

A FERRITE ROD SHORTWAVE ANTENNA

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Recently I obtained an old radio direction finding unit at a hamfest. It was inoperative and beyond repair but costing only two dollars, I wasn't disappointed. I was mainly interested in the antenna system in the unit because of the frequency range of the unit; from the low band through the 49 meter shortwave band. The antenna was located on top of the radio beneath a rotating dome shaped cover.

Finding that the radio did not work, I took it apart. As I have imagined, there was a ferrite rod wrapped with turns of wire under the dome. I removed the rod without disturbing the windings. I began testing this ferrite rod in various locations of my shack to see if it could be used as an indoor antenna. Since there are many violent thunder storms here in Florida, I wanted a small indoor antenna that was sensitive and safe enough to be used during storms. Unfortunately, because of the metal construction of the house, this was not the answer. The antenna's pickup was hindered by the metal in the walls. Failing in that experiment, I tried the antenna outside and found it to be almost beyond belief. The gain from the ferrite rod was as good as my dipole and longwire antennas, especially on the 49 meter and 60 meter shortwave bands. I continued to use this ferrite rod until it was blown down one day by a high wind consequently breaking into a number of pieces.

Ferrite rods come in many sizes and chemical compositions. These differences influence the rod's frequency response, Q and heat tolerance. Depending on the manufactures, the rods are coded differently so that the information about the ferrite rod or core will be known. The rod may be a certain color or have colored dots on each end. These codes seem to vary among different manufactures.

Ofcourse, not knowing what the color codes meant on the rod from the experimental ferrite rod antenna, it was necessary to purchase a ferrite rod from Amidon Associates which corresponded to the frequency bands that I wanted to receive.

The stock number of the ferrite rod I purchased and the source were: Part number R-61-050-750

Amidon Associates, 12033 Otsego Street, North Hollywood,
California, 91607

Call for prices:(818) 760-4429

Ferrite rods are available in several different ferrite materials, but the most common stock items are of the #33 and the #61 materials. Both types of rods are mainly used for antenna construction and choke applications.

The #61 material rods are widely used for antennas covering the commercial AM radio band and on up to 10MHz. The #33 material rods are more suitable for the lower frequencies and the VLF range.

Upon receiving the ferrite rod from Amidon, I duplicated the turns of wire from the broken experimental prototype rod. After placing the rod on a pole and attaching it to a feed line, I was surprised to find that it also performed as well as my dipole antenna.

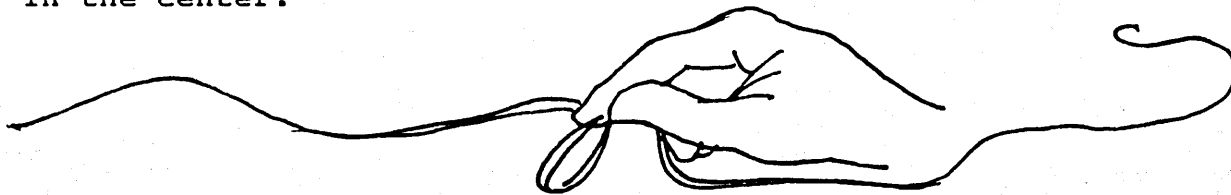
The constant complaint from apartment dwellers that they do not have adequate space to erect a longwire or dipole can be solved with an antenna made from a ferrite rod. If they are unable to go up to the roof of their dwelling with this antenna and special easily constructed protection, they can throw the antenna to the roof as long as the feed line is strong enough to take the strain. Be sure, however, that the antenna or feed line does not come in contact with electrical power lines or other sources of danger.

How do you construct the ferrite rod antenna? After the rod has been purchased, it is a simple process of construction.

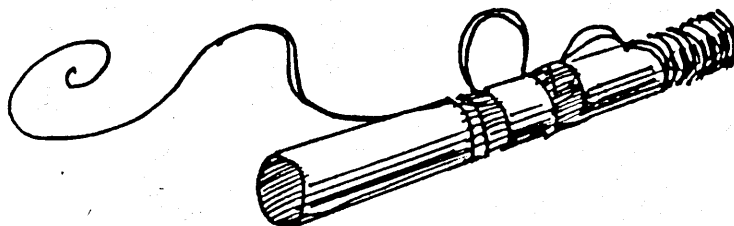
1. First wrap the rod with a layer of electrical tape. This will give the rod added strength. Ferrite rods are easily broken so they should be handled with care.

2. Cut three yards or hookup wire for the windings. The wire should be about 20 gauge. Litz wire can also be used but experiments with this type of wire have proved less satisfactory than ordinary insulated hookup wire.

3. Fold the hookup wire in two to determine the center and make a small loop of the wire in your hand. The diameter for the loop should be around one inch. Tape the loop onto the ferrite rod in the center.

