Service Scope

USEFUL INFORMATION FOR USERS OF TEKTRONIX INSTRUMENTS

SAVING CONTAMINATED OSCILLOSCOPES

Tektronix Field Engineer Fred Lenczynski on a call to a Nuclear Research operation discovered they were destroying Tektronix scopes that had become contaminated. They were very happy to learn that Tektronix scopes could be washed with the Kelite solution and retrieved from the atomic junk man. Ask your Tektronix Field Engineer for details on this money saving operation.

HIGH Gm TUBES OSCILLATING IN TYPE 570

There is a tendency for some high Gm tubes being tested with the Type 570 Characteristic-Curve Tracer to oscillate despite the use of resistor patch cords and shielding with Belden braid.

Tektronix Field Engineer Earl Williams reports considerable success in suppressing these oscillations through the use of Ferramic cores installed on each bare-wire lead connecting pin jack to tube socket lug. Ferramic cores are the ferrite material beads that can be strung on wire to act as suppressors to high-frequency currents flowing in wire. Earl says that brief test did not show that use of beads could eliminate possible need for resistor patch cords, but he was able to display curves he had not seen to date.

REACTIVATING THE CATHODES OF STORED CATHODE-RAY TUBES

A cathode-ray tube that has been in storage for some time should be "reactivated" before being placed in service. To reactivate the cathode, operate the CRT with 8 volts on the heater (other operating conditions normal) for about one hour, and follow with 24 hours of operation at normal heater voltage. During the reactivation period the beam should be positioned off the face of the CRT.

SERVICING YOUR AIR FILTERS

Reliability of Tektronix Oscilloscopes is improved if the washable Lumaloy air filter is clean. The filters should be inspected every three or four months, for dirt content, by holding the filter up to the light. The following filter cleaning instructions are given by the filter manufacturer:

"To Clean:

(1) If grease or dirt load is light, remove filter from installation and flush dirt or grease out of filter with a stream of hot water or steam.

(2) If load is too heavy for treatment in (1) above, prepare mild soap or detergent solution in pan or sink deep enough to cover filter when laid flat. Agitate filter up and down in this solution until grease or dirt is loosened and carried off filter.

(3) Rinse filter and let dry.

(4) Dip or spray filter with fresh Filter Coat, or other approved adhesive."

Filter Coat should be easy to get locally; look in the Classified Section of your phone book for RP Air Filters, or EZ Kleen Air Filters. If you have any trouble, we can supply you from Portland at $1.00 per pint.

CHANGING TO SILICON RECTIFIERS

Field-Modification Kits for several Tektronix Oscilloscopes facilitate changing from selenium to silicon rectifiers for increased reliability. Kits contain all necessary parts and instructions.

Field-Modification Kit 040-201 ...... $60
   for Type 531 serial numbers 101 through 7600
   for Type 535 serial numbers 101 through 8627

Field-Modification Kit 040-202 .... $60
   for Type 531 serial number 7601 and up
   for Type 535 serial number 8628 and up
   for Types RM31, 533, RM33, RM35, 541, RM41, 543, RM43, 545, RM45— all serial numbers.
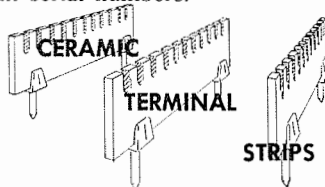
Due to increased production capacity, Tektronix is now able to accept large quantity orders for ceramic terminal strips. These are the same strips as are used in current production instruments: one, two, and three notch strips with one-yoke mounting, and four, seven, nine, and eleven notch strips with two-yoke mounting. Yokes are made of nylon, and are press-fit mounted to the chassis with spacers. Please consult your Tektronix Field Engineer for complete particulars and prices.

AVOID BURNING CRT SCREENS

Turning down the intensity before changing plug-in units in Tektronix Oscilloscopes eliminates any danger of burning the CRT screen during this operation.

USED INSTRUMENTS WANTED

1	524 or 514	Frank Valencic 718 E. 200 St. Cleveland 19, Ohio
1	315 or 511	Robert Anderson University of Illinois Chicago Control Systems Lab. Urbana, Illinois Phone: EMpire 7-6611
1	511, 514 or 515	Dr. R.B. Marion, Physicist University of Maryland U. S. Rt. #1 College Park, Maryland
1	511	A.C. Nielsen Company 807 Howard Street Evanston, Illinois Phone HO 5-4400
1	512	Willis Smith 5449 La Jolla Hermosa Ave. La Jolla, California
1	310 (or 315 512 514 515	H.J. Wood, Jr. Garwood Development Lab. P. O. Box 412 Las Cruces, New Mexico Phone JA 4-4044

☍. QUESTIONS FROM THE FIELD ☌

Q. Is the HV power supply in the 530-540 Series scopes capable of operating a slave CRT?

A. Yes, but if there is a regulation problem, it may be necessary to change the 6AU5 screen resistor (56 K 2 W) to a 47 K or 39 K 2 W resistor.

