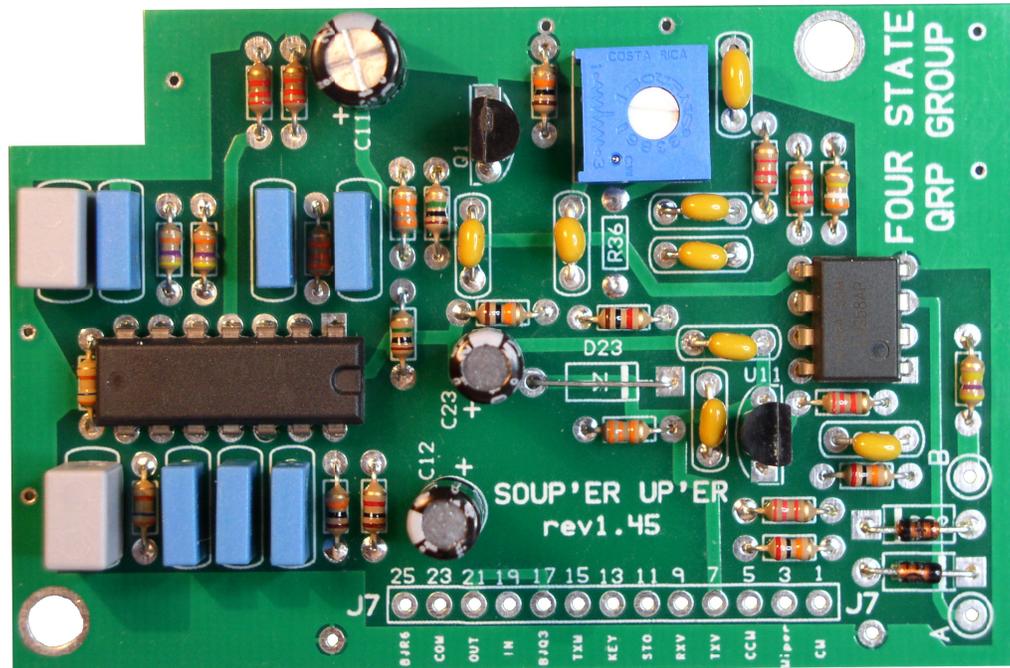


# Soup'er Up'er – rev 1.45

for the  
**Four State QRP Group  
Bayou Jumper**



**Sidetone Generator**  
**Receive Audio Mute (during Xmit)**  
**Fine Tuning**

by  
David Martin – NA1MH

and

**Hi-Per-Mite CW Filter**

by  
David Cripe – NM0S  
adapted for the Soup'er Up'er

**This manual is edited for use with the  
Bayou Jumper revB**

Manual Issue date: 05/07/2021

## Tools / Materials needed:

Soldering Iron	Side Cutters	Needle Nose Pliers	Dummy Load or Antenna
Screw Drivers	Small Wrenches	Solder Wick or Solder Sucker	
Electric Drill	Tack Hammer & small Finishing Nail, or Center Punch		
1/16" Drill Bit	3/32" Drill Bit	3/16" Drill Bit	1/4" Drill Bit
1/2" Drill Bit for final deburring	Volt-Ohm Meter or DVM		
X-ACTO Knife (if cutting a trace is necessary)			

## Notes:

1. **Build your Bayou Jumper and have it 100% functional prior to adding the Soup'er Up'er.**
2. **RIGHT NOW: Read and perform the Errata 1 located at the end of this manual.**
3. Images of the Soup'er Up'er pcb in this manual are the designer's prototype pcb and will have visual differences from the kit's pcb. The prototype and kit's boards will be functionally identical.
4. While installing the resistors and capacitors, save a few trimmed leads and some may be used later while installing the board.
5. Photos used in this instruction manual are of the designers Bayou Jumper and may contain some wiring and components that are extraneous to the addition of the Soup'er Up'er kit.
6. When referencing Bayou Jumper Schematics, use the Receiver schematic "Rev. B" and the Transmitter schematic "Rev. B", for the (Blue Panel) Bayou Jumper
7. Just take your time, this is not a horse race !



