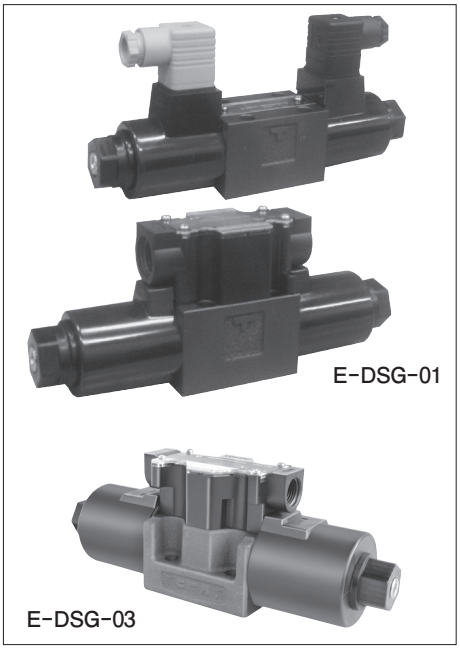
Two types of Direct Acting Type Solenoid Operated Directional Valves, E-DSG-01/03, with suppressed consumption power 5W are launched in series.



● Enable Savings In Operating Cost

Because these valves only 5W of power which enables remarkable reduction of operating cost.

Standard DSG Series
DSG-01 : 29W
DSG-03 : 38W

⇒

Low Wattage Type E-DSG Series
E-DSG-01 : 5W
E-DSG-03 : 5W

● Enable Savings In Initial Cost

Since these valves operate on only 5W, they can be driven through the output circuit of a programmed or sequence controller. This feature simplifies the electric circuitry and enables savings in initial cost.

● Low Coil Surface Temperature

These low wattage valves minimize coil surface temperature.

● CE Certified Products Available

Because E-DSG-03 models are for the European equipment market, so CE certified products are also available.
(For more details, please contact us.)

■ Specifications

Model Numbers	Max. Flow★ L/min	Max. Operating Pressure MPa	Max. T-Line Back Pressure MPa	Max. Changeover Frequency min⁻¹	Mass kg
E–DSG–01–3C✻–D✻–70	45	16	16	240	2.0
E–DSG–01–2D2–D✻–70					2.0
E–DSG–01–2B✻–D✻–70					1.5
E–DSG–03–3C✻–D✻–50	63	16	16	240	5
E–DSG–03–2D2–D✻–50					5
E–DSG–03–2B2–D✻–50					3.6

★ The maximum flow means the limited flow without inducing any abnormality to the operation (changeover) of the valve.
The maximum flow differs according to the spool type and operating conditions. For details, please refer to the "List of Standard Models" on page E-55.

■ Solenoid Ratings

Model Numbers	Electric Source	Coil Type	Voltage (V)		Current & Power at Rated Voltage	
			Source Rating	Serviceable Range	Inrush (A)	Power (W)
E–DSG–01	DC (K Series)	D24	24	21.6 - 26.4	0.22	5
E–DSG–03		D12	12	10.8 - 13.2	0.44	5
		D24	24	21.6 - 26.4	0.22	

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.

■ Sub-plates

Valve Model Numbers	Sub-plate Model Numbers	Thread Size Rc	Mass kg
E-DSG-01	DSGM-01-31	1/8	0.8
	DSGM-01X-31	1/4	
	DSGM-01Y-31	3/8	
E-DSG-03	DSGM-03-40	3/8	3
	DSGM-03X-40	1/2	
	DSGM-03Y-40	3/4	4.7

● Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.(1.6▽)

● Sub-plates are same with those for DSG 01/03 series. For dimensions, refer to pages E-31 & E-47.

■ Mounting Bolts

Mounting bolts are not available, so please order separately. For details, please refer to pages E-29 & E-44.

■ Special Electrical Conduit Connection

“M12-4 Pin Connector Type”, “Center Plug-in Connector Type” “Center Plug-in M12-4 Pin Connector Type” are available, please refer to page E-61 for details.

