

# Instructions



**050-3600-00**

**AES Board Replacement  
764 Digital Audio Monitor**

**075-0853-00**

**Warning**

The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries prior to performing service.

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# Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* and the *General Safety Summary* before performing any service procedures.

**Do Not Service Alone.** Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

**Disconnect Power.** To avoid electric shock, switch off the instrument power, then disconnect the power cord from the mains power.

**Use Caution When Servicing the CRT.** To avoid electric shock or injury, use extreme caution when handling the CRT. Only qualified personnel familiar with CRT servicing procedures and precautions should remove or install the CRT.

CRTs retain hazardous voltages for long periods of time after power is turned off. Before attempting any servicing, discharge the CRT by shorting the anode to chassis ground. When discharging the CRT, connect the discharge path to ground and then the anode. Rough handling may cause the CRT to implode. Do not nick or scratch the glass or subject it to undue pressure when removing or installing it. When handling the CRT, wear safety goggles and heavy gloves for protection.

**Use Care When Servicing With Power On.** Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

**X-Radiation.** To avoid x-radiation exposure, do not modify or otherwise alter the high-voltage circuitry or the CRT enclosure. X-ray emissions generated within this product have been sufficiently shielded.



# Kit Description

This document supports the following kits:

- **050-3600-00.** Replaces the AES board and modifies the XLR board to work with the new AES board.
- **050-3612-00.** Replaces parts U404 and U405 on the AES board and modifies the XLR board to work with the updated AES board.

This document supports Tektronix modification: ECO 1035.

## Products

**764** B010100 - B024917  
**764 Option 02** B010100 - B024917

## Minimum Tool and Equipment List

| Required tools and equipment   | Example  |
|--------------------------------|--|
| #15 Torx driver                |  |
| 3/16 inch socket or nut driver |  |
| 9/16 wrench                    |  |
| Small flat-bladed screwdriver  | A 3/32 inch screwdriver that has been filed to fit the slot and blunted for strength |
| PLCC Socket Extraction Tool    | AMP 822154-1   |

### Kit Parts List for 050-3600-00

| Circuit/figure number | Quantity | Part number | Description   |
|-----------------------|----------|-------------|---|
| A2U404                | 1 ea     | 163-0414-00 | IC,DIGITAL: CMOS  |
| A2U405                | 1 ea     | 163-0413-00 | IC,DIGITAL: CMOS  |
| A6C90                 | 1 ea     | 281-0797-00 | CAP,FXD,CERAMIC: 15PF,5%,100 V                                |
| A6R80,<br>A6R90       | 2 ea     | 322-3193-00 | RES,FXD,FILM: 1.00 K OHM,1%,0.2 W                             |
| -----                 | 1 ea     | 075-0853-00 | INSTRUCTIONS: AES Board Replacement 764 Digital Audio Monitor |

### Kit Parts List for 050-3612-00

| Circuit/figure number | Quantity | Part number | Description   |
|-----------------------|----------|-------------|---|
| A2                    | 1 ea     | 671-2331-XX | Circuit board assembly, AES                                   |
| A6C90                 | 1 ea     | 281-0797-00 | CAP,FXD,CERAMIC: 15PF,5%,100 V                                |
| A6R80,<br>A6R90       | 2 ea     | 322-3193-00 | RES,FXD,FILM: 1.00 K OHM,1%,0.2 W                             |
| -----                 | 1 ea     | 075-0853-00 | INSTRUCTIONS: AES Board Replacement 764 Digital Audio Monitor |

# Installation Instructions

These instructions are for personnel who are familiar with servicing the product. If you need further details for disassembling or reassembling the product, refer to the appropriate product manual. Contact your nearest Tektronix, Inc., Service Center or Tektronix Factory Service for installation assistance.



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**WARNING.** To avoid electrical shock, disconnect the instrument from the AC power supply before removing the cabinet or replacing any components.

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**CAUTION.** To prevent static discharge damage, service the product only in a static-free environment. Observe standard handling precautions for static-sensitive devices while installing this kit. Always wear a grounded wrist strap, grounded foot strap, and static resistant apparel while installing this kit.

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**CAUTION.** To avoid damage to the chassis, do not over-tighten the threaded fasteners in the 764 Digital Audio Monitor when reassembling the instrument. Please note the following recommended maximum torques:

#4 fasteners (for example, the stud/spacers that fasten the D-connector board to the rear panel): 3 to 5 Inch-pounds (0.34–0.56 N·m).

