

OVMRC Slim Jim Antenna

OVMRC Antenna Assembly Instructions

January 14, 2018 – Rev. 2

Introduction

The assembly instructions for this kit have been broken down into 19 specific steps. This has been done to simplify and clarify the assembly process.

While it may seem obvious, if your work bench is like mine, prepare a clear, clean workspace, for the project. The assembly of this kit is not particularly difficult, but there are several steps involved. If you take your time, follow the instructions carefully, you will end up with a quality 2m portable antenna.

Once completed, the antenna should tune to approximately 146.00 MHz with an SWR of 1.0, and an impedance of 50 ohms. It will provide good performance throughout the useable amateur 2m band.

Assembly Recommendation: Read through all the instructions thoroughly, before starting the assembly process. If you require, print out the assembly instructions and the parts list. During assembly, refer to the photos on your computer so you can zoom in to each figure/photograph as required. Photo numbering matches the steps in each assembly section that you are working on.

Credits

The “Slim Jim” antenna has been documented numerous times. The calculator I used for this project was from MOUKD. I used a frequency of 147 MHz and a VF of 0.82 .

What's in the box?

QTY one (1) - 300 Ohm twin lead (~5 ft)

QTY one (1) - RG 316 coax with connector installed (~ 29 ft.)

QTY one (1) - 22-gauge bare copper wire

Heat shrink tubing:

QTY one (1) - 0.25 " x 4 cm

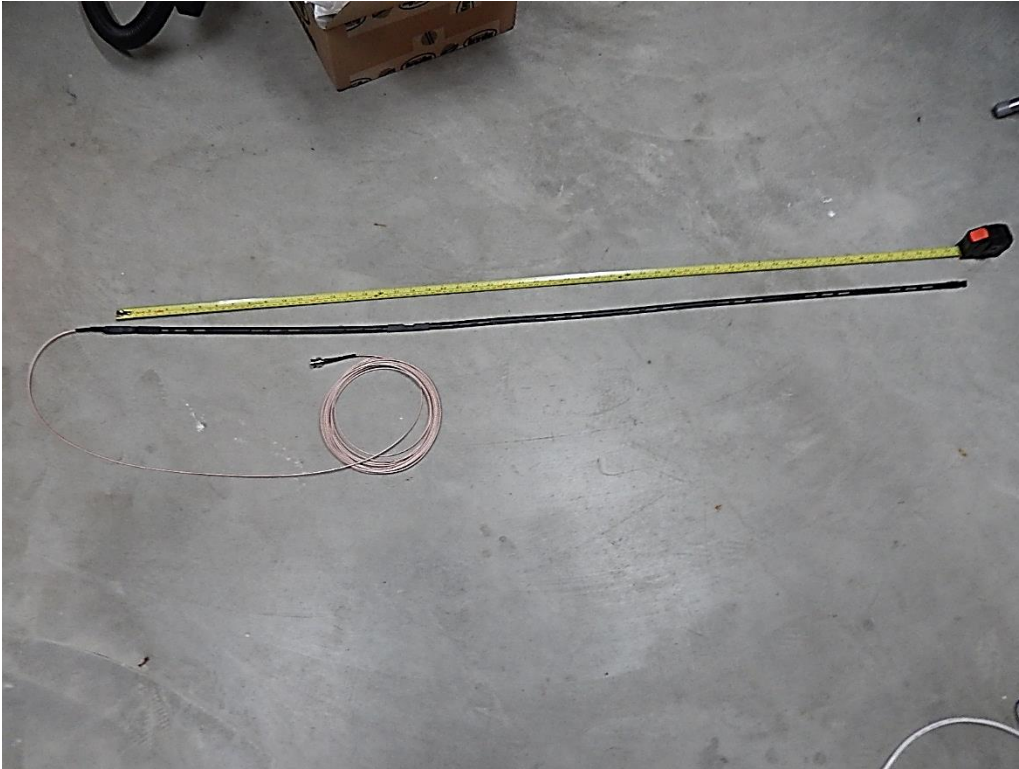
QTY one (1) - 0.375 " x 10 cm

QTY one (1) - 0.375 " x 6 cm

QTY one (1) - 0.375" x 3 cm



This is what are you going to build.



