

## LINKED DIPOLE KIT INSTRUCTIONS

### Revision History

27 August 2014	First issued
16 June 2020	Removed irrelevant circuit diagram

### Linked Dipole Kit Packing List

It's a good idea to check that you have all the parts before you get started:

Item	Number	Comments
Wire Winders	2	
Laser-cut centre-piece	1	Orange
Laser-cut link insulators	4	Orange
Laser-cut end insulators	2	Orange
Toroid for balun	1	
Crocodile clips	8	
Hi-Viz cord	10	metres (about 33 feet)
Lightweight Alloy pegs	2	
	1	web link to download full instructions

If anything is missing, just get in touch for help.

## Linked Dipole Instructions

A three band linked dipole is easy to make. All you need is time!

Our instructions show you how to use our hardware. I will assume that you know how to make and adjust a dipole antenna.

This reference may be helpful if you are unsure about linked dipoles;

<http://www.sotabeams.co.uk/linked-dipoles/>

## Spotted a mistake or need help?

Please let us know if you need help! Email [support@sotabeams.co.uk](mailto:support@sotabeams.co.uk)

## Tools and other items needed

1. Antenna wire
2. Co-ax cable (RG58 or RG174 recommended)
3. Soldering iron and solder
4. Long nosed pliers
5. Tape measure
6. Wire cutters
7. Wire strippers
8. Craft knife

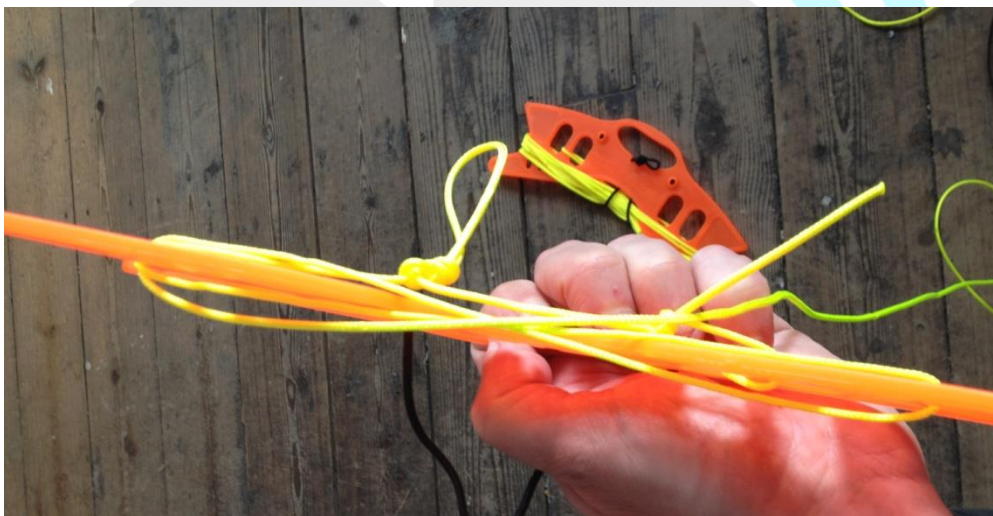
## Step by Step Instructions

### Assembling the antenna system ends

- Cut the length of Hi Viz cord into two equal lengths
- Tie one end of each length to a Wire Winder. We use a bowline knot.
- Tie in a pegging loop. We use a figure-of-eight knot.
- Tie the other end of each length to a short end insulator. We use two half-hitches.



- Wind the cord onto the wire winder using a figure of eight motion.



- Fasten the cord using the elastic tie on the wire winder.

### Assembling the balun and dipole centre

- If using RG58, pass 45cm of co-axial cable through the toroid and fasten firmly with a cable tie.



- ❑ Wind the balun as shown below. You should manage to get 7 – 8 turns through the core.
  - If using RG174, pass 45cm of co-axial cable through the toroid and fasten firmly with a cable tie.
  - Wind the balun as shown below. You should manage to get 12 – 14 turns through the core.





