UDC 621.882.31

June 1987

# Hexagon domed cap nuts

DIN 1587

Sechskant-Hutmuttern, hohe Form

Supersedes April 1977 edition.

*In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.*

The new widths across flats as specified in ISO 272 have been adopted in addition to the previous widths across flats for thread sizes M10, M12, M14 and M22.

The new widths across flats 16 mm, 18 mm, 21 mm and 34 mm shall be used instead of the previous widths across flats 17 mm, 19 mm, 22 mm and 32 mm; see example of designation in clause 4.

It is intended to omit the obsolescent widths across flats by 1 July 1992 at the latest.

Dimensions in mm

## 1 Field of application

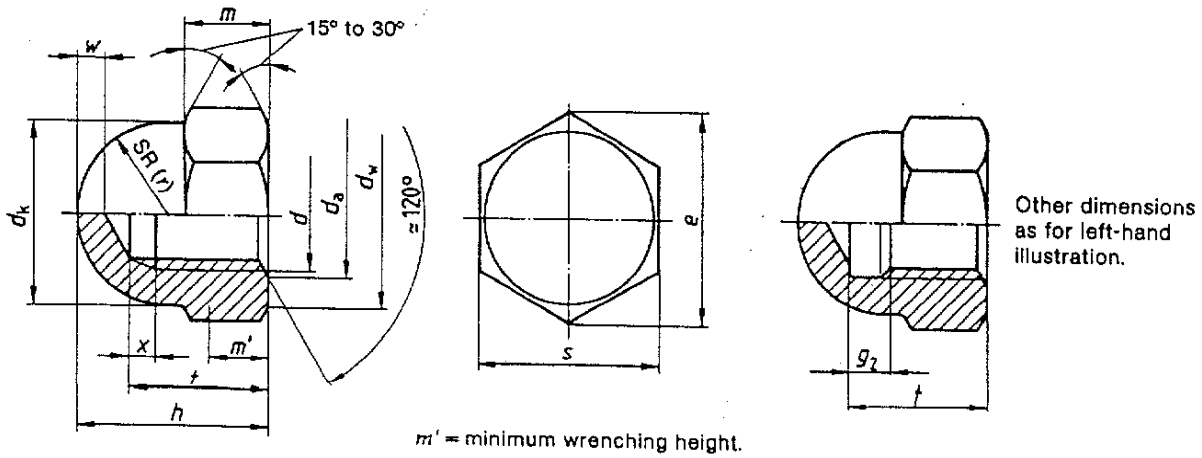
This standard specifies requirements for M4 to M24 coarse and fine pitch thread hexagon domed cap nuts assigned to product grade A or B.

If, in special cases, nuts are to comply with specifications other than those given in this standard, e.g. regarding property class, these shall be selected in accordance with the relevant standards.

## 2 Dimensions

**For sizes up to M10**
(with thread run-out or thread undercut, at the manufacturer's discretion)

**For size M12 or more**
(with thread undercut)




Other dimensions as for left-hand illustration.

$m'$ = minimum wrenching height.

Continued on pages 2 to 5

Table.

