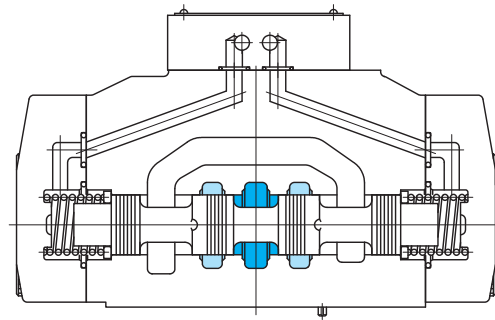
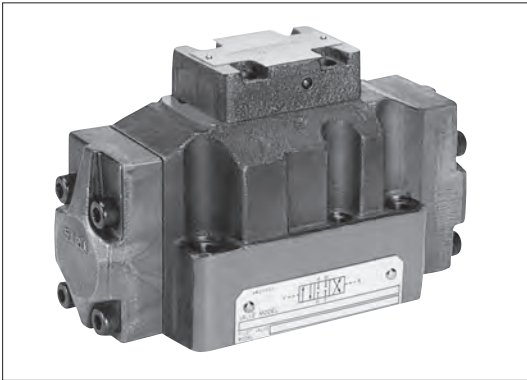


# Pilot operated directional control valves DG3V-7/DG3V-H8



## Model Code

**(F3)-DG3V-7-2A-(1)-10-(LH)-JA**

1 2 3 4 5 6 7 8








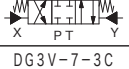


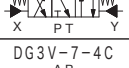
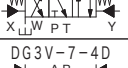

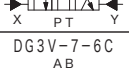
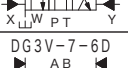

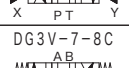
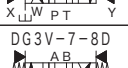

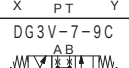
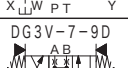

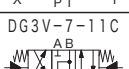
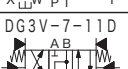

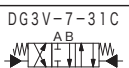
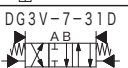

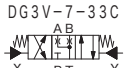



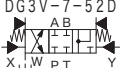

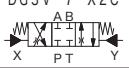


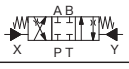
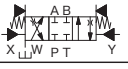







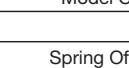
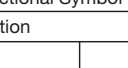
- 1 Hydraulic fluid  
Omit: mineral oil based fluid, water-glycol based fluid  
F3: Phosphate ester
- 2 Pilot operated directional control valve (gasket mounting)
- 3 Mounting dimensions  
7: ISO 4401-AD-07-4-A  
H8: ISO 4401-AE-08-4-A
- 4 Spool type  
See page E18-2 to E18-3
- 5 Spool/spring arrangement  
A: Spring offset  
C: Spring centered  
D: Pressure centered  
Omitted for no spring
- 6 Spool stroke adjustment (option)  
Omit: no option (standard)  
1: Stroke adjuster (both A, B ports)  
7: Stroke adjuster (A port side)  
8: Stroke adjuster (B port side)
- 7 Design no.  
10: All models except design no. 12 below  
12: DG3V-7-\*\*-1/7/8 (model with spool stroke adjuster)
- 8 Cover build orientation (only for spring offset type)  
Omit: standard (when offset, P to A, B to T)  
LH: Left hand build (when offset, P to B, A to T)








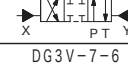


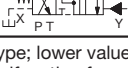
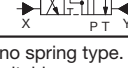
## Specifications

Model Code	Size	Max. Working Pressure MPa	Max. Flow L/min	Allowable T (Tank) Port Back Pressure MPa	Min. Pilot Pressure MPa	Max. Pilot Pressure MPa	Weight kg
DG3V-7	04	31.5	See "Pressure-Flow Characteristics"	21	See Min. Pilot Pressure Curves	31.5	7.5
DG3V-H8	06						15.5

# Spool Types and Pressure-Flow Characteristics (DG3V-7)








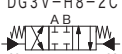
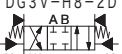

