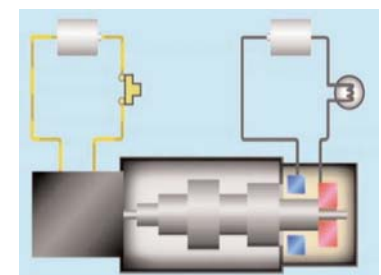
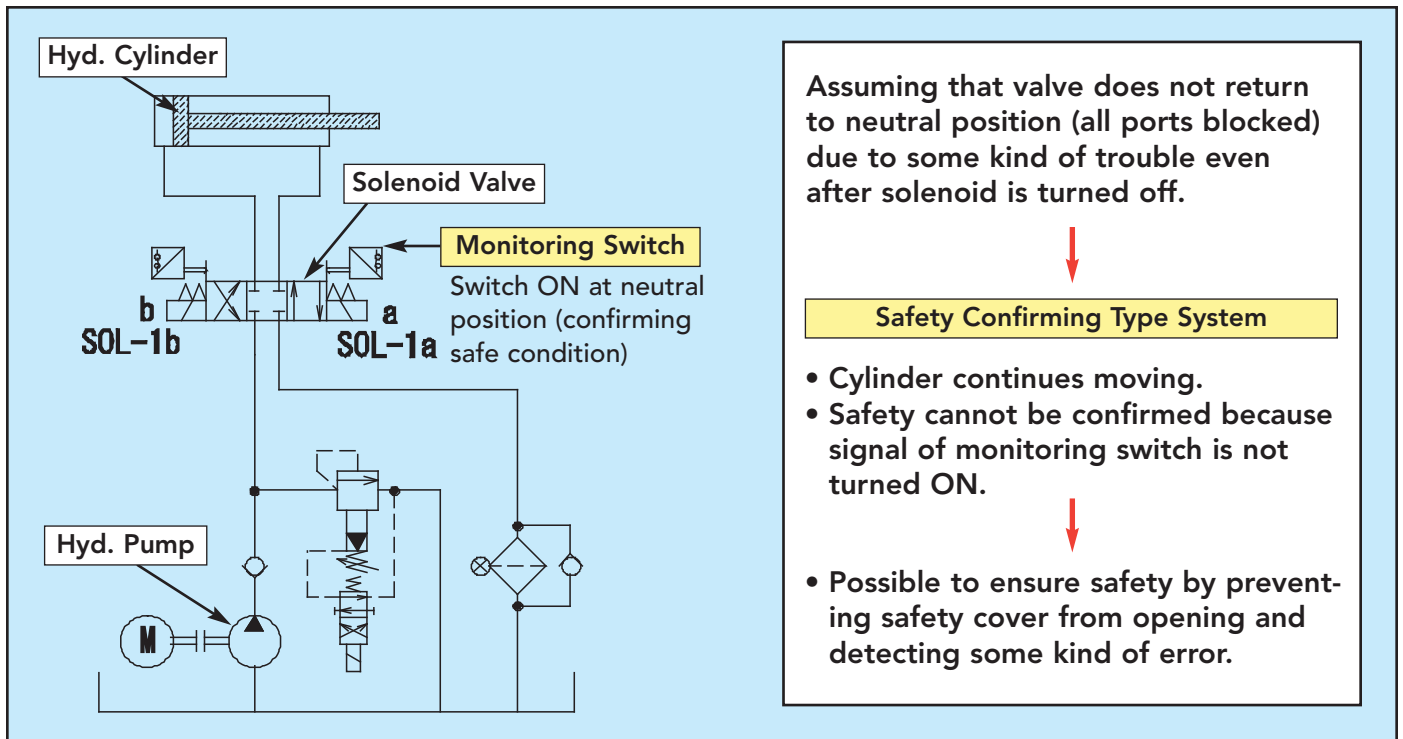


Fig.2 Solenoid energized
(Switch OFF)

Example of Use



Specifications

Series		SAW-G01	SAW-G03 (Note 1)	DSW-G04 (Note 1)
Operation Type		Direct operated type spool valve		Pilot operated type spool valve
Max. Working Pressure (Note 2)		35MPa (5,076psi)		
Max. Flow Rate (Note 3)		100L/min (26.4gpm)	160L/min (42.2gpm)	300L/min(79.2 gpm)
Max. Allowable Back-Pressure		21MPa (3,046psi)	16MPa (2,320psi)	21MPa (3,046psi)
Operating Environment	Dust Resistance/ Water Resistance Rank	JIS C 0920 IP65		
	Operating Fluid (Note 4)	Petroleum type		
	Ambient Temperature	-20 to 50° C (-4 to 122 °F)		
	Temperature Range	-20 to 70° C (-4 to 158 °F)		
	Viscosity Range	15 - 300 mm ² /s		
	Filtration	25μm or less		
Monitoring Switch	Rated Voltage	DC24V		
	Allowable Voltage Range	DC24V±20%		
	Max. Load Current	100mA		
	Residual Voltage (Note 6)	Max. 1.2V		
	Wiring to Connector	Lead wire or M12-4 pins connector		

(Note 1) SAW-G03 and DSW-G04 will be launched in the middle of 2006.

(Note 2) The maximum working pressure is dependent on the valve type.

(Note 3) The maximum flow rate is dependent on the valve type and the working pressure.

(Note 4) Use petroleum type operating fluid only. The fluid requires insulation performance for configuration of the monitoring switch being operated in the fluid. Fluids other than petroleum type (e.g. water-glycol, water in oil emulsion type, phosphate ester, fatty acid ester) are not acceptable. Even petroleum type must not exceed 0.1% of water content.

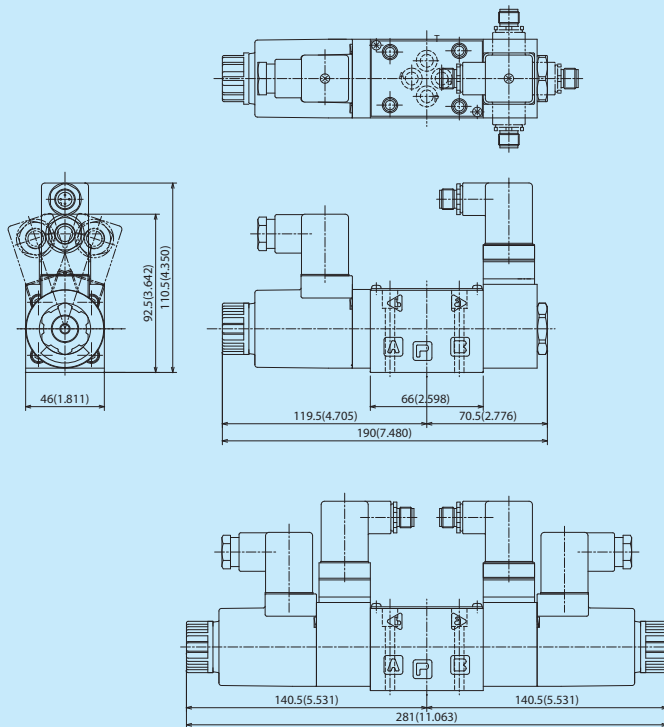
(Note 5) Plus (+) common method and minus (-) common method are available for programmable controller input circuit. Solenoid valve with monitoring switch employs source method (switch on at load and plus (+) side of the power supply) for safety of electric circuit. Consequently, when inputting a monitoring switch output into a programmable controller, use a minus (-) common type programmable controller.

(Note 6) Supply voltage to the monitoring switch shall be given within a range fulfilling the following condition. Load ON voltage + Residual voltage ≤ Switch supply voltage ≤ 28.8 V (Rated voltage + 20%).

Dimensional Drawings

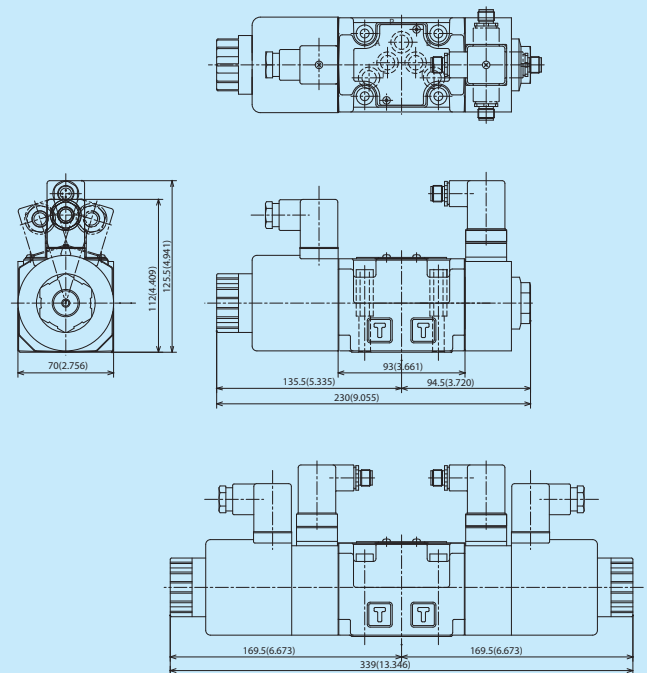
SAW-G01 series

The installation dimension on the gasket surface is the same as ISO 4401-03-02.



SAW-G03 series

The installation dimension on the gasket surface is the same as ISO 4401-05-04.



(Note 1) Dimension is for DC solenoid.

(Note 2) The connector for switch in the above is with M12-4 pin connector. Also available with lead wire.

(Note 3) The connector wiring port should be pointed in the direction shown in the above on the ground of packing when shipping. Change the direction as needed when wiring.

NACHI

NACHI AMERICA INC.

17500 23 Mile Road, Macomb, MI 48044

Tel. (800)622-4410 Fax. (586)226-5289

DMA Type Manually Operated Directional Valve

Features

- ① Compact design.
- ② Balanced design allows T-port back pressure up to 70 kgf/cm² (1000 psi) in G03 and 160 kgf/cm² (2286 psi) in G01 models.
- ③ D03 and D05 mounting pattern allows the use of modular valves to simplify circuit design.

Specifications

Model	Pipe Size (Valve Size)	Max. Operating Pressure kgf/cm ² (psi)	Back Pressure (Tank Port) kgf/cm ² (psi)	Rated Flow ℓ/min (gpm)	Stroke mm (inch)		Weight kg (lbs)
					Two Position	Three Position	
DMA-G01-***-20	1/8	350, 250 (3571), Note	160 (2286)	40 (10.6)	4 (0.16)	4 (0.16) x 2	1.3 (2.9)
DMA-G03-***-10	3/8	250 (3571)	70 (1000)	75 (19.8)	6 (0.24)	4 (0.24) x 2	3.0 (6.6)

Note: The figure in parenthesis is for tandem center type.

Position	Spool Type	JIS Symbol	Model	
Two Position	Closed Crossover		DMA ^{G01} _{G03} -A3X- ²⁰ / ₁₀	
	Open Crossover		DMA ^{G01} _{G03} -A3Z- ²⁰ / ₁₀	
	Closed Crossover		DMA ^{G01} _{G03} -E3X- ²⁰ / ₁₀	
	Open Crossover		DMA ^{G01} _{G03} -E3Z- ²⁰ / ₁₀	
Three Position	All Ports Open Center		DMA ^{G01} _{G03} -C4- ²⁰ / ₁₀	
			DMA ^{G01} _{G03} -F4- ²⁰ / ₁₀	
	All Ports Blocked Center		DMA ^{G01} _{G03} -C5- ²⁰ / ₁₀	
			DMA ^{G01} _{G03} -F5- ²⁰ / ₁₀	
	Pressure Port Blocked Center		DMA ^{G01} _{G03} -C6- ²⁰ / ₁₀	
			DMA ^{G01} _{G03} -F6- ²⁰ / ₁₀	
	Tandem Center	Closed Crossover		DMA ^{G01} _{G03} -C7X- ²⁰ / ₁₀
		Open Crossover With Taper		DMA ^{G01} _{G03} -C7Y- ²⁰ / ₁₀
		Closed Crossover		DMA ^{G01} _{G03} -F7X- ²⁰ / ₁₀
		Open Crossover With Taper		DMA ^{G01} _{G03} -F7Y- ²⁰ / ₁₀
B Port Blocked Center		DMA ^{G01} _{G03} -C8- ²⁰ / ₁₀		
		DMA ^{G01} _{G03} -F8- ²⁰ / ₁₀		

Notes

- 1 The following three different methods are available to operate the valve handle.
 - (1) Spring offset type(A-type)
With this type, the lever is always kept at the end position; when the lever is pulled, the flow is changed over from one direction to another. But when the lever is released, the flow returns to the initial direction.
 - (2) Spring center type(C-type)
With this type, the spool is always kept at the center between the other two valve positions; when the lever is released after shifting the spool to either one of these valve positions, the spool returns to the center with the assistance of the spring.
 - (3) Detent type (F- and E-types)
With this type, the spool comes to a standstill by its notch provided at the third or second position on this spool.
- 2 The mounting direction of the lever can be changed optionally at every 90° if the direction of the cover on the lever side is changed.
- 3 DMA-G**-7*-10 of the P and T port connection type is based on DMA-G**-7X-10 of the closed cross type.
- 4 The following are the locking bolts furnished for each valve.

DMA-G01	10-24 UNC-3A x 1 3/4	4 pcs
DMA-G03	1/2-20 UNC-3A x 2 3/4	4 pcs

Note: Use the locking bolts with a torque rating of grade 12.9 or the equivalent.

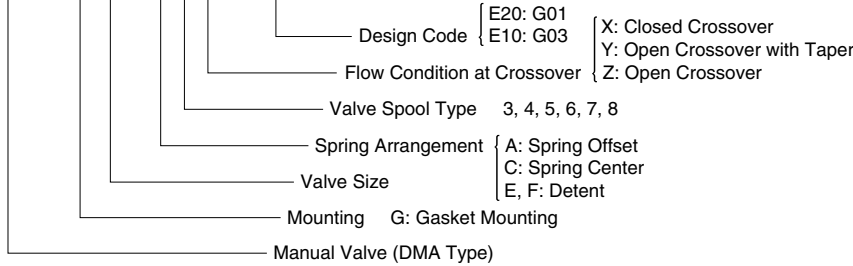
- 5 Select the desired subplate according to the following table if necessary.

Model	Pipe size	Max. Flow ℓ/min (gpm)	W'gt kg (lbs)	Applicable Valve Model
MSA-01Y-E10	3/8	30 (7.9)	1.3 (2.9)	DMA-G01-***-E20

Model	Pipe size(E)	Max. Flow ℓ/min (gpm)	W'gt kg (lbs)	Applicable Valve Model
MSA-03X-E10	1/2	80 (21.2)	2.3 (5.1)	DMA-G03-***-E10

Understanding Model Numbers

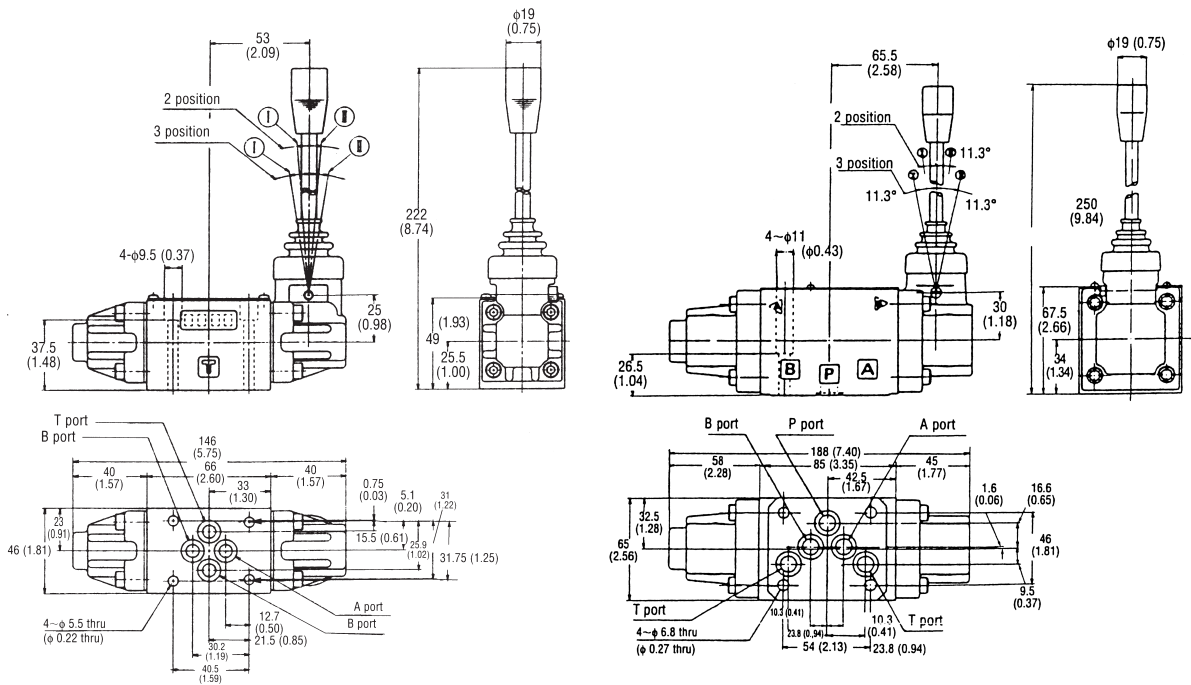
DMA - G 01 - A 3 X - E 20



Installation Dimensions

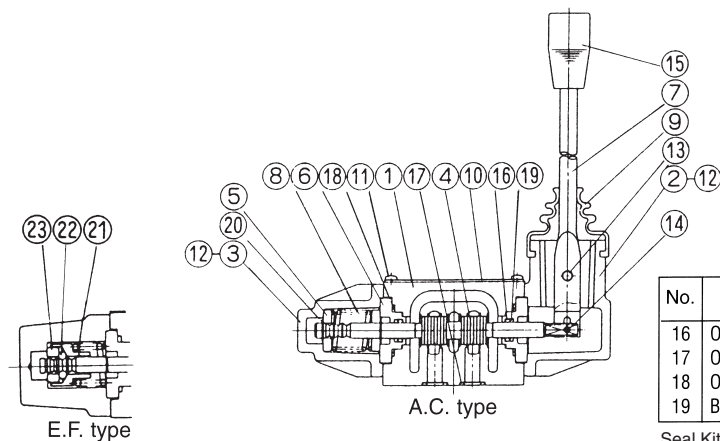
DMA-G01-***-E20

DMA-G03-***-E10



Cross-Sectional Drawings











DMA-G01-***-E20



No.	Part name	No.	Part name
1	Body	13	Screw
2	Cover A	14	Pin
3	Cover B	15	Knob
4	Spool	16	O ring
5	Ring	17	O ring
6	Bushing	18	O ring
7	Lever	19	Backup ring
8	Spring	20	Snap ring
9	Bellows	21	Guide
10	Name plate	22	Ball
11	Screw	23	Retainer
12	Screw		

No.	Part name	Part number			
		DMA-G01	Qty	DMA-G03	Qty
16	O Ring	RO-P7	2	RO-P10	2
17	O ring	RO-P9-90	4	RO-P12-90	5
18	O ring	ROA-019-90	2	RO-P28-90	2
19	Backup ring	RB0-P7	2	RB0-P10	2

Seal Kit = DNS-G01 (DMA-G01)
 DNS-G03 (DMA-G03)

Photo	Type	Series	Description	Main Specifications
	Pressure Control	OR	Relief Modular Valve	13.2 - 21.2gpm, 3571psi
	Pressure Control	ORO	Brake Modular Valve	5.3 - 7.9gpm, 114 to 3000, 3571psi
	Pressure Control	ORD	Direct Relief Modular Valve	5.3 - 7.9gpm, 114 to 3000, 3571psi
	Pressure Control	OG	Pressure Reducing Modular Valve	10.6 - 21.2gpm, 3571psi
	Pressure Control	OQ	Sequence Modular Valve	10.6 - 21.2gpm, 3571psi
NA	Pressure Control	OCQ	Counter Balance Modular Valve	10.6 - 21.2gpm, 2000psi
	Pressure Control	OW	Modular Type Pressure Switch	13.2gpm, 3571psi
	Flow Control	OY/OCY	Flow Regulator Modular Valve	13.2 - 26.4gpm, 3571psi
	Flow Control	OF/OCF	Flow Control Modular Valve	5.3 - 15.8gpm, 3000, 3571psi
	Check Valves	OC/OCV	Check Modular Valve	13.2 - 26.4gpm, 3571psi
	Check Valves	OCP	Pilot Operated Check Modular Valve	13.2 - 26.4gpm, 3571psi
NA	Valve Installation Bolt List	OTH/OTD	NA	NA

Flow Regulator Modular Valve

13.2 to 26.4gpm
3571psi



Features

- ① This modular valve is used to control actuator speed and for other flow control valve applications.
- ② A wide range of models are available for A and B port control, A or B port control, and P or T port control.
- ③ Maximum Operating Pressure: 25MPa {3571psi}

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa{psi}	Maximum Flow Rate ℓ /min(gpm)	Cracking Pressure of Check Valve MPa{psi}	Weight kg	Gasket Surface Dimensions
OY-G01-T-20	1/8	25{3571}	50 (13.2)	-	1.0	ISO 4401-03-02-0-94
OCY-G01-P-20				0.04{5.7}	1.0	
OCY-G01-W-X-20 A B				0.08{11.4}	1.3	
					1.2	
OCY-G01-W-Y-20 A B				0.08{11.4}	1.3	
		1.2				
OCY-G03-P-J50	3/8	25{3571}	100 (26.4)	0.04{5.7}	2.9	ISO 4401-05-04-0-94
OCY-G03-W-X-J51 A B				0.1{14.3}	3.1	
					3.0	
OCY-G03-W-Y-J51 A B				0.1{14.3}	3.1	
					3.0	

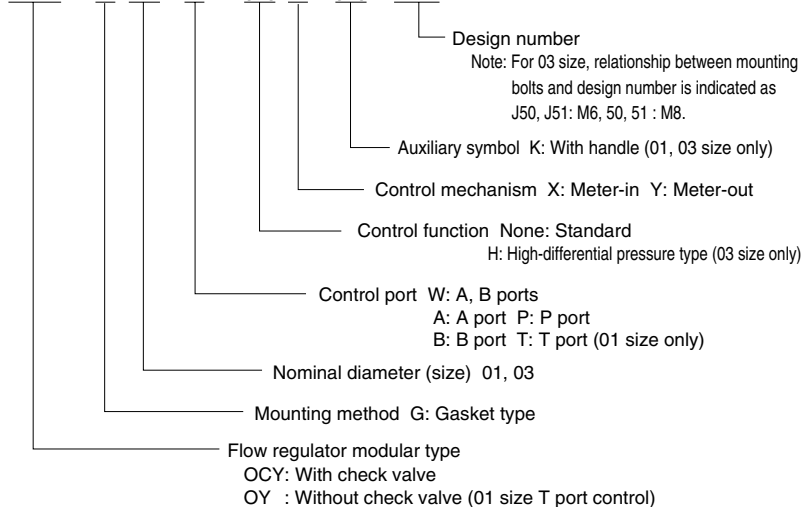
● Handling

- ① In a 03 size application where control differential pressure is large, use of an H type makes adjustment easier.
- ② Note that a sub plate and installation bolts are not included.

Understanding Model Numbers

01, 03 size

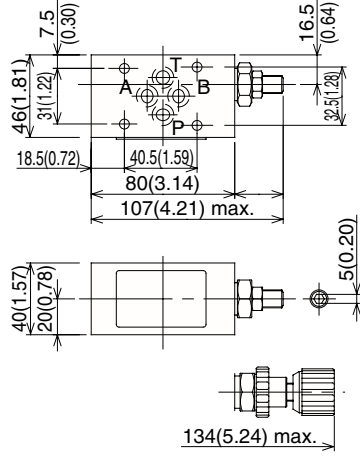
OCY - G 03 - W - (H) Y - (K) - J51



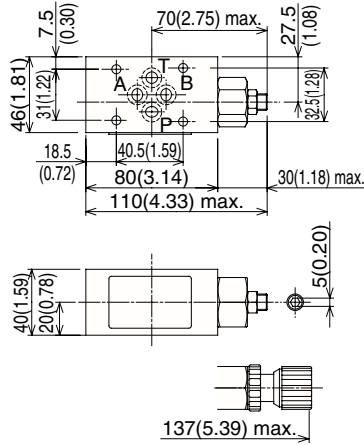
Installation Dimension Drawings

Note) The control flow rate is increased by counter clockwise (leftward) rotation of the adjusting screw.

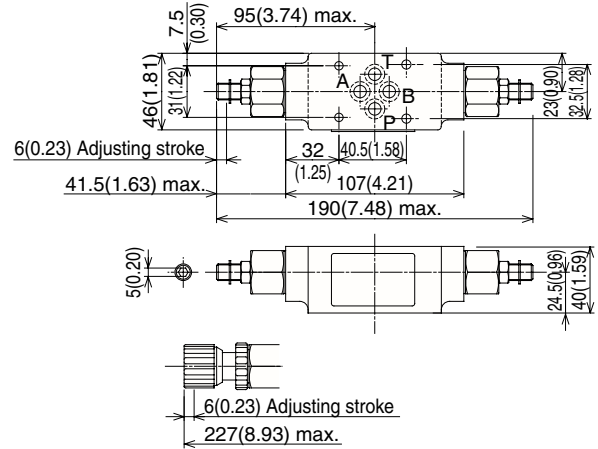
OY-G01-T-20



OCY-G01-P-20

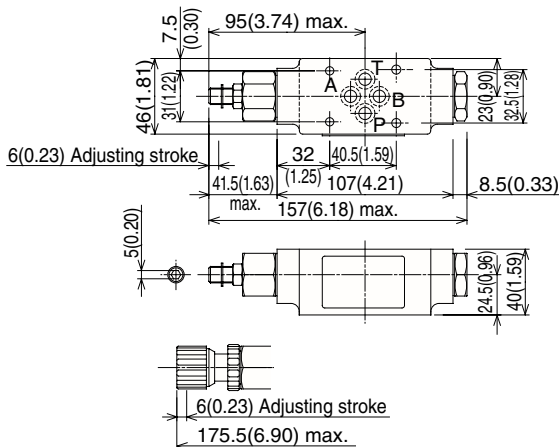


OCY-G01-W-X-20



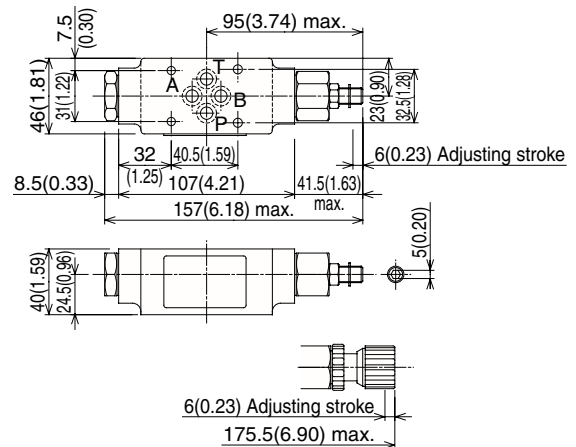
Note) Dimensions in the parentheses are for the OCY-G01-W-X-20.

OCY-G01-A-X-20



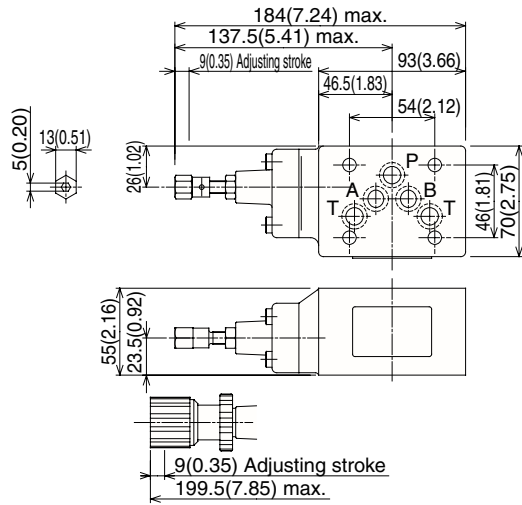
Note) Dimensions in the parentheses are for the OCY-G01-A-X-20.

OCY-G01-B-X-20

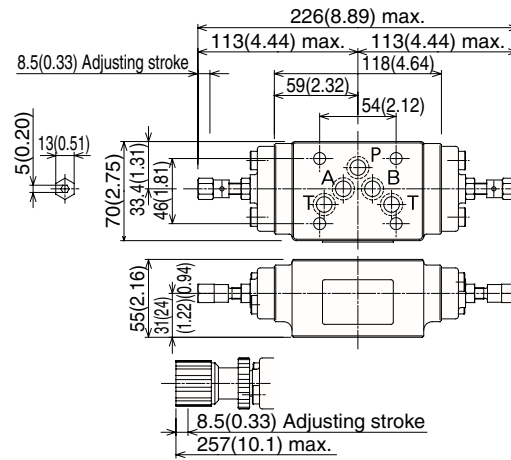


Note) Dimensions in the parentheses are for the OCY-G01-B-X-20.

OCY-G03-P-J50

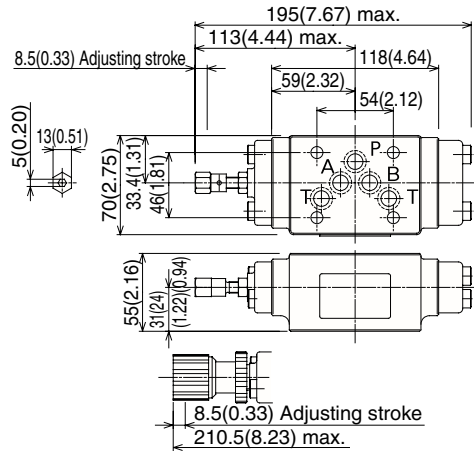


OCY-G03-W-X_Y-J51



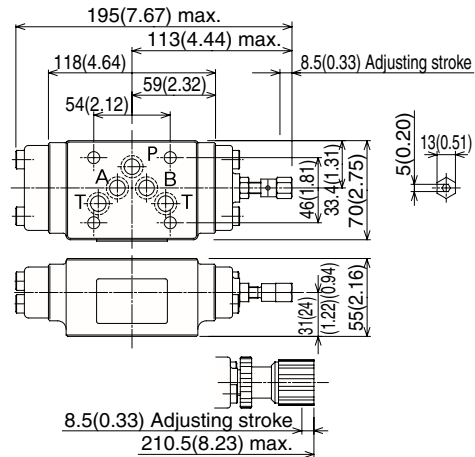
Note)
Dimensions in the parentheses are for the OCY-G03-W-X-J51.

OCY-G03-A-X_Y-J51



Note)
Dimensions in the parentheses are for the OCY-G03-A-X-J51.

