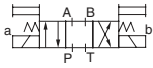
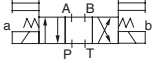
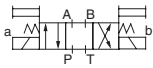
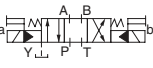
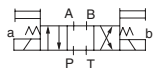



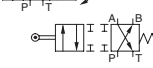


Solenoid Operated Directional Valves

Solenoid Controlled Pilot Operated Directional Valves

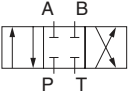
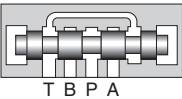
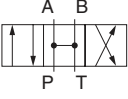
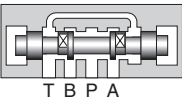
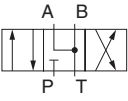
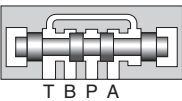
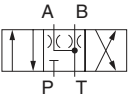
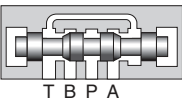
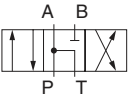
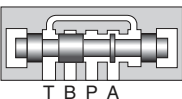
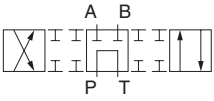
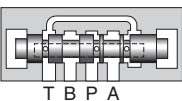
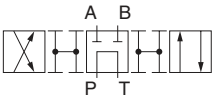
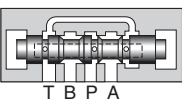
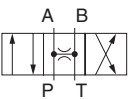
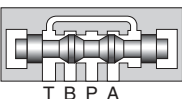
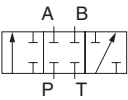
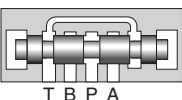
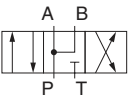
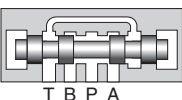
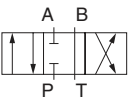
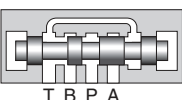
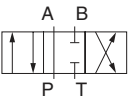
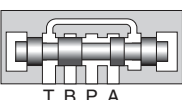
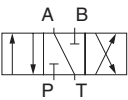
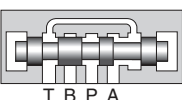
“G” Series Shockless Type Directional Valves

Pilot / Manually / Mechanically Operated Directional Valves

| Valve Type | Graphic Symbols | Max. Operating Pressure MPa (PSI) | Maximum Flow | | | | | | | | | | Page | | |
|---|---|--------------------------------------|--|---|---|----|----|---------|-----|-----|-----|------|------|------|--|
| | | | L/min | | | | | U.S.GPM | | | | | | | |
| | | | 1 | 2 | 5 | 10 | 20 | 50 | 100 | 200 | 500 | 1000 | 2000 | 5000 | |
| Solenoid Operated Directional Valves |  | 25 (3600) | DSG-005 | | | | | | | | | | 336 | | |
| | | 16 (2320) | L-DSG-01 | | | | | | | | | | 344 | | |
| | | 25 (3600) | S-DSG-01 | | | | | | | | | | | | |
| | | 35 (5080) | DSG-01 | | | | | | | | | | 361 | | |
| | | 16 (2320) | L-DSG-03 | | | | | | | | | | | | |
| | | 25 (3600) | S-DSG-03 | | | | | | | | | | | | |
| 31.5 (4580) | DSG-03 | | | | | | | | | | | | | | |
| Low Wattage (5W) Type Solenoid Operated Directional Valves |  | 16 (2320) | E-DSG-01 | | | | | | | | | | 378 | | |
| | | | E-DSG-03 | | | | | | | | | | | | |
| Electronic Relay Incorporated Solenoid Operated Directional Valves |  | 25 (3600) | T-S-DSG-01 | | | | | | | | | | 379 | | |
| | | 35 (5080) | T-DSG-01 | | | | | | | | | | | | |
| | | 25 (3600) | T-S-DSG-03 | | | | | | | | | | 379 | | |
| | | 31.5 (4580) | T-DSG-03 | | | | | | | | | | | | |
| Solenoid Controlled Pilot Operated Directional Valve |  | 21 (3050) | DSHG-01 | | | | | | | | | | 381 | | |
| | | 25 (3600) | DSHG-03 | | | | | | | | | | | | |
| | | 31.5 (4580) | DSHG-04/S-DSHG-04 | | | | | | | | | | | | |
| | | | DSHG-06/S-DSHG-06 | | | | | | | | | | | | |
| “G” Series Shockless Type Solenoid Operated Directional Valves |  | 25 (3600) | G-DSG-01 | | | | | | | | | | 412 | | |
| | | | G-DSG-03 | | | | | | | | | | | | |
| “G” Series Shockless Type Solenoid Controlled Pilot Operated Directional Valves |  | 25 (3600) | G-DSHG-04 | | | | | | | | | | 418 | | |
| | | | G-DSHG-06 | | | | | | | | | | | | |
| Pilot Operated Directional Valves |  | 31.5 (4580) | DHG-04 06 10 | | | | | | | | | | 423 | | |
| Manually Operated Directional Valves |  | 21 (3050) | Threaded Connection (DMT) | | | 03 | 06 | 10 | | | | | 429 | | |
| | | 31.5 (4580) | Sub-plate connection (DMG) | | | 01 | 03 | 04 | 06 | 10 | | | | | |
| Mechanically Operated Directional Valves |  | 7 (1020) | Rotary (DR ^T _G) 02 | | | | | | | | | | 441 | | |
| | | 25 (3600) | Cam Operated (DC ^T _G) 01 03 | | | | | | | | | | | | |

Spool Types

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

| Spool Type | Graphic Symbols | Schematic Drawing (Centre Position) | Functions and Applications |
|--|---|---|--|
| 2 (Closed Centre All Ports) |  |  | Holds pump pressure and cylinder position at neutral. Care should be paid if used as a 2-position type because shock occurs when each port is blocked in transit. |
| 3 (Open Centre All Ports) |  |  | Pump can be unloaded and actuator is floating at neutral. If a 2-position type is used, shock is reduced as each ports is released to tank in transit. |
| 4 (Open Centre A, B&T) |  |  | Pump pressure is held and actuator is floated at neutral. 2-position type is used when system pressure is required to be held in transit. Shock during transit is less compared to spool type "2". |
| 40 (Open Centre A, B&T Restricted Flow) |  |  | In a variation of spool type "4", a restrictor is provided in A-T and B-T ports. Making it faster at stopping the actuator. |
| 5 (Open Centre P, A&T) |  |  | It can be used when a pump is unloading at neutral and actuator is halted at one way flow. |
| 6 (Open Centre P&T Closed Crossover) |  |  | Pump is unloading and actuator position held at neutral. Suitable for series operation. |
| 60 (Open Centre P&T Open Crossover) |  |  | It is a variation of spool type "6". Shock is reduced as each port is released to tank on transit. |
| 7 (Open Centre All Ports Restricted Flow) |  |  | Mainly used as a 2-position type. Shock is reduced on transit. |
| 8 (2-Way) |  |  | Pump pressure and cylinder position is held at neutral in the same way as spool type "2". It is used as 2 way type. |
| 9 (Open Centre P, A&B) |  |  | Regenerative circuit is provided at neutral. |
| 10 (Open Centre B&T) |  |  | Prevent actuator from one direction drift by leakage of P port at neutral. |
| 11 (Open Centre P&A) |  |  | Halt actuator movement positively at B, T ports blocked P, A ports connected at neutral. |
| 12 (Open Centre A&T) |  |  | Prevent actuator from one direction drift by leakage of P port at neutral. |

■ Mounting Surface

Mounting surface dimensions conform to ISO 4401, Hydraulic fluid power-Four-Port directional control valves-Mounting surfaces.

| Model Numbers | ISO Code of Mounting Surface |
|--|------------------------------|
| $\begin{pmatrix} S- \\ L- \\ E- \\ T- \\ G- \end{pmatrix}$ DSG-01 DSHG-01 DMG-01 DCG-01 | ISO 4401-AB-03-4-A |
| $\begin{pmatrix} S- \\ L- \\ E- \\ T- \\ G- \end{pmatrix}$ DSG-03 DMG-03 DCG-03 | ISO 4401-AC-05-4-A |
| DSHG-03 | ISO 4401-AC-05-4-A* |
| $\begin{pmatrix} S- \\ G- \end{pmatrix}$ DSHG-04 DHG-04 DMG-04 | ISO 4401-AD-07-4-A |
| $\begin{pmatrix} S- \\ G- \end{pmatrix}$ DSHG-06 DHG-06 DMG-06 | ISO 4401-AE-08-4-A |
| (S-) DSHG-10 DHG-10 DMG-10 | ISO 4401-AF-10-4-A |

* The main port conform to the ISO 4401-AC-05-4-A.
 The pilot and drain ports is sccordance with the ISO original draft.

Interchangeability in Installation between Current and New Design

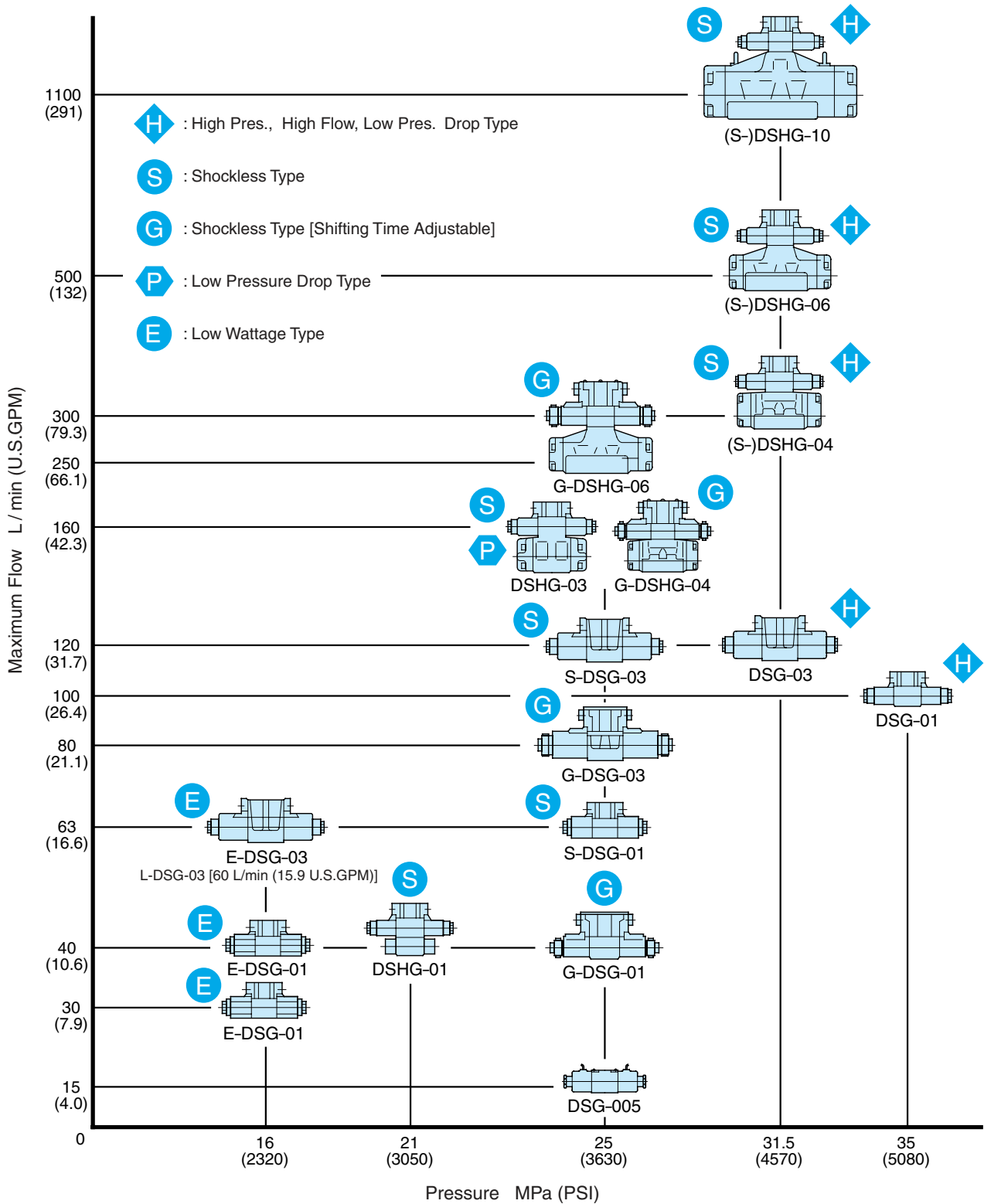
Model change has been made on the following product.

The difference between current and new design has been described on the paragraph of “Interchangeability in Installation between Current and New Design.” Refer to relevant pages on each series.

| Name | Model Numbers | | Interchangeability in Installation | Related Page | Major Changes |
|---|---|---|------------------------------------|--------------|---|
| | Current | New | | | |
| DSG-005 Series Solenoid Operated Directional Valves | DSG-005-***-*-30/3090 | DSG-005-***-*-40/4090 DSG-005-***-*- $\frac{N}{NI}$ -40/4090 | Yes | — | <ul style="list-style-type: none"> ● High Flow ● Low Pressure Drop ● Din-connector type solenoid in addition |
| DSG-01 Series Solenoid Operated Directional Valves | $\begin{pmatrix} S- \\ L- \\ T- \end{pmatrix}$ DSG-01-***-*-60/6090 | $\begin{pmatrix} S- \\ L- \\ T- \end{pmatrix}$ DSG-01-***-*-70/7090 | Yes | 357 | <ul style="list-style-type: none"> ● High Pressure and High Flow ● Low Pressure Drop |
| 1/8,3/8 Solenoid Controlled Pilot Operated Directional Valves | DSHG-01-***-*-13/1390 DSHG-03-***-*-13/1390 | DSHG-01-***-*-14/1490 DSHG-03-***-*-14/1490 | Yes | — | <ul style="list-style-type: none"> ● Pilot valve has been changed from DSG-01, 60 design to 70 design. |
| 1/2 Solenoid Controlled Pilot Operated Directional Valves | (S-) DSHG-04-***-*-51/5190 | (S-) DSHG-04-***-*-52/5290 | Yes | — | <ul style="list-style-type: none"> ● Pilot valve has been changed from DSG-01, 60 design to 70 design. |
| 3/4,1-1/4 Solenoid Controlled Pilot Operated Directional Valves | (S-) DSHG-06-***-*-52/5290 (S-) DSHG-10-***-*-42/4290 | (S-) DSHG-06-***-*-53/5390 (S-) DSHG-10-***-*-43/4390 | Yes | — | <ul style="list-style-type: none"> ● Pilot valve has been changed from DSG-01, 60 design to 70 design. |

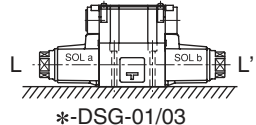
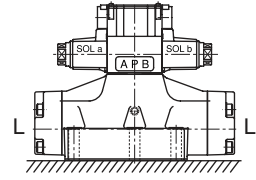
■ Solenoid Operated / Solenoid Controlled Operated Directional Valves

WIDE RANGE OF MODELS – Choose the optimum valve to meet your needs from a largeselection available.