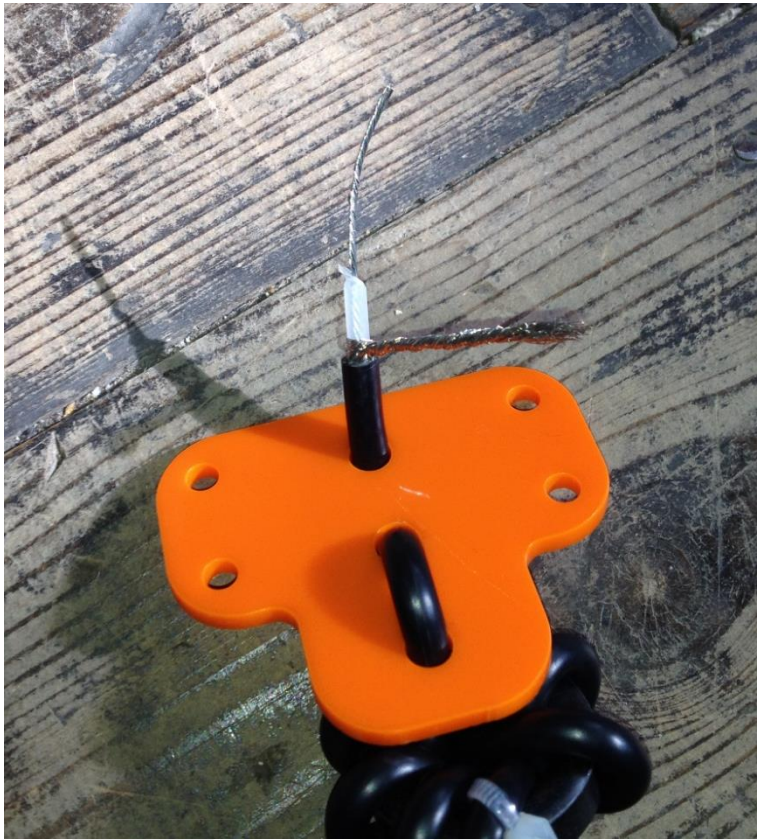


**Winding Technique** (ref: <http://myantennas.com/wp/tech-info/about-baluns/>)

- Use a cable tie to secure the free end of co-ax to the toroid (probably not required if you are using RG58).
- Thread the short co-ax tail from the balun through the centrepiece as shown.



- Cut the co-ax off so that 5 cm emerges from the centrepiece.
- Dress this end about 1.5cm from the centre piece as shown

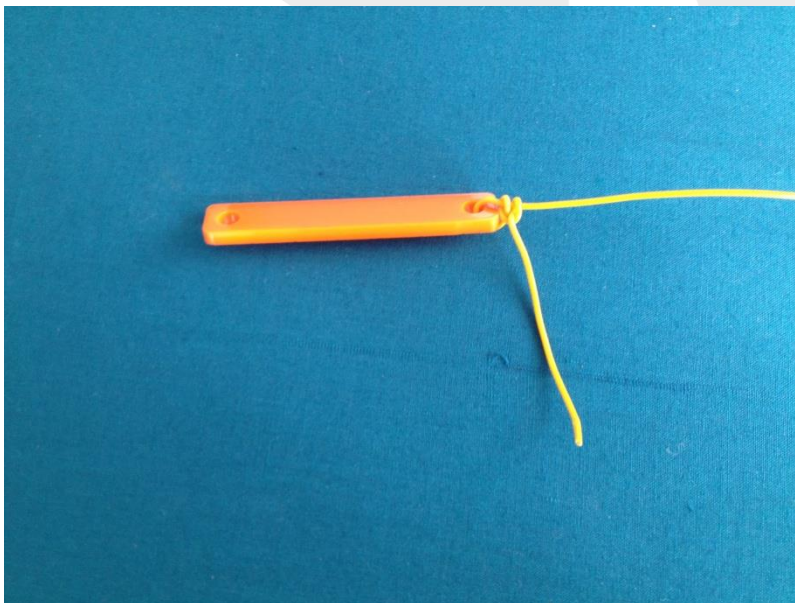


### Making the Radiator

- Use our *Linked Dipole Designer* software to design your antenna.  
<https://www.sotabeams.co.uk/downloads/>
- Cut the wire lengths for the highest frequency section of the antenna.
- Thread 10cm through the centre piece and attach as shown using the cable ties.



- Solder the connections on the centre-piece.
- On the other end of this first wire section, attach one pair of the link insulators. How you do this will depend on the type of wire that you use. Pass 8cm of wire through one of the holes in the link insulator and tie off using two half hitches. If your wire is very thick you may need to use a cable tie (not supplied) instead of a knot. Do this for both sides of your dipole.

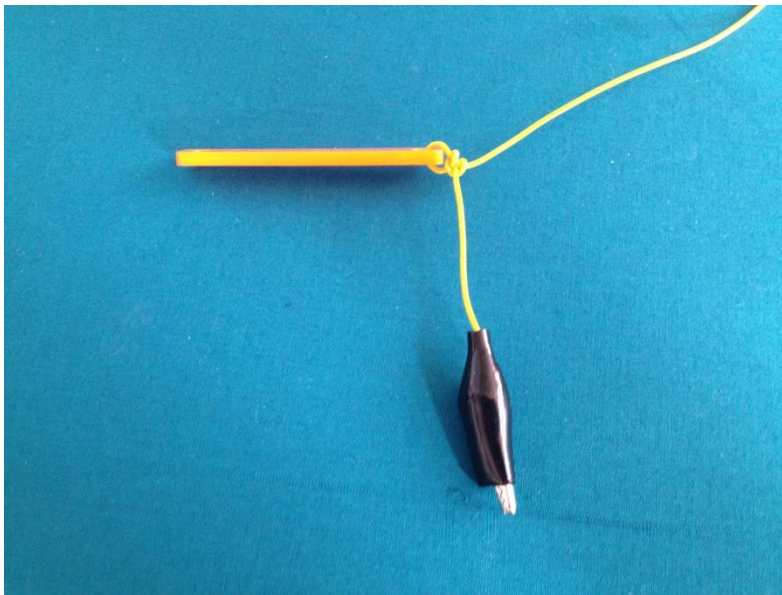


- You should now adjust this part of your linked dipole for resonance. Make sure that you do this on the mast that you are intending to use with the antenna. Attach the centrepiece to

