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Design & Construction

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50MHz LFA Yagis

PLEASE READ!!

Making the LFA Loop

3el 1.9mtr Boom LFA

4el 3.5mtr Boom LFA

5el 4.1mtr Boom LFA

5el 4.4mtr Boom LFA

6el 6.0mtr Boom LFA

6el 6.4mtr Boom LFA

6el 6.8mtr Boom LFA

6el 7.3mtr Boom LFA

7el 8.9mtr Boom LFA2

7el 9.8mtr Boom LFA

8el 12.5mtr Boom LFA

9el 15.0mtr Boom LFA

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Making the LFA Loop

DETAILS

Created: 25 July 2009

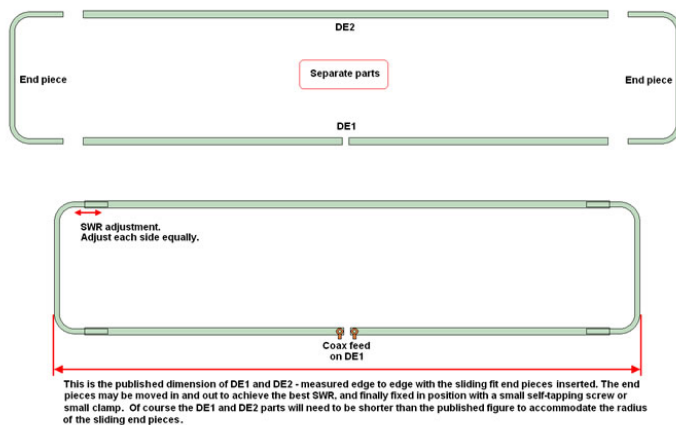


I have exchanged mails and had conversations with hams that would like to build an LFA but the prospect of making a loop is a little challenging. Making the loop is really very simple and I have decided to detail the steps I take in order to make the loop in a few very simple steps.

First, an illustration by Rob, VK2GOM/G0MOH (thanks Rob) which shows the LFA arrangement. **Note:** pay careful attention to the design you have chosen as the feed point is within DE1 on some antennas and DE2 in others.

The tool for making the LFA loop can be purchased [here](#)

Assembly and adjustment of G0KSC LFA Loop



Step 1

First of all, I treat the back and front of the loop as to separate elements (to start with) and place/mount them on the boom. Therefore, if I have a 6 element Yagi, without the loop ends joined, it looks like a 7 element Yagi. The picture below shows an antenna with the loop end piece laying on the floor next to the elements mounted to the boom. What we will now do is go back and bend another piece of smaller diameter tubing to join the ends of the driven element and first director on the other side of the antenna in order to make this 7el Yagi, a loop fed 6 element Yagi.

- 10el 17.3mtr Boom LFA
- 11el 19.8mtr Boom LFA
- 12el 22.5mtr Boom LFA
- 13el 25.2mtr Boom LFA
- 14el 27.7mtr Boom LFA
- 15el 30.3mtr Boom LFA

Other Information

- Why G0KSC Antennas?
- Performance Directives
- Mechanical Design
- Building a Yagi
- What You Say

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70MHz LFA Yagis

PLEASE READ!!

Making the LFA Loop

- 3el 1.39mtr Boom LFA
- 5el 3.38mtr Boom LFA
- 6el 4.9mtr Boom LFA
- 6el 5.32mtr Boom LFA
- 7el 6.89mtr Boom LFA
- 8el 8.52mtr Boom LFA
- 9el 10.42mtr Boom LFA
- 10el 11.99mtr BoomLFA
- 11el 13.87mtr Boom LFA
- 12el 15.70mtr Boom LFA
- 14el 19.3mtr Boom LFA

HF Yagis

- 14MHz 4el OWA Yagi
- 14MHz 5el OWA Yagi
- 14MHz 7el OWA Yagi
- 21MHz 6el OWA Yagi



Step 2

The elements on this antenna are all 1/2 inch or 12.7mm thick which is 18SWG. 3/8 inch or 9.6mm tubing fits nice and snug inside 1/2 inch so we will bend a piece of 3/8 inch tube to complete the loop. 3/8 inch is a nice size as a standard car brake pipe bender can be used to bend this tube cold. My one was purchased from Ebay for £3.99.

Make one bend in a length of 3.8 inch tube as per the photo below. Remove the pipe bender and insert the bent end into one side of the loop. In this case I will insert into the driven element section.



