

International Standard



4016

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Hexagon head bolts — Product grade C

Boulons à tête hexagonale — Classe de produit C

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4016 was developed by Technical Committee ISO/TC 2, *Fasteners*, and was circulated to the member bodies in December 1977.

It has been approved by the member bodies of the following countries:

Australia	India	Romania
Belgium	Ireland	South Africa, Rep. of
Canada	Israel	Spain
Chile	Italy	Sweden
Czechoslovakia	Korea, Rep. of	Switzerland
Denmark	Mexico	Turkey
Egypt, Arab Rep. of	Netherlands	United Kingdom
Finland	New Zealand	USA
Germany, F.R.	Norway	Yugoslavia
Hungary	Poland	

The member bodies of the following countries expressed disapproval of the document on technical grounds:

France
USSR

Hexagon head bolts — Product grade C

0 INTRODUCTION

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

- a) Hexagon head bolts (ISO 4014, ISO 4015 and ISO 4016)
- b) Hexagon head screws (ISO 4017 and ISO 4018)
- c) Hexagon nuts (ISO 4032, ISO 4033, ISO 4034, ISO 4035 and ISO 4036)
- d) Hexagon flanged bolts
- e) Hexagon flanged screws
- f) Hexagon flanged nuts
- g) Structural bolting

(In preparation)

1 SCOPE AND FIELD OF APPLICATION

This International Standard gives specifications for hexagon head bolts with metric dimensions and thread diameters from 5 up to and including 36 mm, of product grade C.

No finish is required for this product except for the thread. A small die seam across the bearing surface is permissible.

If, in special cases, specifications other than those listed in this International Standard are required, it is recommended that they should be selected from existing International Standards, for example ISO 261, ISO 888, ISO 898, ISO 965, ISO 1461, ISO 4759/1.

2 REFERENCES

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.*

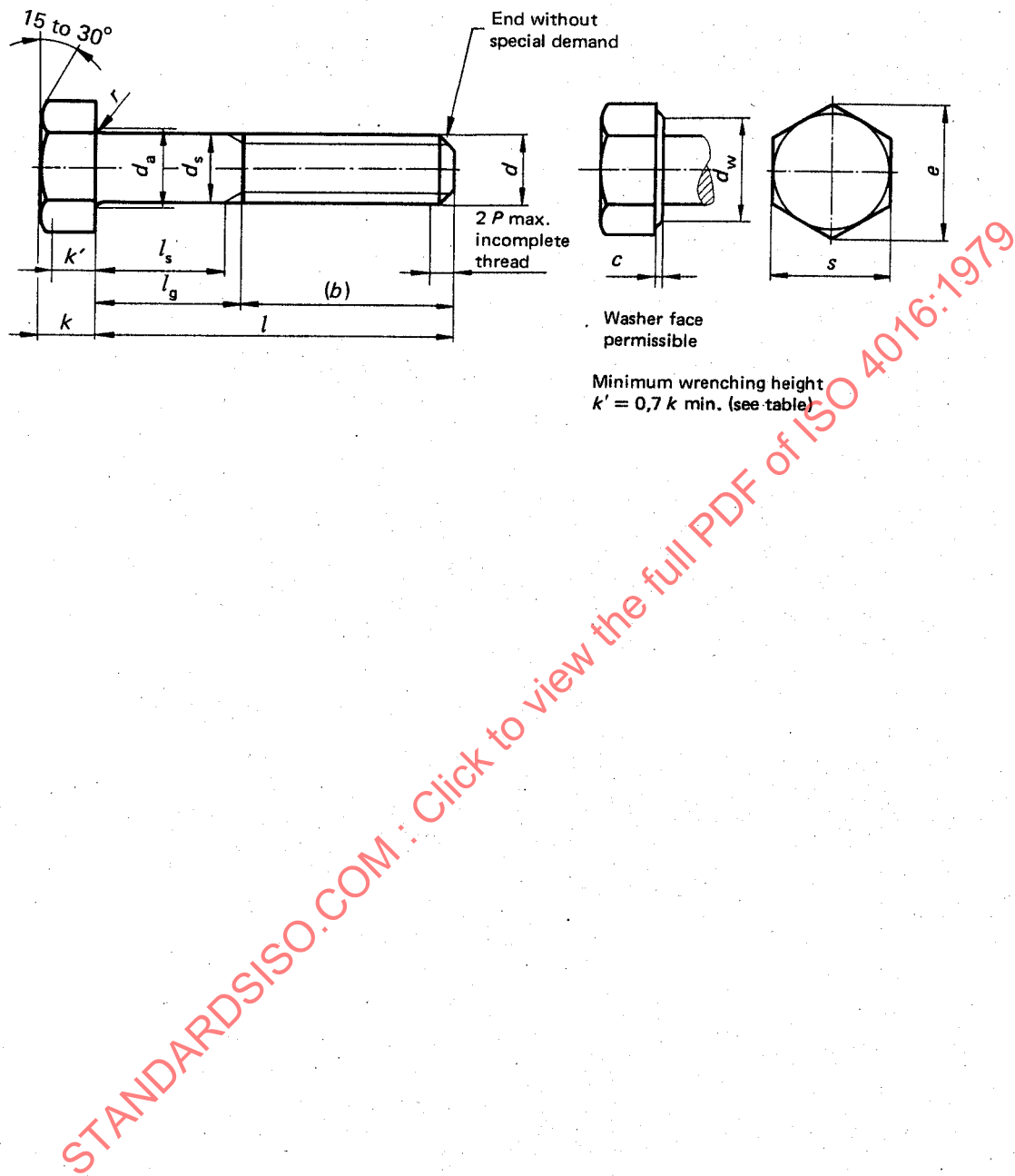
ISO 898, *Mechanical properties of fasteners.*

