UW3

SPECIFICATION SHEET

ULTRASONIC WELDERS

600WATTS & 1KILOWATT

GENERATORS & PRESS

30/8/73 $2500.00 x Stock. SG10A SW6/10.

INDENT. $3050.00 Del. March. if order placed Sept '73.

SG6A-SG10 SW6/10

Technical Specification

GENERATOR TYPE SG6A

CIRCUIT

The basic circuit consists of a power supply section feeding a silicon thyristor functioning as a relaxation oscillator inverter. The power supply includes a switched transformer with tappings giving three levels of power output: 50%, 75% and 100% of full power. Automatic frequency tracking by a feed-back path from the transducer continuously adjusts the oscillator frequency to match the transducer under variable loading conditions. A preset band width control and a resonance indicating meter enables initial setting up to be carried out.

Incorporated protective circuits to prevent component overloads due to voltage surges or high temperature. Solid state devices are used throughout. A miniature circuit breaker safeguards against transient surges or misuse of the equipment. An integral axial flow fan provides component cooling. External control circuits are energized by a 110 volt supply.

CONTROLS

ON/OFF switch with integral pilot lamp. Preset band width control. Resonance indicating meter. Automatic reset timer adjustable between 0.2 seconds and 10 seconds. Illuminated mains switch. Three position power selector switch. Miniature circuit breaker at rear of cabinet.

CONNECTIONS

The generator is coupled to the press head using a 6ft. length of industrial multilead cable terminated in plugs.

CONSTRUCTION AND FINISH

Circuit components are positioned for point-to-point wiring with the inverter section assembled as a pre-wired module. The removal of the cover enables all components immediately accessible for service.

Robust ventilated steel casing, rustproofed and finished in stoved enamel.

POWER RATING

Input:	200 - 250 volts, 50 Hz., single phase, 1.0 kVA.
Output:	600 Watts maximum with provision for selecting 300 Watts and 450 Watts. At nominal frequency of 19 kHz.
Size:	22" x 15⅞" x 10⅛" high (55.9 x 40.3 x 25.7cms).
Weight:	97 lbs (44 kgs).

GENERATOR TYPE SG10A

The construction is generally similar to Type SG6A and has the same circuit but full power only is supplied to the transducer.

CONTROLS

ON/OFF switch with integral pilot lamp. Preset band width control. Resonance indicating meter. Weld timer with automatic reset adjustable between 0.2 seconds and 10 seconds. Hold timer with automatic reset adjustable between 0.2 seconds and 10 seconds. Illuminated mains switch. Miniature overload circuit breaker at rear of cabinet.

POWER RATING

Input:	200 - 250 volts, 50 Hz., single phase, 1.4 kVA.
Output:	1 kW at nominal frequency of 19 kHz.
Size:	24" x 14½" x 9½" high (61 x 37 x 24 cms).
Weight:	120 lbs (51.6 kgs).

PRESS TYPE SW6/10

CONSTRUCTION

A cast aluminium platen has a machined surface with a steel support pillar carrying the head. Pneumatic controls are incorporated into the base of the platen and consist of a pressure gauge and adjustable valve.

The vertical movement of the transducer is pneumatically actuated and incorporates a secondary air cylinder for balancing the weight of the carriage. The main slide is also balanced by a spring and may be locked at any convenient position on the support pillar.

TRANSDUCER

The transducer consists of a laminated magnetostriction stack wound with heat resistant wire. The stack is coupled to a stepped stub mounted at its nodal point on the slide. A tapped hole in the stub allows work horns to be attached. The complete transducer is held to the slide with a clamp ring, enabling rotation of the stub for correct orientation of work horns. Levelling screws are also provided.

A fan blower inside the transducer cover cools the unit during continuous operation. The high efficiency transducer obviates the necessity for more elaborate cooling means. Power is automatically supplied to the transducer by the operation of an air-line pressure switch when contact is made with the work.

WORK HORNS

The work horn is usually designed for a specific purpose although a number of standard forms are available for general use. They may be of exponential, stepped or parallel form and the usual constructional material is a titanium alloy for high transmission efficiency. The working face can be circular, ring, bar or of complex shape. Radyne facilities include an Application Laboratory for evaluation of customer's samples and the manufacture of suitable work horns.

