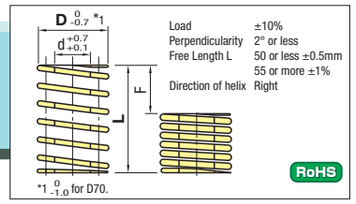
Coil Spring

For Light Load SWF



Load	±10%
Perpendicularity	2° or less
Free Length L	50 or less ±0.5mm 55 or more ±1%
Direction of helix	Right

RoHS

D	d	L	Spring Constant N/mm{kgf/mm}	F=Lx40% Fmm	F=Lx40% Load N{kgf}	F=Lx45% Fmm	F=Lx45% Load N{kgf}	F=Lx50% Fmm	F=Lx50% Load N{kgf}	Part Number TypeD-L	Unit Price
6	3	15	7.8{0.80}	6.0	47 {4.8}	6.8	53 {5.4}	7.5	59 {6.0}	SWF6- 15	
		20	5.9{0.60}	8.0		9.0		10.0		20	
		25	4.7{0.48}	10.0		11.3		12.5		25	
		30	3.9{0.40}	12.0		13.5		15.0		30	
		35	3.4{0.34}	14.0		15.8		17.5		35	
		40	2.9{0.30}	16.0		18.0		20.0		40	
8	4	10	15.7{1.60}	4.0	63 {6.4}	4.5	71 {7.2}	5.0	79 {8.0}	SWF8- 10	
		15	10.5{1.07}	6.0		6.8		7.5		15	
		20	7.8{0.80}	8.0		9.0		10.0		20	
		25	6.3{0.64}	10.0		11.2		12.5		25	
		30	5.2{0.53}	12.0		13.5		15.0		30	
		35	4.5{0.46}	14.0		15.7		17.5		35	
		40	3.9{0.40}	16.0		18.0		20.0		40	
		45	3.5{0.36}	18.0		20.2		22.5		45	
		50	3.1{0.32}	20.0		22.5		25.0		50	
		55	2.9{0.29}	22.0		24.7		27.5		55	
		60	2.6{0.27}	24.0		27.0		30.0		60	
		65	2.4{0.25}	26.0		29.3		32.5		65	
		70	2.2{0.23}	28.0		31.5		35.0		70	
		75	2.1{0.21}	30.0		33.8		37.5		75	
		80	2.0{0.20}	32.0		36.0		40.0		80	
10	5	10	19.6{2.00}	4.0	78 {8.0}	4.5	88 {9.0}	5.0	98 {10}	SWF10- 10	
		15	13.1{1.33}	6.0		6.8		7.5		15	
		20	9.8{1.00}	8.0		9.0		10.0		20	
		25	7.8{0.80}	10.0		11.2		12.5		25	
		30	6.5{0.67}	12.0		13.5		15.0		30	
		35	5.9{0.57}	14.0		15.7		17.5		35	
		40	4.9{0.50}	16.0		18.0		20.0		40	
		45	4.4{0.44}	18.0		20.2		22.5		45	
