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ISO
4018

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

Hexagon head screws — Product grade C

Vis à tête hexagonale — Grade C

Reference number
ISO 4018 : 1988 (E)

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.

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 4018 was prepared by Technical Committee ISO/TC 2, *Fasteners*.

This second edition cancels and replaces the first edition (ISO 4018 : 1979), to which the following major alterations have been made:

a) the range of threads has been extended to be M5 to M64;

b) the range of nominal lengths has been extended up to 500 mm;

c) non-preferred threads have been entered;

d) in addition to the property classes 4.6 and 4.8, property class 3.6 has been entered.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Printed in Switzerland

Hexagon head screws — Product grade C

0 Introduction

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

a) hexagon head bolts (ISO 4014, ISO 4015, ISO 4016 and ISO 8765);

b) hexagon head screws (ISO 4017, ISO 4018 and ISO 8676);

c) hexagon nuts (ISO 4032, ISO 4033, ISO 4034, ISO 4035, ISO 4036, ISO 8673, ISO 8674 and ISO 8675);

d) hexagon flanged bolts (ISO 4162 and ISO 8102);

e) hexagon flanged screws;[1)]

f) hexagon flanged nuts (ISO 4161, ISO 7043 and ISO 7044);

g) structural bolting (ISO 4775, ISO 7411 to ISO 7414 and ISO 7417).

1 Scope and field of application

This International Standard gives specifications for hexagon head screws with threads from M5 up to and including M64, of product grade C.

NOTE — This type of product is the same as that covered by ISO 4016 with the exception of threading up to the head.

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 261, ISO 888, ISO 898-1, ISO 965-2 and ISO 4759-1.

1) These will form the subject of future International Standards.

2 References

ISO 225, *Fasteners — Bolts, screws 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 and screws.*

ISO 898-1, *Mechanical properties of fasteners — Part 1: Bolts, screws and studs.*

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 4042, *Threaded components — Electroplated coatings.* [1)]

ISO 4759-1, *Tolerances for fasteners — Part 1: Bolts, screws and nuts with thread diameters* > 1,6 *and* < 150 mm *and product grades A, B and C.*

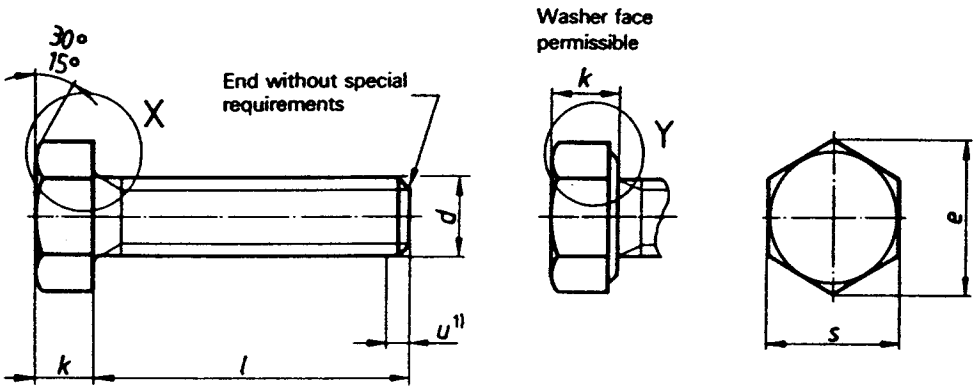
ISO 8992, *Fasteners — General requirements for bolts, screws and nuts.*

1) At present at the stage of draft.

3 Dimensions

NOTE — Symbols and designations of dimensions are specified in ISO 225.