Q. What is the frequency response of P170CF and P500CF probes when used with 545/G?

A. We made some measurements and found the P170CF to be 3 db down at 22 mc and the P500CF 3 db down at 11.7 mc.

Q. Is it possible to use a 5BG or 5BH with the 530A and 540A?

A. Yes, it is possible if other minor changes are made. The 5BG crt is directly interchangeable with the T533 crt when it is used in the 531A, 533 or 535A Oscilloscopes except for the different vertical sensitivities of the

Form 3547 requested

Tektronix, Inc.
P. O. Box 831
Portland 7, Oregon

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two crt's. The vertical sensitivities are:

5BG	11.2 - 13.7 v/cm
T533	8.6 - 10.5 v/cm

The Vertical Gain Adj. in the scope should have enough range to overcome this difference. (Although changing the gain means you will have to re-tune the delay line and possibly the other coils in the amplifier.)

The 5BH crt is directly interchangeable with the T543 crt if pins 11 and 12 on the 5BH crt are jumpered together with a strap. The deflection sensitivities are the same in both of these crt's.

The T533 and T543 crt's have photo-etched horizontal deflection plates to minimize flare when the sweep in the 533 and 543 Oscilloscopes are used in the 50 and 100 times magnifier position.

### VERTICAL INTERFIELD TEST MODIFICATION KIT FOR TYPE 525 TV WAVEFORM MONITOR

A modification kit with step-by-step instructions is now available. To permit observation of the VERTICAL INTER-FIELD TEST SIGNAL which is inserted between horizontal sync pulses on the porch of the vertical blanking pulse of the composite video signal.

The kit includes all parts, wired VIT chassis, photos and instructions for modifying the Type 525 Oscilloscope. Also included are operating instructions and internal adjustment procedure with theory of operation.

When ordering, please specify Type 525 Vertical Interfield Test Modification Kit, Tek Number 040-171. Price $35.00.

CRT REPLACEMENT TECHNIQUE

We have an occasional note from the field, indicating trouble with the new brush-type CRT anode connectors.
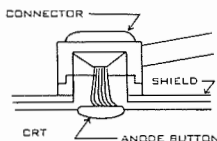
The new anode connectors were designed so that they would not have to be removed when replacing the CRT. The connector mounts on the shield and when the CRT is installed the brush makes contact with the CRT anode button.

If the connector is installed after the CRT is in place, the brush is apt to become frayed and bent resulting in a poor connection. It is recommended that you do not remove the connector from the shield when installing or replacing the CRT.

USE of TYPES 535, 535A, 545 and 545A for DOUBLE SWEEPS

Two single sweeps may be obtained utilizing the principle that when the Horizontal Display switch is placed in the Main Sweep Delayed ('A Delayed by B')* position, the trigger gate circuit can be armed either by depressing the Reset button or by a pulse from the delay pickoff circuit. Thus a sequence can be set up with a short main sweep and a longer delayed sweep, such that when both sweeps are triggered at the same time the main sweep will complete its cycle and lock out until the delayed sweep (through the delay pickoff) resets the trigger gate circuit; then the main sweep will accept one more trigger pulse and lock out until the Reset button is pressed. The details of this are as follows:

1. Set the Horizontal Display switch to Main Sweep Normal (A)*.

2. Adjust Main Sweep (Time Base A)* for sweep time desired and adjust triggering controls to trigger internally on the signal to be displayed.

3. Reset the Horizontal Display switch to Main Sweep Delayed ('A De-layed by B')*.

4. Set the Delaying Sweep Time/cm (Time Base B, Time/cm or Delay Time)* to a setting greater than the total time needed for displaying both main sweeps. (See note 1)

5. Set the Delaying Sweep Delay-Time Multiplier (Delay-Time Multiplier)* to the desired delay time needed to arm the Main Sweep (Time Base A)* for its second sweep.

6. Connect the +Gate Main Sweep (+Gate A)* to the Delaying Sweep Trigger or External Sweep In (Time Base B Trigger Input)* and set the Slope (Time Base B Trigger Slope)* switch to the + (+Int.)* position.

7. Adjust the Delaying Sweep (Time Base B)* Stability and Triggering Level controls to trigger on the leading edge of the main sweep +gate. When this is properly adjusted it should be possible to get lock out after main sweeps.

*(Captions in parenthesis apply to Types 535A and 545A instruments.)

Note 1: The total delaying sweep time must be greater than the total time needed for displaying both main sweeps, otherwise the delaying sweep could be retriggered during the second main sweep which would allow continuous sweep operation. In the Type 535 and 545 the total delaying sweep time is limited to 10 msec/cm. If a total delaying sweep time in excess of 10 msec/cm is required we suggest a K535-S1 modification kit (Tek #040-063) which gives a maximum delay sweep range of 1 sec/cm. This kit is available for $40.00 including a new front panel. When ordering please specify the instrument type and serial number.

Note 2: This double sweep type of operation is applicable to all A to Z plug-in units, however the Type C-A unit can be used in the alternate position to observe a separate sweep each of two signals which are displaced in time. The Type C-A unit is switched at the end of each main sweep when used in the alternate position.

Tektronix Instrument-Repair Facilities: There is a fully-equipped and properly-staffed Tektronix In-