How to Swap Passive for Active Pickups:

2 Humbucker Style Guitar

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Welcome! This is the companion workbook to your Seymour Duncan Tech Pickup Install Course.

HOW TO USE THIS MODULE

Download and save the workbook before starting your installation. We recommend keeping it handy throughout your pickup install.

This course teaches you how to swap passive humbucking pickups for active humbuckers in a 2-humbucker guitar. This workbook is a supplement to the video course and provides additional information to help you along the way. Swapping pickups is an easy process. But take your time going through the course. And always use safety when working with hot irons.

Need Help?

1. Join the Community! Go to the introduction section at the beginning of the course and click “How to join the Private Community”.
2. For additional resources on pickups, wiring diagrams, pickup recommendations, and more visit: https://www.seymourduncan.com/resources

What you need

- Philips head screwdriver
- Flathead “slotted” screwdriver
- Shop Ruler
- Small, electronics-style wire cutters
- Guitar string cutters (havy duty dikes)
- Small needle-nose pliers or tweezers
- Wire strippers (20-30 gauge)
- Solder
- Solder Station (40-85watts)
- Sponge or brass pad for cleaning soldering iron
- Cloth for protecting guitar’s finish
- Safety glasses
- Blue painter’s tape
- Shrink tubing
- Pen/Pencil pad of paper
- Camera phone for documenting the process
- Trays or cups to hold parts
- Allen wrench to remove volume and tone knobs
- Reamer 3/8” (4.3mm) diameter (if needed)
- 9 Volt Battery
- Socket set 3/8” (4.3mm) to remove and install new pots

Optional

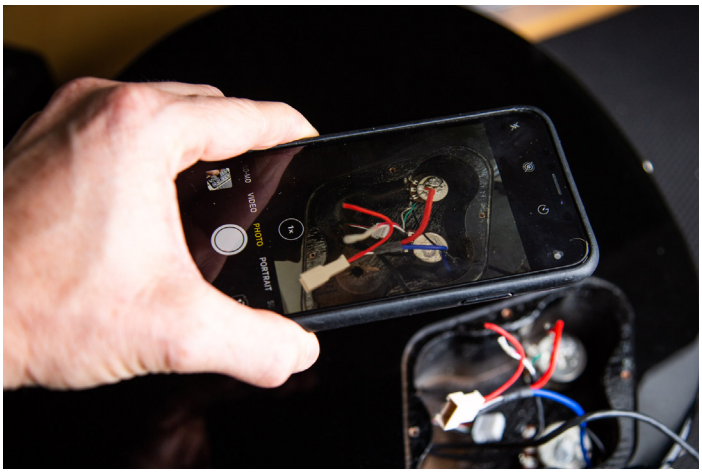
- Helping hands
- Solder Sucker or Solder Braid
- Neck rest and mat
- Fan/ventilation
- Guitar Winder
- Contract cleaner
- Electric screwdriver
- Guitar polish
- New Strings

Workspace/Starting Tips

When working on guitars, it's essential to start with a clean workspace. Have only the guitar, your small bins or boxes for parts, and the necessary tools. Here are some tips for organizing your space for the best workflow.

Keep mounting ring screws, cavity screws, and pickguard screws in different trays (pickup boxes are great for this, a Dixie cup also works). You don't want to mix the screws up because they can be different lengths and thickness. It's best to label your containers.

Ensure there is nothing between your guitar, your hand, the soldering station, and the soldering station's electrical outlet. You don't want the iron's cord getting hung up on anything. And remember, the iron is VERY hot. Be careful when using it.



- Taking pictures of each step of the process. It is an excellent way to document the "before and after." The better the documentation, the less chance of something going wrong.
- You'll want to make sure you have plenty of light so you can see clearly.
- Be sure to have some eye protection. Getting some solder in the eye is not a fun experience.
- Measure your pickup height before and after. If you need to reinstall the original pickups, you can get back to your base.
- Spend time getting familiar with the pickup wiring diagram. Engineers often draw diagrams from different angles and perspectives. Some may even have 5-way switches rotated 180°. Make sure to double and triple check the orientation of your Diagram
- A multimeter is an excellent tool for diagnosing pickup issues, as well as measuring the DC Resistance (DCR) of the pickups themselves.

