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Deluxe Mini Humbucker Pickup Kit

Assembly Instructions

The Deluxe mini humbucker found on Gibson® Les Paul® models starting in the late 1960s has its roots in the Epiphone line, appearing on models like the Sheraton, Wilshire, and Sorrento. Similar in design to Gibson's P.A.F. pickups, the smaller Deluxe mini has a narrower magnetic field and fewer winds per coil, giving it more highs and better clarity than a full size humbucker.

Winding technique

Gibson wound their pickups on machines, and the mechanically precise traverse of the wire across the coil resulted in very consistent layers of windings. You can experiment with winding very methodically to replicate machine winding, or allow more inconsistency as you hand-feed the coil wire (called "scatter-winding").

Overwound, underwound

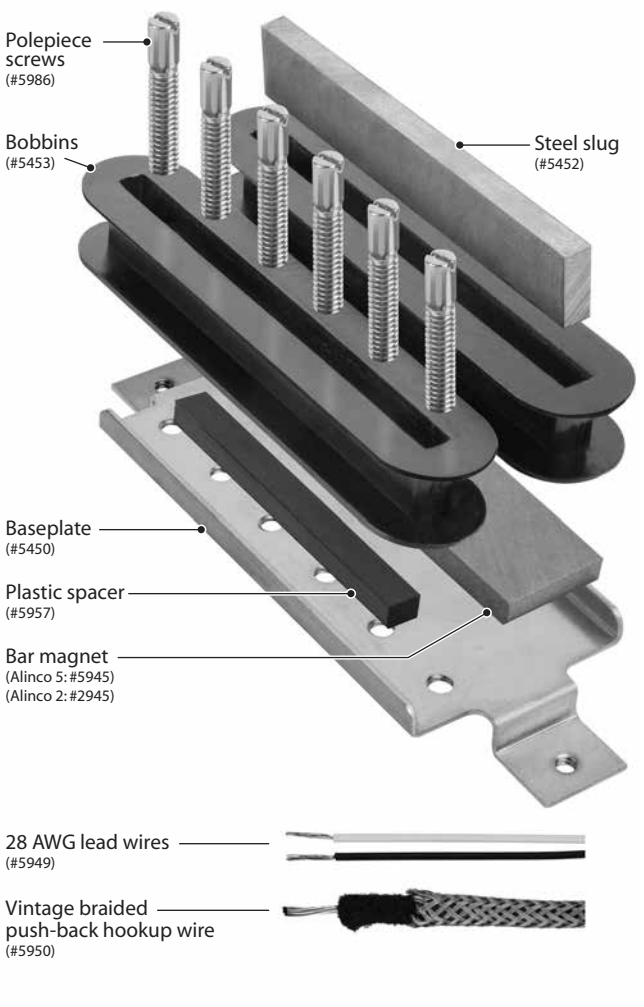
The number of winds affects the pickup's tone and response. For example, adding 5% more winds than usual will produce a higher output with more midrange punch; a warmer sound with less top end.

On the other hand, winding a coil 5% under spec results in a more open sound, with greater high-end clarity but less output.

Gibson mini humbucker bobbins were wound with around 4,500 turns of wire, averaging a DC resistance of a little over 6K. Epiphone models were usually a little over 7K with about 5,450 winds per bobbin.

Some manufacturers offer pickups with different outputs for neck and bridge pickups, usually making the bridge pickup sightly more powerful to blend better with the neck pickup.

Another way to affect a pickup's tone and response is to experiment with mismatched coils. You can mix a different number of turns/DC resistances and styles of winding to produce some very interesting and great sounding pickups.

