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## 255A Manual Wire Bonder Overview

The Anza Model 255 is an ultrasonic/thermo-sonic tab, wedge, or ball bonder. The machine bonds **bare or insulated** aluminum or gold wires ranging from 0.0007 inches to 0.004 inches. Bonds are made by an ultrasonic technique using 62PT ultrasonic energy to attach the wire at room temperature. Wire is clamped above the tool and then threaded diagonally under the bonding tool, allowing independent feeding action but requiring front-to-back bonding direction. The bonding tool is guided manually by the operator using hand/eye reference to bond targets and elevations.

### MECHANICAL

Each of the X, Y, are straight-line and purely orthogonal. A counterweight balances the pantograph arm. The result is a superior feel and balance.

Range of movement of the tool by manipulator control is 0.625 inches vertically and 0.7250 inches horizontally with an 8/1 ratio of mechanical advantage.

The pivot tool assemblies of this series are built around the Anza 62PT transducer. The 62PT operates at 62 KHz. It is driven by an Anza digitally controlled Ultrasonic Power Supply, 5 watts, dual channel, with Power, Time and Force set as program values. The variables of Power Time and Force can be programmed for each and every bond. This transducer uses a bond tool of 0.750" length, dropped 0.65625" below center. Vertical clearance is a full 0.475" in all directions under the tool head. Wire Clamps are solenoid-opened and spring-closed, and have self-contained closure pivots. A separate pivot about the axis is located to generate the clamp motions along the lines of feed action. Alignment of clamps to the tool is facilitated by individual adjustments along three axes.

A high-resolution optical encoder is fitted to the Z-axis to provide position measurement of each bond elevation and then to initiate clamp re-closing to control wire loop arch consistency. This encoder enables a second function unique to Anza's 255 series. Upon touch down, contact is sensed by opening a firing switch that starts the initiation of ultrasonic energy and the force. The force is then applied over a programmable time variable for a SOFT CONTACT with the pad.

Control of machine logic, motor motions, and ultrasonic energy is programmed to and executed through the Anza digital board with 256 KB of nonvolatile RAM. All machine motions and functions and bond settings are programmable at the machine panel, prompted by a series of "screens" displayed on an LCD. The bond settings for a wire type can be selected and entered. Each wire type can have approximately 21 stitch bonds, each with its own settings of ultrasonic power and time and force. All programmed values are displayed during bonding.

An adjustable height platform is available as an option for the Model 255 bonders. These platforms can be either manual or automatic. Standard bonding method of Model 255 is a 90° wire feed with the clamps above the tool, for a deep access.

### MACHINE CONFIGURATION

The 255 Bonder machine is 22" wide x 16.25" deep x 8.625" high, exclusive of microscope. Weight is approximately 60 lbs. uncrated and about 95 lbs. crated.

### 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; and all exposed painted parts with a powder-coated 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. This work station modified for screw-adjustable height is also available from stock. 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. Work holders for new work pieces requiring custom design and fabrication will be quoted upon receipt of drawings and samples. These must also be noted on separate purchase orders.

### SERVICES

Electric service required is 50-60 Hz, single phase, either 115 VAC or 230 VAC, selected automatically. A fuse and a 3-prong power cord connector are provided for 115 VAC. The 230 VAC machines must be changed to conform to local requirements.

