

# Elecraft K3

## 12VDC OUT Current Modification

Revision A, April 10, 2012  
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### Introduction

This modification raises the current available from the K3's 12VDC OUT connector from 0.5A to 1.0A. It involves replacing three components on the K3 RF board: diode D34, choke RFC 48 and resettable fuse F2.

### Parts and Tools Required

You will need a temperature-controlled ESD-Safe soldering station, fine solder, and your normal hand tools such as needle nose pliers and diagonal cutters. In addition, you will need de-soldering tools such as a solder-sucker or high-quality de-soldering wick. The action of de-soldering wick is often improved by adding a small amount of pure rosin-based liquid soldering flux.

A kit containing the required parts is available from Elecraft. Order K312MDKT

QUANTITY	DESCRIPTION	ELECRAFT PART NUMBER
1	Choke, 10uH 1.28A	E690303
1	Diode	E560063
1	Resettable Fuse, 1.1A	E980223

### Procedure

**⚠** A grounded wrist strap and ESD dissipating mat are recommended whenever you work inside your K3. Optionally, touch a bare metal ground frequently while working.

Disconnect power and all cables from your K3.

Remove the rear section of the K3's bottom cover (see Figure 1). Keep the three longer screws with their lock washers separate from the others. You must reinstall them in the same locations when replacing the bottom cover.

**⚠** Whenever you remove screws from a panel, if one screw seems too tight to loosen without damaging it, first loosen the other screws then try again. Sometimes one screw binds in its hole when the other screws are tightened.



REMOVE ALL THE SCREWS INDICATED AND LIFT THE REAR SECTION OF THE BOTTOM COVER OFF

NOTE:  
THESE THREE SCREWS ARE 1/4" (6.4mm) LONG AND HAVE INSIDE TOOTH LOCK WASHERS UNDER THE SCREW HEADS. ALL THE OTHER SCREWS ARE 3/16" (4.8 mm) LONG AND HAVE NO LOCK WASHERS. KEEP THEM SEPARATE.

Figure 1. Removing Rear Section of Bottom Cover.

□ Replace SMD diode D34 with the new diode supplied with the mod kit (see Figure 2) . The old diode is easily removed without special SMD handling tools by heating and lifting one end of the existing diode at a time using a thin screwdriver or knife blade under the diode.

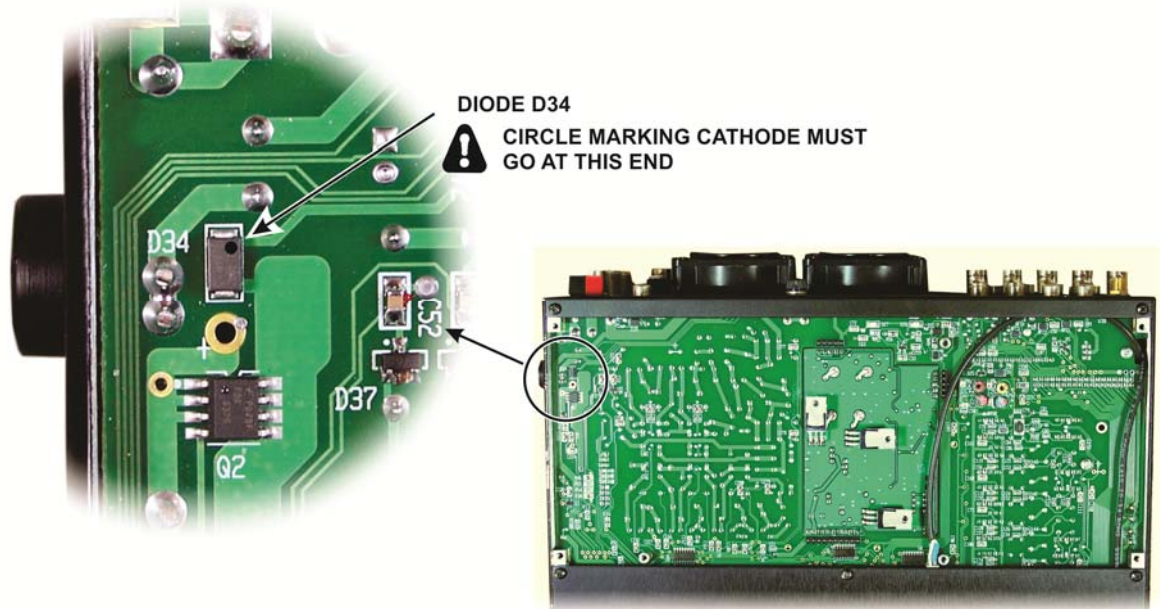


Figure 2. D34.

