62'BRIT PLEX

45W AMPLIFIER KIT
ORIGINAL BRITISH CIRCUIT
INSTRUCTIONS

Finally, a hand-wired JTM45 circuit is now within reach.

stewmac
making guitars better

Contents

Iconic British tone is now in your hands

Your new StewMac ’62 Brit-Plex will be a blast to play through and even more fun to build.

This amp is favored by blues and rock guitarists for its rich, articulate clean tones and exceptional sustain: creamy, warm and a little crispy. Rich in harmonic feedback, this was the amp that started a rock and roll revolution.

This amp is an ICON

This is the JTM45 circuit, the very first circuit produced by Marshall and modeled after a 5F6A Fender Bassman. To keep the weight manageable, this amp was designed as a head to pair with a separate 4x12 speaker cabinet.

By the mid-60s the JTM45 had taken the crown from the AC30 as the must-have British amp. While it might not have as much grit and guts as the subsequent Marshall amps, this is the seminal circuit of a musical empire.

StewMac ICON KITS bring classics that are no longer made, or are simply unaffordable, within reach. And the best part is you get to build them with your own hands.

We give painstaking attention to parts selection, authentic materials, and instantly recognizable details—everything that makes the originals so sought after.

Build it with StewMac

These immersive instructions walk you through every step of creating your StewMac Brit-Plex. Follow our steps closely for safety, too: we’ve carefully laid out a path that even newcomers can follow in handling electrical components. Building an amp can seem daunting, but nobody makes it easier than StewMac. Watch for helpful tips along the way, too—we’re here to help!

When you see this icon through this instruction manual, take a little time to read through the helpful tips and tricks.

Parts

Know your parts. Taking a minute to become familiar with and organize your parts well before you jump into building your amp will save you a ton of time in the long run.

Identifying numbers, letters and color bands on parts isn't always easy. To make the process more efficient, we've sorted the smaller parts into a couple of tackle boxes. However, we recommend always having both a magnifying device and a multimeter on hand.

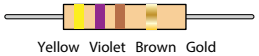
Resistors

☐ (1) 10K 1W 5% carbon film

☐ (2) 82K 1W 5% carbon film

☐ (3) 220K 1W 5% carbon film

☐ (2) 5.1K 1W 5% carbon film



☐ (1) 470Ω 1W 5% carbon film

☐ (1) 27K 1W 5% carbon film

☐ (2) 820Ω 1W 5% carbon film

☐ (2) 56K 1W 5% carbon film

☐ (4) 1M 1W 5% carbon film

☐ (1) 15K 1W 5% carbon film

☐ (5) 100K 1W 5% carbon film

☐ (2) 270K 1W 5% carbon film

☐ (4) 68K 1W 5% carbon film

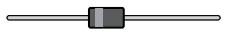
☐ (2) 270K 3W metal film

☐ (2) 470Ω 2W metal oxide

☐ (2) 10K 2W metal oxide

☐ (1) 1K 5W ceramic

Diode



☐ (1) 1N4007 diode DO-41

Capacitors

☐ (2) 250pF 500V silver mica

☐ (1) 47pF 500V silver mica

☐ (1) 500pF 500V silver mica

☐ (5) .022uF 630V capacitor

(1) .047uF 630V capacitor

☐ (4) 0.1uF 630V capacitor

☐ (2) 32µF+32µF 500V electrolytic can capacitor

☐ (1) 16uF 475V aluminum electrolytic capacitor

☐ (1) 250µF 25V axial leaded capacitor

☐ (2) 8µF 150V axial leaded capacitor

Wire

☐ (2ft) 20 AWG white PVC coated wire

☐ (4ft) 20 AWG gray PVC coated wire

☐ (4ft) 20 AWG blue PVC coated wire

☐ (4ft) 20 AWG red PVC coated wire

☐ (4ft) 20 AWG yellow PVC coated wire

☐ (62") 20 AWG black PVC coated wire

☐ (4ft) 20 AWG green PVC coated wire

☐ (2ft) 18 AWG solid tinned copper buss wire

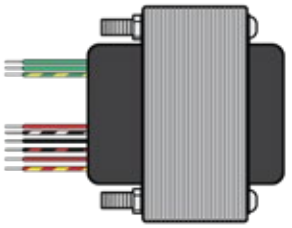
Heat-shrink tubing

☐ (1) 1/2" diameter (2-1/2" length)

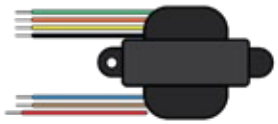
☐ (1) 1/8" diameter (2-1/2" length)

☐ (1) 1/16" diameter (2-1/2" length)

Transformers



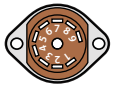
☐ (1) Power transformer



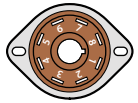
☐ (1) Output transformer

☐ (1) Filter choke

Tubes, lamps, fuses, and sockets



☐ (3) Nine-pin tube socket



☐ (3) Eight-pin tube socket

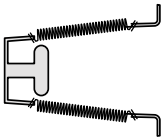
☐ (3) 12AX7/ECC83 preamp tube

☐ (2) EL34 power tube

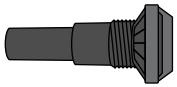
☐ (1) 5AR4/GZ34 rectifier tube

☐ (3) Tube shield

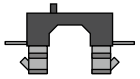
☐ (2) 1-3/8" (35mm) mounting clamp



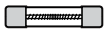
☐ (3) Tube spring retainer



☐ (1) Fuse socket



☐ (1) Base mount fuse block



☐ (1) 500mA, slow blow 5x20mm GMA fuse

☐ (1) 3 amp, slow blow 5x20mm GMA fuse

☐ (1) Indicator light

Hardware

☐ (16) 4-40 machine screw, 1/4"

☐ (9) 4-40 machine screw, 3/8"

☐ (15) 4-40 keps nuts

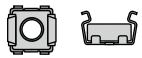
☐ (4) 6-32 machine screw, 1/2"

☐ (4) 6-32 keps nuts

☐ (6) 8-32 machine screw, 1/4"

☐ (10) 8-32 keps nuts

☐ (4) 1-1/8" chassis mounting screw

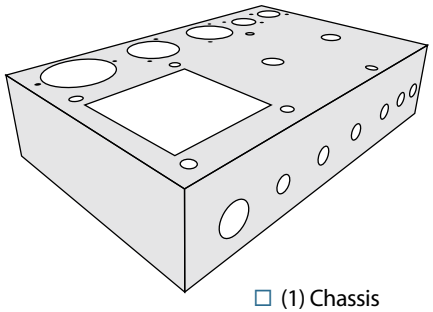


☐ (4) Threaded chassis clips

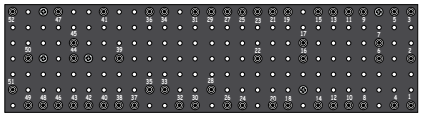
☐ (5) 4-40 Threaded standoff 1/2"

☐ (2) Medium rubber grommet for 1/2" holes

☐ (1) Small rubber grommet for 3/8" holes

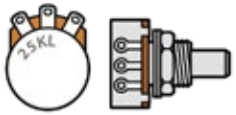


☐ (1) Chassis

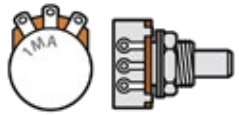


☐ (1) Turret board

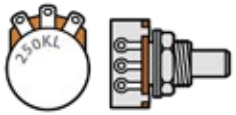
Control pots, input jacks and more



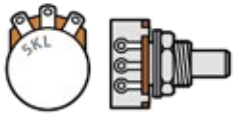
☐ (1) 25KL CTS pot



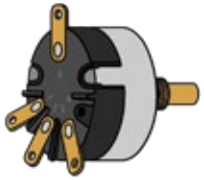
☐ (3) 1MA CTS pot



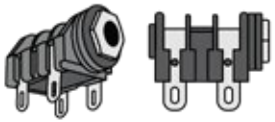
☐ (1) 250KL CTS pot



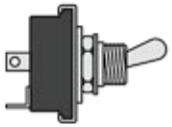
☐ (1) 5KL CTS pot



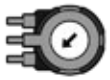
☐ (1) Impendance selector switch



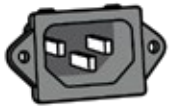
☐ (6) Four-lug input jack



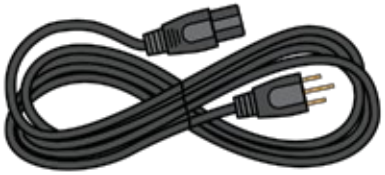
☐ (2) DPST switch



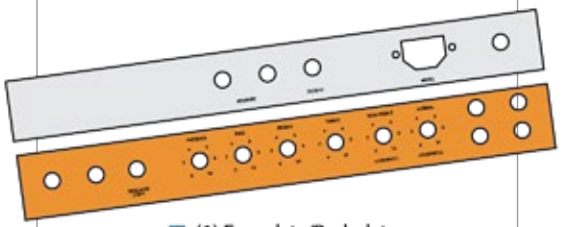
☐ (1) 50K Trimmer bias pot



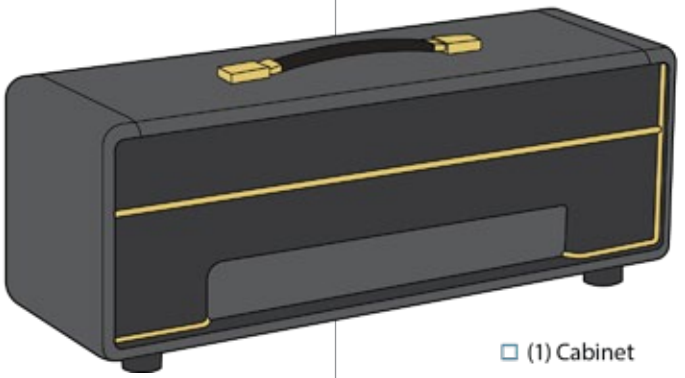
☐ (1) IEC power inlet



☐ (1) Power Cord



☐ (1) Faceplate/Backplate



☐ (1) Cabinet

☐ (6) Gold knob

☐ (1) Black skirted pointer knob

☐ (5) Solder lug

Tools and supplies

Required

Phillips screwdrivers, #1 and #2
Item #3000 Guitar Tech Screwdriver Set

Needle nose pliers
Item #1610 Long Nose Pliers

Round nose bending pliers
#1609

Wire cutter
Item #1607 Wire Cutter

Wire stripper
Item #1606 Wire Stripper

Soldering iron (preferably 40W)
Item #0501 Solomon SL-30 Soldering Station

Delta Solder 60/40
Item #103460 60/40
Item #103461 Lead Free

Solder sucker
Item #0503 Solomon Solder Sucker

Rule
Item #4905 StewMac Shop Rule

Peakmeter PM19C
Item #3620

Snuffer stick (bleed resistor)
Item #1552 Snuffer Stick

Alligator Clip Heat Sinks
Item # 0532-CU

Wooden chopsticks

Butane BBQ lighter
For heating heat-shrink tubing

White grease pencil

Amp voltages are seriously dangerous! Even when unplugged.

When you turn on an amp, the capacitors are designed to take on a charge and hold it. That stored voltage is enough to injure you seriously, or even kill you.

These components aren't a threat until the first time you plug the amp in. The stored electricity can be safely discharged to ground with a snuffer stick. See how to use it in the photo on the right.

Once your amp has been turned on, don't touch the wiring with your bare hands—even after turning it off. If you need to press on a contact, use a chopstick or Sharpie marker, which are both non-conductive. Don't use a pencil, because graphite is conductive.

Follow these important tips, they will help you complete your build safely.

Wear rubber-soled shoes
Rubber soles increase the insulation between yourself and the ground.

Take off your ring
A metal ring on your finger can bridge a hot connection to ground.

Wear safety glasses
Rosin-core solder sometimes bubbles up, and it can spew molten specks into the air. You don't want molten solder in your eyes.

It's better not to work alone
Electrical shocks can incapacitate you, and having someone available to call 911 can be a lifesaver.

Take breaks and stop when you're tired
Fatigue leads to mistakes, and no one can afford mistakes when working with electricity.

Stay suspicious
Whether it's the first time you've been inside a live amplifier or the 100th time, don't become complacent. If you discharge the caps and walk away for a few minutes, check again for residual voltage when you return. Capacitors can self-charge through a phenomenon known as dielectric memory.

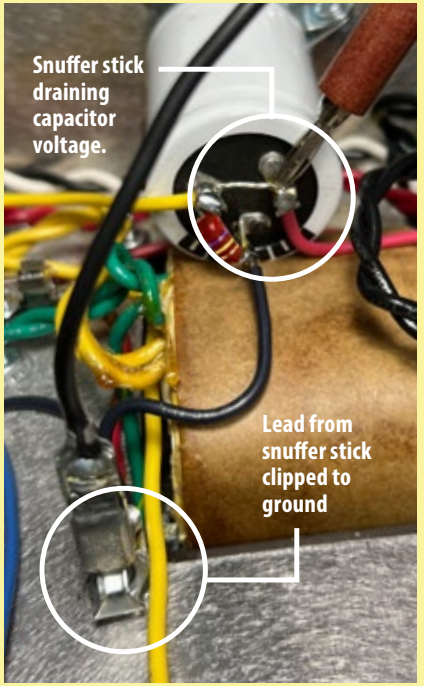
Check before powering on
It's easy to forget that you left a stray tool or wire in the chassis. It's also easy to forget to re-attach the speaker wire, and that can fry an output transformer in seconds. Constant vigilance is your friend when working on amps.

Always unplug your amp
Unplug the amp whenever you don't need it plugged in. Some points are always hot when the amp's plugged in, even if the power switch is off. These points include the lugs on the fuse socket, power switch, and standby switch.

How to use a snuffer stick

The snuffer stick is a specialty tool that is used to safely discharge dangerous voltage from capacitors before working on the amp.

To discharge a capacitor, clip the snuffer stick lead to ground—preferably a mounting bolt on the power transformer. Hold the tip of the stick to the cap's positive lead and use your multimeter to watch the voltage drain to less than 18V.

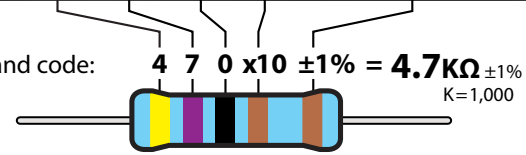


How to read resistor values

A resistor's value—the amount of resistance it creates—is rated in ohms (Ω). Larger ohm values mean more resistance. For example, a 100Ω resistor creates ten times as much resistance as a 10Ω resistor.

The resistors used in amplifiers are too small to have value numbers printed on them. Instead, a system of colored bands tells their values. The key to reading these bands is located to the right.

	Band 1	Band 2	Band 3	Multiplier	Tolerance
BLACK	0	0	0	1	
BROWN	1	1	1	10	+/- 1%
RED	2	2	2	100	+/- 2%
ORANGE	3	3	3	1,000	
YELLOW	4	4	4	10,000	
GREEN	5	5	5	100,000	+/- 0.5%
BLUE	6	6	6	1,000,000	+/- 0.25%
VIOLET	7	7	7	10,000,000	+/- 0.10%
GRAY	8	8	8	100,000,000	+/- 0.05%
WHITE	9	9	9	1,000,000,000	
GOLD				0.1	+/- 5%
SILVER				0.01	+/- 10%



4-band code: read Bands 1 and 2 same as above, then Band 3 is the Multiplier and Band 4 is the Tolerance.

The first color in the code is usually the one painted closest to a lead. When a gold or silver band is present, it's always one of the last colors in the code. This indicates the tolerance allowed during manufacturing

Can't read the colors?

You can always use a multimeter to test a resistor's value. Set your meter to ohms and connect the test leads on each side of the resistor. Additionally, there are great apps and websites like DigiKey.com out there to help you indentify parts accurately. Beyond color identification, it's a great practice to test every resistor with your multimeter, just to be certain the resistor is not faulty.

Capacitor values

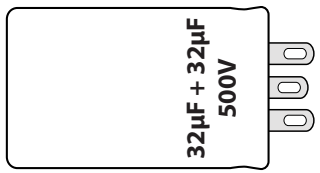
Capacitor values are typically printed on the component. The key values with caps are their capacitance and voltage.

Think of a capacitor as a container that can hold electricity. Capacitance, measured in farads, refers to how much electricity this container can hold—its capacity. One farad (1F) would be much too large for use in an amplifier. Caps for amps are rated in millionths of a farad, called microfarads (µF), or trillionths of a farad: picofarads (pF). The voltage spec for a cap refers to how much DC voltage it can handle at any given time.

A unique property of capacitors is that they don't allow DC current to flow past them, only AC current. This is important in parts of an amplifier circuit, such as the path between a preamp stage and a power amp stage. Here, a "coupling capacitor" will block DC voltage, allowing only the AC guitar signal to pass.

Filter caps

Capacitors also filter out 60Hz hum, or "ripple," after the AC current from the wall is converted to DC. These capacitors are called filter caps, because they filter out the ripple from a power supply. The filter caps in this amp are two 32µF + 32µF electrolytic can capacitors. These can capacitors actually have two capacitors inside. They each have their own positive lug and they share a common negative lug.



Electrolytic caps

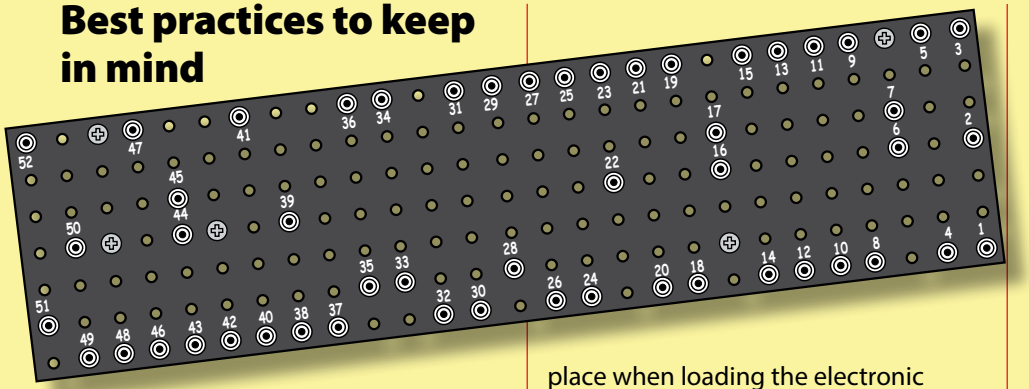
Electrolytic capacitors contain electrolyte: a liquid or gel that gives them a large storage capacity. Electrolytic caps are typically polarized.

Polarized caps

Some capacitors have polarity and some don't. It's extremely important to install polarized caps correctly in a circuit. The positive lead of an electrolytic cap will be indicated by an indented ring around one edge of the capacitor. The negative lead will often be indicated by a band of arrows pointing to the negative lead.

Installing capacitors with the polarity backwards will make the circuit malfunction and quickly destroy the capacitor—even causing it to explode.

Best practices to keep in mind



Number and solder turrets

Steps to adding parts to the turret board are referred to by turret number. However, the turret board does not come numbered. You will find a numbered diagram in this guide to help you but it's very helpful to number each turret on the turret board with a white grease pencil.

When it's time to solder, flow the solder all the way through the turret to ensure a good connection for the component leads and flow solder all the way around the turret to ensure a good connection for the jumper wires.

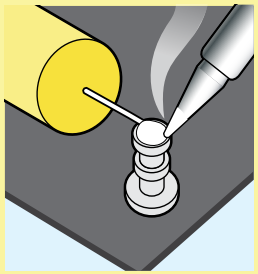
Soldering lead wire and components to the turret board

Solder the lead wires onto the turret board first. Cut each lead to their specified lengths. Strip 3/8" off one end of each lead and 1/8" off the other.

Double check your work! Make sure you have the correct lead connected to the correct turret before soldering.

Wrap the 3/8" end of each lead around its designated turret, position it, and tack it in with a small amount of solder. This is to hold these leads in place when loading the electronic components onto the turret board. They will be fully soldered in place with the capacitors and resistors once the board is fully loaded.

Component leads are inserted through the turrets. Measure the distance between the turrets a component will be spanning and trim the leads 1/4" longer on each end. Bend the leads to fit into the holes in the tops of the turrets. Leave the leads unsoldered while you add other components. This way, you can check your work and make corrections without having to redo a solder joint. It also helps protect heat sensitive parts from damage. Ideally, you solder components only once, which is the best way to get clean, trouble-free connections.



Once confirming (and re-confirming) that all components are in their proper locations, solder them into place. While the turret is hot, hit the lead wire with more solder to make sure they are secure, and their joints are solid.

