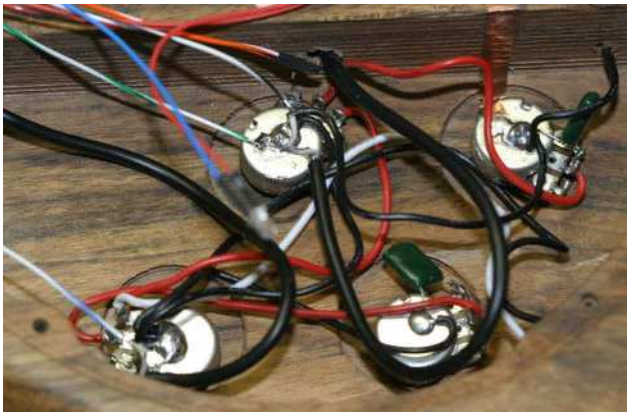
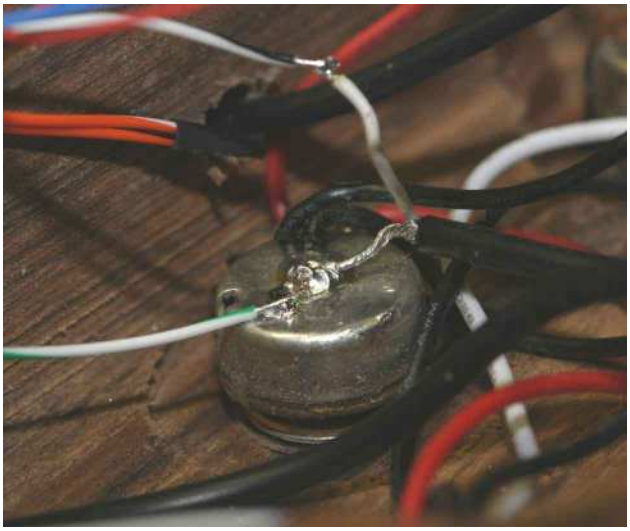
Installation of Audere 3ZB preamp in a Peavey “Grind” Bass

Z-Mode Preamp with Passive volume and tone controls, No Active/Passive Switch





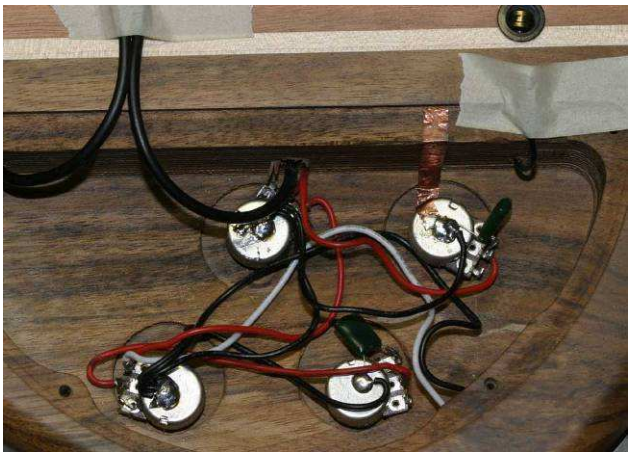
SECTION ONE: STEPS TO BE ABLE TO DO A PLAY TEST