Dimensions in millimetres



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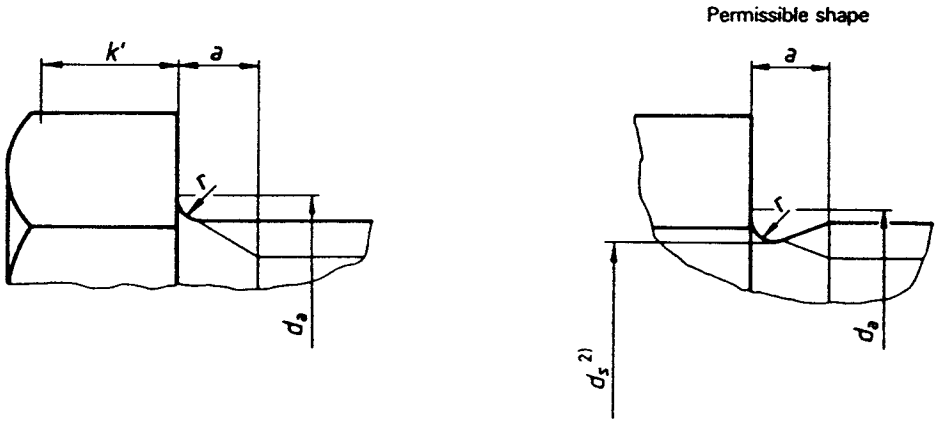

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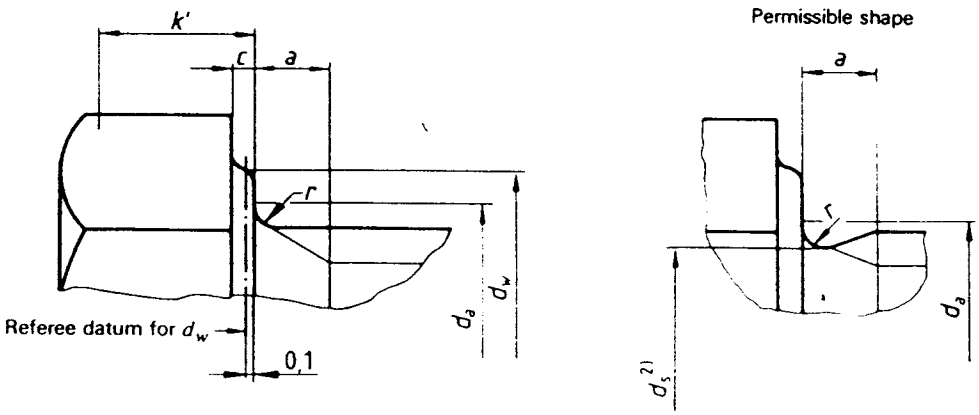

1) Incomplete thread $u < 2P$

2) d_s = pitch diameter.

Table 1 — Preferred threads

Dimensions in millimetres

Thread (d)		M5	M6	M8	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64
P [1]		0,8	1	1,25	1,5	1,75	2	2,5	3	3,5	4	4,5	5	5,5	6
a	max.	2,4	3	4	4,5	5,3	6	7,5	9	10,5	12	13,5	15	16,5	18
	min.	0,8	1	1,25	1,5	1,75	2	2,5	3	3,5	4	4,5	5	5,5	6
c	max.	0,5	0,5	0,6	0,6	0,6	0,8	0,8	0,8	0,8	0,8	1	1	1	1
d_a	max.	6	7,2	10,2	12,2	14,7	18,7	24,4	28,4	35,4	42,4	48,6	56,6	67	75
d_w	min.	6,74	8,74	11,47	14,47	16,47	22	27,7	33,25	42,75	51,11	59,95	69,45	78,66	88,16
e	min.	8,63	10,89	14,2	17,59	19,85	26,17	32,95	39,55	50,85	60,79	71,3	82,6	93,56	104,86
k	nom.	3,5	4	5,3	6,4	7,5	10	12,5	15	18,7	22,5	26	30	35	40
	min.	3,125	3,625	4,925	5,95	7,05	9,25	11,6	14,1	17,65	21,45	24,95	28,95	33,75	38,75
	max.	3,875	4,375	5,675	6,85	7,95	10,75	13,4	15,9	19,75	23,55	27,05	31,05	36,25	41,25
k' [2]	min.	2,19	2,54	3,45	4,17	4,94	6,48	8,12	9,87	12,36	15,02	17,47	20,27	23,63	27,13
r	min.	0,2	0,25	0,4	0,4	0,6	0,6	0,8	0,8	1	1	1,2	1,6	2	2
s	nom. = max.	8	10	13	16	18	24	30	36	46	55	65	75	85	95
	min.	7,64	9,64	12,57	15,57	17,57	23,16	29,16	35	45	53,8	63,1	73,1	82,8	92,8

l [3]		
nom.	min.	max.
10	9,25	10,75
12	11,1	12,9
16	15,1	16,9
20	18,95	21,05
25	23,95	26,05
30	28,95	31,05
35	33,75	36,25
40	38,75	41,25
45	43,75	46,25
50	48,75	51,25
55	53,5	56,5
60	58,5	61,5
65	63,5	66,5
70	68,5	71,5
80	78,5	81,5
90	88,25	91,75
100	98,25	101,75
110	108,25	111,75