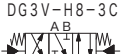
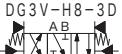

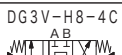
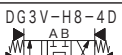

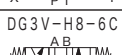
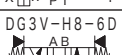

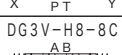
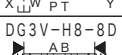

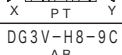
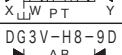










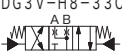
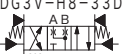


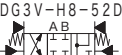

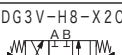
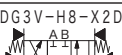

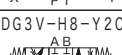
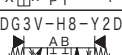

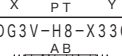
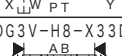







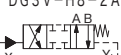
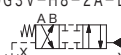


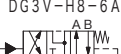
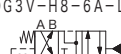
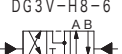
Spool Center Position		Model Code, Functional Symbol		Max. Flow L/min					Pressure Drop Curve Number						
		3 Position				7 MPa	14 MPa	21 MPa	28 MPa	31.5 MPa	Switched Condition				Neutral
		Spring Centered - C -	Pressure Centered Type - D -	7 MPa	14 MPa						21 MPa	28 MPa	31.5 MPa	P→A	
0	 Open center	DG3V-7-0C 	DG3V-7-0D 	300	300	300	300	300	②	①	②	③	③		
1	 P-A-T connected	DG3V-7-1C 	DG3V-7-1D 	260	220	120	100	90	①	②	②	③	④		
2	 Closed center	DG3V-7-2C 	DG3V-7-2D 	300	300	300	300	300	①	②	①	②	—		
3	 A-T connected	DG3V-7-3C 	DG3V-7-3D 	300	300	300	300	300	①	②	①	③	—		
4	 Tandem	DG3V-7-4C 	DG3V-7-4D 	260	220	120	100	90	②	②	②	①	⑥		
6	 A-B-T connected	DG3V-7-6C 	DG3V-7-6D 	300	300	300	300	300	①	①	①	③	—		
8	 Tandem	DG3V-7-8C 	DG3V-7-8D 	300	300	250	165	140	②	②	②	①	⑤		
9	 Open Center w/ A, B Restrictors	DG3V-7-9C 	DG3V-7-9D 	260	220	120	100	90	①	②	①	③	⑦		
11	 P-B-T connected	DG3V-7-11C 	DG3V-7-11D 	260	220	120	100	90	②	③	①	②	④		
31	 B-T connected	DG3V-7-31C 	DG3V-7-31D 	300	300	300	300	300	①	③	①	②	—		
33	 A-B-T connected w/ restrictors	DG3V-7-33C 	DG3V-7-33D 	300	300	300	300	300	①	②	①	②	—		
52	 Closed center	DG3V-7-52C 	DG3V-7-52D 	300	300	300	300	300	②	—	③	③	—		
X2	 Closed center	DG3V-7-X2C 	DG3V-7-X2D 	120	120	120	120	120	—	②	—	②	—		
Y2	 Closed center	DG3V-7-Y2C 	DG3V-7-Y2D 	120	120	120	120	120	①	—	①	—	—		
X33	 A-B-T connected w/ restrictors	DG3V-7-X33C 	DG3V-7-X33D 	120	120	120	120	120	—	②	—	②	—		
Y33	 A-B-T connected w/ restrictors	DG3V-7-Y33C 	DG3V-7-Y33D 	120	120	120	120	120	①	—	①	—	—		

Spool Transient Condition		Model Code, Functional Symbol			Max. Flow L/min					Pressure Drop Curve Number			
		2 Position			7 MPa	14 MPa	21 MPa	28 MPa	31.5 MPa	Switched Condition			
		Spring Offset - A -	- A-LH -	No Spring						7 MPa	14 MPa	21 MPa	28 MPa
0	 Open center	DG3V-7-0A 	DG3V-7-0A-LH 	DG3V-7-0 	300	300	300	300	300	②	①	②	③
2	 Closed center	DG3V-7-2A 	DG3V-7-2A-LH 	DG3V-7-2 	300	300	70	50	40	①	②	①	③
6	 A-B-T connected	DG3V-7-6A 	DG3V-7-6A-LH 	DG3V-7-6 	300	300	100	70	60	①	①	①	③

Note: • Upper max. flow values for spring offset, A type; lower values for no spring type.  
 • Max. flow refers to limit flow without valve malfunction for valve switching.

