NoisySix™
Introduction and Installation Guide
Vintage Synth Lab
ver. 1.3

Section 1 - NoisySix Introduction / Operation

- Items in both bold *and* caps (E.g. **WAVESHAPE**) indicate a control on either the NoisySix or the Polysix
- The abbreviation of "Polysix" as "P6" will be referenced throughout this guide.

1. The NoisySix™ is an analog upgrade for the Korg Polysix synthesizer that provides the addition of a pink/white noise generator and a 6-waveshape LFO

1.1. **Noise (pink / white)**
The NoisySix provides a pink and white noise source. The noise source can be selected by a 3-way rotary switch **NOISE-SEL** as: Pink-Noise; none; or White-Noise.

A **NOISE** control will allow for varying levels of either pink or white noise, which is then injected into each VCF (simultaneously) of each voice channel. Since the pink/white noise signal is injected prior to the VCF, it is similarly affected by both the VCF and the the VCA the same way that the native VCO waveforms of the P6 are. See **Figure-2** for NoisySix signal routing architecture. Note that the noise is *not* programmable and is a real-time analog control.

1.2. **LFO**
A multi-waveform LFO replaces the original P6 MG LFO source (which was originally limited to only triangle wave only). The new LFO incorporates a 6-position rotary switch called **WAVESHAPE** that allows you to choose between the following waveforms: (from left to right) **SINE, TRI, RMP, SAW, SQR, or S&H**. Note that these wave shapes are labeled as graphical representations of the waveforms, not as text—for the control panel as shown in **Figure-1**.

Figure-1
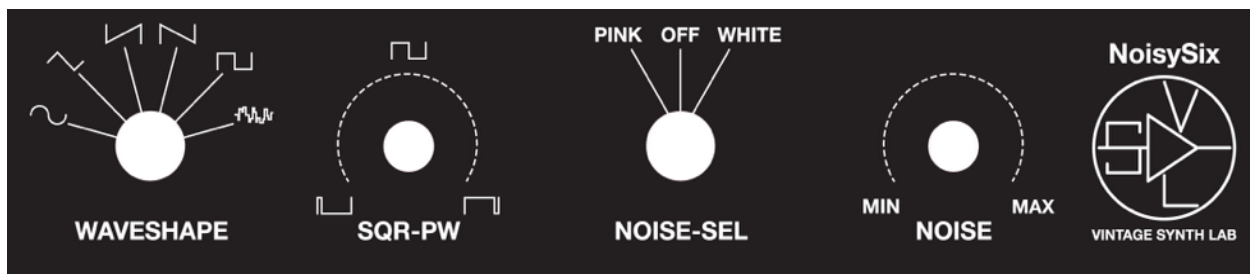
1.3. Additionally, the **SQR-PW** control is provided to manually vary the **SQR** (square wave) duty cycle (or "pulse width") from ~10% to ~90%. When centered (at 12-o'clock), the PW is ≈ 50%

The **S&H** (sample and hold) source utilizes the pink-noise source and is gated, or "clocked", by the LFO rate (determined by the **FREQUENCY** control of the P6 and is therefore truly random …hence, analog.

The original P6 LFO speed control **FREQUENCY** still determines the NoisySix™ LFO oscillator frequency as this control is still programmable with patches since the new LFO takes over the original, and is still controlled by the CV developed from the P6. The frequency range is extremely wide: from as low as 0.005 Hz to as high as 110 Hz (*see Specifications at the end of this guide*). This provides for a very wide range of possibilities, since the original speed of the P6 **FREQUENCY** control was relatively narrow. Again, the original **FREQUENCY** control of the MG still saves the setting to the patch. However, the **WAVESHAPE** is a real-time, analog control that does *not* save with patches.

The architecture (block diagram) for the NoisySix™ is illustrated in **Figure-2**

Figure-2
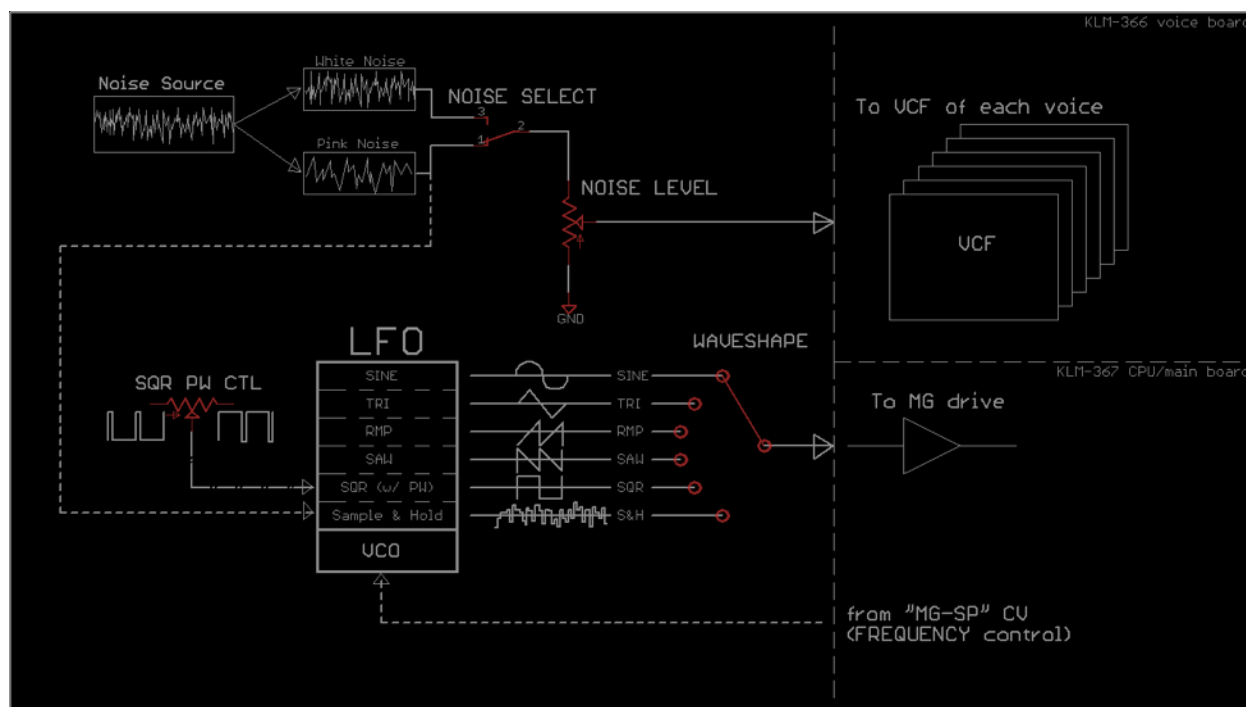
Section 2 - NoisySix™ Installation Requirements

2. **Disclaimer: **HEALTH and SAFTEY**; Vintage Synth Lab does not assume any responsibility for damage, loss, or health related problems incurred from installation, mishandling, incorrect wiring / hook up of circuitry, or anything related to the installation of this kit, mechanically, electrically or otherwise. If you are not sure, not comfortable and/or not confident in your mechanical and electrical/electronic skills, you should consider consulting an experienced service provider for analog synthesizers for installation and any necessary adjustments. Please review the entire installation guide in this manual before purchasing or installing a NoisySix™ kit. Please use good environmental practices, such as avoiding inhalation of solder or flux smoke and fumes. Both lead and lead-free solder have flux. While lead solder is clearly bad for your health, you should avoid breathing in lead-free solder as well. You can buy sophisticated smoke filtration systems, ranging from light-duty to heavy-duty (manufacturing standard OSHA type), however it is up to you to determine what system, if any, will suffice for keeping you healthy and not inhaling smoke fumes of any kind. While not required, I encourage you to use an ESD wrist-strap to protect the static sensitive I.C.s throughout the synthesizer. There is a wealth of information on the internet that provides education for ESD awareness and safe practices. In short, if you don't have an ESD wrist strap, I would recommend that you work on a table where you will not be moving around (potentially generating ESD. The less you move around, the better.

3. **WARNING**: **Please read this entire installation guide before attempting to install the NoisySix™ upgrade kit, including disclaimer* and calibration note**. You will find that it will be easier to execute a successful installation.**

    The installation of the NoisySix™ upgrade kit requires a moderate amount of skill and technical aptitude as some drilling, soldering, cutting of one trace, removal of two resistors, one capacitor, and the routing (and securing) of all wiring. However, this installation guide will help you through the process of preparing and installing the NoisySix into your Polysix synthesizer. If you have any questions, please consult the VSL website at: www.vintagesynthlab.com for help or email vintagesynthlab@gmail.com

    While not absolutely necessary, it is a good idea to document your own work as you disassemble your P6 synthesizer. This is otherwise known as "leaving a breadcrumb trail"… It will help you by providing a reference for reassembly in the event that you need to retrace your steps. This usually includes either taking photographs and/or drawing/writing down notes that illustrate or describe your disassembly. While not absolutely necessary, I highly recommend doing this. Also remember the famous rule: "Measure twice, cut once". Take your time and be careful with your tools, including drilling. Work in adequate light. Using eye protection. Use properly maintained tools. A well maintained or new tool in good condition will pay for itself. When it comes to drilling holes in the chassis, it is best to have the exact size drill bit called out in this installation guide. And above all, use common

sense.

It is important that your Polysix synthesizer be in good working condition and tuned properly before installing this kit. This provides for a better assessment for troubleshooting and assures a more successful installation of the NoisySix™ upgrade!

WARNING
There is always a risk of electric shock when working on electronic equipment. Always unplug the Korg Polysix before attempting to service the synthesizer. Electronic circuitry and cabling must be handled with care. Excessive physical force can damage connectors, cables, components or circuit boards.

3.1. Provided in the kit are the following materials: **See Figure-3**
       1 NoisySix PCB assembly — *see instruction 3.34*
       4 Mounting spacers (which provide easy installation of the PCB) — *see instruction 3.33*
       3 Discrete cable assemblies — *3.15, 3.16, 3.18.4*
       1 Cable assembly harness with ribbon cable & controls attached — *see instruction 3.28, 3.29, 3.30*
       1 Control Panel Overlay (decal) — *see instruction 3.30*
       1 PCB Mounting drill template (**shown in Figure-3.1)** — *see instruction 3.9, 3.10, 3.11*
       1 Control Panel drill template (**shown in Figure-3.1)** — *see instruction 3.20*
       2 Cable mounting clips, self-adhesive backed (not shown)
       4 knobs — *see instruction 3.32, 3.33*

Figure-3 (NoisySix kit)
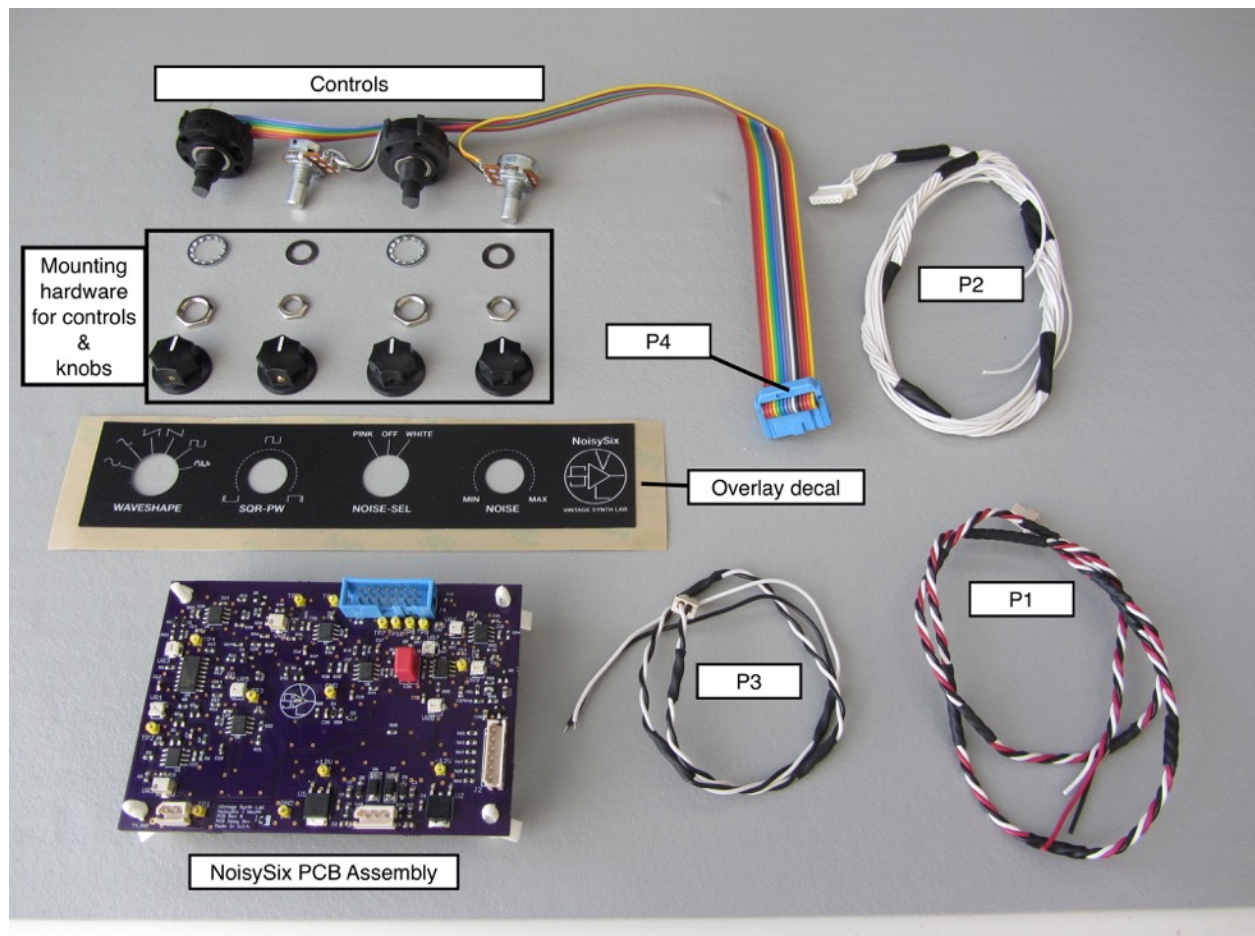
3.2. What you will need that is *not* provided in the kit:
       A #2 phillips screwdriver
       Needle-nose pliers

Small diagonal cutters
Soldering iron and solder
Exacto knife (to cut one trace on the KLM-376 circuit board)
3/16 (or 4.5mm) drill bit (for rear chassis mount of nylon PCB mount lock-in spacer)
9/32 (or 7.0mm) drill bit (for "SQ-PW" and "NOISE" potentiometer mount holes)
3/8 (or 9.5mm) drill bit (for "WAVESHAPE" and "NOISE-SEL" switch mount holes)
A 9"x9" disposable aluminum baking pan/tray (used during the drilling process)

3.3.   Additional items that will be useful, but not absolutely necessary:
I recommend that you use a **vacuum** to extract any stray fragments of metal that will result from drilling the various holes. Also, use **painter's (masking) tape**—this type of tape is very useful for capturing a large amount of the metal fragments produced <u>during</u> and <u>after</u> the drilling process.

