



ELITE SPRINGS PTE LTD

PRODUCT CATALOGUE

Springs | Forming | Cutting



GREETINGS FROM ELITE SPRINGS

This catalogue describes Elite Springs complete service which is intended primarily for engineering design products that are involved in prototype and development work requiring close tolerance spring-type parts.

With more than 20 years of experience, be it designing, making and handling millions of spring parts over the years, this background gives us information about the many types of springs used in various industries, including their materials used, characteristics and usage rates. Hence, Elite Springs catalogue is produced.

Why Elite Springs

1) **Saves Time on Design work.**

You don't have to waste time designing a spring yourself, you only need to select the catalog number of the item you require.

2) **Saves Money.**

No tooling charge or setup cost.

3) **Consistency.**

What you purchase today will be of the same quality for your next order.

Elite Springs is able to handle your spring needs regardless of quantity. In addition, our spring design software allows us to offer design services to help you achieve the maximum lifespan for your springs. Elite Springs is not only a manufacturer but also a reliable business partner.



DISC SPRINGS

Precision Disc Springs, also known as Belleville Springs are conical springs. They are washers that are loaded along its axis statically or dynamically. They can be used in single or multiple pieces. They are also used together with bolts or nuts for various purposes where there is frequent motion.

They deform elastically to a shorter height when subject to load. The spring action is characterized by its elastic deformation. Disc spring washers are used in areas where there is high load with space constraints. These spring washers are preset to maintain constant spring tension under load over a period of time. Load flexibility can be achieved by stacking washers of various configurations. We can also produce special sizes upon request.

Material Used

Either high carbon steels CK75 or 50CRV4 are used

Manufacturing and Tolerance (load are for reference)

Items produced are manufactured according to DIN standards 2093.

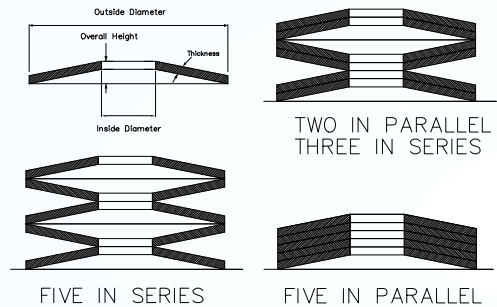
Group 1 : Thickness under 1.25mm (No machining)

Group 2 : Thickness from 1.25mm up to 6.00mm (De and Di machined)

Group 3 : Thickness from 6.00mm to 16.00mm
(Completed machining with contact flats and reduce thickness)

Finishing

Phosphated and oiled



DISC SPRING

Spring Steel (Phosphated)



