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Firebird Mini Humbucker Pickup Kit

Assembly Instructions

The mini humbucker first appeared on Gibson® Firebird guitars in the early 1960s. Outwardly, it looks similar to a Les Paul® Deluxe mini humbucker, but without adjustable polepieces. Inside, the two pickup designs are very different. The Firebird mini humbucker design has dual bar magnets with steel plates above and below them, a higher output and a brighter sound.

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 like Gibson's original winding, or allow more inconsistency as you hand-feed the coil wire (called "scatter-winding").

Overwound, underwound

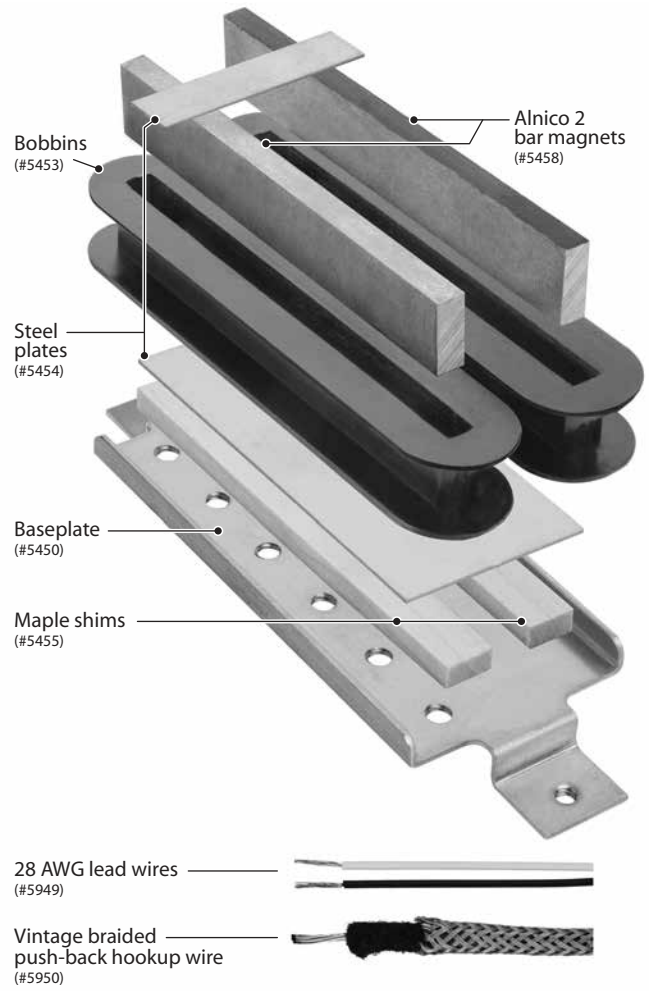
The number of winds affects the pickup's tone and response. For example, adding 5% more winds than usual will produce a higher output with more midrange punch; a warmer sound with less top end.

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 Firebird coils were wound with 5,000 to 5,500 turns of wire, averaging a DC resistance of at least 7K.

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 change the number of turns to create different DC resistances and vary your styles of winding to produce uniquely interesting, great sounding pickups.



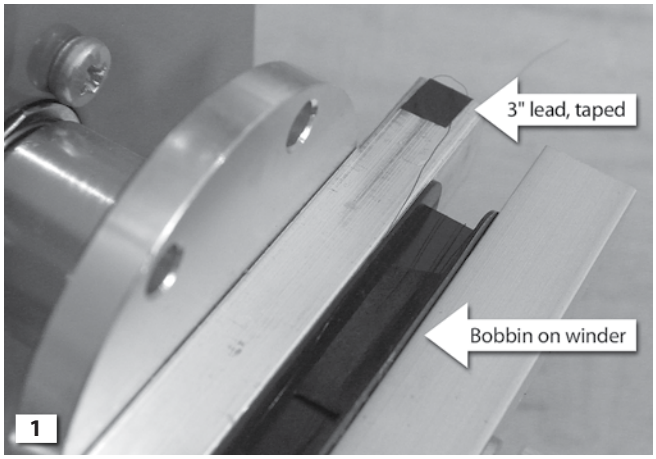
Preparation

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.

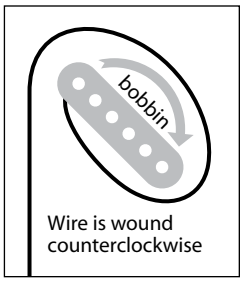
Winding

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.

