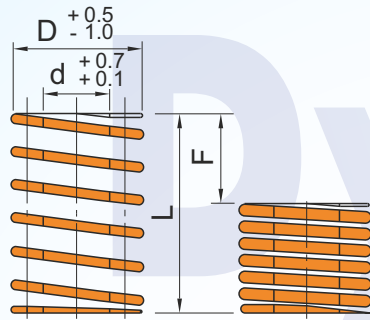


Coil Springs – MEDIUM DEFLECTION DSWS



Coil direction Right: Sectional drawing

For information on the D dimension and the counterbore hole, and also the d dimension and the shaft



Load + 20%
- 10%
Squareness 3° or less
Free length L ± 2%

F(Allowable deflection) is due to the measurement at normal temperature (40°C)

Maximum allowable deflection at high temperature (150°/200°C).

Part No. Type D-L	D	d	L	Spring Constant		F = L x 40%	
				N/mm(kgf/mm)	Fmm	Load N(kgf)	Load N(kgf)
DSWS10.5 - 20	10.5	5.5	20	10.90 (1.11)	8.0	87.2 (8.9)	
			25	8.72 (0.89)	10.0		
			30	7.27 (0.74)	12.0		
			35	6.23 (0.64)	14.0		
			40	5.45 (0.56)	16.0		
			45	4.84 (0.49)	18.0		
			50	4.36 (0.44)	20.0		
			55	3.96 (0.40)	22.0		
			60	3.63 (0.37)	24.0		
			65	3.35 (0.34)	26.0		
			70	3.11 (0.32)	28.0		
DSWS12.5 - 20	12.5	6.5	20	15.25 (1.56)	8.0	122.0 (12.4)	
			25	12.20 (1.24)	10.0		
			30	10.17 (1.04)	12.0		
			35	8.71 (0.89)	14.0		
			40	7.63 (0.78)	16.0		
			45	6.78 (0.69)	18.0		
			50	6.10 (0.62)	20.0		
			55	5.55 (0.57)	22.0		
			60	5.08 (0.52)	24.0		
			65	4.69 (0.48)	26.0		
			70	4.36 (0.44)	28.0		
DSWS14.5 - 20	14.5	8.5	20	24.50 (2.50)	8.0	196.0 (20)	
			25	19.61 (2.00)	10.0		
			30	16.33 (1.67)	12.0		
			35	14.00 (1.43)	14.0		
			40	12.25 (1.25)	16.0		
			45	10.89 (1.11)	18.0		
			50	9.80 (1.00)	20.0		
			55	8.91 (0.91)	22.0		
			60	8.17 (0.83)	24.0		
			65	7.54 (0.77)	26.0		
			70	7.00 (0.71)	28.0		

Part No. Type D-L	D	d	L	Spring Constant		F = L x 40%	
				N/mm(kgf/mm)	Fmm	Load N(kgf)	Load N(kgf)
DSWS17 - 25	17	10.5	25	29.42 (3.00)	10.0	294.2 (30.0)	
			30	24.52 (2.50)	12.0		
			35	21.01 (2.14)	14.0		
			40	18.39 (1.88)	16.0		
			45	16.34 (1.67)	18.0		
			50	14.71 (1.50)	20.0		
			55	13.37 (1.36)	22.0		
			60	12.26 (1.25)	24.0		
			65	11.32 (1.15)	26.0		
			70	10.51 (1.07)	28.0		
			75	9.81 (1.00)	30.0		
DSWS21 - 30	21	13.5	30	35.17 (3.59)	12.0	422.0 (43.0)	
			35	30.14 (3.07)	14.0		
			40	26.38 (2.69)	16.0		
			45	23.44 (2.39)	18.0		
			50	21.10 (2.15)	20.0		
			55	19.18 (1.96)	22.0		
			60	17.58 (1.79)	24.0		
			65	16.23 (1.66)	26.0		
			70	15.07 (1.54)	28.0		
			75	14.07 (1.43)	30.0		
			80	13.19 (1.34)	32.0		
DSWS26 - 30	26	16.5	30	47.42 (4.84)	12.0	569.0 (58.0)	
			35	40.64 (4.14)	14.0		
			40	35.56 (3.63)	16.0		
			45	31.61 (3.22)	18.0		
			50	28.45 (2.90)	20.0		
			55	25.86 (2.64)	22.0		
			60	23.71 (2.42)	24.0		
			65	21.88 (2.23)	26.0		
			70	20.32 (2.07)	28.0		
			75	18.97 (1.93)	30.0		
			80	17.78 (1.81)	32.0		

M Equivalent of SWOSC – V (Steel Wire Oil Temper Silicon for Valve)

Load calculation method: Load = Spring constant x Deflection

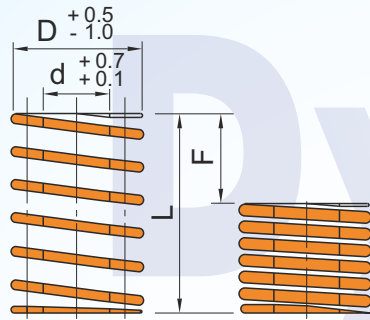
(SI units) N = N/mm x Fmm

kgf = kgf/mm x Fmm

(kgf = N x 0.101972)



Coil Springs – MEDIUM DEFLECTION DSWS



Load + 20%
- 10%
Squareness 3° or less
Free length L ± 2%

Coil direction Right: Sectional drawing

For information on the D dimension and the counterbore hole, and also the d dimension and the shaft

F(Allowable deflection) is due to the measurement at normal temperature (40°C)

Maximum allowable deflection at high temperature (150°/200°C).