Active Pickups

Installing active pickups does require a few extra steps. You'll need to install new potentiometers (four 25k included in your set), stereo output jack (included), and a battery clip (included).

Since you have to replace the potentiometers make sure the diameter of the hole matches the the included 25k pots (3/8th" or 4.3mm). Some guitars come with smaller potentiometer holes. If you need to enlarge the hole we recommend using a reamer or step-up drill (more on this later).

If you are replacing a Seymour Duncan Active pickup set with a new Seymour Duncan Active pickup set all you need to do is connect the new pickups to the quick connect in your guitar. Our active sets are also compatible with EMG quick connect,

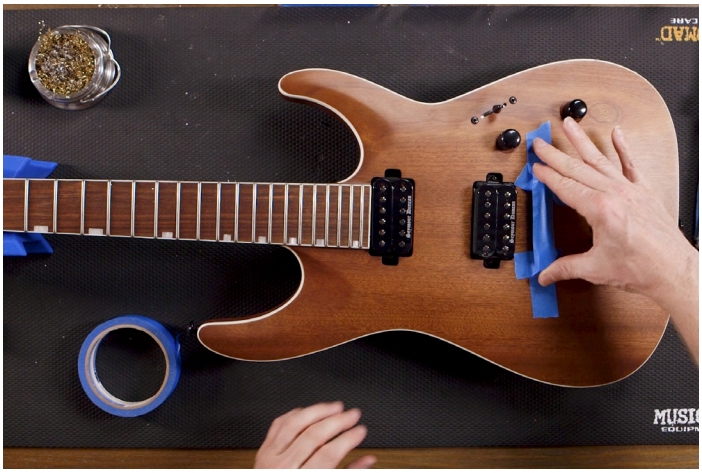
One challenge you may encounter is trying to fit a 9 volt battery into a compartment that wasn't meant for one. This will be the single largest item in the cavity and will be pushing against the wires and components and may cause a short. The battery could also make it difficult to fit the back cover on. You may have to move things around for everything to fit. We recommend wrapping the battery in foam to keep it from touching anything live and to keep it from bouncing around. You can also use one of the plastic bags to cover the battery. Lets dive right in!

PRO TIP

- To protect them from damage, leave the protective plastic on your pickup covers until you've finished the installation.
- If necessary, you can cut the length of the mounting springs with "Dikes" or diagonal cutters.v
- Perform the soldering outside of the cavity when possible. This makes it easier to solder and connect wires.
- Create an electronics template with a piece of cardboard or wood. This will hold your electronics in place while soldering. It will also create a convenient drop-in electronics harness.

1. Document current specs
    - Measure the current height of the pickups.
    - Press the low and high E strings down on the highest fret.
    - Using a shop ruler, measure the height between the bottom of the string and the top of the pickup's corresponding pole piece.

2. Remove the guitar's strings.
    - Loosen the strings at the headstock and remove them from the tuning machines.
    - Pull the strings from the ball end until the strings are free from the guitar.
    - It may be necessary to cut the loose strings with your heavy-duty cutters to remove them.
3. Remove or secure any loose parts.
    - Note which side of the bridge the intonation adjustment screws are on. (Great time for a photo!)
    - Carefully remove (or tape) the loose tailpiece and bridge from the guitar
    - Put painters tape over the screws and thumbwheel to keep them from moving out of adjustment.

