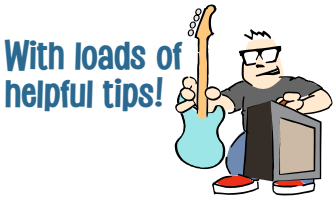
’65 P-REVERB 15W

COMBO AMP KIT

ORIGINAL AA1164 CIRCUIT

ASSEMBLY INSTRUCTIONS



StewMac® ICON KITS

Contents

’65 P-REVERB 15W

COMBO AMP KIT ORIGINAL AA1164 CIRCUIT

Iconic American tone is now in your hands

Be excited!

Your new StewMac ’65 P-Reverb will be a blast to play through and even more fun to build.

Plug your single-coils straight in and use its signature clean tone, or go surfing with the onboard effects.

This amp is an ICON

The smallest member of the black-panel family to offer both 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 power tubes.

Suggested listening while you build this kit: the Beach Boys’ “Surfin’ USA” and the great sounds of Ryan Adams.

StewMac® ICON KITS

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 P-Reverb. And you’ll learn a lot, gaining a deep knowledge of your amp’s inner workings.

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!

Let's get building!

Here's how to build this amp!

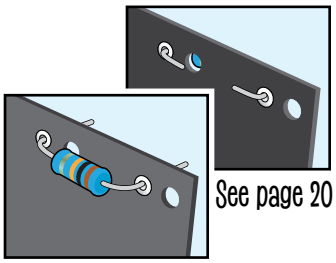
Quick look:

Sort your components by type, using the **parts list**.

Get the **cabinet** ready, starting at **Step 1** on page 8.

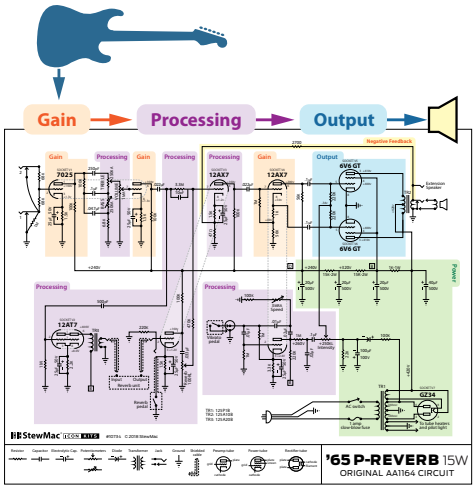
You'll prep the metal **chassis** and the **eyelet board** too.

Wiring goes like this:



See page 20

1. First, you'll **wrap** the leads, connecting them without solder.
2. Then **double-check** all the connections. Don't rush!
3. When everything checks out, it's time to **solder**. The numbered steps tell you when.



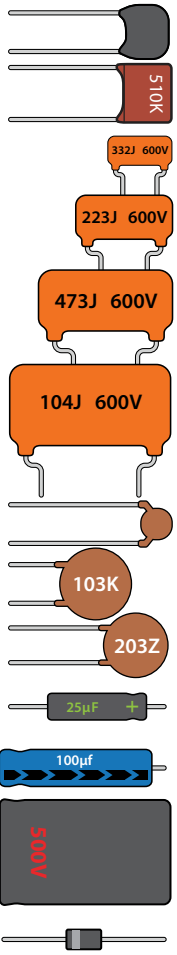
Learn more:
You don't need to read the **schematic**, but it's fun!
See how your guitar's signal gets processed into sound on **page 46**.

Parts list

Resistors

- ☐ (1) 47Ω .5W carbon composite
- ☐ (2) 100Ω .5W carbon composite
- ☐ (1) 1K .5W carbon composite
- ☐ (4) 1.5K .5W carbon composite
- ☐ (1) 2.2K .5W carbon composite
- ☐ (1) 2.7K .5W carbon composite
- ☐ (1) 3.3K .5W carbon composite
- ☐ (1) 6.8K .5W carbon composite
- ☐ (1) 22K .5W carbon composite
- ☐ (2) 56K .5W carbon composite
- ☐ (2) 68K .5W carbon composite
- ☐ (7) 100K .5W carbon composite
- ☐ (4) 220K .5W carbon composite
- ☐ (1) 470K .5W carbon composite
- ☐ (6) 1M .5W carbon composite
- ☐ (1) 3.3M .5W carbon composite
- ☐ (1) 1K 2W metal oxide
- ☐ (2) 15K 2W metal oxide

Capacitors and diode

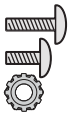


- ☐ (1) 250pF 500V silver mica
- ☐ (1) 500pF 500V silver mica
- ☐ (1) .0033µF 600V Orange Drop
- ☐ (3) .022µF 600V Orange Drop
- ☐ (2) .047µF 600V Orange Drop
- ☐ (4) .1µF 600V Orange Drop
- ☐ (1) 10pF 500V ceramic disk
- ☐ (2) .01µF 500V ceramic disk
- ☐ (1) .02µF 500V ceramic disk
- ☐ (6) 25µF 50V Sprague Atom
- ☐ (1) 100µF 100V aluminum electrolytic
- ☐ (1) 40µF/20µF/20µF/20µF 500V filter cap
- ☐ (1) 1N4007 1000V rectifier diode

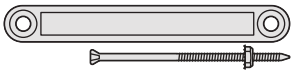
Hardware

- ☐ (6) 8-32 machine screw, 3/8"
- ☐ (10) 8-32 locknut

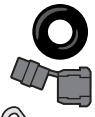
- ☐ (6) 6-32 machine screw, 1/2"
- ☐ (6) 6-32 locknut



- ☐ (6) 4-40 machine screw, 3/8"
- ☐ (8) 4-40 machine screw, 1/4"
- ☐ (14) 4-40 locknut

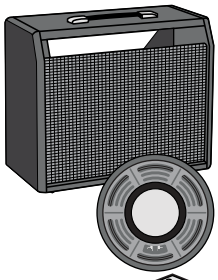


- ☐ (2) Chassis mounting strap
- ☐ (4) Chassis strap screw and nut

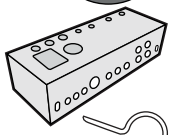


- ☐ (6) Rubber grommet
- ☐ (1) Strain relief for power cord

- ☐ (1) Filter cap mounting clamp



- ☐ (1) Cabinet
- ☐ (1) 10" speaker

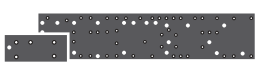


- ☐ (1) Chassis

- ☐ (1) Cable clamp

- ☐ (1) Screw for cable clamp

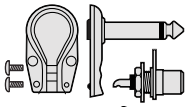
- ☐ (1) Faceplate/backplate set



- ☐ (2) Eyelet boards set

- ☐ (2) Insulator boards set

Parts list



☐ (1) Speaker plug

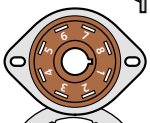
☐ (4) RCA-style jack

☐ (3) Three-lug shorting jack

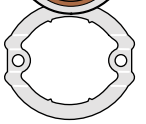
☐ (1) Two-lug mono jack

☐ (4) Nine-pin tube socket

☐ (4) Shield for nine-pin socket



☐ (3) Eight-pin tube socket



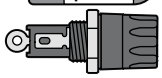
☐ (3) Tension clip for 8-pin socket

☐ (3) 12AX7 preamp tube (also called ECC83S)

☐ (1) 12AT7 preamp tube (also called ECC81)

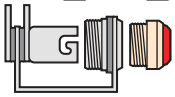
☐ (2) 6V6S power tube

☐ (1) 5AR4 rectifier tube (also called GZ34)

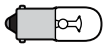


☐ (1) Fuse socket

☐ (1) Fuse (1 amp, slow blow)

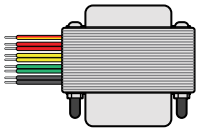


☐ (1) Pilot lamp socket with lens

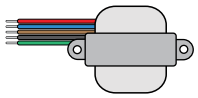


☐ (1) Pilot lamp bulb (#47)

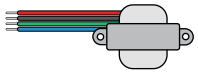
Transformers



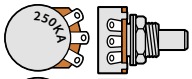
☐ (1) Power transformer



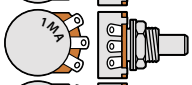
☐ (1) Output transformer



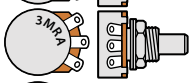
☐ (1) Reverb driver



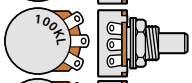
☐ (2) 250K control pot (A–audio taper)



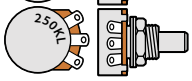
☐ (1) 1M control pot (A–audio taper)



☐ (1) 3M control pot (RA–reverse audio taper)

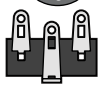


☐ (1) 100K control pot (L–linear taper)

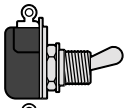


☐ (1) 250K control pot (L–linear taper)

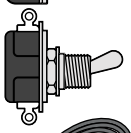
☐ (6) Knob



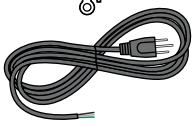
☐ (2) Three-lug terminal strip



☐ (1) Power switch (2 lugs)

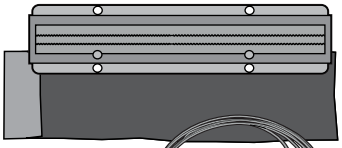


☐ (1) Ground switch (3 lugs)



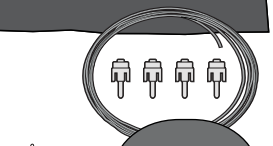
☐ (1) Power cord

Reverb



☐ (1) Reverb tank

☐ (1) Reverb tank bag



☐ (1) Reverb wiring kit

☐ (1) Reverb footswitch

Vintage-style **push-back wire** lets you push the insulation back instead of cutting it away.
BUT: Trimming the insulation still works better.

Wire

☐ (1) White wire

☐ (1) Green wire

☐ (1) Speaker wire (two leads)

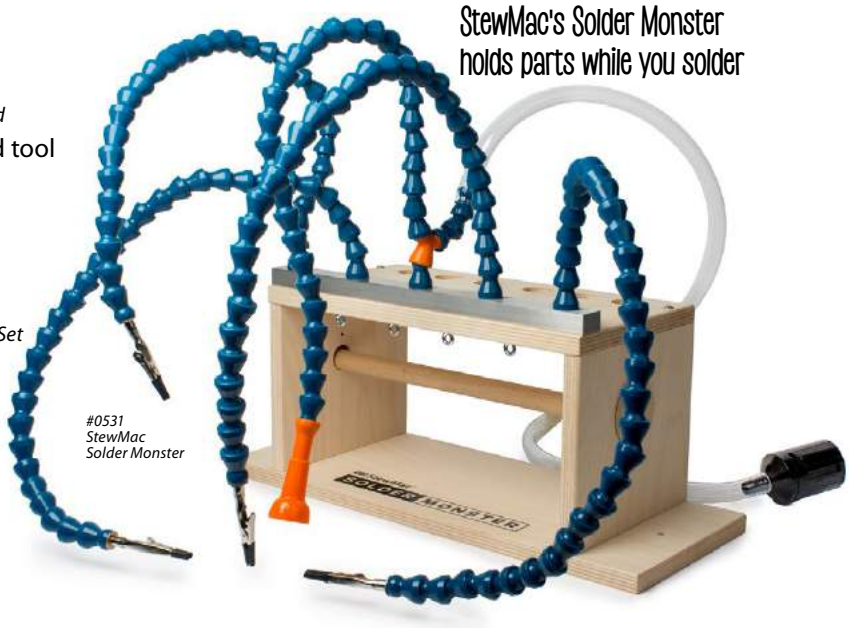
Tools and supplies

Required

- Phillips screwdrivers, #1 and #2
  Item #3000 Guitar Tech Screwdriver Set
- Needle nose pliers
  Item #1610 Long Nose Pliers
- Wire cutter
  Item #1607 Wire Cutter
- Wire stripper
  Item #1606 Wire Stripper
- Soldering iron (preferably 40W)
  Item #0501 Solomon SL-30 Soldering Station
- Solder (at least one Pocket-Pak)
  Item #0505 Kester Pocket-Pak Solder
- Solder sucker
  Item #0503 Solomon Solder Sucker
- Drill with a 5/32" bit
  For mounting eyelet board and filter cap
- Ruler
  Item #4905 StewMac Shop Rule
- Digital multimeter
  Item #3618 Fieldpiece Pocket Multimeter
- Snuffer stick (bleed resistor)
  Item #1552 Snuffer Stick
- Copper shielding tape
  Item #0028 2" Conductive Copper Tape
- Pencil
- Colored art markers
- Wooden chopsticks
- Glue
  Wood glue, white glue or contact cement for gluing a paper label inside the cabinet

Helpful

- Round nose bending pliers
  Item #1609 Round Nose Bending Pliers
- Solder wick
  Item #0504 Solder Wick, 5-foot roll
- Soldering aids
  Item #0521 StewMac Soldering Aids
- Soldering stand
  Item #0506 Solomon Soldering Stand
- Solder Monster, or helping hand tool
  Item #0531 StewMac Solder Monster
- Chassis stand
  Item #10750 Chassis Stand
- Printed circuit board vise
- Scratch awl or center punch
  Item #3000 Guitar Tech Screwdriver Set
- Tray for loose parts



Amp voltages are seriously dangerous!

High voltage, 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 below.

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.

It's important that you understand the dangers so you're working safely. Here's how to do it right.

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.

Professionals who work on amps take these safety habits very seriously

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

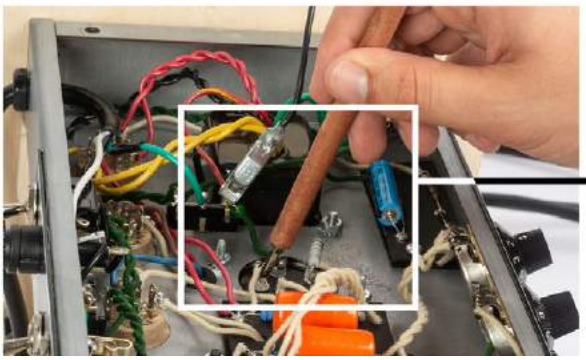
It's easy to forget that you a left a stray tool or wire in the chassis. It's also easy to forget to re-attach the speaker wire, and that can fry an output transformer in seconds. Constant vigilance is your friend when working on amps.

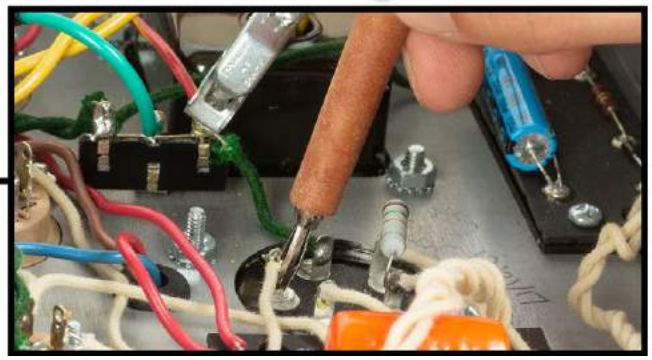
Always unplug it

Unplug the amp whenever you don't specifically 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

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 provided below. However, an easier way to decode these bands is to download one of the many smartphone apps for this purpose.

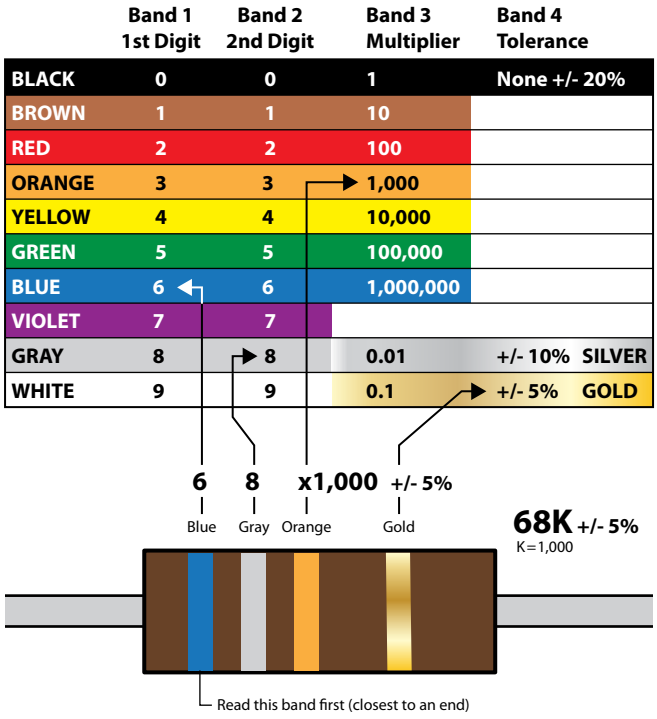
One band will be the nearest to an end of the resistor. That band tells the first value. Combine it with the value of band 2 to get a two-digit number (68 in our example below). Multiply that number by band 3 (68 x 1,000 = 68,000). Thousands are represented by the letter K, so this resistor is 68K (kilo-ohms, or KΩ).

If there is a fourth band, it will be either silver or gold. This indicates the tolerance allowed during manufacturing. The resistors used in this kit have a +/- 5% tolerance, represented by a gold band 4.

A magnifying glass helps a lot. The bands on a 470Ω resistor are yellow/violet/brown, and the bands on a 47K resistor are yellow/violet/orange. They're easily confused!

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.



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.

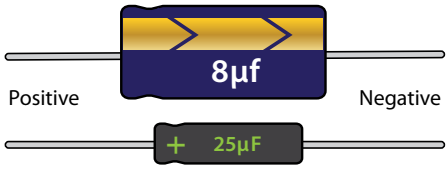
A unique property of capacitors is that they don't allow DC current to flow past them, only AC current. This is important in parts of an amplifier circuit, such as the path between a preamp stage and a power amp stage. Here, a "coupling capacitor" will block DC voltage, allowing only the AC guitar signal 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 the 8µF and 16µF electrolytic capacitors.

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.

Start by prepping the cabinet

Prepare the cabinet for mounting the amp chassis by first removing the two back panels.

☐ STEP 1

Mount the power cord clamp

Drill a 5/64" pilot hole to mount the nylon cable clamp. Locate the clamp inside the left wall of the cabinet, 8" up from the bottom and 1" in from the panel mounting ledge.

Back

Don't drill through the cabinet! Use a piece of masking tape on your drill bit to mark the depth, or use a StewMac Depth-stop Drill Bit (item #1712).

Use the black cable clamp screw to mount the clamp. You'll secure the power cord with this clamp later, after the testing.

☐ STEP 2

Solder the speaker plug

Use a small screwdriver to remove the back of the speaker plug.

On the black and white speaker leads, push the insulation back 3/8". Solder the white positive lead to the tip lug (center of the plug).

Trim the black lead and solder it to the sleeve lug. The solder joints need to be neat so they won't short against the metal case. See "Tips for great soldering" on page 11.

Reassemble the plug and do a continuity test with your multimeter to make sure there's no connection between the plug's tip and its metal case (see page 43).

☐ STEP 3

Solder the speaker leads

Twist the speaker leads together to keep them neat.

Push the insulation back 3/8" and insert the white lead into the speaker's positive terminal and the black lead into the negative terminal.

