

Wing screws with rounded wings

DIN
316

ICS 21.060.10

Supersedes
June 1983 edition.

Descriptors: Wing screws.

Flügelschrauben, runde Flügelform

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.

Foreword

This standard has been prepared by the *Normenausschuß Mechanische Verbindungselemente* (Fasteners Standards Committee), Technical Committee *Schrauben und Muttern ohne Werkzeugantrieb*. See DIN 318 for wing screws with edged wings.

Amendments

The following amendments have been made to the June 1983 edition.

- a) Specific grades for malleable cast iron and copper-zinc alloys are no longer included.
- b) The minimum tensile strength of steel and product grade B are no longer specified.
- c) For wing screws of product grade C, the tolerance class has been changed from 8g to 6g.
- d) The bearing face of wing screws is specified as being unmachined.

Previous editions

DIN 316: 1920-10, 1925-04, 1943-10, 1956-01, 1970-11, 1983-06.

Dimensions in mm

1 Scope

This standard specifies requirements for M4 to M24 wing screws with rounded wings, of product grade C and made of malleable cast iron, steel or copper-zinc alloy.

2 Normative references

This standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the titles of the publications are listed below. For dated references, subsequent amendments to or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

- DIN 13-13 ISO metric screw threads – Series of preferred sizes for screws, bolts and nuts from 1 mm to 52 mm diameter and limits of sizes
- DIN 78 Thread ends and lengths of projection of bolt ends for ISO metric screw threads in accordance with the DIN 13 series

Continued on pages 2 to 4.

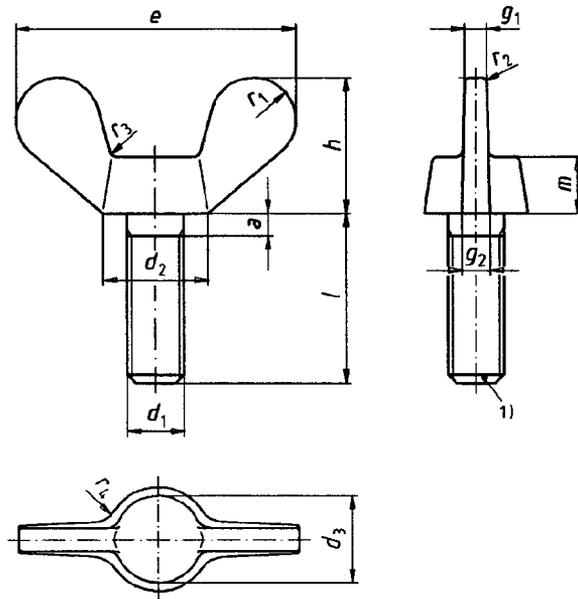
Translation by DIN-Sprachendienst.

In case of doubt, the German-language original should be consulted as the authoritative text.

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|-------------------|---|
| DIN 318 | Wing screws, edged wings*) |
| DIN 4000-2 | Tabular layout of article characteristics for bolts, screws, studs and nuts |
| DIN EN ISO 4042 | Threaded components – Electroplated coatings (ISO/DIS 4042 : 1996)*) |
| DIN EN ISO 4759-1 | Tolerances for fasteners – Part 1: Bolts, screws and nuts – Product grades A, B and C (ISO/DIS 4759-1 : 1997)*) |
| ISO 3269 : 1988 | Fasteners – Acceptance inspection |
| ISO 8992 : 1986 | Fasteners – General requirements for bolts, screws, studs and nuts |

3 Dimensions

See figure 1 and table 1.



1) Threads may have a chamfered end (DIN 78-K end) or rounded end (DIN 78-L end), screws with an as-rolled end also being permitted.

Figure 1

*) At present at draft stage.

