

ICS 21.060.10
CCS J13



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

GB/T 70.3-2023

**Hexagon socket countersunk head screws with reduced
loadability**

降低承载能力内六角沉头螺钉

Issued on: May 23, 2023

Implemented on: December 1, 2023

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents. This Document is Part 3 of GB/T

70 Hexagon Socket Screws (containing measuring gauge). GB/T 70 has published the following parts:

70.1 Hexagon Socket head Cap Screws;

70.2 Hexagon Socket Button Head Screws;

70.3 Hexagon Socket Countersunk Head Screws with Reduced Loadability;

70.4 Hexagon Socket Button Head Screws with Collar;

70.5 Gauging of Hexagon Sockets;

70.6 Hexagon Socket Head Cap Screws - Fine Pitch Thread. This Document replaced GB/T 70.3-2008 Hexagon Socket Countersunk Head Screws. Compared with GB/T 70.3-2008, this Document has the major technical changes as follows besides the structural adjustments and editorial modifications:

a) It is clearly stated that hexagon socket countersunk head screws have reduced loadability due to their head design (head size and hexagon socket penetration depth) (see Clause 1 of this Edition; Clause 1 of the 2008 Edition);

b) Add M2 and M2.5. Since their minimum tensile loads are not specified in GB/T 3098.1 and GB/T 3098.6, the corresponding formulas are used for calculation (see Clause 1, Table 1, Annex A of this Edition);

- c) Add material and technical requirements for stainless steel screws (see Clause 1, Table 4, Table 5 of this Edition);
- d) Add head type details (see Figure 4 of this Edition);
- e) Delete the shorter lengths of M4–M20 (see Table 1 of the 2008 Edition);
- f) Increase the actual maximum value of d_k (see Table 1 and Table 2 of this Edition);

1 Scope

GB/T 70.3-2023 covers the hexagon socket countersunk head screw, and is unusually explicit about its own limitation. A countersunk head has to sit flush, which leaves very little metal above the socket; the head is therefore weaker than the shank, and the screw cannot develop the tightening torque its thread and property class would otherwise allow. The title says so - reduced loadability due to the head design - because a designer who selects this screw on the strength of its property class alone will over-torque it and strip or shear the head. This document specifies the type, dimensions, technical conditions, marking, labels and designations for these screws. It applies to hexagon socket countersunk head screws in thread sizes M2 to M20 with coarse thread, in property classes 8.8 and 10.9. It is part 3 of the GB/T 70 series covering hexagon socket screws. Under ICS 21.060.10 and CCS J13, it is the reference for fastener manufacturers, for mechanical designers specifying a flush-mounted fastening, and for the assembly engineering that has to set a tightening torque the head will actually survive.

This Document specifies the type, dimensions, technical conditions, marking, labels and signs of hexagon socket countersunk head screws with reduced loadability due to head design. This Document is applicable to hexagon socket countersunk head screws with thread specifications M2–M20; coarse threads; performance levels 8.8,

10.9 and 12.9; groups and performance levels A2-50, A4-50, A2-70, A4-70, A2-80 and A4-80, and Level-A products. NOTE 1: For other size options, see GB/T 2, GB/T 197 and GB/T 3106. NOTE 2: Reduced loadability (related to the combination of countersunk head size and hexagonal penetration depth specified in this Document) implies a limit to the minimum tensile load (see Table 5). NOTE 3: Special attention needs to be paid to ensure that the countersunk head is aligned with the countersunk hole support surface in the assembly.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document. GB/T

2 Fasteners - Ends of Parts with External Thread (GB/T 2-2016, ISO 4753:2011, MOD)
GB/T

90.1 Fasteners - Acceptance Inspection (GB/T 90.1-2023, ISO 3269:2019, MOD) GB/T

90.2 Fasteners - Marking and packaging

GB/T 197 General purpose metric screw threads - Tolerances (GB/T 197-2018, ISO 965-1:2013, MOD)

GB/T 1237 Designation system for fasteners (GB/T 1237-2000, eqv ISO 8991:1986)

GB/T 3098.1 Mechanical properties of fasteners - Bolts, screws and studs (GB/T 3098.1-2010, ISO 898-1:2009, MOD)

GB/T 3098.6 Mechanical properties of fasteners - Stainless steel bolts, screws and studs (GB/T 3098.6-2023, ISO 3506-1:2020, MOD)

GB/T 3099.4 Terminology of fasteners - Control, inspection, delivery, acceptance and quality (GB/T 3099.4-2021, ISO 1891-4:2018, MOD)

GB/T 3103.1 Essential oils and aromatic extracts - Determination of residual benzene content (GB/T 3103.1-2002, idt ISO 4759-1:2000)

GB/T 5267.1 Fasteners - Electroplate coating (GB/T 5267.1-2023, ISO 4042:2022, MOD)

GB/T 5267.2 Fasteners - Non-electrolytically applied zinc flake coatings (GB/T 5267.2-2021, ISO 10683:2018, MOD)

GB/T 5276 Fasteners - Bolts, screws, studs and nuts - Symbols and descriptions of dimensions (GB/T 5276-2015, ISO 225:2010, MOD)

GB/T 5779.1 Fasteners-Surface discontinuities - Bolts, screws and studs for general requirements (GB/T 5779.1-2000, idt ISO 6157-1:1988)

3 Terms and Definitions

For the purposes of this Document, no terms and definitions apply.