

HANSON

WELDING MACHINES

Series 2000 RESISTANCE WELDING & SOLDERING MACHINES 1 to 20 KVA

In the 1-20 KVA range, Hanson offers a fully integrated bench-top welding and soldering machine system. That is our model AP-2W resistance welding and soldering machine.

It is offered with a wide range of options that permits the customer to virtually custom design each machine to meet his particular requirements.

Features/Benefits

Series 2000 Control

Microprocessor-based controller stores programmable, pre-selected weld schedules. Schedules are programmed and recalled through a hand-held pendant that prevents unauthorized changes.

Unique approaches to voltage compensation and phase shift heat control eliminate variables that cause inconsistent welding performance. No other controller can match the degree of precision and consistency provided by the Series 2000.

Head Assembly Designed for Durability and Consistent Performance.

Low-inertia linear precision cross roller slide head assembly assures continued smooth operation and repeatable performance. Rugged construction for long, trouble-free service.

Head Force System Guarantees Precision Weld Performance.

The head force system is in direct alignment with electrodes. This enables follow-up response not available in cantilever-type heads and assures precision weld performance.

Special Head Firing Switch Insures Repeatability and Reliability of Welds.

A reliable feature on all Hanson welders. It allows the welding control to be fired only when the predetermined force range has been reached by measuring the displacement of the head force system.

Transformer Design Minimize Possibility of Saturation.

Multi-tapped stacked core, epoxy-impregnated design, using high-grade silicon steel.

Built-In Versatility to Handle a Variety of Jobs.

Force system, stroke, electrode opening and squeeze and hold times are all fully adjustable to accommodate a wide variety of parts sizes, materials and fixturing.

Modular Construction Permits Equipment Modification in the Field.

If requirements change, a welder can be modified by changing transformer and/or force control springs and indicators.

Convenient No Heat/No Weld Switches for Safer, Easier Set-Up.

Minimizes chance of operator injury, set-up times are reduced.



Single Ram Head



Dual Ram Head

Applications

The basic versatility of the AP-2W welder and the many options and accessories available make it suitable for welding a wide range of small to medium-sized parts. These machines are widely used in electrical/electronics, automotive, appliance, aerospace, jewelry and metal-working industries in metal-joining applications where precision is essential.

Represented by: **Welding & Automation, Inc.**
PO Box 940 • Flat Rock, NC 28731 • (828) 674-1233

Specifications

MODELS

- Model AP-2W single ram resistance welding and soldering machine.
- Model AP-2W-2D dual ram resistance welding and soldering machine.

Welding/Soldering Head

OPERATION

Standard

Air Operated. Low-Inertia precision cross roller slide Head Assembly. Complete with all pneumatic circuitry and foot-switch actuator.

Two operating modes: semi-automatic and automatic

HEAD ASSEMBLY

Standard Air Operated Single Ram Head

Options

- Standard Air Operated Single Ram Head
- Air Operated Dual Ram Head with Twin Cylinders (one independent cylinder for each ram.)

FORCE SYSTEM, FULLY ADJUSTABLE

Six Standard spring sizes provide;

- 0-12 lbs
- 0-24 lbs
- 0-48 lbs
- 0-72 lbs
- 0-96 lbs

WATER-COOLED ELECTRODE HOLDERS

Standard 3/8" diameter 1/4" diameter

Options

Other sizes available, either straight or with morse taper at extra charge. Consult Hanson Welding Machines before ordering.

FULLY ADJUSTABLE LOWER TOOL HOLDER

Provides up to 4" electrode opening.

STROKE ADJUSTMENT CONTROL

Allows control over head stroke from, 1/4" to 1" of electrode travel. Die set electrode tooling can be provided on special order.

Transformer

Multi-tapped stacked core design using high grade silicon iron.

RATINGS

Specify One

- 1 KVA
- 2.5 KVA
- 5 KVA
- 10 KVA
- 15 KVA
- 20 KVA

PRIMARY VOLTAGE

Standard Voltages Available (AC Single Phase).

