

Square weld nuts

DIN
928

ICS 21.060.20

Supersedes
February 1998 edition.

Vierkant-Schweißmuttern

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 Technical Committee *Schrauben und Muttern mit Außenantrieb* of the *Normenausschuss Mechanische Verbindungselemente* (Fasteners Standards Committee).

In the May 1970 edition of this standard, nuts of property class 8 ('weldable') were specified. Since then, proof loads have been increased and new nut heights specified both in International and European Standards (cf. DIN EN 20898-2).

It did not seem advisable to adapt the nut heights to those of nuts with full loadability, since weld nut mounting is largely automated. Changing the nut dimensions would thus have given rise to considerable difficulties (retooling), which would not have been offset by the advantage of a slightly higher resistance to stripping.

Instead, this standard specifies steel with a maximum carbon content of 0,25% and proof loads which are deemed sufficient for weld nuts to be used together with bolts of property classes lower than 8.8. Weld nuts with a higher loadability are specified in DIN 977.

The DIN 4000-2-9.4 tabular layout of article characteristics shall apply to nuts covered in this standard.

Amendments

This standard differs from the February 1998 edition in that the designation of a square weld nut with UNF thread has been specified and some editorial amendments have been made.

Previous editions

DIN 928: 1970-05, 1983-08, 1998-02.

All dimensions are in millimetres.

1 Scope

This standard specifies requirements for sizes M4 to M16 coarse and fine pitch thread square weld nuts of product grade A, for use with bolts of property classes below 8.8 as specified in DIN EN ISO 898-1.

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 13-1 General purpose ISO metric screw threads – Nominal sizes for 1mm to 68mm diameter coarse pitch threads
- DIN 13-5 General purpose ISO metric screw threads – Nominal sizes for 1 mm and 1,25 mm fine pitch threads with diameters from 7,5 mm to 200 mm

Continued on pages 2 to 5.

Translation by DIN-Sprachendienst.

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

DIN 13-6	General purpose ISO metric screw threads – Nominal sizes for 1,5 mm fine pitch threads with diameters from 12 mm to 300 mm
DIN 13-15	ISO metric screw threads – Fundamental deviations and tolerances for screw threads of 1 mm diameter and larger
DIN 267-2	Fasteners – Technical delivery conditions – Product grades and tolerances
DIN 929	Hexagon weld nuts
DIN 977	Hexagon weld nuts with flange
DIN 4000-2	Tabular layouts of article characteristics for bolts, screws and fit bolts
DIN EN 20898-2	Mechanical properties of fasteners – Part 2: Nuts with coarse pitch thread and specified proof load values (ISO 898-2 : 1992)
DIN EN ISO 898-1	Mechanical properties of fasteners made of carbon steel and alloy steel – Part 1: Bolts, screws and studs (ISO 898-1 : 1999)
DIN EN ISO 898-6	Mechanical properties of fasteners – Part 6: Nuts with fine pitch thread and specified proof load values (ISO 898-6 : 1994)
DIN EN ISO 3269	Fasteners – Acceptance inspection (ISO/DIS 3269 : 1998)*)
DIN EN ISO 4042	Fasteners – Electroplated coatings (ISO 4042 : 1999)
DIN EN ISO 4759-1	Tolerances for fasteners – Part 1: Bolts, screws, studs and fit bolts – Product grades A, B and C (ISO/DIS 4759-1 : 1997)*)
ISO 8992 : 1986	Fasteners – General requirements for bolts, screws, studs and fit bolts
ANSI B1.1-1989	Unified inch screw threads (UN and UNR thread form) ¹⁾

3 Dimensions

The design shown is for illustrative purposes only, but the dimensions of nuts shall be as specified.

