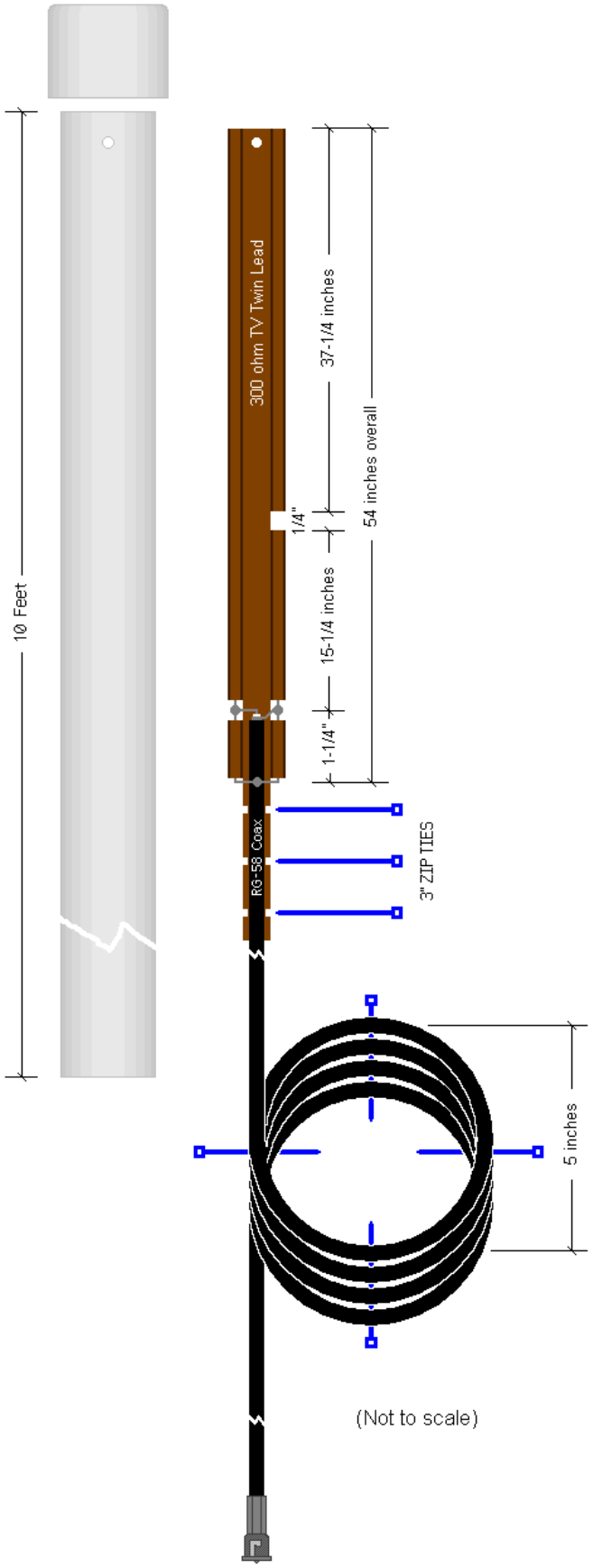
N8VJP's TwinLead J-Pole for 2 meters



Materials & Tools Needed:

(1) ¾"x10' Sch40 PVC
(1) ¾" PVC Cap
(1) Nylon bolt ~1¼" long
(2) Nylon nuts for above bolt
(5ft) 300 Ohm Flat TV Twin-Lead Cable
(>11ft*) RG-58 Coaxial Cable
(1) Twist-On, solderless, male BNC for RG-58
(7) 3" Zip ties (prefer clear or black)
Soldering Iron & Solder
Utility Knife
Tape Measure
Pliers
Drill & Drill bit (dia. of nylon bolt)
* You will need 11 feet more coax than the distance between the proposed mounting location and the ham shack. Remember that it is easier to cut off excess cable than add some on; be generous in your measurements.

