

# How to Build the Nobleman ODR Uno

[www.toneclonepedals.com](http://www.toneclonepedals.com)

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# **Company Policies**

## **Tone Clone Warranty**

Tone Clone Pedals, LLC shall guarantee that your order will arrive in a complete kit form with all of the necessary parts and pieces to achieve a successful build. Any misuse of the supplied components such as altering their appearance and/or intended use by anything other than the supplied instructed use will void your warranty or any guarantees by Tone Clone Pedals, LLC. Tone Clone Pedals, LLC guarantees that all instructions supplied for our products are accurate and free of any foreseeable errors that may cause damage to the product. Tone Clone Pedals, LLC does not guarantee the instructions will be free of minor errors or typographical errors. Tone Clone Pedals, LLC will not warranty the completed build of a product as an entire functioning unit. Tone Clone Pedals, LLC will not warranty any parts once they have been used. IF the customer feels that any parts or pieces were defective prior to the build process Tone Clone Pedals, LLC reserves the right to examine and/or determine whether or not the parts(s) in question were malfunctioning prior to shipping. All warranty issues should be directed to: [www.toneclonepedals.com](http://www.toneclonepedals.com)

## **Return Policy**

Tone Clone Pedals, LLC will accept product returns as long as all parts and pieces of each product are unused. We will not accept partial product returns. All refunds for any one or more product will reflect the purchase price only and not the shipping, insurance and handling fees. Return shipping and shipping fees along with accountability for shipping mishaps are also the customer's responsibility.

## **Technical Support**

Tone Clone Pedals, LLC cannot make any guarantees that the product(s) will be completed in a successful and/or satisfactory manner. Tone Clone Pedals, LLC does not supply free technical support. A product purchase from Tone Clone Pedals, LLC does not include any technical support. Any needed technical support will be fee based however; no guarantees will be issued toward the success of any purchased technical support. This does not mean we will not help you throughout the build process but we can only supply basic help to guide you through the build process. We have convenient discussion forums that will help answer FAQ's and guide you through the build process. Our forums are also an outstanding tool for sharing different modifications and build techniques as well.

## **Forums**

<http://toneclonepedals.com/index.php/forum>

When posting a tech support thread on the Tone Clone Pedals forum please post it under the appropriate product line with a specific title. If you are not specific in your titling it will be impossible for the forum support to keep track of your progress. A detailed description of your issue will be more easily remedied so feel free to share as much info as needed. Details will also help to identify if someone else is having or has had the same problem as you. The question(s) you may or may not ask

might already be answered so please peruse the forum for those specifics. Here is a list of suggested items you should include in the body of your tech support thread:

1. A detailed explanation of what the problem is. (Please do not be vague)
2. Picture of the top and bottom sides of your PCB board/build progress or problem.
3. Pictures that clearly show your foot switch/jack wiring and the wires going to the PCB
4. All of our kits are PCB mounted pots, LED's and switches so any wiring that needs to be displayed will be limited to input/output jacks, DC jacks, battery terminals and foot switches.
5. Make sure all photos are clearly legible. Unclear photos are worthless so please no cell phone photos.
6. See Products for Technical support pricing
7. See FAQ's to monitor typical build questions.

## Circuit Explanation

The following explanation will walk you through the signal flow of the circuit. (The path that the signal takes through the circuitry from input to output).

The guitar signal enters in through R2. It then passes C28 and R1 which filter out radio frequencies and help to stop pop when turning the pedal on and off. The signal then goes through a buffer. After leaving the buffer the signal goes through C1 and C2, then R5 while C3 takes out some highs before hitting the first gain stage.

The signal is boosted through pins 1 and 2 and is controlled by the value the gain pot in conjunction with R9 and C14, and C15 along with R8. C4 shaves a little bit of highs and keeps the opamp stable.

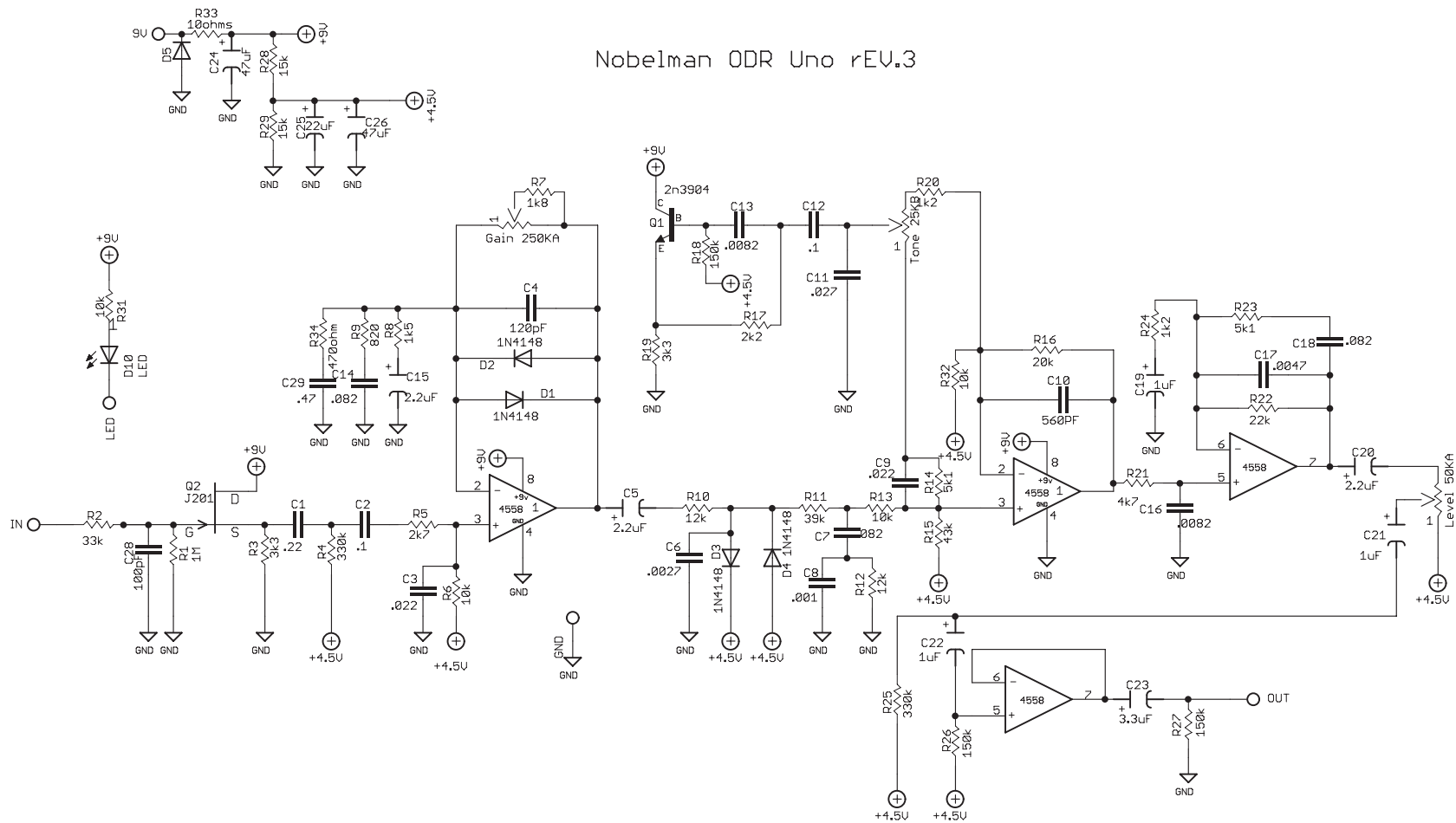
D1 and D2 "soft clip" the signal a bit before exiting the opamp and going through C5, R10, and then filtering out highs as it passes C6. D3 and D6 clip the signal even more then the signal goes through R11 before another tonal filter consisting of C7, C8 and R12 which filters out more highs.

The signal then goes through R13 before hitting the next stage which is an active treble boosting stage, controlled by the tone pot. The signal then exits and goes through R21, filters out some highs through C16 and then enters the next gain stage which is a volume boosting and eq stage. This stage adds a bit of bass back into the signal.

