

SE Series (Wiring System: Central Terminal Box) Lower Power Solenoid Valve

40 to 60ℓ/min
10 to 16MPa

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.

④ With M12-4 pin connector (option)

Makes it easier to interface with open networks like Device Net. This connector streamlines wiring work. The diode for preventing current back surge is

built in to the terminal box to protect the slave unit connection. (With M12-4 pin connector)

⑤ Global compliance (G01 size)

Meets overseas safety standards TÜV (CE marking). Can be used safely around the world.

Specifications

Operation Symbol	JIS Symbol	SE-G01-**-*(G)R-**-40		SE-G03-**-GR-**-*(J)30	
		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	16 {163}	40	10 {102}
A3X		30		50	
H3X		40		-	
E3X		30		50	
C4		30		60	
C5		40			
C6		40			

Note) The maximum flow rate of each valve depends on the pressure. For details, see page E-30.

● Handling

- In order to realize the full benefits of the solenoid valve, configure piping so oil is constantly supplied to the T(DR) port.
- Ensure that surge pressure in excess of the maximum allowable back pressure can be accidentally at the T port.

③ Note that the maximum flow rate is limited when used as a four-way valve, or by blocking ports for use as a two-way valve or oneway valve.

④ Always keep the operating fluid clean. Allowable contamination is class NAS12 or less.

⑤ When using petroleum type operating fluid, use JIS K 2213 Class 1 or Class 2, or equivalent.

⑥ Use the SS series solenoid valve if using flame resistant operating fluid.

⑦ Be sure to note the allowable pressure range of the coil being used.

⑧ Maintaining a switching position under high pressure for a long period can cause abnormal operation due to hydraulic lockup. Contact your agent when you need to maintain a switching position for a long period.

⑨ When using a detent type (E3X), provide constant energization when secure maintenance of the switching position is required.

⑩ Note that manual pin operating pressure changes in accordance with tank line back pressure.

⑪ If you do not select the option with the M12-4 pin connector, current back surge may occur because there is no solenoid in the central terminal box. Therefore, install solenoid valves to protect against current back surge on both ends of the coil in the output circuit of the programmable controller (PC) if directly operating the solenoid valves. (Recommended diode: Hitachi V07J or equivalent)

● 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	Holding Current (A)	Holding Power (W)	Allowable Voltage Range (V)
Built-in rectifier type AC	E1	AC100	50	EED64-E1	0.08	7.0	80 to 120	SLH1-03B-R1-01	0.06	5.8	80 to 120
			60								
DC	D2	DC24	-	EED64-D2	0.2	4.8	21.6 to 26.4	SLH1-03B-D2-01	0.2	4.8	21.6 to 26.4

Solenoid Type		SE-G01		SE-G03		
		DC Solenoid	Internal DC solenoid for rectifier	DC Solenoid	Internal DC solenoid for rectifier	
		D2	E1	D2	E1	
Maximum Working Pressure	P, A, B Ports	16MPa{163kgf/cm ² }		10MPa{102kgf/cm ² }		
Maximum Allowable Backpressure	T port	16MPa{163kgf/cm ² }		10MPa {102kgf/cm ² } (In the case of 2MPa {21kgf/cm ² } operation symbol E3X)		
Changeover Frequency (per minute)		120		120		
Standard	Indicator light Surgeless	GR	R		GR	
Weight (kg)	Double Solenoid	2.2		3.5		
	Single Solenoid	1.7		3.3		
Operating Environment	Dust Resistance/Water Resistance Rank	JIS C0920 IP64 (Dust-tight, Splash proof)		JIS C0920 IP65 (Dust-tight, Waterjet-proof)		
	Ambient Temperature	-20 to 50°C		-10 to 50°C		
	Operating Fluid	Temperature Range	-20 to 70°C		0 to 65°C	
		Kinematic Viscosity Range	15 to 300mm ² /s			
	Filtration	25 μm or less				
Bundled Accessories	Mounting bolt	Refer to page D-93 for bolt lengths for usage of M5 x 45 4-module valves.		Refer to page E-31 for bolt lengths for usage of M6 x 40 (M8 x 40) 4-module valves.		
	Tightening Torque	5 to 7N·m {51 to 71kgf·cm}		M6 10 to 13N·m{102 to 133kgf·cm} M8 18 to 21N·m{184 to 214kgf·cm}		

Note) For mounting bolts, use bolts of 12.9 strength classification or equivalent.

