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ISO 8765

Fourth edition
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Fasteners — Hexagon head bolts, with fine pitch thread — Product grades A and B

Fixations — Vis à tête hexagonale partiellement filetées, à pas fin — Grades A et B

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 11, *Fasteners with metric external thread*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 185, *Fasteners*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 8765:2011), which has been technically revised.

The main changes are as follows:

— tables for dimensions have been entirely restructured, so that the user can find the specified values in a reliable manner (no risk of picking the wrong dimension), see Clause 4 and Annex A;

— M18×2 has been added;

— $d_{w,min}$ for M14×1,5 has been corrected to 19,64 mm;

— the rules for the shortest and greatest standard lengths have been added, and they have been amended accordingly;

— for steel bolts, property class 5.6 has been deleted and property class 12.9/12.9 has been added;

— for stainless steel bolts, grades D4 and D6 and property class 80 have been added;

— non-ferrous metal bolts have been deleted;

— specifications for marking and labelling have been added as Clause 6.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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

1 Scope

This document specifies the characteristics of hexagon head bolts, in steel and stainless steel, with metric fine pitch threads M8×1 to M64×4, and with product grades A and B.

If in certain cases other specifications are requested, property classes and stainless steel grades can be selected from ISO 898-1 or ISO 3506-1, and dimensional options from ISO 888 or ISO 4753.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 225, *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions*

ISO 262, *ISO general purpose metric screw threads — Selected sizes for screws, bolts and nuts*

ISO 888, *Fasteners — Bolts, screws and studs — Nominal lengths and thread lengths*

ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread*

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

ISO 1891-4, *Fasteners — Vocabulary — Part 4: Control, inspection, delivery, acceptance and quality*

ISO 3269, *Fasteners — Acceptance inspection*

ISO 3506-1, *Fasteners — Mechanical properties of corrosion-resistant stainless steel fasteners — Part 1: Bolts, screws and studs with specified grades and property classes*

ISO 4042, *Fasteners — Electroplated coating systems*

ISO 4753, *Fasteners — Ends of parts with external ISO metric thread*

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

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

ISO 6157-3, *Fasteners — Surface discontinuities — Part 3: Bolts, screws and studs for special requirements*

ISO 8991, *Designation system for fasteners*

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

ISO 10683, *Fasteners — Non-electrolytically applied zinc flake coating systems*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

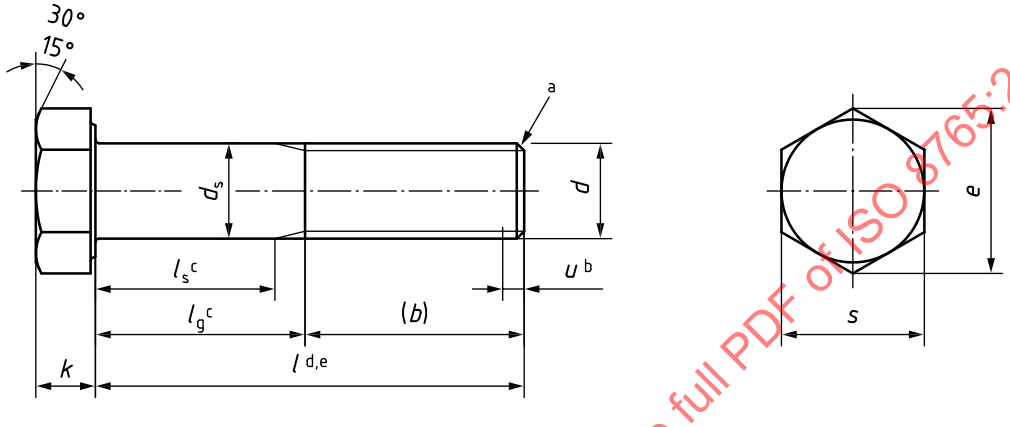
— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Dimensions

Dimensions shall be in accordance with Figures 1 and 2 and with Tables 1 to 5.

Symbols and descriptions of dimensions are defined in ISO 225.



a Chamfered end (CH) in accordance with ISO 4753.

b Incomplete thread $u \leq 2P$, where P is the fine pitch specified in Tables 1 to 5.

