



E

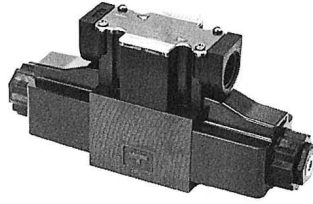
DIRECTIONAL CONTROLS

- Solenoid Operated Directional Valves..... E-5
- Solenoid Controlled Pilot Operated Directional Valves..... E-5
- Pilot Mechanically Operated Directional Valves..... E-5
- Check/Pilot Controlled Check Valves..... E-63

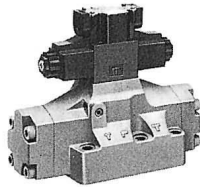
■ Directional Valves

These valve are used for shifting oil flow direction of hydraulic circuit and for actuator starting/stopping as well as the operating direction shifting of actuator.

● Solenoid Operated Directional Valve



● Solenoid Controlled Pilot Operated Directional Valve



● Pilot / Mechanically Operated Directional Valves



● Check / Pilot Controlled Check Valves



Hydraulic Fluids

1. Type of Fluids

Any type of hydraulic fluid, listed in the table below can be used.

Type of Fluids	Petroleum Base Oils
Petroleum Base Oil	Use fluids equivalent to ISO VG32 or VG46.
Synthetic Fluids ¹⁾	Use phosphate ester or polyol ester type. When phosphate ester type fluid is to be used, prefix "F-" to the model number because a special seal (fluororubber) will be used.
Water Containing Fluids	Use water-glycol fluids or W/O emulsion type fluids.

Note 1. For use with hydraulic fluids other than those listed above, please consult your SEWON representatives in advance.

2. Recommended Viscosity and Oil Temperatures

Use hydraulic fluids which satisfy the both recommended viscosity and oil temperatures given in the table below.

Name	Viscosity	Oil Temperature	Degree of contamination
Solenoid Operated Directional Valves Solenoid Controlled Pilot Operated Directional Valves Poppet Type Solenoid Operated Directional Valves Mechanically Operated Directional Valves Check Valves Pilot Controlled Check Valves	15~400mm ² /s {cSt}	-15℃ ~ +70℃	ISO 21/18 NAS 1638-Grade 12

3. Control of Contamination

Due caution must be paid to maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorter the life of the valve. Please maintain the degree of contamination within NAS 1638-Grade 12. Use 25 μm or finer line filter.

Water-proof, dust-proof and vibration-resistance

There properties are in compliance with the following standards.(The marking of O indicates compliance)

Item	Standard	Type	Description	Compliance	
				DSG-01 DSG-03	DSHG-03 DSHG-04 DSHG-06 DSHG-10
★2 Water-proof	JIS F 8001 Water-proof test for marine electric appliance	Class 1 water spray	Drip-proof construction	○	○
		Class 2 water spray	Froth-roof construction	○	○
	JIS D 0203 Damp-proof and Water-proof test for automobile parts	Damp-proof test M1	Test to examine damp-resistance of parts.	○	○
		Damp-proof test M2	Test to examine functions of part under high temperature and high humidity.	○	○
		Splash-proof test R1	Test to examine functions of parts which are likely to be exposed to water splash.	○	○
		Splash-proof test R2	Test to examine functions of parts which are indirectly exposed to stormy weather or water splash.	○	○
	JIS C 0920 Water-proof test for electromechanical parts an wiring materials	Drip-proof type	Not affected by water dropping at vertical angle of 15 degrees or less.	○	○
		Rain-proof type	Not affected by rain fall at vertical angle of 60 degrees or less.	○	○
		Froth-proof type	Not affected by water drip from any dirction.	○	○
		Jet-flow proof type	Not affected by jet flow from any direction.	○	○
	(I.E.C) PUBL.529	Protection Class 2: Drip-proof type (2)	Not affected by water drip falling at vertical angle of 15 degrees or less.	○	○
		Protection Class 3: Rain-proof type	Not affected by rain falling at vertical angle of 60 degrees or less.	○	○
		Protection Class 4: Froth-proof type	Not affected by water drip from any direction. Not affected by jet flow from any direction.	○	○
Dust-proof	(I.E.C) PUBL.529	Protection Class 5: Jet-flow proof type	Not affected by jet flow from any direction.	×	×
		Protection Class 6	Fully protected from entry of dust.	○	○
Vibration resistance	JIS C 0911 Vibration test for small electric appliances	Resonance test (IC)	Vibration range: 7-59.5 Hz Duplex amplitude: 0.1 mm	○	○
		Fixed frequency resistance test (IIC)	Grade 1: duplex amplitude-0.5 mm	○	○
			Grade 2: duplex amplitude-1.2 mm	(2D※: ×) ^{★1}	(2N※: ×) ^{★1}
			Grade 3: duplex amplitude-1.8 mm	(2D※: ×) ^{★1}	(2N※: ×) ^{★1}
			Grade 4: duplex amplitude-2.4 mm	(2D※: ×) ^{★1}	(2N※: ×) ^{★1}
		Variable frequency resistance test (IIIC)	Grade1: duplex amplitude-0.3 mm	(2D※: ×) ^{★1}	(2N※: ×) ^{★1}
			Grade 2: duplex amplitude-0.5 mm	(2D※: ×) ^{★1}	(2N※: ×) ^{★1}
			Grade 3: duplex amplitude-0.75 mm	(2D※: ×) ^{★1}	(2N※: ×) ^{★1}
	JIS D 1601 Vibration test for automobile parts	Class1: mainly for parts of passenger car	Grade A: Parts mounted on spring of body or chassis having relatively low vibration.	○(2D※: ×) ^{★1}	○(2N※: ×) ^{★1}
			Grade B: Parts mounted on spring of body or chassis having relatively low vibration.	○(2D※: ×) ^{★1}	○(2N※: ×) ^{★1}
			Grade C: Parts mounted in engine having relatively low vibration.	○(2D※: ×) ^{★1}	○(2N※: ×) ^{★1}

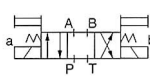
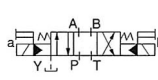
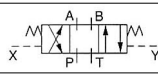
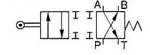
★1. No-spring detented type (2D.) and No-spring type (2N.) can be used when energised continuous for position holding.

★2. For outdoor use, protect equipment with a cover, etc., to prevent direct exposure to water.

Solenoid Operated Directional Valves

Solenoid Controlled Pilot Operated Directional Valves

Pilot/Mechanically Operated Directional Valves

Valve Type	Graphic Symbols	Max. Operat ing Pressure MPa { kgf/cm ² }	Maximum Flow L/min												Page
			1	2	5	10	20	50	100	200	500	1000	2000	5000	
Solenoid Operated Directional Valves		35 {357}	DSG-01												E-9
		31.5 {321}	DSG-03												E-22
Solenoid Controlled Pilot Operated Directional Valve		25 {255}	DSHG-03												E-35
		31.5 {321}	DSHG-04												
			DSHG-06												
			DSHG-10												
Pilot Operated Directional Valves		31.5 {321}	DHG-04 06 10												E-56
Mechanically Operated Directional Valves		25 {255}	Cam Operated (DC T _G) 01 03												E-57

■ Spool Types

Spool types are classified to the condition of flow at the neutral position.

