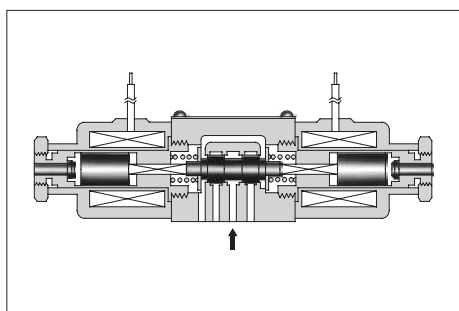


## ■ Solenoid Operated Directional Valves, DSG-005 Series

These DSG-005 series solenoid directional valves are the products newly developed as a “Mini-series”. Compared with DSG-01 series, the valve are much more compactly manufactured but enjoy a maximum operating pressure of 25 MPa (3630 PSI) and a maximum flow rate of 15 L/min (3.96 U.S.GPM), while contributing further to a space saving requirement. Moreover, using wet armature solenoids, the valves ensure the long life.



Flying Lead Wire Type



Plug-in Connector Type

### ■ Specifications

| Model Numbers          | Max. Flow★<br>L/min<br>(U.S.GPM) | Max. Operating<br>Pressure<br>MPa<br>(PSI) | Max. Tank-Line<br>Back Pressure<br>MPa<br>(PSI) | Max. Changeover<br>Frequency<br>min <sup>-1</sup><br>(Cycles/min) | Approx. Mass<br>kg<br>(lbs.) |
|------------------------|----------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------|------------------------------|
| DSG-005-3C*- *-40/4090 | 15<br>(3.96)                     | 25<br>(3630)                               | 7<br>(1020)                                     | 120                                                               | 0.5 (1.1)                    |
| DSG-005-2B*- *-40/4090 |                                  |                                            |                                                 |                                                                   | 0.4 (.9)                     |

★ 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 type and operating conditions. For details, please refer to the “List of Standard Models and Maximum Flow” on [pages 338 to 339](#).

### ■ Solenoid Rating

| Electric Source  | Coil Type | Frequency<br>(Hz) | Voltage (V)   |             | Current & Power at Rated Voltage |                |              |
|------------------|-----------|-------------------|---------------|-------------|----------------------------------|----------------|--------------|
|                  |           |                   | Source Rating | Serviceable | Inrush★ <sup>1</sup><br>(A)      | Holding<br>(A) | Power<br>(W) |
| AC               | A100      | 50                | 100           | 80 – 110    | 0.36                             | 0.16           | —            |
|                  |           | 60                |               | 90 – 120    | 0.34                             | 0.11           |              |
|                  | A200      | 50                | 200           | 160 – 220   | 0.18                             | 0.08           |              |
|                  |           | 60                |               | 180 – 240   | 0.17                             | 0.05           |              |
| DC★ <sup>2</sup> | D12       | —                 | 12            | 10.8 – 13.2 | —                                | 1.2            | 15           |
|                  | D24       |                   | 24            | 21.6 – 26.4 |                                  | 0.6            |              |

★<sup>1</sup> Inrush current in the above table shows rms values at maximum stroke.

★<sup>2</sup> The Plug-in Connector Type DC solenoid has a built-in surge absorber.  
The Flying Lead Wire Type has no surge absorber equipped. Install a surge absorber separately.

## Model Number Designation

| F-                                                                         | DSG                                         | -005       | -3                       | C                        | 2          | -D24                               | -N                                                                                                     | -40           | *               |
|----------------------------------------------------------------------------|---------------------------------------------|------------|--------------------------|--------------------------|------------|------------------------------------|--------------------------------------------------------------------------------------------------------|---------------|-----------------|
| Special Seals                                                              | Series Number                               | Valve Size | Number of Valve Position | Spool-Spring Arrangement | Spool Type | Coil Type                          | Electrical Conduit Connection                                                                          | Design Number | Design Standard |
| F:<br>Special Seals for Phosphate Ester Type Fluids (Omit if not required) | DSG:<br>Solenoid Operated Directional Valve | 005        | 3                        | C:<br>Spring Centred     | 2, 3<br>40 | AC<br>A100, A200<br>DC<br>D12, D24 | None: Flying Lead Wire Type<br>N: Plug-in Connector Type<br>N1: Plug-in Connector with Indicator Light | 40            | Refer to ★      |
|                                                                            |                                             |            | 2                        | B:<br>Spring Offset      | 2, 3       |                                    |                                                                                                        |               |                 |

★ Design Standards: None ..... Japanese Standard "JIS" and European Design Standard  
90 ..... N. American Design Standard

## Sub-plates

| Piping Size | Japanese Standard "JIS" |             | European Design Standard |             | N. American Design Standard |             | Approx. Mass<br>kg (lbs.) |
|-------------|-------------------------|-------------|--------------------------|-------------|-----------------------------|-------------|---------------------------|
|             | Sub-plate Model Numbers | Thread Size | Sub-plate Model Numbers  | Thread Size | Sub-plate Model Numbers     | Thread Size |                           |
| 1/8         | DSGM-005X-20            | Rc 1/8      | DSGM-005X-2080           | 1/8 BSP.F   | DSGM-005X-2090              | 1/8 NPT     | 0.8 (1.8)                 |
| 1/4         | DSGM-005Y-20            | Rc 1/4      | DSGM-005Y-2080           | 1/4 BSP.F   | DSGM-005Y-2090              | 1/4 NPT     | 0.8 (1.8)                 |

● 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.

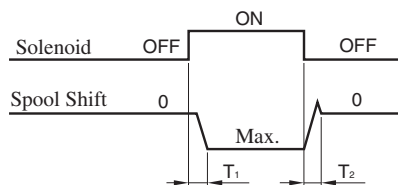
## Mounting Bolts

Four socket head cap screws in the table below are included.

| Descriptions                | Soc. Hd. Cap Screw (4 Pcs.) | Tightening Torque                   |
|-----------------------------|-----------------------------|-------------------------------------|
| Japanese Standard "JIS"     | M4 × 35 Lg.                 | 2.5 - 3.5 Nm (22.1 - 31.0 in. lbs.) |
| European Design Standard    |                             |                                     |
| N. American Design Standard | No. 8-32 UNC × 1-3/8 Lg.    |                                     |

## Typical Changeover Time (Example)

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



[Test Conditions]

Pressure: 16 MPa (2320 PSI)

Flow Rate: 7.5 L/min (1.98 U.S.GPM)

Viscosity: 30 mm<sup>2</sup>/s (141 SSU)

Voltage: Rated Voltage (After coil temperature rises and saturated)

Direction of Flow: P → A → B → T  
P → B → A → T

[Result of Measurement]

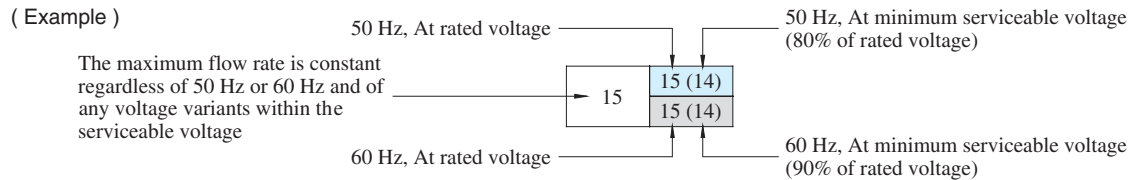
| Model Numbers  | Time ms        |                |
|----------------|----------------|----------------|
|                | T <sub>1</sub> | T <sub>2</sub> |
| DSG-005-3C2-A* | 16             | 60             |
| DSG-005-3C2-D* | 23             | 40             |
| DSG-005-2B2-A* | 14             | 45             |
| DSG-005-2B2-D* | 15             | 33             |

■ List of Standard Models and The Maximum Flow

● Models with AC Solenoids : DSG-005-\*\*\*-A\*-40/4090

| No. of Valve Position | 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     |        |        |        |
|                       |                          |               |                 | 5                    | 10   | 16   | 25   | 5                        | 10    | 16    | 25     | 5                        | 10     | 16     | 25     |
| Three Positions       | Spring Centred           | DSG-005-3C2   |                 | 15                   | 15   | 15   | 15   | 15(14)                   | 15(7) | 12(3) | 4(0.5) | 15(14)                   | 15(7)  | 12(3)  | 4(0.5) |
|                       |                          | DSG-005-3C3   |                 | 12                   | 12   | 12   | 12   | 15                       | 15    | 15    | 15     | 15                       | 15     | 15     | 15     |
|                       |                          | DSG-005-3C40  |                 | 15                   | 15   | 15   | 15   | 15(14)                   | 15(6) | 12(2) | 4(0.5) | 15(14)                   | 15(6)  | 12(2)  | 4(0.5) |
| Two Positions         | Spring Offset            | DSG-005-2B2   |                 | 14                   | 14   | 14   | 14   | 2                        | 1     | 1     | 1      | 15(14)                   | 15(10) | 13(5)  | 6(0.5) |
|                       |                          | DSG-005-2B3   |                 | 13.5                 | 13.5 | 13.5 | 13.5 | 3                        | 3     | 3     | 3      | 15                       | 15(14) | 15(11) | 15(9)  |

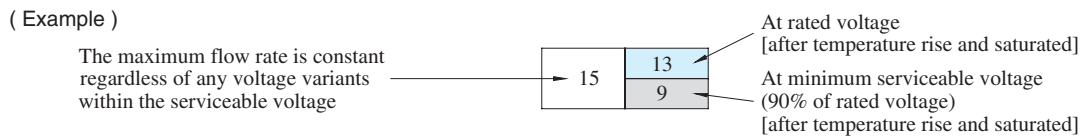
Notes: 1. The relation between the maximum flow in the table above and the frequency/voltage (within the serviceable voltage) is as shown below.



● Models with DC Solenoids : DSG-005-\*\*\*-D\*-40/4090

| No. of Valve Position | 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     |    |    |      |
|                       |                          |               |                 | 5                    | 10   | 16   | 25   | 5                        | 10  | 16  | 25  | 5                        | 10 | 16 | 25   |
| Three Positions       | Spring Centred           | DSG-005-3C2   |                 | 15                   | 15   | 15   | 15   | 15                       | 8   | 5   | 3   | 15                       | 8  | 5  | 3    |
|                       |                          | DSG-005-3C3   |                 | 15                   | 15   | 15   | 15   | 15                       | 15  | 15  | 15  | 15                       | 15 | 15 | 15   |
|                       |                          | DSG-005-3C40  |                 | 15                   | 15   | 15   | 15   | 15                       | 13  | 8   | 5   | 15                       | 13 | 8  | 5    |
| Two Positions         | Spring Offset            | DSG-005-2B2   |                 | 14                   | 14   | 14   | 14   | 8.5                      | 4.5 | 6.5 | 6.5 | 15                       | 15 | 11 | 9    |
|                       |                          | DSG-005-2B3   |                 | 13.5                 | 13.5 | 13.5 | 13.5 | 8                        | 7   | 8   | 9   | 15                       | 15 | 15 | 13.5 |

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



## List of Standard Models and The Maximum Flow

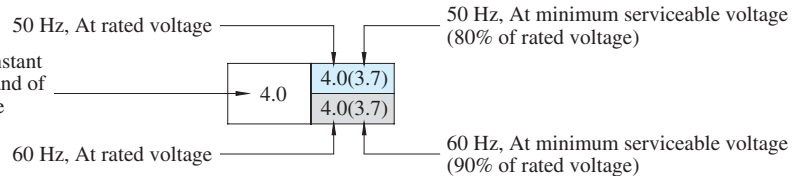
### Models with AC Solenoids : DSG-005-\*\*\*-A\*-40/4090

| No. of Valve Position | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow U.S.GPM    |      |      |      |                          |          |         |         |                          |          |          |          |
|-----------------------|--------------------------|---------------|-----------------|----------------------|------|------|------|--------------------------|----------|---------|---------|--------------------------|----------|----------|----------|
|                       |                          |               |                 | P → A → B → T        |      |      |      | P → A [Port "B" Blocked] |          |         |         | P → B [Port "A" Blocked] |          |          |          |
|                       |                          |               |                 | Working Pressure PSI |      |      |      | Working Pressure PSI     |          |         |         | Working Pressure PSI     |          |          |          |
|                       |                          |               |                 | 730                  | 1450 | 2320 | 3630 | 730                      | 1450     | 2320    | 3630    | 730                      | 1450     | 2320     | 3630     |
| Three Positions       | Spring Centred           | DSG-005-3C2   |                 | 4.0                  | 4.0  | 4.0  | 4.0  | 4.0(3.7)                 | 4.0(1.9) | 3.2(.8) | 1.1(.1) | 4.0(3.7)                 | 4.0(1.9) | 3.2(.8)  | 1.1(.1)  |
|                       |                          | DSG-005-3C3   |                 | 3.2                  | 3.2  | 3.2  | 3.2  | 4.0                      | 4.0      | 4.0     | 4.0     | 4.0                      | 4.0      | 4.0      | 4.0      |
|                       |                          | DSG-005-3C40  |                 | 4.0                  | 4.0  | 4.0  | 4.0  | 4.0(3.7)                 | 4.0(1.6) | 3.2(.5) | 1.1(.1) | 4.0(3.7)                 | 4.0(1.6) | 3.2(.5)  | 1.1(.1)  |
| Two Positions         | Spring Offset            | DSG-005-2B2   |                 | 3.7                  | 3.7  | 3.7  | 3.7  | .5                       | .3       | .3      | .3      | 4.0(3.7)                 | 4.0(2.6) | 3.4(1.3) | 1.6(.1)  |
|                       |                          | DSG-005-2B3   |                 | 3.6                  | 3.6  | 3.6  | 3.6  | .8                       | .8       | .8      | .8      | 4.0                      | 4.0(3.7) | 4.0(2.9) | 4.0(2.4) |

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 50 Hz or 60 Hz and of any voltage variants within the serviceable voltage



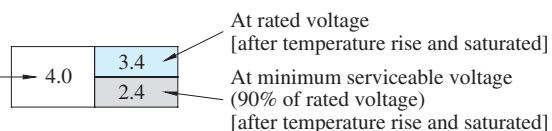
### Models with DC Solenoids : DSG-005-\*\*\*-D\*-40/4090

| No. of Valve Position | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow U.S.GPM    |      |      |      |                          |      |      |      |                          |      |      |      |
|-----------------------|--------------------------|---------------|-----------------|----------------------|------|------|------|--------------------------|------|------|------|--------------------------|------|------|------|
|                       |                          |               |                 | P → A → B → T        |      |      |      | P → A [Port "B" Blocked] |      |      |      | P → B [Port "A" Blocked] |      |      |      |
|                       |                          |               |                 | Working Pressure PSI |      |      |      | Working Pressure PSI     |      |      |      | Working Pressure PSI     |      |      |      |
|                       |                          |               |                 | 730                  | 1450 | 2320 | 3630 | 730                      | 1450 | 2320 | 3630 | 730                      | 1450 | 2320 | 3630 |
| Three Positions       | Spring Centred           | DSG-005-3C2   |                 | 4.0                  | 4.0  | 4.0  | 4.0  | 4.0                      | 2.1  | 1.3  | .8   | 4.0                      | 2.1  | 1.3  | .8   |
|                       |                          | DSG-005-3C3   |                 | 4.0                  | 4.0  | 4.0  | 4.0  | 3.2                      | 1.3  | .8   | .5   | 3.2                      | 1.3  | .8   | .5   |
|                       |                          | DSG-005-3C40  |                 | 4.0                  | 4.0  | 4.0  | 4.0  | 4.0                      | 3.4  | 2.1  | 1.3  | 4.0                      | 3.4  | 2.1  | 1.3  |
| Two Positions         | Spring Offset            | DSG-005-2B2   |                 | 3.7                  | 3.7  | 3.7  | 3.7  | 2.3                      | 1.2  | 1.7  | 1.7  | 4.0                      | 4.0  | 2.9  | 2.4  |
|                       |                          | DSG-005-2B3   |                 | 3.6                  | 3.6  | 3.6  | 3.6  | 2.1                      | 1.9  | 2.1  | 2.4  | 4.0                      | 4.0  | 4.0  | 3.6  |

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

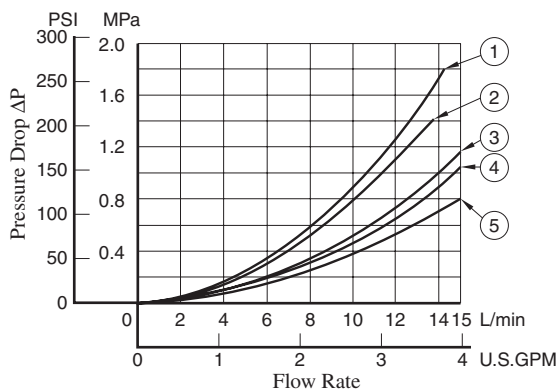
( Example )

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



## Pressure Drop

Pressure drop curves based on viscosity of 30 mm<sup>2</sup>/s (141 SSU) and specific gravity of 0.850.



| Model Numbers | Pressure Drop Curve Numbers |       |       |       |       |
|---------------|-----------------------------|-------|-------|-------|-------|
|               | P → A                       | B → T | P → B | A → T | P → T |
| DSG-005-3C2   | ④                           | ④     | ④     | ④     | —     |
| DSG-005-3C3   | ⑤                           | ⑤     | ⑤     | ⑤     | ③     |
| DSG-005-3C40  | ④                           | ④     | ④     | ④     | —     |
| DSG-005-2B2   | ①                           | ①     | ④     | ④     | —     |
| DSG-005-2B3   | ②                           | ②     | ④     | ④     | —     |

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

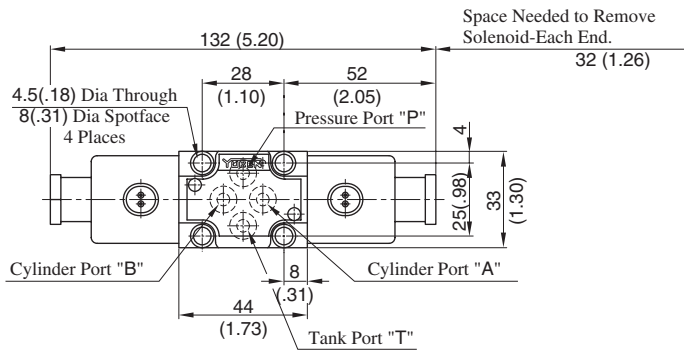
| Viscosity | mm <sup>2</sup> /s | 15   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  |
|-----------|--------------------|------|------|------|------|------|------|------|------|------|------|
|           | SSU                | 77   | 98   | 141  | 186  | 232  | 278  | 324  | 371  | 417  | 464  |
| Factor    |                    | 0.84 | 0.91 | 1.00 | 1.07 | 1.14 | 1.19 | 1.24 | 1.28 | 1.32 | 1.35 |

For any other specific gravity (G'), the pressure drop ( $\Delta P$ ) may be obtained from the formula below.

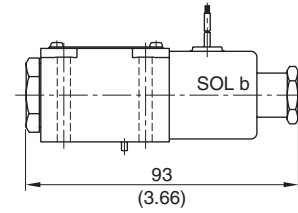
$$\Delta P' = \Delta P (G'/0.850)$$

## Flying Lead Wire Type

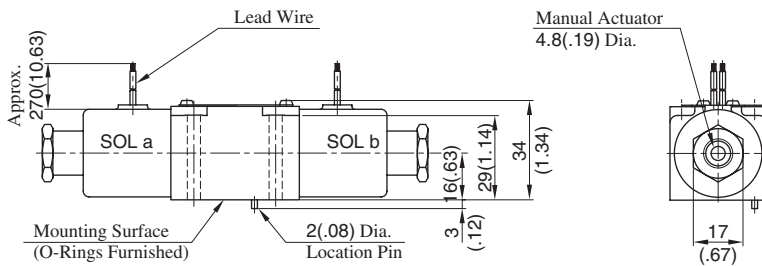
- Spring Centred: DSG-005-3C\* - A\*-D\*-40/4090



- Spring Offset: DSG-005-2B\* - A\*-D\*-40/4090



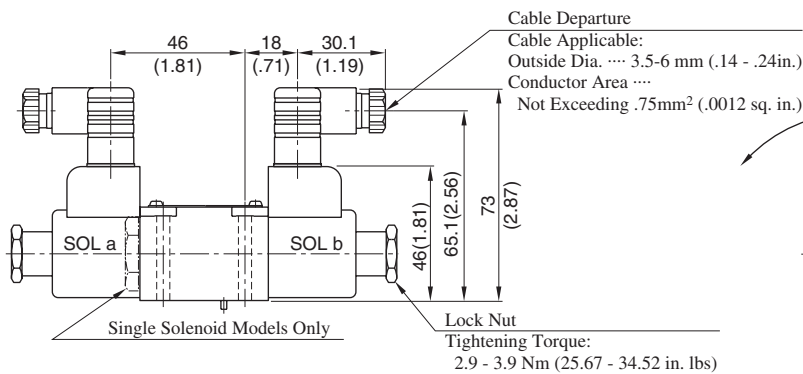
- For other dimensions, refer to "Spring Centred" type.



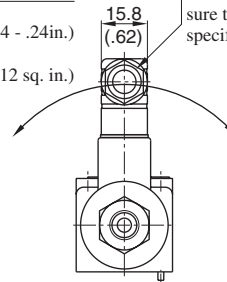
DIMENSIONS IN  
MILLIMETRES (INCHES)

## DIN Connector Type / DIN Connector with Indicator Light

- Spring Centred: DSG-005-3C\* - A\*-N/N1-40/4090
- Spring Offset: DSG-005-2B\* - A\*-N/N1-40/4090

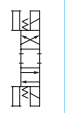


The position of the Plug-in connector can be changed as illustrated below by loosening the lock nut. After completion of the change, be sure to tighten the lock nut with the torque as specified below.



- For other dimensions, refer to "Flying Lead Wire Type".