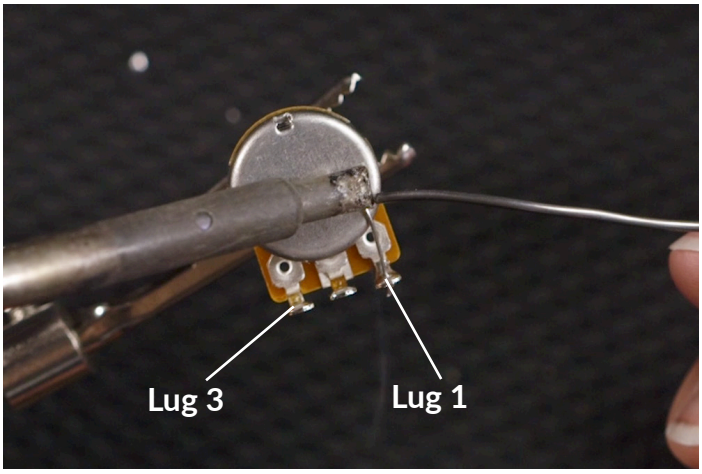


4. Document the orientation of the original pickups.
    - Note the shape, placement, and curvature of the mounting rings.

5. Remove pickguard and/or backplate.
    - Take photos to document the guitar's current wiring.
6. Remove electronics
    - De-solder all pickup leads and ground connections on the pots.
    - Save the connecting wires. You can use them to connect the new pots.

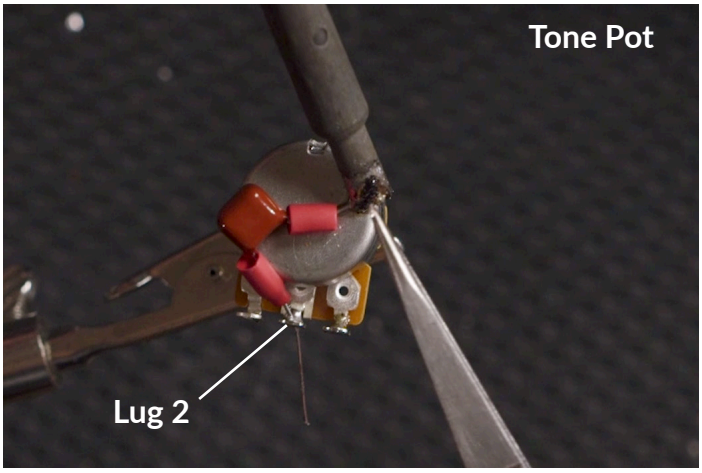
7. Remove the bridge and neck pickups.
    - Remove the mounting screws from each pickup.
    - Remove the pickups (and mounting rings if utilized) out of the pickup cavities.
    - Gently pull lead wires until completely removed from the guitar.
    - If the original pickups utilize mounting rings, remove them from the rings and set the pickups aside.

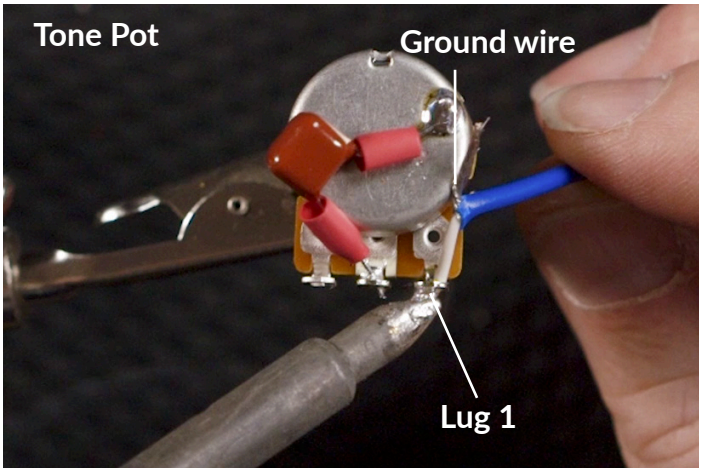
8. Remove volume and tone pots from the guitar.
    - Loosen the volume- and tone-pot nuts.
    - Remove the pots from the pickguard or through the electronics cavity.
    - Put the pots, nuts, and washers in their own tray.



CONNECTING VOLUME AND TONE POTS (25K)

9. Ground the volume pots.
    - Ground lug 1 of each volume pot to the back of the pot casing.
    - Use a small piece of wire to connect the lug to the casing. You can trim a small length of wire from the capacitor
10. Installing the tone pot capacitor.
    - Use the included .47 Capacitor on Lug 2 (middle lug) and ground to the back of the pot (Duplicate this if you have two tone pots).
    - You can put a small strip of shrink tubing around the capacitor leads to protect it from shorting out other wires.