Explanation of model No.

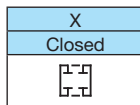
SE - G 03 - A 3 X - GR - D2 - J30

Design number
40: For 01 size
J30: 03 size for mounting bolt M6 (30 if mounting bolt is M8)

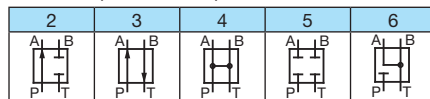
Power supply
D: DC
E: For AC (joint 50/60 Hz inside rectifier)
D2=DC24V
E1=AC100V

Auxiliary symbol
GR: Surgeless type with indicator (applicable for power supply D2 only)
R: With indicator light (applicable for power supply E1 only)
V: With M12-4 pin connector, load side - common (applicable for power supply D2 only)
W: With M12-4 pin connector, load side + common (applicable for power supply D2 only)

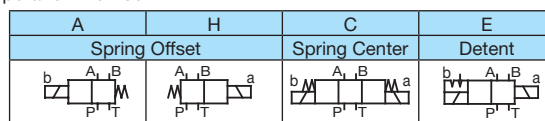
Transition Flow Path (Specify for A2X, A3X only)



Center valve position flow path



Operation Method



Nominal pipe diameter
01 size
03 size

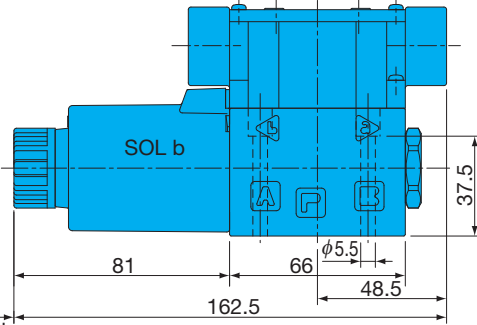
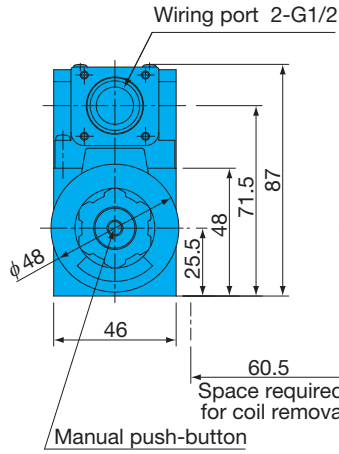
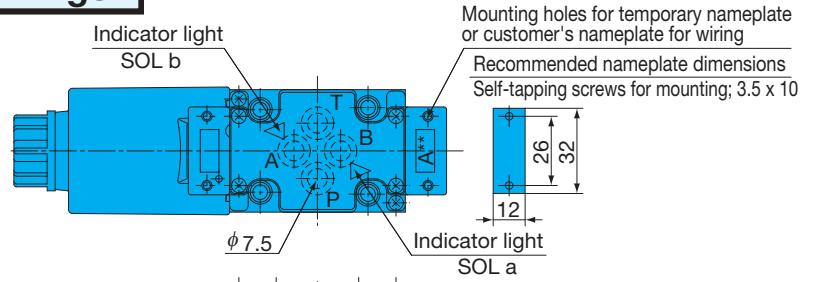
Mounting method
G: Gasket type

Central terminal box with low-power solenoid valve

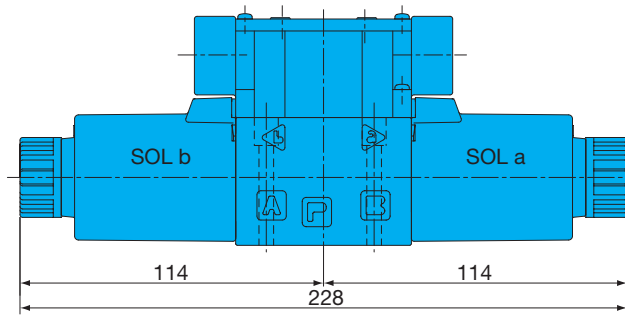
Installation Dimension Drawings

SE-G01-A***-(G)R**-40
SE-G01-H***-(G)R**-40

Note) For SE-G01-H3X-(G)R**-40, the solenoid is on the opposite side as that shown in the diagram (SOL.a).



