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

**GB/T 12-2013**

Replacing GB/T 12-1988

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**Cup head square neck bolts**

圆头方颈螺栓

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### Foreword

This standard is one of the national standards in the bolt series, a series that includes the square head bolts, countersunk head square neck bolts, countersunk head bolts with nib, cup head square neck bolts, cup head bolts with nib, mushroom head square neck bolts, mushroom head bolts with nib, hexagon head bolts with large shank, hexagon head bolts with holed shank, hexagon head slotted bolts, hexagon head cross-recessed bolts, small square head bolts, hexagon head bolts of the various grades and series, and hexagon flange bolts.

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

This standard replaces GB/T 12-1988 Cup head square neck bolts (semi-round head square neck bolts). Compared with GB/T 12-1988 the main changes are the following: the title of the standard has been changed; the statement that commercial fastener types are to be selected in preference has been removed (Clause 1 of the 1988 edition); the normative references have been updated (Clause 2); the general length range replaces the commercial size range (see Table 1); general technical conditions have been added (see Table 2); property class 3.6 has been removed; and the stainless steel 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 previous editions of the standard replaced by this one were GB 12-1958, GB 12-1976 and GB/T 12-1988.

### 1 Scope

The product standard for the carriage bolt in China. A cup head square neck bolt is the bolt with a domed head and no drive on it: the square section under the head bites into a square or slotted hole so that the bolt cannot turn while the nut is tightened from the other side, which is why it holds together wooden structures, agricultural machinery, conveyor buckets, guard rails and anything else that must be assembled by one person working from one side. Because the head is smooth there is nothing to inspect visually, and the joint depends entirely on the square neck being the right size for the hole and the shank being the right property class. This standard fixes those things: the form and dimensions of the bolt with its figure and dimension table, the technical conditions and the standards they refer to for thread, mechanical properties, tolerances, surface treatment, acceptance and packaging, and the designation method with a worked example. It covers thread sizes from M6 to M20 in product grade C. The 2013 edition renamed the standard, dropped the old instruction on preferred commercial sizes, replaced the commercial size range with a general length range, added a table of general technical conditions, removed property class 3.6 and added the stainless steel classes A2-50 and A2-70. It belongs to a family of Chinese bolt standards that runs from square head bolts to hexagon flange bolts.

This standard specifies cup head square neck bolts with thread sizes from M6 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 of 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 5276 Fasteners - Bolts, screws, studs and nuts - Symbols and designations of dimensions.

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

### 3 Dimensions

The form and the dimensions are given in Figure 1 and Table 1. The dimension symbols and the way they are marked comply with GB/T 5276.

Figure 1 shows the domed head, the square neck under it and the shank, with a section through the square neck; it notes that the diameter of the unthreaded part of the shank is approximately equal to the pitch diameter or to the major diameter of the thread, and that the bolt end is a rolled end in accordance with GB/T 2. Table 1 carries, for each thread size from M6 to M20, the head and neck dimensions, the thread length and the general length range. The values themselves are in the standard.

### 4 Technical conditions and referenced standards

The technical conditions and the standards they refer to are given in Table 2. The table is set out in two material columns, steel and stainless steel, and covers: the general technical conditions, to GB/T 16938; the thread, with its tolerance class and the standards GB/T 196 and GB/T 197; the mechanical properties, with the property classes for steel and for stainless steel and the standards GB/T 3098.1 and GB/T 3098.6; the tolerances, with the product grade and the standard GB/T 3103.1; the surface treatment, either as-processed or, for electroplating, to the technical requirements of GB/T 5267.1, and simple treatment for stainless steel, any other surface treatment being a matter for agreement between supplier and purchaser; and the acceptance and packaging, to GB/T 90.1 and GB/T 90.2.

#### 5.1 Designation method

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

#### 5.2 Designation example

Clause 5.2 gives a worked example of the designation of a cup head square neck bolt of a stated thread size and nominal length, of a stated property class, with no surface treatment and of product grade C, written out in the form "Bolt GB/T 12 M... x ...".