□ Leave the bottom cover off for now, turn the K3 over and remove the nine screws to free the top cover as shown in Figure 3. After removing the screws, lift the cover gently to reach the speaker wire connector. Unplug the speaker then set the top cover aside in a safe place.

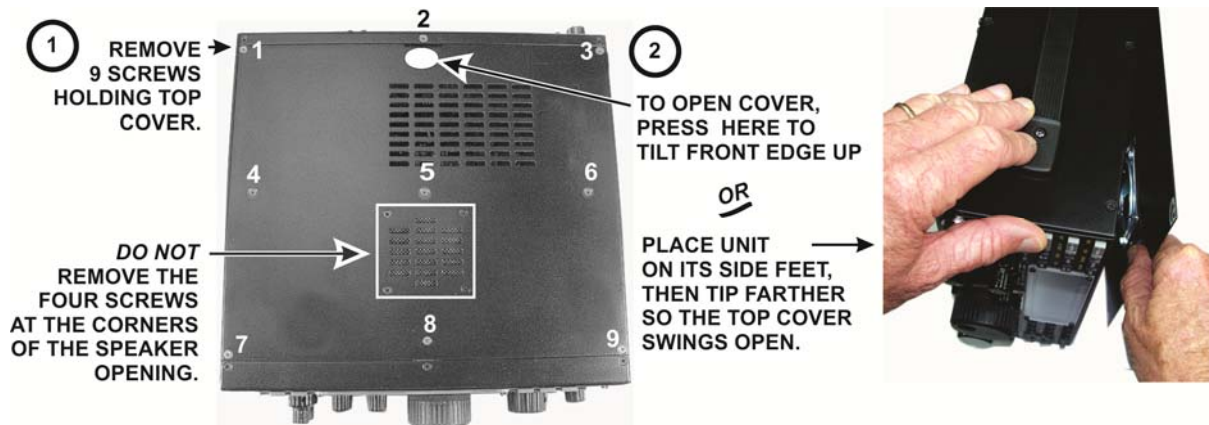
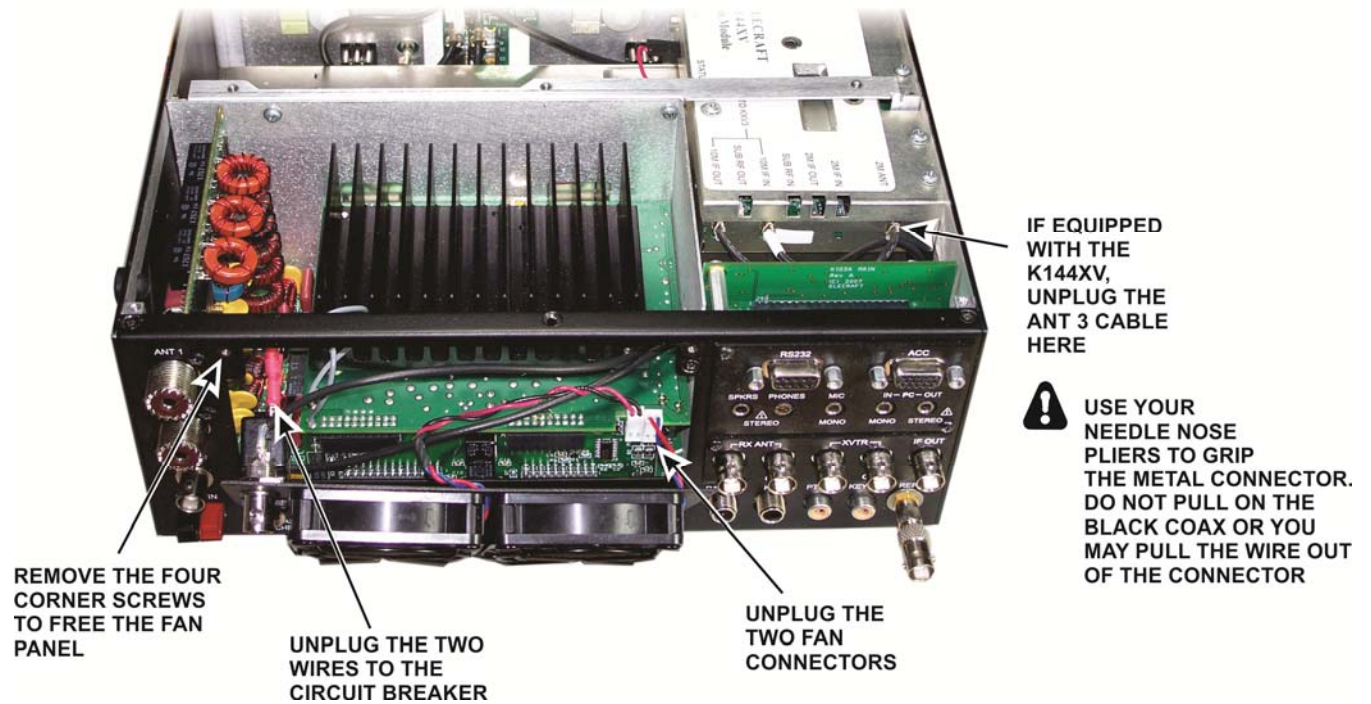