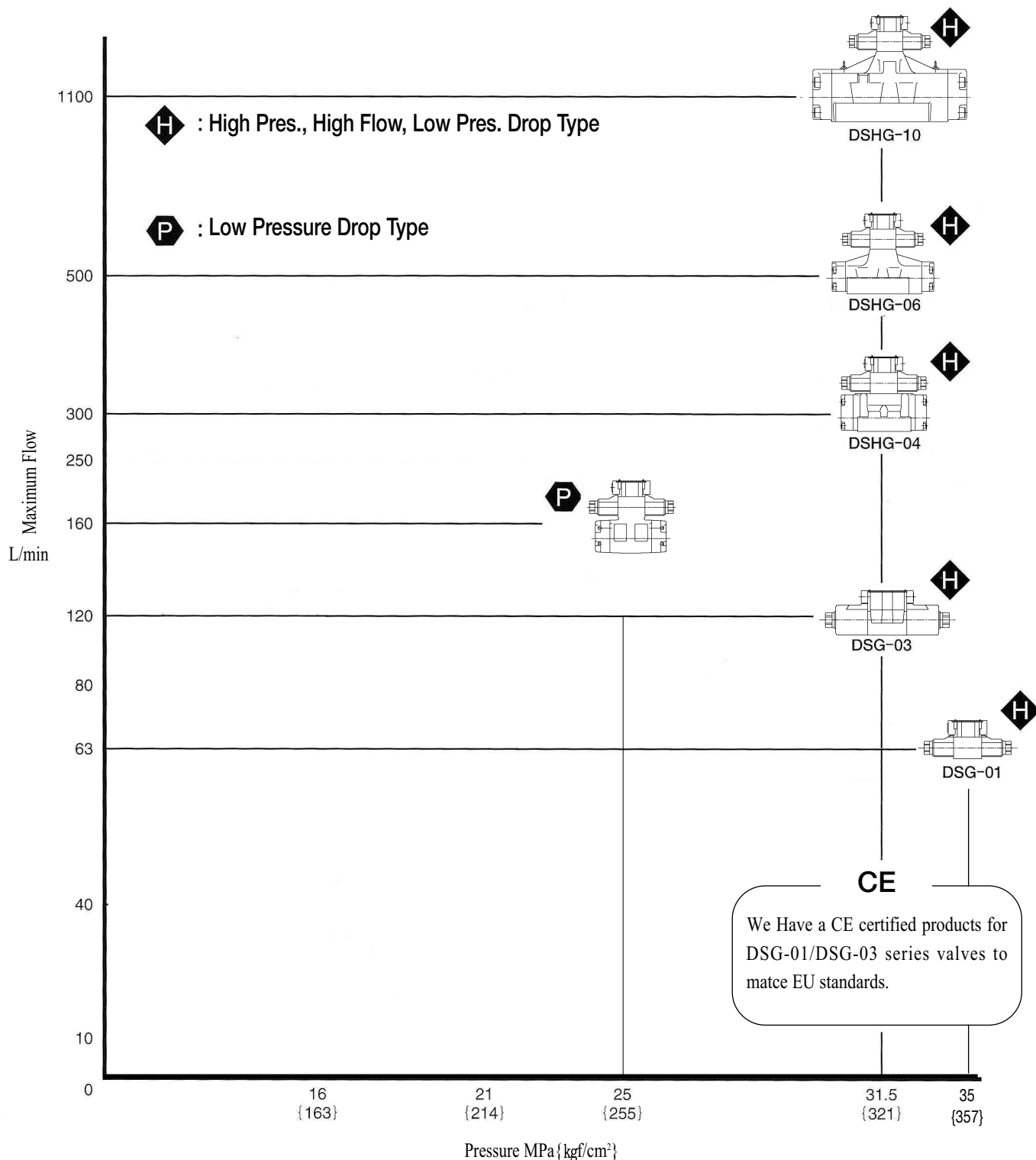
Spool Type	Graphic Symbols	Schematic Drawing (Centre Position)	Functions and Applications
"2" Closed Centre All Ports			Holds pump pressure and cylinder position at neutral. Care should be paid if used as a 2-position type because shock occurs when each port is blocked in transit.
"3" Open Centre All Ports			Pump can be unloaded and actuator is floating at neutral. If a 2-position type is used, shock is reduced as each port is released to tank in transit.
"4" Open Centre A, B & T			Pump pressure is held and actuator is floated at neutral. 2-position type is used when system pressure is required to be held in transit. Shock during transit is less compared to spool type "2".
"40" Open Centre A, B & T Restricted Flow			In a variation of spool type "4", a restrictor is provided in A-T and B-T ports. Making it faster at stopping the actuator.
"60" Open Centre P & T Open Crossover			It is a variation of spool type "6". Shock is reduced as each port is released to tank on transit.
"8" 2-Way			Pump pressure and cylinder position is held at neutral in the same way as spool type "2". It is used as 2 way type.
"9" Open Centre B & T			Regenerative circuit is provided at neutral.
"10" Open Centre P, A & B			Prevent actuator from one direction drift by leakage of P port at neutral.
"12" Open Centre A & T			Prevent actuator from one direction drift by leakage of P port at neutral.

DIRECTIONAL CONTROLS

■ Solenoid Operated / Solenoid Controlled Operated Directional Valves

WIDE RANGE OF MODELS .

Choose the optimum valve to meet your needs from a large selection available.

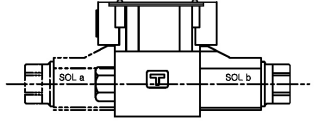
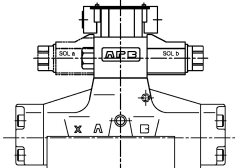


E

Solenoid Valve

Instructions

● Mounting

DSG-01 DSG-03	No-spring detented models not energised continuously must be installed so that the spool axis L-L' is horizontal. Otherwise there is no mounting restrictions.	 DSG-01/03
DSHG-03 DSHG-04 DSHG-06 DSHG-10	No-spring models not energised continuously must be installed so that the spool axis L-L' is horizontal. Otherwise there is no mounting restrictions.	 DSHG

● Energisation

1. No-Spring Type : One of two solenoids should be energised continuously to avoid malfunction.
2. On double solenoid valves do not energise both at the same time as it will result in coils burning out.

● Valve Tank Port

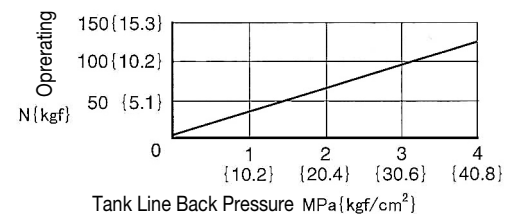
- Avoid connecting the valve tank port to a line with possible surge pressure.
- Piping end of tank line should be submerged in oil.

● Pilot Drain Port for Solenoid Controlled Pilot Operated Valve

- Avoid connecting the valve pilot drain port to a line with possible surge pressure.
- Piping end of drain should be submerged in oil.

● Operating Force by Manual Actuator

- Take care as the operating force by the manual actuator increases in proportion to the tank line back pressure. (See the graph right.)



Solenoid

■ Solenoid connector (DIN connector)

The solenoid connector is in accordance with the international standard ISO 4400 (Fluid power systems and components-Three-pin electrical plug connectors-Characteristics and requirements).

■ AC Solenoid

50-60 Hz common service solenoids do not require rewiring when the applied frequency is changed.

■ DC Solenoid (K-series Solenoid Operated Directional Valve)

These valves differ from conventional DC solenoid operated directional valves and have the following characteristics:

1. The spark between the relay contacts has been eliminated and therefore the valve can be operated by miniature relays.
2. The surge voltage is approximately 10 % of that normally experienced.
3. Time lag on de-energisation is reduced by approximately 50 %.

