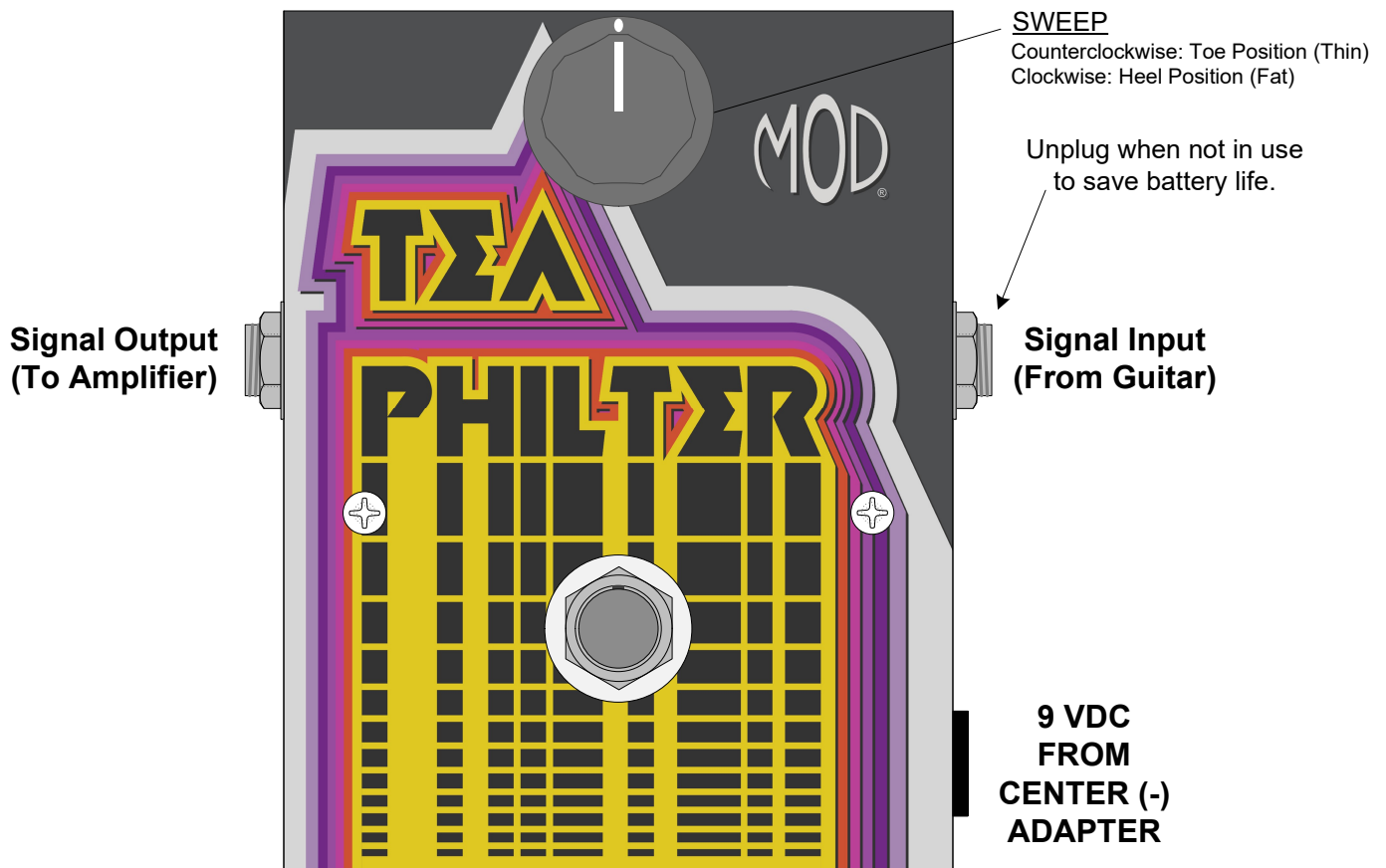


THE TEA PHILTER (K-970)



Use these instructions to learn:

- How to build an effects pedal for fixed wah tone.

Every guitar/wah combination has a certain sweet spot that's perfect for lead and chord work. The Tea Philter lets you dial in everything from your favorite vocal midrange tone to thick lows and even that "chicks for free" sound.

Warning: This circuit was designed for use with a 9 VDC power supply only.



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These are the last 2 pages. They should be separated and used as a reference to help assemble the kit correctly.

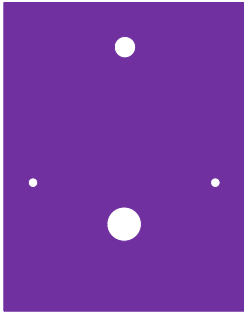
TOOL LIST

- Wire Strippers
- Needle Nose Pliers
- Cutting Pliers
- Desoldering Pump
- Solder (60/40 rosin core)
- Soldering Station
- Phillips Head Screwdrivers
- Slotted tip screwdrivers (3 mm tip)
- Channellock Pliers (or similar type)
- Ruler
- Hobby Vise (or other means to secure box while working)
- Exacto knife or similar cutting tool

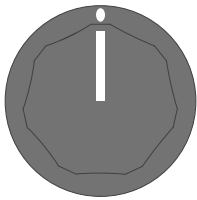
PARTS LIST 1

Thin Stranded Wire (22 AWG) - Red
K-PUL1569 (3 FT)