Before soldering these leads, place a business card or other protection under the terminals to prevent solder dripping onto the speaker cone. Solder the two leads to the speaker terminals.

☐ STEP 4

Install the speaker

Remove the nuts from the four speaker mounting screws. Carefully slide the speaker onto the mounting screws until it's flush with the front panel.

Install the mounting nuts so they lightly touch the speaker frame.

Do not tighten the nuts in a circular pattern around the speaker, because this can warp the speaker frame.

Instead tighten one nut with a quarter turn so it's just snug, then do the same to the opposite side. Then snug the third nut and fourth. Repeat this criss-cross pattern of quarter-turns until all four nuts have had one full turn. This will give proper tension to compress the speaker gasket. Overtightening can damage the cone and cause unwanted distortion.

☐ STEP 5

Install the faceplate + backplate

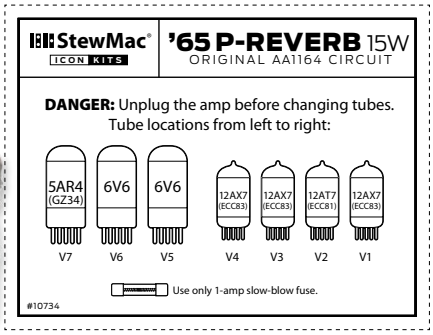
Secure the faceplate by putting the Volume and Bass control pots in their holes and sliding the faceplate over them. Install washers and nuts on the pots to hold the plate in place.

Use the 1MA pot for Volume and a 250KA pot for Bass. Install them with their lugs facing up for soldering. See the wiring diagram on Page 12.

Install the backplate the same way, using the 2-lug extension speaker jack and the 3-lug ground switch.

This switch is just for looks, because ground switches are not needed in modern amps with 3-wire grounding power cords. But having it there keeps the vintage 1960s look.

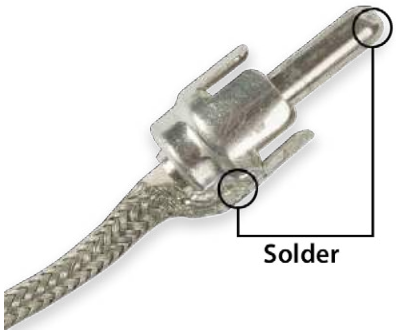
Mount the ground switch so it toggles left/right rather than up/down.



☐ STEP 6

Glue the tube placement chart

Cut out the tube replacement chart on page 51. Put a thin coat of glue or contact cement on the back and glue it to the inside wall of the cabinet.



☐ STEP 7

Solder four RCA plugs

The shielded wire is in two 3-foot lengths. At the ends of each piece, pull 3/4" of the wire mesh shielding away to one side and strip away 3/8" of the internal cloth shielding. Insert the exposed wire into an RCA plug so that it reaches the tip of the center post.

Solder this lead in place at the tip of the plug. Don't leave solder on the outside of the plug tip which would keep it from fitting into the jack. See "Tips for great soldering" on page 11.

After the plug tip cools and the inside solder joint is set, solder the braided wire shielding onto the outside of the plug. Solder the four RCA plugs this way, on each end of the two cables.

These two cables will connect the reverb tank.

Test for continuity between the tips of the plugs on each cable, then test for continuity between the shields of the plugs in the same way.

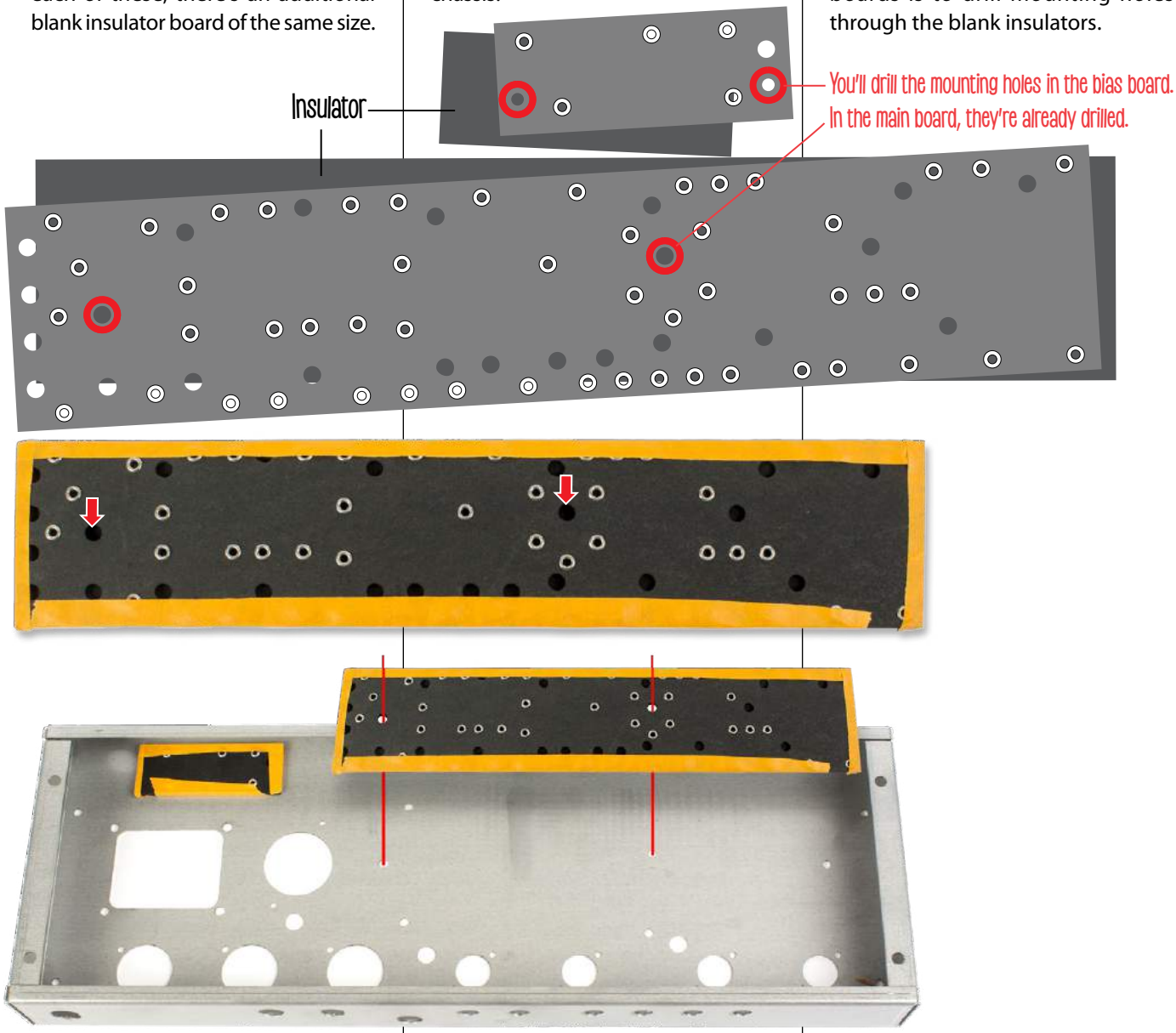
Also test to make sure you **don't** have continuity between the tip and the shield of each plug, which would indicate a short in the jumper. If your multimeter finds unwanted continuity, the likely culprit is the inside (tip) wire shorting to the outer shield. If that happens, de-solder the tip connection and redo that solder joint.

Prepping the eyelet boards

This circuit is built on two eyelet boards: the large main board and a smaller one called the bias board. For each of these, there's an additional blank insulator board of the same size.

These insulators mount behind the eyelet boards to prevent the components from contacting the metal chassis.

Each pair of boards will mount to the chassis with two machine screws. The first step in preparing these boards is to drill mounting holes through the blank insulators.



☐ STEP 8

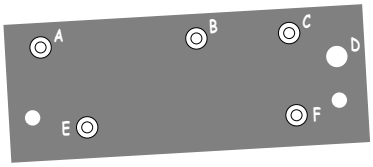
Drill the insulator boards

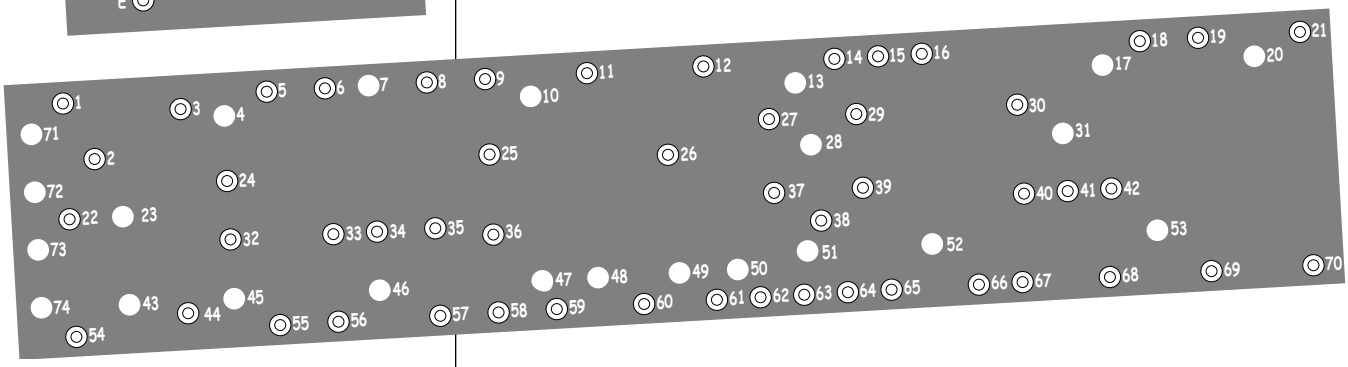
Noting the eyelet holes, orient the boards as shown above. Align each eyelet board with its insulator and tape them together.

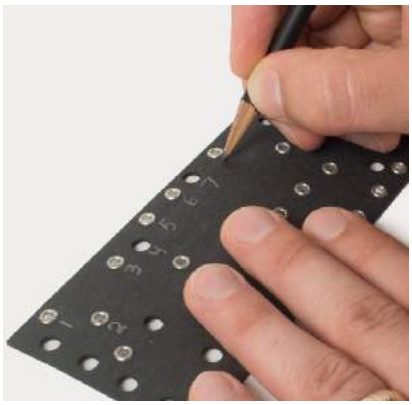
The mounting holes are pre-drilled in the main eyelet board, but not in its insulator board. Drill through the holes indicated using a 5/32" drill bit. Separate the boards and set the insulator board aside for later.

The smaller bias board does not have pre-drilled mounting holes. Place it in the chassis as shown. Holding the board in position, turn the chassis over to see the mounting holes.

With a sharp pencil, mark the two hole locations onto the insulator board. Drill two 5/32" mounting holes through this pair of boards. Set the insulator board aside for later.







☐ STEP 9

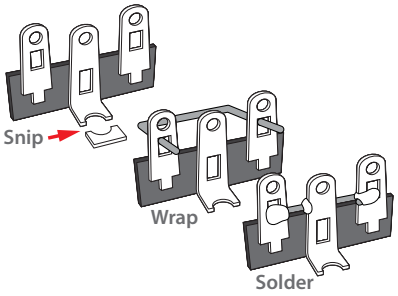
Number the eyelets and holes

These instructions will refer to the eyelets and holes on the main eyelet board by number and the bias board by letter. Use a pencil to mark these numbers and letters onto the boards.

☐ STEP 10

Prep one grounding strip

With a wire cutter, snip the mounting holes on a 3-lug terminal strips as pictured. Cut a 1" piece of green wire and remove the insulation. Wrap and solder the wire across the terminals, electrically connecting all three lugs. This will be used as a grounding strip.



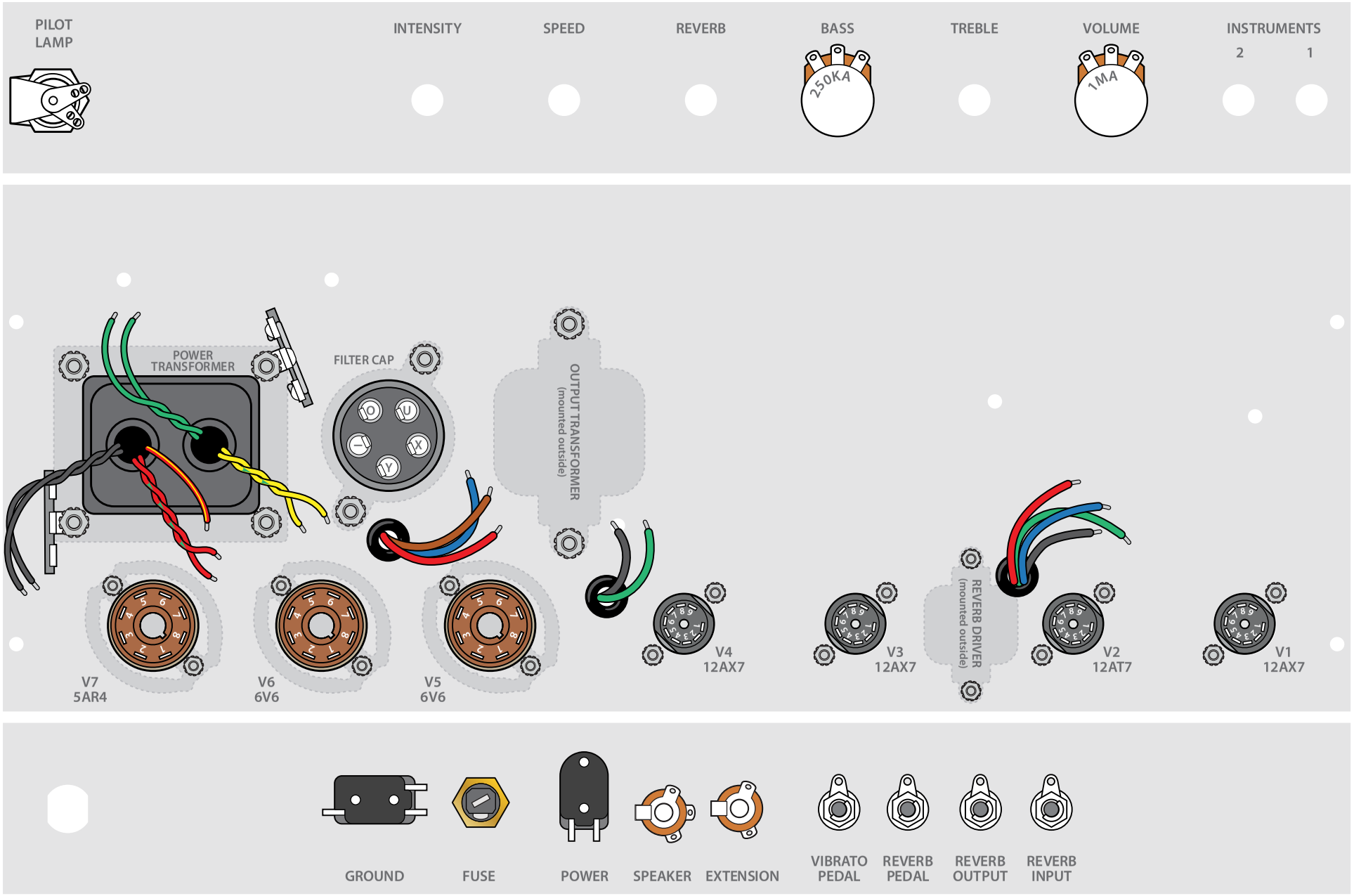
You're ready to build!

Tips for great soldering!

- Wrap the leads tightly for a good electrical contact before soldering. Don't use solder to "glue" loose joints.
- Melt a small amount of solder onto the tip of the iron ("tinning" the iron). Hold the tip against the connection until the connection reaches soldering temperature. This should take just a few seconds.

Also tin component leads like multi-strand wires to help the solder flow for a better joint.

- Keep your soldering tip clean by wiping it often on a damp sponge. And keep it tinned by occasionally melting a little solder onto it.
- Feed solder to the connection, not to the iron. Stop feeding solder once an eyelet is filled. Keep the iron on the connection for a second longer to allow time for all of the flux to cook out of the joint.
- Don't ever blow on the hot solder, or touch anything until the joint is completely cool. A good solder joint is shiny—a sign that it was left to cool undisturbed.
- After the joint has cooled, trim away the excess wires.
- Plan ahead so each joint is only soldered once. Resoldered joints are messy and more likely to fail.
- Position 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.
- 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 wrap.



Installing the chassis-mounted components

☐ STEP 11

Mount the power transformer and two 3-lug terminal strips

The power transformer has nine leads color-coded in four pairs, plus a single red/yellow striped lead. Twist the same-color pairs together. Feed all the leads into the chassis through the square hole.

Install the transformer on the outside of the chassis, using four 8-32 locknuts inside. Mount the two terminal strips under the locknuts at the front and back corners as shown: the one you've turned into a grounding strip goes to the front.

☐ STEP 12

Install three rubber grommets

Squeeze these into the three holes as shown. These grommets provide strain relief for the transformer wires that will pass through the metal chassis.

☐ STEP 13

Mount the output transformer

The output transformer has red, blue, brown, black, and green leads. Thread the red, blue and brown leads through the left rubber grommet as pictured in the diagram, and the black and green leads through the middle grommet.

Using two 8-32 machine screws and locknuts, mount the transformer to the outside of the chassis.

☐ STEP 14

Mount the reverb driver

The reverb driver is a transformer with red, blue, green, and black leads. Thread these four leads through the remaining rubber grommet.

Use two 8-32 x 1/4" machine screws to mount the reverb driver on the outside of the chassis.

☐ STEP 15

Mount the filter capacitor

The large filter cap mounts to the chassis with the filter capacitor mounting clamp. The clamp attaches to the end of capacitor near the lugs, and then mounts to the chassis using 6-32 x 1/2" machine screws and locknut. If needed, enlarge the screw holes by drilling them with a 5/32" bit.

Attach the clamp so that the capacitor's negative lug (marked "–") is closest to the power transformer, as shown.

☐ STEP 16

Install the speaker output jack

Add the 3-lug speaker output jack next to the 2-lug extension speaker jack which you've already installed.

These jacks are electrically grounded through contact with the metal chassis, so tighten them well for a good ground.

☐ STEP 17

Install the three large tube sockets with tension clips

Orient these 8-pin tube sockets so that pin 1 is closest to the rear panel of the chassis.

Use 4-40 x 3/8" machine screws to mount these sockets on the outside of the chassis. Include a tension clip on top of each socket to provide support for these three tubes when they're installed later.

☐ STEP 18

Install the four small tube sockets

Use two 4-40 x 1/4" machine screws to mount the four remaining tube sockets. Position these sockets so pin 3 is closest to the rear panel of the chassis.

☐ STEP 19

Install the fuse socket

Mount the fuse socket so its side lug faces the open side of the chassis. This orientation makes it easier to solder later.

☐ STEP 20

Install the power switch

Mount the power switch with its two lugs facing up for soldering later.