OCY-G03-B-X_Y-J51



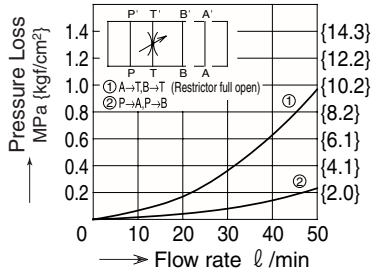
Note)
Dimensions in the parentheses are for the OCY-G03-B-X-J51.

Performance Curves

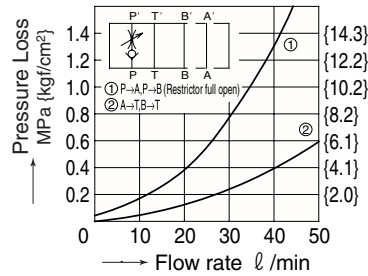
Hydraulic Operating Fluid Viscosity 32mm²/s

Pressure Loss Characteristics

OY-G01-T-20

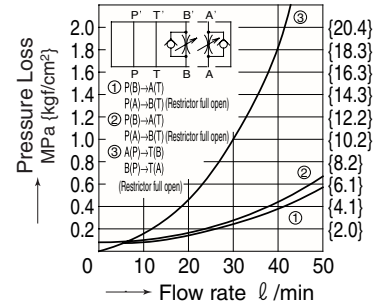


OCY-G01-P-20

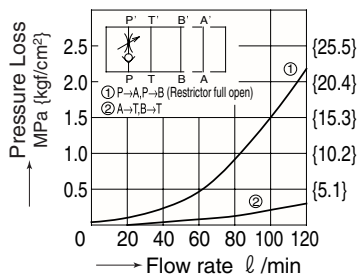


OCY-G01-W-Y-20

(OCY-G01-W-X-20)

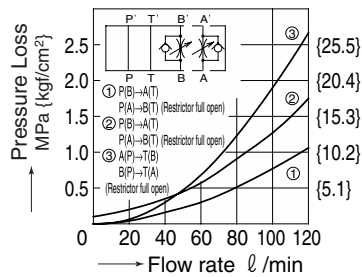


OCY-G03-P-J50



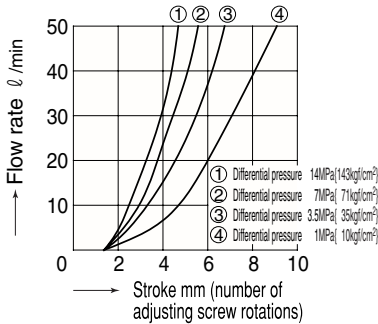
OCY-G03-W-Y-J51

(OCY-G03-W-X-J51)

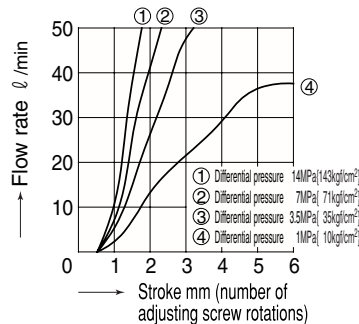


Stroke — Flow Rate Characteristics

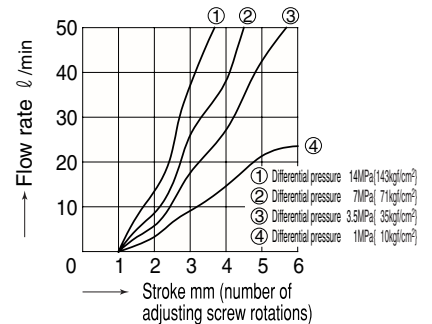
OY-G01-T-20



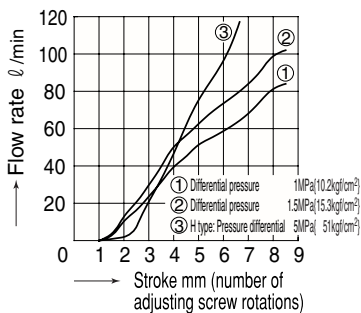
OCY-G01-P-20



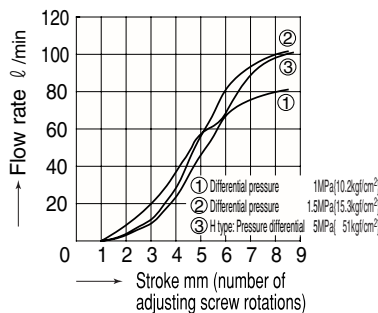
OCY-G01-*-*-20



OCY-G03-P-(H)-J50

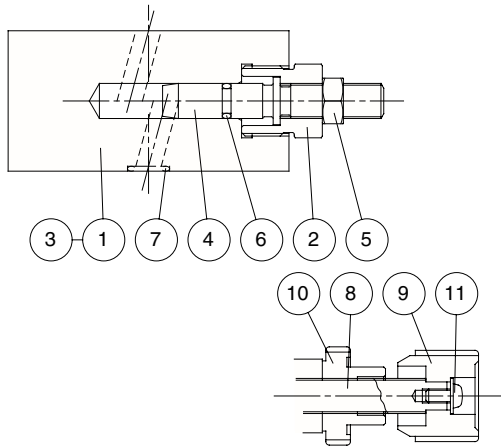


OCY-G03-W-(H)Y-J51



Cross-sectional Drawing

OY-G01-T-20



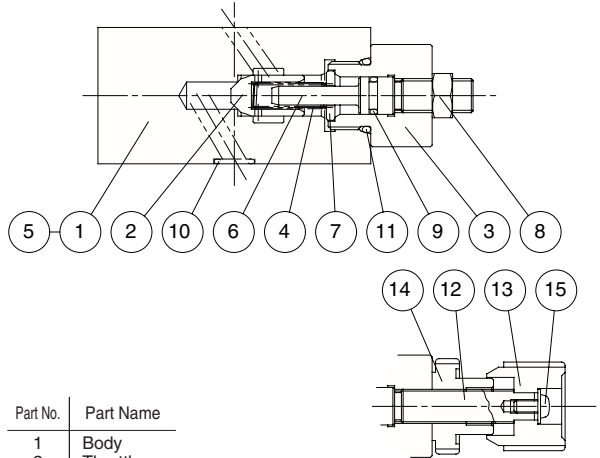
Part No.	Part Name
1	Body
2	Retainer
3	Plate
4	Screw
5	Nut
6	O-ring
7	O-ring
8	Screw
9	Knob
10	Nut
11	Screw

Seal Part List (Kit Model Number BFBS-01YT)

Part No.	Part Name	Part Number	Q'ty
6	O-ring	1B-P7	1
7	O-ring	1B-P9	4

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.

OCY-G01-P-20



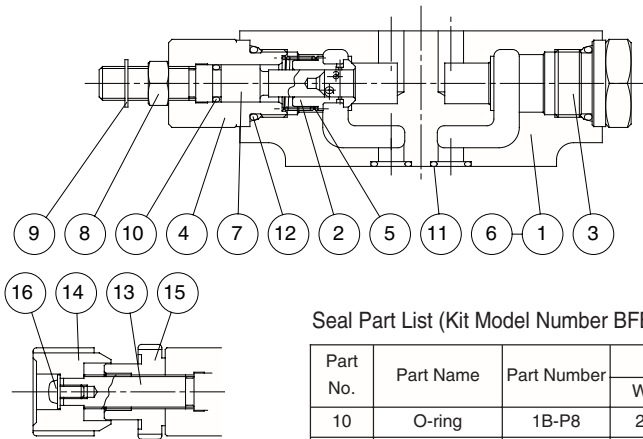
Part No.	Part Name
1	Body
2	Throttle
3	Retainer
4	Spring
5	Plate
6	Screw
7	Ring
8	Nut
9	O-ring
10	O-ring
11	O-ring
12	Screw
13	Knob
14	Nut
15	Screw

Seal Part List (Kit Model Number BFBS-01CYP)

Part No.	Part Name	Part Number	Q'ty
9	O-ring	1B-P8	1
10	O-ring	1B-P9	4
11	O-ring	1B-P18	1

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.

OCY-G01-A-Y-20



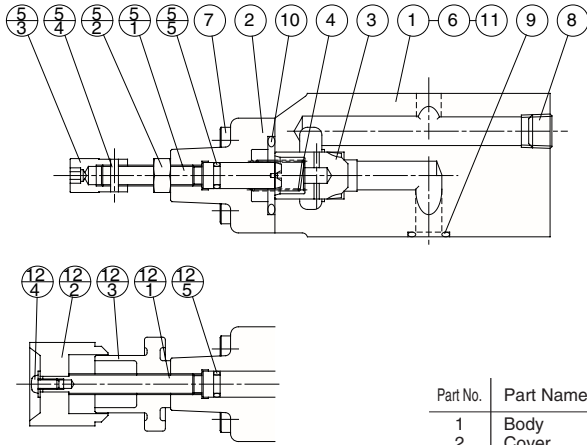
Seal Part List (Kit Model Number BFBS-01CY*)

Part No.	Part Name	Part Number	Q'ty		
			W	A	B
10	O-ring	1B-P8	2	1	1
11	O-ring	1B-P9	4	4	4
12	O-ring	1B-P18	2	2	2

Note) 1. O-ring 1A/B-** refers to JIS B2401-1A/B.
2. Specify W, A, or B for the asterisk (*) in the kit model number.

Part No.	Part Name
1	Body
2	Throttle
3	Bushing
4	Retainer
5	Spring
6	Plate
7	Screw
8	Nut
9	E-ring
10	O-ring
11	O-ring
12	O-ring
13	Screw
14	Knob
15	Nut
16	Screw

OCY-G03-P-J50



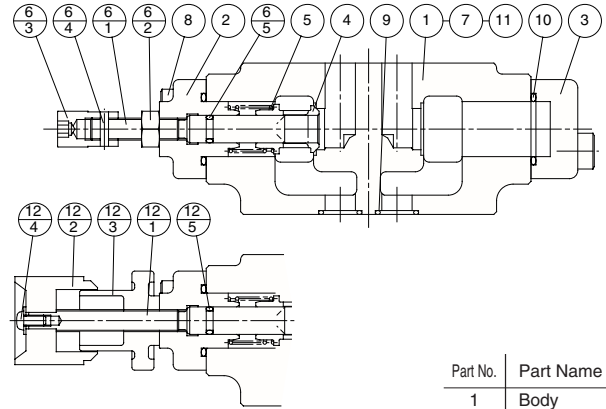
Seal Part List (Kit Model Number BFES-03CYP)

Part No.	Part Name	Part Number	Q'ty	
				P
5(12) ^s	O-ring	1B-P7	1	
9	O-ring	AS568-014(Hs90)	5	
10	O-ring	1B-P24	1	

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.

Part No.	Part Name
1	Body
2	Cover
3	Throttle
4	Spring
5	Screw kit
5-1	Screw
5-2	Nut
5-3	Nut
5-4	Pin
5-5	O-ring
6	Plate
7	Screw
8	Plug
9	O-ring
10	O-ring
11	Pin
12	Handle kit
12-1	Screw
12-2	Knob
12-3	Nut
12-4	Screw
12-5	O-ring

OCY-G03-A-Y-J51



Seal Part List (Kit Model Number BFES-03CY*)

Part No.	Part Name	Part Number	Q'ty		
			W	A	B
6(12) ^s	O-ring	1B-P7	2	1	1
9	O-ring	AS568-014(Hs90)	5	5	5
10	O-ring	1B-P22	2	2	2

Note) 1. O-ring 1A/B-** refers to JIS B2401-1A/B.
2. Specify W, A, or B for the asterisk (*) in the kit model number.

Part No.	Part Name
1	Body
2	Cover
3	Cover
4	Throttle
5	Spring
6	Screw kit
6-1	Screw
6-2	Nut
6-3	Nut
6-4	Pin
6-5	O-ring
7	Plate
8	Screw
9	O-ring
10	O-ring
11	Pin
12	Handle kit
12-1	Screw
12-2	Knob
12-3	Nut
12-4	Screw
12-5	O-ring

Flow Control Modular Valve (Pressure and temperature compensated)

5.3 to 15.8gpm
3000,3571psi



Features

- ① This modular valve is used to control actuator speed and for other flow control valve applications.
- ② A wide range of models are available for A and B port control, A or B port control, and P port control.
- ③ A pressure compensation mechanism ensures that the control flow rate does not change, even when there is pressure fluctuation.
- ④ The control flow rate remains stable, even when fluid temperature changes.
- ⑤ Maximum Operating Pressure : 21, 25MPa {3000, 3571psi}

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa{psi}	Control Flow Rate gpm	Check Valve Cracking pressure MPa{psi}	Weight kg	Gasket Surface Dimensions
OF-G01-P20-20	1/8	21{3000}	0.03 to 5.3(differential pressure: 7MPa{1000psi}) 0.08 to 5.3(differential pressure:21MPa{3000psi})	—	1.2	ISO 4401-03-02-0-94
OCF-G01-W40-X-30 A40 B40		25{3571}	0.03 to 10.6(differential pressure: 7MPa{1000psi}) 0.13 to 10.6(differential pressure:25MPa{3571psi})	0.08{11.4}	1.7	
OCF-G01-W40-Y-30 A40 B40				0.08{11.4}	1.5	
OF-G03-P60-J50	3/8	25{3571}	0.08 to 15.8(differential pressure: 7MPa{1000psi}) 0.13 to 15.8(differential pressure:25MPa{3571psi})	—	3.1	ISO 4401-05-04-0-94
OCF-G03-W60-X-J50 A60 B60				0.1{14.3}	5.0	
OCF-G03-W60-Y-J50 A60 B60				0.1{14.3}	4.6	

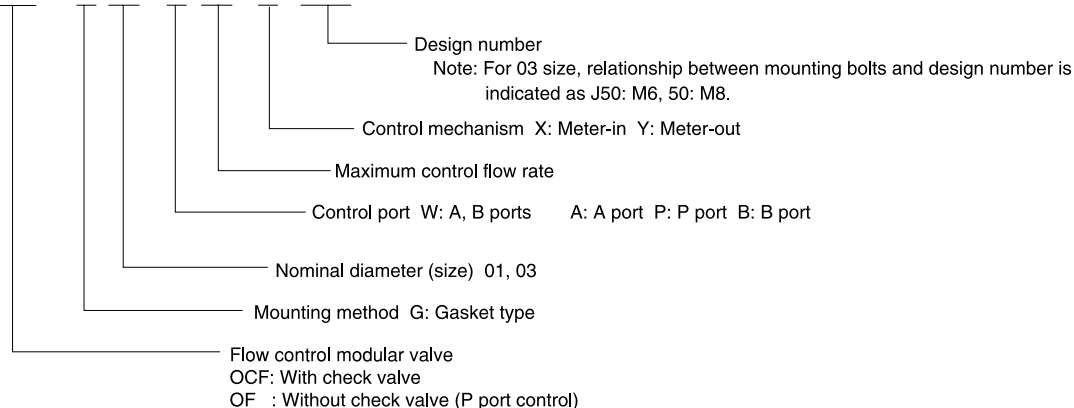
● Handling

- ① For flow rate control, make sure that the pressure differential between the input port and output port is at least 1MPa {146psi}. See the Flow Rate - Minimum Differential Pressure Characteristics for information about the OCF-G01 and OFF-G04 maximum control flow rate.
- ② The control flow rate is increased by counter clockwise (leftward) rotation of the flow rate control knob.
- ③ Pressure rate control knob rotation resistance will increase as the pressure increases. However, do not use a spanner or other tool that fits around the knob to turn it. Instead, insert a 5mm hex spanner into the hex hole in the center of the knob and rotate it that way.
- ④ Note that a sub plate and installation bolts are not included.
- ⑤ Flow rate fluctuation is ±5% within the temperature range of 20°C to 60°C.

Understanding Model Numbers

01, 03 size

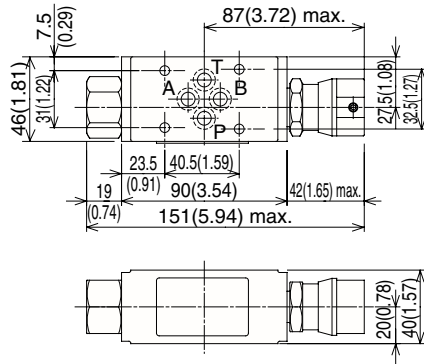
OCF - G 03 - W 60 - Y - J50



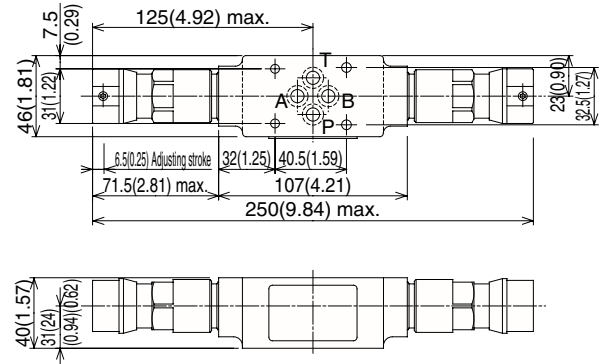
Installation Dimension Drawings

Note) The control flow rate is increased by counter clockwise (leftward) rotation of the flow rate control knob.

OF-G01-P20-20

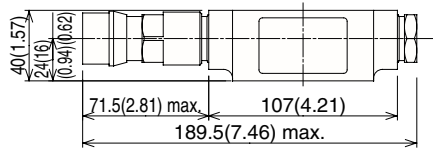


OCF-G01-W40-X/Y-30



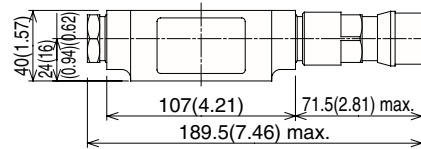
Note)
Dimensions in the parentheses are for the OCF-G01-W40-X-30.

OCF-G01-A40-X/Y-30



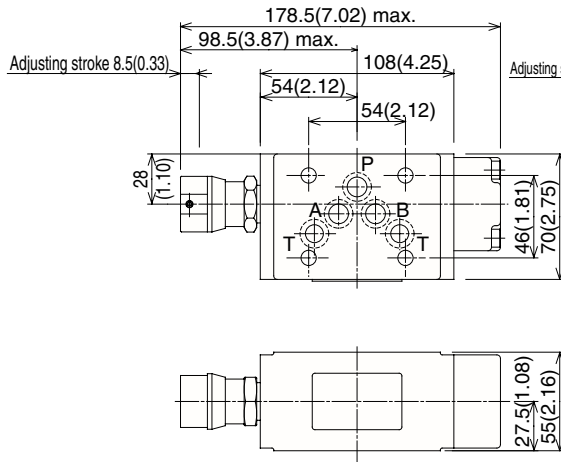
Note)
Dimensions in the parentheses are for the OCF-G01-A40-X-30.

OCF-G01-B40-X/Y-30

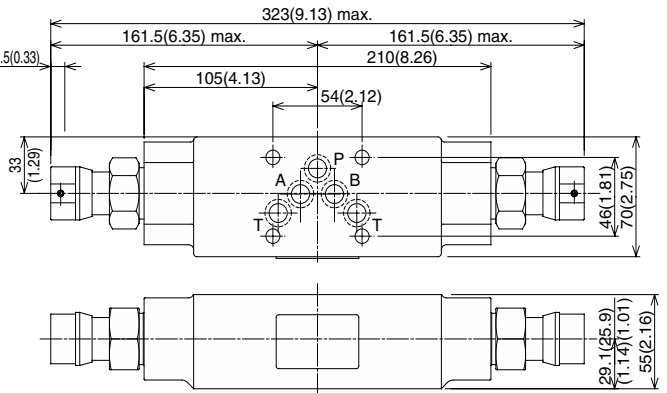


Note)
Dimensions in the parentheses are for the OCF-G01-B40-X-30.

OF-G03-P60-J50

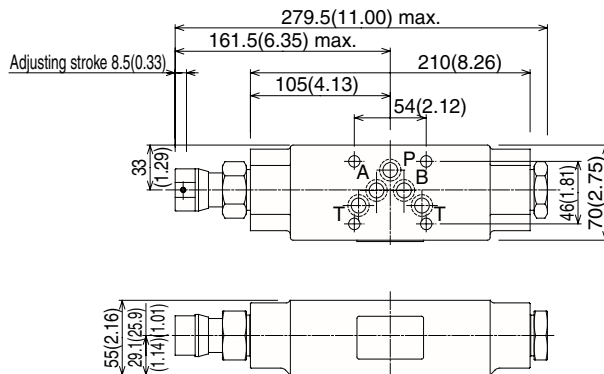


OCF-G03-W60-X/Y-J50



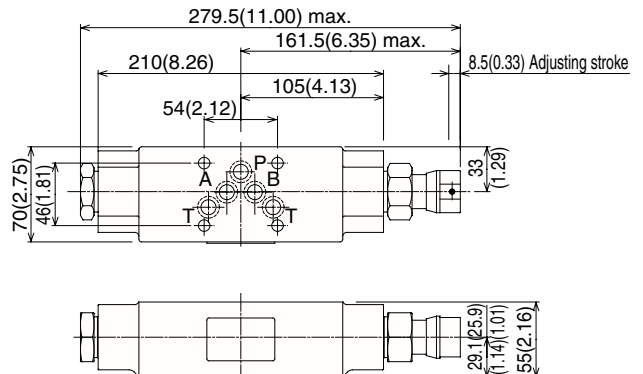
Note)
Dimensions in the parentheses are for the OCF-G03-W60-X-J50.

OCF-G03-A60-X/Y-J50



Note)
Dimensions in the parentheses are for the OCF-G03-A60-X-J50.

OCF-G03-B60-X/Y-J50



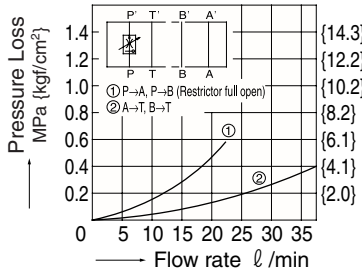
Note)
Dimensions in the parentheses are for the OCF-G03-B60-X-J50.

Performance Curves

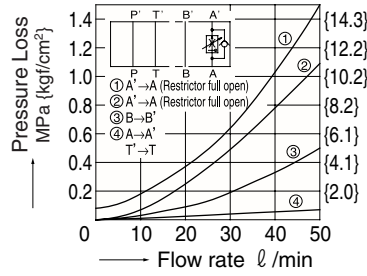
Hydraulic Operating Fluid Viscosity 32mm²/s

Pressure Loss Characteristics

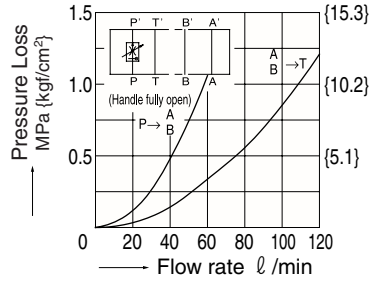
OF-G01-P20-20



OCF-G01-A40-Y-30

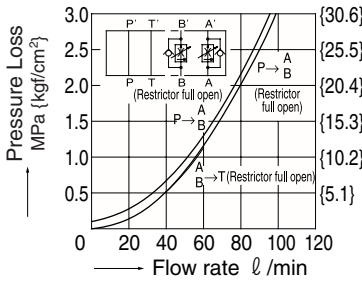


OF-G03-P60-J50

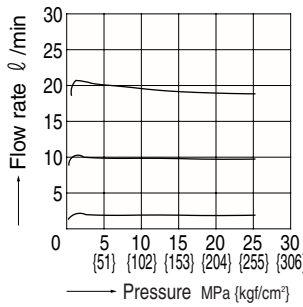


Pressure - Control Flow Rate Characteristics

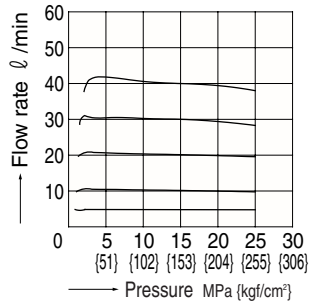
OCF-G03-W60-Y-J50



OF-G01-P20-20

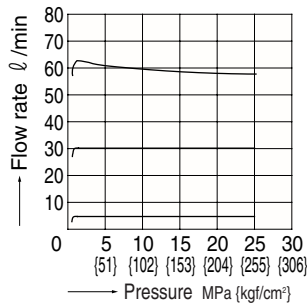


OCF-G01-*40*-30

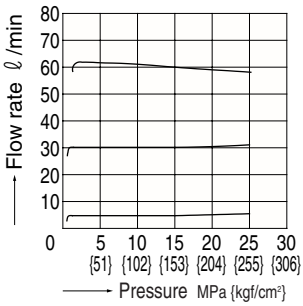


Fluid Temperature - Control Flow Rate Characteristics

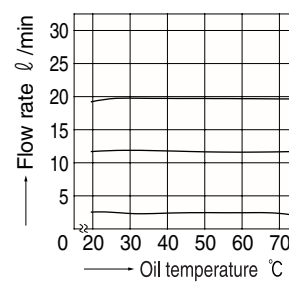
OF-G03-P60-J50



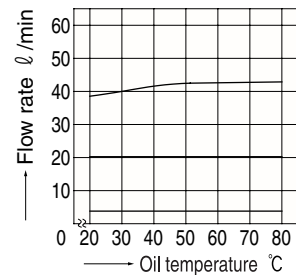
OCF-G03-W60*-J50



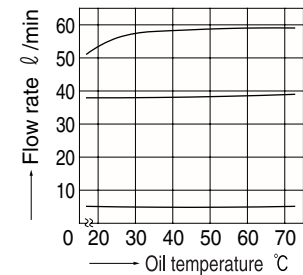
OF-G01-P20-20



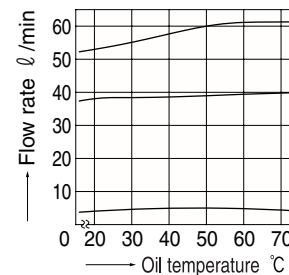
OCF-G01-*40*-30



OF-G03-P60-J50

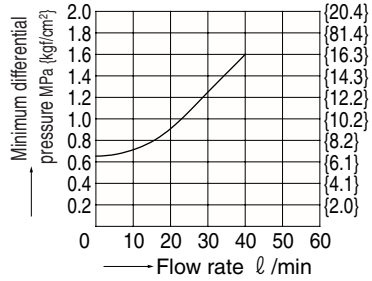


OCF-G03-W60*-J50



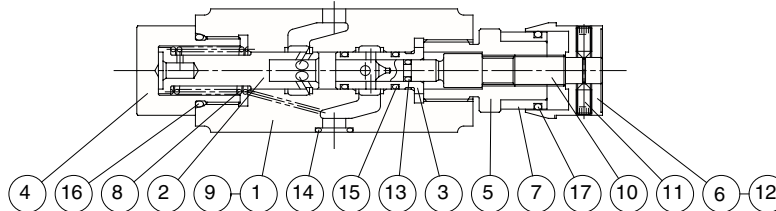
Flow Rate — Minimum Differential Pressure Characteristics

OCF-G01-*40-*-30



Cross-sectional Drawing

OF-G01-P20-20



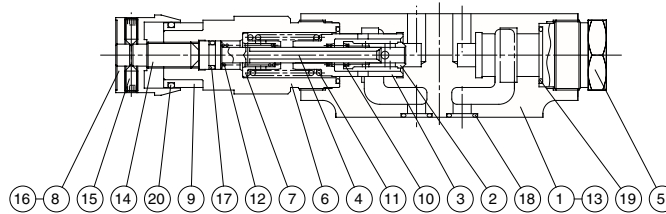
Seal Part List (Kit Model Number BFBS-01FP)

Part No.	Part Name	Part Number	Q'ty	
			P	
13	O-ring	1B-P4	1	
14	O-ring	1B-P9	4	
15	O-ring	1B-P9	2	
16	O-ring	1B-P20	1	
17	O-ring	1A-P22	1	

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.

Part No.	Part Name
1	Body
2	Piston
3	Sleeve
4	Bushing
5	Retainer
6	Knob
7	Dial
8	Spring
9	Plate
10	Screw
11	Screw
12	Screw
13	O-ring
14	O-ring
15	O-ring
16	O-ring
17	O-ring

OCF-G01-A40-Y-30



Seal Part List (Kit Model Number BFCS-01CF*)

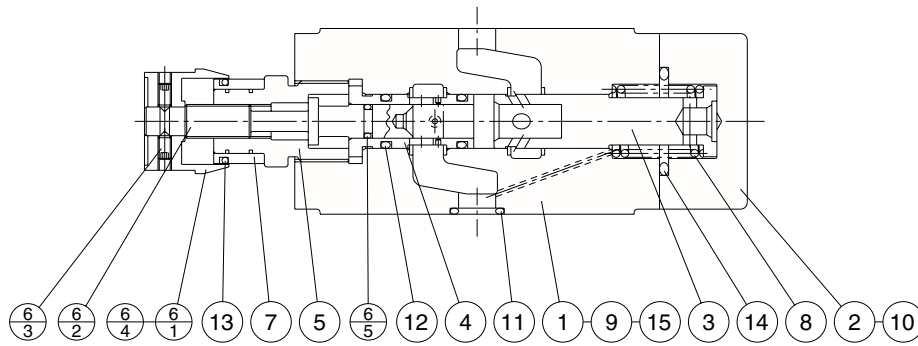
Part No.	Part Name	Part Number	Q'ty		
			W	A	B
17	O-ring	1A-P8	2	1	1
18	O-ring	1B-P9	4	4	4
19	O-ring	AS568-018(Hs90)	2	2	2
20	O-ring	1A-P21	1	1	1

Note)

- O-ring 1A/B-** refers to JIS B2401-1A/B.
- Specify W, A, or B for the asterisk (*) in the kit model number.

Part No.	Part Name
1	Body
2	Throttle
3	Piston
4	Rod
5	Bushing
6	Retainer
7	Guide
8	Knob
9	Dial
10	Spring
11	Spring
12	Spring
13	Plate
14	Screw
15	Screw
16	Screw
17	O-ring
18	O-ring
19	O-ring
20	O-ring

OF-G03-P60-J50



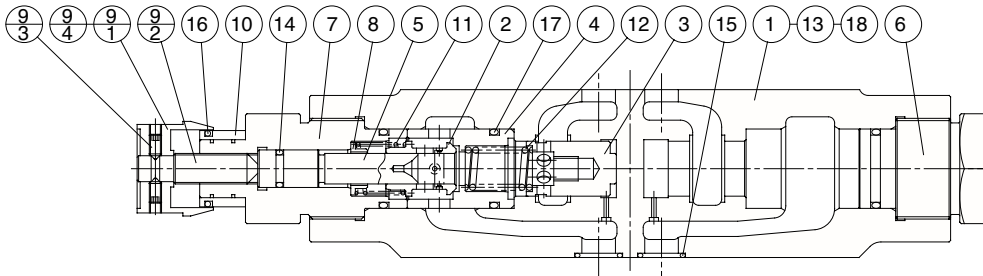
Seal Part List (Kit Model Number BFES-03FP)

Part No.	Part Name	Part Number	Q'ty	
				PC
6-5	O-ring	1A-P7	1	
11	O-ring	AS568-014(Hs90)	5	
12	O-ring	1B-P12	2	
13	O-ring	1A-P21	1	
14	O-ring	1B-P26	1	

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.