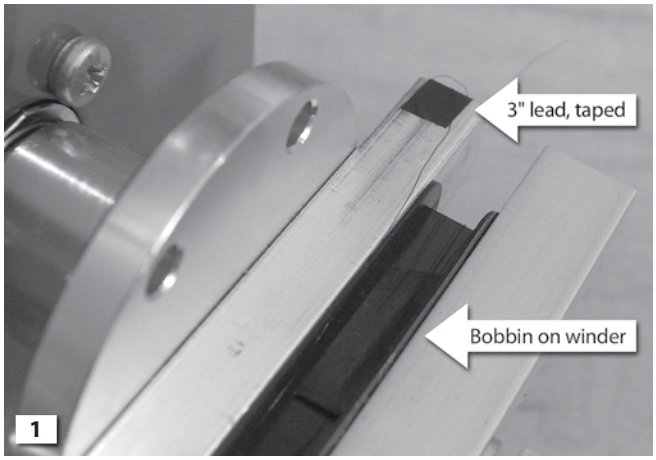


Winding the bobbins

Carefully inspect the bobbins to make sure there are no rough edges, nicks, or molding lines that may snag the coil wire. Smooth any possible snags with 600-grit sandpaper or a fine emery board. Once they're cleaned up, use a pencil to mark the top side of each bobbin for reference. Unlike a full size humbucker bobbin, a mini humbucker doesn't have a specific top side so it doesn't matter which side you mark.

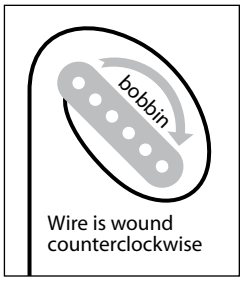
Cut the each of the two 28AWG lead wires (4" long, one black/one white) into 2" pieces (each coil gets one black and one white lead wire). Strip 3/16" of insulation from each end of these wires.

Attach the bobbin to the winding machine with the marked top facing out. Make sure it is carefully centered for wobble-free operation.



Wind 42 AWG coil wire around the bobbin by hand, giving it about six turns counterclockwise, leaving a 3" tail. This tail will be the pickup's start lead; carefully tape it to the platen of the winder, keeping it taught so it's out of the way of your winding.

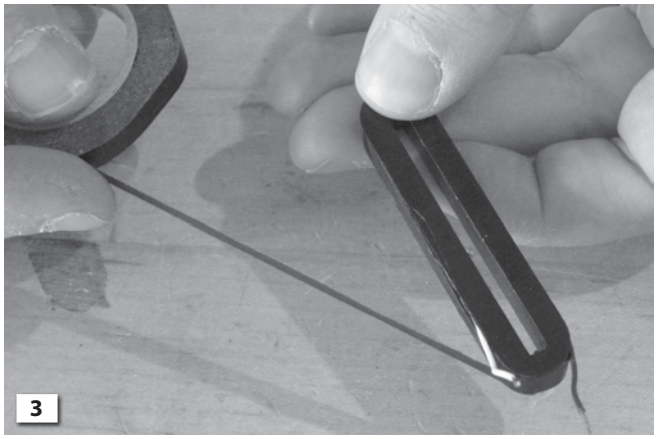
Gibson mini humbuckers were wound counterclockwise (when viewed from the top of the pickup). Set the traverse limiter on your winder so the coil wire stops about .020" from the flatwork on both sides. This helps prevent the windings from deforming and gives a more uniform coil.



When you have reached your desired wind count (for a Gibson spec, that's about 4,500 turns, for Epiphone about 5,450), carefully lift the tape fastening the start lead. Leave the tape on the wire to identify it as the start tail. Cut the wire coming from your source spool, leaving a 3" tail. This is your finish tail.

Wrap the bobbin with a single layer of paper coil tape. This keeps everything in place and protects the coil when you solder the hookup leads.

Solder the black lead to the start tail and tape the joint using coil tape. Do the same with the white lead and the finish tail. There's no need to strip the clear insulating coating from the fine coil wire; the heat from soldering will melt it away.

