

For Comments Only

**BUREAU OF INDIAN STANDARDS**

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भारतीय मानक मसौदा

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भाग 3 परिपत्र अनुभाग तार और बार से बने स्प्रिंग्स के  
लिए विनिर्देशों के लिए डेटा शीट

(पहला पुनरीक्षण)

Draft Indian Standard

**HELICAL COMPRESSION SPRINGS**

PART 3 DATA SHEET FOR SPECIFICATIONS FOR SPRINGS MADE  
FROM CIRCULAR SECTION WIRE AND BAR

(First Revision)

ICS 21.160

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**Springs and Suspension Systems Sectional Committee, TED 34**

**Last date for receipt of  
comments is 12/10/2024**

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**Foreword**

(Formal clauses will be added later)

This standard was originally published in 1975.

This standard is one of the series of standards on design calculation and specifications of helical coiled springs. Other standards in this series are:

IS 7906 (Part 1) : 1997	Helical compression springs: Part 1. design and calculation for springs made from circular section wire and bar ( <i>first revision</i> )
IS 7906 (Part 2) : 1975	Helical compression springs: Part 2 specification for cold coiled springs made from circular section wire and bar
IS 7906 (Part 4) : 1987	Helical compression springs: Part 4 selection of standard cold coiled springs made from circular section wire and bar
IS 7906 (Part 5) : 2004	Helical compression springs: Part 5 hot coiled springs made from circular section bars - Specification ( <i>second revision</i> )
IS 7906 (Part 6) : 1978	Helical compression springs: Part 6 design and calculations for springs made from rectangular section bar - Steel
IS 7906 (Part 7) : 1989	Helical compression springs: Part 7 quality requirements for cylindrical coil compression springs used mainly as vehicle suspension springs
IS 7906 (Part 8) : 1989	Helical compression springs: Part 8 method of inspection of hotcoiled compression springs made from circular section bars

The duplication of this Data Sheet is allowed. This Data Sheet is so designed that it can also be used as a factory drawing.

In the preparation of this standard considerable assistance has been derived from DIN 2099 Sheet 1 Helical springs made from circular section wire and bar, Specification for tension springs, issued by Deutschen Institut für Normung (DIN).

The composition of the Committee responsible for the formulation of this standard is given at **Annex A. (Will be added later)**

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2: 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Draft Indian Standard

**HELICAL COMPRESSION SPRINGS**  
PART 3 DATA SHEET FOR SPECIFICATIONS FOR SPRINGS MADE  
FROM CIRCULAR SECTION WIRE AND BAR  
(First Revision)

**1 SCOPE**

Gives Data Sheet for processing of orders and queries for the specification for compression springs covered by IS 7906 (Part 2) and IS 7906 (Part 5).

**2 REFERENCES**

The following standards contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
7906 (Part 1) : 1997	Helical compression springs: Part 1. design and calculation for springs made from circular section wire and bar ( <i>first revision</i> )
7906 (Part 2) : 1975	Helical compression springs Part 2 specification for cold coiled springs made from circular section wire and bar
7906 (Part 5) : 2004	Helical compression springs: Part 5 hot coiled springs made from circular section bars — Specification ( <i>second revision</i> )

**3 PROCEDURE FOR USE OF DATA SHEET**

**3.1** It may not always be necessary to give all the data provided in the Data Sheet. Initially only those Parameters that are required for the use of spring may be given. The parameters that are not necessary for the working of spring can be bracketed. The bracketed parameters are not toleranced, for example, the spring rate  $S_C$ .

**3.2** The Data Sheet can generally be used for all types of compression springs. If a separate drawing is attached to the Data Sheet, mention of the drawing shall be made in the item 13 of the Data Sheet. If different or additional dimensions are to be specified in special cases, this can be done in the diagram in the Data Sheet itself.