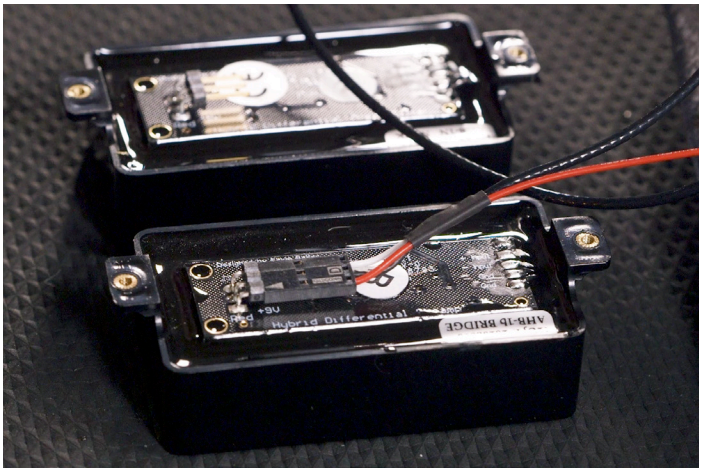




11. Connect the volume and tone pots.
    - Solder a wire from lug 1 of the tone pot to lug 3 of the volumev pot.
    - Duplicate this if you have two volume pots and two tone pots.
12. Connect all pots to the ground.
    - Some guitars have a copper lined control cavity or formed metal liners. These liners are used to ground the pots. The pots will be grounded to each other as soon as they are securely fastened. All that remains is to ground one pot to the ground terminal of the output jack
    - If you don't have a metal liner you will need to make sure the pots are grounded. This can be done using an extra wire to solder all pot casing. You can use some of the or-gaina wiring to make these connections.

INSTALLING THE NEW PICKUPS

13. Attach the quick contnect (included with your set) to the pickup terminals located on the back side of the pickup. Align the arrow on the quick connect



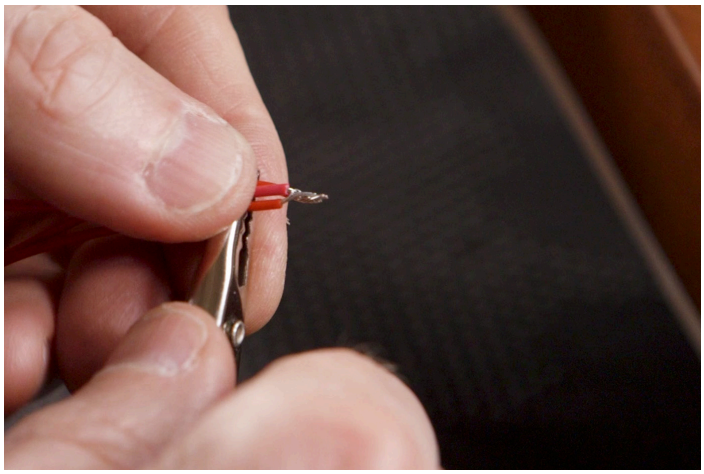
14. Install the new pickups in the correct mounting rings (if applicable).
15. Thread the pickups' lead wires into your guitar.
    - Always start with the neck pickup.
    - Twist the pickup's wires together. This will help the wires from getting stuck as you thread them through.
    - Pull the lead wires all the way through until the pickups are sitting flush on the guitar's surface.
16. Once threaded through the cavity, you can label the pickup hookup wires neck and bridge with painters tape.
17. Screw pickups to the body.
    - For direct mount you may have to use the screws that came with your guitar. Keep in mind the screws may be larger than the baseplate mounting hole.
18. Trim lead wire (optional).
    - Leave one or two inches of slack and trim the lead wire to length.
    - Trimming excess wire is not required. But loose lead wire (especially 1c) can lead to shorting.
19. Make your pickup solder connections in one of two ways.