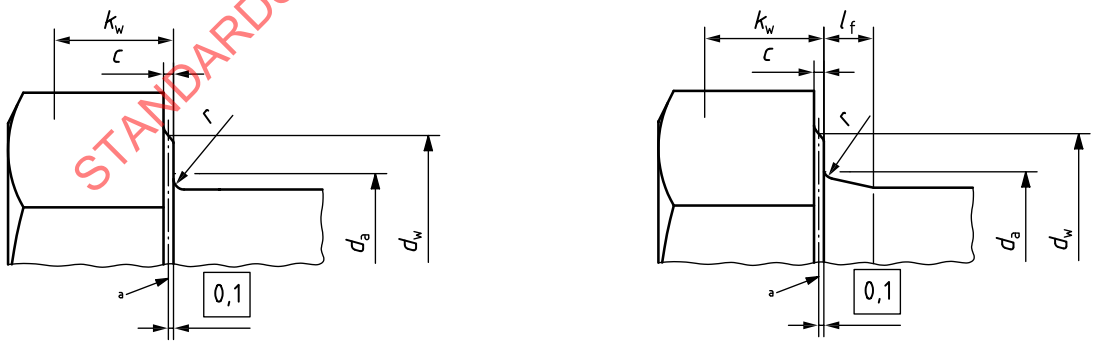
c $l_{g,max} = l_{nom} - b$ and $l_{s,min} = l_{g,max} - 5P$, where P is the coarse pitch in accordance with ISO 262.

d Shortest standard length l_{nom} determined with $5d$ for thread size 8 mm, $4{,}5d$ for 10 mm, $4d$ for 12 mm to 22 mm, $3{,}75d$ for 24 mm to 60 mm, and rounded (if necessary) to the nearest standard length; shortest standard length l_{nom} = 220 mm for 64 mm.

e Greatest standard length $l_{nom} \leq 10d$ or 500 mm, whichever is the shorter.

Figure 1 — Hexagon head bolt

Dimensions in millimetres



a) Minimum underhead fillet **b) Maximum underhead fillet**

a Reference datum for d_w.

Figure 2 — Head details and permissible shapes

Table 1 — Dimensions for product grade A – 8 mm to 16 mm

Dimensions in millimetres

Thread, $d \times P$ [a]			M8×1	M10×1,25	(M10×1)	M12×1,5	(M12×1,25)	(M14×1,5)	M16×1,5
b	ref.	[b]	22	26	26	30	30	34	38
		[c]	—	—	—	—	—	40	44
c		max.	0,60	0,60	0,60	0,60	0,60	0,60	0,80
		min.	0,15	0,15	0,15	0,15	0,15	0,15	0,20
d_a		max.	9,2	11,2	11,2	13,7	13,7	15,7	17,7
d_s	nom. =	max.	8,00	10,00	10,00	12,00	12,00	14,00	16,00
		min.	7,78	9,78	9,78	11,73	11,73	13,73	15,73
d_w		min.	11,63	14,63	14,63	16,63	16,63	19,64	22,49
e		min.	14,38	17,77	17,77	20,03	20,03	23,36	26,75
k		nom.	5,3	6,4	6,4	7,5	7,5	8,8	10
		max.	5,45	6,58	6,58	7,68	7,68	8,98	10,18
		min.	5,15	6,22	6,22	7,32	7,32	8,62	9,82
k_w		min.	3,61	4,35	4,35	5,12	5,12	6,03	6,87
l_f		max.	2	2	2	3	3	3	3
r		min.	0,4	0,4	0,4	0,6	0,6	0,6	0,6
s	nom. =	max.	13,00	16,00	16,00	18,00	18,00	21,00	24,00
		min.	12,73	15,73	15,73	17,73	17,73	20,67	23,67

l			Range of standard lengths between the stepped bold lines													
nom.	min.	max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.
40	39,5	40,5	11,75	18,0												
45	44,5	45,5	16,75	23,0	11,5	19,0	11,5	19,0								
50	49,5	50,5	21,75	28,0	16,5	24,0	16,5	24,0	11,25	20,0	11,25	20,0				
55	54,4	55,6	26,75	33,0	21,5	29,0	21,5	29,0	16,25	25,0	16,25	25,0	11,0	21,0		
60	59,4	60,6	31,75	38,0	26,5	34,0	26,5	34,0	21,25	30,0	21,25	30,0	16,0	26,0		
65	64,4	65,6	36,75	43,0	31,5	39,0	31,5	39,0	26,25	35,0	26,25	35,0	21,0	31,0	17,0	27,0
70	69,4	70,6	41,75	48,0	36,5	44,0	36,5	44,0	31,25	40,0	31,25	40,0	26,0	36,0	22,0	32,0
80	79,4	80,6	51,75	58,0	46,5	54,0	46,5	54,0	41,25	50,0	41,25	50,0	36,0	46,0	32,0	42,0
90	89,3	90,7			56,5	64,0	56,5	64,0	51,25	60,0	51,25	60,0	46,0	56,0	42,0	52,0
100	99,3	100,7			66,5	74,0	66,5	74,0	61,25	70,0	61,25	70,0	56,0	66,0	52,0	62,0
110	109,3	110,7							71,25	80,0	71,25	80,0	66,0	76,0	62,0	72,0
120	119,3	120,7							81,25	90,0	81,25	90,0	76,0	86,0	72,0	82,0
130	129,2	130,8											80,0	90,0	76,0	86,0
140	139,2	140,8											90,0	100,0	86,0	96,0
150	149,2	150,8													96,0	106,0
> 150															[d]	

