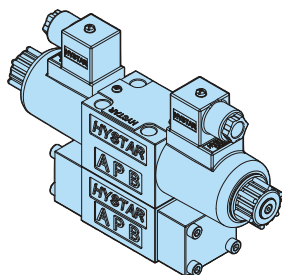


SOLENOID CONTROLLED PILOT OPERATED DIRECTIONAL VALVES DSHG TYPE

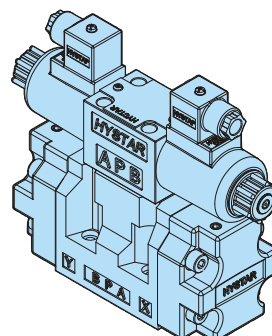
A

DSHG-N-01



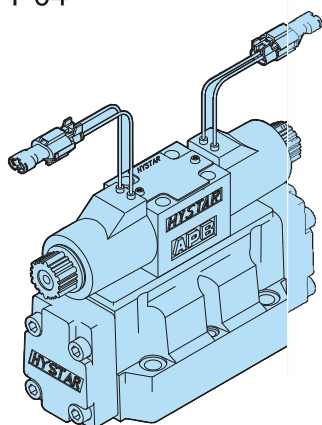
Max. Pressure : 210bar (3000PSI)
Max. Flow : 40lpm (10.6USgpm)

DSHG-N-03



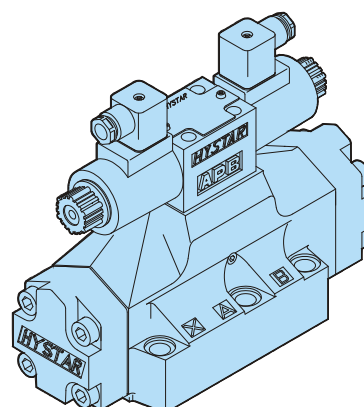
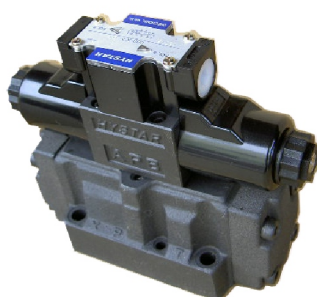
Max. Pressure : 250bar (3600PSI)
Max. Flow : 160lpm (42.3USgpm)

DSHG-Y-04



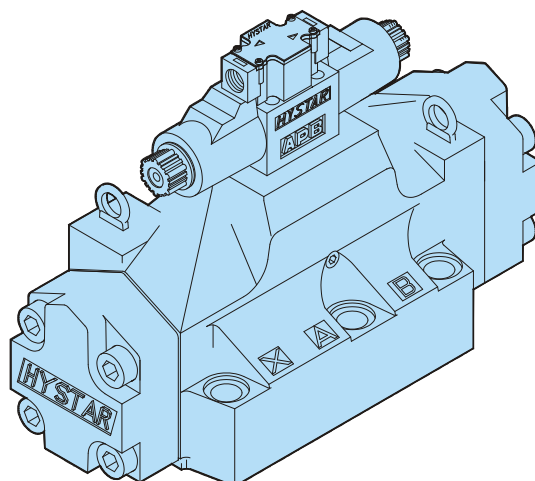
Max. Pressure : 250bar (3600PSI)
Max. Flow : 300lpm (79.3USgpm)

DSHG-N-06



Max. Pressure : 250bar (3600PSI)
Max. Flow : 500lpm (132USgpm)

DSHG-10



Max. Pressure : 250bar (3600PSI)

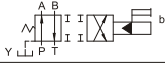
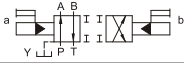
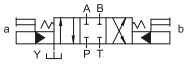
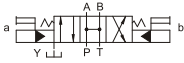
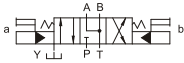
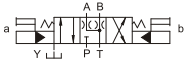
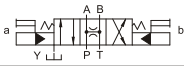
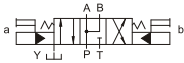
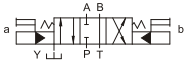
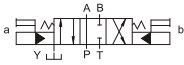
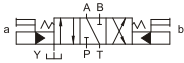
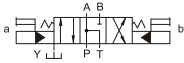
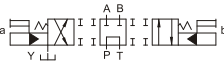
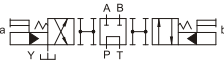
Max. Flow : 1100lpm (291USgpm)



