Grass Valley Group

Field Modification Note

FM Number: FM2204-00B **Ref ECO:** none **Date:** November 1996

Product: VPE series editors with K2 Keyboard

Assemblies: K2 Keyboard

Purpose: Adds a new jog knob touch sensor circuit board. The new board significantly improves jog knob performance, eliminating erratic jogging and shuttling.

There are two keyboard kits: 152227-00 and 152227-01. Early model keyboards must use kit version -01. Late model keyboards may use either kit version. To distinguish early keyboards from late keyboards, see the Important Notes heading on page 2.

FM2204-00B

Parts Included:

Part Number	Description	Qty
	FM2204-00B Sticker	1
152227-00/-01	FMN Parts Kit, VPE Jog sensitivity K2	1

Overview: This modification requires the following general steps:

- Remove the jog knob
- Open the keyboard and remove the internal pc board
- Do modifications to the keyboard pcb
- Mount and connect the new Jog Touch Sensor module to the main pc board
- Reassemble the keyboard pcb and install the new rubber ring on the jog knob
- Adjust the sensitivity of the jog knob

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IMPORTANT NOTES: *There are two models of the K2 keyboard: early and late. To complete this modification, you need to know which one you have. When you take the keyboard bottom cover off in step 3 of the following instructions, you can make that determination by looking at the pcb assembly inside the keyboard. Early model keyboards can be identified by a jog knob shaft encoder (Softpot™) that connects to the keyboard in the middle of the keyboard pcb behind the Mark In button. Late model keyboards can be identified by a jog knob shaft encoder (Softpot™) that connects to the keyboard along the keyboard edge near the Mark Out button. See Figure 1.*

There are also two versions of the Jog Touch Sensor submodule that you will be installing as part of this modification: a shorter -00 version submodule for late model K2 keyboards only, and a longer -01 version for early and late keyboards. If you have an early keyboard, be sure you received a -01 submodule (submodule 067170-01, kit 152227-01). If you have a late keyboard, either module version will fit.

