GET 102 PICKUP TONES WITH OUR T4-SWITCH *(REV E2)*

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Our T4-Switch product ***(REV E2)*** lets you directly control four separate pickup coils with an HH, HSS or SSSS pickup configuration to give you 68 unique pickup tones. If you use a push-pull potentiometer *(e.g., part of our **VT-3 Volume-Tone Control**)*, you can connect the switch portion of the push-pull pot to our T4-Switch.

This lets you put the two inner pickup coils into series to give you 34 *additional* unique pickup tones. This means that you will have a total of **102 pickup tones** on you instrument that contains our T4-Switch.

Now you can directly put all four pickup coils in series to get several incredible *jaw-dropping* **QuadraBucker™** pickup tones that are so "Fat", they are… OBESE! You must use true **4-wire humbucker pickups**.

A. How It Works

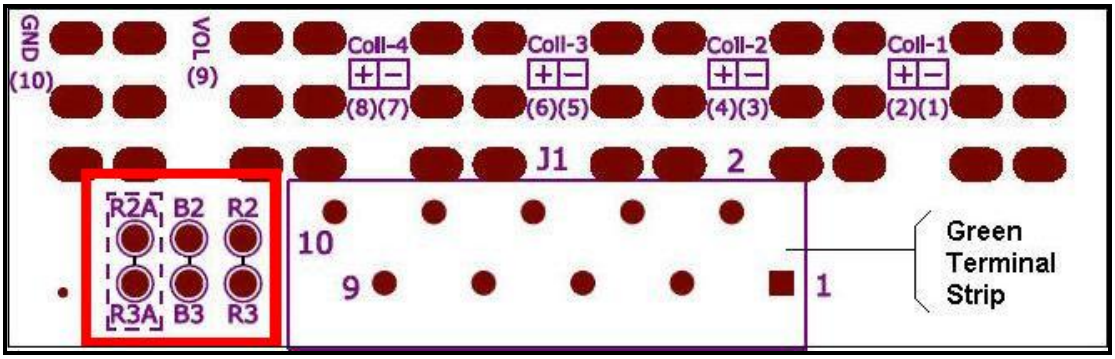
Using the push-pull Tone control *(see our VT-3 Volume-Tone Control product)*, you can electrically put Coil-2 and Coil-3 in series. The push-pull Tone control switching function is on our T4-Switch printed circuit board. With the Tone control shaft IN, pickup Coil-2 and Coil-3 are directly connected to the T4-Switch. Pulling the Tone control shaft OUT puts Coil-2 and Coil-3 into a series circuit to give you 34 additional pickup tones.

Our website's Document Library *(See document # D)* has a worksheet that lets you *map* all the pickup tones.

The following pages identify how to get 102 pickup tones. **Page two** contains the wiring for our new T4-Switch product *(REV E2)*. **Page three and four** describes how to use the T4-Switch. **Page five** includes the additional 34 pickup tone map switch positions (see Document #C for the tone map for the first 68 pickup tone). **Page six** has important information about 4-wire humbucker pickups.

