L.J. TECHNOLOGIES

- Drawn Arc Weld Studs
- Capacitor Discharge Weld Studs
- Short Cycle Studs
- Headed Shear Connectors
- Stud Welding Services

What is stud welding

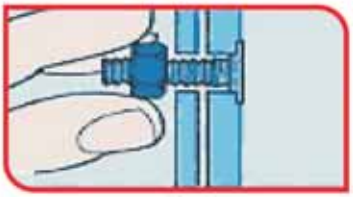
Stud welding is a fast, reliable and accurate method of welding a metal fasterner to another metal object. The resultant weld joint is stronger than the stud or parent material. Improved product design is achieved since reverse marking is eliminated and the area around the stud is flat and clean. In order to weld the stud, access is only required from one side which means that component handling is reduced. Welds are also leakproof and tamper proof, and since no holes are punched in the sheet, corrosion problems are reduced and the work piece is not weakened.

Stud welding can also be used on single sides pre-coated polished or painted materials. The fastener can be made from many metals or alloys.

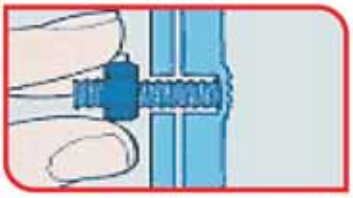
Stud welding benefits : Fast attachment, No reverse marking. The welded joint is stronger than the parent material or the stud. Access is only required from one side, No holes hence no leaking or weakening of the sheet. Tamper proof, Pre-coated or painted materials can be welded. The equipment is portable and easily jigged. In fact Stud welding overcomes all of the disadvantages of the following problems.

Problems with alternative fixing and fastening methods

Drilling and Tapping : These processes are very slow. Thicker parent material and longer studs are required.

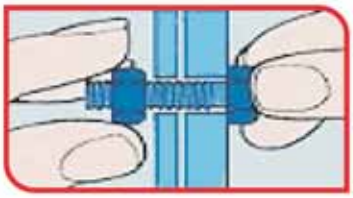


Inserts : They can eventually work loose. They can crack paint and leave unsightly stains. Holes need to be deburred in parent material. The reverse side is not always clean and flat. The parent material is weakened by holes.



Back Welding : The process is slow. Holes heed to be punched and deburred in parent material. The excess weld needs grinding off for a clean flat finish. The parent material is weakened by holes.

Through Bolting : Requires two handed assembly and access from both sides. Holes need to be punches and deburred in parent material. Bolt heads are unsightly and stains can come from the bolt holes. The assembly is not leakproof and the parent material is weakened by the presence of holes.



STUD WELDING PROCESSES

THE CAPACITOR DISCHARGE "CD" Process

The Capacitor are charged to a pre-set voltage to suit the diameter to be welded. The stud pip is placed into contact with the sheet.

Upon triggering, the stored energy is discharged as a high current pulse, melting the pip and

Return spring pressure forges the stud into the molten surface area on the sheet to give complete fusion across the flange.

Designed specifically for thin gauge materials where reverse marking must be minimal. Sheet surface should be clean and flat. Stud has a weld pip.

Stud/Material/Power

Stud Diameter 1mm - M10

Material Thickness

0.7mm & above

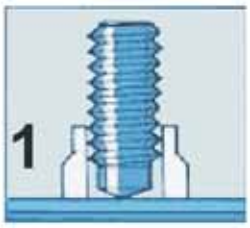
Power Requirements

Single Phase 240/110 Volt

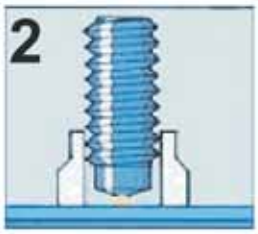
Advantages

Low cost equipment, low cost studs, fast to load and weld, easy to jig and automate, small light equipment, no ferrules or shrouding gas required, good weld results with aluminium or brass in addition to mild and stainless steel. Weld is clean and requires no finishing.

