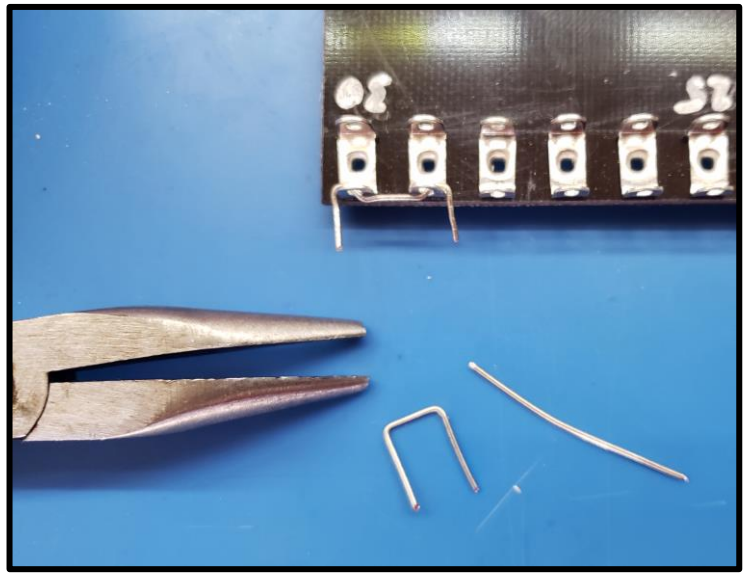
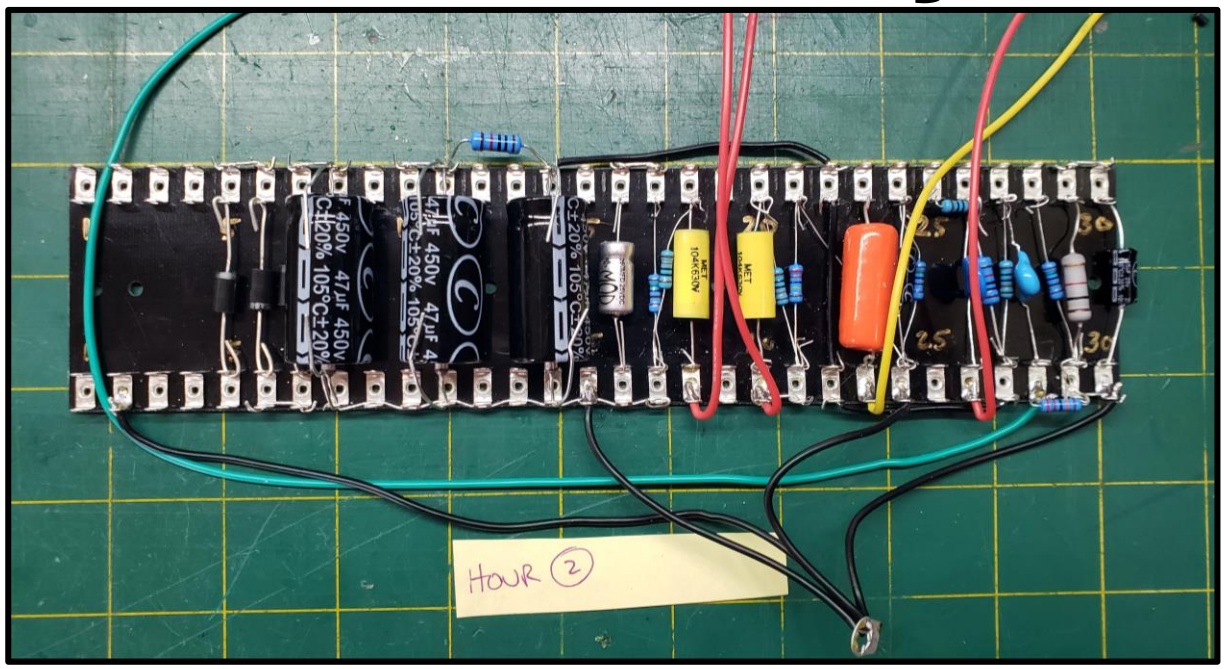
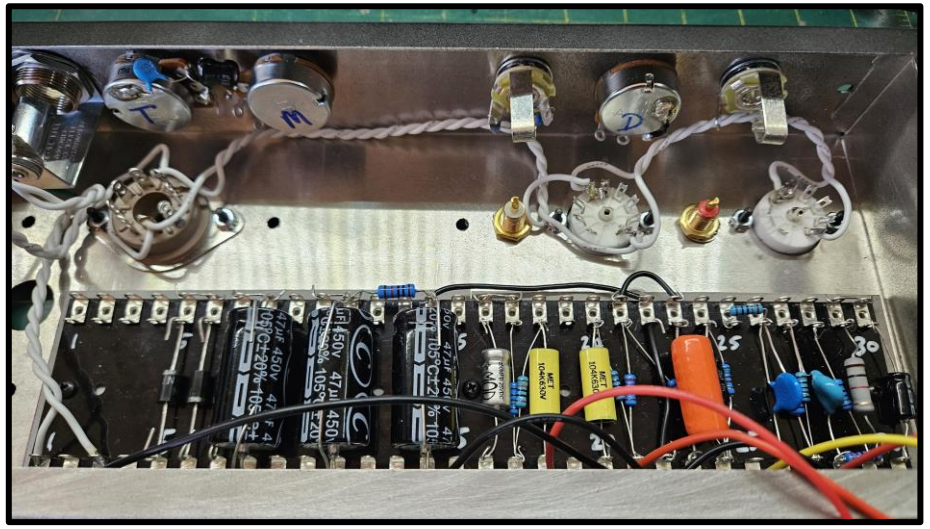
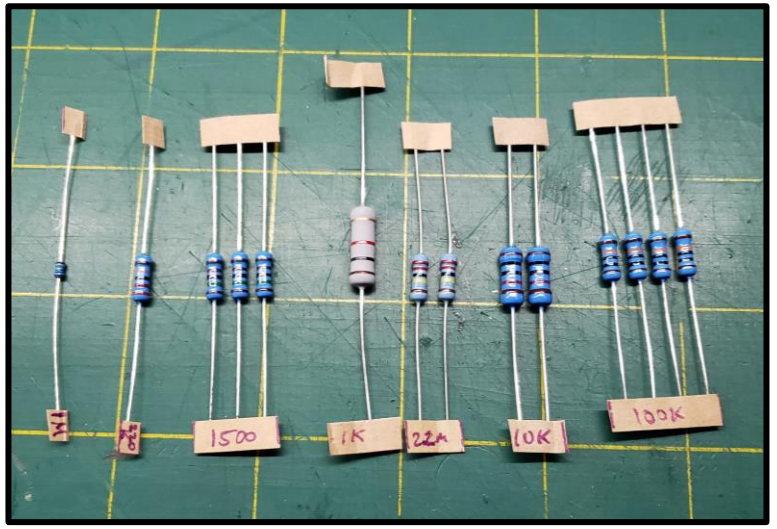
Electronics Assembly









Safety First

- ***This is not a one-night project.*** Plan for 8-10 hours and several sessions to complete this project. Add 2-3 hours if building a cabinet, and 3-4 more if Tolexing
- **The builder is 100% responsible for their own safety with tools and electricity.**
  - Austin Ribbon Microphones, LLC ("ARM, LLC") ships de-energized, non-lethal parts.
  - ARM, LLC is not responsible for wiring or circuit errors made by the builder.
- There is no electrical power in this circuit until introduced by the builder in the final steps of assembly.
- All power circuits will be verified with a multimeter and checked-off on a list *before* the power cord is installed.
- Tech support is available via email if there are any verification discrepancies.
- The Power Cord is the ***final*** item to be soldered to the circuit.
- The builder shall not apply full wall voltage until all circuits are 100% verified and the complete checklist is checked-off.
- Installing the power cord is a legal agreement between the builder and ARM, LLC that the builder has 100% verified and checked-off every item on the checklist.

One Hour Sessions

This project is sectioned into a series of one-hour tasks.
Some DIY Kits include completed cabinets, which significantly reduces the overall time required.

- An average DIY'er with some experience and the correct tools can complete each task in approximately one hour, give or take 10-15 minutes.

- *Expert* DIY'ers and those with previous electronic and soldering experience may be able to complete each section faster, shortening the overall time required.

- A new DIY'er will require more than one hour for each task, but as you work your way through the project, your expertise and familiarity should increase and shorten the time for each section.

- If there are words or phrases you don't understand, Google them, or write to me at: DiyRibbonMic@yahoo.com

Techniques & Tools

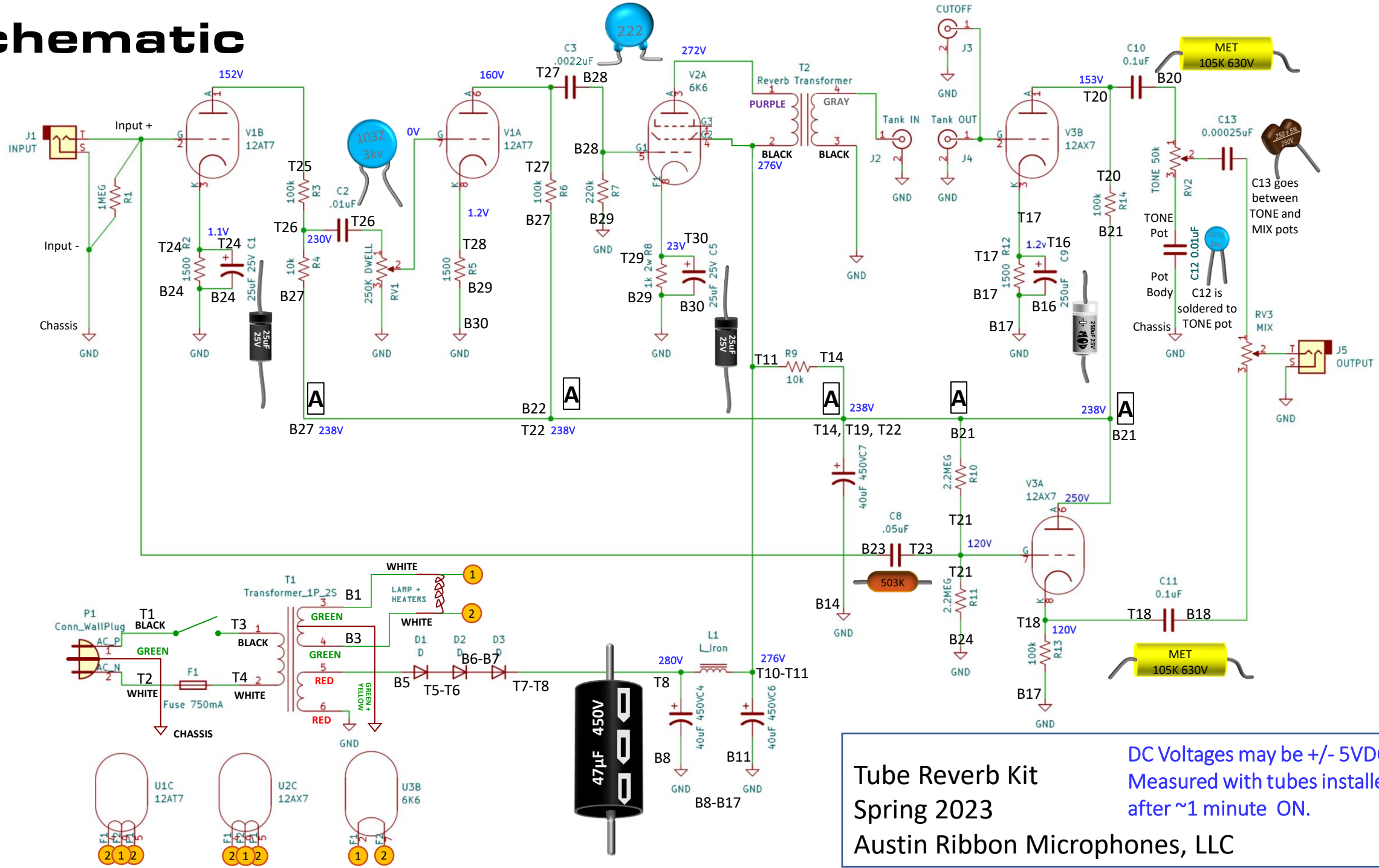
Amazon Link to the $120 soldering iron I use!

Best practices while building and learning:

- A good soldering iron and the correct hand-tools help a lot!!
  Specifically: "bent-nose" pliers, wire strippers, electrical lead cutters and a multimeter. ***Get those 4 tools.***
- ***A 40W, 750° (or adjustable) soldering iron is required to complete this project.***
- Toothpicks are great tools for moving wires into place, and re-opening holes in previously-soldered terminals.
- ***"Cut-Lead Accountability"*** – After soldering, when you cut-off a leg of a component, be 100% accountable for where it goes:
  - Not in your eye, across the room, or under a component on the terminal board
  - Not "*I don't know where that went!?!*"

A tiny, unseen piece of metal wire inside your circuit can be extremely bad!
Find *every* cut piece when you cut it, or hold the wire ends with needle-nose pliers when you cut them, so they don't end-up shorting-out your circuit!

Schematic



Tube Reverb Kit
Spring 2023
Austin Ribbon Microphones, LLC

DC Voltages may be +/- 5VDC
Measured with tubes installed,
after ~1 minute ON.

Start of Hour 1

Tools Required:

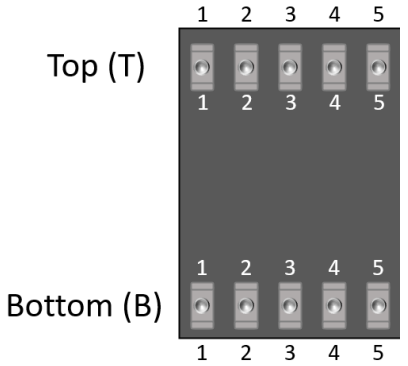
- Soldering Iron
- Wire Strippers for 20 & 18 AWG
- Bent-Nose Pliers
- Multimeter
- Magnification

Austin

Installing Parts on the Terminal Board

T is the ***top*** row: T3, T16, T22, etc.

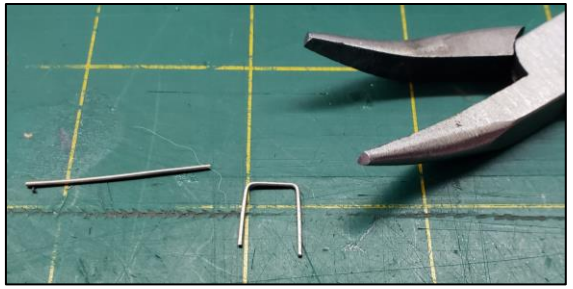
B is the ***bottom*** row: B5, B17, B28, etc.



With a paint pen or marker, mark your terminal board every 5 lugs,
Top and bottom: 1, 5, 10, 15, 20, 25, 30

Nothing is soldered until the end of the parts installation, because:

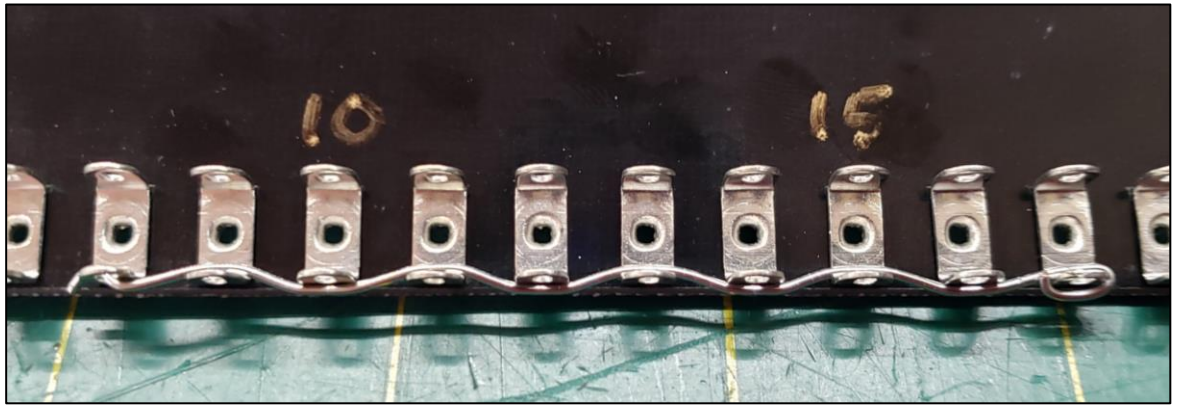
On many lugs, 2 or 3 parts must be installed, and soldering would close the holes for those parts. Part legs are bent as shown to secure them to each lug without soldering yet.