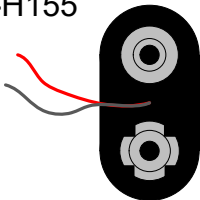
Enclosure
P-H1590BBCE-DP (1)



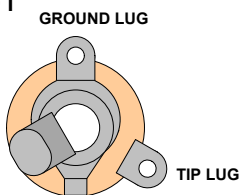
Knob
P-K345-DGRAY (1)



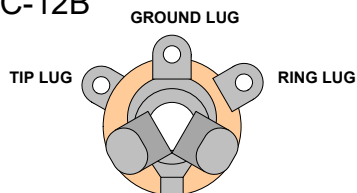
Battery Clip
S-H155 (1)



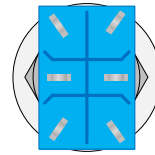
1/4" Mono Jack (Output Jack)
W-SC-11-T (1)



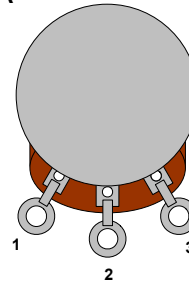
1/4" Stereo Jack (Input Jack)
W-SC-12B (1)



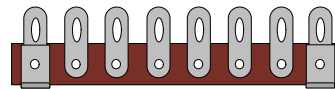
DPDT Foot Switch
P-H498 (1)



50kΩ Potentiometer with Audio Taper
R-VA50KA (1)

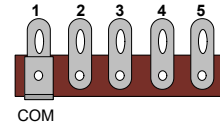


Terminal Strip with 8 Terminals
P-0802H (1)



Terminal Strips with 5 Terminals
P-0501H01 (1)

1st Lug Common



S-HS440-38 2 #4 screw



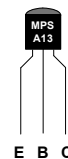
S-HLW4 2 #4 lock washer



S-HHN440 2 #4 hex nut



NPN Darlington (MPSA13)
P-QMPSA13 (1)



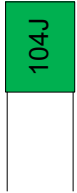
PARTS LIST 2

DC Power Jack
S-H750



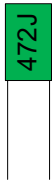
(1)

0.1 μ F Capacitor 100V
C-PEID1-100



(2)

0.0047 μ F Capacitor 100V
C-PEID0047-100



(1)

680pF Capacitor 50V
C-D680-50



(1)

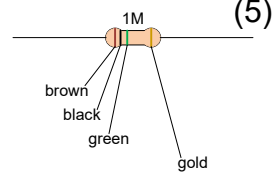
22 μ F Polarized Capacitor 50V
C-ET22-50



(1)

1M Ω Resistor $\frac{1}{2}$ W

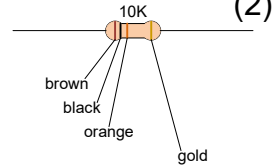
R-A1M



(5)

10k Ω Resistor $\frac{1}{2}$ W

R-A10K



(2)

Tea Philter Sticker

(1)

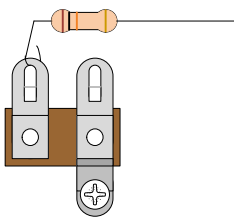


SOLDERING TIPS

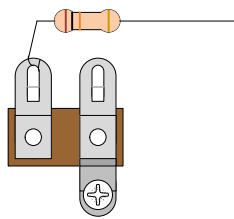
It is important to make a good solder joint at each connection point. A cold solder joint is a connection that may look connected but is actually disconnected or intermittently connected. (A cold solder joint can keep your project from working.)

Follow these tips to make a good solder joint. *Take your time with each connection and make sure that all components are connected and will remain connected if your project is bumped or shaken.*

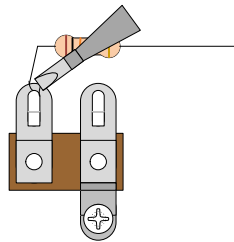
1. Bend the component lead or wire ending and wrap it around the connection point.
 - Make sure it is not too close to a neighboring component which could cause an unintended connection.
2. Wrap the component lead so that it can hold itself to the connection point.
3. Touch the soldering iron to both the component lead and the connection point allowing both to warm up just before applying the solder to them.
4. Be sure to adequately cover both component lead and connection point with melted solder.
 - Remove the soldering iron from your work and allow the solder joint to cool. (The solder joint should be shiny and smooth after solidifying.)
 - Cut off any excess wire or component leads with cutting pliers.
 - Clean the soldering iron's tip by wiping it across the wet sponge again after making the solder joint.



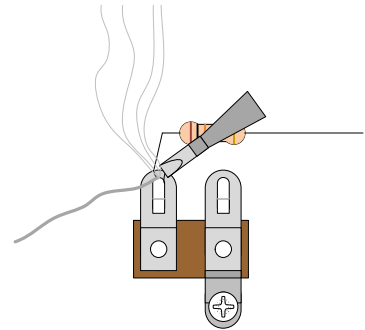
1. Bend the component lead and wrap it around the connection point.