Figure-3.1 shows the drill guide templates. Provided are two guides per page just in case one gets damaged or altered in the process of drilling or taping to chassis. Cut one out and only use the other if necessary.
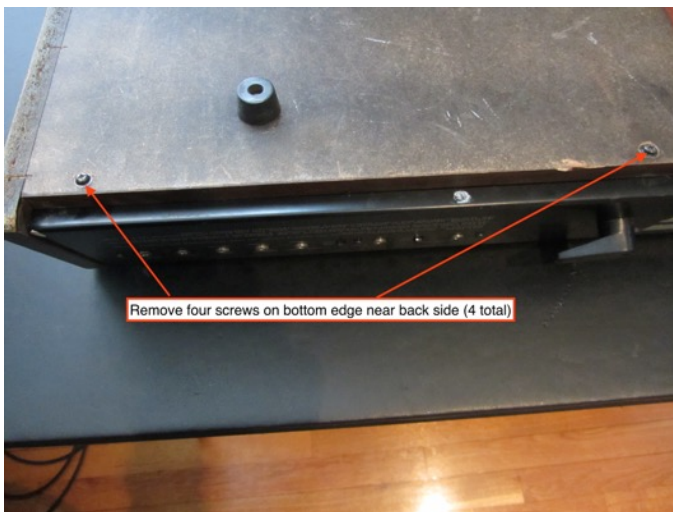
Figure-3.1

PCB Mounting Drill Template

Control Panel Drill Template
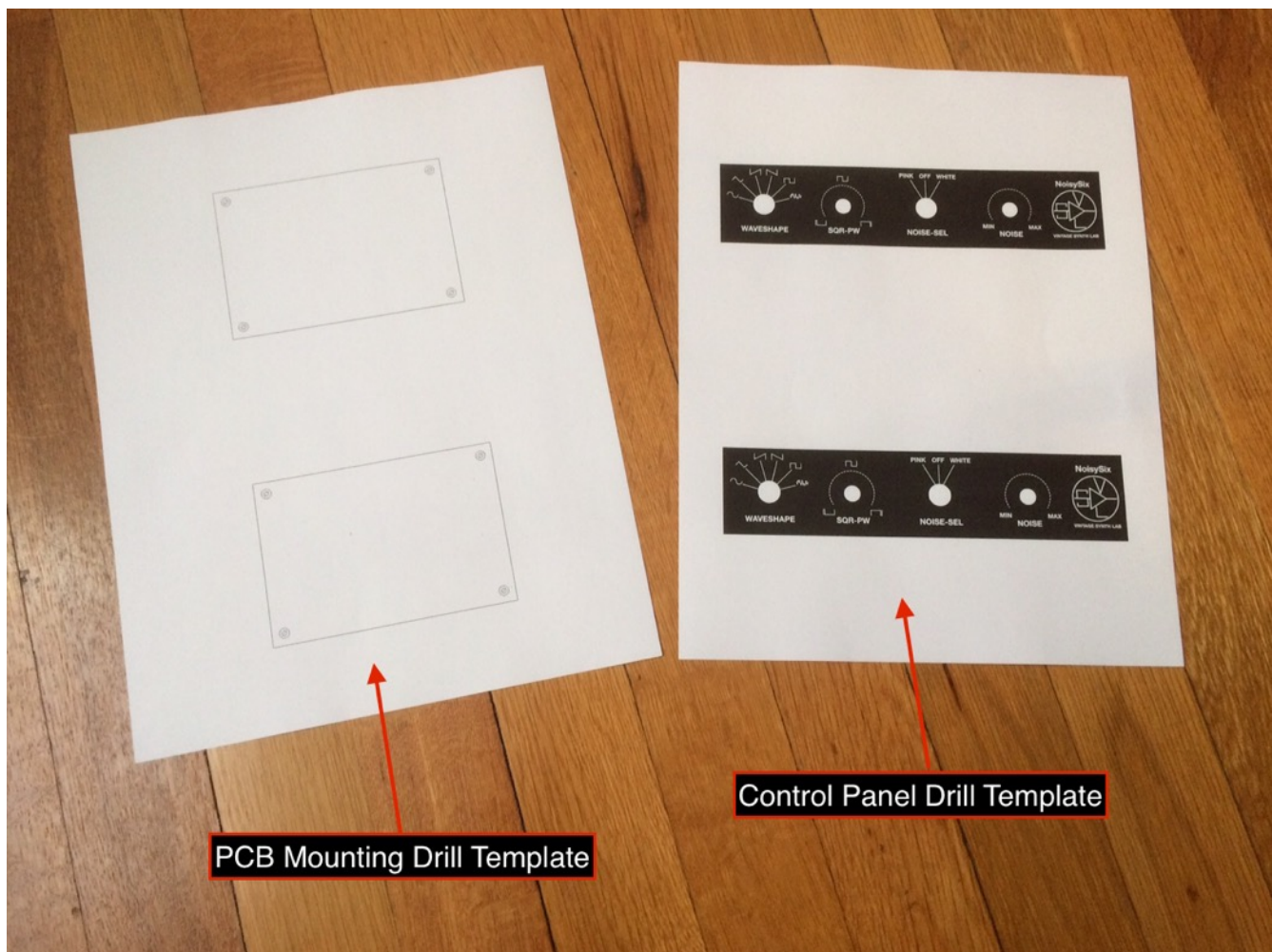
Section 3 - NoisySix™ Installation Procedure

4.   **Installation Procedure for the NoisySix**

4.1.   <u>Unplug the synthesizer</u> (remove the AC line cord from your mains power!)

4.2.   **Place the P6 (Polysix synthesizer) onto a clean work surface** (workbench) that will not damage or scratch the controls, the wood, or the top panel.

4.3.   **Carefully place the P6 (face down) on the workbench**
Remove the four screws along the bottom (near the back edge). These are screwed into the metal chassis (back side of the metal top panel). **See Figure-4 & Figure-5**

Figure-4 / Figure-5

4.4.   **Turn the P6 over (face up) on the workbench.**
Remove the four screws located two at each end of the top control panel as shown in **Figure-6.**

Figure-6

4.5.   **Remove screws holding the key-bed (keyboard) assembly**
These are the 6 <u>larger</u> screws underneath the main wooden chassis panel that secure the key-bed assembly. Move the synthesizer to the edge of the workbench so that it hangs over slightly—just enough to remove these 6 screws. Then place the P6 back to the center of your workbench.

4.6.   **Open the P6 synthesizer**
<u>Carefully</u> hinge open the top panel lid (it swings back). In some cases where the synth has incurred extensive wear, you might want to *support the top panel as it is rests in the open position*. However, take special care to prevent the top panel from pulling too hard on the large black cable (ground wire) that runs from the top panel to the main CPU board. This large black ground wire also acts as a support

Remove 4 screws on top panel
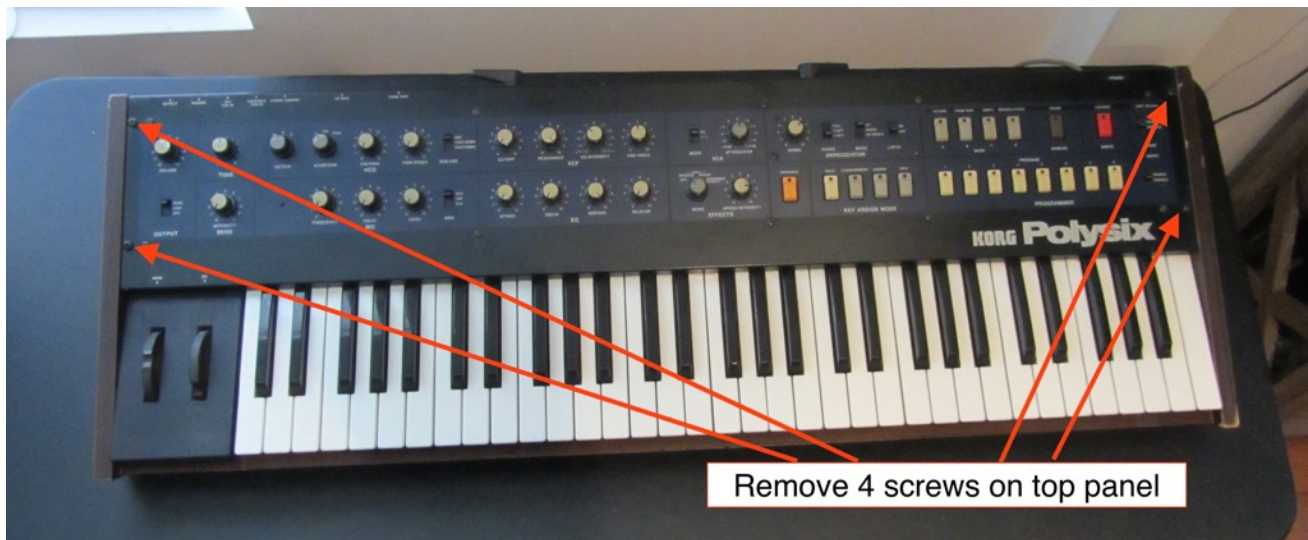
for holding up the top panel. Try to support the top panel so that you don't stress the two pivot dowels that are anchored to the two side panels. This will reduce the tension / stress between the two PCBs it is attached to.

4.7. **Removing the key-bed assembly**

Remove the keyboard connector (CN-04 on the KLM-366 voice board) as shown in **Figure-7.** You can now remove the key-bed assembly. Place it in a safe, secure place, out of the way. You will be reinstalling it toward the end of this installation guide.

Figure-7
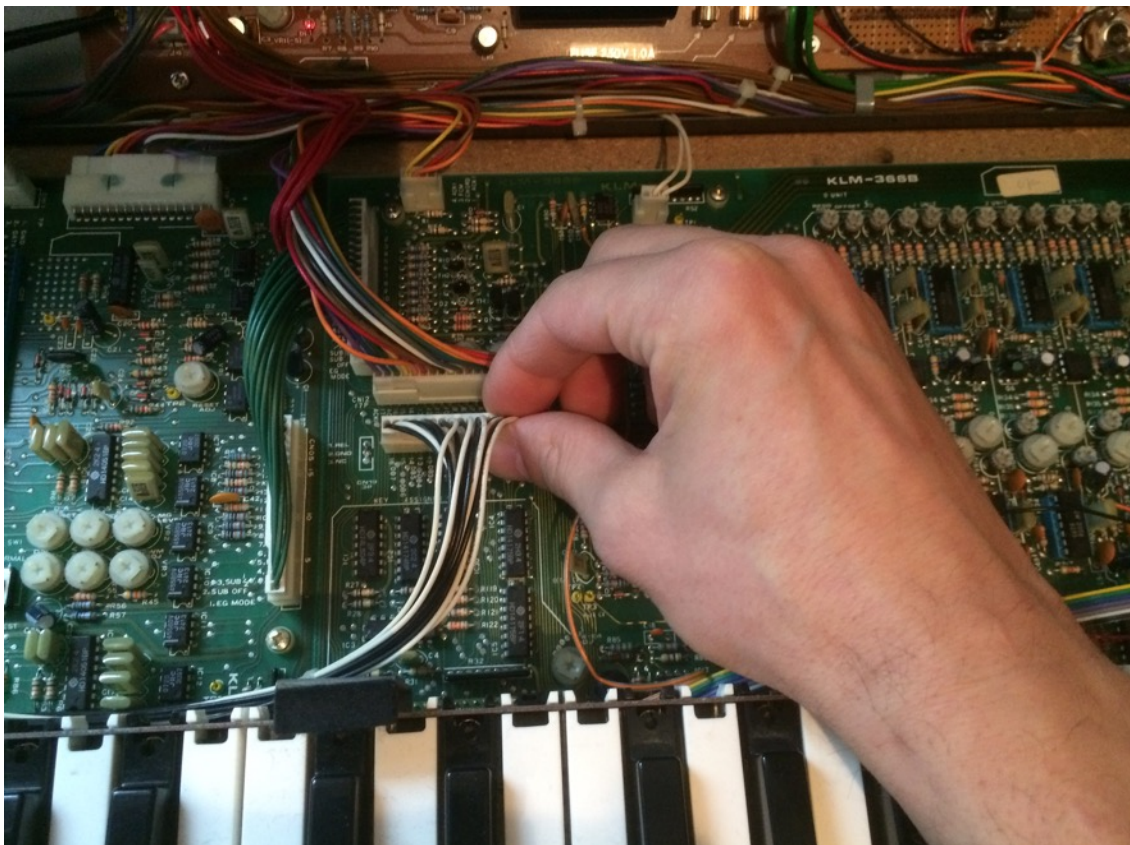
4.8.   **Removing the KLM-368 (effects) PCB and the KLM-367A (main/CPU) PCB**
   For reference, **See Figure-8 (next page)**