"DSHG" DIRECTIONAL VALVES

MODEL NO SPECIFICATIONS (Solenoid Controlled Pilot Operated Directional Valves)

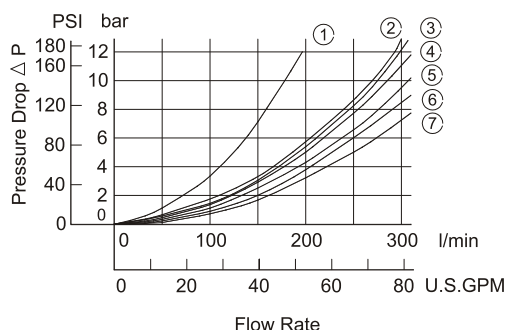
A

Spool Type & Graphic Symbols		Rated Flow Capacity -Maximum Flow Capacity				
SYMBOLS	MODEL NO	DSHG-01	DSHG-03	DSHG-04	DSHG-06	DSHG-10
	DSHG-2B2-**	~40 lpm (~10.6USgpm)	60~160 lpm (15.9~42.3USgpm)	135~300 lpm (35.7~79.3USgpm)	310~500 lpm (82~132USgpm)	570~1100 lpm (150~291USgpm)
	DSHG-2B3-**					
	DSHG-2B4-**					
	DSHG-2N2-**					
	DSHG-2N3-**					
	DSHG-3C2-**					
	DSHG-3C3-**					
	DSHG-3C4-**					
	DSHG-3C40-**					
	DSHG-3C7-**					
	DSHG-3C9-**					
	DSHG-3C10-**					
	DSHG-3C11-**					
	DSHG-3C12-**					
	DSHG-3C5-**	~40 lpm (~10.6USgpm)	60~160 lpm (15.9~42.3USgpm)	245~280 lpm (64.8~74.5USgpm)	230~450 lpm (60.8~120USgpm)	570~950 lpm (150~250USgpm)
	DSHG-3C6-**					
	DSHG-3C60-**					
Max. Operating Pressure (bar)		315 (4500 PSI)				
Min. Required Pilot Pressure (bar)		8 (114 PSI)				10 (143 PSI)
Max. Pilot Pressure (bar)		250 (3600 PSI)				
Permissible Back Pressure (T) (bar) Ext. Drain		210 (3000 PSI)				
Permissible Back Pressure (T) (bar) Int. Drain		160 (2300 PSI)				
Weight (Kgs)	Double Solenoid	3.5	7.2	8.9	12.8	45.4
	Single Solenoid	2.9	6.6	8.3	12.2	44.8
Switching Frequency (times/min)		120	120	120	120	110
Hydraulic Fluids		Use Hydraulic Fluids Equivalent to ISO VG32 or VG46				
Operating Temperature Range Recommended (°C)		-15 ~ +70 (+5 ~ +160°F)				
Operating Viscosity (cSt)		15 ~ 400 (80 ~ 1800SSU)				
Filtration		25 Microns Absolute or Finer				

