

# Fuzz Box for Swingers

*Fuzz your guitar and you'll have the biggest, roughest sound on the scene.*

By HERB FRIEDMAN

ONCE upon a time just a plain old electric guitar could be the center of attraction at a musical happening. But a straight guitar wasn't enough. Soon reverb was added, some tremolo and finally a vibrato tailpiece. This still didn't do it. The latest extra which has been added to electric guitars is fuzz—a deliberate distortion which is added to simulate the sound of a sax.

All it takes to add fuzz to your electric guitar is our fuzz box. You connect it between the guitar output and the amplifier input to generate distortion—plain, simple distortion.

The fuzz box gives you full-range fuzz. Crank fuzz control R2 open just a little and you begin to get a real rough sound. Add a little more and with some slick fingering your guitar will sound like a bass or baritone sax. If you crank the control wide open, you'll drown out just about everything with noise.

The difference between our fuzz box and commercial units is that ours doesn't produce the distortion at its input. The first amplifier stage, Q1, operates at low distortion. Amplifier Q2 also operates at low distortion, but by overdriving its base it produces almost symmetrical clipping. The greater the input signal to Q2 the greater the clipping, hence, the greater the fuzz. If R2 is almost wide open and Q1 is also overdriven by the signal from the guitar, the effect is very severe distortion—almost all noise.

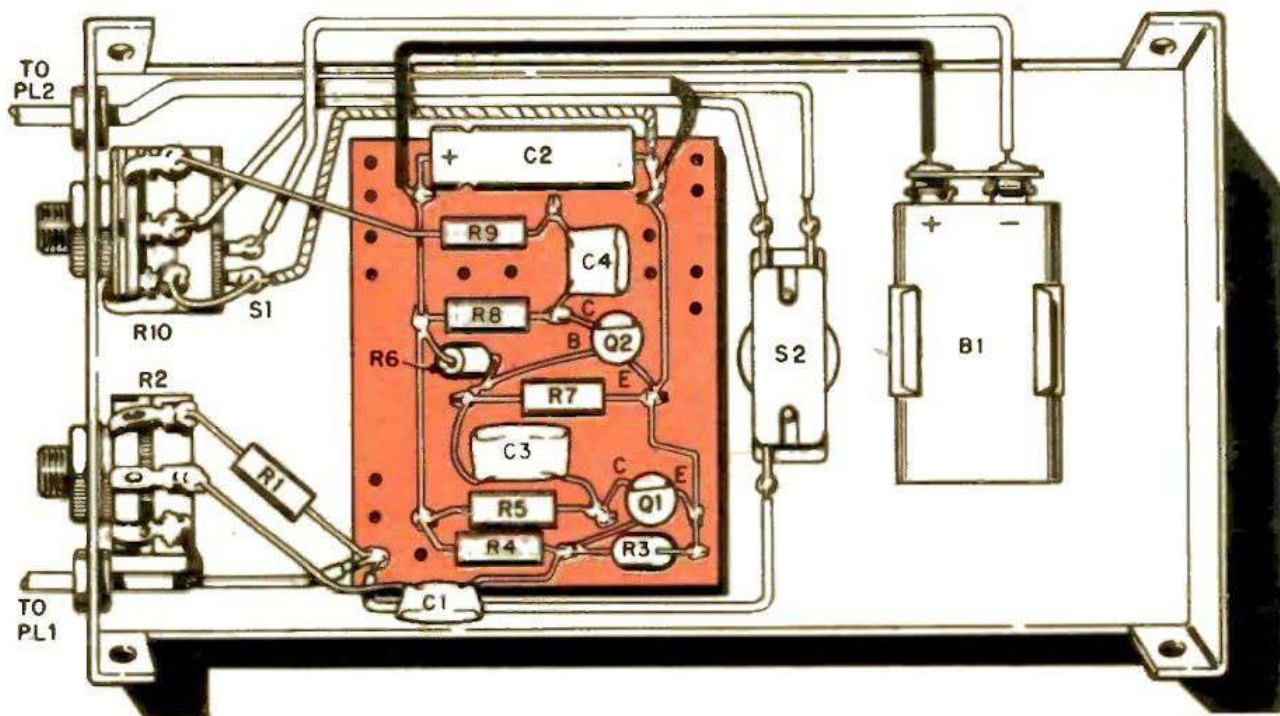
Bypass switch S2 routes the guitar's output signal around the fuzz circuits when you want normal guitar sound. Volume control R10 allows the fuzz-box output level to be made the same as the guitar's output level so when you turn the fuzz on there won't be big volume-level changes.

