Mounting Surface

Mounting surfacedimensions conform to ISO standard discribed 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. Inter-changeability	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-offf 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 over-heating 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

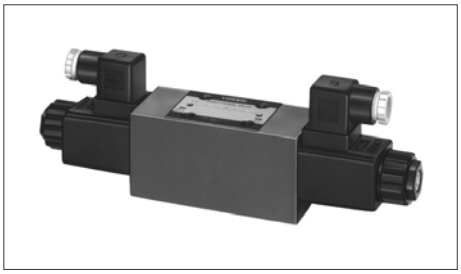
These are Solenoid Operated Directional Valves of No Leak Type developed with the aim of responding the demand of the age including energy saving. Because these valves are of no leak type they allow the low viscosity hydraulic fluids to be used as well as the circuit construction which cannot be used 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.

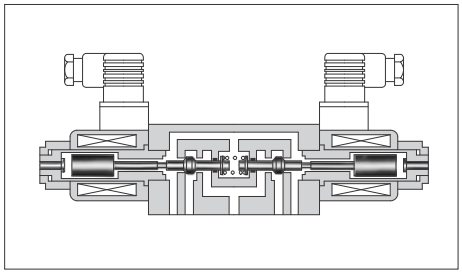
Poppet Type Solenoid Operated Directional Valves

- 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.

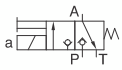
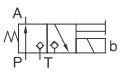
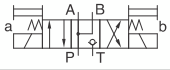
- No Leak
  Sheet type seal has been adopted and internal leak is greatly reduced.

- 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 L/min (U.S.GPM)	Max. Operating Pressure MPa (PSI)	Max. T-Line Back Pressure MPa (PSI)	Max. Changeover Frequency min^{-1} {Cycles/Min}	Internal leakage cm^3/min (cu. in./min)	Approx. Mass kg (lbs.)	Graphic Symbols
DSLG-01-3-C-∗-N-11	16 (4.2)	31.5 (4570)	16 (2320)	240	Or Less 0.5 ★1 (.03)	1.9 (4.2)	
DSLG-01-3-O-∗-N-11							
DSLG-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-	DSLG	-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)	**DSLG**: 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.

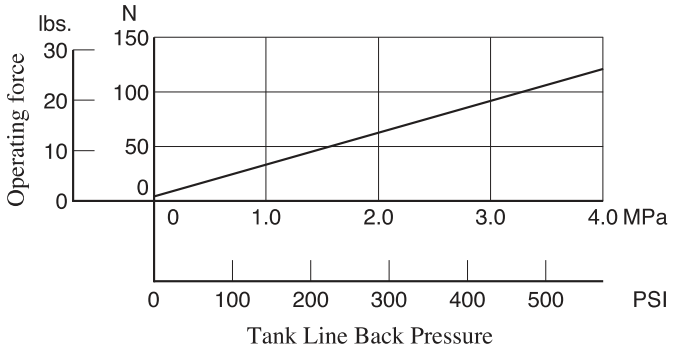
● **Valve Tank Port**

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.)

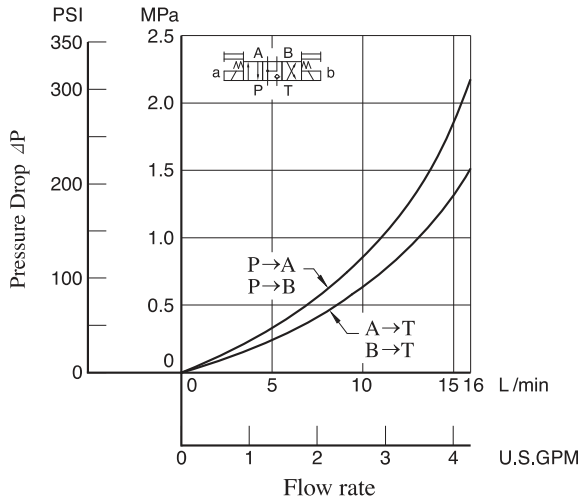
Operating Force by Manual Actuator



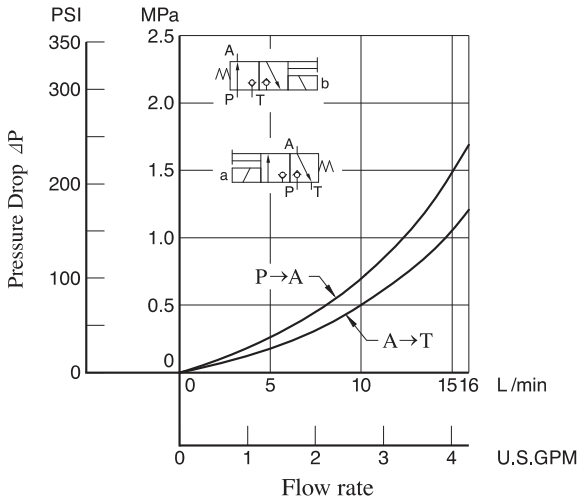
Pressure Drop

Hydraulic Fluid: Viscosity 35 mm^2/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	464
Factor		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

