INTERNATIONAL STANDARD

ISO 4018

Fourth edition
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Hexagon head screws — Product grade C

Vis à tête hexagonale entièrement filetées — Grade C

Reference number
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Foreword

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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 4018 was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 10, *Product standards for fasteners*.

This fourth edition cancels and replaces the third edition (ISO 4018:1999), of which it constitutes a minor revision.

Introduction

This International Standard belongs to a complete family of product standards developed by ISO on external hexagon drive fasteners. It comprises the following:

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 7040, ISO 7041, ISO 7042, ISO 7719, ISO 7720, ISO 8673, ISO 8674, ISO 8675, ISO 10511, ISO 10512 and ISO 10513);

d) hexagon bolts with flange (ISO 4162, ISO 15071 and ISO 15072);

e) hexagon nuts with flange (ISO 4161, ISO 7043, ISO 7044, ISO 10663, ISO 12125, ISO 12126 and ISO 21670).

Hexagon head screws — Product grade C

1 Scope

This International Standard specifies the characteristics of 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 head.

If, in special cases, specifications other than those listed in this International Standard are required, they can be selected from existing International Standards, for example ISO 724, ISO 888, ISO 898-1, ISO 965-1 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 descriptions of dimensions*

ISO 724, *ISO general-purpose metric screw threads — Basic dimensions*

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 3269, *Fasteners — Acceptance inspection*

ISO 4042, *Fasteners — Electroplated coatings*

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

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

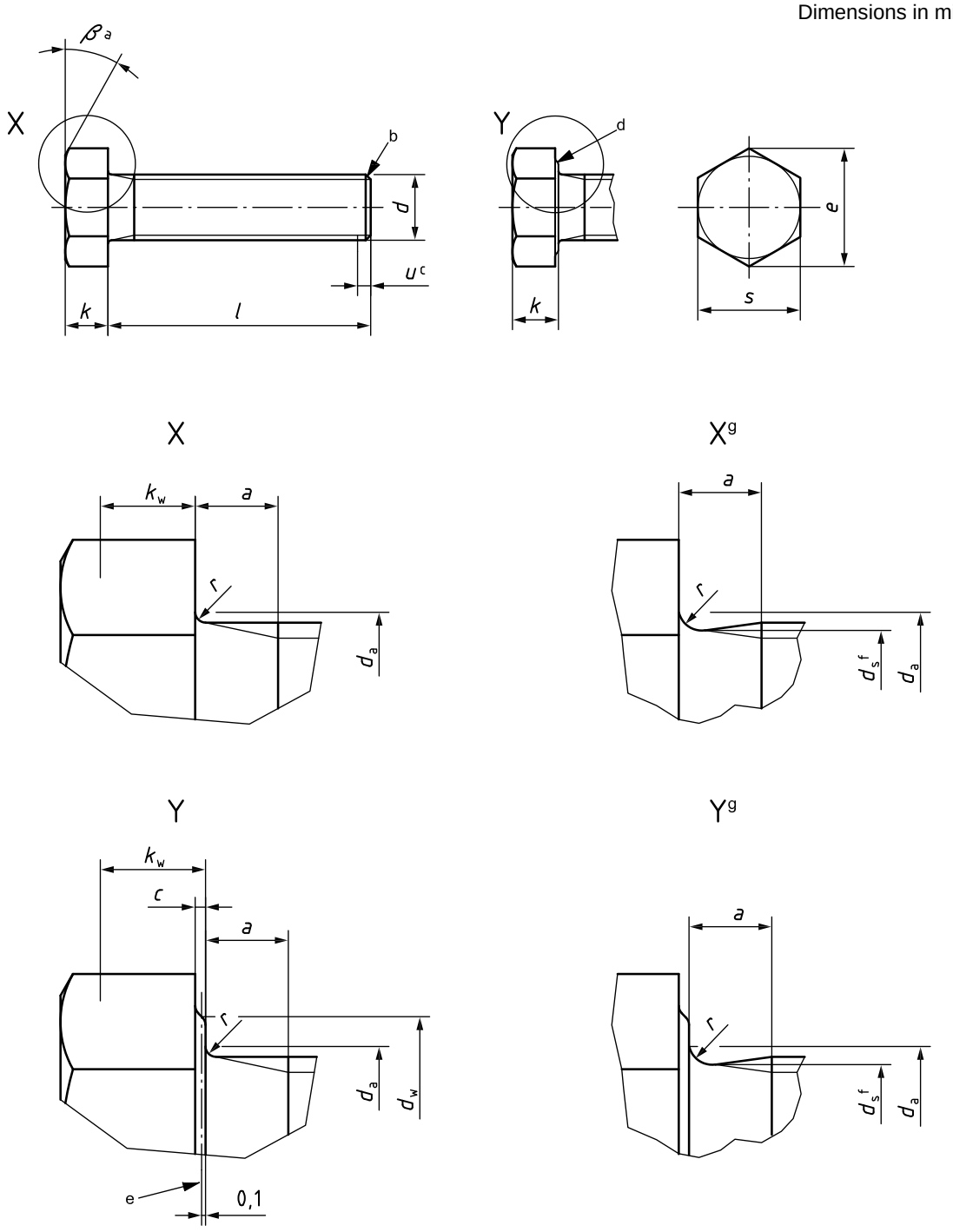
ISO 10683, *Fasteners — Non-electrolytically applied zinc flake coatings*

