

## **Newcomers and Elmers Net: Antenna Supports 3.15.15**

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While we often talk about getting creative with antenna design, sometimes we have to get creative with how we support our antennas and with how they are run.

While we would all like to have room for all the antennas we want, the real world is often much smaller

-- One of my antennas, the G5RV, has one arm in the open supported by a mast, while the other arm is in a "compromised" position, shall we say.

--When I first put it up both arms were wrapped around the house—I worked stations in the US but very little DX.

-- I then moved one arm into the clear and things improved quite a bit—I actually made some really great DX contacts with this position, but the 40- and 80-meter bands were fairly weak all around.

-- Finally, and this is where it gets a bit weird, I started wondering what would happen if I moved part of the antenna indoors?

-- After debating the lunacy of this for a while, I decided to try it—after all, I could always move it back.

-- I moved the arm into the attic through a window and stretched it across the room to the far wall along the rafters.

-- Even though most of the arm is in the house, because there is little metal or electricity in the attic my 40- and 80-meter signals improved dramatically.

Getting creative means finding ways in which ordinary items around the house or found at the local hardware store can increase your antenna options.

-- Trees and towers work great, but sometimes they are just not available. -

-- Supporting an antenna doesn't have to be costly—it just needs to work.

-- With this in mind, let's look at some economical support options, some of which are even free!

### **Mounting Antennas: Tripod Mounts**

One of the most common spots to mount an antenna is on the roof and/or chimney.

-- Since the roof often represents the highest point on a house, this is a popular place to mount antennas, particularly verticals and small directional antennas.

-- While I would not recommend a chimney for large antennas, assuming the chimney is sturdy a small Yagi or similar antenna may be mounted for VHF/UHF work

-- it also has the advantage of looking like a TV antenna which can slide by some neighborhood covenant restrictions.

- If your antenna is large I would avoid the chimney since a strong wind could place a severe burden on both the antenna mount and the chimney to which it is strapped, causing the chimney to crumble.
- Also, I would avoid any venting poles which may come out of the roof as these are not designed to carry any kind of load.

For larger antennas I would recommend a tripod mount bolted to the roof with the antenna supported by guy wires

- guy wires are a good idea in most situations, not just for towers or tall poles
- I recommend always getting more support than you think you need.
- Find out what manufacturers recommend for your intended antenna, and increase the support by double or triple if possible.
- This is not a place to pinch pennies. Do whatever it takes to make your antenna secure,
- in the long run not only will you not have to replace or rebuild after typical storms, but the antenna will likely withstand almost anything nature can throw at it within reason.
- these tripod units can add a lot of stability for the money.
- tripod mounts also work well for portable setups, and you can find them at hamfests for pretty reasonable prices.
- I found mine for about \$15, and while it is large enough to hold a decent sized pole, it is small enough to carry easily and fits well in the car.
- The larger the antenna, the larger the tripod needed of course.
- Most tripod mounts allow for a 1-2" mast to slide through the center (depending on the tripod), with a locking mechanism of some sort to hold the shaft in place.
- I like the kind which allows the mast to slide all the way through to the ground—this allows for a bit extra stability, especially if you can sink the mast in the ground a couple of inches.

## **Masts**

Most of my antennas are mounted on masts by one means or another.

- masts are good for several reasons:
  - they are usually expandable to grow (or shrink) as needed;
  - they can be guyed easily;
  - they can be raised along the house or the garage for added strength;
  - they can be fairly easy to adjust since most masts come in sections.
- I used to like using fiberglass masts for most of my antennas, usually purchased as army surplus poles available online or at most hamfests.

- They are a bit flexible which is both a plus and a minus, but they have a real advantage of being made out of non-conductive materials so that they will not act like another antenna in close proximity to the main one.
- Several accessories are available for these poles, including guy wire rings and paddle feet to form a base when used in a portable setup.
- There is also an attachment which fits on the end of a pole with a pulley attached for raising and lowering dipoles which is handy
- The real downside to these is that they will dry out/weather over time
- ones I have had up for 6 or 7 years are brittle, and several have gotten damaged

As I mentioned above, guying antennas is always a good idea, and I would recommend using at least three ropes to hold the masts steady.

- This area had a windstorm come through a few years ago with 75 mph gusts, and all of my antennas held except the two which were only guyed with two ropes, something I quickly fixed when repairing the antennas.
- Being somewhat frugal I have used rope, speaker wire, baling wire and weed-whacker string to hold the masts, all of which have held quite well.
- I have tied them off to fences and clothesline hooks mounted in the wall, as well as anything else which was sturdy enough to hold the mast and antenna.
- Again like the chimney, I wouldn't attach an antenna much bigger than a 2-meter log periodic to one of these masts without a lot of additional support—the fiberglass masts will break with too much stress.
- Heavy and/or big antennas require extremely solid supports. You won't find expensive 20-meter Yagis held up by a 1-1/2" fiberglass mast very often!
- If you are using the fiberglass masts to hold a permanent antenna, something which I have found useful is to drive a metal post several feet into the ground and then slide the mast over the metal pole to gain some stability in the base.
- If you try to drive the fiberglass into the ground it will likely crack or splinter—they are not designed to take a pounding.
- I like to leave about three or four feet above ground so that the fiberglass mast has good stability. While this adds to the cost a bit, I think it is well worth it in the long run.