Photo 1

The Soup'er Up'er will be installed in a Bayou Jumper in the location show above.

(Photo is NA1MH's (White Face) Bayou Jumper and Prototype Soup'er Up'er board)

Check each item (✓) when completed.

Install all the fixed Resistors:

Hi-Per-Mite Section

<input type="checkbox"/>	R1	1 Meg	1/8 watt, 5%	(Brn   Blk   Grn)
<input type="checkbox"/>	R2	33 K	1/8 watt, 5%	(Org   Org   Org)
<input type="checkbox"/>	R3	33 K	1/8 watt, 5%	(Org   Org   Org)
<input type="checkbox"/>	R4	47 K	1/8 watt, 5%	(Yel   Vio   Org)
<input type="checkbox"/>	R5	47 K	1/8 watt, 5%	(Yel   Vio   Org)
<input type="checkbox"/>	R6	36 K	1/8 watt, 5%	(Org   Blu   Org)
<input type="checkbox"/>	R7	36 K	1/8 watt, 5%	(Org   Blu   Org)
<input type="checkbox"/>	R8	10 K	1/8 watt, 5%	(Brn   Blk   Org)
<input type="checkbox"/>	R9	1 Meg	1/8 watt, 5%	(Brn   Blk   Grn)
<input type="checkbox"/>	R10	1 K	1/8 watt, 5%	(Brn   Blk   Red)
<input type="checkbox"/>	R12	2.2 K	1/8 watt, 5%	(Red   Red   Red)
<input type="checkbox"/>	R13	2.2 K	1/8 watt, 5%	(Red   Red   Red)

Receive Audio Mute Section

<input type="checkbox"/>	R14	10 K	1/8 watt, 5%	(Brn   Blk   Org)
<input type="checkbox"/>	R15	10 K	1/8 watt, 5%	(Brn   Blk   Org)

Fine Tuning Section

<input type="checkbox"/>	R22	20 K	1/8 watt, 5%	(Red   Blk   Org)
<input type="checkbox"/>	R23	20 K	1/8 watt, 5%	(Red   Blk   Org)
<input type="checkbox"/>	R24	2.2 K	1/8 watt, 5%	(Red   Red   Red)
<input type="checkbox"/>	R25	2.2 K	1/8 watt, 5%	(Red   Red   Red)
<input type="checkbox"/>	R26	470 K	1/8 watt, 5%	(Yel   Vio   Yel)

R21 1K Potentiometer with Center Detent (to be installed on Bayou Jumper Main PCB)

Side Tone Section

<input type="checkbox"/>	R31	2.2 K	1/8 watt, 5%	(Red   Red   Red)
<input type="checkbox"/>	R32	2.2 K	1/8 watt, 5%	(Red   Red   Red)
<input type="checkbox"/>	R33	1 K	1/8 watt, 5%	(Brn   Blk   Red)
<input type="checkbox"/>	R34	390 K	1/8 watt, 5%	(Org   Wht   Yel)
<input type="checkbox"/>	R36	33 K	1/8 watt, 5%	(Org   Org   Org)

Install all Diodes:

Fine Tuning Section

<input type="checkbox"/>	D21	1N4148	
<input type="checkbox"/>	D22	1N4148	
<input type="checkbox"/>	D23	1N4001	– For Bayou Jumper revB (blue face) and later, do not install D23, use a wire jumper instead.

