IS 1364 (Part 2) : 2002
ISO 4017 : 1999

भारतीय मानक

उत्पाद ग्रेड ए और बी के लिए षटकोणीय शीर्ष वाले काबले, पेंच और ढिबरियाँ

भाग 2 षटकोणीय शीर्ष वाले पेंच (साइज़ रेंज एम 1.6 से एम 64 तक)

(चौथा पुनरीक्षण)

Indian Standard

HEXAGON HEAD BOLTS, SCREWS AND NUTS OF PRODUCT GRADES A AND B

PART 2 HEXAGON HEAD SCREWS (SIZE RANGE M 1.6 TO M 64)

(Fourth Revision)

ICS 21.060.10

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 2002

Price Group 6

Bolts, Nuts and Fasteners Accessories Sectional Committee, BP 33

NATIONAL FOREWORD

This Indian Standard (Part 2) (Fourth Revision) which is identical with ISO 4017 : 1999 'Hexagon head screws — Product grades A and B' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Bolts, Nuts and Fasteners Accessories Sectional Committee and approval of the Basic and Production Engineering Division Council.

IS 1364 was originally published in 1960 and first revised in 1967. Subsequent to the publication of 1967 edition, many changes had been agreed upon at international level which have been reflected in IS 1367 series of standards covering 'Technical supply conditions for threaded steel fasteners'. Accordingly, second revision was published in 1983 splitting the standard into 5 parts covering hexagon head bolts, hexagon head screws, hexagon nuts, hexagon thin nuts (chamfered) and hexagon thin nuts (unchamfered).

The third revision of this standard was published in 1992 by adoption of ISO 4017 : 1988. This fourth revision has been prepared by adoption of latest version of ISO 4017 published in 1999. The remaining parts of the standard, that is, Part 1, Part 3, Part 4 and Part 5 are also being revised by adopting the corresponding latest editions of ISO Standards published in 1999.

The Committee also decided to publish Indian Standard on 'Hexagon nuts, style 2 — Product grades A and B' as Part 6 of IS 1364. The Part 6 will supersede IS/ISO 4033 : 1979 on its publication.

In 1967 version of this standard, the widths across flat dimensions for M10 and M12 size fasteners were specified as 17 mm and 19 mm respectively. However, in the 1983 version, these widths across flat dimensions were brought in line with ISO 4017 : 1979 and specified as 16 mm and 18 mm respectively for M10 and M12 size fasteners. Recognizing the difficulty of immediate changeover to new width across flat dimensions, the Committee decided to permit width across flat dimensions as per 1967 version, that is, 17 mm and 19 mm for M10 and M12 size fasteners till 31 December 1994. Now it is expected that the entire fastener industry would have switched over to new width across flat dimensions and from 1 January 1995, no old width across flat dimensions shall be permitted.

The text of ISO Standard has been approved as suitable for publication as Indian Standard without deviations. Certain terminology and conventions are, however, not identical to those used in Indian Standards. Attention is drawn especially to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 225 : 1983	IS 8536 : 1987 Fasteners — Bolts, screws, studs and nuts — Symbols and designation of dimensions (*first revision*)	Identical

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 724 : 1993	IS 4218 (Part 3) : 1999 ISO General purpose metric screw threads: Part 3 Basic dimensions (*second revision*)	Identical
ISO 888 : 1976	IS 4206 : 1987 Dimensions for nominal lengths and thread lengths for bolts, screws and studs (*first revision*)	do
ISO 898-1 : 1999	IS 1367 (Part 3) : 2002 Technical supply conditions for threaded steel fasteners: Part 3 Mechanical properties of fasteners made of carbon steel and alloy steel — Bolts, screws and studs (*fourth revision*)	do
ISO 965-1 : 1998	IS 14962 (Part 1) : 2001 ISO General purpose metric screw threads — Tolerances : Part 1 Principles and basic data	do
ISO 3269 : [1)]	IS 1367 (Part 17) : 1996 [2)] Industrial fasteners — Threaded steel fasteners — Technical supply conditions: Part 17 Inspection, sampling and acceptance procedure (*third revision*)	do
ISO 3506-1 : 1997	IS 1367 (Part 14/Sec 1) : 2002 Technical supply conditions for threaded steel fasteners: Part 14 Mechanical properties of corrosion resistant stainless-steel fasteners, Section 1 Bolts, screws and studs (*third revision*)	do
ISO 3508 : 1976	IS 1369 (Part 1) : 1993 Fasteners — Thread run-outs and undercuts: Part 1 Dimensions for screw thread run-outs for external ISO metric threads (*third revision*)	do
ISO 4042 : 1999	IS 1367 (Part 11) : 2002 Technical supply conditions for threaded steel fasteners: Part 11 Electroplated coatings (*third revision*)	do
ISO 4753 : [3)]	IS 1368 : 2002 Fasteners — Ends of parts with external ISO metric threads (*fourth revision*)	do
ISO 4759-1 : [3)]	IS 1367 (Part 2) : 2002 Technical supply conditions for threaded steel fasteners: Part 2 Product grades and tolerances (*third revision*)	do
ISO 6157-1 : 1988	IS 1367 (Part 9/Sec 1) : 1993 Technical supply conditions for threaded steel fasteners: Part 9 Surface discontinuities; Section 1 Bolts, screws and studs for general applications (*third revision*)	do