☐ STEP 21

Install the four RCA jacks

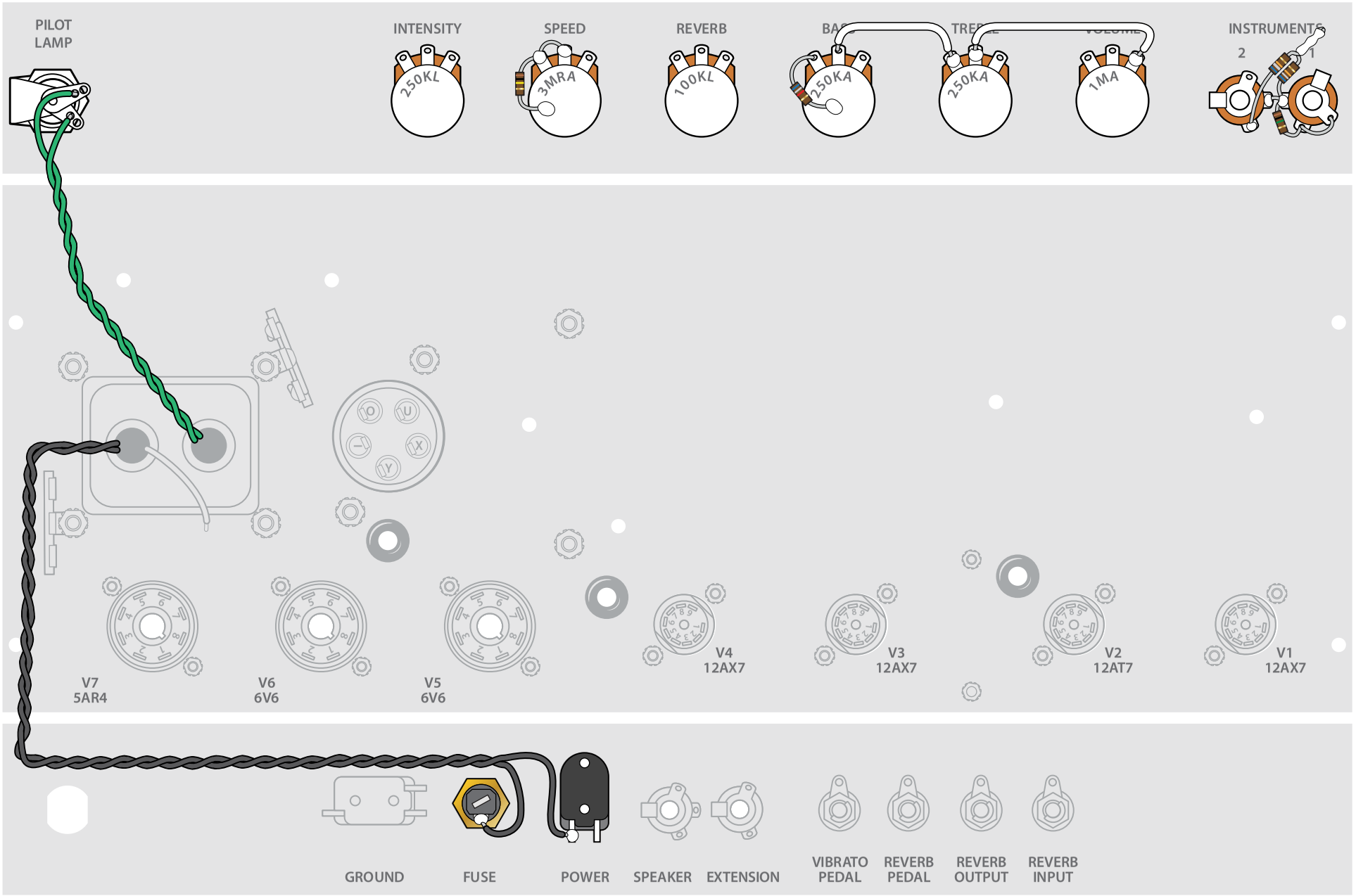
Mount the RCA jacks to the chassis with the large washers on the outside. Once installed, bend the grounding tabs slightly away from the inside of the chassis.

☐ STEP 22

Install the pilot lamp socket

Mount the socket by screwing the lens from the outside into the socket assembly. Position the socket so the arm supporting the lamp faces the side wall of the chassis.

Some amp builders add a drop of glue to the mounting threads to keep vibrations from loosening the socket from high-volume playing.



☐ STEP 23

Install the remaining control pots

Mount the control pots with their lugs facing up for soldering. When we refer to lugs as left or right, it's assuming you're looking at the pot from the same point of view as in the wiring diagram.

Mount them as follows:

Intensity:	250KL pot
Speed:	3MRA pot
Reverb:	100KL pot
Bass:	250KA pot
Treble:	250KA pot
Volume:	1MA pot

☐ STEP 24

Install 100K resistor + 6.8K resistor

Run one lead of the 100K resistor up through the bottom of the left lug of the speed pot and wrap it down through the middle lug of the same pot. It doesn't matter which direction this resistor is installed, because resistors aren't polarized. Solder the resistor lead to both lugs.

Solder the other lead of this resistor to the back of the speed pot.

Wrap one lead of the 6.8K resistor through the left lug of the bass pot but don't solder this connection yet.

Solder the 6.8K resistor's other lead to the back of the bass pot.

☐ STEP 25

Install two jumpers

Cut two white wires, 2" long. Connecting wires like this are called jumpers.

Wrap one end of a jumper onto the middle lug of the bass pot and wrap the other end of this jumper onto the left lug of the treble pot. Solder the connection to the left lug of the treble pot, but leave the middle lug of the bass pot unsoldered for now.

Wrap one end of the other jumper onto the middle lug of the treble pot. Wrap the other end onto the right lug of the volume pot. Solder the connections at both ends of this jumper.

☐ STEP 26

Install two jacks + a 1M resistor

Add instrument jacks 1 and 2. Position them so the center lug of jack 2 is close to the side lug of jack 1 as pictured.

Wrap one lead of a 1M resistor through the right lug of jack 1 and wrap it onto the center lug of the same jack. Make sure this lead won't be in the way when an instrument cable is plugged in.

Run this resistor's other lead through the left lug of jack 1 and onto the center lug of jack 2. Don't solder these connections yet.

☐ STEP 27

Install two 68K resistors

Twist the leads of the two 68K resistors together, creating one connection. Wrap the other lead from one resistor onto the right lug of jack 2 as shown.

Wrap the remaining resitor lead onto the left lug of jack 1, adding it to the connection made in the previous step.

Solder all these connections, and also solder the twisted 68K resistor leads.

☐ STEP 28

Power transformer black leads

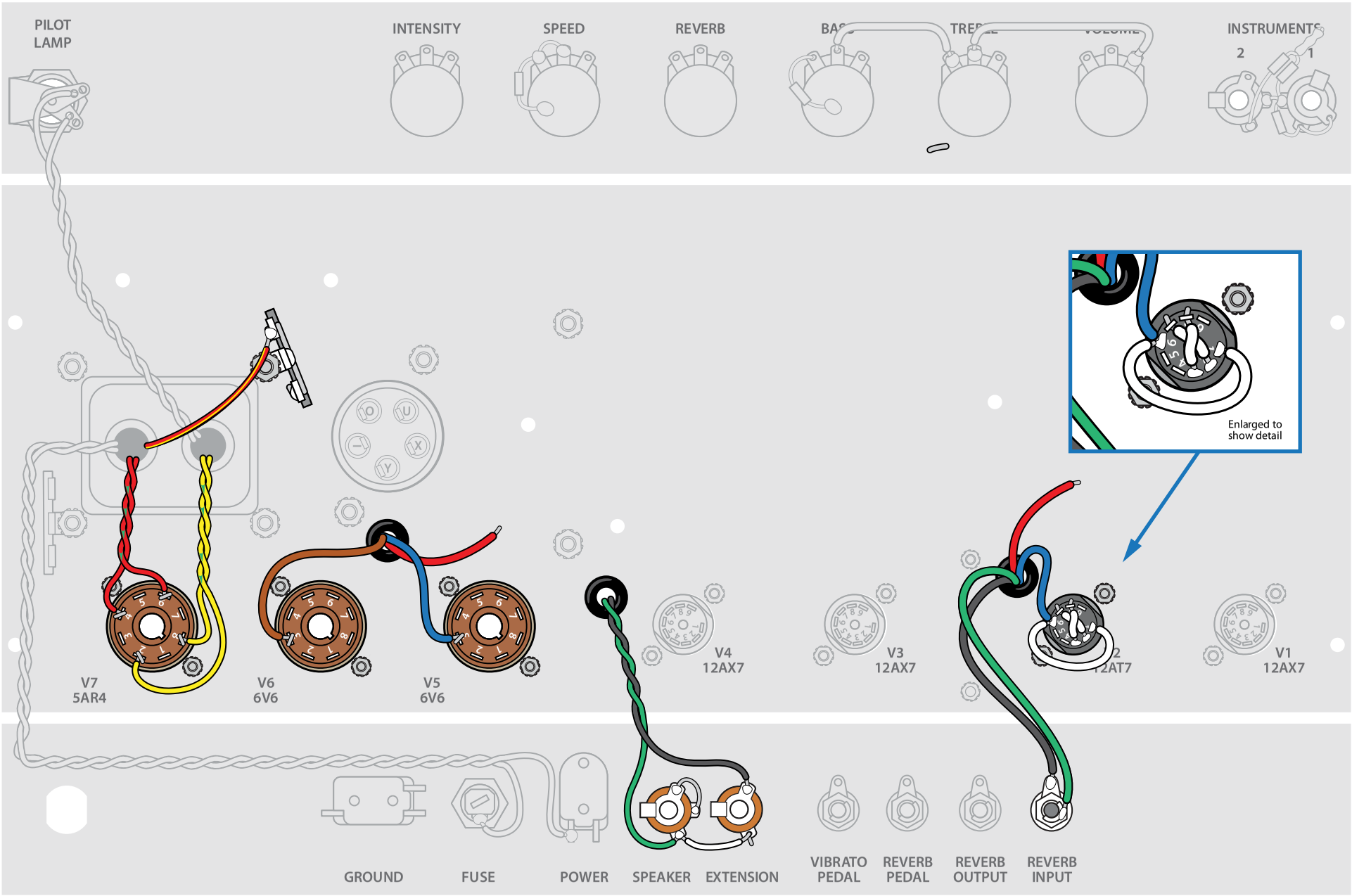
Run either of the black wires from the power transformer to the side lug of the fuse socket. Trim it to fit and solder it. Trim and solder the other black wire to the left lug on the power switch.

☐ STEP 29

Power transformer green leads

Run the two green wires from the power transformer to the lugs on the pilot lamp socket (either wire can go to either lug). Trim these wires to length and wrap them onto the lugs. Don't solder these connections yet.

Despite being green, these aren't ground wires. They power the pilot lamp and tube heater filaments.



☐ STEP 30

Power transformer red/yellow lead

Trim the power transformer's red/yellow lead to an appropriate length and solder it to the front grounding strip as shown.

☐ STEP 31

Power transformer red leads

Trim the power transformer's red leads to an appropriate length and wrap one lead onto pin 4 of the V7 tube socket (5AR4). Socket pins have upper and lower eyelets for multiple connections.

Wrap the other red lead onto pin 6 of the same socket. Don't solder these red leads yet.

☐ STEP 32

Power transformer yellow leads

Trim the power transformer's yellow leads to an appropriate length. Wrap one of these leads onto pin 2 of socket V7.

Wrap the other yellow lead onto pin 8 of the same socket. Don't solder these yellow leads yet.

☐ STEP 33

Output transformer blue and brown leads

Trim the blue wire from the output transformer to an appropriate length and wrap it onto pin 3 of socket V5. Don't solder this connection yet.

Trim the brown wire from the output transformer to an appropriate length and wrap it onto pin 3 of socket V6. Don't solder this connection yet.

Leave the red output transformer lead free for now, you'll connect it later, when the eyelet board is installed.

☐ STEP 34

Two jumpers

Add a 1-1/2" white jumper between the right lug of the speaker jack and the right lug of the extension jack. Wrap these joints, but do not solder them yet.

Cut a 3/4" white jumper and remove the insulation. Add this short wire between the speaker jack's left lug and center lug. Solder the both ends.

☐ STEP 35

Output transformer green and black leads

Trim these two wires to reach the speaker jack and extension speaker jack.

Solder the green lead to the right lug of the speaker jack along with the jumper from the previous step.

Solder the black lead to the left lug of the extension speaker jack.

☐ STEP 36

Connect the reverb driver leads

Trim the green lead to reach the middle lug of the reverb input jack, tin it and solder it to the lug.

Trim the black lead to reach the ground tab on the reverb input jack. Tin it and solder it to this tab.

Trim the blue lead to reach pin 6 of socket V2. Tin it and wrap it onto the pin, but don't solder it yet.

Leave the red lead free for now, you'll connect it to the eyelet board later on.

☐ STEP 37

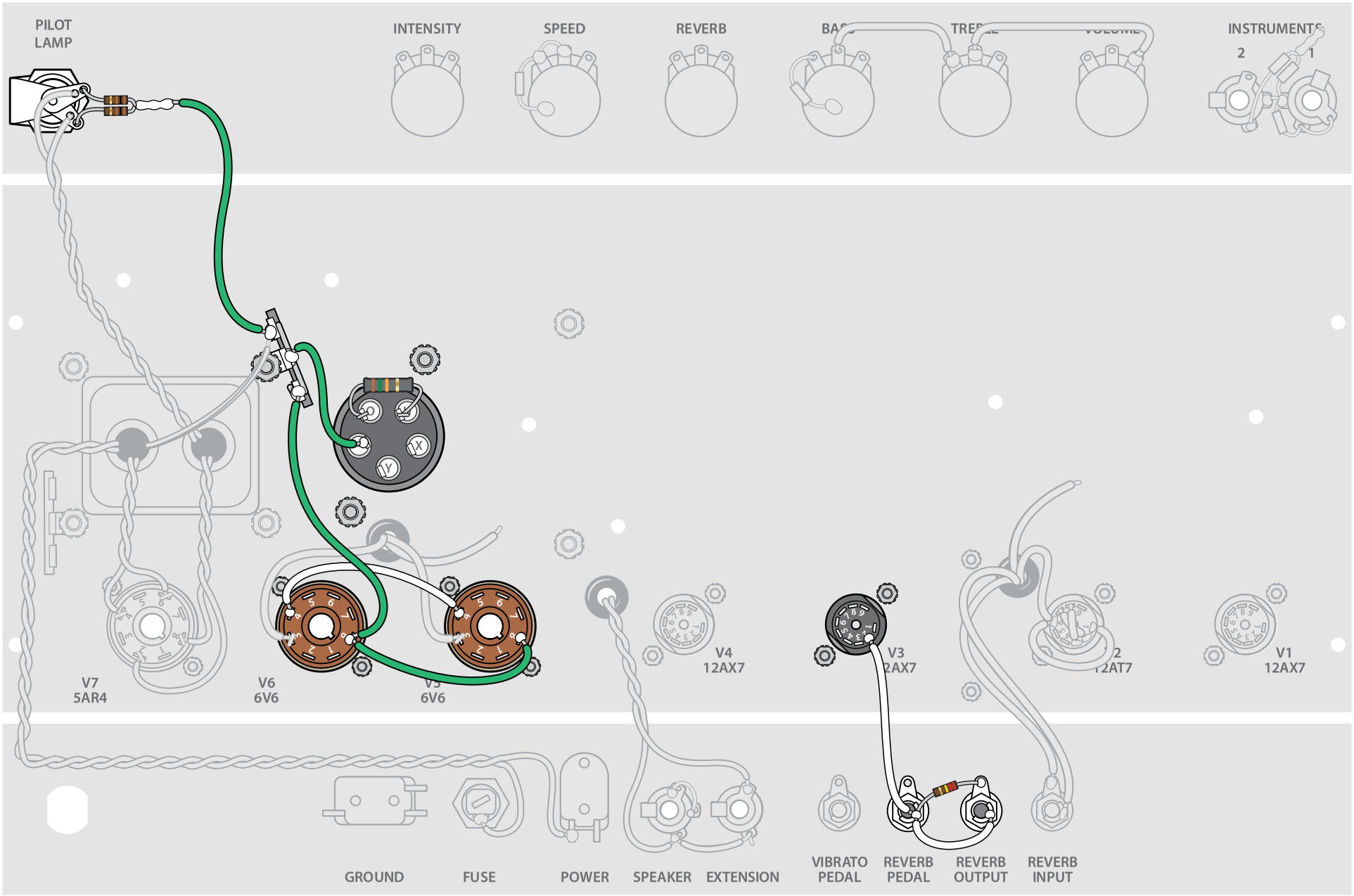
Add three white jumpers

Cut two 3/4" white jumpers. Wrap one of them between pin 2 and pin 7 of socket V2. Solder the connection to pin 2.

Wrap the second short jumper between pin 3 and pin 8 of socket V2. Solder the connection to pin 3.

Cut a 2" white jumper and connect it between pins 1 and 6 on socket V2. Route this jumper in a semicircle around the socket. Solder this jumper at pin 1 and also at pin 6 where it joins the blue wire from the reverb driver.

For neat looking wiring, use wire strippers to trim 1/4" of the insulation from the ends of the push-back wire.



☐ STEP 38

Add three more jumpers

Cut one 3" green jumper. Wrap one end onto pin 8 of socket V5 and solder this connection. Trim away any excess wire. Wrap the other end of this jumper onto pin 8 of socket V6.

Cut one 5" green jumper. Solder one end to pin 8 of socket V6 along with the jumper coming from V5. Solder the other end of this 8" jumper to the front grounding strip.

Cut one 4" white jumper. Solder one end to pin 4 of socket V6, and solder the other end the pin 4 of socket V5.

☐ STEP 39

Two white jumpers + one resistor

Cut one 1-1/4" white jumper. Solder one end onto the middle lug of the reverb output jack.

Wrap the other end onto the middle lug of the reverb pedal jack. Don't solder this joint yet.

Wrap a 220K resistor onto the middle lug of the reverb pedal jack. Solder this resistor's other lead to the ground tab of the reverb output jack.

Cut a 1-1/2" white jumper. Wrap one end onto the middle lug of the reverb pedal jack and wrap the other end onto pin 2 of socket V3. Solder this jumper at both ends.

☐ STEP 40

One green jumper + three resistors

Cut one 2" green jumper. Install it between filter cap's negative (–) lug and the nearby grounding strip. Solder the connections at both ends.

Wrap a 15K 2W resistor between filter cap lugs "O" and "U". Don't solder it yet.

Twist the leads of two 100Ω resistors together and apply solder to keep them joined. Wrap the two resistors' other leads onto the pilot lamp lugs along with the green power transformer leads. Do not solder these yet.

☐ STEP 41

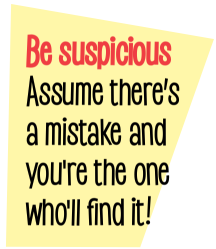
Add one green jumper

Cut one 4" green jumper. Solder one end to the twisted combined leads of the 100Ω resistors you just connected to the pilot lamp socket. Solder the other end of this jumper to the front grounding strip.

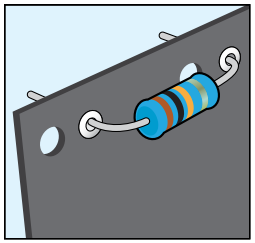
Stop and inspect your work

This is a good time to step away from the project for a few minutes. Take a break before reviewing your work for errors.