Part No.	Part Name
1	Body
2	Cover
3	Piston
4	Sleeve
5	Retainer
6	Screw kit
6-1	Knob
6-2	Screw
6-3	Screw
6-4	Screw
6-5	O-ring
7	Dial
8	Spring
9	Plate
10	Screw
11	O-ring
12	O-ring
13	O-ring
14	O-ring
15	Pin

OCF-G03-A60-Y-J50



Seal Part List (Kit Model Number BFES-03CF*)

Part No.	Part Name	Part Number	Q'ty		
			W	A	B
14	O-ring	1A-P10	2	1	1
15	O-ring	AS568-014(Hs90)	5	5	5
16	O-ring	1A-P21	2	1	1
17	O-ring	1B-P22	4	3	3

Note)

- O-ring 1A/B-** refers to JIS B2401-1A/B.
- Specify W, A, or B for the asterisk (*) in the kit model number.

Part No.	Part Name
1	Body
2	Throttle
3	Piston
4	Sleeve
5	Rod
6	Bushing
7	Retainer
8	Guide
9	Screw kit
9-1	Knob
9-2	Screw
9-3	Screw
9-4	Screw
10	Dial
11	Spring
12	Spring
13	Plate
14	O-ring
15	O-ring
16	O-ring
17	O-ring
18	Pin



Gauge Modular Block

13.2 to 26.4gpm
3571psi

Features

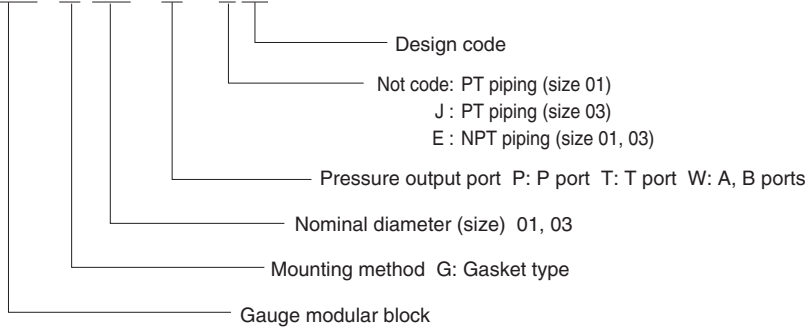
- ① This modular block makes it possible to attach a pressure gauge to the P and T ports or the A and B ports.
- ② Connection to the ports is extremely simple.

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa{psi}	Maximum Flow Rate ℓ /min (gpm)	Weight kg	Gasket Surface Dimensions
OK-G01-P-E20 OK-G01-T-E20	1/8	25{3571}	50 (13.2)	0.6	ISO 4401-03-02-0-94
OK-G01-W-E20				0.6	
OK-G01-P-H-E20 OK-G01-T-H-E20				1.0	
OK-G01-W-H-E20				1.0	
OK-G03-E50	3/8	25{3571}	100(26.4)	2.3	ISO 4401-05-04-0-94

Understanding Model Numbers

OK - G 01 - P - E20

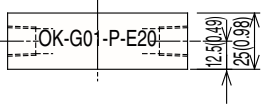
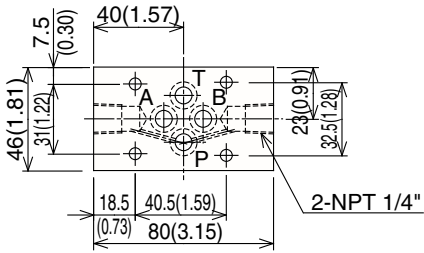


● Handling

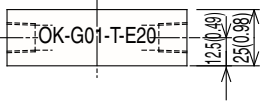
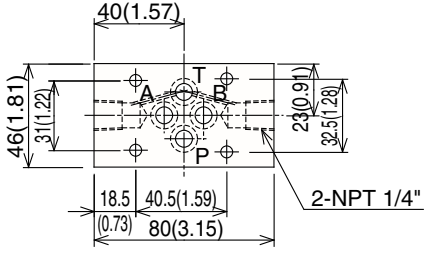
- ① When installing the OK-G01-P- (H)-20, OK-G01-T-(H)-20, or OK-G01-W-(H)-20, make sure the model number printing is oriented so it can be read correctly from the P port side.
- ② Note that a sub plate and installation bolts are not included.

Installation Dimension Drawings

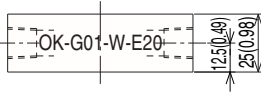
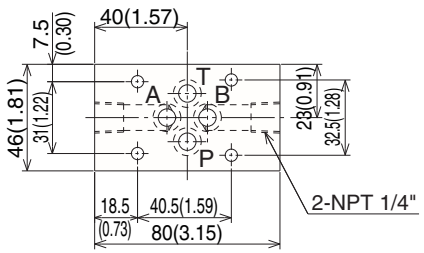
OK-G01-P-E20



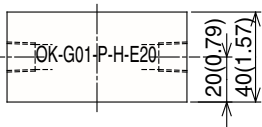
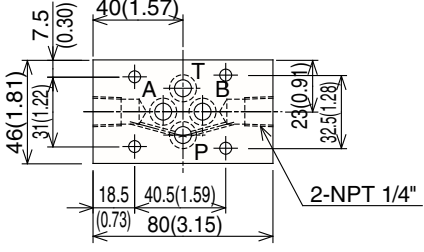
OK-G01-T-E20



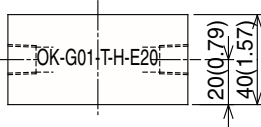
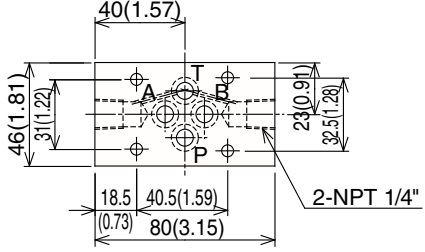
OK-G01-W-E20



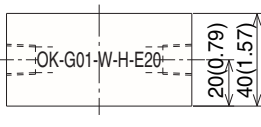
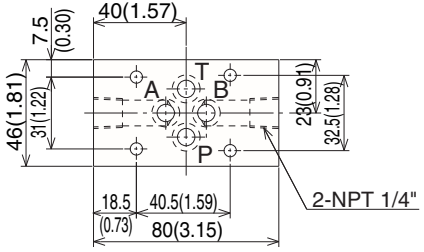
OK-G01-P-H-E20



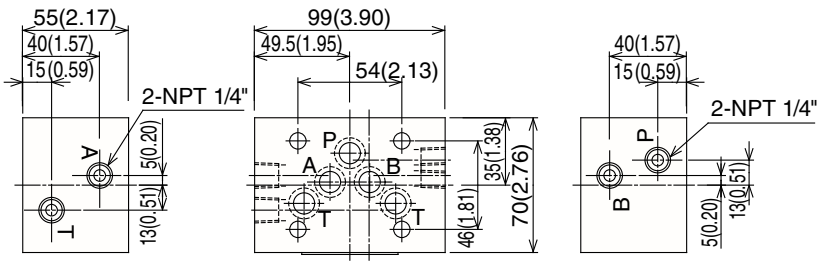
OK-G01-T-H-E20



OK-G01-W-H-E20



OK-G03-E50





Check Modular Valve

13.2 to 26.4gpm
3571psi

Features

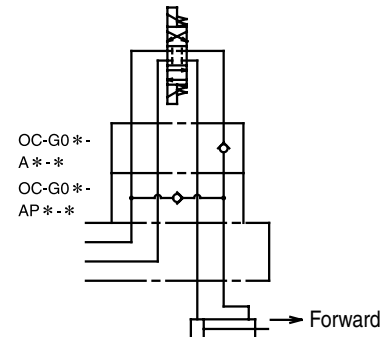
- ① This modular valve is a check valve that prevents reverse-flow.
- ② The 01, 03 sizes include types that can also be used as suction and differential circuits.
- ③ Maximum Operating Pressure: 25MPa {3571psi}

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa{psi}	Maximum Flow Rate ℓ /min(gpm)	Cracking pressure MPa{psi}	Weight kg	Gasket Surface Dimensions					
OC-G01-P1-20 P2 P3	1/8	25{3571}	50 (13.2)	0.04{5.7}	1.0	ISO 4401-03-02-0-94					
0.35{50}											
0.50{71}											
0.04{5.7}											
0.35{50}											
0.50{71}											
OC-G01-T1-20 T2 T3	3/8	25{3571}	100 (26.4)	0.04{5.7}	2.7	ISO 4401-05-04-0-94					
0.35{50}											
0.50{71}											
0.04{5.7}											
0.35{50}											
0.50{71}											
OC-G01-A1-21 A2 A3	3/8	25{3571}	100 (26.4)	0.04{5.7}	2.7	ISO 4401-05-04-0-94					
0.35{50}											
0.50{71}											
0.04{5.7}											
0.35{50}											
OC-G01-AP1-20 AP2 AP3	3/8	25{3571}	100 (26.4)	0.04{5.7}	2.7	ISO 4401-05-04-0-94					
0.35{50}											
0.50{71}											
0.015{2.14}											
OCV-G01-W-20	3/8	25{3571}	100 (26.4)	0.015{2.14}	3.5	ISO 4401-05-04-0-94					
OC-G03-P1-J50 P2 P3				3/8			25{3571}	100 (26.4)	0.04{5.7}	2.7	ISO 4401-05-04-0-94
0.35{50}											
0.50{71}											
0.04{5.7}											
0.35{50}											
0.50{71}											
OC-G03-T1-J50 T2 T3	3/8	25{3571}	100 (26.4)	0.04{5.7}	2.7	ISO 4401-05-04-0-94					
0.35{50}											
0.50{71}											
0.04{5.7}											
0.35{50}											
OC-G03-A1-J50 A2 A3	3/8	25{3571}	100 (26.4)	0.04{5.7}	2.7	ISO 4401-05-04-0-94					
0.35{50}											
0.50{71}											
0.04{5.7}											
0.35{50}											
OC-G03-AP1-J50 AP2 AP3	3/8	25{3571}	100 (26.4)	0.04{5.7}	2.7	ISO 4401-05-04-0-94					
0.35{50}											
0.50{71}											
0.015{2.14}											
OCV-G03-W-J50	3/8	25{3571}	100 (26.4)	0.015{2.14}	3.5	ISO 4401-05-04-0-94					

● Handling

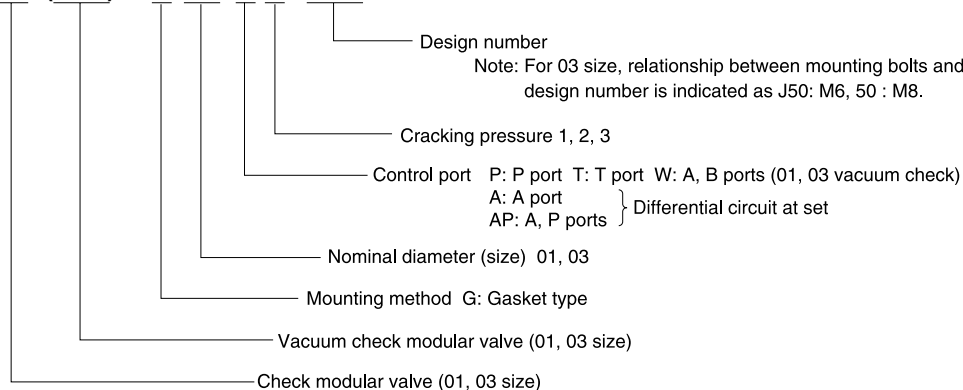
- ① Differential circuit can be easily configured at P → B by attaching OC-G**-A* above the OC-G**-AP* on the sub-plate. (See the figure to the right.)
- ② Note that a sub plate and installation bolts are not included.



Understanding Model Numbers

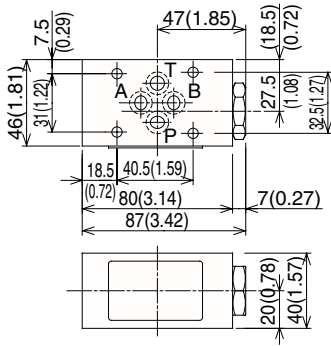
01, 03 size

OC (OCV) – G 03 – P 1 – J50

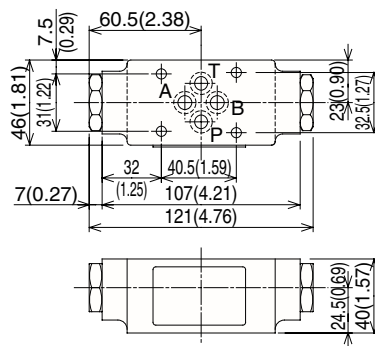


Installation Dimension Drawings

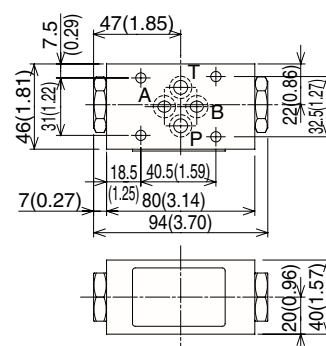
OC-G01-T*-20
P
AP



OC-G01-A*-21

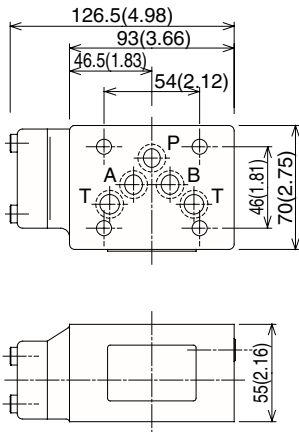


OCV-G01-W-20

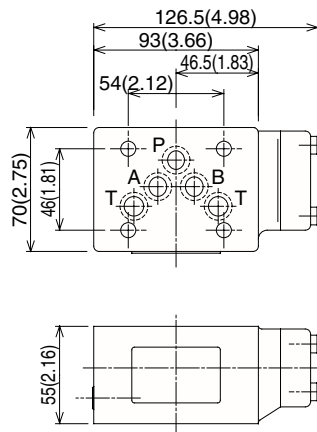


Note) Dimensions in the parentheses are for the OC-G01-T*-20.

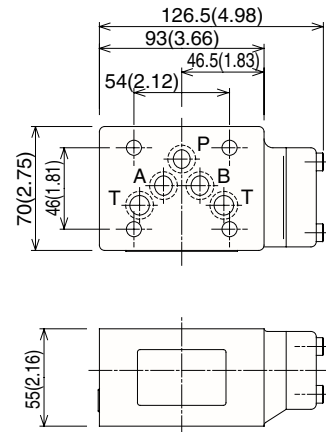
OC-G03-P
AP*-J50



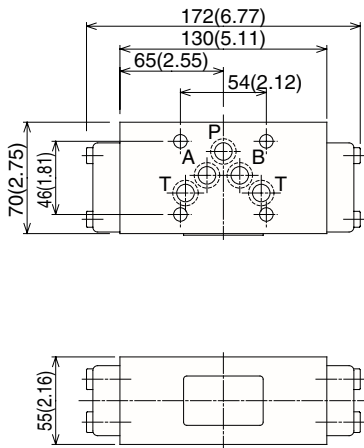
OC-G03-A*-J50



OC-G03-T*-J50



OCV-G03-W-J50

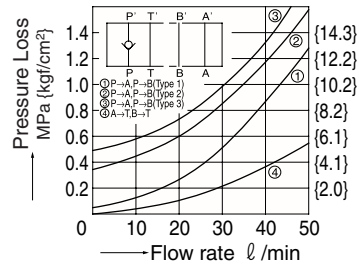


Performance Curves

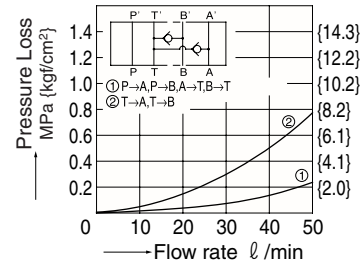
Hydraulic Operating Fluid Viscosity 32mm²/s

Pressure Loss Characteristics

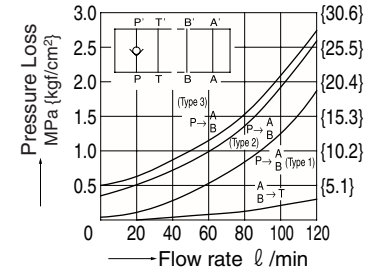
OC-G01-P*-20



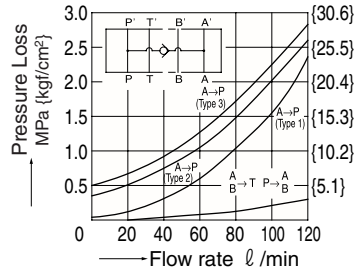
OCV-G01-W-20



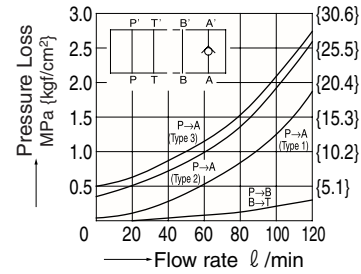
OC-G03-P*-J50



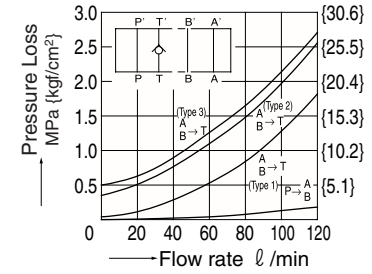
OC-G03-AP*-J50



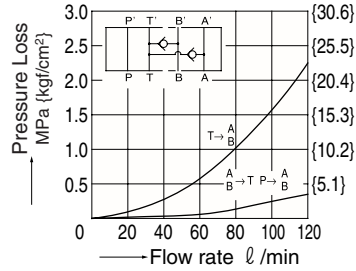
OC-G03-A*-J50



OC-G03-T*-J50

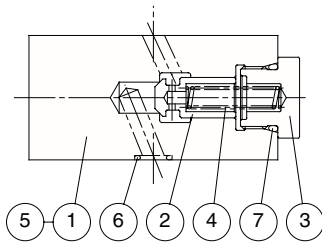


OCV-G03-W-J50



Cross-sectional Drawing

P
OC-G01-T*-20
AP



Part No.	Part Name
1	Body
2	Poppet
3	Guide
4	Spring
5	Plate
6	O-ring
7	O-ring

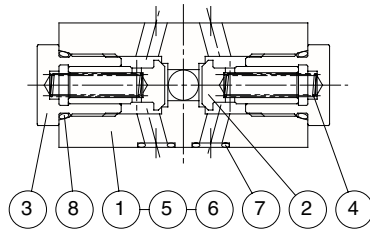
Seal Part List (Kit Model Number BRBS-01C*)

Part No.	Part Name	Part Number	Q'ty		
			P	T	AP
6	O-ring	1B-P9	4	4	4
7	O-ring	1B-P18	1	1	1

Note)

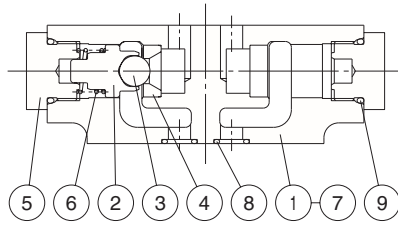
1. O-ring 1A/B-** refers to JIS B2401-1A/B.
2. Specify P, T, or AP for the asterisk (*) in the kit model number.

OCV-G01-W-20



Part No.	Part Name
1	Body
2	Poppet
3	Guide
4	Spring
5	Plate
6	Plug
7	O-ring
8	O-ring

OC-G01-A*-21



Part No.	Part Name
1	Body
2	Poppet
3	Ball
4	Seat
5	Guide
6	Spring
7	Plate
8	O-ring
9	O-ring

Seal Part List (Kit Model Number BDBS-01CA)

Part No.	Part Name	Part Number	Q'ty
			A
8	O-ring	1B-P9	4
9	O-ring	1B-P18	2

Note)

1. O-ring 1A/B-** refers to JIS B2401-1A/B.

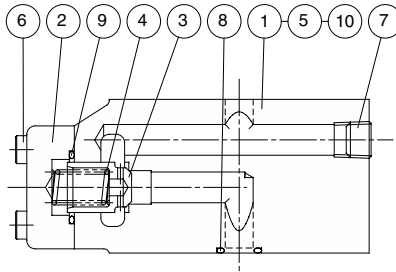
Seal Part List (Kit Model Number BDBS-01CVW)

Part No.	Part Name	Part Number	Q'ty
			W
7	O-ring	1B-P9	4
8	O-ring	1B-P18	2

Note)

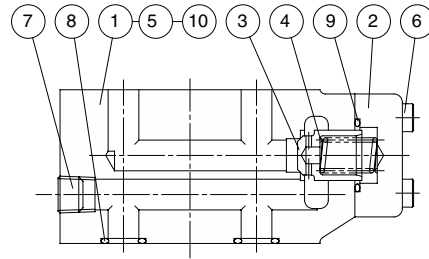
1. O-ring 1A/B-** refers to JIS B2401-1A/B.

OC-G03-P*-J50



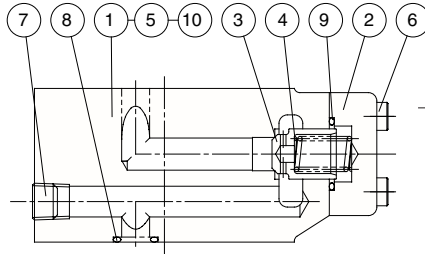
Part No.	Part Name
1	Body
2	Cover
3	Poppet
4	Spring
5	Plate
6	Screw
7	Plug
8	O-ring
9	O-ring
10	Pin

OC-G03-T*-J50



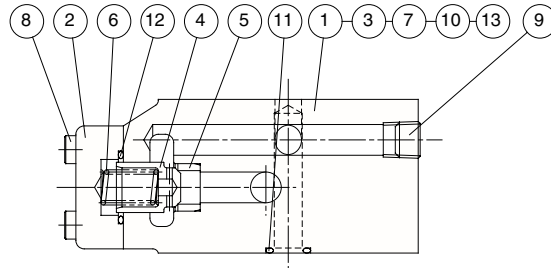
Part No.	Part Name
1	Body
2	Cover
3	Poppet
4	Spring
5	Plate
6	Screw
7	Plug
8	O-ring
9	O-ring
10	Pin

OC-G03-A*-J50



Part No.	Part Name
1	Body
2	Cover
3	Poppet
4	Spring
5	Plate
6	Screw
7	Plug
8	O-ring
9	O-ring
10	Pin

OC-G03-AP*-J50



Part No.	Part Name
1	Body
2	Cover
3	Plug
4	Poppet
5	Seat
6	Spring
7	Plate
8	Screw
9	Plug
10	O-ring
11	O-ring
12	O-ring
13	Pin

Seal Part List (Kit Model Number BDES-03C*)

Part No.	Part Name	Part Number	Q'ty		
			P	T	A
8	O-ring	AS568-014(Hs90)	5	5	5
9	O-ring	1B-P22	1	1	1

Note)

- O-ring 1A/B-** refers to JIS B2401-1A/B.
- Specify P, T, or A for the asterisk (*) in the kit model number.

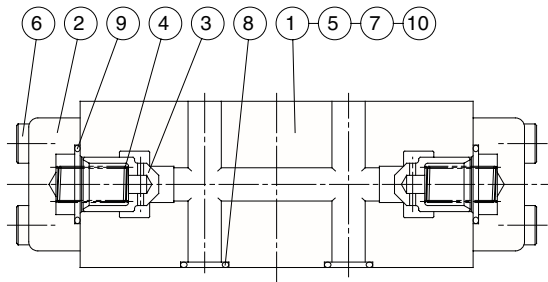
Seal Part List (Kit Model Number BDES-03CAP)

Part No.	Part Name	Part Number	Q'ty
			AP
10	O-ring	1B-P11	1
11	O-ring	AS568-014(Hs90)	5
12	O-ring	1B-P22	1

Note)

- O-ring 1A/B-** refers to JIS B2401-1A/B.

OCV-G03-W-J50



Seal Part List (Kit Model Number BDES-03CVW)

Part No.	Part Name	Part Number	Q'ty
			W
7	O-ring	1B-P10A	2
8	O-ring	AS568-014(Hs90)	5
9	O-ring	1B-P22	2

Part No.	Part Name	Part No.	Part Name	Part No.	Part Name
1	Body	5	Plate	9	O-ring
2	Cover	6	Screw	10	Pin
3	Poppet	7	O-ring		
4	Spring	8	O-ring		

Pilot Operated Check Modular Valve

13.2 to 26.4gpm
3571psi



Features

- ① This modular valve is used to prevent actuator self-running and to maintain actuator position.
- ② Maximum Operating Pressure: 25MPa {3571psi}

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa{psi}	Maximum Flow Rate ℓ /min{gpm}	Cracking pressure MPa{psi}	Area Ratio			Weight kg	Gasket Surface Dimensions	
					Pilot Piston	Check Valve Seat	Needle Valve Seat			
OCP-G01-W1-21 W2	1/8	25{3571}	50 (13.2)	0.2{29} 0.5{71}	1	0.37	—	1.2	ISO 4401-03-02-0-94	
OCP-G01-A1-21 A2				0.2{29} 0.5{71}						
OCP-G01-B1-21 B2				0.2{29} 0.5{71}						
OCP-G01-W1-F-21 W2				1	0.51	0.06	1.2			
OCP-G01-A1-F-21 A2										0.2{29} 0.5{71}
OCP-G01-B1-F-21 B2										0.2{29} 0.5{71}
OCP-G03-W1-J50 W2	3/8	25{3571}	100 (26.4)	0.2{29} 0.5{71}	1	0.49		0.07	3.6	ISO 4401-05-04-0-94
OCP-G03-A1-J50 A2				0.2{29} 0.5{71}						
OCP-G03-B1-J50 B2				0.2{29} 0.5{71}						
OCP-G03-W1-D-J50 W2				1	0.49	—	3.6			
OCP-G03-A1-D-J50 A2								0.2{29} 0.5{71}		
OCP-G03-B1-D-J50 B2								0.2{29} 0.5{71}		

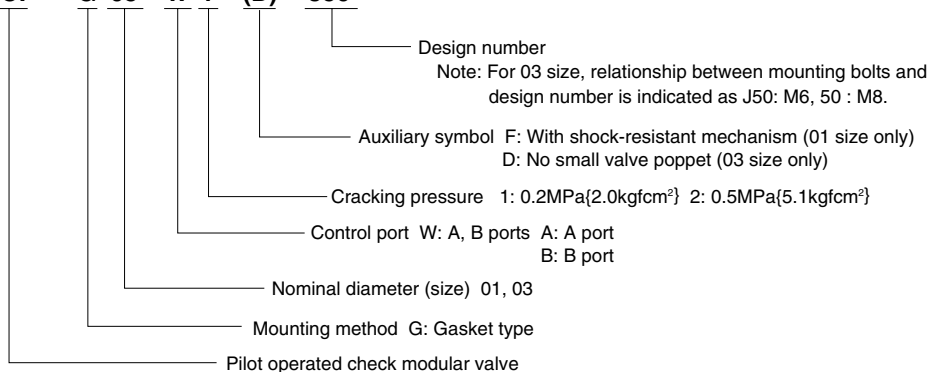
● Handling

- ① Note that when the 01 size has the auxiliary symbol "F," tank port back pressure can cause the small valve to open, making it impossible to maintain pressure.
- ② If tank port back pressure causes the small valve to open and make it impossible to maintain pressure with the 03 size, use a direct type with auxiliary symbol "D."
- ③ Minimum pilot pressure fluctuates with the input side pressure during reverse flow. Operate the valve so pressure is at least twice as high as the required pressure obtained using the minimum pilot pressure characteristics graph.
- ④ Note that a sub plate and installation bolts are not included.