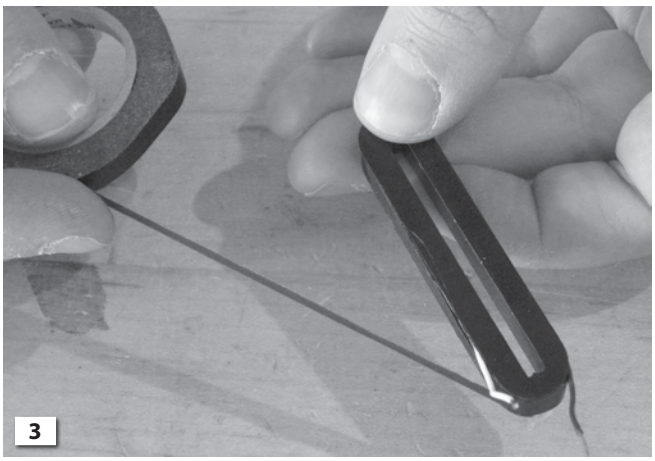
Gibson mini humbuckers were wound counterclockwise (when viewed from the top of the pickup). Set the traverse limiter on your winder so the coil wire stops about .020" from the flatwork on both sides. This helps keep the bobbins from deforming and gives a more uniform coil.



When you have reached your desired wind count (typically 5,000 to 5,500 turns), 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.

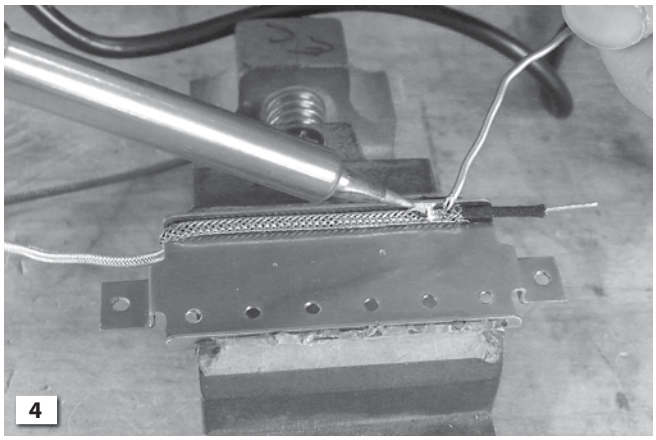
Solder the black lead to the start tail and tape the joint using coil tape. Do the same with the white lead and the finish tail. There's no need to strip the clear insulating coating from the fine coil wire; the heat from soldering will melt it away.



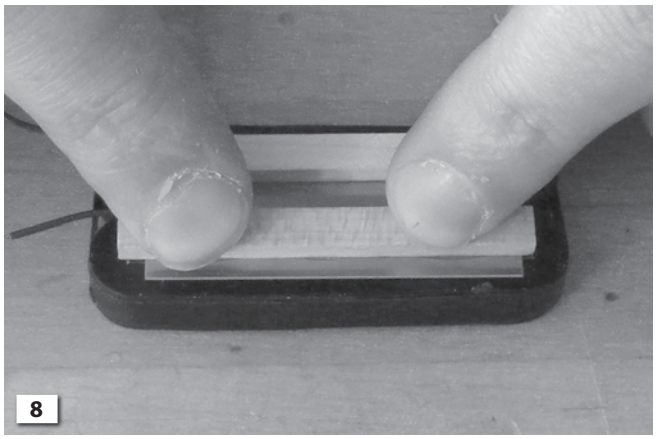
Give the bobbins a few wraps in paper coil tape to secure the lead wires. This is delicate work; be very careful not to break the leads as you wrap.

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

Assembly

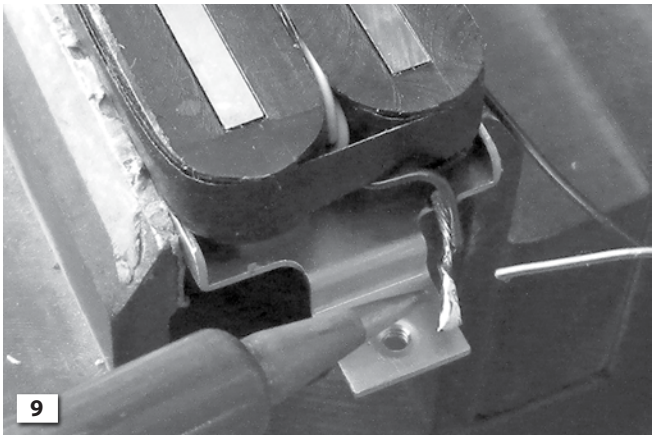


Holding the baseplate with a vise or clamp, solder on the hookup wire.