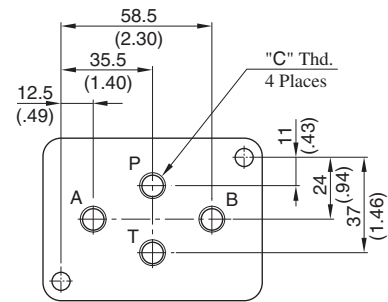
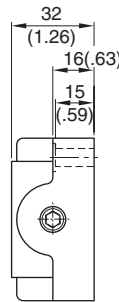
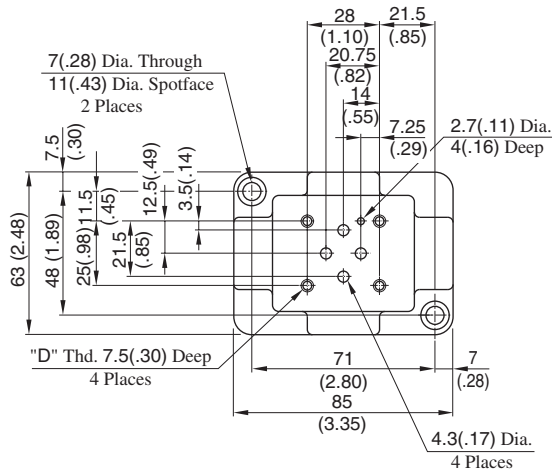
E



DSG-005 Series Solenoid  
Operated Directional Valves

■ Sub-plates: DSGM-005\* -20/2080/2090

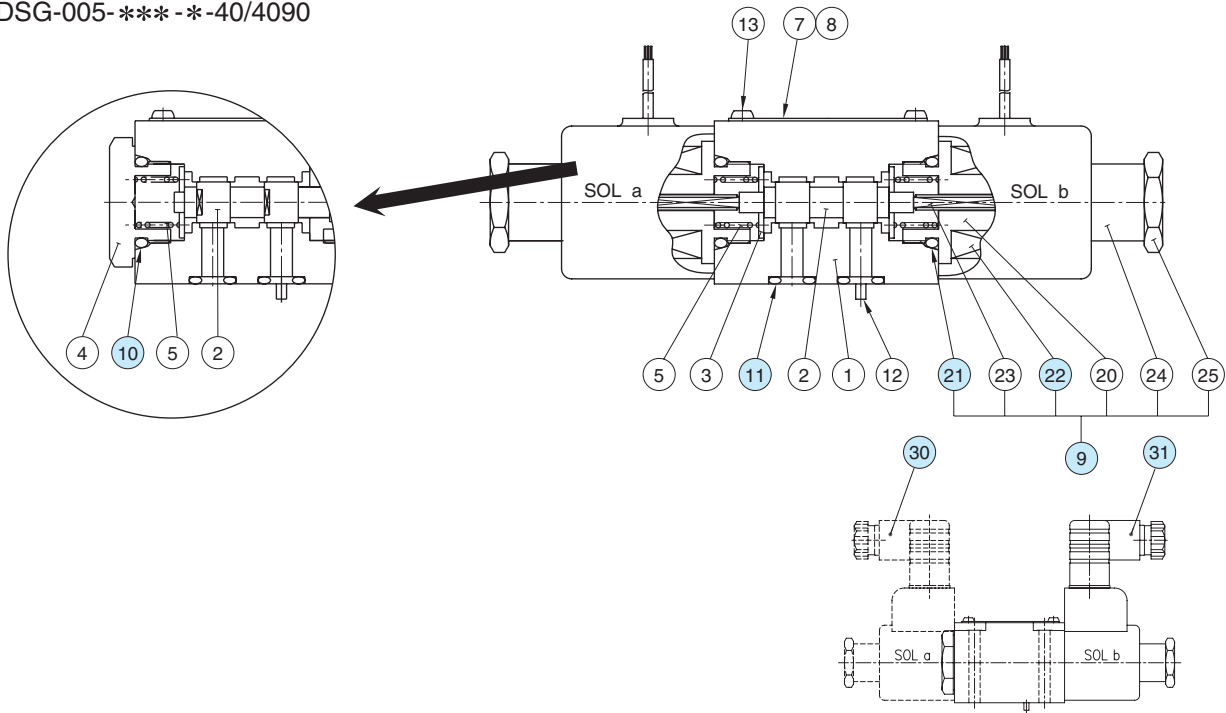
DIMENSIONS IN  
MILLIMETRES (INCHES)



| Sub-plate<br>Model Numbers | Piping Size<br>"C" Thd. | "D" Thd.     |
|----------------------------|-------------------------|--------------|
| DSGM-005X-20               | Rc 1/8                  | M4           |
| DSGM-005X-2080             | 1/8 BSP. F              |              |
| DSGM-005X-2090             | 1/8 NPT                 | No. 8-32 UNC |
| DSGM-005Y-20               | Rc 1/4                  | M4           |
| DSGM-005Y-2080             | 1/4 BSP. F              |              |
| DSGM-005Y-2090             | 1/4 NPT                 | No. 8-32 UNC |

## List of Seals, Solenoid Ass'y, Coil and Connector Ass'y

DSG-005-\*\*\*-\*-40/4090



### List of Seals

| Item | Name of Parts | Part Numbers | Qty. |     | Remarks                    |
|------|---------------|--------------|------|-----|----------------------------|
|      |               |              | 3C*  | 2B* |                            |
| 10   | O-Ring        | SO-NB-P14    | —    | 1   |                            |
| 11   | O-Ring        | SO-NB-P6     | 4    | 4   |                            |
| 21   | O-Ring        | SO-NB-P14    | 2    | 1   | Included in Solenoid Ass'y |

Note: When ordering seals, please specify the seal kit number "KS-DSG-005-40".

### Solenoid Ass'y, Coil and Connector Ass'y No.

| Valve Model Number  | ⑨ Solenoid Ass'y No. | ⑫ Coil No.      | ⑩ Connector Ass'y Part No. | ⑪ Connector Ass'y Part No. | Remarks                                |
|---------------------|----------------------|-----------------|----------------------------|----------------------------|----------------------------------------|
| DSG-005-***-A100    | SA05-100-40          | C-SA05-100-40   | —                          | —                          | Flying Lead Wire Type                  |
| DSG-005-***-A200    | SA05-200-40          | C-SA05-200-40   |                            |                            |                                        |
| DSG-005-***-D12     | SD05-12-40           | C-SD05-12-40    |                            |                            |                                        |
| DSG-005-***-D24     | SD-05-24-40          | C-SD-05-24-40   |                            |                            |                                        |
| DSG-005-***-A100-N  | SA05-100-N-40        | C-SA05-100-N-40 | TK290058-7                 | TK290058-7                 | Plug-in Connector Type                 |
| DSG-005-***-A200-N  | SA05-200-N-40        | C-SA05-200-N-40 |                            |                            |                                        |
| DSG-005-***-D12-N   | SD05-12-N-40         | C-SD05-12-N-40  |                            |                            |                                        |
| DSG-005-***-D24-N   | SD-05-24-N-40        | C-SD-05-24-N-40 |                            |                            |                                        |
| DSG-005-***-A100-N1 | SA05-100-N-40        | C-SA05-100-N-40 | TK290378-9                 | TK290378-9                 | Plug-in Connector with Indicator Light |
| DSG-005-***-A200-N1 | SA05-200-N-40        | C-SA05-200-N-40 | TK290379-7                 | TK290379-7                 |                                        |
| DSG-005-***-D12-N1  | SD05-12-N-40         | C-SD05-12-N-40  | TK290089-2                 | TK290089-2                 |                                        |
| DSG-005-***-D24-N1  | SD-05-24-N-40        | C-SD-05-24-N-40 | TK290090-0                 | TK290090-0                 |                                        |



## ■ 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→35 MPa (4570 →5080 PSI)]
- Max. T-Line Back Pressure: approx. 30 % increased [16→21 MPa (2320 →3050 PSI)]
- Max. Flow Rate: approx. 60 % increased [63→100 L/min (16.64 →26.42 U.S.GPM)]

### ● Low Pressure Drop

The pressure drop of these valves is reduced by 10 % from 1.0 to 0.9 MPa (145 to 131 PSI), in comparison to our existing lines\*; the valves effectively reduce the energy consumption of the unit.

{\* At Flow Rate: 60 L/min (15.9 U.S.GPM), Spool Type: 3C2 (P→A)}

### ● Compact & Small Mass

Despite of high pressure, high flow and low pressure drop, these valve bodies are compact and lightweight with DC double solenoids; the overall length and mass are reduced from 210 to 205 mm (8.26 to 8.07 inch) and from 2.2 to 1.85 kg (4.85 to 4.08 lbs), respectively.

### ● Shockless type available

In addition to the standard valves for high pressure and high flow, a shockless type capable of minimizing noise and vibration in piping during spool changeover is also available.

### ● Stable Operation

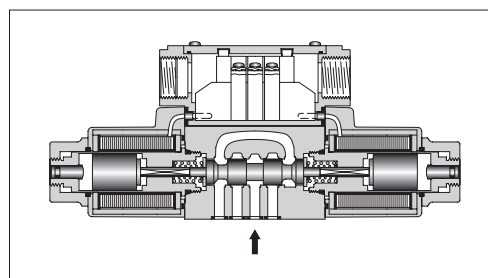
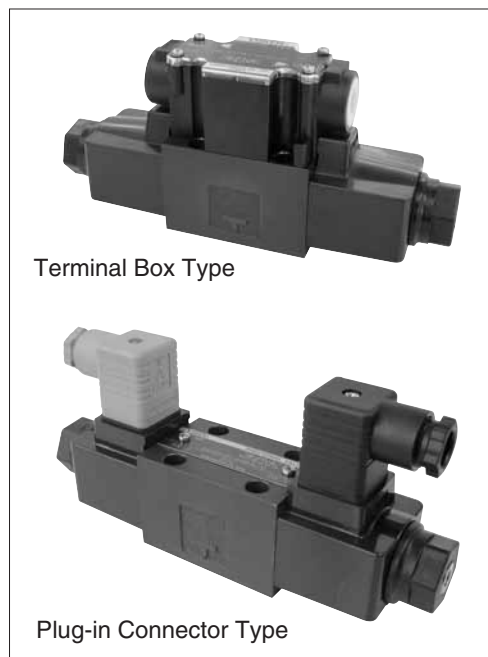
Due to the powerful magnetic and spring force of the solenoids, these valves exhibit a high tolerance to contaminants and especially stable operation.

### ● IP65-equivalent high dust- and water-proof

These valves demonstrate excellent dust- and water-proof characteristics, in compliance with I. E. C. Pub. 529. IP65 and JIS C 0920 IP65 (dust- and jet-proof type).

### ● Usable in products of various standards

These standard valves are CE certified for installation in equipment overseas. UL/CSA certified products are also available.



## ■ Specifications

| Valve Type                             | Model Numbers         | Max. Flow<br>L/min<br>(U.S.GPM) | Max. Operating<br>Pressure<br>MPa (PSI) | Max. T-Line<br>Back Pressure<br>MPa (PSI) | Max. Changeover<br>Frequency<br>Cycle/min {min <sup>-1</sup> } | Mass<br>kg<br>(lbs.) |
|----------------------------------------|-----------------------|---------------------------------|-----------------------------------------|-------------------------------------------|----------------------------------------------------------------|----------------------|
| Standard Type                          | DSG-01-3C*-70/7090    | 100<br>(26.4)                   | 35<br>(5080)                            | 21<br>(3050)                              | 300<br>(R Type Sol. Only)<br>120                               | 1.85<br>(4.08)       |
|                                        | DSG-01-2D2*-70/7090   |                                 |                                         |                                           |                                                                | 1.4(3.09)            |
|                                        | DSG-01-2B*-70/7090    |                                 |                                         |                                           |                                                                | 1.4(3.09)            |
| Shockless Type                         | S-DSG-01-3C*-70/7090  | 63<br>(16.6)                    | 25<br>(3630)                            | 21<br>(3050)                              | 120                                                            | 1.85(4.08)           |
|                                        | S-DSG-01-2B2*-70/7090 |                                 |                                         |                                           |                                                                | 1.4(3.09)            |
| Low Wattage(14W)<br>Type <sup>★1</sup> | L-DSG-01-3C*-70/7090  | 40<br>(10.6)                    | 16<br>(2320)                            | 16<br>(2320)                              | 300<br>(R Type Sol. Only)<br>120                               | 1.85<br>(4.08)       |
|                                        | L-DSG-01-2D2*-70/7090 |                                 |                                         |                                           |                                                                | 1.4(3.09)            |
|                                        | L-DSG-01-2N*-70/7090  |                                 |                                         |                                           |                                                                | 1.4(3.09)            |
|                                        | L-DSG-01-2B*-70/7090  |                                 |                                         |                                           |                                                                | 1.4(3.09)            |

★ 1. For details of L-DSG-01, please contact us.

★ 2. Maximum flow indicates a ceiling flow depends on the type of spool and operating condition, refer to the List of Spool Functions on [pages 347 to 351](#) for details.

## Sub-plate

| Piping Size | Japanese Standard "JIS " |             | European Design Standard |             | N.American Design Standard |             | Approx. Mass<br>kg (lbs.) |
|-------------|--------------------------|-------------|--------------------------|-------------|----------------------------|-------------|---------------------------|
|             | Sub-plate Model Numbers  | Thread Size | Sub-plate Model Numbers  | Thread Size | Sub-plate Model Numbers    | Thread Size |                           |
| 1/8         | DSGM-01-31               | Rc 1/8      | DSGM-01-3180             | 1/8 BSP.F   | DSGM-01-3190               | 1/8 NPT     | 0.8 (1.8)                 |
| 1/4         | DSGM-01X-31              | Rc 1/4      | DSGM-01X-3180            | 1/4 BSP.F   | DSGM-01X-3190              | 1/4 NPT     | 0.8 (1.8)                 |
| 3/8         | DSGM-01Y-31              | Rc 3/8      | —                        | —           | DSGM-01Y-3190              | 3/8 NPT     | 0.8 (1.8)                 |

- 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.

## Mounting Bolt

For socket head cap screws in the table below are included.

| Descriptions                                        | Soc. Hd. Cap Screw (4 pcs.) | Tightening Torque                                                                                                         |
|-----------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Japanese Standard "JIS"<br>European Design Standard | M5 × 45 Lg.                 | 5 - 7 Nm (43 - 60 in. lbs.)<br>Applicable to working pressure more than<br>25 MPa (3630 PSI): 6 - 7 Nm (52 - 60 in. lbs.) |
| N. American Design Standard                         | No. 10-24 UNC × 1-3/4 Lg.   |                                                                                                                           |

## Solenoid Ratings

| Valve Type     | Electric source       | Coil Type | Frequency (Hz) | Voltage (V)   |                   | Current & Power at Rated Voltage |             |           |
|----------------|-----------------------|-----------|----------------|---------------|-------------------|----------------------------------|-------------|-----------|
|                |                       |           |                | Source Rating | Serviceable Range | Inrush (A) <sup>★2</sup>         | Holding (A) | Power (W) |
| Standard Type  | AC <sup>★1</sup>      | A100      | 50             | 100           | 80 - 110          | 2.42                             | 0.51        | —         |
|                |                       |           | 60             | 100           | 90 - 120          | 2.14                             | 0.37        |           |
|                |                       |           |                | 110           |                   | 2.35                             | 0.44        |           |
|                |                       | A120      | 50             | 120           | 96 - 132          | 2.02                             | 0.42        |           |
|                |                       |           | 60             |               | 108 - 144         | 1.78                             | 0.31        |           |
|                |                       | A200      | 50             | 200           | 160 - 220         | 1.21                             | 0.25        |           |
|                |                       |           | 60             |               | 180 - 240         | 1.07                             | 0.19        |           |
|                |                       |           |                |               |                   | 1.18                             | 0.22        |           |
|                |                       | A240      | 50             | 240           | 192 - 264         | 1.01                             | 0.21        |           |
|                |                       |           | 60             |               | 216 - 288         | 0.89                             | 0.15        |           |
| Shockless Type | DC (K Series)         | D12       | —              | 12            | 10.8 - 13.2       | —                                | 2.45        | 29        |
|                |                       | D24       |                | 24            | 21.6 - 26.4       |                                  | 1.23        |           |
|                |                       | D48       |                | 48            | 43.2 - 52.8       |                                  | 0.61        |           |
|                | AC → DC Rectified (R) | R100      | 50/60          | 100           | 90 - 110          | —                                | 0.33        | 29        |
|                |                       | R200      |                | 200           | 180 - 220         |                                  | 0.16        |           |
|                |                       |           |                |               |                   |                                  |             |           |

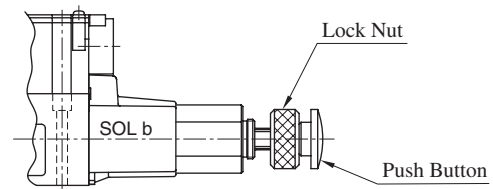
- ★1. AC solenoid is not available in shockless type.  
R type models with built-in current rectifier is recommended for shockless operation with AC power.
- ★2. Inrush current in the above table show rms values at maximum stroke.
- ★3. There are more coil types other than the above. For details, please 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

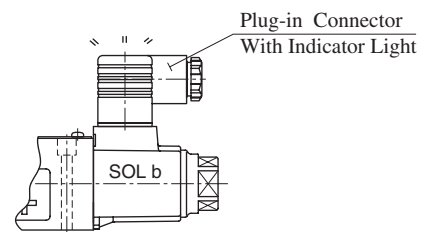
### Push Button with Lock Nut

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



### Plug-in Connector with Solenoid Indicator Light

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.



**Model Number Designation**

| F-                                                             | S-                     | DSG                                         | - 01       | -2                        | B                        | 2                                      | A                                                     | -D24                                | -C                           | -N                            | -70           | *                                                                                               | -L                                                              |                               |                                                       |   |
|----------------------------------------------------------------|------------------------|---------------------------------------------|------------|---------------------------|--------------------------|----------------------------------------|-------------------------------------------------------|-------------------------------------|------------------------------|-------------------------------|---------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------|-------------------------------------------------------|---|
| Special Seals                                                  | Shockless Type         | Series Number                               | Valve Size | Number of Valve Positions | Spool-Spring Arrangement | Spool Type                             | Special Two Position Valve<br>(Omit if not required ) | Coil Type                           | Manual Override              | Electrical Conduit Connection | Design Number | Design Standard                                                                                 | Models with Reverse Mtg. of Solenoid<br>(Omit if not required ) |                               |                                                       |   |
| F:<br>For Phosphate Ester Type Fluids<br>(Omit if not required | None:<br>Standard Type | DSG:<br>Solenoid Operated Directional Valve | 01         | 3:<br>Three Positions     | C:<br>Spring Centred     | 2, 3<br>4, 40<br>60, 9<br>10, 11<br>12 | —                                                     | AC:<br>A100<br>A120<br>A200<br>A240 | None:<br>Manual Override Pin | None:<br>Terminal Box Type    | 70            | None:<br>Japanese Std. "JIS"                                                                    | —                                                               |                               |                                                       |   |
|                                                                |                        |                                             |            | 2:<br>Two Positions       | D:<br>No-Spring Detented | 2                                      | —                                                     | DC:<br>D12<br>D24<br>D48            |                              |                               |               | N:<br>Plug-in Connector Type<br><br>N1:<br>Plug-in Connector Type with Indicator Light (Option) |                                                                 | 90:<br>N.American Design Std. |                                                       |   |
|                                                                |                        |                                             |            |                           | B:<br>Spring Offset      | 2<br>3<br>8                            | A <sup>*1</sup><br>B <sup>*1</sup>                    | R:<br>(AC→DC)<br>R100<br>R200       |                              |                               |               |                                                                                                 |                                                                 |                               | None:<br>Japanese Std. "JIS" and European Design Std. | L |
|                                                                |                        |                                             |            |                           | 3:<br>Three Positions    | C:<br>Spring Centred                   | 2<br>4                                                | —                                   |                              |                               |               |                                                                                                 |                                                                 |                               |                                                       |   |
|                                                                |                        |                                             |            | 2:<br>Two Positions       | B:<br>Spring Offset      | 2                                      | —                                                     | R:<br>(AC→DC)<br>R100<br>R200       |                              |                               |               | L                                                                                               |                                                                 |                               |                                                       |   |
|                                                                |                        |                                             |            | S:<br>Shockless Type      |                          |                                        |                                                       |                                     |                              |                               |               |                                                                                                 |                                                                 |                               |                                                       |   |

★1. In case of the special two position valve, please refer to [page 352](#) for details.

★2. N1 is not available for R type solenoids.

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 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      |         |         |         |         |                             |         |         |        |        |                             |         |         |        |        |
|------------------------|--------------------------|---------------|-----------------|----------------------|---------|---------|---------|---------|-----------------------------|---------|---------|--------|--------|-----------------------------|---------|---------|--------|--------|
|                        |                          |               |                 | P → A → B → T        |         |         |         |         | P → A<br>[Port "B" Blocked] |         |         |        |        | P → B<br>[Port "A" Blocked] |         |         |        |        |
|                        |                          |               |                 |                      |         |         |         |         |                             |         |         |        |        |                             |         |         |        |        |
|                        |                          |               |                 | Working Pressure MPa |         |         |         |         | Working Pressure MPa        |         |         |        |        | Working Pressure MPa        |         |         |        |        |
|                        |                          |               |                 | 10                   | 16      | 25      | 31.5    | 35      | 10                          | 16      | 25      | 31.5   | 35     | 10                          | 16      | 25      | 31.5   | 35     |
| 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) | 57(38)                      | 53(31)  | 29(17)  | 19(10) | 13(9)  | 57(38)                      | 53(31)  | 29(17)  | 19(10) | 13(9)  |
|                        |                          | DSG-01-3C4    |                 | 90                   | 90      | 90      | 90(22)  | 35(18)  | 90(63)                      | 90(63)  | 45(30)  | 45(30) | 45(30) | 45(30)                      | 45(30)  | 45(30)  | 45(30) | 45(30) |
|                        |                          | 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★  |                 | 43(23)               | 43(23)  | 42(23)  | 42(23)  | 42(23)  | 54(32)                      | 54(32)  | 52(32)  | 52(32) | 52(32) | 54(32)                      | 54(32)  | 52(32)  | 52(32) | 52(32) |
|                        |                          | 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-01-3C11◆  |                 | 100                  | 100     | 100     | 100     | 100     | 23                          | 20      | 13      | 10     | 5      | 100(65)                     | 85(52)  | 72(45)  | 65(34) | 60(27) |
|                        |                          | 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) |
|                        |                          |               |                 |                      |         |         |         |         |                             |         | 36(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                          | 17      | 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.

