

Coil-Cut Switches for Humbuckers

Overview

The idea behind a coil-cut switch for a humbucker pickup is to add an alternate sound for that pickup. While it is supposed to offer "strat-like sounds", there really aren't that many humbuckers which have a decent sound when split. While I would never suggest that someone drill a hole in a Les Paul to add a coil-cut switch, if the hole is already there, I have a few suggestions to improve the sounds.

The Details

As for the technical details, the typical coil-cut switch would ground the middle tap of a humbucker, thus eliminating the coil that normally connects to ground (see Figure 1). Bill Lawrence recommended routing the middle tap to ground through a small capacitor such as .022uf; the capacitor routes the higher frequencies to ground more efficiently than the lower frequencies, which are instead routed to ground through the second coil. With this arrangement, some of the hum-cancelling effects are retained as is some of the low frequency response. While the individual pickups may sound better through the coil-cut caps instead of a direct wire to ground, the blend positions don't work that well. For the Bill Lawrence design, I would generally use a DPDT mini-toggle switch with a center off position (see Figure 2). When switched one direction, the middle taps would be routed to directly to ground; when switched the other direction, the taps would be routed to ground through a capacitor. The center-off position would be the full-humbucker mode. Different pickups may work best with caps of different values; I suggest that you try out different caps using test clips to the middle tap lead before soldering up the switch.

Most coil-cut circuits do not offer a hum-cancelling effect in the blend position, and the hum is actually louder with the two pickups together. To be hum-cancelling the coils need to be of Reverse Winding and Reverse Polarity with respect to each other. In a typical PAF-style humbucker, as you follow the path of the signal from the pot or selector switch to ground, it goes through one coil in a CW direction and through the other in a CCW direction. The single magnet causes the pole pieces in one coil to be North on top and the other coil to be South on top. To combine one coil from each pickup in a hum-cancelling parallel linkage, add the 1st coil of one pickup to the 2nd coil of the other pickup. A traditional double-pole coil-cut switch does not provide this combination as it selects the 1st coil in both pickups. (By 1st coil, I am referring to the coil that is normally closest to the hot signal rather than the ground in the full-humbucker mode.) To achieve a hum-cancelling effect, you need to wire up a "split-coil" switch as described in the following section.

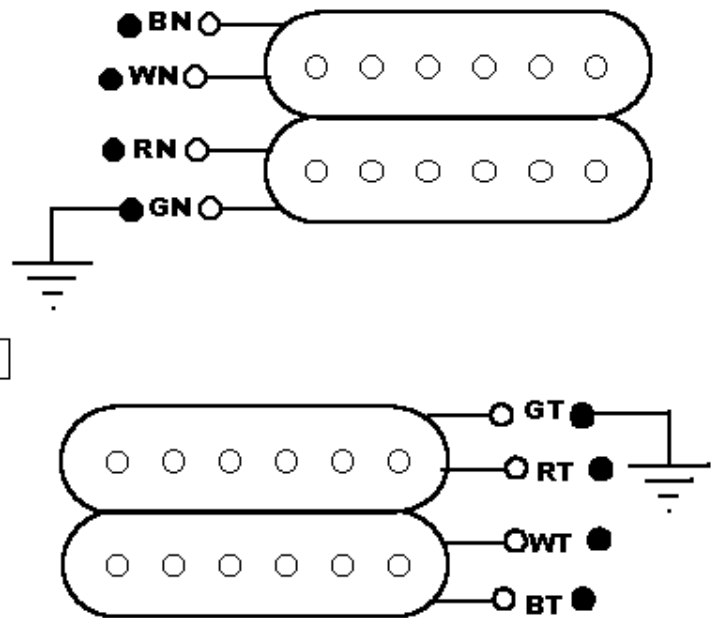
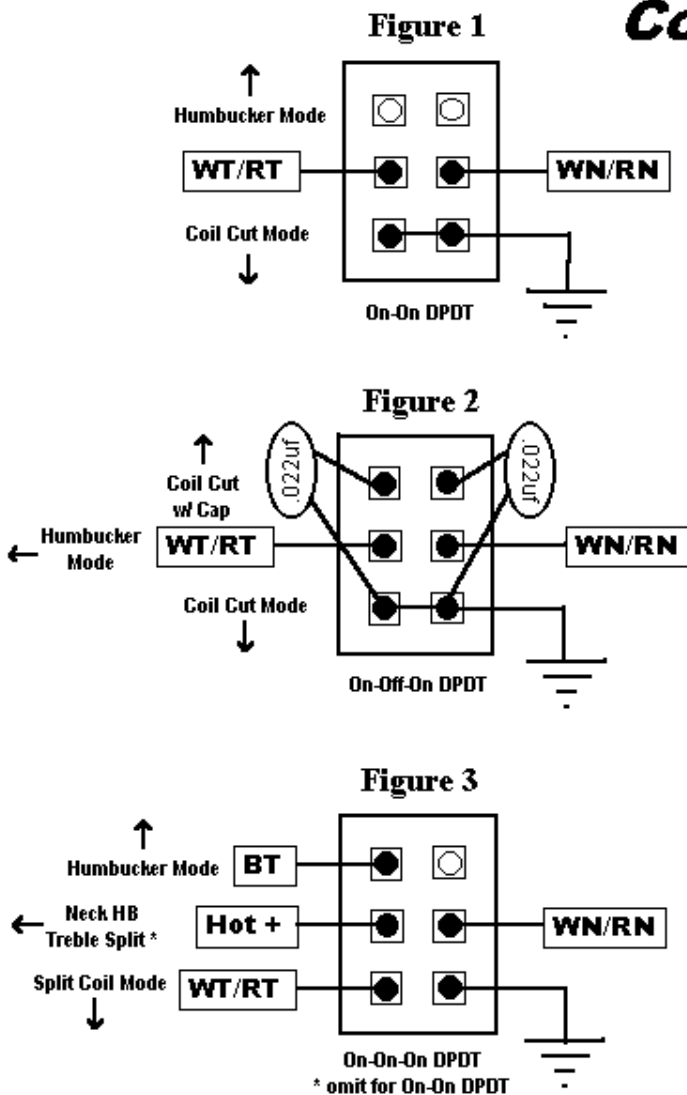
The Split Coil Switch