To get good clean solder joints, follow these tips

✔ **Wrap the leads tightly**
Good electrical contact starts with good mechanical contact before you add the solder. Don't use solder to "glue" loose joints.

✔ **Keep the iron clean**
Wipe the tip of the iron often on a damp sponge.

✔ **Keep the iron tinned**
Melt a small amount of solder onto the tip of the hot iron. This is called "tinning" the iron. Also tin component leads like multi-strand wires to help the solder flow.

✔ **Don't feed the solder to the iron**
Hold the tinned tip against the joint for a few seconds until the connection reaches soldering temperature, then feed the solder to the joint. Keep the iron on the connection for a second longer to allow the flux to cook out of the joint.

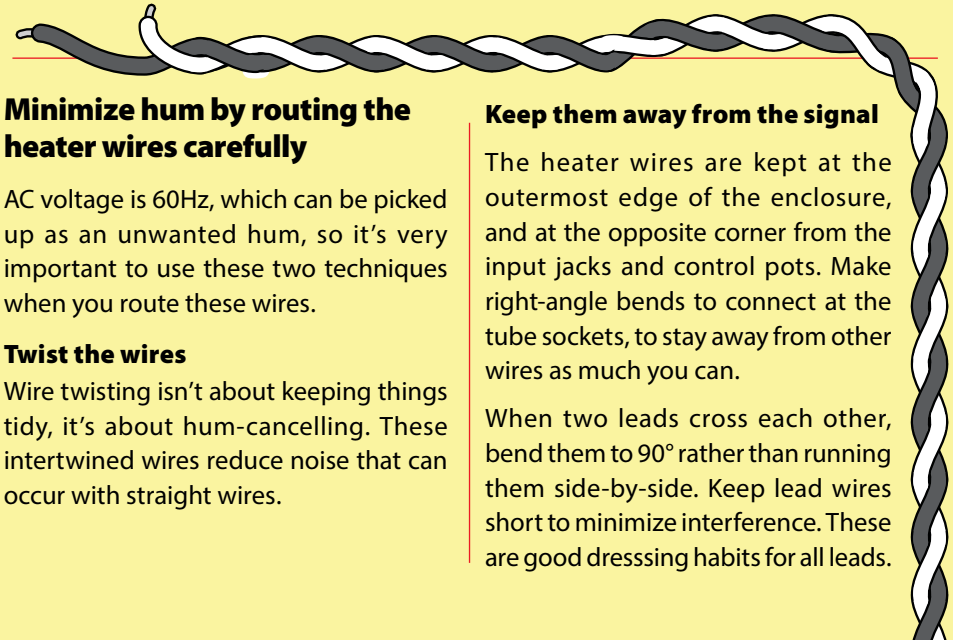
✔ **Don't blow on hot solder**
Don't blow on the joint to cool it, or touch anything until the joint has completely cooled. A good solder joint is shiny—a sign that it was left to cool undisturbed.

✔ **Trim excess leads**
Cut away the ends of wires after the joint has cooled.

✔ **Think twice, solder once**
Plan ahead so each joint is only soldered once. Resoldered joints are messy and more likely to fail.

✔ **Position the parts**
Orient the parts so their specs face out so you can read them later. Many builders also align resistor bands to read in the same direction.

✔ **Strip the insulation**
How much insulation to strip? With plastic insulation, strip 3/8" from the wire ends. Push-back wire works best when you strip away about 1/4" of the cloth.



Minimize hum by routing the heater wires carefully

AC voltage is 60Hz, which can be picked up as an unwanted hum, so it's very important to use these two techniques when you route these wires.

Twist the wires

Wire twisting isn't about keeping things tidy, it's about hum-cancelling. These intertwined wires reduce noise that can occur with straight wires.

Keep them away from the signal

The heater wires are kept at the outermost edge of the enclosure, and at the opposite corner from the input jacks and control pots. Make right-angle bends to connect at the tube sockets, to stay away from other wires as much you can.

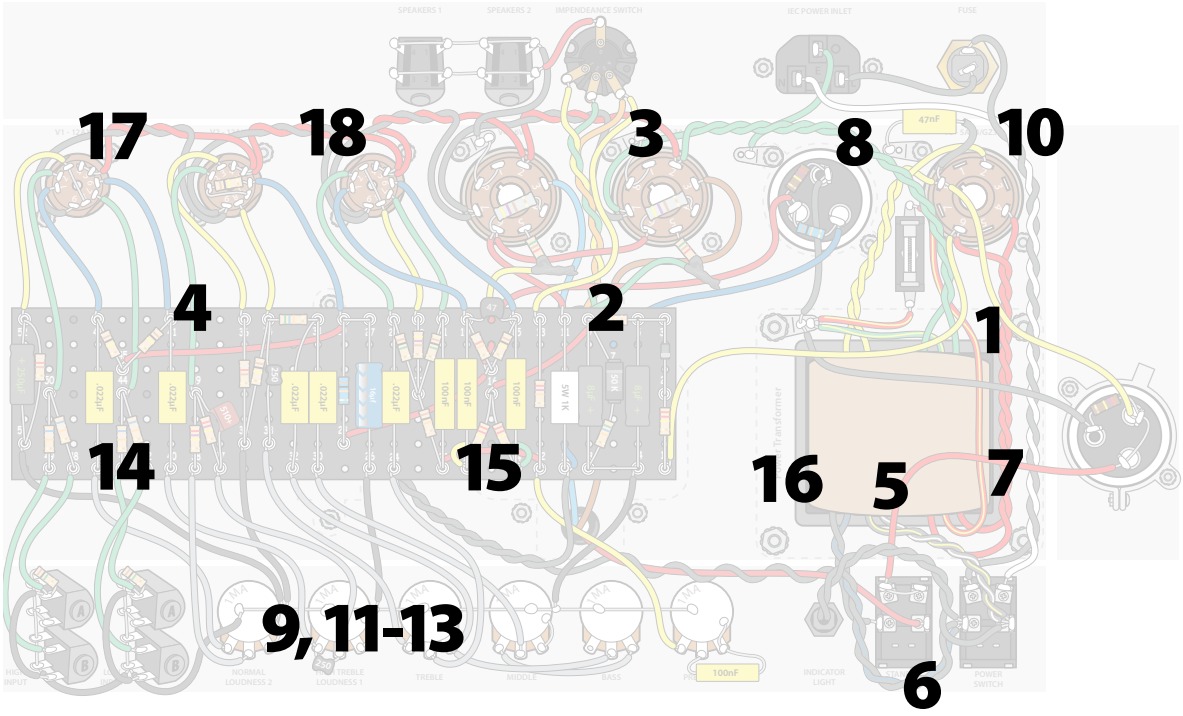
When two leads cross each other, bend them to 90° rather than running them side-by-side. Keep lead wires short to minimize interference. These are good dresssing habits for all leads.

Order of build

You'll start this amp build by affixing all of the chassis hardware and components such as tube sockets, pots and jacks, as well as the transformers, switches and filter capacitors. There are a lot of small but important details in laying this foundation, so be sure to take your time! You'll be getting everything from your power transformer wired up, to the tube-to-tube heater circuit installed during these steps.

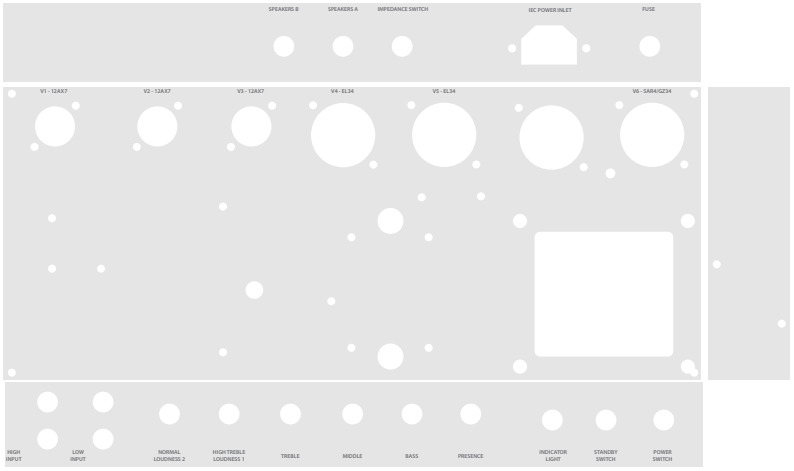
Once you have your chassis mounted hardware and components installed and ready for the circuit, you'll start placing your passive components (such as resistors and capacitors) onto the turret board. Again, pay close attention to the details, ensuring all components and lead wires are in place before solding your connections.

Once you have completed assembly of your turret board, you'll be ready to carefully place the circuit into the amp chassis and solder the final connections. Once this is done, take care during the start-up and testing procedures, reading carefully over instructions on how to get your amp fired up safely!



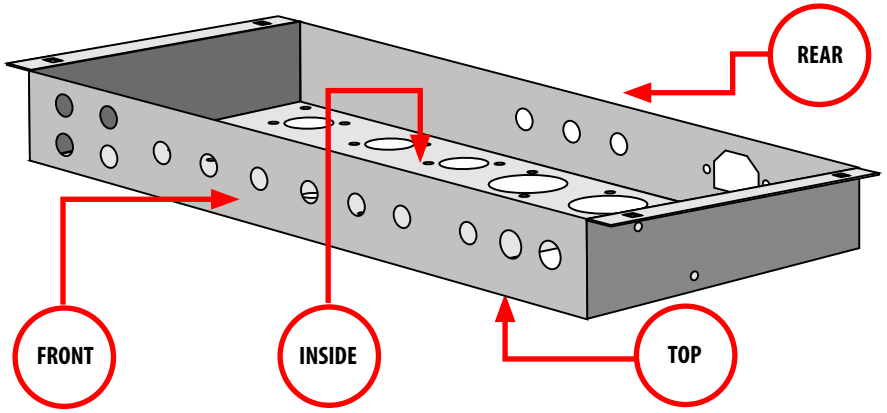
Understanding the illustrations in this guide

The majority of the illustrations in this guide are shown as an overhead view. For example, in reality the chassis is a metal box, but it is shown as flat panels in this guide.



Get a handle on the chassis

Throughout this guide, directions for location and orientation of parts being installed in this amp will often be referred to based on the chassis layout. Because you'll be turning and flipping the chassis from time to time throughout this build, take a minute to acquaint yourself with the how chassis sections will be addressed.



STEP BY STEP

FOLLOW THESE STEPS AND SOON YOU'LL HAVE AN AMAZING AMP THAT YOU BUILT BY YOURSELF

Create a simple workstation

The transformers are added to the chassis early on in the process. This elevates the chassis, so it's easier to work on. However, the transformers are also heavy and sit on one end of the chassis, making it cumbersome and unbalanced. Building a simple, solid, work station (with materials you might very well have laying around the house!) will help your amp build immensely.

Below is a step-by-step guide to building a simple wooden workstation.

THINGS YOU'LL NEED

- (2) 2" x 4" x 48" wooden boards
- (1) 1" x 2" x 48" board
- (16) 2" wood screws
- Saw (table, circular, etc.)
- Power drill
- Phillips bit
- 1/8" drill bit
- Pencil
- Wood glue (optional)

☐ STEP 01

Cut the 2x4's into five, 9.5" lengths and cut the 1x2 in half.

☐ STEP 02

Separate the 2x4's into two piles of five.

☐ STEP 03

In the first stack of five 2x4's, you'll drill pilot holes through three of the five boards. On board #1, measure 3.5" from each end of the board to make your pilot holes. On board #2, make two holes at 2.5". Finally, make two holes at 1.5" on board #3.

☐ STEP 04

Stack board #1 on top of the board WITHOUT holes (add wood glue in between beforehand if you like) and drive two screws through board #1 into the the board below it.

☐ STEP 05

Now flip the combined boards over so that board #1 is on the bottom and the holeless board is on the top. Stack board #2 on top of the holeless board (adding glue first for a more solid attachment) and drive screws through the pilot holes of board two.

☐ STEP 06

Attach board #3 to board #2 in the same manner as above and then repeat this process for the second set of 2x4s.

☐ STEP 07

Place the empty amp chassis upside down between the combinded 2x4 stack. Make sure the fit is snug and even. With a pencil, mark a circle through the mounting holes on the wooden station, then remove the chassis.

☐ STEP 08

Drill a hole on either end of the station.

☐ STEP 09

Slip your chassis back in place and lightly screw two screws through the chassis and into the station.

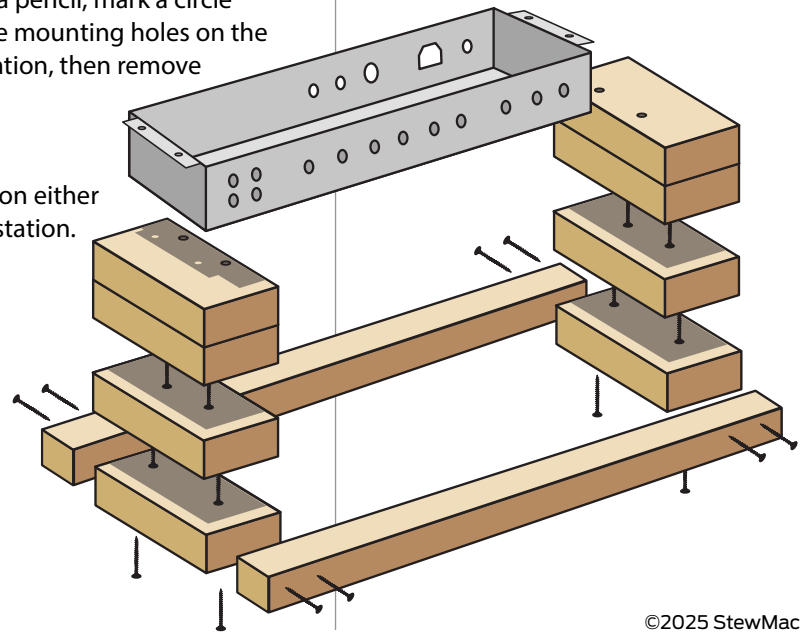
☐ STEP 10

Lay the two 1x2 boards next to the bottom ends of the station and drill two pilot holes through either end of each board and just a bit into the station.

☐ STEP 11

Now attach the 1x2 boards to the station with screws through the holes you drilled.

Voila, station complete! Is it pretty? Umm, no. That said, you're not building a china cabinet here. You're building a rough workstation to help you build a beautiful amp. One you'll most certainly be proud to put on display when it's complete.

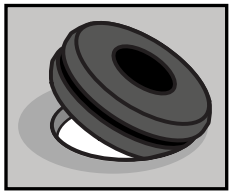


A few steps before the first step

If you've followed everything in this guide thus far, you're ready to start *actually building* your amp. However, there's a few things to do before attaching the chasiss to the work station.

Install 3 rubber grommets

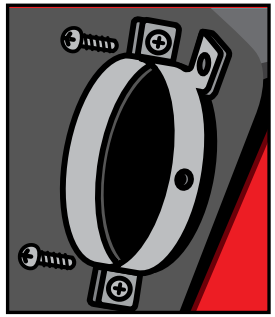
☐ STEP 12



Squeeze these into the three holes as shown. These provide protection from the sharp metal edges around the holes, as well as strain relief for the transformer wires that will pass through the metal chassis.

Install the internal capacitor clamp

☐ STEP 13



Attach the capacitor clamp to the chassis using two 6-32 x 1/2" screws and locking nuts. The mounting screws should be installed from the inside out, with the locking nuts on the outside of the chassis. Position the clamp so the holding screw is facing up, so you have access to tighten it once the filter capacitor is installed.

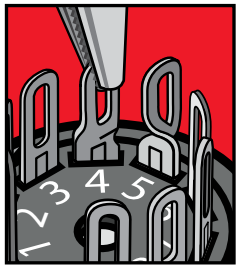
Install the top capacitor clamp

☐ STEP 14

A separate filter capacitor is installed on the outside top of the chassis. Attach the capacitor clamp to the chassis using two 6-32 x 1/2" screws and locking nuts. The mounting screws should be installed from the outside in, with the locking nuts on the inside of the chassis. Secure a #6 grounding lug under the locking nut of the mounting screw closest to the rear panel of the chassis. Position the clamp so the holding screw faces the rear panel of the chassis, giving you access to tighten it once the filter capacitor is installed.

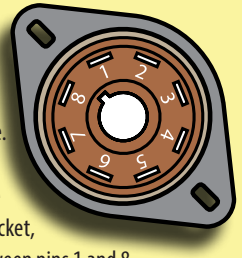
Prep V1, V2, & V3 tube sockets

☐ STEP 15



These sockets are the smaller of the two types of sockets in this amp and have a series of numbers (1-9) associated with each pin. It is helpful to *carefully* twist pins 4 and 5 slightly with a pair of needle nose pliers, so that they are facing each other as shown.

NOTE: The larger sockets are for the output tubes and have a series of numbers associated with each pin (1-8). They're hard to see, so a magnifier will be very helpful here. Notice a squared off notch within the beige part of the socket, which lines up between pins 1 and 8.



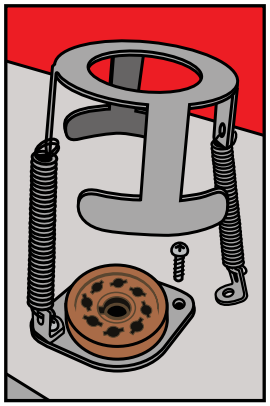
Install V1, V2, & V3 tube sockets

☐ STEP 16

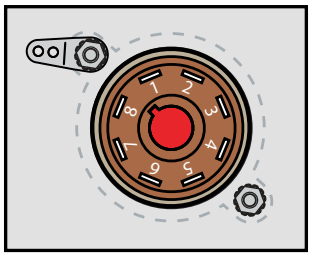
Orient them so pin 4/5 is closest to the rear panel of the chassis. Secure the sockets to the top of the chassis using the included 4-40 x 1/4" machine screws and locknuts.

Install the V4, V5, & V6 tube sockets with spring retainers

☐ STEP 17



Orient these eight-pin tube sockets so that pin 1 is closest to the rear panel of the chassis. Run 4/40 x 3/8" screws through the mounting lugs of the spring retainers, then through the mounting holes of the tube sockets. Mount the sockets on the top of the chassis and secure internally with the included locknuts. When mounting these sockets, install the included #6 ground lugs under the locking nut that is closest to the rear panel of the chassis.



Attach to workstation

☐ STEP 18

Secure the chassis to the workstation you built (or prop it in another manner). Next, you will start connecting parts.

Mount the power transformer

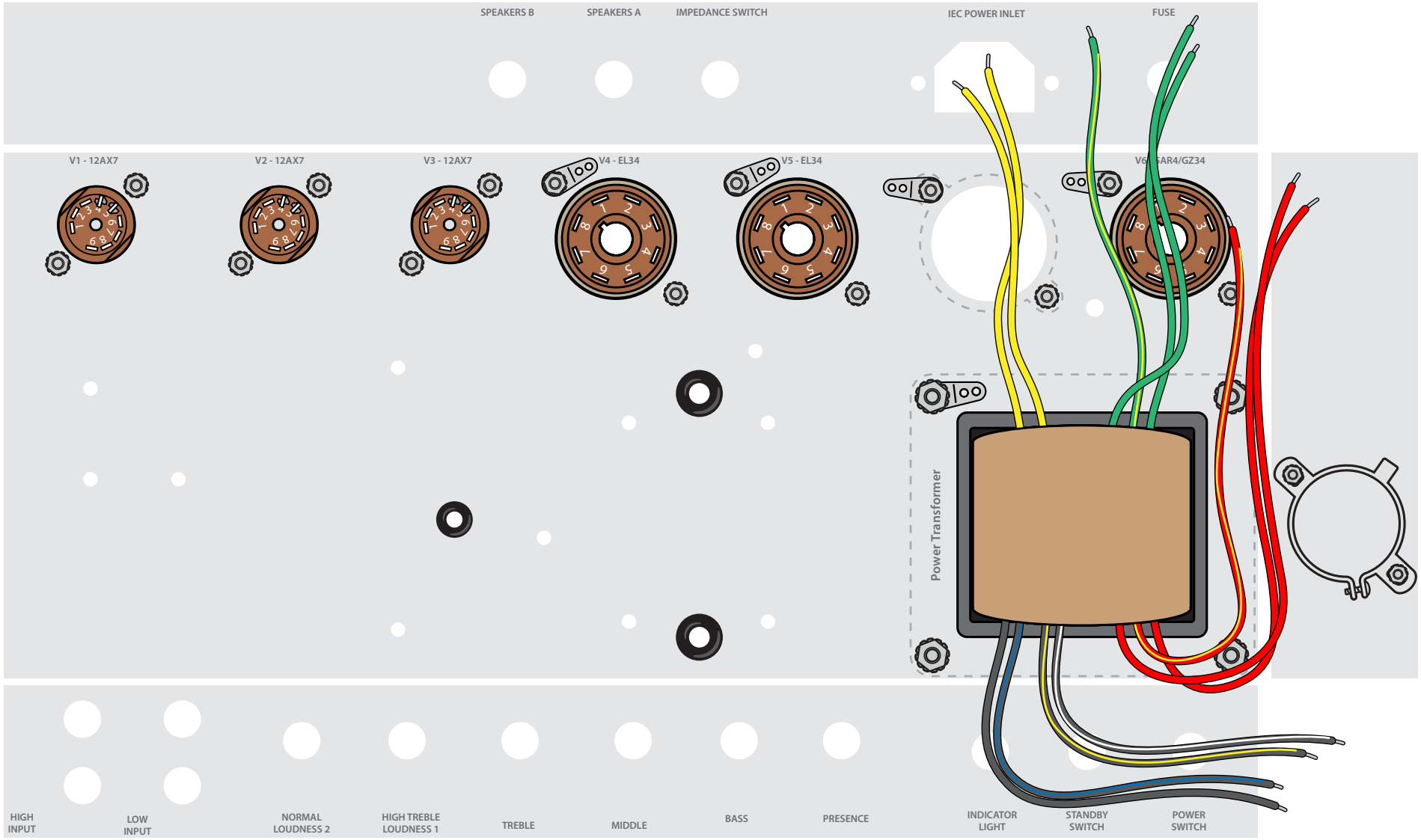
☐ STEP 19

Before mounting, note that there are 4 rubber caps protecting the mounting screws for the transformer. Remove these caps but leave the nuts on, they keep the core laminations of the transformer in place.