Option 1: Hot leads to switch (v1 Volume, 1 Tone, 3-way switch)

- Solder neck hot lead (white) to neck terminal of the switch.
- Solder bridge hot lead (white) to bridge terminal of the switch.
- Connect the hot lead from the 3-way switch terminal to lug 3 of the volume pot (you can use the previous wire).
- Connect both pickup ground wires to the outer casing of either volume potentiometer.
- Solder ground wires to switch casing (Only If the switch casing is grounded).

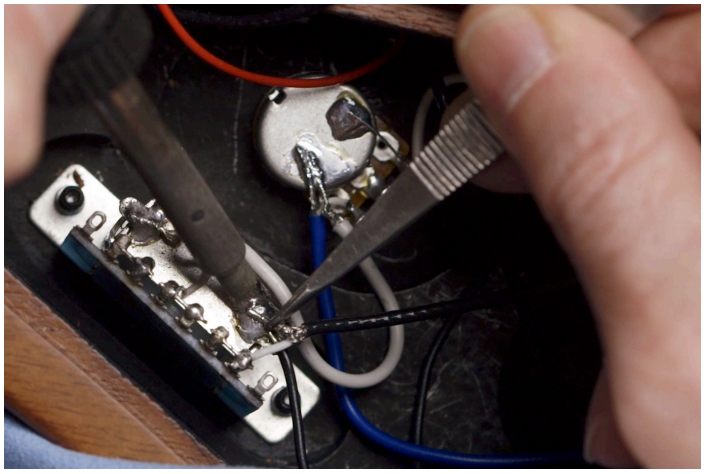
Option 2: Hot leads to the pots (2 Volume Pots, 2 Tone Pots, 3-way switch).

- Connect the neck hot lead (white) to lug 3 of the neck volume pot.
- Connect bridge hot lead (white) to lug 3 of the bridge volume pot.
- Connect lug 2 (middle lug) of the neck volume pot to the 3-way switch.



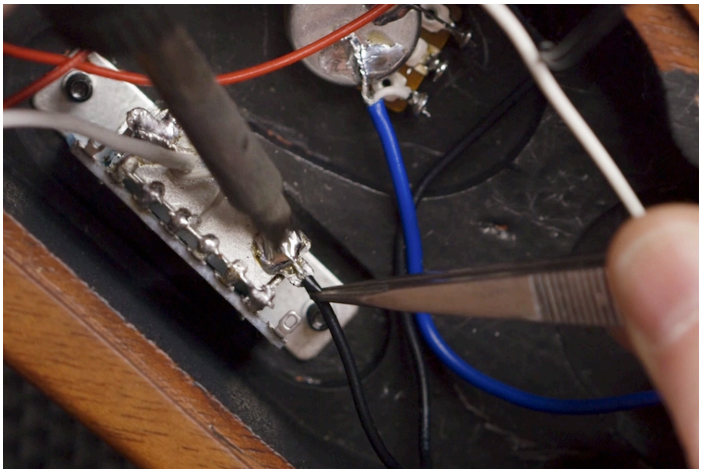
- Connect lug 2 (middle lug) of the bridge volume pot to the 3-way switch

20. Connect Battery Wires
    - Solder all of the pickup and battery clip red wires together.
    - Protect the soldered ends of the red wires with shrink tubing.
    - Thread the battery clip's black ground wire to the output jack.
21. Connect electronics to the stereo output jack
    - Solder the black battery ground wire to the ring of the output jack.
    - Solder the pots or switch ground wire to the output jack sleeve.



PRO TIP

- Guitars with passive electronics aren't designed to fit a 9-volt battery. You may have to get creative for everything to fit. We recommend wrapping the battery in foam or one of the plastic bags to keep it stable and from shorting any circuitry.



