
**Welding — Studs and ceramic ferrules
for arc stud welding**

*Soudage — Goujons et bagues en céramique pour le soudage à l'arc
des goujons*

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[ISO 13918:1998](https://standards.iteh.ai/catalog/standards/sist/dab9cf76-e8e7-45c8-a6cb-3edafb45ff4/iso-13918-1998)

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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International Standard ISO 13918 was prepared by the European Committee for Standardization (CEN) in collaboration with ISO Technical Committee TC 44, *Welding and allied processes*, Subcommittee SC 10, *Unification of requirements in the field of metal welding*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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Throughout the text of this standard, read “..this European Standard!!” to mean “...this International Standard...”.

Annex ZZ gives a list of corresponding International and European Standards for which equivalents are not given in the text.

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Foreword

The text of prEN ISO 13918:1998 has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DS, in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association. This European Standard is considered to be a supporting standard to those application and product standards which in themselves support an essential safety requirement of a New Approach Directive and which make reference to this European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 1999, and conflicting national standards shall be withdrawn at the latest by April 1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This standard includes the most important dimensions of studs and ceramic ferrules for arc stud welding. The range of types of studs specified in this standard accounts for customary applications. Further types may be specified as required for special application. This standard can be used in all fields of the metal-working industry.

Table 1 shows types of studs and the symbols for studs and ceramic ferrules, which are used in this standard.

Table 1: Type of studs and symbols for studs and ceramic ferrules

Type of studs		Symbols for studs	Symbols for ceramic ferrules	
drawn arc	drawn arc stud	threaded stud (pitch)	PD	PF
	welding with	threaded stud with reduced shaft	RD	RF
	ceramic ferrule or	unthreaded stud	UD	UF
	shielding gas	shear connector	SD	UF
	short-cycle drawn arc stud welding	threaded stud with flange	FD	–
tip ignition		threaded stud (pitch)	PT	–
		unthreaded stud	UT	–
		stud with internal thread	IT	–

2 Normative references

This European 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 publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 573-3

Aluminium and aluminium alloys – Chemical compositions and forms of wrought products – Part 3: Chemical composition

EN 10025

Hot rolled products of non-alloy structural steels – Technical delivery conditions

EN 10088-1

Stainless steels – Part 1: List of stainless steels

EN 20898-1

Mechanical properties of fasteners – Part 1: Bolts, screws and studs (ISO 898-1:1988)

EN ISO 6947

Welds – Working positions – Definitions of angles of slope and rotation (ISO 6947:1993)

prEN ISO 14555

Welding – Arc stud welding of metallic materials (ISO/FDIS 14555:1998)

ISO 426-1

Wrought copper-zinc alloys – Chemical composition and forms of wrought products – Part 1: Non-lead and special copper-zinc alloys

ISO 724

ISO general-purpose metric screw threads – Basic dimensions

ISO 1638

Wrought copper and copper alloy wire – Technical conditions of delivery

EN ISO 3506-3

Mechanical properties of corrosion-resistant stainless-steel fasteners - Part 3: Set screws and similar fasteners not under tensile stress (ISO 3506-3:1997)

ISO 4042

Threaded components - Electroplated coatings

ISO 4759-1

Tolerances for fasteners - Part 1: Bolts, screws and nuts with thread diameters between 1,6 (inclusive) and 150 mm (inclusive) and product grades A, B and C

3 Definitions

For the purposes of this standard, the definitions listed in prEN ISO 14555 apply.

4 Dimensions and mass for studs

4.1 General

Dimensions are given in millimetres. Details left unspecified are at the manufacturer's discretion. Nominal dimensions are listed in the following tables.

The dimensions of stud collars shown in figures 1, 2, 3 and 5 may be generally achieved in welding position PA according to EN ISO 6947.

