

LES ATTACHES D.F. Inc.

STUD WELDING

**CAPACITOR DISCHARGE (CD) WELD STUDS
& STUD WELDING EQUIPMENT**

Phone Mtl.: (514) 355-8066 / Toll Free: 1-888-355-8066
Fax.: (514) 355-8023 / E-mail: info@studwelding.ca

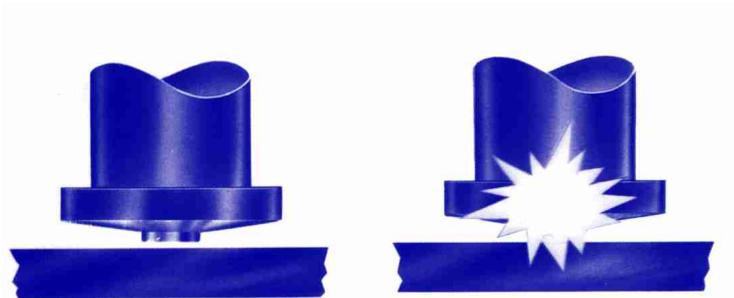
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THE WELDING PROCESS

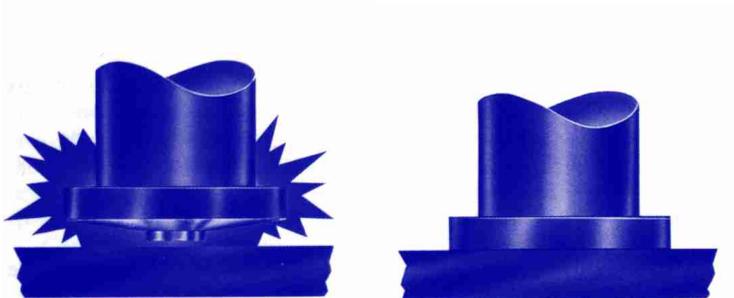
THE CAPACITOR DISCHARGE (CD) STUDWELDING PROCESS

CD Studwelding is generally used to weld smaller diameter studs to thin base metals, especially where reverse side marking is not permissible. Since the entire weld cycle is completed in milliseconds, welds can be made to thin material without pronounced distortion, burn-through or reverse side discoloration. As long as one end of stud is designed for CD welding, CD studs can be manufactured in almost any shape.



1. Stud against work

2. Stored energy discharged through special weld "Timing" tip and stud starts downward.



3. Stud forced into molten metal.

4. Metal solidifies and weld is completed in milliseconds.

For more information consult your nearby ATTACHES D.F. field sales representative.

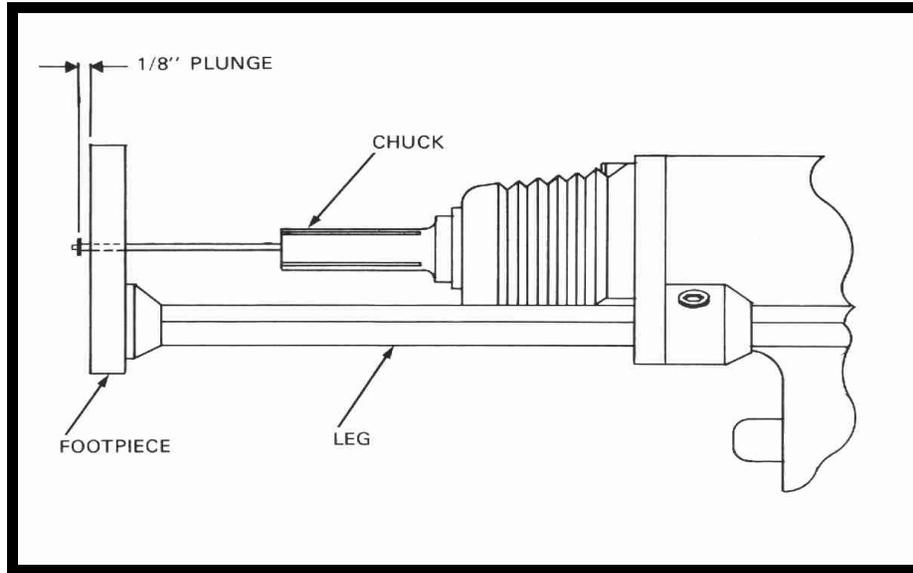
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CD STUD FIXTURING



GUN SET-UP

To prepare for stud welding, it is necessary to have the proper accessories for the size and type of stud to be welded. Those required are the legs, footpiece, spring, collet and pin stop.

