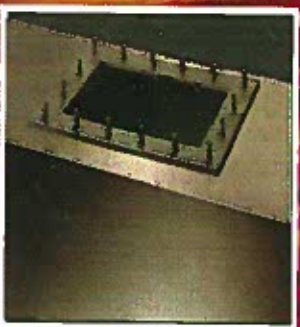
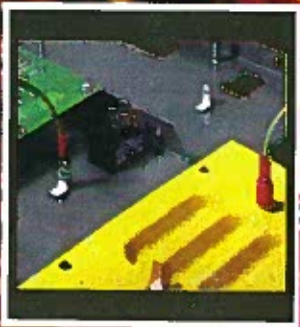
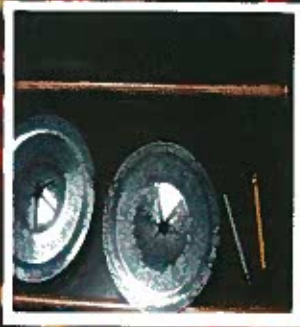


Stud welding

The future of fixing & fastening



KELVIN

INTRODUCTION

KELVIN

The complete range of **KELVIN** stud welding units are compact and cost effective equipments. The units are specifically designed to enable a small diameter range of ferrous and non-ferrous weld studs to be welded to light gauge, self-finish or pre-coated materials, in most cases with little or no reverse making.

THE PROCESS

Capacitor Discharge stud welding is a form of welding in which the stored energy is discharged across the gap between the two surfaces to be welded as they are propelled towards each other.

TYPICAL APPLICATION

Studwelding is a fast, accurate and reliable process which ensures the joint is stronger than the parent material or stud. The workpiece is not weakened by any hole punching or drilling, so thinner gauges of materials can be used.

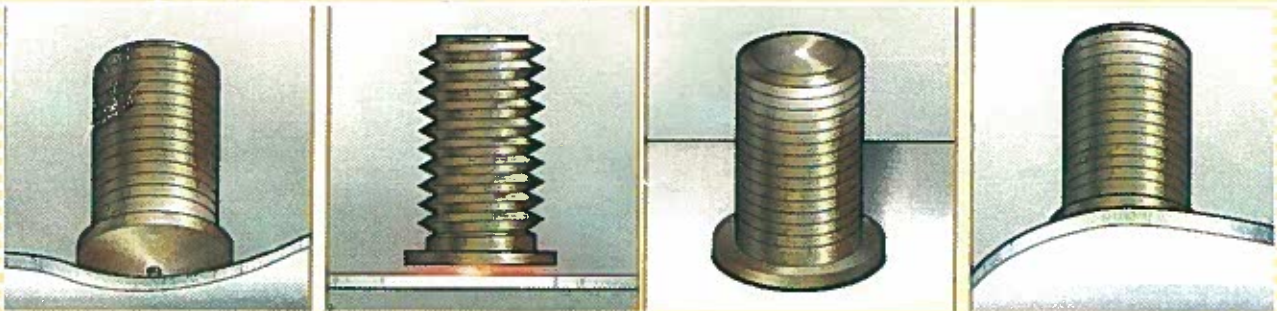
Studwelding provides an "invisible" fixing for fascia panels, counter tops, signs, circuit boards, rails, instruments and badges - for any surface where final appearance, security or hygiene is paramount.

The Studs maintains to the DEN13918 Standard, in the following.

Mild Steel, Grade ST37-E
Stainless Steel, Grade 1.4303
Aluminium Alloy, Grade AlMg3

And Sheet Materials of The following Types :

Mild Steel, Grade CR4
Stainless Steel, Type SS304
ZINC Coated Mild Steel, Grade Cr4
Aluminium Alloy, Grade He3, Half Hard



Technical Data

SPECIFICATION	KCD-66	KCD-88	KCD-88 H.D.
Power Supply	230 VA.C/8 Amps	230 VA.C/10A	230 VA.C/10A
Stud Range	M2-M6	M2-M8	M2-M6
Duty Cycle	6-10 Studs /min	6-10 Studs /min	6-12 Studs /min
Gun Type	Tip Contact	Tip Contact	Tip Contact
Weight	20 Kgs	25 Kgs	25 Kgs

*Specification Subject to Change without Notice

Contact :

KELVIN WELDERS AND SOLUTIONS

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CAPACITOR DISCHARGE TYPE PROJECTION WELDER



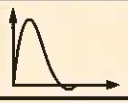
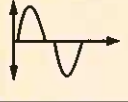