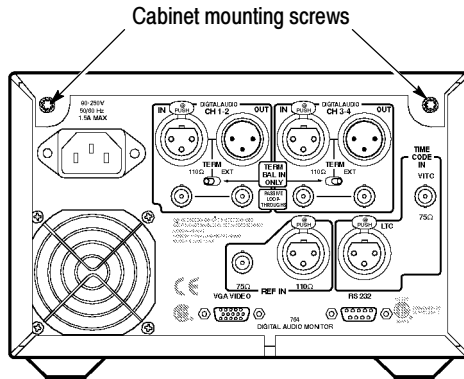
#6 fasteners (for example, the Torx-head screws used to fasten the rear panel to the remainder of the chassis): 7 to 9 Inch-pounds (0.79–1.02 N·m).

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## Remove and Replace

### Remove the Cabinet

Disconnect all cables from the monitor and remove the two cabinet mounting screws shown in Figure 1. Slide the monitor forward out of the enclosure.

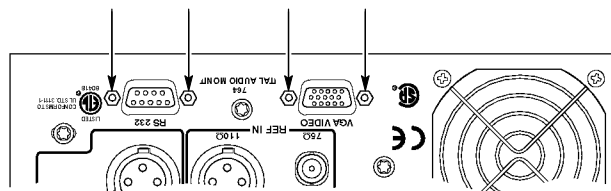


**Figure 1: Rear view of the 764 Digital Audio Monitor in a Tektronix enclosure**

**NOTE.** In an instrument with an older XLR board (part number 671-3245-02 and earlier, standard, or 671-4160-01 and earlier, Opt 02), if you replace the AES board, or replace parts at U404 and U405 on the AES board, you must modify the XLR board. Modification requires removal of the rear-panel assembly and the XLR board from the instrument.

### Remove the Rear Panel Assembly

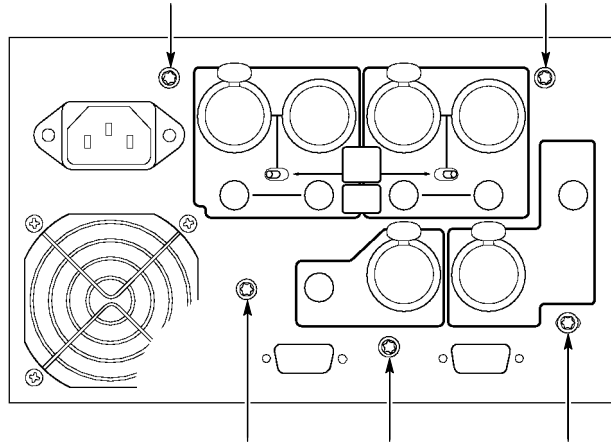
1. Set the instrument upside-down on a flat surface, and disconnect the 26-conductor D-Connector cable from J105 on the main circuit board.
2. With a 3/16 inch socket or nut driver, remove the threaded stud/spacers from both sides of the RS-232 and VGA D-connectors (see Figure 2), and remove the D-Connector board from the rear panel.



**Figure 2: The stud/spacers that retain the d-connector assembly**



3. Turn the instrument right-side up, and disconnect the input data bus cable from J912 of the AES board.
4. Remove the lock nut from the rear-panel VITC connector (BNC). Remove the five (5) Torx-head screws (shown in Figure 3) that hold the rear panel to the remainder of the chassis and the input/reference subassembly.



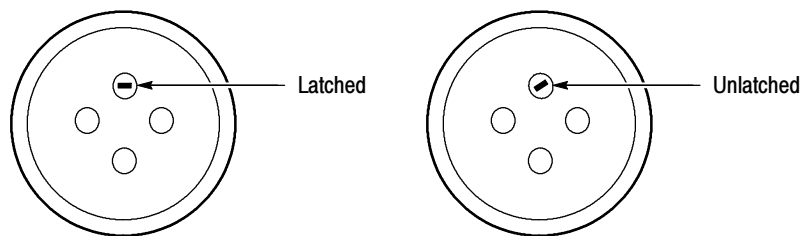
**Figure 3: The rear-panel retaining screws**

5. Gently pull the rear panel away from the XLR and BNC connectors on the input/reference subassembly. The panel will remain connected to the power supply board by the fan and AC supply wires.
6. Remove the two Torx-head screws that hold the XLR board (and the rest of the input/reference subassembly) to the 764 Digital Audio Monitor chassis. Carefully lift the subassembly away from the rest of the instrument.