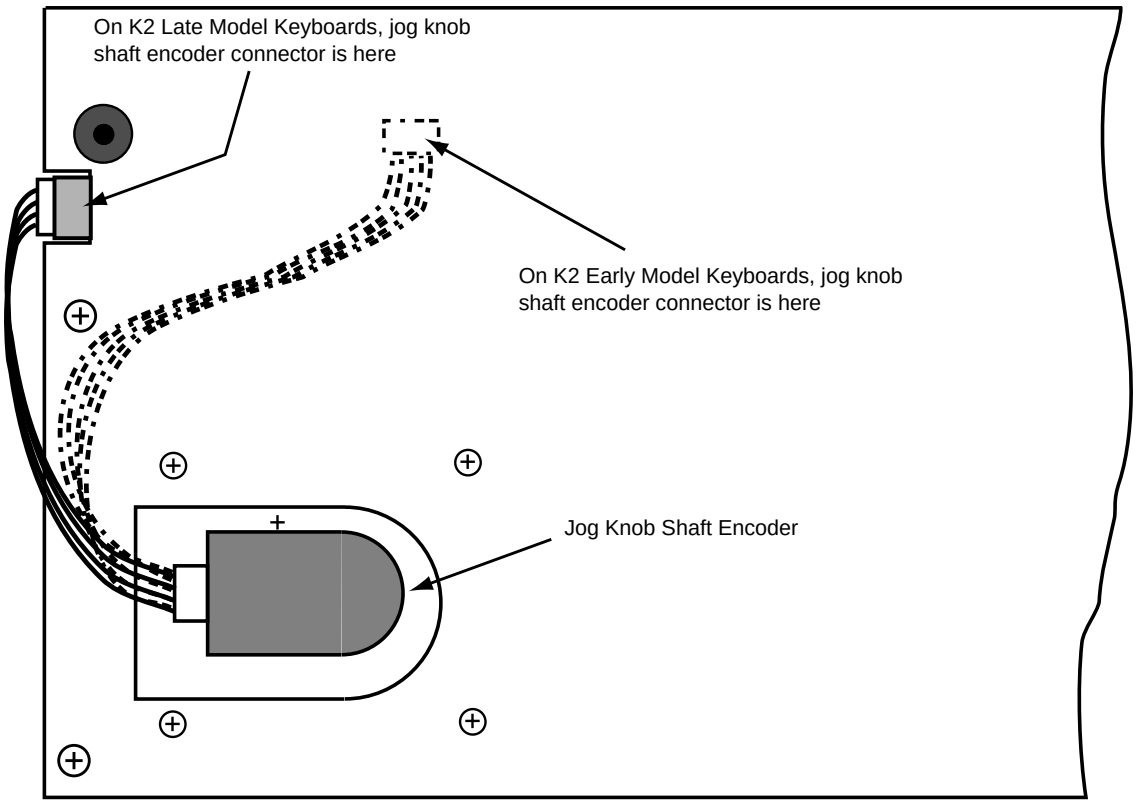

Figure 1. Identifying Early and Late Model Keyboard PCBs

Instructions:

1. Turn off system power, disconnect the keyboard from the editor, and place the keyboard on a static-free work surface where you can take it apart and do the following modifications.

CAUTION: *To prevent static damage to sensitive components, use a grounded wrist strap, mat, and tools when handling components and printed circuit modules.*

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2. Remove the jog knob. To do so, pull off the rubber ring that surrounds the knob and use a 1/16" hex wrench to loosen the 2 set screws inside the rim of the knob. Then lift the knob off the shaft. (The knob may be snug; use a firm grip).
3. Turn the keyboard upside down and remove the bottom cover by removing the 6 screws around the perimeter of the cover. With the cover off, examine the keyboard pcb and determine whether it is an early or late model as described in the *Important Notes* on the previous page.
4. Remove the main printed circuit board from the keyboard case by removing the 9 screws along the perimeter and across the middle of the pc board.
5. **For both keyboard models**, clip out resistor R12, which is located above the jog knob on the component side of the pc board. Note that the location of R12 is slightly different for early and late model keyboards (Figure 2).

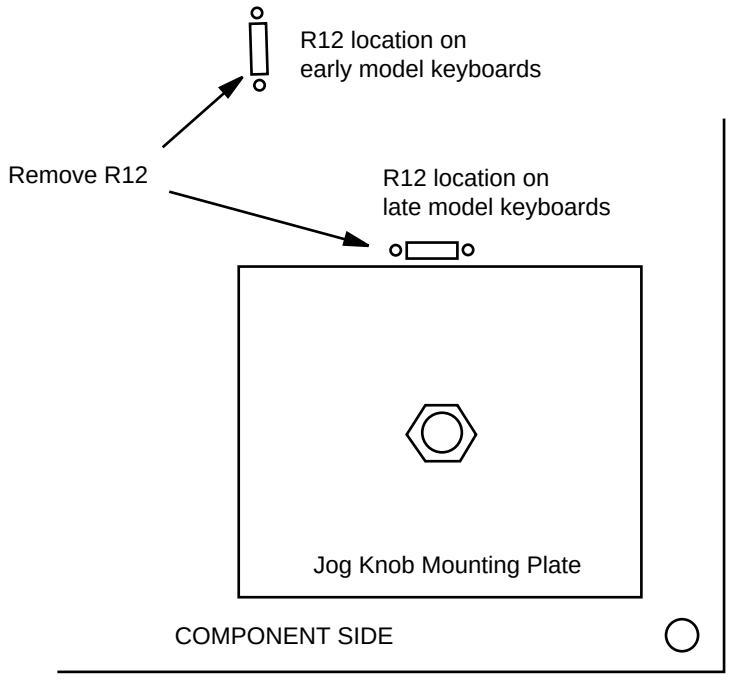

Figure 2. Location of Resistor R12

6. **For early model keyboards only**, cut pin 6 of IC U6 near the body of the IC. Unsolder and remove the cut pin from the pc board (Figure 3).

