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(ISO 4759-1 : 2000)

(JFRI/JSA)

**Tolerances for fasteners—
Part 1 : Bolts, screws, studs and
nuts—Product grades A, B and C**

ICS 21.060.10; 21.060.20

Reference number : JIS B 1021 : 2003 (E)

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Research Institute for Screw Threads and Fasteners (JFRI)/ the Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS B 1021 : 1985** is replaced with this Standard.

This revision has been made based on **ISO 4759-1 : 2000** *Tolerances for fasteners—Part 1 : Bolts, screws, studs and nuts—Product grades A, B and C* for the purposes of making easy to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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Tolerances for fasteners— Part 1 : Bolts, screws, studs and nuts— Product grades A, B and C

Introduction This Japanese Industrial Standard has been prepared based on the second edition of **ISO 4759-1 : 2000** *Tolerances for fasteners—Part 1 : Bolts, screws, studs and nuts—Product grades A, B and C* published in 2000 without modifying the technical contents.

1 Scope This Standard specifies a selection of tolerances for bolts, screws, studs and nuts with **ISO** metric threads and with product grades A, B and C and for tapping screws with product grade A.

NOTE 1 The product grades refer to the size of the tolerances where grade A is the most precise and grade C is the least precise.

NOTE 2 The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are **IDT** (identical), **MOD** (modified), and **NEQ** (not equivalent) according to **ISO/IEC Guide 21**.

ISO 4759-1 : 2000 *Tolerances for fasteners—Part 1 : Bolts, screws, studs and nuts—Product grades A, B and C* (**IDT**)

The tolerances, except tolerances for threads, are selected from the system of limits and fits specified in **JIS B 0401-1** and **JIS B 0401-2**. The tolerances for metric threads are taken from the series of tolerance classes specified in **JIS B 0209-3**. The tolerances for tapping screw threads are covered in **JIS B 1007**.

The tolerances of form and position are specified and indicated in accordance with **JIS B 0021**, **JIS B 0023** and **JIS B 0024**.

The tolerances specified in this Standard apply to fasteners prior to coating unless otherwise specified. See also **JIS B 1044**.

Deviations from the tolerances specified in this Standard are only permitted in product standards where there are valid technical reasons. In cases where there is a difference between the tolerance requirements in this Standard and the product standard, the product standard takes precedence.

It is recommended that these tolerances also be used for non-standard fasteners.

Dimensions and tolerances given in this Standard are in millimetres.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 0021 *Geometrical product specification (GPS)—Geometrical tolerancing—Tolerancing of form, orientation, location and run-out*

NOTE : **ISO/DIS 1101** : 1996 *Geometrical product specifications (GPS)—Geometrical tolerancing—Tolerancing of form, orientation, location and run-out* is identical with the said standard.

JIS B 0023 *Technical drawings—Geometrical tolerancing—Maximum material requirement and least material requirement*

NOTE : **ISO 2692** : 1988 *Technical drawings—Geometrical tolerancing—Maximum material principle* is identical with the said standard.

JIS B 0024 *Technical drawings—Fundamental tolerancing principle*

NOTE : **ISO 8015** : 1985 *Technical drawings—Fundamental tolerancing principle* is identical with the said standard.

JIS B 0143 *Symbols and designations of dimensions for threaded fasteners*

NOTE : **ISO 225** : 1983 *Fasteners—Bolts, screws, studs and nuts—Symbols and designation of dimensions* is equivalent to the said standard.

JIS B 0209-3 *ISO general purpose metric screw threads—Tolerances—Part 3 : Deviations for constructional screw threads*

NOTE : **ISO 965-3** : 1988 *ISO general purpose metric screw threads—Tolerances—Part 3 : Deviations for constructional screw threads* is identical with the said standard.

JIS B 0401-1 *ISO system of limits and fits—Part 1 : Bases of tolerances, deviations and fits*

NOTE : **ISO 286-1** : 1988 *ISO system of limits and fits—Part 1 : Bases of tolerances, deviations and fits* is identical with the said standard.