It is 128.5 cm (approx. 50.5") long plus coax.



Tools Required

- Wire cutters
- Wire strippers
- A sharp knife (Dollar Store if you don't have one)
- Soldering iron and solder
- Heat shrink gun or paint stripper
- Metric rule
- Sharpie marker

Cautionary Note: If you are using a paint stripper type heat gun to shrink the heat shrink tubing, use the low heat setting, otherwise make sure you hold the tip of the paint stripper a safe distance from the work because paint strippers produce a really hot jet of air.

Assembly Steps and Instructions

1. Slide the 0.25" x 4 cm piece of heat shrink over the loose end (i.e. the end without the connector), of the coax but do not shrink it yet.
2. Remove the tape from the coil of 300 ohm twin lead but save the tape. It will be used later.
3. Strip about 1.25 cm of insulation from one end of both conductors of the twin lead as shown below (Fig. 3). There is an excess of 300 ohm twin lead so you can take a couple of dry runs getting this right and still have enough twin lead to finish the project. Take your time. Try not to cut any of the strands of wire off in the process.

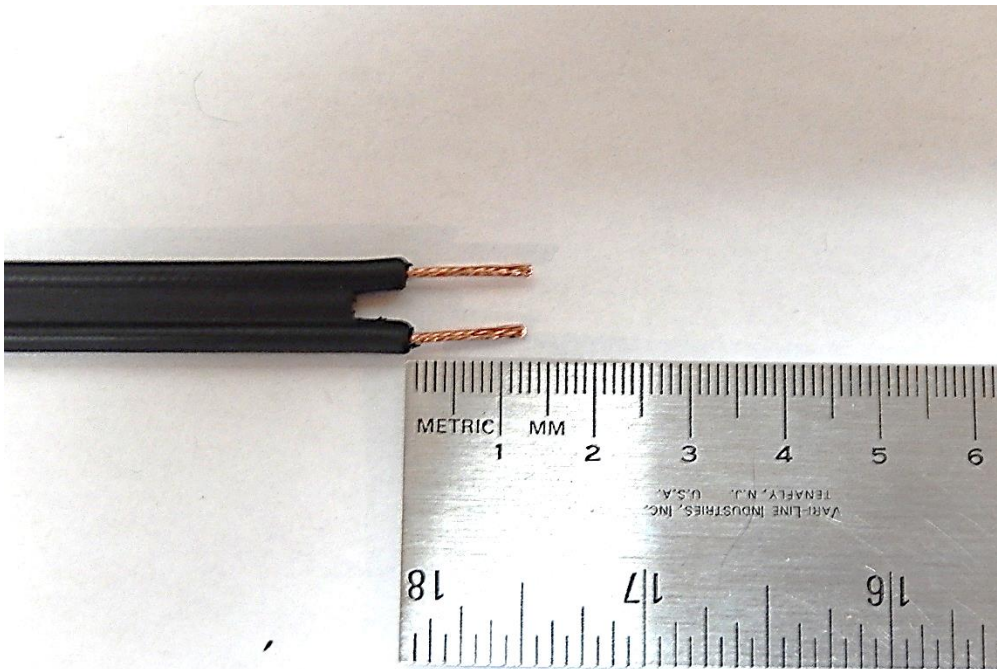


Figure 3

4. Fold over the bare wire and bind it with a short piece of the bare copper wire. Cut off any excess wire. (fig. 4)

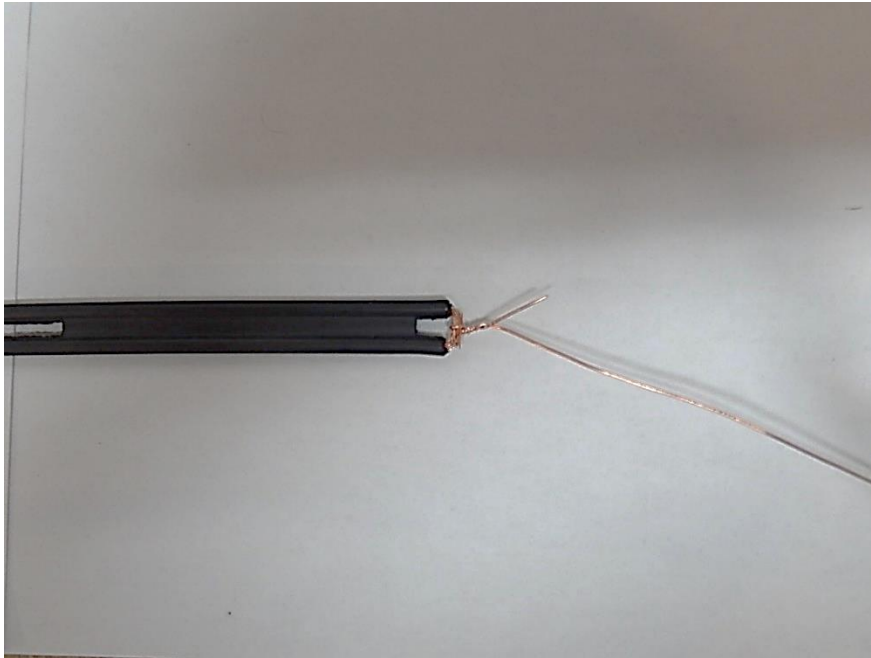


Figure 4

5. Solder the connection. (fig 5)



Figure 5

6. Measure from the soldered end to 128.5 cm and mark the twin lead with the sharpie (**DO NOT CUT IT AT THIS TIME – READ STEP 7**). (fig 6a, 6b)

