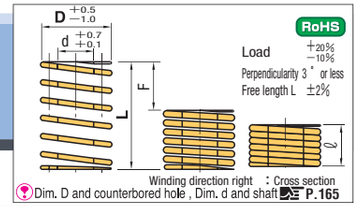
COIL SPRINGS
—MIDDLE DEFLECTION SWS—

Light — Load — Heavy
SWS

MORE ITEMS　SGP Stock　Printed in Red



The volume discount rate is also applicable to alteration cost.
All price & lead time are to be quoted.

D	d	L	Spring constant N/mm{kgf/mm}	Solid height ℓ min	F=L×40% Fmm	F=L×40% Load N{kgf}	Catalog No. Type D—L	U/Price Q'ty : 1~19
10.5	5.5	20	10.90 {1.11}	10.0	8.0	87.2 {8.9}	SWS10.5— 20	
		25	8.72 {0.89}	12.5	10.0		25	
		30	7.27 {0.74}	15.0	12.0		30	
		35	6.23 {0.64}	17.5	14.0		35	
		40	5.45 {0.56}	20.0	16.0		40	
		45	4.84 {0.49}	22.5	18.0		45	
		50	4.36 {0.44}	25.0	20.0		50	
		55	3.96 {0.40}	27.5	22.0		55	
		60	3.63 {0.37}	30.0	24.0		60	
		65	3.35 {0.34}	32.5	26.0		65	
		70	3.11 {0.32}	35.0	28.0		70	
		75	2.91 {0.30}	37.5	30.0		75	
		80	2.73 {0.28}	40.0	32.0		80	
12.5	6.5	20	15.25 {1.56}	10.0	8.0	122.0 {12.4}	SWS12.5— 20	Quotation
		25	12.20 {1.24}	12.5	10.0		25	
		30	10.17 {1.04}	15.0	12.0		30	
		35	8.71 {0.89}	17.5	14.0		35	
		40	7.63 {0.78}	20.0	16.0		40	
		45	6.78 {0.69}	22.5	18.0		45	
		50	6.10 {0.62}	25.0	20.0		50	
		55	5.55 {0.57}	27.5	22.0		55	
		60	5.08 {0.52}	30.0	24.0		60	
		65	4.69 {0.48}	32.5	26.0		65	
		70	4.36 {0.44}	35.0	28.0		70	
		75	4.07 {0.41}	37.5	30.0		75	
		80	3.81 {0.39}	40.0	32.0		80	
14.5	8.5	20	24.50 {2.50}	10.0	8.0	196.0 {20.0}	SWS14.5— 20	
		25	19.61 {2.00}	12.5	10.0		25	
		30	16.33 {1.67}	15.0	12.0		30	
		35	14.00 {1.43}	17.5	14.0		35	
		40	12.25 {1.25}	20.0	16.0		40	
		45	10.89 {1.11}	22.5	18.0		45	
		50	9.80 {1.00}	25.0	20.0		50	
		55	8.91 {0.91}	27.5	22.0		55	
		60	8.17 {0.83}	30.0	24.0		60	
		65	7.54 {0.77}	32.5	26.0		65	
		70	7.00 {0.71}	35.0	28.0		70	
		75	6.53 {0.67}	37.5	30.0		75	
		80	6.13 {0.62}	40.0	32.0		80	
		90	5.44 {0.56}	45.0	36.0		90	
		100	4.90 {0.50}	50.0	40.0		100	
		125	3.92 {0.40}	62.5	50.0		125	
		150	3.27 {0.33}	75.0	60.0		150	

