

CONSTANT FORCE SPRINGS

Guide to using tables

Width
is the width of material used to make a spring.

Lee Stock Number
ordering reference.

Life Cycles
is the number of times a spring can be loaded and unloaded between two points without permanently changing its properties.

Thickness
is the thickness of material used to make a spring.

Length
is the length of a spring fully unwound.

Inside Diameter
is the natural inside diameter of a spring before assembling with a drum.

Price Group
reference to price list.

Load
is the force applied to a spring that causes a deflection.

Drum Diameter
is the outside diameter of a drum/shaft over which a spring fits firmly.

Working Deflection
is the deflection to which a spring can be safely subjected to without permanently changing its properties.

Initial Deflection
is the minimum deflection of a spring needed to attain the specified load.

CONSTANT FORCE SPRINGS

● Stainless Steel 301

LEE STOCK NUMBER	LIFE CYCLES	THICKNESS (T)		WIDTH		LENGTH		INITIAL DEFLECTION (I)		WORKING DEFLECTION (W)		INSIDE DIAMETER (ID)		DRUM DIAMETER (DD)		LOAD (P)		PRICE GROUP	
		MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	N	LB		
2500																			
LCF 025 04 025S	2500	0.10	0.004	6.35	0.250	356.6	14	13.2	0.520	304.8	12	8.64	0.297	8.86	0.349	2.94	0.66	Y	
LCF 025 05 031S		0.13	0.005	7.92	0.312	381.0	15	16.5	0.650	330.3	12	9.91	0.359	11.07	0.436	3.65	1.03	Y	
LCF 025 06 038S		0.15	0.006	9.53	0.375	533.4	21	19.8	0.780	457.2	18	11.13	0.438	13.28	0.523	6.52	1.48	Y	
LCF 025 08 050S		0.15	0.006	12.70	0.500	533.4	21	19.8	0.780	457.2	18	11.13	0.438	13.28	0.523	6.52	1.48	Z	
LCF 025 10 063S		0.20	0.008	12.70	0.500	711.2	28	28.9	1.050	609.6	24	14.68	0.574	17.70	0.697	11.70	2.63	BC	
LCF 025 12 076S		0.25	0.010	12.70	0.625	736.6	29	33.3	1.310	609.6	24	18.64	0.734	22.17	0.873	18.33	4.12	BG	
LCF 025 12 076S		0.30	0.012	19.05	0.750	914.4	36	39.6	1.560	762.0	30	22.23	0.875	26.67	1.050	26.42	5.94	BH	
LCF 025 12 100S		0.30	0.012	25.40	1.000	914.4	36	39.6	1.560	762.0	30	22.23	0.875	26.67	1.050	35.23	7.92	BH	
LCF 025 15 100S		0.41	0.016	25.40	1.000	965.2	38	53.3	2.100	762.0	30	29.51	1.156	35.56	1.400	47.15	10.60	BW	
LCF 025 15 125S		0.51	0.020	31.75	1.250	1193.8	47	66.0	2.600	914.4	36	37.31	1.469	44.45	1.700	73.40	16.50	CD	
4000																			
LCF 040 04 025S	4000	0.10	0.004	6.35	0.250	381.0	15	15.5	0.610	304.8	12	8.64	0.360	10.16	0.400	2.22	0.50	Z	
LCF 040 05 031S		0.13	0.005	7.92	0.312	431.8	17	19.1	0.750	304.8	12	9.40	0.373	12.70	0.500	3.58	1.03	Z	
LCF 040 06 038S		0.15	0.006	9.53	0.375	609.6	24	23.9	0.940	457.2	18	11.43	0.450	15.75	0.620	5.17	1.48	Z	
LCF 040 08 050S		0.15	0.006	12.70	0.500	635.0	25	24.6	0.970	457.2	18	11.43	0.450	15.75	0.620	6.76	1.97	BA	
LCF 040 10 063S		0.20	0.008	12.70	0.500	762.0	30	31.5	1.240	609.6	24	14.99	0.590	20.31	0.820	11.70	2.63	BC	
LCF 040 10 063S		0.25	0.010	15.88	0.625	838.2	33	37.8	1.490	609.6	24	18.54	0.730	26.15	0.950	18.33	4.12	BG	
LCF 040 12 076S		0.30	0.012	19.05	0.750	990.6	39	45.5	1.790	762.0	30	22.35	0.880	30.23	1.00	26.42	5.94	BG	
LCF 040 12 100S		0.30	0.012	25.40	1.000	990.6	39	45.7	1.800	762.0	30	22.35	0.880	30.48	1.250	35.23	7.92	Z	
LCF 040 15 100S		0.41	0.016	25.40	1.000	1016.0	40	57.9	2.280	762.0	30	30.48	1.200	38.61	1.520	47.15	10.60	BR	
LCF 040 15 125S		0.51	0.020	31.75	1.250	1270.0	50	71.9	2.830	914.4	36	37.34	1.470	48.01	1.890	40.15	16.50	BY	
13000																			
LCF 130 04 025S	13000	0.10	0.004	6.35	0.250	381.0	15	20.3	0.800	304.8	12	11.13	0.438	13.54	0.533	3.00	0.32	Z	
LCF 130 05 031S		0.13	0.005	7.92	0.312	406.4	16	25.4	1.000	304.8	12	14.30	0.563	16.89	0.665	2.18	0.49	Z	
LCF 130 06 038S		0.15	0.006	9.53	0.375	584.2	23	30.5	1.200	457.2	18	17.07	0.672	20.27	0.798	3.16	0.71	BA	
LCF 130 06 050S		0.15	0.006	12.70	0.500	584.2	23	30.5	1.200	457.2	18	17.07	0.672	20.27	0.798	4.23	0.93	BA	
LCF 130 08 050S		0.20	0.008	12.70	0.500	762.0	30	40.4	1.590	609.6	24	22.23	0.875	26.92	1.060	5.60	1.28	BG	
LCF 130 10 063S		0.25	0.010	15.88	0.625	812.8	32	50.8	2.000	609.6	24	28.17	1.109	33.78	1.330	8.81	1.98	BM	
LCF 130 12 076S		0.30	0.012	19.05	0.750	1016.0	40	60.5	2.380	762.0	30	34.14	1.344	40.39	1.590	12.63	2.84	BO	
LCF 130 12 100S		0.30	0.012	25.40	1.000	1016.0	40	60.5	2.380	762.0	30	34.14	1.344	40.39	1.590	16.86	3.79	BO	
LCF 130 15 100S		0.38	0.015	25.40	1.000	1066.8	42	75.7	2.980	762.0	30	42.47	1.672	50.55	1.990	21.08	4.74	BW	
LCF 130 20 125S		0.51	0.020	31.75	1.250	1320.8	52	100.8	3.970	914.4	36	56.36	2.219	67.31	2.650	40.12	9.48	CE	
25000																			
LCF 250 04 025S	25000	0.10	0.004	6.35	0.250	558.8	22	22.4	0.880	457.2	18	13.46	0.530	14.99	0.590	4.02	0.23	Z	
LCF 250 05 038S		0.13	0.005	9.53	0.375	736.6	29	27.7	1.050	609.6	24	16.51	0.650	18.54	0.730	1.91	0.43	BA	
LCF 250 06 038S		0.15	0.006	9.53	0.375	762.0	30	33.0	1.300	609.6	24	19.56	0.770	21.94	0.860	2.31	0.52	BA	
LCF 250 06 050S		0.15	0.006	12.70	0.500	762.0	30	34.5	1.360	609.6	24	20.32	0.800	22.96	0.900	3.11	0.70	BB	
LCF 250 08 050S		0.20	0.008	12.70	0.500	965.2	38	45.7	1.800	762.0	30	27.18	1.070	30.48	1.200	4.14	0.93	BG	
LCF 250 10 063S		0.25	0.010	15.88	0.625	1016.0	40	57.9	2.280	762.0	30	34.54	1.360	38.61	1.520	6.49	1.46	BG	
LCF 250 12 076S		0.30	0.012	19.05	0.750	1219.2	48	68.3	2.690	914.4	36	40.64	1.600	45.47	1.790	9.30	2.09	BM	
LCF 250 12 100S		0.30	0.012	25.40	1.000	1219.2	48	68.3	2.690	914.4	36	40.64	1.600	45.47	1.790	12.46	2.80	BO	
LCF 250 15 100S		0.38	0.015	25.40	1.000	1422.4	56	83.8	3.300	1066.8	42	49.78	1.960	55.88	2.200	15.57	3.50	BW	
LCF 250 20 125S		0.51	0.020	31.75	1.250	1524.0	60	108.0	4.250	1066.8	42	64.26	2.530	71.88	2.830	25.93	5.83	CE	

