INTERNATIONAL STANDARD

ISO 4762

Fourth edition
2004-03-01

Hexagon socket head cap screws

Vis à tête cylindrique à six pans creux

Reference number
ISO 4762:2004(E)

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Contents

Page

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 4762 was prepared by Technical Committee ISO/TC 2, *Fasteners*.

This fourth edition cancels and replaces the third edition (ISO 4762:1997), which has been technically revised.

Hexagon socket head cap screws

1 Scope

This International Standard specifies the characteristics of hexagon socket head cap screws with coarse pitch thread from M1,6 up to and including M64 and product grade A.

For approximate masses of screws see Annex A.

If, in special cases, specifications other than those listed in this International Standard are required, they should be selected from existing International Standards, e.g ISO 261, ISO 888, ISO 898-1, ISO 965-2. ISO 3506-1, ISO 8839 and ISO 4759-1.

2 Normative references

The following referenced documents are indispensable for the application 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 designations of dimensions*

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

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

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

ISO 965-2, *ISO general purpose metric screw threads — Tolerances — Part 2: Limits of sizes for general purpose external and internal screw threads — Medium quality*

ISO 965-3, *ISO general purpose metric screw threads — Tolerances — Part 3: Deviations for constructional screw threads*

ISO 3269, *Fasteners — Acceptance inspection*

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

ISO 4042, *Fasteners — Electroplated coatings*

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

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

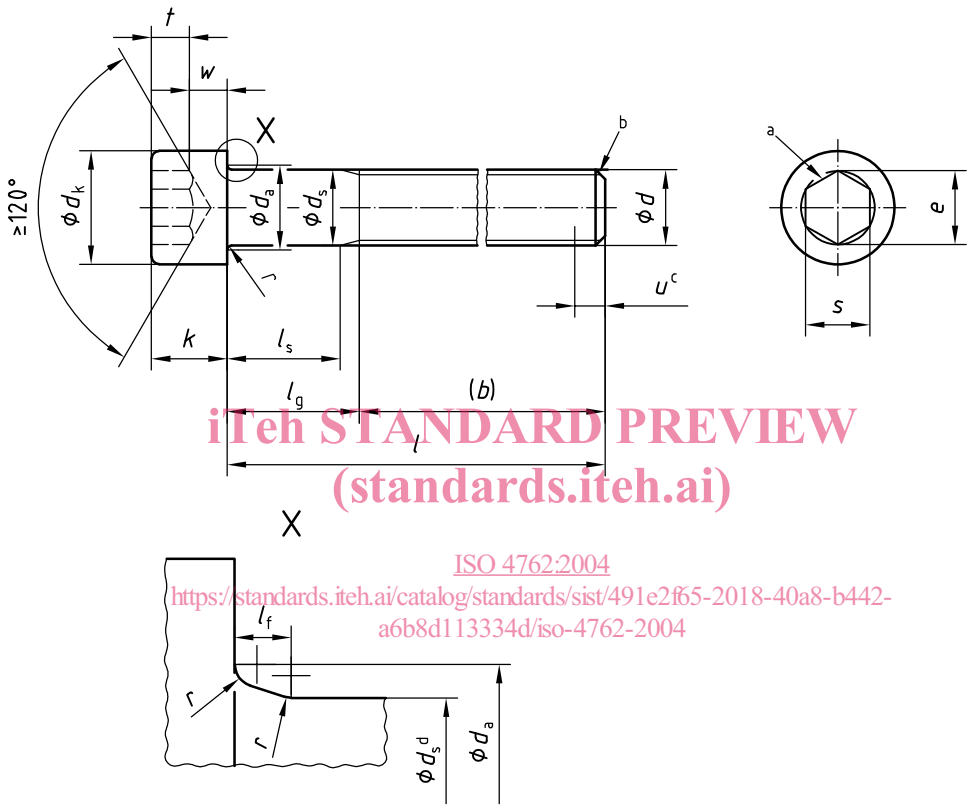
ISO 10683, *Fasteners — Non-electrolytically applied zinc flake coatings*

ISO 23429, *Gauging of hexagon sockets*

3 Dimensions

See Figure 1 and Table 1.

Symbols and designations of dimensions are defined in ISO 225.