For CD welding, the stud normally should be engaged for all but 1/4" of this length, whenever possible. Selecting the proper pin stop will accomplish this for you. The objective of the collet is to maintain a firm grip on the fastener to assure correct alignment and a good electrical connection, yet allow for ease of loading.

Correct set-up on all CD units is 1/8" - 5/16" plunge. This must be assured for proper weld results in all cases.

The gun is now ready to weld. Select the proper settings for size stud to be welded. Voltage is determined by the weld base diameter.

***For more information, consult your
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CD STUDS (GENERAL INFORMATION)

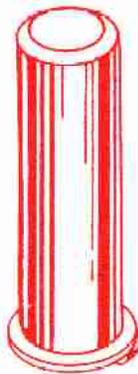
CD STUD WELD INSPECTION (VISUAL)

The CD stud weld can be visually inspected by observing the fillet at the base of the stud. The illustrations and comments below will assist you in visually judging the quality of the weld.



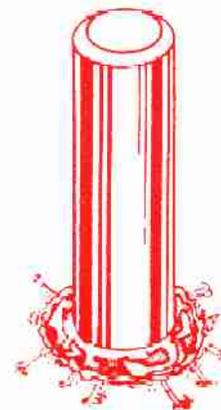
GOOD

Full, even fillet all around stud.



COLD

No or uneven fillet



HOT

Large crater-excessive metal expulsion very shiny appearance.

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CD STUDS (GENERAL INFORMATION)

CD STUD LOAD STRENGTHS

STUD MATERIAL	Stud Dia. Size	Suggested Max. Fastening Torque (inch/Lbs)*	Ultimate Tensile Load (LBS)	Ultimate Yield Load (LBS)
Low-Carbon, Copper-Flashed Steel	#6	6	500	375
	#8	12	765	575
	#10	14	960	720
	1/4	43	1750	1300
	5/16	72	2900	2200
	3/8	106	4300	3250
Stainless Steel: 304	#6	10	790	590
	#8	20	1260	940
	#10	23	1530	1150
	1/4	75	2880	2160
	5/16	126	3750	5350
	3/8	186	4850	7150
Aluminum Alloy: 5356	#6	3.5	375	235
	#8	7.5	585	365
	#10	10	735	460
	1/4	32.5	1360	850
	5/16	70	2300	1400
	3/8	81	3250	2100
Aluminum Alloy: 6061	#6	6.5	350	160
	#8	13	560	229
	#10	19	670	310
	1/4	40	1240	679
	5/16	70.5	2025	1210
	3/8	100	2985	1750
Brass: 70-30 (260) 65-35 (268)	#6	8	600	390
	#8	16	860	560
	#10	18.5	1040	680
	1/4	61	1950	1275
	5/16	102	3280	2140
	3/8	150	4800	3160

* These values should develop fastener tension to slightly less than yield point.

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CD STUDS (GENERAL INFORMATION)

CD STUD/BASE METAL COMBINATION WELDING CAPABILITIES

BASE WELD SURFACE MATERIAL	STUD MATERIAL			
	MILD STEEL	STAINLESS	ALUMINUM	BRASS
	1008, 1010	304, 305	5386, 6061	70-30, 65-35
MILD STEEL: 1006 THROUGH 1030	Excellent	Excellent	—	Excellent
MEDIUM CARBON STEEL: 1030 THROUGH 1050	Good*	Good*	—	Good*
GALVANIZED SHEET DUCT OR DECKING:	Excellent	Excellent	—	—
STUCTURAL STEEL	Excellent	Excellent	—	Excellent
STAINLESS STEEL 405, 410, 430, AND 300 SERIES EXCEPT 303	Excellent	Excellent	—	Excellent
LEAD FREE BRASS; ELECTROLYTIC COOPER; LEAD-FREE ROLLED COPPER	Excellent	Excellent	—	Excellent
MOST ALUMINUM ALLOYS OF TH 1100, 3000, 5000, AND 6000 SERIES**	—	—	Excellent	—
DIE-CAST ZINC ALLOYS	Good*	Good*	Excellent	Good*

* **GOOD:** Generally full strength results, depending upon the combination of stud size and base metal.