# Spool Types and Pressure-Flow Characteristics (DG3V-H8)

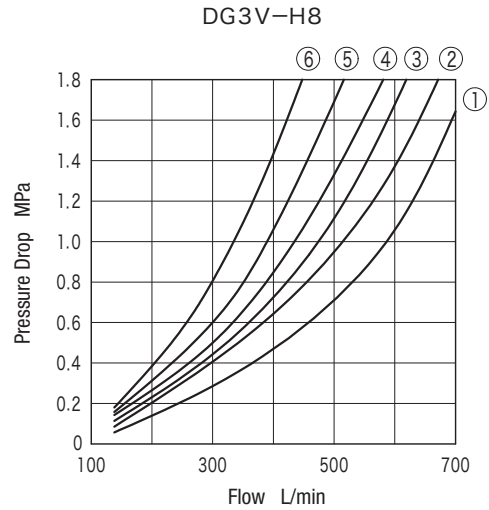
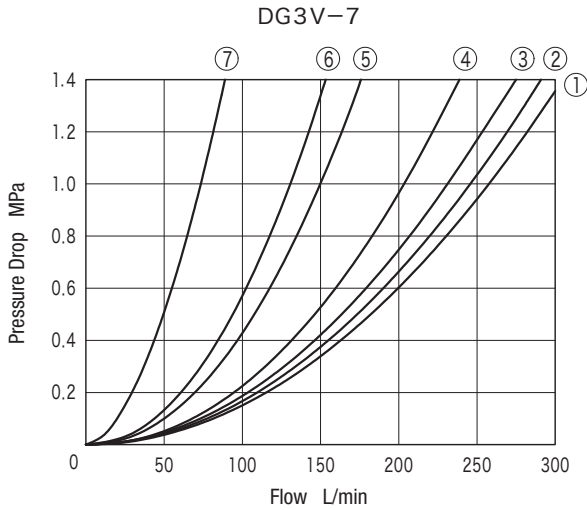
Spool Center Position		Model Code, Functional Symbol		Max. Flow L/min		Pressure Drop Curve Number				
		3 Position				21 MPa	31.5 MPa	Switched Condition		
		Spring Centered - C -	Pressure Centered Type - D -	P→A	B→T			P→B	A→T	P→T
0	 Open center	DG3V-H8-0C 	DG3V-H8-0D 	700	650	②	⑤	②	③	④
1	 P-A-T connected	DG3V-H8-1C 	DG3V-H8-1D 	650	500	①	②	②	②	⑤
2	 Closed center	DG3V-H8-2C 	DG3V-H8-2D 	700	700	①	②	①	②	—
3	 A-T connected	DG3V-H8-3C 	DG3V-H8-3D 	700	700	①	②	①	④	—
4	 Tandem	DG3V-H8-4C 	DG3V-H8-4D 	350	220	①	④	①	③	⑥
6	 A-B-T connected	DG3V-H8-6C 	DG3V-H8-6D 	650	600	①	④	①	④	—
8	 Tandem	DG3V-H8-8C 	DG3V-H8-8D 	700	450	①	④	①	③	⑥
9	 Open Center w/ A, B Restrictors	DG3V-H8-9C 	DG3V-H8-9D 	350	220	②	④	②	③	—
11	 P-B-T connected	DG3V-H8-11C 	DG3V-H8-11D 	650	500	②	②	①	②	⑤
31	 B-T connected	DG3V-H8-31C 	DG3V-H8-31D 	700	700	①	④	①	②	—
33	 A-B-T connected w/ restrictors	DG3V-H8-33C 	DG3V-H8-33D 	700	700	①	②	①	①	—
52	 Closed center	DG3V-H8-52C 	DG3V-H8-52D 	500	500	②	—	⑤	②	—
X2	 Closed center	DG3V-H8-X2C 	DG3V-H8-X2D 	300	300	—	②	—	②	—
Y2	 Closed center	DG3V-H8-Y2C 	DG3V-H8-Y2D 	300	300	①	—	①	—	—
X33	 A-B-T connected w/ restrictors	DG3V-H8-X33C 	DG3V-H8-X33D 	300	300	—	②	—	②	—
Y33	 A-B-T connected w/ restrictors	DG3V-H8-Y33C 	DG3V-H8-Y33D 	300	300	①	—	①	—	—