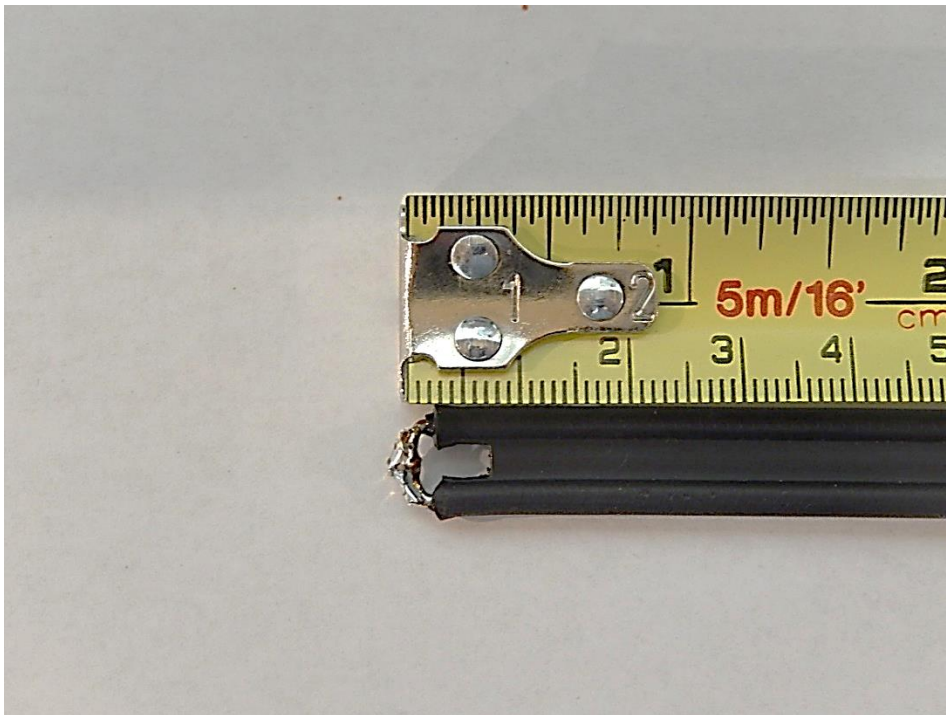


Figure 6a

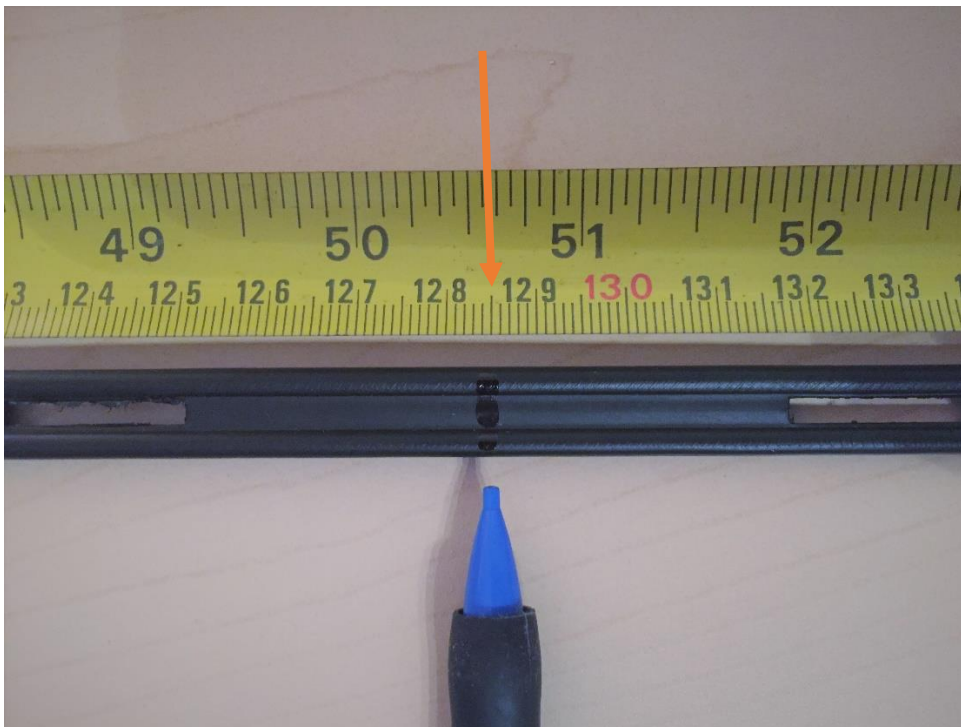


Figure 6b

7. Cut the twin lead about 1 cm past this mark. (fig. 7)

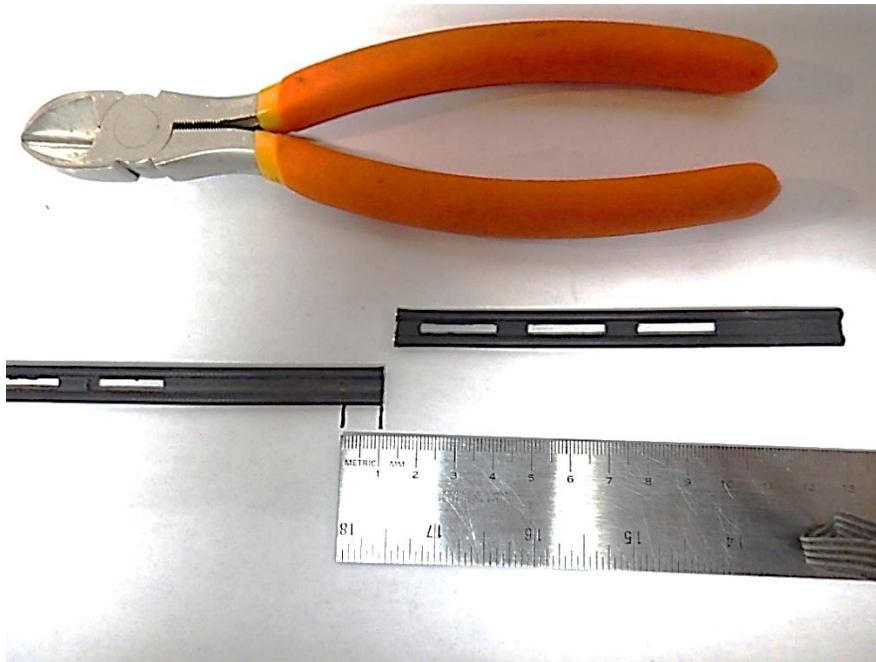


Figure 7

8. Strip, tie, and solder this end of the twin lead, like you did in steps 4 and 5.



Figure 8

9. From one end (either end will be OK), measure up and place a mark at 43 cm and at 45 cm. (fig. 9)



Figure 9

10. Cut out a 2 cm section of conductor from one side of the twin lead by making the first cut at the 43 cm mark and the second cut