2. Wrap the component lead so that it can hold itself to the connection point.

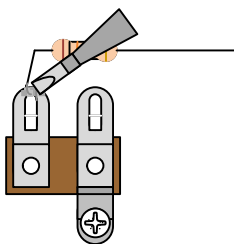


3. Heat up both component lead and connection point with the soldering iron.

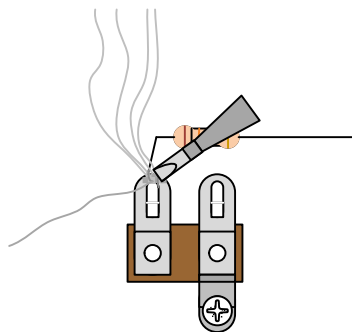


4. Apply solder to both component lead and connection point.

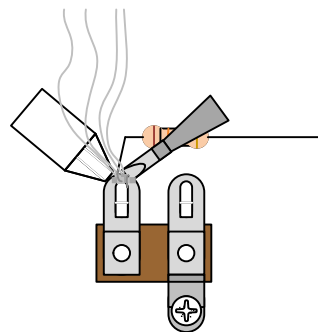
De-Soldering Tip



1. Heat up old solder joint with the soldering iron.



2. Apply fresh solder to mix in with old solder joint



3. Use a de-soldering tool to remove the old solder joint while it is heated.

SECTION 1 – Mount 1/4" Jacks and Terminal Strip Components

Please refer to **DRAWING 1** and **DRAWING 2**.

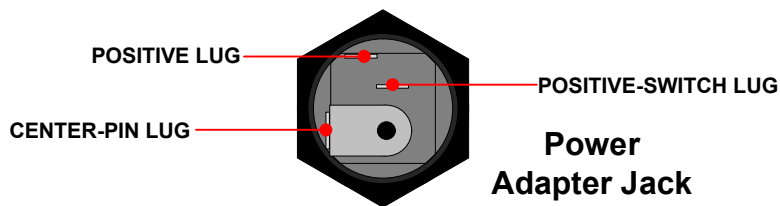
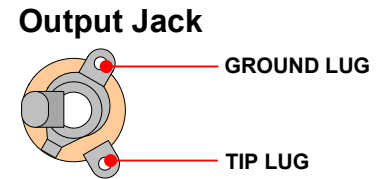
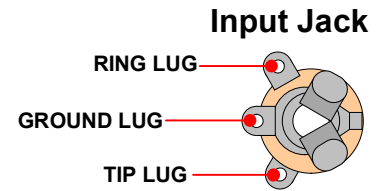
Orient box with single centered 5/16" hole on top and 1/2" hole nearest you.

Apply the sticker to the top of the box then use a blade to cut out the holes.

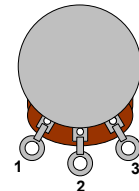
Mount input jack in 3/8" hole on left side of box with hardware provided. Washer goes under nut on outside of box. Make sure center solder lug of input jack is facing up. Correct positioning of jack will make soldering connections much easier. When positioned correctly, tighten nut.

Mount output jack in 3/8" hole on right side of box with hardware provided. Washer goes under nut on outside of box. Make sure two solder lugs are in most upright position before tightening nut.

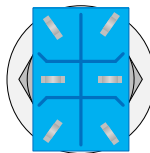
Mount power adapter jack in 15/32" hole on bottom left side of box. Orient solder lugs on power adapter jack so larger center-pin lug is facing the bottom side of box. Tighten adapter jack.



Mount the 50K pot in the 5/16" hole with its solder lugs oriented as shown in the drawing. *You can break off the small guide tab on the pot by bending it back with pliers so that the pot is pressed flush against the enclosure surface.*



Mount the DPDT footswitch to the 1/2" hole with its solder lugs oriented as shown in the drawing. (The plastic washer goes on top of the enclosure underneath the nut).

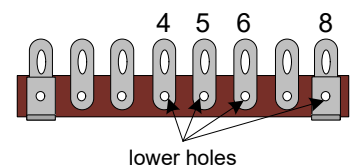
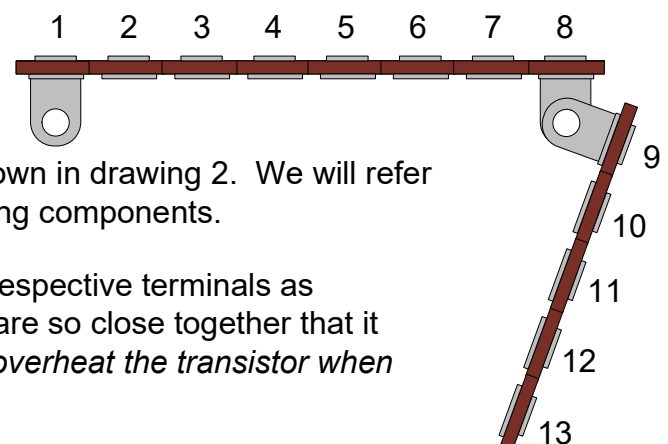


Mount the terminal strips to the two 9/64" holes as shown in drawing 2. We will refer to terminal numbers as illustrated here when connecting components.

Connect the following components and wires to their respective terminals as instructed. (Make sure none of the component leads are so close together that it could lead to an unintended short). *Be careful not to overheat the transistor when soldering.*

Unless noted otherwise, "mount" or "connect" means to wrap the component lead or wire-end around its connection point, trim excess and solder. There may be more components connected at that terminal, so be sure to leave space and look ahead at the final assembly drawings to get an idea of what else will be connected at a particular terminal or lug.