( Example )

The maximum flow rate is constant regardless of 50 Hz or 60 Hz and of any voltage variants within the serviceable voltage

50 Hz, At rated voltage

60 Hz, At rated voltage

|     |          |
|-----|----------|
| 100 | 100 (43) |
| 57  | 57 (38)  |

50 Hz, At minimum serviceable voltage (80% of rated voltage)

60 Hz, At minimum serviceable voltage (90% of rated voltage)

2. For the maximum flow rate in P → T of the valves with a ★ mark, please see [page 351](#).

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

■ List of Standard Models and The Maximum Flow

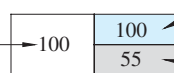
● Models with DC or R Type Solenoids: DSG-01-\*\*\*-D\*/R\*

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow L/min      |     |     |      |     |                             |    |    |      |    |                             |    |    |      |    |
|------------------------|--------------------------|---------------|-----------------|----------------------|-----|-----|------|-----|-----------------------------|----|----|------|----|-----------------------------|----|----|------|----|
|                        |                          |               |                 | P → A → B → T        |     |     |      |     | P → A<br>[Port "B" Blocked] |    |    |      |    | P → B<br>[Port "A" Blocked] |    |    |      |    |
|                        |                          |               |                 |                      |     |     |      |     |                             |    |    |      |    |                             |    |    |      |    |
|                        |                          |               |                 | Working Pressure MPa |     |     |      |     | Working Pressure MPa        |    |    |      |    | Working Pressure MPa        |    |    |      |    |
|                        |                          |               |                 | 10                   | 16  | 25  | 31.5 | 35  | 10                          | 16 | 25 | 31.5 | 35 | 10                          | 16 | 25 | 31.5 | 35 |
| 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  | 65  | 40   | 33  | 85                          | 52 | 30 | 26   | 24 | 85                          | 52 | 30 | 26   | 24 |
|                        |                          | DSG-01-3C60   |                 | 50                   | 50  | 50  | 50   | 50  | 66                          | 66 | 66 | 66   | 66 | 66                          | 66 | 66 | 66   | 66 |
|                        |                          | 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-01-3C11   |                 | 100                  | 100 | 100 | 100  | 100 | 23                          | 20 | 13 | 10   | 5  | 100                         | 60 | 40 | 36   | 32 |
|                        |                          | DSG-01-3C12   |                 | 85                   | 85  | 85  | 80   | 40  | 100                         | 56 | 36 | 28   | 24 | 100                         | 56 | 36 | 28   | 24 |
|                        |                          |               |                 |                      |     | 35  | 23   | 20  | 74                          | 43 | 28 | 20   | 19 | 74                          | 43 | 28 | 20   | 19 |
| Two Positions          | No-Spring Detented       | DSG-01-2D2    |                 | 75                   | 75  | 75  | 75   | 75  | 45                          | 45 | 40 | 30   | 27 | 50                          | 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   | 22 |
|                        |                          | DSG-01-2B3    |                 | 70                   | 70  | 70  | 70   | 70  | 50                          | 50 | 50 | 50   | 50 | 75                          | 75 | 75 | 75   | 75 |
|                        |                          | DSG-01-2B8    |                 | —                    | —   | —   | —    | —   | 26                          | 17 | 13 | 11   | 10 | 53                          | 35 | 23 | 19   | 17 |
|                        |                          |               |                 |                      |     |     |      |     |                             |    |    |      |    | 35                          | 30 | 17 | 13   | 12 |

Notes: 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



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 351](#).

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

## List of Standard Models and The Maximum Flow

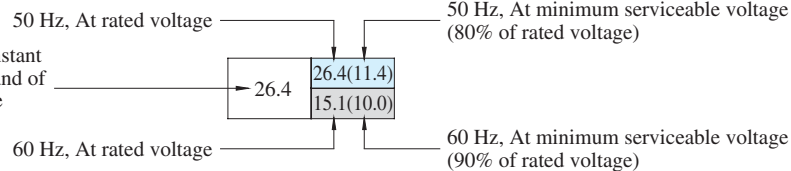
### Models with AC Solenoids: DSG-01-\*\*\*-A\*

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow U.S.GPM    |            |            |            |            |                             |            |            |            |            |                             |            |            |            |            |
|------------------------|--------------------------|---------------|-----------------|----------------------|------------|------------|------------|------------|-----------------------------|------------|------------|------------|------------|-----------------------------|------------|------------|------------|------------|
|                        |                          |               |                 | P → A → B → T        |            |            |            |            | P → A<br>[Port "B" Blocked] |            |            |            |            | P → B<br>[Port "A" Blocked] |            |            |            |            |
|                        |                          |               |                 |                      |            |            |            |            |                             |            |            |            |            |                             |            |            |            |            |
|                        |                          |               |                 | Working Pressure PSI |            |            |            |            | Working Pressure PSI        |            |            |            |            | Working Pressure PSI        |            |            |            |            |
|                        |                          |               |                 | 1450                 | 2320       | 3630       | 4570       | 5080       | 1450                        | 2320       | 3630       | 4570       | 5080       | 1450                        | 2320       | 3630       | 4570       | 5080       |
| Three Positions        | Spring Centred           | DSG-01-3C2    |                 | 26.4                 | 26.4       | 26.4       | 26.4       | 26.4       | 26.4(11.4)                  | 26.4(10.8) | 21.1(5.6)  | 15.9(4.5)  | 10.0(4.0)  | 26.4(11.4)                  | 26.4(10.8) | 21.1(5.6)  | 15.9(4.5)  | 10.0(4.0)  |
|                        |                          | DSG-01-3C3    |                 | 26.4(21.1)           | 26.4(21.1) | 26.4(21.1) | 26.4(21.1) | 26.4(21.1) | 18.5(12.2)                  | 18.5(12.2) | 18.5(12.2) | 18.5(12.2) | 18.5(12.2) | 18.5(12.2)                  | 18.5(12.2) | 18.5(12.2) | 18.5(12.2) | 18.5(12.2) |
|                        |                          | DSG-01-3C4    |                 | 23.8                 | 23.8       | 23.8       | 23.8(5.8)  | 9.2(4.8)   | 26.4(10.0)                  | 20.1(7.4)  | 17.7(4.0)  | 15.1(2.6)  | 9.2(1.8)   | 26.4(10.0)                  | 20.1(7.4)  | 17.7(4.0)  | 15.1(2.6)  | 9.2(1.8)   |
|                        |                          | DSG-01-3C40   |                 | 22.5                 | 22.5       | 22.5       | 21.1(10.6) | 21.1(5.8)  | 22.5(10.6)                  | 22.5(9.3)  | 22.5(6.3)  | 15.9(4.2)  | 14.5(3.2)  | 22.5(10.6)                  | 22.5(9.3)  | 22.5(6.3)  | 15.9(4.2)  | 14.5(3.2)  |
|                        |                          | DSG-01-3C60   |                 | 11.4(6.1)            | 11.4(6.1)  | 11.1(6.1)  | 11.1(6.1)  | 11.1(6.1)  | 14.2(8.4)                   | 14.2(8.4)  | 13.7(8.4)  | 13.7(8.4)  | 13.7(8.4)  | 14.2(8.4)                   | 14.2(8.4)  | 13.7(8.4)  | 13.7(8.4)  | 13.7(8.4)  |
|                        |                          | DSG-01-3C9    |                 | 26.4                 | 26.4       | 26.4       | 26.4       | 26.4       | 5.3                         | 4.0        | 2.6        | 2.6        | 2.1        | 5.3                         | 4.0        | 2.6        | 2.6        | 2.1        |
|                        |                          | DSG-01-3C10   |                 | 26.4                 | 26.4       | 26.4(16.6) | 26.4(8.7)  | 26.4(7.1)  | 26.4(13.2)                  | 26.4(9.8)  | 26.4(5.3)  | 20.6(4.2)  | 16.4(3.4)  | 26.4(13.2)                  | 26.4(9.8)  | 26.4(5.3)  | 20.6(4.2)  | 16.4(3.4)  |
|                        |                          | DSG-01-3C11   |                 | 26.4                 | 26.4       | 26.4       | 26.4       | 26.4       | 6.1                         | 5.3        | 3.4        | 2.6        | 1.3        | 26.4(17.2)                  | 22.5(13.7) | 19.0(13.7) | 17.2(9.0)  | 15.9(7.1)  |
|                        |                          | DSG-01-3C12   |                 | 26.4                 | 26.4       | 26.4(16.6) | 26.4(8.7)  | 26.4(7.1)  | 26.4(13.2)                  | 26.4(9.8)  | 26.4(5.3)  | 20.6(4.2)  | 16.4(3.4)  | 26.4(13.2)                  | 26.4(9.8)  | 26.4(5.3)  | 20.6(4.2)  | 16.4(3.4)  |
| Two Positions          | No-Spring Detented       | DSG-01-2D2    |                 | 21.1                 | 21.1       | 21.1       | 21.1       | 21.1       | 11.9                        | 11.9       | 11.9(5.6)  | 11.9(4.2)  | 10.0(3.4)  | 13.2                        | 13.2(11.9) | 13.2(11.1) | 11.9(10.6) | 11.9(10.6) |
|                        |                          |               |                 |                      |            |            |            |            |                             |            | 9.5(4.8)   | 7.4(3.4)   | 5.8(3.2)   |                             | 13.2(11.9) | 13.2(11.1) | 11.9(10.6) | 11.9(10.6) |
|                        | Spring Offset            | DSG-01-2B2    |                 | 22.5                 | 22.5       | 22.5       | 22.5       | 22.5       | 5.3                         | 4.2        | 4.2        | 4.0        | 3.4        | 22.5(16.6)                  | 21.1(13.2) | 16.6(10.6) | 11.6(8.5)  | 11.6(8.5)  |
|                        |                          | DSG-01-2B3    |                 | 18.5                 | 18.5       | 18.5       | 18.5       | 18.5       | 13.2                        | 13.2       | 13.2       | 13.2       | 13.2       | 21.1(18.5)                  | 21.1(18.5) | 21.1(18.5) | 21.1(18.5) | 21.1(18.5) |
|                        |                          | DSG-01-2B8    |                 | —                    | —          | —          | —          | —          | 6.9                         | 4.5        | 3.4        | 2.9        | 2.6        | 21.1(13.2)                  | 18.5(10.6) | 15.9(5.3)  | 11.9(2.6)  | 7.9(2.6)   |

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 50 Hz or 60 Hz and of any voltage variants within the serviceable voltage

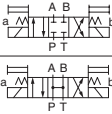
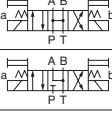
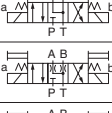
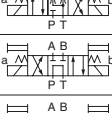
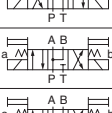
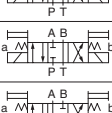
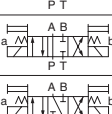
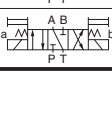
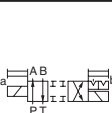
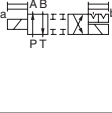
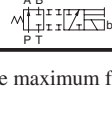


2. For the maximum flow rate in P → T of the valves with a ★ mark, please see [page 351](#).

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

■ List of Standard Models and The Maximum Flow

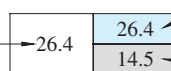
● Models with DC or R Type Solenoids: DSG-01-\*\*\*-D\*/R\*

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbols                                                                     | Max. Flow U.S.GPM                                                                 |      |      |      |      |                                                                                    |      |      |      |      |                                                                                     |      |      |      |      |
|------------------------|--------------------------|---------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|------|------|------------------------------------------------------------------------------------|------|------|------|------|-------------------------------------------------------------------------------------|------|------|------|------|
|                        |                          |               |                                                                                     | P → A → B → T                                                                     |      |      |      |      | P → A<br>[Port "B" Blocked]                                                        |      |      |      |      | P → B<br>[Port "A" Blocked]                                                         |      |      |      |      |
|                        |                          |               |                                                                                     |  |      |      |      |      |  |      |      |      |      |  |      |      |      |      |
|                        |                          |               |                                                                                     | Working Pressure PSI                                                              |      |      |      |      | Working Pressure PSI                                                               |      |      |      |      | Working Pressure PSI                                                                |      |      |      |      |
|                        |                          |               |                                                                                     | 1450                                                                              | 2320 | 3630 | 4570 | 5080 | 1450                                                                               | 2320 | 3630 | 4570 | 5080 | 1450                                                                                | 2320 | 3630 | 4570 | 5080 |
| Three Positions        | Spring Centred           | DSG-01-3C2    |    | 26.4                                                                              | 26.4 | 26.4 | 26.4 | 26.4 | 26.4                                                                               | 11.9 | 7.4  | 6.6  | 5.8  | 26.4                                                                                | 11.9 | 7.4  | 6.6  | 5.8  |
|                        |                          | DSG-01-3C3    |    | 26.4                                                                              | 26.4 | 26.4 | 26.4 | 26.4 | 20.6                                                                               | 20.6 | 20.6 | 20.6 | 19.8 | 20.6                                                                                | 20.6 | 20.6 | 20.6 | 19.8 |
|                        |                          | DSG-01-3C4    |    | 23.8                                                                              | 23.8 | 23.8 | 13.2 | 10.0 | 26.4                                                                               | 15.3 | 10.0 | 8.2  | 7.7  | 26.4                                                                                | 15.3 | 10.0 | 8.2  | 7.7  |
|                        |                          | DSG-01-3C40   |    | 22.5                                                                              | 22.5 | 17.2 | 10.6 | 8.7  | 22.5                                                                               | 13.7 | 7.9  | 6.9  | 6.3  | 22.5                                                                                | 13.7 | 7.9  | 6.9  | 6.3  |
|                        |                          | DSG-01-3C60   |   | 13.3                                                                              | 13.3 | 13.3 | 13.3 | 13.3 | 17.4                                                                               | 17.4 | 17.4 | 17.4 | 17.4 | 17.4                                                                                | 17.4 | 17.4 | 17.4 | 17.4 |
|                        |                          | DSG-01-3C9    |   | 26.4                                                                              | 26.4 | 26.4 | 26.4 | 26.4 | 5.3                                                                                | 4.0  | 2.6  | 2.6  | 2.1  | 5.3                                                                                 | 4.0  | 2.6  | 2.6  | 2.1  |
|                        |                          | DSG-01-3C10   |  | 22.5                                                                              | 22.5 | 22.5 | 21.1 | 10.6 | 26.4                                                                               | 14.8 | 9.5  | 7.4  | 6.3  | 26.4                                                                                | 14.8 | 9.5  | 7.4  | 6.3  |
|                        |                          | DSG-01-3C11   |  | 26.4                                                                              | 26.4 | 26.4 | 26.4 | 26.4 | 6.1                                                                                | 5.3  | 3.4  | 2.6  | 1.3  | 26.4                                                                                | 15.9 | 10.6 | 9.5  | 8.5  |
|                        |                          | DSG-01-3C12   |  | 22.5                                                                              | 22.5 | 22.5 | 21.1 | 10.6 | 26.4                                                                               | 14.8 | 9.5  | 7.4  | 6.3  | 26.4                                                                                | 14.8 | 9.5  | 7.4  | 6.3  |
|                        |                          |               |                                                                                     | 9.2                                                                               | 6.1  | 5.3  |      |      | 19.6                                                                               | 11.4 | 7.4  | 5.3  | 5.0  | 19.6                                                                                | 11.4 | 7.4  | 5.3  | 5.0  |
| Two Positions          | No-Spring Detented       | DSG-01-2D2    |  | 19.8                                                                              | 19.8 | 19.8 | 19.8 | 19.8 |                                                                                    |      | 10.6 | 7.9  | 7.1  |                                                                                     | 13.2 | 13.2 | 11.9 | 11.9 |
|                        |                          |               |                                                                                     | 18.5                                                                              | 18.5 | 18.5 | 18.5 | 18.5 | 11.9                                                                               | 11.9 | 7.9  | 6.6  | 5.8  | 13.2                                                                                | 13.2 | 11.1 | 10.6 | 10.6 |
|                        | Spring Offset            | DSG-01-2B2    |  | 21.1                                                                              | 21.1 | 21.1 | 21.1 | 21.1 | 5.3                                                                                | 4.2  | 4.2  | 4.0  | 3.4  | 12.2                                                                                | 8.2  | 6.3  | 5.8  | 5.8  |
|                        |                          |               |                                                                                     |                                                                                   |      |      |      |      |                                                                                    |      |      |      |      | 8.5                                                                                 | 6.1  | 5.0  | 4.8  | 4.8  |
|                        |                          | DSG-01-2B3    |  | 18.5                                                                              | 18.5 | 18.5 | 18.5 | 18.5 | 13.2                                                                               | 13.2 | 13.2 | 13.2 | 13.2 | 19.8                                                                                | 19.8 | 19.8 | 19.8 | 19.8 |
|                        |                          |               |                                                                                     |                                                                                   |      |      |      |      |                                                                                    |      |      |      |      | 17.2                                                                                | 17.2 | 17.2 | 17.2 | 17.2 |
|                        |                          | DSG-01-2B8    |  | —                                                                                 | —    | —    | —    | —    | 6.9                                                                                | 4.5  | 3.4  | 2.9  | 2.6  | 14.0                                                                                | 9.2  | 6.1  | 5.0  | 4.5  |
|                        |                          |               |                                                                                     |                                                                                   |      |      |      |      |                                                                                    |      |      |      |      | 9.3                                                                                 | 7.9  | 4.5  | 3.4  | 3.2  |

Notes: 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



At rated voltage  
[after temperature rise and saturated]

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

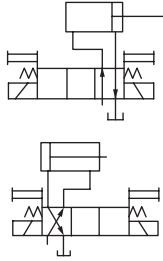
2. For the maximum flow rate in P → T of the valves with a ★ mark, please see [page 351](#).

The valve models with a ◆ mark are handled as Options. If you choose suce valves, check the time of delivery beforehand.



## Maximum Flow of Centre By-Pass

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.



| Mode Numbers         | Graphic Symbol | Max. Flow L/min (U.S.GPM) |                      |                      |                        |                      |
|----------------------|----------------|---------------------------|----------------------|----------------------|------------------------|----------------------|
|                      |                | 10 MPa<br>(1450 PSI)      | 16 MPa<br>(2320 PSI) | 25 MPa<br>(3630 PSI) | 31.5 MPa<br>(4570 PSI) | 35 MPa<br>(5080 PSI) |
| DSG-01-3C60-A*/D*/R* |                | 55<br>(14.5)              | 44<br>(11.6)         | 30<br>(7.9)          | 26<br>(6.9)            | 22<br>(5.8)          |

## List of Shockless Models and The Maximum Flow

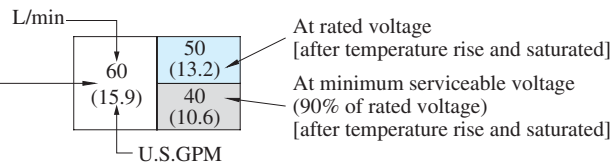
### Models with DC or R Type Solenoids: S-DSG-01-\*\*\*-D\*/R\*

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbol | Max. Flow L/min (U.S.GPM)  |              |              |                             |              |              |                             |              |              |
|------------------------|--------------------------|---------------|----------------|----------------------------|--------------|--------------|-----------------------------|--------------|--------------|-----------------------------|--------------|--------------|
|                        |                          |               |                | P → A → B → T<br>B → A     |              |              | P → A<br>[Port "B" Blocked] |              |              | P → B<br>[Port "A" Blocked] |              |              |
|                        |                          |               |                |                            |              |              |                             |              |              |                             |              |              |
|                        |                          |               |                | Working Pressure MPa (PSI) |              |              | Working Pressure MPa (PSI)  |              |              | Working Pressure MPa (PSI)  |              |              |
|                        |                          |               |                | 10<br>(1450)               | 16<br>(2320) | 25<br>(3630) | 10<br>(1450)                | 16<br>(2320) | 25<br>(3630) | 10<br>(1450)                | 16<br>(2320) | 25<br>(3630) |
| Three Positions        | Spring Centred           | S-DSG-01-3C2  |                | 63<br>(16.6)               | 63<br>(16.6) | 40<br>(10.6) | 40<br>(10.6)                | 32<br>(8.5)  | 25<br>(6.6)  | 40<br>(10.6)                | 32<br>(8.5)  | 25<br>(6.6)  |
|                        |                          |               |                |                            |              |              | 32<br>(8.5)                 | 20<br>(5.3)  | 16<br>(4.23) | 32<br>(8.5)                 | 20<br>(5.3)  | 16<br>(4.23) |
|                        |                          | S-DSG-01-3C4  |                | 60<br>(15.9)               | 50<br>(13.2) | 40<br>(10.6) | 40<br>(10.6)                | 32<br>(8.5)  | 16<br>(4.2)  | 40<br>(10.6)                | 32<br>(8.5)  | 16<br>(4.2)  |
|                        |                          |               |                |                            | 40<br>(10.6) | 20<br>(5.3)  | 32<br>(8.45)                | 16<br>(4.23) | 12<br>(3.17) | 32<br>(8.45)                | 16<br>(4.23) | 12<br>(3.17) |
| Two Positions          | Spring Offset            | S-DSG-01-3B2  |                | 50<br>(13.2)               | 45<br>(11.9) | 45<br>(11.9) | 30<br>(7.9)                 | 30<br>(7.9)  | 30<br>(7.9)  | 60<br>(15.9)                | 40<br>(10.6) | 40<br>(10.6) |
|                        |                          |               |                | 45<br>(11.9)               | 40<br>(10.6) | 40<br>(10.6) |                             |              |              |                             |              |              |

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

( Example )

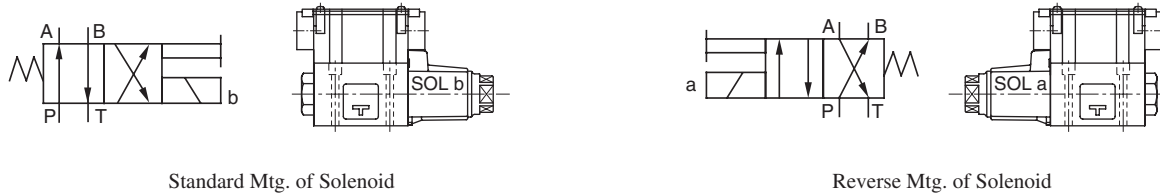
The maximum flow rate is constant regardless of any voltage variants within the serviceable voltage





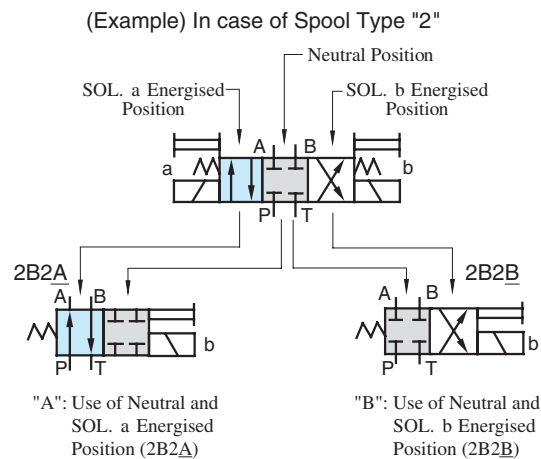
## Reverse Mounting of Solenoid.

