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GA-5

STYLE 1 X8 COMBO AMP

INSTRUCTION MANUAL



MOJOTONE CANYON SERIES



ROBBY BACA
OF THE CONTORTIONIST
ON STAGE WITH
THE MOJOTONE GRAND CANYON
4X12 CABINET

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GA-5

STYLE 1 X8 COMBO AMP

Originally produced from 1954-1956 the GA-5 was often called Gibson's answer to Fender's 5C1 Tweed Champ. Both the Champ and the GA-5 used a 6SJ7, 6V6 and 5Y3 tube compliment and shared a very similar schematic and part assortment. Often over looked and undervalued, the GA-5 is a fantastic recording amp that loves to be pushed and also makes a great living room amp that puts out a warm clean tone at lower volumes.

Mojotone brings the GA-5 circuit back to life with the Mojotone GA-5 Style Kit. Featuring a classic TV Front cabinet, vintage inspired circuit now using a 6V6, 12AX7 and 5Y3 tube compliment – this unsung classic is the perfect amp kit to get you started on your amp building journey.

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INTRODUCTION

This amplifier kit wiring and assembly are based on the same construction methods that the original designers used 50+ years ago. This vintage method of assembly is a “hands-on” experience. When putting them together and you should take your time when assembling the kit. It’s always exciting as you get closer to finishing the build, but this is where errors will normally occur. It can become overwhelming when looking at the whole picture of building the kit, therefore try looking at the amp in small sections. Ex: The input jacks, preamp section on the board, power supply section on the board, wiring the potentiometers, wiring the preamp tube sockets, wiring the power tube sockets, transformer wiring and so on.

Remember to take your time and enjoy the build. If you get stuck on something, step away from the build for a few hours or a day, then come back to it.

SECTION 1:

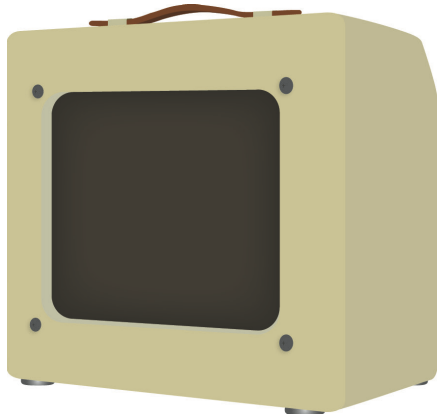
SAFETY

SAFETY FIRST! Electronics can be dangerous and must be treated with respect. Any circuit that works with 120VAC power from an electrical outlet is especially dangerous and could potentially kill you. Here are some guidelines to keep you safe as you work.

- **Never work on a circuit** while power is applied.
- **Do not connect power** to a circuit until the circuit is finished and you have carefully checked your work (twice).
- **If you smell anything burning**, immediately disconnect the power and examine your circuit to find out what went wrong.
- **Keep your work area** dry and organized.
- **Be careful around large capacitors.** They can continue to hold voltage long after they are disconnected from power. Discharge electrolytic capacitors if power has been applied to the unit.
- **Be especially careful when you solder.** A hot soldering iron can easily burn you.
- **Always work** in a well-ventilated space.
- **Have safety equipment** such as a fire extinguisher, a first-aid kit and a phone nearby.
- **Be Patient!** Rushing through any type of technical work just leads to frustration and compounds issues that can easily be avoided.



SECTION 2:
INVENTORY **optional based on order*



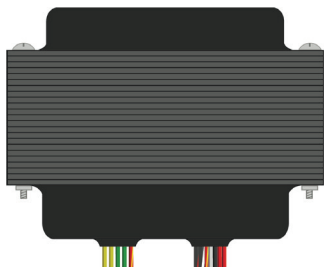
(1) baltic birch ply cabinet*



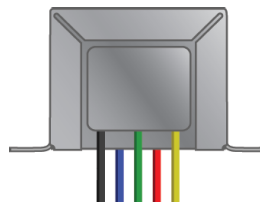
(1) chrome chassis



(1) Mojotone AV8C 8" 15 watt 4 ohm speaker



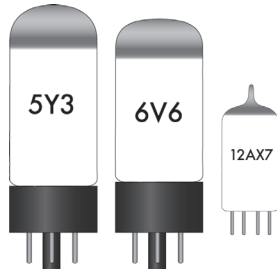
(1) MOJO 759 power transformer



(1) MOJO 771 output transformer



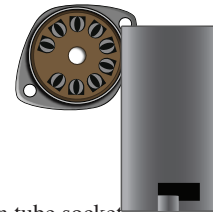
(1) 10" removeable power cord



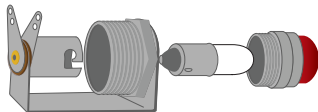
(1 of each) vacuume tubes*



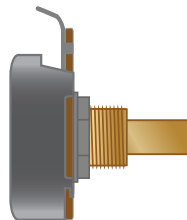
(2) octal tube sockets



(1) 9-pin tube socket



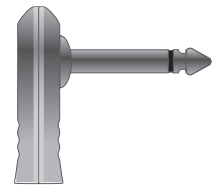
(1)indicator light assembly



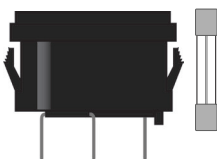
(1) 1M "volume" potentiometer



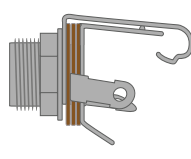
(1) chicken head knob



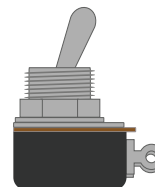
(1) 1/4" right angle plug



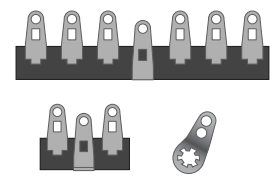
(1) A/C power jack & 1amp fuse



(3) J12A 1/4" input / speaker jack



(1) power switch



(1) 7 lug terminal strip,
 (2) 3 lug terminal strip, (1) ground lug

RESISTORS

Carbon Composite

 (2) 1/2 watt 2.2k Ω

 (1) 1/2 watt 22k Ω

 (3) 1/2 watt 47k Ω

 (3) 1/2 watt 220k Ω

Metal Oxide


 (1) 2 watt 10K Ω


Wirewound Ceramic

 (1) 5 watt 500 Ω

HARDWARE

 (10) 4-40 1/4" screw & keps nuts

 (6) 8-32 3/8" screw & keps nuts

 (3) chassis mount screws

WIRES

pre-tinned cloth covered wire

(2') **Red** 

(2') **Yellow** 

(2') **Green** 

(2') **Black** 

CAPACITORS

 (2) Sprague Atom
25 μ f @ 500v

 (2) Mojotone Dijon
22nf @ 630v

 (2) Mojotone Electrolytic KingCap
8 μ f @ 475v

 (1) Mojotone Electrolytic KingCap
16 μ f @ 475v

SECTION 3:

TOOLS

Certain tools are required to successfully build your amp. The following are recommended to complete your project.

NEED A TOOL? Do you see something on this list that you need? Turn to **page 20** for a full list of tools, parts and kits to add to your workbench

☐ 1/2" nut driver

☐ Set of needle nose pliers (one with teeth and one without)

☐ Wire cutters

☐ Wire strippers

☐ Soldering iron and solder

☐ Adjustable wrench

☐ Phillips head screw driver

☐ Multimeter

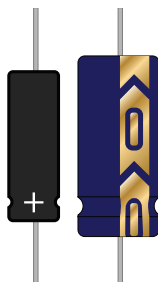
SECTION 4:

COMPONENT IDENTITY & ORIENTATION

Ensure all polarized caps are in the correct orientation when installing onto the board. This is typically denoted by an arrow pointing towards the negative side, or a small indentation on the positive side.