Instructions

Mounting

| | | |
|--|--|---|
| DSG-005 | No mounting restrictions for any model. | |
| *-DSG-01 *-DSG-03 | No-spring detented models not energised continuously must be installed so that the spool axis L-L' is horizontal. Otherwise there is no mounting restrictions. |  |
| DSHG-01 DSHG-03 (S-) DSHG-04 (S-) DSHG-06 (S-) DSHG-10 | No-spring models not energised continuously must be installed so that the spool axis L-L' is horizontal. Otherwise there is no mounting restrictions. |  |

Energisation

1. No-Spring Type

One of two solenoids should be energised continuously to avoid malfunction.

2. On double solenoid valves do not energise both at the same time as it will result in coils burning out.

Valve Tank Port

Avoid connecting the valve tank port to a line with possible surge pressure.

Piping end of tank line should be submerged in oil.

Pilot Drain Port for Solenoid Controlled Pilot Operated Valve

Avoid connecting the valve pilot drain port to a line with possible surge pressure.

Piping end of drain should be submerged in oil.

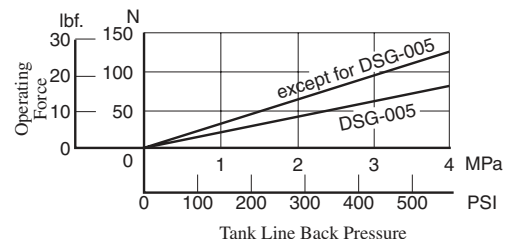
Shockless Type

In order to benefit from a shockless operation, it is necessary to fill the tank line with operating oil.

Only after the tank line has been filled with operating oil should the valve be used on a regular basis.

Operating Force by Manual Actuator

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



Solenoid

Solenoid connector (DIN connector)

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

AC Solenoid

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

DC Solenoid (K-series Solenoid Operated Directional Valve)

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

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

R type Models with Current Rectifier and DC Solenoid

Specially designed DC solenoid and receptacle (or connector) containing AC-DC rectifier and transient peak suppressor are provided. Connection to be made to AC power source as with conventional AC solenoid. Remarkably high reliability and long life and other advantages including quiet valve operation. No over-heating of coil due to the spool sticking and protection against transient voltage peaks are assured.

RQ type Models with Current rectifier and Quick Return Solenoid

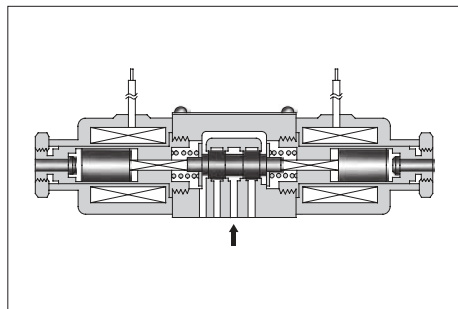
Valve characteristics are identical to R type except for the fast return time of the spool after deenergisation.

Insulation Class of Solenoid

| Model numbers | Insulation Class |
|---|------------------|
| DSG-005, DSG-01, S-DSG01 L-DSG-01, E-DSG-01, T-DSG-01 DSG-03, S-DSG-03, L-DSG-03 E-DSG-03, T-DSG-03 DSHG-01/03/04/06/10, S-DSHG-04/-06/10 | Class H |
| G-DSG-01, G-DSG-03 | Class F |

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.



Specifications

| Model Numbers | Max. Flow [★] L/min (U.S.GPM) | Max. Operating Pressure MPa (PSI) | Max. Tank-Line Back Pressure MPa (PSI) | Max. Changeover Frequency min ⁻¹ (Cycles/min) | Approx. Mass kg (lbs.) |
|-------------------------|--|---|--|--|------------------------------|
| DSG-005-3C* - *-40/4090 | 15 (3.96) | 25 (3630) | 7 (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 (Hz) | Voltage (V) | | Current & Power at Rated Voltage | | |
|------------------|-----------|----------------|---------------|-------------|----------------------------------|-------------|-----------|
| | | | Source Rating | Serviceable | Inrush ^{★1} (A) | Holding (A) | Power (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 ^{★2} | D12 | — | 12 | 10.8 – 13.2 | — | 1.2 | 15 |
| | D24 | — | 24 | 21.6 – 26.4 | | 0.6 | |

★1 Inrush current in the above table shows rms values at maximum stroke.

★2 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: Special Seals for Phosphate Ester Type Fluids (Omit if not required) | DSG: Solenoid Operated Directional Valve | 005 | 3 | C: Spring Centred | 2, 3 40 | AC A100, A200 DC D12, D24 | None: Flying Lead Wire Type N: Plug-in Connector Type N1: Plug-in Connector with Indicator Light | 40 | Refer to [★] |
| | | | 2 | B: 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 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.

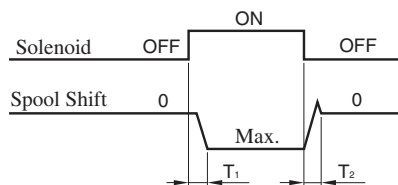
Mounting Bolts

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

| Descriptions | Soc. Hd. Cap Screw (4 Pcs.) | Tightening Torque |
|---|-----------------------------|-------------------------------------|
| Japanese Standard "JIS" European Design Standard | M4 × 35 Lg. | 2.5 - 3.5 Nm (22.1 - 31.0 in. lbs.) |
| 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 mm²/s (141 SSU)

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

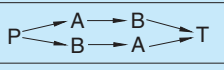
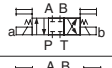


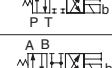
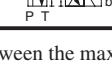
Direction of Flow: P → A → B → T
P → B → A → T

[Result of Measurement]

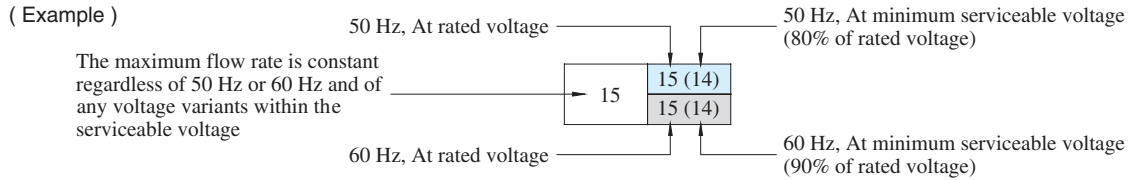
| Model Numbers | Time ms | |
|----------------|----------------|----------------|
| | T ₁ | T ₂ |
| DSG-005-3C2-A* | 16 | 60 |
| DSG-005-3C2-D* | 23 | 40 |
| DSG-005-2B2-A* | 14 | 45 |
| DSG-005-2B2-D* | 15 | 33 |

■ List of Standard Models and The Maximum Flow

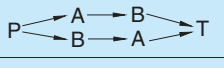
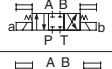


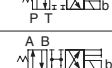
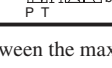
● Models with AC Solenoids : DSG-005-*** -A* -40/4090

| No. of Valve Position | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow L/min | | | | | | | | | | | |
|-----------------------|--------------------------|---------------|---|---|------|------|------|--------------------------|-------|-------|--------|--------------------------|--------|--------|--------|
| | | | |  | | | | P → A [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) |

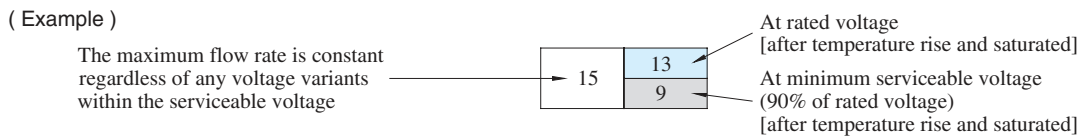
Notes: 1. The relation between the maximum flow in the table above and the frequency/voltage (within the serviceable voltage) is as shown below.



● 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 [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.

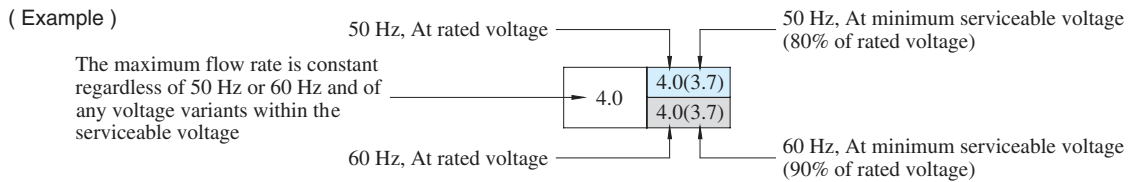


List of Standard Models and The Maximum Flow

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 | | | | | | | | | | | |
|-----------------------|--------------------------|---------------|-----------------|----------------------|------|------|------|----------------------|----------|---------|---------|----------------------|----------|----------|----------|
| | | | | | | | | | | | | | | | |
| | | | | 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) |

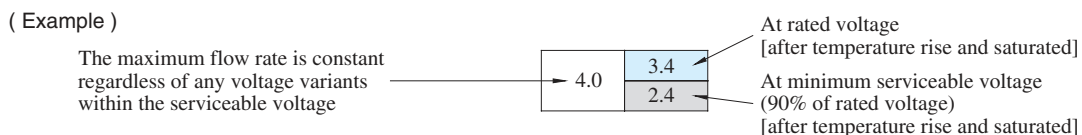
Notes: 1. The relation between the maximum flow in the table above and the frequency/voltage (within the serviceable voltage) is as shown below.



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

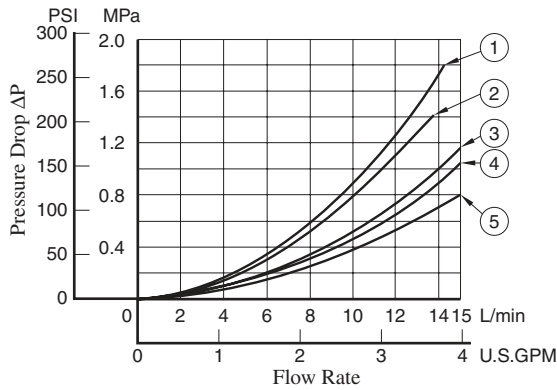
| No. of Valve Position | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow U.S.GPM | | | | | | | | | | | |
|-----------------------|--------------------------|---------------|-----------------|----------------------|------|------|------|----------------------|------|------|------|----------------------|------|------|------|
| | | | | | | | | | | | | | | | |
| | | | | 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 | 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 | 3.4 | 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.



Pressure Drop

Pressure drop curves based on viscosity of 30 mm²/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.

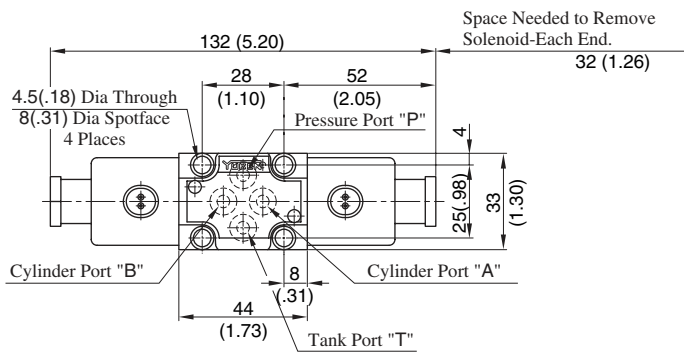
| Viscosity | mm ² /s | 15 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|-----------|--------------------|------|------|------|------|------|------|------|------|------|------|
| | SSU | 77 | 98 | 141 | 186 | 232 | 278 | 324 | 371 | 417 | 464 |
| Factor | | 0.84 | 0.91 | 1.00 | 1.07 | 1.14 | 1.19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

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

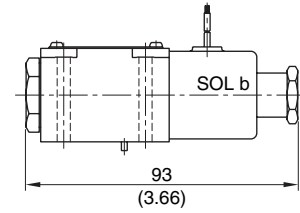
$$\Delta P' = \Delta P (G'/0.850)$$

Flying Lead Wire Type

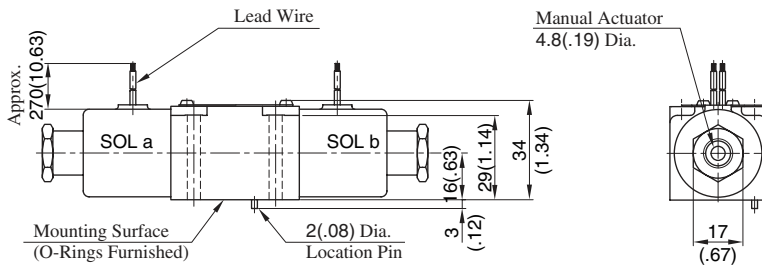
- Spring Centred: DSG-005-3C* - $\frac{A^*}{D^*}$ -40/4090



- Spring Offset: DSG-005-2B* - $\frac{A^*}{D^*}$ -40/4090



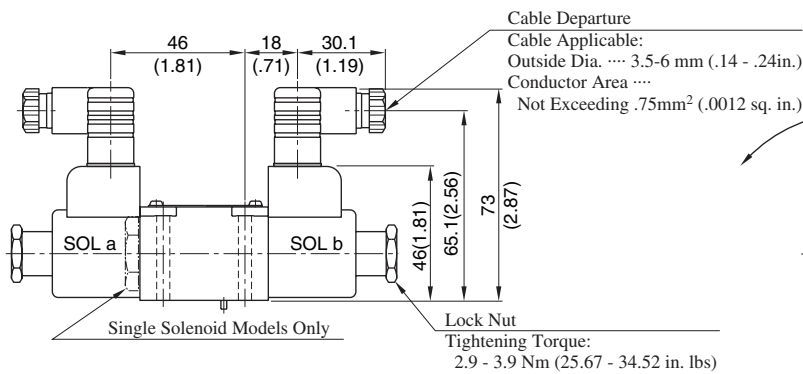
- For other dimensions, refer to "Spring Centred" type.