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.



## 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).



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

| Model Numbers | raphic 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  |                    | —                 |

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.

## Typical Changeover Time

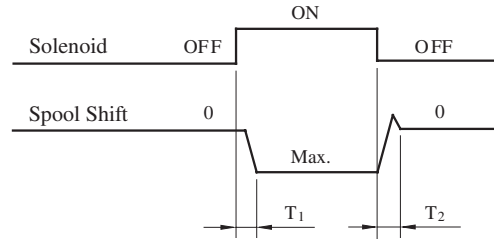
Changeover time varies according to oil viscosity, spool type and hydraulic circuit.

### Standard Type (Without Shockless Function)

#### [Test Conditions]

Pressure: 16 MPa (2320 PSI)  
 Flow Rate: 31.5 L/min (8.3 U.S.GPM)  
 Viscosity: 35 mm<sup>2</sup>/s (164 SSU)  
 Voltage: 100 %V  
 (After coil temperature rises and saturated)

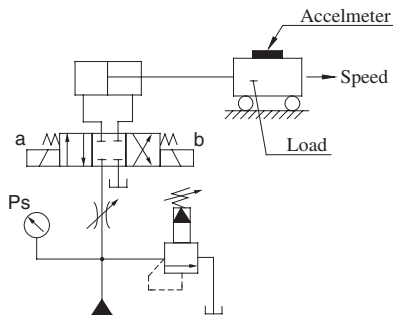
#### [Result of Measurement]



| Type          | Model Numbers  | Time ms        |                |
|---------------|----------------|----------------|----------------|
|               |                | T <sub>1</sub> | T <sub>2</sub> |
| Standard Type | DSG-01-3C2- A* | 15             | 23             |
|               | DSG-01-3C2- D* | 48             | 19             |
|               | DSG-01-3C2- R* | 50             | 100            |

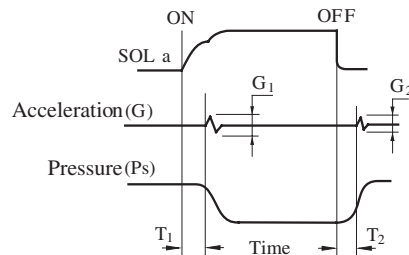
### Shockless Type

#### [Test Circuit and Conditions]



Setting Pressure (Ps): 7 MPa (1020 PSI)  
 Load (W): 1000 kg (2205 lbs.)  
 Speed: 8 m/min (26.2 ft./min)  
 Viscosity: 35 mm<sup>2</sup>/s (164 SSU)

#### [Results of Measurement]

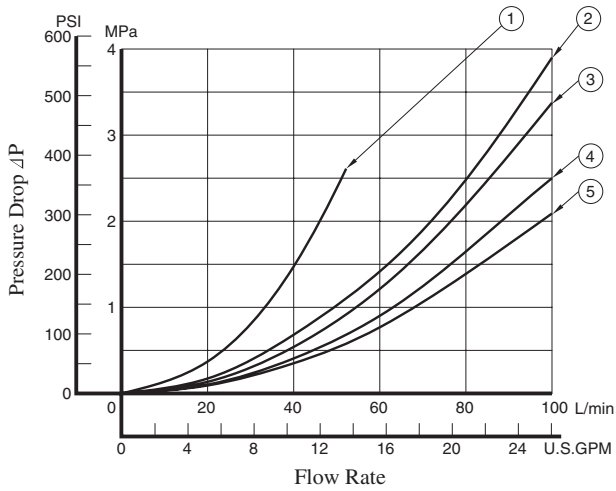


| Type           | Model Numbers    | Time ms        |                | Acceleration m/s <sup>2</sup> (G) |                |
|----------------|------------------|----------------|----------------|-----------------------------------|----------------|
|                |                  | T <sub>1</sub> | T <sub>2</sub> | G <sub>1</sub>                    | G <sub>2</sub> |
| Shockless Type | S-DSG-01-3C2- D* | 70             | 30             | 12 (1.2)                          | 7 (0.7)        |
| Standard Type  | DSG-01-3C2- D*   | 35             | 25             | 18 (1.8)                          | 15 (1.5)       |

## ■ Pressure Drop

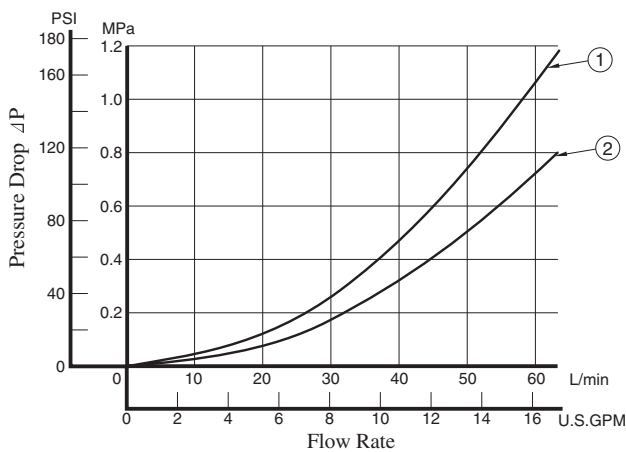
Pressure drop curves based on viscosity of 35 mm<sup>2</sup>/s (164 SSU) and specific gravity of 0.850.

### ● Standard Type: DSG-01



| Model Numbers | Pressure Drop Curve Number |     |     |     |     |
|---------------|----------------------------|-----|-----|-----|-----|
|               | P→A                        | B→T | P→B | A→T | P→T |
| DSG-01-3C2    | ④                          | ④   | ④   | ④   | —   |
| DSG-01-3C3    | ⑤                          | ⑤   | ⑤   | ⑤   | ②   |
| DSG-01-3C4    | ④                          | ④   | ④   | ④   | —   |
| DSG-01-3C40   | ④                          | ④   | ④   | ④   | —   |
| DSG-01-3C60   | ①                          | ①   | ①   | ①   | ②   |
| DSG-01-3C9    | ⑤                          | ③   | ⑤   | ③   | —   |
| DSG-01-3C10   | ④                          | ⑤   | ④   | ④   | —   |
| DSG-01-3C11   | ④                          | ④   | ④   | ④   | —   |
| DSG-01-3C12   | ④                          | ④   | ④   | ⑤   | —   |
| DSG-01-2D2    | ⑤                          | ④   | ⑤   | ④   | —   |
| DSG-01-2B2    | ⑤                          | ④   | ⑤   | ④   | —   |
| DSG-01-2B3    | ⑤                          | ⑤   | ⑤   | ⑤   | —   |
| DSG-01-2B8    | ⑤                          | —   | ④   | —   | —   |

### ● Shockless Type: S-DSG-01



| Model Numbers | Pressure Drop Curve Number |     |     |     |
|---------------|----------------------------|-----|-----|-----|
|               | P→A                        | B→T | P→B | A→T |
| S-DSG-01-3C2  | ①                          | ①   | ①   | ①   |
| S-DSG-01-3C4  | ①                          | ②   | ①   | ②   |
| S-DSG-01-2B2  | ①                          | ①   | ①   | ①   |

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

| Viscosity | mm <sup>2</sup> /s | 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.

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

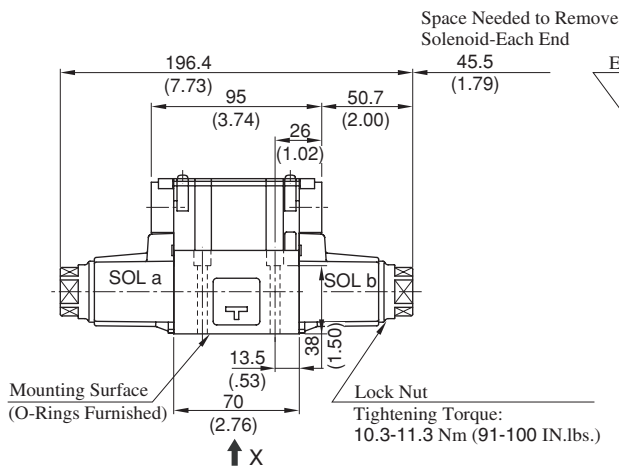
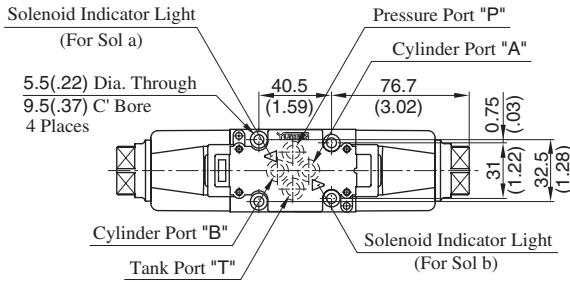
Mounting surface: ISO 4401-AB-03-4-A

## TERMINAL BOX TYPE

### Models with AC Solenoids

- Double Solenoid: Spring Centred & No-Spring Detented

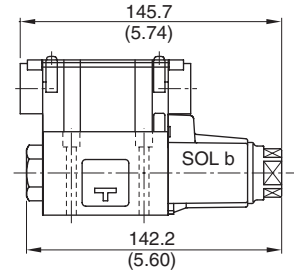
DSG-01- 3C\*  
2D2 -A\*-70/7090



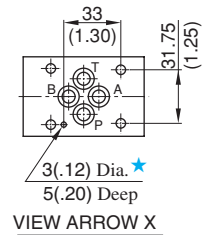
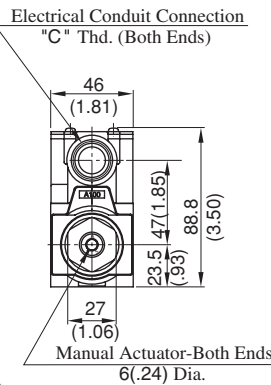
| Model Numbers      | "C" Thd. |
|--------------------|----------|
| DSG-01-***-A*-70   | G 1/2    |
| DSG-01-***-A*-7090 | 1/2 NPT  |

- Single Solenoid: Spring Offset

DSG-01-2B\*-A\*-70/7090



- 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.



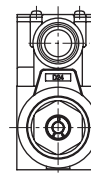
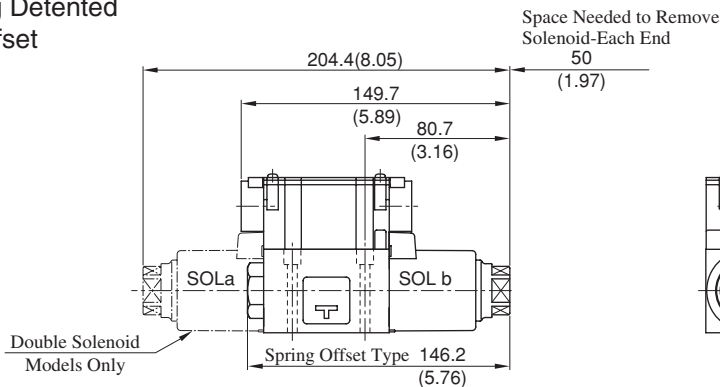
- ★ Locating pin can be fitted to this hole to conform with ISO4401-03-02-94. However, locating pin is not provided to standard design valve. When ordering valve with a locating pin, please consult Yuken.

DIMENSIONS IN  
MILLIMETRES (INCHES)

### Models with DC Solenoids: (S-)DSG-01- \*\*\*-D\*-70/7090

### Models with R Type Solenoids: (S-)DSG-01- \*\*\*-R\*-70/7090

- Spring Centred
- No-Spring Detented
- Spring Offset



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

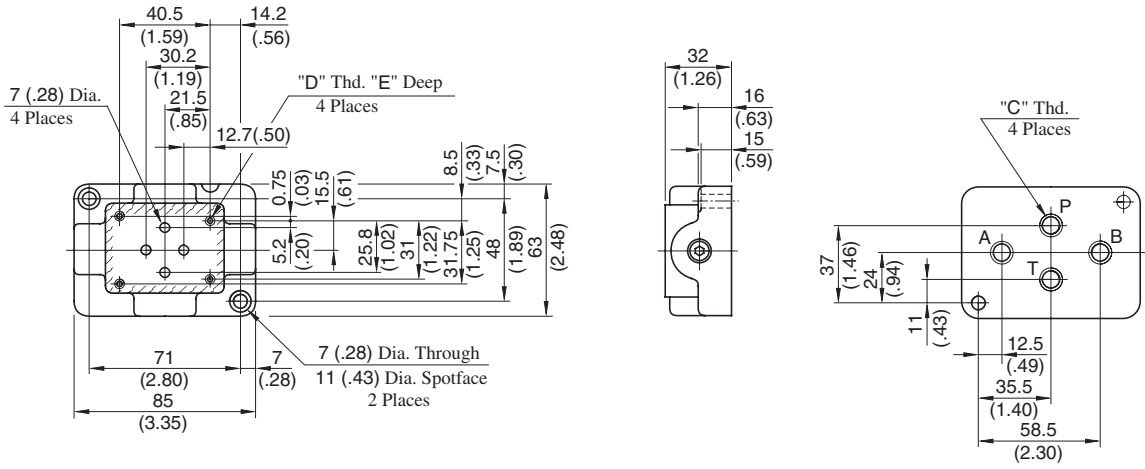
E



DSG-01 Series Solenoid  
Operated Directional Valves

■ Sub-plate : DSGM-01/01X/01Y-31/3180/3190

DIMENSIONS IN  
MILLIMETRES (INCHES)

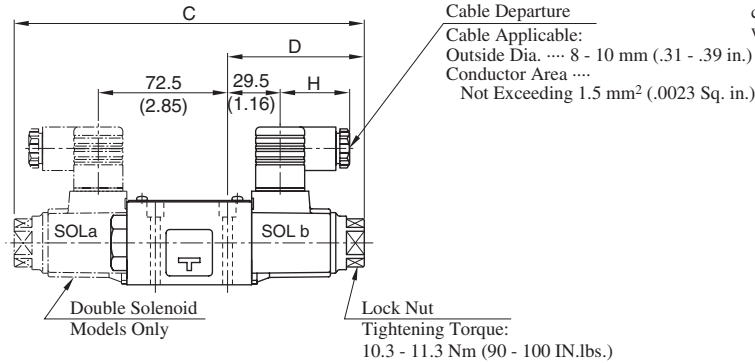


| Sub-plate<br>Model Numbers | Piping Size<br>"C" Thd. | "D" Thd.      | "E"<br>mm(IN.) |
|----------------------------|-------------------------|---------------|----------------|
| DSGM-01-31                 | Rc 1/8                  | M5            | 10 (.39)       |
| DSGM-01-3180               | 1/8 BSP.F               |               |                |
| DSGM-01-3190               | 1/8 NPT                 | No.10-24 UNC  | 12 (.47)       |
| DSGM-01X-31                | Rc 1/4                  | M5            | 10 (.39)       |
| DSGM-01X-3180              | 1/4 BSP.F               |               |                |
| DSGM-01X-3190              | 1/4 NPT                 | No.10-24 UNC  | 12 (.47)       |
| DSGM-01Y-31                | Rc 3/8                  | M5            | 10 (.39)       |
| DSGM-01Y-3190              | 3/8 NPT                 | No. 10-24 UNC | 12 (.47)       |

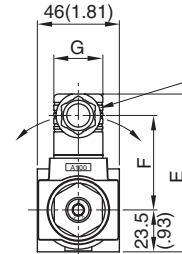
## PLUG-IN CONNECTOR TYPE (N) PLUG-IN CONNECTOR WITH INDICATOR LIGHT (N1)

- Models with AC Solenoids: DSG-01-\*\*\*-A\*-N<sub>1</sub>-70/7090
- Models with DC Solenoids: (S-)DSG-01-\*\*\*-D\*-N<sub>1</sub>-70/7090
- Models with R Solenoids: (S-)DSG-01-\*\*\*-R\*-N-70/7090

### DIMENSIONS IN MILLIMETRES (INCHES)



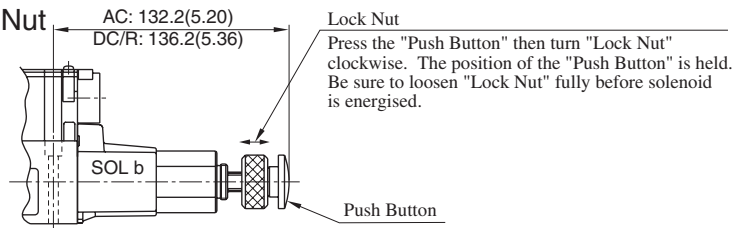
The position of the Plug-in connector can be changed as illustrated below by loosening the lock nut. After completion of the change, be sure to tighten the lock nut with the torque as specified below.



| Model Numbers        | C               | D              | E               | F              | G              | H            |
|----------------------|-----------------|----------------|-----------------|----------------|----------------|--------------|
| DSG-01-***-A*-N*     | 196.4<br>(7.73) | 76.7<br>(3.02) | 88.5<br>(3.48)  | 53<br>(2.09)   | 27.5<br>(1.08) | 39<br>(1.54) |
| (S-)DSG-01-***-D*-N* | 204.4<br>(8.05) | 80.7<br>(3.18) | 99.5<br>(3.92)  | 64<br>(2.52)   | 27.5<br>(1.08) | 39<br>(1.54) |
| (S-)DSG-01-***-R*-N  | 204.4<br>(8.05) | 80.7<br>(3.18) | 102.5<br>(4.04) | 57.2<br>(2.25) | 34<br>(1.34)   | 53<br>(2.09) |

● For other dimensions, refer to "Terminal Box type" (Page 356).

## Models with Push Button & Lock Nut (S-)DSG-01-\*\*\*-\*-C



## Interchangeability in Installation Current and New Design

In order to achieve higher pressure, higher flow, lower pressure drop DSG-01 valves has been upgraded from the 60 design series to the 70 design series.

The figures in the table below are the comparison between the current and the new design valves.

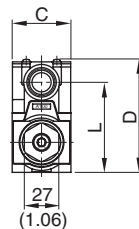
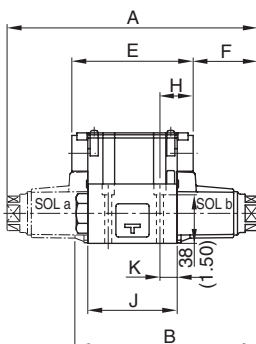
### Specifications

| Design Number      | Max. Flow<br>L/min<br>(U.S.GPM) | Max. Operating<br>Pressure<br>MPa (PSI) | Max. T-Line<br>Back Pres.<br>MPa (PSI) | Max. Changeover<br>Frequency<br>Cycle/min (min <sup>-1</sup> ) | Pressure Drop <sup>*</sup><br>MPa (PSI)<br>{P→A} | Mass kg (lbs.) |           |
|--------------------|---------------------------------|-----------------------------------------|----------------------------------------|----------------------------------------------------------------|--------------------------------------------------|----------------|-----------|
|                    |                                 |                                         |                                        |                                                                |                                                  | 3C*/2D*        | 2B*       |
| New Design: 70     | 100(26.4)                       | 35(5080)                                | 21(3050)                               | 300<br>(R Type sol. Only 120)                                  | 0.9(130)                                         | 1.85(4.08)     | 1.4(3.09) |
| Current Design: 60 | 63(16.6)                        | 31.5(4570)                              | 16(2320)                               |                                                                | 1.0(145)                                         | 2.2(4.85)      | 1.6(3.53) |

<sup>\*</sup> Flow Rate: 60 L/min (15.9 U.S.GPM), Viscosity: 30 mm<sup>2</sup>/s (141 SSU), Spool type "2" (Closed centre)

### Interchangeability in Installation

Interchangeability in installation is maintained though there are minor differences in dimension as in the following table.



| Coil Type | Design Number       | A               | B               | C            | D              | E            | F              | H             | J            | K             | L              |
|-----------|---------------------|-----------------|-----------------|--------------|----------------|--------------|----------------|---------------|--------------|---------------|----------------|
| AC        | New Design : 70     | 196.4<br>(7.73) | 142.2<br>(5.60) | 46<br>(1.81) | 88.8<br>(3.50) | 95<br>(3.74) | 50.7<br>(2.00) | 26<br>(1.02)  | 70<br>(2.76) | 13.5<br>(.53) | 70.5<br>(2.78) |
|           | Current Design : 60 | 191.4<br>(7.54) | 142.7<br>(5.62) | 48<br>(1.89) | 90.3<br>(3.56) | 90<br>(3.54) | 50.7<br>(2.00) | 23.5<br>(.93) | 65<br>(2.56) | 11<br>(.43)   | 72<br>(2.83)   |
| DC<br>R   | New Design : 70     | 204.4<br>(8.05) | 146.2<br>(5.76) | 46<br>(1.81) | 88.8<br>(3.50) | 95<br>(3.74) | 54.7<br>(2.15) | 26<br>(1.02)  | 70<br>(2.76) | 13.5<br>(.53) | 70.5<br>(2.78) |
|           | Current Design : 60 | 210<br>(8.27)   | 152<br>(5.98)   | 48<br>(1.89) | 90.3<br>(3.56) | 90<br>(3.54) | 60<br>(2.36)   | 23.5<br>(.93) | 65<br>(2.56) | 11<br>(.43)   | 72<br>(2.83)   |

## Details of Receptacle

| Type of Electrical Conduit Connection | Double Solenoid Type | Single Solenoid Type |
|---------------------------------------|----------------------|----------------------|
| Terminal Box Type                     |                      |                      |
| Plug-in Connector Type                |                      |                      |

- ★ 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.



