

K3 VFO TUNING NOISE REDUCTION

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Introduction

Some K3 owners have reported hearing noise during VFO rotation on the 6, 10, and 60 meter bands. This can be observed when on-air noise is very low, or when no antenna is connected. A simple modification, in conjunction with firmware rev. 3.24 or later, may reduce this tuning noise to insignificant levels.

The noise is caused by digital transitions on certain synthesizer control lines. The hardware mod adds better termination to these lines for both synthesizer slots (required even if no sub RX is installed). The new firmware alters the SPI bus clock rate. The combination of the two significantly suppresses the noise, if present.

Before making this mod, recommend you check to see if you can hear the noise. Switch to 10 or 6 meters (around 28.0 or 50.0 MHz), select USB or LSB mode, turn the preamp on, and **disconnect all antennas**. Then tune the VFO around and listen for low-level “tics” in the audio.

Installing New Components

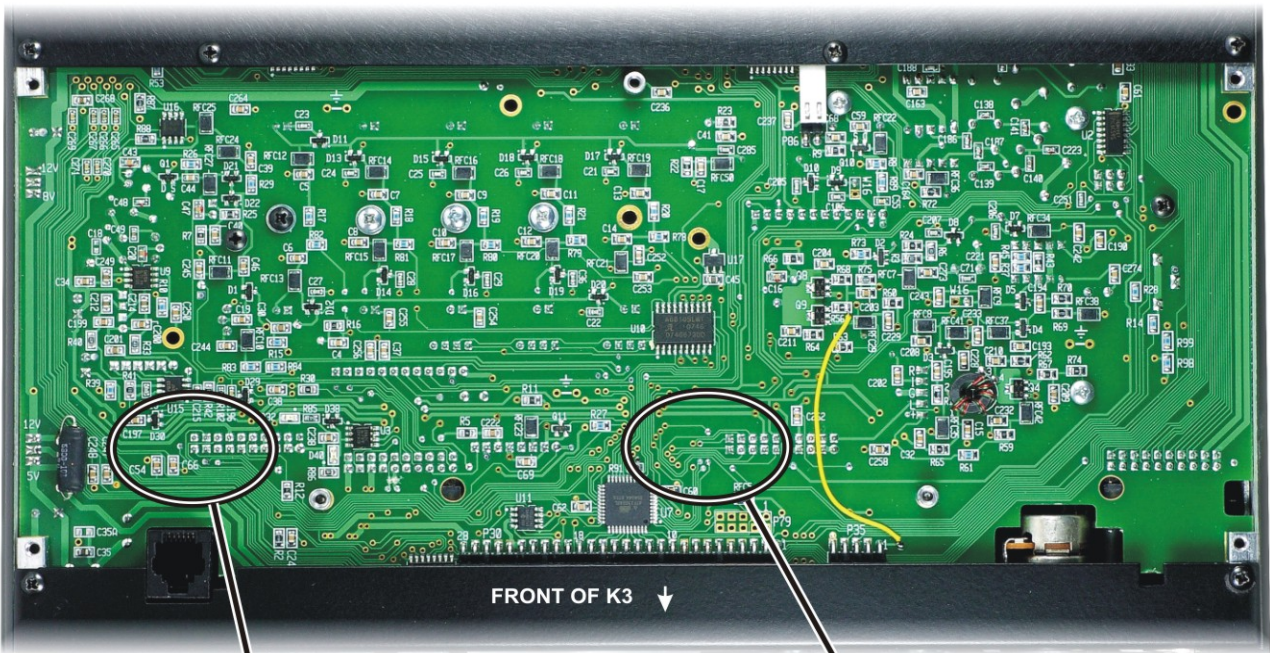
1. You will need two 470-ohm, 1/4 W or 1/8 W resistors, and two ordinary silicon diodes (1N4148, 1N914, or equivalent). Suitable parts can be ordered from Elecraft (mod kit part number K3VFOFILTERKT).
2. Turn the K3 off. Place it upside-down on a soft cloth to protect the finish.
3. Remove the front half of the bottom cover (the part with the tilt stand).
4. Locate the areas of the RF board shown in the photo on the next page and install the resistor and diode pairs exactly as shown. **Use only the vias shown.**
5. **When finished, compare your installation to the photos once more to verify that the right vias have been used and that the diodes are oriented correctly.**
6. Reinstall the bottom cover, set the K3 back upright, and turn on power.