PRESSURE DROP

A

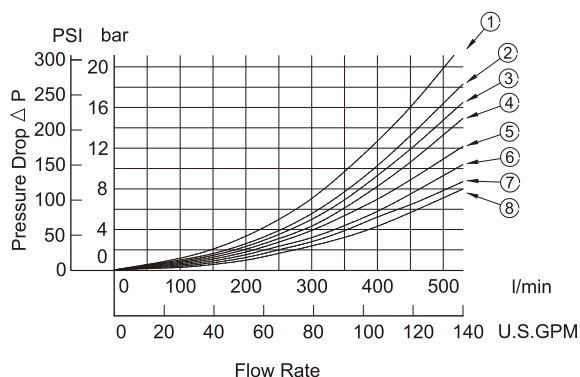
DSHG-04
DSHG-04-S



Series	Spool Type	Pressure Drop Curve Number				
		P→A	B→T	P→B	A→T	P→T
DSHG-04 DSHG-04-S	3C2	(5)(2)	(4)(2)	(5)(2)	(6)(4)	—
	3C3	(5)	(3)	(5)	(5)	(7)
	3C4	(5)(2)	(3)(3)	(5)(2)	(5)(5)	—
	3C40	(5)(2)	(4)(4)	(5)(2)	(6)(6)	—
	3C5	(7)	(4)	(5)	(5)	(5)
	3C6	(5)(6)	(3)(4)	(5)(6)	(6)(7)	(1)(2)
	3C60	(7)	(5)	(7)	(7)	(2)
	3C7	(5)	(4)	(5)	(6)	—
	3C9	(5)	(4)	(5)	(6)	—
	3C10	(5)(2)	(2)(2)	(5)(2)	(6)(4)	—
	3C11	(6)	(4)	(5)	(6)	—
	3C12	(5)(2)	(4)(2)	(5)(2)	(5)(5)	—

Graphs based on fluid viscosity of 35 cSt (162 SSU).
Notes : () curve No. is for shock-less type.

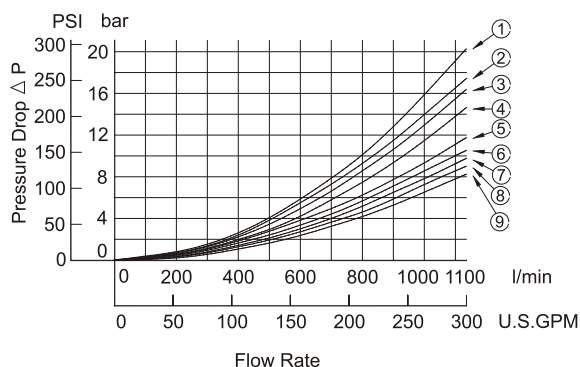
DSHG-06
DSHG-06-S



Series	Spool Type	Pressure Drop Curve Number				
		P→A	B→T	P→B	A→T	P→T
DSHG-06 DSHG-06-S	3C2	(8)(6)	(5)(1)	(8)(6)	(7)(2)	—
	3C3	(6)	(4)	(6)	(7)	(6)
	3C4	(8)(6)	(5)(2)	(8)(6)	(7)(2)	—
	3C40	(8)	(5)	(8)	(7)	—
	3C5	(8)	(4)	(5)	(7)	(2)
	3C6	(5)	(1)	(5)	(4)	(3)
	3C60	(6)(6)	(5)(2)	(6)(6)	(7)(3)	(3)(1)
	3C7	(6)	(4)	(6)	(7)	—
	3C9	(6)	(5)	(6)	(7)	—
	3C10	(8)	(5)	(8)	(7)	—
	3C11	(8)	(4)	(5)	(7)	—
	3C12	(8)	(5)	(8)	(7)	—

Graphs based on fluid viscosity of 35 cSt (162 SSU).
Notes : () curve No. is for shock-less type.

DSHG-10
DSHG-10-S



Series	Spool Type	Pressure Drop Curve Number				
		P→A	B→T	P→B	A→T	P→T
DSHG-10 DSHG-10-S	3C2	(9)(8)	(6)(3)	(9)(8)	(8)(4)	—
	3C3	(7)	(6)	(7)	(7)	(5)
	3C4	(9)(8)	(6)(5)	(9)(8)	(6)(6)	—
	3C40	(9)	(6)	(9)	(8)	—
	3C5	(9)	(6)	(8)	(6)	(1)
	3C6	(5)	(3)	(5)	(4)	(2)
	3C60	(8)(8)	(5)(4)	(8)(8)	(5)(4)	(3)(2)
	3C7	(7)	(6)	(7)	(7)	—
	3C9	(7)	(6)	(7)	(8)	—
	3C10	(9)	(5)	(9)	(8)	—
	3C11	(9)	(6)	(8)	(7)	—
	3C12	(9)	(7)	(9)	(6)	—

Graphs based on fluid viscosity of 35 cSt (162 SSU).
Notes : () curve No. is for shock-less type.