### DANGER

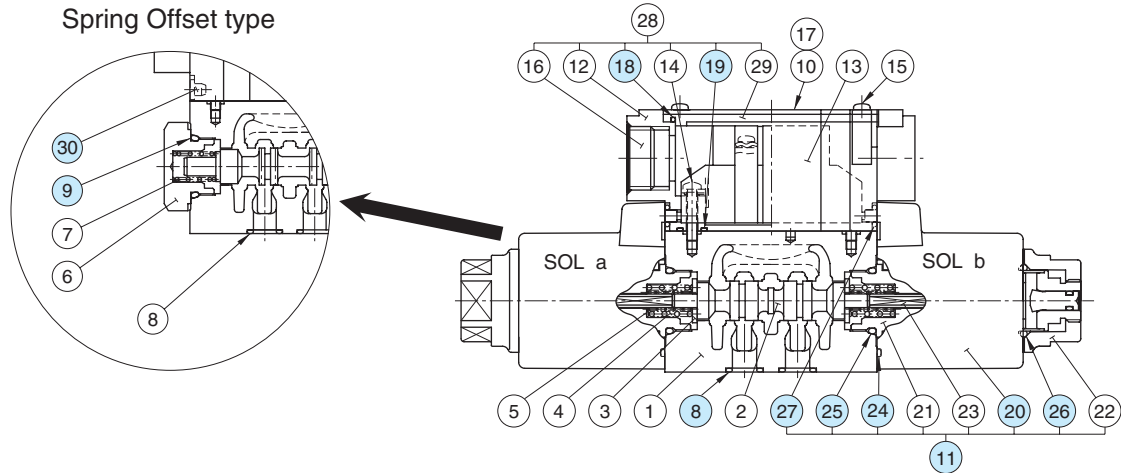
- Do not perform wiring while the power is on. Doing so may result in electric shock, burns or death.
- Make the wiring properly. Improper wiring will cause an irregular movement of the machine, resulting in a grave accident.

## Electrical Circuit

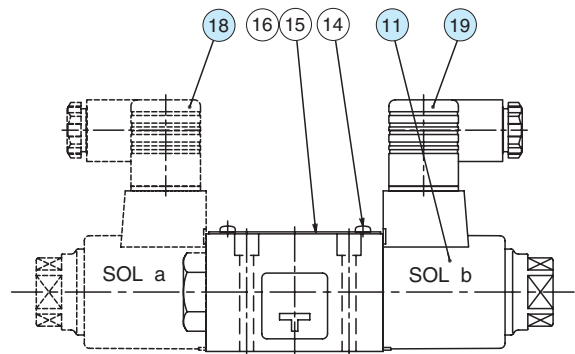
| Type of Electrical Conduit Connection | Electric Source |    |                 |
|---------------------------------------|-----------------|----|-----------------|
|                                       | AC              | DC | AC→DC Rectified |
| Terminal Box Type                     |                 |    |                 |
| Plug-in Connector Type                |                 |    |                 |

## List of Seals

\*-DSG-01-\*\*\*-\*-70/7090



\*-DSG-01-\*\*\*-\*-N/N1-70/7090



## List of Seals

| Item | Name of Parts | Part Numbers            | Qty. |     |     | Remarks                              |
|------|---------------|-------------------------|------|-----|-----|--------------------------------------|
|      |               |                         | 3C*  | 2D* | 2B* |                                      |
| 8    | O-Ring        | SO-NB-A-012 (NBR, Hs90) | 4    | 4   | 4   |                                      |
| 9    | O-Ring        | SO-NB-P18               | —    | —   | 1   |                                      |
| 18   | Packing       | 1790S-VK421290-8        | 1    | 1   | 1   |                                      |
| 19   | O-Ring        | S6                      | 2    | 2   | 2   |                                      |
| 24   | O-Ring        | AS 568-026 (NBR, Hs70)  | 2    | 2   | 1   | Included in Solenoid Ass'y (Item 11) |
| 25   | O-Ring        | SO-NB-P18               | 2    | 2   | 1   |                                      |
| 26   | O-Ring        | SO-NA-P20               | 2    | 2   | 1   |                                      |
| 27   | O-Ring        | SO-NA-P4                | 4    | 4   | 2   |                                      |
| 30   | Plug          | 1790S-VK418329-9        | —    | —   | 2   |                                      |

★ When ordering the O-Rings, please specify the seal kit number from the table below.

| Valve Model Numbers      | Seal Kit No.   | O-Ring Details for Seal Kit                                |
|--------------------------|----------------|------------------------------------------------------------|
| *-DSG-01-***-*-70/7090   | KS-DSG-01-70   | (8)(4 Pcs.), (9) & (25) (2 Pcs., see above), (27) (4 Pcs.) |
| *-DSG-01-***-*-N-70/7090 | KS-DSG-01-N-70 | (8)(4 Pcs.), (9) & (25) (2 Pcs., see above)                |

● Solenoid Ass'y, Coil, Receptacle and Connector Refer to [page 360](#) for the details of these parts.

E



DSG-01 Series Solenoid Operated Directional Valves



■ Solenoid Ass'y, Coil, Receptacle and Connector Ass'y No.

| Valve Model Numbers     | ⑪<br>Solenoid Ass'y No. | ⑫<br>Coil No.  | ⑬<br>Receptacle<br>Part No. | ⑮<br>Connector Ass'y<br>Part No. | ⑰<br>Connector Ass'y<br>Part No. | Remarks                                            |  |  |  |
|-------------------------|-------------------------|----------------|-----------------------------|----------------------------------|----------------------------------|----------------------------------------------------|--|--|--|
| DSG-01-***-A100-70*     | SA1-100-70              | C-SA1-100-70   | R1-70                       | —                                | —                                | Terminal<br>Box<br>Type                            |  |  |  |
| DSG-01-***-A120-70*     | SA1-120-70              | C-SA1-120-70   |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-A200-70*     | SA1-200-70              | C-SA1-200-70   |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-A240-70*     | SA1-240-70              | C-SA1-240-70   |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-D12-70*      | SD1-12-70               | C-SD1-12-70    | KR1-A-70                    |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-D24-70*      | SD1-24-70               | C-SD1-24-70    |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-D48-70*      | SD1-48-70               | C-SD1-48-70    | KR1-B-70                    |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-R100-70*     | SR1-100-70              | C-SR1-100-70   | RR1-70                      |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-R200-70*     | SR1-200-70              | C-SR1-200-70   |                             |                                  |                                  |                                                    |  |  |  |
| S-DSG-01-***-D12-70*    | SD1-12-S-70             | C-SD1-12-70    | KR1-A-70                    |                                  |                                  |                                                    |  |  |  |
| S-DSG-01-***-D24-70*    | SD1-24-S-70             | C-SD1-24-70    |                             |                                  |                                  |                                                    |  |  |  |
| S-DSG-01-***-D48-70*    | SD1-48-S-70             | C-SD1-48-70    | KR1-B-70                    |                                  |                                  |                                                    |  |  |  |
| S-DSG-01-***-R100-70*   | SR1-100-S-70            | C-SR1-100-70   | RR1-70                      |                                  |                                  |                                                    |  |  |  |
| S-DSG-01-***-R200-70*   | SR1-200-S-70            | C-SR1-200-70   |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-A100-N-70*   | SA1-100-N-70            | C-SA1-100-N-70 | —                           | GDM-211-A-11                     | GDM-211-B-11                     | Plug-in<br>Connector<br>Type                       |  |  |  |
| DSG-01-***-A120-N-70*   | SA1-120-N-70            | C-SA1-120-N-70 |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-A200-N-70*   | SA1-200-N-70            | C-SA1-200-N-70 |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-A240-N-70*   | SA1-240-N-70            | C-SA1-240-N-70 |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-D12-N-70*    | SD1-12-N-70             | C-SD1-12-N-70  |                             | GDME-211-R-A-10                  | GDME-211-R-B-10                  |                                                    |  |  |  |
| DSG-01-***-D24-N-70*    | SD1-24-N-70             | C-SD1-24-N-70  |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-D48-N-70*    | SD1-48-N-70             | C-SD1-48-N-70  |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-R100-N-70*   | SR1-100-N-70            | C-SR1-100-N-70 |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-R200-N-70*   | SR1-200-N-70            | C-SR1-200-N-70 |                             | GDM-211-A-11                     | GDM-211-B-11                     |                                                    |  |  |  |
| S-DSG-01-***-D12-N-70*  | SD1-12-S-N-70           | C-SD1-12-N-70  |                             |                                  |                                  |                                                    |  |  |  |
| S-DSG-01-***-D24-N-70*  | SD1-24-S-N-70           | C-SD1-24-N-70  |                             |                                  |                                  |                                                    |  |  |  |
| S-DSG-01-***-D48-N-70*  | SD1-48-S-N-70           | C-SD1-48-N-70  | GDME-211-R-A-10             | GDME-211-R-B-10                  |                                  |                                                    |  |  |  |
| S-DSG-01-***-R100-N-70* | SR1-100-S-N-70          | C-SR1-100-N-70 |                             |                                  |                                  |                                                    |  |  |  |
| S-DSG-01-***-R200-N-70* | SR1-200-S-N-70          | C-SR1-200-N-70 |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-A100-N1-70*  | SA1-100-N-70            | C-SA1-100-N-70 | —                           | GDML-211-1-11                    | GDML-211-1-11                    | Plug-in<br>Connector<br>with<br>Indicator<br>Light |  |  |  |
| DSG-01-***-A120-N1-70*  | SA1-120-N-70            | C-SA1-120-N-70 |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-A200-N1-70*  | SA1-200-N-70            | C-SA1-200-N-70 |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-A240-N1-70*  | SA1-240-N-70            | C-SA1-240-N-70 |                             |                                  |                                  |                                                    |  |  |  |
| DSG-01-***-D12-N1-70*   | SD1-12-N-70             | C-SD1-12-N-70  |                             | GDML-211-2-11                    | GDML-211-2-11                    |                                                    |  |  |  |
| DSG-01-***-D24-N1-70*   | SD1-24-N-70             | C-SD1-24-N-70  |                             | GDML-211-3-11                    | GDML-211-3-11                    |                                                    |  |  |  |
| DSG-01-***-D48-N1-70*   | SD1-48-N-70             | C-SD1-48-N-70  |                             | GDML-211-1-11                    | GDML-211-1-11                    |                                                    |  |  |  |
| S-DSG-01-***-D12-N1-70* | SD1-12-S-N-70           | C-SD1-12-N-70  |                             | GDML-211-2-11                    | GDML-211-2-11                    |                                                    |  |  |  |
| S-DSG-01-***-D24-N1-70* | SD1-24-S-N-70           | C-SD1-24-N-70  |                             | GDML-211-3-11                    | GDML-211-3-11                    |                                                    |  |  |  |
| S-DSG-01-***-D48-N1-70* | SD1-48-S-N-70           | C-SD1-48-N-70  |                             | GDML-211-1-11                    | GDML-211-1-11                    |                                                    |  |  |  |

Note: The connector assembly is not included in the solenoid assembly.

## 3/8 Solenoid Operated Directional Valves, DSG-03 Series

These are epoch-making solenoid operated valves of high pressure, high flow which have been developed incorporating a unique design concept into every part of the valve including the solenoid. With wet type solenoids, these valves ensure the low noise and the long life, moreover, ensure no leakage of oil outside of the valves.

### Wide Range of Models

Choose the optimum valve to meet your need from a large selection available. The DSG-03 50 design series solenoid operated directional valves are classified into the two basic models.

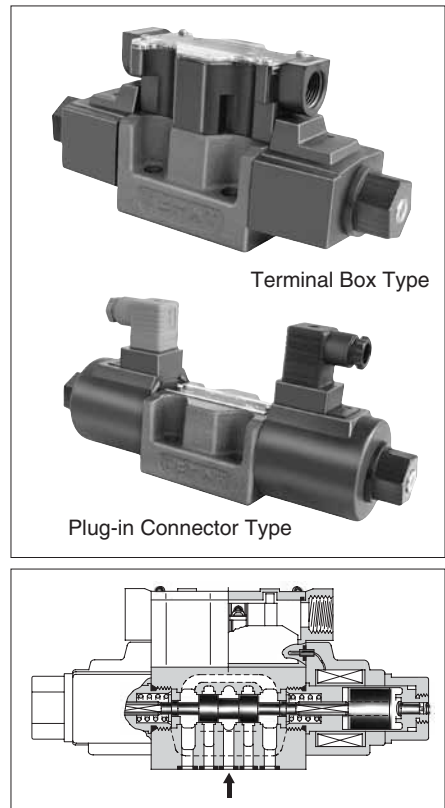
- Standard type .... Useable at high pressure: 31.5 MPa (4570 PSI) and high flow: 120 L/min (31.7 U.S.GPM)
- Shockless type .... A noise at spool changeover and a vibration in piping can be reduced to a minimum.

### Stable Operation

With a strong magnet and spring force, the valves are tough against contamination and thus ensure a stable operation.

### Usable in products of various standards

CE/UL/CSA certified products are available.



### Specifications

| Valve Type               | Model Numbers         | Max. Flow<br>L/min (U.S.GPM) | Max. Operating Pressure<br>MPa (PSI)              | Max. T-Line Back Pres.<br>MPa (PSI) | Max. Changeover Frequency<br>min <sup>-1</sup> (Cycles/Min) | Approx. Mass kg(1bs.) |           |
|--------------------------|-----------------------|------------------------------|---------------------------------------------------|-------------------------------------|-------------------------------------------------------------|-----------------------|-----------|
|                          |                       |                              |                                                   |                                     |                                                             | Type of Solenoid      |           |
| Standard Type            | DSG-03-3C*-50/5090    | 120 (31.7)                   | 31.5 (4570)<br>[Spool Type 60 Only]<br>25 (3630)] | 16 (2320)                           | 240<br>(R Type Sol. Only)<br>120                            | 3.6 (7.9)             | 5 (11)    |
|                          | DSG-03-2D2*-50/5090   |                              |                                                   |                                     |                                                             | 2.9 (6.4)             | 3.6 (7.9) |
|                          | DSG-03-2B*-50/5090    |                              |                                                   |                                     |                                                             | —                     | 5 (11)    |
| Shockless Type           | S-DSG-03-3C*-50/5090  | 120 (31.7)                   | 25 (3630)                                         | 16 (2320)                           | 120                                                         | —                     | 3.6 (7.9) |
|                          | S-DSG-03-2B2*-50/5090 |                              |                                                   |                                     |                                                             | —                     | 5 (11)    |
| Low Wattage<br>(14W)Type | L-DSG-03-3C*-50/5090  | 60 (15.9)                    | 16 (2320)                                         | 16 (2320)                           | 240<br>(R Type Sol. Only)<br>120                            | 3.6 (7.9)             | 5 (11)    |
|                          | L-DSG-03-2D2*-50/5090 |                              |                                                   |                                     |                                                             | 2.9 (6.4)             | 3.6 (7.9) |
|                          | L-DSG-03-2B*-50/5090  |                              |                                                   |                                     |                                                             | —                     | 5 (11)    |

★1 For details of L-DSG-03, please contact us.

★2 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 and Maximum Flow" on pages 364 to 368.

### Sub-plate

| Piping Size | Japanese Standard "JIS" |             | European Design Standard |             | N.American Design Standard |             | Approx. Mass kg (lbs.) |
|-------------|-------------------------|-------------|--------------------------|-------------|----------------------------|-------------|------------------------|
|             | Sub-plate Model Numbers | Thread Size | Sub-plate Model Numbers  | Thread Size | Sub-plate Model Numbers    | Thread Size |                        |
| 3/8         | DSGM-03-40              | Rc 3/8      | DSGM-03-2180             | 3/8 BSP.F   | DSGM-03-2190               | 3/8 NPT     | 3.0 (6.6)              |
| 1/2         | DSGM-03X-40             | Rc 1/2      | DSGM-03X-2180            | 1/2 BSP.F   | DSGM-03X-2190              | 1/2 NPT     | 3.0 (6.6)              |
| 3/4         | DSGM-03Y-40             | Rc 3/4      | DSGM-03Y-2180            | 3/4 BSP.F   | DSGM-03Y-2190              | 3/4 NPT     | 4.7 (10.4)             |

- 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.

### Mounting Bolts

For socket head cap screws in the table below are included.

| Descriptions                | Soc. Hd. Cap Screw (4 pcs.) | Tightening Torque                  |
|-----------------------------|-----------------------------|------------------------------------|
| Japanese Standard "JIS"     | M6 × 35 Lg.                 | 12 - 15 Nm<br>(106 - 133 in. lbs.) |
| European Design Standard    |                             |                                    |
| N. American Design Standard | 1/4-20 UNC × 1-1/2 Lg.      |                                    |

## Solenoid Ratings

| Valve Type     | Electric source                        | Coil Type | Frequency (Hz) | Voltage (V)   |                   | Current & Power at Rated Voltage |             |           |
|----------------|----------------------------------------|-----------|----------------|---------------|-------------------|----------------------------------|-------------|-----------|
|                |                                        |           |                | Source Rating | Serviceable Range | Inrush (A) <sup>★2</sup>         | Holding (A) | Power (W) |
| Standard Type  | AC <sup>★1</sup>                       | A100      | 50             | 100           | 80 - 110          | 5.37                             | 0.90        | —         |
|                |                                        |           | 60             | 100           | 90 - 120          | 4.57                             | 0.63        |           |
|                |                                        |           |                | 110           |                   | 5.03                             | 0.77        |           |
|                |                                        | A120      | 50             | 120           | 96 - 132          | 4.48                             | 0.75        |           |
|                |                                        |           | 60             |               | 108 - 144         | 3.81                             | 0.52        |           |
|                |                                        | A200      | 50             | 200           | 160 - 220         | 2.69                             | 0.45        |           |
|                |                                        |           | 60             |               | 180 - 240         | 2.29                             | 0.31        |           |
|                |                                        |           |                |               |                   | 2.52                             | 0.38        |           |
|                |                                        | A240      | 50             | 240           | 192 - 264         | 2.24                             | 0.37        |           |
|                |                                        |           | 60             |               | 216 - 288         | 1.91                             | 0.26        |           |
| Shockless Type | DC (K Series)                          | D12       | —              | 12            | 10.8 - 13.2       | —                                | 3.16        | 38        |
|                |                                        | D24       |                | 24            | 21.6 - 26.4       |                                  | 1.57        |           |
|                |                                        | D100      |                | 100           | 90 - 110          |                                  | 0.38        |           |
|                | AC→DC Rectified (R)                    | R100      | 50/60          | 100           | 90 - 110          | —                                | 0.43        | 38        |
|                |                                        | R200      |                | 200           | 180 - 220         |                                  | 0.21        |           |
|                | AC→DC Rectified (RQ)<br>(Quick Return) | RQ100     | 50/60          | 100           | 90 - 110          | —                                | 0.43        | 38        |
|                |                                        |           |                |               |                   |                                  |             |           |

★1. AC solenoid is not available in shockless type.

R or RQ type models with built-in current rectifier is recommended for shockless operation with AC power.

★2. Inrush current in the above table show rms values at maximum stroke.

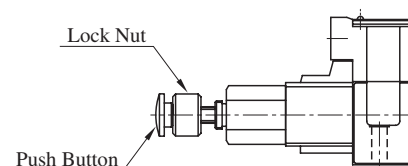
★3. There are more coil types other than the above. For details, please make inquiries .

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

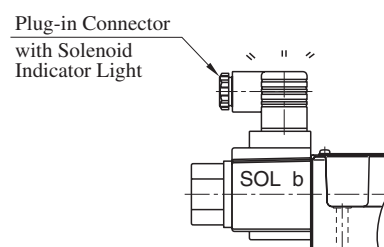
### ● Push Button with Lock Nut

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



### ● Plug-in Connector with Solenoid Indicator Light

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.



### ● M8 Mounting Bolts.

As the mounting bolts, M6 socket head cap screws are used for the standard valves, however, M8 socket head cap screws are also available for supply as optional extras. In case the M8 screws are required, suffix "02" to the design number of both valve and sub-plate model number like below.

(Example)

Valve: DSG-03-3C2-A100-5002

Sub-plate: DSGM-03-4002

The valve is supplied with 4 pcs. hexagon socket head cap screws M8 × 38 Lg.

