



Glossary of Spring Terminology

ACTIVE COILS – Those coils which are free to deflect under load.

BAKING – Heating of electroplated springs to relieve hydrogen embrittlement.

BUCKLING – Bowing or lateral displacement of a compression spring.

CLOSE WOUND – Adjacent coils are touching.

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 square with the spring axis and touch the adjacent coils.

DEFLECTION – Motion imparted to a spring by application or removal of an external load.

DRY FILM LUBRICANTS – Are able to reduce friction between two surfaces sliding against each other without the need for a liquid oil medium

ELASTIC LIMIT – Maximum stress to which a material may be subjected without permanent set.

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 resistance.

HELIX – The spiral form (open or closed - left or right) of compression, extension and torsion springs.

HOOKS – Open loops or ends of extension springs.

INITIAL TENSION – A force that tends to keep coils of a closewound extension spring closed and which must be overcome before the coils start to open.

LOOPS – Formed ends with minimal gaps at the ends of extension springs.

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 (compression), this is the equivalent to the outside diameter minus one wire diameter.

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.

PASSIVATION – Acid Treatment to remove contaminants and improve corrosion resistance of stainless steel

PITCH – Distance from center to center of wire in adjacent coils in a open-wound spring.

PLAIN ENDS – End coils of a compression 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.

RATE – Spring gradient, or change in load per unit of deflection.

SET – Permanent change of length, height or position after a spring is stressed beyond material's elastic limit.

SET REMOVAL – An operation which causes a permanent loss of length or height due to spring deflection.

SHOT PEENING – Blasting surfaces of spring material with steel or glass pellets to induce compressive stresses that improve fatigue life.

SOLID HEIGHT – Length of a compression spring when deflected under sufficient load to bring all adjacent coils into contact – no additional deflection is possible at this point.

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.

STRESS RELIEF – A low temperature heat treatment given to springs to relieve residual stresses produced by prior cold forming.

TORQUE – A twisting action in torsion springs which produces rotation

TOTAL NUMBER OF COILS – The sum of the number of active and inactive coils in a spring body.