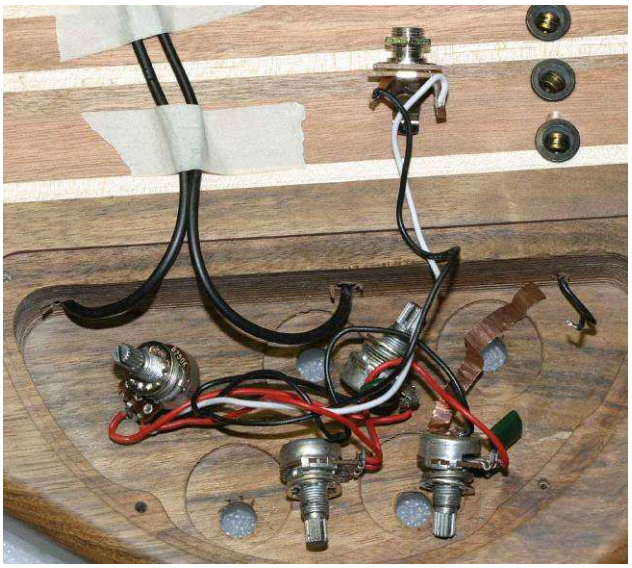
1. Remove back panel.
2. Unsolder the Pickup’s Hot lead from the existing preamp.
3. Solder the Neck Pickup’s Hot lead to the Module’s Blue/White[1] wire and the Bridge Hot lead to the Module’s Black/White wire.
4. Solder the Module’s Green/White wire to any convenient ground location (a grounded cavity, the output jack center tab etc).
5. Tape the preamp to the back of the instrument with low tack tape to hold it in place during testing (test first to be sure it will not hurt the finish when removed).
6. Connect a battery to the new preamp and insert the guitar cable into the new preamp’s jack. Verify the battery LED lights on insertion.
7. You can now do an initial play test. Note that there will be more noise due to the preamp being out of the shielded cavity. All controls will be functional. The Low Z mode maybe louder or softer than the other modes (this will be adjusted later). Touching the switches and pots will cause hum pickup since they are not grounded yet.

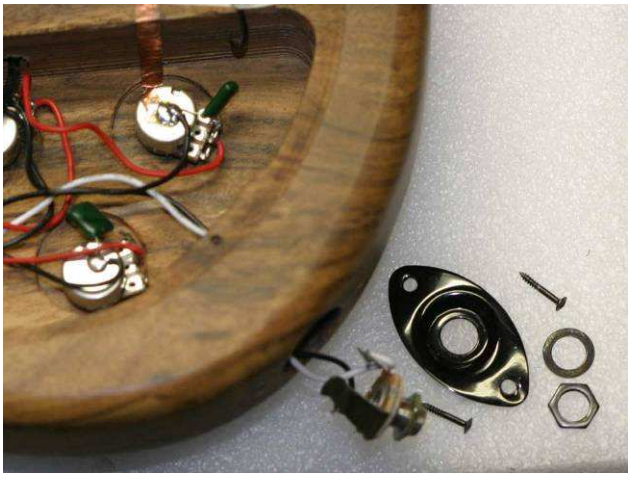
[1] Wire colors are called out as Stripe color first, “/” then Jacket color. Blue/White is a Blue stripe on White.

SECTION TWO: REMOVING THE OLD PASSIVE CIRCUIT

1. Disconnect the pickup leads (hot and ground) and the Bridge ground wires from the old passive circuit. In the Peavey installation, the cavity needs to be shielded so we also disconnected the hot wires from the new preamp to clear the work space.
2. Remove the new preamp and set aside.
3. Remove screws holding the output jack plate and remove the jack nut. Pull jack back into the cavity.
4. Remove the knobs from the pots and the nuts and washers from pots and switches.
5. Pull out the old passive circuit.

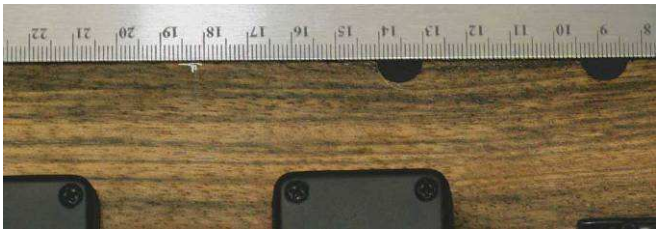






SECTION THREE: DRILLING THE HOLES

1. Determine the location for the module, battery, LED and any additional holes, if required for pots and switches. In this installation we wanted a new ¼" hole for the Z-Mode switch in the top of the bass and a 3mm hole for the LED in back cover.
2. Mark the hole location for the switch and make certain that it will pass into the cavity with enough clearance to mount the switch on the inside of the cavity.
3. Use a punch to create a starting position for the drill.
4. We initially hand drilled from the outside of the body to ensure no wood split-outs on the bass face. Then we used an electric hand drill at low speed to remove the bulk of the wood. You can hand drill the holes fairly easily if you do not have an electric drill.
5. Clean out the inside of the hole, we used an Exacto knife.
6. The cavity cover is plastic, so we drilled the LED hole by hand.

