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DIRECTIONAL CONTROLS

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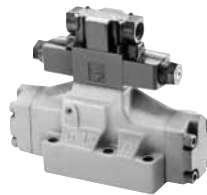
Directional Valves

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

● Solenoid Operated Directional Valves



● Solenoid Controlled Pilot Operated Directional Valves



● "G" Series Shockless Type Directional Valves



● Pilot/Manually/Mechanically Operated Directional Valves



● Poppet Type Directional Valves



● Check/Pilot Controlled Check Valves



Hydraulic Fluids

1. Type of Fluids

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

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

- Notes
- 1: Not applicable with G-DSG and G-DSHG series valves.
 - 2: For two types of manually operated directional valves, DMT-⁰⁶/_{06X} and DMT-¹⁰/_{10X}, only petroleum base oils and polyol ester type fluids are available.
 - 3: Water-glycol fluids cannot be used for two types of solenoid operated poppet type two-way valves; CDST-03* and CDSG-03 types.
 - 4: For use with hydraulic fluids other than those listed above, please consult your Yuken representatives in advance.

2. Recommended Viscosity and Oil Temperatures

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

Name	Viscosity	Oil Temperature
DSG-005 series Solenoid Operated Directional Valves	20 – 200 mm ² /s (100 – 900 SSU)	–15 – +60°C (5 – 140°F)
Solenoid Operated Directional Valves Solenoid Controlled Pilot Operated Directional Valves Poppet Type Solenoid Operated Directional Valves Multi Purpose Control Valves Solenoid Operated Poppet Type Two-Way Valves Pilot Controlled Directional Valves Manually Operated Directional Valves Mechanically Operated Directional Valves Check Valves Pilot Controlled Check Valves	15 – 400 mm ² /s (80 – 1800 SSU)	–15 – +70°C (5 – 160°F)
G Series Shockless Type Solenoid Operated Directional Valves (Shifting Time Adjustable)	15 – 200 mm ² /s (80 – 900 SSU)	–15 – +60°C (5 – 140°F)

3. Control of Contamination

Due caution must be paid to maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorter the life of the valve. Please maintain the degree of contamination within NAS 1638-Grade 12. Use 25 µm or finer line filter (In case of DSG-005 series Solenoid Operated Directional Valves, NAS1638-Grade 11. Use 20 µm or finer line filter).



Water-proof, dust-proof and vibration-resistance

These properties are in compliance with the following standards.
(The marking of ○ indicates compliance)

Item	Standard	Type	Description	Compliance							
				DSG-005	(S-/T-/L-)DSG-01 DSHG-01 DSHG-03 (S-)DSHG-04 (S-)DSHG-06 (S-)DSHG-10	(S-/E-/T-/L-)DSG-03	G-DSG-01 G-DSG-03 G-DSHG-04 G-DSHG-06	DSLHG DSLHG DSP*	CDS*		
★2 Water-proof	JIS F8001 Water-proof test for marine electric appliance	Class 1 water spray	Drip-proof construction	○	○	○	○	○	○		
		Class 2 water spray	Froth-roof construction	×	○	○	○	○	○		
	JIS D0203 Damp-proof and Water-proof test for automobile parts	Damp-proof test M1	Test to examine damp-resistance of parts	×	○	○	○	○	○		
		Damp-proof test M2	Test to examine functions of part under high temperature and high humidity	×	○	○	○	○	○		
		Splash-proof test R1	Test to examine functions of parts which are likely to be exposed to water splash.	○	○	○	○	○	○		
		Splash-proof test R2	Test to examine functions of parts which are indirectly exposed to stormy weather or water splash.	×	○	○	○	○	○		
	JIS C0920 Water-proof test for electro-mechanical parts and wiring materials	Drip-proof type	Not affected by water dropping at vertical angle of 15 degrees or less.	○	○	○	○	○	○		
		Rain-proof type	Not affected by rain fall at vertical angle of 60 degrees or less.	×	○	○	○	○	○		
		Froth-proof type	Not affected by water drip from any direction.	×	○	○	○	○	○		
		Jet-flow proof type	Not affected by jet flow from any direction.	×	○	×	×	×	×		
	(I.E.C) PUBL. 529	Protection Class 2: Drip-proof type (2)	Not affected by water drip falling at vertical angle of 15 degrees or less.	○	○	○	○	○	○		
		Protection Class 3: Rain-proof type	Not affected by rain falling at vertical angle of 60 degrees or less.	×	○	○	○	○	○		
		Protection Class 4: Froth-proof type	Not affected by water drip from any direction.	×	○	○	○	○	○		
		Protection Class 5: Jet-flow proof type	Not affected by jet flow from any direction.	×	○	×	×	×	×		
	Dust-proof	(I.E.C) PUBL. 529	Protection Class 6	Fully protected from entry of dust.	○	○	○	○	○	○	
	Vibration-resistance	JIS C0911 Vibration test for small electric appliances	Resonance test (IC)	Vibration range: 7-59.5 Hz Duplex amplitude: 0.1 mm	×	○	○	○	○	○	
Fixed frequency resistance test (IIC)				Frequency: 20 Hz	Grade 1: duplex amplitude-0.5 mm	×	○	○	○	○	○
				Grade 2: duplex amplitude-1.2 mm	×	○(2D*)★1	○(2D*)★1	○★1	○	○	
				Grade 3: duplex amplitude-1.8 mm	×	○(2D*)★1	○(2D*)★1	○★1	○	○	
Grade 4: duplex amplitude-2.4 mm			×	○(2D*)★1	○(2D*)★1	○★1	○	○			
Variable frequency resistance test (IIIC)			Frequency range: 7-59.5 Hz	Grade 1: duplex amplitude-0.3 mm	×	○(2D*)★1	○(2D*)★1	○★1	○	○	
			Grade 2: duplex amplitude-0.5 mm	×	○(2D*)★1	○(2D*)★1	○★1	○	×		
		Grade 3: duplex amplitude-0.75 mm	×	○(2D*)★1	○(2D*)★1	○★1	○	×			
JIS D1601 Vibration test for automobile parts	Class 1: mainly for parts of passenger car	Grade A: Parts mounted on spring of body or chassis having relatively low vibration.	×	○(2D*)★1	○(2D*)★1	○	○	×			
Grade B: Parts mounted on spring of body or chassis having relatively low vibration.		×	○(2D*)★1	○(2D*)★1	○	○	×				
Grade C: Parts mounted in engine having relatively low vibration		×	○(2D*)★1	○(2D*)★1	×	○	×				

★1 : No-spring detented type (2D*) and No-spring type (2N*) can be used when energised continuous for position holding.
★2 : For outdoor use, protect equipment with a cover, etc., to prevent direct exposure to water.

Solenoid Operated Directional Valves

Solenoid Controlled Pilot Operated Directional Valves

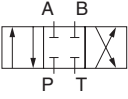
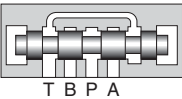
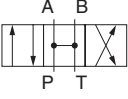
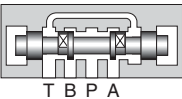
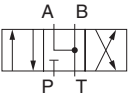
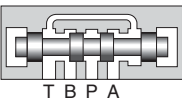
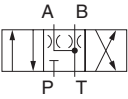
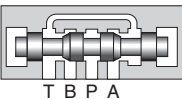
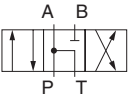
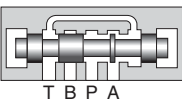
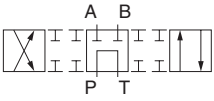
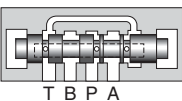
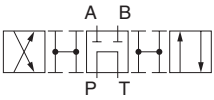
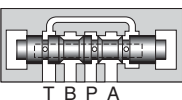
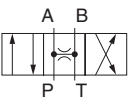
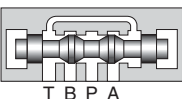
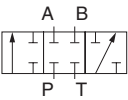
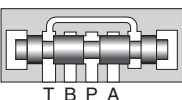
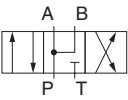
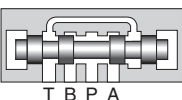
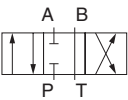
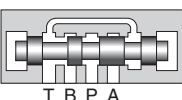
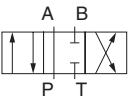
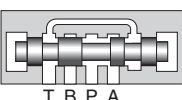
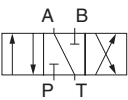
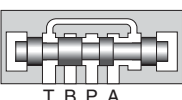
“G” Series Shockless Type Directional Valves

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												
		16 (2320)	L-DSG-03										361		
		25 (3600)	S-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												
			DSHG-04/S-DSHG-04												
		31.5 (4580)	DSHG-06/S-DSHG-06												
			DSHG-10/S-DSHG-10												
“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

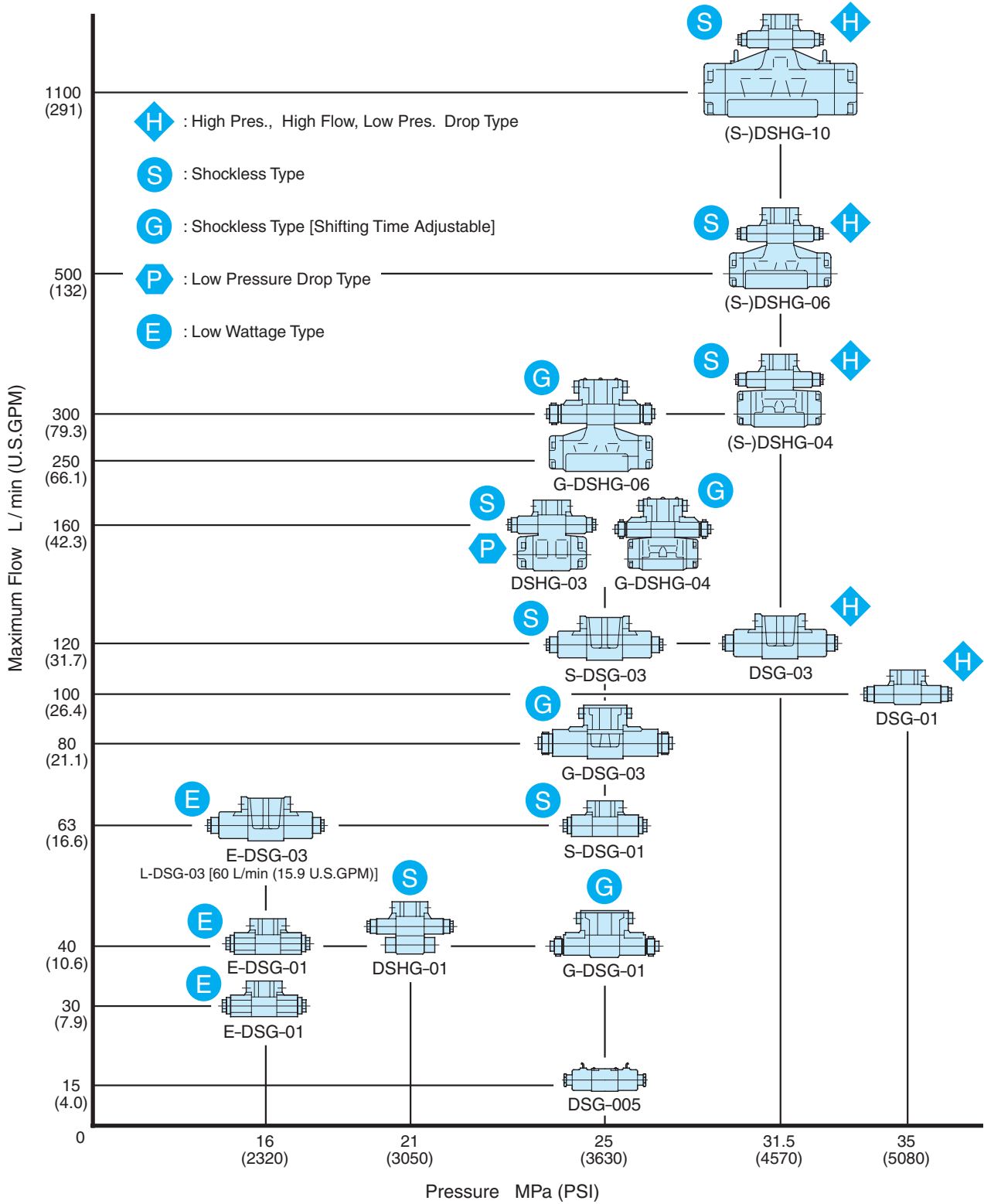
Model change has been made on the following product.

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.

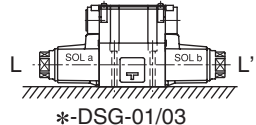
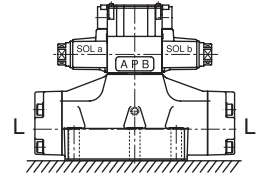
■ Solenoid Operated / Solenoid Controlled Operated Directional Valves

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.

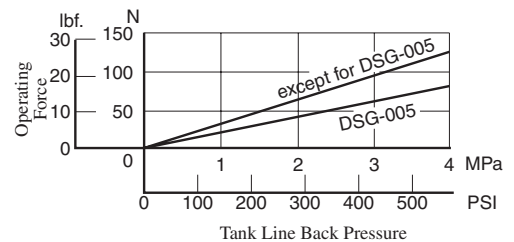
Shockless Type

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

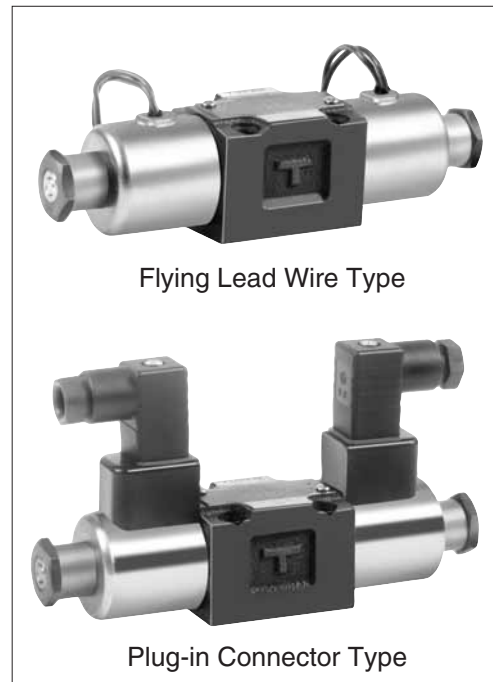
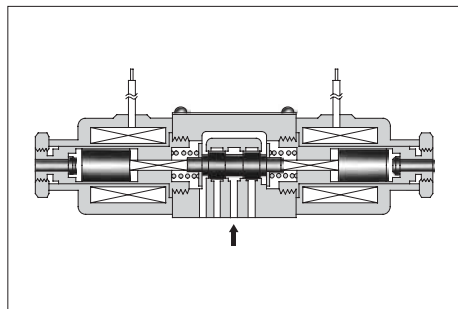
Valve characteristics are identical to R type except for the fast return time of the spool after deenergisation.

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.

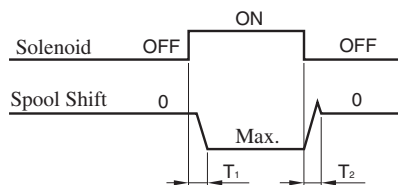
Mounting Bolts

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)

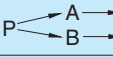
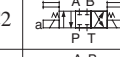

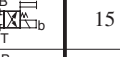


Direction of Flow: P → A → B → T
P → B → A → T

[Result of Measurement]

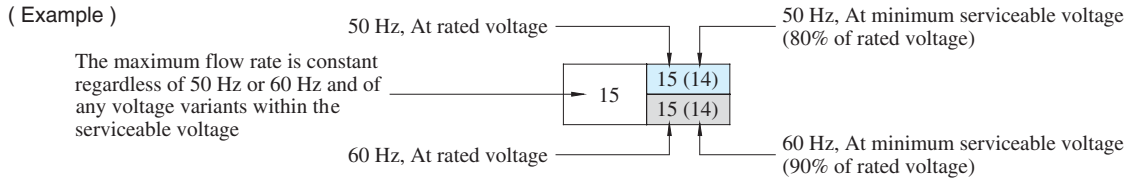
Model Numbers	Time ms	
	T ₁	T ₂
DSG-005-3C2-A*	16	60
DSG-005-3C2-D*	23	40
DSG-005-2B2-A*	14	45
DSG-005-2B2-D*	15	33

■ List of Standard Models and The Maximum Flow

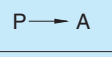
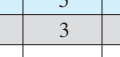
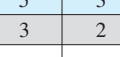
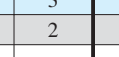
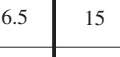
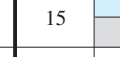
● Models with AC Solenoids : DSG-005-*** -A* -40/4090

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)

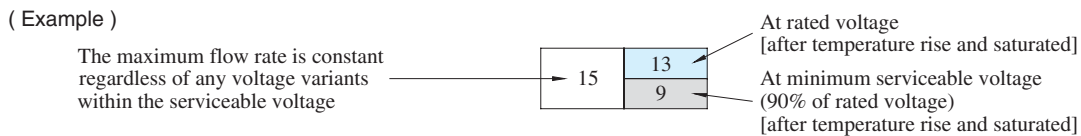
Notes: 1. The relation between the maximum flow in the table above and the frequency/voltage (within the serviceable voltage) is as shown below.



● 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.

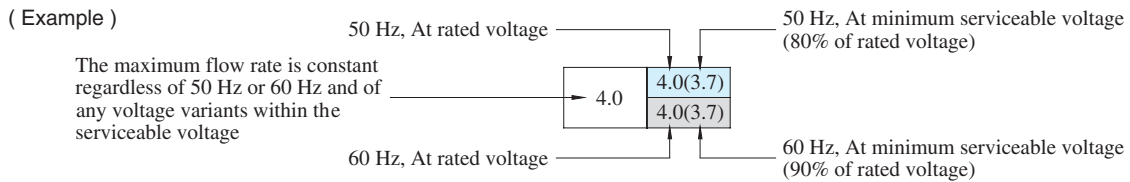


■ List of Standard Models and The Maximum Flow

● 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)

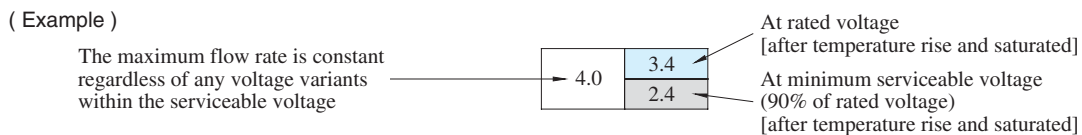
Notes: 1. The relation between the maximum flow in the table above and the frequency/voltage (within the serviceable voltage) is as shown below.



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

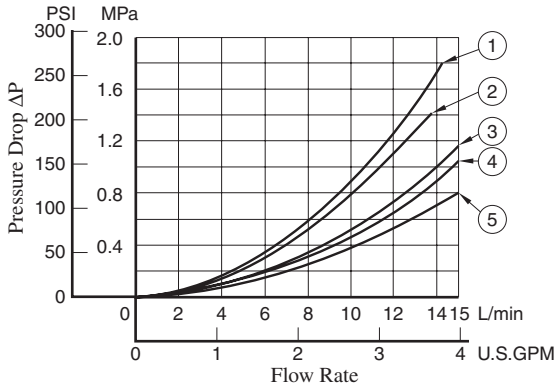
No. of Valve Position	Spool-Spring Arrangement	Model Numbers	Graphic Symbols	Max. Flow U.S.GPM											
				Working Pressure PSI				Working Pressure PSI				Working Pressure PSI			
				730	1450	2320	3630	730	1450	2320	3630	730	1450	2320	3630
Three Positions	Spring Centred	DSG-005-3C2		4.0	4.0	4.0	4.0	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.

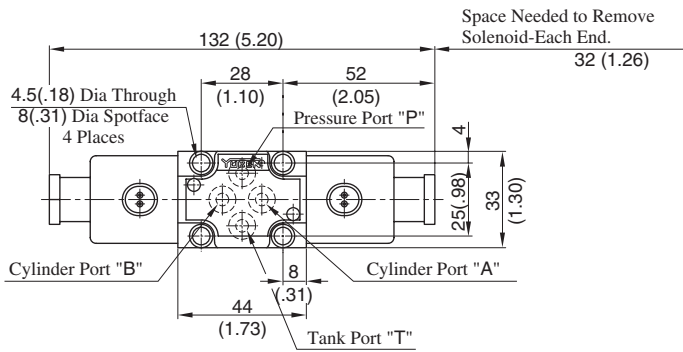
Viscosity	mm ² /s	15	20	30	40	50	60	70	80	90	100
	SSU	77	98	141	186	232	278	324	371	417	464
Factor		0.84	0.91	1.00	1.07	1.14	1.19	1.24	1.28	1.32	1.35

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

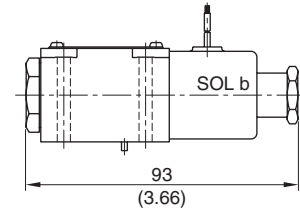
$$\Delta P' = \Delta P (G'/0.850)$$

Flying Lead Wire Type

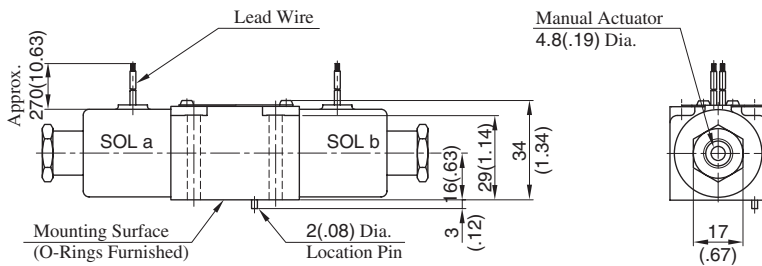
- Spring Centred: DSG-005-3C* - A*_{D*}-40/4090



- Spring Offset: DSG-005-2B* - A*_{D*}-40/4090



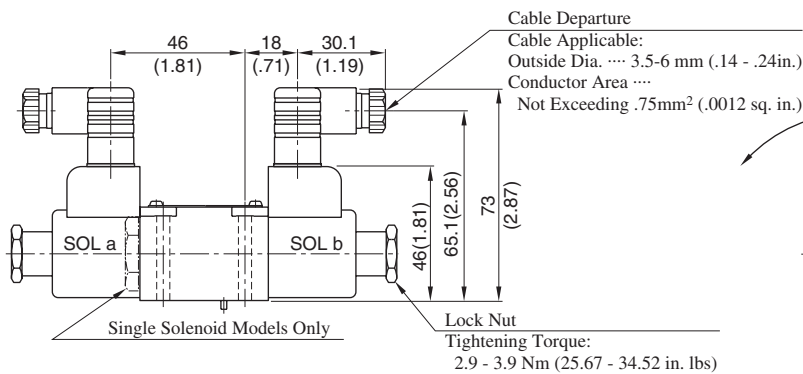
- For other dimensions, refer to "Spring Centred" type.



DIMENSIONS IN
MILLIMETRES (INCHES)

DIN Connector Type / DIN Connector with Indicator Light

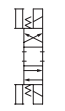
- Spring Centred: DSG-005-3C* - A*_{D*}-N/N1-40/4090
- Spring Offset: DSG-005-2B* - A*_{D*}-N/N1-40/4090



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".

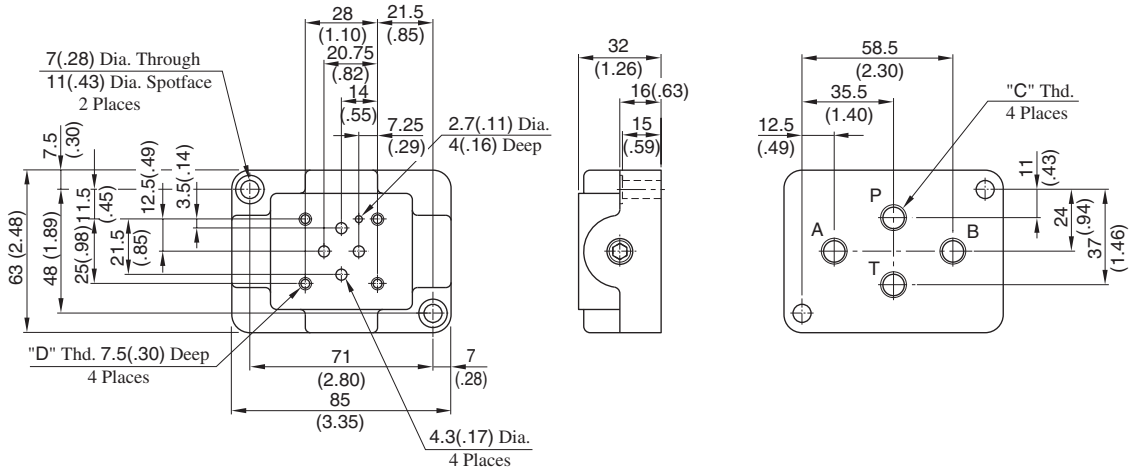
E



DSG-005 Series Solenoid
Operated Directional Valves

■ Sub-plates: DSGM-005* -20/2080/2090

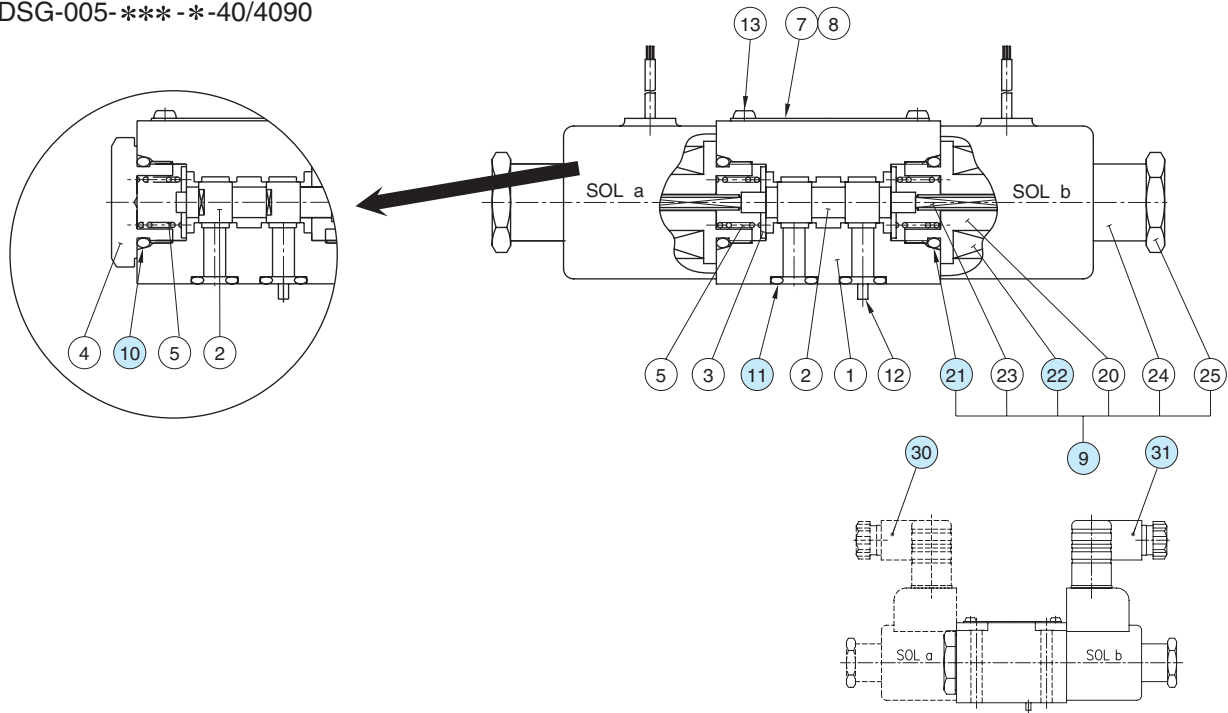
**DIMENSIONS IN
MILLIMETRES (INCHES)**



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.	⑬ Connector Ass'y Part No.	⑭ 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	TK290058-7	TK290058-7	Plug-in Connector Type
DSG-005-***-A100-N	SA05-100-N-40	C-SA05-100-N-40			
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	TK290378-9	TK290378-9	Plug-in Connector with Indicator Light
DSG-005-***-A100-N1	SA05-100-N-40	C-SA05-100-N-40			
DSG-005-***-A200-N1	SA05-200-N-40	C-SA05-200-N-40			
DSG-005-***-D12-N1	SD05-12-N-40	C-SD05-12-N-40			
DSG-005-***-D24-N1	SD-05-24-N-40	C-SD-05-24-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

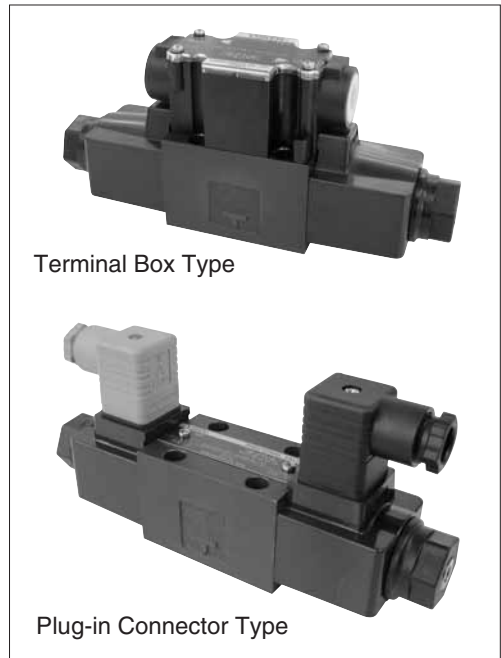
Due to the powerful magnetic and spring force of the solenoids, these valves exhibit a high tolerance to contaminants and especially stable operation.

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).

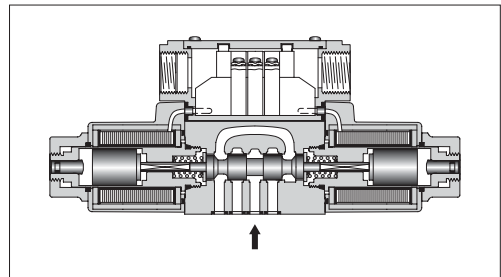
Usable in products of various standards

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	—		
				100	90 - 120	2.14	0.37			
			60	110	—	2.35	0.44			
				120	96 - 132	2.02	0.42			
			60		108 - 144	1.78	0.31			
				A200	50	200	160 - 220		1.21	0.25
		200	180 - 240			1.07	0.19			
		60	220		—	1.18	0.22			
			240		192 - 264	1.01	0.21			
		60			216 - 288	0.89	0.15			
			Shockless Type		DC (K Series)	—	D12		10.8 - 13.2	—
		D24		21.6 - 26.4			—		1.23	
D48	43.2 - 52.8	—		0.61						
AC → DC Rectified (R)	50/60	R100		90 - 110	—	0.33	29			
		R200		180 - 220	—	0.16				
				—	—	—		—		

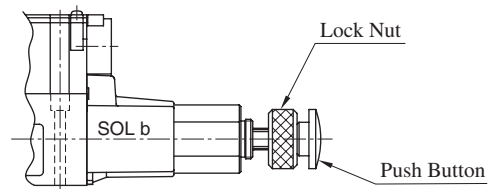
- ★1. AC solenoid is not available in shockless type. R type models with built-in current rectifier is recommended for shockless operation with AC power.
- ★2. Inrush current in the above table show rms values at maximum stroke.
- ★3. There are more coil types other than the above. For details, please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

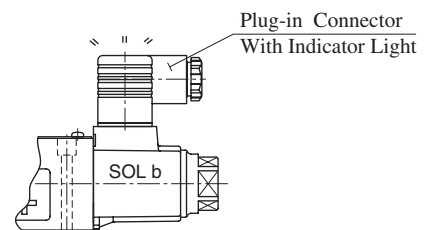
Push Button with Lock Nut

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

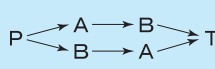
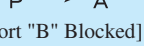
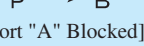





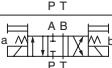
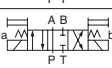



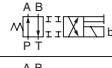


F-	S-	DSG	-01	-2	B	2	A	-D24	-C	-N	-70	*	-L
Special Seals	Shockless Type	Series Number	Valve Size	Number of Valve Positions	Spool-Spring Arrangement	Spool Type	Special Two Position Valve (Omit if not required)	Coil Type	Manual Override	Electrical Conduit Connection	Design Number	Design Standard	Models 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	—	DC: D12 D24 D48					C: Push Button and Lock Nut (Option)
	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.

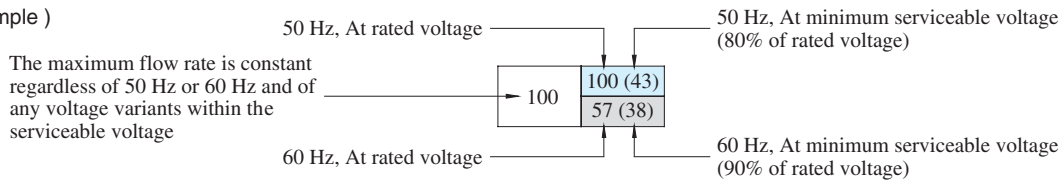
■ List of Standard Models and The Maximum Flow

● 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)
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)



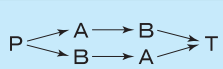
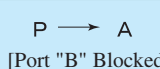
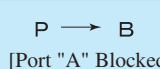
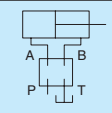
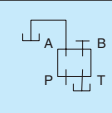
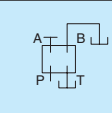







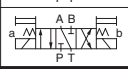


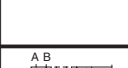

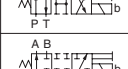
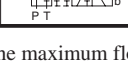

2. For the maximum flow rate in P → T of the valves with a ★ mark, please see page 351.

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

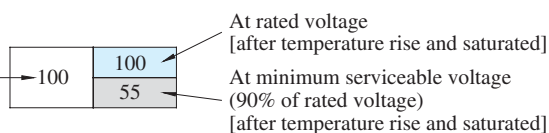
● Models with DC or R Type Solenoids: DSG-01-***-D*/R*

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	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-01-2B2		80	80	80	80	80	20	16	16	15	13	32	23	19	18	18
		DSG-01-2B3		70	70	70	70	70	50	50	50	50	50	65	65	65	65	65

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

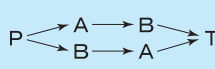
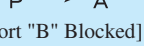






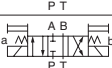
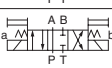




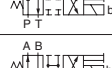
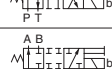
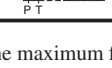



2. For the maximum flow rate in P → T of the valves with a ★ mark, please see page 351.

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

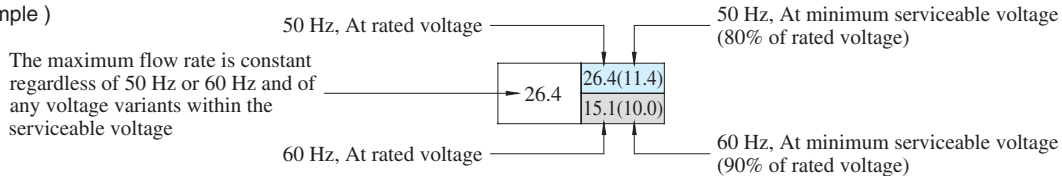
■ List of Standard Models and The Maximum Flow

● 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)
Spring Offset	DSG-01-2B3			18.5	18.5	18.5	18.5	18.5	13.2	13.2	13.2	13.2	13.2	21.1(18.5)	21.1(18.5)	21.1(18.5)	21.1(18.5)	21.1(18.5)
	DSG-01-2B8			—	—	—	—	—	6.9	4.5	3.4	2.9	2.6	21.1(13.2)	18.5(10.6)	15.9(5.3)	11.9(2.6)	7.9(2.6)
	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.

(Example)



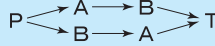
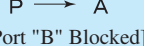

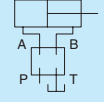
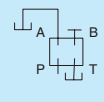
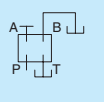







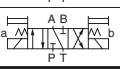




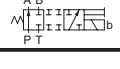
2. For the maximum flow rate in P → T of the valves with a ★ mark, please see [page 351](#).

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

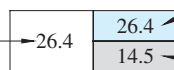
● Models with DC or R Type Solenoids: DSG-01-***-D*/R*

No. of Valve Positions	Spool-Spring Arrangement	Model Numbers	Graphic Symbols	Max. Flow U.S.GPM														
									 [Port "B" Blocked]					 [Port "A" Blocked]				
																		
				Working Pressure PSI					Working Pressure PSI					Working Pressure PSI				
				1450	2320	3630	4570	5080	1450	2320	3630	4570	5080	1450	2320	3630	4570	5080
Three Positions	Spring Centred	DSG-01-3C2		26.4	26.4	26.4	26.4	26.4	26.4	11.9	7.4	6.6	5.8	26.4	11.9	7.4	6.6	5.8
		DSG-01-3C3		26.4	26.4	26.4	26.4	26.4	20.6	20.6	20.6	20.6	19.8	20.6	20.6	20.6	20.6	19.8
		DSG-01-3C4		23.8	23.8	23.8	13.2	10.0	26.4	15.3	10.0	8.2	7.7	26.4	15.3	10.0	8.2	7.7
		DSG-01-3C40		22.5	22.5	17.2	10.6	8.7	22.5	13.7	7.9	6.9	6.3	22.5	13.7	7.9	6.9	6.3
		DSG-01-3C60		13.3	13.3	13.3	13.3	13.3	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
		DSG-01-3C9		26.4	26.4	26.4	26.4	26.4	5.3	4.0	2.6	2.6	2.1	5.3	4.0	2.6	2.6	2.1
		DSG-01-3C10		22.5	22.5	22.5	21.1	10.6	26.4	14.8	9.5	7.4	6.3	26.4	14.8	9.5	7.4	6.3
		DSG-01-3C11		26.4	26.4	26.4	26.4	26.4	6.1	5.3	3.4	2.6	1.3	26.4	15.9	10.6	9.5	8.5
		DSG-01-3C12		22.5	22.5	22.5	21.1	10.6	26.4	14.8	9.5	7.4	6.3	26.4	14.8	9.5	7.4	6.3
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	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												

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

(Example)

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



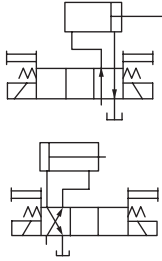
At rated voltage [after temperature rise and saturated]
 At minimum serviceable voltage (90% of rated voltage) [after temperature rise and saturated]

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

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

Maximum Flow of Centre By-Pass

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



Mode Numbers	Graphic Symbol	Max. Flow L/min (U.S.GPM)				
		10 MPa (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

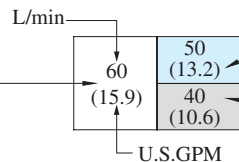
- Models with DC or R Type Solenoids: S-DSG-01-***-D*/R*

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]

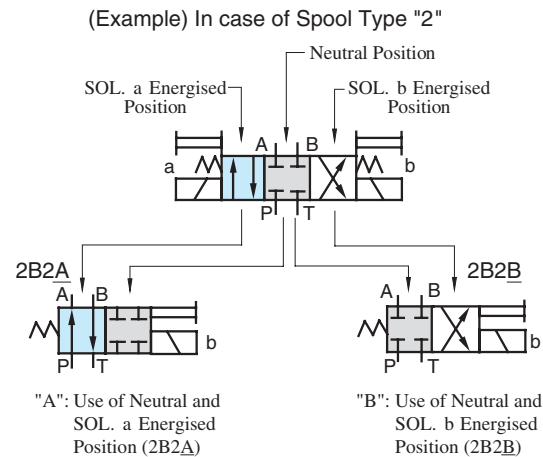
■ Reverse Mounting of Solenoid.

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

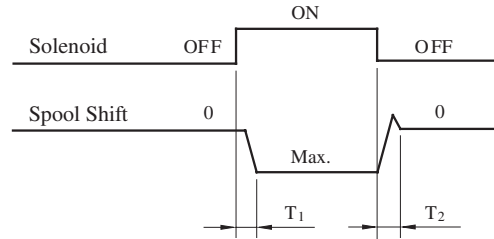
Changeover time varies according to oil viscosity, spool type and hydraulic circuit.

● 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 temprature rises and saturated)

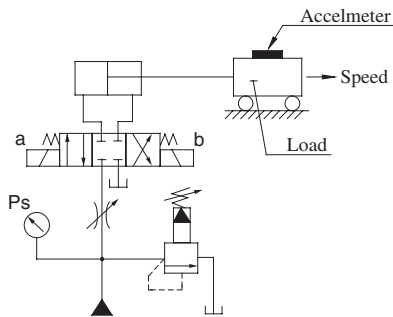
[Result of Measurement]



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

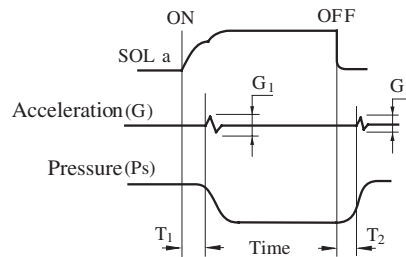
● Shockless Type

[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]

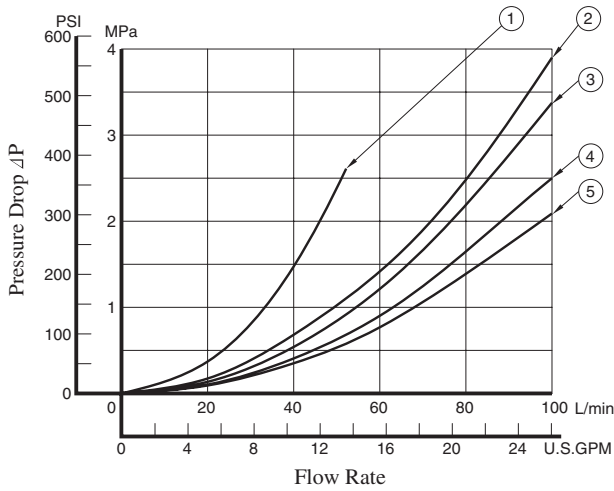


Type	Model Numbers	Time ms		Acceleration m/s ² (G)	
		T ₁	T ₂	G ₁	G ₂
Shockless Type	S-DSG-01-3C2- D*	70	30	12 (1.2)	7 (0.7)
Standard Type	DSG-01-3C2- D*	35	25	18 (1.8)	15 (1.5)

Pressure Drop

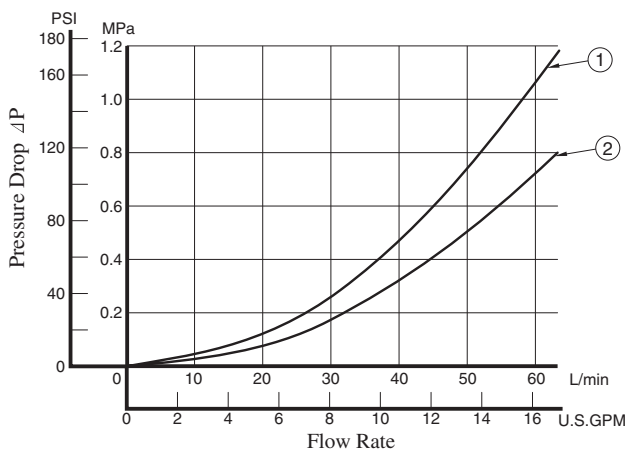
Pressure drop curves based on viscosity of 35 mm²/s (164 SSU) and specific gravity of 0.850.

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.

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

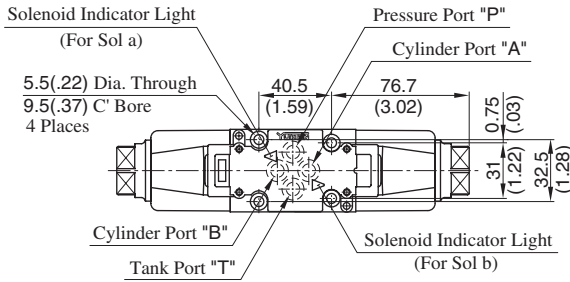
Mounting surface: ISO 4401-AB-03-4-A

TERMINAL BOX TYPE

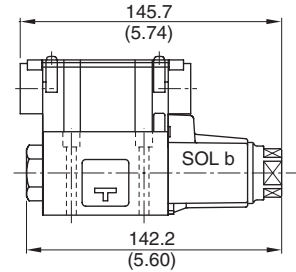
Models with AC Solenoids

- Double Solenoid: Spring Centred & No-Spring Detented

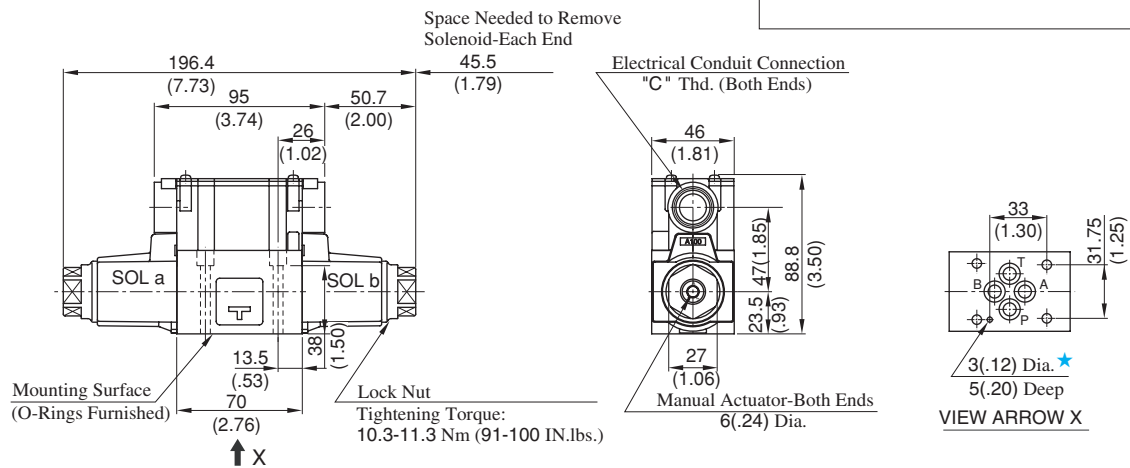
DSG-01-3C*
2D2-A*-70/7090



- 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

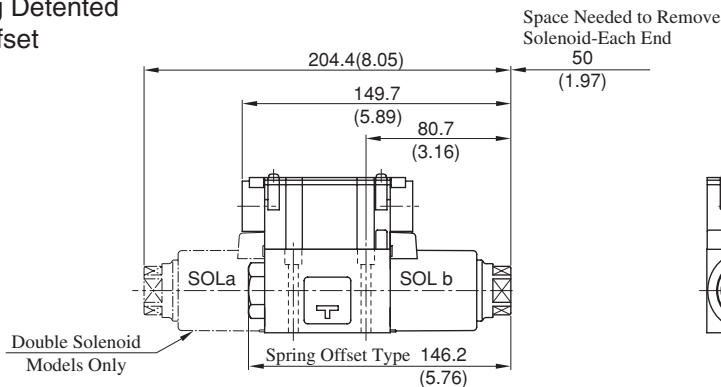
- ★ Locating pin can be fitted to this hole to conform with ISO4401-03-02-94. However, locating pin is not provided to standard design valve. When ordering valve with a locating pin, please consult Yuken.

DIMENSIONS IN MILLIMETRES (INCHES)

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

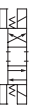
Models with R Type Solenoids: (S-)DSG-01-***-R*-70/7090

- Spring Centred
- No-Spring Detented
- Spring Offset



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

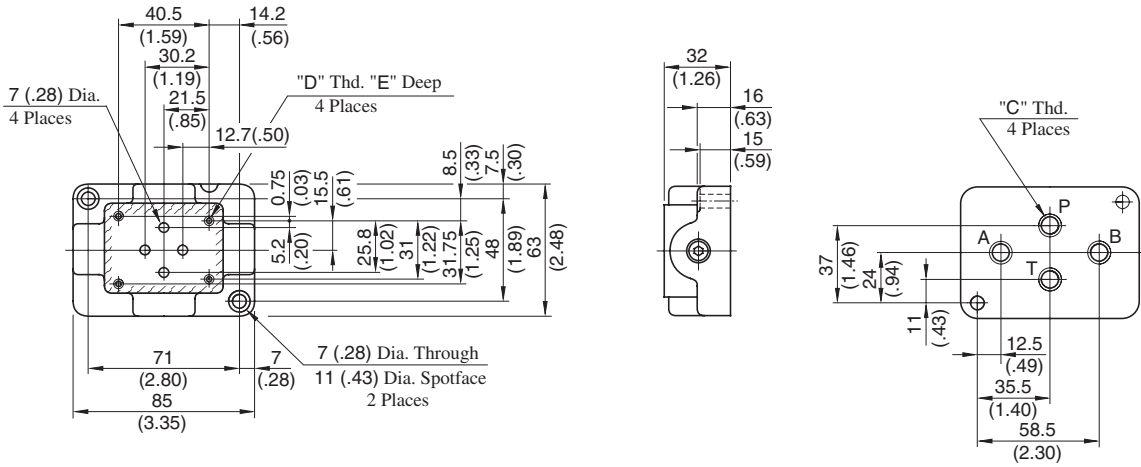
E



DSG-01 Series Solenoid Operated Directional Valves

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

**DIMENSIONS IN
MILLIMETRES (INCHES)**

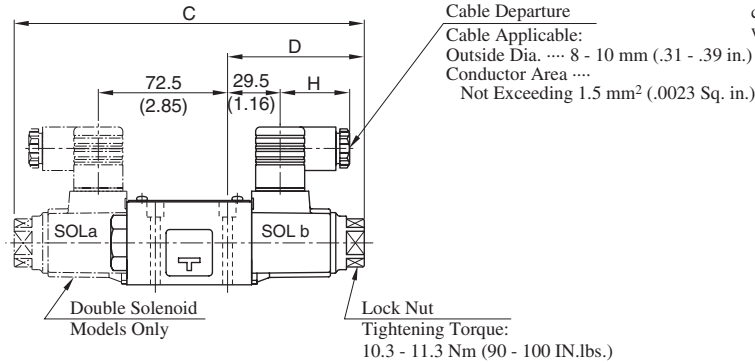


Sub-plate Model Numbers	Piping Size "C" Thd.	"D" Thd.	"E" mm(IN.)
DSGM-01-31	Rc 1/8	M5	10 (.39)
DSGM-01-3180	1/8 BSP.F		
DSGM-01-3190	1/8 NPT	No.10-24 UNC	12 (.47)
DSGM-01X-31	Rc 1/4	M5	10 (.39)
DSGM-01X-3180	1/4 BSP.F		
DSGM-01X-3190	1/4 NPT	No.10-24 UNC	12 (.47)
DSGM-01Y-31	Rc 3/8	M5	10 (.39)
DSGM-01Y-3190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

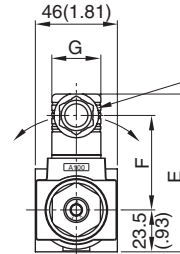
PLUG-IN CONNECTOR TYPE (N) PLUG-IN CONNECTOR WITH INDICATOR LIGHT (N1)

- 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)



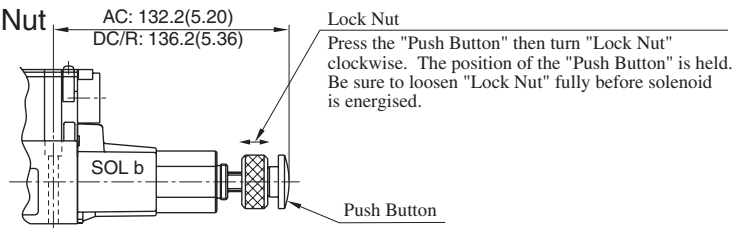
The position of the Plug-in connector can be changed as illustrated below by loosening the lock nut. After completion of the change, be sure to tighten the lock nut with the torque as specified below.



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.

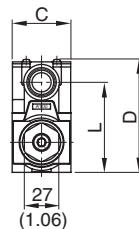
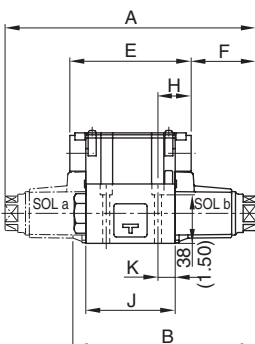
Specifications

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) 1.0(145)	1.85(4.08)	1.4(3.09)
Current Design: 60	63(16.6)	31.5(4570)	16(2320)			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

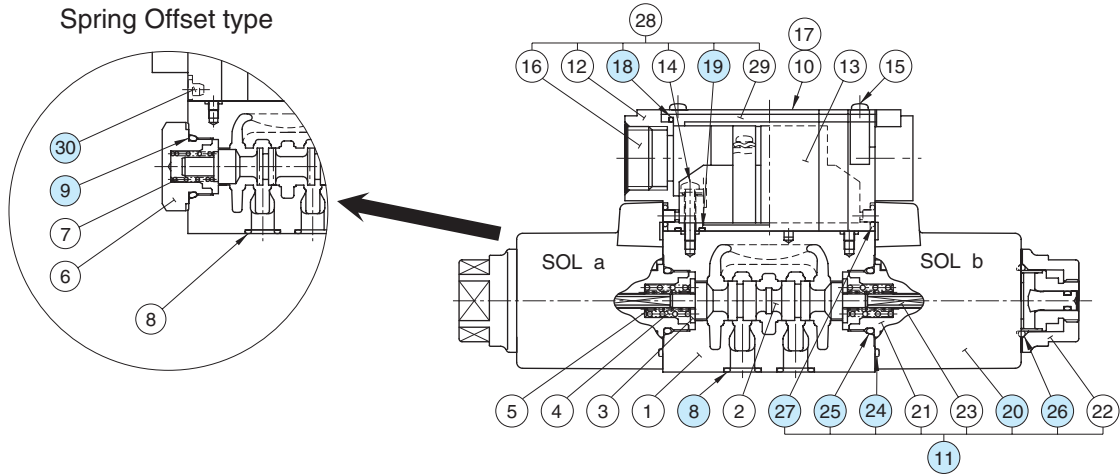
- Do not perform wiring while the power is on. Doing so may result in electric shock, burns or death.
- Make the wiring properly. Improper wiring will cause an irregular movement of the machine, resulting in a grave accident.

■ Electrical Circuit

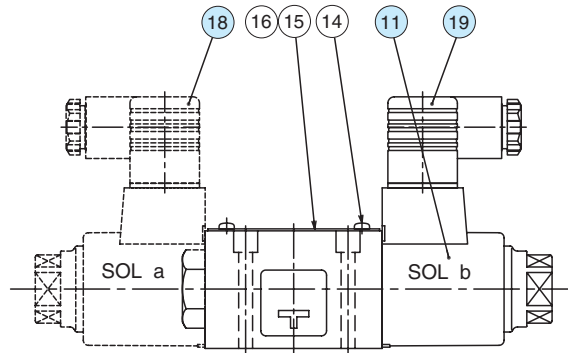
Type of Electrical Conduit Connection	Electric Source		
	AC	DC	AC→DC Rectified
Terminal Box Type			
Plug-in Connector Type			

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 & ⑳(2 Pcs., see above), ㉓(4 Pcs.)
*-DSG-01-***-*-N-70/7090	KS-DSG-01-N-70	⑧(4 Pcs.), ⑨ & ⑳(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
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		GDML-211-1-11	GDML-211-1-11			
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-211-2-11	GDML-211-2-11	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			GDML-211-3-11	GDML-211-3-11		
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-211-1-11		GDML-211-1-11			
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-211-2-11		GDML-211-2-11			
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-211-3-11		GDML-211-3-11			
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.

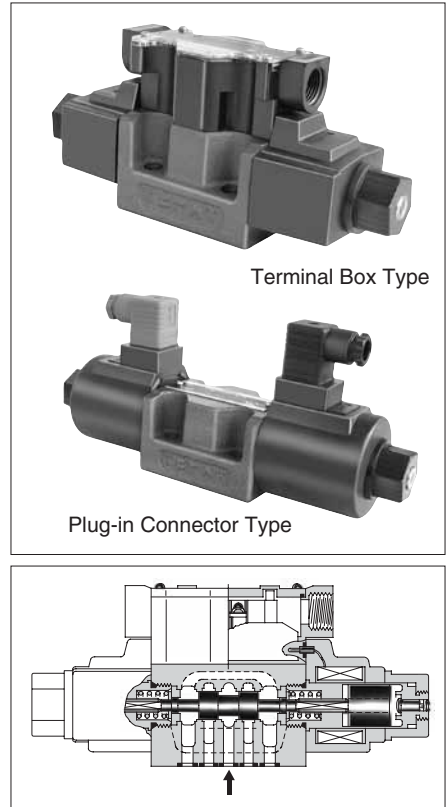
- Standard type Useable at high pressure: 31.5 MPa (4570 PSI) and high flow: 120 L/min (31.7 U.S.GPM)
- Shockless type A noise at spool changeover and a vibration in piping can be reduced to a minimum.

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.	

E
DSG-03 Series Solenoid Operated Directional Valves

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

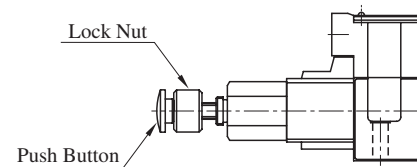
- ★1. AC solenoid is not available in shockless type.
R or RQ type models with built-in current rectifier is recommended for shockless operation with AC power.
- ★2. Inrush current in the above table show rms values at maximum stroke.
- ★3. There are more coil types other than the above. For details,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

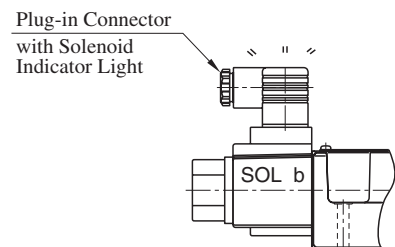
● Push Button with Lock Nut

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	None: Manual Override Pin	None: Terminal Box Type	50	None: Japanese Std. "JIS" 90: N.American Design Std.	—								
						4,40 5 ,60 9, 10 11 , 12		DC: D12 D24 D100													
						2: Two Positions		D: No-Spring Detented						2	—	R: (AC→DC) R100 R200					
	3: Three Positions			C: Spring Centred	2 4	—	RQ: (AC→DC) RQ100	C: Push Button and Lock Nut (Option)						N: ^{*2} Plug-in Connector Type N1: ^{*3} Plug-in Connector Type with Indicator Light (Option)	None: Japanese Std. "JIS" and European Design Std. 90: N.American Design Std.	—					
																	2: Two Positions	B: Spring Offset	2 3 8	A ^{*1} B ^{*1}	DC: D12 D24 D100
S: Shockles Type	3: Three Positions	C: Spring Centred	2 4	—	RQ: (AC DC) RQ100	L															
							2: Two Positions	B: Spring Offset	2	A ^{*1} B ^{*1}	L										

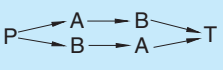
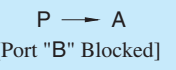
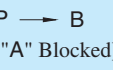
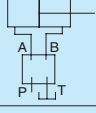
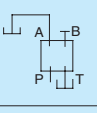
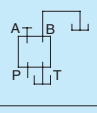






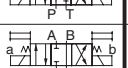

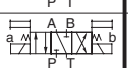
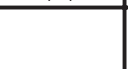
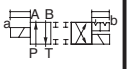

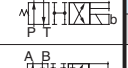
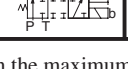
- ★ 1. In case of the special two position valve, please refer to [page 369](#) for details.
- ★ 2. N is not available for RQ-type solenoids .
- ★ 3. N1 is not available for R and RQ-type solenoids .

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.



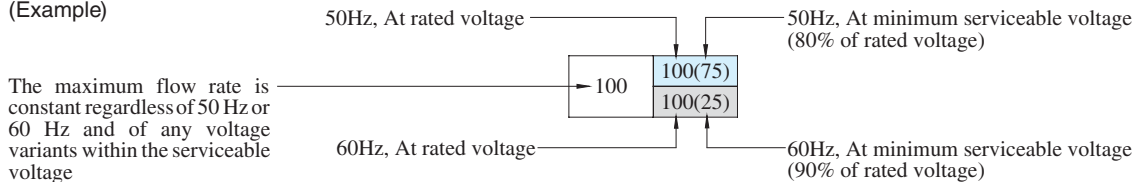
■ List of Standard Models and The Maximum Flow

● 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)	100(81)
		DSG-03-3C4		80	80	80(65)	80(25)	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)	80(20)	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)	90(20)	100(55)	100(36)	60(21)	34(16)	100(55)	100(36)	60(21)	34(16)	
Two Positions	No-Spring Detented	DSG-03-2D2		100	100	100	100	40	40	30	28	60	60	40	35	
		Spring Offset	DSG-03-2B2		100	100	100	100	100(90)	100(90)	100(90)	100(90)	34	24	20	19
			DSG-03-2B3		100	100	100	100	100(75)	100(75)	100(75)	100(75)	57	57	57	57
			DSG-03-2B8		—	—	—	—	26	19	18	16	100(35)	87(15)	61(9)	49(7)

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

(Example)

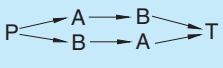
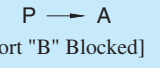
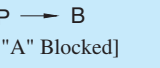
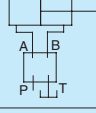
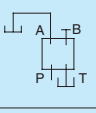
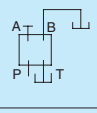
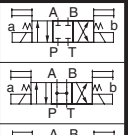
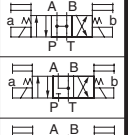
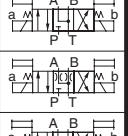
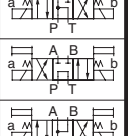
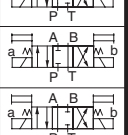
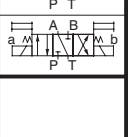
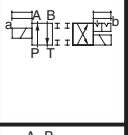
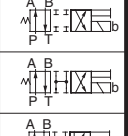
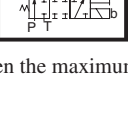
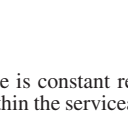
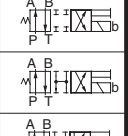
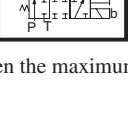
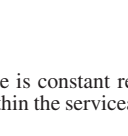
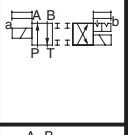


2. For the maximum flow rate in P→T of the valves with a ★ mark, please see page 368.

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

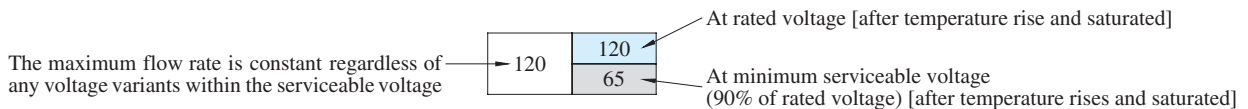
■ List of Standard Models and The Maximum Flow

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

No. of Valve Positions	Spool-Spring Arrangement	Model Numbers	Graphic Symbols	Max. Flow L/min											
								 [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	Spring Offset	DSG-03-2B2		110	110	110	110	68	47	38	38	120	114	75	63
		DSG-03-2B3		120	120	120	120	77	77	77	77	120	120	120	120
		DSG-03-2B8		—	—	—	—	53	33	24	23	120	120	62	47
		DSG-03-2D2		120	120	120	120	45	37	30	28	60	60	40	35

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

(Example)



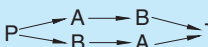
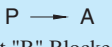
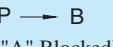
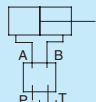
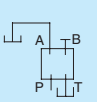
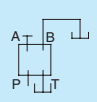
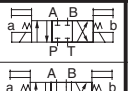


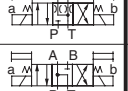
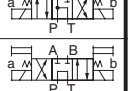


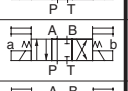
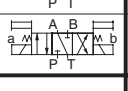
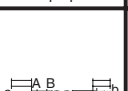
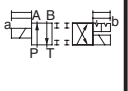
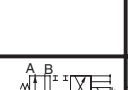
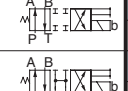
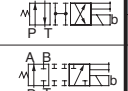
2. For the maximum flow rate in P → T of the valves with a ★ mark, please see [page 368](#).

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

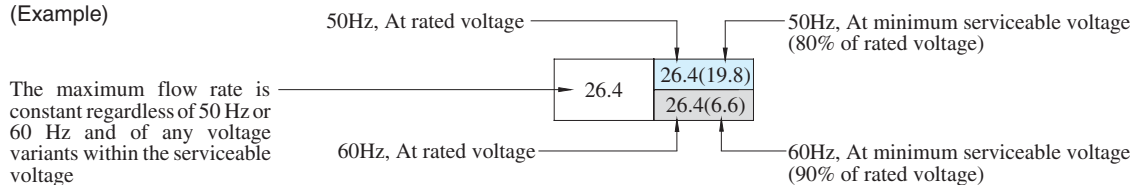
■ List of Standard Models and The Maximum Flow

● 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	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	7.4	
		DSG-03-3C60		18.5	18.5	18.5	—	26.4	26.4	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)	21.1 (11.1)	19.3 (9.5)	
		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)	24.3 (14.5)	23.5 (12.2)	
		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)	11.9 (5.5)	9.0 (3.2)	

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

(Example)




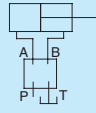
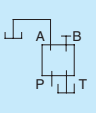
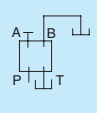
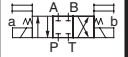

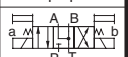
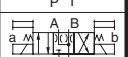

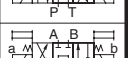
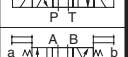
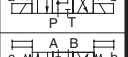
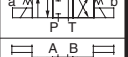
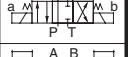

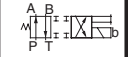

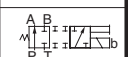


2. For the maximum flow rate in P → T of the valves with a ★ mark, please see [page 368](#).

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

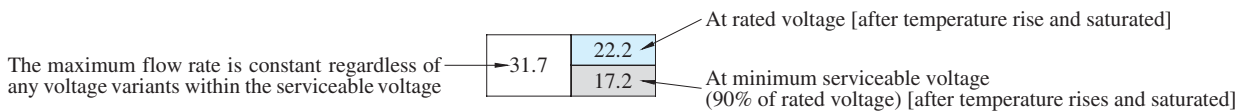
■ List of Standard Models and The Maximum Flow

- 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												
																
																
				Working Pressure		PSI		Working Pressure		PSI		Working Pressure		PSI		
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	31.7
		DSG-03-3C4		31.7	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	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	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)



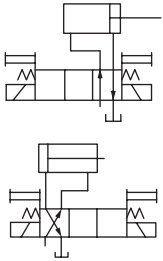
2. For the maximum flow rate in P → T of the valves with a ★ mark, please see [page 368](#).

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)	—

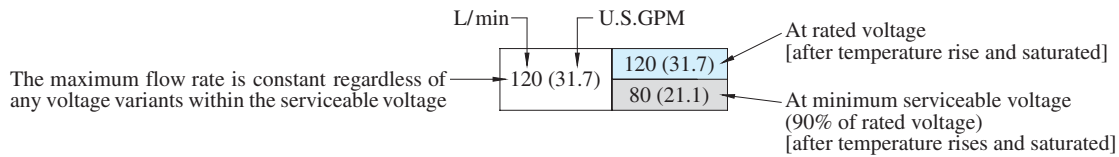
List of Shockless Models and The Maximum Flow

- 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)

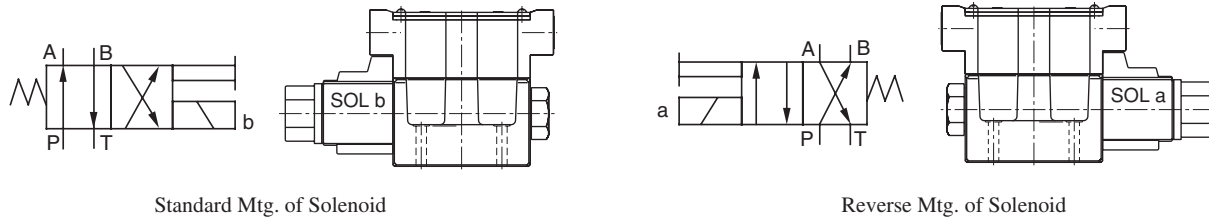
Note: The relation between the maximum flow in the table above and the voltage (within the serviceable voltage) is as shown below.

(Example)



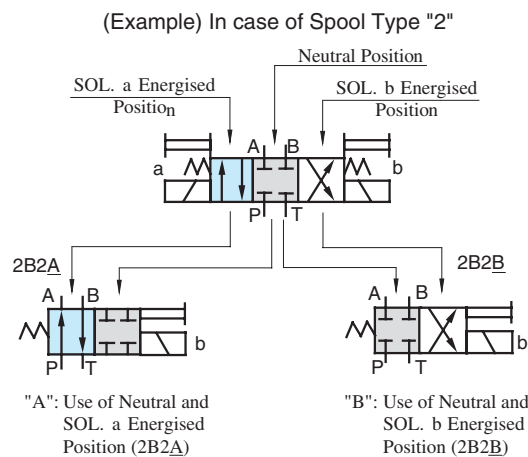
Reverse Mounting of Solenoid

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.

■ Typical Changeover Time

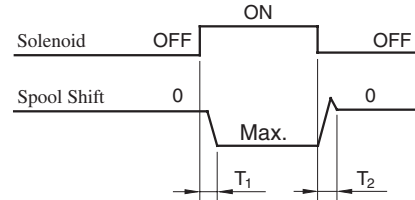
Changeover time varies according to oil viscosity, spool type and hydraulic circuit.

● **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)

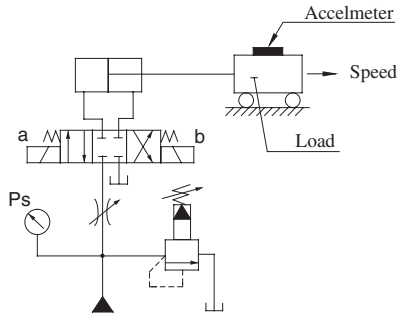
[Result of Measurement]



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

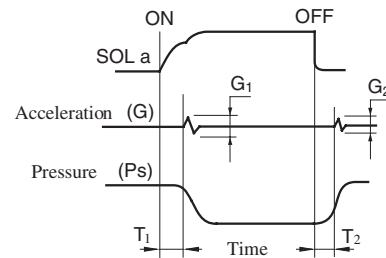
● **Shockless Type**

[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]

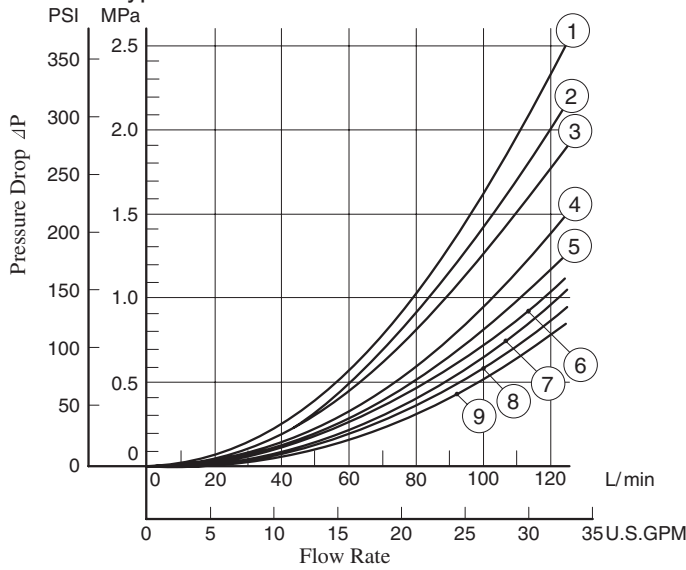


Type	Model Numbers	Time ms		Acceleration m/s ² (G)	
		T ₁	T ₂	G ₁	G ₂
Shockless Type	S-DSG-03-3C2-D*	110	120	6.4 (.65)	6.4 (.65)
	S-DSG-03-3C2-R*	110	220		
	S-DSG-03-3C2-RQ100	110	120		

Pressure Drop

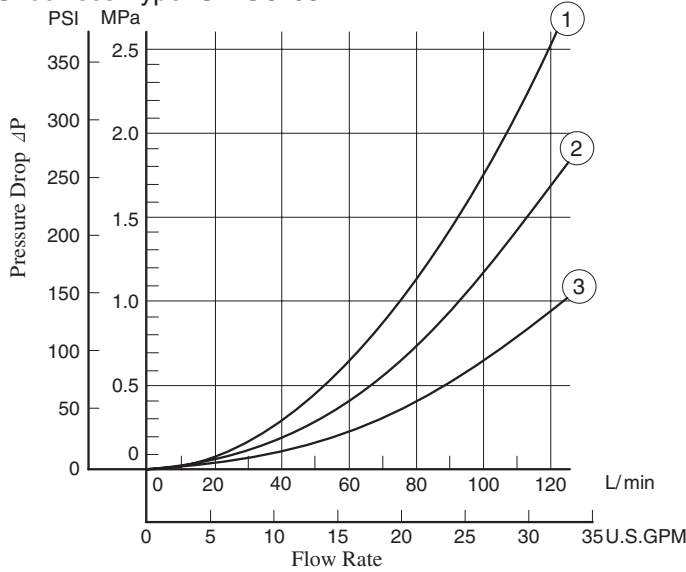
Pressure drop curves based on viscosity of 35 mm²/s (164 SSU) and specific gravity of 0.850.

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

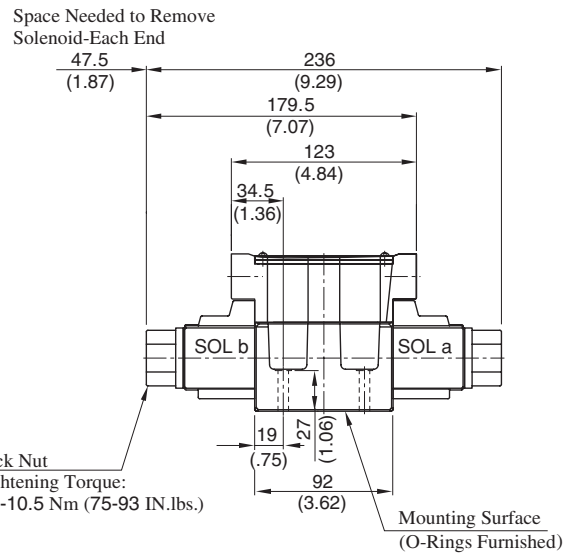
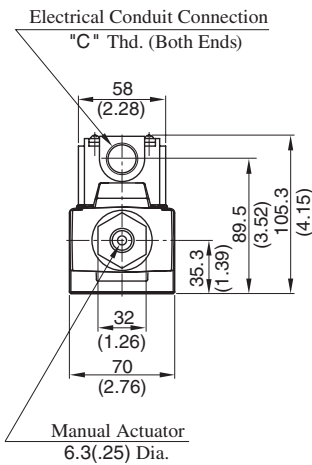
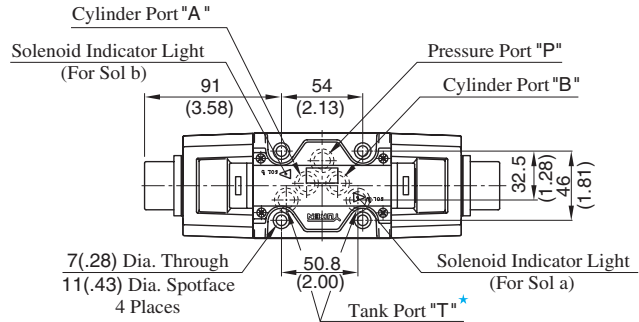
● For any other specific gravity (G'), the pressure drop (ΔP') may be obtained from the formula below.

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

TERMINAL BOX TYPE

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

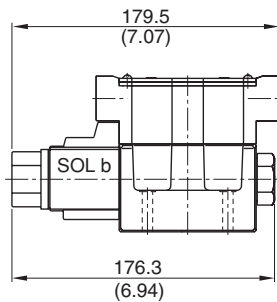
Model Numbers	"C" Thd.
DSG-03- ***-A* -50	G 1/2
DSG-03- ***-A* -5090	1/2 NPT



★. 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

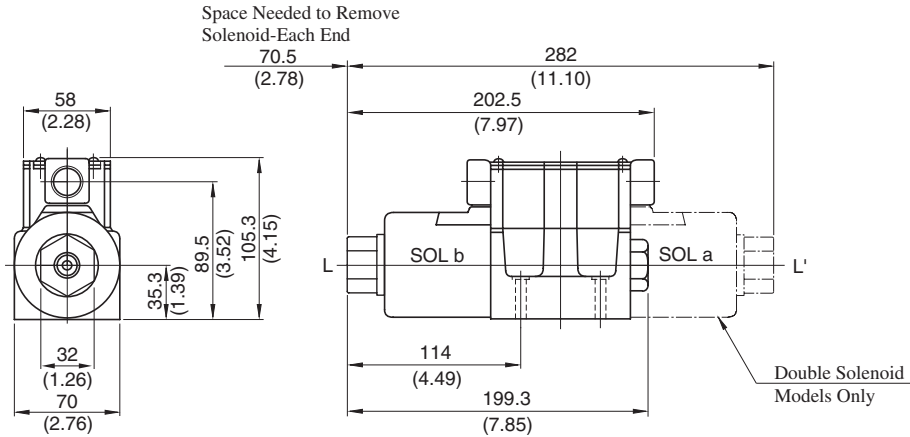


- For other dimensions, refer to "Spring Centred and No-Spring Detended" models.
- Solenoid being mounted in the reverse position -SOL a side- is also available.