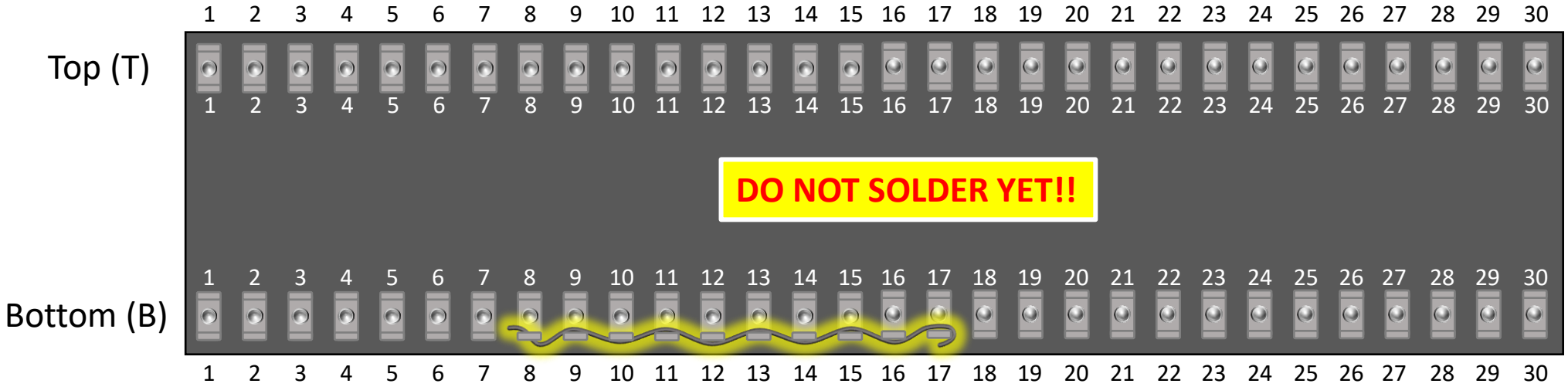


Use needle-nose pliers to form jumpers.

Terminal Board Ground

"Weave" the 4"(10cm) bare wire through terminals B8-B17. The wire *goes through* B8 and weaves *between* the other terminals to B17, so it touches every terminal. Bend the other end around B17 to hold the wire in place. DO NOT solder yet, because there are other components that need to go into those terminals.





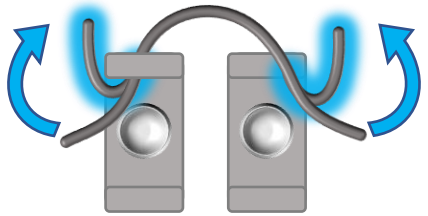
Terminal Board Jumpers

These 8 bare wires are ¾” (19mm)

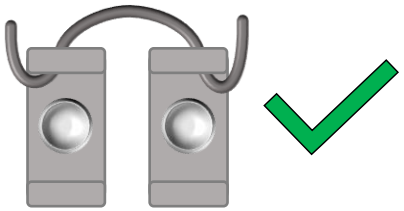
DO NOT SOLDER YET!!

- ◯ T5 – T6
- ◯ T7 – T8
- ◯ T10 – T11
- ◯ T16 – T17
- ◯ T29 – T30
- ◯ B6 – B7
- ◯ B21 – B22
- ◯ B29 – B30

Jumpers go through the hole, and are bent around the *outside* of the terminal lugs with your needle-nose pliers:



GOOD

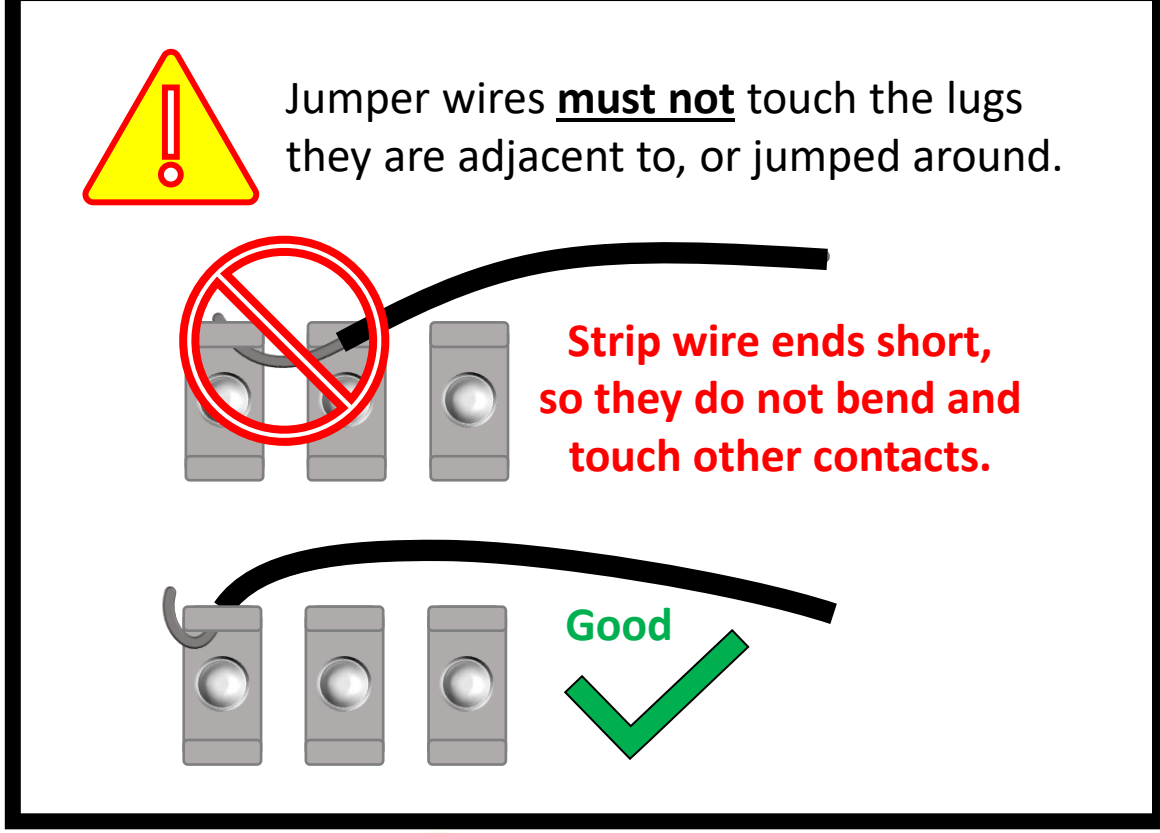


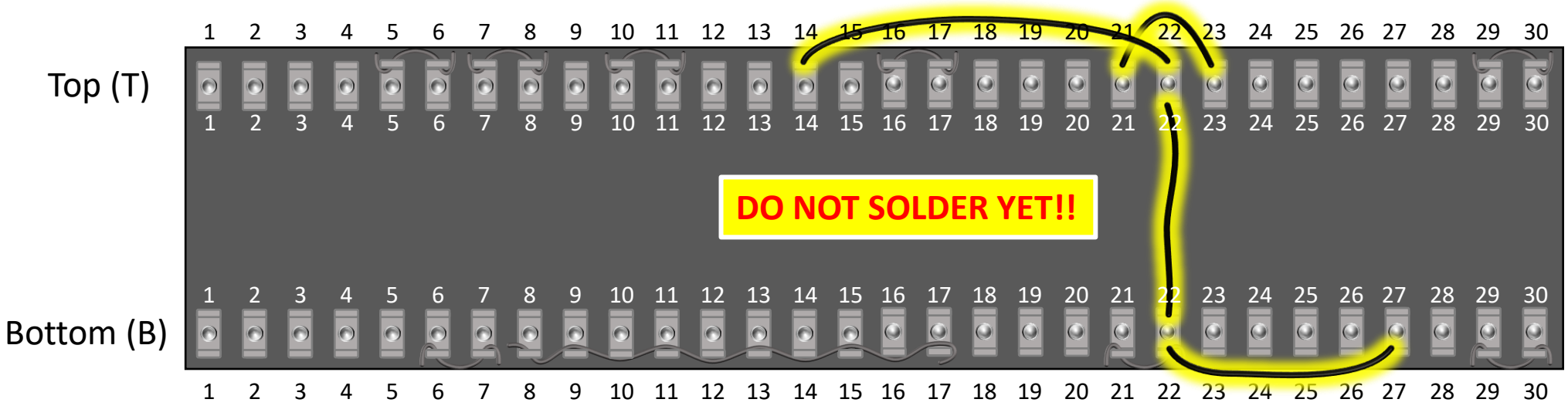
Check-off these circles on a printed copy, as each part is installed.

Terminal Board Wires

- ◯ T14 – T22 - 3” (7.7 cm) Solid Black Wire
- ◯ T22 – B22 - 2” (5 cm) Solid Black Wire
- ◯ B22 – B27 - 2” (5 cm) Solid Black Wire
- ◯ T21 – T23 - 1.5” (4cm) Solid Black Wire

These solid wires are 20 gauge (“20 AWG”), so use the appropriate notch on your wire stripper!

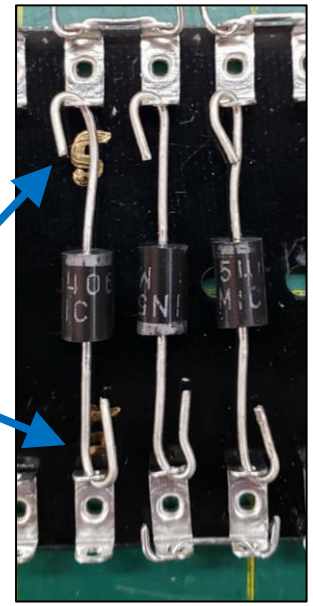




Rectifiers, D1, D2, D3:

- ◯ B5 – T5
- ◯ T6 – B6
- ◯ B7 – T7

Rectifier diodes have a silver stripe on one edge that defines their polarity.
Current flows in the direction of the stripe.
The stripe is the pointer.



Note the polarity of each diode:

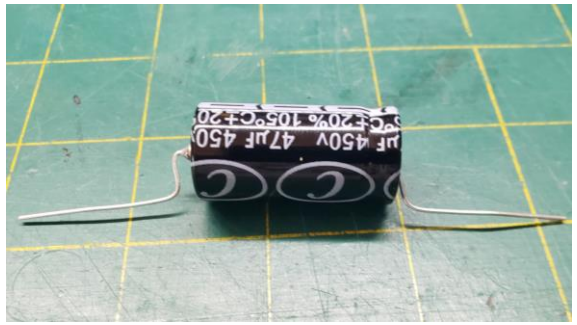
- The outside two point “UP”
- The center diode points “DOWN”
- Installed on the inside terminal holes

Bend the ends of the legs after installing, so they don’t fall out.

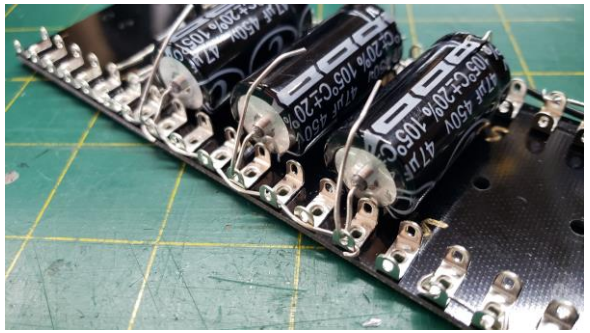
47µF, 450V Filter Capacitors

- ◯ T8 – B8 (C4)
- ◯ T11 – B11 (C5)
- ◯ T14 – B14 (C7)

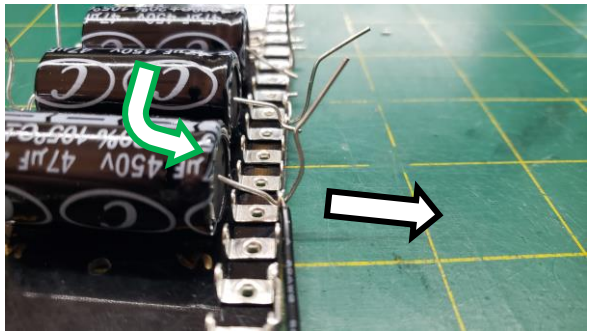
The 47µF 450V filter capacitors have a silver stripe running down one side.
That stripe is small arrows that point to the negative side.
The negative side also has a small bump on the face.
The legs of these 3 filter capacitors go through the ***outside*** terminal holes.



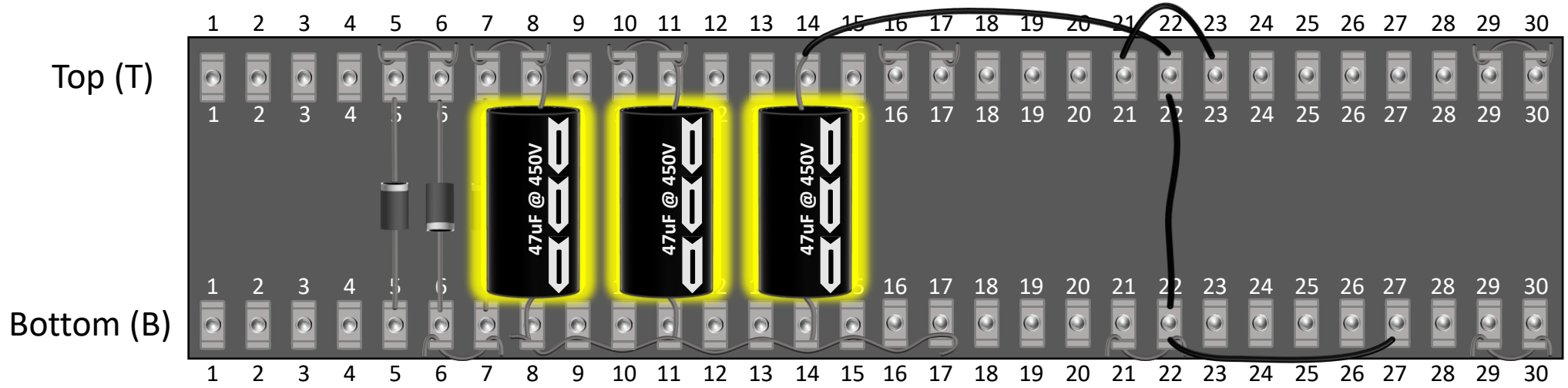
1. Bend capacitor legs as shown



2. Slide the negative leg into row B



3. Bend and *gently* tug the positive leg into row T



These large capacitors are a tight fit. Verify they are in the correct lug numbers.

250µF, 25V Capacitor, C9:

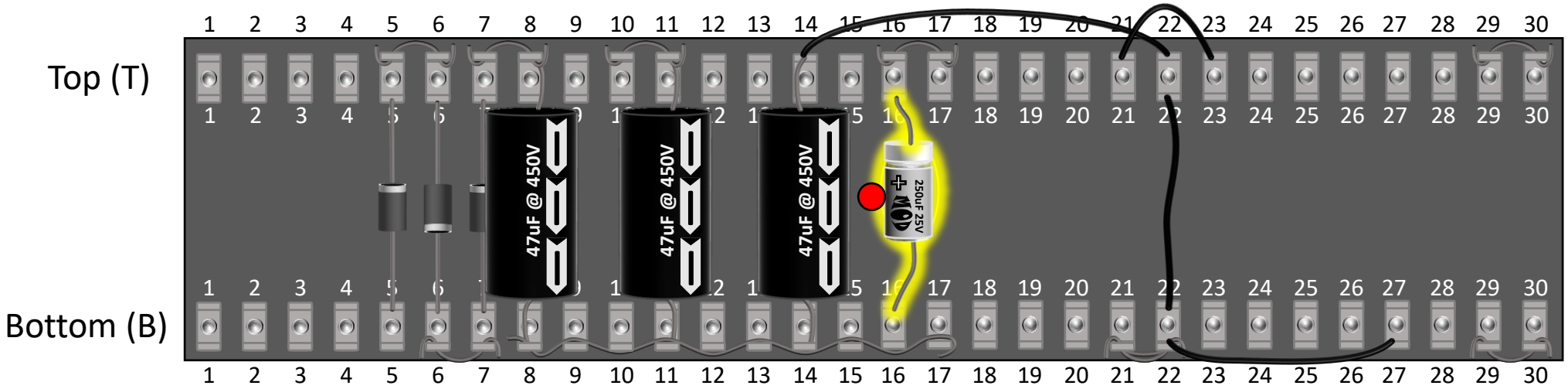
◯ T16 – B16

Crimp and ✙ indicates positive lead.

The 250µF @ 25V Capacitor has a crimp indentation near one end, and is also marked with a "+" This is the positive leg of the capacitor. ***The positive lead goes in the TOP (T) row.***

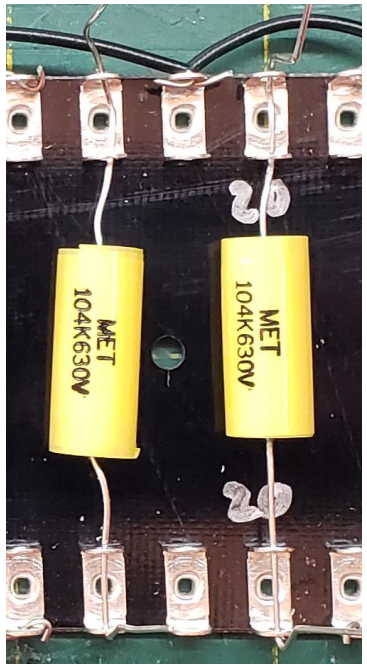
Leave space to install the bolt (*red dot below*) in the hole between the 250µF and 47µF capacitors.

Capacitor color and markings may vary by manufacturer.