Understanding Model Numbers

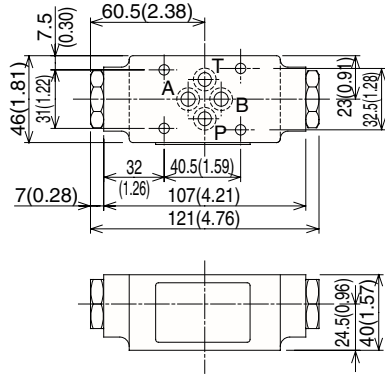
01, 03 size

OCP - G 03 - W 1 - (D) - J50

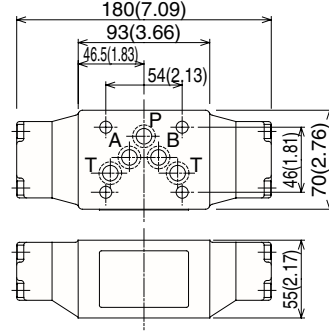


Installation Dimension Drawings

OCP-G01-**-(-F)-21



OCP-G03-**-(-D)-J50

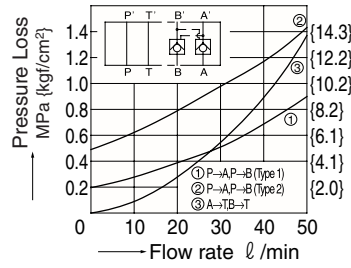


Performance Curves

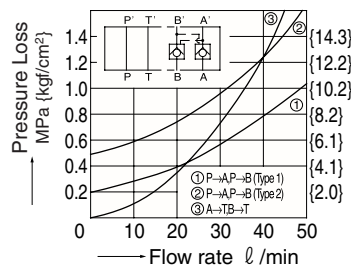
Hydraulic Operating Fluid Viscosity 32mm²/s

Pressure Loss Characteristics

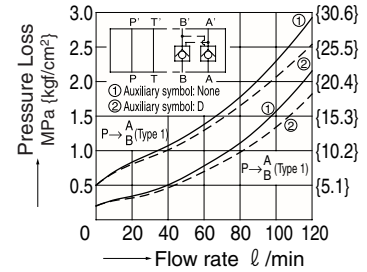
OCP-G01-W*-F-21



OCP-G01-W*-F-21

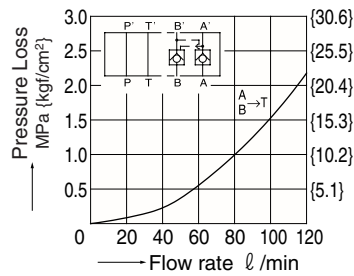


OCP-G03-W*-(-D)-J50



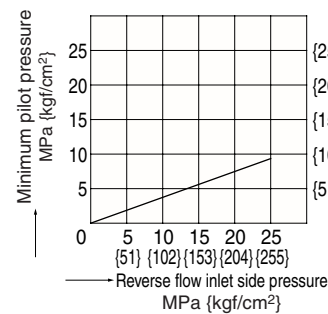
Pressure Loss Characteristics (Reverse Free Flow)

OCP-G03-W*-J50

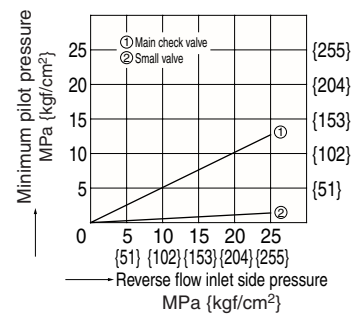


Minimum Pilot Pressure Characteristics

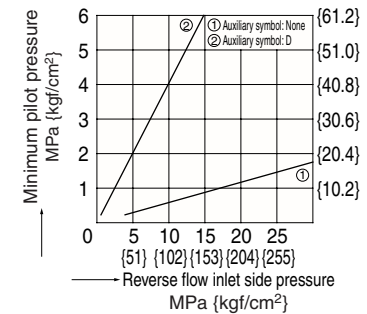
OCP-G01-**-(-F)-21



OCP-G01-**-(-F)-21

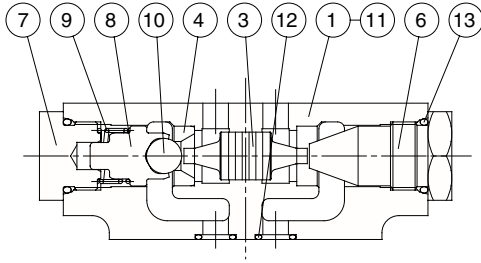


OCP-G03-W*-(-D)-J50

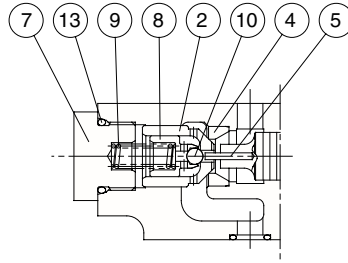


Cross-sectional Drawing

OCP-G01-A*-21



OCP-G01-A*-F-21



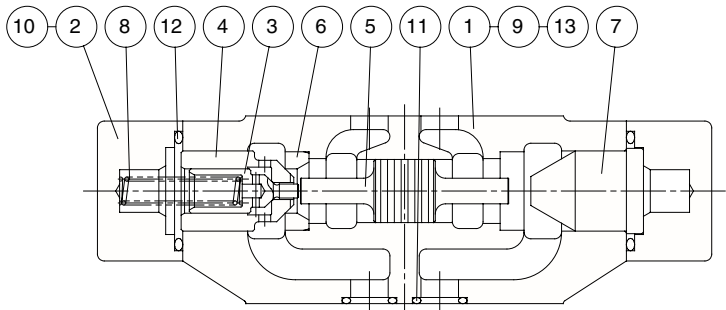
Part No.	Part Name
1	Body
2	Poppet
3	Piston
4	Seat
5	Rod
6	Bushing
7	Guide
8	Guide
9	Spring
10	Ball
11	Plate
12	O-ring
13	O-ring

Seal Part List (Kit Model Number BDBS-01CP)

Part No.	Part Name	Part Number	Q'ty		
			W	A	B
12	O-ring	1B-P9	4	4	4
13	O-ring	1B-P18	2	2	2

Note) 1. O-ring 1A/B-** refers to JIS B2401-1A/B.
2. Specify W, A, or B for the asterisk (*) in the kit model number.

OCP-G03-A*-J50



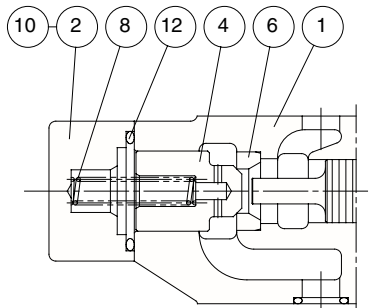
Part No.	Part Name
1	Body
2	Cover
3	Poppet
4	Poppet
5	Piston
6	Seat
7	Bushing
8	Spring
9	Plate
10	Screw
11	O-ring
12	O-ring
13	Pin

Seal Part List (Kit Model Number BDES-03CP*)

Part No.	Part Name	Part Number	Q'ty		
			W	A	B
11	O-ring	AS568-014(Hs90)	5	5	5
12	O-ring	1B-P29	2	2	2

Note) 1. O-ring 1A/B-** refers to JIS B2401-1A/B.
2. Specify W, A, or B for the asterisk (*) in the kit model number.

OCP-G03-**-D-J50



Relief Modular Valve

13.2 to 21.2gpm
3571psi



Features

- ① This modular relief valve provides maximum pressure control for a hydraulic circuit.
- ② Wide ranging applicability Maximum Operating Pressure: 25, 35MPa {255, 357kgf/cm²} Pressure Adjustment Range: 0.8 to 25, 35MPa {8.2 to 255, 357kgf/cm²}
- ③ Shockless unload, 2-pressure control, and other configurations are possible by switching the solenoid valve. Contact your agent for details.

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa{psi}	Maximum Flow Rate ℓ /min(gpm)	Pressure Adjustment Range MPa{psi}	Weight kg	Gasket Surface Dimensions
OR-G01-P1-20 P3	1/8	25 {3571}	50 (13.2)	* to 7{ * to 1000} 3.5 to 25{500 to 3571}	1.5	ISO 4401-03-02-0-94
OR-G01-W1-20 W3				* to 7{ * to 1000} 3.5 to 25{500 to 3571}	2.3	
OR-G01-A1-21 A3				* to 7{ * to 1000} 3.5 to 25{500 to 3571}	1.6	
OR-G01-B1-21 B3				* to 7{ * to 1000} 3.5 to 25{500 to 3571}	1.6	
OR-G03-P1-(V)-J50 P3	3/8	25 {3571}	80 (21.2)	* to 7{ * to 1000} 3.5 to 25{500 to 3571}	3.1	ISO 4401-05-04-0-94
OR-G03-W1-J50 W3				* to 7{ * to 1000} 3.5 to 25{500 to 3571}	3.9	
OR-G03-A1-E50 A3				* to 7{ * to 1000} 3.5 to 25{500 to 3571}	3.1	
OR-G03-B1-E50 B3				* to 7{ * to 1000} 3.5 to 25{500 to 3571}	3.1	

Note) See the Flow Rate - Low Pressure characteristics on page M-12 for information about items marked with an asterisk.*

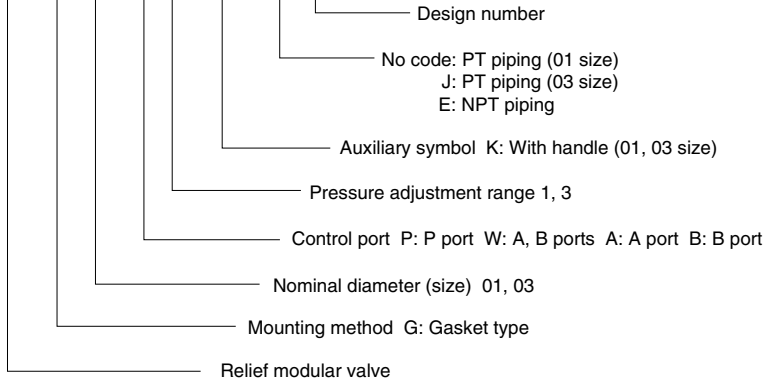
● Handling

- ① When using a remote control valve in a vent circuit, certain vent circuit pipe capacities can cause vibration. Because of this, thick steel pipe with an inside diameter of φ4mm that is no longer than three meters is recommended. Vent piping cannot be used with the 01 size. If a vent port is required for the 03 size, add the auxiliary code "V".
- ② For use as a safety valve, use a pressure override that is higher than the required circuit pressure.
- ③ Make sure that tank port back pressure is no greater than 0.2MPa {29psi},
- ④ A small control flow rate can cause pressure instability. Use a control flow rate that is in accordance with the values shown below.
01 size: At least 1.3gpm
03 size: At least 2.1gpm
- ⑤ For applications that require a flow rate that is less than the minimum flow rate, use an ORD-G** direct type relieve modular valve.
- ⑥ Note that a sub plate and installation bolts are not included.
- ⑦ Connect OR-G03-W*-(J) 50 to the two T-ports on the tanks.

Understanding Model Numbers

01: 03 size

OR-G 03 - P 1 - (K) - E 50

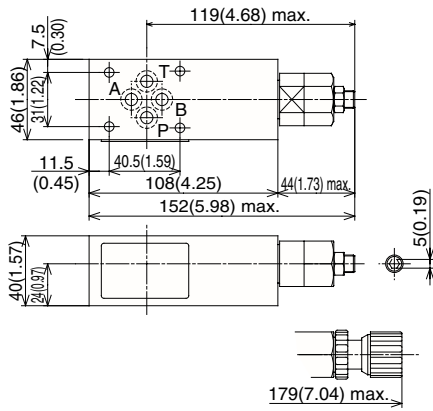


Installation Dimension Drawings

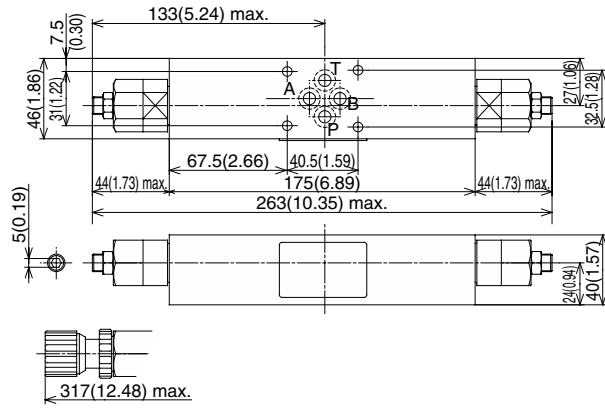
mm(inch)

Note) Pressure is increased by clockwise (rightward) rotation of the adjusting screw (bolt), and decreased by counterclockwise (leftward) rotation.

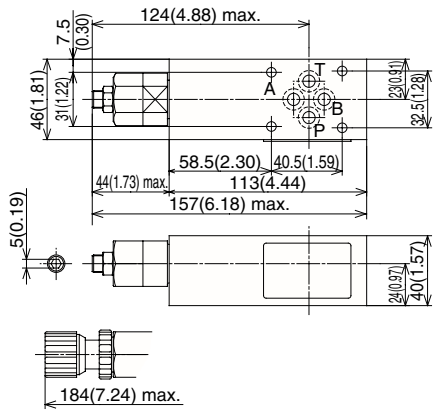
OR-G01-P*-20



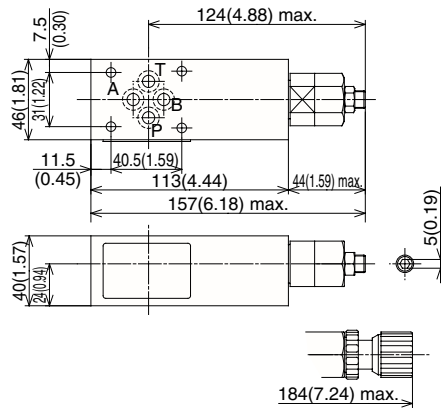
OR-G01-W*-20



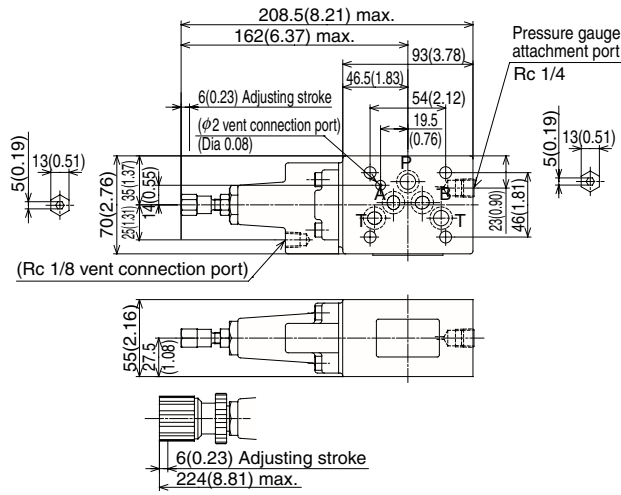
OR-G01-A*-21



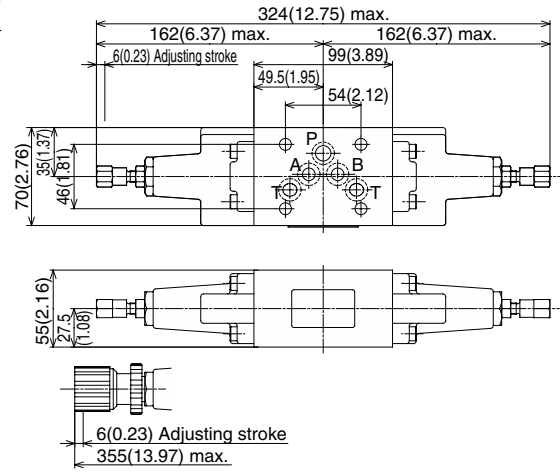
OR-G01-B*-21



OR-G03-P*-(V)-J50

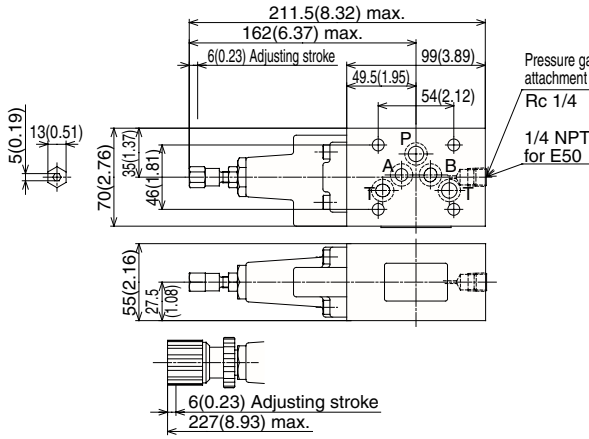


OR-G03-W*-(V)-J50

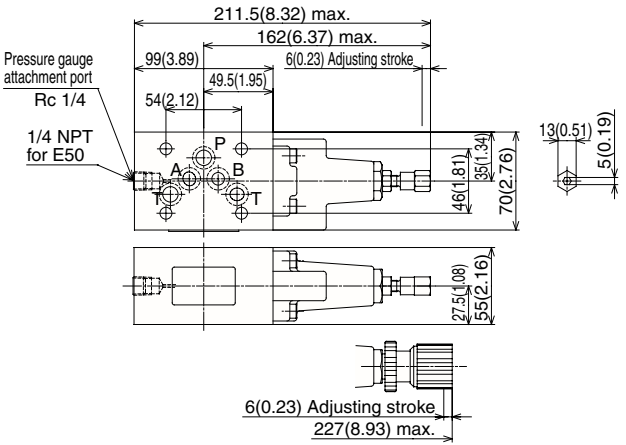


Note) Dimensions in parentheses show dimensions with vent port installed (V type)

OR-G03-A*-E50



OR-G03-B*-E50



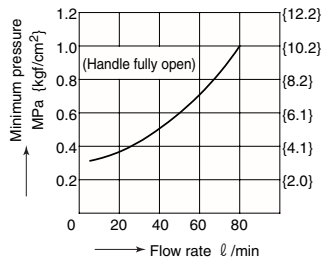
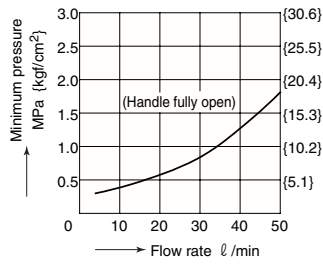
Performance Curves

Differential Hydraulic Fluid Viscosity 32mm²/s

Flow Rate – Minimum Pressure Characteristics

OR-G01-*1-20(21)

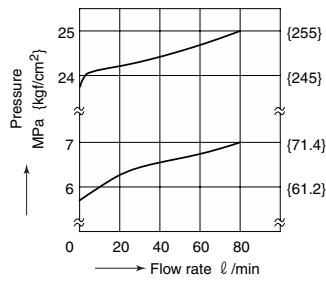
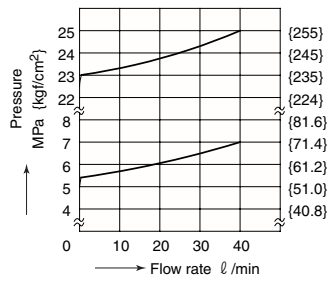
OR-G03-P1-E50



Pressure – Flow Rate Characteristics

OR-G01-**-20(21)

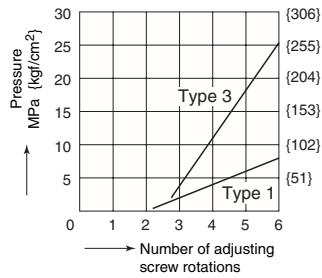
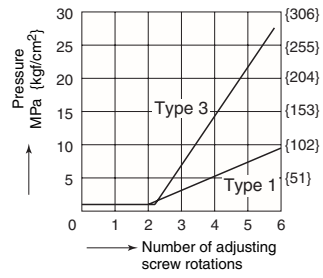
OR-G03-P*-E50



Number of Adjusting Screw Rotations – Pressure Characteristics

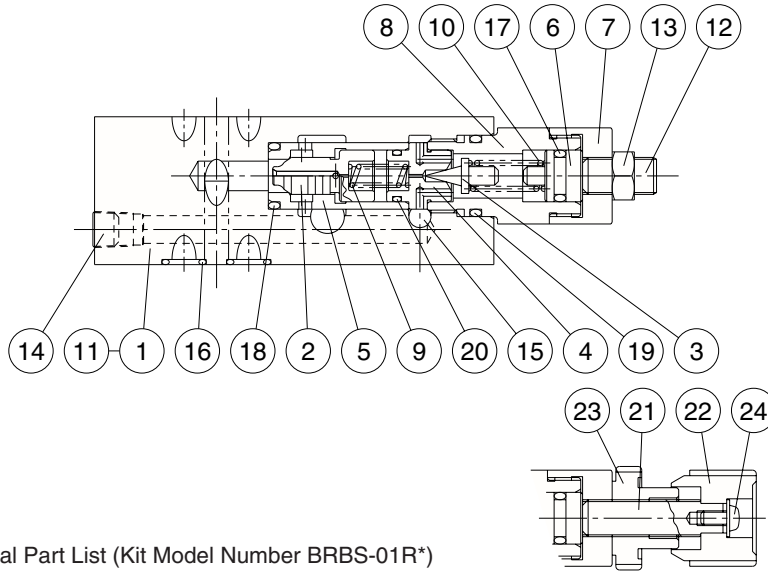
OR-G01-P*-20

OR-G03-P*-(E)50



Cross-sectional Drawing

OR-G01-P*-20



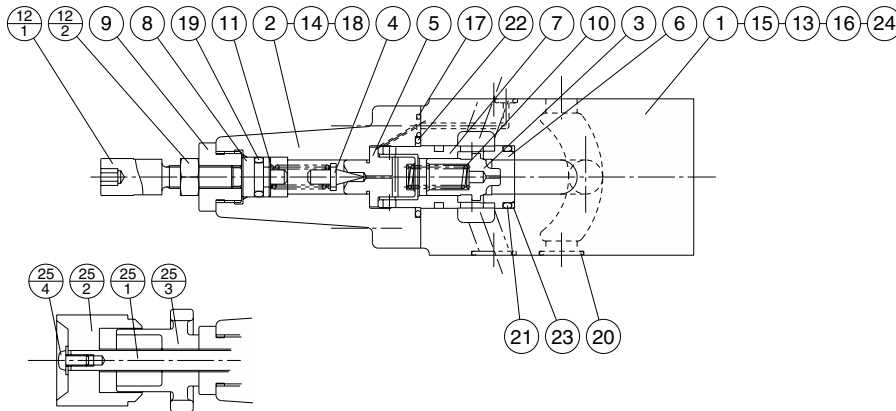
Part No.	Part Name
1	Body
2	Spool
3	Poppet
4	Seat
5	Sleeve
6	Plunger
7	Bushing
8	Retainer
9	Spring
10	Spring
11	Plate
12	Screw
13	Nut
14	Plug
15	Plug
16	O-ring
17	O-ring
18	O-ring
19	O-ring
20	O-ring
21	Screw
22	Knob
23	Nut
24	Screw

Seal Part List (Kit Model Number BRBS-01R*)

Part No.	Part Name	Part Number	Q'ty			
			P	W	A	B
16	O-ring	1B-P9	4	4	4	4
17	O-ring	1A-P10A	1	2	1	1
18	O-ring	1B-P14	1	2	1	1
19	O-ring	1B-P18	1	2	1	1
20	O-ring	AS568-013(Hs90)	1	1	1	1

Note) 1. O-ring 1A/B-** refers to JIS B2401-1A/B.
2. Specify P, W, A, or B for the asterisk (*) in the kit model number.

OR-G03-P*-V-J50



Part No.	Part Name
1	Body
2	Cover
3	Spool
4	Poppet
5	Seat
6	Seat
7	Sleeve
8	Plunger
9	Retainer
10	Spring
11	Spring
12	Screw kit
12-1	Screw
12-2	Nut
13	Plate
14	Screw
15	Plug
16	Plug
17	O-ring
18	O-ring
19	O-ring
20	O-ring
21	O-ring
22	O-ring
23	Backup ring
24	Pin
25	Handle kit
25-1	Screw
25-2	Knob
25-3	Nut
25-4	Screw

Seal Part List (Kit Model Number BRES-03R*)

Part No.	Part Name	Part Number	Q'ty		
			P/A/B	W	PV
17	O-ring	1B-P5	—	—	2
18	O-ring	1B-P7	1	2	1
19	O-ring	1A-P10A	1	2	1
20	O-ring	AS568-014(Hs90)	5	5	5
21	O-ring	1B-P18	2	4	2
22	O-ring	AS568-119(Hs90)	1	2	1
23	Backup ring	T2-P18	1	2	1

Note) 1. O-ring 1A/B-** refers to JIS B2401-1A/B.
2. Backup ring indicates JIS B2407-T2-**.
3. Specify P, W, or PV for the asterisk (*) in the kit model number.



Brake Modular Valve

5.3 to 7.9gpm
114 to 3000,3571psi

Features

① This modular pressure control valve prevents abnormal pressure when the actuator stops, enabling smooth stops.

② Wide ranging applicability
Maximum operating pressure:
25MPa{3571psi}

Pressure Adjustment Range:
0.8 to 21, 25MPa
{114 to 3000, 3571psi}

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa{psi}	Maximum Flow Rate ℓ /min(gpm)	Pressure Adjustment Range MPa{psi}	Weight kg	Gasket Surface Dimensions
ORO-G01-W1-20 W3	1/8	25 {3571}	20 (5.3)	0.8 to 7{114 to 1000}	1.5	ISO 4401-03-02-0-94
3.5 to 21{500 to 3000}						
0.8 to 7{114 to 1000}						
ORO-G01-A1-20 A3				3.5 to 21{500 to 3000}	1.4	
ORO-G01-B1-20 B3				0.8 to 7{114 to 1000}	1.4	
3.5 to 21{500 to 3000}						
ORO-G03-W1-J50 W3	3/8	25 {3571}	30 (7.9)	0.8 to 7{114 to 1000}	4.8	ISO 4401-05-04-0-94
3.5 to 25{500 to 3571}						
0.8 to 7{114 to 1000}						
ORO-G03-A1-J50 A3				3.5 to 25{500 to 3571}	4.0	
ORO-G03-B1-J50 B3				0.8 to 7{114 to 1000}	4.0	
3.5 to 25{500 to 3571}						

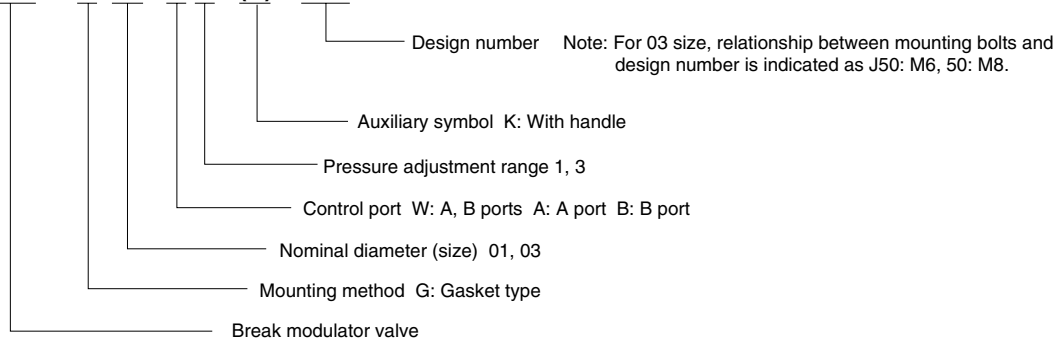
● Handling

① The pressure adjustment range is expressed using cracking pressure.
② For use as a safety valve, use a pressure override that is higher than the required circuit pressure.

③ Note that a sub plate and installation bolts are not included.

Understanding Model Numbers

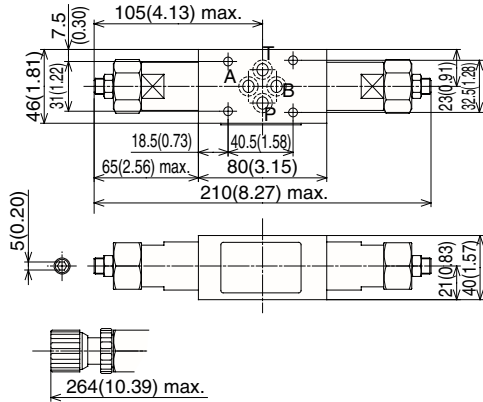
ORO - G 03 - A 3 - (K) - J50



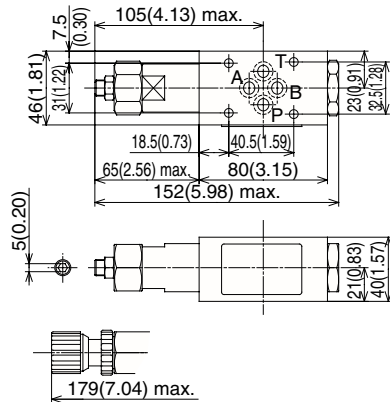
Installation Dimension Drawings

Note) Pressure is increased by clockwise (rightward) rotation of the adjusting screw (bolt), and decreased by counterclockwise (leftward) rotation.