■ Insulation Class of Solenoid

Model numbers	Insulation Class
DSG-01 DSG-03 E-DSG-01 DSHG-03/04/06/10	Class H

■ 1/8 Solenoid Operated Directional Valves, DSG-01 Series

These are Solenoid Operated Directional Valves of high pressure, high flow and low pressure drop, the features of which can be materialized by employing a powerful wet type solenoid and the rational flow channel design.

● High Pressure & High Flow Rate

In comparison to our existing lines, both the pressure and flow of these valves are much increased.

Max. Operating Pressure: approx. 10 % increased [31.5 MPa] {357kgf/cm²}

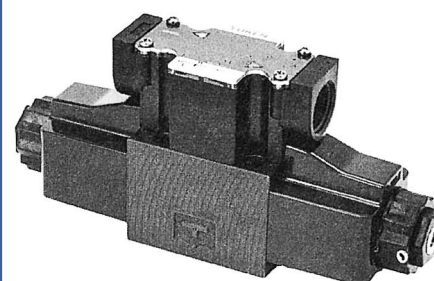
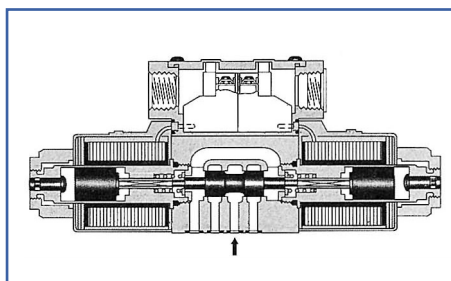
Max. Flow Rate: approx. 60 % increased [63 L/min]

● Low Pressure Drop

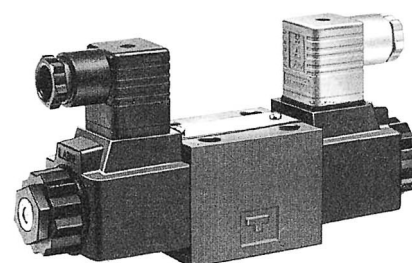
The pressure drop of these valves is reduced by 10 % from 1.0 to 0.9MPa(10.2 to 9.2kgf/cm²), in comparison to our existing lines*; the valves effectively reduce the energy consumption of the unit. {* At Flow Rate : 60L/min, Spool Type:3C2(PA)}

● Stable Operation

Due to the powerful magnetic and spring force of the solenoids, these valves exhibit a high tolerance to contaminants and especially stable operation.



TERMINAL BOX TYPE



Plug-in Connector

■ Ratings

Valve Type	Model Numbers	Max. ★ Flow L/min	Max. Operating Pressure MPa {kgf/cm ² }	Max. T-Line Back Pressure MPa {kgf/cm ² }	Max. Change over Frequency Cycle/min {min ⁻¹ }	Approx. Mass kg	
						Type	
						AC	DC
Standard Type	DSG-01-3C ※-※-80	100	35 {357}	16 {163}	240	1.9	2.2
	DSG-01-2D2-※-80						
	DSG-01-2B ※-※-80					1.45	1.6

★ The maximum flow means the limited without inducing any abnormality to the operation(changeover) of the valve.

The maximum flow differs according to the spool type and operating conditions.

Refer to the List of Spool Functions on pages E-12 to E-14 for details.

■ Sub-plate

Sub-plate Model Numbers	Thread Size (Rc, PT)	Approx. Mass kg
DSGM-01-30	1/8	0.8
DSGM-01X-30	1/4	
DSGM-01Y-30	3/8	

● Please order the sub-plate using above the model number when you see it.

The mounting surface should be used roughly 6-S after grind when you made it yourself.

■ Mounting Bolt

Soc. Hd. Cap Screw (4 pcs.)	Tightening Torque
M5 × 45L	5~7Nm {0.5~0.7kgf·m} (Applicable to working pressure more than 25 MPa : 6~7Nm {0.6~0.7kgf·m})

■ Solenoid Ratings

Valve Type	Electric source	Coil Type ^{★3}	Frequency (HZ)	Voltage (V)		Current & Power at Rated Voltage		
				Source Rating	Serviceable Range	Inrush ^{★2} (A)	Holding (A)	Power (W)
Standard Type	AC	A100	50	100	80~100	2.38	0.46	—
			60	110	100~120	2.33	0.39	
		A200	50	200	160~200	1.19	0.23	—
			60	220	200~240	1.17	0.19	
	DC (K Series)	D12	—	12	10.8~13.2	—	2.2	26
		D24		24	21.6~26.4		1.1	

★1. Inrush current in the above table show rms valves at maximum stroke.

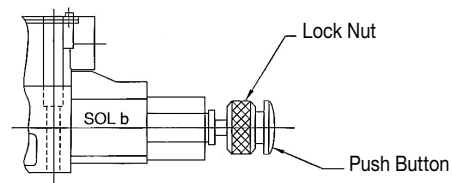
★2. There are more coil types other than the above. For details, please make inquiries.

The coil type numbers in the shaded column are handled as optional extras. In case these coils are required to be chosen, please confirm the time of delivery with us before ordering.

■ Options

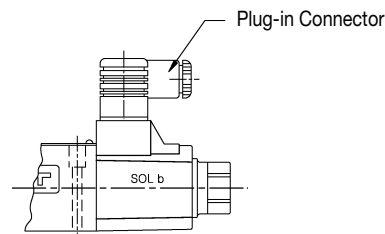
● Push Button with Lock Nut

Can be used for manual changeover of spool. The push button can be locked in the pressed condition.



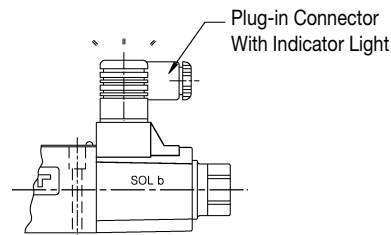
● Plug-in Connector (N)

Electrical wires are of the plug-in type which allows mounting and removal of the valve without removing connections.



● Plug-in Connector with Solenoid Indicator Light (N1)

These are the indicator light incorporated plug-in connector type solenoids. Energisation or de-energisation of the solenoid can be easily identified with the incorporated indicator light.



CSA / CE certified Products

CSA / CE certified Products are available. For details, please contact us.

DIRECTIONAL CONTROLS

Model Number Designation

	DSG	-01	-2	B	2	A	-D24	-C	-N	-80	-L
Valve Type	Series Number	Valve Size	Number of Valve Positions	Spool-Spring Arrangement	Spool Type	Special Two Position Valve(Omit if not required)	Coil Type	Manual Override	Electrical Conduit Connection	Design Number	Models with Reverse Mtg. of Solenoid
None: Standard Type	Solenoid Operated Directional Valve	01	3	C : Spring Centred	2, 3 4, 40 60, 9 11, 12	—	AC A100 A200	None: Manual Override Pin	None: Terminal Box Type N .. Plug-in Connector or Type (Option)	80	—
			2	D: No-Spring Detented	2	—	DC D12 D24	C .. Push Button and Lock Nut (Option)	N1 .. Plug-in Connector Type with Indicator Light (Option)		L
				B : Spring Offset	2 3 8	A: ★ ¹ B: ★ ¹					

★1. In case of the special two position valve, please refer to page E-15 for details.

★2. Special seals (Viton seals) are required when phosphate ester type fluids are used.
(Put "F-" before model number of valve when ordering.)

In the table above, the symbols or numbers highlighted with shade represent the optionalextras. The valves with model number having such optional extras are handles as options,therefore, please confirm the time of delivery with us before ordering.

