

WA3WZR Modernized "JOYSTICK" Antenna Project

I used the "Joystick" or "Little Wonder", as I knew it (from an article in an old magazine from the 70s, cant find the article so I dont really know which magazine anymore), back in the late 70s and early 80s. I had other antennas of course, a tri-band beam and a long-wire and I used all of them interchangeably. This antenna was always my favorite though, simple, omnidirectional and it worked.

The biggest problem with constructing the original joystick was making the coil form. Obtaining a 1" dowel and then turning it down to fit the 3/4" copper pipe was a challenge and a pain. Modern materials provide an easy solution.

Here is how I built my current version: Refer to drawing below as needed.

Bill of Materials:

3/4" copper pipe (43.75" piece and 31.5" piece)

3/4" cap (copper or PVC to fit the copper pipe)

25" section 3/4" I.D. Sched. 40 PVC pipe.

#12 Solid Electrical wire, insulated of course, about 52' needed

2 - 3/4" dowel rod - one 48" length, one as needed for the mount

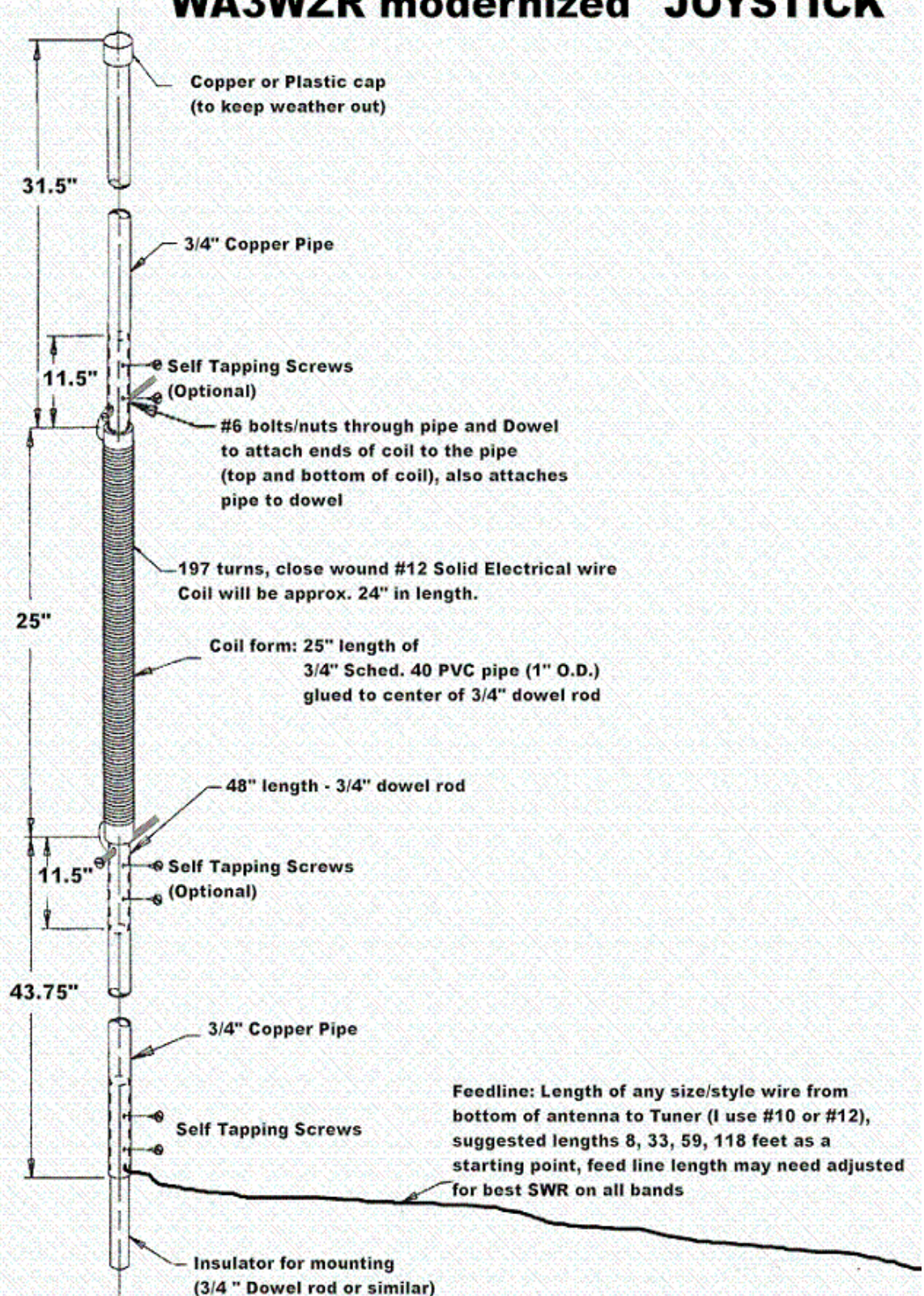
#6 bolts/nuts/washers

self tapping screws

Glue (good waterproof to bond metal/wood/PVC, I used Gorilla Glue)

Clamps (for assistance when wrapping the coil)

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Antenna must be used with a good station ground

Original Drawing:
Bob Morden VE3EIM
Hamuniverse.com

Assembly steps.

- Use the 48" length of 3/4" dowel rod and cut a 25" length of 3/4" I.D. Sched. 40 PVC pipe. The 3/4" I.D. Sched. 40 PVC happens to have an O.D. of about 1 inch, which is close enough for these purposes. Make sure it is Sched. 40 pipe or it will not be 1" O.D.
- to make the coil form, glue the PVC pipe to the center of the dowel rod, there will be 11.5" of dowel showing on each side of the PVC pipe. Set aside to dry
- Cut the copper pipe in 2 lengths, one of 43.75" and one of 31.5"
- After the glue in the coil form dries (trim excess glue if necessary), fit the copper pipe onto the coil form and drill a hole through the copper pipe and dowel large enough for the #6 bolt, close to where the copper abuts the PVC. This will both hold the pipe and coil form together, and provide the electrical connection for the coil to the pipe.
- If this is for a portable antenna, remove the copper pipe and cut slots in the end down to the holes just drilled. The slots need to be as wide as the holes, this is so you do not have to remove the bolt when disassembling the antenna, just loosen the bolts and pull the pipe off.
- assemble the bolts/nuts/washers in the holes, but do not tighten
