भारतीय मानक **IS 7906 (Part 3) : 2024**

Indian Standard

कुंडलाकार संपीड़न कमानियां

भाग 3 वृताकार सेक्शन तार तथा छड़ों से बनी कमानियों के विनिर्देशन हेतु डेटा शीट

(पहला पुनरीक्षण)

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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December 2024 **Price Group 3**

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

Foreword

This Indian Standard (Part 3) (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Springs and Suspension Systems Sectional Committee had been approved by the Transport Engineering Division Council.

This standard was first published in 1975 to specify 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). This revision has been brought out in view of technological advancements which have taken place after publication of the standard. In this revision editorial corrections have been rectified and references have been made up to date.

This standard (Part 3) is one of a series dealing with helical compression springs:

Part 1 Design and calculation for springs made from circular section wire and bar

Part 2 Specification for cold coiled springs made from circular section wire and bar

Part 4 Selection of standard cold coiled springs made from circular section wire and bar

Part 5 Hot coiled springs made from circular section bars — Specification

Part 6 Design and calculations for springs made from rectangular section bar — Steel

Part 7 Quality requirements for cylindrical coil compression springs used mainly as vehicle suspension springs

Part 8 Method of inspection of hot coiled 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 fur Normung (DIN).

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

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.

Indian Standard

HELICAL COMPRESSION SPRINGS

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

(First Revision)

1 SCOPE

The standard covers the 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 standards given below 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 these standards:

IS No.	*Title*
IS 7906	Helical compression springs:
(Part 1) : 1997	Design and calculation for springs made from circular section wire and bar (*first revision*)
(Part 2) : 1975	Specification for cold coiled springs made from circular section wire and bar
(Part 5) : 2004	Hot coiled springs made from circular section bars — Specification (*second revision*)

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 17 mm.

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 mm 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_1 or D_m, the unloaded length L_O and axial loads F_1 to *Fm* 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.

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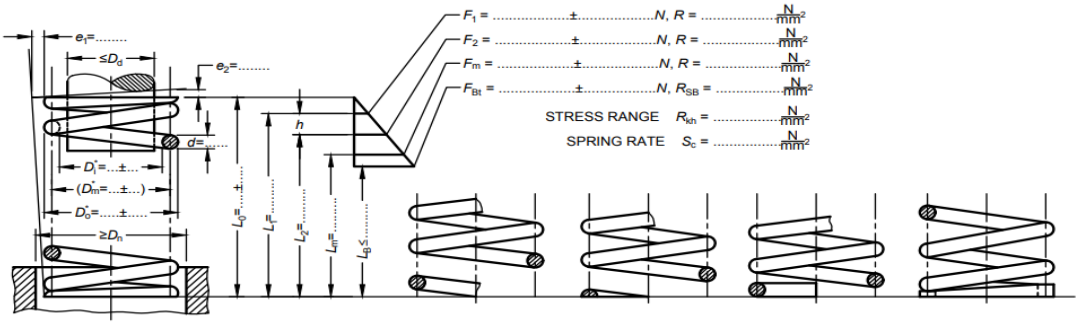

FIG. 1 ENDS CLOSED O AND GROUND

FIG. 2 ENDS OPEN O AND UNGROUND

FIG. 3 END OPEN O AND GROUND

FIG. 4 ENDS CLOSED O AND UNGROUND

FIG. 5 ENDS TAPERED O BEFORE COILING CLOSED AND GROUND

NOTE — For details of parameters specified in data sheet please refer Fig. 1, Fig. 2, Fig. 3, Fig. 4 and Fig. 5.

(1)	Number of working coil total number of coil	i_f = …… i_g = ……		(10)		Tolerances according to IS 7906 (Part 2)	Tolerances according to IS 7906 (Part 6)
(2)	Hand of coiling (optional)	Right-hand			D_o[1]),D_1[1]) (D_m[1]))	……	……
		Left-hand			L_o	……	……
(3)	Chamfering of spring ends	Omitted Internally Width…… Angle…… Externally Width……, Angle……			F_1 To F_m	……	……
					e_1	……	……
					e_2	……	……
					Wire Or Bar Diameter d	……	……
(4)	Stroke	*Max* height ……. mm and *Min* height ……mm		(11)	Adaptation of the Spring		
(5)	Load cycle frequency	n = ……Hz			Given Requirements		Permissible Deviation
(6)	Maximum working temperature	=……ºC			a) One load F_1, corresponding length L_1 and spring rate R_s		L_o, d, n_t
(7)	Wire or bar surface	Drawn ○ Rolled Centreless Ground Spring Shot-Peened ○ ○ ○			b) Two load F_1/F_2 and Corresponding length L_1/L_2		L_o, d, n_t
					c) Length of the un preset spring and spring rate R_s		d, n_t
					d) One load F_1 and the load of the preset spring		L_o
					e) One load F_1, the length of the preset spring and the length of the unpreset spring L_o		n_t, d or n_t, D_e, D_i
(8)	Surface protection						
(9)	Material……according to IS…… Permissible shear stress R_{sp}=…… $\frac{N}{mm^2}$			(12)	Type of end ……..		
(13)	Total number of cycles up to rupture ……						
(14)	Permissible relaxation at defined initial stress, temperature and duration……						
(15)	Any other special details:						

[1]) Any one the coil diameters D_i, D_o OR D_m may appear
[2]) The listed parameters may be altered in order to meet the given requirements.

					Name	Date
				Designed		
				Drawn		
				Checked		
				Standard		
Issue	Modifications	Date	Name	Approved		
Scale		Data Sheet for helical compression spring IS 7906 (Part 3)		Drawing number		
				Sheet		

ANNEX A
(*Foreword*)

COMMITTEE COMPOSITION

Springs and Suspension Systems Sectional Committee, TED 34

Organization	*Representative*(*s*)
Automotive Research Association of India, Pune	SHRI V. V. SHINDE **(*Chairperson*)**
Advik Hi-Tech Private Limited, Pune	SHRI KAMALKISHOR KAKADE
Anna University, Chennai	SHRI G. VENKATESAN
Automotive Component Manufactures Association of India, New Delhi	SHRI SANJAY TANK SHREEMATI SEEMA BABAL (*Alternative*)
Automotive Research Association of India, Pune	SHRI NITIN SINNARKAR
Central Institute of Road Transport, Pune	SHRI RAJKUMAR MALAJURE SHRI BIRENDRA RAWAT (*Alternative*)
International Centre for Automotive Technology, Manesar	SHRI SAMIR SHIKALGAR
Jamna Auto Industries Limited, New Delhi	SHRI ANUJ SHARMA
Mubea Automotive Components India Private Limited, Pune	SHRI AMOL HARI JOSHI
Stumpp Scheule And Somappa Springs Private Limited, Bengaluru	SHRI PUNITH REDDY
BIS Directorate General	SHRI A. P. D. DWIVEDI, SCIENTIST 'F'/SENIOR DIRECTOR AND HEAD (TRANSPORT ENGINEERING) [REPRESENTING DIRECTOR GENERAL (*Ex-officio*)]

Member Secretary
SHRI GALI AJIT KUMAR
SCIENTIST 'C'/DEPUTY DIRECTOR
(TRANSPORT ENGINEERING), BIS

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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