The concerned Technical Committee has reviewed the provisions of following ISO Standards referred in this adopted standard and has decided that they are acceptable for use in conjunction with this standard:

[1)] To be published (Revision of ISO 3269 : 1988).

[2)] Identical with ISO 3269 : 1988.

[3)] Since published in 2000.

ISO Standard	*Title*
ISO 8839 : 1986	Mechanical properties of fasteners — Bolts, screws, studs and nuts made of non-ferrous metals
ISO 16048 :[1)]	Passivation of corrosion-resistant stainless steel fasteners — Passivation process and acceptance criteria

CORRIGENDUM

(*Page* 4, *Table* 1, *col* 2, *row* 12) — Read dimension d_w, for Product grade A, size M1.6 as '2.42' *in place of* '2.27'.

ALTERATION

In clause **5**, the designation of hexagon head screws shall be read as:

'Hexagon head screw — IS 1364 (Part 2) / ISO 4017 — M12 × 80 – 8.8' *in place of* **'Hexagon head screw ISO 4017 — M12 × 80 – 8.8'**

PACKAGING

The packaging of hexagon head screws shall be in accordance with IS 1367 (Part 18) : 1996 'Industrial fasteners — Threaded steel fasteners — Technical supply conditions: Part 18 Packaging (*third revision*)'.

BIS CERTIFICATION MARKING

Details available with the Bureau of Indian Standards.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

[1)] To be published.

Indian Standard

HEXAGON HEAD BOLTS, SCREWS AND NUTS OF PRODUCT GRADES A AND B

PART 2 HEXAGON HEAD SCREWS (SIZE RANGE M 1.6 TO M 64)

(Fourth Revision)

1 Scope

This International Standard specifies the characteristics of hexagon head screws with threads from M1,6 up to and including M64, of product grade A for threads M1,6 to M24 and nominal lengths up to and including 10 *d* or 150 mm, whichever is shorter, and product grade B for threads over M24 or nominal lengths over 10 *d* or 150 mm, whichever is shorter.

NOTE This type of product is the same as that covered by ISO 4014 with the exception of threading up to head and nominal length up to and including 200 mm as popular lengths.

If, in special cases, specifications other than those listed in this International Standard are required, they should be selected from existing International Standards, for example ISO 724, ISO 888, ISO 898-1, ISO 965-1, ISO 3506-1, ISO 4753 and ISO 4759-1.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 225:1983, *Fasteners — Bolts, screws, studs and nuts — Symbols and designations of dimensions.*

ISO 724:1993, *ISO general-purpose metric screw threads — Basic dimensions.*

ISO 888:1976, *Bolts, screws and studs — Nominal lengths, and thread lengths for general purpose bolts.*

ISO 898-1:1999, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs.*

ISO 965-1:1998, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data.*

ISO 3269:—[1)], *Fasteners — Acceptance inspection.*

ISO 3506-1:1997, *Mechanical properties of corrosion-resistant stainless steel-fasteners — Part 1: Bolts, screws and studs.*

ISO 3508:1976, *Thread run-outs for fasteners with thread in accordance with ISO 261 and ISO 262.*

ISO 4042:1999, *Fasteners — Electroplated coatings.*

[1)] To be published. (Revision of ISO 3269:1988)

ISO 4753:—[2], *Fasteners — Ends of parts with external metric ISO thread.*

ISO 4759-1:—[3], *Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C.*

ISO 6157-1:1988, *Fasteners — Surface discontinuities — Part 1: Bolts, screws and studs for general requirements.*

ISO 8839:1986, *Mechanical properties of fasteners — Bolts, screws, studs and nuts made of non-ferrous metals.*

ISO 8992:1986, *Fasteners — General requirements for bolts, screws, studs and nuts.*

ISO 10683:—[4], *Fasteners — Non-electrolytically applied zinc flake coatings.*

---

[2] To be published. (Revisioin of ISO 4753:1983)

[3] To be published. (Revision of ISO 4759-1:1978)

