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Same as 1995

VERITEST 1.4 *4*

INSTRUCTION MANUAL

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*Effective 15 April 1995

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* Effective 15 April 1995

The Engineered Inspection Services' Veritest is an extremely versatile instrument which offers high-speed nondestructive separation capabilities based on eddy current technology. The machine is easily set up and operated.

APPLICATION

The Veritest is designed to sort or separate magnetic or non-magnetic parts into either two or three groups, dependent on the initial set-up of the inspection. These groups can be differences in metallic grades, hardness, case depth, grain size, or plating thickness as well as variations in processing, geometry, or chemistry. Because the equipment is both frequency and phase selective, the important variable which needs to be inspected can be detected in most cases despite the presence of other inconsequential variables.

When accompanied by suitable mechanical handling systems, the Veritest is an ideal component of an automated inspection line because of its inherent stability and high speed capabilities.

UNIQUE FEATURES

1. Infinitely variable phase and frequency selection is provided to maximize separation capabilities, enabling:
 - a. A better separation in phase of signals indicating defects and those which may simply indicate variations within the good parts
 - b. An arbitrary choice of depth of frequency penetration so that the proper area of the part can be inspected for the defect being sought
2. The broad frequency range (from 100 Hz to 20 KHz) allows application to both magnetic and non-magnetic materials.
3. The unit is highly sensitive at all frequencies, with a relatively low inherent noise level.

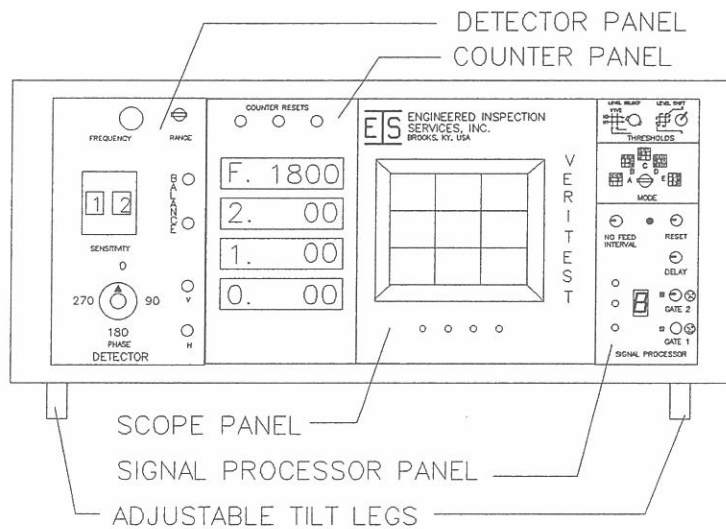
4. A simple polar presentation is provided on the rectangular scope to illustrate the relation between amplitude and phase. The threshold levels on the screen are independently adjustable to allow for tighter sorts which may be required for specific defects. Threshold level adjustments are located in the upper right corner of the S P M section.
5. Due to a judicious selection of integrated circuit components, the Veritest is completely stable, unaffected by normal environmental temperature changes.
6. Five modes of operation are available, with three-way separation available in all modes. Mode A provides separations based on amplitude (vertical) variations in part signals. Modes B, C, and T provide separations based on a combination of both phase (horizontal) and amplitude signal variations. Mode P provides separations based solely on phase differences between signals.
7. Inspection speeds up to 100 pieces per second are theoretically obtainable, with feed-through rates up to 2000 feet per minute. However, typical screw separations of up to 10 per second are more practical due to the problems encountered activating gates at higher speeds.
8. The unit has an automatic switch-off capability for jam-ups of parts feed drives. It is also available with monitors to control the bowl and hopper operation.

EQUIPMENT DESCRIPTION

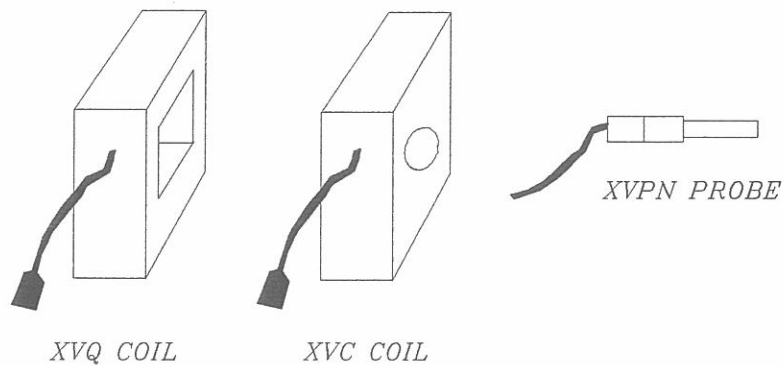
The Veritest is packaged in a conventional 19" rack mount cabinet. The chassis is 7" high so that the total dimensions are 19½" wide, 7½" high, and 17" deep. Total weight is approximately 50 lbs. The Veritest can also be conveniently packaged with other E I S inspection equipment as an auxiliary unit.

Current requirements: 115V/230V, 50-60 Hz cycle, single phase, 2 amps minimum required.

The equipment contains one chassis with four sub units: the detector module, the counter module, the scope module, and the signal processor module. A pair of test coils plugs into the back of the unit via an extension cable. Operation of an E I S parts diverter or other automated sorting device is accomplished by 48V DC pulses which drive control solenoids.