Figure-8

Remove KLM-368 effects board

Remove KLM-367A main board
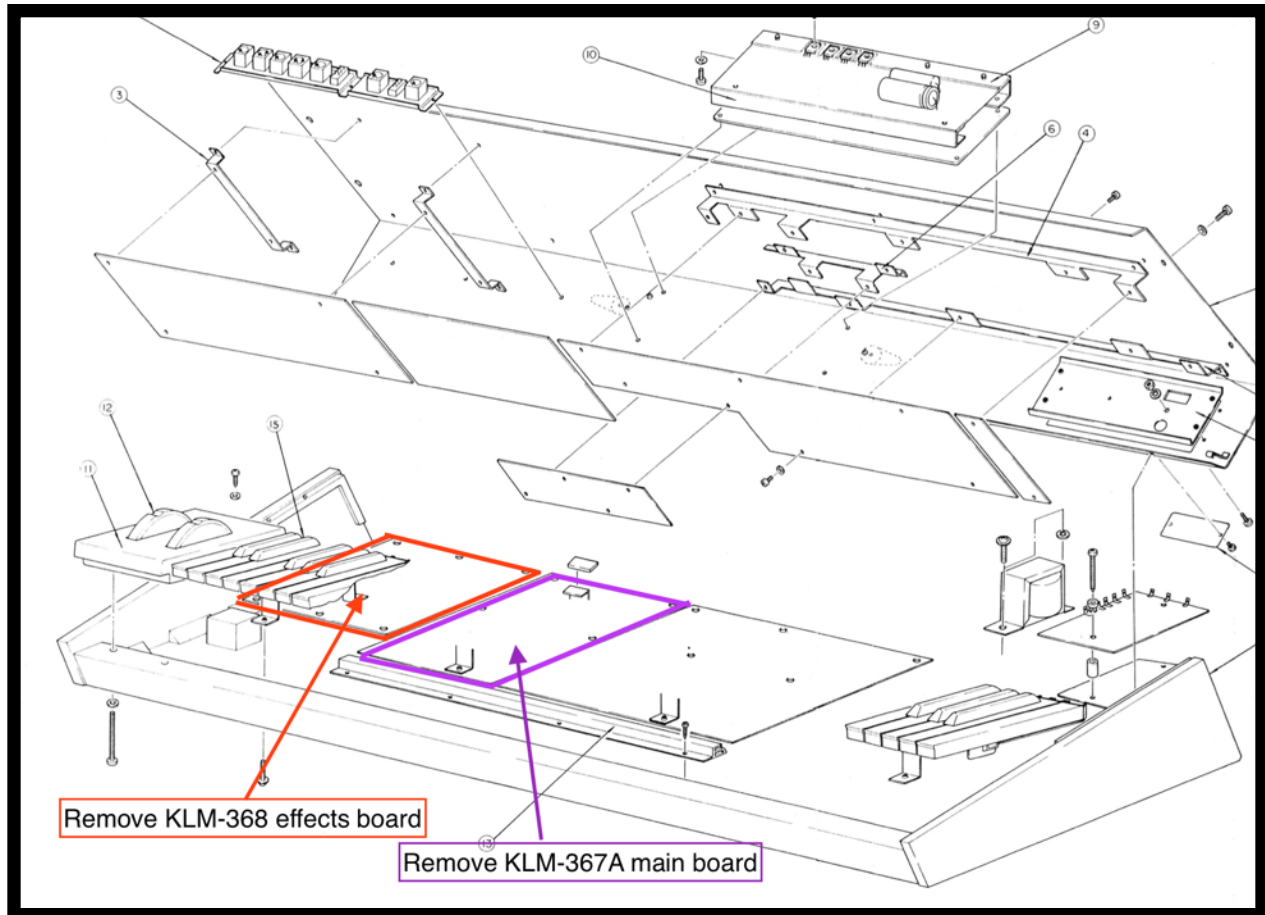
4.8.1. Remove the **KLM-368 "Effects board" PCB**: carefully disconnect the connectors from the PCB headers. These are sometimes difficult to remove. Just carefully and slowly work them by rocking them a little side to side (long ways). You can also use a strong right-angle pick as leverage (with care) to help pry those stuck connectors.

4.8.2. Before removing the **KLM-367A "main board" PCB**, you must *first desolder the large black ground wire that is soldered along the left edge of the PCB* **(See Figure-9 on next page)**. The other end connects to one of the top control panel PCBs (leave the top connection, as you only need to disconnect one end). Be sure that the top panel is supported well. Carefully disconnect the other remaining cables. Be sure to note where they were routed / connected.

Figure-9
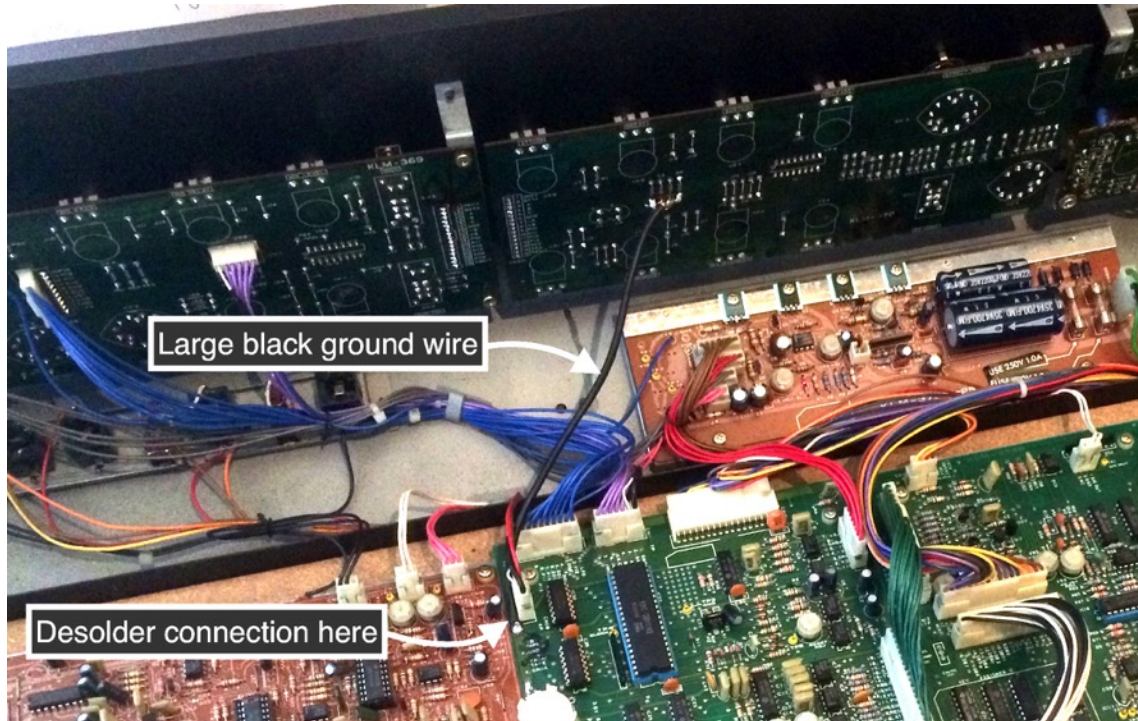
4.9.   The "**PCB Mounting drill template**" will be placed onto the interior of the rear chassis panel as shown in Figure-10 **(See Figure-10 for _general location_ and Figure-11 for _specific_ location)**.

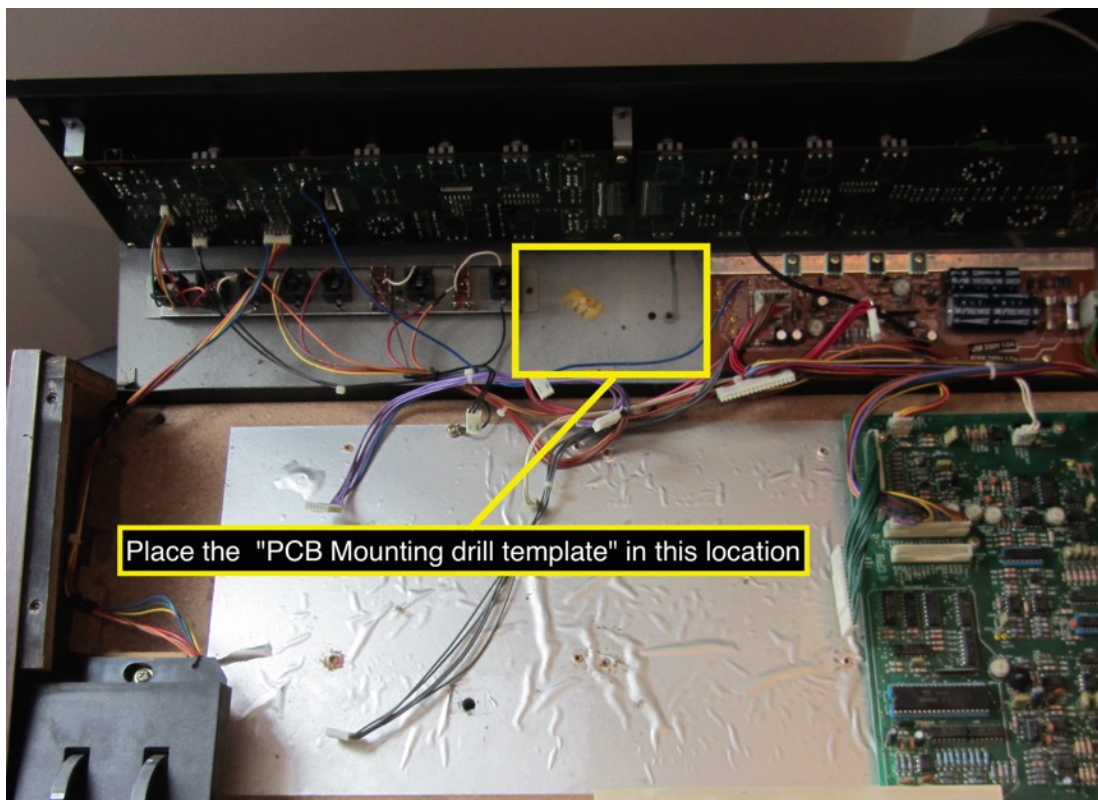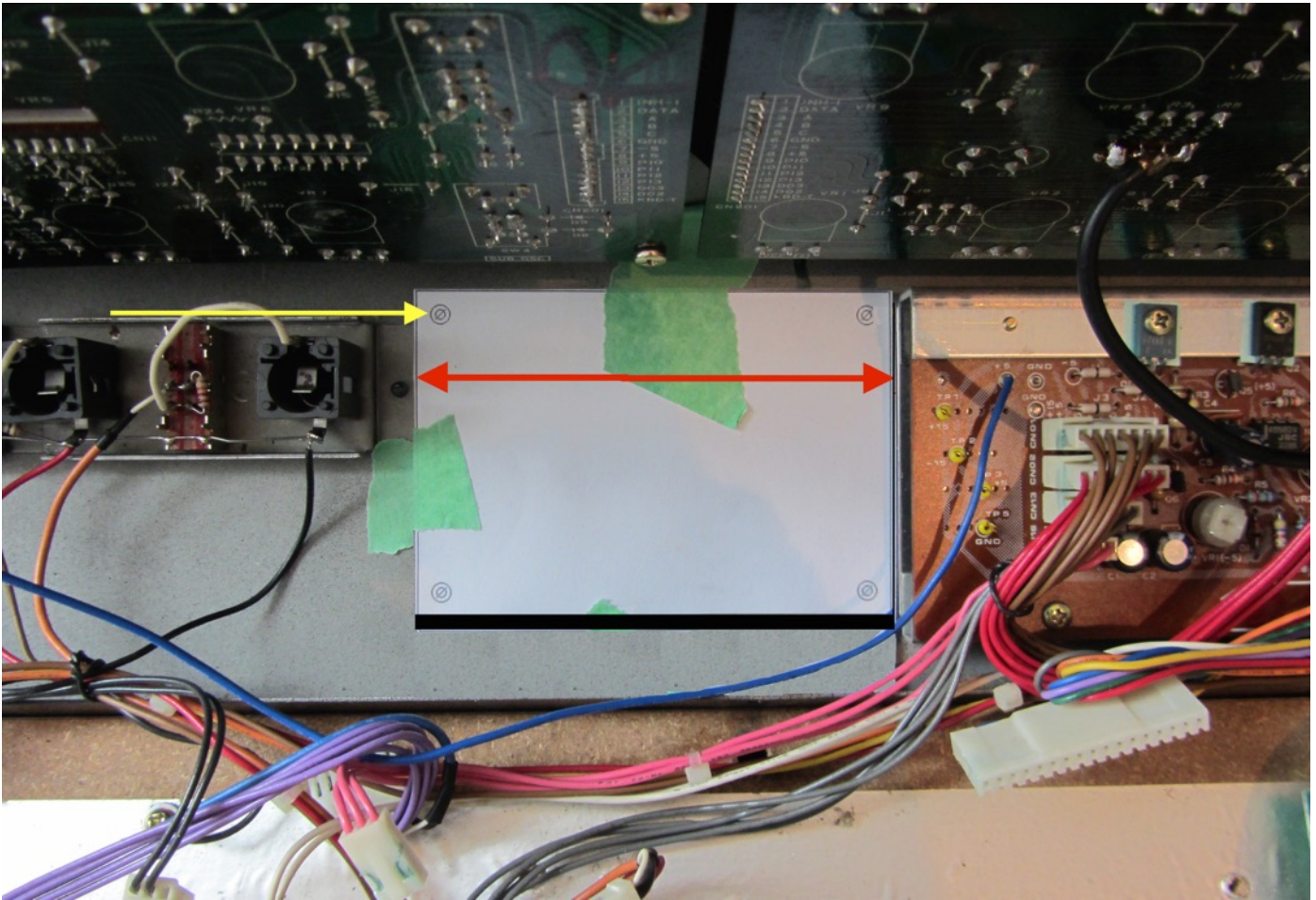**Figure-10 (_general_ location for PCB Mounting drill template)**

Figure-11 (_specific_ location for PCB Mounting drill template)

Notice the alignment in **Figure-11** : The red arrow emphasizes the **horizontal** position and shows that the PCB Mounting drill template fits just between the jack panel (as seen just to the left) and the power supply board (as seen just to the right). More importantly, the yellow line emphasizes the relative **vertical** position of the template relative to the jack panel which is located just to the left side of the template. The alignment should be as close to this position as possible. **Notice that the top of template is slightly higher than the power supply metal heatsink—it must not be lower than this, otherwise the NoisySix PCB may interfere with the original KLM-367 CPU board!** Move as many cables out of the way as possible. Four drill holes will be made in this area, so it is best to make sure any cables are out of the way. Also, remove the cable-tie (plastic piece) that holds the cable in this vacant area. In addition, remove the left-side plastic AC line cord mount (black plastic piece on the out side/rear of the chassis).