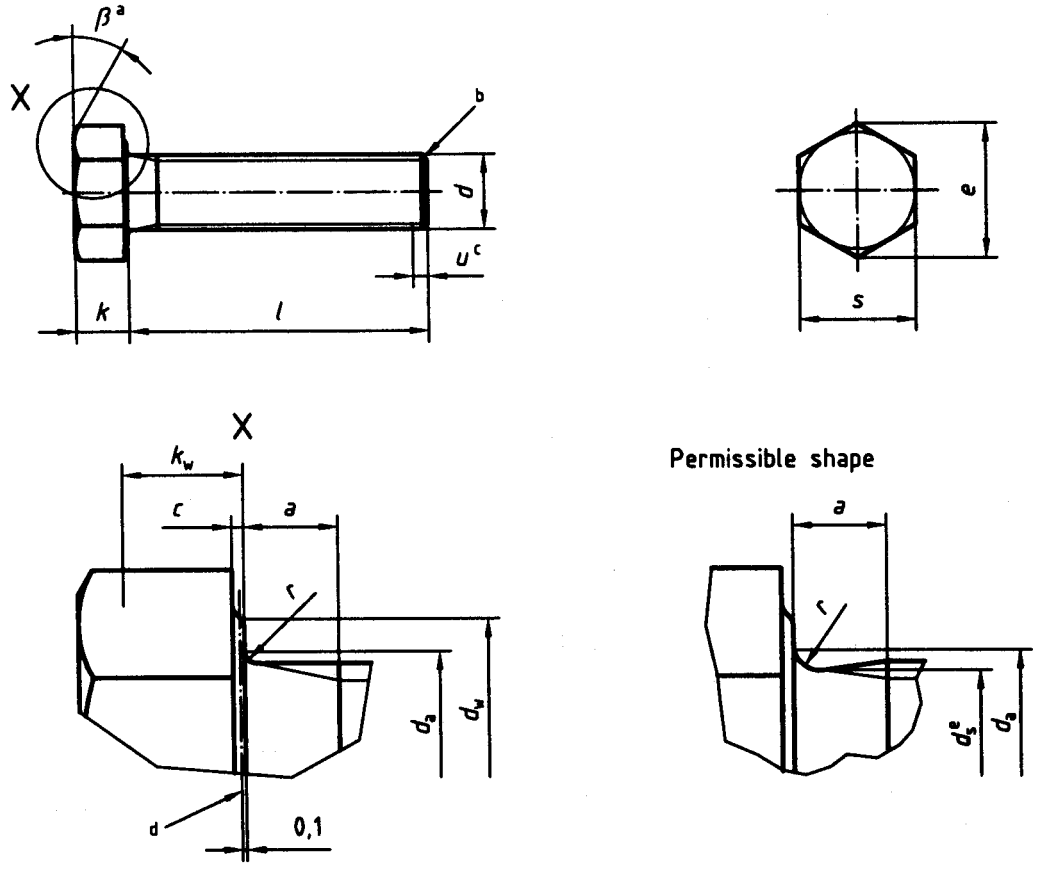
[4] To be published.

3 Dimensions

See Figure 1 and Tables 1 and 2.

Symbols and description of dimensions are defined in ISO 225.

Dimensions in millimetres



a $\beta = 15°$ to $30°$

b Point shall be chamfered or for threads ≤ M4 may be as-rolled (sheared end) (see ISO 4753)