Model Number Designation

E–DSG	–01	–2	B	2	A	–D24	–N	–70	–L
Series Number	Valve Size	Number of Valve Positions	Spool Spring Arrangement	Spool Type	Input Only Valves Using ★1 Neutral Position & Side Position	Coil Type	Electrical Conduit Connection	Design Number	Models with Reverse Mtg. of Solenoid
E–DSG : Low Wattage (5W) Solenoid Operated Directional Valve (Sub-plate Mounting Type)	01	3	C : Spring Centered	2, 3, 4 11, 40	———	D24	None: Terminal Box Type (Standard) N : Plug-in Connector Type	70	———
		2	D : No-Spring Detented	2	———				———
			B : Spring Offset	2, 3, 8	———				L : Input only for reverse mtg. of solenoid.
				2, 4 40	A : Using Neutral Position & SOL a Energised Position B : Using Neutral Position & SOL b Energised Position				
	03	3	C : Spring Centered	2, 4	———	D12 D24	N1 : Plug-in Connector Type with Indicator Light	50	———
		2	D : No-Spring Detented	2	———				———
			B : Spring Offset	2	B : Using Neutral Position & SOL b Energised Position				L : Input only for reverse mtg. of solenoid.

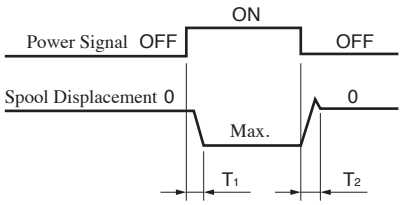
★1. In case of Valves Using Neutral Position and Side Position, please refer to page E-56 for details.
★2. Models for phosphate ester fluid are available. When phosphate ester fluid is used, prefix "F-" to the model number because the special seals (fluororubber) are required to be used.

Attention

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

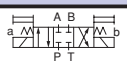
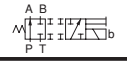
Typical Changeover Time (Example)

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



Valve Size	Model Numbers	Time ms		Test Conditions			
		T_1	T_2	Pressure MPa	Flow Rate L/min	Viscosity mm2/s	Voltage
01	E–DSG–01–3C2	125	37	16	30	30	100 %V at rated voltage (After temperature rise and saturated)
03	E–DSG–03–3C2	190	70	16	50	35	
	E–DSG–03–2B2	190	100		40		

LIst of Standard Models

Valve Size	No. of Valve Positions	Spool-Spring Arrangement	Model Numbers	Graphic Symbols	Max. Flow L/min: P → A, B → T			P → A [Port "B" Blocked]			P → B [Port "A" Blocked]		
					Working Pressure MPa			Working Pressure MPa			Working Pressure MPa		
					3.5	7	16	3.5	7	16	3.5	7	16
01	Three Positions	Spring Centered	E-DSG-01-3C2		45	45	45	45	45 30	20 15	45	45 30	20 15
			E-DSG-01-3C3		45	45	45	45	45	45	45	45	45
			E-DSG-01-3C4		45	45	45 35	45	45 30	20 15	45	45 30	20 15
			E-DSG-01-3C40		45	45	45 25	45	45 30	20 15	45	45 30	20 15
			E-DSG-01-3C11		45	45	45	16	8	3	45	25 14	9 6
	Two Positions	No-Spring Detented	E-DSG-01-2D2		40	40	40	40	30 23	20 12	40	30 23	20 12
		Spring Offset	E-DSG-01-2B2		45	45	45	30	10	9	45	20 13	12 6
			E-DSG-01-2B3		45	45 30	45 30	35	35 22	25 22	45 35	45 35	45 35
			E-DSG-01-2B8		—	—	—	16	5	2	40	25 14	9 6
03	Three Positions	Spring Centered	E-DSG-03-3C2		63	63	50	50	48 35	22 16	50	48 35	22 16
			E-DSG-03-3C4		63	63 50	30 18	50	45 32	32 22	50	45 32	32 22
	Two Positions	No-Spring Detented	E-DSG-03-2D2		63	63	50	34	34	25 20	34	34	25 20
		Spring Offset	E-DSG-03-2B2		50	50	40	16	12	10	50 35	32 18	16 10

