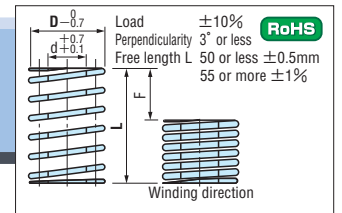
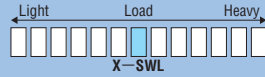


# COIL SPRINGS

## X-SWL



D	d	L	Spring constant N/mm (kgf/mm)	F=L×32%		F=L×36%		Catalog No.		
				Fmm	Load N (kgf)	Fmm	Load N (kgf)			
Operation count										
				1,000,000	500,000					
8	4	10	24.5 (2.50)	3.2	78 (8.0)	3.6	88 (9.0)	X-SWL8-10		
		15	16.3 (1.67)	4.8	5.4	15				
		20	12.3 (1.25)	6.4	7.2	20				
		25	9.8 (1.00)	8.0	9.0	25				
		30	8.2 (0.83)	9.6	10.8	30				
		35	7.0 (0.71)	11.2	12.6	35				
		40	6.1 (0.63)	12.8	14.4	40				
		45	5.4 (0.56)	14.4	16.2	45				
		50	4.9 (0.50)	16.0	18.0	50				
		55	4.5 (0.45)	17.6	19.8	55				
		60	4.1 (0.42)	19.2	21.6	60				
		65	3.8 (0.38)	20.8	23.4	65				
		70	3.5 (0.36)	22.4	25.2	70				
		75	3.3 (0.33)	24.0	27.0	75				
		80	3.1 (0.31)	25.6	28.8	80				
		10	5	10	34.3 (3.50)	3.2	110 (11)	3.6	124 (13)	X-SWL10-10
15	22.9 (2.33)			4.8	5.4	15				
20	17.2 (1.75)			6.4	7.2	20				
25	13.7 (1.40)			8.0	9.0	25				
30	11.4 (1.17)			9.6	10.8	30				
35	9.8 (1.00)			11.2	12.6	35				
40	8.6 (0.88)			12.8	14.4	40				
45	7.6 (0.78)			14.4	16.2	45				
50	6.9 (0.70)			16.0	18.0	50				
55	6.2 (0.64)			17.6	19.8	55				
60	5.7 (0.58)			19.2	21.6	60				
65	5.3 (0.54)			20.8	23.4	65				
70	4.9 (0.50)			22.4	25.2	70				
75	4.6 (0.47)			24.0	27.0	75				
80	4.3 (0.44)			25.6	28.8	80				
90	3.8 (0.39)			28.8	32.4	90				
12	6	20	25.7 (2.63)	6.4	165 (17)	7.2	185 (19)	X-SWL12-20		
		25	20.6 (2.10)	8.0	9.0	25				
		30	17.2 (1.75)	9.6	10.8	30				
		35	14.7 (1.50)	11.2	12.6	35				
		40	12.9 (1.31)	12.8	14.4	40				
		45	11.4 (1.17)	14.4	16.2	45				
		50	10.3 (1.05)	16.0	18.0	50				
		55	9.4 (0.95)	17.6	19.8	55				
		60	8.6 (0.88)	19.2	21.6	60				
		65	7.9 (0.81)	20.8	23.4	65				
		70	7.4 (0.75)	22.4	25.2	70				
		75	6.9 (0.70)	24.0	27.0	75				
		80	6.4 (0.66)	25.6	28.8	80				
		90	5.7 (0.58)	28.8	32.4	90				
		14	7	20	34.3 (3.50)	6.4	220 (22)	7.2	247 (25)	X-SWL14-20
				25	27.5 (2.80)	8.0	9.0	25		
30	22.9 (2.33)			9.6	10.8	30				
35	19.6 (2.00)			11.2	12.6	35				
40	17.2 (1.75)			12.8	14.4	40				
45	15.3 (1.56)			14.4	16.2	45				
50	13.7 (1.40)			16.0	18.0	50				
55	12.5 (1.27)			17.6	19.8	55				
60	11.4 (1.17)			19.2	21.6	60				
65	10.6 (1.08)			20.8	23.4	65				
70	9.8 (1.00)			22.4	25.2	70				
75	9.2 (0.93)			24.0	27.0	75				
80	8.6 (0.88)			25.6	28.8	80				
90	7.6 (0.78)			28.8	32.4	90				
100	6.9 (0.70)			32.0	36.0	100				