c Incomplete thread $u \leq 2P$

d Reference datum for d_w

e $d_s \approx$ pitch diameter

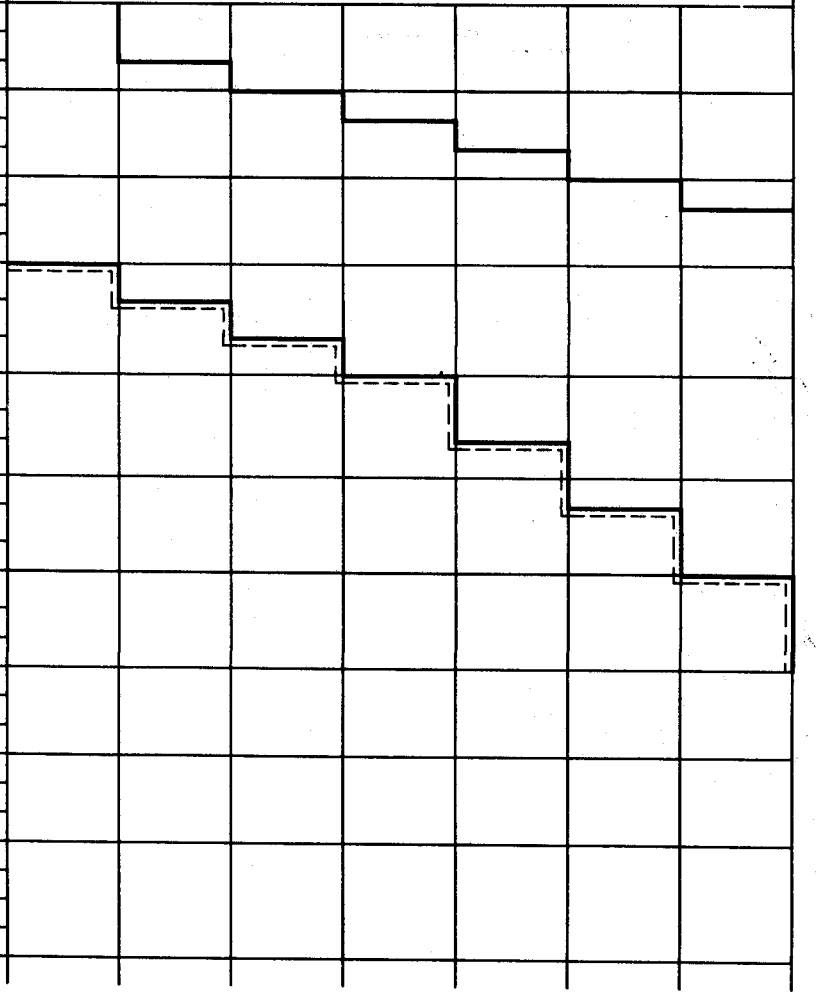
Figure 1

Table 1 — Preferred threads

Dimensions in millimetres

Threads (d)				M1,6	M2	M2,5	M3	M4	M5	M6
P[a]				0,35	0,4	0,45	0,5	0,7	0,8	1
a			max.[b]	1,05	1,2	1,35	1,5	2,1	2,4	3
			min.	0,35	0,4	0,45	0,5	0,7	0,8	1
c			max.	0,25	0,25	0,25	0,40	0,40	0,50	0,50
			min.	0,10	0,10	0,10	0,15	0,15	0,15	0,15
d_a			max.	2	2,6	3,1	3,6	4,7	5,7	6,8
d_w	Product grade	A	min.	2,27	3,07	4,07	4,57	5,88	6,88	8,88
		B		2,30	2,95	3,95	4,45	5,74	6,74	8,74
e	Product grade	A	min.	3,41	4,32	5,45	6,01	7,66	8,79	11,05
		B		3,28	4,18	5,31	5,88	7,50	8,63	10,89
k			nom.	1,1	1,4	1,7	2	2,8	3,5	4
	Product grade	A	max.	1,225	1,525	1,825	2,125	2,925	3,65	4,15
			min.	0,975	1,275	1,575	1,875	2,675	3,35	3,85
	Product grade	B	max.	1,3	1,6	1,9	2,2	3,0	3,74	4,24
			min.	0,9	1,2	1,5	1,8	2,6	3,26	3,76
k_w[c]	Product grade	A	min.	0,68	0,89	1,10	1,31	1,87	2,35	2,70
		B		0,63	0,84	1,05	1,26	1,82	2,28	2,63
r			min.	0,1	0,1	0,1	0,1	0,2	0,2	0,25
s	nom. =		max.	3,20	4,00	5,00	5,50	7,00	8,00	10,00
	Product grade	A	min.	3,02	3,82	4,82	5,32	6,78	7,78	9,78
		B		2,90	3,70	4,70	5,20	6,64	7,64	9,64

l				
	Product grade A		Product grade B	
nom.	min.	max.	min.	max.
2	1,8	2,2	—	—
3	2,8	3,2	—	—
4	3,76	4,24	—	—
5	4,76	5,24	—	—
6	5,76	6,24	—	—
8	7,71	8,29	—	—
10	9,71	10,29	—	—
12	11,65	12,35	—	—
16	15,65	16,35	—	—
20	19,58	20,42	18,95	21,05
25	24,58	25,42	23,95	26,05
30	29,58	30,42	28,95	31,05
35	34,5	35,5	33,75	36,25
40	39,5	40,5	38,75	41,25
45	44,5	45,5	43,75	46,25
50	49,5	50,5	48,75	51,25
55	54,4	55,6	53,5	56,5
60	59,4	60,6	58,5	61,5
65	64,4	65,6	63,5	66,5
70	69,4	70,6	68,5	71,5
80	79,4	80,6	78,5	81,5
90	89,3	90,7	88,25	91,75
100	99,3	100,7	98,25	101,75
110	109,3	110,7	108,25	111,75
120	119,3	120,7	118,25	121,75
130	129,2	130,8	128	132
140	139,2	140,8	138	142
150	149,2	150,8	148	152
160	—	—	158	162
180	—	—	178	182
200	—	—	197,7	202,3