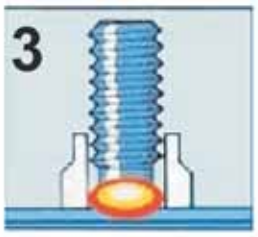
THE DRAWN ARC "DA" PROCESS



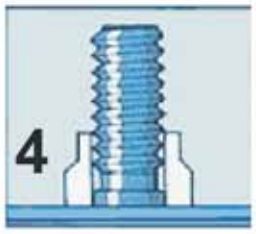
Current and weld time is pre-set to suit the diameter to the welded. The stud is then placed on the



Upon triggering pilot arc occurs as the stud lifts to a pre-set height



The main arc a then melts the weld end of the stud and creates a molten pool in the plate.



Return sprint pressure forges the stud into the molten pool. The ferrule contains the molten metal and shapes the fillet

Very strong penetrative welds are achieved with this process. Ferrules required to contain and shape molten metal. Weld end of stud is fluxex.

Stud/Material/Power

Stud Diameter 3mm to 30 mm

Material Thickness

2.0mm & above

Power Requirements

Three Phase 415 Volt

Advantages

Burns through parent material laminations, tolerates surface curvature and imperfections e.g. Light rust, scale, grease and some coatings. Gives neat and controlled weld fillet. The only method of stud welding large diameters. This process also lends itself to multi-gun applications.

The SHORT CYCLE "SC" PROCESS

This process is the same for Drawn Arc but operates over a much shorter time period - up to 100 milliseconds. Ceramic arc shields (ferrules) are not required with this process. But shrouding with gas can improve weld fillet formation especially when welding stainless steel studs. Capicitor Discharge studs may be used.

More penetrative welds than CD and is suitable for hot rolled / coated materials.

Stud/Material/Power

Stud Diameter M3 to M8

Material Thickness

1.5mm & above

Power Requirements

Three Phase 415 Volt

Advantages

This process is more tolerant than CD of uneven or dirty surface can be easily automated and can utilize low cost CD studs. Ferrules are not required. However shrouding gas improves weld spatter.

What we offer ?

Drawn ARC Studs

- Threaded and un-threaded studs, Collar studs, Headed Shear Connectors, bended, tapped studs, refractory anchors.
- Diameter : 3 up till 30 mm diameter
- Material : Low Carbon Steel, Grade 8.8 Steel, Stainless Steel 304, 304 L, 316L, 316 Ti, 310, Aluminium, Inconel

Capacitors Discharge (CD) Studs

- Threaded, un-threaded studs, tapped studs, flanged & Deflanged and earth tags
- Diameter : 3 to 10 mm in Mild Steel 4.8, Steel 6.8 and Stainless Steel 304, 316 L
- Diameter : 3 to 8 mm in Aluminium and Brass

Short Cycle (SC) Studs

- Threaded, un-threaded studs, tapped studs, flanged & Deflanged and earth tags
- Diameter : 3 to 10 mm
- Materials : Mild Steel 4.8, Steel class 6.8 & 8.8, Stainless Steel 304 & 316 L, Aluminium.

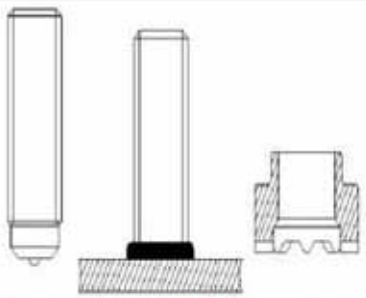
Refactory Anchors

Studs Welding Services

Need the stud welding services of stud welding contractors for weld stud installations? L.J. Technologies was founded on that need. Our people have the knowledge and expertise gained through years of experience in the stud welding industry. If this is a service that you've been looking for, we'd love to give you a quote!

ARC Weld Studs

PD

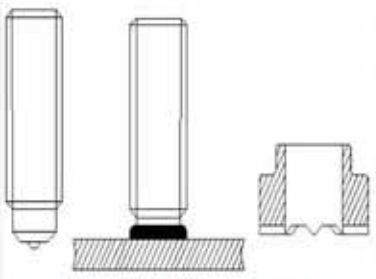


Ø	Length
M 5	L = 15 - 100 mm
M 6	L = 15 - 100 mm
M 8	L = 15 - 100 mm
M 10	L = 15 - 100 mm
M 12	L = 15 - 100 mm
M 14	L = 15 - 100 mm
M 16	L = 15 - 100 mm
M 18	L = 15 - 100 mm
M 20	L = 15 - 100 mm
M 22	L = 15 - 100 mm
M 24	L = 15 - 100 mm