		50	3.9{0.40}	20.0		22.5		25.0		50	
		55	3.6{0.36}	22.0		24.7		27.5		55	
		60	3.3{0.33}	24.0		27.0		30.0		60	
		65	3.0{0.31}	26.0		29.2		32.5		65	
		70	2.8{0.29}	28.0		31.5		35.0		70	
		75	2.6{0.27}	30.0		33.7		37.5		75	
		80	2.5{0.25}	32.0		36.0		40.0		80	
		90	2.2{0.22}	36.0		40.5		45.0		90	
12	6	15	18.3{1.87}	6.0	110 {11}	6.8	124 {13}	7.5	137 {14}	SWF12- 15	
		20	13.7{1.40}	8.0		9.0		10.0		20	
		25	11.0{1.12}	10.0		11.2		12.5		25	
		30	9.2{0.93}	12.0		13.5		15.0		30	
		35	7.8{0.80}	14.0		15.7		17.5		35	
		40	6.9{0.70}	16.0		18.0		20.0		40	
		45	6.1{0.62}	18.0		20.2		22.5		45	
		50	5.5{0.56}	20.0		22.5		25.0		50	
		55	5.0{0.51}	22.0		24.7		27.5		55	
		60	4.6{0.47}	24.0		27.0		30.0		60	
		65	4.2{0.43}	26.0		29.2		32.5		65	
		70	3.9{0.40}	28.0		31.5		35.0		70	
		75	3.7{0.37}	30.0		33.7		37.5		75	
		80	3.4{0.35}	32.0		36.0		40.0		80	
		90	3.1{0.31}	36.0		40.5		45.0		90	
14	7	20	17.7{1.80}	8.0	141 {14}	9.0	159 {16}	10.0	177 {18}	SWF14- 20	
		25	14.1{1.44}	10.0		11.2		12.5		25	
		30	11.8{1.20}	12.0		13.5		15.0		30	
		35	10.1{1.03}	14.0		15.7		17.5		35	
		40	8.8{0.90}	16.0		18.0		20.0		40	
		45	7.8{0.80}	18.0		20.2		22.5		45	
		50	7.1{0.72}	20.0		22.5		25.0		50	
		55	6.4{0.65}	22.0		24.7		27.5		55	
		60	5.9{0.60}	24.0		27.0		30.0		60	
		65	5.4{0.55}	26.0		29.2		32.5		65	
		70	5.0{0.51}	28.0		31.5		35.0		70	
		75	4.7{0.48}	30.0		33.7		37.5		75	
		80	4.4{0.45}	32.0		36.0		40.0		80	
		90	3.9{0.40}	36.0		40.5		45.0		90	
		100	3.5{0.36}	40.0		45.0		50.0		100	
Usage Count				1 Million Times		500,000 Times		300,000 Times			