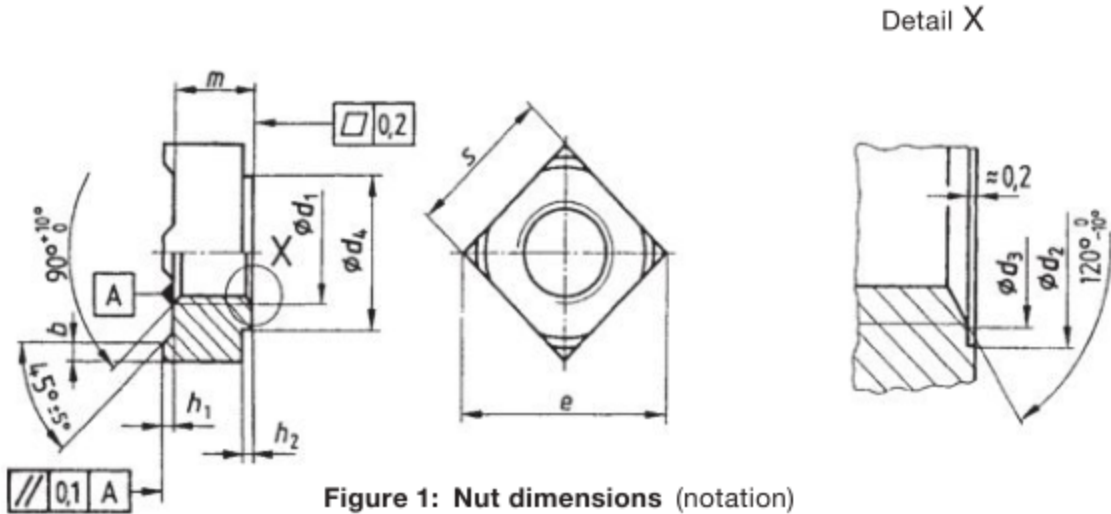


Figure 1: Nut dimensions (notation)

*) Currently at draft stage.
¹⁾ Obtainable from *Beuth Verlag GmbH (Auslandsnormen-Service)*, 10772 Berlin, Germany.

Table 1: Nut dimensions

Thread size			b		d ₂	d ₃	d ₄	e	h ₁
d ₁	d ₁ × P ¹⁾			Limit de- viations	H13	Max.	Min.	Min.	± 0,1
M4	–	–	0,8	± 0,15	5	4,2	6,4	9	0,6
M5	–	–	1		6	5,25	8,2	12	0,8
M6	–	–	1,2		7,5	6,3	9,1	13	0,8
M8	M8 × 1	–	1,5		10	8,4	12,8	18	1
M10	M10 × 1,25	M10 × 1	1,8	± 0,2	12,5	10,5	15,6	22	1,2
–	–	7/16-20 UNF-2B ²⁾	1,8		12,5	11,7	15,6	22	1,2
–	–	7/16-20 UNF-2B ²⁾	2		13,5	11,7	17,4	25	1,4
M12	M12 × 1,25	M12 × 1,5	2		13,5	12,6	17,4	25	1,4
(M14)	(M14 × 1,5)	–	2,5		16,8	14,7	20,4	28	1,4
(M16)	(M16 × 1,5)	–	2,5		18,8	16,8	22,4	32	1,6

d ₁	Thread size		h ₂		m	s	Approx. mass, in kg, per 1000 units
	d ₁ × P ¹⁾		Min.	Max.	h14	h14	
M4	–	–	0,4	1,3	3,5	7	0,81
M5	–	–	0,6	1,5	4,2	9	1,7
M6	–	–	0,7	1,8	5	10	2,4
M8	M8 × 1	–	1,1	2,0	6,5	14	6,5
M10	M10 × 1,25	M10 × 1	1,25	2,2	8	17	11,3
–	–	7/16-20 UNF-2B ²⁾	1,25	2,2	9	17	12,5
–	–	7/16-20 UNF-2B ²⁾	1,75	3,0	9	19	16,5
M12	M12 × 1,25	M12 × 1,5	1,75	3,0	9,5	19	16,6
(M14)	(M14 × 1,5)	–	1,75	3,2	11,4	22	26,7
(M16)	(M16 × 1,5)	–	2,0	4,0	13	24	35,8

Bracketed sizes should not be used.

¹⁾ Thread pitch.

²⁾ Thread series to ANSI B1.1; only to be used for fastening of seat belts in motor vehicles.

4 Technical delivery conditions

4.1 General requirements

General requirements for standardized bolts, screws, studs and nuts are specified in ISO 8992.

4.2 Material

Weld nuts shall be made of steel with a maximum carbon content of 0,25. If a specific steel grade is required, this shall be agreed on ordering.