## Model Number Designation

| F-                                                                       | S-                        | DSG                                                  | -03           | -2                              | B                               | 2                                         | A                                                              | -D24                                                                                                                         | -C                                 | -N                                  | -50              | *                                                                       | -L                                                                                                                                  |                                     |   |  |
|--------------------------------------------------------------------------|---------------------------|------------------------------------------------------|---------------|---------------------------------|---------------------------------|-------------------------------------------|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------|------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---|--|
| Special<br>Seals                                                         | Shockles<br>Type          | Series<br>Number                                     | Valve<br>Size | Number<br>of Valve<br>Positions | Spool-<br>Spring<br>Arrangement | Spool<br>Type                             | Special Two<br>Position Valve<br><br>(Omit if not<br>required) | Coil<br>Type                                                                                                                 | Manual<br>Override                 | Electrical<br>Conduit<br>Connection | Design<br>Number | Design<br>Standard                                                      | Models with<br>Reverse Mtg. of<br>Solenoid<br><br>(Omit if not<br>required)                                                         |                                     |   |  |
| F:<br>For Phosphate<br>Ester Type<br>Fluids<br>(Omit if not<br>required) | None:<br>Standard<br>Type | DSG:<br>Solenoid<br>Operated<br>Directional<br>Valve | 03            | 3:<br>Three<br>Positions        | C:<br>Spring<br>Centred         | 2, 3<br>4, 40<br>5, 60<br>9, 10<br>11, 12 | —                                                              | AC:<br>A100<br>A120<br>A200<br>A240<br>DC:<br>D12<br>D24<br>D100<br>R:<br>(AC→DC)<br>R100<br>R200<br>RQ:<br>(AC→DC)<br>RQ100 | None:<br>Manual<br>Override<br>Pin | None:<br>Terminal<br>Box Type       | 50               | None:<br>Japanese<br>Std. "JIS"<br><br>90:<br>N.American<br>Design Std. | —                                                                                                                                   |                                     |   |  |
|                                                                          |                           |                                                      |               | 2:<br>Two<br>Positions          | D:<br>No-Spring<br>Detented     | 2                                         | —                                                              | R100<br>R200                                                                                                                 |                                    |                                     |                  |                                                                         | N:<br>*2<br>Plug-in<br>Connector<br>Type<br><br>N1:<br>*3<br>Plug-in<br>Connector<br>Type<br>with<br>Indicator<br>Light<br>(Option) | L                                   |   |  |
|                                                                          |                           |                                                      |               |                                 | B:<br>Spring<br>Offset          | 2<br>3<br>8                               | A*1<br>B*1                                                     | RQ100                                                                                                                        |                                    |                                     |                  |                                                                         |                                                                                                                                     |                                     |   |  |
|                                                                          |                           |                                                      |               | 3:<br>Three<br>Positions        | C:<br>Spring<br>Centred         | 2<br>4                                    | —                                                              | DC:<br>D12<br>D24<br>D100<br><br>R:<br>(AC DC)<br>R100<br>R200                                                               |                                    |                                     |                  |                                                                         | C:<br>Push<br>Button<br>and<br>Lock Nut<br>(Option)                                                                                 | 90:<br>N.American<br>Design<br>Std. | — |  |
|                                                                          | 2:<br>Two<br>Positions    |                                                      |               |                                 | B:<br>Spring<br>Offset          | 2                                         | A*1<br>B*1                                                     | RQ:<br>(AC DC)<br>RQ100                                                                                                      | L                                  |                                     |                  |                                                                         |                                                                                                                                     |                                     |   |  |
|                                                                          |                           |                                                      |               |                                 |                                 |                                           |                                                                |                                                                                                                              |                                    |                                     |                  |                                                                         |                                                                                                                                     |                                     |   |  |
|                                                                          | S:<br>Shockles<br>Type    |                                                      |               |                                 |                                 |                                           |                                                                |                                                                                                                              |                                    |                                     |                  |                                                                         |                                                                                                                                     |                                     |   |  |
|                                                                          |                           |                                                      |               |                                 |                                 |                                           |                                                                |                                                                                                                              |                                    |                                     |                  |                                                                         |                                                                                                                                     |                                     |   |  |
|                                                                          |                           |                                                      |               |                                 |                                 |                                           |                                                                |                                                                                                                              |                                    |                                     |                  |                                                                         |                                                                                                                                     |                                     |   |  |
|                                                                          |                           |                                                      |               |                                 |                                 |                                           |                                                                |                                                                                                                              |                                    |                                     |                  |                                                                         |                                                                                                                                     |                                     |   |  |
|                                                                          |                           |                                                      |               |                                 |                                 |                                           |                                                                |                                                                                                                              |                                    |                                     |                  |                                                                         |                                                                                                                                     |                                     |   |  |
|                                                                          |                           |                                                      |               |                                 |                                 |                                           |                                                                |                                                                                                                              |                                    |                                     |                  |                                                                         |                                                                                                                                     |                                     |   |  |

★ 1. In case of the special two position valve, please refer to [page 369](#) for details.

★ 2. N is not available for RQ-type solenoids .

★ 3. N1 is not available for R and RQ-type solenoids .

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 handles as options, therefore, please confirm the time of delivery with us before ordering.

E



DSG-03 Series Solenoid  
Operated Directional Valves

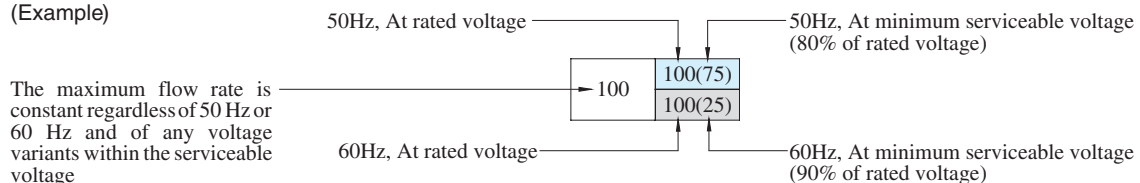
■ List of Standard Models and The Maximum Flow

● Models with AC Solenoids: DSG-03-\*\*\*-A\*

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow L/min                |     |         |         |                             |         |         |         |                             |         |         |         |
|------------------------|--------------------------|---------------|-----------------|--------------------------------|-----|---------|---------|-----------------------------|---------|---------|---------|-----------------------------|---------|---------|---------|
|                        |                          |               |                 | P → A → B → T<br>P → B → A → T |     |         |         | P → A<br>[Port "B" Blocked] |         |         |         | P → B<br>[Port "A" Blocked] |         |         |         |
|                        |                          |               |                 |                                |     |         |         |                             |         |         |         |                             |         |         |         |
|                        |                          |               |                 | Working Pressure MPa           |     |         |         | Working Pressure MPa        |         |         |         | Working Pressure MPa        |         |         |         |
|                        |                          |               |                 | 10                             | 16  | 25      | 31.5    | 10                          | 16      | 25      | 31.5    | 10                          | 16      | 25      | 31.5    |
| Three Positions        | Spring Centred           | DSG-03-3C2    |                 | 100                            | 100 | 100     | 100     | 100(70)                     | 100(48) | 96(28)  | 65(24)  | 100(70)                     | 100(48) | 96(28)  | 65(24)  |
|                        |                          | DSG-03-3C3    |                 | 90                             | 90  | 90      | 90      | 90(49)                      | 53(30)  | 34(19)  | 26(15)  | 90(49)                      | 53(30)  | 34(19)  | 26(15)  |
|                        |                          | DSG-03-3C4    |                 | 80                             | 80  | 80(65)  | 80(25)  | 100(81)                     | 100(81) | 100(81) | 100(81) | 100(81)                     | 100(81) | 100(81) | 100(81) |
|                        |                          | DSG-03-3C40   |                 | 100                            | 100 | 80(65)  | 80(25)  | 100(81)                     | 100(81) | 100(81) | 100(81) | 100(81)                     | 100(81) | 100(81) | 100(81) |
|                        |                          | DSG-03-3C5    |                 | 30                             | 30  | 75(20)  | 30(15)  | 100(58)                     | 100(33) | 76(22)  | 46(19)  | 100(58)                     | 100(33) | 76(22)  | 46(19)  |
|                        |                          | DSG-03-3C60   |                 | 70                             | 70  | 30(15)  | 30(15)  | 90(47)                      | 50(26)  | 28(18)  | 22(15)  | 90(47)                      | 50(26)  | 28(18)  | 22(15)  |
|                        |                          | DSG-03-3C9    |                 | 100                            | 100 | 100(75) | 100(25) | 100(62)                     | 100(39) | 84(21)  | 48(18)  | 100(62)                     | 100(39) | 84(21)  | 48(18)  |
|                        |                          | DSG-03-3C10   |                 | 80                             | 80  | 100(75) | 80(20)  | 100(62)                     | 100(39) | 84(21)  | 48(18)  | 100(62)                     | 100(39) | 84(21)  | 48(18)  |
|                        |                          | DSG-03-3C11   |                 | 100                            | 100 | 100(25) | 100(25) | 62(40)                      | 47(26)  | 27(16)  | 20(12)  | 62(40)                      | 47(26)  | 27(16)  | 20(12)  |
|                        |                          | DSG-03-3C12   |                 | 90                             | 90  | 80(30)  | 80(20)  | 100(55)                     | 100(36) | 60(21)  | 34(16)  | 100(55)                     | 100(36) | 60(21)  | 34(16)  |
| Two Positions          | No-Spring Detented       | DSG-03-2D2    |                 | 100                            | 100 | 100     | 100     | 40                          | 40      | 30      | 28      | 60                          | 60      | 40      | 35      |
|                        | Spring Offset            | DSG-03-2B2    |                 | 100                            | 100 | 100     | 100     | 34                          | 24      | 20      | 19      | 100(62)                     | 100(62) | 100(44) | 94(37)  |
|                        |                          | DSG-03-2B3    |                 | 100                            | 100 | 100     | 100     | 57                          | 57      | 57      | 57      | 100(79)                     | 100(72) | 100(64) | 100(59) |
|                        |                          | DSG-03-2B8    |                 | —                              | —   | —       | —       | 26                          | 19      | 18      | 16      | 100(35)                     | 87(15)  | 61(9)   | 49(7)   |

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)



2. For the maximum flow rate in P → T of the valves with a ★ mark, please see [page 368](#).

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

## List of Standard Models and The Maximum Flow

- Models with DC Solenoids: DSG-03-\*\*\*-D\*
- Models with R Type Solenoids: DSG-03-\*\*\*-R\*
- Models with RQ Type Solenoids: DSG-03-\*\*\*-RQ100\*

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow L/min      |     |     |      |                             |     |     |      |                             |     |     |      |
|------------------------|--------------------------|---------------|-----------------|----------------------|-----|-----|------|-----------------------------|-----|-----|------|-----------------------------|-----|-----|------|
|                        |                          |               |                 | P → A → B → T        |     |     |      | P → A<br>[Port "B" Blocked] |     |     |      | P → B<br>[Port "A" Blocked] |     |     |      |
|                        |                          |               |                 |                      |     |     |      |                             |     |     |      |                             |     |     |      |
|                        |                          |               |                 | Working Pressure MPa |     |     |      | Working Pressure MPa        |     |     |      | Working Pressure MPa        |     |     |      |
|                        |                          |               |                 | 10                   | 16  | 25  | 31.5 | 10                          | 16  | 25  | 31.5 | 10                          | 16  | 25  | 31.5 |
| Three Positions        | Spring Centred           | DSG-03-3C2    |                 | 120                  | 120 | 120 | 120  | 120                         | 120 | 80  | 55   | 120                         | 120 | 80  | 55   |
|                        |                          | DSG-03-3C3    |                 | 120                  | 120 | 120 | 120  | 120                         | 120 | 120 | 120  | 120                         | 120 | 120 | 120  |
|                        |                          | DSG-03-3C4    |                 | 120                  | 120 | 120 | 120  | 120                         | 120 | 84  | 64   | 120                         | 120 | 84  | 64   |
|                        |                          | DSG-03-3C40   |                 | 120                  | 120 | 120 | 120  | 120                         | 120 | 65  | 53   | 120                         | 120 | 65  | 53   |
|                        |                          | DSG-03-3C5    |                 | 50                   | 50  | 50  | 50   | 35                          | 24  | 21  | 20   | 45                          | 45  | 45  | 45   |
|                        |                          | DSG-03-3C60   |                 | 120                  | 120 | 120 | —    | 120                         | 120 | 120 | —    | 120                         | 120 | 120 | —    |
|                        |                          | DSG-03-3C9    |                 | 120                  | 120 | 120 | 120  | 100                         | 100 | 100 | 100  | 100                         | 100 | 100 | 100  |
|                        |                          | DSG-03-3C10   |                 | 120                  | 120 | 120 | 65   | 120                         | 112 | 60  | 51   | 120                         | 112 | 60  | 51   |
|                        |                          | DSG-03-3C11   |                 | 120                  | 120 | 120 | 120  | 100                         | 100 | 80  | 65   | 100                         | 100 | 80  | 65   |
|                        |                          | DSG-03-3C12   |                 | 120                  | 120 | 120 | 65   | 120                         | 120 | 62  | 51   | 120                         | 120 | 62  | 51   |
| Two Positions          | No-Spring Detented       | DSG-03-2D2    |                 | 120                  | 120 | 120 | 120  | 45                          | 37  | 30  | 28   | 60                          | 60  | 40  | 35   |
|                        | Spring Offset            | DSG-03-2B2    |                 | 110                  | 110 | 110 | 110  | 68                          | 47  | 38  | 38   | 120                         | 114 | 75  | 63   |
|                        |                          | DSG-03-2B3    |                 | 120                  | 120 | 120 | 120  | 77                          | 77  | 77  | 77   | 120                         | 120 | 120 | 120  |
|                        |                          | DSG-03-2B8    |                 | —                    | —   | —   | —    | 53                          | 33  | 24  | 23   | 120                         | 120 | 62  | 47   |

Notes ) 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

|     |     |
|-----|-----|
| 120 | 120 |
|     | 65  |

At rated voltage [after temperature rise and saturated]

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

2. For the maximum flow rate in P → T of the valves with a ★ mark, please see [page 368](#).

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

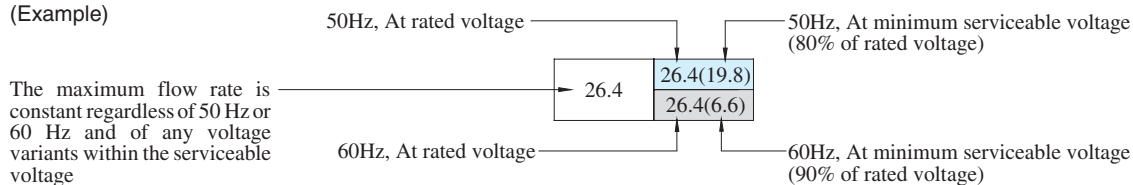
■ List of Standard Models and The Maximum Flow

● Models with AC Solenoids: DSG-03-\*\*\*-A\*

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbol | Max. Flow U.S.GPM    |      |             |            |                             |             |             |            |                             |             |             |             |
|------------------------|--------------------------|---------------|----------------|----------------------|------|-------------|------------|-----------------------------|-------------|-------------|------------|-----------------------------|-------------|-------------|-------------|
|                        |                          |               |                | P → A → B → T        |      |             |            | P → A<br>[Port "B" Blocked] |             |             |            | P → B<br>[Port "A" Blocked] |             |             |             |
|                        |                          |               |                |                      |      |             |            |                             |             |             |            |                             |             |             |             |
|                        |                          |               |                | Working Pressure PSI |      |             |            | Working Pressure PSI        |             |             |            | Working Pressure PSI        |             |             |             |
|                        |                          |               |                | 1450                 | 2320 | 3630        | 4570       | 1450                        | 2320        | 3630        | 4570       | 1450                        | 2320        | 3630        | 4570        |
| Three Positions        | Spring Centred           | DSG-03-3C2    |                | 26.4                 | 26.4 | 26.4        | 26.4       | 26.4 (18.5)                 | 26.4 (12.7) | 25.4 (7.4)  | 17.2 (6.3) | 26.4 (18.5)                 | 26.4 (12.7) | 25.4 (7.4)  | 17.2 (6.3)  |
|                        |                          | DSG-03-3C3    |                | 23.8                 | 23.8 | 23.8        | 23.8       | 23.8 (12.9)                 | 14.0 (7.9)  | 9.0 (5.0)   | 6.7 (4.0)  | 23.8 (12.9)                 | 14.0 (7.9)  | 9.0 (5.0)   | 6.7 (4.0)   |
|                        |                          | DSG-03-3C4    |                | 21.1                 | 21.1 | 21.1 (17.2) | 21.1 (6.6) | 26.4 (15.3)                 | 26.4 (8.7)  | 20.1 (5.8)  | 12.2 (5.0) | 26.4 (15.3)                 | 26.4 (8.7)  | 20.1 (5.8)  | 12.2 (5.0)  |
|                        |                          | DSG-03-3C40   |                | 26.4                 | 26.4 | 26.4        | 26.4       | 26.4 (19.8)                 | 26.4 (16.4) | 26.4 (10.3) | 22.2 (5.5) | 12.7 (4.8)                  | 26.4 (16.4) | 26.4 (10.3) | 22.2 (5.5)  |
|                        |                          | DSG-03-3C5    |                | 7.9                  | 7.9  | 7.9         | 7.9        | 6.9                         | 5.5         | 4.8         | 4.2        | 7.9                         | 7.4         | 7.4         | 7.4         |
|                        |                          | DSG-03-3C60   |                | 18.5                 | 18.5 | 18.5        | —          | 26.4                        | 26.4        | 26.4        | —          | 26.4                        | 26.4        | 26.4        | —           |
|                        |                          | DSG-03-3C9    |                | 26.4                 | 26.4 | 26.4        | 26.4       | 15.9                        | 15.9        | 15.9        | 15.9       | 15.9                        | 15.9        | 15.9        | 15.9        |
|                        |                          | DSG-03-3C10   |                | 21.1                 | 21.1 | 21.1 (7.9)  | 21.1 (5.3) | 26.4 (14.5)                 | 26.4 (9.5)  | 15.9 (5.5)  | 9.0 (4.2)  | 26.4 (14.5)                 | 26.4 (9.5)  | 15.9 (5.5)  | 9.0 (4.2)   |
|                        |                          | DSG-03-3C11   |                | 26.4                 | 26.4 | 26.4        | 26.4       | 26.4 (21.1)                 | 26.4 (17.2) | 22.5 (9.2)  | 16.4 (7.4) | 26.4 (21.1)                 | 26.4 (17.2) | 22.5 (9.2)  | 16.4 (7.4)  |
|                        |                          | DSG-03-3C12   |                | 23.8                 | 23.8 | 23.8 (7.9)  | 23.8 (5.3) | 26.4 (14.5)                 | 26.4 (9.5)  | 15.9 (5.5)  | 9.0 (4.2)  | 26.4 (14.5)                 | 26.4 (9.5)  | 15.9 (5.5)  | 9.0 (4.2)   |
| Two Positions          | No-Spring Detented       | DSG-03-2D2    |                | 26.4                 | 26.4 | 26.4        | 26.4       | 10.6                        | 10.6        | 7.9         | 7.4        | 15.9                        | 15.9        | 10.6        | 9.2         |
|                        | Spring Offset            | DSG-03-2B2    |                | 26.4                 | 26.4 | 26.4        | 26.4       | 9.0                         | 6.3         | 5.3         | 5.0        | 26.4 (16.4)                 | 26.4 (16.4) | 26.4 (11.6) | 24.8 (9.8)  |
|                        |                          | DSG-03-2B3    |                | 26.4                 | 26.4 | 26.4        | 26.4       | 15.1                        | 15.1        | 15.1        | 15.1       | 26.4 (20.9)                 | 26.4 (19)   | 26.4 (16.9) | 26.4 (15.6) |
|                        |                          | DSG-03-2B8    |                | —                    | —    | —           | —          | 6.9                         | 5.0         | 4.8         | 4.2        | 26.4 (9.2)                  | 23 (4.0)    | 16.1 (2.4)  | 12.9 (1.8)  |

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

(Example)



2. For the maximum flow rate in P → T of the valves with a ★ mark, please see [page 368](#).

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



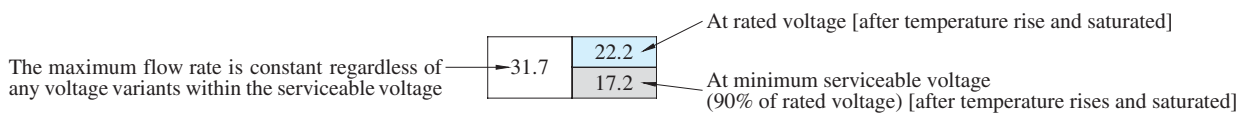
## List of Standard Models and The Maximum Flow

- Models with DC Solenoids: DSG-03-\*\*\*-D\*
- Models with R Type Solenoids: DSG-03-\*\*\*-R\*
- Models with RQ Type Solenoids: DSG-03-\*\*\*-RQ100\*

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow U.S. GPM   |      |      |      |                             |      |      |      |                             |      |      |      |
|------------------------|--------------------------|---------------|-----------------|----------------------|------|------|------|-----------------------------|------|------|------|-----------------------------|------|------|------|
|                        |                          |               |                 | P → A → B → T        |      |      |      | P → A<br>[Port "B" Blocked] |      |      |      | P → B<br>[Port "A" Blocked] |      |      |      |
|                        |                          |               |                 |                      |      |      |      |                             |      |      |      |                             |      |      |      |
|                        |                          |               |                 | Working Pressure PSI |      |      |      | Working Pressure PSI        |      |      |      | Working Pressure PSI        |      |      |      |
|                        |                          |               |                 | 1450                 | 2320 | 3630 | 4570 | 1450                        | 2320 | 3630 | 4570 | 1450                        | 2320 | 3630 | 4570 |
| Three Positions        | Spring Centred           | DSG-03-3C2    |                 | 31.7                 | 31.7 | 31.7 | 31.7 | 31.7                        | 31.7 | 21.1 | 14.5 | 31.7                        | 31.7 | 21.1 | 14.5 |
|                        |                          | DSG-03-3C3    |                 | 31.7                 | 31.7 | 31.7 | 31.7 | 31.7                        | 31.7 | 31.7 | 31.7 | 31.7                        | 31.7 | 31.7 | 31.7 |
|                        |                          | DSG-03-3C4    |                 | 31.7                 | 31.7 | 31.7 | 31.7 | 31.7                        | 31.7 | 22.2 | 16.9 | 31.7                        | 31.7 | 22.2 | 16.9 |
|                        |                          | DSG-03-3C40   |                 | 31.7                 | 31.7 | 31.7 | 31.7 | 31.7                        | 31.7 | 16.4 | 12.9 | 31.7                        | 31.7 | 16.4 | 12.9 |
|                        |                          | DSG-03-3C5    |                 | 13.2                 | 13.2 | 13.2 | 13.2 | 9.2                         | 6.3  | 5.5  | 5.3  | 11.9                        | 11.9 | 11.9 | 11.9 |
|                        |                          | DSG-03-3C60   |                 | 31.7                 | 31.7 | 31.7 | —    | 31.7                        | 31.7 | 31.7 | —    | 31.7                        | 31.7 | 31.7 | —    |
|                        |                          | DSG-03-3C9    |                 | 31.7                 | 31.7 | 31.7 | 31.7 | 26.4                        | 26.4 | 26.4 | 26.4 | 26.4                        | 26.4 | 26.4 | 26.4 |
|                        |                          | DSG-03-3C10   |                 | 31.7                 | 31.7 | 31.7 | 17.2 | 31.7                        | 29.6 | 15.9 | 13.5 | 31.7                        | 29.6 | 15.9 | 13.5 |
|                        |                          | DSG-03-3C11   |                 | 31.7                 | 31.7 | 31.7 | 31.7 | 26.4                        | 26.4 | 21.1 | 17.2 | 26.4                        | 26.4 | 21.1 | 17.2 |
|                        |                          | DSG-03-3C12   |                 | 31.7                 | 31.7 | 31.7 | 17.2 | 31.7                        | 31.7 | 16.4 | 13.5 | 31.7                        | 31.7 | 16.4 | 13.5 |
| Two Positions          | No-Spring Detented       | DSG-03-2D2    |                 | 31.7                 | 31.7 | 31.7 | 31.7 | 11.9                        | 9.8  | 7.9  | 7.4  | 15.9                        | 15.9 | 10.6 | 9.2  |
|                        | Spring Offset            | DSG-03-2B2    |                 | 29.1                 | 29.1 | 29.1 | 29.1 | 18                          | 12.4 | 10   | 10   | 31.7                        | 30.1 | 19.8 | 16.6 |
|                        |                          |               |                 | 26.4                 | 26.4 | 26.4 | 26.4 |                             |      |      |      |                             | 21.9 | 15.3 | 12.7 |
|                        |                          | DSG-03-2B3    |                 | 31.7                 | 31.7 | 31.7 | 31.7 | 20.3                        | 20.3 | 20.3 | 20.3 | 31.7                        | 31.7 | 31.7 | 31.7 |
|                        |                          | DSG-03-2B8    |                 | —                    | —    | —    | —    | 14                          | 8.7  | 6.3  | 6.1  | 31.7                        | 31.7 | 16.4 | 12.4 |

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

(Example)



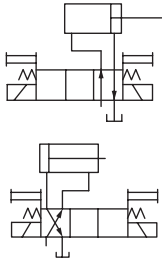
2. For the maximum flow rate in P → T of the valves with a ★ mark, please see [page 368](#).

