

Technical product documentation — Springs

Part 1 . Simplified representation

The European Standard EN ISO 2162-1 : 1996 has the status of a
British Standard

ICS 01.100.20; 21.160



Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee TDE/4, Engineering drawing practice, upon which the following bodies were represented:

Atomic Weapons Establishment
British Gas plc
British Standards Society
Drawing Office Material Manufacturers' and Dealers' Association
Electricity Association
Gauge and Tools Makers' Association
HEVAC Association
Institution of Chemical Engineers
Institution of Engineering Designers
Power Generation Contractors' Association
Society of British Aerospace Companies Ltd.
University of Warwick

This British Standard, having been prepared under the direction of the Engineering Sector Board, was published under the authority of the Standards Board and comes into effect on
15 November 1996

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Amendments issued since publication

Amd. No.	Date	Text affected

The following BSI references relate to the work on this standard:
Committee reference TDE/4
Draft announced in *BSI News*

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National foreword

This British Standard has been prepared by Technical Committee TDE/4 and is the English language version of EN ISO 2162-1 : 1996 *Technical product documentation — Springs — Part 1 : Simplified representation*, published by the European Committee for Standardization (CEN). It is identical with ISO 2162-1 : 1993 published by the International Organization for Standardization (ISO).

This British Standard partially supersedes BS 308 : Part 1. It is envisaged that when the full range of European Standards on technical drawing is implemented BS 308 will be withdrawn.

Cross-reference

Publication referred to	Corresponding British Standard
	BS EN ISO 2162 <i>Technical product documentation — Springs</i>
EN ISO 2162-2 : 1996 (ISO 2162-2 : 1993)	BS EN ISO 2162-2 : 1996 <i>Presentation of data for cylindrical helical compression springs</i>

Compliance with a British Standard does not of itself confer immunity from legal obligations.

ICS 01.100.20; 20.160

Descriptors: Drawings, technical drawings, graphic methods, springs

English version

Technical product documentation — Springs — Part 1 : Simplified representation

(ISO 2162-1 : 1993)

Documentation technique de produits — Ressorts
— Partie 1 : Représentation simplifiée
(ISO 2162-1 : 1993)

Technische Produktdokumentation — Federn —
Teil 1 : Vereinfachte Darstellung
(ISO 2162-1 : 1993)

This European Standard was approved by CEN on 1996-03-02. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels



Foreword

The text of the International Standard from Technical Committee ISO/TC 10, Technical drawings, product definition and related documentation, of the International Organization for Standardization (ISO) has been taken over as a European Standard by the Technical Board of CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 1997, and conflicting national standards shall be withdrawn at the latest by January 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

NOTE Normative references to International Standards are listed in annex ZA (normative).

Technical product documentation — Springs —

Part 1: Simplified representation

1 Scope

This part of ISO 2162 gives rules for the simplified representation of compression, extension, torsion, disc, spiral and leaf springs on technical drawings.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 2162. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 2162 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2162-2:1993, *Technical product documentation — Springs — Part 2: Presentation of data for cylindrical helical compression springs*.

ISO 5261:1981, *Technical drawings for structural metal work*.

3 General

In simplified representations, springs are represented as follows.

— Coiled wire springs: by a line following the axis of the spring wire.

— Other types of springs: by lines showing the characteristics of the respective type of springs and their elements.

The representations shown are examples only.

4 Helical compression springs

The following requirements shall be applied for the indication of the geometrical characteristics of wire-made springs on a simplified representation.

a) Cross-section of the material

Cylindrical: the appropriate graphical symbol in accordance with ISO 5261 ($\emptyset$) need not be indicated.

Other than cylindrical: the appropriate graphical symbol in accordance with ISO 5261 shall be indicated (e.g. , ).

b) Direction of helix

Right-hand: assumed as normal and the designation RH need not be indicated.