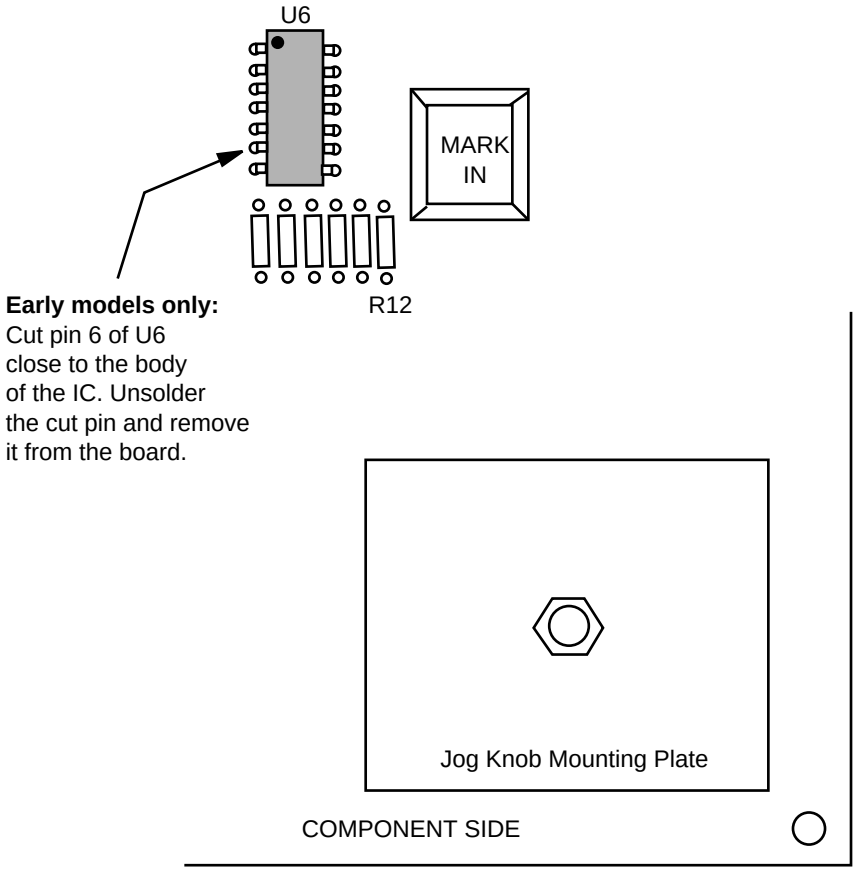

Figure 3. Location of U6 pin 6 on Early Model Keyboards

7. **For early model keyboards only**, mark the locations of the following components on the solder side of the keyboard: C5, R12, U6, and U7. You will make solder side connections to the solder pads of these components in a later step.

8. **For early model keyboards only**, put the keyboard back into its case and fasten it in place using the screws removed earlier. Note in Figure 4 (next page) that two of the holes in the keyboard and corresponding mounting bosses in the case are used for mounting the new Jog Touch Sensor submodule; leave the screws out of those two holes.

9. **For early model keyboards only**, position the supplied spacers over the two unused screw holes. Then place the new 067170-01 Jog Touch Sensor submodule on top of the keyboard pcb and spacers as shown in Figure 4 (next page). Insert the remaining two screws through the holes in the submodule, spacers, and keyboard pcb and tighten the screws to fasten the submodule securely to the keyboard pcb and case.