| Thread size | | | M 4 | M 5 | M 6 | M 8 | M 10 | | M 12 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Series 1 | | M 4 | M 5 | M 6 | M 8 | M 10 | | M 12 | |
| | Series 2 | | – | – | – | M 8 × 1 | M 10 × 1 | | M 12 × 1,5 | |
| | Series 3 | | – | – | – | – | M 10 × 1,25 | | M 12 × 1,25 | |
| $P$ [1] | | | 0,7 | 0,8 | 1 | 1,25 | 1,5 | | 1,75 | |
| $d_a$ | | min. | 4 | 5 | 6 | 8 | 10 | | 12 | |
| | | max. | 4,6 | 5,75 | 6,75 | 8,75 | 10,8 | | 13 | |
| $d_k$ | | max. | 6,5 | 7,5 | 9,5 | 12,5 | 15 | 16 | 17 | 18 |
| $d_w$ | | min. | 5,8 | 6,8 | 8,3 | 11,3 | 14,3 | 15,3 | 16,2 | 17,2 |
| $e$ min. | Product grade | A | 7,66 | 8,79 | 11,05 | 14,38 | 17,77 | 18,9 | 20,03 | 21,1 |
| | | B | 7,5 | 8,63 | 10,89 | 14,2 | 17,59 | 18,72 | 19,85 | 20,88 |
| $x$ [2] max. | Series 1 | | 1,4 | 1,6 | 2 | 2,5 | 3 | | – | |
| | Series 2 | | – | – | – | 2 | 2 | | – | |
| | Series 3 | | – | – | – | – | 2,5 | | – | |
| $g_2$ [3] max. | Series 1 | | – | – | – | – | – | | 6,4 | |
| | Series 2 | | – | – | – | – | – | | 5,6 | |
| | Series 3 | | – | – | – | – | – | | 4,9 | |
| $h$ | max. = nominal size | | 8 | 10 | 12 | 15 | 18 | | 22 | |
| | min. Product grade | A | 7,64 | 9,64 | 11,57 | 14,57 | 17,57 | | 21,48 | |
| | | B | 7,42 | 9,42 | 11,3 | 14,3 | 17,3 | | 21,16 | |
| $m$ | | max. | 3,2 | 4 | 5 | 6,5 | 8 | | 10 | |
| | | min. | 2,9 | 3,7 | 4,7 | 6,14 | 7,64 | | 9,64 | |
| $m'$ | | min. | 2,32 | 2,96 | 3,76 | 4,91 | 6,11 | | 7,71 | |
| $r$ | | ≈ | 3,25 | 3,75 | 4,75 | 6,25 | 7,5 | 8 | 8,5 | 9 |
| $s$ | max. = nominal size | | 7 | 8 | 10 | 13 | 16 | 17 | 18 | 19 |
| | min. Product grade | A | 6,78 | 7,78 | 9,78 | 12,73 | 15,73 | 16,73 | 17,73 | 18,67 |
| | | B | 6,64 | 7,64 | 9,64 | 12,57 | 15,57 | 16,57 | 17,57 | 18,48 |
| $t$ | | min. | 5,26 | 7,21 | 7,71 | 10,65 | 12,65 | | 15,65 | |
| | | max. | 5,74 | 7,79 | 8,29 | 11,35 | 13,35 | | 16,35 | |
| $w$ | | min. | 2 | 2 | 2 | 2 | 2 | | 3 | |
| Mass (7,85 kg/dm³) for 1000 units, in kg, ≈ | | | [4] | [4] | 4,66 | 11 | [4] | 20,1 | [4] | 28,3 |

[1] $P$ = pitch of coarse thread as specified in DIN 13 Part 15.

[2] For sizes not exceeding M 10, thread undercut or thread run-out, $x$, not exceeding 2 $P$.

[3] For sizes exceeding M 10, thread undercut, $g_2$, not exceeding the values specified in DIN 76 Part 1 (type D, short thread undercut).

[4] At present no values of mass specified.

Table (concluded)