Install Potentiometer:

Side Tone Section

<input type="checkbox"/>	R35	10 K	Trimmer Potentiometer
--------------------------	-----	------	-----------------------

#### Fine Tuning Section

- [ ] C21 0.1 uF (104)
- [ ] C22 0.1 uF (104)
- [ ] C25 0.1 uF (104)

#### Side Tone Section

- [ ] C32 0.1 uF (104)
- [ ] C33 0.1 uF (104)
- [ ] C34 0.01 uF (103)

#### Hi-Per-Mite Section

- [ ] C1 0.1 uF (104)
- [ ] C2 0.047 uF (47nJ63) <sup>1</sup>
- [ ] C3 0.001 uF (1nJ63) <sup>1</sup>
- [ ] C4 0.036 uF (36n) <sup>1</sup>
- [ ] C5 0.001 uF (1nJ63) <sup>1</sup>
- [ ] C6 0.039 uF (39n) <sup>1</sup>
- [ ] C7 0.001 uF (1nJ63) <sup>1</sup>
- [ ] C8 0.0022 uF (2n2J63) <sup>1</sup>
- [ ] C9 0.0022 uF (2n2J63) <sup>1</sup>
- [ ] C11 220 uF @ 25V Electrolytic <sup>2</sup>

**! Pay attention to the Positive and Negative leads and insert into the correct holes on the pcb !**

#### Side Tone Section

- [ ] C12 4.7 uF @ 25V Electrolytic <sup>2</sup>

**! Pay attention to the Positive and Negative leads and insert into the correct holes on the pcb !**

- [ ] C31 0.22 uF (.22K63) <sup>1</sup> [labeled 224]

#### Fine Tuning Section

- [ ] C23 4.7 uF @ 25V Electrolytic <sup>2</sup>

**! Pay attention to the Positive and Negative leads and insert into the correct holes on the pcb !**

#### Notes:

1 – Do no substitute the recommended part. A part with higher tolerance or different capacitance may affect performance.

2 - Do no substitute the recommended part. A different part may not fit the holes on the pcb.

#### Install Semiconductors/IC's:

##### Fine Tuning Section

- [ ] U11 78L08 - Position the device 'Flat Side' towards the Flat Line on the PCB Silkscreen.

##### Receive Mute Section

- [ ] Q1 2N7000 - Position the device 'Flat Side' towards the Flat Line on the PCB Silkscreen.

##### Fine Tuning & Side Tone Section(s):

- [ ] U21 LM358 - Position the semi-circle on the end of the IC in the same direction as indicated on the PCB Silkscreen.

##### Hi-Per-Mite Section:

- [ ] U1 LM324 - Position the semi-circle on the end of the IC in the same direction as indicated on the PCB Silkscreen.

SW2 SPDT Toggle Switch (to be installed on Bayou Jumper Main pcb)

## Installation Instructions

*You will be drilling holes in the Front Panel of your Bayou Jumper, take the time to ensure you fully understand the instructions and hole sizes before starting.*

[ ] Separate the Bayou Jumper Front Panel and Circuit Board. You can leave the 5/8 inch Spacers mounted to the Main Circuit Board, but remove the 1/8 jacks and Power Jack from the Front Panel.

*You will be drilling some holes in the Front Panel and you may want to temporarily remove the "Built-In" Key from the Bayou Jumper Front Panel.*

[ ] On the Bayou Jumper Circuit Board, remove Resistor R9 and Capacitor C9. Using solder wick or a solder sucker, make sure the solder pads (for the removed components) are free and clear to accept wiring from the Soup'er Up'er.

*Be careful, do not apply excess heat for an extended time to accomplish this, the last thing you want to do is cause a solder pad to delaminate from the circuit board.*

*Also, if a component lead does not want to freely slip out of a hole while heat is applied, do NOT force it, it is possible to pull the "Plate-Thru" from the hole thus removing the electrical connection from the hole that connects the 2 sides of the board for that circuit.*

## Drilling the Front Panel to accept the Filter Switch and Fine Tuning Pot Shaft:

The Bayou Jumper has cross-hairs on the back side of the Front Panel (shown below) to assist locating where to drill holes for the Fine Tuning Pot & Filter Switch.