3 Dimensions

See Figure 1 and Tables 1 and 2.

Symbols and descriptions of dimensions are specified in ISO 225.

Dimensions in millimetres



a $\beta = 15°$ to 30°.

b End without special requirements.

c Incomplete thread $u \leqslant 2P$.

d Washer face permissible.

e Reference datum for d_w.

f $d_S \approx$ pitch diameter.

g Permissible shape.

Figure 1

Table 1 — Preferred threads

Dimensions in millimetres

Thread, d		**M5**	**M6**	**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M30**	**M36**	**M42**	**M48**	**M56**	**M64**
P[a]		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
	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
	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
k_w[b]	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.	8,00	10,00	13,00	16,00	18,00	24,00	30,00	36	46	55,0	65,0	75,0	85,0	95,0
	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[c]															
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													

Table 1 (*continued*)

Dimensions in millimetres

Thread, d	l^c		**M5**	**M6**	**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M30**	**M36**	**M42**	**M48**	**M56**	**M64**
nom.	min.	max.														
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														

a P is the pitch of the thread.

b $k_{w,min} = 0{,}7\ k_{min}$.

c The range of preferred lengths is between the solid, bold, stepped lines.

Table 2 — Non-preferred threads

Dimensions in millimetres

Thread, d			**M14**	**M18**	**M22**	**M27**	**M33**	**M39**	**M45**	**M52**	**M60**
P[a]			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
		max.	9,25	12,4	14,9	17,9	22,05	26,05	29,05	34,25	39,25
		min.	8,35	10,6	13,1	16,1	19,95	23,95	26,95	31,75	36,75
k_w[b]		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.	21,00	27,00	34	41	50	60,0	70,0	80,0	90,0
		min.	20,16	26,16	33	40	49	58,8	68,1	78,1	87,8
l[c]											
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									

Table 2 (*continued*)

Dimensions in millimetres

Thread, d			**M14**	**M18**	**M22**	**M27**	**M33**	**M39**	**M45**	**M52**	**M60**
l^c											
nom.	min.	max.									
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									

a P is the pitch of the thread.

b $k_{w,min} = 0,7\ k_{min}$.

c The range of preferred lengths is between the solid, bold, stepped lines.

4 Specifications and reference International Standards

See Table 3.

Table 3 — Specifications and reference International Standards

Material		Steel
General requirements	International Standard	ISO 8992
Thread	Tolerance class	8g
	International Standard	ISO 724, ISO 965-1
Mechanical property	Property class[a]	$d \leqslant 39$ mm: 4.6, 4.8 $d > 39$ mm: as agreed
	International Standard	$d \leqslant 39$ mm: ISO 898-1 $d > 39$ mm: as agreed
Tolerance	Product grade	C
	International Standard	ISO 4759-1
Finish — Coating		As processed Requirements for electroplating are specified in ISO 4042. Requirements for non-electrolytically applied zinc flake coatings are specified in ISO 10683. Additional requirements or other finishes or coatings shall be agreed between the supplier and the purchaser.
Acceptability		Acceptance inspection is specified in ISO 3269.