When you're ready to go at it again, very carefully walk through every connection you've made so far. When everything checks out, you're ready to move on to the eyelet board.

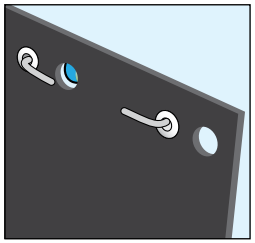


How to install parts on an eyelet board in three steps



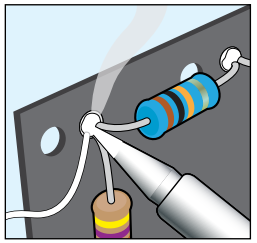
Wrap

Don't solder the components as they go onto the eyelet board. Instead wrap all the parts onto the board, bending their leads tightly so the parts stay in place without solder.



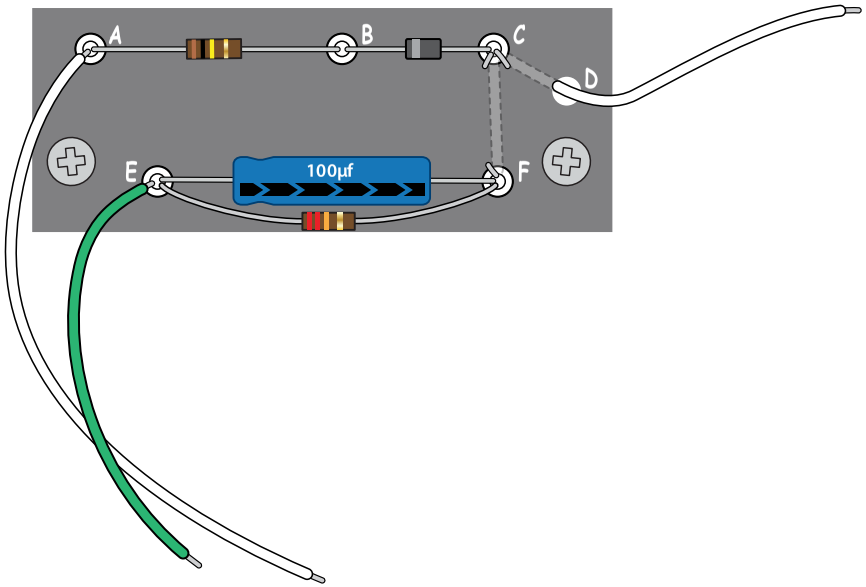
Inspect

When all the parts are in place, stop and inspect. Go back over every step. Careful inspection is the best way to make sure your amp works the first time you turn it on.



Solder

Solder each connection point only once. Reheating to add another part makes a messy, faulty solder joint. Use the soldering tips on page 11 to get professional results.



Wrapping parts onto the bias board

The bias board is the smaller of the two eyelet boards. Position it as shown above, with hole D to the upper right, and the pair of mounting holes toward the bottom.

☐ STEP 42

Add two resistors

Wrap a 100K resistor between eyelets A and B.

Wrap a 22K resistor between eyelets E and F.

Don't solder these connections. You'll solder the connections on both eyelet boards later, after all their parts are wrapped in place and double-checked.

☐ STEP 43

Add a capacitor and a diode

Wrap a 100µF electrolytic cap between eyelets E and F. **Note the polarity of the capacitor.** Connect the cap's negative lead to eyelet F. This capacitor connects next to the 22K resistor installed in the previous step. As you wrap the leads, allow the two parts enough room to sit side-by-side.

Add the rectifier diode between eyelets B and C. **Note the polarity.** The positive lead of the diode is indicated by a stripe at that end. The end with no stripe is negative. Connect the negative lead to eyelet C.

☐ STEP 44

Add two white jumpers

Cut a 1" white jumper. Turn the eyelet board over, and add this jumper between eyelets C and F on the back of the bias board.

Cut a 3" white jumper. Wrap one end up through the bottom of eyelet C, and run this jumper up through hole D. Pull it tight to keep it in place.

☐ STEP 45

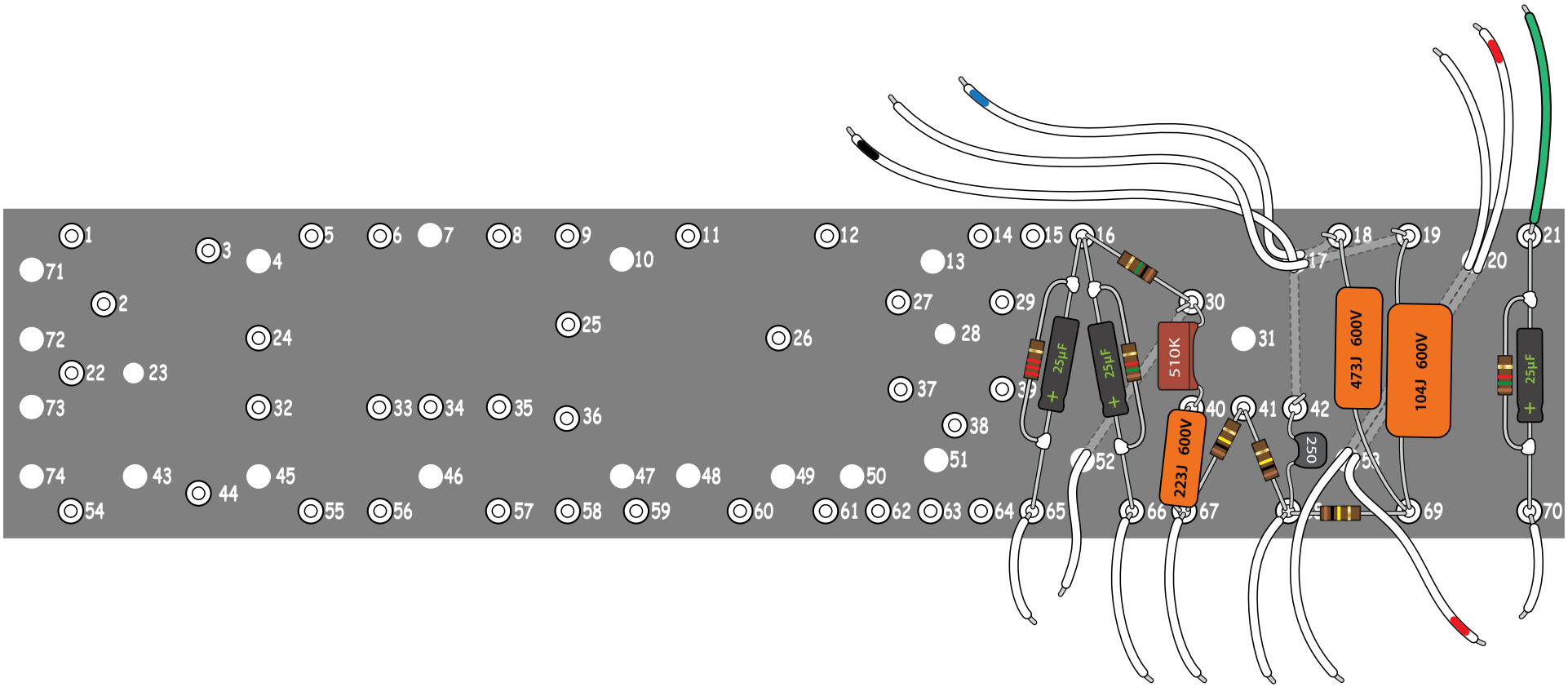
Add two more jumpers

Cut a 6" green jumper and wrap it onto eyelet E from the front.

Cut a 7" white jumper and wrap it onto eyelet A from the front.

Set the bias board aside

Store the bias board somewhere that it won't be disturbed. You're ready to turn your attention to the main eyelet board.

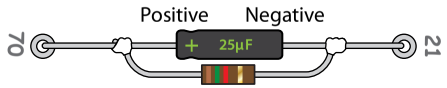


Wrapping parts onto the main board

☐ STEP 46

Install a 25µF cap + a 1.5K resistor

Wrap the leads of a 1.5K resistor around the leads of a 25µF Sprague electrolytic capacitor and solder them together.



Note the polarity of the capacitor. Install this resistor/capacitor assembly between eyelets 21 and 70, making sure the capacitor's negative lead goes to eyelet 21.

☐ STEP 47

Add two jumpers, green + white

Cut a 4" green jumper and wrap one end onto eyelet 21.

Cut a 3-1/2" white jumper and wrap one end onto eyelet 70.

☐ STEP 48

Add two white jumpers

Cut two 12" white jumpers. On one of these, mark the insulation at both ends with a red marker.

Run both of these jumpers down through hole 20, across the back of the board, and up through hole 53.

☐ STEP 49

Add a 0.1µF capacitor + one jumper

Wrap a 0.1µF Orange Drop capacitor between eyelets 19 and 69. This capacitor does not have polarity and can be installed in either direction.

Cut an 8-1/2" white jumper. Turn the board over and wrap this jumper through the bottom of eyelet 19. Run the other end of the jumper up through hole 17 and pull it tight so it stays in place.

☐ STEP 50

0.047µF capacitor + one jumper

Add a 0.047µF Orange Drop capacitor between eyelets 18 and 69. This cap is not polarized and can be installed facing either direction.

Cut an 8-1/2" white jumper and mark one of the end with blue marker. Flip the board and wrap the unmarked end of this jumper onto the back of eyelet 18. Run this jumper up through hole 17 and pull tight to keep in place.

☐ STEP 51

100K resistor + 250pF capacitor

Wrap a 100K resistor between eyelets 68 and 69.

Add a 250pF silver mica capacitor between eyelets 68 and 42. This capacitor also has no polarity and can be installed facing either way.

☐ STEP 52

Install two white jumpers

Add a 3" white jumper to eyelet 68.

Cut a 5-1/2" white jumper and mark one end with a black marker. Turn the board over and wrap its unmarked end through the back of eyelet 42. Run the other end of this jumper up through hole 17 and pull it tight to keep it in place.

☐ STEP 53

Install two 100K resistors

Add one 100K resistor between eyelets 41 and 68. Add another 100K resistor between eyelets 41 and 67.

☐ STEP 54

Add two capacitors + a 1M resistor

Add a 0.022µF Orange Drop capacitor between eyelets 67 and 40. This cap is not polarized.

Add a 500pF Silver Mica capacitor between eyelets 40 and 30.

Add a 1M resistor between eyelets 16 and 30.

☐ STEP 55

Add two white jumpers

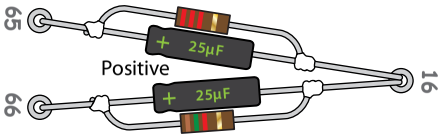
Add a 3" white jumper to eyelet 67.

Cut one 4" white jumper. Flip the board over and wrap one end of the jumper through the back of eyelet 30. Run this jumper up through hole 52 and pull it tight.

☐ STEP 56

Add two more cap+resistor pairings

Wrap the leads of a 2.2K resistor and a 1.5K resistor around the leads of two 25µF Sprague electrolytic capacitors and solder them together.



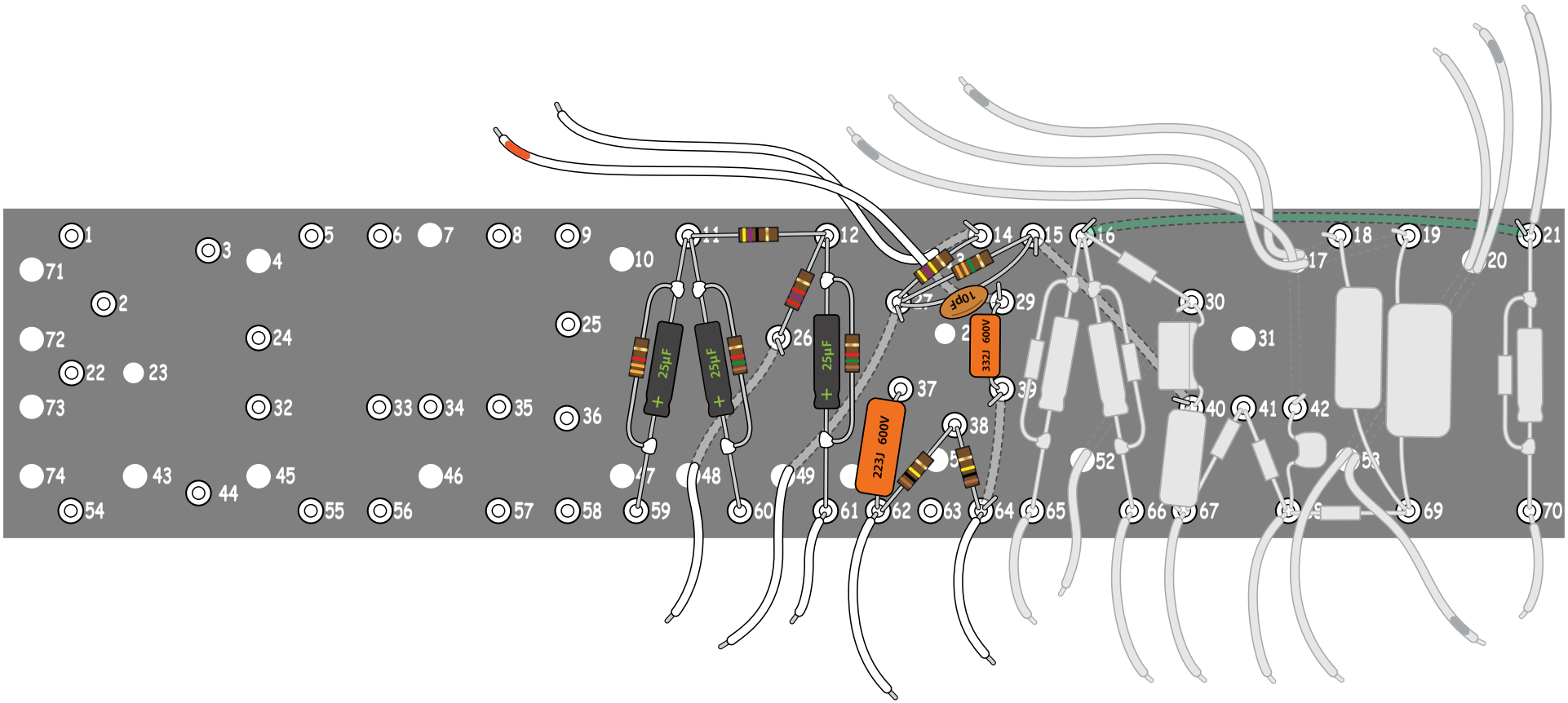
Install the 2.2K resistor/cap assembly between eyelets 16 and 65, and the 1.5K resistor/cap assembly between eyelets 16 and 66. Note the polarity of the caps, making sure the negative leads go to eyelet 16.

☐ STEP 57

Add two white jumpers

Add a 3" white jumper to eyelet 66.

Add a 1-1/2" white jumper to eyelet 65.



☐ STEP 58

Add a green back-of-board jumper

Cut a 4" green jumper. Flip the eyelet board over and add this jumper between eyelet 16 and eyelet 21 on the back of the board.

☐ STEP 59

Add a 3.3M resistor + a 10pF cap

Add a 3.3M resistor and a 10pF ceramic disk capacitor between eyelets 27 and 15. This cap is not polarized.

☐ STEP 60

Add a 470K resistor

Add a 470K resistor between eyelets 27 and 14.

☐ STEP 61

Add a back-of-board jumper

Flip the board over and add a 2-1/4" white jumper on the back of the board between eyelets 15 and 40.

☐ STEP 62

Add a .0033µF capacitor

Add a .0033µF Orange Drop capacitor between eyelets 39 and 29. This cap is not polarized.

☐ STEP 63

Add three white jumpers

Cut two 6-1/2" white jumpers. Mark the end of one with an orange marker.

Flip the board over and wrap the unmarked end of this jumper through the back of eyelet 29.

Wrap the second jumper through the back of eyelet 14.

Run both these jumpers up through hole 13 and pull them tight to keep them in place.

Flip the board over and add a 1-1/4" white jumper on the back of the board between eyelets 39 and 64.

☐ STEP 64

Add two 100K resistors + one cap

Add a 100K resistor between eyelets 38 and 64. Add another 100K resistor between eyelets 38 and 62.

Add a 0.02µF Orange Drop cap between eyelets 37 and 62. This capacitor is not polarized.

☐ STEP 65

Add two white jumpers

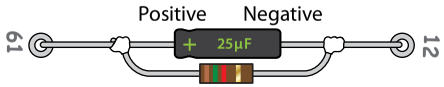
Add one 3" jumper to eyelet 64.

Add one 4-1/2" jumper to eyelet 62.

☐ STEP 66

Add a cap + resistor pairing

Wrap the leads of a 1.5K resistor around the leads of a 25µF Sprague electrolytic capacitor and solder them together.



Note the polarity of the capacitor. Install this resistor/capacitor assembly between eyelets 12 and 61, making sure the capacitor's negative lead goes to eyelet 12.

☐ STEP 67

Add two resistors

Add a 2.7k resistor between eyelets 12 and 26.

Add a 47ohm resistor between eyelets 11 and 12.

☐ STEP 68

Three jumpers

Add a 2" white jumper to eyelet 61.

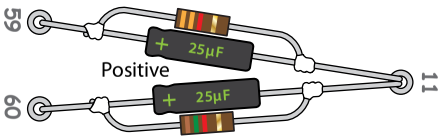
Cut one 7" white jumper. Flip the board over and wrap one end of the jumper through the bottom of eyelet 26. Run the other end of the jumper up through hole 48 and pull tight to keep in place.

Cut one 5" white jumper. Flip the board over and wrap one end of the jumper through the bottom of eyelet 27. Run the other end of the jumper up through hole 49 and pull tight to keep in place.

