

Spring Information

Springs are usually made from coiled, hardened steel to store or absorb mechanical energy, depending upon the application. Under normal conditions, springs will not lose their tension with age. Most observed sag comes from plastic deformation caused by springs being compressed or extended beyond their yield point, a relatively common occurrence.

SPRING TYPES



Compression

Shorten under load to absorb impact, apply pressure to surfaces, or protect against the effects of shock.



Disc

Convex discs generate high force within a very short length. Discs can be used singly or stacked in an infinite number of ways to achieve desired load and travel with minimal movement.



Extension (Tension)

Expand and elongate under load and have a hook, eye, or some other means of attachment at either end to allow attached pieces to give way and absorb impact, shock, or other forces.

DEFINITIONS

Load—The amount of force applied to a spring to cause deflection.

Load at 50% Free Length—The amount of force needed to compress a spring to half its original length from the unloaded position.

Load at Solid—The amount of force applied so that all coils are touching or cannot be compressed any further.

Load at Deflection—The amount of force required to deflect or move a spring.

Deflection at Load—The distance a spring will move when a specific load is applied.

Calculated Load at Flat—Total amount of force required to completely compress a disc spring.

Spring Rate—Change in load per unit of deflection, generally given in pounds per inch.

Initial Tension—The force that tends to keep coils of an extension spring closed, and which must be overcome before the coils start to open.

Closed Ends—The ends of compression springs on which the pitch has been reduced so that the end coils touch.

Open Ends—The end coils on compression springs do not touch.

Ground Ends/Squared Ends—Ends are ground to provide a flat plane.