Table 1: Screw dimensions

| Thread size (d_1) | | M4 | M5 | M6 | M8 | M10 | M12 | M16 | M20 | M24 |
|---|-----------|---------|-------------------|-----|------|------|------|------|------|------|
| $P^1)$ | | 0,7 | 0,8 | 1 | 1,25 | 1,5 | 1,75 | 2 | 2,5 | 3 |
| a | max. | 2,1 | 2,4 | 3 | 4 | 4,5 | 5,3 | 6 | 7,5 | 9 |
| d_2 | max. | 8 | 11 | 13 | 16 | 20 | 23 | 29 | 35 | 44 |
| | min. | 6 | 8 | 10 | 13 | 17 | 20 | 26 | 32 | 41 |
| d_3 | max. | 7 | 9 | 11 | 12,5 | 16,5 | 19,5 | 23 | 29 | 37,5 |
| | min. | 5,5 | 7,5 | 9 | 10,5 | 14,5 | 17,5 | 21 | 27 | 35 |
| e | max. | 20 | 26 | 33 | 39 | 51 | 65 | 73 | 90 | 110 |
| | min. | 18 | 24 | 30 | 36 | 48 | 62 | 70 | 86 | 106 |
| g_1 | max. | 1,9 | 2,3 | 2,3 | 2,8 | 4,4 | 4,9 | 6,4 | 6,9 | 9,4 |
| | min. | 1,1 | 1,5 | 1,5 | 2 | 3,6 | 4,1 | 5,6 | 6,1 | 8,6 |
| g_2 | max. | 2,3 | 2,8 | 3,3 | 4,4 | 5,4 | 6,4 | 7,5 | 8 | 10,5 |
| | min. | 1,7 | 2,3 | 2,7 | 3,6 | 4,6 | 5,6 | 6,5 | 7 | 9,5 |
| h | max. | 10,5 | 13 | 17 | 20 | 25 | 33,5 | 37,5 | 46,5 | 56,5 |
| | min. | 8,5 | 11 | 15 | 18 | 23 | 31 | 35 | 44 | 53,5 |
| m | max. | 4,6 | 6,5 | 8 | 10 | 12 | 14 | 17 | 21 | 25 |
| | min. | 3,2 | 4 | 5 | 6,5 | 8 | 10 | 13 | 16 | 20 |
| r_1 | \approx | 3 | 4 | 5 | 6 | 8 | 10 | 11 | 14 | 18 |
| r_2 | \approx | Rounded | | | | 1 | 1 | 1,2 | 1,6 | 2,5 |
| r_3 | \approx | 0,5 | 1 | 1 | 1 | 1,2 | 1,2 | 1,6 | 2 | 2,5 |
| r_4 | \approx | 2 | 2,5 | 3 | 3 | 5 | 6 | 7 | 8 | 9 |
| $f^2)$ | | | | | | | | | | |
| Nominal size | min. | max. | | | | | | | | |
| 6 | 5,40 | 6,60 | | | | | | | | |
| 8 | 7,25 | 8,75 | | | | | | | | |
| 10 | 9,25 | 10,75 | | | | | | | | |
| 12 | 11,10 | 12,90 | | | | | | | | |
| (14) | 13,10 | 14,90 | Range of | | | | | | | |
| 16 | 15,10 | 16,90 | | | | | | | | |
| (18) | 17,10 | 18,90 | | | | | | | | |
| 20 | 18,95 | 21,05 | commercially | | | | | | | |
| 25 | 23,95 | 26,05 | | | | | | | | |
| 30 | 28,95 | 31,05 | | | | | | | | |
| 35 | 33,75 | 36,25 | available lengths | | | | | | | |
| 40 | 38,75 | 41,25 | | | | | | | | |
| 50 | 48,75 | 51,25 | | | | | | | | |
| 60 | 58,50 | 61,50 | | | | | | | | |
| <p>1) Thread pitch.</p> <p>2) Bracketed sizes should be avoided where possible.</p> | | | | | | | | | | |

4 Technical delivery conditions

Table 2: Technical delivery conditions

| Material | | |
|--|---|--------------------|
| Malleable cast iron (GT) (GTS or GTW)* Steel (St) (forged or cold worked)* Copper-zinc alloy (CuZn) (malleable or casting alloy)* Austenitic steel (A) (grade at the manufacturer's discretion) | | |
| General requirements | As specified in ISO 8992. | |
| Thread | Tolerance | 6g |
| | As specified in | DIN 13-13. |
| Limit deviations and geometrical tolerances | Product grade | C |
| | As specified in | DIN EN ISO 4759-1. |
| Surface finish | As processed. Bearing face unmachined. DIN EN ISO 4042 shall apply with regard to electroplating. | |
| Acceptance inspection | As specified in ISO 3269. | |
| *) At the manufacturer's discretion. | | |

Wing screws may be made from two pieces, as long as they are joined in such a manner that their performance is equal to that of one-piece screws.

5 Designation

Designation of an M6 wing screw with rounded wings, made of malleable cast iron (GT), with a nominal length, *l*, of 20 mm:

Wing screw DIN 316 – M6 × 20 – GT

Tabular layout of article characteristics

The DIN 4000-2-6 tabular layout of article characteristics shall apply to the wing screws covered in this standard.