Glossary of Spring Terms

GSI
GARDNER SPRING INC.
A Vulcan Spring company.

Active Coils
The number of active coils (those which factor into spring rate) in a spring design.

Angle
The relative angle between arms of a torsion spring.

Arbor Diameter
The diameter of the arbor over which the spring will operate.

Arm Length / Leg Length
Arm/leg length of torsion springs.

Available Deflection/Available Travel
The amount of deflection available from free state to solid height or theoretical onset of permanent set.

Body Length
The length of the coil section of an extension or torsion spring.

Buckle Length
The calculated length at which a compression spring is expected to buckle.

Coils
The number of coils in a spring design.

Dead Coils
Inactive coils in a design.

Deflection
A displacement value indicating how far a spring travels.

End Type
The type of ends specified for a compression spring.

Free Height
The height of a compression or disc spring under no load.

Free Length
The free length of an extension spring under no load.

h/t Ratio
The ratio of the height to the thickness of a Belleville washer.

Hand
The direction in which a spring is coiled, either right hand or left hand.

Hook ID
The inside diameter of an extension spring hook.

Hook Type
Specification of the type of hook on an extension spring.

Hook Length
The length of the hook on an extension spring.

Inactive Coils
The coils which do not deflect in a spring design.

Index
The ratio of the wire diameter to the mean diameter.

Initial Tension
The amount of force required to initially separate coils in a spring.

Load
Force applied to deflect a spring.

Length
The length of a spring. May be specified as Free, at specified load, or at solid.

Large Diameter
Diameter of the large end of a conical spring.

Maximum Deflection
The farthest a spring can travel, either due to physical limitations or design specifications.

Maximum Outside Diameter
The maximum outer diameter of a disc spring under load.

Max Rotation
The maximum rotation of a torsion spring design.

Maximum Torque
The maximum torque value that can be applied to a torsion spring within given design parameters.

Minimum Inside Diameter
The minimum inner diameter of a disc spring under load.

Minimum Rotated Inside Diameter
The inside diameter of a torsion spring accounting for tolerance and the effect of winding the spring.

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Moment – See Torque

Pitch
The distance from center to center of the wire in adjacent active coils.

Pitch Angle/Helix Angle
The angle of the pitch between coils, measured in the free state.

Shaft Diameter
The diameter of the shaft over which the torsion spring will operate.

Solid Height
The height of a fully compressed compression spring.

Small Diameter
The diameter of the small end of a conical spring.

Spring Rate
Change in load per unit deflection, generally given in pounds per inch or Newtons per millimeter.

Stack Height
The calculated height of a stack of washers and separators (ifdefined).

Stress
Design stress.

Stress Ratio
The ratio of the minimum stress to the maximum stress, normally a positive number in the range of 0.0-0.8.

Torque
A twisting action in torsion springs that tends to produce rotation, equal to the load multiplied by the distance (or moment arm) from the load to the axis of the spring body.

Total Coils
The total number of coils, active and inactive, in a spring design.

Travel
The amount of deflection in a spring design.

Wire Length
The length of wire required to manufacture the spring design.

Works In
The diameter of the bore/hole the spring is designed to work within.

Works Over
*The diameter of the shaft over which the spring is designed to work****Solid Height***
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