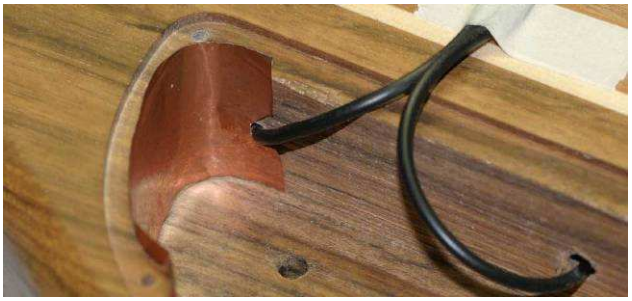


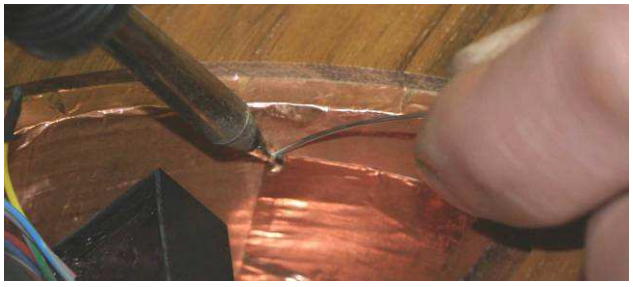
SECTION THREE: SHIELDING THE CAVITY

Most basses have the cavity shielded with either conductive paint or a foil shield; however some low cost basses do not have a shielded cavity. This is important for quiet operation and for providing a ground connection for the pots and switches. With shielding you don't need to get 100% coverage, but you want to get the best coverage that is reasonably achieved. You do need to be sure the pots and switches ground. If the pots and switches are not grounded they will buzz when you touch them.

Unfortunately the Peavey does not have any shielding except on the back cover so we will make a shielded cavity using copper tape. Our tape has a non-conductive adhesive (McMaster – one option is the 2" width, 76555A725) so we will have to place a solder connection between each piece. Conductive adhesive is also available (McMaster's 2" option is 76555A715) and will make your installation easier but costs approximately 2X.

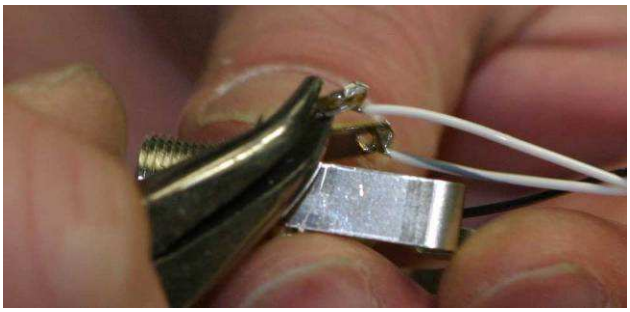
1. Clean the cavity of any debris.
2. We apply the foil in smaller pieces for ease in handling. We cut them to fit just pass the wires and then cut a slit into the end for the wire to pass through. The next piece will cover the slit ends.
3. The foil needs to make an electrical connection with the cover, in this case the tape is a bit wider than the cavity is deep so we can cut slits in the overhang and press it flat across the edge where the cover rests.
4. Clear the foil from the holes. We marked the location of the hole by piercing the foil coming from the face of the bass. Make slits with an Exacto knife and trim or press the foil into place.
5. Solder a connection between pieces if you are using non-conductive adhesive, as we are. In the photos you'll see that we did this step after we installed the preamp. Better if you do it now. Since you are soldering to foil directly applied on top of wood it is important to not use too much heat. The goal is to solder the foil together without burning the wood significantly. Make sure your soldering iron has extra solder on it to increase the speed of heat transfer. Touch the copper and it will quickly solder the 2 pieces together; quickly remove the heat.
6. Attach a ground wire to the foil shield at a convenient spot, near the output jack location.