****OTHER MATERIALS,** such as 7000 Series aluminum, titanium alloys, inconel, etc. can be welded under specified conditions.

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CD STUDS (GENERAL INFORMATION)

HOW TO FIND THE OPTIMUM COMBINATION OF STUD SIZE
AND BASE METAL THICKNESS IN ORDER TO
PREVENT REVERSE-SIDE MARKING.



UNACCEPTABLE



ACCEPTABLE



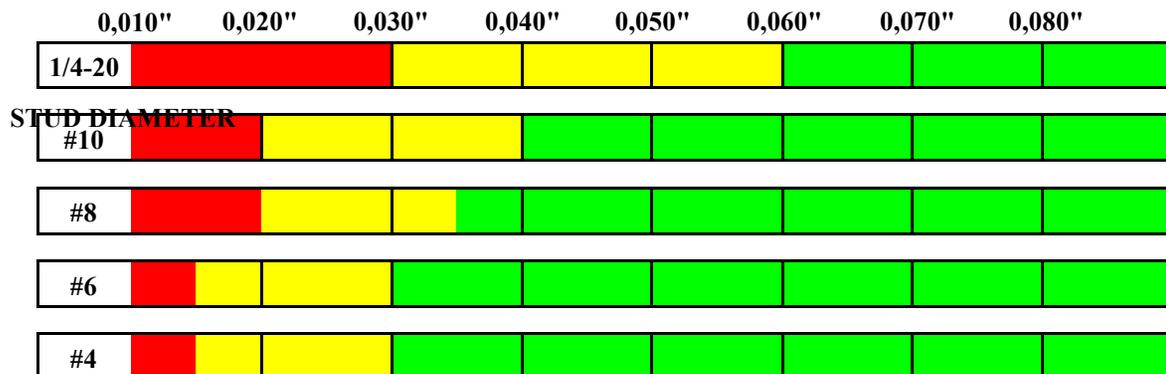
EXCELLENT

MILD STEEL

BASE METAL: Mild Steel

STUD: Mild Steel, Flanged or Mini Flanged

BASE METAL THICKNESS

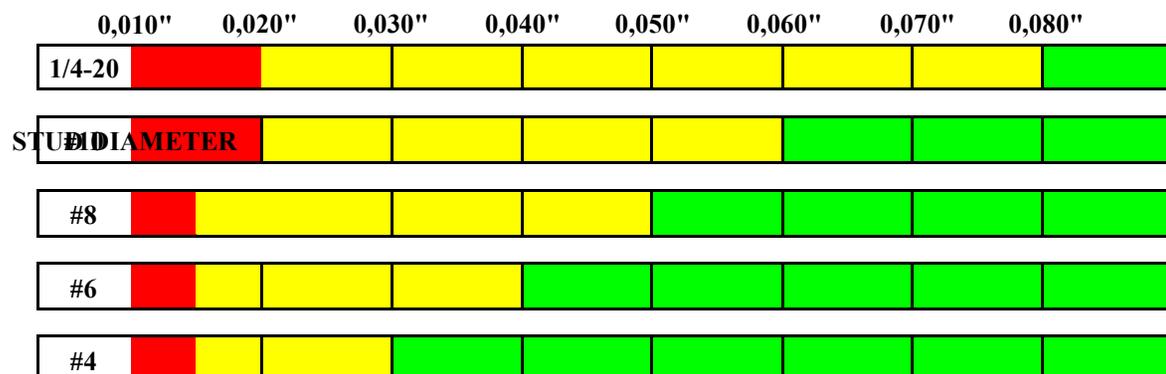


STAINLESS STEEL

BASE METAL: Stainless Steel

STUD: Stainless Steel, Flanged or Mini Flanged

BASE METAL THICKNESS



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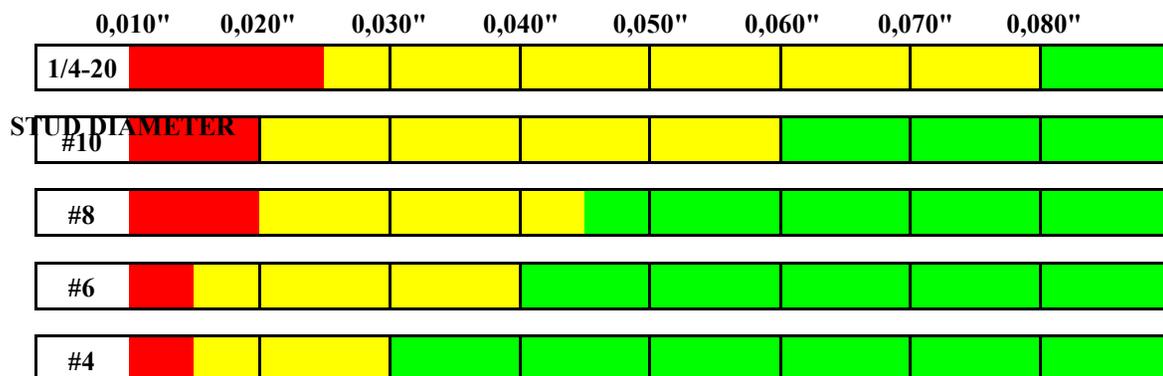
CD STUDS (GENERAL INFORMATION)

HOW TO FIND THE OPTIMUM COMBINATION OF STUD SIZE
