

# Application Note

## Bourns® Model PDB183-GTR Guitar Potentiometer with Push-Pull Switch Used for Split-Coil Pickup Switching



Electric guitar manufacturing is a multi-billion dollar industry with major manufacturers established worldwide. From the introduction of the first mass-produced electric guitar in 1950, guitarists have been mesmerized with advances in technology and the wide array of after-market parts commercially available for guitar upgrades. Specialty products such as Bourns® Model PDB183-GTR Guitar Potentiometer with Push-Pull Switch allow the guitarist multiple functions utilizing a single control such as split-coil switching for humbucking (double-pole) pickups or stacked single-coil pickups, active electronics activation, and pickup phase switching. This application note addresses utilization of the PDB183-GTR to enable split-coil pickup switching in electric guitar humbucking pickups.

### PDB183-GTR Guitar Potentiometer with Push-Pull Switch

Bourns® Model PDB183-GTR Guitar Potentiometer with Push-Pull Switch is designed to allow the guitarist switching capability and volume or tone controls with a single 18 mm package size potentiometer. The potentiometer is designed with a single shaft that is used to activate the Double-Pole, Double-Throw (DPDT) switch and to adjust the potentiometer. The DPDT switch can be wired for various switch functions. Figure 1 shows all the possible switch configurations that can be wired.

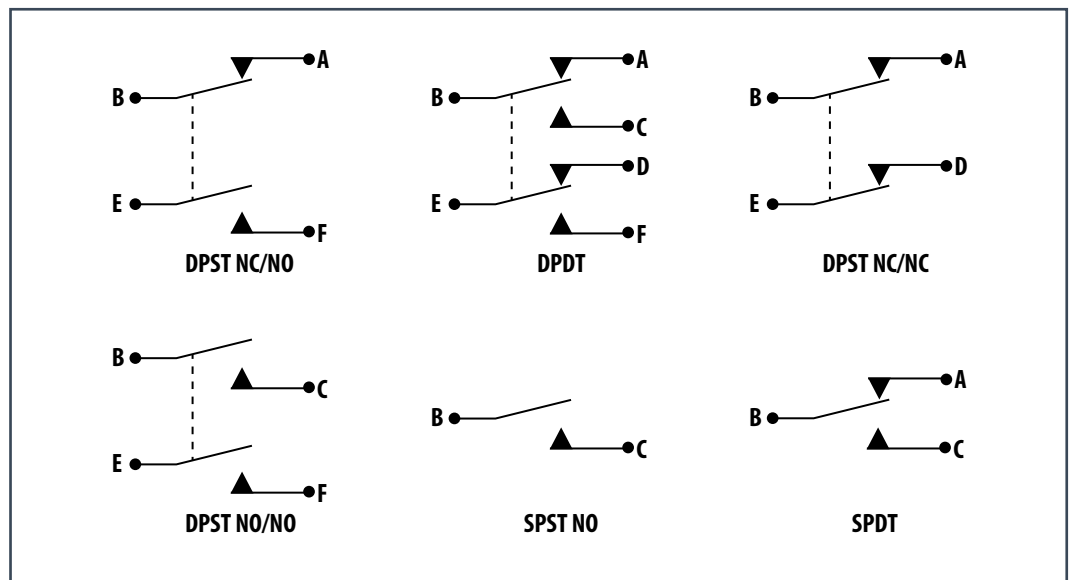
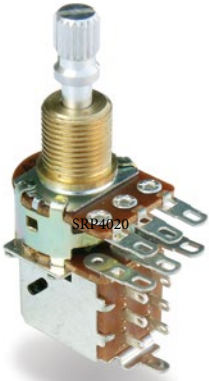


Figure 1 | Possible Switch Configurations



PDB183-GTR

## Split-Coil Switching for Humbucking Pickups

There are several ways to wire up the Bourns® Model PDB183-GTR Guitar Potentiometer with Push-Pull Switch to activate the split-coil function. Figure 2 shows a standard wiring diagram for guitars with two humbucking pickups, two volume controls, one master tone control, and a 3-position switch on-board.

The master tone control is removed and replaced by a PDB183-GTR 500 kΩ potentiometer. The potentiometer gets wired up as the original potentiometer was wired. The switch will allow the guitar player to change from a humbucking pickup to a single-coil pickup by grounding one of the coils on each pickup.