This allows you to both key the fuzz in and out to change the fuzz quality during a solo—with no break to reset the controls.

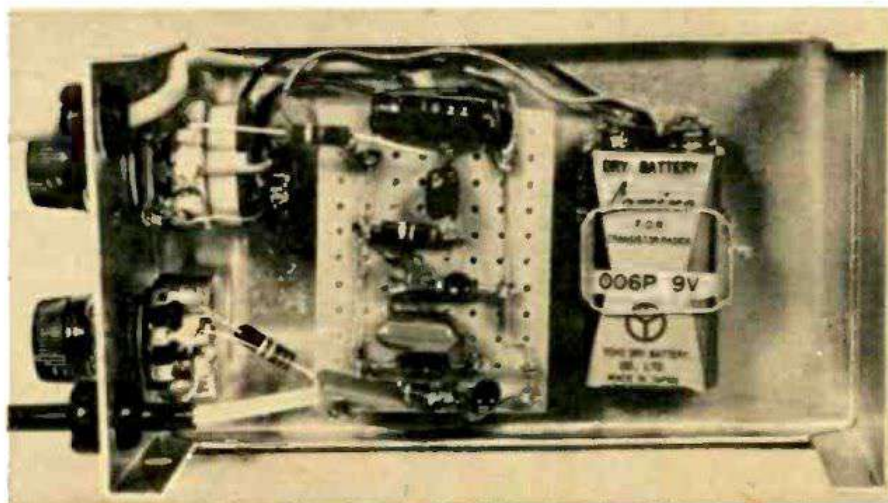
Although the fuzz is obtained primarily by



Our model has cables which plug into your guitar and amplifier. Step on push-button switch on top and you add fuzz; step again and you remove it.



In pictorial at top we have shown push-button switch to right of circuit board for clarity. Actually, it is under board and board is cemented to back of it. Wiring and parts placement is not critical and unit may be built in whatever cabinet or box is available.



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overdriving Q2, it is possible to control the effect by adjusting the guitar's volume control.

### Construction

The fuzz box is built in the main section of a  $5\frac{1}{4} \times 3 \times 2\frac{1}{8}$ -in. Minibox. Because the battery will have to be changed after about 50 hours (100 hours if the batteries are alkaline or mercury), use a Bud type CU-2106A cabinet because its cover snaps in place.

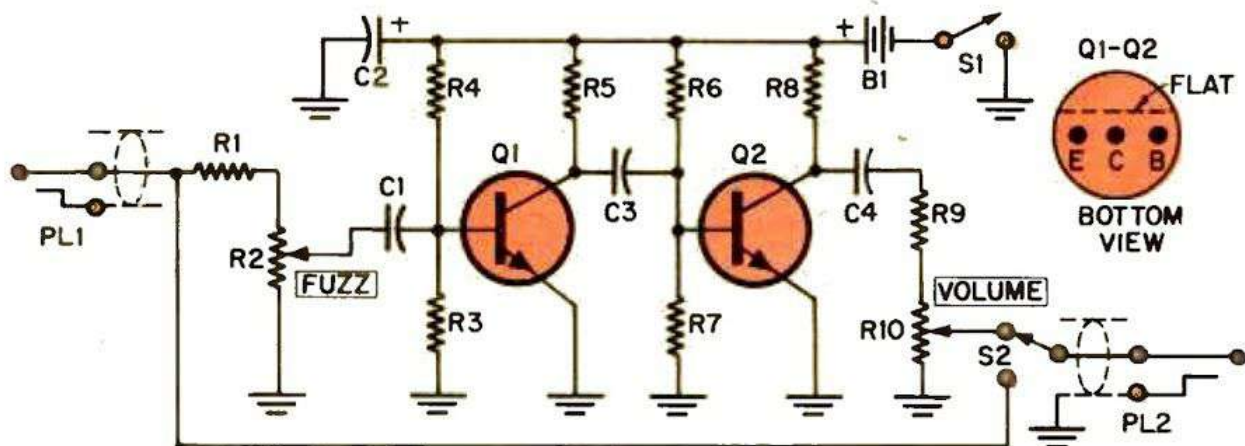
The layout is not critical but the component values are. With the exception of C1, C3 and C4, do not make substitutions. Capacitors C1 and C3 can be either .2 or .25  $\mu\text{f}$ —whichever is easier to obtain. The .05  $\mu\text{f}$  value for C4 will generally be adequate,

but for a little more bass you can use the same value as for C1 and C3, though the larger value for C4 might result in a little crowding of the components.