The power transformer has twelve leads: Separate the following 10 leads and twist them together into color-coded pairs.

- Two red leads
- Two green leads
- Two yellow leads
- Solid black and black/blue striped
- Black/yellow striped and black/white striped

Feed all the transformer leads into the chassis through the square hole with green leads closest to the rear panel of the chassis and the red leads on the same side as the front panel controls. Install the transformer on the outside of the chassis and add one of the #6 ground lugs at the rear left-hand corner as shown. Secure the transformer with the included 8-32 locknuts.



Mount the output transformer

☐ STEP 20

One side of the output transformer has blue, red, and brown wires. These are the primary leads of the transformer. Pass these three wires through the grommeted hole closest to the front panel of the chassis. The other side of the output transformer has orange, green, yellow, brown, and black wires. These are the secondary leads of the transformer.

Twist the orange + green + yellow secondary wires together. Pass these through the grommeted hole closest to the back panel, along with the brown and black wires (five wires through this grommet). Use four 8-32 x 1/4" machine screws with locknuts to mount the transformer on the outside of the chassis.

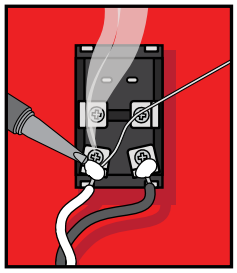
Mount the filter choke

☐ STEP 21

The filter choke only has two leads, both black. Twist these leads together and thread them through the grommeted hole in the middle of the chassis. Use two 8-32 machine screws and locknuts to mount the filter choke outside of the chassis.

Prep the power switch

☐ STEP 22



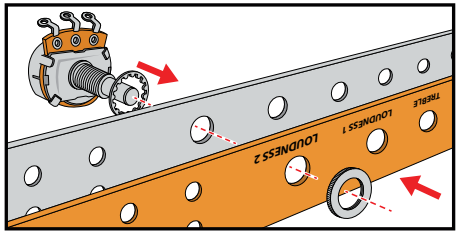
Cut 9" of white wire, and 7-1/2" of black wire. Strip 1/8" off both ends of both leads and twist them together tightly. Solder one end of the black wire to the bottom right-hand lug of the power switch. Solder the same end of the white wire to the bottom left-hand lug of the power switch.

Mount the faceplate

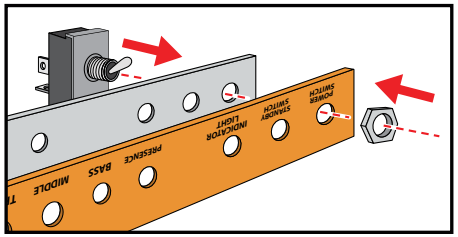
☐ STEP 23

Peel the protective film off of the faceplate, the backplate doesn't usually have this protective layer, but check for it anyway.

Secure the faceplate by placing the normal channel loudness control pot (1MA) in its hole and sliding the faceplate over the shaft. Install this pot with the lock washer inside the chassis, and the washer and nut outside the chassis.



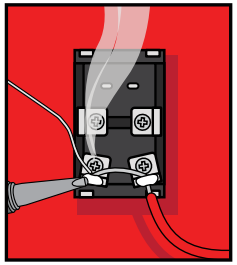
Mount the other end of the faceplate using the power switch, with a hex nut on the inside of the chassis, and a switch nut on the outside of the chassis. Orient the switch as shown, with the bottom most row of lugs facing the top of the chassis.



Direct the twisted black and white pair of wires down into, and around the right side of the chassis, running towards the IEC power inlet and mains fuse holder.

Prep the standby switch

☐ STEP 24



Before installing the standby switch, cut a 3-1/2" piece of red wire. Strip 1/2" off one end, and 3/4" off the other.

Solder the bare 1/2" end of the wire between the bottom two lugs of the standby switch as shown.

Install the standby switch

☐ STEP 25

Mount the standby switch with one hex mounting nut at the base of the threaded shaft. After inserting the switch, place its washer on the threaded shaft before adding the other nut.

Trim, strip, and solder the red lead coming from the output transformer to the lower right-hand lug of the standby switch (as shown in the master diagram on the right). Take one of the black leads from the choke and trim, strip, and solder it to the top right-hand lug of the standby switch.

Install the remaining control pots

☐ STEP 26

Mount the control pots so their three lugs are facing the chassis opening. When we refer to these lugs as left or right, it's assuming you're looking at the pot from the same point of view as the wiring diagram. Mount them as follows, right to left:

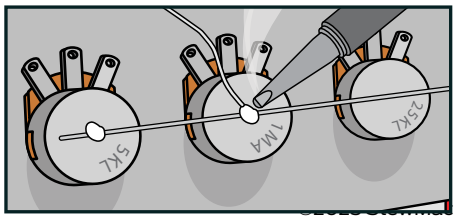
- **Presence**: 5KL pot
- **Bass**: 1MA pot
- **Middle**: 25KL pot
- **Treble**: 250KL pot
- **High Treble Volume:** 1MA pot

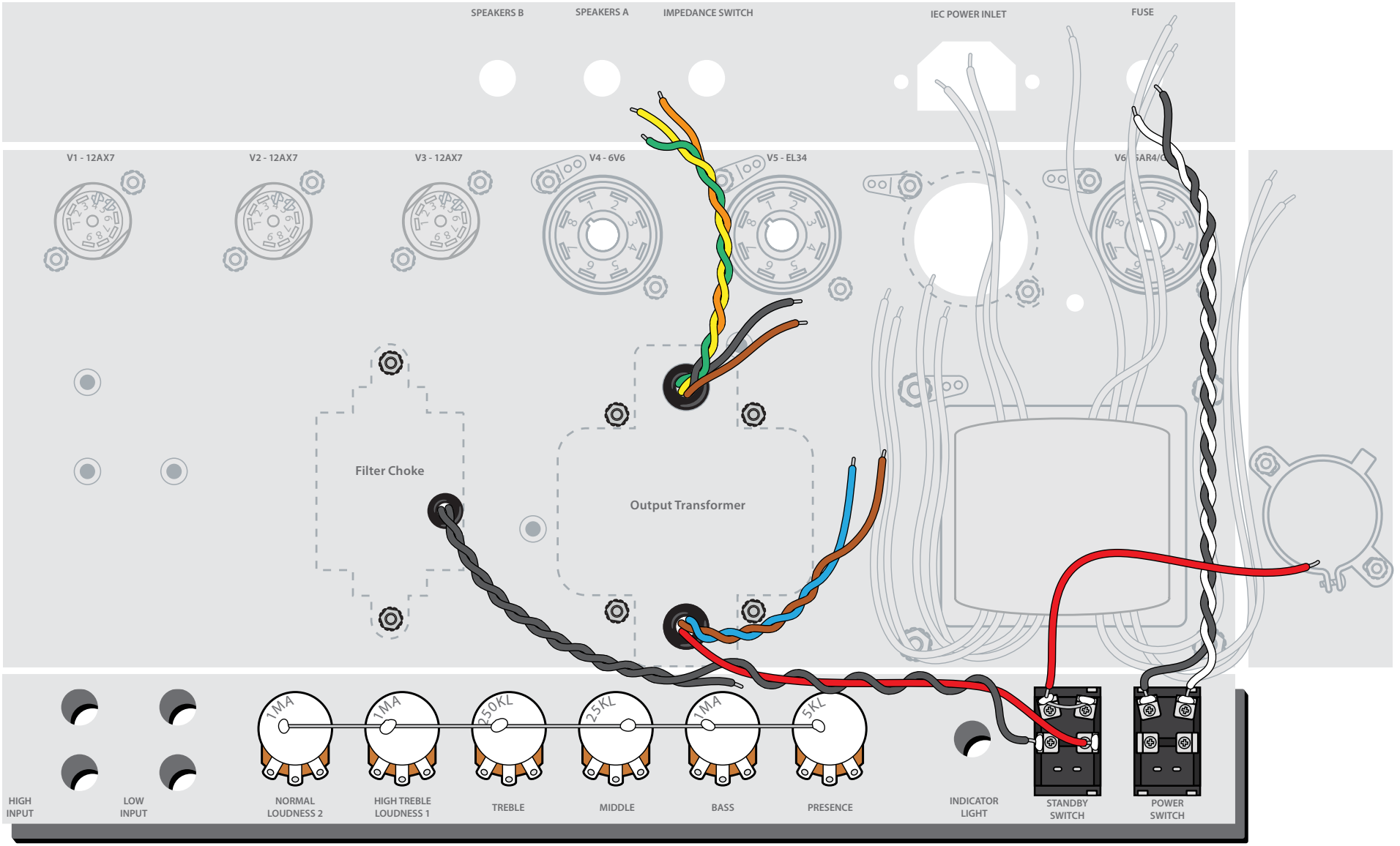
Install the buss wire

☐ STEP 27

Turn all pot shafts counterclockwise to their zero position before starting this step. This is because you'll be applying heat to their cases, and if the heat lingers too long it could create an impression on the wiper inside. This isn't a concern if the pot is in the zero position.

With all the pots installed and secured, cut a 7" piece of the coiled up bare wire and straighten it out as best as possible. Solder this wire between the normal volume and presence control pots. Once in place, proceed to solder it to the back of the remaining pots. This important connection is the main audio ground for all the front panel and turret board connections.

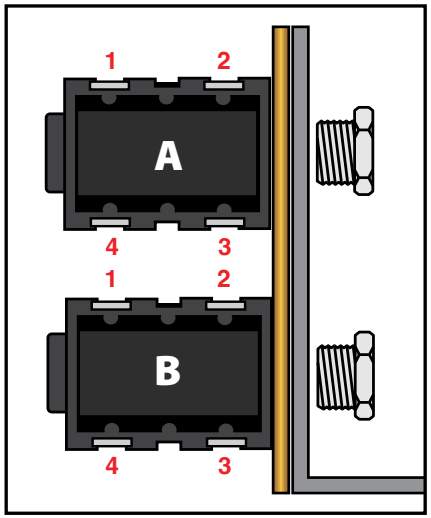




Wire the normal channel input jacks

☐ STEP 28

Use two 4-lug jacks for the inputs on the normal channel. For these steps, we'll refer to these input jacks as A and B.



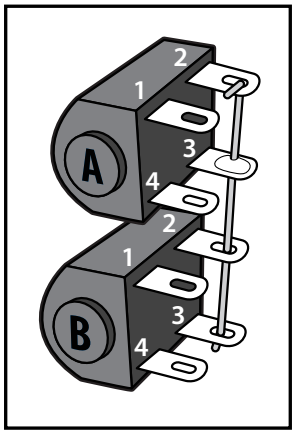
Mount the jacks temporarily on the outside of the chassis in their respective holes, with their lugs pointing toward the indicator light.

Mounting the jacks outside the chassis will hold them in position and give you room to do the tricky job of wiring them up. Afterward, they'll fit nicely inside the chassis as a pre-wired assembly.

In building this amp, you'll cut pieces of wire to make connections. These connecting wires are called jumpers, and you'll use a lot of them in building this amp.

Cut a 1-3/4" length of the included bare wire.

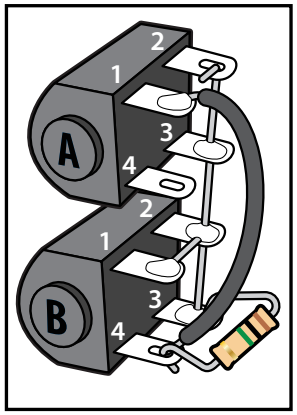
Bend a small hook on one end and run the long straight end through lug 2 and lug 3 of jack A, and through lug 2 and lug 3 of jack B.



Solder this jumper to lug 3 of jack A.

Run one lead of a 1M resistor through lug 3 of jack B and the other lead through lug 4 of jack B.

Solder the resistor lead and bare jumper lead to lug 3 of jack B and trim away any excess jumper and resistor lead.



Cut a ¾" piece of bare wire and run it through lug 1 and 2 of jack B. Solder this jumper to both lugs.

Cut a 2" black jumper and expose 1/8" of the core on both ends. Solder one end to lug 1 of jack A. Connect the other end to lug 4 of jack B, but do not solder here yet.

Remove these wired-up input jacks and mount them in the same holes on the inside of the chassis (Their lugs are now facing away from the indicator light).

Wire the high treble channel input jacks

☐ STEP 29

Again, use two 4-lug jacks which we'll refer to as A and B.

As you did with the normal channel jacks, assemble these on the outside of the chassis with their lugs pointing toward the indicator light.

Cut a 1-3/4" length of bare wire.

Bend a small hook on one end and run the long straight end through lug 2 and lug 3 of jack A, and through lug 2 and lug 3 of jack B.

Solder this jumper to lug 3 of jack A.

Run one lead of a 1M resistor through lug 3 of jack B and the other lead through lug 4 of jack B.

Solder the resistor lead and bare jumper lead to lug 3 of jack B and trim away any excess jumper and resistor lead.

Cut a ¾" piece of bare wire and run it through lug 1 and 2 of jack B. Solder this jumper to both lugs.

Cut a 2" black jumper and expose 1/8" of the core on both ends. Solder one end to lug 1 of jack A. Connect the other end to lug 4 of jack B, but do not solder here yet.

Remove these wired-up input jacks and mount them in the same holes on the inside of the chassis (Their lugs are now facing away from the indicator light).

Add two ground jumpers

☐ STEP 30

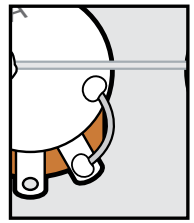
Cut one 1-3/4" black jumper and wrap one end to lug 2 of the high treble channel jack A. Solder the other end to lug 2 of the normal channel jack A.

Cut a 3" black jumper and wrap one end to lug 2 of the high treble channel jack A. Solder this jumper end in place with the two other jumpers already there. Turn the normal channel loudness pot shaft counterclockwise to its zero position and solder the other end of this jumper to the back of the normal channel loudness pot.

Ground three control pots

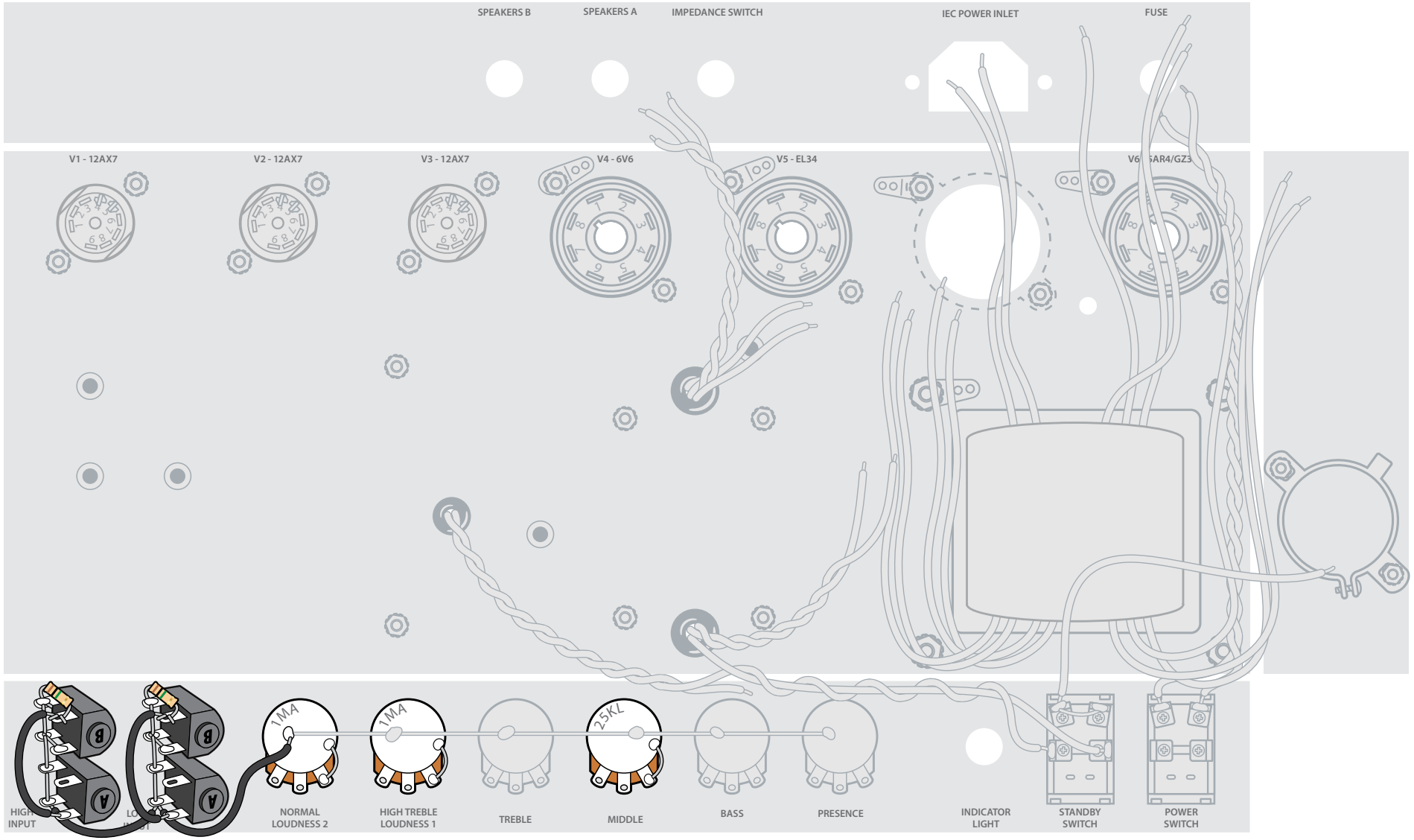
☐ STEP 31

Cut three 1" pieces of bare wire and bend one end of each into a hook.



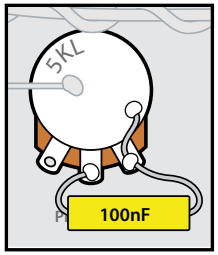
Starting with the normal channel loudness pot, solder the hook end of the jumper to the right lug of the pot. Solder the straight end of this jumper to the back of the pot.

Repeat this process for the high treble loudness pot and the mids pot.



Add a .1µF capacitor

☐ STEP 32



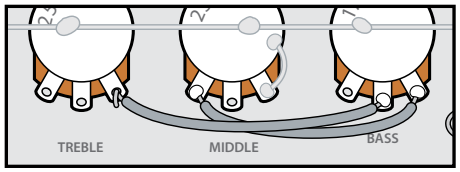
Solder a .1µF cap between the right lug of the presence pot and the middle lug of the same pot. Bend the capacitor lead from the right lug of the pot to the back of the pot and solder it. Trim away any excess lead at the middle lug and the back of the pot.

Add two gray jumpers

☐ STEP 33

Cut a 3-1/4" gray jumper. Strip 1/8" of insulation from one side. Solder this jumper to the middle lug of the bass pot. Route the other end of this jumper over the midrange pot and wrap it through the right lug of the treble pot. Don't solder this end yet.

Cut a 2-1/2" gray jumper and solder one end to the right lug of the bass pot. Solder the other end of this jumper to the left lug of the midrange pot.