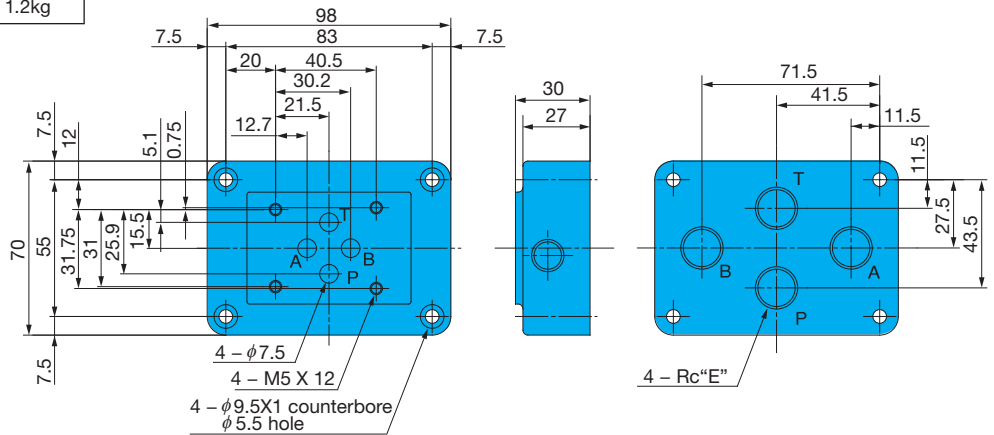
SE-G01-C**-(G)R**-40
SE-G01-E3X-(G)R**-40