AND BASE METAL THICKNESS IN ORDER TO
PREVENT REVERSE-SIDE MARKING.

ALUMINUM

BASE METAL: aluminum
STUD: aluminum, Flanged or small Flanged

BASE METAL THICKNESS



CD STUD REVERSE-SIDE MARKING LIMITATIONS

The charts on the following page will be of help in determining the best combination of stud weld base size and base metal thickness. The terms on the chart are defined as follows:

EXCELLENT - No marking, excellent weld.

ACCEPTABLE - Visible marking, excellent weld.

UNACCEPTABLE - Unacceptable marking, base metal failure.

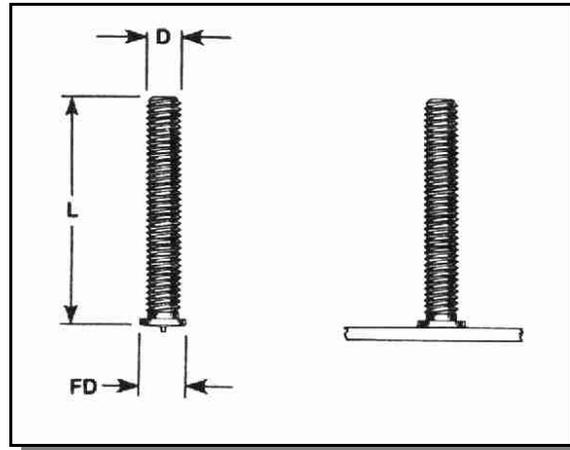
It should be noted that these charts are based on optimum laboratory conditions. Even under optimum conditions it is difficult to determine the precise point at which reverse-side marking will appear. Therefore, These charts should be used only as a guide.