D	d	L	Spring constant N/mm (kgf/mm)	F=L×32%		F=L×36%		Catalog No.
				Fmm	Load N (kgf)	Fmm	Load N (kgf)	
Operation count								
				1,000,000	500,000			
16	8	20	42.9 (4.38)	6.4	275 (28)	7.2	309 (32)	X-SWL16-20
		25	34.3 (3.50)	8.0	9.0	25		
		30	28.6 (2.92)	9.6	10.8	30		
		35	24.5 (2.50)	11.2	12.6	35		
		40	21.5 (2.19)	12.8	14.4	40		
		45	19.1 (1.94)	14.4	16.2	45		
		50	17.2 (1.75)	16.0	18.0	50		
		55	15.6 (1.59)	17.6	19.8	55		
		60	14.3 (1.46)	19.2	21.6	60		
		65	13.2 (1.35)	20.8	23.4	65		
		70	12.3 (1.25)	22.4	25.2	70		
		75	11.4 (1.17)	24.0	27.0	75		
		80	10.7 (1.09)	25.6	28.8	80		
		90	9.5 (0.97)	28.8	32.4	90		
		100	8.6 (0.88)	32.0	36.0	100		
		125	6.9 (0.70)	40.0	45.0	125		
18	9	20	52.7 (5.38)	6.4	337 (34)	7.2	380 (39)	X-SWL18-20
		25	42.2 (4.30)	8.0	9.0	25		
		30	35.1 (3.58)	9.6	10.8	30		
		35	30.1 (3.07)	11.2	12.6	35		
		40	26.4 (2.69)	12.8	14.4	40		
		45	23.4 (2.39)	14.4	16.2	45		
		50	21.1 (2.15)	16.0	18.0	50		
		55	19.2 (1.95)	17.6	19.8	55		
		60	17.6 (1.79)	19.2	21.6	60		
		65	16.2 (1.65)	20.8	23.4	65		
		70	15.1 (1.54)	22.4	25.2	70		
		75	14.1 (1.43)	24.0	27.0	75		
		80	13.2 (1.34)	25.6	28.8	80		
		90	11.7 (1.19)	28.8	32.4	90		
		100	10.5 (1.08)	32.0	36.0	100		
		125	8.4 (0.86)	40.0	45.0	125		
20	10	20	66.2 (6.75)	6.4	424 (43)	7.2	477 (48)	X-SWL20-20
		25	53.0 (5.40)	8.0	9.0	25		
		30	44.1 (4.50)	9.6	10.8	30		
		35	37.8 (3.86)	11.2	12.6	35		
		40	33.1 (3.38)	12.8	14.4	40		
		45	29.4 (3.00)	14.4	16.2	45		
		50	26.5 (2.70)	16.0	18.0	50		
		55	24.1 (2.45)	17.6	19.8	55		
		60	22.1 (2.25)	19.2	21.6	60		
		65	20.4 (2.08)	20.8	23.4	65		
		70	18.9 (1.93)	22.4	25.2	70		
		75	17.7 (1.80)	24.0	27.0	75		
		80	16.5 (1.69)	25.6	28.8	80		
		90	14.7 (1.50)	28.8	32.4	90		
		100	13.2 (1.35)	32.0	36.0	100		
		125	10.6 (1.08)	40.0	45.0	125		
150	8.8 (0.90)	48.0	54.0	150				
22	11	25	65.7 (6.70)	8.0	526 (54)	9.0	591 (60)	X-SWL22-25
		30	54.8 (5.58)	9.6	10.8	30		
		35	46.9 (4.79)	11.2	12.6	35		
		40	41.1 (4.19)	12.8	14.4	40		
		45	36.5 (3.72)	14.4	16.2	45		
		50	32.9 (3.35)	16.0	18.0	50		
		55	29.9 (3.05)	17.6	19.8	55		
		60	27.4 (2.79)	19.2	21.6	60		
		65	25.3 (2.58)	20.8	23.4	65		
		70	23.5 (2.39)	22.4	25.2	70		
		75	21.9 (2.23)	24.0	27.0	75		
		80	20.5 (2.09)	25.6	28.8	80		
		90	18.3 (1.86)	28.8	32.4	90		
		100	16.4 (1.68)	32.0	36.0	100		
		125	13.1 (1.34)	40.0	45.0	125		
		150	11.0 (1.12)	48.0	54.0	150		