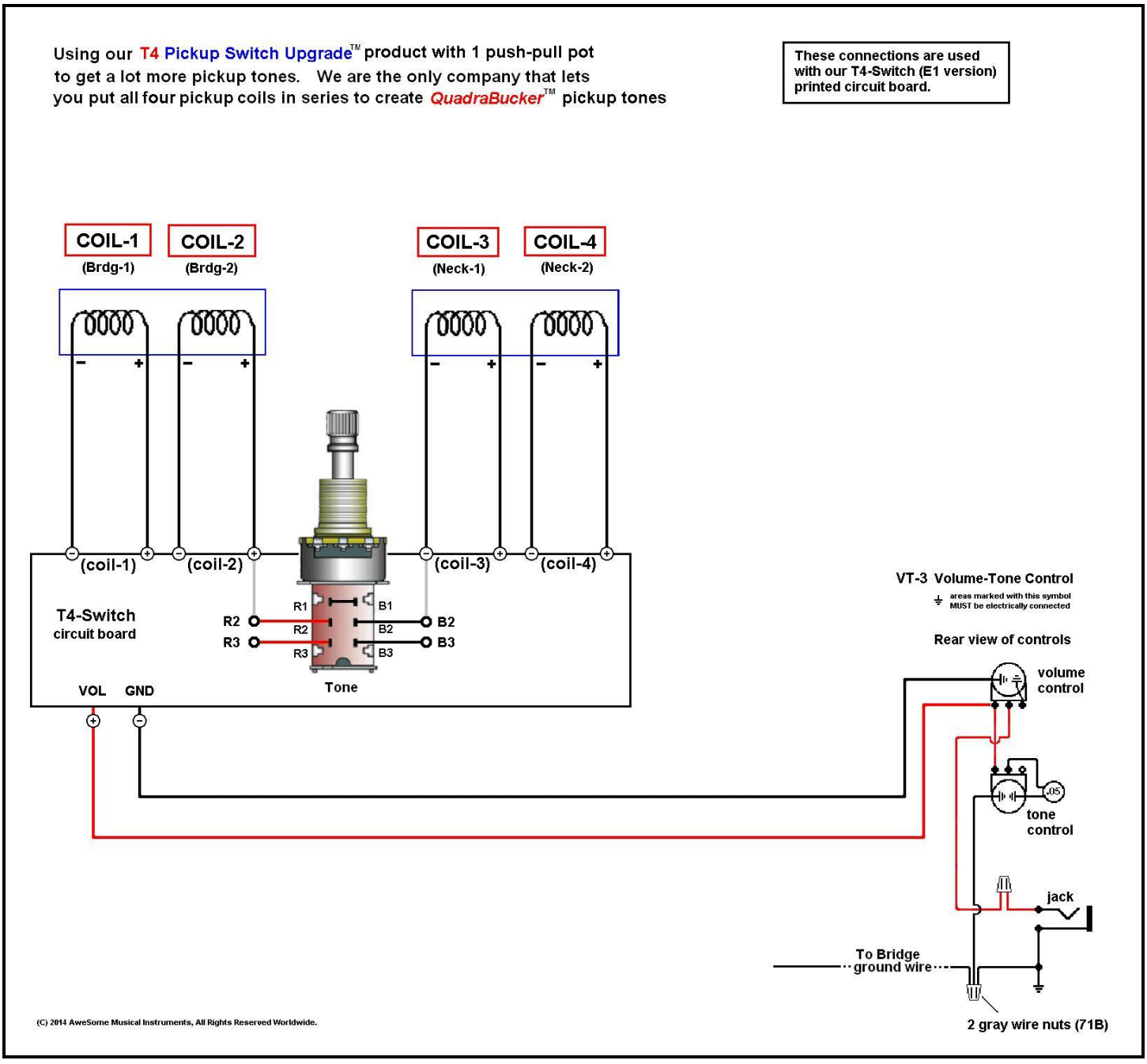
Shown below is the circuit board of our T4-Switch product *(REV E2)*. It has three sets of pads to directly connect the push-pull pots to the circuit board. This simplification lets you connect your two 4-wire humbucker pickups directly to the T4-Switch via the green solderless terminal strip. On the Terminal Strip side, there are narrow circuit board "traces" that connect the pairs of pads highlighted in the red square (e.g., R2-R3, B2-B3, and R2A-R3A) permitting the product to electrically behave as the *"standard"* T4-Switch version.

You can use an Exacto blade to cut *only* the traces between the R2-R3, B2-B3 pads to permit the push-pull pot switch wires to be directly connected to the circuit board putting the push-pull pot's switch "in line" with the pickup signal path. Verify they are completely cut with an ohmmeter. You will measure continuity between the two pads with uncut trace, and infinity/open when the trace between the pads is correctly and completely cut.



T4-Switch Wiring (REV E2) – Using Our VT-3 Volume-Tone Control.

Here is how the push-pull pot is connected to the T4-Switch printed circuit board to produce **QuadraBucker™** pickup tones.



B. HOW YOU USE THE T4-SWITCH

Here are the switches of the T4-Switch product (when mounted) and **laid out from instrument rear to front**:

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(rear)   SW1   S5B   SW2   SW3   S5N   SW4   (front)
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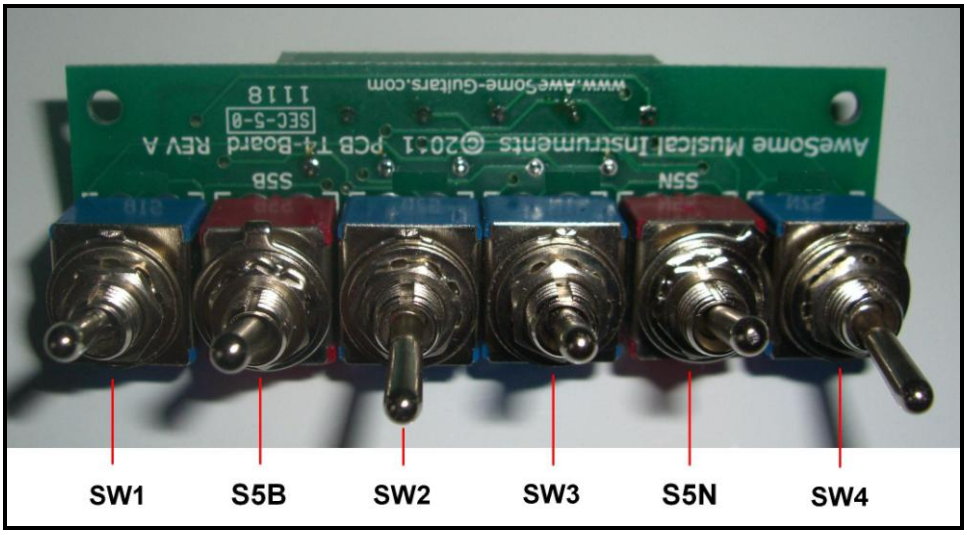