**Remove the XLR Board (A6)**

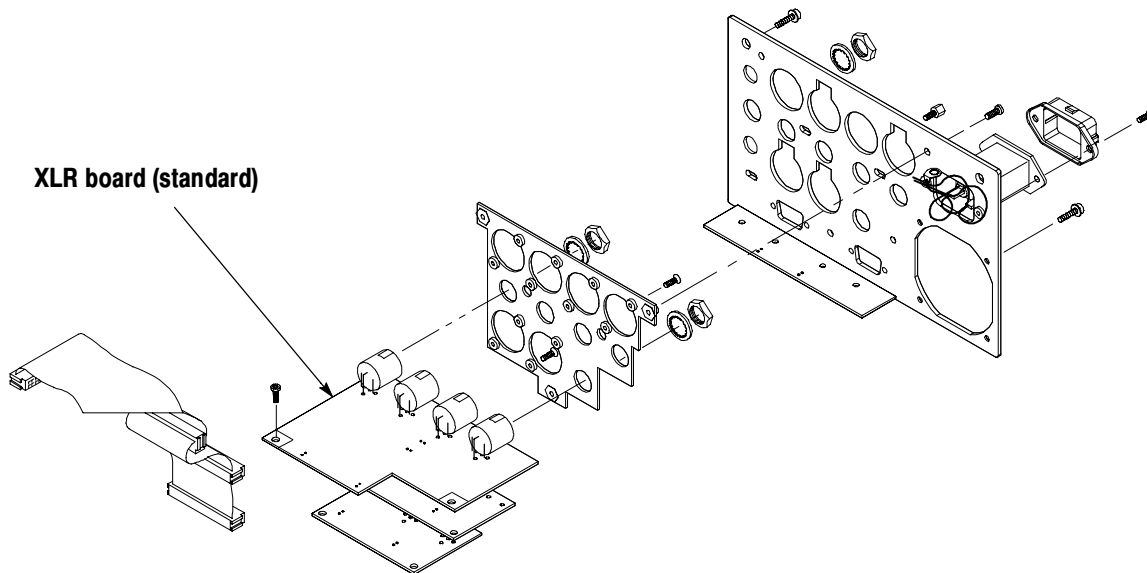
1. Disconnect the input data bus cable from J5 on the XLR board.
2. Release the four DIGITAL AUDIO XLR connectors from their housings to separate the XLR circuit board assembly from the remainder of the audio/reference subassembly.

Referring to Figure 4, release the XLR connectors from their housings by inserting a small flat-blade screwdriver into the slot as shown. (Technicians at Tektronix use 3/32 inch screwdrivers that have been filed to fit the slot and blunted for strength.) Turn the screwdriver counterclockwise (less than 1/4 turn is required) to release the latch.

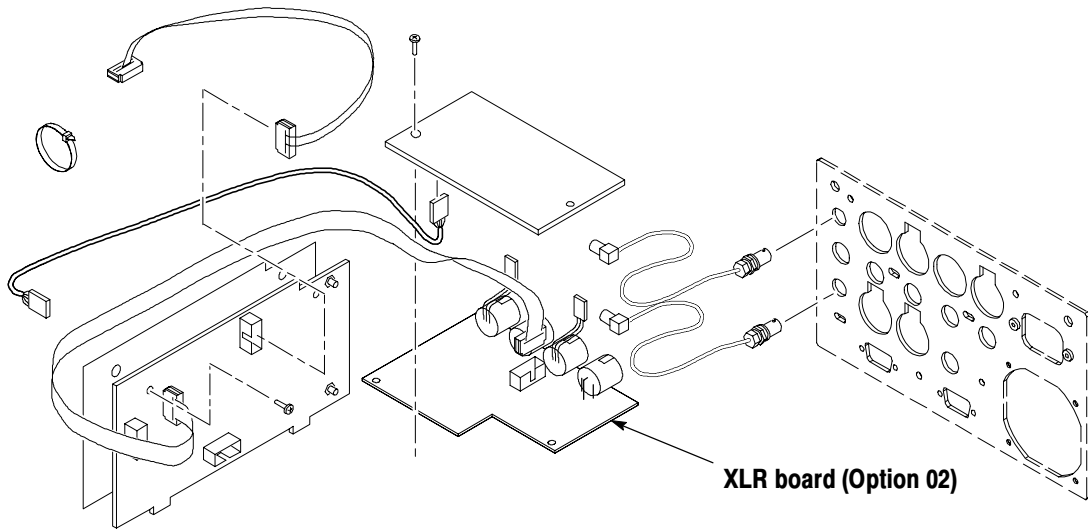


**Figure 4: Releasing the XLR connectors**

3. Pull the XLR board gently away from the subpanel to extract the connectors from their housings (see Figure 5 or Figure 6).