Bypass switch S2 is a SPDT push-push type. The connections change and remain that way each time the button is pushed. (They remain that way after the button is released.) Do not confuse this switch with a momentary-contact type, which flips the connections back as soon as the button is released.

The input and output can be standard phone jacks or permanently-attached cables as shown. If you use cables, fasten them in place with a cord clamp or tie a knot in them and pass them through rubber-grommetted holes.

Most of parts are mounted on a  $2\frac{1}{4} \times$



High signal level from Q1 will overdrive Q2, which clips the signal symmetrically and produces distortion.

#### PARTS LIST

- |   |  |
|---|--|
| B1—9 V battery  | R10—50,000 ohm, audio-taper potentiometer with SPST switch   |
| Capacitors: 15 V or higher                                    | S1—SPST switch (on R10)  |
| C1,C3—.1 $\mu$ f ceramic disc                                 | S2—SPDT push-push switch (Carling 112P or equiv.)  |
| C2—50 $\mu$ f electrolytic                                    | Misc.—5 $\frac{1}{4}$ x 3 x 2 $\frac{1}{8}$ -in. Minibox, perforated board, flea clips   |
| PL1,PL2—Phone plug  | The Carling 112P switch is available for \$2 plus 40¢ postage and handling, or a complete set of parts (except misc.) is available for \$8.50 plus 50¢ postage and handling from Tridac Electronics Corp., P.O. Box 313, Aldon Manor Br., Elmont, N.Y. 11003. No foreign orders. |
| Q1—2N3391 transistor (GE)                                     |  |
| Q2—2N3392 transistor (GE)                                     |  |
| Resistors: $\frac{1}{2}$ watt, 10% unless otherwise indicated |  |
| R1—22,000 ohms  |  |
| R2—50,000 ohm, audio-taper potentiometer                      |  |
| R3,R7,R8—10,000 ohms  | R4,R6—150,000 ohms   |
| R5—6,800 ohms   | R9—1 megohm  |

1 $\frac{3}{4}$ -in. piece of perforated board. Vector T28 terminals can be used as tie points. Any component shown with both leads on the perforated board is part of the subassembly. However, do not install capacitor C2 until all other wiring is completed. Connect resistors R1, R9 and capacitor C1 after the board is installed.

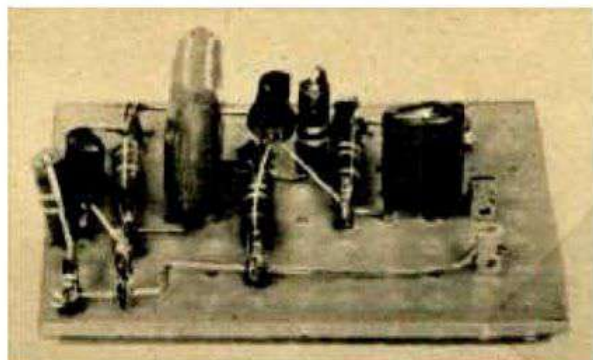
The board has no mounting screws: it is cemented to the back of S2 with either silicon rubber adhesive or a strip of two-sided

picture-frame adhesive. Battery B1 can be mounted in a holder or a U-clamp as shown.

#### Using The Fuzz Box

Connect PL1 to the guitar and connect PL2 to the amplifier's input. Turn on power. Press S2 once or twice to get the guitar to feed the amplifier directly. Set the guitar's volume control(s) to the normal position and adjust the amplifier for the usual level. Set R2 to mid-position. Turn on the fuzz with S2, and then while playing, adjust R10 until the fuzz level is nearly the same as the level without the fuzz. Press S2 in and out to switch from normal to fuzz while setting R10. Now adjust R2 for the desired amount of fuzz; it may be necessary to reset R10's volume setting.

As you play you can increase or decrease the fuzz by adjusting the guitar's volume control. In effect, the guitar's volume control becomes a vernier for R2. Careful adjustment of the guitar's volume control should allow you to almost drop the fuzz out entirely, or increase it till the sound is shattering noise.



Wiring is tight on 2 $\frac{1}{4}$  x 1 $\frac{3}{4}$ -in. circuit board so wherever possible, mount parts standing up. Input is at the left and the output is at the right.