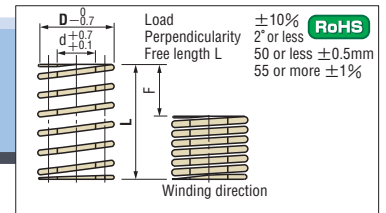
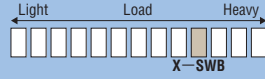


COIL SPRINGS

—X—SWB—



RoHS
±10%
2" or less
50 or less ±0.5mm
55 or more ±1%

D	d	L	Spring constant N/mm (kgf/mm)	F=L×16%		F=L×18%		Catalog No.
				Fmm	Load N (kgf)	Fmm	Load N (kgf)	
Type D—L								
Operation count				1,000,000	500,000			
8	4	10	162.0 (16.5)	1.6	1.8	258 (26)	291 (30)	X—SWB 8—10
		15	108.0 (11.0)	2.4	2.7			15
		20	80.8 (8.2)	3.2	3.6			20
		25	64.6 (6.6)	4.0	4.5			25
		30	53.8 (5.5)	4.8	5.4			30
		35	46.1 (4.7)	5.6	6.3			35
		40	40.4 (4.1)	6.4	7.2			40
		45	35.9 (3.7)	7.2	8.1			45
		50	32.3 (3.3)	8.0	9.0			50
		55	29.4 (3.0)	8.8	9.9			55
		60	26.9 (2.7)	9.6	10.8			60
		65	24.8 (2.5)	10.4	11.7			65
		70	23.1 (2.4)	11.2	12.6			70
		75	21.5 (2.2)	12.0	13.5			75
80	20.2 (2.1)	12.8	14.4	80				
Type D—L								
Operation count				1,000,000	500,000			
10	5	10	221.0 (22.5)	1.6	1.8	353 (36)	397 (41)	X—SWB10—10
		15	147.0 (15.0)	2.4	2.7			15
		20	110.0 (11.2)	3.2	3.6			20
		25	88.2 (9.0)	4.0	4.5			25
		30	73.5 (7.5)	4.8	5.4			30
		35	63.0 (6.4)	5.6	6.3			35
		40	55.1 (5.6)	6.4	7.2			40
		45	49.0 (5.0)	7.2	8.1			45
		50	44.1 (4.5)	8.0	9.0			50
		55	40.1 (4.1)	8.8	9.9			55
		60	36.8 (3.7)	9.6	10.8			60
		65	33.9 (3.5)	10.4	11.7			65
		70	31.5 (3.2)	11.2	12.6			70
		75	29.4 (3.0)	12.0	13.5			75
80	27.6 (2.8)	12.8	14.4	80				
90	24.5 (2.5)	14.4	16.2	90				
Type D—L								
Operation count				1,000,000	500,000			
12	6	20	142.0 (14.5)	3.2	3.6	455 (46)	512 (52)	X—SWB12—20
		25	114.0 (11.6)	4.0	4.5			25
		30	94.8 (9.7)	4.8	5.4			30
		35	81.3 (8.3)	5.6	6.3			35
		40	71.1 (7.3)	6.4	7.2			40
		45	63.2 (6.4)	7.2	8.1			45
		50	56.9 (5.8)	8.0	9.0			50
		55	51.7 (5.3)	8.8	9.9			55
		60	47.4 (4.8)	9.6	10.8			60
		65	43.8 (4.5)	10.4	11.7			65
		70	40.6 (4.1)	11.2	12.6			70
		75	37.9 (3.9)	12.0	13.5			75
		80	35.6 (3.6)	12.8	14.4			80
		90	31.6 (3.2)	14.4	16.2			90
Type D—L								
Operation count				1,000,000	500,000			
14	7	20	184.0 (18.8)	3.2	3.6	589 (60)	662 (68)	X—SWB14—20
		25	147.0 (15.0)	4.0	4.5			25
		30	123.0 (12.5)	4.8	5.4			30
		35	105.0 (10.7)	5.6	6.3			35
		40	92.0 (9.4)	6.4	7.2			40
		45	81.8 (8.3)	7.2	8.1			45
		50	73.6 (7.5)	8.0	9.0			50
		55	66.9 (6.8)	8.8	9.9			55
		60	61.3 (6.3)	9.6	10.8			60
		65	56.6 (5.8)	10.4	11.7			65
		70	52.6 (5.4)	11.2	12.6			70
		75	49.1 (5.0)	12.0	13.5			75
		80	46.0 (4.7)	12.8	14.4			80
		90	40.9 (4.2)	14.4	16.2			90
100	36.8 (3.8)	16.0	18.0	100				

