

February 8, 1988

**THE LINE-CORD CHOKE: ANOTHER WEAPON AGAINST LINE NOISE** (Chuck Bolland, KA4PRF, Lake Worth, Florida) Even though my ICOM IC-R71A receiver has a noise blanking circuit, I find many times that the blanker is not able to handle the job of blanking the noise completely. Looking for other solutions, I found that much of the noise was getting into the receiver via the power line. I tried "cheapie" line filters from the television department of K Mart, and electronic stores, with no success. (I knew that a really good line filter could be purchased for almost \$100, but I had no intention of spending that much money!)

In his book *Ferromagnetic Core Design and Application Handbook*, H. F. ("Doug") DeHaw suggests that wrapping the power cord of the receiver around a ferrite rod may cut down power-line RFI by "choking" it out. I have had this type of choke "in line" for a couple of months now and have found it to be extremely effective in reducing noise.

To make the choke, I simply took a ferrite rod that I had been saving and taped the receiver power cord to one end. Then, I wrapped the cord around the rod (six turns, in this instance). After I had finished the winding, I taped its free end to the rod.

You can order a ferrite rod from Amidon Associates, 12033 Otsego Street, North Hollywood, California, 91607 (telephone: [213]-760-4429). The cost is about \$2.00. Ask for a rod suitable for use as a medium-wave antenna.

djn: Yes, indeed, Chuck, a line-cord choke can be quite useful in reducing line-cord-conducted interference. For the record, ferrite is a ceramiclike material with magnetic properties. Why does wrapping wire around it choke off radio interference? Well, a choke is just an inductance that impedes the flow of alternating currents; an RF choke impedes the flow of RF ac. Coiled wire forms an inductor; slipping a

ferrite core into an inductor increases its inductance, thus increasing the coil's ability to choke the flow of unwanted high-frequency ac on the line.

Here's another hint: Ferrite-rod chokes installed in speaker leads (right at the amplifier or receiver cabinet) can help keep RF out of stereos, too. Here at Oak Floor House, we're "line of sight" from several powerful VHF and UHF TV stations. Our auxiliary "boom box" stereo was plagued by video interference from those transmitters (it sounds like ac hum that changes in timbre as the video modulation changes) until I wound ferrite-core chokes in the speaker and power cords connected to the box.

One more hint: You may not have to spring for a new ferrite rod if you can salvage one from a defunct AM radio. You'll almost certainly find a ferrite rod in the core of an AM set's "loopstick" antenna.

Chuck adds this about ferrite-rod chokes:

After discovering the usefulness of the ferrite rod on my power cord, I found that it also helped with another problem. Using headphones to listen to my cassette recorder, I had been accustomed to hearing a local AM station in the 'phones while rewinding tapes. I knew this interference was getting into the recorder via the power line because the interference disappeared whenever I switched the recorder over to battery power by detaching its power cord.

The recorder power cord was too long anyway, so I wrapped the slack around a ferrite rod. *No more interference!*

Another note: I wasn't sure if my receiver's ground lead was adding to the interference, but just to be on the safe side, I added a ferrite choke in this lead, too.

djn: Chuck, I strongly suggest removing that ground-lead choke. Remember: Aside from the electrical safety afforded by grounding, a ground lead generally improves the performance of your receiving setup by keeping the receiver chassis at RF ground potential. By putting a choke in the ground lead, you destroy the wire's RF-grounding capability. (The wire will still act as a ground for dc and 60-Hz ac, however.)

Thanks for reminding us about the usefulness of the ferrite choke! Not only are ferrite chokes useful and cheap, but they take almost no work to install -- and you know *right away* if they work.

