SUBJECT: FIELD MAINTENANCE OF THE 310 OSCILLOSCOPE

The purpose of this article is to help guide the Field Engineers in locating simple tube failures that may exist in the Tektronix 310 Oscilloscope. It is not intended as a complete maintenance guide. If the following procedures do not solve your oscilloscope problems, notify Customer Engineering in Los Angeles immediately and phone or wire for a replacement oscilloscope.

If the instrument fails to operate, check the source of power and power cord connections. Then check the fuse at the back of the instrument.

A. Power Supply:

1. Remove side panels and bottom plate. Open the oscilloscope with the twist lock screw on the right side of scope.

2. Plug in power cord and turn the oscilloscope on with the Scale Illum. control.

3. To check the -150 volt supply, measure with a V.O.M. the red lead to ground and the black leads to the case of C601, in which the wires are color coded brown, green and black, located above the power transformer on the inside of the door. This is the top electolytic condenser. If the voltage is more than -150 volts, check V602; if less then 150 volts, check V607. The voltage regulator tube, V613, should be glowing.

4. To check the +100 volt supply, measure with a V.O.M. the black lead to ground and the red lead to the outside of the DC balance potentiometer located to the left of the handle. If the voltage is more than +100 volts, check V631; and if less than +100 volts, check V633.

5. To check +300 volts supply, measure from ground to the positive side of C102, located behind the Vertical Position control and connected to pin 6 of V102. If the voltage is more than +300 volts, check V661, and if less than +300 check V663.

B. To determine if the horizontal or vertical amplifier is at fault:

1. Turn the Intensity control full clockwise, Vertical and Horizontal position controls to center of range, Stability control full clockwise, Time/div. to 500 microseconds.

2. Remove V440 and V441; if trace or spot appears, check vertical amplifier, if trace or spot does not appear, check horizontal amplifier. Replace these tubes in their original position.

C. Vertical Amplifier:

1. If the "AC only" of the vertical amplifier does not work, check V320 and V329 on printed circuit board.

2. Remove V401 and V408; if trace reappears, check these tubes.

3. Remove V430; if trace reappears, check V430, V440 and V441.

D. Horizontal Amplifier:

1. Turn Horizontal control full counter clockwise and if spot is to the extreme left of the cathode ray tubes, check V150 and V130.

2. If the spot is in the center of the cathode ray tube, check V110.

3. Turn Horizontal control full clockwise and if spot is in the center of the cathode ray tube, check V160.

4. If no spot or trace is observed, then check V240, V220, and V102.

E. The Calibrator:

1. Set Calibrator on 1 volt.

2. Measure with a V.O.M. using DC volts from ground to Cal. Out terminal, and the reading will be 1/2 volt. If voltage is 1 volt, check V501, and if no voltage, check V520.

F. Triggering:

1. Set the Vertical and Horizontal controls to center of range, Stability control full clockwise, Trigger Level counter clockwise, Time/div. to 500 microseconds, Calibrator set for 1 volt.

2. Set the vertical amplifier Volts/div. to 1 volt.

3. Connect jumpers from Cal. Out to Vertical Input and to Trigger Input. A signal 1 division tall should be observed.

4. Set Trigger selector to +Ext. (black knob) and red knob to AC.

5. Turn Stability control counter clockwise until signal disappears, then turn Trigger Level clockwise until signal sync. If signal does not sync, check V10 and V40.

6. Set Trigger selector (black knob) to +Int. and signal should sync. If not, check V465.