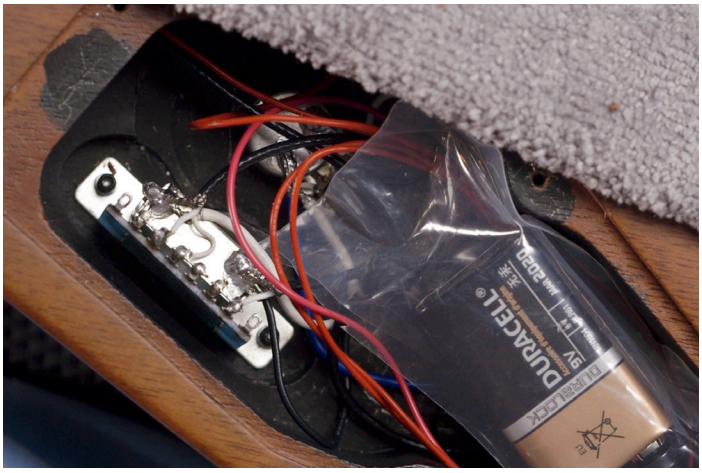
- Solder the hot lead from...
- If using Option 1 above:

  ...lug 2 (middle lug) of volume to the tip of the output jack.
- If using Option 2 above:

  ...the 3-way switch to the tip of the output jack.
- Install the output jack in the guitar.

FIT THE ELECTRONICS TO THE GUITAR

22. Remove the prepared electronics from the template (if prepared outside of the guitar).
23. Install electronics into the guitar's cavity.
24. Press the prepared pots' shaft through the correct holes in the pickguard or top of the guitar.
25. Install and tighten the 25k pot's washer and threaded nut over the top of the shaft.
26. Solder the guitar bridge ground wire to pot or switch.
27. Connect 9-volt battery



ELECTRONICS TEST

28. Plug your guitar into an amplifier.
29. Using a screwdriver, tap the pickup.
    - If you hear a "pop" through your amplifier, the pickups are working.
30. Repeat for each pickup position.

SETUP & PICKUP HEIGHT

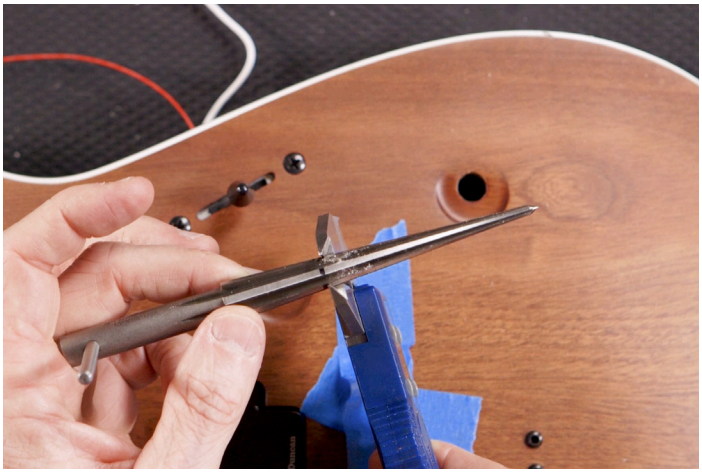
31. Replace the guitar's pickguard/backplate.
32. Take this opportunity to clean your guitar's finish before installing new guitar strings.
33. Install new guitar strings.
34. Measure the current height of the pickups.
    - Press the low and high E strings down on the highest fret.
    - Using a shop ruler, measure the height between the bottom of the string and the top of the pickup's corresponding pole piece.
35. Make height adjustments
    - By turning the pickup mounting screw in the pickup rings, raise or lower the pickups until both the treble and bass side read approximately 3/32" (2.38mm).

Using a Reamer

If the 3/8” (4.3mm)shaft of your new 25k pots are too large for your guitar’s holes, you will need to widen the holes. We recommend using a set of calipers and a reamer to reduce the risk of over widening the hole or ruining your guitar’s finish.