Load is for reference only

Part No	OD	ID	THK	Free Height	Thickness Reduced	Free Height HO	Overall Height	Load at (s = 0.75 ho)
ESW 6 - 32 - 03	6.00	3.20	0.30	0.15	-	-	0.45	119.14
ESW 8 - 32 - 02	8.00	3.20	0.20	0.20	-	-	0.40	25.79
ESW 8 - 32 - 03	8.00	3.20	0.30	0.25	-	-	0.55	104.31
ESW 8 - 32 - 04	8.00	3.20	0.40	0.20	-	-	0.60	185.41
ESW 8 - 32 - 05	8.00	3.20	0.50	0.20	-	-	0.70	357.22
ESW 8 - 42 - 02	8.00	4.20	0.20	0.25	-	-	0.45	39.19
ESW 8 - 42 - 03	8.00	4.20	0.30	0.25	-	-	0.55	117.85
ESW 8 - 42 - 04	8.00	4.20	0.40	0.20	-	-	0.60	209.48
ESW 10 - 32 - 03	10.00	3.20	0.30	0.35	-	-	0.65	98.26
ESW 10 - 32 - 04	10.00	3.20	0.40	0.30	-	-	0.70	179.09
ESW 10 - 32 - 05	10.00	3.20	0.50	0.35	-	-	0.85	403.83
ESW 10 - 42 - 04	10.00	4.20	0.40	0.30	-	-	0.70	189.08
ESW 10 - 42 - 05	10.00	4.20	0.50	0.25	-	-	0.75	293.93
ESW 10 - 42 - 06	10.00	4.20	0.60	0.25	-	-	0.85	502.08
ESW 10 - 52 - 25	10.00	5.20	0.25	0.30	-	-	0.55	57.51
ESW 10 - 52 - 04	10.00	5.20	0.40	0.30	-	-	0.70	209.21
ESW 10 - 52 - 05	10.00	5.20	0.50	0.25	-	-	0.75	325.23
ESW 12 - 42 - 04	12.00	4.20	0.40	0.40	-	-	0.80	178.28
ESW 12 - 42 - 05	12.00	4.20	0.50	0.40	-	-	0.90	331.26
ESW 12 - 42 - 06	12.00	4.20	0.60	0.40	-	-	1.00	556.52
ESW 12 - 52 - 05	12.00	5.20	0.50	0.40	-	-	0.90	349.46
ESW 12 - 52 - 06	12.00	5.20	0.60	0.35	-	-	0.95	505.89
ESW 12 - 52 - 08	12.00	5.20	0.80	0.30	-	-	1.10	997.39
ESW 12 - 62 - 05	12.00	6.20	0.50	0.35	-	-	0.85	326.24
ESW 12 - 62 - 06	12.00	6.20	0.60	0.35	-	-	0.95	551.48
ESW 12 - 62 - 08	12.00	6.20	0.80	0.30	-	-	1.10	1087.29
ESW 13 - 52 - 05	12.50	5.20	0.50	0.35	-	-	0.85	272.04
ESW 13 - 62 - 35	12.50	6.20	0.35	0.45	-	-	0.80	151.20
ESW 13 - 62 - 05	12.50	6.20	0.50	0.35	-	-	0.85	293.33
ESW 13 - 62 - 07	12.50	6.20	0.70	0.30	-	-	1.00	659.24
ESW 13 - 62 - 10	12.50	6.20	1.00	0.20	-	-	1.20	1253.36
ESW 14 - 62 - 09	14.00	6.20	0.90	0.35	-	-	1.25	1229.18
ESW 14 - 72 - 35	14.00	7.20	0.35	0.45	-	-	0.80	123.18
ESW 14 - 72 - 05	14.00	7.20	0.50	0.40	-	-	0.90	279.06
ESW 14 - 72 - 08	14.00	7.20	0.80	0.30	-	-	1.10	796.46
ESW 15 - 52 - 04	15.00	5.20	0.40	0.55	-	-	0.95	175.51
ESW 15 - 52 - 05	15.00	5.20	0.50	0.50	-	-	1.00	278.15
ESW 15 - 52 - 06	15.00	5.20	0.60	0.45	-	-	1.05	407.00
ESW 15 - 52 - 07	15.00	5.20	0.70	0.55	-	-	1.25	796.15
ESW 15 - 62 - 05	15.00	6.20	0.50	0.50	-	-	1.00	289.28
ESW 15 - 62 - 06	15.00	6.20	0.60	0.45	-	-	1.05	423.29
ESW 15 - 62 - 07	15.00	6.20	0.70	0.40	-	-	1.10	577.23
ESW 15 - 82 - 07	15.00	8.20	0.70	0.40	-	-	1.10	665.31
ESW 15 - 82 - 08	15.00	8.20	0.80	0.40	-	-	1.20	981.82
ESW 16 - 82 - 04	16.00	8.20	0.40	0.50	-	-	0.90	154.32
ESW 16 - 82 - 06	16.00	8.20	0.60	0.45	-	-	1.05	409.87
ESW 16 - 82 - 07	16.00	8.20	0.70	0.45	-	-	1.15	636.91
ESW 16 - 82 - 08	16.00	8.20	0.80	0.40	-	-	1.20	824.84
ESW 16 - 82 - 09	16.00	8.20	0.90	0.35	-	-	1.25	1012.36
ESW 18 - 62 - 04	18.00	6.20	0.40	0.60	-	-	1.00	138.59
ESW 18 - 62 - 05	18.00	6.20	0.50	0.60	-	-	1.10	245.34

DISC SPRING

Spring Steel (Phosphated)