Part No. Type D-L	D	d	L	Spring Constant		F = L x 40%	
				N/mm(kgf/mm)	Fmm	Load N(kgf)	
DSWS31 - 40	31	21	40	49.00 (5.00)	16.0	784.0 (79.9)	
45			43.56 (4.44)	18.0			
50			39.20 (4.00)	20.0			
55			35.64 (3.63)	22.0			
60			32.67 (3.33)	24.0			
65			30.15 (3.07)	26.0			
70			28.00 (2.86)	28.0			
75			26.13 (2.66)	30.0			
80			24.50 (2.50)	32.0			
90			21.78 (2.22)	36.0			
100			19.60 (2.00)	40.0			
110			17.82 (1.82)	44.0			
120			16.33 (1.67)	48.0			
125			15.68 (1.60)	50.0			
130			15.08 (1.54)	52.0			
140			14.00 (1.43)	56.0			
150			13.07 (1.33)	60.0			
160			12.25 (1.25)	64.0			
170			11.53 (1.18)	68.0			
175			11.20 (1.14)	70.0			
180	10.89 (1.11)	72.0					
190	10.32 (1.05)	76.0					
200	9.80 (1.00)	80.0					
250	7.84 (0.80)	100.0					
300	6.53 (0.67)	120.0					
DSWS37 - 40	37	26	40	52.13 (5.32)	16.0	834.0 (85)	
45			46.33 (4.72)	18.0			
50			41.70 (4.25)	20.0			
55			37.91 (3.87)	22.0			
60			34.75 (3.54)	24.0			
65			32.08 (3.27)	26.0			
70			29.79 (3.04)	28.0			
75			27.80 (2.83)	30.0			
80			26.06 (2.66)	32.0			
90			23.17 (2.36)	36.0			
100			20.85 (2.13)	40.0			
110			18.95 (1.93)	44.0			
120			17.38 (1.77)	48.0			
125			16.68 (1.70)	50.0			
130			16.04 (1.64)	52.0			
140			14.89 (1.52)	56.0			
150			13.90 (1.42)	60.0			
160			13.03 (1.33)	64.0			
170			12.26 (1.25)	68.0			
175			11.91 (1.21)	70.0			
180	11.58 (1.18)	72.0					
190	10.97 (1.12)	76.0					
200	10.43 (1.06)	80.0					
250	8.34 (0.85)	100.0					
300	6.95 (0.71)	120.0					

Part No. Type D-L	D	d	L	Spring Constant		F = L x 40%				
				N/mm(kgf/mm)	Fmm	Load N(kgf)				
DSWS44.5- 50	44.5	31	50	50.15 (5.11)	20.0	1003 (102)				
60			41.79 (4.26)	24.0						
70			35.82 (3.65)	28.0						
80			31.34 (3.20)	32.0						
90			27.86 (2.84)	36.0						
100			25.08 (2.56)	40.0						
110			22.80 (2.32)	44.0						
120			20.90 (2.13)	48.0						
130			19.29 (1.97)	52.0						
140			17.91 (1.83)	56.0						
150			16.72 (1.70)	60.0						
160			15.67 (1.60)	64.0						
170			14.75 (1.50)	68.0						
180			13.93 (1.42)	72.0						
190			13.20 (1.35)	76.0						
200			12.54 (1.28)	80.0						
225			11.14 (1.14)	90.0						
250			10.03 (1.02)	100.0						
275			9.12 (0.93)	110.0						
300			8.36 (0.85)	120.0						
DSWS46 - 50	46	33	50	63.74 (6.50)	20.0	1275 (130)				
60			53.12 (5.42)	24.0						
70			45.53 (4.64)	28.0						
80			39.84 (4.06)	32.0						
90			35.41 (3.61)	36.0						
100			31.87 (3.25)	40.0						
110			28.97 (2.95)	44.0						
120			26.56 (2.71)	48.0						
125			25.50 (2.60)	50.0						
130			24.52 (2.50)	52.0						
140			22.77 (2.32)	56.0						
150			21.25 (2.17)	60.0						
175			18.21 (1.86)	70.0						
200			15.94 (1.63)	80.0						
225			14.17 (1.44)	90.0						
250			12.75 (1.30)	100.0						
275			11.59 (1.18)	110.0						
300			10.62 (1.08)	120.0						
DSWS52 - 60			52	37	60		65.42 (6.67)	24.0	1570 (160)	
70					56.07 (5.72)		28.0			
80	49.06 (5.00)	32.0								
90	43.61 (4.45)	36.0								
100	39.25 (4.00)	40.0								
110	35.68 (3.64)	44.0								
120	32.71 (3.34)	48.0								
130	30.19 (3.08)	52.0								
140	28.04 (2.86)	56.0								
150	26.17 (2.67)	60.0								
175	22.43 (2.29)	70.0								
200	19.63 (2.00)	80.0								
225	17.44 (1.78)	90.0								
250	15.70 (1.60)	100.0								
275	14.27 (1.46)	110.0								
300	13.08 (1.33)	120.0								

Alteration	Code	Spec.
 No painting	NT	<p>Paint peeling Peel the coating by shot peening.</p> <p>Since the springs which have undergone the painting peeling are easy to rust, be careful in handling.</p> <p>A rusted spring could cause early breakage.</p> <p>Compared to painted springs, there may be some dispersions in terms of load, etc. depending on the lot.</p>

