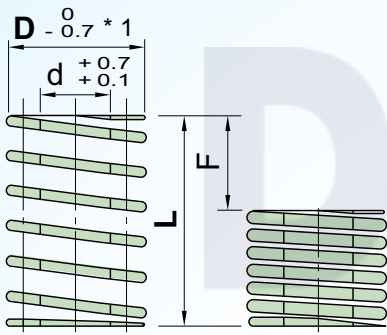


Load $\pm 10\%$
 Perpendicularity 2° or less
 Free length L 50 or less $\pm 0.5\text{mm}$
 55 or more $\pm 1\%$
 Winding Direction : Right

*1 For D70, the D dimension tolerance is $0_{-1.0}$

Part No. Type D-L	D	d	L	Spring Constant N/mm(kgf/mm)	F = L x 19.2%		F = L x 21.6%		F = L x 24%		
					Fmm	Load N(kgf)	Fmm	Load N(kgf)	Fmm	Load N(kgf)	
Operation Count											
					1,000,000	500,000	300,000				
DSWH6 - 15	6	3	15	38.1 { 3.9}	2.9	3.2	3.6	110	123	137	
20			20	28.5 { 2.9}	3.8	4.3	4.8	(11)	(13)	(14)	
25			25	22.8 { 2.3}	4.8	5.4	6.0				
30			30	19.0 { 1.9}	5.8	6.5	7.2				
35			35	16.3 { 1.7}	6.7	7.6	8.4				
40			40	14.3 { 1.5}	7.7	8.6	9.6				
45			45	12.7 { 1.3}	8.6	9.7	10.8				
50			50	11.4 { 1.2}	9.6	10.8	12.0				
55			55	10.4 { 1.1}	10.6	11.9	13.2				
60			60	9.5 { 1.0}	11.5	13.0	14.4				
DSWH8 - 10	8	4	10	85.8 { 8.8}	1.9	2.2	2.4	165	185	206	
15			15	57.2 { 5.8}	2.9	3.2	3.6	(17)	(19)	(21)	
20			20	42.9 { 4.4}	3.8	4.3	4.8				
25			25	34.3 { 3.5}	4.8	5.4	6.0				
30			30	28.6 { 2.9}	5.8	6.5	7.2				
35			35	24.5 { 2.5}	6.7	7.5	8.4				
40			40	21.5 { 2.2}	7.7	8.6	9.6				
45			45	19.1 { 1.9}	8.6	9.7	10.8				
50			50	17.2 { 1.8}	9.6	10.8	12.0				
55			55	15.6 { 1.6}	10.6	11.8	13.2				
60	60	14.3 { 1.5}	11.5	13.0	14.4						
65	65	13.2 { 1.3}	12.5	14.0	15.6						
70	70	12.3 { 1.3}	13.4	15.1	16.8						
75	75	11.4 { 1.2}	14.4	16.2	18.0						
80	80	10.7 { 1.1}	15.4	17.3	19.2						
DSWH10 - 10	10	5	10	123 { 12.5}	1.9	2.2	2.4	235	265	294	
15			15	81.7 { 8.3}	2.9	3.2	3.6	(24)	(27)	(30)	
20			20	61.3 { 6.3}	3.8	4.3	4.8				
25			25	49.0 { 5.0}	4.8	5.4	6.0				
30			30	40.8 { 4.2}	5.8	6.5	7.2				