- attach one end (insulation removed) of the wire to one of the bolt assemblies and tighten enough to hold the wire in place
- start wrapping the wire on the coil form, 197 turns are needed. This needs to be a very close, very tight wrap. I would suggest using clamps of some type to help hold the coil in place as you progress.
- after 197 wraps, strip the insulation off of the loose end and, keeping the coil as tight as possible, attach it to the other bolt and tighten the bolt assembly.
- Cap the end of the short copper pipe with either a copper or PVC pipe cap
- (optional) wrap the coil with electrical tape

The Joystick antenna is completely assembled at this point. Use the second dowel rod to make an insulated mount for the antenna. Insert the dowel into the long copper pipe and secure with self tapping screws (need to drill a hole in the copper pipe first). I also used some additional

plumbing hardware to make a plug on the dowel mount to fit into a socket on a portable base I made out of wood.

Feedline:

The feedline for this antenna can be any wire of any type and gauge. The suggested feedline lengths for the original antenna are 8, 33 or 59 feet (the longer the length, the better). I have also used 118 feet. This may sound strange, since the antenna is to be used with an antenna tuner, but the feedline length needs to be adjusted to obtain the best SWR on all bands. That may be due to the tuner I am using, which has fixed coils for each band. **You will just have to experiment with this and the tuner you use.**

Operational Notes:

- This antenna REQUIRES a good station ground to function, the antenna itself is not grounded.

- My home installation has the antenna mounted 10 feet in the air, feedline routing is not critical, but keep in mind that may affect your SWR. My own feedline is around 120 feet (not sure since I had to tune it), but not in a straight line; it currently goes through the wall of my house, wraps around my deck and goes up the side of the house wrapped around an external electrical line to an insulator, the last 50 feet or so are airborne to the antenna itself.

- I have used this antenna ground mounted, with the feedline running right along the ground when I first built it, and portable on a houseboat.

- From Sept. 2008 to Feb. 2009 I made 66 contacts on SSB to 28 countries and 16 states. In Feb 2009 I switched to PSK (mostly PSK31 running about 30 watts) and from then till the beginning of May 2009, I made 184 contacts to 39 countries and 34 states and still going strong.

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