Terminals #5 and #6 will have a lot of connections so we will use both the upper and lower portions of the terminals.

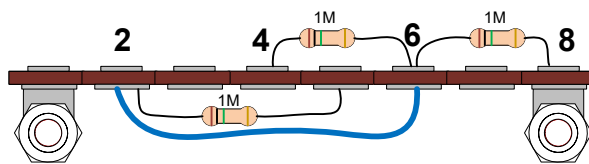


1) Mount two 1M resistors to the lower set of holes of the terminals listed below, but do not solder.

Terminals #4 & 6: 1M resistor

Terminals #6 & 8: 1M resistor

2) Mount a 2 ¼" piece of wire to the lower holes of terminals #2 and #6. Solder the lower hole connections at terminals 2, 4, 6 and 8 now.



Terminals #2 & 6: jumper wire

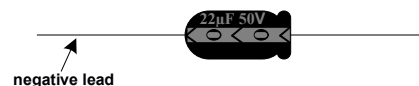
3) Mount another 1M resistor to terminals #2 & #5.

4) Mount the .0047μF capacitor to the lower hole of terminal 5 and lug 1 & 2 of the 50K pot. Use the extra lead wire to feed through lug 1 of the pot and bend around to lug 2 of the pot. Do not solder the pot connections, yet.

5) Mount the 680pF cap to lug 2 of the pot and terminal #6. Solder the pot lugs 1 and 2 now.

6) Mount one of the 10K resistors to terminals #7 and #8.

7) Mount the 22μF cap to terminals #7 and #9 with the negative (-) lead on terminal #9.

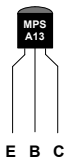


8) Mount the MPSA13 transistor to terminals 5, 6 & 7. Mount each of its leads to their respective terminals:

Terminal #5: Collector (C)

Terminal #6: Bass (B)

Terminal #7: Emitter (E)



9) Mount ONE OF THE .1μF caps to terminal #4 and lug 1 of the DPDT footswitch.

10) Mount the remaining .1μF cap to terminals #12 and #13.

11) Mount the remaining 10K resistor to terminals #11 and #12.

Please refer to DRAWING 3.

12) Mount one 1M resistor to terminal #1 and footswitch lug 1.

13) Mount the remaining 1M resistor to terminal #9 and footswitch lug 4.

SECTION 2 – Wiring the Jack, Footswitch and Power Supply

Stripping and tinning wire: For the rest of these instructions you will be told to strip and tin various lengths of wire. Unless noted otherwise, cut the wire to the length stated in the instructions, then strip ¼" of insulation off each end. Twist each end of the stranded wire and apply a small amount of solder to each end (tin the wire ends). This prevents the stranded wire from fraying and makes soldering much easier.

Please refer to DRAWING 4.

- 1) Connect a 2 3/4" piece of wire to terminals #5 and #12.
- 2) Connect a 1 1/2" piece of wire to footswitch lugs 3 and 6.
(Bend this wire down so it rests flat against the back of the footswitch. This will keep the battery insulated from the footswitch terminals and prevent a possible short across the battery casing).
- 3) Connect a 2 1/2" piece of wire to pot lug 3 and the output jack ground lug.
- 4) Connect a 3" piece of wire to the output jack tip lug and footswitch lug 5.
- 5) Connect a 2 1/2" piece of wire to footswitch lug 4 and terminal #13.
- 6) Connect a 2 1/2" piece of wire to the power jack center-pin lug and terminal #1.
- 7) Connect a 3 1/2" piece of wire to terminal #11 and the power jack positive lug.
- 8) Connect a 3" piece of wire to input jack tip lug to footswitch lug 2.
- 9) Connect the battery clip black wire to the input jack ring lug.
- 10) Connect the battery clip red wire to the power jack positive-switch lug.