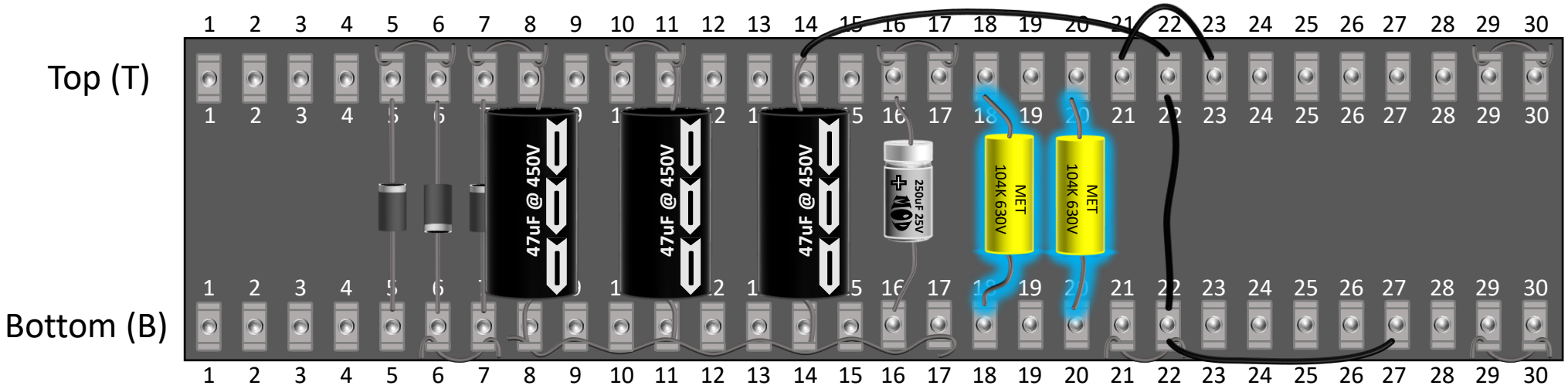


0.1µF ("104") high-voltage Capacitors:

- ◯ T18 – B18 (C11)
- ◯ T20 – B20 (C10)



These 0.1µF Capacitors are not polarized.
There is no Positive or Negative side: They can be installed either way.
The size and text of these capacitors may vary, depending on manufacturer.

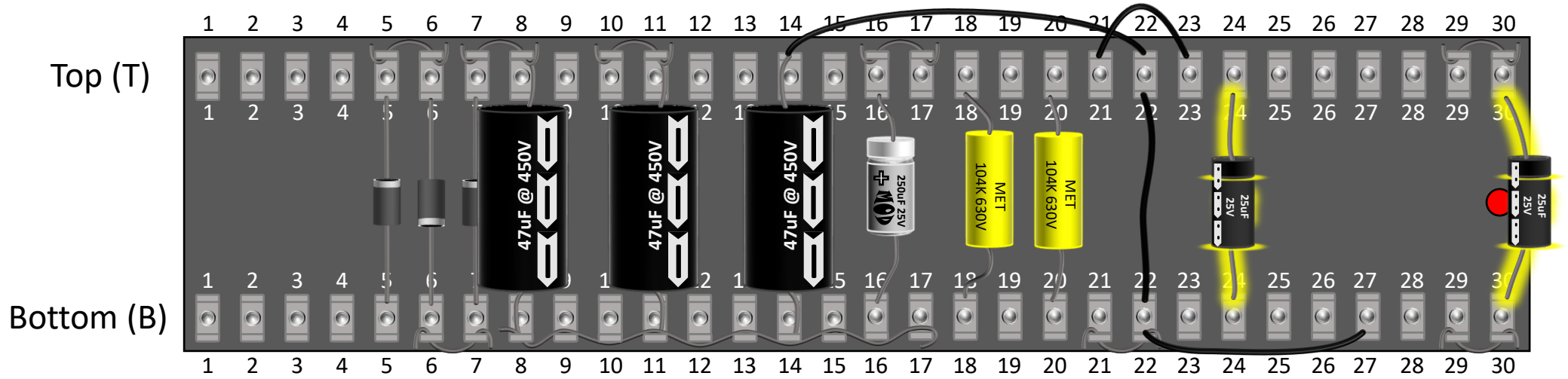


25µF, 25V Capacitor:

- ◯ T24 – B24 (C1)
- ◯ T30 – B30 (C5)

These 25µF, 25V Capacitors are polarized. A white stripe of arrows points to the negative end.
The negative side also has a small bump on the face.
Each capacitor has a crimp indentation near one end. The crimped end is the positive end.
The positive side of these capacitors go int the top (T) row.
Color and text of these capacitors may vary, depending on the manufacturer.

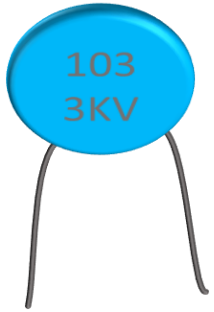
Leave space to install the bolt (*red dot below*) under the capacitor at T30 – B30

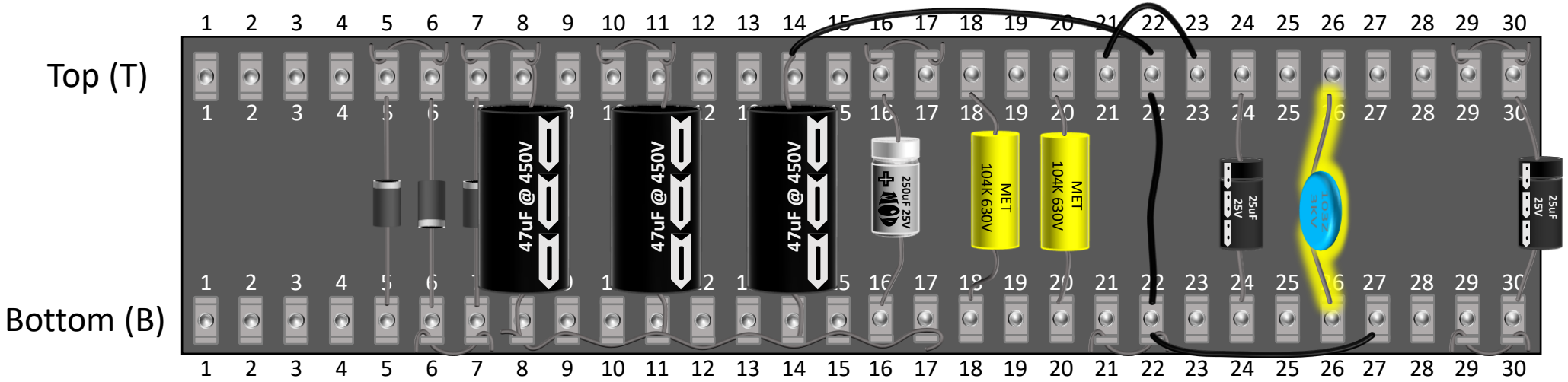


0.01µF, (“103”) ***LARGE*** High-Voltage Capacitor:

◯ T26 – B26 (C2)

There are *two* of these “103” capacitors in the kit. Install the ***LARGE*** “3KV” one here.
These capacitors are not polarized.
There is no Positive or Negative side. It can be installed either way.
Color and text on these capacitors may vary, depending on manufacturer.





0.0022µF (“222”) 1000V Capacitor:

◯ T27 – B28 (C3)

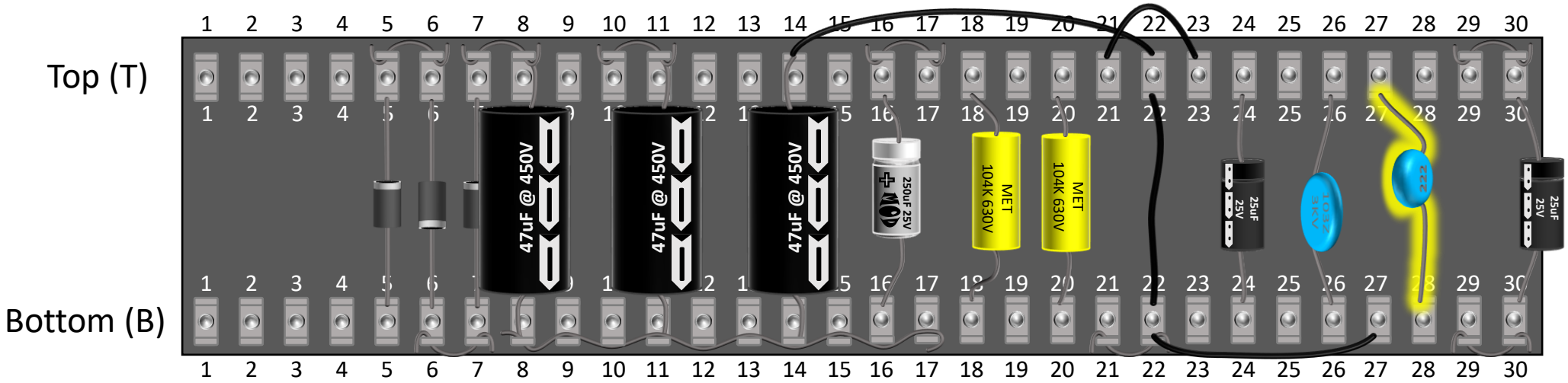
NOTE: The two legs are <u>not in the same row.</u>

Top is 27, Bottom is 28

This 0.0022µF, 1000V Capacitor is not polarized.

There is no Positive or Negative side. It can be installed either way.

Color and text on these capacitors may vary, depending on manufacturer.



End of Hour 1

- - - -

Start of Hour 2

Tools Required:

- Soldering Iron
- Wire Strippers for 20 & 18 AWG
- Bent-Nose Pliers
- Multimeter
- Magnification

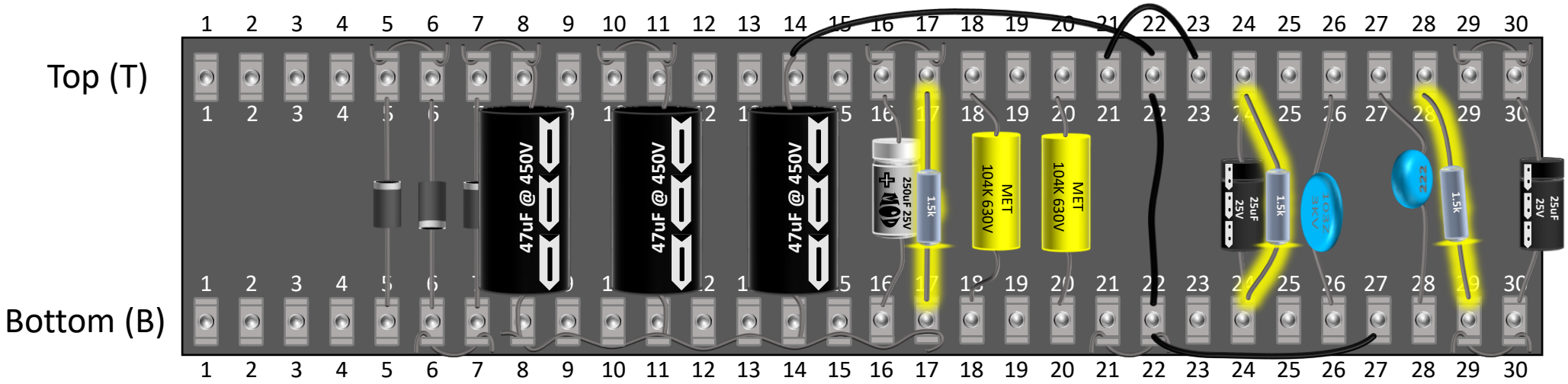
1.5k (1500Ω) Resistors (**Brown**, **Green**, **Black Brown**)

- ◯ T17 – B17 (R12)
- ◯ T24 – B24 (R2)
- ◯ T28 – B29 (R5) ***Not the same row*** **Top row is 28, Bottom row is 29**

Example resistor only.
Stripes and body colors vary.

As the board becomes populated, these resistors must fit between, under, or on top of other parts.
Bend the legs of the resistors and other components, and wedge between parts to accommodate spacing.
100% verify that legs of resistors are not touching the legs of other components, except at the lug.

Resistors are not polarized. There is no Positive or Negative side. They can be installed either way.
The body color of these resistors may vary, depending on the manufacturer and tolerance.

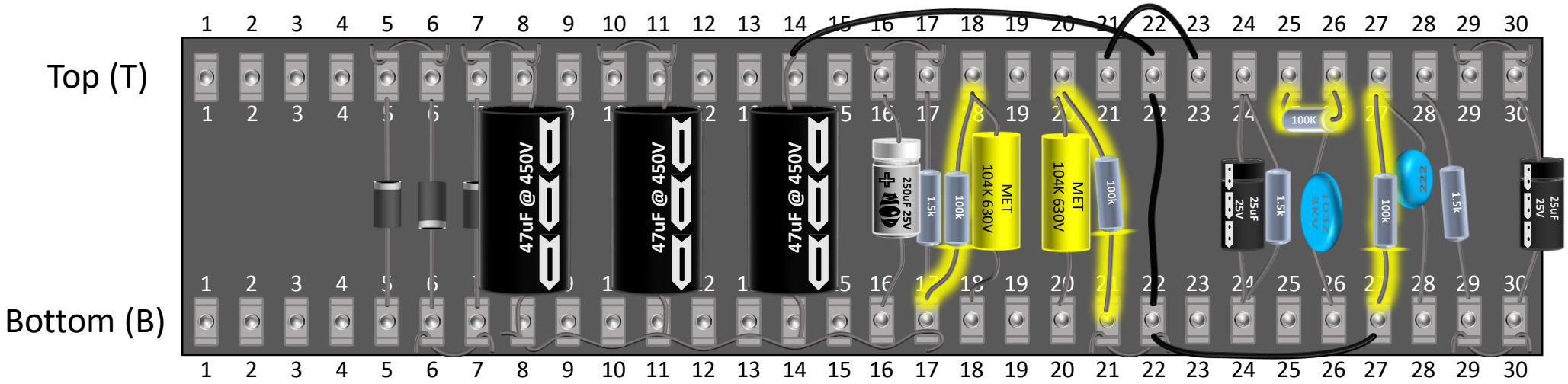


100k Resistors: (**Brown Black Black Orange**)

- ◯ T25 – T26 (R3) R3 is installed horizontally:
- ◯ T27 – B27 (R6)
- ◯ T20 – B21 (R14) ***Not the same row*** **Top row is 20, Bottom row is 21**
- ◯ T18 – B17 (R13) ***Not the same row*** **Top row is 18, Bottom row is 17**

Resistors are not polarized. There is no Positive or Negative side. They can be installed either way.
The body color of these resistors may vary, depending on the manufacturer and tolerance.

As the board becomes populated, these resistors must fit between, under, or on top of other parts.
Bend the legs of the resistors and other components, and wedge between parts to accommodate spacing.
100% verify that legs of resistors are not touching the legs of other components, except at the lug.



2.2 MEG Resistors: (**Red Red Black Yellow**)

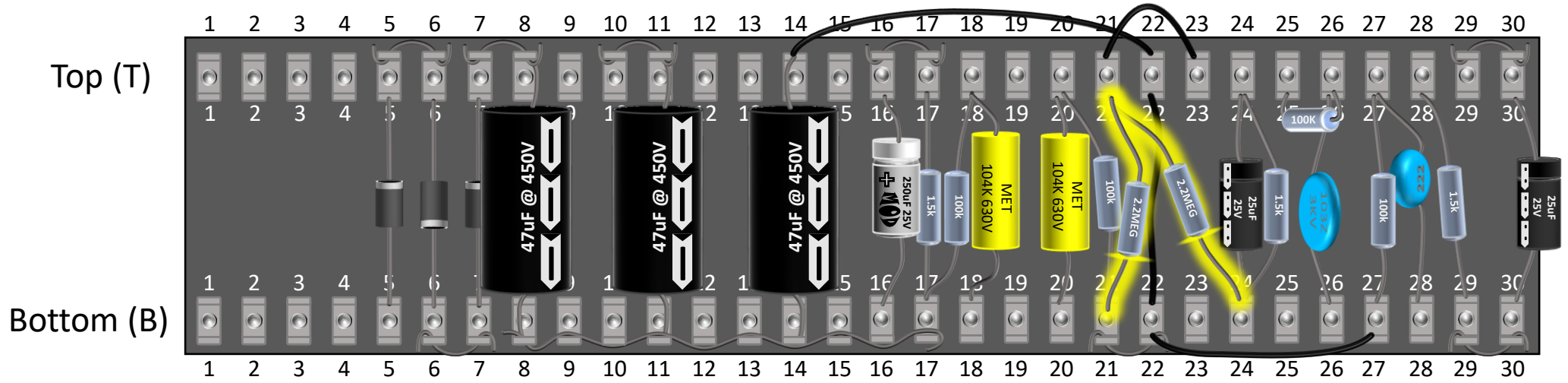
◯ T21 – B21 (R10)

◯ T21 – B24 (R11) ***Not the same row*** **Top row is 20, Bottom row is 21**

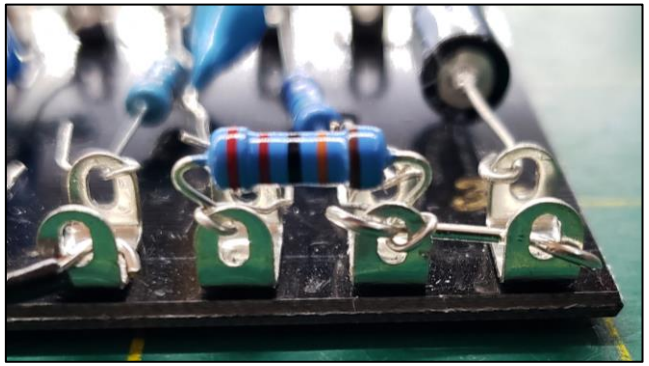
NOTE: R11 must be diagonal under row 23, to pass under a part installed later

Resistors are not polarized. There is no Positive or Negative side. They can be installed either way.
The body color of these resistors may vary, depending on the manufacturer and tolerance.