FLOW LIMITATIONS :

Pressure drop is influenced by forces acting within the valve. The graphs shown assume simultaneous equal flow rates P to A or B, and from A or B to T.

Care should be taken in applications where high flow rates are used in conjunction with high pressure i.e. greater than 250 bar (3600 PSI). Also when single flow paths, or substantially different simultaneous flow rates are required between P to A or B, and A or B to T.

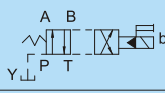
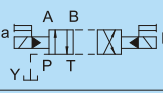


"DSHG" DIRECTIONAL VALVES

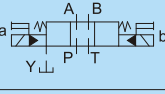
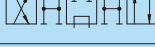
FLOW RATINGS CHART [DSHG-(N)-04]

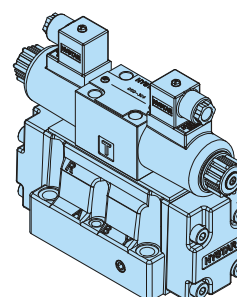
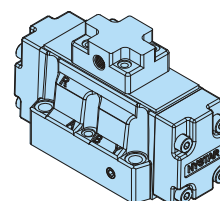
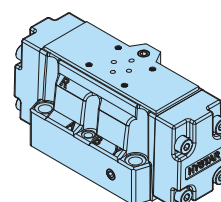
A

Two Positions

Spool Type	Spring Offset				No-Spring			
	Graphic Symbol	Maximum Flow			Graphic Symbol	Maximum Flow		
	 A B Y P T b	lpm(USgpm)			 a A B Y P T b	lpm(USgpm)		
	Model Numbers	100bar (1430PSI)	205bar (2930PSI)	315bar (4500PSI)	Model Numbers	100bar (1430PSI)	205bar (2930PSI)	315bar (4500PSI)
	(S-)DSHG-2B2-04	300(79.3)	300(79.3)	300(79.3)	(S-)DSHG-2N2-04	300(79.3)	300(79.3)	300(79.3)
	DSHG-2B3-04	300(79.3)	300(79.3)	300(79.3)	DSHG-2N3-04	300(79.3)	300(79.3)	300(79.3)
	(S-)DSHG-2B4-04	300(79.3)	300(79.3)	300(79.3)				

Three Positions

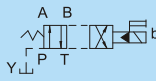
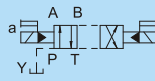
Spool Type	Spring Centered			
	Graphic Symbol	Maximum Flow		
	 a A B Y P T b	lpm(USgpm)		
	Model Numbers	100bar (1430PSI)	205bar (2930PSI)	315bar (4500PSI)
	DSHG-3C2-04	300(79.3)	250(66)	145(38.3)
	S-DSHG-3C2-04	300(79.3)	185(48.8)	110(29.1)
	DSHG-3C3-04	300(79.3)	300(79.3)	300(79.3)
	DSHG-3C4-04	300(79.3)	275(72.6)	165(43.6)
	S-DSHG-3C4-04	300(79.3)	220(58.1)	110(29.1)
	DSHG-3C40-04	300(79.3)	250(66)	145(38.3)
	S-DSHG-3C40-04	300(79.3)	185(48.8)	110(29.1)
	DSHG-3C5-04	250(66.1)	248(65.5)	245(64.7)
	DSHG-3C6-04	300(79.3)	253(66.8)	235(62.1)
	DSHG-3C60-04	300(79.3)	300(79.3)	300(79.3)
	S-DSHG-3C60-04			
	DSHG-3C7-04	300(79.3)	250(66.1)	145(38.3)
	DSHG-3C9-04	300(79.3)	290(76.6)	250(66.1)
	DSHG-3C10-04	300(79.3)	250(66.1)	150(39.6)
	S-DSHG-3C10-04	300(79.3)	185(48.8)	110(29.1)
	DSHG-3C11-04	300(79.3)	210(55.5)	140(37.0)
	DSHG-3C12-04	300(79.3)	225(59.4)	135(35.7)
	S-DSHG-3C12-04	300(79.3)	185(48.8)	110(29.1)



