WELCOME!
Your decision to purchase a ToneShaper was a good one! Your new toy should give you lots of tone tweaking enjoyment, and will prove to be a valuable tool in getting the tone you’re looking for from your guitar. Please read over these instructions to become acquainted with your new unit, and keep them handy for future reference.

INSTALLATION
We’ve included everything you’ll need. The first step is to remove any existing wiring from your guitar, including the switch and jack (pickups don’t need to be removed). Strip 1/4” of insulation from the ends of the pickup leads to prepare them for connection to the ToneShaper.

First, test-fit the unit in the guitar. Make sure that your four control holes are large enough to receive the 3/8” bushings of the included pots. If you need to enlarge them, a reamer is the quick and easy way to do this without risking damage to the finish.

The pot that’s attached to the circuit board is the neck volume control. It has an extra-long threaded bushing, so you’ll need to put a nut on it first (we’ll call this the interior nut) and then follow this with a lockwasher (the washer with the teeth). Insert the unit into the guitar and see how far the threaded portion of the pot (the bushing) protrudes through the face of the guitar. On the outside of the guitar you’ll need to install one of the flat washers we provide (or Gibson’s pointer washers if you have them) followed by another nut, so the idea is to adjust the position of the interior nut so that when the exterior washer and nut are installed, you have little or no threads visible above the top of the exterior nut. This will allow you to get the knobs down as close to the face of the guitar as possible.

Do the same thing with the other three pots, one at a time, and without the ToneShaper board installed (so you’ll have more room for your fingers). We’ve included extra nuts and lockwashers, and using these you should be able to adjust each pot so that the knobs will all be as close to the face of the guitar as possible. Some Les Pauls have a consistent wood thickness at all four holes and some don’t, so there’s no guarantee that all four pots will need the same amount of adjustment. Note that for most installations you will not need interior nuts on the other three pots, you’ll be able to stack lockwashers instead to get things properly adjusted. But the nuts are there if you need them.

Once you’ve test-fit each of the pots and know how many washers you’ll need at each location, you can attach the three pots to the circuit board. You’ll see that each pot has a ribbon cable attached that terminates in a gray plastic connector. Each of these connectors is plugged onto one of the 8-pin headers (the little gold pins on the underside of the board). It’s imperative that you not bend the pins when pushing the connector on, so be careful. They’re fairly stout, but you can bend them if you don’t get the pins lined up properly and you apply too much force.

Make sure that you align the connectors as shown in the following illustration, and make sure that you get the right pots plugged into the right headers. If you mix up the pot attachments then the unit won’t work correctly. The illustration shows push/pull pots in the tone positions, which use an 8-conductor cable. The standard tone pots use a 4-conductor cable and are identical to the bridge volume pot, so if you’ve ordered the unit with standard tone pots rather than push/pull, the three pots will be identical and are interchangeable.

Once the unit has the three pots attached, you can insert it into the guitar. Remember that the pot that’s permanently attached to the circuit board is the neck volume pot, so you’ll insert the unit into the guitar as shown in the following illustration.

The installation is easiest if you attach the bridge volume control first, so that you can hold it in place.
with your fingers while you install the washer and nut on the face of the guitar. Tighten the nut securely. Next you can wiggle the other three pots and board into position, making sure to use the correct number of washers you figured out during the test-fitting. If there are pickups installed in the guitar, you’ll need to get the circuit board underneath their leads where the leads enter into the cavity.

In most cases, the guitar’s bridge ground wire enters the cavity just above the neck volume control. In Gibson guitars this is usually a stiff, solid wire. This wire will be connected to the screw-down terminal near the top-right corner of the circuit board. Back the screw out slightly using the screwdriver provided, and insert the wire through the hole. You may find it easier to do this as you’re inserting the circuit board into the guitar, or you can fully install the board in the guitar first and then manipulate the wire into the terminal.

Either way, make sure that the wire doesn’t touch anything on the board, or any of the pots. The permissible exceptions are that it can touch the housing of the neck volume pot, or the edge of the circuit board. It can also touch the top of one of the DIP switches. But it must not touch any other wires or solder joints. The best way to insure against this is to cover it with the included heat shrink tubing. You don’t even need to shrink the tubing, just covering the exposed wire will be sufficient to keep it from causing any mischief.