As the board becomes populated, these resistors must fit between, under, or on top of other parts.
Bend the legs of the resistors and other components, and wedge between parts to accommodate spacing.
100% verify that legs of resistors are not touching the legs of other components, except at the lug.



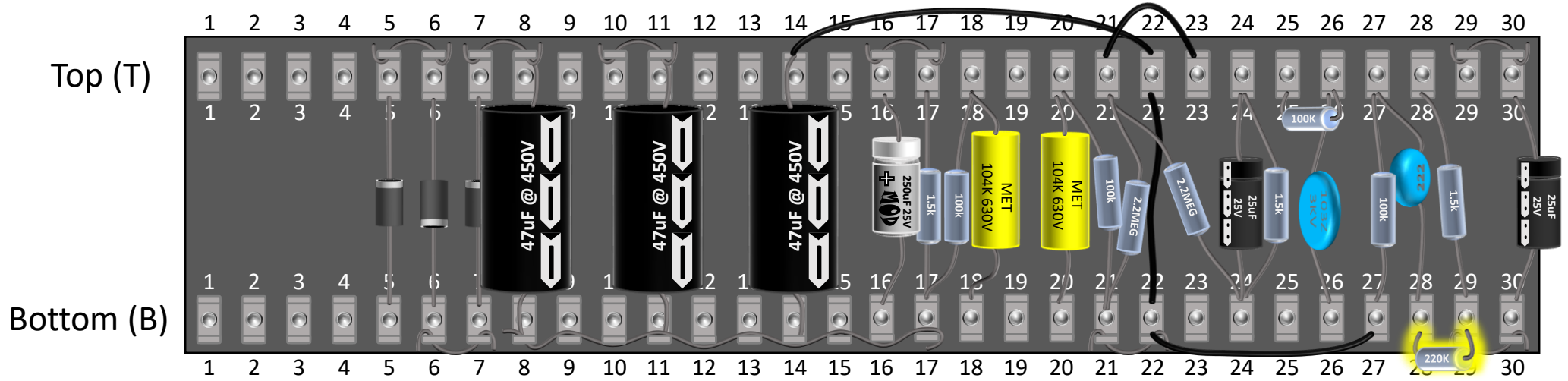
220k Resistor: (**Red Red Black Orange**)



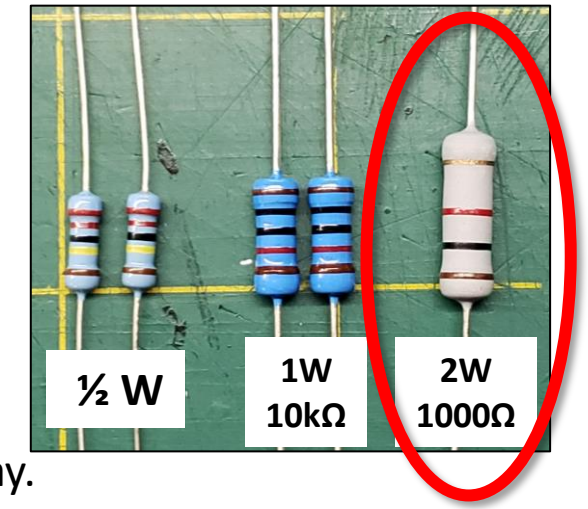
◯ B28 – B29 (R7) R7 is horizontal as shown:

Resistors are not polarized. There is no Positive or Negative side. They can be installed either way.
The body color of these resistors may vary, depending on the manufacturer and tolerance.

As the board becomes populated, these resistors must fit between, under, or on top of other parts.
Bend the legs of the resistors and other components, and wedge between parts to accommodate spacing.
100% verify that legs of resistors are not touching the legs of other components, except at the lug.



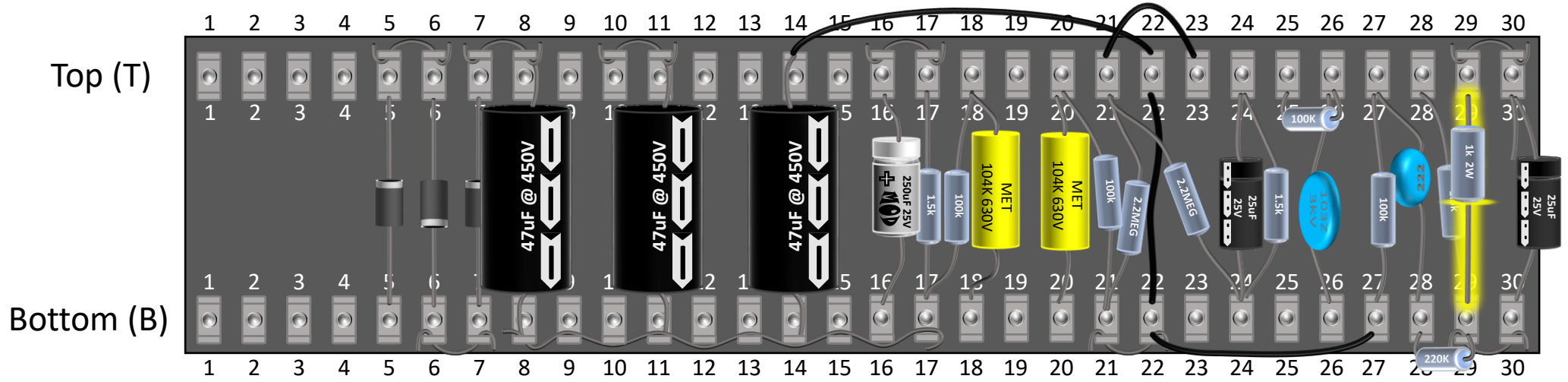
1k (1000 Ω) 2-Watt Resistor: (Gray Body, **Brown Black Red**)



◯ T29 – B29 (R8) R8 is a **2-Watt** resistor. *It is larger than the others:*

Resistors are not polarized. There is no Positive or Negative side. They can be installed either way.
The body color of these resistors may vary, depending on the manufacturer and tolerance. (Blue = 1% tolerance)

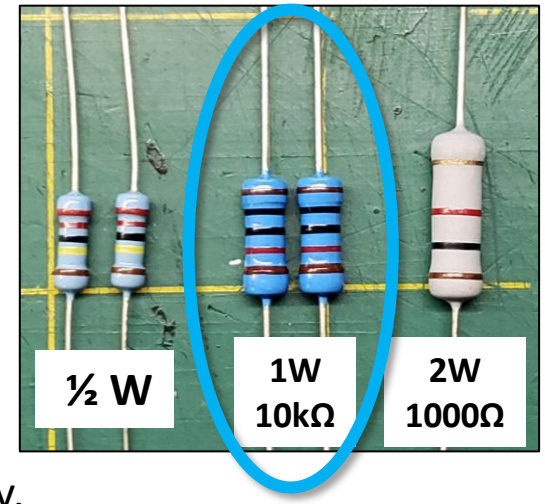
As the board becomes populated, these resistors must fit between, under, or on top of other parts.
Bend the legs of the resistors and other components, and wedge between parts to accommodate spacing.
100% verify that legs of resistors are not touching the legs of other components, except at the lug.



10k, 1-Watt Resistors: (**Brown Black, Black Red**)

◯ T11 – T14 (R9) is a **1-Watt** resistor. (Connects across the two big capacitors.)

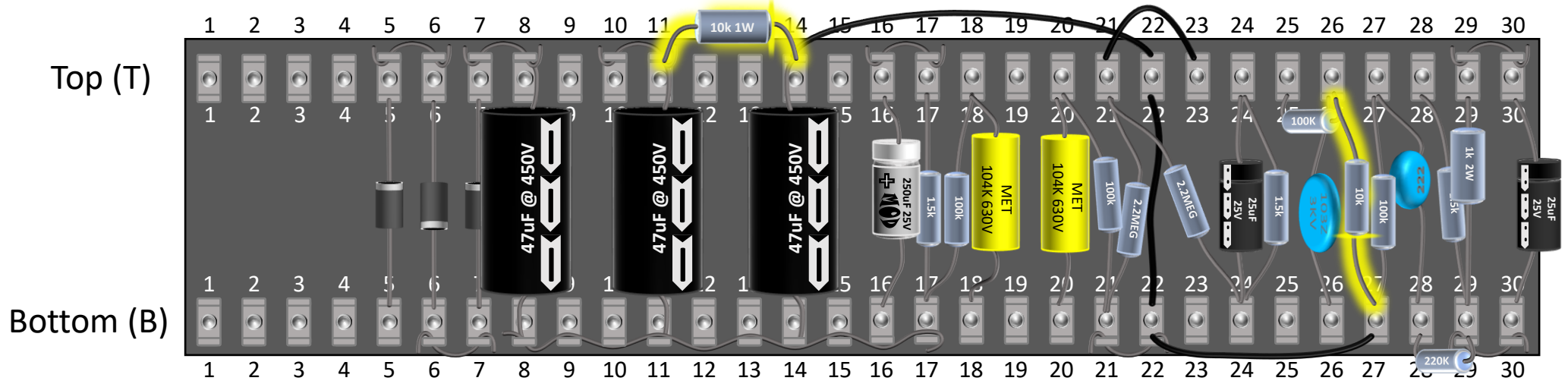
R9 is larger than the others, but smaller than the 2-Watt resistor.



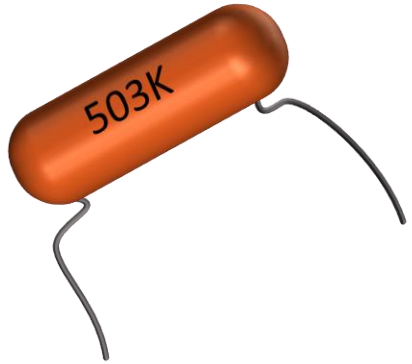
◯ T26 – B27 (R4) ***Not the same row.*** **Top row is 26, Bottom row is 27**

Resistors are not polarized. There is no Positive or Negative side. They can be installed either way.
The body color of these resistors may vary, depending on the manufacturer and tolerance.

As the board becomes populated, these resistors must fit between, under, or on top of other parts.
Bend the legs of the resistors and other components, and wedge between parts to accommodate spacing.
100% verify that legs of resistors are not touching the legs of other components, except at the lug.

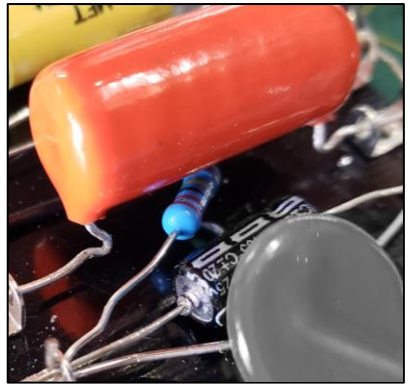


0.05µF, 400V Capacitor:
◯ T23 – B23 (C8)

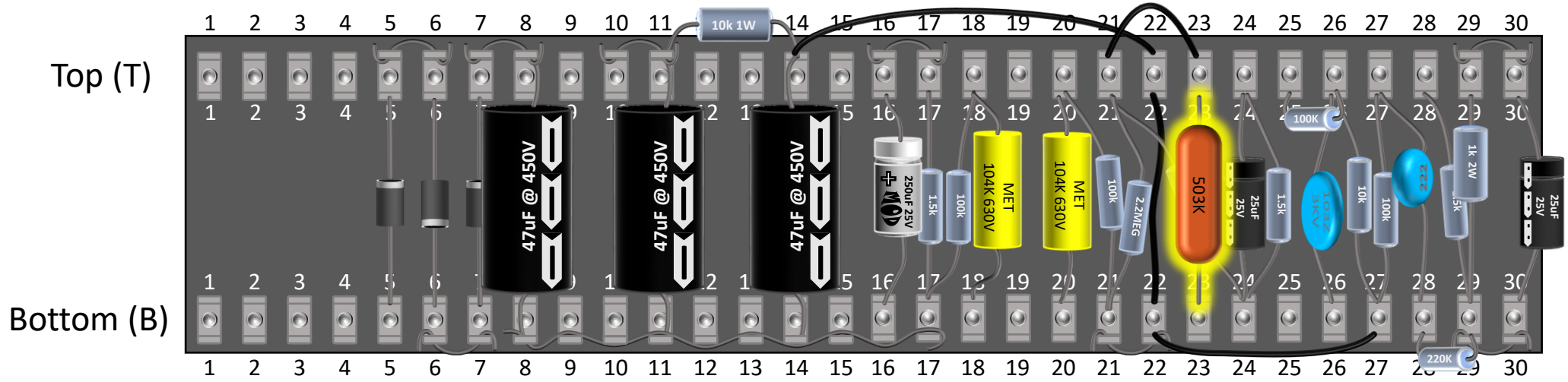


This 0.05µF 400V capacitor is not polarized. There is no Positive or Negative side. It can be installed either way.

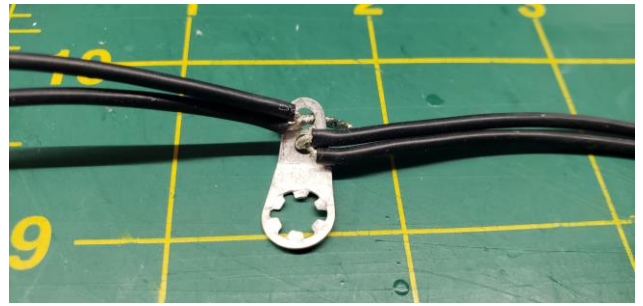
The capacitor must pass over the 2.2 MEG diagonal resistor, without touching the legs of that resistor.



Color, shape and text on this capacitor may vary, depending on manufacturer.

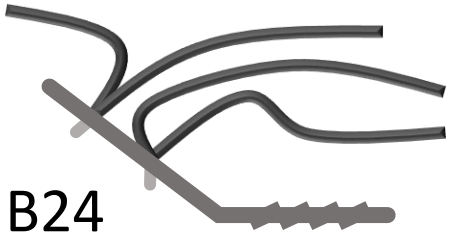


Star Grounding Lug

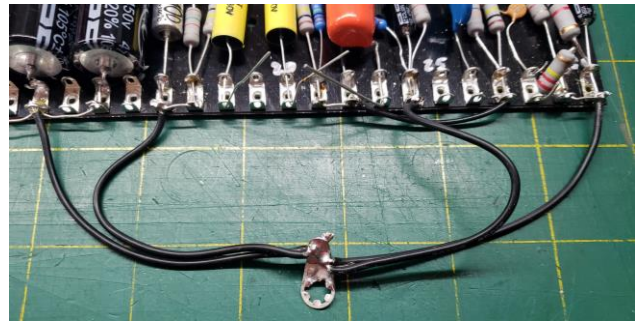


Solder all four black wires to a single ground lug. It will look sort of like an octopus with 4 legs.

Wires enter from the top side of the lug.



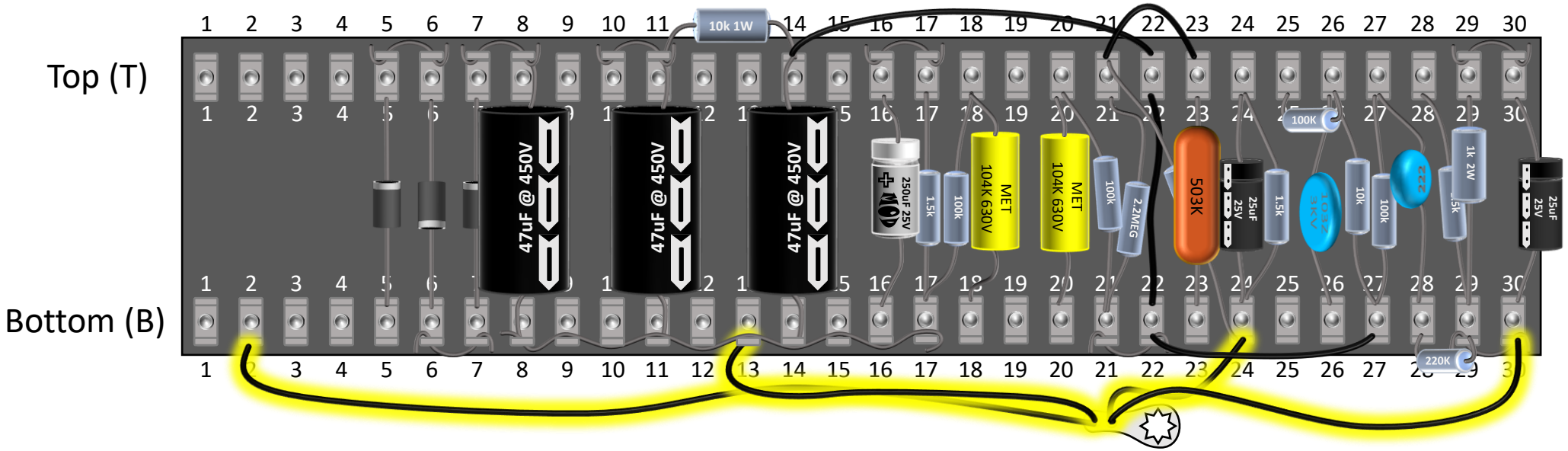
Side View



◯ *Solder* the longest wire to B2

◯ *Solder* the remaining 3 wires to B30, B13*, and B24

*** NOTE: The wire to B13 can go to any of the "weaved" ground wire terminals. Just make sure you add solder to the weaved-through wire on the terminal as well!**