Fully threaded screws specified in ISO 8676

Product grade B in Annex A

NOTE Sizes shown in brackets are non-preferred dimensions.

[a] P is the pitch of the thread.

[b] For $l_{nom} \leq 125$ mm.

[c] For 125 mm < $l_{nom} \leq 200$ mm.

[d] Product grade B, see Table 3.

Table 2 — Dimensions for product grade A – 18 mm to 24 mm

Dimensions in millimetres

Thread, $d \times P$ [a]			(M18×2)	(M18×1,5)	**M20×2**	(M20×1,5)	(M22×2)	(M22×1,5)	**M24×2**
b	ref.	[b]	42	42	46	46	50	50	54
		[c]	48	48	52	52	56	56	60
c		max.	0,8	0,8	0,8	0,8	0,8	0,8	0,8
		min.	0,2	0,2	0,2	0,2	0,2	0,2	0,2
d_a		max.	20,2	20,2	22,4	22,4	24,4	24,4	26,4
d_s	nom. =	max.	18,00	18,00	20,00	20,00	22,0	22,0	24,00
		min.	17,73	17,73	19,67	19,67	21,67	21,67	23,67
d_w		min.	25,34	25,34	28,19	28,19	31,71	31,71	33,61
e		min.	30,14	30,14	33,53	33,53	37,72	37,72	39,98
k		nom.	11,5	11,5	12,5	12,5	14	14	15
		max.	11,715	11,715	12,715	12,715	14,215	14,215	15,215
		min.	11,285	11,285	12,285	12,285	13,785	13,785	14,785
k_w		min.	7,90	7,90	8,60	8,60	9,65	9,65	10,35
l_f		max.	3	3	4	4	4	4	4
r		min.	0,6	0,6	0,8	0,8	0,8	0,8	0,8
s	nom. =	max.	27,00	27,00	30,00	30,00	34,00	34,00	36,00
		min.	26,67	26,67	29,67	29,67	33,38	33,38	35,38

l			**Range of standard lengths between the stepped bold lines**													
nom.	min.	max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.
70	69,4	70,6	15,5	28,0	15,5	28,0	**Fully threaded screws specified in ISO 8676**									
80	79,4	80,6	25,5	38,0	25,5	38,0	21,5	34,0	21,5	34,0						
90	89,3	90,7	35,5	48,0	35,5	48,0	31,5	44,0	31,5	44,0	27,5	40,0	27,5	40,0	21,0	36,0
100	99,3	100,7	45,5	58,0	45,5	58,0	41,5	54,0	41,5	54,0	37,5	50,0	37,5	50,0	31,0	46,0
110	109,3	110,7	55,5	68,0	55,5	68,0	51,5	64,0	51,5	64,0	47,5	60,0	47,5	60,0	41,0	56,0
120	119,3	120,7	65,5	78,0	65,5	78,0	61,5	74,0	61,5	74,0	57,5	70,0	57,5	70,0	51,0	66,0
130	129,2	130,8	69,5	82,0	69,5	82,0	65,5	78,0	65,5	78,0	61,5	74,0	61,5	74,0	55,0	70,0
140	139,2	140,8	79,5	92,0	79,5	92,0	75,5	88,0	75,5	88,0	71,5	84,0	71,5	84,0	65,0	80,0
150	149,2	150,8	89,5	102,0	89,5	102,0	85,5	98,0	85,5	98,0	81,5	94,0	81,5	94,0	75,0	90,0
> 150			**Product grade B in Table 3 or Table 4**													

NOTE Sizes shown in brackets are non-preferred dimensions.

[a] P is the pitch of the thread.