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CAPACITOR DISCHARGE (CD) WELD STUDS

FLANGED

"D"	"FD"	"L" MIN.
4-40	0.174	0.250
6-32	0.200	0.250
8-32	0.218	0.250
10-24	0.250	0.250
10-32	0.250	0.250
1/4-20	0.312	0.375
5/16-18	0.375	0.500



MATERIAL:	LOW CARBON STEEL C=0.23% max. P=0.04% max. Mn=0.90% max. S=0.05% max.	STAINLESS STEEL AISI Grade - 304/305 Std. Other grades available upon request.	ALUMINUM Alloy - 5000 series Other alloys available upon request.
MECHANICAL PROPERTIES:	TENSILE: 60000 psi (min.) YIELD: 50 000 psi (min.) ELONGATION: 20 % (in 2 inches)	Values for various grades available upon request.	Values for various grades available upon request.
PLATING	Cooper plating is standard	Does not apply to Stainless Steel	Does not apply to Aluminum
ANNEALING	Studs are annealed where required	Studs are annealed where required	Does not apply to Aluminum

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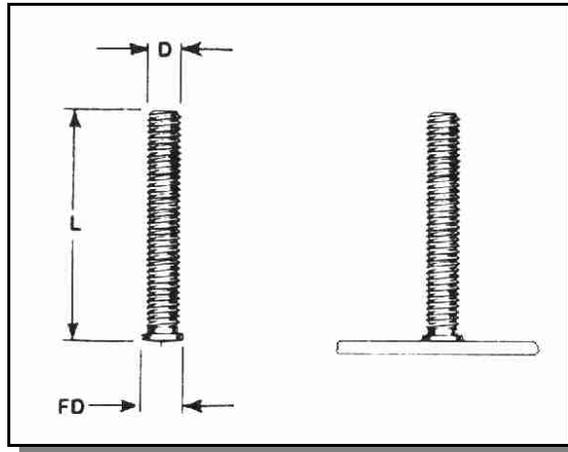
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CAPACITOR DISCHARGE (CD) WELD STUDS

MINI-FLANGED

"D"	"FD"	"L" MIN.
4-40	0.143	0.250
6-32	0.169	0.250
8-32	0.195	0.250
10-24	0.221	0.250
10-32	0.221	0.250
1/4-20	0.281	0.375
5/16-18	0.342	0.500



MATERIAL:	LOW CARBON STEEL C=0.23% max. P=0.04% max. Mn=0.90% max. S=0.05% max.	STAINLESS STEEL AISI Grade - 304/305 Std. Other grades available upon request.	ALUMINUM Alloy - 5000 series Other alloys available upon request.
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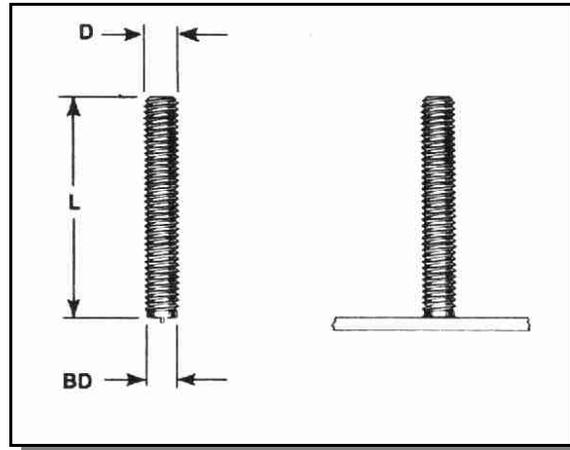
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CAPACITOR DISCHARGE (CD) WELD STUDS

NON FLANGED

"D"	"BD"	"L" MIN.
4-40	0.116	0.250
6-32	0.142	0.250
8-32	0.168	0.250
10-24	0.194	0.250
10-32	0.194	0.250
1/4-20	0.252	0.375
5/16-18	0.315	0.500



