Minelab Sovereign Jumper Settings & Misc Settings and Adjustments

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F. Murphy (Sov535)

In this document I have attempted to capture details of the different jumper settings on the different Minelab Sovereign models I have either worked on or read about. Initial pictures are from my own Sovereign and Sovereign XS-2 Pro control boxes.

Minelab doesn't freely provide jumper settings, they have to be found on boards or by experimentation.

For the jumper settings, some definitions may be helpful:

LK1 Threshold Tone: The Background Threshold jumper setting either gives you some feedback on the discrimination action of the Sovereign circuitry by a change in pitch of tone as the detector is swung across a metallic object that is set for discrimination. If the jumper is set to Silent Search, you may not be aware of a miss-adjustment of the discriminator Threshold knob.

LK2: This jumper is not used and may be a form of factory test jumper.

LK3 Tone ID: When the jumper is set to Target tone ID, the Sovereign gives you multiple tones for a target to help you learn what different targets sound like. If the jumper is set to Fixed Tone Audio, the Sovereign gives you the same single tone for all objects. Some find the former irritating and choose the fixed tone ID. However, this reduces the information that the Sovereign is designed to provide the user.

In addition to the jumper adjustments, there are two potentiometers on the main circuit board. Their functions are as follows:

- RT1 broad adjustment for threshold
- RT2 adjusts tone frequency (raise or lower the entire band of 17-tone audio frequency for most pleasurable audio)

One tip I have read about simple control panel settings suggests the following:

1. Set the two discriminate knobs to zero
2. Set the volume knob at maximum volume
3. Set the sensitivity knob 12 o'clock
4. Finally, set the sensitivity knob so you can just hear the audio

<u>Minelab Sovereign</u> [**Board 2-91 Rev 2.3]**

This is the older of my two Sovereign detectors, the board being designed in February of 1991. Not the use of through-hole resistors throughout and the mix of through-hole dip parts and surface mount parts. The microprocessor Revision 1.1 is the same as was used in my newer 1998 XS2-Pro, however!

