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Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 1364-3 (2002): Hexagon Head Bolts, Screws and Nuts of Product Grades A and B, Part 3: Hexagon Nuts, Style 1 (Size Range M 1.6 to M 64) [PGD 31: Bolts, Nuts and Fasteners Accessories]
Indian Standard

HEXAGON HEAD BOLTS, SCREWS AND NUTS OF PRODUCT GRADES A AND B

PART 3 HEXAGON NUTS, STYLE 1 ( SIZE RANGE M 1.6 TO M 64 )

( Fourth Revision )

ICS 21.060.20
NATIONAL FOREWORD

This Indian Standard (Part 3) (Fourth Revision) which is identical with ISO 4032:1999 'Hexagon nuts, style 1 — Product grades A and B' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Bolts, Nuts and Fasteners Accessories Sectional Committee and approval of the Basic and Production Engineering Division Council.

IS 1364 was originally published in 1960 and first revised in 1967. Subsequent to the publication of 1967 edition, many changes had been agreed upon at international level which have been reflected in IS 1367 series of standards covering 'Technical supply conditions for threaded steel fasteners'. Accordingly, second revision was published in 1983 splitting the standard into 5 parts covering hexagon head bolts, hexagon head screws, hexagon nuts, hexagon thin nuts (chamfered) and hexagon thin nuts (unchamfered).

The third revision of this standard was published in 1992 by adoption of ISO 4017:1988. This fourth revision has been made by adoption of latest version of ISO 4032 published in 1999. The remaining parts of the standard, that is, Part 1, Part 2, Part 4 and Part 5 are also being revised by adopting the corresponding latest editions of ISO Standards published in 1999.

The Committee also decided to publish Indian Standard on 'Hexagon nuts, Style 2 — Product grades A and B' as Part 6 of IS 1364. The Part 6 will supersede IS/ISO 4033:1979 on its publication.

In 1967 version of this standard, the widths across flat dimensions for M10 and M12 size fasteners were specified as 17 mm and 19 mm respectively. However, in the 1983 version, these widths across flat dimensions were brought in line with ISO 4032:1979 and specified as 16 mm and 18 mm respectively for M10 and M12 size fasteners. Recognizing the difficulty of immediate changeover to new width across flat dimensions, the Committee decided to permit width across flat dimensions as per 1967 version, that is, 17 mm and 19 mm for M10 and M12 size fasteners till 31 December 1994. Now it is expected that the entire fastener industry would have switched over to new width across flat dimensions and from 1 January 1995 no old width across flat dimensions shall be permitted.

The text of ISO Standard has been approved as suitable for publication as Indian Standard without deviations. Certain terminology and conventions are, however, not identical to those used in Indian Standards. Attention is drawn especially to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

<table>
<thead>
<tr>
<th>International Standard</th>
<th>Corresponding Indian Standard</th>
<th>Degree of Equivalence</th>
</tr>
</thead>
</table>

(i)
<table>
<thead>
<tr>
<th>International Standard</th>
<th>Corresponding Indian Standard</th>
<th>Degree of Equivalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 3269 : 1)</td>
<td>IS 1367 ( Part 17 ) : 1996 2) Industrial fasteners — Threaded steel fasteners — Technical supply conditions: Part 17 Inspection, sampling and acceptance procedure ( third revision )</td>
<td>do</td>
</tr>
<tr>
<td>ISO 3506-2 : 1997</td>
<td>IS 1367 ( Part 14/Sec 2 ) : 2002 Technical supply conditions for threaded steel fasteners: Part 14 Mechanical properties of corrosion resistant stainless-steel fasteners, Section 2 Nuts ( third revision )</td>
<td>do</td>
</tr>
<tr>
<td>ISO 4759-1 : 3)</td>
<td>IS 1367 ( Part 2 ) : 2002 Technical supply conditions for threaded steel fasteners: Part 2 Product grades and tolerances ( third revision )</td>
<td>do</td>
</tr>
</tbody>
</table>

The concerned Technical Committee has reviewed the provisions of the following ISO Standards referred in this adopted standard and has decided that they are acceptable for use in conjunction with this standard:

<table>
<thead>
<tr>
<th>ISO Standard</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 8839 : 1986</td>
<td>Mechanical properties of fasteners — Bolts, screws, studs and nuts made of non-ferrous metals</td>
</tr>
<tr>
<td>ISO 16048 : — 4)</td>
<td>Passivation of corrosion-resistant stainless steel fasteners — Passivation process and acceptance criteria</td>
</tr>
</tbody>
</table>

1) To be published ( Revision of ISO 3269 : 1988 ).
4) To be published.
CORRIGENDUM
(Page 3, Table 2, col 1, row 11) — Read ‘m_w’ in place of ‘d_w’.