4.10.   Start by drilling <u>only the two holes on the left side</u>. **Us a pilot drill, the 3/32 (2.5mm) drill bit to start the holes**. I usually drill out the two holes on the left side, since they are easier to start.

4.11.   Once you have the first two pilot holes drilled as described in 3.10, carefully take the drill template off and place it on the rear of the chassis in the same location so that your holes match up—that is, the 4 holes will line up through the chassis from front to back. Now drill the remaining holes using the pilot drill bit 3/32 (2.5mm). **See Figure-12 (next page)**.

CAUTION: These four holes should not be any larger than 3/32. Make sure you have the correct size drill bit and that it is in good condition. If these holes are drilled too large (by using a faulty or incorrect size bit, the PCB mounting spacers may not fit correctly! (See **step 3.34.**)

4.12. Remove the template and drill out the pilot holes with the final drill, using the 3/16 (or 4.5mm) bit. Be sure to remove the rough metal fragments attached to the holes by carefully deburring them. I usually use a large drill but, such as a 1/2" to just remove those attached pieces. Immediately vacuum and clean up any stray fragments on both the interior and exterior of the synthesizer.
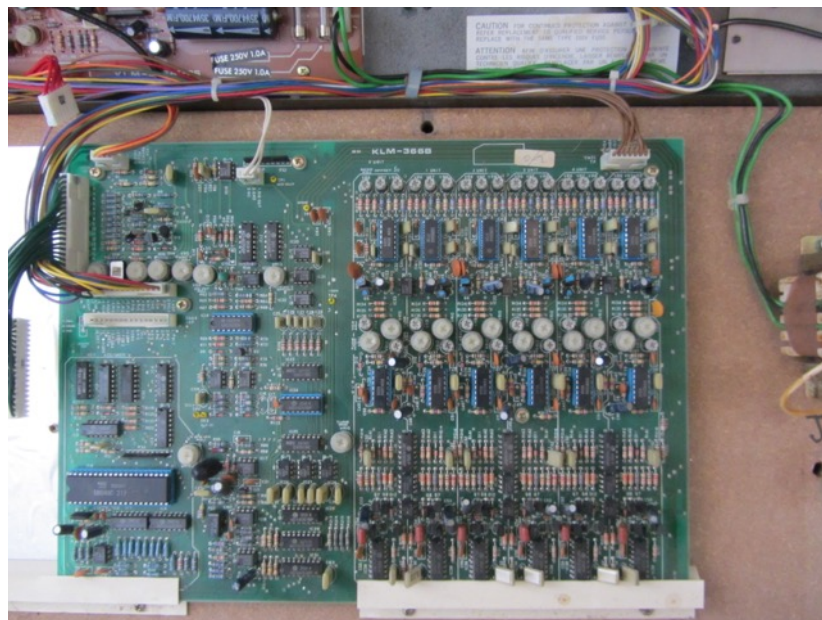
Figure-12

Do not install the NoisySix PCB assembly yet—this comes much later in the installation process. Wait until all of the other work is completed. Instead, you will continue with the installation of the various wires (cable harnesses)…

4.13. Next, you will need to get your soldering iron out. Here is where we start soldering up the cable harnesses, "**P1**" and "**P2**" (see also **Figure-3**).

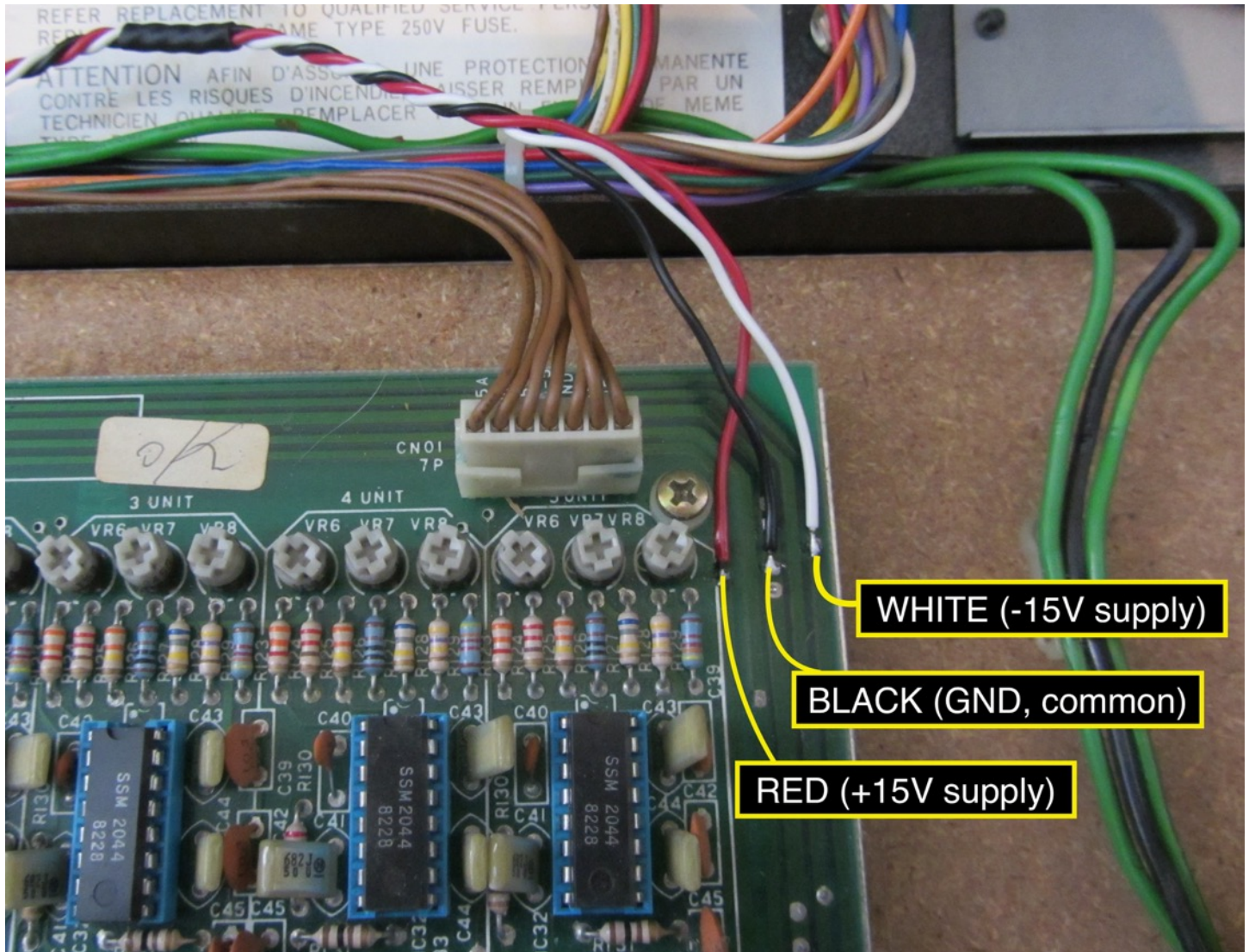4.14. **Figure-13** shows the KLM-366 voice board.

Figure-13 (KLM-366 voice board)

4.15. Attach "**P1**", the 3-conductor cable (WHITE, BLACK, RED), to the KLM-366 "voice board" as shown in **Figure-14**. "**P1**" provides power *from* the KLM-366 board *to* the NoisySix. On the far right side of the KLM-366 voice board, there are a few vias (routing holes in the KLM-366 circuit board) that will be used to "tap" into the existing power supply. The **red wire should be soldered to the "+15V"** supply. The **black wire should be soldered to the "GND"** (ground) connection. And finally, the **white wire should be soldered to the "-15V"** supply (see **Figure-14**). Normally, you would remove the solder and then feed the wires through these vias (holes), but it is much easier to "tin" the holes first with fresh solder and then simply attach the wires by soldering them directly to the vias as shown in **Figure-14**. Be sure to route the cable through the conduit along the lower edge of the back of the synth (just below the Power Supply board) along with all of the existing cables that are routed there.
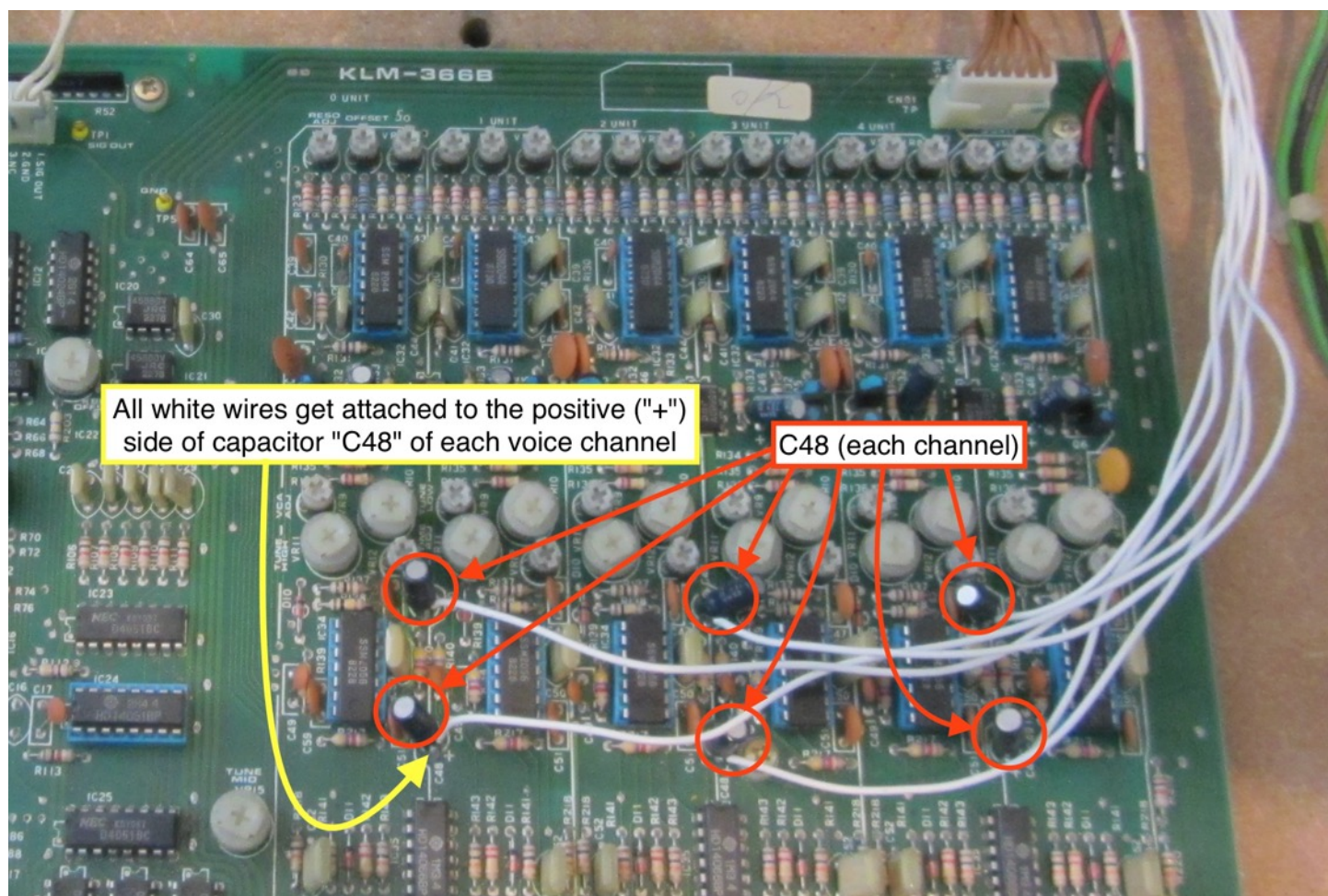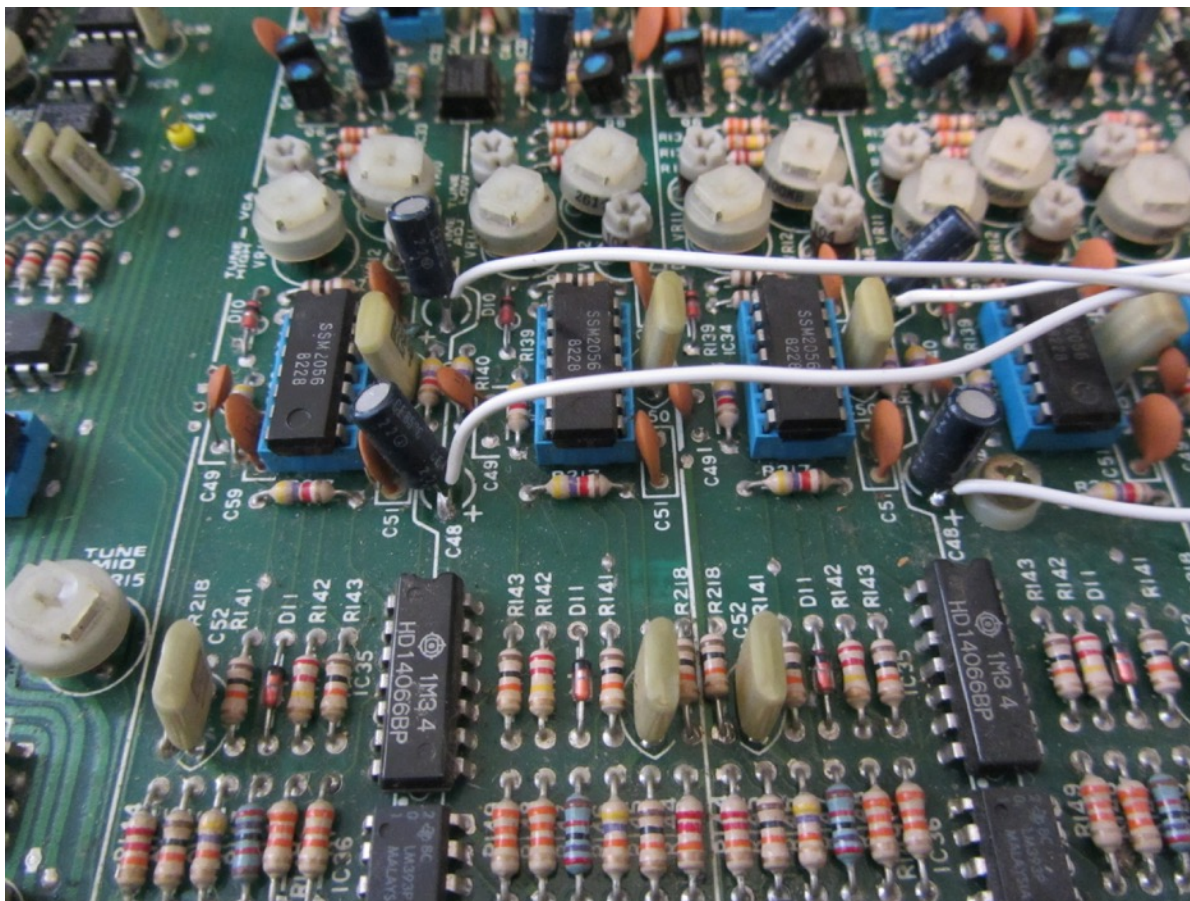
Figure-14