SAFETY FIRST! A cap in the wrong orientation can explode! So follow your wiring diagram and pay close attention when orienting your polarized caps

POLARIZED



NON-POLARIZED

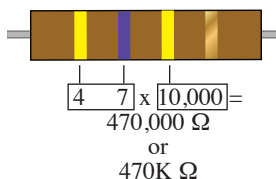


SECTION 5:

HOW TO READ COMPONENTS

READING RESISTOR VALUES

The resistors that are included in your Mojitone amp kit, all use the 4-band resistor color code for determining their values. The easiest way to read the resistors is to start by having the **Gold** strip facing towards the right. The first two colors on the left are going to be your values. For example **Yellow** & **Violet** would be 47. The third strip is going to be your multiplier. So for this example, the third strip is a **Yellow** stripe which is 10,000. The value of the resistor is calculated as such 47 X 10,000 which equals 470,000 ohms (Ω) or 470K Ω .



COLOR	BAND 1	BAND 2	MULTIPLIER	TOLERANCE
Black	0	0	1 Ω	
Brown	1	1	10 Ω	$\pm 1\%$
Red	2	2	100 Ω	$\pm 2\%$
Orange	3	3	1K Ω	
Yellow	4	4	10K Ω	
Green	5	5	100K Ω	$\pm 0.5\%$
Blue	6	6	1M Ω	$\pm 0.25\%$
Violet	7	7	10M Ω	$\pm 0.10\%$
Grey	8	8	100M Ω	$\pm 0.05\%$
White	9	9	1 Ω	
Gold			0.1 Ω	$\pm 5\%$
Silver			0.01 Ω	$\pm 10\%$

SECTION 6:

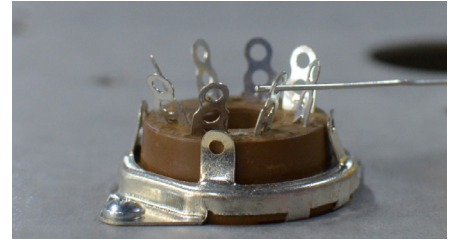
SOLDERING BASICS

Before you start slinging solder in your kit or if you have never soldered before, take a moment to read over this section about soldering.

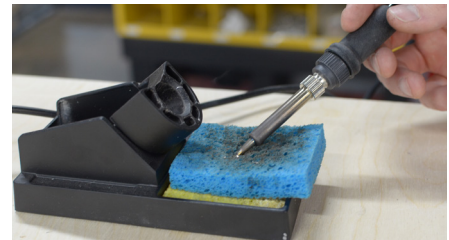
When assembling your amp kit, whether it's putting components on the eyelet board, wiring up the tube sockets or connecting wires to the potentiometers, the first thing you want is a good solid mechanical connection. So for example if you are connecting a wire to a pin on a tube socket or on the back of a potentiometer, you do NOT want to set the wire on the pin or let it float loosely and throw a bunch of solder on there. Solder is not a great conductor, specially some of the newer lead-free solder, think of it as more of a semi-conductive glue. So what you want is a solid physical connection between the components that you are connecting together. For example, when soldering to a tube socket, you would want to create a hook with the wire or component lead, hook it through the pin, then use a pair of needle nose pliers to pinch the hook together around the pin. Now the wire has a solid connection to the pin, so even if solder were to fail, in theory you have the components connected together. After you have created the mechanical "bond", then you can add a little solder to help solidify the joint.

SOLDERING A CONNECTION

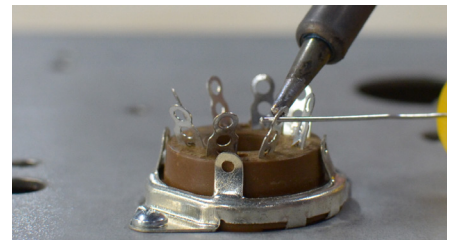
○ Connect the components together. Be sure you have a solid mechanical connection before you proceed.



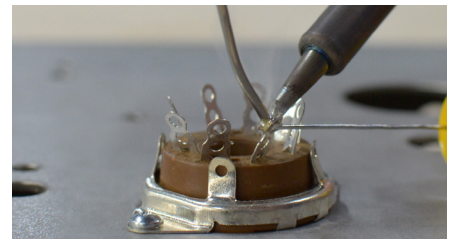
○ Make sure the tip of the iron is clean.



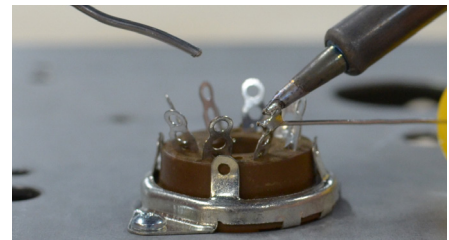
○ Heat the components by touching the tip of the iron to both components at the same time. It should take about 2-3 seconds for the connecting component leads to become hot enough to flow solder.



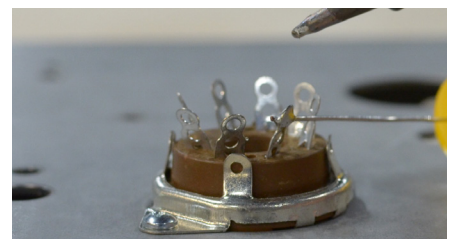
○ Slowly flow the solder into the connection. The solder should liquefy and spread over the connection. If the solder does not melt almost instantly or if it beads up and falls off, double check the temperature of your soldering iron and make sure the tip of the iron is clean.



○ Remove the solder from the connection.



○ Remove the iron from the connection and allow the joint to cool. Once it has cooled you can gently pull the component to test the connection.



SECTION 7:

CHASSIS ASSEMBLY

○ **Mount the power transformer** into the chassis using (4) 8-32 keps nuts and your adjustable wrench. The transformer will be recessed through the rectangular cutout in the “belly” of the chassis. You do not need to remove the screws or nuts that are already on the transformer.

○ **Mount the output transformer** using the (2) 8-32 x 1/4" screws and keps nuts into the belly of the chassis. Install the transformer so that the **Red**, and **Blue** wires are towards the front of the chassis, while the **Black**, **Green** and **Yellow** are towards the rear. The screws will go through the outside of the chassis, and the nuts will be installed on the inside. Use a screwdriver and adjustable wrench to tighten.

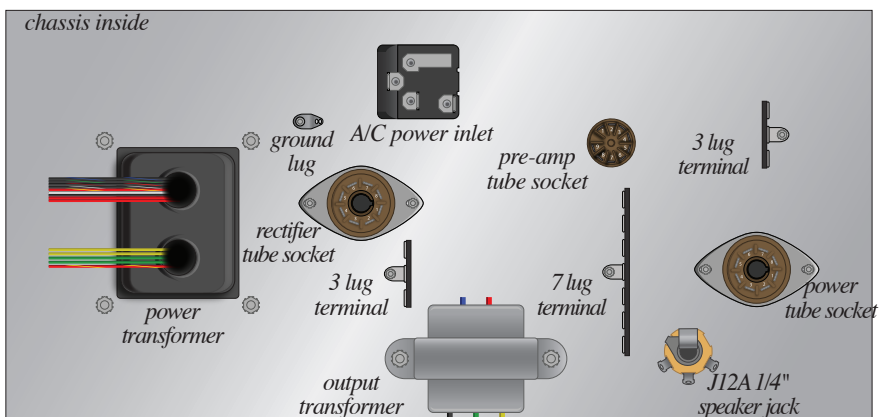
○ **Mount the (2) 3-Lug terminal strips**, 7-Lug terminal strip and ground tab using a 4-40 x 1/4" screw and keps nut for each.

○ **Install A/C power inlet / fuse assembly** from the outside of the chassis. Press it in until it snaps into place.

○ **Mount the J12A jack** using its pre-assembled hardware with adjustable wrench and pliers.