SECTION FOUR: INSTALLING THE NEW PREAMP

1. Install each switch and pot, taking care not to pull on the wires. In any case, wires should never be pulled taunt or strained.
2. We installed the Z-Mode switch first. There are 3 decorative finishes to the nuts and washers for each switch, Black Nickel, Bright Nickel, and Chrome. Choose which you will use on the exterior and use one of the others inside the cavity if needed for depth spacing. In our case, no depth adjustment was needed for the switch so we mounted the switch flush.
3. Your existing holes may be larger than our pot shafts. The pots have an oversized washer for the cavity interior to prevent the pot from rocking; it goes over the shaft first. Then add the two rubber spacer rings that fit over the shaft; these go up into the standard sized hole to center the pot shaft. In this case, the oversized washer also spaced the pot to the correct depth so the washer was mounted flush with the inside of the case. You might need to use a interior panel nut to set the depth.
4. Secure each pot and switch with a washer and panel nut on the face of the bass.
5. Install the out put jack. In our case, we had to bend the tabs a bit to fit through the hole. Set the depth of the jack using an internal panel nut.
6. Secure the jack plate with the original hardware or with the hardware provided on the jack. Reinstall the plate with the original screws.



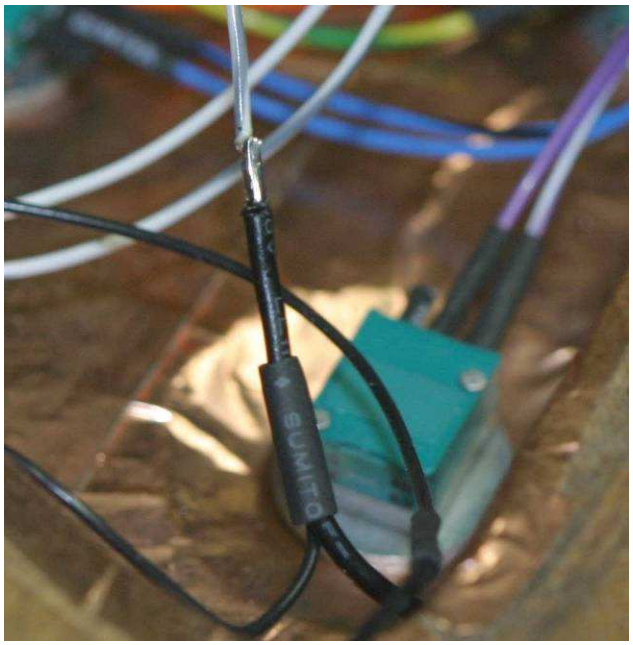
Above: bending output jacks in to fit existing hole

SECTION FIVE: FINISH THE WIRING

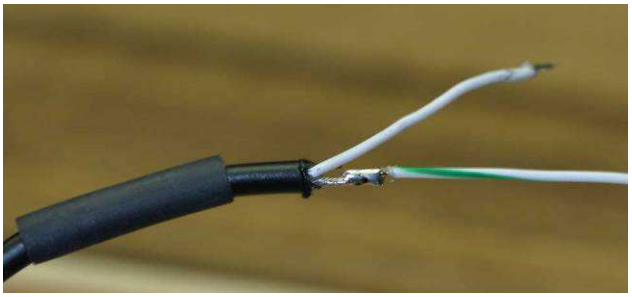
The output jack center tab is the Ground point. The module has a Grey/White wire connected to the ground tab already. You need to add a connection from the ground tab to the cavity shielding and one to the Bridge (assuming your bass has a Bridge ground wire, most do). The Bridge ground wire provides grounding for the strings. As you'll see, we prefer to use wire extensions rather than strain the existing wires which tend to have been trimmed short.