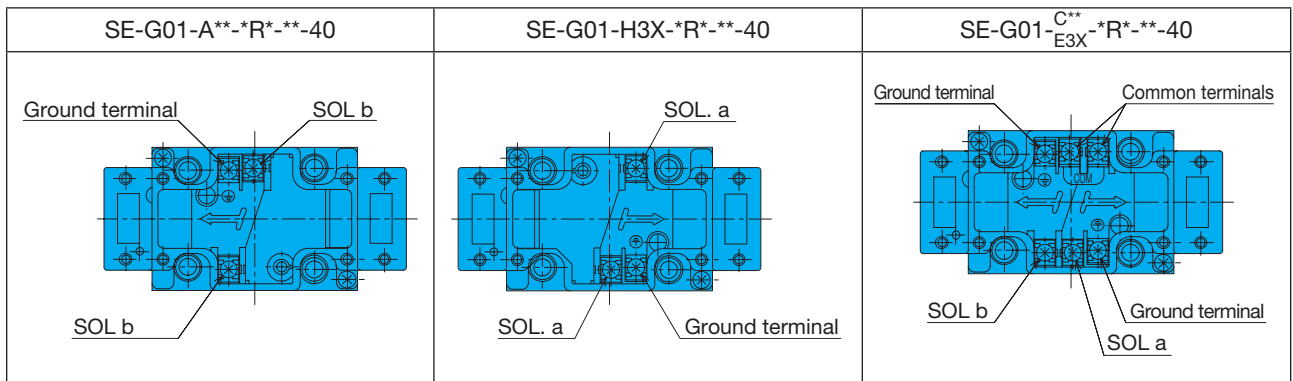
For sub plate SE-G01

Model No.	E	Weight
MSA-01X-10	1/4	1.2kg
MSA-01Y-10	3/8	1.2kg

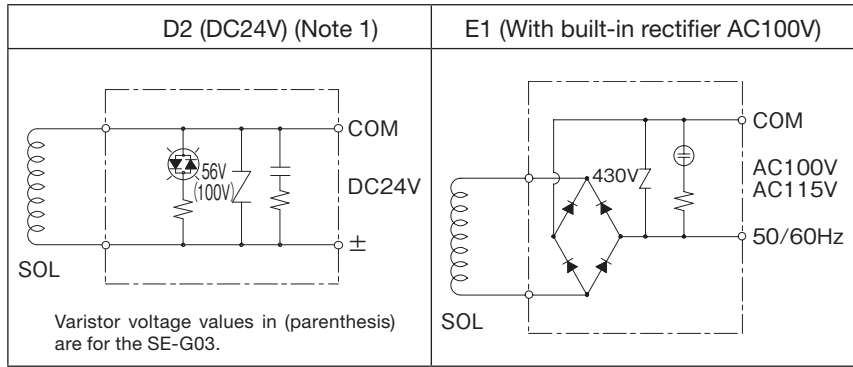
Gasket Surface Dimensions
ISO 4401-03-02-0-05
(JIS B 8355 D-03-02-0-05)



Wiring diagram for central terminal box kit

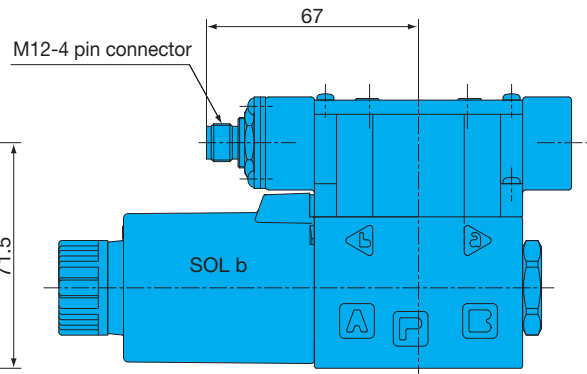
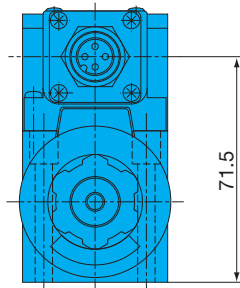
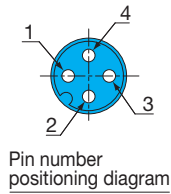


Electrical circuit diagram for central terminal box kit



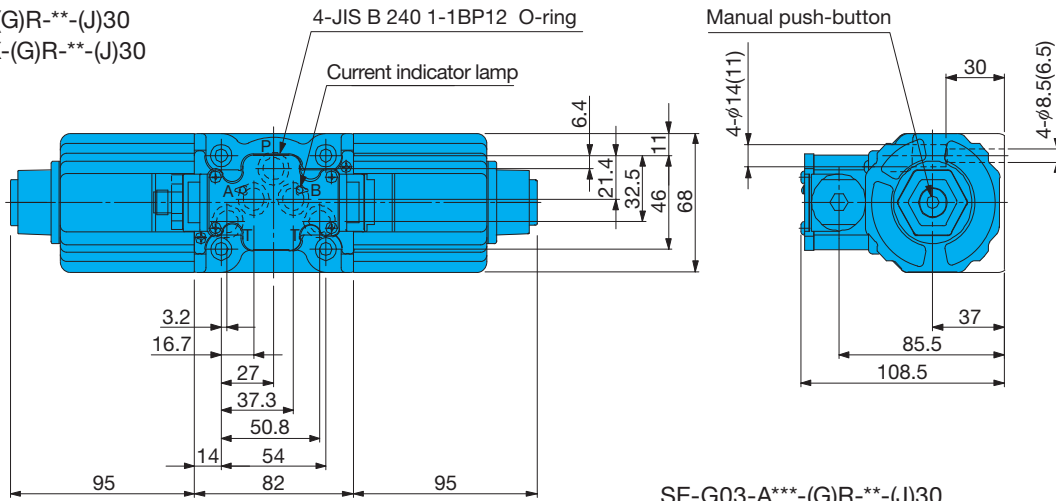
Note 1) Install D2 specification solenoid valves to protect against current back surge on both ends of the coil in the output circuit of the programmable controller (PC) if directly operating the solenoid valves.