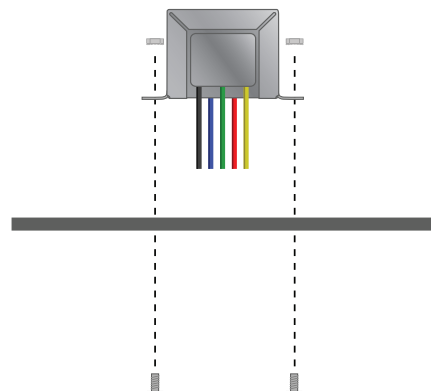
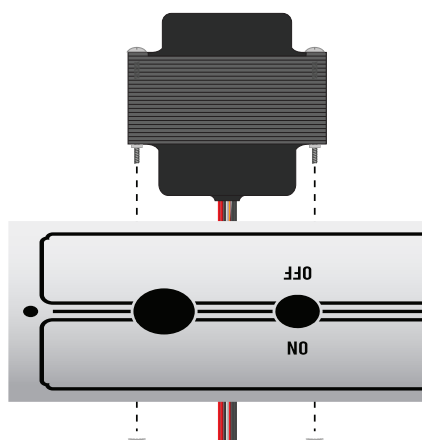
○ **Mount octal tube sockets** and tension clamp using (6) 4-40 x 1/4" screws and keps nuts. When mounting, be sure to choose an orientation and keep this orientation uniform between both octal sockets. Install octal sockets with solder lugs facing inside the chassis.

○ **Mount pre-amp tube socket** using (2) 4-40 x 1/4" screws and keps nuts and tighten down with adjustable wrench and screwdriver.



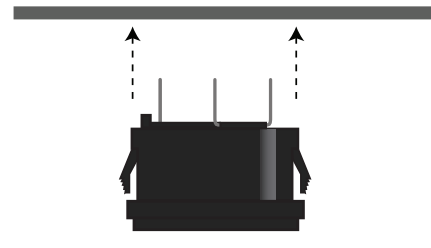
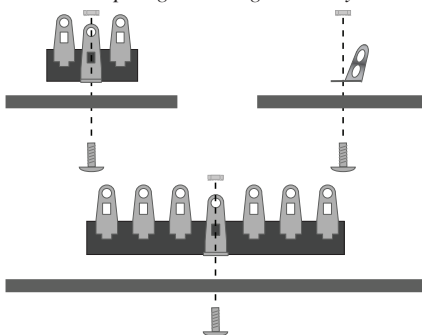
power transformer assembly

output transformer assembly



terminal strip & ground lug assembly

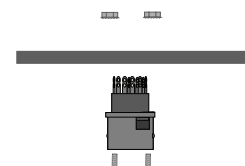
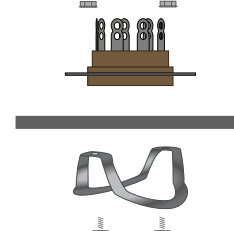
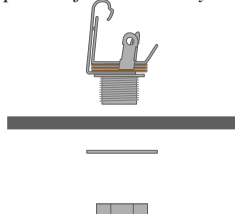
A/C power inlet / fuse assembly



J12A 1/4" input / speaker jack assembly

octal tube socket assembly

pre-amp tube socket assembly



FRONT PANEL ASSEMBLY

○ **Mount indicator lamp** using its pre-assembled hardware. Un-thread the hardware from the component and insert it through the chassis. Reapply hardware and tighten with adjustable wrench and pliers. Install bulb and jewel lens.

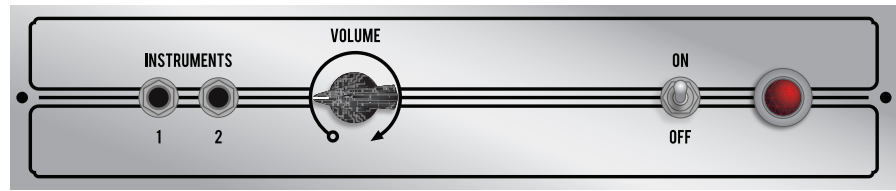
○ **Mount On / Off switch** using its pre-assembled hardware with adjustable wrench and pliers.

○ **Mount Volume potentiometer** using its pre-assembled hardware and 1/2" nut driver. Make sure potentiometer is mounted with its lugs facing up towards the open end of the chassis.

PRO TIP: When mounting the pot, make sure the toothed locking washer goes between the potentiometer and the chassis. The flat washer will go on the outside of the chassis and the nut will tighten down

○ **Once you have the pot securely installed,** turn the shaft of the pot all the way counter-clockwise. Install the chicken knob on the pot, making sure the pointer of the knob is pointing to the "0" on the chassis. Use a small flat head screwdriver to tighten the set screw in the back of the knob securely on the pot shaft. If the knob isn't moving smoothly, loosen the set screw, back the knob off of the pot 1/16" and retighten

○ **Mount the J12A input jacks** using their pre-assembled hardware and an adjustable wrench. Pay close attention to the orientation of the jacks on the wiring diagram.



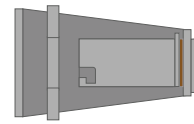
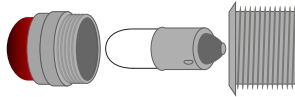
J12A 1/4" input jack

potentiometer & knob

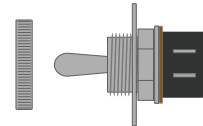
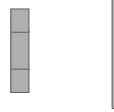
power switch

indicator light

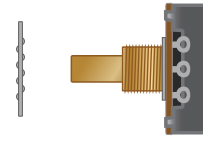
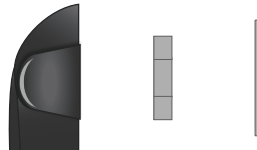
indicator light assembly



power switch assembly



potentiometer & knob assembly



SECTION 8:

TRANSFORMER WIRING

POWER TRANSFORMER WIRING

○ **Determine which Primary AC voltage** (AC voltage coming from the wall socket) you will need. The power transformer included with the kit has taps for both USA and export voltages. **White** - 120V (USA), **Black / Blue** - 100V, **Black / Yellow** - 220V, **Black / Green** - 230V, **Black / Red** - 240V.

○ **Prepare the AC Voltage wire** for your application, connect it to the left terminal on the power switch.

○ **Prepare the Black wire** coming from the power transformer and connect it to the middle lug on the IEC Power Socket.

○ **For the remaining primary voltage wires**, clip the ends, apply a piece of heat shrink to each end, then neatly secure them in between the side of the chassis and the power transformer.

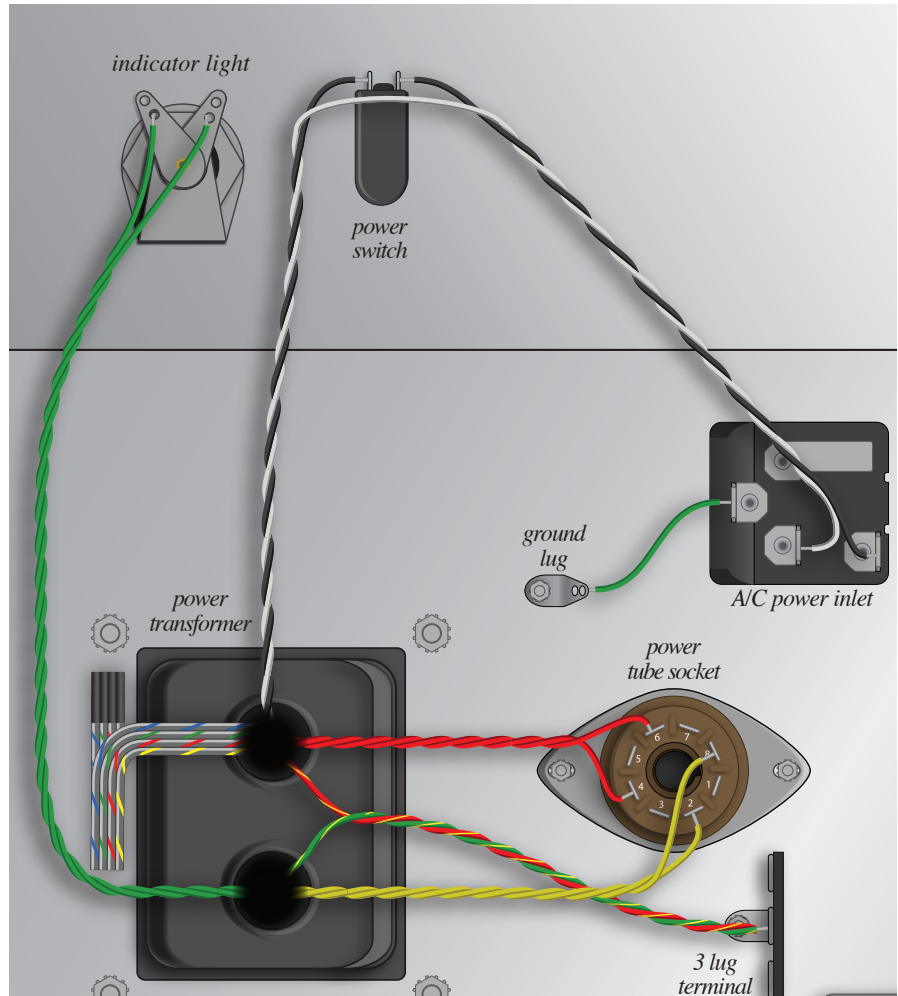
○ **Prepare the two Red wires** from the power transformer (HV secondary). Solder one wire to pin 4 and the other to pin 6 of the rectifier tube socket, the octal socket that is closest to the power transformer.