D	d	L	Spring constant N/mm{kgf/mm}	Solid height ℓ min	F=L×40% Fmm	F=L×40% Load N{kgf}	Catalog No. Type D—L	U/Price Q'ty : 1~19
17	10.5	25	29.42 {3.00}	12.5	10.0	294.2 {30.0}	SWS 17— 25	
		30	24.52 {2.50}	15.0	12.0		30	
		35	21.01 {2.14}	17.5	14.0		35	
		40	18.39 {1.88}	20.0	16.0		40	
		45	16.34 {1.67}	22.5	18.0		45	
		50	14.71 {1.50}	25.0	20.0		50	
		55	13.37 {1.36}	27.5	22.0		55	
		60	12.26 {1.25}	30.0	24.0		60	
		65	11.32 {1.15}	32.5	26.0		65	
		70	10.51 {1.07}	35.0	28.0		70	
		75	9.81 {1.00}	37.5	30.0		75	
		80	9.19 {0.94}	40.0	32.0		80	
		90	8.17 {0.83}	45.0	36.0		90	
		100	7.35 {0.75}	50.0	40.0		100	
		125	5.88 {0.60}	62.5	50.0		125	
		150	4.90 {0.50}	75.0	60.0		150	
21	13.5	30	35.17 {3.59}	15.0	12.0	422.0 {43.0}	SWS 21— 30	Quotation
		35	30.14 {3.07}	17.5	14.0		35	
		40	26.38 {2.69}	20.0	16.0		40	
		45	23.44 {2.39}	22.5	18.0		45	
		50	21.10 {2.15}	25.0	20.0		50	
		55	19.18 {1.96}	27.5	22.0		55	
		60	17.58 {1.79}	30.0	24.0		60	
		65	16.23 {1.66}	32.5	26.0		65	
		70	15.07 {1.54}	35.0	28.0		70	
		75	14.07 {1.43}	37.5	30.0		75	
		80	13.19 {1.34}	40.0	32.0		80	
		90	11.72 {1.20}	45.0	36.0		90	
		100	10.55 {1.08}	50.0	40.0		100	
		110	9.59 {0.98}	55.0	44.0		110	
		120	8.79 {0.90}	60.0	48.0		120	
		125	8.44 {0.86}	62.5	50.0		125	
		130	8.12 {0.83}	65.0	52.0		130	
		140	7.54 {0.77}	70.0	56.0		140	
		150	7.03 {0.72}	75.0	60.0		150	
		175	6.03 {0.61}	87.5	70.0		175	
		200	5.28 {0.54}	100.0	80.0		200	
26	16.5	30	47.42 {4.84}	15.0	12.0	569.0 {58.0}	SWS 26— 30	
		35	40.64 {4.14}	17.5	14.0		35	
		40	35.56 {3.63}	20.0	16.0		40	
		45	31.61 {3.22}	22.5	18.0		45	
		50	28.45 {2.90}	25.0	20.0		50	
		55	25.86 {2.64}	27.5	22.0		55	
		60	23.71 {2.42}	30.0	24.0		60	
		65	21.88 {2.23}	32.5	26.0		65	
		70	20.32 {2.07}	35.0	28.0		70	
		75	18.97 {1.93}	37.5	30.0		75	
		80	17.78 {1.81}	40.0	32.0		80	
		90	15.81 {1.61}	45.0	36.0		90	
		100	14.23 {1.45}	50.0	40.0		100	
		110	12.93 {1.32}	55.0	44.0		110	
		120	11.85 {1.21}	60.0	48.0		120	
		125	11.38 {1.16}	62.5	50.0		125	
		130	10.94 {1.12}	65.0	52.0		130	
		140	10.16 {1.04}	70.0	56.0		140	
		150	9.48 {0.97}	75.0	60.0		150	
		175	8.13 {0.83}	87.5	70.0		175	
		200	7.11 {0.73}	100.0	80.0		200	
		225	6.32 {0.64}	112.5	90.0		225	
		250	5.69 {0.58}	125.0	100.0		250	