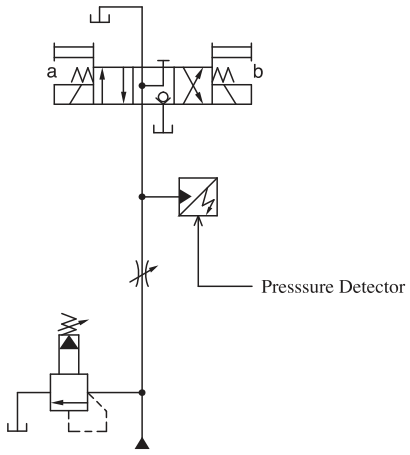
- For any other specific gravity (G'), the pressure drop (⊿P') may be obtained from the formula below.

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

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.

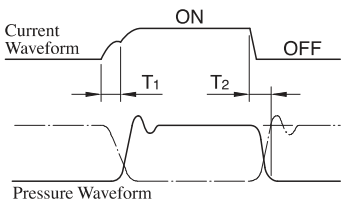
Test Circuit and Conditions



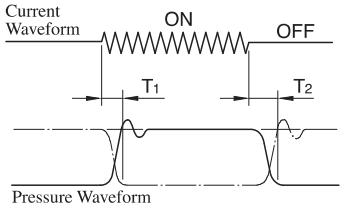
Pressure: 21 MPa (3050 PSI)
Flow Rate: 16 L/min (4.2 U.S.GPM)
Voltage: Rated voltage

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.

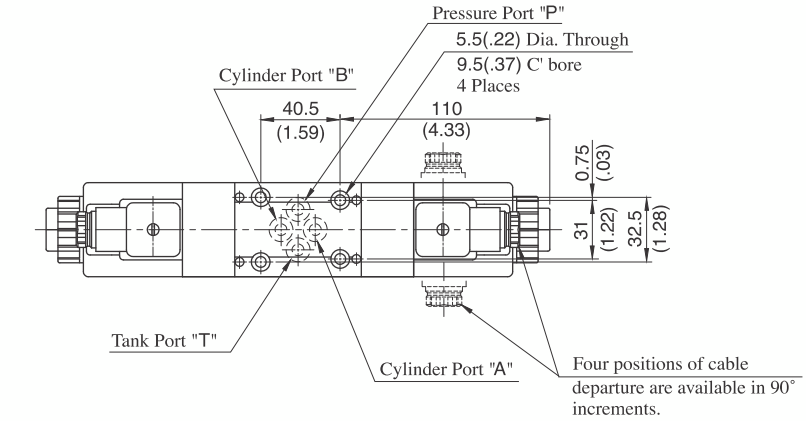
Solenoid Type	Model Numbers	Time (ms) T_1	Time (ms) T_2	Remarks
DC	DSLG-01-4-O-D✻	55	30	4 port valve, normally open
	DSLG-01-3-O-D✻	55	30	3 port valve, normally open
	DSLG-01-3-C-D✻	70	25	3 port valve, normally closed
AC→DC Rectified	DSLG-01-4-O-R✻	55	150	4 port valve, normally open
	DSLG-01-3-O-R✻	55	150	3 port valve, normally open
	DSLG-01-3-C-R✻	70	150	3 port valve, normally closed

