

Model 7000E Series, Wire Pull Test Machines, Manual X-Y-Z

Last revised: 09/19/18 - microscope

West-Bond Series 7000E Pull Testers provide an exceptionally convenient means to place a hook under the arch of a bonded wire and then lower the wire under microprocessor control to measure tensile strength, either destructively or non-destructively. Embodied in this series is a new and unique West-Bond three-axis micromanipulator in which the entire mechanism is arrayed above the work plane, so that there is now no limit to the size of the work piece. The X, Y, and Z axes are straight-line and purely orthogonal, and each is braked pneumatically during the workstation pull stroke. Dual counterweights balance the pantograph arm and the tool support individually, complemented by an adjustable spring to counterbalance the hook tool assembly. The large work platform moves up and down in extremely small steps about a simple pivot while a load cell measures the force of the wire on the hook.

The hook is guided to the wire by the right hand 8/1 X-Y-Z manipulator, and is rotated by a motor directly slaved to a remote rotary encoder at the left hand. When aligned, the pull test is initiated by use of a keypad which sets axis brakes and starts the workstation actuator. The work piece containing the test wire arch is lowered in very fine increments and the load cell reading is updated during each motor step. In non-destruct mode the test is stopped after any step when the set value is reached; in destruct mode, the test continues while test values increase, until reversal indicates a break. Standard step resolution is 0.00003906 inch through a range of 0.125 inch. Reassembling the final tapered drive element can set an alternate resolution of 0.00002604 inch through a range of 0.083 inch. The stepping rate can be selected from a group of suggested values. Further, a mechanical down stop can be set to limit hook descent by manipulator toward the wire array if desired.

The hook assembly, and selection of hook sizes, is brought unchanged from West-Bond's "A" Series. This assembly fits into a collet rotated by the hook motor, in a lever that bears on the load cell with a mechanical advantage of 4:1. This lever is counter balanced by an adjustable spring to bear on the cell with a "Tare" value of 20 grams, which is subtracted in software. The load cell output is read in to the microprocessor as 12 bits of binary data and is presented with a resolution of 0.1 gram through the range of 00.0 to 99.9 grams. The standard load cell is K~Sine 1710-C, with 1.0 Lb. (or 453 grams) capacity.

Control of machine logic, motor motions, and test parameters is programmed to and executed by West-Bond Part No 8750 CPU, containing a Motorola 68000 microprocessor and 256 KB of nonvolatile RAM. The operator is prompted for various setup values by a series of "screens" displayed on a 4-line by 40-character LCD, and enters this data via a separate numerical keypad. During testing, in either mode, this keypad is enabled to encode the break position for analysis. Test values and statistical analyses are printed, when desired, by an Okidata Microline 320 Turbo 9-pin dot matrix printer, which is included. Alternately, this output can be directed via an RS-232 port to a computer for graphical analysis: This capability, now standard, was previously offered separately as Feature -75.

Definitions of Models of this Series:

- **Model No. 70PTE.** This machine as described herein.

Features Available for this Series:

- **None**

The microscope recommended for this model is either the Olympus SZ51-60E with the "Luxuray" LED illuminator #10265. Neither microscope nor illuminator is included. One wire pull hook and a set of ASTM Class 6 calibration weights are included.

Quite a large number of previously designed special work holders, both heated and unheated, are listed in the Work Holders Table of our Web Site: Those with "*Current*" Status can be ordered together with a machine order; those with "*AvailableNotStocked*" Status must be ordered separately. Work holders for new work pieces requiring custom design and fabrication will be quoted upon receipt of drawings and samples: These must be ordered on separate purchase orders. Work holders are priced separately.

A universal unheated work holder, capable of holding most common substrate devices between a pivoted clamp lever and adjustable backstops, is maintained in stock. This workstation modified for screw-adjustable height is also available from stock.

For customers providing their own work holder, the height from the work platform surface to the nominal hook elevation is 2.6875 inches. The work platform is approximately 11.00 inches square in a clear-through opening 22.00 inches wide; however, neither area is exactly centered on the hook.

Compressed air, regulated to 50 psig, is required. Connection is via 1/4-inch tubing.

Electrical service required is 50-60 Hz, single phase, either 115 VAC or 230 VAC, selected automatically. A fuse and three-prong power cord connector are provided for 115 VAC: For 230 VAC, these must be changed to conform to local requirements. The electrical power supply, Part No 8850, is packaged in a separate enclosure 8.75"wide x 8.00" deep x 3.00" high.

"E" Series machine size is 24.0" wide x 21.250" deep x 11.625" high, exclusive of microscope, or 15.0" in height to scope eyepieces. The printer and the small numerical keypad, as well as the electrical power supply, are packaged separately. Weight is 70 lb. uncrated, or 140 lb. accessorized and crated