1. In addition to the Module's ground wire, there is an extra Grey/White ground wire attached to the center tab of the output jack; it is to be connected to the Bridge ground wire and the cavity ground wire. Slide heat shrink over the Grey/White wire, then solder this wire to the Bridge and cavity ground wires. Slide the heat shrink over the solder joint and shrink it.
2. Next, the pickup wires. In this Peavey, the pickup ground wire is a woven shielding. The pickup wire is a bit short, so we trimmed the insulation back an inch, taking extra care not to nick the insulation on the hot lead.
3. The two pickup's ground wires are joined together with the ground wire going to the module (note, this is different for preamps with an active/passive switch). In this installation, we are doing all solder connections (as opposed to using wire connectors).
4. For ease
5. in connection, we added extension wires to the pickup grounds. Slide the heat shrink over the soldered connection and reduced it. The heat shrink is large enough to cover where the shielding exits the pickup insulation providing 100% coverage.
6. Then we slide heat shrink over the module's Green/White ground wire, solder the two pickup wires to the module wire. Slide the heat shrink insulation over the connection and reduce it.

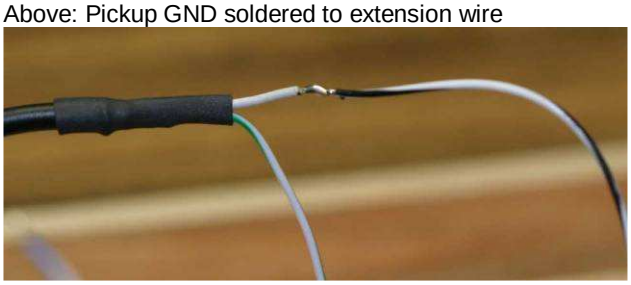
IMPORTANT NOTE: it is important that the pickup ground wires are insulated and can not short to the cavity or any other surface. Pickup ground is not the same as the ground for the output jack (cavity, Bridge etc).



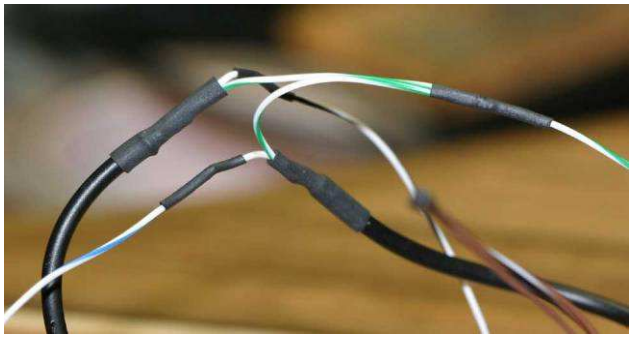
Above: Bridge & Cavity GND go to Output Jack GND



Above: Pickup GND soldered to extension wire



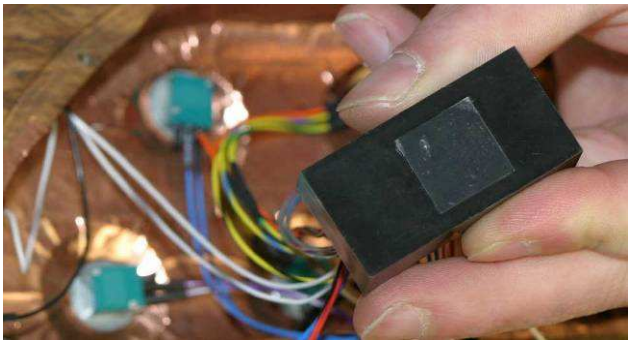
Above: Pickup Hot wire soldered to extension wire