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

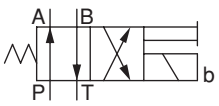
(Example)

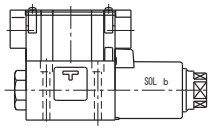
The maximum flow rate is constant regardless of any voltage variants within the serviceable voltage → 45 / 35

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

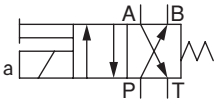
Reverse Mounting of Solenoid

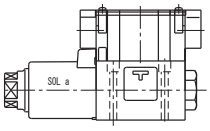
In spring offset type, it is a standard configuration that the solenoid is mounted onto the valve in the SOL b position (side). However, in this particular spool-spring arrangement, the mounting of the solenoid onto the valve in the reverse position -SOL a side- is also available. The graphic symbol 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



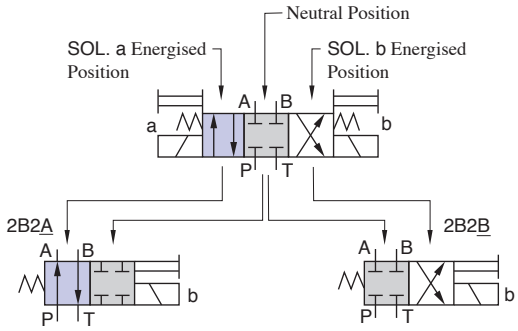


Reverse Mtg. of Solenoid

Valves Using Neutral Position and Side Position

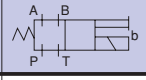
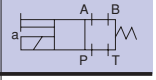
Besides the use of the standard 2-position valves aforementioned in the "List of Standard Models", the 3-position valves also can be used as the 2-position valves using the two of their three positions. In this case, there are two kinds of the valve available. One is the valve using the neutral position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

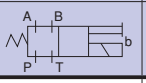
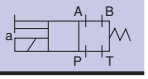
(Example) In case of Spool Type "2"



"A" : Use of Neutral and SOL. a Energised Position

"B" : Use of Neutral and SOL. b Energised Position

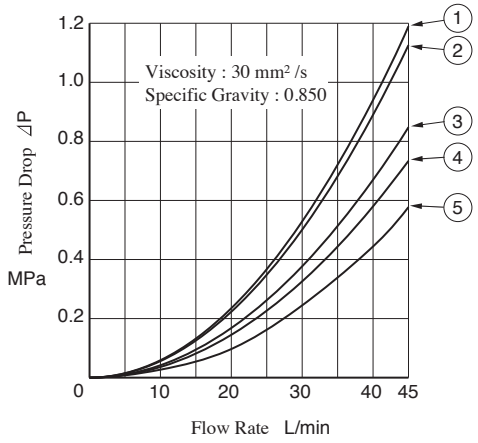
Model Numbers	Graphic Symbols	
	Standard Mtg. Type	Reverse Mtg. Type
E-DSG-01-2B＊A		
E-DSG-01-2B2A		——

Model Numbers	Graphic Symbols	
	Standard Mtg. Type	Reverse Mtg. Type
E-DSG-$\frac{01}{03}$-2B＊B		
E-DSG-$\frac{01}{03}$-2B2B		——
E-DSG-$\frac{01}{03}$-2B4B		

In the above table, the graphic symbols in mounting type highlighted with shade are optional extra, therefore, please confirm the time of delivery with us before ordering.

