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Partie 2: Spécifications techniques

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 227, *Springs*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

A list of all parts in the ISO 19690 series can be found on the ISO website.

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Disc springs —

Part 2:
Technical specifications

1 Scope

This document specifies two different grades of disc springs.

Grade A defines basic requirements of disc springs for static applications with low and moderate performance. Springs manufactured according to Grade A are not used for dynamic applications.

Grade B defines requirements on disc springs especially used for dynamic applications and high performance static applications. Disc springs according to Grade B ensure a better quality by higher demands on manufacturing processes and tolerance requirements. Grade B includes graphs showing the guaranteed fatigue life such as a function of stress.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 683-1, *Heat-treatable steels, alloy steels and free-cutting steels — Part 1: Non-alloy steels for quenching and tempering*

ISO 683-2, *Heat-treatable steels, alloy steels and free-cutting steels — Part 2: Alloy steels for quenching and tempering*

ISO 6507 (all parts), *Metallic materials — Vickers hardness test*

ISO 6508 (all parts), *Metallic materials — Rockwell hardness test*

ISO 16249, *Springs — Symbols*

ISO 26909, *Springs — Vocabulary*

EN 1654, *Copper and copper alloys — Strip for springs and connectors*

EN 10083-1, *Quenched and tempered steels — Technical delivery conditions for special steels*

EN 10083-2, *Quenched and tempered steels — Technical delivery conditions for unalloyed quality steels*

EN 10083-3, *Quenched and tempered steels — Technical delivery conditions for boron steels*

EN 10089, *Hot-rolled steels for quenched and tempered springs — Technical delivery conditions*

EN 10132-4, *Cold-rolled narrow steel strip for heat treatment — Technical delivery conditions — Part 4: Spring steels and other applications*

EN 10151, *Stainless steel strip for springs — Technical delivery conditions*

JIS G 3311, *Cold-rolled special steel strip*

JIS G 4801, *Spring steels*

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JIS G 4802, *Cold-rolled steel strip for springs*

ASTM A240, *Standard specification for chromium and chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications*

ASTM A332, *Specification for nickel-chromium-molybdenum steel bars for springs*

ASTM A506, *Standard specification for alloy and structural alloy steel, sheet and strip, hot-rolled and cold-rolled*

ASTM A568, *Standard specification for steel, sheet, carbon, structural, and high-strength, low-alloy, hot-rolled and cold-rolled, General requirements for*

ASTM A666, *Standard specification for annealed or cold-worked austenitic stainless steel sheet, strip, plate, and flat bar*

ASTM A682, *Standard specification for steel, strip, high carbon, cold rolled, General requirements for*

ASTM A684, *Standard specification for steel, strip, high carbon, cold rolled*

ASTM A689, *Standard specification for carbon and alloy steel bars for springs*

ASTM A693, *Standard specification for precipitation-hardening stainless and heat-resistant steel plate, sheet, and strip*

ASTM B103, *Standard specification for phosphor bronze pate, sheet, strip, and rolled bar*

ASTM B194, *Standard specification for copper-beryllium alloy plate, sheet, strip, and rolled bar*

ASTM B196, *Standard specification for copper-beryllium alloy rod and bar*

GB/T 1222, *Spring steels*

BS 970-2, *Specification for wrought steels for mechanical and allied engineering purposes: Requirements for steels for the manufacture of hot-formed springs*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 26909 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Symbols and units

For the purposes of this document, the symbols and units given in ISO 16249, Table 1 and Figure 1 apply.

Table 1 — Symbols and units for design calculation

Symbol	Unit	Parameter
b_r	mm	width of scar (see Figure 2)
D	mm	external diameter of spring
D_0	mm	diameter of centre of rotation
d	mm	internal diameter of spring

NOTE 1 N/mm² = 1 MPa.

[a] *r* is not chamfered unless otherwise agreed between customer and supplier.

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