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

TERMINAL BOX TYPE

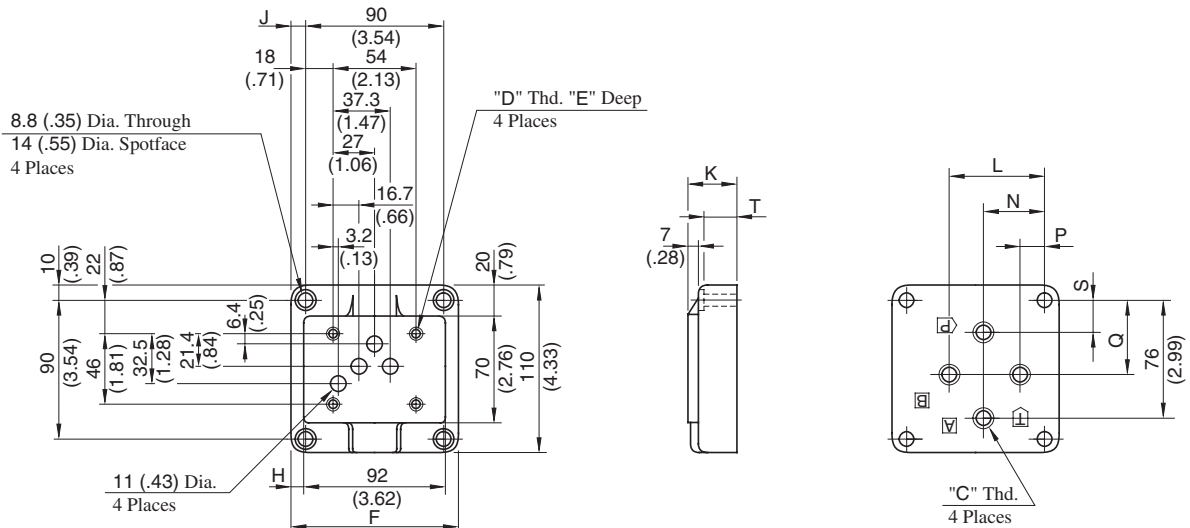
- Models with DC Solenoids : (S-)DSG-03- *** -D* -50/5090
- Models with R Type Solenoids : (S-)DSG-03- *** -R* -50/5090
- Models with RQ Type Solenoids : (S-)DSG-03- *** -RQ100-50/5090
- Double Solenoid: Spring Centred & No-Spring Detented
- Single Solenoid: Spring Offset



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

DIMENSIONS IN MILLIMETRES (INCHES)

Sub- plates DSGM-03*-40/2180/2190



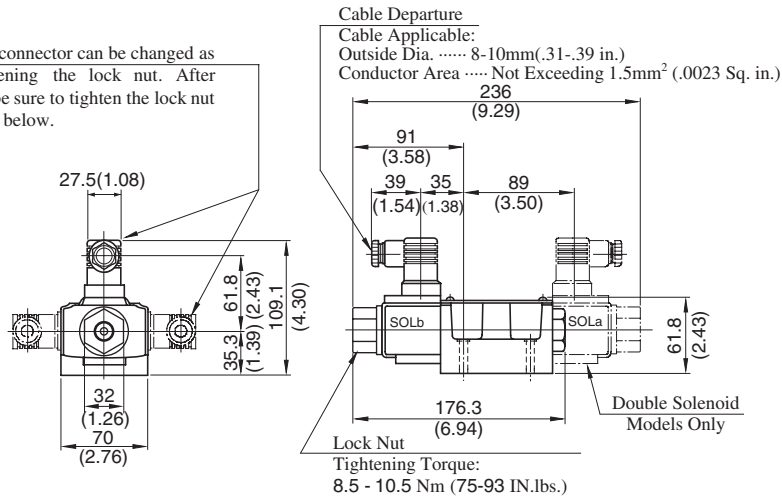
Sub-plate Model Numbers	Piping Size "C" Thd.	"D" Thd.	Dimensions mm (Inches)										
			E	F	H	J	K	L	N	P	Q	S	T
DSGM-03-40	Rc 3/8	M6	13 (.51)	110	9	10	32	62	40	16	48	21	24
DSGM-03-2180	3/8 BSP.F		(4.33)	(.35)	(.39)	(1.26)	(2.44)	(1.57)	(.63)	(1.89)	(.83)	(.94)	
DSGM-03-2190	3/8 NPT		1/4-20 UNC	15 (.59)									
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		1/4-20 UNC	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		1/4-20 UNC	15 (.59)									

E
 DSG-03 Series Solenoid Operated Directional Valves

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

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

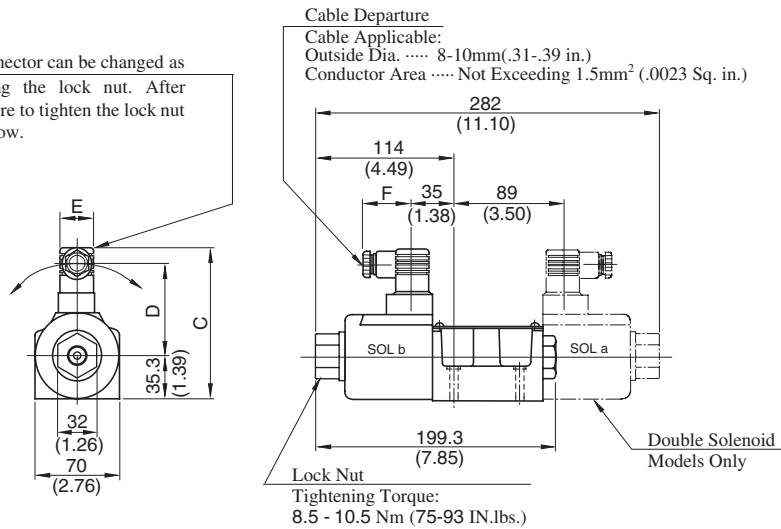
The position of the Plug-in connector can be changed as illustrated below by loosening the lock nut. After completion of the change, be sure to tighten the lock nut with the torque as specified below.



● **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)

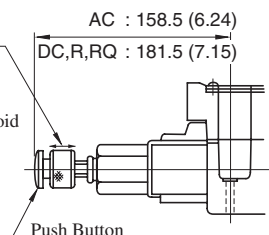
● For other dimensions, refer to "Terminal Box Type" (Page 372 - 373).

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	<p>Diagram showing a double solenoid valve with two solenoids, SOL. a and SOL. b. It includes two power supply terminals (one for SOL. a, one for SOL. b), two earth terminals, a common plate, and two indicator light terminals. Labels include: Power Supply (For SOL. b), Earth, Indicator Light, SOL. b, Common Plate, Common, SOL. a, Indicator Light, Earth, and Power Supply (For SOL. a).</p>	<p>Diagram showing a single solenoid valve with one solenoid, SOL. b. It includes one power supply terminal, one earth terminal, and one indicator light terminal. Labels include: Earth, Indicator Light, SOL. b, and Power Supply.</p>
Plug-in Connector Type	<p>Diagram showing a plug-in connector with two power supply terminals (1 and 2), a ground terminal, and two indicator light terminals. Labels include: 1-Power Supply, Ground, 2-Power Supply, and Indicator Light.</p>	

- ★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

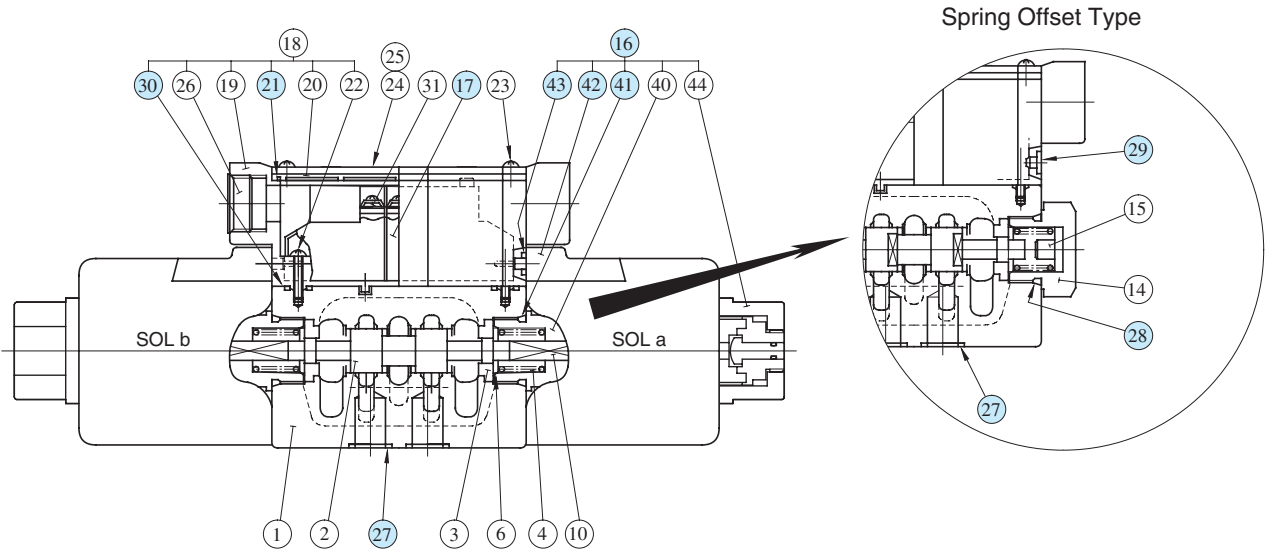
- Do not perform wiring while the power is on. Doing so may result in electric shock, burns or death.
- Make the wiring properly. Improper wiring will cause an irregular movement of the machine, resulting in a grave accident.

Electrical Circuit

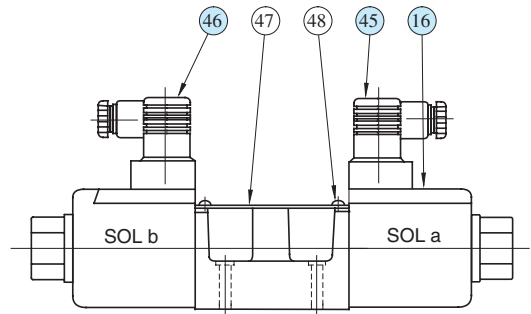
Type of Electrical Conduit Connection	Electric Source		
	AC	DC	AC→DC Rectified
Terminal Box Type	<p>Diagram showing an AC circuit with a power supply, an indicator light, and a solenoid (SOL.) connected in series. A common terminal and a ground terminal are also shown.</p>	<p>Diagram showing a DC circuit with a power supply, an indicator light, a voltage surge suppressor, and a solenoid (SOL.) connected in series. A common terminal and a ground terminal are also shown.</p>	<p>Diagram showing an AC→DC rectified circuit with a power supply, an indicator light, a voltage surge suppressor, a rectifier circuit, and a solenoid (SOL.) connected in series. A common terminal and a ground terminal are also shown.</p>
Plug-in Connector Type	<p>Diagram showing an AC circuit with two power supply terminals (1 and 2), an indicator light, and a solenoid (SOL.) connected in series. A ground terminal is also shown. Note: Indicator Light (Integrated in "N1" model only).</p>	<p>Diagram showing a DC circuit with two power supply terminals (1 and 2), an indicator light, a voltage surge suppressor, and a solenoid (SOL.) connected in series. A ground terminal is also shown. Note: Indicator Light (Integrated in "N1" model only). Voltage-Surge Suppressor (Circuit composed in coil).</p>	<p>Diagram showing an AC→DC rectified circuit with two power supply terminals (1 and 2), a voltage surge suppressor, a rectifier circuit, and a solenoid (SOL.) connected in series. A ground terminal is also shown.</p>

■ List of Seals

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



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



● List of Seals

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

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

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

● Solenoid Ass'y, Coil, Receptacle and Connector

Refer to Page 377 for the details of these parts.

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

Valve Model Numbers	⑩ 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				
S-DSG-03-***-D100-N1-50*	SD3-48-S-N-51	C-SD3-100-N-51				

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

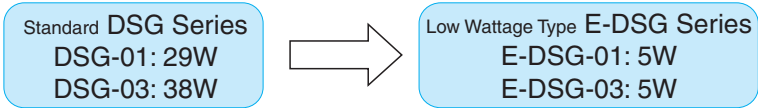
E

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

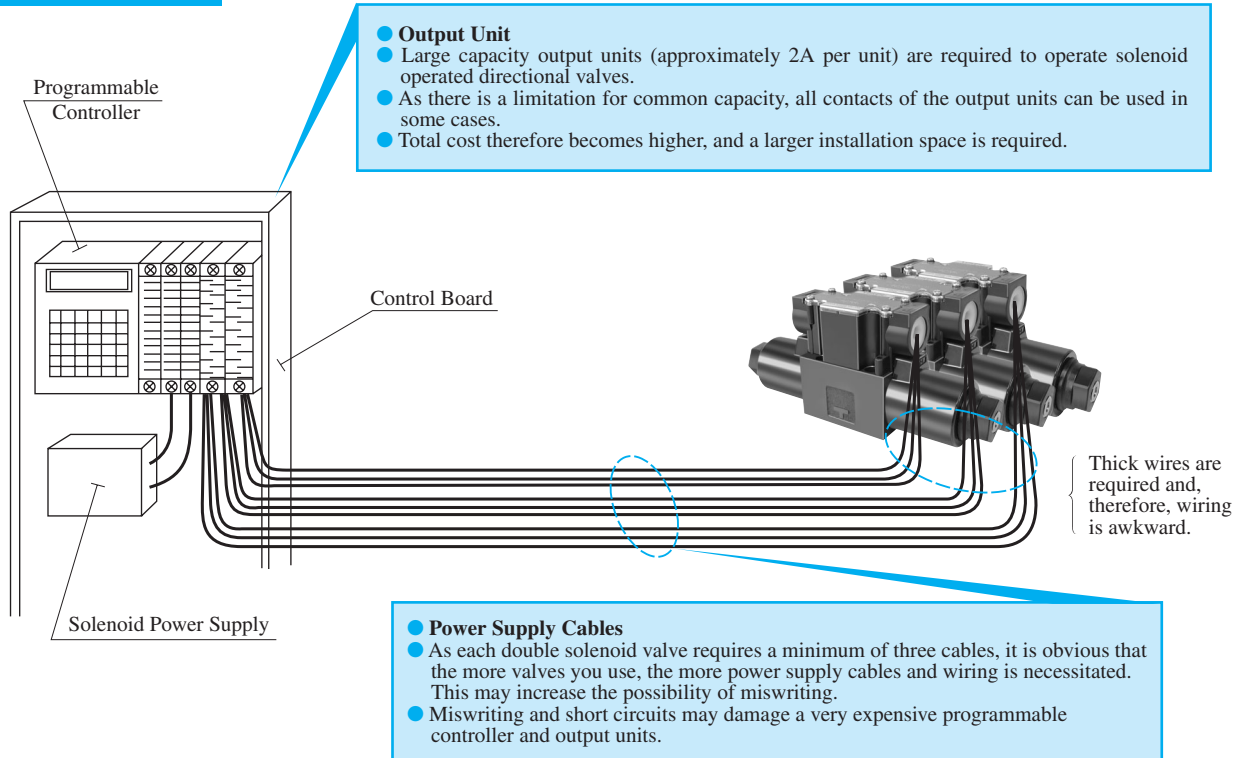
F-	T-	S-	DSG	-03	-2	B	2	A	-D24	M	-70	*	-L
Special Seals	Control Type	Type	Series Number	Valve Size	Number of Valve Position	Spool-Spring Arrangement	Spool Type	Special Two Position Valve	Coil Type	Supply Type of Signal Power	Design Number	Design Standard	Models with Alternate Offset Solenoid
	T: Electronic 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.

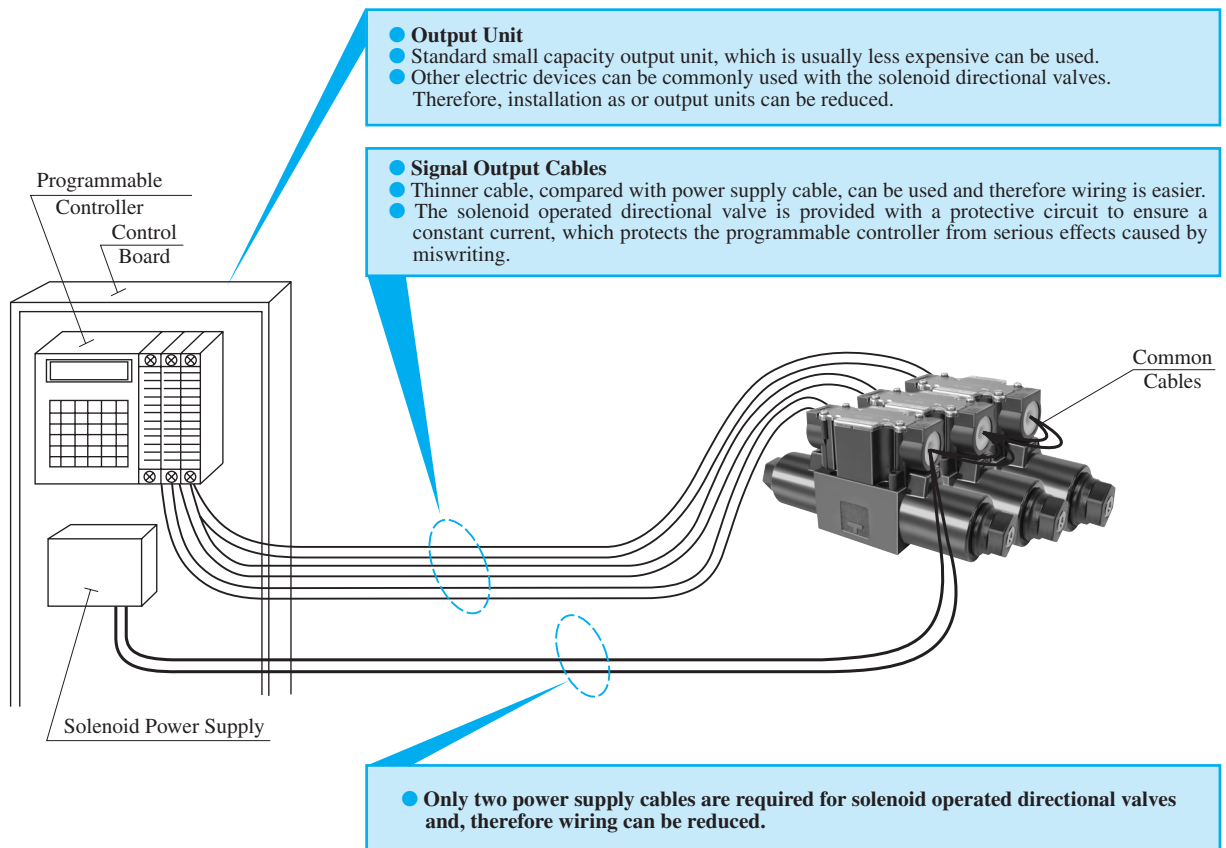
For details, please contact us.

Comparison of The Conventional Type and The Electronic Relay Incorporated Type

Conventional Type



Electronic Relay Incorporated Type



Solenoid Controlled Pilot Operated Directional Valves

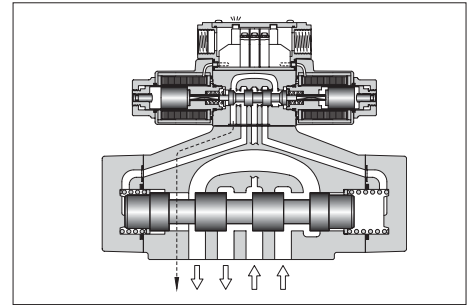
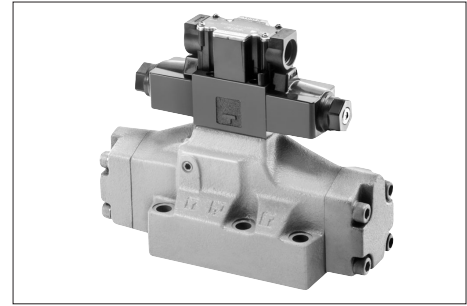
These valves are composed of a solenoid operated pilot valve and a pilot operated slave valve. When a solenoid is energised the pilot valve directs the flow to move the spool of the slave valve, thus changing the direction of flow in the hydraulic circuit.

● **High Pressure High Flow**

High pressure [31.5 MPa (4570 PSI)] along with high flow means compact system design.

● **Lower Pressure Drop**

System energy saving increased as pressure drop of each valve has been greatly reduced.



Specifications

Valve Type	Model Numbers	Max. Flow L/min (U.S.GPM) ^{★1}	Max. Operating Pressure MPa (PSI)	Max. Pilot Pressure MPa (PSI)	Min. ^{★2} Required Pilot Pres. MPa (PSI)	Max. T-Line Back Pressure MPa (PSI)		Max. Change-over Frequency Cycles/Min {min ⁻¹ }			Mass kg (lbs.)
						Ext. Drain	Int. Drain	AC	DC	R	
Standard Type	DSHG-01-3C*-*-14/1480/1490	40 (10.6)	21 (3050)	21 (3050)	1.0 (145)	16 (2320)	16 (2320)	120	120	120	3.2 (7.1)
	DSHG-01-2B*-*-14/1480/1490										
	DSHG-03-3C*-*-14/1490	160 (42.3)	25 (3630)	25 (3630)	0.7 (100)	16 (2320)	16 (2320)	120	120	120	6.9 (15.2)
	DSHG-03-2N*-*-14/1490										6.9 (15.2)
	DSHG-03-2B*-*-14/1490										6.4 (14.1)
	Shockless Type	(S-)DSHG-04-3C*-*-52/5290	300 (79.3)	31.5 (4570)	25 (3630)	0.8 (120)	21 (3050)	16 (2320)	120	120	120
(S-)DSHG-04-2N*-*-52/5290		8.5 (18.7)									
(S-)DSHG-04-2B*-*-52/5290		8.0 (17.6)									
(S-)DSHG-06-3C*-*-53/5390		500 (132)	31.5 (4570)	25 (3630)	0.8 (120)	21 (3050)	16 (2320)	120	120	120	12.4 (27.3)
(S-)DSHG-06-2N*-*-53/5390											12.4 (27.3)
(S-)DSHG-06-2B*-*-53/5390				11.9 (26.2)							
(S-)DSHG-06-3H*-*-53/5390				21 (3050)	1.0 (145)		110	110	110	13.2 (29.1)	
(S-)DSHG-10-3C*-*-43/4390		1100 (291)	31.5 (4570)	25 (3630)	1.0 (145)	21 (3050)	16 (2320)	120	120	100	45.0 (99.2)
(S-)DSHG-10-2N*-*-43/4390								100	100	100	45.0 (99.2)
(S-)DSHG-10-2B*-*-43/4390				21 (3050)		60	60	50	44.5 (98.1)		
(S-)DSHG-10-3H*-*-43/4390								52.9 (116.6)			

- ★1. Maximum flow indicates a ceiling flow. As the ceiling flow depends on the type of spool and operating condition, refer to the List of Spool Functions on pages 386 to 390 for details.
- ★2. Pilot pressure of internal pilot drain models must always exceed tank line back pressure by a minimum required pilot pressure.
- ★3. Min. pilot pressure of with pilot piston in 1.8 MPa (260 PSI).

Yuken can offer flanged connection valves described below. Consult us for the details.

Model Numbers	Rated Flow l/min (U.S.GPM)	Max. Pressure MPa (PSI)
DSHF-10-***-*-27*	315 (83)	21 (3050)
DSHF-16-***-*-37*	500 (132)	21 (3050)
DSHF-24-***-*-28*	1200 (317)	21 (3050)
DSHF-32-***-*-27*	2400 (634)	21 (3050)

Solenoid Ratings

Solenoid ratings of pilot valve are identical with those of standard solenoid valve. Refer to relevant solenoid ratings described on the page below.

Model Numbers	Pilot Valve Model Numbers	Solenoid Ratings described on the page below
DSHG-01	DSG-01-***-*-70*	345
DSHG-03		
(S-)DSHG-04		
(S-)DSHG-06		
(S-)DSHG-10		

CSA Approved Solenoid Valve

Available to supply DSHG-06 series valve approved by the CSA (Canadian Standards Association). Consult us for details.



■ Model Number Designation

F-	S-	DSHG	-06	-2	B	2	A	-C2	-E	T	
Special Seals	Type	Series Number	Valve Size	No. of Valve Position	Spool-Spring Arrangement	Spool Type	Special Two Position Valve	Models with Pilot Choke Valve	Pilot Connection	Drain Connection	
F: For Phosphate Ester Type Fluids (Omit if not required)	None: Standard Type	DSHG: Solenoid Controlled Pilot Operated Directional Valve, Sub-plate Mounting	01	3	C: Spring Centred	2, 3, 4 40, 5, 60 7, 9, 10 11, 12	—	—	C1: With C1 Choke C2: With C2 Choke C1C2: With C1 & C2 Choke (Omit if not required)	None: Internal Pilot E: External Pilot	None: External Drain E: Internal Drain
				2	B: Spring Offset	2, 3, 4 40, 7					
			03	3	C: Spring Centred	2, 3, 4 40, 5, 60 7, 9, 10 11, 12	—				
				2	N: No-Spring B: Spring Offset	2 3 4 40 7					
			04	3	C: Spring Centred	2, 4, 40 60, 10, 12 (3, 5, 6) ^{*1} (7, 9, 11)	—				
				2	N: No-Spring B: Spring Offset	2, 4, 40 (3, 7) ^{*1} 2, 4, 40 (3, 7) ^{*1}	A ^{*2} (Omit if not required) A ^{*2} B ^{*2} (Omit if not required)				
	06		3	H: Pressure Centred C: Spring Centred	2, 4, 40 60, 10, 12 (3, 5, 6) ^{*1} (7, 9, 11)	—					
	10		2	N: No-Spring	2, 4, 40 (3, 7) ^{*1}	A ^{*2} (Omit if not required)					
				B: Spring Offset	2, 4, 40 (3, 7) ^{*1}	A ^{*2} B ^{*2} (Omit if not required)					

Note: In spool type “3”, “5”, “6”, “60”, and “7”, the combination applicable between pilot system and drain system is as described in the table below.

Pilot Connection	Drain Connection	Care in Application
Internal Pilot	External Drain	Hold back pressure in the tank line so that the difference between pilot pressure and drain pressure is always more than minimum required pilot pressure.
	Internal Drain (T)	Combination is not applicable
External Pilot (E)	External Drain Internal Drain (T)	No restrictions in the combination on us

-R2	-A100	-C	-H	-N	-53	-*	-L
Spool Control ^{★3} (Omit if not required)	Coil Type	Manual Override of Pilot Valve	Bult-in Orifice for Pilot Line	Type of Electrical Conduit Connection	Design Number	Design Standard	Models with Reverse Mtg. of Solenoid
—	AC: A100 , A200 A120 , A240		—		14	None: Japanese Standard "JIS"	— L (Omit if not required)
R2 : With Stroke Adjustment, Both Ends	DC: D12 , D24 D48	None : Manual Override Pin	—	None: Terminal Box Type	14	90: N. American Design Standard	— L (Omit if not required)
RA : With Stroke Adjustment, Port "A" End	AC → DC R100 , R200		—				
RB : With Stroke Adjustment, Port "B" End	AC: A100 , A200 A120 , A240	C : Push Button & Lock Nut	—		52	None: Japanese Standard "JIS" & European Design Standard	— L (Omit if not required)
	DC: D12 , D24 D48		—		N: Push-in Connector Type	53	80: European Design Standard (Applicable only for DSHG-01)
R2 : With Stroke Adj., Both Ends	AC → DC R100 , R200		—	H : Refer to ^{★5}	N1 : Push-in Connector with Indicator Light ^{★4}	43	90: N. American Design Standard
RA : With Stroke Adj., Port "A" End			—				— L (Omit if not required)
RB : With Stroke Adj., Port "B" End			—				— L (Omit if not required)
P2 : With Pilot Piston, Both Ends			—				— L (Omit if not required)
PA : With Pilot Piston, Port "A" End			—				— L (Omit if not required)
PB : With Pilot Piston, Port "B" End			—				— L (Omit if not required)

- ★1. Shekless type (S-DSHG) are not available for spool type marked ().
- ★2. As for the details of the valve using the neutral position and the side position (either SOL a or SOL b side), please refer to page 391. Furthermore, the spool types other than "2", "4", "40" (3, 7) are also available.
- ★3. In spool-spring arrangement "H" (Pressure centred models), the valves with stroke adjustment (R*) and pilot-piston (P*) are not available.
- ★4. NI stands for Plug-in connector with solenoid indicator light. NI is not available for R-type solenoids.
- ★5. In spool-spring arrangement "H" (pressure centred models), in case the pilot pressure is more than 10 MPa (1450 PSI), please specify that the valve should have the built-in orifice to the pilot line.

In the table above, the symbols and 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.

Sub-plates

Valve Model Numbers	Japanese Standard "JIS"			European Design Standard			N. American Design Standard		
	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)
DSHG-01	DSGM-01-31	Rc 1/8	0.8 (1.8)	DSGM-01-3080	1/8 BSP.F	0.8 (1.8)	DSGM-01-3090	1/8 NPT	0.8 (1.8)
	DSGM-01X-31	Rc 1/4	0.8 (1.8)	DSGM-01X-3080	1/4 BSP.F	0.8 (1.8)	DSGM-01X-3090	1/4 NPT	0.8 (1.8)
	DSGM-01Y-31	Rc 3/8	0.8 (1.8)	—	—	—	DSGM-01Y-3090	3/8 NPT	0.8 (1.8)
DSHG-03	DSGM-03-40*	Rc 3/8	3.0 (6.6)	DSGM-03-2180*	3/8 BSP.F	3.0 (6.6)	DSGM-03-2190*	3/8 NPT	3.0 (6.6)
	DSGM-03X-40*	Rc 1/2	3.0 (6.6)	DSGM-03X-2180*	1/2 BSP.F	3.0 (6.6)	DSGM-03X-2190*	1/2 NPT	3.0 (6.6)
	DSGM-03Y-40*	Rc 3/4	4.7 (10.4)	DSGM-03Y-2180*	3/4 BSP.F	4.7 (10.4)	DSGM-03Y-2190*	3/4 NPT	4.7 (10.4)
	DHGM-03Y-10	Rc 3/4	4.7 (10.4)	DHGM-03Y-1080	3/4 BSP.F	4.7 (10.4)	DHGM-03Y-1090	3/4 NPT	4.7 (10.4)
DSHG-04	DHGM-04-20	Rc 1/2	4.4 (9.7)	DHGM-04-2080	1/2 BSP.F	4.4 (9.7)	DHGM-04-2090	1/2 NPT	4.4 (9.7)
	DHGM-04X-20	Rc 3/4	4.1 (9.0)	DHGM-04X-2080	3/4 BSP.F	4.1 (9.0)	DHGM-04X-2090	3/4 NPT	4.1 (9.0)
DSHG-06	DHGM-06-50	Rc 3/4	7.4 (16.3)	DHGM-06-5080	3/4 BSP.F	8.5 (18.7)	DHGM-06-5090	3/4 NPT	7.4 (16.3)
	DHGM-06X-50	Rc 1	7.4 (16.3)	DHGM-06X-5080	1 BSP.F	8.5 (18.7)	DHGM-06X-5090	1 NPT	7.4 (16.3)
DSHG-10	DHGM-10-40	Rc 1-1/4	21.5 (47.4)	DHGM-10-4080	1-1/4 BSP.F	21.5 (47.4)	DHGM-10-4090	1-1/4 NPT	21.5 (47.4)
	DHGM-10X-40	Rc 1-1/2	21.5 (47.4)	DHGM-10X-4080	1-1/2 BSP.F	21.5 (47.4)	DHGM-10X-4090	1-1/2 NPT	21.5 (47.4)

★ DSGM-03* is available only for Internal pilot-Internal drain type (Use DHGM-03Y for other valves).

● 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

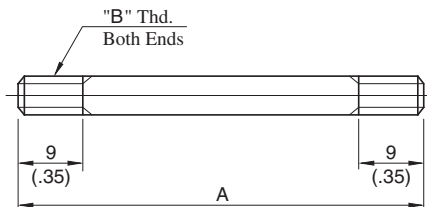
Model Numbers	Mounting Bolt				
	Name	Japanese Standard "JIS" European Design Standard	N. American Design Standard	Qty.	Tightening Torque Nm (in. lbs.)
DSHG-01	Mtg. Bolt Kit ★ ³	MBK-01-01-30 ★ ¹ MBK-01-02-30 ★ ²	MBK-01-01-3090 ★ ¹ MBK-01-02-3090 ★ ²	1 set	5 - 6 (43 - 52)
DSHG-03	Soc. Hd. Cap Screw	M6 × 35 Lg.	1/4-20 UNC × 1-3/4 Lg.	4	12 - 15 (104 - 130)
(S-)DSHG-04	Soc. Hd. Cap Screw	M6 × 45 Lg.	1/4-20 UNC × 1-3/4 Lg.	2	12 - 15 (104 - 130)
		M10 × 50 Lg.	3/8-16 UNC × 2 Lg.	4	58 - 72 (504 - 625)
(S-)DSHG-06	Soc. Hd. Cap Screw	M12 × 60 Lg.	1/2-13 UNC × 2-1/2 Lg.	6	100 - 123 (868 - 1068)
(S-)DSHG-10	Soc. Hd. Cap Screw	M20 × 75 Lg.	3/4-10 UNC × 3 Lg.	6	473 - 585 (4106 - 5078)

★ 1. For Internal Pilot-Internal Drain.

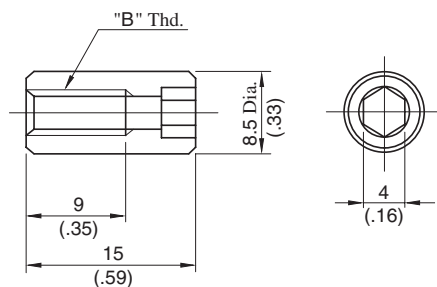
★ 2. For External Pilot or External Drain.

★ 3. Mounting bolt kit is common to that of 01 series modular valves. Refer to figure below for the dimensions of bolt kit.

Stud Bolt



Nut



DIMENSIONS IN MILLIMETRES (INCHES)

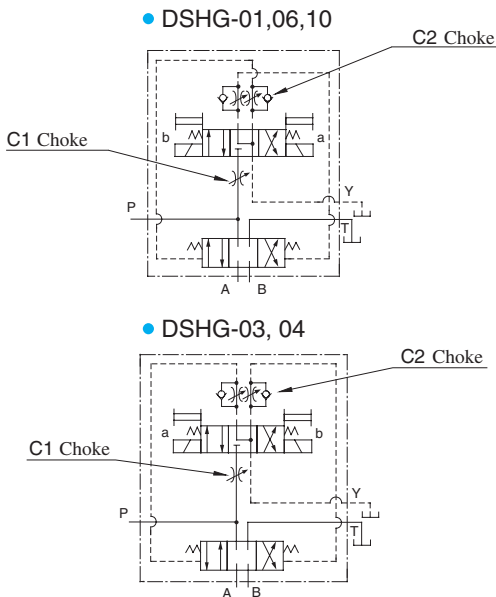
Model Numbers	A mm (In.)	"B" Thd.
MBK-01-01-30	94 (3.70)	M5
MBK-01-02-30	134 (5.28)	
MBK-01-01-3090	94 (3.70)	No.10-24 UNC
MBK-01-02-3090	134 (5.28)	

Options

Models with Pilot Choke Adjustment

When the adjustment screw is turned clockwise, changeover speed of the main spool becomes slow. In case of the spring centred valves in particular, making slow of the returning speed of the main spool to the neutral position is possible with a C2 choke valve. These choke valves can be used in combination with the valves of spring centred, no-spring, offset, pressure centred and the valves with stroke adjustment.

Graphic Symbols (Ex.: Spring Centred)

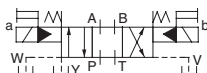


Models with Pilot Piston (P2, PA, PB)

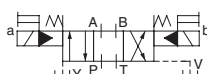
The valves with a pilot piston can be used when the high speed changeover of the main spool is required. However, please note that in case of spring centered valves, there is no change in the returning speed of the main spool to the neutral position even with the pilot piston.

Graphic Symbols (Ex.: Spring Centred)

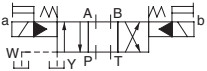
"P2" Models



"PA" Models



"PB" Models

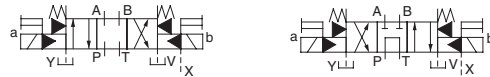


Pressure Centred Models (3H*)

The pressure centered type can be used when the returning of the main spool to the neutral position is required to be firmly.

Graphic Symbols (Ex.: External Pilot-External Drain)

(Only for 3H6, 3H60)

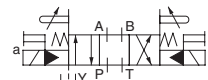


Models with Stroke Adjustment (R2, RA, RB)

When the adjustment screw is screwed in, the main spool stroke becomes short and flow rate reduces.

Graphic Symbols (Ex.: Spring Centred)

"R2" Models



"RA" Models



"RB" Models



Additional Mass of Options

Add the mass described below to the mass of standard models on [page 381](#), if options are required.

kg (lbs.)

Model Numbers	Model with Pilot Choke Adj.		Models with Pilot Piston		Models with Stroke Adj.	
	C1, C2	C1C2	P2	PA PB	P2	PA PB
DSHG-03	0.65(1.4)	1.3(2.9)	—	—	0.6(1.3)	0.3 (.7)
(S-)DSHG-04	0.65(1.4)	1.3(2.9)	—	—	1.0(2.2)	0.5(1.1)
(S-)DSHG-06	0.65(1.4)	1.3(2.9)	1.0(2.2)	0.5(1.1)	1.2(2.6)	0.6(1.3)
(S-)DSHG-10	0.65(1.4)	1.3(2.9)	3.6(7.9)	1.8(4.0)	3.7(8.2)	1.85(4.1)

Options on Pilot Valve

The same options to DSG-01 series valves are available. Please refer to [page 345](#) for the details.

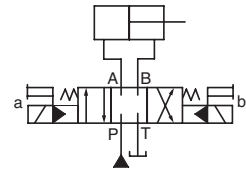
List of Spool Functions and Maximum Flow (DSHG-01)

Spool Type	Three Positions				Two Positions			
	Spring Centred				Spring Centred			
	Graphic Symbol 	Maximum Flow L/min (U.S.GPM)			Graphic Symbol 	Maximum Flow L/min (U.S.GPM)		
Model Numbers	7 MPa (1020 PSI)	14 MPa (2030 PSI)	21 MPa (3050 PSI)	Model Numbers	7 MPa (1020 PSI)	14 MPa (2030 PSI)	21 MPa (3050 PSI)	
"2"	DSHG-01-3C2	40 (10.6)	40 (10.6)	40 (10.6)	DSHG-01-2B2	40 (10.6)	40 (10.6)	40 (10.6)
"3"	DSHG-01-3C3	40 (10.6)	40 (10.6)	40 (10.6)	DSHG-01-2B3	40 (10.6)	40 (10.6)	40 (10.6)
"4"	DSHG-01-3C4	40 (10.6)	40 (10.6)	40 (10.6)	DSHG-01-2B4	40 (10.6)	40 (10.6)	40 (10.6)
"40"	DSHG-01-3C40	40 (10.6)	40 (10.6)	40 (10.6)	DSHG-01-2B40	40 (10.6)	40 (10.6)	40 (10.6)
"5"	DSHG-01-3C5	40 (10.6)	40 (10.6)	40 (10.6)				
"60"	DSHG-01-3C60	40 (10.6)	40 (10.6)	40 (10.6)				
"7"	DSHG-01-3C7	40 (10.6)	40 (10.6)	40 (10.6)	DSHG-01-2B7	40 (10.6)	40 (10.6)	40 (10.6)
"9"	DSHG-01-3C9	40 (10.6)	40 (10.6)	40 (10.6)				
"10"	DSHG-01-3C10	40 (10.6)	40 (10.6)	40 (10.6)				
"11"	DSHG-01-3C11	40 (10.6)	40 (10.6)	40 (10.6)				
"12"	DSHG-01-3C12	40 (10.6)	40 (10.6)	40 (10.6)				

Notes) 1. Max. flow shows value at pilot pressure more than 1 MPa (150 PSI)

2. Max. flow in the table above represents the value in the flow condition of P → A → B → T (or P → B → A → T) as shown in the circuit diagram right.

In case the valve is used in the condition that either A or B port is blocked, the maximum flow differs according to a hydraulic circuit, therefore, please consult us for details.



List of Spool Functions and Maximum Flow (DSHG-03)

Three Positions

Spool Type	Spring Centred			
	Graphic Symbol	Maximum Flow L/min (U.S.GPM)		
	Model Numbers	7 MPa (1020 PSI)	14 MPa (2030 PSI)	25 MPa (3630 PSI)
"2"	DSHG-03-3C2	160 (42.3)	85 (22.5) 160 (42.3)	60 (15.9) 95 (25.1)
"3"	DSHG-03-3C3	160 (42.3)	160 (42.3)	160 (42.3)
"4"	DSHG-03-3C4	160 (42.3)	85 (22.5) 160 (42.3)	60 (15.9) 95 (25.1)
"40"	DSHG-03-3C40	160 (42.3)	85 (22.5) 160 (42.3)	60 (15.9) 95 (25.1)
"5"	DSHG-03-3C5	160 (42.3)	85 (22.5) 160 (42.3)	60 (15.9) 95 (25.1)
"60"	DSHG-03-3C60	160 (42.3)	160 (42.3)	125 (33.0) 160 (42.3)
"7"	DSHG-03-3C7	160 (42.3)	85 (22.5) 160 (42.3)	60 (15.9) 95 (25.1)
"9"	DSHG-03-3C9	160 (42.3)	85 (22.5) 160 (42.3)	60 (15.9) 95 (25.1)
"10"	DSHG-03-3C10	160 (42.3)	85 (22.5) 160 (42.3)	60 (15.9) 95 (25.1)
"11"	DSHG-03-3C11	160 (42.3)	85 (22.5) 160 (42.3)	60 (15.9) 95 (25.1)
"12"	DSHG-03-3C12	160 (42.3)	85 (22.5) 160 (42.3)	60 (15.9) 95 (25.1)

Two Positions

Spool Type	No-Spring			Spring Offset				
	Graphic Symbol	Maximum Flow L/min (U.S.GPM)			Graphic Symbol	Maximum Flow L/min (U.S.GPM)		
	Model Numbers	7 MPa (1020 PSI)	14 MPa (2030 PSI)	25 MPa (3630 PSI)	Model Numbers	7 MPa (1020 PSI)	14 MPa (2030 PSI)	25 MPa (3630 PSI)
"2"	DSHG-03-2N2	160 (42.3)	160 (42.3)	85 (22.5) 160 (42.3)	DSHG-03-2B2	160 (42.3)	160 (42.3)	85 (22.5) 160 (42.3)
"3"	DSHG-03-2N3	160 (42.3)	160 (42.3)	85 (22.5) 160 (42.3)	DSHG-03-2B3	160 (42.3)	160 (42.3)	85 (22.5) 160 (42.3)
"4"	DSHG-03-2N4	160 (42.3)	160 (42.3)	85 (22.5) 160 (42.3)	DSHG-03-2B4	160 (42.3)	160 (42.3)	85 (22.5) 160 (42.3)
"40"	DSHG-03-2N40	160 (42.3)	160 (42.3)	85 (22.5) 160 (42.3)	DSHG-03-2B40	160 (42.3)	160 (42.3)	85 (22.5) 160 (42.3)
"7"	DSHG-03-2N7	160 (42.3)	160 (42.3)	85 (22.5) 160 (42.3)	DSHG-03-2B7	160 (42.3)	160 (42.3)	85 (22.5) 160 (42.3)

Notes: 1. The relation between max. flow and pilot pressure in the table above is as shown below.

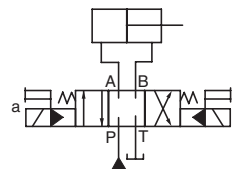
(Example)

Maximum flow rate is constant regardless of pilot pressure.
Pilot Pressure more than 0.7 MPa (100 PSI).

160 (42.3)	85 (22.5) 160 (42.3)
------------	-------------------------

Pilot Pressure at 0.7 MPa (100 PSI).
Pilot Pressure at 1 MPa (150 PSI).

2. Max. flow in the table above represents the value in the flow condition of P → A → B → T (or P → B → A → T) as shown in the circuit diagram right.
In case the valve is used in the condition that either A or B port is blocked, the maximum flow differs according to a hydraulic circuit, therefore, please consult us for details.



■ List of Spool Functions and Maximum Flow (DSHG-04/S-DSHG-04)

● Three Positions

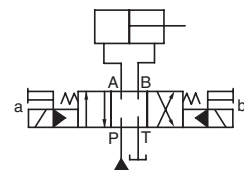
Spool Type	Spring Centred				
	Graphic Symbol	Maximum Flow			
	Model Numbers	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)
"2"	DSHG-04-3C2 (S-)DSHG-04-3C2	300 (79.3)	300 (79.3)	200 (52.8)	145 (38.3)
"3"	DSHG-04-3C3	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)
"4"	DSHG-04-3C4	300 (79.3)	300 (79.3)	250 (66.1)	165 (43.6)
	(S-)DSHG-04-3C4	300 (79.3)	300 (79.3)	140 (37.0)	110 (29.1)
"40"	DSHG-04-3C40	300 (79.3)	300 (79.3)	200 (52.8)	145 (38.3)
	(S-)DSHG-04-3C40	300 (79.3)	250 (66.1)	120 (31.7)	110 (29.1)
"5"	DSHG-04-3C5	250 (66.1)	250 (66.1)	245 (64.7)	245 (64.7)
"6"	DSHG-04-3C6	300 (79.3)	260 (68.7)	245 (64.7)	235 (62.1)
"60"	DSHG-04-3C60	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)
	(S-)DSHG-04-3C60	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)
"7"	DSHG-04-3C7	300 (79.3)	300 (79.3)	200 (52.8)	145 (38.3)
"9"	DSHG-04-3C9	300 (79.3)	300 (79.3)	280 (74.0)	250 (66.1)
"10"	DSHG-04-3C10	300 (79.3)	300 (79.3)	200 (52.8)	150 (39.6)
	(S-)DSHG-04-3C10	300 (79.3)	250 (66.1)	120 (31.7)	110 (29.1)
"11"	DSHG-04-3C11	300 (79.3)	260 (68.7)	160 (42.3)	140 (37.0)
"12"	DSHG-04-3C12	300 (79.3)	280 (74.0)	170 (44.9)	135 (35.7)
	(S-)DSHG-04-3C12	300 (79.3)	250 (66.1)	120 (31.7)	110 (29.1)

● Two Positions

Spool Type	No-Spring					Spring Offset				
	Graphic Symbol	Maximum Flow				Graphic Symbol	Maximum Flow			
	Model Numbers	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)	Model Numbers	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)
"2"	(S-)DSHG-04-2N2	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)	(S-)DSHG-04-2B2	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)
"3"	DSHG-04-2N3	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)	DSHG-04-2B3	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)
"4"	(S-)DSHG-04-2N4	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)	(S-)DSHG-04-2B4	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)
"40"	(S-)DSHG-04-2N40	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)	(S-)DSHG-04-2B40	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)
"7"	DSHG-04-2N7	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)	DSHG-04-2B7	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)

Notes: 1. Max flow described above shown value at pilot pressure more than 0.8 MPa (120 PSI).

2. Max. flow in the table above represents the value in the flow condition of P → A → B → T (or P → B → A → T) as shown in the circuit diagram right.
In case the valve is used in the condition that either A or B port is blocked, the maximum flow differs according to a hydraulic circuit, therefore, please consult us for details.



List of Spool Functions and Maximum Flow (DSHG-06/S-DSHG-06)

Three Positions

Spool Type	Spring Centred					Pressure Centred				
	Graphic Symbol	Maximum Flow				Graphic Symbol	Maximum Flow			
	Model Numbers	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)	Model Numbers	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)
"2"	(S-)DSHG-06-3C2	500 (132)	500 (132)	410 (108) 500 (132)	310 (81.9) 500 (132)	(S-)DSHG-06-3H2	500 (132)	500 (132)	500 (132)	420 (111) 500 (132)
"3"	DSHG-06-3C3	500 (132)	500 (132)	460 (122)	370 (97.8)	DSHG-06-3H3	500 (132)	500 (132)	500 (132)	500 (132)
"4"	(S-)DSHG-06-3C4	500 (132)	500 (132)	410 (108) 500 (132)	310 (81.9) 500 (132)	(S-)DSHG-06-3H4	500 (132)	500 (132)	500 (132)	420 (111) 500 (132)
"40"	(S-)DSHG-06-3C40	500 (132)	500 (132)	410 (108) 500 (132)	310 (81.9) 500 (132)	(S-)DSHG-06-3H40	500 (132)	500 (132)	500 (132)	420 (111) 500 (132)
"5"	DSHG-06-3C5	500 (132)	500 (132)	425 (112)	350 (92.5)	DSHG-06-3H5	500 (132)	500 (132)	500 (132)	470 (124) 500 (132)
"6"	DSHG-06-3C6	475 (125)	390 (103)	300 (79.3)	230 (60.8)	DSHG-06-3H6	500 (132)	500 (132)	500 (132)	420 (111) 500 (132)
"60"	(S-)DSHG-06-3C60	475 (125)	420 (111)	340 (89.8)	280 (74.0)	(S-)DSHG-06-3H60	500 (132)	500 (132)	500 (132)	420 (111) 500 (132)
"7"	DSHG-06-3C7	500 (132)	500 (132)	450 (119)	360 (95.1)	DSHG-06-3H7	500 (132)	500 (132)	500 (132)	500 (132)
"9"	DSHG-06-3C9	500 (132)	500 (132)	450 (119) 500 (132)	360 (95.1) 500 (132)	DSHG-06-3H9	500 (132)	500 (132)	500 (132)	500 (132)
"10"	(S-)DSHG-06-3C10	500 (132)	500 (132)	410 (108) 500 (132)	310 (81.9) 500 (132)	(S-)DSHG-06-3H10	500 (132)	500 (132)	500 (132)	460 (122) 500 (132)
"11"	DSHG-06-3C11	500 (132)	500 (132)	410 (108) 500 (132)	310 (81.9) 500 (132)	DSHG-06-3H11	500 (132)	500 (132)	500 (132)	460 (122) 500 (132)
"12"	(S-)DSHG-06-3C12	500 (132)	500 (132)	410 (108) 500 (132)	310 (81.9) 500 (132)	(S-)DSHG-06-3H12	500 (132)	500 (132)	500 (132)	460 (122) 500 (132)

Two Positions

Spool Type	No-Spring					Spring Offset				
	Graphic Symbol	Maximum Flow				Graphic Symbol	Maximum Flow			
	Model Numbers	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)	Model Numbers	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)
"2"	(S-)DSHG-06-2N2	500 (132)	500 (132)	500 (132)	500 (132)	(S-)DSHG-06-2B2	500 (132)	500 (132)	500 (132)	500 (132)
"3"	DSHG-06-2N3	500 (132)	500 (132)	500 (132)	500 (132)	DSHG-06-2B3	500 (132)	500 (132)	500 (132)	500 (132)
"4"	(S-)DSHG-06-2N4	500 (132)	500 (132)	500 (132)	500 (132)	(S-)DSHG-06-2B4	500 (132)	500 (132)	500 (132)	500 (132)
"40"	(S-)DSHG-06-2N40	500 (132)	500 (132)	500 (132)	500 (132)	(S-)DSHG-06-2B40	500 (132)	500 (132)	500 (132)	500 (132)
"7"	DSHG-06-2N7	500 (132)	500 (132)	500 (132)	500 (132)	DSHG-06-2B7	500 (132)	500 (132)	500 (132)	500 (132)

Notes: 1. The relation between max. flow and pilot pressure in the table above is as shown below.

(Example)

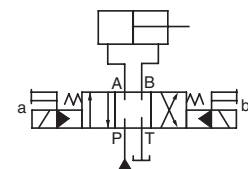
Maximum flow rate is constant regardless of pilot pressure. → 500 (132)
 Pilot Pressure more than 0.8 MPa (120 PSI).
 In case pressure centred models, pilot pressure is more than 1 MPa (150 PSI).

500 (132)	410 (108)
500 (132)	500 (132)

Pilot Pressure at 0.8 MPa (120 PSI).
 In case pressure centred models, pilot pressure is more than 1 MPa (150 PSI)

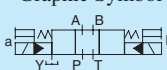
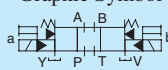












Pilot Pressure at 1.5 MPa (220 PSI).

2. Max. flow in the table above represents the value in the flow condition of P → A → B → T (or P → B → A → T) as shown in the circuit diagram right.
 In case the valve is used in the condition that either A or B port is blocked, the maximum flow differs according to a hydraulic circuit, therefore, please consult us for details.

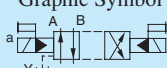
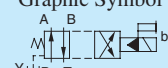







■ List of Spool Functions and Maximum Flow (DSHG-010/S-DSHG-10)

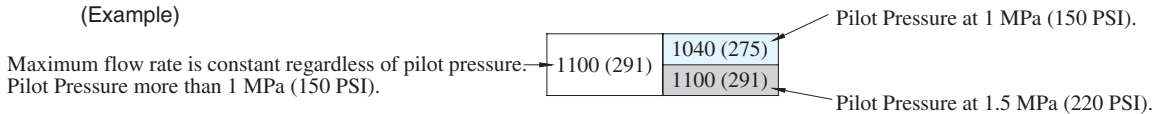
● Three Positions

Spool Type	Spring Centred					Pressure Centred				
	Graphic Symbol 	Maximum Flow L/min (U.S.GPM)				Graphic Symbol 	Maximum Flow L/min (U.S.GPM)			
	Model Numbers	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)	Model Numbers	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)
"2" 	(S-)DSHG-10-3C2	1100(291)	1100(291)	950(251) 1100(291)	750(198) 1100(291)	(S-)DSHG-10-3H2	1100(291)	1100(291)	1100(291)	970(256) 1100(291)
"3" 	DSHG-10-3C3	1100(291)	1100(291)	1060(280)	895(236)	DSHG-10-3H3	1100(291)	1100(291)	1100(291)	1050(277) 1100(291)
"4" 	(S-)DSHG-10-3C4	1100(291)	1100(291)	950(251) 1100(291)	750(198) 1100(291)	(S-)DSHG-10-3H4	1100(291)	1100(291)	1100(291)	970(256) 1100(291)
"40" 	(S-)DSHG-10-3C40	1100(291)	1100(291)	950(251) 1100(291)	750(198) 1100(291)	(S-)DSHG-10-3H40	1100(291)	1100(291)	1100(291)	970(256) 1100(291)
"5" 	DSHG-10-3C5	1100(291)	1100(291)	980(259)	850(225)	DSHG-10-3H5	1100(291)	1100(291)	1100(291)	1000(264) 1100(291)
"6" 	DSHG-10-3C6	1050(277)	880(232)	700(185)	570(151)	DSHG-10-3H6	1100(291)	1100(291)	1100(291)	970(256) 1100(291)
"60" 	(S-)DSHG-10-3C60	1050(277)	940(248)	785(207)	680(180)	(S-)DSHG-10-3H60	1100(291)	1100(291)	1100(291)	970(256) 1100(291)
"7" 	DSHG-10-3C7	1100(291)	1100(291)	1040(275) 1100(291)	870(230) 1100(291)	DSHG-10-3H7	1100(291)	1100(291)	1100(291)	1100(291)
"9" 	DSHG-10-3C9	1100(291)	1100(291)	1040(275)	870(230)	DSHG-10-3H9	1100(291)	1100(291)	1100(291)	1100(291)
"10" 	(S-)DSHG-10-3C10	1100(291)	1100(291)	950(251) 1100(291)	750(198) 1100(291)	(S-)DSHG-10-3H10	1100(291)	1100(291)	1100(291)	1060(280) 1100(291)
"11" 	DSHG-10-3C11	1100(291)	1100(291)	950(251) 1100(291)	750(198) 1100(291)	DSHG-10-3H11	1100(291)	1100(291)	1100(291)	1060(280) 1100(291)
"12" 	(S-)DSHG-10-3C12	1100(291)	1100(291)	950(251) 1100(291)	750(198) 1100(291)	(S-)DSHG-10-3H12	1100(291)	1100(291)	1100(291)	1060(280) 1100(291)

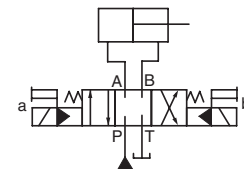
● Two Positions

Spool Type	No-Spring					Spring Offset				
	Graphic Symbol 	Maximum Flow L/min (U.S.GPM)				Graphic Symbol 	Maximum Flow L/min (U.S.GPM)			
	Model Numbers	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)	Model Numbers	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)
"2" 	(S-)DSHG-10-2N2	1100(291)	1100(291)	1100(291)	1100(291)	(S-)DSHG-10-2B2	1100(291)	1100(291)	1100(291)	1100(291)
"3" 	DSHG-10-2N3	1100(291)	1100(291)	1100(291)	1100(291)	DSHG-10-2B3	1100(291)	1100(291)	1100(291)	1100(291)
"4" 	(S-)DSHG-10-2N4	1100(291)	1100(291)	1100(291)	1100(291)	(S-)DSHG-10-2B4	1100(291)	1100(291)	1100(291)	1100(291)
"40" 	(S-)DSHG-10-2N40	1100(291)	1100(291)	1100(291)	1100(291)	(S-)DSHG-10-2B40	1100(291)	1100(291)	1100(291)	1100(291)
"7" 	DSHG-10-2N7	1100(291)	1100(291)	1100(291)	1100(291)	DSHG-10-2B7	1100(291)	1100(291)	1100(291)	1100(291)

Notes) 1. The relation between max. flow and pilot pressure in the table above is as shown below.
(Example)

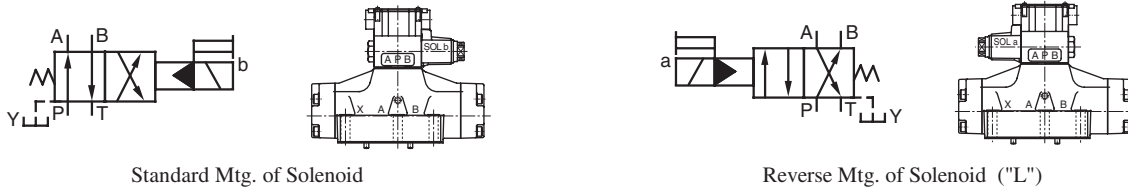


2. Max. flow in the table above represents the value in the flow condition of P → A → B → T (or P → B → A → T) as shown in the circuit diagram right.
In case the valve is used in the condition that either A or B port is blocked, the maximum flow differs according to a hydraulic circuit, therefore, please consult us for details.



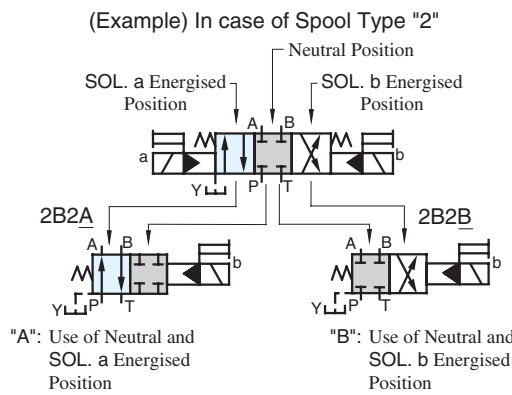
Reverse Mounting of Solenoid.

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



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

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



Model Numbers	Graphic Symbols	
	Standard Mtg.	Reverse Mtg. Type
04 DSHG-06-2B*A 10		
(S-)DSHG-*-2B2A		
DSHG-*-2B3A		
(S-)DSHG-*-2B4A		
(S-)DSHG-*-2B40A		
DSHG-*-2B5A		
DSHG-*-2B6A		
(S-)DSHG-*-2B60A		
DSHG-*-2B7A		
DSHG-*-2B9A		
(S-)DSHG-*-2B10A		
DSHG-*-2B11A		
(S-)DSHG-*-2B12A		

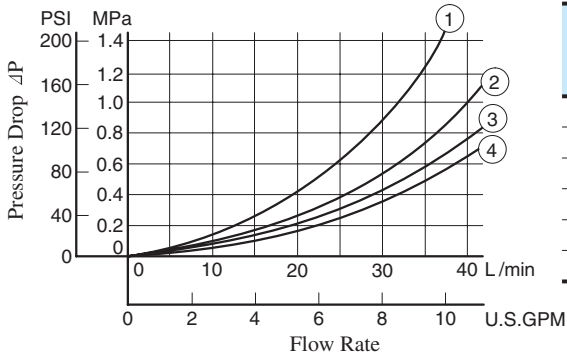
Model Numbers	Graphic Symbols	
	Standard Mtg.	Reverse Mtg. Type
04 DSHG-06-2B*B 10		
(S-)DSHG-*-2B2B		
DSHG-*-2B3B		
(S-)DSHG-*-2B4B		
(S-)DSHG-*-2B40B		
DSHG-*-2B5B		
DSHG-*-2B6B		
(S-)DSHG-*-2B60B		
DSHG-*-2B7B		
DSHG-*-2B9B		
(S-)DSHG-*-2B10B		
DSHG-*-2B11B		
(S-)DSHG-*-2B12B		

Model Numbers	Graphic Symbols
	Standard Mtg.
04 DSHG-06-2N*A 10	
(S-)DSHG-*-2N2A	
DSHG-*-2N3A	
(S-)DSHG-*-2N4A	
(S-)DSHG-*-2N40A	
DSHG-*-2N5A	
DSHG-*-2N6A	
(S-)DSHG-*-2N60A	
DSHG-*-2N7A	
DSHG-*-2N9A	
(S-)DSHG-*-2N10A	
DSHG-*-2N11A	
(S-)DSHG-*-2N12A	

Pressure Drop

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

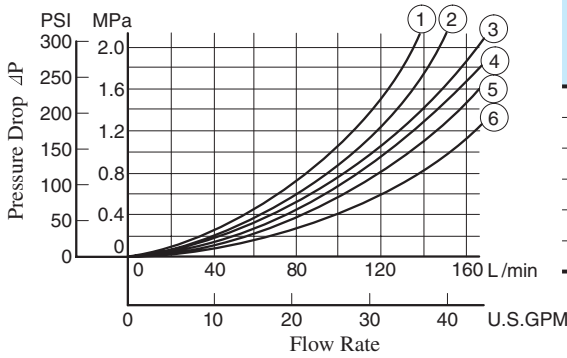
● **DSHG-01**



● **DSHG-01**

Spool Type	Pressure Drop Curve Numbers					Spool Type	Pressure Drop Curve Numbers				
	P→A	B→T	P→B	A→T	P→T		P→A	B→T	P→B	A→T	P→T
2	③	②	③	②	—	7	③	②	③	②	—
3	④	②	④	②	②	9	④	②	④	②	—
4	③	②	③	②	—	10	③	②	③	②	—
40	③	②	③	②	—	11	③	②	③	②	—
5	③	②	③	②	①	12	③	②	③	②	—
60	③	②	③	②	①						

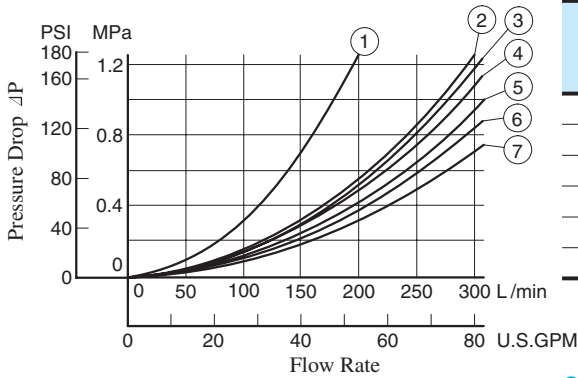
● **DSHG-03**



● **DSHG-03**

Spool Type	Pressure Drop Curve Numbers					Spool Type	Pressure Drop Curve Numbers				
	P→A	B→T	P→B	A→T	P→T		P→A	B→T	P→B	A→T	P→T
2	③	③	④	④	—	7	③	③	④	④	—
3	⑤	⑤	⑤	⑥	④	9	⑥	③	⑥	④	—
4	③	⑤	④	⑥	—	10	③	⑤	④	④	—
40	③	③	④	④	—	11	⑥	③	④	④	—
5	⑥	③	④	⑥	②	12	③	③	④	⑥	—
60	③	③	④	④	①						

● **DSHG-04, S-DSHG-04**



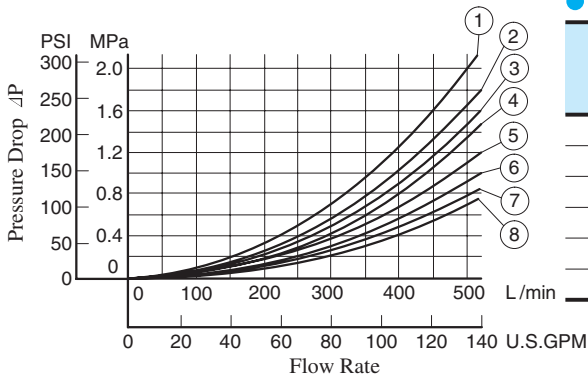
● **DSHG-04**

Spool Type	Pressure Drop Curve Numbers					Spool Type	Pressure Drop Curve Numbers				
	P→A	B→T	P→B	A→T	P→T		P→A	B→T	P→B	A→T	P→T
2	⑤	④	⑤	⑥	—	60	⑦	⑤	⑦	⑦	②
3	⑤	③	⑤	⑤	⑦	7	⑤	④	⑤	⑥	—
4	⑤	③	⑤	⑤	—	9	⑤	④	⑤	⑥	—
40	⑤	④	⑤	⑥	—	10	⑤	②	⑤	⑥	—
5	⑦	④	⑤	⑤	⑤	11	⑥	④	⑤	⑥	—
6	⑤	③	⑤	⑥	①	12	⑤	④	⑤	⑤	—

● **S-DSHG-04**

Spool Type	Pressure Drop Curve Numbers					Spool Type	Pressure Drop Curve Numbers				
	P→A	B→T	P→B	A→T	P→T		P→A	B→T	P→B	A→T	P→T
2	②	②	②	④	—	60	⑥	④	⑥	⑦	②
4	②	③	②	⑤	—	10	②	②	②	④	—
40	②	④	②	⑥	—	12	②	②	②	⑤	—

DSHG-06, S-DSHG-06



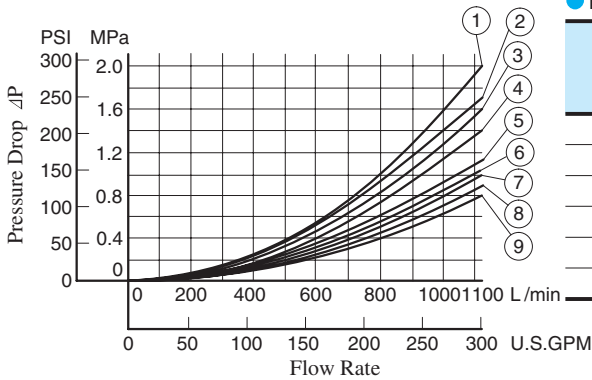
DSHG-06

Spool Type	Pressure Drop Curve Numbers					Spool Type	Pressure Drop Curve Numbers				
	P→A	B→T	P→B	A→T	P→T		P→A	B→T	P→B	A→T	P→T
2	⑧	⑤	⑧	⑦	—	60	⑥	⑤	⑥	⑦	①
3	⑥	④	⑥	⑦	④	7	⑥	④	⑥	⑦	—
4	⑧	⑤	⑧	⑦	—	9	⑥	⑤	⑥	⑦	—
40	⑧	⑤	⑧	⑦	—	10	⑧	⑤	⑧	⑦	—
5	⑧	④	⑤	⑦	①	11	⑧	④	⑤	⑦	—
6	⑤	③	⑤	④	①	12	⑧	⑤	⑧	⑦	—

S-DSHG-06

Spool Type	Pressure Drop Curve Numbers					Spool Type	Pressure Drop Curve Numbers				
	P→A	B→T	P→B	A→T	P→T		P→A	B→T	P→B	A→T	P→T
2	⑥	①	⑥	②	—	60	⑥	②	⑥	③	①
4	⑥	②	⑥	②	—	10	⑧	⑤	⑧	⑦	—
40	⑧	⑤	⑧	⑦	—	12	⑧	⑤	⑧	⑦	—

DSHG-10, S-DSHG-10



DSHG-10

Spool Type	Pressure Drop Curve Numbers					Spool Type	Pressure Drop Curve Numbers				
	P→A	B→T	P→B	A→T	P→T		P→A	B→T	P→B	A→T	P→T
2	⑨	⑥	⑨	⑧	—	60	⑧	⑤	⑧	⑤	③
3	⑦	⑥	⑦	⑦	⑤	7	⑦	⑥	⑦	⑦	—
4	⑨	⑥	⑨	⑥	—	9	⑦	⑥	⑦	⑧	—
40	⑨	⑥	⑨	⑧	—	10	⑨	⑤	⑨	⑧	—
5	⑨	⑥	⑧	⑥	①	11	⑨	⑥	⑧	⑦	—
6	⑤	③	⑤	②	②	12	⑨	⑦	⑨	⑥	—

S-DSHG-10

Spool Type	Pressure Drop Curve Numbers					Spool Type	Pressure Drop Curve Numbers				
	P→A	B→T	P→B	A→T	P→T		P→A	B→T	P→B	A→T	P→T
2	⑧	③	⑧	④	—	60	⑧	④	⑧	④	②
4	⑧	⑤	⑧	⑥	—	10	⑨	⑤	⑨	⑧	—
40	⑨	⑥	⑨	⑧	—	12	⑨	⑦	⑨	⑥	—

● 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 right.

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

■ Typical Changeover Time

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

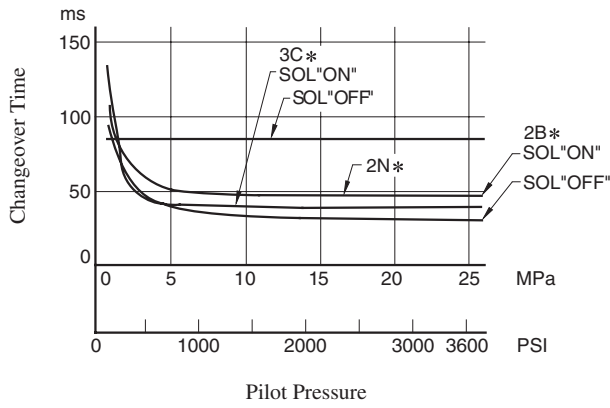
● Test Conditions

Coil Type : D*(Models with DC solenoids)

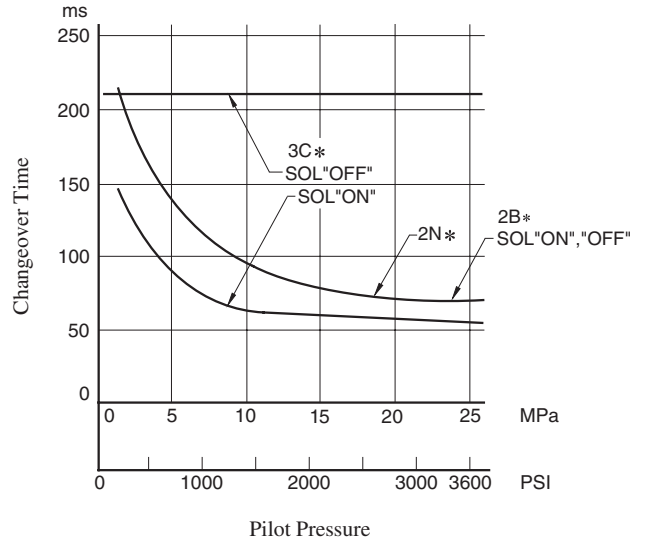
Voltage : Rated Voltage

Oil Viscosity : 35 mm²/s (164 SSU)

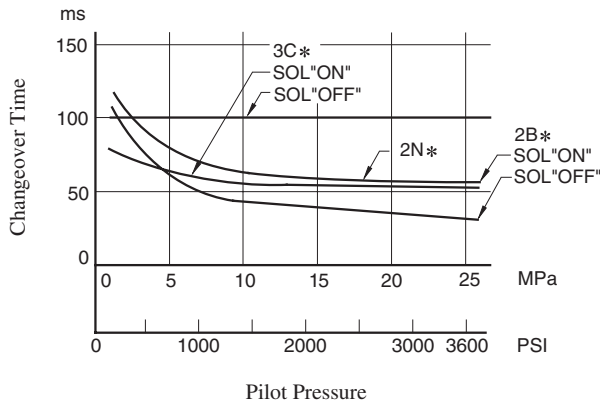
● DSHG-04



● DSHG-10



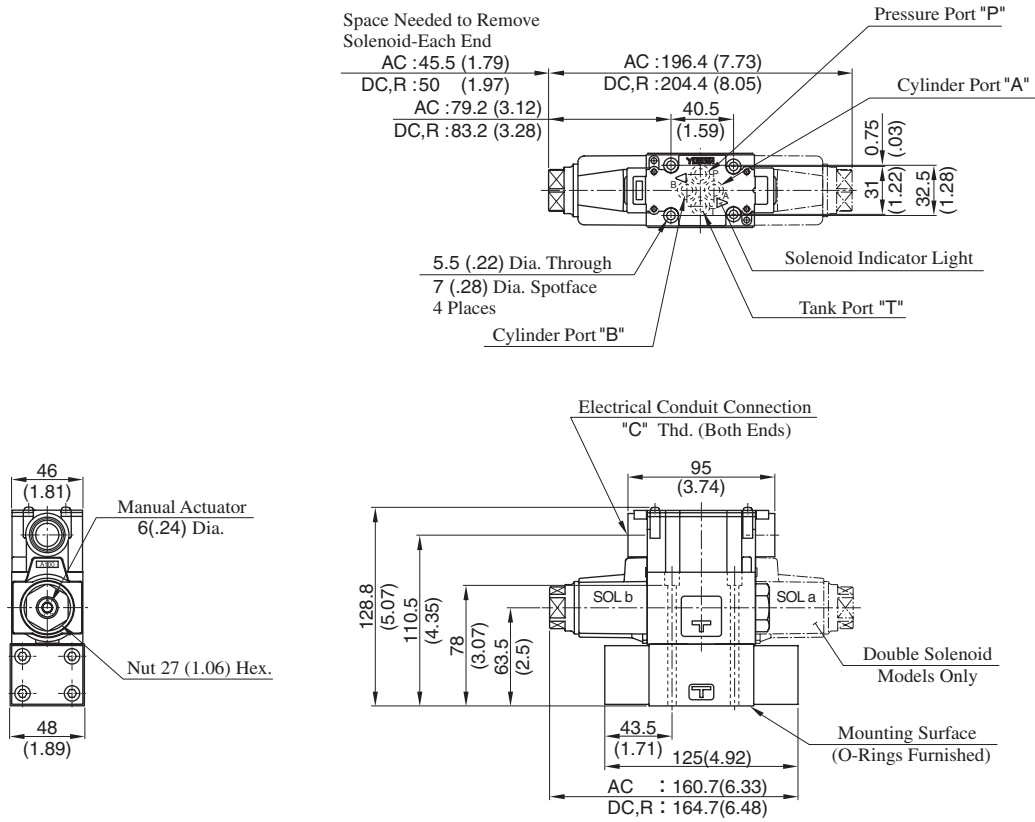
● DSHG-06



Terminal Box type: DSHG-01-***-*-14/1490

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

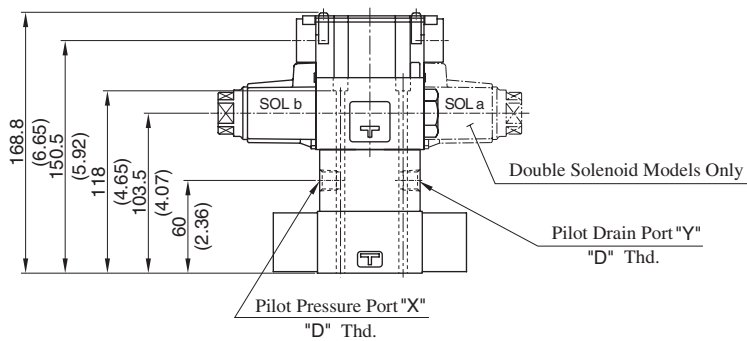
● Internal Pilot - Internal Drain



Model Numbers	"C" Thd.	"D" Thd.
DSHG-01-***-*-14	G 1/2	Rc 1/4
DSHG-01-***-*-1490	1/2 NPT	1/4 NPT

DIMENSIONS IN MILLIMETRES (INCHES)

- External Pilot - External Drain
- External Pilot - Internal Drain
- Internal Pilot - External Drain

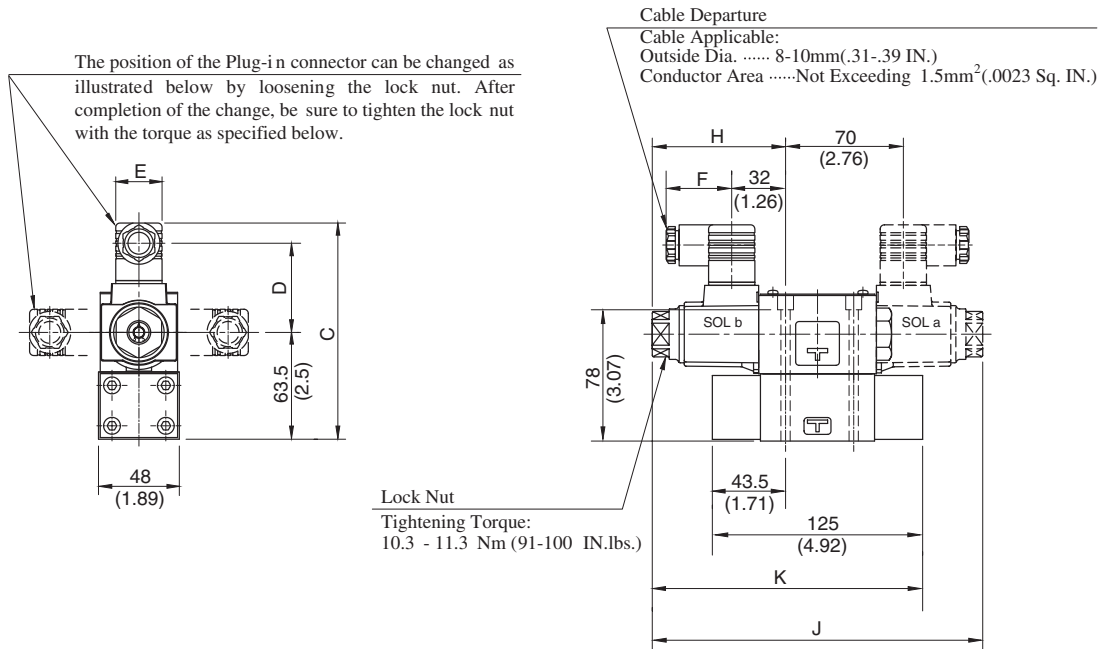


● For other dimensions, refer to "Internal Pilot Internal Drain".