DIMENSIONS IN
MILLIMETRES (INCHES)

DIN Connector Type / DIN Connector with Indicator Light

- Spring Centred: DSG-005-3C* - $\frac{A^*}{D^*}$ -N/N1-40/4090
- Spring Offset: DSG-005-2B* - $\frac{A^*}{D^*}$ -N/N1-40/4090



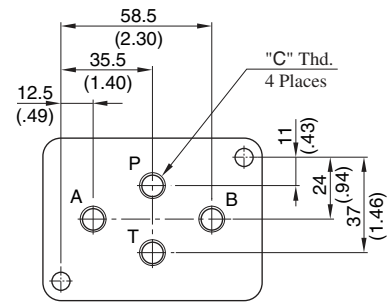
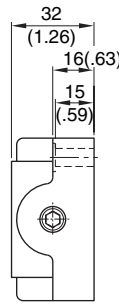
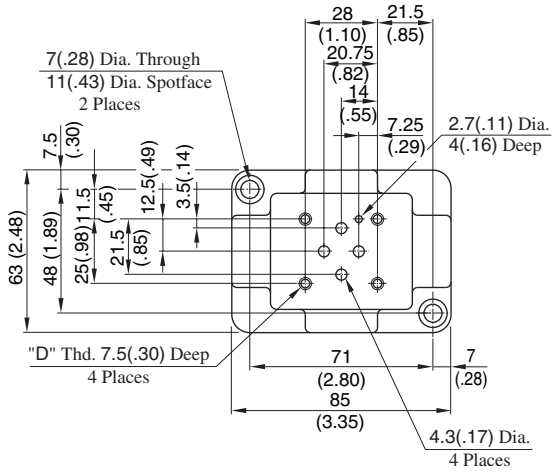
The position of the Plug-in connector can be changed as illustrated below by loosening the lock nut. After completion of the change, be sure to tighten the lock nut with the torque as specified below.

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

E
 DSG-005 Series Solenoid
 Operated Directional Valves

■ Sub-plates: DSGM-005* -20/2080/2090

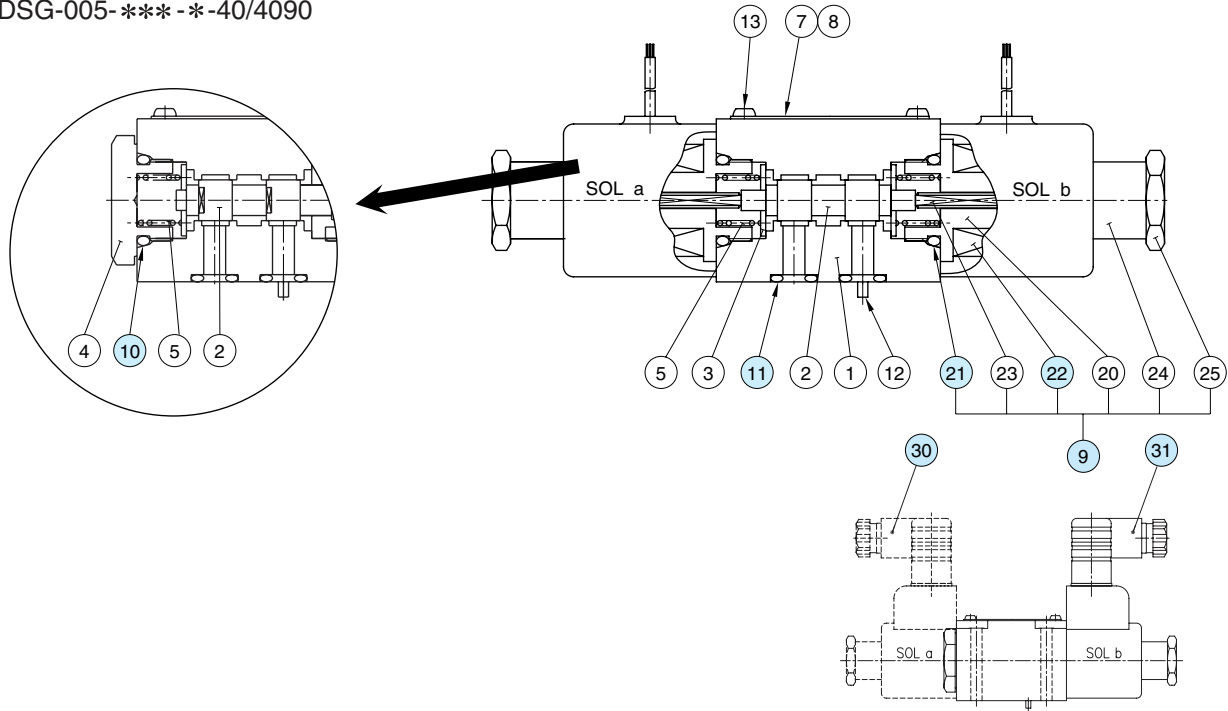
DIMENSIONS IN
MILLIMETRES (INCHES)



| Sub-plate Model Numbers | Piping Size "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. | ⑳ Connector Ass'y Part No. | ㉑ 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

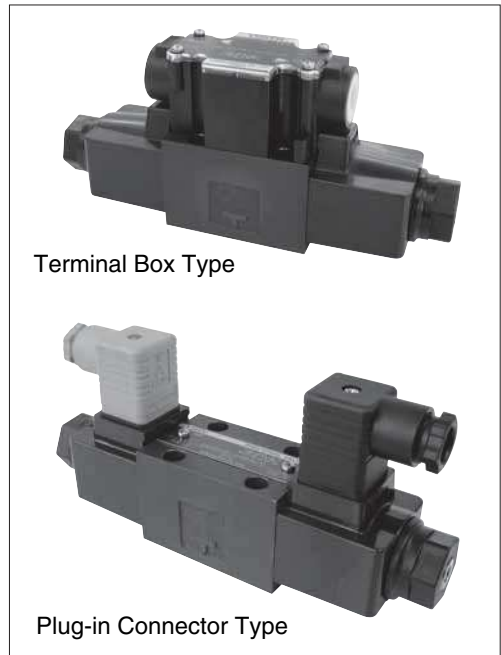
Due to the powerful magnetic and spring force of the solenoids, these valves exhibit a high tolerance to contaminants and especially stable operation.

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).

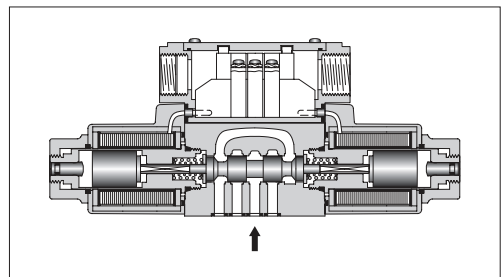
Usable in products of various standards

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



Terminal Box Type

Plug-in Connector Type



Specifications

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

★ 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 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" European Design Standard | M5 × 45 Lg. | 5 - 7 Nm (43 - 60 in. lbs.) Applicable to working pressure more than 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) ^{*2} | Holding (A) | Power (W) |
| Standard Type | AC ^{*1} | A100 | 50 | 100 | 80 - 110 | 2.42 | 0.51 | — |
| | | | 60 | 100 | 90 - 120 | 2.14 | 0.37 | |
| | | 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 | |
| | | | 220 | | | 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 | |
| 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 | |

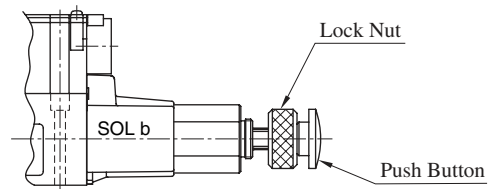
- ★ 1. AC solenoid is not available in shockless type. R type models with built-in current rectifier is recommended for shockless operation with AC power.
- ★ 2. Inrush current in the above table show rms values at maximum stroke.
- ★ 3. There are more coil types other than the above. For details, please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

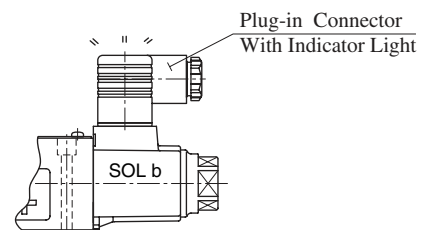
Push Button with Lock Nut

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

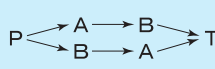
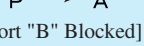
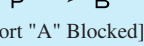





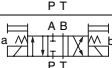
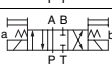
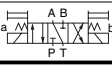
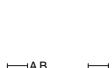




★1. In case of the special two position valve, please refer to page 352 for details.

★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.

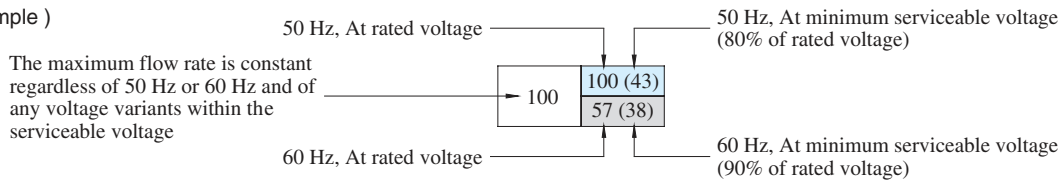
■ List of Standard Models and The Maximum Flow

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

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow L/min | | | | | | | | | | | | | | |
|------------------------|--------------------------|---------------|---|---|-------------------|-------------------|-------------------|-------------------|--|-------------------|-------------------|------------------|------------------|---|-------------------|-------------------|------------------|------------------|
| | | | |  | | | | |  | | | | |  | | | | |
| | | | | 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) 57(38) | 100(41) 53(31) | 80(21) 29(17) | 60(17) 19(10) | 38(15) 13(9) | 100(43) 57(38) | 100(41) 53(31) | 80(21) 29(17) | 60(17) 19(10) | 38(15) 13(9) |
| | | DSG-01-3C3 |  | 100(80) 90(63) | 100(80) 90(63) | 100(80) 90(63) | 100(77) 90(63) | 100(77) 90(63) | 70(46) 45(30) | 70(46) 45(30) | 70(46) 45(30) | 70(46) 45(30) | 70(46) 45(30) | 70(46) 45(30) | 70(46) 45(30) | 70(46) 45(30) | 70(46) 45(30) | 70(46) 45(30) |
| | | DSG-01-3C4 |  | 90 | 90 | 90 | 90(22) 43(14) | 35(18) 30(11) | 100(38) 50(31) | 76(28) 38(20) | 67(15) 20(10) | 57(10) 16(7) | 35(7) 12(5) | 100(38) 50(31) | 76(28) 38(20) | 67(15) 20(10) | 57(10) 16(7) | 35(7) 12(5) |
| | | DSG-01-3C40 |  | 85 | 85 | 85 | 80(40) 63(15) | 80(22) 25(10) | 85(40) 70(26) | 85(35) 50(24) | 85(24) 32(16) | 60(16) 22(13) | 55(12) 18(10) | 85(40) 70(26) | 85(35) 50(24) | 85(24) 32(16) | 60(16) 22(13) | 55(12) 18(10) |
| | | DSG-01-3C60★ |  | 43(23) 40(23) | 43(23) 40(23) | 42(23) 38(23) | 42(23) 36(23) | 42(23) 35(23) | 54(32) 48(30) | 54(32) 47(30) | 52(32) 47(30) | 52(32) 47(30) | 52(32) 47(30) | 54(32) 48(30) | 54(32) 47(30) | 52(32) 47(30) | 52(32) 47(30) | 52(32) 47(30) |
| | | DSG-01-3C9 |  | 100 | 100 | 100 | 100 | 100 | 20 | 15 | 10 | 10 | 8 | 20 | 15 | 10 | 10 | 8 |
| | | DSG-01-3C10◆ |  | 100 | 100 | 100(63) 80(20) | 100(33) 70(20) | 100(27) 40(19) | 100(50) 100(37) | 100(37) 55(25) | 100(20) 29(14) | 78(16) 20(11) | 62(13) 15(10) | 100(50) 100(37) | 100(37) 55(25) | 100(20) 29(14) | 78(16) 20(11) | 62(13) 15(10) |
| | | DSG-01-3C11◆ |  | 100 | 100 | 100 | 100 | 100 | 23 | 20 | 13 | 10 | 5 | 100(65) 70(50) | 85(52) 57(40) | 72(45) 50(25) | 65(34) 43(19) | 60(27) 35(18) |
| | | DSG-01-3C12◆ |  | 100 | 100 | 100(63) 80(20) | 100(33) 70(20) | 100(27) 40(19) | 100(50) 100(37) | 100(37) 55(25) | 100(20) 29(14) | 78(16) 20(11) | 62(13) 15(10) | 100(50) 100(37) | 100(37) 55(25) | 100(20) 29(14) | 78(16) 20(11) | 62(13) 15(10) |
| Two Positions | No-Spring Detented | DSG-01-2D2 |  | 80 | 80 | 80 | 80 | 80 | 45 | 45 | 45(21) 36(18) | 45(16) 28(13) | 38(13) 22(12) | 50 | 50(45) 50(45) | 50(42) 50(42) | 45(40) 45(40) | 45(40) 45(40) |
| | | DSG-01-2B2 |  | 85 | 85 | 85 | 85 | 85 | 20 | 16 | 16 | 15 | 13 | 85(63) 85(30) | 80(50) 60(33) | 63(40) 50(28) | 44(32) 40(28) | 44(32) 40(28) |
| | Spring Offset | DSG-01-2B3 |  | 70 | 70 | 70 | 70 | 70 | 50 | 50 | 50 | 50 | 50 | 80(70) 70(48) | 80(70) 70(48) | 80(70) 70(48) | 80(70) 70(48) | 80(70) 70(48) |
| | | DSG-01-2B8 |  | — | — | — | — | — | 26 | 17 | 13 | 11 | 10 | 80(50) 35(20) | 70(40) 23(15) | 60(20) 15(8) | 45(10) 10(5) | 30(10) 7(5) |

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)



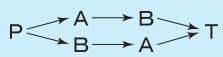
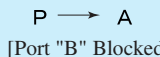
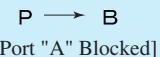
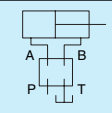
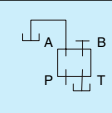
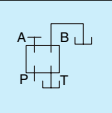







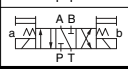




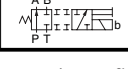
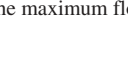
2. For the maximum flow rate in P → T of the valves with a ★ mark, please see page 351.