Install the HT fuse holder

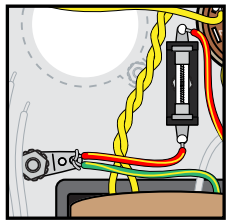
☐ STEP 34

Near the V6 tube socket, there is a hole in the chassis that is for mounting the high tension (HT) fuse holder. Install the fuse holder using a 4-40 x 3/8" screw and locking nut.

Wiring the HT fuse holder

☐ STEP 35

Measure, trim, and strip 1/4" of the insulation off the red/yellow striped lead coming off the power transformer. Solder the lead to the lug on the fuse holder that is closest to the rear panel of the chassis. Take a 3" piece of the cut off end of the red/yellow striped wire and solder it to the opposite end of the fuse holder. Run this wire to the #6 ground lug that is attached to the mounting bolt at top left hand corner of the power transformer as shown. Do not solder this end yet as there are more leads to be attached at a later stage.



Attach the green/yellow wire to ground

☐ STEP 36

Trim the green/yellow striped lead coming off the power transformer to length and strip 1/8" of the insulation off of the end. Connect it to the ground lug attached to the mounting screw located at the upper left corner of the power transformer. Do not solder it in place yet as other leads will be run to the same lug.

Solder the power transformer red leads to the V6 tube socket

☐ STEP 37

Run the two red wires from the power transformer to the V6 rectifier tube socket. Trim these wires to length and solder one to pin 4 and the other to the lower hole on pin 6. Either wire can go to either lug.

Solder the power transformer yellow leads to the V6 tube socket

☐ STEP 38

Run the two yellow wires from the power transformer to the V6 rectifier tube socket. Trim these wires to length and solder one to pin 2 and the other to pin 8. Either wire can go to either pin.

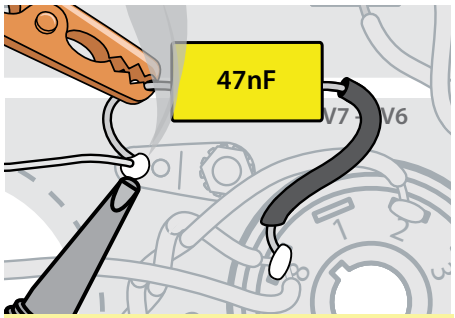
Note that each pin lug has two holes in it for connecting additional leads. Cut a 4" piece of yellow wire, strip 1/8" off each end and connect one end to the open hole on the pin 8 lug. Do not solder yet, we have one more connection to make to this pin first.

At this stage, it is also a good idea to cut a 8" piece of yellow wire and solder it to the top hole on pin 6. It is easier to solder in this yellow lead now rather than later.

Install 47nF capacitor

☐ STEP 39

Solder the 47nF capacitor between the ground lug attached to the mounting screw on V6 and pin 8 on V6. Use heat sinks to prevent damaging the capacitor when soldering.

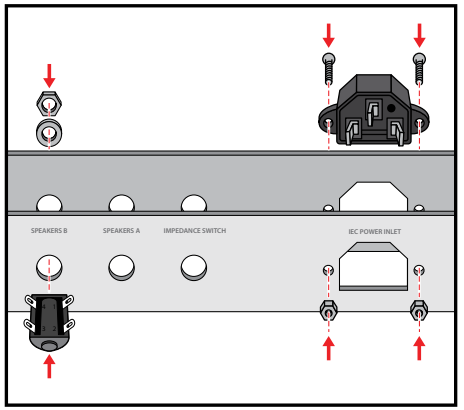


TIP! Measure and cut a small piece of 1/16" heat shrink tubing and shrink it over the ungrounded lead of the capacitor to avoid it shorting out against other components such as the fuse holder.

Install the backplate

☐ STEP 40

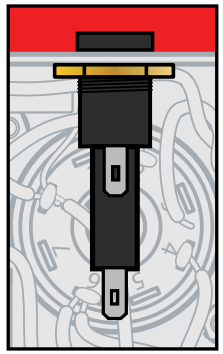
Use the IEC power inlet and one of the 4-lug speaker jacks to hold the backplate in place while adjusting the panel to make sure it is square to the chassis. Attach the IEC inlet using 4-40 x 3/8" screws and locknuts. Double stick tape can help keep the unsupported side of the plate in place to prevent catching it on something and possibly breaking it off.

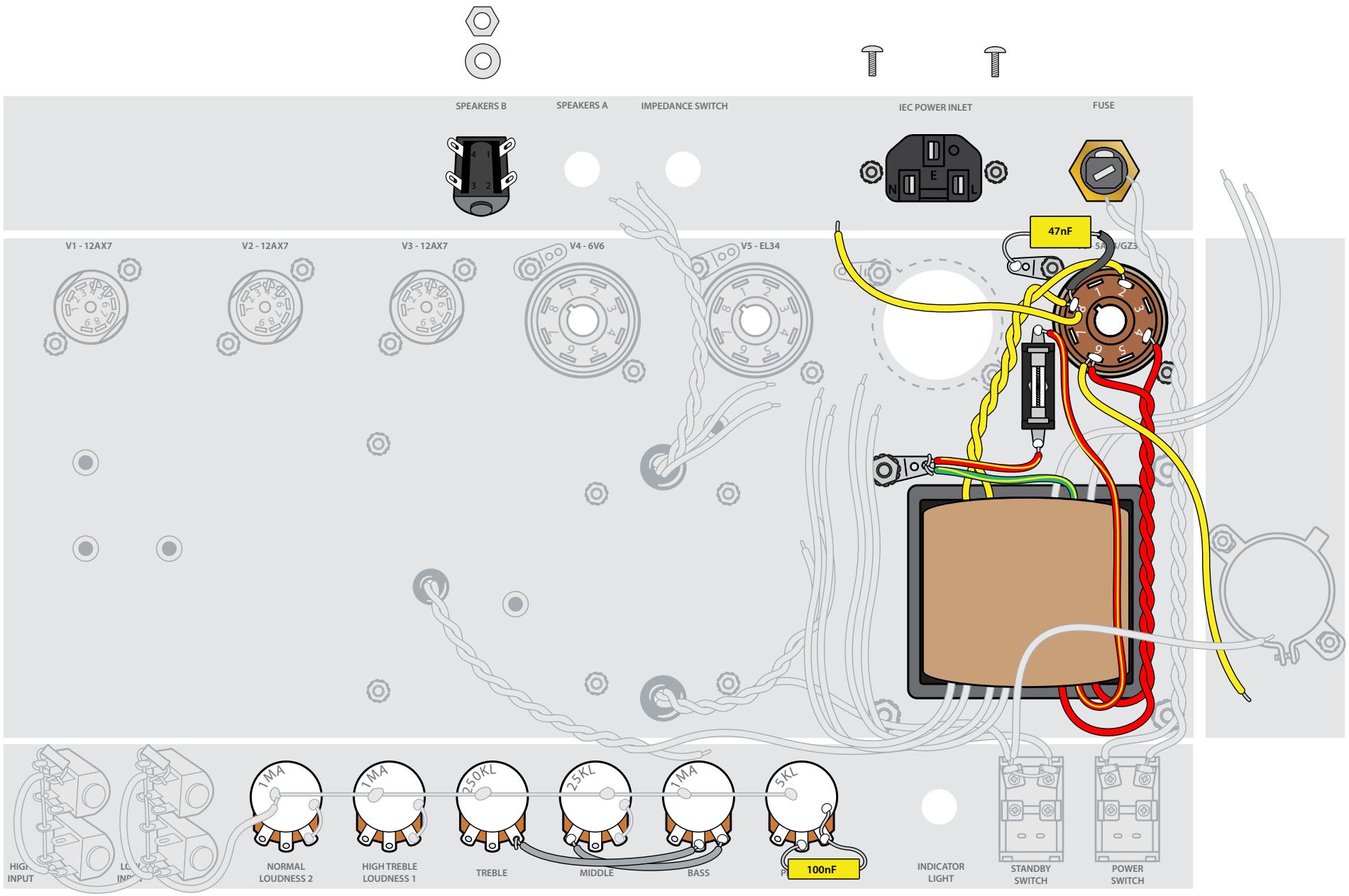


Install the mains fuse holder

☐ STEP 41

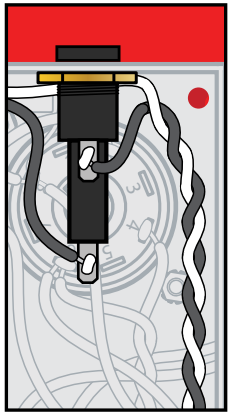
Install the mains fuse holder with the lug on the side facing up towards you for easy access for soldering. Secure using an 11/16" wrench.





Wire the mains fuse holder and IEC power inlet

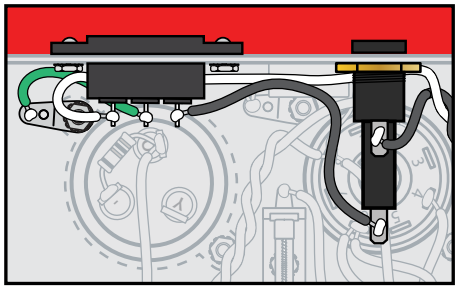
☐ STEP 42



Solder the black lead coming from the upper left-hand lug of the power switch to the lug on the side of the mains fuse holder. Cut a 2-1/2" piece of black wire and run it from the eyelet on the end of the fuse holder to the right-hand lug on the IEC power inlet marked "L" and solder in place.

Cut a 2" piece of green wire and strip 1/8" of insulation off of each end. Solder one end to the middle lug of the IEC power inlet marked ground (⏚). Solder the opposite end to the ground lug that is installed on the mounting screw for the external filter capacitor.

Solder the white wire coming off of the upper right-hand lug of the power switch to the left-hand lug on the IEC power inlet that is marked "N".



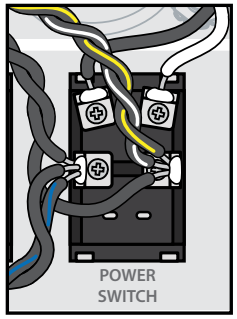
Prepare the indicator light lead wires

☐ STEP 43

Install the indicator light into the front panel and secure. Twist the two leads tightly together, leaving the last 1-1/2" straight. Measure the length needed to reach the lugs on the power switch that these leads will eventually be connected to. Note one lead will need to be a little longer, it does not matter which one. Once measured, cut the leads to length and strip 1/4" of the insulation off of the ends. Do not solder them to the switch yet.

Prepare and solder the black/white & black/yellow striped power transformer leads

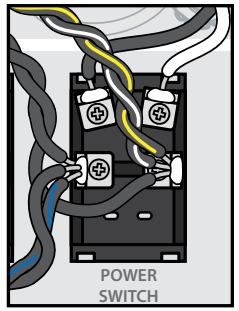
☐ STEP 44



Measure, trim, and strip 1/4" of the insulation off the ends of the black/white and black/yellow striped leads coming off of the power transformer. Twist the bare ends of these leads, along with one of the leads coming off of the indicator light together tightly. It does not matter which indicator light leads are used. Solder this bundle to the bottom right-hand lug of the power switch as shown.

Prepare and solder the solid black and black/blue striped power transformer leads

☐ STEP 45



Measure, trim, and strip 1/4" of the insulation off of the ends of the solid black and black/blue striped leads coming off of the power transformer. Twist the bare ends of these leads, along with the other lead coming off the indicator light together tightly. Solder this bundle to the bottom left-hand lug of the power switch as shown.

Install the internal filter capacitor

☐ STEP 46

Before installing the internal filter capacitor, cut a 2-3/4" piece of black wire and strip 1/8" of the insulation off of both ends. Attach one end of this wire to the ground lug of the capacitor, but don't solder yet. This lug is identified by a black dot where the lug attaches. Next, wrap one of the 270K 3W metal film resistors between the positive lug that will eventually face the rear panel of the chassis (as shown in the diagram on the right) and the ground lug. Solder the resistor and black lead in place at the capacitor ground lug.

Install the filter capacitor into the clamp with the ground lug closest to the power transformer. Tighten the clamp around the capacitor until it is secure.

Take the red wire coming off the standby switch and run the stripped end through both positive (+) lugs on the internal filter capacitor.

Take the yellow wire coming off pin 8 on V6 and connect it to the positive lug closest to the rear panel of the chassis as shown, along with the other end of the 270K 3W resistor. Solder the leads and resistor to both positive lugs.

Connect the opposite end of the ground wire to the ground lug attached to the mounting screw located at the upper left-hand corner of the power transformer. Do not solder this wire in place yet, as another lead will be run to the same lug.

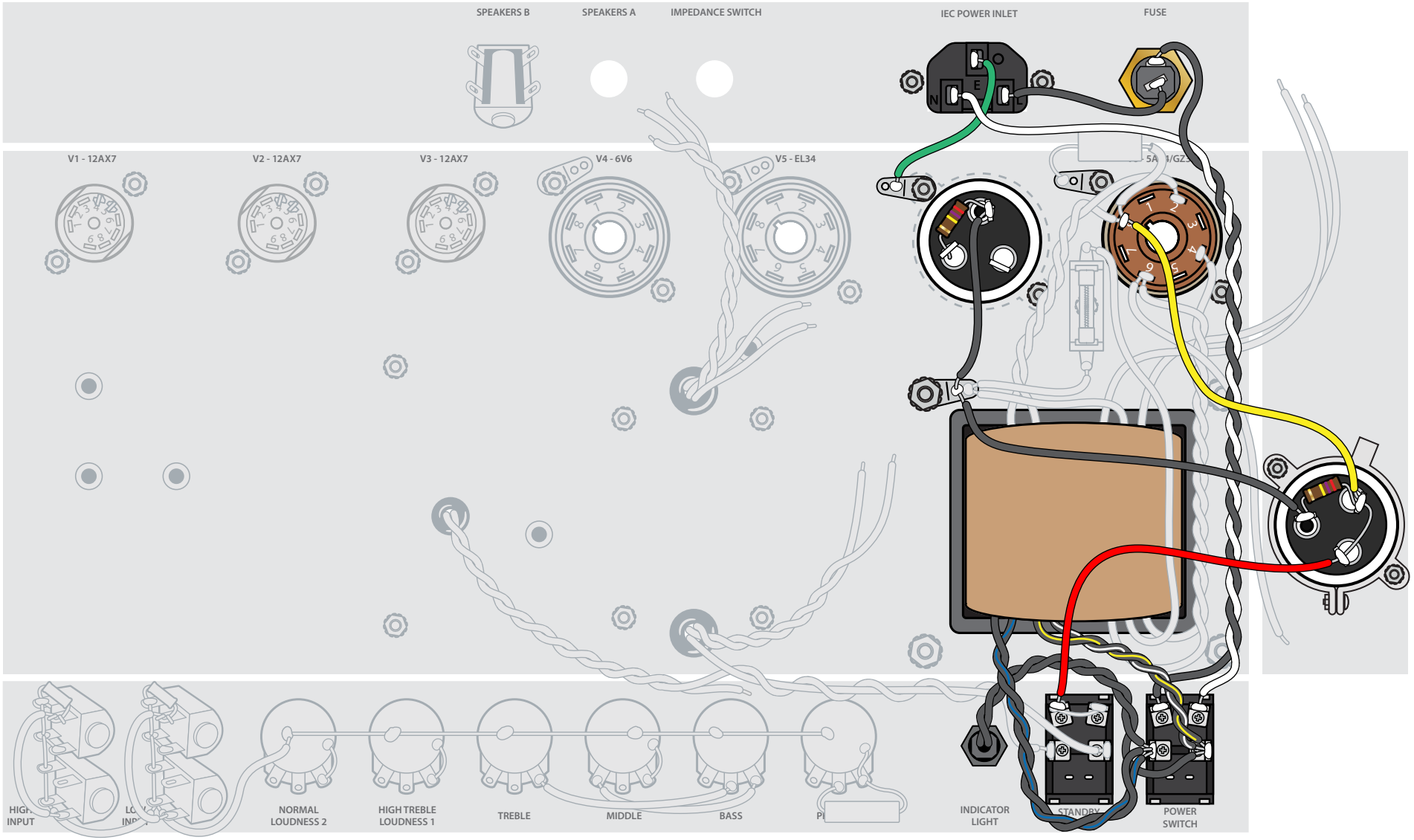
Install the top mounted capacitor

☐ STEP 47

Before installing the remaining filter capacitor, cut a 3" piece of black wire and strip 1/8" of the insulation off both ends. Attach one end of this lead to the ground lug of the capacitor, but do not solder yet. Wrap the remaining 270K 3W metal film resistor between the positive lug that will eventually be facing the left panel of the chassis (as shown in the diagram on the right), and the ground lug. Solder the resistor and lead connected to the ground lug in place, but leave the other end of the 270K 3W resistor unsoldered.

Install the filter capacitor into the clamp with the ground lug closest to the rear panel of the chassis. Tighten the clamp around the capacitor until it is secure. Connect the opposite end of the black ground wire to the lug attached to the mounting screw located at the rear left-hand corner of the power transformer. Solder all wires connected to this lug in at this time.

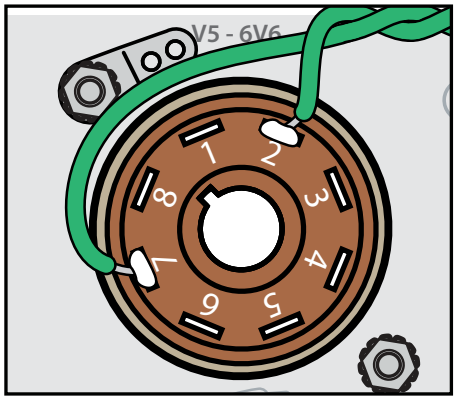
The remaining lugs will be wired up once the turret board is installed.



Solder two green transformer wires to the V5 socket

☐ STEP 48

Trim, strip, and solder the green wires into the bottom mounting holes on pins 2 and 7 on V5 as shown. Use care not to get any solder into the top holes. Tuck the twisted green leads into the rear corner of the chassis.



Prep black and red heater wires

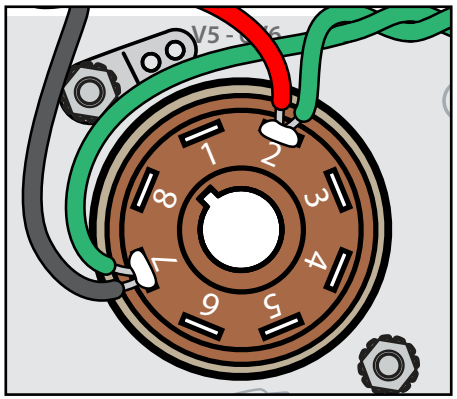
☐ STEP 49

Cut approximately 22" of black, and 22" of red lead wire and twist them together tightly. Note that the runs between tube sockets are not even. The black leads will be slightly longer in order to reach the pins they will be soldered to.

Connect heater wires from the V5 to V4 sockets

☐ STEP 50

Cut off around 5" of the black and red wires and position them in the rear corner of the chassis, as was done with the twisted green wires coming off the power transformer. Untwist enough red wire to reach pin 2 on the V5 socket. Strip 1/8" off the end and solder into the top hole of pin 2 on V5. Untwist enough of the black wire to reach pin 7 and trim off the excess. Strip the end and solder to the top hole on pin 7. Do the same for the opposite end of the wires, soldering the leads into the bottom holes of V4. Red to pin 2, black to pin 7.



Connect heater wires from the V4 to V3 sockets

☐ STEP 51

Following the same procedure: trim, strip and run a 5" section of the twisted red and black heaters between V4 and V3. This run will end up being slightly shorter than 5". Solder the red wire to the top hole on pin 2 of the V4 socket, and the black lead to pin 7 on V4. When trimming the end of the red wire running to pins 4/5 on V3, leave the wire a bit long and strip 1/2" off the end. Take the 1/2" stripped end, thread it through pin 5 and loop it around through pin 4. Solder it into pin 4 but leave pin 5 open as another wire will be attached to the same lug. Untwist enough of the black wire to reach pin 9, strip the end, but don't solder it in yet.

Connect the heater wires from the V3 to V2 sockets

☐ STEP52

Again, using the same process, connect the heater wires to V3 and V2. When trimming the end of the red wire running to pin 5 on V2, leave the wire a bit long and strip 1/2" off the end. Take the 1/2" stripped end, thread it through pin 5 and loop it around through pin 4. Solder it into pin 4 but leave pin 5 open as another wire will be attached to the same lug. Untwist enough of the black to reach pin 9, strip the end, but don't solder it in yet.