Thread (d)				M8	M10	M12	M16	M20	M24
P[a]				1,25	1,5	1,75	2	2,5	3
a			max.[b]	4	4,5	5,3	6	7,5	9
			min.	1,25	1,5	1,75	2	2,5	3
c			max.	0,60	0,60	0,60	0,8	0,8	0,8
			min.	0,15	0,15	0,15	0,2	0,2	0,2
d_a			max.	9,2	11,2	13,7	17,7	22,4	26,4
d_w	Product grade	A	min.	11,63	14,63	16,63	22,49	28,19	33,61
		B		11,47	14,47	16,47	22	27,7	33,25
e	Product grade	A	min.	14,38	17,77	20,03	26,75	33,53	39,98
		B		14,20	17,59	19,85	26,17	32,95	39,55
k			nom.	5,3	6,4	7,5	10	12,5	15
	Product grade	A	max.	5,45	6,58	7,68	10,18	12,715	15,215
			min.	5,15	6,22	7,32	9,82	12,285	14,785
	Product grade	B	max.	5,54	6,69	7,79	10,29	12,85	15,35
			min.	5,06	6,11	7,21	9,71	12,15	14,65
k_w[c]	Product grade	A	min.	3,61	4,35	5,12	6,87	8,6	10,35
		B		3,54	4,28	5,05	6,8	8,51	10,26
r			min.	0,4	0,4	0,6	0,6	0,8	0,8
s			nom. = max.	13,00	16,00	18,00	24,00	30,00	36,00
	Product grade	A	min.	12,73	15,73	17,73	23,67	29,67	35,38
		B		12,57	15,57	17,57	23,16	29,16	35,00

l				
	Product grade A		Product grade B	
nom.	min.	max.	min.	max.
2	1,8	2,2	—	—
3	2,8	3,2	—	—
4	3,76	4,24	—	—
5	4,76	5,24	—	—
6	5,76	6,24	—	—
8	7,71	8,29	—	—
10	9,71	10,29	—	—
12	11,65	12,35	—	—
16	15,65	16,35	—	—
20	19,58	20,42	18,95	21,05
25	24,58	25,42	23,95	26,05
30	29,58	30,42	28,95	31,05
35	34,5	35,5	33,75	36,25
40	39,5	40,5	38,75	41,25
45	44,5	45,5	43,75	46,25
50	49,5	50,5	48,75	51,25
55	54,4	55,6	53,5	56,5
60	59,4	60,6	58,5	61,5
65	64,4	65,6	63,5	66,5
70	69,4	70,6	68,5	71,5
80	79,4	80,6	78,5	81,5
90	89,3	90,7	88,25	91,75
100	99,3	100,7	98,25	101,75
110	109,3	110,7	108,25	111,25
120	119,3	120,7	118,25	121,75
130	129,2	130,8	128	132
140	139,2	140,8	138	142
150	149,2	150,8	148	152
160	—	—	158	162
180	—	—	178	182
200	—	—	197,7	202,3