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

DSG-01 Series Solenoid Operated Directional Valves

■ List of Standard Models and The Maximum Flow

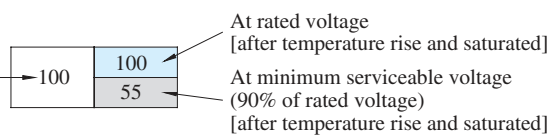
● Models with DC or R Type Solenoids: DSG-01-***-D*/R*

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow L/mi | | | | | | | | | | | | | | |
|------------------------|--------------------------|---------------|---|---|-----|-----|------|-----|--|----|----|------|----|---|----|----|------|----|
| | | | |  | | | | |  [Port "B" Blocked] | | | | |  [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 |
| Two Positions | No-Spring Detented | DSG-01-2D2 |  | 75 | 75 | 75 | 75 | 75 | 45 | 45 | 40 | 30 | 27 | 50 | 50 | 50 | 45 | 45 |
| | | DSG-01-2B2 |  | 80 | 80 | 80 | 80 | 80 | 20 | 16 | 16 | 15 | 13 | 46 | 31 | 24 | 22 | 22 |
| | Spring Offset | 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 |
| | | DSG-01-2B8 |  | — | — | — | — | — | 26 | 17 | 13 | 11 | 10 | 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

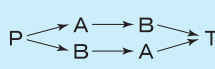
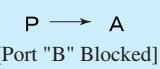
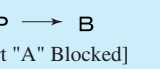





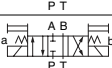
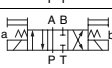
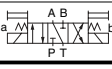
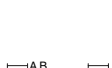




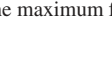
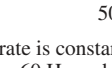


2. For the maximum flow rate in P → T of the valves with a ★ mark, please see page 351.

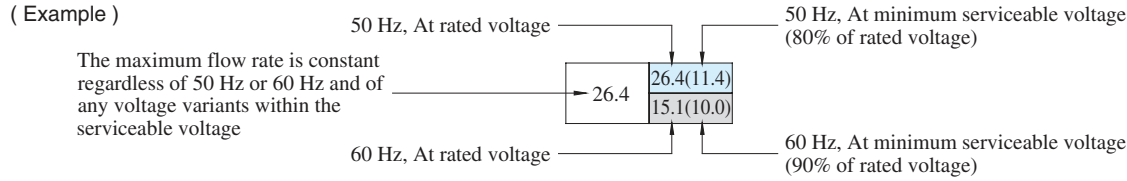
The valve models with a ◆ mark are handled as Options. If you choose suce valves, check the time of delivery beforehand.

■ 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 | | | | | | | | | | | | | | |
|------------------------|---|---------------|---|---|---|------------|------------|------------|--|------------|------------|------------|------------|---|------------|------------|------------|------------|
| | | | |  | | | | |  | | | | |  | | | | |
| | | | | 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 | 23.8 | 26.4(10.0) | 20.1(17.4) | 17.7(4.0) | 15.1(2.6) | 9.2(1.8) | 26.4(10.0) | 20.1(17.4) | 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 | 26.4 | 26.4 | 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 | 26.4 | 26.4 | 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) |
| 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) |
| Spring Offset | 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) |
| | 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) |

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



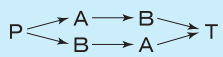
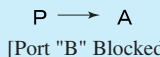
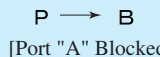
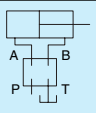
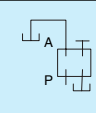
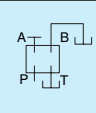







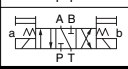




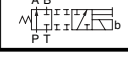
2. For the maximum flow rate in P → T of the valves with a ★ mark, please see page 351.

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

DSG-01 Series Solenoid Operated Directional Valves

■ List of Standard Models and The Maximum Flow

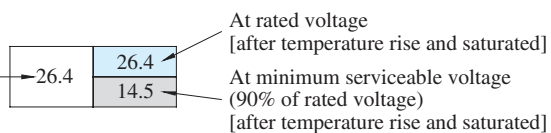
● Models with DC or R Type Solenoids: DSG-01-***-D*/R*

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow U.S.GPM | | | | | | | | | | | | | | |
|------------------------|--------------------------|---------------|---|---|---|------|------|------|--|------|------|------|------|---|------|------|------|------|
| | | | |  | | | | |  | | | | |  | | | | |
| | | | |  | | | | |  | | | | |  | | | | |
| | | | | 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 |
| | | Two Positions | No-Spring Detented | DSG-01-2D2 |  | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 11.9 | 11.9 | 10.6 | 7.9 | 7.1 | 13.2 | 13.2 | 11.9 |
| 18.5 | 18.5 | | | 18.5 | 18.5 | 18.5 | 7.9 | 6.6 | 5.8 | 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 |
| | 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 |
| | 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 | | | | | | | | | | | | |
| | 17.2 | | 17.2 | 17.2 | 17.2 | 17.2 | | | | | | | | | | | | |

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

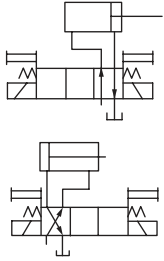


2. For the maximum flow rate in P → T of the valves with a ★ mark, please see page 351.

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 (1450 PSI) | 16 MPa (2320 PSI) | 25 MPa (3630 PSI) | 31.5 MPa (4570 PSI) | 35 MPa (5080 PSI) |
| DSG-01-3C60-A*/D*/R* | | 55 (14.5) | 44 (11.6) | 30 (7.9) | 26 (6.9) | 22 (5.8) |

List of Shockless Models and The Maximum Flow

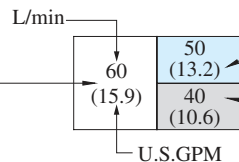
- Models with DC or R Type Solenoids: S-DSG-01-***-D*/R*

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbol | Max. Flow L/min (U.S.GPM) | | | | | | | | |
|------------------------|--------------------------|---------------|----------------|----------------------------|-----------|-----------|----------------------------|-----------|-----------|----------------------------|-----------|-----------|
| | | | | | | | | | | | | |
| | | | | Working Pressure MPa (PSI) | | | Working Pressure MPa (PSI) | | | Working Pressure MPa (PSI) | | |
| | | | | 10 (1450) | 16 (2320) | 25 (3630) | 10 (1450) | 16 (2320) | 25 (3630) | 10 (1450) | 16 (2320) | 25 (3630) |
| Three Positions | Spring Centred | S-DSG-01-3C2 | | 63 (16.6) | 63 (16.6) | 40 (10.6) | 40 (10.6) | 32 (8.5) | 25 (6.6) | 40 (10.6) | 32 (8.5) | 25 (6.6) |
| | | S-DSG-01-3C4 | | 60 (15.9) | 50 (13.2) | 40 (10.6) | 40 (10.6) | 32 (8.5) | 16 (4.2) | 40 (10.6) | 32 (8.5) | 16 (4.2) |
| Two Positions | Spring Offset | S-DSG-01-3B2 | | 50 (13.2) | 45 (11.9) | 45 (11.9) | 30 (7.9) | 30 (7.9) | 30 (7.9) | 60 (15.9) | 40 (10.6) | 40 (10.6) |
| | | | | 45 (11.9) | 40 (10.6) | 40 (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



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

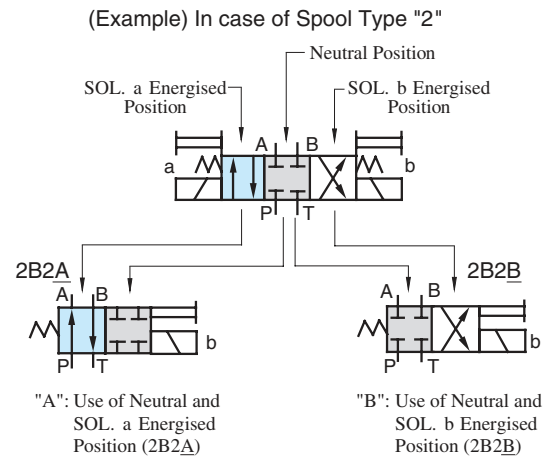
■ Reverse Mounting of Solenoid.

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



■ 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

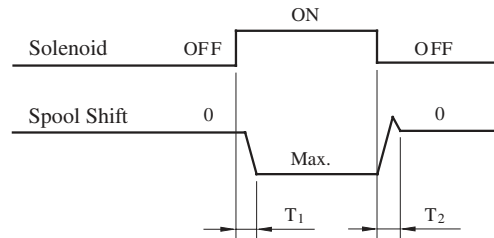
Changeover time varies according to oil viscosity, spool type and hydraulic circuit.

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 mm²/s (164 SSU)
 Voltage: 100 %V
 (After coil temperature rises and saturated)

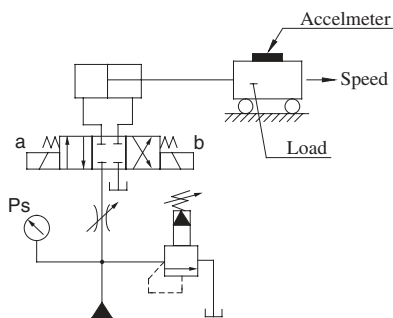
[Result of Measurement]



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

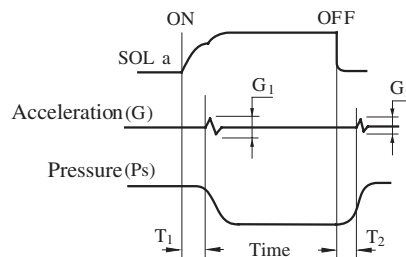
Shockless Type

[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 mm²/s (164 SSU)

[Results of Measurement]

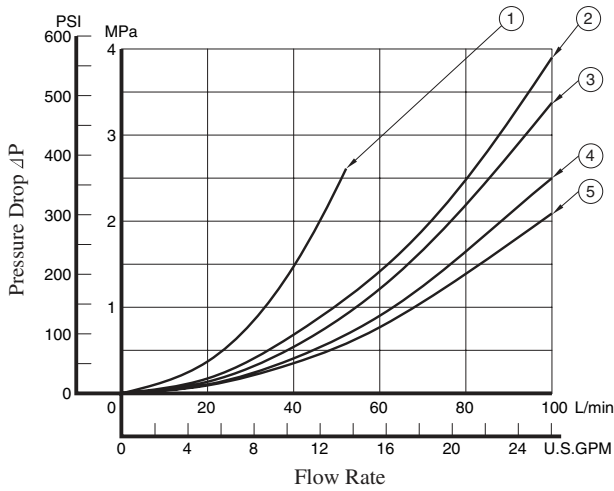


| Type | Model Numbers | Time ms | | Acceleration m/s ² (G) | |
|----------------|------------------|----------------|----------------|-----------------------------------|----------------|
| | | T ₁ | T ₂ | G ₁ | G ₂ |
| Shockless Type | S-DSG-01-3C2- D* | 70 | 30 | 12 (1.2) | 7 (0.7) |
| Standard Type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

Pressure Drop

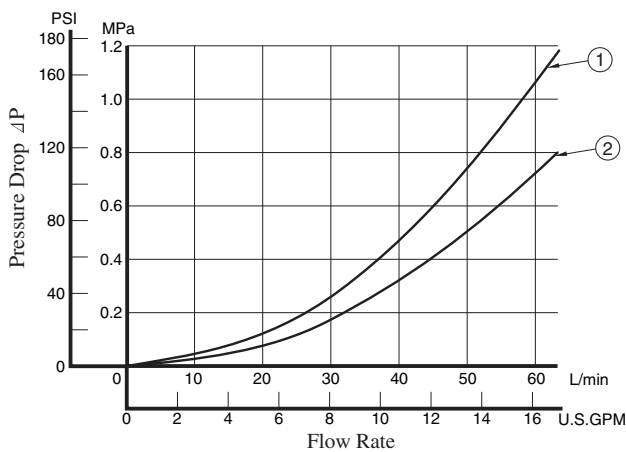
Pressure drop curves based on viscosity of 35 mm²/s (164 SSU) and specific gravity of 0.850.

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 ² /s | 15 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|-----------|--------------------|------|------|------|------|------|------|------|------|------|------|
| | | SSU | 77 | 98 | 141 | 186 | 232 | 278 | 324 | 371 | 417 |
| 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.

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

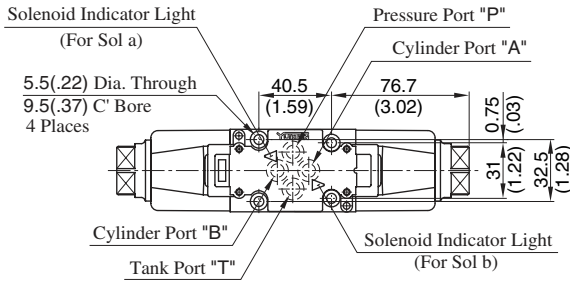
Mounting surface: ISO 4401-AB-03-4-A

TERMINAL BOX TYPE

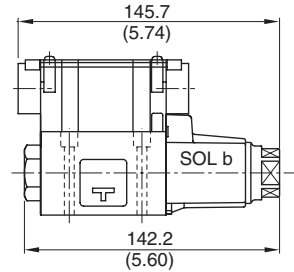
Models with AC Solenoids

- Double Solenoid: Spring Centred & No-Spring Detented

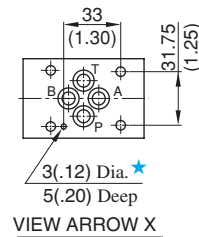
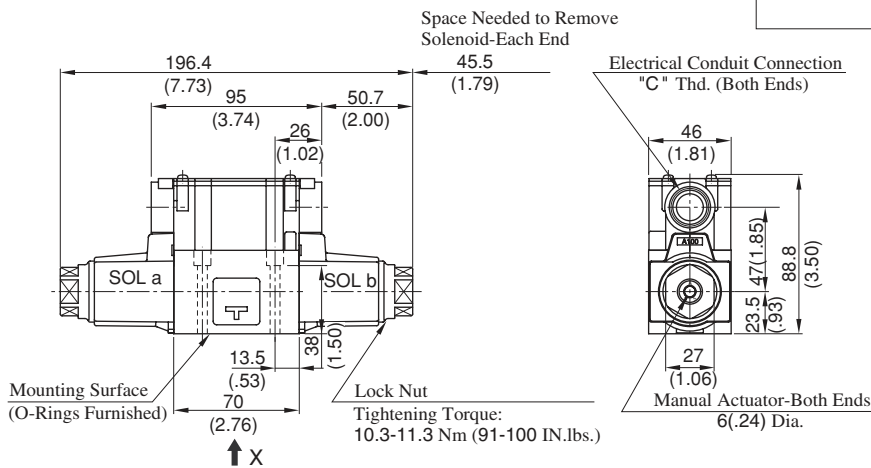
DSG-01- $\frac{3C}{2D2}$ -A*-70/7090



- 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.



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

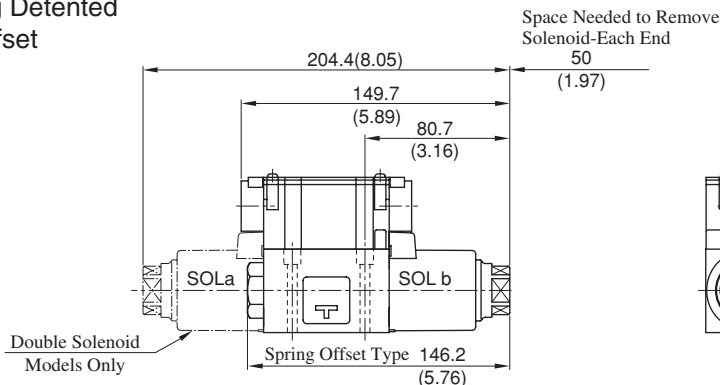
- ★ Locating pin can be fitted to this hole to conform with ISO4401-03-02-94. However, locating pin is not provided to standard design valve. When ordering valve with a locating pin, please consult Yuken.