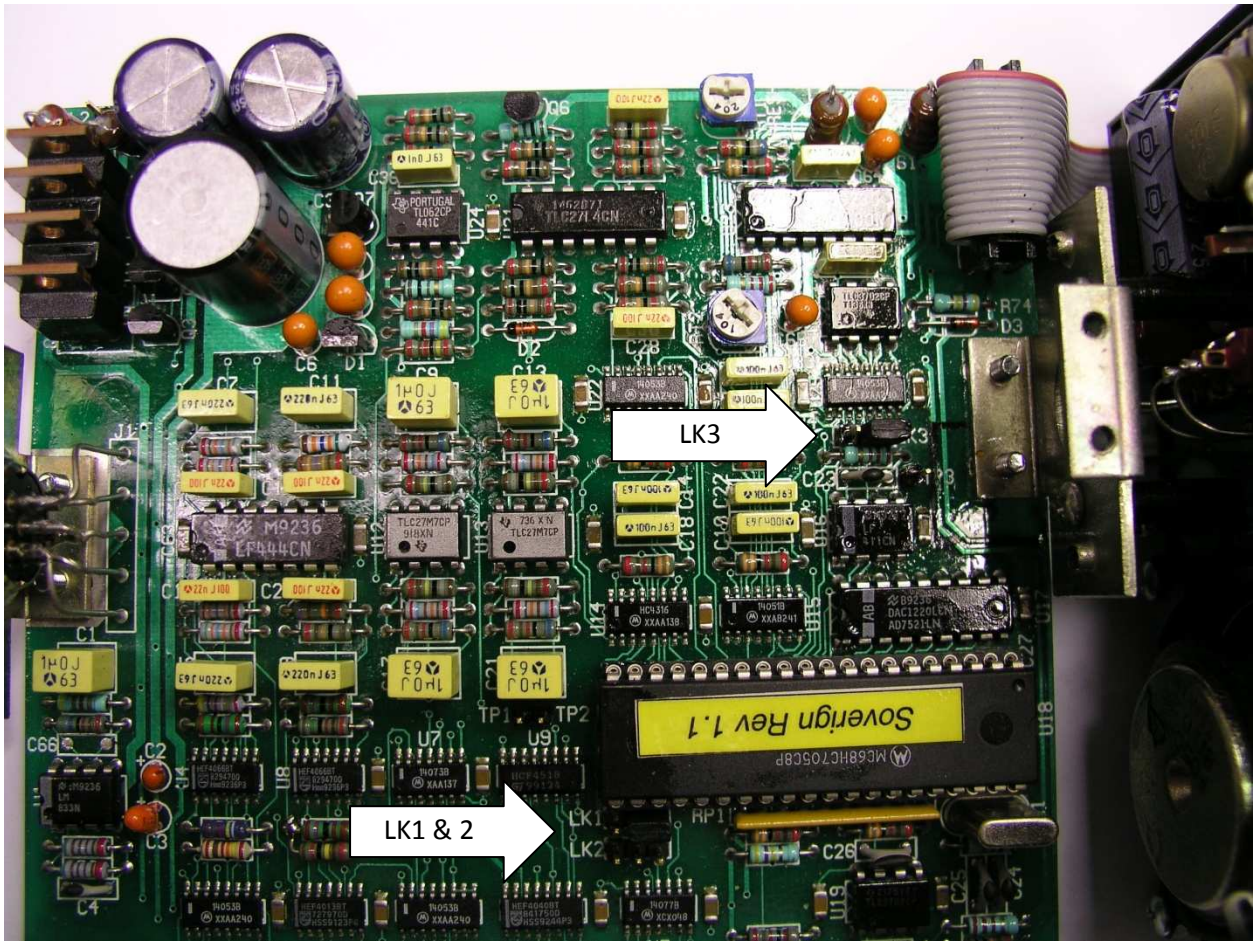
LK1 jumper 2 pins nearest front panel = Background Threshold