If you have any other ground wires in the cavity, such as might attach to cavity shielding, these can also be inserted into the screw-down terminal. Up to four wires can be inserted into it. We expect most customers won’t have additional ground wires, and you won’t need to attach anything from our switch or our jack to this point. In any case, once you have any/all ground wires inserted into the terminal, screw it down snugly, but not too tight. You should use the included screwdriver for this; its small barrel will help prevent you from over-torquing. If you over-torque, you might break the solder connection, and then the screw terminal will rotate on the circuit board.

Make sure that all four pots are tightened securely.

**PICKUP SELECTOR SWITCH**

Fishing the switch wires through the wiring channel can be a little frustrating, especially if the pickup leads are already in there. We’ve included a long drinking straw to make this easier. Slide the straw up the channel from inside the control cavity, until you see it exit into the hole where the switch goes. Now insert the switch’s leads into the end of the straw, and push the leads into the wiring channel at the same time that you pull the straw back into the main cavity. This should make it easy to get the switch leads through the wiring channel.

Insert the switch into the hole. Like the pots, the switch has a larger bushing diameter than the switches used on some imported guitars, so if you need to enlarge the hole in the guitar then use the reamer again.

It’s important that the switch be oriented properly, otherwise you’ll select the neck pickup when you want the bridge pickup. Refer to the following illustration, then tighten the switch securely using the included nut.

**JACK**

Attach the jack to your jackplate using the hardware provided. The lockwasher goes on the inside of the jackplate and the flat washer on the outside, underneath the nut. Tighten securely, then insert a 1/4” mono plug into the jack to ensure that it inserts freely. If it does not, try rotating the jackplate (not the jack) 180° and re-attach it, and see if that fixes it. If not, then you’ll need to loosen the jack nut and rotate the jack itself until you can insert the plug smoothly.

**CONNECTIONS**

The pickup leads, plus the switch and jack leads, will now be connected to the terminal block on the board as shown below. Simply depress the plunger as shown, insert the stripped section of the wire, and release the plunger. To ensure a solid connection, verify that the spring contact down inside the terminal block is in direct contact with the wire, not the wire’s insulation.

**Braided Leads**

If your pickups have braided single-conductor wire, such as used by Gibson in the original Les Pauls, then the outer braid will be too large to fit into the terminal block opening. You’ll have to find another way to connect it to ground, and one way is to insert the braid into the screw-down terminal that you inserted the bridge ground into. This is a tight fit, but it will work.

First, you’ll need to separate the outer braid from the inner cloth-insulated conductor. There are different ways to do this, but the easiest way is to use a pick or...
other pointed object to open a hole in the braid 2” to 3” from the end of the wire, and then pull the inner wire through the hole. You’ll find a video on our website where we show one way to do this.

The braided outer sheaths of the two pickups can be inserted into the screw-down connector along with the bridge ground wire, but again, it’s a tight fit. You’ll need to pull the sheaths through your fingers to elongate them and thereby reduce their diameters as much as possible, then cut the ends off cleanly with sharp cutters. With a little perseverance you’ll be able to get both braided sheaths plus the bridge ground wire into the screw-down connector. Like we mentioned before, don’t overtighten the screw. Make sure that the braided portion of the leads doesn’t touch anything it’s not supposed to - cover with heat-shrink tubing if needed.

The inner wire’s cloth insulation will fit perfectly into the slots on the terminal block (you’ll insert them into each pickup’s BLK slot). The key is to strip the wire, rather than push back the insulation (this wire is often referred to as “push back” wire). If you push back the insulation it will bunch up, increasing its diameter and preventing it from fitting down into the slot.

2-Conductor or 4-Conductor + Bare
These leads are easiest to install. Simply strip off some insulation from each of the colored wires and insert them into the terminal block in the appropriate slots.

2-Conductor - Either lead to the BLK slot, the other to the GRN slot. Bare wire to BARE slot.

4-Conductor - Per the label on the ToneShaper. The colors marked are Duncan’s, so if you’re using pickups from a different manufacturer you’ll need to check their color codes and adjust accordingly.