Pressure Drop

E-DSG-01



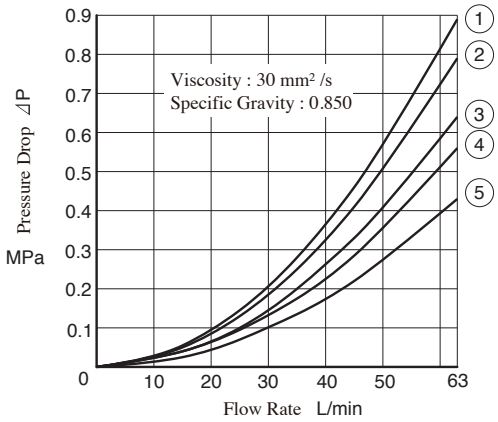
Model Numbers	Pressure Drop Curve Number			
	P→A	B→T	P→B	A→T
E–DSG–01–3C2	①	①	①	①
E–DSG–01–3C3	⑤	⑤	⑤	⑤
E–DSG–01–3C4	①	④	①	④
E–DSG–01–3C40	①	①	①	①
E–DSG–01–3C11	⑤	①	①	①
E–DSG–01–2D2	②	②	②	②
E–DSG–01–2B2	②	②	②	②
E–DSG–01–2B3	③	③	③	③
E–DSG–01–2B8	②	—	②	—

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

Viscosity mm²/s	15	20	30	40	50	60	70	80	90	100
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 (⊿P') may be obtained from the formula below.
⊿P' = ⊿P (G'/0.850)

E–DSG–03



Model Numbers	Pressure Drop Curve Number			
	P→A	B→T	P→B	A→T
E-DSG-03-3C2	③	③	③	③
E-DSG-03-3C4	③	④	③	④
E-DSG-03-2D2	①	①	⑤	⑤
E-DSG-03-2B2	②	②	③	③

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

Viscosity mm²/s	15	20	30	40	50	60	70	80	90	100
Factor	0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

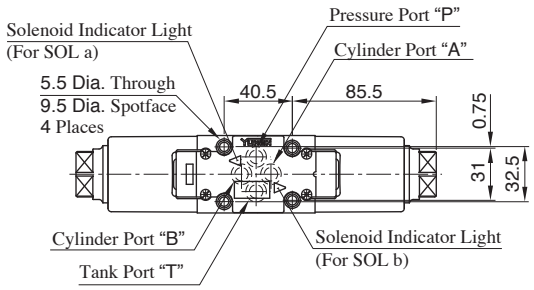
● For any other specific gravity (G'), the pressure drop (⊿P') may be obtained from the formula below.
⊿P' = ⊿P (G'/0.850)

Mounting Surface: ISO 4401-03-02-0-05

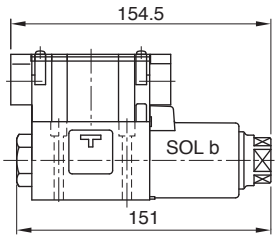
Terminal Box Type (Standard)

■ E-DSG-01-＊＊＊-D24

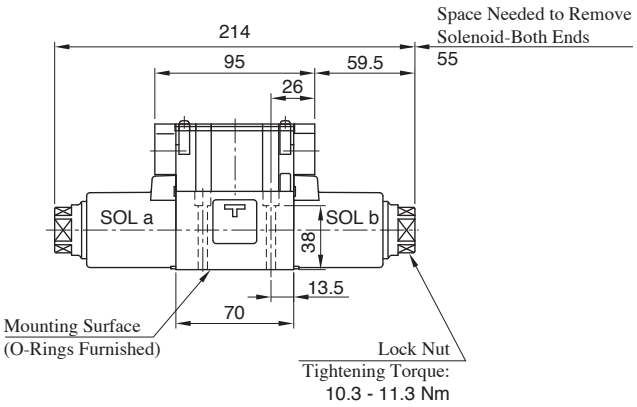
● Spring Centered & No-Spring Detented

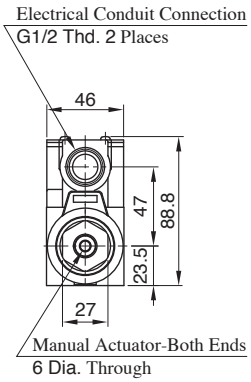


● Spring Offset



●For other dimensions, refer to the drawing left.
●Solenoid being mounted in the reverse position SOL a side is also available.