ADDITIONAL INFORMATION

Manufactured from high yield 301 stainless steel strip our constant force springs exert a near constant restraining force to resist uncoiling. This natural inbuilt stress resists load at an even rate and so makes the springs suitable for use in retractor mechanisms. Common applications include counterbalance springs, car seat belt and cable retractors.

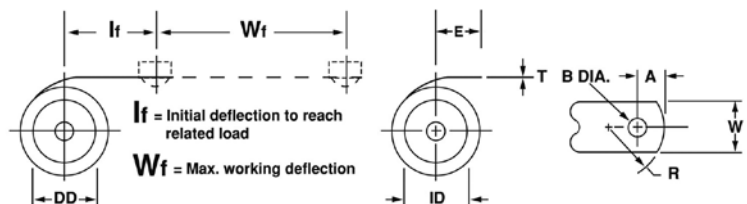
Four life cycle ranges are offered: 2,500, 4,000, 13,000 and 25,000 covering loads from 1.02 to 73.42N (0.23 to 16.50lb).

Mounting

Constant force springs are generally tightly coiled on a drum with either the free end or the drum attached to the load. This relationship can also be reversed.

Important points to note:

- 1 The drum diameter should be 10 to 20% larger than the inside diameter of the spring.
- 2 A minimum of one and one-half coils should remain on the drum at maximum extension.
- 3 The strip from which these springs are manufactured becomes unstable at long extensions and so should be guided to prevent twisting or kinking on recoil.
- 4 Idler pulleys must be larger in diameter than the natural diameter and should never be used to cause back-bending against the natural radius of curvature.