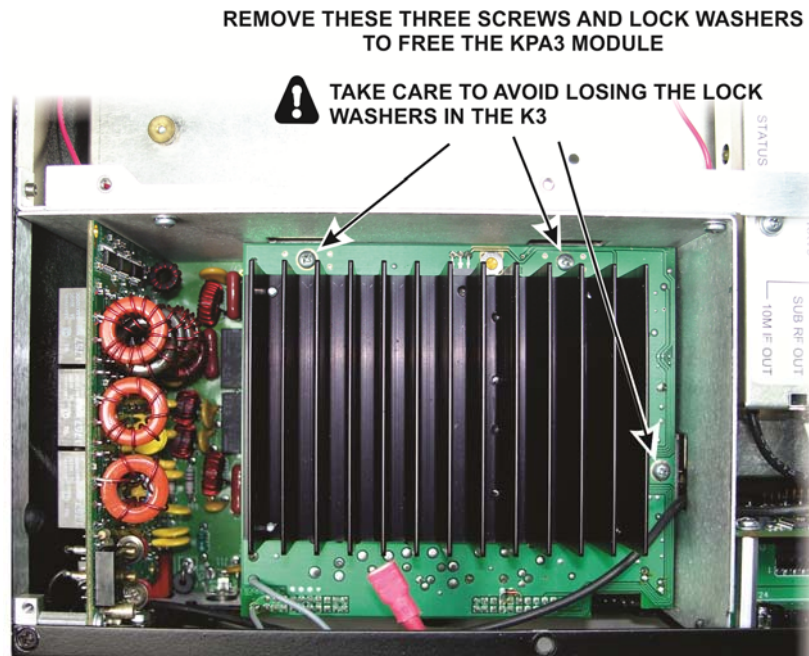
Figure 3. Removing the Top Cover.

Remove the KPA3 fan panel and set it aside (see Figure 4). If you have a K3/10, there will be a blank panel in place of the fan panel that also removes with four screws. Remove the panel and skip the next step.