10. **For early model keyboards only**, connect wires from the new Jog Touch Sensor submodule to the solder side of the keyboard pcb as follows (see also Figure 4):
    - YELLOW logic wire to U6 pin 6.
    - GREEN ground wire to the bottom of C5.
    - RED +5 volt wire to the top of C5.
    - BROWN wire to the lower hole where R12 was located.
11. **For early model keyboards only**, install the supplied 160 pF capacitor from the bottom of R29 to the bottom of R30 on the Jog Touch Sensor submodule. (Note: Late model keyboards do not use this capacitor.)
12. **For early model keyboards only**, if an Auto Cal submodule is present as shown by dashed lines in Figure 4, disconnect and completely remove the two wires connecting the Auto Cal submodule to U7 pin 2 and R12. Leave the other wires connecting to the submodule in place.

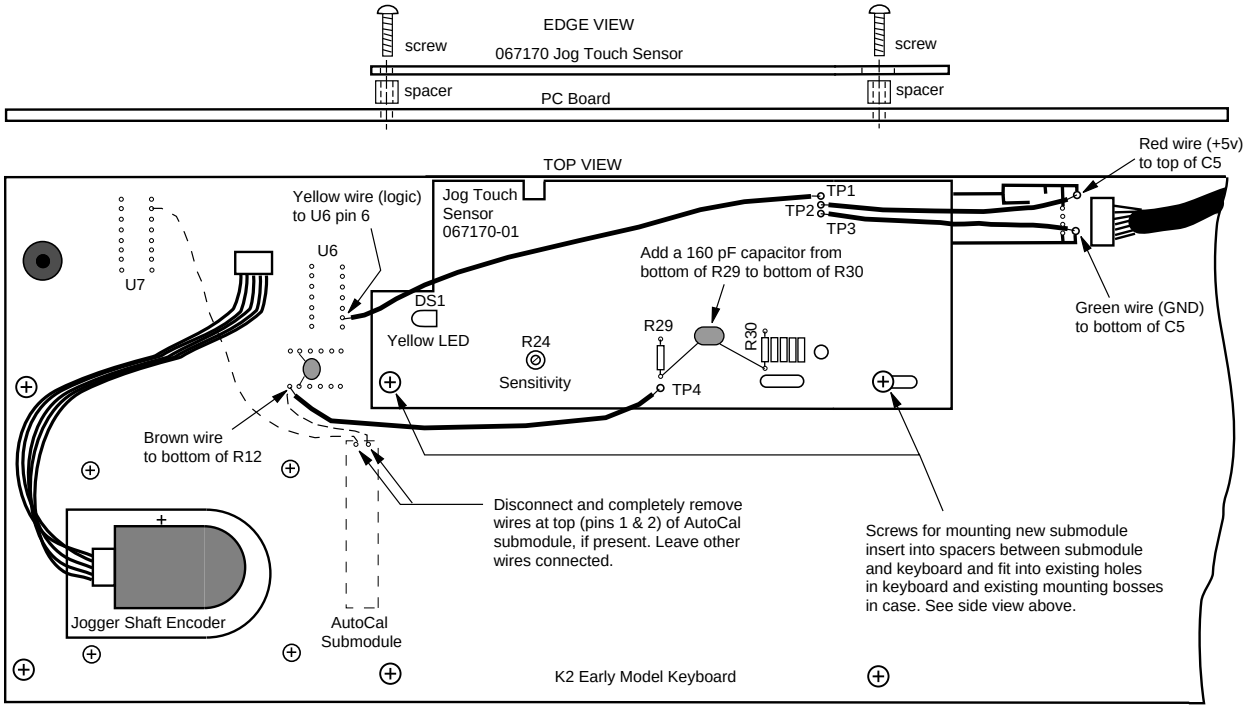

Figure 4. Jog Touch Sensor Submodule Installation on Early Keyboards

13. **For late model keyboards only**, cut the trace between the two solder pads labelled AUTO ADJ W2 above the right corner of the keyboard on the component side (Figure 5).