Material
- Mild steel
- Stainless steel

Pitch Diameter - Fully Threaded

RB



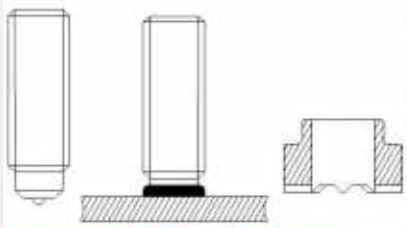
Ø	Length
M 5	L = 15 - 100 mm
M 6	L = 15 - 100 mm
M 8	L = 15 - 100 mm
M 10	L = 15 - 100 mm
M 12	L = 15 - 100 mm
M 14	L = 15 - 100 mm
M 16	L = 15 - 100 mm
M 18	L = 15 - 100 mm
M 20	L = 15 - 100 mm

Material
- Mild steel
- Stainless steel

Reduced Base - Fully Threaded

ARC Weld Studs

RB

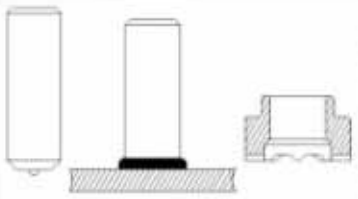


Ø	Length
M 5	L = 15 - 100 mm
M 6	L = 15 - 100 mm
M 8	L = 15 - 100 mm
M 10	L = 15 - 100 mm
M 12	L = 15 - 100 mm
M 14	L = 15 - 100 mm
M 16	L = 15 - 100 mm
M 18	L = 15 - 100 mm
M 20	L = 15 - 100 mm

Material
- Mild steel
- Stainless steel

Reduced Base - Fully Threaded

SWP



Ø	Length
Ø 5	L = 15 - 100 mm
Ø 6	L = 15 - 100 mm
Ø 8	L = 15 - 100 mm
Ø 10	L = 15 - 100 mm
Ø 12	L = 20 - 100 mm
Ø 14	L = 20 - 100 mm
Ø 16	L = 20 - 100 mm
Ø 18	L = 20 - 100 mm
Ø 20	L = 25 - 100 mm
Ø 22	L = 25 - 100 mm
Ø 24	L = 25 - 100 mm

Material
- Mild steel
- Stainless steel

Straight Welding Pins - No Thread

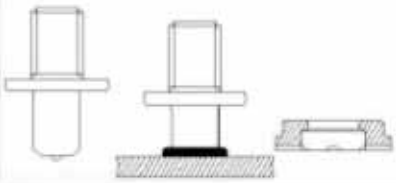
FBI

Ø	Length	Internal thread
Ø 8	L = 15 - 100 mm	M 4, M 5
Ø 10	L = 15 - 100 mm	M 6
Ø 12	L = 20 - 100 mm	M 8
Ø 14,6	L = 20 - 100 mm	M 8
Ø 16	L = 20 - 100 mm	M 10
Ø 17,3	L = 20 - 100 mm	M 12
Ø 19	L = 25 - 100 mm	M 14

Material
- Mild steel
- Stainless steel
- Aluminium

Full Base - Internal thread

CL



Ø	Length
M 5	L = 25 - 90 mm
M 6	L = 25 - 90 mm
M 8	L = 25 - 90 mm
M 10	L = 55 - 90 mm
M 12	L = 25 - 90 mm

Material
- Mild steel
- Stainless steel

Collar Stud - Threaded

Zinc plating is available according to standard. Other plating materials available on request. Plating is removed from the weld base to prevent contamination on all studs.

Annealing. Our arc welding studs can be annealed to a maximum of 75 Rockwell B for low carbon steel; 90 Rockwell B for stainless steel.

Flux. Except for some studs less than 8mm diameter, all studs are solid fluxed at the center of the weld base.

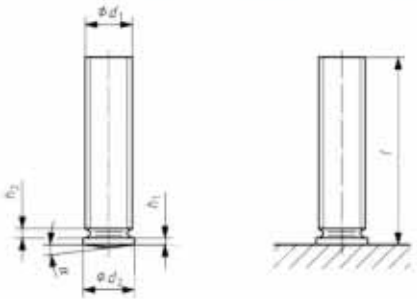
Ferrules. All orders include ferrules when required. Ferrules are supplied with the studs and are not sold individually.