**Figure 4. Removing the Fan Panel.**

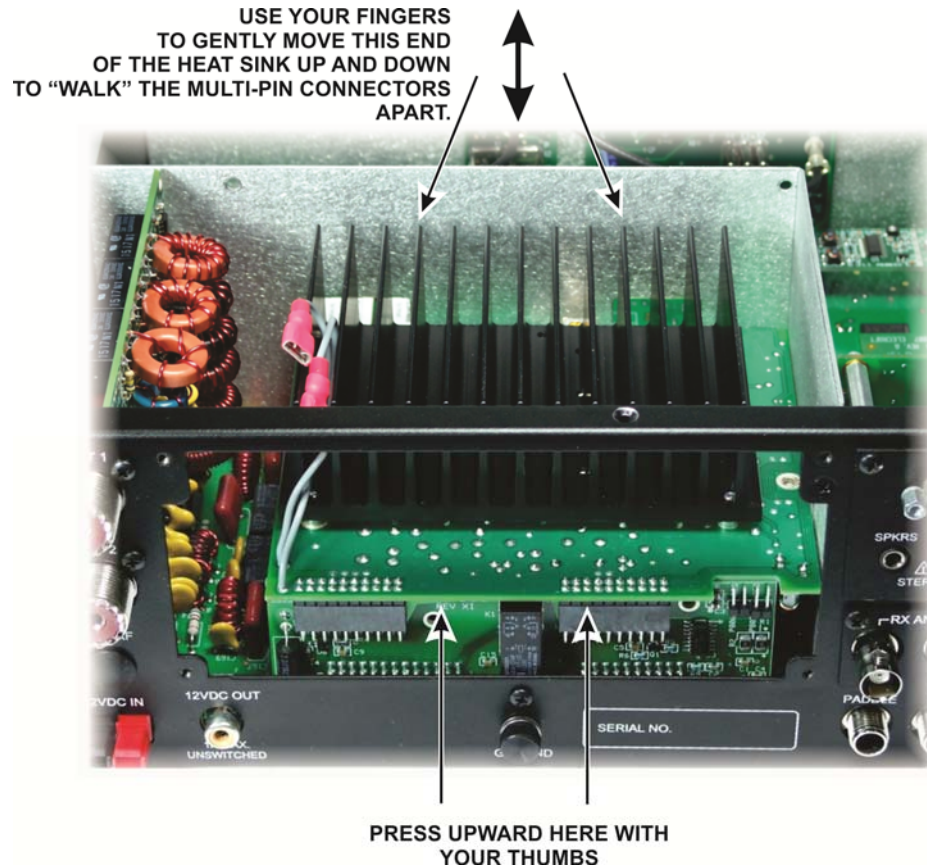
It may be possible to reach the remaining components to be replaced without removing the KPA3 module, but it is a lot easier and you are less likely to accidentally damage the KPA3 if you remove it. There are three screws holding it in place (see Figure 5). Remove them and their lock washers.



**Figure 5. Removing the KPA3 Screws.**

☐ Unplug the KPA3 module from the two multi-pin connectors at the rear edge by placing your thumbs under the back edge of the KPA3 board near the connectors and placing your fingers on the heat sink to gently move the opposite edge of the KPA3 up and down (see Figure 6). This will “walk” the connectors apart, freeing the module.

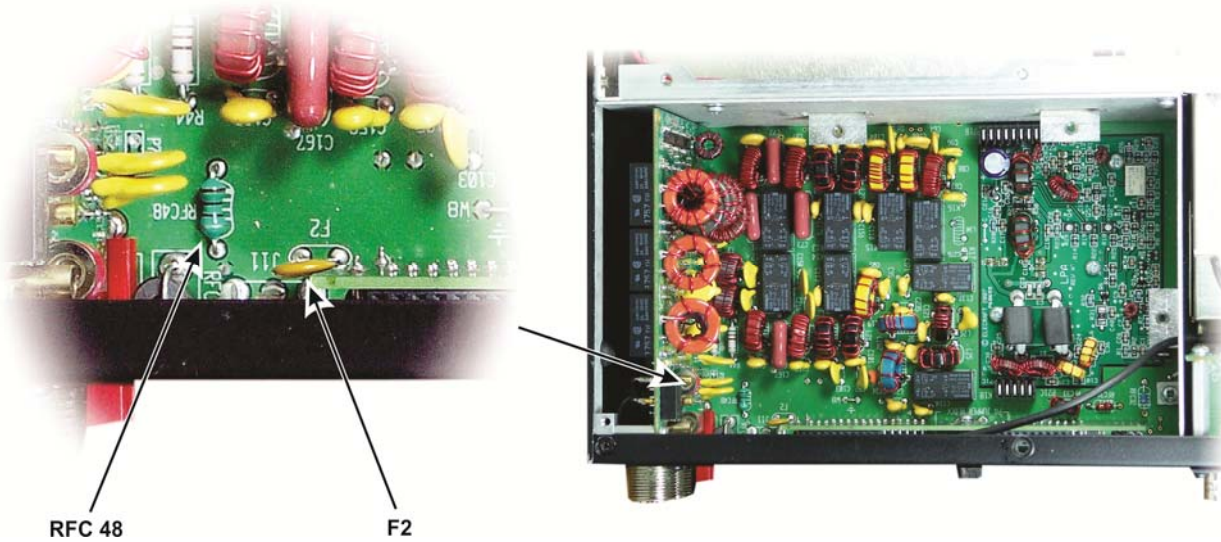
**⚠** Your KPA3 module may produce a rattling sound when shaken. This is normal. It is caused by ferrite beads sliding along wire leads in the module.