F
 Solenoid Controlled
 Pilot Operated Directional Valves

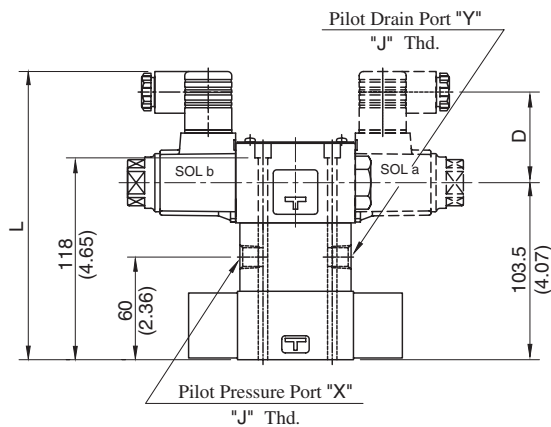
■ Plug-in Connector Type: DSHG-01-***-*-N₁-14/1480/1490

● Internal Pilot-Internal Drain



DIMENSIONS IN
MILLIMETRES (INCHES)

- External Pilot-External Drain
- External Pilot-Internal Drain
- Internal Pilot-External Drain



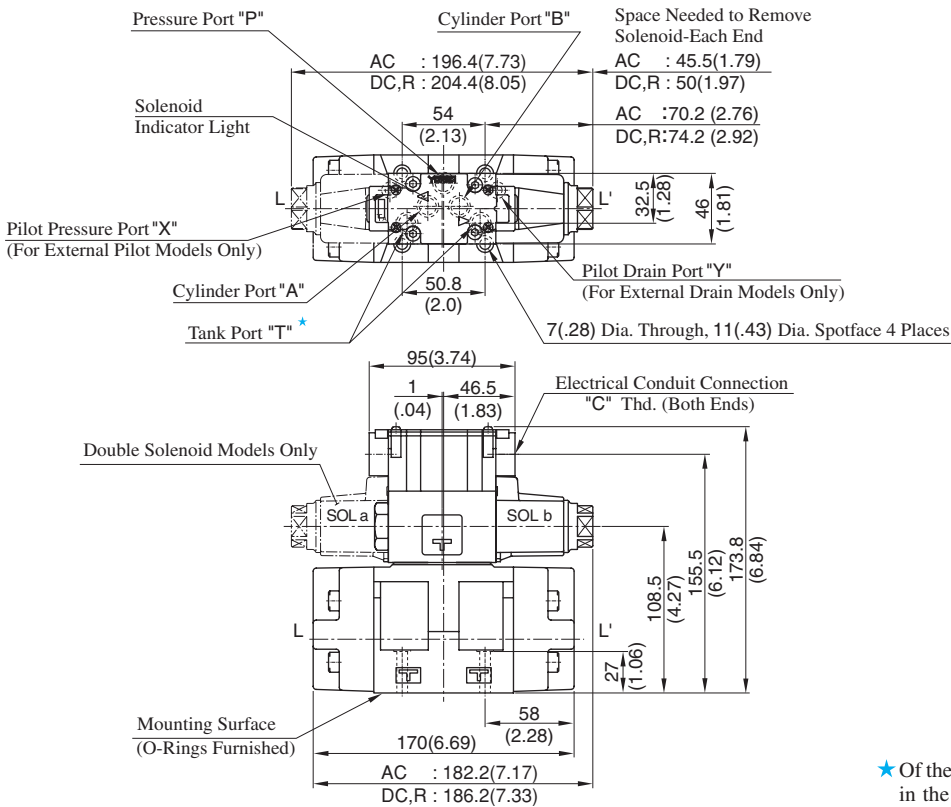
Model Numbers	"J" Thd.
DSHG-01-***-*-N*-14	Rc 1/4
DSHG-01-***-*-N*-1480	1/4 BSP.F
DSHG-01-***-*-N*-1490	1/4 NPT

Model Numbers	Dimensions mm (Inches)							
	C	D	E	F	H	J	K	L
DSHG-01-***-*-A*-N/N1	128.5 (5.06)	53 (2.09)	27.5 (1.08)	39 (1.54)	79.2 (3.12)	196.4 (7.73)	160.7 (6.33)	168.5 (6.63)
DSHG-01-***-*-D*-N/N1	139.5 (5.49)	64 (2.52)	27.5 (1.08)	39 (1.54)	83.2 (3.28)	204.4 (8.05)	164.7 (6.48)	179.5 (7.07)
DSHG-01-***-*-R*-N	142.5 (5.61)	57.2 (2.25)	34 (1.34)	53 (2.09)				182.5 (7.19)

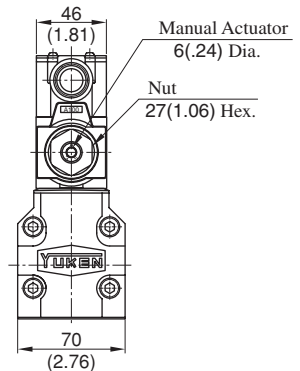
● For other dimensions, refer to "Terminal Box Type".

Terminal Box Type: DSHG-03-***-*-14/1490

Mounting surface: ISO 4401-AC-05-4-A
(The pilot and drain ports in accordance with the ISO original draft)



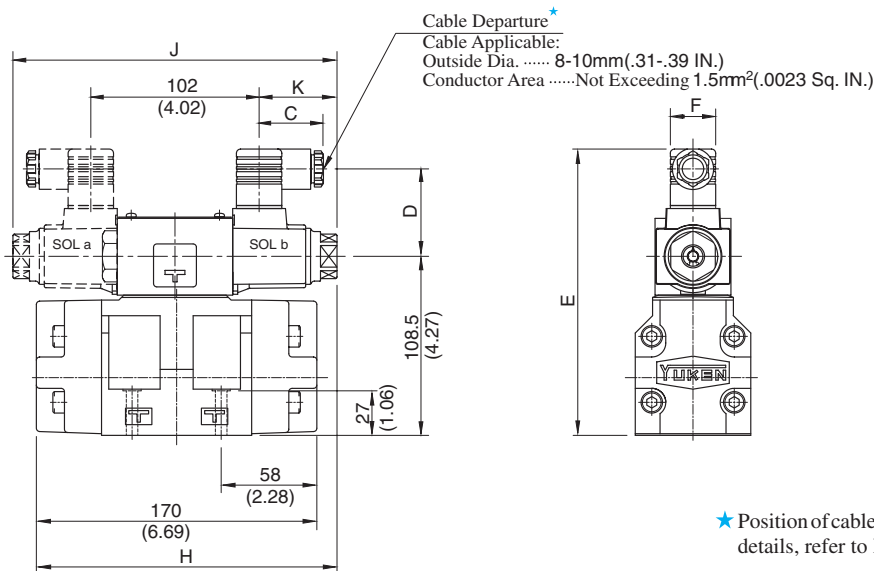
Model Numbers	"C" Thd.
DSHG-03-***-*-14	G 1/2
DSHG-03-***-*-1490	1/2 NPT



★ 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)

Plug-in Connector Type: DSHG-03-***-*-N_{N1}-14/1490



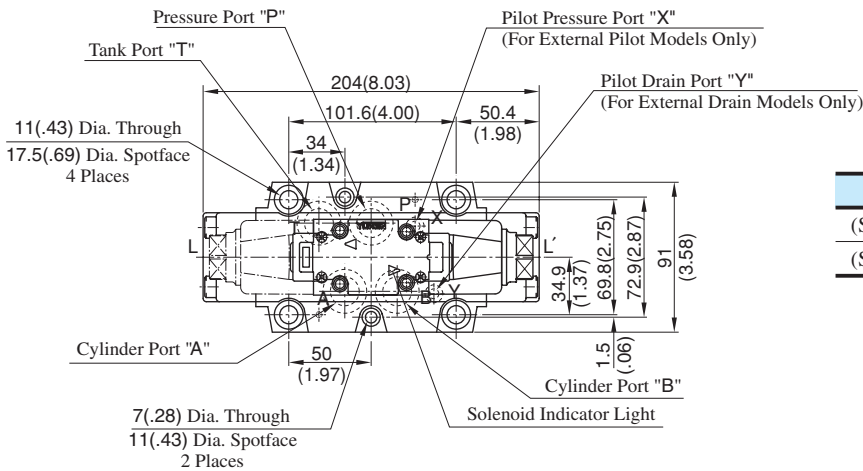
★ Position of cable departure can be changed. For details, refer to DSHG-01 valve on [page 396](#).

Model Numbers	Dimensions mm (Inches)						
	C	D	E	F	H	J	K
DSHG-03-***-*-A*-N/N1	39 (1.54)	53 (2.09)	173.5 (6.83)	27.5 (1.08)	182.2 (7.17)	196.4 (7.73)	47.2 (1.86)
DSHG-03-***-*-D*-N/N1	39 (1.54)	64 (2.52)	184.5 (7.26)	27.5 (1.08)	186.2 (7.33)	204.4 (8.05)	51.2 (2.02)
DSHG-03-***-*-R*-N	53 (2.09)	57.2 (2.25)	187.5 (7.38)	34 (1.34)			

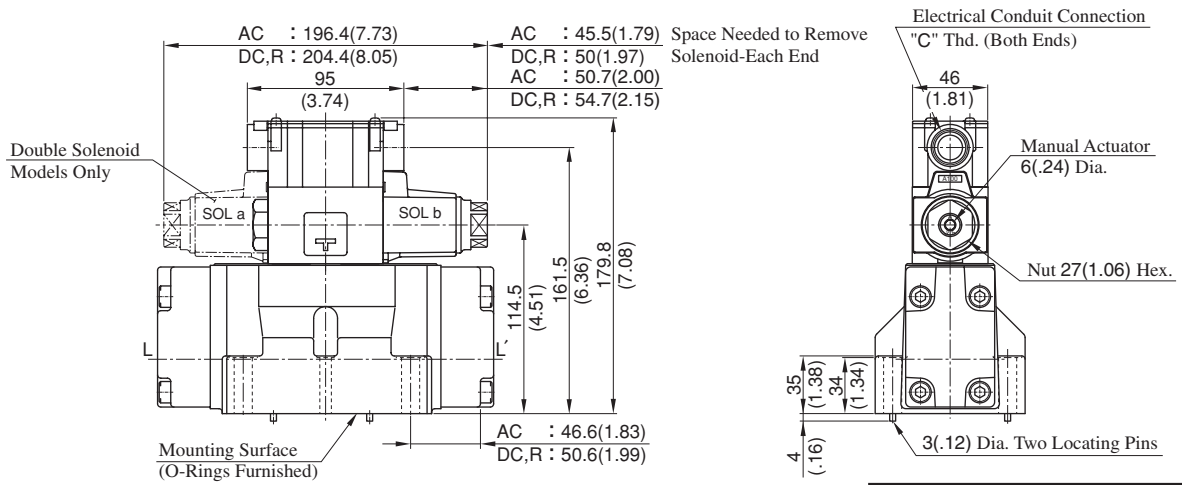
• For other dimensions, refer to "Terminal Box Type".

■ Terminal Box Type: (S-)DSHG-04-***-*-52/5290

Mounting surface:
ISO 4401-AD-07-4-A

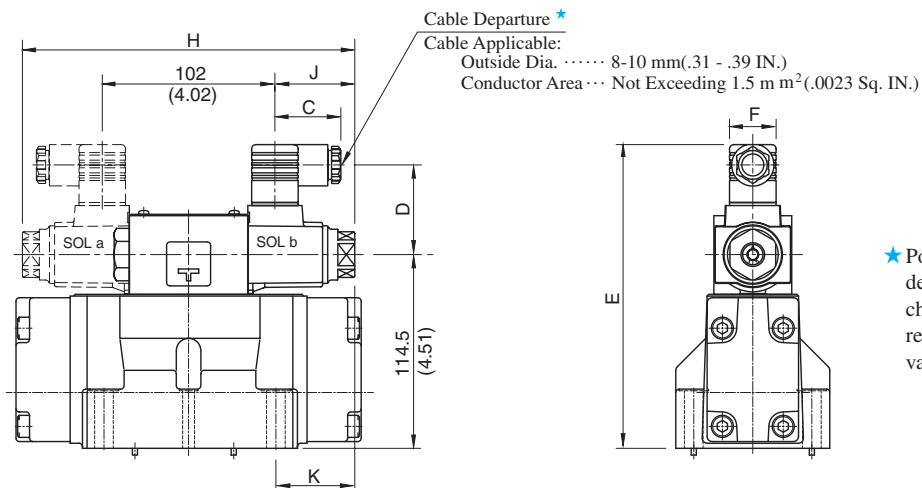


Model Numbers	"C" Thd.
(S-)DSHG-04-***-*-52	G 1/2
(S-)DSHG-04-***-*-5290	1/2 NPT



DIMENSIONS IN MILLIMETRES (INCHES)

■ Plug-in Connector Type: (S-)DSHG-04-***-*-N₁-52/5290



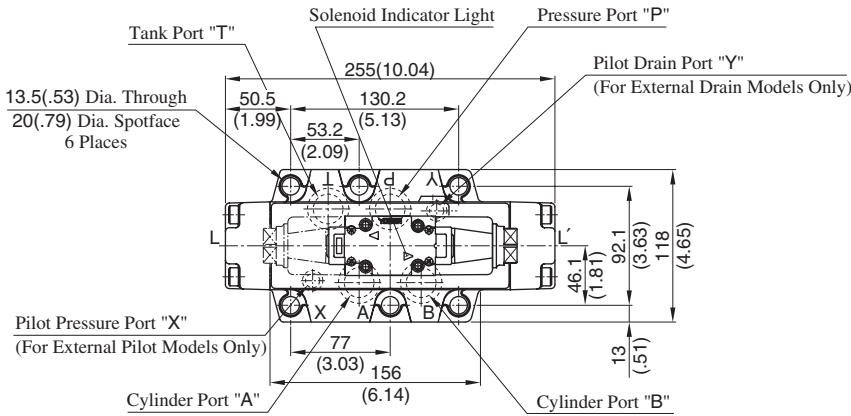
★ Position of cable departure can be changed. For details, refer to DSHG-01 valve on [page 396](#).

Model Numbers	Dimensions mm (Inches)						
	C	D	E	F	H	J	K
(S-)DSHG-04-***-A*-N/N1	39 (1.54)	53 (2.09)	173.5 (6.83)	27.5 (1.08)	196.4 (7.73)	47.2 (1.86)	45.6 (1.80)
(S-)DSHG-04-***-D*-N/N1	39 (1.54)	64 (2.52)	184.5 (7.26)	27.5 (1.08)	204.4 (8.05)	51.2 (2.02)	49.6 (1.95)
(S-)DSHG-04-***-R*-N	53 (2.09)	57.2 (2.25)	187.6 (7.39)	34 (1.34)			

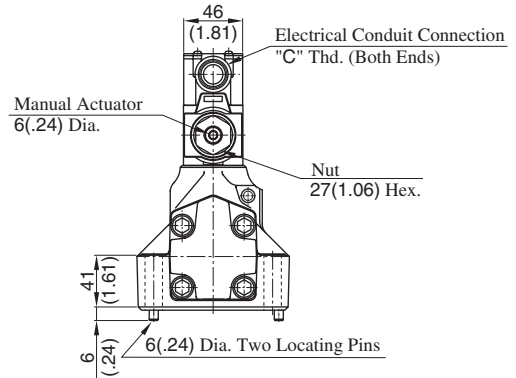
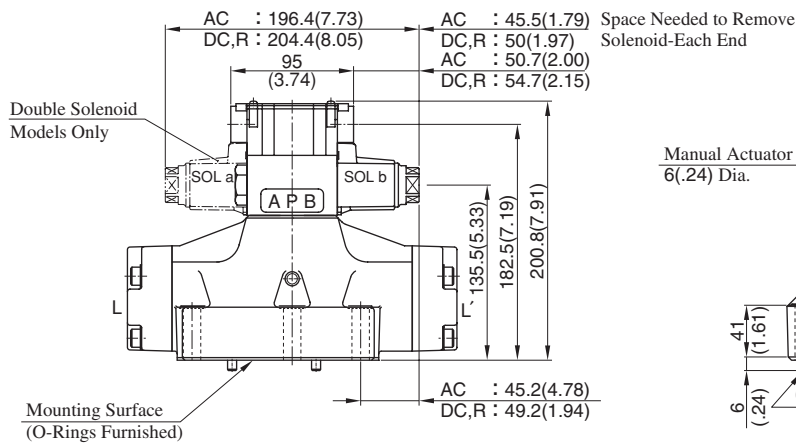
● For other dimensions, refer to "Terminal Box Type".

Terminal Box Type: (S-)DSHG-06-***-*-53/5390

Mounting surface:
ISO 4401-AE-08-4-A

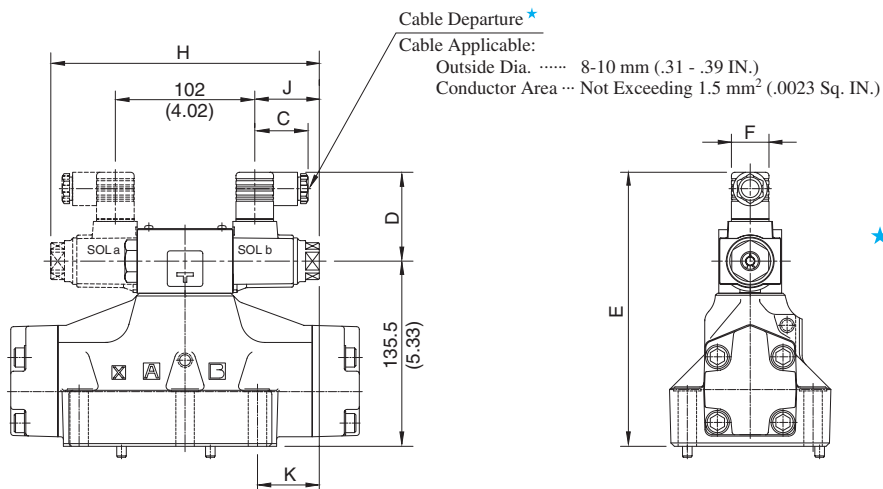


Model Numbers	"C" Thd.
(S-)DSHG-06-***-*-53	G 1/2
(S-)DSHG-06-***-*-5390	1/2 NPT



DIMENSIONS IN MILLIMETRES (INCHES)

Plug-in Connector Type: (S-)DSHG-06-***-*-N_{N1}-53/5390



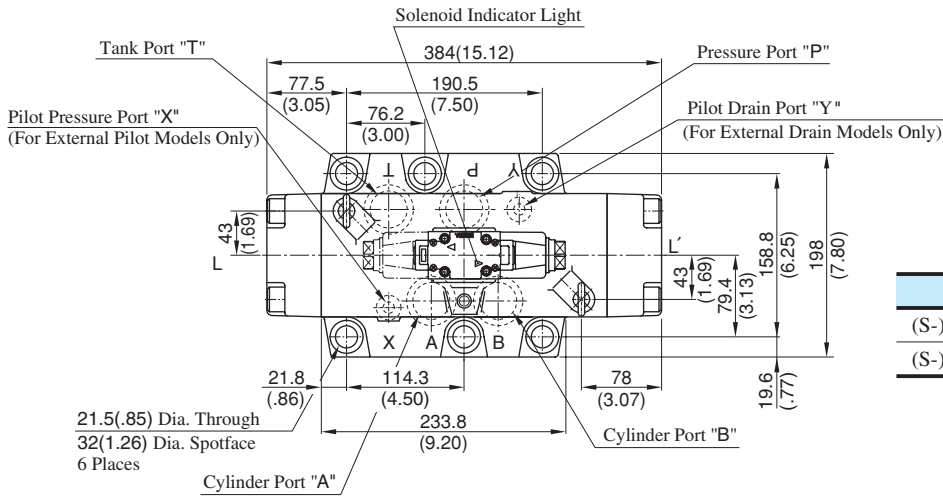
★ Position of cable departure can be changed. For details, refer to DSHG-01 valve on [page 396](#).

Model Numbers	Dimensions mm (Inches)						
	C	D	E	F	H	J	K
(S-)DSHG-06-***-A*-N/N1	39 (1.54)	53 (2.09)	200.5 (7.95)	27.5 (1.08)	196.4 (7.73)	47.2 (1.86)	45.2 (1.78)
(S-)DSHG-06-***-D*-N/N1	39 (1.54)	64 (2.52)	211.5 (8.33)	27.5 (1.08)	204.4 (8.05)	51.2 (2.02)	49.2 (1.94)
(S-)DSHG-06-***-R*-N	53 (2.09)	57.2 (2.25)	214.5 (8.44)	34 (1.34)			

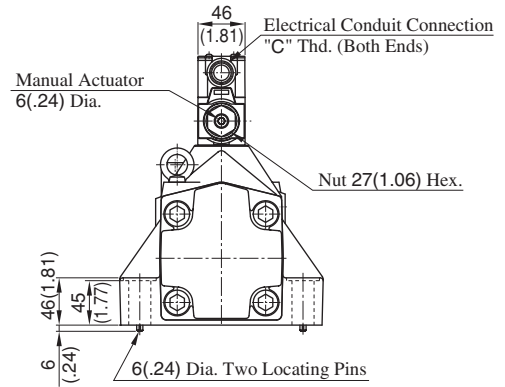
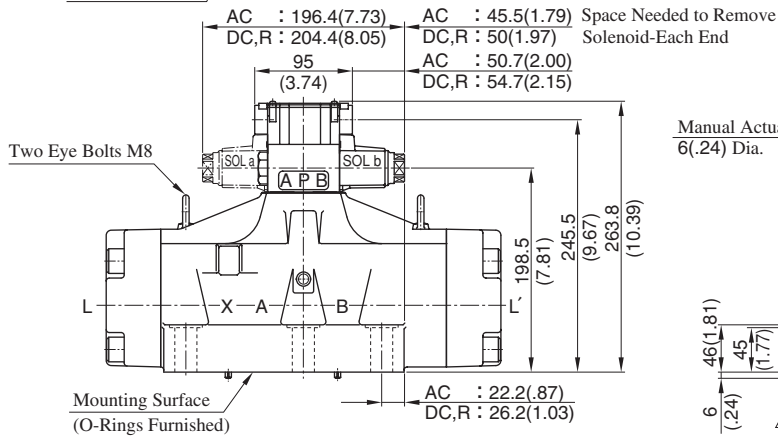
• For other dimensions, refer to "Terminal Box Type".

■ Terminal Box Type: (S-)DSHG-10-***-*-43/4390

Mounting surface:
ISO 4401-AF-10-4-A

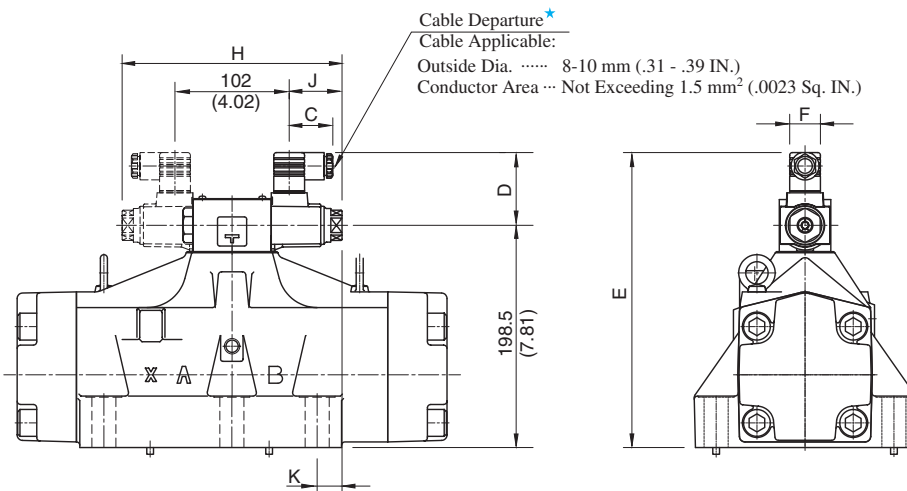


Model Numbers	"C" Thd.
(S-)DSHG-10-***-*-43	G 1/2
(S-)DSHG-10-***-*-4390	1/2 NPT



DIMENSIONS IN MILLIMETRES (INCHES)

■ Plug-in Connector Type: (S-)DSHG-10-***-*-N₁-43/4390



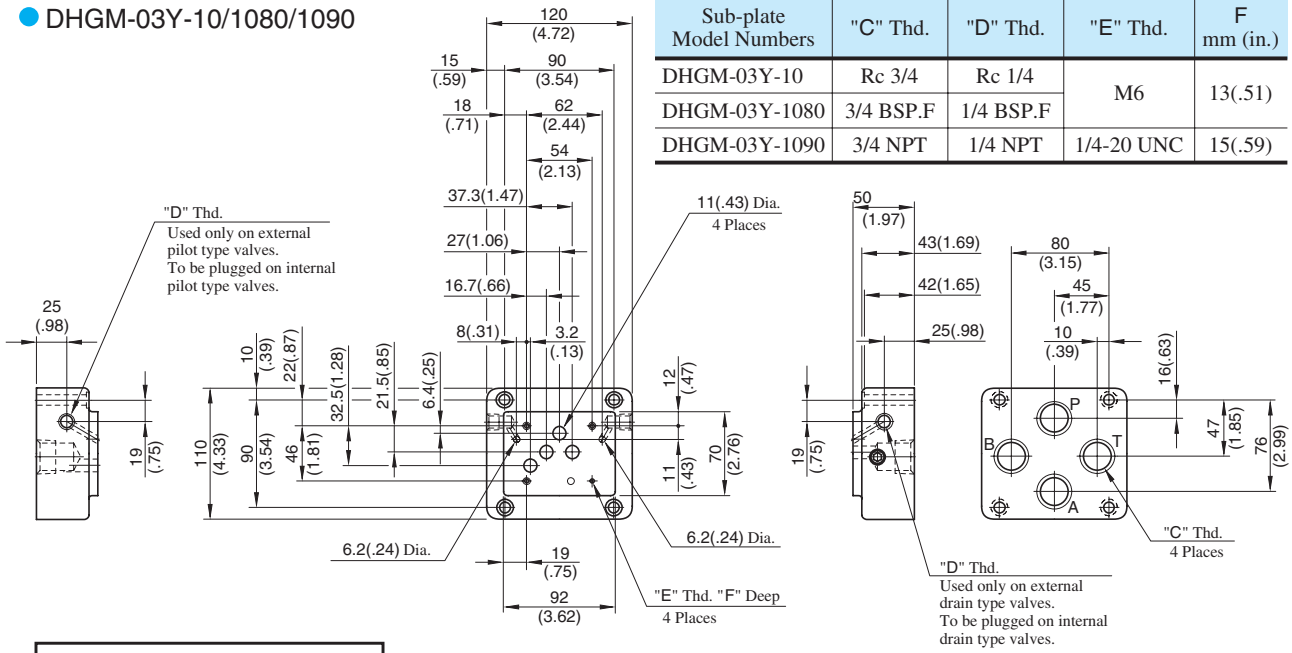
★ Position of cable departure can be changed. For details, refer to DSHG-01 valve on page 396.

Model Numbers	Dimensions mm (Inches)						
	C	D	E	F	H	J	K
(S-)DSHG-10-***-A*-N/N ₁	39 (1.54)	53 (2.09)	263.5 (10.37)	27.5 (1.08)	196.4 (7.73)	47.2 (1.86)	22.2 (.87)
(S-)DSHG-10-***-D*-N/N ₁	39 (1.54)	64 (2.52)	274.5 (10.81)	27.5 (1.08)	204.4 (8.05)	51.2 (2.02)	26.2 (1.03)
(S-)DSHG-10-***-R*-N	53 (2.09)	57.2 (2.25)	277.5 (10.93)	34 (1.34)			

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

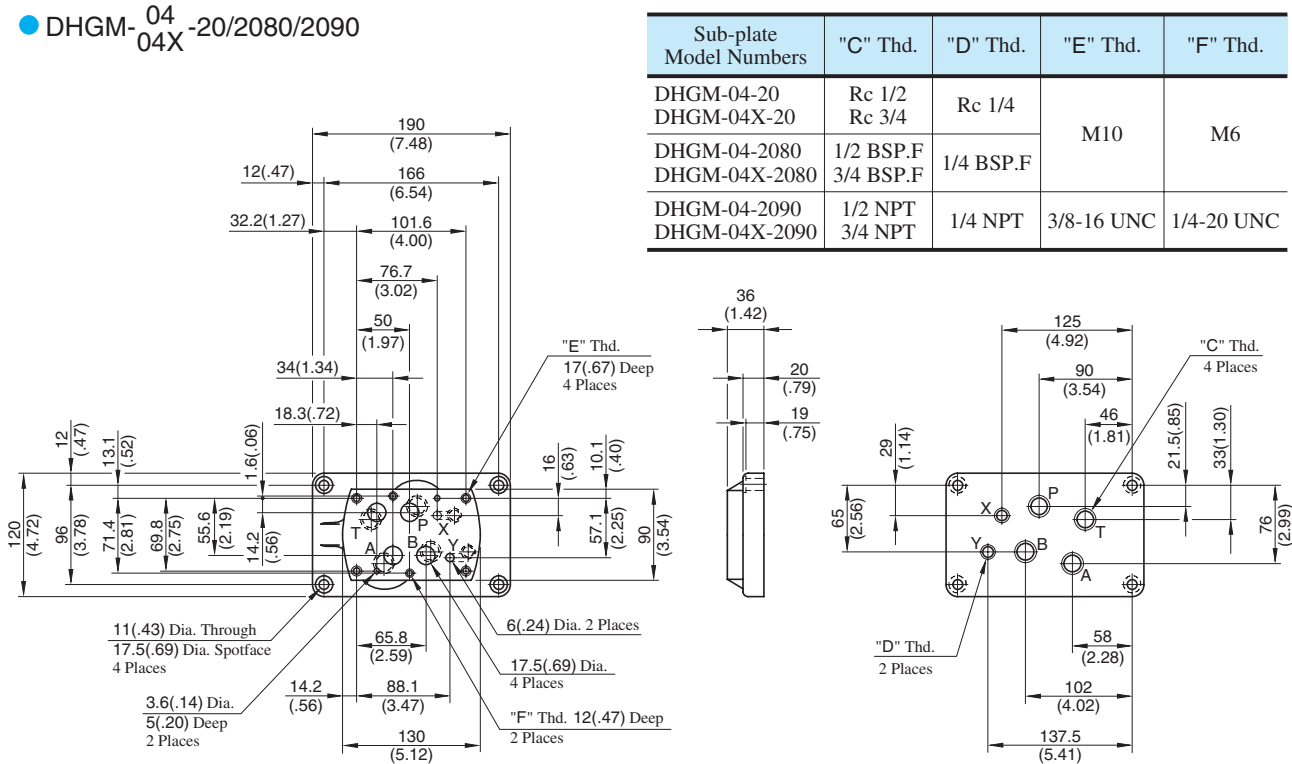
Sub-plate

● DHGM-03Y-10/1080/1090



DIMENSIONS IN MILLIMETRES (INCHES)

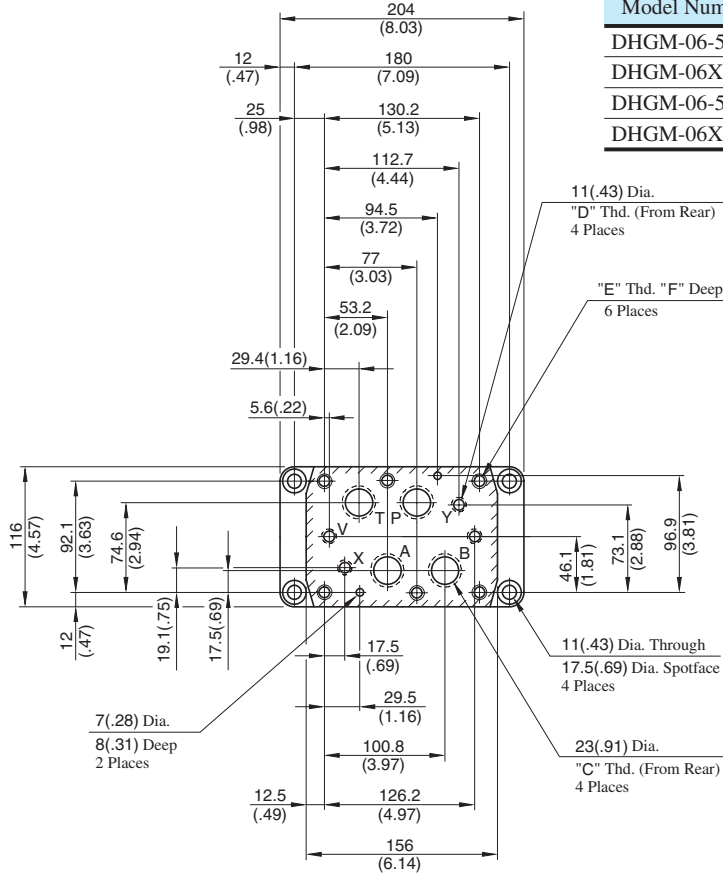
● DHGM-04-20/2080/2090



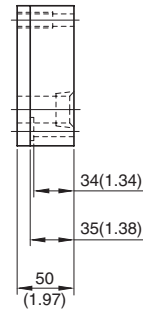
Valve Types		Pilot Pressure Port "X"	Port "Y"
Solenoid Controlled Pilot Operated Directional Valves		Used only on external pilot type valves. To be plugged on internal pilot type valves.	Used as drain port only on external drain type valves. To be plugged on internal drain type valves.
Pilot Operated Directional Valves	Spring Centred No-spring	Used	Used as pilot pressure port
	Spring Offset		Used as pilot drain port
Manually Operated Directional Valves		Not used (plug is not required)	Used as drain port

Sub-plate

● DHGM-06
06X -50/5090

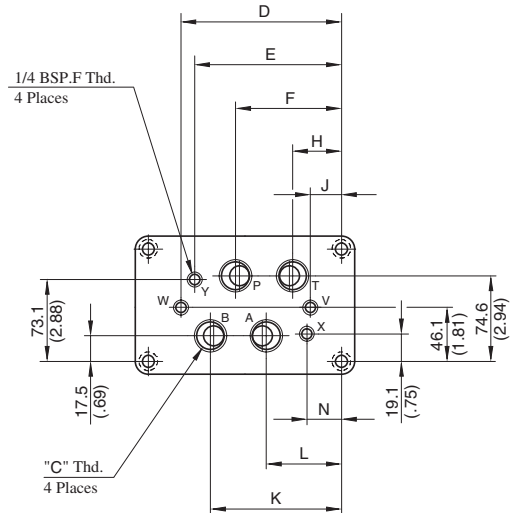
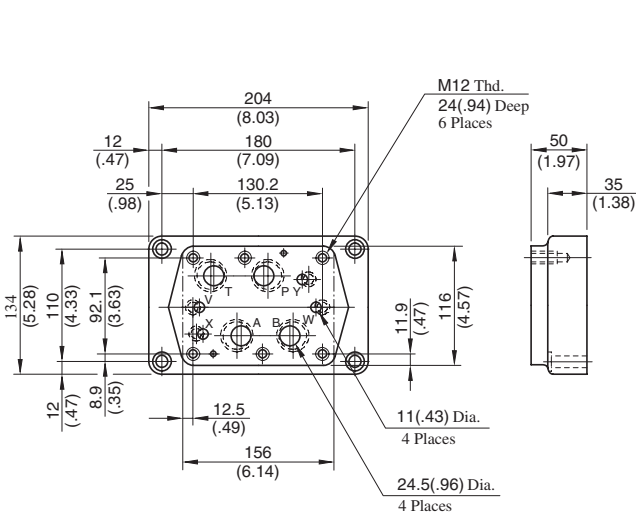


Sub-plate Model Numbers	"C" Thd.	"D" Thd.	"E" Thd.	F mm (in.)
DHGM-06-50	Rc 3/4	Rc 1/4	M12	24 (.94)
DHGM-06X-50	Rc 1			
DHGM-06-5090	3/4 NPT	1/4 NPT	1/2-13 UNC	26 (1.02)
DHGM-06X-5090	1 NPT			



DIMENSIONS IN MILLIMETRES (INCHES)

● DHGM-06
06X -5080



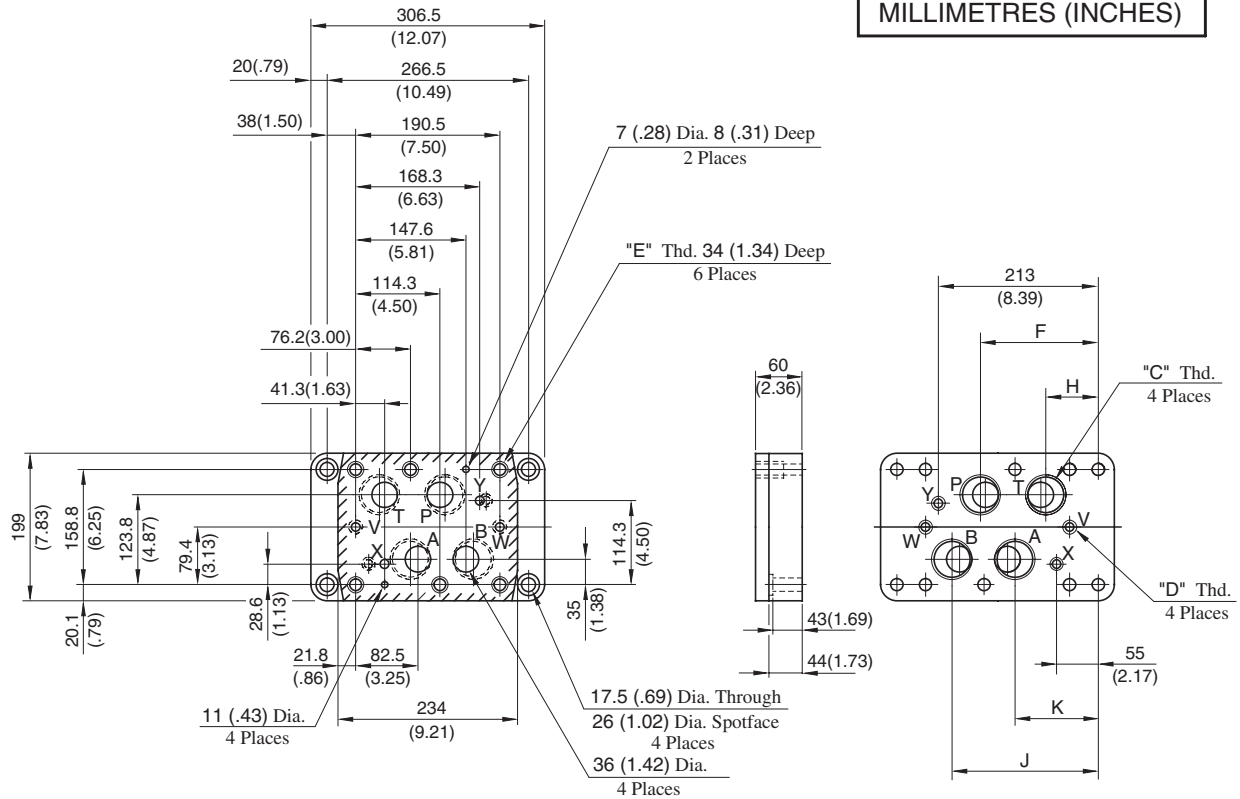
Sub-plate Model Numbers	"C" Thd.	Dimensions mm (Inches)							
		D	E	F	H	J	K	L	N
DHGM-06-5080	3/4 BSP.F	151.2 (5.95)	137.7 (5.42)	102 (4.02)	54.4 (2.14)	30.6 (1.20)	125.8 (4.95)	78.2 (3.08)	42.5 (1.67)
DHGM-06X-5080	1 BSP.F	155.2 (6.11)	148 (5.83)	106 (4.17)	50 (1.97)	25 (.98)	130 (5.12)	74 (2.91)	32 (1.26)

For other dimensions, refer to "DHGM-06*-50/5090" above.

* For Uses of Port "X", "Y", "V", "W", refer to DHGM-10* on the following page.

Sub-plate

● DHGM-10
10X -40/4080/4090



Sub-plate Model Numbers	"C" Thd.	"D" Thd.	"E" Thd.	Dimensions mm (Inches)			
				F	H	J	K
DHGM-10-40	Rc 1-1/4	Rc 3/8	M20	152 (5.98)	79 (3.11)	185.5 (7.30)	120.5 (4.74)
DHGM-10-4080	1-1/4 BSP.F	3/8 BSP.F	M20				
DHGM-10-4090	1-1/4 NPT	3/8 NPT	3/4-10 UNC				
DHGM-10X-40	Rc 1-1/2	Rc 3/8	M20	156 (6.14)	74 (2.91)	194.5 (7.66)	112.5 (4.43)
DHGM-10X-4080	1-1/2 BSP.F	3/8 BSP.F	M20				
DHGM-10X-4090	1-1/2 NPT	3/8 NPT	3/4-10 UNC				

Note: Uses of port "X", "Y", "V", and "W"

Valve Types		Pilot Pres. Port "X"	Port "Y"	Drain Port "V"	Drain Port "W"
Solenoid Controlled Pilot Operated Directional Valves	Spring Centred, No-spring, Spring Offset	Used only on external pilot type valves.	Used as drain port only on external drain type valves.	Not used (plug is not required)	
	Pressure Centred			Used	Not used
	With Pilot Piston, Both Ends	To be plugged on internal pilot type valves.	To be plugged on* internal drain type valves.	Used	Used
	With Pilot Piston, Port "A" End			Used	Not used (plug is required)
	With Pilot Piston, Port "B" End			Not used (plug is required)	Used
Pilot Operated Directional Valves	Spring Centred, No-spring	Used	Used as pilot pres. port	Not used (plug is not required)	
	Spring Offset		Used as pilot drain port		
	Pressure Centred		Used as pilot pres. port	Used	Not used
	With Pilot Piston, Both Ends			Used	Used
	With Pilot Piston, Port "B" End			Not used (plug is required)	Used
	With Pilot Piston Port "A" End		Spring Centred No-spring	Used as pilot pres. port	Used
Spring Offset		Used as pilot drain port			
Manually Operated Directional Valves		Not used (plug is not required)	Not used (plug is not required)	Used	Not used (plug is not required)

* As the thread is provided on the body, plug either port on the sub-plate or port on the body.

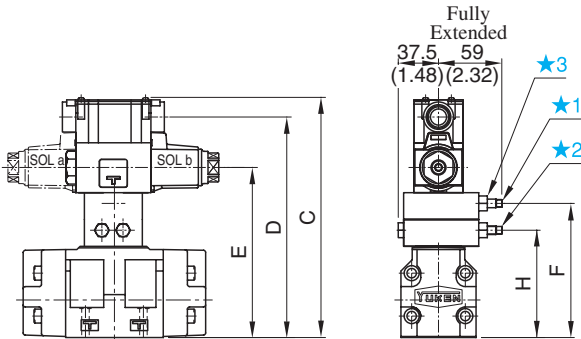
E
Solenoid Controlled Pilot Operated Directional Valves

Options

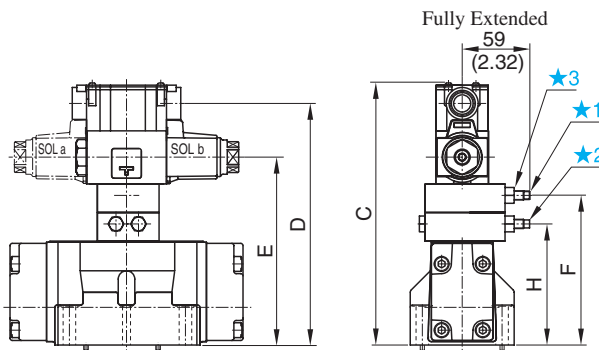
Models with Pilot Choke Valve

■ Terminal Box Type

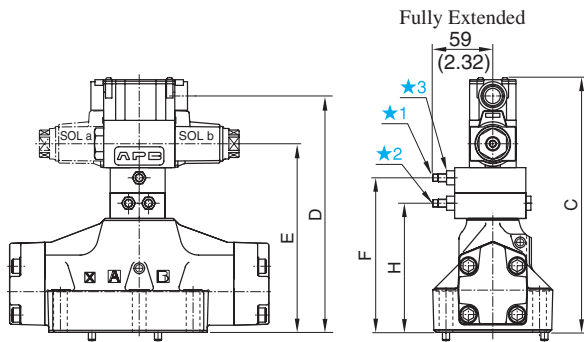
- DSHG-03- *** -C1/C2/C1C2



- (S-)DSHG-04- *** -C1/C2/C1C2

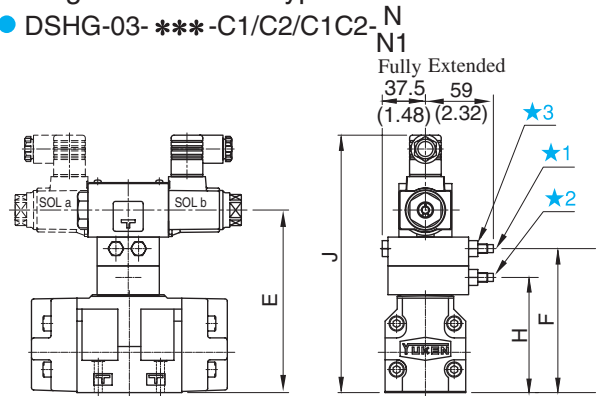


- (S-)DSHG-06⁰⁶/₁₀ - *** -C1/C2/C1C2

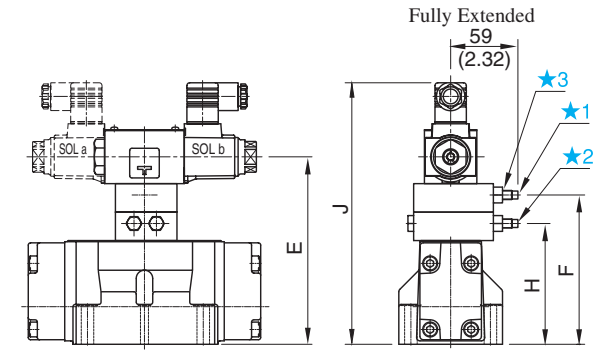


■ Plug-in Connector Type

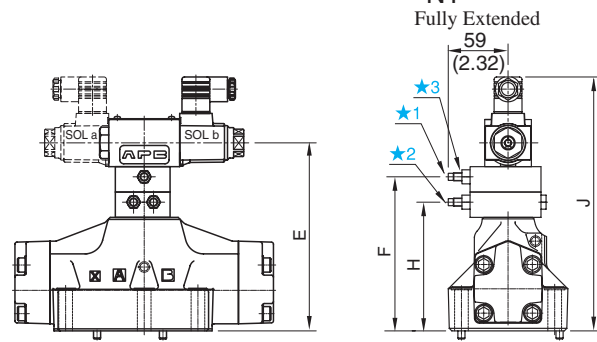
- DSHG-03- *** -C1/C2/C1C2-N_{N1}



- (S-)DSHG-04- *** -C1/C2/C1C2-N_{N1}



- (S-)DSHG-06⁰⁶/₁₀ - *** -C1/C2/C1C2-N_{N1}



- ★1. "C1" Choke Adj. Screw 6 (.24) Hex.
- ★2. "C2" Choke Adj. Screw 6 (.24) Hex.
- ★3. Lock Nut 12 (.47) Hex.

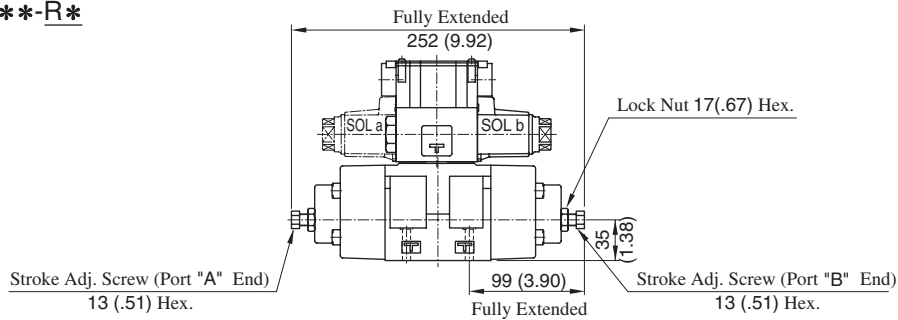
DIMENSIONS IN MILLIMETRES (INCHES)

Model Numbers	Dimensions mm (Inches)								
	C	D	E	F	H	J			
						AC SO L	DC SO L	R SOL	
DSHG-03- *** -C1	198.8 (7.83)	180.5 (7.11)	133.5 (5.26)	100 (3.94)	—	198.5 (7.81)	209.5 (8.25)	212.5 (8.37)	
DSHG-03- *** -C2				—	100 (3.94)				
DSHG-03- *** -C1C2	223.8 (8.81)	205.5 (8.09)	158.5 (6.24)	125 (4.92)	100 (3.94)	223.5 (8.80)	234.5 (9.23)	237.5 (9.35)	
(S-) DSHG-04- *** -C1	204.8 (8.06)	186.5 (7.34)	139.5 (5.49)	106 (4.17)	—	204.5 (8.05)	215.5 (8.48)	218.5 (8.60)	
(S-) DSHG-04- *** -C2				—	106 (4.17)				
(S-) DSHG-04- *** -C1C2	229.8 (9.05)	211.5 (8.33)	164.5 (6.48)	131 (5.16)	106 (4.17)	229.5 (9.04)	240.5 (9.47)	243.5 (9.59)	
(S-) DSHG-06- *** -C1	225.8 (8.89)	207.5 (8.17)	160.5 (6.32)	127 (5.00)	—	225.5 (8.88)	236.5 (9.31)	239.5 (9.43)	
(S-) DSHG-06- *** -C2				—	127 (5.00)				
(S-) DSHG-06- *** -C1C2	250.8 (9.87)	232.5 (9.15)	185.5 (7.30)	152 (5.98)	127 (5.00)	250.5 (9.86)	261.5 (10.30)	264.5 (10.41)	
(S-) DSHG-10- *** -C1	288.8 (11.37)	270.5 (10.65)	223.5 (8.80)	190 (7.48)	—	288.5 (11.36)	299.5 (11.79)	302.5 (11.91)	
(S-) DSHG-10- *** -C2				—	190 (7.48)				
(S-) DSHG-10- *** -C1C2	313.8 (12.35)	295.5 (11.63)	248.5 (9.78)	215 (8.46)	190 (7.48)	313.5 (12.34)	324.5 (12.78)	327.5 (12.89)	

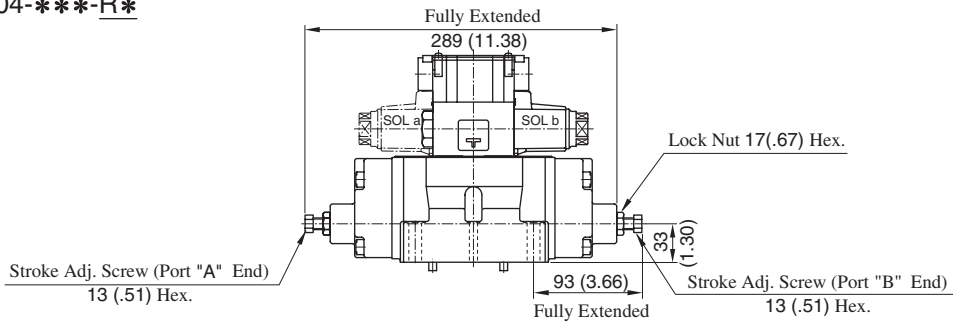
Options

Models with Stroke Adjustment

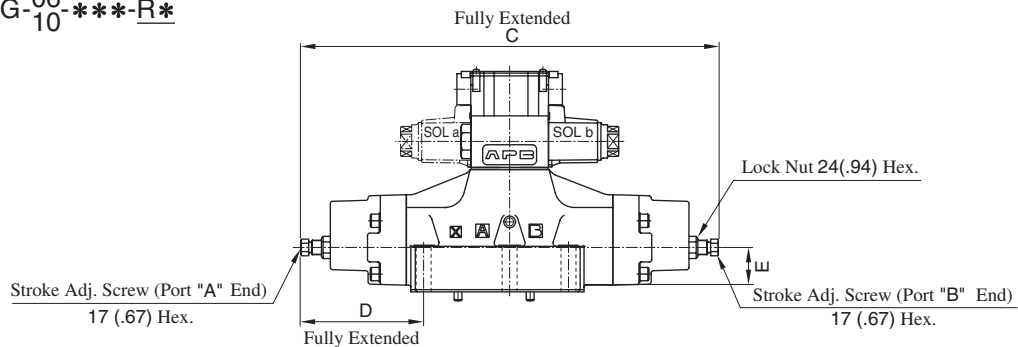
- DSHG-03-***-R*



- (S-)DSHG-04-***-R*



- (S-)DSHG-⁰⁶/₁₀-***-R*

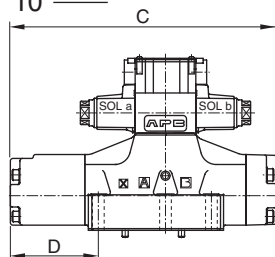


Model Numbers	C	D	E
(S-)DSHG-06-***-R2	376 (14.80)	111 (4.37)	40 (1.57)
(S-)DSHG-10-***-R2	558 (21.97)	164.5 (6.48)	65 (2.56)

DIMENSIONS IN
MILLIMETRES (INCHES)

Pressure Centred Models

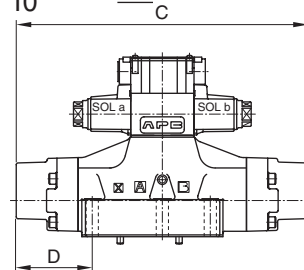
- (S-)DSHG-⁰⁶/₁₀-3H*



Model Numbers	C	D
(S-)DSHG-06-3H*	306.5 (12.07)	102 (4.02)
(S-)DSHG-10-3H*	456 (17.95)	149.5 (5.89)

Models with Pilot Piston

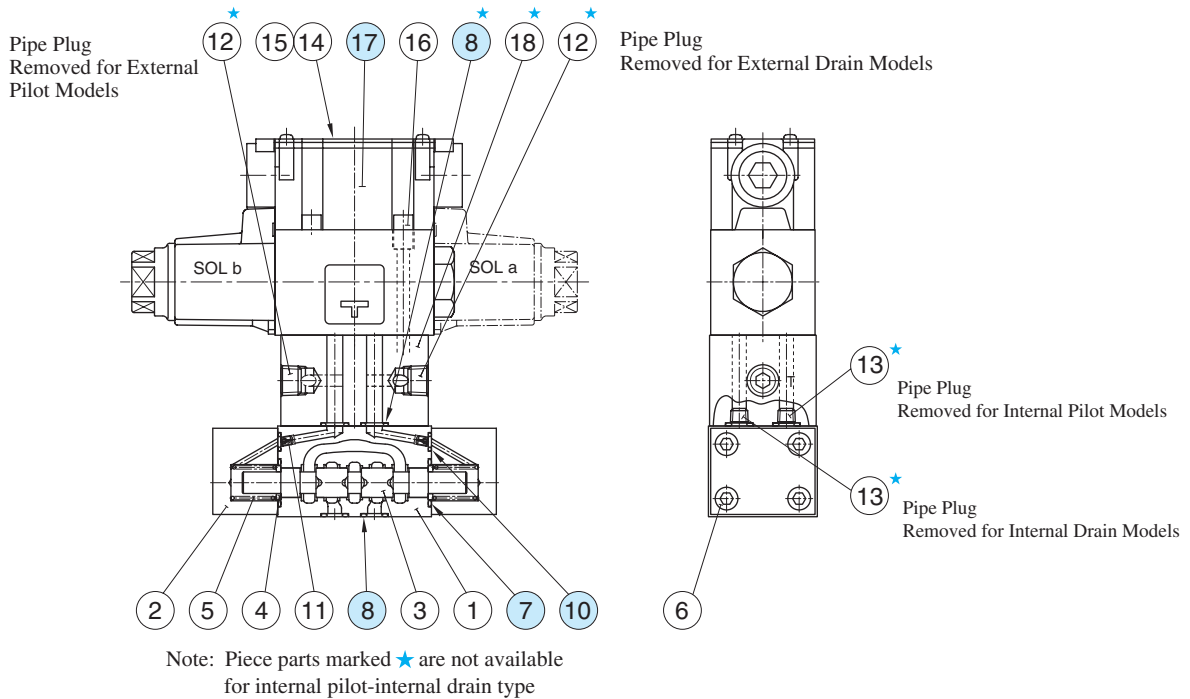
- (S-)DSHG-⁰⁶/₁₀-***-P*



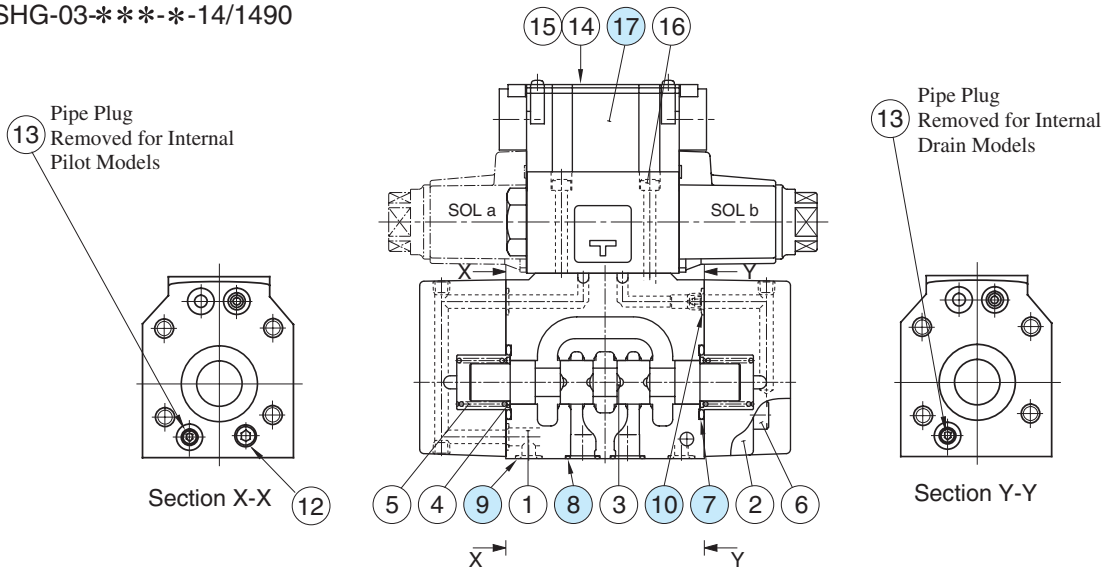
Model Numbers	C	D
(S-)DSHG-06-***-P2	323 (12.72)	84 (3.31)
(S-)DSHG-10-***-P2	479 (18.86)	125 (4.92)

List of Seals and Pilot Valves

DSHG-01-***-14/1480/1490



DSHG-03-***-14/1490



List of Seals

Item	Name	DSHG-01		DSHG-03	
		Part Numbers	Qty.	Part Numbers	Qty.
7	O-Ring	JASO-1018-1A	2	SO-NB-P28	2
8	O-Ring	SO-NB-P9	8(4) [★]	SO-NB-A104	5
9	O-Ring	—	—	SO-NB-P9	2
10	O-Ring	SO-NB-P5	2	SO-NB-P9	6

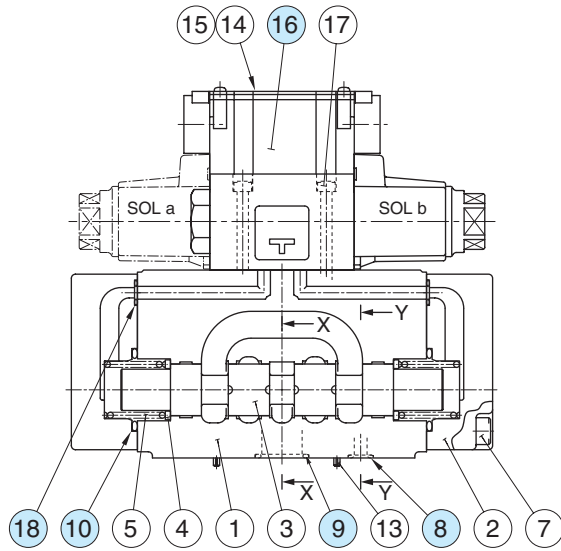
★ Quantities in the () are applicable to internal pilot-internal drain.
 Note: When ordering the o-rings, please specify the seal kit number listed in [page 408](#). In addition to the above o-rings, o-rings for pilot valve is included in the seal kit.
 For the detail of the pilot valve o-rings, see [page 359](#).

Pilot Valves

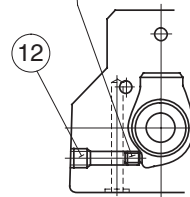
See [page 408](#) for the pilot valve model numbers to be used.

List of Seals and Pilot Valves

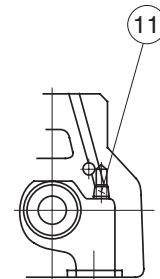
(S-)DSHG-04-***-52/5290



11 Pipe Plug Removed for Internal Drain Models

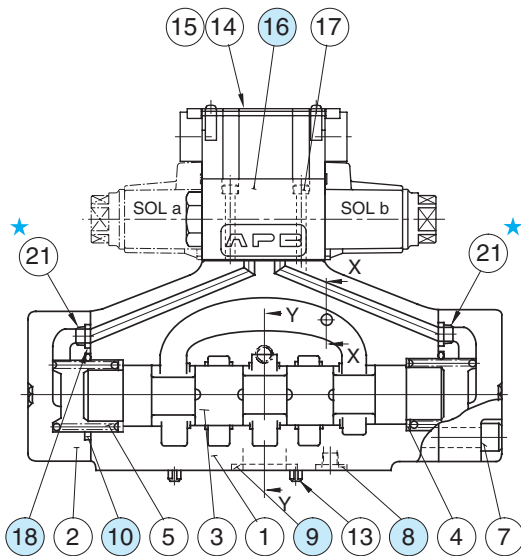


Pipe Plug Removed for Internal Pilot Models

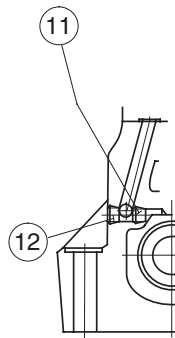


(S-)DSHG-06-***-53/5390

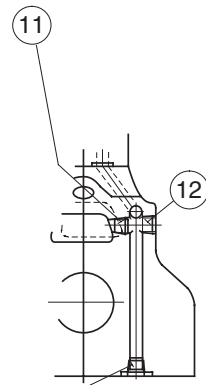
(S-)DSHG-10-***-43/4390



Pipe Plug Removed for Internal Pilot Models



Pipe Plug Removed for Internal Drain Models



11 Pipe Plug Removed for External Drain Models

Note: Item 21 orifice marked ★ is applicable to pressure centred models (3H*) with pilot pressure more than 10 MPa (1450 PSI).

List of Seals

Item	Name	Part Numbers			Qty.
		(S-)DSHG-04	(S-)DSHG-06	(S-)DSHG-10	
8	O-Ring	SO-NB-P9	SO-NB-P14	SO-NB-P20	2
9		SO-NB-P22	SO-NB-P30	SO-NB-P42	4
10		SO-NB-P34	SO-NB-P40	SO-NB-P65	2
18		SO-NB-P9	SO-NB-P10	SO-NB-P14	2

Pilot Valves

See page 408 for the pilot valve model numbers to be used.

Note: When ordering the o-rings, please specify the seal kit number listed in page 408. In addition to the above o-rings, o-rings for pilot valve is included in the seal kit.

For the detail of the pilot valve o-rings, see page 359.

List of Seal Kits and Pilot Valves

Valve Model Numbers	Pilot Valve Model Numbers	Seal Kit Numbers
DSHG-01-3C*-★-▲-14 DSHG-01-3C*-★-N-1480 DSHG-01-3C*-★-▲-1490	DSG-01-3C4-★-▲-70 DSG-01-3C4-★-N-70 DSG-01-3C4-★-▲-7090	KS-DSHG-01-▲-14 (For Internal Pilot-Internal Drain)
DSHG-01-2B*-★-▲-14 DSHG-01-2B*-★-N-1480 DSHG-01-2B*-★-▲-1490	DSG-01-2B2-★-▲-70-L DSG-01-2B2-★-N-70-L DSG-01-2B2-★-▲-7090-L	KS-DSHG-01-ET-▲-14 (Except for Internal Pilot-Internal Drain)
DSHG-03-3C*-★-▲-14 DSHG-03-3C*-★-▲-1490	DSG-01-3C4-★-▲-70 DSG-01-3C4-★-▲-7090	KS-DSHG-03-▲-14
DSHG-03-2B*-★-▲-14 DSHG-03-2B*-★-▲-1490	DSG-01-2B2-★-▲-70 DSG-01-2B2-★-▲-7090	
DSHG-03-2N*-★-▲-14 DSHG-03-2N*-★-▲-1490	DSG-01-2D2-★-▲-70 DSG-01-2D2-★-▲-7090	
(S-)DSHG-04-3C*-★-▲-52 (S-)DSHG-04-3C*-★-▲-5290	DSG-01-3C4-★-▲-70 DSG-01-3C4-★-▲-7090	KS-DSHG-04-▲-52
(S-)DSHG-04-2B*-★-▲-52 (S-)DSHG-04-2B*-★-▲-5290	DSG-01-2B2-★-▲-70 DSG-01-2B2-★-▲-7090	
(S-)DSHG-04-2N*-★-▲-52 (S-)DSHG-04-2N*-★-▲-5290	DSG-01-2D2-★-▲-70 DSG-01-2D2-★-▲-7090	
(S-)DSHG-06-3C*-★-▲-53 (S-)DSHG-06-3C*-★-▲-5390	DSG-01-3C4-★-▲-70 DSG-01-3C4-★-▲-7090	KS-DSHG-06-▲-53
(S-)DSHG-06-2B*-★-▲-53 (S-)DSHG-06-2B*-★-▲-5390	DSG-01-2B2-★-▲-70-L DSG-01-2B2-★-▲-7090-L	
(S-)DSHG-06-2N*-★-▲-53 (S-)DSHG-06-2N*-★-▲-5390	DSG-01-2D2-★-▲-70 DSG-01-2D2-★-▲-7090	
(S-)DSHG-10-3C*-★-▲-43 (S-)DSHG-10-3C*-★-▲-4390	DSG-01-3C4-★-▲-70 DSG-01-3C4-★-▲-7090	KS-DSHG-10-▲-43
(S-)DSHG-10-2B*-★-▲-43 (S-)DSHG-10-2B*-★-▲-4390	DSG-01-2B2-★-▲-70-L DSG-01-2B2-★-▲-7090-L	
(S-)DSHG-10-2N*-★-▲-43 (S-)DSHG-10-2N*-★-▲-4390	DSG-01-2D2-★-▲-70 DSG-01-2D2-★-▲-7090	

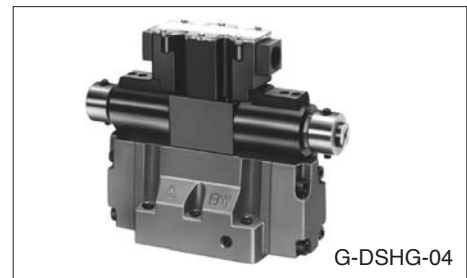
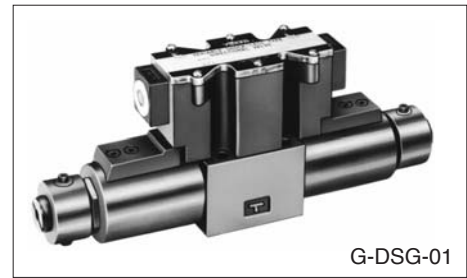
Notes) 1: Fill coil type (a symbol representing current/voltage) in section marked ★. Likewise, in section marked ▲, fill a symbol representing the type of electrical conduit connection (None: Terminal Box Type, N: Plug-in Connector Type).
2: For the details of the pilot valves, see [page 359 to 360](#).

“G” Series Shockless Type Solenoid Operated / Solenoid Controlled Pilot Operated Directional Valves

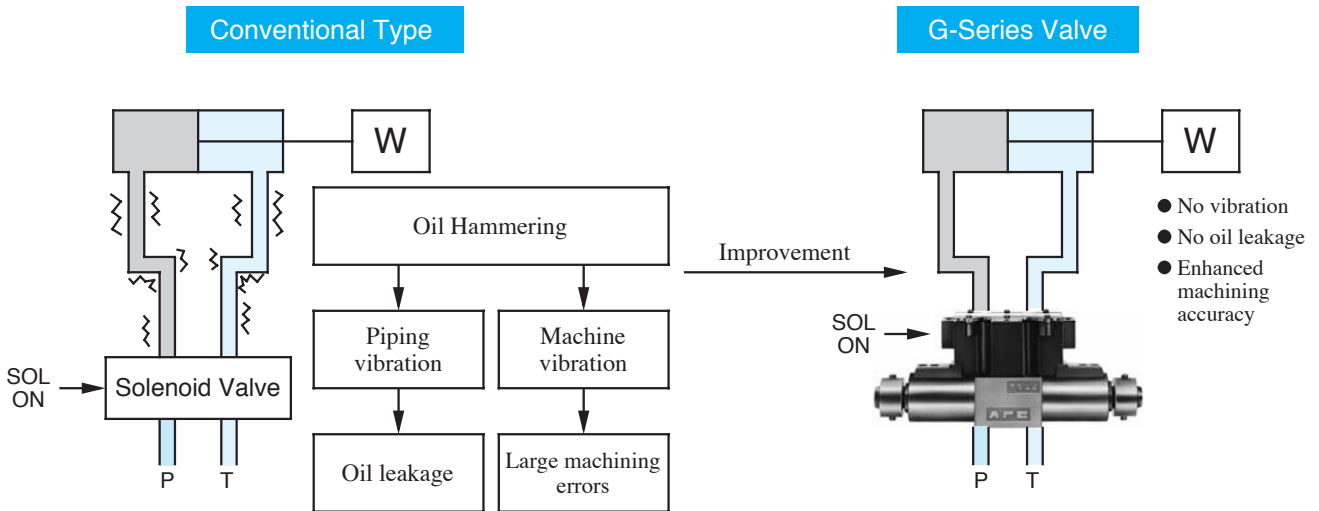
The G-Series Solenoid Operated Directional Valves incorporate electronic circuits to enable adjustment of the spool shifting time.

A special spool shape that minimises shock is used, shocks caused by the actuator starting and stopping, as well as vibration due to oil hammering. The shifting time of conventional Solenoid Operated, Shockless, and Directional Valves is constant and cannot be adjusted.

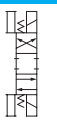
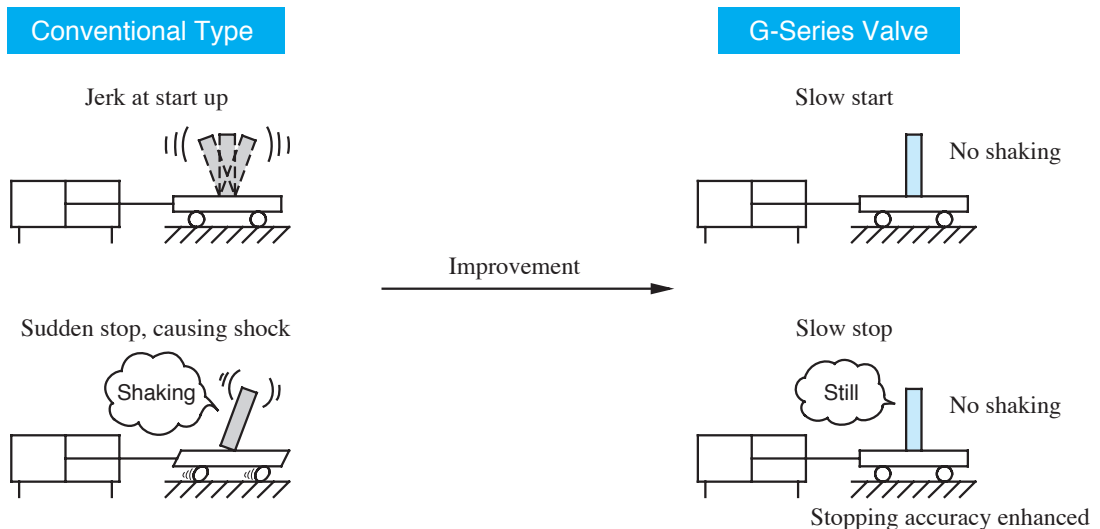
As the shifting time of the G-Series valves can be adjusted, it can be set at an optimal level to minimise shocks to the machine.



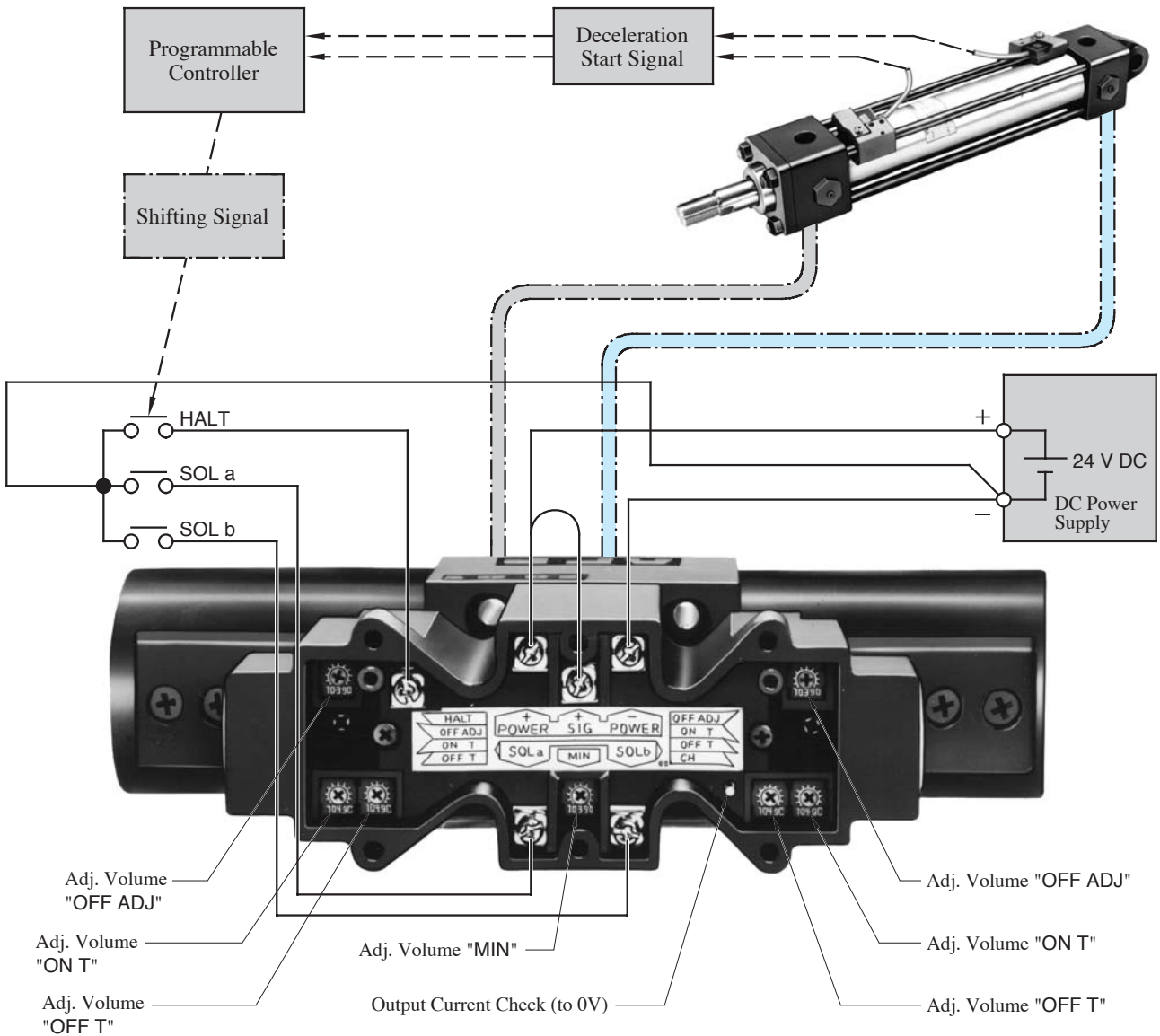
1 Reduces oil hammering during spool changeover.



2 Reduces shock caused by acceleration and deceleration

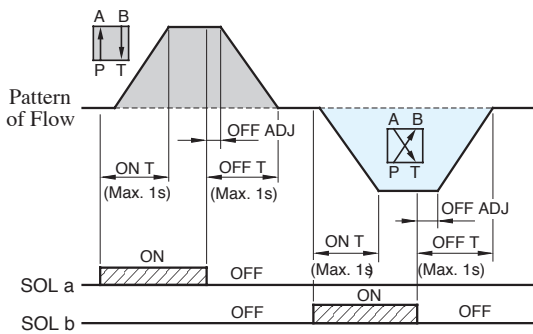


■ System Diagram (Example of sink type wiring)

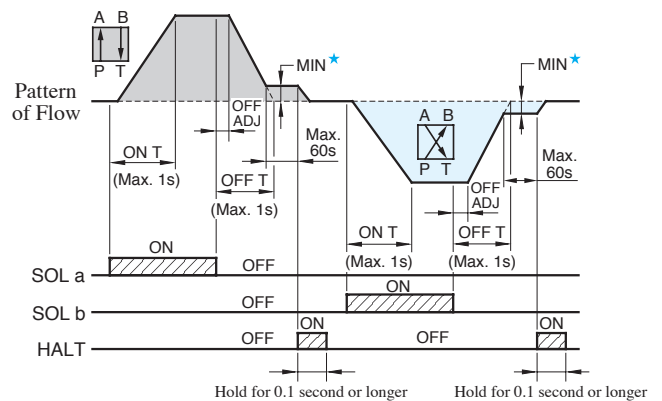


■ Relationships between SOL signals and flow patterns

● Without HALT functions



● With HALT functions



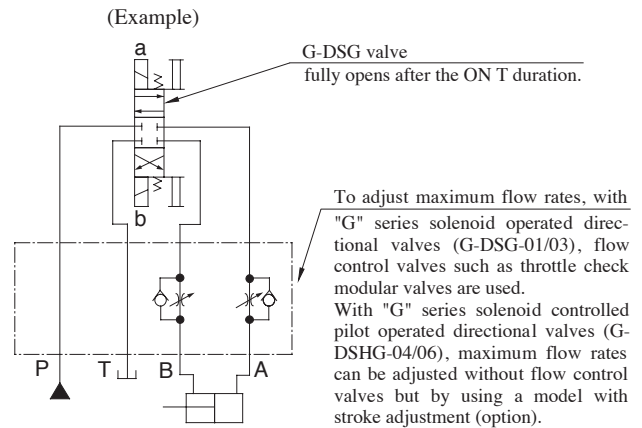
★ The minimum adjustment volume is common for SOL a and b, and it is not possible to set a different volume for each SOL a and b individually. If the HALT functions are not used, set the minimum adjustment volume to zero.

Instructions

Adjustment of maximum flow rate

The G-Series Solenoid Operated Directional Valves cannot be adjusted for maximum flow rates.

To adjust maximum flow rates, use flow control valves. In G-series solenoid controlled pilot operated directional valves (G-DSHG-04/06), the maximum flow rate can be adjusted by use of the valve with stroke adjustment screw of optional extra.

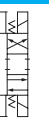
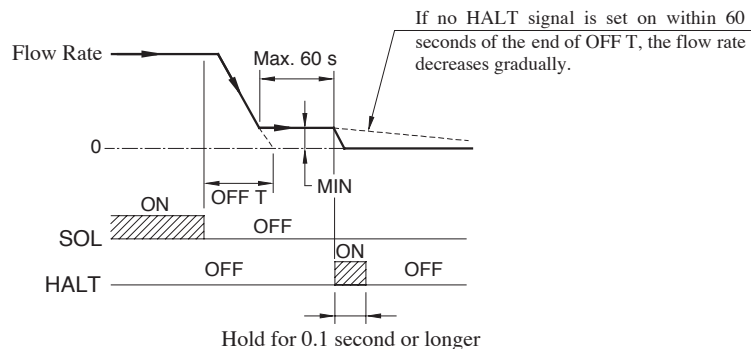


How to use HALT functions

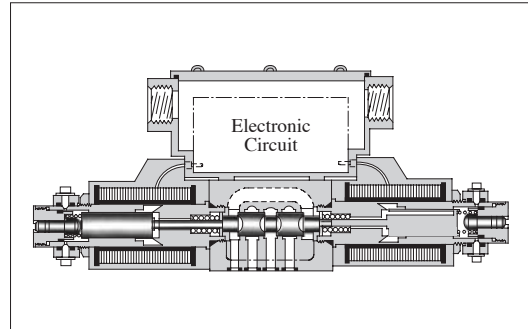
The HALT functions are used to drive the actuator at a low speed to the stop position while keeping a slight flow after OFF T.

A flow rate (min. flow rate) during a low-speed operation can be set with the minimum adjusting volume (The minimum adjusting volume is common for SOL a and b. Individual setting is not possible for SOL a and b.) When HALT signal is on, the min. flow rate becomes zero and the actuator stops. Here, take care to keep the HALT signal on for longer than 0.1 second. The min. flow rate gets to "0" after about 60 seconds following the OFF T. If the HALT functions are not used, set the minimum adjusting volume to zero.

The HALT functions are not applicable to the spool function "2B7".