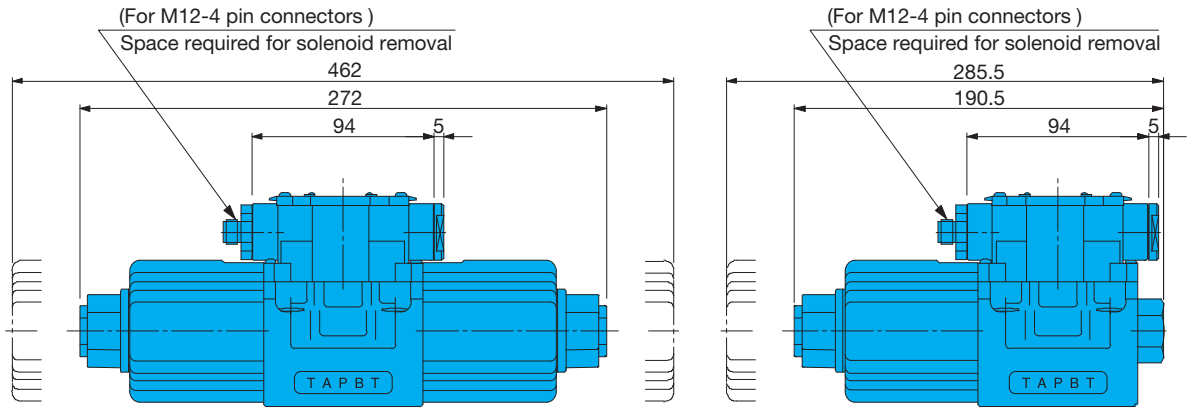
With M12-4 pin connector
SE-G01**-GRV-D2-40
SE-G01**-GRW-D2-40



	Pin number position	Electrical Circuit Diagram	
		Operation Symbol C*	Operation Symbol A*, H*
Type V	<p style="text-align: center;">4: SOL. b(+) (Type A, C) 4: SOL. a(+) (Type H)</p> <p style="text-align: center;">2: SOL. a(+) (For Type C)</p> <p style="text-align: center;">3: COM(-)</p>	<p style="text-align: center;">PIN No. 2 SOL. a(+)</p> <p style="text-align: center;">PIN No. 3 COM(-)</p> <p style="text-align: center;">PIN No. 1 Not used</p> <p style="text-align: center;">PIN No. 4 SOL. b(+)</p>	<p style="text-align: center;">PIN No. 4 SOL. a(+): Type H SOL. b(+): Type A</p> <p style="text-align: center;">PIN No. 3 COM(-)</p> <p style="text-align: center;">PIN No. 1, 2 are not used</p>
Type W	<p style="text-align: center;">4: SOL. b(-) (Type A, C) 4: SOL. a(-) (Type H)</p> <p style="text-align: center;">1: COM(+)</p> <p style="text-align: center;">4: SOL. a(-) (Type C)</p> <p style="text-align: center;">3: Not used</p>	<p style="text-align: center;">PIN No. 2 SOL. a(-)</p> <p style="text-align: center;">PIN No. 1 COM(+)</p> <p style="text-align: center;">PIN No. 3 Not used</p> <p style="text-align: center;">PIN No. 4 SOL. b(-)</p>	<p style="text-align: center;">PIN No. 4 SOL. a(-): Type H SOL. b(-): Type A</p> <p style="text-align: center;">PIN No. 1 COM(+)</p> <p style="text-align: center;">PIN No. 2, 3 are not used</p>