Changing the SPI Bus Rate

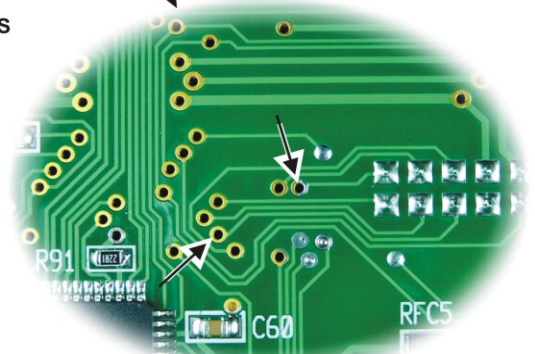
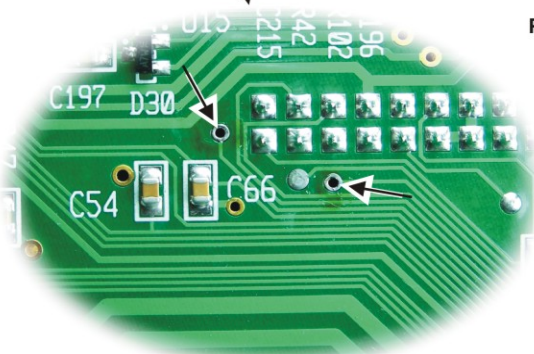
IMPORTANT: *You must install the resistors and diodes as described above before changing the bus clock rate. Failure to do so will result in erratic behavior of your K3.*

1. Download and install firmware revision 3.24 or later. Refer to the K3 software page for instructions.
2. **IMPORTANT:** Locate the *CONFIG:VCO MD* menu entry, and tap the **1** keypad switch until you see **SPI 2**; this selects the new bus clock rate. (The default setting is **SPI 1**.)

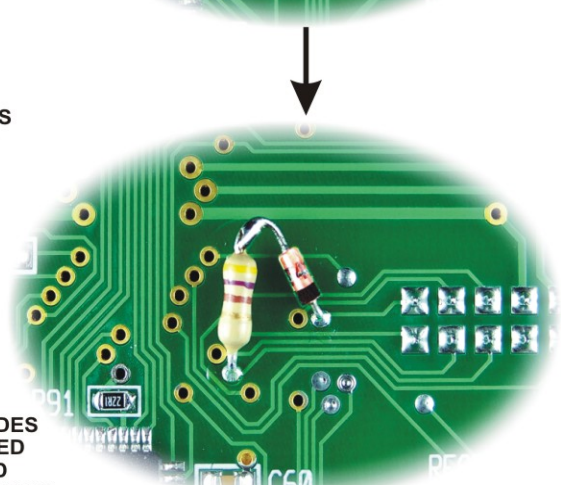
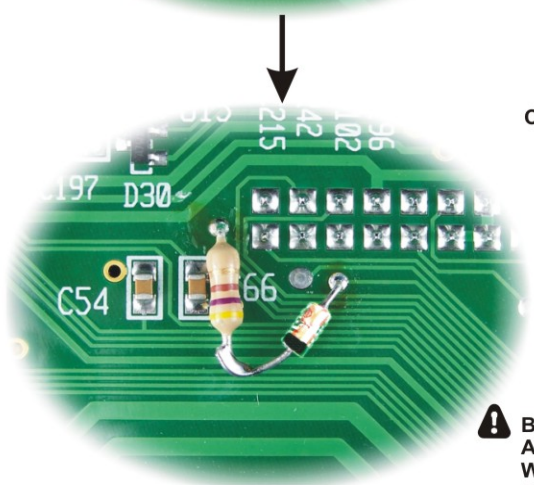
That completes the modification. If you checked the noise level before making the mod, you can repeat the procedure (above) to evaluate the improvement obtained.



PAD LOCATIONS



COMPONENTS INSTALLED



⚠ BE SURE DIODES ARE INSTALLED WITH BANDED ENDS (CATHODES) ORIENTED AS SHOWN