After leaving this stage, the signal travels through C20 before hitting the volume pot, which then sends the signal through another cap and then into the output buffer when goes through C23 and then to the output while R27 sets the output impedance.

Note that R34 and C29 are not on the stock Nobels pedal, however by adding these you can increase mid range 'beefiness'.

Nobelman ODR Uno rEV.3



## Parts Checklist

Part	Value	Device	Writing on part (if applicable)
R1	1M	resistor	brown   black   green   gold
R2	33k	resistor	orange   orange   orange   gold
R3	3k3	resistor	orange   orange   red   gold
R4	330k	resistor	orange   orange   yellow   gold
R5	2k7	resistor	red   violet   red   gold
R6	10k	resistor	brown   black   orange   gold
R7	1k8	resistor	brown   grey   red   gold
R8	1k5	resistor	brown   green   red   gold
R9	820	resistor	grey   red   brown   gold
R10	12k	resistor	brown   red   orange   gold
R11	39k	resistor	orange   white   orange   gold
R12	12k	resistor	brown   red   orange   gold
R13	10k	resistor	brown   black   orange   gold
R14	5k1	resistor	green   brown   red   gold
R15	43k	resistor	yellow   orange   orange   gold
R16	20k	resistor	red   black   orange   gold
R17	2k2	resistor	red   red   red   gold
R18	150k	resistor	brown   green   yellow   gold
R19	3k3	resistor	orange   orange   red   gold
R20	1k2	resistor	brown   red   red   gold
R21	4k7	resistor	yellow   violet   red   gold
R22	22k	resistor	red   red   orange   gold
R23	5k1	resistor	green   brown   red   gold
R24	1k2	resistor	brown   red   red   gold
R25	330k	resistor	orange   orange   yellow   gold
R26	150k	resistor	brown   green   yellow   gold
R27	150k	resistor	brown   green   yellow   gold
R28	15k	resistor	brown   green   orange   gold
R29	15k	resistor	brown   green   orange   gold
R31	10k	resistor	brown   black   orange   gold
R32	10k	resistor	brown   black   orange   gold

R33	10ohms	resistor	brown   black   black   gold
R34	470ohm	resistor	yellow   violet   brown   gold
D1	1N4148	diode	
D2	1N4148	diode	
D3	1N4148	diode	
D4	1N4148	diode	
D5	1N4148	diode	
D10	LED	led diode	
O1	4558 OPAMP	IC	
O2	4558 OPAMP	IC	
Q1	2N3904	transistor	
Q2	J201	transistor	
C1	0.22	capacitor	224
C2	0.1	capacitor	104
C3	0.022	capacitor	223
C4	120pF	capacitor	121
C5	2.2uF	capacitor	A0906 Nichicon
C6	0.0027	capacitor	272
C7	0.082	capacitor	823
C8	0.001	capacitor	102
C9	0.022	capacitor	223
C10	560PF	capacitor	561
C11	0.027	capacitor	273
C12	0.1	capacitor	104
C13	0.0082	capacitor	822
C14	0.082	capacitor	823
C15	2.2uF	capacitor	A0906 Nichicon
C16	0.0082	capacitor	822
C17	0.0047	capacitor	472
C18	0.082	capacitor	823
C19	1uF	capacitor	A0843 Nichicon
C20	2.2uF	capacitor	A0906 Nichicon
C21	1uF	capacitor	A0843 Nichicon
C22	1uF	capacitor	A0843 Nichicon
C23	3.3uF	capacitor	B0841 Nichicon

C24	47uF	capacitor	B0820 Nichicon
C25	22uF	capacitor	B0825 Nichicon
C26	47uF	capacitor	B0820 Nichison
C28	100pF	capacitor	101
C29	0.47	capacitor	474
Gain A250K	Potentiometer		
Tone B25K	Potentiometer		
Level A50K	Potentiometer		

Please make note: Your kit may or may not include all of the above parts. Some of these parts are only associated with our available modification kits. Our boards are all designed with mods in mind but as it stands you are building the stock product. If you choose to pursue any modifications you will start to see how some of the parts listed above will be appropriate. Do not be concerned that some parts of the above parts will not be a part of the stock kit.



## Populating the circuit board

Holes at top left and bottom left are extra grounding pads if needed.

Below is an actual photo of the Nobleman circuit board.

As an example we will be locating R6. You will need to cross reference R6 with the parts checklist above to understand how R6 is a 10k (10 thousand ohm) resistor. We will then insert a 10k (R6) resistor into the (R6) position as shown below, then solder it into place

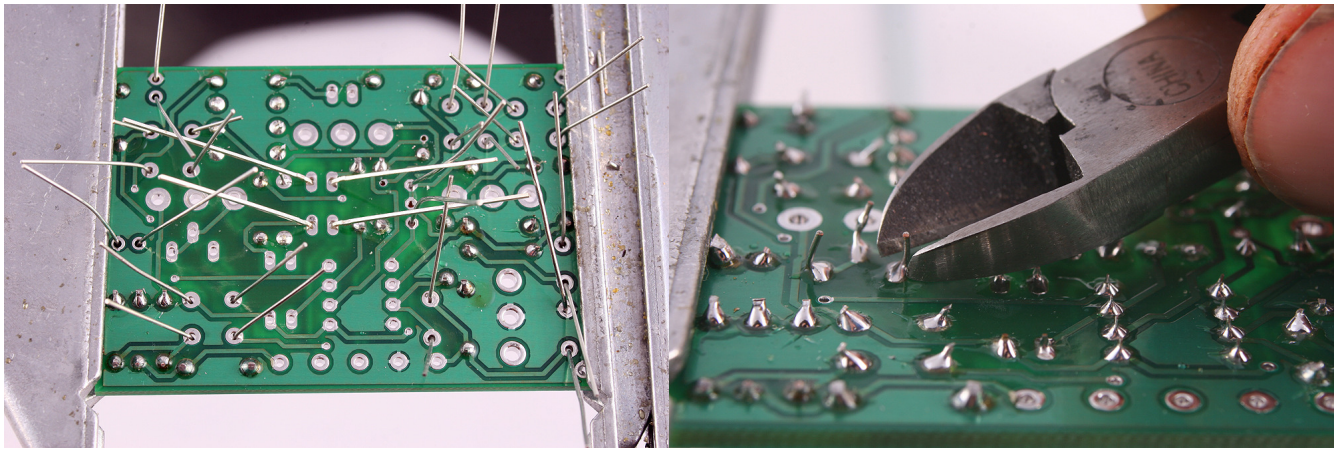
Before installing the resistors into the holes.



After installing the resistors into the holes.



The first thing we want to do is populate the board. This means inserting the capacitors, resistors and diodes in the appropriate holes.