4.2 Threaded stud (PD)

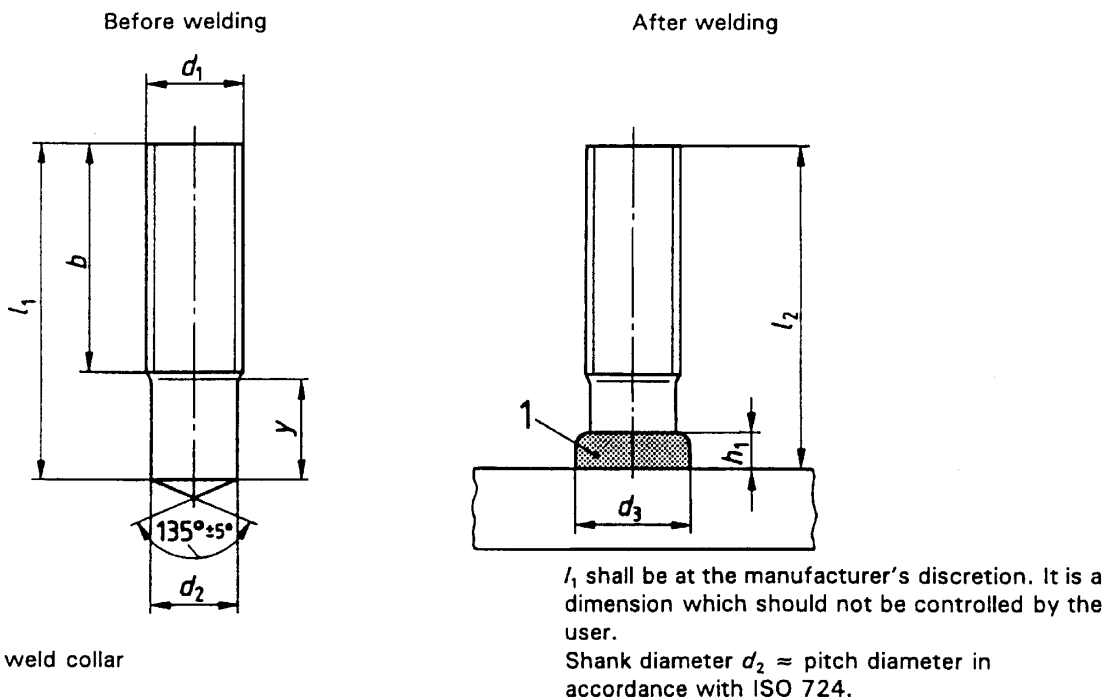


Figure 1: Threaded stud (PD)

Table 2: Dimensions and mass of threaded studs (PD)

d_1	M6			M8			M10			M12			M16			M20			M24		
	Y_{\min}	b	m^3	Y_{\min}	b	m^3	Y_{\min}	b	m^3	Y_{\min}	b	m^3	Y_{\min}	b	m^3	Y_{\min}	b	m^3	Y_{\min}	b	m^3
d_2	5,35			7,19			9,03			10,86			14,7			18,38			22,05		
$d_3^{1)}$	8,5			10			12,5			15,5			19,5			24,5			30		
$h_1^{1)}$	3,5			3,5			4			4,5			6			7			10		
$l_2^{2)}$	Y_{\min}	b	m^3	Y_{\min}	b	m^3	Y_{\min}	b	m^3	Y_{\min}	b	m^3	Y_{\min}	b	m^3	Y_{\min}	b	m^3	Y_{\min}	b	m^3
15	9	—	2,6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	9	—	3,5	9	—	6,4	9,5	—	10,0	—	—	—	—	—	—	—	—	—	—	—	—
25	9	—	4,4	9	—	8,0	9,5	—	12,6	—	18,2	—	—	—	—	—	—	—	—	—	—
30	9	—	5,3	9	—	9,6	9,5	—	15,1	—	21,8	13,5	—	—	—	—	—	—	—	—	—
35	—	20	6,2	9	—	11,1	9,5	—	17,6	11,5	25,4	13,5	—	—	—	15,5	—	—	—	—	—
40	—	20	7,1	9	—	12,7	9,5	—	20,1	11,5	29,1	13,5	—	—	—	15,5	—	—	—	—	—
45	—	—	—	9	—	14,3	9,5	—	22,6	11,5	32,7	13,5	—	—	—	15,5	—	—	—	—	—
50	—	—	—	—	40	15,9	—	40	25,1	—	36,3	—	40	66,6	—	40	104,1	30	—	—	149,8
55	—	—	—	—	—	—	—	—	—	—	—	—	40	73,2	—	40	114,5	—	—	—	—
60	—	—	—	—	—	—	—	—	—	—	—	—	40	79,9	—	40	124,9	—	—	—	—
65	—	—	—	—	—	—	—	—	—	—	—	—	40	86,6	—	40	135,3	—	—	—	—

(continued)

Table 2 (concluded)

d_1	M6			M8			M10			M12			M16			M20			M24		
	Y_{min}	b	m^3	Y_{min}	b	m^3	Y_{min}	b	m^3	Y_{min}	b	m^3	Y_{min}	b	m^3	Y_{min}	b	m^3	Y_{min}	b	m^3
d_2	5,35			7,19			9,03			10,86			14,7			18,38			22,05		
$d_3^{1)}$	8,5			10			12,5			15,5			19,5			24,5			30		
$h_1^{1)}$	3,5			3,5			4			4,5			6			7			10		
$l_2^{2)}$																					
70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
100	—	—	—	—	—	—	—	40	50,2	—	40	72,7	—	40	133,2	—	—	—	—	40	224,7
140	—	—	—	—	—	—	—	80	70,3	—	80	101,7	—	80	186,4	—	—	—	—	40	299,6
150	—	—	—	—	—	—	—	80	75,4	—	80	109,0	—	80	199,7	—	—	—	—	—	—
160	—	—	—	—	—	—	—	80	80,4	—	80	116,3	—	80	213,1	—	—	—	—	—	—

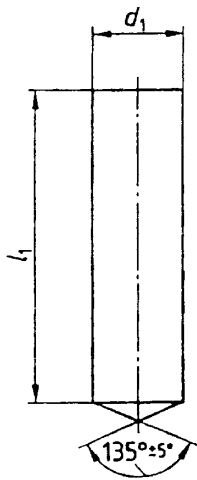
1) Guide values.