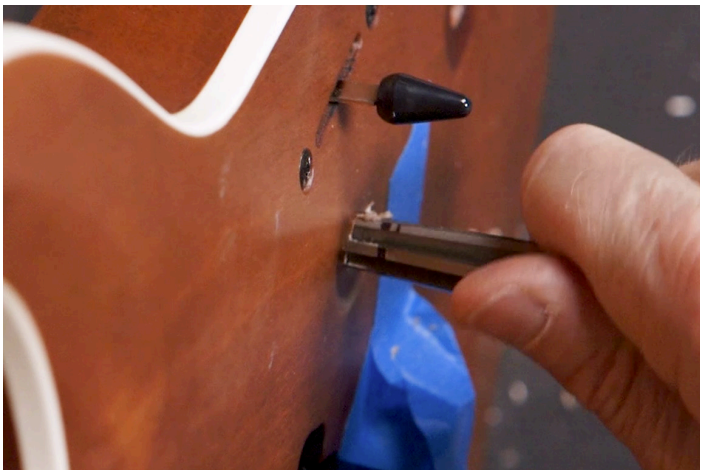
VWITH CALIPERS

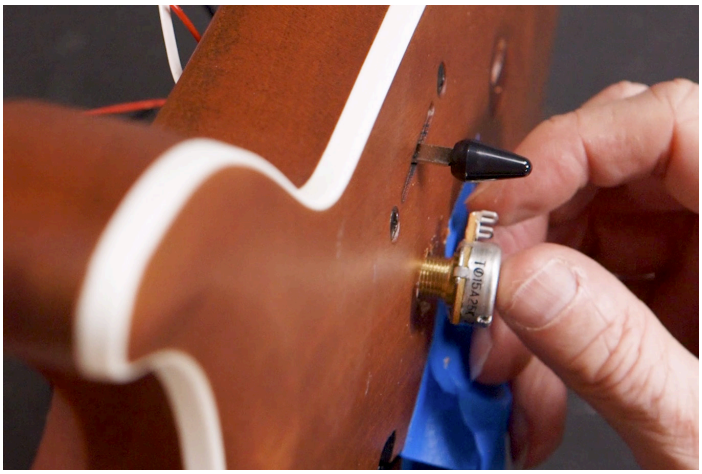
- Measure the width of the included 25k pot.
- Use this meaurement to mark the reamer with a Sharpy.
- Insert the reamer in the pot hole and slowly turn clockwise.
- Stop once you’ve reached the marking on the reamer.



WITHOUT CALIPERS

- Press the reamer into the pot route
- With moderate downward pressure, slowly turn the reamer clockwise.
- After every few turns, check to see if the 25k pot fits into the widened route.
- Repeat until the pot fits easily in the route without extra play in any direction.





36. Experiment with different pickup heights.
    - 3/32” is just a starting point. Use your ears to balance the output of each pickup and to adjust the tone of your rig.
    - Take measurements every time you make adjustments. This will help you get back to a previous setting if needed.