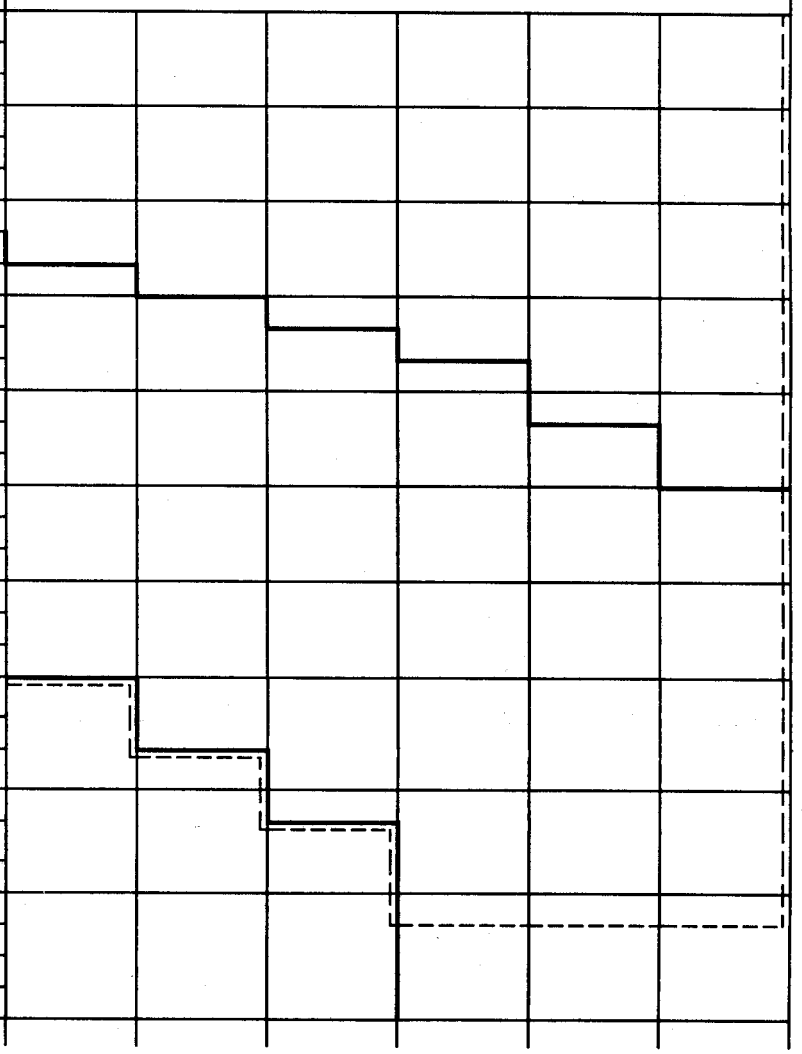


Table 1 *(continued)*

Thread (d)				M30	M36	M42	M48	M56	M64
P^a				3,5	4	4,5	5	5,5	6
a			max.[b]	10,5	12	13,5	15	16,5	18
			min.	3,5	4	4,5	5	5,5	6
c			max.	0,8	0,8	1,0	1,0	1,0	1,0
			min.	0,2	0,2	0,3	0,3	0,3	0,3
d_a			max.	33,4	39,4	45,6	52,6	63	71
d_w	Product grade	A	min.	—	—	—	—	—	—
		B		42,75	51,11	59,95	69,45	78,66	88,16
e	Product grade	A	min.	—	—	—	—	—	—
		B		50,85	60,79	71,3	82,6	93,56	104,86
k			nom.	18,7	22,5	26	30	35	40
	Product grade	A	max.	—	—	—	—	—	—
			min.	—	—	—	—	—	—
	Product grade	B	max.	19,12	22,92	26,42	30,42	35,5	40,5
			min.	18,28	22,08	25,58	29,58	34,5	39,5
k_w[c]	Product grade	A	min.	—	—	—	—	—	—
		B		12,8	15,46	17,91	20,71	24,15	27,65
r			min.	1	1	1,2	1,6	2	2
s		nom. =	max.	46	55,0	65,0	75,0	85,0	95,0
	Product grade	A	min.	—	—	—	—	—	—
		B		45	53,8	63,1	73,1	82,8	92,8

l				
	Product grade A		Product grade B	
nom.	min.	max.	min.	max.
2	1,8	2,2	—	—
3	2,8	3,2	—	—
4	3,76	4,24	—	—
5	4,76	5,24	—	—
6	5,76	6,24	—	—
8	7,71	8,29	—	—
10	9,71	10,29	—	—
12	11,65	12,35	—	—
16	15,65	16,35	—	—
20	19,58	20,42	18,95	21,05
25	24,58	25,42	23,95	26,05
30	29,58	30,42	28,95	31,05
35	34,5	35,5	33,75	36,25
40	39,5	40,5	38,75	41,25
45	44,5	45,5	43,75	46,25
50	49,5	50,5	8,75	51,25
55	54,4	55,6	53,5	56,5
60	59,4	60,6	58,5	61,5
65	64,4	65,6	63,5	66,5
70	69,4	70,6	68,5	71,5
80	79,4	80,6	78,5	81,5
90	89,3	90,7	88,25	91,75
100	99,3	100,7	98,25	101,75
110	109,3	110,7	108,25	111,75
120	119,3	120,7	118,25	121,75
130	129,2	130,8	128	132
140	139,2	140,8	138	142
150	149,2	150,8	148	152
160	—	—	158	162
180	—	—	178	182
200	—	—	197,7	202,3

NOTE Range of popular lengths between the solid, boldface stepped line:
— for product grade A, above the dashed, stepped line;
— for product grade B, below this line.

[a] P is the pitch of the thread.

[b] Values in accordance with a_{max}, normal series, in ISO 3508.

[c] $k_{w,\,min} = 0{,}7\ k_{min}$

Table 2 — Non-preferred threads

Dimensions in millimetres

Thread (d)				M3,5	M14	M18	M22	M27
P[a]				0,6	2	2,5	2,5	3
a			max.[b]	1,8	6	7,5	7,5	9
			min.	0,6	2	2,5	2,5	3
c			max.	0,40	0,60	0,8	0,8	0,8
			min.	0,15	0,15	0,2	0,2	0,2
d_a			max.	4,1	15,7	20,2	24,4	30,4
d_w	Product grade	A	min.	5,07	19,64	25,34	31,71	—
		B		4,95	19,15	24,85	31,35	38
e	Product grade	A	min.	6,58	23,36	30,14	37,72	—
		B		6,44	22,78	29,56	37,29	45,2
k			nom.	2,4	8,8	11,5	14	17
	Product grade	A	max.	2,525	8,98	11,715	14,215	—
			min.	2,275	8,62	11,285	13,785	—
	Product grade	B	max.	2,6	9,09	11,85	14,35	17,35
			min.	2,2	8,51	11,15	13,65	16,65
k_w[c]	Product grade	A	min.	1,59	6,03	7,9	9,65	—
		B		1,54	5,96	7,81	9,56	11,66
r			min.	0,1	0,6	0,6	0,8	1
s			nom. = max.	6,00	21,00	27,00	34,00	41
	Product grade	A	min.	5,82	20,67	26,67	33,38	—
		B		5,70	20,16	26,16	33,00	40