ALTERATION
In clause 5, the designation of hexagon nut, style 1 shall be read as:

‘Hexagon nut - IS 1364 ( Part 3 ) /ISO 4032 - M12 - 8’ in place of ‘Hexagon nut - ISO 4032 - M12 - 8’

PACKAGING
The packaging of hexagon nuts shall be in accordance with IS 1367 ( Part 18 ) : 1996 ‘Industrial fasteners — Threaded steel fasteners — Technical supply conditions : Part 18 Packaging ( third revision )’.

BIS CERTIFICATION MARKING
Details available with the Bureau of Indian Standards.

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.
HEXAGON HEAD BOLTS, SCREWS AND NUTS OF
PRODUCT GRADES A AND B
PART 3 HEXAGON NUTS, STYLE 1 ( SIZE RANGE M 1.6 TO M 64 )
(Fourth Revision)

1 Scope

This International Standard specifies the characteristics of hexagon nuts, style 1, with threads from M1.6 up to including M64, with product grade A for threads \( d \leq M16 \) and product grade B for threads \( d > M16 \).

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 724, ISO 898-2, ISO 965-1, ISO 3506-2 and ISO 4759-1.

NOTE For hexagon nuts style 2, see ISO 4033.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.


ISO 3269:—1), Fasteners — Acceptance inspection.


ISO 4759-1:—2), Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C.


ISO 8839:1986, Mechanical properties of fasteners — Bolts, screws, studs and nuts made of non-ferrous metals.

ISO 8992:1986, Fasteners — General requirements for bolts, screws, studs and nuts.

ISO 10683:—3), Fasteners — Non-electrolytically applied zinc flake coatings.

1) To be published. (Revision of ISO 3269:1988)

2) To be published. (Revision of ISO 4759-1:1978)

3) To be published.
3 Dimensions

See Figure 1 and Tables 1 and 2.

Symbols and descriptions of dimensions are defined in ISO 225.

- Washer-face form to be ordered separately
- $\beta = 15^\circ$ to $30^\circ$
- $\theta = 90^\circ$ to $120^\circ$

Figure 1
### Table 1 — Preferred threads

<table>
<thead>
<tr>
<th>Thread (d)</th>
<th>M1.6</th>
<th>M2</th>
<th>M2.5</th>
<th>M3</th>
<th>M4</th>
<th>M5</th>
<th>M6</th>
<th>M8</th>
<th>M10</th>
<th>M12</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P^a$</td>
<td>0.35</td>
<td>0.4</td>
<td>0.45</td>
<td>0.5</td>
<td>0.7</td>
<td>0.8</td>
<td>1</td>
<td>1.25</td>
<td>1.5</td>
<td>1.75</td>
</tr>
<tr>
<td>$c$</td>
<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
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<tr>
<td>min.</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>$d_a$</td>
<td>1.84</td>
<td>2.3</td>
<td>2.9</td>
<td>3.45</td>
<td>4.6</td>
<td>5.75</td>
<td>6.75</td>
<td>8.75</td>
<td>10.8</td>
<td>13</td>
</tr>
<tr>
<td>max.</td>
<td>1.60</td>
<td>2.0</td>
<td>2.5</td>
<td>3.00</td>
<td>4.0</td>
<td>5.0</td>
<td>6.0</td>
<td>8.0</td>
<td>10.0</td>
<td>12</td>
</tr>
<tr>
<td>min.</td>
<td>2.4</td>
<td>3.1</td>
<td>4.1</td>
<td>4.6</td>
<td>5.9</td>
<td>6.9</td>
<td>8.9</td>
<td>11.6</td>
<td>14.6</td>
<td>16.6</td>
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<tr>
<td>$d_m$</td>
<td>min.</td>
<td>3.41</td>
<td>4.32</td>
<td>5.45</td>
<td>6.01</td>
<td>7.66</td>
<td>8.79</td>
<td>11.05</td>
<td>14.38</td>
<td>17.77</td>
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<tr>
<td>e</td>
<td>min.</td>
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<td>1.60</td>
<td>2.00</td>
<td>2.40</td>
<td>3.2</td>
<td>4.7</td>
<td>5.2</td>
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<td>$m$</td>
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<td>8.04</td>
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<td>1.4</td>
<td>1.7</td>
<td>2.3</td>
<td>3.5</td>
<td>3.9</td>
<td>5.2</td>
<td>6.4</td>
<td>8.3</td>
</tr>
<tr>
<td>$s$</td>
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</tbody>
</table>

$a$ $P$ is the pitch of the thread.