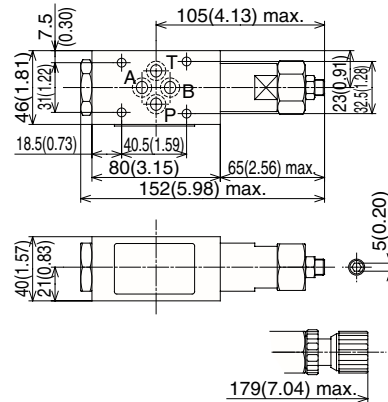
ORO-G01-W*-20



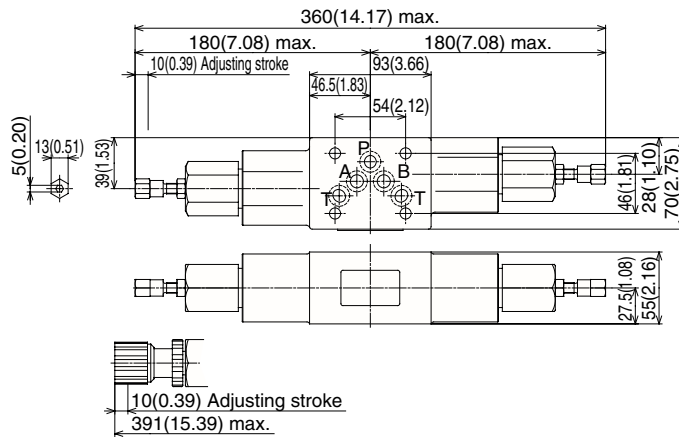
ORO-G01-A*-20



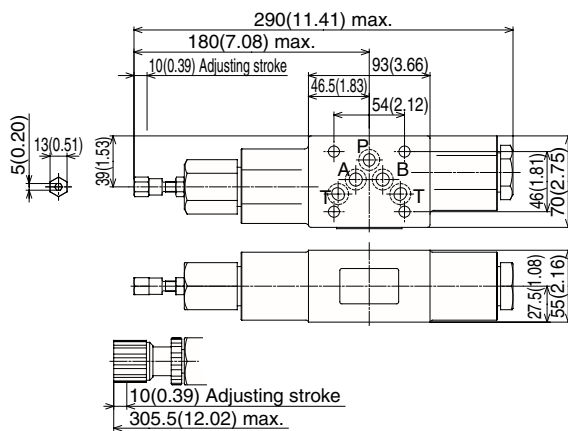
ORO-G01-B*-20



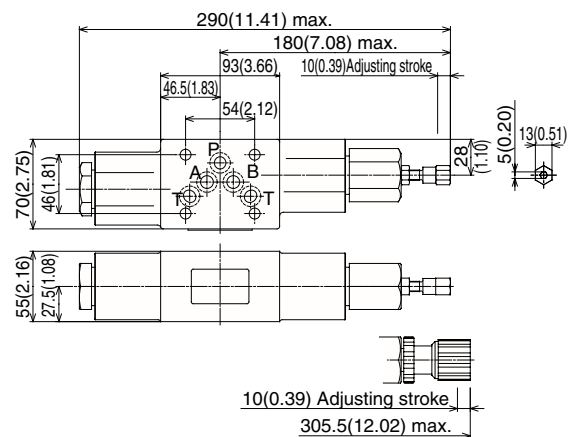
ORO-G03-W*-J50



ORO-G03-A*-J50



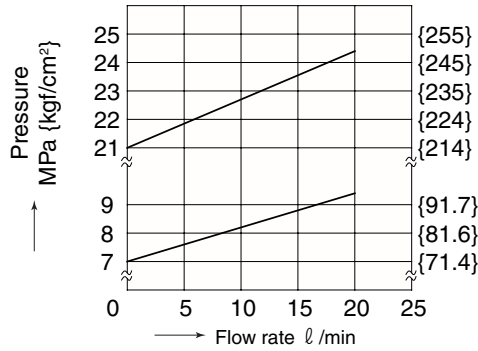
ORO-G03-B*-J50



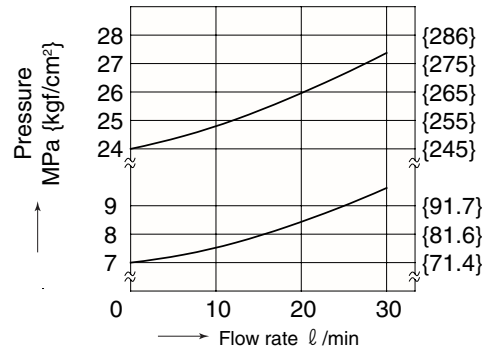
Performance Curves

Differential Hydraulic Fluid Viscosity 32mm²/s

Pressure – Flow Rate Characteristics
ORO-G01-**-20

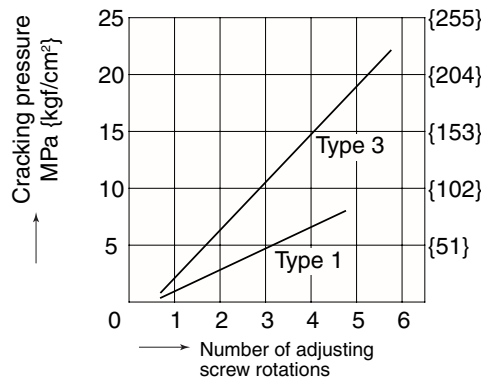


ORO-G03-**-J50

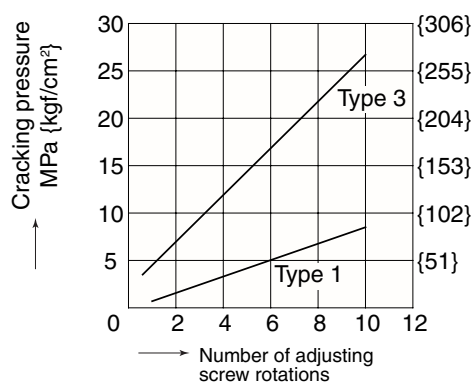


Number of Adjusting Screw Rotations – Pressure Characteristics

ORO-G01-**-20

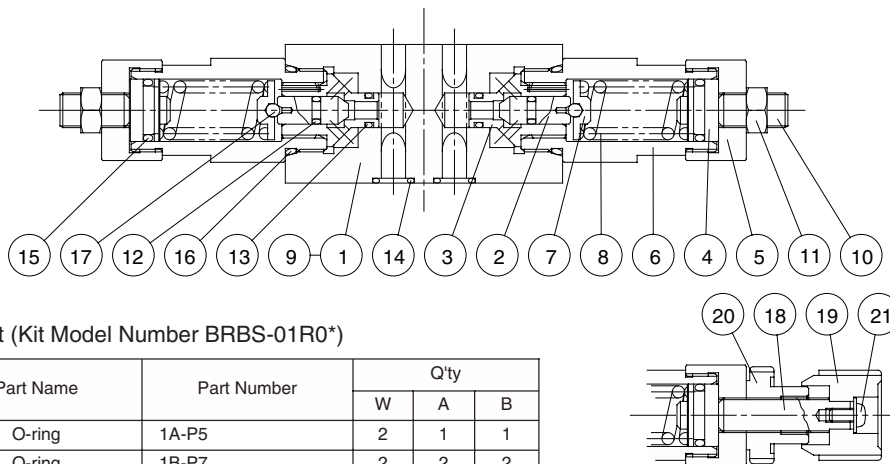


ORO-G03-**-J50



Cross-sectional Drawing

ORO-G01-W*-20



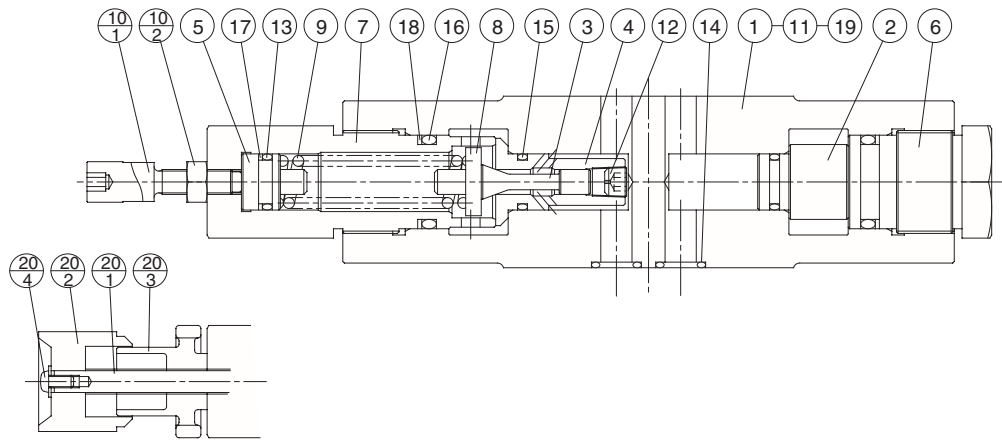
Part No.	Part Name
1	Body
2	Poppet
3	Seat
4	Plunger
5	Bushing
6	Retainer
7	Guide
8	Spring
9	Plate
10	Screw
11	Nut
12	O-ring
13	O-ring
14	O-ring
15	O-ring
16	O-ring
17	Ball
18	Screw
19	Knob
20	Nut
21	Screw

Seal Part List (Kit Model Number BRBS-01R0*)

Part No.	Part Name	Part Number	Q'ty		
			W	A	B
12	O-ring	1A-P5	2	1	1
13	O-ring	1B-P7	2	2	2
14	O-ring	1B-P9	4	4	4
15	O-ring	1B-P14	2	1	1
16	O-ring	1B-P22	2	2	2

Note) 1. O-ring 1A/B-** refers to JIS B2401-1A/B.
2. Specify W, A, or B for the asterisk (*) in the kit model number.

ORO-G03-A*-J50



Part No. | Part Name

1	Body
2	Plug
3	Poppet
4	Seat
5	Plunger
6	Bushing
7	Retainer
8	Guide
9	Spring
10	Screw kit
10.1	Screw
10.2	Nut
10.3	Nut
11	Plate
12	Orifice
13	O-ring
14	O-ring
15	O-ring
16	O-ring
17	Backup ring
18	Backup ring
19	Pin
20	Handle kit
20.1	Screw
20.2	Knob
20.3	Nut
20.4	Screw

Seal Part List (Kit Model Number BRES-03R0*)

Part No.	Part Name	Part Number	Q'ty		
			W	A	B
13	O-ring	1A-P14	2	1	1
14	O-ring	AS568-014(Hs90)	5	5	5
15	O-ring	1B-P14	2	2	2
16	O-ring	1B-P24	2	2	2
17	Backup ring	T2-P14	2	1	1
18	Backup ring	T2-P24	2	2	2

- Note) 1. O-ring 1A/B-** refers to JIS B2401-1A/B.
 2. Backup ring indicates JIS B2407-T2-**.
 3. Specify W, A, or B for the asterisk (*) in the kit model number.

Direct Relief Modular Valve

5.3 to 7.9gpm
114 to 3000,3571psi



Features

① This modular relief valve provides maximum pressure control for a hydraulic circuit.

② Wide ranging applicability
Maximum Working Pressure: 25MPa {3571psi}

Pressure Adjustment Range:
0.8 to 21, 25MPa {114 to 3571psi}

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa{psi}	Maximum Flow Rate ℓ /min(gpm)	Pressure Adjustment Range MPa{psi}	Weight kg	Gasket Surface Dimensions
ORD-G01-W1-20 W3	1/8	25{3571}	20 (5.3)	0.8 to 7{114 to 1000}	1.5	ISO 4401-03-02-0-94
ORD-G01-A1-20 A3				3.5 to 21{500 to 3000}		
ORD-G01-B1-20 B3				3.5 to 21{500 to 3000}		
ORD-G03-W1-J50 W3	3/8	25{3571}	30 (7.9)	0.8 to 7{114 to 1000}	4.8	ISO 4401-05-04-0-94
ORD-G03-A1-J50 A3				3.5 to 25{500 to 3571}		
ORD-G03-B1-J50 B3				3.5 to 25{500 to 3571}		

● Handling

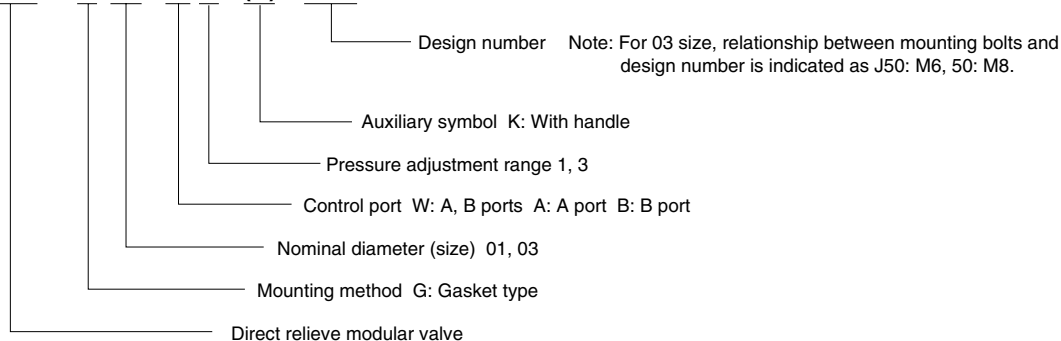
- ① The pressure adjustment range is expressed in terms of cracking pressure.
- ② For use as a safety valve, use a pressure override that is higher than the required circuit pressure.

- ③ Tank port back pressure changes cracking pressure by the corresponding amount.
- ④ Note that a sub plate and installation bolts are not included.

Understanding Model Numbers

01, 03 size

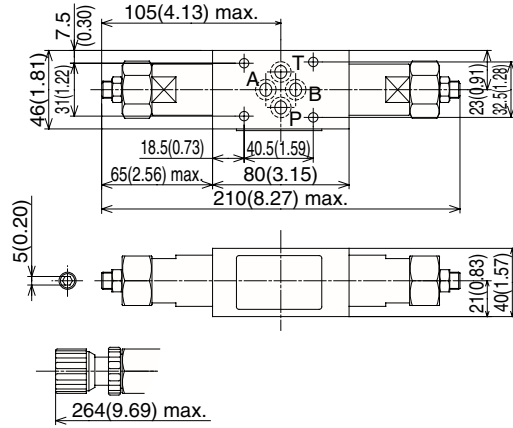
ORD - G 03 - W 3 - (K) - J50



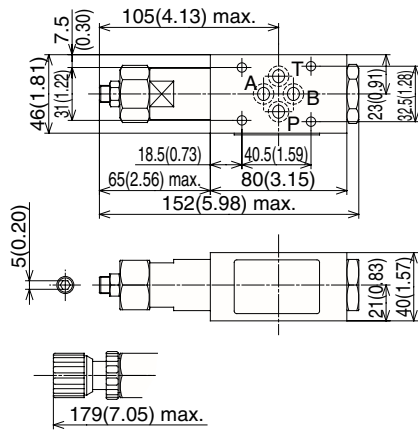
Installation Dimension Drawings

Note)
Pressure is increased by clockwise (rightward) rotation of the adjusting screw (bolt), and decreased by counterclockwise (leftward) rotation.

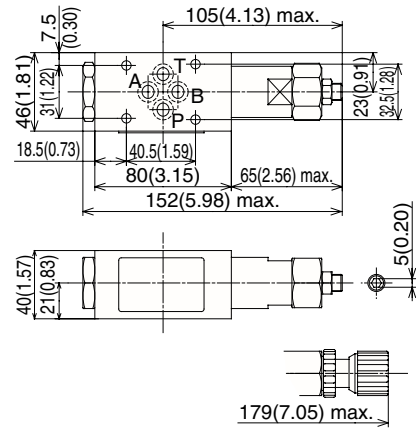
ORD-G01-W*-20



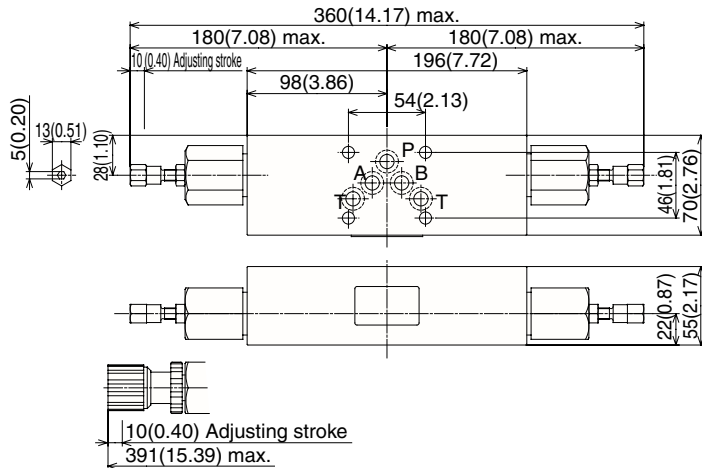
ORD-G01-A*-20



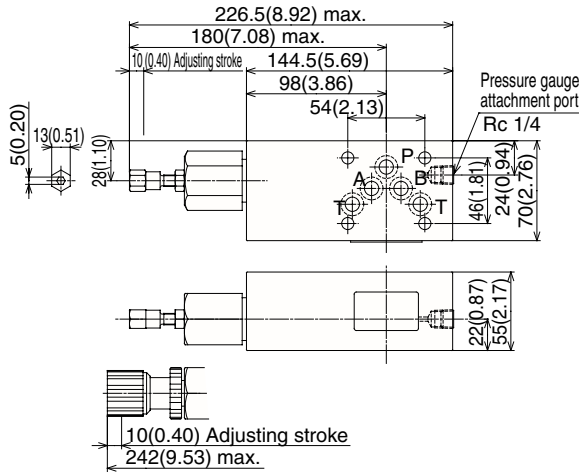
ORD-G01-B*-20



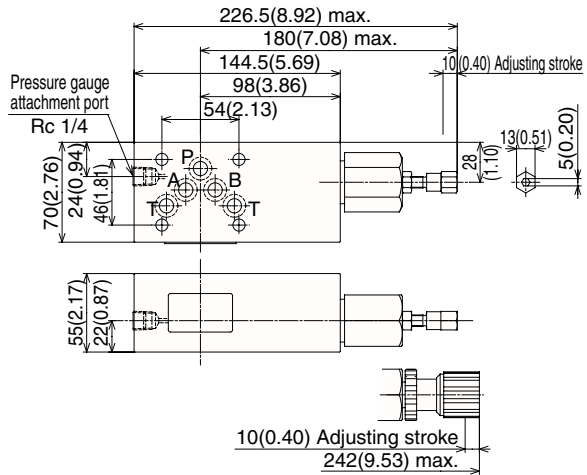
ORD-G03-W*-J50



ORD-G03-A*-J50



ORD-G03-B*-J50

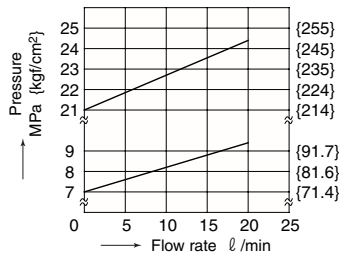


Performance Curves

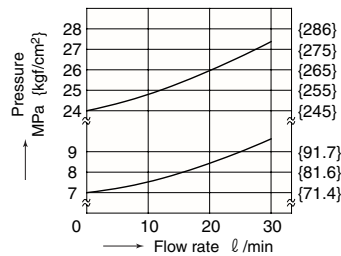
Differential Hydraulic Fluid Viscosity 32mm²/s

Pressure – Flow Rate Characteristics

ORD-G01-**-20

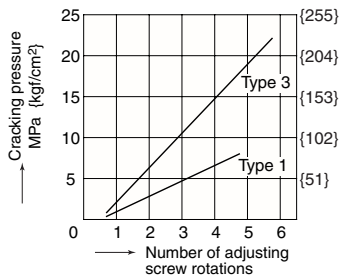


ORD-G03-**-J50

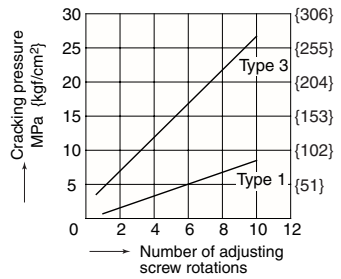


Number of Adjusting Screw Rotations – Pressure Characteristics

ORD-G01-**-20

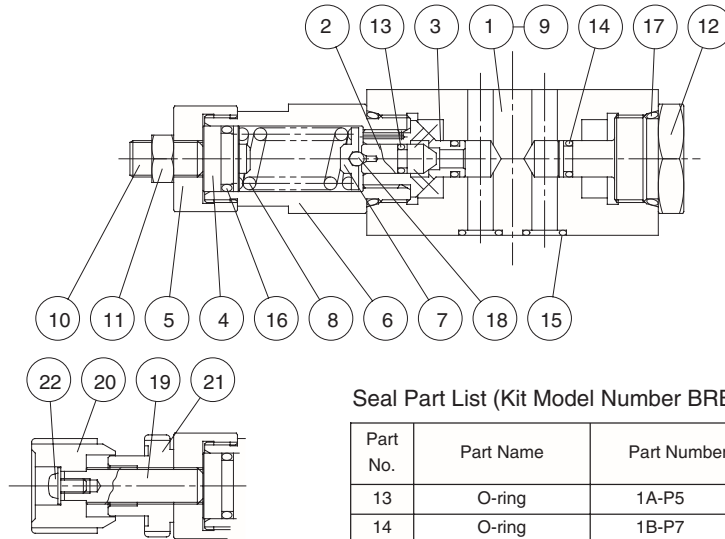


ORD-G03-**-J50



Cross-sectional Drawing

ORD-G01-A*-20



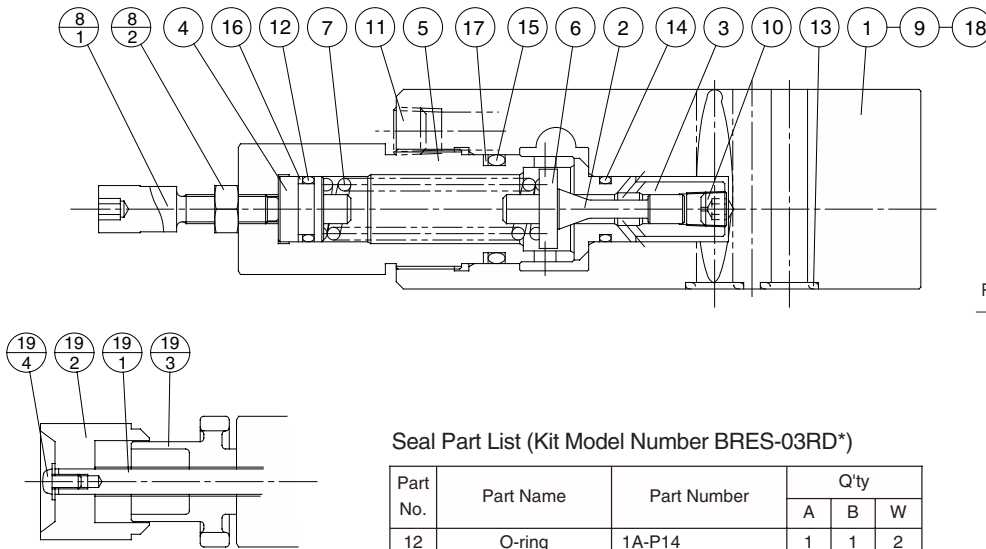
Seal Part List (Kit Model Number BRBS-01RD*)

Part No.	Part Name	Part Number	Q'ty		
			W	A	B
13	O-ring	1A-P5	2	1	1
14	O-ring	1B-P7	2	2	2
15	O-ring	1B-P9	4	4	4
16	O-ring	1B-P14	2	1	1
17	O-ring	1B-P22	2	2	2

Note) 1.O-ring 1A/B-** refers to JIS B2401-1A/B.
2.Specify W, A, or B for the asterisk (*) in the kit model number.

Part No.	Part Name
1	Body
2	Poppet
3	Seat
4	Plunger
5	Bushing
6	Retainer
7	Guide
8	Spring
9	Plate
10	Screw
11	Nut
12	Bushing
13	O-ring
14	O-ring
15	O-ring
16	O-ring
17	O-ring
18	Ball
19	Screw
20	Knob
21	Nut
22	Screw

ORD-G03-A*-J50



Seal Part List (Kit Model Number BRES-03RD*)

Part No.	Part Name	Part Number	Q'ty		
			A	B	W
12	O-ring	1A-P14	1	1	2
13	O-ring	AS568-014(Hs90)	5	5	5
14	O-ring	1B-P14	1	1	2
15	O-ring	1B-P24	1	1	2
16	Backup ring	T2-P14	1	1	2
17	Backup ring	T2-P24	1	1	2

Note) 1.O-ring 1A/B-** refers to JIS B2401-1A/B.
2.Backup ring indicates JIS B2407-T2-**.
3.Specify W, A, or B for the asterisk (*) in the kit model number.

Part No.	Part Name
1	Body
2	Poppet
3	Seat
4	Plunger
5	Retainer
6	Guide
7	Spring
8	Screw kit
8-1	Screw
8-2	Nut
9	Plate
10	Orifice
11	Plug
12	O-ring
13	O-ring
14	O-ring
15	O-ring
16	Backup ring
17	Backup ring
18	Pin
19	Handle kit
19-1	Screw
19-2	Knob
19-3	Nut
19-4	Screw

Pressure Reducing Modular Valve

10.6 to 21.2gpm
3571psi



Features

- ① This modular valve makes the pressure in part of the circuit lower than that of the main circuit.
- ② Even when pressure changes in the primary main circuit, the reduced secondary pressure is maintained at a constant level.
- ③ Maximum Operating Pressure: 25MPa {3571psi}

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa{psi}	Maximum Flow Rate ℓ /min(gpm)	Pressure Adjustment Range MPa{psi}	Weight kg	Gasket Surface Dimensions
OG-G01-PC-E21 P1 P2	1/8	25 {3571}	50 (13.2)	0.15 to 3.5{21 to 500} 0.8 to 7{114 to 1000} 3.5 to 16{500 to 3000}	1.3	ISO 4401-03-02-0-94
OG-G03-PC-(V)-E51 P1 P3	3/8	25 {3571}	80(21.1) but C : 50(13.2)	0.25 to 3.5{21 to 500} 0.8 to 7{114 to 1000} 3.5 to 21{500 to 3000}	3.8	ISO 4401-05-04-0-94

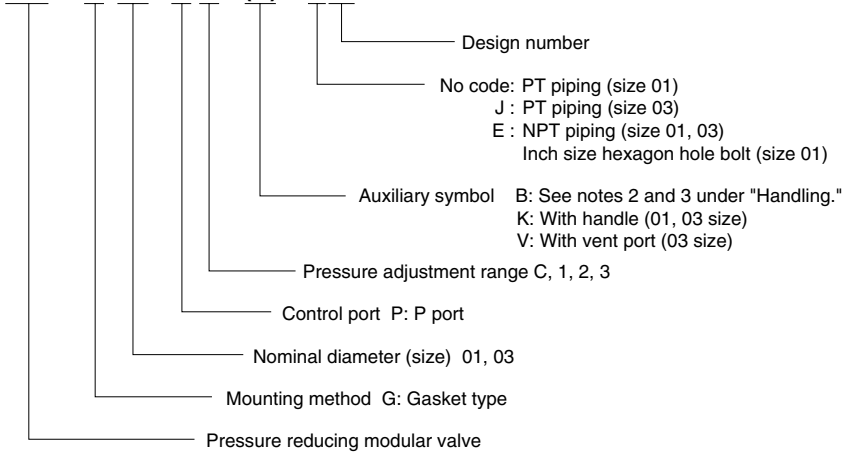
● Handling

- ① When using a remote control valve in a vent circuit, certain vent circuit pipe capacities can cause vibration. Because of this, thick steel pipe with an inside diameter of ϕ 4mm that is no longer than three meters is recommended. Vent piping cannot be used with the 01 size. If a vent port is required for the 03 size, add the auxiliary code "V".
- ② For the 03 size, the drainage can be allowed to escape through the T port. In the case of a valve with the auxiliary symbol B, however, run a return pipe from the drain discharge port directly to the tank.
- ③ Note that a change in drain back pressure causes a change in setting pressure.
- ④ With the 01, 03 sizes, the flow rate is limited at low pressures. See the Pressure-Flow Rate Characteristics on pages M-23 and M-24 for more information.
- ⑤ Note that a sub plate and installation bolts are not included.
- ⑥ With the 03 sizes, the control port can be changed by altering the attachment orientation of the back cover. See the installation diagram for more information. After making this change, be sure also to make the other changes in accordance with the model number indicated on the nameplate.

Understanding Model Numbers

01, 03, size

OG - G 03 - P 1 - (B) - E 51

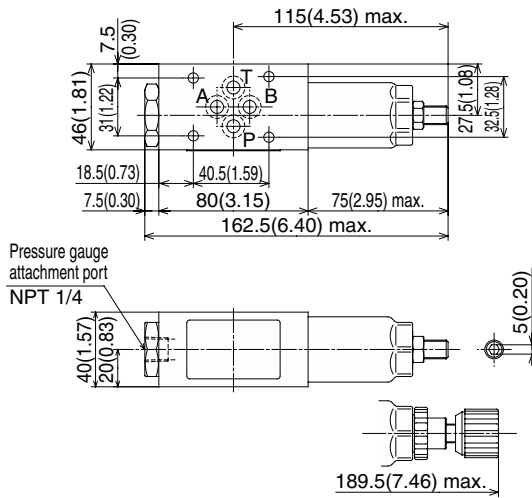


Installation Dimension Drawings

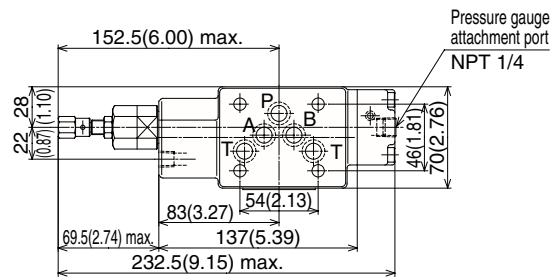
Note)

Pressure is increased by clockwise (rightward) rotation of the adjusting screw (bolt), and decreased by counterclockwise (leftward) rotation.

OG-G01-P*-E21

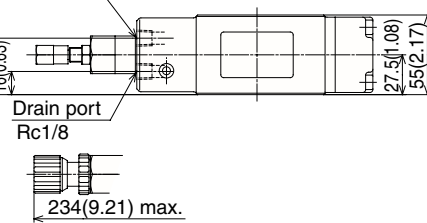


OG-G03-P*-(V)-E51

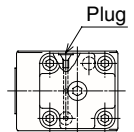
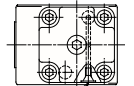


Pressure gauge attachment port
NPT 1/4

(Vent connection port)
Rc 1/8



OG-G03-P*-J51



OG-G03-B*-J51

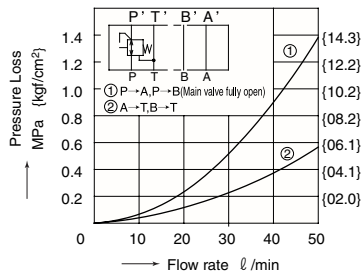
- Note)
1. Conversion to B port control is possible by changing the back cover. Port control is determined by plug orientation.
 2. When replacing the back cover, be sure also to change the nameplate to the applicable model type.
 3. The tightening torque of the back cover bolts is: (M6) 10 to 13Nm (102 to 133 kgf-cm).

Performance Curves

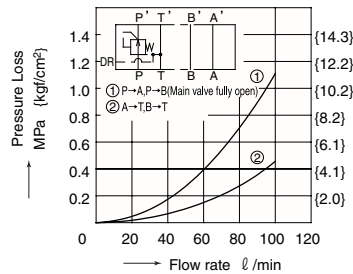
Differential Hydraulic Fluid Viscosity 32mm²/s

Pressure Loss Characteristics

OG-G01-P*-E21

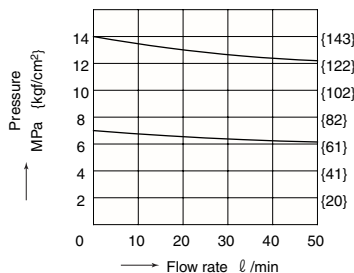


OG-G03-P*-E51

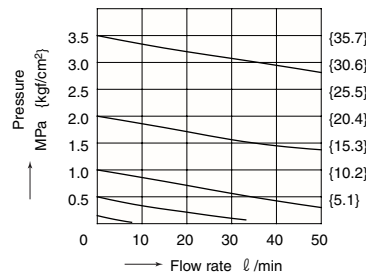


Pressure - Flow Rate Characteristics

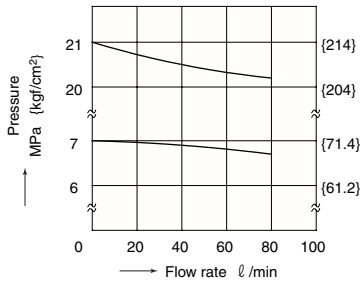
OG-G01-P₂-E21



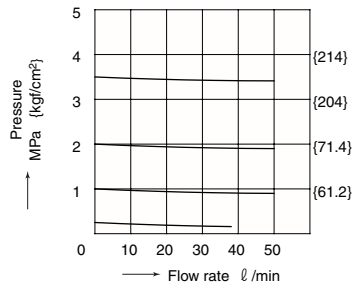
OG-G01-PC-E21



OG-G03-P₃¹-E51

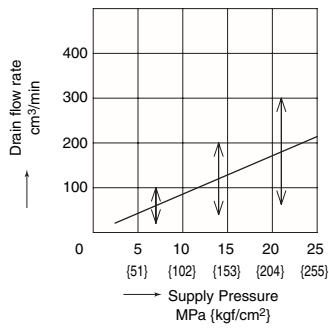


OG-G03-PC-E51

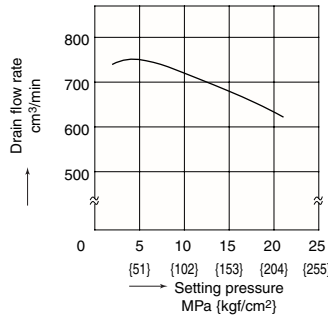


Pressure – Drain Rate Characteristics

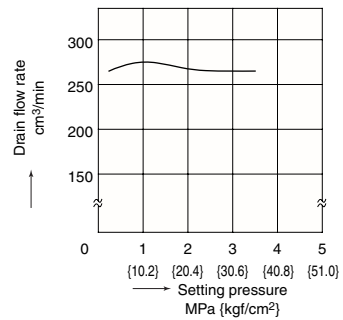
OG-G01-P*-E21



OG-G03-P*-E51

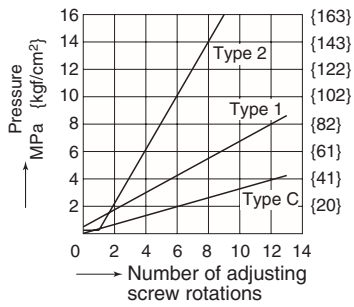


OG-G03-PC-E51

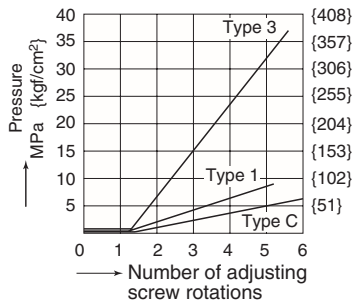


Number of Adjusting Screw Rotations – Pressure Characteristics

OG-G01-P*-E21

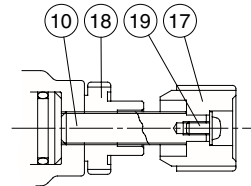
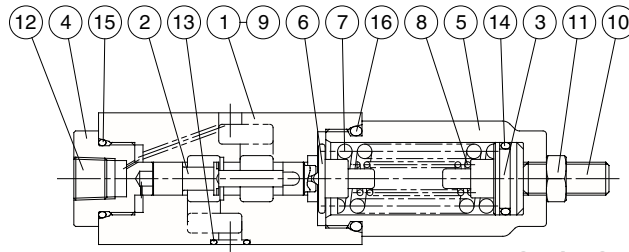


OG-G03-P*-E51



Cross-sectional Drawing

OG-G01-P2-E21



Part No.	Part Name
1	Body
2	Spool
3	Push rod
4	Bushing
5	Retainer
6	Guide
7	Spring
8	Spring
9	Plate
10	Screw
11	Nut
12	Plug
13	O-ring
14	O-ring
15	O-ring
16	O-ring
17	Knob
18	Nut
19	Screw

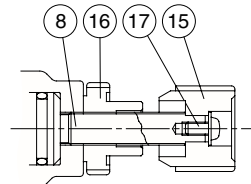
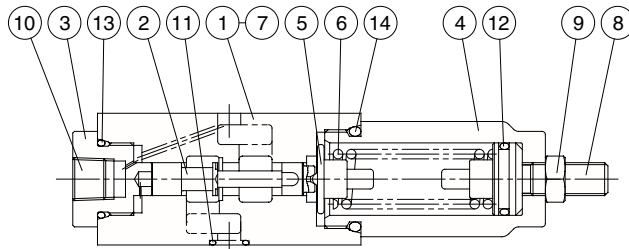
Seal Part List (Kit Model Number BRBS-01GP*)

Part No.	Part Name	Part Number	Q'ty
			P
13	O-ring	1B-P9	4
14	O-ring	1A-P18	1
15	O-ring	1B-P20	1
16	O-ring	1B-P26	1

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.