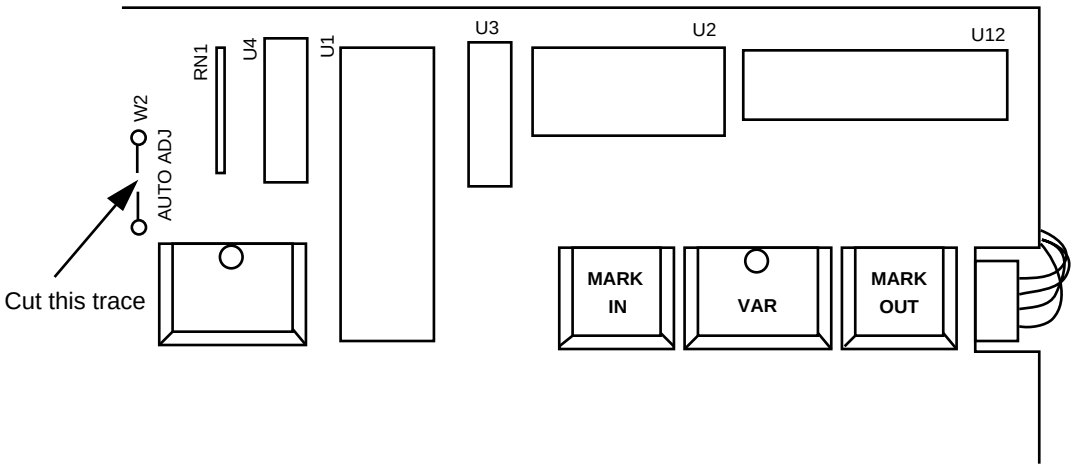

Figure 5. Location of Component Side Trace Cut on Late Model Keyboards

14. **For late model keyboards only**, cut the trace connected to U6 pin 6 on the solder side (Figure 6).