■ “G” Series Shockless Type Solenoid Operated Directional Valves



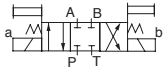
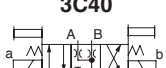


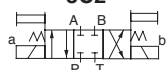

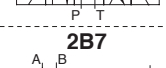
■ Specifications

Descriptions		Model Numbers	G-DSG-01-***-*-50/5090	G-DSG-03-***-*-50/5090
Max. Flow★ ¹	L/min (U.S.GPM)		10 (2.6), 20 (5.3), 30 (7.9), 40 (10.6)	40 (10.6), 60 (15.9), 80 (21.1)
Max. Operating Pres.★ ²	MPa (PSI)		25 (3630)	25 (3630)
Max. T-Line Back Pres.	MPa (PSI)		16 (2320)	16 (2320)
Electric Power Supply	Voltage	24 V DC (21 - 28 V DC Included Ripple); Use a stable power supply		
	Input Power at 24V		36 W	36 W
Shifting signal, low speed operation halt signal (can be used in common with electric power supply).	Voltage	5 - 48 V DC (Use a stable power supply)		
	Current	Constant at 10 mA (A constant-current circuit is used)		
	Input interface	Sink Type, Source Type		
Shifting time range (for ON and OFF)			0.1 - 1 s	0.3 - 1 s
Low speed operation flow rate (min. flow rate) range (for SOL a and b) L/min (U.S.GPM)			0.5 - 5 (.13 - 1.3)	1 - 10 (.26 - 2.6)
Low speed operation flow rate (min. flow rate) hold time		Max. 60 s (After 60 seconds, the flow rate decreases gradually.)		
Ambient Temperature		0 - 50 °C (32 - 122 °F) with circulated air		
Approx. Mass	Single Solenoid		2.1 kg (4.6 lbs.)	5.3 kg (11.7 lbs.)
	Double Solenoid		3.0 kg (6.6 lbs.)	7.5 kg (16.5 lbs.)

★1. The maximum flow rates may vary according to the operating pressure. Refer to Maximum Flow Rates Characteristics on pages 414 and 415 for details.

★2. At pressures more than 21 MPa (3050 PSI), the "shockless effect" is slightly less if compared it with that at 16 MPa (2320 PSI).

Model Number Designation

G-DSG	-01	-10	-2B7	-S	-50	*	-L
Series Number	Valve Size	Metred Flow Capacity	Spool Type	Input Interface	Design Number	Design Standards	Models with Alternate Offset Solenoid
G-DSG : G Series Shockless Type Solenoid Operated Directional Valve, Sub-plate Mounting	01	None: 40 L/min 10 : 10 L/min 20 : 20 L/min	3C2  3C40 	None: Sink Type (Standard) S: Source Type	50	Refer to ★	L Applicable only for 2B7 (Omit if not required) 
		None: 30 L/min 10 : 10 L/min 20 : 20 L/min	2B7 				
	03	None: 80 L/min 40 : 40 L/min 60 : 60 L/min	3C2  3C40 		50		
		None: 60 L/min 40 : 40 L/min	2B7 				

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

Sub-plate

Valve Model Numbers	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	
G-DSG-01	DSGM-01-31	Rc 1/8	DSGM-01-3180	1/8 BSPF	DSGM-01-3190	1/8 NPT	0.8 (1.8)
	DSGM-01X-31	Rc 1/4	DSGM-01X-3180	1/4 BSPF	DSGM-01X-3190	1/4 NPT	0.8 (1.8)
	DSGM-01Y-31	Rc 3/8	—	—	DSGM-01Y-3190	3/8 NPT	0.8 (1.8)
G-DSG-03	DSGM-03-40	Rc 3/8	DSGM-03-2180	3/8 BSPF	DSGM-03-2190	3/8 NPT	3.0 (6.6)
	DSGM-03X-40	Rc 1/2	DSGM-03X-2180	1/2 BSPF	DSGM-03X-2190	1/2 NPT	3.0 (6.6)
	DSGM-03Y-40	Rc 3/4	DSGM-03Y-2180	3/4 BSPF	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.

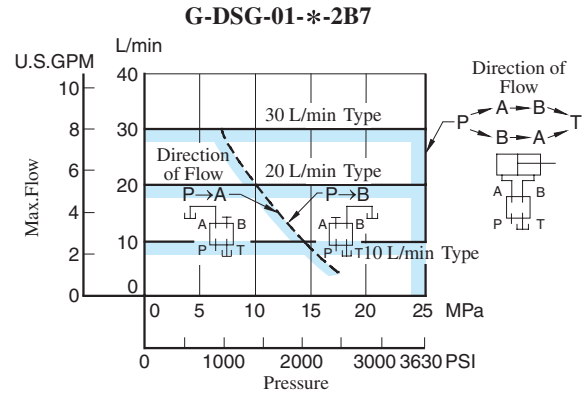
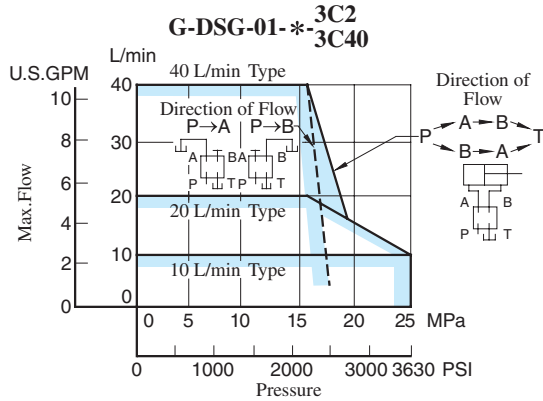
Attachment (Mtg. Bolt)

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

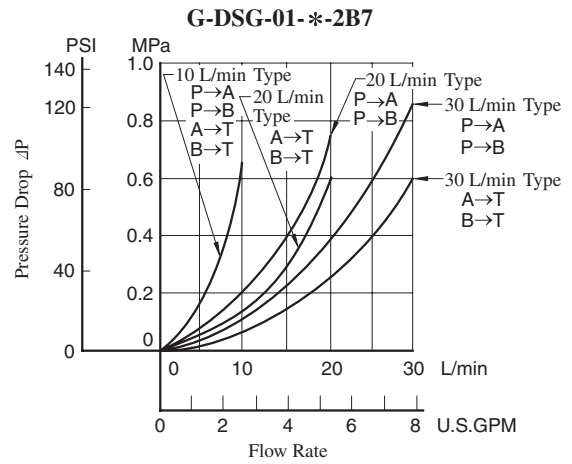
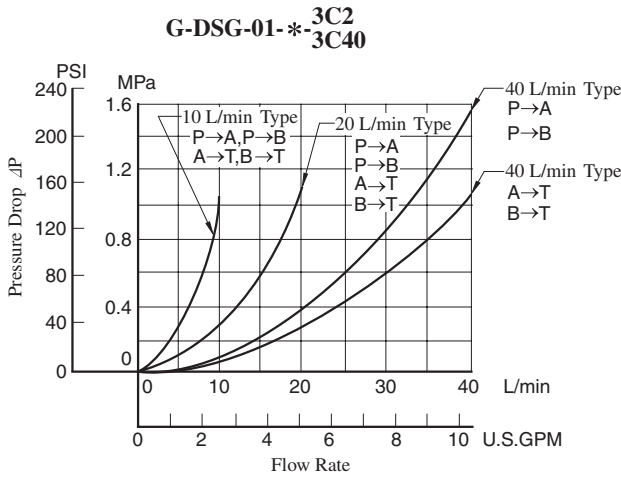
Model Numbers	Socket Head Cap Screw (4 pcs.)		
	Japanese Standard "JIS" & European Design Standard	N. American Design Standard	Tightening Torque
G-DSG-01	M5 × 45 Lg.	No.10-24 UNC × 1-3/4 Lg.	5-7 Nm (44-62 in. lbs.)
G-DSG-03	M6 × 35 Lg.	1/4-20 UNC × 1-1/2 Lg.	12-15 Nm (106-133 in. lbs.)

Typical Performance Characteristics of "G-DSG-01" at Viscosity 30 mm²/s (141 SSU), Specific Gravity 0.850

Maximum Flow Rate



Pressure Drop



- For any other viscosity, multiply the factors in the table right.
- For any other specific gravity (G'), the pressure drop (ΔP') may be obtained from the formula below.

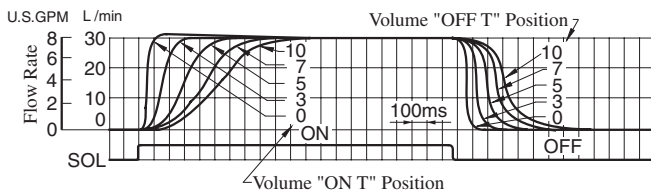
$$\Delta P' = \Delta P (G'/0.850)$$

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		0.84	0.91	1.00	1.07	1.14	1.19	1.24	1.28	1.32	1.35

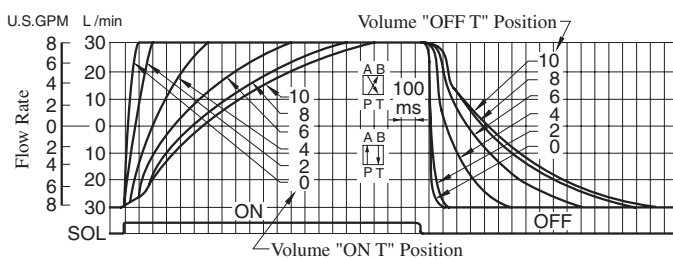
Shifting Characteristics

Supply Pressure : 16 MPa (2320 PSI)
 Flow Rate : 30 L/min (7.9 U.S.GPM)

3C2, 3C40

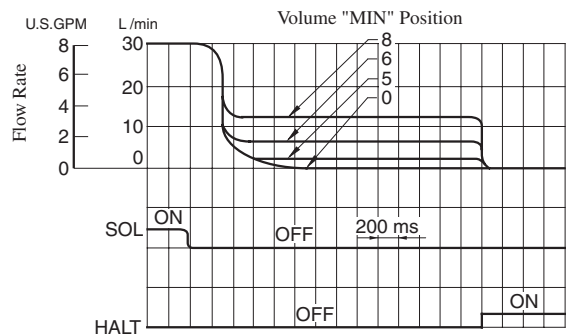


2B7



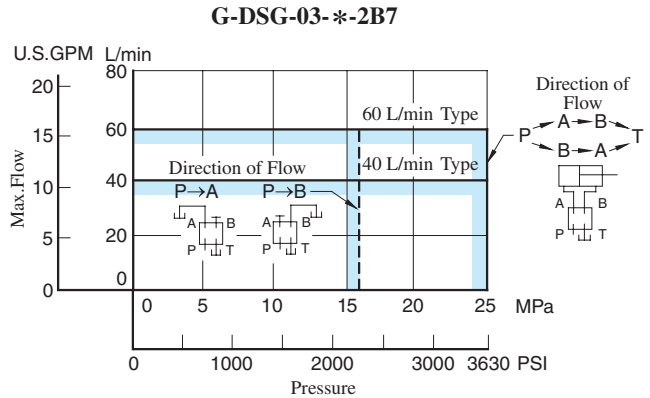
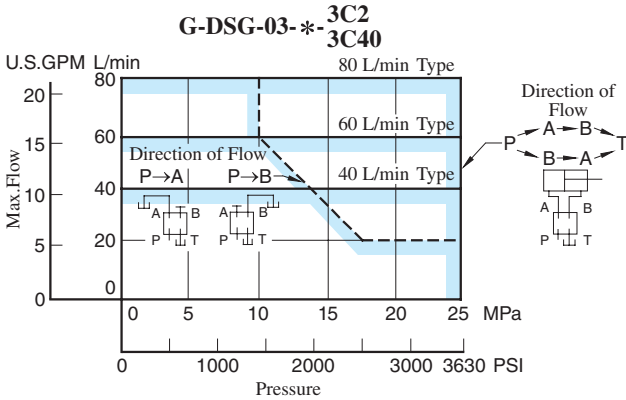
Low Speed Operating Flow Characteristics

Supply Pressure : 16 MPa (2320 PSI)
 Flow Rate : 30 L/min (7.9 U.S.GPM)

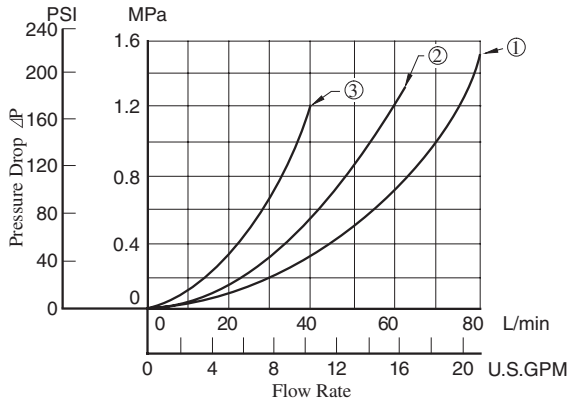


Typical Performance Characteristics of "G-DSG-03" at Viscosity 30 mm²/s (141 SSU), Specific Gravity 0.850

Maximum Flow Rate



Pressure Drop



Model Numbers	Pressure Drop Curve Numbers*
G-DSG-03- ^{3C2} / _{3C40}	①
G-DSG-03-40- ^{3C2} / _{3C40}	③
G-DSG-03-60- ^{3C2} / _{3C40}	②
G-DSG-03-2B7	①
G-DSG-03-40-2B7	③

* The numbers of the pressure drop curves are the same for P→A, P→B, A→T and B→T.

- For any other viscosity, multiply the factors in the table right.
- For any other specific gravity (G'), the pressure drop (ΔP') may be obtained from the formula below.

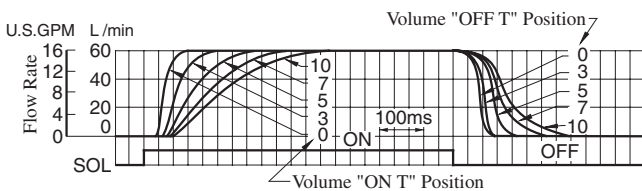
$$\Delta P' = \Delta P (G'/0.850)$$

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

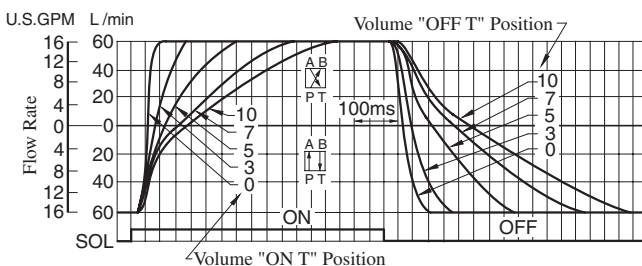
Shifting Characteristics

Supply Pressure : 16 MPa (2320 PSI)
Flow Rate : 60 L/min (15.9 U.S.GPM)

3C2, 3C40

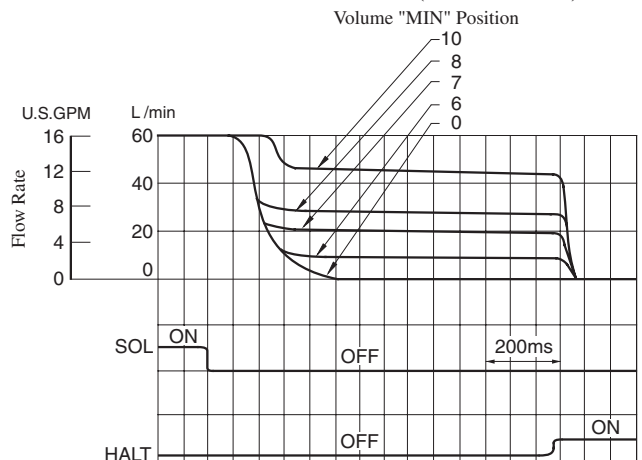


2B7



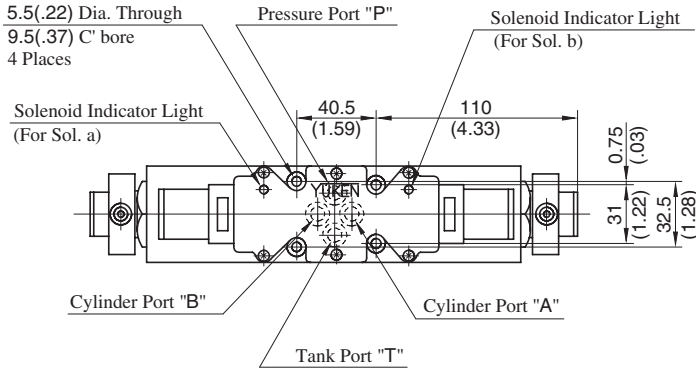
Low Speed Operating Flow Characteristics

Supply Pressure : 16 MPa (2320 PSI)
Flow Rate : 60 L/min (15.9 U.S.GPM)

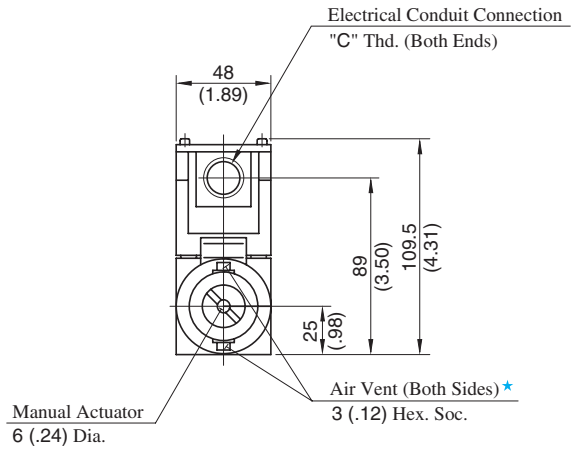
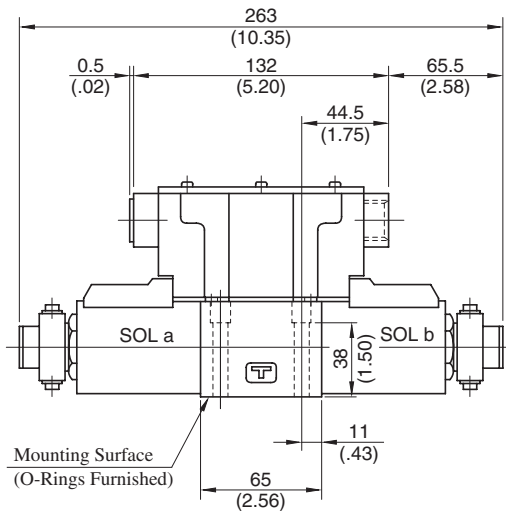


G-DSG-01-**-3C2/3C40-**-50/5090

Mounting Surface:
ISO4401-AB-03-4-A



Model Numbers	"C" Thd.
G-DSG-01-***-**-50	G 1/2
G-DSG-01-***-**-5090	1/2 NPT

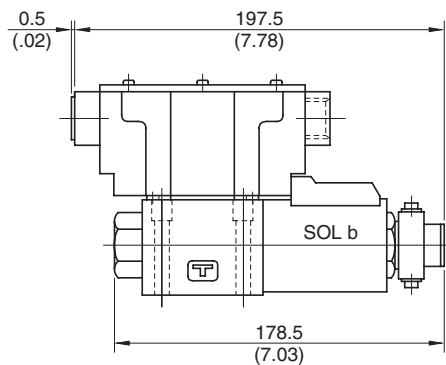


★ Air vent position around valve longitudinal axis can be optionally selected.

Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 356](#).

**DIMENSIONS IN
MILLIMETRES (INCHES)**

G-DSG-01-**-2B7-**-50/5090

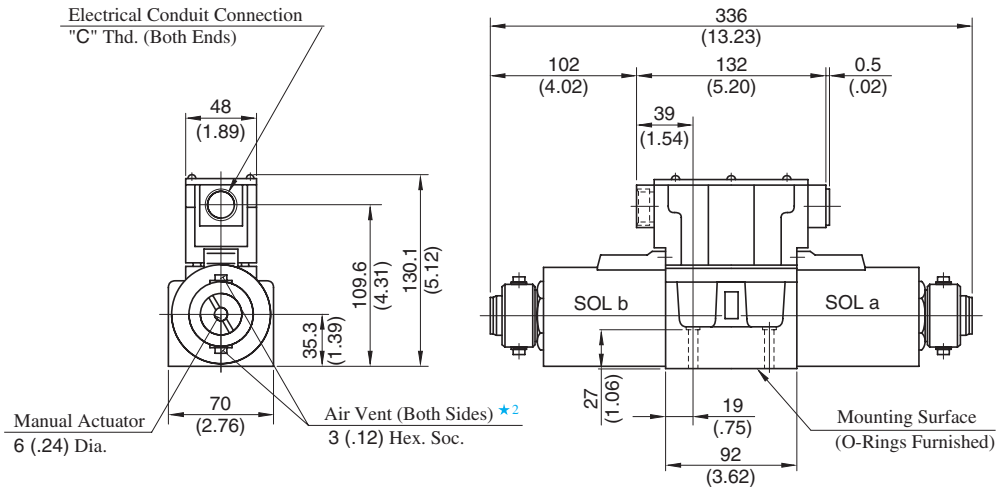
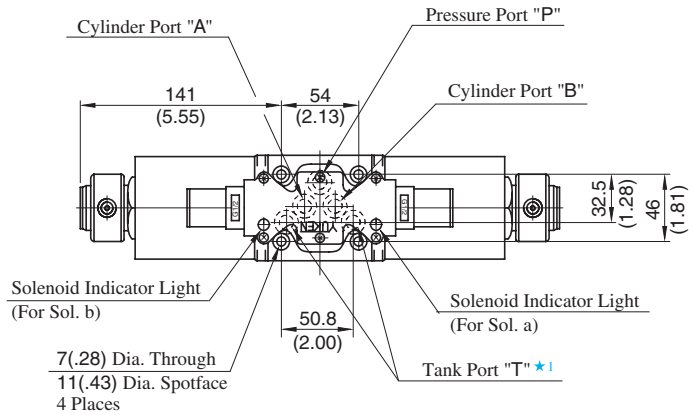


• For other dimensions, refer to the drawing above.

G-DSG-03-**-3C2/3C40-**-50/5090

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

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



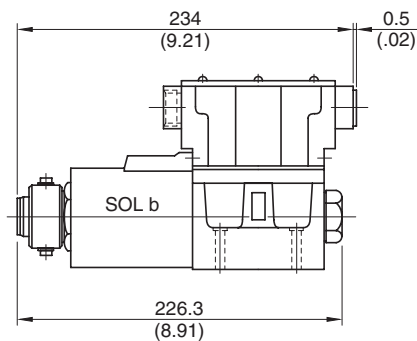
★1. Although the tank port is shown on the left in our sub-plate, either may be used.

★2. Air vent position around valve longitudinal axis can be optionally selected.

Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 373](#).

DIMENSIONS IN
MILLIMETRES (INCHES)

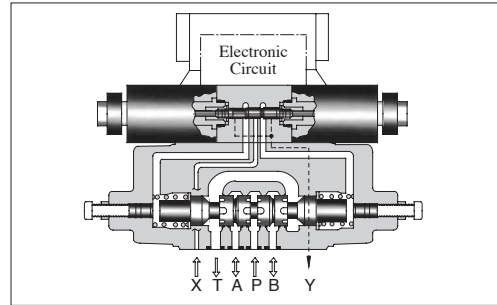
G-DSG-03-**-2B7-**-50/5090



• For other dimensions, refer to the drawing above.

E
 "G" Series Shockless Type
 Solenoid Operated Directional Valves

“G” Series Shockless Type Solenoid Controlled Pilot Operated Directional Valves



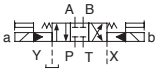

Specifications

Descriptions		Model Numbers	G-DSHG-04-3C*-**-50/5090	G-DSHG-06-3C*-**-50/5090
Max. Flow	L/min (U.S.GPM)		160 (42.3) ★ ¹	250 (66.1) ★ ¹
Max. Operating Pres.	MPa (PSI)		25 (3630)	25 (3630)
Max. T-Line Back Pres.	MPa (PSI)		16 (2320)	16 (2320)
Max. Drain Line Back Pressure	MPa (PSI)		3 (440)	3 (440)
Max. Pilot Pressure	MPa (PSI)		16 (2320)	16 (2320)
Min. Required Pilot Pres.	MPa (PSI)		1.5 (220) ★ ²	
Pilot Flow L/min (U.S.GPM)	at Normal		1 (0.3)	1 (0.3)
	at Transition		4 (1.1)	6 (1.6)
Electric Power Supply	Voltage		24 V DC (21 - 28 V DC Included Ripple): Use a stable power supply	
	Input Power at 24V		36 W	36 W
Shifting signal, low speed operation halt signal (can be used in common with electric power supply)	Voltage		5 - 48 V DC (Use a stable power supply)	
	Current		Constant at 10 mA (A constant-current circuit is used)	
	Input interface		Sink Type, Source Type	
Shifting time range (for ON and OFF)			ON: 0.06 - 1.5 s, OFF: 0.1 - 2 s	ON: 0.1 - 1 s, OFF: 0.2 - 2 s
Low speed operation flow rate (min. flow rate) range (for SOL a and b)	L/min (U.S.GPM)		5 - 20 (1.3 - 5.3)	10 - 30 (2.6 - 7.9)
Low speed operation flow rate (min. flow rate) hold time			Max. 60 s (After 60 seconds, the flow rate decreases gradually.)	
Ambient Temperature			0 - 50 °C (32 - 122 °F) with circulated air	
Approx. Mass			12 kg (26.5 lbs.)	15 kg (33.1 lbs.)

★1. The maximum flow rate is constant irrespective of the working pressure.

★2. Be sure that the difference between pilot pressure and drain port back pressure is larger than the minimum pilot pressure.

Model Number Designation

G-DSHG	-04	-3C2	-E	-R2	-S	-50	*
Series Number	Valve Size	Spool Type	Pilot Connection	Spool Control Modification (Omit if not required)	Input Interface	Design Number	Design Standards
G-DSHG : G Series Shockless Type Solenoid Controlled Pilot Operated Directional Valve, Sub-plate Mounting	04	3C2 	None: Internal Pilot	R2: With Stroke Adjustment, Both Ends RA: With Stroke Adjustment, Port "A" End RB: With Stroke Adjustment, Port "B" End	None: Sink Type (Standard) S: Source Type	50	Refer to ★
	06	3C40 	E: External Pilot			50	

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

Sub-plate

Valve Model Numbers	Japanese Standard "JIS"			European Design Standard			N. American Design Standard		
	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)
G-DSHG-04	DHGM-04-20	Rc 1/2	4.4 (9.7)	DHGM-04-2080	1/2 BSP.F	4.4 (9.7)	DHGM-04-2090	1/2 NPT	4.4 (9.7)
	DHGM-04X-20	Rc 3/4	4.1 (9.0)	DHGM-04X-2080	3/4 BSP.F	4.1 (9.0)	DHGM-04X-2090	3/4 NPT	4.1 (9.0)
G-DSHG-06	DHGM-06-50	Rc 3/4	7.4 (16.3)	DHGM-06-5080	3/4 BSP.F	8.5 (18.7)	DHGM-06-5090	3/4 NPT	7.4 (16.3)
	DHGM-06X-50	Rc 1	7.4 (16.3)	DHGM-06X-5080	1 BSP.F	8.5 (18.7)	DHGM-06X-5090	1 NPT	7.4 (16.3)

● 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.

Attachment (Mtg. Bolts)

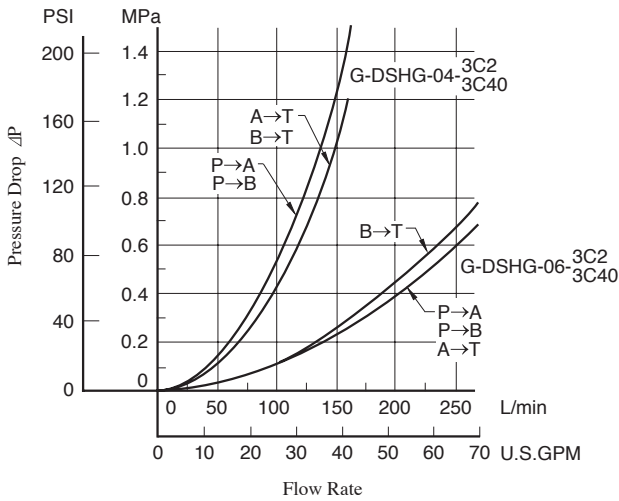
Socket head cap screws in the table below are included.

Model Numbers	Socket Head Cap Screw			
	Japanese Standard "JIS" & European Design Standard	N. American Design Standard	Qty.	Tightening Torque Nm (in. lbs.)
G-DSHG-04	M6 × 45 Lg.	1/4-20 UNC × 1-3/4 Lg.	2	12-15 (106-133)
	M10 × 50 Lg.	3/8-16 UNC × 2 Lg.	4	58-72 (513-637)
G-DSHG-06	M12 × 60 Lg.	1/2-13 UNC × 2-1/2 Lg.	6	100-123 (885-1089)

Hydraulic Fluid: Viscosity 30 mm²/s (141 SSU), Specific Gravity 0.850

Pressure Drop

G-DSHG-04/06-3C2/3C40



● 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

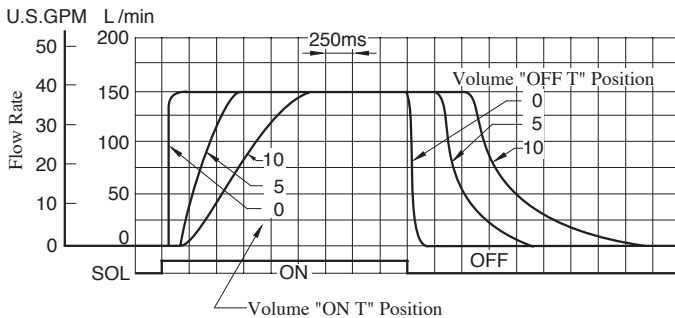
● For any other specific gravity (G'), the pressure drop (ΔP') may be obtained from the formula below.

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

Shifting Characteristics

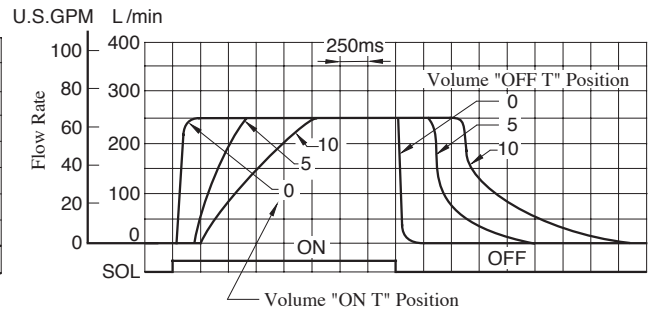
G-DSHG-04-3C2/3C40

Supply Pressure : 16 MPa (2320 PSI)
 Flow Rate : 150 L/min (39.6 U.S.GPM)
 Pilot Pressure : 16 MPa (2320 PSI)



G-DSHG-06-3C2/3C40

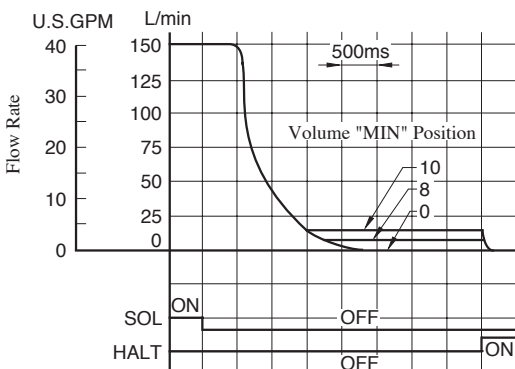
Supply Pressure : 16 MPa (2320 PSI)
 Flow Rate : 250 L/min (66.1 U.S.GPM)
 Pilot Pressure : 16 MPa (2320 PSI)



Low Speed Operating Flow Characteristics

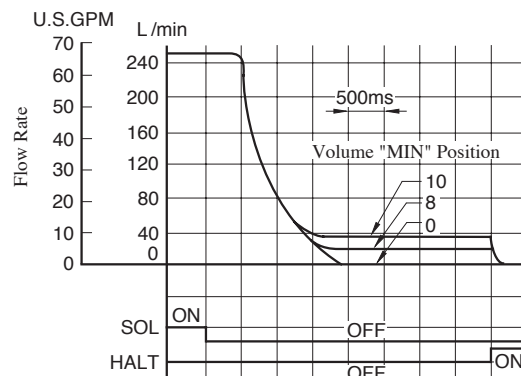
G-DSHG-04-3C2/3C40

Supply Pressure : 16 MPa (2320 PSI)
 Flow Rate : 150 L/min (39.6 U.S.GPM)
 Pilot Pressure : 16 MPa (2320 PSI)



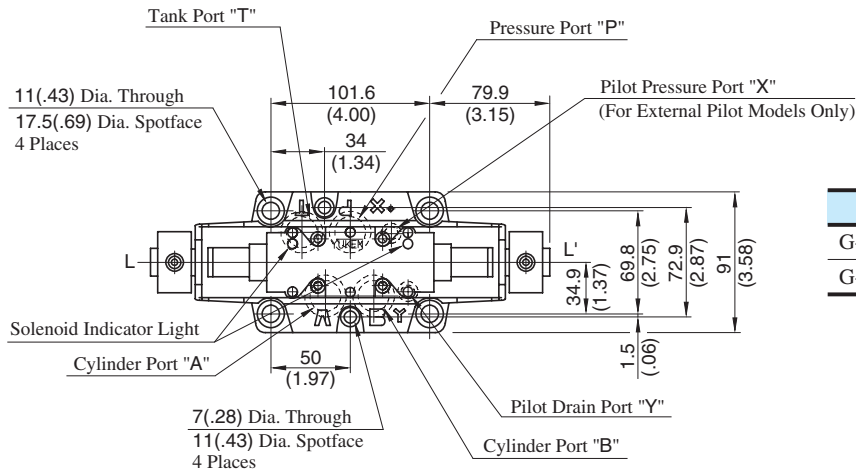
G-DSHG-06-3C2/3C40

Supply Pressure : 16 MPa (2320 PSI)
 Flow Rate : 250 L/min (66.1 U.S.GPM)
 Pilot Pressure : 16 MPa (2320 PSI)

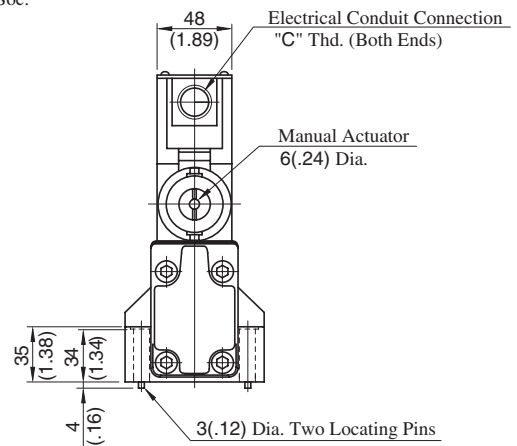
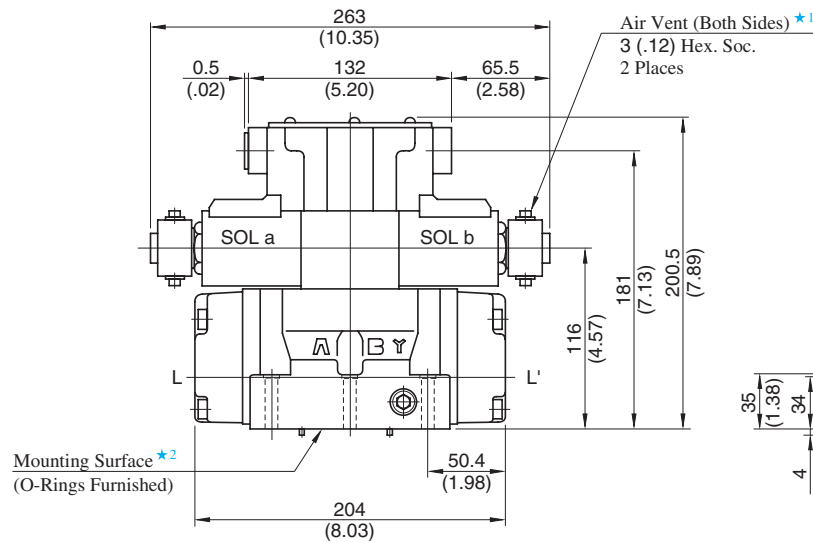


G-DSHG-04-3C*-**-50/5090

Mounting Surface:
ISO 4401-AD-07-4-A



Model Numbers	"C" Thd.
G-DSHG-04-3C*-**-50	G 1/2
G-DSHG-04-3C*-**-5090	1/2 NPT



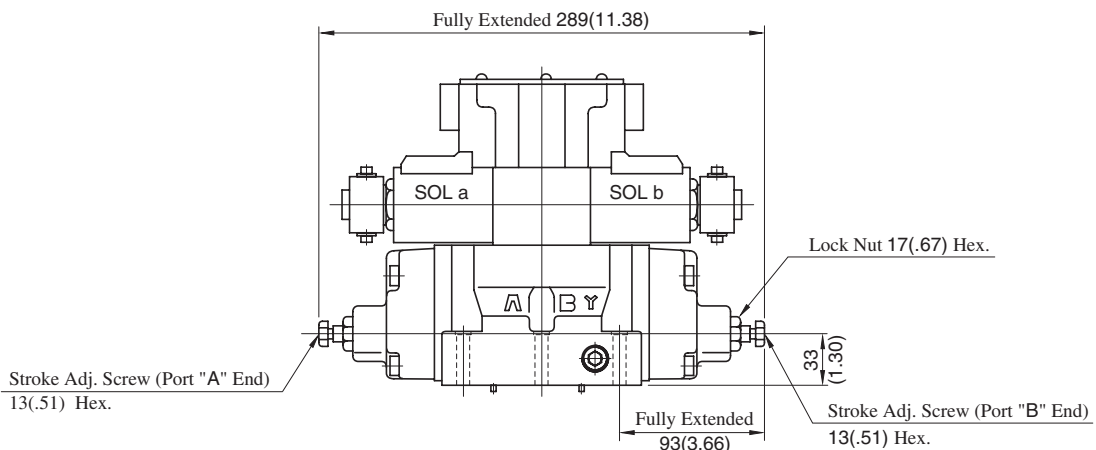
- ★ 1. Air vent position around valve longitudinal axis can be optionally selected.
- ★ 2. O-rings for ports: SO-NB-P22 for P/A/B/T ports
SO-NB-P9 for X/Y ports

Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate on [page 401](#).

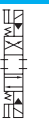
DIMENSIONS IN
MILLIMETRES (INCHES)

● Models with Stroke Adjustment (Option)

G-DSHG-04-3C*-**-R*-**-50/5090



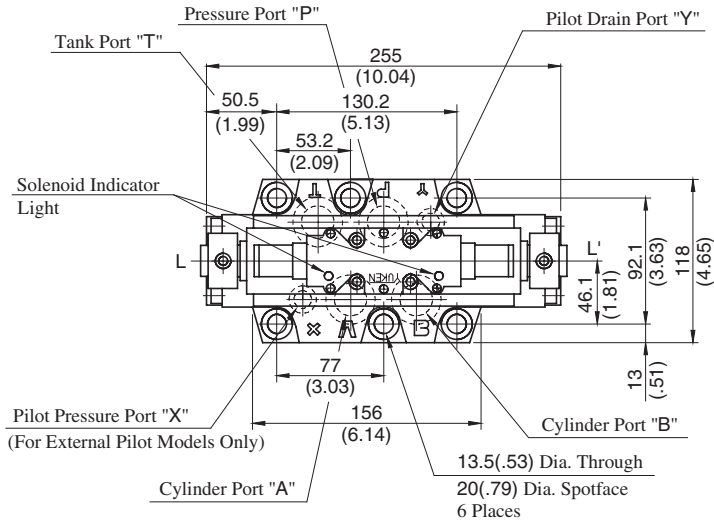
E



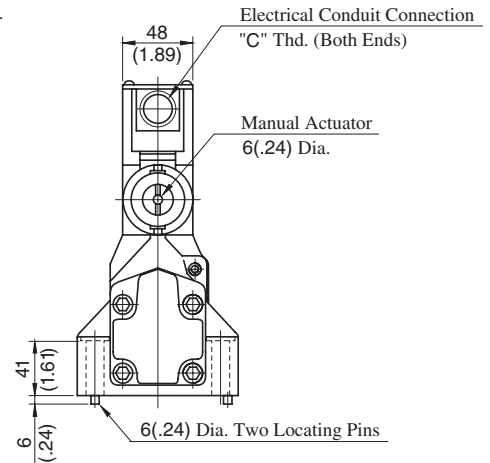
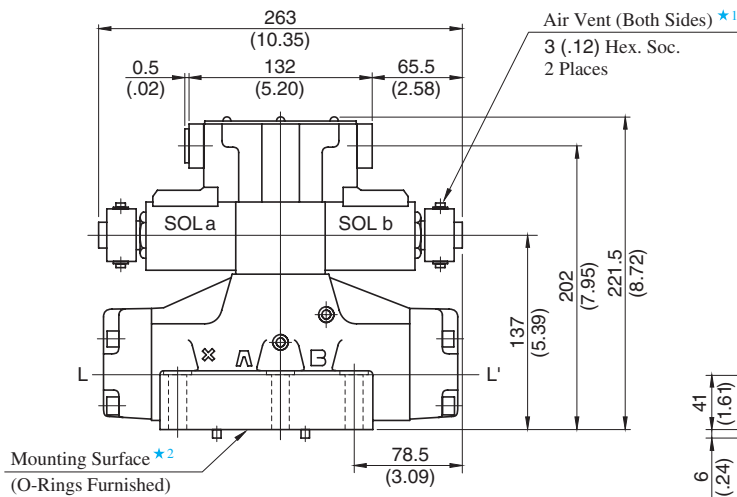
"G" Series Shockless Type
Solenoid Controlled Pilot Directional Valves

G-DSHG-06-3C*-*-50/5090

Mounting Surface:
ISO4401-AE-08-4-A



Model Numbers	"C" Thd.
G-DSHG-06-3C*-*-50	G 1/2
G-DSHG-06-3C*-*-5090	1/2 NPT

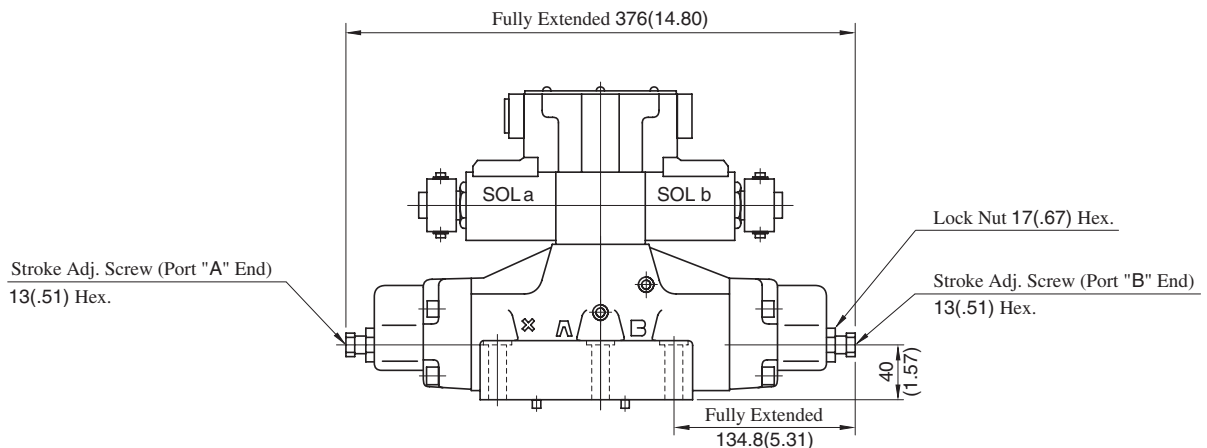


- ★ 1. Air vent position around valve longitudinal axis can be optionally selected.
 - ★ 2. O-rings for ports: SO-NB-P30 for P/A/B/T ports
SO-NB-P14 for X/Y ports
- Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 403](#).

DIMENSIONS IN
MILLIMETRES (INCHES)

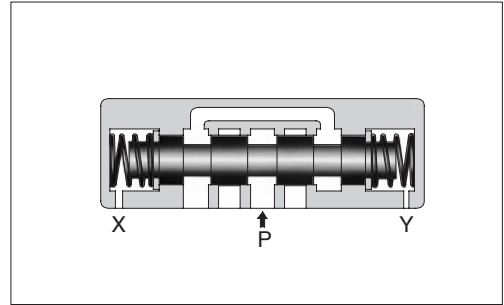
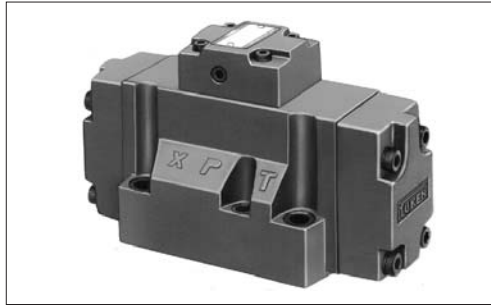
● **Models with Stroke Adjustment (Option)**

G-DSHG-06-3C*-*-R*-*-50/5090



Pilot Operated Directional Valves

These valves perform a change over of spool by hydraulic pilot and shift the direction of oil flow.

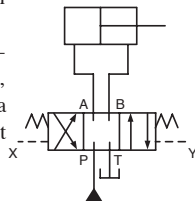


Specifications

Model Numbers	Maximum Flow L/min (U.S.GPM)				Max. Operating Pressure MPa (PSI)	Max. Pilot Pressure MPa (PSI)	Min. Required Pilot Pressure MPa (PSI)	Max. T-Line Back Pressure MPa (PSI)	Approx. Mass kg (lbs.)
	10 MPa (1450 PSI)	16 MPa (2320 PSI)	25 MPa (3630 PSI)	31.5 MPa (4570 PSI)					
DHG-04-3C*-50*	300 (79.3) ^{*1}	300 (79.3) ^{*1}	300 (79.3) ^{*1}	300 (79.3) ^{*1}	31.5 (4570)	25 (3630)	0.8 (120)	21 (3050)	7.4 (16.3)
DHG-04-2N*-50*	300 (79.3)	300 (79.3)	300 (79.3)	300 (79.3)					7.4 (16.3)
DHG-04-2B*-50*	130 (34.3)	70 (18.5)	70 (18.5)	60 (15.9)					7.8 (17.2)
DHG-06-3C*-50*	500 (132) ^{*2}	500 (132) ^{*2}	500 (132) ^{*2}	500 (132) ^{*2}	31.5 (4570)	25 (3630)	0.8 (120) ^{*4}	21 (3050)	11.2 (24.7)
DHG-06-2N*-50*	500 (132)	500 (132)	500 (132)	500 (132)					11.2 (24.7)
DHG-06-2B*-50*	140 (37)	100 (26.4)	90 (23.8)	80 (21.1)					11.7 (25.8)
DHG-06-3H*-50*	500 (132)	500 (132)	500 (132)	500 (132) ^{*3}					12.0 (26.5)
DHG-10-3C*-40*	1100 (291) ^{*4}	1100 (291) ^{*4}	1100 (291) ^{*4}	1100 (291) ^{*4}	31.5 (4570)	25 (3630)	1 (150) ^{*4}	21 (3050)	43.8 (96.6)
DHG-10-2N*-40*	1100 (291)	1100 (291)	1100 (291)	1100 (291)					43.8 (96.6)
DHG-10-2B*-40*	460 (122)	300 (79.3)	220 (58.1)	200 (52.8)					45.6 (101)
DHG-10-3H*-40*	1100 (291)	1100 (291)	1100 (291) ^{*3}	1100 (291) ^{*3}					51.6 (114)

Note: Max. flow in the table above represents the value in the flow condition of P→A →B→T (or P→B→A→T) as shown in the circuit diagram right.

In case the valves is used in the condition that either A or B port is blocked, the maximum flow differs according to a hydraulic circuit, therefore, please consult us for details.



- ★ 1. Varies depending on the spool type. For more information, see page 388 for the List of “Standard Model and Maximum Flow” (DSHG-04) for Solenoid Controlled Pilot Operated Directional Valves.
- ★ 2. Varies depending on the spool type and pilot pressure. For more information, see page 389 for the List of “Standard Model and Maximum Flow” (DSHG-06) related to the Solenoid Controlled Pilot Operated Directional Valves.
- ★ 3. Varies depending on the spool type and pilot pressure. For more information, see page 390 for the List of “Standard Model and Maximum Flow” (DSHG-10) related to the Solenoid Controlled Pilot Operated Directional Valves.
- ★ 4. Minimum Pilot Pressure for the models with pilot piston is 1.8 MPa (260 PSI).

Yuken can offer flanged connection valves described below.
Consult us for the details.

Model Numbers	Rated Flow L/min (U.S.GPM)	Max. Operating Pres. MPa (PSI)
DHF-16-***-30*	500 (132)	21 (3050)
DHF-24-***-26*	1200 (317)	
DHF-32-***-21*	2400 (634)	

Pressure Drop

Same as those for Solenoid Controlled Pilot Operated Directional Valves. See pages 392 and 393 for the related information.

Instruction

- In case of Spring Offset Models, directly connect the pilot pressure port "Y" to the reservoir as a drain port.



Model Number Designation

F-	DH	G	-04	-2	B	2	A	-C2	-RA	-H	-50	*	
Special Seals	Series Number	Type of Connection	Valve Size	Number of Valve Positions	Spool-Spring Arrangement	Spool Type	Special Two Position Valve	Model with Pilot Choke Valve (Options) *2	Spool Control Modification (Options) *2	Built-in Orifice for Pilot Line	Design Number	Design Standard	
F: Special Seals for Phosphate ester type fluids (Omit if not required)	DH: Pilot Operated Directional Valve	G: Sub-plate Mounting	04	3	C: Spring Centred H: Pressure Centred (Option) *2 N: No-Spring B: Spring Offset	2, 3 4, 40 5, 6 60, 7 9, 10 11, 12	A*3, B*3 (Omit if not required)	C2: With C2 Choke	R2: With Stroke Adjustment, Both Ends RA: With Stroke Adjustment, Port A End RB: With Stroke Adjustment, Port B End P2: With Pilot Piston, Both Ends PA: With Pilot Piston, Port A End PB: With Pilot Piston, Port B End	—	H: Refer to *4	50	Refer to *5
			06									50	
			10									40	

Refer to *1

- ★ 1. For various combination, see the List of Valve Types below.
- ★ 2. For the option combinations of the Type (Valve Size) and Options, see the List of Options below.
- ★ 3. Refer to the column "valves using neutral position and side position" (Special 2-position valve) on page 426.
- ★ 4. In spool-spring arrangement "H" (pressure centred models), in case the pilot pressure is more than 10 MPa (150PSI), please specify that the valve should have the built-in orifice to the pilot line.
- ★ 5. Design Standards: None..... Japanese Standard "JIS" and European Design Standard 90..... N. American Design Standard

List of Valve Type

Spool Type	Valve Types				
	Three Positions		Two Positions		
	Spring Centred	Pressure Centred *	No-Spring	Spring Offset	
	Graphic Symbols				
2		3C2	3H2	2N2	2B2
3		3C3	3H3	2N3	2B3
4		3C4	3H4	2N4	2B4
40		3C40	3H40	2N40	2B40
5		3C5	3H5		
6		3C6	3H6		
60		3C60	3H60		
7		3C7	3H7	2N7	2B7
9		3C9	3H9		
10		3C10	3H10		
11		3C11	3H11		
12		3C12	3H12		

★: Pressure Centered Models are not available for the Valve Size of "04".

List of Options

Model Numbers	Option Code							
	3H*	C2	R2	RA	RB	P2	PA	PB
DHG-04-3C*	×	○	○	○	○	×	×	×
DHG-04-2N*	×	○	○	○	○	×	×	×
DHG-04-2B*	×	○	×	○	×	×	×	×
DHG-06-3C*	×	○	○	○	○	○	○	○
DHG-06-2N*	×	○	○	○	○	○	○	○
DHG-06-2B*	×	○	×	○	×	×	○	×
DHG-06-3H*	○	○	×	×	×	×	×	×
DHG-10-3C*	×	○	○	○	○	○	○	○
DHG-10-2N*	×	○	○	○	○	○	○	○
DHG-10-2B*	×	○	×	○	×	×	○	×
DHG-10-3H*	○	○	×	×	×	×	○	×

Note. ○ Mark: Available
× Mark: Not Available

Sub-plate

Valve Model Numbers	Japanese Standard "JIS"			European Design Standard			N. American Design Standard		
	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)
DHG-04	DHGM-04-20	Rc 1/2	4.4 (9.7)	DHGM-04-2080	1/2 BSP.F	4.4 (9.7)	DHGM-04-2090	1/2 NPT	4.4 (9.7)
	DHGM-04X-20	Rc 3/4	4.1 (9.0)	DHGM-04X-2080	3/4 BSP.F	4.1 (9.0)	DHGM-04X-2090	3/4 NPT	4.1 (9.0)
DHG-06	DHGM-06-50	Rc 3/4	7.4 (16.3)	DHGM-06-5080	3/4 BSP.F	8.5 (18.7)	DHGM-06-5090	3/4 NPT	7.4 (16.3)
	DHGM-06X-50	Rc 1	7.4 (16.3)	DHGM-06X-5080	1 BSP.F	8.5 (18.7)	DHGM-06X-5090	1 NPT	7.4 (16.3)
DHG-10	DHGM-10-40	Rc 1-1/4	21.5 (47.4)	DHGM-10-4080	1-1/4 BSP.F	21.5 (47.4)	DHGM-10-4090	1-1/4 NPT	21.5 (47.4)
	DHGM-10X-40	Rc 1-1/2	21.5 (47.4)	DHGM-10X-4080	1-1/2 BSP.F	21.5 (47.4)	DHGM-10X-4090	1-1/2 NPT	21.5 (47.4)

- 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.
- Sub-plates are shared with those for Solenoid Controlled Pilot Operated Directional Valves. Refer to [pages 401 to 403](#) for dimensions.

Mounting Bolts

Model Numbers	Socket Head Cap Screw			
	Japanese Standard "JIS" European Design Standard	N. American Design Standard	Qty.	Tightening Torque Nm (in. lbs)
DHG-04	M6 × 45 Lg.	1/4-20 UNC × 1-3/4 Lg.	2	12-15 (106-133)
	M10 × 50 Lg.	3/8-16 UNC × 2 Lg.	4	58-72 (513-637)
DHG-06	M12 × 60 Lg.	1/2-13 UNC × 2-1/2 Lg.	6	100-123 (885-1089)
DHG-10	M20 × 75 Lg.	3/8-16 UNC × 2 Lg.	6	473-585 (4186-5177)

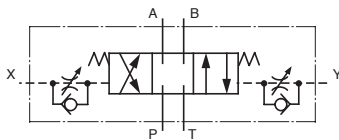
Options

Models with Pilot Choke Adjustment (C2)

When the adjustment screw is turned clockwise, changeover speed of the spool becomes slow. In case of the spring centred valves in particular, making slow of the returning speed of the spool to the neutral position is possible with a C2 choke valve. These choke valves can be used in combination with valves of spring centred, no spring, spring offset, pressure centred and the valves with stroke adjustment.

Graphic Symbols

Spring Centred Models

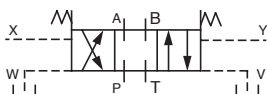


Models with Pilot Piston (P*)

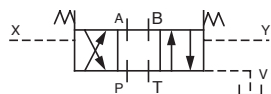
The valves with a pilot piston can be used when the high speed changeover of the spool is required. However, please note that in case of spring centred valves, there is no change in the returning speed of the spool to the neutral position even with the pilot piston.

Graphic Symbols

Spring Centred Models with Pilot Piston on Both Ends (P2)



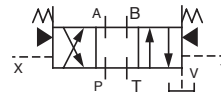
Spring Centred Models with Pilot Piston on Port "A" End (PA)



Pressure Centred Models (3H*)

The pressure centred type can be used when the returning of the spool to the neutral position is required to be done firmly.

Graphic Symbol

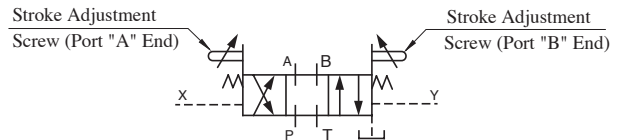


Models with Stroke Adjustment (R*)

When the adjustment screw is screwed in, the spool stroke becomes short and flow rate reduces

Graphic Symbol

Spring Centred Models with Stroke Adjustment on Both Ends (R2)



Additional Mass of Options

Add the mass described below to the mass of standard models on [page 423](#) if options are required.

kg (lbs.)

Model Numbers	With Pilot Choke Valve	With Pilot Piston		With Stroke Adjustment	
		P2	PA PB	R2	RA RB
DHG-04	0.65 (1.4)	—	—	1.0 (2.2)	0.5 (1.1)
DHG-06	0.65 (1.4)	1.0 (2.2)	0.5 (1.1)	1.2 (2.6)	0.6 (1.3)
DHG-10	0.65 (1.4)	3.6(7.9)	1.8 (4.0)	3.7 (8.2)	1.85 (4.1)

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

In addition to the standard two positions valves (2B*), the following two types of two positions valves are available: valves with neutral position and pilot Y pressure position (2B*A), valves with neutral position and pilot X pressure position (2B*B).

Model Numbers	Graphic Symbols
04 DHG-06-2B* <u>A</u> 10	
DHG-* <u>-2B2A</u>	
DHG-* <u>-2B3A</u>	
DHG-* <u>-2B4A</u>	
DHG-* <u>-2B40A</u>	
DHG-* <u>-2B5A</u>	
DHG-* <u>-2B6A</u>	
DHG-* <u>-2B60A</u>	
DHG-* <u>-2B7A</u>	
DHG-* <u>-2B9A</u>	
DHG-* <u>-2B10A</u>	
DHG-* <u>-2B11A</u>	
DHG-* <u>-2B12A</u>	

Model Numbers	Graphic Symbols
04 DHG-06-2B* <u>B</u> 10	
DHG-* <u>-2B2B</u>	
DHG-* <u>-2B3B</u>	
DHG-* <u>-2B4B</u>	
DHG-* <u>-2B40B</u>	
DHG-* <u>-2B5B</u>	
DHG-* <u>-2B6B</u>	
DHG-* <u>-2B60B</u>	
DHG-* <u>-2B7B</u>	
DHG-* <u>-2B9B</u>	
DHG-* <u>-2B10B</u>	
DHG-* <u>-2B11B</u>	
DHG-* <u>-2B12B</u>	

DHG-04-***-50/5090

DIMENSIONS IN MILLIMETRES (INCHES)

Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate on [page 401](#).

Mounting Surface: ISO 4401-AD-07-4-A

Options

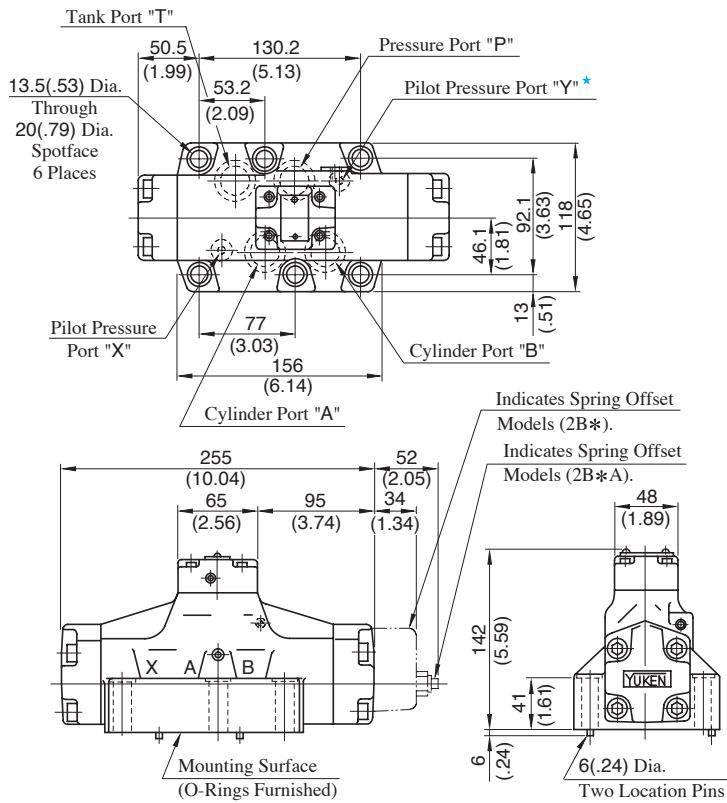
- **Models with Pilot Choke Valve**
DHG-04-***-C2
- **Models with Stroke Adj. (R*)**

Outside dimensions are the same as those of the main valve of Solenoid Controlled Pilot Operated Directional Valves (DSHG-04). See [page 405](#).

★ For Spring Offset Models (2B*, 2B*A), it functions as drain port. When that model is used, directly connect it to the reservoir.

DHG-06-***-50/5090

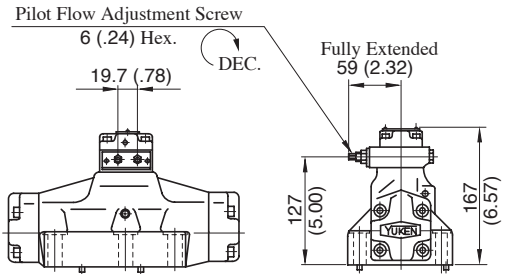
Mounting surface: ISO 4401-AE-08-4-A



Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 402](#).

Options

- **Models with Pilot Choke Valve**
DHG-06-***-C2



- **Pressure Centred Models (3H*)**
- **Models with Stroke Adjustment (R*)**
- **Models with Pilot Piston (P*)**

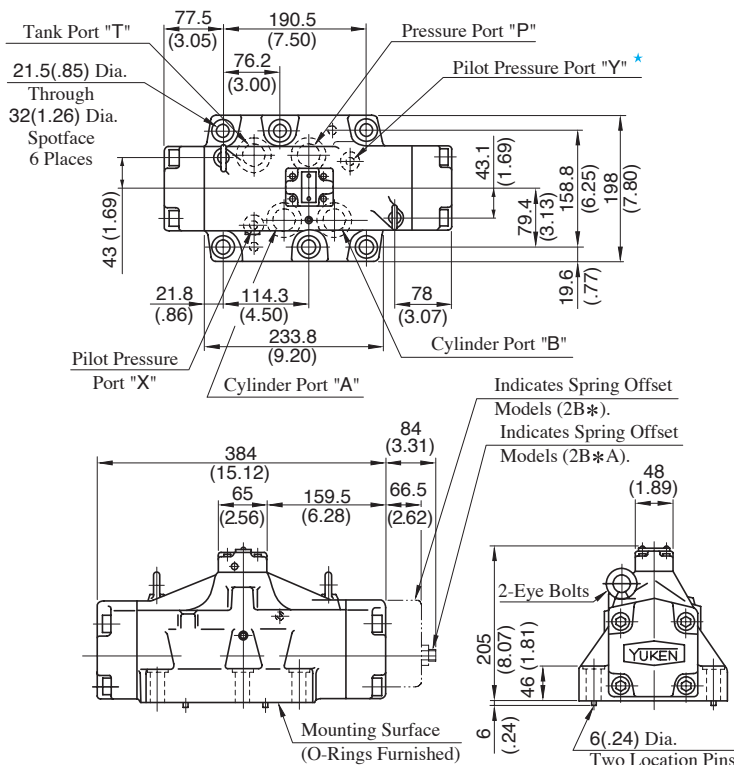
The outside dimensions of the above options are the same as those of the main valve of Solenoid Controlled Pilot Operated Directional Valve (DSHG-06). See [page 405](#).

★ In case of Spring Offset Model (2B*, 2B*^A/_B), it functions as a drain port. When that model is used, directly connect it to the reservoir.

DIMENSIONS IN
MILLIMETRES (INCHES)

DHG-10-***-40/4090

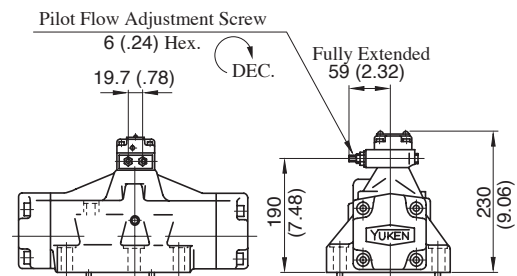
Mounting surface: ISO 4401-AF-10-4-A



Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 403](#).

Options

- **Models with Pilot Choke Valve**
DHG-10-***-C2



- **Pressure Centred Models (3H*)**
- **Models with Stroke Adjustment (R*)**
- **Models with Pilot Piston (P*)**

The outside dimensions of the above options are the same as those of the main valve of Solenoid Controlled Pilot Operated Directional Valves (DSHG-10). See [page 405](#).

★ In case of Spring Offset Model (2B*, 2B*^A/_B), in functions as a drain port. When that model is used, directly connect it to the reservoir.

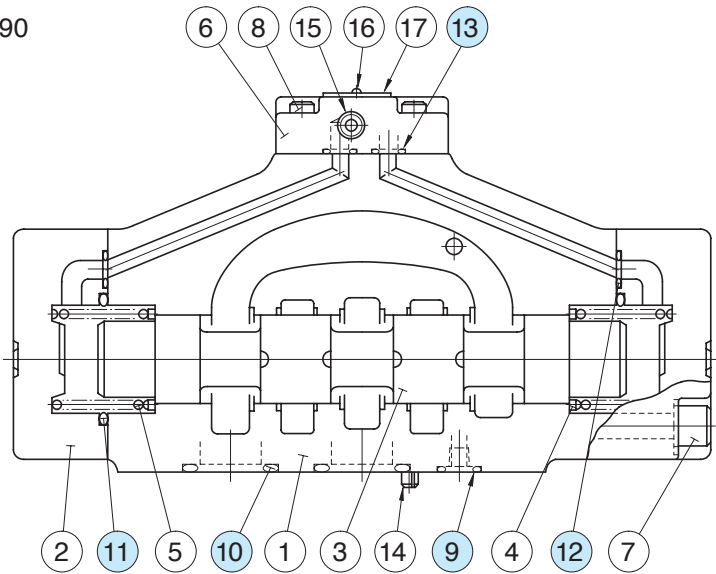


■ List of Seals

DHG-04-***-50/5090

DHG-06-***-50/5090

DHG-10-***-40/4090



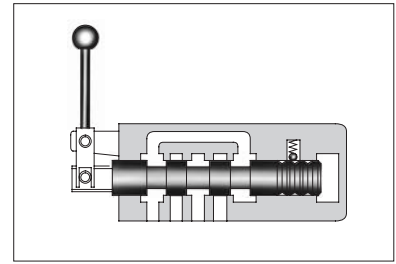
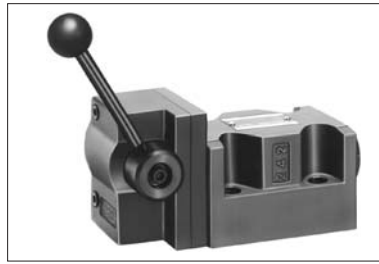
Item	Name of Parts	Part Numbers			Qty
		DHG-04	DHG-06	DHG-10	
9	O-Ring	SO-NB-P9	SO-NB-P14	SO-NB-P20	2
10	O-Ring	SO-NB-P22	SO-NB-P30	SO-NB-P42	4
11	O-Ring	SO-NB-P34	SO-NB-P40	SO-NB-G65	2
12	O-Ring	SO-NB-P9	SO-NB-P10	SO-NB-P14	2
13	O-Ring	SO-NB-P9	SO-NB-P9	SO-NB-P9	4

Note: When ordering the o-rings, please specify the seal kit number from the table below.

Valve Model Numbers	Seal Kit Numbers
DHG-04-***-50/5090	KS-DHG-04-50
DHG-06-***-50/5090	KS-DHG-06-50
DHG-10-***-40/4090	KS-DHG-10-40

Manually Operated Directional Valves

These valves may be used to manually shift the spool position and change the direction of oil flow.



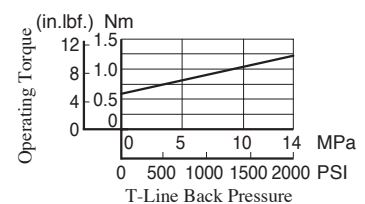
Specifications

Model Numbers	Maximum Flow L/min (U.S.GPM)				Max. Operating Pressure MPa (PSI)	Max. T-Line Back Pressure MPa (PSI)	Approx. Mass kg (lbs.)
	7 MPa (1020 PSI)	14 MPa (2030 PSI)	21 MPa (3050 PSI)	31.5 MPa (4570 PSI)			
Threaded Connections	DMT-03-3C*-50*	100 (26.4) ^{*1}	100 (26.4) ^{*1}	100 (26.4) ^{*1}	25 (3630)	16 (2320)	5.0 (11.0)
	DMT-03-3D*-50*	100 (26.4)	100 (26.4)	100 (26.4)			
	DMT-03-2D*-50*	100 (26.4)	100 (26.4)	100 (26.4)			
	DMT-03-2B*-50*	100 (26.4) ^{*1}	100 (26.4) ^{*1}	100 (26.4) ^{*1}			
	DMT-06*-3C*-30*	300 {200} ^{*2} (79.3 {52.8})	300 {120} ^{*2} (79.3 {31.7})	300 {100} ^{*2} (79.3 {26.4})	21 (3050)	At time spool shift is required: 7 (1020) At time spool shift is not required: 21 (3050)	12.9 (28.5)
	DMT-06*-3D*-30*	300 (79.3)	300 (79.3)	300 (79.3)			
	DMT-06*-2D*-30*	300 (79.3)	300 (79.3)	300 (79.3)			
	DMT-06*-2B*-30*	200 (52.8)	120 (31.7)	100 (26.4)			
Sub-Plate Mounting	DMT-10*-3C*-30*	500 {315} ^{*2} (132 {83.2})	500 {315} ^{*2} (132 {83.2})	500 {315} ^{*2} (132 {83.2})	21 (3050)	At time spool shift is required: 7 (1020) At time spool shift is not required: 21 (3050)	22 (48.5)
	DMT-10*-3D*-30*	500 (132)	500 (132)	500 (132)			
	DMT-10*-2D*-30*	500 (132)	500 (132)	500 (132)			
	DMT-10*-2B*-30*	315 (83.2)	315 (83.2)	315 (83.2)			
Sub-Plate Mounting	DMG-01-3C*-10*	35 (9.2)	35 (9.2)	35 (9.2)	25 (3630)	14 (2030) ^{*5}	1.8 (4.0)
	DMG-01-3D*-10*						
	DMG-01-2D*-10*						
	DMG-01-2B*-10*						
Sub-Plate Mounting	DMG-03-3C*-50*	100 (26.4) ^{*1}	100 (26.4) ^{*1}	100 (26.4) ^{*1}	25 (3630)	16 (2320)	4.0 (8.8)
	DMG-03-3D*-50*	100 (26.4)	100 (26.4)	100 (26.4)			
	DMG-03-2D*-50*	100 (26.4)	100 (26.4)	100 (26.4)			
	DMG-03-2B*-50*	100 (26.4) ^{*1}	100 (26.4) ^{*1}	100 (26.4) ^{*1}			
Sub-Plate Mounting	DMG-04-3C*-21*	200 (52.8) ^{*3}	200 (52.8) ^{*3}	105 (27.7) ^{*3}	21 (3050)	21 (3050) ^{*6}	7.4 (16.3)
	DMG-04-3D*-21*	200 (52.8)	200 (52.8)	200 (52.8)			
	DMG-04-2D*-21*	200 (52.8)	200 (52.8)	200 (52.8)			
	DMG-04-2B*-21*	90 (23.8)	60 (15.9)	50 (13.2)			7.9 (17.4)
Sub-Plate Mounting	DMG-06-3C*-50*	500 (132)	500 (132)	500 (132)	31.5 (4570)	21 (3050) ^{*6}	11.5 (25.4)
	DMG-06-3D*-50*	500 (132)	500 (132)	500 (132)			
	DMG-06-2D*-50*	500 (132)	500 (132)	500 (132)			
	DMG-06-2B*-50*	420 (111)	300 (79.3)	250 (66.1)			12 (26.5)
Sub-Plate Mounting	DMG-10-3C*-40*	1100 (291) ^{*4}	1100 (291) ^{*4}	1100 (291) ^{*4}	31.5 (4570)	21 (3050) ^{*6}	48.2 (106)
	DMG-10-3D*-40*	1100 (291)	1100 (291)	1100 (291)			
	DMG-10-2D*-40*	1100 (291)	1100 (291)	1100 (291)			
	DMG-10-2B*-40*	670 (177)	350 (92.5)	260 (68.7)			50 (110)

Note: The maximum flow means the limited flow without inducing any abnormality to the operation (changeover) of the valve. For details, please refer to the "List of Standard Models and Maximum Flow" on pages 386 to 390.

- ★ 1. Varies depending on the spool type. For details, see the "List of Standard Model and Maximum Flows" for DSG-03 Series Solenoid Operated Directional Valves (page 364 and 366 at 50 Hz rated voltage).
- ★ 2. The figures in parentheses indicate Max. flow for 3C3,3C5, 3C6 and 3C60.
- ★ 3. Varies depending on the spool type. For the details, see the table in the following page.
- ★ 4. Varies depending on the spool type. Same as DSHG-10 (at pilot pressure of 1.5 MPa (220 PSI). See page 390.
- ★ 5. Lever operating torque varies depends on the T-line back pressure. See the right-hand figure.
- ★ 6. If the T-Line back pressure exceeds 7 MPa (1020 PSI), directly connect the drain port to the reservoir.

DMG-01 Lever Operating Torque



Model Number Designation

F-	DM	T	-03	-2	B	2	A	-50	*		
Special Seals	Series Number	Type of Connection	Valve Size	No. of Valve Position	Spool-Spring Arrangement	Spool Type	Special Two Position Valve	Design Number	Design Standard		
F: Special Seals for Phosphate ester fluids (Omit if not required)	DM: Manually Operated Directional Valves	T: Threaded Connection	03	3	C: Spring Centred	2, 3 4, 40 5, 6 60, 7	A*, B* (Omit if not required)	50	None: Japanese Std. "JIS"		
			06 (Piping size 3/4)							80: European Design Std.	
			06X (Piping size 1)								90: N. American Design Std.
			10 (Piping size 1-1/4)								
			10X (Piping size 1-1/2)								
			01								
		03	2	D: No-Spring Detented	8, 9	10, 11	12	None: Japanese Std. "JIS" and European Design Std.			
		04									
		06									
		10									
G: Sub-plate Mounting			See the table below for combinations.								

* Refer to column "valves using neutral position and side position" (special 2-position valve) on page 431.

Yuken can offer flanged connection valves described below. Consult us for the details.

Model Numbers	Rated Flow L/min (U.S.GPM)	Max. Operating Pressure MPa (PSI)
DMF-10-***-30*	315 (83.2)	21 (3050)
DMF-16-***-31*	400 (106)	

List of Spool Type

Spool Type	DMG-01			DMT-03 DMG-03			DMT-06* DMT-10*		DMG-04 DMG-06 DMG-10	
	3C 3D	2D	2B	3C 3D	2D	2B	3C 3D	2D 2B	3C 3D	2D 2B
2	○	○	○	○	○	○	○	○	○	○
3	○	○	○	○	—	○	○	○	○	○
4	○	—	—	○	—	—	○	○	○	○
40	○	—	—	○	—	—	○	○	○	○
5	○	—	—	—	—	—	—	—	—	—
6	—	—	—	—	—	—	—	—	○	—
60	○	—	—	○	—	—	—	—	○	—
7	○	○	—	—	—	—	○	○	○	○
8	○	○	○	—	—	—	○	○	○	—
9	○	—	—	○	—	—	○	—	○	—
10	○	—	—	○	—	—	○	—	○	—
11	○	—	—	—	—	—	○	—	○	—
12	○	—	—	○	—	—	○	—	○	—

Maximum Flow of DMG-04-3C*

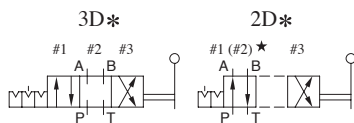
Model Numbers	Max. Flow L/min (U.S.GPM)		
	7 MPa(1020 PSI)	14 MPa(2030 PSI)	21 MPa(3050 PSI)
DMG-04-3C2	200 (52.8)	130 (34.3)	85 (22.5)
DMG-04-3C3	180 (47.6)	90 (23.8)	70 (18.5)
DMG-04-3C4	200 (52.8)	200 (52.8)	90 (23.8)
DMG-04-3C40	200 (52.8)	200 (52.8)	105 (27.7)
DMG-04-3C5	80 (21.1)	50 (13.2)	40 (10.6)
DMG-04-3C6	90 (23.8)	60 (15.9)	55 (14.5)
DMG-04-3C60	140 (37.0)	70 (18.5)	55 (14.5)
DMG-04-3C7	200 (52.8)	75 (19.8)	55 (14.5)
DMG-04-3C9	200 (52.8)	125 (33.0)	100 (26.4)
DMG-04-3C10	200 (52.8)	130 (34.3)	85 (22.5)
DMG-04-3C11	200 (52.8)	150 (39.6)	85 (22.5)
DMG-04-3C12	200 (52.8)	200 (52.8)	95 (25.1)

Graphic Symbols

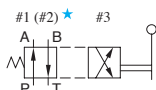
Spring Centred Models (3C*)



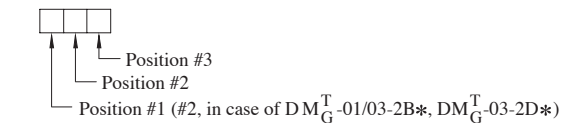
No-Spring Detented Models



Spring Offset Models (2B*)



. Position #2 is applied for models DMG-01-2B and DM_G^T-03-2B*/2D*.



Note: The ○ mark indicate the spool type available for each type.

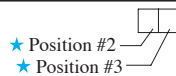
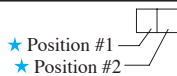
Valves Using Neutral Position and Side Position (Special Two Position Valve)

In addition to the standard two positions valves (2D*, 2B*), the following two types of two positions valves are available: Valves with neutral position (#2) and position #1 (2B*A, 2D*A), valves with neutral position (#2) and position #3 (2B*B, 2D*B).

The ○ mark in the table below indicates the spool type available for each models.

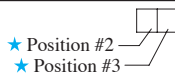
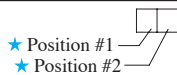
Spring Offset Models

Valve Type	Graphic Symbols	Model			Valve Type	Graphic Symbols	Model			
		DMT-03 DMG-03	DMT-06* DMT-10*	DMG-04 DMG-06 DMG-10			DMG-01	DMT-03 DMG-03	DMT-06* DMT-10*	DMG-04 DMG-06 DMG-10
2B2A		○	○	○	2B2B		○	○	○	○
2B3A		○	○	○	2B3B		○	○	○	○
2B4A		—	○	○	2B4B		○	○	○	○
2B40A		—	○	○	2B40B		○	—	○	○
—	—	—	—	—	2B5B		○	—	—	—
2B5A		—	○	○			—	—	○	○
2B6A		—	—	○	2B6B		—	—	—	○
		—	○	—			—	—	○	—
2B60A		—	—	○	2B60B		○	○	—	○
		—	○	—			—	—	○	—
2B7A		—	○	○	2B7B		○	—	○	○
2B8A		—	○	—	2B8B		○	—	○	—
2B9A		—	○	○	2B9B		○	—	○	○
2B10A		—	○	○	2B10B		○	○	○	○
2B11A		—	○	○	2B11B		○	—	○	○
2B12A		—	○	○	2B12B		○	○	○	○

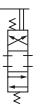


No-spring Detented Models

Valve Type	Graphic Symbols	Model		Valve Type	Graphic Symbols	Model		
		DMT-06* DMT-10*	DMG-04 DMG-06 DMG-10			DMG-01	DMT-06* DMT-10*	DMG-04 DMG-06 DMG-10
2D2A		○	○	2D2B		○	○	○
2D3A		○	○	2D3B		○	○	○
2D4A		○	○	2D4B		○	○	○
2D40A		○	○	2D40B		○	○	○
—	—	—	—	2D5B		○	—	—
2D5A		○	○			—	○	○
2D6A		—	○	2D6B		—	—	○
		○	—			—	○	—
2D60A		—	○	2D60B		○	—	○
		○	—			—	○	—
2D7A		○	○	2D7B		○	○	○
2D8A		○	—	2D8B		○	○	—
2D9A		○	○	2D9B		○	○	○
2D10A		○	○	2D10B		○	○	○
2D11A		○	○	2D11B		○	○	○
2D12A		○	○	2D12B		○	○	○



★. Position number is determined with three position type (3C* and 3D*) as the standard.