JIS B 0401-2 *ISO system of limits and fits—Part 2 : Tables of standard tolerance grades and limit deviations for holes and shafts*

NOTE : **ISO 286-2** : 1988 *ISO system of limits and fits—Part 2 : Tables of standard tolerance grades and limit deviations for holes and shafts* is identical with the said standard.

JIS B 1005 *Radii under the head for external threaded fasteners*

NOTE : **ISO 885** : 2000 *General purpose bolts and screws—Metric series—Radii under the head* is identical with the said standard.

JIS B 1007 *Threads and thread ends for tapping screws*

NOTE : **ISO 1478** : 1999 *Tapping screws thread* is equivalent to the said standard.

JIS B 1012 *Cross recesses for screws*

NOTE : **ISO 4757** : 1983 *Cross recesses for screws* is equivalent to the said standard.

JIS B 1013 *Countersunk head screws—Head configuration and gauging*

NOTE : **ISO 7721** : 1983 *Countersunk head screws—Head configuration and gauging* is identical with the said standard.

JIS B 1015 *Hexalobular internal driving feature for bolts and screws*

NOTE : **ISO 10664** : 1999 *Hexalobular internal driving feature for bolts and screws* is identical with the said standard.

JIS B 1044 *Fasteners—Electroplated coatings*

NOTE : **ISO 4042** : 1999 *Fasteners—Electroplated coatings* is identical with the said standard.

JIS B 1123 *Hexagon head tapping screws*

NOTE : **ISO 1479** : 1983 *Hexagon head tapping screws* is equivalent to the said standard.

JIS B 1126 *Hexagon washer head tapping screws*

NOTE : **ISO 7053** : 1992 *Hexagon washer head tapping screws* is identical with the said standard.

JIS B 1127 *Hexagon flange head tapping screws*

NOTE : **ISO 10509** : 1992 *Hexagon flange head tapping screws* is identical with the said standard.

JIS B 1181 *Hexagon nuts and hexagon thin nuts*

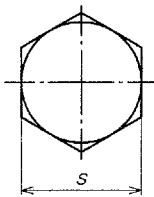
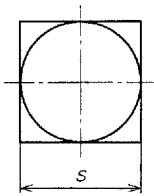
NOTE : **ISO 4032** : 1999 *Hexagon nuts, style 1—Product grades A and B* is equivalent to the said standard.

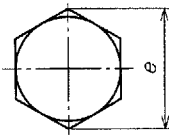
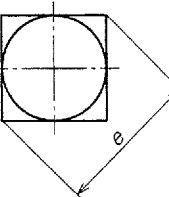
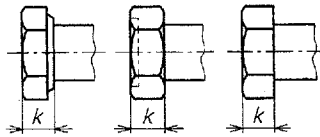
JIS B 1194 *Hexagon socket countersunk head screws*

NOTE : **ISO 10642** : 1997 *Hexagon socket countersunk head screws* is identical with the said standard.

3 Tolerances for metric bolts, screws and studs

3.1 Dimensional tolerances Symbols and designations of dimensions are specified in JIS B 0143.

Feature	Tolerance for product grades			Notes
	A	B	C	
3.1.1 Tolerance level Shank and bearing surface Other features	close close	close wide	wide wide	
3.1.2 External thread	6g	6g	8g (but 6g for property class 8.8 and higher)	For certain products and coatings, other tolerance classes for threads may be specified in the relevant product and coating standards.
3.1.3 Driving features 3.1.3.1 External 3.1.3.1.1 Width across flats				
 Figure 1  Figure 2	<i>s</i>	Tolerance	<i>s</i>	Tolerance
	≤30	h13	≤ 18	h14
	>30	h14	> 18 ≤ 60	h15
			> 60 ≤180	h16
		>180	h17	

Feature	Tolerance for product grades			Notes
	A	B	C	
3.1.3.1.2 Width across corners  Figure 3	$e_{\min} = 1.13s_{\min}$ $e_{\min} = 1.12s_{\min}$ for bolts and screws with flange and other cold forged heads without trimming operation			
 Figure 4	$e_{\min} = 1.13s_{\min}$			
3.1.3.1.3 Height of head  Figure 5	js14	js15		
<i>k</i>			Tolerance	
< 10			js16	
≥ 10	js17			