M Material: Oil tempered wires for springs

• Load calculation method = Spring constant x Deflection

(Int'l Unit) N=N/mmxFmm

kgf=kgf/mmxFmm

(kgf=Nx0.101972)

D	d	L	Spring Constant N/mm{kgf/mm}	F=Lx40% Fmm	F=Lx40% Load N{kgf}	F=Lx45% Fmm	F=Lx45% Load N{kgf}	F=Lx50% Fmm	F=Lx50% Load N{kgf}	Part Number TypeD-L	Unit Price
16	8	20	20.6{2.10}	8.0	165 {17}	9.0	185 {19}	10.0	206 {21}	SWF16- 20	
		25	16.5{1.68}	10.0		11.2		12.5		25	
		30	13.7{1.40}	12.0		13.5		15.0		30	
		35	11.8{1.20}	14.0		15.7		17.5		35	
		40	10.3{1.05}	16.0		18.0		20.0		40	
		45	9.2{0.93}	18.0		20.2		22.5		45	
		50	8.2{0.84}	20.0		22.5		25.0		50	
		55	7.5{0.76}	22.0		24.7		27.5		55	
		60	6.9{0.70}	24.0		27.0		30.0		60	
		65	6.3{0.65}	26.0		29.2		32.5		65	
		70	5.9{0.60}	28.0		31.5		35.0		70	
		75	5.5{0.56}	30.0		33.7		37.5		75	
		80	5.1{0.53}	32.0		36.0		40.0		80	
		90	4.6{0.47}	36.0		40.5		45.0		90	
		100	4.1{0.42}	40.0		45.0		50.0		100	
		125	3.3{0.34}	50.0		56.3		62.5		125	
18	9	20	25.5{2.60}	8.0	204 {21}	9.0	229 {23}	10.0	255 {26}	SWF18- 20	
		25	20.4{2.08}	10.0		11.2		12.5		25	
		30	17.0{1.73}	12.0		13.5		15.0		30	
		35	14.6{1.49}	14.0		15.7		17.5		35	
		40	12.7{1.30}	16.0		18.0		20.0		40	
		45	11.3{1.16}	18.0		20.2		22.5		45	
		50	10.2{1.04}	20.0		22.5		25.0		50	
		55	9.3{0.95}	22.0		24.7		27.5		55	
		60	8.5{0.87}	24.0		27.0		30.0		60	
		65	7.8{0.80}	26.0		29.2		32.5		65	
		70	7.3{0.74}	28.0		31.5		35.0		70	
		75	6.8{0.69}	30.0		33.7		37.5		75	
		80	6.4{0.65}	32.0		36.0		40.0		80	
		90	5.7{0.58}	36.0		40.5		45.0		90	
		100	5.1{0.52}	40.0		45.0		50.0		100	
		125	4.1{0.42}	50.0		56.3		62.5		125	
20	11	20	31.4{3.20}	8.0	251 {26}	9.0	282 {29}	10.0	314 {32}	SWF20- 20	
		25	25.1{2.56}	10.0		11.2		12.5		25	
		30	20.9{2.13}	12.0		13.5		15.0		30	
		35	17.9{1.83}	14.0		15.7		17.5		35	
		40	15.7{1.60}	16.0		18.0		20.0		40	
		45	13.9{1.42}	18.0		20.2		22.5		45	
		50	12.6{1.28}	20.0		22.5		25.0		50	
		55	11.4{1.16}	22.0		24.7		27.5		55	
		60	10.5{1.07}	24.0		27.0		30.0		60	
		65	9.7{0.98}	26.0		29.2		32.5		65	
		70	9.0{0.91}	28.0		31.5		35.0		70	
		75	8.4{0.85}	30.0		33.7		37.5		75	
		80	7.8{0.80}	32.0		36.0		40.0		80	
		90	7.0{0.71}	36.0		40.5		45.0		90	
		100	6.3{0.64}	40.0		45.0		50.0		100	
		125	5.0{0.51}	50.0		56.2		62.5		125	
		150	4.2{0.43}	60.0		67.5		75.0		150	
22	11	25	31.4{3.20}	10.0	314 {32}	11.2	353 {36}	12.5	392 {40}	SWF22- 25	
		30	26.2{2.67}	12.0		13.5		15.0		30	
		35	22.4{2.29}	14.0		15.7		17.5		35	
		40	19.6{2.00}	16.0		18.0		20.0		40	
		45	17.4{1.78}	18.0		20.2		22.5		45	
		50	15.7{1.60}	20.0		22.5		25.0		50	
		55	14.3{1.45}	22.0		24.7		27.5		55	
		60	13.1{1.33}	24.0		27.0		30.0		60	
		65	12.1{1.23}	26.0		29.2		32.5		65	
		70	11.2{1.14}	28.0		31.5		35.0		70	
		75	10.5{1.07}	30.0		33.7		37.5		75	
		80	9.8{1.00}	32.0		36.0		40.0		80	
		90	8.7{0.89}	36.0		40.5		45.0		90	
		100	7.8{0.80}	40.0		45.0		50.0		100	
		125	6.3{0.64}	50.0		56.2		62.5		125	
		150	5.2{0.53}	60.0		67.5		75.0		150	
Usage Count				1 Million Times		500,000 Times		300,000 Times			