Short Cycle Studs, SC Studs

Threaded Short Cycle studs

AFT

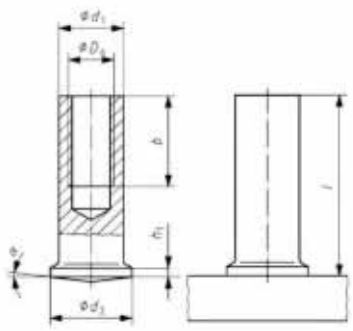
Material : - Coppered steel
- Stainless steel



d_1	l	d_2	h_1	h_2 max
M3	6 - 50 mm	4,0 mm	0,7-1,4 mm	1,5 mm
M4	6 - 50 mm	5,0 mm	0,7-1,4 mm	1,5 mm
M5	6 - 70 mm	6,0 mm	0,7-1,4 mm	2 mm
M6	6 - 80 mm	7,0 mm	0,7-1,4 mm	2 mm
M8	10 - 80 mm	9,0 mm	0,8-1,4 mm	2 mm
M10	12 - 80 mm	11,0 mm	0,9-1,4 mm	2 mm

AFI

Material : - Coppered steel
- Stainless steel

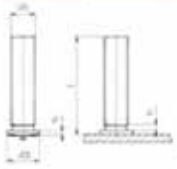


d_6	l	d_2	b	h_1	d_1
M3	6 - 30 mm	6,0 mm	6 mm	0,7-1,4 mm	5 mm
M4	8 - 35 mm	7,0 mm	6 mm	0,7-1,4 mm	6 mm
M5	10 - 40 mm	9,0 mm	7,5 mm	0,8-1,4 mm	7,1 mm
M6	10 - 30 mm	9,0 mm	9 mm	0,8-1,4 mm	8,0 mm

OUR PRODUCTS

CD Capacitors discharge Weld Studs

CFT — Threaded Capacitors Discharge studs

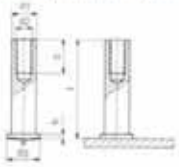


d_1	l	d_3	h	$e_{max.}$
M3	6 - 30 mm	4,5 mm	0,7 - 1,4 mm	1,5 mm
M4	6 - 50 mm	5,5 mm	0,7 - 1,4 mm	1,5 mm
M5	6 - 70 mm	6,5 mm	0,8 - 1,4 mm	2 mm
M6	6 - 100 mm	7,5 mm	0,8 - 1,4 mm	2 mm
M8	10 - 100 mm	9,5 mm	0,8 - 1,4 mm	2 mm
M10	12 - 60 mm	11,5 mm	1,0 - 1,6 mm	2 mm

CFS — Fir Tree thread Capacitors Discharge studs

d_1	l_1	d_2	n	h
Ø 5	9 - 35 mm	6,5 mm	2,5 mm max.	0,8 - 1 mm

CFI — Internally Threaded Capacitors Discharge studs

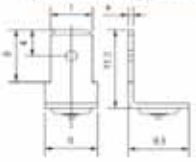


d_2	l	d_1	b	h	d_3
M 3	6 - 30 mm	5 mm	5 mm	0,8 - 1,4 mm	6,5 mm
M 4	8 - 35 mm	6 mm	6 mm	0,8 - 1,4 mm	7,5 mm
M 5	10 - 40 mm	7,1 mm	7,5 mm	0,8 - 1,4 mm	8,5 mm
M 6	10 - 30 mm	8,0 mm	9 mm	0,8 - 1,4 mm	9,0 mm
M 8	15 - 40 mm	10,0 mm	10 mm	1,0 - 2,5 mm	11,25 mm

CFU — Un-threaded (no thread) Capacitors Discharge studs

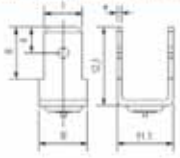
d_1	l	d_3	h
Ø 3	6 - 35 mm	4,5 mm	0,7 - 1,4 mm
Ø 4	6 - 40 mm	5,5 mm	0,7 - 1,4 mm
Ø 5	6 - 70 mm	6,5 mm	0,8 - 1,4 mm
Ø 6	8 - 80 mm	7,5 mm	0,8 - 1,4 mm
Ø 7,1	10 - 80 mm	9,0 mm	0,8 - 1,4 mm
Ø 8	10 - 80 mm	9,0 mm	0,8 - 1,4 mm

