

कुंडलाकार संपीडन कमनियां

भाग 3 वृताकार सेक्शन तार तथा छड़ों से बनी
कमनियों 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

© BIS 2024



भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002

www.bis.gov.in www.standardsbis.in

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 für 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:

<i>IS No.</i>	<i>Title</i>
IS 7906	Helical compression springs:
(Part 1) : 1997	Design and calculation for springs made from circular section wire and bar (<i>first revision</i>)
(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 (<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 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 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.

To access Indian Standards click on the link below:

https://www.services.bis.gov.in/php/BIS_2.0/bisconnect/knowyourstandards/Indian_standards/isdetails/

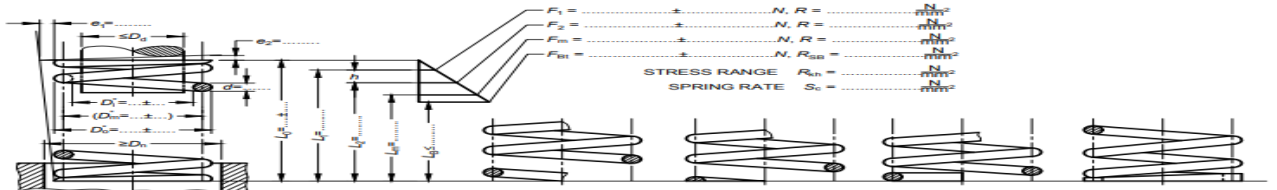


FIG. 1 ENDS CLOSED O AND GROUND

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



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

<i>Organization</i>	<i>Representative(s)</i>
Automotive Research Association of India, Pune	SHRI V. V. SHINDE (<i>Chairperson</i>)
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 (<i>Alternative</i>)
Automotive Research Association of India, Pune	SHRI NITIN SINNARKAR
Central Institute of Road Transport, Pune	SHRI RAJKUMAR MALAJURE SHRI BIRENDRA RAWAT (<i>Alternative</i>)
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 (<i>Ex-officio</i>)]

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

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 2016* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Head (Publication & Sales), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

This Indian Standard has been developed from Doc No.: TED 34 (26558).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002

Telephones: 2323 0131, 2323 3375, 2323 9402

Website: www.bis.gov.in

Regional Offices:

Central : 601/A, Konnectus Tower -1, 6th Floor,
DMRC Building, Bhavbhuti Marg, New
Delhi 110002

Telephones

{ 2323 7617

Eastern : 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V,
Salt Lake, Kolkata, West Bengal 700091

{ 2367 0012
2320 9474

Northern : Plot No. 4-A, Sector 27-B, Madhya Marg,
Chandigarh 160019

{ 265 9930

Southern : C.I.T. Campus, IV Cross Road, Taramani, Chennai 600113

{ 2254 1442
2254 1216

Western : 5th Floor/MTNL CETTM, Technology Street, Hiranandani Gardens, Powai
Mumbai 400076

{ 25700030
25702715

Branches : AHMEDABAD, BENGALURU, BHOPAL, BHUBANESHWAR, CHANDIGARH, CHENNAI, COIMBATORE, DEHRADUN, DELHI, FARIDABAD, GHAZIABAD, GUWAHATI, HARYANA (CHANDIGARH), HUBLI, HYDERABAD, JAIPUR, JAMMU, JAMSHEDPUR, KOCHI, KOLKATA, LUCKNOW, MADURAI, MUMBAI, NAGPUR, NOIDA, PARWANOO, PATNA, PUNE, RAIPUR, RAJKOT, SURAT, VIJAYAWADA.