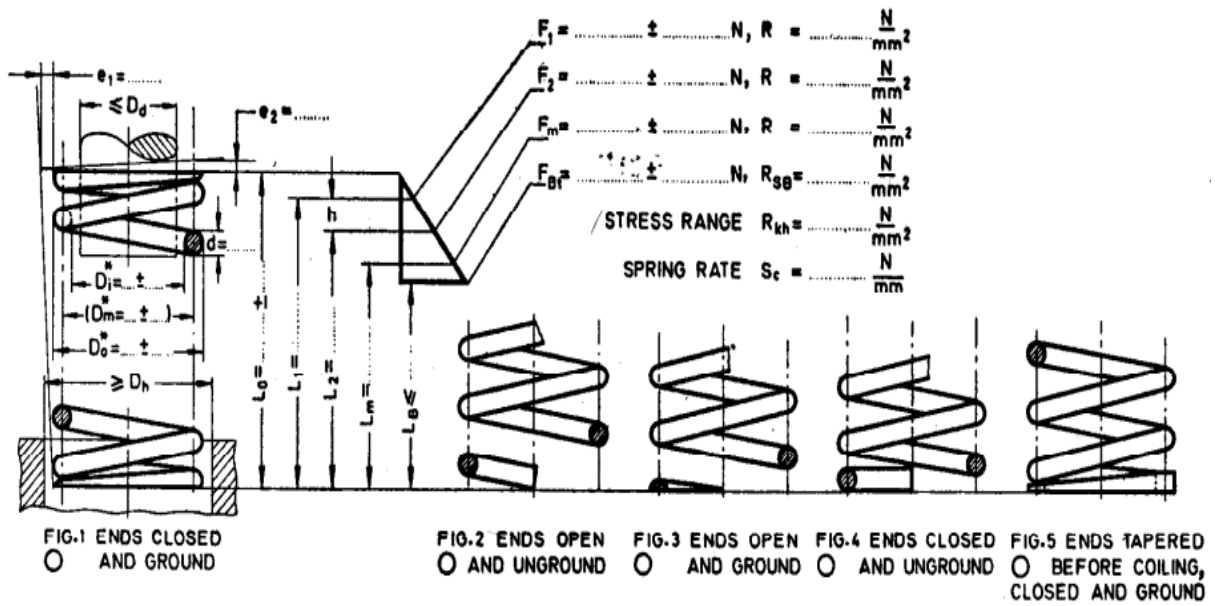
**3.3** The data on material and permissible shear-stress and on tolerances depend on type of production which is determined by the size of the spring.

**3.4** Compression springs made of wires of diameter up to 17 mm are generally cold-formed but with modern machines cold formed springs can be made above 17mm

**3.5** Compression springs made with bars of diameter more than 17 mm are generally hot-formed but springs made from wire and bar between 10 and 17 mm can also be hot-formed. For this manufacturer should be consulted for process, tolerances, etc. The process generally depends on the 'load, function of the spring and the material.

**3.6** To allow economical manufacture of springs, the maximum possible tolerance according to IS 7906 (Part 2) shall be, specified for the coil diameter  $D_o$ ,  $D_i$  or  $D_m$ , the unloaded length  $L_o$  and axial loads  $F_1$  to  $F_m$  and deviations  $e_1$  and  $e_2$ . The complimentary adjustment for manufacturing as described in IS 7906 (Part 2) shall be applied.

**3.7** Indication shall be made whether the spring has to work with guides. For this purpose, the outer or inner diameter of guide shall be mentioned in the drawing. This is particularly important for compression springs which work in a guide, since even in block position of the spring there should still be a play the spring and the guide.



Give Only those particulars which are functionally important and cross the appropriate circles. Avoid redundant dimensioning. In the case of shear stress R, and the appropriate subscript s or k as per IS 7906 (Part 1) for reasons of economy the tolerances should be made as large as possible.