Spool Transient Condition		Model Code, Functional Symbol			Max. Flow L/min		Pressure Drop Curve Number			
		2 Position					21 MPa	31.5 MPa	Switched Condition	
		Spring Offset		No Spring	P→A	B→T			P→B	A→T
0	 Open center	DG3V-H8-0A 	DG3V-H8-0A-LH 				DG3V-H8-0 	500		
				700	700					
2	 Closed center	DG3V-H8-2A 	DG3V-H8-2A-LH 	DG3V-H8-2 	350	250	①	②	①	②
					700	700				
6	 A-B-T connected	DG3V-H8-6A 	DG3V-H8-6A-LH 	DG3V-H8-6 	350	250	①	④	①	④
					700	700				

Note: • Upper max. flow values for spring offset, A type; lower values for no spring type.  
• Max. flow refers to limit flow without valve malfunction for valve switching.

# Characteristics Curve (viscosity 20 mm<sup>2</sup>/s, specific gravity 0.87) (typical examples)

## Pressure Drop Characteristics



- For pressure drops ( $\Delta P_1$ ) of viscosities other than 20 mm<sup>2</sup>/s, calculate using multiplier coefficients shown in below table.
- The formula to calculate pressure drops ( $\Delta P_1$ ) for specific gravities other than 0.87 is as follows.

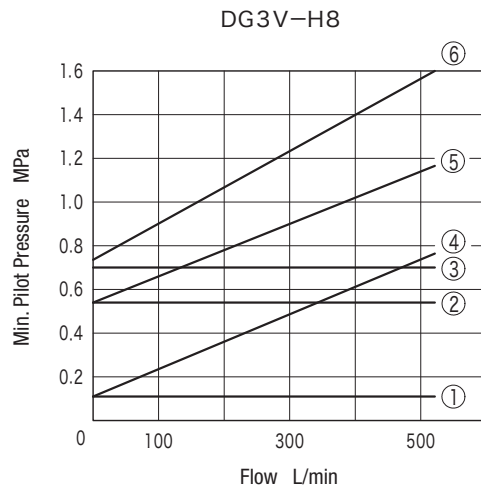
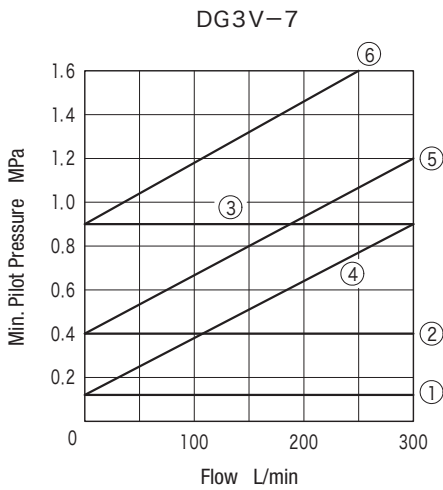
$$\Delta P_1 = \Delta P \times G_1 / G$$

$\Delta P$  ..... Values according to characteristics curve  
 $G$  ..... 0.87  
 $G_1$  ..... Desired specific gravity value

Viscosity mm <sup>2</sup> /s	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Coefficient	0.85	1.00	1.09	1.17	1.24	1.29	1.34	1.38	1.42	1.46	1.49	1.52	1.56	1.59	1.62

