

BIG BOOST

This inline preamp puts more punch in your mike

BY HERB FRIEDMAN



WHEN THE VOCALIST can't make it over the bass player, or the lead guitar gets buried behind the rhythm section, or the audience can't tell the keyboard player is really tickling the ivories, that's the time you need a big boost in preamplification between the performers and the amplifiers. And that's just what you'll get from Big Boost, a self-contained mike/guitar/keyboard preamp you can plug directly into the amp, or into the mike or instrument itself.

Big Features. Though the Big Boost is a simple one-transistor project, it has several features specifically intended for rock or dance band use, or just for straight vocal amplification. First off, the Big Boost contains its own battery power supply, a standard 9-volt transistor radio battery operating at only 1 mA drain. Next, it is virtually overload immune; whether driven by a mike or the signal from an electric guitar pickup (about 0.1-volt) the output signal is

not driven into clipping. As for gain, it's a whopping 25 dB, almost "ruler flat" from 100 Hz to about 20kHz. If you need extra bass for a keyboard, simply change C1 to 0.1- μ f. Finally, the whole device is assembled in a palm-sized metal cabinet, and using a Switchcraft phone plug-to-phone plug adaptor, you can plug the Big Boost directly into an amplifier input. Or, because it's also unusually light, you can plug the preamp into the guitar or keyboard so the volume control is directly at the instrument.

Assembly. The unit shown in the photographs was assembled inside of a 2 $\frac{3}{4}$ by 2 $\frac{1}{8}$ by 1 $\frac{5}{8}$ -inch Mini-Box. Admittedly, it's a tight fit, but it can be done if input and output phone jacks J1 and J2 are installed $\frac{1}{8}$ -inch off-center on each end (make certain they are offset to the same side). This should leave just enough clearance for battery B1 on one side. Rotate J1 and J2, and bend their lugs if necessary, until you are certain the battery will fit with the Mini-Box's cover in place.

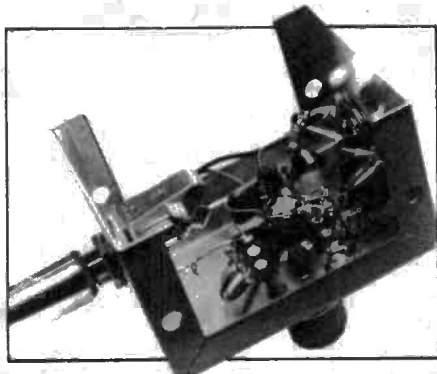
Potentiometer R5 is the volume control, and the miniature type specified in the parts list must be used if you want to get everything in a miniature cabinet. You must be certain R5 will not interfere with insertion of plugs into J1 and J2. It might appear that there's lots of room, but there really isn't. To avoid problems, it's best to insert a dummy plug into both J1 and J2 while marking R5's mounting spot.

R1 is supplied with a DPDT switch, S1a and S1b. Take note that some types have only two wire lugs for each switch

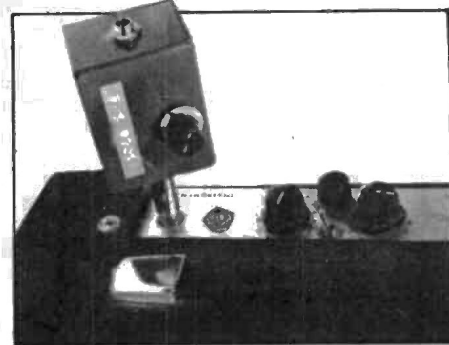
section, the third connection being a rivet through which the builder sticks the component lead before soldering. Don't think something is wrong with the potentiometer because each switch section has only two lugs. Remember, the third connection for each switch is a solder-rivet.

No terminal strip is needed for assembly. All components are self-supported by simply twisting them together and soldering. If you keep the connecting leads as short as possible, the assembly will be sufficiently rigid to take the most rugged handling without shorts or "sound dropouts." It will all squeeze in nicely if the resistors used are $\frac{1}{4}$ -watt units, and the capacitors are the miniature mylar printed circuit type (both leads from the same end) available from Radio Shack.

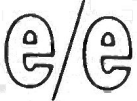
As with the mounting of R5, double-check that inserting a plug into J1 or J2 does not touch any wire or compon-



Use the jacks and volume control leads to wire up your amp point-to-point. Parts layout is not critical with this project.



Use of the double male phone plug allows placement of the preamp at the amp's control head or right at mike stand.



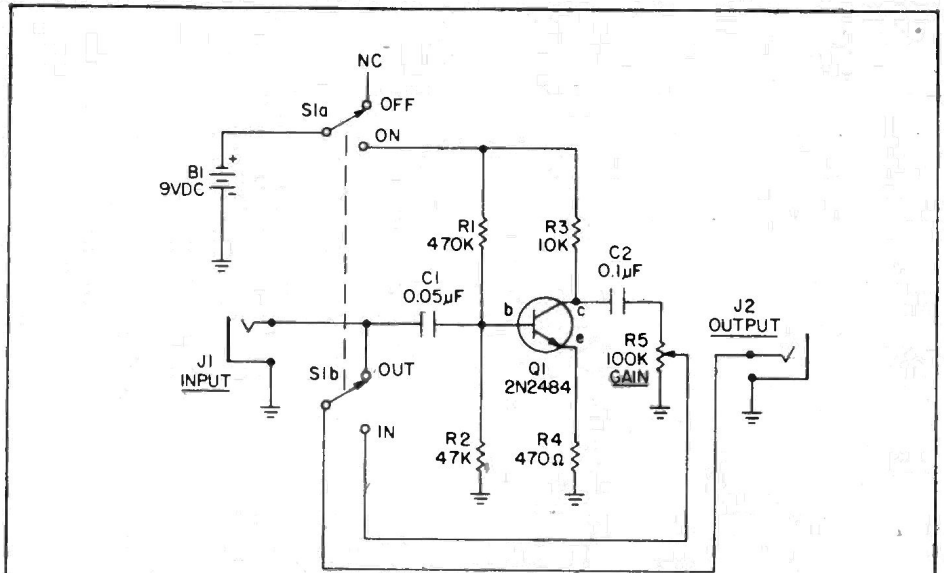
BIG BOOST

ent. Again, your best bet is to wire the project with dummy plugs installed.

