



045-0144-02

M64414, M64442
M64679, M64799
M65927, M66995

RELIABILITY IMPROVEMENTS

For TEKTRONIX® 11A52 Two Channel Amplifier

Serial Numbers B010100 - B019999

This kit contains parts and instructions that will improve the plug-in amplifier's reliability. To eliminate component failures caused by high humidity, the EPROM and both hybrid preamplifiers IC's are to be replaced.

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KIT PARTS LIST:

Ckt. Number	Quantity	Part Number	Description
A1U700	1 ea	160-4010-08	Microckt. dgtl:HMOS, EPROM, Ver 3.8
A1U310 A1U410	2 ea	165-2129-03	Microckt. linear:Vertical preamp
	1 ea	-----	Label: 045-Kit

INSTRUCTIONS:

WARNING

Dangerous shock hazards may be exposed when the instrument covers are removed. Before proceeding, ensure the mainframe power switch is in the off position. Then, remove the plug-in from the instrument. Disassembly should only be attempted by qualified service personnel.

CAUTION

Many components within the 11A52 Two Channel Amplifier plug-in are extremely susceptible to static-discharge damage. Service the instrument only in a static-free environment. Observe standard handling precautions for static-sensitive devices while installing this kit. Always wear a grounded wrist strap.

The Following Instructions Are Divided Into Three Sections:

- Section A. Vertical preamp microcircuit (hybrid) replacement.
- Section B. EPROM microcircuit replacement.
- Section C. Programming The Unit Identification