at the 45 cm mark made in step 9. Remove the single 2 cm wire section as shown below. (fig. 10a and 10b).

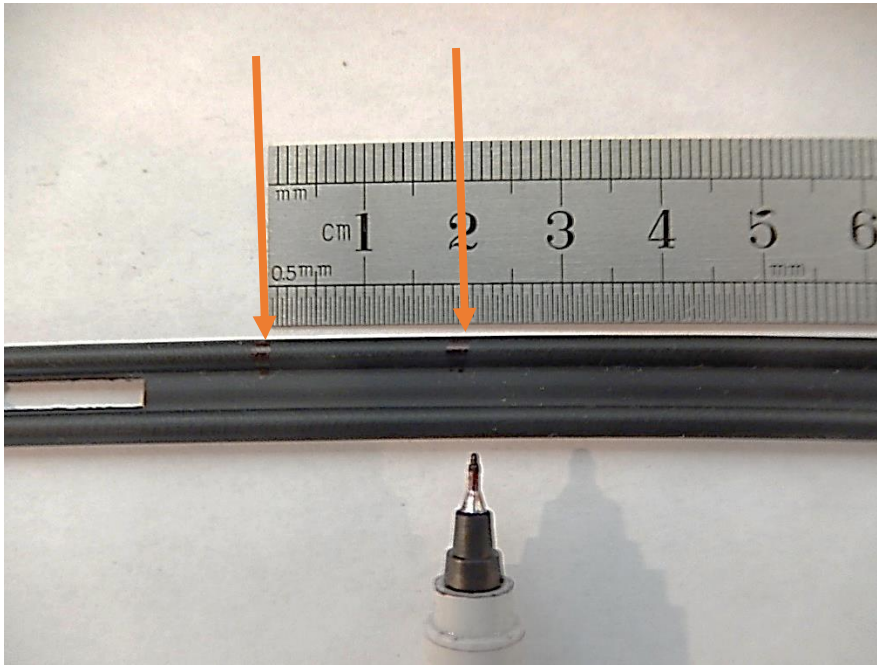


Figure 10a



Figure 10b

11. From the same end that you made your 43 and 45 cm measurements in step 9, measure up 4.6 cm and mark the cable (fig.11a). Then remove 1 cm of insulation from both conductors. Notice the 1 cm gap is centred at the 4.6 cm measurement (fig. 11b). Take your time as this is the most critical part of the build. This is where you really need a very sharp knife. Stay calm and carry on.