NOTE: These wires carry AC voltage, so either wire can go to either pin 4 or 6.

○ **Prepare the two Yellow wires** from the power transformer (5v rectifier filament). and connect them to pins 8 and 2 (top opening of pins) of the rectifier tube socket. Solder pin 2 but don't solder pin 8 yet.

○ **Prepare the Red and Yellow striped wire** as well as the Green and Yellow striped wire, connect it to the center lug of the 3-lug terminal strip next to the output transformer. Do not solder this connection yet.

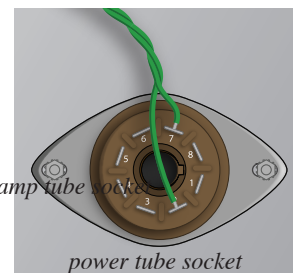
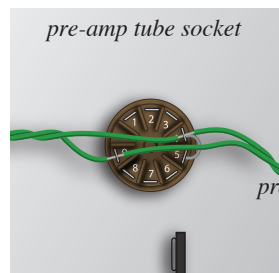
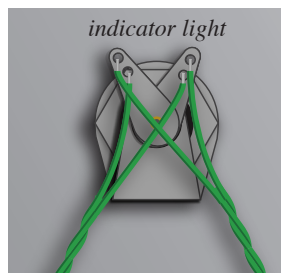
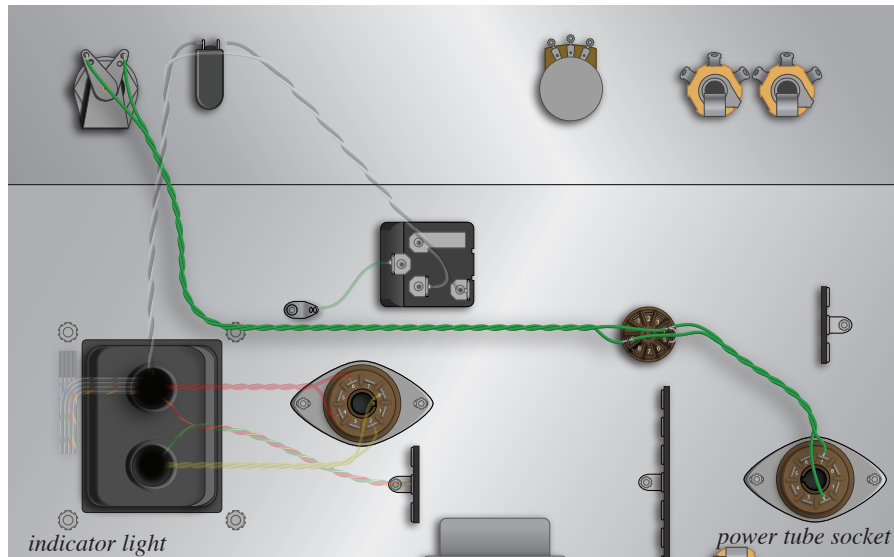
○ **Prepare the 2 Green wires** from the power transformer (6.3v tube filament) and connect to your pilot light.



○ **Twist tightly together** a length of about 2' of **Green** 20-ga wire to start wiring the tube filaments. Starting with the pilot light, connect one of the **Green** wires to one terminal and the other **Green** wire to the other terminal. From there, connect the one wire to pin 9 of the preamp tube socket in the middle of the chassis. Connect the other wire to pins 4 & 5 on the same preamp tube socket.

PRO TIP: Since there is a wire connected to the 5 pin, you can achieve the jumper wire to the 4 pin by stripping the wire back further, running it through the 5 pin and reach to the 4 pin. Solder the wire to both pins.

○ **Prepare and connect a Green wire** from pin 9 of the preamp tube socket to pin 2 of the power tube socket, the furthest from the power transformer. Connect another green wire to pin 5 of the preamp socket to pin 7 of the power tube socket.



OUTPUT TRANSFORMER WIRING

○ **Connect the Red wire** from the output transformer to pin 3 of the octal socket closest to the speaker jack.

○ **Connect the Blue wire** from the output transformer to lug #8.

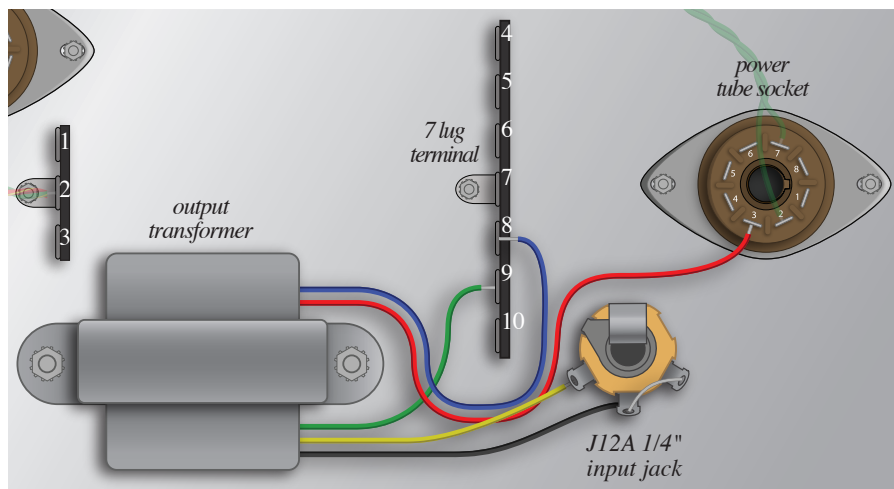
○ **Connect the Yellow wire** from the output transformer to the tip lug on the J12A jack.

○ **Connect a small jumper wire** from the middle lug (shorting lug) of the J12A jack to its ground lug.

○ **Connect the Black wire** from the output transformer to the middle lug of the J12A jack.

○ **Connect & solder the Green wire** from the output transformer to lug #9.

○ **Double check your wiring** and begin soldering all connections in this section.