Ordering Example — Part Number: SWF10-30

D	d	L	Spring Constant N/mm{kgf/mm}	F=Lx40% Fmm	F=Lx40% Load N{kgf}	F=Lx45% Fmm	F=Lx45% Load N{kgf}	F=Lx50% Fmm	F=Lx50% Load N{kgf}	Part Number TypeD-L	Unit Price
25	13.5	25	39.2{4.00}	10.0	392 {40}	11.2	441 {45}	12.5	490 {50}	SWF25- 25	
		30	32.7{3.33}	12.0		13.5		15.0		30	
		35	28.0{2.86}	14.0		15.7		17.5		35	
		40	24.5{2.50}	16.0		18.0		20.0		40	
		45	21.8{2.22}	18.0		20.2		22.5		45	
		50	19.6{2.00}	20.0		22.5		25.0		50	
		55	17.8{1.82}	22.0		24.7		27.5		55	
		60	16.3{1.67}	24.0		27.0		30.0		60	
		65	15.1{1.54}	26.0		29.2		32.5		65	
		70	14.0{1.43}	28.0		31.5		35.0		70	
		75	13.1{1.33}	30.0		33.7		37.5		75	
		80	12.3{1.25}	32.0		36.0		40.0		80	
		90	10.9{1.11}	36.0		40.5		45.0		90	
		100	9.8{1.00}	40.0		45.0		50.0		100	
		125	7.8{0.80}	50.0		56.2		62.5		125	
		150	6.5{0.67}	60.0		67.5		75.0		150	
		175	5.6{0.57}	70.0		78.7		87.5		175	
		200	4.9{0.50}	80.0		90.0		100.0		200	
27	13.5	25	47.1{4.80}	10.0	471 {48}	11.2	530 {54}	12.5	588 {60}	SWF27- 25	
		30	39.2{4.00}	12.0		13.5		15.0		30	
		35	33.6{3.43}	14.0		15.7		17.5		35	
		40	29.4{3.00}	16.0		18.0		20.0		40	
		45	26.2{2.67}	18.0		20.2		22.5		45	
		50	23.5{2.40}	20.0		22.5		25.0		50	
		55	21.4{2.18}	22.0		24.7		27.5		55	
		60	19.6{2.00}	24.0		27.0		30.0		60	
		65	18.1{1.85}	26.0		29.2		32.5		65	
		70	16.8{1.71}	28.0		31.5		35.0		70	
		75	15.7{1.60}	30.0		33.7		37.5		75	
		80	14.7{1.50}	32.0		36.0		40.0		80	
		90	13.1{1.33}	36.0		40.5		45.0		90	
		100	11.8{1.20}	40.0		45.0		50.0		100	
		125	9.4{0.96}	50.0		56.2		62.5		125	
		150	7.8{0.80}	60.0		67.5		75.0		150	
		175	6.7{0.69}	70.0		78.7		87.5		175	
		200	5.9{0.60}	80.0		90.0		100.0		200	
30	16	25	56.5{5.76}	10.0	565 {58}	11.2	635 {65}	12.5	706 {72}	SWF30- 25	
		30	47.1{4.80}	12.0		13.5		15.0		30	
		35	40.3{4.11}	14.0		15.7		17.5		35	
		40	35.3{3.60}	16.0		18.0		20.0		40	
		45	31.4{3.20}	18.0		20.2		22.5		45	
		50	28.2{2.88}	20.0		22.5		25.0		50	
		55	25.7{2.62}	22.0		24.7		27.5		55	
		60	23.5{2.40}	24.0		27.0		30.0		60	
		65	21.7{2.22}	26.0		29.2		32.5		65	
		70	20.2{2.06}	28.0		31.5		35.0		70	
		75	18.8{1.92}	30.0		33.7		37.5		75	
		80	17.7{1.80}	32.0		36.0		40.0		80	
		90	15.7{1.60}	36.0		40.5		45.0		90	
		100	14.1{1.44}	40.0		45.0		50.0		100	
		125	11.3{1.15}	50.0		56.2		62.5		125	
		150	9.4{0.96}	60.0		67.5		75.0		150	
		175	8.1{0.82}	70.0		78.7		87.5		175	
		200	7.1{0.72}	80.0		90.0		100.0		200	
35	19	40	48.0{4.89}	16.0	768 {78}	18.0	864 {88}	20.0	960 {98}	SWF35- 40	
		45	42.7{4.35}	18.0		20.2		22.5		45	
		50	38.4{3.92}	20.0		22.5		25.0		50	
		55	34.9{3.56}	22.0		24.7		27.5		55	
		60	32.0{3.26}	24.0		27.0		30.0		60	
		65	29.5{3.01}	26.0		29.2		32.5		65	
		70	27.4{2.80}	28.0		31.5		35.0		70	
		75	25.6{2.61}	30.0		33.7		37.5		75	
		80	24.0{2.45}	32.0		36.0		40.0		80	
		90	21.3{2.18}	36.0		40.5		45.0		90	
		100	19.2{1.96}	40.0		45.0		50.0		100	
		125	15.4{1.57}	50.0		56.2		62.5		125	
		150	12.8{1.31}	60.0		67.5		75.0		150	
		175	11.0{1.12}	70.0		78.7		87.5		175	
		200	9.6{0.98}	80.0		90.0		100.0		200	
Usage Count				1 Million Times		500,000 Times		300,000 Times			

Product Outline P.327

How to use coil springs, and precautions P.328

About D dimension and back facing hole, and D dimension and shaft, see P.1881.