D	d	L	Spring constant N/mm (kgf/mm)	F=L×32%		F=L×36%		Catalog No.		
				Fmm	Load N (kgf)	Fmm	Load N (kgf)			
Operation count										
				1,000,000	500,000					
25	12.5	25	82.4 (8.40)	8.0	659 (67)	9.0	741 (76)	X-SWL25-25		
		30	68.6 (7.00)	9.6	10.8	30				
		35	58.8 (6.00)	11.2	12.6	35				
		40	51.5 (5.25)	12.8	14.4	40				
		45	45.8 (4.67)	14.4	16.2	45				
		50	41.2 (4.20)	16.0	18.0	50				
		55	37.4 (3.82)	17.6	19.8	55				
		60	34.3 (3.50)	19.2	21.6	60				
		65	31.7 (3.23)	20.8	23.4	65				
		70	29.4 (3.00)	22.4	25.2	70				
		75	27.5 (2.80)	24.0	27.0	75				
		80	25.7 (2.63)	25.6	28.8	80				
		90	22.9 (2.33)	28.8	32.4	90				
		100	20.6 (2.10)	32.0	36.0	100				
		125	16.5 (1.68)	40.0	45.0	125				
		150	13.7 (1.40)	48.0	54.0	150				
		175	11.8 (1.20)	56.0	63.0	175				
		200	10.3 (1.05)	64.0	72.0	200				
		27	13.5	30	81.7 (8.33)	9.6	785 (80)	10.8	883 (90)	X-SWL27-30
				35	70.0 (7.14)	11.2	12.6	35		
40	61.3 (6.25)			12.8	14.4	40				
45	54.5 (5.56)			14.4	16.2	45				
50	49.0 (5.00)			16.0	18.0	50				
55	44.6 (4.55)			17.6	19.8	55				
60	40.9 (4.17)			19.2	21.6	60				
65	37.7 (3.85)			20.8	23.4	65				
70	35.0 (3.57)			22.4	25.2	70				
75	32.7 (3.33)			24.0	27.0	75				
80	30.6 (3.13)			25.6	28.8	80				
90	27.2 (2.78)			28.8	32.4	90				
100	24.5 (2.50)			32.0	36.0	100				
125	19.6 (2.00)			40.0	45.0	125				
150	16.3 (1.67)			48.0	54.0	150				
175	14.0 (1.43)			56.0	63.0	175				
200	12.3 (1.25)			64.0	72.0	200				
30	15			25	119.0 (12.1)	8.0	949 (97)	9.0	1067 (109)	X-SWL30-25
				30	98.8 (10.1)	9.6	10.8	30		
				35	84.7 (8.64)	11.2	12.6	35		
		40	74.1 (7.56)	12.8	14.4	40				
		45	65.9 (6.72)	14.4	16.2	45				
		50	59.3 (6.05)	16.0	18.0	50				
		55	53.9 (5.50)	17.6	19.8	55				
		60	49.4 (5.04)	19.2	21.6	60				
		65	45.6 (4.65)	20.8	23.4	65				
		70	42.4 (4.32)	22.4	25.2	70				
		75	39.5 (4.03)	24.0	27.0	75				
		80	37.1 (3.78)	25.6	28.8	80				
		90	32.9 (3.36)	28.8	32.4	90				
		100	29.7 (3.02)	32.0	36.0	100				
		125	23.7 (2.42)	40.0	45.0	125				
		150	19.8 (2.02)	48.0	54.0	150				
		175	16.9 (1.73)	56.0	63.0	175				
		200	14.8 (1.51)	64.0	72.0	200				
		35	17.5	40	101.0 (10.3)	12.8	1294 (132)	14.4	1455 (148)	X-SWL35-40
				45	89.8 (9.16)	14.4	16.2	45		
50	80.9 (8.24)			16.0	18.0	50				
55	73.5 (7.49)			17.6	19.8	55				
60	67.4 (6.87)			19.2	21.6	60				
65	62.2 (6.34)			20.8	23.4	65				
70	57.8 (5.89)			22.4	25.2	70				
75	53.9 (5.50)			24.0	27.0	75				
80	50.5 (5.15)			25.6	28.8	80				
90	44.9 (4.58)			28.8	32.4	90				
100	40.4 (4.12)			32.0	36.0	100				
125	32.3 (3.30)			40.0	45.0	125				
150	27.0 (2.75)			48.0	54.0	150				
175	23.1 (2.36)			56.0	63.0	175				
200	20.2 (2.06)			64.0	72.0	200				

D	d	L	Spring constant N/mm (kgf/mm)	F=L×32%		F=L×36%		Catalog No.
				Fmm	Load N (kgf)	Fmm	Load N (kgf)	
Operation count								
				1,000,000	500,000			
40	20	40	132.0 (13.50)	12.8	1694 (173)	14.4	1905 (194)	X-SWL40-40
		45	118.0 (12.00)	14.4	16.2	45		
		50	106.0 (10.80)	16.0	18.0	50		
		55	96.2 (9.81)	17.6	19.8	55		
		60	88.2 (8.99)	19.2	21.6	60		
		65	81.4 (8.30)	20.8	23.4	65		
		70	75.6 (7.71)	22.4	25.2	70		
		75	70.6 (7.20)	24.0	27.0	75		
		80	66.2 (6.75)	25.6	28.8	80		
		90	58					