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

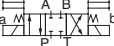
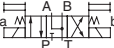
In valve type 3C3, 3C5 and 3C60, in case where the actuator is put on in between the cylinder ports A and B as illustrated below and where the actuator moves and suspended at its stroke end and where the valve is then shifted to the neutral position in the suspended state of the actuator, the maximum flow rates available are those as shown as the table below regardless of any voltage in the range of serviceable voltage.



| Model Numbers           | Graphic Symbols | Max. Flow L/min (U.S.GPM) |                      |                      |                        |
|-------------------------|-----------------|---------------------------|----------------------|----------------------|------------------------|
|                         |                 | 10 MPa<br>(1450 PSI)      | 16 MPa<br>(2320 PSI) | 25 MPa<br>(3630 PSI) | 31.5 MPa<br>(4570 PSI) |
| DSG-03-3C3-A*           |                 | 100 (26.4)                | 100 (26.4)           | 100 (26.4)           | 100 (26.4)             |
| DSG-03-3C3-D*/R*/RQ100  |                 | 120 (31.7)                | 120 (31.7)           | 120 (31.7)           | 120 (31.7)             |
| DSG-03-3C5-A*           |                 | 26 (6.9)                  | 21 (5.5)             | 18 (4.8)             | 16 (4.2)               |
| DSG-03-3C5-D*/R*/RQ100  |                 | 35 (9.2)                  | 24 (6.3)             | 21 (5.5)             | 20 (5.3)               |
| DSG-03-3C60-A*          |                 | 84 (22.2)                 | 52 (13.7)            | 52 (13.7)            | —                      |
| DSG-03-3C60-D*/R*/RQ100 |                 | 68 (18.0)                 | 65 (17.2)            | 61 (16.1)            | —                      |

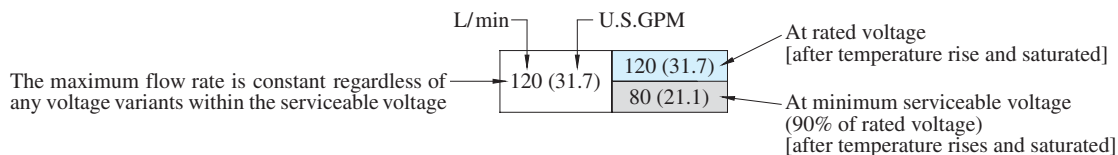
### List of Shockless Models and The Maximum Flow

- Models with DC Solenoids: S-DSG-03-\*\*\*-D\*
- Models with R Type Solenoids: S-DSG-03-\*\*\*-R\*
- Models with RQ Type Solenoids: S-DSG-03-\*\*\*-RQ100

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbols                                                                     | Max. Flow <b>L/min (U.S.GPM)</b>                                                    |              |              |              |                                                                                                            |              |              |              |                                                                                                             |              |              |              |
|------------------------|--------------------------|---------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------|--------------|--------------|------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|-------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|
|                        |                          |               |                                                                                     |  |              |              |              | <br>[Port "B" Blocked] |              |              |              | <br>[Port "A" Blocked] |              |              |              |
|                        |                          |               |                                                                                     |  |              |              |              |                        |              |              |              |                        |              |              |              |
|                        |                          |               |                                                                                     | Working Pressure MPa (PSI)                                                          |              |              |              | Working Pressure MPa (PSI)                                                                                 |              |              |              | Working Pressure MPa (PSI)                                                                                  |              |              |              |
|                        |                          |               |                                                                                     | 5<br>(730)                                                                          | 10<br>(1450) | 16<br>(2320) | 25<br>(3630) | 5<br>(730)                                                                                                 | 10<br>(1450) | 16<br>(2320) | 25<br>(3630) | 5<br>(730)                                                                                                  | 10<br>(1450) | 16<br>(2320) | 25<br>(3630) |
| Three Positions        | Spring Centred           | S-DSG-03-3C2  |  | 120 (31.7)                                                                          | 120 (31.7)   | 120 (31.7)   | 120 (31.7)   | 120 (31.7)                                                                                                 | 120 (31.7)   | 120 (31.7)   | 120 (31.7)   | 120 (31.7)                                                                                                  | 120 (31.7)   | 120 (31.7)   | 120 (31.7)   |
|                        |                          |               |                                                                                     |                                                                                     |              |              |              |                                                                                                            | 105 (27.7)   | 65 (17.2)    | 40 (10.6)    |                                                                                                             |              | 105 (27.7)   | 65 (17.2)    |
|                        |                          | S-DSG-03-3C4  |  | 120 (31.7)                                                                          | 120 (31.7)   | 85 (22.5)    | 65 (17.2)    | 120 (31.7)                                                                                                 | 120 (31.7)   | 75 (19.8)    | 40 (10.6)    | 120 (31.7)                                                                                                  | 120 (31.7)   | 75 (19.8)    | 40 (10.6)    |
|                        |                          |               |                                                                                     |                                                                                     |              |              | 70 (18.5)    | 45 (11.9)                                                                                                  |              |              | 100 (26.4)   | 65 (17.2)                                                                                                   | 35 (9.2)     |              |              |
| Two Positions          | Spring Offset            | S-DSG-03-2B2  |  | 120 (31.7)                                                                          | 100 (26.4)   | 75 (19.8)    | 40 (10.6)    | 39 (10.3)                                                                                                  | 39 (10.3)    | 39 (10.3)    | 39 (10.3)    | 120 (31.7)                                                                                                  | 120 (31.7)   | 105 (27.7)   | 60 (15.9)    |
|                        |                          |               |                                                                                     |                                                                                     |              |              |              |                                                                                                            |              |              |              |                                                                                                             |              | 80 (21.1)    | 50 (13.2)    |

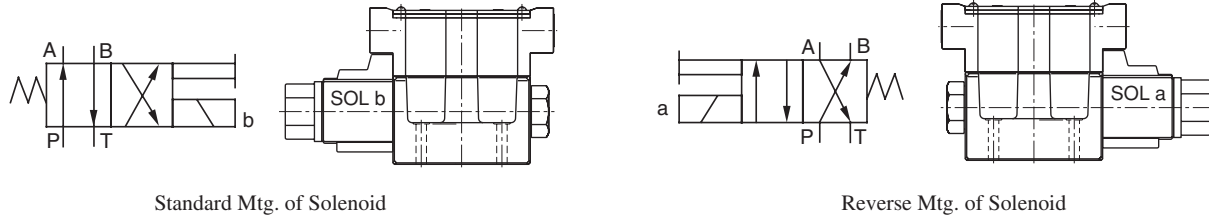
Note: The relation between the maximum flow in the table above and the voltage (within the serviceable voltage) is as shown below.

(Example)



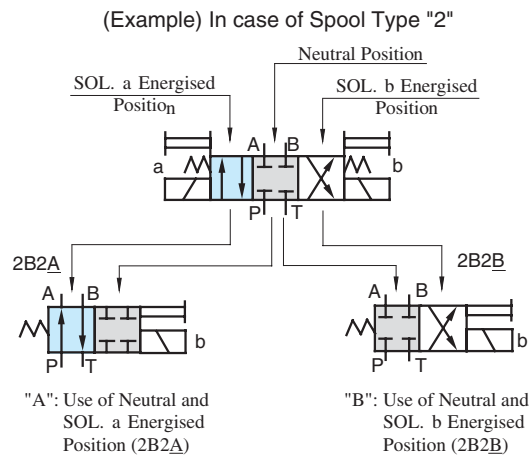
## Reverse Mounting of Solenoid

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.



## Valves Using Neutral Position and Side Position (Special Two Position Valve)

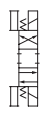
Besides the use of the standard 2-position valves aforementioned in the "List of Standard Models and Maximum Flow", the 3-position valves also can be used as the 2-position valves using the two of their three positions. In this case, there are two kinds of the valve available. One is the valve using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



| Model Numbers    | Graphic Symbols    |                   |
|------------------|--------------------|-------------------|
|                  | Standard Mtg. Type | Reverse Mtg. Type |
| (S-) DSG-03-2B*A |                    |                   |
| (S-) DSG-03-2B2A |                    | —                 |

| Model Numbers    | Graphic Symbols    |                   |
|------------------|--------------------|-------------------|
|                  | Standard Mtg. Type | Reverse Mtg. Type |
| DSG-03-2B*B      |                    |                   |
| (S-) DSG-03-2B2B |                    |                   |
| DSG-03-2B3B      |                    | —                 |
| (S-) DSG-03-2B4B |                    | —                 |
| DSG-03-2B60B     |                    | —                 |
| DSG-03-2B10B     |                    | —                 |

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.



## Typical Changeover Time

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

### Standard Type (Without Shockless Function)

#### [Test Conditions]

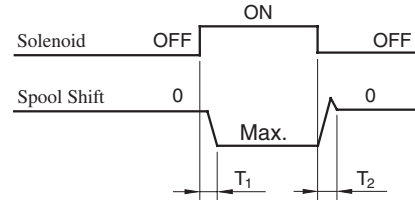
Pressure: 16 MPa (2320 PSI)

Flow Rate: 70 L/min (18.5 U.S.GPM)

Viscosity: 30 mm<sup>2</sup>/s (140 SSU)

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

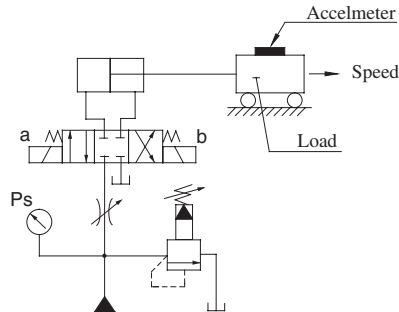
#### [Result of Measurement]



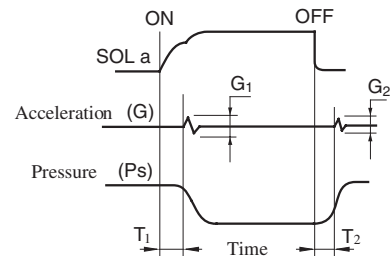
| Type          | Model Numbers    | Changeover Time ms |                |
|---------------|------------------|--------------------|----------------|
|               |                  | T <sub>1</sub>     | T <sub>2</sub> |
| Standard Type | DSG-03-3C2-A*    | 27                 | 22             |
|               | DSG-03-3C2-D*    | 97                 | 30             |
|               | DSG-03-3C2-R*    | 97                 | 204            |
|               | DSG-03-3C2-RQ100 | 97                 | 41             |

### Shockless Type

#### [Test Circuit and Conditions]



#### [Result of Measurement]



Setting Pressure (Ps): 7 MPa (1020 PSI)

Load (W): 1000 kg (2205 lbs.)

Speed: 8.8 m/min (28.9 ft./min)

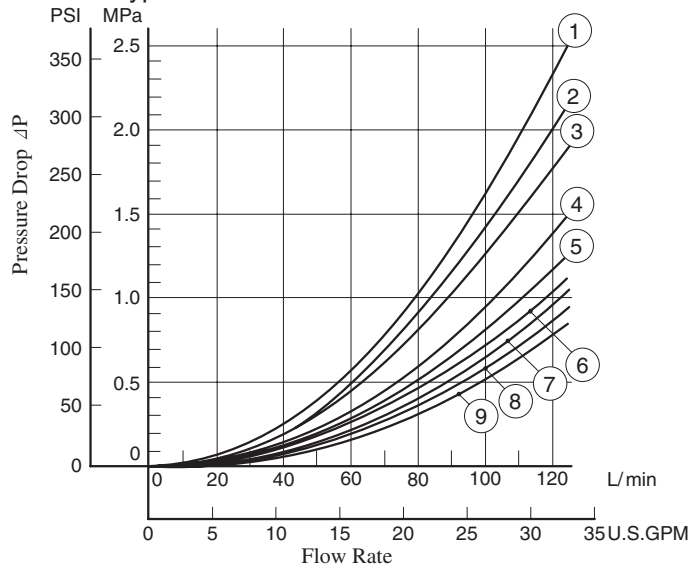
Viscosity: 30 mm<sup>2</sup>/s (140 SSU)

| Type           | Model Numbers      | Time ms        |                | Acceleration m/s <sup>2</sup> (G) |                |
|----------------|--------------------|----------------|----------------|-----------------------------------|----------------|
|                |                    | T <sub>1</sub> | T <sub>2</sub> | G <sub>1</sub>                    | G <sub>2</sub> |
| Shockless Type | S-DSG-03-3C2-D*    | 110            | 120            | 6.4                               | 6.4            |
|                | S-DSG-03-3C2-R*    | 110            | 220            | (.65)                             | (.65)          |
|                | S-DSG-03-3C2-RQ100 | 110            | 120            |                                   |                |

## Pressure Drop

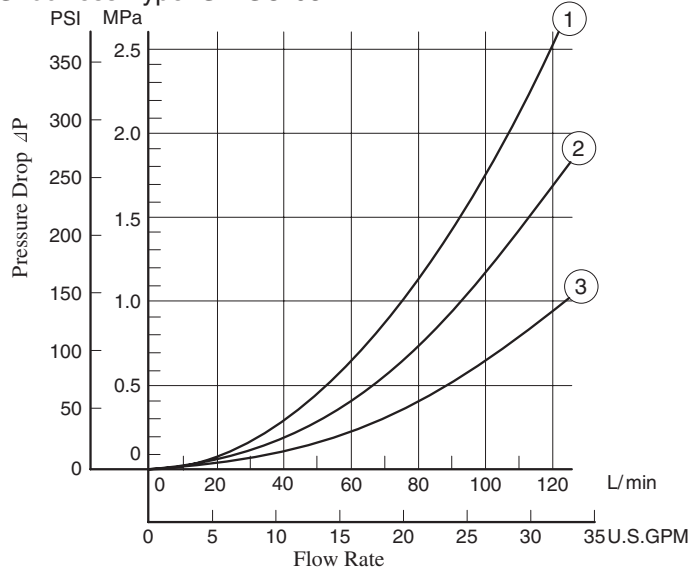
Pressure drop curves based on viscosity of 35 mm<sup>2</sup>/s (164 SSU) and specific gravity of 0.850.

### Standard Type: DSG-03



| Model Numbers | Pressure Drop Curve Number |     |     |     |     |
|---------------|----------------------------|-----|-----|-----|-----|
|               | P→A                        | B→T | P→B | A→T | P→T |
| DSG-03-3C2    | ⑦                          | ⑦   | ⑦   | ⑦   | —   |
| DSG-03-3C3    | ⑨                          | ⑨   | ⑨   | ⑨   | ⑤   |
| DSG-03-3C4    | ⑦                          | ⑧   | ⑦   | ⑧   | —   |
| DSG-03-3C40   | ⑦                          | ⑦   | ⑦   | ⑦   | —   |
| DSG-03-3C5    | ⑨                          | ⑦   | ⑦   | ⑨   | ①   |
| DSG-03-3C60   | ⑥                          | ⑤   | ⑥   | ⑤   | ①   |
| DSG-03-3C9    | ⑨                          | ⑦   | ⑨   | ⑦   | —   |
| DSG-03-3C10   | ⑦                          | ⑧   | ⑦   | ⑦   | —   |
| DSG-03-3C11   | ⑨                          | ⑦   | ⑦   | ⑦   | —   |
| DSG-03-3C12   | ⑦                          | ⑦   | ⑦   | ⑧   | —   |
| DSG-03-2D2    | ④                          | ③   | ⑥   | ⑥   | —   |
| DSG-03-2B2    | ②                          | ①   | ⑦   | ⑦   | —   |
| DSG-03-2B3    | ③                          | ②   | ⑨   | ⑨   | —   |
| DSG-03-2B8    | ⑥                          | —   | ⑤   | —   | —   |

### Shockless Type: S-DSG-03



| Model Numbers | Pressure Drop Curve Number |     |     |     |
|---------------|----------------------------|-----|-----|-----|
|               | P→A                        | B→T | P→B | A→T |
| S-DSG-03-3C2  | ②                          | ②   | ②   | ②   |
| S-DSG-03-3C4  | ②                          | ②   | ③   | ③   |
| S-DSG-03-2B2  | ①                          | ②   | ②   | ②   |

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

| Viscosity | mm <sup>2</sup> /s | 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.

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

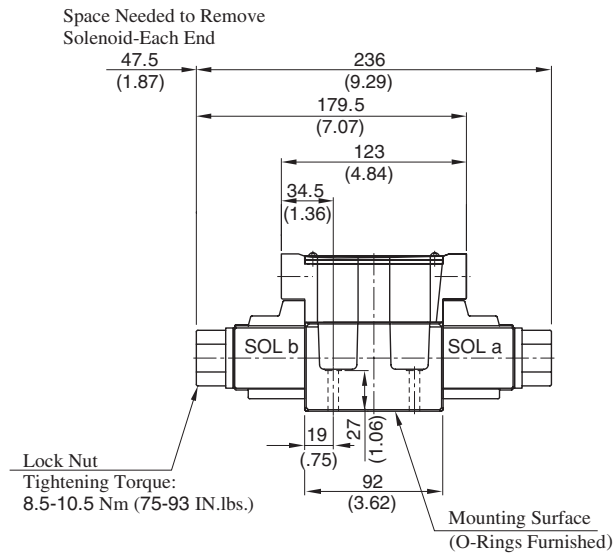
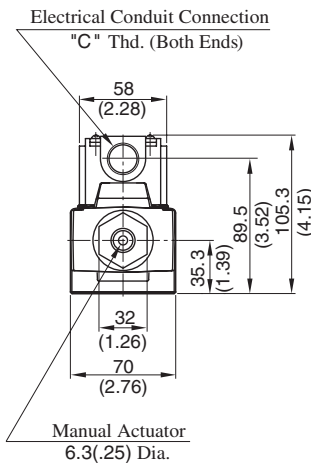
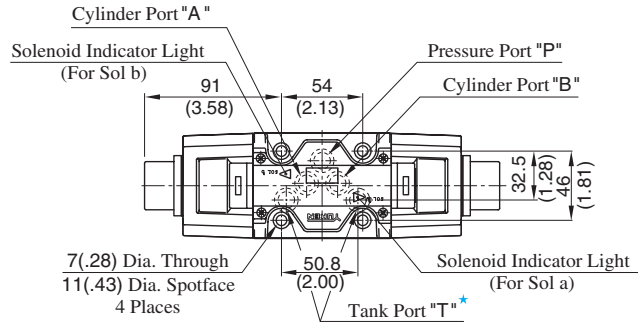


## TERMINAL BOX TYPE

### Models with AC Solenoids: DSG-03- \*\*\*-A\* -50/5090

#### Double Solenoid: Spring Centred & No-Spring Detented

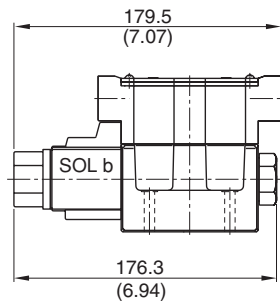
| Model Numbers        | "C" Thd. |
|----------------------|----------|
| DSG-03- ***-A* -50   | G 1/2    |
| DSG-03- ***-A* -5090 | 1/2 NPT  |



★. Of the two of tank port "T", the tank port in the left side is normally used in our standard sub-plate, though, either side of the tank port "T" can be used without problem.

DIMENSIONS IN  
MILLIMETRES (INCHES)

#### Single Solenoid: Spring Offset

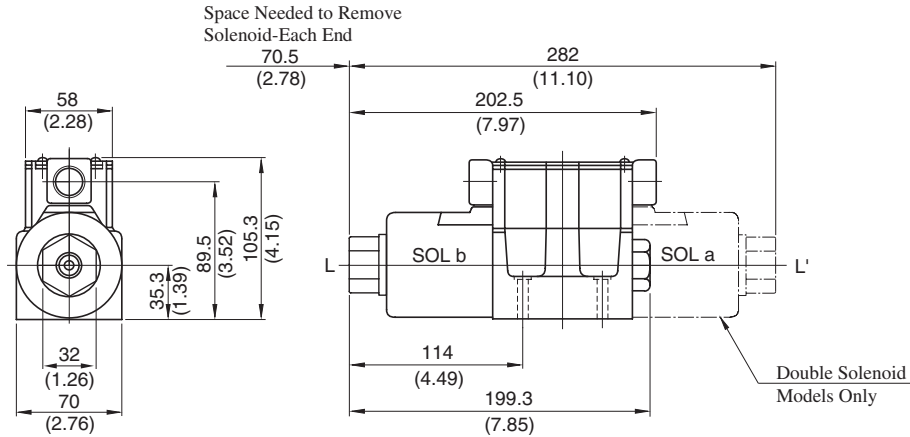


- For other dimensions, refer to "Spring Centred and No-Spring Detented" models.
- Solenoid being mounted in the reverse position -SOL a side- is also available.