Data Sheet

1.	Number of Working coil Total Number of Coil	i <sub>f</sub> = ..... i <sub>g</sub> = .....	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">10</td> <td style="width: 65%;"></td> <td colspan="2" style="text-align: center;">Tolerances According To</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">IS 7906 (Part 2)</td> <td style="text-align: center;">IS 7906 (Part 6)</td> </tr> <tr> <td></td> <td>D<sub>o</sub><sup>1)</sup>, D<sub>i</sub><sup>1)</sup> (D<sub>m</sub><sup>1)</sup></td> <td>.....</td> <td>.....</td> </tr> <tr> <td></td> <td>L<sub>o</sub></td> <td>.....</td> <td>.....</td> </tr> <tr> <td></td> <td>F<sub>1</sub> To F<sub>m</sub></td> <td>.....</td> <td>.....</td> </tr> <tr> <td></td> <td>e<sub>1</sub></td> <td>.....</td> <td>.....</td> </tr> <tr> <td></td> <td>e<sub>2</sub></td> <td>.....</td> <td>.....</td> </tr> <tr> <td></td> <td>Wire Or Bar Diameter d</td> <td>.....</td> <td>.....</td> </tr> </table>		10		Tolerances According To				IS 7906 (Part 2)	IS 7906 (Part 6)		D <sub>o</sub> <sup>1)</sup> , D <sub>i</sub> <sup>1)</sup> (D <sub>m</sub> <sup>1)</sup>	.....	.....		L <sub>o</sub>	.....	.....		F <sub>1</sub> To F <sub>m</sub>	.....	.....		e <sub>1</sub>	.....	.....		e <sub>2</sub>	.....	.....		Wire Or Bar Diameter d	.....	.....
10		Tolerances According To																																		
		IS 7906 (Part 2)			IS 7906 (Part 6)																															
	D <sub>o</sub> <sup>1)</sup> , D <sub>i</sub> <sup>1)</sup> (D <sub>m</sub> <sup>1)</sup>	.....			.....																															
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	F <sub>1</sub> To F <sub>m</sub>	.....			.....																															
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	e <sub>2</sub>	.....			.....																															
	Wire Or Bar Diameter d	.....			.....																															
2.	Hand of Coiling (Optional)	Right-Hand Left-Hand																																		
3.	Chamfering of spring ends	<div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 5px;">{</div> <div style="margin-left: 5px;">                     Omitted Internally                      Width.....                      Angle.....                      Externally                      Width.....,                      Angle.....                 </div> </div>																																		
4.	Stroke	Max and Min height = .....mm																																		
5.	Load Cycle Frequency	n = .....Hz																																		
6.	Maximum Working Temperature	=.....°C																																		
7.	Wire or Bar Surface	<table style="border: none;"> <tr><td style="border: none;">—</td><td style="border: none;">Drawn</td><td style="border: none; text-align: right;">○</td></tr> <tr><td style="border: none;">—</td><td style="border: none;">Rolled</td><td style="border: none; text-align: right;">○</td></tr> <tr><td style="border: none;">—</td><td style="border: none;">Centreless</td><td style="border: none; text-align: right;">○</td></tr> <tr><td style="border: none;">—</td><td style="border: none;">Ground</td><td style="border: none; text-align: right;">○</td></tr> <tr><td style="border: none;">—</td><td style="border: none;">Spring</td><td style="border: none; text-align: right;">○</td></tr> <tr><td style="border: none;">—</td><td style="border: none;">Shot-Peened</td><td style="border: none; text-align: right;">○</td></tr> </table>	—	Drawn	○	—	Rolled	○	—	Centreless	○	—	Ground	○	—	Spring	○	—	Shot-Peened	○																
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—	Ground	○																																		
—	Spring	○																																		
—	Shot-Peened	○																																		
8.	Surface Protection																																			
9.	Material.....According to IS..... Permissible Shear Stress R <sub>sp</sub> =..... $\frac{N}{mm^2}$																																			
13.	Total number of cycles up to rupture .....																																			
14.	Permissible relaxation at defined initial stress, temperature and duration.....																																			
15.	Any other special details:																																			
<sup>1)</sup> Any one the coil diameters D <sub>i</sub> , D <sub>o</sub> OR D <sub>m</sub> may appear																																				
Issue	Modifications	Date	Name																																	
Scale	Data Sheet for helical Compression Spring IS 7906 (Part 3)			Name																																
				Date																																
				Designed																																
				Drawn																																
				Checked																																
				Standard																																
				Approved																																
				Drawing Number																																
				Sheet																																

**ANNEX A**  
*(Foreword)*

**COMMITTEE COMPOSITION**

**Springs and Suspension Systems Sectional Committee, TED 34**

**Will be added later**