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

GB/T 14-2013

Replacing GB/T 14-1998

Mushroom head square neck bolts

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Foreword

This standard is one of the national standards of the "bolt series of standards", a series that includes GB/T 8, GB/T 10, GB/T 11, GB/T 12, GB/T 13, GB/T 14, GB/T 15, GB/T 27, GB/T 28, GB/T 29.1, GB/T 29.2, GB/T 31.1, GB/T 31.2, GB/T 31.3, GB/T 32.1, GB/T 32.2, GB/T 32.3, GB/T 35, GB/T 5780, GB/T 5781, GB/T 5782, GB/T 5783, GB/T 5784, GB/T 5785, GB/T 5786, GB/T 5789, GB/T 5790, GB/T 16674.1 and GB/T 16674.2.

This standard is drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 14-1998 Mushroom head square neck bolts - Product grade C.

The main changes with respect to GB/T 14-1998 are as follows: the title of the standard has been modified; the international standard ISO 8677:1986 Mushroom head square neck bolts - Product grade C has not been adopted; the provision that "commodity fastener varieties should be selected in preference" (Clause 1 of the 1998 edition) has been deleted; the normative references have been updated (Clause 2); the term "general length specification range" has been added (see note h of Table 1); general technical conditions have been added (see Table 2); and the stainless steel property classes A2-50 and A2-70 have been added (see Table 2).

This standard was proposed by the China Machinery Industry Federation and is under the jurisdiction of the National Technical Committee on Fasteners of Standardization Administration of China (SAC/TC 85).

The organisation responsible for drafting this standard is the China Machinery Productivity Promotion Centre; the participating drafting organisations are Ningbo Economic and Technological Development Zone Yonggang Fastener Co. Ltd. and Ningbo Zhongji Machinery Parts Testing Co. Ltd.

The previous editions of the standard replaced by this one are GB 14-1958, GB 14-1976, GB/T 14-1988 and GB/T 14-1998.

1 Scope

China's national dimensional standard for mushroom head square neck bolts - the fastener the rest of the world calls a carriage bolt or a coach bolt. Under its low domed head the bolt carries a square neck; driven into a round hole in sheet or a square hole in a section, the neck locks against the material so the bolt cannot spin while the nut is tightened from behind. That is what makes it the fastener of choice for a joint accessible from one side only, and the smooth head is what makes it the fastener of choice where nothing should snag - conveyor belts, guard rails, agricultural machinery, timber framing, vehicle bodywork. The standard makes such bolts interchangeable between suppliers: it fixes the form, the complete dimension table across the thread sizes covered, the length range generally available for each size, and the unthreaded shank and clamping lengths that decide whether the bolt will actually reach through a given stack of material. It then sets out the technical conditions - the thread standards and tolerance classes, the mechanical property classes for both steel and stainless steel, the product grade and its tolerances, the surface treatments including electroplating and hot dip galvanizing, and the acceptance and packaging rules - each referred to the standard that governs it, and gives the designation method with a worked example. It covers thread sizes M5 to M20 in product grade C. The 2013 edition changed the title of the standard, chose not to adopt ISO 8677:1986, and added the stainless steel property classes.

This standard specifies mushroom head square neck bolts with thread sizes M5 to M20 and product grade C.

2 Normative references

The following documents are indispensable for the application 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.

GB/T 2 Fasteners - Ends of parts with external metric ISO thread.

GB/T 90.1 Fasteners - Acceptance inspection; GB/T 90.2 Fasteners - Marking and packaging.

GB/T 196 General purpose metric screw threads - Basic dimensions; GB/T 197 General purpose metric screw threads - Tolerances.

GB/T 1237 Designation method for fasteners.

GB/T 3098.1 Mechanical properties of fasteners - Bolts, screws and studs; GB/T 3098.6 Mechanical properties of fasteners - Stainless steel bolts, screws and studs.

GB/T 3103.1 Tolerances for fasteners - Bolts, screws, studs and nuts.

GB/T 5267.1 Fasteners - Electroplated coatings; GB/T 5267.3 Fasteners - Hot dip galvanized coatings.

GB/T 5276 Fasteners - Bolts, screws, studs and nuts - Symbols and descriptions of dimensions.

GB/T 16938 Fasteners - General requirements for bolts, screws, studs and nuts.

3 Dimensions

The form and the dimensions are given in Figure 1 and Table 1.

The dimensional symbols and the method of marking them conform to GB/T 5276.

Table 1 gives, for each thread size, the pitch, the thread length, the head and square neck dimensions and the nominal lengths with their limits, and then, in its continuation, the minimum unthreaded shank length and the maximum clamping length for each combination of thread size and nominal length. Its notes state that bolts below a stated nominal length and thread diameter may be made with a full thread; that the measuring range of the minimum head dimension runs from the bearing face over a stated fraction of the head height; that above a stated nominal length the lengths increase in fixed steps; that the specifications shown in brackets should be avoided where possible; how the minimum unthreaded shank length and the maximum clamping length are derived from the nominal length and the thread length; and that the range between the stepped solid lines is the general length specification range.

4 Technical conditions and referenced standards

The technical conditions and the referenced standards are given in Table 2.

Table 2 covers two materials, steel and stainless steel. For both it refers the general technical conditions to GB/T 16938, the thread standards to GB/T 196 and GB/T 197, the product grade to grade C except where Clause 3 specifies otherwise with the tolerance standard GB/T 3103.1, and the acceptance and packaging to GB/T 90.1 and GB/T 90.2. The mechanical property classes are referred to GB/T 3098.1 for steel and to GB/T 3098.6 for stainless steel. For the surface finish, steel bolts are supplied as processed, with the technical requirements for electroplating according to GB/T 5267.1 and for hot dip galvanizing according to GB/T 5267.3, while stainless steel bolts are given a simple treatment; any other surface treatment is to be agreed between supplier and purchaser.

5.1 Designation method

The designation method is as specified in GB/T 1237.

5.2 Designation example

A mushroom head square neck bolt with thread size $d = M12$, nominal length $l = 80 \text{ mm}$, the property class stated in the example, no surface treatment and product grade C is designated: Bolt GB/T 14 M12x80.

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