MATERIAL:	LOW CARBON STEEL C=0.23% max. P=0.04% max. Mn=0.90% max. S=0.05% max.	STAINLESS STEEL AISI Grade - 304/305 Std. Other grades available upon request.	ALUMINUM Alloy - 5000 series Other alloys available upon request.
MECHANICAL PROPERTIES:	TENSILE: 60000 psi (min.) YIELD: 50 000 psi (min.) ELONGATION: 20 % (in 2 inches)	Values for various grades available upon request.	Values for various grades available upon request.
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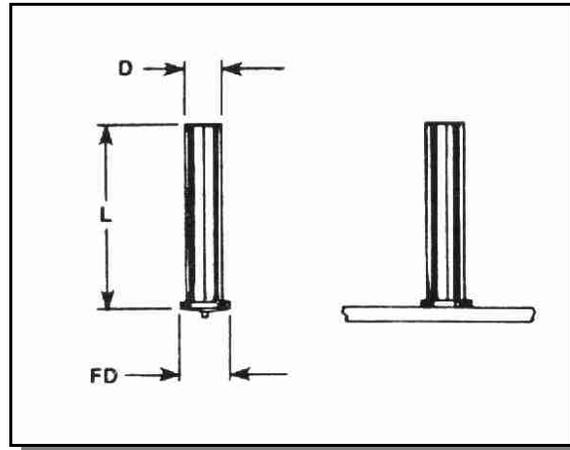
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CAPACITOR DISCHARGE (CD) WELD STUDS

FLANGED - NO THREAD

"D"	"FD"	"L" MIN.
0.156	0.250	0.250
0.161	0.250	0.250
0.187	0.250	0.250
0.215	0.312	0.250
0.250	0.312	0.375
0.273	0.375	0.375
0.313	0.375	0.500



MATERIAL:	LOW CARBON STEEL C=0.23% max. P=0.04% max. Mn=0.90% max. S=0.05% max.	STAINLESS STEEL AISI Grade - 304/305 Std. Other grades available upon request.	ALUMINUM Alloy - 5000 series Other alloys available upon request.
MECHANICAL PROPERTIES:	TENSILE: 60000 psi (min.) YIELD: 50 000 psi (min.) ELONGATION: 20 % (in 2 inches)	Values for various grades available upon request.	Values for various grades available upon request.
PLATING	Cooper plating is standard	Does not apply to Stainless Steel	Does not apply to Aluminum
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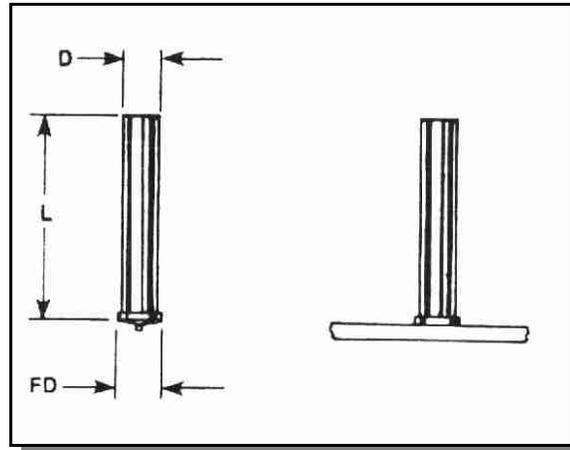
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CAPACITOR DISCHARGE (CD) WELD STUDS

MINI FLANGED - NO THREAD

"D"	"FD"	"L" MIN.
0.156	0.221	0.250
0.161	0.221	0.250
0.187	0.221	0.250
0.215	0.281	0.250
0.250	0.281	0.375
0.273	0.343	0.375
0.313	0.343	0.500



MATERIAL:	LOW CARBON STEEL C=0.23% max. P=0.04% max. Mn=0.90% max. S=0.05% max.	STAINLESS STEEL AISI Grade - 304/305 Std. Other grades available upon request.	ALUMINUM Alloy - 5000 series Other alloys available upon request.
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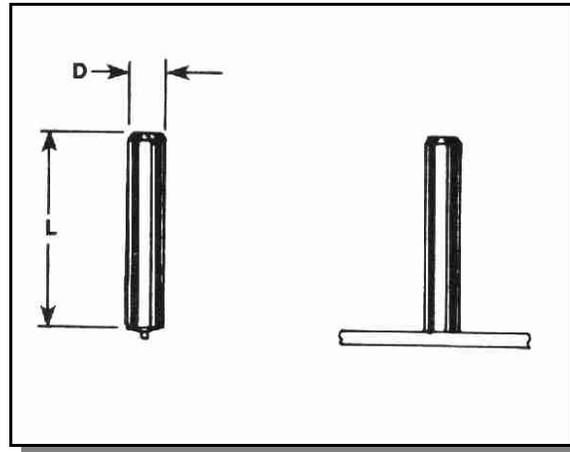
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CAPACITOR DISCHARGE (CD) WELD STUDS

