IS 2585 (2006): Black Square Bolts and Nuts (Diameter Range 6 to 39 mm) and Black Square Screws (Diameter Range 6 to 24 mm) [PGD 31: Bolts, Nuts and Fasteners Accessories]

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भारतीय मानक

वर्गाकार शीर्ष वाले काबले, पेंच एवं वर्गाकार ढिबरियाँ — उत्पाद ग्रेड सी — विशिष्टि

(दूसरा पुनरीक्षण)

Indian Standard

SQUARE HEAD BOLTS, SCREWS AND SQUARE NUTS OF PRODUCT GRADE C — SPECIFICATION

(Second Revision)

ICS 21.060.10, 21.060.20

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Price Group 3

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Bolts, Nuts and Fasteners Accessories Sectional Committee had been approved by the Medical Instruments, General and Production Engineering Division Council.

This standard was first published in 1964 and subsequently revised in 1968. This revision has been necessitated due to the revision of IS 1363 (Parts 1 to 3) and revision of various parts of IS 1367 having reference in this standard.

This revision has been aligned dimensionally to the following Indian Standards except the dimensions of square:

IS 1363	Hexagon head bolts, screws and nuts of product grade C:
(Part 1) : 2002	Hexagon head bolts (size range M5 to M64) (*fourth revision*)
(Part 2) : 2002	Hexagon head screws (size range M5 to M64) (*fourth revision*)
(Part 3) : 1992	Hexagon nuts (size range M5 to M64) (*fourth revision*)

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SQUARE HEAD BOLTS, SCREWS AND SQUARE NUTS OF PRODUCT GRADE C — SPECIFICATION

(Second Revision)

1 SCOPE

This standard covers the requirements of square head bolts, screws and square nuts of product grade C in the size range of M6 to M39.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
1363 (Part 3) : 1992	Hexagon head bolts, screws and nuts of product grade C: Part 3 Hexagon nuts (size range M 5 to M 64)
1367	Technical supply conditions for threaded steel fasteners:
(Part 2) : 2002	Tolerance for fasteners — Bolts, screws, studs and nuts — Product grades A, B and C (*third revision*)
(Part 3) : 2002	Mechanical properties of fasteners made of carbon steel and alloy steel (*fourth revision*)
(Part 6) : 1994	Mechanical properties and test methods for nuts with specified proof loads (*third revision*)
(Part 9/Sec 1) : 1993	Surface discontinuities, Section 1 Bolts, screws, studs and studs for general application (*third revision*)
(Part 10) : 2002	Surface discontinuities — Nuts (*third revision*)
(Part 17) : 1996	Inspection, sampling and acceptance procedure (*fourth revision*)
(Part 18) : 1996	Industrial fasteners threaded steel fasteners technical supply conditions: Part 18 Packaging (*third revision*)
1368 : 1997	Dimensions for ends of parts with external ISO metric threads (*third revision*)
1369	Fasteners — Thread run-outs and undercuts:
(Part 1) : 1993	Dimensions for screw thread run-outs for external ISO metric threads
(Part 2) : 1993	Dimensions for screw thread undercuts for external ISO metric threads
2016 : 1967	Specifications for plain washers (*first revision*)
2334 : 2001	ISO general purpose metric screw threads — Gauges and gauging (*second revision*)
4218	ISO General purpose metric screw thread:
(Part 1) : 2001	Basic profile (*second revision*)
(Part 2) : 2001	General plan (*second revision*)
(Part 3) : 1999	Basic dimensions (*second revision*)
(Part 4) : 2001	Selected sizes for screws, bolts and nuts (*second revision*)
14962	ISO general purpose metric screw thread — Tolerances:
(Part 1) : 2001	Principles and basic details
(Part 2) : 2001	Limits of sizes for general purpose external and internal screw threads — Medium quality
(Part 3) : 2001	Deviations for constructional screw threads

3 PRODUCT GRADES

The bolts, screws and nuts shall be of product grade C as specified in IS 1367 (Part 2).

4 DIMENSIONS AND TOLERANCES

4.1 The dimensions of bolts, screws and nuts shall be as given in Table 1 when read with Fig. 1. The tolerances, wherever not provided shall be in accordance with IS 1367 (Part 2).

Table 1 Dimensions for Square Head Bolts, Screws and Square Nuts

(*Clause* 4.1)

All dimensions in millimetres.