●Load calculation method: Load=Spring constant×Deflection
(SI unit) N=N/mm×Fmm
kgf=kgf/mm×Fmm
(kgf=N×0.101972)

D	d	L	Spring constant N/mm (kgf/mm)	F=L×16%		F=L×18%		Catalog No.
				Fmm	Load N (kgf)	Fmm	Load N (kgf)	
Type D—L								
Operation count				1,000,000	500,000			
16	8	20	245.0 (25.0)	3.2	3.6	784 (80)	882 (90)	X—SWB16—20
		25	196.0 (20.0)	4.0	4.5			25
		30	163.0 (16.7)	4.8	5.4			30
		35	140.0 (14.3)	5.6	6.3			35
		40	123.0 (12.5)	6.4	7.2			40
		45	109.0 (11.1)	7.2	8.1			45
		50	98.0 (10.0)	8.0	9.0			50
		55	89.1 (9.1)	8.8	9.9			55
		60	81.7 (8.3)	9.6	10.8			60
		65	75.4 (7.7)	10.4	11.7			65
		70	70.0 (7.1)	11.2	12.6			70
		75	65.3 (6.7)	12.0	13.5			75
		80	61.3 (6.3)	12.8	14.4			80
		90	54.4 (5.6)	14.4	16.2			90
100	49.0 (5.0)	16.0	18.0	100				
Type D—L								
Operation count				1,000,000	500,000			
18	9	20	306.0 (31.2)	3.2	3.6	980 (100)	1103 (113)	X—SWB18—20
		25	245.0 (25.0)	4.0	4.5			25
		30	204.0 (20.8)	4.8	5.4			30
		35	175.0 (17.8)	5.6	6.3			35
		40	153.0 (15.6)	6.4	7.2			40
		45	136.0 (13.9)	7.2	8.1			45
		50	123.0 (12.5)	8.0	9.0			50
		55	111.0 (11.4)	8.8	9.9			55
		60	102.0 (10.4)	9.6	10.8			60
		65	94.2 (9.6)	10.4	11.7			65
		70	87.5 (8.9)	11.2	12.6			70
		75	81.7 (8.3)	12.0	13.5			75
		80	76.6 (7.8)	12.8	14.4			80
		90	68.1 (6.9)	14.4	16.2			90
100	61.3 (6.2)	16.0	18.0	100				
Type D—L								
Operation count				1,000,000	500,000			
20	10	20	392.0 (40.0)	3.2	3.6	1254 (128)	1411 (144)	X—SWB20—20
		25	314.0 (32.0)	4.0	4.5			25
		30	261.0 (26.6)	4.8	5.4			30
		35	224.0 (22.8)	5.6	6.3			35
		40	196.0 (20.0)	6.4	7.2			40
		45	174.0 (17.8)	7.2	8.1			45
		50	157.0 (16.0)	8.0	9.0			50
		55	143.0 (14.5)	8.8	9.9			55
		60	131.0 (13.3)	9.6	10.8			60
		65	121.0 (12.3)	10.4	11.7			65
		70	112.0 (11.4)	11.2	12.6			70
		75	105.0 (10.7)	12.0	13.5			75
		80	98.0 (10.0)	12.8	14.4			80
		90	87.1 (8.9)	14.4	16.2			90
100	78.4 (8.0)	16.0	18.0	100				
125	62.7 (6.4)	20.0	22.5	125				
150	52.3 (5.3)	24.0	27.0	150				
Type D—L								
Operation count				1,000,000	500,000			
22	11	25	382.0 (39.0)	4.0	4.5	1530 (156)	1721 (175)	X—SWB22—25
		30	319.0 (32.5)	4.8	5.4			30
		35	273.0 (27.9)	5.6	6.3			35
		40	239.0 (24.4)	6.4	7.2			40
		45	212.0 (21.7)	7.2	8.1			45
		50	191.0 (19.5)	8.0	9.0			50
		55	174.0 (17.7)	8.8	9.9			55
		60	159.0 (16.2)	9.6	10.8			60
		65	147.0 (15.0)	10.4	11.7			65
		70	137.0 (13.9)	11.2	12.6			70
		75	127.0 (13.0)	12.0	13.5			75
		80	120.0 (12.2)	12.8	14.4			80
		90	106.0 (10.8)	14.4	16.2			90
		100	95.6 (9.8)	16.0	18.0			100
125	76.5 (7.8)	20.0	22.5	125				
150	63.7 (6.5)	24.0	27.0	150				