Part No	OD	ID	THK	Free Height	Thickness Reduced	Free Height HO	Overall Height	Load at (s = 0.75 ho)
ESW 18-62-06	18.00	6.20	0.60	0.60	-	-	1.20	400.15
ESW 18-62-07	18.00	6.20	0.70	0.70	-	-	1.40	741.33
ESW 18-62-08	18.00	6.20	0.80	0.70	-	-	1.50	1071.54
ESW 18-82-05	18.00	8.20	0.50	0.60	-	-	1.10	264.60
ESW 18-82-07	18.00	8.20	0.70	0.55	-	-	1.25	595.72
ESW 18-82-08	18.00	8.20	0.80	0.50	-	-	1.30	782.28
ESW 18-82-10	18.00	8.20	1.00	0.50	-	-	1.50	1496.26
ESW 18-92-45	18.00	9.20	0.45	0.60	-	-	1.05	213.60
ESW 18-92-07	18.00	9.20	0.70	0.50	-	-	1.20	566.15
ESW 18-92-10	18.00	9.20	1.00	0.40	-	-	1.40	1253.54
ESW 20-82-05	20.00	8.20	0.50	0.65	-	-	1.15	230.70
ESW 20-82-06	20.00	8.20	0.60	0.70	-	-	1.30	411.85
ESW 20-82-07	20.00	8.20	0.70	0.65	-	-	1.35	568.26
ESW 20-82-08	20.00	8.20	0.80	0.60	-	-	1.40	750.68
ESW 20-82-09	20.00	8.20	0.90	0.60	-	-	1.50	1050.71
ESW 20-82-10	20.00	8.20	1.00	0.60	-	-	1.60	1423.52
ESW 20-10-04	20.00	10.20	0.40	0.50	-	-	0.90	98.46
ESW 20-10-05	20.00	10.20	0.50	0.65	-	-	1.15	254.01
ESW 20-10-08	20.00	10.20	0.80	0.55	-	-	1.35	747.88
ESW 20-10-09	20.00	10.20	0.90	0.55	-	-	1.45	1049.48
ESW 20-10-10	20.00	10.20	1.00	0.55	-	-	1.55	1424.53
ESW 20-10-11	20.00	10.20	1.10	0.45	-	-	1.55	1520.03
ESW 20-10-13	20.00	10.20	1.25	0.50	-	-	1.75	2475.00
ESW 20-10-15	20.00	10.20	1.50	0.30	-	-	1.80	2519.72
ESW 22-11-06	22.50	11.20	0.60	0.80	-	-	1.40	425.28
ESW 22-11-08	22.50	11.20	0.80	0.65	-	-	1.45	707.13
ESW 22-11-13	22.50	11.20	1.25	0.50	-	-	1.75	1927.99
ESW 22-11-15	22.50	11.20	1.50	0.55	-	-	2.05	3650.44
ESW 23-82-07	23.00	8.20	0.70	0.80	-	-	1.50	543.35
ESW 23-82-08	23.00	8.20	0.80	0.75	-	-	1.55	718.22
ESW 23-82-09	23.00	8.20	0.90	0.80	-	-	1.70	1077.48
ESW 23-82-10	23.00	8.20	1.00	0.70	-	-	1.70	1239.29
ESW 23-10-09	23.00	10.20	0.90	0.75	-	-	1.65	1057.41
ESW 23-10-10	23.00	10.20	1.00	0.70	-	-	1.70	1314.78
ESW 23-12-13	23.00	12.20	1.25	0.60	-	-	1.85	2330.00
ESW 23-12-15	23.00	12.20	1.50	0.60	-	-	2.10	3983.49
ESW 25-10-10	25.00	10.20	1.00	0.75	-	-	1.75	1171.24
ESW 25-12-07	25.00	12.20	0.70	0.90	-	-	1.60	599.39
ESW 25-12-09	25.00	12.20	0.90	0.70	-	-	1.60	861.88
ESW 25-12-10	25.00	12.20	1.00	0.80	-	-	1.80	1357.93
ESW 25-12-13	25.00	12.20	1.25	0.70	-	-	1.95	2213.09
ESW 25-12-15	25.00	12.20	1.50	0.55	-	-	2.05	2924.56
ESW 28-10-08	28.00	10.20	0.80	0.95	-	-	1.75	661.20
ESW 28-10-10	28.00	10.20	1.00	1.00	-	-	2.00	1287.99
ESW 28-10-13	28.00	10.20	1.25	1.00	-	-	2.25	2393.23
ESW 28-10-15	28.00	10.20	1.50	0.70	-	-	2.20	2721.23
ESW 28-10-18	28.00	10.20	1.75	0.90	-	-	2.65	5595.06
ESW 28-12-10	28.00	12.20	1.00	0.95	-	-	1.95	1267.55
ESW 28-12-13	28.00	12.20	1.25	0.85	-	-	2.10	2081.58
ESW 28-12-15	28.00	12.20	1.50	0.75	-	-	2.25	3075.57
ESW 28-14-08	28.00	14.20	0.80	1.00	-	-	1.80	801.01



DISC SPRING

Spring Steel (Phosphated)