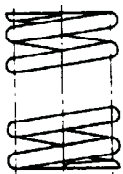
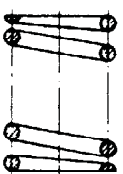
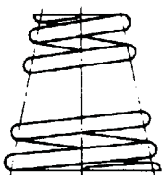
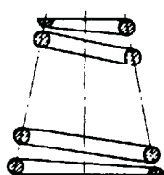
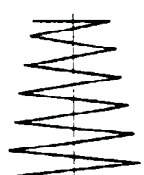
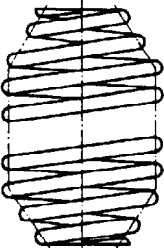
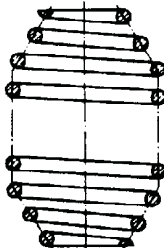
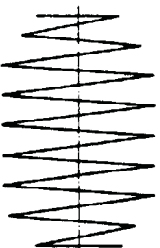
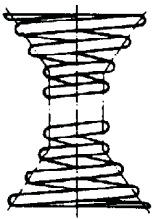
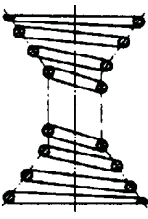
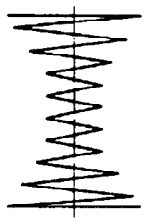
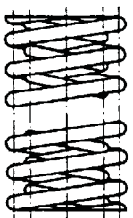
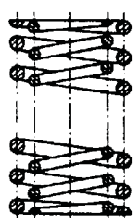
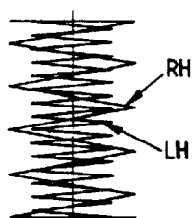
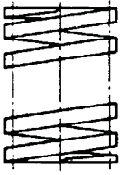
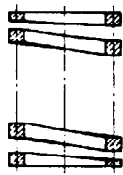
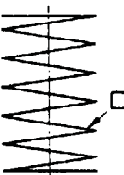
Left-hand: exceptional and the designation LH¹⁾ shall be indicated.

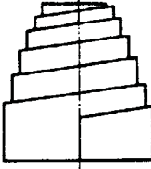
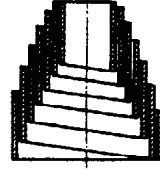
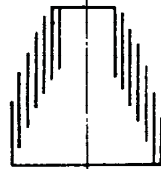
c) Shape of ends

Ground: no indication is necessary.

Other than ground: the type shall be specified on the drawing, with dimensions if necessary (see ISO 2162-2).

1) In accordance with the rules given for the indication of left-hand screw threads (see ISO 5864:1978, *ISO inch screw threads — Allowances and tolerances*, clause 11).

No.	Type of spring	Representation		
		View	Section	Simplified
4.1	Cylindrical helical compression spring			
4.2	Conical helical compression spring			
Combinations of cylindrical (4.1) and conical (4.2) helical compression springs.				
4.3	Double-conical helical compression spring Barrel spring			
4.4	Double-conical helical compression spring Waisted spring			
4.5	Spring nest of, for example, two cylindrical helical compression springs			
4.6	Cylindrical helical compression spring of material having square cross-section			

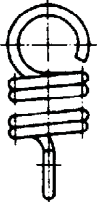
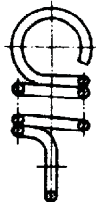
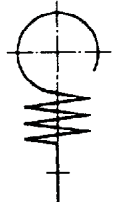
No.	Type of spring	Representation		
		View	Section	Simplified
4.7	Conical helical compression spring of strip having rectangular cross-section Volute spring			

5 Helical extension springs

The requirements for the indication of the cross-section of the material and direction of helix are identical to those given in clause 4.

The shape of the ends shall be specified on the drawing, with dimensions if necessary.

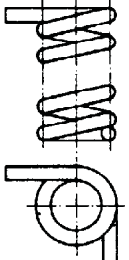
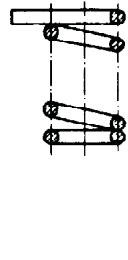
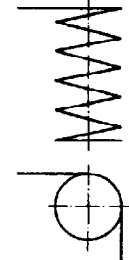
The spring and its ends usually have the same diameter.