Connect heater wires from V2 to V1

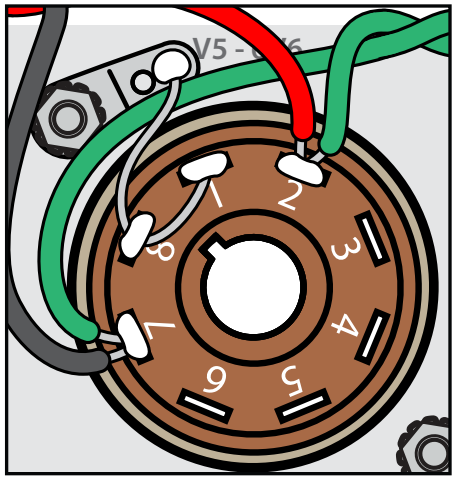
☐ STEP 53

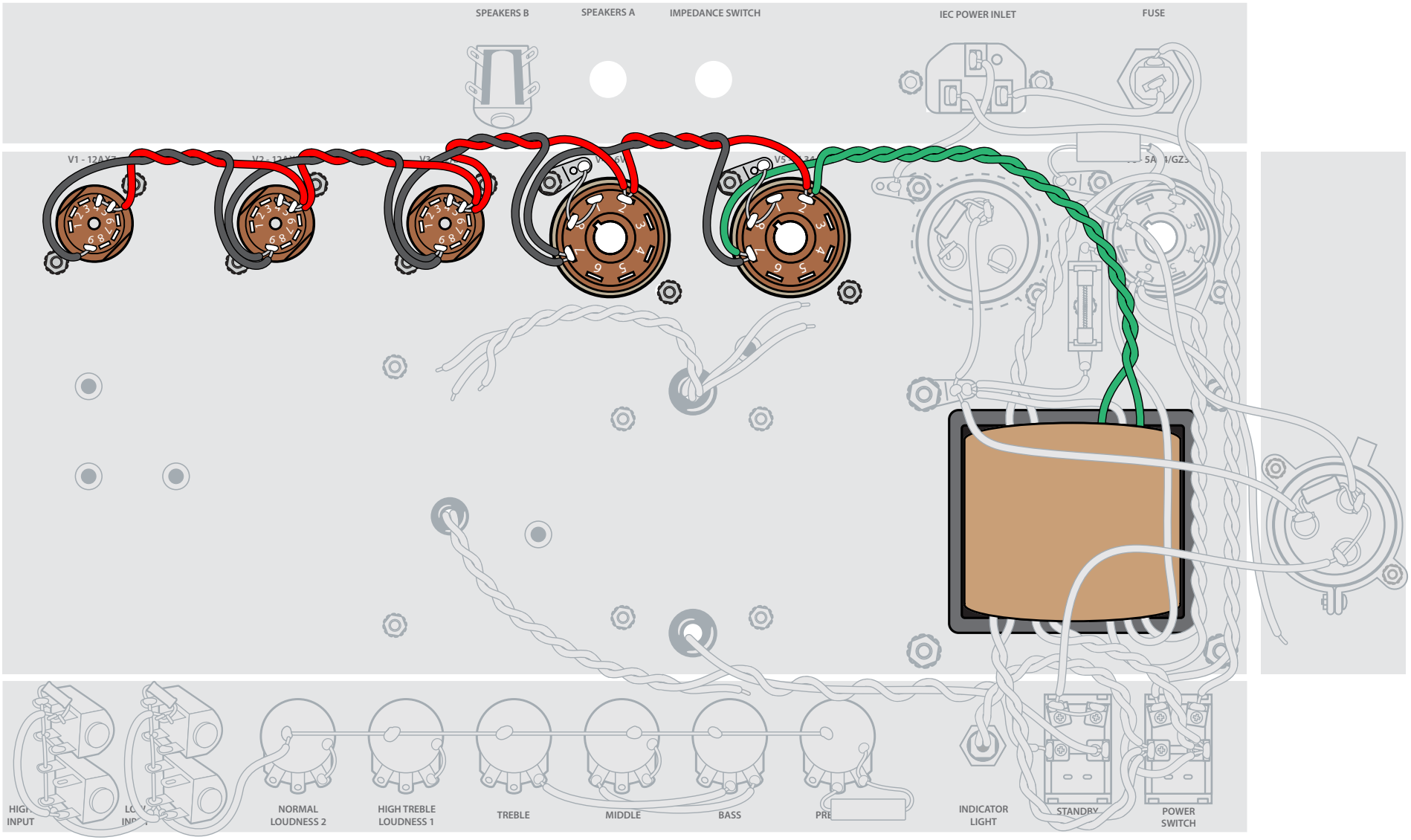
Again, using the same process, connect the heater wires to V2 and V1. When trimming the end of the red wire running to pin 5 on V2, leave the wire a bit long and strip 1/2" off the end. Take the 1/2" stripped end, thread it through pin 5 and loop it around through pin 4. Solder it into pin 4 and pin 5. Untwist enough of the black wire to reach pin 9, strip the end, and solder in place.

Ground the V4 and V5 sockets

☐ STEP 53

Cut two 1-1/2" pieces of the bare wire that was used for the ground buss. Run one end through lugs 1 and 8 on V5, and solder them in place. Run the other end through the grounding lug attached to the socket mounting hardware and solder it in place. Follow the same procedure for V4.



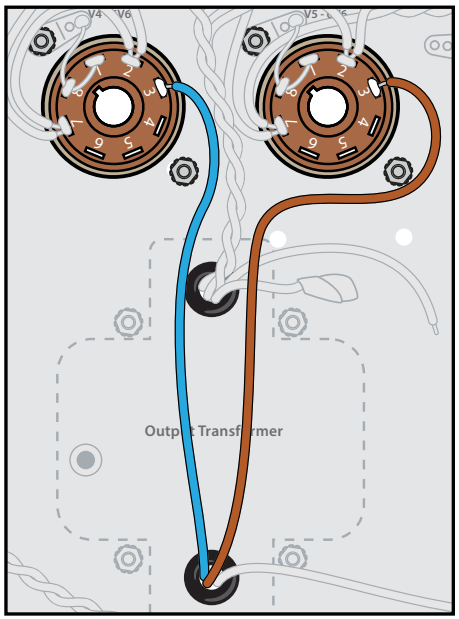


Wiring the brown and blue output transformer leads

☐ STEP 55

Locate the brown output transformer lead that is coming through the same grommeted hole as the output transformer blue and red leads. This will be the hole closest to the frony control panel. Run this brown output transformer lead, as shown on the wiring diagram, along the floor of the chassis, to pin 3 of the V5 socket. Cut it to an appropriate length and solder it in place.

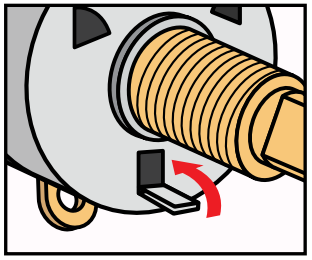
Route the blue output transformer lead, as shown on the wiring diagram, along the floor of the chassis to pin 3 of the V4 socket. Cut it to an appropriate length and solder it in place. We route these two output transformer leads this way because they carry audio signal. We want to keep these far away from the heater wire circuit.

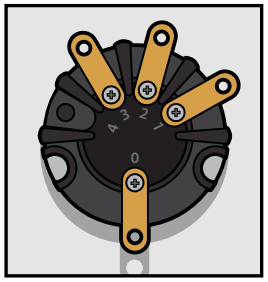


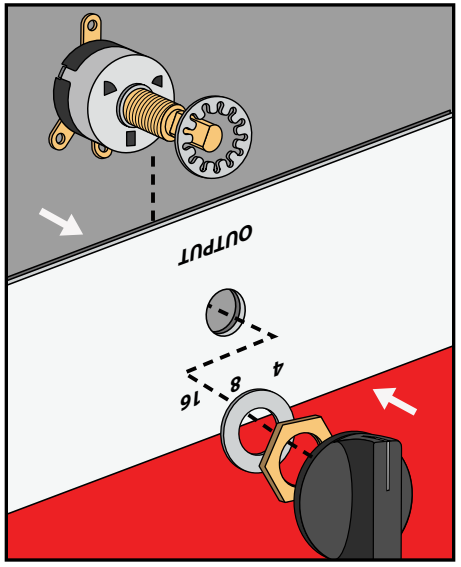
Install the impedance switch

☐ STEP 56

Install the impedance switch as shown below. Before installing, you will need to flatten the indicator tab to the body of the switch. Note the lugs on the back of the switch are numbered 0, 1, 2, and 3. When you install the switch, lug 2 will be pointing straight towards the floor of the chassis. Before wiring, install the indicator knob and make sure it lines up with the numbers on the rear control panel when cycled through the different positions.



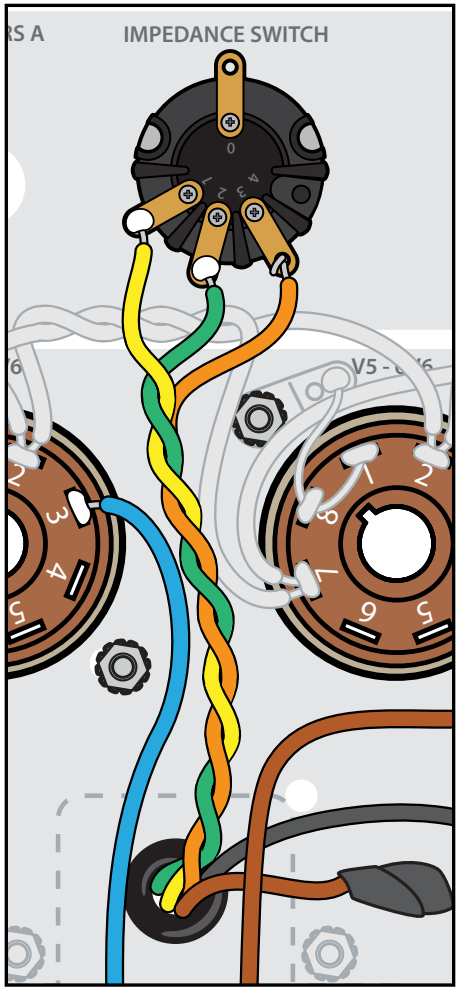




Wiring the impedance switch

☐ STEP 57

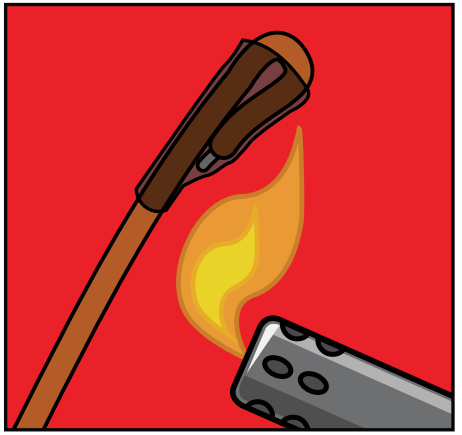
Trim and strip the orange wire coming off of the output transformer and connect it to lug 3. Don't solder this one in place yet, another lead will be connected to this lug once the turret board is installed. Trim and strip the green lead and solder it to lug 2. Trim and strip the yellow lead and solder it to lug 1. The black lead coming off the output transformer will be soldered later in the build.

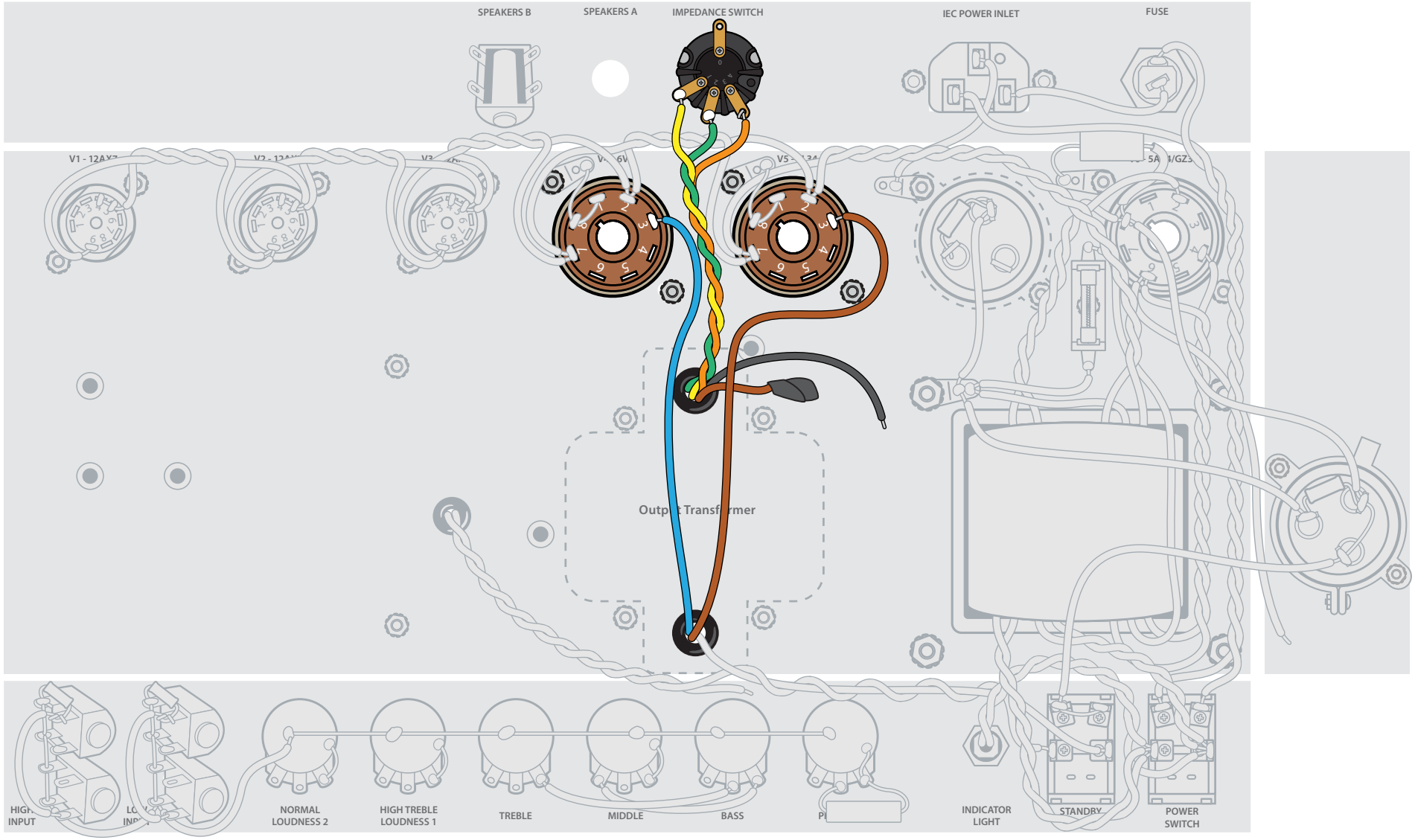


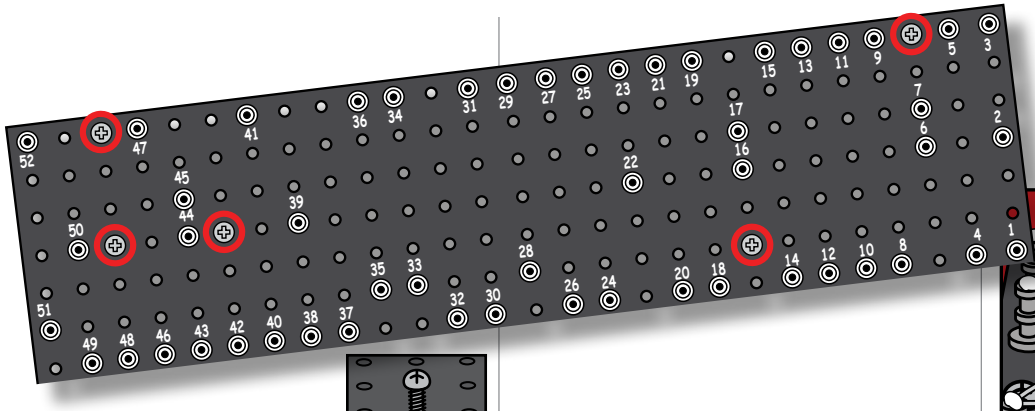
Terminate the secondary brown lead on the output transformer

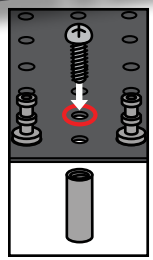
☐ STEP 58

Along with the orange, green, yellow and black leads, there is a brown lead coming out of the grommeted hole closest to the tube sockets. This brown lead is not used. Trim this wire to about 2-1/2", bend it over itself, and place a small piece of heat shrink tubing over the end to prevent it from coming in contact with the chassis or any other components.









Install the turret board standoffs

☐ STEP 59

Install the turret board standoffs in the locations shown using 4-40 x 1/4" screws.

Populate the turret board

☐ STEP 60

Load the lead wires and components without soldering them in. This allows for easy swapping of parts if a mistake is made. Check and re-check your work as you go to avoid errors.

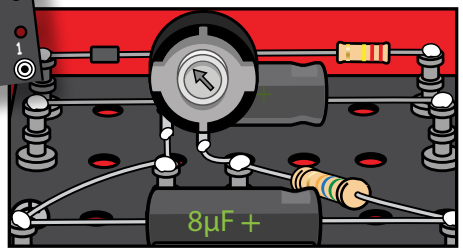
Start by running your red board jumpers. Wrap these jumpers around the bottoms of the turrets as close to the board as possible and solder them in place.

- Run a 2-1/2" red lead between turrets 9 and 16.
- Run a 2-1/2" red lead between turrets 12 and 20.
- Run a 3" red lead between turrets 17 and 28.
- Run a 4" red jumper between turrets 29 and 45.

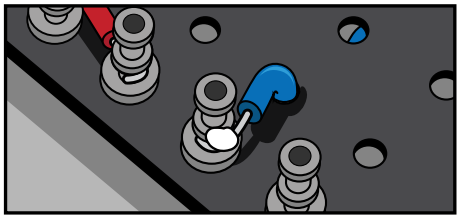
Load components and lead wires

- Run a 1N4007 diode between turrets 2 and 3. Ensure the negative lead is installed to turret 2
- Run a 220K resistor between turrets 1 and 2.
- Run a bare jumper between turrets 3 and 5. A scrap of a trimmed resistor lead works well for this if long enough.
- Run an 8µF capacitor between turrets 4 and 5. Make sure the capacitor is oriented correctly.
- Wrap a 3" black lead onto turret 4.
- Run a 15K resistor between turrets 5 and 9.
- Run a bare jumper between turrets 4 and 8.
- Run a bare jumper between turrets 9 and 7.

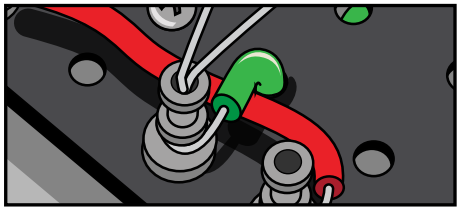
- Modify the bias pot with wire scraps as shown and run it between turrets 6 and 7 with the middle lug going into turret 6. You can clip the unused trim pot lug.



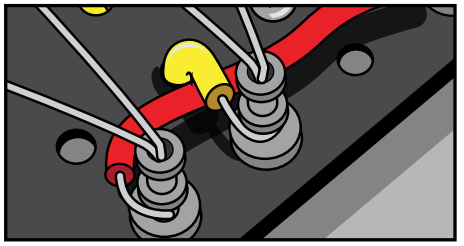
- Run a 56K resistor between turrets 6 and 8.
- Run an 8µF capacitor between turrets 8 and 9.
- Wrap a 1-1/2" red lead on turret 11.
- Run the 5-watt 1K resistor between turrets 10 and 11.
- Wrap a 9" blue lead onto turret 10. This lead will run under the board. Install as shown.