4.16. Attach "**P2**", the 6-conductor cable (6 x WHITE wires) to the KLM-366 "voice board" as shown in **Figure-15 & Figure-16 (for close up view, next page)**. Notice that the wires are slightly <u>different</u> lengths. **Figure-15** shows that <u>the voices toward the right side get the shorter wires and the voices toward the left side get the longer wires</u>. *For more detail, see next paragraph (**3.17.**) and **Figure-16***

Figure-15

All white wires get attached to the positive ("+") side of capacitor "C48" of each voice channel

C48 (each channel)

4.17. **Figure-16 (next page)** shows a close-up view of some of the white wires from "P2" attached to C48. This cable assembly has all white wires. They all provide simultaneous "NOISE" (when selected) from the NoisySix to the voice board. Each individual connection goes to each voice, respectively, on the voice board via the "+" (positive) side of C48. Note that each voice channel is the same circuit, repeated six times, including the reference designators for all voices. Therefore, C48 will be found six times, one for each voice, on the KLM-366 voice board as shown in **Figure-15**.

Figure-16

After you have attached the six white wires to the voice board, set the keyboard aside. Next, you will modify the KLM-367A "main (CPU) board"…

4.18. **Modifying the KLM-367A board**

4.18.1. Place the KLM-367A "main CPU board" onto your workbench. Refer to **Figures 17, 18, 19, 20, and 21** for reference to this procedure.

4.18.2. Remove **R18, R69, and C19** as shown in **Figure-17 (photo) and Figure-18 (illustration)**.

4.18.3. **Cut the trace** that connects IC21 (pin-12) to the gate (center lead) of Q1. Only a small section of the trace needs to be cut in order to severe this connection. See **Figure-18** and **Figure-19 for close up view (next page)**. Use a good quality, sharp cutting blade. I find that the smaller, narrower blades work best. Do not cut any adjacent traces or components. Take your time and be sure to work in good lighting. The use of a magnifier is helpful, too. When finished, you can double-check your work by verifying continuity between IC21, pin-12 and the center lead of Q1. It should no longer be a direct connection (i.e. not 0-ohms).
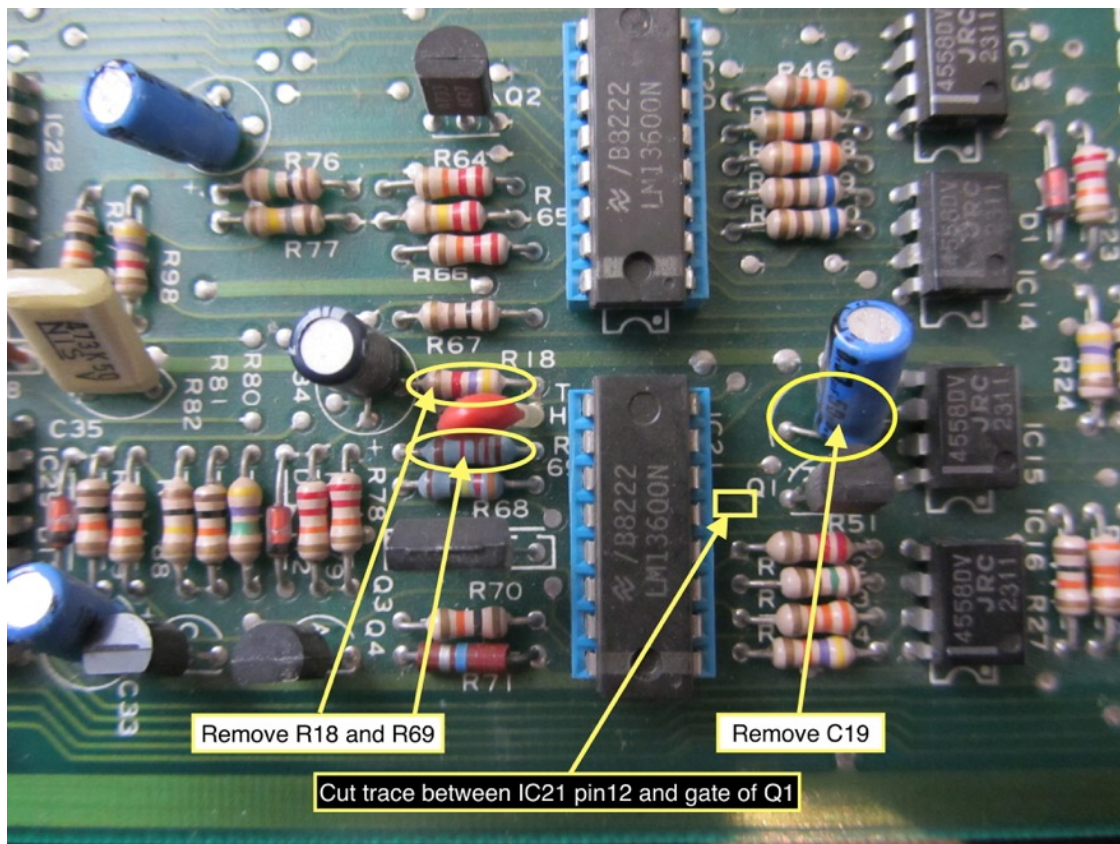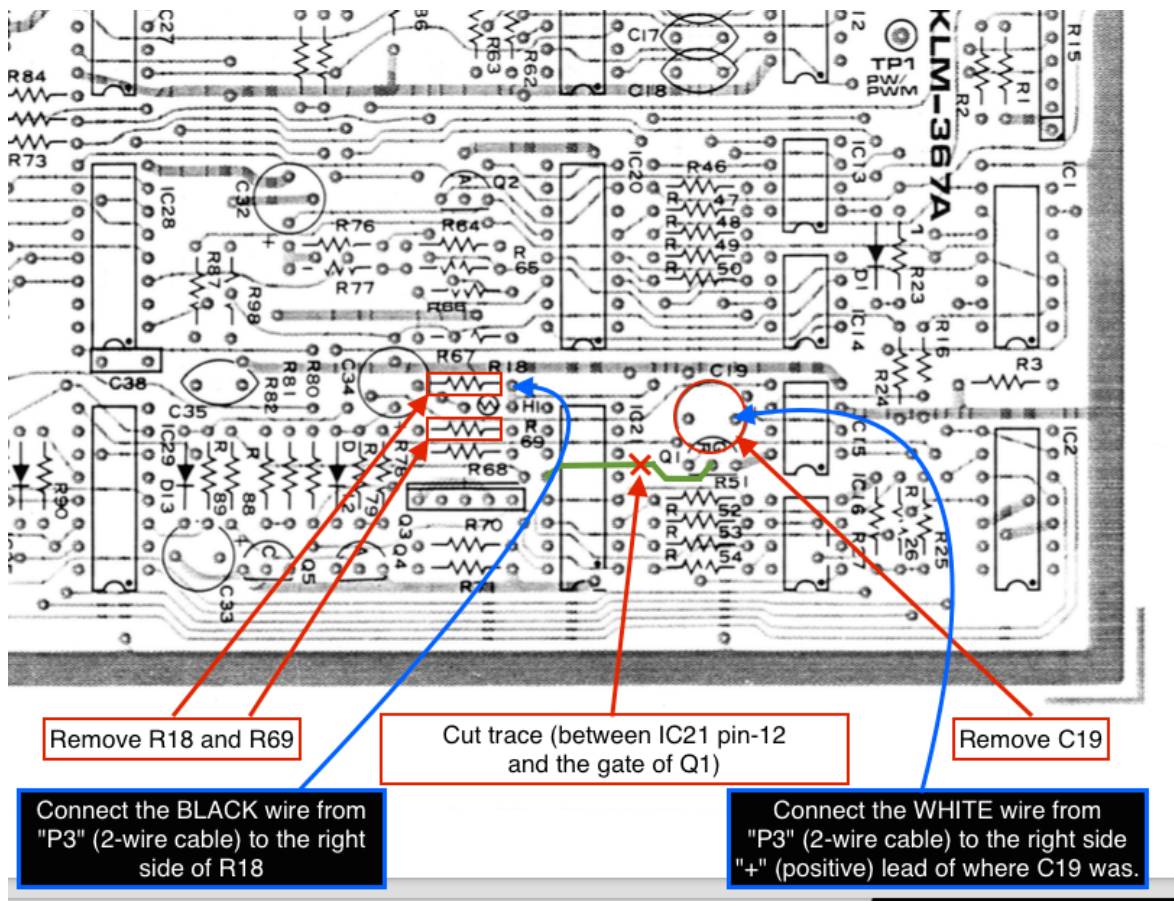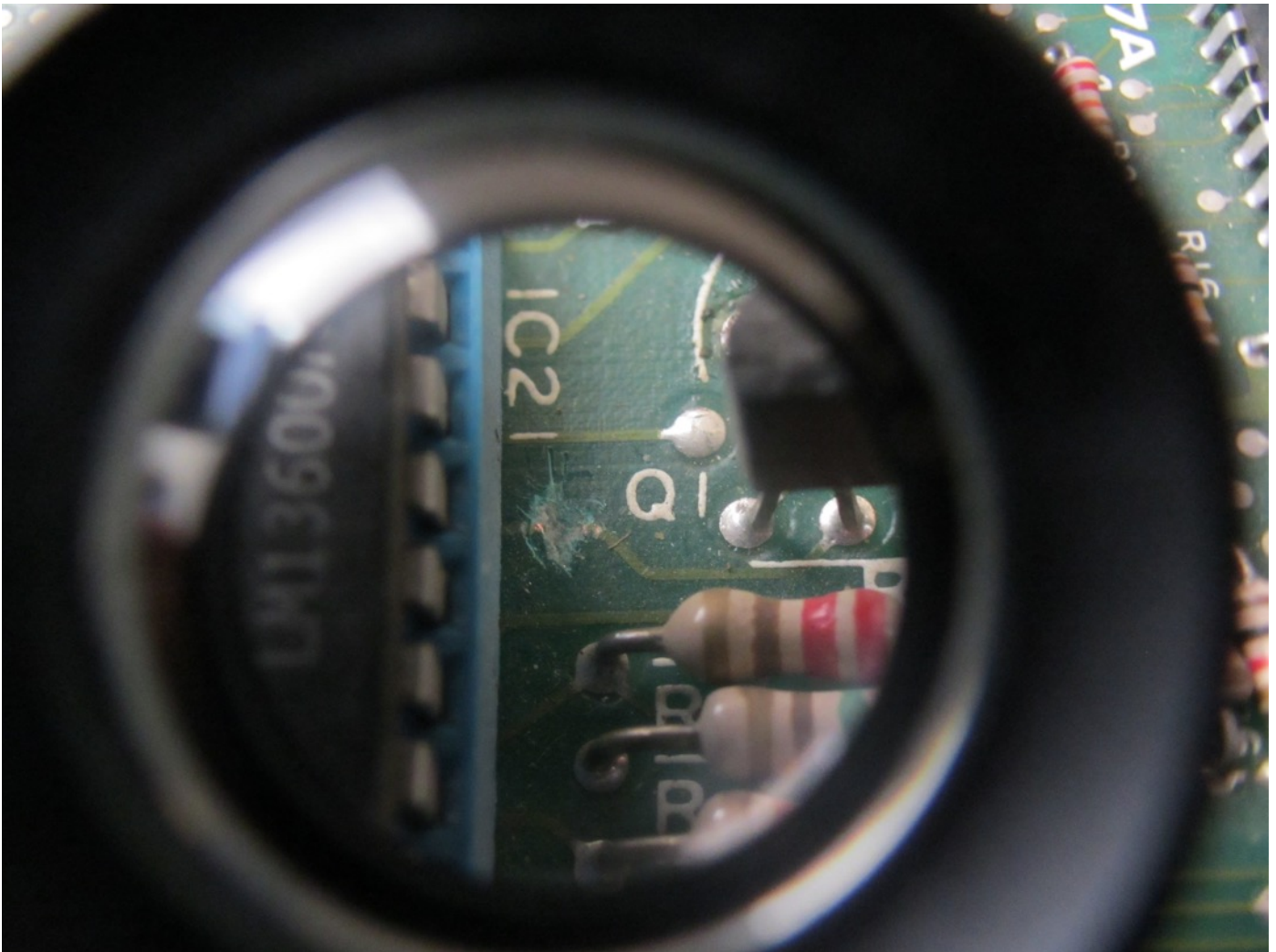
Figure-17

Remove R18 and R69

Remove C19

Cut trace between IC21 pin12 and gate of Q1

Figure-18
(illustrated reference for modification to KLM-367A main-CPU board)

Remove R18 and R69

Cut trace (between IC21 pin-12 and the gate of Q1)

Remove C19

Connect the BLACK wire from "P3" (2-wire cable) to the right side of R18

Connect the WHITE wire from "P3" (2-wire cable) to the right side "+" (positive) lead of where C19 was.