35			35	35.0 { 3.6}	6.7	7.5	8.4				
40			40	30.6 { 3.1}	7.7	8.6	9.6				
45			45	27.2 { 2.8}	8.6	9.7	10.8				
50			50	24.5 { 2.5}	9.6	10.8	12.0				
55			55	22.3 { 2.3}	10.6	11.8	13.2				
60	60	20.4 { 2.1}	11.5	13.0	14.4						
65	65	18.8 { 1.9}	12.5	14.0	15.6						
70	70	17.5 { 1.8}	13.4	15.1	16.8						
75	75	16.3 { 1.7}	14.4	16.2	18.0						
80	80	15.3 { 1.6}	15.4	17.3	19.2						
90	90	13.6 { 1.4}	17.3	19.4	21.6						
DSWH12 - 15	12	6	15	117 { 11.9}	2.9	3.2	3.6	337	379	421	
20			20	87.7 { 8.9}	3.8	4.3	4.8	(24)	(38)	(43)	
25			25	70.2 { 7.2}	4.8	5.4	6.0				
30			30	58.5 { 6.0}	5.8	6.5	7.2				
35			35	50.1 { 5.1}	6.7	7.5	8.4				
40			40	43.9 { 4.5}	7.7	8.6	9.6				
45			45	39.0 { 4.0}	8.6	9.7	10.8				
50			50	35.1 { 3.6}	9.6	10.8	12.0				
55			55	31.9 { 3.3}	10.6	11.8	13.2				
60			60	29.2 { 3.0}	11.5	13.0	14.4				
65	65	27.0 { 2.8}	12.5	14.0	15.6						
70	70	25.1 { 2.6}	13.4	15.1	16.8						
75	75	23.4 { 2.4}	14.4	16.2	18.0						
80	80	21.9 { 2.2}	15.4	17.3	19.2						
90	90	19.5 { 2.0}	17.3	19.4	21.6						
DSWH14 - 20	14	7	20	120 { 12.3}	3.8	4.3	4.8	462	520	578	
25			25	96.3 { 9.8}	4.8	5.4	6.0	(47)	(53)	(59)	
30			30	80.3 { 8.2}	5.8	6.5	7.2				
35			35	68.8 { 7.0}	6.7	7.5	8.4				
40			40	60.2 { 6.1}	7.7	8.6	9.6				
45			45	53.5 { 5.5}	8.6	9.7	10.8				
50			50	48.2 { 4.9}	9.6	10.8	12.0				
55			55	43.8 { 4.5}	10.6	11.8	13.2				
60			60	40.1 { 4.1}	11.5	13.0	14.4				
65			65	37.1 { 3.8}	12.5	14.0	15.6				
70	70	34.4 { 3.5}	13.4	15.1	16.8						
75	75	32.1 { 3.3}	14.4	16.2	18.0						
80	80	30.1 { 3.1}	15.4	17.3	19.2						
90	90	26.8 { 2.7}	17.3	19.4	21.6						
100	100	24.1 { 2.5}	19.2	21.6	24.0						