CONSTANT FORCE SPRINGS



● Stainless Steel 301

LEE STOCK NUMBER	LIFE CYCLES	THICKNESS (T)		WIDTH (W)		LENGTH		INITIAL DEFLECTION (If)		WORKING DEFLECTION (Wf)		INSIDE DIAMETER (ID)		DRUM DIAMETER (DD)		LOAD (P) +/- 20%		PRICE GROUP
		MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	N	LB	
LCF 025 04 025S	2500	0.10	0.004	6.35	0.250	355.6	14	13.2	0.520	304.8	12	7.54	0.297	8.86	0.349	2.94	0.66	Y
LCF 025 05 031S		0.13	0.005	7.92	0.312	381.0	15	16.5	0.650	304.8	12	9.12	0.359	11.07	0.436	4.58	1.03	Y
LCF 025 06 038S		0.15	0.006	9.53	0.375	533.4	21	19.8	0.780	457.2	18	11.13	0.438	13.28	0.523	6.58	1.48	Y
LCF 025 06 050S		0.15	0.006	12.70	0.500	533.4	21	19.8	0.780	457.2	18	11.13	0.438	13.28	0.523	8.76	1.97	Z
LCF 025 08 050S		0.20	0.008	12.70	0.500	711.2	28	26.9	1.060	609.6	24	14.68	0.578	17.70	0.697	11.70	2.63	BC
LCF 025 10 063S		0.25	0.010	15.88	0.625	736.6	29	33.3	1.310	609.6	24	18.64	0.734	22.17	0.873	18.33	4.12	BG
LCF 025 12 075S		0.30	0.012	19.05	0.750	914.4	36	39.6	1.560	762.0	30	22.23	0.875	26.67	1.050	26.42	5.94	BG
LCF 025 12 100S		0.30	0.012	25.40	1.000	914.4	36	39.6	1.560	762.0	30	22.23	0.875	26.67	1.050	35.23	7.92	BH
LCF 025 16 100S		0.41	0.016	25.40	1.000	965.2	38	53.3	2.100	762.0	30	29.36	1.156	35.56	1.400	47.15	10.60	BW
LCF 025 20 125S	0.51	0.020	31.75	1.250	1193.8	47	66.0	2.600	914.4	36	37.31	1.469	44.45	1.750	73.40	16.50	CD	
LCF 040 04 025S	4000	0.10	0.004	6.35	0.250	381.0	15	15.5	0.610	304.8	12	8.64	0.340	10.16	0.400	2.22	0.50	Z
LCF 040 05 031S		0.13	0.005	7.92	0.312	431.8	17	19.1	0.750	304.8	12	9.40	0.370	12.70	0.500	4.58	1.03	Z
LCF 040 06 038S		0.15	0.006	9.53	0.375	609.6	24	23.9	0.940	457.2	18	11.43	0.450	15.75	0.620	6.58	1.48	Z
LCF 040 06 050S		0.15	0.006	12.70	0.500	635.0	25	24.6	0.970	457.2	18	11.43	0.450	16.51	0.650	8.76	1.97	BA
LCF 040 08 050S		0.20	0.008	12.70	0.500	762.0	30	31.5	1.240	609.6	24	14.99	0.590	20.83	0.820	11.70	2.63	BC
LCF 040 10 063S		0.25	0.010	15.88	0.625	838.2	33	37.8	1.490	609.6	24	18.54	0.730	25.15	0.990	18.33	4.12	BG
LCF 040 12 075S		0.30	0.012	19.05	0.750	990.6	39	45.5	1.790	762.0	30	22.35	0.880	30.23	1.190	26.42	5.94	BG
LCF 040 12 100S		0.30	0.012	25.40	1.000	990.6	39	45.7	1.800	762.0	30	22.35	0.880	30.48	1.200	35.23	7.92	BJ
LCF 040 16 100S		0.41	0.016	25.40	1.000	1016.0	40	57.9	2.280	762.0	30	30.48	1.200	38.61	1.520	47.15	10.60	BR
LCF 040 20 125S	0.51	0.020	31.75	1.250	1270.0	50	71.9	2.830	914.4	36	37.34	1.470	48.01	1.890	73.40	16.50	BY	
LCF 130 04 025S	13000	0.10	0.004	6.35	0.250	381.0	15	20.3	0.800	304.8	12	11.13	0.438	13.54	0.533	1.42	0.32	Z
LCF 130 05 031S		0.13	0.005	7.92	0.312	406.4	16	25.4	1.000	304.8	12	14.30	0.563	16.89	0.665	2.18	0.49	Z
LCF 130 06 038S		0.15	0.006	9.53	0.375	584.2	23	30.5	1.200	457.2	18	17.07	0.672	20.27	0.798	3.16	0.71	BA
LCF 130 06 050S		0.15	0.006	12.70	0.500	584.2	23	30.5	1.200	457.2	18	17.07	0.672	20.27	0.798	4.23	0.95	BA
LCF 130 08 050S		0.20	0.008	12.70	0.500	762.0	30	40.4	1.590	609.6	24	22.23	0.875	26.92	1.060	5.60	1.26	BG
LCF 130 10 063S		0.25	0.010	15.88	0.625	812.8	32	50.8	2.000	609.6	24	28.17	1.109	33.78	1.330	8.81	1.98	BM
LCF 130 12 075S		0.30	0.012	19.05	0.750	1016.0	40	60.5	2.380	762.0	30	34.14	1.344	40.39	1.590	12.63	2.84	BQ
LCF 130 12 100S		0.30	0.012	25.40	1.000	1016.0	40	60.5	2.380	762.0	30	34.14	1.344	40.39	1.590	16.86	3.79	BQ
LCF 130 15 100S		0.38	0.015	25.40	1.000	1066.8	42	75.7	2.980	762.0	30	42.47	1.672	50.55	1.990	21.08	4.74	BW
LCF 130 20 125S	0.51	0.020	31.75	1.250	1320.8	52	100.8	3.970	914.4	36	56.36	2.219	67.31	2.650	42.17	9.48	CE	
LCF 250 04 025S	25000	0.10	0.004	6.35	0.250	558.8	22	22.4	0.880	457.2	18	13.46	0.530	14.99	0.590	1.02	0.23	Z
LCF 250 05 038S		0.13	0.005	9.53	0.375	736.6	29	27.7	1.090	609.6	24	16.51	0.650	18.54	0.730	1.91	0.43	BA
LCF 250 06 038S		0.15	0.006	9.53	0.375	762.0	30	33.0	1.300	609.6	24	19.56	0.770	21.84	0.860	2.31	0.52	BA
LCF 250 06 050S		0.15	0.006	12.70	0.500	762.0	30	34.5	1.360	609.6	24	20.32	0.800	22.86	0.900	3.11	0.70	BB
LCF 250 08 050S		0.20	0.008	12.70	0.500	965.2	38	45.7	1.800	762.0	30	27.18	1.070	30.48	1.200	4.14	0.93	BG
LCF 250 10 063S		0.25	0.010	15.88	0.625	1016.0	40	57.9	2.280	762.0	30	34.54	1.360	38.61	1.520	6.49	1.46	BG
LCF 250 12 075S		0.30	0.012	19.05	0.750	1219.2	48	68.3	2.690	914.4	36	40.64	1.600	45.47	1.790	9.30	2.09	BM
LCF 250 12 100S		0.30	0.012	25.40	1.000	1219.2	48	68.3	2.690	914.4	36	40.64	1.600	45.47	1.790	12.46	2.80	BQ
LCF 250 15 100S		0.38	0.015	25.40	1.000	1422.4	56	83.8	3.300	1066.8	42	49.78	1.960	55.88	2.200	15.57	3.50	BW
LCF 250 20 125S		0.51	0.020	31.75	1.250	1524.0	60	108.0	4.250	1066.8	42	64.26	2.530	71.88	2.830	25.93	5.83	CE

BATTERY SPRINGS

Guide to using tables

OD Base
outside diameter at the base of the spring.