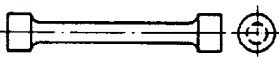
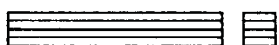
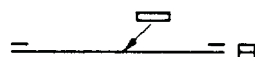
No.	Type of spring	Representation		
		View	Section	Simplified
5.1	Cylindrical helical extension spring			

6 Torsion springs

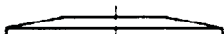
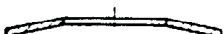
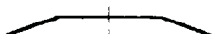
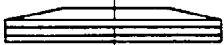
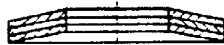
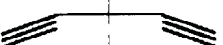
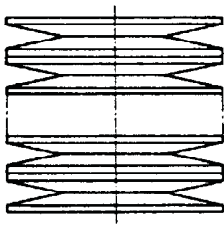
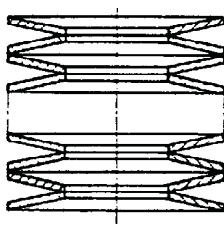
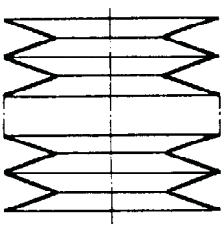
The requirements for the indication of the direction of helix and the cross-section of the material for 6.1 are identical to those given in clause 4. For 6.2 and 6.3, the cross-section of the material shall be indicated.

The shape of the ends shall be specified on the drawing, with dimensions if necessary.

No.	Type of spring	Representation		
		View	Section	Simplified
6.1	Cylindrical helical torsion spring			

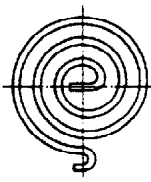
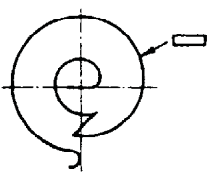
No.	Type of spring	Representation	
		View	Simplified
6.2	Torsion bar spring having circular cross-section		
6.3	Stacked laminated torsion bar spring of strips having rectangular cross-section		

7 Disc springs (Belleville)

No.	Type of spring	Representation		
		View	Section	Simplified
7.1	Disc spring, single			
7.2	Multi-disc spring (disc laminated in parallel)			
7.3	Multi-disc spring (disc laminated in series) Disc spring column			

8 Spiral springs

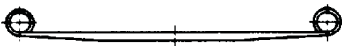
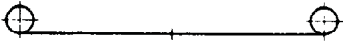
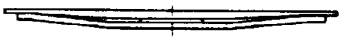
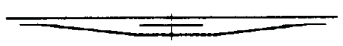
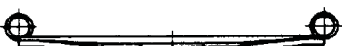
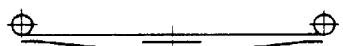
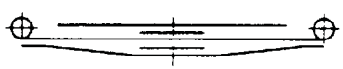
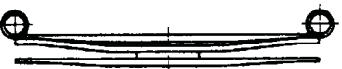
The cross-section of the material shall be indicated (see example in 8.1). In cases 8.1 and 8.2 the shape of the ends needs to be indicated.

No.	Type of spring	Representation	
		View	Simplified
8.1	Spiral spring of strip having rectangular cross-section		

No.	Type of spring	Representation	
		View	Simplified
8.2	Constant force extension spring		
8.3	Constant force spring — A-Motor		
8.4	Constant force spring — B-Motor		

9 Leaf springs

No.	Type of spring	Representation	
		View	Simplified
9.1	Laminated leaf spring without eyes		
9.2	Laminated leaf spring with eyes		
9.3	Laminated leaf spring with eyes and helper spring		
9.4	Laminated leaf spring with eyes and auxiliary spring		

No.	Type of spring	Representation	
		View	Simplified
9.5	Parabolic single-leaf spring with eyes		
9.6	Parabolic multi-leaf spring without eyes		
9.7	Parabolic multi-leaf spring with eyes		
9.8	Parabolic multi-leaf spring with eyes and helper spring		
9.9	Parabolic multi-leaf spring with eyes and auxiliary spring		

Annex ZA (normative)

Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

Publication	Year	Title	EN	Year
ISO 2162-2	1993	<i>Technical product documentation — Springs — Part 2 : Presentation of data for cylindrical helical compression springs</i>	EN ISO 2162-2	1996



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