CDL — Capacitors Discharge Earth tag



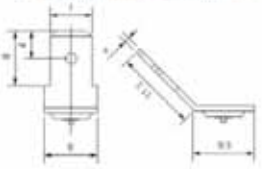
l	e
6,2 mm	2,8 mm

CDLD — Capacitors Discharge Double Earth tag



l	e
6,2 mm	2,8 mm

CDL-45 — Capacitors Discharge Earth tag (45°)

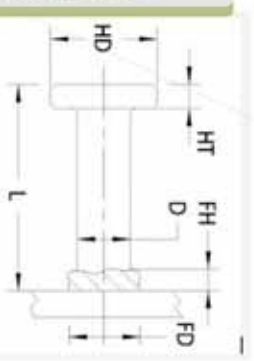


l	e
6,2 mm	2,8 mm

CFN — Capacitors Discharge Insulation Pins

d_2	l
Ø 2,1	15 - 100 mm
Ø 2,6	15 - 70 mm
Ø 3	15 - 100 mm
Ø 4	15 - 100 mm
Ø 5	15 - 100 mm

Headed Shear Connectors



Headed Concrete Anchors are available for welding to flat surfaces, inside angles, and outside angles. Each of these applications requires the proper style stud and ferrule, so please specify your application when ordering.

Ø D	Ø HD	Standard Length L (in mm)															
Ø 6,4	Ø 13	25				60	75		100								
Ø 9,5	Ø 19	25	30	35	50	60	75		100	125		150	175	200			...
Ø 13	Ø 25	25	30	35	50	60	75	90	100	125	130	150		200			...
Ø 16	Ø 32		30	35	50	60	75	90	100	125		150		200		250	...
Ø 19	Ø 32				50	60	75	90	100	125	140	150	175	200	225	250	...
Ø 22	Ø 35						75	90	100	125		150	175	200	225	250	...
Ø 25	Ø 41						75		100	125		150	175	200	225		...

Material : Mild Steel

Mechanical Properties

Tensile	:	60,000 psi (min.)
Yield	:	50,000 psi (min.)
Elongation	:	20% (min.)
Area	:	50% (min.)

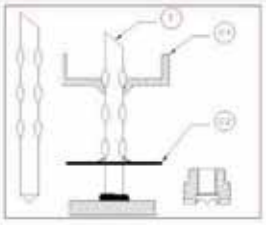
Values for various grades available upon request.

HEADED CONCRETE ANCHORS are available for welding to flat surfaces, inside angles, outside angles. Each of these applications requires the proper style stud and ferrule, so please specify your application when ordering studs.