D	d	L	Spring constant N/mm (kgf/mm)	F=L×16%		F=L×18%		Catalog No.
				Fmm	Load N (kgf)	Fmm	Load N (kgf)	
Type D—L								
Operation count				1,000,000	500,000			
25	12.5	25	481.0 (49.0)	4.0	4.5	1922 (196)	2162 (220)	X—SWB25—25
		30	400.0 (40.8)	4.8	5.4			30
		35	343.0 (35.0)	5.6	6.3			35
		40	300.0 (30.6)	6.4	7.2			40
		45	267.0 (27.2)	7.2	8.1			45
		50	240.0 (24.5)	8.0	9.0			50
		55	218.0 (22.3)	8.8	9.9			55
		60	200.0 (20.4)	9.6	10.8			60
		65	185.0 (18.8)	10.4	11.7			65
		70	172.0 (17.5)	11.2	12.6			70
		75	160.0 (16.3)	12.0	13.5			75
		80	150.0 (15.3)	12.8	14.4			80
		90	133.0 (13.6)	14.4	16.2			90
		100	120.0 (12.2)	16.0	18.0			100
125	96.1 (9.8)	20.0	22.5	125				
150	80.1 (8.2)	24.0	27.0	150				
175	68.6 (7.0)	28.0	31.5	175				
Type D—L								
Operation count				1,000,000	500,000			
27	13.5	30	474.0 (48.3)	4.8	5.4	2275 (232)	2560 (261)	X—SWB27—30
		35	406.0 (41.4)	5.6	6.3			35
		40	355.0 (36.2)	6.4	7.2			40
		45	316.0 (32.2)	7.2	8.1			45
		50	284.0 (29.0)	8.0	9.0			50
		55	259.0 (26.4)	8.8	9.9			55
		60	237.0 (24.2)	9.6	10.8			60
		65	219.0 (22.3)	10.4	11.7			65
		70	203.0 (20.7)	11.2	12.6			70
		75	190.0 (19.3)	12.0	13.5			75
		80	178.0 (18.1)	12.8	14.4			80
		90	158.0 (16.1)	14.4	16.2			90
		100	142.0 (14.5)	16.0	18.0			100
		125	114.0 (11.6)	20.0	22.5			125
150	94.8 (9.7)	24.0	27.0	150				
175	81.3 (8.3)	28.0	31.5	175				
Type D—L								
Operation count				1,000,000	500,000			
30	15	25	706.0 (72.0)	4.0	4.5	2824 (288)	3177 (324)	X—SWB30—25
		30	588.0 (60.0)	4.8	5.4			30
		35	504.0 (51.4)	5.6	6.3			35
		40	441.0 (45.0)	6.4	7.2			40
		45	392.0 (40.0)	7.2	8.1			45
		50	353.0 (36.0)	8.0	9.0			50
		55	321.0 (32.7)	8.8	9.9			55
		60	294.0 (30.0)	9.6	10.8			60
		65	272.0 (27.7)	10.4	11.7			65
		70	252.0 (25.7)	11.2	12.6			70
		75	235.0 (24.0)	12.0	13.5			75
		80	221.0 (22.5)	12.8	14.4			80
		90	196.0 (20.0)	14.4	16.2			90
		100	177.0 (18.0)	16.0	18.0			100
125	141.0 (14.4)	20.0	22.5	125				
150	118.0 (12.0)	24.0	27.0	150				
175	101.0 (10.3)	28.0	31.5	175				
200	88.3 (9.0)	32.0	36.0	200				
Type D—L								
Operation count				1,000,000	500,000			
35	17.5	40	600.0 (61.2)	6.4	7.2	3842 (392)	4322 (441)	X—SWB35—40
		45	534.0 (54.4)	7.2	8.1			45
		50	480.0 (49.0)	8.0	9.0			50
		55	437.0 (44.5)	8.8	9.9			55
		60	400.0 (40.8)	9.6	10.8			60
		65	369.0 (37.7)	10.4	11.7			65
		70	343.0 (35.0)	11.2	12.6			70
		75	320.0 (32.6)	12.0	13.5			75
		80	300.0 (30.6)	12.8	14.4			80
		90	267.0 (27.2)	14.4	16.2			90
		100	240.0 (24.5)	16.0	18.0			100
		125	192.0 (19.6)	20.0	22.5			125
		150	160.0 (16.3)	24.0	27.0			150
		175	137.0 (14.0)	28.0	31.5			175
200	120.0 (12.2)	32.0	36.0	200				

D	d	L	Spring constant N/mm (kgf/mm)	F=L×16%		F=L×18%		Catalog No.
				Fmm	Load N (kgf)	Fmm	Load N (kgf)	