



SLOVENSKI STANDARD

SIST EN 1665:2001

01-julij-2001

Vijaki s šest robo glavo s poševnim krajcem - Težka izvedba

Hexagon bolts with flange - Heavy series

Sechskantschrauben mit Flansch - Schwere Reihe

Vis à tête hexagonale à embase cylindro-tronconique - Série large

Ta slovenski standard je istoveten z: EN 1665:1997

[SIST EN 1665:2001](https://standards.iteh.ai/catalog/standards/sist/937235cb-91e5-42dc-9fbe-d78a60e73c9a/sist-en-1665-2001)

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ICS:

21.060.10 Sorniki, vijaki, stebelni vijaki Bolts, screws, studs

SIST EN 1665:2001

en

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EUROPEAN STANDARD

EN 1665

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 1997

ICS 21.060.10

Descriptors: fasteners, screws, hexagonal head screws, dimensions, dimensional tolerances, characteristics, verification, designation

English version

Hexagon bolts with flange - Heavy series

Vis à tête hexagonale à embase à Sechskantschrauben mit Flansch - Schwere Reihe
cylindro-tronconique - Série large

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 185 "Threaded and non-threaded mechanical fasteners and accessories", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 1997, and conflicting national standards shall be withdrawn at the latest by November 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This European Standard specifies characteristics of hexagon bolts with flange, heavy series, with threads from M5 up to and including M20 and with property classes 8.8, 10.9 and A2-70.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 26157-3

Fasteners – Surface discontinuities – Part 3: Bolts, screws and studs for special requirements
(ISO 6157-3 : 1988)

prEN ISO 898-1

Mechanical properties of fasteners – Part 1: Bolts, screws and studs (ISO/DIS 898-1 : 1996)

prEN ISO 3506-1

Mechanical properties of corrosion-resistant stainless-steel fasteners – Part 1: Bolts, screws and studs
(ISO/DIS 3506-1 : 1995)

prEN ISO 4042

Fasteners – Electroplated coatings (ISO/DIS 4042 : 1996)

prEN ISO 4753

Fasteners – Ends of parts with external metric ISO thread (ISO/DIS 4753 : 1997)

prEN ISO 4759-1

Tolerances for fasteners – Part 1: Bolts, screws, studs and nuts – Product grades A, B and C
(ISO/DIS 4759-1 : 1997)

ISO 724

ISO general purpose metric screw threads – Basic dimensions

ISO 888

Bolts, screw and studs – Nominal lengths, and thread lengths for general purpose bolts

ISO 965-2

ISO general purpose metric screw threads – Tolerances – Part 2: Limits of sizes for general purpose bolt and nut threads – Medium quality

ISO 3269

Fasteners – Acceptance inspection

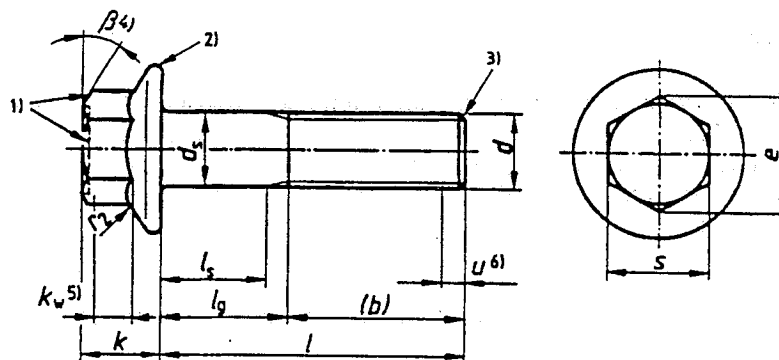
ISO 8992

Fasteners – General requirements for bolts, screws, studs and nuts

3 Dimensions

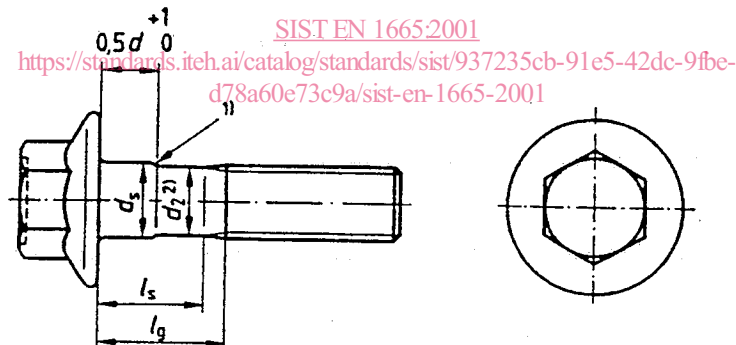
Dimensions shall be in accordance with figures 1 to 3 and table 1.