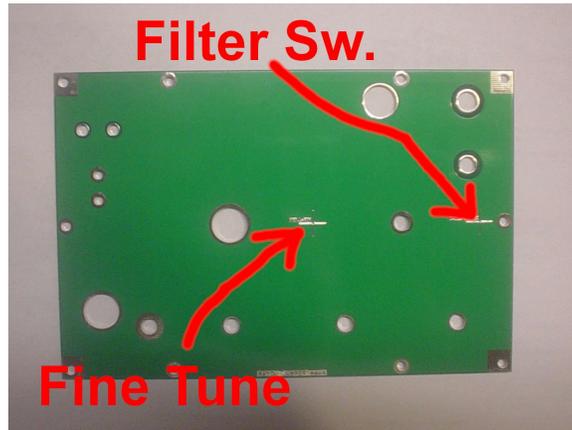


Photo 2

*Note: Prior to starting this next step, I recommend securing the 2 wires of the LED circuit. All the handling of the Front Panel with the wires flopping around may cause one to break loose. How you accomplish this is your chose, masking tape, hot glue, etc.*

- **On the Front Panel, you are drilling 2 Holes ONLY.**
- Beginning on the 'back side' of the Front Panel -
  1. Center punch the panel to accurately spot the point for drilling the pilot hole.
  2. Use the 1/16 inch drill bit for both holes to provide a pilot hole.
- Turn the Front Panel over to the 'front side' for the following steps -
  1. Use the 3/16" Drill Bit to deburr the 2 holes you just drilled.
  2. Use the 3/32" Drill Bit to enlarge the pilot hole.
  3. Deburr the holes on the back side so the panel will lay flat for the final drilling.
  4. Again drilling on the 'front side' of the Front Panel, drill the 2 holes using the 1/4" Drill Bit.
  5. Finally, deburr the holes on both sides of the Front Panel as needed.



Photo 3

## Bayou Jumper Modification for LEDs and Soup'er Up'er:

I am including this modification for all using the Soup'er Up'er with the Bayou Jumper "rev.B", whether or not you are using the Tuning Knob Indicator LEDs. Later revisions of the 'Bayou Jumper revB' will provide a means for accomplishing this without having to cut any traces.

Locate the circuit trace that passes under the letters "la" in the word "Oscillator" just to the right of the Tuning Pot.

[ ] Using an X-ACTO Knife, cut the trace at the location indicated in Photo 4 indicated by "Cut".

[ ] Using a DVM, check the resistance between U1 Pin 6 and RX-VCC, that is 'A' & 'B' respectively. The resistance should indicate an 'open' (high resistance on the DVM's lowest resistance scale).

NOTE: This photo is with the 'Fine Tuning' pot already installed. You haven't reached the step to install the 'Fine Tuning' pot, so just ignore it in this photo.

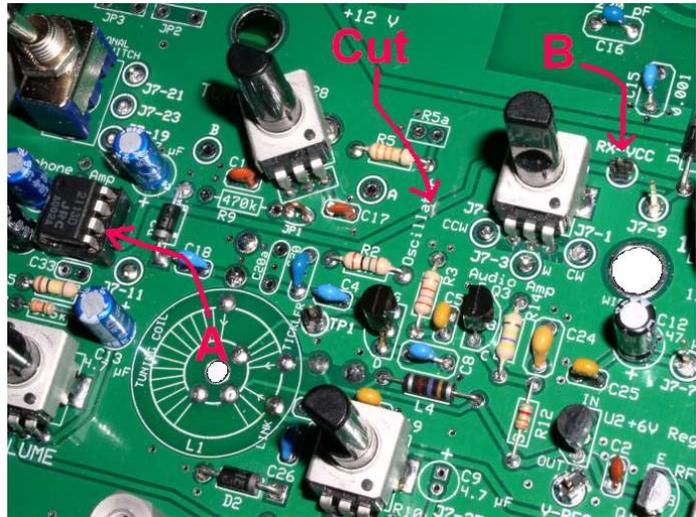


Photo 4

## Mounting the Fine Tuning Potentiometer:



Photo 5

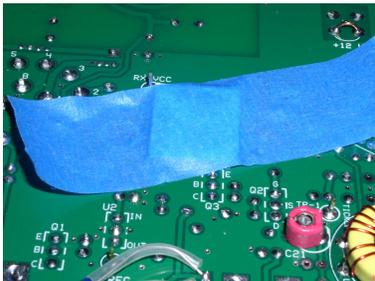


Photo 6

You are going to mount the Fine Tuning Pot in the same manner as the Bayou Jumper's other Pots.