Part No	OD	ID	THK	Free Height	Thickness Reduced	Free Height HO	Overall Height	Load at (s = 0.75 ho)
ESW 28 - 14 - 10	28.00	14.20	1.00	0.80	-	-	1.80	1106.58
ESW 28 - 14 - 13	28.00	14.20	1.25	0.85	-	-	2.10	2238.44
ESW 28 - 14 - 15	28.00	14.20	1.50	0.65	-	-	2.15	2839.53
ESW 32 - 12 - 10	31.50	12.20	1.00	1.10	-	-	2.10	1166.40
ESW 32 - 12 - 13	31.50	12.20	1.25	0.95	-	-	2.20	1803.97
ESW 32 - 12 - 15	31.50	12.20	1.50	0.85	-	-	2.35	2686.59
ESW 32 - 16 - 08	31.50	16.30	0.80	1.05	-	-	1.85	686.54
ESW 32 - 16 - 13	31.50	16.30	1.25	0.90	-	-	2.15	1911.98
ESW 32 - 16 - 15	31.50	16.30	1.50	0.90	-	-	2.40	3228.26
ESW 32 - 16 - 18	31.50	16.30	1.75	0.70	-	-	2.45	3869.21
ESW 32 - 16 - 20	31.50	16.30	2.00	0.75	-	-	2.75	6169.88
ESW 34 - 12 - 10	34.00	12.30	1.00	1.20	-	-	2.20	1109.12
ESW 34 - 12 - 13	34.00	12.30	1.25	1.20	-	-	2.45	2023.00
ESW 34 - 12 - 15	34.00	12.30	1.50	1.20	-	-	2.70	3361.30
ESW 34 - 14 - 13	34.00	14.30	1.25	1.15	-	-	2.40	1992.34
ESW 34 - 14 - 15	34.00	14.30	1.50	1.05	-	-	2.55	2988.80
ESW 34 - 16 - 15	34.00	16.30	1.50	1.05	-	-	2.55	3153.58
ESW 34 - 16 - 18	34.00	16.30	1.75	0.90	-	-	2.65	4151.89
ESW 34 - 16 - 20	34.00	16.30	2.00	0.85	-	-	2.85	5779.60
ESW 36 - 18 - 09	35.50	18.30	0.90	1.15	-	-	2.05	831.56
ESW 36 - 18 - 13	35.50	18.30	1.25	1.00	-	-	2.25	1697.88
ESW 36 - 18 - 20	35.50	18.30	2.00	0.80	-	-	2.80	5184.27
ESW 40 - 14 - 13	40.00	14.30	1.25	1.40	-	-	2.65	1778.97
ESW 40 - 14 - 15	40.00	14.30	1.50	1.30	-	-	2.80	2666.79
ESW 40 - 14 - 20	40.00	14.30	2.00	1.05	-	-	3.05	4766.17
ESW 40 - 16 - 15	40.00	16.30	1.50	1.30	-	-	2.80	2748.00
ESW 40 - 16 - 18	40.00	16.30	1.75	1.35	-	-	3.10	4432.69
ESW 40 - 16 - 20	40.00	16.30	2.00	1.10	-	-	3.10	5165.89
ESW 40 - 18 - 20	40.00	18.30	2.00	1.15	-	-	3.15	5653.00
ESW 40 - 20 - 10	40.00	20.40	1.00	1.30	-	-	2.30	1016.02
ESW 40 - 20 - 15	40.00	20.40	1.50	1.15	-	-	2.65	2620.13
ESW 40 - 20 - 20	40.00	20.40	2.00	1.10	-	-	3.10	5698.12
ESW 40 - 20 - 23	40.00	20.40	2.25	0.90	-	-	3.15	6496.89
ESW 40 - 20 - 25	40.00	20.40	2.50	0.95	-	-	3.45	9384.80
ESW 45 - 22 - 13	45.00	22.40	1.25	1.60	-	-	2.85	1889.99
ESW 45 - 22 - 18	45.00	22.40	1.75	1.30	-	-	3.05	3644.16
ESW 45 - 22 - 22	45.00	22.40	2.20	1.15	-	-	3.35	6148.13
ESW 45 - 22 - 25	45.00	22.40	2.50	1.00	-	-	3.50	7711.94
ESW 50 - 18 - 15	50.00	18.40	1.50	1.65	-	-	3.15	2317.65
ESW 50 - 18 - 20	50.00	18.40	2.00	1.65	-	-	3.65	5111.53
ESW 50 - 18 - 25	50.00	18.40	2.50	1.65	-	-	4.15	9637.98
ESW 50 - 18 - 30	50.00	18.40	3.00	1.20	-	-	4.20	11623.96
ESW 50 - 20 - 20	50.00	20.40	2.00	1.50	-	-	3.50	4684.97
ESW 50 - 20 - 25	50.00	20.40	2.50	1.35	-	-	3.85	7914.88
ESW 50 - 22 - 20	50.00	22.40	2.00	1.60	-	-	3.60	5218.96
ESW 50 - 22 - 25	50.00	22.40	2.50	1.40	-	-	3.90	8505.60
ESW 50 - 25 - 13	50.00	25.40	1.25	1.60	-	-	2.85	1549.40
ESW 50 - 25 - 15	50.00	25.40	1.50	1.60	-	-	3.10	2510.61
ESW 50 - 25 - 20	50.00	25.40	2.00	1.40	-	-	3.40	4759.70
ESW 50 - 25 - 23	50.00	25.40	2.25	1.50	-	-	3.75	7213.06
ESW 50 - 25 - 25	50.00	25.40	2.50	1.40	-	-	3.90	9058.29