NOTE: Symbols and designations of dimensions are specified in EN 20225.



- 1) The top of the head shall be either full form or indented at the manufacturer's option and shall be either chamfered or rounded. The minimum diameter of the chamfer circle or start of rounding shall be the maximum width across flats minus 15 %. If the top of the head is indented, the periphery may be rounded.
- 2) Chamfered end (see prEN ISO 4753).
- 3) Edge contour optional.
- 4) $\beta = 15^\circ$ to 30°
- 5) k_w is the wrenching height; see the note to table 1.
- 6) Incomplete thread $u \leq 2P$.

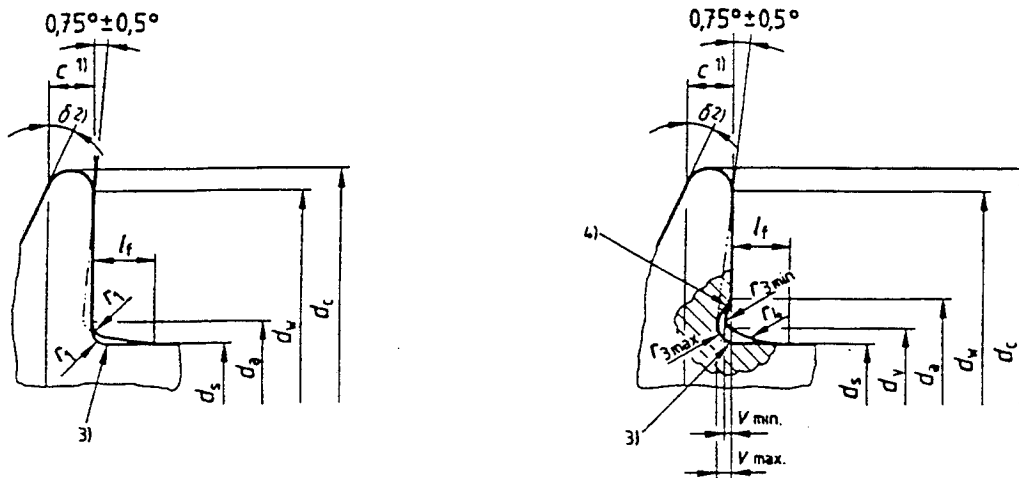
Figure 1: Hexagon bolt with flange - Full shank (standard type)



other dimensions, see figure 1

- 1) Rounded or chamfered or conical.
- 2) d_2 is approximately equal to the pitch diameter (rolling diameter).

Figure 2: Hexagon bolt with flange - Reduced shank, type R (upon request)



Type F, without undercut (standard type)

Type U, with undercut (upon request or optional)

- 1) c is measured at $d_{w \min}$.
- 2) $\delta = 15^\circ$ to 25°
- 3) Maximum and minimum underhead fillet.
- 4) Junction of fillet with bearing surface to be a smooth blend.

Figure 3: Hexagon bolt with flange – Underhead configuration (bearing area)