A "split-coil" switch consists of one pole wired as usual (with the middle tap of one pickup switched to ground for the split-coil mode) and the other pole wired to switch the hot signal from the normal output of the pickup to the middle tap of that pickup for split-coil mode (see Figure 3). I'd recommend testing out the different combinations of single coils from each humbucker using test clips to determine how to wire up the split-coil switch. I personally recommend the PRS method of selecting the "inner coils" or "outer coils"; to do this with a matched set of pickups requires you to reverse the magnet and invert the leads from one of the pickups. On a PAF-style humbucker, remove the screws holding it together to flip the magnet 180 degrees; you may want to confirm that the polarity was indeed reversed by using a small bar magnet. Incidentally, if a special on-on-on DPDT mini-toggle is used in Figure 3 (instead of a normal on-on switch) the middle position will allow the split coil mode of the bridge pickup to be blended with the full humbucker mode of the neck pickup for a third blend sound.

The Wiring Diagrams:

Coil-Cut Switch Options

Designed by Steve Ahola 1997



Note: Pickup color codes indicated are for Seymour Duncan pickups. Switches are viewed from rear of guitar.

To Translate SD Color Codes:

[colorcod.pdf](#)

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To convert color codes for other brand pickups:

(adapted from Stewart-MacDonald's web site)

[A] ___()))))))))))) ___ [B]

[D] ___())))))))))) ___ [C]

	A	B	C	D
Seymour Duncan	Black	White	Red	Green
DiMarzio	Red	Green	White	Black
Gibson	Black	Green	White	Red
PRS Neck	White	Red >>>	<<< Red	Black
PRS Bridge	Black	Red >>>	<<< Red	White
Lawrence	Black	Green	White	Red
Schaller	Green	White	Brown	Yellow
Jackson	Green	White	Red	Black
Anderson	Red	Green	White	Black

Series/Out of Phase [Standard HB Linkage]*

A -> Hot(+); B <--> C; D -> Ground

Series/In Phase [Non-Humbucking]

A -> Hot(+); B <--> D; C -> Ground

Parallel/Out-of-Phase ["Dual Sound" Linkage]**

A & C -> Hot(+); B & D -> Ground

Parallel/In Phase [Non-Humbucking]

A & D -> Hot(+); B & C -> Ground

* Normal humbucker wiring for full sound.

** Alt. humbucking wiring for a thinner sound.