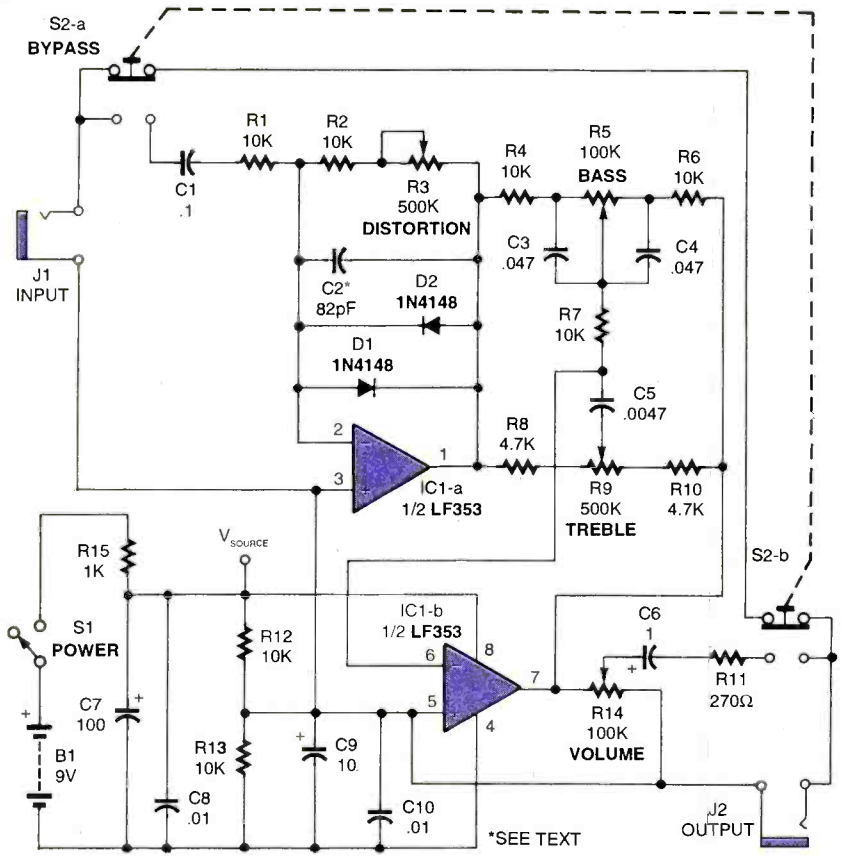

Fig. 2. Shown here is a schematic diagram of the Guitar Distortion Pedal, which also features a bypass switch, along with independent bass and treble controls.

by a bipolar supply. To ensure proper operation using a single-ended power supply, R12 and R13 are used to simulate a null condition equal to half the supply voltage, which is applied to the non-inverting inputs of IC1-a and IC1-b. Decoupling of the power supply is handled by capacitors C7 and C8.

The circuit is designed to be powered from a 9-volt battery: AC adapters are not recommend as a power source because they can introduce noise and hum to the output signal.

Construction. The Guitar Distortion Pedal was assembled on a printed-circuit board, measuring 3 1/2 by 2 inches. A full-scale template of the author's printed-circuit foil pattern is shown in Fig. 3. That pattern can be lifted or copied from the page and used to etch your own printed-circuit board. Once you've etched the board and obtained all of the parts listed in the Parts List, construction can begin.

Assemble the circuit's printed-circuit board guided by the parts-placement diagram shown in Fig. 4. Begin construction by installing all of the resistors, excluding the potentiometers. Follow up by installing the diodes and capacitors, making sure that all of the electrolytic capacitors and the diodes are installed with the proper polarity. Next install a socket in the position where IC1 is indicated. Socketing the IC helps to prevent damage to the IC due to excessive heat (normally caused by sustained lead contact with the soldering iron). **Note:** All components for this project, except for the potentiometers, the jacks, and the switches, mount to the printed-circuit board.

Once the board-mounted components have been soldered in place, do a quick check of the board, looking for and correcting any construction errors (such as misoriented or misplaced components, cold solder joints, solder bridges, *etc.*) as they are encountered. If no errors are found or those that were discovered have been corrected, it's time to concentrate our attention on the off-board mounted components.

Begin this phase of construction by connecting short lengths of hook-up wire to the board for all of the off-board components, except R3, making sure that all wiring to the off-board components is long enough to reach from the board to the device's off-board mounting position. To prevent hum pick up, it's strongly recommended that potentiometer R3 be connected to the board through a length of two-conductor, shielded, microphone cable, as outlined in Fig. 5.

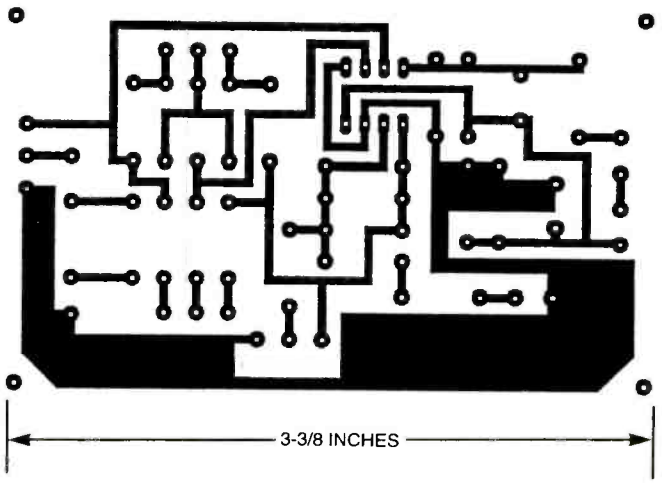

Fig. 3. This full-scale template of the Guitar Distortion Pedal's printed-circuit foil, measuring 3 1/2 by 2 inches, can be lifted or copied from the page and used to etch your printed-circuit board.