4.3 Design

Weld nuts shall be of product grade A conforming to DIN EN ISO 4759-1 or DIN 267-2, with diameters and pitches in accordance with DIN 13-1 (coarse thread) or DIN 3-5 and DIN 13-6 (fine thread), tolerance class 6G to DIN 13-15 being permitted.

4.4 Mechanical properties

If the proof load test specified in DIN EN 20898-2 or DIN EN ISO 898-6 is carried out, the loads given in table 2 shall be used. In case of dispute, welding projections shall be removed prior to testing.

Table 2: Proof loads

Coarse thread (size)	Proof load, in N	Fine thread (size)	Proof load, in N
M4	6 800	–	–
M5	11 000	–	–
M6	15 500	–	–
M8	28 300	M8 × 1	30 200
M10	44 800	M10 × 1	50 200
–	–	M10 × 1,25	47 800
–	–	7/16-20 UNF-2B	53 600
M12	65 300	M12 × 1,25	72 100
–	–	M12 × 1,5	68 200
M14	89 700	M14 × 1,5	97 500
M16	123 000	M16 × 1,5	132 000

4.5 Surface finish

As a rule, square weld nuts are to be supplied uncoated. Electroplated coatings shall comply with the specifications given in DIN EN ISO 4042.

Since uncoated weld nuts may be affected by corrosion during transit or storage, the manufacturer shall provide corrosion protection that does not impair nut weldability.

4.6 Acceptance inspection

Acceptance inspection shall comply with the specifications given in DIN EN ISO 3269.

5 Designation

Designation of a size M10 square weld nut made of steel (St):

Nut DIN 928 – M10 – St

If a square weld nut with UNF thread is to be supplied, the width across flats shall be included in the designation.

EXAMPLE:

Designation of a size 7/16-20 UNF-2B square weld nut, made of steel (St), with a width across flats of 17 mm (SW17):

Nut DIN 928 – 7/16-20 UNF-2B – SW17 – St

6 Marking

Square weld nuts of sizes M5 and above shall be imprinted with the manufacturer’s symbol.

7 Indication on drawings

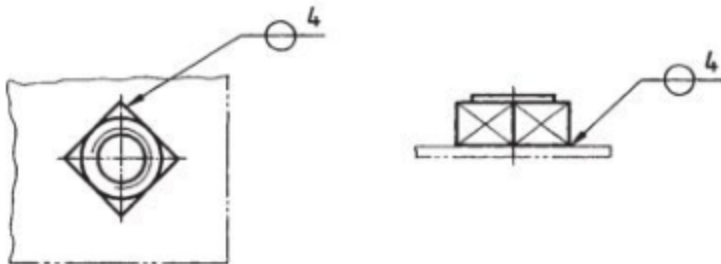


Figure 2: Indication on drawings

8 Connecting dimensions

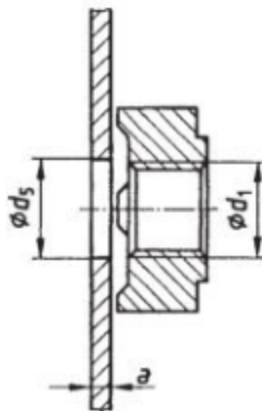


Figure 3: Connecting dimensions (nut not welded on)

Table 3: Connecting dimensions

Thread size as in table 1			Plate thickness, a		Hole diameter, d ₅ ¹⁾ (H11)
d ₁	d ₁ × P		Min.	Max.	
M4	–	–	0,75	1,5	6
M5	–	–	0,88	2	7
M6	–	–	0,88	2,5	8
M8	M8 × 1	–	1	3	10,5
M10	M10 × 1,25	M10 × 1	1,25	4	12,5
–	–	7/16-20 UNF-2B	1,25	4	13,5
M12	M12 × 1,25	M12 × 1,5	1,5	5	14,8
M14	M14 × 1,5	–	2	6	16,8
M16	M16 × 1,5	–	2	6	18,8

¹⁾ To ensure interchangeability, the hole diameters correspond to those of hexagon weld nuts as specified in DIN 929. They are, however, not design requirements, and therefore, other hole diameters are permitted.