SE-G03-C*(G)R**- (J)30
SE-G03-E3X-(G)R**- (J)30

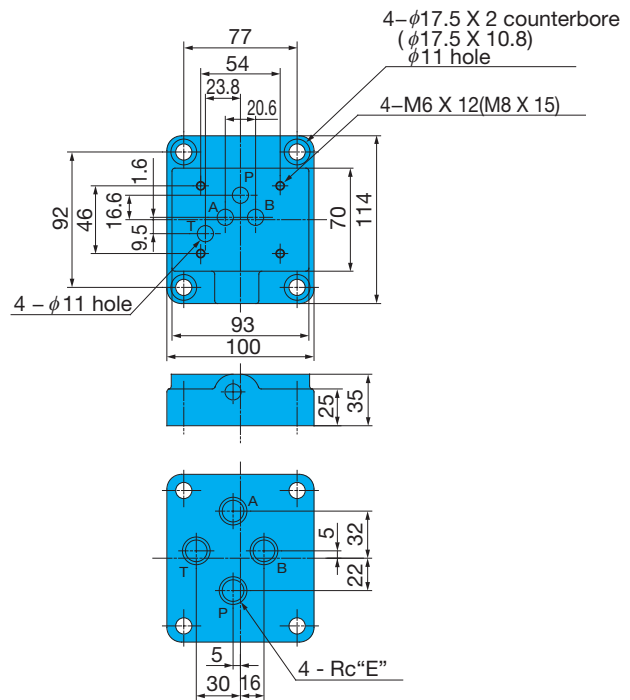




For sub plate SE-G03

Mounting bolt	Model No.	E	Weight
M6	MSA-03-10	3/8	2.3kg
	MSA-03X-10	1/2	
M8	MS-03-30	3/8	
	MS-03X-30	1/2	

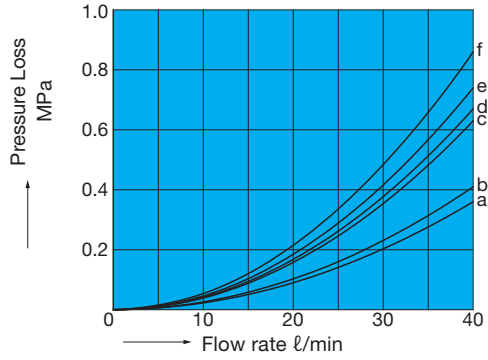
M6 gasket surface dimensions
 ISO 4401-05-04-0-05
 (JIS B 8355 D-05-04-0-05)



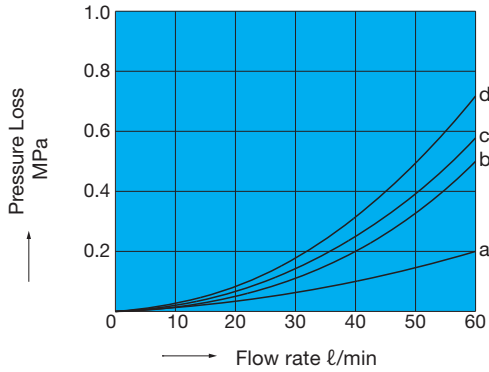
Performance Curves

Differential Hydraulic Fluid Kinematic Viscosity 32mm²/s

Pressure Loss Characteristics



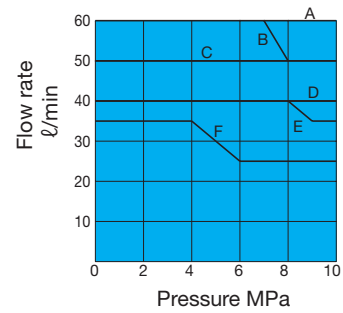
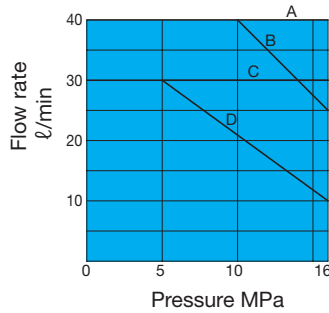
Pump Type	Flow Path	P→A	P→B	A→T	B→T	P→T
SE-G01	A2X	d	f	-	-	-
	A3X	f	f	e	e	-
	H3X	f	f	e	e	-
	E3X	c	c	e	e	-
	C4	b	b	b	b	d
	C5	e	e	d	d	-
C6	f	f	a	a	-	



Pump Type	Flow Path	P→A	P→B	A→T	B→T	P→T
SE-G03	A2X	d	d	-	-	-
	A3X	d	d	d	d	-
	E3X	d	d	c	c	-
	C4	c	c	a	a	b
	C5	d	d	d	d	-
	C6	d	d	b	b	-

Pressure - Flow Volume Allowable Value

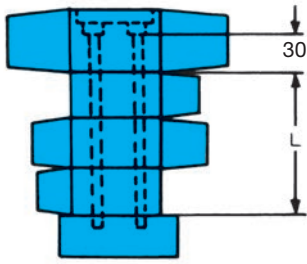
Pump Type	SE-G01			SE-G03		
	Operation Example	Operation Symbol	Operation Symbol	Operation Example	Operation Symbol	Operation Symbol
A2X						
A3X	A	D	D	C	E	A
H3X	A	D	D	-	-	-
E3X	A	C	C	D	D	C
C4	C	C	C	C	F	C
C5	A	D	D	A	B	B
C6	B	D	D	A	B	B



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.