D	d	L	Spring constant N/mm{kgf/mm}	Solid height ℓ min	F=L×40% Fmm	F=L×40% Load N{kgf}	Catalog No. Type D—L	U/Price Q'ty : 1~19
31	21	40	49.00 {5.00}	20.0	16.0	784.0 {79.9}	SWS 31— 40	
		45	43.56 {4.44}	22.5	18.0		45	
		50	39.20 {4.00}	25.0	20.0		50	
		55	35.64 {3.63}	27.5	22.0		55	
		60	32.67 {3.33}	30.0	24.0		60	
		65	30.15 {3.07}	32.5	26.0		65	
		70	28.00 {2.86}	35.0	28.0		70	
		75	26.13 {2.66}	37.5	30.0		75	
		80	24.50 {2.50}	40.0	32.0		80	
		90	21.78 {2.22}	45.0	36.0		90	
		100	19.60 {2.00}	50.0	40.0		100	
		110	17.82 {1.82}	55.0	44.0		110	
		120	16.33 {1.67}	60.0	48.0		120	
		125	15.68 {1.60}	62.5	50.0		125	
		130	15.08 {1.54}	65.0	52.0		130	
		140	14.00 {1.43}	70.0	56.0		140	
		150	13.07 {1.33}	75.0	60.0		150	
		160	12.25 {1.25}	80.0	64.0		160	
		170	11.53 {1.18}	85.0	68.0		170	
		175	11.20 {1.14}	87.5	70.0		175	
		180	10.89 {1.11}	90.0	72.0		180	
		190	10.32 {1.05}	95.0	76.0		190	
		200	9.80 {1.00}	100.0	80.0		200	
		250	7.84 {0.80}	125.0	100.0		250	
		300	6.53 {0.67}	150.0	120.0		300	
37	26	40	52.13 {5.32}	20.0	16.0	834.0 {85.0}	SWS 37— 40	
		45	46.33 {4.72}	22.5	18.0		45	
		50	41.70 {4.25}	25.0	20.0		50	
		55	37.91 {3.87}	27.5	22.0		55	
		60	34.75 {3.54}	30.0	24.0		60	
		65	32.08 {3.27}	32.5	26.0		65	
		70	29.79 {3.04}	35.0	28.0		70	
		75	27.80 {2.83}	37.5	30.0		75	
		80	26.06 {2.66}	40.0	32.0		80	
		90	23.17 {2.36}	45.0	36.0		90	
		100	20.85 {2.13}	50.0	40.0		100	
		110	18.95 {1.93}	55.0	44.0		110	
		120	17.38 {1.77}	60.0	48.0		120	
		125	16.68 {1.70}	62.5	50.0		125	
		130	16.04 {1.64}	65.0	52.0		130	
		140	14.89 {1.52}	70.0	56.0		140	
		150	13.90 {1.42}	75.0	60.0		150	
		160	13.03 {1.33}	80.0	64.0		160	
		170	12.26 {1.25}	85.0	68.0		170	
		175	11.91 {1.21}	87.5	70.0		175	
		180	11.58 {1.18}	90.0	72.0		180	
		190	10.97 {1.12}	95.0	76.0		190	
		200	10.43 {1.06}	100.0	80.0		200	
		250	8.34 {0.85}	125.0	100.0		250	
		300	6.95 {0.71}	150.0	120.0		300	