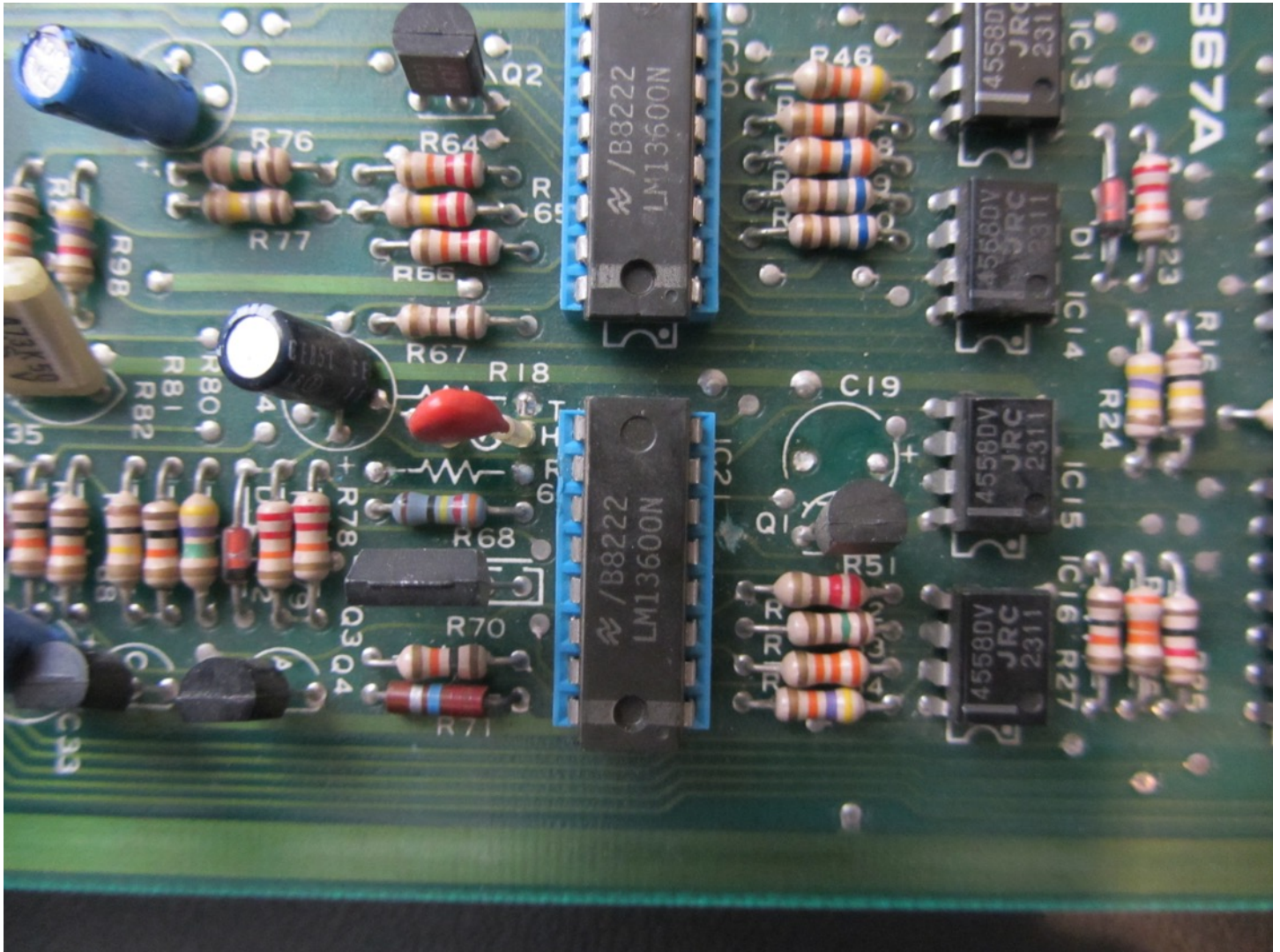*Figure-19 shows a close up view of the cut trace leading to the center lead of transistor "Q1"…*

Figure-19

Figure-20 shows the R18, R69, and C19 removed and the cut trace leading to transistor Q1-gate (center lead) …

Figure-20

4.18.4.   Attach "**P2**", the 2-conductor cable (BLACK, WHITE) to the KLM-367A "main-CPU board" as shown in **Figure-21 (next page)**.

The **BLACK** wire is the **CV** taken *from* the KLM-367A *to* the NoisySix and is attached (soldered) to the **right side of where R-18 *used to be***.

The **WHITE** wire is the **LFO** *from* the NoisySix *to* the existing MG circuit located on the KLM-367A board and is attached (soldered) to the or **right side ("+" positive) of where C19 *used to be***.

Note that you can either remove the solder of these two nodes (using either solder-wick or a solder removal pump) -or- you can reflow the solder with new/fresh solder and then attach the wires. Either way works well.

Figure-21 shows the black and white wires from "P3" attached to the KLM-367A board…

Figure-21
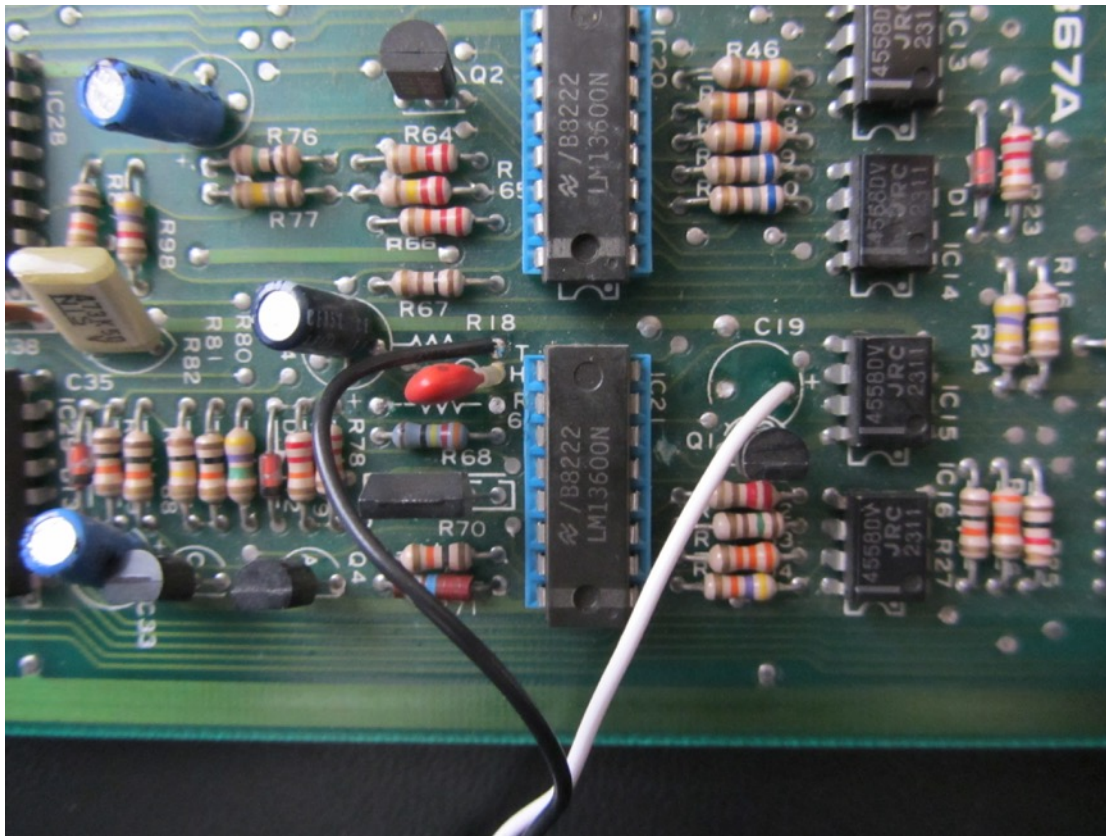
Place the KLM-367A CPU board aside (preferably in an ESD safe bag and/or on an ESD safe surface). Place the P6 synthesizer back onto the workbench as you will now drill the holes in the top panel for the four NoisySix controls…

4.19. **Drilling and mounting the top panel NoisySix controls**

Before drilling the holes for the top panel controls, make sure that there are no cables or anything underneath the location where you will be drilling. For reference, the four hole locations to be drilled are very well lined up with the existing MG controls. For example, **see Figure-22**

Figure-22

4.20. The old saying "measure twice and cut once" definitely applies here—as you have one chance to get the holes drilled correctly, so take your time. While the holes do not need to be very precise, you should try to mark or "start-punch" holes (using an awl) in order to obtain a centered drill point.

It is a good idea to **establish exactly where your controls will go** <u>**by placing either the overlay provided with the NoisySix kit**</u> **(Control Panel Drill Template),** *temporarily***, onto the top panel** (If you chose to use the overlay instead, do <u>not</u> peel the backing off of the overlay yet!).

The template or overlay should be **centered horizontally** just below (and lined up with) the original MG controls (as referenced in **Figure-22**).

It should also be **centered vertically** so that the <u>distance between the top edge of the overlay and the MG section blue graphical paint</u> —and— <u>the distance between the bottom edge of the overlay and chassis edge</u> **are equal.**

Once you are satisfied with the position of the overlay, tape it so that it won't move. Mark the exact center of each hole with a scribe or awl. Remove the template (or overlay so that it doesn't get damaged).

4.21. Place a disposable aluminum pan underneath where you will be drilling and affix masking tape above and below the drill points to help catch metal fragments. See **Figure-23**. Remember: it is a good idea to reattach two of the top panel screws (one on each side) to hold it secure in place while you drill.

Figure-23

4.22.   Start by drilling out the pilot holes. **Us a the 3/32 (2.5mm) drill bit to start the pilot holes**. Take your time and make sure you drill perpendicular to the surface so that the holes are straight and centered. Clean up metal fragments as you go along. Use both a vacuum as well as plenty of new masking tape. The masking tape picks up a lot of the metal pieces easily.

4.23.   Note that the controls for the NoisySix are (from left to right):
WAVESHAPE, **SQR-PW**, **NOISE-SEL**, **NOISE**
See Figure-1 (at the beginning of this document) for reference!
See also Figure-24 (showing holes drilled)

I emphasize this because the **WAVESHAPE** and **NOISE-SEL** are <u>larger</u> holes! (0.375, 3/8", or 9.5mm) Whereas the **SQR-PW** and **NOISE** are <u>smaller</u> holes! (0.280, 9/32", or 7.0mm)

4.24.   Drill the <u>first</u> and <u>third</u> positions "**WAVESHAPE**" and "**NOISE-SEL**" using the **3/8-inch (9.5mm) drill bit**. You might want to use an in-between drill size and slowly graduate to the 3/8-inch bit. Make sure that your bits are in good condition—better to buy a new bit than chew up your precious Polysix!

4.25.   Drill the <u>second</u> and <u>fourth</u> positions "**SQR-PW**" and "**NOISE**" using the **9/32 (7.0mm) drill bit.**

4.26.   Deburr the drilled holes and thoroughly clean up all metal fragments.

Figure-24 shows the holes drilled out and deburred
Figure-24

4.27. Clean the surface of the top panel where the new controls will be mounted.

4.28. Install the lock washers onto the two switches of "**P4**" (the large cable harness with the four controls), as shown in **Figure-25**.

