UDC 621.882.211

February 1992

Hexagon head screws
Product grade C
(ISO 4018 : 1988)
English version of DIN EN 24 018

DIN
EN 24 018

This standard incorporates the English version of ISO 4018.

Sechskantschrauben mit Gewinde bis Kopf; Produktklasse C (ISO 4018 : 1988)

Supersedes DIN 558, September 1987 edition, and DIN ISO 4018, October 1989 edition.

European Standard EN 24 018 : 1991 has the status of a DIN Standard.

A comma is used as the decimal marker.

National foreword

The publication of this standard is in keeping with a decision made by CEN/TC 185 to adopt, without alteration, a series of ISO Standards covering hexagon head bolts and nuts as European Standards. The responsible German body involved in their publication is the *Normenausschuß Mechanische Verbindungselemente* (Fasteners Standards Committee).

As a consequence, all DIN ISO Standards covering hexagon head bolts and nuts have been superseded by the corresponding DIN EN Standards (see table overleaf), with no alteration having been made to the former ISO designation.

The DIN Standards corresponding to the ISO Standards referred to in clause 2 of the EN are as follows:

ISO 225	DIN EN 20 225
ISO 898-1	DIN EN 20 898 Part 1
ISO 3269	DIN ISO 3269 (at present at the stage of draft)
ISO 4042	DIN ISO 4042 (at present at the stage of draft)
ISO 4759-1	DIN ISO 4759 Part 1
ISO 8992	DIN ISO 8992 (at present at the stage of draft)

Continued overleaf.

EN comprises 10 pages.

DIN EN Standard	Title	Previous DIN ISO Standard	Withdrawn DIN Standard
24 014	Hexagon head bolts; product grades A and B	4014	931 Part 1
24 016	Hexagon head bolts; product grade C	4016	601
24 017	Hexagon head screws; product grades A and B	4017	933
24 018	Hexagon head screws; product grade C	4018	558
24 032	Hexagon nuts, style 1; product grades A and B	4032	934
24 034	Hexagon nuts; product grade C	4034	555
24 035	Hexagon thin nuts (chamfered); product grades A and B	4035	439 Part 2
24 036	Hexagon thin nuts; product grade B (unchamfered)	4036	439 Part 1
28 673	Hexagon nuts, style 1, with metric fine pitch thread; product grades A and B	8673	971 Part 1 934
28 674	Hexagon nuts, style 2, with metric fine pitch thread; product grades A and B	8674	971 Part 2
28 675	Hexagon thin nuts with metric fine pitch thread; product grades A and B	8675	439 Part 2
28 676	Hexagon head screws with metric fine pitch thread; product grades A and B	8676	961
28 765	Hexagon head bolts with metric fine pitch thread; product grades A and B	8765	960

Standards referred to

See clauses 0 and 2.

Other relevant document

Supplement 2 to DIN 918 Fasteners; synopsis of available ISO Standards and DIN Standards

Previous editions

DIN 558: 02.23, 04.25, 07.34, 12.67, 12.83, 09.87; Supplement to DIN 558: 10.26; DIN 558 Part 1: 01.41, 08.53, 03.63; DIN ISO 4018: 09.87, 10.89.

Amendments

In comparison with the September 1987 edition of DIN 558 and the October 1989 edition of DIN ISO 4018, the following amendments have been made.

a) The range of thread sizes specified has been extended to include size M 64.

b) Thread sizes M 14, M 18, M 22, M 27 and M 33 have been included for the first time.

c) The range of nominal lengths specified has been extended to include 500 mm.

d) The widths across flats specified in ISO 272 have been adopted for thread sizes M 10 and M 12.

e) Property class 4.8 is now permitted for screws up to size M 39.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 24 018

October 1991

UDC 621.882.211

Descriptors: Fasteners, screws, hexagon head screws, requirements, dimensions, designation.

English version

Hexagon head screws
Product grade C
(ISO 4018:1988)

Vis à tête hexagonale, grade C
(ISO 4018:1988)

Sechskantschrauben mit Gewinde bis Kopf; Produktklasse C
(ISO 4018:1988)

This European Standard was approved by CEN on 1991-10-10 and is identical to the ISO Standard as referred to. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

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

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

Ref. No. EN 24 018:1991 E

Foreword

In 1990, ISO 4018 : 1988 was submitted to the CEN PQ procedure. Following the positive result of the PQ, CEN/BT agreed to submit ISO 4018 : 1988, with the following modifications, to Formal Vote.

In the French version, replace:

- 'boulon' by 'vis partiellement filetée',
- 'vis' by 'vis entièrement filetée'.

In accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of the International Standard ISO 4018 : 1988 was approved by CEN as a European Standard with agreed common modifications as given above.

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.*

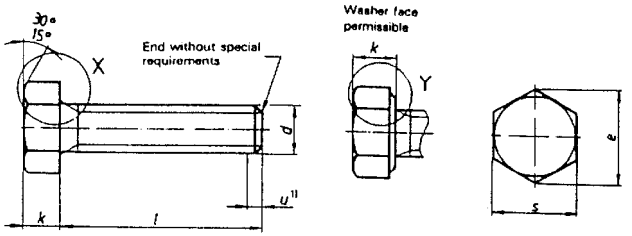
ISO 8992, *Fasteners – General requirements for bolts, screws and nuts.*

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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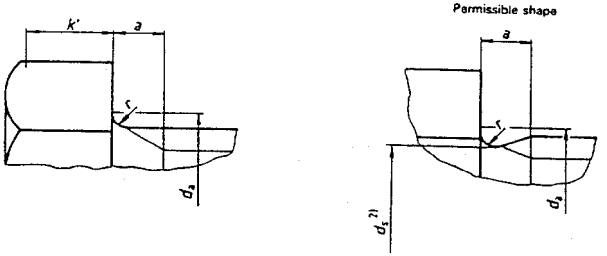

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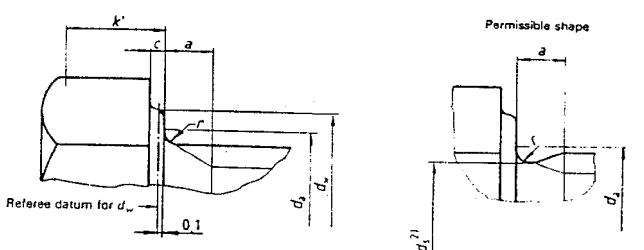

1) Incomplete thread $u \leq 2P$

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	196,4	204,6														
220	216,4	224,6														
240	236,4	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_g	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	406,7									
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) $k_{min} = 0{,}7\ k_{nom}$

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 x 80 - 4.6