
**Hexagon head bolts with metric fine pitch
thread — Product grades A and B**

*Vis à tête hexagonale, à filetage métrique à pas fin partiellement filetées —
Grades A et B*

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8765 was prepared by Technical Committee ISO/TC 2, *Fasteners*.

This second edition cancels and replaces the first edition (ISO 8765:1988) which has been technically revised.

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Introduction

This International Standard is part of the complete ISO product standard series on external hexagon drive fasteners. The series comprises:

- a) hexagon head bolts (ISO 4014 to ISO 4016 and ISO 8765);
- b) hexagon head screws (ISO 4017, ISO 4018 and ISO 8676);
- c) hexagon nuts (ISO 4032 to ISO 4036, ISO 8673 to ISO 8675);
- d) hexagon bolts with flange (ISO 4162 and ISO 15071);
- e) hexagon nuts with flange (ISO 4161 and ISO 10663);
- f) structural bolts and nuts (ISO 4775, ISO 7411 to ISO 7414 and ISO 7417).

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Hexagon head bolts with metric fine pitch thread — Product grades A and B

1 Scope

This International Standard specifies the characteristics of hexagon head bolts with metric fine pitch thread with nominal thread diameters d from 8 mm to 64 mm, of product grade A for nominal thread diameters d from 8 mm to 24 mm and nominal lengths, l , up to and including $10d$ or 150 mm, whichever is shorter, and of product grade B for nominal thread diameters d over 24 mm or nominal lengths, l , over $10d$ or 150 mm, whichever is shorter.

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.

Coarse thread bolts according to ISO 4014 should be first choice.

2 Normative references

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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 261:1998, *ISO general-purpose metric screw threads — General plan.*

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

ISO 888:1976, *Bolts, screws and nuts — 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 4042:1999, *Fasteners — Electroplated coatings.*

ISO 4753:—²⁾ *Fasteners — Ends of parts with external metric ISO thread.*

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

²⁾ To be published. (Revision of ISO 4753:1983)

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.*

3 Dimensions

See Figure 1 and Tables 1 and 2.

Symbols and descriptions of dimensions are defined in ISO 225.

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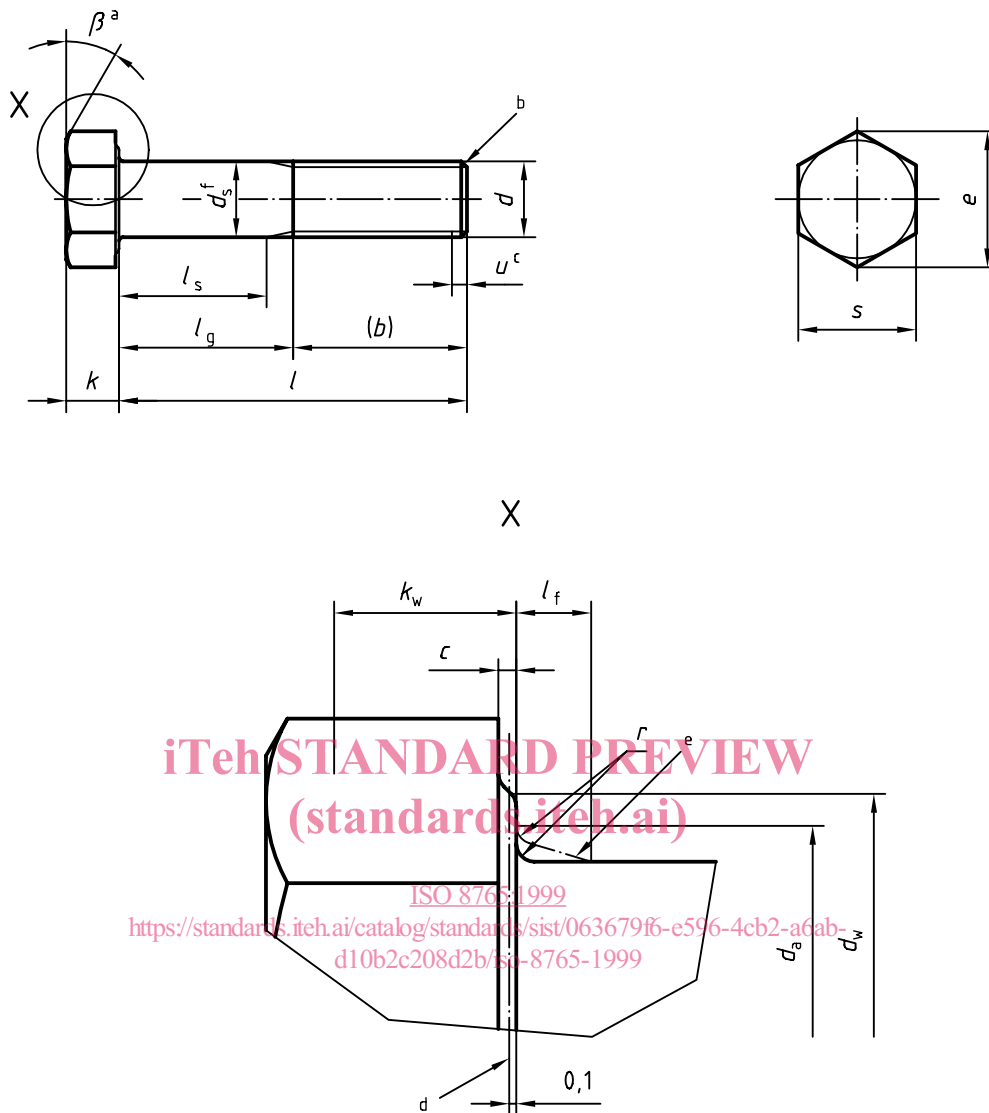
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³⁾ To be published. (Revision of ISO 4759-1:1978)

