The SOTABEAMS SB6 Six Metre Beam Instructions

Safety

Read all the instructions before unpacking your beam.

We recommend handling the unpainted fibreglass with plastic/rubber gloves to avoid skin irritation from the fibreglass.

Occasionally sharp edges remain after manufacture on the aluminium pole couplers. Be careful when handling these.

While the SB6 six metre beam is lightweight it can still injure anyone it might fall on. Be especially careful to keep people clear when putting the antenna up or taking it down.

Do not use this antenna when lightning is possible.

We do not recommend using this antenna in high winds.

Packing list

4 x long spreaders with aluminium couplers attached

4 x long spreaders with no couplers

1 x shorter feed point spreader with BNC adapter attached

1 x black plastic circular hub

1 x antenna bag

1 x length of antenna wire on a Wire Winder

A plastic bag containing:

- 2 x spacers (orange)
- 4 x rubber end caps
- 2 x solder tags (be careful not to mislay these!)
- 1 x instruction slip with web link

We are here to help

If anything goes wrong or you are not certain about anything, don't panic! Just get in touch and we will help. My email address is Richard@sotabeams.co.uk.

 Last updated: 17 December 2014

Preparation

As a first step, we recommend painting the spreaders with a Yacht/Spar Varnish. This will protect the fibreglass spreaders but, more importantly, it will make them nicer to handle. It is best applied slightly thinned. If you decide to use paint, you can also decide what colour you want your antenna to be.

Identify the white fibre-glass spreaders with the aluminium sleeves attached. Insert these as far as possible into the black plastic hub as shown.

Insert the short feed-point spreader.

On each spreader put a pencil mark around the fibreglass spreader where it enters the hub.

Remove all the spreaders.

Mask off the part of the spreader that was inside the hub using the pencil mark.

Paint the all spreader sections (9 in total) with a thin coat of paint/varnish. Be careful not to get the paint on the BNC feedpoint.

Leave to dry fully.

Once fully dry, remove the masking. The spreaders are now be ready to use.

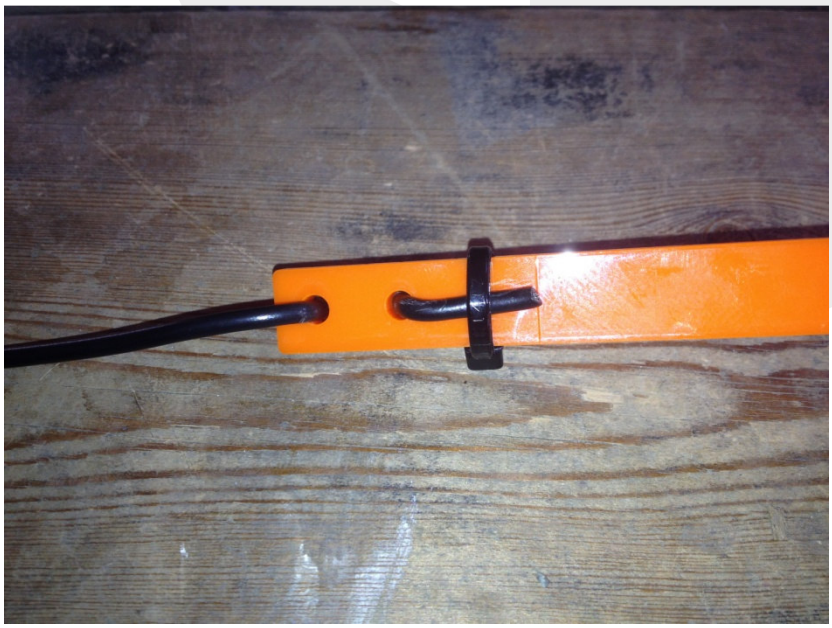
Making the Antenna Element

Reflector

Cut a length of the wire 2.835 m long (9 feet 3 ¾ inches)

Thread to through two of the black rubber end caps

Attach to the orange acrylic spacers as shown. Use the engraved marks on the spreaders to line up the ends of the wires. **Note that care is needed with this process. Do not bend the spacers when inserting the wires. If you do accidentally break the spacers, we can help you with spares!**



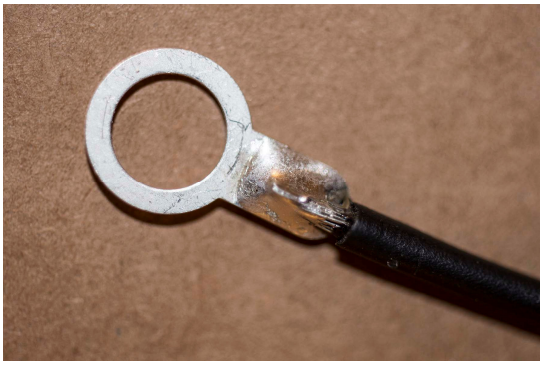
Fasten with the supplied cable ties.

This completes the reflector section of the antenna.

Driven Element

Cut two lengths of wire 1.315 m long (4 feet 3 and 7/8th inches)

Strip 4mm (0.16 inches) of insulation off each wire and solder to the solder tags as show below.



Thread one of the black rubber end caps onto each wire.

Attach the wires to the acrylic spacers as you did with the reflector. Note that care is needed with this process. Do not bend the spacers when inserting the wires.

This completes the antenna element.

Your new antenna is now ready to use.

Feeding your Antenna

For portable use, we recommend feeding your antenna with RG58c/u coaxial cable. Five metres of this cable will have a loss of about 0.5dB and be good for up to 400 Watts of power (**we recommend a maximum power of 150 Watts for our antenna however**). A higher performance alternative cable would be Aircell 5 or Aircell 7.

To get the best performance out of your antenna, you must have a balun at the feedpoint. A balun stops the feeder becoming part of your antenna system. This is important when using the SB6 as the ultimate performance can only be realised from the antenna on its own. Not using an effective balun will result in a degraded front to back ratio and possibly in reduced gain.

A current balun is easy to make using the end of your feeder. A balun using RG58c/u is described below.

The lightest way to make a balun is to wind a few turns of the coaxial cable around a suitable ferrite core. SOTABEAMS sells suitable cores (with instructions).

Alternatively use a 40mm plastic pipe former and wind 11.75 turns of RG58c/u. This will be self resonant on about 50MHz and will have a high impedance (more than 10,000 Ohms) at its resonant frequency. The impedance of the test version that I made had an impedance of greater than 2,000 Ohms from 42 to 65 MHz.

To make the former drill 5.5mm holes 58mm apart. The winding requires 168cm co-ax.

Using your Antenna

There is a video at www.sotabeams.co.uk that shows how the SB6 is used.

The hole in the centre of the hub is designed to slip over a telescopic fibreglass or carbon fibre pole. The antenna will find its own height and lodge there. Typically it will sit at 4 m above ground on a 7 m telescopic pole and 7 m above ground on a 10m telescopic pole.

We recommend our rotating guying kit for easy use of the SB6.