Note)
Part number 8 is used in the case of pressure adjustment range type 2 only.

OG-G01-PC-E21



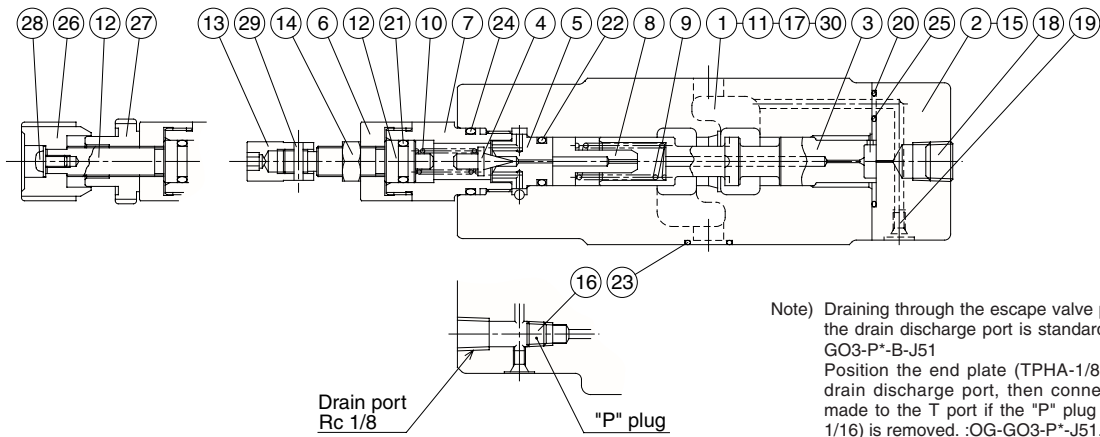
Part No.	Part Name
1	Body
2	Spool
3	Bushing
4	Retainer
5	Guide
6	Spring
7	Plate
8	Screw
9	Nut
10	Plug
11	O-ring
12	O-ring
13	O-ring
14	O-ring
15	Knob
16	Nut
17	Screw

Seal Part List (Kit Model Number BRBS-01GP*)

Part No.	Part Name	Part Number	Q'ty
			P
11	O-ring	1B-P9	4
12	O-ring	1A-P18	1
13	O-ring	1B-P20	1
14	O-ring	1B-P26	1

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.

OG-G03-P*-E51



Note) Draining through the escape valve piped to the drain discharge port is standard. : OG-G03-P*-B-J51
Position the end plate (TPHA-1/8) to the drain discharge port, then connection is made to the T port if the "P" plug (TPUA-1/16) is removed. :OG-G03-P*-J51.

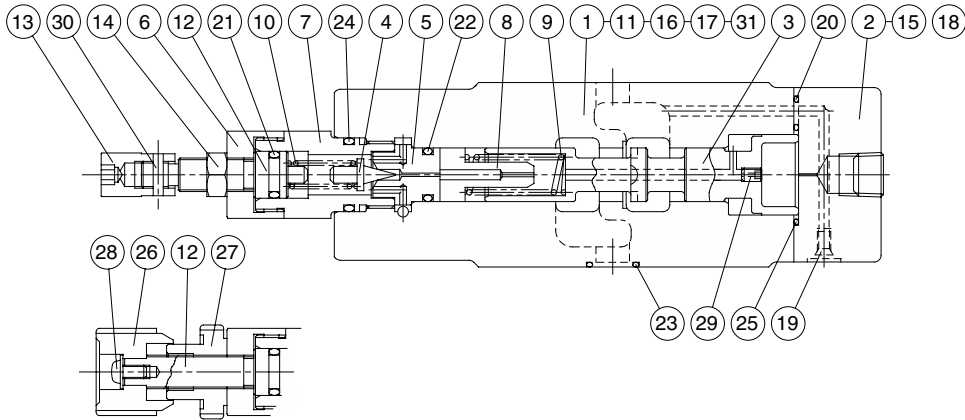
Seal Part List (Kit Model Number BRES-03GP-1A)

Part No.	Part Name	Part Number	Q'ty	
			P	
20	O-ring	1B-P6	2	
21	O-ring	1A-P10A	1	
22	O-ring	1B-P12	1	
23	O-ring	AS568-014(Hs90)	5	
24	O-ring	1B-P18	1	
25	O-ring	AS568-023(Hs90)	1	

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.

Part No.	Part Name	Part No.	Part Name
1	Body	14	Nut
2	Cover	15	Screw
3	Spool	16	Plug
4	Poppet	17	Plug
5	Seat	18	Plug
6	Bushing	19	Plug
7	Retainer	20	O-ring
8	Choke	21	O-ring
9	Spring	22	O-ring
10	Spring	23	O-ring
11	Plate	24	O-ring
12	Screw	25	O-ring
13	Nut	26	Knob
		27	Nut
		28	Screw
		29	Pin
		30	Pin

OG-G03-PC-E51



Seal Part List (Kit Model Number BRES-03GP*-1A)

Part No.	Part Name	Part Number	Q'ty	
			P	
20	O-ring	1B-P6	2	
21	O-ring	1A-P10A	1	
22	O-ring	1B-P12	1	
23	O-ring	AS568-014(Hs90)	5	
24	O-ring	1B-P18	1	
25	O-ring	AS568-023(Hs90)	1	

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.

Part No.	Part Name	Part No.	Part Name
1	Body	16	Plug
2	Cover	17	Plug
3	Spool	18	Plug
4	Poppet	19	Plug
5	Seat	20	O-ring
6	Bushing	21	O-ring
7	Retainer	22	O-ring
8	Choke	23	O-ring
9	Spring	24	O-ring
10	Spring	25	O-ring
11	Plate	26	Knob
12	Screw	27	Nut
13	Nut	28	Screw
14	Nut	29	Choke
15	Screw	30	Pin
		31	Pin



Pressure Reducing Modular Valve

10.6 to 21.2gpm
3571psi

Features

- ① This modular valve makes the pressure in part of the circuit lower than the main circuit.
- ② Even when pressure changes in the primary main circuit, the reduced secondary pressure is maintained at a constant level.
- ③ Maximum Operating Pressure: 25MPa {3571psi}

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa{psi}	Maximum Flow Rate ℓ /min(gpm)	Pressure Adjustment Range MPa{psi}	Weight kg	Gasket Surface Dimensions
OG-G01-AC-E21 A1 A2	1/8	25{3571}	40 (10.6)	0.15 to 3.5{21 to 500}	1.3	ISO 4401-03-02-0-94
OG-G01-BC-E21 B1 B2				0.8 to 7{114 to 1000}		
OG-G03-AC-E51 A1 A3	3/8	25{3571}	80{21.1} but C : 50{13.2}	0.15 to 3.5{21 to 500}	1.3	
OG-G03-BC-E51 B1 B3				0.8 to 7{114 to 1000}		
				0.25 to 3.5{35 to 500}	3.8	ISO 4401-05-04-0-94
				0.8 to 7{114 to 1000}	3.8	
				0.25 to 3.5{35 to 500}		
				0.8 to 7{114 to 1000}		
				3.5 to 21{500 to 3000}		

● Handling

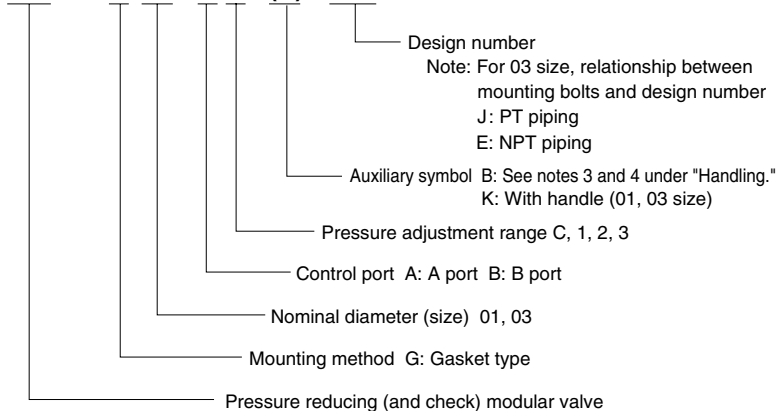
- ① When using a remote control valve in a vent circuit, certain vent circuit pipe capacities can cause vibration. Because of this, thick steel pipe with an inside diameter of ϕ 4mm that is no longer than three meters is recommended. Vent piping cannot be used with the 01, 03 sizes.
- ② With the 01, 03 sizes, the flow rate is limited at low pressures. See the Pressure-

Flow Rate Characteristics on page M-31 and M-32 for more information.

- ③ For the 03 size, the drainage can be allowed to escape through the T port. In the case of a valve with the auxiliary symbol B, however, run a return pipe from the drain discharge port directly to the tank.

Understanding Model Numbers

OG - G 03 - B 1 - (B) - E51



- ④ Note that a change in drain back pressure causes a change in setting pressure.

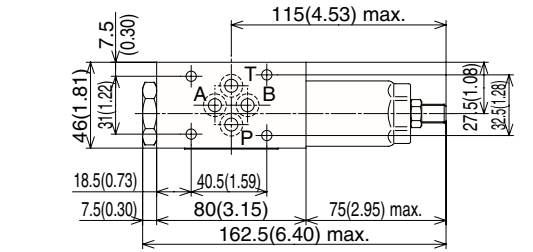
- ⑤ Note that a sub plate and installation bolts are not included.

- ⑥ With the 03 sizes, the control port can be changed by altering the attachment orientation of the back cover. See the installation diagram for more information. After making this change, be sure also to make the other changes as in accordance with the model number indicated on the nameplate.

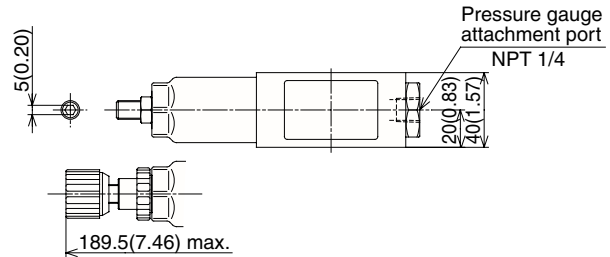
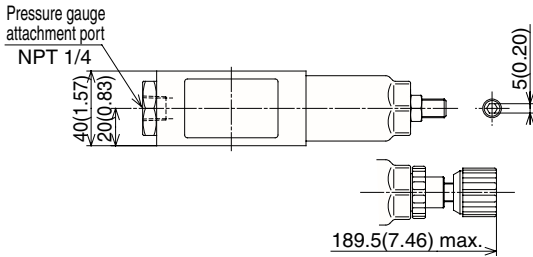
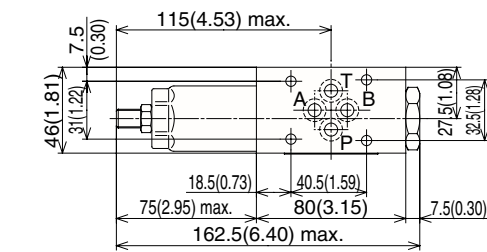
Installation Dimension Drawings

Note)
Pressure is increased by clockwise (rightward) rotation of the adjusting screw (bolt), and decreased by counterclockwise (leftward) rotation.

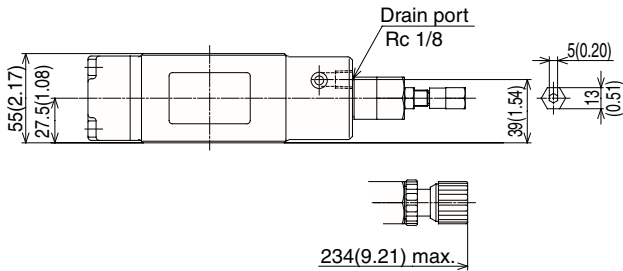
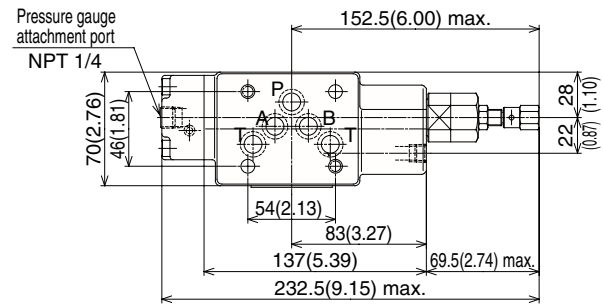
OG-G01-A*-E21



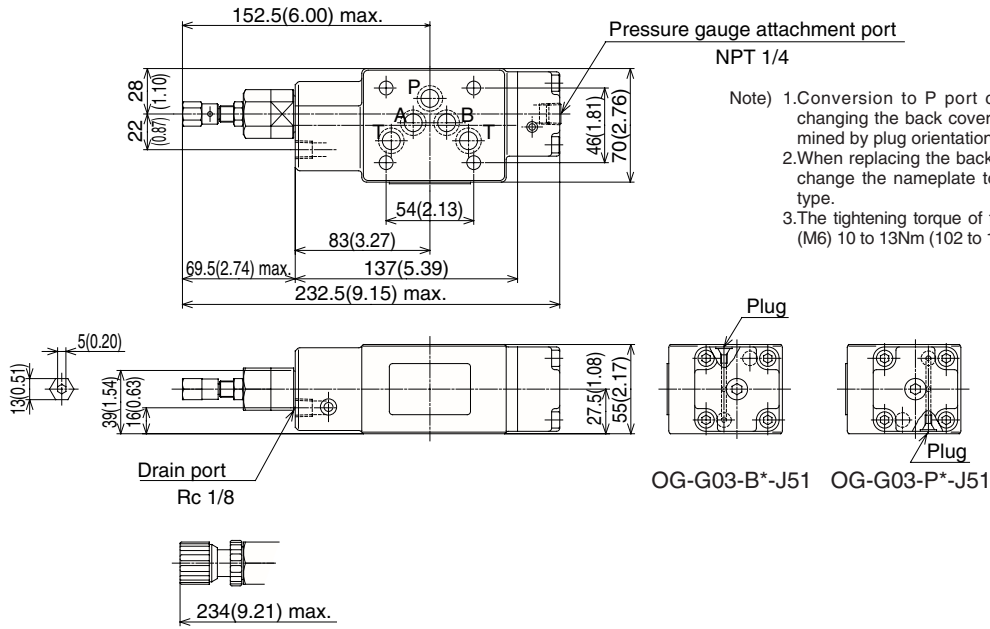
OG-G01-B*-E21



OG-G03-A*-E51



OG-G03-B*-E51

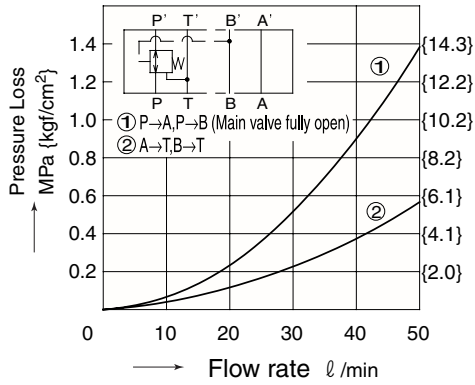


Performance Curves

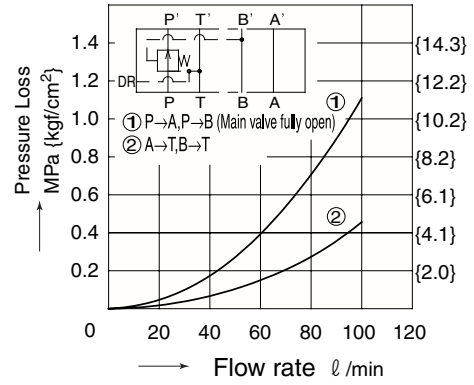
Hydraulic Operating Fluid Viscosity 32mm²/s

Pressure Loss Curve

OG-G01-B*-E21

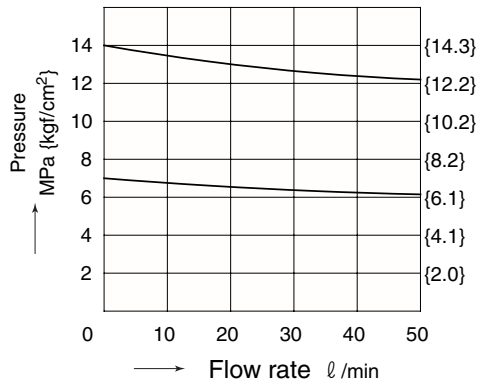


OG-G03-B*-E51

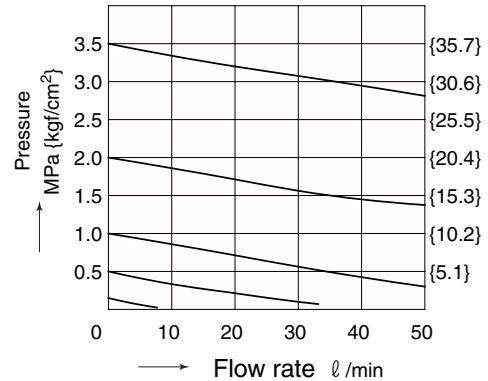


Pressure - Flow Rate Characteristics

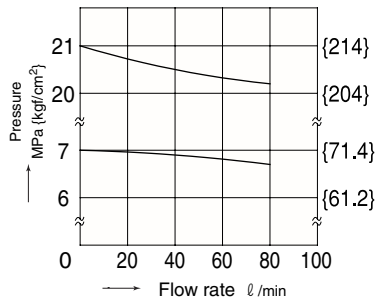
OG-G01-B₂¹-E21



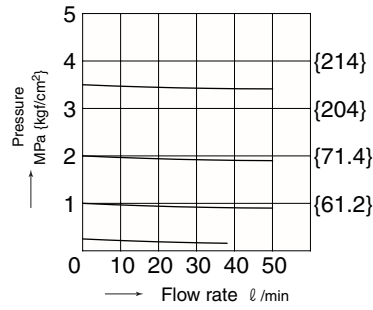
OG-G01-BC-E21



OG-G03-B¹₃-E51

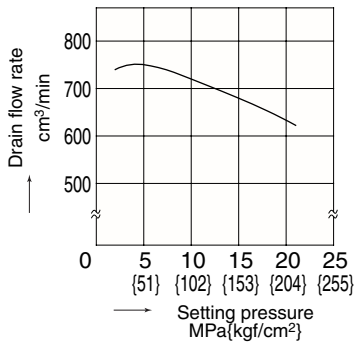


OG-G03-BC-E51

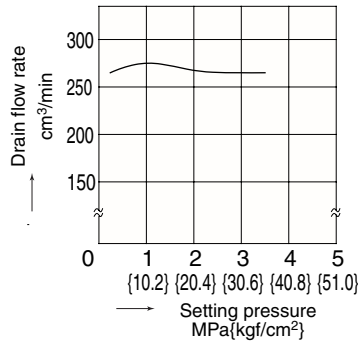


Pressure – Drain Rate Characteristics

OG-G03-B*-E51

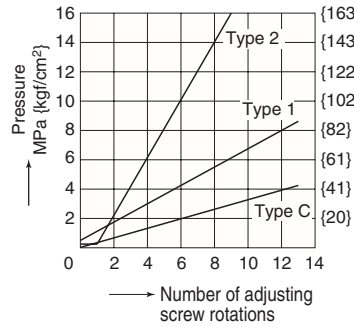


OG-G03-BC-E51

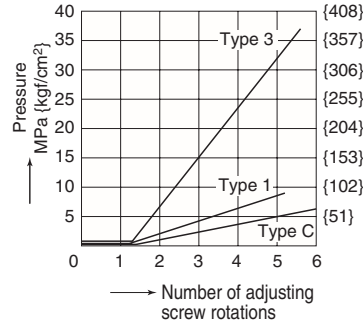


Number of Adjusting Screw Rotations – Pressure Characteristics

OG-G01-**-E21

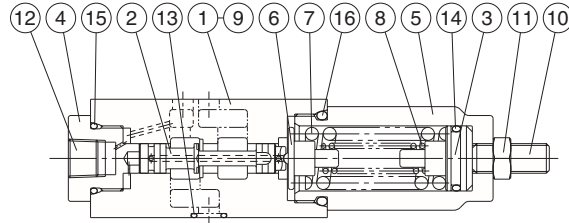


OG-G03-**-E51



Cross-section

OG-G01-A2-E21

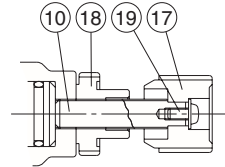


Part No.	Part Name
1	Body
2	Spool
3	Push rod
4	Bushing
5	Retainer
6	Guide
7	Spring
8	Spring
9	Plate
10	Screw
11	Nut
12	Plug
13	O-ring
14	O-ring
15	O-ring
16	O-ring
17	Knob
18	Nut
19	Screw

Seal Part List (Kit Model Number BRBS-01GP*)

Part No.	Part Name	Part Number	Q'ty
13	O-ring	1B-P9	4
14	O-ring	1A-P18	1
15	O-ring	1B-P20	1
16	O-ring	1B-P26	1

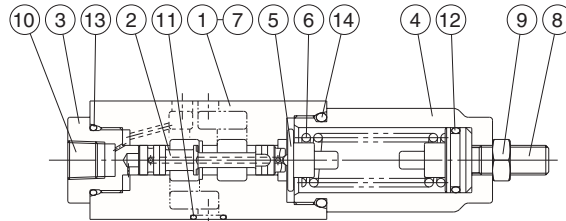
Note) O-ring 1A/B-** refers to JIS B2401-1A/B.



Note)

Part number 8 is used in the case of pressure adjustment range type 2 only.

OG-G01-AC-E21

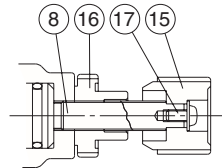


Part No.	Part Name
1	Body
2	Spool
3	Bushing
4	Retainer
5	Guide
6	Spring
7	Plate
8	Screw
9	Nut
10	Plug
11	O-ring
12	O-ring
13	O-ring
14	O-ring
15	Knob
16	Nut
17	Screw

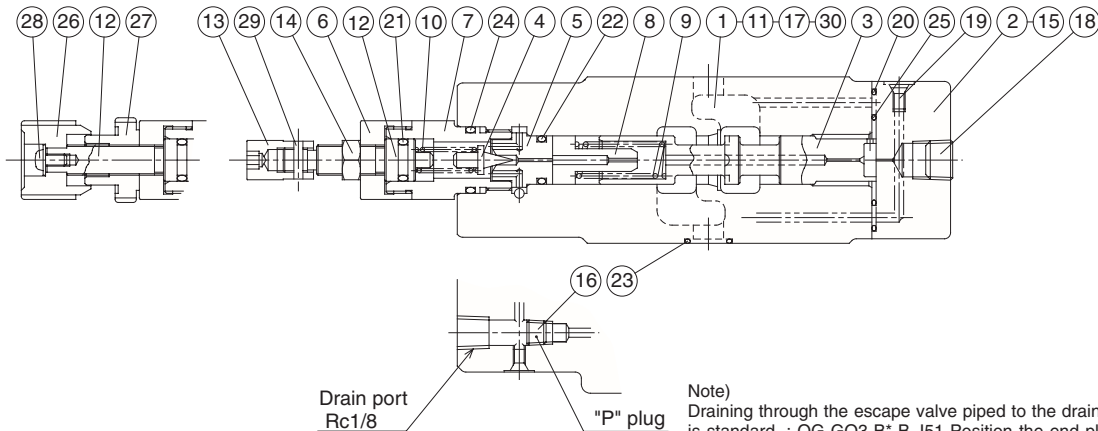
Seal Part List (Kit Model Number BRBS-01GP*)

Part No.	Part Name	Part Number	Q'ty
11	O-ring	1B-P9	4
12	O-ring	1A-P18	1
13	O-ring	1B-P20	1
14	O-ring	1B-P26	1

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.



OG-G03-B*-E51



Note)

Draining through the escape valve piped to the drain discharge port is standard. : OG-G03-B*-B-J51 Position the end plate (TPHA-1/8) to the drain discharge port, then connection is made to the T port if the "P" plug (TPUA-1/16) is removed. :OG-G03-B*-J51.

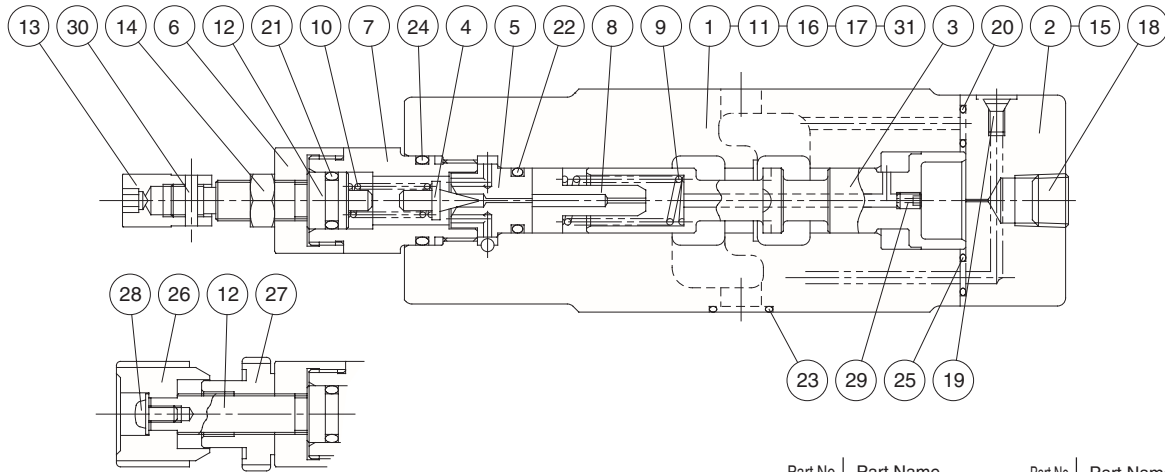
Seal Part List (Kit Model Number BRES-03G*-1A)

Part No.	Part Name	Part Number	Q'ty	
			A	B
20	O-ring	1B-P6	2	2
21	O-ring	1A-P10A	1	1
22	O-ring	1B-P12	1	1
23	O-ring	AS568-014(Hs90)	5	5
24	O-ring	1B-P18	1	1
25	O-ring	AS568-023(Hs90)	1	1

Note) 1.O-ring 1A/B-** refers to JIS B2401-1A/B.
2.Specify A or B for the asterisk (*) in the kit model number.

Part No.	Part Name	Part No.	Part Name	Part No.	Part Name
1	Body	11	Plate	21	O-ring
2	Cover	12	Screw	22	O-ring
3	Spool	13	Nut	23	O-ring
4	Poppet	14	Nut	24	O-ring
5	Seat	15	Screw	25	O-ring
6	Bushing	16	Plug	26	Knob
7	Retainer	17	Plug	27	Nut
8	Choke	18	Plug	28	Screw
9	Spring	19	Plug	29	Pin
10	Spring	20	O-ring	30	Pin

OG-G03-BC-E51



Seal Part List (Kit Model Number BRES-03GC*-1A)

Part No.	Part Name	Part Number	Q'ty	
			A	B
20	O-ring	1B-P6	2	2
21	O-ring	1A-P10A	1	1
22	O-ring	1B-P12	1	1
23	O-ring	AS568-014(Hs90)	5	5
24	O-ring	1B-P18	1	1
25	O-ring	AS568-023(Hs90)	1	1

Note) 1.O-ring 1A/B-** refers to JIS B2401-1A/B.
 2.Specify A or B for the asterisk (*) in the kit model number.