Wire Diameter
in ascending order of size.

Lee Stock Number
ordering reference.

Battery Size
size of battery the springs have been designed to work with.

ID Top
inside diameter at the top of the spring.

ID Eyelet
inside diameter of the eyelet inside the base of the spring.

Free Length
length of the spring in the unloaded position.

Price Group
reference to the price list.

Centre to Centre/End Length
distance between points as shown in graphical images below.

Installed Height
the length to which the spring will be compressed when assembled.

Approximate Load
the load or force required to reach the installed height.

LEE STOCK NUMBER	BATTERY SIZE	WIRE DIAMETER		OD BASE		ID TOP		FREE LENGTH		ID EYELET		APPROX LOAD		INSTALLED HEIGHT		CENTRE TO CENTRE LENGTH		PRICE GROUP	
		MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	N	LB	MM	IN	MM	IN		
Interior Mount Battery Springs																			
MUSIC WIRE - NICKEL COATED																			
LB 024A 01 AA	AA	0.61	0.024	9.91	0.390	5.59	0.220	11.18	0.440	2.79	0.110	7.78	1.75	3.61	0.142	NA	NA	P	
LB 024A 01 AAA	AAA	0.61	0.024	9.14	0.360	4.06	0.160	9.02	0.355	2.79	0.110	6.67	1.50	4.95	0.195	NA	NA	P	
LB 032A 01 C	C	0.81	0.032	13.72	0.540	8.38	0.330	13.21	0.520	4.45	0.175	4.45	1.00	8.64	0.340	NA	NA	P	
LB 038A 01 D	D	0.91	0.036	16.76	0.660	9.14	0.360	18.29	0.720	4.45	0.175	13.34	3.00	4.45	0.175	NA	NA	P	
BERYLLIUM COPPER - SILVER COATED																			
LBC 028A 01 AA	AA	0.71	0.028	9.91	0.390	5.59	0.220	11.18	0.440	2.79	0.110	7.78	1.75	3.61	0.142	NA	NA	S	
LBC 028A 01 AAA	AAA	0.71	0.028	9.14	0.360	4.06	0.160	9.02	0.355	2.79	0.110	6.67	1.50	4.95	0.195	NA	NA	S	
LBC 032A 01 C	C	0.97	0.038	13.72	0.540	8.38	0.330	13.21	0.520	4.45	0.175	4.45	1.00	8.64	0.340	NA	NA	U	
LBC 038A 01 D	D	1.02	0.040	16.76	0.660	9.14	0.360	18.29	0.720	4.45	0.175	13.34	3.00	4.45	0.175	NA	NA	X	
Exterior Mount Battery Springs																			
MUSIC WIRE - NICKEL COATED																			
LB 024B 01 AA	AA	0.61	0.024	9.91	0.390	5.59	0.220	11.18	0.440	2.79	0.110	7.78	1.75	3.61	0.142	13.84	0.545	P	
LB 024B 01 AAA	AAA	0.61	0.024	9.14	0.360	4.06	0.160	9.02	0.355	2.79	0.110	6.67	1.50	4.95	0.195	12.14	0.478	P	
LB 032B 01 C	C	0.81	0.032	13.72	0.540	8.38	0.330	13.21	0.520	4.45	0.175	4.45	1.00	8.64	0.340	24.99	0.984	P	
LB 038B 01 D	D	0.91	0.036	16.76	0.660	9.14	0.360	18.29	0.720	4.45	0.175	13.34	3.00	4.45	0.175	12.18	0.478	P	

ADDITIONAL INFORMATION

- Four mounting configurations are offered – interior, exterior, adjustable and double - all of which have been developed to work with the four most popular battery sizes: AA, AAA, C and D. Custom designs are also possible.
- Battery springs are produced in nickel coated music wire for several reasons. Most alkaline batteries use nickel plated containers and so nickel coatings on contact surfaces are generally preferred. The use of similar materials also removes the possibility of galvanic corrosion and enhances resistance to wear. Additionally, nickel helps to break down the oxide that can form on battery contact surfaces, it offers excellent corrosion resistance and is an excellent conductor of electricity.
- We can now offer our battery springs in silver coated beryllium copper. Beryllium copper is among the hardest, strongest, and most wear-resistant of copper alloys. Silver coating further enhances electrical and thermal conductivity. Electric conductivity is 65 to 70% that of copper while strength and fatigue resistance are comparable with higher beryllium alloys. The light silver-plating also facilitates easy soldering. Beryllium copper is corrosion resistance in many environments, and is both non-magnetic and non-sparking.

Interior Mount Battery Springs

Adaptable Mount Battery Springs

Exterior Mount Battery Springs

Double Mount Battery Springs

BATTERY SPRINGS

● Interior Mount Battery Springs

LEE STOCK NUMBER	BATTERY SIZE	WIRE DIAMETER		OD BASE		ID TOP		FREE LENGTH		ID EYELET		APPROX LOAD		INSTALLED HEIGHT		CENTRE TO CENTRE LENGTH		PRICE GROUP
		MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	N	LB	MM	IN	MM	IN	
MUSIC WIRE – NICKEL COATED																		
LB 024A 01 AA	AA	0.61	0.024	9.91	0.390	5.59	0.220	11.18	0.440	2.79	0.110	7.78	1.75	3.61	0.142	N/A	N/A	P
LB 024A 01 AAA	AAA	0.61	0.024	9.14	0.360	4.06	0.160	9.02	0.355	2.79	0.110	6.67	1.50	4.95	0.195	N/A	N/A	P
LB 032A 01 C	C	0.81	0.032	13.72	0.540	8.38	0.330	13.21	0.520	4.45	0.175	4.45	1.00	8.64	0.340	N/A	N/A	P
LB 036A 01 D	D	0.91	0.036	16.76	0.660	9.14	0.360	18.29	0.720	4.45	0.175	13.34	3.00	4.45	0.175	N/A	N/A	P
BERYLLIUM COPPER – SILVER COATED																		
LBC 028A 01 AA	AA	0.71	0.028	9.91	0.390	5.59	0.220	11.18	0.440	2.79	0.110	7.78	1.75	3.61	0.142	N/A	N/A	S
LBC 028A 01 AAA	AAA	0.71	0.028	9.14	0.360	4.06	0.160	9.02	0.355	2.79	0.110	6.67	1.50	4.95	0.195	N/A	N/A	S
LBC 038A 01 C	C	0.97	0.038	13.72	0.540	8.38	0.330	13.21	0.520	4.45	0.175	4.45	1.00	8.64	0.340	N/A	N/A	U
LBC 040A 01 D	D	1.02	0.040	16.76	0.660	9.14	0.360	18.29	0.720	4.45	0.175	13.34	3.00	4.45	0.175	N/A	N/A	X