On the bottom (solder) side of the main pcb, a shim of thick poster board or cardboard will have to be cut so it can be located flush on the board, and not be held off the surface from other components already installed.

Top photo shows a method for this.

[ ] Secure the homemade shim to the board with some tape.

As you mounted the other pots, tack solder the pot on the component side of the board and check the pot's position using the Face Panel as you did with the other pots.

[ ] Remove the tape & shim and finish soldering the pot.

## Mounting the Filter In/Out Switch:

You have two options when mounting the Filter Toggle Switch.

1. Fully seated into the PCB
2. Mounted flush with the bottom of the Main PCB same as the Potentiometers

Option 1 leaves barely enough threads to apply the lockwasher and nut on the top.

Option 2 leaves more threads available for the washer and nut

You decide which option is visually appealing to you, but in either case you should use the second nut supplied, with the switch, on the under side of the Face Panel to insure you don't over-tighten the top nut and damage the switch or plate-thru holes on the Main PCB



Photo 7

For mounting the Filter Switch, put one nut on the switch and run it down the threads all the way.

Insert the switch solder lugs into the main pcb in it's position near the left middle spacer.

Now place the face plate on the main pcb with the switch sticking through and thread the other nut on the switch mounting shaft.

Add the (3) face plate mounting screws as show in the photo and 'snug up'.

At this point, you can adjust the bottom and top nuts to position the switch (vertically).

[ ] Now solder the switch solder lugs to the main pcb.

[ ] Once the switch is soldered in, remove the face plate, while assembling the Soup'er Up'er to the Bayou Jumper main pcb.

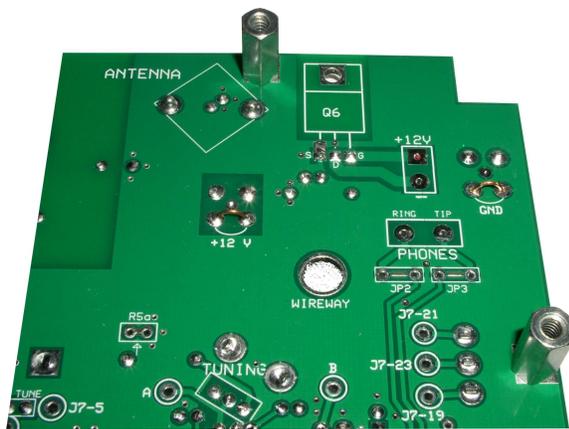


Photo 8

[ ] Working on the bottom 'solder side' of the main pcb, replace the 2 (each) 6-32 screws in the corner shown in the this photo, with the 2 supplied 1/2" inch hex stand-offs.

Save the 6-32 screws for mounting the Soup'er Up'er board.

The corner of the board shown will be the mounting location of the Soup'er Up'er pcb.

Once mounted, the board will block access to the solder pads for the Filter Switch, and that is where we will begin adding wiring.

[ ] Cut 3 each, 3 inch pieces of wire, of different colors.

[ ] On 1 end of each wire, strip 1/8 inch of insulation, make sure the strands are twisted together, and then lightly tin the exposed wire.

[ ] Solder these wires into the pads on the Bayou Jumper for the Filter Switch. Record in the table below the color for each connection.