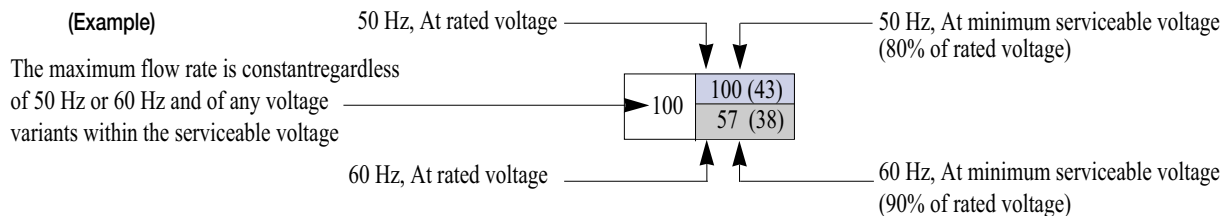


■ List of Standard Models and The Maximum Flow

● Models with AC Solenoids: DSG-01 - ※ ※ ※ -A ※

No. of Valve Positions	Spool-Spring Arrangement	Model Numbers	Graphic Symbols	Max. Flow L/min														
				Working Pressure Mpa {kgf/cm ² }					Working Pressure Mpa {kgf/cm ² }					Working Pressure Mpa {kgf/cm ² }				
				10 {102}	16 {163}	25 {255}	31.5 {321}	35 {357}	10 {102}	16 {163}	25 {255}	31.5 {321}	35 {357}	10 {102}	16 {163}	25 {255}	31.5 {321}	35 {357}
Three Positions	Spring Centred	DSG-01-3C2		100	100	100	100	100	100(43)	100(41)	80(21)	60(17)	38(15)	100(43)	100(41)	80(21)	60(17)	38(15)
		DSG-01-3C3		100(80)	100(80)	100(80)	100(77)	100(77)	70(46)	70(46)	70(46)	70(46)	70(46)	70(46)	70(46)	70(46)	70(46)	70(46)
		DSG-01-3C4		90	90	90	90(22)	35(18)	100(38)	76(28)	67(15)	57(10)	35(7)	100(38)	76(28)	67(15)	57(10)	35(7)
		DSG-01-3C40		85	85	85	80(40)	80(22)	85(40)	85(35)	85(24)	60(16)	55(12)	85(40)	85(35)	85(24)	60(16)	55(12)
		DSG-01-3C60★		40(19)	40(19)	40(18)	40(18)	40(18)	52(30)	52(30)	47(30)	47(30)	47(30)	52(30)	52(30)	47(30)	47(30)	47(30)
		DSG-01-3C9		100	100	100	100	100	20	15	10	10	8	20	15	10	10	8
		DSG-01-3C10		100	100	100(63)	100(33)	100(27)	100(50)	100(37)	100(20)	78(16)	62(13)	100(50)	100(37)	100(20)	78(16)	62(13)
		DSG-01-3C12		100	100	100(63)	100(33)	100(27)	100(50)	100(37)	100(20)	78(16)	62(13)	100(50)	100(37)	100(20)	78(16)	62(13)
Two Positions	No-Spring Detented	DSG-01-2D2		80	80	80	80	80	45	45	45(21)	45(16)	38(13)	50	50(45)	50(42)	45(40)	45(40)
											38(18)	28(13)	22(12)		50(45)	50(42)	45(40)	45(40)
	Spring Offset	DSG-01-2B2		85	85	85	85	85	20	16	16	15	13	85(63)	80(50)	63(40)	44(32)	44(32)
		DSG-01-2B3		70	70	70	70	70	50	50	50	50	50	80(70)	80(70)	80(70)	80(70)	80(70)
		DSG-01-2B8		—	—	—	—	—	26	13	13	11	10	80(50)	70(40)	60(20)	45(10)	30(10)

Notes: 1. The relation between the maximum flow in the table above and the frequency/voltage (within the serviceable voltage) is as shown below.



2. For the maximum flow rate in P → T of the valves with a ★ mark, please see page E-14

The valve models with a ★ mark are handled as options. If you choose such valves, check the time of delivery beforehand.

DIRECTIONAL CONTROLS

List of Standard Models and The Maximum Flow

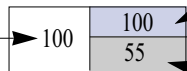
Models with DC or R Type Solenoids: DSG-01-※※※-D※

No. of Valve Positions	Spool-Spring Arrangement	Model Numbers	Graphic Symbols	Max. Flow L/min														
									P → A (Port “B” Blocked)					P → B (Port “A” Blocked)				
				Working Pressure Mpa {kgf/cm ² }					Working Pressure Mpa {kgf/cm ² }					Working Pressure Mpa {kgf/cm ² }				
				10 {102}	16 {163}	25 {255}	31.5 {321}	35 {357}	10 {102}	16 {163}	25 {255}	31.5 {321}	35 {357}	10 {102}	16 {163}	25 {255}	31.5 {321}	35 {357}
Three Positions	Spring Centred	DSG-01-3C2		100	100	100	100	100	100	45	28	25	22	100	45	28	25	22
		DSG-01-3C3		100	100	100	100	100	78	78	78	78	75	78	78	78	78	75
		DSG-01-3C4		90	90	90	50	38	100	58	38	31	29	100	58	38	31	29
		DSG-01-3C40		85	85	85	40	33	85	52	30	26	24	85	52	30	26	24
		DSG-01-3C60		32	32	32	32	32	52	44	44	44	44	52	44	44	44	44
		DSG-01-3C9		100	100	100	100	100	20	15	10	10	8	20	15	10	10	8
		DSG-01-3C10		85	85	85	80	40	100	56	36	28	24	100	56	36	28	24
		DSG-01-3C12		85	85	85	80	40	100	56	36	28	24	100	56	36	28	24
Two Positions	No-Spring Detented	DSG-01-2D2		75	75	75	75	75	45	45	40	30	27	50	50	45	45	
		70	70	70	70	70			30	25	22		45	42	40	40		
	Spring Offset	DSG-01-2B2		80	80	80	80	80	20	16	16	15	13	46	31	24	22	
		DSG-01-2B3		70	70	70	70	70	50	50	50	50	50	75	75	75	75	
		DSG-01-2B8		—	—	—	—	—	26	17	13	11	10	53	35	23	19	

Notes: 1. The relation between the maximum flow in the table above and the frequency/voltage (within the serviceable voltage) is as shown below.

(Example)

The maximum flow rate is constant regardless of any voltage variants within the serviceable voltage



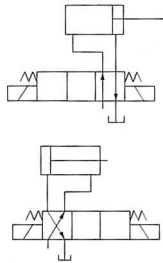
At rated voltage
[after temperature rise and saturated]
At minimum serviceable voltage
(90% of rated voltage)
[after temperature rise and saturated]

2. For the maximum flow rate in P → T of the valves with a ★ mark, please see page E-14

The valve models with a ★ mark are handled as options. If you choose such valves, check the time of delivery beforehand.

■ Maximum Flow of Centre By-Pass (P→ T)

- ★ In valve type 3C60, in case where the actuator is put on in between the cylinder ports A and B as illustrated below and where the actuator moves and suspended at its stroke end and where the valve is then shifted to the neutral position in the suspended state of the actuator, the maximum flow rates available are those as shown as the table below regardless of any voltage in the range of serviceable voltage.