[a] Other property classes are specified in ISO 898-1.

5 Designation

EXAMPLE A hexagon head screw, product grade C, with thread M12, nominal length $l = 80$ mm and property class 4.6 is designated as follows:

Hexagon head screw ISO 4018 - M12 × 80 - 4.6

Bibliography

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

[2] ISO 4014, *Hexagon head bolts — Product grades A and B*

[3] ISO 4015, *Hexagon head bolts — Product grade B — Reduced shank (shank diameter approximately equal to pitch diameter)*

[4] ISO 4016, *Hexagon head bolts — Product grade C*

[5] ISO 4017, *Hexagon head screws — Product grades A and B*

[6] ISO 4032, *Hexagon nuts, style 1 — Product grades A and B*

[7] ISO 4033, *Hexagon nuts, style 2 — Product grades A and B*

[8] ISO 4034, *Hexagon nuts — Product grade C*

[9] ISO 4035, *Hexagon thin nuts (chamfered) — Product grades A and B*

[10] ISO 4036, *Hexagon thin nuts (unchamfered) — Product grade B*

[11] ISO 4161, *Hexagon nuts with flange — Coarse thread*

[12] ISO 4162, *Hexagon flange bolts — Small series*

[13] ISO 7040, *Prevailing torque type hexagon nuts (with non-metallic insert), style 1 — Property classes 5, 8 and 10*

[14] ISO 7041, *Prevailing torque type hexagon nuts (with non-metallic insert), style 2 — Property classes 9 and 12*

[15] ISO 7042, *Prevailing torque type all-metal hexagon nuts, style 2 — Property classes 5, 8, 10 and 12*

[16] ISO 7043, *Prevailing torque type hexagon nuts with flange (with non-metallic insert) — Product grades A and B*

[17] ISO 7044, *Prevailing torque type all-metal hexagon nuts with flange — Product grades A and B*

[18] ISO 7719, *Prevailing torque type all-metal hexagon nuts, style 1 — Property classes 5, 8 and 10*

[19] ISO 7720, *Prevailing torque type all-metal hexagon nuts, style 2 — Property class 9*

[20] ISO 8673, *Hexagon nuts, style 1, with metric fine pitch thread — Product grades A and B*

[21] ISO 8674, *Hexagon nuts, style 2, with metric fine pitch thread — Product grades A and B*

[22] ISO 8675, *Hexagon thin nuts (chamfered) with metric fine pitch thread — Product grades A and B*

[23] ISO 8676, *Hexagon head screws with metric fine pitch thread — Product grades A and B*

[24] ISO 8765, *Hexagon head bolts with metric fine pitch thread — Product grades A and B*

[25] ISO 10511, *Prevailing torque type hexagon thin nuts (with non-metallic insert)*

[26] ISO 10512, *Prevailing torque type hexagon nuts (with non-metallic insert), style 1, with metric fine pitch thread — Property classes 6, 8 and 10*

[27] ISO 10513, *Prevailing torque type all-metal hexagon nuts, style 2, with metric fine pitch thread — Property classes 8, 10 and 12*

[28] ISO 10663, *Hexagon nuts with flange — Fine pitch thread*

[29] ISO 12125, *Prevailing torque type hexagon nuts with flange (with non-metallic insert) with metric fine pitch thread — Product grades A and B*

[30] ISO 12126, *Prevailing torque type all-metal hexagon nuts with flange with metric fine pitch thread — Product grades A and B*

[31] ISO 15071, *Hexagon bolts with flange —Small series — Product grade A*

[32] ISO 15072, *Hexagon bolts with flange with metric fine pitch thread — Small series — Product grade A*

[33] ISO 21670, *Hexagon weld nuts with flange*

ICS 21.060.10

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