Sub-plates

Valve Model Numbers	Japanese Standard "JIS"			European Design Standard			N. American Design Standard		
	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)
DMG-01	DSGM-01-31	Rc 1/8	0.8 (1.8)	DSGM-01-3080	1/8 BSPF	0.8 (1.8)	DSGM-01-3190	1/8 NPT	0.8 (1.8)
	DSGM-01X-31	Rc 1/4	0.8 (1.8)	DSGM-01X-3080	1/4 BSPF	0.8 (1.8)	DSGM-01X-3190	1/4 NPT	0.8 (1.8)
	DSGM-01Y-31	Rc 3/8	0.8 (1.8)	—	—	—	DSGM-01Y-3190	3/8 NPT	0.8 (1.8)
DMG-03	DSGM-03-40	Rc 3/8	3.0 (6.6)	DSGM-03-2180	3/8 BSPF	3.0 (6.6)	DSGM-03-2190	3/8 NPT	3.0 (6.6)
	DSGM-03X-40	Rc 1/2	3.0 (6.6)	DSGM-03X-2180	1/2 BSPF	3.0 (6.6)	DSGM-03X-2190	1/2 NPT	3.0 (6.6)
	DSGM-03Y-40	Rc 3/4	4.7 (10.4)	DSGM-03Y-2180	3/4 BSPF	4.7 (10.4)	DSGM-03Y-2190	3/4 NPT	4.7 (10.4)
DMG-04	DHGM-04-20	Rc 1/2	4.4 (9.7)	DHGM-04-2080	1/2 BSPF	4.4 (9.7)	DHGM-04-2090	1/2 NPT	4.4 (9.7)
	DHGM-04X-20	Rc 3/4	4.1 (9.0)	DHGM-04X-2080	3/4 BSPF	4.1 (9.0)	DHGM-04X-2090	3/4 NPT	4.1 (9.0)
DMG-06	DHGM-06-50	Rc 3/4	7.4 (16.3)	DHGM-06-5080	3/4 BSPF	8.5 (18.7)	DHGM-06-5090	3/4 NPT	7.4 (16.3)
	DHGM-06X-50	Rc 1	7.4 (16.3)	DHGM-06X-5080	1 BSPF	8.5 (18.7)	DHGM-06X-5090	1 NPT	7.4 (16.3)
DMG-10	DHGM-10-40	Rc 1-1/4	21.5 (47.4)	DHGM-10-4080	1-1/4 BSPF	21.5 (47.4)	DHGM-10-4090	1-1/4 NPT	21.5 (47.4)
	DHGM-10X-40	Rc 1-1/2	21.5 (47.4)	DHGM-10X-4080	1-1/2 BSPF	21.5 (47.4)	DHGM-10X-4090	1-1/2 NPT	21.5 (47.4)

- 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.
- Sharable with Solenoid Operated Directional Valves and Solenoid Controlled Pilot Operated Directional Valves. For dimensions, refer to the right table then see the corresponding pages.

- Sub-plate dimensions appearing page

Subplate Model Numbers	Page
DSGM-01*	356
DSGM-03*	373
DHGM-04*	401
DHGM-06*	402
DHGM-10*	403

Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw			
	Japanese Standard "JIS" European Design Standard	N. American Design Standard	Qty.	Tightening Torque Nm (in. lbs.)
DMG-01	M5 × 45 Lg.	No. 10-24 UNC × 1-3/4 Lg.	4	5-7 (44-62)
DMG-03	M6 × 35 Lg.	1/4-20 UNC × 1-3/4 Lg.	4	12-15 (106-133)
DMG-04	M6 × 40 Lg.	1/4-20 UNC × 1-1/2 Lg.	2	12-15 (106-133)
	M10 × 45 Lg.	3/8-16 UNC × 1-3/4 Lg.	4	58-72 (513-637)
DMG-06	M12 × 60 Lg.	1/2-13 UNC × 2-1/2 Lg.	6	100-123 (885-1089)
DMG-10	M20 × 75 Lg.	3/4-10 UNC × 3 Lg.	8	473-585 (4195-5177)

Instructions

- Avoid connecting the Tank Port "T" to a line with possible surge pressure.

Pressure Drop

The following characteristics are based on the following conditions: viscosity of the fluid: 35 mm²/s (164 SSU) and Specific Gravity: 0.850

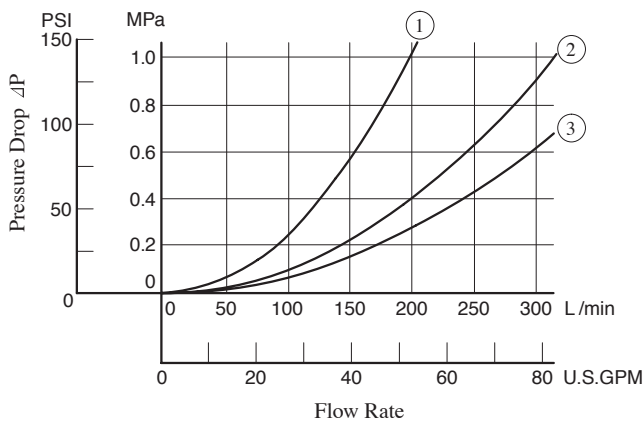
- For any other viscosity, multiply the factors in the table below.

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		0.81	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 ($\Delta P'$) may be obtained from the formula below.

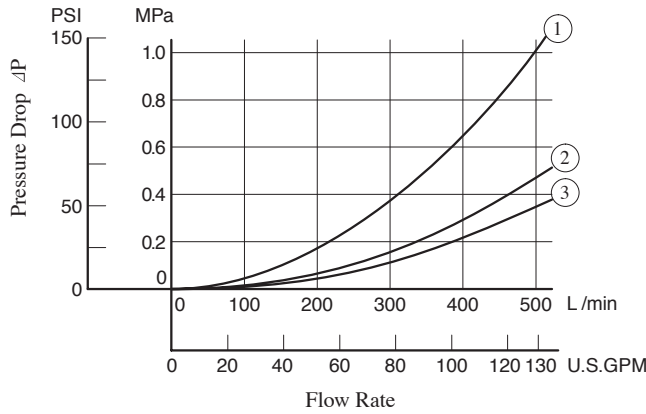
$$\Delta P' = \Delta P (G'/G) \text{ where } \Delta P \text{ is a value on the following chart and } G \text{ is } 0.850.$$

- DMT-06, 06X



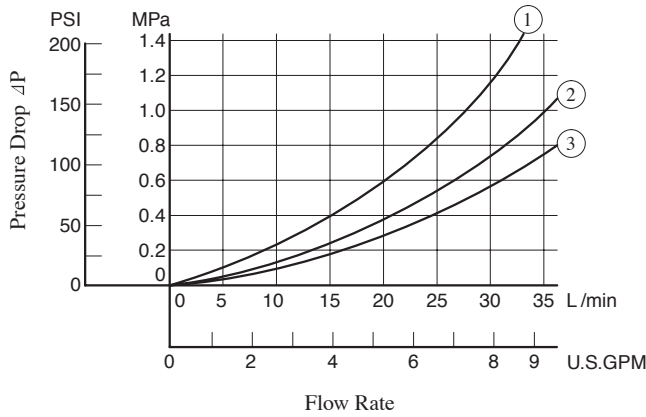
Spool Type	Pressure Drop Curve Number				
	P→A	B→T	P→B	A→T	P→T
2	②	②	②	②	
3	③	②	③	②	②
4	②	③	②	②	—
40	②	②	②	②	—
5	③	②	②	②	—
6	③	②	③	②	①
60	③	②	③	②	①
7	②	②	②	②	—
8	②	—	②	—	—
9	③	②	③	②	—
10	②	②	②	②	—
11	③	②	②	②	—
12	②	②	②	②	—

● DMT-10, 10X



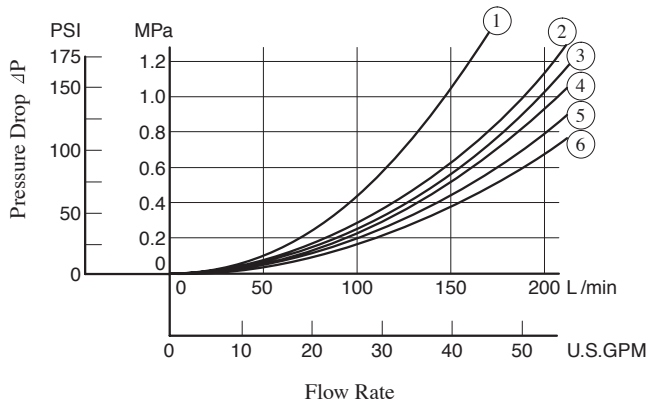
Spool Type	Pressure Drop Curve Number				
	P→A	B→T	P→B	A→T	P→T
2	③	②	③	②	—
3	③	②	③	②	②
4	③	②	③	②	—
40	③	②	③	②	—
5	③	②	③	②	—
6	③	③	③	③	①
60	③	③	③	③	①
7	③	②	③	②	—
8	③	—	③	—	—
9	③	②	③	②	—
10	③	②	③	②	—
11	③	②	③	②	—
12	③	②	③	②	—

● DMG-01



Valve type				Pressure Drop Curve Number				
3C*	3D*	2D*	2B*	P→A	B→T	P→B	A→T	P→T
3C2	3D2	2D2		③	③	③	③	—
3C3	3D3	2D3		③	③	③	③	②
3C4	3D4			③	③	③	③	—
3C40	3D40			③	③	③	③	—
3C5	3D5			②	①	①	①	③
3C60	3D60			①	①	①	①	③
3C7	3D7	2D7		③	③	③	③	—
3C8	3D8	2D8		③	—	③	—	—
3C9	3D9			③	③	③	③	—
3C10	3D10			③	③	③	③	—
3C11	3D11			③	③	③	③	—
3C12	3D12			③	③	③	③	—
			2B2	②	②	③	③	—
			2B3	②	②	③	③	—
			2B8	③	—	③	—	—

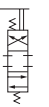
● DMG-04



Spool Type	Pressure Drop Curve Number				
	P→A	B→T	P→B	A→T	P→T
2	⑤	②	⑤	④	—
3	⑥	③	⑥	⑤	③
4	⑤	④	⑤	⑤	—
40	⑤	④	⑤	⑤	—
5	⑤	②	④	⑤	①
6	②	③	④	②	①
60	②	③	④	②	①
7	⑤	②	⑤	⑤	—
9	⑥	②	⑥	⑤	—
10	⑤	④	⑤	⑤	—
11	⑤	④	⑤	⑤	—
12	⑤	③	⑤	⑤	—

● For DMT-03, DMG-03, DMG-06, and DMG-10, refer to the table below then see the related page.

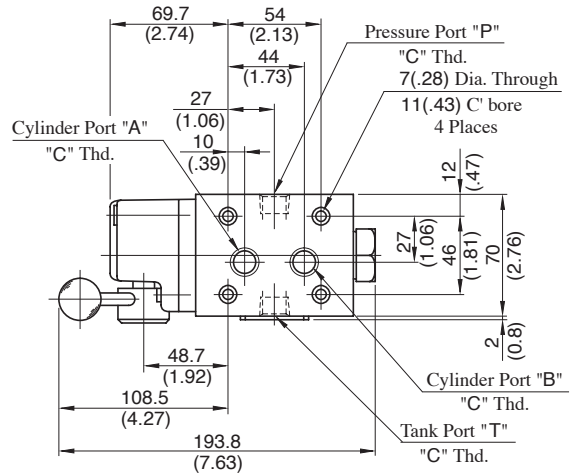
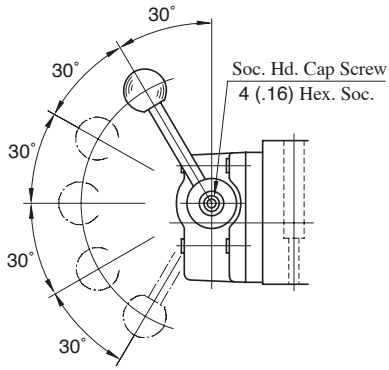
Model Number	Pressure Drop Characteristics	Page	Remarks
DMT-03 DMG-03	Same as DSG-03 Series Solenoid Operated Directional Valves (Standard Type)	371	3D* is same as 3C*
DMG-06	Same as Solenoid Controlled Pilot Operated Directional Valves (DSHG-06)	393	
DMG-10	Same as Solenoid Controlled Pilot Operated Directional Valves (DSHG-10)	393	



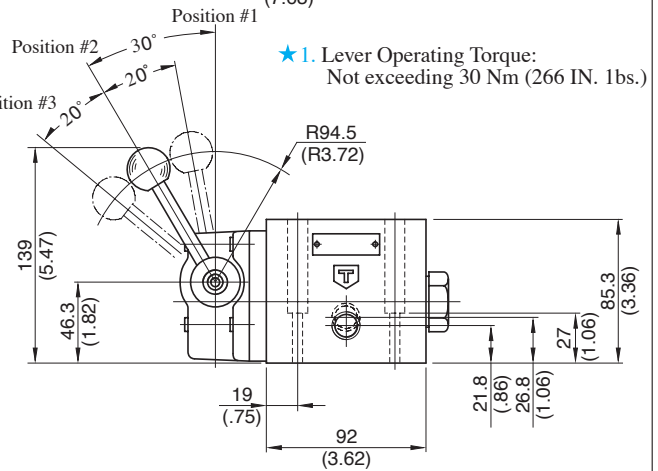
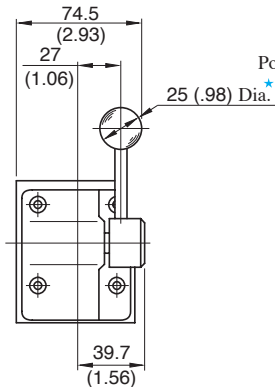
DMT-03-*-50/5080/5090**

How to Change Lever Position:

The lever position can be changed to any position in five different positions shown on the sketch in the right. For the lever position change, remove the Soc. Hd. Cap Screw and lever once, set the lever at the required position and tighten it with the Soc. Hd. Cap Screw firmly.



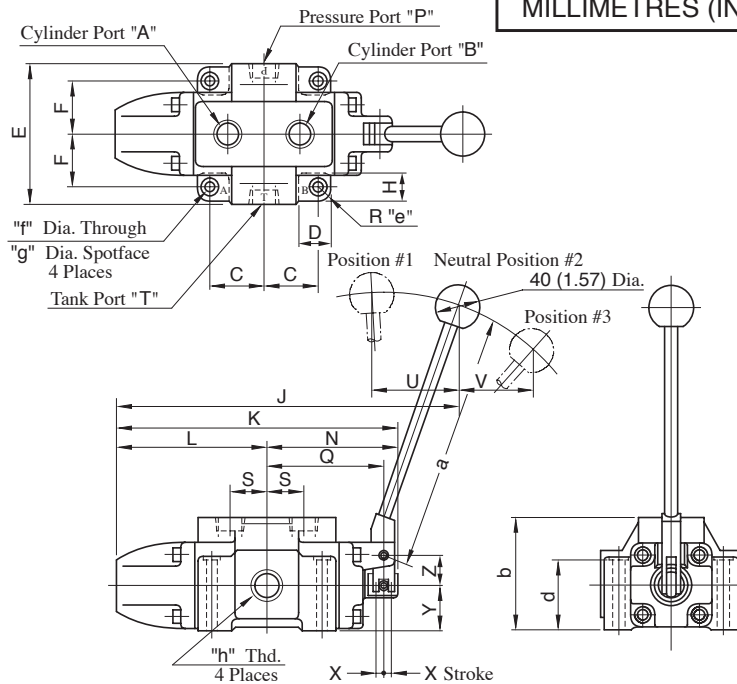
Model Numbers	"C" Thd.
DMT-03-***-50	Rc 3/8
DMT-03-***-5080	3/8 BSPF
DMT-03-***-5090	3/8 NPT



DIMENSIONS IN MILLIMETRES (INCHES)

DMT-06, 06X-*-30/3080/3090**
DMT-10, 10X-*-30/3080/3090**

Model Numbers	"h" Thd.
DMT-06-***-30	Rc 3/4
DMT-06X-***-30	Rc 1
DMT-06-***-3080	3/4 BSPF
DMT-06X-***-3080	1 BSPF
DMT-06-***-3090	3/4 NPT
DMT-06X-***-3090	1 NPT
DMT-10-***-30	Rc 1-1/4
DMT-10X-***-30	Rc 1-1/2
DMT-10-***-3080	1-1/4 BSPF
DMT-10X-***-3080	1-1/2 BSPF
DMT-10-***-3090	1-1/4 NPT
DMT-10X-***-3090	1-1/2 NPT

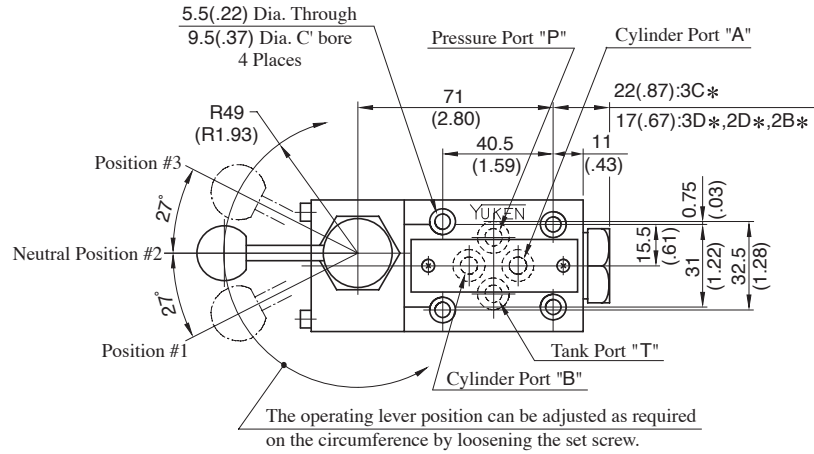


Model No.	Dimension mm (Inches)																					
	C	D	E	F	H	J	K	L	N	Q	S	U	V	X	Y	Z	a	b	d	e	f	g
DMT-06	50	30	126	47.5	24	320	255	137	118	107	33.5	86	76	9	40	25	250	100	63.5	12	11	17.5
DMT-06X	(1.97)	(1.18)	(4.96)	(1.87)	(.94)	(12.60)	(10.04)	(5.39)	(4.65)	(4.21)	(1.32)	(3.39)	(2.99)	(.35)	(1.57)	(.98)	(9.84)	(3.94)	(2.50)	(.47)	(.43)	(.69)
DMT-10	66	40	160	62.5	33	402	320	173	147	135	40	102	90	12.5	50	35	300	120	78.5	15	13.5	21
DMT-10X	(2.60)	(1.57)	(6.30)	(2.46)	(1.30)	(15.83)	(12.60)	(6.81)	(5.79)	(5.31)	(1.57)	(4.02)	(3.54)	(.49)	(1.97)	(1.38)	(11.81)	(4.72)	(3.09)	(.59)	(.53)	(.83)

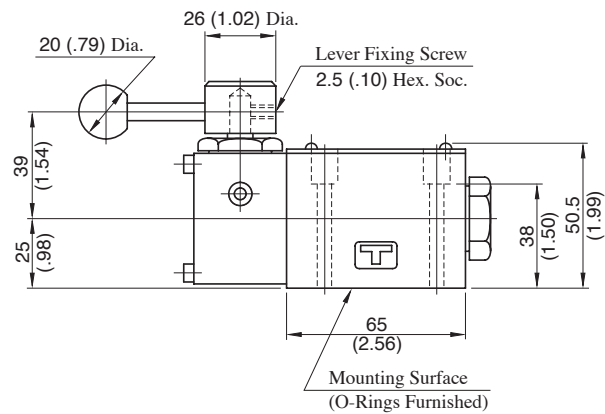
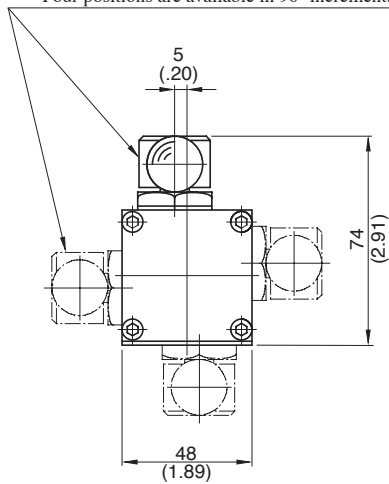
DMG-01-***-10/1090

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

DIMENSIONS IN
MILLIMETRES (INCHES)



Four positions are available in 90° increment.

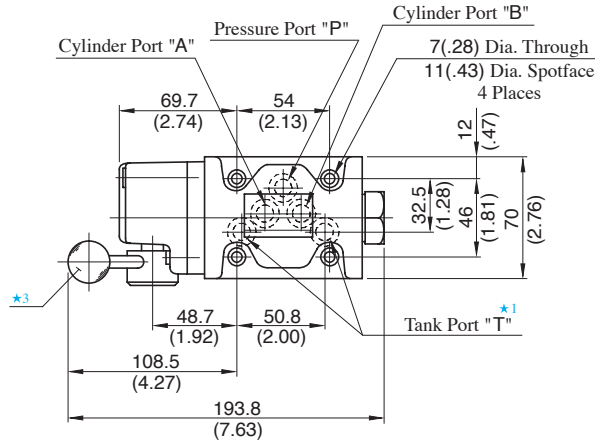


Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 356](#).

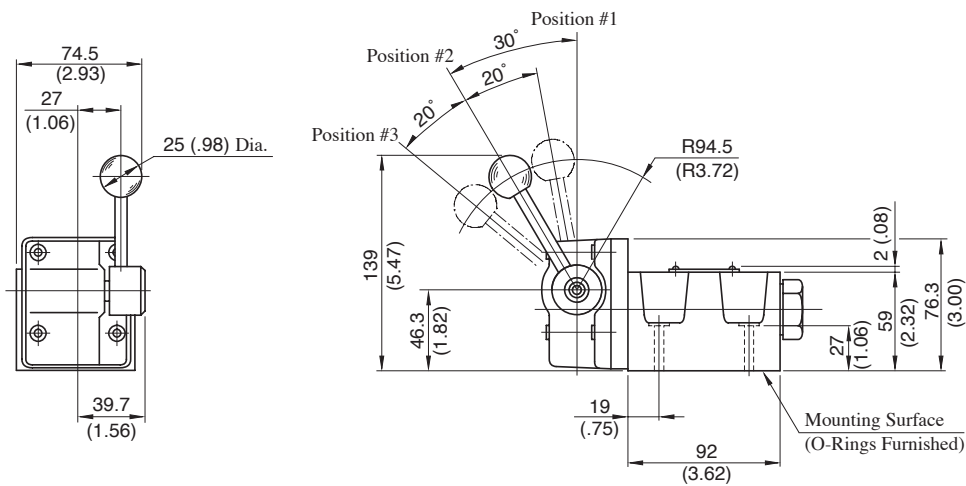
DMG-03-***-50/5090

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

**DIMENSIONS IN
MILLIMETRES (INCHES)**



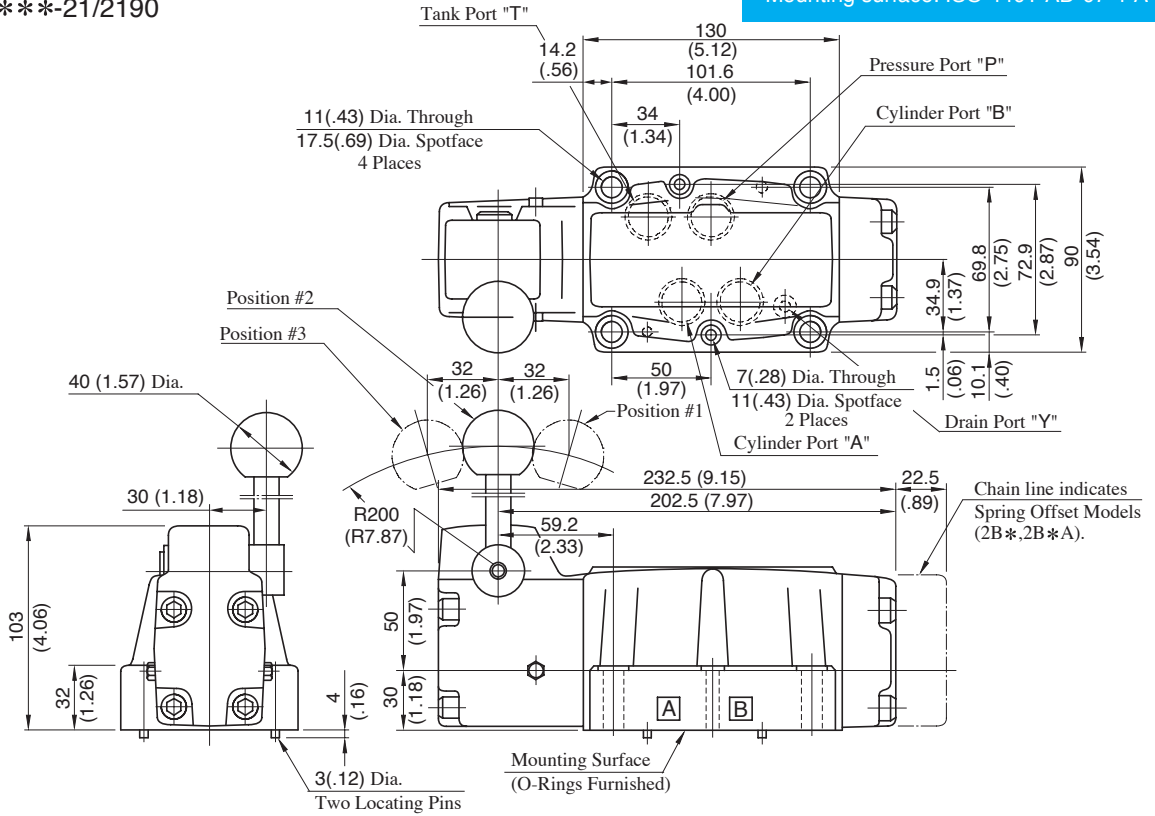
- ★ 1. Although the tank port is shown on the left in our sub-plate either may be used.
- ★ 2. The position of operating lever can be changed as required. For the detail, see the DMT-03 in the [previous page](#).
- ★ 3. Lever Operating Torque:
Not exceeding 30 Nm (266 IN. lbs.)



Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 373](#).

DMG-04-***-21/2190

Mounting surface: ISO 4401-AD-07-4-A

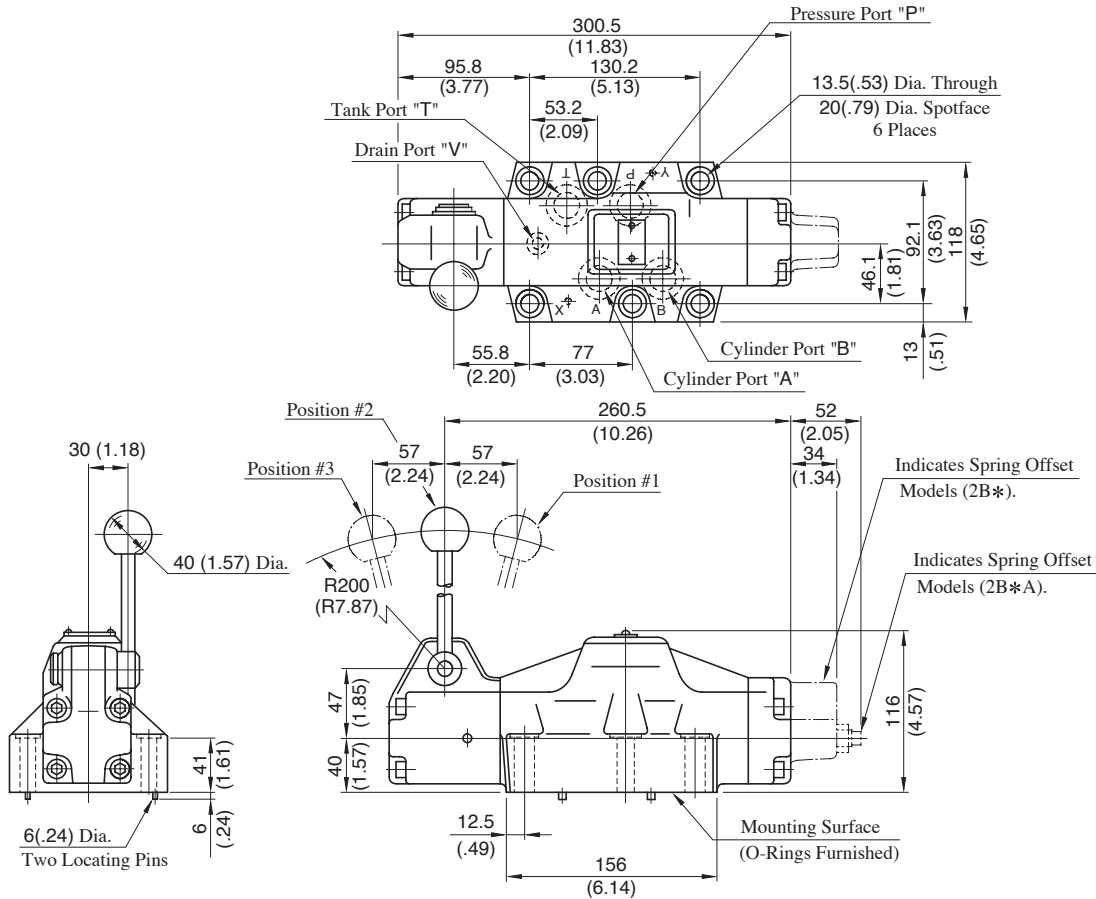


Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 401](#).

DIMENSIONS IN MILLIMETRES (INCHES)

DMG-06-***-50/5090

Mounting surface: ISO 4401-AE-08-4-A



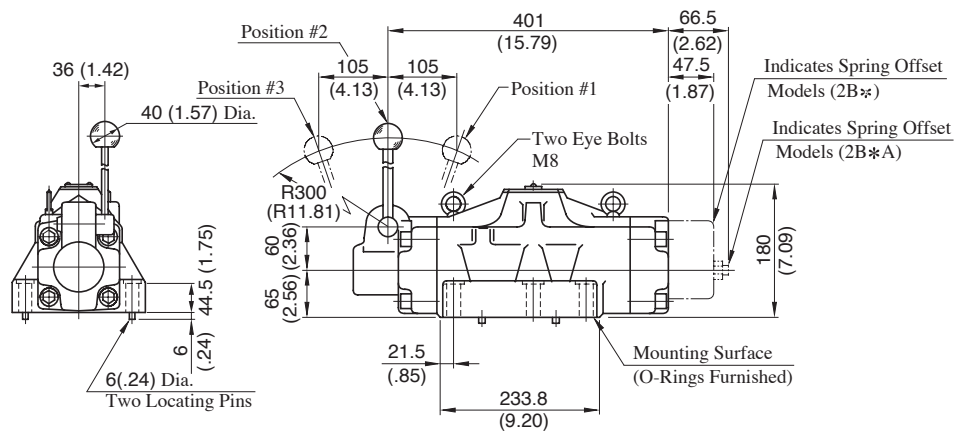
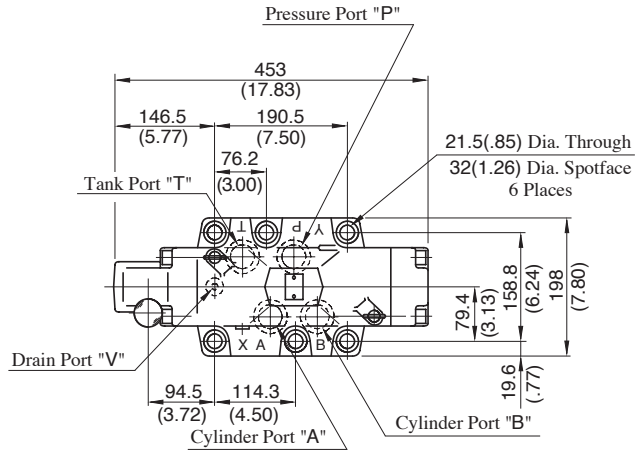
Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 402](#).



DMG-10-***-50/5090

Mounting surface: ISO 4401-AF-10-4-A

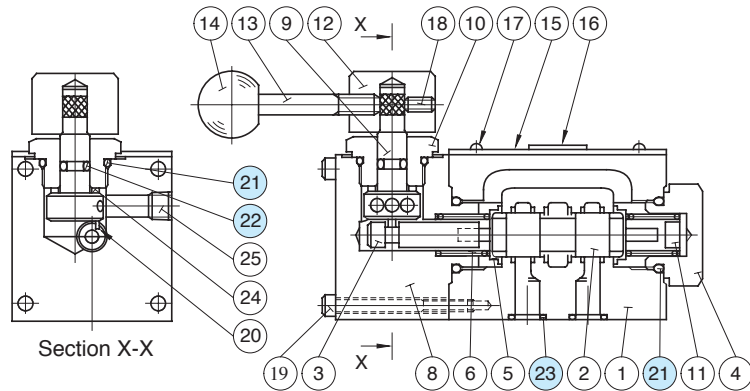
**DIMENSIONS IN
MILLIMETRES (INCHES)**



Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 403](#).

List of Seals

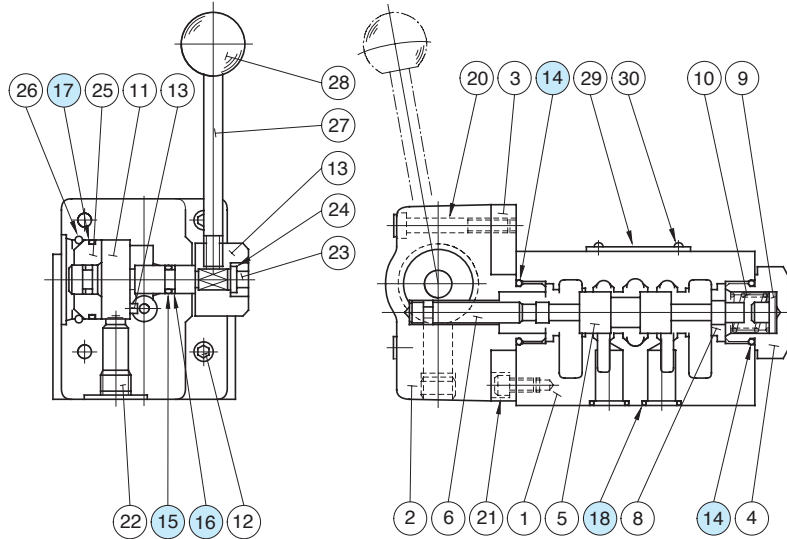
DMG-01-***-10/1090



Item	Name of Parts	Part Numbers	Qty.
21	O-Ring	SO-NB-P18	3
22	O-Ring	SO-NA-P6	1
23	O-Ring	SO-NB-P9	4

Note: When ordering the o-ring, please specify the seal kit number (KS-DMG-01-10).

DMT-03-***-50/5080/5090
DMG-03-***-50/5090



Item	Name of Parts	Part Numbers	Qty.
14	O-Ring	SO-NB-P21	2
15	O-Ring	SO-NA-P8	2
16	Back Up Ring	SO-BB-P8	2
17	O-Ring	SO-NB-A023	1
18	O-Ring	SO-NB-A014	5

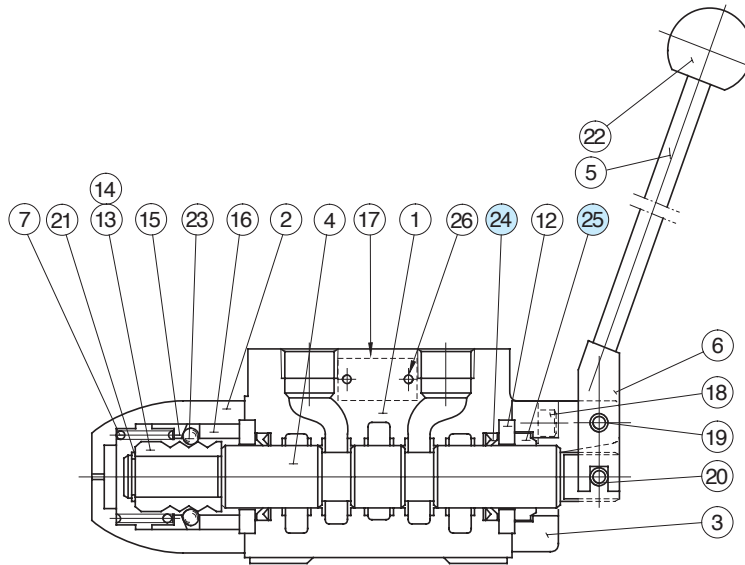
Valve Model Numbers	Seal Kit Numbers
DMT-03-***-50/5080/5090	KS-DMT-03-50
DMG-03-***-50/5090	KS-DMG-03-50

Note: 1. O-rings of Item (18) are not used for DMT-03.
2. When ordering the seals, please specify the seal kit number from the table right.



List of Seals

DMT-06, 06X-***-30/3080/3090
 DMT-10, 10X-***-30/3080/3090



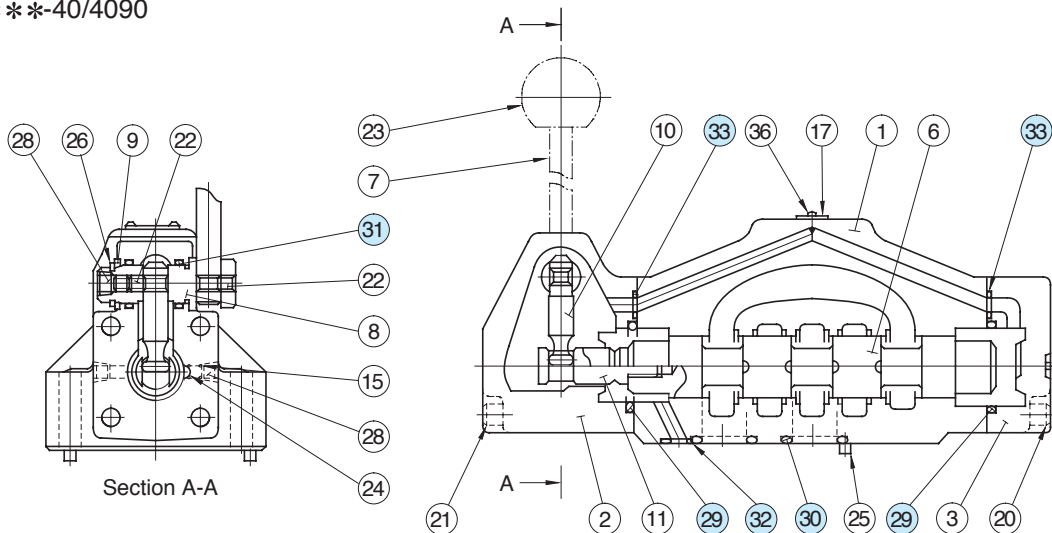
● List of Seal Kits

Item	Name of Parts	Part Numbers		Qty.
		DMT-06*	DMT-10*	
24	Packing	UPI 32 • 40 • 6Y	UPI 40 • 55 • 10Y	2
25	Dust Seal	DKI 32 • 44 • 7 • 10	DKI 40 • 52 • 7 • 10	1

Valve Model Numbers	Seal Kit Numbers
DMT-06*-***-30/3080/3090	KS-DMT-06-30
DMT-10*-***-30/3080/3090	KS-DMT-10-30

Note: When ordering the seals, please specify the seal kit number from the table right.

DMG-04-***-21/2190
 DMG-06-***-50/5090
 DMG-10-***-40/4090



● List of Seal Kits

Item	Name of Parts	Part Numbers			Qty.
		DMG-04	DMG-06	DMG-10	
29	O-Ring	SO-NB-P34	SO-NB-P40	SO-NB-G65	2
30	O-Ring	SO-NB-P22A	SO-NB-P30	SO-NB-P42	4
31	O-Ring	SO-NA-P20	SO-NA-P20	SO-NA-P25	2
32	O-Ring	SO-NB-P9	SO-NB-P14	SO-NB-P20	1
33	O-Ring	SO-NB-P9	SO-NB-P10	SO-NB-P14	2

Valve Model Numbers	Seal Kit Numbers
DMG-04*-***-21/2190	KS-DMG-04-21
DMG-06*-***-50/5090	KS-DMG-06-50
DMG-10-***-40/4090	KS-DMG-10-40

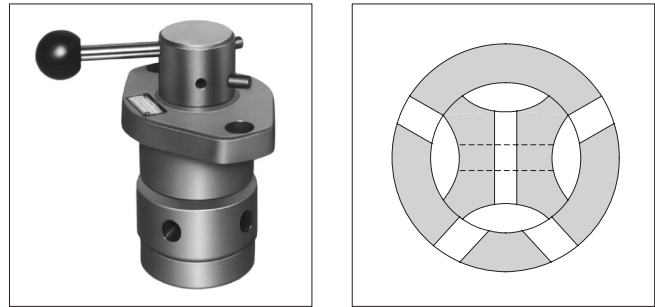
Note: When ordering the seals, please specify the seal kit number from the table right.

Mechanically Operated Directional Valves

These valves are chiefly used to shift the pilot circuit. Rotary Type Directional Valves and Cam Operated Type Directional Valves are available.

Rotary Type Directional Valves

These valves are used to rotate the spool either manually or by way of cam and shift the direction of oil flow. The detented mechanism incorporated in these valves prevents the valve from being changed over by itself due to vibrations or any other shocks.



Specifications

Model Numbers		Rated Flow L/min (U.S.GPM)	Max. Operating Pressure MPa (PSI)	Max. T-Line Pressure MPa (PSI)	Approx. Mass kg (lbs.)	
Threaded Connection	Sub-plate Mounting				DRT Type	DRG Type
DRT-02-*D*-20*	DRG-02-*D*-20*	16 (4.2)	7 (1020)	7 (1020) *	4.7 (10.4)	3.4 (7.5)

★ When a back pressure of more than 3 MPa (435 PSI) is generated in the tank port, be sure to use External Drain Type.

Model Number Designation

F-	DR	G	-02	-2	D	2	-A	-R	-20	*
Special Seals	Series Connection	Type of Mounting	Valve Size	No. of Valve Position	Spool-Spring Arrangement	Spool Type	Operation Type	Drain Connection	Design Number	Design Standards
F: Special seals for phosphate ester type fluids (Omit if not required)	DR: Rotary Type Directional Valve	T: Threaded Connection	02	2	D: No-spring Detented	2	A: Reversing Dog B: Reversing Dog & Manual C: Manual	None: Internal Drain R: External Drain	20	None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.
		G: Sub-plate Mounting	02	3		4			20	

Note: When selecting the Model type, be sure to give the model number from the following Graphic Symbols.
No combinations other than those in the table below are allowed.

Graphic Symbols

No. of Position	2-Position Type			3-Position Type
	Reversing Dog Operation	Reversing Dog & Manual Operation	Manual Operation	Manual Operation
Graphic Symbols				
Model No.	DR*-02-2D2-A	DR*-02-2D2-B	DR*-02-2D2-C	DR*-02-3D4-C

Instructions

Changeover Torque

When the pressure of pressure port "P" and cylinder port "A" (or "B") is set to 7 MPa (1020 PSI), the valve changeover torque will be as right side table:

Changeover Torque

Tank Port Back Pres. MPa (PSI)	Torque Nm (in. lbs.)
0	1.0 (8.9)
3 (435)	4.8 (42.5)

2-Way directional valves

Be sure to use the External Drain Type Valve of spool type "2" and plug the tank port.



Sub-plates

Drain Connection	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	
For Internal Drain	DRGM-02-20 DRGM-02X-20	Rc 1/4 Rc 3/8	DRGM-02-2080 DRGM-02X-2080	1/4 BSPF 3/8 BSPF	DRGM-02-2090 DRGM-02X-2090	1/4 NPT 3/8 NPT	1.9 (4.2)
For External Drain	DRGM-02-R-20 DRGM-02X-R-20	Rc 1/4 Rc 3/8	DRGM-02-R-2080 DRGM-02X-R-2080	1/4 BSPF 3/8 BSPF	DRGM-02-R-2090 DRGM-02X-R-2090	1/4 NPT 3/8 NPT	

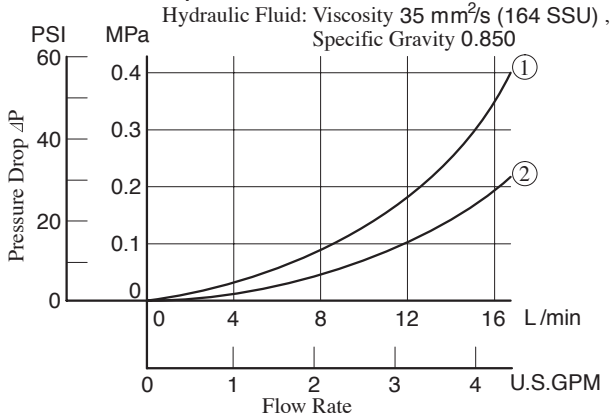
- Sub-plates are available. Specify the sub-plate model number from the table above.
- When sub-plates are not used, the mounting surface should have a good machined finish.

Mounting Bolts

The Sub-plate Mounting Type Valves (DRG-02) only are furnished with the following mounting bolts.

Model Numbers	Socket Head Cap Screw (5 Pcs.)	
	Japanese Standard "JIS" European Design Standard	N. American Design Standard
DRG-02	M8 × 45 Lg.	5/16-18 UNC × 1-3/4 Lg.

Pressure Drop



Valve Type	Pressure Drop Curve No.			
	P→A	B→T	P→B	A→T
2D2	②	②	②	②
3D4	②	②	①	②

1. For any other viscosity, multiply by 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		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

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

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

DRT-02- *D* - *-20/2080/2090

● Type "A" : Reversing Dog Operation

● Type "B": Reversing Dog and Manual Operation

● Type "C": Manual Operation

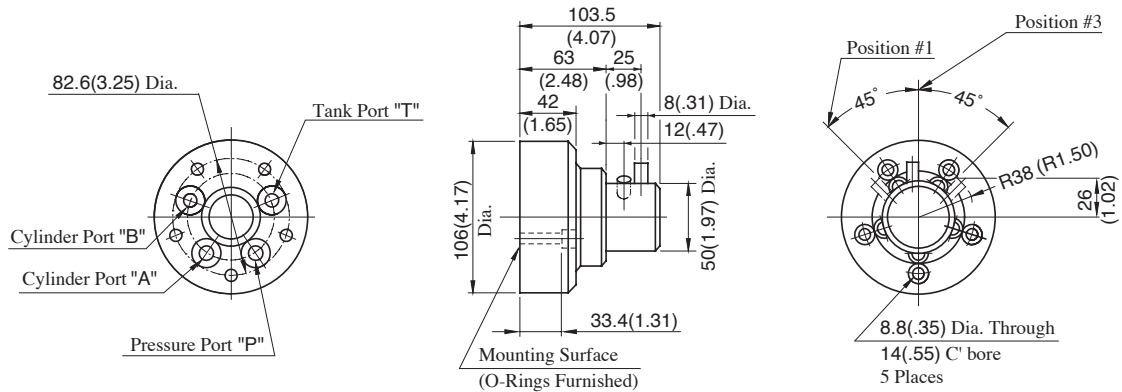
Model Numbers	"C" Thd.
DRT-02- *D* - *-20	Rc 1/4
DRT-02- *D* - *-2080	1/4 BSPF
DRT-02- *D* - *-2090	1/4 NPT

DIMENSIONS IN MILLIMETRES (INCHES)

For other dimensions, refer to "Reversing Dog Operation".

DRG-02-*D*-*20/2090

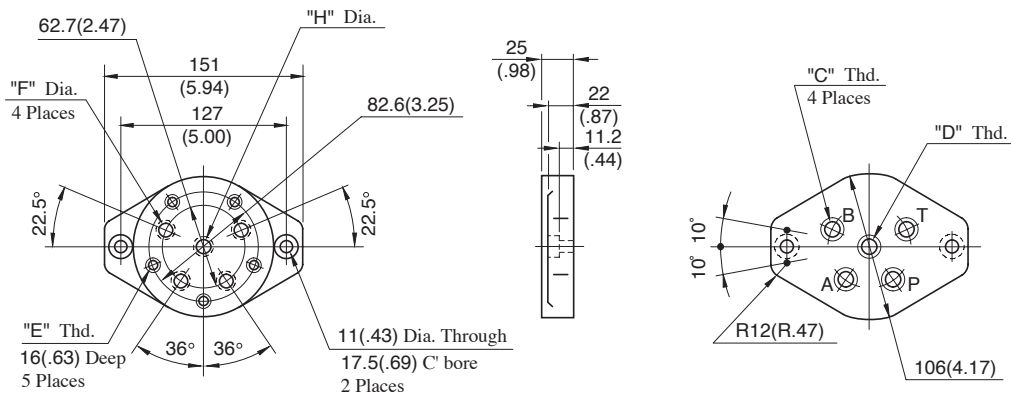
● **Type "A": Reversing Dog Operation**



For information on Type "B": reversing Dog and Manual Operation and Type "C": Manual Operation, see DRT-02 on the [previous page](#).

**DIMENSIONS IN
MILLIMETRES (INCHES)**

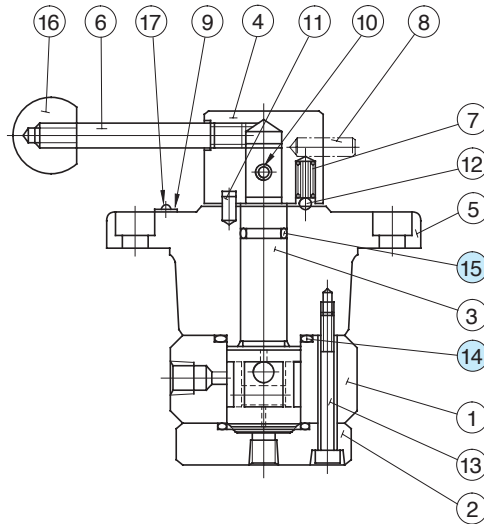
Sub-plates : DRGM-⁰²_{02X}-*20/2080/2090



Sub-plate Model Numbers	"C" Thd.	"D" Thd.	"E" Thd.	mm (Inches)		Remarks
				F	H	
DRGM-02-20 DRGM-02X-20	Rc 1/4 Rc 3/8	—	M8	11 (.43)		For Internal Drain
DRGM-02-2080 DRGM-02X-2080	1/4 BSP.F 3/8 BSP.F	—	M8	11.7 (.46)	—	
DRGM-02-2090 DRGM-02X-2090	1/4 NPT 3/8 NPT	—	5/16-18 UNC	11 (.43)		
DRGM-02-R-20 DRGM-02X-R-20	Rc 1/4 Rc 3/8	Rc 1/4	M8	11 (.43)	11 (.43)	For External Drain
DRGM-02-R-2080 DRGM-02X-R-2080	1/4 BSP.F 3/8 BSP.F	1/4 BSP.F	M8	11.7 (.46)	11.7 (.46)	
DRGM-02-R-2090 DRGM-02X-R-2090	1/4 NPT 3/8 NPT	1/4 NPT	5/16-18 UNC	11 (.43)	11 (.43)	

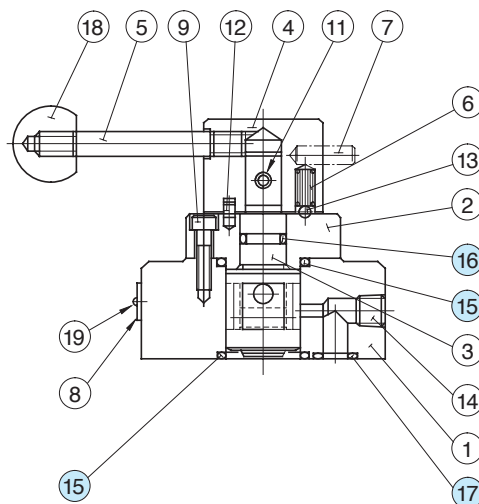
■ List of Seals

DRT-02- *D* - *-20/2080/2090



Item	Name of Parts	Part Numbers	Qty.	Remarks
14	O-Ring	SO-NB-G35	2	Included in Seal Kit
15	O-Ring	SO-NA-P16	1	(Kit No.: KS-DRT-02-20)

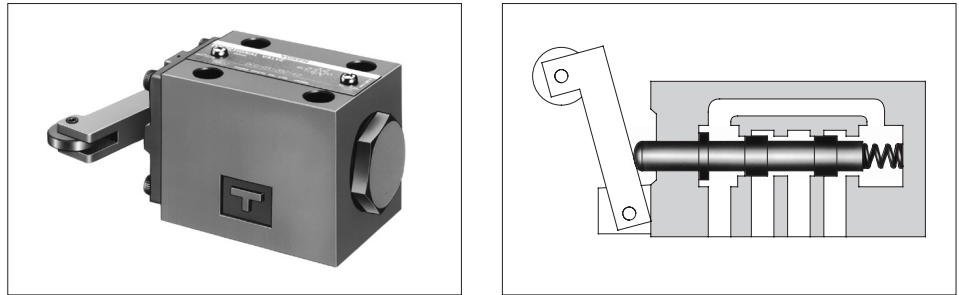
DRG-02- *D* - *-20/2090



Item	Name of Parts	Part Numbers	Qty.	Remarks
15	O-Ring	SO-NB-G35	2	Included in Seal Kit (Kit No.: KS-DRG-02-20)
16	O-Ring	SO-NA-P16	1	
17	O-Ring	SO-NB-P16	4	

Cam Operated Directional Valves

These valves may be used to shift the direction of oil flow by depressing the spool by way of a cam.



Specifications

Model Numbers		Max. Flow * L/min (U.S.GPM)	Max. Operating Pressure MPa (PSI)	Max. T-Line Pressure MPa (PSI)	Approx. Mass kg (lbs.)	
Threaded Connection	Sub-plate Mounting				DCT Type	DCG Type
DCT-01-2B*-40*	DCG-01-2B*-40*	30 (7.9)	21 (3050)	7 (1020)	1.1 (2.4)	1.1 (2.4)
DCT-03-2B*-50*	DCG-03-2B*-50*	100 (26.4)	25 (3630)	10 (1450)	4.5 (9.9)	3.8 (8.4)

★ Max. flow indicates the ceiling flow which does not affect the normal function (changeover) of valves.

Model Number Designation

F-	DC	T	-01	-2	B	2	-R	-40	*
Special Seals	Series Number	Type of Connection	Valve Size	No. of Valve Position	Spool-Spring Arrangement	Spool Type	Roller Position	Design Number	Design Standards
F: Special seals for phosphate ester type fluids (Omit if not required)	DC: Cam Operated Directional Valve	T: Threaded Connection	01	2	B: Spring Offset	2 3 8		40	None: Japanese Standard "JIS" 80: European Design Standard 90: N. American Design Standard None: Japanese Standard "JIS" & European Design Standard 90: N. American Design Standard
			03					50	
		G: Sub-plate Mounting	01					40	
			03					50	

Sub-plates

Valve Model Numbers	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	
DCG-01	DSGM-01-31	Rc 1/8	DSGM-01-3180	1/8 BSP.F	DSGM-01-3190	1/8 NPT	0.8 (1.8)
	DSGM-01X-31	Rc 1/4	DSGM-01X-3180	1/4 BSP.F	DSGM-01X-3190	1/4 NPT	0.8 (1.8)
	DSGM-01Y-31	Rc 3/8	—	—	DSGM-01Y-3190	3/8 NPT	0.8 (1.8)
DCG-03	DSGM-03-41	Rc 3/8	DSGM-03-2180	3/8 BSP.F	DSGM-03-2190	3/8 NPT	3.0 (6.6)
	DSGM-03X-41	Rc 1/2	DSGM-03X-2180	1/2 BSP.F	DSGM-03X-2190	1/2 NPT	3.0 (6.6)
	DSGM-03Y-41	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

Socket head cap screws in the table below are included.

Model Numbers	Socket Head Cap Screw			
	Japanese Standard "JIS" European Design Standard	N. American Design Standard	Qty.	Tightening Torque Nm (in. lbs)
DCT-01	M5 × 45 Lg.	No. 10-24 UNC × 1-3/4 Lg.	2	5-7 (43-60)
DCG-01	M5 × 45 Lg.	No. 10-24 UNC × 1-3/4 Lg.	4	5-7 (43-60)
DCG-03	M6 × 35 Lg.	1/4-20 UNC × 1-1/2 Lg.	4	12-15 (105-130)

Direction of Oil Flow for Roller Position

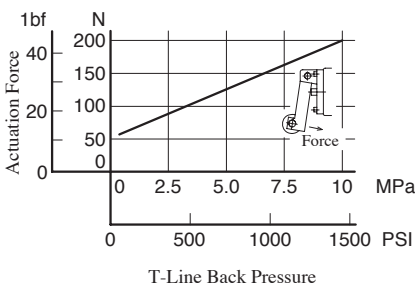
Model Numbers	Graphic Symbols	Roller Position and Direction of Oil Flow	
		Roller Stroke from Offset Position mm(Inches)	
		Extended(Offset)	Depressed
DCT-01-2B2 DCG-01-2B2		P → B A → T 0 ——— 3.8 (150) ——— 4.6 (181) ——— 9.5 (374)	P → A B → T All ports blocked
DCT-01-2B3 DCG-01-2B3		P → B A → T 0 ——— 3.8 (150) ——— 4.6 (181) ——— 9.5 (374)	P → A B → T All ports open
DCT-01-2B8 DCG-01-2B8		P → B A&T ports blocked 0 ——— 3.8 (150) ——— 9.5 (374)	P → A B&T ports blocked
DCT-03-2B2 DCG-03-2B2		P → A B → T 0 ——— 3.4 (134) ——— 3.8 (150) ——— 7 (276)	P → B A → T All ports blocked
DCT-03-2B3 DCG-03-2B3		P → A B → T 0 ——— 3.0 (118) ——— 4.0 (157) ——— 7 (276)	P → B A → T All ports open
DCT-03-2B8 DCG-03-2B8		P → A B&T ports blocked 0 ——— 3.6 (142) ——— 4.7 (185) ——— 7 (276)	P → B A&T ports blocked All ports blocked

Instructions

Valve Type "2B8"

Tank port "T" functions as a drain port. Directly connect it to the reservoir. [Max. allowable back pressure 0.35 MPa (50 PSI)].

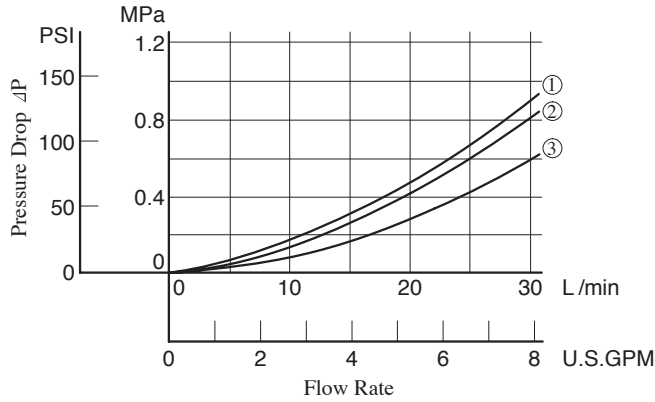
Actuation Force



Pressure Drop

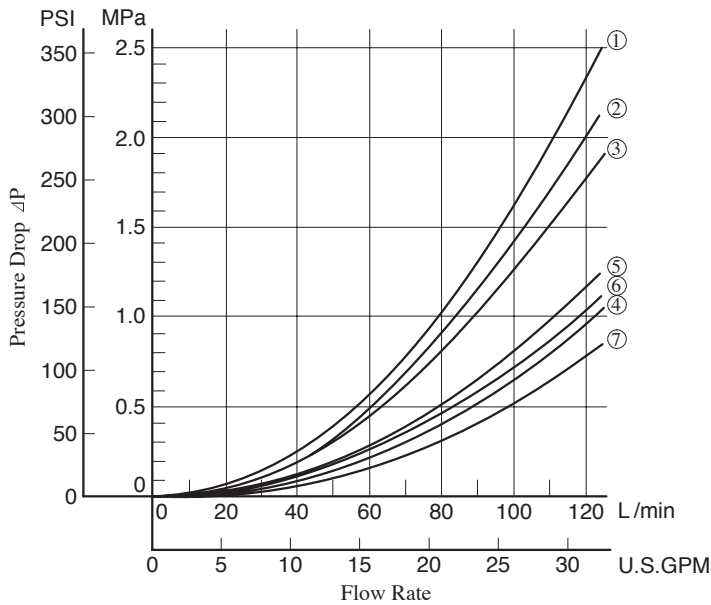
Pressure drop curves based on viscosity of 35 mm²/s (164 SSU) and specific gravity of 0.850.

DCT DCG -01



Model Numbers	Pressure Drop Curve No.			
	P→A	B→T	P→B	A→T
DCT-01-2B2	①	①	②	①
DCT-01-2B3	②	—	②	—
DCG-01-2B2	②	②	③	③
DCG-01-2B3	③	—	③	—

DCT DCG -03



Model Numbers	Pressure Drop Curve No.			
	P→A	B→T	P→B	A→T
DCG-03-2B2	②	①	④	④
DCG-03-2B3	③	②	⑦	⑦
DCG-03-2B8	⑥	—	⑤	—

● 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

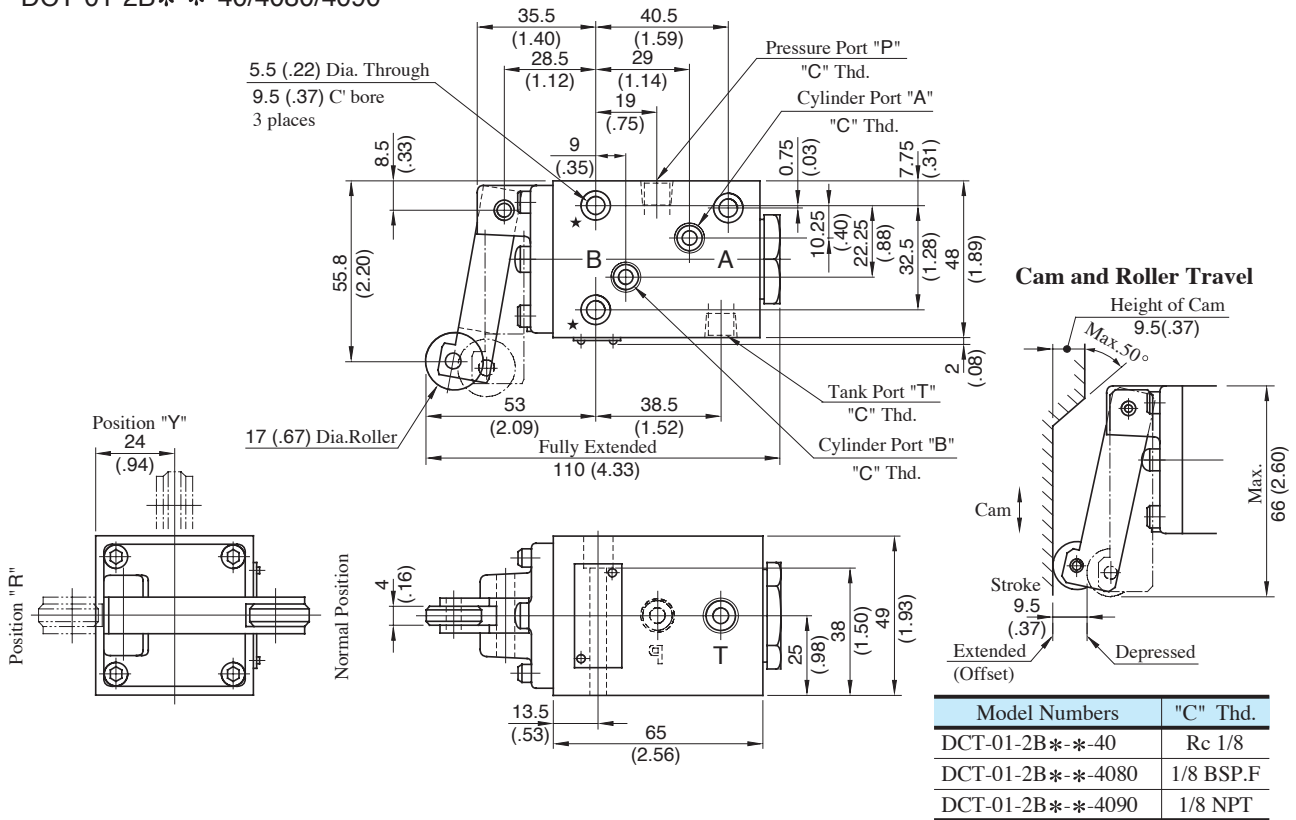
● For any other specific gravity (G'), the pressure drop (ΔP') may be obtained from the formula below.

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

where, ΔP is a value on the above chart and G is 0.850.



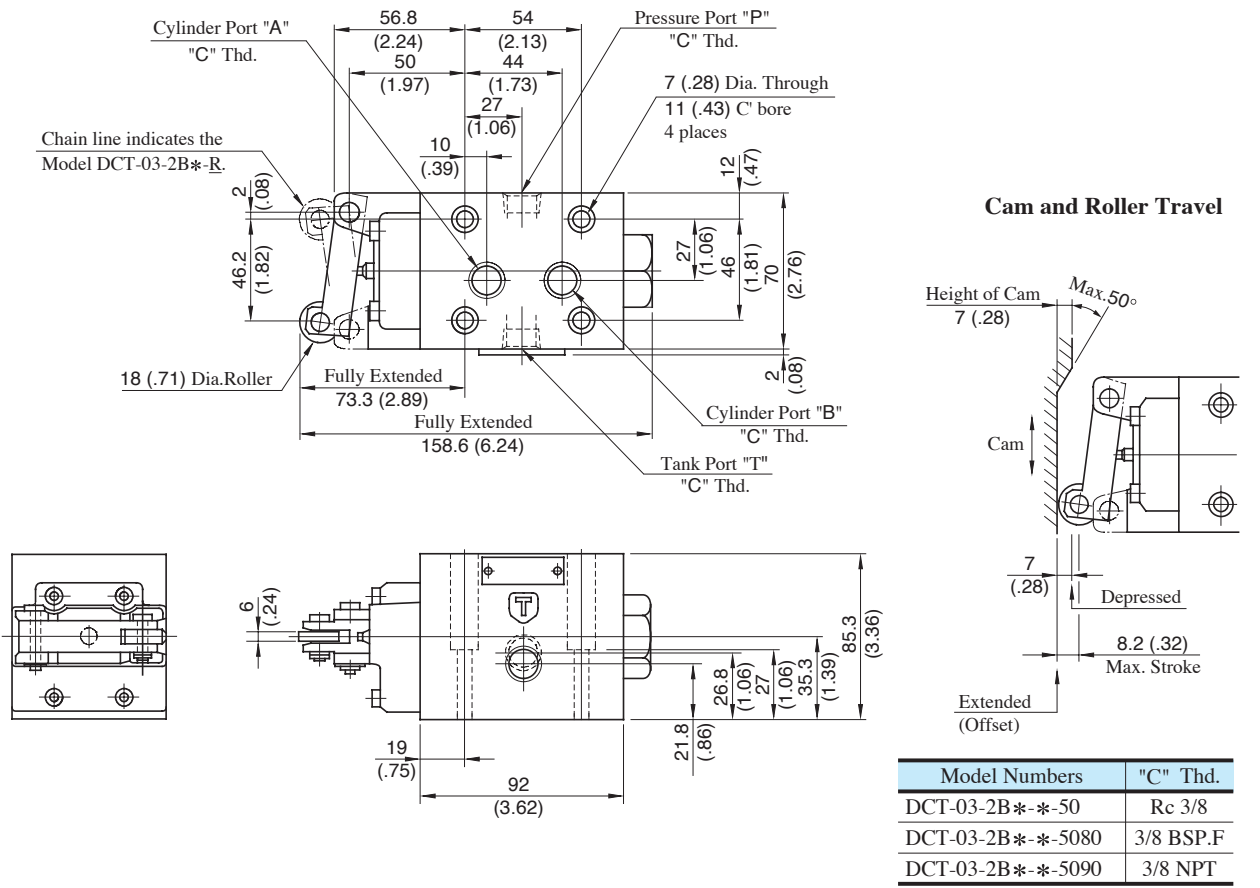
DCT-01-2B*-*-40/4080/4090



Note: When mounting the valve, be sure to use two mounting holes marked with ★.

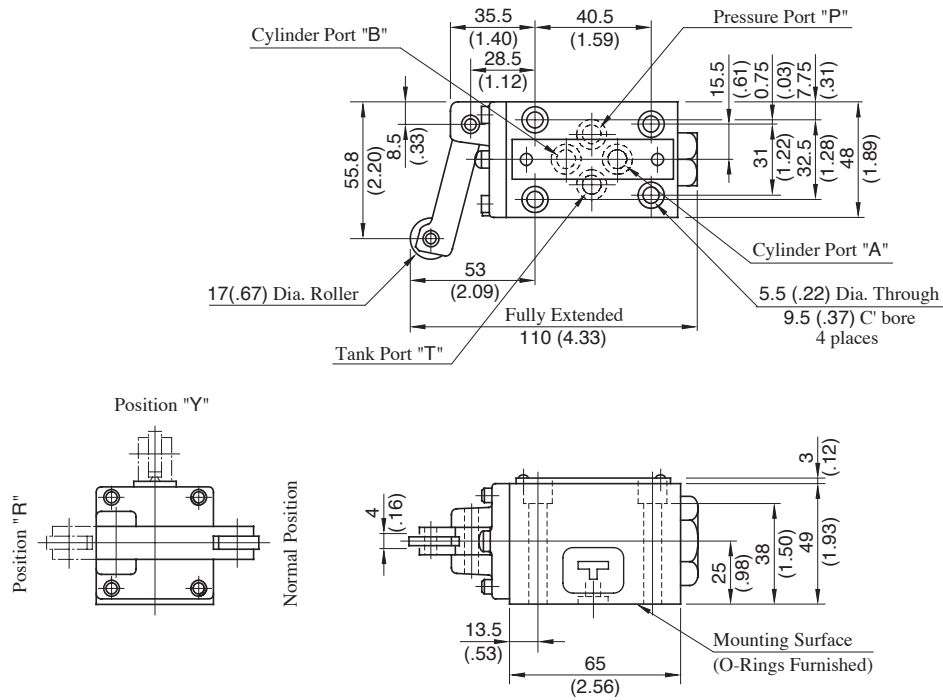
DIMENSIONS IN MILLIMETRES (INCHES)

DCT-03-2B*-*-50/5080/5090



DCG-01-2B*-**-40/4090

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



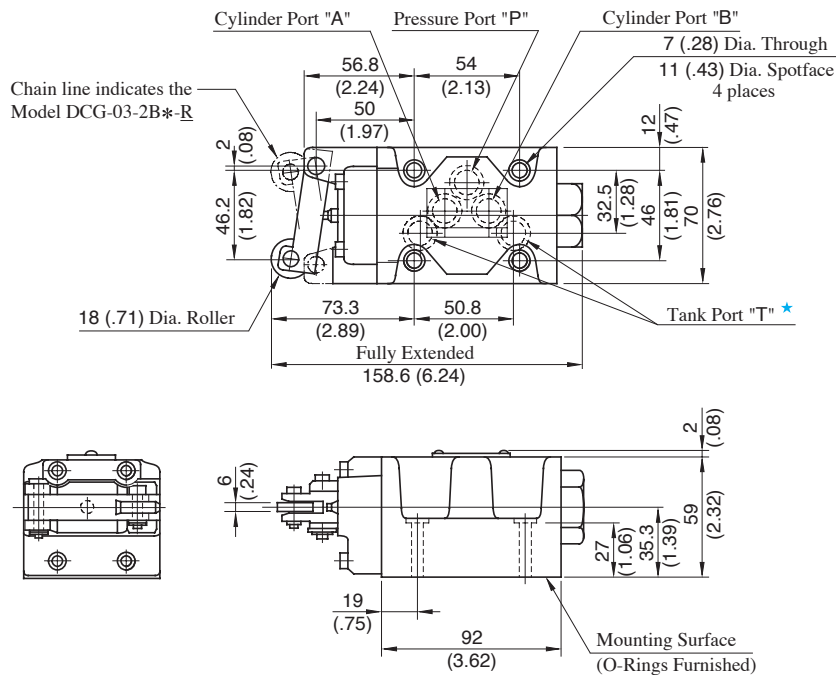
Note1: For the cam and roller travel, see DCT-01 in the [previous page](#).

Note2: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 356](#).

DIMENSIONS IN MILLIMETRES (INCHES)

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

DCG-03-2B*-**-50/5090



★. Although the tank port is shown on the left in our sub-plate, either may be used.

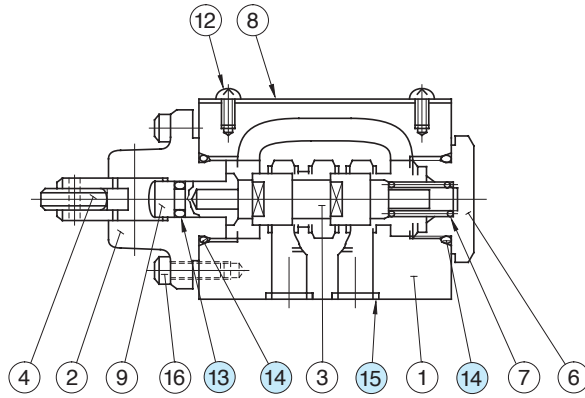
Note1: For the cam and roller travel, see DCT-03 in the [previous page](#).

Note2: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 373](#).



■ List of Seals

DCT-01-2B*-*-40/4080/4090
 DCG-01-2B*-*-40/4090



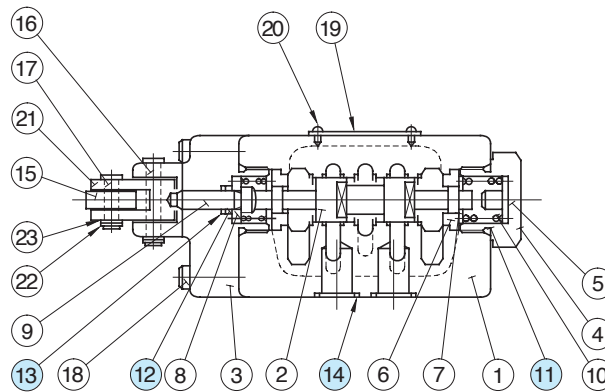
● List of Seal Kit No.

Item	Name of Parts	Part Numbers	Quantity	
			DCT-01	DCG-01
13	O-Ring	SO-NA-P5	1	1
14	O-Ring	SO-NB-P18	2	2
15	O-Ring	SO-NB-P9	0	4

Valve Mdel Numbers	Seal Kit Numbers
DCT-01-2B*-*-40/4080/4090	KS-DCT-01-40
DCG-01-2B*-*-40/4090	KS-DCG-01-40

Note: When ordering the o-rings, please specify the seal kit number from the table right.

DCT-03-2B*-*-50/5080/5090
 DCG-03-2B*-*-50/5090




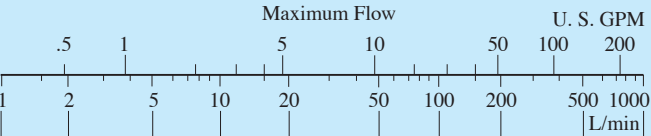
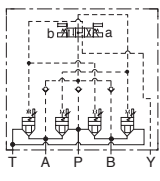
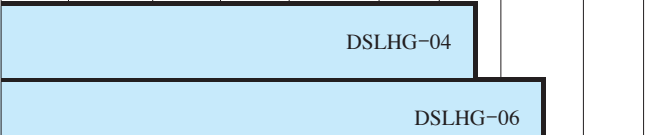
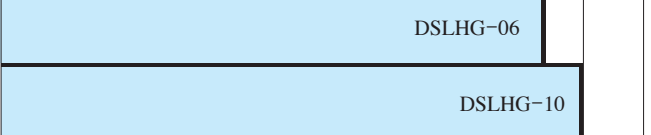
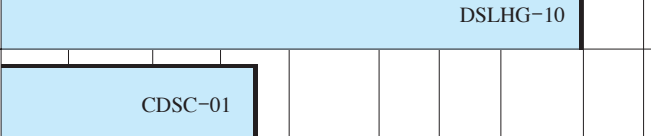
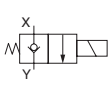

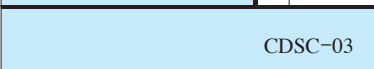
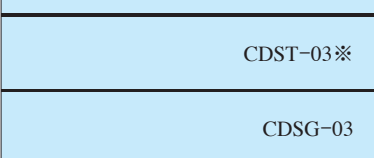
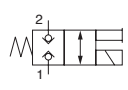
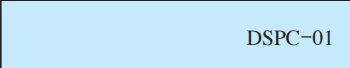
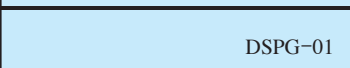
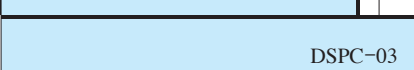
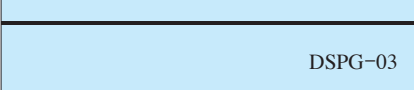
● List of Seal Kit No.

Item	Name of Parts	Part Numbers	Quantity	
			DCT-03	DCG-03
11	O-Ring	SO-NB-P21	2	2
12	O-Ring	SO-NA-P6	1	1
13	Back Up Ring	SO-BE-P6	1	1
14	O-Ring	SO-NB-A014	0	5

Valve Mdel Numbers	Seal Kit Numbers
DCT-03-2B*-*-50/5080/5090	KS-DCT-03-50
DCG-03-2B*-*-50/5090	KS-DCG-03-50

Note: When ordering the seals, please specify the seal kit number from the table right.

Poppet Type Directional Valves

Valve Type	Graphic Symbols	Max. Operating Pressure MPa (PSI)	Maximum Flow		Page
			L/min	U. S. GPM	
Poppet Type Solenoid Operated Directional Valves		31.5 (4570)			453
Multi Purpose Control Valves		25 (3630)			459
					
					
Solenoid Operated Poppet Type Two-Way Valves		21 (3050)			480
		14 (2030)			
					
Shut-off Type Solenoid Operated Directional Valves		25 (3630)			489
					
					
					

■ Mounting Surface

Mounting surfacedimensions conform to ISO standard described in below table.

