

Wing screws

DIN
316

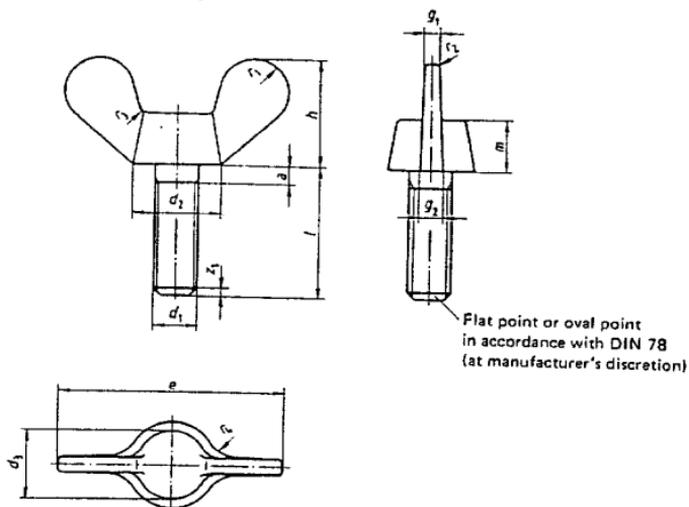
Flügelschrauben

Supersedes November 1970 edition

As it is current practice in standards published by the International Organization for Standardization (ISO), the comma has been used throughout as a decimal marker.

Dimensions in mm

1 Dimensions, designation



Designation of a malleable cast iron (GT) wing screw with a screw thread $d_1 = M6$ and a length $l = 20$ mm, of product class C (previously type g):

Wing screw DIN 316 - M 6 x 20 - GT - C

Continued on pages 2 to 4

Screw thread d_1	M 4	M 5	M 6	M 8	M 10	M 12	M 16	M 20	M 24	
$P^1)$	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
c	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	
$r_2 \approx$	radiused				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	

Nominal length	l	
	min.	max.
6	5,4	6,6
8	7,3	8,7
10	9,3	10,7
12	11,1	12,9
(14)	13,1	14,9
16	15,1	16,9
(18)	17,1	18,9
20	19	21
25	24	26
30	29	31
35	33,8	36,2
40	38,8	41,2
50	48,8	51,2
60	58,5	61,5

Range

of commercially available

lengths

¹⁾ P = Thread pitch (regular thread)

2 Technical delivery conditions

Material		Malleable cast iron (GT)	Steel (St)	Copper-zinc alloys (CuZn)
General requirements		in accordance with DIN 267 Part 1		
Screw thread	Tolerance	6g (product class B); 8g (product class C)		
	Standard	DIN 13 Part 13		
Mechanical properties	Property class or material	GT = GTS-35-10	St = steel min. tensile strength ≥ 400 N/mm ²	CuZn = G-CuZn40 Fe
	Standard	DIN 1692	DIN 17 100	DIN 1709
Permissible dimensional deviations	Product class	B (previously mg ¹); C (previously g ²)		
	Standard	DIN ISO 4759 Part 1		
Surface		as manufactured As regards galvanic surface protection, DIN 267 Part 9 shall apply Other kinds of surface protection subject to agreement		
Acceptance test		DIN 267 Part 5 ^{*)} shall apply to the acceptance test		
^{*)} At present at the stage of draft ¹⁾ Bearing face machined ²⁾ Bearing face unmachined				

Wing screws complying with this standard may be made from two separate pieces. The joint between these pieces shall be so designed as not to impair the mechanical and functional properties of the screws, compared to screws made of one piece only.

Standards referred to

DIN 13 Part 13	ISO metric screw threads; review of screw threads for bolts and nuts from 1 to 52 mm screw thread diameter and limiting sizes
DIN 78	Thread ends, lengths of projection of thread ends for ISO metric screw threads according to DIN 13
DIN 267 Part 1	Fasteners; technical delivery conditions, general requirements
DIN 267 Part 5	(at present at the stage of draft) Fasteners; technical delivery conditions, acceptance test
DIN 267 Part 9	Fasteners; technical delivery conditions, components with electroplated coatings
DIN 1692	Malleable cast iron; terminology, properties
DIN 1709	Copper-zinc casting alloy (cast brass and special cast brass); castings
DIN 17 100	Steels for general structural purposes; quality standard
DIN ISO 4759 Part 1	Fasteners; tolerances for bolts and nuts with screw thread diameters from 1,6 to 150 mm; product classes A, B and C

Previous editions

DIN 316: 10.20, 04.25, 10.43, 01.56, 11.70

Amendments

The following amendments have been made in comparison with the November 1970 edition:

- The dimensions of the wing screws have been altered in some respects.
- Limiting sizes have been adopted.
- Sizes M 2 to M 3,5 have been deleted.
- The technical delivery conditions have been complemented.
- The contents of the standard have been revised editorially.

Explanatory notes

In June 1975, drafts of the planned new editions of DIN 315 (wing nuts) and of DIN 316 (wing screws) were published; they made a distinction between Part 1 "heavy duty type" and Part 2 "light duty type". This distinction did not however meet with general approval, because it did not reflect the real situation in practice.

Consequently, new draft standards were published in December 1980, which no longer made this distinction. In lieu thereof, the constructional dimensions of the wing nuts and wing screws have been selected in such a way, also from the tolerance aspect, that the most common production series are covered thereby, without having to worry about any impairment of the proper functioning of the components due to the revised dimensions and tolerances.

These draft standards led to the revised editions of DIN 315 and DIN 316, which manage to preserve the relatively wide latitude for the various shapes and types. Sizes M 2 to M 3,5 have been deleted because no requirement for these sizes worthy of their inclusion in the standard could be ascertained.

Specifications with regard to the weight of wing nuts and wing screws have been dropped from the standards because the wide ranges of tolerance of the individual dimensions do not permit the specification of weights which would give any useful information.

The data relating to technical delivery conditions have been modified and complemented. In this connection, no property classes in accordance with DIN ISO 898 Part 1 (previously DIN 267 Part 3) have been selected for wing screws made of steel, because the requirements and tests associated with these property classes in the standard concerned are not applicable, or are only applicable to a limited extent to wing screws. As far as wing nuts made of steel are concerned, recourse was had to DIN ISO 898 Part 2, and in the case of components made of malleable cast iron or of copper-zinc alloys, the appropriate materials have been specified.

The previous mg and g types in accordance with DIN 267 Part 2 have been replaced by product classes A and B in accordance with DIN ISO 4759 Part 1, and the latter will shortly be complemented by the planned new edition of DIN 267 Part 2. These revised designations have not resulted in any fundamental changes however. These two product classes, apart from the screw thread tolerances, only differ in practice from each other in respect of their bearing faces (machined v. unmachined), which fact can however only be deduced with reservations from DIN ISO 4759 Part 1 or from DIN 267 Part 2. Consequently, appropriate notes to this effect have been incorporated.

In deference to established practice, the manufacture of wing screws made from two separate pieces has been authorized as previously, on condition that the joint between the two pieces is properly designed, and that the use of the wing screws is in no way impaired thereby.

International Patent Classification

F 16 B 35-00