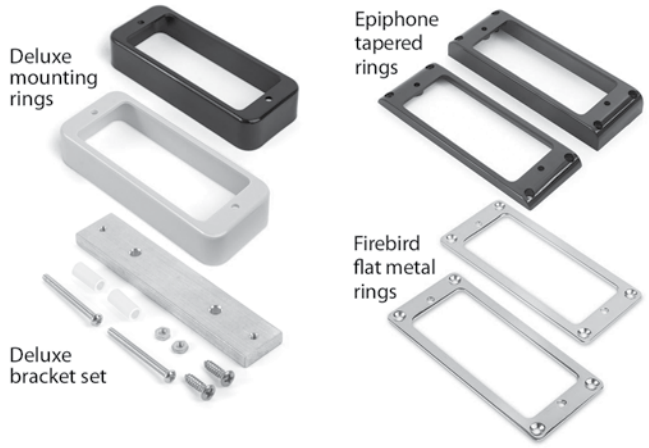


Give the bobbins a few wraps in paper coil tape to secure the lead wires. This is delicate work; be very careful not to break the leads as you wrap.

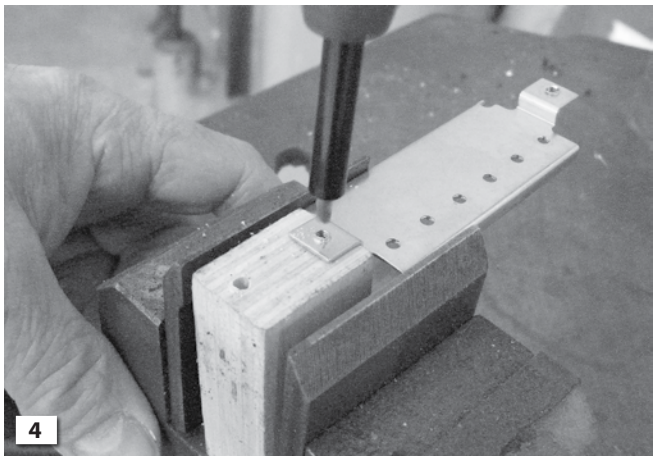
Repeat these winding steps for the other coil: same winding direction, same number of turns.

Assembly

Before assembly, you will need to decide which style of mounting ring you'll use. We offer three mounting ring options: the Deluxe style as found on Les Paul Deluxe guitars, the tapered plastic surface mount style found on the Epiphone Sheraton and Wilshire models, and the flat metal Firebird surface mount.

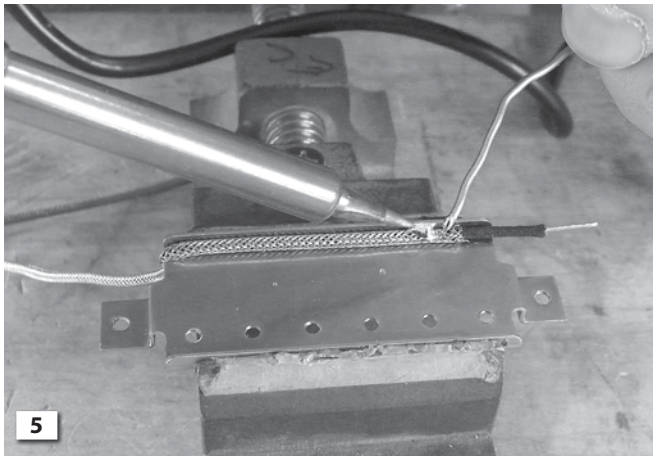


To use the Deluxe mounting system, you'll need to drill out two holes in the baseplate before you assemble the pickup. The Epiphone and Firebird style mounts don't need this modification.



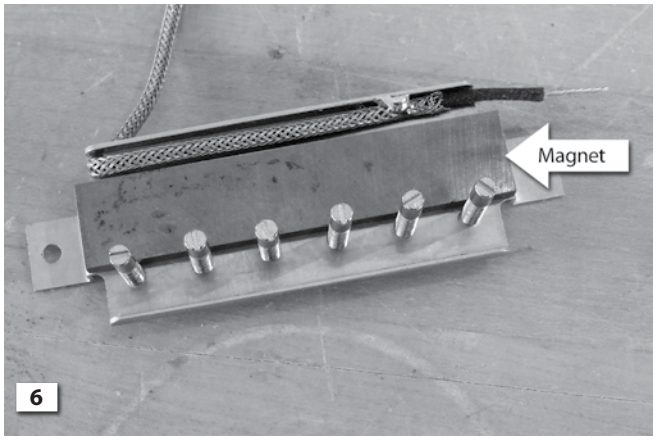
The two "ears" on the metal baseplate have threaded holes for height adjustment screws. For a Deluxe mount, these holes need to be enlarged so they'll slip over the screws without the threads engaging.