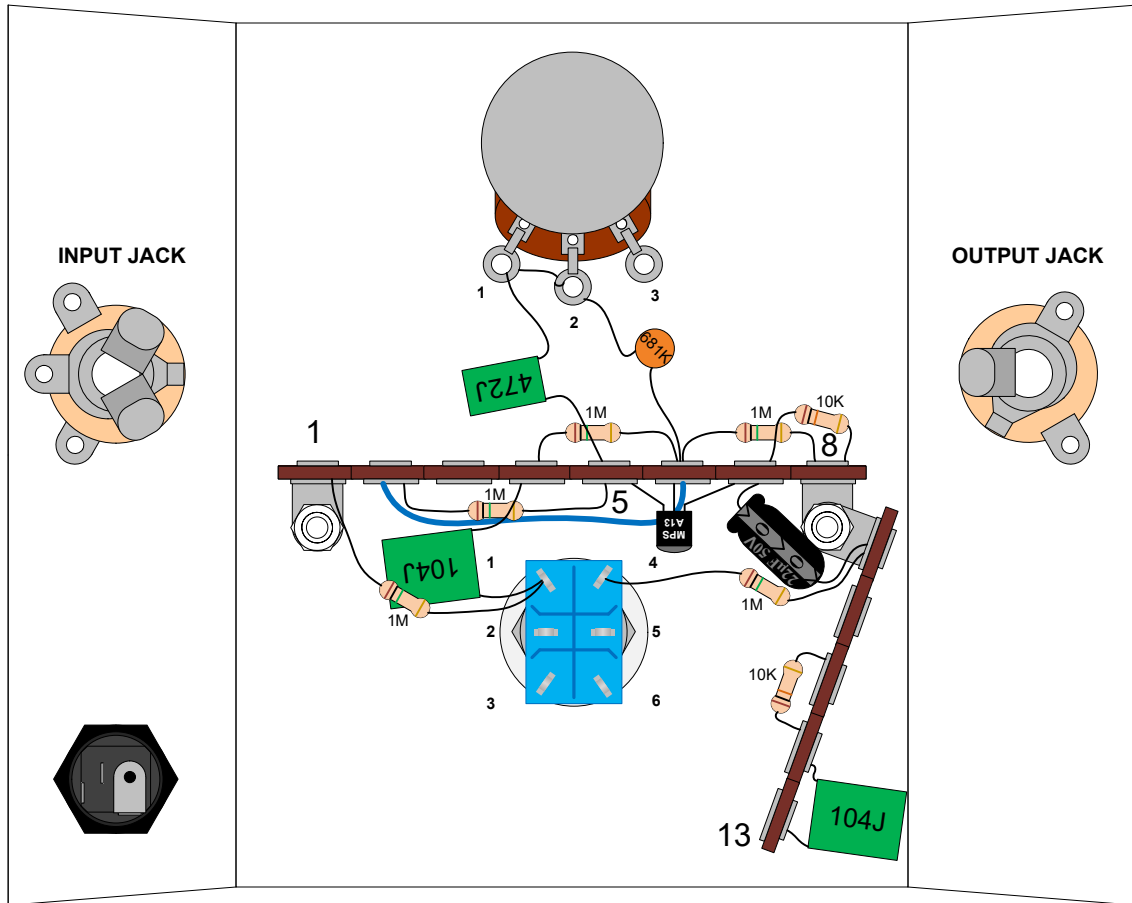
SECTION 3 – Finishing Up

It's always a good idea to thoroughly double-check your connections before applying power. *Make sure there are no connection points left un-soldered.*

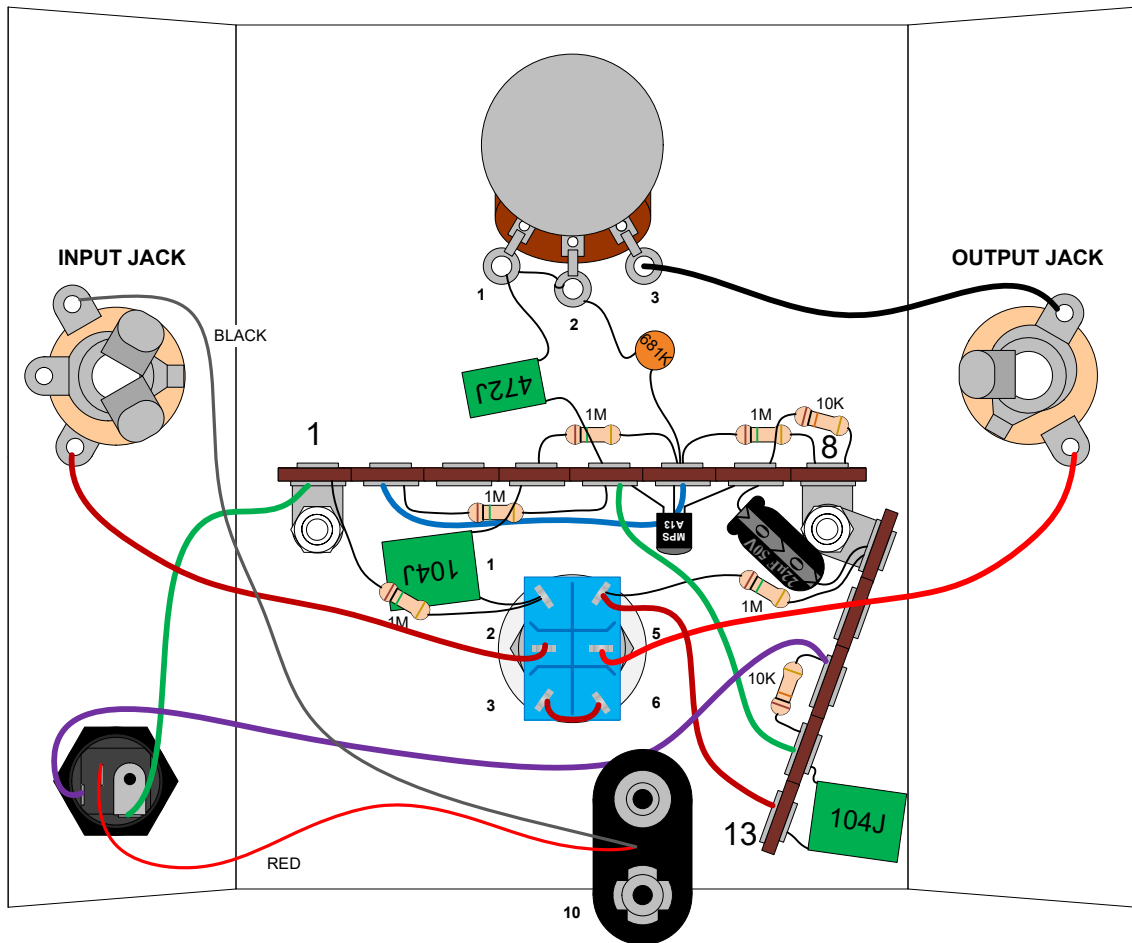
Install a 9 volt battery if necessary and close the cover using the screws provided. Fasten the knob to the potentiometer shaft. Plug your guitar into the input jack. This turns the unit on when using a battery. Connect another cable from the pedal's output jack to your amplifier input.