⁴⁾ To be published.

Dimensions in millimetres



- a $\beta = 15^\circ$ to 30°
- b Point shall be chamfered (see ISO 4753)
- c Incomplete thread $u \leq 2P$
- d Reference datum for d_w
- e Maximum underhead fillet
- f d_s applies if values of $l_{s \min}$ are specified.

Figure 1

Table 1 — Preferred threads

Dimensions in millimetres

Thread (<i>d</i> × <i>P</i>)	M8 × 1	M10 × 1	M12 × 1,5	M16 × 1,5	M20 × 1,5	M24 × 2	M30 × 2	M36 × 3	M42 × 3	M48 × 3	M56 × 4	M64 × 4
<i>a</i>	22	26	30	38	46	54	66	—	—	—	—	—
<i>b</i> ref.	28	32	36	44	52	60	72	84	96	108	—	—
<i>c</i>	41	45	49	57	65	73	85	97	109	121	137	153
<i>c</i>	max.	0,60	0,60	0,8	0,8	0,8	0,8	0,8	1,0	1,0	1,0	1,0
	min.	0,15	0,15	0,2	0,2	0,2	0,2	0,2	0,3	0,3	0,3	0,3
<i>d_a</i>	max.	9,2	11,2	13,7	17,7	22,4	33,4	39,4	45,6	52,6	63	71
	nom. = max.	8,00	10,00	12,00	16,00	24,00	30,00	36,00	42,00	48,00	56,00	64,00
<i>d_s</i>	Product grade	A	—	—	15,73	23,67	—	—	—	—	—	—
	min.	7,78	9,78	11,73	15,73	23,67	—	—	—	—	—	—
<i>d_w</i>	Product grade	A	—	—	15,57	23,48	29,48	—	—	—	—	—
	min.	11,63	14,63	16,63	22,49	33,61	—	—	—	—	—	—
<i>e</i>	Product grade	A	—	—	26,75	39,98	—	—	—	—	—	—
	min.	14,38	17,77	20,03	26,75	39,98	—	—	—	—	—	—
<i>f_t</i>	Product grade	A	—	—	32,95	49,55	50,85	60,79	71,3	82,6	93,56	104,86
	min.	14,2	17,59	19,85	26,17	39,55	50,85	60,79	71,3	82,6	93,56	104,86
	max.	2	2	3	3	4	6	6	8	10	12	13
	nom.	5,3	6,4	7,5	10	15	18,7	22,5	26	30	35	40
<i>k</i>	Product grade	A	—	—	12,715	15,215	—	—	—	—	—	—
	max.	5,45	6,58	7,68	10,18	15,215	—	—	—	—	—	—
	min.	5,15	6,22	7,32	9,82	14,785	—	—	—	—	—	—
	max.	5,54	6,69	7,79	10,29	15,35	19,12	22,92	26,42	30,42	35,5	40,5
	min.	5,06	6,11	7,21	9,71	14,65	18,28	22,08	25,58	29,58	34,5	39,5
<i>k_w^d</i>	Product grade	A	—	—	6,87	10,35	—	—	—	—	—	—
	min.	3,61	4,35	5,12	6,87	10,35	—	—	—	—	—	—
	max.	3,54	4,28	5,05	6,8	10,26	12,8	15,46	17,91	20,71	24,15	27,65
<i>r</i>	min.	0,4	0,4	0,6	0,6	0,8	1	1	1,2	1,6	2	2
	nom. = max.	13,00	16,00	18,00	24,00	36,00	46	55,0	65,0	75,0	85,0	95,0
<i>s</i>	Product grade	A	—	—	23,67	35,38	—	—	—	—	—	—
	min.	12,73	15,73	17,73	23,67	35,38	—	—	—	—	—	—
	max.	12,57	15,57	17,57	23,16	35	45	53,8	63,1	73,1	82,8	92,8