Make sure that the bare wire is not touching anything in the cavity. Cover it with heat-shrink tubing to be safe.

**HOW THE THING WORKS**

The ToneShaper has been designed to be really simple to use. Once installed, you can make changes to its configuration by simply removing the control plate and manipulating some mini switches. The mini switches that are used are large enough for many people to move with their fingernails, but we’ve also included a handy pointed stick that you fingernail-challenged folks can use instead. As you might expect, the mini switches have an OFF side and an ON side:

![ON CTS OFF](image)

These switches are OFF

![ON CTS ON](image)

These switches are ON

This is pretty straightforward, but in the interest of simplicity we’re going to color code as follows:

![ON CTS ON](image)

These switches are ON

![ON CTS ON](image)

Turn these on if you want to

On the following pages we’ll show you how to set the switches for the various options that the ToneShaper offers. It’s important to understand that you must make a selection from each section, and configure the mini-switches accordingly. For instance, you must make a choice between modern or vintage wiring; you must make a choice between 500k or 300k pots; etc. After making a choice from each section, and then configuring the switches appropriately, you’ll be ready to floor it!

**MODERN / VINTAGE WIRING**

This is one of the most popular modding topics amongst Les Paul owners. You can see above that for modern wiring you turn on switch 6 on each of the long switches, and that switch 8 is optional (switch 8 turns on the volume kit, discussed below). For vintage wiring, just turn off switch 6 and turn on switch 7. Simple!

Presumably, most modern Les Pauls come with modern wiring and most vintage Les Paul with vintage wiring. But this has been debated on the Internet, as have most things. Suffice it to say that either way can be used. Guitars with modern wiring experience some treble loss when the volume controls are rolled down, which is what the optional volume kits address. Changing to vintage wiring is another way of addressing the treble loss, but with the consequence that the tone and volume controls become interactive.

Some people don’t mind the treble loss, and modern wiring works for them. Others find that the volume kits do a satisfactory job of addressing the problem, and use modern wiring with the volume kits enabled. And then there are those who don’t like the treble loss, but don’t like the volume kits either, and find that vintage wiring works best for them. With the ToneShaper you can very easily try all three and see what works best for you.
Gibson has typically used 500kΩ pots in their guitars, but they’ve experimented with different values. 300kΩ has been used in some guitars, and like most things, opinions vary as to which is better.

Our position is that guitars have inherent tonalities, and these vary, so what works best in one guitar may not be what works best in another. In fact, you may find that you like 300kΩ on one pickup, and 500kΩ on the other, so we’ve labelled the image above so you’ll know how the switches correlate to the pots. Try them and see what you think! The 500kΩ pots will make your pickups sound brighter than 300kΩ.

If you’ve ordered your ToneShaper with push/pull pots, then you have the option of splitting your humbuckers by pulling up on the tone knobs. You can select which coil you’d like to remain on by choosing between switch 6 or switch 7 as shown above (and you don’t have to set the two pickups the same). With Duncan humbuckers, the black/white wires are the north coil, which is the slug coil. This is the coil that would typically remain on when a Duncan humbucker is split, but you can elect to have the south (screw) coil remain on instead. If you’re using humbuckers with unbalanced coils, this can be beneficial in that you can always choose to have the stronger coil remain on.

There’s another option too: You can elect to have both coils remain on when you pull the knob up, but the two coils will be connected in parallel. With most pickups this will result in a hum-canceling combination, but one that is distinctly different tonally than a traditional humbucker, which has its coils connected in series.
Tone controls use capacitors to reduce treble. The value of the capacitor used is irrelevant when the tone controls are fully clockwise, it’s only when they’re turned counter-clockwise that the capacitors have an effect. The higher the value of the capacitor, the more treble will be rolled away as you turn the tone control.

The value used by Gibson since the birth of the Les Paul has been .022μF. We give you three different capacitors that can be added together to make seven different values. Any of these seven values can be easily selected by turning on the appropriate DIP switches as shown.

THAT'S IT!

Thanks very much for your purchase of our product, we hope it gives you many years of useful service. Enjoy!