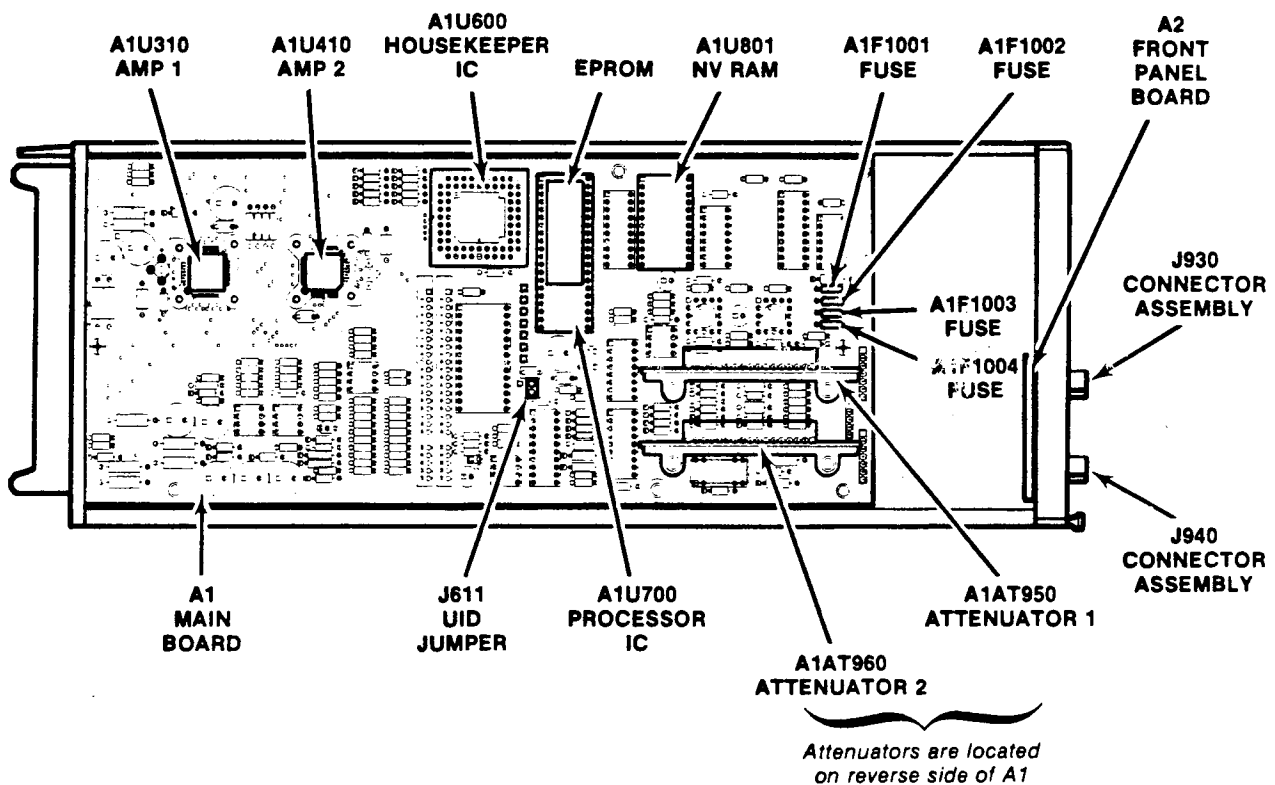


Figure 1. - Component locations.

Section A. Vertical pre-amp microcircuit (hybrid) replacement.

- () 1. Remove the left and right electrical shields. Take care not to bend or damage the electrical shields during removal.

- () 2. Replace A1U310 and A1U410, vertical pre-amp microcircuits, with the new microcircuits, pn 165-2129-03, provided in this kit. For disassembly and replacement of the microcircuit from the Hypcon assembly connector refer to the following steps. Refer to Figure 1, for component locations.
- () 3. Unscrew and remove the 4 screw/washer assemblies, noting the index on the circuit board (arrow) and plastic frame (pointed tab), for later assembly.
- () 4. Remove the plastic frame away from the board.
- () 5. Remove the hybrid from the circuit board using tweezers, noting the index location for later assembly.

NOTE

Cleanliness is very important. Small hairs and elastomer flash under the contacts, which are almost invisible to the naked eye, will prevent good electrical contact. Most apparent failures of the hybrid are actually due to contamination of the Hypcon. Do not touch the gold-plated contacts with fingers. Refer to pages 5 and 6 for additional information.

- () 6. Place the new hybrid microcircuit into the square hole in the circuit board. The hybrid is keyed so that it will properly fit into the circuit board in only one position. When the back of the hybrid rests on the heat sink pedestal, the top of the hybrid should be flush with the top of the circuit board. Misalignment may result in a fractured hybrid when the frame is reinstalled.
- () 7. Place the plastic frame with elastomer installed over hybrid so that the key (pointed tab) is aligned with the corner arrow on the circuit board.
- () 8. Replace the mounting hardware. Apply two (2) inch-pounds of torque (2.3 cm-kg) to the four (4) mounting screws. Do not overtighten. To do so will strip the microcircuit stiffener/heat sink mounting threads.

Amplifier Hybrids

Refer to Figure 2, Hypcon assembly removal and replacement. When replacing the hybrid, do not touch the elastomer's gold-plated contacts with your fingers. Use a cleaner (such as alcohol) that will not lessen contact reliability. The Hypcon socket contacts are fragile. Use caution when removing and replacing a Hypcon to avoid damaging these contacts.

Before reinstallation, use a 4X (or greater) magnifying glass to examine the hybrid, elastomer, and the Hypcon contacts under light for dust, hair, lint, etc. If the etched circuit board surfaces require more cleaning, scrub lightly with a soft rubber eraser. Do not use an eraser on the hybrid or elastomer. Blow or vacuum clean, while dusting the surface with small clean brush.

If the hybrid and elastomer contact holder are contaminated, clean them by flushing or spraying with alcohol and oven dry at +50°C or air dry for 20 minutes. Do not scrub with a cotton-tipped swab or similar device. (Cotton fibers may adhere to the contacts.) If the contact holder is excessively contaminated, replace it with a new one.