Part No. Type D-L	D	d	L	Spring Constant N/mm(kgf/mm)	F = L x 19.2%		F = L x 21.6%		F = L x 24%		
					Fmm	Load N(kgf)	Fmm	Load N(kgf)	Fmm	Load N(kgf)	
Operation Count											
					1,000,000	500,000	300,000				
DSWH16 - 20	16	8	20	157 { 16.0}	3.8	4.3	4.8	604	680	755	
25			25	126 { 12.8}	4.8	5.4	6.0	(62)	(69)	(77)	
30			30	105 { 10.7}	5.8	6.5	7.2				
35			35	89.9 { 9.2}	6.7	7.5	8.4				
40			40	78.6 { 8.0}	7.7	8.6	9.6				
45			45	69.9 { 7.1}	8.6	9.7	10.8				
50			50	62.9 { 6.4}	9.6	10.8	12.0				
55			55	57.2 { 5.8}	10.6	11.8	13.2				
60			60	52.4 { 5.3}	11.5	13.0	14.4				
65			65	48.4 { 4.9}	12.5	14.0	15.6				
70	70	44.9 { 4.6}	13.4	15.1	16.8						
75	75	41.9 { 4.3}	14.4	16.2	18.0						
80	80	39.3 { 4.0}	15.4	17.3	19.2						
90	90	35.0 { 3.6}	17.3	19.4	21.6						
100	100	31.5 { 3.2}	19.2	21.6	24.0						
DSWH18 - 20	18	9	20	198 { 20.2}	3.8	4.3	4.8	761	856	951	
25			25	159 { 16.2}	4.8	5.4	6.0	(78)	(76)	(97)	
30			30	132 { 13.5}	5.8	6.5	7.2				
35			35	113 { 11.5}	6.7	7.5	8.4				
40			40	99.1 { 10.1}	7.7	8.6	9.6				
45			45	88.1 { 9.0}	8.6	9.7	10.8				
50			50	79.3 { 8.1}	9.6	10.8	12.0				
55			55	72.0 { 7.3}	10.6	11.8	13.2				
60			60	66.0 { 6.7}	11.5	13.0	14.4				
65			65	61.0 { 6.2}	12.5	14.0	15.6				
70	70	56.6 { 5.8}	13.4	15.1	16.8						
75	75	52.8 { 5.4}	14.4	16.2	18.0						
80	80	49.5 { 5.1}	15.4	17.3	19.2						
90	90	44.0 { 4.5}	17.3	19.4	21.6						
100	100	39.6 { 4.0}	19.2	21.6	24.0						
DSWH20 - 20	20	10	20	245 { 25.0}	3.8	4.3	4.8	941	1058	1176	
25			25	196 { 20.0}	4.8	5.4	6.0	(96)	(108)	(120)	
30			30	163 { 16.7}	5.8	6.5	7.2				
35			35	140 { 14.3}	6.7	7.5	8.4				
40			40	123 { 12.5}	7.7	8.6	9.6				
45			45	109 { 11.1}	8.6	9.7	10.8				
50			50	98.0 { 10.0}	9.6	10.8	12.0				
55			55	89.1 { 9.1}	10.6	11.8	13.2				
60			60	81.7 { 8.3}	11.5	13.0	14.4				
65			65	75.4 { 7.7}	12.5	14.0	15.6				
70	70	70.0 { 7.1}	13.4	15.1	16.8						
75	75	65.3 { 6.7}	14.4	16.2	18.0						
80	80	61.3 { 6.2}	15.4	17.3	19.2						
90	90	54.4 { 5.6}	17.3	19.4	21.6						
100	100	49.0 { 5.0}	19.2	21.6	24.0						
125	125	39.2 { 4.0}	24.0	27.0	30.0						
150	150	32.7 { 3.3}	28.8	32.4	36.0						
DSWH22 - 25	20	11	25	237 { 24.2}	4.8	5.4	6.0	1337	1421	1421	
30			30	197 { 20.1}	5.8	6.5	7.2	(116)	(130)	(145)	
35			35	169 { 17.3}	6.7	7.5	8.4				
40			40	148 { 15.1}	7.7	8.6	9.6				
45			45	132 { 13.4}	8.6	9.7	10.8				
50			50	118 { 12.1}	9.6	10.8	12.0				
55			55	108 { 11.0}	10.6	11.9	13.2				
60			60	98.7 { 10.1}	11.5	13.0	14.4				
65			65	91.1 { 9.3}	12.5	14.0	15.6				
70			70	84.6 { 8.6}	13.4	15.1	16.8				
75	75	78.9 { 8.1}	14.4	16.2	18.0						
80	80	74.0 { 7.5}	15.4	17.3	19.2						
90	90	65.8 { 6.7}	17.3	19.4	21.6						
100	100	59.2 { 6.0}	19.2	21.6	24.0						
125	125	47.4 { 4.8}	24.0	27.0							