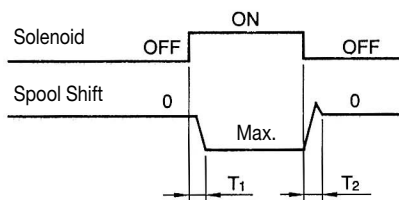


Model Number	Graphic Symbol	Max. Flow L/min				
		10 MPa {102kgf/cm ² }	16MPa {163kgf/cm ² }	25MPa {255kgf/cm ² }	31.5MPa {357kgf/cm ² }	35MPa {357kgf/cm ² }
DSG-01-3C60-A※/D※		43	40	30	25	20

■ Typical Changeover

Changeover time varies according to oil viscosity, spool type and hydraulic circuit.

● Standard Type (Without Shockless Function)



[Test Conditions]

Pressure : 16 MPa {163kgf/cm²}

Flow Rate : 31.5 L/min

Viscosity: 35mm²/s {cSt}

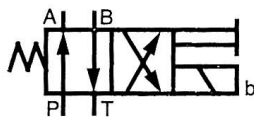
Voltage: 100 %V (After coil temperature rises and saturated)

[Result of Measurement]

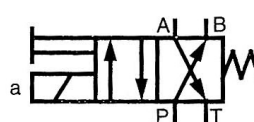
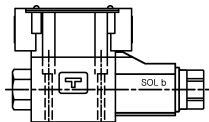
Type	Model Numbers	Time ms	
		T ₁	T ₂
Standard Type	DSG-01-3C2-A※	15	23
	DSG-01-3C2-D※	48	19

Reverse Mounting of Solenoid.

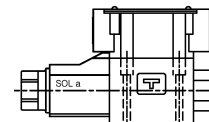
In spring offset type, it is a standard configuration that the solenoid is mounted onto the valve in the SOL b position(side). However, in this particular spool-spring arrangement, the mounting of the solenoid onto the valve in the reverse position -SOL a side- is also available. The graphic symbol for this reverse mounting is as shown below. As for the valve type 2B※A and 2B※B, please refer to the explanation under the heading of “Valves Using Neutral Position and Side Position” given below.



Standard Mtg. of Solenoid



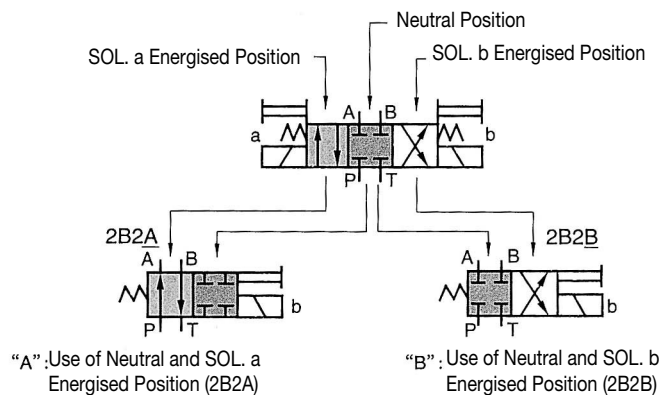
Reverse Mtg. of Solenoid



Valves Using Neutral Position and Side Position. (Special Two position Valve)

Besides the use of the standard 2-position valves aforementioned in the “List of Standard Models and Maximum Flow”, the 3-position valves also can be used as the 2-position valves using the two of their three positions. In this case, there are two kinds of the valve available. One is the valve using the neutral position and SOL a position (2B※A) and another is the valve using the neutral position and SOL b position (2B※B).

(Example) In case of Spool Type “2”



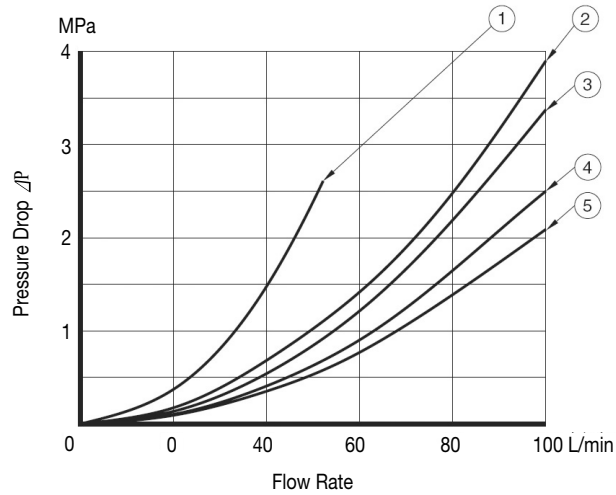
Model Numbers	Graphic Symbols	
	Standard Mtg. Type	Reverse Mtg. Type
DSG-01-2B※A		
DSG-01-2B3A		

Model Numbers	Graphic Symbols	
	Standard Mtg. Type	Reverse Mtg. Type
DSG-01-2B※B		
DSG-01-2B2B		
DSG-01-2B3B		
DSG-01-2B4B		
DSG-01-2B60B		
DSG-01-2B10B		
DSG-01-2B12B		

■ Pressure Drop

Pressure drop curves based on viscosity of 35 mm²/s and specific gravity of 0.850.

● Standard Type: DSG-01



Model Numbers	Pressure Drop Curve Number				
	P→A	B→T	P→B	A→T	P→T
DSG-01-3C2	⑤	⑤	⑤	⑤	-
DSG-01-3C3	⑥	⑥	⑥	⑥	④
DSG-01-3C4	⑤	⑥	⑤	⑥	-
DSG-01-3C40	⑤	⑤	⑤	⑤	-
DSG-01-3C60	①	①	①	①	④
DSG-01-3C9	⑥	⑤	⑥	⑤	-
DSG-01-3C10	⑤	⑥	⑤	⑤	-
DSG-01-3C12	⑤	⑤	⑤	⑥	-
DSG-01-2D2	⑤	②	⑤	②	-
DSG-01-2B2	②	②	⑤	⑤	-
DSG-01-2B3	③	③	⑤	⑥	-
DSG-01-2B8	⑤	-	⑤	-	-

● For any other viscosity, multiply the factors in the table below.

Viscosity	mm ² /s {cSt}	15	20	30	40	50	60	70	80	90	100
	SSU	77	98	141	186	232	278	324	371	417	464
Factor		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

● For any other specific gravity (G'), the pressure drop (ΔP') may be obtained from the formula below.

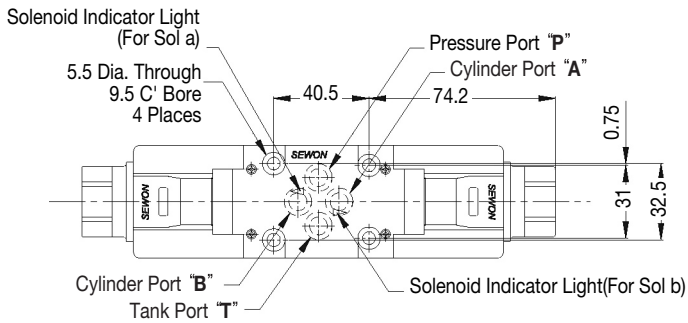
$$P' = \Delta P (G' / 0.850)$$

Mounting surface: ISO 4401-AB-03-4-A

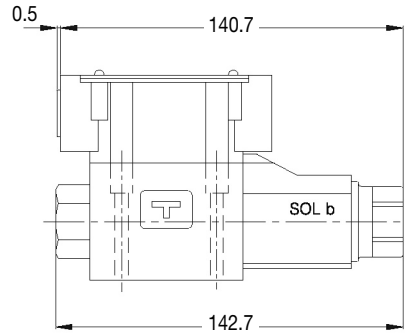
TERMINAL BOX TYPE (Standard)