| Thread size | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Series 1 | (M 14) | | M 16 | (M 18) | M 20 | (M 22) | | M 24 |
| | Series 2 | (M 14 × 1,5) | | M 16 × 1,5 | (M 18 × 1,5) | M 20 × 2 | (M 22 × 1,5) | | M 24 × 2 |
| | Series 3 | – | | – | (M 18 × 2) | M 20 × 1,5 | (M 22 × 2) | | – |
| $P$ [1] | | 2 | | 2 | 2,5 | 2,5 | 2,5 | | 3 |
| $d_a$ | min. | 14 | | 16 | 18 | 20 | 22 | | 24 |
| | max. | 15,1 | | 17,3 | 19,5 | 21,6 | 23,7 | | 25,9 |
| $d_k$ | max. | 20 | 21 | 23 | 26 | 28 | 31 | 33 | 34 |
| $d_w$ | min. | 19,2 | 20,2 | 22,2 | 25,3 | 28,2 | 29,5 | 31,4 | 33,2 |
| $e$ min. | Product grade A | 23,35 | 24,49 | 26,75 | 30,14 | 33,53 | 35,72 | 37,72 | 39,98 |
| | Product grade B | 22,78 | 23,91 | 26,17 | 29,56 | 32,95 | 35,03 | 37,29 | 39,55 |
| $g_2$ [3] max. | Series 1 | 7,3 | | 7,3 | 9,3 | 9,3 | 9,3 | | 10,7 |
| | Series 2 | 5,6 | | 5,6 | 5,6 | 7,3 | 5,6 | | 7,3 |
| | Series 3 | – | | – | 7,3 | 5,6 | 7,3 | | – |
| $h$ | max. = nominal size | 25 | | 28 | 32 | 34 | 39 | | 42 |
| | min. Product grade A | 24,48 | | 27,48 | 31,38 | 33,38 | 38,38 | | 41,38 |
| | Product grade B | 24,16 | | 27,16 | 31 | 33 | 38 | | 41 |
| $m$ | max. | 11 | | 13 | 15 | 16 | 18 | | 19 |
| | min. | 10,3 | | 12,3 | 14,3 | 14,9 | 16,9 | | 17,7 |
| $m'$ | min. | 8,24 | | 9,84 | 11,44 | 11,92 | 13,52 | | 14,16 |
| $r$ | ≈ | 10 | 10,5 | 11,5 | 13 | 14 | 15,5 | 16,5 | 17 |
| $s$ | max. = nominal size | 21 | 22 | 24 | 27 | 30 | 32 | 34 | 36 |
| | min. Product grade A | 20,67 | 21,67 | 23,67 | 26,67 | 29,67 | 31,61 | 33,38 | 35,38 |
| | Product grade B | 20,16 | 21,16 | 23,16 | 26,16 | 29,16 | 31 | 33 | 35 |
| $t$ | min. | 17,65 | | 20,58 | 24,58 | 25,58 | 28,58 | | 30,5 |
| | max. | 18,35 | | 21,42 | 25,42 | 26,42 | 29,42 | | 31,5 |
| $w$ | min. | 4 | | 4 | 5 | 5 | 5 | | 6 |
| Mass (7,85 kg/dm³) for 1000 units, in kg, ≈ | | [4] | 57,2 | 54,3 | 95 | 104 | 129 | [4] | 216 |

Use of values given in brackets should be avoided where possible.

For [1], [3] and [4], see page 2.

## 3 Technical delivery conditions

| Material | | Steel | Stainless steel | Non-ferrous metal |
|---|---|---|---|---|
| General requirements | | As specified in DIN 267 Part 1. | | |
| Thread | Tolerance | 6H | | |
| | As specified in | DIN 13 Part 15. | | |
| Mechanical properties | Property class[1] (material) | 6 | A1-50 | CU3 or CU6 |
| | As specified in | ISO 898 Part 2 or DIN 267 Part 23. | DIN 267 Part 11. | DIN 267 Part 18. |
| Limit deviations, geometrical tolerances | Product grade | A or B, at the manufacturer's discretion. | | |
| | As specified in | ISO 4759 Part 1 | | |
| Surface finish | | As processed. | Bright. | Bright. |
| | | DIN 267 Part 2 shall apply with regard to surface roughness.<br>DIN 267 Part 20 shall apply with regard to permissible surface discontinuities.<br>DIN 267 Part 9 shall apply with regard to electroplating.<br>DIN 267 Part 10 shall apply with regard to hot dip galvanizing. | | |
| Acceptance inspection | | DIN 267 Part 5 shall apply with regard to acceptance inspection. | | |

[1]) Different property classes or materials, or a particular grade of material, shall be subject to agreement.

## 4 Designation

Designation of an M12 hexagon domed cap nut assigned to property class 6:

Domed cap nut DIN 1587 – M12 – 6

In this designation, the previous widths across flats 17 mm, 19 mm, 22 mm and 32 mm apply for sizes M10, M12, M14 or M22. Where nuts of those sizes are required to be supplied with the new widths across flats 16 mm, 18 mm, 21 mm or 34 mm (as specified in ISO 272), the width across flats (SW) shall be included in the designation, e.g.:

**Domed cap nut DIN 1587 – M12 – SW18 – 6**

If a thread undercut is required for sizes up to and including M10, the symbol Ri shall be included in the designation, e.g.:

**Domed cap nut DIN 1587 – M8 – Ri – 6**

Where a specific product grade is required, this shall be included in the designation, e.g.:

**Domed cap nut DIN 1587 – M12 – 6 – A**

The DIN 4000 – 2 – 7 tabular layout of article characteristics shall apply for nuts covered in this standard.