Figure 11a



Figure 11b

12. Now you have this. (fig 12)

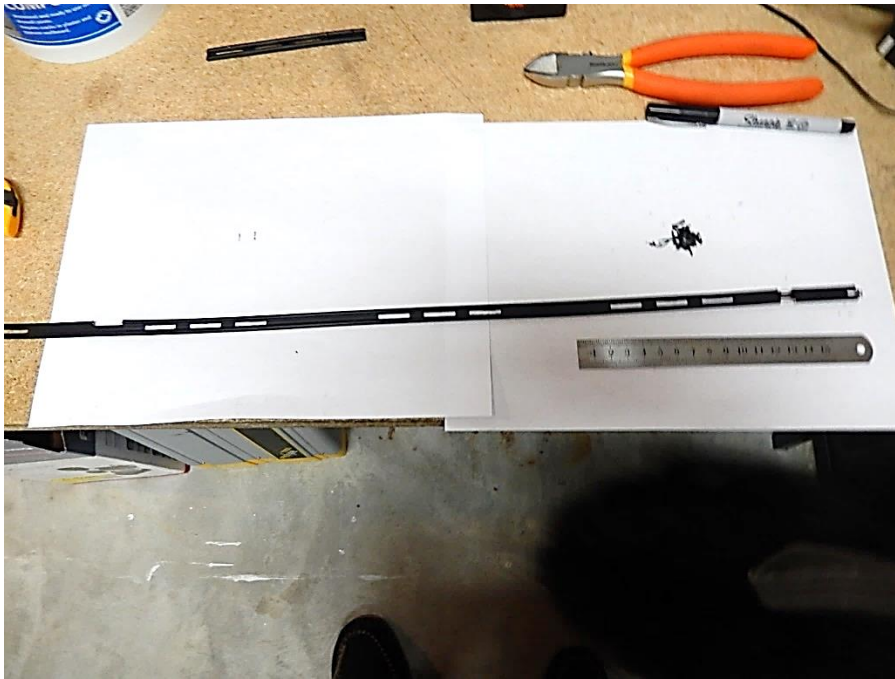


Figure 12

13. Now prepare the coax as shown. (fig. 13)



Figure 13

14. Wrap bare copper wire as shown and solder.

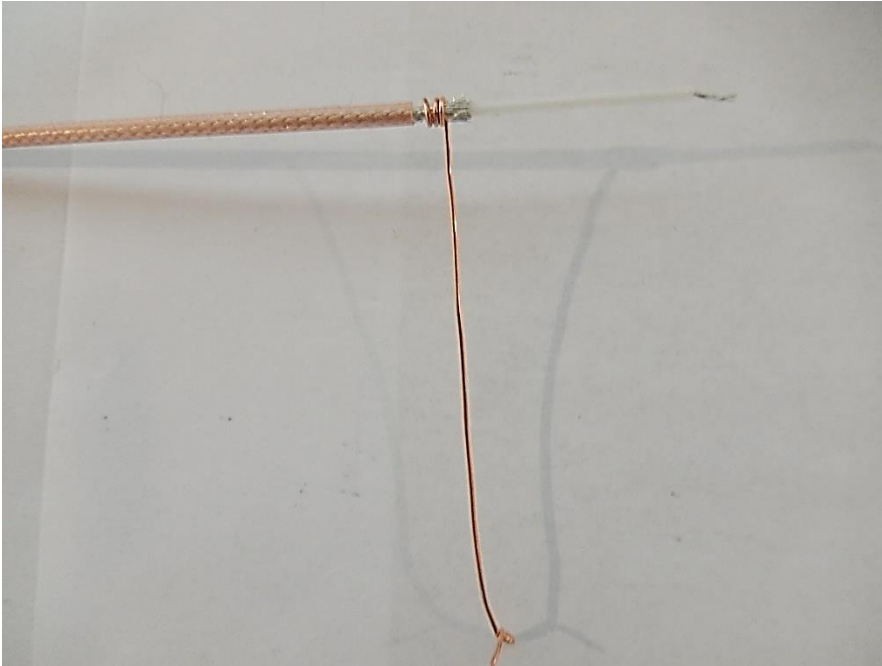


Figure 14a

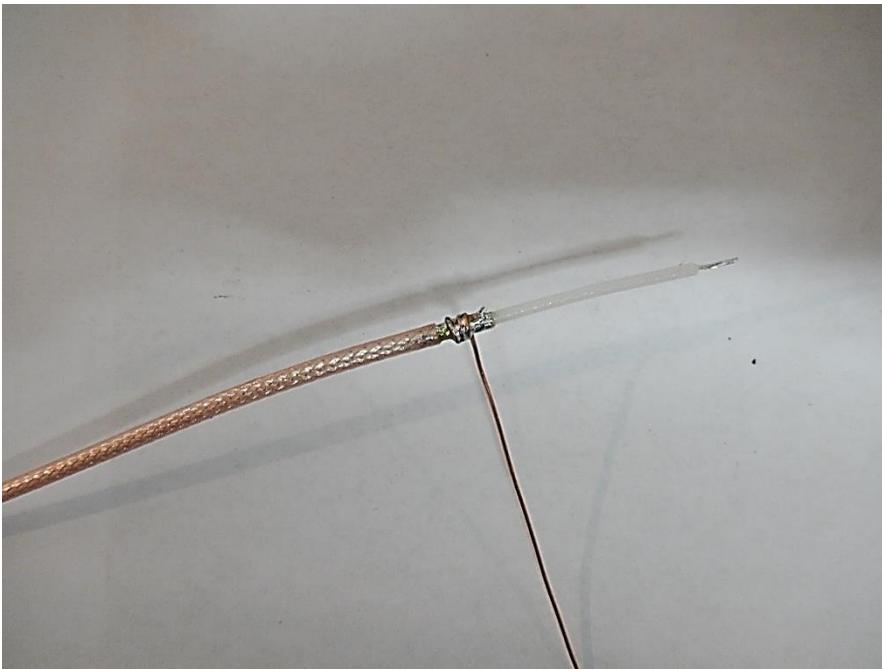


Figure 14b

15. Tape the coax to the twin lead and solder as shown below. The centre conductor goes