Load $\pm 10\%$
 Perpendicularity 2° or less
 Free length L 50 or less $\pm 0.5\text{mm}$
 55 or more $\pm 1\%$
 Winding Direction : Right

*1 For D70, the D dimension tolerance is -0.1

Part No. Type D-L	D	d	L	Spring Constant N/mm(kgf/mm)	F = L x 19.2%		F = L x 21.6%		F = L x 24%		
					Fmm	Load N(kgf)	Fmm	Load N(kgf)	Fmm	Load N(kgf)	
Operation Count											
					1,000,000	500,000	300,000				
DSWH25 - 25	25	12.5	30	306 (31.2)	4.8	5.4	6.0	1466 (150)	1650 (68)	1833 (187)	
30			255 (26.0)	5.8	6.5	7.2					
35			218 (22.3)	6.7	7.6	8.4					
40			191 (19.5)	7.7	8.6	9.6					
45			170 (17.3)	8.6	9.7	10.8					
50			153 (15.6)	9.6	10.8	12.0					
55			139 (14.2)	10.6	11.9	13.2					
60			127 (13.0)	11.5	13.0	14.4					
65			118 (12.0)	12.5	14.0	15.6					
70			109 (11.1)	13.4	15.1	16.8					
75			102 (10.4)	14.4	16.2	18.0					
80			95.5 (9.7)	15.4	17.3	19.2					
90			84.9 (8.7)	17.3	19.4	21.6					
100			76.4 (7.8)	19.2	21.6	24.0					
125			61.1 (6.2)	24.0	27.0	30.0					
150			50.9 (5.2)	28.8	32.4	36.0					
175			43.6 (4.5)	33.6	37.8	42.0					
DSWH27 - 25	27	13.5	25	358 (36.5)	4.8	5.4	6.0	1717 (175)	1931 (197)	2146 (219)	
30			298 (30.4)	5.8	6.5	7.2					
35			255 (26.1)	6.7	7.6	8.4					
40			224 (22.8)	7.7	8.6	9.6					
45			199 (20.3)	8.6	9.7	10.8					
50			179 (18.2)	9.6	10.8	12.0					
55			163 (16.6)	10.6	11.9	13.2					
60			149 (15.2)	11.5	13.0	14.4					
65			138 (14.0)	12.5	14.0	15.6					
70			128 (13.0)	13.4	15.1	16.8					
75			119 (12.2)	14.4	16.2	18.0					
80			112 (11.4)	15.4	17.3	19.2					
90			99.4 (10.1)	17.3	19.4	21.6					
100			89.4 (9.1)	19.2	21.6	24.0					
125			71.5 (7.3)	24.0	27.0	30.0					
150			59.6 (6.1)	28.8	32.4	36.0					
175			51.1 (5.2)	33.6	37.8	42.0					
DSWH30 - 25	30	15	25	441 (45.0)	4.8	5.4	6.0	2117 (216)	2381 (243)	2646 (270)	
30			368 (37.5)	5.8	6.5	7.2					
35			315 (32.1)	6.7	7.6	8.4					
40			276 (28.1)	7.7	8.6	9.6					
45			245 (25.0)	8.6	9.7	10.8					
50			221 (22.5)	9.6	10.8	12.0					
55			200 (20.4)	10.6	11.9	13.2					
60			184 (18.7)	11.5	13.0	14.4					
65			170 (17.3)	12.5	14.0	15.6					
70			158 (16.1)	13.4	15.1	16.8					
75			147 (15.0)	14.4	16.2	18.0					
80			138 (14.1)	15.4	17.3	19.2					
90			123 (12.5)	17.3	19.4	21.6					
100			110 (11.2)	19.2	21.6	24.0					
125			88.2 (9.0)	24.0	27.0	30.0					
150			73.5 (7.5)	28.8	32.4	36.0					
175			63.0 (6.4)	33.6	37.8	42.0					
200	55.1 (5.6)	38.4	43.2	48.0							
DSWH35 - 40	35	17.5	40	375 (38.2)	7.7	8.6	9.6	2878 (293)	3237 (330)	3597 (367)	
45			333 (34.0)	8.6	9.7	10.8					
50			300 (30.6)	9.6	10.8	12.0					
55			273 (27.8)	10.6	11.9	13.2					
60			250 (25.5)	11.5	13.0	14.4					
65			231 (23.5)	12.5	14.0	15.6					
70			214 (21.8)	13.4	15.1	16.8					
75			200 (20.4)	14.4	16.2	18.0					
80			187 (19.1)	15.4	17.3	19.2					
90			167 (17.0)	17.3	19.4	21.6					
100			150 (15.3)	19.2	21.6	24.0					
125			120 (12.2)	24.0	27.0	30.0					
150			99.9 (10.2)	28.8	32.4	36.0					
175			85.6 (8.7)	33.6	37.8	42.0					
200			74.9 (7.6)	38.4	43.2	48.0					