D	d	L	Spring constant N/mm{kgf/mm}	Solid height ℓ min	F=L×40% Fmm	F=L×40% Load N{kgf}	Catalog No. Type D—L	U/Price Q'ty : 1~19
44.5	31	50	50.15 {5.11}	25.0	20.0	1003 {102}	SWS 44.5- 50	
		60	41.79 {4.26}	30.0	24.0		60	
		70	35.82 {3.65}	35.0	28.0		70	
		80	31.34 {3.20}	40.0	32.0		80	
		90	27.86 {2.84}	45.0	36.0		90	
		100	25.08 {2.56}	50.0	40.0		100	
		110	22.80 {2.32}	55.0	44.0		110	
		120	20.90 {2.13}	60.0	48.0		120	
		130	19.29 {1.97}	65.0	52.0		130	
		140	17.91 {1.83}	70.0	56.0		140	
		150	16.72 {1.70}	75.0	60.0		150	
		160	15.67 {1.60}	80.0	64.0		160	
		170	14.75 {1.50}	85.0	68.0		170	
		180	13.93 {1.42}	90.0	72.0		180	
		190	13.20 {1.35}	95.0	76.0		190	
		200	12.54 {1.28}	100.0	80.0		200	
		225	11.14 {1.14}	112.5	90.0		225	
		250	10.03 {1.02}	125.0	100.0		250	
		275	9.12 {0.93}	137.5	110.0		275	
		300	8.36 {0.85}	150.0	120.0		300	
46	33	50	63.74 {6.50}	25.0	20.0	1275 {130}	SWS 46— 50	Quotation
		60	53.12 {5.42}	30.0	24.0		60	
		70	45.53 {4.64}	35.0	28.0		70	
		80	39.84 {4.06}	40.0	32.0		80	
		90	35.41 {3.61}	45.0	36.0		90	
		100	31.87 {3.25}	50.0	40.0		100	
		110	28.97 {2.95}	55.0	44.0		110	
		120	26.56 {2.71}	60.0	48.0		120	
		125	25.50 {2.60}	62.5	50.0		125	
		130	24.52 {2.50}	65.0	52.0		130	
		140	22.77 {2.32}	70.0	56.0		140	
		150	21.25 {2.17}	75.0	60.0		150	
		175	18.21 {1.86}	87.5	70.0		175	
		200	15.94 {1.63}	100.0	80.0		200	
		225	14.17 {1.44}	112.5	90.0		225	
		250	12.75 {1.30}	125.0	100.0		250	
		275	11.59 {1.18}	137.5	110.0		275	
		300	10.62 {1.08}	150.0	120.0		300	
52	37	60	65.42 {6.67}	30.0	24.0	1570 {160}	SWS 52— 60	
		70	56.07 {5.72}	35.0	28.0		70	
		80	49.06 {5.00}	40.0	32.0		80	
		90	43.61 {4.45}	45.0	36.0		90	
		100	39.25 {4.00}	50.0	40.0		100	
		110	35.68 {3.64}	55.0	44.0		110	
		120	32.71 {3.34}	60.0	48.0		120	
		130	30.19 {3.08}	65.0	52.0		130	
		140	28.04 {2.86}	70.0	56.0		140	
		150	26.17 {2.67}	75.0	60.0		150	
		175	22.43 {2.29}	87.5	70.0		175	
		200	19.63 {2.00}	100.0	80.0		200	
		225	17.44 {1.78}	112.5	90.0		225	
		250	15.70 {1.60}	125.0	100.0		250	
		275	14.27 {1.46}	137.5	110.0		275	
		300	13.08 {1.33}	150.0	120.0		300	

M SWOSC —V

●Load calculation method ：N(load)＝N/mm (spring constant)×F(deflection)
(International units) N＝N/mm×Fmm
kgf＝kgf/mm×Fmm
(kgf＝N×0.101972)

The solid height values are reference only. There may be some variations depending on lots.

Operation frequency ：1 million times. (L×45% is 300,000 times.)

Product Outline P.163

Directions and precautions for coil springs P.165

Order　Catalog No.
SWS 21—100

Delivery
• Printed in Red　SGP Stock
• Printed in Black　3 Days

For area out of Singapore please refer to P.i.

Volume discount rate

Quantity	1~19	20~49	50~199	200~500
Rate	—	5%	10%	15%

Alterations　(NT) — Catalog No.
NT — SWS 31—70
7 Days　For area out of Singapore please refer to P.i.

Alteration	Code	Spec.	Price
No painting	NT	**Paint peeling** Peel the coating by shot peening. Since the springs which have undergone the painting peeling are easy to rust, be careful in handling. A rusty spring could cause early breakage. Compared to painted springs, there may be some variations, etc. depending on the lot.	Free of Change