Figure-25

Install the lock-washers onto the two switches, one each
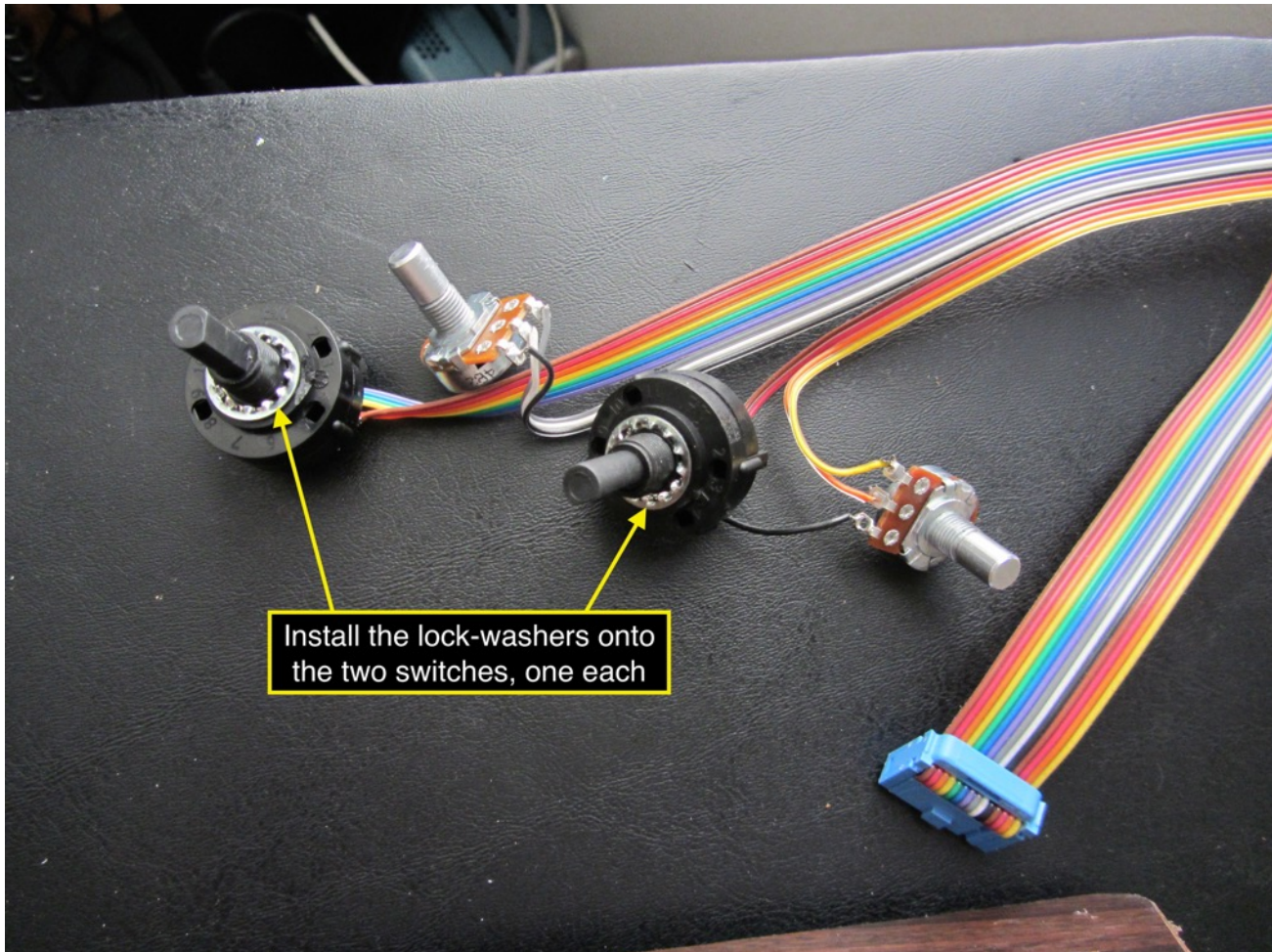
4.29. Place the controls through the newly drilled holes in the top panel as shown in **Figure-26 (next page).** The ribbon cable should run in the direction as shown (to the right). Secure the two switches (1st and 3rd positions) with the larger nuts and tighten lightly by hand for now. Secure the two potentiometers (2nd and 4th positions) with the small flat washers and small nuts and tighten lightly by hand for now.

Note: You may want to consider placing the overlay onto the top panel chassis *before* attaching the controls to the top panel (chassis). Once the overlay is centered and placed, you can then attach the controls. However, some people may find it easier to attach the controls first. Either way works fine.

Figure-26

4.30. Carefully peel the paper backing off of the overlay decal. Align the overlay onto the new control location and center it over the new controls as shown in **Figure-27** so that the hardware that secures the controls doesn't overlap with the overlay-decal.

Figure-27

4.31. Attach the two knobs for the rotary switches "**WAVESHAPE**" and "**NOISE-SEL**". Note that depending on what parts Vintage Synth Lab has in its inventory, some kits ship with switches that have completely round shafts for the switches and some ship with the "D" type (one edge is flat). Either way, you will have to lightly tighten each knob's built-in "set screw" (with a small flat-blade screwdriver) to see if the alignment for which you have tighten the actual switch to the top panel is correct. If not, take the knob off, and make the necessary adjustment by slightly rotating the entire body of the switch until the alignment is such that when you put the knob back on, the white pointer is pointing to each of the graphical spokes (on the overlay). For example, the pointer on the **WAVESHAPE** control below in **Figure-28** indicates that the switch was installed so that the alignment is satisfactory.

Figure-28

4.32. Attach the two knobs for the potentiometers "SQR-PW" and "NOISE". Secure the knobs using the built-in set-screws and rotate the knob and relocate the position of the knob on the potentiometer until the alignment is satisfactory. For example, when the NOISE control is rotated completely counter-clockwise (CCW), the pointer should look very similar to the one shown in **Figure-29**

Remember to make sure that all four controls (switches & pots) are tightened before finally securing the four knobs!

Figure-29

CAUTION!: The NoisySix circuit board assembly has many small components on them called "Surface-Mount Devices" or "SMDs". These SMD components are more fragile than the old "thru-hole" circuit board parts. The NoisySix design as a compact circuit board is possible because of this modern technology. However, SMDs are fragile. Do not use any tools to install the circuit board assembly. Carefully use your hands only to press the four plastic (white) mounting spacers into the newly drilled holes *before* installing the NoisySix PCB. If you can't completely seat the circuit board, carefully pull the board out and check to see if the drilled holes in the back panel (from Step 3.11.) are free of metal fragments. If any of the plastic mounting spacers don't stay in the chassis, you may have drilled your holes too small or too large.

4.33.   (Read caution statement *above*)… **You are almost ready to install the NoisySix circuit board assembly**. Open the P6 back up (hinge the lid back). If you had secured the top panel with two screws during the drilling process, as in **step 3.22.**, remove them now. Once the synthesizer is open, locate the area where you drilled holes in **step 3.10. through 3.12.** (**See Figure-10 and Figure-11 for reference**). If you have an ESD wrist-strap, this is a good time to use it.

When you remove the NoisySix circuit board assembly from its static-protective bag, you will notice that there are four holes, one in each corner. These are the mounting holes that the **white plastic mounting spacers** will lock into. However, do not install them onto the circuit board. ***First***, you must place the spacers into the chassis (from the inside of the synthesizer) with the shorter end entering the chassis and the longer, narrower end facing out toward you. The longer, narrower end of the plastic mounting spacer is where the PCB will mount.

Use your hands to press them in firmly until they are secure into the chassis holes you drilled. The use of a tool could damage the spacers! If you chose to use pliers, be very careful. Make sure that the spares are secured and don't come out of the chassis when pulled on. The holes drilled in the chassis (from **step 3.10. through 3.12.**) should be the correct size. If they are too small, you won't be able to snap the plastic mounting spacers in. If they are too large, the mounting spacers will be loose.

4.34.   Once the **plastic mounting spacers** are all seated and secured into the chassis correctly, you can install the circuit board assembly onto the mounting spacers with the blue connector toward the top. The VSL logo should be facing up as shown in **Figure-30**
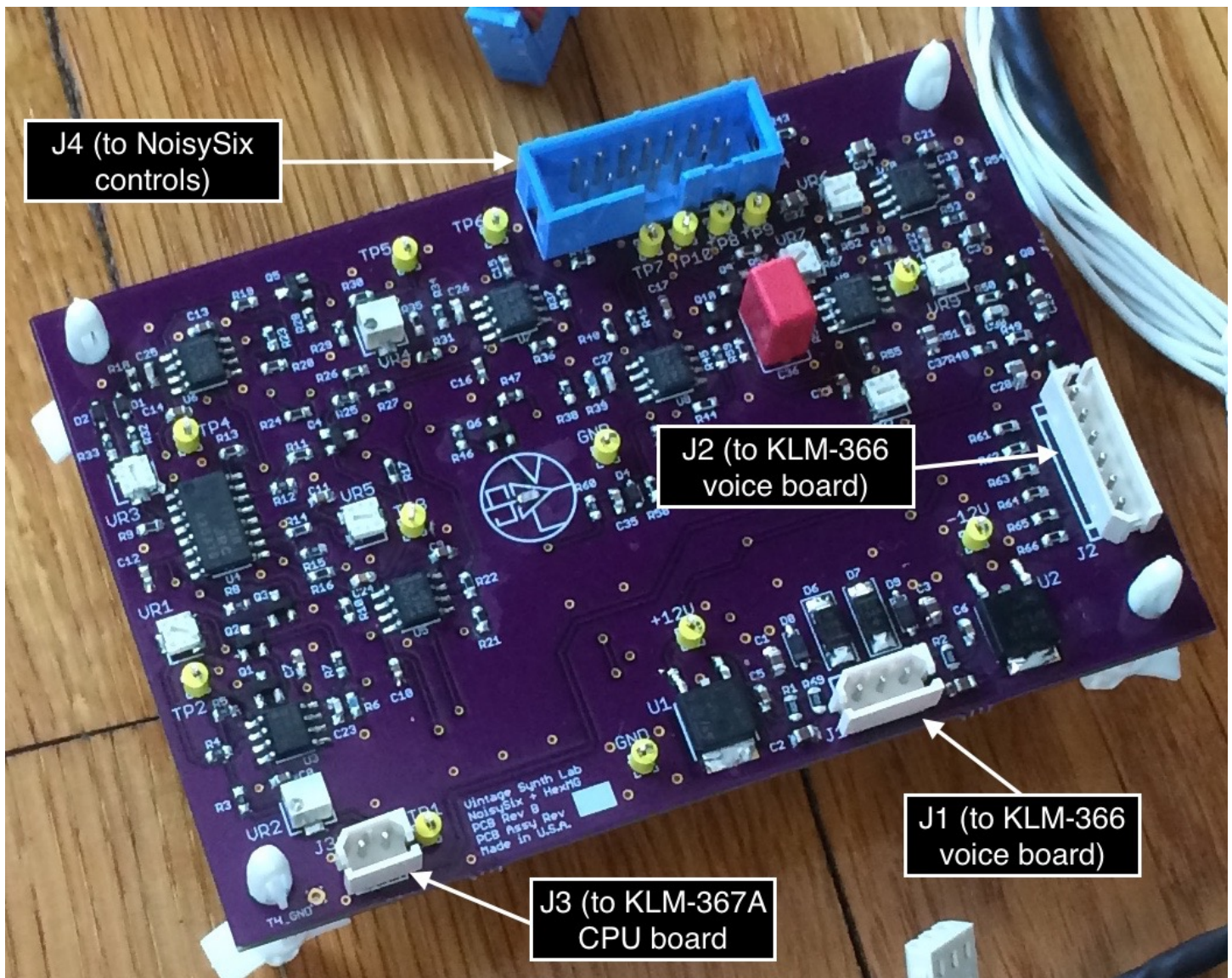
Figure-30
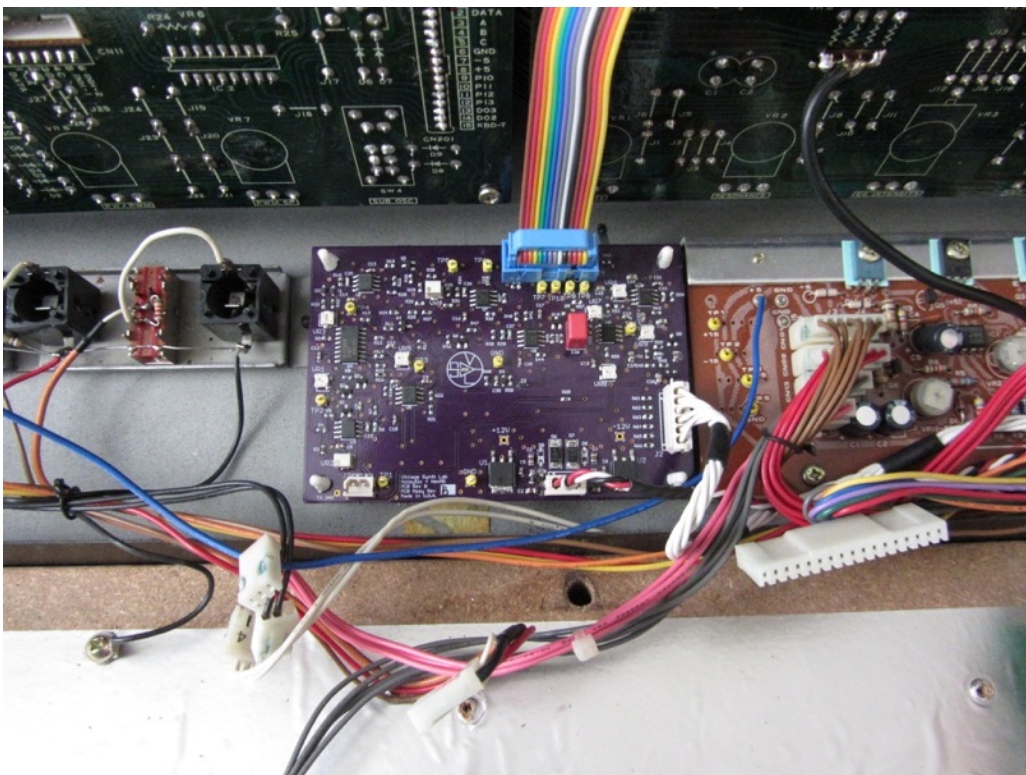
4.35.   Reinstall the KLM-367A (main-CPU board) into the synthesizer.

4.36.   Reinstall the KLM-368 (effects board) into the synthesizer.

4.37.   Reconnect all of the original P6 internal cables to their correct positions. A helpful hint is that most P6 synths have a "P#" printed onto the end connector shell. This should match the header location to which it mates on each circuit board.