Unplug from the input jack of the pedal to turn it off and save power.

DRAWING 3



DRAWING 4

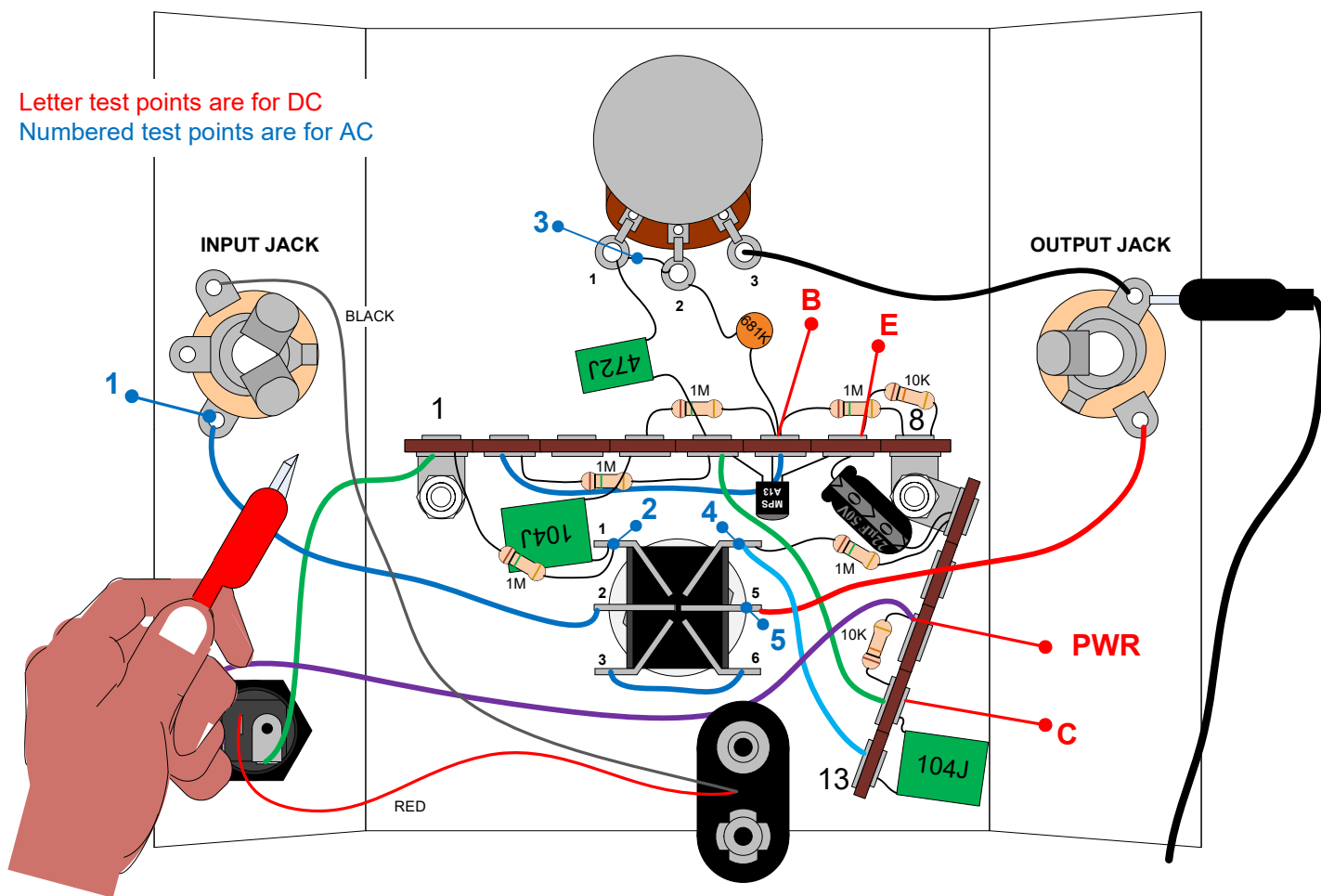


Use this troubleshooting supplement to help:

- Measure voltage test points to identify major discrepancies and locate problem areas.

(Keep in mind that the voltage measurements will vary slightly from kit to kit. The voltages you measure should be in the same ballpark, but do not expect to get the exact same value.)

Using a volt meter, connect the ground side lead of the meter to any ground point on the pedal. One ground point would be the output jack's ground lug. The other volt meter lead will be used to measure voltages at the test points shown below.