OUR PRODUCTS

Refractory Anchors

INSULTWIST

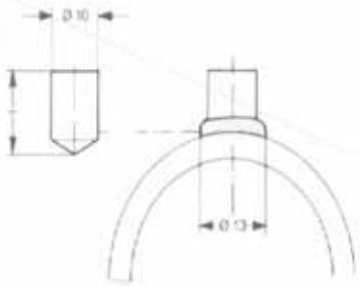


Ø	Length
Ø 5	L = 50 - 550 mm
Ø 6	On request
Ø 8	On request

Material
- Mild steel
- AISI 304
- AISI 310
- INCONEL 601

Round slotted pins with washers

BS



Ø	Length
Ø 10	L = 12 - 40 mm

Material
- Mild steel
- AISI 304
- AISI 310
- AISI 316
- AISI 321
- Sicromal 10

Boiler Stud

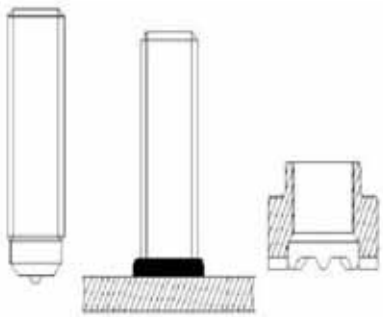
YSP

Ø	Length
Ø 5	L = 40 - 350 mm
Ø 6	L = 40 - 350 mm
Ø 8	L = 40 - 350 mm

Material
- Mild steel
- AISI 304
- AISI 310
- AISI 316
- AISI 321

"Y" Refractory Anchor

PD

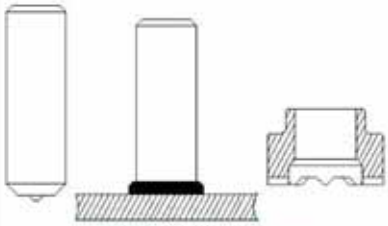


Ø	Length
M 5	L = 15 - 100 mm
M 6	L = 15 - 100 mm
M 8	L = 20 - 100 mm
M 10	L = 20 - 100 mm

Material
- Mild steel
- AISI 304
- AISI 310
- AISI 316
- AISI 321

Pitch Diameter - Fully Threaded

SWP

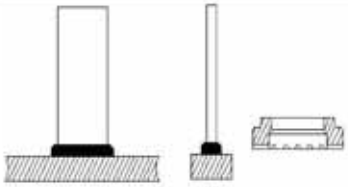


Ø	Length
Ø 5	L = 15 - 100 mm
Ø 6	L = 15 - 100 mm
Ø 8	L = 15 - 100 mm
Ø 10	L = 15 - 100 mm
Ø 12	L = 20 - 100 mm

Material
- Mild steel
- AISI 304
- AISI 310
- AISI 316
- AISI 321
- SICROMAL

Straight Welding Pins - No Thread

RP

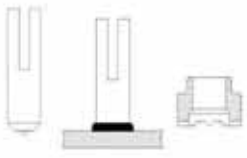


B x W	Length
10 x 3	L = 20 - 200 mm
16 x 3	L = 20 - 200 mm
16 x 5	L = 20 - 200 mm
20 x 4	L = 20 - 200 mm
20 x 5	L = 20 - 200 mm

Material
- Mild steel
- AISI 304
- AISI 310
- AISI 316
- AISI 321

Rectangular Pin

FBS

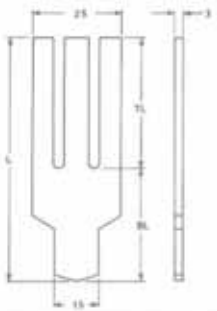


Ø	Length
Ø 5	L = 20 - 100 mm
Ø 6	L = 20 - 100 mm
Ø 8	L = 20 - 250 mm
Ø 10	L = 20 - 250 mm
Ø 12	L = 20 - 250 mm

Material
- Mild steel
- AISI 304
- AISI 310
- AISI 316
- AISI 321

Full Base round welding pins Split

RPS



B x W	Length
10 x 3	L = 20 - 200 mm
16 x 3	L = 20 - 200 mm
16 x 5	L = 20 - 200 mm
20 x 4	L = 20 - 200 mm
20 x 5	L = 20 - 200 mm

Material
- Mild steel
- AISI 304
- AISI 310
- AISI 316
- AISI 321

Rectangular Pin Split 3 tines

BALL STUD

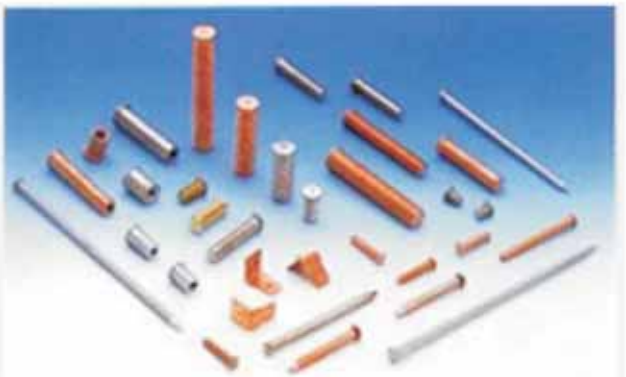
Ø D
Ø 9,5 (= 3/8)
Ø 12,7 (= 1/2)

Material
- Mild steel
- AISI 430
- SICROMAL
- AISI 316

Spherical shaped fasteners (require no arc shields)

REFRACTORY ANCHORS

For drawn arc stud welding



For capacitor discharge stud welding

NOTES :

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