NON FLANGED - NO THREAD

"D"	"L" MIN.
0.156	0.250
0.161	0.250
0.187	0.250
0.215	0.250
0.250	0.375
0.273	0.375
0.313	0.500



MATERIAL:	LOW CARBON STEEL C=0.23% max. P=0.04% max. Mn=0.90% max. S=0.05% max.	STAINLESS STEEL AISI Grade - 304/305 Std. Other grades available upon request.	ALUMINUM Alloy - 5000 series Other alloys available upon request.
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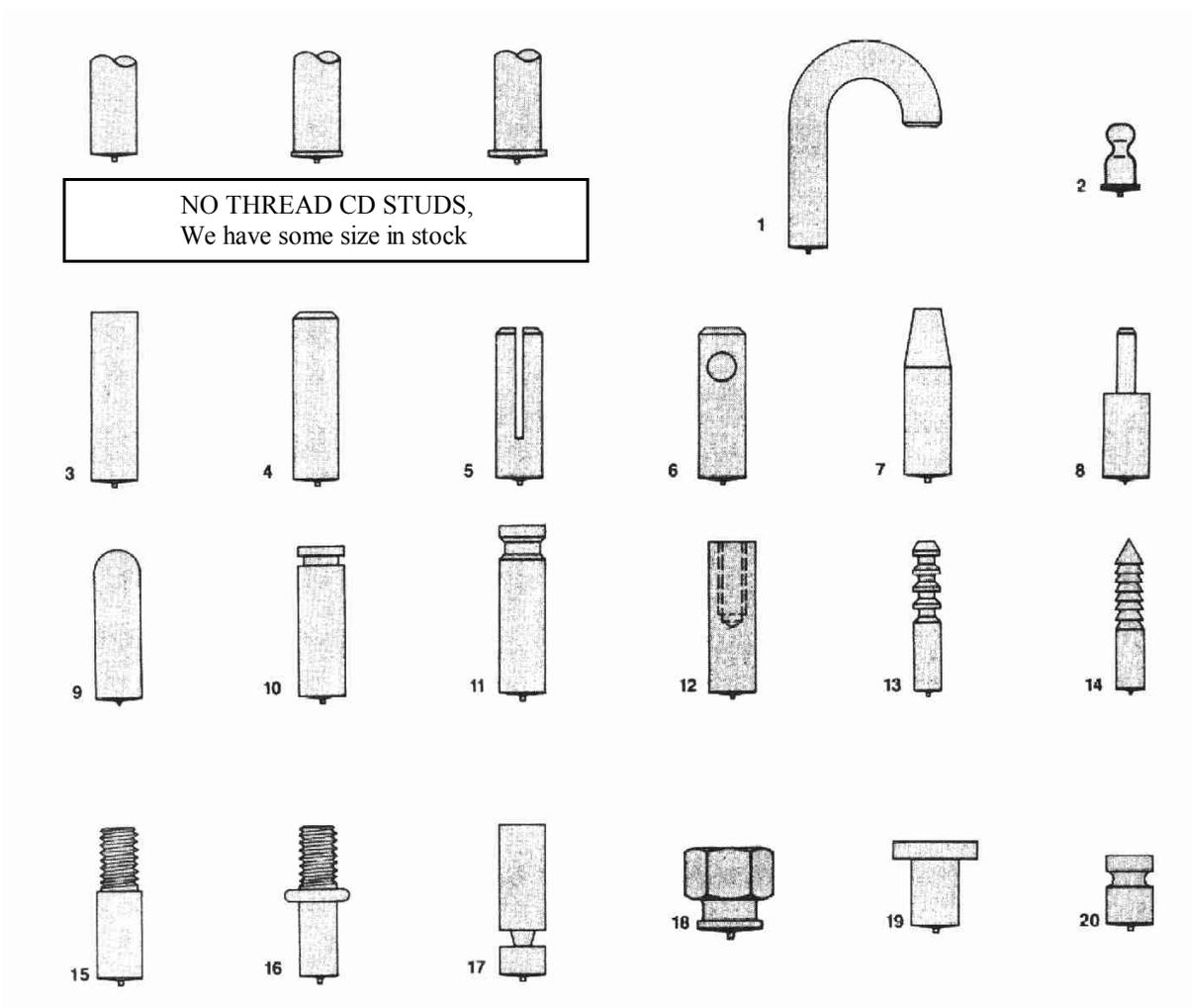
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CAPACITOR DISCHARGE (CD) WELD STUDS