● Exterior Mount Battery Springs

LEE STOCK NUMBER	BATTERY SIZE	WIRE DIAMETER		OD BASE		ID TOP		FREE LENGTH		ID EYELET		APPROX LOAD		INSTALLED HEIGHT		CENTRE TO CENTRE LENGTH		PRICE GROUP
		MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	N	LB	MM	IN	MM	IN	
MUSIC WIRE – NICKEL COATED																		
LB 024B 01 AA	AA	0.61	0.024	9.91	0.390	5.59	0.220	11.18	0.440	2.79	0.110	7.78	1.75	3.61	0.142	13.84	0.545	P
LB 024B 01 AAA	AAA	0.61	0.024	9.14	0.360	4.06	0.160	9.02	0.355	2.79	0.110	6.67	1.50	4.95	0.195	12.14	0.478	P
LB 032B 01 C	C	0.81	0.032	13.72	0.540	8.38	0.330	13.21	0.520	4.45	0.175	4.45	1.00	8.64	0.340	24.99	0.984	P
LB 036B 01 D	D	0.91	0.036	16.76	0.660	9.14	0.360	18.29	0.720	4.45	0.175	13.34	3.00	4.45	0.175	30.94	1.218	P
BERYLLIUM COPPER – SILVER COATED																		
LBC 028B 01 AA	AA	0.71	0.028	9.91	0.390	5.59	0.220	11.18	0.440	2.79	0.110	7.78	1.75	3.61	0.142	13.84	0.545	S
LBC 028B 01 AAA	AAA	0.71	0.028	9.14	0.360	4.06	0.160	9.02	0.355	2.79	0.110	6.67	1.50	4.95	0.195	12.14	0.478	S
LBC 038B 01 C	C	0.97	0.038	13.72	0.540	8.38	0.330	13.21	0.520	4.45	0.175	4.45	1.00	8.64	0.340	24.99	0.984	U
LBC 040B 01 D	D	1.02	0.040	16.76	0.660	9.14	0.360	18.29	0.720	4.45	0.175	13.34	3.00	4.45	0.175	30.94	1.218	X

● Adaptable Mount Battery Springs

LEE STOCK NUMBER	BATTERY SIZE	WIRE DIAMETER		OD BASE		ID TOP		FREE LENGTH		ID EYELET		APPROX LOAD		INSTALLED HEIGHT		CENTRE TO END LENGTH		PRICE GROUP
		MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	N	LB	MM	IN	MM	IN	
MUSIC WIRE – NICKEL COATED																		
LB 024C 01 AA	AA	0.61	0.024	9.91	0.390	5.59	0.220	11.18	0.440	N/A	N/A	7.78	1.75	3.61	0.142	76.20	3.000	N
LB 024C 01 AAA	AAA	0.61	0.024	9.14	0.360	4.06	0.160	9.02	0.355	N/A	N/A	6.67	1.50	4.95	0.195	76.20	3.000	N
LB 032C 01 C	C	0.81	0.032	13.72	0.540	8.38	0.330	13.21	0.520	N/A	N/A	4.45	1.00	8.64	0.340	76.20	3.000	N
LB 036C 01 D	D	0.91	0.036	16.76	0.660	9.14	0.360	18.29	0.720	N/A	N/A	13.34	3.00	4.45	0.175	76.20	3.000	N
BERYLLIUM COPPER – SILVER COATED																		
LBC 028C 01 AA	AA	0.71	0.028	9.91	0.390	5.59	0.220	11.18	0.440	N/A	N/A	7.78	1.75	3.61	0.142	76.20	3.000	R
LBC 028C 01 AAA	AAA	0.71	0.028	9.14	0.360	4.06	0.160	9.02	0.355	N/A	N/A	6.67	1.50	4.95	0.195	76.20	3.000	R
LBC 038C 01 C	C	0.97	0.038	13.72	0.540	8.38	0.330	13.21	0.520	N/A	N/A	4.45	1.00	8.64	0.340	76.20	3.000	U
LBC 040C 01 D	D	1.02	0.040	16.76	0.660	9.14	0.360	18.29	0.720	N/A	N/A	13.34	3.00	4.45	0.175	76.20	3.000	Z