## 5 Identification marking

Cap nuts of copper-zinc alloy CU3 (CuZn39Pb3) or CU6 (CuZn40MnPb) as specified in DIN 267 Part 18 shall be provided with a mark. In the case of product grade A nuts, the symbol CU3 (previously, Ms1) or CU6 (previously, Ms2) shall be stamped on one of the hexagon flats, viz. in the middle of the flat and with the lettering parallel to the nut axis. In the case of product grade B nuts, the symbol shall be cast on, pressed on or punched on the curved portion of the cap.

Where cap nuts are to be supplied without these symbols, symbol oK shall be appended to the designation, e.g.:

**Domed cap nuts DIN 1587 – M10 – CU6 – oK**

## Standards referred to

| | |
|---|---|
| DIN 13 Part 15 | ISO metric screw threads; fundamental deviations and tolerances for screw threads of 1 mm diameter and larger |
| DIN 76 Part 1 | Thread run-outs and thread undercuts for ISO metric screw threads as specified in DIN 13 |
| DIN 267 Part 1 | Fasteners; technical delivery conditions; general requirements |
| DIN 267 Part 2 | Fasteners; technical delivery conditions; types of finish and dimensional accuracy |
| DIN 267 Part 5 | Fasteners; technical delivery conditions; acceptance inspection |
| DIN 267 Part 9 | Fasteners; technical delivery conditions; electroplated components |
| DIN 267 Part 10 | Fasteners; technical delivery conditions; hot-dip galvanized components |
| DIN 267 Part 11 | Fasteners; technical delivery conditions, with addenda to ISO 3506; corrosion-resistant stainless steel components |
| DIN 267 Part 18 | Fasteners; technical delivery conditions; non-ferrous metal components |
| DIN 267 Part 20 | Fasteners; technical delivery conditions; surface discontinuities on nuts |
| DIN 267 Part 23 | Fasteners; technical delivery conditions; property classes for nuts with fine pitch thread (ISO classes) |
| DIN 4000 Part 2 | Tabular layout of article characteristics for bolts, screws and nuts |
| ISO 272 | Fasteners; hexagon products; widths across flats |
| ISO 898 Part 2 | Mechanical properties of fasteners; nuts with specified proof load values |
| ISO 4759 Part 1 | Tolerances for fasteners. Part 1: Bolts, screws and nuts with thread diameters between 1,6 mm (inclusive) and 150 mm (inclusive) and product grades A, B and C |

## Previous editions

DIN KrK 127 to DIN KrK 130: 10.25; DIN Kr 801: 10.34, DIN Kr 802: 10.34; DIN Kr 803: 10.34;
DIN 1587: 07.29, 12.34, 11.43, 10.53, 03.63x, 12.70, 04.77.

## Amendments

The following amendments have been made to the April 1977 edition.

a) Widths across flats 16 mm, 18 mm, 21 mm and 34 mm as specified in ISO 272 have been additionally adopted for sizes M 10, M 12, M 14 and M 22.

b) A note regarding the use of the obsolescent widths across flats has been included.

c) The nut bearing faces have been specified more precisely by introducing dimensions $d_a$ and $d_w$.

d) The minimum wrenching height, $m'$, has been included.

e) The previous types m and mg have been replaced by product grades A and B as specified in ISO 4759 Part 1.

f) In agreement with DIN 267 Part 18, the previously used material grades CuZn39Pb2 F50 (from M8 F44) (Ms1) and CuZn40 F35 (Ms2) have been replaced by the grades CuZn39Pb3 (denoted by CU3) and CuZn40MnPb (denoted by CU6).

g) The standard has been editorially revised and harmonized with other DIN Standards on hexagon nuts.

## International Patent Classification

F 16 B 37/14