SPECIAL CAPACITOR DISCHARGE WELD STUDS

From an .060 Diameter no-thread CD stud to a 7/16" hex CD stud, **ALLIANCE** can manufacture a special CD stud to meet your precision fastening requirements. The illustrations below indicate just a few of the possible configurations in which CD studs can be manufactured. These illustrations however do not represent any standard **ALLIANCE** in-stock product line. If you require a special configuration CD stud for your application, please submit a sketch or drawing with dimensions and material requirements to **ALLIANCE** for a quote.



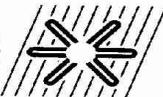
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CAPACITOR DISCHARGE STUD WELDER CD-212

PRO  WELD
INTERNATIONAL

SPECIFICATIONS

HEIGHT	8 1/2"
WIDTH	9"
DEPTH	11 3/4"
WEIGHT	26 Lbs
INPUT	
Voltage	110 VAC
Fusing	20 Amps
Phase	60 Hz
Capacitance	66000 Mfd
Range	45-200VDC

WELD RATE

14 ga - 1/4"
12 Studs/min



DESCRIPTION

The CD-212 is a state-of-the-art solid state capacitor discharge stud/pin welder. It's lightweight design increases portability but with the power to weld 1/4" diameter flanged studs.

The extremely short weld time of capacitor discharge process allows studs to be welded to material as thin as .015" without burn-through.

The unit is capable of welding mild steel, stainless and aluminium studs.

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LES ATTACHES D.F. INC.

CAPACITOR DISCHARGE STUD WELDER CD-312

PRO  WELD
INTERNATIONAL



SPECIFICATIONS

HEIGHT	8 1/2"	INPUT POWER		STUD RANGE
WIDTH	10"	Voltage	110 VAC	#2 - 5/16"
DEPTH	16 1/2"	Fusing	20 Amps	24 Studs/Min.
WEIGHT	48 Lbs	Phase	60 Hz	
		Capacitance	84000 Mfd	
		Range	45-185VDC	

DESCRIPTION

The CD-312 is a state-of-the-art solid state capacitor discharge stud/pin welder. It's rugged design and user friendly controls make it simple to set up and use.

The extremely short weld time of capacitor discharge process allows studs to be welded to material as thin as .015" without burn-through.

The unit is capable of welding mild steel, stainless and aluminium studs.

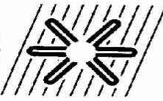
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LES ATTACHES D.F. INC.

CAPACITOR DISCHARGE STUD WELDER CD-512

PRO  WELD
INTERNATIONAL



SPECIFICATIONS

HEIGHT	8 1/2"	INPUT POWER	WELD RATE
WIDTH	13 1/2"	Voltage	#2 - 3/8"
DEPTH	20"	Fusing	24 Studs/Min.
WEIGHT	64 Lbs	Phase	
		Capacitance	
		Charge Range	

DESCRIPTION

The CD-512 is a state-of-the-art solid state capacitor discharge stud/pin welder. It's rugged design and user friendly controls make it simple to set up and use.

The extremely short weld time of capacitor discharge process allows studs to be welded to material as thin as .015" without burn-through.

The unit is capable of welding mild steel, stainless and aluminium studs.

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