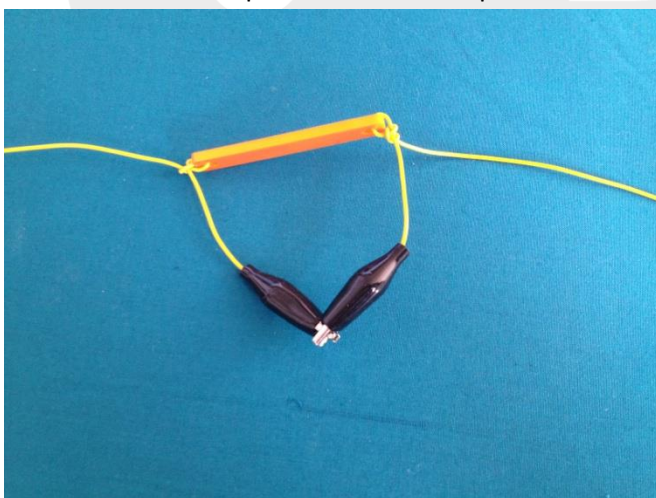


your mast using the two free holes. How you do this will depend on your mast. A piece of cord may suffice.

- Before adjusting your antenna, extend the end of the antenna with string tied loosely in the free holes in the link insulators such that the angle of the dipole to the ground will be similar to that when you have the complete antenna made. this angle will affect the resonant frequency of the antenna.
- Once this part of your linked dipole is adjusted, solder a crocodile clip on the link end of the wire.



- Now cut the next (middle) section of your antenna.
- remove any string that you attached to the links and attach the middle section of the antenna in the same way as before.
- Solder a crocodile clip to this end and clip it to the other clip.



- Attach a link to the other end of each middle section as above.
- Resonant the middle section of your antenna to the required working frequency.
- Finally repeat the process with the final section of the antenna. In this case the far ends of the antenna will be attached to the insulators and cord extensions on the wire winders.



## Final assembly

Take a few minutes to check your soldered joints. The exposed co-ax on the centre-piece should be waterproofed. This is best done with our Liquid Electrical Tape. If you don't have any, hot-melt glue or self amalgamating tape can also be used.

## Useful additional information

Not sure what cm means? Cm stands for centimetre. This is a measure of length used in most parts of the World. The following table gives conversions.

**Centimeters To Inches Conversion Table**

Cm	Inch	Cm	Inch	Cm	Inch	Cm	Inch
1	0.393700787	26	10.23622046	51	20.07874014	76	29.92125981
2	0.787401574	27	10.62992125	52	20.47244092	77	30.3149606
3	1.181102361	28	11.02362204	53	20.86614171	78	30.70866139
4	1.574803148	29	11.41732282	54	21.2598425	79	31.10236217
5	1.968503935	30	11.81102361	55	21.65354329	80	31.49606296
6	2.362204722	31	12.2047244	56	22.04724407	81	31.88976375
7	2.755905509	32	12.59842518	57	22.44094486	82	32.28346453
8	3.149606296	33	12.99212597	58	22.83464565	83	32.67716532
9	3.543307083	34	13.38582676	59	23.22834643	84	33.07086611
10	3.93700787	35	13.77952755	60	23.62204722	85	33.4645669
11	4.330708657	36	14.17322833	61	24.01574801	86	33.85826768
12	4.724409444	37	14.56692912	62	24.40944879	87	34.25196847
13	5.118110231	38	14.96062991	63	24.80314958	88	34.64566926
14	5.511811018	39	15.35433069	64	25.19685037	89	35.03937004
15	5.905511805	40	15.74803148	65	25.59055116	90	35.43307083
16	6.299212592	41	16.14173227	66	25.98425194	100	39.3700787
17	6.692913379	42	16.53543305	67	26.37795273	125	49.21259838
18	7.086614166	43	16.92913384	68	26.77165352	150	59.05511805
19	7.480314953	44	17.32283463	69	27.1653543	175	68.89763773
20	7.87401574	45	17.71653542	70	27.55905509	200	78.7401574
21	8.267716527	46	18.1102362	71	27.95275588	250	98.42519675
22	8.661417314	47	18.50393699	72	28.34645666	300	118.1102361
23	9.055118101	48	18.89763778	73	28.74015745	500	196.8503935
24	9.448818888	49	19.29133856	74	29.13385824	750	295.2755903
25	9.842519675	50	19.68503935	75	29.52755903	1000	393.700787