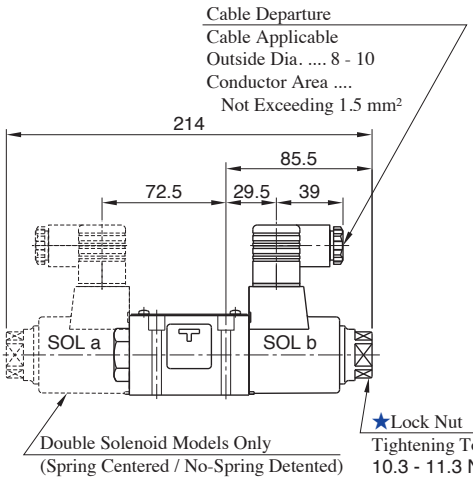


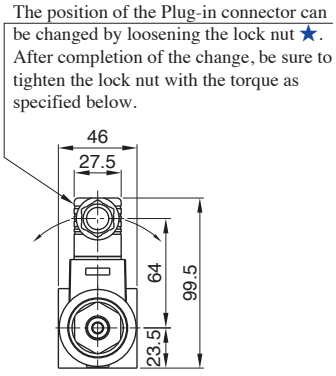


Note : Dimensions of valve mounting surface, refer to page E-31 for shared sub-plates dimensions.

Options

■ Plug-in Connector Type / Plug-in Connector with Indicator Light：E-DSG-01-＊＊＊-D24-N/N1





● For other dimensions, refer to "Terminal Box Type" drawing above.

■ E-DSG-03-＊＊＊-D＊

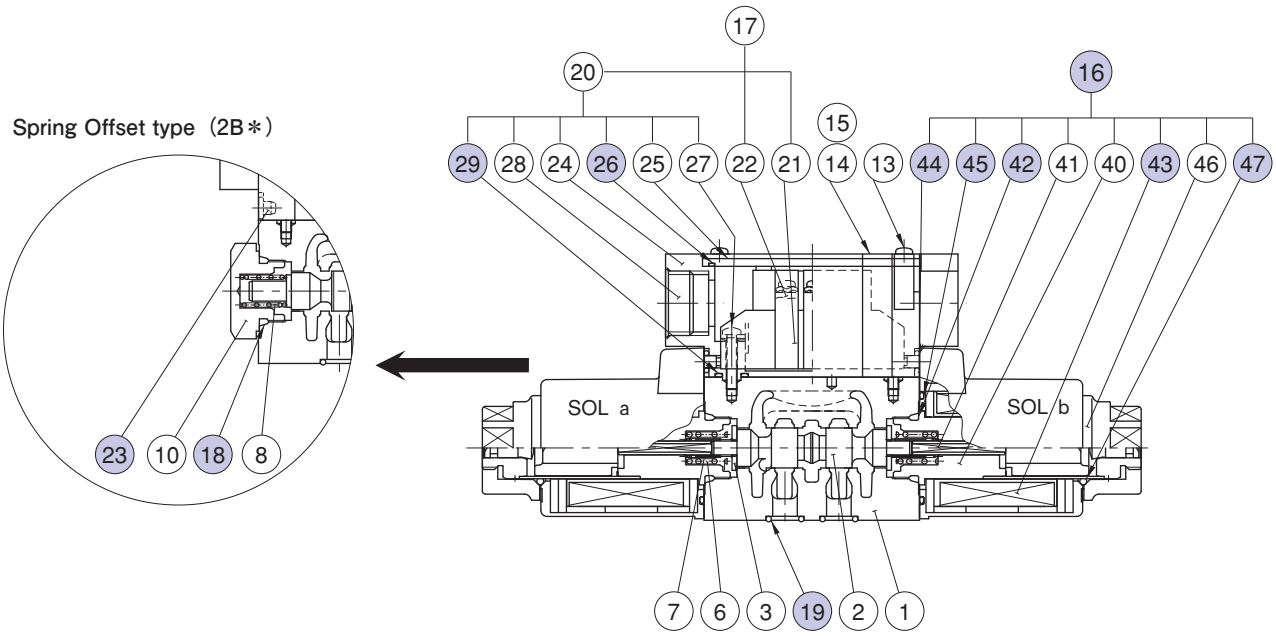
Outside dimensions are same with DSG-03 series solenoid operated directional valves, refer to pages E-47 & E-48.