● Double Mount Battery Springs

LEE STOCK NUMBER	BATTERY SIZE	WIRE DIAMETER		OD BASE		ID TOP		FREE LENGTH		ID EYELET		APPROX LOAD		INSTALLED HEIGHT		CENTRE TO CENTRE LENGTH		PRICE GROUP
		MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	N	LB	MM	IN	MM	IN	
MUSIC WIRE – NICKEL COATED																		
LB 024D 01 AA	AA	0.61	0.024	9.91	0.390	5.59	0.220	11.18	0.440	N/A	N/A	7.78	1.75	3.61	0.142	15.75	0.620	T
LB 024D 01 AAA	AAA	0.61	0.024	9.14	0.360	4.06	0.160	9.02	0.355	N/A	N/A	6.67	1.50	4.95	0.195	11.84	0.466	T
LB 032D 01 C	C	0.81	0.032	13.72	0.540	8.38	0.330	13.21	0.520	N/A	N/A	4.45	1.00	8.64	0.340	27.18	1.070	T
LB 036D 01 D	D	0.91	0.036	16.76	0.660	9.14	0.360	18.29	0.720	N/A	N/A	13.34	3.00	4.45	0.175	34.04	1.340	T
BERYLLIUM COPPER – SILVER COATED																		
LBC 028D 01 AA	AA	0.71	0.028	9.91	0.390	5.59	0.220	11.18	0.440	N/A	N/A	7.78	1.75	3.61	0.142	15.75	0.620	V
LBC 028D 01 AAA	AAA	0.71	0.028	9.14	0.360	4.06	0.160	9.02	0.355	N/A	N/A	6.67	1.50	4.95	0.195	11.84	0.466	Y
LBC 038D 01 C	C	0.97	0.038	13.72	0.540	8.38	0.330	13.21	0.520	N/A	N/A	4.45	1.00	8.64	0.340	27.18	1.070	BB
LBC 040D 01 D	D	1.02	0.040	16.76	0.660	9.14	0.360	18.29	0.720	N/A	N/A	13.34	3.00	4.45	0.175	34.04	1.340	BE

CONTINUOUS LENGTH EXTENSION SPRINGS

Guide to using tables

Free Length
overall length of the spring.

Initial Tension
the force that keeps the coils of an extension spring closed and which must be overcome before the coils start to open.

Lee Stock Number
Please add suffix **M** for Music Wire or **S** for 302 Stainless Steel when ordering.

Number of Coils
coils in each unit length.

Outside Diameter
arranged through the pages in ascending order of size.

Wire Diameter
in ascending order of size, within each group of outside diameters.

Price Group
reference to the price list.

Stiffness
factor used to calculate spring rate based on the final cut length.

LEE STOCK NUMBER	OUTSIDE DIAMETER		WIRE DIAMETER		FREE LENGTH		INITIAL TENSION		APPROX NUMBER OF COILS PER		STIFFNESS	PRICE GROUP	
	MM	IN	MM	IN	MM	IN	N	LB	MM	IN		Music Wire	302 SS
LEC 014A 12	3.18	0.25	0.36	0.014	304.80	12	0.53	0.12	2.8	71.4	42.1	BB	BB
LEC 014A 24					609.60	24						BC	BC
LEC 014A 36					914.40	36						BD	BD
LEC 016A 12	3.18	0.25	0.41	0.016	304.80	12	0.89	0.20	2.5	62.5	75.9	BB	BB
LEC 016A 24					609.60	24						BC	BC
LEC 016A 36					914.40	36						BD	BD
LEC 018A 12	3.18	0.25	0.46	0.018	304.80	12	1.33	0.30	2.2	55.5	128.5	BB	BB
LEC 018A 24					609.60	24						BC	BC
LEC 018A 36					914.40	36						BD	BD
LEC 020A 12	3.18	0.25	0.51	0.020	304.80	12	1.78	0.40	2.0	50.0	207.3	BB	BB
LEC 020A 24					609.60	24						BC	BC
LEC 020A 36					914.40	36						BD	BD
LEC 022A 12	3.18	0.25	0.56	0.022	304.80	12	2.00	0.45	1.8	45.4	321.6	BB	BB
LEC 022A 24					609.60	24						BC	BC
LEC 022A 36					914.40	36						BD	BD
LEC 018C 12	6.35	0.250	0.46	0.018	304.80	12	0.44	0.10	2.2	55.5	12.6	BC	BC
LEC 018C 24					609.60	24						BD	BE
LEC 018C 36					914.40	36						BE	BJ
LEC 022C 12	6.35	0.250	0.56	0.022	304.80	12	0.89	0.20	1.8	45.4	29.6	BC	BC
LEC 022C 24					609.60	24						BD	BE
LEC 022C 36					914.40	36						BE	BJ
LEC 026C 12	6.35	0.250	0.66	0.026	304.80	12	1.78	0.40	1.5	38.4	11.1	BC	BC
LEC 026C 24					609.60	24						BD	BE
LEC 026C 36					914.40	36						BE	BE

ADDITIONAL INFORMATION

- Continuous length extension springs are available in three lengths: 12, 24 & 36 inch.
- Continuous length extension springs are designed to be cut to the length required by the user.
- All continuous length springs are right hand wound.
- Material specification, finishes and tolerances are detailed on the specification page 237.
- Please note that the stiffness and initial tension listed in the following extension spring tables relate only to music wire. When choosing stainless steel multiply the factors by 0.833.
- To determine the spring rate (Newtons per mm of extension) at the final cut length use the following formula:

$$\text{Rate} = \frac{K}{N} \times 5.7099 \quad \text{where } K = \text{Stiffness}$$

$$N = \text{Number of coils per mm} \times \text{body length in mm}$$
- To determine load at an extended length multiply deflection by the spring rate and add initial tension.

VARIOUS LOOPS OR HOOKS CAN BE FORMED ON THE ENDS OF CONTINUOUS LENGTH EXTENSION SPRINGS.

Step 1



Fold Spring 180° at desired length and cut. Cut shorter than needed by one-half the coil body diameter.

Step 2



Across from cut end, bend last coil up at 45° angle. To form double loop, bend last two coils up 45°. Do not use heat!

Step 3

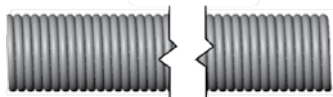


Twist cut end of loop into center of coil body. This may require pliers. You may have to twist past center to allow the loop to flex back.

Step 4



Cut end of newly formed loop to obtain any gap needed for mounting.

