

# ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

## ISO RECOMMENDATION R 272

HEXAGON BOLTS AND NUTS  
WIDTHS ACROSS FLATS, HEIGHTS OF HEADS,  
THICKNESSES OF NUTS

1<sup>st</sup> EDITION

September 1962

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## BRIEF HISTORY

The ISO Recommendation R 272, *Hexagon Bolts and Nuts—Widths across Flats, Heights of Heads, Thicknesses of Nuts*, was drawn up by Technical Committee ISO/TC 2, *Bolts, Nuts and Accessories*, the Secretariat of which is held by the Deutscher Normenausschuss (DNA).

Work on this question by the Technical Committee began in 1953 and led, in 1959, to the adoption of a Draft ISO Recommendation.

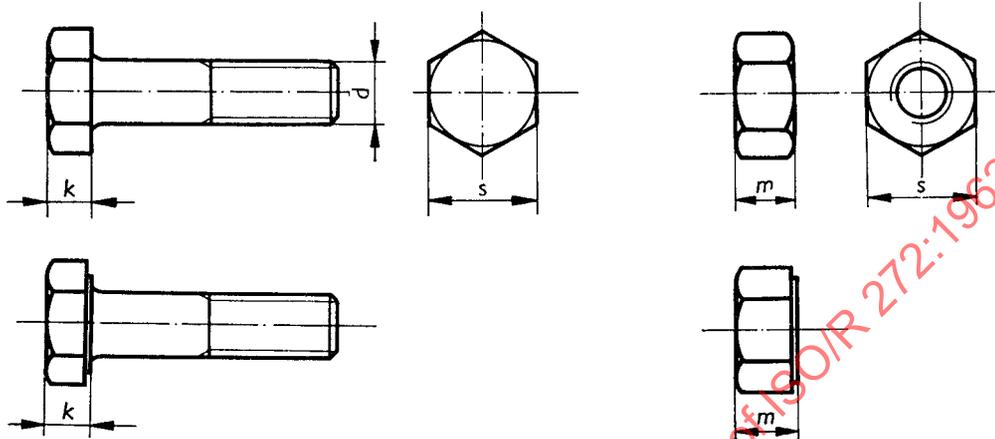
In June 1960, this Draft ISO Recommendation (No. 383) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Bulgaria	India	Portugal
Chile	Israel	Romania
Colombia	Italy	Spain
Denmark	Japan	Sweden
Finland	Netherlands	United Kingdom
Germany	New Zealand	U.S.S.R.
Greece	Norway	
Hungary	Poland	

Five Member Bodies opposed the approval of the Draft: Australia, Belgium, Czechoslovakia, France, Switzerland.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in September 1962, to accept it as an ISO RECOMMENDATION.

**HEXAGON BOLTS AND NUTS**  
**WIDTHS ACROSS FLATS, HEIGHTS OF HEADS,**  
**THICKNESSES OF NUTS**

**1. BASIC DIMENSIONS: METRIC SERIES**

Dimensions in millimetres

Thread diameter $d$	Width across flats** $s$		Height of head $k$	Thickness of nut $m$
	normal	small		
1.6 *	3.2	—	1.1	1.3
2 *	4	—	1.4	1.6
2.5 *	5	—	1.7	2
3 *	5.5	—	2	2.4
4 *	7	—	2.8	3.2
5 *	8	—	3.5	4
6	10	—	4	5
7	11	—	5	5.5
8	13	12	5.5	6.5
10	17	14	7	8
12	19	17	8	10
14	22	19	9	11
16	24	22	10	13
18	27	24	12	15
20	30	27	13	16
22	32	30	14	18
24	36	32	15	19
27	41	36	17	22
30	46	41	19	24
33	50	46	21	26
36	55	50	23	29
39	60	55	25	31

**2. BASIC DIMENSIONS: INCH SERIES**

Dimensions in inches

Sizes	Thread diameter $d$	Width across flats $s$		Height of head $k$	Thickness of nut $m$
		bolt	nut		
N <sup>o</sup> 0	0.060	—	0.1562	—	0.050
N <sup>o</sup> 1	0.073	—	0.1562	—	0.050
N <sup>o</sup> 2	0.086	0.1250	0.1875	0.050	0.066
N <sup>o</sup> 3	0.099	0.1875	0.1875	0.055	0.066
N <sup>o</sup> 4	0.112	0.1875	0.2500	0.060	0.098
N <sup>o</sup> 5	0.125	0.1875	0.3125	0.070	0.114
N <sup>o</sup> 6	0.138	0.2500	0.3125	0.093	0.114
N <sup>o</sup> 8	0.164	0.2500	0.3438	0.110	0.130
N <sup>o</sup> 10	0.190	0.3125	0.3750	0.120	0.130
N <sup>o</sup> 12	0.216	0.3125	0.4375	0.155	0.161
$\frac{1}{4}$	0.250	0.4375	0.4375	0.163	0.226
$\frac{5}{16}$	0.3125	0.5000	0.5000	0.211	0.273
$\frac{3}{8}$	0.375	0.5625	0.5625	0.243	0.337
$\frac{7}{16}$	0.4375	0.6250	0.6875	0.291	0.385
$\frac{1}{2}$	0.500	0.7500	0.7500	0.323	0.448
$\frac{9}{16}$	0.5625	0.8125	0.8750	0.371	0.496
$\frac{5}{8}$	0.625	0.9375	0.9375	0.403	0.559
$\frac{3}{4}$	0.750	1.1250	1.1250	0.483	0.665
$\frac{7}{8}$	0.875	1.3125	1.3125	0.563	0.776
1	1.000	1.5000	1.5000	0.627	0.887
$1\frac{1}{8}$	1.125	1.6875	1.6875	0.718	0.999
$1\frac{1}{4}$	1.250	1.8750	1.8750	0.813	1.094
$1\frac{3}{8}$	1.375	2.0625	2.0625	0.878	1.206
$1\frac{1}{2}$	1.500	2.2500	2.2500	0.974	1.317
$1\frac{3}{4}$	1.750	2.6250	2.6250	1.134	1.540
2	2.000	3.0000	3.0000	1.263	1.763

\* The metric thread diameters 1.6 to 5 mm conform to ISO Recommendation R 68, *Screw Threads*.

\*\* Where larger metric hexagons are required, the next larger width across flats for any given diameter, as shown in the normal metric series, should be chosen.