Thread Size *d*		M6	M8	M10	M12	(M14)	M16	(M18)	M20	(M22)	M24	(M27)	M30	(M33)	M36	(M39)
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
P[1]		1	1.25	1.5	1.75	2	2	2.5	2.5	2.5	3	3	3.5	3.5	4	4
b ref	*b*	18	22	26	30	34	38	42	46	50	54	60	66	—	—	—
	c	24	28	32	36	40	44	48	52	56	60	66	72	78	84	90
	d	37	41	45	49	53	57	61	65	69	73	79	85	91	97	103
c	*Max*	0.5	0.6	0.6	0.6	0.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1
d_a	*Max*	7.2	10.2	12.2	14.7	16.7	18.7	21.2	24.4	26.4	28.4	32.4	35.4	38.4	42.4	45.4
d_s	*Max*	6.48	8.58	10.58	12.7	14.7	16.7	18.7	20.84	22.84	24.84	27.84	30.84	34	37	40
	Min	5.52	7.42	9.42	11.3	13.3	15.3	17.3	19.16	21.16	23.16	26.16	29.16	32	35	38
d_w	*Min*	8.74	11.47	14.47	16.47	19.15	22	24.85	27.7	31.35	33.25	38	42.75	46.55	51.11	55.86
k	*Nom*	4	5.3	6.4	7.5	8.8	10	11.5	12.5	14	15	17	18.7	21	22.5	25
	Max	4.375	5.675	6.85	7.95	9.25	10.75	12.4	13.4	14.9	15.9	17.9	19.75	22.05	23.55	23.95
	Min	3.625	4.925	5.95	7.05	8.35	9.25	10.6	11.6	13.1	14.1	16.1	17.65	19.95	21.45	26.05
k_w[2]		13.97	15.02	16.77	4.94	5.85	6.48	7.42	8.12	9.17	9.87	11.27	12.36	13.97	15.02	16.77
r	*Min*	0.25	0.4	0.4	0.6	0.6	0.6	0.6	0.8	0.8	0.8	1	1	1	1	1
s	*Nom = Max*	10.00	13.00	16.00	18.00	21.00	24.00	27.00	30.00	34	36	41	46	50	55.0	60.0
	Min	9.64	12.57	15.57	17.57	20.16	23.16	26.16	29.16	33	35	40	45	49	53.8	58.8
m	*Nom*	5	6.5	8	10	11	13	15	16	18	19	22	24	26	29	31
	Max	5.38	6.95	7.55	10.45	11.55	13.55	15.55	16.55	18.55	19.65	22.65	24.65	26.65	29.65	31.80
	Min	4.62	6.05	6.45	9.55	10.45	12.45	14.45	15.45	17.45	18.35	21.35	23.25	25.35	28.35	30.20
a	*Max*	3	4.00	4.5	5.30	6	6	7.5	7.5	7.5	9	9	10.5	10.5	12	12
	Min	1	1.25	1.5	1.75	2	2	2.5	2.5	2.5	3	3	3.5	3.5	4	4

NOTE — Sizes shown in brackets are of second preference.

[1] Pitch of thread.

[2] k_w, *Min* = 0.7 *k*, *Min*.