Part No.	Part Name	Part No.	Part Name
1	Body	16	Plug
2	Cover	17	Plug
3	Spool	18	Plug
4	Poppet	19	Plug
5	Seat	20	O-ring
6	Bushing	21	O-ring
7	Retainer	22	O-ring
8	Choke	23	O-ring
9	Spring	24	O-ring
10	Spring	25	O-ring
11	Plate	26	Knob
12	Screw	27	Nut
13	Nut	28	Screw
14	Nut	29	Choke
15	Screw	30	Pin
		31	Pin

Sequence Modular Valve

10.6 to 21.2gpm
3571psi



Features

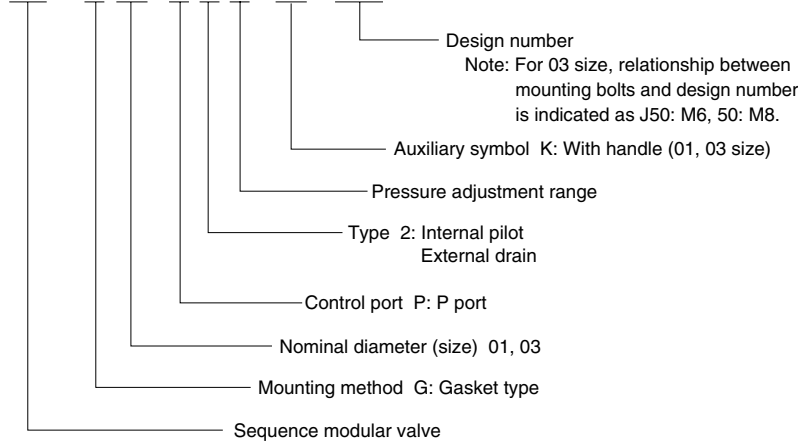
- ① This modular valve is a pressure control valve used for sequential actuator operations and for maintaining main circuit pressure.
- ② Pressure adjustment is possible across a wide range, from 35 to 3000psi.
- ③ Maximum Operating Pressure: 25MPa {3571psi}

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa(psi)	Maximum Flow Rate ℓ /min(gpm)	Pressure Adjustment Range MPa(kgf/cm ²)	Weight kg	Gasket Surface Dimensions
OQ-G01-P21-20 P23	1/8	25{3571}	40 (10.5)	0.8 to 7{114 to 1000} 3.5 to 21{500 to 3000}	1.1	ISO 4401-03-02-0-94
OQ-G03-P2A-J50 P2C P2E	3/8	25{3571}	80 (21.1)	0.25 to 0.85{35 to 122} 0.85 to 3.5 {122 to 500} 3.5 to 14{500 to 2000}	3.5	ISO 4401-05-04-0-94

Understanding Model Numbers

OQ - G 03 - P 2 A - (K) - J50



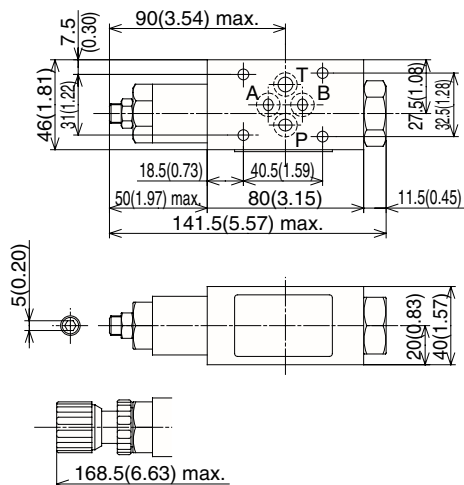
● Handling

- ① The pressure adjustment range is expressed in terms of cracking pressure.
- ② Install this valve directly above the sub plate or manifold.
- ③ When two or more of these valves are ganged in sequence, make sure the setting pressure differential between them is at least 1MPa {10.2kgf/cm²}.
- ④ Note that a sub plate and installation bolts are not included.

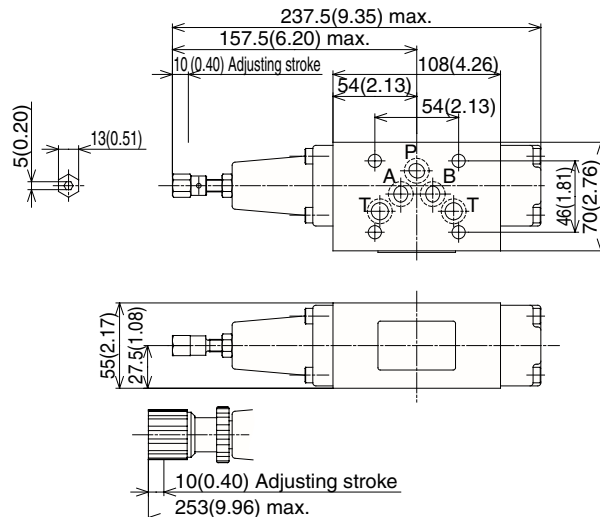
Installation Dimension Drawings

Note) Pressure is increased by clockwise (rightward) rotation of the adjusting screw (bolt), and decreased by counterclockwise (leftward) rotation.

OQ-G01-P2*-20



OQ-G03-P2*-J50

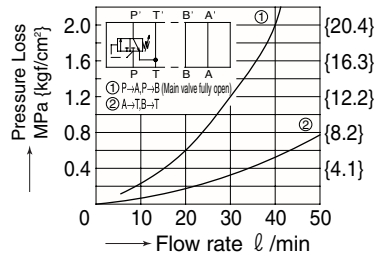


Performance Curves

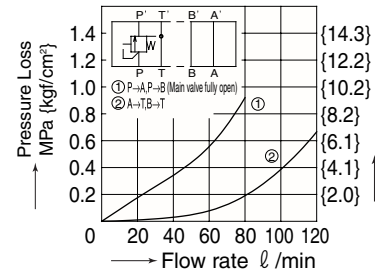
Hydraulic Operating Fluid Viscosity 32mm²/s

Pressure Loss Characteristics

OQ-G01-P2*-20

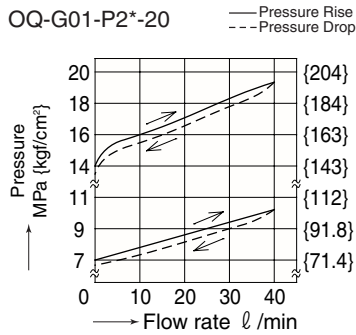


OQ-G03-P2A-J50

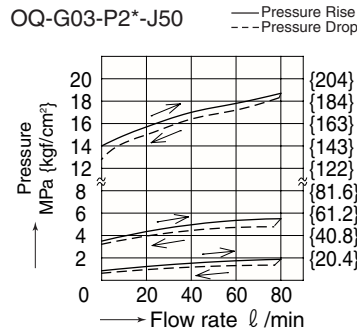


Pressure — Flow Rate Characteristics

OQ-G01-P2*-20

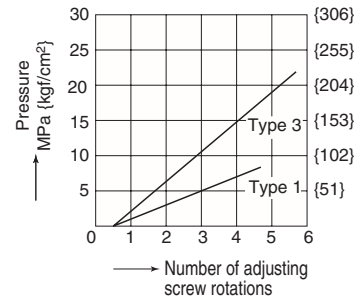


OQ-G03-P2*-J50

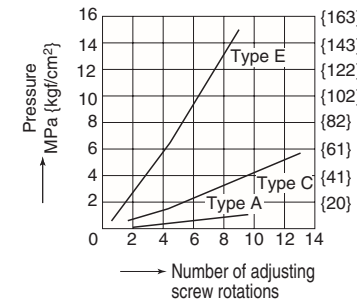


Number of Adjusting Screw Rotations — Pressure Characteristics

OQ-G01-P2*-20

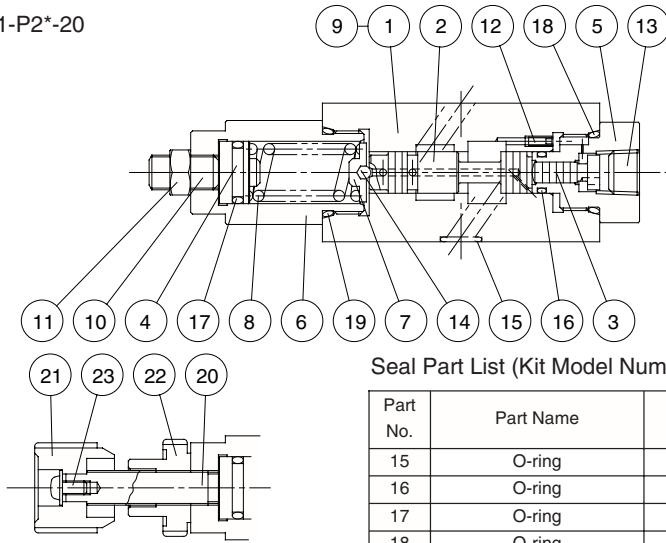


OQ-G03-P2*-J50



Cross-sectional Drawing

OQ-G01-P2*-20



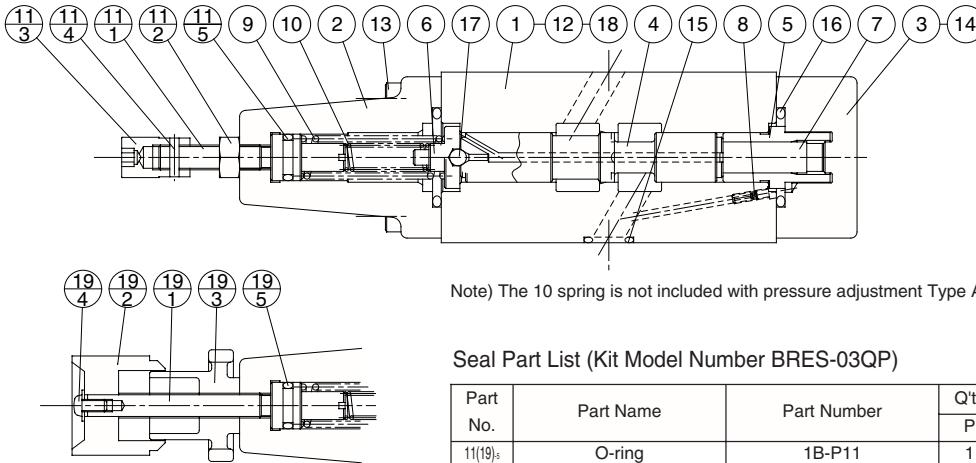
Seal Part List (Kit Model Number BRBS-01QP)

Part No.	Part Name	Part Number	Q'ty	
				P
15	O-ring	1B-P9	4	
16	O-ring	1B-P9	1	
17	O-ring	1A-P14	1	
18	O-ring	1B-P20	1	
19	O-ring	1B-P22	1	

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.

Part No.	Part Name
1	Body
2	Spool
3	Piston
4	Plunger
5	Bushing
6	Retainer
7	Guide
8	Spring
9	Plate
10	Screw
11	Nut
12	Choke
13	Plug
14	Ball
15	O-ring
16	O-ring
17	O-ring
18	O-ring
19	O-ring
20	Screw
21	Knob
22	Nut
23	Screw

OQ-G03-P2*-J50



Note) The 10 spring is not included with pressure adjustment Type A.

Seal Part List (Kit Model Number BRES-03QP)

Part No.	Part Name	Part Number	Q'ty	
				P
11(19) ₅	O-ring	1B-P11	1	
15	O-ring	AS568-014(Hs90)	5	
16	O-ring	1B-P26	2	

Note) O-ring 1A/B-** refers to JIS B2401-1A/B.

Part No.	Part Name
1	Body
2	Cover
3	Cover
4	Spool
5	Sleeve
6	Guide
7	Plunger
8	Choke
9	Spring
10	Spring
11	Screw kit
11 ₁	Screw
11 ₂	Nut
11 ₃	Nut
11 ₄	Pin
11 ₅	O-ring
12	Plate
13	Screw
14	Screw
15	O-ring
16	O-ring
17	Ball
18	Pin
19	Handle kit
19 ₁	Screw
19 ₂	Knob
19 ₃	Nut
19 ₄	Screw
19 ₅	O-ring



Counter Balance Modular Valve

10.6 to 21.2gpm
2000psi

Features

- ① This modular valve is used to control actuator back pressure and for other pressure control valve applications.
- ② Pressure adjustment is possible across a wide range, from 35 to 2000psi.
- ③ Maximum Operating Pressure: 3571psi

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa(psi)	Maximum Flow Rate ℓ /min(gpm)	Pressure Adjustment Range MPa(psi)	Weight kg	Gasket Surface Dimensions	
OCQ-G01-A11-20 A12	1/8	25{3571}	40 (10.5)	0.8 to 7{114 to 1000}	1.1	ISO 4401-03-02-0-94	
OCQ-G01-B11-20 B12				3.5 to 14{500 to 2000}			
OCQ-G03-A1A-J50 A1C A1E	3/8	25{3571}	80 (21.1)	0.25 to 0.85{35 to 114}	3.5		ISO 4401-05-04-0-94
OCQ-G03-B1A-J50 B1C B1E				0.85 to 3.5{114 to 500}			
				0.25 to 0.85{35 to 114}	3.5		
				0.85 to 3.5{114 to 500}			
				3.5 to 14{500 to 2000}			

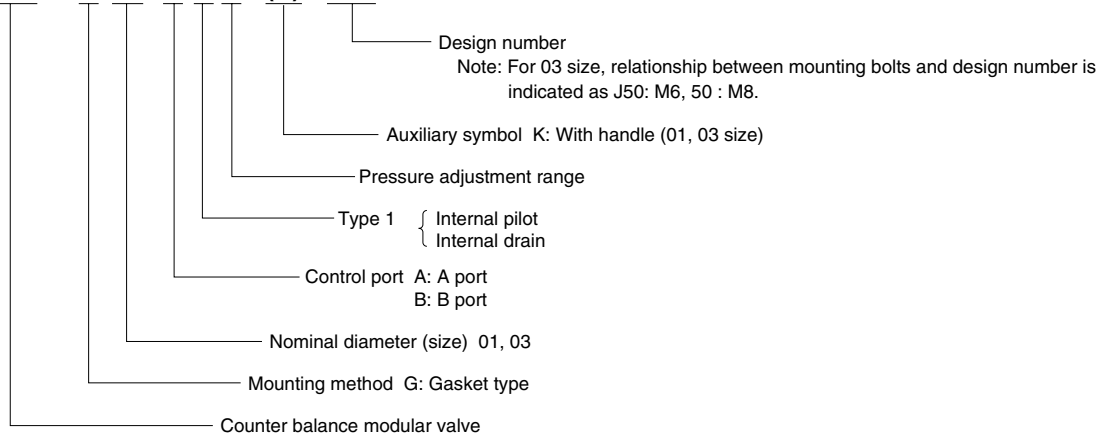
• Handling

- ① The pressure adjustment range is expressed in terms of cracking pressure.
- ② Run tank port piping directly to the tank, and ensure that back pressure is as small as possible.
- ③ Note that a sub plate and installation bolts are not included.

Understanding Model Numbers

01, 03 size

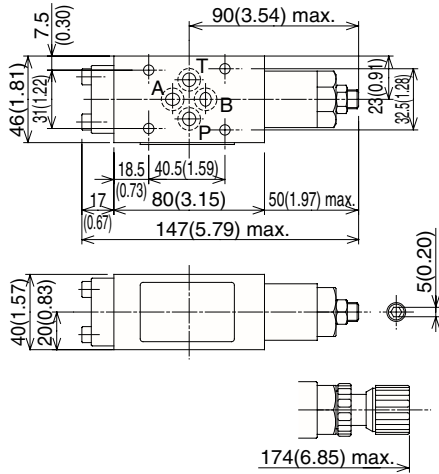
OCQ - G 03 - B 1 A - (K) - J50



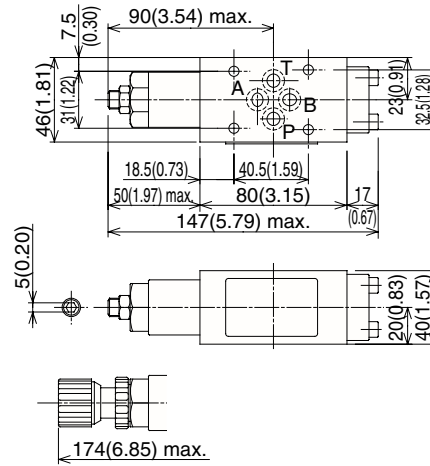
Installation Dimension Drawings

Note) Pressure is increased by clockwise (rightward) rotation of the adjusting screw (bolt), and decreased by counterclockwise (leftward) rotation.

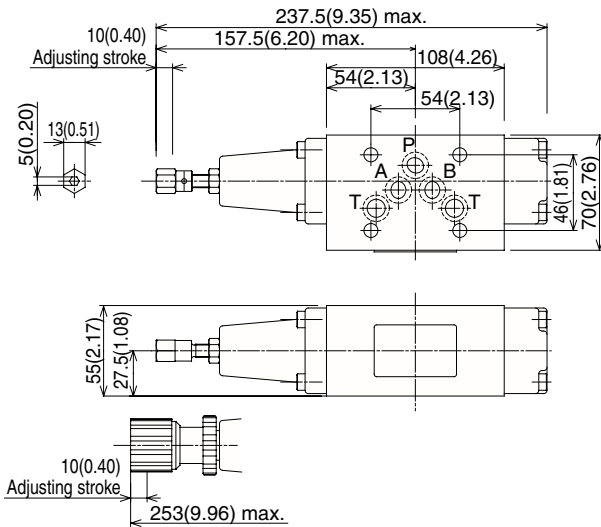
OCQ-G01-A1*-20



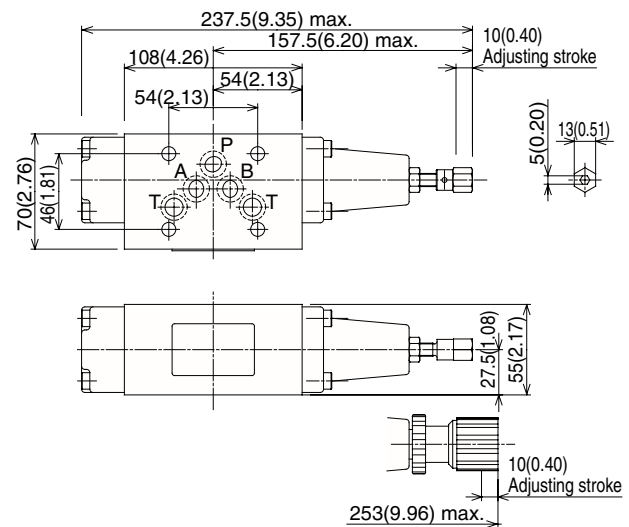
OCQ-G01-B1*-20



OCQ-G03-A1*-J50



OCQ-G03-B1*-J50

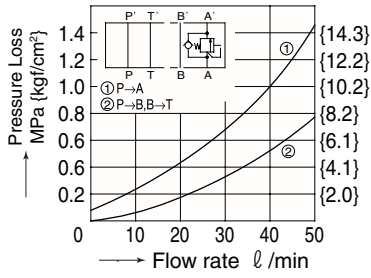


Performance Curves

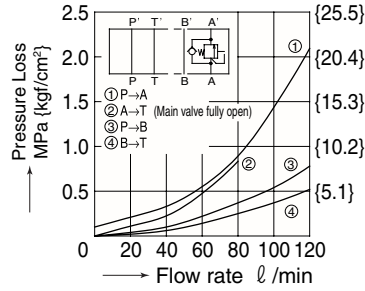
Hydraulic Operating Fluid
Viscosity 32mm²/s

Pressure Loss Characteristics

OCQ-G01-A1*-20

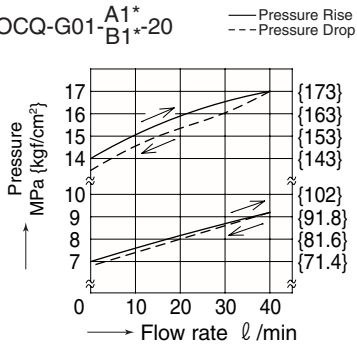


OCQ-G03-A1A-J50

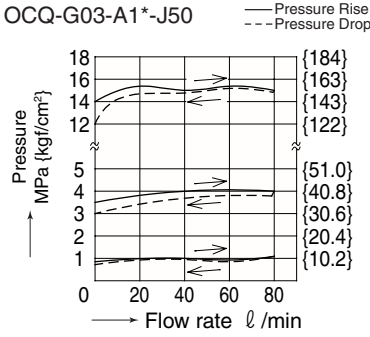


Pressure — Flow Rate Characteristics

OCQ-G01-A1*
B1*-20

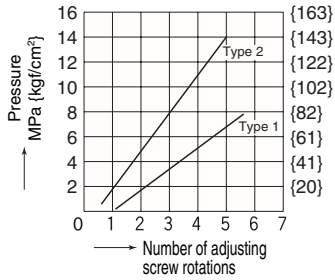


OCQ-G03-A1*-J50

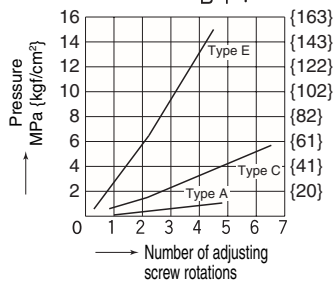


Number of Adjusting Screw Rotations — Pressure Characteristics

OCQ-G01-A1*
B1*-20

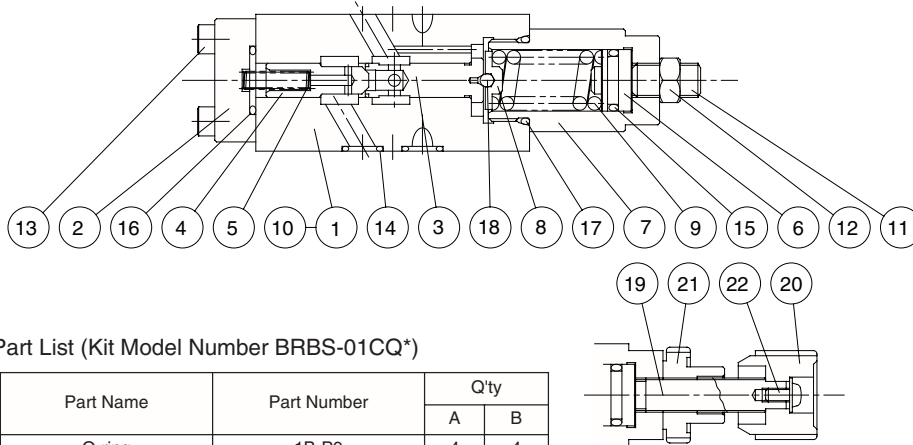


OCQ-G03-A1*
B1*-J50



Cross-sectional Drawing

OCQ-G01-A1*-20



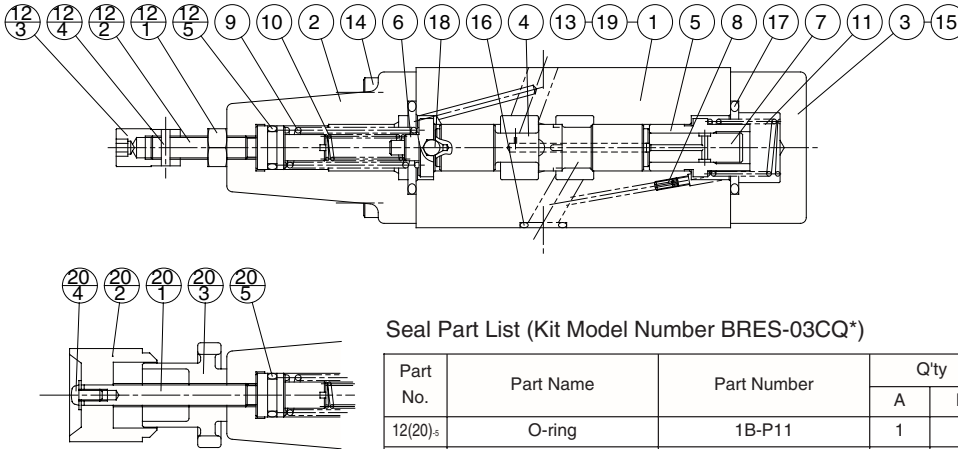
Part No.	Part Name
1	Body
2	Cover
3	Spool
4	Poppet
5	Spring
6	Plunger
7	Retainer
8	Guide
9	Spring
10	Plate
11	Screw
12	Nut
13	Screw
14	O-ring
15	O-ring
16	O-ring
17	O-ring
18	Ball
19	Screw
20	Knob
21	Nut
22	Screw

Seal Part List (Kit Model Number BRBS-01CQ*)

Part No.	Part Name	Part Number	Q'ty	
			A	B
14	O-ring	1B-P9	4	4
15	O-ring	1B-P14	1	1
16	O-ring	1B-P16	1	1
17	O-ring	1B-P22	1	1

Note) 1. O-ring 1A/B-** refers to JIS B2401-1A/B.
2. Specify A or B for the asterisk (*) in the kit model number.

OCQ-G03-A1*-J50



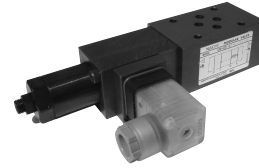
Part No.	Part Name
1	Body
2	Cover
3	Cover
4	Spool
5	Sleeve
6	Guide
7	Plunger
8	Choke
9	Spring
10	Spring
11	Spring
12	Screw kit
12-1	Screw
12-2	Nut
12-3	Nut
12-4	Pin
12-5	O-ring
13	Plate
14	Screw
15	Screw
16	O-ring
17	O-ring
18	Ball
19	Pin
20	Handle kit
20-1	Screw
20-2	Knob
20-3	Nut
20-4	Screw
20-5	O-ring

Seal Part List (Kit Model Number BRES-03CQ*)

Part No.	Part Name	Part Number	Q'ty	
			A	B
12(20) _s	O-ring	1B-P11	1	1
16	O-ring	AS568-014(Hs90)	5	5
17	O-ring	1B-P26	2	2

Note)
The 10 spring is not included with pressure adjustment Type A.

Note) 1. O-ring 1A/B-** refers to JIS B2401-1A/B.
2. Specify A or B for the asterisk (*) in the kit model number.



Pressure Switch Modular Valve

**13.2gpm
3571psi**

Features

- ① This modular valve detects pressure changes inside the hydraulic circuit and opens and closes an electrical circuit accordingly.
- ② High precision detection, high precision circuit control, outstanding reliability.
- ③ Maximum operating pressure: 25MPa {3571psi}
- ④ Indicator light built into the DIN connector shows operational status at a glance.
- ⑤ A double type is also available for control of both port A and port B in a compact configuration.

Specifications

Model No.	Nominal Diameter (Size)	Maximum Working Pressure MPa{psi}	Maximum Flow Rate ℓ /min(gpm)	Pressure Adjustment Range MPa{psi}	Weight kg	Gasket Surface Dimensions
OW-G01-PC-R-**-30 P1 P3	1/8	25{3571}	50 (13.2)	0.5 to 3.5{72 to 500}	1.8	ISO 4401-03-02-0-94
0.8 to 7{114 to 1000}						
3.5 to 21{500 to 3000}						
0.5 to 3.5{72 to 500}				1.8		
0.8 to 7{114 to 1000}						
OW-G01-AC-R-**-30 A1 A3				3.5 to 21{500 to 2000}		
OW-G01-BC-R-**-30 B1 B3				0.5 to 3.5{72 to 500}	1.8	ISO 4401-03-02-0-94
				0.8 to 7{114 to 1000}		
				3.5 to 21{500 to 2000}		
OW-G01-WC-R-**-30 W1 W3				0.5 to 3.5{72 to 500}	2.6	
				0.8 to 7{114 to 1000}		
				3.5 to 21{500 to 2000}		

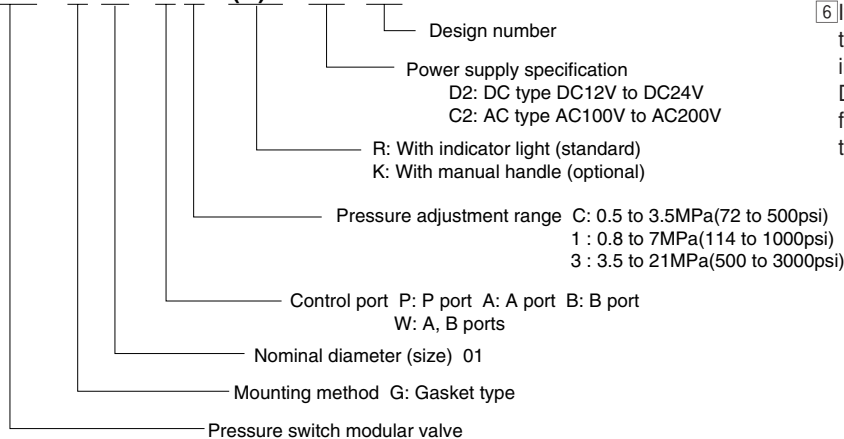
Electrical Specifications Micro Switch Manufacturer: Omron Model No. SS-5	Contact Capacitance (Resistive Load)	AC	125V	5A
			250V	3A
		DC	14V	5A
			30V	4A
	Mechanical Life	At least 1×10^7		
	Electrical Life	At least 3×10^6 (AC, 0.1A, $\cos\phi=1$)		
	Contact Resistance	30MΩ maximum (initial value)		
Insulation Resistance	At least 100MΩ			
Allowable Operating Frequency	60 times/minute (electrical)			
Operating Environment	Dust Resistance/Water Resistance Rank	JIS C0920 IP64		
	Ambient Temperature	-20°C to 70°C (non-condensation)		
	Operating Fluid	Fluid Temperature	-20°C to 70°C	Use a fluid that is within both ranges.
		Allowable Viscosity Range	15 to 300mm ² /s{cSt}	
Filtration		25μm maximum		

● Handling

- ① See the detailed explanation on the next page for information about wiring inside connectors.
- ② Contacts are normally open type only, not normally closed type.
- ③ In addition to load wiring, power supply wiring is also required to illuminate the indicator light. See the wiring diagram for more information.
- ④ If the DIN connector interferes with other valves, remove the two switch installation bolts and change the installation orientation. If interference is caused in all orientations, install an interference blanker plate on top of the connector. Contact your agent if an interference blanker plate is required.
- ⑤ Note that a special type of DIN connector is required. The DIN connector is not interchangeable with the one for the SA type solenoid valve.
- ⑥ If you cannot remove the DIN connector when wiring, remove the switch installation bolts and then remove the DIN connector. The tightening torque for the installation bolts is 5 to 7Nm {5 to 71kgf/cm}.