Checkout. Install a battery, rotate R5's shaft until you hear the power switch click, and then check the voltage from Q1's collector to the cabinet. It should be about half the battery voltage (4 to 5-volts). If it's excessively high, around 8-9 volts, or excessively low, 1-2 volts, you have either made a wiring error or substituted an improper transistor for the specified Q1.

Connect a mike or an electric instrument's output to the Big Boost input and connect the preamp's output to your main amplifier's input. Advance R5 as you speak into the mike or play the instrument. The volume should increase as R5 is advanced. If it doesn't, you have wired S1a/S1b incorrectly. Note that when R5 is fully counter-clockwise (off) the battery is disconnected and J1 is connected through S1a directly to J2. When R5 is advanced, closing S1, the battery is connected and S1a connects the preamp's output via R5's wiper to J2.

Plug to Plug. While you can use patch cords to connect the Big Boost to your equipment, it's usually a lot more convenient and less of a hazard if the Big Boost is right at the amplifier input. Professional musicians do this by us-



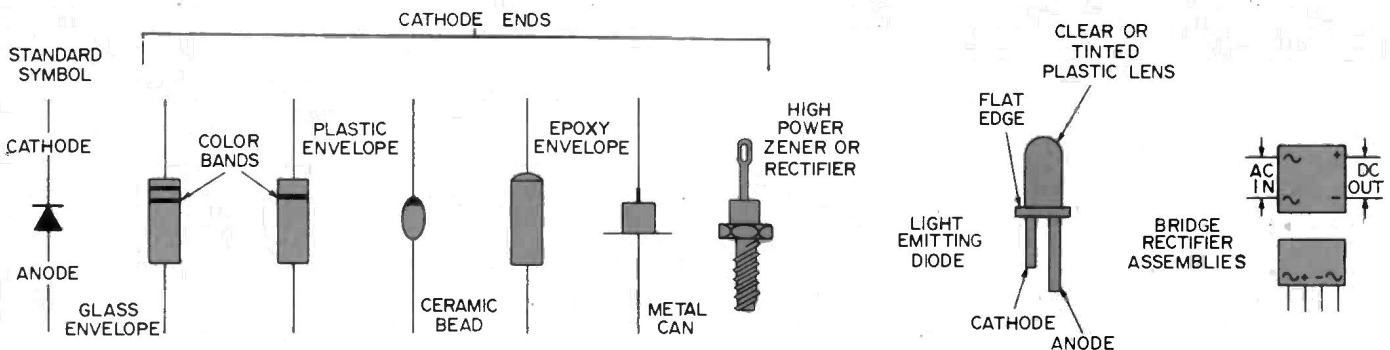
PARTS LIST FOR BIG BOOST

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|---|--|
| B1 —9-volt transistor battery | R3 —10,000-ohm, ¼-watt resistor, 10% |
| C1 —0.05-μF, 15 VDC mylar capacitor (see text) | R4 —470-ohm, ¼-watt resistor, 10% |
| C2 —0.1-μF, 15 VDC mylar capacitor | R5 —100,000-ohm audio taper potentiometer with built-in DPDT switch (Radio Shack part #271-216 or equiv.) |
| J1, J2 —¼-inch standard phone jack | S1 —DPDT switch (part of R5) |
| Q1 —PN2484 NPN transistor | Misc. —cabinet, wire, battery clip, knob, phone plug (female-to-male) adaptor, etc. |
| R1 —470,000-ohm, ¼-watt resistor, 10% | |
| R2 —47,000-ohm, ¼-watt resistor, 10% | |

ing a special *phone plug-to-phone plug* adaptor sold at music instrument shops. You can use the adaptor for either the input or output. If desired, you can

plug the Big Boost directly into an electric guitar or keyboard output jack, and then use a regular patch cord to the amplifier's input.

DIODE DIGEST



IT MAY SOUND SILLY, but it seems that a lot of people still don't know which end of a diode is up. A letter we received recently from O.M.S. of Guilford, Connecticut illustrates this point. He writes:

"I have been trying for the last three months to purchase a power supply that I can use to power a walky-talky from house current. I've finally given up and decided to build my own. I have a transformer that converts 110 VAC to 12.6 VAC, some large filter capacitors salvaged from an old television, and some 'bargain bag' diodes I purchased from a discount store. The diodes are black, unmarked, and have one rounded end. Can I use them,

or will I have to shell out for ones with known values?"

Of course, we couldn't be sure of just exactly what he had in hand, but from the description, and basing our guess on the chart, we were pretty sure that these were epoxy-encapsulated rectifiers, with probably about a 100 to 200-PIV rating. These would fill his needs if our guess was right. Although we haven't heard any more from that gentleman, we assume he didn't blow himself up. By tearing out the chart and pasting it up inside the cover of your spare parts box, you can have a handy reference guide for identifying the leads and types of whatever diodes happen to find their way into your hands.