DIMENSIONS IN MILLIMETRES (INCHES)

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

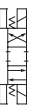
Models with R Type Solenoids: (S-)DSG-01-***-R*-70/7090

- Spring Centred
- No-Spring Detented
- Spring Offset



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

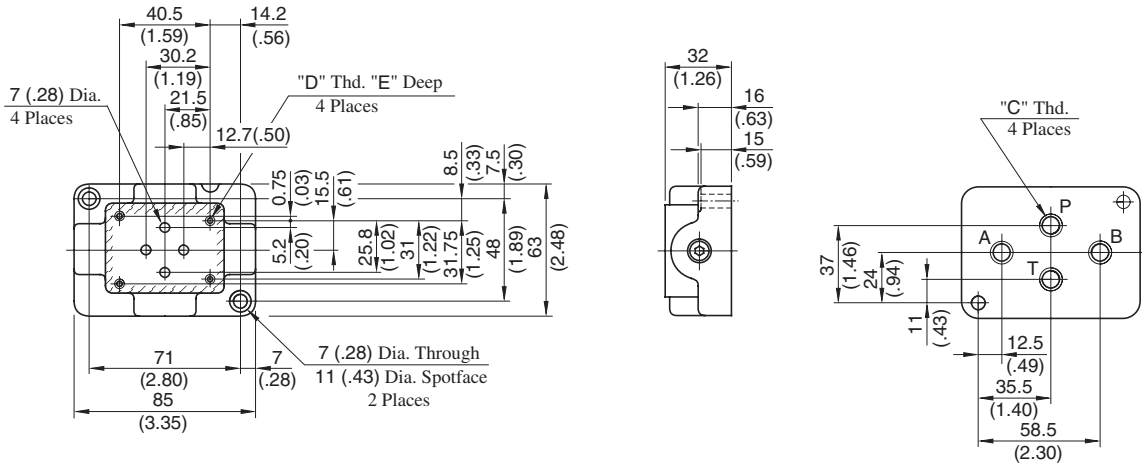
E



DSG-01 Series Solenoid Operated Directional Valves

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

**DIMENSIONS IN
MILLIMETRES (INCHES)**

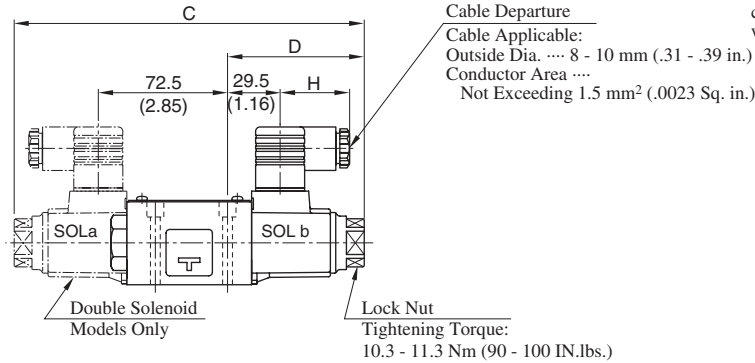


| Sub-plate Model Numbers | Piping Size "C" Thd. | "D" Thd. | "E" mm(IN.) |
|-------------------------|----------------------|---------------|-------------|
| DSGM-01-31 | Rc 1/8 | M5 | 10 (.39) |
| DSGM-01-3180 | 1/8 BSP.F | | |
| DSGM-01-3190 | 1/8 NPT | No.10-24 UNC | 12 (.47) |
| DSGM-01X-31 | Rc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

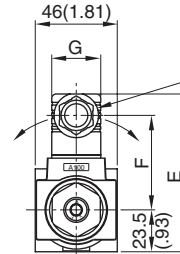
PLUG-IN CONNECTOR TYPE (N) PLUG-IN CONNECTOR WITH INDICATOR LIGHT (N1)

- Models with AC Solenoids: DSG-01-***-A*-N₁-70/7090
- Models with DC Solenoids: (S-)DSG-01-***-D*-N₁-70/7090
- Models with R Solenoids: (S-)DSG-01-***-R*-N-70/7090

DIMENSIONS IN
MILLIMETRES (INCHES)



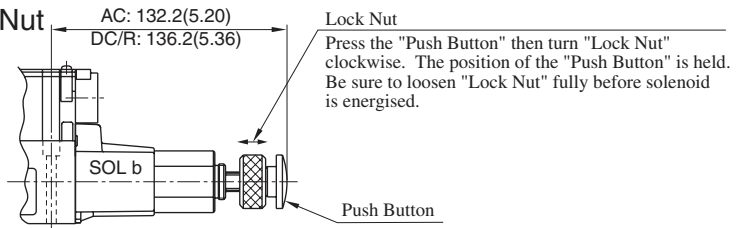
The position of the Plug-in connector can be changed as illustrated below by loosening the lock nut. After completion of the change, be sure to tighten the lock nut with the torque as specified below.



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

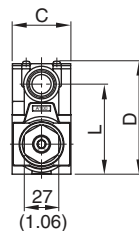
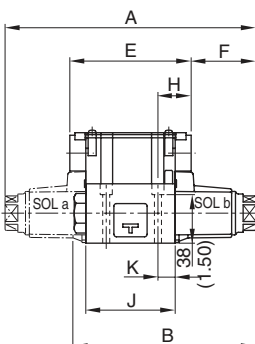
Specifications

| Design Number | Max. Flow L/min (U.S.GPM) | Max. Operating Pressure MPa (PSI) | Max. T-Line Back Pres. MPa (PSI) | Max. Changeover Frequency Cycle/min (min ⁻¹) | Pressure Drop* MPa (PSI) {P→A} | Mass kg (lbs.) | |
|--------------------|---------------------------------|---|--|--|--------------------------------------|----------------|-----------|
| | | | | | | 3C*/2D* | 2B* |
| New Design: 70 | 100(26.4) | 35(5080) | 21(3050) | 300 (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) |

* Flow Rate: 60 L/min (15.9 U.S.GPM), Viscosity: 30 mm²/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 (7.73) | 142.2 (5.60) | 46 (1.81) | 88.8 (3.50) | 95 (3.74) | 50.7 (2.00) | 26 (1.02) | 70 (2.76) | 13.5 (.53) | 70.5 (2.78) |
| | Current Design : 60 | 191.4 (7.54) | 142.7 (5.62) | 48 (1.89) | 90.3 (3.56) | 90 (3.54) | 50.7 (2.00) | 23.5 (.93) | 65 (2.56) | 11 (.43) | 72 (2.83) |
| DC R | New Design : 70 | 204.4 (8.05) | 146.2 (5.76) | 46 (1.81) | 88.8 (3.50) | 95 (3.74) | 54.7 (2.15) | 26 (1.02) | 70 (2.76) | 13.5 (.53) | 70.5 (2.78) |
| | Current Design : 60 | 210 (8.27) | 152 (5.98) | 48 (1.89) | 90.3 (3.56) | 90 (3.54) | 60 (2.36) | 23.5 (.93) | 65 (2.56) | 11 (.43) | 72 (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

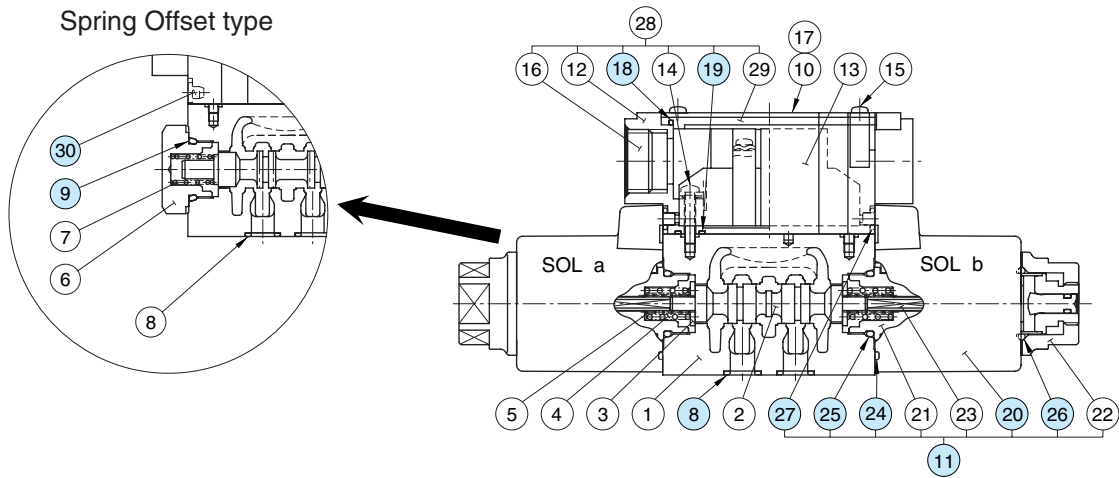
- Do not perform wiring while the power is on. Doing so may result in electric shock, burns or death.
- Make the wiring properly. Improper wiring will cause an irregular movement of the machine, resulting in a grave accident.

Electrical Circuit

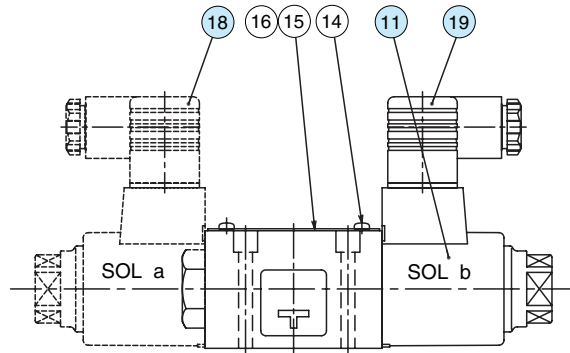
| Type of Electrical Conduit Connection | Electric Source | | |
|---------------------------------------|-----------------|----|-----------------|
| | AC | DC | AC→DC Rectified |
| Terminal Box Type | | | |
| Plug-in Connector Type | | | |

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.

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

| Valve Model Numbers | ⑪ Solenoid Ass'y No. | ⑫ Coil No. | ⑬ Receptacle Part No. | ⑱ Connector Ass'y Part No. | ⑲ Connector Ass'y Part No. | Remarks |
|--------------------------|-------------------------|----------------|--------------------------|-------------------------------|-------------------------------|--|
| DSG-01-***-A100-70* | SA1-100-70 | C-SA1-100-70 | R1-70 | — | — | Terminal Box 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 | KR1-B-70 | | | |
| DSG-01-***-D48-70* | SD1-48-70 | C-SD1-48-70 | RR1-70 | | | |
| DSG-01-***-R100-70* | SR1-100-70 | C-SR1-100-70 | KR1-A-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-B-70 | | | |
| S-DSG-01-***-D24-70* | SD1-24-S-70 | C-SD1-24-70 | RR1-70 | | | |
| S-DSG-01-***-D48-70* | SD1-48-S-70 | C-SD1-48-70 | | | | |
| 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 Connector 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 | | | | |
| 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 | | GDME-211-R-A-10 | GDME-211-R-B-10 | |
| 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 | | GDME-211-R-A-10 | GDME-211-R-B-10 | |
| S-DSG-01-***-D48-N-70* | SD1-48-S-N-70 | C-SD1-48-N-70 | | | | |
| S-DSG-01-***-R100-N-70* | SR1-100-S-N-70 | C-SR1-100-N-70 | | SR1-200-S-N-70 | GDME-211-R-B-10 | |
| 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 Connector with Indicator 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 | | | | |
| 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 | | | | |
| S-DSG-01-***-D24-N1-70* | SD1-24-S-N-70 | C-SD1-24-N-70 | | GDML-211-2-11 | GDML-211-2-11 | |
| S-DSG-01-***-D48-N1-70* | SD1-48-S-N-70 | C-SD1-48-N-70 | | | | |
| S-DSG-01-***-R100-N1-70* | SR1-100-S-N-70 | C-SR1-100-N-70 | | GDML-211-3-11 | GDML-211-3-11 | |
| S-DSG-01-***-R200-N1-70* | SR1-200-S-N-70 | C-SR1-200-N-70 | | | | |
| S-DSG-01-***-D12-N1-70* | SD1-12-S-N-70 | C-SD1-12-N-70 | | GDML-211-1-11 | GDML-211-1-11 | |
| S-DSG-01-***-D24-N1-70* | SD1-24-S-N-70 | C-SD1-24-N-70 | | | | |
| S-DSG-01-***-D48-N1-70* | SD1-48-S-N-70 | C-SD1-48-N-70 | GDML-211-1-11 | GDML-211-1-11 | | |
| S-DSG-01-***-R100-N1-70* | SR1-100-S-N-70 | C-SR1-100-N-70 | | | | |
| S-DSG-01-***-R200-N1-70* | SR1-200-S-N-70 | C-SR1-200-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 | | | | |
| S-DSG-01-***-D24-N1-70* | SD1-24-S-N-70 | C-SD1-24-N-70 | GDML-211-1-11 | GDML-211-1-11 | | |
| S-DSG-01-***-D48-N1-70* | SD1-48-S-N-70 | C-SD1-48-N-70 | | | | |

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.

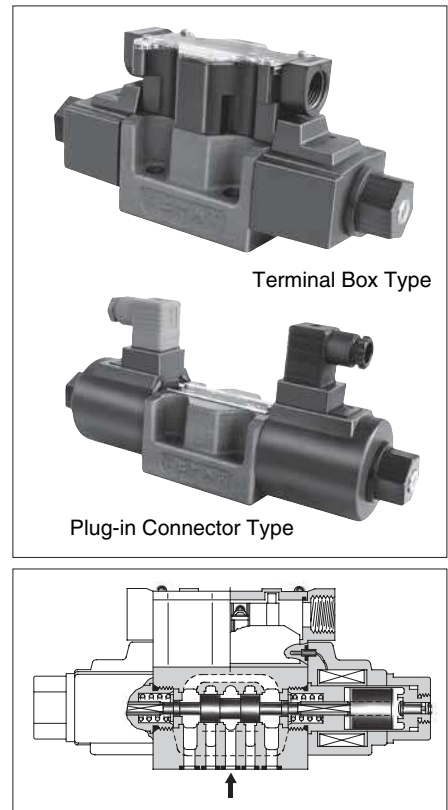
- Standard type Useable at high pressure: 31.5 MPa (4570 PSI) and high flow: 120 L/min (31.7 U.S.GPM)
- Shockless type A noise at spool changeover and a vibration in piping can be reduced to a minimum.