Models with AC Solenoids : DSG-01 - ※※※-A※

- Double Solenoid: Spring Centred & No-Spring Detented

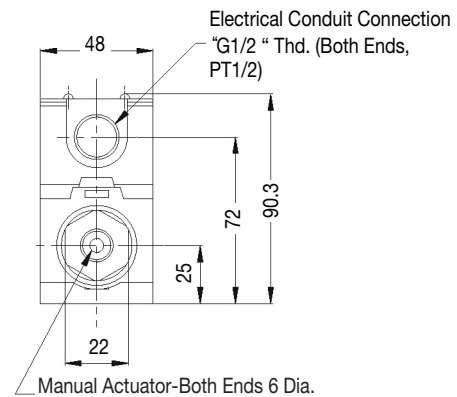
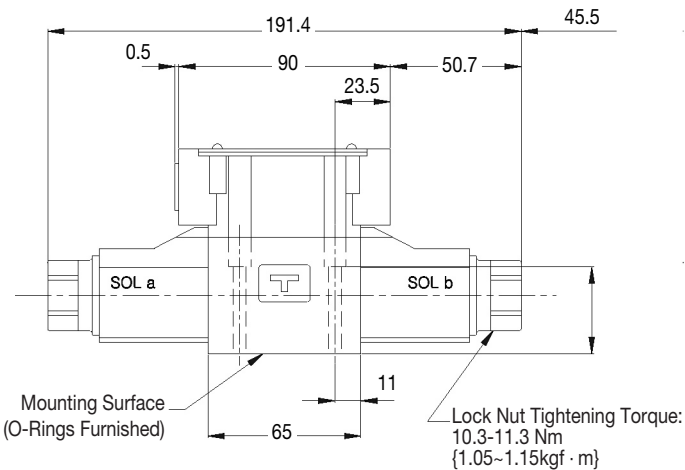


● Single Solenoid: Spring Offset



- For other dimensions, refer to "spring Centred and No-Spring Detented" models.
- Solenoid being mounted in the reverse position. SOL a side is also available.

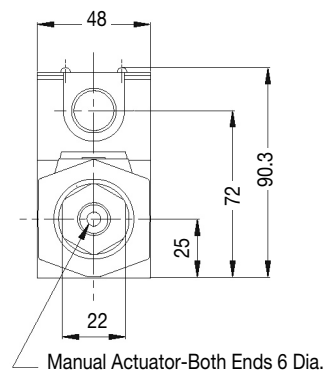
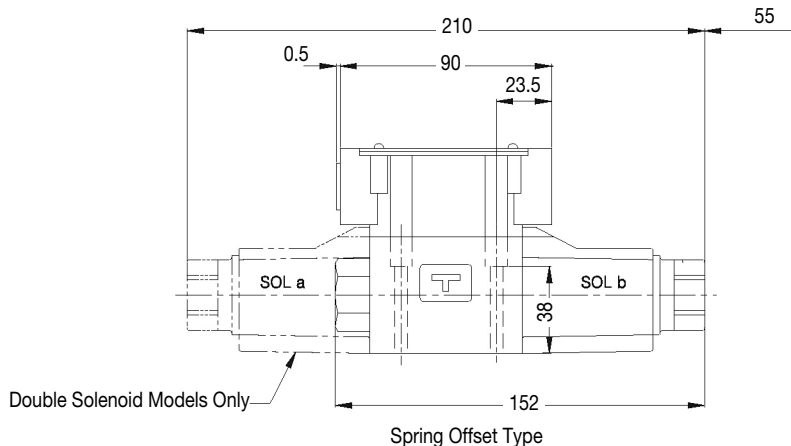
Space Needed to Remove Solenoid-Each End



Models with DC Solenoids: DSG-01 - ※※※-D※

- Spring Centred
- No-Spring Detented
- Spring Offset

Space Needed to Remove Solenoid-Each End



- For other dimensions, refer to models with AC solenoids.

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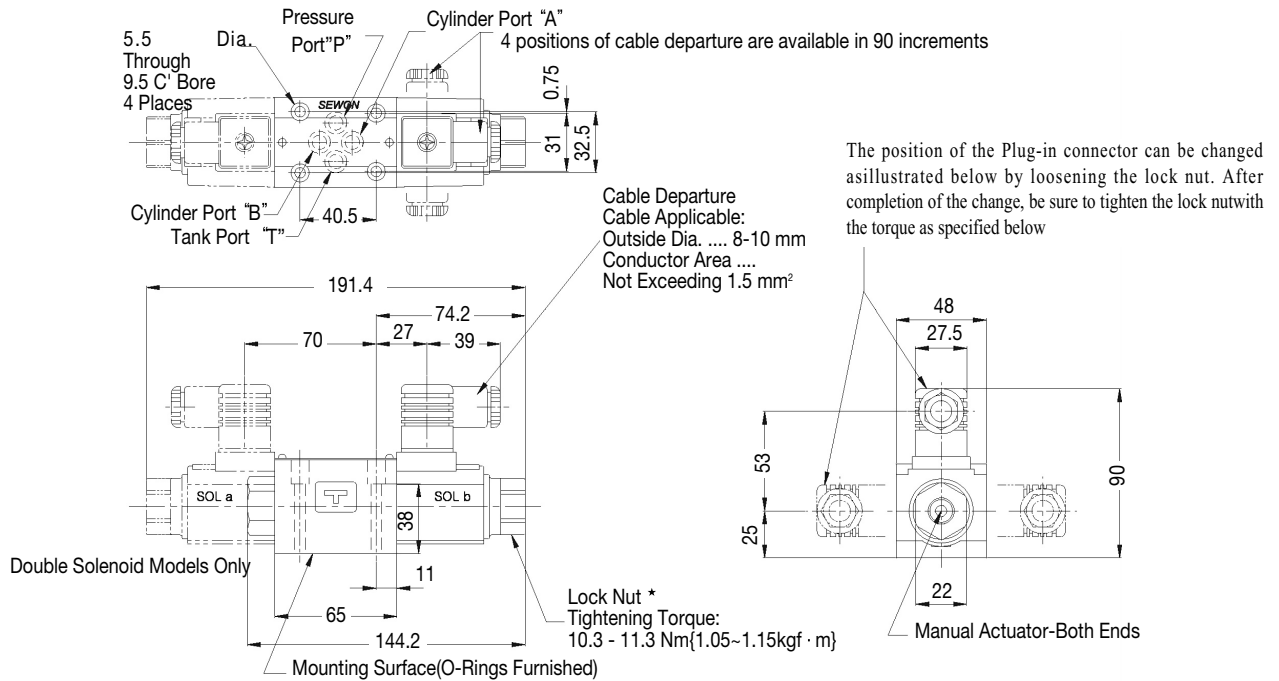