## Pilot

### Minimum Pilot Pressure



### Min. Pilot Pressure Curve No.

Spool/Spring Arrangement	Spool Type	Min. Pilot Pressure Curve No.
No Spring	0	①
	2, 6	④
A, A-LH, C	0, 1, 4, 8, 9, 11	②
	2, 3, 6, 31, 33, 52, X2, Y2, X33, Y33	⑤
D	0, 1, 4, 8, 9, 11	③
	2, 3, 6, 31, 33, 52, X2, Y2, X33, Y33	⑥

### Pilot Fluid Volume

Unit: cm<sup>3</sup>

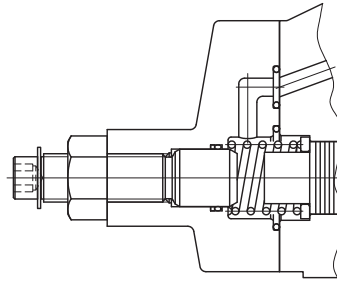
Valve Model	Spool/Spring Arrangement	Neutral to Stroke End	Stroke End to Stroke End
DG3V-7	A, A-LH	—————	8.1
	No Spring	—————	8.1
	C, D	4.1	8.1
DG3V-H8	A, A-LH	—————	23
	No Spring	—————	23
	C, D	12	23

## Options

### Spool stroke adjustment

Spool stroke adjusters can be installed on one or both sides and provides flow control by adjustment of the spool maximum opening.

Flow control can be optimized by using X2, X33, Y2, Y33 type spools.



## Notes on Operation

- **Pilot**  
Supply of pilot pressure to pilot ports X, Y may differ by spool/spring arrangement. Pilot circuit should be designed according to the reference table below (for spool types 4 and 8, pilot port X and Y relationship will be reversed).

Valve Switched Condition Pilot Port	P→A, B→T		Neutral		P→B, A→T	
	X	Y	X	Y	X	Y
Spring Offset, A Type	D	D	—	—	P	D
Spring Offset, A-LH Type	D	P	—	—	D	D
Spring Centered, C Type	D	P	D	D	P	D
Pressure Centered, D Type	D	P	P	P	P	D
No Spring	D	P	—	—	P	D

P: Pilot pressure supplied  
D: Drained to tank

- **Minimum Pilot Pressure**  
For valve switching, differential pressure between X port and Y port must be higher than the minimum pilot pressure. Therefore when there is back pressure in the drain side port, pilot pressure supplied must be higher than the minimum pilot pressure + drain port back pressure. For spring centered, spring offset, and pressure centered types, when pressure falls below minimum pilot pressure, spool will be returned to the prescribed position by spring force. With no spring types, spool positioning is unstable. Always maintain minimum pilot pressure during valve switching.
- **Drain**  
Y port of spring offset type, X port of spring offset (LH) type, and W port of pressure centered type are the drain ports. Do not merge with other tank lines and pipe directly to tank.
- **Mounting orientation**  
As long as minimum pilot pressure is maintained, there is no restriction in mounting direction.

## Mounting Bolts (JIS B 1176, Strength Class 12.9)

Model Code	Hex Socket Bolts	Qty
DG3V-7	M10 × 60	4
	M 6 × 55	2
DG3V-H8	M12 × 80	6

- Mounting bolts must be ordered separately.
- Tightening torque of mounting bolts  
M6: 9 to 14 N·m  
M10: 50 to 60 N·m  
M12: 75 to 81 N·m