First, plug a guitar cable into the input jack if you are using a battery for power. Next, take the DC voltage measurements (Letters in red) at each test point (the potentiometer setting should not alter the DC voltage measurements). Any major differences between the voltages listed above should indicate a problem area.

DC Voltage Test Points

PWR = 9.11 VDC

C = 6.73 VDC

B = 3.24 VDC

E = 2.33 VDC

AC Voltage Test Points

Once your DC voltages look good, you can move on to taking AC voltage measurements along the signal path. (AC voltages measured while strumming an open E chord on a strat with single coil neck pickup (volume and tone turned all the up)..)

1 = 0.15 VAC

2 = 0.15 VAC

3 = 0 mVAC @ minimum (7:00) sweep

3 = 15 mVAC @ half-way (12:00) sweep

3 = 60 mVAC @ maximum (5:00) sweep

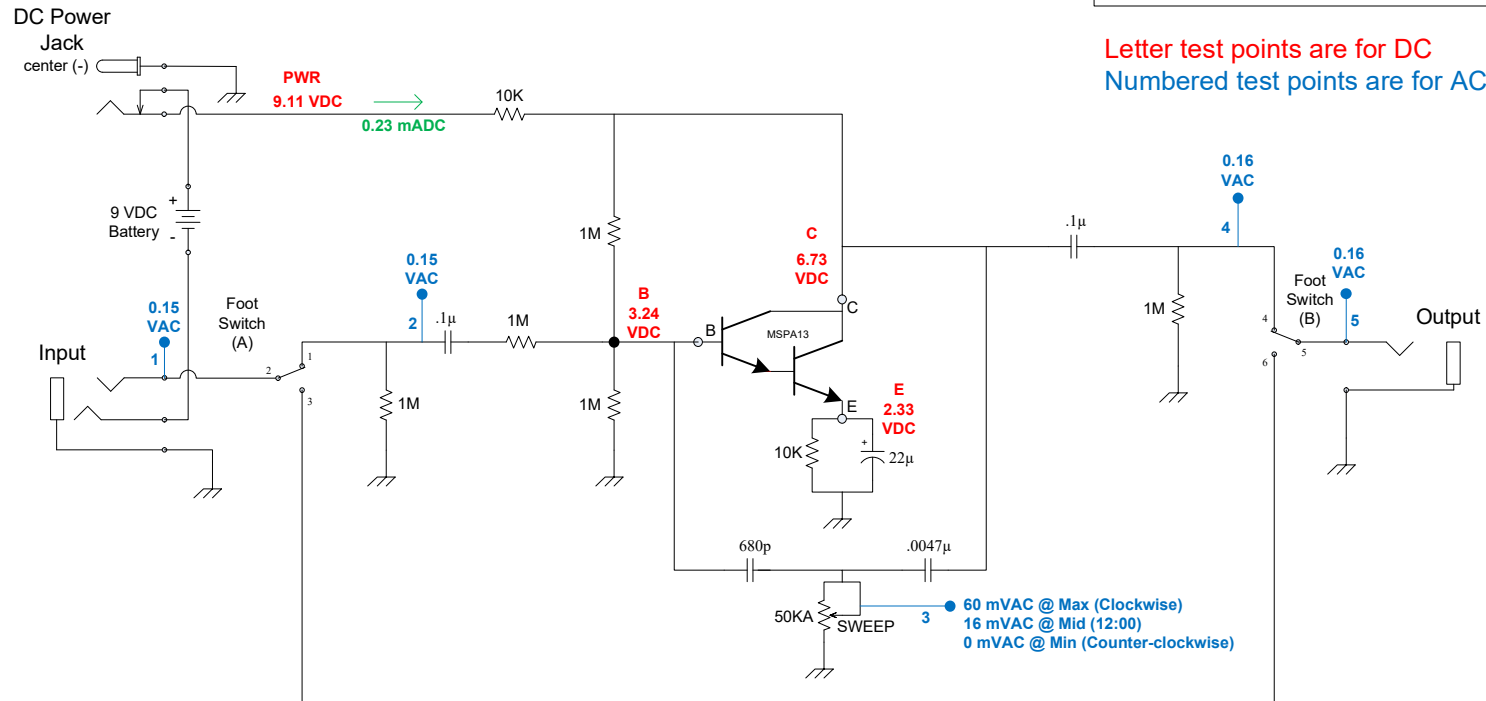
4 = 0.16 VAC

5 = 0.16 VAC

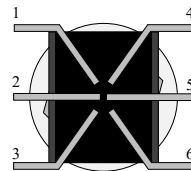
- DC Voltages measured with respect to ground.
- AC Voltages measured with 50KA sweep pot set to half-way (12:00), except for test point 3.

AC voltages measured while strumming an open E chord on a strat with single coil neck pickup (volume and tone turned all the up).