<b>J7-21</b>	
<b>J7-23</b>	
<b>J7-19</b>	
<b>Bayou Jumper Solder Pad</b>	<b>Wire Color</b>

Filter Switch Wire Colors – **Table 1**

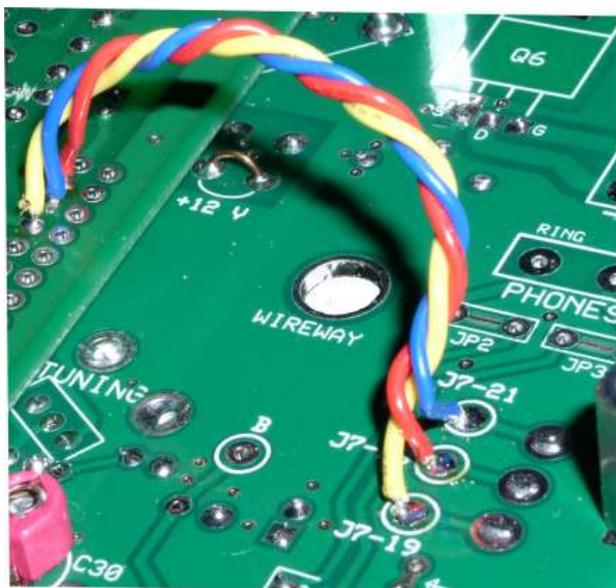


Photo 9

Lay the Soup'er Up'er component side down, on the Bayou Jumper's bottom "solder" side.

[ ] Now solder each color wire into the appropriate solder pad J7-19, -21 or -23.

[ ] When finished soldering, verify each wire connection is going to the matching "J7" number, J7-19 to -19, etc. and verify **NONE** of the wires are soldered into any pad on the row closest to the edge of the Soup'er Up'er board.

With the Bayou Jumper, there are two methods to tie the Soup'er Up'er fine tuning to the Bayou Jumpers tuning circuit.

-----  
(1) When the Soup'er Up'er is mounted on the Bayou Jumper, the Soup'er Up'er "A" & "B" pads should be almost directly above the solder pads for R9 on the Bayou Jumper. On the Bayou Jumper board these pads are very slightly shifted, but are close enough to allow you to use a couple of trimmed component leads, to make the connections.

If using this method, it is recommended to wait until all other wiring is completed.

-----  
(2) The other method to wire this circuit would be to use insulated wires, and use the "A" & "B" pads available on the Bayou Jumper. This method will more easily allow the Soup'er Up'er to be unmounted from the Bayou Jumper if needed in the future.

**If using Option (1)** – Option 1 will be presented later on in the build. If you plan to use this method, Skip Down to "Mounting the Soup'er Up'er Circuit Board".

**If using Option (2) -**

[ ] Cut 2 each pieces of insulated wire at least 2.5 inches long, of different color wire.

[ ] On one end of each wire, strip 1/8 inch of insulation from the wire, make sure the strands are twisted together, and then lightly tin the exposed wire.

Using photo 8 above, you see a Bayou Jumper solder pad labeled "B" to the right of the Tuning Pot, and to the left of the Tuning Pot you will find the solder pad labeled "A".

[ ] Solder one wire in each and record the wire color in the table below.

"A"	
"B"	
<b>Bayou Jumper Solder Pad</b>	<b>Wire Color</b>

Soup'er Up'er Fine Tuning to Bayou Jumper Wire Colors – **Table 2**

[ ] Referring to Table 2, solder each colored wire to the appropriate point on the Soup'er Up'er. Again, feel free to trim excess wire as you see fit so you end up with a tidy looking project. You may also want to twist together even if it is just a few turns.

## Mounting the Soup'er Up'er Circuit Board.

At this point you can mount the Soup'er Up'er to the Bayou Jumper.

You can leave it unmounted, but mounting it makes measuring and positioning the wires easier, and there is sufficient room between the Soup'er Up'er and the Bayou Jumper to insert wires through the bottom side of Soup'er Up'er and make the installation look a little more tidy.

Fold the Soup'er Up'er over on top of the Hex Stand-offs making sure the Filter Switch wires curl up and to the right to leave clear access to the rest of the solder pads on the Soup'er Up'er.