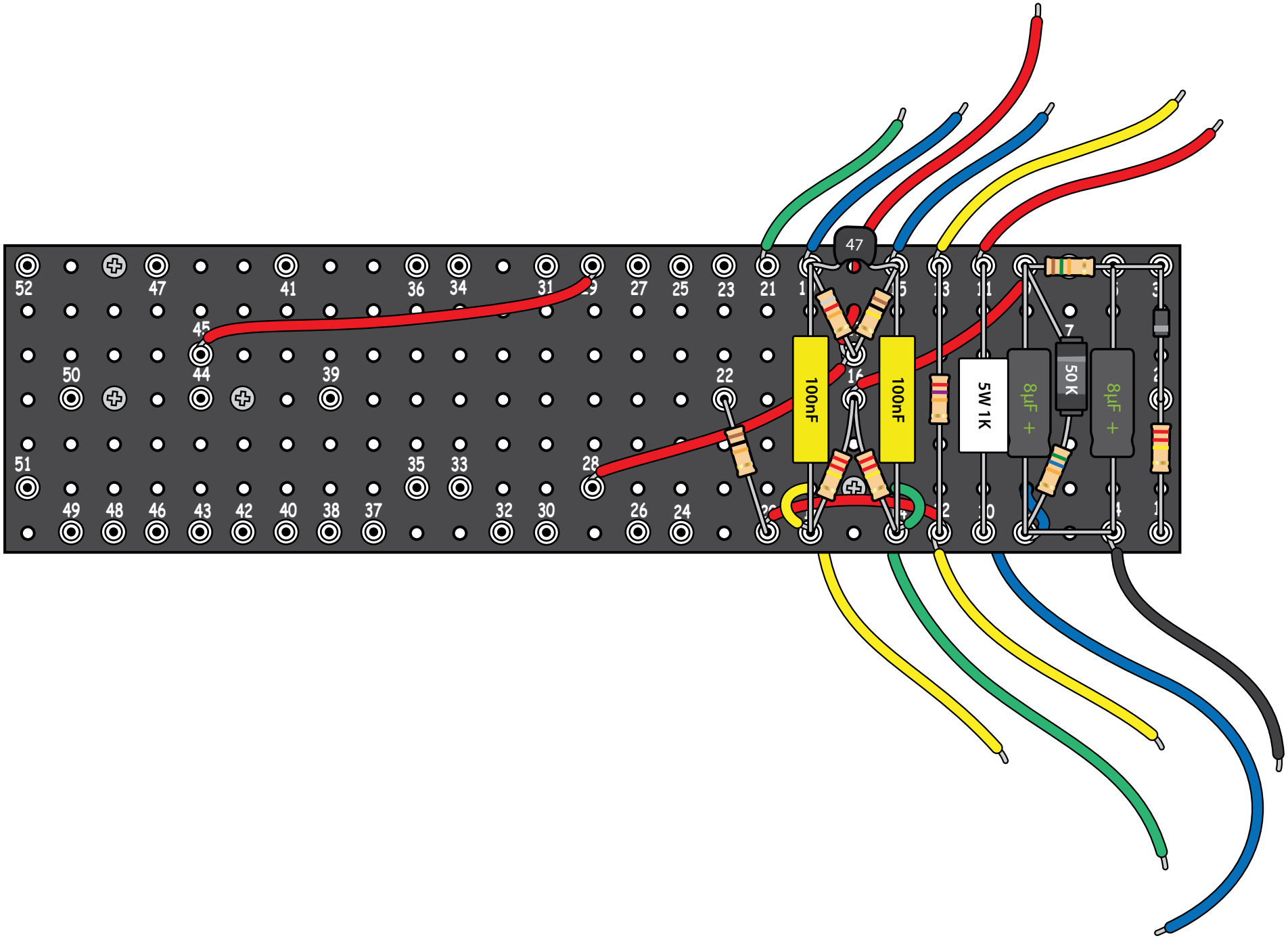
- Wrap a 3-1/2" yellow lead onto turret 13.
- Run a 27K resistor between turrets 12 and 13.
- Wrap a 5" yellow lead onto turret 12.
- Wrap a 2-1/4" blue lead onto turret 15.
- Wrap a 7-1/2" green lead to turret 14. This lead will run under the board.



- Run a 100nF capacitor between turrets 14 and 15.
- Wrap a 2-3/4" blue lead onto turret 19.
- Wrap a 7-1/2" red lead onto turret 17. This lead will run under the board like the 9" blue lead.
- Run a 47pF capacitor between turrets 15 and 19.
- Run a 100K resistor between turrets 15 and 17.
- Run an 82K resistor between turrets 17 and 19.
- Wrap a 5-1/2" yellow lead to turret 18. This lead will run under the board.

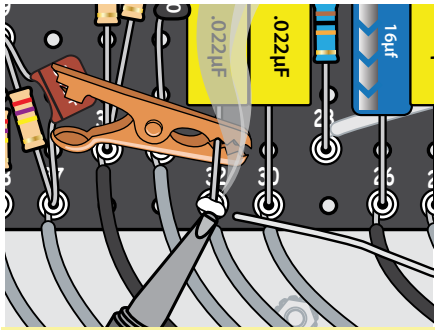


- Run a 100nF capacitor between turrets 18 and 19.
- Run a 220K resistor between turrets 14 and 16.
- Run a 220K resistor between turrets 16 and 18.



- Wrap a 1-1/2″ green lead to turret 21.
- Run a 10K resistor between turrets 20 and 22.
- Run a 100nF capacitor between turrets 20 and 21.
- Run a 1M resistor between turrets 21 and 22.
- Wrap a 1-1/4″ yellow lead onto turret 23.
- Run a 470-ohm resistor between turrets 22 and 23.
- Wrap a 2-1/2″ green lead onto turret 25.
- Run a 1M resistor between turrets 22 and 25.
- Run a 22nF capacitor between turrets 24 and 25.
- Wrap a 3″ grey lead onto turret 24.
- Run a 16µF capacitor between turrets 26 and 27 (ensure it is oriented as shown in the diagram).
- Wrap a 2-1/2″ black lead onto turret 26.
- Run a bare jumper between turrets 27 and 29.
- Wrap a 2-1/2″ blue lead onto turret 29.
- Run a 10K 2W resistor between turrets 28 and 29.
- Run a 22nF capacitor between turrets 30 and 31.
- Wrap a 5-1/2″ grey lead onto turret 30.
- Run a 22nF capacitor between turrets 32 and 31.
- Wrap a 4-1/2″ grey lead onto turret 32.
- Run a 56K resistor between turrets 31 and 34.
- Wrap a 1-1/2″ yellow lead onto turret 34.
- Run a 250pF capacitor between turrets 33 and 34.
- Wrap a 4-1/2″ grey lead onto turret 33.
- Run a 100K resistor between turrets 34 and 35.
- Wrap a 2-1/2″ yellow lead onto turret 36.
- Run an 820-ohm resistor between turrets 35 and 36.
- Wrap a 2-3/4″ black lead onto turret 35.
- Wrap a 4″ grey lead onto turret 37.
- Wrap a 4″ green lead onto turret 39.
- Run a 500pF capacitor between turrets 37 and 39.
- Run a 270K resistor between turrets 37 and 39.
- Run a 270K resistor between turrets 38 and 39.
- Wrap a 3″ grey lead onto turret 38.
- Wrap a 2″ blue lead onto turret 41.
- Run a 22nF capacitor between turrets 40 and 41.
- Wrap a 4-1/4″ grey lead onto turret 40.
- Wrap a 3-1/4″ green lead onto turret 44.
- Run a 100K resistor between turrets 41 and 45.
- Run a 68K resistor between turrets 42 and 44.
- Wrap a 2-1/2″ green lead onto turret 42.
- Run a 68K resistor between turrets 43 and 44.
- Wrap a 2-3/4″ green lead onto turret 43.
- Wrap a 2″ blue lead onto turret 47.
- Run a 100K resistor between turrets 45 and 47.
- Run a 22nF capacitor between turrets 46 and 47.
- Wrap a 4-1/2″ grey lead onto turret 46.
- Wrap a 4″ green lead onto turret 50.
- Run a 68K resistor between turrets 48 and 50.
- Wrap a 2-1/2″ green lead onto turret 48.
- Run a 68K resistor between turrets 49 and 50.
- Wrap a 2-1/2″ green lead onto turret 49.
- Wrap a 3-1/2″ yellow lead onto turret 52.
- Run a 250µF capacitor between turrets 51 and 52. Again, be sure this component is oriented correctly.
- Run a 820-ohm resistor between turrets 51 and 52, alongside the 250µF capacitor.turret 52.
- Wrap a 6″ black lead onto turret 51.

Once the turret board is loaded, re-check the board one more time to make sure all components and leads are in their proper locations. If everything looks good, solder the leads and turrets in place.

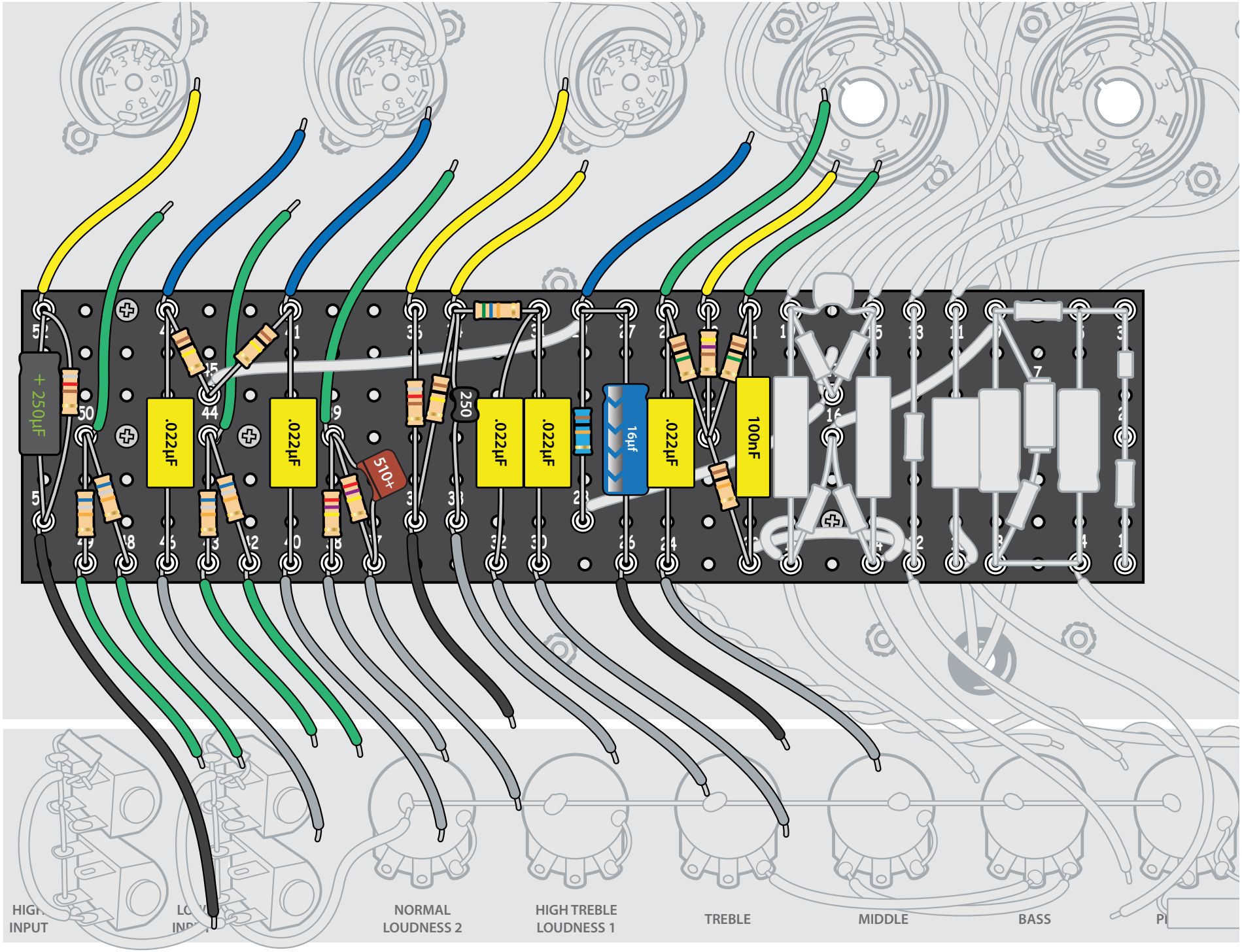


TIP! Use heat sinks on the capacitors to prevent heat damage.

Install the turret board

☐ STEP 61

Install the turret board using the five 4-40 x 1/4″ screws.



Wiring the front panel

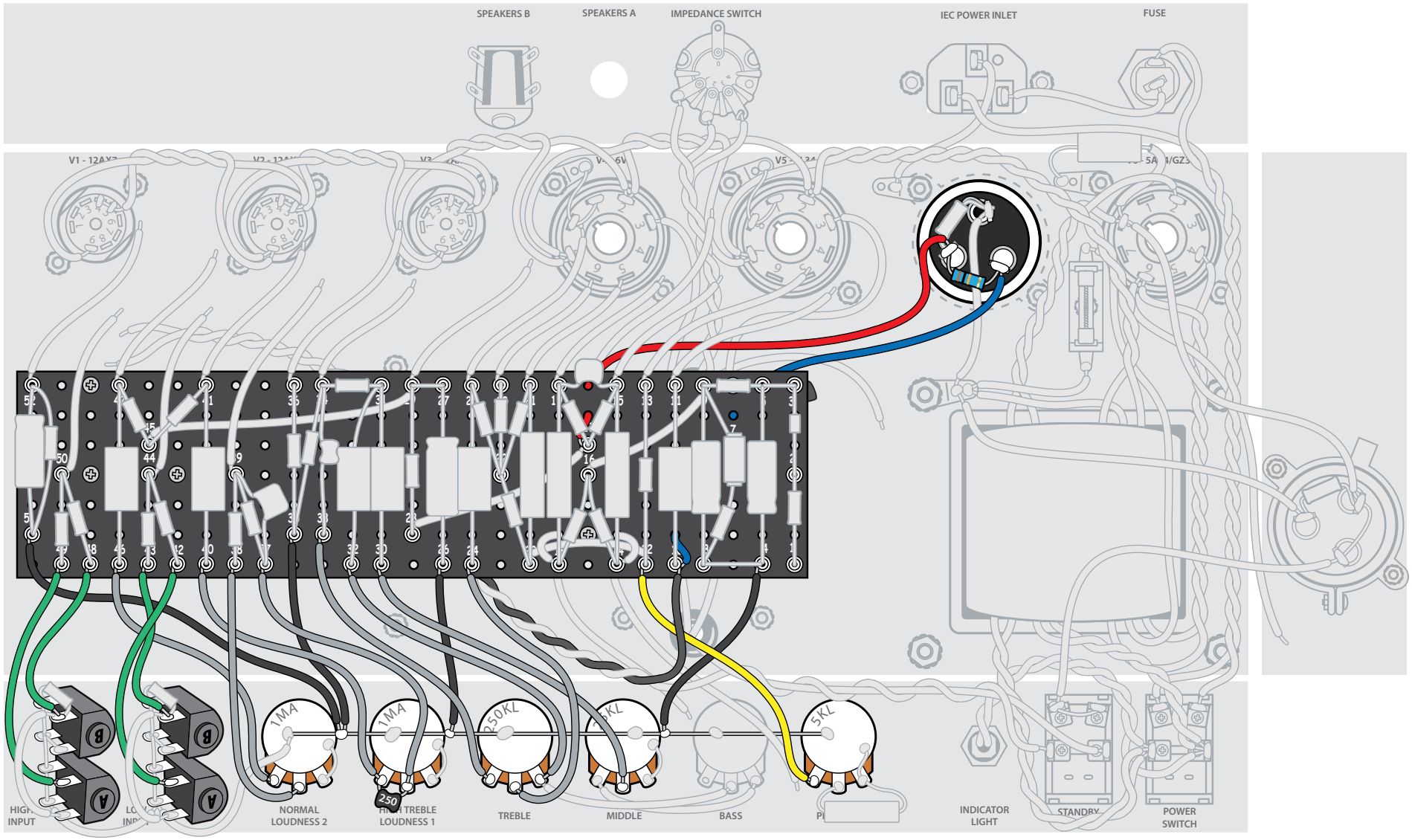
☐ STEP 62

- Solder the black lead from turret 4 to the ground buss between the bass and midrange (middle) control pots.
- Solder the remaining black lead from the filter choke to turret 10.
- Solder the yellow lead from turret 12 to the left-hand lug of the presence control pot.
- Solder the gray lead from turret 24 to the middle lug of the treble control pot.
- Solder the black lead from turret 26 to the ground buss in between the treble and high treble volume control pots.
- Solder the black lead from turret 35 to the ground buss in between the volume control pots.
- Solder the black lead from turret 51 to the ground buss in between the volume control pots.
- Solder the green lead from turret 42 to the open lug of jack A of the high treble inputs.
- Solder the green lead from turret 43 to the open lug of jack B of the high treble inputs.
- Solder the green lead from turret 48 to the open lug of jack B of the normal inputs.
- Solder the green lead from turret 49 to the open lug of jack A of the normal inputs.
- Solder the gray lead from turret 30 to the middle lug on the midrange (middle) control pot.
- Solder the gray lead from turret 32 to the right lug of the treble control pot.
- Solder the gray lead from turret 33 to the right left lug on the treble control pot.
- Trim and install a 250pF capacitor in between the middle and left lugs on the high treble volume control pot, but don't solder it in yet. It will be soldered when the leads from turrets 37 and 40 are connected.
- Solder the gray lead from turret 37 to the middle lug of the high treble volume control pot.
- Solder the gray lead from turret 38 to the middle lug of the normal volume control pot.
- Solder the gray lead from turret 40 to the left lug of the high treble volume control pot.
- Solder the gray lead from turret 46 to the left lug of the normal volume control pot.

Finish wiring the top mounted filter capacitor

☐ STEP 63

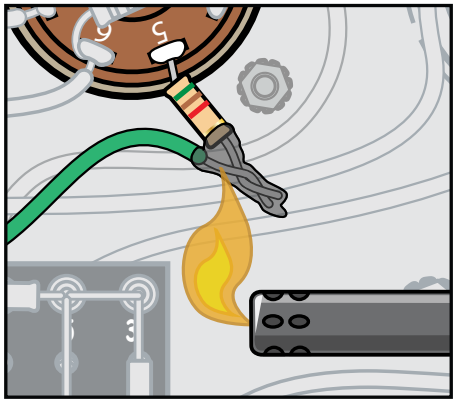
- Install a 10K 2W metal oxide resistor between the positive lugs of the top mounted filter capacitor, don't solder it in yet.
- Solder the blue wire that runs under the board from turret 10 to the right-hand positive lug.
- Solder the red wire that runs underneath the board from turret 17 to the left-hand positive lug.



Finish wiring the tube sockets

☐ STEP 64

- Solder the yellow wire coming off pin 6 of V6 socket to turret 1.
- Cut a 3" length of red wire, strip the ends, and run them into the bottom holes of pin 6 on V4 and V5 sockets. Solder in the end on V5, V4 will be soldered in the next step.
- Connect the red lead from turret 11 to the bottom hole on pin 6 of V4 socket and solder both wires in place.
- Solder a 5.1K resistor to pin 5 on V5.
- Solder a 5.1K resistor to pin 5 on V4.
- Solder a 470-ohm metal oxide 2W resistor between the top holes on pins 4 and 6 of V5.
- Solder a 470-ohm metal oxide 2W resistor between the top holes on pins 4 and 6 of V4.
- Solder the yellow lead coming from Turret 13 to lug 3 of the impedance switch.
- Solder the green lead that runs underneath the board from turret 14 to the end of the 5.1K resistor on pin 5 of the V5 socket. Shrink wrap the ends as shown.