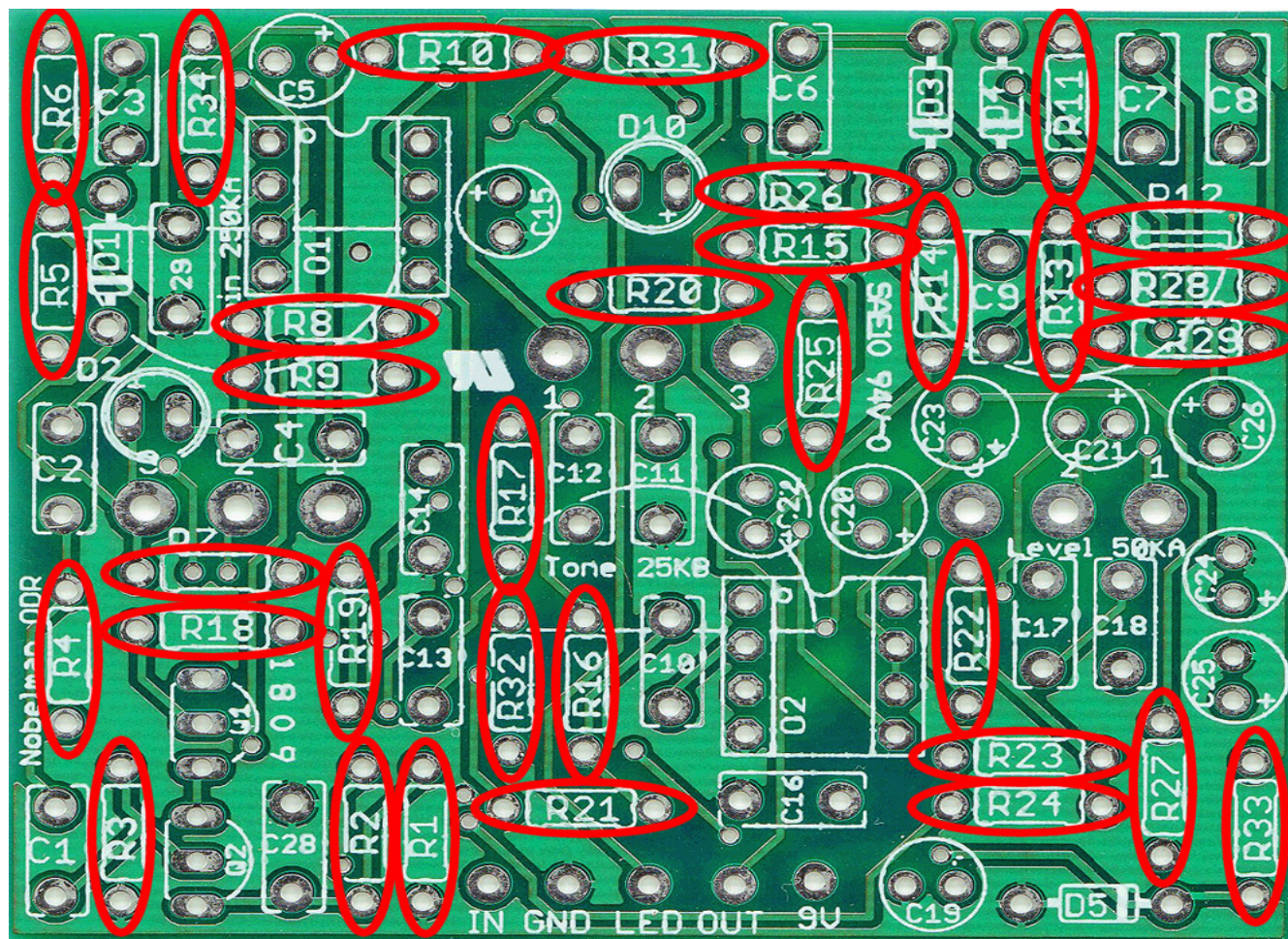


After soldering in the part use your clippers and cut off the 'legs' as close to the solder joint as possible without cutting into the solder itself.

The circuit board is shown in a workstation circuit board holder which is a recommended item for ease of use.

## Step 1: Install resistors

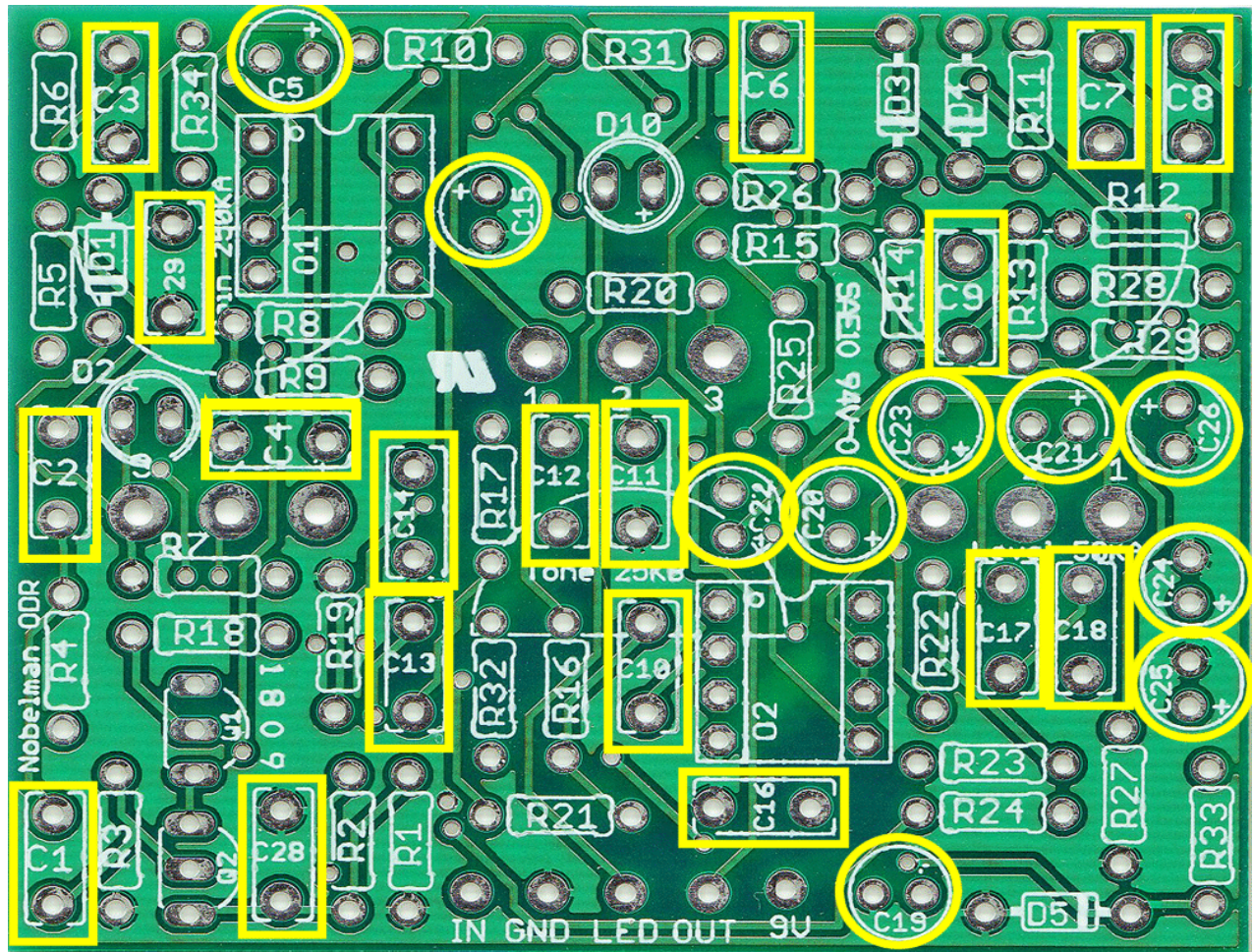
The first step in population your circuit board will be to install all resistors. Once again we will need to cross reference all PCB locations with the parts checklist.





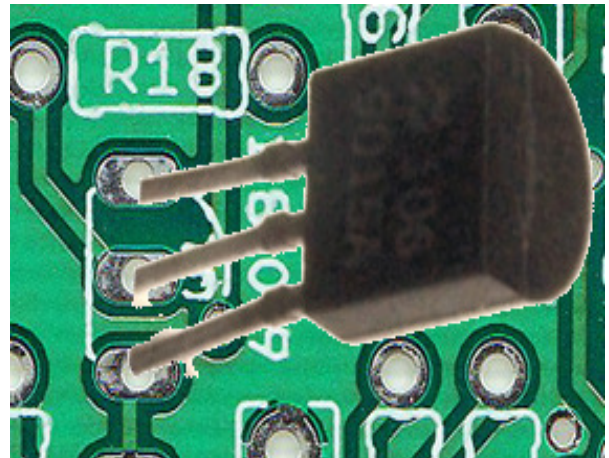
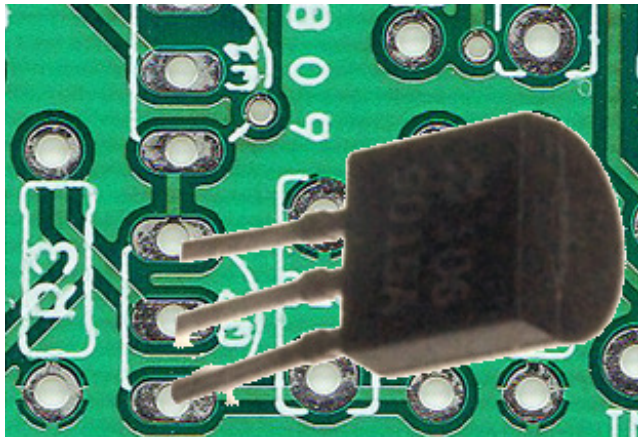
## Step 2: Install capacitors

The next step in populating our circuit board will be to install the capacitors (shown below in yellow). Note that the round yellow circles are the electrolytic capacitors. However, the round white circle or D10 should not be confused with a capacitor. We will install D10 at a later step. Since we are dealing with electrolytic capacitors you must recognize that each capacitor has a positive and negative side. The longer leg of the capacitor is the “+” (positive) side and will need to be inserted in the hole next the the “+” sign.