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

★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" European Design Standard | M6 × 35 Lg. | 12 - 15 Nm (106 - 133 in. lbs.) |
| 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) ^{★2} | Holding (A) | Power (W) |
| Standard Type | AC ^{★1} | 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 | |
| | | | | | 180 - 240 | 2.29 | 0.31 | |
| | | | 60 | 220 | | 2.52 | 0.38 | |
| | | | | | A240 | 50 | 240 | |
| | | 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) (Quick Return) | RQ100 | 50/60 | 100 | 90 - 110 | — | 0.43 | 38 |

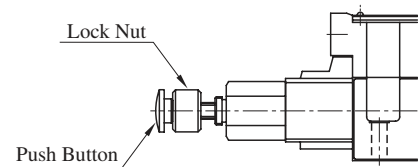
- ★1. AC solenoid is not available in shockless type.
R or RQ type models with built-in current rectifier is recommended for shockless operation with AC power.
- ★2. Inrush current in the above table show rms values at maximum stroke.
- ★3. There are more coil types other than the above. For details,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

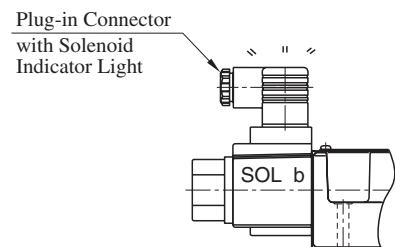
● Push Button with Lock Nut

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

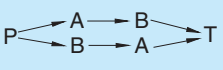
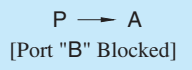
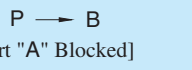
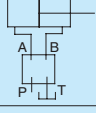
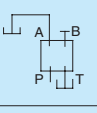
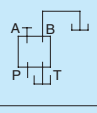






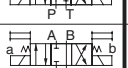

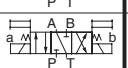
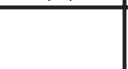
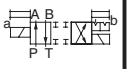
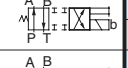
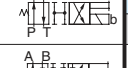
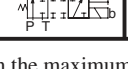
- ★ 1. In case of the special two position valve, please refer to page 369 for details.
- ★ 2. N is not available for RQ-type solenoids .
- ★ 3. N1 is not available for R and RQ-type solenoids .

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.

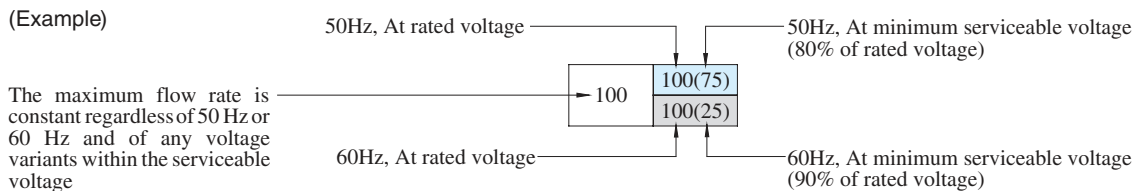


■ List of Standard Models and The Maximum Flow

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

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbols | Max. Flow L/min | | | | | | | | | | | | |
|------------------------|--------------------------|---------------|---|---|-----|------------------|------------------|--|---------|---------|---------|---|---------|---------|---------|---------|
| | | | |  | | | |  | | | |  | | | | |
| | | | |  | | | |  | | | |  | | | | |
| | | | | 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 | 100(81) | 100(81) | 100(81) | 100(81) | 100(81) | 100(81) | 100(81) | 100(81) | |
| | | DSG-03-3C4 |  | 80 | 80 | 80(65) 75(20) | 80(25) 30(15) | 100(58) | 100(33) | 76(22) | 46(19) | 100(58) | 100(33) | 76(22) | 46(19) | |
| | | DSG-03-3C40 |  | 100 | 100 | 100 | 100 | 100(75) | 100(62) | 100(39) | 84(21) | 48(18) | 100(62) | 100(39) | 84(21) | 48(18) |
| | | DSG-03-3C5 |  | 30 | 30 | 30 | 30 | 26 | 21 | 18 | 16 | 30 | 28 | 28 | 28 | |
| | | DSG-03-3C60 |  | 70 | 70 | 70 | — | 100 | 100 | 100 | — | 100 | 100 | 100 | — | |
| | | DSG-03-3C9 |  | 100 | 100 | 100 | 100 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | |
| | | DSG-03-3C10 |  | 80 | 80 | 80(30) 30(25) | 80(20) 20(15) | 100(55) | 100(36) | 60(21) | 34(16) | 100(55) | 100(36) | 60(21) | 34(16) | |
| | | DSG-03-3C11 |  | 100 | 100 | 100 | 100 | 100(80) | 100(65) | 85(35) | 62(28) | 100(80) | 100(65) | 85(35) | 62(28) | |
| | | DSG-03-3C12 |  | 90 | 90 | 90(30) 40(20) | 90(20) 20(15) | 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.

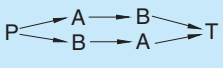
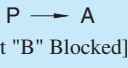
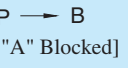
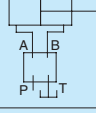
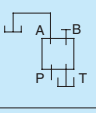
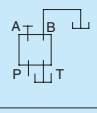
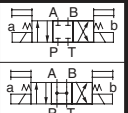
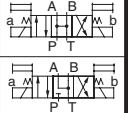
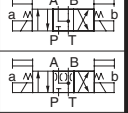
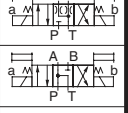
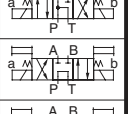
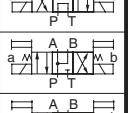
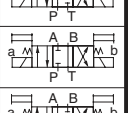
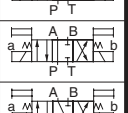
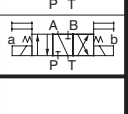
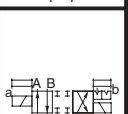
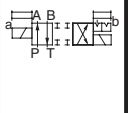


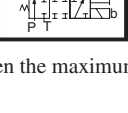


2. For the maximum flow rate in P→T of the valves with a ★ mark, please see page 368.

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

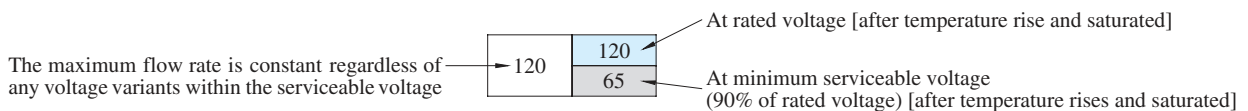
■ List of Standard Models and The Maximum Flow

- 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 | | | | | | | | | | | |
|------------------------|--------------------------|---------------|---|---|-----|-----|------|--|-----|-----|------|---|-----|-----|------|
| | | | |  | | | |  [Port "B" Blocked] | | | |  [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 |
| | 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)



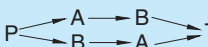
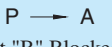
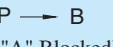









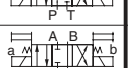
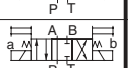

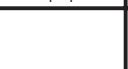
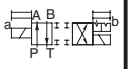

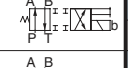
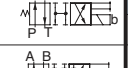
2. For the maximum flow rate in P → T of the valves with a ★ mark, please see page 368.

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

DSG-03 Series Solenoid Operated Directional Valves

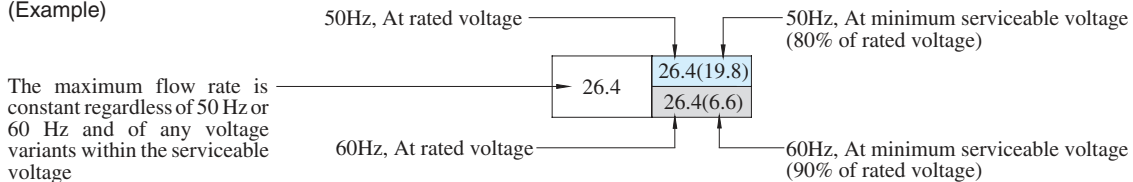
■ List of Standard Models and The Maximum Flow

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

| No. of Valve Positions | Spool-Spring Arrangement | Model Numbers | Graphic Symbole | Max. Flow U.S.GPM | | | | | | | | | | | | | |
|------------------------|--------------------------|---------------|---|---|------|-------------|-------------|--|-------------|-------------|-------------|---|-------------|-------------|-------------|-------------|-------------|
| | | | |  | | | |  [Port "B" Blocked] | | | |  [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 | 26.4 (21.4) | 26.4 (21.4) | 26.4 (21.4) | 26.4 (21.4) | 26.4 (21.4) | 26.4 (21.4) | 26.4 (21.4) | 26.4 (21.4) | 26.4 (21.4) | |
| | | 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) | 19.8 (5.3) | 7.9 (4.0) |
| | | DSG-03-3C40 |  | 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) | 12.7 (4.8) | 26.4 (6.6) | 16.4 (10.6) |
| | | 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 | 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 | 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) | 7.9 (6.6) | 5.3 (4.0) |
| | | 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) | 21.1 (15.9) | 18.5 (12.2) |
| | | 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) | 10.6 (5.3) | 5.3 (4.0) |
| 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)


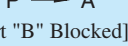

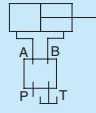
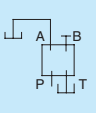
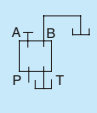
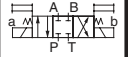

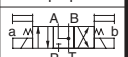
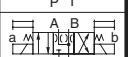

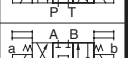
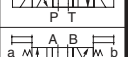
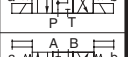
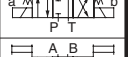
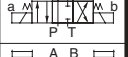

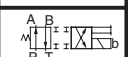
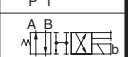
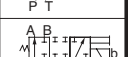


2. For the maximum flow rate in P → T of the valves with a ★ mark, please see page 368.

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

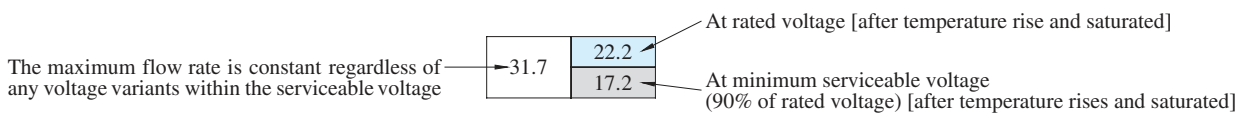
■ List of Standard Models and The Maximum Flow

- 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 | | | | | | | | | | | |
|------------------------|--------------------------|---------------|---|---|------|------|------|--|------|------|------|---|------|------|------|
| | | | |  | | | |  [Port "B" Blocked] | | | |  [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 |
| | | 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 | 27.2 |
| | | 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)



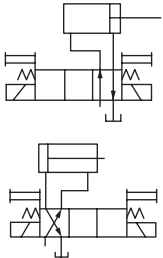
2. For the maximum flow rate in P → T of the valves with a ★ mark, please see page 368.

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

DSG-03 Series Solenoid Operated Directional Valves

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 (1450 PSI) | 16 MPa (2320 PSI) | 25 MPa (3630 PSI) | 31.5 MPa (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) | — |

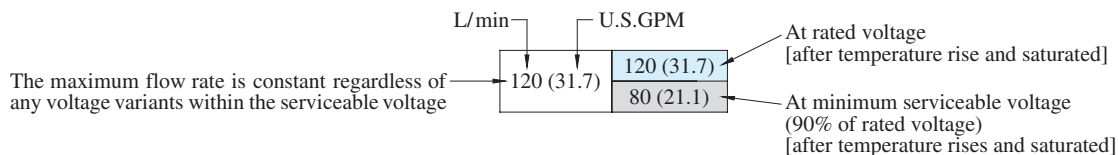
List of Shockless Models and The Maximum Flow

- 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 L/min (U.S.GPM) | | | | | | | | | | | |
|------------------------|--------------------------|---------------|-----------------|----------------------------|------------|------------|------------|----------------------------|------------|-----------|-----------|----------------------------|------------|------------|-----------|
| | | | | | | | | P → A [Port "B" Blocked] | | | | P → B [Port "A" Blocked] | | | |
| | | | | | | | | | | | | | | | |
| | | | | Working Pressure MPa (PSI) | | | | Working Pressure MPa (PSI) | | | | Working Pressure MPa (PSI) | | | |
| | | | | 5 (730) | 10 (1450) | 16 (2320) | 25 (3630) | 5 (730) | 10 (1450) | 16 (2320) | 25 (3630) | 5 (730) | 10 (1450) | 16 (2320) | 25 (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) | 75 (19.8) | 50 (13.2) | 120 (31.7) | 120 (31.7) | 75 (19.8) | 50 (13.2) |
| | | 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) |
| 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) |

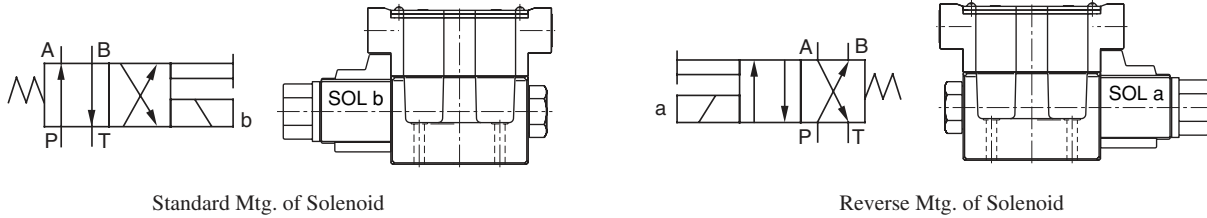
Note: The relation between the maximum flow in the table above and the voltage (within the serviceable voltage) is as shown below.

(Example)



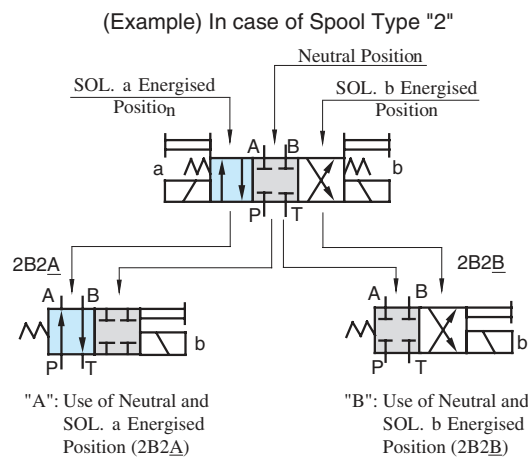
Reverse Mounting of Solenoid

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 SymbolsG | |
|------------------|--------------------|-------------------|
| | Standard Mtg. Type | Reverse Mtg. Type |
| (S-) DSG-03-2B*A | | |
| (S-) DSG-03-2B2A | | — |

| Model Numbers | raphic 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.

E
DSG-03 Series Solenoid Operated Directional Valves

■ **Typical Changeover Time**

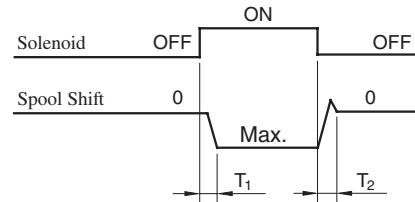
Changeover time varies according to oil viscosity, spool type and hydraulic circuit.