Clamp the baseplate into a vise with a wooden backer block under the ear for support, and drill the hole out with a 9/64" bit.

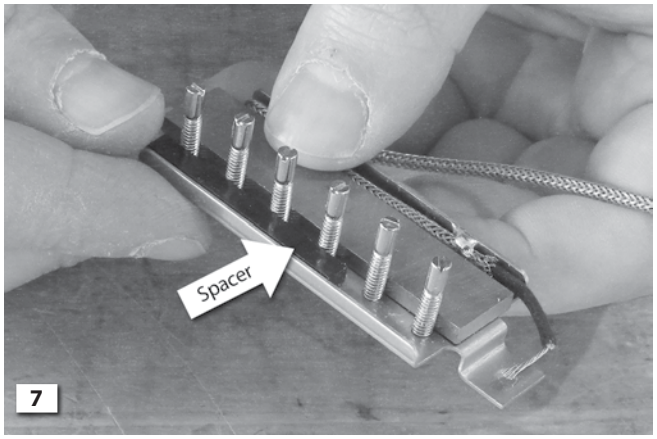


Holding the baseplate with a vise or clamp, solder on the hookup wire.

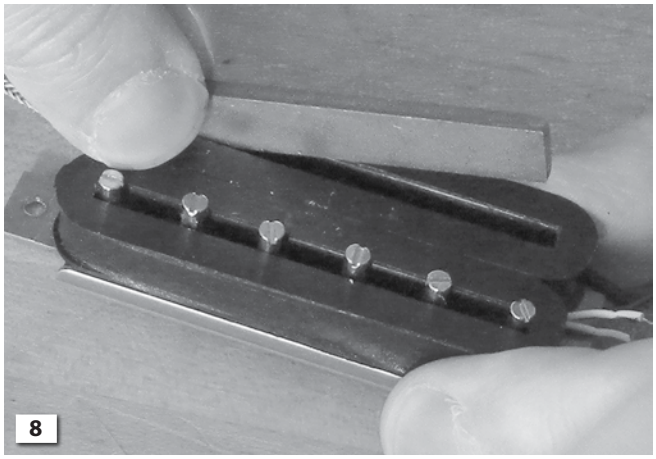
Install the adjustable polepiece screws in the baseplate giving each a few turns.



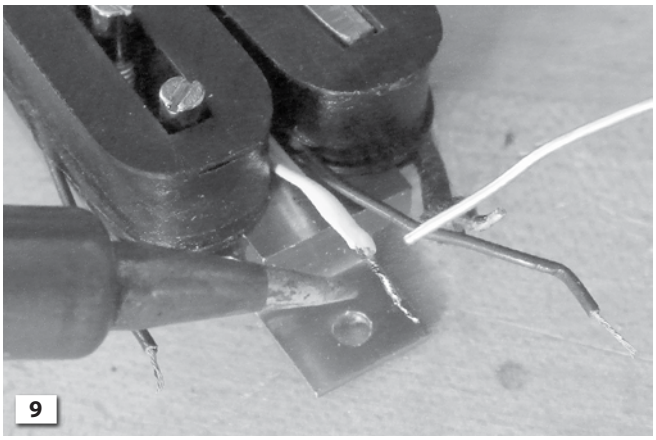
Determine the south side of the magnet using a polarity tester, and place the magnet on the polepieces, south side up.