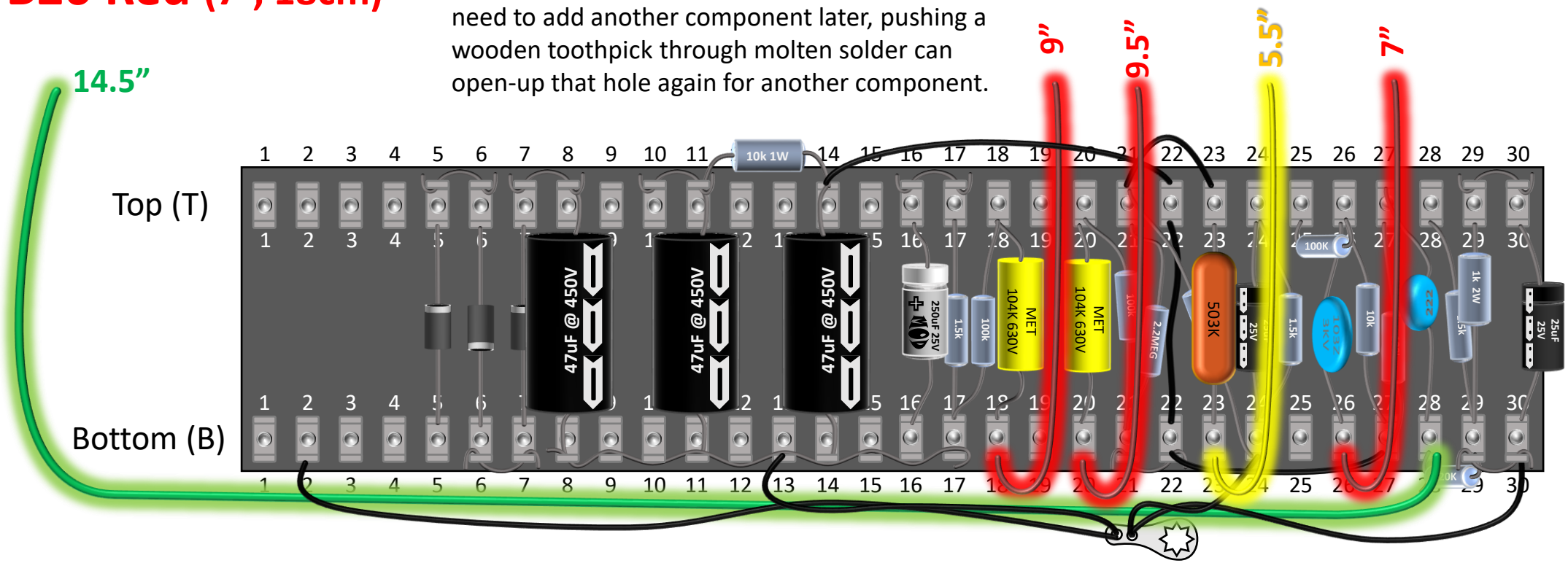


Bottom Row Wiring on Terminal Board

Solder these 5 long wires to the bottom row of the terminal board:

- **B18 Red (9”, 23cm)**
- **B20 Red (9.5”, 24cm)**
- **B26 Red (7”, 18cm)**
- **B28 Green (14.5”, 37cm)**
- **B23 Yellow (5.5 inch = 14 cm)**

TIP: If you accidentally solder a terminal and need to add another component later, pushing a wooden toothpick through molten solder can open-up that hole again for another component.



End of Hour 2

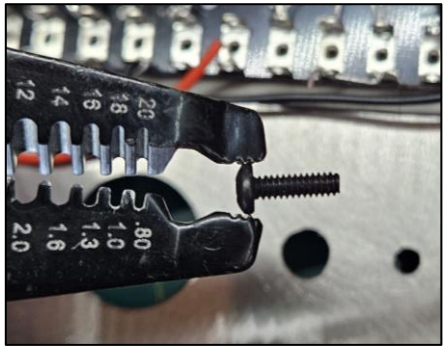
- - - -

Start of Hour 3

Install the Terminal Board & Insulator

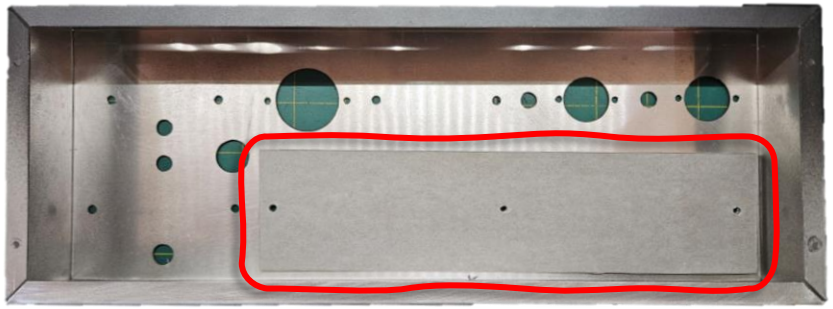
- Add the gray insulator and the terminal board into the enclosure.
  - Align the holes in the gray insulator, the terminal board, and the enclosure
  - Insert the black bolts from the inside
  - Secure the small silver K-nuts from outside the enclosure.
  - ***Avoid pinning wires underneath the board.***

K-Nut

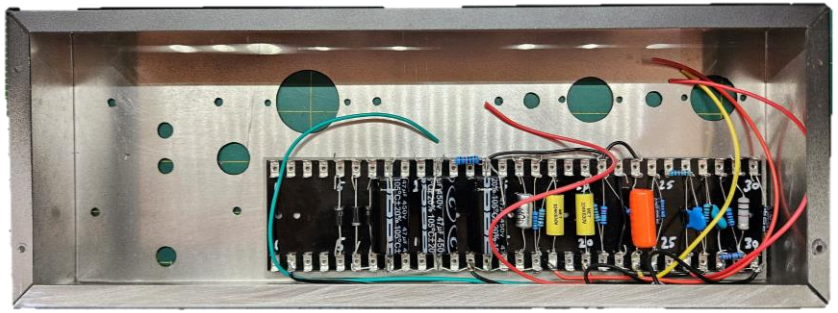


The tip of wire strippers have a jaw clamp to hold the bolts

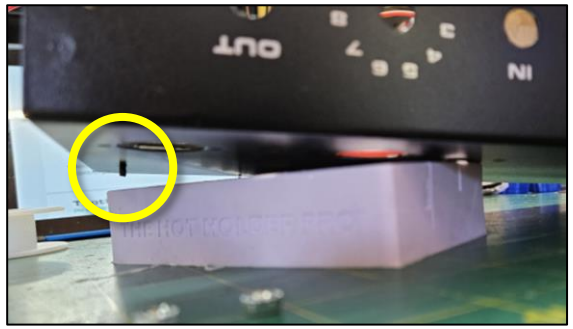
- **100% verify that none of the bare component legs on the terminal board touch the bolts that hold the terminal board to the chassis.**
- Bolt the Star-Ground Lug to the hole in the chassis side, opposite the control panel. Bolt head on the outside, K-nut *inside* on the ground lug.



1 Gray insulator



2 Terminal Board

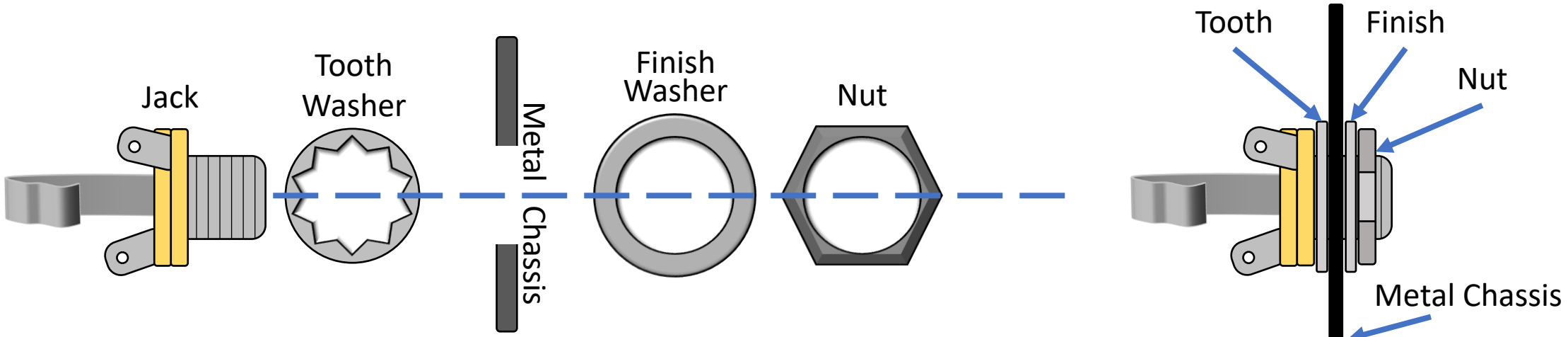


Raising the enclosure off the bench can help with bolt installation

Tooth Washers on Jacks & Pots

(No assembly on this page, just advice.)

- Ground connections are made through metal-to-metal contact at the pots and jacks.
- Internal-Tooth washers dig-in to the metal chassis to make a ground connection
- Washers and nuts are “stacked” on jacks, pots and switches as shown:



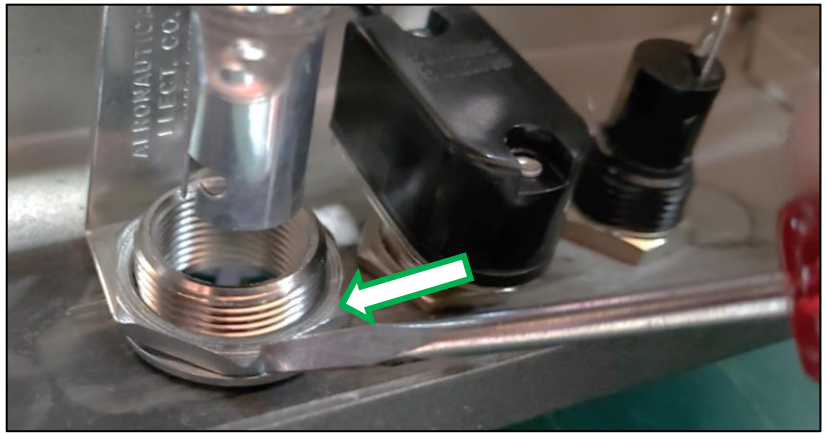
Tooth washer is always touching the chassis on the inside.
Smooth “Finish” washer is always on the outside, under the nut.

Assemble & Wire the Control Panel

- Install the Power Switch and the Fuse Holder into the chassis

- On the lamp base, make 3 small bends in the ring. This will help secure the lamp base to the chassis.

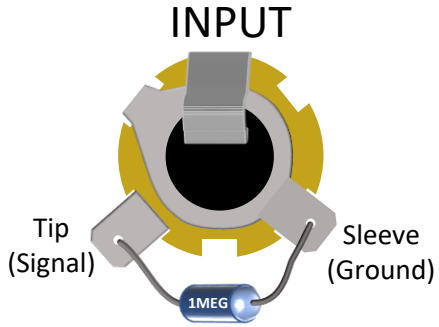
- Install the lamp holder into the chassis and tighten the nut. *This is difficult.* Have patience.
  Use the tip of a screwdriver to push the corners of the large nut until tight.



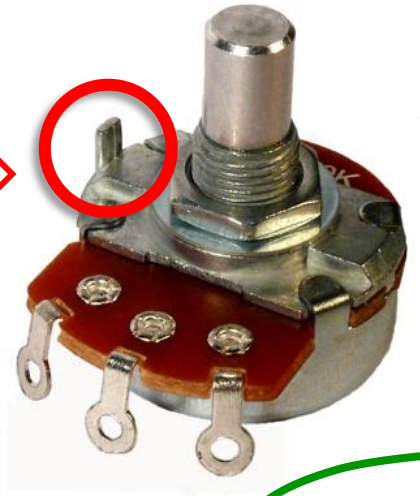
It may help to install the red jewel light on the outside to hold with your fingers.

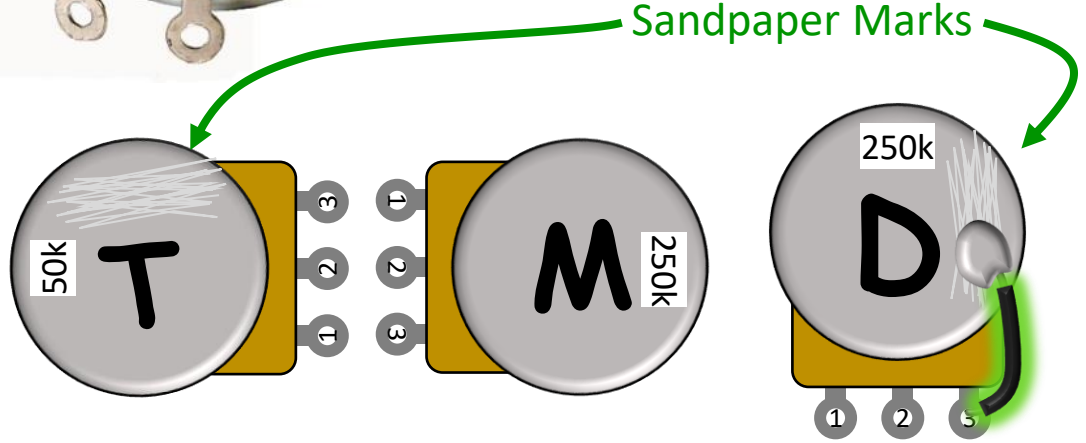
Assemble & Wire the Control Panel

- Add the 1Meg resistor through the holes in the INPUT jack lugs
  - **Do not solder the 1Meg resistor yet**



- Break-off the tabs from all pots.
- Mark the 50K pot “T” for TONE
- Mark one 250k Pot “M” for MIX and the other “D” for DWELL.
- ***Solder*** the ¾” solid jumper between pin 3 of Pot “D” and the pot body.
  - It helps to use sandpaper to shine-up the pot body where you will solder to it.

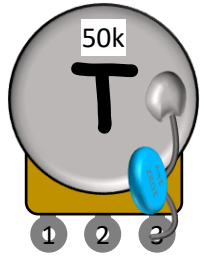




You will need at least a 40W, 750° iron to heat and solder to the DWELL Pot case.

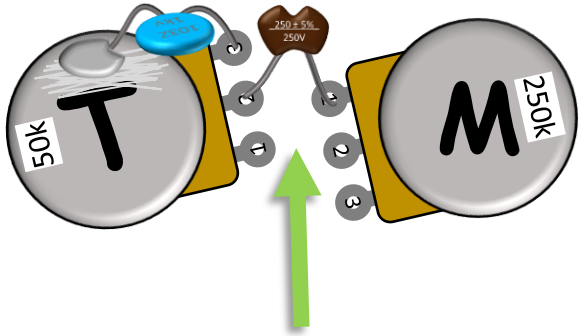
Assemble & Wire the Control Panel

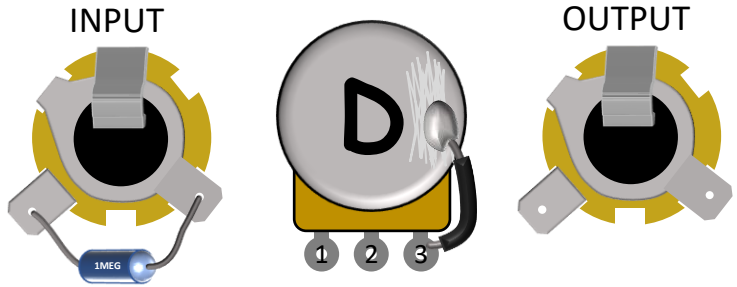
- Solder C12 **0.01uF (SMALL "103", 1KV)** onto the 50k TONE ("T") Pot between Pin 3 and the pot body.
  - ***You will need at least a 40W, 750° iron to heat and solder to the Tone Pot case.***



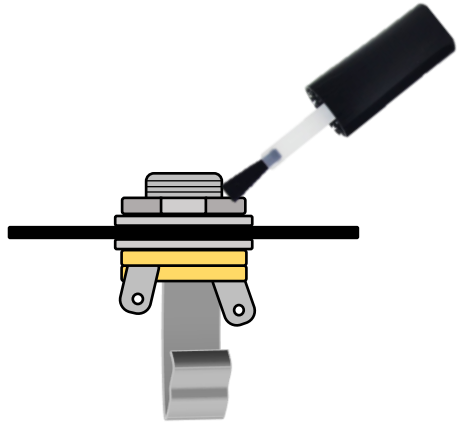
- Install all 3 pots into the enclosure. The lugs of T & M face each other:

Rotate pots slightly offset so TONE Pin 2 and MIX Pin 1 line-up, and the legs of the capacitor go in easily. You can also gently twist the lugs on the pots as needed.





- Install C13 ("250") between TONE Pin 2 and MIX pin 1



- Secure all nuts on the outside with a dab of nail polish.

End of Hour 3

- - - -

Start of Hour 4

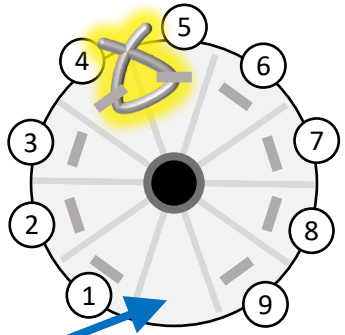
Installing the Tube Sockets

1

Slightly bend-out the pins on the 9-pin tube sockets.