to the long side and the shield goes to the short side of the twin lead. Try to solder the conductors as close as possible to the centre of the gap. This connection point affects feed point impedance and hence SWR. (fig 15)

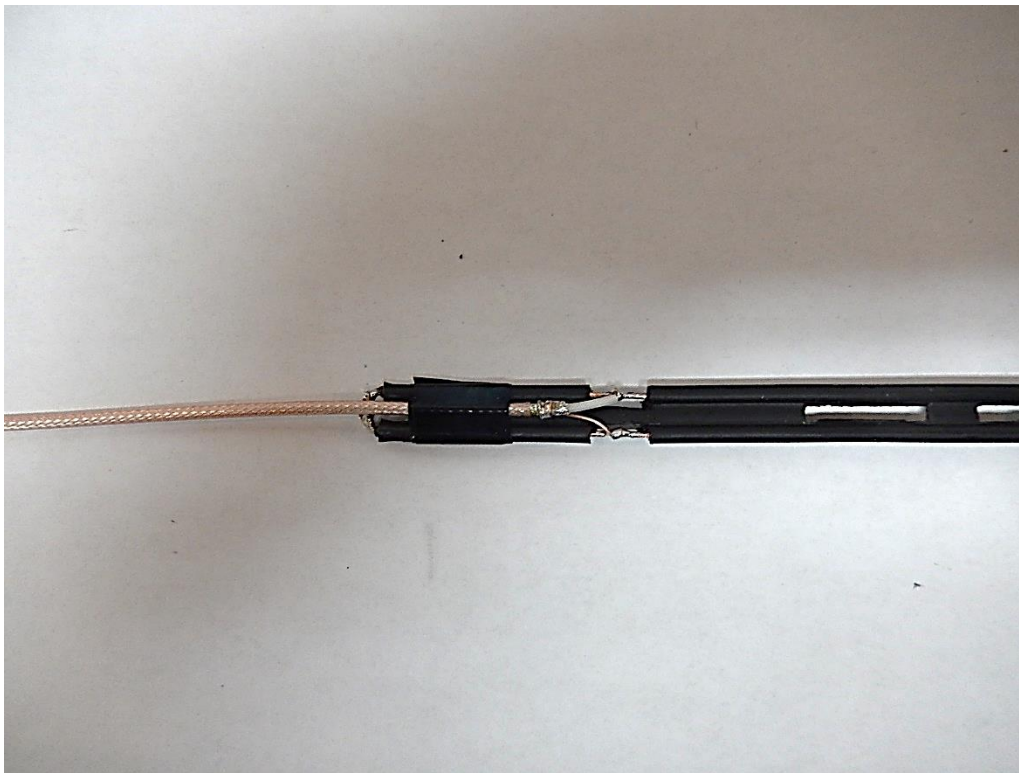


Figure 15

16. Now slide the 0.25" 4 cm piece of heat shrink as close as possible to the end of the twin lead and shrink it down to the coax. (fig. 16)