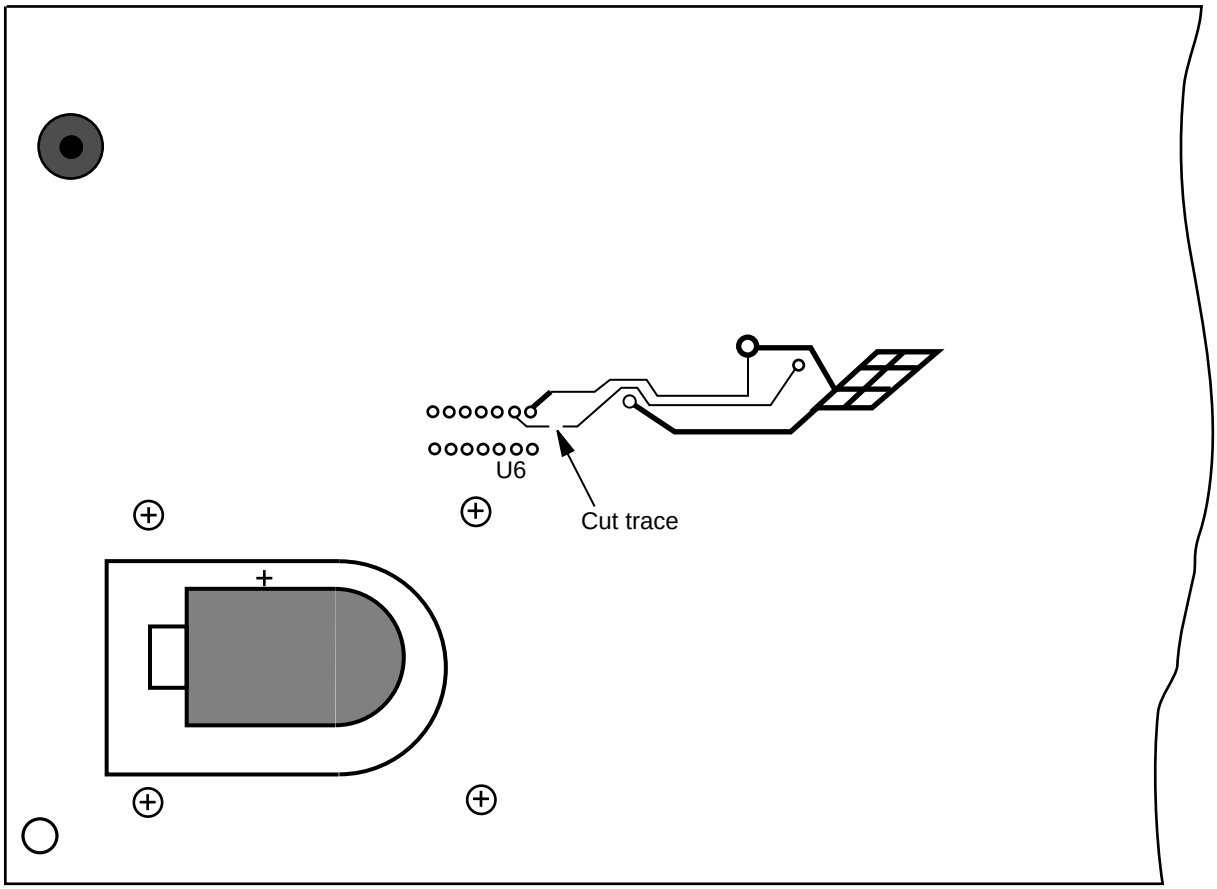

Figure 6. Location of Solder Side Trace Cut on Late Model Keyboards

15. **For late model keyboards only**, put the keyboard back into its case and fasten it in place using the screws removed earlier. Note in Figure 7 (next page) that two of the holes in the keyboard and corresponding mounting bosses in the case are used for mounting the new Jog Touch Sensor submodule; leave the screws out of those two holes.

16. **For late model keyboards only**, loosely place the new Jog Touch Sensor submodule into the position where it will mount as shown in Figure 7. Do not fasten it into place yet because some wires must be soldered to the keyboard underneath the submodule. Connect the submodule wires to the keyboard as follows:

    - YELLOW logic wire to the feedthrough hole under the TRIM OUT key.
    - GREEN ground wire to the ground plane under the SET OUT key.
    - RED +5 volt wire to the top pad of resistor R8.
    - BROWN wire from TP4 on the submodule to the pad that connects to the bottom of C24 on the pc board.

    Note that there is a wire on the component side of the keyboard opposite the connection point of the green wire. Make sure this wire does not become disconnected when you solder the green wire in place.

17. **For late model keyboards only**, position the supplied spacers over the two unused keyboard screw holes, between the keyboard pcb and the submodule. Then line up the new 067170 Jog Touch Sensor submodule on top of the keyboard pcb and spacers as shown in Figure 7. Insert the remaining two screws through the holes in the submodule, spacers, and keyboard pcb. Tighten the screws to fasten the submodule to the keyboard pcb and case.

18. **For both keyboard models**, put the jog knob back on the shaft and tighten the set screws that hold the knob in place.

19. **For both keyboard models**, place the newly-supplied rubber ring onto the jog knob.

20. **For both keyboard models**, connect the keyboard to the editor and turn on power.

21. **For both keyboard models**, adjust jog knob sensitivity as follows: Firmly grasp the outer ring of the jog knob but do not touch the metal center. Adjust trim pot R24 on the new Jog Touch Sensor submodule until the yellow LED on that module just turns off. *Please note that this adjustment takes the place of the software AUTOCAL, which no longer functions.*

22. **For both keyboard models**, put the bottom cover back on the keyboard using the 6 screws that were removed originally. Attach the supplied FMN sticker and Manual Override sticker to the bottom of the keyboard. This completes the modifications.