☐ STEP 69

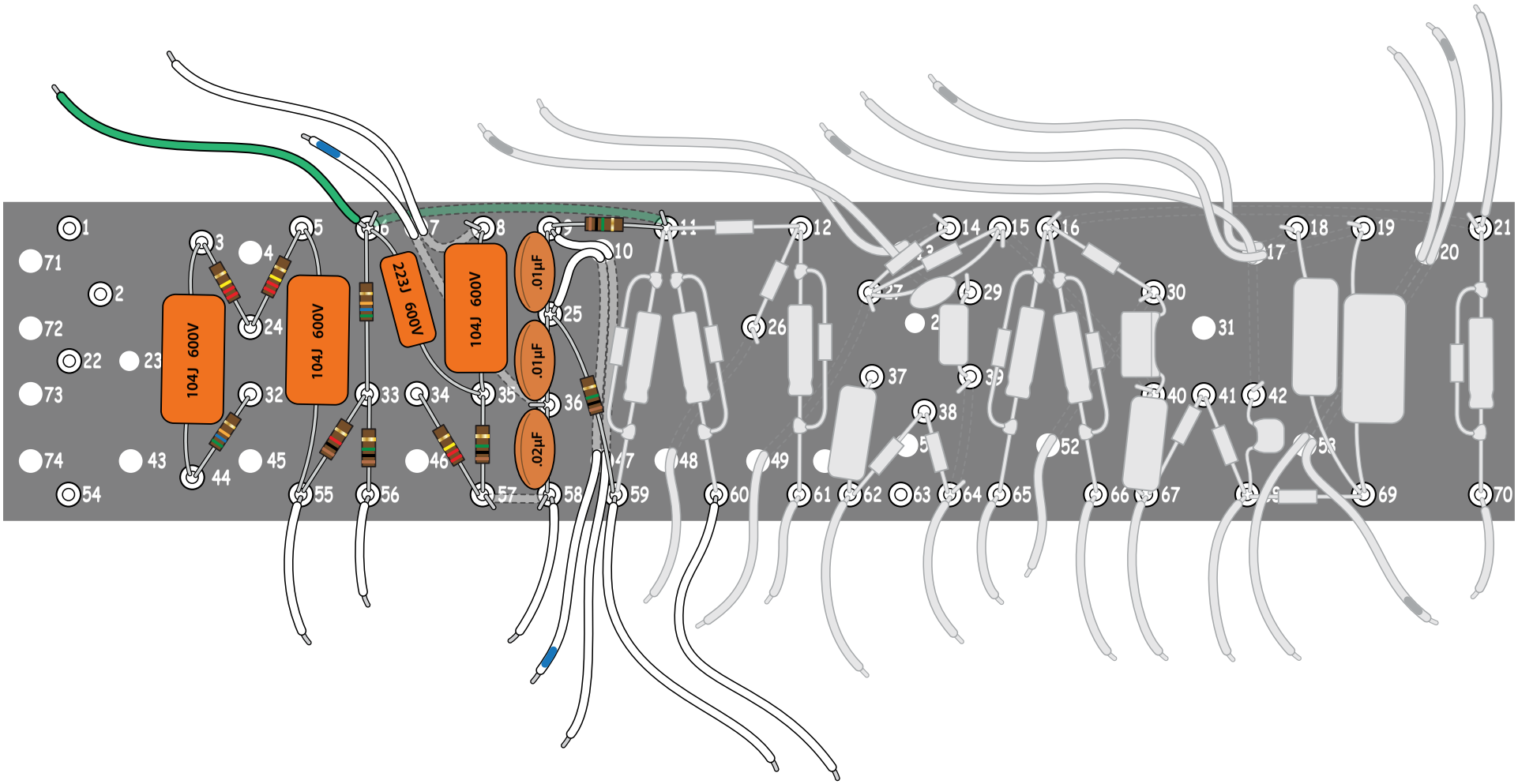
Add two more cap+resistor pairings

Wrap the leads of a 3.3K resistor and a 1.5K resistor around the leads of two 25µF Sprague electrolytic capacitors and



solder them together.

Install the 3.3K resistor/cap assembly between eyelets 11 and 59, and the 1.5K resistor/cap assembly between eyelets 11 and 60. Note the polarity of the caps, making sure the negative leads go to eyelet 11.



☐ STEP 70

Add three jumpers, white and green

Cut two 4-1/2" white jumpers. Add one to eyelet 60 and the other to eyelet 59.

Cut one 3" green jumper. Flip the board over and add this jumper between eyelets 11 and 6 on the back of the board.

☐ STEP 71

Add two 1M resistors

Add a 1M resistor between eyelets 9 and 11.

Add another 1M resistor between eyelets 25 and 59.

☐ STEP 72

Add three ceramic disk capacitors

The three capacitors installed in this step are not polarized, so you can install them in either direction.

Add a 0.02µF ceramic disk cap between eyelets 58 and 36.

Add a 0.01µF ceramic disk cap between eyelets 36 and 25.

Add a 0.01µF ceramic disk cap between eyelets 25 and 9.

☐ STEP 73

Add two white jumpers

Cut one 8" white jumper and add it to eyelet 9. Run this jumper down through hole 10, across the back of the eyelet board and back up through hole 47. Pull it tight to keep it in place.

Cut one 7" white jumper. Mark one end with a blue marker. Wrap the unmarked end onto eyelet 25. Run the marked end down through hole 10, across the back of the board and up through hole 47. Pull it tight.

☐ STEP 74

Add three white jumpers

Add a 2" white jumper to eyelet 58.

Cut one 7" white jumper. Mark one end with a blue marker. Flip the board over and wrap the unmarked end through the back of eyelet 36. Run the marked end up through hole 7 and pull it tight.

Flip the board again and add a 1-1/4" jumper between eyelets 57 and 58 on the back of the board.

☐ STEP 75

Add a resistor, a cap + a jumper

Add a 1M resistor between eyelets 57 and 35.

Add a 0.1µF Orange Drop cap between eyelets 35 and 8. This cap is not polarized.

Cut a 6" white jumper. Flip the board over and wrap one end through the back of eyelet 8. Run this jumper up through hole 7 and pull it tight.

☐ STEP 76

Add one capacitor + one resistor

Add a 0.02µF Orange Drop capacitor between eyelets 6 and 35. This cap is not polarized.

Add a 220K resistor between eyelets 34 and 57.

☐ STEP 77

Add three resistors

Add a 1M resistor between eyelets 33 and 56.

Add a 1K resistor between eyelets 33 and 55.

Add a 56k resistor between eyelets 33 and 6.

☐ STEP 78

Add three jumpers

Add a 1-1/2" white jumper to eyelet 56.

Add a 2" white jumper to eyelet 55.

Add a 6" green jumper to eyelet 6.

☐ STEP 79

Two resistors + one capacitor

Add one 220K resistor between eyelets 5 and 24. Add another 220K resistor between eyelets 3 and 24.

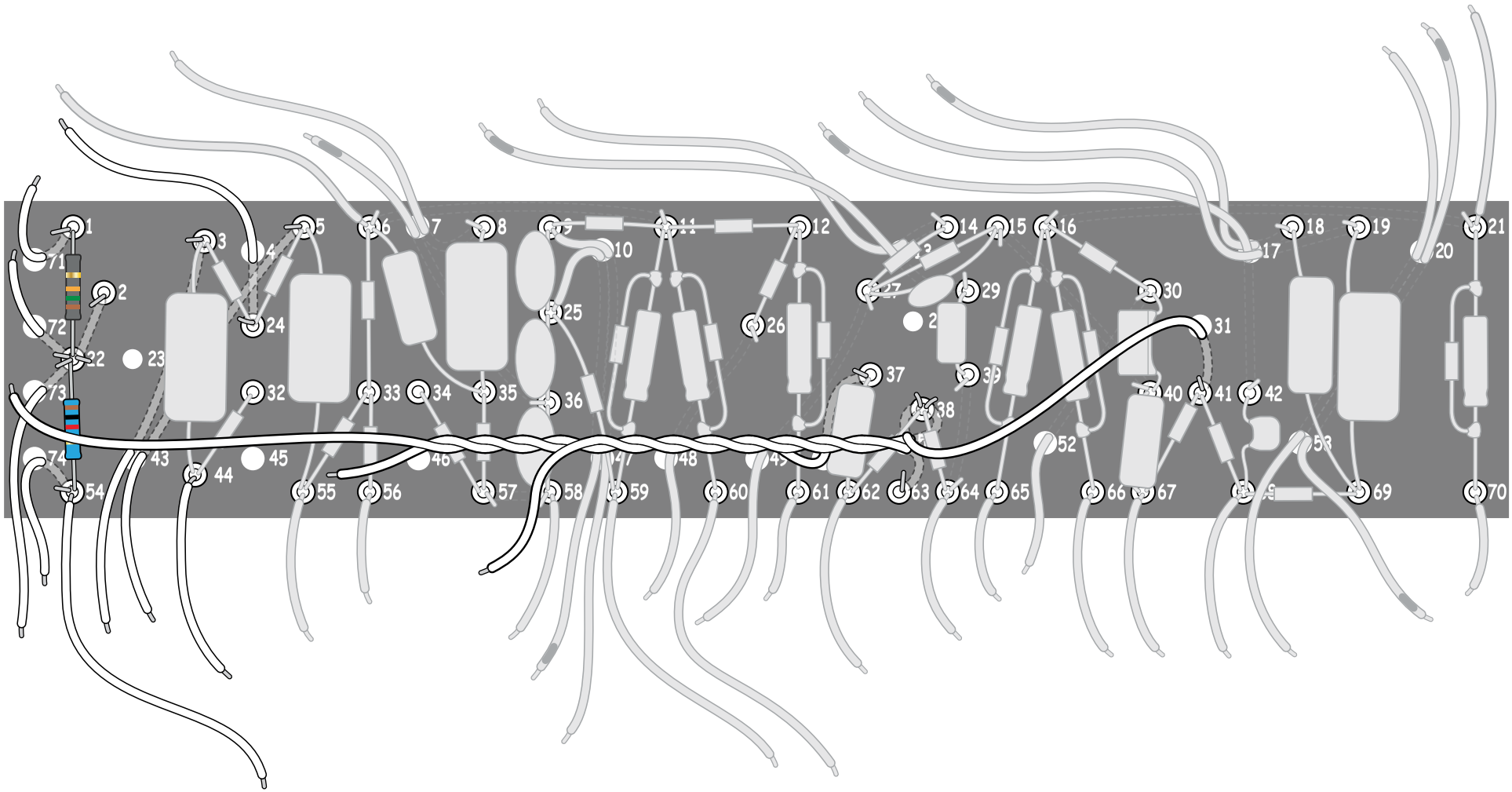
Add a 0.1µF Orange Drop capacitor between eyelets 5 and 55. This cap is not polarized.

☐ STEP 80

Add one resistor + one capacitor

Add a 56k resistor between eyelets 44 and 32.

Add a 0.1µF Orange Drop cap between eyelets 3 and 44. This cap isn't polarized.



Review this page before starting

The diagram shows a lot of jumpers now, so it's a good idea to read the steps and understand where each wire goes before diving in.

☐ STEP 81

Add four white jumpers

Add a 3" jumper to eyelet 44.

Cut a 6" white jumper. Flip the board over and wrap one end through the back of eyelet 24. Run this jumper up through hole 4 and pull it tight.

Cut a 4-1/2" white jumper. Flip the board and wrap it through the back of eyelet 5. Run this jumper up through hole 43 and pull it tight to keep it in place.

Cut a 6" white jumper. Flip the board and wrap this onto the back of eyelet 3. Run it up through hole 43 and pull it tight.

STEP 82

Add two resistors

Add a 1K 2W resistor between eyelets 54 and 22.

Add a 15K 2W resistor between eyelets 22 and 1.

☐ STEP 83

Add six white jumpers

Add a 1" white jumper on the back of the board between eyelets 2 and 22.

Add a 6" white jumper to eyelet 54.

Cut a 2" white jumper. Flip the board over and wrap one end through the back of eyelet 1. Run this jumper up through hole 71 and pull it tight.

Cut a 1-3/4" white jumper. Flip the board and wrap it to the back of eyelet 22. Run it up through hole 72 and pull it tight.

Cut a 5" white jumper. Flip the board and wrap it to the back of eyelet 22. Run the this jumper up through hole 73 and pull it tight.

Cut a 2" white jumper. Flip the board and wrap it to the back of eyelet 54. Run it up through hole 74 and pull it tight.

☐ STEP 84

Add two flying jumpers

Flying jumpers are wires that travel over the board, jumping from one eyelet to another. These are very common in classic point-to-point circuits.

Cut a 4" white jumper. Flip the board over and wrap one end through the back of eyelet 41. Run this jumper up through hole 31, pull it tight, and run it back down through hole 51. Wrap this end through the back of eyelet 38.

Cut a 7" white jumper. Flip the board and wrap it to the back of eyelet 63. Run this jumper up through hole 51, pull it tight, and leave the end of this flying for now. You'll be twisting this lead together with other flying leads.

☐ STEP 85

Add two more flying jumpers

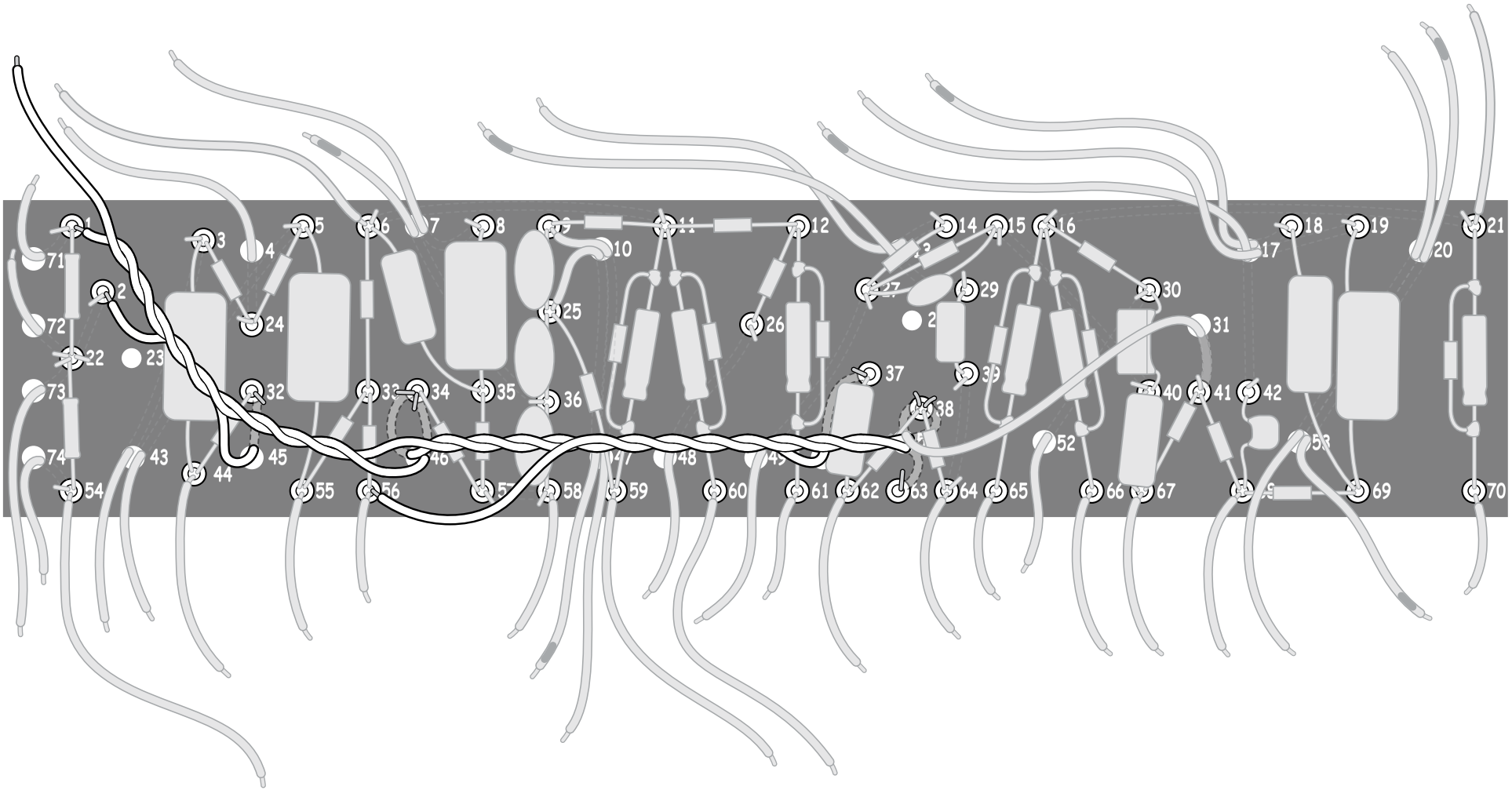
Cut a 12" white jumper. Flip the board and wrap this jumper through the back of eyelet 38. Run the free end up through hole 51 and pull it tight. Leave this end flying for now.

Cut a 6-1/2" white jumper. Flip the board and wrap one end through the back of eyelet 37. Run this jumper up through hole 50 and pull it tight.

☐ STEP 86

Twist the flying jumpers

Carefully twist these three flying jumpers together, bending them toward the left side of the board. You want these jumpers to be up and away from components. Be careful not to disturb their wrapped connections to the eyelets.



☐ STEP 87

Identify the flying jumpers

Use a multimeter to identify the flying jumper that has continuity to eyelet 63. Run that jumper down through hole 46 and wrap it through the back of eyelet 34.

Find the flying jumper with continuity to eyelet 37. Wrap the end of this jumper down onto eyelet 56.

☐ STEP 88

Add two white jumpers

Cut a 6" white jumper. Flip the board over and wrap one end through the back of eyelet 34. Run this jumper up through hole 46, pull it tight, and twist it in with the flying jumper still remaining above the board.

Cut a 6" white jumper. Flip the board and wrap it through the back of eyelet 32. Run this jumper up through hole 45, pull it tight, and twist it in with the flying jumpers.

☐ STEP 89

Installing flying jumpers

Use a multimeter to find the flying jumper with continuity to eyelet 32. Wrap the end of this jumper onto eyelet 1.

Find the flying jumper with continuity to eyelet 34. Wrap the end of this jumper down onto eyelet 2.

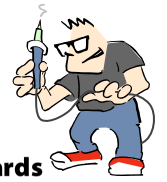
The one remaining flying jumper will be soldered to the filter capacitor later.

Stop and review

Now all the components and wires are on the eyelet board. Stop and take a break so you'll have fresh eyes to review your work before soldering.

Make sure you've followed each step correctly. It would be surprising to find no mistakes at this point, and it's much less work to find and fix them now rather than after soldering!

As you're checking your work, make sure all your connections are tight. Don't count on solder to "glue" your joints—make them mechanically tight before solder is ever applied.