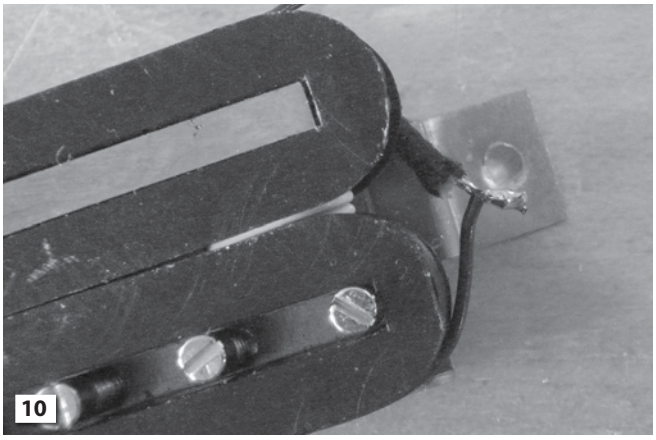
Insert the plastic spacer between the polepieces and side of the bobbin.



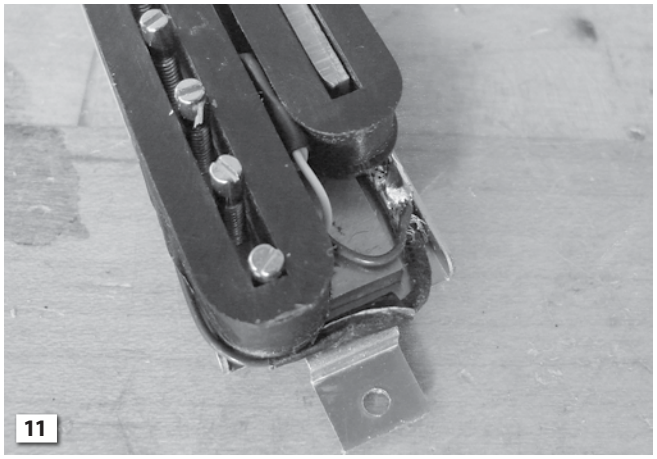
Place the two bobbins on the baseplate. One over the screws and the other next to it sitting on the magnet. Install the steel slug in the bobbin.



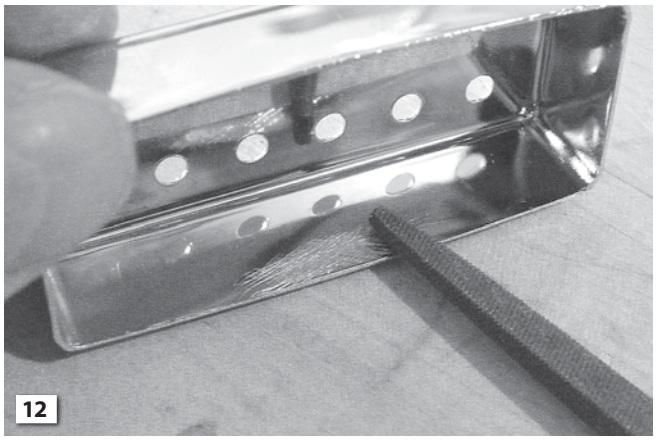
Solder the two white leads together for your series link. Tape off the joint and tuck it between the two bobbins.



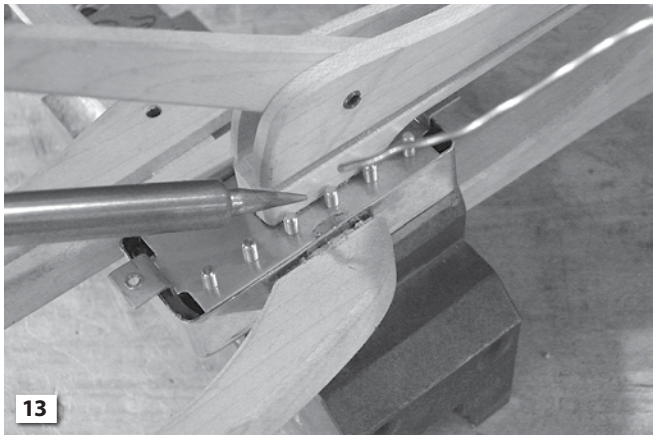
Solder the black start lead of the polepiece coil to the hot, center lead of the hookup wire.



