

ARC WELDING STUD (Shear Connector)

ISO 13918 - SD TYPE

The Unbrako Arc Welding Stud (also known as shear stud or shear connector) is designed to operate in conjunction with the steel plate, welding steel mesh & cement modeled objects. It is used in construction of tall buildings, bridges and a variety of steel structures, where concrete composite action is required.

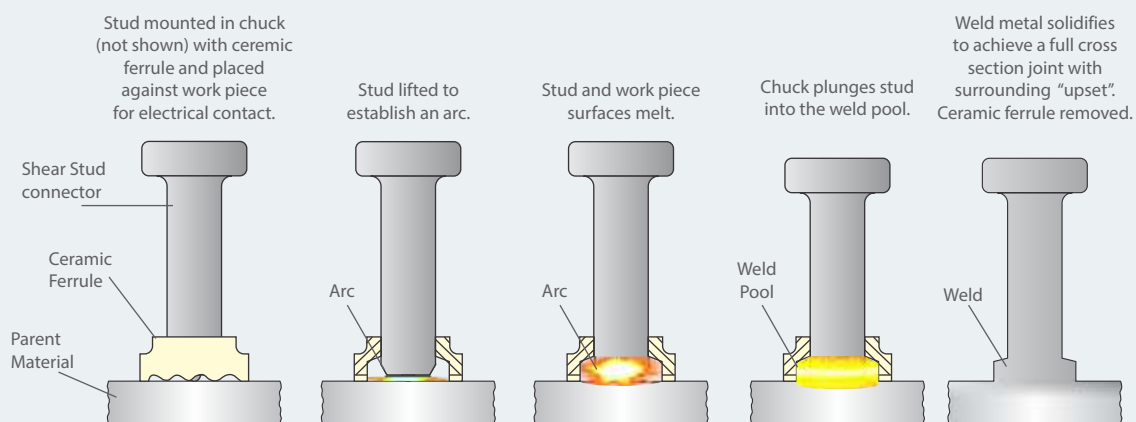
The drawn-arc process, done with a specialist gun, is used for stud welding. Studs are loaded into the gun and on making electrical contact with the work, the tipped end arcs and melts. The duration of the arc is timed to establish a molten state between the end of the stud and the parent material, and then the stud is plunged into the weld pool.

A ceramic ferrule surrounds the stud to protect and support the weld pool, stabilize the arc and mould a weld collar. It is chipped off when the weld solidifies.

Unbrako Arc Welding Stud produces a full cross-sectional weld, forming a bond that is stronger than the surrounding metal. It improves the strength of the structure while efficiently & economically combining the floor plate with the steel beam.



Installation Procedure



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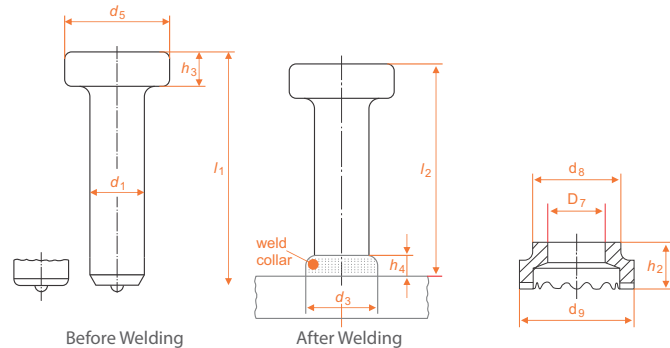
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Headed Shear Studs are welded to the steel beam. Primarily designed to transmit the horizontal shear force between the concrete and beam connection. Commonly used in the design and construction of composite beams.

Mechanical Properties

As per ISO 13918 & ISO/TR 15608

	SD1	SD2
Min. Tensile Strength	450 N/mm ²	400-550 N/mm ²
Min. Yield Strength	350 N/mm ²	235 N/mm ²
Min. Elongation	15%	20%

Tests are conducted in accordance with the test conditions of ISO 898 - Part 1

Note:

**Tolerance on l_2 is $+1$ -2 mm.

- Excess diameter or production impressions in the shaft area below the head are permitted up to 0.5 mm, provided they do not affect proper plunge.

- For special conditions, e.g. through-deck stud welding, the dimensions and the tolerances are not applicable.

- *May be reduced to 29 mm for shear application.
- Use of the optional dimension depends on national regulations.

Welding Studs / Shear Studs also available under standard AWS D1.1 / D1.1M

Head Marking



Dimensions of Welding Stud

d_1	d_5	d_3	h_3	h_4	l_1
10	19	13	7	2.5	l2+ 3
13	25	17	8	3	l2+ 3
16	32*	21	8	4.5	l2+ 4
19	32	23	10	6	l2+ 4.5
22	35	29	10	6	l2+ 5
25	40	31	12	7	l2+ 5.5
25.4	41	31	12	7	l2+5.5

Dimensions of Ceramic Ferrule

Form	D_7	d_8	d_9	h_2
UF 6	6,2	9,5	11,5	8,7
UF 8	8,2	11	15	8,7
UF 10	10,2	15	17,8	10
UF 12	12,2	16,5	20	10,7
UF 13	13,1	20	22,2/26*	11
UF 16	16,3	26	30	13
UF 19	19,4	26	30,8	16,7
UF 22	22,8	30,7	38,5	18,5
UF 25	26,0	35,5	41	21

Ceramic ferrule for unthreaded stud and shear connector

Standard Sizes (SD1)

Arc Welding Stud With Ceramic Ferrule

Size mm ($d_1 \times l_2$)	Part No	Pcs/ Carton	Weight per 1000 pcs	
			kg	lbs
M16X100	796141	3600	192.0	422.4
M16X110	796142	2880	207.0	455.4
M16X150	796143	2160	270.0	594.0
M19X105	796061	2160	271.0	596.2
M19X110	796144	2160	281.0	618.2
M19X120	796145	2160	303.0	666.6
M19X130	796146	2160	329.0	723.8
M22X110	796147	1728	373.0	820.6
M22X120	796148	1440	402.0	884.4
M22X150	796149	1440	490.0	1078.0
M25X180	796150	1152	860.0	1,892.0
M25X250	796151	720	1,040.0	2,288.0

Other sizes are available as per customer drawing or project needs.