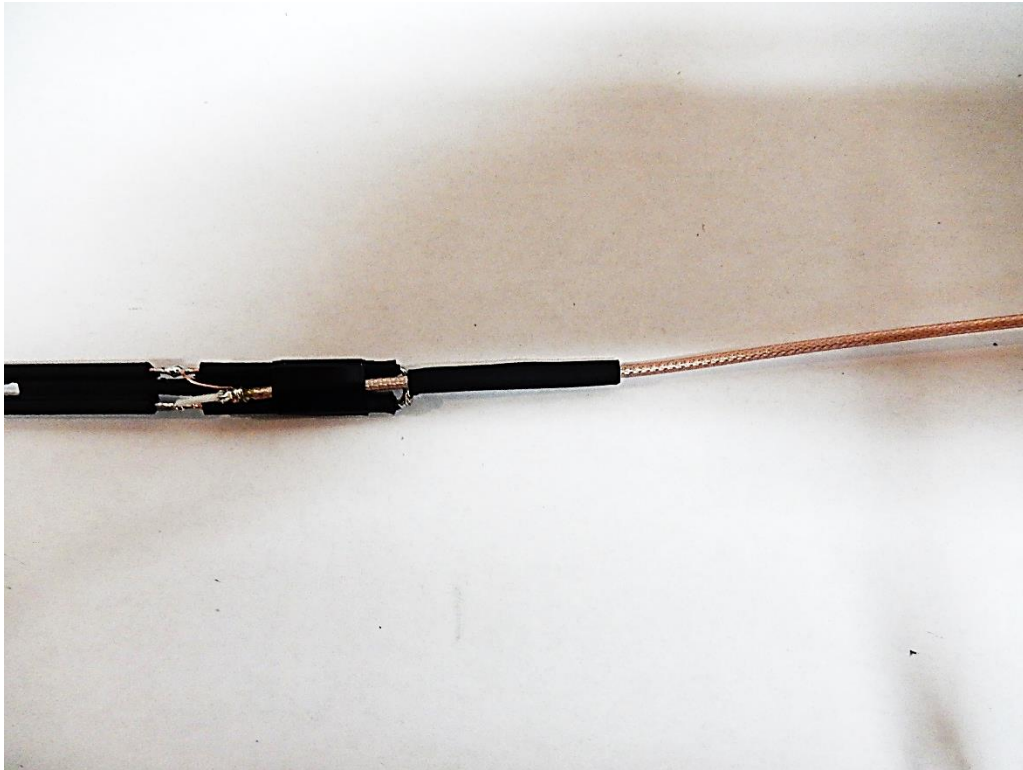


Figure 16

17. Now slide the 10 cm piece of 0.375 "heat shrink over the twin lead and cover the 0.25 " piece of heat shrink on the coax by about 2 cm and shrink it down. (fig. 17)



Figure 17

18. Slide the 6 cm piece of 0.375" heat shrink over the twin lead and cover the 2 cm gap that was cut in step 10. Space equally on either side of the gap and shrink it down. (fig. 18)



Figure 18

19. Now place the 3 cm piece of 0.375" heat shrink over the end of the twin lead. While it is still hot, crimp the end with needle nose pliers to seal the end as shown. (fig 19)



Figure 19

Congratulations, you are done!

Support the antenna in a safe and clear location away from any hazards (power lines, etc.).

I suspend mine using one of those extended fishing poles available on the internet for about \$12.00. The one I have is 16 feet long of which about 14 feet is usable. I tie a piece of string through the top gap in the twin lead and tape it to the fishing pole top. The kit is supplied with ample coax to do this.

Connect the antenna to your portable and enjoy!