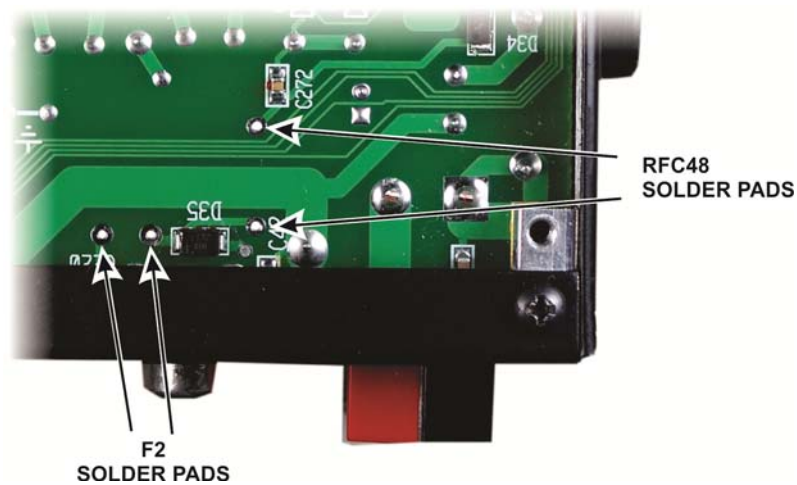
**Figure 6. Removing the KPA3 Module.**

☐ Locate resettable fuse F2 and choke RFC48 (see Figure 7). Remove both RFC48 and F2. Clear the holes of solder. The cleared solder pad locations on the bottom of the board are shown in Figure 8.

**⚠ Be sure the holes are completely clear of solder, especially the holes for F2. The replacement F2 has leads that fit very snugly in the pads, and any solder remaining will prevent inserting the leads.**

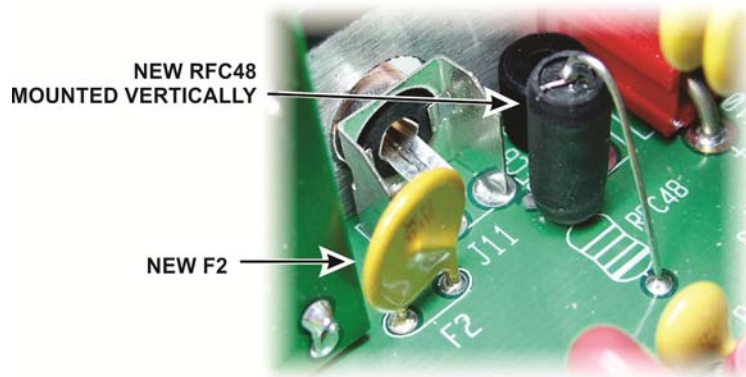


**Figure 7. RFC 48 and Resettable Fuse F2 Locations.**



**Figure 8. RFC48 and Fuse F2 Solder Pads on the Bottom of the Board.**

Install the new resettable fuse F2 and choke RFC48 in the holes and solder. Unlike the diode, they are not polarized. It does not matter which lead goes in which solder pad. However, the new RFC48 is larger than the hole spacing. Install it vertically as shown in Figure 9.

