

Static smasher

Snap, crackle and pop may be okay in your cereal bowl, but it sure is a pain in your radio. Here's an easy-to-build static filter that can cut the noise level down to size.

Electrical noise—it's the scourge of am radio. Whether it's from an automobile ignition system or a vacuum cleaner, or even mother nature, this background noise can make reception of weak signals a nightmare. That's why most CB radios have automatic noise limiters built-in. But even with a noise limiter, a weak signal can still get buried in the noise.

Generally, the noise you're trying to eliminate is at relatively high audio frequencies—above those of the signal you're trying to copy. Base station operators are sometimes bothered by 60 or 120 Hz hum as well. What's needed is a filter that is smart enough to pass through the signal you're trying to copy while at the same time eliminating both lower and higher frequency signals. And that's just what the Static Smasher does.

The Static Smasher consists of a capacitor and an inductor connected in parallel. The resulting circuit is called a bandpass filter because it passes only a relatively narrow band of frequencies. Unlike many other bandpass filter circuits you may have seen, the Static Smasher gives you a total of 28 different passbands to choose from.

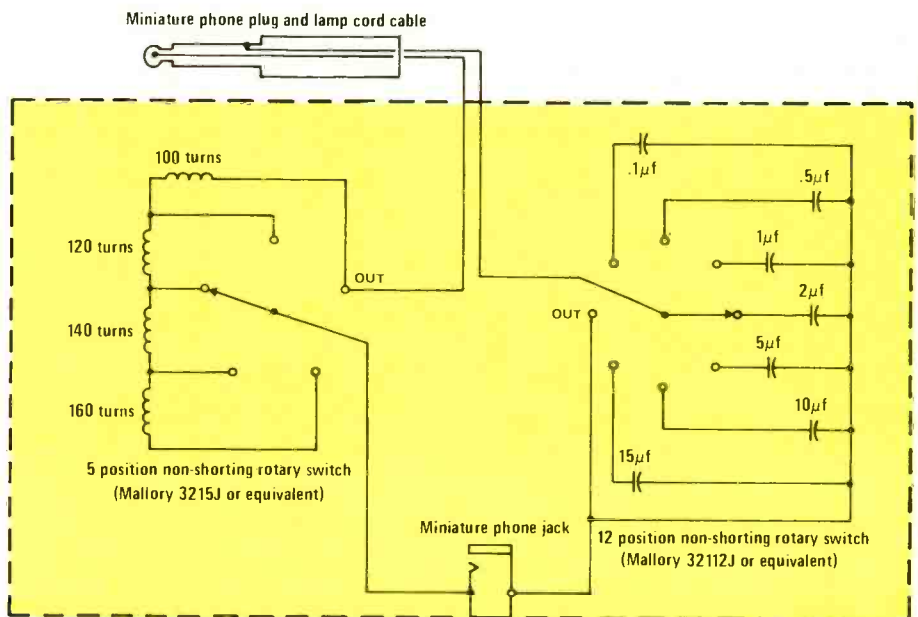
Reducing or eliminating electrical noise is not without its cost, however. By restricting the bandwidth through which the signal passes, you'll reduce the fidelity of the signal you hear. But that's a small price to pay for the ability to copy signals that would otherwise be buried under the noise.

Just plug it in

The Static Smasher filters the signal going to your speaker or headphones, so you won't have dig into your radio. If you plan to use the filter with more than one radio, you can build it so that it plugs into the radio, and the speaker plugs into it.

The circuit is really nothing more than a pair of rotary switches with a tapped coil and a handful of capacitors, all of which can be mounted directly on the switches. So, you can build the Static Smasher in just about any enclosure you have handy.

If you plan to use the filter only with



your base station, and have no enclosure on hand, the Radio Shack 270-260 wood-grained project cabinet should be ideal. For strictly mobile use, any aluminum box will do.

The Static Smasher is a snap to build and shouldn't take more than a few hours to complete. The most difficult part of the project is winding the coil. It's made by wrapping number 18 enameled wire, sometimes called 18 gauge magnet wire, around a 3/4-inch wooden dowel.

As you wrap the wire around the dowel, you'll have to keep track of the times you've gone around it. Each time the wire completes one trip around the dowel, you've added one more *turn* to the coil.

After you've put 100 turns of wire on the dowel, bring the wire away from the dowel to a distance of about four inches. Then, bending the wire back on itself, resume wrapping the wire around the dowel. After you've added another 20 turns, bring the wire away in the same manner. Repeat the procedure again after another 20 turns have been added, then complete the winding by adding a final 20 turns. The result will be a 160-

turn coil with taps at 100, 120 and 140 turns.

As you wind your coil, keep the wire confined to a 1-1/2 inch section of the dowel. You can slip two pieces of cardboard onto the dowel and space them an inch and a half apart to help you hold the dimension. Or you can cut the dowel to exactly 1-1/2 inches and glue cardboard to each end.

Easy to use

The Static Smasher requires no external power. Just plug it into the speaker line and you're in business. The front panel switch controls let you choose between seven different capacitors and four different inductances. You'll find that the best combination of capacitor and inductance will vary depending on the noise and the signal you're copying.

The Static Smasher is an effective filter for reducing electrical noise interference in am radios. It is not the complete answer to the problem. You can further improve your reception by making every effort to reduce the cause and the amount of noise being generated in your car and electrical appliances.