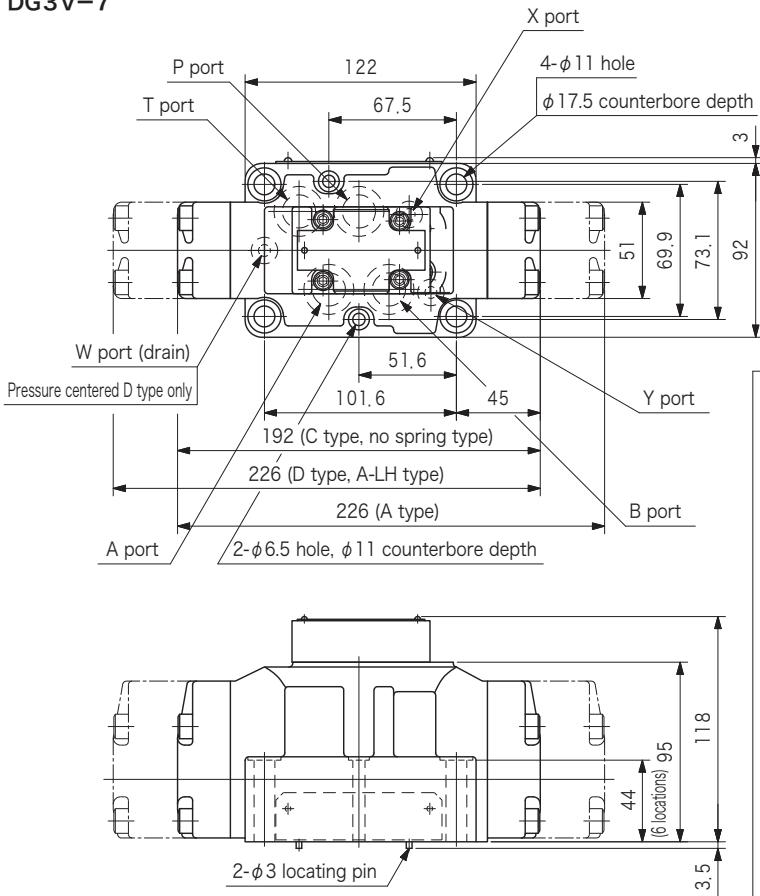
## Subplate

Valve Model	Subplate	Connection Port Dia.	
		P, T, A, B	X, Y, W
DG3V-7	DGSMV-04-10	Rc1/2	Rc1/4
	DGSMV-04-D-10		
	DGSMV-04X-10	Rc3/4	
	DGSMV-04X-D-10		
DG3V-H8	DGSMV-06-10	Rc3/4	Rc1/4
	DGSMV-06-D-10		
	DGSMV-06X-10	Rc1	
	DGSMV-06X-D-10		

- Subplate must be ordered separately.
- Subplates are supplied with hex socket bolts for mounting valve.
- See page R6-5 for dimensions.
- DGSMV-\*\*-D-10 used is pressure center type.
- Max. working pressure is 21 MPa. For higher pressures, valve should be mounted on manifold block.