Name	Model Number	ISO Code of Mounting Surface
Shut-off Type Solenoid Operated Directional Valves	DSPG-01	ISO 4401-AB-03-4-A
	DSPG-03	ISO 4401-AC-05-4-A
	DSPC-01	ISO 7789 20-01-0-93
	DSPC-03	ISO 7789 27-01-0-93
Multi Purpose Control Cavles	DSLHG-04	ISO 4401-AD-07-4-A
	DSLHG-06	ISO 4401-AE-08-4-A
	DSLHG-10	ISO 4401-AF-10-4-A

Interchangeability in Installation between Current and New Design

Model change has been made on the following products.

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		Mtg. Interchangeability	Page	Main changes
	Current	New			
Multi Purpose Control Valves	DSLHG-04-*-*-12* DSLHG-06-*-*-12* DSLHG-10-*-*-12*	DSLHG-04-*-*-13* DSLHG-06-*-*-13* DSLHG-10-*-*-13*	Yes	—	Pilot valve (DSG-01) changed to design.
Solenoid Operated Poppet Type Two-Way Valves	CDS*-03*-C-*-20*	CDS*-03*-C-*-21*	Yes	488	The change of solenoid ratings.
Shut-off Type Solenoid Operated Directional Valves	DSP*-01-C-*-10*	DSP*-01-C-*-20*	Yes	—	The change of solenoid.

Solenoid

■ Solenoid connector (DIN connector)

The solenoid connector is in accordance with the international standard ISO 4400 (Fluidpower System 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)

K-series DC Solenoid which has a reputation for excellent DC control is employed.

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-exercitation is reduced by approximately 50 %.

■ R Type Models with Current Rectifier and DC Solenoid

Specially designed DC solenoids 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 overheating of coil due to the spool sticking and protection against transient voltage peaks are assured.

■ Insulation Class of Solenoid

Model Numbers	Insulation Class
DSLG-01	Class H
DSLHG-04/06/10	
CDSC-01	
CDS*-03* DSP*-01/03	

■ Poppet Type Directional Valves

These are Solenoid Operated Directional Valves of No Leak Type developed with the aim of responding the demand of the age including energy saving. Because these valves are of no leak type they allow the low viscosity hydraulic fluids to be used as well as the circuit construction which cannot be used by the conventional spool type directional valves because of too much internal leak of pressure oil. The use of the low viscosity hydraulic fluids reduces the pressure loss which can arise from the passage resistance of the hydraulic fluids, leading to the system energy saving.

■ Poppet Type Solenoid Operated Directional Valves

● High Response High Reliability

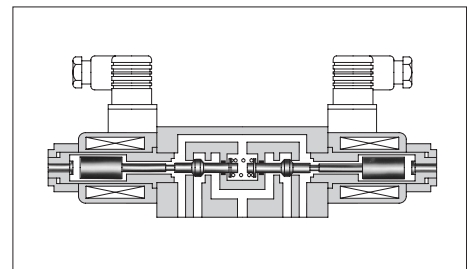
Because these valves are of poppet type, there is no overlap, high response can be achieved. At the same time, hydraulic lock is eliminated.

● No Leak

Sheet type seal has been adopted and internal leak is greatly reduced.

● ISO Comformant Mounting Surface

Because the mounting surface conforms to ISO 4401-AB-03-4-A, there is an interchangeability with the conventional valves. This makes it possible to use these valves in combination with 01 Series Modular Valves.



■ Specifications

Model Numbers	Max. Flow	Max. Operating Pressure	Max. T-Line Back Pressure	Max. Changeover Frequency	Internal leakage	Approx. Mass	Graphic Symbols
	L/min (U.S.GPM)	MPa (PSI)	MPa (PSI)	min ⁻¹ {Cycles/Min}			
DSL-G-01-3-C-*N-11	16 (4.2)	31.5 (4570)	16 (2320)	240	Or Less 0.5 ^{★1} (.03)	1.9 (4.2)	
DSL-G-01-3-O-*N-11							
DSL-G-01-4-O-*N-11					Or Less 1 ^{★2} (.06)	3.7 (8.2)	

★1. This is the leakage towards "T" port in A port block at "P" port pressure 14 MPa (2030 PSI).

★2. This is the leakage towards "T" port in A•B port block at "P" port pressure 14 MPa (2030 PSI).

■ Solenoid Ratings

Electric Source	Coil Type	Frequency (Hz)	Voltage (V)		Current & Power at Rated Voltage	
			Source Rating	Serviceable Range	Holding (A)	Power (W)
DC (K Series)	D12	—	12	10.8 - 13.2	2.45	29
	D24	—	24	21.6 - 26.4	1.23	
AC→DC Rectified	R100	50/60	100	90 - 110	0.33	29
	R200	50/60	200	180 - 220	0.16	

Model Number Designation

F-	DSLGL	-01	-4	-O	-D24	-N	-11	*
Special Seals	Series Number	Valve Size	Number of Port	Function	Coil Type	Type of Electrical Conduit Connection	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	DSLGL: Poppet Type Solenoid Operated Directional Valve (Sub-plate Mtg.)	01	3: 3 Port	O: Normally Open C: Normally Closed	DC D12, D24 AC→DC R100 R200	N: Plug-in Connector	11	Refer to ★
			4: 4 Port	O: Normally Open				

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

Sub-plate

Piping Size	Japanese Standard "JIS"		European Design Std.		N. American Design Std.		Approx. Mass kg (lbs.)
	Sub-plate Model No.	Thread Size	Sub-plate Model No.	Thread Size	Sub-plate Model No.	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 Bolts

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

Descriptions	Socket Head Cap Screw (4 pcs.)	Tightening Torque
Japanese Standard "JIS" European Design Standard	M5 × 45 Lg.	5-7 Nm (44-62 in. lbs.) [Applicable to working pressure more than 25 MPa (3630 PSI) : 6-7 Nm (53-62 in. lbs.)]
N. American Design Standard	No. 10-24 UNC × 1-3/4 Lg.	

Instructions

● **Mounting**

No mounting restrictions for any models.

● **Solenoid Shifting**

On double solenoid valves do not energise both at the same time.

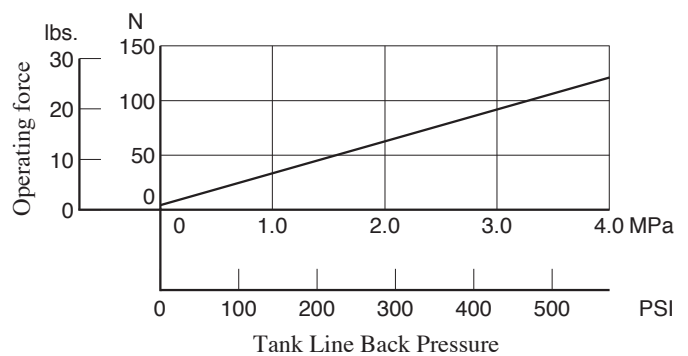
● **Valve Tank Port**

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

● **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.)

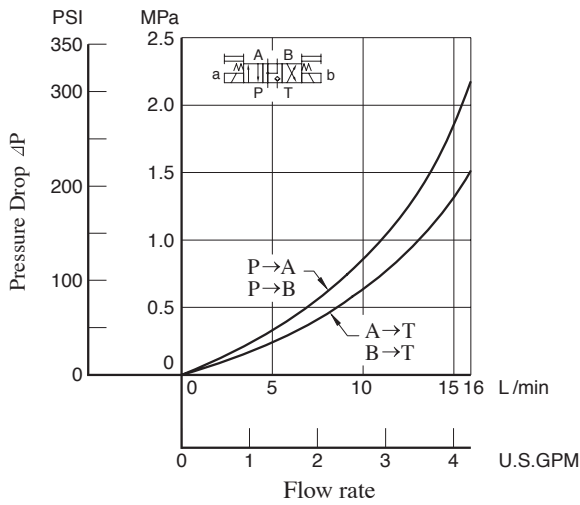
Operating Force by Manual Actuator



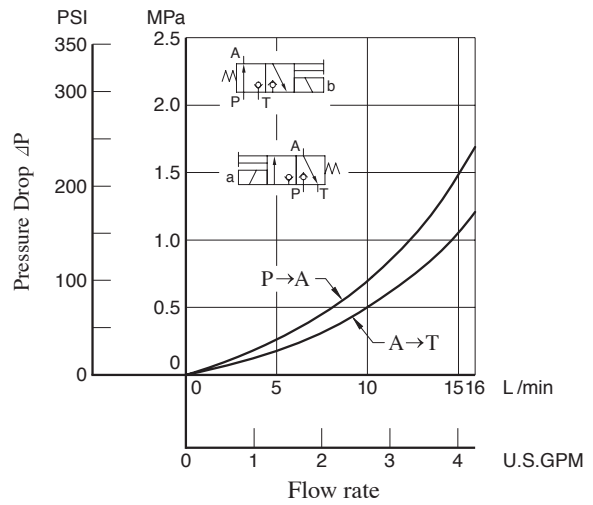
Pressure Drop

Hydraulic Fluid: Viscosity 35 mm²/s (164 SSU), Specific Gravity 0.850

4 Port Valve



3 Port Valve



- 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

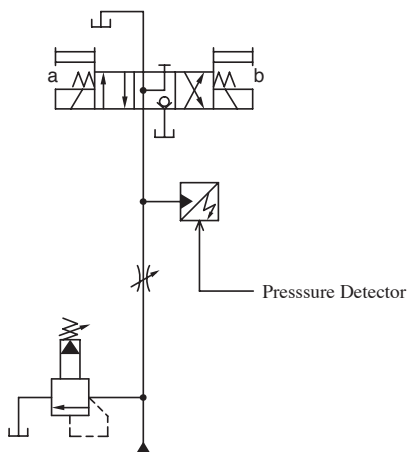
- For any other specific gravity (G'), the pressure drop (ΔP') may be obtained from the formula below.

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

Changeover Time

Changeover time varies according to hydraulic circuit of the model actually used and conditions. An example of measurement is given in the figure below.

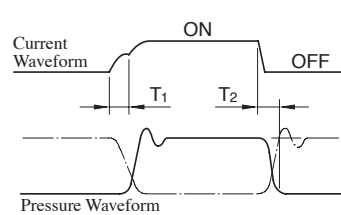
Test Circuit and Conditions



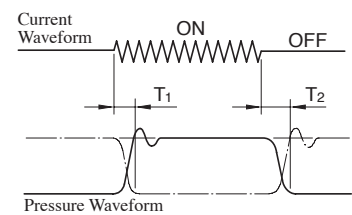
Pressure: 21 MPa (3050 PSI)
Flow Rate: 16 L/min (4.2 U.S.GPM)
Voltage: Rated voltage

Result of Measurement

(DC Solenoid)

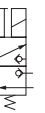


(AC→DC Rectified)



Note: Alternate long and short dash lines in the pressure waveform figures indicate the waveforms for Normally Closed Type 3 Port Valves.

Solenoid Type	Model Numbers	Time (ms)		Remarks
		T ₁	T ₂	
DC	DSL-G-01-4-O-D*	55	30	4 port valve, normally open
	DSL-G-01-3-O-D*	55	30	3 port valve, normally open
	DSL-G-01-3-C-D*	70	25	3 port valve, normally closed
AC→DC Rectified	DSL-G-01-4-O-R*	55	150	4 port valve, normally open
	DSL-G-01-3-O-R*	55	150	3 port valve, normally open
	DSL-G-01-3-C-R*	70	150	3 port valve, normally closed

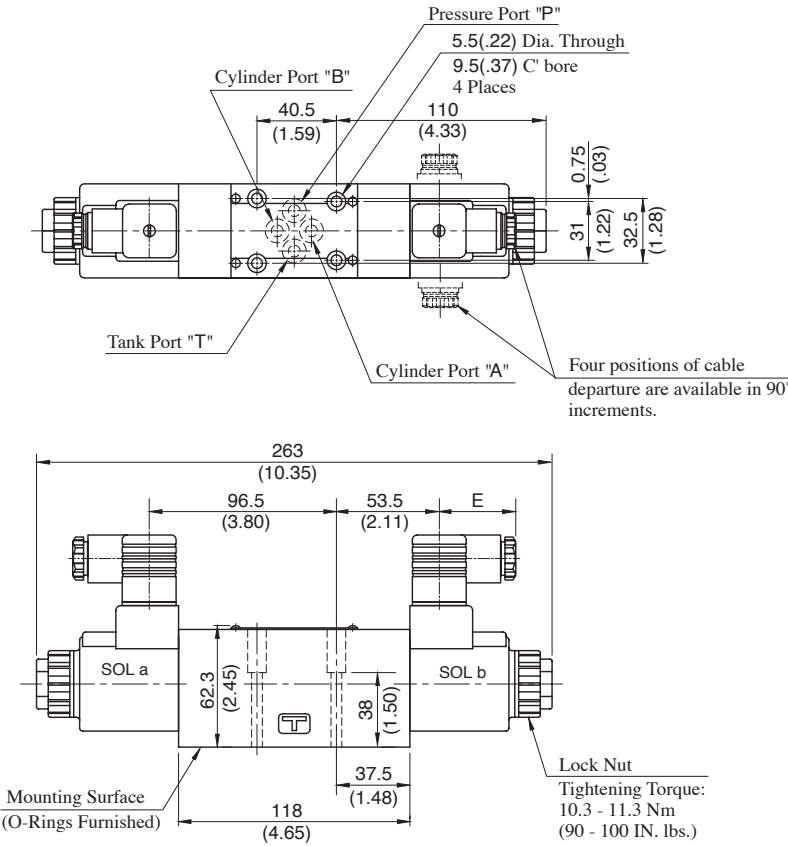


■ 4 Port Valve

Mounting Surface:
ISO4401-AB-03-4-A

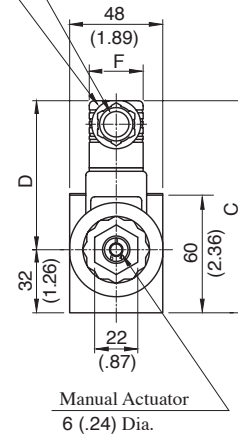
● Normally Open: DSLG-01-4-O-*-*N-11/1190

**DIMENSIONS IN
MILLIMETRES (INCHES)**



The connector can be moved to various positions by loosening the "Lock Nut". After location tighten "Lock Nut".

Cable Departure
Cable Applicable:
Outside Dia. 8-10 mm (.31 - .39 in.)
Conductor Area . . . Not Exceeding 1.5 mm² (.0023 Sq. in.)



Model Numbers	Dimensions mm (Inches)			
	C	D	E	F
DSL-01-4-O-D*-N	108 (4.25)	64 (2.52)	39 (1.54)	27.5 (1.08)
DSL-01-4-O-R*-N	111 (4.37)	57.2 (2.25)	51 (2.01)	34 (1.34)

● The information on 3 Port Valves is provided in the [following page](#).

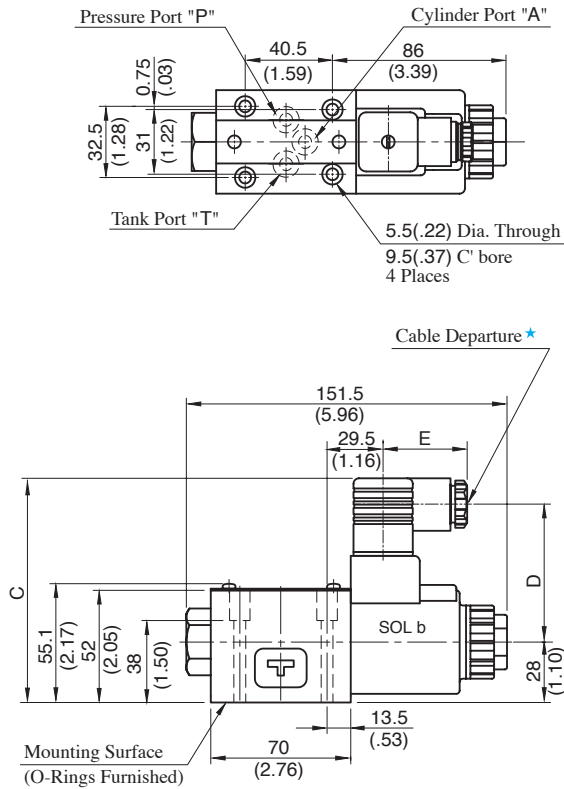
Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 356](#).

Mounting Surface:
ISO4401-AB-03-4-A

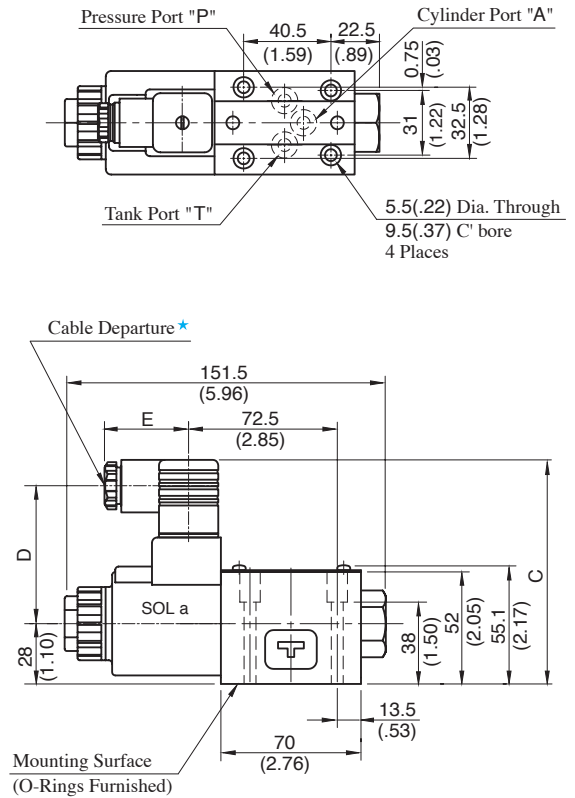
3 Port Valves

DIMENSIONS IN
MILLIMETRES (INCHES)

● Normally Open Type: DSL_G-01-3-O-***-N-11/1190



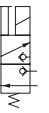
● Normally Closed Type: DSL_G-01-3-C-***-N-11/1190



Model Numbers	Dimensions mm (Inches)		
	C	D	E
DSL _G -01-3- <i>*</i> -D- <i>*</i> -N	104 (4.09)	64 (2.52)	39 (1.54)
DSL _G -01-3- <i>*</i> -R- <i>*</i> -N	107 (4.21)	57.2 (2.25)	51 (2.01)

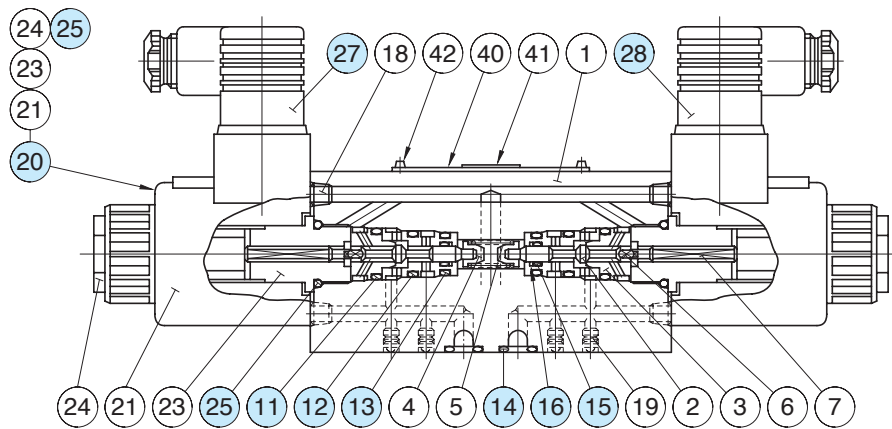
★ Cable departure position can be changed. See "4 Port Valves" in the previous page for the details.

Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in [page 356](#).

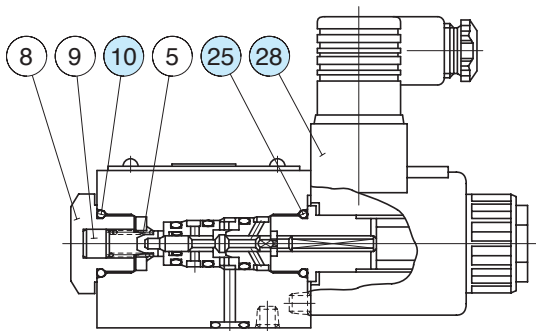


■ List of Seals, Solenoid Ass'y and Connectors

4 Port Valve



3 Port Valve



● List of Seals

Item	Name of Parts	Part Numbers	Quantity	
			4 Port Valve	3 Port Valve
10	O-Ring	SO-NB-P18	—	1
11	O-Ring	SO-NB-P14	2	1
12	O-Ring	SO-NB-P12	2	1
13	O-Ring	SO-NB-P11	2	1
14	O-Ring	SO-NB-P9	4	3
15	O-Ring	SO-NA-P5	2	1
16	Back Up Ring	2705-VK414322-8	2	1
25	O-Ring	SO-NB-P18	2	1

Note 1: O-Ring of item (25) are included in solenoid assembly.
 2: When ordering the seals, specify the seal kit number from the table right.

● Change of supply voltage

The supply voltage can be changed by replacing the coil (21) only.

● List of Seal Kits

Valve Model Number s	Seal Kit Numbers
DSL G-01-3-O- *-N-11*	KS-DSL G-01-3-N-11
DSL G-01-3-C- *-N-11*	
DSL G-01-4-O- *-N-11*	KS-DSL G-01-4-N-11

● List of Solenoid Ass'y and Connectors

Valve Model No.	(20) Solenoid Ass'y No.	(21) Coil No.	(27) Connector No.	(28) Connector No.
DSL G-01- *- *-D12-N-11*	SD1L-12-N-20	C-SD1-12-N-60	GDM-211-A-11	GDM-211-B-11
DSL G-01- *- *-D24-N-11*	SD1L-24-N-20	C-SD1-24-N-60		
DSL G-01- *- *-R100-N-11*	SD1L-100-N-20	C-SR1-100-N-60	GDME-211-R-A-10	GDME-211-R-B-10
DSL G-01- *- *-R200-N-11*	SD1L-200-N-20	C-SR1-200-N-60		

Multi Purpose Control Valves

The Yuken Multi-Purpose Control Valves Comply with The Needs of Reducing Cost and Size of Your Machine

YUKEN's Multi Purpose Control Valves are compound valves composed of the main valve having four poppets, 1/8 Solenoid Operated Directional Valves for pilot and Pilot Selector Valves. This valve is multifunctionalized by having individual poppet had functions such as directional control, flow control or pressure control according to the combination of the main valve and pilot selector valve.

Features

Multi-purpose control valves

The valves combine three functions of directional control, flow control and of pilot operated check valve (or counterbalance valve). The valves contribute for reducing a number of valves in applications and space for installation and then eventually leads to reduction in size and cost of your machines.

Quick response, High reliability

Changeover response time is very quick as the valves are poppet type, there is no over-lap. No hydraulic lock occurs as there is no leakage of pressurised oil from the seat parts.

Easy to reduce shock in your hydraulic system

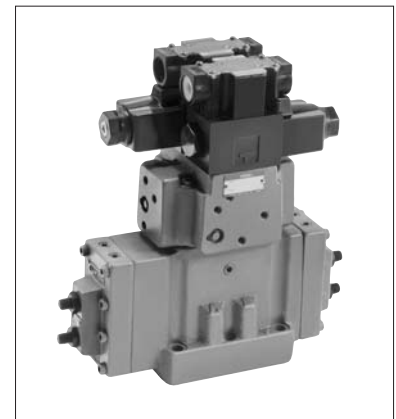
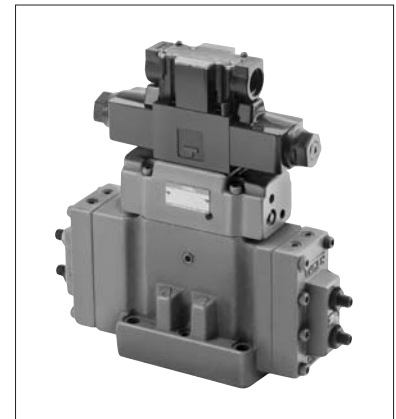
By selecting proper diameter of orifice for pilot, the open/close timing of the flow passage can be set freely. Therefore, smooth starting and stopping of actuator can be done combined with using shockless type poppet. Noise of ON/OFF and vibration of piping in hydraulic system can be also reduced.

For regenerative circuit

4 position-4 way type, which is to compose regenerative circuit, is available. By adopting regenerative circuit, gaining fast feed speed by using smaller volume pump is possible. Therefore saving electric power of system is possible.

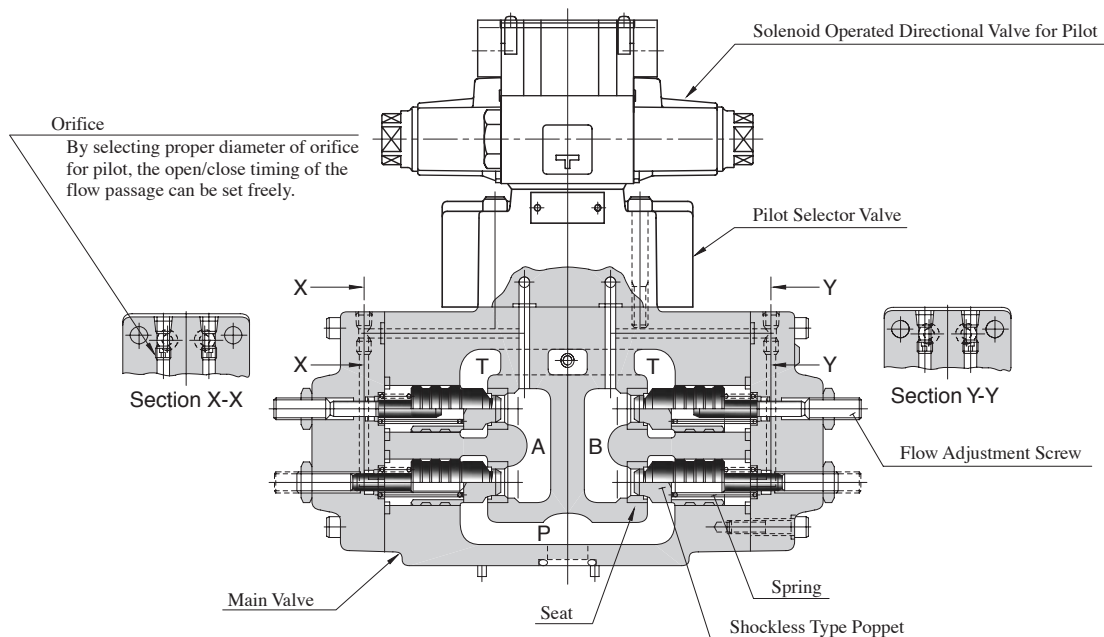
The mounting dimensions are conformed with ISO standard

The valves are interchangeable with our conventional valves in mounting.



F

Multi Purpose Control Valves



Specifications

Model Numbers	Max. Flow L/min (U.S.GPM)	Max. Operating Pressure MPa (PSI)	Max. Pilot Pressure MPa (PSI)	Max. T-Line Back Pres. MPa (PSI)	Pressure Adj. Range of Counterbalance MPa (PSI)	Ratio of Poppet Area (Seat Area: Annular Area)		Approx. Mass kg (lbs.)
						Direction & Flow Control	Pressure Control	
DSLHG-04-1-* -13*	150 (39.6)	25 (3630)	25 (3630)	16 (2320)	—	1:1	—	15 (33)
DSLHG-04-2-* -13*								15 (33)
DSLHG-04-3-* -13*								19 (42)
DSLHG-04-4-* -13*	150 {100}* (39.6 {26.4})	25 (3630)	25 (3630)	16 (2320)	Refer to Model No. Designation	1:1	24:1	20 (44)
DSLHG-04-5-* -13*								22.5 (50)
DSLHG-06-1-* -13*	300 (79.3)	25 (3630)	25 (3630)	16 (2320)	—	1:1	—	26.5 (59)
DSLHG-06-2-* -13*								26.5 (59)
DSLHG-06-3-* -13*								28 (62)
DSLHG-06-4-* -13*	300 {200}* (79.3 {52.8})	25 (3630)	25 (3630)	16 (2320)	Refer to Model No. Designation	1:1	24:1	31 (68)
DSLHG-06-5-* -13*								34.5 (76)
DSLHG-10-1-* -13*	500 (132)	25 (3630)	25 (3630)	16 (2320)	—	1:1	—	59 (130)
DSLHG-10-2-* -13*								59 (130)
DSLHG-10-3-* -13*								62 (137)
DSLHG-10-4-* -13*	500 {300}* (132 {79.3})	25 (3630)	25 (3630)	16 (2320)	Refer to Model No. Designation	1:1	24:1	63.5 (140)
DSLHG-10-5-* -13*								67 (148)

★ In case of counterbalance function line, maximum flow is limited to the values in brackets.

Solenoid Ratings

Refer to Pilot Valve (DSG-01 Series Solenoid Operated Directional Valve) Solenoid Ratings on [page 345](#).

Model Number Designation

F-	DSLH	G	-04	-4	A	-B		
Special Seals	Series Number	Type of Mounting	Valve Size	Type of Pilot Control	Counterbalance Function	Pressure Adj. Range of Counterbalance MPa (PSI)		
F: For phosphate ester type fluids (Omit if not required)	DSLH: Multi-Purpose Control Valve	G: Sub-plate Mounting	04	1	—	—		
				2				
				3				
				4			A : AT Line W : AT & BT Lines	B : * ^{★1} - 7 (* ^{★1} - 1020) H : 6 - 25 (870 - 3630)
				5				
			06	1	—	A : AT Line W : AT & BT Lines	None: * ^{★1} - 25 (* ^{★1} - 3630)	
				2				
				3				
				4				
				5				
10	1	—	A : AT Line W : AT & BT Lines	None: * ^{★1} - 25 (* ^{★1} - 3630)				
	2							
	3							
	4							
	5							

See [page 462](#) for functions and purpose of use.

★1. See "Min. Adjustment Pressure", [page 464](#), for information on minimum adjustment pressure.

Sub-plate

Valve Model Numbers	Japanese Standard "JIS"			European Design Standard			N. American Design Standard		
	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)
DSLHG-04	DHGM-04-20	Rc 1/2	4.4 (9.7)	DHGM-04-2080	1/2 BSP.F	4.4 (9.7)	DHGM-04-2090	1/2 NPT	4.4 (9.7)
	DHGM-04X-20	Rc 3/4	4.1 (9.0)	DHGM-04X-2080	3/4 BSP.F	4.1 (9.0)	DHGM-04X-2090	3/4 NPT	4.1 (9.0)
DSLHG-06	DHGM-06-50	Rc 3/4	7.4 (16.3)	DHGM-06-5080	3/4 BSP.F	8.5 (18.7)	DHGM-06-5090	3/4 NPT	7.4 (16.3)
	DHGM-06X-50	Rc 1	7.4 (16.3)	DHGM-06X-5080	1 BSP.F	8.5 (18.7)	DHGM-06X-5090	1 NPT	7.4 (16.3)
DSLHG-10	DHGM-10-40	Rc 1-1/4	21.5 (47.4)	DHGM-10-4080	1-1/4 BSP.F	21.5 (47.4)	DHGM-10-4090	1-1/4 NPT	21.5 (47.4)
	DHGM-10X-40	Rc 1-1/2	21.5 (47.4)	DHGM-10X-4080	1-1/2 BSP.F	21.5 (47.4)	DHGM-10X-4090	1-1/2 NPT	21.5 (47.4)

- 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.
- These sub-plates are sharable with those for DSHG Series Solenoid Controlled Pilot Operated Directional Valve. For dimensions, see [pages 401 to 403](#).

Mounting Bolts

Socket head cap screws in the table below are included.

Model Numbers	Socket Head Cap Screw			
	Japanese Standard "JIS" and European Design Standard	N. American Design Standard	Qty.	Tightening Torque Nm (In. lbs.)
DSLHG-04	M6 × 40 Lg.	1/4-20 UNC × 1-1/2 Lg.	2	12-15 (106-133)
	M10 × 45 Lg.	3/8-16 UNC × 1-3/4 Lg.	4	58-72 (513-637)
DSLHG-06	M12 × 60 Lg.	1/2-13 UNC × 2-1/2 Lg.	6	100-123 (885-1089)
DSLHG-10	M20 × 75 Lg.	3/4-10 UNC × 3 Lg.	6	473-585 (4186-5177)

-E	T	-A100	-C	-N	-13	*
Pilot Connection	Drain Connection ^{★2}	Coil Type	Manual Override	Electrical Conduit Connection	Design Number	Design Standards
None: Internal Pilot	None: External Drain	AC: A100 A120 A200 A240	None: Manual Override Pin	None: Terminal Box Type	13	None: Japanese Std. "JIS" 90: N.American Design Std.
		DC: D12 D24 D48			13	
E: External Pilot	T: Internal Drain	R: (AC→DC) R100 R200	C: Push Button & Lock Nut (Options)	N: Plug-in Connector Type	13	None: Japanese Std. "JIS" & European Design Std. 90: N.American Design Std.

★2. In case of lines with counterbalance function ($-4 \frac{A}{W}$, $-5 \frac{A}{W}$), External Drain must be selected for Drain Connection.

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.

Function and Purpose of Use

Type of Pilot Control	Model No.	Graphic Symbols	Function			Purpose of Use													
			Directional Control	Flow Control	Pilot Operated Check Valve / Pressure Control														
Type "1"	DSLHG-**-1		 <table border="1"> <tr> <td>Position</td> <td>#1</td> <td>#2</td> <td>#3</td> </tr> <tr> <td>SOL a</td> <td>ON</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>SOL b</td> <td>OFF</td> <td>OFF</td> <td>ON</td> </tr> </table>	Position	#1	#2	#3	SOL a	ON	OFF	OFF	SOL b	OFF	OFF	ON	 Both Metre-in and Metre-out are possible	 To get a function of pilot operated check valve, the following conditions should be fulfilled. <ul style="list-style-type: none"> Internal pilot type ("P" port pressure) \geq ("A""B" ports pressure) External pilot type (Pilot pressure) \geq ("A""B" ports pressure) 	<ul style="list-style-type: none"> Functions as Three Position Four-Way Valve (Spring Centred Model). 	
	Position	#1	#2	#3															
SOL a	ON	OFF	OFF																
SOL b	OFF	OFF	ON																
DSLHG-**-2		 <table border="1"> <tr> <td>Position</td> <td>#1</td> <td>#2</td> <td>#3</td> </tr> <tr> <td>SOL a</td> <td>ON</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>SOL b</td> <td>OFF</td> <td>OFF</td> <td>ON</td> </tr> </table>	Position	#1	#2	#3	SOL a	ON	OFF	OFF	SOL b	OFF	OFF	ON	<ul style="list-style-type: none"> Functions as Three Position Four-Way Valve (Spring Centred Model) as well as Two Position Valve which uses positions #1 and #3. Effective especially when the actuator has inertia force. 				
Position	#1	#2	#3																
SOL a	ON	OFF	OFF																
SOL b	OFF	OFF	ON																
Type "3"	DSLHG-**-3		 <table border="1"> <tr> <td>Position</td> <td>#1</td> <td>#2</td> <td>#3</td> <td>#4</td> </tr> <tr> <td>SOL a</td> <td>ON</td> <td>OFF</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>SOL b</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>ON</td> </tr> </table>	Position	#1	#2	#3	#4	SOL a	ON	OFF	ON	OFF	SOL b	OFF	OFF	ON	ON	<ul style="list-style-type: none"> Functions as Four Position Four-Way Valve. Regenerative circuit can be constructed at the Position #3.
	Position	#1	#2	#3	#4														
SOL a	ON	OFF	ON	OFF															
SOL b	OFF	OFF	ON	ON															
DSLHG-**-4A		 <table border="1"> <tr> <td>Position</td> <td>#1</td> <td>#2</td> <td>#3</td> </tr> <tr> <td>SOL a</td> <td>ON</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>SOL b</td> <td>OFF</td> <td>OFF</td> <td>ON</td> </tr> </table>	Position	#1	#2	#3	SOL a	ON	OFF	OFF	SOL b	OFF	OFF	ON	<ul style="list-style-type: none"> Pressure control function (counterbalance valve) has been added to Type "2" to make this type. 				
Position	#1	#2	#3																
SOL a	ON	OFF	OFF																
SOL b	OFF	OFF	ON																
Type "4"	DSLHG-**-4W		 <table border="1"> <tr> <td>Position</td> <td>#1</td> <td>#2</td> <td>#3</td> </tr> <tr> <td>SOL a</td> <td>ON</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>SOL b</td> <td>OFF</td> <td>OFF</td> <td>ON</td> </tr> </table>	Position	#1	#2	#3	SOL a	ON	OFF	OFF	SOL b	OFF	OFF	ON	<ul style="list-style-type: none"> Used to control the back pressure of the actuator. 			
	Position	#1	#2	#3															
SOL a	ON	OFF	OFF																
SOL b	OFF	OFF	ON																
DSLHG-**-5A		 <table border="1"> <tr> <td>Position</td> <td>#1</td> <td>#2</td> <td>#3</td> <td>#4</td> </tr> <tr> <td>SOL a</td> <td>ON</td> <td>OFF</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>SOL b</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>ON</td> </tr> </table>	Position	#1	#2	#3	#4	SOL a	ON	OFF	ON	OFF	SOL b	OFF	OFF	ON	ON	<ul style="list-style-type: none"> Pressure control function (counterbalance valve) has been added to Type "3" to make this type. 	
Position	#1	#2	#3	#4															
SOL a	ON	OFF	ON	OFF															
SOL b	OFF	OFF	ON	ON															
DSLHG-**-5W		 <table border="1"> <tr> <td>Position</td> <td>#1</td> <td>#2</td> <td>#3</td> <td>#4</td> </tr> <tr> <td>SOL a</td> <td>ON</td> <td>OFF</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>SOL b</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>ON</td> </tr> </table>	Position	#1	#2	#3	#4	SOL a	ON	OFF	ON	OFF	SOL b	OFF	OFF	ON	ON	<ul style="list-style-type: none"> Used to control the back pressure of the actuator. 	
Position	#1	#2	#3	#4															
SOL a	ON	OFF	ON	OFF															
SOL b	OFF	OFF	ON	ON															

■ Instructions

● Pilot Pressure

Pilot pressure of external pilot drain models must always exceed the pressure of the main pressure port "P".

● Pilot Drain Port

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

● Drain Connection when with Counterbalance Function

When a valve having counterbalance function is used with internal drain type, the counterbalance pilot valve is subjected to pressure fluctuation and the pressure setting becomes unstable. For this reason, be sure to use external drain type valve.

● Flow Adjustment

To perform the flow adjustment, loosen the lock nut, then turn the flow adjustment screw clockwise to decrease the flow. Be sure to re-tighten the lock nut after the adjustment.

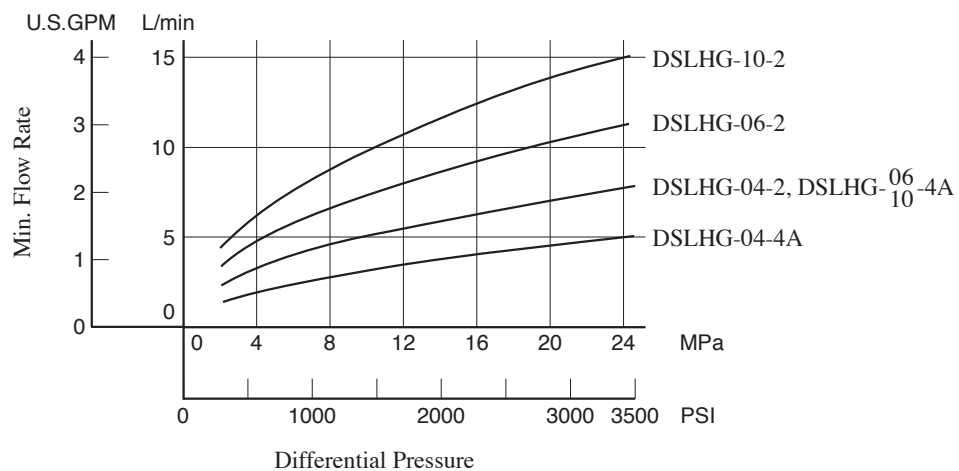
● Pressure Adjustment

To perform the pressure adjustment, loosen the lock nut, then turn the pressure adjustment screw clockwise to increase the pressure. Be sure to re-tighten the lock nut after the adjustment.

● Min. Controlled Flow for Types "2" and "4A" at The Time of Metre-out Control

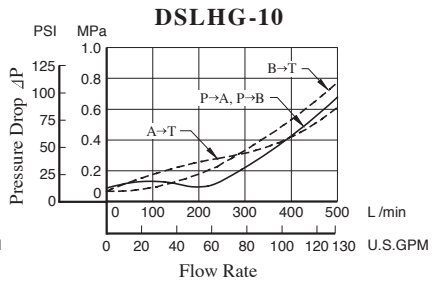
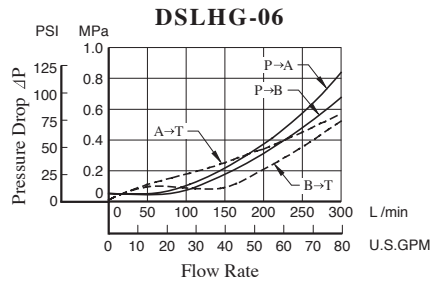
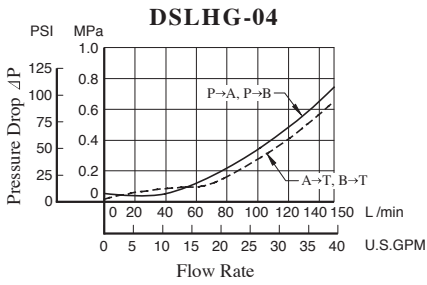
Minimum controlled flow at the time of metre-out control is limited (this does not happen during metre-in control) as shown in the figure below only in the case of pilot control types "2" (DSLHG- *-2) and "4A" (DSLHG- *-4A).

Min. Controlled Flow for Types "2" and "4A" at The Time of Metre-out Control



Hydraulic Fluid: Viscosity 35 mm²/s (164 SSU), Specific Gravity 0.850

Pressure Drop



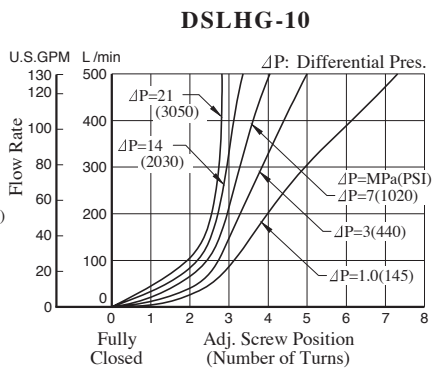
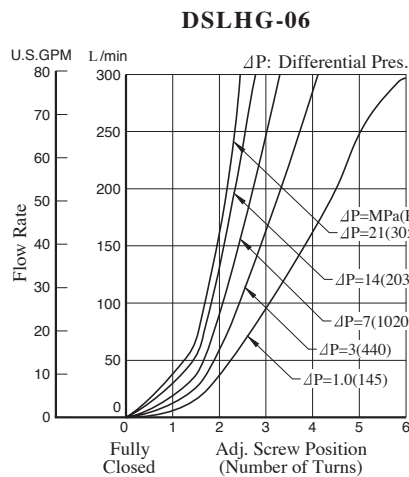
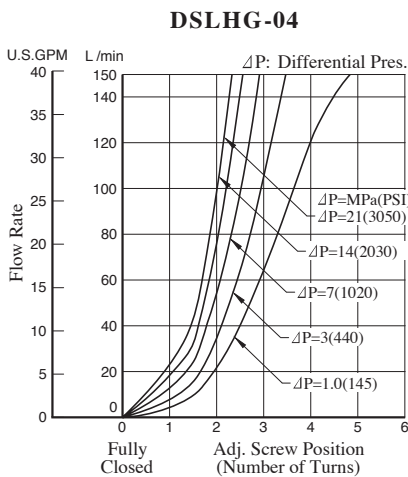
- For any other viscosity, multiply the factors in the table below.

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.

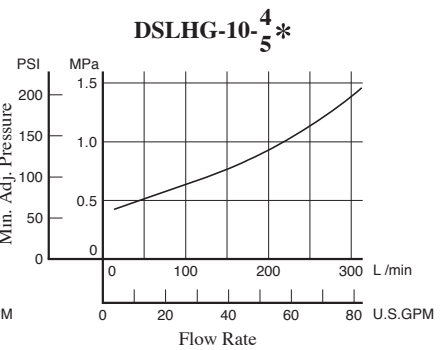
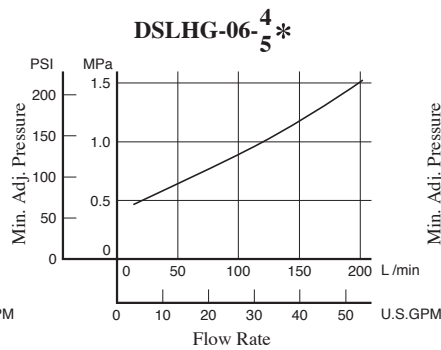
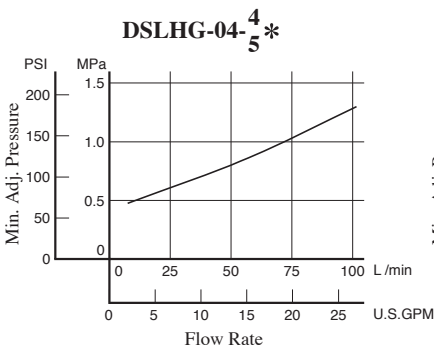
$$\Delta P' = \Delta P (G'/0.850)$$

Flow vs. Adjustment Revolutions



Minimum Adjustment Pressure

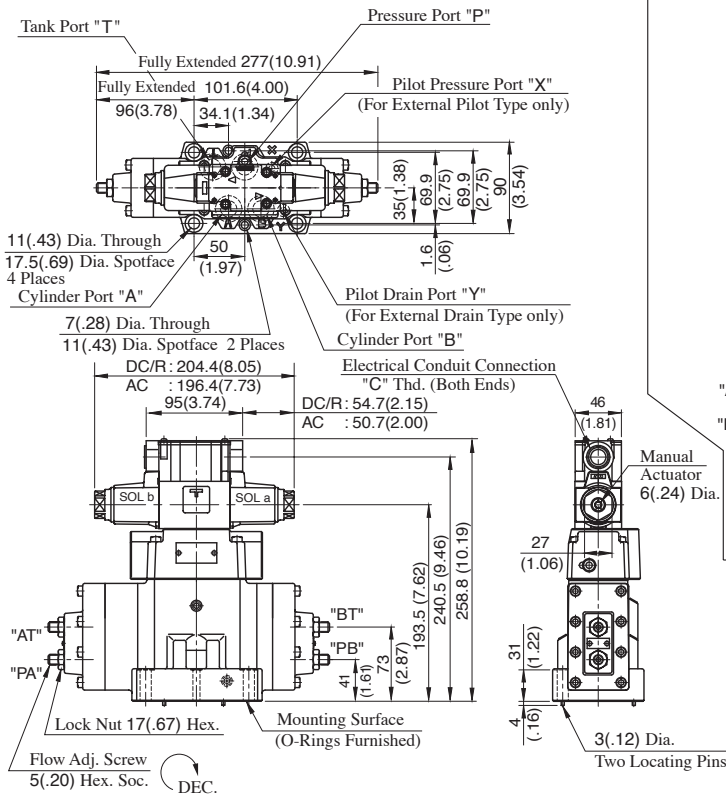
Because the minimum adjustment pressure varies with the tank line back pressure, add the tank line back pressure to the value on the following lines.



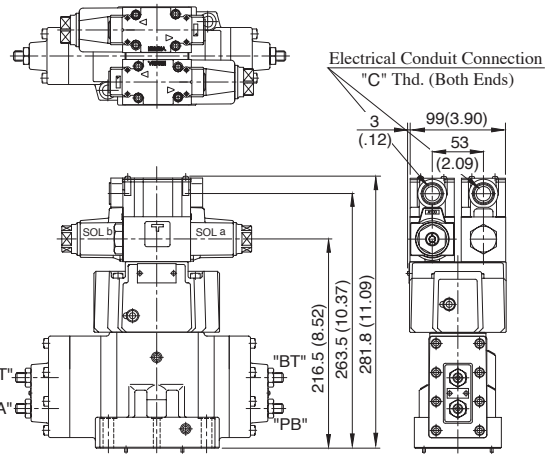
DSLHG-04- $\frac{1}{2}$ -*-13/1390

Terminal Box Type

Mounting Surface:
ISO4401-AD-07-4-A



DSLHG-04-3-*-13/1390

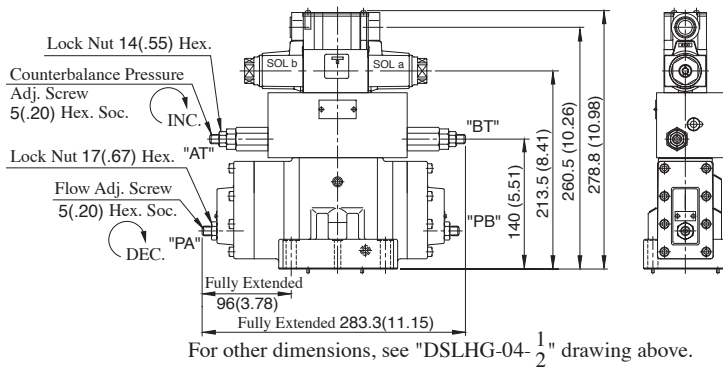


For other dimensions, see "DSLHG-04- $\frac{1}{2}$ " drawing left.

Model Numbers	"C" Thd.
DSLHG-04-*-*-13	G 1/2
DSLHG-04-*-*-1390	1/2 NPT

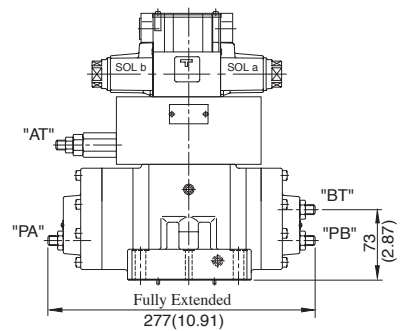
DIMENSIONS IN MILLIMETRES (INCHES)

DSLHG-04-4W-*-*-13/1390



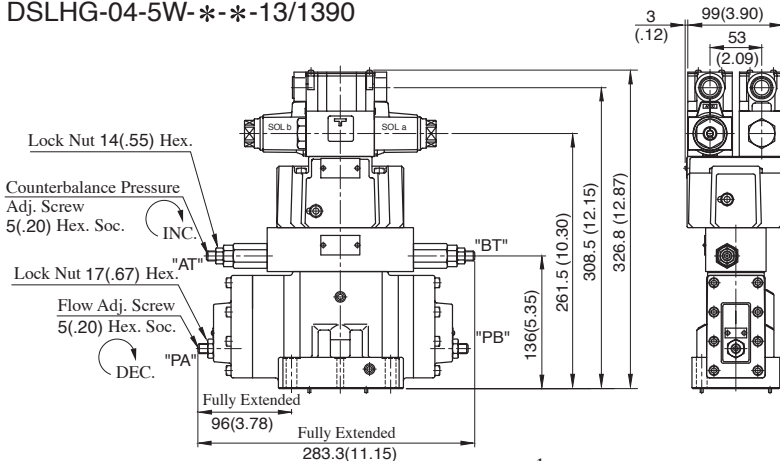
For other dimensions, see "DSLHG-04- $\frac{1}{2}$ " drawing above.

DSLHG-04-4A-*-*-13/1390



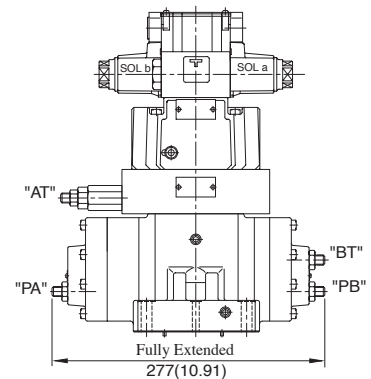
For other dimensions, see "DSLHG-04-4W" drawing left.

DSLHG-04-5W-*-*-13/1390



For other dimensions, see "DSLHG-04- $\frac{1}{2}$ " drawing above.

DSLHG-04-5A-*-*-13/1390

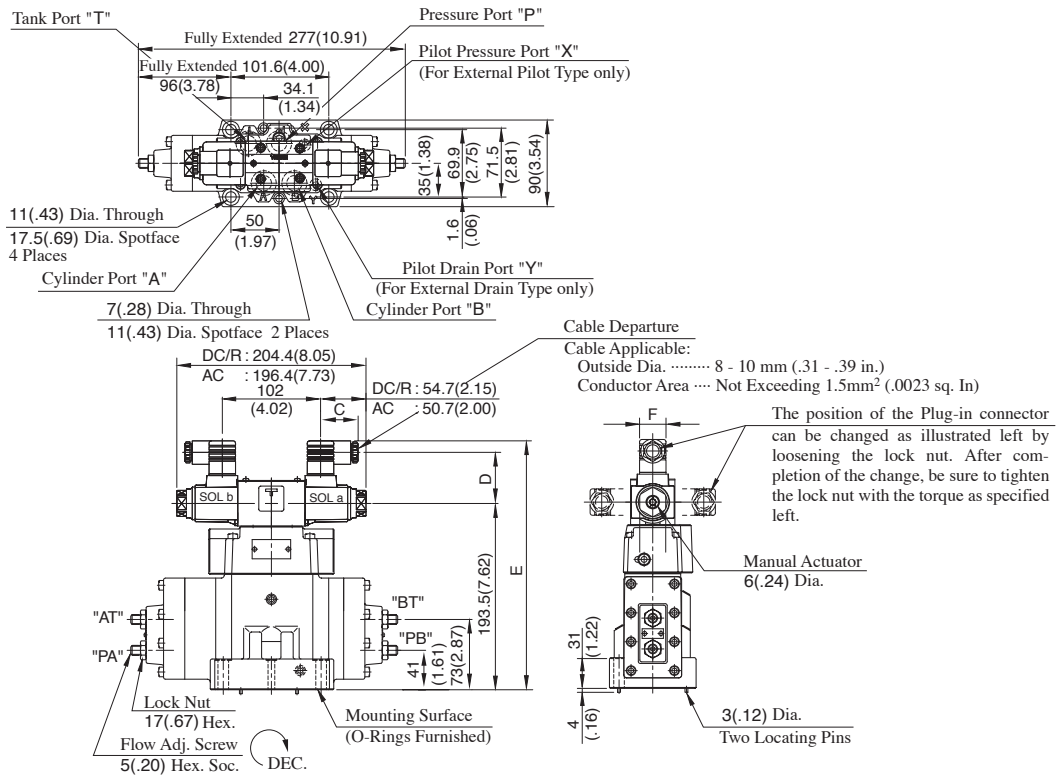


For other dimensions, see "DSLHG-04-5W" drawing left.

DSLHG-04- $\frac{1}{2}$ -*-N-13/1390

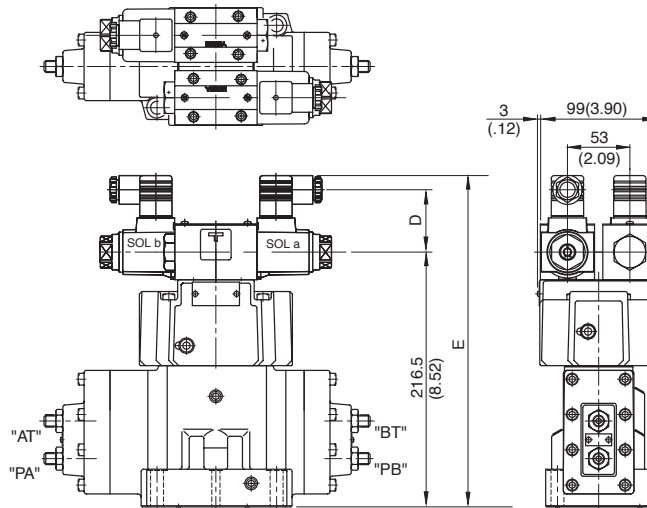
Plug-in Connector Type

Mounting Surface:
ISO 4401-AD-07-4-A



Model Numbers	Dimensions mm (Inches)			
	C	D	E	F
DSLHG-04-*-A*-N	39 (1.54)	53 (2.09)	258.5(10.18)	27.5 (1.08)
DSLHG-04-*-D*-N	39 (1.54)	64 (2.52)	269.5(10.61)	27.5 (1.08)
DSLHG-04-*-R*-N	53 (2.09)	57.2(2.25)	272.5(10.73)	34 (1.34)

DSLHG-04-3-*-N-13/1390



Model Numbers	Dimensions mm (Inches)	
	D	E
DSLHG-04-3-A*-N	53 (2.09)	281.5 (11.08)
DSLHG-04-3-D*-N	64 (2.52)	292.5 (11.52)
DSLHG-04-3-R*-N	57.2 (2.25)	299.5 (11.63)

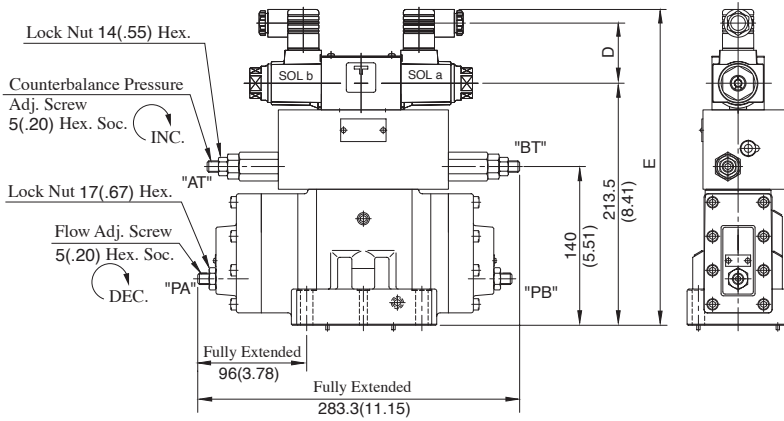
DIMENSIONS IN MILLIMETRES (INCHES)

For other dimensions, see "DSLHG-04- $\frac{1}{2}$ -*-N" drawing above.

Plug-in Connector Type

Mounting Surface:
ISO 4401-AD-07-4-A

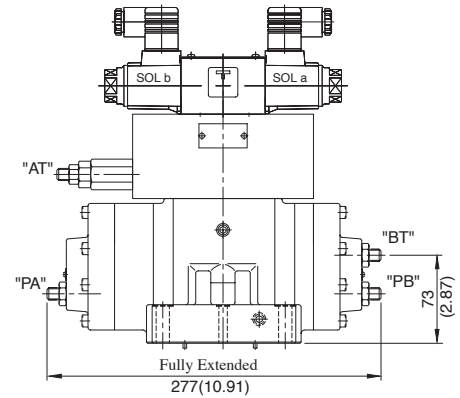
DSLHG-04-4W-*-N-13/1390



Model Numbers	Dimensions mm (Inches)	
	D	E
DSLHG-04-4W-*-A*-N	53 (2.09)	278.5 (10.96)
DSLHG-04-4W-*-D*-N	64 (2.52)	289.5 (11.40)
DSLHG-04-4W-*-R*-N	57.2 (2.25)	292.5 (11.52)

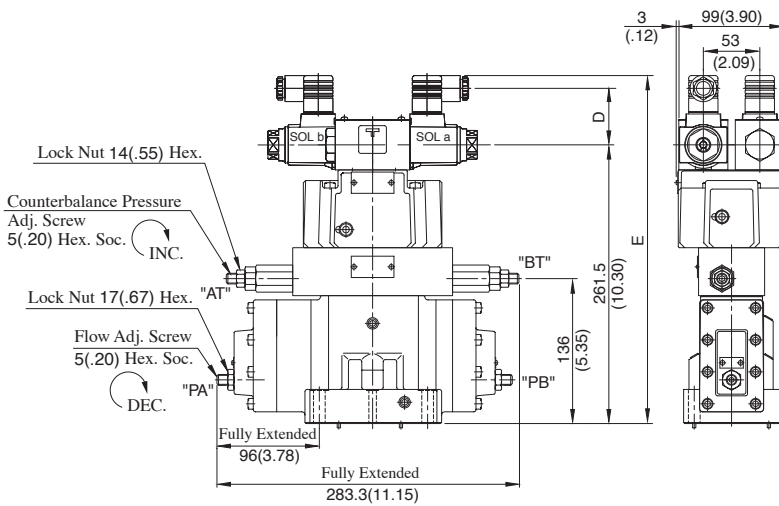
For other dimensions, see DSLHG-04- $\frac{1}{2}$ -*-N on the [previous page](#).

DSLHG-04-4A-*-N-13/1390



For other dimensions, see
"DSLHG-04-4W-*-N" drawing left.

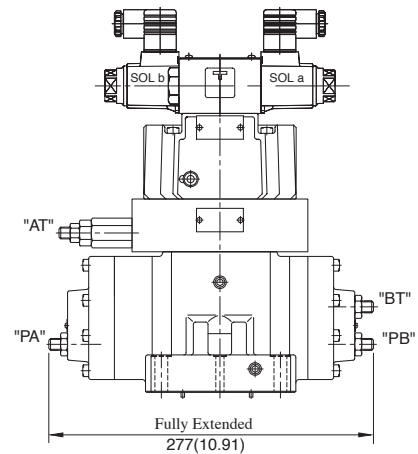
DSLHG-04-5W-*-N-13/1390



Model Numbers	Dimensions mm (Inches)	
	D	E
DSLHG-04-5W-*-A*-N	53 (2.09)	326.5 (12.85)
DSLHG-04-5W-*-D*-N	64 (2.52)	337.5 (13.28)
DSLHG-04-5W-*-R*-N	57.2 (2.25)	340.5 (13.41)

For other dimensions, see DSLHG-04- $\frac{1}{2}$ -*-N on the [previous page](#).

DSLHG-04-5A-*-N-13/1390



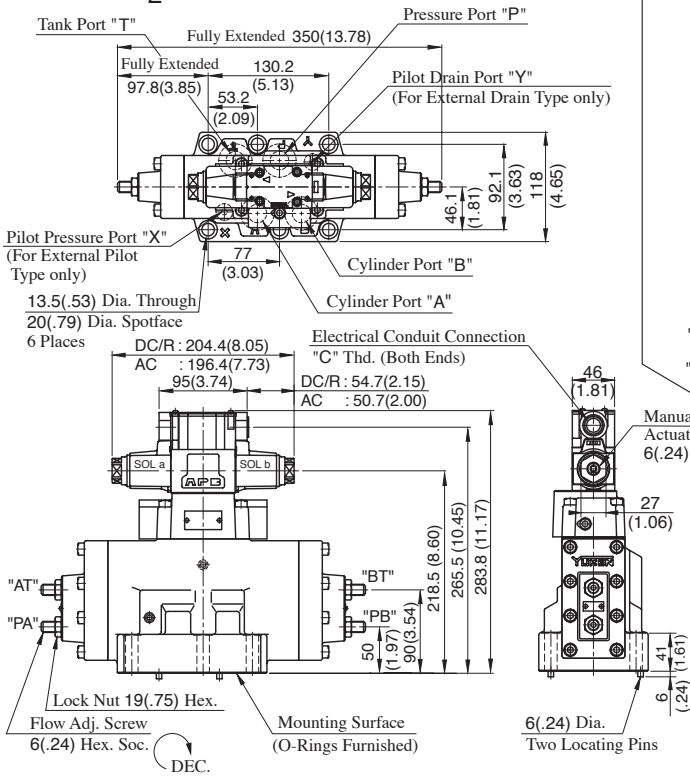
For other dimensions, see
"DSLHG-04-5W-*-N" drawing left.

**DIMENSIONS IN
MILLIMETRES (INCHES)**

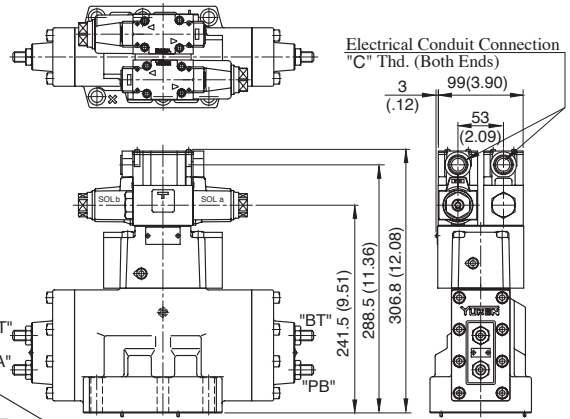
Terminal Box Type

Mounting Surface:
ISO4401-AE-08-4-A

DSLHG-06- $\frac{1}{2}$ -*-13/1390



DSLHG-06-3-*-13/1390

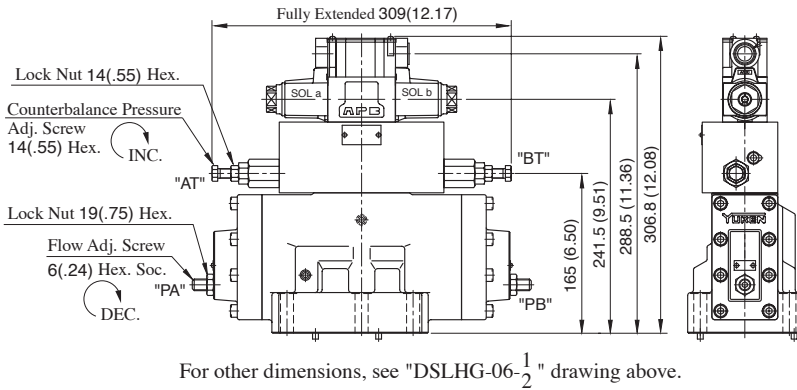


For other dimensions, see "DSLHG-06- $\frac{1}{2}$ " drawing left.

Model Numbers	"C" Thd.
DSLHG-06-*-13	G 1/2
DSLHG-06-*-1390	1/2 NPT

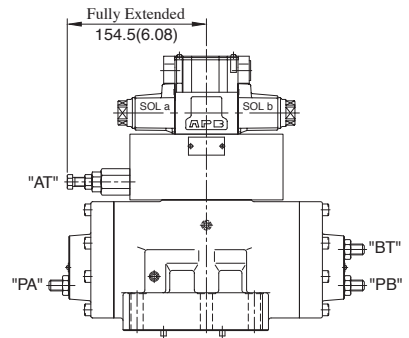
DIMENSIONS IN MILLIMETRES (INCHES)

DSLHG-06-4W-*-13/1390



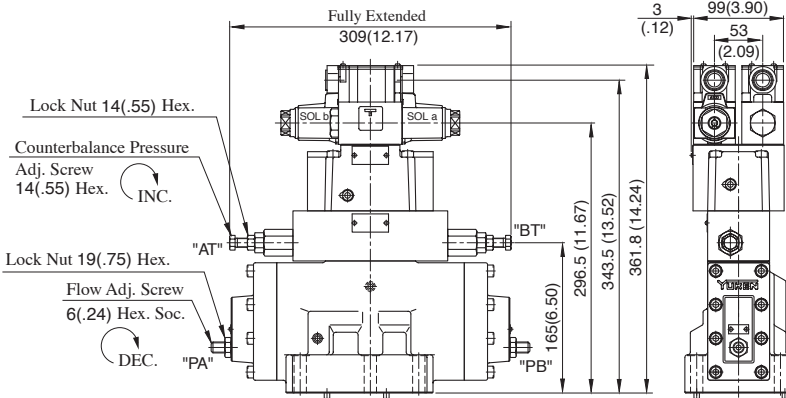
For other dimensions, see "DSLHG-06- $\frac{1}{2}$ " drawing above.

DSLHG-06-4A-*-13/1390



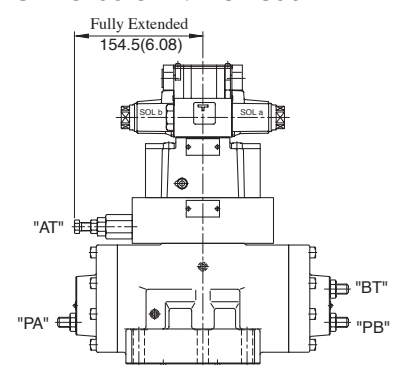
For other dimensions, see "DSLHG-06-4W" drawing left.

DSLHG-06-5W-*-13/1390



For other dimensions, see "DSLHG-06- $\frac{1}{2}$ " drawing above.

DSLHG-06-5A-*-13/1390

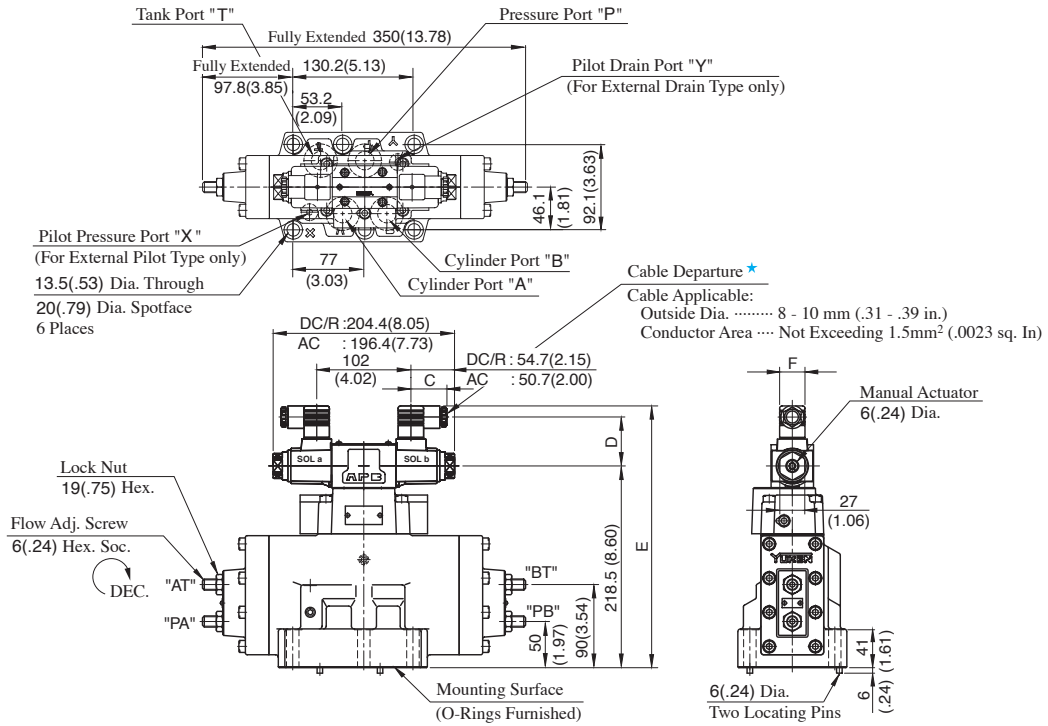


For other dimensions, see "DSLHG-06-5W" drawing left.

DSLHG-06- $\frac{1}{2}$ -*-N-13/1390

Plug-in Connector Type

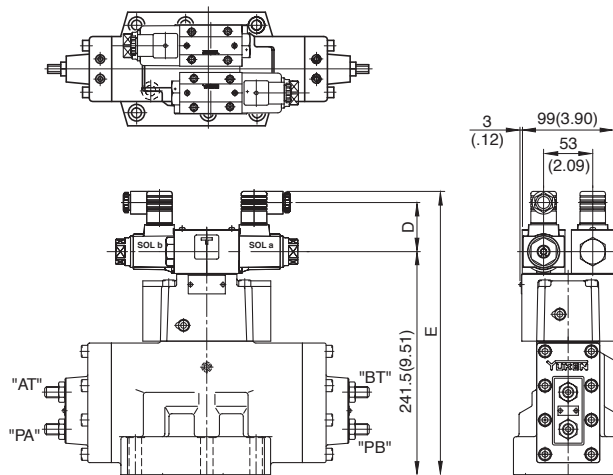
Mounting Surface:
ISO4401-AE-08-4-A



Model Numbers	Dimensions mm (Inches)			
	C	D	E	F
DSLHG-06-*-A*-N	39 (1.54)	53 (2.09)	283.5 (11.16)	27.5 (1.08)
DSLHG-06-*-D*-N	39 (1.54)	64 (2.52)	294.5 (11.59)	27.5 (1.08)
DSLHG-06-*-R*-N	53 (2.09)	57.2(2.25)	297.5 (11.71)	34 (1.34)

\star Position of cable departure can be changed. For the details, refer to DSLHG-04 valve on page 466.

DSLHG-06-3-*-N-13/1390



Model Numbers	Dimensions mm (Inches)	
	D	E
DSLHG-06-3-A*-N	53 (2.09)	306.5 (12.07)
DSLHG-06-3-D*-N	64 (2.52)	317.5 (12.50)
DSLHG-06-3-R*-N	57.2 (2.25)	320.5 (12.62)

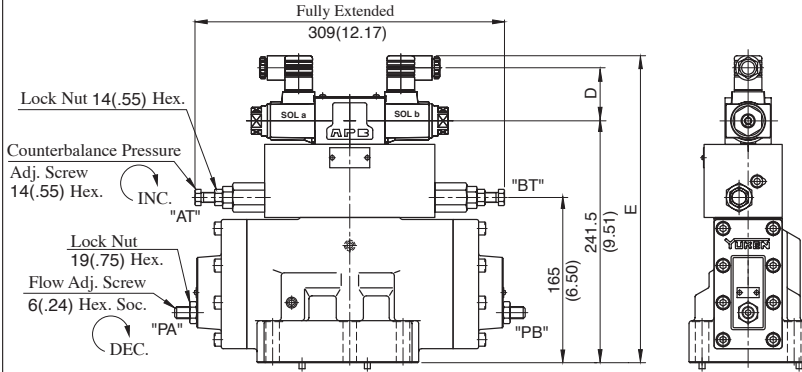
DIMENSIONS IN
MILLIMETRES (INCHES)

For other dimensions, see "DSLHG-06- $\frac{1}{2}$ -*-N" drawing above.

Plug-in Connector Type

Mounting Surface:
ISO4401-AE-08-4-A

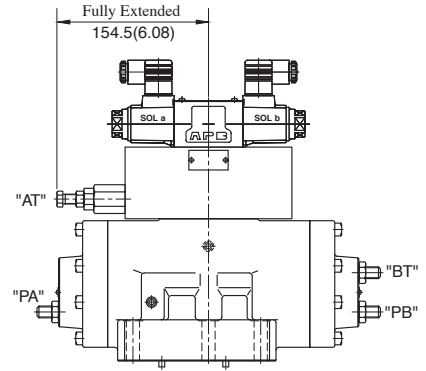
DSLHG-06-4W-* -N-13/1390



Model Numbers	Dimensions mm (Inches)	
	D	E
DSLHG-06-4W-A*-N	53 (2.09)	306.5 (12.07)
DSLHG-06-4W-D*-N	64 (2.52)	317.5 (12.50)
DSLHG-06-4W-R*-N	57.2 (2.25)	320.5 (12.62)

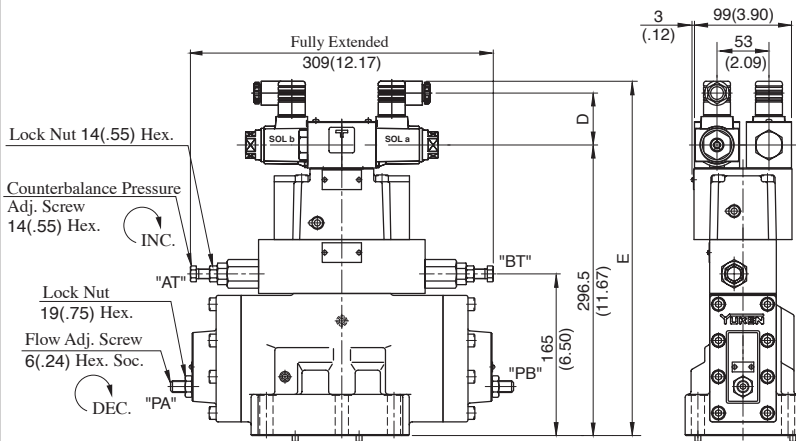
For other dimensions, see DSLHG-06- $\frac{1}{2}$ -*-N on the [previous page](#).

DSLHG-06-4A-* -N-13/1390



For other dimensions, see "DSLHG-06-4W-* -N" drawing left.

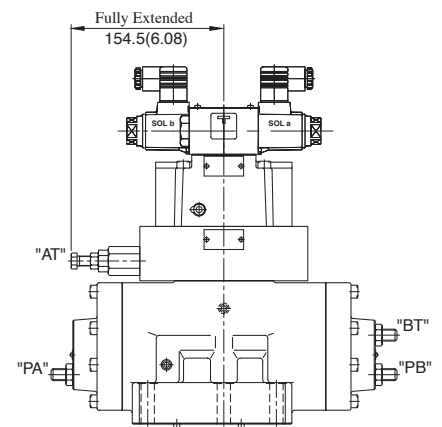
DSLHG-06-5W-* -N-13/1390



Model Numbers	Dimensions mm (Inches)	
	D	E
DSLHG-06-5W-A*-N	53 (2.09)	361.5 (14.23)
DSLHG-06-5W-D*-N	64 (2.52)	372.5 (14.67)
DSLHG-06-5W-R*-N	57.2 (2.25)	375.5 (14.78)

For other dimensions, see DSLHG-06- $\frac{1}{2}$ -*-N on the [previous page](#).

DSLHG-06-5A-* -N-13/1390



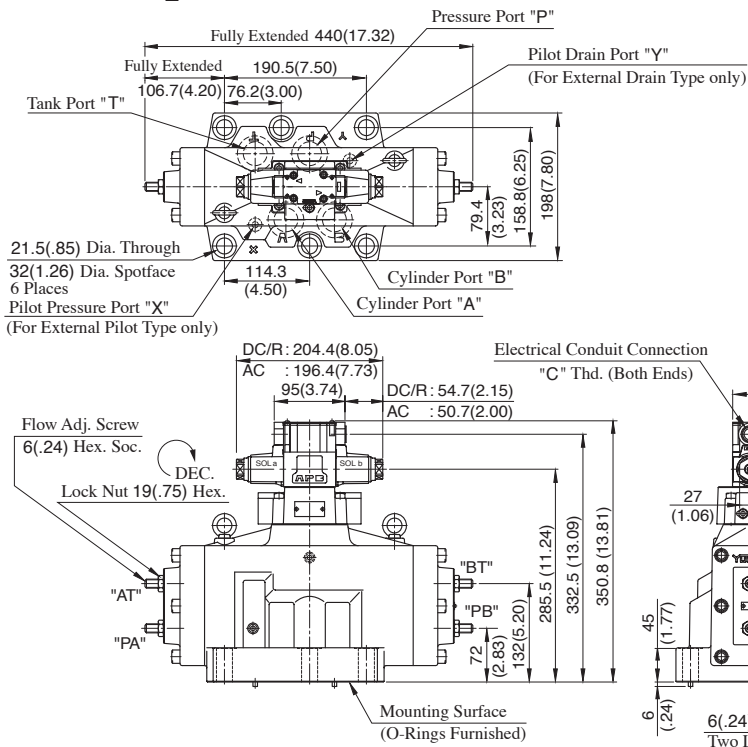
For other dimensions, see "DSLHG-06-5W-* -N" drawing left.