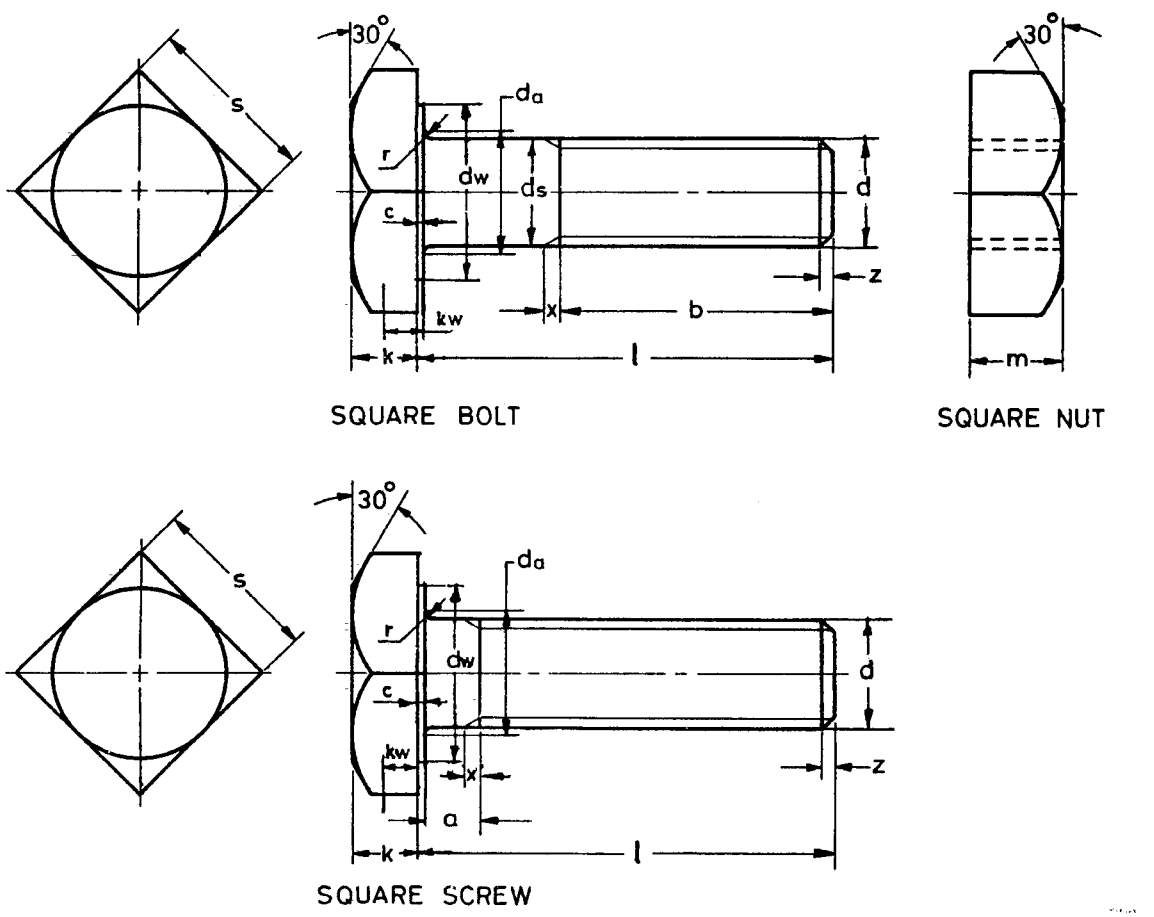

FIG. 1 SQUARE HEAD BOLTS, SCREWS AND SQUARE NUTS

4.2 The length size combination and grip range for bolts shall be as given in Table 2.

4.3 The bolts, screws and nuts shall have course pitch thread in accordance with IS 4218 (Part 1), IS 4218 (Part 2), IS 4218 (Part 3), IS 4218 (Part 4) and shall conform to 'Go' and 'Not Go' threaded plug and ring gauges in accordance with IS 2334. The tolerances on the threads shall be 8g for bolts and screws and 7H for nuts [*see* IS 14962 (Parts 1, 2 and 3)].

5 MATERIAL

5.1 The bolts, screws and nuts shall be made from steel.

5.2 Mechanical Properties

The mechanical properties of bolts and screws shall conform to the property class 4.6 as specified in IS 1367 (Part 3) and those for nuts to property class 5 for $d \leq$ M16 and 4 and 5 for M16 $\geq d \leq$ M39 as specified in IS 1367 (Part 6).

6 FINISH

The bolts, screws and nuts shall be supplied in natural finish.

7 GENERAL REQUIREMENTS

7.1 The bolts shall conform to IS 1367 (Part 9/Sec 1) for permissible surface discontinuities and those for nuts shall conform to IS 1367 (Part 10).

7.2 The hexagon nuts used with these bolts shall conform to IS 1363 (Part 3) may also be used for these bolts.

7.3 The washers to be used with these bolts shall conform to IS 2016.

8 DESIGNATION

The bolts, screws and nuts shall be designated by name, size, length and number of this Indian Standard.

Example:

a) A square head bolt of size M12 with nut and length 30 mm shall be designated as Square head bolt — M12 × 30N IS 2585.

b) A square head bolt of size M12 without nut and length 30 mm shall be designated as Square head bolt — M12 × 30 IS 2585.

c) A square head screw of size M12 without nut

Table 2 Preferred Length Diameter Combinations and Clamping Lengths for Square Head Bolts

(*Clause* 4.2)

All dimensions in millimetres.