ISO 965, *ISO general purpose metric screw threads — Tolerances.*

ISO 1461, *Metallic coatings — Hot dip galvanized coatings on fabricated ferrous products — Requirements.*

ISO 4759/1, *Tolerances for fasteners — Part 1 : Bolts, screws and nuts with thread diameters $\geq 1,6 \leq 150$ mm and product grades A, B and C.*

3 DIMENSIONS



Thread size d			M5	M6	M8	M10	M12	(M14)	M16
P	1)		0,8	1	1,25	1,5	1,75	2	2
b ref.	2)		16	18	22	26	30	34	38
	3)		—	—	28	32	36	40	44
	4)		—	—	—	—	—	—	57
c	max.		0,5	0,5	0,6	0,6	0,6	0,6	0,8
d_a	max.		6	7,2	10,2	12,2	14,7	16,7	18,7
d_s	max.		5,48	6,48	8,58	10,58	12,7	14,7	16,7
	min.		4,52	5,52	7,42	9,42	11,3	13,3	15,3
d_w	min.		6,7	8,7	11,4	14,4	16,4	19,2	22
e	min.		8,63	10,89	14,20	17,59	19,85	22,78	26,17
k	nom.		3,5	4	5,3	6,4	7,5	8,8	10
	min.		3,12	3,62	4,92	5,95	7,05	8,35	9,25
	max.		3,88	4,38	5,68	6,85	7,95	9,25	10,75
k'	min.		2,2	2,5	3,45	4,2	4,95	5,85	6,5
r	min.		0,2	0,25	0,4	0,4	0,6	0,6	0,6
s	max.		8	10	13	16	18	21	24
	min.		7,64	9,64	12,57	15,57	17,57	20,16	23,16