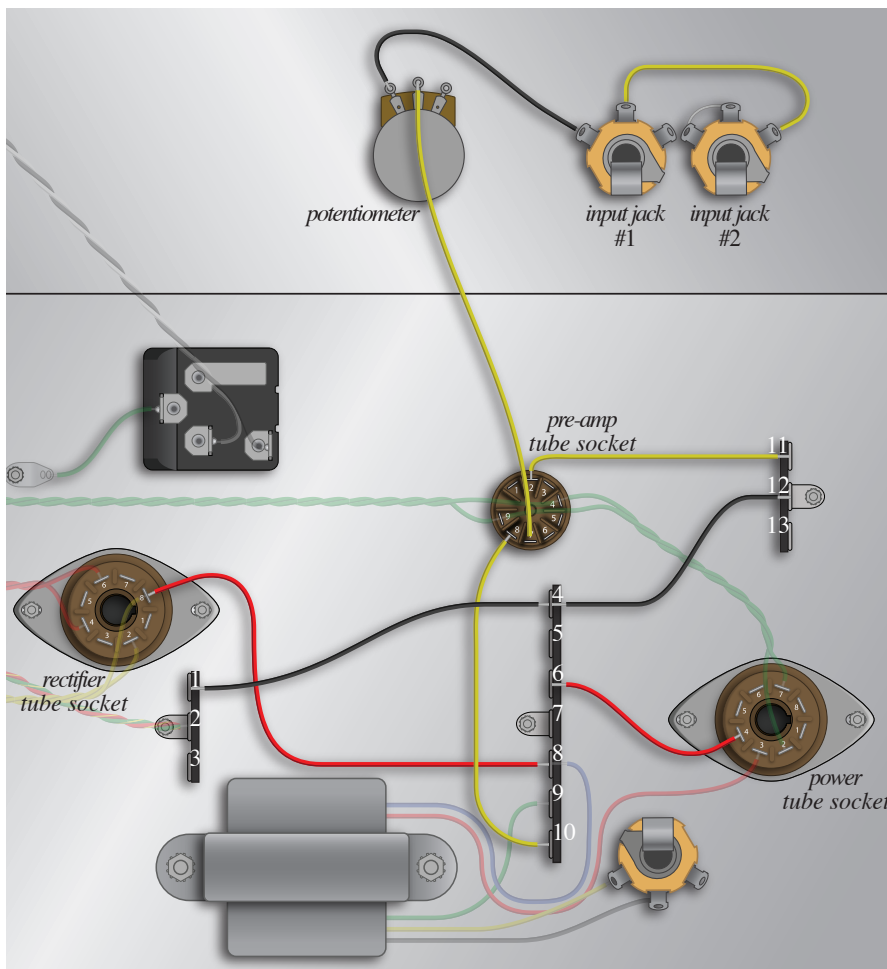


SECTION 9:

CIRCUIT WIRING

JUMPER WIRES

- Connect a **Red** wire from pin 8 of the rectifier tube socket to lug #8, the same lug that the Blue wire from the output transformer is connected to.
- Connect a **Red** wire from pin 4 of the output tube socket to lug #6.
- Connect a **Yellow** wire from lug #10 to pin 8 of the preamp tube socket.
- Connect a **Yellow** wire from lug #11 and solder to pin 2 of the preamp tube socket.
- Connect a **Yellow** wire from the center lug of Input #2 jack to tip lug of Input #1 jack.
- Connect a **jumper wire** on Input #1 from the ground lug to the center lug.
- Connect a **Black** wire from the ground lug of Input #2 to the left lug on the volume potentiometer.
- Connect a **Black** wire from lug #12 to lug #4. Then connect a black wire from lug #4 to lug #1.
- Connect a **Yellow** wire from the center lug of the volume pot to pin 7 of the preamp tube socket.



FILTER CAPS & RESISTORS

PRO TIP: The construction of the GA-5 kit is based on point to point wiring. In some instances components will be “floating” over other components. To keep them from possibly shorting together, the leads will need to be insulated. This can be done stripping off a piece of insulation from the included wire and sliding the insulation over the component leads. You will notice on the wiring diagram that there are several components with red, black and yellow leads. These leads will need to be shielded to protect from the possibility of shorting with other components.

- Connect the (-) lead of a 16uf capacitor to lug #2 and the (+) lead of the 16uf capacitor to lug #8.
- Connect the (-) lead of an 8uf capacitor to lug #2 and the (+) lead of the 8uf capacitor to lug #6. Solder the connections at lug #2.
- Connect the (-) lead of an 8uf capacitor to lug #1 and the (+) lead of the 8uf capacitor to lug #4.

to lug #5. Solder the connections at lug #1.

○ **Connect a 47K Ω resistor** from the tip lug of the J12A Speaker Output jack to lug #10.

○ **Connect the 10K Ω metal oxide resistor** to lug #8 and to lug #6.

○ **Connect a 22K Ω resistor** to lug #6 and to lug #5. Solder the lug where the 10K and 22K resistors connect.

○ **Connect a 2.2K Ω resistor** to lug #4 and to pin 8 on the preamp tube socket.

○ **Connect a 2.2K Ω resistor** and 25uf capacitor from pin 3 of the preamp tube socket to lug #12. Note the orientation of the 25uf capacitor.

○ **Connect a 47K Ω resistor** from each of the tip lugs on the input jacks to lug #11.

○ **Connect a 220K Ω resistor** to pin 5 of the power tube socket and to lug #7.

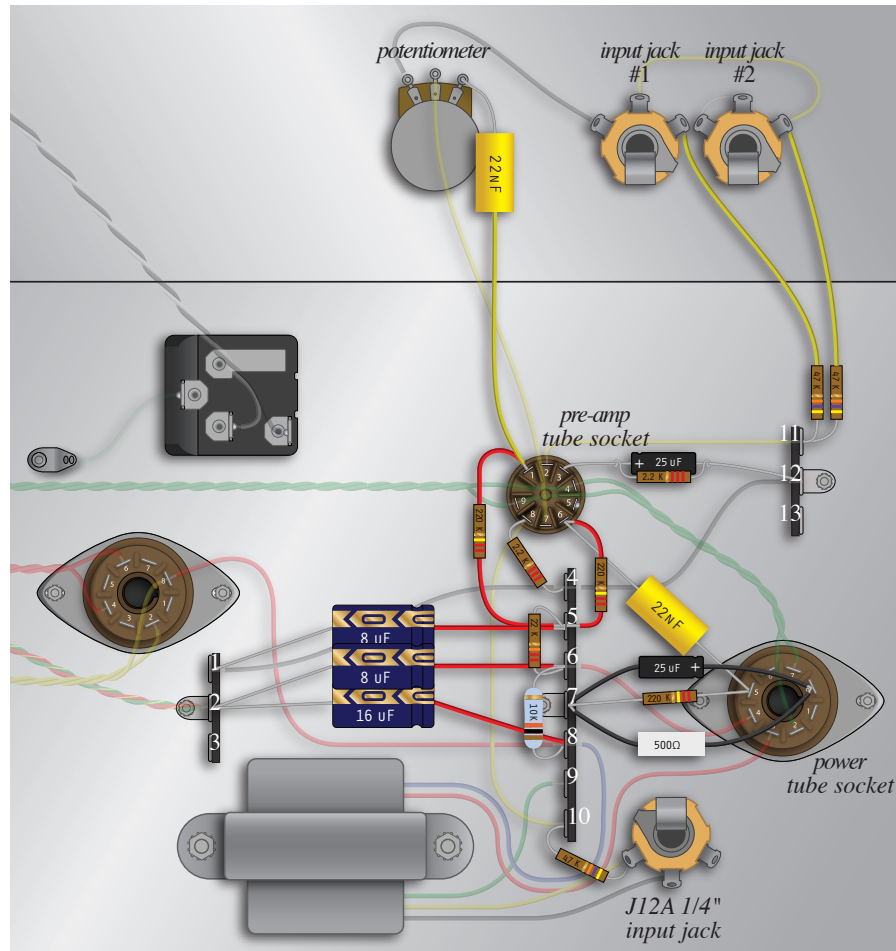
○ **Connect two 220K Ω resistors** to lug #5 and the other end of one resistor to pin 6 and the other to pin 1 of the preamp tube socket. Make sure that the resistors are “arc’d” up so that they are not touching any other components or pins. You can use a piece of insulation from wires that you have stripped to put on the resistor leads to insulate them.

○ **Connect a Mojo Dijon 22nf capacitor** from pin 5 of the power tube socket to pin 6 of the preamp tube socket.

○ **Connect a Mojo Dijon 22nf capacitor** from pin 1 of the preamp tube to the lug on the volume control that is closest to the Input #2 jack.

○ **Connect a 500 Ω 5W resistor** and 25uf capacitor from pin 8 of the power tube socket to lug #7. Make sure that the resistor and capacitor are “arc’d” up so that they are not touching any other components or pins. You can use a piece of insulation from wires that you have stripped to put on the resistor leads to insulate them. Also make sure there is space between the capacitor and resistor, as the resistor will get hot when the amp is operation.

○ **Double check your wiring** and begin soldering all connections in this section.



SECTION 11:

SPEAKER WIRING & INSTALLATION

SPEAKER WIRING

○ Twist the two 15" lengths of Black and White 18 gauge stranded wire together.

○ Push the insulation back about 1/2" from both wires on one end and tin them.