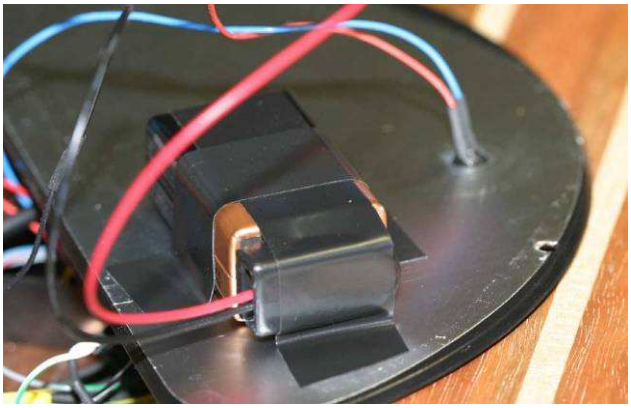


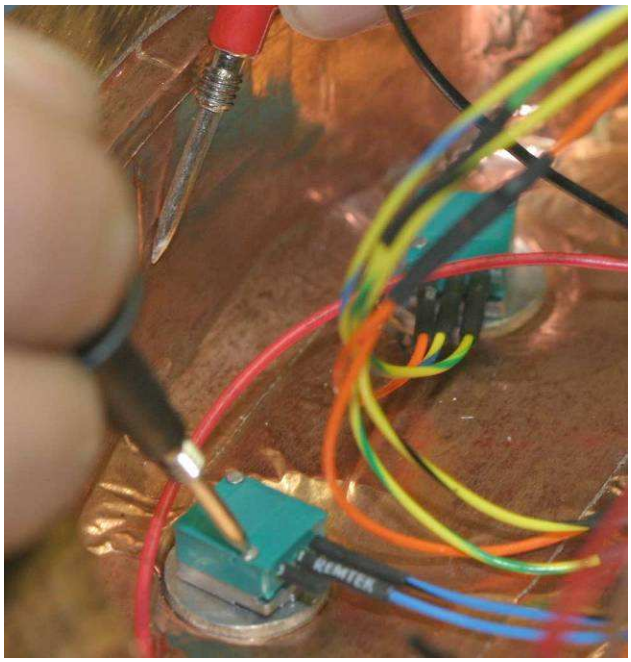
Above: Two Pickup GND wires joined to Module GND

Section Six: Final steps to finish installation

1. Apply one of the adhesive pads to the base of module; removing the first liner, press into place, then remove 2nd liner and press the module into position in the cavity.
2. Press the LED into the hole in the cavity cover, secure with instant adhesive, like Super Glue.
3. Install the battery. We are temporarily using tape to hold our battery to the door. We also are using a partially discharged battery so that we can see the low power reading from the battery level LED.
4. Use wire ties to tidy up the cavity if desired and attach the back cover.
5. If you have an Ohm meter, test the ground connection from the Pot metal to the cavity shielding.
6. Install door and attach Knobs. Check Battery LED operation.