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Table 1

Dimensions in millimetres

Thread (<i>d</i>)		M5	M6	M8	M10	M12	(M14) ¹⁾	M16	M20
<i>P</i> ²⁾		0,8	1	1,25	1,5	1,75	2	2	2,5
<i>b</i> ref.	³⁾	16	18	22	26	30	34	38	46
	⁴⁾	–	–	28	32	36	40	44	52
	⁵⁾	–	–	–	–	–	–	57	65
<i>c</i>	min.	1	1,1	1,2	1,5	1,8	2,1	2,4	3
<i>d</i> _a Types	F max.	5,7	6,8	9,2	11,2	13,7	15,7	17,7	22,4
	U	6,2	7,5	10,0	12,5	15,2	17,7	20,5	25,7
<i>d</i> _c	max.	11,8	14,2	18	22,3	26,6	30,5	35	43
<i>d</i> _s	max.	5,00	6,00	8,00	10,00	12,00	14,00	16,00	20,00
	min.	4,82	5,82	7,78	9,78	11,73	13,73	15,73	19,67
<i>d</i> _v	max.	5,5	6,6	8,8	10,8	12,8	14,8	17,2	21,6
<i>d</i> _w	min.	9,8	12,2	15,8	19,6	23,8	27,6	31,9	39,9
<i>e</i>	min.	8,71	10,95	14,26	17,62	19,86	23,15	26,51	33,23
<i>k</i>	max.	5,8	6,6	8,1	10,4	11,8	13,7	15,4	18,9
<i>k</i> _w	min.	2,6	3,0	3,9	5,1	5,6	6,5	7,3	8,9
<i>l</i> _t	max.	1,4	1,6	2,1	2,1	2,1	2,1	3,2	4,2
<i>r</i> ₁	min.	0,2	0,25	0,4	0,4	0,6	0,6	0,6	0,8
<i>r</i> ₂ ⁶⁾	max.	0,3	0,4	0,5	0,6	0,7	0,9	1	1,2
<i>r</i> ₃	max.	0,25	0,26	0,36	0,45	0,54	0,63	0,72	0,9
	min.	0,10	0,11	0,16	0,20	0,24	0,28	0,32	0,4
<i>r</i> ₄	ref.	4	4,4	5,7	5,7	5,7	5,7	8,8	11,4
<i>s</i>	max.	8,00	10,00	13,00	16,00	18,00	21,00	24,00	30,00
	min.	7,78	9,78	12,73	15,73	17,73	20,67	23,67	29,67
<i>v</i>	max.	0,15	0,20	0,25	0,30	0,35	0,45	0,50	0,65
	min.	0,05	0,05	0,10	0,15	0,15	0,20	0,25	0,30

(continued)

Table 1 (concluded)

Thread (<i>d</i>)			M5	M6	M8	M10	M12	(M14) ¹⁾	M16	M20								
<i>l</i> ^{7), 8)}			<i>l</i> _s and <i>l</i> _g ⁹⁾															
nom.	min.	max.	<i>l</i> _s min.	<i>l</i> _g max.	<i>l</i> _s min.	<i>l</i> _g max.	<i>l</i> _s min.	<i>l</i> _g max.	<i>l</i> _s min.	<i>l</i> _g max.	<i>l</i> _s min.	<i>l</i> _g max.	<i>l</i> _s min.	<i>l</i> _g max.	<i>l</i> _s min.	<i>l</i> _g max.	<i>l</i> _s min.	<i>l</i> _g max.
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	5	9														
30	29,58	30,42	10	14	7	12												
35	34,5	35,5	15	19	12	17	6,75	13										
40	39,5	40,5	20	24	17	22	11,75	18	6,5	14								
45	44,5	45,5	25	29	22	27	16,75	23	11,5	19	6,25	15						
50	49,5	50,5	30	34	27	32	21,75	28	16,5	24	11,25	20	6	16	-	-	-	-
55	54,4	55,6			32	37	26,75	33	21,5	29	16,25	25	11	21	7	17	-	-
60	59,4	60,6			37	42	31,75	38	26,5	34	21,25	30	16	26	12	22	-	-
65	64,4	65,6					36,75	43	31,5	39	26,25	35	21	31	17	27	6,5	19
70	69,4	70,6					41,75	48	36,5	44	31,25	40	26	36	22	32	11,5	24
80	79,4	80,6					51,75	58	46,5	54	41,25	50	36	46	32	42	21,5	34
90	89,3	90,7							56,5	64	51,25	60	46	56	42	52	31,5	44
100	99,3	100,7							66,5	74	61,25	70	56	66	52	62	41,5	54
110	109,3	110,7							71,25	80	76	76	66	76	62	72	51,5	64
120	119,3	120,7							81,25	90	86	86	76	86	72	82	61,5	74
130	129,2	130,8											80	90	76	86	65,5	78
140	139,2	140,8											90	100	86	96	75,5	88
150	149,2	150,8													96	106	85,5	98
160	159,2	160,8													106	116	95,5	108
180	179,2	180,8															115,5	128
200	199,075	200,925															135,5	148

¹⁾ The size in parentheses should be avoided if possible.

²⁾ *P* is the pitch of the thread.

³⁾ For lengths $l_{nom} \leq 125$ mm.

⁴⁾ For lengths $125 \text{ mm} < l_{nom} \leq 200$ mm.

⁵⁾ For lengths $l_{nom} > 200$ mm.

⁶⁾ Radius r_2 applies both at the corners and at the flats of the hexagon.

⁷⁾ Screws with lengths shown above the continuous thick line are threaded to head.

⁸⁾ Reduced shank type (type R) only below the dashed line.

⁹⁾ l_g is the minimum grip length.

NOTE: If the product passes the gauging in annex A, the requirements for dimensions *e* and *k_w* are satisfied.