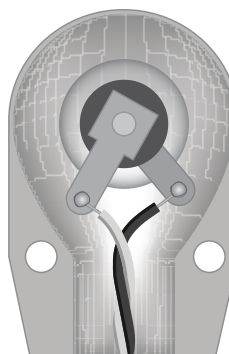
○ Unscrew the back of the 1/4" right angle plug.

○ Solder the tinned wires to the plug: White to center and Black to shield, then reinstall the back.

○ On the other end of the wiring harness, push back the insulation on the wires by 1/2", twist and tin them.

○ With a pair of needle nose pliers, take the tinned wire and make a small "hook" on both the White & Black wires.

○ Insert the White wire "hook" into the positive (+) terminal on the back of the speaker. Use the needle nose pliers to carefully crimp the "hook" on the terminal, forming a mechanical connection. Then solder the wire to the terminal. Repeat the same process with the Black wire on the negative (-) terminal.



SPEAKER INSTALLATION

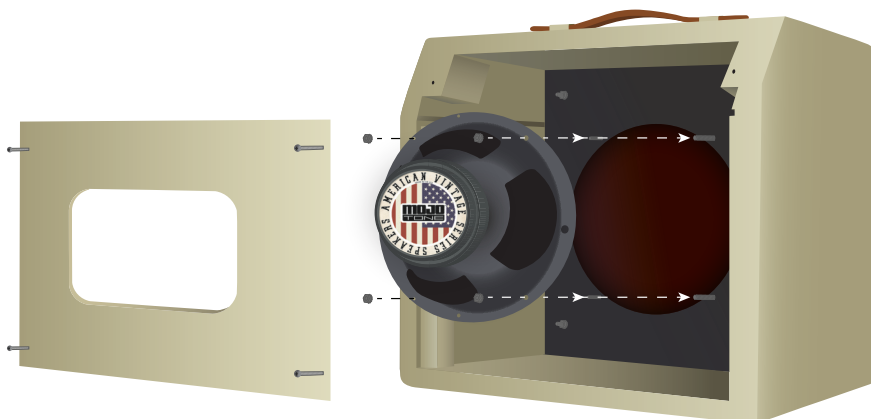
○ Remove the back panel of the cabinet.

○ Remove the four mounting keps nuts from the speaker baffle.

○ With the cabinet laying facedown, carefully line up the speaker mounting holes with the mounting studs on the baffle.

○ Finger tighten the mounting keps nuts.

○ Starting with the top left screw, tighten with a nut driver, then tighten the nut diagonally from it. Then tighten the remaining nuts in the same way.



INITIAL CHASSIS TESTING

○ **Starting from the left side of the chassis,** ensure all solder joints and connections are good.

○ **Physically inspect every tube socket closely,** making sure there are not any extra wires touching other pins.

○ **Look and listen for loose hardware** by shaking chassis.

○ **Ensure chassis is free from debris** before plugging in. Check for pinched or burnt wire insulation.

○ **Adjust lead dress** so it is easy to see components.

○ **Power amp on** without the tubes installed.

○ **Using a multimeter set to AC voltage,** Check the power transformer secondary AC voltages (at tube socket for filaments). This will be pins 4+5 and pin 9 on the preamp tube and pins 2 and 7 on the 6V6 (See the Wiring Diagram for voltage values).

○ **Turn amp off** and install the 5Y3 rectifier tube.

○ **Turn amp on and allow it to warm up** (approximately one minute). Watch for any kind of arcing or smoke from any component or transformer. If you see anything, shut down the amp immediately. Disconnect the amplifier from wall socket, check voltages on the filter capacitors (DC voltage), make sure they are drained, and then recheck your wiring.

○ **Set your multimeter** to its highest DC Voltage setting. Attach the ground / common probe to the metal chassis.

○ **With one hand,** take the positive (Red) probe and carefully measure the voltage on pin 8 on the rectifier tube socket. Then measure the voltages at the positive end of the three filter capacitors. The voltages will be higher than the voltage readings on the wiring diagram due to the remaining tubes not being installed in the circuit. If you do not have voltages at these points, power down the amplifier, allow the capacitors to drain, DO NOT short them to ground as this can damage the capacitors or cause them to explode. Test with your multimeter to make sure the voltages are below 10V DC before working on the amp.

○ **Turn amp off.** Remember, if you have not drained the capacitors, there are still high voltages present.

○ **Install the preamp tube.** Then power up the amplifier and ensure the filaments are working. Check the B+ voltages on pin 1 and pin 6 of the preamp tubes.

○ **Turn amp off. Install the output tube,** make sure when installing the tubes that you line up the guide pin correctly. Plug the speaker into the “SPEAKER” jack.

○ **Turn the amp on and check** for proper filament operation on the power tube.

○ **Check the voltages** at the test points on the Wiring Diagram. Check the voltage on pin 5 of the 6V6 tube. Ensure the voltage reading is near 0V +/- 50mV to avoid “red-plating” of the tubes.

PRO TIP: Red plating occurs when too much current is applied to the plate (anode) of a vacuum tube. It will overheat and glow cherry red. Turn the power off immediately if this happens.

○ **Let the amp idle** on for half an hour or so for the chassis to be warm and do the “bump test.”

PRO TIP: A bump test is exactly what it means. Use a non conductive tool, such as a wooden handle of hammer or plastic handle of a screw driver, to hit the edge of the chassis or pick your amp up about an inch and drop it. Don't worry it won't harm your amp. This helps you test for bad solder joints and any loose hardware as well as lets you know if there is a physical problem with one of your tubes.

SECTION 14:

CHASSIS INSTALLATION

- **Locate the two small grooves** that are cut into the inside of the cabinet.
- **With the faceplate facing outward**, slide the chassis into the cabinet by aligning the chassis into the grooves.
- **Use two #6 Black screws** to secure the chassis to the cabinet through the mounting holes on the face of the chassis.
- **Plug in the 1/4" jack** from the speaker into the speaker jack on the chassis.
- **Plug the removeable power cord** into the A/C power inlet jack on the chassis.
- **Install the white cord strain relief** to the side of the cabinet using #6 screw.
- **Reinstall the back panel** with the included mounting screws. Do not over-tighten the screws.



SECTION 15:

SOUND TEST

- **Turn on the amp** and let it warm up.
- **After warm-up**, ensure the tubes are not “red plating.”
- **Rotate all controls fully** and listen for noise. It is normal to have some noise at high volume levels.
- **Plug in an instrument cable** and listen for any crackle, pops, strange oscillations or feedback.
- **Leave on for a while** so the tubes and components can “burn in” - (not literally)
- **ROCK OUT!!!**

CONGRATULATIONS!! You have just built your very own Tweed Deluxe. There is only one on the planet that is like yours. We hope you have enjoyed this experience and gained knowledge to help you become more confident to build many more amps and spread your knowledge.

SECTION 16:

TROUBLESHOOTING

Depending on the issue you have, you will need to diagnose which part of the circuit is faulty. Try to work the problem analytically, you can make problems worse or create new ones by doing unnecessary repairs. 99% of the time it is simple, a bad solder joint, no solder on joint, capacitor in backwards, etc.. Here are a few resources we suggest.

RESOURCE WEBSITES

- **www.ampwares.com**
The best resource with the most extensive info on most vintage amps.
- **rob-robinette.com**
The non-electronic tech's guide to understanding the classic 5E3 tube amplifier and how it works.
- **TDPRI.com**
Telecaster discussion page reissue. Various builders are on this forum and a wealth of info for history and help.