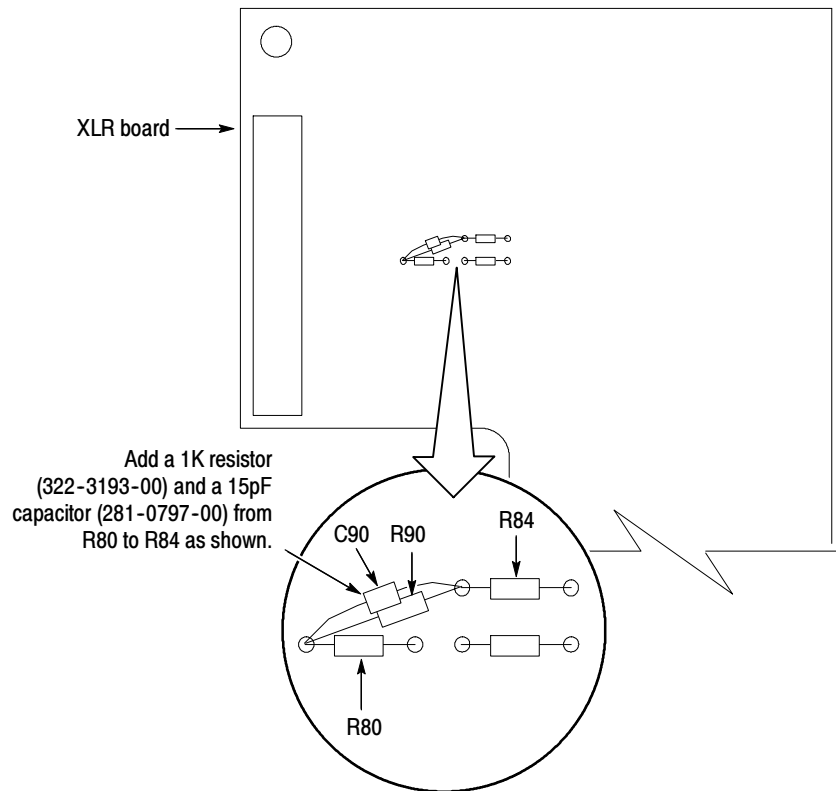
**Figure 5: Removing the XLR board (standard)**



**Figure 6: Removing the XLR board (Option 02)**

### Modify the XLR Board

1. Remove R80 on the XLR board, and replace it with a new 1.00 K ohm resistor (Tektronix part number 322-3193-00). See Figure 7 for the board location.
2. Add a new 1.00 K ohm resistor (Tektronix part number 322-3193-00) and 15 pF capacitor (Tektronix part number 281-0797-00) between the grounded end of R84 and R80 as shown in Figure 7. See Figure 8 for the schematic.



**Figure 7: Adding new parts to the XLR board**

3. Reinstall the XLR board in the instrument by reversing the procedure for removing the board (see *Remove the XLR Board (A6)* on page 8).
4. Proceed to *Reinstall the Cabinet* on page 14.