Electrical Conduit Connection

As of details of receptacle and electrical circuit, please refer to page E-33 & E-49 for standard DSG-01 / DSG-03 series solenoid operated directional valves.

List of Seals and Solenoid Ass'y

E-DSG-01-＊＊＊-D24



● List of Seals

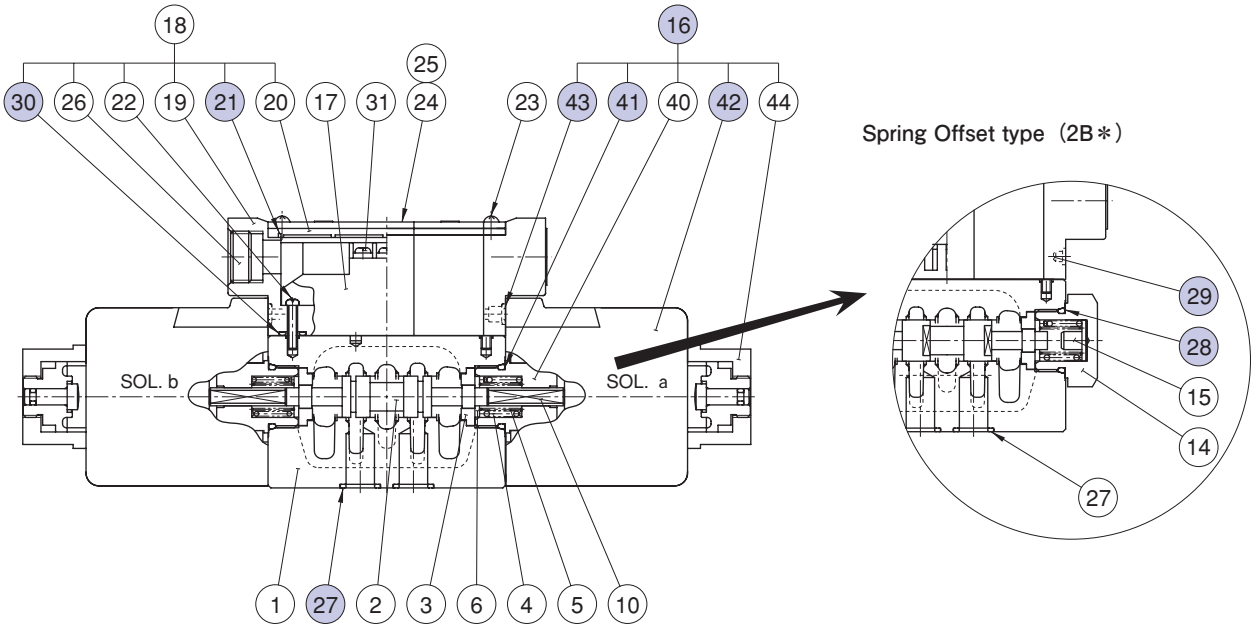
Item	Name of Parts	Part Numbers	Qty.			Remarks
			3C＊	2D＊	2B＊	
18	O-Ring	OR NBR-90 P18-N	—	—	1	
19	O-Ring	AS568-012 (NBR-90)	4	4	4	
23	Packing	1790S-VK418329-9	—	—	2	
26	Gasket	1790S-VK421290-8	1	1	1	
29	O-Ring	S 6	2	2	2	
42	O-Ring	OR NBR-90 P18-N	2	2	1	Included in Solenoid Ass'y (Item ⑯)
44	O-Ring	OR NBR-70-1 P4-N	4	4	2	
45	O-Ring	AS568-026 (NBR-70-1)	2	2	1	
47	O-Ring	OR NBR-70-1 P20-N	2	2	1	