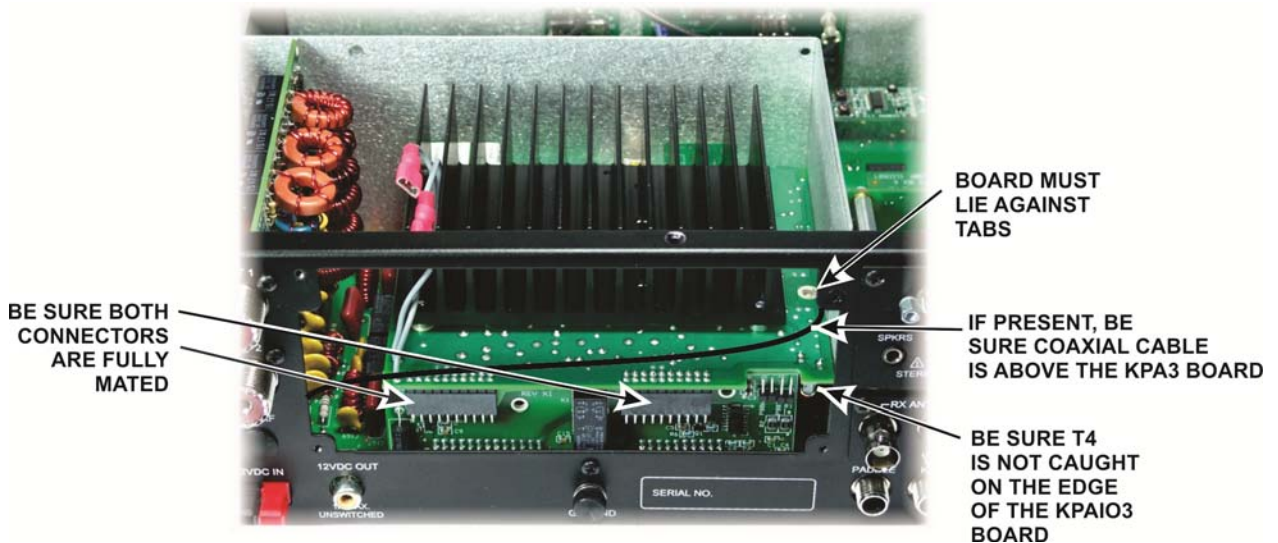


**Figure 9. New RFC48 and F2 Installed.**

Trim the leads flush with the bottom of the board and reinstall the bottom cover (Figure 1).

**⚠ CAUTION!** Be sure you replace the three longer screws with their lock washers in the locations shown in Figure 1. Failure to do so will lead to premature failure of the LPA power transistors.

Place the KPA3 module inside the shield from the top. Mate the two connectors fully with the KPAIO3 board as shown in Figure 10. If a coaxial cable is present running across the KPA3 enclosure, be sure it is routed above the KPA3 board as shown.



**Figure 10. Reinstalling the KPA3 Module.**

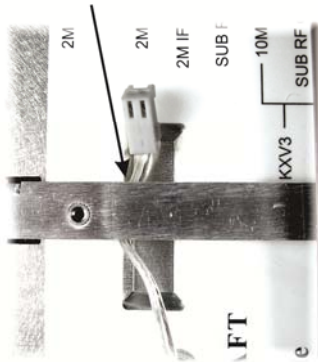
- Secure the KPA3 module with the three 4-40, 1/4" (6.4mm) zinc pan head screws and lock washers you removed earlier (see Figure 5).
- Replace the fan panel (see Figure 4).
  - Be sure the connectors on the circuit breaker fit snugly. If they are loose, squeeze them gently with your needle nose pliers to tighten the fit.
  - Orient the fan connectors so the red wires are to the left, looking at the assembly from the rear. The colors are marked on the circuit board as well. Installing them backward will cause the fans to run in reverse, severely limiting the PA cooling.
- Dress the fan leads so they are well clear of the blades (see Figure 11). Ensure both fans turn freely.



**Figure 11. Positioning the Fan Leads.**

☐ Hold the top cover above the K3 and reconnect the speaker wire (see Figure 12), then replace the top cover and secure it with the nine 4-40 3/16" (4.8 mm) black flat head screws you removed earlier.

PASS THE SPEAKER WIRE UNDER THE STIFFENER. IF EQUIPPED WITH THE K144XV 2-METER OPTION, PASS THE SPEAKER WIRE UNDER THE STIFFENER ABOVE THE RECESS IN THE K144XV COVER.



PLUG CONNECTOR INTO KIO3 BOARD  
ORIENT CONNECTOR AS SHOWN

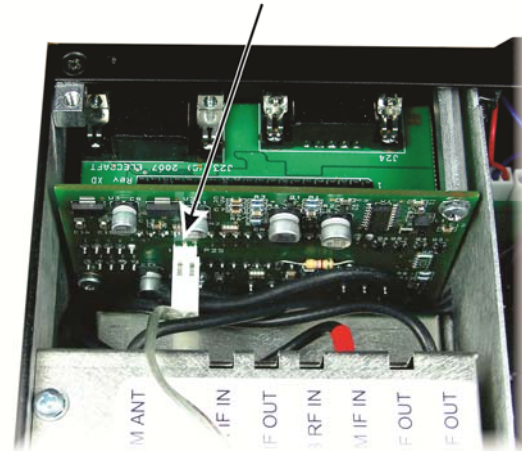


Figure 12. Reconnecting the Speaker Wire.

### ⚠ REPLACE ALL THE SCREWS!

The K3's chassis has excellent rigidity despite its light weight. The screws that hold the covers in place are an important part of the structural design. Please be sure to replace all the screws and verify they are tight whenever you replace the cover or other panels

That completes the modification.