### ***Step 3: Install the transistors***

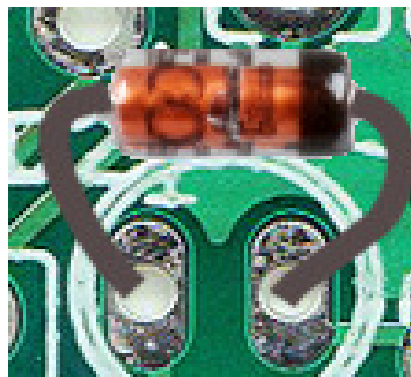
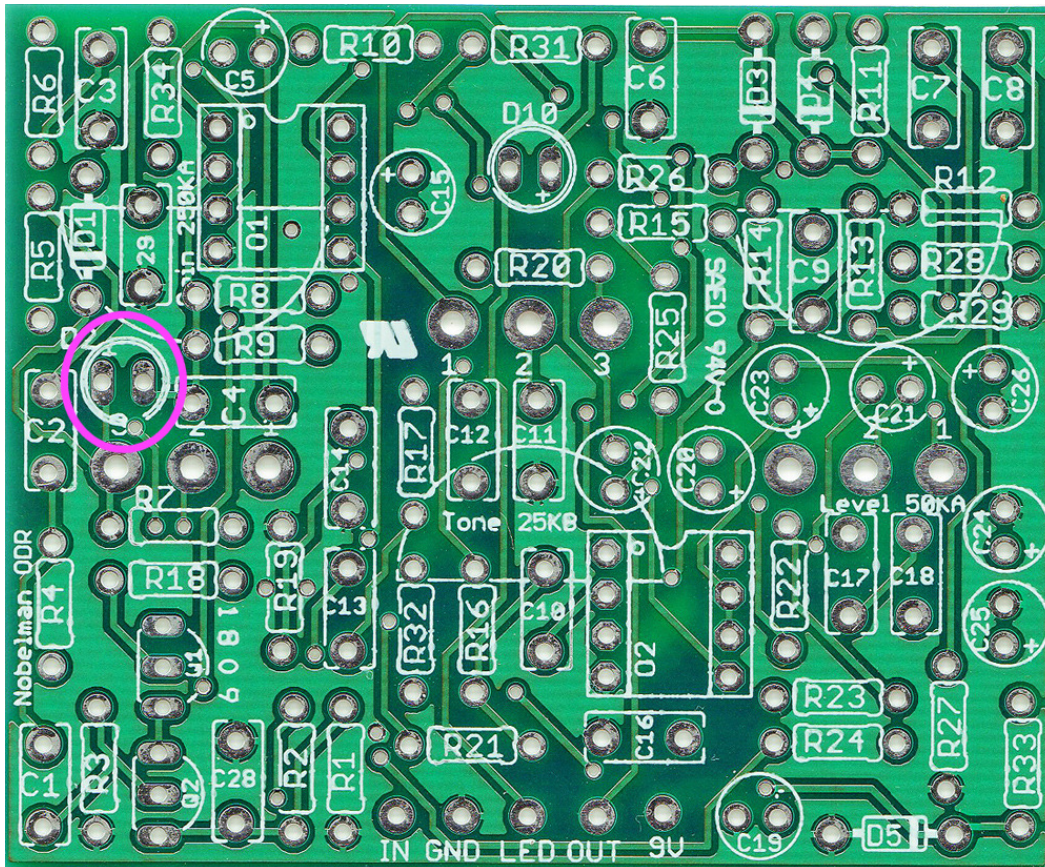
Next we will be installing the transistor and JFET. Install the JFET (Q2) as shown on the left. Install Q1 as shown on the right. Please make sure that these components are installed exactly as shown below. The shape of the silkscreen shows the flat side of the device. If these components are installed backwards they will not work.





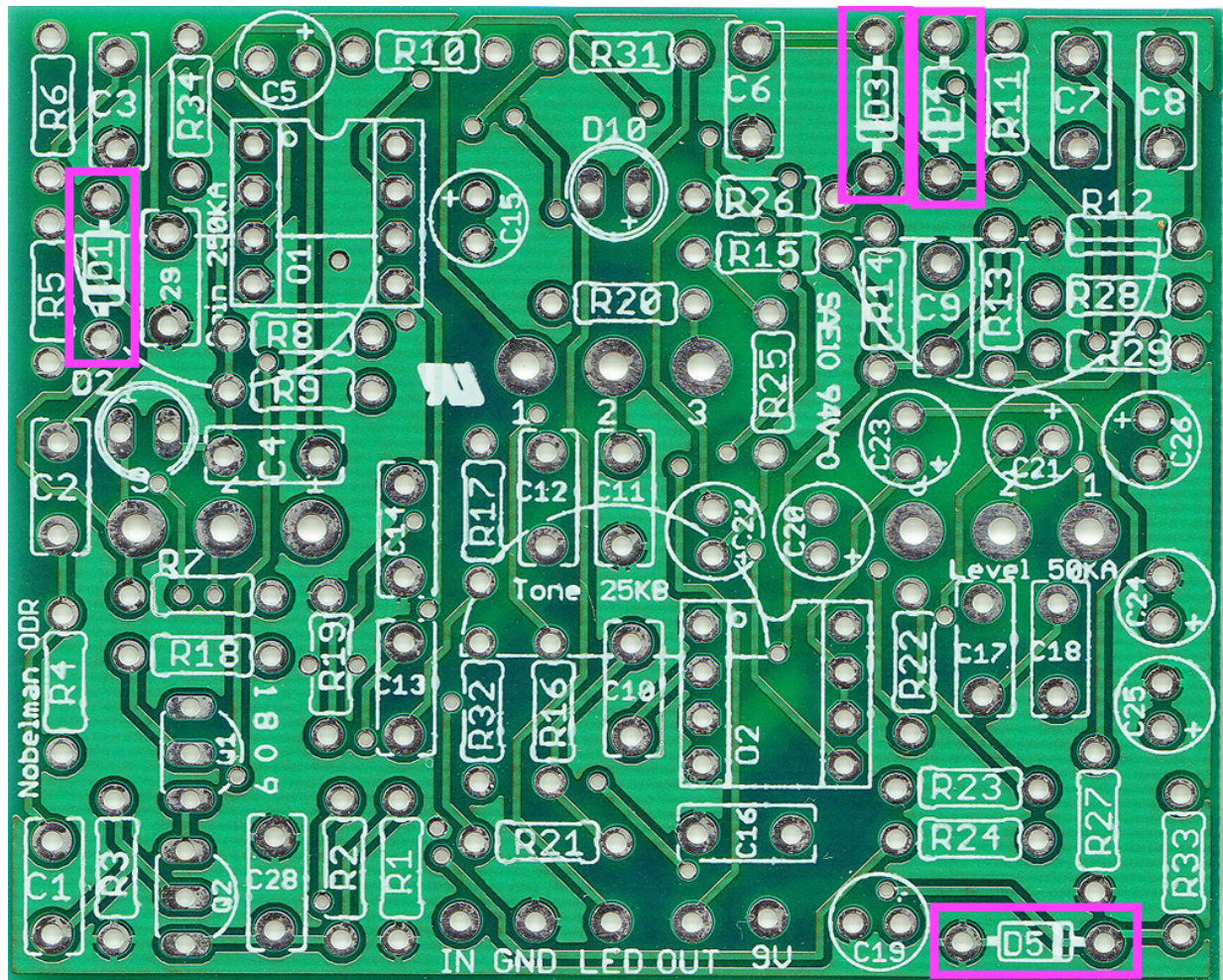
### Step 4: Install the diodes

The next step will be to install the the diode D2 on the circuit board as shown below. The circuit board location is circled in purple. The image below shows which way to orient the diode. Pay close attention to the solid band on the silk screen and on your diode. The solid band shown on the silk screen should indicate where the solid band on the diode should be oriented. The band indicates the negative side of the diode.