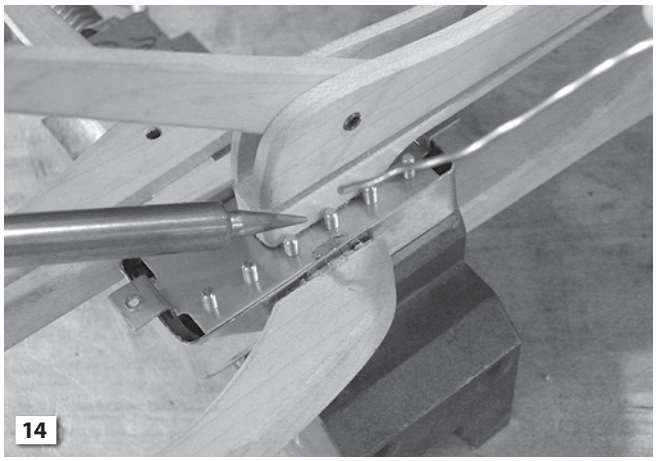
Finish by soldering the start of the slug coil to the braided shield of the hookup wire. Carefully tuck all wires out of the way to make room for the pickup cover.



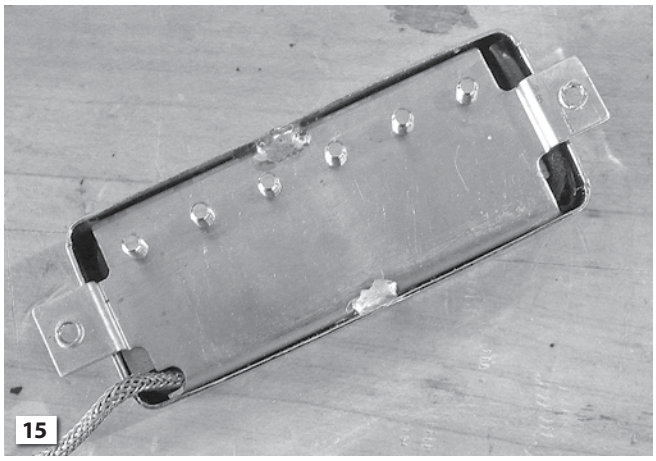
Use a file to rough up the cover in the areas where you will be soldering. This will help the solder grip better.



The cover on a mini humbucker holds the whole assembly together. Carefully place the cover over the assembly and use a clamp to ensure a tight fit from front to back.



Use a second clamp to gently squeeze the sides of the cover to fit tightly against the baseplate. With a hot soldering iron, put one small dab of solder on each side of the cover to secure it.

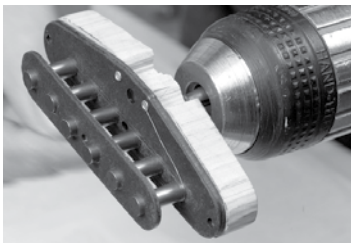


Your assembled pickup is now ready to be installed.

Crafty tip: a homemade pickup winder

Here's how you can make yourself an improvised pickup winder using a hand drill, although it has no way to count the number of winds.

Clamp an electric drill to a workbench. The speed control is simply a second clamp which is tightened onto the drill trigger: screwing it down tighter presses the trigger and speeds up the drill.



We fashioned a mounting plate in the shape of the pickup (with a recess for the eyelets), and mounted that onto a metal shaft that's held in the drill chuck. Whatever your method, see that the pickup is spinning true and straight.

You will be moving the wire back and forth as it feeds onto the coil, so you'll want to create a "traverse limiter" to keep it between the two flatwork pieces. A real pickup winder has a polished metal rod with adjustable right and left limiters. For this simple winder, the limiter is a hole drilled in a piece of wood that pivots right and left. The hole needs to be sanded very smooth.