l				
	Product grade A		Product grade B	
nom.	min.	max.	min.	max.
8	7,71	8,29	—	—
10	9,71	10,29	—	—
12	11,65	12,35	—	—
16	15,65	16,35	—	—
20	19,58	20,42	—	—
25	24,58	25,42	—	—
30	29,58	30,42	—	—
35	34,5	35,5	—	—
40	39,5	40,5	38,75	41,25
45	44,5	45,5	43,75	46,25
50	49,5	50,5	48,75	51,25
55	54,4	55,6	53,5	56,5
60	59,4	60,6	58,5	61,5
65	64,4	65,6	63,5	66,5
70	69,4	70,6	68,5	71,5
80	79,4	80,6	78,5	81,5
90	89,3	90,7	88,25	91,75
100	99,3	100,7	98,25	101,75
110	109,3	110,7	108,25	111,75
120	119,3	120,7	118,25	121,75
130	129,2	130,8	128	132
140	139,2	140,8	138	142
150	149,2	150,8	148	152
160	—	—	158	162
180	—	—	178	182
200	—	—	197,7	202,3

Table 2 *(continued)*

Thread (d)				M33	M39	M45	M52	M60
P[a]				3,5	4	4,5	5	5,5
a			max.[b]	10,5	12	13,5	15	16,5
			min.	3,5	4	4,5	5	5,5
c			max.	0,8	1,0	1,0	1,0	1,0
			min.	0,2	0,3	0,3	0,3	0,3
d_a			max.	36,4	42,4	48,6	56,6	67
d_w	Product grade	A	min.	—	—	—	—	—
		B		46,55	55,86	64,7	74,2	83,41
e	Product grade	A	min.	—	—	—	—	—
		B		55,37	66,44	76,95	88,25	99,21
k			nom.	21	25	28	33	38
	Product grade	A	min.	—	—	—	—	—
			max.	—	—	—	—	—
	Product grade	B	max.	21,42	25,42	28,42	33,5	38,5
			min.	20,58	24,58	27,58	32,5	37,5
k_w[c]	Product grade	A	min.	—	—	—	—	—
		B		14,41	17,21	19,31	22,75	26,25
r			min.	1	1	1,2	1,6	2
s			nom. = max.	50	60,0	70,0	80,0	90,0
	Product grade	A	min.	—	—	—	—	—
		B		49	58,8	68,1	78,1	87,8

l				
	Product grade A		Product grade B	
nom.	min.	max.	min.	max.
8	7,71	8,29	—	—
10	9,71	10,29	—	—
12	11,65	12,35	—	—
16	15,65	16,35	—	—
20	19,58	20,42	—	—
25	24,58	25,42	—	—
30	29,58	30,42	—	—
35	34,5	35,5	—	—
40	39,5	40,5	38,75	41,25
45	44,5	45,5	43,75	46,25
50	49,5	50,5	48,75	51,25
55	54,4	55,6	53,5	56,5
60	59,4	60,6	58,5	61,5
65	64,4	65,6	63,5	66,5
70	69,4	70,6	68,5	71,5
80	79,4	80,6	78,5	81,5
90	89,3	90,7	88,25	91,75
100	99,3	100,7	98,25	101,75
110	109,3	110,7	108,25	111,75
120	119,3	120,7	118,25	121,75
130	129,2	130,8	128	132
140	139,2	140,8	138	142
150	149,2	150,8	148	152
160	—	—	158	162
180	—	—	178	182
200	—	—	197,7	202,3

NOTE Range of popular lengths between the solid, boldface stepped line:
— for product grade A, above the dashed, stepped line;
— for product grade B, below this line.

[a] P is the pitch of the thread.
[b] Values in accordance with a_{max}, normal series, in ISO 3508.
[c] $k_{w,\,min} = 0,7\ k_{min}$

4 Specifications and reference standards

See Table 3.