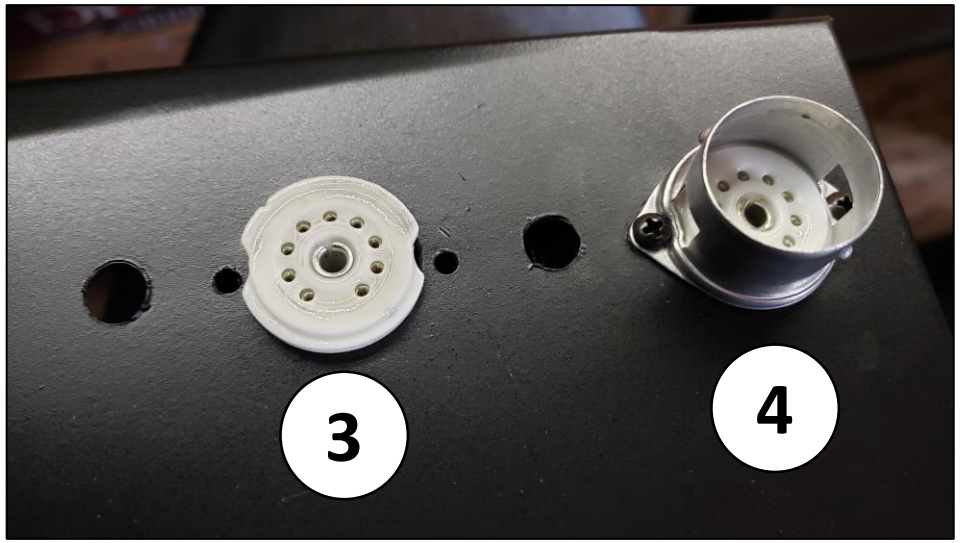
2

Jumper pins 4 and 5 on both 9-pin sockets. ***Do not solder yet!***

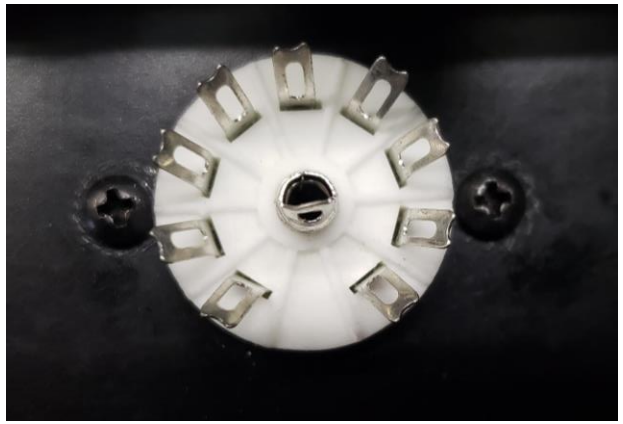


The 9-pin sockets have an empty space at the bottom:

From the outside, install the socket (3), then cover with the tube shield retainers (4).



It can be easier to install the bolts from inside the enclosure, and thread the K-Nuts from the outside of the enclosure. It is your choice.

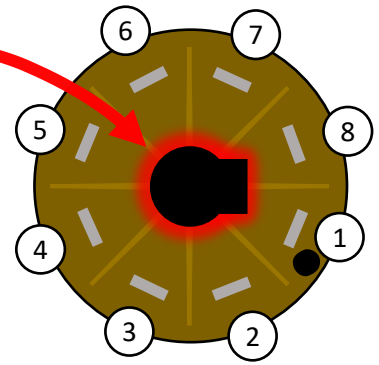


Bolts installed from the Inside, Nuts on the Outside

Bolts installed from the Outside, nuts on the Inside

Install the Hardware

- Orient and install all 3 Tube Sockets with black #4 bolts and K-Nuts
  - ***IMPORTANT!*** *The 8-Pin Octal Socket has a keyway that "points" to the RIGHT, toward the other tube sockets.*
  - Pin 1 of the 6K6 socket has a black paint dot next to it.

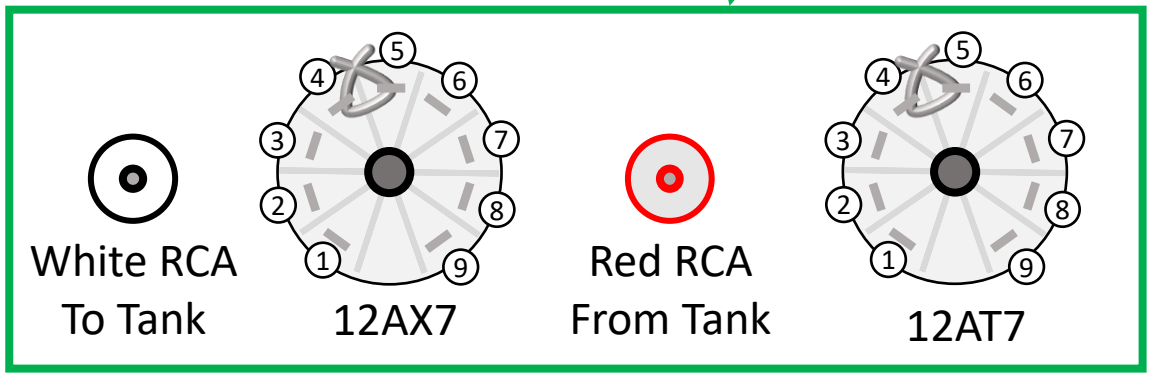


6K6

- Install the RCA Jacks Red/White, with tooth washers.
  - RCA Jacks may be Red & Black, depending on manufacturer
    - The **Red** RCA Jack is installed between the two 9-pin tube jacks
    - The White Jack goes between the reverb transformer and the 12AX7
    - NOTE: ***Do not over-tighten.*** It is possible to strip the threads on the RCA Jacks!

Use the plastic "Turn Ups" in the kit to tighten the nuts.
They are marked for each size:

- **RCA** (The gold-plated RCA jacks)
- **JACK** (¼" Input/output jacks)
- **POT** (Potentiometer Knobs)
- **SWITCH** (Power Switch)

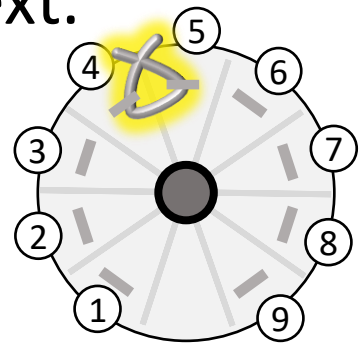


Wire the Heaters & Lamp

Use needle-nose pliers to form jumpers

Heaters and Lamp get Twisted White Wire Pairs.

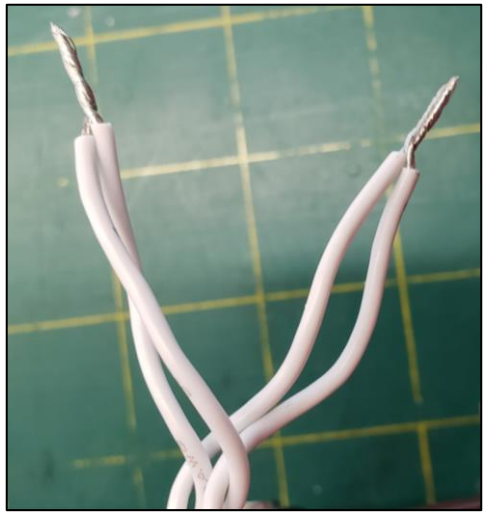
They “daisy-chain” from one tube socket to the next.



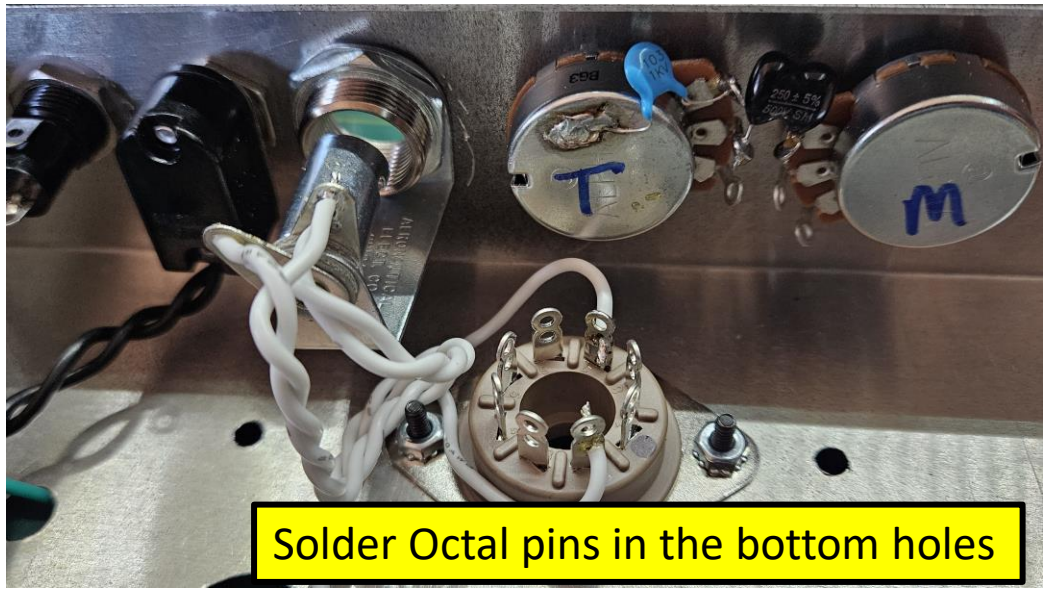
To fit 2 wires into each tube pin,
twist the pairs together before installing them,
as shown here and on the next page:

See the next page for images and diagrams

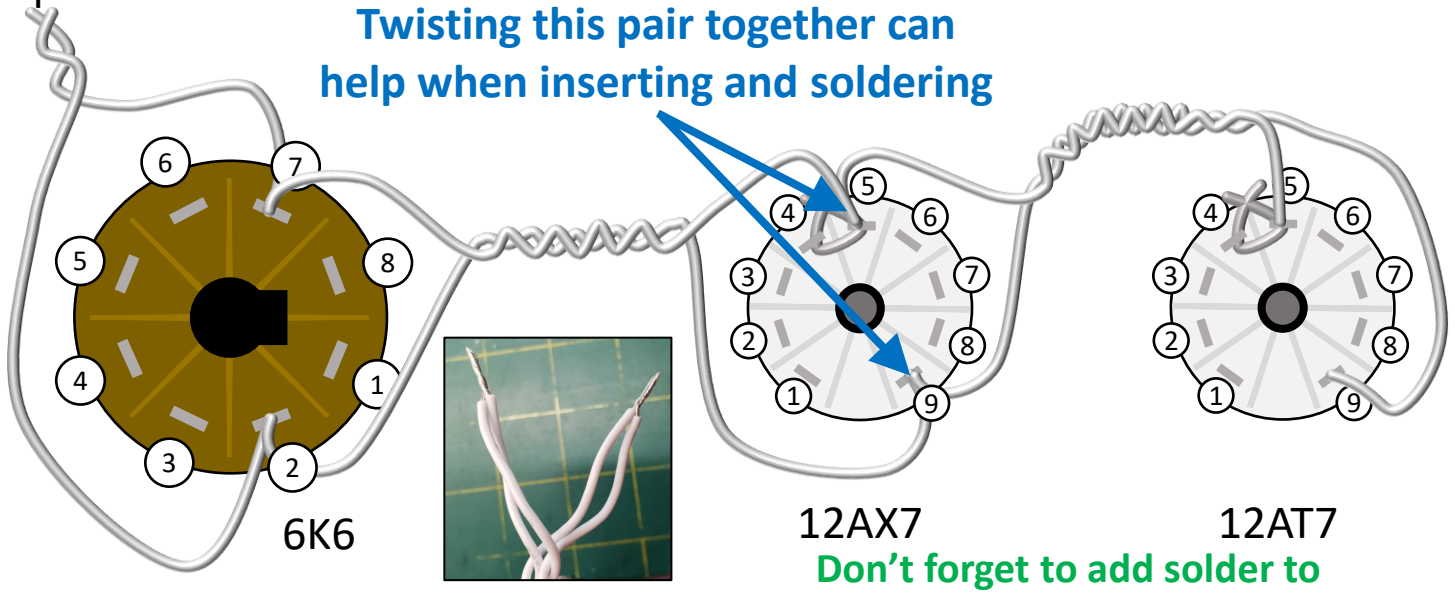
- **Solder these white wires to the sockets. 2 wires in each pin.**
- B1 and B3 go to Lamp + and Lamp - (6 inch = 15 cm)
- Lamp +/- goes to 6K6 pins 2 and 7 (5 inch = 13 cm)
- 6K6 Pins 2 & 7 go to 12AX7 Pins 5 and 9 (8.5 inch = 21.5 cm)
- 12AX7 Pins 9 & 5 go to 12AT7 Pins 5 and 9 (6 inch = 15 cm)
- **Don’t forget to add solder to *BOTH* Pin 4 *and* 5!!**



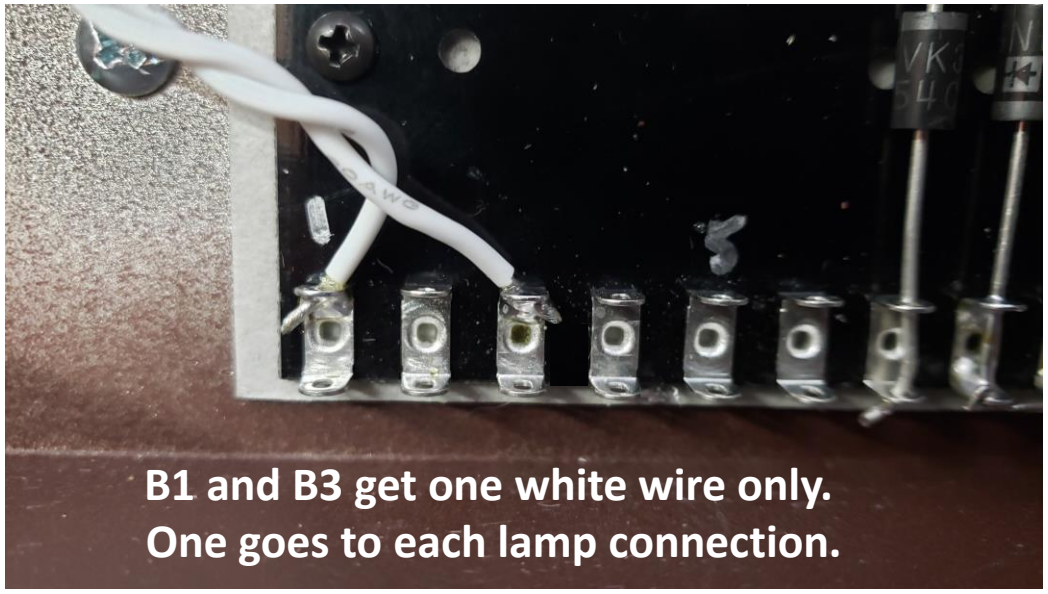
From Lamp

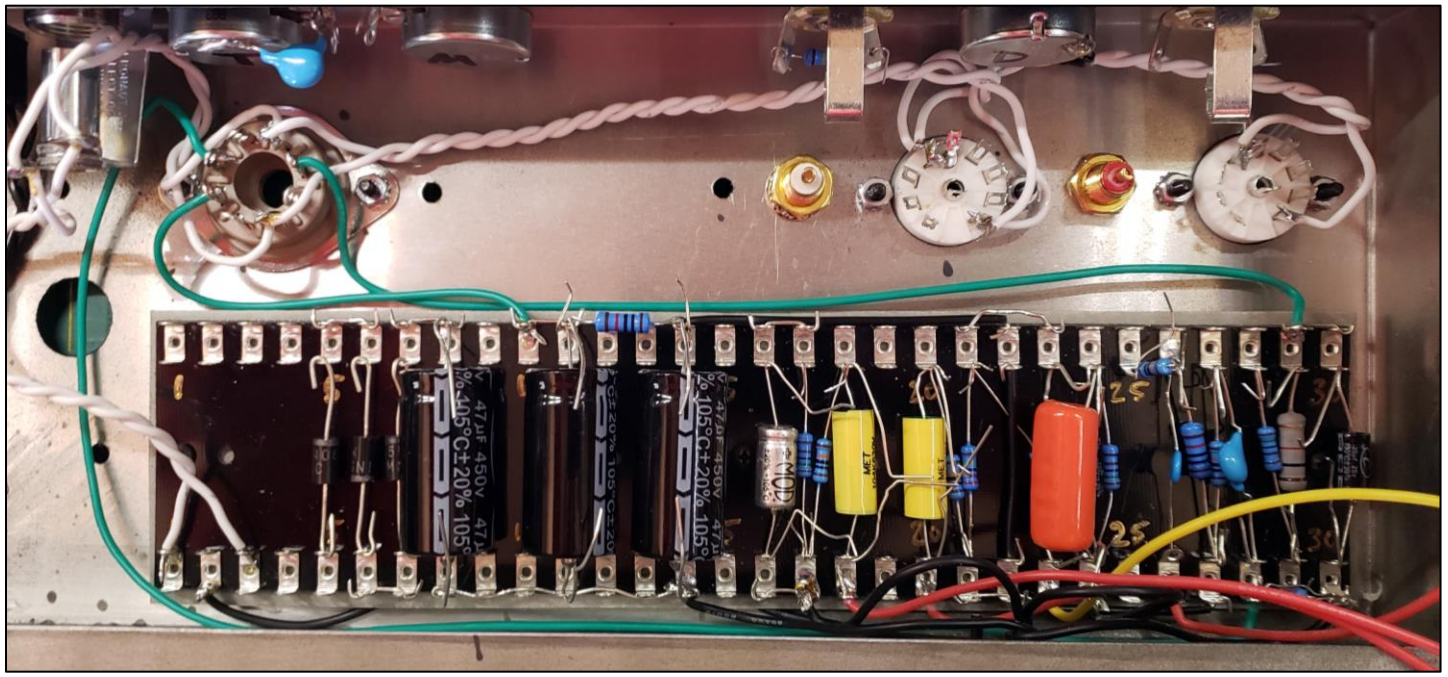


Twisting this pair together can help when inserting and soldering



Don't forget to add solder to ***BOTH*** Pins: 4 ***and*** 5!!