[ ] Use the two 6-32 screws to secure the Soup'er Up'er to the Bayou Jumper.

## Connecting Side Tone.

Next to be wired is a connection to the Bayou Jumper Audio Amplifier. Measure (do not cut yet) a piece of wire to connect J7-11 on the Soup'er Up'er to J7-11 on the Bayou Jumper. It will be around 2 inches.

[ ] Cut the wire to the length you determined, strip and tin both ends and solder to the boards to connect J7-11 on both boards.

## Connect the Fine Tuning Potentiometer circuit.

[ ] Cut 3 each pieces of wire about 3 & 1/2 inches long, each of a different color.

Strip and tin both ends of each wire.

[ ] Solder one wire to J7-1 on the Soup'er Up'er. Continue with the other 2 wires on J7-3 & J7-5.

<b>J7-1</b>	
<b>J7-3</b>	
<b>J7-5</b>	
<b>Soup'er Up'er Solder Pad</b>	<b>Wire Color</b>

Fine Tuning Potentiometer Wire Colors – **Table 3**

Twist the 3 wires together and route toward the Bayou Jumper board. Solder each color wire to its corresponding circuit connection on the Bayou Jumper, 1 to 1, 3 to 3 and 5 to 5. Again, trim wire lengths as needed to make it neat and tidy.

## Connecting CW filter circuit.

Measure from the Bayou Jumper J7-25 to the same connection on the Soup'er Up'er. It is around 5 inches.

[ ] Cut 2 wires of different colors to the length you measured.

[ ] Strip and tin one end of each and connect them to J7-17 and J7-25 on the Soup'er Up'er.

<b>J7-17</b>	
<b>J7-25</b>	
<b>Soup'er Up'er Solder Pad</b>	<b>Wire Color</b>

CW Filter Wire Colors – **Table 4**

[..] Twist the 2 wires together and route toward the Bayou Jumper.

[ ] Cut, strip & tin each wire the necessary length to reach its corresponding connection on the Bayou Jumper, 17 to 17 & 25 to 25, and solder to the Bayou Jumper.



Photo 10

**Connect Key, TX\_Vcc & Receive Mute Trigger, Audio Amplifier Power (U1 – pin 5).**

For the next 4 wires, use a different color for each insulated wire.

<b>J7-13 (5 inches)</b>	
<b>J7-15 (5 inches)</b>	
<b>J7-7 (4.5 inches)</b>	
<b>J7-9 (2 &amp; 1/4” inches)</b>	
<b>Soup’er Up’er Solder Pad</b>	<b>Wire Color</b>

Wire Colors – **Table 5**

Cut two wires about 5 inches long. Strip and tin about 1/8 inch on one end of each wire.

- [ ] Solder one wire to J7-13 on the Soup’er Up’er.
- [ ] Solder the second wire to J7-15 on the Soup’er Up’er.

Cut one wire about 4 & 1/2 inches long. Strip and tin about 1/8 inch on one end of each wire.

- [ ] Solder one wire to J7-7 on the Soup’er Up’er.

Twist all 3 wires together.

One by one, separate one wire and route that particular color wire toward it's designated solder pad on the Bayou Jumper.

- [ ] Trim the wire slightly longer than required to reach the pad then strip and tin about 1/8 inch. Solder the wire to it's pad on the Bayou Jumper.
- [ ] Repeat for the other 2 wires.

[ ]..VERIFY all three wires, each color wire should have both ends connected to the same labeled connection on the Bayou Jumper and the Soup'er Up'er.



Photo 11

[ ] Solder the one (2 & 1/4 inches) wire to J7-9 on the Soup'er Up'er.

On the free end of this wire, snip the tinned end down to about 1/16".

[ ] Solder the 1/16" tinned end to U1 Pin 6.



Photo 11

### Finished ? ..... Maybe !

If you have not already wired the "A" & "B" connections on the Soup'er Up'er, then it should be done now.