nom.	Product grade		l_s and l_g ef																	
	A		B		l_s				l_g				l_s				l_g			
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.		
35	34,5	35,5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
40	39,5	40,5	—	—	11,75	18	—	—	—	—	—	—	—	—	—	—	—	—		
45	44,5	45,5	—	—	16,75	23	—	—	—	—	—	—	—	—	—	—	—	—		
50	49,5	50,5	—	—	21,75	28	11,25	20	—	—	—	—	—	—	—	—	—	—		
55	54,4	55,6	—	—	26,75	33	16,25	25	—	—	—	—	—	—	—	—	—	—		
60	59,4	60,6	—	—	31,75	38	21,25	30	—	—	—	—	—	—	—	—	—	—		
65	64,4	65,6	—	—	36,75	43	26,25	35	17,27	—	—	—	—	—	—	—	—	—		
70	69,4	70,6	—	—	41,75	48	31,25	40	22,32	—	—	—	—	—	—	—	—	—		
80	79,4	80,6	—	—	51,75	58	41,25	50	32,42	21,5	34	—	—	—	—	—	—	—		
90	89,3	90,7	88,25	91,75	56,5	64	51,25	60	42,52	31,5	44	—	—	—	—	—	—	—		
100	99,3	100,7	98,25	101,75	66,5	74	61,25	70	52,62	41,5	54	31	46	—	—	—	—	—		
110	109,3	110,7	108,25	111,75	—	—	71,25	80	62,72	51,5	64	41	56	—	—	—	—	—		
120	119,3	120,7	118,25	121,75	—	—	81,25	90	72,82	61,5	74	51	66	36,5	54	—	—	—		
130	129,2	130,8	128	132	—	—	—	—	76,86	65,5	78	55	70	40,5	58	—	—	—		
140	139,2	140,8	138	142	—	—	—	—	86,96	75,5	88	65	80	50,5	68	—	—	—		
150	149,2	150,8	148	152	—	—	—	—	96,106	85,5	98	75	90	60,5	78	46	66	—		
160	—	—	158	162	—	—	—	—	106	95,5	108	85	100	70,5	88	56	76	41,5	64	
180	—	—	178	182	—	—	—	—	—	115,5	128	105	120	90,5	108	76	96	61,5	84	
200	—	—	197,7	202,3	—	—	—	—	—	135,5	148	125	140	110,5	128	96	116	81,5	104	
220	—	—	217,7	222,3	—	—	—	—	—	—	—	132	147	117,5	135	103	123	88,5	111	
240	—	—	237,7	242,3	—	—	—	—	—	—	—	152	167	137,5	155	123	143	108,5	131	
260	—	—	257,4	262,6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
280	—	—	277,4	282,6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
300	—	—	297,4	302,6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
320	—	—	317,15	322,85	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
340	—	—	337,15	342,85	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

For sizes above the solid, stepped line see ISO 8676

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