LK1 jumper 2 pins away from front panel = Silent Search

LK2 = Not Used

LK3 jumper 2 pins nearest front panel = Tone Target ID

LK3 jumper 2 pins away from front panel = Fixed Tone Audio

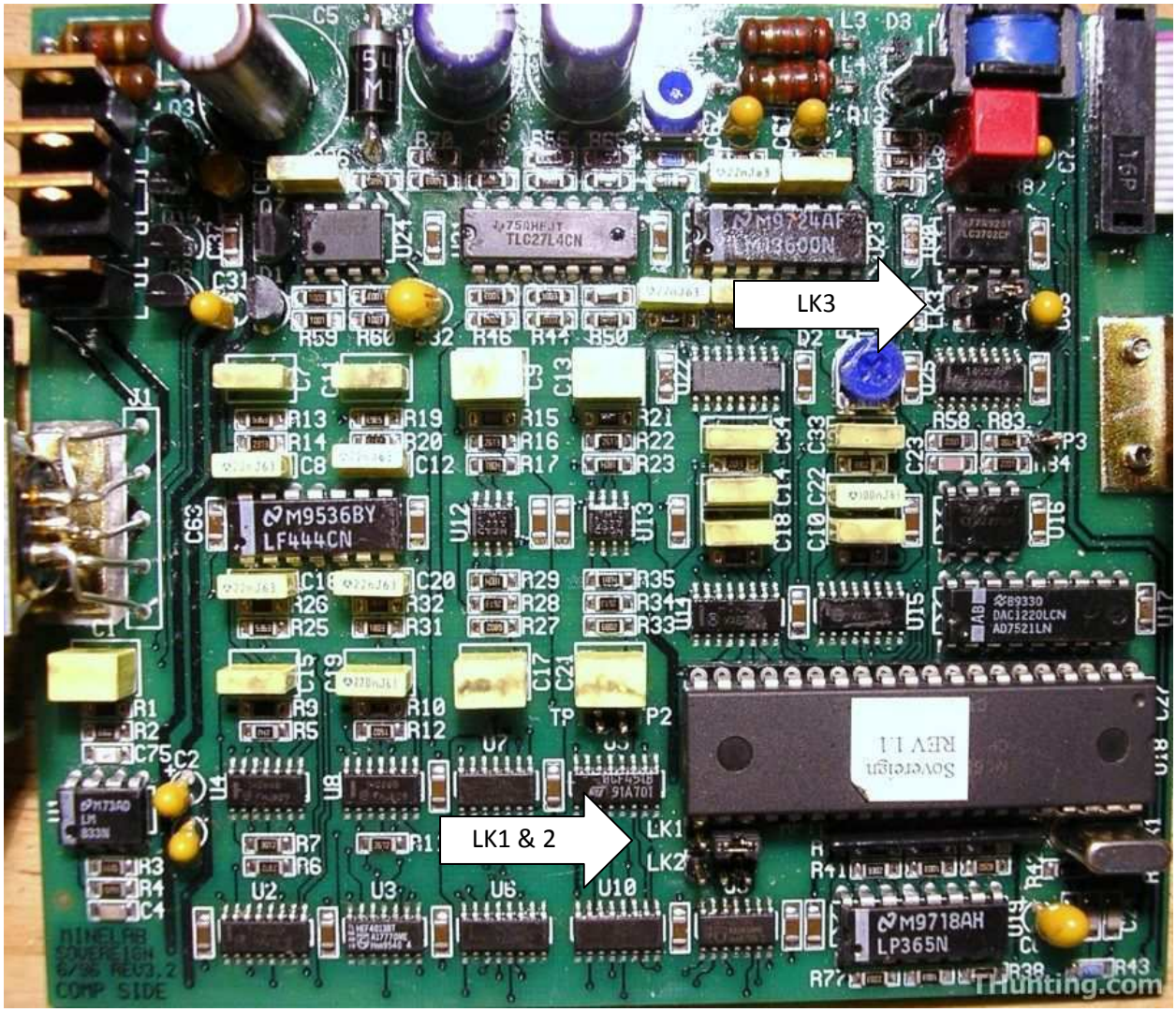


<u>Minelab Sovereign XS (?)</u> [Board 6-96 Rev 3.2]

I thought that I had taken this picture of my detector but then I noted the THunting.com logo on the lower right corner! So I need to give credit to an unknown photographer for this one! This is being included here more for a timeline of board changes between my two detectors. Since I have no idea what the front panel looks like for this detector, I am just guessing it may be an XS.

Not much had changed from 1991, except they were transitioning to surface mount for more of the parts.

Since the positions of the jumpers and the designations of the jumpers are almost identical to the original Sovereign in the previous description, it would be safe to assume that the functions are also the same for this version of the board.



<u>Minelab Sovereign XS2-PRO</u> [08/98 Rev. 4.0]

This is my newer Sovereign! Notice that at this point in the design they have changed from LK designators to simple J designators for the jumper strips.

Most of the ICs are now surface mount, with the exception of the processor and one other IC.

J1 is the coil connector and J2 is the front panel interface connector on this board.

The owner's manual of course indicates that there are two internal options that can be set up by your "Factory Authorized" Minelab dealer for the Sovereign, and doesn't provide any information about which jumpers are for what function:

J3 : Not Used

J4 Tone ID: jumper 2 pins toward J3 will put the board into the Background Threshold mode.

J4 Tone ID: jumper 2 pins toward J5 will put the board into the Silent Search / Fixed Tone mode.

J5 Threshold tone: jumper 2 pins toward front panel will put the board into the Variable Tone Target Indication (factory setting)

J5 Threshold Tone: jumper 2 pins toward microProcessor IC (U306) will put the board into the Fixed Tone Target Indication.