4.38.   Finally, you can connect your NoisySix custom cables as follows (**Figure-31 shows the header locations marked as J1, J2, J3, and J4, next page**)

P1 connects to J1
P2 connects to J2
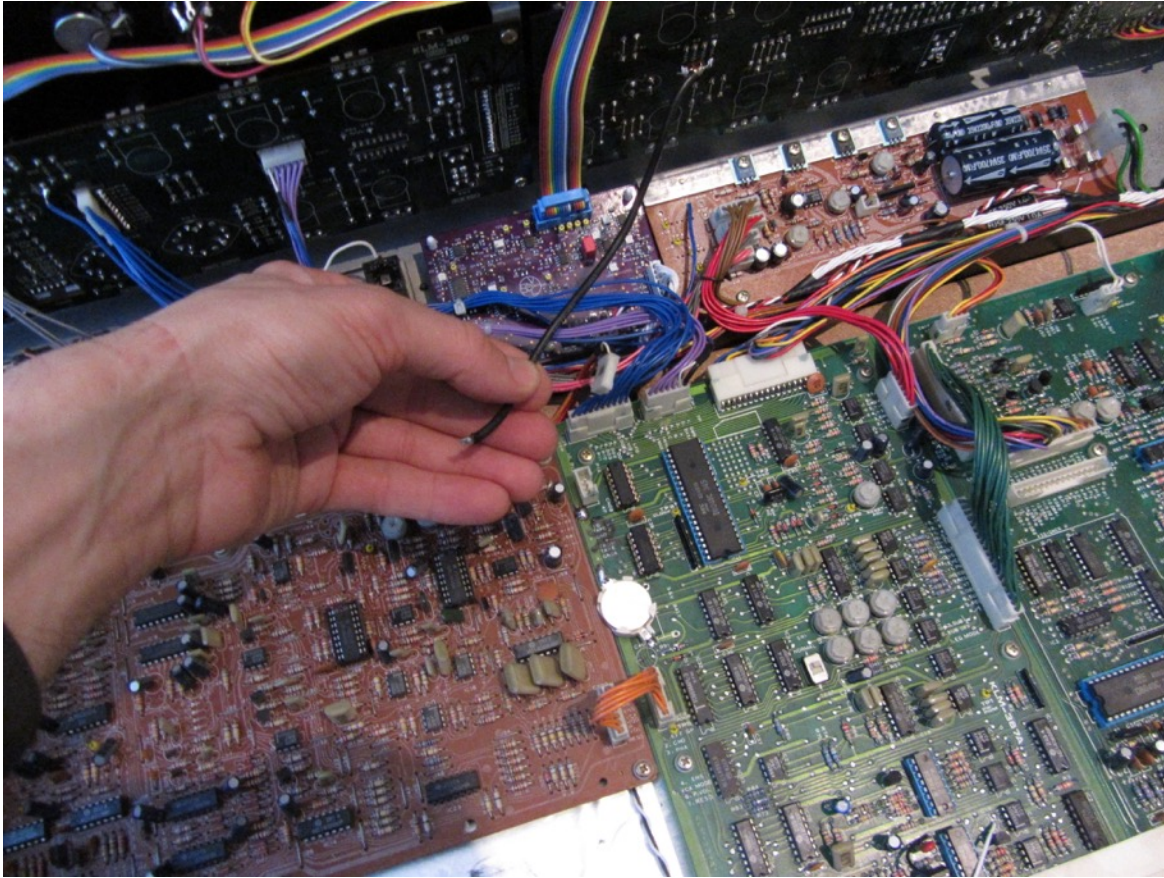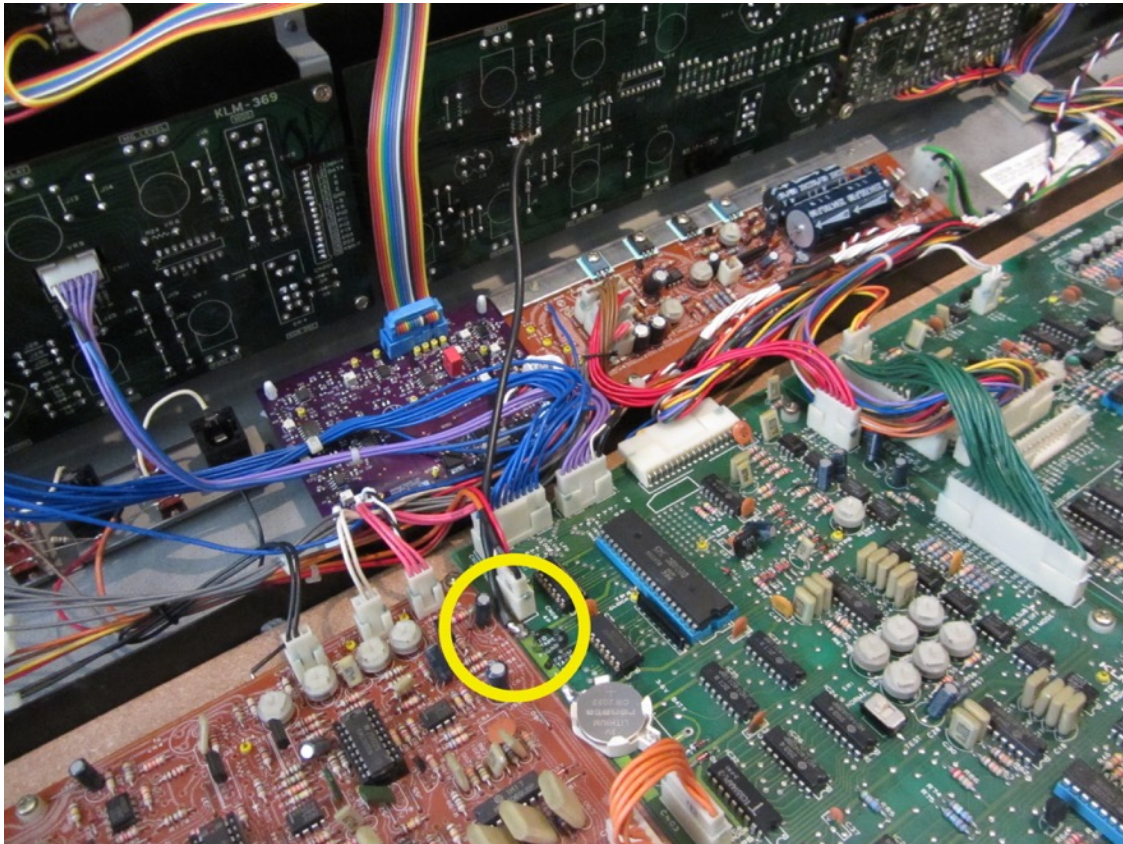P3 connects to J3
P4 connects to J4

Figure-31

4.39. And finally remember to reconnect (solder) the large black wire (**as shown in Figure-32 and Figure-33**) back onto the KLM-367A CPU board (as you desoldered in **step 3.8.2. (reference Figure-9)**

Figure-32
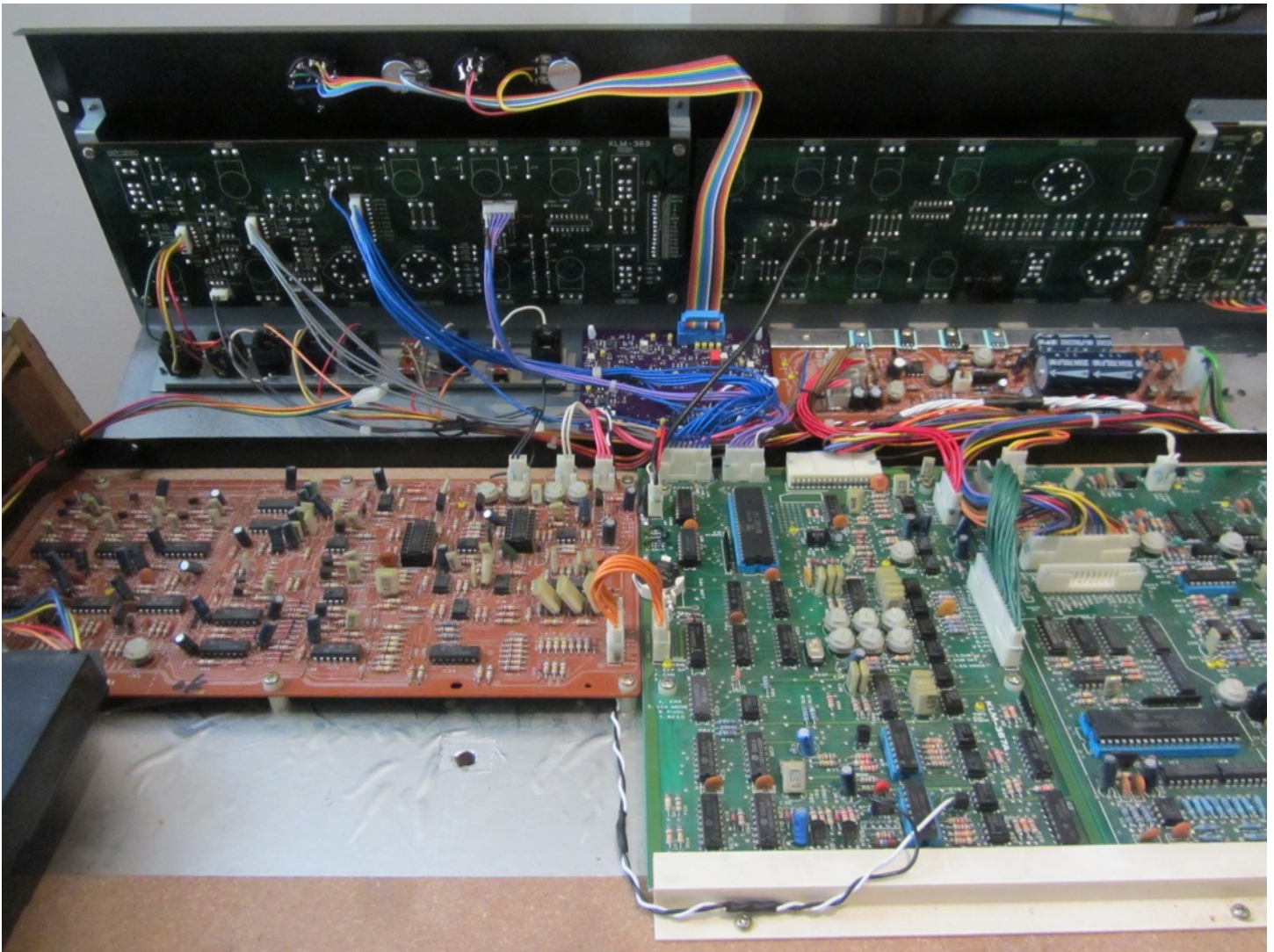

Figure-33

4.40.   Look over all of the connections carefully…. your P6 should look very similar to **Figure-34 (or the photographs you took for reference during the disassembly of the synthesizer cabling and PCB locations (for any removal).**

Figure-34

4.41.   Reinstall the key-bed assembly and all of the chassis screws.

Congratulations!! You have now installed your NoisySix!

If you run into any trouble or have any questions, please contact vintagesynthlab@gmail.com or visit www.vintagesynthlab.com

***Disclaimer**: Vintage Synth Lab does not assume any responsibility for damage, loss, or health related problems incurred from installation, mishandling, incorrect wiring / hook up of circuitry, or anything related to the installation of this kit, mechanically, electrically or otherwise. If you are not sure, not comfortable and/or not confident in your mechanical and electrical/electronic skills, you should consider consulting an experienced service provider for analog synthesizers for installation and any necessary adjustments. Please review the entire installation guide in this manual before purchasing or installing a NoisySix™ kit. Please use good environmental practices, such as avoiding inhalation of solder or flux smoke and fumes. Both lead and lead-free solder have flux. While lead solder is clearly bad for your health, you should avoid breathing in lead-free solder as well. You can buy sophisticated smoke filtration systems, ranging from light-duty to heavy-duty (manufacturing standard OSHA type), however it is up to you to determine what system, if any, will suffice for keeping you healthy and not inhaling smoke fumes of any kind. While not required, I encourage you to use an ESD wrist-strap to protect the static sensitive I.C.s throughout the synthesizer. There is a wealth of information on the internet that provides education for ESD awareness and safe practices. In short, if you don't have an ESD wrist strap, I would recommend that you work on a table where you will not be moving around (potentially generating ESD. The less you move around, the better.

**Calibration
Calibration of the NoisySix™ should not be necessary as all kits are calibrated and fully tested before being shipped out to customers. It is suggested that your P6 be tuned properly before installing this kit. The NoisySix™ has a built in power supply (positive and negative regulators) resulting in a dedicated +12V and -12V supply. This provides a reliable and consistent operation, independent of the other circuits inside the P6. If you are experiencing problems, please consult the VSL website.

NoisySix™
Introduction and Installation Guide (End of Document)
Vintage Synth Lab
ver. 1.3

NoisySix specifications

Power Supply input voltage range
Min: +13.6VDC, -13.6VDC
Max: +29.0VDC, -29.0VDC

Current consumption
40mA (± 3)

LFO waveforms ("WAVESHAPE")
Sine-wave
Triangle
Ramp
Saw
Square[1]
Sample & Hold[2]

Square-wave Pulse-width range ("SQR-PW")
CCW: 10% (± 6)
Centered: 50% (± 6)[3]
CW: 90% (± 6)

Noise source (simultaneously distributed, unison noise, to all six VCF inputs)
Pink[4]
White: True White

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[1] Square-wave duty-cycle (pulse-width) is manually adjustable via "SQR-PW" control

[2] Sample & Hold clock (gate timing) is generated from the NoisySix LFO oscillator frequency via the "FREQUENCY" control of the Polysix. The signal source sampled is taken from the pink noise circuit of the NoisySix

[3] The placement of the knob onto the potentiometer can affect deviation from 50% when pointer is centered (at 12-o'clock)

[4] Pink noise is selectively focused as darker (lower cutoff freq) to accommodate Polysix architecture, further differentiate from white noise, and feed the S&H circuit a conditioned signal for a more smooth operation