There are really two *"groups"* of switches: (SW1, S5B, SW2) -*and*- (SW3, S5N, SW4)

Here is how the switches are used:

Switches SW1, SW2, SW3 and SW4 are ON-OFF-ON switches used to turn an individual pickup coil Off and On. The middle position of each switch is Off. The down position turns the pickup On (in *normal-phase*) and the Up position turns the pickup On (in *reverse-phase*).

Switches S5B and S5N are ON-ON (a.k.a. ON-NONE-ON) switches that are used to put select pickup coils into a **Series circuit** when in the Up position. When Down, the select pickup coils are in a **Parallel circuit**. Pretty simple, don't you agree?

When switches S5B and S5N are in the Down position, you will get 29 different pickup tones from the various combinations of four pickup coils being Off or On (either in *normal-phase* or in *reverse-phase*) using switches SW1, SW2, SW3 and SW4. These pickup tones are also due to the combination of pickup coils being in a **Parallel circuit**.

The other switches (S5B and S5N) are ON-ON (a.k.a. ON-NONE-ON) switches are used to put select pickup coils into a **Series circuit**. Here are two things you must remember when putting pickup coils into a Series circuit:

First, putting two pickup coils in Series circuit creates a *"Compound"* (i.e., Humbucker) pickup that gives you about 8 to 15 percent More output (think Heavy Metal/Jazz tone).

Second, because the pickup coils are in a Series circuit, BOTH of the affected pickup coils that are in a Series circuit **MUST** be On (either in *normal-phase* or *reverse-phase*). Any non-Series circuit pickup can be either Off or On (either in *normal-phase* or *reverse-phase*).

What Each Switch Controls

Typically, for an instrument with two 4-wire humbucker pickups, pickup coil #1 is the bridge south coil, coil #2 is the bridge north coil. Pickup coil #3 is the neck south coil, while pickup coil #4 is the neck north coil.

If your instrument has one 4-wire humbucker pickup and two single-coil pickups (where the humbucker is in the bridge position), pickup coil #1 is the bridge south coil, coil #2 is the bridge north coil. Pickup coil #3 is the middle coil, while pickup coil #4 is the neck coil.

Switch SW1: Turns on pickup coil #1 (down is *normal-phase*, up is *reverse-phase*, center is Off.)
Switch S5B: Puts both coil #1 and coil #2 into a Series circuit when Up. Both pickup coils MUST be On.
Switch SW2: Turns on pickup coil #2 (down is *normal-phase*, up is *reverse-phase*, center is Off.)

Switch SW3: Turns on pickup coil #3 (down is *normal-phase*, up is *reverse-phase*, center is Off.)
Switch S5N: Puts both coil #3 and coil #4 into a Series circuit when Up. Both pickup coils MUST be On.
Switch SW4: Turns on pickup coil #4 (down is *normal-phase*, up is *reverse-phase*, center is Off.)

This added capability lets you enhance your existing *"palette"* of pure analog *pickup tones* with incredible pickup tones that are so *fat*, they're **obese**. These are amazing pickup tones that let you put three coils in series to produce several **TroikaBucker**™ pickup tones (labeled "**T**"). You can also put all four pickup coils in series to produce several **QuadraBucker**™ pickup tones (labeled "**Q**") – incredible and unique pickup tones that are unavailable on other instruments.

C. Switch Table For The Added Tones

This Switch Table shows the additional pickup tone combinations when using either of our Spanner Switches with our T4-Switch. See document #C on our Document Library for the first 68 pickup tone combinations.