Solenoid Ass'y, Coil Ass'y No.

Model Numbers	⑯ Solenoid Ass'y No.	㊸ Coil Ass'y No.	Remarks
E–DSG–01–＊＊＊–D24	E–SD1H–24–70	C–E–SD1H–24–70	Terminal Box Type
E–DSG–01–＊＊＊–D24–N/N1	E–SD1H–24–N–70	C–E–SD1H–24–N–70	Plug-in Connector Type / Plug-in Connector with Indicator Light

List of Seals and Solenoid Ass'y

E-DSG-03-＊＊＊-D＊



List of Seals

Item	Name of Parts	Part Numbers	Qty.			Remarks
			3C＊	2D＊	2B＊	
21	Gasket	1751S-VK418689-6	1	1	1	
27	O-Ring	AS 568-014 (NBR-90)	5	5	5	
28	O-Ring	OR NBR-90 P21-N	—	—	1	
29	Plug	1790S-VK418329-2	—	—	2	
30	O-Ring	S 6	2	2	2	
41	O-Ring	OR NBR-90 P21-N	2	2	1	Included in Solenoid Ass'y (Item ⑯)
43	O-Ring	OR NBR-70-1 P4-N	4	4	2	

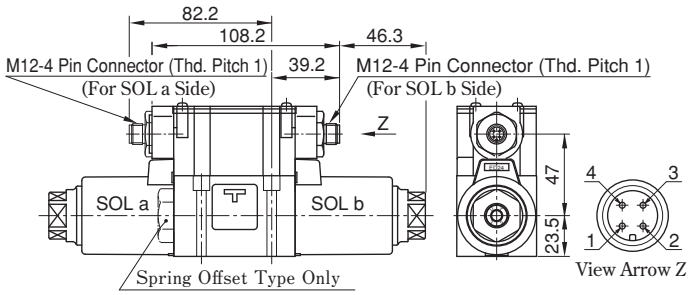
Solenoid Ass'y, Coil Ass'y No.

Model Numbers	⑯ Solenoid Ass'y No.	㊷ Coil Ass'y No.	Remarks
E–DSG–03–＊＊＊–D12	E–SD3–12–51	C–E–SD3–12–51	Terminal Box Type
E–DSG–03–＊＊＊–D24	E–SD3–24–51	C–E–SD3–24–51	
E–DSG–03–＊＊＊–D12–N/N1	E–SD3–12–N–51	C–E–SD3–12–N–51	Plug-in Connector Type / Plug-in Connector with Indicator Light
E–DSG–03–＊＊＊–D24–N/N1	E–SD3–24–N–51	C–E–SD3–24–N–51	