Verify With Your Meter

It's a good time to start using your meter to verify wired connections:

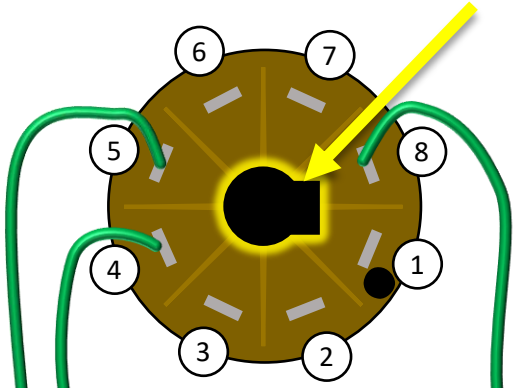
1. Set your meter to "beep" at *continuity.* Usually this symbol: 
2. Verify your meter beeps by touching the **red** and **black** leads together.
3. To verify wire continuity, touch **red** to one end, and **black** to the other.
   - For example, the jumper wire between T14 and T22
4. Wires are continuous ("continuity") when the meter beeps.
   - If your meter does not beep, set to OHMS ("Ω") and verify *zero* ohms.
5. Twisted pair wires that "daisy-chain" can be tested from one end all the way through the daisy-chain, to the other end.
   - For example, Terminal B1 will end at either Pin 4 or Pin 9 of the 12AT7 in the corner of the enclosure.
   - B3 will end on the *other* pin of the twisted pair at the 12AT7.

End of Hour 4

Start of Hour 5

Solder the 6K6 Octal Socket

Note the keyway "points" to the *right, towards the other tube sockets.*

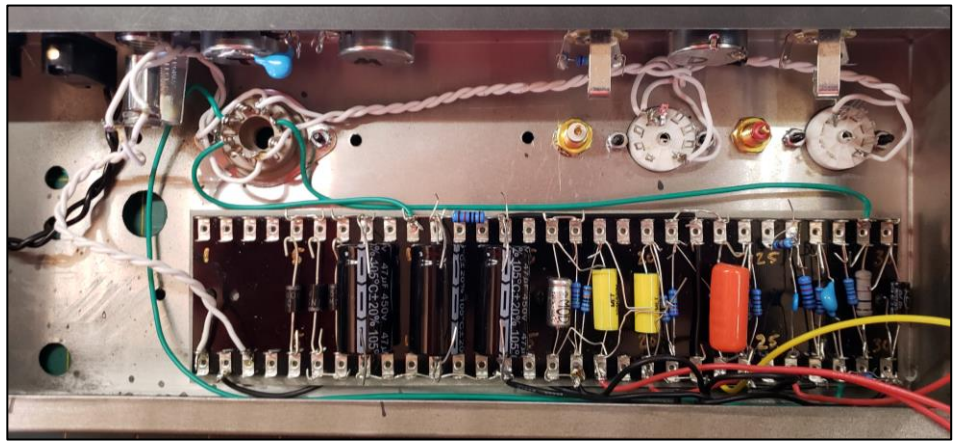


Solder these **Green Wires** to the Octal Socket:

- 14.5 inch (37 cm) wire from **Pin 5 to B28** (Already soldered to the board)
- 9.5 inch (24 cm) wire from **Pin 8 to T29**
- 4.5 inch (11.5 cm) **Pin 4 to T10**

4.5" Pin 4 to T10

9.5" Pin 8 to T29



14.5" Pin 5 to B28

Wires are cut to an appropriate length.
You may feel the need to shorten these wires to the exact length, but we suggest you do not.
If you make a mistake, you can't "un-cut" a wire.

Solder the 12AT7 Socket

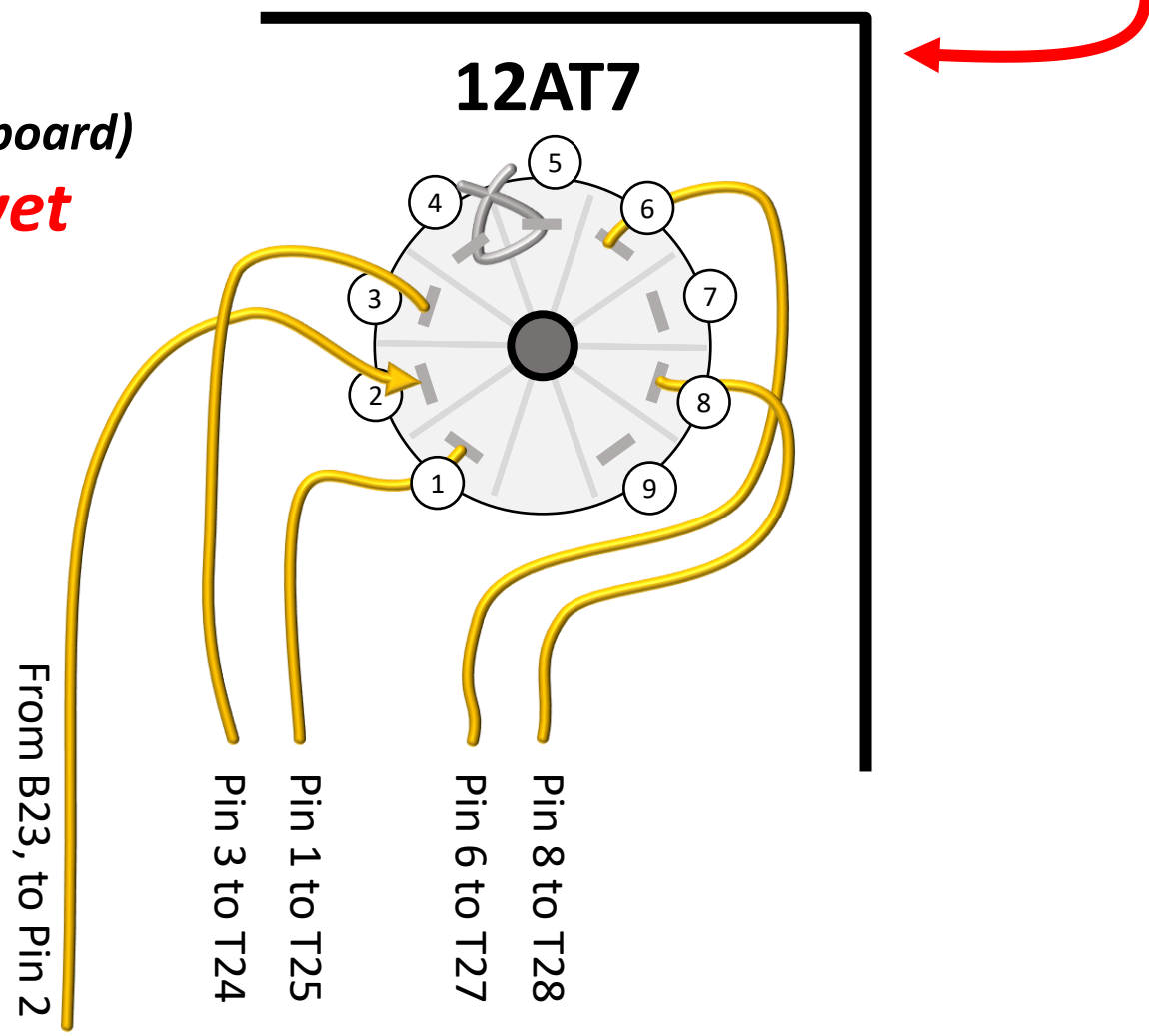
The 12**AT**7 is "***AT*** *the edge*" of the enclosure:

12AT7 Socket gets **Yellow Wires**

- **Pin 2 from B23** ***(Already wired to the terminal board)***
  →Insert into Pin 2, but do not solder yet
- **Pin 1 to T25** (3.5 inch = 9 cm)
- **Pin 3 to T24** (3.5 inch = 9 cm)
- **Pin 6 to T27** (3.5 inch = 9 cm)
- **Pin 8 to T28** (3.5 inch = 9 cm)

Begin to think about, and notice wire placement and layout.
Route wires over, under, or around other wires in the circuit.

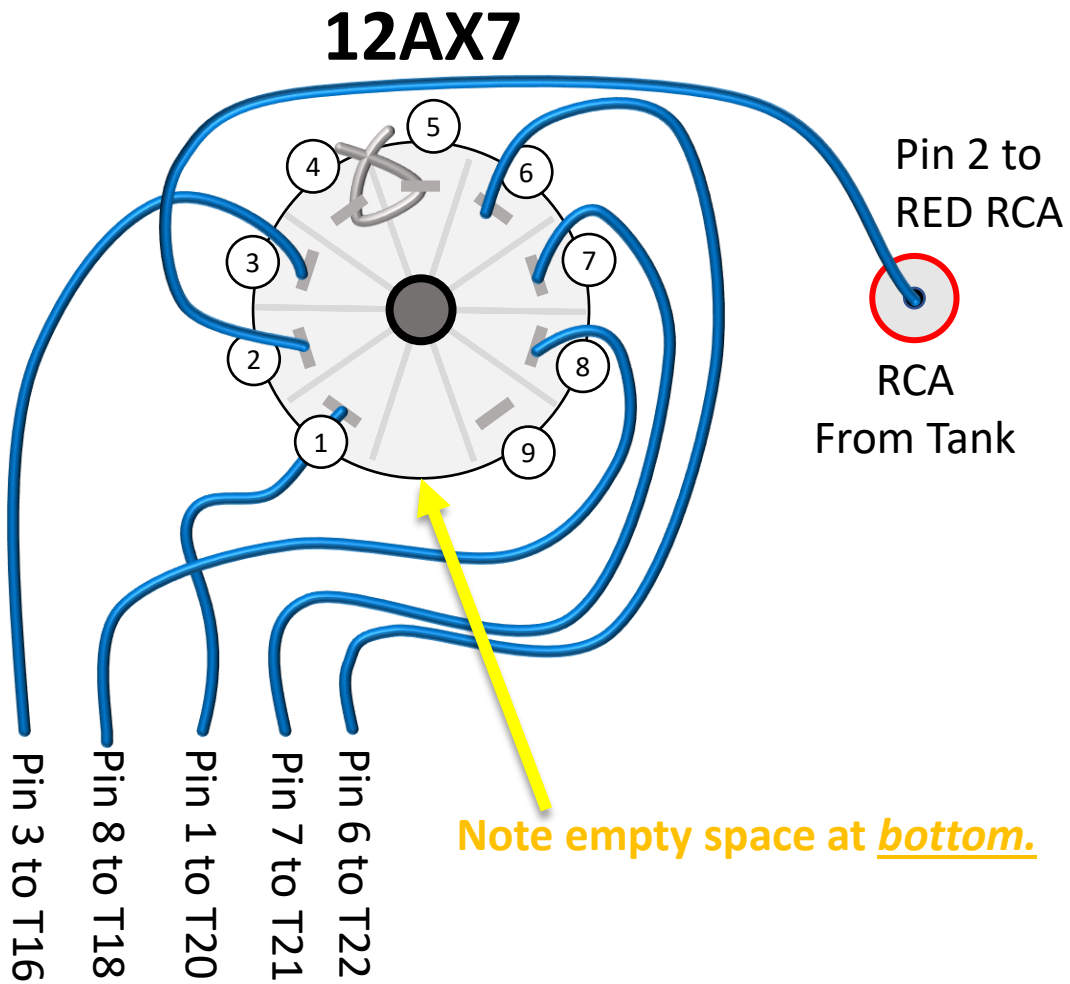
Wires are cut to an appropriate length. You may feel the need to shorten these wires to the exact length, but we suggest you do not. If you make a mistake, you can't "un-cut" a wire.



Solder the 12AX7 Socket

12AX7 Socket gets 3.5” (9 cm) **Blue Wires**

- **Pin 2 to the RED RCA “From Tank”**
- **Pin 1 to T20**
- **Pin 3 to T16**
- **Pin 6 to T22**
- **Pin 7 to T21**
- **Pin 8 to T18**



Wires are cut to an appropriate length. You may feel the need to shorten these wires to the exact length, but we suggest you do not. If you make a mistake, you can’t “un-cut” a wire.

End of Hour 5

- - - -

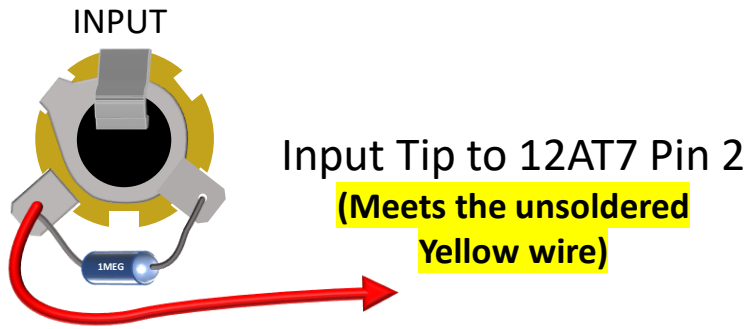
Start of Hour 6

Wire the Control Panel

- Solder the **Red** wire coming from B20 on the Terminal Board to **TONE** 1 (bottom pin) (9.5-inch (24 cm))
- Solder the **Red** wire coming from B18 on the Terminal Board to **MIX** 3 (bottom pin) (9-inch (23 cm))
- Trim capacitor legs and wire ends so they do not touch other pins, or the case of the pots

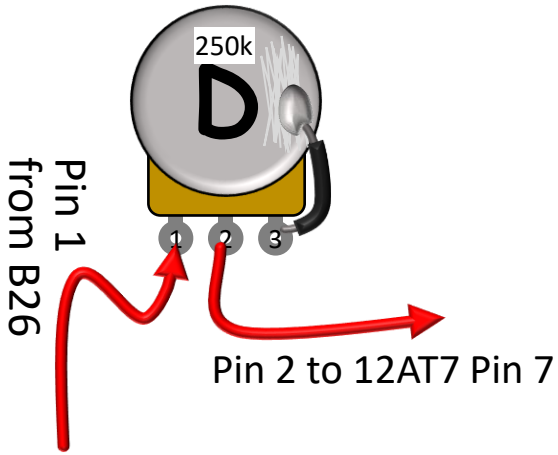
Wire the Control Panel (continued)

- On the Input Jack:
  - Solder a 5-inch (13cm) **Red** wire between the "Tip" lug and Pin 2 of the 12AT7 Tube
  - Solder both legs of the 1Meg resistor to the jack



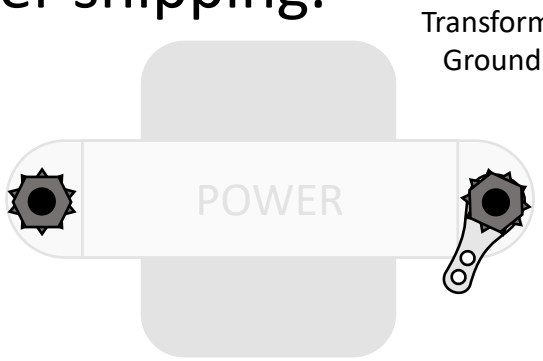
- On the Output Jack:
  - Solder the 8.5-inch (21.5cm) **Red** wire from **MIX** Pin 2 (Center), to the Output Jack "Tip" lug.
  - Route this wire over the top of the jacks and pins to the output jack.

- On the Dwell Pot:
  - Solder the **Red** wire coming from B26, to Pin 1 (Left)
  - Solder a 5-inch (13cm) **Red** wire between the Center Pin and the empty Pin 7 on the 12AT7.