### Table 2 — Non-preferred threads

<table>
<thead>
<tr>
<th>Thread (d)</th>
<th>M3,5</th>
<th>M14</th>
<th>M18</th>
<th>M22</th>
<th>M27</th>
<th>M33</th>
<th>M39</th>
<th>M45</th>
<th>M52</th>
<th>M60</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P^a$</td>
<td>0.6</td>
<td>2</td>
<td>2.5</td>
<td>2.5</td>
<td>3</td>
<td>3.5</td>
<td>4</td>
<td>4.5</td>
<td>5</td>
<td>5.5</td>
</tr>
<tr>
<td>$c$</td>
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<td>0.6</td>
<td>0.8</td>
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<td>0.8</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
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<tr>
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<td>0.15</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>$d_a$</td>
<td>4.0</td>
<td>15.1</td>
<td>19.5</td>
<td>23.7</td>
<td>29.1</td>
<td>35.6</td>
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<td>56.2</td>
<td>64.8</td>
</tr>
<tr>
<td>max.</td>
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<td>14.0</td>
<td>18.0</td>
<td>22.0</td>
<td>27.0</td>
<td>33.0</td>
<td>39.0</td>
<td>45.0</td>
<td>52.0</td>
<td>60.0</td>
</tr>
<tr>
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<td>5</td>
<td>19.6</td>
<td>24.9</td>
<td>31.4</td>
<td>36</td>
<td>46.6</td>
<td>55.9</td>
<td>64.7</td>
<td>74.2</td>
<td>83.4</td>
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<tr>
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<td>6.58</td>
<td>23.36</td>
<td>29.56</td>
<td>37.29</td>
<td>45.2</td>
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<td>76.95</td>
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<td>12.8</td>
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<td>33.4</td>
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<td>42.0</td>
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<tr>
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<td>15.1</td>
<td>18.1</td>
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<td>34.4</td>
<td>40.4</td>
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<tr>
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<td>14.5</td>
<td>18</td>
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<td>37.1</td>
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<tr>
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<td>27.00</td>
<td>34</td>
<td>41</td>
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<td>70.0</td>
<td>80.0</td>
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<tr>
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<td>26.16</td>
<td>33</td>
<td>40</td>
<td>49</td>
<td>58.8</td>
<td>68.1</td>
<td>78.1</td>
<td>87.8</td>
</tr>
</tbody>
</table>

$a$ $P$ is the pitch of the thread.
4 Specifications and reference standards

See Table 3.

Table 3 — Specifications and reference standards

<table>
<thead>
<tr>
<th>Material</th>
<th>Steel</th>
<th>Stainless steel</th>
<th>Non-ferrous metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>General requirements</td>
<td>ISO 8992</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread</td>
<td>Tolerance</td>
<td>6H</td>
<td>ISO 724, ISO 965-1</td>
</tr>
<tr>
<td>Mechanical properties</td>
<td>Property class&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td>Materials specified in ISO 8839</td>
</tr>
<tr>
<td>Mechanical properties</td>
<td></td>
<td>d ≤ M39: as agreed</td>
<td></td>
</tr>
<tr>
<td>Mechanical properties</td>
<td></td>
<td>M24 &lt; d ≤ M39: A2-50, A4-50</td>
<td></td>
</tr>
<tr>
<td>Mechanical properties</td>
<td></td>
<td>d &gt; M39: as agreed</td>
<td></td>
</tr>
<tr>
<td>Tolerances</td>
<td>Product grade</td>
<td>d &lt; M16: A</td>
<td></td>
</tr>
<tr>
<td>Tolerances</td>
<td>International Standard</td>
<td>d &gt; M16: B</td>
<td></td>
</tr>
<tr>
<td>Finish and/or coating</td>
<td>As processed</td>
<td>Plain</td>
<td>Requirements for electroplating are covered in ISO 4042</td>
</tr>
<tr>
<td>Finish and/or coating</td>
<td>Requirements for non-electrolytically applied zinc flake coatings are covered in ISO 10683</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finish and/or coating</td>
<td>Limits for surface discontinuities are covered in ISO 6157-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptability</td>
<td>For acceptance procedure, see ISO 3269.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> For other property classes see ISO 8992-2 for steel and ISO 3506-2 for stainless steel respectively.

5 Designation

EXAMPLE

A hexagon nut, style 1, with thread M12 and property class 8 is designated as follows:

Hexagon nut ISO 4032 - M12 - 8
Bibliography

[18] ISO 8673:1999, Hexagon nuts, style 1, with metric fine pitch thread — Product grades A and B.

4) To be published. (Revision of ISO 4162:1990)


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Amendments Issued Since Publication

<table>
<thead>
<tr>
<th>Amend No.</th>
<th>Date of Issue</th>
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</table>

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