

# The Model MCW-550 Constant Voltage Power Supply

- WELD parallel-gap, opposed or offset.
- BRAZE connector leads, relay blades.
- BOND thin film, thick film.
- REFLOW SOLDER flat pack (single or multiple lead), discrete components.

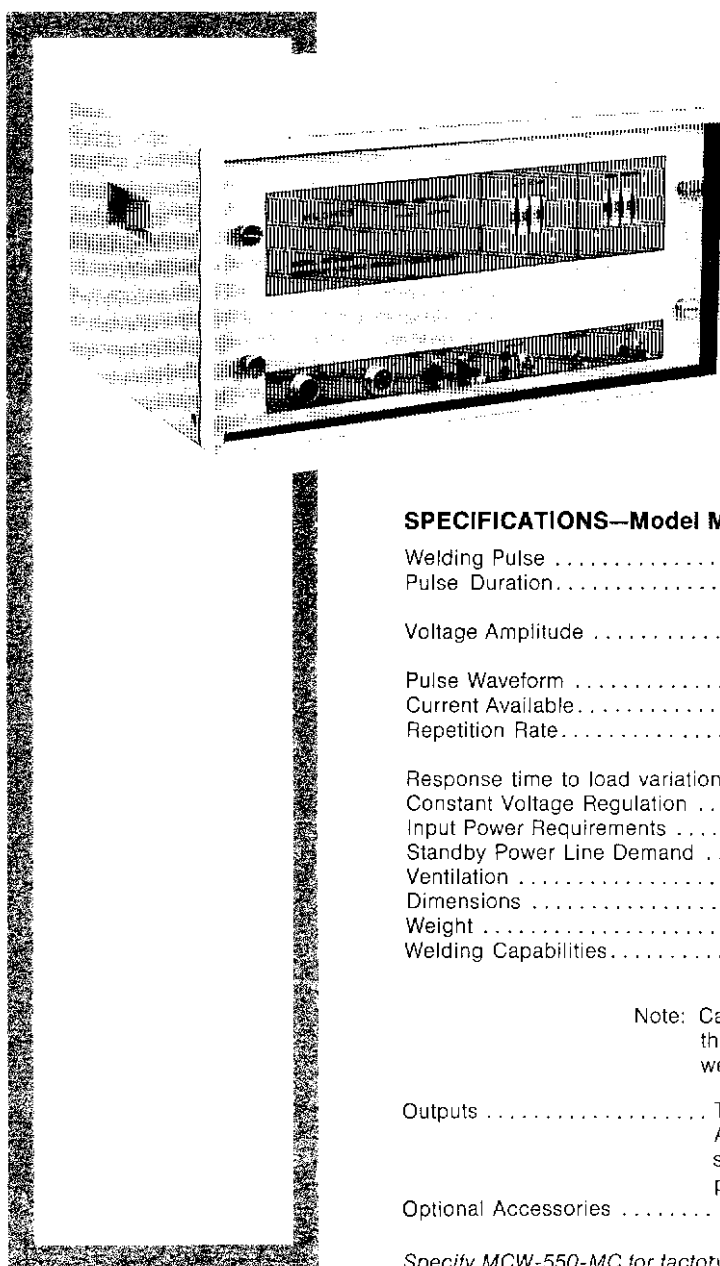
## INDUSTRY LEADER

Clearly a leader, this easy to use unit has earned the title of "the industry's precision microcircuit power supply." Weld voltage and weld duration are dialed into the machine, using simple, positive, digital selectors. The MCW-550 power supply is capable of ultra-fine weld heat control. It is suitable for parallel-gap bonding to the thinnest vacuum-deposited films, or for the heavier requirements of reflow soldering 7 flat pack

leads at once. It is important to note the MCW-550's operating range of both current output and length of pulse compared to those of other equipment.

## AUTOMATIC CURRENT CONTROL

The Model MCW-550 Constant Voltage Welding Power Supply is the heart of an entire family of precision MCW-type bonding systems. With this new energy source, the direct current welding pulse is dynamically controlled during the discharge period to maintain a constant, preset voltage across the work. This is accomplished through an active feedback circuit that constantly monitors the weld joint or work and signals the need for increased or reduced weld current. Current density is thus consistent even though size of materials may vary.



## SPECIFICATIONS—Model MCW-550

Welding Pulse .....	Constant voltage, direct current, solid state circuitry
Pulse Duration .....	Adjustable from 1-9900 milliseconds in 3 ranges: 1-99 milliseconds 10-990 milliseconds, and 100-9900 milliseconds
Voltage Amplitude .....	Adjustable from 0.01 to 1.99 volts, automatically maintains voltage selected
Pulse Waveform .....	Square (pure DC)
Current Available .....	Up to 800 amps. Current varies to maintain constant weld voltage
Repetition Rate .....	More than 100 welds per minute of typical flat pack leads under continuous duty
Response time to load variations .....	Approximately 25 microseconds
Constant Voltage Regulation .....	Within 25 millivolts throughout range
Input Power Requirements .....	105-125 volts single phase—50/60 Hz—3 amp fuse
Standby Power Line Demand .....	Less than 1 amp
Ventilation .....	Forced air, muffin fan
Dimensions .....	10½" high, 20" wide, 13" deep
Weight .....	.65 lbs. net
Welding Capabilities .....	Ribbon Leads: Up to 0.008", up to 0.030" wide Wire Leads: Up to 0.017" diameter

Note: Capability is conservatively expressed in terms of largest Kovar leads that can be welded to 2 ounce copper laminate. Crosswire welds and welds to larger, less conductive materials are readily accomplished.