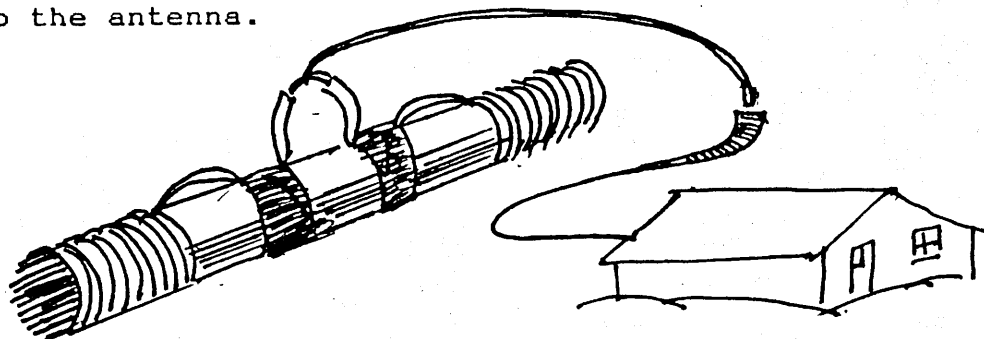


4. Take one end of the hookup wire and wrap it clockwise on the ferrite rod. Start to wrap the wire about an inch and a half from the right hand end of the rod. Wrap twenty five tight turns trying to get the last turn as near to the end of the rod as possible. Tape the turns in place with electrical tape.



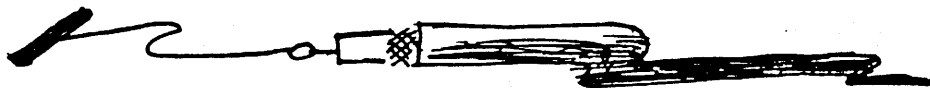
5. Now take the other end of the hookup wire and wrap twenty five tight turns counter clockwise on the left hand end of the ferrite rod in the same fashion as step four above. Tape the turns in place with electrical tape.

6. There should now be twenty five turns of wire on each end of the ferrite rod with a small loop of wire in the middle of the rod. Take some of the insulation from the wire where the loop is without breaking the actual wire. This will be the point where the feedline is connect to the antenna.

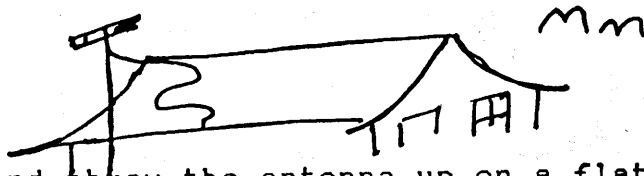


7. The feed line consists of two types of wire. The first type is the same hookup wire used to wrap the turns on the rod, if that is what was used. Take five feed of this hookup wire and solder one end to the loop on the ferrite rod.

8. The other type of wire for the feedline will be coaxial cable's center conductor. Connect the five foot hookup wire portion of the feed line to the center conductor of you coaxial feed line into your shack. The shielding of the coaxial cable should not be connected to anything at the antenna's end. Whether or not you ground it at the receiver's end depends on the reception. I have found that just connecting the center conductor produces better results than connecting the shielding to ground too.



The antenna does not need to be very high for good reception. I have mine at around fifteen feet up from the ground. Ofcourse, there should not be any obstructions blocking reception especially things made from metal.



For those who want to try and throw the antenna up on a flat roof, remember that this can be dangerous if there is any possibility of coming in contact with an electrical source. Watch out for breaking some ones window too. Changes are that when doing this, the rod may get broken. If it is not too bad, glue it together again with "Super Glue". After all ferrite rods are just iron particles glue together.

1. Reinforce the ferrite rod antenna with more electrical tape. You may wish to insert the rod in a piece of PVC pipe and cushion it with cotton before you throw it?

2. Making supports for the antenna so that when it lands on the roof it will be above the surface a few inches, requires purchasing a couple of half inch wooden dowels.

3. Cut the dowels into six equal lengths. Tape the dowels together in a fashion so that which ever way they fall, the center will be held up from any surface by a few inches.

4. When you have accomplished the above step, tape the antenna in the middle of the dowel support and test it to see if the antenna remains above any surface where it lands by a few inches. This will give the antenna some area away from the roof surface when it lands.

Even if you do not live in an apartment, this antenna is a great addition to your antenna system. Its' cost is under ten dollars complete and doesn't need much space - only seven and a half inches. As you sue the antenna, change the amount of turns of wire. Try fewer turns or more turns. You will find that this also changes the frequency response to some degree. Better results can be obtained if a good amplified preselēctor or tuner is used with this antenna. Your experience with and construction of this antenna should lead you down a road of discovery only if you accept the challenge. Good listening.