Table 3 — Specifications and reference standards

Material		Steel	Stainless steel	Non-ferrous metal
General requirements	International Standard	ISO 8992		
Thread	Tolerance	6g		
	International Standards	ISO 724, ISO 965-1		
Mechanical properties	Property class[a]	$d < 3$ mm: as agreed 3 mm $\leq d \leq$ 39 mm: 5.6, 8.8, 9.8, 10.9 $d >$ 39 mm: as agreed	$d \leq$ 24 mm: A2-70, A4-70 24 mm $< d \leq$ 39 mm: A2-50, A4-50 $d >$ 39 mm: as agreed	Materials specified in ISO 8839
	International Standards	$d \leq$ 39 mm: ISO 898-1 $d < 3$ mm and $d >$ 39 mm: as agreed	$d \leq$ 39 mm: ISO 3506-1 $d >$ 39 mm: as agreed	
Tolerances	Product grade	For $d \leq$ 24 mm and $l \leq 10\,d$ or 150 mm[b]: A For $d >$ 24 mm or $l > 10\,d$ or 150 mm[b]: B		
	International Standard	ISO 4759-1		
Finish and/or coating		As processed Requirements for electroplating are covered in ISO 4042 Requirements for non-electrolytically applied zinc flake coatings are covered in ISO 10683	Plain	Plain Requirements for electroplating are covered in ISO 4042
		If different electroplating requirements are desired or if requirements are needed for other finishes, they should be agreed between customer and supplier		
		Limits for surface discontinuities are covered in ISO 6157-1		
Acceptability		For acceptance procedure, see ISO 3269.		

[a] For other property classes see ISO 898-1 for steel and ISO 3506-1 for stainless steel respectively.

[b] Whichever is shorter.

5 Designation

EXAMPLE

A hexagon head screw with thread size M12, nominal length $l = 80$ mm and property class 8.8 is designated as follows:

Hexagon head screw ISO 4017 - M12 × 80 - 8.8

Bibliography

[1] ISO 4014:1999, *Hexagon head bolts — Product grades A and B.*

[2] ISO 4015:1979, *Hexagon head bolts — Product grade B — Reduced shank (shank diameter approximately equal to pitch diameter).*

[3] ISO 4016:1999, *Hexagon head bolts — Product grade C.*

[4] ISO 4018:1999, *Hexagon head screws — Product grade C.*

[5] ISO 4032:1999, *Hexagon nuts, style 1 — Product grades A and B.*

[6] ISO 4033:1999, *Hexagon nuts, style 2 — Product grades A and B.*

[7] ISO 4034:1999, *Hexagon nuts — Product grade C.*

[8] ISO 4035:1999, *Hexagon thin nuts (chamfered) — Product grades A and B.*

[9] ISO 4036:1999, *Hexagon thin nuts (unchamfered) — Product grade B.*

[10] ISO 4161:1999, *Hexagon nuts with flange — Coarse thread.*

[11] ISO 4162:—[5)], *Hexagon bolts with flange — Small series — Product grade combination A/B.*

[12] ISO 4775:1984,*Hexagon nuts for high-strength structural bolting with large width across flats — Product grade B — Property classes 8 and 10.*

[13] ISO 7411:1984, *Hexagon bolts for high-strength structural bolting with large width across flats (thread lengths according to ISO 888) — Product grade C — Property classes 8.8 and 10.9.*

[14] ISO 7412:1984, *Hexagon bolts for high-strength structural bolting with large width across flats (short thread length) — Product grade C — Property classes 8.8 and 10.9.*

[15] ISO 7413:1984, *Hexagon nuts for structural bolting, style 1, hot-dip galvanize (oversize tapped) — Product grades A and B — Property classes 5, 6 and 8.*

[16] ISO 7414:1984, *Hexagon nuts for structural bolting with large width across flats, style 1 — Product grade B — Property class 10.*

[17] ISO 7417:1984, *Hexagon nuts for structural bolting, style 2, hot-dip galvanize (oversize tapped) — Product grade A — Property class 9.*

[18] ISO 8673:1999, *Hexagon nuts, style 1, with metric fine pitch thread — Product grades A and B.*

[19] ISO 8674:1999, *Hexagon nuts, style 2, with metric fine pitch thread — Product grades A and B.*

[20] ISO 8675:1999, *Hexagon thin nuts (chamfered) with metric fine pitch thread — Product grades A and B.*

[21] ISO 8676:1999, *Hexagon head screws with metric fine pitch thread — Product grades A and B.*

---

5) To be published. (Revision of ISO 4162:1990)

[22] ISO 8765:1999, *Hexagon head bolts with metric fine pitch thread — Product grades A and B.*

[23] ISO 10663:1999, *Hexagon nuts with flange — Fine pitch thread.*

[24] ISO 15071:1999, *Hexagon bolts with flange —Small series — Product grade A.*

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act,* 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc : No. BP 33 (0114).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002
Telephones : 323 01 31, 323 33 75, 323 94 02

Telegrams: Manaksanstha
(Common to all offices)

Regional Offices :	Telephone
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110 002	323 76 17 323 38 41
Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Kankurgachi KOLKATA 700 054	337 84 99, 337 85 61 337 86 26, 337 91 20
Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160 022	60 38 43 60 20 25
Southern : C. I. T. Campus, IV Cross Road, CHENNAI 600 113	254 12 16, 254 14 42 254 25 19, 254 13 15
Western : Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400 093	832 92 95, 832 78 58 832 78 91, 832 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. NALAGARH. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM.

Printed at New India Printing Press, Khurja, India