

MFJ 913 Balun Repair

Bob Beanblossom WA4JIT

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Rather than build my own, I opted to buy an MFJ 913 4:1 balun for my OCF antenna. After soldering the antenna legs to the leads on the balun, I hooked the top eyebolt to my line and hoisted it up the tower. Well, that was the plan. As the assembly almost reached the mounting height the entire array fell back to the ground. The hoisting line remained connected at the top. The factory eyebolt on the top of the balun had come out. See Photo 1.



Photo 1

The balun is housed in a section of PVC pipe with caps on either end—all securely glued. An inexpensive solution to house the balun and support the wire antenna.

The eyebolt came out because the nut inside the “box” came off. Although it had a jam nut on the outside and a lock washer, apparently all had not been securely tightened at the factory. Once loose, there was nothing to stop the nut from coming off.

The first challenge was how to get into the box in such a way as to allow it to be securely reassembled. The only way in was to cut the pipe in what I hoped would not damage essential parts. I knew what was inside electrically but not physically. Photo 2 shows the exterior.

I decided to repair the cut pipe with a sleeve. After that, I simply took a chance and cut the pipe in the middle to allow room on top and bottom to glue the sleeve. See Photo 3.



Photo 2

The cut worked well and no component was damaged. The UHF connector at the bottom had suggested that all the “guts” were in the lower portion of the box, and they were. Only the lead wires to the side mounted eyebolts for the antenna-balun interface were in the top portion.



Photo 3



Photo 4

The cut worked well (photo 4) and the “guts” are seen in the top of the picture which is the bottom of the balun where the coax attaches. The hardware to the right of the box is the reinforcing fender washer, lock washer, and standard nut. The side eyebolts are attached the same way. The problem is that if the nut becomes loose, there is no way to tighten it and prevent ultimate failure.

My solution was to replace all of the standard nuts with nyloc nuts that do not rely on the lock washer to maintain integrity of the connection. Photo 5 shows the new nyloc and a standard nut. The added cost is negligible for the benefits achieved.

This photo also shows what I consider to be another shortcoming. The leads to the antenna eyebolt are not insulated. Once routed through the holes below the proper eyebolts and the whole system is secured by glue, and the wires are wrapped around the eyebolt, the problem of shorting the leads during reassembly nor use is minimized, but again, a little work and expense on the front end prevents problems later.

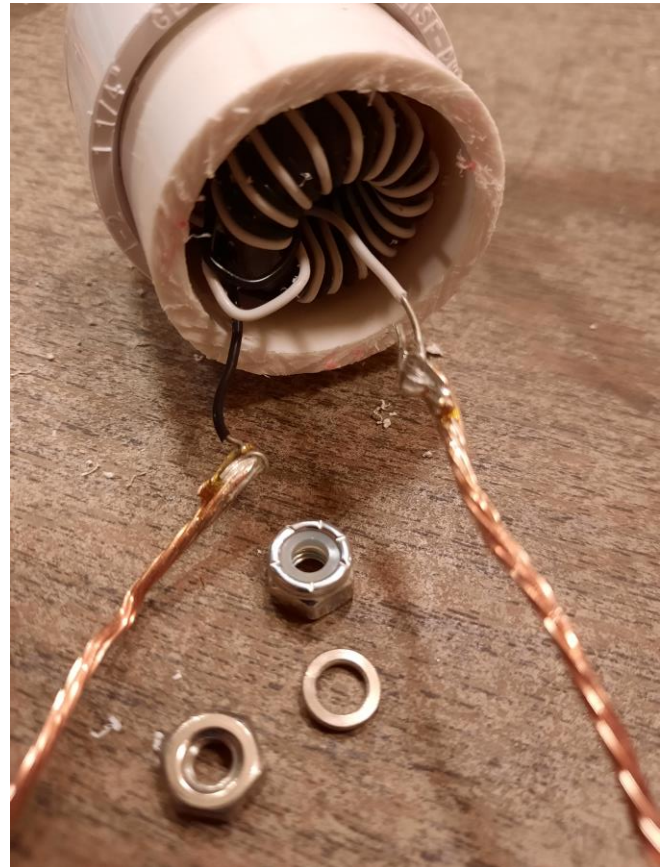


Photo 5



Photo 6

I simply slipped some heat shrink over each lead before routing them back out the holes by the feed eyebolts. The length is determined by the distance from the ferrite core to the exit holes. This fix is visible in photos Photos 6 and 7.

I installed the 1 ¼” PVC sleeve over the cut pipe and after routing the leads through the existing holes. The whole thing is reassembled as the leads while fishing the leads through the holes, keeping them snug without adding unnecessary pressure on the ferrite donut. All PVC joints are glued with the proper PVC cement. Don’t be skimpy with the cement. These joints will support the apex of the entire antenna assembly.



Photo 7

Photo 7 shows the careful process of feeding the wires through the holes as the whole assembly is worked together. This is no time to rush, and when close, PVC cement can be applied with no danger of drying before final assembly. Note that the heat shrink will insulate the leads right up to the feed holes.

Photo 8 shows the completed repair. The sleeve has been securely glued in position after the feed wires were snaked through the existing holes.

An added feature is the addition of a fender washer on the outside of the box as reinforcing to minimize wear at these vital junctions. Again, minimal cost and effort for an added layer of security.

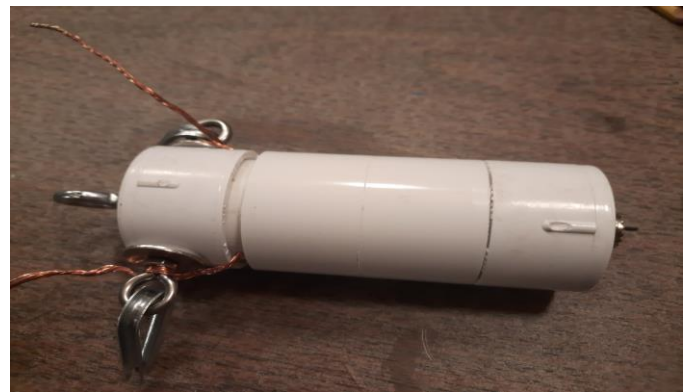


Photo 8

This completes the repair for the MFJ 939 balun. The assembly has been soldered back to the antenna wires and hoisted back into the air. The antenna is behaving well on all intended bands. I am hoping that this system has a long life. Since it is capable being raised and lowered at will, the antenna system will be flexible to meet new needs or allow experimentation with minimal tower climbing. The other ends of the antenna are supported by nylon line that can be replaced or re-tensioned as needed. As a side note, I broke in a new butane soldering iron on this project when attaching the antenna wires to the balun feeds. Worked great.