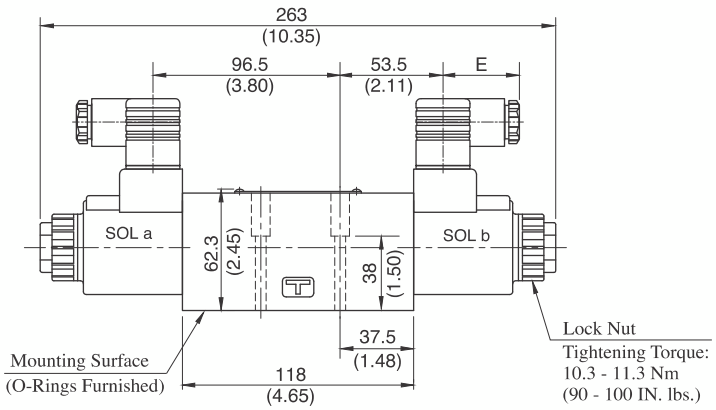
4 Port Valve

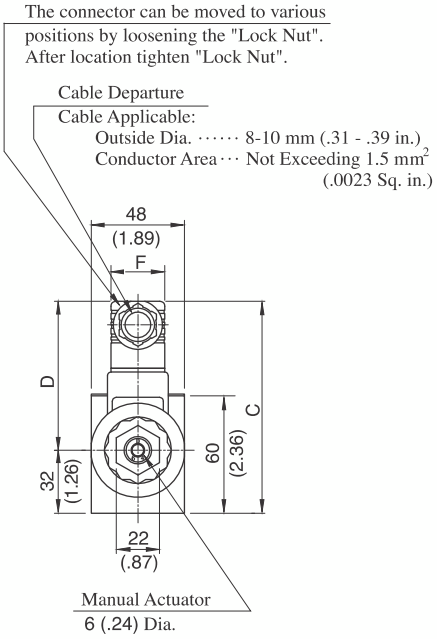
Mounting Surface:
ISO4401-AB-03-4-A

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

DIMENSIONS IN MILLIMETRES (INCHES)







Model Numbers	Dimensions mm (Inches)			
	C	D	E	F
DSLG-01-4-O-D∗-N	108 (4.25)	64 (2.52)	39 (1.54)	27.5 (1.08)
DSLG-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.

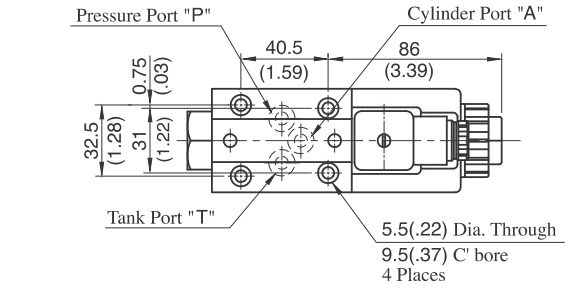
Note: For the valve mounting surface dimensions, see the dimensional drawing of the sharable sub-plate in page 356.

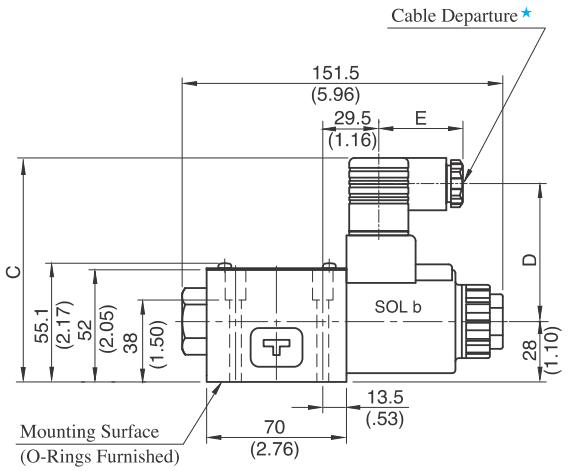
Mounting Surface:
ISO4401-AB-03-4-A

3 Port Valves

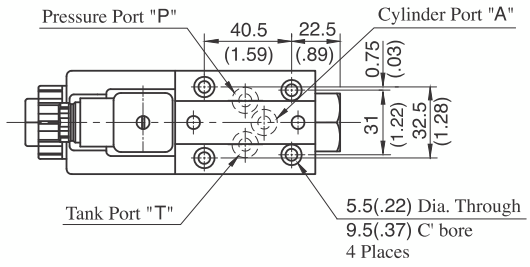
DIMENSIONS IN MILLIMETRES (INCHES)

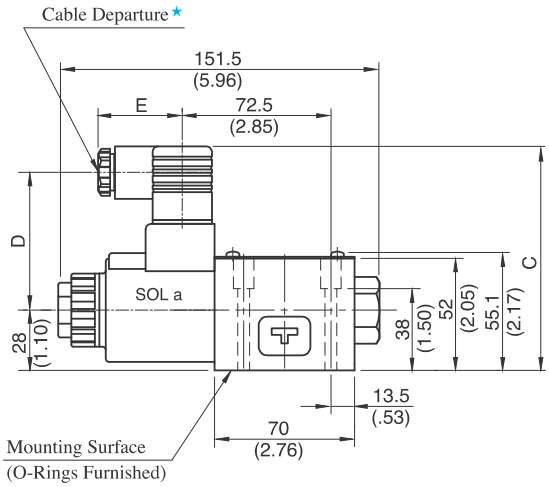
Normally Open Type:
DSLG-01-3-O-∗-N-11/1190





Normally Closed Type:
DSLG-01-3-C-∗-N-11/1190





Model Numbers	Dimensions mm (Inches)		
	C	D	E
DSLG-01-3-∗-D∗-N	104 (4.09)	64 (2.52)	39 (1.54)
DSLG-01-3-∗-R∗-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.