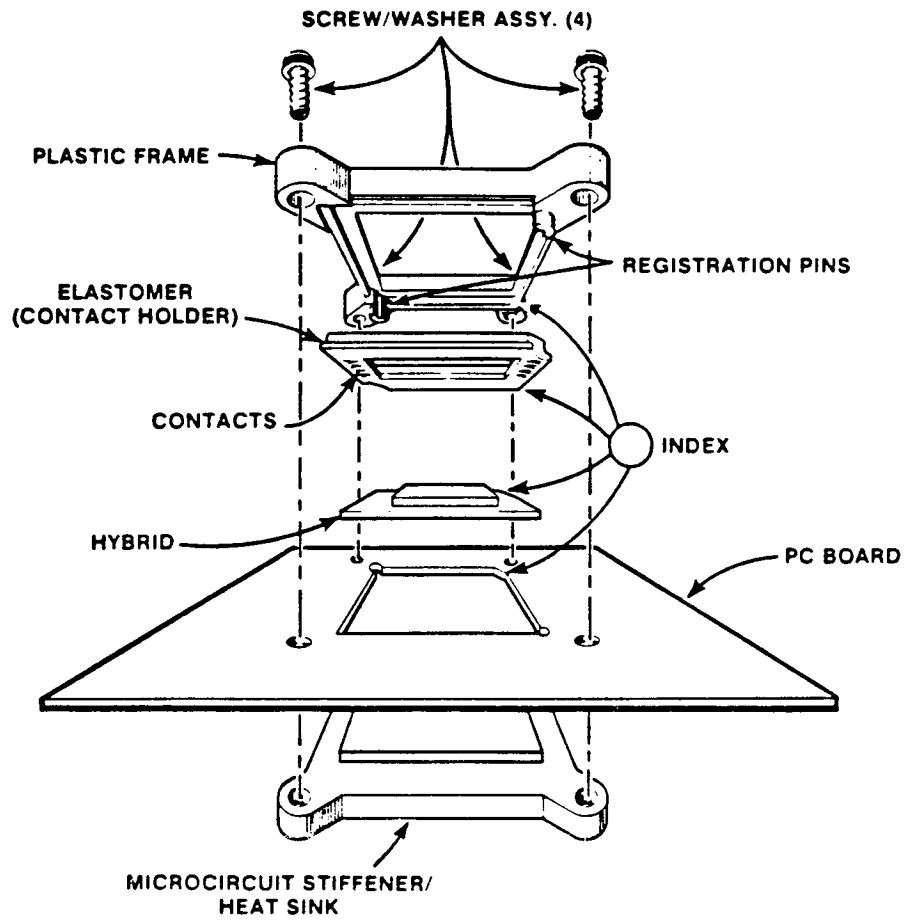
Tighten the mounting screws with two inch-pounds of torque (in the English Unit System) or 2.3 centimeter-kilograms (in the MKS Unit System) to secure the Hypcon to the circuit board.

Make sure that the elastomer is properly seated in the contact holder before remounting the assembly to the circuit board. Use care when mounting the whole assembly to the circuit board to prevent misalignment between the connector and board.

WARNING

Because of close tolerances involved, special care must be taken to ensure correct index alignment of each Hypcon part during reassembly. Refer to Figure 2 for the index locations. Failure to do so can result in a cracked hybrid substrate.

EXPLODED VIEW OF HYPCON CONNECTOR



CROSS SECTION VIEW OF HYPCON CONNECTOR

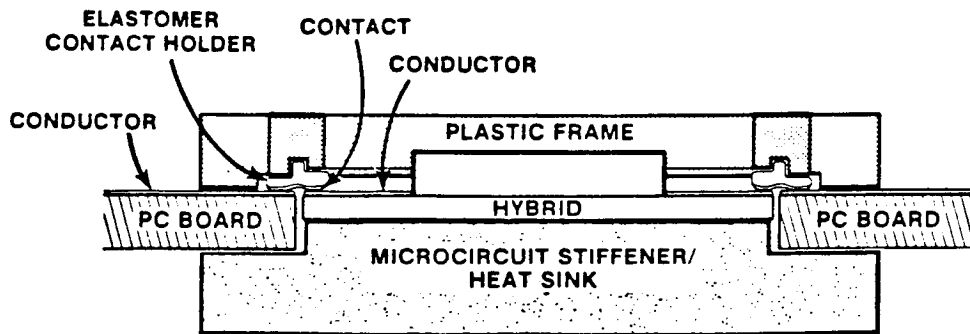


Figure 2. - Hypcon assembly removal and replacement.