Thread Size, *d*			M6		M8		M10		M12		(M14)		M16		(M18)		M20		(M22)		M24		(M27)		M30		(M33)		M36		(M39)	
Length, *l*			l_s and l_g [1), 2)]																													
			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	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*	*Min*	*Max*	*Min*	*Max*	*Min*	*Max*	*Min*	*Max*	*Min*	*Max*
25	23.95	26.05																														
30	28.95	31.05	7	12																												
35	33.75	36.25	12	17																												
40	38.75	41.25	17	22	11.75	18																										
45	43.75	46.25	22	27	16.75	23	11.5	19																								
50	48.75	51.25	27	32	21.75	28	16.5	24																								
55	53.5	56.5	32	37	26.75	33	21.5	29	16.25	25																						
60	58.5	61.5	37	42	31.75	38	26.5	34	21.25	30	16	26																				
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	25.5	38	21.5	34														
90	88.25	91.75					56.5	64	51.25	60	46	56	42	52	35.5	48	31.5	44	27.5	40												
100	98.25	101.75					66.5	74	61.25	70	56	66	52	62	45.5	58	41.5	54	37.5	50	31	46										
110	108.25	111.75							71.25	80	66	76	62	72	55.5	68	51.5	64	47.5	60	41	56	35	50								
120	118.25	121.75							81.25	90	76	86	72	82	65.5	78	61.5	74	57.5	70	51	66	45	60	36.5	54						
130	128	132									80	90	76	86	69.5	82	65.5	78	61.5	74	55	70	49	64	40.5	58	34.5	52				
140	138	142									90	100	86	96	79.5	92	75.5	88	71.5	84	65	80	59	74	50.5	68	44.5	62	36	56		
150	148	152											96	106	89.5	102	85.5	98	81.5	94	75	90	69	84	60.5	78	54.5	72	46	66	40	60
160	156	164											106	116	99.5	112	95.5	108	91.5	104	85	100	79	94	70.5	88	64.5	82	56	76	50	70
180	176	184													119.5	132	115.5	128	111.5	124	105	120	99	114	90.5	108	84.5	102	76	96	70	90
200	195.4	204.6															135.5	148	131.5	144	125	140	119	134	110.5	128	104.5	122	96	116	90	110
220	215.4	224.6																	138.5	151	132	147	126	141	117.5	135	111.5	129	103	123	97	117
240	235.4	244.6																			152	167	146	161	137.5	155	131.5	149	123	143	117	137

Table 2 (*Concluded*)

All dimensions in millimetres.

Thread Size, d			M6		M8		M10		M12		(M14)		M16		(M18)		M20		(M22)		M24		(M27)		M30		(M33)		M36		(M39)	
Length, l			l_s and l_g [1), 2)]																													
			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	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*	*Min*	*Max*	*Min*	*Max*	*Min*	*Max*	*Min*	*Max*	*Min*	*Max*
260	254.8	265.2																					166	181	157.5	175	151.5	167	143	163	137	157
280	274.8	285.2																							177.5	195	171.5	189	163	183	157	177
300	294.8	305.2																							197.5	215	191.5	209	183	203	177	197
320	314.3	325.7																									211.5	229	203	223	197	217
340	334.3	345.7																											223	243	217	237
360	354.3	365.7																											243	263	237	257
380	374.3	385.7																													257	277
400	394.3	405.7																													277	297

NOTES

1 Sizes shown in brackets are of second preference.

2 Popular lengthsare defined in terms of l_s and l_g.

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1) l_g, $Max = l$, $Nom - b$.
l_s, $Min = l_g$, $Max - 5P$.

2) l_g, is the minimum grip length.

and length 30 mm shall be designated as Square head screw — M12 × 30 IS 2585.

d) A square nut of size M12 shall be designated as Square nut — M12 IS 2585.

e) A square head bolt/screw of size M12 with hexagon nut and length 30 mm shall be designated as Square head bolt — M12 × 30 HN IS 2585.

9 SAMPLING INSPECTION AND ACCEPTANCE CRITERIA

The sampling, inspection and acceptance criteria of the bolts shall be in accordance with IS 1367 (Part 17).

10 MARKING

10.1 The marking on the hexagon head bolts shall be in accordance with IS 1367 (Part 3) and those of nuts shall be in accordance with IS 1367 (Part 6).

10.2 BIS Certification Marking

The product may also be marked with the Standard Mark. Wherever it is not possible to put the Standard Mark on the product, it may be marked on the packaging.

10.2.1 The use of Standard Mark is governed by the provision of *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to the manufacturers or producers may be obtained from the Bureau of Indian Standards.

11 PACKAGING

The packaging of hexagon bolts shall be done in accordance with IS 1367 (Part 18).

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act,* 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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