PRO TIP

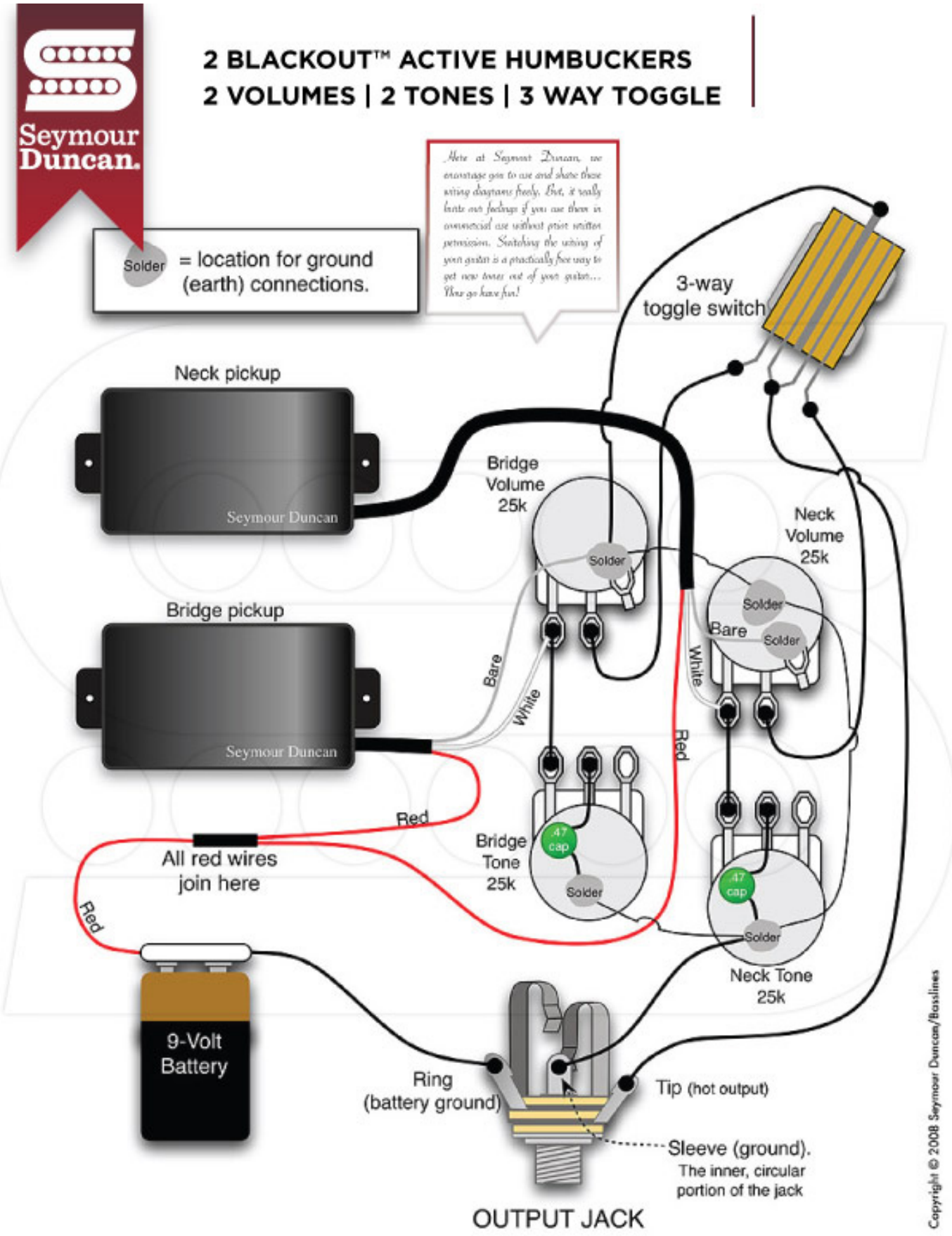
- You can fine-tune the left/right angle of each pickup to different heights. This can improve the string-to-string balance.
- Make sure the pickup’s adjustable pole screws are flush with the cover.

TROUBLESHOOTING

- No sound
    - Check hot lead wire connections on the 3 way switch
    - Make sure the battery is connected properly. Check all battery wires.
- Buzz or hum, check ground connections. See if any ground wires came loose.
- No output, check output jack wires. There should be 3 wires connected to the output jack.
- No sound, make sure batter is connected properly. Check all battery wires.

OTHER CONSIDERATIONS.

- If your guitar has a deep curve to the carved top, tightening the pickup mounting ring screws will flex them into place.
- Do not tug on the bridge ground wire. It usually connects to the tailpiece bushings or bridge bushings. This connection can come disconnected, and it is not easy to reattach.
- Before removing them, record the pickups’ height from the top of the pickup to the top of the mounting ring. That way, you’ll be close to optimal pickup height when you install the new pickups.
- Removing a Les Paul’s pickguard, keep track of which mounting screws go where. They are often different sizes.



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Visit seymourduncan.com/resources for more useful tools, tech tips and info.

Liked the tech information in this ebook and want more? We have tons of great resources to provide you with incredibly helpful tech and wiring info.

Check out the wiring diagram library on our website. We have diagrams for tons of different setups—single-coils, humbuckers, HSS, HSH, and much more. Plus, info on switches, pots, coil-splitting, and beyond.

Have a specific technical question? Head over to the Seymour Duncan Knowledge Base on our website—our compilation of more than 45 years of detailed note-taking on everything guitar and pickups. If you have a question, we likely have the answer.

Also, keep an eye on the Seymour Duncan blog, which we update weekly with detailed technical, wiring, and pickup info. And follow #seymourduncantechtips on social media to stay up-to-date on all our great tech posts!

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