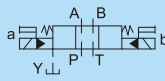
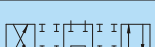
FLOW RATINGS CHART [DSHG-(N)-06]

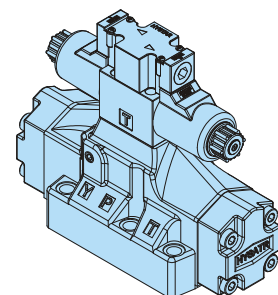
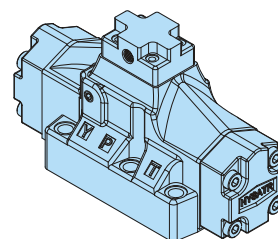
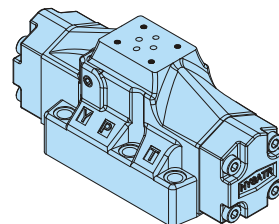
A

Two Positions

Spool Type	Spring Offset				No-Spring			
	Graphic Symbol 	Maximum Flow lpm(USgpm)			Graphic Symbol 	Maximum Flow lpm(USgpm)		
	Model Numbers	100bar (1430PSI)	205bar (2930PSI)	315bar (4500PSI)	Model Numbers	100bar (1430PSI)	205bar (2930PSI)	315bar (4500PSI)
	(S-)DSHG-06-2B2	500(132)	500(132)	500(132)	(S-)DSHG-06-2N2	500(132)	500(132)	500(132)
	DSHG-06-2B3	500(132)	500(132)	500(132)	DSHG-06-2N3	500(132)	500(132)	500(132)
	(S-)DSHG-06-2B4	500(132)	500(132)	500(132)				

Three Positions

Spool Type	Spring Centered			
	Graphic Symbol 	Maximum Flow lpm(USgpm)		
	Model Numbers	100bar (1430PSI)	205bar (2930PSI)	315bar (4500PSI)
	(S-)DSHG-06-3C2	500(132)	455(120) 500(132)	310(81.9) 500(132)
	DSHG-06-3C3	500(132)	480(126.7)	370(97.8)
	(S-)DSHG-06-3C4	500(132)	455(120) 500(132)	310(81.9) 500(132)
	(S-)DSHG-06-3C40	500(132)	455(120) 500(132)	310(81.9) 500(132)
	DSHG-06-3C5	500(132)	462(122)	350(92.5)
	DSHG-06-3C6	475(125)	345(91.1)	230(60.8)
	(S-)DSHG-06-3C60	475(125)	380(100.3)	280(74.0)
	DSHG-06-3C7	500(132)	475(125.4)	360(95.1)
	DSHG-06-3C9	500(132)	475(125.4) 500(132)	360(95.1) 500(132)
	(S-)DSHG-06-3C10	500(132)	455(120) 500(132)	310(81.9) 500(132)
	DSHG-06-3C11	500(132)	455(120) 500(132)	310(81.9) 500(132)
	(S-)DSHG-06-3C12	500(132)	455(120) 500(132)	310(81.9) 500(132)



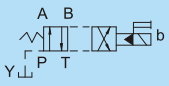
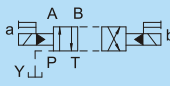


"DSHG" DIRECTIONAL VALVES

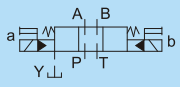
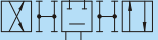
FLOW RATINGS CHART [DSHG-(N)-10]