The photo below shows our length of tube with the bent end placed into the driven section of the loop. the other end is not yet bent. This is the part that makes the loop nice and simple to complete.



Step 3

Place the brake pipe bender back onto the 3/8 inch section of tube and move it along until the next element, the one we want to join to complete the loop, is sitting in the bend groove of the pipe bender (see photo below). Ensure that neither the back or front section of the loop is stressed and both are in their resting position. Apply a little pressure on the handles of the bender as if you were going to bend the tube

21MHz 7el OWA Yagi
 24MHz 3el LFA Yagi
 24MHz 4el LFA Yagi
 28MHz 3el LFA Yagi
 28MHz 4el LFA Yagi
 28MHz 5el OWA Yagi
 28MHz 5el LFA Yagi
 28MHz 6el OWA Yagi
 28MHz 6el LFA Yagi

144MHz LFA Yagis

PLEASE READ!!

Making the LFA Loop

4el 144MHz LN LFA
 5el 144MHz LN LFA
 6el 144MHz LN LFA
 7el 144MHz LN LFA
 8el 144MHz LN LFA
 9el 144MHz LN LFA
 11el 144MHz LN LFA EU
 12el 144MHz LN LFA EU
 13el 144MHz LN LFA EU
 14el 144MHz LN LFA
 15el 144MHz LN LFA EU
 16el 144MHz LN LFA EU
 17el 144MHz LN LFA EU
 18el 144MHz LN LFA
 19el 144MHz LN LFA

144MHz OWL Yagis

PLEASE READ!!

Matching the OWL

The OWL Folded Dipole

5el 28Ohm 1.34m
 7el 12.5Ohm 3m LT
 8el 12.5Ohm 3.9m LT
 8el 28Ohm 4.3m LT
 9el 12.5Ohm 4.7m LT
 9el 28Ohm 5.2m
 11el 12.5Ohm 6.3m LT
 13el 12.5Ohm 8.1m LT
 13el 28Ohm 8.2m
 14el 28Ohm 9m

but not too much. We want to just apply enough pressure so as the bender will not move on the tube as we remove the tube from the driven element section. the bender should remain in its current position and should not move at all.



While keeping pressure on the bender, remove the other side of the 3/8 inch tube from the rear drive section of the loop. Now complete the second bend in the tube.



Step 4

Now the second bend is done, you can now cut the end section to size, ready for final placement into the ends of the loop.



Step 5

Your done! now the section of 3/8 inch tube can slot perfectly into the ends of the loop and no tape measure or bend calculations have been needed! Make the choice of final connection of the loop carefully. While I do use stainless steel screws or nuts and bolts to hold these joints in place, the best

15el 28Ohm 9.8m

432MHz LFA Yagis

Making the LFA Loop

18el 432MHz LFA Yagi

20el 432MHz LFA Yagi

22el 432MHz LFA Yagi

24el 432MHz LFA Yagi

26el 432MHz LFA Yagi

28el 432MHz LFA Yagi

30el 432MHz LFA Yagi

50Mhz OWA Yagi Antennas

4el 2.4mtr Boom

5el 3.4mtr Boom

5el 3.6mtr Boom

5el 4.4Mtr Boom

6el 6.1mtr Boom

7el 7.1mtr Boom

8el 9.8mtr Boom

10el 15.2mtr Boom

11el 17.65m Boom

option is a spot of aluminium at the 4 points where the loop meets the end section. This will ensure you will never, ever have an issue with water ingress or shifting SWR. This said, both my current 4/6M antennas are secured with stainless steel screws only and both perform now as they did when they were first installed. Furthermore, with such wide-band antennas as the LFA it is even less likely that any movement will ever be seen. However, I do like to point out the best way of doing everything we do!



The completed loop (below) with both sections in place. As you can see, the loop is straight and no bend exist where there should not be one!



The completed project, a 6el LFA Yagi for 50MHz. This one has a 1.5 inch square boom with a 1.5 inch secondary boom beneath the first. This ensures the 7.3 metre long boom will not sag and will not require any guying. This antenna has 12.3 dBi Gain and just over 23dB F/B.



Enjoy building your LFA and remember, PLEASE ask me if you get stuck or need help, no matter how silly the question sounds, I want to help you!

73

Justin G0KSC

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