DSG-01 Series Solenoid Valves

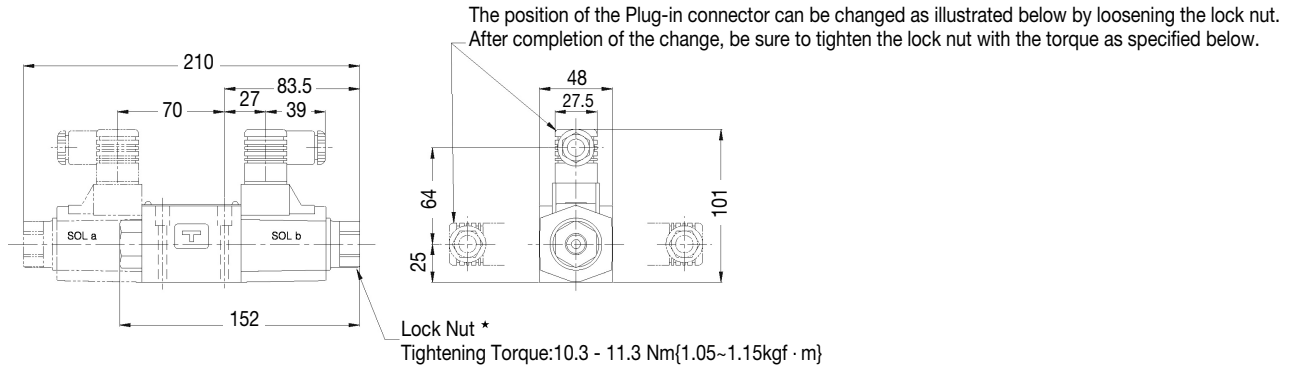
OPTION

OPTION PLUG-IN CONNECTOR. PLUG-IN CONNECTOR WITH INDICATOR LIGHT

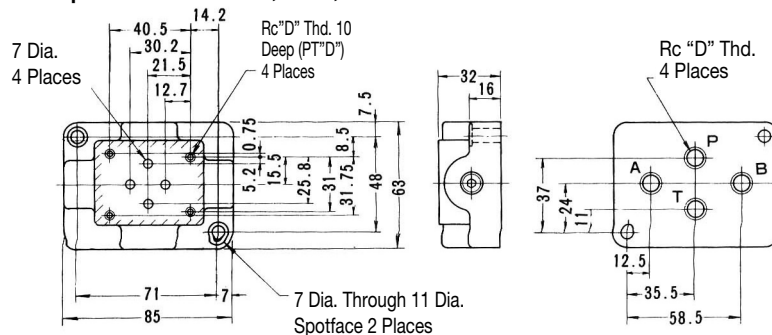
Models with AC Solenoids : DSG-01-※※※-A※-N/N1



Models with DC Solenoids : DSG-01-※※※-D※-N/N1



Sub-plate : DSGM-01, 01X, 01Y



Sub-plate Model Numbers	D
DSGM-01-30	1/8
DSGM-01X-30	1/4
DSGM-01Y-30	3/8

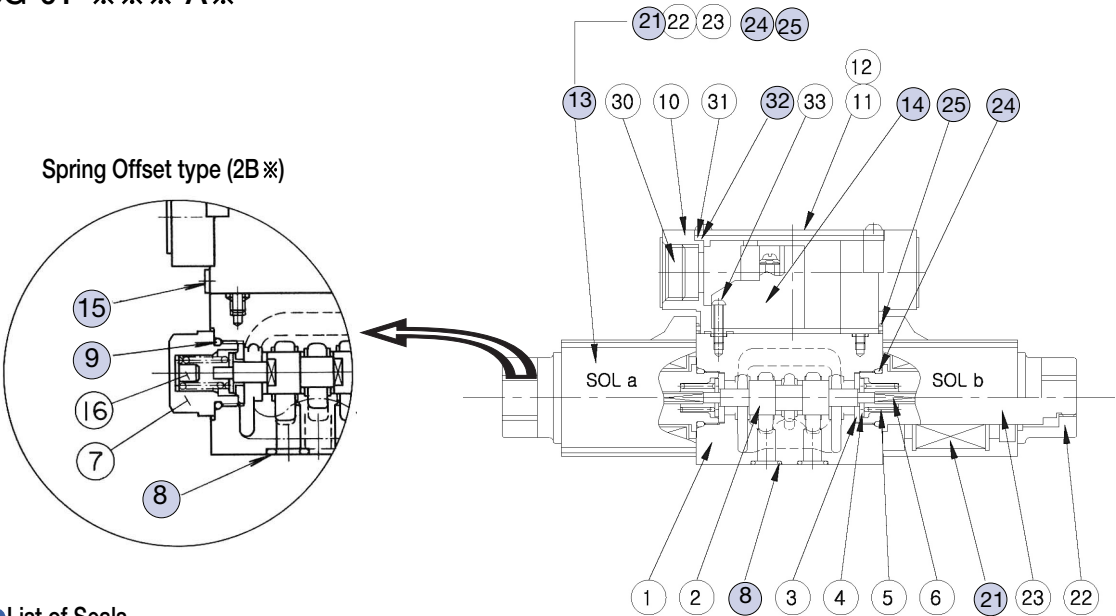
DIRECTIONAL CONTROLS



When making replacement of seals or solenoid assemblies, please do it carefully after reading through the relevant instructions in the Operator's Manual.

List of Seals & Solenoid Ass'y : Models with AC Solenoids

DSG-01-※※※-A※



List of Seals

Item	Name of Parts	Part Numbers	Qty.			Remarks
			3C※	2D※	2B※	
8	O-Ring	JIS B 2401-1B-P9	4	4	4	
9	O-Ring	JIS B 2401-1B-P18	—	—	1	
15	Packing	1790S-VK411689-3	—	—	2	
24	O-Ring	JIS B 2401-1B-P18	2	2	1	Included in Solenoid Ass'y (Item⑬)
25	O-Ring	JIS B 2401-1A-P4	4	4	2	
32	Packing	1790S-VK411686-9	1	1	1	

List of Solenoid Ass'y, Coil & Receptacle

Valve Model Numbers	⑬ Solenoid Ass'y No.★1	⑳ Coil No.	㉔ Receptacle Part No.
DSG-01-※※※-A100	SA1-100-50	1790S-VK414403-6	R1-10
DSG-01-※※※-A200	SA1-200-50	1790S-VK414405-1	

Change of supply voltage

In case AC->DC, replace the coil ㉔, solenoid Ass'y ⑬(include ㉓) and receptacle ㉔

Change of supply voltage

The supply voltage can be changed by replacing the coil ㉔only.

★1. When ordering the solenoid assembly with push button and lock, be sure to give the number in the following manner:

SA1-120-C-N-50

- Electrical Conduit Connection
N: Plug-in Connector (Omit for terminal box type)
- Manual Override
C: Push Button & Lock (Option-Omit for manual override pin)
- Coil Type (Refer to table below)

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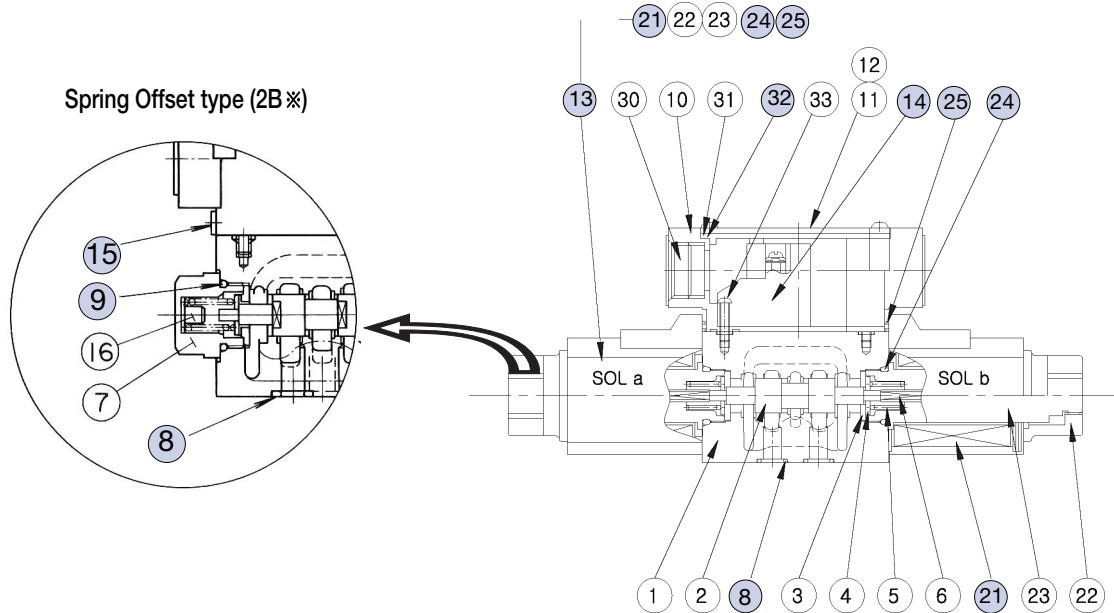
DSG-01 Series Solenoid Valves

CAUTION

When making replacement of seals or solenoid assemblies, please do it carefully after reading through the relevant instructions in the Operator's Manual.