DIMENSIONS AND SUPPLY REQUIREMENTS

Free Air Consumption (per cycle):	0.08 cu.ft. free air (2260 cu.cms).
Air Line Pressure:	50 - 150 p.s.i. (3.5 - 10.5 Kg/cm²).
Applied Pressure of Work Horn:	Minimum - 5 lbs. (2.25 Kg). Maximum - 100 lbs. at 80 p.s.i. Air line pressure (45 kg at 5.6 Kg/cm²).
Platen Dimensions:	14" x 15½" (36 x 40 cms).
Press Stroke:	3" fully floating (7.6 cms).
Throat Depth:	10¾" (27 cms).
Maximum Work Height:	13¾" (35 cms).
Overall Size:	15" x 22½" x 36⅞" high (38 x 57 x 92 cms).
Weight:	102 lbs. (46 Kgs).

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RADYNE LIMITED

Generator models SG6A - SG10

Press model SW6/10

The welding or sealing of rigid and flexible thermoplastic materials can be carried out using ultrasonic energy. The equipment consists of an electronic generator converting mains electrical frequency to an electrical ultrasonic frequency, and a press unit containing a transducer providing an ultrasonic vibratory output.

Operation

High amplitude ultrasonic energy is applied to a surface of two plastic components held in contact with each other. Energy is transmitted through the material to the interface at the contact surfaces. The discontinuity produces a localised conversion of the mechanical vibrations into heat energy and the surfaces molecularly fuse together. The process is almost instantaneous and little heating occurs outside the weld zone.

The mechanical amplitude of the transducer is increased by attaching a velocity transformer or 'work horn'. This may be profiled to conform to the surface of the plastic. The work horn is an acoustically designed element and is accurately matched to the transducer.

Features

Generators are based on a solid state silicon thyristor in an inverter circuit. This avoids the use of multiple transistors commonly found in ultrasonic generators. The design requires 50% less components than comparable units with a corresponding increase in reliability.

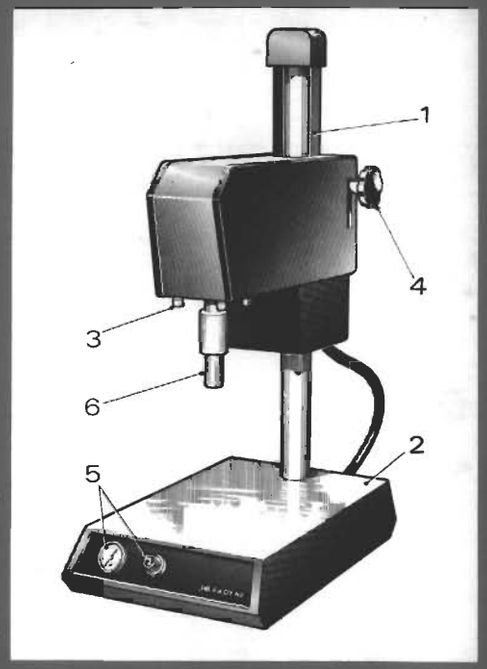
Automatic frequency tracking is incorporated, eliminating the need for continuous adjustment of the generator frequency.

An adjustable timer allows the welding time to be preset and has automatic resetting for repetitive work.

The press head embodies a high efficiency magnetostriction transducer with the robustness of a machine tool. It is virtually indestructable and resistant to thermal or mechanical shock.

Operator safety is assured by the absence of high voltage for transducer energising and the elimination of heat on the work horn.

The press head is raised and lowered by pneumatic operation. Power is automatically applied to the transducer when the work horn contacts the work at a preset pressure. Completely automated welding machines incorporating transport mechanisms can be supplied to customer's requirements.



PRESS DETAILS

1) Counter balanced head for smooth lift action.
2) Cast Aluminium Platen.
3) Levelling and securing bolts.
4) Head clamp locking nut.
5) Air pressure regulator and gauge.
6) Typical work horn.

WORK HORNS

A wide range of work horns are available, either as standard units or specifically designed for a particular application.

AUTOMATED PRODUCTION

The press head is easily embodied into complex handling gear. Special machinery can be manufactured for repetitive production.