☐ STEP 90

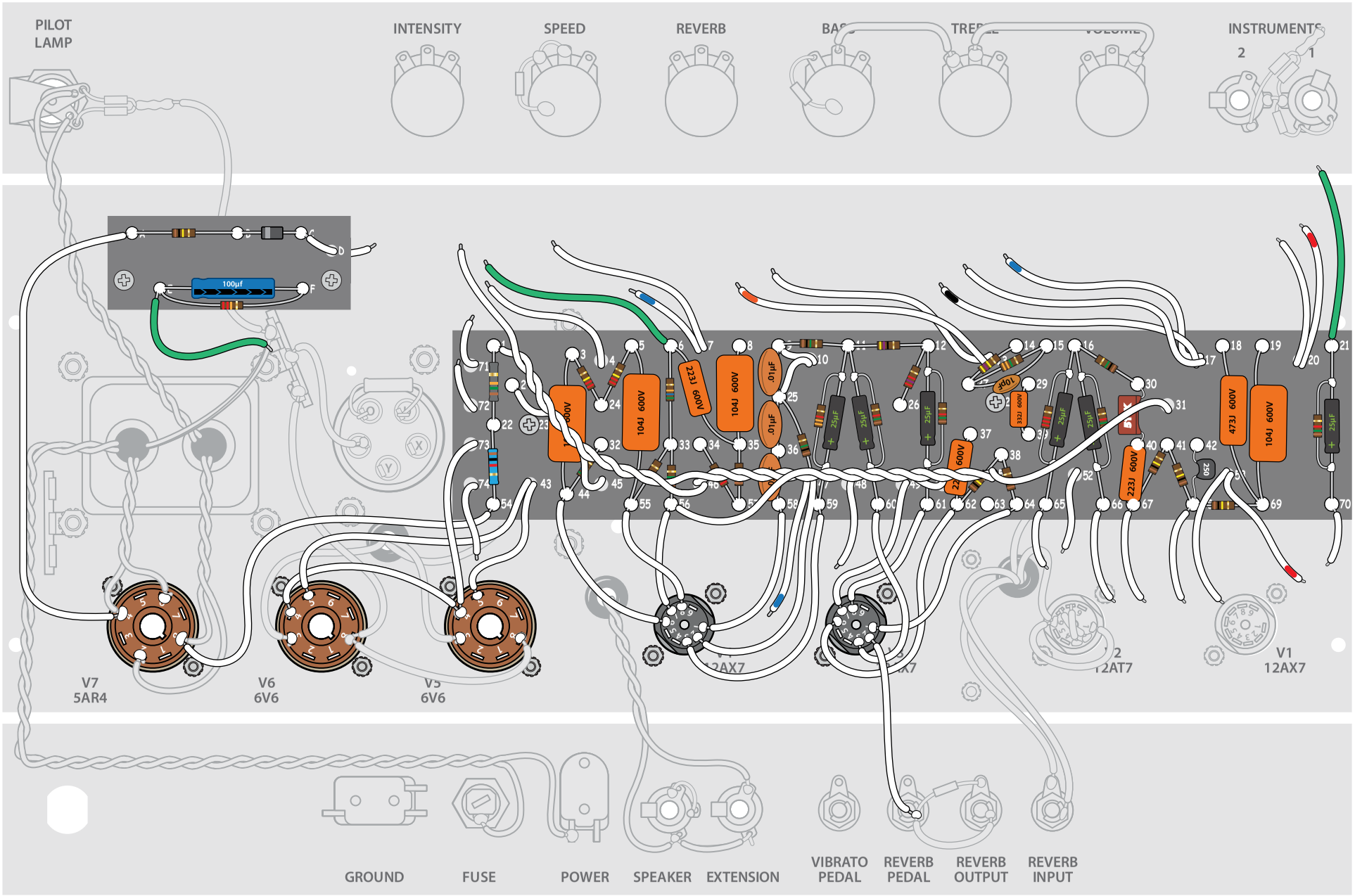
Solder both eyelet boards

The components and jumpers are on the boards and double-checked for correct placement and tight wraps. It's time set the connections with solder.

Review "Tips for great soldering" on page 11, then solder each connection on the eyelet board.

After all the joints are soldered, clip the excess leads on the front and back of the board. Trimming these excess leads is important to avoid a short in your circuit.

Check all your solder joints to see that they're shiny, and to make sure that you haven't missed one.



Installing and soldering the boards

☐ STEP 91

Install the boards in the chassis

Before installing the main eyelet board and insulator board in the chassis, make sure the unsoldered jumpers coming through holes 20 and 53 have enough length to reach their components. Place the eyelet board in the chassis where it will be mounted and adjust these jumpers until they reach their components.

Lay the main insulator board on the bottom of the chassis, aligning it with the mounting holes. Align the main eyelet board over the insulator board. Pass a 6-32 x 1/2" machine screw through the eyelet board, the insulator board, and the chassis. Secure it with a locknut on the outside of the chassis. Do the same with the second bolt.

Install the bias board in the same way: insulator first, eyelet board on top and mounted with 6-32 x 1/2" machine screws.

☐ STEP 92

Solder tube socket V7

Wrap the white jumper from eyelet 54 onto pin 8 on tube socket V7 along with the yellow power transformer lead.

Wrap the white jumper from bias board eyelet A onto pin 4 of socket V7.

Solder all the connections to this socket (six wires) and trim the excess wire ends.

☐ STEP 93

Solder tube socket V6

Test the two jumpers coming from hole 43 to identify the one with continuity to eyelet 3. Solder this jumper to pin 5 of socket V6.

You should have jumpers soldered to pins 3, 4, 5 and 8. Solder any unsoldered connections on this socket now and trim the wire ends.

☐ STEP 94

Solder tube socket V5

Solder the other jumper coming from hole 43 to pin 5 of socket V5. Test to make sure this jumper has continuity to eyelet 5.

Solder the jumper coming from hole 73 to pin 4 of socket V5. This jumper should have continuity to eyelet 22.

You should have jumpers soldered to pins 3, 4, 5 and 8. Solder any unsoldered connections on this socket now and trim the wire ends.

☐ STEP 95

Solder tube socket V4

Wrap the jumper from eyelet 44 to pin 6 of socket V4.

Wrap the jumper from eyelet 58 to pin 1 of socket V4.

Wrap the jumper from eyelet 56 to pin 7 of socket V4.

Wrap the jumper from eyelet 55 to pin 8 of socket V4.

Test the two jumpers coming through hole 47 to see which one has continuity to eyelet 9. Solder this jumper to pin 2 of socket V4.

Wrap the jumper from eyelet 59 to pin 3 of socket V4.

Solder the connections to this socket (six wires). Trim the wire ends.

☐ STEP 96

Solder tube socket V3

Wrap the jumper from eyelet 62 to pin 6 of socket V3. Run this lead along the floor of the chassis to the other side of the tube socket. This lead carries high voltage and running it against the floor helps distance it from other wires—which could create unwanted hum.

Wrap the jumper from eyelet 64 to pin 1 of socket V3.

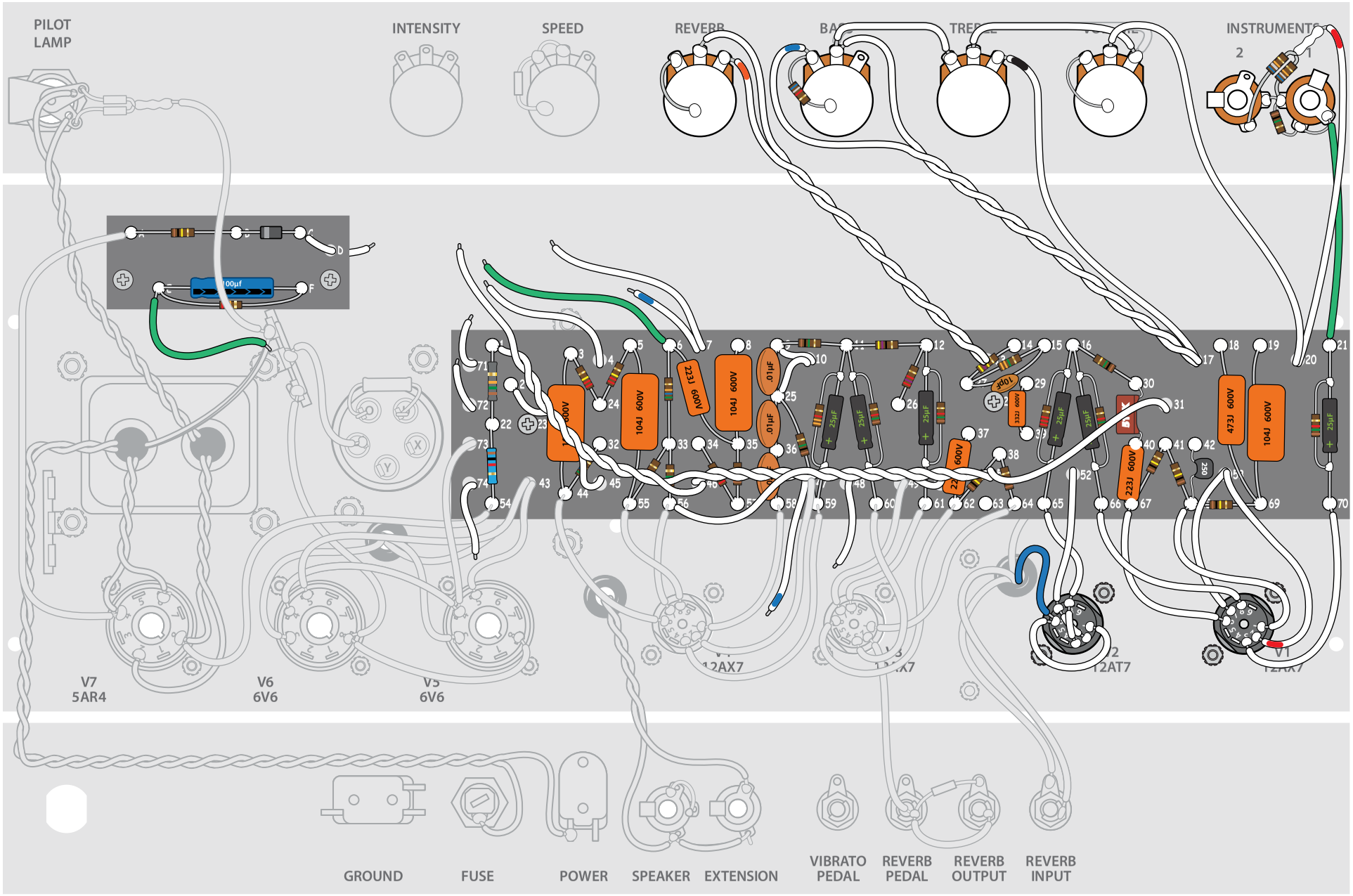
Wrap the jumper coming through hole 49 to pin 7 of socket V3. This jumper should have continuity to eyelet 27.

Wrap the jumper from eyelet 60 to pin 3 of socket V3.

Wrap the jumper from eyelet 61 to pin 8 of socket V3.

Wrap the jumper coming from the reverb pedal jack to pin 2 of socket V3.

Solder the connections to this socket (six wires). Trim the wire ends.



☐ STEP 97

Solder tube socket V2

Wrap the jumper from hole 52 onto pin 7 of socket V2. This jumper should have continuity to eyelet 30.

Wrap the jumper from eyelet 65 onto pin 8 of socket V2.

Double-check to be sure the jumper from pin 7 to pin 2 is securely wrapped onto pin 7.

Also make sure the jumper from pin 8 to pin 3 is wrapped in place on pin 8.

Solder the connections to this socket (six wires). Trim the wire ends.

☐ STEP 98

Solder tube socket V1

Wrap the jumper from eyelet 67 onto pin 6 on socket V1.

Wrap the jumper from eyelet 68 onto pin 1 of socket V1.

Wrap the unmarked jumper coming through hole 53 onto pin 7 of socket V1.

Wrap the jumper from eyelet 66 onto pin 8 of socket V1.

Wrap the red marked jumper from hole 53 onto pin 2 of socket V1.

Wrap the jumper from eyelet 70 onto pin 3 of socket V1.

Solder the connections to this socket (six wires). Trim the wire ends.

☐ STEP 99

Solder the instrument input jacks

Solder the red-marked jumper from hole 20 onto the twisted pair of 68K resistor leads coming from the input jacks.

Solder the green jumper from eyelet 21 onto the right lug of input jack 1.

Solder any remaining unsoldered connections on the input jacks and trim the excess wires.

STEP 100

Solder the volume pot

Solder the unmarked jumper from hole 20 to the middle lug of the volume pot.

Cut a 1" green jumper and remove the shielding. Solder one end of this to the left lug of the volume pot. Solder the other end to the back of the volume pot.

☐ STEP 101

Solder the treble pot

Find the jumper coming through hole 17 that you marked with black ink. Solder this to the right lug of the treble pot.

☐ STEP 102

Solder the bass pot

Twist the two jumpers together that are coming through hole 17. Identify which of these jumpers has continuity to eyelet 19 and solder it to the middle lug of the bass pot along with the jumper already in place.

Find the blue-marked jumper coming through hole 17 that has continuity to eyelet 18. Solder this jumper to the left lug of the bass pot along with the resistor lead already in place.

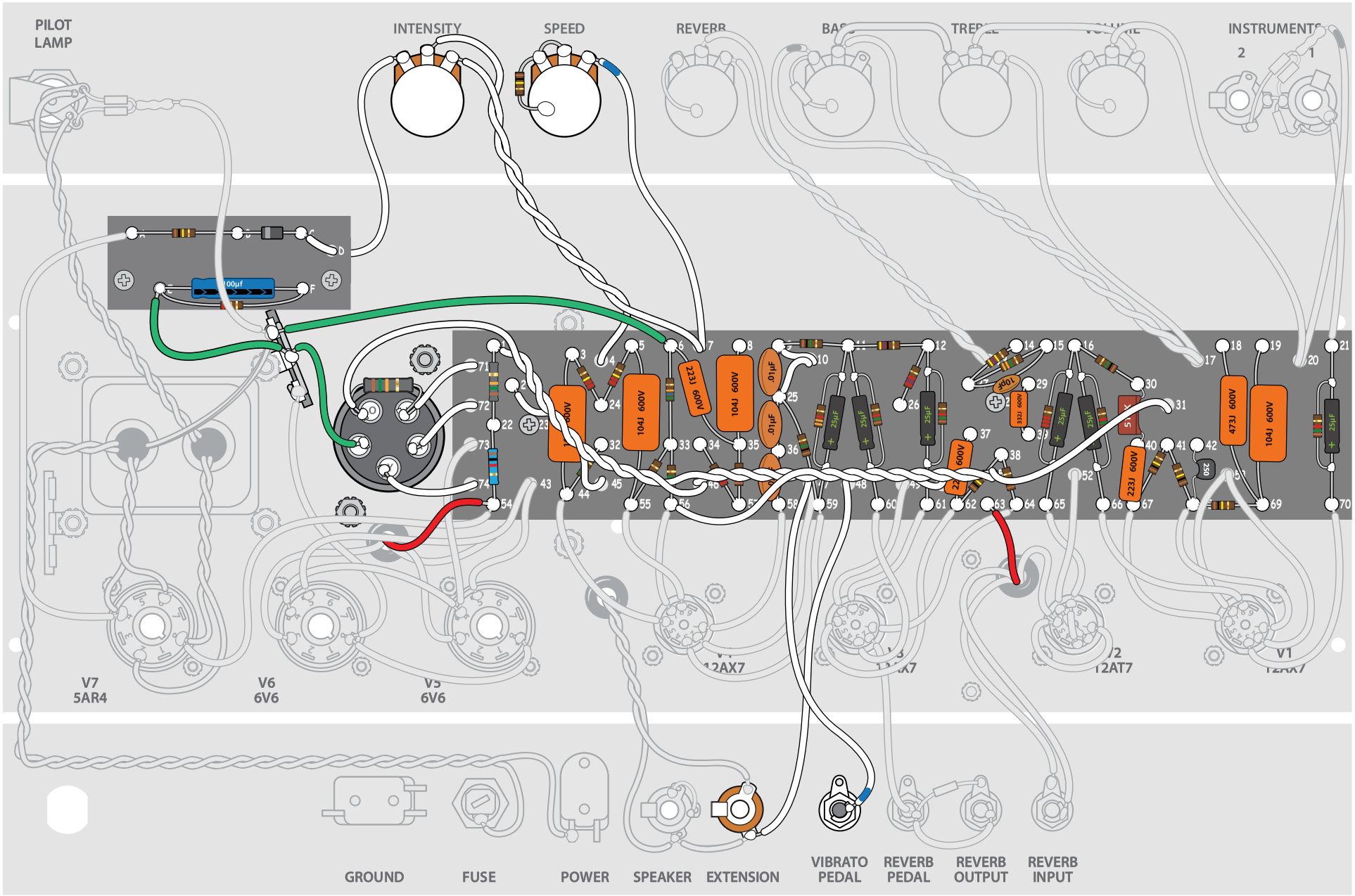
☐ STEP 103

Solder the reverb pot

Take the two jumpers coming through hole 13 and twist them together. Identify the jumper that you marked orange, and solder it to the right lug of the reverb pot.

Find the jumper coming through hole 13 that has continuity to eyelet 14. Solder this jumper to the middle lug of the reverb pot.

Cut a 1" green jumper and remove the shielding. Solder one end of this to the left lug of the reverb pot. Solder the other end to the back of the reverb pot.



☐ STEP 104

Solder the speed pot

Find the jumper coming through hole 7 that you marked with blue ink. This should have continuity to eyelet 36. Solder this jumper to the right lug of the speed pot.

☐ STEP 105

Solder the intensity pot

Identify the jumper coming through hole 7 that has continuity to eyelet 8. Solder this to the right lug of the intensity pot after twisting it together with the jumper from hole 4.

The jumper coming through hole 4 should have continuity to eyelet 24. Solder this jumper to the middle lug of the intensity pot.

Find the jumper coming through hole D of the bias board that has continuity to eyelet C of the bias board. Solder this jumper to the left lug of the intensity pot.

☐ STEP 106

Solder the filter capacitor

Make sure the remaining flying lead has continuity to eyelets 38 and 41. Solder this lead in to the "O" lug of the filter cap along with the resistor lead already in place.

Solder the lead from hole 71 to lug "U" of the filter cap along with the resistor lead already in place. This lead should have continuity to eyelet 1.

Solder the lead from hole 72 to lug "X" of the filter cap along with the resistor lead already in place. This should have continuity to eyelet 22.

Solder the lead from hole 74 to lug "Y" of the filter cap along with the resistor lead already in place. This lead should have continuity to eyelet 54.

☐ STEP 107

Solder two red leads

Trim the red output transformer lead coming through the rubber grommet beside the filter cap to an appropriate length and solder it to eyelet 54.

Also trim the red lead from the reverb driver and solder it to eyelet 63.

☐ STEP 108

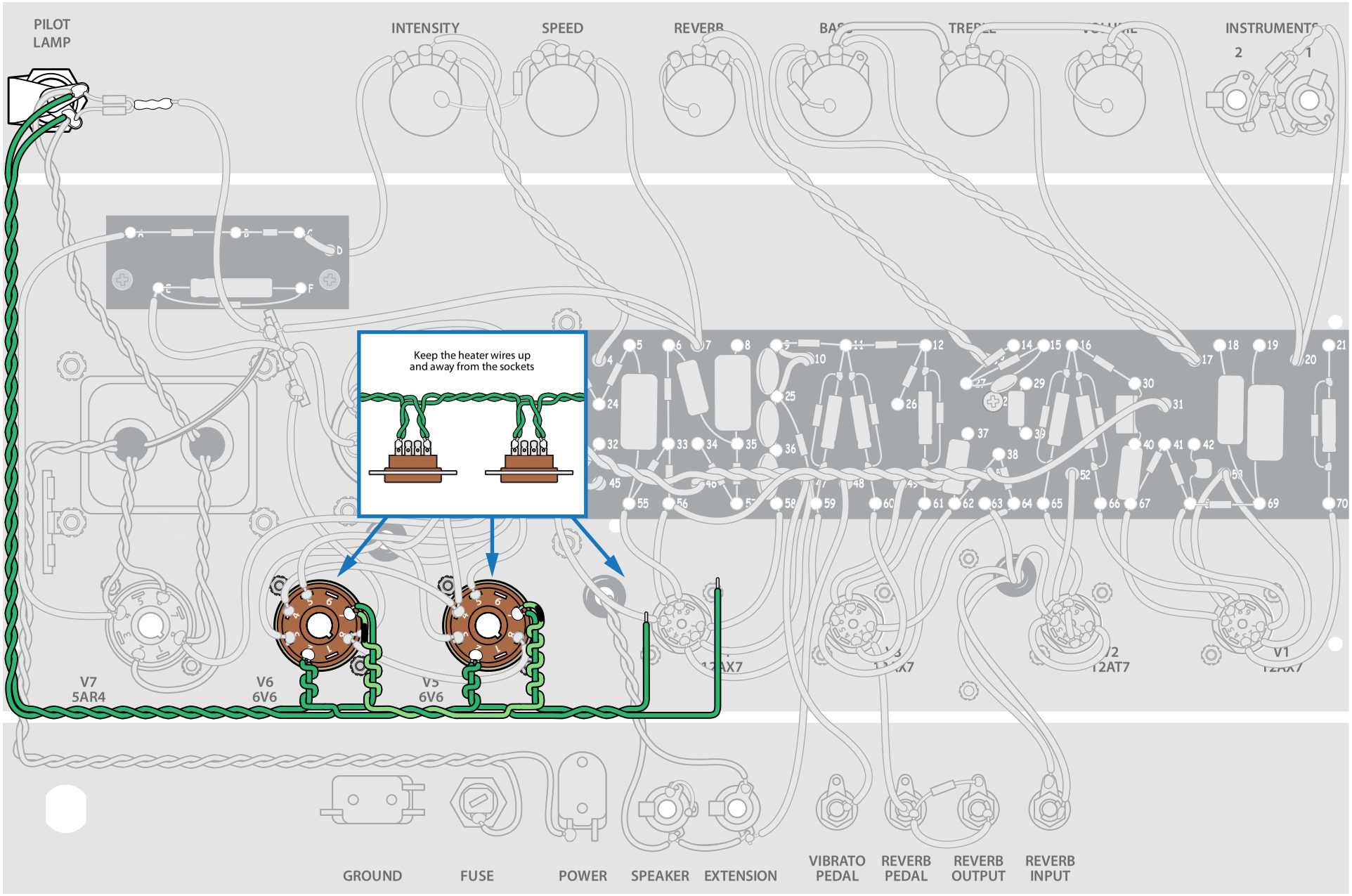
Solder three jumpers

Solder the green jumper from bias board eyelet E to the front grounding strip.