DISC SPRING

Spring Steel (Phosphated)



Part No	OD	ID	THK	Free Height	Thickness Reduced	Free Height HO	Overall Height	Load at (s = 0.75 ho)
ESW 50 - 25 - 30	50.00	25.40	3.00	1.10	-	-	4.10	11970.38
ESW 56 - 29 - 15	56.00	28.50	1.50	1.95	-	-	3.45	2620.89
ESW 56 - 29 - 20	56.00	28.50	2.00	1.60	-	-	3.60	4435.83
ESW 56 - 29 - 25	56.00	28.50	2.50	1.70	-	-	4.20	8973.00
ESW 56 - 29 - 30	56.00	28.50	3.00	1.30	-	-	4.30	11382.53
ESW 60 - 21 - 20	60.00	20.50	2.00	2.20	-	-	4.20	5023.64
ESW 60 - 21 - 25	60.00	20.50	2.50	2.20	-	-	4.70	9250.16
ESW 60 - 21 - 30	60.00	20.50	3.00	2.20	-	-	5.20	15457.10
ESW 60 - 26 - 25	60.00	25.50	2.50	1.90	-	-	4.40	8170.54
ESW 60 - 26 - 30	60.00	25.50	3.00	1.65	-	-	4.65	11777.57
ESW 60 - 31 - 25	60.00	30.50	2.50	2.00	-	-	4.50	9427.08
ESW 60 - 31 - 28	60.00	30.50	2.75	2.00	-	-	4.75	12349.47
ESW 60 - 31 - 30	60.00	30.50	3.00	1.70	-	-	4.70	13219.29
ESW 60 - 31 - 35	60.00	30.50	3.50	1.50	-	-	5.00	18143.38
ESW 63 - 31 - 18	63.00	31.00	1.80	2.35	-	-	4.15	4236.24
ESW 63 - 31 - 25	63.00	31.00	2.50	1.75	-	-	4.25	7185.34
ESW 63 - 31 - 30	63.00	31.00	3.00	1.70	-	-	4.70	11765.87
ESW 63 - 31 - 35	63.00	31.00	3.50	1.40	-	-	4.90	15017.79
ESW 70 - 31 - 25	70.00	30.50	2.50	2.40	-	-	4.90	8026.49
ESW 70 - 31 - 30	70.00	30.50	3.00	2.10	-	-	5.10	11420.65
ESW 70 - 36 - 30	70.00	35.50	3.00	2.10	-	-	5.10	12281.24
ESW 70 - 36 - 35	70.00	35.50	3.50	1.80	-	-	5.30	16169.01
ESW 70 - 36 - 40	70.00	35.50	4.00	1.80	-	-	5.80	23911.17
ESW 70 - 41 - 50	70.00	40.50	5.00	1.40	-	-	6.40	39390.43
ESW 71 - 36 - 20	71.00	36.00	2.00	2.60	-	-	4.60	5141.37
ESW 71 - 36 - 25	71.00	36.00	2.50	2.00	-	-	4.50	6721.86
ESW 71 - 36 - 40	71.00	36.00	4.00	1.60	-	-	5.60	20524.42
ESW 80 - 31 - 25	80.00	31.00	2.50	2.80	-	-	5.30	7235.23
ESW 80 - 31 - 30	80.00	31.00	3.00	2.50	-	-	5.50	10346.31
ESW 80 - 36 - 30	80.00	36.00	3.00	2.70	-	-	5.70	11912.75
ESW 80 - 41 - 23	80.00	41.00	2.25	2.95	-	-	5.20	6609.20
ESW 80 - 41 - 30	80.00	41.00	3.00	2.30	-	-	5.30	10512.52
ESW 80 - 41 - 40	80.00	41.00	4.00	2.20	-	-	6.20	22862.07
ESW 80 - 41 - 50	80.00	41.00	5.00	1.70	-	-	6.70	33542.04
ESW 90 - 46 - 25	90.00	46.00	2.50	3.20	-	-	5.70	7680.21
ESW 90 - 46 - 35	90.00	46.00	3.50	2.50	-	-	6.00	14153.65
ESW 90 - 46 - 50	90.00	46.00	5.00	2.00	-	-	7.00	31338.44
ESW 100 - 41 - 40	100.00	41.00	4.00	3.20	-	-	7.20	20240.86
ESW 100 - 41 - 50	100.00	41.00	5.00	2.75	-	-	7.75	32344.91
ESW 100 - 51 - 27	100.00	51.00	2.70	3.50	-	-	6.20	8604.45
ESW 100 - 51 - 35	100.00	51.00	3.50	2.80	-	-	6.30	13063.71
ESW 100 - 51 - 40	100.00	51.00	4.00	3.00	-	-	7.00	20663.23
ESW 100 - 51 - 50	100.00	51.00	5.00	2.80	-	-	7.80	36320.79
ESW 100 - 51 - 60	100.00	51.00	6.00	2.20	-	-	8.20	47997.31
ESW 100 - 51 - 70	100.00	51.00	7.00	2.20	6.55	2.65	9.20	75801.90
ESW 112 - 57 - 30	112.00	57.00	3.00	3.90	-	-	6.90	10483.58
ESW 112 - 57 - 40	112.00	57.00	4.00	3.20	-	-	7.20	17743.33
ESW 112 - 57 - 60	112.00	57.00	6.00	2.50	-	-	8.50	43684.80
ESW 125 - 41 - 40	125.00	41.00	4.00	4.20	-	-	8.20	17336.88
ESW 125 - 51 - 40	125.00	51.00	4.00	4.50	-	-	8.50	19807.09
ESW 125 - 51 - 50	125.00	51.00	5.00	3.90	-	-	8.90	30653.08