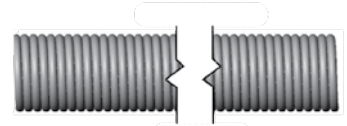


CONTINUOUS LENGTH EXTENSION SPRINGS

● Music Wire (Lightly Oiled) or Stainless Steel (Natural)

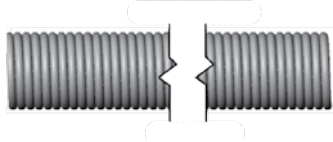
LEE STOCK NUMBER	OUTSIDE DIAMETER		WIRE DIAMETER		FREE LENGTH		INITIAL TENSION		APPROX NUMBER OF COILS PER		STIFFNESS	PRICE GROUP			
	MM	IN	MM	IN	MM	IN	N	LB	MM	IN	K	Music Wire M	302 Stainless S		
LEC 014A 12 LEC 014A 24 LEC 014A 36	3.18	0.125	0.36	0.014	304.80 609.60 914.40	12 24 36	0.53	0.12	2.8	71.4	42.1	BB BC BD	BB BC BF		
LEC 016A 12 LEC 016A 24 LEC 016A 36			0.41	0.016	304.80 609.60 914.40	12 24 36	0.89	0.20	2.5	62.5	75.9	BB BC BD	BB BC BF		
LEC 018A 12 LEC 018A 24 LEC 018A 36			0.46	0.018	304.80 609.60 914.40	12 24 36	1.33	0.30	2.2	55.5	128.5	BB BC BD	BB BC BF		
LEC 020A 12 LEC 020A 24 LEC 020A 36			0.51	0.020	304.80 609.60 914.40	12 24 36	1.78	0.40	2.0	50.0	207.3	BB BC BD	BB BC BF		
LEC 022A 12 LEC 022A 24 LEC 022A 36			0.56	0.022	304.80 609.60 914.40	12 24 36	2.00	0.45	1.8	45.4	321.6	BB BC BD	BB BC BF		
LEC 018C 12 LEC 018C 24 LEC 018C 36			6.35	0.250	0.46	0.018	304.80 609.60 914.40	12 24 36	0.44	0.10	2.2	55.5	12.6	BC BD BE	BC BE BJ
LEC 022C 12 LEC 022C 24 LEC 022C 36	0.56	0.022			304.80 609.60 914.40	12 24 36	0.89	0.20	1.8	45.4	29.6	BC BD BE	BC BE BJ		
LEC 026C 12 LEC 026C 24 LEC 026C 36	0.66	0.026			304.80 609.60 914.40	12 24 36	1.78	0.40	1.5	38.4	61.0	BC BD BE	BC BE BJ		
LEC 029C 12 LEC 029C 24 LEC 029C 36	0.74	0.029			304.80 609.60 914.40	12 24 36	2.45	0.55	1.4	34.4	98.3	BC BD BE	BC BE BJ		
LEC 031C 12 LEC 031C 24 LEC 031C 36	0.79	0.031			304.80 609.60 914.40	12 24 36	3.11	0.70	1.3	32.2	131.9	BC BD BE	BC BE BJ		
LEC 034C 12 LEC 034C 24 LEC 034C 36	0.86	0.034			304.80 609.60 914.40	12 24 36	3.78	0.85	1.2	29.4	198.9	BC BD BE	BC BE BJ		
LEC 037C 12 LEC 037C 24 LEC 037C 36	0.94	0.037			304.80 609.60 914.40	12 24 36	4.45	1.00	1.1	27.0	290.9	BC BD BE	BC BE BJ		
LEC 041C 12 LEC 041C 24 LEC 041C 36	1.04	0.041			304.80 609.60 914.40	12 24 36	4.67	1.05	1.0	24.3	464.3	BC BD BE	BC BE BJ		
LEC 026D 12 LEC 026D 24 LEC 026D 36	9.53	0.375			0.66	0.026	304.80 609.60 914.40	12 24 36	0.98	0.22	1.5	38.4	16.1	BD BE BG	BE BH BL
LEC 031D 12 LEC 031D 24 LEC 031D 36					0.79	0.031	304.80 609.60 914.40	12 24 36	1.33	0.30	1.3	32.2	34.0	BD BE BG	BE BH BL
LEC 034D 12 LEC 034D 24 LEC 034D 36					0.86	0.034	304.80 609.60 914.40	12 24 36	2.22	0.50	1.2	29.4	50.6	BD BE BG	BE BH BL
LEC 037D 12 LEC 037D 24 LEC 037D 36					0.94	0.037	304.80 609.60 914.40	12 24 36	3.11	0.70	1.1	27.0	72.8	BD BE BG	BE BH BL

CONTINUOUS LENGTH EXTENSION SPRINGS



● Music Wire (Lightly Oiled) or Stainless Steel (Natural)