**DIMENSIONS IN
MILLIMETRES (INCHES)**

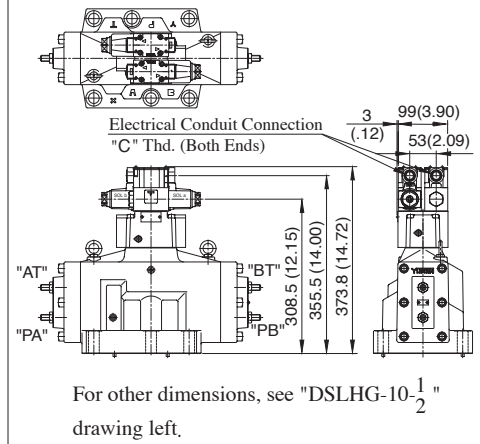
Terminal Box Type

Mounting Surface:
ISO 4401-AF-10-4-A

DSLHG-10- $\frac{1}{2}$ -*-13/1390



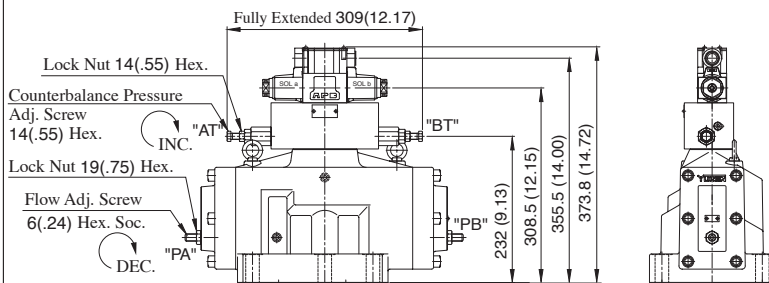
DSLHG-10-3-*-13/1390



Model Numbers	"C" Thd.
DSLHG-10-*-13	G 1/2
DSLHG-10-*-1390	1/2 NPT

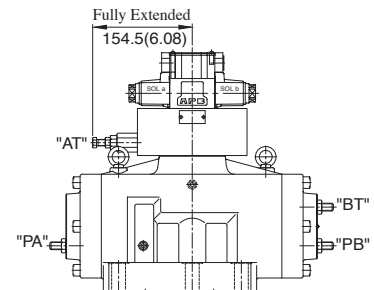
DIMENSIONS IN
MILLIMETRES (INCHES)

DSLHG-10-4W-*-13/1390



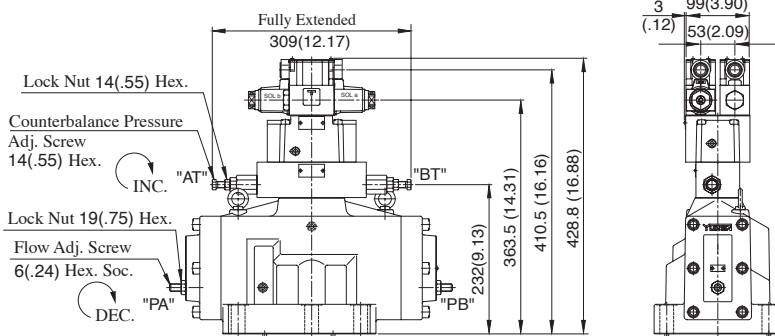
For other dimensions, see "DSLHG-10- $\frac{1}{2}$ " drawing above.

DSLHG-10-4A-*-13/1390



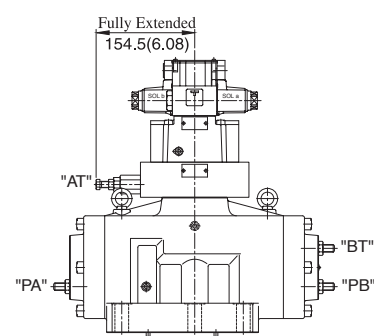
For other dimensions, see "DSLHG-10-4W"
drawing left.

DSLHG-10-5W-*-13/1390



For other dimensions, see "DSLHG-10- $\frac{1}{2}$ " drawing above.

DSLHG-10-5A-*-13/1390

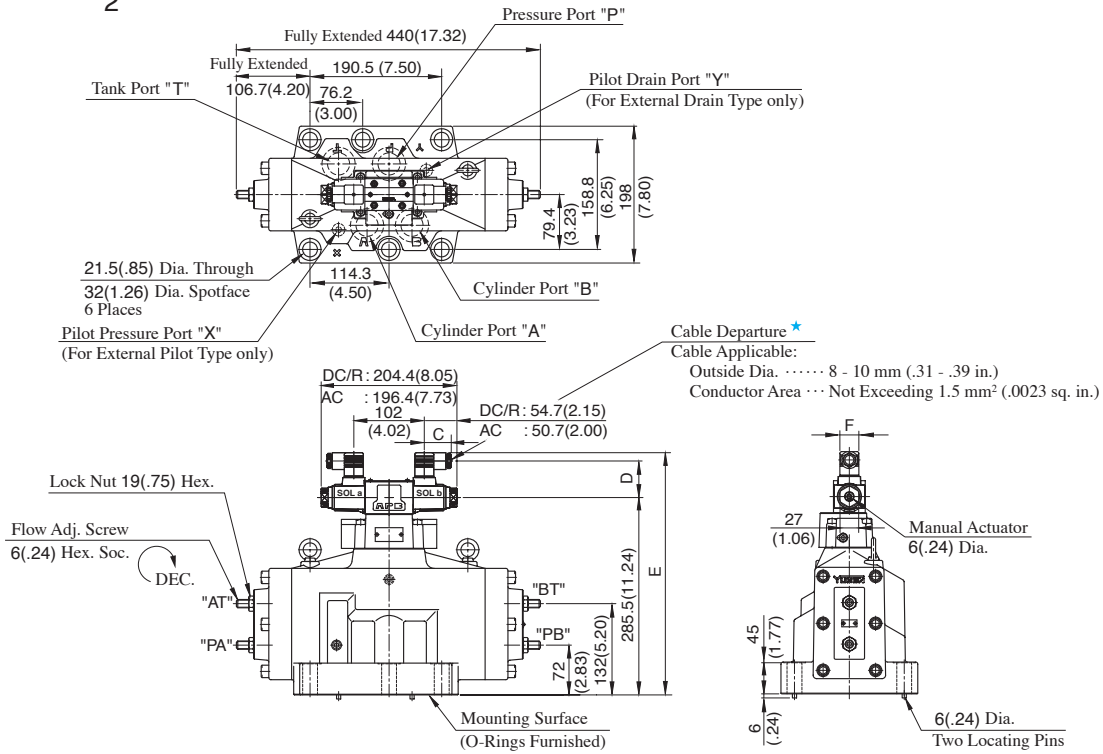


For other dimensions, see "DSLHG-10-5W"
drawing left.

Plug-in Connector Type

Mounting Surface:
ISO 4401-AF-10-4-A

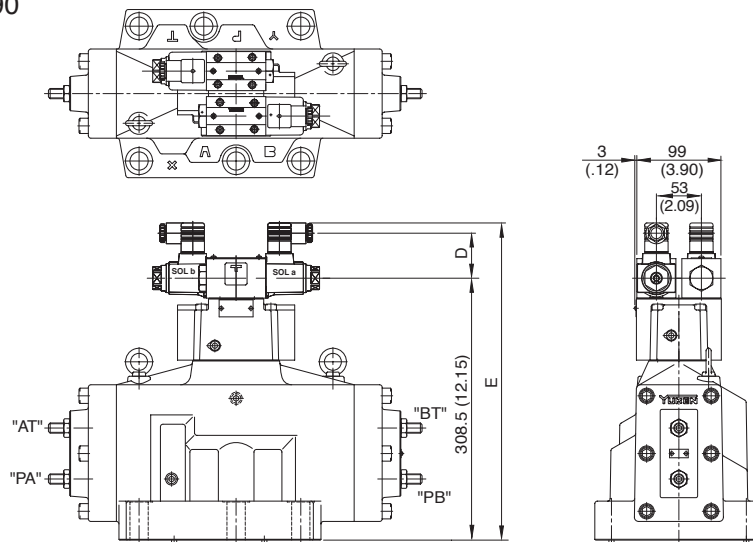
DSLHG-10- $\frac{1}{2}$ -*-N-13/1390



Model Numbers	Dimensions mm (Inches)			
	C	D	E	F
DSLHG-10-*-A*-N	39 (1.54)	53 (2.09)	350.5 (13.80)	27.5 (1.08)
DSLHG-10-*-D*-N	39 (1.54)	64 (2.52)	361.5 (14.23)	27.5 (1.08)
DSLHG-10-*-R*-N	53 (2.09)	57.2(2.25)	364.5 (14.35)	34 (1.34)

★ Position of cable departure can be changed. For the details, refer to DSLHG-04 valve on page 466.

DSLHG-10-3-*-N-13/1390



Model Numbers	Dimensions mm (Inches)	
	D	E
DSLHG-10-3-A*-N	53 (2.09)	373.5 (14.70)
DSLHG-10-3-D*-N	64 (2.52)	384.5 (15.14)
DSLHG-10-3-R*-N	57.2 (2.25)	387.5 (15.26)

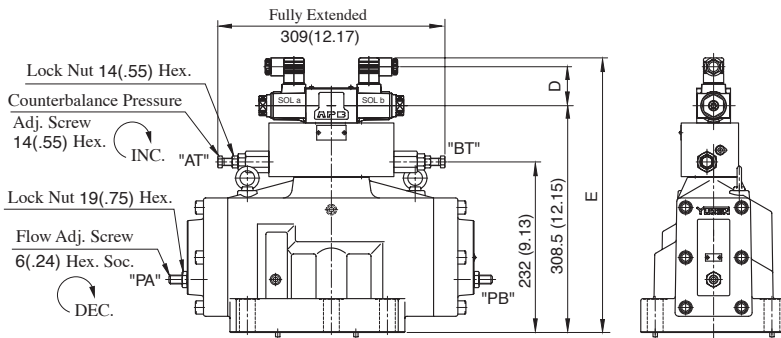
**DIMENSIONS IN
MILLIMETRES (INCHES)**

For other dimensions, see "DSLHG-10- $\frac{1}{2}$ -*-N" drawing above.

Plug-in Connector Type

Mounting Surface:
ISO 4401-AF-10-4-A

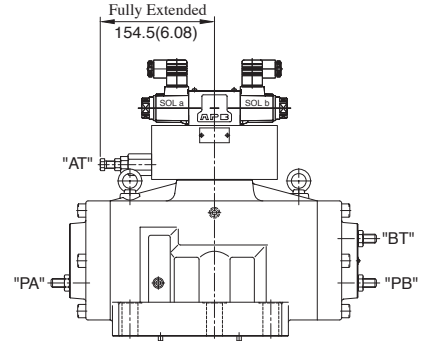
DSLHG-10-4W-*-N-13/1390



Model Numbers	Dimensions mm (Inches)	
	D	E
DSLHG-10-4W-A*-N	53 (2.09)	373.5 (14.70)
DSLHG-10-4W-D*-N	64 (2.52)	384.5 (15.14)
DSLHG-10-4W-R*-N	57.2 (2.25)	387.5 (15.26)

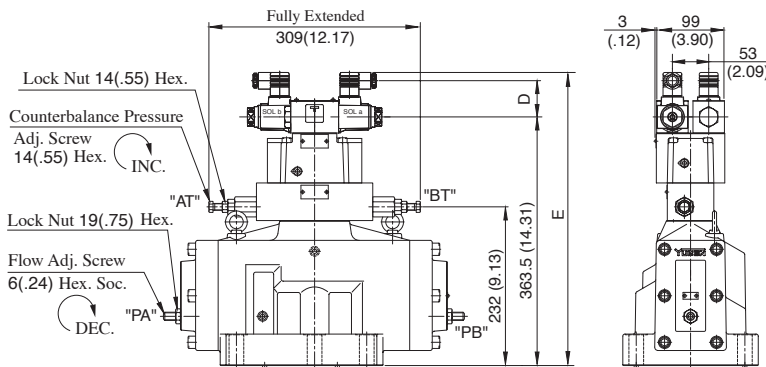
For other dimensions, see DSLHG-10- $\frac{1}{2}$ -*-N on the [previous page](#).

DSLHG-10-4A-*-N-13/1390



For other dimensions, see
"DSLHG-10-4W-*-N" drawing left.

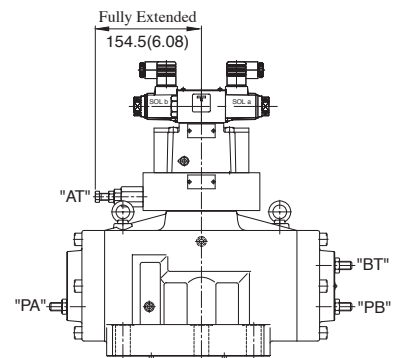
DSLHG-10-5W-*-N-13/1390



Model Numbers	Dimensions mm (Inches)	
	D	E
DSLHG-10-5W-A*-N	53 (2.09)	428.5 (16.87)
DSLHG-10-5W-D*-N	64 (2.52)	439.5 (17.30)
DSLHG-10-5W-R*-N	57.2 (2.25)	442.5 (17.42)

For other dimensions, see DSLHG-10- $\frac{1}{2}$ -*-N on the [previous page](#).

DSLHG-10-5A- *-N-13/1390

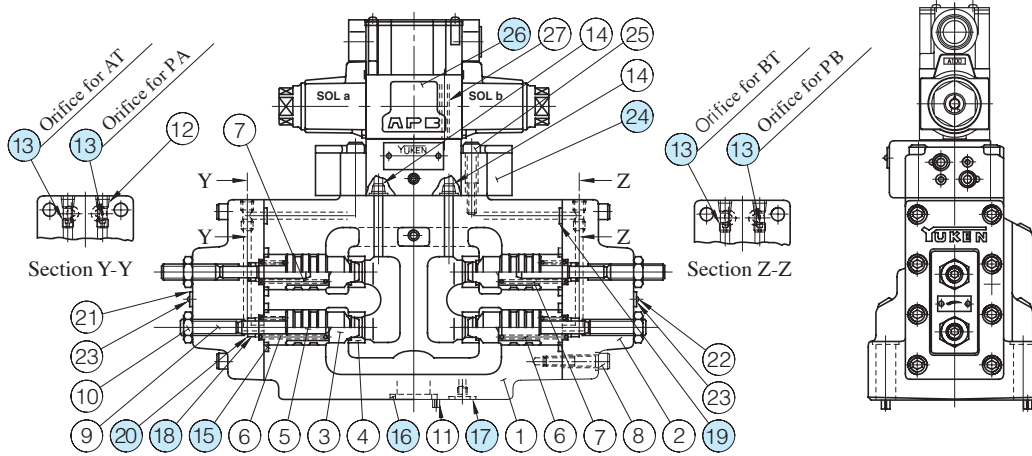


For other dimensions, see
"DSLHG-10-5W-*-N" drawing left.

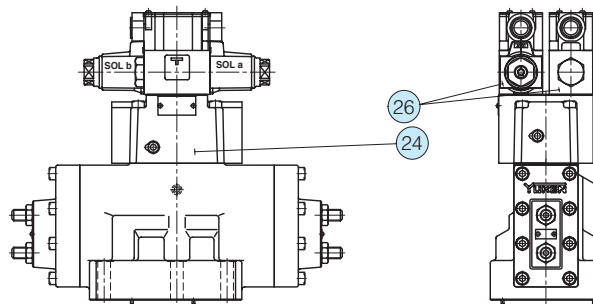
**DIMENSIONS IN
MILLIMETRES (INCHES)**

■ List of Seals for Main Valve, Pilot Selector Valve and Orifice

DSLHG-04/06/10- $\frac{1}{2}$ -*-13/1390



DSLHG-04/06/10-3-*-13/1390



Note) Main valve is same as above drawings.

● List of Seals for Main Valves

Item	Name of Parts	Part Numbers			Qty.
		DSLHG-04	DSLHG-06	DSLHG-10	
15	O-Ring	SO-NB-P22	SO-NB-G30	SO-NB-G40	4
16	O-Ring	SO-NB-P22	SO-NB-P30	SO-NB-P42	4
17	O-Ring	SO-NB-P9	SO-NB-P14	SO-NB-P14	2
18	O-Ring	SO-NA-P8	SO-NA-P10	SO-NA-P16	4
19	O-Ring	SO-NB-P8	SO-NB-P9	SO-NB-P11	4
20	Back Up Ring	SO-BB-P8	SO-BB-P10	SO-BB-P16	4

Note: When ordering the seals, please specify the seal kit number listed on page 478.

● Item 13 Orifice

The timing of flow path opening/closing can be adjusted as required by selecting the appropriate pilot orifice diameter. When the diameter of the orifice is to be changed, another orifice should be ordered. Standard built-in orifice diameters and selectable orifice diameters are listed in the table below.

Orifice Type	TP-OPT-1/16 x d			Max. Dia. at Pressure over 20 MPa(2900 PSI)
	Orifice Diameter "d" mm			
	Standard Built-in	Selectable		
DSLHG-04	1.0	0.5, 0.6, 0.8, 1.0	1.2	
DSLHG-06	1.2	1.2, 1.4, 1.6, 1.8		
DSLHG-10	1.4	2.0, 2.5	1.4	

● Item 24 Pilot Selector Valve List

Multi-Purpose Control Valve Model Numbers	24 Pilot Selector Valve Model Numbers
DSLHG-04-1	CG-04-1-10
DSLHG-04-2	CG-04-2-10
DSLHG-04-3	CG-04-3-10
DSLHG-06-1	CG-06-1-10
DSLHG-06-2	CG-06-2-10
DSLHG-06-3	CG-06-3-10
DSLHG-10-1	CG-06-1-10
DSLHG-10-2	CG-06-2-10
DSLHG-10-3	CG-06-3-10

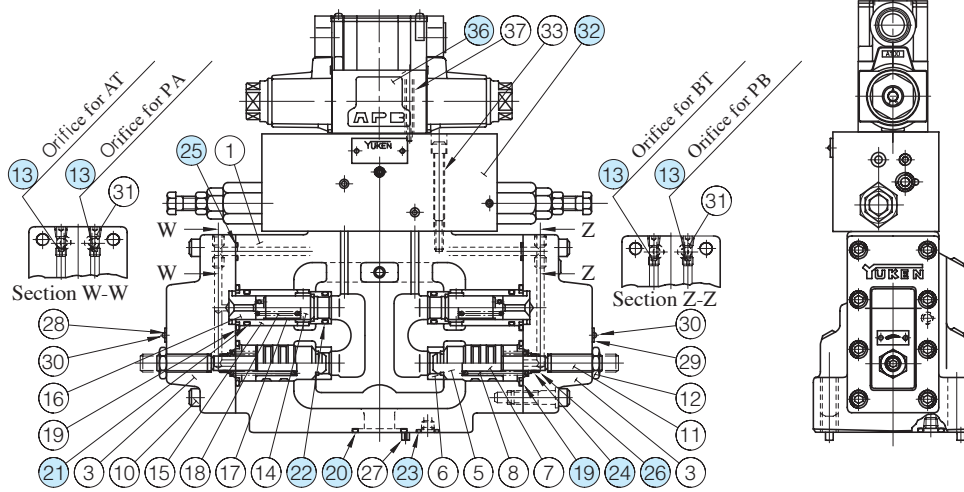
Note: For details of Pilot Selector Valve, see page 476.

● Pilot Valve

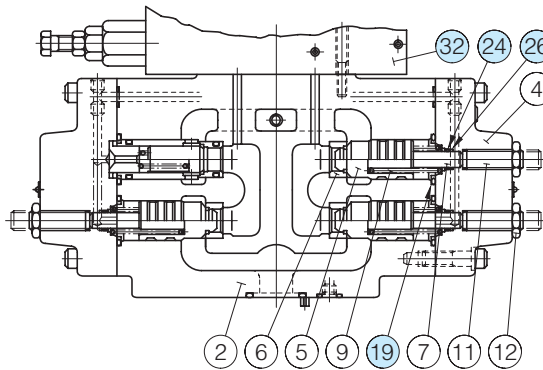
Refer to page 478 for Pilot Valve Model Numbers.

List of Seals for Main Valves and Pilot Selector Valve

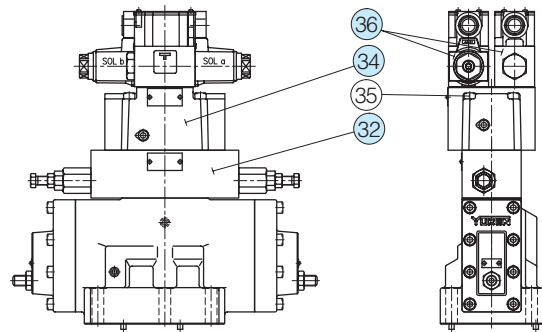
DSLHG-04/06/10-4W-*-12/1290



DSLHG-04/06/10-4A
5A-*-12/1290



DSLHG-04/06/10-5W-*-12/1290



Note) Main valve is the same as above drawings.

List of Seals for Main Valves

Item	Name of Parts	Part Numbers			Qty.
		DSLHG-04	DSLHG-06	DSLHG-10	
19	O-Ring	SO-NB-P22	SO-NB-G30	SO-NB-G40	4
20	O-Ring	SO-NB-P22	SO-NB-P30	SO-NB-P42	4
21	O-Ring	SO-NB-P16	SO-NB-P22	SO-NB-P30	2(1)
22	O-Ring	SO-NB-P14	SO-NB-P20	SO-NB-A122	2(1)
23	O-Ring	SO-NB-P9	SO-NB-P14	SO-NB-P14	2
24	O-Ring	SO-NA-P8	SO-NA-P10	SO-NA-P16	2(3)
25	O-Ring	SO-NB-P8	SO-NB-P9	SO-NB-P11	4
26	Back Up Ring	SO-BB-P8	SO-BB-P10	SO-BB-P16	2(3)

Note 1: The figures in () indicate the quantity of seals used for 4A and 5A.

Note 2: When ordering the seals, please specify the seal kit number listed on [page 478](#).

Pilot Valve

Refer to [page 478](#) for Pilot Valve Model Numbers.

Pilot Selector Valve List

Multi-Purpose Control Valve Model Numbers	Pilot Selector Valve Model Numbers	
	Item (32)	Item (34)
DSLHG-04-4A-■	CG-04-4A-■-10	—
DSLHG-04-4W-■	CG-04-4W-■-10	—
DSLHG-04-5A-■	CG-04-5A-■-10	CG-04-3-10
DSLHG-04-5W-■	CG-04-5W-■-10	
DSLHG-06-4A	CG-06-4A-10	—
DSLHG-06-4W	CG-06-4W-10	—
DSLHG-06-5A	CG-06-5A-10	CG-06-3-10
DSLHG-06-5W	CG-06-5W-10	
DSLHG-10-4A	CG-06-4A-10	—
DSLHG-10-4W	CG-06-4W-10	—
DSLHG-10-5A	CG-06-5A-10	CG-06-3-10
DSLHG-10-5W	CG-06-5W-10	

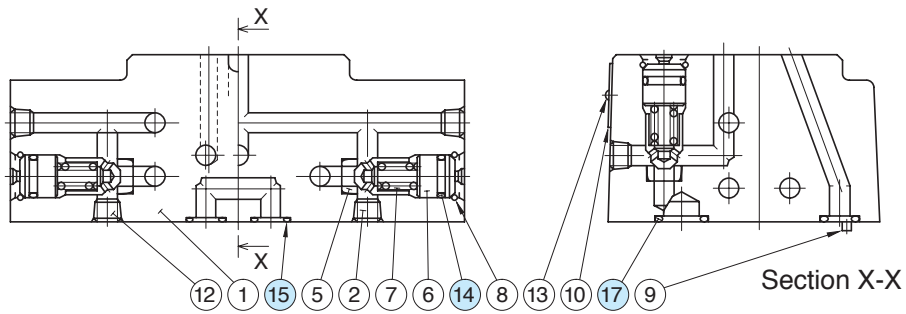
Note: Fill "B" or "H" representing the pressure adjustment range in section marked with ■.

See [page 477](#) for the details of the pilot selector valves.

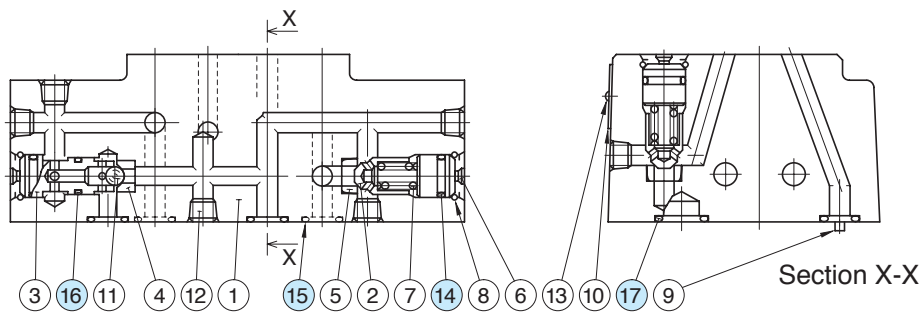
● See the [previous page](#) for Item (13) Orifice.

■ List of Seals (Pilot Selector Valves)

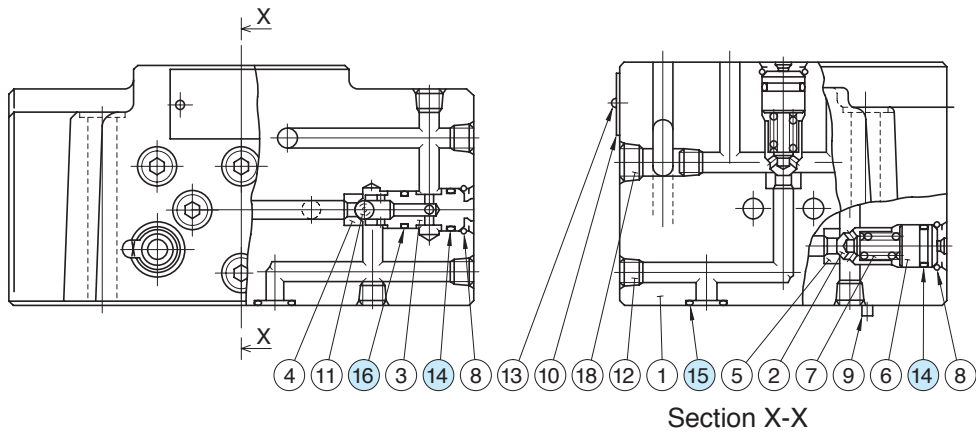
CG-04/06-1-10



CG-04/06-2-10



CG-04/06-3-10



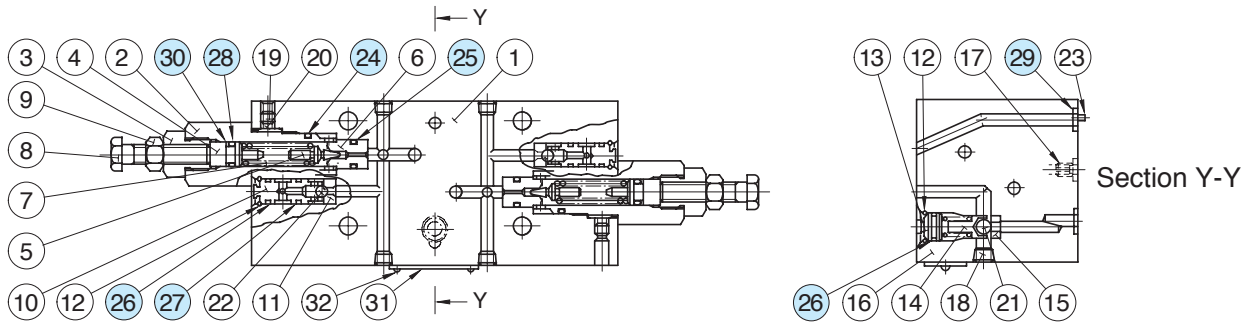
● List of Seals

Item	Name of Parts	CG-04					CG-06			
		Part Numbers	Quantity			Part Numbers	Quantity			
			CG-04-1	CG-04-2	CG-04-3		CG-06-1	CG-06-2	CG-06-3	
14	O-Ring	SO-NB-P10	3	5	5	SO-NB-P10	3	5	5	
15	O-Ring	SO-NB-P8	7	7	8	SO-NB-P9	7	7	8	
16	O-Ring	SO-NB-P8	—	2	2	SO-NB-P8	—	2	2	
17	O-Ring	SO-NB-P8	1	1	—	SO-NB-A014	1	1	—	

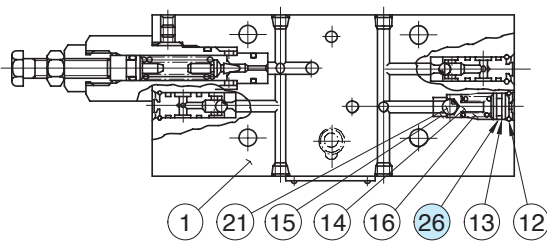
Note: When ordering the o-rings, please specify the seal kit number listed in [page 478](#).

List of Seals (Pilot Selector Valves)

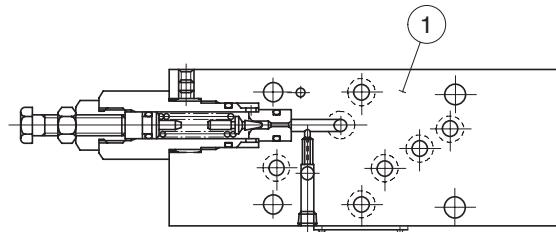
CG-04/06-4W-10



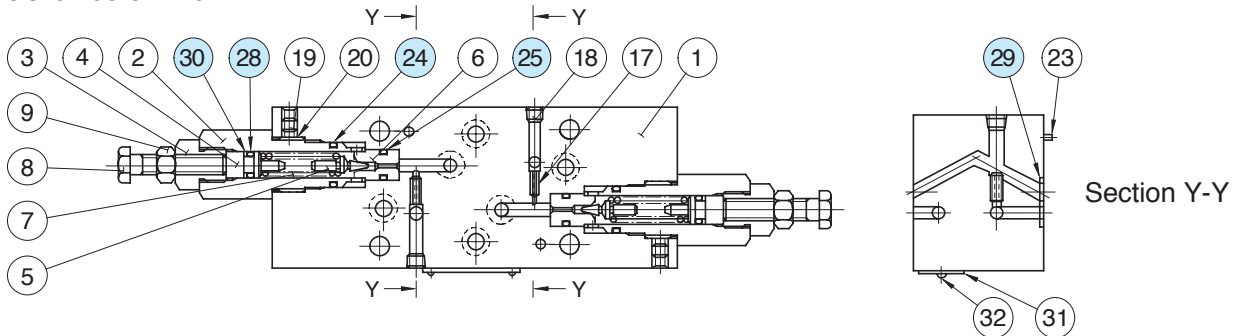
CG-04/06-4A-10



CG-04/06-5A-10



CG-04/06-5W-10



List of Seals

Item	Name of Parts	CG-04				CG-06					
		Part Numbers	Quantity				Part Numbers	Quantity			
			-4W-	-4A-	-5W-	-5A-		-4W-	-4A-	-5W-	-5A-
24	O-Ring	SO-NB-P12	2	1	2	1	SO-NB-P16	2	1	2	1
25	O-Ring	SO-NB-P9	2	1	2	1	SO-NB-P11	2	1	2	1
26	O-Ring	SO-NB-P10	3	4	—	—	SO-NB-P10	3	4	—	—
27	O-Ring	SO-NB-P8	2	2	—	—	SO-NB-P8	2	2	—	—
28	O-Ring	SO-NA-P6	2	1	2	1	SO-NA-P9	2	1	2	1
29	O-Ring	SO-NB-P8	8	8	8	8	SO-NB-P9	8	8	8	8
30	Back Up Ring	SO-BB-P6	2	1	2	1	SO-BB-P9	2	1	2	1

Note: When ordering the seals, please specify the seal kit number listed in [page 478](#).

List of Seal Kits and Pilot Valves

Model Numbers	Pilot Valve Model Numbers	Seal Kit Numbers		
		Complete Kit	For Pilot Selector Valves	For Pilot Valves
DSLHG-04-1★▲-13 DSLHG-04-1★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-04-1▲-13	KS-CG-04-1-10	KS-DSG-01-▲-70 (1 Set Req'd)
DSLHG-04-2★▲-13 DSLHG-04-2★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-04-2▲-13	KS-CG-04-2-10	
DSLHG-04-3★▲-13 DSLHG-04-3★▲-1390	DSG-01-2B2★▲-70 DSG-01-2B2★▲-7090	KS-DSLHG-04-3▲-13		KS-DSG-01-▲-70 (2 Set Req'd)
DSLHG-04-4A*★▲-13 DSLHG-04-4A*★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-04-4A▲-13	KS-CG-04-4A-10	KS-DSG-01-▲-70 (1 Set Req'd)
DSLHG-04-4W*★▲-13 DSLHG-04-4W*★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-04-4W▲-13	KS-CG-04-4W-10	
DSLHG-04-5A*★▲-13 DSLHG-04-5A*★▲-1390	DSG-01-2B2★▲-70 DSG-01-2B2★▲-7090	KS-DSLHG-04-5A▲-13	KS-CG-04-5A-10	KS-DSG-01-▲-70 (2 Set Req'd)
DSLHG-04-5W*★▲-13 DSLHG-04-5W*★▲-1390	DSG-01-2B2★▲-70 DSG-01-2B2★▲-7090	KS-DSLHG-04-5W▲-13	KS-CG-04-5W-10	
DSLHG-06-1★▲-13 DSLHG-06-1★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-06-1▲-13	KS-CG-06-1-10	KS-DSG-01-▲-70 (1 Set Req'd)
DSLHG-06-2★▲-13 DSLHG-06-2★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-06-2▲-13	KS-CG-06-2-10	
DSLHG-06-3★▲-13 DSLHG-06-3★▲-1390	DSG-01-2B2★▲-70 DSG-01-2B2★▲-7090	KS-DSLHG-06-3▲-13	KS-CG-06-3-10	KS-DSG-01-▲-70 (2 Set Req'd)
DSLHG-06-4A★▲-13 DSLHG-06-4A★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-06-4A▲-13	KS-CG-06-4A-10	KS-DSG-01-▲-70 (1 Set Req'd)
DSLHG-06-4W★▲-13 DSLHG-06-4W★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-06-4W▲-13	KS-CG-06-4W-10	
DSLHG-06-5A★▲-13 DSLHG-06-5A★▲-1390	DSG-01-2B2★▲-70 DSG-01-2B2★▲-7090	KS-DSLHG-06-5A▲-13	KS-CG-06-5A-10	KS-DSG-01-▲-70 (2 Set Req'd)
DSLHG-06-5W★▲-13 DSLHG-06-5W★▲-1390	DSG-01-2B2★▲-70 DSG-01-2B2★▲-7090	KS-DSLHG-06-5W▲-13	KS-CG-06-5W-10	
DSLHG-10-1★▲-13 DSLHG-10-1★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-10-1▲-13	KS-CG-06-1-10	KS-DSG-01-▲-70 (1 Set Req'd)
DSLHG-10-2★▲-13 DSLHG-10-2★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-10-2▲-13	KS-CG-06-2-10	
DSLHG-10-3★▲-13 DSLHG-10-3★▲-1390	DSG-01-2B2★▲-70 DSG-01-2B2★▲-7090	KS-DSLHG-10-3▲-13	KS-CG-06-3-10	KS-DSG-01-▲-70 (2 Set Req'd)
DSLHG-10-4A★▲-13 DSLHG-10-4A★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-10-4A▲-13	KS-CG-06-4A-10	KS-DSG-01-▲-70 (1 Set Req'd)
DSLHG-10-4W★▲-13 DSLHG-10-4W★▲-1390	DSG-01-3C9★▲-70 DSG-01-3C9★▲-7090	KS-DSLHG-10-4W▲-13	KS-CG-06-4W-10	
DSLHG-10-5A★▲-13 DSLHG-10-5A★▲-1390	DSG-01-2B2★▲-70 DSG-01-2B2★▲-7090	KS-DSLHG-10-5A▲-13	KS-CG-06-5A-10	KS-DSG-01-▲-70 (2 Set Req'd)
DSLHG-10-5W★▲-13 DSLHG-10-5W★▲-1390	DSG-01-2B2★▲-70 DSG-01-2B2★▲-7090	KS-DSLHG-10-5W▲-13	KS-CG-06-5W-10	

Note 1: Fill coil type (a symbol representing current/voltage) in section marked ★. Likewise, in section marked ▲, fill a symbol representing the type of electrical conduit connection (None: Terminal Box Type, N: Plug-in Connector Type).

2: A complete seal kit is composed of seal kit for pilot selector valve, seal kit for pilot valve and seal for main valve.

See pages 474 and 475 for information on the seals for main valve.

3: See page 344 for the detailed information on the pilot valves.

How to Change Pilot & Drain Connection

Pilot Connection and Drain Connection can be changed easily with a disconnection/connection of pilot plug. The following drawings give illustrations of External Pilot-External Drain Type, When changing to Internal Pilot-Internal Drain Type, the following procedure may be followed.

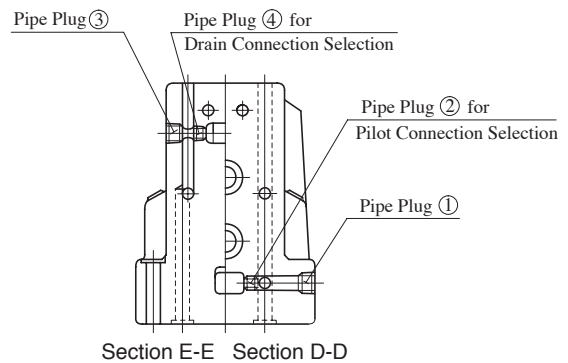
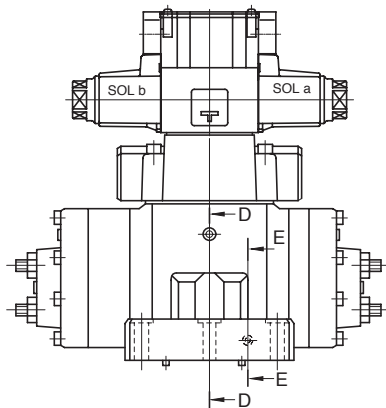
External Pilot → Internal Pilot (See Section E-E)

- 1) Remove pipe plug ①.
- 2) Remove pipe plug ②.
- 3) Wind a sealing tape around the pipe plug ①, then fit the plug into the port.

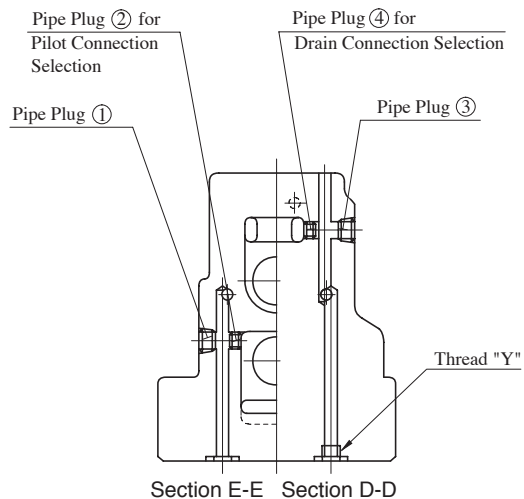
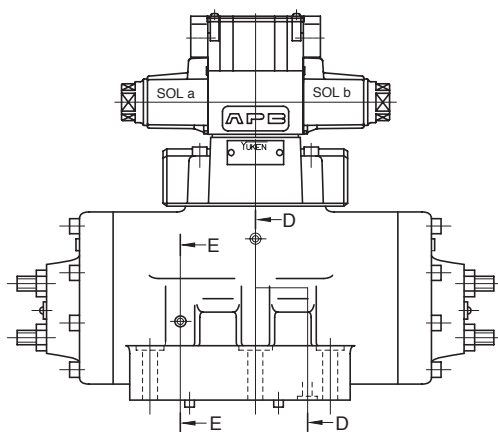
External Drain → Internal Drain (See Section D-D)

- 1) Remove pipe plug ③.
- 2) Remove pipe plug ④.
- 3) Wind a sealing tape around the pipe plug ③, then fit the plug into the port.
- 4) In case of DSLHG-04, fit the plug into the port "Y" on the sub-plate. In case of DSLHG-06/10, wind a sealing tape around the plug ④ and then thread it into the port "Y".

DSLHG-04



DSLHG-06/10



Solenoid Operated Poppet Type Two-Way Valves

These valves are used for opening/closing the oil path by having the poppet valve operated with an electric signal via solenoid. Because these are of poppet type, the internal leakage is quite small and there is no worry about hydraulic lock.

Specifications

Model Numbers	Max. Flow L/min (U.S.GPM)	Max. Operating Pressure MPa (PSI)	Internal leakage cm ³ /min (cu.in./min)	Max. Changeover Frequency min ⁻¹ (Cycles/Min)	Approx. Mass kg(1bs.)
CDSC-01-C-D24-10*	15 (4.0)	21 (3050)*2	or less 0.25 (.015)	240	0.35 (.8)
CDSC-03-C-* -21*	50 (13.2)	14 (2030)	or less 0.25 (.015)	AC: 300 DC: 240 R: 120	0.5 (1.1)
CDST-03W-03-C-* -21*					0.85 (1.9)
CDSG-03-C-* -21*					0.85 (1.9)

- ★ 1. The maximum flow means the limited flow without inducing any abnormality to the operation (changeover) of the valve.
- ★ 2. When the valve is operated at 18.5 Mpa (2680 PSI) or higher pressure, continuous energies time is restricted with Max. 30 min., and also the energies ratio less than 90 %.

Solenoid Ratings

Electric Source	Coil Type	Frequency (Hz)	Voltage (V)		Current & Power at Rated Voltage				
			Source Rating	Serviceable Range	Inrush (A)	Holding (A)	Power (W)		
AC	A100	50	100	80 - 100	1.12	0.55	—		
		60	100	90 - 120	0.95	0.40			
	A120	50	120	96 - 132	0.93	0.46			
		60		108 - 144	0.79	0.33			
	A200	50	200	160 - 220	0.56	0.28			
		60		180 - 240	0.48	0.20			
	A240	50	240	192 - 264	0.47	0.23			
		60		216 - 288	0.40	0.17			
	DC (K Series)	D12	—	12	10.8 - 13.2	—		2.20	26
		D24 ★		24	21.6 - 26.4			1.10	
D48		48		43.2 - 52.8	0.55				
AC→DC Rectified	R100	50/60	100	90 - 110	—	0.30	26		
	R200		200	180 - 220		0.15			

- ★ CDSC-01 is available with coil type "D24" only.
- Because both AC and DC solenoids employ the plug-in type electrical wiring, the valve can be removed without removing the wiring. (Coil type of CDSC-01 is flying lead wire only.)
- Being 50-60 Hz common service AC solenoids, do not require rewiring when the applied frequency is changed.
- K-Series DC Solenoid which has a reputation for excellent DC control is employed. (Coil type of CDSC-01 is with Surge Suppressor.)

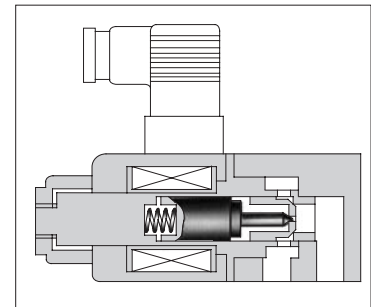
Model Number Designation

F-	CDS	T	-03	-C	-D12	-21	*
Special Seals	Series Number	Type of Connection	Valve Size	Valve Type	Coil Type	Design Number	Design Standard
F: Special seals for phosphate ester type fluids (Omit if not required)	CDS: Solenoid Operated Poppet Type Two-Way Valves	C: Cartridge Type	01	C: Normally Closed	DC D24	10	None: Japanese Std. "JIS" & European Design Std. 90: N. American Design Std.
		T: Threaded Connection	03W (Piping Size 1/4) 03 (Piping Size 3/8)			21	None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.
		G: Gasket Mounting	03			21	None: Japanese Std. "JIS" & European Design Std. 90: N. American Design Std.

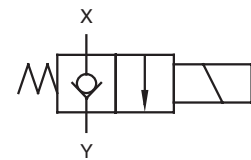
Mounting Bolts

Mounting bolt in the table below is attached only for Gasket mounting type valve (CDSG-03).

Valve Model Numbers	Socket Head Cap Screws (2pcs.)	
	Japanese Standard "JIS" European Design Standard	N. American Design Standard
CDSG-03	M6 × 60 Lg.	1/4-20 UNC × 2-1/4Lg.



Graphic Symbol

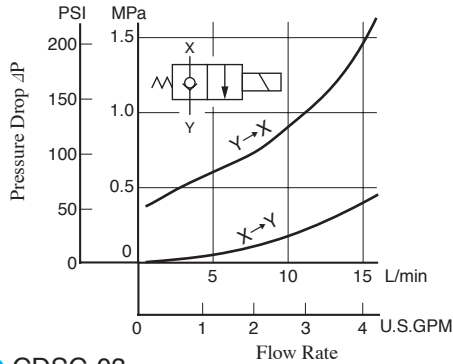


Instructions

- **Direction of flow when the solenoid is energised**
These valves do not allow flow from Y to X when the solenoid is energised.
- **At the time of test run**
At the time of test run, there is a possibility that the oil may not flow even after the solenoid is energised because of the residual air in the valve.
- **Mounting**
There are no mounting restrictions for any models.

Pressure Drop

- **CDSC-01** Hydraulic Fluid: Viscosity 30 mm² (141 SSU), Specific Gravity 0.850



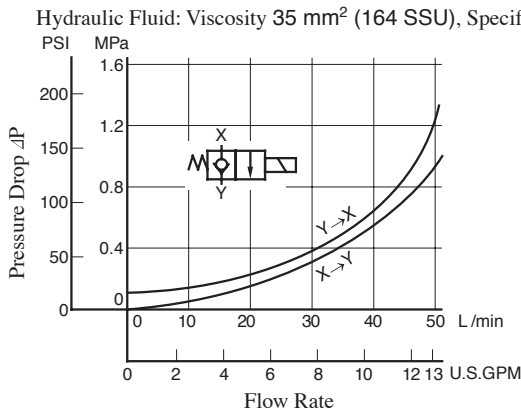
- For any other viscosity, multiply the factors in the table below.

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		0.84	0.91	1.00	1.07	1.14	1.19	1.24	1.28	1.32	1.35

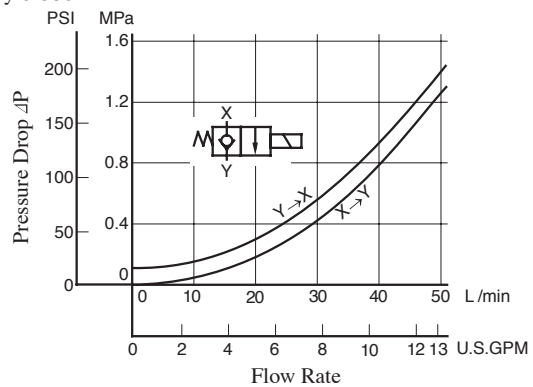
- For any other specific gravity (G'), the pressure drop ($\Delta P'$) may be obtained from the formula below.

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

- **CDSC-03**
- **CDST-03**
- **CDSG-03**



- **CDST-03W**



Note: Measuring has been made for the CDSC-03 (Cartridge type) when it is equipped with the same body as the threaded connections and the gasket mounting type.

- 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

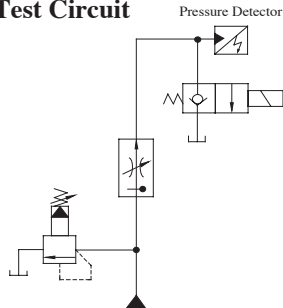
- For any other specific gravity (G'), the pressure drop ($\Delta P'$) may be obtained from the formula below.

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

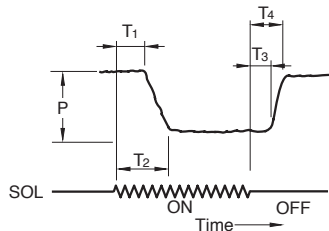
Changeover Time

Changeover time, T₂ and T₄, in particular, varies according to the hydraulic circuit and operating conditions. As an example, the following figures show how the measurement is made.

- **Test Circuit**

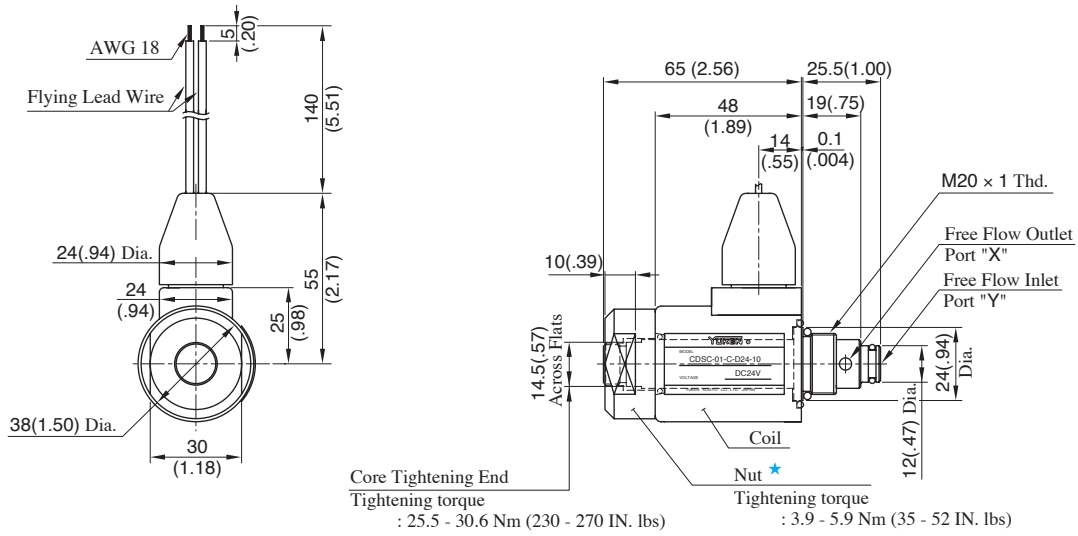


- **Result of measurement**



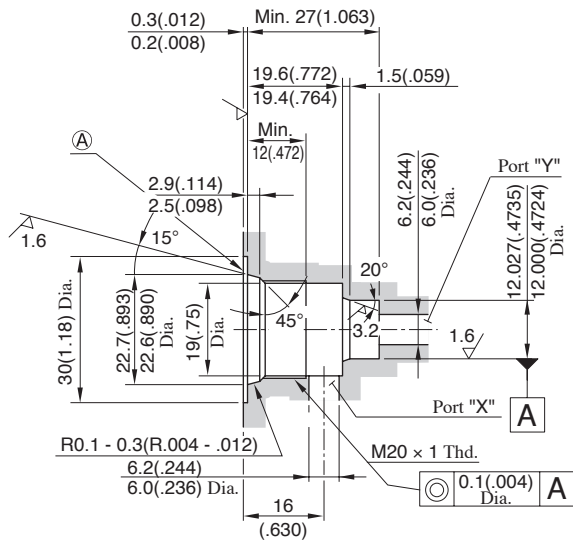
Model Number	Solenoid Types	Condition		Shifting time (ms)			
		Pressure "P" MPa (PSI)	Flow Rate L/min (U.S.GPM)	SOL "ON"(Open→Close)		SOL "OFF"(Open→Close)	
				T ₁	T ₂ (ex.)	T ₃	T ₄ (ex.)
CDSC-01	DC	10 (1450)	15 (4.0)	21.4	44.0	29.0	38.4
		21 (3050)	15 (4.0)	30.6	47.0	27.0	44.0
CDS*-03	AC	7 (1020)	50 (13.2)	10.0	86.0	20.0	44.0
		14 (2030)	50 (13.2)	11.0	43.0	12.0	54.0
	DC	7 (1020)	50 (13.2)	22.0	104.0	44.0	66.0
		14 (2030)	50 (13.2)	24.0	60.0	41.0	73.0
AC→DC Rectified	7 (1020)	50 (13.2)	27.0	100.0	114.0	146.0	
	14 (2030)	50 (13.2)	32.0	66.0	108.0	142.0	

CDSC-01-C-D24-10/1090



DIMENSIONS IN
MILLIMETRES (INCHES)

Details of Mounting Holes



Note: The fitting portion of o-rings should have a good machined finish.

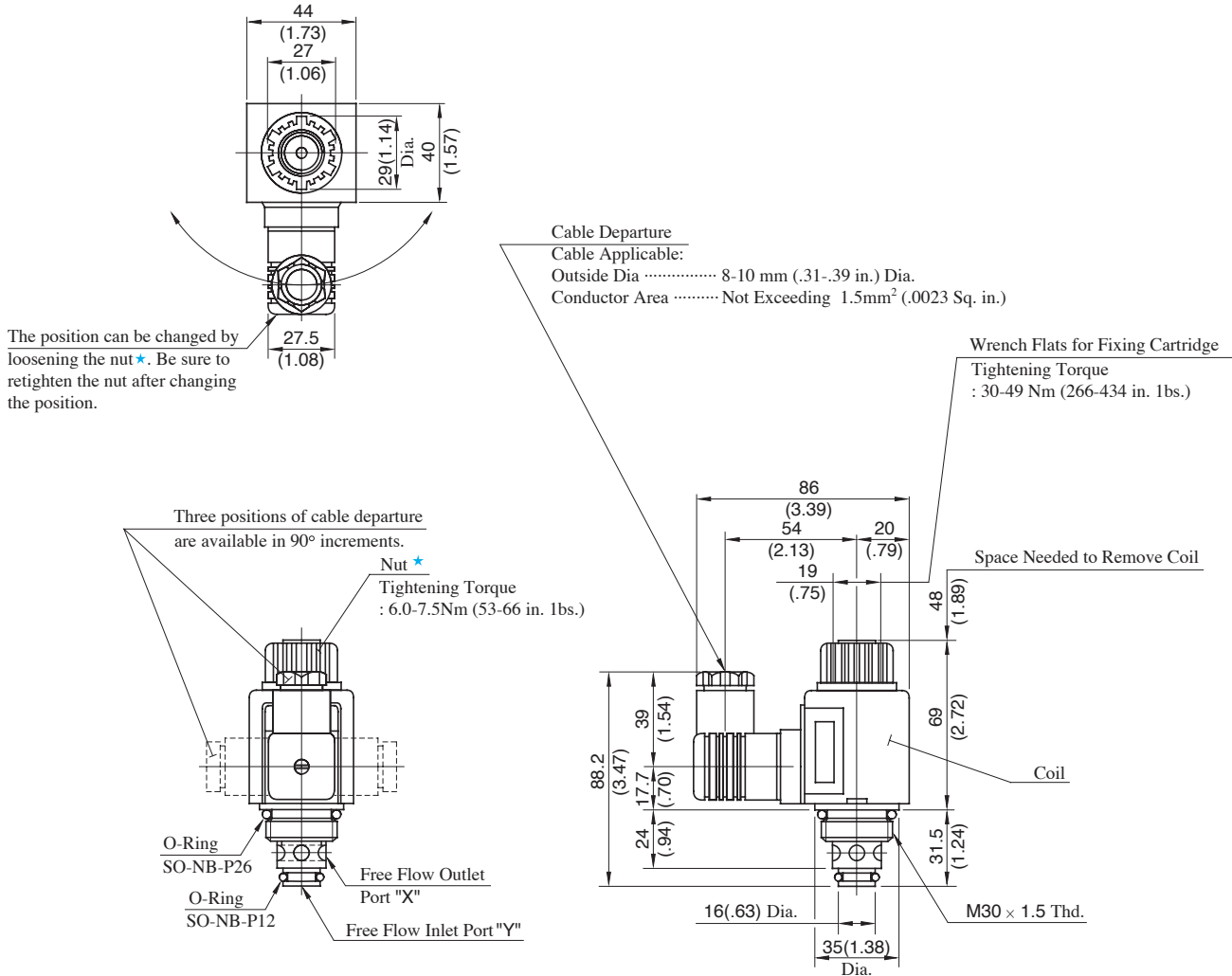
How to Mount

When mounting, the following steps must be followed:

1. Loosen the nut★, then remove the coil.
2. Thread the cartridge, making sure that the collar 24 (.94) Dia. of the cartridge is well fitted to the component surface (A) surface in the left drawing).
3. Attach the coil and secure it with a nut.

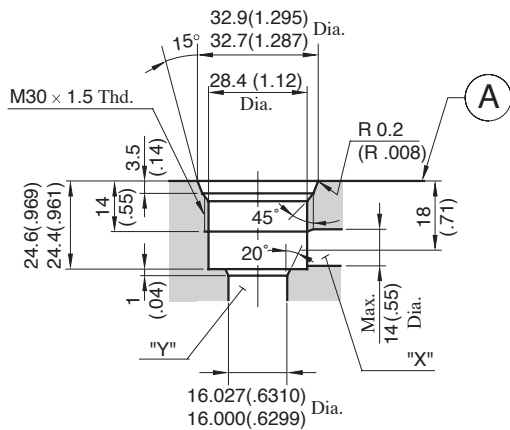
CDSC-03-C-A*-21/2190

Models with AC Solenoids



DIMENSIONS IN MILLIMETRES (INCHES)

Details of Mounting Holes



Note: The fitting portion of O-rings should have a good machined finish.

How to Mount

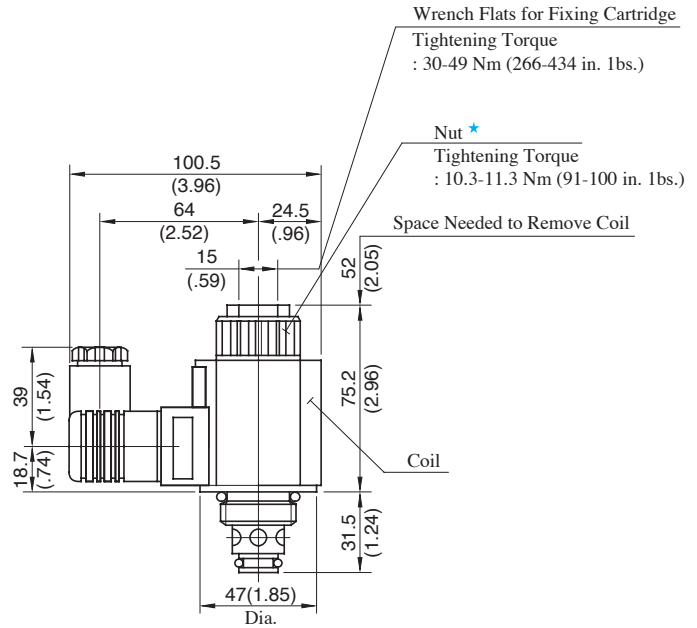
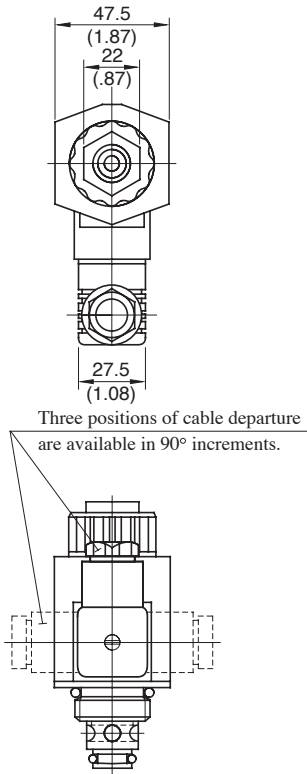
When mounting, the following steps must be followed:

1. Loosen the nut \star , then remove the coil.
2. Thread the cartridge, making sure that the collar 35 (1.38) Dia. of the cartridge is well fitted to the component surface ($\text{\textcircled{A}}$ surface in the left drawing).
3. Attach the coil and secure it with a nut.



CDSC-03-C-D*-21/2190

Models with DC Solenoids

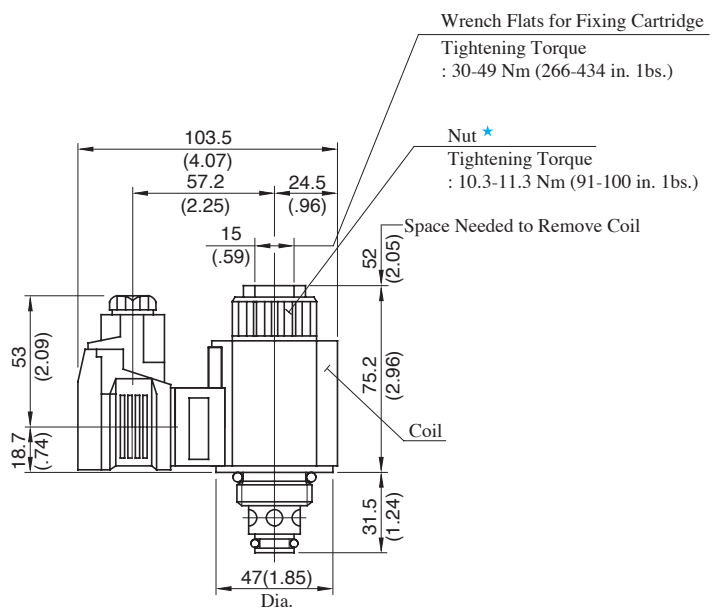
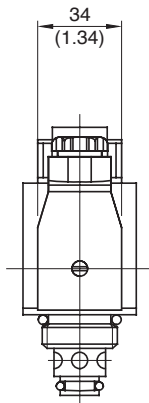


For other dimensions, refer to the "Models with AC Solenoids".

**DIMENSIONS IN
MILLIMETRES (INCHES)**

CDSC-03-C-R*-21/2190

Models with R Type Solenoids

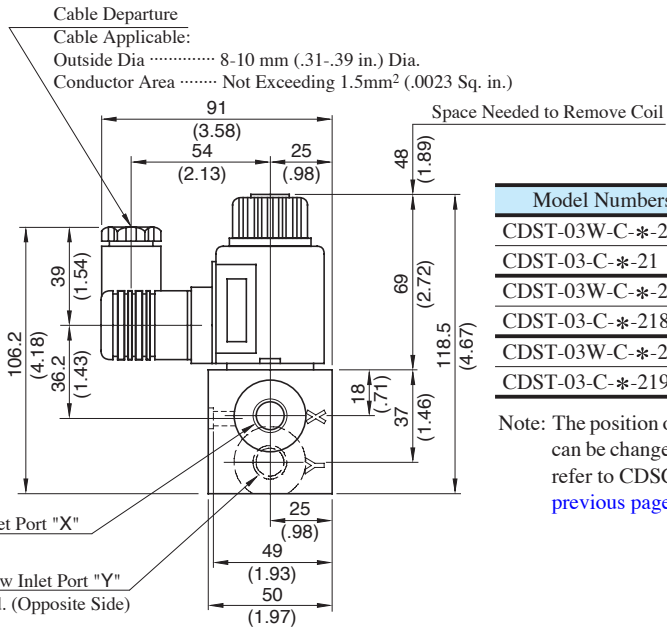
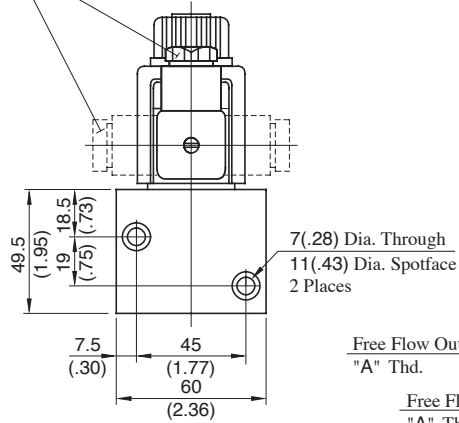


For other dimensions, refer to the "Models with AC Solenoids".

CDST-03, 03W-C-* -21/2180/2190

Models with AC Solenoids

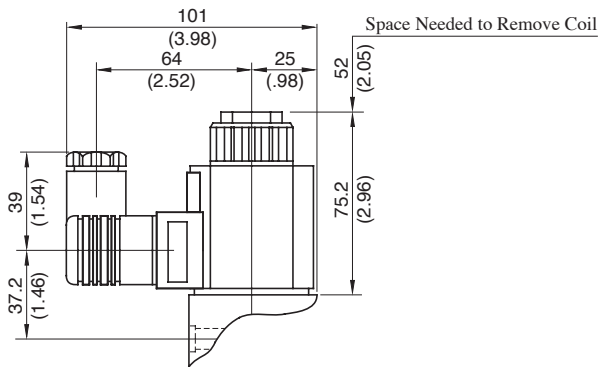
Three positions of cable departure are available in 90° increments.



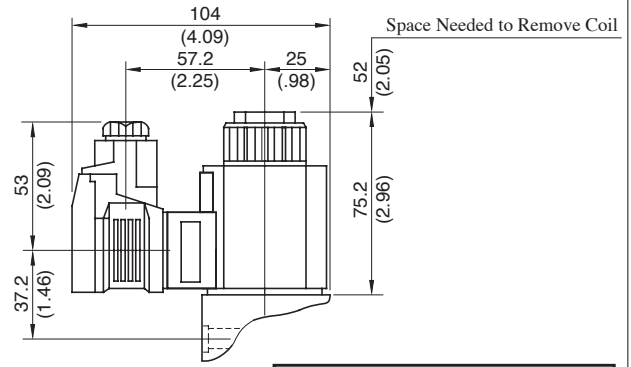
Model Numbers	"A" Thd.
CDST-03W-C-* -21	Rc 1/4
CDST-03-C-* -21	Rc 3/8
CDST-03W-C-* -2180	1/4 BSP.F
CDST-03-C-* -2180	3/8 BSP.F
CDST-03W-C-* -2190	1/4 NPT
CDST-03-C-* -2190	3/8 NPT

Note: The position of cable departure can be changed. For the detail, refer to CDSC-03 on the [previous page](#).

Models with DC Solenoids



Models with R Type Solenoids



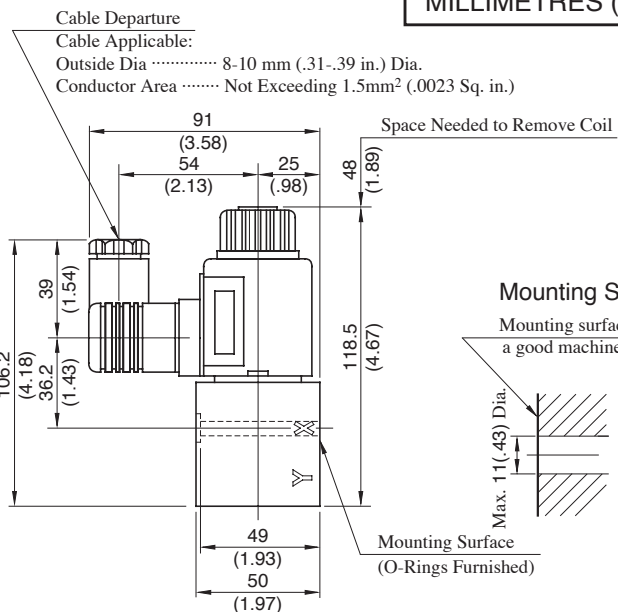
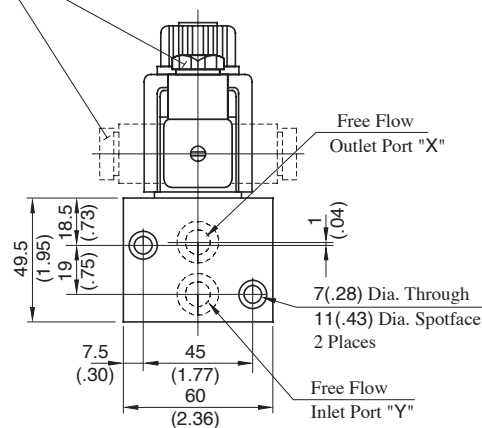
For other dimensions, refer to the "Models with AC Solenoids".

DIMENSIONS IN MILLIMETRES (INCHES)

CDSG-03-C-* -21/2190

Models with AC Solenoids

Three positions of cable departure are available in 90° increments.



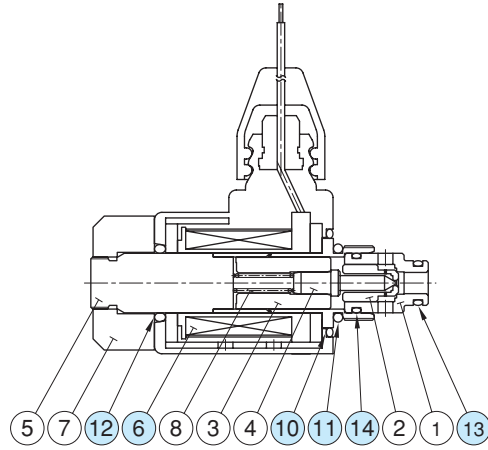
Note 1: For models with DC solenoids and models with R type solenoids, refer to CDST-03, 03W.

Note 2: The position of cable departure can be changed. For the detail, refer to CDSC-03 on the [previous page](#).



■ List of Seals and Coil Ass'y

CDSC-01-C-D24-10/1090

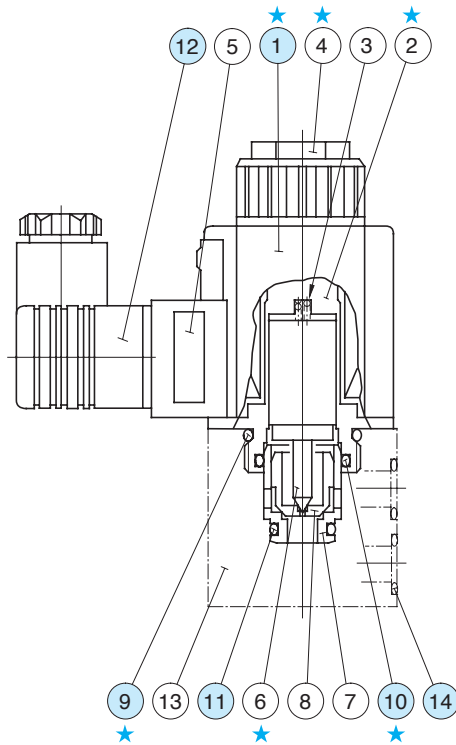


Item	Name of Parts	Part Numbers	Qty.	Seal Kit Numbers
6	Coil Ass'y	2697-VK317470-3	1	————
10	O-Ring	TK280163-7	1	KS-CDSC-01-10
11	O-Ring	SO-NB-P18	1	
12	O-Ring	SO-NB-P16	1	
13	O-Ring	SO-NB-P9	1	
14	O-Ring	SO-NB-A014	1	

Note: When ordering the seals, please specify the seal kit number.

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

CDST-03*-C-* -21/2180/2190
 CDSC-03-C-* -21/2190
 CDSG-03-C-* -21/2190



Solenoid assembly is composed of the parts marked with ★.

List of Seals

Item	Name of Parts	Part Numbers	Qty.	Remarks
9	O-Ring	SO-NB-P26	1	_____
10	O-Ring	SO-NB-P20	1	_____
11	O-Ring	SO-NB-P12	1	_____
14	O-Ring	SO-NB-A014	2	only for CDSG

List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
CDSC-03-C-* -21*	KS-CDSC-03-20
CDST-03*-C-* -21*	
CDSG-03-C-* -21*	KS-CDSG-03-20

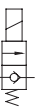
Note: When ordering the seals, please specify the seal kit number from the table right.

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

Valve Model No.	Solenoid Ass'y No.	① Coil No.	② Connector Ass'y No.
CDS*-03*-C-A100	CSA1-100-20	C-CSA1-100-20	GDM-211-B-11
CDS*-03*-C-A120	CSA1-120-20	C-CSA1-120-20	
CDS*-03*-C-A200	CSA1-200-20	C-CSA1-200-20	
CDS*-03*-C-A240	CSA1-240-20	C-CSA1-240-20	
CDS*-03*-C-D12	CSD1-12-20	C-SD1-12-50	GDM-211-B-11
CDS*-03*-C-D24	CSD1-24-20	C-SD1-24-50	
CDS*-03*-C-D48	CSD1-48-20	C-SD1-48-50	
CDS*-03*-C-R100	CSR1-100-20	C-SR1-100-50	GDME-211-R-B-10
CDS*-03*-C-R200	CSR1-200-20	C-SR1-200-50	

Change of supply voltage

The supply voltage can be changed by replacing the coil.



■ **Interchangeability between Current and New Design**

Because of solenoid assembly improvements, CDS*-03* has been model-changed (design 20 to design 21).

● **Specifications and Characteristics**

There are no changes in the specifications and characteristics of the valves themselves.

● **Solenoid Ratings**

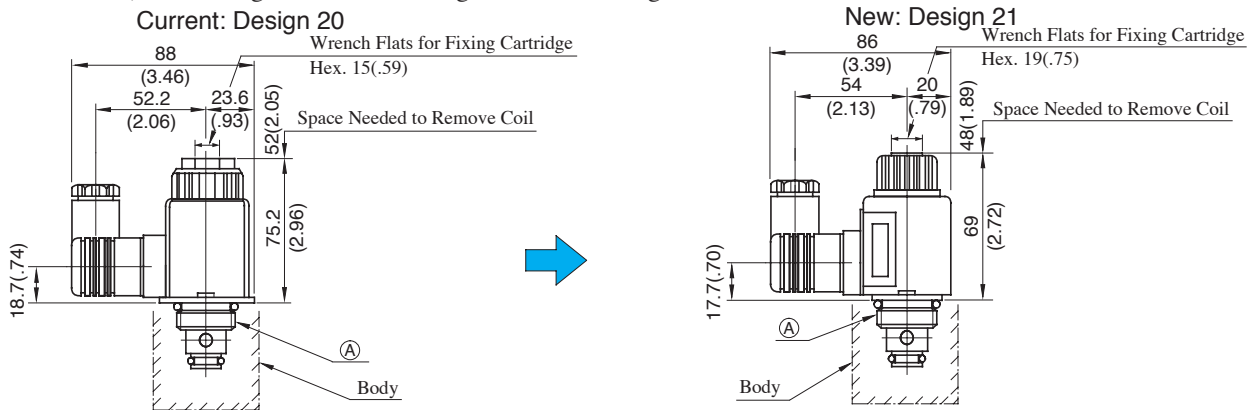
There are changes in the inrush current, holding current and power as shown below. No other changes.

Electric Source	Coil Type	Frequency (Hz)	Voltage (V)		Current & Power at Rated Voltage					
			Source Rating	Serviceable Range	Inrush (A)		Holding (A)		Power (W)	
					New	Current	New	Current	New	Current
AC	A100	50	100	80 - 110	1.12	1.30	0.55	0.52	—	—
		60	100	90 - 120	0.95	1.08	0.40	0.39		
			110		0.86	1.19	0.36	0.47		
	A120	50	120	96 - 132	0.93	1.08	0.46	0.45		
		60		108 - 144	0.79	0.98	0.33	0.33		
	A200	50	200	160 - 220	0.56	0.65	0.28	0.27		
		60	200	180 - 240	0.48	0.54	0.20	0.20		
			220		0.43	0.59	0.18	0.24		
A240	50	240	192 - 264	0.47	0.55	0.23	0.23			
	60		216 - 288	0.40	0.45	0.17	0.17			
DC (K Series)	D12	—	12	10.8 - 13.2	—	—	2.20	2.40	26	29
	D24		24	21.6 - 26.4			1.10	1.20		
	D48		48	43.2 - 52.8			0.55	0.60		
AC→DC Rectified	R100	50/60	100	90 - 110	—	—	0.30	0.32	26	29
	R200		200	180 - 220			0.15	0.17		

● **Interchangeability in Installation**

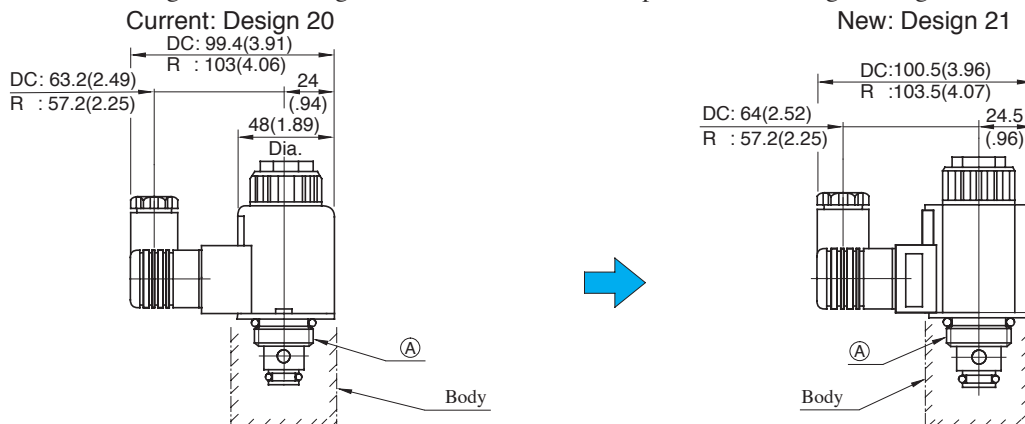
● **AC Solenoids**

Most items of mounting are interchangeable except the dimensions as shown below. In addition, the size of the spanner (core end faces) for locking the CDSC cartridges has been changed to 15-19 mm across flats.



● **DC/R Type Solenoids**

Most items of mounting are interchangeable except the dimensions as shown below. The solenoid shape changed from circular to hexagonal. No change in the size 15 mm of the spanner for locking cartridges.

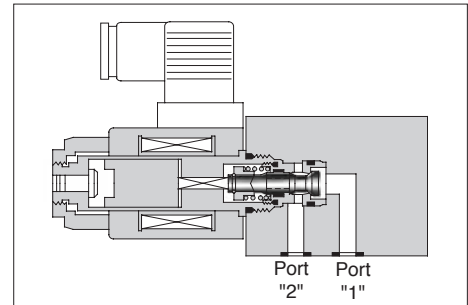


Note: The above drawings give illustrations for the cartridge type. The dimension (A) at the mounting section remains unchanged. In case of the Thread Connection Type and Gasket Mounting Type, a body is mounted to the hatched section. The dimensions of the body remain unchanged.

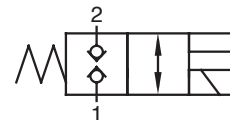
Shut-off Type Solenoid Operated Directional Valves

The shut-off type solenoid operated directional valves are poppet type solenoid operated two-way directional valves developed to meet the needs of this age such as energy and resources saving.

- **High-response**
High response is provided by the poppet design.
- **Smallest internal leakage**
Internal leakage are very small, less than 5 drips per min., which is achieved by the poppet design.
- **Two mounting types: cartridge and sub-plate**
Mounting dimensions for both types conform to ISO standard.
- **Water-proof type (conforming to JIS D 0203 Water Spray Test 32) is also available.**



Graphic Symbol



Specifications

Model Numbers	Max. Flow ^{★1} L/min (U.S.GPM)	Max. Operating Pressure			Max. Changeover Frequency min ⁻¹ (Cycles/Min)	Internal leakage cm ³ /min (cu.in./min)	Approx. Mass kg(1bs.)	
		Port "1" ^{★2}		Port "2"			AC	DC
		"1" to "2" Flow	"2" to "1" Flow					
DSPC-01-C-*-20* ^{★3} ^{★4}	40 (10.6)	10 (1450)	16 (2320)	25 (3630)	300	or Less 0.25 (.015)	0.45 (1.0)	0.6 (1.3)
DSPG-01-C-*-20* ^{★3}							1.45 (3.2)	1.6 (3.5)
DSPC-03-C-*-10* ^{★3}	80 (21.1)	10 (1450)	16 (2320)	25 (3630)	240	or Less 0.25 (.015)	0.9 (2.0)	1.0 (2.2)
DSPG-03-C-*-10* ^{★3}							3.8 (8.4)	3.9 (8.6)

- ★1. Maximum flow rates depend on operating conditions. For details, see [page 491](#).
- ★2. Do not connect port "1" to a line subjected to surge pressures. In addition, if you use port "1" for tank line, be sure to keep the end of the line in the oil.
- ★3. Protections against dust and water conform to the international electric standard (IEC) PUBL 529 IP64.
- ★4. In the case of "DSPC-01-C-D*", use iron material for installation body (cavity).