DISC SPRING

Spring Steel (Phosphated)



Part No	OD	ID	THK	Free Height	Thickness Reduced	Free Height HO	Overall Height	Load at (s = 0.75 ho)
ESW 125 - 61 - 50	125.00	61.00	5.00	4.00	-	-	9.00	33948.26
ESW 125 - 61 - 80	125.00	61.00	8.00	2.90	7.50	3.40	10.90	93529.68
ESW 125 - 64 - 35	125.00	64.00	3.50	4.50	-	-	8.00	15408.05
ESW 125 - 64 - 50	125.00	64.00	5.00	3.50	-	-	8.50	29892.85
ESW 125 - 64 - 70	125.00	64.00	7.00	3.00	6.55	3.45	10.00	67182.11
ESW 125 - 64 - 80	125.00	64.00	8.00	2.60	7.50	3.10	10.60	85882.04
ESW 125 - 71 - 80	125.00	71.00	8.00	2.90	7.45	3.45	10.90	103911.50
ESW 125 - 71 - 10	125.00	71.00	10.00	1.80	9.30	2.50	11.80	124060.78
ESW 140 - 72 - 38	140.00	72.00	3.80	4.90	-	-	8.70	17186.38
ESW 140 - 72 - 50	140.00	72.00	5.00	4.00	-	-	9.00	27906.00
ESW 140 - 72 - 80	140.00	72.00	8.00	3.20	7.50	3.70	11.20	85207.66
ESW 150 - 61 - 50	150.00	61.00	5.00	5.30	-	-	10.30	31025.36
ESW 150 - 61 - 70	150.00	61.00	7.00	4.80	6.55	5.25	11.80	70406.10
ESW 150 - 71 - 80	150.00	71.00	8.00	4.05	7.50	4.55	12.05	91014.28
ESW 150 - 81 - 80	150.00	81.00	8.00	4.00	7.50	4.50	12.00	97269.94
ESW 150 - 81 - 10	150.00	81.00	10.00	3.40	9.40	4.00	13.40	158219.63
ESW 160 - 82 - 43	160.00	82.00	4.30	5.60	-	-	9.90	21831.46
ESW 160 - 82 - 60	160.00	82.00	6.00	4.50	-	-	10.50	40987.14
ESW 160 - 82 - 10	160.00	82.00	10.00	3.50	9.40	4.10	13.50	138260.54
ESW 160 - 82 - 11	160.00	82.00	11.00	3.50	10.20	4.30	14.50	183424.94
ESW 180 - 92 - 48	180.00	92.00	4.80	6.20	-	-	11.00	26428.74
ESW 180 - 92 - 60	180.00	92.00	6.00	5.00	-	-	11.00	36602.92
ESW 180 - 92 - 10	180.00	92.00	10.00	4.00	9.40	4.60	14.00	125353.76
ESW 180 - 92 - 13	180.00	92.00	13.00	3.50	12.10	4.40	16.50	237762.14
ESW 200 - 82 - 80	200.00	82.00	8.00	6.20	7.50	6.70	14.20	77994.65
ESW 200 - 82 - 10	200.00	82.00	10.00	5.50	9.40	6.10	15.50	129379.62
ESW 200 - 82 - 12	200.00	82.00	12.00	4.60	11.25	5.35	16.60	182644.50
ESW 200 - 92 - 10	200.00	92.00	10.00	5.60	9.40	6.20	15.60	137617.82
ESW 200 - 92 - 12	200.00	92.00	12.00	4.80	11.25	5.55	16.80	199168.21
ESW 200 - 92 - 14	200.00	92.00	14.00	4.10	13.05	5.05	18.10	267091.70
ESW 200 - 102 - 80	200.00	102.00	8.00	5.60	7.50	6.10	13.60	76339.44
ESW 200 - 102 - 10	200.00	102.00	10.00	5.60	9.40	6.20	15.60	145283.15
ESW 200 - 102 - 12	200.00	102.00	12.00	4.20	11.25	4.95	16.20	182927.45
ESW 200 - 102 - 14	200.00	102.00	14.00	4.20	13.05	5.15	18.20	289034.62
ESW 200 - 112 - 12	200.00	112.00	12.00	4.20	11.25	4.95	16.20	195730.50
ESW 200 - 112 - 14	200.00	112.00	14.00	3.50	13.05	4.45	17.50	256628.03
ESW 200 - 112 - 16	200.00	112.00	16.00	3.80	14.80	5.00	19.80	415514.11
ESW 225 - 112 - 65	225.00	112.00	6.50	7.10	6.20	7.40	13.60	44557.36
ESW 225 - 112 - 80	225.00	112.00	8.00	6.50	7.50	7.00	14.50	70712.71
ESW 225 - 112 - 12	225.00	112.00	12.00	5.00	11.25	5.75	17.00	170929.73
ESW 225 - 112 - 16	225.00	112.00	16.00	4.50	14.90	5.60	20.50	359407.48
ESW 250 - 102 - 10	250.00	102.00	10.00	8.00	9.40	8.60	18.00	126323.23
ESW 250 - 102 - 12	250.00	102.00	12.00	7.00	11.25	7.75	19.00	182869.03
ESW 250 - 127 - 70	250.00	127.00	7.00	7.80	6.70	8.10	14.80	50440.30
ESW 250 - 127 - 80	250.00	127.00	8.00	8.00	7.50	8.50	16.00	74781.55
ESW 250 - 127 - 10	250.00	127.00	10.00	7.00	9.40	7.60	17.00	118992.62
ESW 250 - 127 - 12	250.00	127.00	12.00	7.30	11.30	8.00	19.30	210699.01
ESW 250 - 127 - 14	250.00	127.00	14.00	5.60	13.10	6.50	19.60	248701.69
ESW 250 - 127 - 16	250.00	127.00	16.00	5.80	14.90	6.90	21.80	382822.46