Introduction

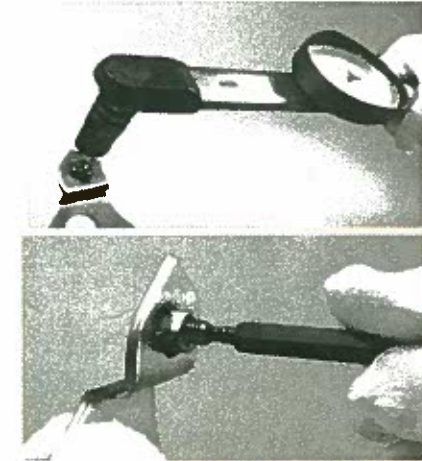
Kelvin Projection Welding Machines are designed to replace conventional method of joining metal parts, this is an innovative piece of welding equipment. our exclusive electronic control is ingeniously combined with a special electrolytic capacitor and a welding transformer so that the electric energy built up in the capacitor is released in a moment. The resulting heat is utilized to fuse the parts together. The machine is outstanding in performance, cutting labor requirements and cost drastically. It is a versatile tool for any business that aspires to keep growing and remain competitive.

Projection welding is the most common method for nut and M- or T-thread bolt welding. These nuts and bolts are provided with annular projections or three to four separate projections, depending on the application.

A modern car body contains some 300 welded and punched fasteners, such as bolts, nuts, and studs. The quality of the attachment of these fasteners to the stamped body components is critical for the final product's safety and reliability. Crucial components such as the front and rear axles are mounted to such fasteners, the seat belts and steering column are anchored to them, and they provide grounding for electrical wires.¹

Power Supply Technology Comparison

Power Supply	Typical Cycle Time	Typical Bond Type	Repetition Rate	Advantages	Limitation	Waveform
Capacitor Discharge (CD) provides a uni-polar fixed duration weld current pulse of short duration with a fast rise time.	1-16 msec	Solid State	≤ 2/sec.	Rugged and inexpensive. Suitable for highly conductive materials.	Open loop. Discharge "self-regulating."	
Direct Energy (AC) provides a uni-polar or bi-polar, adjustable duration weld current pulse with rise times dependent on the % weld current setting.	>8 msec	Fusion, Reflow, Braze	≤ 5/sec.	Rugged and inexpensive.	Poor control at short cycle times.	
High Frequency Inverter (HFDC) provides a uni-polar, adjustable duration weld current pulse with an adjustable moderate-to-fast, rise time.	1,000 msec	Fusion, Solid State, Reflow, Braze	≤ 10/sec.	Excellent control and repeatability. High current capacity; high duty cycle.	Higher cost.	
Transistor or Linear DC (DC) provides a uni-polar, adjustable duration weld current pulse with a fast voltage rise time, and square voltage wave.	0.010 - 9.99 MSEC	Solid State	≤ 1/sec.	Suitable for amorphous materials, thin foils, fine wires. Excellent control and repeatability.	Higher cost maintenance. Limited duty cycle. One piece construction.	



Optimizing Projection Welding

Capacitor discharge welding is an excellent substitute for ac welding. It can supply large weld current for short times. Its main disadvantage has been that the cost of storing the weld energy in a capacitor bank has made commercially available systems expensive. This is especially true for large capacitor discharge welding equipment capable of delivering 100,000 A or more.

Welding engineers are aware that the energy in joules dissipated in a weld is equal to I^2RT , where I = weld current (A), R = weld resistance (W), and T = weld time (s) When insufficient weld current is available to make a good weld in a short time, the welding engineer is forced to use the only degree of freedom remaining: increase the weld time Most Important Conclusions Low-impedance CD welding machine design has proven to be effective in reducing weld-metal expulsion by dynamically regulating weld current as the resistance of the weld changes. Another byproduct of the design is a significant reduction in the required amount of energy storage to make a weld, as well as a lighter and more compact design than previous machines of similar capacity. Parts in excess of 6.0 linear inches are currently being welded in significant quantities with 100% yield.

Parts welded with this technology are very robust. Weld thermal rise is so rapid and so localized that there is no temperature rise of the package or its contents. No special plating or preform is required to weld these parts. The overall process efficiency is so high that cooling of the machine has not been required. The reduction in transformer core mass was also very successful. Using a magnetic core weighing 80 lb, this machine can generate weld pulses in excess of 150,000 A. This is sufficient current to weld about 10 linear inches in a single discharge. Commercial welding machines require up to 10 times this core weight to perform the same task.

American Welding Society – Welding Journal
BY THOMAS E. SALZER

MODELS AND RATINGS

Model	Method	Input	Rated Input	Throat Depth	Output Current	Charg. Volt
		Phase/HZ	KVA	M.M	Jules	D.C
KSP - 6	SPOT / PROJECTION	3Ø 50/60HZ	6	150 (Std.) 100 - 450*	4100*	20-220*
KSP - 8			8		5500*	
KSP - 12			12		8300*	
KSP - 16			16		11000*	

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ATM #021 CHUNIA (CIBI/ATM/02)

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TO A/C: 000505617572

CUR GEN CNT AMT

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