### **Mast Options**

While on the subject of poles and masts, here are a few suggestions for suitable supports depending on your local resources/budget:

- Paint roller extension poles
- window washing poles
- chimney sweeping poles

- fiberglass telescopic poles available online
- sectional fishing rod poles
- metal/aluminum telescoping poles (pricey but sturdy)
- PVC pipe (more on this in a moment)
- Fence railing
- stair handrails
- galvanized pipe with connectors

-- There are probably dozens of other pole/mast options out there I am overlooking here, but hopefully this list will get you thinking about some readily available options which will fit your needs and your budget.

-- Also, don't overlook the value of having several cheap mast options available to you for experimentation.

-- I purchased a telescoping fiberglass mast just for this purpose as I can easily store the mast when not in use, and then take it to a portable/temporary location and have it operational in minutes.

-- If you also have one of the tripods mentioned above, you will likely be able to use the pole without guy wires for portable operations.

-- Obviously wind and other conditions may still require supports, but even these are easy to do as you raise the mast section by section.

-- Keep some radiator style clamps on hand to hold the guy wires in place, and then just tie them off to trees or tent spikes, or whatever else is available.

-- With just few items you really can have a good portable setup with minimal muss and fuss.

I mentioned PVC pipe above as a good material for masts. I would encourage a trip to the local "box" home improvement center for a well-spent hour or so in the plumbing area.

-- In addition to the standard galvanized and copper pipe, there are a lot of options for using PVC pipe which is both sturdy and very modular, allowing for great flexibility in antenna support.

-- With elbows, couplers, and splitters, the possibilities are endless, and with the ability to take the pieces apart, the supports can be very portable.

-- After rummaging through the plumbing section for a while, take a walk down the various aisles to see what jumps out at you for support material—you may be quite surprised at what you find.

-- Sometimes things work well which might never occur to you without seeing it in person, so have at it. After all, most of us don't really need much of an excuse to head to the hardware store in the first place!

### **Using What's Available**

Because I am something of an "outside the box" kind of guy, I am always looking for things to use for my antennas, much to my wife's amusement.

-- An example of "using what you have" comes to mind involving a friend of mine who is an avid SWL listener and at the time was a newly minted Amateur Radio operator.

-- When visiting his house one night I couldn't help but notice the beautiful wooden privacy fence which runs along his back yard. He lives in a covenant restricted space, so visible antennas are *verboden*.

-- I asked him about the approximate dimensions of his back yard, did some rough calculations in my head, and realized he could fit a nice 80-meter wire antenna along his fence which his neighbors would never see.

-- He later bought some 14 gauge wire, strung it along the fence, and now he regularly picks up signals he says he never heard before.

-- Are there better antenna options out there? Absolutely! Can he use most of them? Probably not given the restrictions.

-- Is the antenna he's using exhibiting the optimum radiation pattern, low angle take-off patterns we would all like to have? Nope! But is he happy and enjoying the radio hobby more than ever before? You bet!

The same holds true for me with the small lot I have: I am having the time of my life with compromise antennas left and right!

-- If I am having this much fun now, just imagine what it will be like when I someday have the antenna farm of my dreams!

-- Regardless of where you are you can put up at least one antenna which will pull signals in and send signals out, and that's what it's all about.

Sometimes you just have to find ways to put up the antenna you want. While it is getting harder and harder to put up antennas in cities and suburbs, there are a number of creative things people have done to get around the problem.

-- Flag poles make great "hidden" antenna supports, as do bird feeders, light poles, attic rafters and trellises.

-- I've even seen an antenna disguised as a cactus! Now that's creative! For those living in apartments if you have a balcony of any kind the railings can provide support, as can the balcony above you—just make sure whatever you attach can't be seen during the day and you attach the wires when your neighbor's not home!

### **Assess Your Surroundings**

If you live around trees at all you have an excellent support system for an antenna, of course, but also any secondary structure will work great as well.

-- I have a separate garage to which most of my antennas are mounted, and while the garage is not huge, it does provide me with a good foundation upon which to support my six or seven antennas.

- Being only about 10 feet high, I can easily get up on the flat roof and walk around to work on the antennas as needed (of course with all the wires around I sometimes feel like a gymnast going through an obstacle course!).
- I have used straps for some of the poles and guy wires for others as a means of holding the mast against the walls of the garage, and this allows for added stability for the first ten feet of mast.

Whether it's a garage or shed, adjacent building or lot, they may be more options for antennas than first seen—asking “what if . . .” can often open up a world of possibilities!

- Even running a wire loop antenna along the eaves of your house can make an effective antenna when tuned properly.
- Restricted areas may mean we can't put up a tower antenna or even allow our antennas to be seen, but this doesn't mean we can't get on the air!
- Living within our limitations is something we all do every day, but sometimes a bit of creativity will lower those limitations just enough to have some fun!

### **Hazards To Good Signals**

While most anything can be used as a support for an antenna, some things you want to avoid are metal structures and electrical fields produced by nearby wiring and electrical equipment.

- Metal structures usually interfere with radio signals by either shorting out a signal or by adding noise to a signal, much like an electrical field.
- Stay away from power lines at all costs, not only for the obvious safety issues, but also for the noise they add to a signal.
- While five or six feet below some power lines seemed okay for a wire antenna I was using, I soon discovered “hash” coming through on several bands which disappeared when I moved the wire further away.
- Listen for static, hums, and birdies coming in to your radio and look for patterns. You may just find something is interfering with your radio based on where your wire's going.

Resources (Not an endorsement—just for info!):

Fiberglass Poles and Accessories

<http://workingstiff.webs.com/pgtwoofmastchoices.htm>

<http://stores.ebay.com/nc4ry>