l			shank length l_s and grip length l_g															
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.	l_s min.	l_g max.
25	23,95	26,05	5	9														
30	28,95	31,05	10	14	7	12												
35	33,75	36,25	15	19	12	17	6,75	13										
40	38,75	41,25	20	24	17	22	11,75	18	6,5	14								
45	43,75	46,25	25	29	22	27	16,75	23	11,5	19	6,25	15						
50	48,75	51,25	30	34	27	32	21,75	28	16,5	24	11,25	20	6	16				
55	53,5	56,5			32	37	26,75	33	21,5	29	16,25	25	11	21	7	17		
60	58,5	61,5			37	42	31,75	38	26,5	34	21,25	30	16	26	12	22		
65	63,5	66,5					36,75	43	31,5	39	26,25	35	21	31	17	27		
70	68,5	71,5					41,75	48	36,5	44	31,25	40	26	36	22	32		
80	78,5	81,5					51,75	58	46,5	54	41,25	50	36	46	32	42		
90	88,25	91,75							56,5	64	51,25	60	46	56	42	52		
100	98,25	101,75							66,5	74	61,25	70	56	66	52	62		
110	108,25	111,75									71,25	80	66	76	62	72		
120	118,25	121,75									81,25	90	76	86	72	82		
130	128	132											80	90	76	86		
140	138	142											90	100	86	96		
150	148	152													96	106		
160	156	164													106	116		
180	176	184																
200	195,4	204,6																
220	215,4	224,6																
240	235,4	244,6																
260	254,8	265,2																
280	274,8	285,2																
300	294,8	305,2																

The popular lengths are between the stepped lines. The size M14 should be avoided if possible.

- 1) P = pitch of the thread
- 2) For nominal lengths ≤ 125 mm
- 3) For nominal lengths > 125 and ≤ 200 mm
- 4) For nominal lengths > 200 mm

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Dimensions in millimetres

M10	M12	(M14)	M16	M20	M24	M30	M36
1,5	1,75	2	2	2,5	3	3,5	4
6	30	34	38	46	54	66	78
2	36	40	44	52	60	72	84
—	—	—	57	65	73	85	97
0,6	0,6	0,6	0,8	0,8	0,8	0,8	0,8
2,2	14,7	16,7	18,7	24,4	28,4	35,4	42,4
0,58	12,7	14,7	16,7	20,84	24,84	30,84	37
0,42	11,3	13,3	15,3	19,16	23,16	29,16	35
0,4	16,4	19,2	22	27,7	33,2	42,7	51,1
0,59	19,85	22,78	26,17	32,95	39,55	50,85	60,79
0,4	7,5	8,8	10	12,5	15	18,7	22,5
0,95	7,05	8,35	9,25	11,6	14,1	17,65	21,45
0,85	7,95	9,25	10,75	13,4	15,9	19,75	23,55
0,2	4,95	5,85	6,5	8,1	9,9	12,4	15,0
0,4	0,6	0,6	0,6	0,8	0,8	1	1
6	18	21	24	30	36	46	55
15,57	17,57	20,16	23,16	29,16	35	45	53,8

shank length l_s and grip length l_g

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.	l_s min.	l_g max.
14														
19	6,25	15												
24	11,25	20	6	16										
29	16,25	25	11	21										
34	21,25	30	16	26	7	17								
39	26,25	35	21	31	12	22								
44	31,25	40	26	36	17	27	6,5	19						
54	41,25	50	36	46	22	32	11,5	24						
64	51,25	60	46	56	32	42	21,5	34	11	26				
74	61,25	70	56	66	42	52	31,5	44	21	36	6,5	24		
	71,25	80	66	76	52	62	41,5	54	31	46	16,5	34		
	81,25	90	76	86	62	72	51,5	64	41	56	26,5	44	12	32
			80	90	72	82	61,5	74	51	66	36,5	54	22	42
			90	100	82	92	71,5	84	61	76	46,5	64	32	46
					96	106	85,5	98	75	90	60,5	78	46	66
					106	116	95,5	108	85	100	70,5	88	56	76
							115,5	128	105	120	90,5	108	76	96
							135,5	148	125	140	110,5	128	96	116
									132	147	117,5	135	103	123
									152	167	137,5	155	123	143
											157,5	175	143	163
											177,5	195	163	183
											197,5	215	183	203

Formulae :

$$l_g \text{ max.} = l \text{ nom.} - b \text{ ref.}$$

$$l_s \text{ min.} = l_g \text{ max.} - 5 P$$

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