

PRECISION MICRO-SPOT WELDING MACHINE

(NON-FERRUSS METAL/HIGH FREQUENCY)

MHFSP-

series

Introduction:

MHFSP series of load compatible high/medium frequency micro spot welder machines are available in more than 100 different models (50 -50,000 ampere/ 400 to 15,000Hz). Virtually offering all welding solutions to Non-ferrous metal(Ag,Au,Pt,Cu and other non-precision alloys)/composite welding. This welding machine is used for hermetic sealing in a number of industries, semiconductor packaging, hybrid circuits, crystals, surface acoustic wave devices, medical implants, burst discs, relays, connectors, batteries, electro-optical devices, microelectromechanical systems, sealed compressor feed-throughs, automotive airbag burst discs to man-rated (safety/life-critical) electronic components used in space missions, sheet metal,semiconductors, heavy electrical engineering, aerospace, other applications like semiconductor packaging, hybrid circuits, crystals, surface acoustic wave devices, medical implants,micro- relays, connectors, , electro-optical devices, microelectromechanical systems, sealed compressor feed-throughs, etc.

Operating Principle:

Micro spot welding are ultra low dynamically self adjusting ultra-low output impedance machine to ensure uniform/consistent heat profile across weld to make up with 3-50 time varying weld impedance which is the main requirement for hermitically sealing joint's which minimize /eliminates, weld-metal expulsion, **low thermo-mechanical stress, impact & low thermal loading low thermal loading (2-3 x 10⁶ K/sec)**./low packaging failure, thereby eliminating PIND failures. Further low output impedance improves energy efficiency by more than 25 percent/low reactive power apart from saving welding material. ultra low time constant ensure meeting fast varying weld current demandeliminate metal expulsion due to spreading of melt under intence weld current. In these micro spot welding machines, heat is generated by passing high current at moving high resistance weld point. Amount of heat generated is the function of weld current, weld resistance, contact pressure, welds area etc. Effectively a good weld joint is achieved when optimal melt of weld is fused at a specific rate under external applied pressure.

$$I_{melt} = KxR^{-1.8}(f,D,T)XV(P,D,F)A.t \quad f = \text{frequency, } D = \text{density } R = \text{weld resistance, } A = \text{weld area, } t = \text{weld time, } I_{melt} = \text{max.weld current}$$



MHFSP-1500350

MHFSP-2500350

MHFSP-0750300

SPECIFICATIONS OF HIGH FREQUENCY MICRO SPOT WELDING MACHINE

Duty cycle:50 Power range<500.0 K.Watts

Model	Power V.A.	Current Amp	Welding shot/sec	Electrode pressure (K.N.) / Stroke	Weld metal/LPM	Model	Power V.A.	Current Amps	Welding shot/sec	Electrode pressure(K.N.) / Stroke	Weld metal/LPM
MHFSP-0150060	01,50.0	000600.0	25	1.5/ 50	Cu, Gold, Silver/other high conductivity alloys.	MHFSP-0100600	010,00.0	006000	25	1.5/ 50	Cu, Gold, Silver/other high conductivity alloys.
MHFSP-0250010	02,50.0	001000.0	25	1.5/ 50	Cu, Gold, Silver/other high conductivity alloys.	MHFSP-0120800	012,00.0	008000	25	1.5/ 50	Cu, Gold, Silver/other high conductivity alloys.
MHFSP-0030020	03,00.0	002000.0	25	1.5/ 50	Cu, Gold, Silver/other high conductivity alloys.	MHFSP-0251500	025,00.0	015000	25	2.5/ 50	Cu, Gold, Silver/other high conductivity alloys.
MHFSP-0060040	006,00.0	004000.0	25	1.5/ 50	Cu, Gold, Silver/other high conductivity alloys.	MHFSP-0300180	030,00.0	018000	25	2.5/ 50	Cu, Gold, Silver/other high conductivity alloys.

Three numerals after MHFSP indicates voltage of power supply and last three digit indicates current.All dimensions are in inches/Efficiency of welding machine raises as current increases. Welding equipment above 200 amps is water cooled.

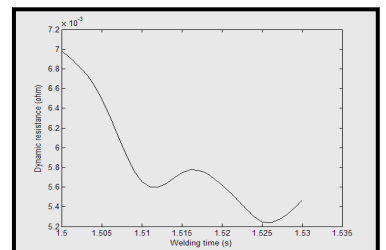
HIGH FREQUENCY MICRO SPOT WELDING MACHINE

CONTROLLER SPECIFICATION:

- Operating voltage 220 volts, 1- phase, 40-60 Hz
- Output current/voltage 0-10 kilo amps/500 mili volts (max)
- Voltage/current ripple 10 micro volts-noload/ 100 micro volt-full load
- Output impedance: 1/1000 of load/Operating frequency: 5.0-200 K.Hz (may be amended)
- Voltage/current control accuracy 99.9% of set point
- Resolution 0.1 volts/amps D.C.
- Repeatability 100 percent
- Response time 10-100 micro-seconds
- Interface Signal 0.0-12.0 volts D.C. [proportional to weld current]
- Current control range 0-100%
- Space mark ratio 1:3 to 1:9(option)
- Weld density: 1.0-1.2 mm/10,000 amps
- Control options 1.cascade feedback control with soft start
2. Constant voltage/current with external adjustment. /pulse mode
- Display Voltage/current/ampere-sec/joule 3½ red glow LED display
- Protection over voltage/short ckt.
- Additional: RS-232 /Synchronous operation



C.D. Spot welder controller



Weld joint resistance characteristic

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