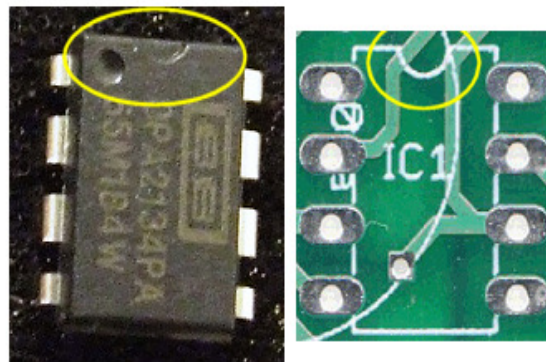


The next step will be to install the the diodes D1, D4, D3, and D5 on the circuit board. The circuit board locations are circled in purple in the image below.



### ***Step 5: Install the IC adapter and IC chip***

The next step will be to install the IC adapter. Please make note that the IC adapter must be installed correctly or it can be blown. The photo to the left shows 2 yellow circles that highlight the “U” shaped notch on the IC chip itself and the “U” shaped notch on the PCB silk screen as well. This is an obvious indication as to how you must orient the IC chip notch to notch. Please note that there will ultimately be a socket that solders into the IC chip silk screened location first and then you will gently push the IC chip into the socket slots with the proper orientation. We make note of this now because you will not be able to see the socket silkscreen once the socket is soldered in place.



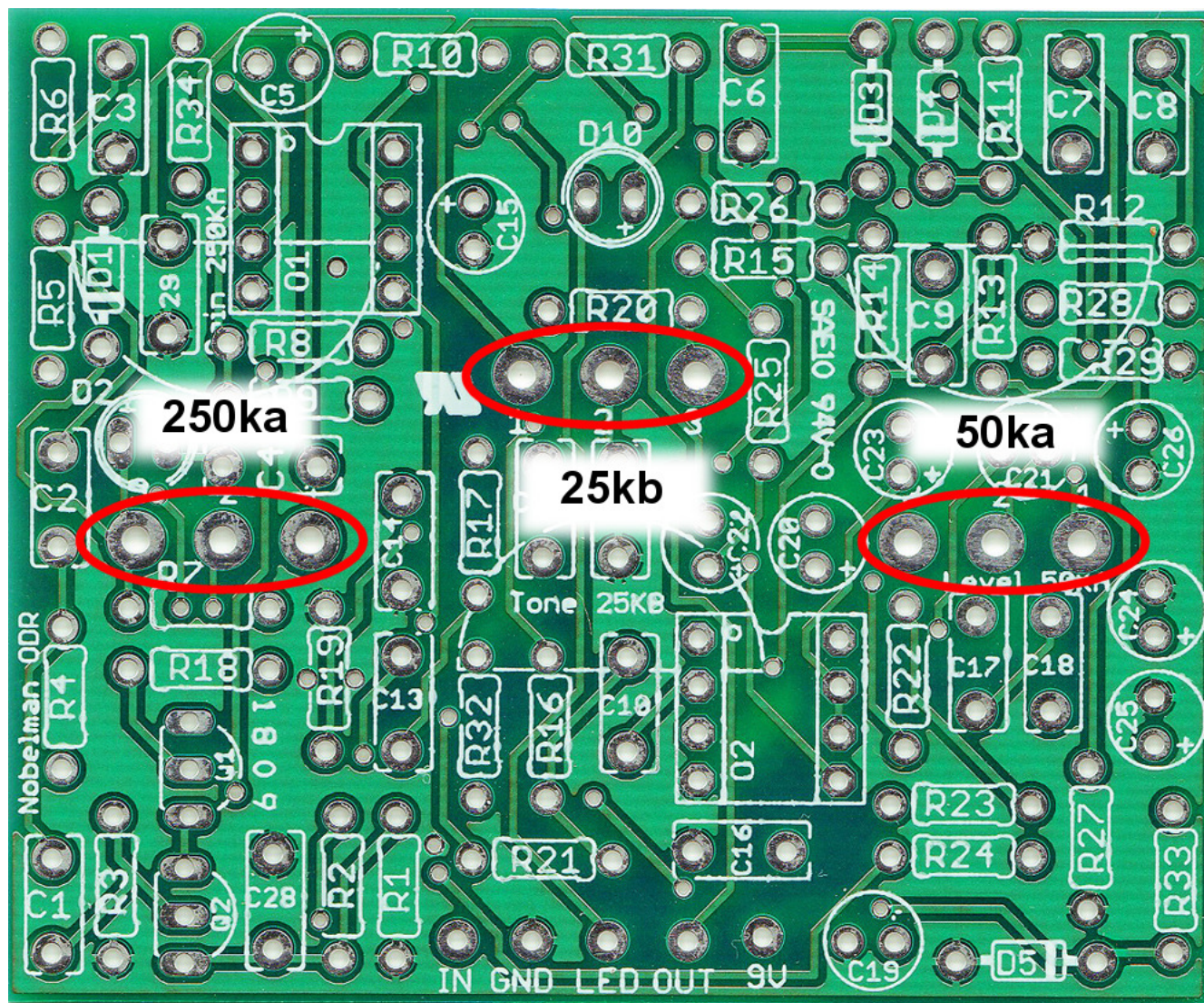
The IC socket inserts into the PCB holes and will be soldered into place. Then simply insert the IC chip into the socket. Do not solder the IC chip into the socket. Make sure none of the pins are bent or they may not seat properly. If they do not seat properly your pedal will not work. The legs are easily bent and can break so keep the bending to a minimum.



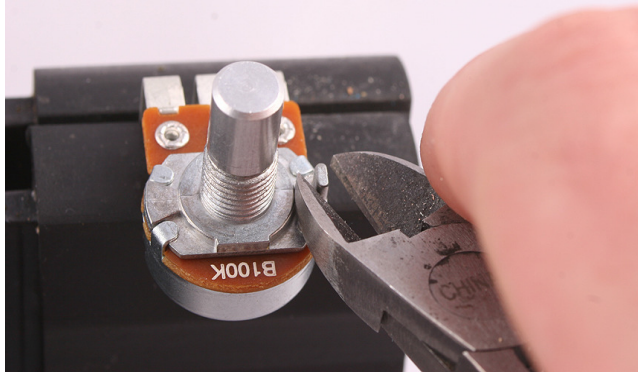
## Step 6: Install the pots (potentiometers)

The next step will be to install the pots. The holes circled in red below are where the legs of the pots will mount. The actual pots will be mounted on the opposite side of what you are viewing now. The side you are viewing now is where you will be soldering after you install the legs of the pots. Please make note that when the pots are installed correctly the gain pot and the volume pot (The two pots on the outside) will be oriented above the solder holes where the legs of the pots are. The Tone pot will be oriented below the solder holes where the legs of the pot are. There are half circles silk screened on the board that indicate where the pots should be oriented for your reference sake. On the left side as you face the photograph you will find the gain control which is a 250ka pot. In the middle you will find the tone control which is a 25kb pot and on the right side you will find the volume control which is a 50ka pot. Please note that when you turn the board over not to get confused since everything will be 180 degrees opposite.

Please see page 19 for a photo of correctly installed pots. Make note of their orientation on the board and which side of the board that they reside.