D	d	L	Spring Constant N/mm{kgf/mm}	F=Lx40% Fmm	F=Lx40% Load N{kgf}	F=Lx45% Fmm	F=Lx45% Load N{kgf}	F=Lx50% Fmm	F=Lx50% Load N{kgf}	Part Number TypeD-L	Unit Price
40	22	40	62.7{6.39}	16.0	1003 {102}	18.0	1129 {115}	20.0	1254 {128}	SWF40- 40	
		45	55.7{5.68}	18.0		20.3		22.5		45	
		50	50.2{5.11}	20.0		22.5		25.0		50	
		55	45.6{4.65}	22.0		24.8		27.5		55	
		60	41.8{4.26}	24.0		27.0		30.0		60	
		65	38.6{3.93}	26.0		29.3		32.5		65	
		70	35.8{3.65}	28.0		31.5		35.0		70	
		75	33.4{3.41}	30.0		33.8		37.5		75	
		80	31.4{3.20}	32.0		36.0		40.0		80	
		90	27.9{2.84}	36.0		40.5		45.0		90	
		100	25.1{2.56}	40.0		45.0		50.0		100	
		125	20.1{2.05}	50.0		56.2		62.5		125	
		150	16.7{1.70}	60.0		67.5		75.0		150	
		175	14.3{1.46}	70.0		78.7		87.5		175	
		200	12.5{1.28}	80.0		90.0		100.0		200	
		225	11.1{1.14}	90.0		101.3		112.5		225	
		250	10.0{1.02}	100.0		112.5		125.0		250	
		275	9.1{0.93}	110.0		123.8		137.5		275	
		300	8.4{0.85}	120.0		135.0		150.0		300	
50	27.50	50	78.4{7.99}	20.0	1568 {160}	22.5	1764 {180}	25.0	1960 {200}	SWF50- 50	
		55	71.3{7.27}	22.0		24.8		27.5		55	
		60	65.3{6.66}	24.0		27.0		30.0		60	
		65	60.3{6.15}	26.0		29.3		32.5		65	
		70	56.0{5.71}	28.0		31.5		35.0		70	
		75	52.3{5.33}	30.0		33.8		37.5		75	
		80	49.0{5.00}	32.0		36.0		40.0		80	
		90	43.6{4.44}	36.0		40.5		45.0		90	
		100	39.2{4.00}	40.0		45.0		50.0		100	
		125	31.4{3.20}	50.0		56.2		62.5		125	
		150	26.1{2.66}	60.0		67.5		75.0		150	
		175	22.4{2.28}	70.0		78.7		87.5		175	
		200	19.6{2.00}	80.0		90.0		100.0		200	
		225	17.4{1.78}	90.0		101.3		112.5		225	
		250	15.7{1.60}	100.0		112.5		125.0		250	
		275	14.3{1.45}	110.0		123.8		137.5		275	
		300	13.1{1.33}	120.0		135.0		150.0		300	
		350	11.2{1.14}	140.0		157.5		175.0		350	
		400	9.8{1.00}	160.0		180.0		200.0		400	
		450	8.7{0.89}	180.0		202.5		225.0		450	
		500	7.8{0.80}	200.0		225.0		250.0		500	
60	33	60	94.0{9.59}	24.0	2256 {230}	27.0	2538 {259}	30.0	2820 {288}	SWF60- 60	
		70	80.6{8.22}	28.0		31.5		35.0		70	
		80	70.5{7.19}	32.0		36.0		40.0		80	
		90	62.7{6.39}	36.0		40.0		45.0		90	
		100	56.4{5.75}	40.0		45.0		50.0		100	
		125	45.1{4.60}	50.0		56.2		62.5		125	
		150	37.6{3.83}	60.0		67.5		75.0		150	
		175	32.2{3.29}	70.0		78.7		87.5		175	
		200	28.2{2.88}	80.0		90.0		100.0		200	
		225	25.1{2.56}	90.0		101.3		112.5		225	
		250	22.6{2.30}	100.0		112.5		125.0		250	
		275	20.5{2.09}	110.0		123.8		137.5		275	
		300	18.8{1.92}	120.0		135.0		150.0		300	
		350	16.1{1.64}	140.0		157.5		175.0		350	
		400	14.1{1.44}	160.0		180.0		200.0		400	
		450	12.5{1.28}	180.0		202.5		225.0		450	
		500	11.3{1.15}	200.0		225.0		250.0		500	
70	38.5	70	112{11.4}	28.0	3136 {320}	31.5	3528 {360}	35.0	3920 {400}	SWF70- 70	
		80	98.0{9.99}	32.0		36.0		40.0		80	
		90	87.1{8.88}	36.0		40.5		45.0		90	
		100	78.4{7.99}	40.0		45.0		50.0		100	
		125	62.7{6.40}	50.0		56.3		62.5		125	
		150	52.3{5.33}	60.0		67.5		75.0		150	
		175	44.8{4.57}	70.0		78.8		87.5		175	
		200	39.2{4.00}	80.0		90.0		100.0		200	
		250	31.4{3.20}	100.0		112.5		125.0		250	
		300	26.1{2.66}	120.0		135.0		150.0		300	
		350	22.4{2.28}	140.0		157.5		175.0		350	
Usage Count				1 Million Times		500,000 Times		300,000 Times			