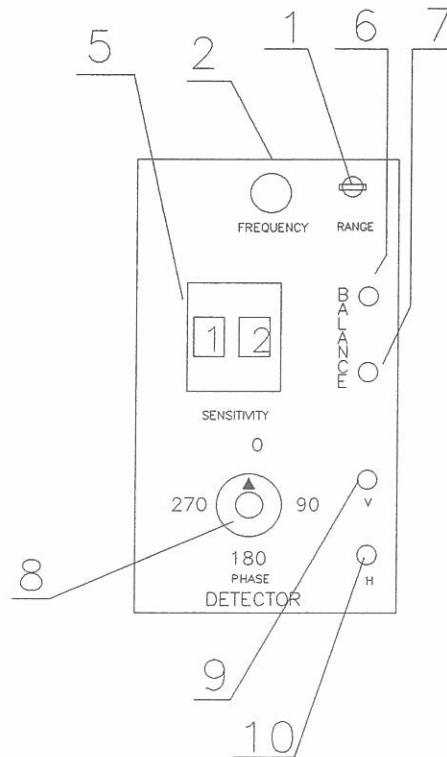
SENSORS: Coils are available in sizes from $\frac{1}{4}$ " through 6" i.d. in roughly $\frac{1}{4}$ " increments (circular or rectangular configurations); special sizes can be manufactured. Probes of any specified o.d. are also available.



CONTROLS AND CONNECTORS FOR TESTING PURPOSES

A. Front Panel

1. Detector Module

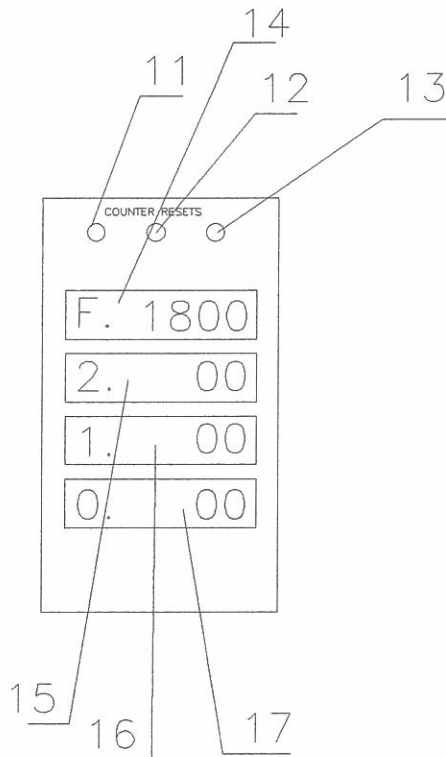


ALL NUMBERS IN MANUAL IN PARENTHESES
() REFER TO NUMBERS IN VERITEST
ILLUSTRATIONS THROUGHOUT MANUAL

- a. Frequency controls: A fine control (2) plus a range switch or multiplier (1) provide maximum control for frequency selection.
- b. Sensitivity: 2 ten position thumbwheel switches (5) allow adjustment of system gain in one and ten db steps from 0 to 99 db to obtain the proper sensitivity for the best possible sort.
- c. Balance controls: These controls (6 and 7) adjust balance in the test coils in order for the inspection to be reliable. The spot on the screen serves as a visual indicator. Perfect balance puts the spot to the center of the screen.
- d. Phase: This dial (8) is calibrated in degrees. It varies the deflection angle of the part signal on the screen continuously over a 360° range.

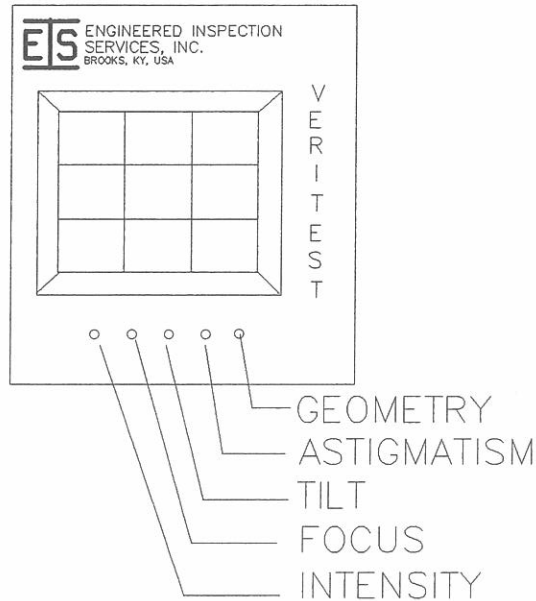
- e. Position controls: V (9) and H (10) position controls place the spot in the center of the screen at 0 sensitivity. This gives the operator a visual aid to assist in the initial set-up of the unit.

2. Counter Module



- a. Frequency display: This number (14) shows the test frequency in Hz being used for inspection.
- b. Parts counters: These numbers (15-17) count tested rejects or good parts.
- c. Counter resets: These buttons (11-13) reset the counts to zero.

3. Scope Module



No external controls

The controls listed below are internal controls accessible from this panel. They are listed from left to right if one is facing the unit. These controls are infrequently adjusted and should only be done so by qualified personnel. **There are possibly lethal voltages inside the unit!**

- Intensity:** Controls the brightness of the spot on the screen.
- Focus:** Focuses the spot on the screen.
- Tilt:** Some units have a fifth hole in the front for tilt control (see illustration)
- Astigmatism:** Controls the roundness of the spot on the screen.
- Geometry:** Controls the vertical linearity of the sweep.