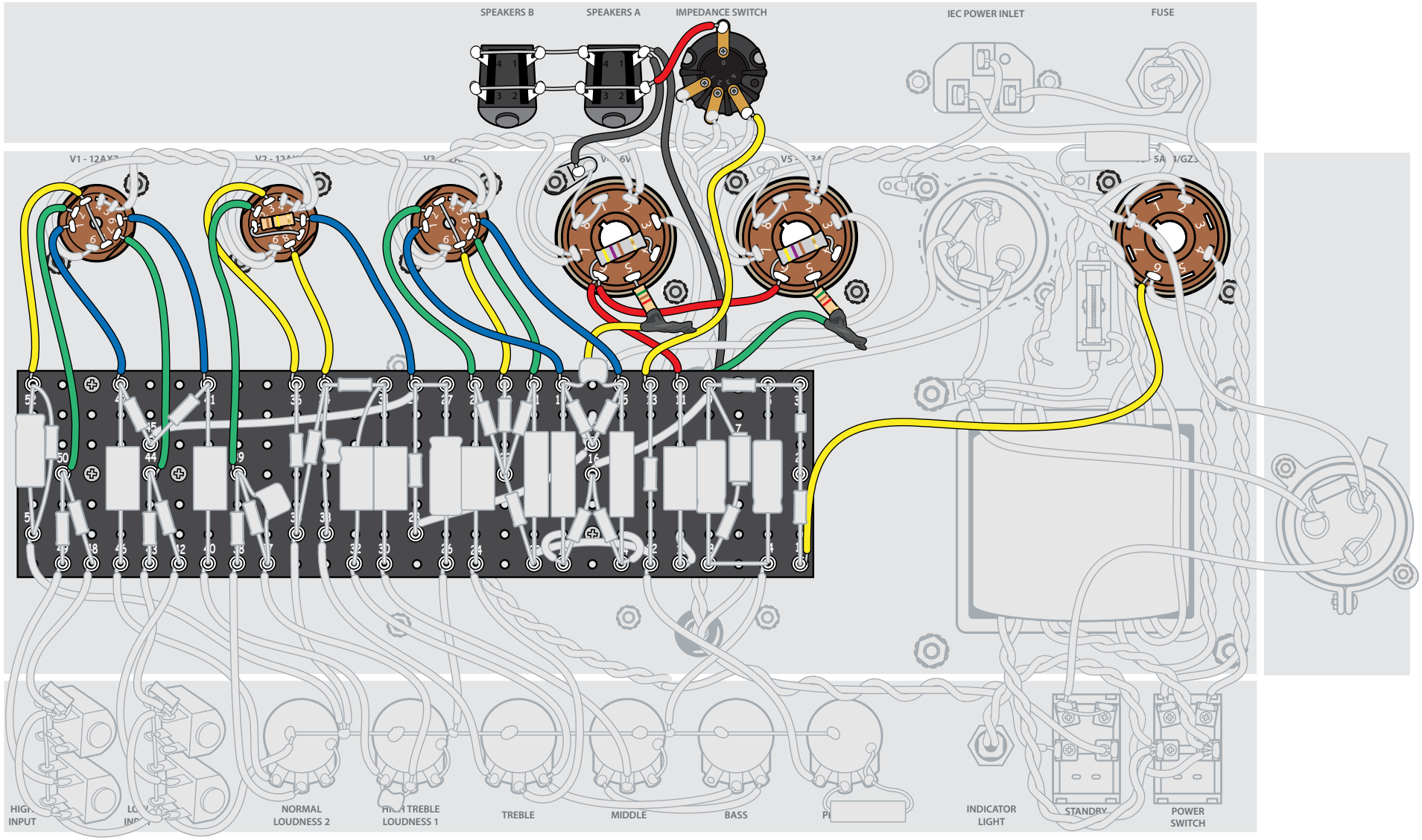


- Solder the yellow lead that runs underneath the board from turret 18 to the end of the 5.1K resistor on pin 5 of the V4 socket. Shrink wrap the ends as was done on V5.
- Solder the blue lead from turret 15 to pin 6 on the V3 socket.
- Solder the green lead from turret 21 to pin 7 on the V3 socket.
- Run a bare jumper between pins 3 and 8 on the V3 socket. Solder it in on pin 3, leaving pin 8 open until the next leadwire is connected.
- Solder the yellow lead from turret 23 to pin 8 on the V3 socket.
- Solder the blue lead from turret 19 to pin 1 of the V3 socket.
- Solder the green lead from turret 25 to pin 2 of the V3 socket.
- Next, we're going to install a 100K resistor into the V2 socket. Start by using one end of the resistor to jump pins 1 and 7, solder those connections in place.
- Connect the opposite end of the 100K resistor to pin 6 of the V2 socket. Don't add solder until the next step.
- Solder the blue lead from turret 29 to pin 6 of the V2 socket, along with the other end of the 100K resistor.
- Solder the yellow lead from turret 34 to pin 8 of the V2 socket.
- Solder the yellow lead from turret 36 to pin 3 of the V2 socket.
- Solder the green lead from turret 39 to pin 2 of the V2 socket.
- Solder the blue lead from turret 41 to pin 6 of the V1 socket.
- Solder the green lead from turret 44 to pin 7 of the V1 socket.
- Solder the blue lead from turret 47 to pin 1 of the V1 socket.
- Solder the green lead from turret 50 to pin 2 of the V1 socket.
- Run a bare jumper between pins 3 and 8 of the V1 socket. Solder the pin 8 end, leaving pin 3 unsoldered until the next step.
- Solder the yellow lead from turret 52 to pin 3 of the V1 socket.

Connecting the speaker outputs

☐ STEP 65

- Cut a 3" black lead and strip the ends. Solder one end to the grounding lug coming off of the V4 socket.
- Install the speaker output jacks into the back panel and secure.
- Run a bare jumper through lugs 2 and 3 on output jack A, and lugs 2 and 3 of output jack B. Solder in all lugs except for lug 2 on output jack A.
- Cut a 1-1/2" red lead and strip the ends.
- Solder one end of the red lead to lug 2 on output jack A and the other to lug 0 on the impedance switch.
- Run a bare jumper between lugs 1 and 4 on output jack A and lugs 1 and 4 on output jack B. Leave lug 1 on output jack A open until other leads are connected.
- Connect the black lead from the ground lug on V4 to lug 1 on output jack A.
- Trim, strip and solder the black lead from the output transformer to lug 1 on output jack A.



Installing parts and preparing for testing

Glue the tube placement chart

☐ STEP 66

Cut out the chart on page # 45. With a thin coat of glue or contact cement, glue it to the inside wall of the cabinet.

Install the fuses

☐ STEP 67

Install the 3-amp fuse in the mains fuse socket and the 500mA fuse in the H.T. fuse socket.

Install the seven control knobs

☐ STEP 68

Turn the shaft of each pot all the way counterclockwise to the “off” point and install the knob so the indicator line points to zero. Don't forget the knob for the impedance selector switch on the back.

Set the chassis on chassis stand or on blocks for testing

☐ STEP 69

Set your chassis up for final testing on your chassis stand (instructions on how to build your own chassis stand, on page 13). If you do not have a chassis stand, you can carefully stack blocks for a similar setup.

Testing and troubleshooting

Any **multimeter** will work fine for the two types of tests we’re about to do: checking **continuity** and reading **voltages**. The instructions that came with your meter will be helpful.

Continuity testing is simply making sure current flows between two points successfully. Touch the meter’s red lead to one end of the section being tested, and the black lead to the other end. If the continuity is good, your meter will beep or register this on the display.

Voltage testing is where you need to be careful. Some steps require the amp to be plugged in and turned on. This becomes dangerous if you’re not cautious. Respect the voltages and follow the directions, and these tests are safe and easy.

DON’T INSTALL THE TUBES YET!

DON’T PLUG THE AMP IN YET!

The next page is going to keep you out of trouble!

Perform a safe power-up

☐ STEP 70

At this point, there should be no tubes installed, and the speaker should be disconnected.

Before plugging the amp in, turn the power switch to ON. Switching the amp on before the first power-up protects you from shock if a mistake in your wiring has created a short to the chassis. If this short exists, an indication would be that the pilot light will not turn on, since the AC current is going directly to ground.

Plug the power cord in. The pilot lamp should light.

For a few minutes, check for smoke or unusual smells. If anything seems unusual, disconnect the power immediately and carefully review all your connections.

Check your bias voltage

☐ STEP 71

The most important singular voltage in a tube amplifier is the bias voltage. This is what regulates your power tubes and keeps them from drawing too much current, leading to red plating and damage to your amp. Now that we know we have power to our amp, our next step is to check that the bias voltage is present.

To take this measurement, and moving forward with further voltage tests, you'll want to connect your negative multimeter probe to ground via an alligator clip and/or test lead. **This will allow for you to probe the amp circuit with one hand while keeping your other hand behind your back or in your pocket. *NEVER* HAVE BOTH HANDS IN THE LIVE AMP, YOU CAN CREATE A PATH BETWEEN YOUR B+ VOLTAGE AND GROUND, RUNNING A DANGEROUS CHARGE THROUGH YOUR HEART.**

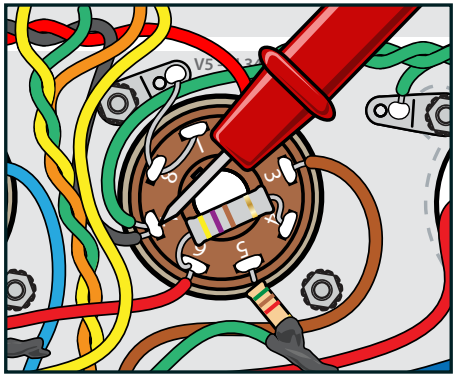
Turn your power switch back to the ON position, leaving the amp in standby. With your negative probe anchored to chassis ground and your multimeter set to read DC voltage, connect the positive probe to turret 16. You should see a negative reading between -30VDC and -70VDC. Go ahead and turn your bias trim pot on the circuit board all the way in the direction of the control pots, pushing the bias voltage as far into the negative as possible. This is a precaution for the power tubes as we proceed with testing.

Check your heater voltage

☐ STEP 72

The next voltage we're going to check is our heater voltage. This is an AC circuit that starts with the pair of green power transformer taps and runs down to each of the power and preamp tubes. The purpose of this voltage is simply to heat the filaments inside the tubes, creating the light you see when the amp is on. This filament heats the cathodes, sending electrons to the plates.

With your multimeter set to read AC voltage, and with your negative probe still anchored to chassis ground, connect your positive probe to pins 2 and 7 or your power tubes, and pins 4/5 and 9 of your preamp tubes. All points should read right around 3.3VAC.



If you are not seeing this voltage somewhere down the chain of heater connections, work your way back towards the power transformer until you find were the circuit is broken.

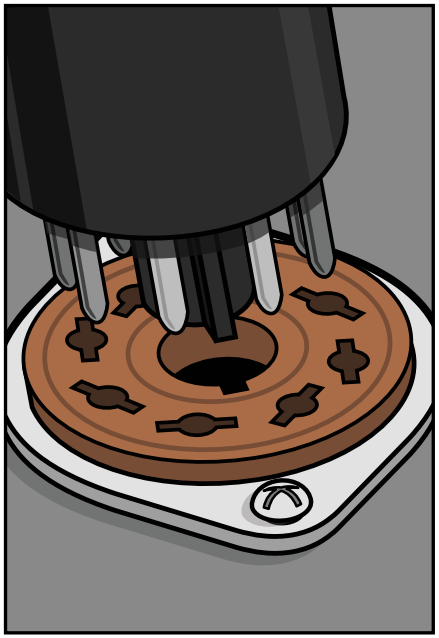
Once all voltages are verified, turn off the amp and unplug it from the wall for safety. Next we'll be moving on to the testing DC voltage.

Test the dangerous DC voltage

☐ STEP 73

The high DC voltage that comes from the rectifier tube and is passed through your filter capacitors is referred to as "B+". The next step is to test this B+ voltage.

With the amp still unplugged, install the 5AR4 rectifier tube. Take care to position the indexing key correctly in the socket.



Plugging your amp back in and switching the power switch to the ON position, you should see the pilot lamp light, along with the filament inside the 5AR4 tube. Again, spend a few moments checking for smoke or smells.

AT THIS POINT, DANGEROUS VOLTAGE IS FORMING IN THE FILTER CAPS. *ALWAYS* DISCHARGE THEM BEFORE WORKING ON THE CIRCUIT, EVEN IF THE AMP IS UNPLUGGED. **SEE HOW TO USE A SNUFFER STICK ON PAGE 9.** **FOR SAFETY, USE ONLY ONE HAND TO PROBE THE AMP DURING DC TESTS.**

Now, with your multimeter set to read DC, and your negative probe still anchored to chassis ground, connect the positive probe to the jumpered positive lugs of the side mounted filter can capacitor. You should find around 500VDC.

If your B+ appears to be within range at the side mounted filter capacitor, turn the amp off and unplug it from the wall.

Testing and troubleshooting

Tube bias affects your sound

☐ STEP 74

"Bias" refers to the voltage that regulates the current of electrons flowing from the cathode to the plate when the tubes are idle. The bias voltage is increased or decreased by the screwdriver-adjustable bias pot.

Adjusting the bias affects your sound: a higher setting gives you punchier cleans and grittier distortion, but your tubes will wear out faster. With a low setting, your tubes last longer but the sound is more sterile. A good bias setting falls between these extremes.

Old method of setting the bias: doing it by ear

If you have a bias meter, skip this step and go on to Step 121.

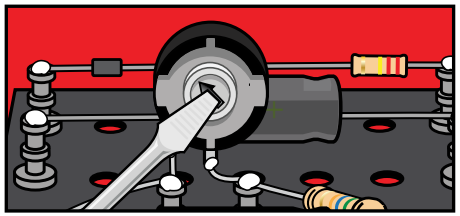
The old-school way of adjusting the bias is by ear: after setting the bias voltage to a recommended starting point, you make tiny adjustments to the bias pot while listening for the sound you want. This inexact method can shorten the life of your power tubes.

For this amp, we're going to rough in the bias at -42VDC.

DANGER: set your guitar aside before you adjust the bias pot.

Do not touch any amp circuitry while holding your guitar. Doing so would create an electrocution hazard!

Use a screwdriver to make a tiny adjustment to the bias pot. Turn clockwise to increase the current and counter-clockwise to decrease it. Then set the screwdriver aside and play to hear to the result.



Watch out for red-plating

You especially want to avoid too much current turning the gray plates to glowing red. If your tubes start red plating, shut the amp down and let it cool before setting the bias to a lower level.

Improved method of setting the bias: using a bias meter

The more accurate way to set the bias is by using a bias meter.

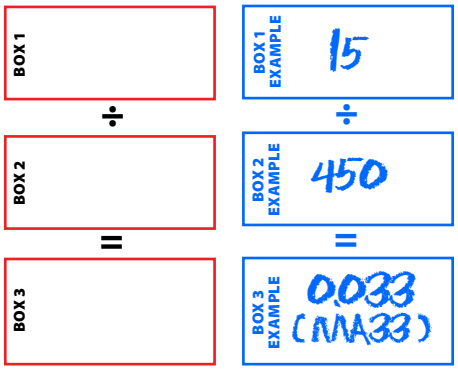
This method starts with a simple calculation to find your bias setting, then you adjust the bias pot until your bias meter displays that reading.

The calculation uses two numbers, the tube's **maximum plate dissipation** and its **plate voltage**.

Plate dissipation. Every power tube has a specified plate dissipation—the maximum wattage the tube can handle. For the EL34 power tubes in this amp, that maximum is 25 watts. Exceeding the 25-watt limit will damage the tube, and operating at the full 25 watts will shorten its life. Our goal is to operate the tube at 60% of the 25-watt limit, or 15 watts. We've entered this number for you in Box 1 of the calculation.

Plate voltage. You already have the plate voltage for these tubes: it's the number you found during the final DC voltage checks at pin 3 of either of your power tubes. Write this number down in Box 2 below.

Divide Box 1 by Box 2. The result is your recommended bias setting for use in the next step. Our example calculation gives a bias recommendation of .034 Amps. Since bias is typically measured in milliamps, this measurement is written as 34mA.



With the amp unplugged, allow the power tubes to cool. Once the power tubes have cooled, remove them from their sockets.

Plug the tubes in to the bias probe sockets, which are like tube sockets. Plug the probe sockets with tubes into the power tube sockets.

Plug the amp back in and flip the power switch ON. Give the tubes 30-60 seconds to warm up, then flip the standby switch ON.

Watch the bias meter as the power tubes heat up. Both needles should rise at an equal rate and settle at the same time.

Adjust your bias pot until the bias meter displays the reading you calculated (33mA in our example). Let the amp idle for a few minutes to make sure that the bias doesn't drift.

When you see a constant readout of your bias setting, turn the power switch OFF.

After a few moments flip the standby switch OFF and unplug the amp from the wall.

Once the tubes are cool, remove them and the bias probes from the amp and plug the tubes back into the amp's tube sockets without the probes attached.

After removing the bias probes and taking it for a test drive, if the amp is stable and your tests match the voltages specified, feel free to let it rip!

After playing for a few minutes and testing all inputs, if everything seems to be operating normally, go ahead and turn the amp off.

If there are any strange oscillations, squeals, or the amp seems at all unstable, use a wooden chopstick to begin probing for loose connections:

- ❑ from the input jacks to the turret board
- ❑ from the tube sockets to the turret board
- ❑ from the tube sockets to the front panel controls.

It usually takes just a minor wiring adjustment, perhaps resoldering a loose joint, to correct this sort of distortion.

Final voltage check and testing

NOTE: Output voltage measurements are measured at 120 VAC input line level.

It's time to install the power and preamp tubes and test some other key DC voltages to ensure the amp is performing correctly.

To do this, we'll also need to plug the amp into a speaker or speaker cabinet to complete the amp circuit. Be sure that the impedance selector switch on the back of your '62 Brit Plex is set to match the impedance of the speaker(s) you plug it into.

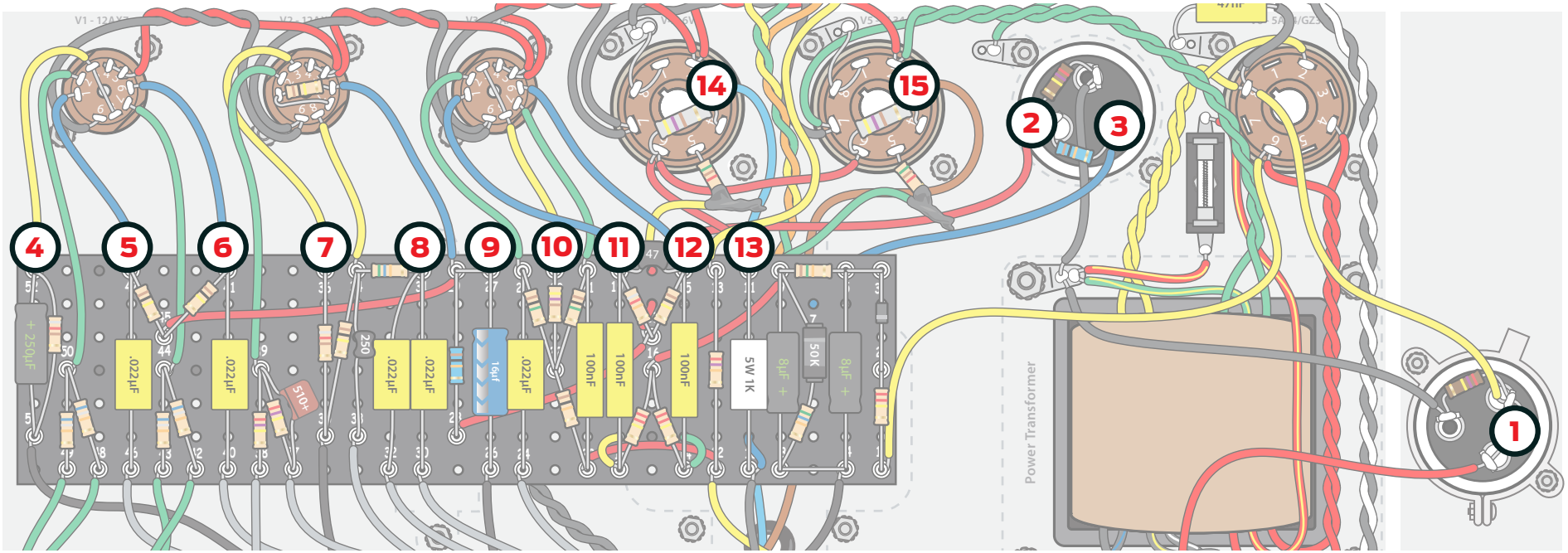
Once your tubes are firmly installed and a viable speaker is connected to your output, plug the amp into the wall and flip the power switch to ON.

After giving the tube filaments 30 seconds or so to warm up, flip the standby switch to ON. By doing this, you are releasing your B+ DC voltage into the rest of the amp circuit. Again, check for smoke or smells.