[b] For $l_{nom} \leq 125$ mm.

[c] For 125 mm < $l_{nom} \leq 200$ mm.

Table 3 — Dimensions for product grade B – 16 mm to 22 mm

Dimensions in millimetres

Thread, $d \times P$ [a]			**M16×1,5**	(M18×2)	(M18×1,5)	**M20×2**	(M20×1,5)	(M22×2)	(M22×1,5)
b	ref.	[b]	44	48	48	52	52	56	56
		[c]	—	—	—	—	—	69	69
c		max.	0,80	0,80	0,80	0,80	0,80	0,80	0,80
		min.	0,20	0,20	0,20	0,20	0,20	0,20	0,20
d_a		max.	17,7	20,2	20,2	22,4	22,4	24,4	24,4
d_s	nom. =	max.	16,00	18,00	18,00	20,00	20,00	22,00	22,00
		min.	15,57	17,57	17,57	19,48	19,48	21,48	21,48
d_w		min.	22,00	24,85	24,85	27,70	27,70	31,35	31,35
e		min.	26,17	29,56	29,56	32,95	32,95	37,29	37,29
k		nom.	10	11,5	11,5	12,5	12,5	14	14
		max.	10,29	11,85	11,85	12,85	12,85	14,35	14,35
		min.	9,71	11,15	11,15	12,15	12,15	13,65	13,65
k_w		min.	6,80	7,81	7,81	8,51	8,51	9,56	9,56
l_f		max.	3	3	3	4	4	4	4
r		min.	0,6	0,6	0,6	0,8	0,8	0,8	0,8
s	nom. =	max.	24,00	27,00	27,00	30,00	30,00	34,00	34,00
		min.	23,16	26,16	26,16	29,16	29,16	33,00	33,00

l			**Range of standard lengths between the stepped bold lines**													
nom.	min.	max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.
≤ 150			**Product grade A in Table 1 or Table 2**													
160	158,0	162,0	106	116	99,5	112	99,5	112	95,5	108	95,5	108	91,5	104	91,5	104
180	178,0	182,0			119,5	132	119,5	132	115,5	128	115,5	128	111,5	124	111,5	124
200	197,7	202,3							135,5	148	135,5	148	131,5	144	131,5	144
220	217,7	222,3											138,5	151	138,5	151
—	—	—	**Length by agreement in accordance with ISO 888**													

NOTE Sizes shown in brackets are non-preferred dimensions.

[a] P is the pitch of the thread.

[b] For 125 mm < l_{nom} ≤ 200 mm.

[c] For l_{nom} > 200 mm.

Table 4 — Dimensions for product grade B – 24 mm to 42 mm

Dimensions in millimetres

Thread, $d \times P$ [a]			M24×2	(M27×2)	M30×2	(M33×2)	M36×3	(M39×3)	M42×3
b	ref.	[b]	—	60	66	72	—	—	—
		[c]	60	66	72	78	84	90	96
		[d]	73	79	85	91	97	103	109
c		max.	0,8	0,8	0,8	0,8	0,8	1,0	1,0
		min.	0,2	0,2	0,2	0,2	0,2	0,3	0,3
d_a		max.	26,4	30,4	33,4	36,4	39,4	42,4	45,6
d_s	nom. =	max.	24,00	27,00	30,00	33,00	36,00	39,00	42,00
		min.	23,48	26,48	29,48	32,38	35,38	38,38	41,38
d_w		min.	33,25	38,00	42,75	46,55	51,11	55,86	59,95
e		min.	39,55	45,20	50,85	55,37	60,79	66,44	71,30
k		nom.	15	17	18,7	21	22,5	25	26
		max.	15,35	17,35	19,12	21,42	22,92	25,42	26,42
		min.	14,65	16,65	18,28	20,58	22,08	24,58	25,58
k_w		min.	10,26	11,66	12,80	14,41	15,46	17,21	17,91
l_f		max.	4	6	6	6	6	6	8
r		min.	0,8	1,0	1,0	1,0	1,0	1,0	1,2
s	nom. =	max.	36,00	41,00	46,00	50,00	55,00	60,00	65,00
		min.	35,00	40,00	45,00	49,00	53,80	58,80	63,10