Specify One.

- 110 volts (1 KVA models only).
- 208 volts.
- 240 volts.
- 480 volts.

Options Special voltages available on request.

FREQUENCY

Standard Frequencies Available. Specify One.

- 50 hz.
- 60 hz.

SECONDARY VOLTAGE

8.0 volts standard. Custom voltages available on request.

Note: This voltage is the maximum value at the highest tap setting.

TAP SELECTION

Standard 12 Tap and series parallel primary windings with center tapped secondary.

COOLING

Standard Air Cooled Secondary

Option Water Cooled Secondary

Welding and Soldering Controls

Series 2000 Microprocessor-based, Programmable Weld Controller:

- Stores pre-selected weld schedules. Automatically controls Percent Heat, Squeeze Time, Weld Time, Hold Time.
- Heat Time Range: 1/2 cycle to 100 cycles
- Schedules are programmed and recalled through a hand-held programming terminal that prevents unauthorized weld schedule changes.
- Automatic line voltage compensation every 1/2 cycle of weld, starting with first 1/2 cycle.
- Unique phase shift control provides true under-the-curve adjustment for consistent welds.
- Battery back-up to protect memory
- RS232 port provides input/output interface
- Polarity selection switch and half-cycle control.
- Manual and automatic mode selector. Used to establish set-up parameters. Allows single stepping each sequence function when in manual mode.
- Heat/no heat selector switch. Used for set-up and dry cycling.
- Back-to-back SCR firing circuits.
- Head Firing Switch. Allows welding control to be fired only when the predetermined force range has been sensed through the displacement of the head force system.
- Two-Stage Foot Switch Initiation. In manual or semi-automatic mode.
- Up slope/down slope option. For applications requiring gentle heat-up prior to full weld energy or controlled cool down.
- Preheat/post-heat (quench and temper) option. Selectable in straight line steps. Preheat useful for brazing flux activation; post heat as an annealing function.
- Electronic cycle counter.

Options

Weld Monitor

Weld monitors have been available for many years. Unfortunately, most of these devices are either current, or milli-volt second monitors, neither of which satisfy the basic requirement. To properly evaluate a weld, we must establish a correlation with what is happening electronically, and the mechanical test results. To do this we must have weld monitoring instrumentation capable of providing the necessary information. To properly monitor a weld, the equipment must measure current and area under the curve on each half cycle in A.C. applications, and measure current and area under the curve for each weld in D.C. applications. Further, it must be capable of calculating the product of these and reporting in half cycle increments, for A.C. applications. This product is called the weld energy, which is expressed in watt-seconds or joules.

$$H = I^2RT$$

H is the heat energy developed in each weld.
I is the current in amperes.
R is the resistance in ohms.
T is the time in milliseconds, or microseconds.

Finally, the weld monitor must be capable of accepting both upper and lower control limits with alarms to alert, or shut down the process.

Only Hanson Welding Machines, Inc. offers such a device. The optional weld monitor is an integral part of the Series 2000 Weld Control, and measures energy in real time, unlike remote add on monitors. It is fully programmable for upper and lower process control limits. The weld monitor audits every half cycle of weld, capturing the readings for current (in amperes) and milli-volt seconds (area under the curve). The product of these is expressed in joules of energy for each half cycle. The weld monitor protects against process shifts caused by dirty or worn electrodes, dirty or inconsistent product, equipment malfunctions, and countless other variables. The weld monitor stores the readings in memory for downloading to SPC packages for process capability analysis, or to printers for charting and evaluation.

Other Options

- Two-hand anti-tie-down initiation circuit.
- Table mounted.
- Work Lights.
- Tooling and fixturing for your particular application.

Weight and Size

Weight, AP-2W: 250 lbs AP-2W-2D: 285 lbs

Size, All Models: 13 1/4" wide x 22" deep x 22" high (overall).