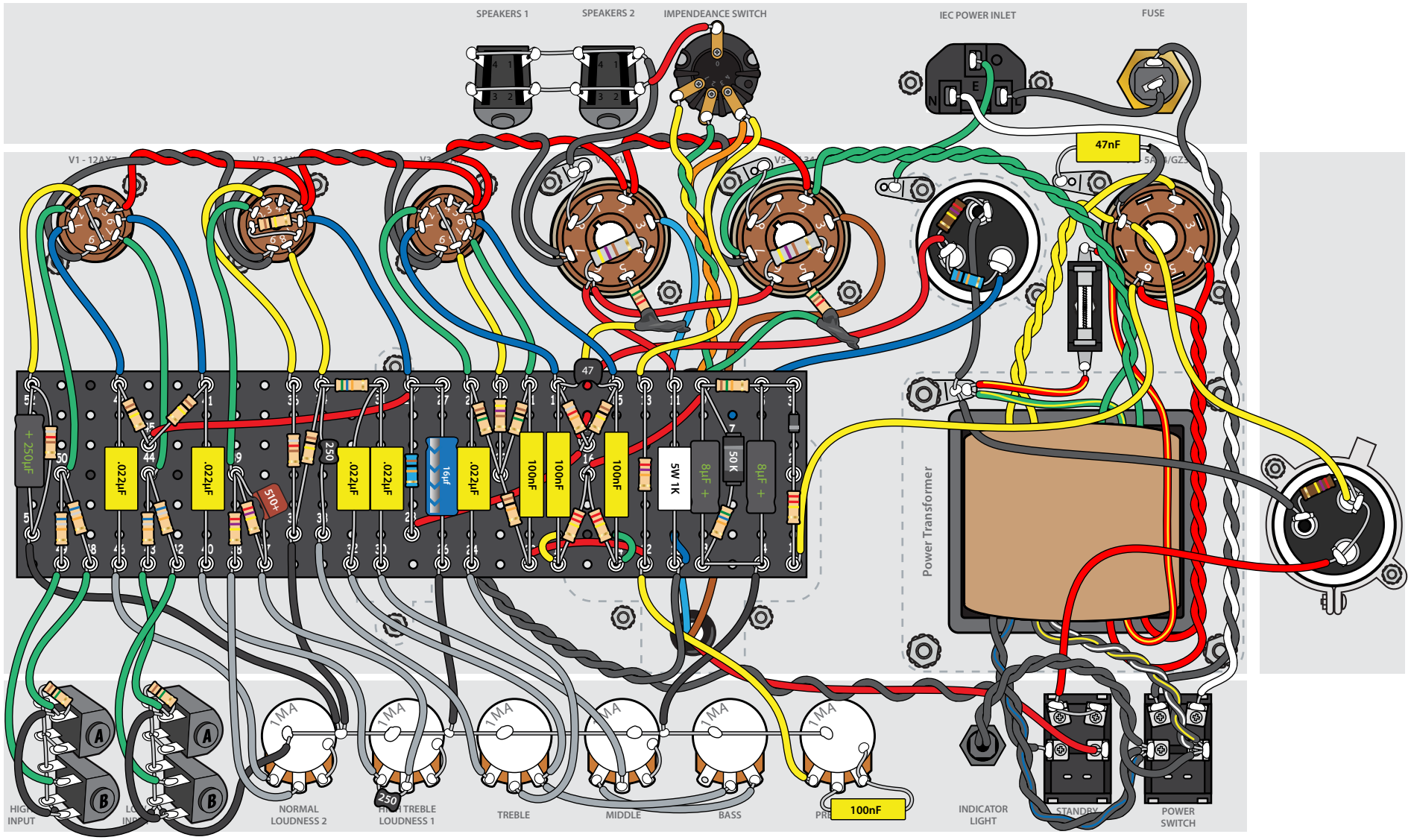
☐ STEP 75

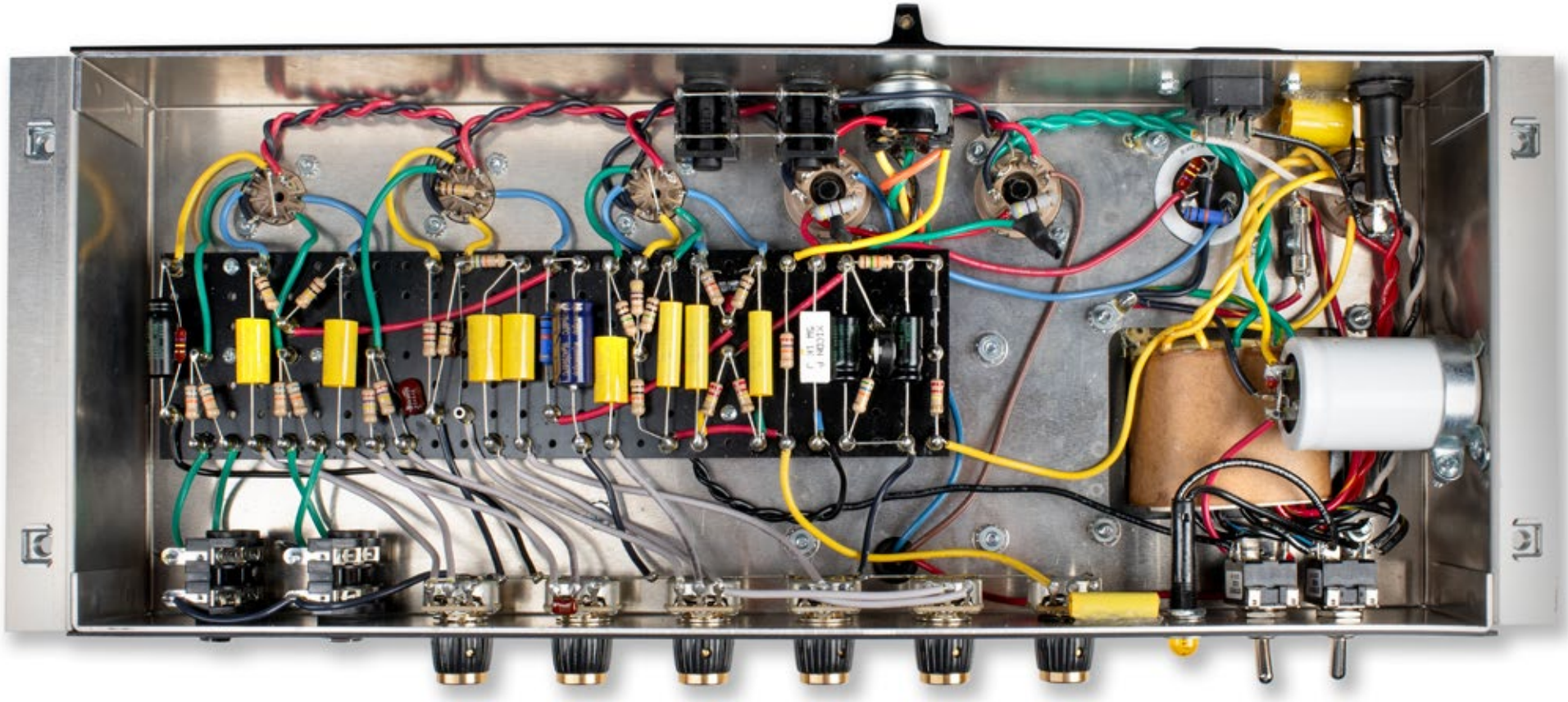
Now that the amp is fully on, follow the steps below along with the diagram to the right and check for the following DC voltages:

1. **Side-mounted filter can capacitor positive lugs:**
   DC Voltage: +460 VDC
2. **Top-mounted filter can capacitor, positive lug with red lead:**
   DC Voltage: +365 VDC
3. **Top-mounted filter can capacitor, positive lug with blue lead:**
   DC Voltage: +460 VDC
4. **V1 shared cathode resistor:**
   DC Voltage: +1.60 VDC
5. **V1A plate resistor:**
   DC Voltage: +216 VDC
6. **V1B plate resistor:**
   DC Voltage: +213 VDC
7. **V2A cathode resistor:**
   DC Voltage:: +1.09 VDC
8. **V2B cathode resistor:**
   DC Voltage: +178 VDC
9. **V2B plate resistor:**
   DC Voltage: +310 VDC
10. **V3 shared cathode:**
    DC Voltage: +40 VDC
11. **V3A plate resistor:**
    DC Voltage: +237 VDC
12. **V3B plate resistor:**
    DC Voltage: +240 VDC
13. **V4 and V5 screen grids:**
    DC Voltage: +448 VDC
14. **V4 plate:**
    DC Voltage: +457 VDC
15. **V5 plate:**
    DC Voltage: +457 VDC



Completed Drawing





Final assembly

Install the chassis

☐ STEP 76

Discharge the capacitors so you can safely handle the chassis. Remove all the cables from their jacks.

Slide the chassis in from the back until its front edge meets the front wall of the cabinet. Insert the mounting screws through the floor of the chassis. Tighten the locknuts.

Install the preamp tube shields and install the back panel.

Tube life

The life span of the power tubes is affected by how hard you drive the amp. If you are overdriving the amp for hours every day, expect the power tubes to have a shorter life span.

We encourage you to experiment with different tube brands and find the brand that is most favorable to your ears and your wallet.

For questions and support, StewMac is here to help!

For more than fifty years, StewMac has supplied instrument builders and repair shops. Our customer service team really knows how to help if you run into questions.

Email: service@stewmac.com

Thanks for choosing this StewMac kit, and welcome to the world of amp building!

Tips for using this amp

This amp is known for its rich, articulate clean tones and exceptional sustain: creamy, warm, and a little crispy. If you're looking for AC/DC tones, look no further.

This amp is based on the JTM45 circuit, which is nearly identical to the 5F6A Tweed Bassman circuit. The most notable change is the use of a 12AX7 in V1 instead of a 12AY7. This gives them amp more gain right out of the gate as the 12AY7 only has a gain factor of 44 compared to the 12AX7's gain factor of 100.

Despite the wealth of gain in the amp, you will find that it is still very quiet. This is largely due to the large filter caps and the use of the filter choke to smooth out the ripple in the high voltage lines.

The treble, middle, bass tone stack allows you to precisely dial in the exact tone you are looking for. I like to play humbuckers through the high treble channel with a traditional 4x12 Marshall cabinet. With this setup, I prefer to keep the treble around 5, the bass and middle controls around 4, the presence around 4, and the volume around 6. This positions the amp right on the edge of tube saturation, perfect for kicking on a distortion pedal when you want to take a lead and drive the amp into full-on, tube-saturated glory.

If you are playing through smaller speakers you will probably want to dial the treble and bass back a little bit. If you are using single-coil pickups in your guitar you will most likely want to give yourself a little bump on the bass control and dial your treble back even more.

As with most of these classic amps, it's hard to pull a bad tone from this one. That's why we are still building these circuits half a century later.

Learning more: secrets revealed in the schematic

You don't need to read a schematic to build this kit. But it's fun to see how the circuit works, and to see the different subcircuits that interact to shape your sound.

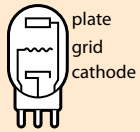
Working with the tiny signal from the guitar, the amp creates the power needed to drive the speaker. The signal is affected by the **gain**, **processing**, **output** and **power** stages as it passes through the circuit.

We've color-coded these stages on our schematic, to show how the parts work together. Symbols for components are in the key at the bottom of the frame.

On the **wiring diagram** we build step-by-step in these pages, the parts are easier to recognize. But studying these color-coded stages will help you understand where each component fits into the creation of your sound.

Gain — Line level →

The gain circuit increases the signal to **line level** (about 1 volt), by passing it through a 12AX7 preamp tube where electrons flow from a heated **cathode** to be received by the anode **plate**. The **grid** between these receives the tiny voltage from the guitar, whose varying musical signal controls the flow of electrons to the plate.



This amp's dirt comes from the first gain stage being biased extremely hot: **the small-value 820Ω resistor** reduces headroom and increases distortion.

Processing — Line level →

The processing stage shapes the **tone**. This amp has a universal Treble, Middle, Bass tone control. This allows you to shape each section of the three-band equalizer, and being universal means that the tone controls effect both channels.

The Presence control of this amp uses the negative feedback circuit to introduce more high frequency to the signal, this can be heard as more "bite" to the naked ear. But don't be surprised if the sound engineer at your next gig asks you to turn down the presence, it can be extremely abrasive when mic'd up.

The signal is then sent to the phase inverter which uses all of V3. The phase inverter then sends the signal to the output section.

Output — Speaker level →

The output stage increases the line level signal to **speaker level**, which is typically 8 volts or greater.

Two EL34 tubes drive the output transformer. They receive the split signal, 180 degrees out of phase, amplify those signals, and send them to the output transformer to be recombined into one signal.

This transformer adjusts the impedance to 4, 8, or 16 ohms to drive an external speaker. This amp has an adjustable fixed bias, which means you need to check the bias and possibly make adjustments when you change power tubes.

Negative feedback

The negative feedback loop flattens and extends the amp's frequency response, reducing distortion generated in the output stage. This makes the amp's sound cleaner and more hi-fi. Some players disable this loop completely or add a potentiometer in place of the resistor to create a "grit control." We don't recommend this, because it places stress on the output transformer.

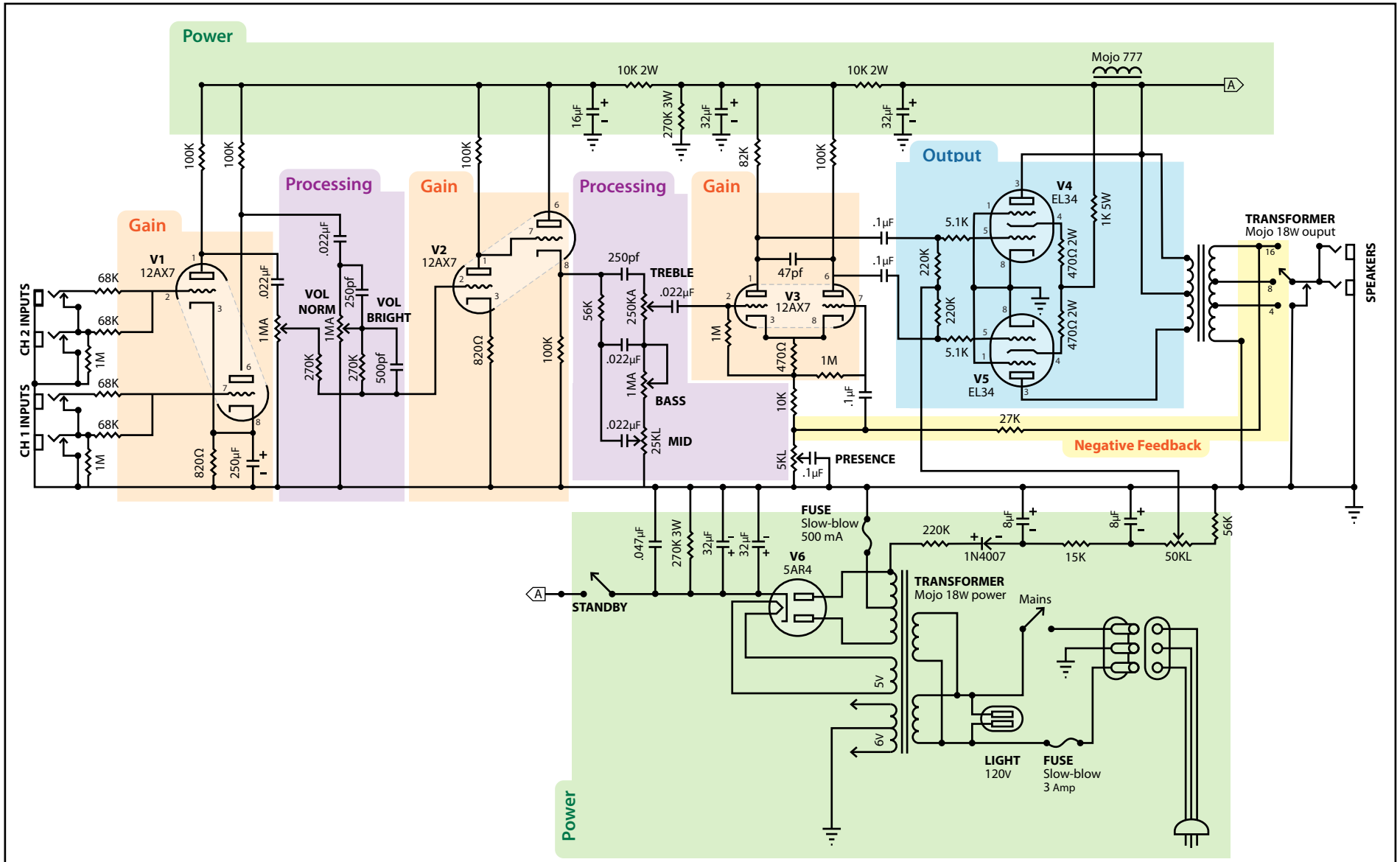
Power

The power supply stage provides power to the other circuit stages, as well as the tube heaters.

This circuit receives the **AC power** from your wall and passes it through the power transformer to create higher voltage. The electricity then goes to the rectifier, which converts it to a pulsing **DC current**.

This then passes through the filter choke and the filter capacitors. The filter capacitors filter out the pulsing to create a smooth current. As each cap smoothes a bit more, the current is also passing through resistors that lower the voltage.

As the signal from the guitar becomes more amplified, the ripple of DC current becomes less evident and the fully filtered current is sent to the most sensitive part of the amplifier, the first pre-amp tube in the Gain stage.



StewMac® ICON KITS #10736 © 2025 StewMac

Resistor Capacitor Electrolytic Cap. Potentiometers Diode Transformer Jack Ground Shielded cable Preamp tube (grid, plate, cathode) Power tube (grid, plate, screen, cathode) Rectifier tube (plate, plate, cathode, filament)

'62 BRIT-PLEX 45W

ORIGINAL BRITISH CIRCUIT

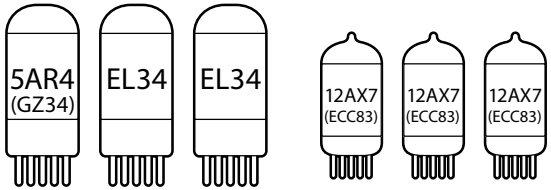
Cut this label on the dotted line with a razor knife and metal straightedge.
Fasten it inside the cabinet using thinned wood glue or contact cement.
The duplicate copy below is included as a backup.

StewMac® ICON KITS

'62 BRIT-PLEX 45W

AMPLIFIER KIT ORIGINAL BRITISH CIRCUIT

DANGER: Unplug the amp before changing tubes.
Tube locations from left to right:

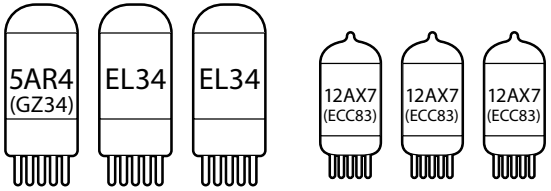


StewMac® ICON KITS

'62 BRIT-PLEX 45W

AMPLIFIER KIT ORIGINAL BRITISH CIRCUIT

DANGER: Unplug the amp before changing tubes.
Tube locations from left to right:



It's your amp. Your tone. You built it!

StewMac **ICON KITS** teach you the world of amp building, then turn you loose with amazing hand-built tone machines!

DIFFICULTY
HOURS: **12**

'62 BRIT-PLEX 45W AMP KIT

The original British showstopper.

This amp started a revolution and it's been rocking the world for over 50 years. Favored by blues and rock players for exceptional sustain and rich creamy tone, the '62 Brit-Plex is chock-full of harmonic gain, yet it still stays articulate and even a little crispy. Put this head on a classic 4x10 cab and watch out!

While building, listen to Gary Moore's "Still Got The Blues."

#10736 45 WATTS / ORIGINAL BRITISH CIRCUIT

DIFFICULTY
HOURS: **6**

'57 MINI TWEED 5W AMP KIT

A timeless studio darling whose tiny size hides tremendous punch and versatility.

The 5F1 circuit was meant to be a student amp but wasn't kid stuff for long; rock's finest guitarists hijacked it for some of the greatest songs ever recorded. Listen to Eric Clapton ("Layla") or Joe Walsh ("Rocky Mountain Way") while you build this amp!

Our simplest and quickest way to get into amp building.

#10730 5 WATTS / 8" SPEAKER / ORIGINAL 5F1 CIRCUIT

DIFFICULTY
HOURS: **12**

'65 P-REVERB 15W AMP KIT

Sparkling bright, perfect for the surf.

Plug your single-coils straight in for that signature clean American tone, or go surfing with onboard effects. The smallest member of the black-panel family to offer reverb and tremolo, this amp made its name as a jangly pop dream machine. Aficionados treasure its early low-end breakup powered by a pair of 6V6 tubes.

Listen to "Surfin' USA" and the great sounds of the Heartbreakers.

#10734 15 WATTS / 10" SPEAKER / ORIGINAL AA1164 CIRCUIT

DIFFICULTY
HOURS: **8**

'59 TWEED 15W AMP KIT

With mysteriously fat saturated tone, this little monster makes it easy to achieve seismic distortion.

The '59 Tweed is our more popular amp kit. This amp's 5E3 circuit is an enigma. Why do the controls on the channel you're NOT using make your tone so great? The answer: Who cares? This is one of the greatest tone monsters ever created!

Listen to Neil Young's *Rust Never Sleeps* while building this kit.

#10731 15 WATTS / 10" SPEAKER / ORIGINAL 5E3 CIRCUIT

DIFFICULTY
HOURS: **16**

'66 D-REVERB 22W AMP KIT

Whether recording or performing, this amp produces stinging clarity that absolutely refuses to get lost in the mix.

One of the most popular designs ever, this amp lives in the happy middle between bright clarity and rich distortion. It excels in the studio and on the stage. While capable of crystal clear tones at good volume, you can push this one into beautifully saturated, play-sensitive distortion.

It's all here: clarity, distortion, and rectifier tube sag.

#10737 22 WATTS / 12" SPEAKER / ORIGINAL AB763 CIRCUIT

stewmac
making guitars better

21 N.Shafer St., Athens, OH 45701
800-848-2273 • stewmac.com

#10736 Updated June, 2025