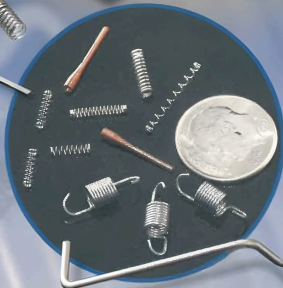




Getting Wound Up Over Your Spring Needs?

ISO 9001
EN ISO 13485
FDA REGISTERED



Worldwide Quality



Compression



Extension

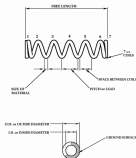


Torsion

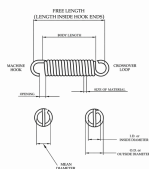


High Precision or High Volume

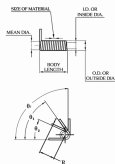
Sound **compression spring** design starts at the drawing board. We offer design courses for your engineering staff to ensure that designs will function well with our springs. We cover the six basic technical considerations for your compression spring design and specifications including material, coil diameter, spring rate, free length, single and multiple load, and grinding tolerance.



Changing technology has made it possible to create standard spring designs that were once custom applications, which can have a dramatic impact on improving your design and your bottom line. We will discuss suggestions for packaging and design ideas to improve the performance or economy of your **extension springs**. Your competitive advantage starts with Acme Monaco.



Pinpoint the exact **torsion spring** that meets your stress and torque requirements. You will recognize economic savings by choosing an arm length and complexity within our practical ratio guide. We can manufacture the arms of the spring both automatically and with conventional tooling. Our state-of-the-art machinery can produce special arm lengths to your specifications.



To see our **FREE** spring design videos:
Betersprings.com/designseminar

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The Acme Monaco budget cutting strategy

Acme Monaco is staffed and equipped to produce springs to extreme limits of precision. However, the end use of most springs does not require more than "commercial tolerances." These +/- allowances can result in economies while maintaining quality. Wherever commercial tolerances are acceptable, costs can be minimized. Commercial grade springs can often be produced on our automatic equipment. The following commercial tolerances are usually considered for springs like these shown.

MATERIAL SELECTION

Material can be selected as they relate to expected (a) cycles of stress, (b) temperature, (c) corrosion, (d) chemicals, (e) water and moisture, (f) special involvements. Commercial tolerances of materials vary with each wire diameter. For example: wire diameter .007" could be +/- .0002" while .090" diameter could be +/- .001".

DETERMINING FREE LENGTH

The overall length of an unloaded spring is its free length. The commercial tolerance of free length is determined by the Spring Index Number, which is the relationship of the spring diameter to the diameter of the wire from which it is made, and the number of active coils per inch (pitch dimension) in relation to the overall length. For example, a spring having 12 coils per inch with a Spring Index Number "10" has a free length commercial tolerance of +/- .030".

COIL DIAMETER

Coil diameter tolerance is determined by the diameter of the wire and the Spring Index Number. For example, springs made from wire with .035" diameter, having an index factor of "10", carries a commercial tolerance of +/- .007" for the coil diameter.

SINGLE AND MULTIPLE LOAD

Commercial tolerances of compression springs include +/- 10% of the load requirement. Springs with a multiple load carry a tolerance of +/- 10% on each load. For example, a spring with a free length of 2" working in the compressed state could have a specified load of 1 1/2" and also at 1". Commercial tolerance would be +/- 10% of each load.

SPRING RATE

The spring rate is determined by the amount of force required to constrict a compression spring by one inch. Using the "LOAD" example, if the 2" free length spring required 1 lb. to compress it to 1 1/2" and 2 lb. to compress it to 1", its spring rate would be 2 lb., and its commercial tolerance would be +/- 3.2 oz. (+/- 10%).

GRINDING TOLERANCE

The grinding of compression springs provides squareness of closed ends. (Closed ends result from reducing the pitch of the end coils until they touch) The commercial tolerance for end grinding is +/- .3".



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Spring Index

Active coils per inch	4	6	8	10	12	14	16
0.5	.010	.011	.012	.013	.015	.016	.016
1	.011	.013	.015	.016	.017	.018	.019
2	.013	.015	.017	.019	.020	.022	.023
4	.016	.018	.021	.023	.024	.026	.027
8	.019	.022	.024	.026	.028	.030	.032
12	.021	.024	.027	.030	.032	.034	.036
16	.022	.026	.029	.032	.034	.036	.038
20	.023	.027	.031	.034	.036	.038	.040



Scan to see our Spring
Design Seminar