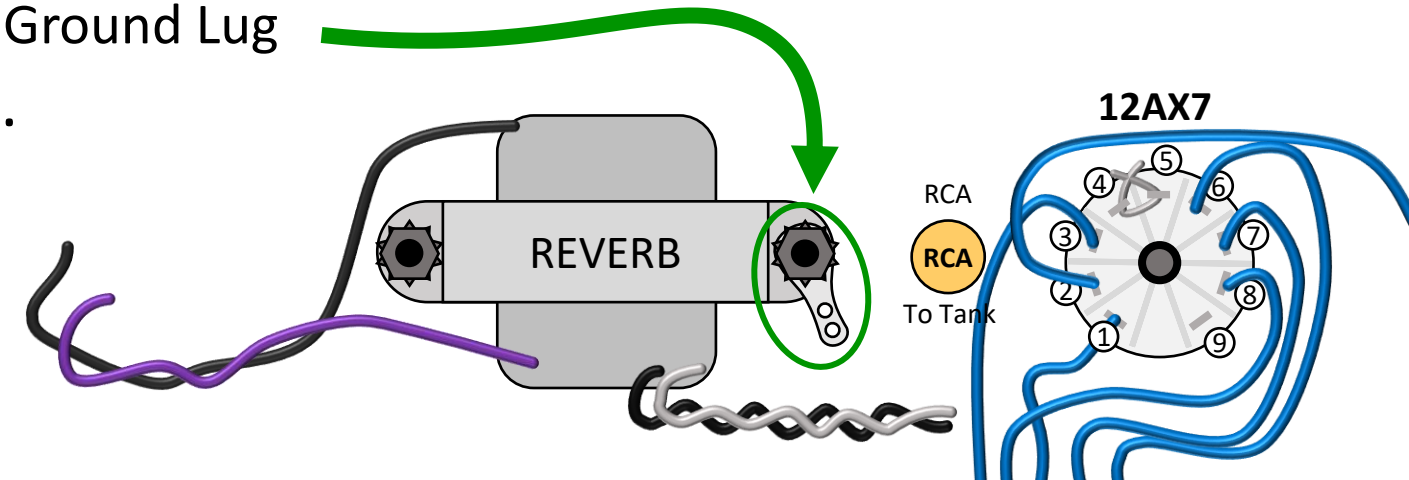


Install the Transformers

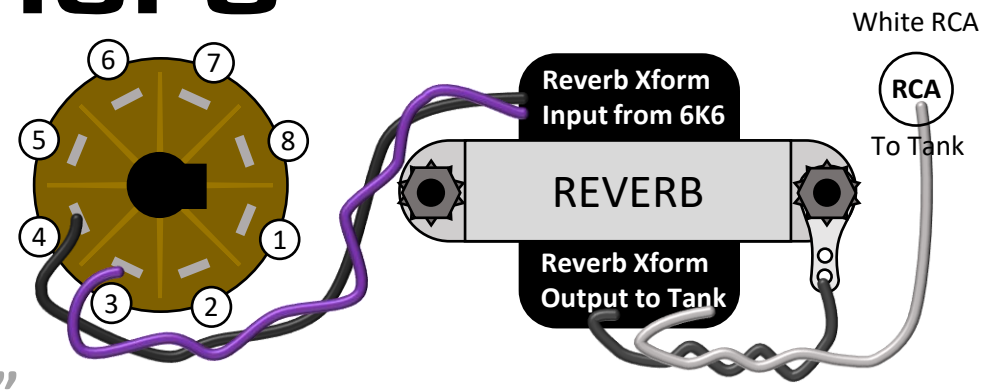
- Install the Grommets where the transformer wires go into the chassis.
- Transformer wires may need to be re-twisted tighter after shipping.
- Bolt the Power Transformer and Choke to the *outside*
  - Power Transformer gets a ground lug *inside* the enclosure, on the bolt nearest the Terminal Board.



- Route wires from the Power Transformer and Choke into the chassis, through the grommet
  - Green and Red wires go through the larger grommet near the bottom row of the Terminal Board
- Bolt the Reverb transformer to the *inside* of the enclosure
  - The bolt nearest the 12AX7 gets a Ground Lug
- Use Nail Polish to secure all nuts.

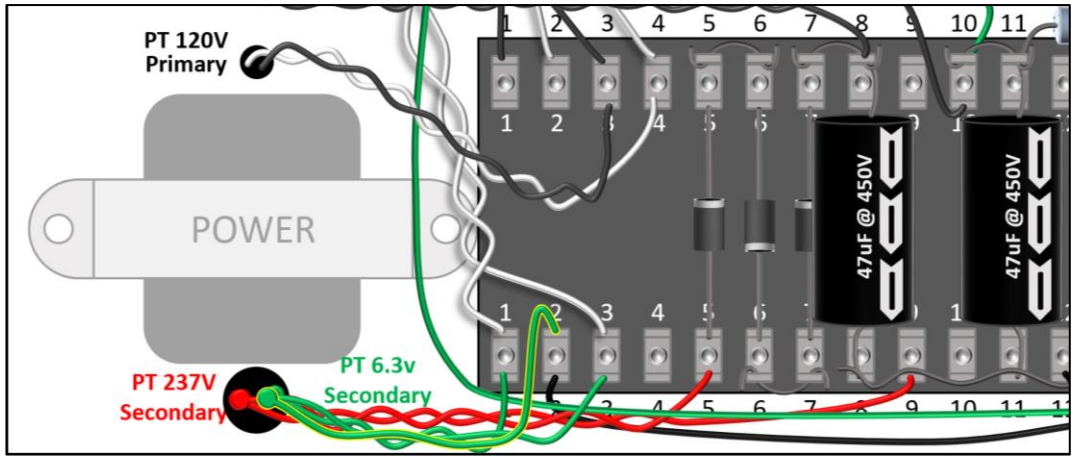


Wire the Transformers



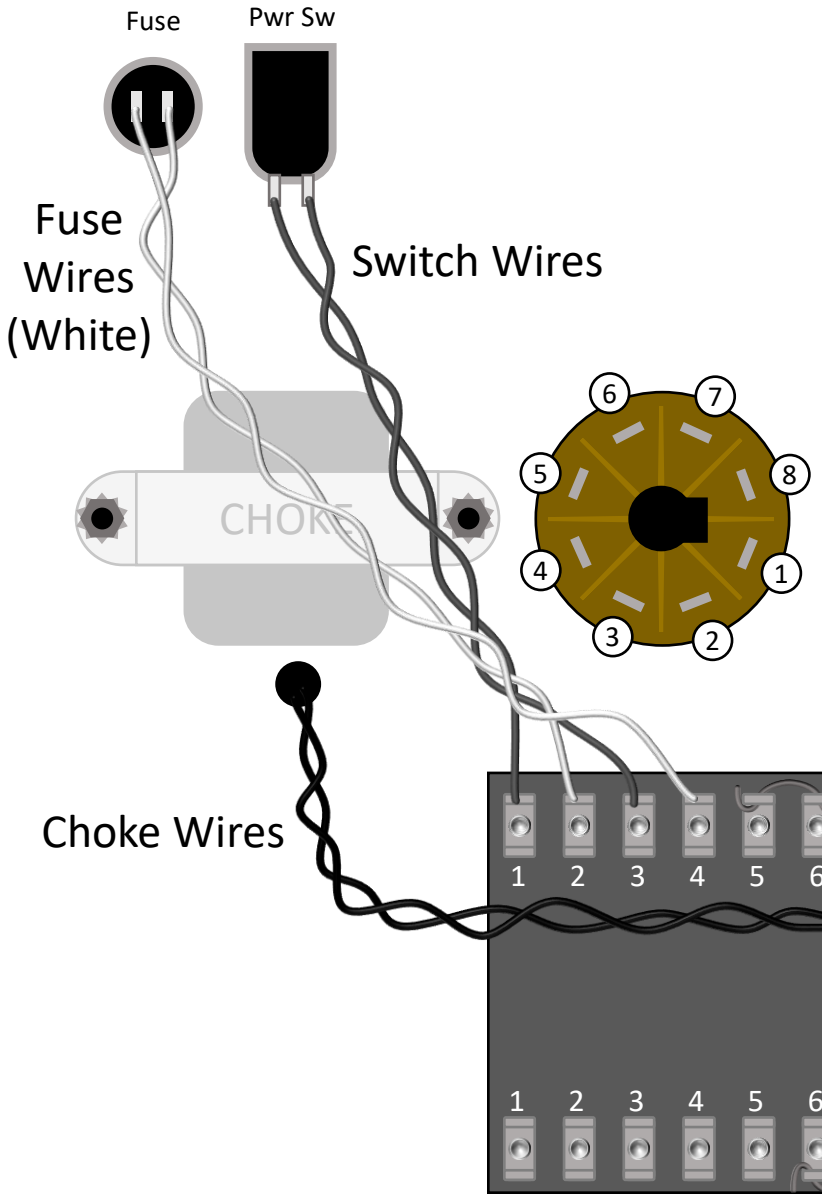
- Solder the Reverb Transformer wires:
  - **Primary (Purple) goes to 6K6 Pin 3.**
  - **Primary Common (Black) goes to 6K6 Pin 4**
  - **Secondary (gray) goes to the White RCA "To Tank."**
  - **Secondary Common (Black) to Ground Lug on the transformer bolt**

- Solder the 18AWG Power Transformer wires:
  - Primary: **Black to T3**, White to T4
  - 6.3V **Green & Green B1 & B3**, **Green/Yellow B2**
  - Secondary: **Red/Red to B5 & B9***

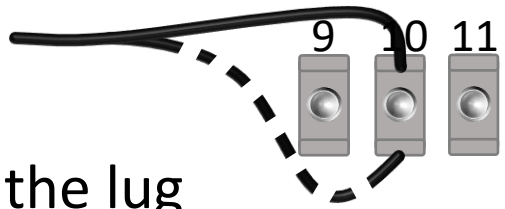


*** Red can go to B9, B10, or any of the "weaved" ground wire terminals. Just make sure you add solder to the weaved-through wire on the terminal as well!**

Wire the Choke, Fuse & Power Switch



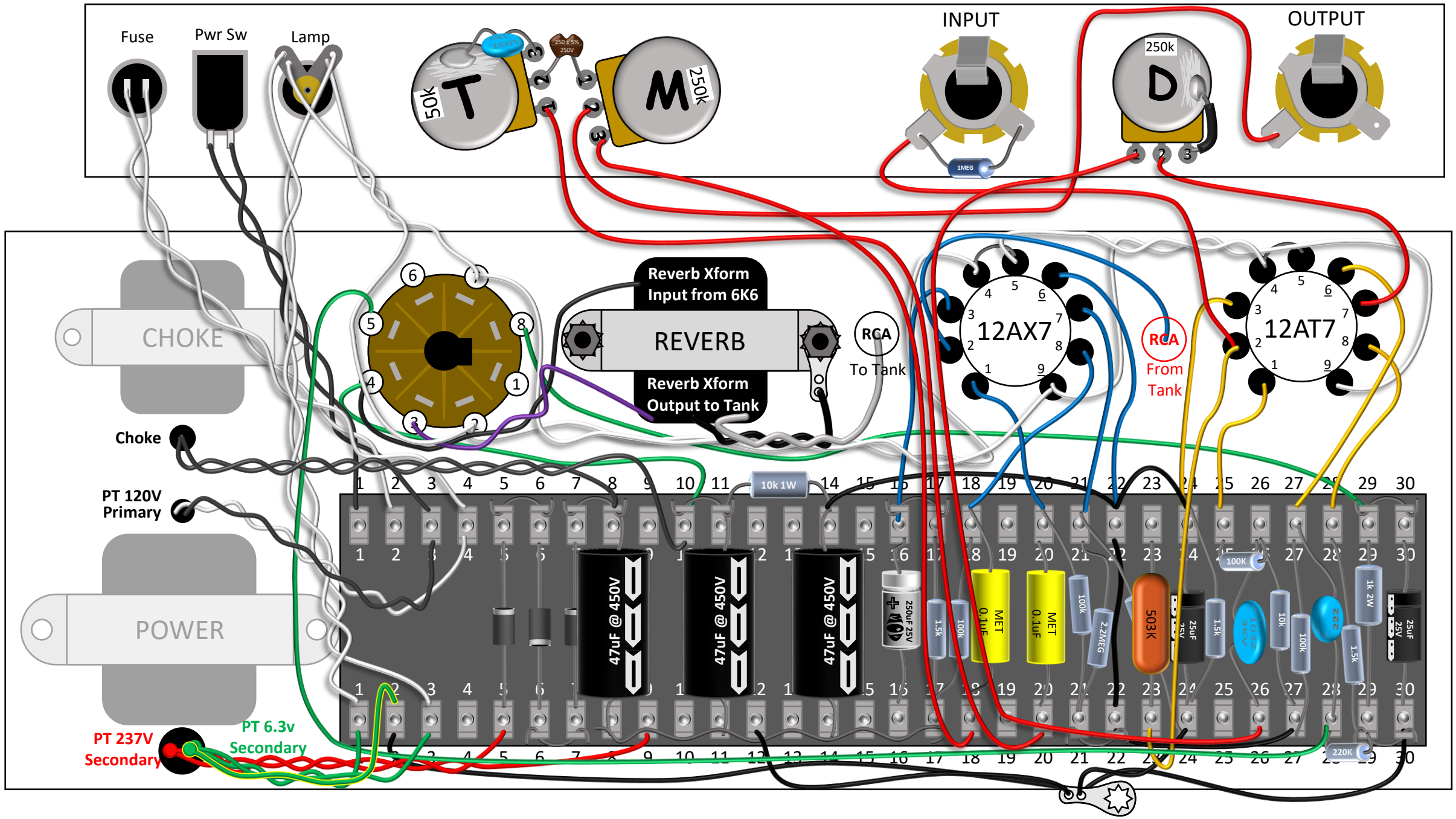
- Wire the Choke
  - Black/Black: T8 – T10
  - T10 wire can go to either side of the lug



- Wire the Fuse and Power Switch
  - 5” (13cm) Twisted WHITE pair from FUSE to T2 & T4
  - **Black** Power Switch wires to T1 and T3

These wires are non-polarized pairs.
It does not matter which wire of the pair goes to which terminal for that pair.

Example: Either white wire for the fuse can be soldered to either tab on the fuse, and to either T2 or T4 the terminal board.


Fuse
Pwr Sw
Lamp
50k
T
M
250k
INPUT
OUTPUT
250k
D
1MEG
CHOKE
POWER
Reverb Xform
Input from 6K6
REVERB
Reverb Xform
Output to Tank
RCA
To Tank
RCA
From
Tank
12AX7
12AT7
Choke
PT 120V
Primary
PT 237V
Secondary
PT 6.3v
Secondary
10k 1W
47uF @ 450V
47uF @ 450V
47uF @ 450V
250uF 25V
1.5k
100k
MET
0.1uF
MET
0.1uF
100k
2.2MEG
503K
25uF
25V
1.5k
100K
10k
100k
1.5k
1k 2W
25uF
25V
220K

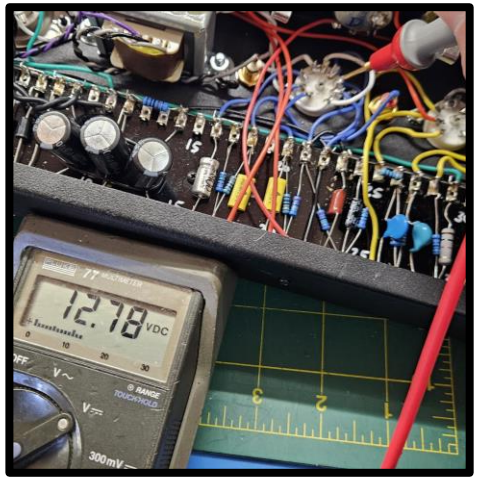
End of Hour 6
End of Electrical Assembly

- - - -

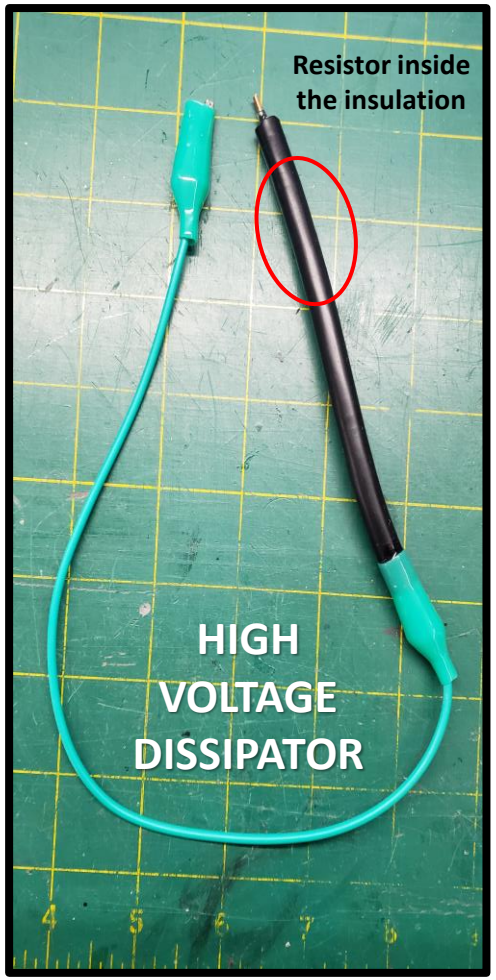
Next Step:
Inspection, Verification and Testing

Austin

Inspection, Verification and Testing

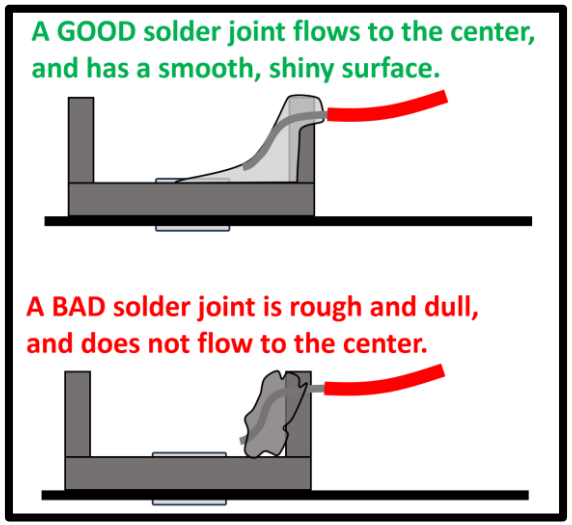


12AX7 Grid 2 Voltage
RED on **Pin 7 = 12.8V**



Tools Required:

- Magnification
- Multimeter
- Bent-Nose Pliers
- Soldering Iron
- Wire Strippers, 20 & 18 AWG
- Phillips & Slot screwdrivers



1. Clip the **black** lead of your meter to a transformer bolt on the enclosure.
2. Set your meter to "beep" at *continuity.* Usually this symbol: ⏚))
   - If your meter does not have a "beep" function, measure *Ohms.* Ω
   - All "beep" measurements here should measure resistance of less than 1 Ohm.