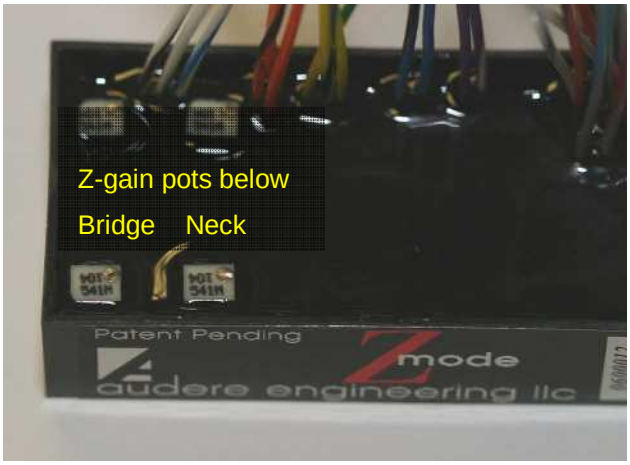
Above: Checking Ground Connection

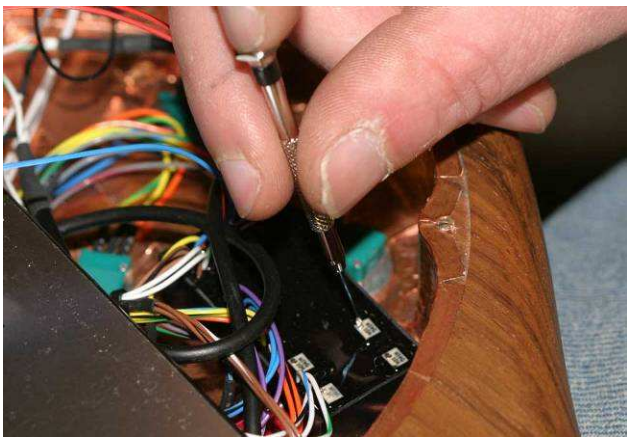
Above: LED shows full power level

SECTION SEVEN: ADJUSTING THE LOW-Z GAIN

Pickups vary by 10:1 in how much output you get in Low Z mode so the preamp must be adjusted to your pickups. There are two Low-Z gain adjustment pots, one for each pickup**.** Both are located on the lower edge of the module that is away from the wires. The Bridge pickup pot is on the left, the outer edge, the Neck adjustment pot is on the right, toward the center of the module. The adjustment pots are 10+ turn adjusters and have no stops at the ends.

1. We opened the back cover and since we have the LED and battery on the cover, we taped it to the back of the body for this step.
2. Plug into your amp setup.
3. Place the Z Mode switch in the middle (Mid Z) position.
4. Set the volume or balance controls so only the Bridge pickup is functioning.
5. With only the Bridge pickup producing sound, adjust the Bridge trim pot until that the volume in is fairly even when you move the switch from the Mid Z mode to the Low Z mode. You probably want the sound a little louder in Low Z mode so you can hear the low notes better.
6. Switch in-between Low Z mode and High Z mode till you get the adjustment you prefer.
7. Repeat the process for the Neck pickup.
8. Again, be sure only the Neck pickup only is producing sound while you adjust it's pot. As with the Bridge pickup, you probably want the sound a little louder in Low Z mode so you can hear the low notes better.
9. The Z-gain adjustment could have been performed in either pickup order since the 2 pickups are adjusted independently.





Above: Low Z being adjusted for the Neck pickup

SECTION EIGHT: ADJUSTING THE CAPACITANCE

There two Capacitance adjustment pots, one for each pickup. Both are located on the upper edge of the module that is closest to the wires. The Bridge pickup pot is on the left outer edge, the Neck adjustment pot is on the right, toward the center of the module. The adjustment pots are 10+ turn adjusters and have no stops at the ends.

1. The cavity cover is still open from the previous step.
2. Set the mode switch to High Z mode.
3. Set the volume or balance controls so that only the Bridge pickup only is producing sound.
4. Turn the capacitance adjustment screw for the Bridge pickup 12 turns to the counter-clockwise.
5. Next turn the adjustment screw back, clockwise, until you get the sound you prefer.
6. Switching back and forth from Mid Z to High Z modes will allow you to compare the two sounds.
7. Repeat the process for the Neck pickup; set the volume or balance controls so only the Neck pickup only is producing sound.
8. Turn the screw on the Neck capacitance adjustment pot 12 turns to the left.
9. Turn the adjustment back, clockwise, until you get the sound you prefer.
10. After setting the capacitance for the individual pickups, test how the pickups blend together; comparing the High Z mode sound to the Mid Z mode sound. Adjust to your preference.
11. You can tweak any of the adjustments later if your preferences change. Otherwise, there is no need to revisit the settings again.
12. Reattach the back cover.