l			Range of standard lengths between the stepped bold lines													
nom.	min.	max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.
100	98,25	101,75	**Product grade A in Table 2**		25,0	40,0	**Fully threaded screws specified in ISO 8676**									
110	108,25	111,75			35,0	50,0	26,5	44,0								
120	118,25	121,75			45,0	60,0	36,5	54,0	30,5	48,0						
130	128,0	132,0			49,0	64,0	40,5	58,0	34,5	52,0						
140	138,0	142,0			59,0	74,0	50,5	68,0	44,5	62,0	36,0	56,0				
150	148,0	152,0			69,0	84,0	60,5	78,0	54,5	72,0	46,0	66,0	40,0	60,0		
160	158,0	162,0	85,0	100	79,0	94,0	70,5	88,0	64,5	82,0	56,0	76,0	50,0	70,0	41,5	64,0
180	178,0	182,0	105	120	99,0	114	90,5	108	84,5	102	76,0	96,0	70,0	90,0	61,5	84,0
200	197,7	202,3	125	140	119	134	110,5	128	104,5	122	96,0	116	90,0	110	81,5	104
220	217,7	222,3	132	147	126	141	117,5	135	111,5	129	103	123	97,0	117	88,5	111
240	237,7	242,3	152	167	146	161	137,5	155	131,5	149	123	143	117	137	108,5	131
260	257,4	262,6	**Length by agreement in accordance with ISO 888**		166	181	157,5	175	151,5	169	143	163	137	157	128,5	151
280	277,4	282,6					177,5	195	171,5	189	163	183	157	177	148,5	171
300	297,4	302,6					197,5	215	191,5	209	183	203	177	197	168,5	191
320	317,15	322,85							211,5	229	203	223	197	217	188,5	211
340	337,15	342,85									223	243	217	237	208,5	231
360	357,15	362,85									243	263	237	257	228,5	251
380	377,15	382,85											257	277	248,5	271
400	397,15	402,85													268,5	291
420	416,85	423,15													288,5	311
—	—	—														

NOTE Sizes shown in brackets are non-preferred dimensions.

[a] P is the pitch of the thread.

[b] For $l_{nom} \leq 125$ mm.

[c] For 125 mm < $l_{nom} \leq 200$ mm.

[d] For $l_{nom} > 200$ mm.

Table 5 — Dimensions for product grade B – 45 mm to 64 mm

Dimensions in millimetres

Thread, $d \times P$ [a]			(M45×3)	**M48×3**	(M52×4)	**M56×4**	(M60×4)	**M64×4**
b	ref.	[b]	102	108	116	—	—	—
		[c]	115	121	129	137	145	153
c		max.	1,0	1,0	1,0	1,0	1,0	1,0
		min.	0,3	0,3	0,3	0,3	0,3	0,3
d_a		max.	48,6	52,6	56,6	63,0	67,0	71,0
d_s	nom. =	max.	45,00	48,00	52,00	56,00	60,00	64,00
		min.	44,38	47,38	51,26	55,26	59,26	63,26
d_w		min.	64,70	69,45	74,20	78,66	83,41	88,16
e		min.	76,95	82,60	88,25	93,56	99,21	104,86
k		nom.	28	30	33	35	38	40
		max.	28,42	30,42	33,50	35,50	38,50	40,50
		min.	27,58	29,58	32,50	34,50	37,50	39,50
k_w		min.	19,31	20,71	22,75	24,15	26,25	27,65
l_f		max.	8	10	10	12	12	13
r		min.	1,2	1,6	1,6	2,0	2,0	2,0
s	nom. =	max.	70,00	75,00	80,00	85,00	90,00	95,00
		min.	68,10	73,10	78,10	82,80	87,80	92,80

l			**Range of standard lengths between the stepped bold lines**											
nom.	min.	max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.
160	158,0	162,0	35,5	58										
180	178,0	182,0	55,5	78	47	72								
200	197,7	202,3	75,5	98	67	92	59	84						
220	217,7	222,3	82,5	105	74	99	66	91	55,5	83	47,5	75	37	67
240	237,7	242,3	102,5	125	94	119	86	111	75,5	103	67,5	95	57	87
260	257,4	262,6	122,5	145	114	139	106	131	95,5	123	87,5	115	77	107
280	277,4	282,6	142,5	165	134	159	126	151	115,5	143	107,5	135	97	127
300	297,4	302,6	162,5	185	154	179	146	171	135,5	163	127,5	155	117	147
320	317,15	322,85	182,5	205	174	199	166	191	155,5	183	147,5	175	137	167
340	337,15	342,85	202,5	225	194	219	186	211	175,5	203	167,5	195	157	187
360	357,15	362,85	222,5	245	214	239	206	231	195,5	223	187,5	215	177	207
380	377,15	382,85	242,5	265	234	259	226	251	215,5	243	207,5	235	197	227
400	397,15	402,85	262,5	285	254	279	246	271	235,5	263	227,5	255	217	247
420	416,85	423,15	282,5	305	274	299	266	291	255,5	283	247,5	275	237	267
440	436,85	443,15	302,5	325	294	319	286	311	275,5	303	267,5	295	257	287
460	456,85	463,15			314	339	306	331	295,5	323	287,5	315	277	307
480	476,85	483,15			334	359	326	351	315,5	343	307,5	335	297	327
500	496,85	503,15					346	371	335,5	363	327,5	355	317	347
—	—	—	**Length by agreement in accordance with ISO 888**											