● **Standard Type (Without Shockless Function)**

[Test Conditions]

Pressure: 16 MPa (2320 PSI)
 Flow Rate: 70 L/min (18.5 U.S.GPM)
 Viscosity: 30 mm²/s (140 SSU)
 Voltage: 100 %V (After coil temperature rises and saturated)

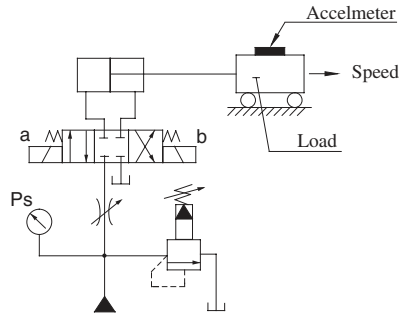
[Result of Measurement]



| Type | Model Numbers | Changeover Time ms | |
|---------------|------------------|--------------------|----------------|
| | | T ₁ | T ₂ |
| 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 |

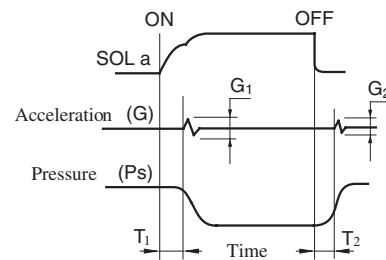
● **Shockless Type**

[Test Circuit and Conditions]



Setting Pressure (Ps): 7 MPa (1020 PSI)
 Load (W): 1000 kg (2205 lbs.)
 Speed: 8.8 m/min (28.9 ft./min)
 Viscosity: 30 mm²/s (140 SSU)

[Result of Measurement]

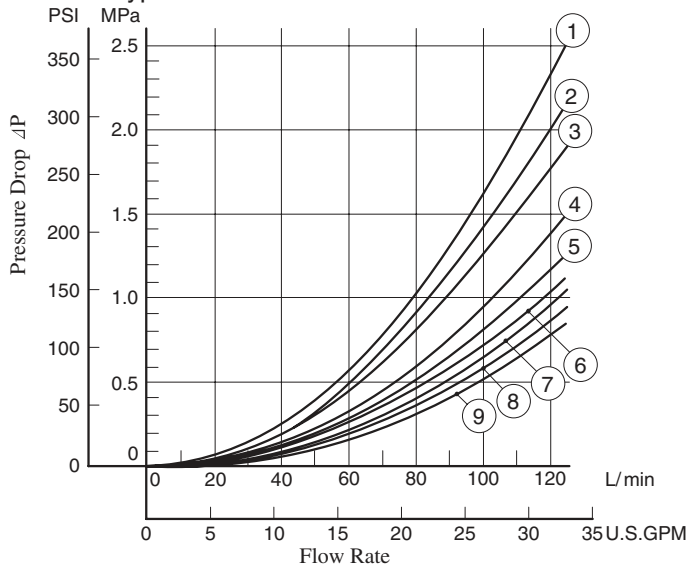


| Type | Model Numbers | Time ms | | Acceleration m/s ² (G) | |
|----------------|--------------------|----------------|----------------|-----------------------------------|----------------|
| | | T ₁ | T ₂ | G ₁ | G ₂ |
| Shockless Type | S-DSG-03-3C2-D* | 110 | 120 | 6.4 (.65) | 6.4 (.65) |
| | S-DSG-03-3C2-R*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

Pressure Drop

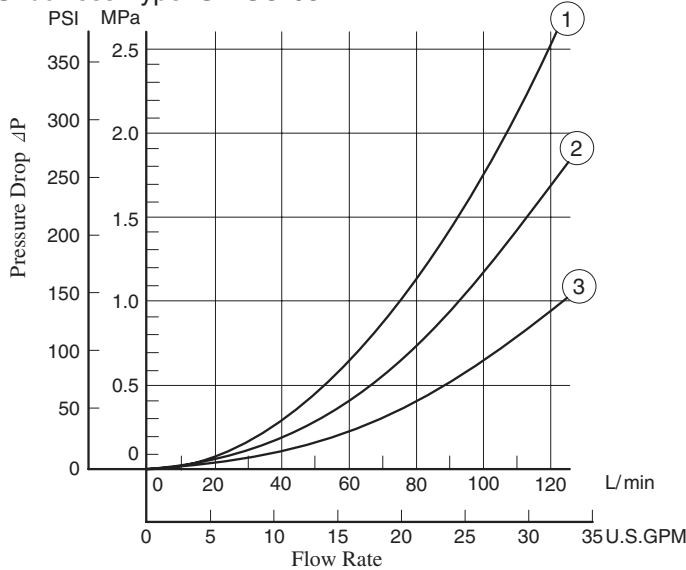
Pressure drop curves based on viscosity of 35 mm²/s (164 SSU) and specific gravity of 0.850.

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

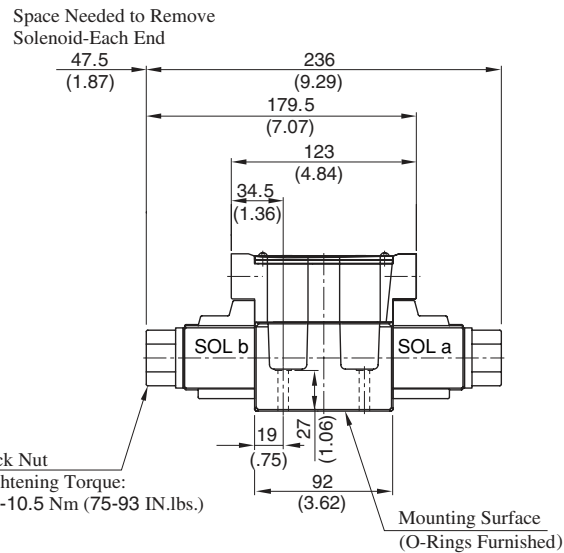
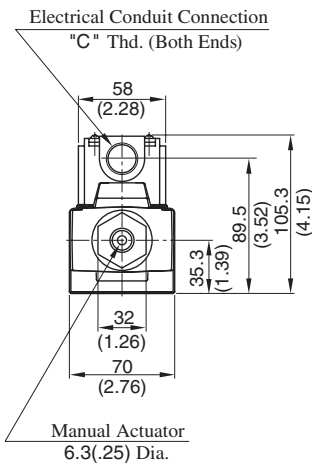
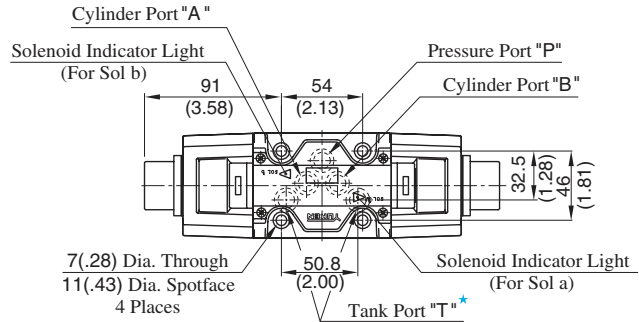
● For any other specific gravity (G'), the pressure drop (ΔP') may be obtained from the formula below.

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

TERMINAL BOX TYPE

- Models with AC Solenoids: DSG-03- ***-A* -50/5090
- Double Solenoid: Spring Centred & No-Spring Detented

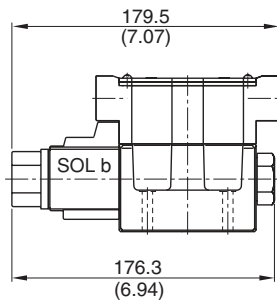
| Model Numbers | "C" Thd. |
|----------------------|----------|
| DSG-03- ***-A* -50 | G 1/2 |
| DSG-03- ***-A* -5090 | 1/2 NPT |



★. 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

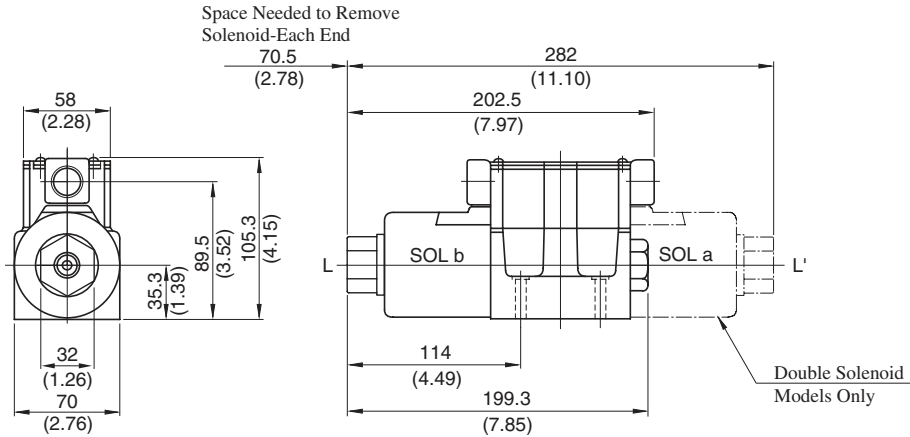


- For other dimensions, refer to "Spring Centred and No-Spring Detented" models.
- Solenoid being mounted in the reverse position -SOL a side- is also available.

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

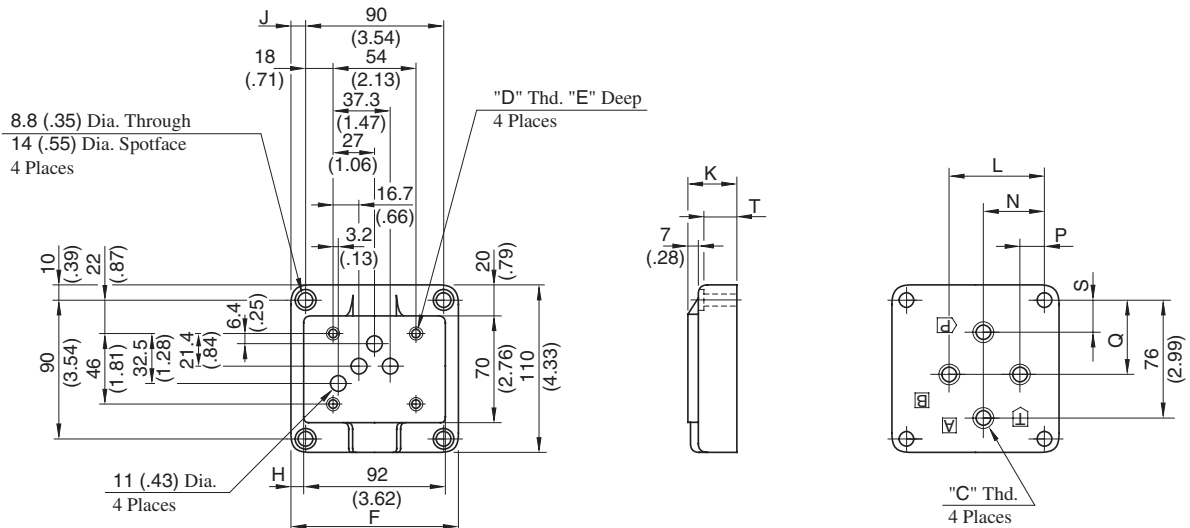


● For other dimensions, refer to Models with AC solenoids (Page 372).

DIMENSIONS IN MILLIMETRES (INCHES)

Sub- plates

DSGM-03*-40/2180/2190

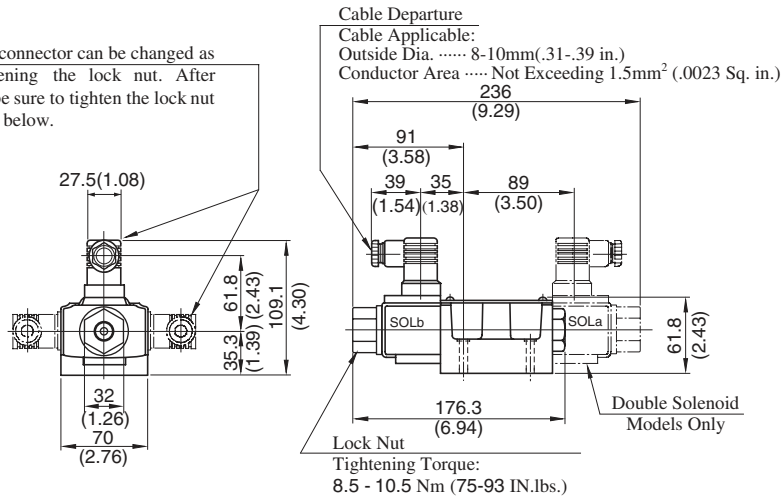


| Sub-plate Model Numbers | Piping Size "C" Thd. | "D" Thd. | Dimensions mm (Inches) | | | | | | | | | | |
|-------------------------|----------------------|----------|------------------------|-------|-------|--------|--------|--------|-------|--------|-------|--------|----|
| | | | E | F | H | J | K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

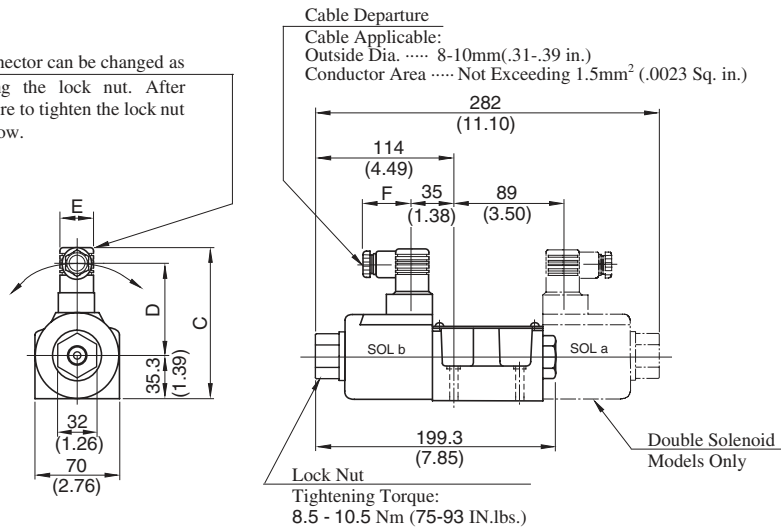
The position of the Plug-in connector can be changed as illustrated below by loosening the lock nut. After completion of the change, be sure to tighten the lock nut with the torque as specified below.



● **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) |

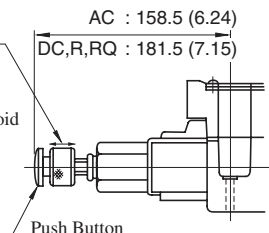
● For other dimensions, refer to "Terminal Box Type" (Page 372 - 373).

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.