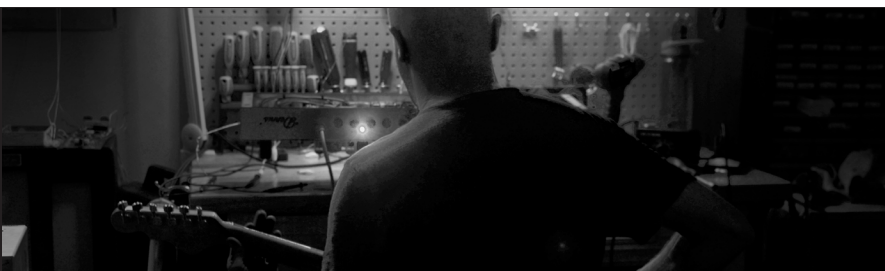
RESOURCE LITERATURE

- **Tube Guitar Amplifier Essentials and All About Vacuum Tube Guitar Amplifiers**
by Gerald Weber
Truly must read books by Gerald Weber for any amp tech. You can purchase these at Mojotone.
- **The Tube Amp Book**
By Aspen Pitman.
A great resource for schematics and basic tube info. Comes with DVD that has over 800 schematics of vintage tube amp technology.
- **RCA Tube Receiving Manual**
This is one of the books that really started the guitar amp craze. In the back of the book, there are many drawings that will look familiar to you. Leo Fender used this very book to develop his first amps. These are out of print, but you can find them on Ebay and Amazon.

THE **mojo** TONE WORKBENCH

WORKBENCH TESTED. AMP PRO APPROVED.

Years of experience and endless passion have driven our team at Mojotone to create the quality products that we offer. Now you can use the tools that we do in your search for perfect tone.



MOJOTONE AMPLIFIER CHASSIS STAND

Using unconventional means to work on your amplifier chassis can be a real pain, and cause unwanted frustration. We here at Mojotone decided we've had enough and created our take on the bench-top repair stand. The final outcome is the item listed above, the Mojotone Amplifier Chassis Stand. Made from 13 ply 3/4" Baltic Birch and completely adjustable, this repair stand will make you wonder how you ever got along without it.

SKU # G16A5951



MOJOTONE SYG A830L DIGITAL MULTIMETER

9V battery is included and pre-installed.

Parameters for Transistors and Continuity:

DC Voltage: 200mV/2V/20V/200V/600V

AC Voltage: 200mV/2V/20V/200V/600V

DC Current: 200uA/2mA/20mA/200mA/2A/10A

Resistance: 200/2K/20K/200K/2M/20M Ohm

SKU # 4152015



WELLER WSA350 BENCH TOP SMOKE ABSORBER

Weller WSA350 120v bench top smoke absorber removes flux fumes from your soldering workbench. Great for workspaces using more active fluxes used with lead-free solder. The fumes are absorbed by the replaceable carbon-activated filter. The stand allows the smoke absorber to be adjusted to varying angles and the fan is quiet and will not add significant noise to the workspace.

SKU # N4T0L107



TUBE AMP DOCTOR TUBE BIAS MASTER

Measures the current of 4x any standard base octal power tubes (6L6, EL34, 6550, etc).

Measures EL84 current with optional noval probe set.

SKU # 4152000



MOJOTONE PICKUP WINDING MACHINE

The most versatile, compact and heavy duty pickup winder available featuring 24DC geared motor; dual H bridge motor driver; uController controlled speed, direction and turns; free mode for manual override; 10 programmable banks; approximately 1800 RPM max speed; magnet gauss sensor; optical counter; and made in the USA.

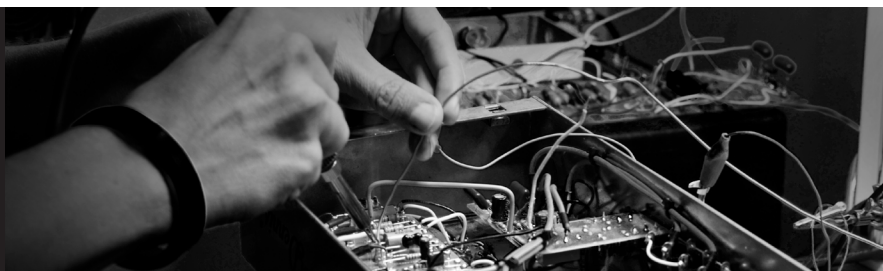
SKU # R3PUW401





READY FOR YOUR NEXT BUILD?

Mojotone has a huge variety of DIY amp kits in every skill level to help you find that vintage sound you are looking for. Here are a few that could be your next project.



GA-5 STYLE COMBO

Mojotone brings the GA-5 circuit back to life with the Mojotone GA-5 Style Kit. Featuring a classic TV Front cabinet, vintage inspired circuit now using a 6V6, 12AX7 and 5Y3 tube compliment – this unsung classic is the perfect amp kit to get you started on your amp building journey. **SKU # 61GA5951**

CLASS TYPE: SINGLE ENDED CLASS A ALL TUBE AMPLIFIER
OUTPUT: ~5W
CIRCUIT: 5F1

BIAS TYPE: CATHODE BIASED
BUILD TIME: 4 HOURS
DIFFICULTY: ● ○ ○ ○ ○



TWEED CHAMP 5F1 STYLE COMBO

Mojotone's Tweed Champ Style Amp Kit is based on the beloved 5 watt amp from the 1950s. These amps were perfect for recording and were featured on a wide array of recordings from Joe Walsh's "Rocky Mountain Way" all the way to Derek & the Dominos' "Layla." Modeled after the historic Class-A 6V6 platform, this amp delivers warm tones that are harmonically rich and have a beautiful low volume crunch. **SKU # 61TCK910**

CLASS TYPE: SINGLE ENDED CLASS A ALL TUBE AMPLIFIER
OUTPUT: ~5W
CIRCUIT: 5F1

BIAS TYPE: CATHODE BIASED
BUILD TIME: 4 HOURS
DIFFICULTY: ● ○ ○ ○ ○



TWEED DELUXE 5E3 STYLE COMBO

Mojotone's Tweed Deluxe Style Amp is based on the popular 5E3 circuit from the 1950s and is by far our most popular amplifier. These amps were originally designed as medium power amps that would allow a musician to plug in more than one amplified instrument at a time. At higher volumes, this amp produces saturated tones that were adopted as signature tones for the likes of Billy Gibbons, Neil Young, Don Felder, and Larry Carlton. **SKU # 61FTD819**

CLASS TYPE: CLASS A/B ALL TUBE AMPLIFIER
OUTPUT: ~15 WATTS
CIRCUIT: 5E3

BIAS TYPE: CATHODE BIASED
BUILD TIME: 5 HOURS
DIFFICULTY: ● ● ○ ○ ○



TWEED TWIN 5E8-A LOW POWER STYLE COMBO

Mojotone's Tweed Twin Low Power Style Amp Kit is a complete tonal powerhouse. Sporting 45 Watts of power, the amp has all the sweet, vocal qualities and rich dynamic response as the original. Known for being a plug-and-play amp, the 5E8-A circuit has been used most notably by Eric Clapton and has been said to 'cut' more than its higher powered counterpart (Tweed Twin High Power). **SKU # 61TTL031**

CLASS TYPE: A/B ALL TUBE AMPLIFIER
OUTPUT: ~45 WATTS
CIRCUIT: 5E8-A

BIAS TYPE: FIXED
BUILD TIME: 6 HOURS
DIFFICULTY: ● ● ● ○ ○



TWEED BASSMAN 5F6-A STYLE COMBO

Mojotone's Tweed Bassman Style Amp is based on the late 50s 5F6-A circuit which seems to be the most commonly used of the Bassman circuits. These 40 Watt amps are known for their bold and pristine clean sounds as well as their classic unmistakable dirt. The Bassman is extremely versatile and has been used by tons of iconic guitarists from Mike McCready, of Pearl Jam fame, all the way to Stevie Ray Vaughan himself. **SKU # 61TWK942**

CLASS TYPE: A/B ALL TUBE AMPLIFIER
OUTPUT: ~40 WATTS
CIRCUIT: 5F6-A

BIAS TYPE: FIXED
BUILD TIME: 6 HOURS
DIFFICULTY: ● ● ● ○ ○



BLACKFACE PRINCETON REVERB STYLE COMBO

The Blackface Princeton Reverb has been a staple in guitar tone since its inception in 1964. The Princeton Reverb was essentially all the good parts of its predecessor, the Tweed Princeton, but with a long-spring reverb and tube-driven tremolo circuit added. Over the years the Princeton Reverb has worked its way into the gear repertoire of many renowned guitarists such as Ryan Adams, Larry Carlton, Glen Campbell, and Tommy Tedesco. **SKU # G1BPR108**

CLASS TYPE: A/B ALL TUBE AMPLIFIER

OUTPUT: ~12-15 WATTS

CIRCUIT: AA1164

BIAS TYPE: FIXED

BUILD TIME: 5 HOURS

DIFFICULTY: ●●○○○



BLACKFACE DELUXE REVERB STYLE COMBO

One of our most popular amps, the Mojotone Deluxe Reverb Style Kit, is based on arguably the most widely used guitar amp of all time. Just about every iconic guitarist imaginable has played through a Deluxe Reverb at some point or another, but this amp has been specifically touted by artists such as Mike Campbell, Vince Gill, Jackson Brown, and even Elvis Costello.