Maximum underhead fillet

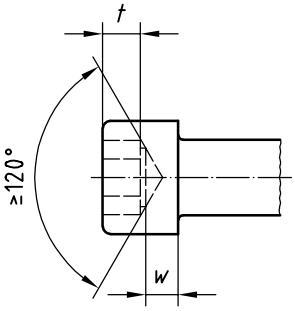
$l_{f,\,max} = 1{,}7\, r_{max}$

$r_{max} = \frac{d_{a,\,max} - d_{s,\,max}}{2}$

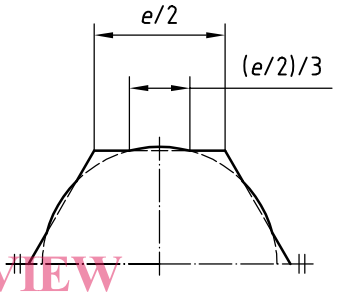
r_{min}, see Table 1

Figure 1

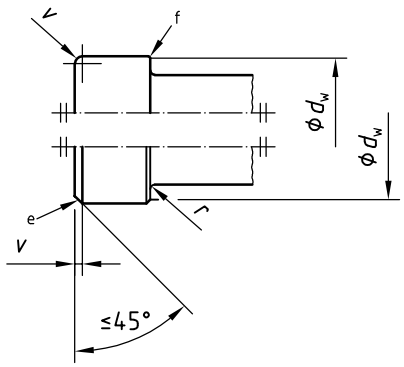
Permissible alternative form of socket



For broached sockets which are at the maximum limit of size the overcut resulting from drilling shall not exceed 1/3 of the length of any flat of the socket which is e/2.



Top and bottom edge opf the head



a A slight rounding or countersink at the mouth of the socket is permissible.

b Point chamfered or for sizes M4 and below “as rolled” according to ISO 4753.

c Incomplete thread $u \leqslant 2\,P$.

d d_s applies if values of $l_{s,\,min}$ are specified.

e Top edge of head may be rounded or chamfered as shown at the option of the manufacturer.

f Bottom edge of head may be rounded or chamfered to d_w but in every case shall be free from burrs.

Figure 1 (*continued*)

Table 1 — Dimensions

Dimensions in millimetres

Thread (d)		M1,6	M2	M2,5	M3	M4	M5	M6	M8	M10	M12
P[a]		0,35	0,4	0,45	0,5	0,7	0,8	1	1,25	1,5	1,75
b[b]	ref.	15	16	17	18	20	22	24	28	32	36
d_k	max.[c]	3,00	3,80	4,50	5,50	7,00	8,50	10,00	13,00	16,00	18,00
	max.[d]	3,14	3,98	4,68	5,68	7,22	8,72	10,22	13,27	16,27	18,27
	min.	2,86	3,62	4,32	5,32	6,78	8,28	9,78	12,73	15,73	17,73
d_a	max.	2	2,6	3,1	3,6	4,7	5,7	6,8	9,2	11,2	13,7
d_s	max.	1,60	2,00	2,50	3,00	4,00	5,00	6,00	8,00	10,00	12,00
	min.	1,46	1,86	2,36	2,86	3,82	4,82	5,82	7,78	9,78	11,73
e[e, f]	min.	1,733	1,733	2,303	2,873	3,443	4,583	5,723	6,863	9,149	11,429
l_f	max	0,34	0,51	0,51	0,51	0,6	0,6	0,68	1,02	1,02	1,45
k	max.	1,60	2,00	2,50	3,00	4,00	5,00	6,0	8,00	10,00	12,00
	min.	1,46	1,86	2,36	2,86	3,82	4,82	5,7	7,64	9,64	11,57
r	min.	0,1	0,1	0,1	0,1	0,2	0,2	0,25	0,4	0,4	0,6
s[f]	nom.	1,5	1,5	2	2,5	3	4	5	6	8	10
	max.	1,58	1,58	2,08	2,58	3,08	4,095	5,14	6,14	8,175	10,175
	min.	1,52	1,52	2,02	2,52	3,02	4,020	5,02	6,02	8,025	10,025
t	min.	0,7	1	1,1	1,3	2	2,5	3	4	5	6
v	max.	0,16	0,2	0,25	0,3	0,4	0,5	0,6	0,8	1	1,2
d_w	min	2,72	3,48	4,18	5,07	6,53	8,03	9,38	12,33	15,33	17,23
w	min.	0,55	0,55	0,85	1,15	1,4	1,9	2,3	3,3	4	4,8

l^g			Shank length l_s and grip length l_g																			
			l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g
nom.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
2,5	2,3	2,7																				
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																				

Table 1 — Dimensions (*continued*)

16	15,65	16,35																		
20	19,58	20,42			2	4														
25	24,58	25,42					5,75	8	4,5	7										
30	29,58	30,42							9,5	12	6,5	10	4	8						
35	34,5	35,5									11,5	15	9	13	6	11				
40	39,5	40,5									16,5	20	14	18	11	16	5,75	12		
45	44,5	45,5											19	23	16	21	10,75	17	5,5	13
50	49,5	50,5											24	28	21	26	15,75	22	10,5	18
55	54,4	55,6													26	31	20,75	27	15,5	23
60	59,4	60,6													31	36	25,75	32	20,5	28
65	64,4	65,6															30,75	37	25,5	33
70	69,4	70,6															35,75	42	30,5	38
80	79,4	80,6															45,75	52	40,5	48
90	89,3	90,7																	50,5	58
100	99,3	100,7																	60,5	68
110	109,3	110,7																		
120	119,3	120,7																		
130	129,2	130,8																		
140	139,2	140,8																		
150	149,2	150,8																		
160	159,2	160,8																		
180	179,2	180,8																		
200	199,075	200,925																		
220	219,075	220,925																		
240	239,075	240,925																		
260	258,95	261,05																		
280	278,95	281,05																		
300	298,95	301,05																		