Installation bolts

Refer to the following table for length of installation bolts for SE-G03 size. (Refer page D-93 for length of installation bolts for SE-G01 size.)

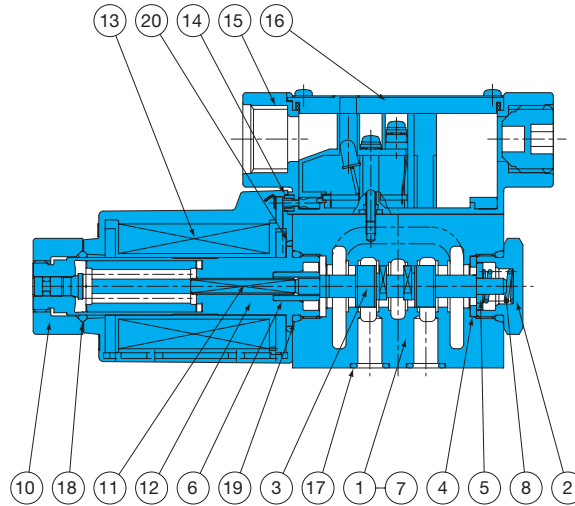


Type	Dimensions L	Bolt length
Hexagon socket head bolt	0 (Solenoid only)	40
	55	95
	110	150

Type	Dimensions L	Bolt length
Stat bolt	55	106
	110	161
	165	216
	220	271

Cross-sectional Drawings

SE-G01-A3X-(G)R-**-40



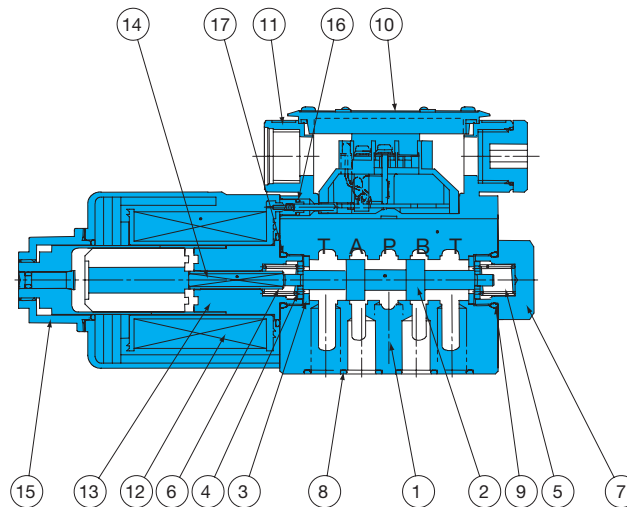
Part No.	Part Name
1	Body
2	Plug
3	Spool
4	Retainer A
5	Retainer B
6	Spring pin
7	Spacer
8	Spring A
9	Spring C
10	Nut
11	Rod
12	Solenoid guide
13	Solenoid coil
14	Packing
15	Terminal box kit
16	Nameplate
17	O-ring
18	O-ring
19	O-ring
20	O-ring

List of Sealing Parts

Part No.	Part Name	SE-G01		
		Part Number	Q'ty	
			Single Solenoid	Double Solenoid
17	O-ring	AS568-012(NBR-90)	4	4
18	O-ring	NBR-70-1 P18	1	2
19	O-ring	NBR-90 P18	2	2
20	O-ring	S-25(NBR-70-1)	1	2

Note) The materials and hardness of the O-ring conforms with JIS B2401.

SE-G03-A3X-GR-**- (J)30



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

List of Sealing Parts

Part No.	Part Name	SE-G03		
		Part Number	Q'ty	
			Single Solenoid	Double Solenoid
8	O-ring	NBR-90 P12	5	5
9, 17	O-ring	NBR-90 P18	2	2
16	O-ring	NBR-70-1 P3	2	4

Note) The materials and hardness of the O-ring conforms with JIS B2401.

Seal Kit Number

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