	NECK Control			Tone Pot	BRDG Control			
	Coil4		Coil3		Coil2		Coil1	
##	SW4	S5N	SW3	shaft is	SW2	S5B	SW1	Your Description Of The Pickup Tone
69.			D	**OUT**	D			69. _____
70.			U	**OUT**	D			70. _____
71.	D		D	**OUT**	D			71. _____
72.	U		D	**OUT**	D			72. _____
73.	D	U	D	**OUT**	D			73. T_____
74.	U	U	D	**OUT**	D			74. T_____
75.	D		D	**OUT**	U			75. _____
76.	U		D	**OUT**	U			76. _____
77.	D	U	D	**OUT**	U			77. T_____
78.	U	U	D	**OUT**	U			78. T_____
79.			D	**OUT**	D		D	79. _____
80.			U	**OUT**	D		D	80. _____
81.	D		D	**OUT**	D		D	81. _____
82.	U		D	**OUT**	D		D	82. _____
83.	D	U	D	**OUT**	D		D	83. _____
84.	U	U	D	**OUT**	D		D	84. _____
85.			D	**OUT**	U		D	85. _____
86.			U	**OUT**	U		D	86. _____
87.	D		D	**OUT**	U		D	87. _____
88.	U		D	**OUT**	U		D	88. _____
89.	D	U	D	**OUT**	U		D	89. _____
90.	U	U	D	**OUT**	U		D	90. _____
91.			D	**OUT**	D	U	D	91. _____
92.			U	**OUT**	D	U	D	92. _____
93.	D		D	**OUT**	D	U	D	93. _____
94.	U		D	**OUT**	D	U	D	94. _____
95.	D	U	D	**OUT**	D	U	D	95. Q_____
96.	U	U	D	**OUT**	D	U	D	96. Q_____
97.			D	**OUT**	U	U	D	97. T_____
98.			U	**OUT**	U	U	D	98. T_____
99.	D		D	**OUT**	U	U	D	99. _____
100.	U		D	**OUT**	U	U	D	100. _____
101.	D	U	D	**OUT**	U	U	D	101. Q_____
102.	U	U	D	**OUT**	U	U	D	102. Q_____

Q = QuadraBucker pickup tone
(all four coils in series)
T = TroikaBucker pickup tone
(three coils in series)

D. IMPORTANT Notes About 4-Wire Humbucker Pickups

Most 4-wire humbucker pickups are made to be ***S****ymmetrical*. This means that the two coils of the humbucker pickup package are identical *(i.e., same impedance/resistance).* Although not necessarily bad in itself, when each of the two coils are separately controlled, the lack of versatility and performance becomes clear. Turn on one of the coils by itself and get a pickup tone. Separately turn on the other coil by itself and get the exact same pickup tone. This design is an obstacle that prevents you from enjoying maximum pickup tone versatility.

When we introduced our T4-Switch in 2011, it became clear that this redudant tone from each separate identical coil of the ***S****ymmetrical* 4-wire humbucker pickup was disappointing because it severely limited the true benefit and pickup tone versatility that our new T4-Switch product was capable of providing.

To address this major shortcoming of the *Symmetric* 4-wire humbucker pickups, we pioneered the development of ***A****symmetrical* 4-wire humbucker pickups that would give players access to a Grand Canyon Wide range of unique pickup tones.

Our criteria was to design the specifications for the ***A****symmetrical* 4-wire humbucker pickups. Further, the characteristics of the Bridge pickup needed to be different than that of the Neck pickup. Each of the two coils of the newly designed ***A****symmetrical* 4-wire humbucker pickup set have a *differential* of about 15 percent. This means that each coil when separately turned on will produce a noticeably different pickup tone.

We also wanted the Bridge and Neck pickups to have completely different impedance/resistance characteristics to maximize pickup tone versatility with the combinations of these four dissimilar pickup coils.

We spent several months collaborating with the owner of **heartlandtone.com** to assist us with creating truly versatile ***A****symmetrical* 4-wire humbucker pickups that harnessed the incredible versatility of our T4-Switch product and produced the maximum in tone versatility.

This genius pickup manufacturer and owner of **heartlandtone.com** is both a guitar player and custom pickup maker who is expert in technical knowledge of creating pickups and uses expensive impedance measuring equipment to scientifically and precisely quantify the pickup coil characteristics – instead of resorting to using deliberately misleading words to describe what you are getting.

Using our switch products, he was able to understand what our incredible products provided. More important, he also clearly knew what we wanted with this new ***A****symmetrical* 4-wire humbucker pickup configuration.

The result of this collaboration is the new the true *"golden mean"* of ***A****symmetrical* 4-wire humbucker pickups.

If your HSS or HH instrument has Symmetric 4-wire humbucker pickups and you want to use our T4-Switch product, consider replacing them with new ***A****symmetrical* 4-wire humbucker pickups from **heartlandtone.com**. Tell them you will be using the AweSome T4-Switch product.

Visit our website's (http://www.AweSome-Guitars.com) *Document Library* for more useful wiring tips.

We have an extensive product catalog of upgrade products to help you *transform your dreams into reality*.