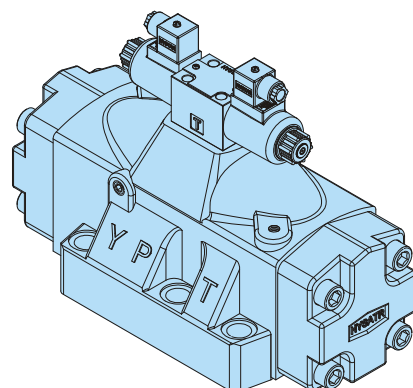
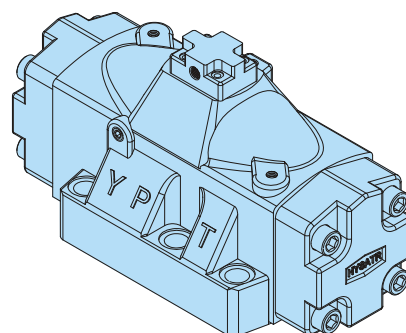
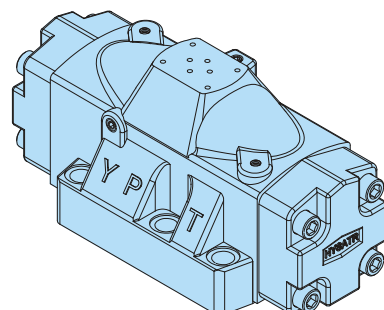
A

Two Positions

Spool Type	Spring Offset				No-Spring			
	Graphic Symbol	Maximum Flow			Graphic Symbol	Maximum Flow		
	 Y L P T	100bar (1430PSI)	205bar (2930PSI)	315bar (4500PSI)	 a Y L P T b	100bar (1430PSI)	205bar (2930PSI)	315bar (4500PSI)
	(S-)DSHG-10-2B2	1100(291)	1100(291)	1100(291)	(S-)DSHG-10-2N2	1100(291)	1100(291)	1100(291)
	DSHG-10-2B3	1100(291)	1100(291)	1100(291)	DSHG-10-2N3	1100(291)	1100(291)	1100(291)
	(S-)DSHG-10-2B4	1100(291)	1100(291)	1100(291)				

Three Positions

Spool Type	Spring Centered			
	Graphic Symbol	Maximum Flow		
	 Y L P T	100bar (1430PSI)	205bar (2930PSI)	315bar (4500PSI)
	(S-)DSHG-10-3C2	1100(291)	1025(270.6) 1100(291)	750(198) 1100(291)
	DSHG-10-3C3	1100(291)	1080(285.1)	895(236)
	(S-)DSHG-10-3C4	1100(291)	1025(270.6) 1100(291)	750(198) 1100(291)
	(S-)DSHG-10-3C40	1100(291)	1025(270.6) 1100(291)	750(198) 1100(291)
	DSHG-10-3C5	1100(291)	1040(274.5)	850(225)
	DSHG-10-3C6	1050(277)	790(208.5)	570(151)
	(S-)DSHG-10-3C60	1050(277)	862(227.5)	680(180)
	DSHG-10-3C7	1100(291)	1070(282.5) 1100(291)	870(230) 1100(291)
	DSHG-10-3C9	1100(291)	1070(282.5)	870(230)
	(S-)DSHG-10-3C10	1100(291)	1025(270.6) 1100(291)	750(198) 1100(291)
	DSHG-10-3C11	1100(291)	1025(270.6) 1100(291)	750(198) 1100(291)
	(S-)DSHG-10-3C12	1100(291)	1025(270.6) 1100(291)	750(198) 1100(291)



LIST OF PILOT VALVES (DSHG-04/06/10)