Outputs .....	Two 115 volt convenience outlets are provided at rear of power supply. A 6.5 volt source for a Nicholas spot illuminator is built in. An auxiliary switch for control of vacuum pump or other electrical accessory is also provided.
Optional Accessories .....	MA-09-28 Dual Heat Selector (factory installed)

Specify MCW-550-MC for factory-set 230 volts/50 Hz operation.

**WELDING HEADS**

**Model VTA-66**

*Parallel Gap Weld Head*

The Model VTA-66 has been designed specifically for precision "parallel-gap" type series welds, where electrode gap spacing is normally of small magnitude and must be rigorously controlled. The VTA-66 is supplied as the basic welding head on Hughes MCW/EL and MCW/SS microcircuit systems. This compliant tip assembly has been awarded U.S. Patent No. 3,283,351. In the VTA-66 head, a single electrode-holding assembly with two electrodes is used, each side being electrically isolated from the other. Both electrodes move downward together upon activation of their common supporting arm.

Gap spacing between the two electrodes is easily controlled by a calibrated knob with which the user can quickly "dial in" the precise gap needed. Each electrode is mounted on a blade-like cantilever that, upon making contact with the work surface, is permitted a controlled degree of flexing that compensates for normal, minor irregularities in material thickness. This "compliance" with the work surface insures good mechanical fit up and preserves the electrical contact necessary for good welding.

Welding is accomplished by passing the weld energy through the work material located beneath the gap between the positive and negative sides of the electrodes. Activation of the welding power supply is automatic when a predetermined weld force is reached.

This force in the standard VTA-66 can be adjusted from 6 oz. to 10 lbs. A work platen attached to a mounting post set in the base of the VTA-66 provides a means of rapid, convenient work alignment beneath the electrodes. It can be removed to facilitate installation of special fixtures when desired.

**SPECIFICATIONS • Model VTA-66** Parallel-gap weld head including variable gap and compliant tip features.

Gap Range.....	0 to .040" continuously adjustable
Max. Step.....	.025" (but electrodes may be installed with preset step for greater variations)
Throat Depth.....	4.5 inches
Electrode Travel.....	Adjustable up to 0.5 inches
Electrode Force.....	8 oz. to 10 lbs. continuously adjustable
Dimensions.....	11" high, 3" wide, 7½" deep
Weight.....	4 lbs. net, 9 lbs. shipping
Switch Cord (standard).....	15" long, includes voltage feedback leads necessary for use with MCW-550 power supply. Amphenol 91 series 4-pin plug attached
Switch Cord (optional).....	15" long, with 2-pin Amphenol 80MC-2M plug attached for use with standard capacitor discharge power supplies. Specify VTA-66-MA
Operation Mode.....	Foot pedal, swing pedal, air or flex line activation
Equipment Included.....	One pair ESQ-2545-02 electrodes of RWMA-2 alloy, integral stroke stops
Additional Equipment Required.....	Weld cables, foot pedal, welding power supply
Conversion Kits Available	
	Catalog No. MA-09-02 parallel-gap conversion kit — contains all parts and instructions necessary to convert any basic VTA-60 head to a VTA-66 variable-gap, compliant tip weld head.
	U.S. Patent 3,238,351



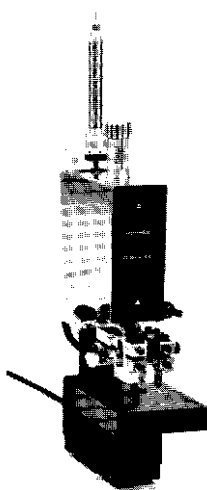
**Model VTA-67**

*Reflow Soldering Head*

The Model VTA-67 is supplied in several configurations for reflow soldering of surface-mounted components. This head provides for mounting of two heater bars for the simultaneous reflow soldering of all leads of most common surface-mounted components. Teamed with Hughes time-at-temperature power supplies and with the MA-09-35 air latch accessory, systems can be assembled to take the guesswork out of reflow solder operations. Typical systems provide for a fully timed reflow cycle while the head latch maintains precise pressure at the tips throughout heat up, reflow, and cool down.