Mounting surface: ISO 4401-AC-05-4-A

## TERMINAL BOX TYPE

- Models with DC Solenoids : (S-)DSG-03- \*\*\* -D\* -50/5090
- Models with R Type Solenoids : (S-)DSG-03- \*\*\* -R\* -50/5090
- Models with RQ Type Solenoids : (S-)DSG-03- \*\*\* -RQ100-50/5090
- Double Solenoid: Spring Centred & No-Spring Detented
- Single Solenoid: Spring Offset

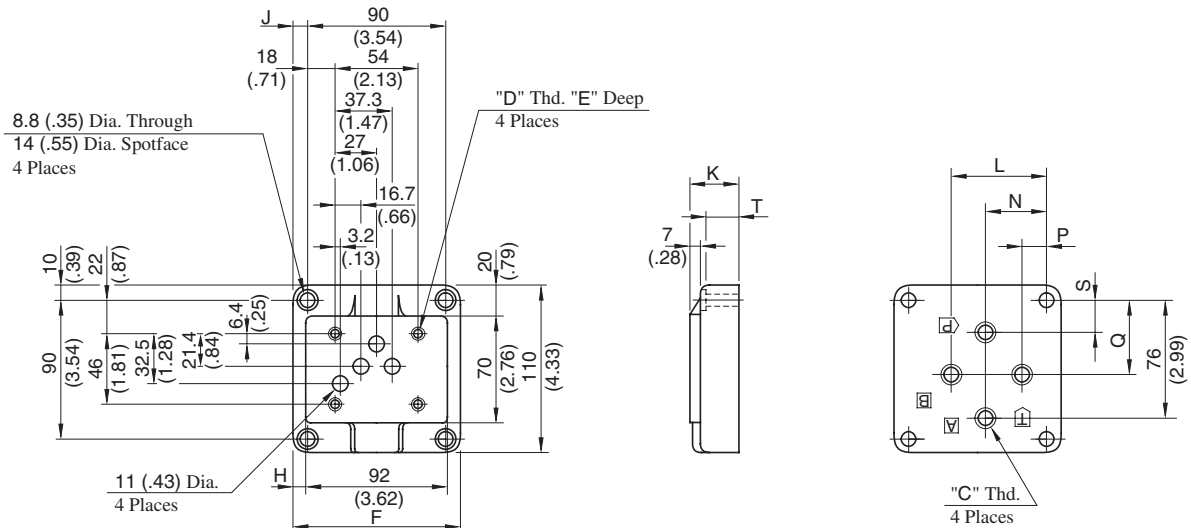


- For other dimensions, refer to Models with AC solenoids (Page 372).

DIMENSIONS IN MILLIMETRES (INCHES)

### Sub- plates

DSGM-03\*-40/2180/2190

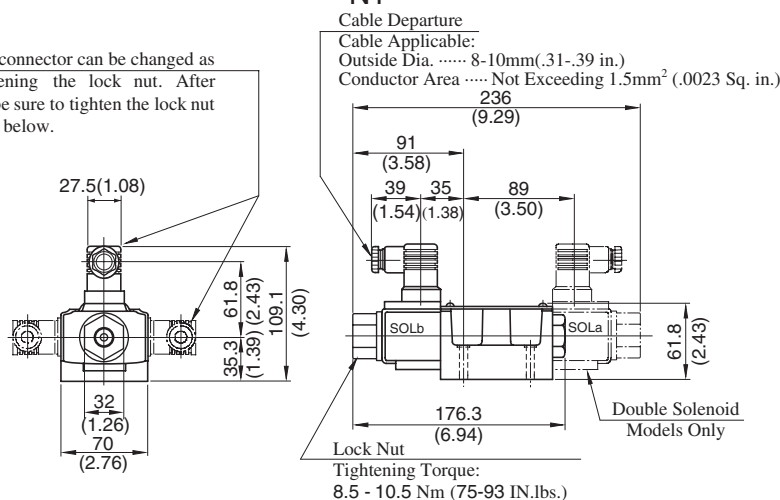


| Sub-plate<br>Model Numbers | Piping Size<br>"C" Thd. | "D" Thd.   | Dimensions mm (Inches) |            |          |          |           |           |           |          |           |          |           |
|----------------------------|-------------------------|------------|------------------------|------------|----------|----------|-----------|-----------|-----------|----------|-----------|----------|-----------|
|                            |                         |            | E                      | F          | H        | J        | K         | L         | N         | P        | Q         | S        | T         |
| DSGM-03-40                 | Rc 3/8                  | M6         | 13 (.51)               | 110 (4.33) | 9 (.35)  | 10 (.39) | 32 (1.26) | 62 (2.44) | 40 (1.57) | 16 (.63) | 48 (1.89) | 21 (.83) | 24 (.94)  |
| DSGM-03-2180               | 3/8 BSP.F               |            | 15 (.59)               |            |          |          |           |           |           |          |           |          |           |
| DSGM-03-2190               | 3/8 NPT                 | 1/4-20 UNC | 15 (.59)               |            |          |          |           |           |           |          |           |          |           |
| DSGM-03X-40                | Rc 1/2                  | M6         | 13 (.51)               | 110 (4.33) | 9 (.35)  | 10 (.39) | 32 (1.26) | 62 (2.44) | 40 (1.57) | 16 (.63) | 48 (1.89) | 21 (.83) | 24 (.94)  |
| DSGM-03X-2180              | 1/2 BSP.F               |            | 15 (.59)               |            |          |          |           |           |           |          |           |          |           |
| DSGM-03X-2190              | 1/2 NPT                 | 1/4-20 UNC | 15 (.59)               |            |          |          |           |           |           |          |           |          |           |
| DSGM-03Y-40                | Rc 3/4                  | M6         | 13 (.51)               | 120 (4.72) | 14 (.55) | 15 (.59) | 50 (1.97) | 80 (3.15) | 45 (1.77) | 10 (.39) | 47 (1.85) | 16 (.63) | 42 (1.65) |
| DSGM-03Y-2180              | 3/4 BSP.F               |            | 15 (.59)               |            |          |          |           |           |           |          |           |          |           |
| DSGM-03Y-2190              | 3/4 NPT                 | 1/4-20 UNC | 15 (.59)               |            |          |          |           |           |           |          |           |          |           |

■ **PLUG-IN CONNECTOR TYPE (N)**  
**PLUG-IN CONNECTOR WITH INDICATOR LIGHT (N1)**

● **Models with AC Solenoids: DSG-03- \*\*\* -A\* -  $\frac{N}{N1}$ -50/5090**

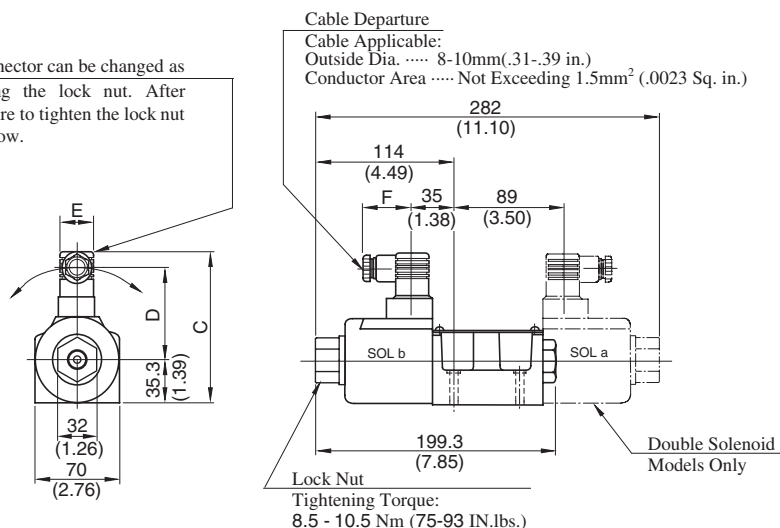
The position of the Plug-in connector can be changed as illustrated below by loosening the lock nut. After completion of the change, be sure to tighten the lock nut with the torque as specified below.



● **Models with DC Solenoids: (S-)DSG-03- \*\*\* -D\* -  $\frac{N}{N1}$ -50/5090**

● **Models with R Type Solenoids: (S-)DSG-03- \*\*\* -R\* -N-50/5090**

The position of the Plug-in connector can be changed as illustrated below by loosening the lock nut. After completion of the change, be sure to tighten the lock nut with the torque as specified below.



| Model Numbers                             | Dimensions mm (Inches) |             |             |           |
|-------------------------------------------|------------------------|-------------|-------------|-----------|
|                                           | C                      | D           | E           | F         |
| DSG-03- *** -D* - $\frac{N}{N1}$ -50/5090 | 121.1 (4.77)           | 73.8 (2.91) | 27.5 (1.08) | 39 (1.54) |
| DSG-03- *** -R* -N-50/5090                | 124.9 (4.92)           | 62.6 (2.46) | 34 (1.34)   | 53 (2.09) |

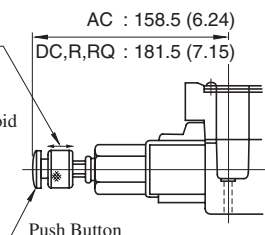
● For other dimensions, refer to "Terminal Box Type" (Page 372 - 373).

**DIMENSIONS IN  
 MILLIMETRES (INCHES)**

■ **Options**

**Models with Push Button & Lock Nut: (S-)DSG-03- \*\*\* -\*C(-  $\frac{N}{N1}$ )-50/5090**

**Lock Nut**  
 Press the "Push Button" then turn "Lock Nut" clockwise. The position of the "Push Button" is held.  
 Be sure to loosen "LockNut" fully before solenoid is energised



## Details of Receptacle

| Type of Electrical Conduit Connection | Double Solenoid Type | Single Solenoid Type |
|---------------------------------------|----------------------|----------------------|
| Terminal Box Type                     |                      |                      |
| Plug-in Connector Type                |                      |                      |

★ 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.



**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 an irregular movement of the machine, resulting in a grave accident.

## Electrical Circuit

| Type of Electrical Conduit Connection | Electric Source |    |                 |
|---------------------------------------|-----------------|----|-----------------|
|                                       | AC              | DC | AC→DC Rectified |
| Terminal Box Type                     |                 |    |                 |
| Plug-in Connector Type                |                 |    |                 |

**E**

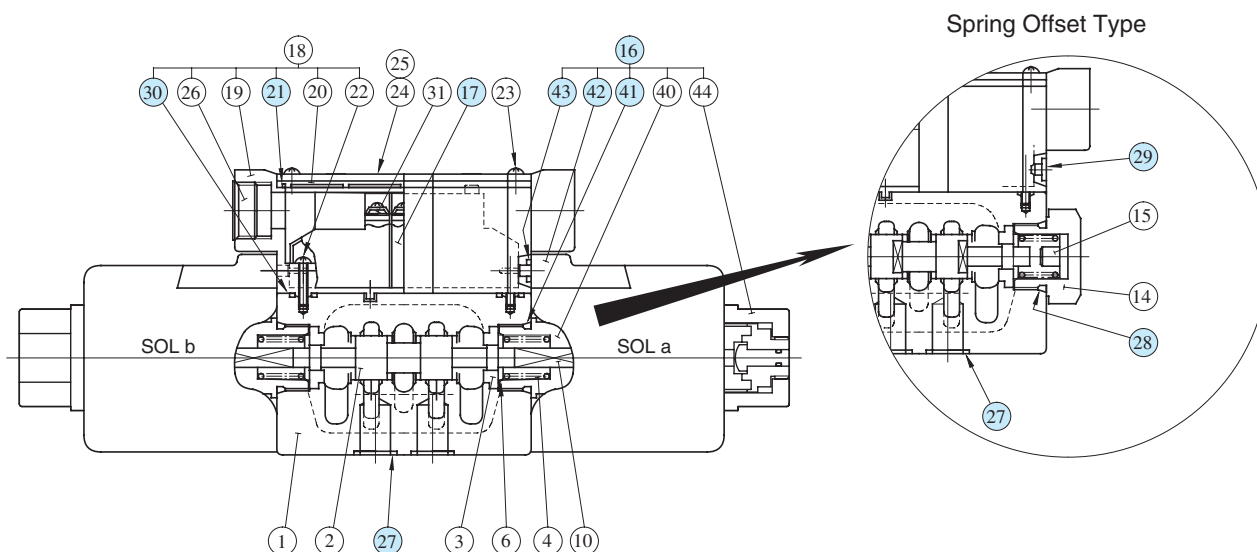


DSG-03 Series Solenoid Operated Directional Valves

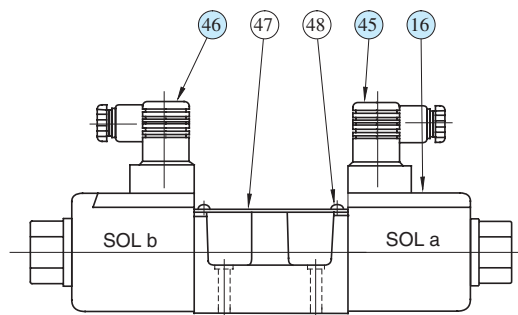


■ List of Seals

\*-DSG-03-\*\*\*-\*-50/5090



\*-DSG-03-\*\*\*-N/N1-50/5090



● List of Seals

| Item | Name of Parts | Part Numbers          | Qty. |     |    | Remarks                                |
|------|---------------|-----------------------|------|-----|----|----------------------------------------|
|      |               |                       | 3C   | 2D2 | 2B |                                        |
| 21   | Gasket        | 1751S-VK418689-6      | 1    | 1   | 1  |                                        |
| 27   | O-Ring        | SO-NB-A014(NBR, Hs90) | 5    | 5   | 5  |                                        |
| 28   | O-Ring        | SO-NB-P21             | —    | —   | 1  |                                        |
| 29   | Plug          | 1790S-VK418329-9      | —    | —   | 2  |                                        |
| 30   | O-Ring        | S6                    | 2    | 2   | 2  |                                        |
| 41   | O-Ring        | SO-NB-P21             | 2    | 2   | 1  | } Included in Solenoid Ass'y (Item 16) |
| 43   | O-Ring        | SO-NA-P4              | 4    | 4   | 2  |                                        |

★ When ordering the O-Rings, please specify the seal kit number from the table below.

| Valve Model Numbers    | Seal Kit No.   | O-Ring Details for Seal Kit                                 |
|------------------------|----------------|-------------------------------------------------------------|
| DSG-03-***-*-50/5090   | KS-DSG-03-50   | (27)(5 Pcs.), (28) & (41) (2 Pcs., see above), (43)(4 Pcs.) |
| DSG-03-***-*-N-50/5090 | KS-DSG-03-N-50 | (27)(5 Pcs.), (28) & (41) (2 Pcs., see above)               |

● Solenoid Ass'y, Coil, Receptacle and Connector

Refer to [Page 377](#) for the details of these parts.

## Solenoid Ass'y, Coil, Receptacle and Connector Ass'y No.

| Valve Model Numbers      | ⑩<br>Solenoid Ass'y No. | ④②<br>Coil No. | ⑰<br>Receptacle<br>Part No. | ④⑤<br>Connector Ass'y<br>Part No. | ④⑥<br>Connector Ass'y<br>Part No. | Remarks                                            |  |
|--------------------------|-------------------------|----------------|-----------------------------|-----------------------------------|-----------------------------------|----------------------------------------------------|--|
| DSG-03-***-A100-50*      | SA3-100-51              | C-SA3-100-51   | R3-60                       | —                                 | —                                 | Terminal<br>Box<br>Type                            |  |
| DSG-03-***-A120-50*      | SA3-120-51              | C-SA3-120-51   |                             |                                   |                                   |                                                    |  |
| DSG-03-***-A200-50*      | SA3-200-51              | C-SA3-200-51   |                             |                                   |                                   |                                                    |  |
| DSG-03-***-A240-50*      | SA3-240-51              | C-SA3-240-51   |                             |                                   |                                   |                                                    |  |
| DSG-03-***-D12-50*       | SD3-12-51               | C-SD3-12-51    | KR3-A-60                    |                                   |                                   |                                                    |  |
| DSG-03-***-D24-50*       | SD3-24-51               | C-SD3-24-51    |                             |                                   |                                   |                                                    |  |
| DSG-03-***-D100-50*      | SD3-100-51              | C-SD3-100-51   | KR3-C-60                    |                                   |                                   |                                                    |  |
| DSG-03-***-R100-50*      | SR3-100-51              | C-SR3-100-51   | RR3-60                      |                                   |                                   |                                                    |  |
| DSG-03-***-R200-50*      | SR3-200-51              | C-SR3-200-51   |                             |                                   |                                   |                                                    |  |
| DSG-03-***-RQ100-50*     | SR3-100-51              | C-SR3-100-51   | QR3-C-60                    |                                   |                                   |                                                    |  |
| S-DSG-03-***-D12-50*     | SD3-12-S-51             | C-SD3-12-51    | KR3-A-60                    |                                   |                                   |                                                    |  |
| S-DSG-03-***-D24-50*     | SD3-24-S-51             | C-SD3-24-51    |                             |                                   |                                   |                                                    |  |
| S-DSG-03-***-D100-50*    | SD3-100-S-51            | C-SD3-100-51   | KR3-C-60                    |                                   |                                   |                                                    |  |
| S-DSG-03-***-R100-50*    | SR3-100-S-51            | C-SR3-100-51   | RR3-60                      |                                   |                                   |                                                    |  |
| S-DSG-03-***-R200-50*    | SR3-200-S-51            | C-SR3-200-51   |                             |                                   |                                   |                                                    |  |
| S-DSG-03-***-RQ100-50*   | SR3-100-51              | C-SR3-100-51   | QR3-C-60                    |                                   |                                   |                                                    |  |
| DSG-03-***-A100-N-50*    | SA3-100-N-51            | C-SA3-100-N-51 | —                           | GDM-211-A-11                      | GDM-211-B-11                      | Plug-in<br>Connector<br>Type                       |  |
| DSG-03-***-A120-N-50*    | SA3-120-N-51            | C-SA3-120-N-51 |                             |                                   |                                   |                                                    |  |
| DSG-03-***-A200-N-50*    | SA3-200-N-51            | C-SA3-200-N-51 |                             |                                   |                                   |                                                    |  |
| DSG-03-***-A240-N-50*    | SA3-240-N-51            | C-SA3-240-N-51 |                             |                                   |                                   |                                                    |  |
| DSG-03-***-D12-N-50*     | SD3-12-N-51             | C-SD3-12-N-51  |                             | GDME-211-R-A-10                   | GDME-211-R-B-10                   |                                                    |  |
| DSG-03-***-D24-N-50*     | SD3-24-N-51             | C-SD3-24-N-51  |                             |                                   |                                   |                                                    |  |
| DSG-03-***-D100-N-50*    | SD3-100-N-51            | C-SD3-100-N-51 |                             | GDM-211-A-11                      | GDM-211-B-11                      |                                                    |  |
| DSG-03-***-R100-N-50*    | SR3-100-N-51            | C-SR3-100-N-51 |                             |                                   |                                   |                                                    |  |
| DSG-03-***-R200-N-50*    | SR3-200-N-51            | C-SR3-200-N-51 |                             | GDME-211-R-A-10                   | GDME-211-R-B-10                   |                                                    |  |
| S-DSG-03-***-D12-N-50*   | SD3-12-S-N-51           | C-SD3-12-N-51  |                             |                                   |                                   |                                                    |  |
| S-DSG-03-***-D24-N-50*   | SD3-24-S-N-51           | C-SD3-24-N-51  |                             | GDM-211-A-11                      | GDM-211-B-11                      |                                                    |  |
| S-DSG-03-***-D100-N-50*  | SD3-100-S-N-51          | C-SD3-100-N-51 |                             |                                   |                                   |                                                    |  |
| S-DSG-03-***-R100-N-50*  | SR3-100-S-N-51          | C-SR3-100-N-51 |                             | GDME-211-R-A-10                   | GDME-211-R-B-10                   |                                                    |  |
| S-DSG-03-***-R200-N-50*  | SR3-200-S-N-51          | C-SR3-200-N-51 |                             |                                   |                                   |                                                    |  |
| DSG-03-***-A100-N1-50*   | SA3-100-N-51            | C-SA3-100-N-51 | —                           | GDML-211-1-11                     | GDML-211-1-11                     | Plug-in<br>Connector<br>with<br>Indicator<br>Light |  |
| DSG-03-***-A120-N1-50*   | SA3-120-N-51            | C-SA3-120-N-51 |                             |                                   |                                   |                                                    |  |
| DSG-03-***-A200-N1-50*   | SA3-200-N-51            | C-SA3-200-N-51 |                             |                                   |                                   |                                                    |  |
| DSG-03-***-A240-N1-50*   | SA3-240-N-51            | C-SA3-240-N-51 |                             |                                   |                                   |                                                    |  |
| DSG-03-***-D12-N1-50*    | SD3-12-N-51             | C-SD3-12-N-51  |                             | GDML-211-2-11                     | GDML-211-2-11                     |                                                    |  |
| DSG-03-***-D24-N1-50*    | SD3-24-N-51             | C-SD3-24-N-51  |                             |                                   |                                   |                                                    |  |
| DSG-03-***-D100-N1-50*   | SD3-100-N-51            | C-SD3-100-N-51 |                             | GDML-211-3-11                     | GDML-211-3-11                     |                                                    |  |
| S-DSG-03-***-D12-N1-50*  | SD3-12-S-N-51           | C-SD3-12-N-51  |                             |                                   |                                   |                                                    |  |
| S-DSG-03-***-D24-N1-50*  | SD3-24-S-N-51           | C-SD3-24-N-51  |                             | GDML-211-1-11                     | GDML-211-1-11                     |                                                    |  |
| S-DSG-03-***-D100-N1-50* | SD3-48-S-N-51           | C-SD3-100-N-51 |                             |                                   |                                   |                                                    |  |
| S-DSG-03-***-D100-N1-50* | SD3-48-S-N-51           | C-SD3-100-N-51 |                             | GDML-211-2-11                     | GDML-211-2-11                     |                                                    |  |
| S-DSG-03-***-D100-N1-50* | SD3-48-S-N-51           | C-SD3-100-N-51 |                             |                                   |                                   |                                                    |  |

Note: The connector assembly is not included in the solenoid assembly.