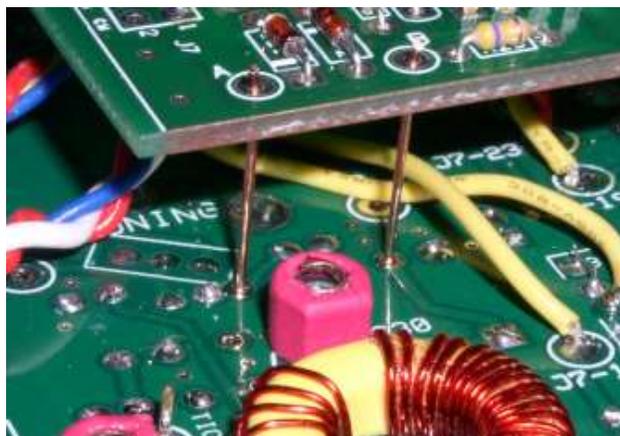


Photo 12



Photo 13

[ ] Find a couple of component leads that are more than long enough to pass through the "A" & "B" holes on the Soup' Up'er and into the empty pads where R9 had been.

*Look at the leads in Photo 13, make sure your component leads are long enough to have 1/8 inch or more protruding above the Soup'er Up'er pcb.*

[ ] Insert the 2 leads as shown in the above photo. Wires only need to be slightly in, or through, the respective R9 solder pads in the Bayou Jumper pcb. Bend the wires to hold them while you solder the wires on the Bayou Jumper pcb.

[ ] Solder the 2 leads on the Bayou Jumper pcb.

[ ] Bend the 2 leads, on top of the Soup'er Up'er pcb, so they are straight up and trim so you have at least 1/8 inch remaining above the pcb.

*This will aid re-connection should you want to dismount the board for troubleshooting or modifications in the future.*

[ ].. Solder the 2 leads on the Soup'er Up'er pcb.

You are as good as done !

[ ] Mount the Bayou Jumper Face Plate to the Bayou Jumper's Main PCB, including all the 1/8 inch jacks, power connector, filter switch nut & washer, and all the knobs, except the knob for the Fine Tuning pot.

Installation of the Soup'er Up'er for the Bayou Jumper rev. "B" is complete and only one adjustment is needed.

[ ] Connect Headphones, Power Supply and Dummy Load or Antenna to the Bayou Jumper.

You can plug in a crystal, but it is not really needed for this adjustment.

[ ] Set the Bayou Jumper selector switch to the "Transmit" position.

[ ] Hold down the transmit "Key" on the Bayou Jumper while listening to the Headphones.

[ ] Adjust the Trimmer Pot on the Soup'er Up'er board to your desired audio level for the Sidetone when you are transmitting.

[ ] And finally, turn the "Fine Tuning" control, on the Bayou Jumper's front panel, to full Clockwise or full Counter Clockwise.

[ ] Now turn the control in the opposite direction being mindful of how the pot shaft feels, we are looking for the detent position. You will feel a click in the shaft at the detent position, and this will be middle of the pot's rotation range.

[ ] With the pot in the detent position, place the knob on the pot shaft with the white stripe pointing toward the 12 o'clock position, and tighten the knob's set screw.

**Congratulations, enjoy your Four State QRP Group Bayou Jumper  
and thank you for purchasing the Soup'er Up'er for your Spy Radio.**

# Soup'er Up'er - rev 1.45 - Errata 1

As might happen on rare (more often than that for me) occasions, I made a mistake.

I modified the Tone Generator circuit by changing the value and location of R36, and forgot to remove R36 from it's previous position on the circuit board and ended up with a run of boards having R36 called out twice on the board.

**The photo below shows the abandoned location of R36 with Red Lettering for the silkscreen, it is just to the left of the R35 Potentiometer's position. DO NOT use that location.** In fact, just go ahead and fill the holes for that R36 component's leads with solder.

The correct location for R36 is on the left side of the board, to the left of D23.