2) l_2 is the design value. By proper control of the welding it is possible to keep variations in l_2 within $\pm 0,5$ mm.

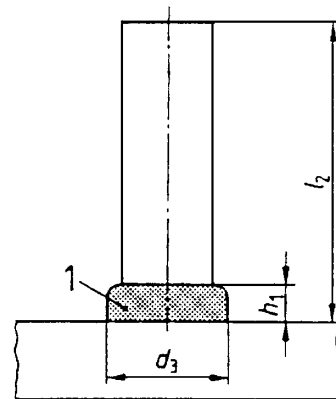
3) Due to the tolerances, the values of mass m are only approximate (7,85 kg/dm³) per 1000 units, in kg.

4.3 Unthreaded stud (UD)

Before welding



After welding



l_1 shall be at the manufacturer's discretion. It is a dimension which should not be controlled by the user.

Key: 1 = weld collar

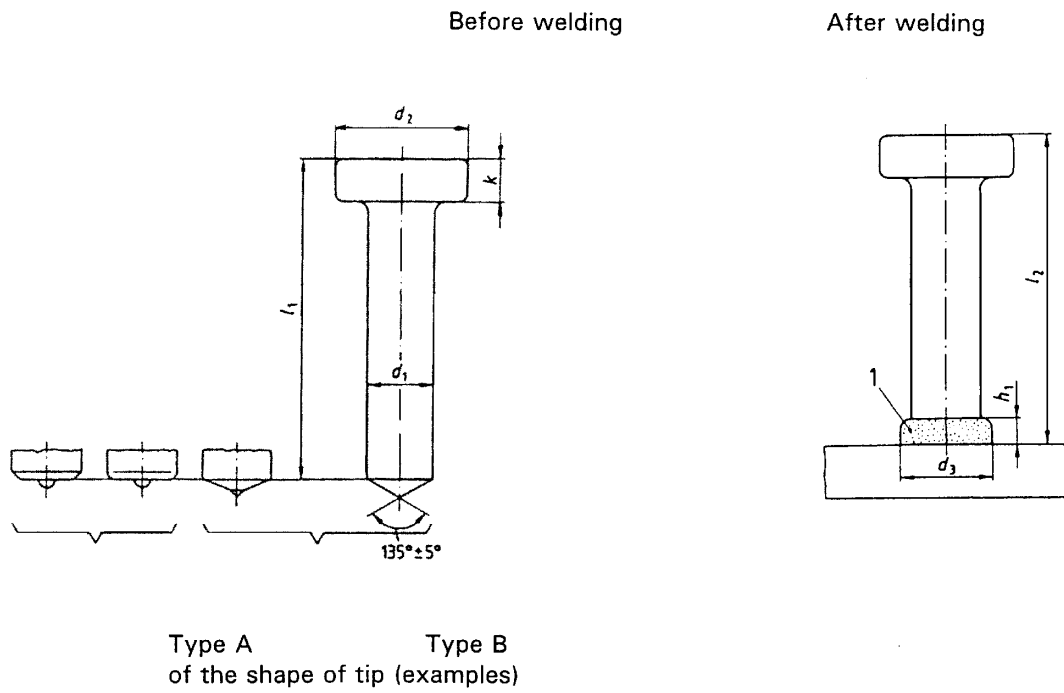
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Figure 2: Unthreaded stud (UD)
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Table 3: Dimensions and mass of unthreaded studs (UD)

d_1	6	8	10	12	16
d_3 ¹⁾	8,5	11	13	16	21
h_1 ¹⁾	4	4	4	5	7
l_2 ²⁾	Approximate mass m ³⁾ (7,85 kg/dm ³) per 1000 units, in kg				
20	4,7	8,2	13,1	20,2	—
25	5,7	10,7	16	23	45,9
30	6,7	12,7	19,4	27,7	49,8
40	8,8	16,7	25,6	36,7	66
50	10,9	20,5	32	45,8	81,7
60			37,9	54,4	97,2
70			44	63	113,3
80			51,5	71,9	129,3
<p>ISO 13918:1998</p> <p>1) Guide values. https://standards.iteh.ai/catalog/standards/sist/dab9cf76-e8e7-45c8-a6cb-311505011111</p> <p>2) l_2 is the design value. By proper control of the welding it is possible to keep variations in l_2 within $\pm 0,5$ mm.</p> <p>3) Due to the tolerances, the values of mass are only approximate.</p>					

4.4 Shear connector (SD)



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l_1 shall be at the manufacturer's discretion. It is a dimension which should not be controlled by the user.

Key: 1 = weld collar

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Figure 3: Shear connector (SD)