# Dimensions

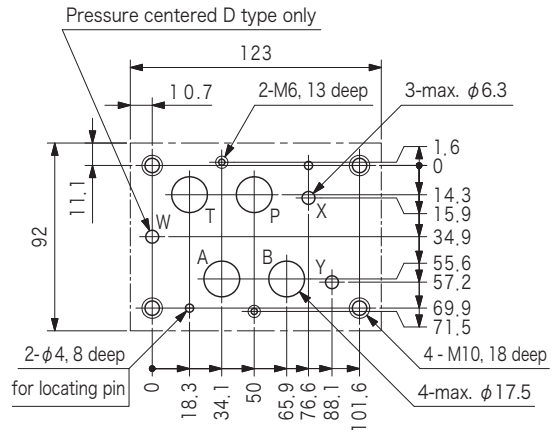
## DG3V-7



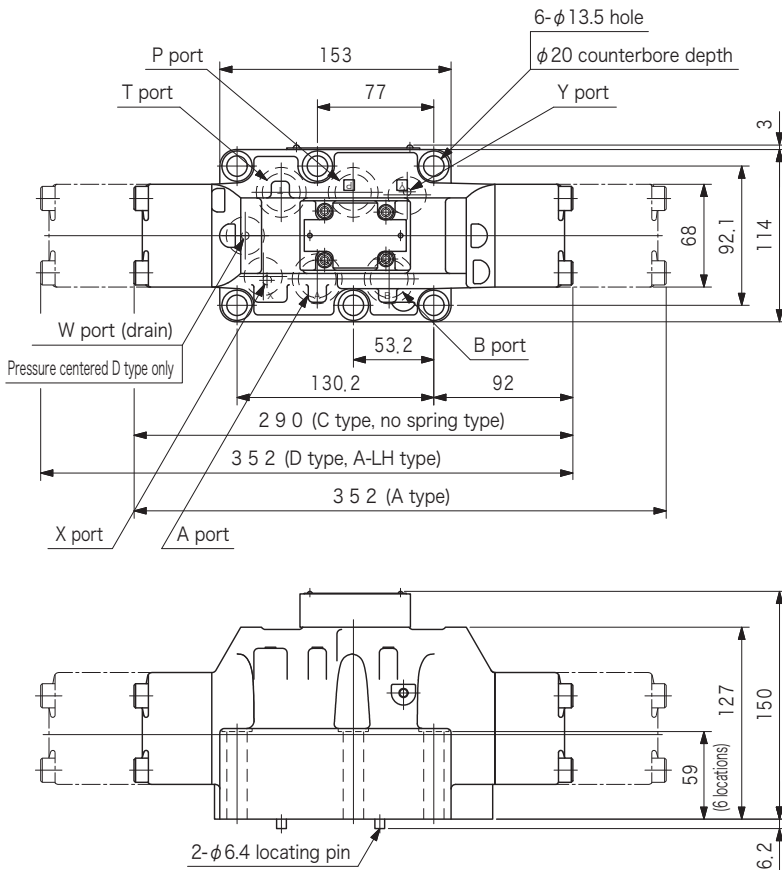
### With Stroke Adjuster

See page E4-10 under DG5V-7 for stroke adjuster dimensions.