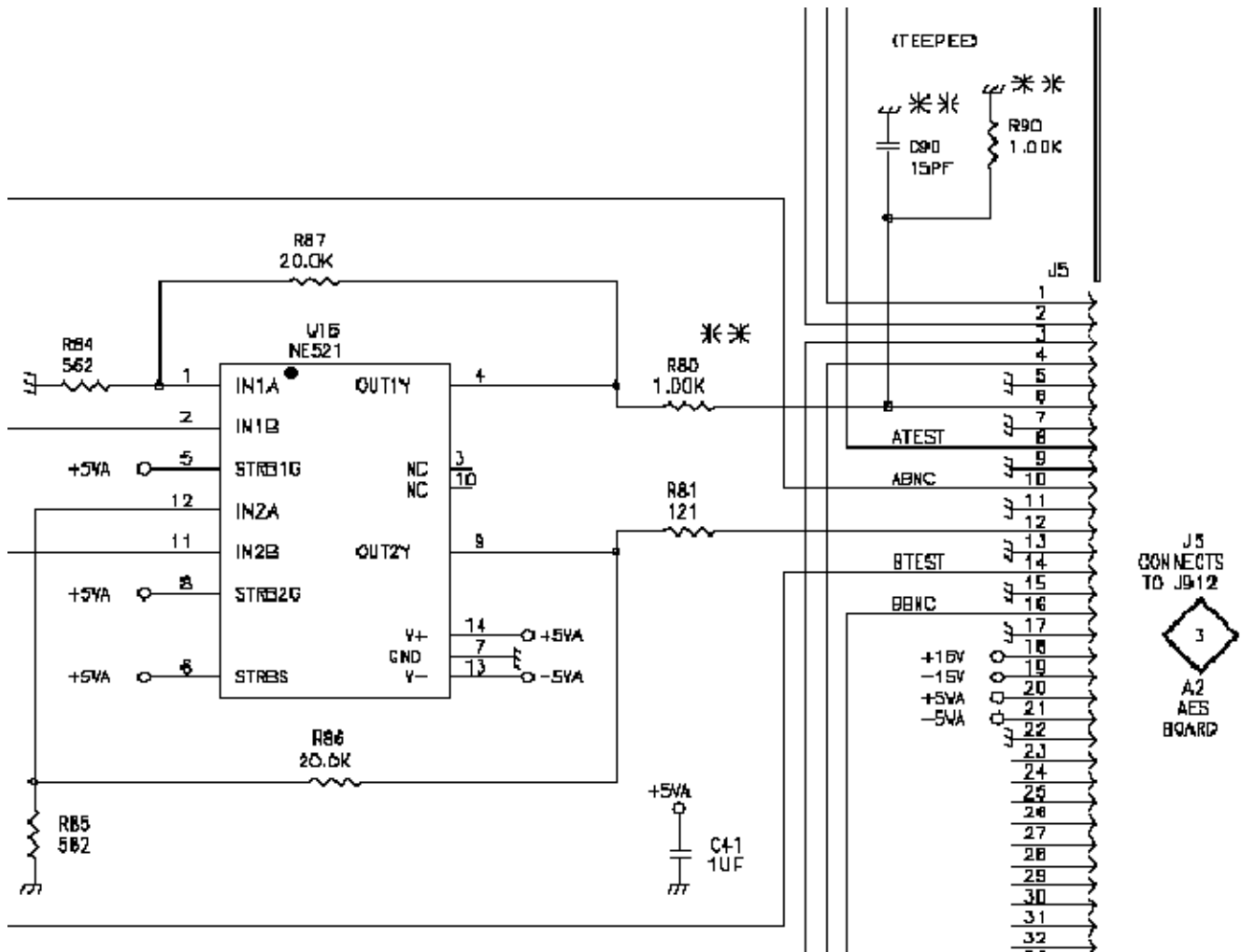


Figure 8: Partial schematic of the XLR board, showing new and changed parts

## Replace AES Board (A2) or Parts

Choose one of the following two procedures, depending on whether you are replacing the entire board or just U404 and U405.

### Replace U404 and U405

1. Carefully pull each old part up and off the board. See Figure 9 for part locations.
2. Push each part firmly onto the board. Be careful not to bend any pins under the part.
3. Proceed to *Reinstall the Cabinet* on page 14.