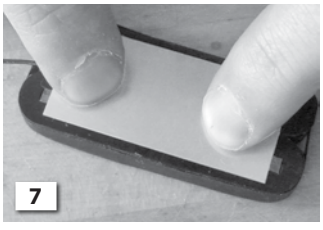
Attach wooden spacers to the bottom of the steel plate. Use tiny dabs of superglue to help hold these in place.

Install the magnets in the bobbins, one with south facing up, the other with north facing up. The north-up bobbin will go on the side that is over the hookup wire. Give both bobbins a wrap of tape to hold them together.

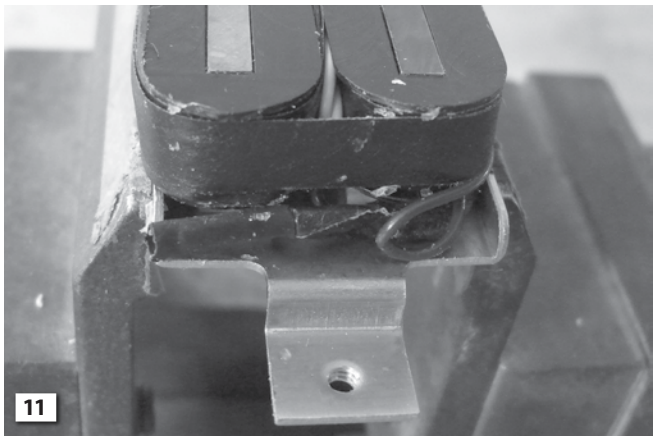


Solder the two white leads together, tape off the joint and tuck the wires in between the bobbins. Solder the black start lead of the south up coil to the hot, center lead of the hookup wire.

Center the bottom steel plate under the coils. A bit of melted wax will hold it in place. This also helps keep it from vibrating against the coil and causing feedback.

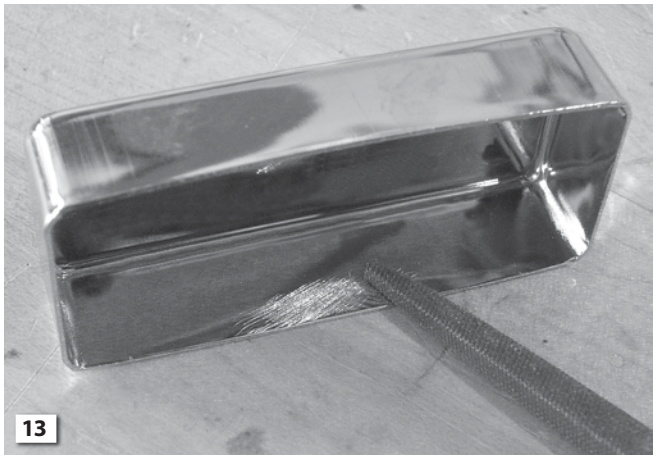


Finish by soldering the start of the north coil to the braided shield of the hookup wire.

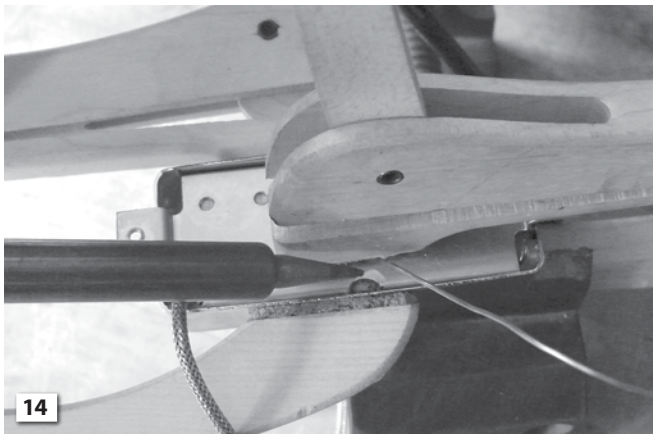


Carefully tuck all wires out of the way to make room for the pickup cover.

Position the top steel plate 3/16" from the edge of the treble side of the magnets. You can scribe a line across the bobbins for reference. A few small drops of melted wax on the bobbins will help hold this piece in place and prevent it from vibrating.



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 Firebird mini humbucker holds the whole pickup together. Carefully place the assembly into the cover 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.

Wax potting

Much of the signature tone of '60s Firebird pickups comes from their steel plates and magnets, but high volume can cause these parts to vibrate and produce feedback. So we recommend potting your Firebird pickup in wax after it's assembled. (Gibson started potting their Firebird pickups sometime in the 1980s.)

Your assembled pickup is ready to be installed in our metal Firebird-style mounting ring or tapered plastic Epiphone-style mounting rings.