Fully threaded screws specified in ISO 8676

NOTE Sizes shown in brackets are non-preferred dimensions.

[a] P is the pitch of the thread.

[b] For 125 mm < l_{nom} ≤ 200 mm.

[c] For l_{nom} > 200 mm.

5 Requirements and reference International Standards

The requirements specified in the International Standards listed in Table 6 shall apply.

Table 6 — Requirements and reference International Standards

<table>
<tr><th colspan="2">Material</th><th colspan="2">Steel</th><th colspan="2">Stainless steel</th></tr>
<tr><td>General requirements</td><td>International Standard</td><td colspan="4">ISO 8992</td></tr>
<tr><td rowspan="2">Thread</td><td>Tolerance class</td><td colspan="4">6g [a]</td></tr>
<tr><td>International Standard</td><td colspan="4">ISO 965-1</td></tr>
<tr><td rowspan="5">Mechanical properties</td><td rowspan="2">Property class
Symbol</td><td>8 mm ≤ d ≤ 39 mm</td><td>8.8, 10.9, 12.9/12.9 [b]</td><td colspan="2" rowspan="2">—</td></tr>
<tr><td>d > 39 mm</td><td>As agreed</td></tr>
<tr><td rowspan="3">Grade [c] and property class
Symbol</td><td colspan="2" rowspan="3">—</td><td>8 mm ≤ d ≤ 24 mm</td><td>A2-70, A4-70, A4-80, D4-80, D6-80</td></tr>
<tr><td>24 mm ≤ d ≤ 39 mm</td><td>A2-50, A2-70, A4-50, A4-70, D4-70, D6-70</td></tr>
<tr><td>d > 39 mm</td><td>As agreed</td></tr>
<tr><td>International Standard</td><td colspan="2">ISO 898-1</td><td colspan="2">ISO 3506-1</td></tr>
<tr><td rowspan="2">Tolerances</td><td>Product grade</td><td colspan="4">For d ≤ 24 mm and l ≤ 10d or 150 mm [d]: A
For d > 24 mm or l > 10d or 150 mm [d]: B</td></tr>
<tr><td>International Standard</td><td colspan="4">ISO 4759-1</td></tr>
<tr><td colspan="2" rowspan="2">Surface condition</td><td colspan="2">As processed (no coating)
Electroplated coatings as specified in ISO 4042
Non-electrolytically applied zinc flake coatings as specified in ISO 10683</td><td colspan="2">Clean and bright
and/or
Passivated [e]</td></tr>
<tr><td colspan="4">Additional requirements or other finishes or coatings shall be agreed between the purchaser and the supplier</td></tr>
<tr><td colspan="2">Surface integrity</td><td colspan="2">Limits for surface discontinuities as specified in ISO 6157-1, and in ISO 6157-3 for property class 12.9/12.9</td><td colspan="2">As agreed [f]</td></tr>
<tr><td colspan="2">Acceptability</td><td colspan="4">Acceptance inspection as specified in ISO 3269</td></tr>
</table>

[a] Depending on the type of coating to be applied, another tolerance position of the thread may be specified for the uncoated fastener in accordance with the relevant coating standard.

[b] Fasteners of property class 12.9/12.9 are susceptible to hydrogen embrittlement; see ISO/TR 20491.

[c] The most common stainless steel grades are A2 and A4; however, depending on the application, it can be necessary to select other grades in ISO 3506-1 suitable for the service corrosive environment. For use at high temperatures (up to 800 °C), mechanical properties are specified in ISO 3506-5. See also ISO 3506-6 for the selection of suitable stainless steel grades.

[d] Whichever is the shorter.

[e] See e.g. ISO 16048.

[f] See e.g. ISO 6157-1.