A

Valve Model Numbers	Pilot Valve Model Numbers
DSHG-2B※-04-★-▲-30(3090) (S)	DSG-2B2-01-★-▲-30(3090)
DSHG-2N※-04-★-▲-30(3090) (S)	DSG-2D2-01-★-▲-30(3090)
DSHG-3C※-04-★-▲-30(3090) (S)	DSG-3C4-01-★-▲-30(3090)
DSHG-2B※-06-★-▲-30(3090) (S)	DSG-2B2L-01-★-▲-30(3090)
DSHG-2N※-06-★-▲-30(3090) (S)	DSG-2D2-01-★-▲-30(3090)
DSHG-3C※-06-★-▲-30(3090) (S)	DSG-3C4-01-★-▲-30(3090)
DSHG-2B※-10-★-▲-30(3090) (S)	DSG-2B2L-01-★-▲-30(3090)
DSHG-2N※-10-★-▲-30(3090) (S)	DSG-2D2-01-★-▲-30(3090)
DSHG-3C※-10-★-▲-30(3090) (S)	DSG-3C4-01-★-▲-30(3090)

※: Spool Type (2B2,2B3,2N2,2N3,3C2,3C3,3C4.....) .

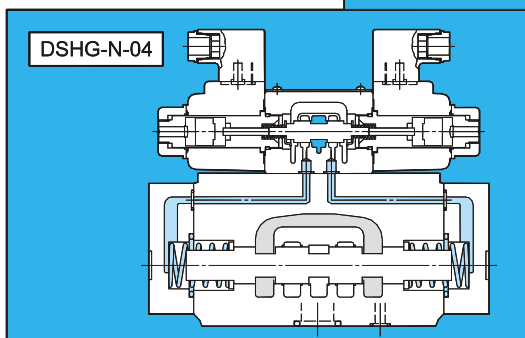
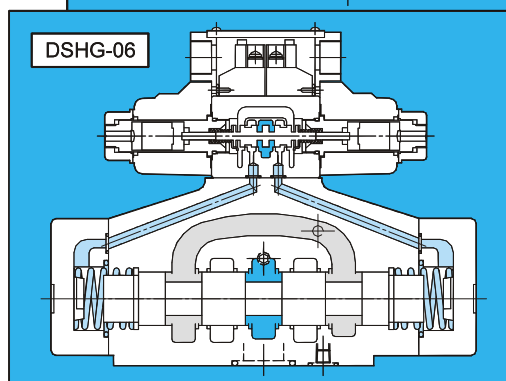
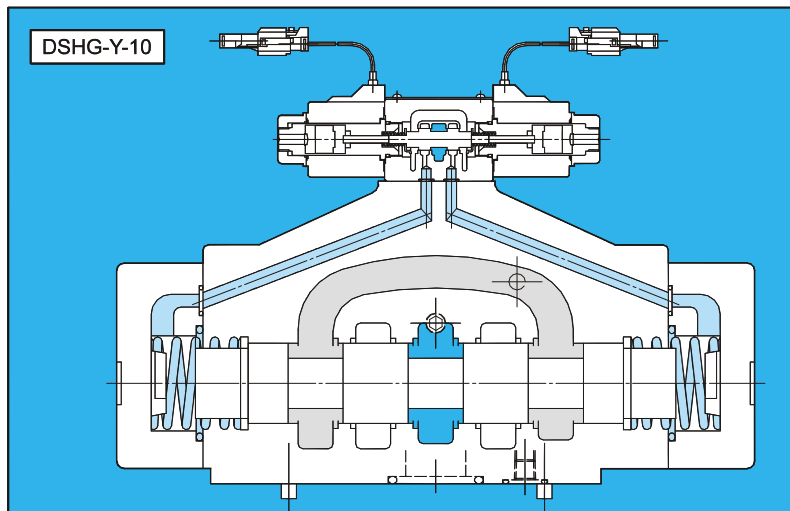
★: Coil Voltages (A110,A220.,D12.D24.,,RAC110.RAC220.....) .

▲: Connection Types.

