SPECIFICATIONS & TOLERANCES

All the 16,500 different types of Stock springs listed in this catalogue have been selected to reflect the most popular sizes ordered. Design and manufacturing tolerances generally follow the guideline requirements of:

BS 1726-1:2002 and BS EN 13906-1:2002 for compression springs
BS 1726-2:2002 and BS EN 13906-2:2002 for extension springs
BS 1726-3:2002 and BS EN 13906-3:2002 for torsion springs

Springs are manufactured from materials to military, aerospace and/or equivalent British or DIN standards.

Material data

Subject to the availability of material, springs may be made from either standard:

Music wire:
ASTM A228, DIN 17223, BS 5216, EN 10270-1 or JIS-G-3522

Stainless steel:
ASTM A313, DIN 17224, BS 2056, EN 10270-3 or JIS-G-4314

Oil tempered MB:
ASTM A229, DIN 17223, BS 2803 or EN 10270-2

Chrome silicon:
ASTM A401, DIN 17223, BS 2803 or EN 10270-2

Stress relief

Standard compression, die, extension and torsion springs as well as Belleville spring washers are stress relieved to remove strains induced during manufacture. Die and heavy duty compression springs are shot peened and prestressed to enhance their performance. Music Wire Springs (excluding die springs) are de-embrittled at no extra cost.

Finishing

Our Lite Pressure™ 316 stainless steel springs are ultrasonically cleaned as well as passivated to offer medical and food grade levels of cleanliness.

Passivation is in accordance with specification
BS EN 2516:1997 or ASTM A967.

Zinc plating is in accordance with specification BS EN 12329:2000 or ASTM B633 Class Fe/Zn 5 Type III (0.0002" thick with clear chromate) and baked for hydrogen embrittlement relief.

Die springs are painted different colours to denote duty:
Medium Load – Grey
Medium Load Plus – Beige
Medium Heavy Load – Purple
Heavy Load – Black
Extra Heavy Load – Orange

Note:
Other special finishes may be supplied on request at additional cost.

All our stock springs are RoHS compliant.

ROHS COMPLIANT

Operational Temperatures

Noticeable deterioration in performance of springs will become apparent if the temperature in which the springs are operating exceed the following maximum temperature recommendations.

MUSIC WIRE 120°C (250°F)
STAINLESS STEEL 260°C (500°F)
OIL TEMPERED MB 120°C (250°F)
CHROME SILICON 245°C (475°F)

Note:
For operation in sub-zero temperatures stainless steel must be used.

Tolerances

Spring manufacturing, as in many other production processes, is not exact. It can be expected to produce variations in such spring characteristics as load, mean coil diameter, free length, and the relationship of ends or hooks. The very nature of spring forms, materials and standard manufacturing processes cause inherent variations. The overall quality level for a given spring design, however, can be expected to be superior with spring manufacturers who specialise in precision, high-quality components. Normal or average tolerances on performance and dimensional characteristics may be expected to be different for each spring design. Manufacturing variations in a particular spring depend largely on variations in spring characteristics, such as index, wire diameter, number of coils, free length, deflection and ratio of deflection to free length.

End Information

Lite Pressure™ and instrument series compression springs have ends closed but not ground.

Standard compression, heavy duty and die springs have ends closed and ground square (tolerance 3°).

Extension springs have full loops, random position.

Direction of Helix

Lee Spring Lite Pressure™, compression, die and extension springs maybe left or right-hand wound at the company's discretion. If direction of wind is critical, please specify at time of ordering.

Continuous length springs are right-hand wound.