List of Seals & Solenoid Ass'y : Models with DC Type Solenoids

DSG-01-※※※-D※



Change of supply voltage

In case DC→AC, replace the coil ②, solenoid Assy ⑬ (include ②③) and receptacle ⑭.

솔레노이드 Ass'y, 코일 일람

Valve Model Numbers	⑬ Solenoid Assy No. *1	② Coil No. *2	⑭ Receptacle Part No.
DSG-01-※※※-D12	SD1-12-50	1790S-VK414392-1	KR1-A-11
DSG-01-※※※-D24	SD1-24-50	1790S-VK414393-9	

Seal

Seals are the same as the those of the AC solenoid type. Refer to the page E-19.

★1. When ordering the solenoid assembly with push button and lock, be sure to give the number in the following manner:

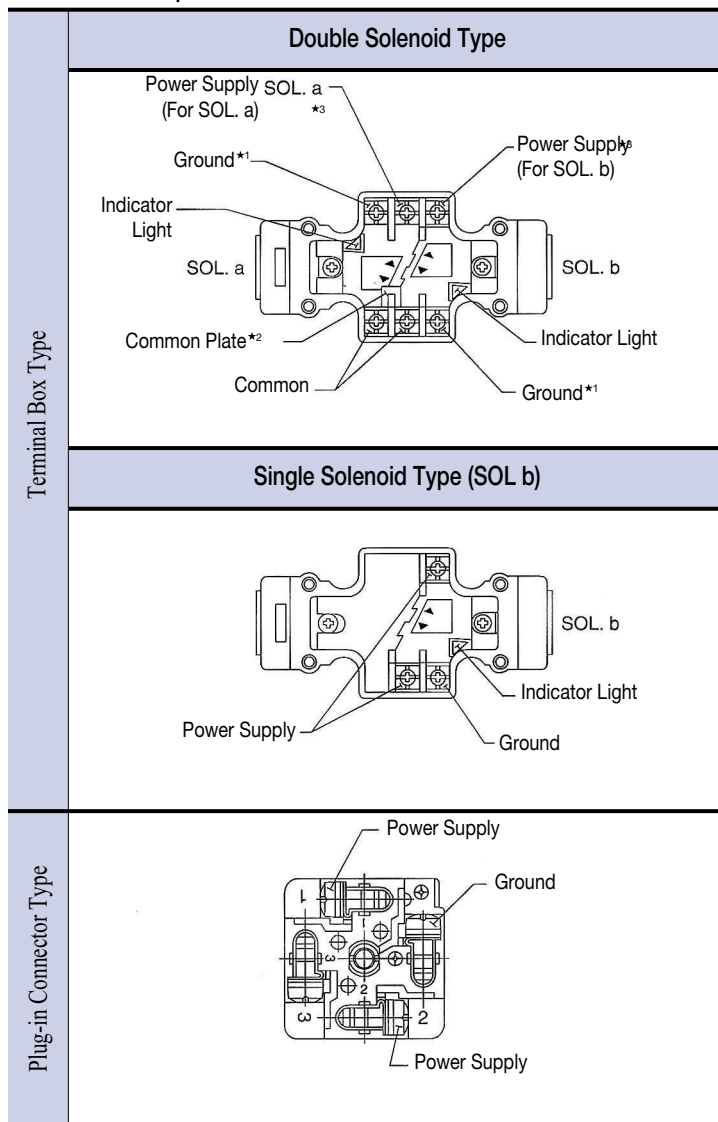
SD1-12-C-N-50

Electrical Conduit Connection
 N: Plug-in Connector(Omit for terminal box type)
 Manual Override
 C: Push Button & Lock(Option-Omit for manual override pin)
 Coil Type (Refer to table below)
 Supply Voltage D: DC

DIRECTIONAL CONTROLS

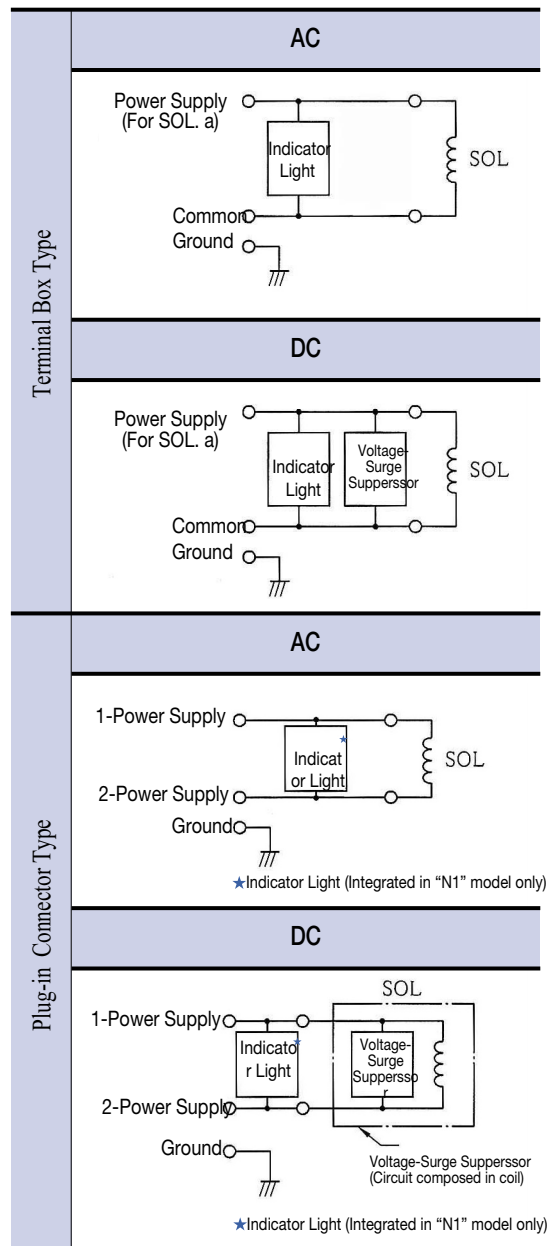
■ Wiring Method

● Details of Receptacle



- ★¹. There are two grounding terminals. You can use either one.
- ★². If you do not need the common plate, remove it.
- ★³. With DC solenoids, polarity is no question.

● Electrical Circuit



! DANGER

- Do not perform wiring while the power is on. Doing so may result in electric shock, burns or death.
- Make the wiring properly. Improper wiring will cause anirregular movement of the machine, resulting in a graveaccident.

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DSG-01 Series Solenoid Valves