Section B. EPROM microcircuit replacement.

CAUTION

Do not remove the label affixed to the top of the EPROMs. Removing this label will allow light into the chip, and may cause partial erasure of its data. Avoid touching the microcircuits pins or socket contacts. Finger oils can lessen contact reliability.

- () 1. Remove A1U700, EPROM microcircuit, using an Insertion - Extraction Pliers (such as General Tool's pn U505BG, a 28-pin type). Refer to Figure 1, for component location.
- () 2. Position the pliers around the outside of the EPROM microcircuit. Squeeze the handles to grasp the EPROM and slowly pull it from the socket.
- () 3. Install the new EPROM microcircuit into the socket, using the same tool used in step 2 in this section. Check that all the microcircuit pins are straight and evenly spaced to ensure proper installation. Refer to Figure 3, EPROM indexing diagram.

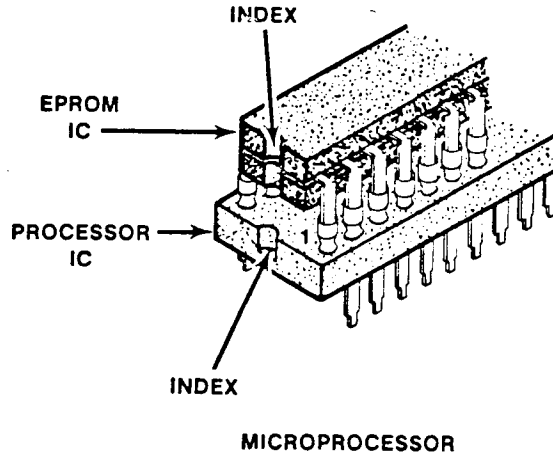


Figure 3. - EPROM indexing diagram.

Section C. Programming The Unit Identification

NOTE

The Unit Identification (UID) is identical to the plug-in's serial number and is stored in NV RAM. It is necessary to enter this number if the Main circuit board A1 is replaced or if data in NV RAM becomes corrupted.

- () 1. 11401 and 11402, remove the bottom cover of the mainframe and install a Term Conn Link (shorting strap) on the CAL-LOCK terminals located on the Time Base circuit board A6. Refer to Figure 4, for pin locations.

NOTE

No special set-up needed with the 11301/11302 mainframes.