GLOSSARY OF SPRING TERMINOLOGY

Active Coils	Coils that deflect under load.
Angular Relationship of Ends	Position of hooks or loops of an extension spring (or ends of a torsion spring) to each other.
Baking	Heating of electroplated springs to relieve hydrogen embrittlement.
Close Wound	Adjacent coils which are in contact.
Closed and Ground Ends	Same as Closed Ends, except the first and last coils are ground to provide a flat bearing surface.
Closed Ends	Compression spring ends with coil pitch angle reduced so they are level with the spring axis and touch the adjacent coils.
Deflection	Motion imparted to a spring by application or removal of an external load.
Elastic Limit	Maximum stress to which a material may be subjected without permanent set.
Endurance Limit	Maximum stress, at a given stress ratio, at which material will operate in a given environment for a stated number of cycles without failure.
Fixture Tempering	Restraining parts during tempering to improve dimensional control.
Free Angle	Angular relationship between arms of a helical torsion spring which is not under load.
Free Length	Overall length of a spring which is not under load.
Heat Setting	A process to pre-relax a spring in order to improve stress relaxation resistance in service.
Helical Springs	Springs made of bar stock or wire coiled into a helical form. This category includes compression, extension and torsion springs.
Hooks	Open loops or ends of extension springs that are generally longer than a standard loops.
Hysteresis	Mechanical energy loss occurred during loading and unloading of a spring within the elastic range. It is illustrated by the area between load-deflection curves.
Initial Tension	The force that tends to keep coils of a close wound extension spring closed and which must be overcome before the coils start to open.
Loops	Circular formed ends, with ends of extension springs that provide a means for attachment.
Mean Diameter	The average diameter of the mass of spring material, equal to one-half the sum of the outside and inside diameters. In a helical spring, this is the equivalent to the outside diameter minus one wire diameter.
Modulus in Shear or Torsion	The coefficient of stiffness used for compression and extension springs.
Modulus in Tension or Bending	(Young's Modulus) The coefficient of stiffness used for torsion or flat springs.
Moment	A product of the distance from the spring axis to the point of load application, and the force component normal to the distance line.
Natural Frequency	The lowest inherent rate of free vibration of a spring vibrating between its own ends.
Passivation	An acid treatment for stainless steel which removes iron deposits and improves corrosion resistance.
Patenting	The process of heating carbon steel above its critical temperature and cooling at a controlled rate to achieve a fine paralytic microstructure.
Pitch	Distance from center to center of wire in adjacent coils in an open-wound spring.
Plain Ends	End coils of a helical spring having a constant pitch and ends not squared.
Plain Ends, Ground	Same as Plain Ends, except wire ends are ground square with the axis.
Preset	See Set Removal
Rate	The change in load per unit of deflection. Generally expressed as Lbs/in or N/mm
Residual Stress	Stress mechanically induced by such means as set removal, shot-peening, cold working, or forming. It may be beneficial or not, depending on the spring application.
Set Permanent	Change of length, height or position after a spring is stressed beyond material's elastic limit.
Set Point	Stress at which some arbitrarily chosen amount of set (usually 2%) occurs. Set percentage is the set divided by the deflection which produced it.
Set Removal	An operation which causes a permanent loss of length or height due to spring deflection.
Shot-Peening	Blasting the surfaces of spring material with steel or glass pellets to induce compressive stresses that improve fatigue life.