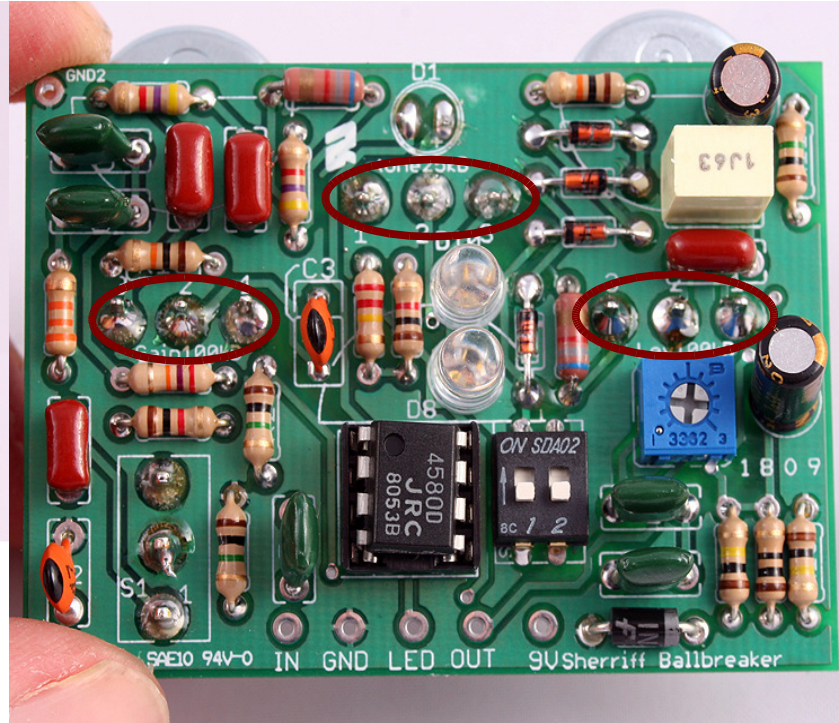
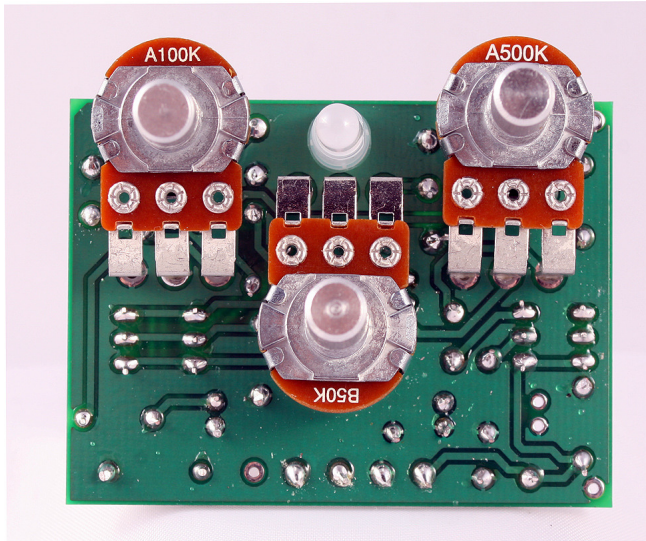






We will need to nip off the little tab on each pot. Simply take your clippers or needle nose pliers and break it off. If you are looking at the picture you would bend it to the right or away from the shaft. It is very brittle so bending it will break it off very easily. We prefer bending it.

After the pots are mounted it will look like this: Below are generic photos for reference sake.



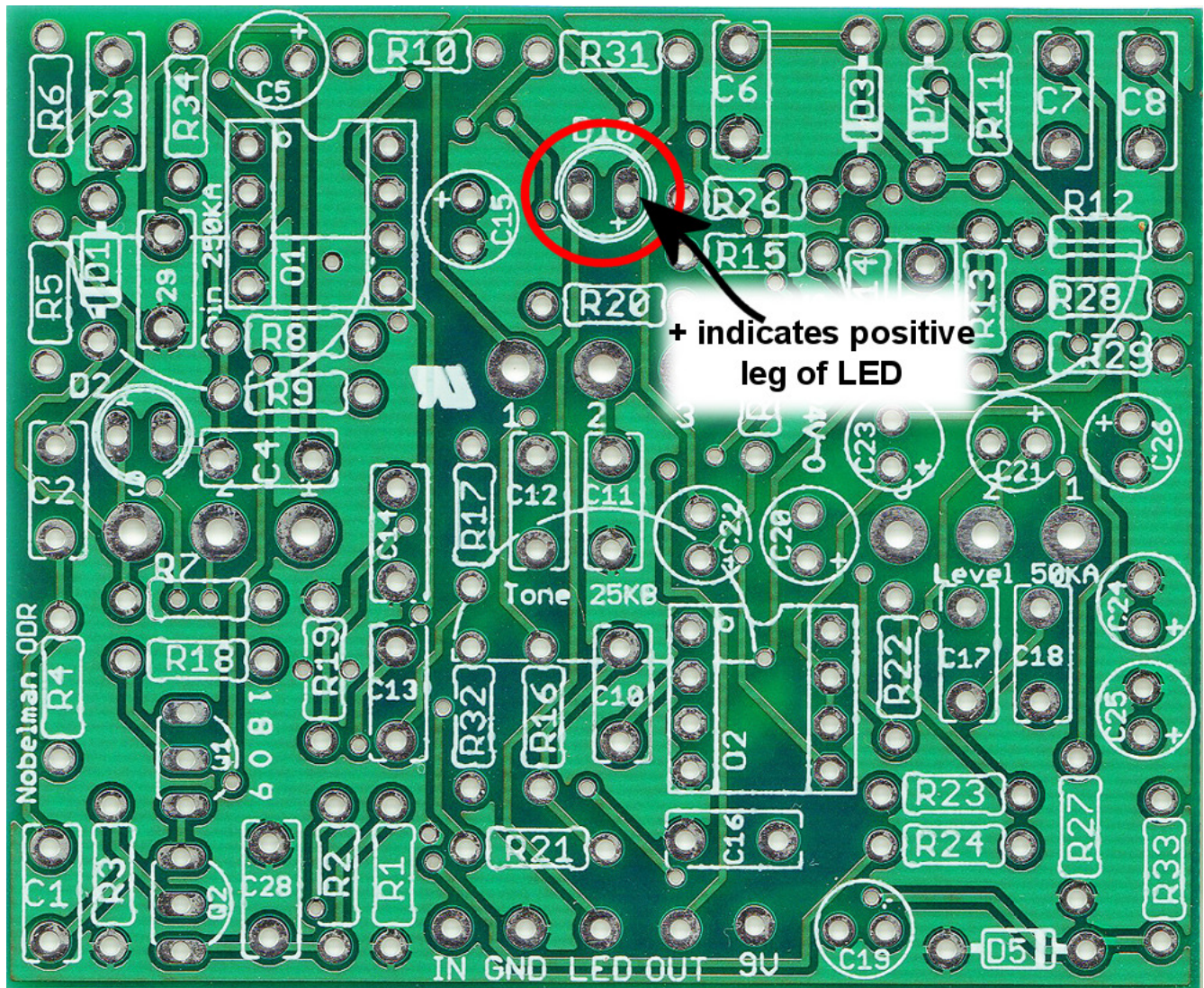
Notice that the pots, led, and any toggle switches (if applicable) are mounted on the opposite side of the components. Please make note that the photos above are generic photos and may or may not be of the specific pedal you are building.