LEE STOCK NUMBER	OUTSIDE DIAMETER		WIRE DIAMETER		FREE LENGTH		INITIAL TENSION		APPROX NUMBER OF COILS PER		STIFFNESS	PRICE GROUP					
	MM	IN	MM	IN	MM	IN	N	LB	MM	IN	K	Music Wire M	302 Stainless S				
LEC 039D 12 LEC 039D 24 LEC 039D 36	9.53	0.375	0.99	0.039	304.80	12	3.56	0.80	1.0	25.6	91.5	BD	BE				
609.60					24	BE						BH					
914.40					36	BG						BL					
LEC 041D 12 LEC 041D 24 LEC 041D 36			9.53	0.375	1.04	0.041	304.80	12	4.00	0.90	1.0	24.3	113.8	BD	BE		
609.60							24	BE						BH			
914.40							36	BG						BL			
LEC 045D 12 LEC 045D 24 LEC 045D 36					9.53	0.375	1.14	0.045	304.80	12	5.34	1.20	0.9	22.2	171.2	BD	BE
609.60									24	BE						BH	
914.40									36	BG						BL	
LEC 049D 12 LEC 049D 24 LEC 049D 36							9.53	0.375	1.24	0.049	304.80	12	6.67	1.50	0.8	20.4	249.6
609.60	24	BF									BH						
914.40	36	BG									BL						
LEC 052D 12 LEC 052D 24 LEC 052D 36	9.53	0.375							1.32	0.052	304.80	12	7.78	1.75	0.8	19.2	325.5
609.60			24	BF							BH						
914.40			36	BH							BM						
LEC 055D 12 LEC 055D 24 LEC 055D 36			9.53	0.375					1.40	0.055	304.80	12	8.90	2.00	0.7	18.1	418.9
609.60					24	BF					BH						
914.40					36	BH					BM						
LEC 058D 12 LEC 058D 24 LEC 058D 36					9.53	0.375			1.47	0.058	304.80	12	11.12	2.50	0.7	17.2	532.9
609.60							24	BF			BH						
914.40							36	BH			BM						
LEC 034E 12 LEC 034E 24 LEC 034E 36							12.70	0.500	0.86	0.034	304.80	12	1.33	0.30	1.2	29.4	19.8
609.60	24	BG									BK						
914.40	36	BJ									BP						
LEC 037E 12 LEC 037E 24 LEC 037E 36	12.70	0.500							0.94	0.037	304.80	12	1.78	0.40	1.1	27.0	28.3
609.60			24	BG							BK						
914.40			36	BJ							BP						
LEC 041E 12 LEC 041E 24 LEC 041E 36			12.70	0.500					1.04	0.041	304.80	12	2.22	0.50	1.0	24.3	43.8
609.60					24	BG					BK						
914.40					36	BJ					BP						
LEC 045E 12 LEC 045E 24 LEC 045E 36					12.70	0.500			1.14	0.045	304.80	12	3.11	0.70	0.9	22.2	65.3
609.60							24	BG			BK						
914.40							36	BJ			BP						
LEC 049E 12 LEC 049E 24 LEC 049E 36							12.70	0.500	1.24	0.049	304.80	12	3.91	0.88	0.8	20.4	94.3
609.60	24	BG									BK						
914.40	36	BJ									BP						
LEC 055E 12 LEC 055E 24 LEC 055E 36	12.70	0.500							1.40	0.055	304.80	12	5.78	1.30	0.7	18.1	155.8
609.60			24	BH							BL						
914.40			36	BK							BQ						
LEC 063E 12 LEC 063E 24 LEC 063E 36			12.70	0.500					1.60	0.063	304.80	12	8.90	2.00	0.6	15.8	273.3
609.60					24	BH					BL						
914.40					36	BK					BQ						
LEC 067E 12 LEC 067E 24 LEC 067E 36					12.70	0.500			1.70	0.067	304.80	12	15.57	3.50	0.6	14.9	372.3
609.60							24	BH			BM						
914.40							36	BK			BR						
LEC 075E 12 LEC 075E 24 LEC 075E 36							12.70	0.500	1.91	0.075	304.80	12	22.24	5.00	0.5	13.3	618.3
609.60	24	BH									BN						
914.40	36	BL									BS						
LEC 049G 12 LEC 049G 24 LEC 049G 36	19.05	0.750							1.24	0.049	304.80	12	2.62	0.59	0.8	20.4	25.1
609.60			24	BK							BR						
914.40			36	BP							BV						



CONTINUOUS LENGTH EXTENSION SPRINGS

● Music Wire (Lightly Oiled) or Stainless Steel (Natural)

LEE STOCK NUMBER	OUTSIDE DIAMETER		WIRE DIAMETER		FREE LENGTH		INITIAL TENSION		APPROX NUMBER OF COILS PER		STIFFNESS	PRICE GROUP							
	MM	IN	MM	IN	MM	IN	N	LB	MM	IN	K	Music Wire M	302 Stainless S						
LEC 055G 12 LEC 055G 24 LEC 055G 36	19.05	0.750	1.40	0.055	304.80	12	3.56	0.80	0.7	18.1	40.9	BK	BM						
609.60					24	BN						BR							
914.40					36	BQ						BV							
LEC 063G 12 LEC 063G 24 LEC 063G 36			19.05	0.750	1.60	0.063	304.80	12	5.34	1.20	0.6	15.8	70.4	BK	BM				
609.60							24	BN						BS					
914.40							36	BQ						BX					
LEC 069G 12 LEC 069G 24 LEC 069G 36					19.05	0.750	1.75	0.069	304.80	12	7.12	1.60	0.6	14.5	107.7	BL	BP		
609.60									24	BN						BS			
914.40									36	BQ						BZ			
LEC 075G 12 LEC 075G 24 LEC 075G 36							19.05	0.750	1.91	0.075	304.80	12	8.90	2.00	0.5	13.3	154.3	BL	BP
609.60											24	BP						BT	
914.40											36	BS						BZ	
LEC 085G 12 LEC 085G 24 LEC 085G 36	19.05	0.750							2.16	0.085	304.80	12	12.46	2.80	0.5	11.7	266.3	BL	BP
609.60											24	BP						BT	
914.40											36	BS						BZ	
LEC 093G 12 LEC 093G 24 LEC 093G 36			19.05	0.750					2.36	0.093	304.80	12	15.57	3.50	0.4	10.7	395.7	BM	BP
609.60											24	BP						BT	
914.40											36	BT						CC	
LEC 105G 12 LEC 105G 24 LEC 105G 36					19.05	0.750			2.67	0.105	304.80	12	26.69	6.00	0.4	9.5	651.2	BM	BQ
609.60											24	BQ						BV	
914.40											36	BT						CD	
LEC 112G 12 LEC 112G 24 LEC 112G 36							19.05	0.750	2.84	0.112	304.80	12	35.59	8.00	0.4	8.9	871.0	BM	BQ
609.60											24	BQ						BV	
914.40											36	BT						CD	
LEC 085JK 12 LEC 085JK 24 LEC 085JK 36	28.58	1.125							2.16	0.085	304.80	12	8.41	1.89	0.5	11.7	69.6	BN	BS
609.60											24	BS						BZ	
914.40											36	BV						CG	
LEC 105JK 12 LEC 105JK 24 LEC 105JK 36			28.58	1.125					2.67	0.105	304.80	12	15.12	3.40	0.4	9.5	164.7	BP	BT
609.60											24	BT						CD	
914.40											36	BZ						CH	
LEC 125JK 12 LEC 125JK 24 LEC 125JK 36	28.58	1.125			3.18	0.125			304.80	12	24.51	5.51	0.3	8.0	351.0	BR	BV		
609.60									24	BX						CE			
914.40									36	CD						CJ			