Slenderness Ratio	Ratio of spring length to mean diameter L/D in helical springs.
Solid Height	Length of a compression spring when deflected under sufficient load to bring all adjacent coils into contact - no additional deflection is possible.
Spiral Springs	Springs formed from flat strip or wire wound in the form of a spiral, loaded by torque about an axis normal to the plane of the spiral.
Spring Index	Ratio of mean diameter to wire diameter.
Squared and Ground Ends	See Closed and Ground Ends.
Squared Ends	See Closed Ends.
Squareness	Angular deviation, between the axis of a compression spring in a free state and a line normal to the end planes. Squareness Under Load same as Squareness but measured while there is a load applied to the spring.
Stress Range	Difference in operating stresses at minimum and maximum loads.
Stress Ratio	Minimum stress divided by maximum stress.
Stress Relief	A low temperature heat treatment given springs to relieve residual stresses produced by prior cold forming.
Torque	A twisting action in torsion springs which produces rotation. Equal to the load multiplied by the distance (or moment arm) from the load to the axis of the spring. Generally expressed as in-lbs or N-mm. also see Moment
Total Number of Coils	The sum of the number of active and inactive coils in a spring body.



FAQ

1) Do you provide standard stock springs?

From Elite Springs Catalogue customers are able to find standard specifications that are conveniently available for clients through our office or official company website. Elite Springs catalogue is ideal for engineers and toolmakers to source for cost effective designed products and prototyping new assemblies.

2) What are the advantages of having stainless springs passivated?

For stainless steel springs to provide proper corrosion resistance, a process of acid treatment for stainless steel which remove iron deposit is done.

3) Why are Stainless Steel springs magnetic after production?

Stainless steel material become magnetic after a production working process.

4) Does it make a difference on a torsion spring whether its left or right hand wound ?

Yes. To reduce the likelihood of torsion springs taking a set, the spring should be coiled in the direction that result in increased coil count as load is applied. In other words, the spring should be coiled such that it "winds up" when load is applied. If the spring "unwinds" as load is applied, it should probably be coiled in the opposite direction.

5) If I stack two springs, would the rate stay the same ?

Stacking springs definitely changes the spring rate. The effective spring rate of the stack will be less than the softest spring in the stack.

6) If I cut a spring in half, would the rate stay the same ?

Cutting springs generally decreases the number of active coils. Therefore, there is an increase in spring rate.

7) How long will a compression spring last ?

The effective life of a compression spring depends primarily on the time cyclic. In cyclic applications, springs are generally designed for maximum lifespan; however, application nuances such as resonant vibration could highly reduce spring life.

8) Can Disc Springs be Stacked?

Yes. Belleville Disc Springs can be stacked in either a series or in parallel to sustain greater loads and/or deflections than when using a single spring.

9) How far can I safely compress a compression spring?

Compression force depends on the design and material of the part. While normal compression springs can safely be compressed to their usual rate without damage, it is not recommended for parts with relatively few coils. Material is also a factor.

10) What is your minimum order quantity ?

MOQ or minimum order quantity affect pricing.



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