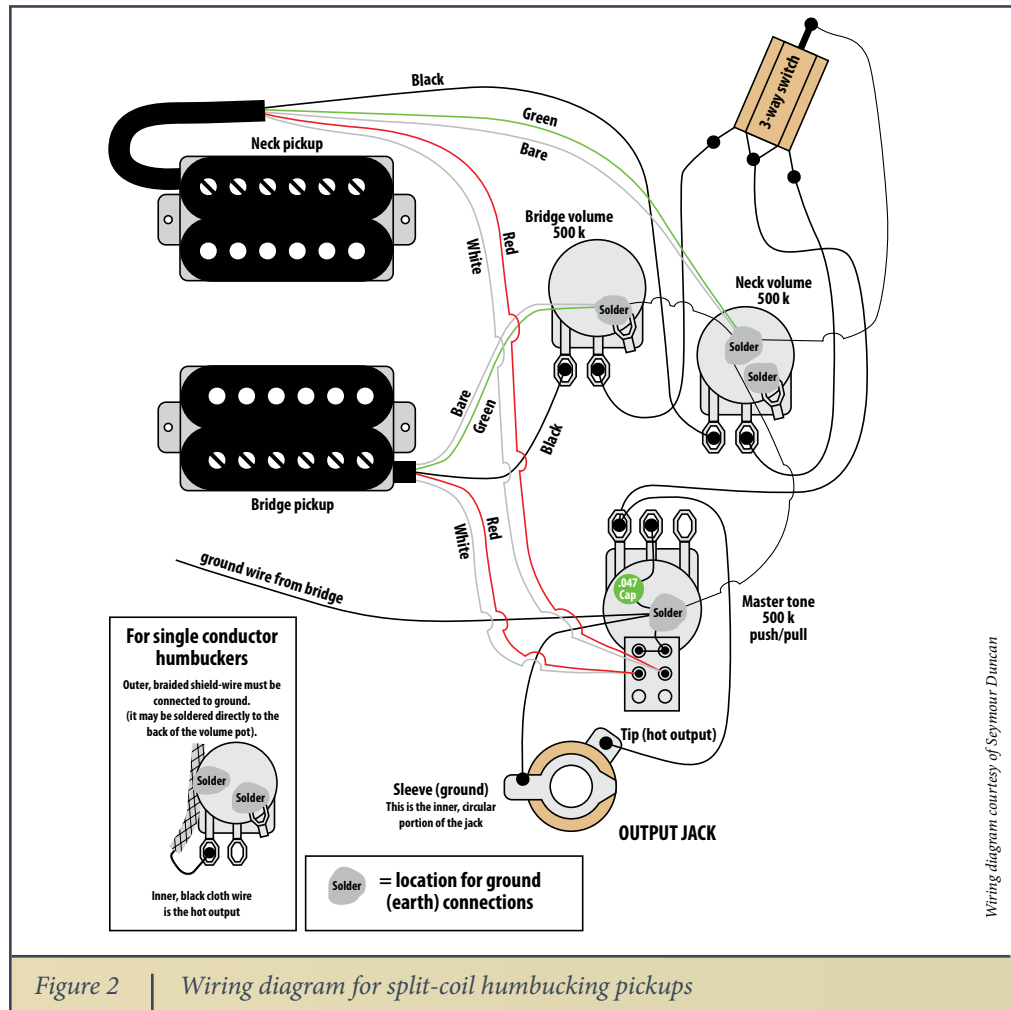


Figure 2 | Wiring diagram for split-coil humbucking pickups

By following the modifications described in figure 2, the switch will function as follows:

- In the pushed (normal) position, the switch is open and the humbucking pickups function and sound normal.
- In the pulled (extended) position, the switch is closed and grounds one coil on each humbucking pickup, converting the double-pole pickups into single-pole pickups. This switch position gives the guitar a new set of bright tones.



PDB183-GTR

## Other Bourns® Guitar Potentiometers Available

Bourns® Sensors and Controls product line now offers a full line of guitar potentiometers including the following:

- Model 82 vintage guitar potentiometer
- Model 95 premium guitar potentiometer
- PDB241-GTR Series standard 24 mm guitar potentiometer
- PDA241-HRT Series 24 mm guitar potentiometer with high torque
- PDB181-GTR Series 18 mm mini-guitar potentiometer
- PDB182-GTRB Series 18 mm guitar blend-balance potentiometer

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