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270A Automated Wire Bonder Overview

The Anza Model 270 is an ultrasonic wire bonder designed to interconnect wire leads to semi-conductor, hybrid, or microwave devices. The machine bonds **bare or insulated** aluminum or gold wires ranging from .0007 inches to 0.007 inches. Bonds are by the wedge-wedge or ball-wedge technique using ultrasonic energy to attach aluminum and gold wire at room temperature or by adding work piece heat. Wire is clamped and threaded diagonally under the bonding wedge, allowing independent feeding action but requiring front-to-back bonding direction. The machine will accept complex programs of device coordinates and bond data. Within a bond array, it automatically measures bond positioning, making corrections on the fly and without operator intervention.

MECHANICAL

The bonding tool is driven along vertical ways by stepper motors through a belt-driven cam mechanism that prevents damage from motor over-travel for any reason. The work station moves along horizontal ways driven by stepper motors through lead screws. Additional motors and actuators couple thru-bearings on the bond head to drive the wire clamp position and the force spring. All motors are driven in micro-step mode, but with sufficient resolution to stop on half-step boundaries. A rotary work station is mounted on and moves with the X-Y table. The work piece on this station can be clamped mechanically or held by vacuum, and can be heated up to 300° C as controlled by Anza Tech's Temperature Controller. Adapters for different work pieces can be exchanged readily.

The ultrasonic transducer is Anza Model 62PT, full wave in length, operating at a nominal frequency of 62 KHZ. The built in ultrasonic power supply is 5 Watts. Settings of power, time and force values are executed via a key pad interface. Included is radiant tool heat with a panel mounted, constant current control.

RANGE, RATIO AND RESOLUTION

Bond Y	Range	4.00 inches
Bond X	Range	4.00 inches
Bond Z	Range	0.500 inch
Rotation	Range	Unlimited
Force	Range	5 to 275 Grams—programmable each bond

ESD PROTECTION

Protection against Electrostatic Discharge is implemented by finishing exposed tool assemblies and other moving parts with electro-less nickel plating, which is conductive. All exposed parts are coated with a powder-coat paint that is dissipative.

WORK HOLDERS

All work holders are priced separately, and should be ordered separately. A universal unheated work holder is capable of holding most common substrate devices between a pivoted clamp lever and adjustable backstops, is maintained in stock and is available for delivery with the machine. There are a large number of previously designed special work holders, both heated and unheated are available for purchase, but not immediately available in stock and therefore cannot be promised in delivery with machine. These should be noted under separate order, or the original order must allow for partial deliveries.

SERVICES

Electrical service required is 50-60 Hz, single phase, either 115 VAC or 230 VAC; fuse and three-prong power cord connectors are provided for 115 VAC. For 230 VAC, these must be changed to conform to local requirements.

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