Also solder the green jumper from eyelet 6 to the front grounding strip.

Solder the jumper from hole 48 to the right lug of the extension jack, along with the jumper from the right lug of the speaker jack. This jumper should have continuity to eyelet 26.

Solder the blue-inked jumper from hole 47 to the center lug of the vibrato pedal jack. This should have continuity to eyelet 25.



Install the heater wires

Review these steps very carefully before you start installing the heater wires that power the heating filaments in the tubes.

It's important to twist these wires tightly together. This isn't for looks; twisting the wires has a hum-cancelling function that reduces noise in the amp.

☐ STEP 109

Install two 12" green jumpers

Cut two 12" green jumpers and twist them together, leaving about an inch of untwisted wire on each side. Wrap these wires onto the lugs of the pilot lamp. Solder them in place with the two 100Ω resistors and the green power transformer leads.

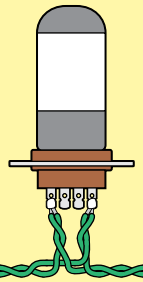
Route these twisted jumpers around the edge of the chassis to reach socket V6.

How to REDUCE THE HUM caused by AC voltage

These green heater wires carry AC voltage that will cause hum if they get too close to wires that carry the signal. These tips minimize that hum.

Twist the wires tightly

This reduces hum, in much the same the way that two opposite-wound coils work in a humbucking pickup.



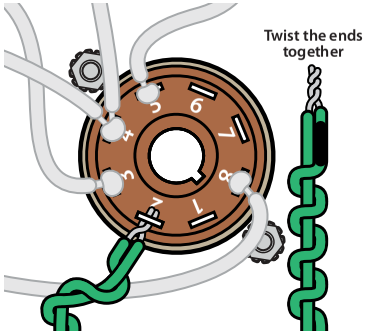
Route them up and away

Let these wires stick up about an inch from the socket before bending them. This keeps the heater wires from mingling with the signal wires.

☐ STEP 110

Add two 4" green jumpers

Cut two 4" green jumpers. Mark one of these jumpers at both ends with a black marker so you can tell them apart after twisting them. Twist them together very tightly, leaving about an inch free at each end.



Connect these jumpers to the jumpers from the pilot lamp by twisting the ends together. Solder the pair with the black-marked wire to pin 7 of socket V6.

Solder the unmarked pair onto pin 2 of socket V6.

Bend these wires so they stick straight out from the socket by 1" as described in the hum-reducing tips explained at left. Bend them into a sharp angle toward socket V5.

☐ STEP 111

Add another two 4" green jumpers

Cut two more 4" green jumpers and twist them tightly together.

Connect the ends of these jumpers to the ones coming from socket V6. Solder the pair with the black-marked wire to pin 7 of socket V5.

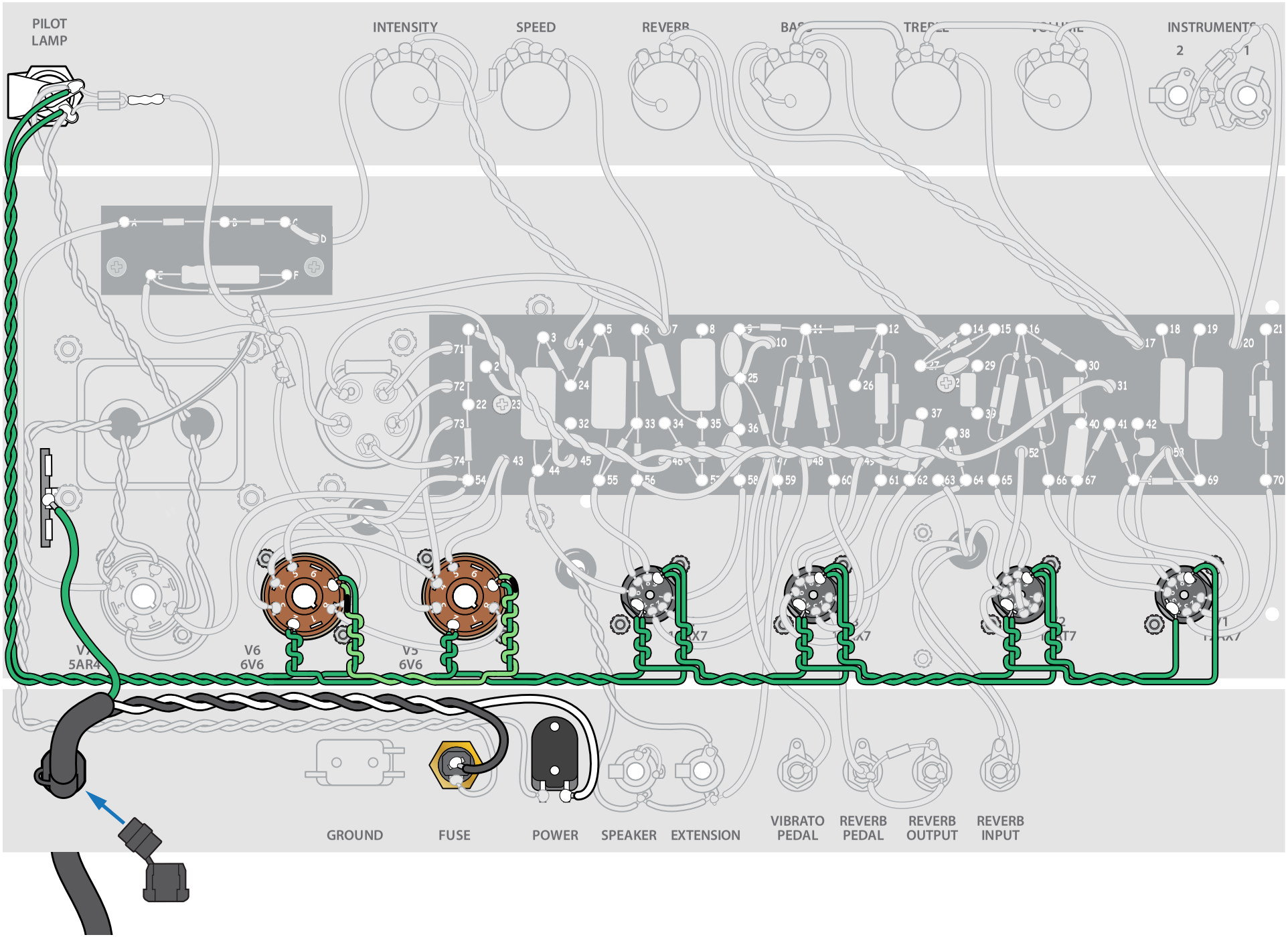
Solder the unmarked pair onto pin 2 of socket V5.

Bend these wires so they stick straight out from the socket by 1" as described before. Bend them into a sharp angle toward socket V4.

☐ STEP 112

Add two 5" green jumpers

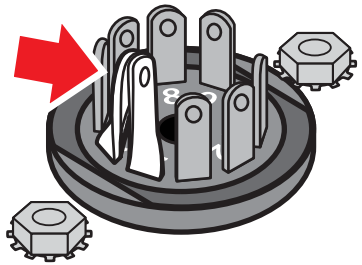
Cut two 5" green jumpers and twist them together tightly. For the remaining tube sockets, you no longer have to mark the wires or keep track of which is which; they're interchangeable from here on. Connect these new jumpers to the pair coming from socket V5.



☐ STEP 113

Connect to socket V4

On the remaining small tube sockets, twist pins 4 and 5 toward each other so their holes line up. Be very careful while doing this as these pins are delicate.



Solder one pair of twisted wires to pins 4 and 5 of socket V4. Solder the other pair to pin 9 of the same socket. Trim the excess wires. Bend these wires as before, routing them toward socket V3.

☐ STEP 114

Add two 5" green jumpers

Cut two 5" green jumpers. Twist them very tightly and join them to the twisted pair coming from socket V4.

Solder one pair to pins 4 and 5 of socket V3, and solder the other pair to pin 9 of socket V3. Bend these wires toward socket V2.

☐ STEP 115

Add another two 5" green jumpers

Cut two more 5" green jumpers. Twist them very tightly and join them to the twisted pair coming from socket V3.

Solder one pair to pins 4 and 5 of socket V2, and solder the other pair to pin 9 of socket V2. Bend these wires toward socket V1.

Solder one of these wires to pins 4 and 5 of socket V1, and solder the other wire to pin 9 of socket V1.

☐ STEP 116

Add the power cord + strain relief

Strip 8-1/2" of the power cord's outer insulation back so the black and white leads can reach from the access hole to the power switch and fuse. Twist these black and white leads together.

Cut the green lead from the power cord to reach the rear grounding strip. Tin this lead with solder and wrap it onto the middle lug of the grounding strip.

Pull the power cord leads through the hole in the chassis and secure with the black strain relief.

The strain relief is a tight fit. Use pliers to squeeze it onto the power cord outside the chassis, and keep squeezing to fit it into the mounting hole.

Run the black and white power cord wires along the back wall of the chassis. Solder the white wire to the right lug on the power switch.

Solder the power cord's black wire to the center/back lug of the fuse socket.

Danger: Soldering this lead to the side lug of the fuse socket will create a shock hazard.

Solder the power cord's green ground wire to the center lug of the rear terminal strip (this lug is grounded to the chassis).

Take a break, then review

Now that you've soldered the wires and components, take a break. Come back in a bit to check your work before continuing.

Check your work slowly and carefully.

You've completed well over one hundred steps so far, so a few small errors will be no surprise at all. Finding and fixing those errors is the way to have your amp work successfully when you get to the testing and power up stage!

Installing the fuse, lamp, and knobs

☐ STEP 117

Install the fuse

Insert the 1-amp fuse into the fuse socket from the back of the chassis. Make sure the socket cap is secure. Never use a fuse rated above 1 amp in this amplifier.

☐ STEP 118

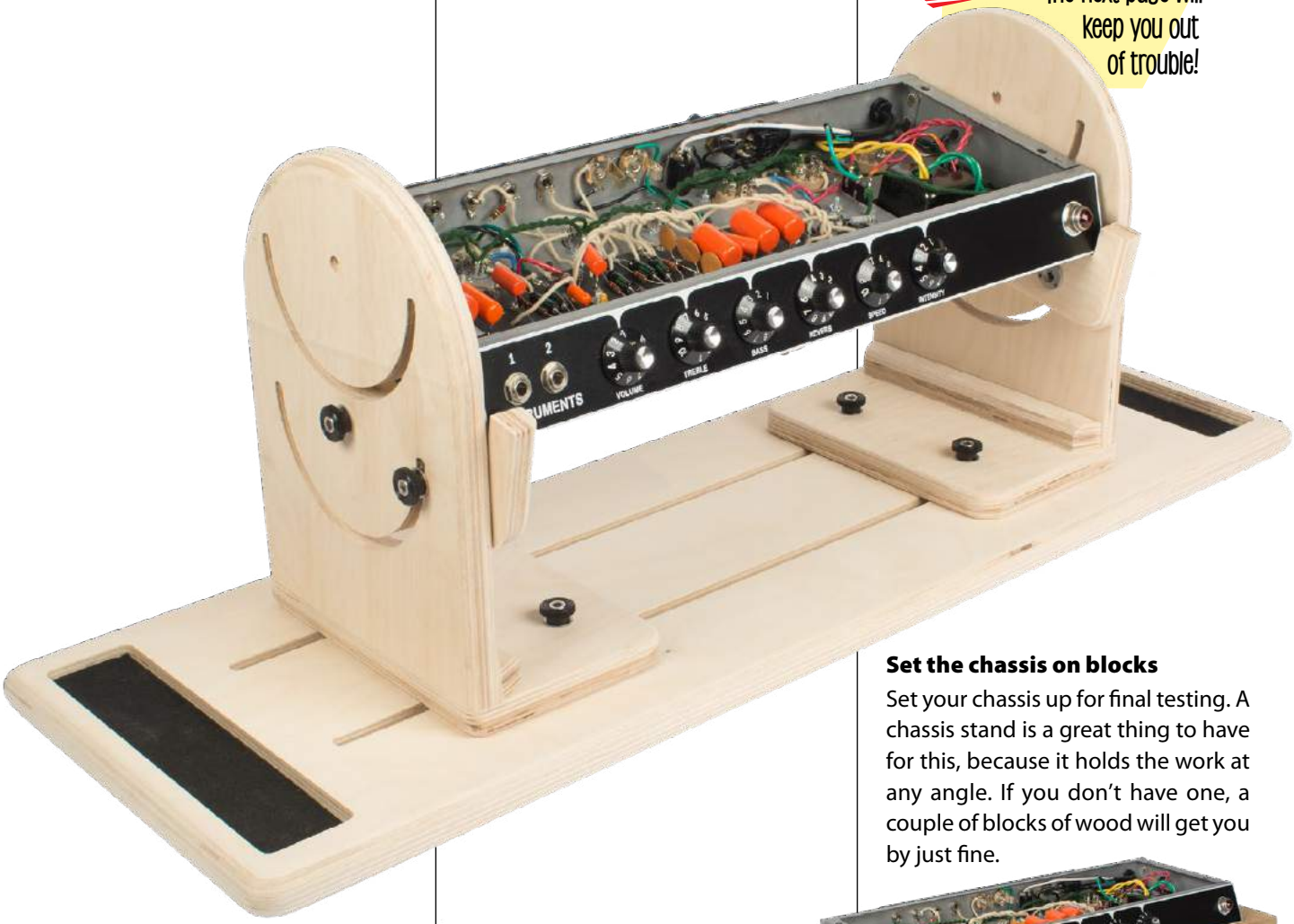
Install the pilot lamp

Insert the pilot lamp bulb into its socket from the front of the chassis and twist until it locks back in place. Screw the red jewel lens over the socket.

☐ STEP 119

Install the six control knobs

Turn the shaft of each pot all the way counterclockwise to the "off" point and install the knob so the indicator line points to number 1.



Set the chassis on blocks

Set your chassis up for final testing. A chassis stand is a great thing to have for this, because it holds the work at any angle. If you don't have one, a couple of blocks of wood will get you by just fine.

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.

☐ STEP 120

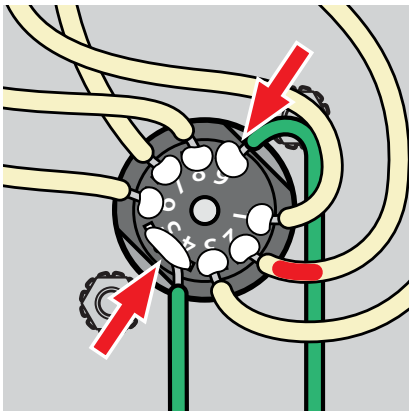
Perform a safe power-up

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, watch for smoke or unusual smells. If anything seems unusual, disconnect the power immediately and carefully review all your connections.



☐ STEP 121

Test the standard AC voltage

Set your multimeter to 20V AC. Check the heater voltage across pin 9 and pins 4+5 on the V1 12AX7 socket. This should read between 5-7V AC. If this reading is drastically different, unplug the amp and check your connections.

If the amp seems normal, unplug the power cord while still leaving the power switch ON.

ALWAYS discharge the filter cap before working on the circuit. See how to use a snuffer stick on page 6.

And seriously, keep one hand behind your back!

☐ STEP 122

Test the dangerous DC voltage

The dangerously high DC voltage that passes through the rectifier tube and the filter caps is referred to as "B+". The next step is to test this B+ voltage.

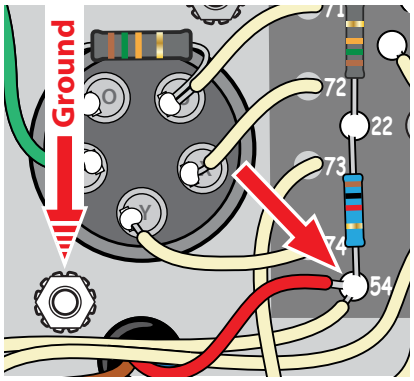
With the amp still unplugged, install the 5AR4 rectifier tube while spreading the tension clip with the other hand. Take care to position the indexing key correctly in the socket.

Plug the power cord back in. The pilot lamp should light, along with the filament inside the 5AR4 rectifier tube.

Again, spend a few minutes watching 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 6.

For safety, use only one hand to touch the amp during DC tests.
Keep your other hand behind your back when you need to probe a component. This way, you can't be a path between B+ voltage and ground—a mistake that would send a dangerous charge through your heart.



Set your multimeter to 500V DC and connect the negative lead to ground. Once the negative lead is secured to ground, measure the DC voltage at eyelet 54 for your B+ voltage. This should be roughly 420V DC.

Unplug the amp

Danger: Remember to discharge the capacitors before working on the circuit. See how to use a snuffer stick on page 6.

☐ STEP 123

Test the preamp tubes

With the amp unplugged, you can install the four preamp tubes. When these tubes are installed, plug the amp back in. The pilot lamp should light up.

Let the amp warm up for a few minutes. Again, if you get smoke or smells, unplug immediately and review your connections.

Connect your multimeter's negative lead to ground.

Set your multimeter to 5V DC and check eyelet 70, which should read around 1.3V.

Set the multimeter to 200V DC and check eyelet 68, this should give a reading of about 160V.

If these voltages read within about 10% of their expected values, unplug the amp.

If the reading at eyelet 68 shows no voltage or low voltage, follow this test: unplug the amp and drain the filter caps with the snuffer stick. Set your meter to read continuity. Check to see that you have properly installed the flying jumper from the "O" lug of the filter cap to eyelet 41. You should have continuity between these two points.