120	118,25	121,75														
130	128	132														
140	138	142														
150	148	152														
160	156	164														
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														
320	314,3	325,7														
340	334,3	345,7														
360	354,3	365,7														
380	374,3	385,7														
400	394,3	405,7														
420	413,7	426,3														
440	433,7	446,3														
460	453,7	466,3														
480	473,7	486,3														
500	493,7	506,3														

1) P = pitch of the thread.

2) $k'_{min} = 0,7\ k_{min}$

3) Range of popular lengths between the stepped lines, marked thus ———.

Table 2 — Non-preferred threads

Dimensions in millimetres

Thread (d)		M14	M18	M22	M27	M33	M39	M45	M52	M60
P 1)		2	2,5	2,5	3	3,5	4	4,5	5	5,5
a	max.	6	7,5	7,5	9	10,5	12	13,5	15	16,5
	min.	2	2,5	2,5	3	3,5	4	4,5	5	5,5
c	max.	0,6	0,8	0,8	0,8	0,8	1	1	1	1
d_a	max.	16,7	21,2	26,4	32,4	38,4	45,4	52,6	62,6	71
d_w	min.	19,15	24,85	31,35	38	46,55	55,86	64,7	74,2	83,41
e	min.	22,78	29,56	37,29	45,2	55,37	66,44	76,95	88,25	99,21
k	nom.	8,8	11,5	14	17	21	25	28	33	38
	min.	8,35	10,6	13,1	16,1	19,95	23,95	26,95	31,75	36,75
	max.	9,25	12,4	14,9	17,9	22,05	26,05	29,05	34,25	39,25
k' 2)	min.	5,85	7,42	9,17	11,27	13,97	16,77	18,87	22,23	25,73
r	min.	0,6	0,6	0,8	1	1	1	1,2	1,6	2
s	nom. = max.	21	27	34	41	50	60	70	80	90
	min.	20,16	26,16	33	40	49	58,8	68,1	78,1	87,8

l 3)		
nom.	min.	max.
30	28,95	31,05
35	33,75	36,25
40	38,75	41,25
45	43,75	46,25
50	48,75	51,25
55	53,5	56,5
60	58,5	61,5
65	63,5	66,5
70	68,5	71,5
80	78,5	81,5
90	88,25	91,75
100	98,25	101,75
110	108,25	111,75
120	118,25	121,75
130	128	132
140	138	142
150	148	152
160	156	164

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										
320	314,3	325,7										
340	334,3	345,7										
360	354,3	365,7										
380	374,3	385,7										
400	394,3	405,7										
420	413,7	426,3										
440	433,7	446,3										
460	453,7	466,3										
480	473,7	486,3										
500	493,7	506,3										

1) P = pitch of the thread.

2) $k'_{min} = 0,7\ k_{min}$

3) Range of popular lengths between the stepped lines, marked thus ———.

4 Specifications and reference standards

Table 3 — Specifications and reference standards

Material		Steel
General requirements	International Standard	ISO 8992
Thread	Tolerance	8g
	International Standards	ISO 261, ISO 965-2
Mechanical properties	Class [1]	d < 39 mm: 3.6 , 4.6 , 4.8 d > 39 mm: as agreed
	International Standards	d < 39 mm: ISO 898-1 d > 39 mm: as agreed
Tolerances	Product grade	C
	International Standard	ISO 4759-1
Finish		as processed Requirements for electroplating are covered in ISO 4042. If different electroplating requirements are desired or if requirements are needed for other finishes, they should be agreed between customer and supplier.
Acceptability		For acceptance procedure, see ISO 3269.

1) The designation symbols for the property classes according to ISO 898-1 can also be used for thread sizes above M39, provided that the finished product has all the properties assigned to the designation symbols in ISO 898-1.

5 Designation

Example for the designation of a hexagon head screw with thread M12, nominal length l = 80 mm and property class 4.6:

Hexagon head screw ISO 4018 - M12 × 80 - 4.6