THANKS!
...for purchasing your new ToneShaper product. We hope this unit will provide many years of useful service. It has been built with the finest-quality, industry-standard components.

INSTALLATION & CONNECTIONS
Installation of the unit couldn’t be simpler. The unit comes with a 5-way switch that functions as the “brain” of the system, plus a volume control, and either one or two tone controls.

5-WAY VOL T1 T2 (opt)

You’ll probably find it easiest to connect the pickups and jack to the switch before installing the components into the guitar. Use the diagrams on the first few pages of these instructions as a guide.

The wires simply insert into the terminal blocks (the green things), and then you’ll tighten the screws using the included screwdriver. Not too tight though, you don’t want to strip the little screws. Once you’ve tightened the screws, you can gently tug on the wires to make sure they’re held fast. If you cannot easily pull the wires out, then the screws are tight enough. Each slot will easily accommodate two pieces of 22 AWG wire (the gauge that’s typically used in guitars), plus another piece of thinner wire, such as a humbucker drain wire.

We’ve used conventional wiring color codes for the single-coils (black = ground, white = hot), but your pickups might be different, and if so you’ll need to adjust. If you have single-coils with three wires (Lace Sensors, Fender Noiseless), then two wires will connect to the pickup’s coil and one will be a chassis ground (Lace, for instance, uses orange & white for the coil, and green for the chassis ground). With these 3-wire pickups, the two coil wires will connect to the ToneShaper using that pickup’s + and - slots, while the chassis ground will go to any of the three ground slots (marked GD).

We’ve used Duncan’s colors for humbuckers. Some other pickup makers also use Duncan’s colors (Suhr, Lollar), but most do not. If you have another brand of pickups, you’ll need to determine how their colors map to Duncan’s.

Once your pickup and jack connections are made, you can connect the pots to the board. We’ve provided 5-wire connector cables - one for each pot - that you’ll use to attach the pots to the switch. When connecting the cables, make sure you match the numbers as shown, where J2 connects to P2, J3 to P3, and J4 to P4.

The cable ends are polarized, meaning they can only be inserted into their mating connectors one way. They will easily push together when properly aligned, so if you find that they are not pushing together easily, try rotating the cable 180°.

We’ve provided the necessary hardware to mount the components into your guitar, though if your guitar originally came with metric components, then you may need to enlarge the holes where the components mount. The holes for the pots and jack will need to be 3/8" (9.5 mm), while the holes for the switch screws will need to be .138" (3.5 mm).

The unit has three ground slots, which can be used for any grounds (from the bridge, shielding, etc).

DEFINITIONS

VT (Volume | Tone)
Uses the tone control as a master tone, active in all five switch positions.

VTT (Volume | Tone | Tone)
Uses two tone controls - T1 & T2 - which are assignable to specific pickups.

VTB (Volume | Tone | Blend)
Uses the tone control as a master tone, active in all five switch positions.

Blender Wiring
Blender wiring allows you to combine pickups in unconventional ways, by “blending” either the neck or bridge pickup into the signal. The blend control is inactive in the clockwise position. Turning it counter-clockwise in switch positions 1 & 2 blends in the neck pickup, a little or all the way. Likewise, in the 4 & 5 positions, the control blends in the bridge pickup. It is inactive in the 3 position.

Modern/Vintage Wiring
“Modern wiring” and “vintage wiring” are commonly-used terms that indicate the point in the circuit from which a tone control receives its signal. Both are probably misnomers, but we use the terms because they are commonly used on forum sites and so forth. Essentially, guitars with “modern” wiring send signal to the tone control from the input lug of the volume control. That is, the tone control receives the full output...
of the pickup(s), regardless of the volume control's position.

“Vintage” wiring delivers signal to the tone control via the volume control’s output lug, making it interactive with the tone control.

With modern wiring, you will lose treble as you lower the volume control. So as you lower the volume to 5 or 6, a tonal change comes along for the ride. Some players don’t have a problem with the tonal change, while others hate it. It can be pretty effectively dealt with by engaging a treble-bleed network (next section).

Vintage wiring seeks to minimize this tonal shift without the need for treble-bleed networks. The jury is out, so we give you both options, and you can determine which one best fits your needs.