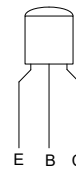
Letter test points are for DC
Numbered test points are for AC



DPDT Foot Switch



MPSA13
NPN Darlington Transistor



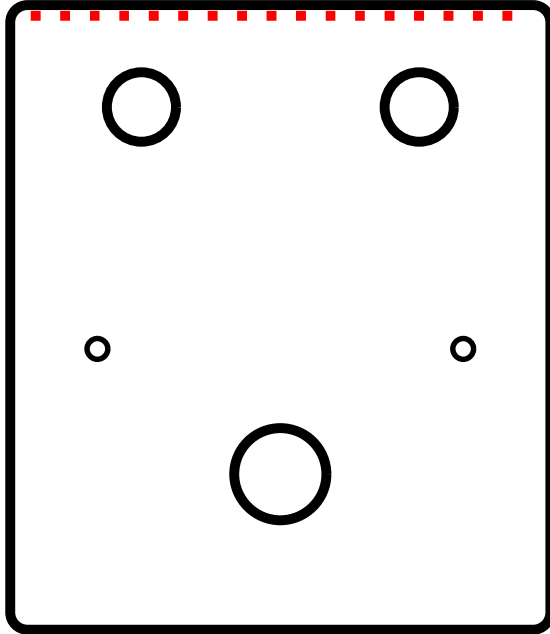
MOD™

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"The Tea Philter" (K-970)
Schematic

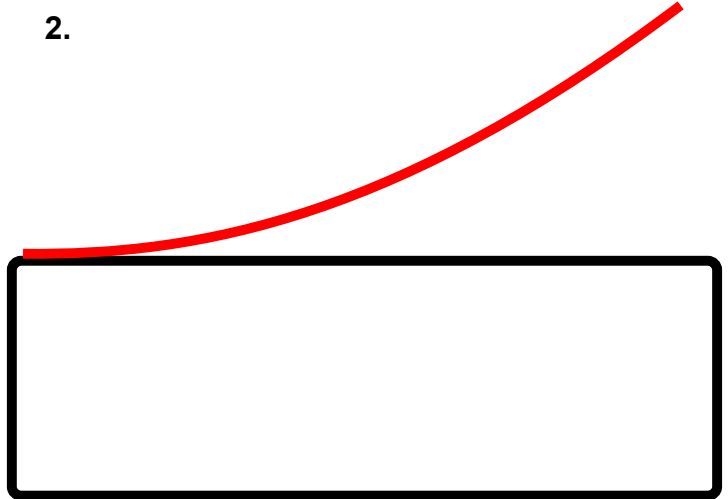
APPLYING THE STICKER TO MOD PEDAL ENCLOSURES

1.



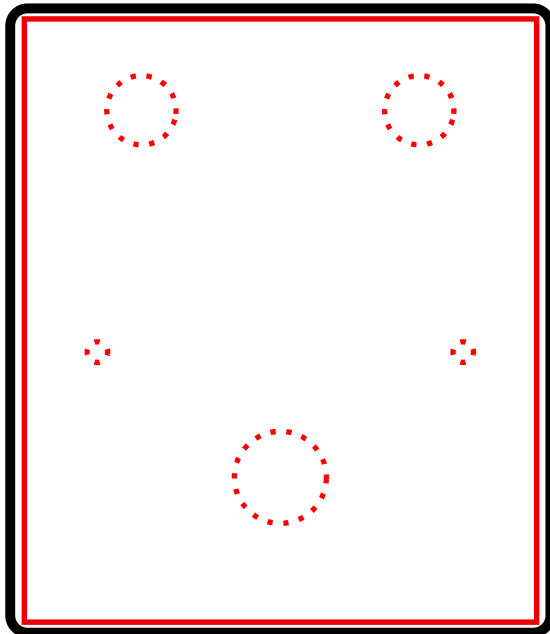
- Locate the top of the pedal as well as the top of the sticker. Page one of the instructions for your kit will have an image of the pedal that can be used for reference.

2.



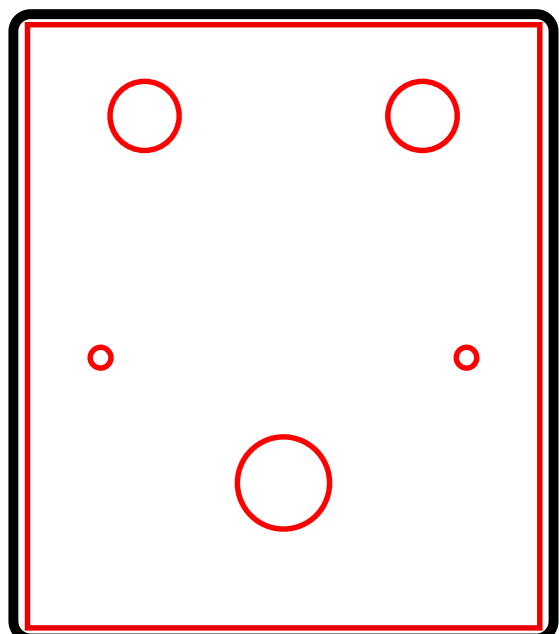
- Peel the backing from the sticker. Carefully line up the top edge of the sticker with the top of the pedal. Press down to apply the sticker only to the edge. Run a finger across the edge to push any air out from beneath the sticker. Continue this motion as you work your way down the pedal until the sticker is fully attached.

3.



- Locate the holes beneath the sticker and depress them using a fingertip. Be sure that the area of the sticker surrounding the holes is fully adhered to the surface.

4.



- With an Xacto knife or similar tool, carefully pierce the sticker in the center of each hole. Carefully work the knife from the center of the hole to the edge and begin cutting fully around the edge until the sticker has been fully cleared from the hole.