### ● Mounting dimensions



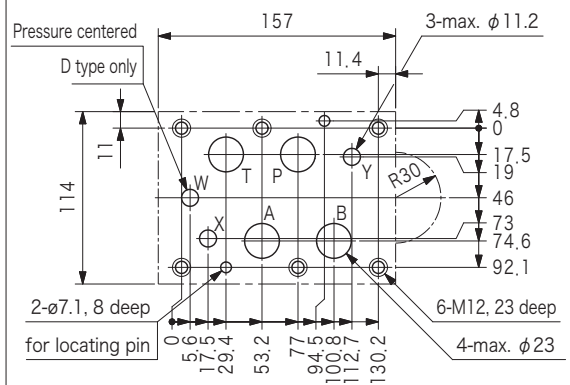
## DG3V-H8

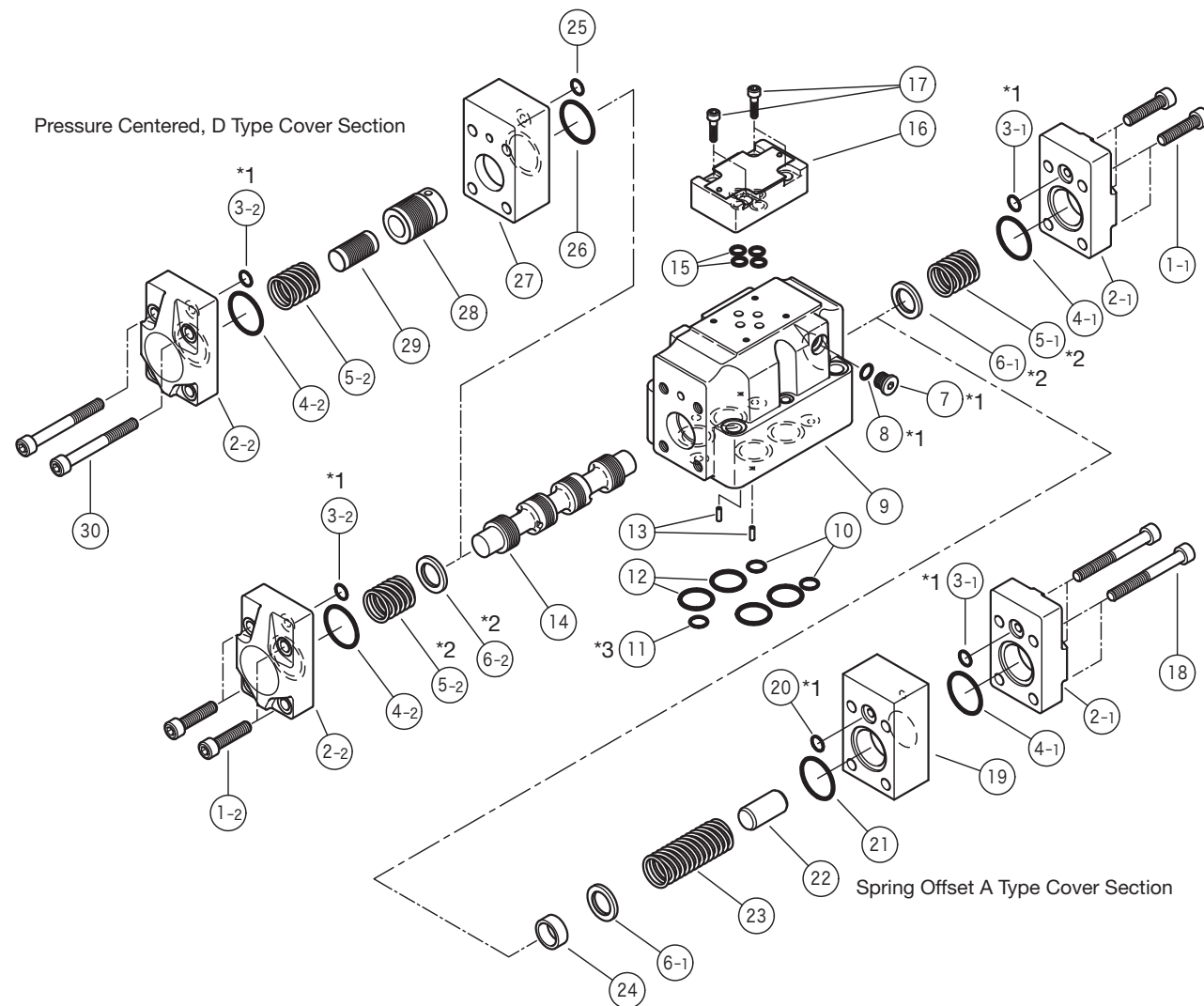


### With Stroke Adjuster

See page E4-11 under DG5V-H8 for stroke adjuster dimensions.

### ● Mounting dimensions





Note:

\*1 <3>, <7>, <8> and <20> are not used in DG3V-H8.

\*2 <5> and <6> are not used with no spring types.

Also for spring offset A type, <5>-2 and <6>-2 are not used.

\*3 <11> only used with pressure centered D type.

O-ring (DG3V-7)

No.	Part No.	Standard	Qty
3	007911019	AS568-110 (NBR, Hs90)	2
4	007912319	AS568-123 (NBR, Hs90)	2
8	008000619	JIS B 2401 1B-P8	1
10	007901319	AS568-013 (NBR, Hs90)	2
11	007901319	AS568-013 (NBR, Hs90)	1
12	007911819	AS568-118 (NBR, Hs90)	4
15	007901219	AS568-012 (NBR, Hs90)	4
20	007911019	AS568-110 (NBR, Hs90)	1
21	007912319	AS568-123 (NBR, Hs90)	1
25	007911019	AS568-110 (NBR, Hs90)	1
26	007912319	AS568-123 (NBR, Hs90)	1

O-ring (DG3V-H8)

No.	Part No.	Standard	Qty
4	007922419	AS568-224 (NBR, Hs90)	2
10	007921019	AS568-210 (NBR, Hs90)	2
11	007921019	AS568-210 (NBR, Hs90)	1
12	007921519	AS568-215 (NBR, Hs90)	4
15	007901219	AS568-012 (NBR, Hs90)	4
21	007922419	AS568-224 (NBR, Hs90)	1
25	007901119	AS568-011 (NBR, Hs90)	1
26	007913119	AS568-131 (NBR, Hs90)	1