E
Shut-off Type Solenoid Operated Directional Valves

Model Number Designation

F-	DSP	G	-01	-C	-D24	-20	*
Special Seals	Series Number	Type of Connection	Valve Size	Valve Type	Coil Type	Design Number	Design Standard
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	DSP: Shut-Off Type Solenoid Operated Directional Valves	C: Cartridge Type G: Sub-plate Mounting	01	C: Normally Closed	AC A 100 A 200	20	None: Japanese Std. "JIS" & European Design Std. 90: N. American Design Std.
			03		DC D12 D24	10	

Solenoid Ratings

Electric Source	Coil Type	Frequency (Hz)	Voltage (V)		Current & Power at Rated Voltage					
			Source Rating	Serviceable Range	Inrush (A) ^{★1}		Holding (A)		Power (W)	
					01	03	01	03	01	03
AC	A100	50	100	80 - 110	2.42	5.37	0.51	0.90	—	—
			100	90 - 120	2.14	4.57	0.37	0.63		
		110			2.35	5.03	0.44	0.77		
	A200	50	200	160 - 220	1.21	2.69	0.25	0.45		
			200	180 - 240	1.07	2.29	0.19	0.31		
		220			1.18	2.52	0.22	0.38		
DC ^{★2} (K Series)	D12	—	12	10.8 - 13.2	—	—	2.45	3.16	29	38
	D24	—	24	21.6 - 26.4	—	—	1.23	1.57		

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

★2. K-Series DC Solenoid which has a reputation for excellent DC control is employed.

Sub-plate

Model Numbers	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	
DSPG-01	DSGM-01-31	Rc 1/8	DSGM-01-3180	1/8 BSP.F	DSGM-01-3190	1/8 NPT	0.8 (1.8)
	DSGM-01X-31	Rc 1/4	DSGM-01X-3180	1/4 BSP.F	DSGM-01X-3190	1/4 NPT	0.8 (1.8)
	DSGM-01Y-31	Rc 3/8	—	—	DSGM-01Y-3190	3/8 NPT	0.8 (1.8)
DSPG-03	DSGM-03-40	Rc 3/8	DSGM-03-2180	3/8 BSP.F	DSGM-03-2190	3/8 NPT	3.0 (6.6)
	DSGM-03X-40	Rc 1/2	DSGM-03X-2180	1/2 BSP.F	DSGM-03X-2190	1/2 NPT	3.0 (6.6)
	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

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

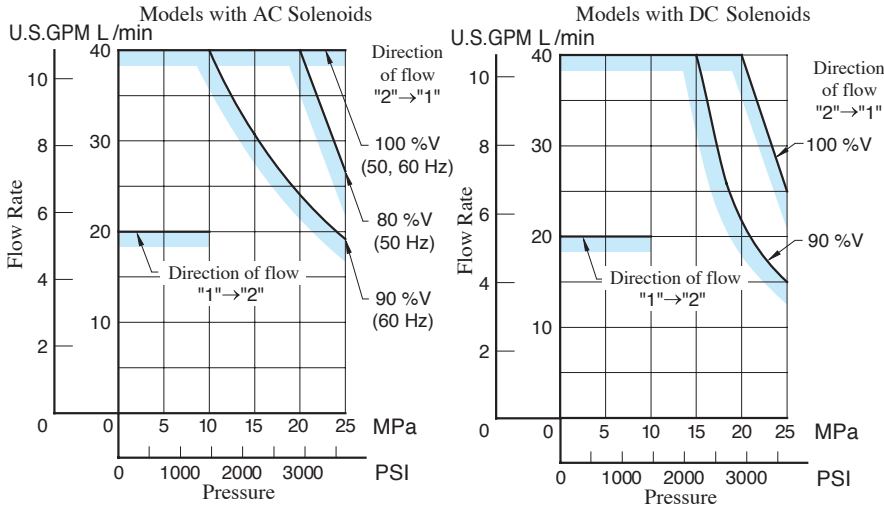
Valve Model Numbers	Descriptions	Soc. Hd. Cap Screw (4 pcs.)	Tightening Torque
DSPG-01	Japanese Standard "JIS" and European Design Standard	M5 × 50 Lg.	5-7 Nm (44 -62 in. lbs.)
	N. American Design Standard	No. 10-24 UNC × 2 Lg.	
DSPG-03	Japanese Standard "JIS" and European Design Standard	M6 × 80 Lg.	12-15 Nm (106 -133 in. lbs.)
	N. American Design Standard	1/4-20 UNC × 3-1/4 Lg.	

Typical Performance Characteristics at Viscosity 30 mm²/s (141 SSU) [ISO VG 46 oils, 50°C(122°F)]

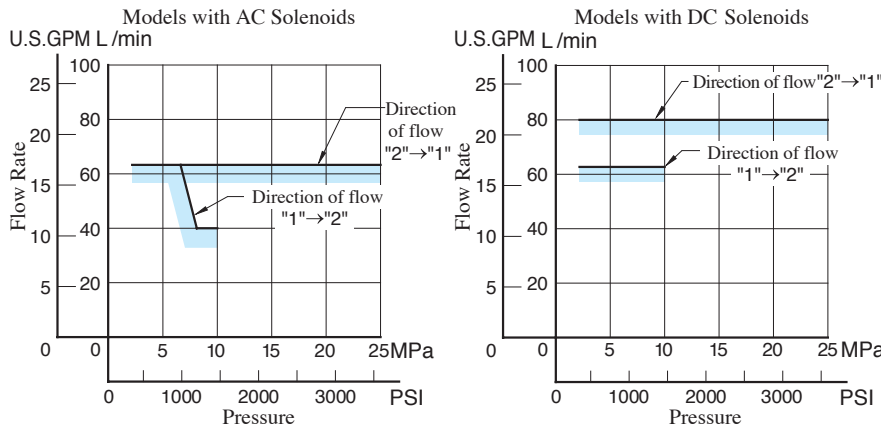
Maximum Flow Rate

The zone under each shaded line denotes the flow rate ranges being free of trouble in changeover.

DSPC/DSPG-01



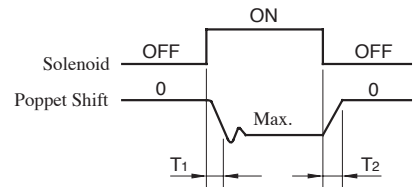
DSPC/DSPG-03



Typical Changeover Time

[Test Conditions]

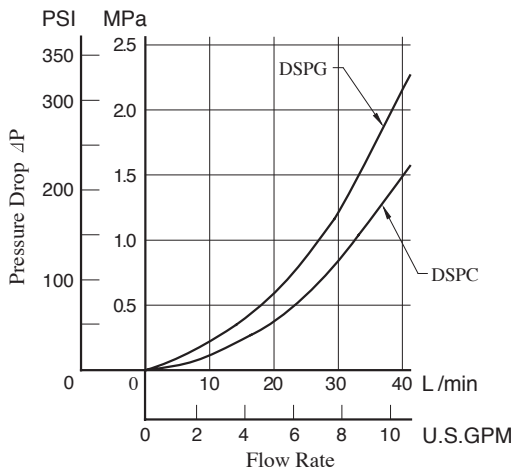
- Pressure: 15 MPa (2180 PSI)
- Flow Rate: (01) 30 L/min (7.9 U.S.GPM)
(03) 63 L/min (16.6 U.S.GPM)
- Viscosity: 30 mm²/s (141 SSU)
- Voltage: 100 % V
(After coil temperature rise and saturates)
- Direction of Flow: "2" → "1"



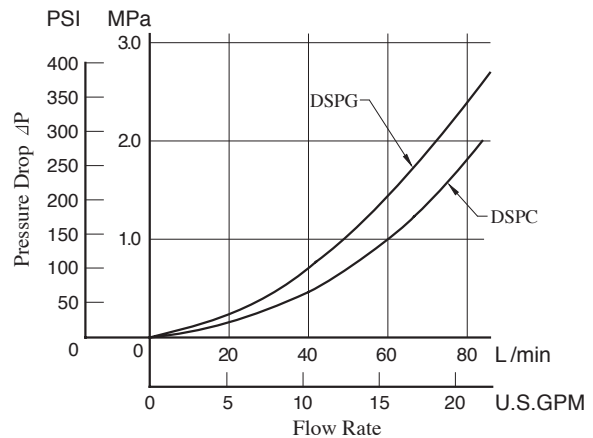
Model Numbers	Shifting Time (ms)	
	T ₁	T ₂
DSPC/DSPG-01-C-A*	22	30
DSPC/DSPG-01-C-D*	69	14
DSPC/DSPG-03-C-A*	22	20
DSPC/DSPG-03-C-D*	60	80

Pressure Drop

DSPC/DSPG-01



DSPC/DSPG-03



● 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.

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

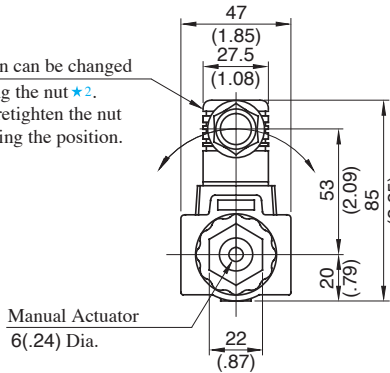


DSPC-01-C-*/20/2090

Mounting Surface: ISO 7789 20-01-0-93

● Models with AC Solenoids

The position can be changed by loosening the nut ★2. Be sure to retighten the nut after changing the position.

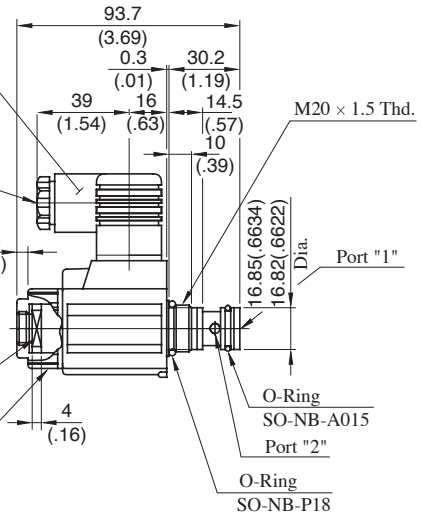


Three positions of cable departure are available in 90° increments.

Cable Departure
Cable Applicable:
Outside Dia.
.....8-10 mm (.31-.39 in.) Dia.
Conductor Area
.....Not Exceeding
1.5m² (.0023 Sq. in.)

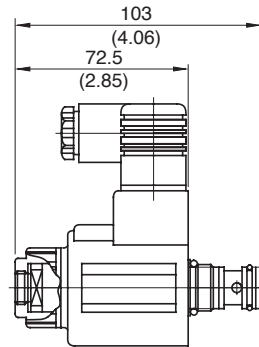
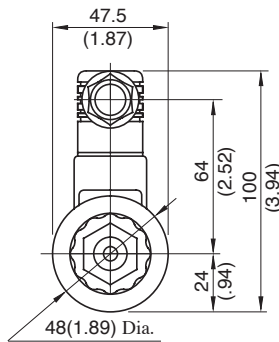
Core Tightening End
15(.59) Across Flats★1

Nut ★2



- ★1. Tightening torque for iron core assembly: 30 - 50 Nm (266-443 IN. lbs.)
- ★2. Tightening torque for nuts: 10.3 - 11.3 Nm (91-100 IN. lbs.)

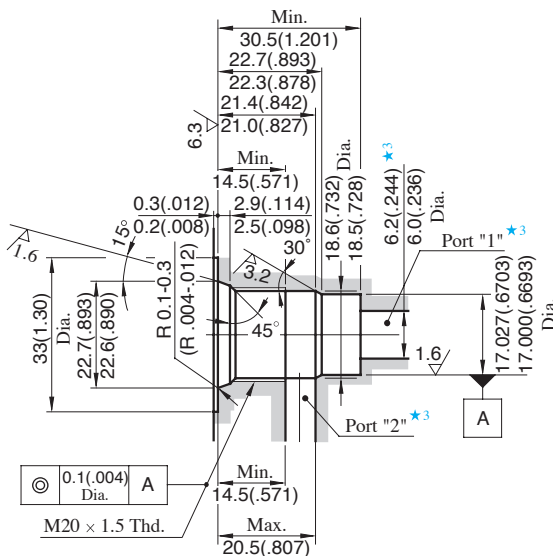
● Models with DC Solenoids



● For other dimensions, refer to the "Models with AC Solenoids".

■ Details of Mounting Holes

DIMENSIONS IN
MILLIMETRES (INCHES)



How to Mount

When mounting, the following steps must be followed.

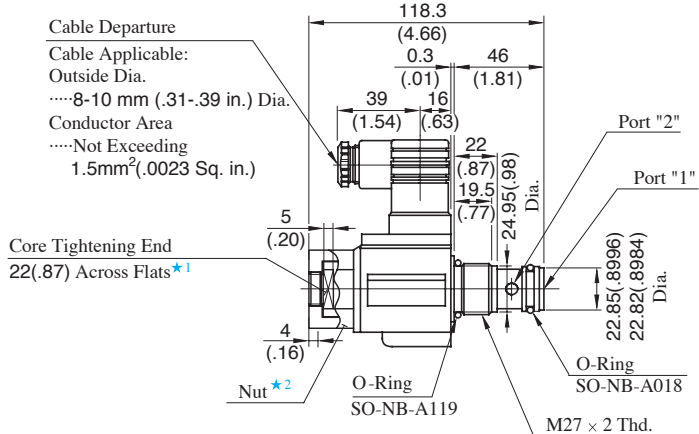
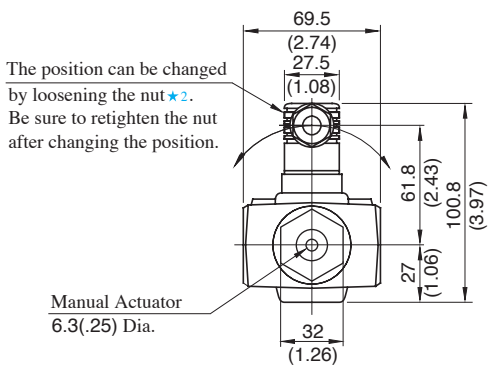
1. Loosen the coil fastening the nut and remove the coil.
2. Making use of the core tightening end, screw the cartridge in.
3. Attach the coil and fix it with the nut.

- ★3. Port diameter of 6.2 (.244) Dia. recommended.
- ★4. Use iron materials for the mounting section.

DSPC-03-C-*-10/1090

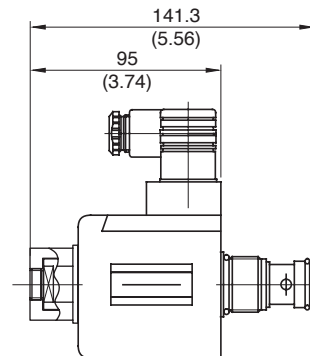
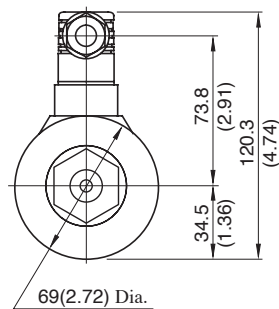
Mounting Surface: ISO 7789 27-01-0-93

Models with AC Solenoids



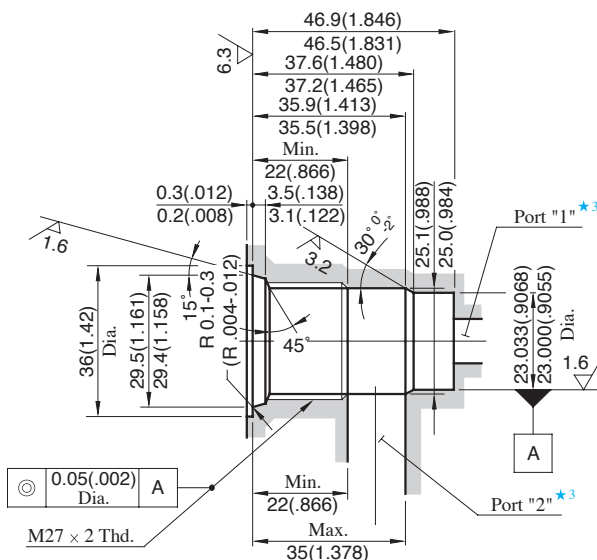
- $\star 1$. Tightening torque for iron core assembly: 110-140 Nm (970-1240 IN. lbs.)
- $\star 2$. Tightening torque for nuts: 8.5-10.5 Nm (75-93 IN. lbs.)

Models with DC Solenoids



● For other dimensions, refer to the "Models with AC Solenoids".

Details of Mounting Holes



DIMENSIONS IN MILLIMETRES (INCHES)

How to Mount

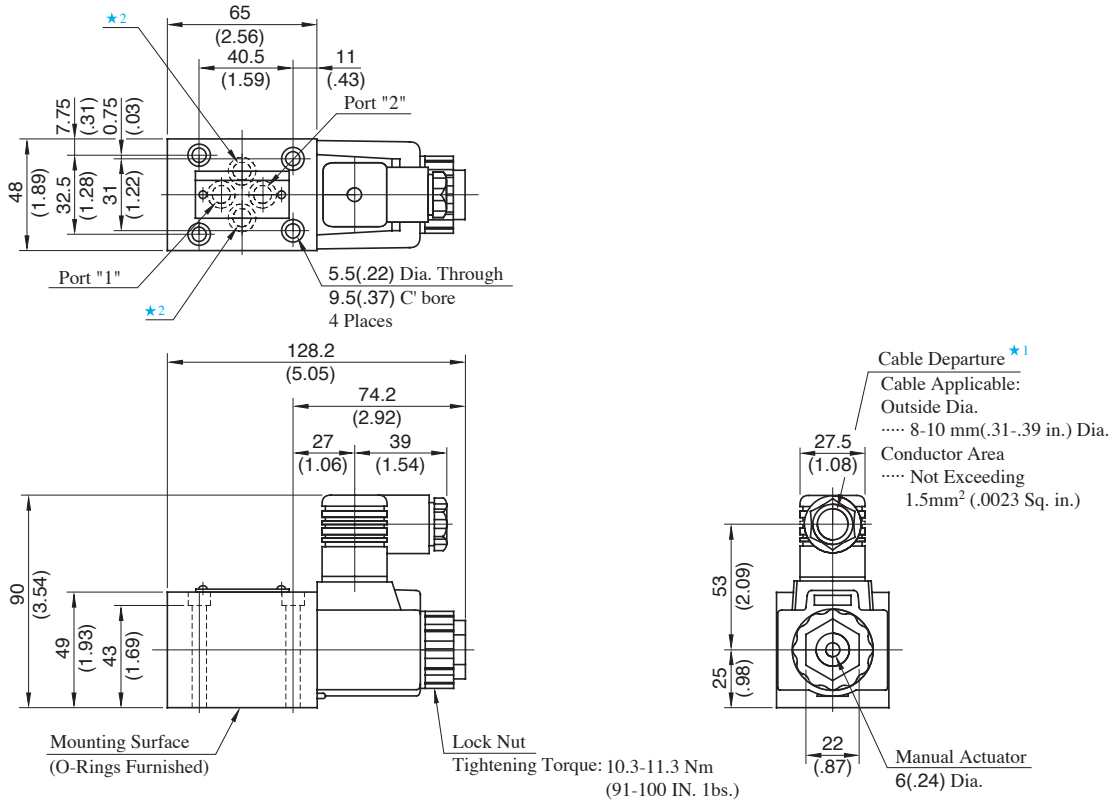
- When mounting, the following steps must be followed.
1. Loosen the coil fastening the nut and remove the coil.
 2. Making use of the core tightening end, screw the cartridge in.
 3. Attach the coil and fix it with the nut.

- $\star 3$. A recommendable port dia. is 11 (.433) mm.
- $\star 4$. Use iron materials for the mounting section.

DSPG-01-C-* -20/2090

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

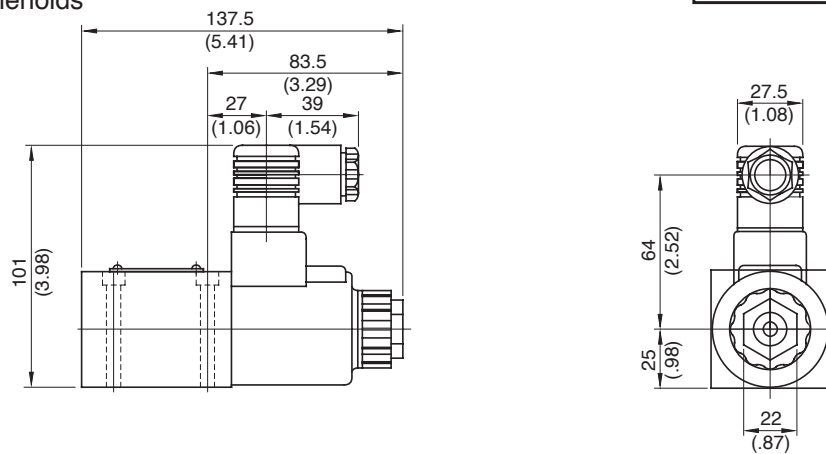
Models with AC Solenoids



- ★1. The location and the position of the cable departure can be changed. For details, see [the cartridge type](#).
- ★2. These ports (2) are not used. In addition, the body has the O-ring grooves and O-rings are included in the body.
- ★3. The mounting dimensions conform to ISO 4401-AB-03-4-A. Ports A and B are used as ports "2" and "1" respectively.
- ★4. O-rings for ports: SO-NB-P9

DIMENSIONS IN
MILLIMETRES (INCHES)

Models with DC Solenoids



● For other dimensions, refer to the "Models with AC Solenoids".

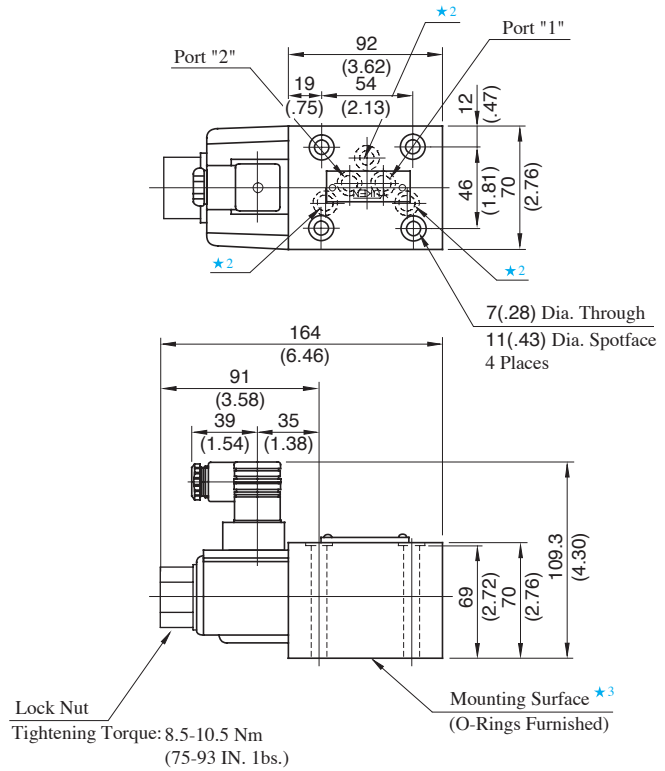
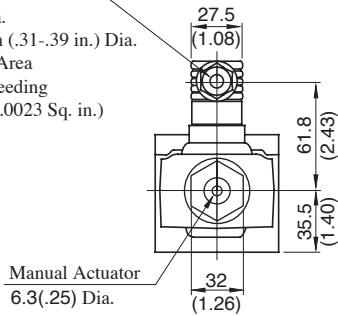
DSPG-03-C-*/-10/1090

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

Models with AC Solenoids

Cable Departure ^{★1}

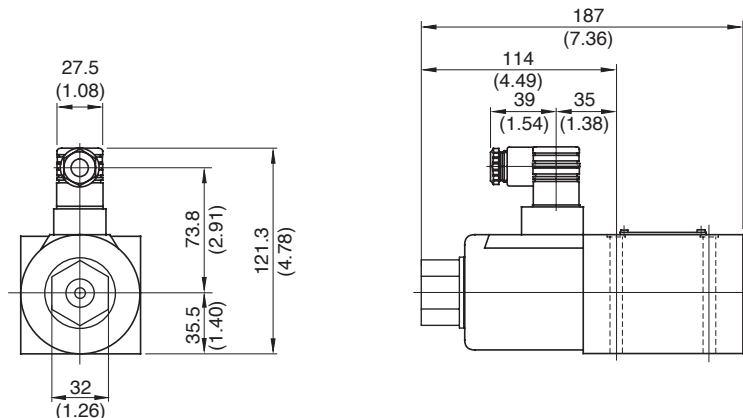
Cable Applicable:
Outside Dia.
.....8-10 mm (.31-.39 in.) Dia.
Conductor Area
.....Not Exceeding
1.5mm² (.0023 Sq. in.)



- ★1. The location and the position of the cable departure can be changed. For details, see [the cartridge type](#).
- ★2. These ports (3) are not used. In addition, the body has the O-ring grooves and O-rings are included in the body.
- ★3. The dimensions of mounting surface conform to ISO 4401-AC-05-4-A. Ports A and B are used as port 2 and port 1 respectively.
- ★4. O-rings for each port: SO-NB-A014

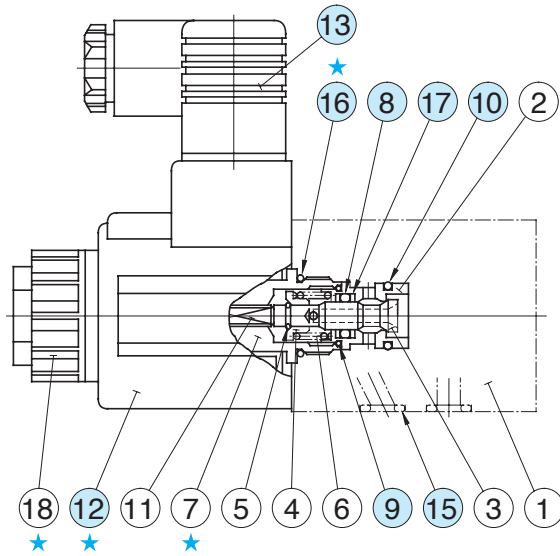
DIMENSIONS IN
MILLIMETRES (INCHES)

Models with DC Solenoids



● For other dimensions, refer to the "Models with AC Solenoids".

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



Solenoid assembly is composed of the parts marked with ★.

● List of Seals

Item	Name of Parts	DSP*-01		DSP*-03		Remarks
		Part Numbers	Qty.	Part Numbers	Qty.	
8	O-Ring	SO-NA-P8	1	SO-NA-P12	1	————
9	O-Ring	SO-NB-A014	1	SO-NB-A017	1	————
10	O-Ring	SO-NB-A015	1	SO-NB-A018	1	————
15	O-Ring	SO-NB-P9	4	SO-NB-A014	5	————
16	O-Ring	SO-NB-P18	1	SO-NB-A119	1	only for "DSPG"
17	Back Up Ring	5701-VK413831-9	2	2691-VK418550-0	2	————

Note: When ordering the seals, specify the seal kit number from the table below.



● List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
DSPC-01-C-*-20*	KS-DSPC-01-C-10
DSPC-03-C-*-10*	KS-DSPC-03-C-10
DSPG-01-C-*-20*	KS-DSPG-01-C-10
DSPG-03-C-*-10*	KS-DSPG-03-C-10

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

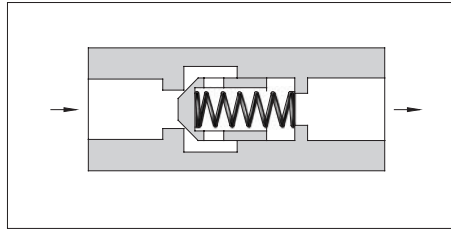
Valve Model No.	Solenoid Ass'y No.	⑫ Coil No.	⑬ Connector No.
DSPC/DSPG-01-C-A100-20/2090	SA1-100-N-6055	C-SA1-100-N-60	GDM-211-B-11
DSPC/DSPG-01-C-A200-20/2090	SA1-200-N-6055	C-SA1-200-N-60	
DSPC/DSPG-01-C-D12-20/2090	SD1-12-N-6055	C-SD1-12-N-60	
DSPC/DSPG-01-C-D24-20/2090	SD1-24-N-6055	C-SD1-24-N-60	
DSPC/DSPG-03-C-A100-10/1090	SA3-100-N-5130	C-SA3-100-N-50	
DSPC/DSPG-03-C-A200-10/1090	SA3-200-N-5130	C-SA3-200-N-50	
DSPC/DSPG-03-C-D12-10/1090	SD3-12-N-5130	C-SD3-12-N-50	
DSPC/DSPG-03-C-D24-10/1090	SD3-24-N-5130	C-SD3-24-N-50	

Check/Pilot Controlled Check Valves

Valve Type	Graphic Symbols	Max. Operating Pressure MPa (PSI)	U.S.GPM										Page	
			1	2	5	10	20	50	100	200	500	1000		
Check Valves		25 (3630)	.3 0.5 1 2 5 10 20 50 100 200 500 1000 2000 5000 L/min										498	
			In-Line (CIT)	02	03	06	10							
			Right Angle (CRT/CRG)		03	06	10							
			Right Angle, Flanged Connection (CRF)				10	16	24					
Pilot Operated Check Valves		25 (3630)											504	
			Threaded Connection(CP*T) Sub-plate Mounting(CP*G)	03	06	10								
			Flanged Connection(CP*F)				10	16						

In-Line Check Valves

These valves allow free flow in one direction and prevent flow in the reverse direction. Cracking pressure specified is the pressure required to open the valve and allow free flow.



Graphic Symbol



Specifications

Model Numbers	Rated Flow* L/min (U.S.GPM)	Max. Operating Pres. MPa (PSI)	Cracking Pres. MPa (PSI)	Approx. Mass kg (lbs.)
CIT-02-* -50/5080/5090	16 (4.23)	25 (3630)	0.04 (6) 0.35 (50) 0.5 (70)	0.1 (.22)
CIT-03-* -50/5080/5090	30 (7.93)			0.3 (.66)
CIT-06-* -50/5080/5090	85 (22.5)			0.8 (1.8)
CIT-10-* -50/5080/5090	230 (60.8)			2.3 (5.1)

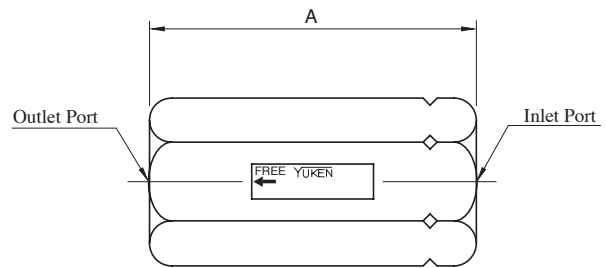
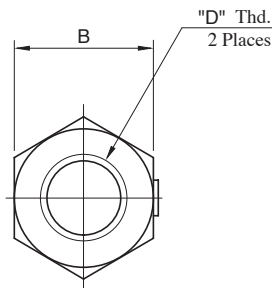
★ Rated flow is the approximate flow rate, when there is a free flow pressure drop of maximum 0.3 MPa (44 PSI), the fluid has a specific gravity of 0.85 and a kinematic viscosity of 20 mm²/s (98 SSU), and the cracking pressure is 0.04 MPa (6 PSI).

Model Number Designation

CI	T	-03	-04	-50	*
Series Number	Type of Connection	Valve Size	Cracking Pressure MPa (PSI)	Design Number	Design Standards
CI: In-Line Check Valve	T: Threaded Connection	02	04: 0.04 (6) 35: 0.35 (50) 50: 0.5 (70)	50	None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.
		03		50	
		06		50	
		10		50	

Note: For In-Line Check Valves, standard type (for petroleum base oils) can be used phosphate ester type fluid.

CIT-02-* -50/5080/5090
CIT-03-* -50/5080/5090
CIT-06-* -50/5080/5090
CIT-10-* -50/5080/5090



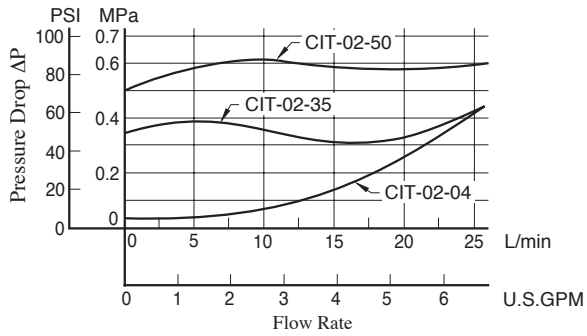
Model Numbers	mm (Inches)		"D" Thd.
	A	B	
CIT-02-* -50	58 (2.28)	19 (.75)	Rc 1/4
CIT-02-* -5080	65 (2.56)	22 (.87)	1/4 BSP.F
CIT-02-* -5090	58 (2.28)	19 (.75)	1/4 NPT
CIT-03-* -50	76 (2.99)	27 (1.06)	Rc 3/8
CIT-03-* -5080	83 (3.27)		3/8 BSP.F
CIT-03-* -5090	76 (2.99)		3/8 NPT
CIT-06-* -50	95 (3.74)	41 (1.61)	Rc 3/4
CIT-06-* -5080	102(4.02)		3/4 BSP.F
CIT-06-* -5090	95 (3.74)		3/4 NPT
CIT-10-* -50	133(5.24)	60 (2.36)	Rc 1-1/4
CIT-10-* -5080			1-1/4 BSP.F
CIT-10-* -5090			1-1/4 NPT

**DIMENSIONS IN
MILLIMETRES (INCHES)**

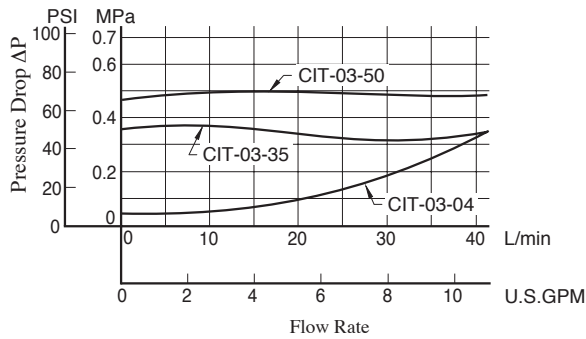
Pressure Drop

Hydraulic Fluid: Viscosity 30 mm²/s (141 SSU), Specific Gravity 0.850

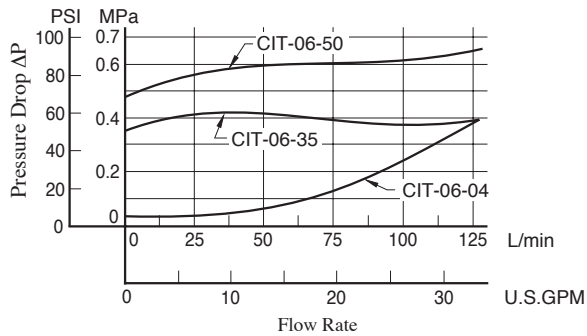
CIT-02



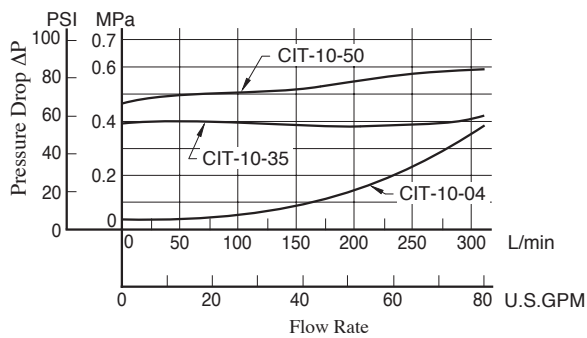
CIT-03



CIT-06

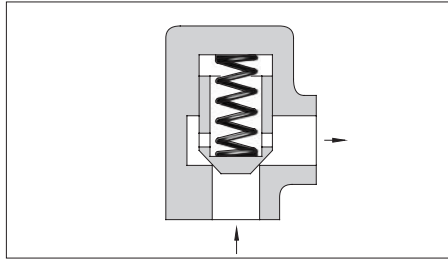


CIT-10

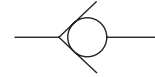


Right Angle Check Valves

These valves allow free flow in one direction and prevent flow in the reverse direction. Cracking pressure specified is the pressure required to open the valve and allow free flow.



Graphic Symbol



Specifications

Type of Connection	Model Numbers	Rated Flow* L/min (U.S.GPM)	Max. Operating Pres. MPa (PSI)	Cracking Pres. MPa (PSI)	Approx. Mass kg (lbs.)
Threaded Connection	CRT-03-*50/5080/5090	40 (10.6)	25 (3630)	0.04 (6)	0.9 (2.0)
	CRT-06-*50/5080/5090	125 (33)		0.35 (50)	1.7 (3.7)
	CRT-10-*50/5080/5090	250 (66)		0.5 (70)	5.6 (12.3)
Sub-plate Mounting	CRG-03-*50/5090	40 (10.6)	25 (3630)	0.04 (6)	1.7 (3.7)
	CRG-06-*50/5090	125 (33)		0.35 (50)	2.9 (6.4)
	CRG-10-*50/5090	250 (66)		0.5 (70)	5.5 (12.1)

* Rated flow is the approximate flow rate, when there is a free flow pressure drop of maximum 0.3 MPa (44 PSI), the fluid has a specific gravity of 0.85 and a kinematic viscosity of 20 mm²/s (98 SSU), and the cracking pressure is 0.04 MPa (6 PSI).

Model Number Designation

F-	CR	T	-03	-04	-50	*
Special Seals	Series Number	Type of Connection	Valve Size	Cracking Pressure MPa (PSI)	Design Number	Design Standards
F: Special seals for phosphate ester type fluids (Omit if not required)	CR: Right Angle Check Valve	T: Threaded Connection	03	04: 0.04 (6)	50	None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.
			06	35: 0.35 (50)	50	
			10	50: 0.5 (70)	50	
		G: Sub-plate Mounting	03	04: 0.04 (6)	50	None: Japanese Std. "JIS" & European Design Std. 90: N. American Design Std.
			06	35: 0.35 (50)	50	
			10	50: 0.5 (70)	50	

Sub-plate

Valve Model Numbers	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	
CRG-03	CRGM-03-50	Rc 3/8	CRGM-03-5080	3/8 BSP.F	CRGM-03-5090	3/8 NPT	1.6 (3.5)
	CRGM-03X-50	Rc 1/2	CRGM-03X-5080	1/2 BSP.F	CRGM-03X-5090	1/2 NPT	1.6 (3.5)
CRG-06	CRGM-06-50	Rc 3/4	CRGM-06-5080	3/4 BSP.F	CRGM-06-5090	3/4 NPT	2.4 (5.3)
	CRGM-06X-50	Rc 1	CRGM-06X-5080	1 BSP.F	CRGM-06X-5090	1 NPT	3.0 (6.6)
CRG-10	CRGM-10-50	Rc 1-1/4	CRGM-10-5080	1-1/4 BSP.F	CRGM-10-5090	1-1/4 NPT	4.8 (10.6)
	CRGM-10X-50	Rc 1-1/2	CRGM-10X-5080	1-1/2 BSP.F	CRGM-10X-5090	1-1/2 NPT	5.7 (12.6)

● 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.

Yuken can offer flanged connection valves described below.

For details, contact us.

Model No.	Rated Flow L/min (U.S.GPM)	Max. Operating Pressure MPa (PSI)
CRF-10-*50*	300 (79.3)	25 (3630)
CRF-16-*50*	600 (159)	
CRF-24-*50*	1300 (343)	

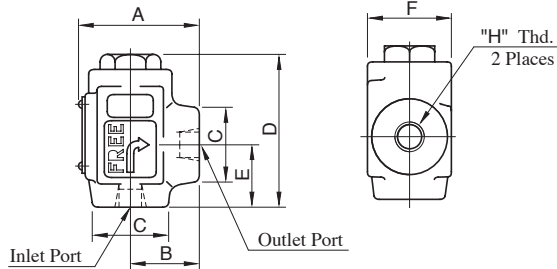
Mounting Bolts

Socket head cap screws in the table below are included.

Valve Model Numbers	Socket Head Cap Screw		Qty.
	Japanese Standard "JIS" European Design Standard	N.American Design Standard	
CRG-03	M10 × 45 Lg.	3/8-16 UNC × 1-3/4 Lg.	4
CRG-06	M10 × 50 Lg.	3/8-16 UNC × 2 Lg.	4
CRG-10	M10 × 55 Lg.	3/8-16 UNC × 2-1/4 Lg.	6

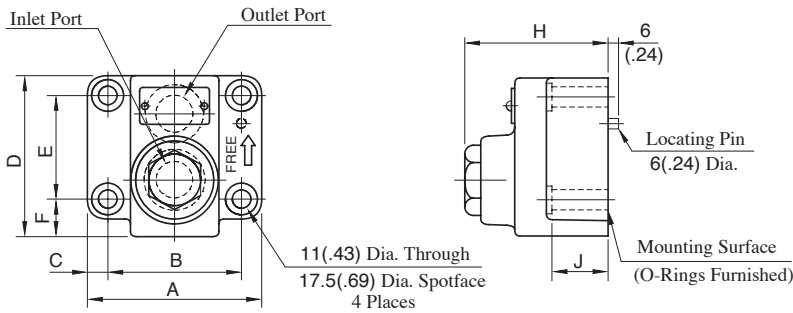
CRT-03-*50/5080/5090
 CRT-06-*50/5080/5090
 CRT-10-*50/5080/5090

**DIMENSIONS IN
 MILLIMETRES (INCHES)**



Model Numbers	Dimensions mm (Inches)						"H" Thd.
	A	B	C	D	E	F	
CRT-03-*50	62	36	38	80.5	33	44	Rc 3/8
CRT-03-*5080	(2.44)	(1.42)	(1.50) Dia	(3.17)	(1.30)	(1.73)	3/8 BSP.F
CRT-03-*5090							3/8 NPT
CRT-06-*50	74	45	54	104.5	49	54	Rc 3/4
CRT-06-*5080	(2.91)	(1.77)	(2.13) Dia	(4.11)	(1.93)	(2.13)	3/4 BSP.F
CRT-06-*5090							3/4 NPT
CRT-10-*50	107	65	80	130	65	80	Rc 1-1/4
CRT-10-*5080	(4.21)	(2.56)	(3.15) SQ.	(5.12)	(2.56)	(3.15)	1-1/4 BSP.F
CRT-10-*5090							1-1/4 NPT

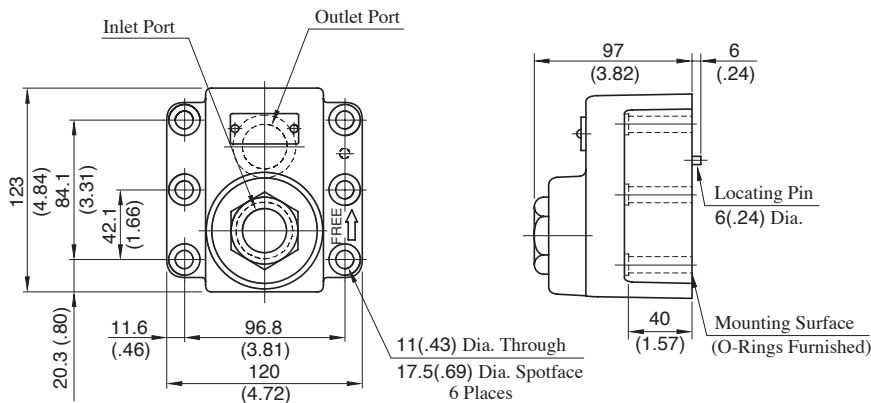
CRG-03-*50/5090
 CRG-06-*50/5090



Model Numbers	Dimensions mm (Inches)								Mounting Surface
	A	B	C	D	E	F	H	J	
CRG-03	90	66.7	11.7	72	42.9	17.5	72.5	30	ISO 5781-AG-06-2-A
	(3.54)	(2.63)	(.46)	(2.83)	(1.69)	(.69)	(2.85)	(1.18)	
CRG-06	102	79.4	11.3	93	60.3	21.4	84.5	35	ISO 5781-AH-08-2-A
	(4.02)	(3.13)	(.44)	(3.66)	(2.37)	(.84)	(3.33)	(1.38)	

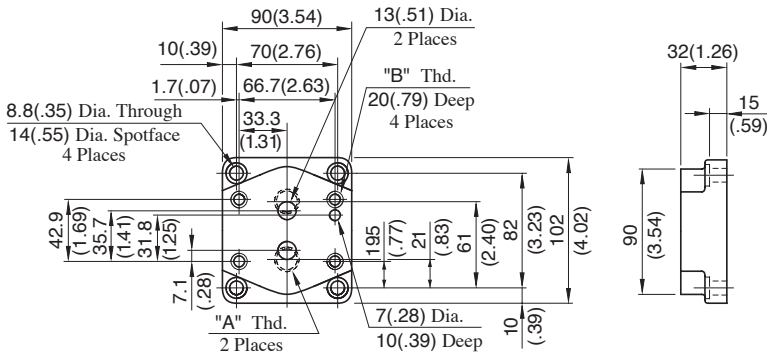
CRG-10-*50/5090

Mounting surface: ISO 5781-AJ-10-2-A



Sub-plate

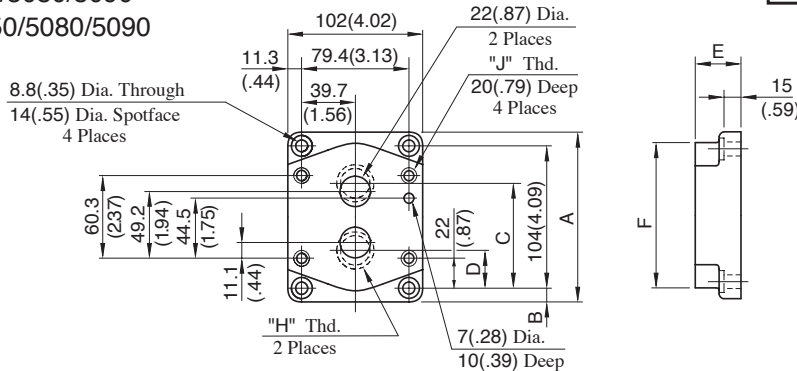
CRGM-03-50/5080/5090
CRGM-03X-50/5080/5090



Sub-plate Model Numbers	Thread Size	
	"A" Thd.	"B" Thd.
CRGM-03-50	Rc 3/8	M10
CRGM-03-5080	3/8 BSP.F	
CRGM-03-5090	3/8 NPT	3/8-16 UNC
CRGM-03X-50	Rc 1/2	M10
CRGM-03X-5080	1/2 BSP.F	
CRGM-03X-5090	1/2 NPT	3/8-16 UNC

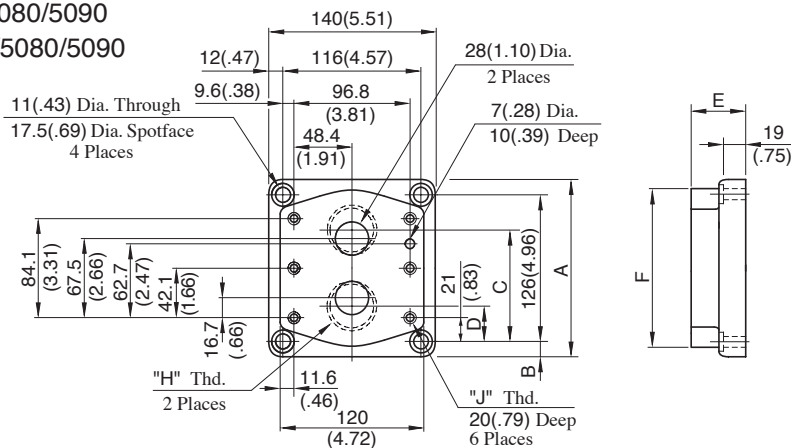
DIMENSIONS IN MILLIMETRES (INCHES)

CRGM-06-50/5080/5090
CRGM-06X-50/5080/5090



Sub-plate Model Numbers	Dimensions mm (Inches)						Thread Size	
	A	B	C	D	E	F	"H" Thd.	"J" Thd.
CRGM-06-50							Rc 3/4	M10
CRGM-06-5080	124 (4.88)	10 (.39)	77 (3.03)	27 (1.06)	36 (1.42)	110 (4.33)	3/4 BSP.F	
CRGM-06-5090							3/4 NPT	3/8-16 UNC
CRGM-06X-50			82.3 (3.24)	22 (.87)	45 (1.77)	130 (5.12)	Rc 1	M10
CRGM-06X-5080	136 (5.35)	16 (.63)	80 (3.15)	24 (.94)				
CRGM-06X-5090			82.3 (3.24)	22 (.87)			1 NPT	3/8-16 UNC

CRGM-10-50/5080/5090
CRGM-10X-50/5080/5090

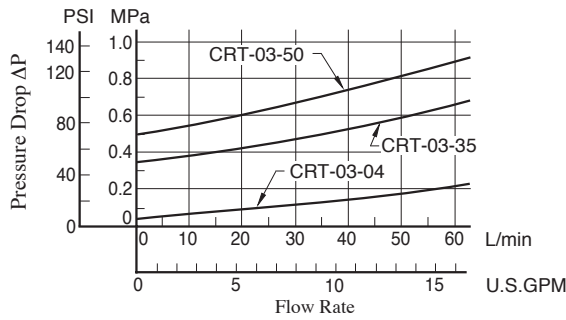


Sub-plate Model Numbers	Dimensions mm (Inches)						Thread Size	
	A	B	C	D	E	F	"H" Thd.	"J" Thd.
CRGM-10-50							Rc 1-1/4	M10
CRGM-10-5080	150 (5.91)	12 (.47)	96 (3.78)	30 (1.18)	45 (1.77)	135 (5.31)	1-1/4 BSP.F	
CRGM-10-5090							1-1/4 NPT	3/8-16 UNC
CRGM-10X-50			104 (4.09)	22 (.87)	50 (1.97)	167 (6.57)	Rc 1-1/2	M10
CRGM-10X-5080	177 (6.97)	25.5 (1.00)	104 (4.09)	22 (.87)				
CRGM-10X-5090			104 (4.09)	22 (.87)			1-1/2 NPT	3/8-16 UNC

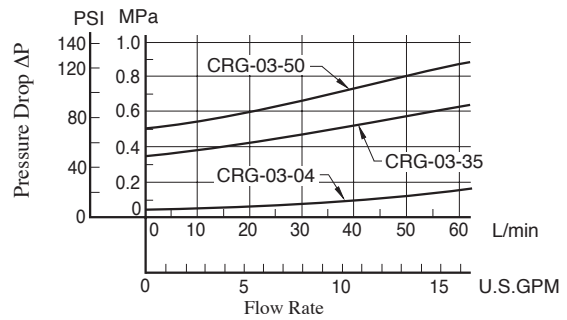
Pressure Drop

Hydraulic Fluid: Viscosity 30mm²/s (141 SSU), Specific Gravity 0.850

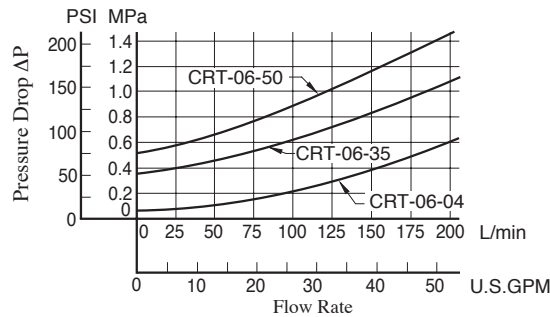
● CRT-03



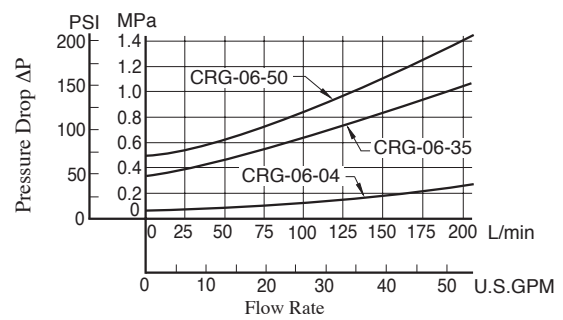
● CRG-03



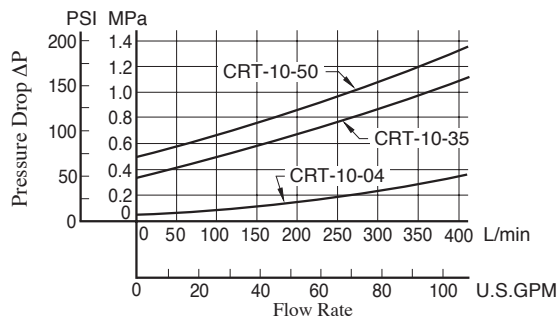
● CRT-06



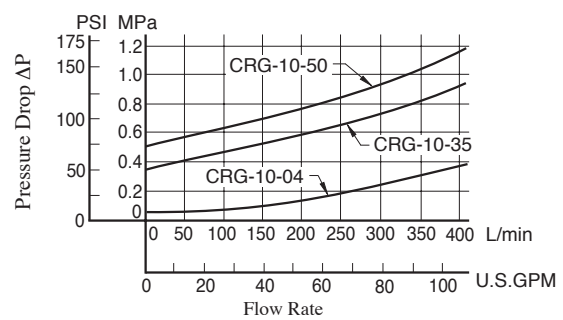
● CRG-06



● CRT-10

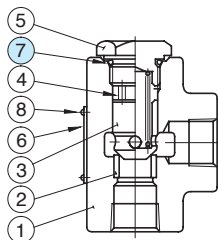


● CRG-10

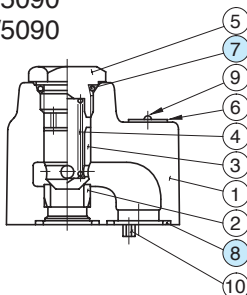


List of Seals

CRT-03-50/5080/5090
 CRT-06-50/5080/5090
 CRT-10-50/5080/5090



CRG-03-50/5090
 CRG-06-50/5090
 CRG-10-50/5090



● List of Seals & Seal Kits

Item	Name of Parts	Part Numbers			Qty.
		CRT-03	CRT-06	CRT-10	
7	O-Ring	SO-NB-P21	SO-NB-P24	SO-NB-P32	1
★	Seal Kit	KS-CRT-03-50	KS-CRT-06-50	KS-CRT-10-50	—

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

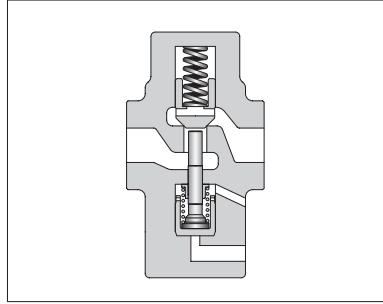
● List of Seals & Seal Kits

Item	Name of Parts	Part Numbers			Qty.
		CRG-03	CRG-06	CRG-10	
7	O-Ring	SO-NB-P21	SO-NB-P24	SO-NB-P32	1
8	O-Ring	SO-NB-P18	SO-NB-P28	SO-NB-P32	2
★	Seal Kit	KS-CRG-03-50	KS-CRG-06-50	KS-CRG-10-50	—

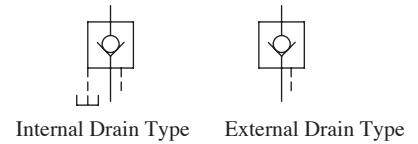
★ When ordering the O-Rings, please specify the seal kit number from the table above.

Pilot Operated Check Valves

These check valves allow flow in one direction and prevent flow in the reverse direction, until operated by pilot pressure to allow free reverse flow. The specified cracking pressure is required to open the valve to allow free flow direction.



Graphic Symbols



Specifications

Type of Connection	Model Numbers	Rated Flow* L/min (U.S.GPM)	Max. Operating Pres. MPa (PSI)	Cracking Pres. MPa (PSI)	Approx. Mass kg (lbs.)
Threaded Connection	CPT/CPDT-03-*-50*	40 (10.6)	25 (3630)	0.04 (6)	3.0 (6.6)
	CPT/CPDT-06-*-50*	125 (33)		0.2 (29)	5.5 (12.1)
	CPT/CPDT-10-*-50*	250 (66)		0.35 (50)	9.6 (21.2)
Sub-plate Mounting	CPG/CPDG-03-*-50*	40 (10.6)	25 (3630)	0.04 (6)	3.3 (7.3)
	CPG/CPDG-06-*-50*	125 (33)		0.2 (29)	5.4 (11.9)
	CPG/CPDG-10-*-50*	250 (66)		0.35 (50)	8.5 (18.7)

* Rated flow is the approximate flow rate, when there is a free flow pressure drop of maximum 0.3 MPa (44 PSI), the fluid has a specific gravity of 0.85 and a kinematic viscosity of 20 mm²/s (98 SSU), and the cracking pressure is 0.04 MPa (6 PSI).

Model Number Designation

F-	CP	T	03	-E	-04	-50	*
Special Seals	Series Number	Type of Connection	Valve Size	Drain Connection	Cracking Pres. MPa (PSI)	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	CP: Pilot Operated Check Valve	T: Threaded Connection	03	None: Internal Drain	04: 0.04 (6)	50	None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.
			06			50	
			10			50	
	CPD: Decompression Type Pilot Operated Check Valve	G: Sub-plate Mounting	03	E: External Drain	35: 0.35 (50) 50: 0.5 (70)	50	None: Japanese Std. "JIS" & European Design Std. 90: N. American Design Std.
			06			50	
			10			50	

Mounting Bolts

Socket head cap screws in the table below are included.

Valve Model Numbers	Socket Head Cap Screw		Qty.
	Japanese Standard "JIS" & European Design Standard	N.American Design Standard	
CP*G-03	M10 × 45 Lg.	3/8-16 UNC × 1-3/4 Lg.	4
CP*G-06	M10 × 50 Lg.	3/8-16 UNC × 2 Lg.	4
CP*G-10	M10 × 55 Lg.	3/8-16 UNC × 2-1/4 Lg.	6

Yuken can offer flanged connection valves described below.
For details, contact us.

Model Numbers	Rated Flow L/min (U.S.GPM)	Max. Operating Pressure MPa (PSI)
CP*F-10-*-50*	250 (66)	25 (3630)
CP*F-16-*-50*	600 (159)	25 (3630)

Sub-plate

Valve Model Numbers	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	
CP*G-03	HGM-03-20	Rc 3/8	HGM-03-2080	3/8 BSP.F	HGM-03-2090	3/8 NPT	1.6 (3.5)
	HGM-03X-20	Rc 1/2	HGM-03X-2080	1/2 BSP.F	HGM-03X-2090	1/2 NPT	1.6 (3.5)
CP*G-06	HGM-06-20	Rc 3/4	HGM-06-2080	3/4 BSP.F	HGM-06-2090	3/4 NPT	2.4 (5.3)
	HGM-06X-20	Rc 1	HGM-06X-2080	1 BSP.F	HGM-06X-2090	1 NPT	3.0 (6.6)
CP*G-10	HGM-10-20	Rc 1-1/4	HGM-10-2080	1-1/4 BSP.F	HGM-10-2090	1-1/4 NPT	4.8 (10.6)
	HGM-10X-20	Rc 1-1/2	HGM-10X-2080	1-1/2 BSP.F	HGM-10X-2090	1-1/2 NPT	5.7 (12.6)

- 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.
- Sub-plates are shared with those for H Type Pressure Control Valves. Refer to [pages 244 to 246](#) for dimensions.

Instructions

Operation of internal and external drain types

When the outlet side P1 is directly connected to the tank in reversed free flow (Fig. a), the internal drain type is normally used. When the back pressure is applied to the outlet side P1 (Fig. b), be sure to use the external drain type.

Minimum pilot pressure characteristics

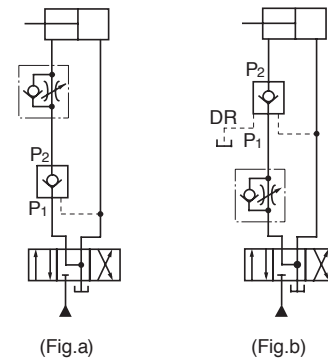
That depends on the pressure of the inlet side P2 in the reversed free flow.

This value can be determined from the characteristics chart.

Caution on replacement of 20 design low cracking pressure type valves with 50 design valves.

In 20 design valve with cracking pressure of 0.035 MPa (5 PSI) (Code "5"), for closing the valve completely and certainly, it was necessary to introduce the pressurized oil into the drain port to push down the piston compulsory.

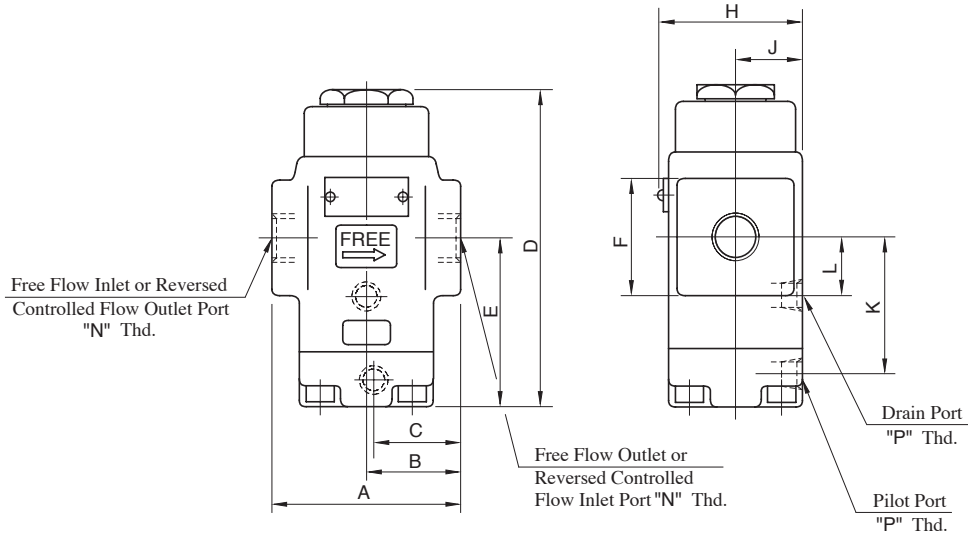
While in 50 design valve with cracking pressure of 0.04 MPa (6 PSI) (Code "6"), it has such structure that the valve can be closed completely and certainly without introducing the pressurized oil into the drain port. On the contrary, what is worse is that if the pressurized oil is introduced into the drain port, the oil acts towards the direction of opening the valve, which is very dangerous and has to be absolutely avoided. Therefore, please do not supply any pressurized oil into the drain port in case of using 50 design valve.



WARNING

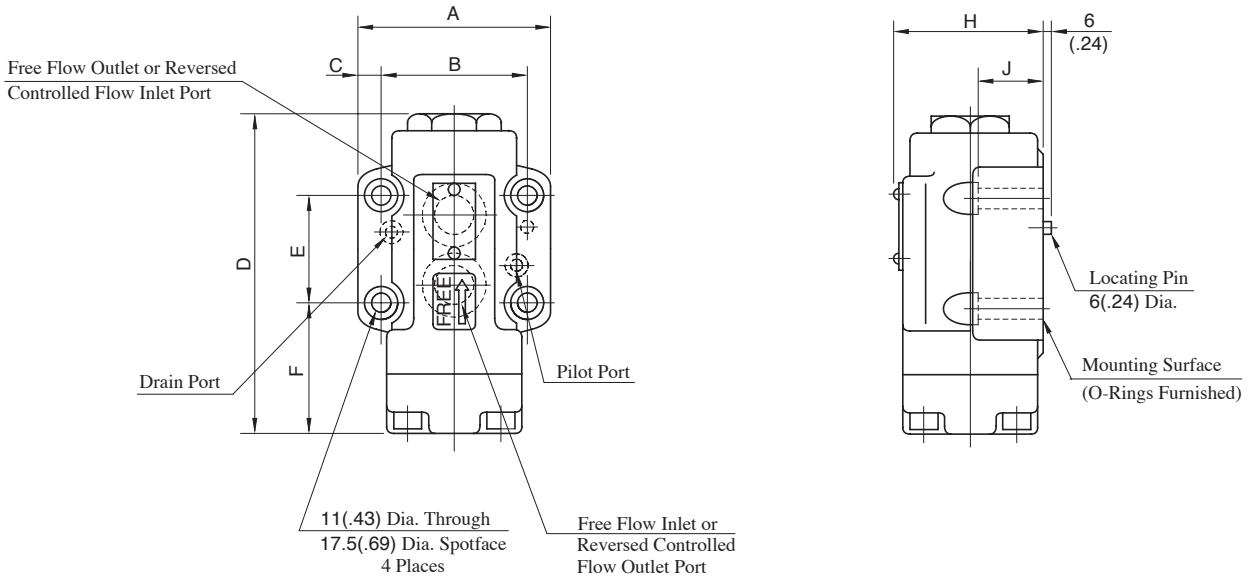
The machinery, if misused due to failure to observe the "Cautions" on the left, may perform unforeseeable movements, resulting in a disastrous accident.

CPT/CPDT-03-**-**-50/5080/5090
 CPT/CPDT-06-**-**-50/5080/5090
 CPT/CPDT-10-**-**-50/5080/5090



Model Numbers	Dimensions mm (Inches)										Thread Size	
	A	B	C	D	E	F	H	J	K	L	"N" Thd.	"P" Thd.
CPT/CPDT-03-**-**-50											Rc 3/8	Rc 1/4
CPT/CPDT-03-**-**-5080	80 (3.15)	40 (1.57)	39 (1.54)	150.5 (5.93)	84.5 (3.33)	38 (1.50) Dia.	60 (2.36)	29 (1.14)	67.5 (2.66)	26.5 (1.04)	3/8 BSP.F	1/4 BSP.F
CPT/CPDT-03-**-**-5090											3/8 NPT	1/4 NPT
CPT/CPDT-06-**-**-50											Rc 3/4	Rc 1/4
CPT/CPDT-06-**-**-5080	96 (3.78)	48 (1.89)	47 (1.85)	171.5 (6.75)	92.5 (3.64)	62 (2.44) SQ.	72 (2.83)	35 (1.38)	75.5 (2.97)	31 (1.22)	3/4 BSP.F	1/4 BSP.F
CPT/CPDT-06-**-**-5090											3/4 NPT	1/4 NPT
CPT/CPDT-10-**-**-50											Rc 1-1/4	Rc 1/4
CPT/CPDT-10-**-**-5080	140 (5.51)	70 (2.76)	64 (2.52)	203.5 (8.01)	113 (4.45)	80 (3.15) SQ.	82 (3.23)	40 (1.57)	96 (3.78)	43 (1.69)	1-1/4 BSP.F	1/4 BSP.F
CPT/CPDT-10-**-**-5090											1-1/4 NPT	1/4NPT

CPG/CPDG-03-**-50/5090
 CPG/CPDG-06-**-50/5090

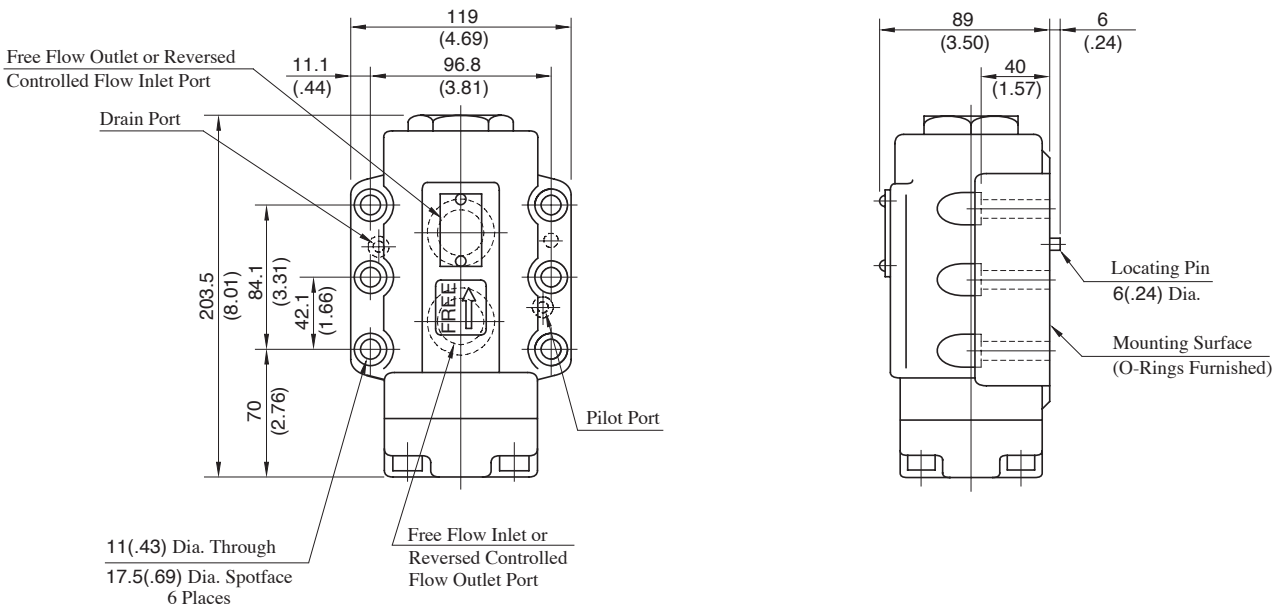


Model Numbers	Dimensions mm (Inches)								Mounting Surface
	A	B	C	D	E	F	H	J	
CPG/CPDG-03-**-50/5090	90 (3.54)	66.7 (2.63)	11.7 (.46)	150.5 (5.93)	42.9 (1.69)	66 (2.60)	62 (2.44)	30 (1.18)	ISO 5781-AG-06-2-A
CPG/CPDG-06-**-50/5090	102 (4.02)	79.4 (3.13)	11.3 (.44)	171.5 (6.75)	60.3 (2.37)	67.5 (2.66)	74 (2.91)	35 (1.38)	ISO 5781-AH-08-2-A

CPG/CPDG-10-**-50/5090

Mounting surface: ISO 5781-AJ-10-2-A

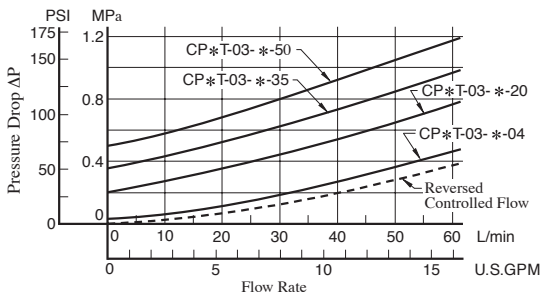
DIMENSIONS IN MILLIMETRES (INCHES)



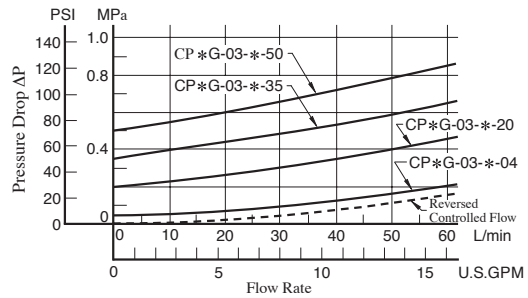
Hydraulic Fluid: Viscosity 30 mm²/s (141 SSU), Specific Gravity 0.850

Pressure Drop

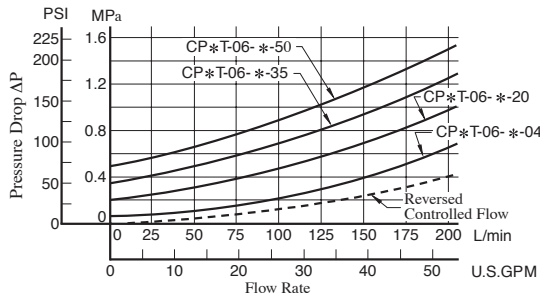
● CPT-03, CPDT-03



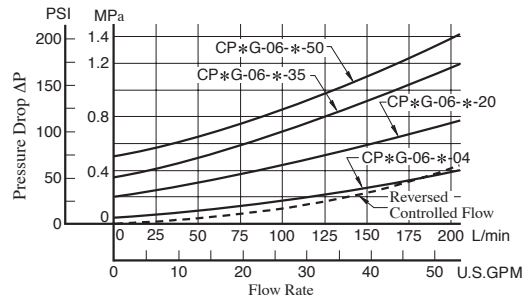
● CPG-03, CPDG-03



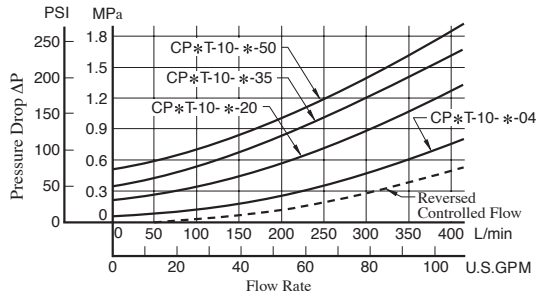
● CPT-06, CPDT-06



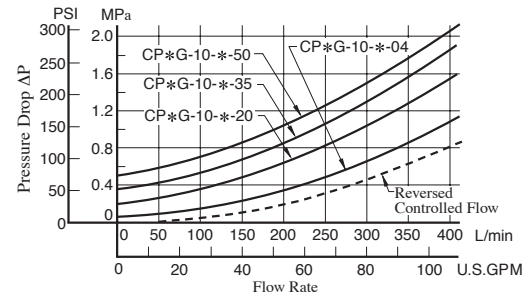
● CPG-06, CPDG-06



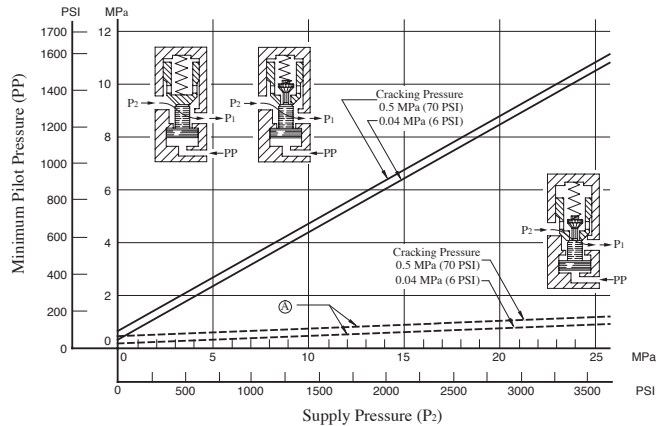
● CPT-10, CPDT-10



● CPG-10, CPDG-10



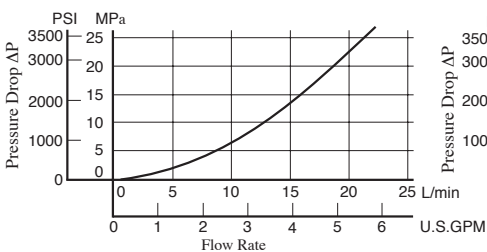
Min. Pilot Pressure Chart



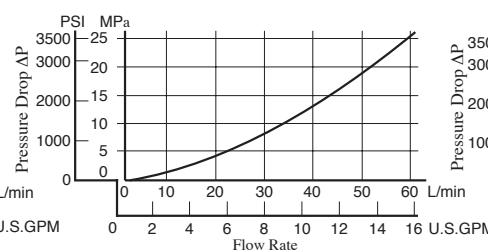
Ⓐ : Min. Pilot Pressure to open the Decompression Valve

Pressure Drop for Reversed Controlled Flow Only when Decompression Valve is Opened

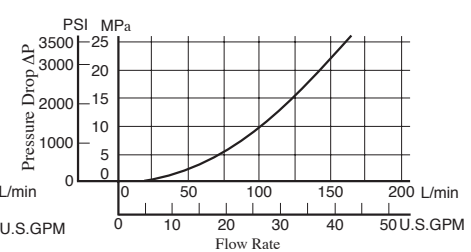
● CPDT-03, CPDG-03



● CPDT-06, CPDG-06

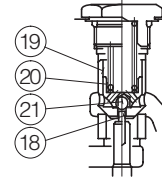
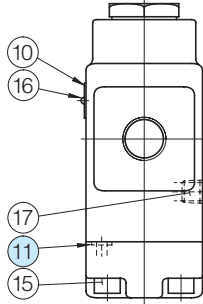
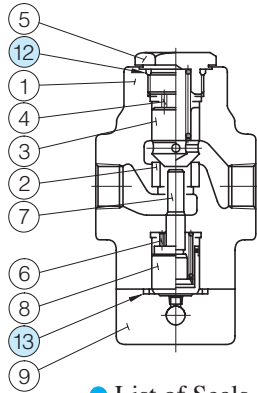


● CPDT-10, CPDG-10



List of Seals

CPT/CPDT-03-**-50/5080/5090
 CPT/CPDT-06-**-50/5080/5090
 CPT/CPDT-10-**-50/5080/5090



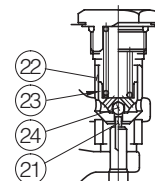
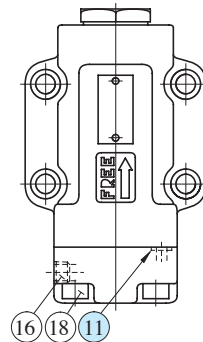
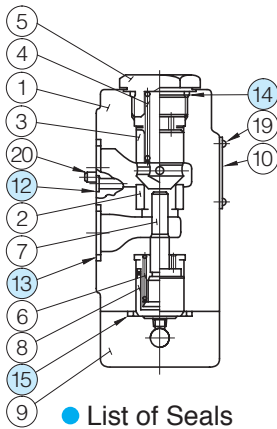
CPDT-03/06/10

List of Seals

Item	Name of Parts	Part Numbers			Qty.
		CPT/CPDT-03	CPT/CPDT-06	CPT/CPDT-10	
11	O-Ring	SO-NB-P7	SO-NB-P9	SO-NB-P9	1
12	O-Ring	SO-NB-P21	SO-NB-P29	SO-NB-P36	1
13	O-Ring	SO-NB-G25	SO-NB-P32	SO-NB-P42	1

Note: When ordering the seals, please specify the seal kit number from the table below.

CPG/CPDG-03-**-50/5090
 CPG/CPDG-06-**-50/5090
 CPG/CPDG-10-**-50/5090



CPDG-03/06/10

List of Seals

Item	Name of Parts	Part Numbers			Qty.
		CPG/CPDG-03	CPG/CPDG-06	CPG/CPDG-10	
11	O-Ring	SO-NB-P7	SO-NB-P9	SO-NB-P9	1
12	O-Ring	SO-NB-P9	SO-NB-P9	SO-NB-P9	2
13	O-Ring	SO-NB-P18	SO-NB-P28	SO-NB-P32	2
14	O-Ring	SO-NB-P21	SO-NB-P29	SO-NB-P36	1
15	O-Ring	SO-NB-G25	SO-NB-P32	SO-NB-P42	1

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

List of Seal Kits

Model Numbers	Seal Kit Numbers
CPT/CPDT-03-**-50/5080/5090	KS-CPT-03-50
CPT/CPDT-06-**-50/5080/5090	KS-CPT-06-50
CPT/CPDT-10-**-50/5080/5090	KS-CPT-10-50
CPG/CPDG-03-**-50/5090	KS-CPG-03-50
CPG/CPDG-06-**-50/5090	KS-CPG-06-50
CPG/CPDG-10-**-50/5090	KS-CPG-10-50