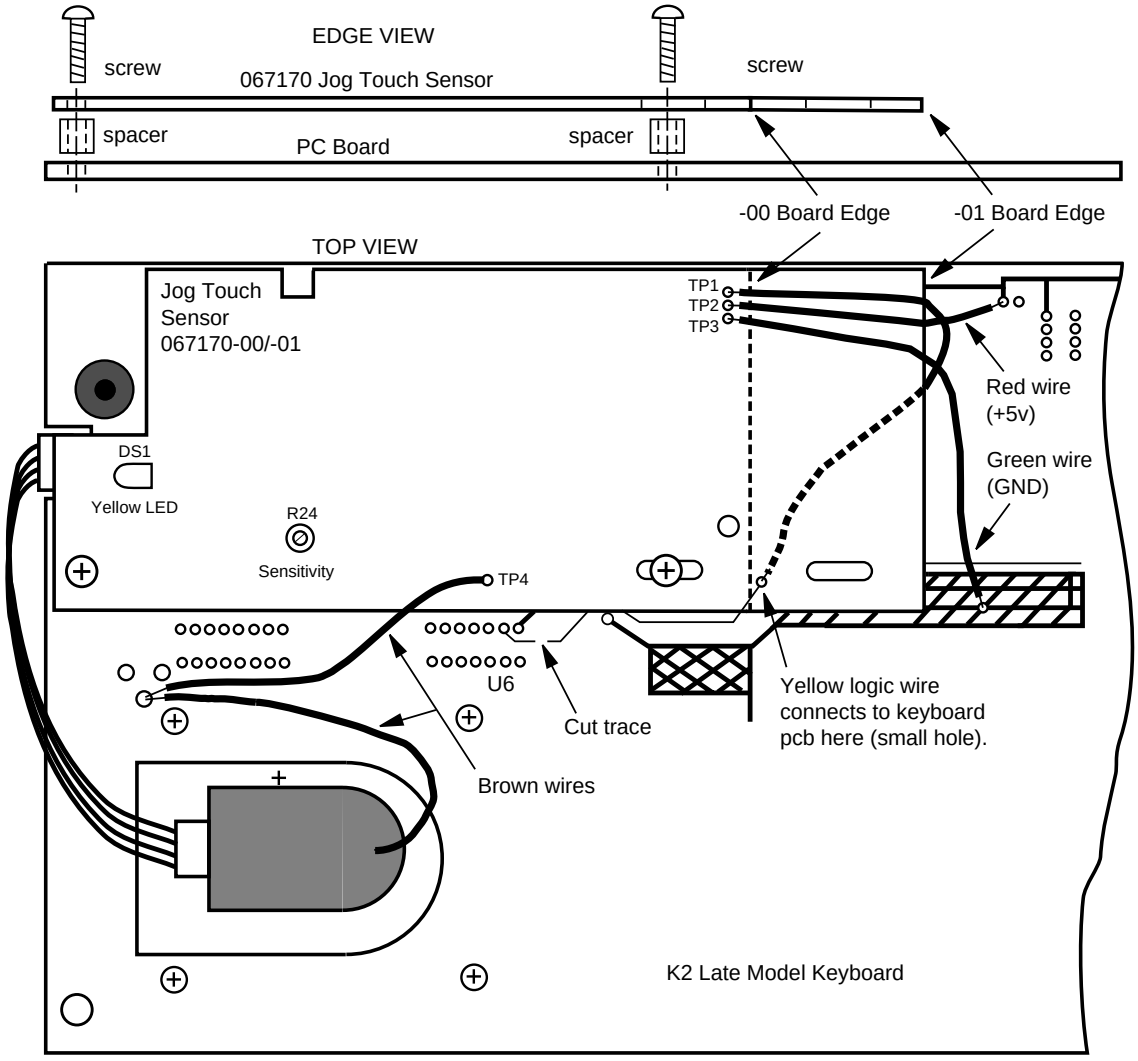

Figure 7. Installation of Jog Touch Sensor Submodule on Late Model Keyboards