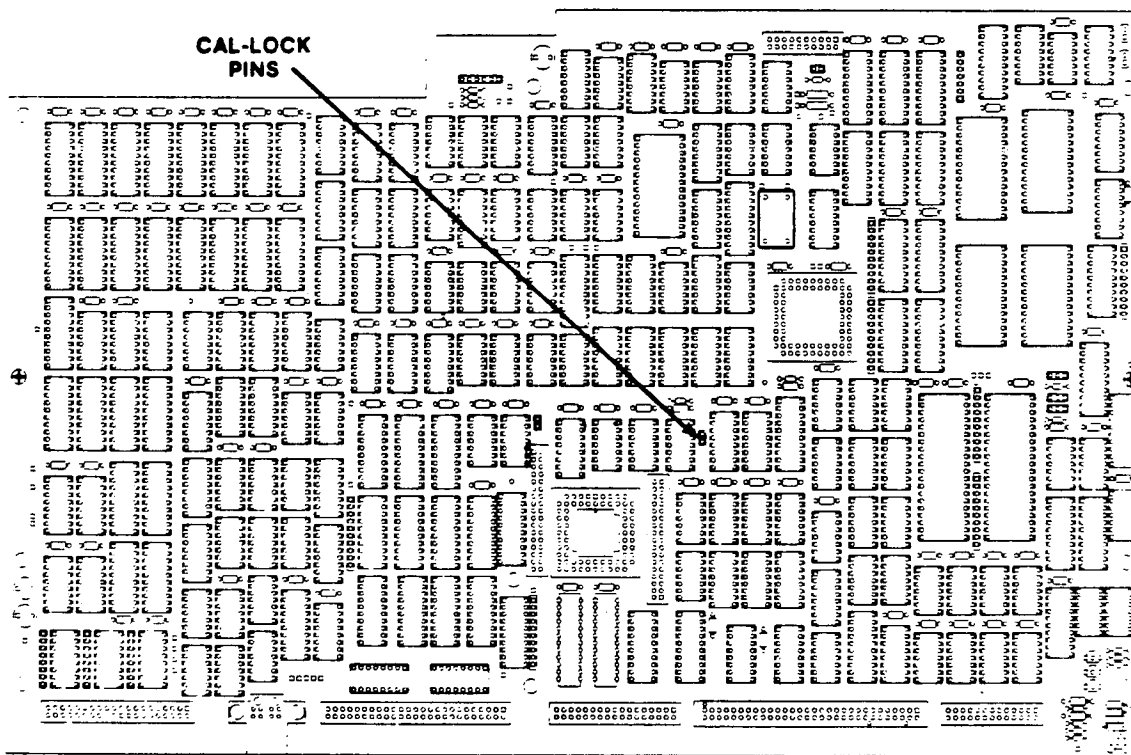


Figure 4. - 11401/11402 Time base ckt bd A6

To Enter the UID, use this procedure:

- () 2. Connect the Terminal to the mainframe's RS-232-C port. (Refer to the mainframe User's Reference Manual for instructions on setting up the RS-232-C parameters).
- () 3. Move the UID Term Conn Link (jumper) J611 on the Main circuit A1 (shown in Figure 1). The jumper should be vertical in its normal position. Remove the jumper and install it horizontally.
- () 4. Install the plug-in into center compartment. Turn the power on. Wait until Diagnostics checks are completed. **Serial Sum** and **Check Tweak** error messages will be displayed.

- () 5. At the Terminal, type the command:

UID [Center]: "<Serial Number>"

. Center refers to the name of the compartment.

- () 6. At the Terminal, type the query:

UID? [Center]

Observe that the correct UID is reported.

- () 7. **Load High Frequency cal constant, channel 1 as follows:**

- A. 11301 and 11302 enter the following:

CCALCONSTANT?58 to get the current value.

CCALCONSTANT58: B0XXXXX where B0XXXXX is the current value.

- B. 11401 and 11402 enter the following:

CCAL?58 To get the current value.

CCAL58: B0XXXXX where B0XXXXX is the current value.

- () 8. **Load High Frequency cal constant, channel 2 as follows:**

- A. 11301 and 11302 enter the following:

CCALCONSTANT?186 to get the current value.

CCALCONSTANT186: B0XXXXX where B0XXXXX is the current value.

B. 11401 and 11402 enter the following:

CCAL?186 To get the current value.

CCAL186: **BOXXXXX** where **BOXXXXX** is the current value.

NOTE

If the current value is greater than ± 1.00 , the cal constants have been lost. Then perform the necessary procedures in Section 2 Checks and Adjustments, in the 1152A Service Reference Manual.

- () 9. Push the ENHANCED ACCURACY button on the mainframe front panel.
- () 10. Move the ON/STANDBY switch to STANDBY.
- () 11. Remove the plug-in from the mainframe.
- () 12. Return the jumper J611 on the Main circuit board A1 to its vertical position.
- () 13. Replace the right and left electrical shields.
- () 14. Remove the protective backing from the 045-Kit label, included in this kit, and place it on a clean, dry area on the top frame rail. The label indicates installation of the kit for future reference.
- () 15. **11401 and 11402.** Remove the Term Conn Link (shorting strap) on the CAL-LOCK terminals located on the Time Base circuit board A6. Replace the bottom cover on the mainframe.