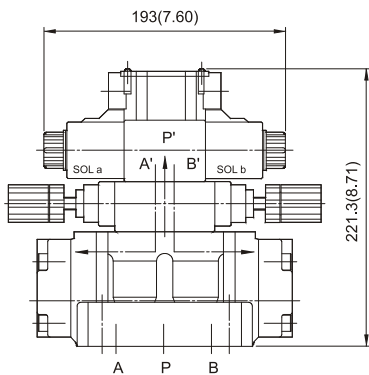
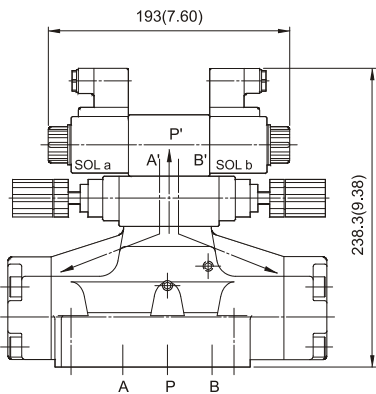
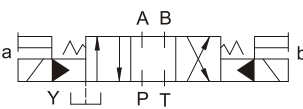
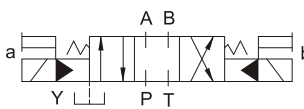
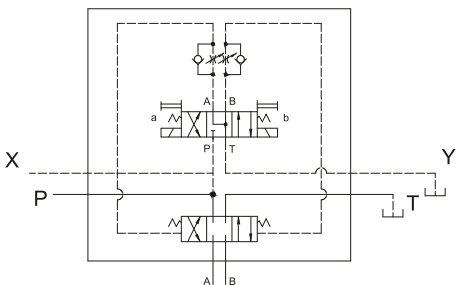
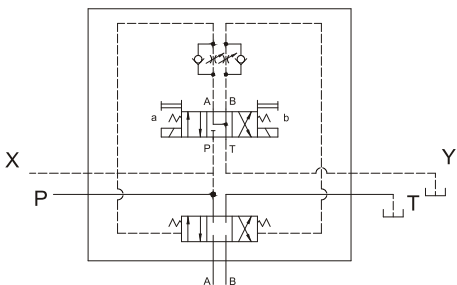
N : German DIN Standard 43650 Plug Type (With Light) .

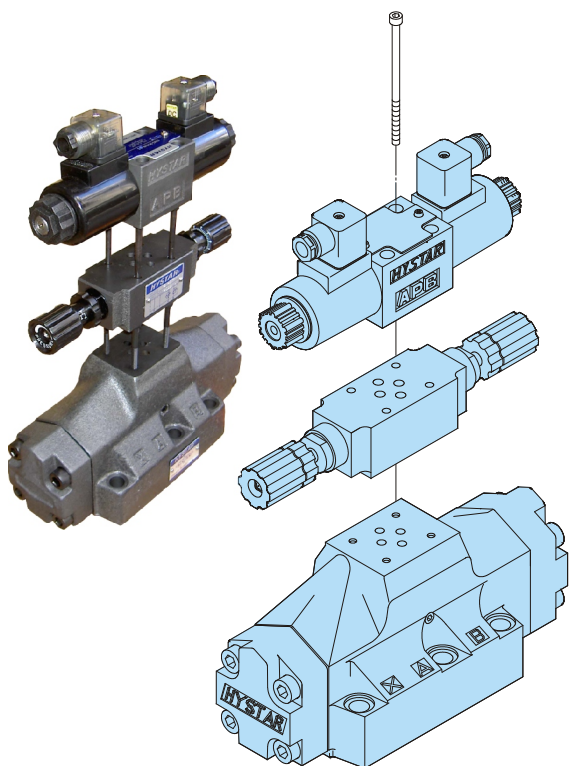
None : Terminal Box Type.

Y : Lead-Wire Type (SWP Connector) .



A

Model	DSHG-04	DSHG-06/10
Front Face		
Simplified Symbol		
Detailed Symbol		



PILOT CHOKE OPTIONS

To control the shift speed of the main spool, providing smoother reversals and less hydraulic shock, a pilot choke may be incorporated on a DSHG valve. Two options are offered.

OPTIONS 1 : A meter-out design adjusts the flow in one direction with free flow in the other one. This is obtained by assembling our MSW-01-* between the main stage (DSHG) and the pilot valve (DSG-01).

OPTIONS 2 : A fixed orifice of 0.8mm (0.032") is assembled in the "P" port of the pilot valve (DSG-01). See page 58 for details.