Construction:

1) Drill one end of both the twin-lead cable and the PVC pipe, keep them as close to the ends while still providing enough material to keep it strong (~1/2"). This will be the top of the antenna.
2) Remove ¼" of wire from one side of the twin-lead, beginning 37¼" from the top (see diagram).
3) In the area of 15¼" below the bottom of the notch, very carefully remove the insulation from both sides of the twin-lead, taking care not to damage the wire within, I prefer to just melt it away with the soldering iron, and then clean the plastic from the iron with a wet towel or sponge (see diagram).
4) Remove all of the twin-lead wire below 55 inches from the top but keeping the center spacing material.
5) Remove 1" of the bottom material from the wires and then solder those two wires together, trimming any extra (see diagram).
6) Notch the remaining material at the bottom in 3 places. Leave ~¼" in the middle of each pair of notches.
7) Prepare one end of the coax by carefully removing about 1" of the outer jacket. Unbraid the shield from around the insulation and retwist it together off to one side. Trim the center insulation back to expose the center conductor, leaving just enough insulation such that the center conductor and the shield can never short together (~¼").
8) Solder the center conductor to the unbroken side,

and the braid to the notched side.
9) Secure the RG-58 to the twin-lead using zip ties fastened very tightly around the twin-lead and coax at each of the 3 notches. The notches should keep the zip ties from slipping up/down. Trim their free ends.
10) With both the antenna and PVC upside-down, lower the antenna into the PVC until the holes line up at their tops.
11) Insert the nylon bolt through one side of the PVC and reach inside to start a nylon nut onto the bolt. Thread the nut on far enough that you can then insert the bolt through the hole in the antenna and then thread on the remaining nylon nut. Continue to thread the nuts on until the bolt reaches the opposite side of the PVC pipe and the antenna is centered in the pipe by the nuts on either side of it. Finger tighten the nuts around the twin-lead. Cut the head from the nylon bolt, such that the bolt is as close to the outside diameter of the PVC pipe without sticking out. You can shave it carefully with the knife. Now slip on the PVC cap over this end, that should keep the bolt in place permanently.
12) Just below the bottom of the PVC, make 4 turns with the coax with a diameter of 5". Secure with 4 zip ties and trim their free ends.
13) Prepare the far end of the coax cable as per the instructions included with the twist on BNC connector. It is recommended to complete this step only after having passed the cable through the exterior wall and into the ham shack. I recommend bringing cables into the ceiling of a closet, it is much easier to conceal the entry point and keep things looking neat. Alternatively, you could finish it off in a wall plate and electrical box designed to fit around such cable.

Mounting and Use:

The antenna may be mounted anywhere along the bottom 3 feet of the PVC pipe. This will ensure the antenna inside is well above any object it is mounted against.
If local restrictions, codes or your significant other prevent exterior mounting of the antenna, you could mount this in an attic. Feel free to shorten the PVC before construction to no less than 7 feet. This will allow you 1 foot of mounting area at the bottom. Remember to keep the 4 turn coax coil as close to the PVC bottom as possible. Obviously, an externally mounted antenna performs better, but you take what you can get.
The antenna design is very broadband, so no tuning or SWR adjustments should be necessary
The Yaesu VX-170 is not equipped with the commonly used BNC connector, so you will require an SMA Male to BNC Female adapter to use your antenna.
If constructed as described, the antenna will not require any weatherproofing, as there are no holes above the antenna to let water in. The open bottom poses no threat to the antenna inside. If you would like to eliminate the spiders and insects that will attempt to nest inside the open bottom, shoot a small amount of Great Stuff expanding foam into the base once the antenna is mounted.

About the Author:

N8VJP was first licensed as a no-code Tech in August of 1992 at the age of 15. Shortly thereafter he passed his CW exam and enjoyed operating on the world bands. After moving to Washington and starting a family, he double tested through the General and Extra class exams. Today, N8VJP operates an IRLP repeater on 70cm, and is active on Packet, APRS, IRLP, HF, VHF, UHF, and SSTV. Outside of Ham Radio he enjoys designing and building computers and high speed wireless networks as well as serves as a Firefighter for the local City Fire Department. He is currently attending EMT school and lives with his wife, KD7QCE, and son in Woodland, WA and can be reached at: *n8vjp@arrl.net*.