SKU # G1BDR092

CLASS TYPE: A/B ALL TUBE AMPLIFIER

OUTPUT: ~22 WATTS

CIRCUIT: AB763

BIAS TYPE: FIXED WITH AN ADJUSTABLE BIAS POTENTIOMETER

BUILD TIME: 7 HOURS

DIFFICULTY: ●●●●○



BLACKFACE SUPER REVERB STYLE COMBO

Few amps have rivaled the commanding image and sound of the Super Reverb. Since its introduction in 1963, the Super Reverb has remained highly sought-after due to its unique tonal qualities and extreme versatility. Having a use on stages of all sizes and in any studio situation, the Mojotone Super Reverb style amp has the potential to handle literally any task at hand. **SKU # G1BSR125**

CLASS TYPE: A/B ALL TUBE AMPLIFIER

OUTPUT: ~40 WATTS

CIRCUIT: AB763

BIAS TYPE: FIXED BIAS W/ ADJUSTABLE BIAS POTENTIOMETER

BUILD TIME: 8 HOURS

DIFFICULTY: ●●●●●



BRITISH 45 WATT STYLE COMBO & HEAD

This was the first amplifier Marshall® ever built, based off of the 5F6A circuit. Favored by blues and rock guitarists, this amp can produce a warm sustain and elegant clean tones, with a pronounced rectifier “sag.” Played by guitar greats such as Angus Young and Gary Moore. **SKU # G145C228**

CLASS TYPE: A/B ALL TUBE AMPLIFIER

OUTPUT: ~45 WATTS

CIRCUIT: M45

BIAS TYPE: FIXED BIAS W/ ADJUSTABLE POTENTIOMETER

BUILD TIME: 6 HOURS

DIFFICULTY: ●●●○○



BRITISH 18 WATT TMB STYLE COMBO & HEAD

With our TMB mod in place, this take on a classic beast now has a normal channel with high sensitivity and low sensitivity inputs as well as a single volume and single tone control; the second channel has a single input with volume, treble, middle, and bass controls. And don't forget about the master volume! **SKU # G1TMC396**

CLASS TYPE: A/B ALL TUBE AMPLIFIER

OUTPUT: ~18 WATTS

CIRCUIT: 2204 (1974)

BIAS TYPE: CATHODE BIASED

BUILD TIME: 6 HOURS

DIFFICULTY: ●●●●○



BRITISH NC3015 STYLE COMBO & HEAD

Inspired by some of history's most iconic British amps the Mojotone NC3015 is one of our most unique and articulate amps yet. Based on a familiar Class A EL84 platform, this amp delivers tones that salute some of the greatest guitarists of all time. Whether you're looking for the shimmering highs of George Harrison or the vintage crunch of bands like The Kinks, the NC3015 will not leave you wanting.

SKU # G1TMC396

CLASS TYPE: A/B ALL TUBE AMPLIFIER

OUTPUT: ~15 WATTS

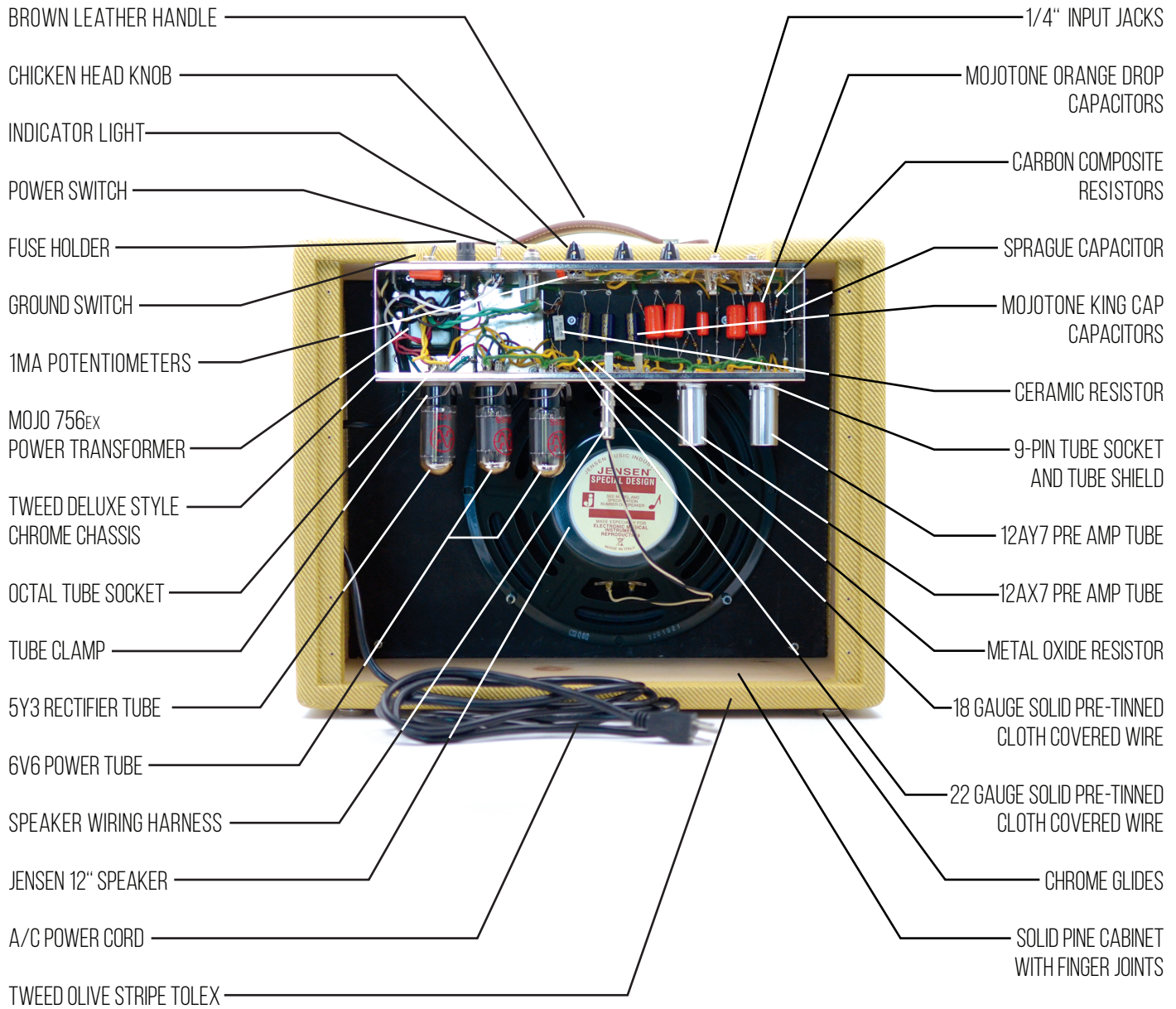
BIAS TYPE: CATHODE BIASED

BUILD TIME: 7 HOURS

DIFFICULTY: ●●●●○



IT STARTS WITH PARTS.



BUILD. MODIFY. REPAIR.

MOJOTONE.COM

THE HEAVY HITTERS

Everyone needs at least one guitar that absolutely SLAMS! Over the years, Mojotone has developed a line of heavy-hitting pickups that never fail to melt faces and bring down houses. If you're looking to add some extra punch to one of your favorite guitars, Mojotone's lineup of high output pickups have the tones that knock 'em down while retaining articulation and musicality in every note.

CLASSIC HOT

PW HORNET

DW TOMAHAWK

44 MAGNUM

mojo GUITAR
TONE TECH.

BUILD. MODIFY. REPAIR.

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