The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE STANDARD

SAE J1122

REV. JUL88

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Submitted for recognition as an American National Standard

(R) HELICAL SPRINGS: SPECIFICATION CHECK LISTS

***Foreword*—**This Document has also changed to comply with the new SAE Technical Standards Board format.

1. ***Scope*—**The following SAE Recommended Practice furnishes sample forms for helical compression, extension and torsion springs to provide a uniform method for specifying design information. It is not necessary to fill in all the data, but sufficient information must be supplied to fully describe the part and to satisfy the requirements of its application. For detailed information, see "Design and Application of Helical and Spiral Springs - SAE HS J795 SEP82", also "Helical Compression and Extension Spring Terminology - SAE J1121 NOV75".

Both these documents use SI (metric) Units in accordance with the provisions of SAE J916 MAY85, and so does SAE J1122. Here, however, the U.S. Customary Units (in, lb, psi) have been added in parentheses after each SI Unit for the convenience of the user who must furnish specifications on a project where all requirements are listed in non-metric terms.

2. ***References***

2.1 **Applicable Publications—**The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated the lastest revision of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J916 JUN82—Rules for SAE Use of SI (Metric) Units
SAE J1121—Helical Compression and Extension Spring Terminology
SAE HS 795

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TABLE 1—CONVERSION TABLE

To Convert from SI Unit to U.S. Customary Unit, Divide by the Factor

To Convert from U.S. Customary Unit to SI Unit, Multiply by the Factor

Quantity	SI Unit		Factor	U.S. Customary Unit	
Length	millimeter	mm	25.4 (Exactly)	inch	in
Area	square millimeter	mm^2	645.16 (Exactly)	square inch	in^2
Mass	kilogram	kg	0.453 592 4	pound-mass	lb_m
Force (or Load)	newton	N	4.448 222 (1)	pound-force	lb_f
Moment	newton millimeter	N.mm	112.984 8	pound inch	lb_f.in
Linear Spring Rate	newton per millimeter	N/mm	0.175 126 8	pound per inch	lb_f/in
Torsional Spring Rate	newton mm per degree	N.mm/deg	112.984 8	pound inch per degree	lb_f.in/deg
Stress	megapascal	MPa	0.006 894 757 (2)	pound per square inch	psi

1. 4.448 222 = 0.453 592 37 · 9.806 650
   where 9.806 650 = Acceleration of Gravity "g" adopted in 1901 by International Committee on Weights & Measures
2. 0.006 894 757 = 4.448 2216 · 0.000 645 16

A - HELICAL COMPRESSION SPRINGS Application _____

OD _____ mm (in) to work inside _____ mm (in) Dia Hole

ID _____ mm (in) to work over _____ mm (in) Dia Rod

Note: Specify only those diameters that are necessary for assembly and operation

Wire Dia _____ mm (in) Total Coils _____ Active Coils _____

Free Length _____ mm (in) approx

Direction of Coil Winding: Right Hand, Left Hand, or Optional _____

Type of Ends _____ Square with Axis within _____ deg

Max Solid Length _____ mm (in)

Load _____ N (lb) ± _____ N (lb) at _____ mm (in) length

Load _____ N (lb) ± _____ N (lb) at _____ mm (in) length

Rate _____ N/mm (lb/in) Ref

After being compressed to a length of _____ mm (in) for _____ hours at a temperature of _____ °C (°F) the spring must not show a load loss in excess of _____ N (lb) at a length of _____ mm (in)

Springn Index = Mean Coil Diameter/Wire Diameter (D/d) _____

Wahl Stress Correction Factor K_w _____

Stress at _____ mm (in) length: _____ MPa (psi) Corrected or Uncorrected _____

Stress at _____ mm (in) length: _____ MPa (psi) Corrected or Uncorrected _____

Material _____

Hardness or Tensile Strength _____

Surface Treatment/Finish _____

Identification _____

Remarks _____

B - HELICAL EXTENSION SPRINGS Application _____

OD _____ mm (in) Wire Dia _____ mm (in)

Number of Coils _____

Direction of Coil Winding: Right Hand, Left Hand, or Optional _____

Free Length Inside Hooks _____ mm (in) approx

Type of Ends (use sketch if necessary) _____

_____

Load _____ N (lb) ± _____ N (lb) at _____ mm (in) length

Load _____ N (lb) ± _____ N (lb) at _____ mm (in) length

Initial Tension _____ N (lb) Ref

Rate _____ N/mm (lb/in) Ref

Stress at _____ mm (in) length: _____ MPa (psi) Corrected or

Uncorrected _____

Stress at _____ mm (in) length: _____ MPa (psi) Corrected or

Uncorrected _____

Max Extended Length without set _____ mm (in)

Stress at Max Extended Length _____ MPa (psi) Corrected or

Uncorrected _____

Material _____

Hardness or Tensile Strength _____

Surface Treatment/Finish _____

Identification _____

Remarks _____

C - HELICAL TORSION SPRINGS Application _____

OD _____ mm (in)

ID _____ mm (in) to work over _____ mm (in) Dia Shaft

Note: Specify only those diameters that are necessary for assembly and operation

Wire Dia _____ mm (in) Number of Coils _____

Max Free Length _____ mm (in)

Direction of Coil Winding: Right Hand or Left Hand _____

Type of Ends (use sketch if necessary) _____

_____

Moment _____ N mm (lb in) ± _____ N mm (lb mm) at _____ deg between ends

Moment _____ N mm (lb in) ± _____ N mm (lb mm) at _____ deg between ends

Rate _____ N mm/deg (lb in/deg) approx

Stress at _____ deg _____ MPa (psi)

Stress at _____ deg _____ MPa (psi)

Max Wound Position _____ deg

Stress at Max Wound Position _____ MPa (psi)

Material _____

Hardness or Tensile Strength _____

Surface Treatment/Finish _____

Identification _____

Remarks _____