Understanding Model Numbers

OW - G 01 - P 1 - (K)R - D2 - 30



● Connectors

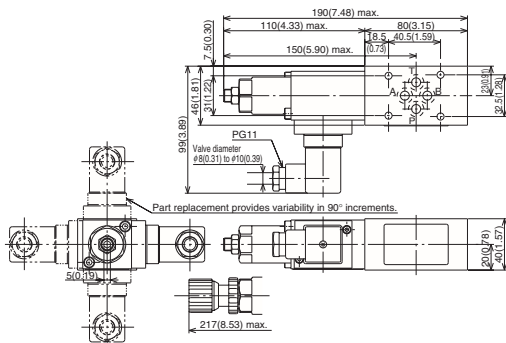
Model No.	Power supply specification	Wiring	Electrical Circuit Diagram
BRC41-01WD2	D2	<p>⊙When signal input device (load) remote common is plus</p> <p>OW Terminal 1 is connected to load, while Terminals 2 and 3 are connected to power (Terminal 2 to +).</p>	<p>Normal open type with indicator</p> <p>Pressure increase causes indicator to light. Circuit closed (ON)</p> <p>Pressure decrease causes indicator to go out. Circuit open (OFF)</p>
		<p>⊙When signal input device (load) common is minus</p> <p>OW Terminal 1 is connected to load, while Terminals 2 and 3 are connected to power (Terminal 2 to -).</p>	
BRC41-01WC2	C2	<p>⊙When signal input device (load) is AC</p> <p>OW Terminal 1 is connected to load, while Terminals 2 and 3 are connected to power (Terminal 2 is nonpolar).</p>	<p>Normal open type with indicator</p> <p>Pressure increase causes indicator to light. Circuit closed (ON)</p> <p>Pressure decrease causes indicator to go out. Circuit open (OFF)</p>

- Note) 1. The DIN connector wiring connector port size is PG11.
 2. The compatible cable diameter for the DIN connector is $\phi 8$ to $\phi 10$. Dust resistance and water resistance is lost for any cable outside this range.
 3. The connector can be installed in different orientations are 90-degree increments by changing the orientation of the terminal block.
 4. The connector is designed so the cover cannot be removed unless the installation screws are removed.
 5. Use M3 for round type and Y type solderless terminals.
 6. The tightening torque of M3 screws used for securing connectors and for terminals is 0.3 to 0.5Nm.

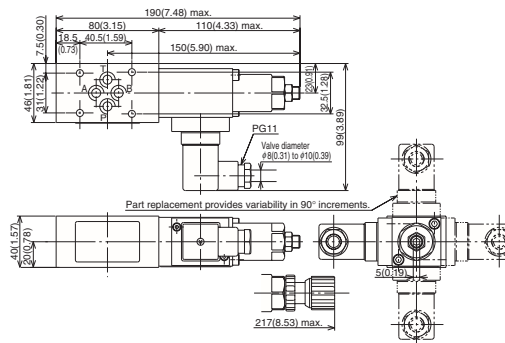
Installation Dimension Drawings

Note) Pressure is increased by clockwise (rightward) rotation of the adjusting screw, and decreased by counterclockwise (leftward) rotation.

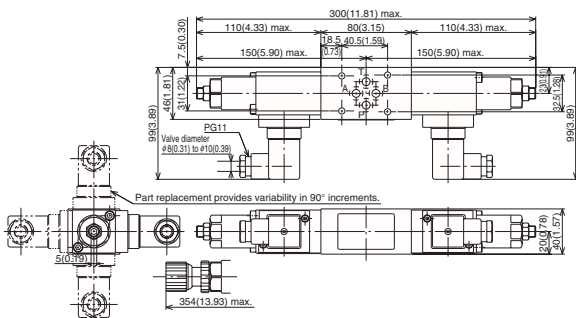
OW-G01-^P_A*-R*-2-30



OW-G01-B*-R*-2-30



OW-G01-W*-R*-2-30

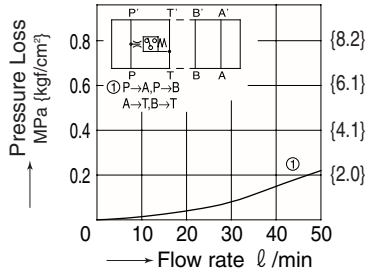


Performance Curves

Hydraulic Operating Fluid Viscosity 32mm²/s

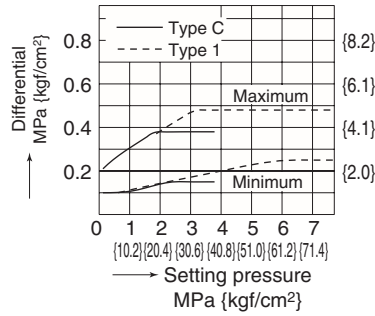
Pressure Loss Characteristics

OW-G01-**-R**-30

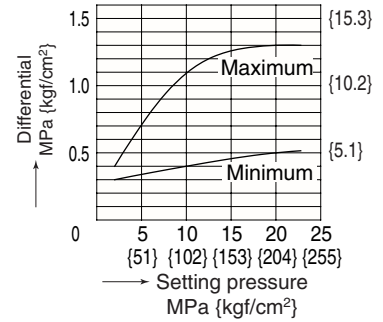


Setting Pressure — Differential Characteristics

OW-G01-^C₁-R**-30

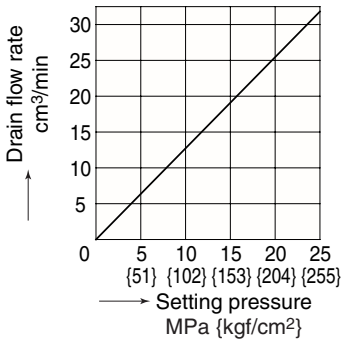


OW-G01-³-R**-30



Drain Rate Characteristics

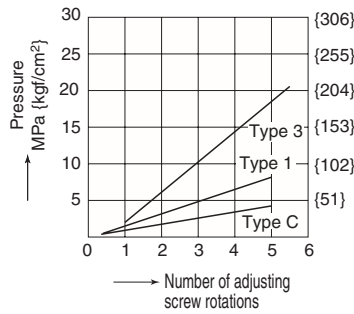
OW-G01-**-R**-30



Number of Adjusting Screw Rotations

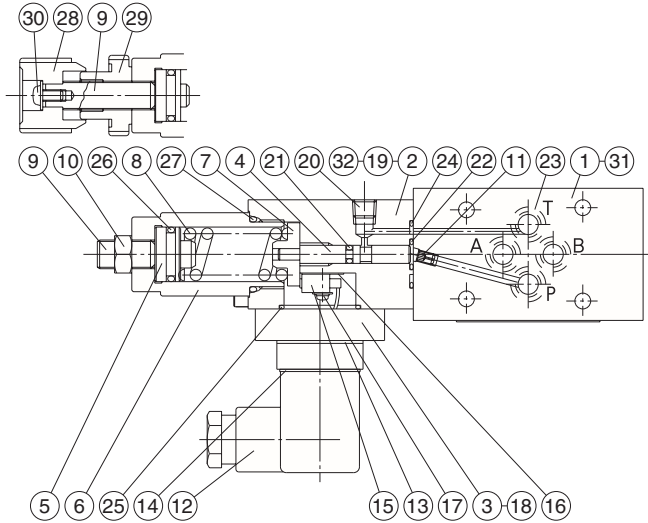
— Pressure Characteristics

OW-G01-**-R**-30



Cross-sectional Drawing

OW-G01-P*-R-2-30



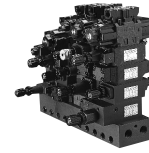
Part No.	Part Name	Part No.	Part Name
1	Body	17	Screw
2	Cover	18	Screw
3	Cover	19	Screw
4	Piston	20	Plug
5	Push rod	21	O-ring
6	Retainer	22	O-ring
7	Guide	23	O-ring
8	Spring	24	O-ring
9	Screw	25	O-ring
10	Nut	26	O-ring
11	Choke	27	O-ring
12	Connector	28	Knob
13	Gasket	29	Nut
14	Gasket	30	Screw
15	Micro switch assy	31	Plate
16	Separator	32	Plate

Seal Part List (Kit Model Number BRCS-01W*)

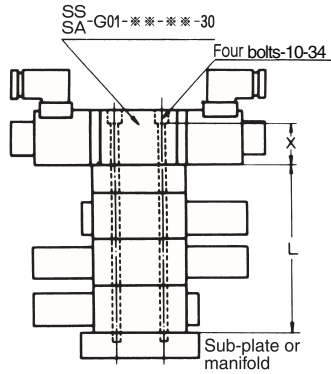
Part No.	Part Name	Part Number	Qty			
			P	W	A	B
21	O-ring	1A-P3	1	2	1	1
22	O-ring	AS568-011(Hs90)	1	2	1	1
23	O-ring	1B-P9	4	4	4	4
24	O-ring	AS568-019(Hs70)	1	2	1	1
25	O-ring	AS568-022(Hs70)	1	2	1	1
26	O-ring	1A-P15	1	2	1	1
27	O-ring	1B-P22	1	2	1	1

Note) Specify P, W, A, or B for the asterisk (*) in the kit model number.

Valve Installation Bolt List

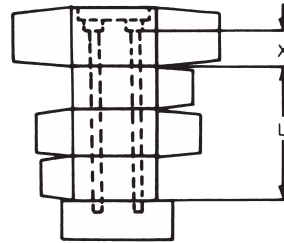


01 (nominal diameter)



03 (nominal diameter)

SS
SA-G03-***-**-for -J21



- Note) 1. Model numbers indicate bolt kits for one solenoid valve.
 2. Up to four modular valves can be ganged together.
 3.01 Size
 Modular valves at a height of 40 + 25 = 65 mm are ganged to one level.
 4.2-pressure reducing valves at a height of 90 mm are ganged to two levels.

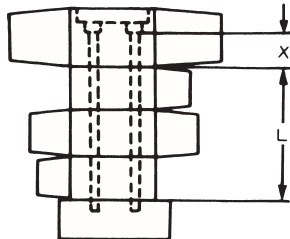
Model Number	X
SA-G01-***-**-E31	37.5(1.47)
SS-G01-***-R-**-E31	

Model Number	X
SS SA-G03-***-R-**-E21	60.5(2.38)

Type	Model Number	Dimension L	Bolt length
Hexagon Socket Head Bolt	OTH-01-70-E10	25(0.98)	70(2.75)
	85	40(1.57)	85(3.30)
	110	65(2.55)	110(4.33)
	125	80(3.14)	125(4.92)
	150	105(4.13)	150(5.90)
	165	120(4.72)	165(6.49)
	190	145(5.70)	190(7.48)
	205	160(6.25)	205(8.07)
Stat Bolt	OTD-01-80-E10	25(0.98)	80(3.14)
	95	40(1.57)	95(3.74)
	120	65(2.55)	120(4.72)
	135	80(3.14)	135(5.31)
	145	90(3.54)	145(5.70)
	160	105(4.13)	160(6.29)
	175	120(4.72)	175(6.88)
	185	130(5.11)	185(7.28)
	200	145(5.70)	200(7.87)
	210	155(6.10)	210(8.26)
	215	160(6.29)	215(8.46)
	225	170(6.69)	225(8.85)
	240	185(7.28)	240(9.44)
	250	195(7.67)	250(9.84)
	265	210(8.26)	265(10.43)
	275	220(8.66)	275(10.82)

Type	Model Number	Dimension L	Bolt length
Hexagon Socket Head Bolt	OTH-03-125-E30	55(2.16)	125(4.92)
	-180-	110(4.33)	180(7.08)
Stat Bolt	OTD-03-135-E30	55(2.16)	135(5.31)
	-190-	110(4.33)	190(7.48)
	-245-	165(6.49)	245(9.64)
	-300-	220(8.66)	300(11.81)

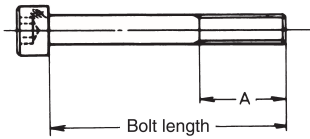
SS
SA-G03-***-**-for -21



Model Number	X
SS SA-G03-***-R-**-21	58(2.28)

Type	Model Number	Dimension L	Bolt length
Hexagon Socket Head Bolt	OTH-03-125-30	55(2.16)	M8 × 125
	-180-	110(4.33)	M8 × 180
Stat Bolt	OTD-03-135-30	55(2.16)	M8 × 135
	-190-	110(4.33)	M8 × 190
	-245-	165(6.49)	M8 × 245
	-300-	220(8.66)	M8 × 300

Hexagon socket head bolt



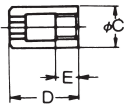
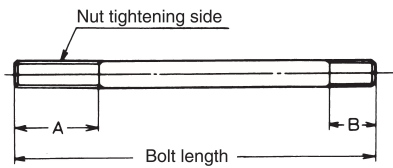
Nominal Diameter	A	Bolt Size
01	15(0.59)	M5
03	18(0.70)	M6
03	22(0.86)	M8

Dimensions other than bolt length are in accordance with JIS B 1176.

Tightening Torque

Nominal Diameter	Bolt Size	Tightening Torque N·m{kgf·cm}
01	M5/10-24UNC	5 to 7{ 51 to 71}
03	M6/1/4-20UNC	10 to 13{102 to 133}
03	M8	20 to 25{205 to 255}

Stat Bolts and Nuts



Model No.	A	B	C	D	E	F	Bolt Size
OTD-01-***-10	12(0.47)	9(0.35)	8.5(0.33)	16(0.62)	11(0.43)	4(0.15)	M5
OTD-03-***-J30	20(0.78)	10(0.39)	10(0.39)	18(0.70)	11.5(0.45)	5(0.19)	M6
OTD-03-***-30	25(0.98)	12.5(0.49)	13(0.51)	22(0.86)	15(0.59)	6(0.23)	M8
OTD-01-***-E10	12(0.47)	9(0.35)	5.5(0.21)	16(0.62)	11(0.43)	4(0.15)	10-24UNC
OTD-03-***-E30	20(0.78)	10(0.39)	10(0.39)	18(0.70)	11.5(0.45)	5(0.19)	1/4-20UNC

Stat bolts and nuts are included. The E dimension is the effective screw depth.



SK-G01 Series

*Wet Type Solenoid Operated
Directional Control Valve With
Deutsch Connector*



Features

- High pressure, large capacity with minimal pressure loss
- High dust and water resistance (JIS C 0920 IP67)
- High vibration proof (JIS D 1601 3 D Grade 90 Division 400)
- Shockless type available (Option: F)
- Diode built in coil available (Option: G)
- Low switching noise and very long life

Specifications

Model Number		SK-G01			
		Standard Type		Shockless Type	
JIS Symbol	Operation	Maximum Flow Rate L/min(gpm)	Maximum Working Pressure MPa(psi)	Maximum Flow Rate L/min(gpm)	Maximum Working Pressure MPa(psi)
	A3X	80 (21.1)	35 (5075)	50.0 (13.2)	25 (3625)
	H3X				
	E3X				
	C5				
	C6				
	C4	50.0 (13.2)		40 (10.6)	
	C7Y				

Maximum Working Pressure MPa(psi) P, A, B ports	Standard Type	35 (5075)
	Shockless Type	25 (3625)
Maximum Allowable Back Pressure MPa(psi) T port	Standard Type	21 (3045)
	Shockless Type	
Switches/min	Standard Type	120
	Shockless Type	
Option	Shockless	F
	Surgeless (Diode built in coil)	G
Weight kg (lbs)	Double solenoid	2.0 (4.41)
	Single solenoid	1.5 (3.31)
Operating Environment	Dust Resistance/Water Resistance Rank	JIS C 0920 IP67
	Vibration Proof	JIS D 1601 3 D Grade 90 Division 400
	Ambient Temperature	-30~+50°C (-22~+122°F)
Operating Fluid	Temperature Range	-25~+80°C (-13~+176°F)
	Viscosity Range	15~300mm ² /s(cSt)
	Filtration	25 μm or less
Mounting Bolts	Size x Length	M5x45 or #10x44.5, four bolts
	Tightening Torque	Hexagon socket head bolts of strength 12T 5~7N•m (3.69~5.16lbf•ft)

Note) 1. Maximum operating pressure depends on the valve type. For details, see "Permissible pressure-flow rate values."

- A protective cover is recommended to avoid splashing the valve directly.
- For mounting bolts, use 12T or equivalent.
- Mounting bolts are not included.

Model Code

S K - G 0 1 - A 3 X - D G T - D 1 - 5 5 0 3 H

- Design number
- Power supply D1=DC12V D2=DC24V
- Deutsch connector
- Auxiliary symbol (Can be combined in alphabetic sequence)
F: Shockless type G: Surgeless type (Diode built in coil)

Transition Flow Path
(A3X, H3X, E3X and C7Y)

X	Y
Closed	Semi-open

Center position

3	4	5	6	7

Operation method

A	H	C	E
Spring offset type		Spring Center type	
Detent type		Detent type	

Nominal diameter

Mounting method G: Gasket type

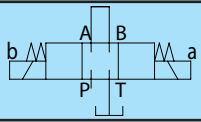
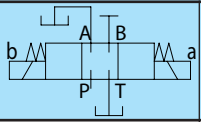
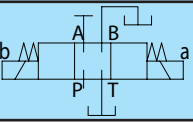
Wet type solenoid operated directional control valve

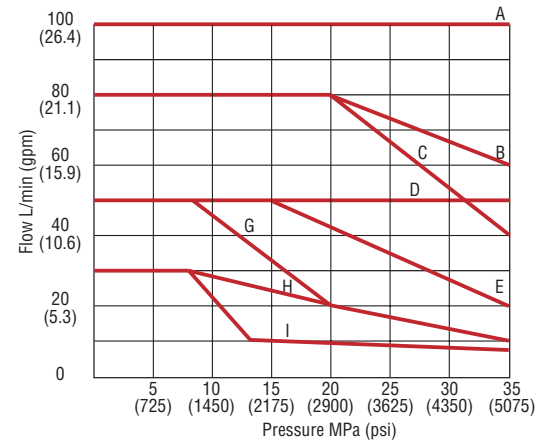
Solenoid Assembly Specifications

Solenoid Type	Power Supply Type	Voltage (V)	Solenoid Coil Model Number	Holding Current (A)	Holding Power (W)	Allowable Voltage Range (V)
DC	D1	DC12	EKB64-DT-D1-5503	2.5	30	10.8 - 13.2
			EKB64-DGT-D1-5503(Surgeless type)			
	D2	DC24	EKB64-DT-D2-5503	1.25	30	21.6 - 26.4
			EKB64-DGT-D2-5503(Surgeless type)			

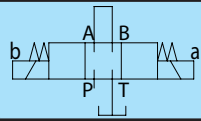
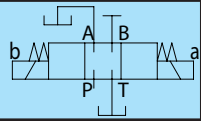
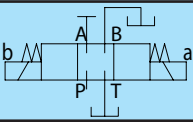
Permissible Pressure-Flow Rate Values

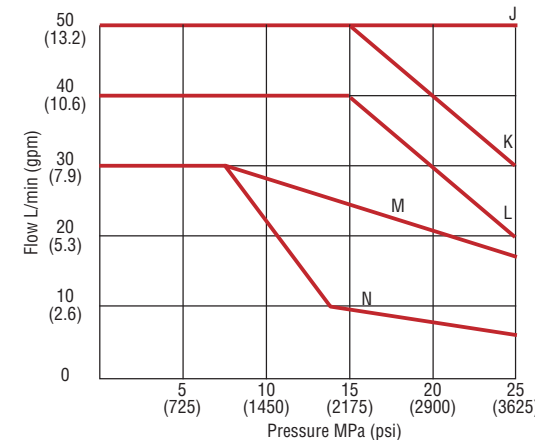
•Standard type

Type	Standard Type		
Operation Example			
Operation Symbol			
A3X	B	I	I
H3X	B	I	I
E3X	A	H	H
C4	D	D	D
C5	A	G	G
C6	C	G	G
C7Y	E	I	I



•Shockless type

Type	Shockless Type		
Operation Example			
Operation Symbol			
A3X	J	N	N
H3X	J	N	N
E3X	J	M	M
C4	J	J	J
C5	J	N	N
C6	K	N	N
C7Y	L	N	N

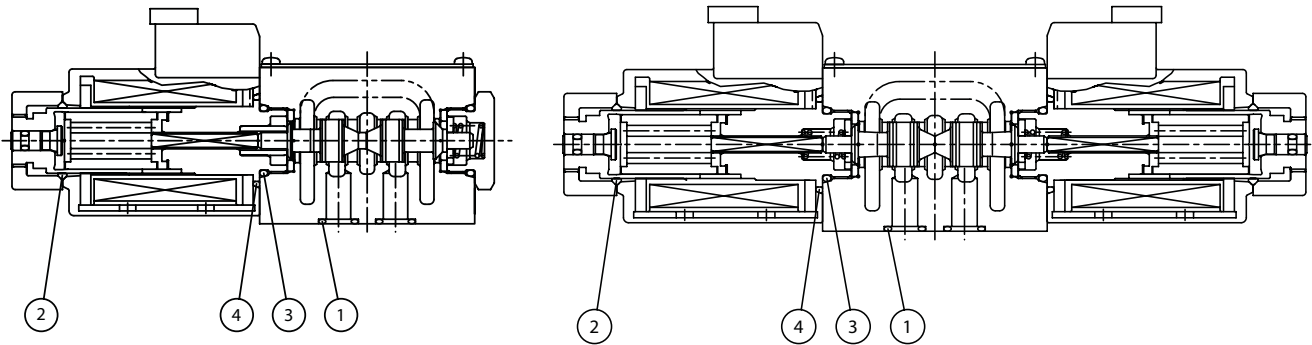
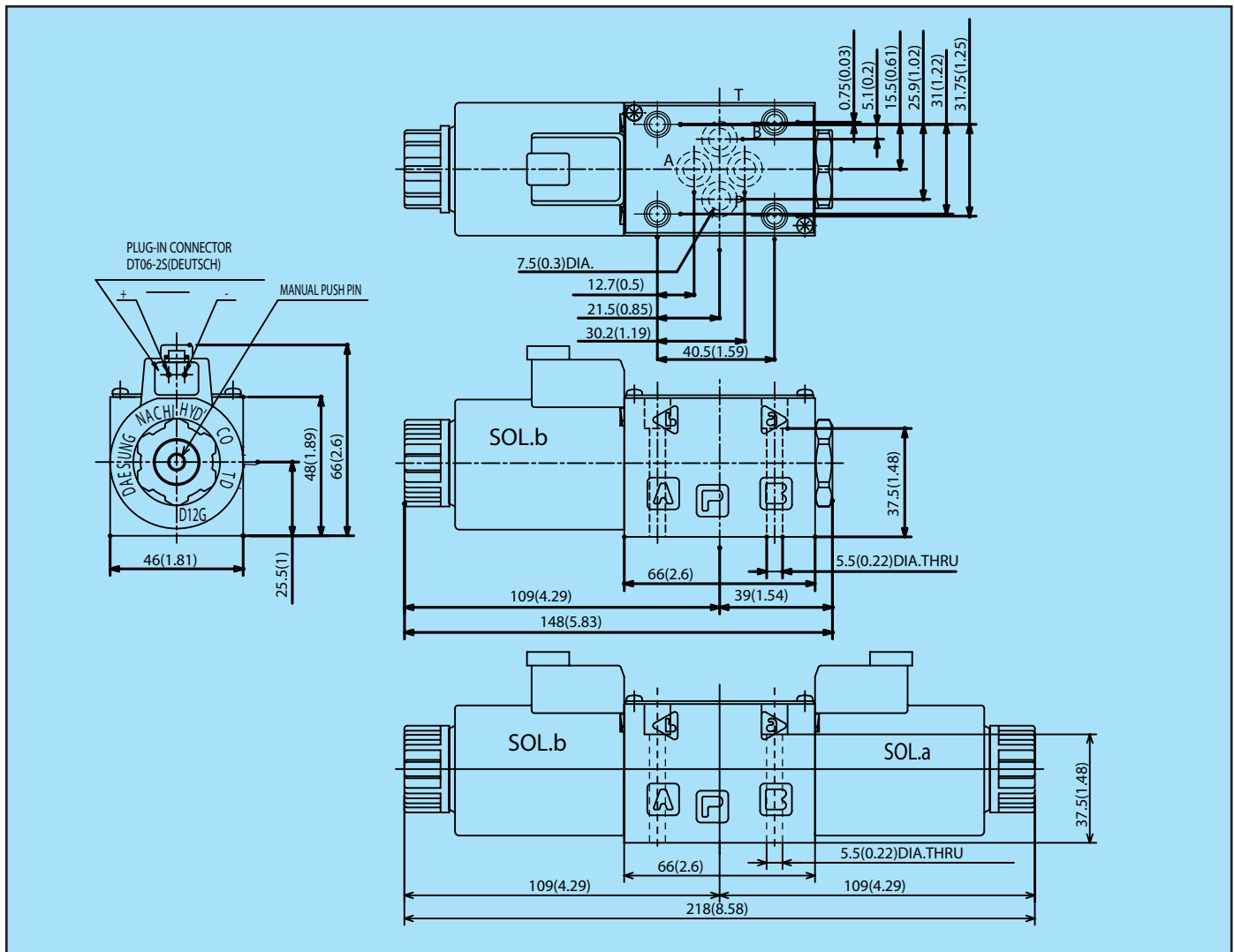


Switching Response Time

Model Number	Response Time (sec.)		Measurement Conditions
	Solenoid ON	Solenoid OFF	
SK-G01-**-DT-D*-5503H	0.03 to 0.04	0.02 to 0.04	14MPa (2030psi) 30L/min (7.9gpm)
SK-G01-**-DGT-D*-5503H	0.03 to 0.04	0.07 to 0.10	
SK-G01-**-DFGT-D*-5503H	0.07 to 0.10	0.10 to 0.15	

Note) The switching response time changes slightly with operating conditions. (Pressure, flow rate, viscosity, etc.)

Dimensional Drawings



Sealing Parts

Part No.	Part Name	Part No.	Quantity	
			Single Solenoid	Double Solenoid
1	O-ring	AS568-012(Hs90)	4	4
2	O-ring	1A-P20	1	2
3	O-ring	1B-P18	2	2
4	O-ring	S-25	1	2

Note) 1A and 1B are JIS Standard B 2401, while AS568 is SAE Standard.

NACHI

NACHI AMERICA INC.

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Tel. (800)622-4410 Fax. (586)226-5289

Email: hydraulics@nachi-america.com

www.nachi-hydraulics.com

Photo	Type	Series	Description	Main Specifications
	Relief Valves	R	NA	45 - 100.5gpm, 3000psi

R Series

Features

R-T06/T10 Series Valves are in-line mounted and rated for 3000 psi. They may be remotely controlled through the vent port. Provides smooth, dependable operation through entire pressure range.

- ① Balanced piston design.
- ② May be used as a safety valve.
- ③ Pressure can be remotely controlled through the vent port.

Specifications

Model	Pipe Size	Rated Capacity ℓ /min (gpm)	Adjusting Range kgf/cm ² (psi)	Weight kgf (lbs)
R-T06-1-E20 3-E20	3/4	170 (45.0)	*-70 (*-1000) 35-210 (500-3000)	3.9 (8.6)
R-T10-1-20 3-E20	1 1/4	380 (100.5)	*-70 (*-1000) 35-210 (500-3000)	7.7 (17.0)

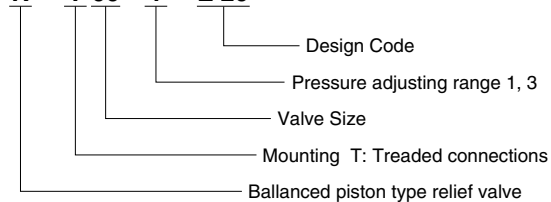
Note *: Please refer Flow—Min. pressure characteristics graph.

● Handling

- ① To adjust the set pressure, loosen the locknut and turn the handle clockwise to increase, counterclockwise to decrease the pressure.
- ② Tank port backpressure should be limited to 28.5 psi.
- ③ To use the relief as a safety valve, be sure to set the pressure 143-214 psi above system pressure.
- ④ When used with a remote control valve, use heavy wall pipe from the vent port. This will reduce the chance of vibration in the piping.
- ⑤ Minimum flow of the size "06" model is 2.1 gpm. Minimum flow of the size "10" model is 2.6 gpm. Lower flow may cause the system to become unstable.

Understanding Model Numbers

R - T 06 - 1 - E 20

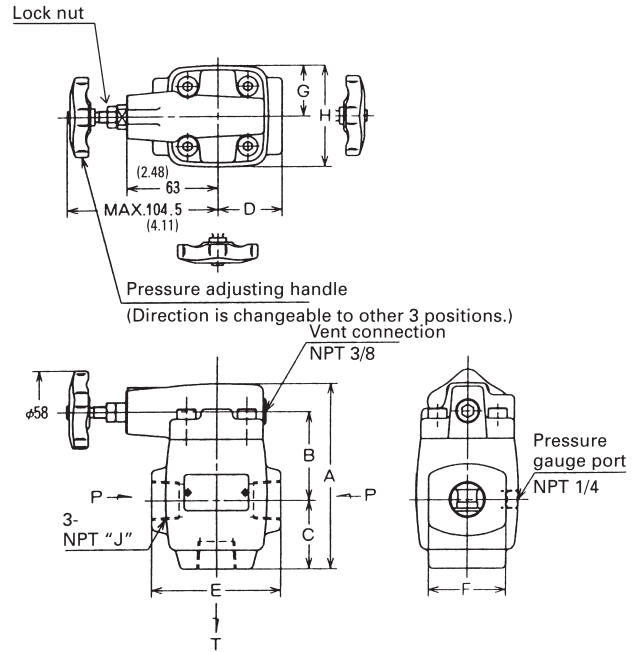


Installation Dimensions

Model	A	B	C
R-T06-*-E20	128.5 (5.06)	61.5 (2.42)	47.5 (1.87)
R-T10-*-E20	153.5 (6.04)	72 (2.83)	62 (2.44)

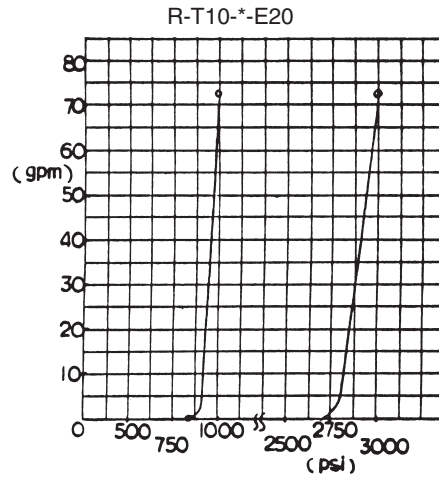
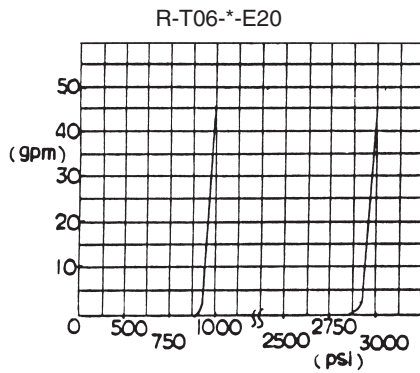
Motor Dimensions mm(inch)

D	E	F	G	H	J
45 (1.77)	90 (3.54)	54 (2.13)	35.5 (1.40)	71 (2.80)	3/4
62.5 (2.46)	125 (4.92)	69 (2.72)	47 (1.85)	94 (3.70)	1 1/4



Performance Curves

Pressure-Flow



Flow—Min. Pressure