☐ STEP 124

Test the 6V6 power tubes

With the amp unplugged, install the 6V6 power tubes in sockets V5 and V6. They have an indexing key on the center post to guide them correctly into the socket.

Plug in the speaker, footswitch, and reverb tank.

Perform these next tests with the speaker turned away from you. This is to protect your ears in case the amp starts to oscillate and squeal.

Plug the amp in. After a few moments you should hear a low hum. If the hum becomes very loud, disconnect the power immediately and review your connections.

After the amp has warmed up for a few minutes attach your multimeter's negative lead to ground, such as the metal chassis or a grounding strip.

Set your multimeter to read 5V DC and test for voltage at eyelet 70. This voltage should read around 1.3V.

Set your multimeter to read 500V DC and test for voltage at pin 3 of the V6 6V6 socket. This voltage should read around 370V.

Set your multimeter to read 50V DC and test for voltage at eyelet 24. This voltage should read around -29V (negative 29V).

If your voltage readings are correct, plug a guitar in and play at low volume. If the amp behaves as it should, keep increasing the volume. It should start to break up nicely as you increase the volume.

☐ STEP 125

Test the reverb and tremolo

If the reverb doesn't seem to work, try switching the cables in the reverb input and output jacks. If that doesn't remedy the issue, check your reverb cables again for a short.

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 eyelet board
- from the tube sockets to the eyelet board
- from the tube sockets to the front panel controls.

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

After testing all inputs, if everything seems to be operating normally, turn the amp off. You're ready to assemble it and play it!

Final assembly

☐ STEP 127

Install the chassis

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

Slide the chassis in from the back until its front edge rests on the speaker baffle. Align the chassis straps with the holes in the top of the cabinet. Insert the mounting screws through the straps and down through the chassis. Tighten the locknuts.

Install the preamp tube shields. Fasten the power cord to the cable clamp on the side of the cabinet and install the back panels.

Slide the reverb tank into its bag and lay it on the floor of the cabinet. The RCA connections inside the bag should be facing front, toward the speaker baffle.

Plug in the speaker, footswitch, and reverb tank.

It's finally time to let it rip!

Tips for using this amp

This amp is known for its gorgeous clean tones and luscious reverb. The vibrato isn't as deep as is typical on Fenders because it's tube-driven, not optocoupler-driven.

The amp's cathodyne phase inverter creates "brown" distortion when you really start to drive the power tubes. This overdrive really pushes the mids and lows, and can become flabby if you don't have your settings right. Use the Bass and Treble controls to dial this in. With humbuckers, try turning the bass down a bit. Give singlecoils a little more bass.

With singlecoils you can also push the reverb a little higher, which would make humbuckers become muddy.

The '65 P-Reverb is a great pedal platform, especially for modulation and delay. Fuzz pedals will most likely need a mids-booster such as an overdrive to keep your tone from being lost in the mix, because fuzz pedals typically cut mids drastically.

Overdrive pedals on their own are great to kick in when you want to jump to the front of the mix.

Still, my favorite way to play this amp is to plug straight in and go. This amp is a classic because it has everything you need for that clean Americana tone and that drenched surfy jangle, all in one box.

Matt Clouston, StewMac

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.

MAKE IT MOD IT FIX IT StewMac®

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.

Call 800-848-2273 from 9AM–6PM Eastern time, Monday–Friday.
Email: service@stewmac.com

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

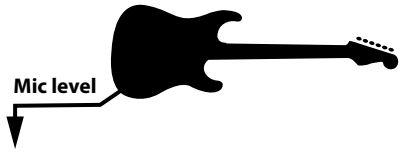
Learning more: secrets revealed in the schematic

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.

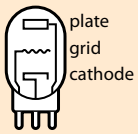


Gain

Line level →

The gain circuit increases the signal strength to **line level** (about 1 volt), by passing it through preamp tubes.

Inside the tube, electrons flow from a heated **cathode** to be received by the anode **plate**. Between these is a **grid** receiving the tiny voltage from the guitar. The guitar's varying musical signal controls the flow of electrons to the plate. This 3-part component is called a triode.



The V1 preamp tube is the only true preamp gain stage in this circuit. A relatively cold bias, with a 1.5K cathode resistor for each side, keeps the headroom high and reduces preamp distortion.

Processing

Line level →

The processing stage shapes the **tone**. The smallest amp of the black-panel era with both reverb and vibrato, most of the P-Reverb's preamp tubes handle both driving and recovery of these effects. Preamp tube V2 sends the signal to the reverb, and V3 recovers that signal and mixes the dry and wet signals.

The first half of V4 drives the vibrato, the second half is the phase inverter. This is very different from the larger black-panel era amps, and can result in a more "brown" distortion.

The sensitive bass response can overwhelm the 10" speaker, so you might want the treble controls a little bit higher than the bass controls.

Output

Speaker level →

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

Two 6V6 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 **8 ohms** to drive the amp's 8Ω speaker.

This amp is cathode biased, which means you don't need to make any adjustments when replacing the power tubes. Just make sure you are replacing the power tubes with a matched pair.

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 doing this, because it places unneeded stress on the output transformer.

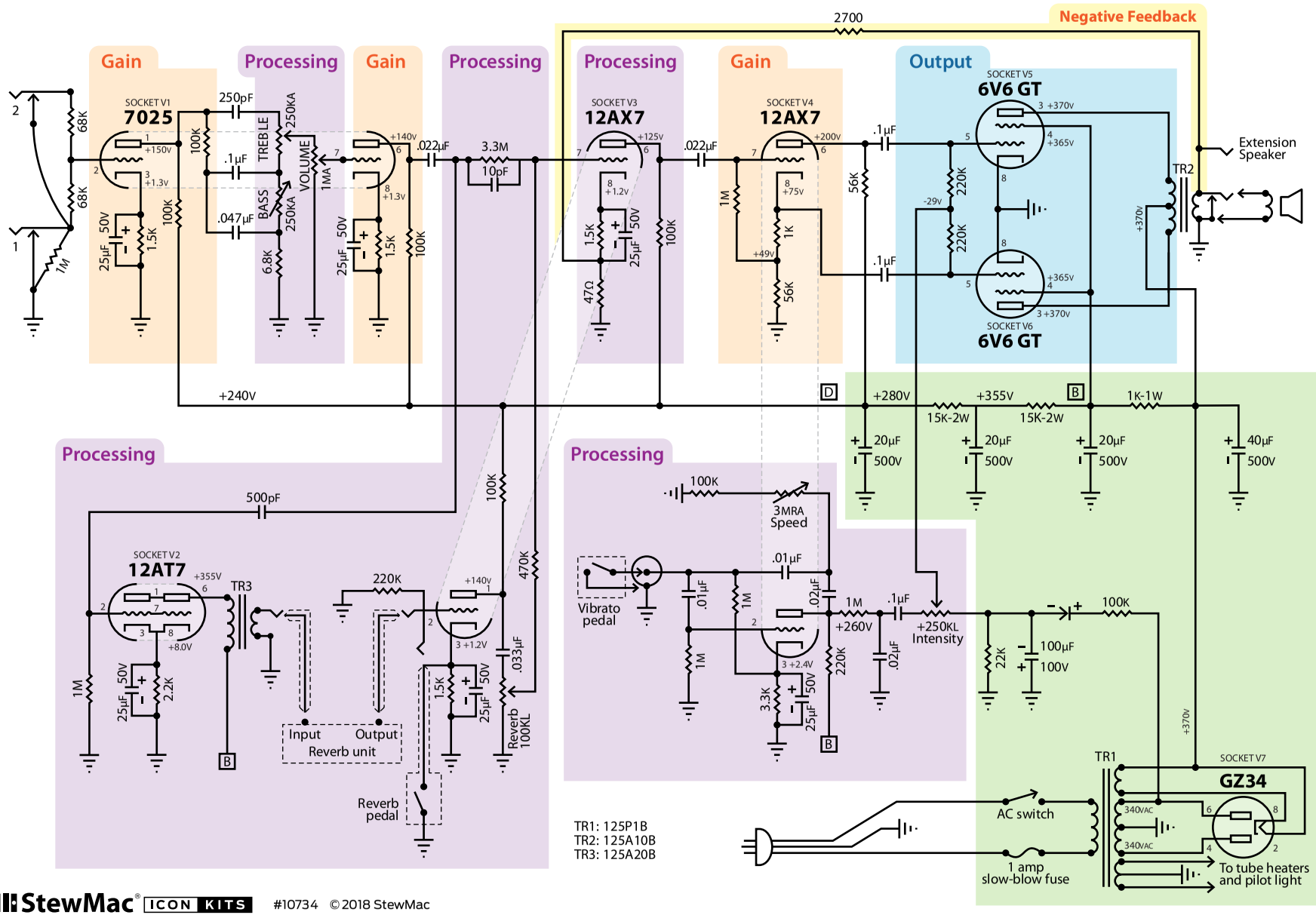
Power

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

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 cap, which contains four capacitors that 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.



TR1: 125P1B
TR2: 125A10B
TR3: 125A20B

StewMac® ICON KITS #10734

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)

'65 P-REVERB 15W

ORIGINAL AA1164 CIRCUIT

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!

'57 MINI TWEED 5W AMP KIT

One-knob titan of tone.

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 kit; the quickest way to get into amp building.

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

DIFFICULTY
HOURS: **6**

'59 TWEED 15W AMP KIT

Dirty little devil that shaped guitar history.

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

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.

Our most popular amp kit and a great learning experience.

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

DIFFICULTY
HOURS: **8**

'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 Ryan Adams.

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

DIFFICULTY
HOURS: **12**

'66 D-REVERB 22W AMP KIT

Famously clean, with enough guts to gig.

Perfect for recording as well as performing, the D-Reverb 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

DIFFICULTY
HOURS: **16**

Beginner-tested. Pro quality.

StewMac **ICON KITS** are fun to build, with friendly instructions to guide you and loads of info to add to your knowledge.

'62 BRIT-PLEX 45W AMP KIT

The original British showstopper.

This amp started a revolution. It's been rocking the world for over 50 years, and we still can't get enough.

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 1962 CIRCUIT

DIFFICULTY
HOURS: **12**

'81 BRIT-800 50W AMP KIT

This hairy monster lives to shred.

The defining British circuit that dominated the '80s.

This 50W giant created your favorite heavy rock and metal albums. Used by Slayer and Pixies, and recorded on early Metallica albums, this circuit produces that screaming guitar tone that your mother despises. With solid-state rectification there's no sag, and the distortion created by this circuit is way more about treble than mids or bass.

Listen while building: Smashing Pumpkins' *Siamese Dream*.

#10735 50 WATTS / ORIGINAL 1981 CIRCUIT

DIFFICULTY
HOURS: **16**

'66 BRIT-74X 18W AMP KIT

Leave your half-stack at home.

Born in London, this little blues blaster earns its living every night, gigging in clubs across the USA.

Launched in 1966, this amp quickly became a low-wattage holy grail. This is a stripped down blues machine: two channels, one tone knob, no master volume. Buckle up and go where this gritty beast takes you! It comes with a footswitch to kick in the onboard tremolo.

Get the plexi tone without blowing the roof off the joint!

#10732 18 WATTS / 12" SPEAKER / ORIGINAL 1965 CIRCUIT

DIFFICULTY
HOURS: **12**

'64 REVERB UNIT KIT

Reverb you can't get from a pedal.

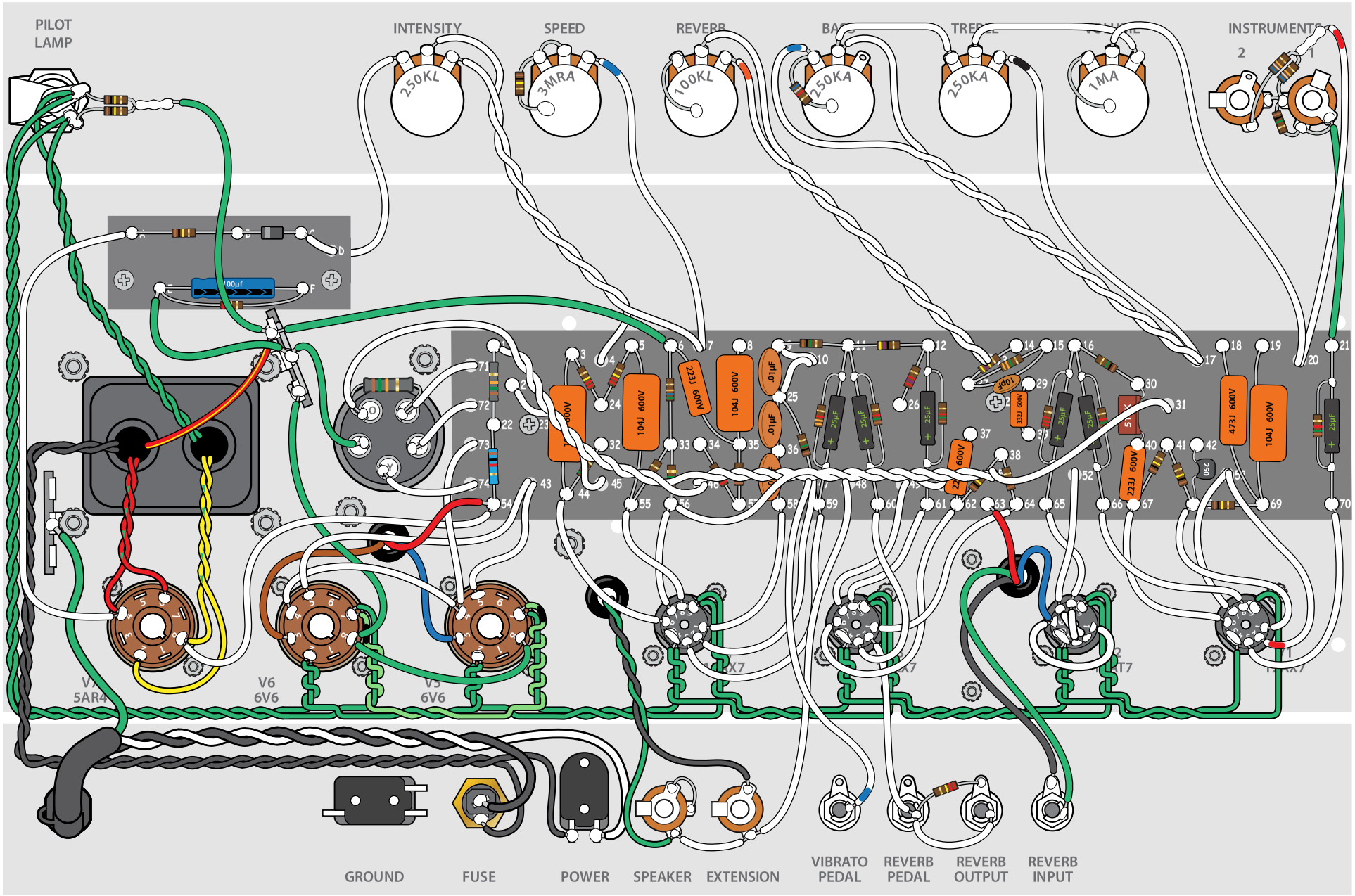
This is the unit that put the waves in surf music! Looks like an amp, sounds like a beach party.

This tube-driven reverb tank relies on good ol' physics for a perfect effect. Your guitar signal travels along two large suspended springs to produce the reverb that launched the iconic surf sound. This isn't a pocket-sized digital simulation; this is the real deal!

Listen to Dick Dale's "Misirlou" while doing this easy build.

#10733 ORIGINAL 6G15 CIRCUIT

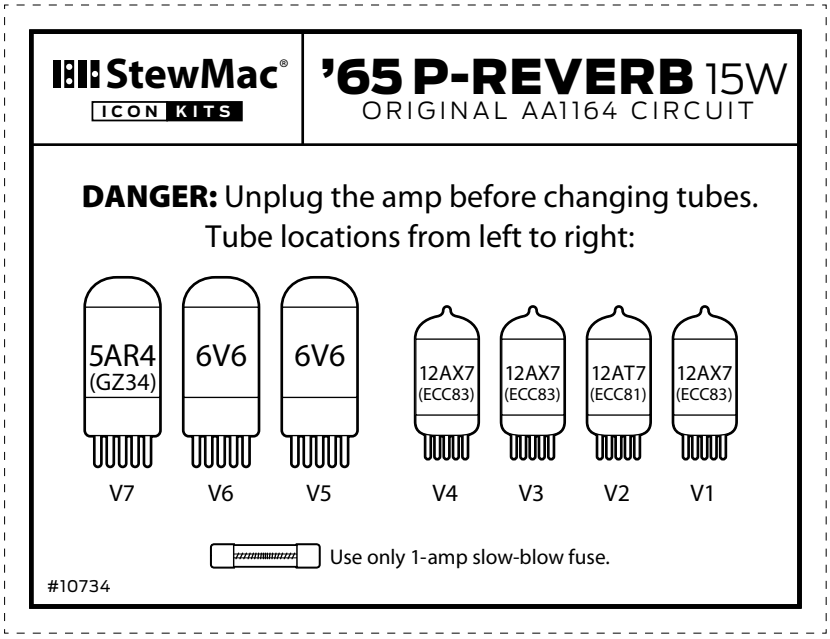
DIFFICULTY
HOURS: **8**



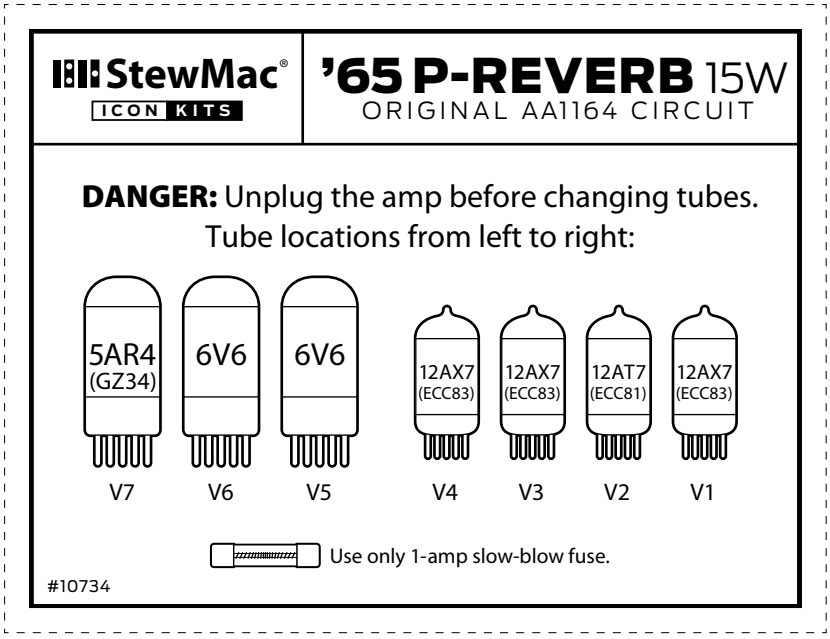
'65 P-REVERB 15W

AA1164 CIRCUIT DIAGRAM

StewMac® ICON KITS



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.



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#i10734 Updated October, 2018