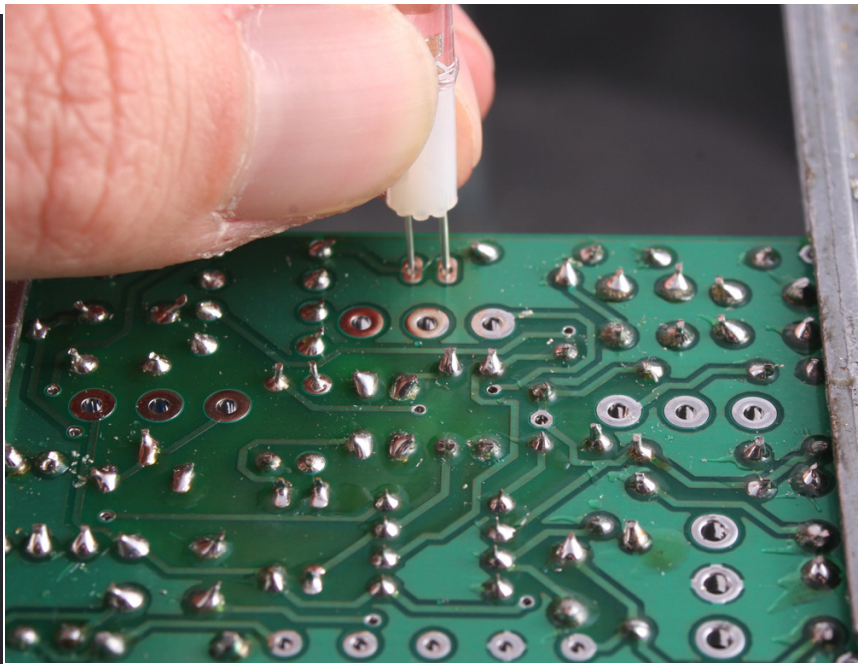
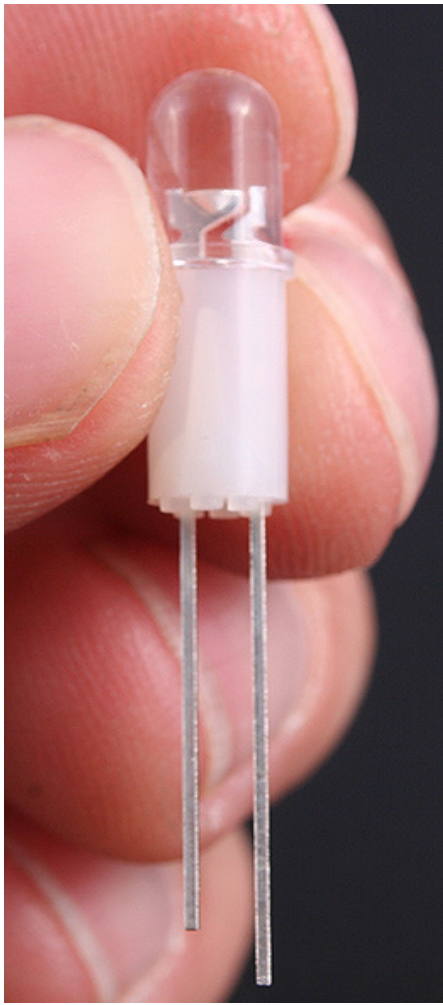
## Step 7: Install the LED

The next step is to install the LED. The LED will be soldered in on the opposite side as most of the components. This is because the LED just like the pots will stick up through the enclosure. The longer leg goes in the hole next to the “+” mark on the PCB.

Insert the LED tube around the legs as shown below. The tubing is used to determine the exact height of the LED so it sticks through the top of the box correctly. Make sure you push the LED all the way down until the tubing is flush with the PCB.

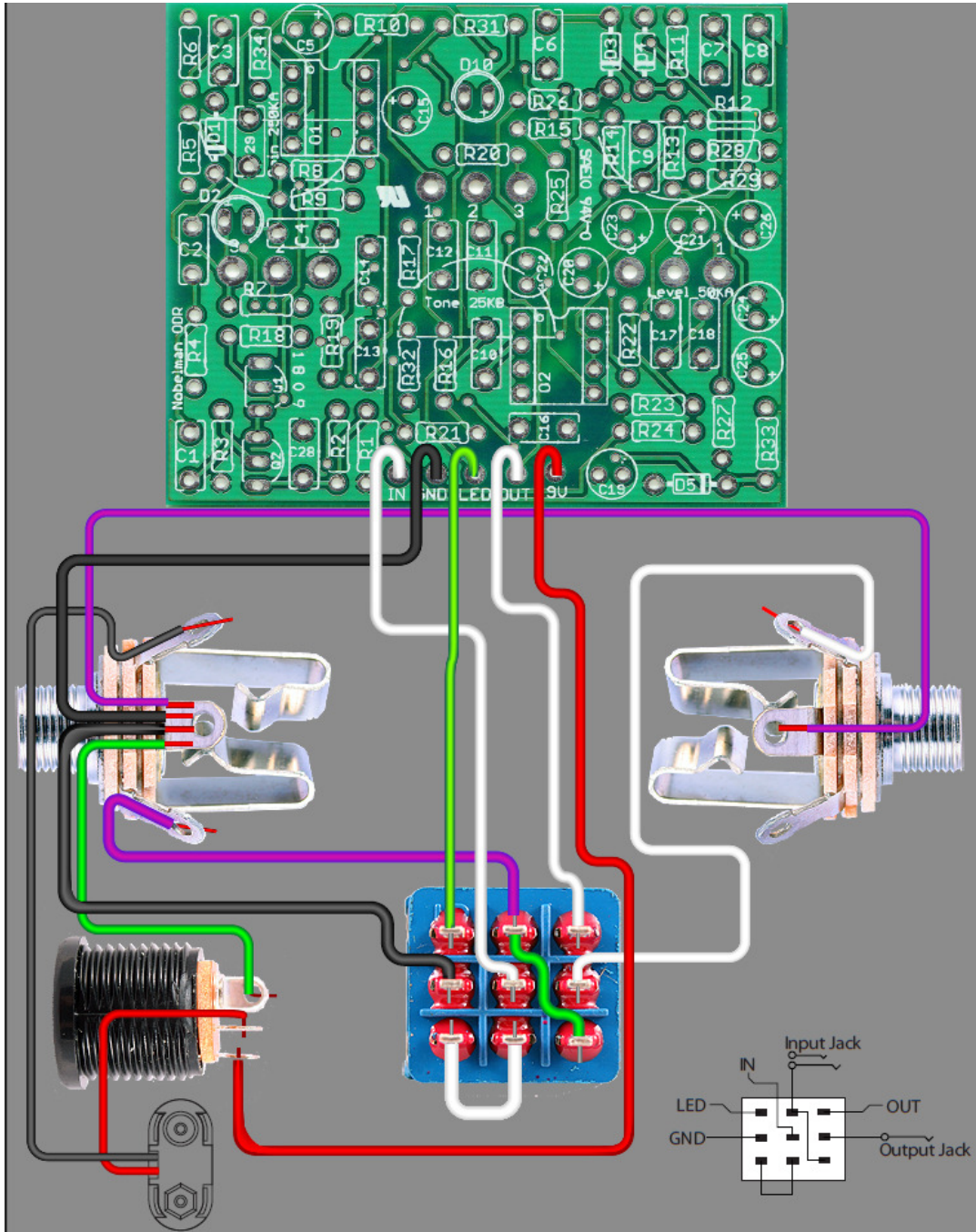






## Step 8: Install the foot switch and jacks

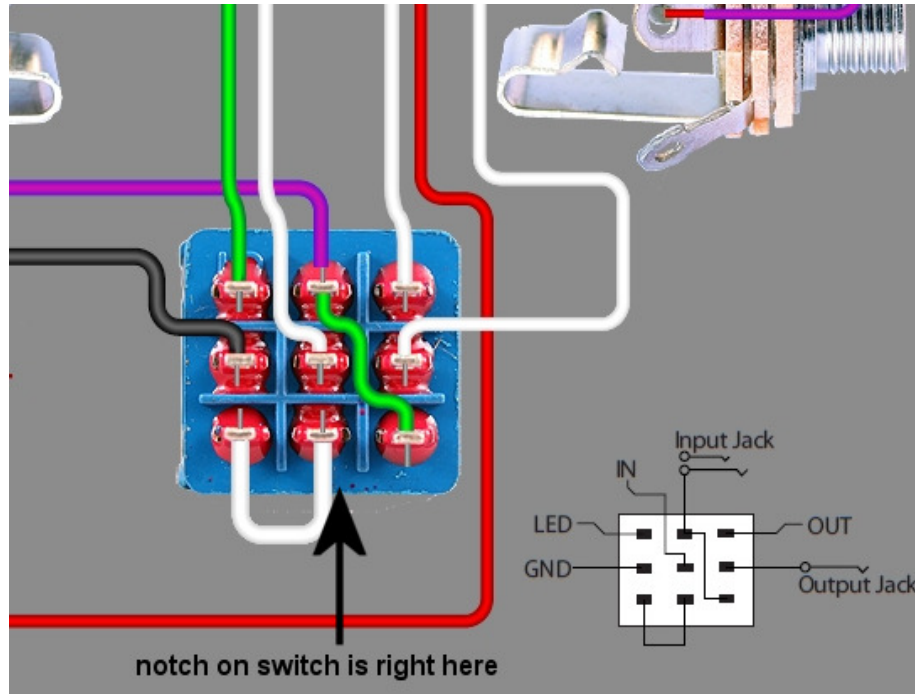
The next step is to install the foot switch and jacks. The hookup wire is displayed in the below graphic in different colors to differentiate each connection. However, the wires that will be supplied to you in the kit will only give you the option of two colors. Please make sure you connect the wires exactly as shown.



