product modification

050-0912-11

M30179, M64490

CRT REPLACEMENT

For TEKTRONIX® 7633/R7633 Storage Oscilloscopes:

Serial Numbers B010100 - B189999

When replacing the cathode-ray tube (crt), V1265, in instruments within the above serial number range, several components on the Storage circuit board need to be changed. These changes provide a greater range for the Bistable Op Level adjustment, R1689, thus compensating for crt variations and aging. Also, component reliability is improved.

NOTE

If the instrument serial number is greater than those listed above or if this kit or the Crt Bistable Op Level Adjustment Range Increase Modification Kit, pn 040-0833-XX, has been previously installed, these instructions may be disregarded and the crt, provided in this kit, used as a direct replacement for V1265.

10-SEPT-1987
Supersedes: 050-0912-10

KIT PARTS LIST:

Ckt. No.	Quantity	Part Number	Description
Q1718	1 ea	+151-0301-00	Transistor, PNP, Si, TO-18; 2N2907A
Q1708 Q1828	2 ea	+151-0347-00	Transistor: NPN, Si
Q1723 Q1711	2 ea	+151-0444-00	Transistor: NPN, Si
V1265	1 ea	154-0721-00	Electron tube: CRT
C1713	1 ea	281-0661-00	Cap, fxd, cer, di: 0.8pF, ±0.1pF, 500V
R1705	1 ea	315-0113-00	Res, fxd, film: 11kΩ, 5%, 0.25W
R1701	1 ea	315-0912-00	Res, fxd, film: 9.1kΩ, 5%, 0.25W
R1687	1 ea	321-0342-00	Res, fxd, film: 35.7kΩ, 1%, 0.125W
R1654	1 ea	321-0416-00	Res, fxd, film: 210kΩ, 1%, 0.125W

INSTRUCTIONS:

WARNING

Dangerous potentials may be exposed when the instrument covers are removed. Before proceeding, ensure the POWER switch is in the OFF position, then disconnect the instrument from the power source. Disassembly should only be attempted by qualified service personnel.

WARNING

Use care when handling a crt. Protective clothing and safety glasses should be worn. Avoid striking the crt on any object which might cause it to crack or implode. Store a crt in a protective carton or face down in a protected location on a soft mat to protect the faceplate from scratches.

NOTE

These instructions assume a certain familiarity with the instrument. If greater details are required for assembly or disassembly, refer to the service manual.

( ) 1. Remove all plug-ins units (necessary for R7633).

( ) 2. Remove the oscilloscope cover(s) -- the two side covers on the 7633 or the top cover on the R7633.

( ) 3. Remove the attaching screws for the low voltage regulator subassembly and pull the subassembly out the rear of the instrument. It is not necessary to completely remove the subassembly or disconnect the wiring.

( ) 4. Disconnect the socket from the rear of the crt.

( ) 5. Loosen the crt ring clamp screws (one on each side of the crt) until the spring tension is released. Then, press in on the screws to ensure the crt clamp is loose.

( ) 6. Disconnect the crt deflection plate leads from the crt neck pins. Ensure the neck pins are not bent.

( ) 7. Disconnect the crt anode plug from the jack coming from the high voltage compartment. Ground both these leads to the chassis to dissipate any stored charge. Use an insulated test lead to ground the high voltage jack.

( ) 8. Disconnect P1830, a 7-pin connector, from the Storage circuit board, A14. P1830 is located at the rear of the board. Removal of the storage access cover from the left side of the plug-in compartment in the R7633 will facilitate access to the Storage circuit board.

( ) 9. Remove the crt mask frame from the front of the crt.

( ) 10. Remove the four screws securing the crt bezel.

( ) 11. Remove the crt light filter, metal mask, bezel, implosion shield, and plastic mask.

( ) 12. Hold one hand on the crt faceplate and push forward on the crt base (rear) with the other. As the crt starts to move out of the shield, grasp the front of the crt firmly with one hand and slowly pull. Guide the anode lead and the storage multi-pin connector through the cutout in the crt shield as the crt is being removed.

( ) 13. Insert the new crt into the shield, guiding the anode lead and the storage multi-pin connector through the cutout in the crt shield.

( ) 14. Clean the crt faceplate, implosion shield and light filter with a soft, lint-free cloth dampeded with denatured alcohol.

( ) 15. Ensure the graticule light reflector is in place, then install the plastice mask, implosion shield, bezel, metal mask and light filter.

( ) 16. Tighten the crt bezel screws.

( ) 17. Install the crt frame mask by pushing in until it snaps into place.

( ) 18. Connect the crt anode plug.

( ) 19. Push on the crt base to ensure the crt is as far forward as possible. Tighten the crt ring clamp screws wntil the springs are compressed. Tighten each screw a few turns at a time to evenly distribute the tension.

( ) 20. Connect the crt base socket.

( ) 21. Install the low voltage regulator subassembly.

( ) 22. Carefully connect the deflection plate connectors to the crt neck pins. After installing each connector, lightly pull on each lead to ensure the connector will remain in place.

( ) 23. Disconnect the multi-pin connectors from the Storage circuit board. A14. Note the color and location of each connector for reassembly purposes.

( ) 24. Remove the screws used to attach the Storage circuit board to the chassis.

( ) 25. Remove the Storage circuit board.

( ) 26. Replace the following components on the Storage circuit board with the indicated component provided in the kit:

( ) a. C1713, the 1.8pF ceramic, tubular-type ('dog-bone') capacitor near Q1810, with the 0.8pF tubular-type capacitor.

( ) b. R1701, a 15kΩ resistor between Q1701 and Q1708, with the 9.1kΩ resistor.

( ) c. R1705, a 16kΩ resistor near Q1704, with the 11kΩ resistor.

( ) d. R1654, a 200kΩ resistor between R1689 (Bistable Op Level adjustment) and Q1701, with the 210kΩ resistor.

( ) e. R1687, a 42.2kΩ resistor near Q1697, with the 35.7kΩ resistor.

( ) f. Q1718 with the 2N2907A transistor.

( ) g. Q1708 and Q1828 transistors, with npn transistors, pn 151-0347-00, that are provided in this kit.

( ) g. Q1711 and Q1723 transistors, with npn transistors, pn 151-~~0342~~-00, that are provided in this kit.

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( ) 27. Install the Storage circuit board and reconnect the multi-pin connectors, including P1830 from the crt.

( ) 28. Refer to the Performance Check/Calibration Section (5) of the instruction manual and check oscilloscope performance, making any necessary adjustments.

( ) 29. Install the instrument cover(s).

( ) 30. Attach the following manual insert to the 7633/R7633 Storage Oscilloscope Service Manual.