

Grounding System for DXers

Perhaps one of the most overlooked aspects of setting up a listening post is a ground system. Any listener with a table top receiver will need a good ground system to operate their unit at its optimum level. This piece will deal with setting up a simple, yet effective, ground system that can be installed in a short period of time with a minimum number of tools.

The first thing you will need three parts:
The first is of course a good ground rod.
You will also need a buss bar if you have more than one unit to ground.
And finally some ground wire to tie the whole thing together.

Let us look at the ground rod.

Not all ground rods are created equally. When I went to put in my present system, I talked with several people from our local hydro electric company to see what they were using. They all agreed on one thing: you need a full sized 10 foot (3 metre) rod to be effective.

This length will almost guarantee that the rod will stay in contact with moisture in all but the driest years. The ground can dry out to quite a depth during long hot dry periods, leaving shorter four to five foot rods useless. The rods must be kept moist to give a good ground, but more on this later.

I also purchased a rod that had a built in connector so I did not have to purchase one to keep the ground wire attached. These work best and are easily found.

Next was the selection of the wire I was to use. I ended up selecting 10 gauge copper wire that was covered in a heavy vinyl jacketing. What kind of wire to use is open to all sorts of opinions. I picked the 10 gauge as it was readily available and, although stiff, you could work with it fairly easily.

A coated or insulated wire was chosen to make life easier for me. By using a coated wire it meant I could run the wire easier as I did not have to worry about it touching objects that are conductive in nature. Your ground wire must never touch any thing conductive as it will ruin the ground. A clear and unrestricted path from the radio(s) to the ground rod is a must and coated wire gives you more options of how and where to run the wire.

The buss bar can be installed if you have more than one radio to ground, or if you plan to add to your listening post with other

equipment that may require grounding.

The bar is usually made from copper because of its conductivity. The bar need not be large. Mine is 3/4 of an inch (2 cm) wide and 10 inches (25cm) long. I can ground five to six pieces of equipment on it with no problems at all.

Now that all of the parts have been purchased we can start on a simple but effective ground system that will last for years.

You must first of all choose a site for the rod to be put in. One very important thing to consider is to keep the run of ground wire as short and as straight as possible. This will insure a better system.

Keep the rod as close to the side of the house that your listening post is located. If your home is like mine, you may have underground hydro, telephone, and gas lines as well as water and sewer lines, so please call your local utilities to have them located before you start putting in a ground rod. You do not want to drive your ground rod into any of these lines. Putting a ten foot metal rod into a hydro or gas line can ruin your day!

Once you have selected your spot you will have two options:

- 1) You can pound the rod into the ground leaving about 8-10 inches (20 cm) of it above ground;
- 2) Or you can for the deluxe option.

I have gone for this latter route as it will over time help you keep the ground rod damp during dry times. This involves more work but if you live in climate like mine where the weather varies over a large spectrum or has long dry spells it is worth the extra effort. Also if you have heavy clay soils during rains the water will have an easier time to soak into the rock pit instead of running off.

You can mark the ground where you wish to put the bar and measure one foot (30 cm) in all directions from this point. Mark the area off and then dig a hole in the area.

This will result in a two foot (60 cm) square or diameter hole depending on how you dig it out. Either is acceptable. You should dig a hole that is about 2 feet (60 cm) deep, more if you wish.

Once the hole is completed place the tip of your rod in the centre of the hole. You can now pound the rod into the ground leaving it the 8 inches (20 cm) above ground level (not the bottom of the hole). Have a friend help hold the rod as it will move around as you pound it in. Be careful not to hit your friend, as this may hurt the relationship as well...

Once the rod is in place test it to insure it is in in tight. Try pulling and wiggling it to see if it moves.

If it is in tight you have been successful.

If it is close to a foundation or is in loose or sandy soil it will move around. This will not produce a good ground, so check it out.

If you went the deluxe route you must now fill the hole with rock.

Insure it is hard rock that will stay loose. Rock such as limestone is of no use as it will break up and form a hard packed area. You need loose rock fill that will not pack over time.

You may also want to put in a bag of rock salt before the rock.

This salt once wet will start working on the rod to give better conductivity. This rock pit is put into place for one important reason: moisture.

During dry periods I water the rock pit to insure moisture is getting down to the lower levels of the rod. The neighbours do kid me about it so if you embarrass easily do it at night.

The next step is to install your buss bar in your listening post.

If you are going to use one it is easy to install. You can make one or buy one ready made.

To build one just take your flat piece of copper and drill two holes in it. One at either end that will act as anchor points to mount it on the wall near as possible to your equipment. You can now drill as many holes as you have pieces of equipment plus one more for the common lead into the bar.

This will mean if you have four pieces of equipment to ground you will need:

Two holes to mount the bar, one at either end.

Four holes for the equipment between the two anchor holes.

And one hole for the common lead, also between the anchor holes.

Each of the holes, excepting the anchor holes at the top and bottom, will be drilled to put in a bolt and washer to attach the radios etc to. Use what ever you have at hand.

Put in the bolts and washers into the pre-drilled holes. Using the two mounting holes screw the buss bar to the wall near to your equipment. Try to keep it centrally located to keep leads to the equipment as short as possible.

Now that the bar is mounted run short straight pieces of heavy wire from each piece of equipment to the buss bar.

You should use coated wire here to insure no wires touch each other or anything else. This is very important. Attach the other end of the wire to the lowest bolt and work your way up to the top.

Insure the wire is under the washer so it presses the wire onto the buss bar insuring a tight and solid contact fit. This is a must.

You can now attach a run of wire to the common at the top of the bar and run it to the ground rod outside. Once again insuring a

solid contact . If your rod had no built in clamp you can use metal strapping to get a solid tight fit to the rod.

When you connect any end of the wire to any piece of equipment or the buss bar or ground rod, insure you strip the wire and then using sanding or emery cloth clean the bare wire to insure there is a clean contact.

You should use washers on binding posts to wire up the equipment. This will insure a solid contact. Loose contacts are of no use so make sure all contacts are good ones.

Your ground system is now completed. Maintenance is little if any. You should from time to time check the connections to insure they are tight and in the case of the ground rod connection there is no corrosion. It may need to be cleaned once a year.

When it is dry water your rock pit to insure a good ground year round. I flood mine until I can see the water sitting on top.

That is it.

You now have a good ground system that will last years.