**SPECIFICATIONS • Model VTA-67**

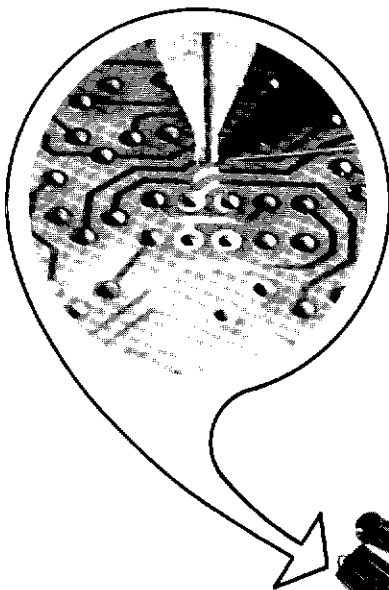
Tip Mounting.....	Dual compliant
Gap Range.....	.30" to .45" typical
Throat Depth.....	4.5" standard, to 12" backmounted
Vertical Motion.....	Adjustable to 0.5" stroke
Tip Force.....	8 oz. to 10 lbs. continuously adjustable
Dimensions.....	11" high, 3" wide, 7½" deep
Weight.....	5 pounds net, 9 pounds shipping
Switch Cord (standard).....	15" long, includes thermocouple feedback leads necessary for use with HTT-550 power supply
Operation Mode.....	Manual foot pedal or air actuation.



# PRINTED CIRCUIT BOARD REPAIR STATION

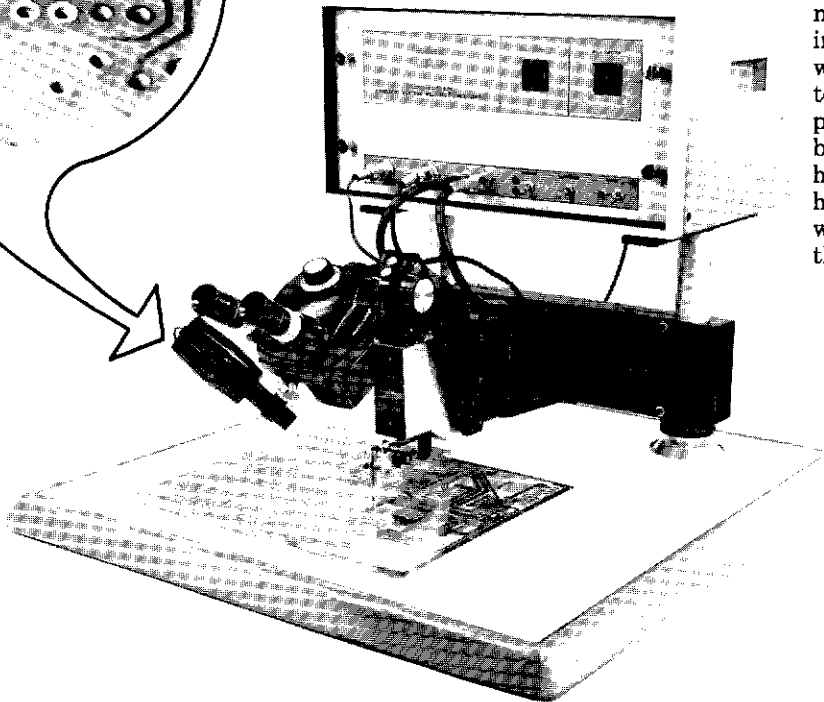
## Model HPC-500

## Printed Circuit Board Repair Station



The Model HPC-500 provides equipment for the proven and approved technique of parallel gap welding of Kovar ribbon to printed circuit boards. These ribbon junctions are used to repair printed circuit boards where broken, over-etched, or otherwise damaged conductors need to be replaced or repaired. The welding technique has evolved from a process originally conceived for the welding of Kovar flat pack leads satisfying both aerospace and mil spec requirements. The

resulting welded bridge is so strong that it will withstand all normal production processes including hot oil scrubbing and wave or dip soldering. The system includes the MCW-550 power supply equipped with a back-mounted VTA-66 welding head. The back mounted weld head allows for an unlimited width of operation and a 12" throat depth.



### MCW EQUIPMENT SELECTION CHART

CATALOG NUMBER	DESCRIPTION	ITEM STANDARD WITH			
		MCW/EL SYSTEM	MCW/IL SYSTEM	MCW/BB SYSTEM	YOUR CUSTOM SYSTEM
MCW-550	Constant Voltage Welding Power Supply	•	•	•	
MCW-552	Optical Aid including Microscope, Illuminator, Mounting Pedestal	•	•	•	
MA-09-05	System Mounting Baseplate (EL)	•			
MA-09-11	System Mounting Baseplate (IL)		•		
MA-09-21	System Mounting Baseplate (BB)			•	
VTA-66	Parallel-Gap Weld Head	•			
MA-02-25	Bus Bars, gold plated, solid copper, for VTA-66	•			
MA-08-04	Flex-Line Foot Actuator, for VTA-66	•			
VTA-90	Thin Film Head, complete with bus bars & Flex-Line foot actuator		•	•	
MA-HZ-90	Substrate Holder		•	•	
MA-XY-90	Micropositioner		•	•	
MA-09-08	Vacuum Pump		•	•	
MA-02-28	Dual Weld Cable				
MA-09-04	Scope Pedestal			•	
MA-04-07	Intercoupler Box				
MA-09-20	Conversion Kit — Pulsed TC Bonder			•	