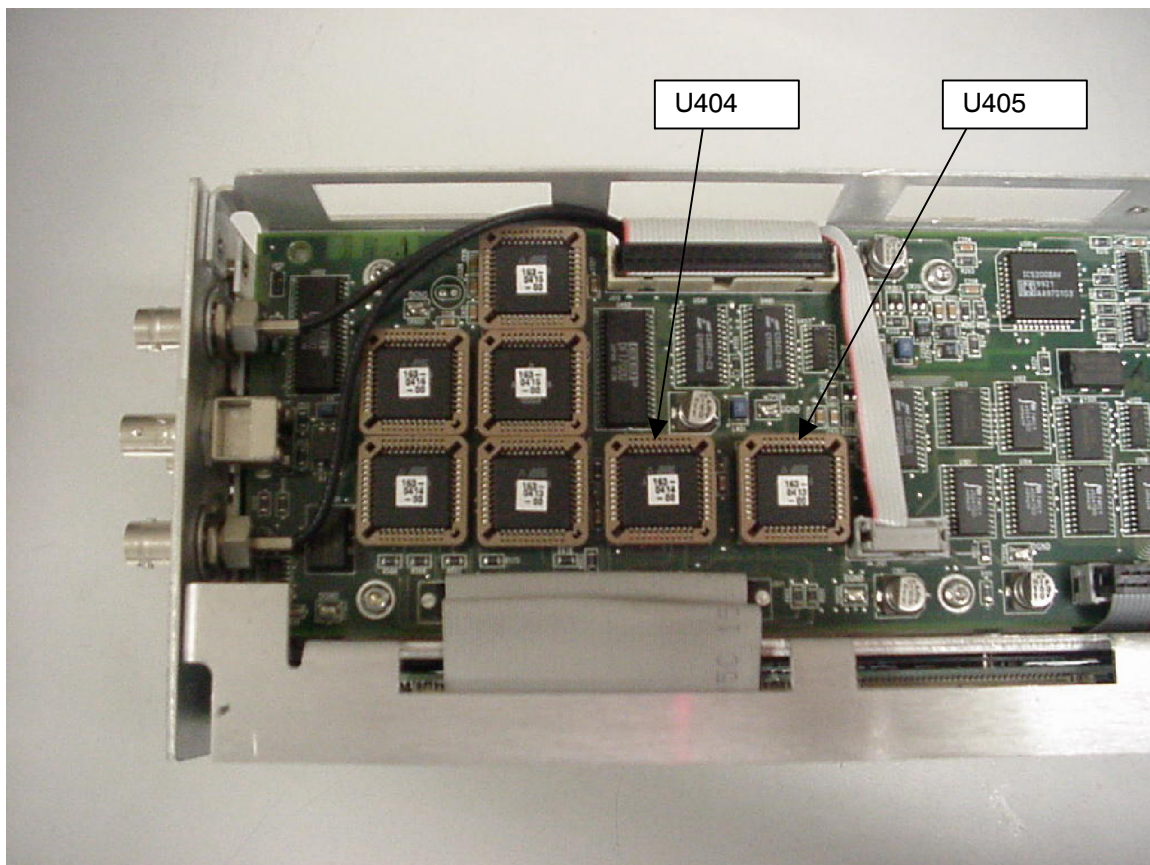


Figure 9: Portion of the AES board, showing locations of U404 and U405

**Replace the AES Board  
(A2)**

1. Carefully remove the cables from J912 (headphones), J902 (power supply), and J701 (input). Push the connector end of the input cable through the cut-out on the top of the chassis.
2. Disconnect the cables from J801 and J901 of the Main circuit board assembly. Straighten each cable if necessary, and push its connector end through the chassis cut-out.
3. Remove the retaining nut from the rear-panel VITC connector.
4. With a #15 Torx driver, remove the six screws that attach the circuit board assembly to the chassis.
5. Grasp the power supply cable in one hand, and pull it gently away from the AES circuit board assembly. Then grasp the front end of the assembly, and lift it enough to clear the chassis. Finally, pull the board toward the front of the instrument until the VITC BNC is clear of the rear panel, and lift the board away from the chassis.
6. Confirm that there is one locknut on the VITC connector (J911) and that it is within 1/16 inch (1.5 mm) of bottoming on the connector body.
7. Hold the connector end of the power supply cable away from the chassis with one hand, and move the new AES circuit board assembly into place (VITC-connector end first) with the other hand.
8. Adjust the BNC locknut so that the holes in the circuit board align with the threaded chassis stand-offs when the locknut is flush with the rear panel.
9. Thread the six mounting screws through circuit board and into the chassis stand-offs. Do not fully tighten the screws.
10. Install and tighten the outer VITC connector retaining nut.
11. Tighten the assembly mounting screws; be careful not to over-tighten.
12. Push the cables that lead from J801 and J901 through the chassis, and attach them to the Main circuit board assembly.
13. Push the connector end of the input cable back through the cut-out on the top of the chassis.
14. Connect the cables that you disconnected in step 1 to J912 (headphones), J902 (power supply), and J701 (input).
15. Proceed to *Reinstall the Cabinet* on page 14.

## Reinstall the Cabinet

Slide the instrument into the enclosure, being careful not to catch any cables. Reinstall and tighten the two cabinet mounting screws shown in Figure 1.

## Verify Operation

To verify proper instrument performance after these modifications, complete the Performance Verification procedure in the *764 Digital Audio Monitor Service Manual*, available on the Tektronix Web site.

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