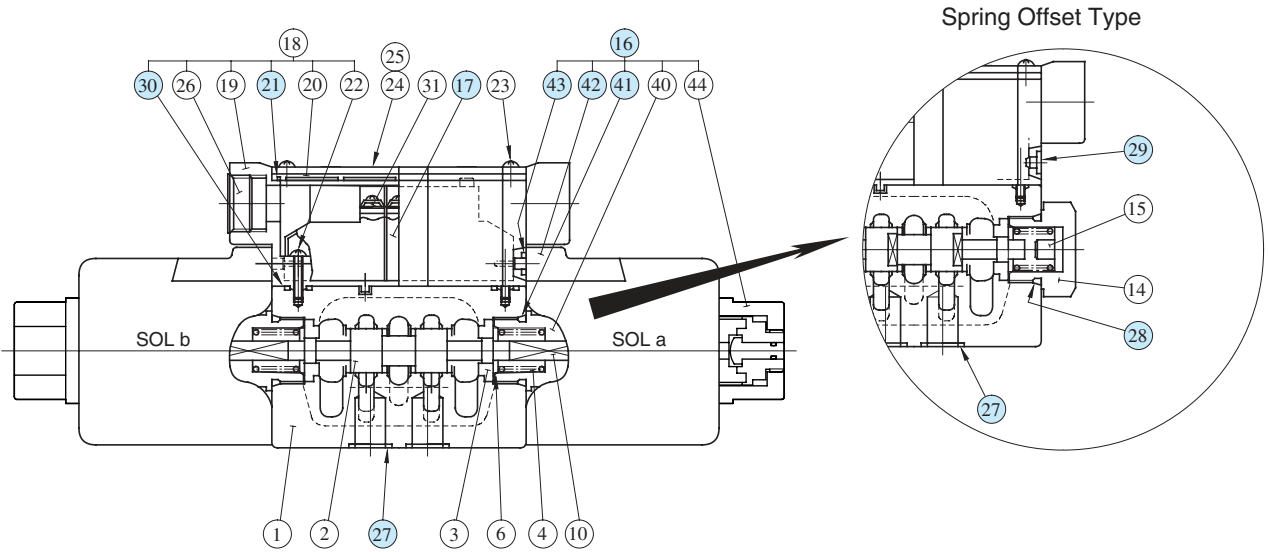
Electrical Circuit

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

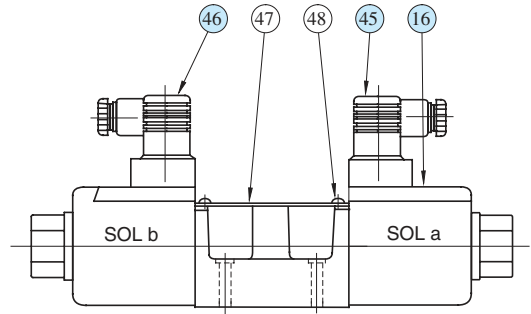
E
 DSG-03 Series Solenoid Operated Directional Valves

■ 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 | (16) Solenoid Ass'y No. | (42) Coil No. | (17) Receptacle Part No. | (45) Connector Ass'y Part No. | (46) Connector Ass'y Part No. | Remarks | |
|--------------------------|----------------------------|------------------|-----------------------------|----------------------------------|----------------------------------|--|---------------|
| DSG-03-***-A100-50* | SA3-100-51 | C-SA3-100-51 | R3-60 | — | — | Terminal Box 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 | KR3-C-60 | | | | |
| DSG-03-***-D100-50* | SD3-100-51 | C-SD3-100-51 | | | | | |
| DSG-03-***-R100-50* | SR3-100-51 | C-SR3-100-51 | RR3-60 | | | | |
| DSG-03-***-R200-50* | SR3-200-51 | C-SR3-200-51 | QR3-C-60 | | | | |
| DSG-03-***-RQ100-50* | SR3-100-51 | C-SR3-100-51 | | | | | |
| 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 | KR3-C-60 | | | | |
| S-DSG-03-***-D100-50* | SD3-100-S-51 | C-SD3-100-51 | | | | | |
| 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 | QR3-C-60 | | | | |
| S-DSG-03-***-RQ100-50* | SR3-100-51 | C-SR3-100-51 | | | | | |
| DSG-03-***-A100-N-50* | SA3-100-N-51 | C-SA3-100-N-51 | — | GDM-211-A-11 | GDM-211-B-11 | Plug-in Connector 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 | | | | | |
| 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 | | | | | |
| 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 | | GDM-211-A-11 | GDM-211-B-11 | | |
| S-DSG-03-***-D24-N-50* | SD3-24-S-N-51 | C-SD3-24-N-51 | | | | | |
| S-DSG-03-***-D100-N-50* | SD3-100-S-N-51 | C-SD3-100-N-51 | | GDME-211-R-A-10 | GDME-211-R-B-10 | | |
| S-DSG-03-***-R100-N-50* | SR3-100-S-N-51 | C-SR3-100-N-51 | | | | | |
| S-DSG-03-***-R200-N-50* | SR3-200-S-N-51 | C-SR3-200-N-51 | | GDM-211-A-11 | GDM-211-B-11 | Plug-in Connector with Indicator Light | |
| DSG-03-***-A100-N1-50* | SA3-100-N-51 | C-SA3-100-N-51 | | | | | |
| 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 | | | | | |
| 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 | | | | | |
| 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 | | | | | |
| S-DSG-03-***-D100-N1-50* | SD3-48-S-N-51 | C-SD3-100-N-51 | GDML-211-1-11 | | | | GDML-211-1-11 |

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

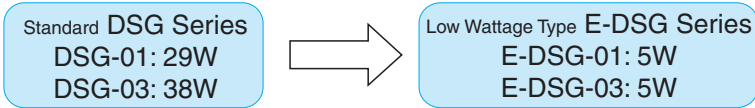


DSG-03 Series Solenoid Operated Directional Valves

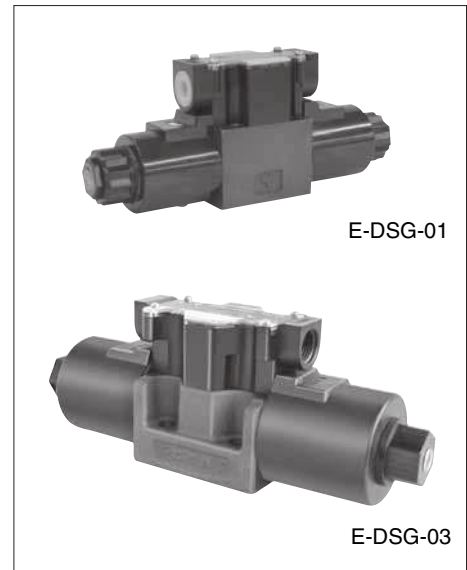
Low Wattage (5W) Type Solenoid Operated Directional Valves

2 type of Direct Acting type Solenoid Operated Directional Valves, E-DSG-01/03, with suppressed consumption power 5W were launched in series.

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



- Since these valves operate on only 5W, they can be driven through the output circuit of a programmed or sequence controller. This feature simplifies the electric circuitry and enables savings in initial cost.
- These low wattage valves minimize coil surface temperature.
- CE certified products are available.



Specifications

| Model Numbers | Max. Flow L/min (U.S.GPM) | Max. Operating Pressure MPa (PSI) | Max. T-Line Back Pressure MPa (PSI) | Max. Changeover Frequency Cycle/min {min ⁻¹ } | Mass kg (lbs.) |
|--------------------|---------------------------------|--------------------------------------|---|--|-------------------|
| E-DSG-01-3C*-D*-60 | 30 (7.9) | 16 (2320) | 16 (2320) | 240 | 2.2 (4.85) |
| E-DSG-01-2N2-D*-60 | | | | | 2.2 (4.85) |
| E-DSG-01-2D2-D*-60 | | | | | 2.2 (4.85) |
| E-DSG-01-2B*-D*-60 | | | | | 1.6 (3.53) |
| E-DSG-03-3C*-D*-50 | 63 (16.6) | 16 (2320) | 16 (2320) | 240 | 5 (11.03) |
| E-DSG-01-2D2-D*-50 | | | | | 5 (11.03) |
| E-DSG-01-2B2-D*-50 | | | | | 3.6 (7.94) |

★ Maximum flow indicates a ceiling flow depends on the type of spool and operating condition.

Solenoid Ratings

| Model Numbers | Electric source | Coil Type | Voltage (V) | | Current & Power at Rated Voltage | |
|---------------|-----------------|-----------|---------------|-------------------|----------------------------------|-----------|
| | | | Source Rating | Serviceable Range | Inrush (A) | Power (W) |
| E-DSG-01 | DC (K Series) | D12 | 12 | 10.8 – 13.2 | 0.43 | 5 |
| | | D24 | 24 | 21.6 – 26.4 | 0.23 | |
| E-DSG-03 | | D12 | 12 | 10.8 – 13.2 | 0.44 | 5 |
| | | D24 | 24 | 21.6 – 26.4 | 0.22 | |

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

For details, please contact us.

Electronic Relay Incorporated Solenoid Operated Directional Valves

Drive power source and signal are separate.

The valve is actuated by operating a built-in switch using a very small current signal (about 10 mA) when the solenoid is energised.

- **A Direct Drive by a programmable controller is now possible.**

As the valve can be actuated by a very small current, as we have mentioned, a Direct Drive is possible on the output circuit of the programmable controller or sequence controller.

- **Simple construction and stable operation.**

Since the valve is a direct type, the construction is quite simple. Also the solenoid is the well proven wet armature type, which can withstand contamination. Therefore a stable operation can be obtained.



Specifications

| Valve Type | Model Numbers | Max. Flow ★ L/min (U.S.GPM) | Max. Operating Pressure MPa (PSI) | Max. T-Line Back Pressure MPa (PSI) | Max. Changeover Frequency Cycle/min {min ⁻¹ } | Mass kg (lbs.) |
|----------------|-----------------------------|-----------------------------------|--|---|---|----------------------|
| Standard Type | T-DSG-01-3C*-D24*-70/7090 | 100 (26.4) | 35 (5080) | 21 (3050) | 300 | 1.85 (4.08) |
| | T-DSG-01-2D2-D24*-70/7090 | | | | | |
| | T-DSG-01-2B*-D24*-70/7090 | | | | | |
| Shockless Type | T-S-DSG-01-3C*-D24*-70/7090 | 63 (16.6) | 25 (3630) | 21 (3050) | 120 | 1.85 (4.08) |
| | T-S-DSG-01-2B2-D24*-70/7090 | | | | | |
| Standard Type | T-DSG-03-3C*-D24*-50/5090 | 120 (31.7) | 31.5 (4570) { Spool Type 60 Only } 25 (3630) | 16 (2320) | 240 | 5 (11.03) |
| | T-DSG-03-2D2-D24*-50/5090 | | | | | |
| | T-DSG-03-2B*-D24*-50/5090 | | | | | |
| Shockless Type | T-S-DSG-03-3C*-D24*-50/5090 | 120 (31.7) | 25 (3630) | 16 (2320) | 120 | 5 (11.03) |
| | T-S-DSG-03-2B2-D24*-50/5090 | | | | | |

★ Maximum flow indicates a ceiling flow. As the ceiling flow depends on the type of spool and operating condition the same as those for standard DSG-01/03, refer to the List of Spool Functions on pages 347 - 351 (DSG-01) and 364 - 368 (DSG-03) for details.

Model Number Designation

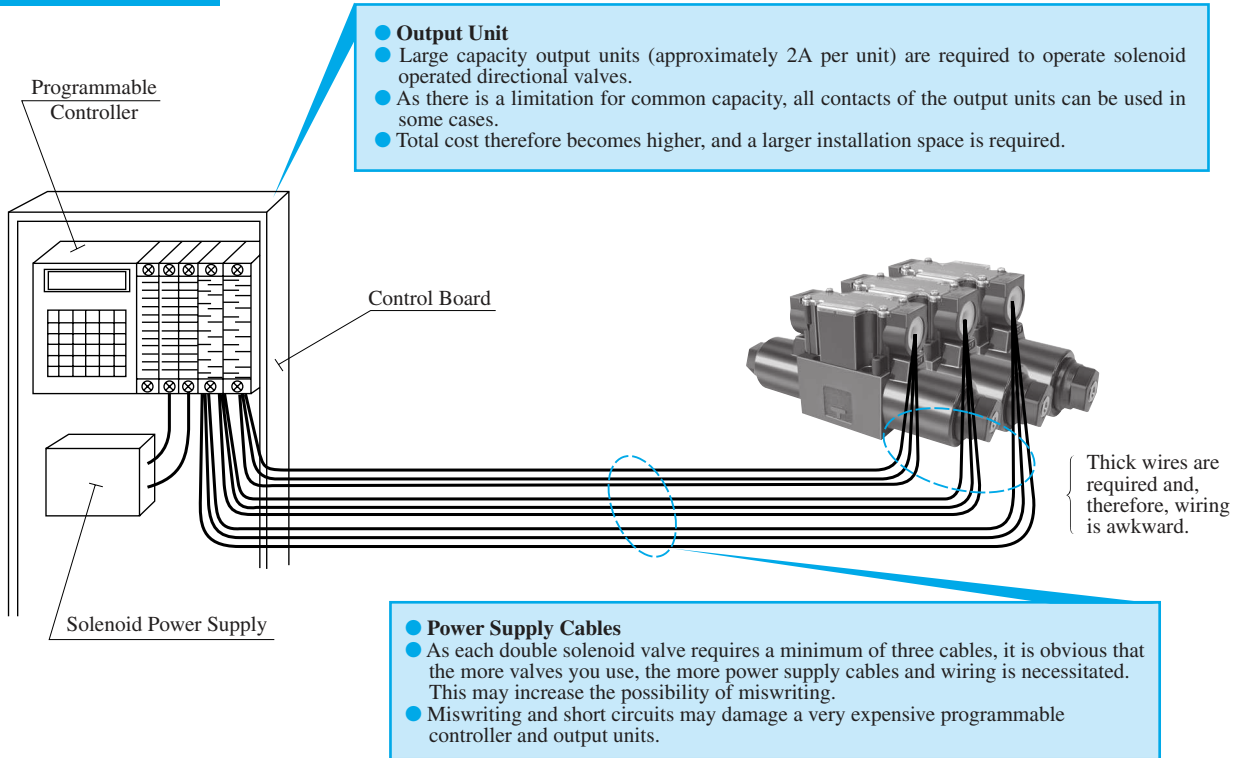
| F- | T- | S- | DSG | -03 | -2 | B | 2 | A | -D24 | M | -70 | * | -L |
|---------------|--|------|---------------|------------|--------------------------|--------------------------|------------|----------------------------|-----------|--------------------------------|---------------|-----------------|---------------------------------------|
| Special Seals | Control Type | Type | Series Number | Valve Size | Number of Valve Position | Spool-Spring Arrangement | Spool Type | Special Two Position Valve | Coil Type | Supply Type of Signal Power | Design Number | Design Standard | Models with Alternate Offset Solenoid |
| | T: Electronic Relay Incorporated Type | | | 01 | | | | | DC D24 | None: Internal Signal Power | 70 | | |
| | | | | 03 | | | | | | M: External Signal Power | 50 | | |

★ Please refer to the valve type DSG-01 and DSG-03 shown on page 346 and 363 for the area shaded.

For details, please contact us.

Comparison of The Conventional Type and The Electronic Relay Incorporated Type

Conventional Type



Electronic Relay Incorporated Type