Part No. Type D-L	D	d	L	Spring Constant N/mm(kgf/mm)	F = L x 19.2%		F = L x 21.6%		F = L x 24%						
					Fmm	Load N(kgf)	Fmm	Load N(kgf)	Fmm	Load N(kgf)					
Operation Count															
					1,000,000	500,000	300,000								
DSWH40 - 40	40	20	40	490 (50.0)	7.7	8.6	9.6	3763 (384)	4234 (432)	4704 (480)					
45			436 (44.4)	8.6	9.7	10.8									
50			392 (40.0)	9.6	10.8	12.0									
55			356 (36.3)	10.6	11.9	13.2									
60			327 (33.3)	11.5	13.0	14.4									
65			302 (30.7)	12.5	14.0	15.6									
70			280 (28.6)	13.4	15.1	16.8									
75			261 (26.6)	14.4	16.2	18.0									
80			245 (25.0)	15.4	17.3	19.2									
90			218 (22.2)	17.3	19.4	21.6									
100			196 (20.0)	19.2	21.6	24.0									
125			157 (16.0)	24.0	27.0	30.0									
150			131 (13.3)	28.8	32.4	36.0									
175			112 (11.4)	33.6	37.8	42.0									
200			98.0 (10.0)	38.4	43.2	48.0									
225			87.1 (8.9)	43.2	48.6	54.0									
250			78.4 (8.0)	48.0	54.0	60.0									
275	71.3 (7.3)	52.8	59.4	66.0											
300	65.3 (6.7)	57.6	64.8	72.0											
DSWH50 - 50	50	25	50	613 (62.5)	9.6	10.8	12.0	5880 (600)	6615 (675)	7350 (750)					
55			557 (56.8)	10.6	11.9	13.2									
60			510 (52.0)	11.5	13.0	14.4									
65			471 (48.0)	12.5	14.0	15.6									
70			438 (44.6)	13.4	15.1	16.8									
75			408 (41.6)	14.4	16.2	18.0									
80			383 (39.0)	15.4	17.3	19.2									
90			340 (34.7)	17.3	19.4	21.6									
100			306 (31.2)	19.2	21.6	24.0									
125			245 (25.0)	24.0	27.0	30.0									
150			204 (20.8)	28.8	32.4	36.0									
175			175 (17.8)	33.6	37.8	42.0									
200			153 (15.6)	38.4	43.2	48.0									
225			136 (13.9)	43.2	48.6	54.0									
250			123 (12.5)	48.0	54.0	60.0									
275			111 (11.4)	52.8	59.4	66.0									
300			102 (10.4)	57.6	64.8	72.0									
350	87.5 (8.9)	67.2	75.6	84.0											
DSWH60 - 60	60	30	60	735 (74.9)	11.5	13.0	14.4	8467 (863)	9526 (971)	10584 (1079)					
70			630 (64.2)	13.4	15.1	16.8									
80			551 (56.2)	15.4	17.3	19.2									
90			490 (50.0)	17.3	19.4	21.6									
100			441 (45.0)	19.2	21.6	24.0									
125			353 (36.0)	24.0	27.0	30.0									
150			294 (30.0)	28.8	32.4	36.0									
175			252 (25.7)	33.6	37.8	42.0									
200			221 (22.5)	38.4	43.2	48.0									
225			196 (20.0)	43.2	48.6	54.0									
250			176 (18.0)	48.0	54.0	60.0									
275			160 (16.4)	52.8	59.4	66.0									
300			147 (15.0)	57.6	64.8	72.0									
350			126 (12.8)	67.2	75.6	84.0									
DSWH70 - 70			70	38.5	70	747 (76.2)	13.4				15.1	16.8	10046 (1024)	11301 (1152)	12557 (1280)
80					654 (66.7)	15.4	17.3				19.2				
90					581 (59.3)	17.3	19.4				21.6				
100	523 (53.4)	19.2			21.6	24.0									
125	419 (42.7)	24.0			27.0	30.0									
150	349 (35.6)	28.8			32.4	36.0									
175	299 (30.5)	33.6			37.8	42.0									
200	262 (26.7)	38.4			43.2	48.0									
250	209 (21.3)	48.0			54.0	60.0									
300	174 (17.8)	57.6			64.8	72.0									
350	149 (15.2)	67.2			75.6	84.0									

Load calculation method: Load = Spring constant x Deflection

(SI units) $N = N/mm \times Fmm$
 $kgf = kgf/mm \times Fmm$
 $(kgf = N \times 0.101972)$

Alteration	Code	Spec.
	NT	Coating removal Removal of the coil spring coating by shot peening ⚠ Springs with the coating removed are extremely susceptible to corrosion. Handle them with care. ⚠ Corrosion of the spring will result in early breakage. There may be greater variation in the load capacity and other characteristics between lots than with ordinary coated products.
No coating		

