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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 1973.2-2025

Replacing GB/T 1973.2-2005

**Small cylindrical helical springs - Part 2: Dimension and
parameters - Extension springs**

小型圆柱螺旋弹簧 第2部分：尺寸及参数 拉伸弹簧

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents". Drafting.

This document is Part 2 of GB/T 1973 "Small Cylindrical Helical Springs". GB/T 1973 has already published the following parts.

- Part 1: Technical Specifications;
- Part 2: Dimensions and Parameters of Tension Springs;
- Part 3: Dimensions and Parameters of Compression Springs This document supersedes GB/T 1973.2-2005 "Dimensions and Parameters of Small Cylindrical Helical Tension Springs" and is consistent with GB/T 1973.2-2005.

Aside from structural adjustments and editorial changes, the main technical changes are as follows.

- a) The content of the element "Terminology" has been changed (see Chapter 3, Chapter 3 of the 2005 edition), and some symbols in Table 1 have been changed (see Chapter 4). Chapter 3 (2005 edition);
- b) The content of the element "Materials" has been changed (see Chapter 6, Chapter 5 of the 2005 edition);
- c) Delete normative reference document YB(T)11 (see Chapter 5 of the 2005 edition);
- d) Add normative reference GB/T 24588 (see Chapter 6);

e) Corrected the calculation error of the initial tension (see Tables 2 and 3, 2005 editions of Tables 2 and 3);

f) The specification with a diameter of $\phi 0.35\text{mm}$ has been changed to $\phi 0.36\text{mm}$ (see Tables 2 and 3, 2005 editions);

g) Added a series of specifications for steel wire diameter of $\phi 0.48\text{mm}$ in Tables 2 and 3 of Chapter 12 (see Tables 2 and 3).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Springs (SAC/TC235).

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The release history of this document and the document it replaces is as follows.

- First published in 1980 as GB/T 1973-1980, first revised in 1989 as GB/T 1973.2-1989, and revised again in 2005. Second revision;

- This is the third revision.

Introduction

Cold-formed cylindrical helical springs are a commonly used elastic element, widely used in industries such as machinery, chemical engineering, aerospace, and construction. They are made of steel wire.

Cold-formed cylindrical helical springs made from circular cross-section materials with diameters of 0.16 mm to 0.48 mm are classified as small cylindrical helical springs. (GB/T 1973) The "Small Cylindrical Helical Spring" is planned to be divided into 3 parts.

- Part 1: Technical Specifications. The purpose is to provide the technical requirements, test methods, inspection rules, and packaging for small cylindrical helical springs.

Requirements for packaging, labeling, transportation, and storage.

- Part 2: Dimensions and Parameters of Tension Springs. The purpose is to provide the markings, dimensions, and parameters of small cylindrical helical tension springs.

- Part 3: Dimensions and Parameters of Compression Springs. The purpose is to provide the markings, dimensions, and parameters of small cylindrical helical compression springs.

Dimensions and parameters of tension springs

1 Scope

This document specifies the markings, dimensions, and parameters for small cylindrical helical tension springs.

This document applies to general-purpose cold-formed cylindrical helical stretching of steel wires with a diameter of 0.16mm to 0.48mm.

Spring (center-pressed round hook type); other hook-type tension springs can be used as a reference.

2 Normative references

GB/T 1805

GB/T 1973.1-2021

GB/T 4357

GB/T 4459.4

GB/T 13911

GB/T 24588

3 Terms and Definitions

The terms and definitions defined in GB/T 1805 apply to this document.

4 Symbols, Units, and Parameter Names

The symbols, units, and parameter names given in Table 1 are applicable to this document.

Table 1. Symbols, Units, and Parameter Names

Symbolic unit	parameter name
d mm	Material diameter
D mm	Spring mean diameter
De mm	spring outer diameter
C	- Wound ratio
Fi N	Initial tension
Fs N	Test Load
F1, F2, N	represent the loads of the springs at specified lengths L1 and L2.

L0 mm measures the free length between the inner radii of the hook and loop.

Ls mm Spring length under test load
 Fs ss mm Deformation under test load
 Total number of NT laps
 Table 1. Symbols, Units, and Parameter Names (Continued)

Symbolic unit	parameter name
n valid revolutions	RN/mm Spring stiffness
taus MPa	Test shear stress
taui MPa	Initial shear stress
L mm	Spring material unfolded length
Q mg	the mass of a single

spring piece m mm hook and loop opening

5 Working diagram of the spring and hook angle type

5.1 Cold-formed cylindrical helical tension springs, hereinafter referred to as springs, shall be drawn in accordance with GB/T 4459.4.

5.2 The hook-loop angle type of the spring is divided into two types. type A (see Figure 1) and type B (see Figure 2). Figure 1 Type A Figure 2 Type B

6 Materials

The spring material uses steel wire with a diameter of 0.16mm to 0.48mm, and specifies the use of DM grade steel wire as per GB/T 4357 or GB/T 24588.

Group B steel wire. When using Group B steel wire from GB/T 24588, the designation "S" must be indicated in the marking. If other grades (groups) and specifications are used...

The materials shall be agreed upon by both the supplier and the buyer and indicated in the markings.

7 Manufacturing precision

Spring stiffness, spring outer diameter, free length, and hook and loop opening size are manufactured to grade 3 precision as specified in GB/T 1973.1-2021.(If required...) When manufacturing at other levels of precision, the supplier and the buyer shall negotiate and specify the precision level.

8 Rotation direction

The spring has a right-hand rotation; if a left-hand rotation is required, it should be marked "left".