Special Electrical Conduit Connection

E-DSG-01-＊＊＊-D＊-M＊

M12-4 Pin Connector Type



Model Numbers

E-DSG-01-2B2-D24-M1-70-L

M12-4 Pin Connector Electrical Conduit Connection

M1：Load Side Common Minus (PNP Type) Terminal Box SOL b Side Conduit Connection

M2：Load Side Common Minus (PNP Type) Terminal Box SOL a Side Conduit Connection

M3：Load Side Common Plus (NPN Type) Terminal Box SOL b Side Conduit Connection

M4：Load Side Common Plus Terminal Box SOL a Side Conduit Connection

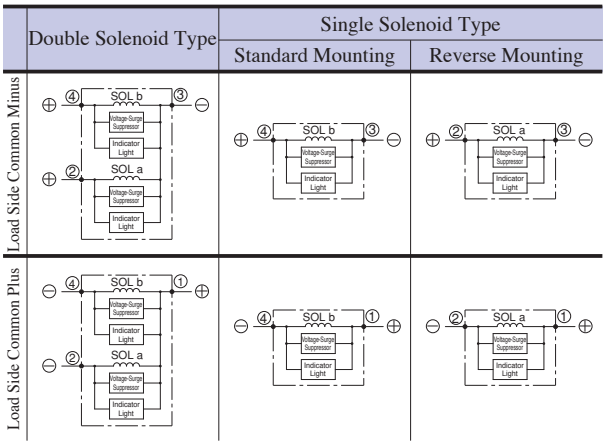
● For other dimensions, refer to page E-58 for Standard Terminal Box Type.

● For other items, refer to page E-54 for Standard Model Number Designation.

Pin No.

	Double Solenoid Type		Single Solenoid Type (Standard Mounting)		Single Solenoid Type (Reverse Mounting)	
Terminal	Common Minus PNP (Source)	Common Plus NPN (Sink)	Common Minus PNP (Source)	Common Plus NPN (Sink)	Common Minus PNP (Source)	Common Plus NPN (Sink)
①	Unused	Common(+)	Unused	Common(+)	Unused	Common(+)
②	SOL a	SOL a	Unused	Unused	SOL a	SOL a
③	Common(-)	Unused	Common(-)	Unused	Common(-)	Unused
④	SOL b	SOL b	SOL b	SOL b	Unused	Unused
Connector Departure Direction	M1: SOL b Side M2: SOL a Side	M3: SOL b Side M4: SOL a Side	M1: SOL b Side M2: Plug Side	M3: SOL b Side M4: Plug Side	M1: Plug Side M2: SOL a Side	M3: Plug Side M4: SOL a Side

Connection Circuit



E-DSG-03-＊＊＊-D＊-M＊/S/S＊

M12-4 Pin Connector Type / Center Plug-in Connector Type / Center Plug-in M12-4 Pin Connector Type

Outside dimensions are same with DSG-03 series solenoid operated directional valves, refer to page E-47, E-51 & E-52.

Interchangeability in Installation between Current and New Design

E-DSG-01 model products made change from 60 design to 70 design, enables hige flow and compact.

Specifications / Characteristics

①Max. Flow：30 → 45 L/min

②Spool Type：Spool types are limited as below.

3C2, 3C3, 3C4, 3C40, 3C11, 2D2, 2B2, 2B3, 2B8

(If use neutral position and side position, please refer to page E-56.)

Standard Solenoid Type

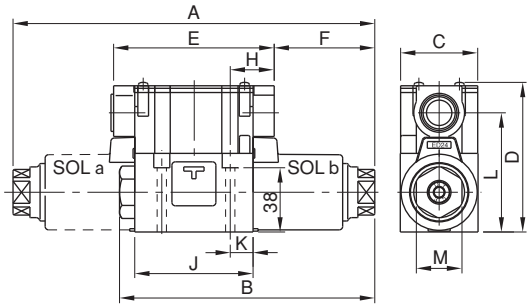
There are no changes in specifications, but coil type is limited only for D24.

Special Electrical Conduit Connection

Electrical conduit connection is limited only for M12-4 pin connector type.

Interchangeability in Mounting between Current and New Design

Position of electrical conduit connection port is changed a little, but has interchangeability in mounting.



Design Number	A	B	C	D	E	F	H	J	K	L	M
(New) 70 Design	214	151	46	88.8	95	59.5	26	70	13.5	70.5	27
(Current) 60 Design	216	155	48	90.3	90	63	23.5	65	11	72	22