Treble-Bleed Networks

Treble-bleed networks are simple resistor/capacitor networks that can be engaged, when configured for modern wiring, to address the treble roll-off. We give you two, one that uses Fender’s values (680pF/220k) and another that uses Gibson’s (1000pF/150k), and you can try them both and find which you prefer, if either.

Auto-Ranging Pots

Pots in guitars with passive pickups are usually either 250k or 500k. 250k is the value traditionally used by Fender, and 500k is the value traditionally used by Gibson.

It might surprise you to learn that the pot itself affects the overall tonality of the guitar, even when turned all the way up. It does. A higher value pot in the volume position will give the guitar an inherently brighter tone than a pot with a lower value.

In a guitar with only one type of pickups - either single-coils or humbuckers - having the ability to choose between 250k and 500k pots provides one more tonal option for you to play with. While a given Strat with single-coils would traditionally use 250k pots for example, some players might prefer 500k instead. So, experiment!

In a guitar that mixes single-coils and humbuckers, a choice between 250k and 500k would normally need to be made, with some potentially negative tonal consequences as a result. With Auto-Ranging (our term), in certain switch positions, the pot value will change automatically in order to optimize the pot value for a given pickup selection.

EIGHT CONTROL OPTIONS

There are eight control options that can be configured with your ToneShaper:

Option 1: VTT (T1 = Neck, T2 = Middle)
Option 2: VTT (T1 = Neck/Middle, T2 = Bridge)
Option 3: VTT (T1 = Neck, T2 = Middle/Bridge)
Option 4: VTT (T1 = Neck, T2 = Bridge)
Option 5: VTB (Blender - Modern Wiring)
Option 6: VTB (Blender - Vintage Wiring)
Option 7: VT (Vintage Wiring)
Option 8: VT (Modern Wiring)

These options are the same for SSS, HSS, and HSH configurations (you can use the blend functionality with humbuckers, just like with single-coils). However, configuring the DIP switches for SSS configurations is just a little different than for HSS/HSH configurations, so we’ll show you both.

DIP SWITCH SETTINGS

Let’s have a look at the DIP switches. There is one on each component: a 10-position switch on the main board, and 6-position switches on the volume and tone controls (if you have a single tone control, then you’ll ignore the T2 switch in our illustrations).

To make it easier for you to understand the DIP switch settings needed to achieve the eight control options listed above, we’ll use a color-code system for the switches. Use the following color key:

- **ON**
- **OFF**
- **ONE OR MORE**
- **OPTIONAL**

This must be on
This must be off
Turn on at least one of these
Turn this on if desired

Here’s an example:

Per the color key, you’ll see that on the main board - the one attached to the 5-way switch - you would turn on switches 4, 6, and 10. On the VOL board, you would optionally turn on 1, 2, and 4. Likewise, on the tone controls, you would optionally turn on switch 1, but the yellow on the four middle switches would indicate that you must turn on at least one of these yellow switches, or your tone control would not function.

At this point you’re probably wondering what each of the switches actually do, so before we go further, here are the switch mappings for all of the controls, so you can determine which you might want to turn on, and which you might not want to:

Okay, so back to our color codes. You’ll want to follow our suggestions in the following scenarios as...
far as the blue and the black are concerned. If we show it blue, it should be on, and if we show it black, it should be off.

The pink switches are at your discretion. The treble-bleed networks are appropriate if you have the unit set up for modern or blender wiring, but not if you have it set up for vintage wiring, as the point of vintage wiring is to address the treble roll-off without using treble-bleed networks.

As for the capacitors, you need at least one to be on for each tone control, or else it won’t do anything. The capacitor is the thing that determines how much treble goes away (to ground - out of the signal) as you turn the tone knob counter-clockwise. Different capacitor values will roll off more or less of the treble frequencies. A higher cap value will have a more pronounced effect, while a lower value will have a subtler effect.

Fender has used .1μF, .05μF, and .022μF over the years. Gibson has used .022μF with few exceptions.

Because we give you four caps ranging in value from .010μF to .047μF, you can approximate pretty much any capacitance value throughout this range, by turning on more than one cap per tone control. You must turn on at least one, but you can turn on 2, 3, or all 4 if you choose, their values will simply add together. Turning on all four will give you .094μF (.047 + .022 + .015 + .010), which is very close to the .1μF values Fender used in the 1950s.