Note that the shaft of the switch has a notch in it. We prefer to face this notch away from the circuit board. However if it is oriented 180 degrees it will still work. If it is oriented 90 degrees it will not.



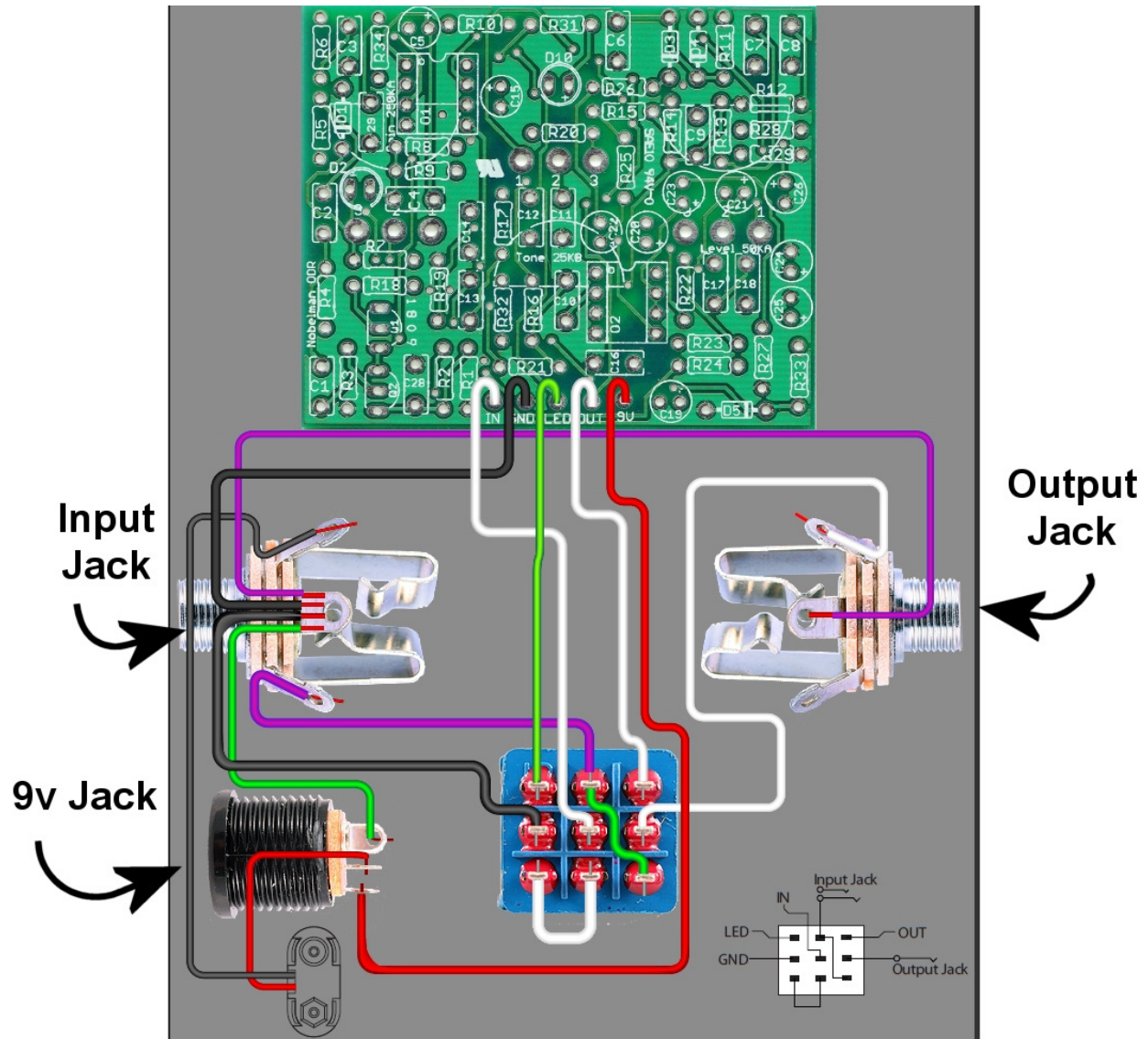
Notice below how the little green wire connects to the same lug of the switch as the purple wire. Both of them are soldered to the same lug of the switch. This is for grounding purposes in order to limit potential noise when the pedal is turned off.



The proper way to install the 9v jack is as follows: You must be aware that the 9v jack has to be inserted from the outside of the enclosure first. Then you will install the nut to hold it in place before wiring it up. The reason why you must do it this way is because if you install the wiring first you will not be able to insert the adapter into the enclosure from the inside. We prefer to mount everything in the enclosure first and then wire up the jacks, foot switches and DC.



### Step 9: Install the circuitry into the enclosure



You should now have a completely “loaded” circuit.

At this point we will insert the pots and the LED into the face of the enclosure. Push the shafts of the gain, volume and tone pot through the underside of the enclosure. Holding them in place with your fingers, turn the enclosure over. Now slide the washers and nuts over the threaded shaft of the pots and tighten them down. Do not make them extremely tight as the threads can strip if you over tighten.

At the same time that you are inserting the pots through the underside of the enclosure carefully manipulate the LED so it fits in the hole properly. You will have to do the same with the foot switch. The 9v jack will have already been installed based on our instructions in the previous step but be careful not to break the solder connections. We prefer to install the battery snap after everything has been installed into the enclosure.

Next we will install the input and output jacks. Push the threaded ends of the input and output jack through the side hole of the enclosure. While holding them in place with your fingers slide the washers and nuts over the threaded shaft. Please remember not to over tighten.

The foot switch will have a nut and serrated washer on the underside of the enclosure. There will be a plastic washer and nut on the outside of the enclosure. Tighten snugly (do not over tighten).

Turn ALL of the pots all the way counter clockwise or to the OFF position. Check the set screws in each knob to make sure it is unscrewed enough to allow the knob to be pushed onto the pot shaft. Do not try to push the pot all the way down onto the pot shaft for this will cause binding between the knob and nut and will cause the pot rotation to be stiff.

Once you have the knob pushed down and pointed in the desired position simply take a small flat head screwdriver and tighten the set screw onto the pot shaft. Do not over tighten the set screw it can actually break off in the knob. Make sure the knob is snug and test its rotation. If the pot's rotation is stiff or erratic the pot was pushed too far down onto the shaft.

The final step in the construction of your pedal is to install the foam pieces for the purpose of holding the battery in place. Cut your foam pieces in half and place them onto the inside of the enclosure to keep the battery from moving within the pedal. Once cut in half remove the plastic adhesive cover and place the first half just behind the foot switch. The other half will be place on the bottom part of the enclosure all the way toward the edge where the aluminum is bent (See Photo Below). Now snap a battery into the battery snap and place it onto the foam behind the foot switch. Lastly, turn the pedal over with the knobs on the table or facing the ground. Place the bottom of the enclosure into its respective position and install the 4 small black screws into the appropriate holes. Do NOT over tighten.

Finally it is time to test the pedal!

Technical Support

**Please Visit**

<http://toneclonpedals.com/index.php/forum>