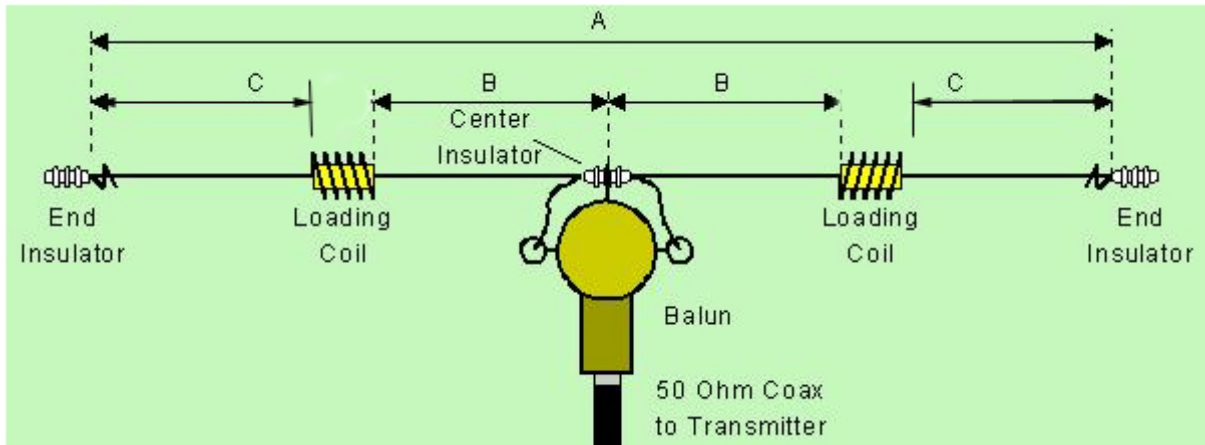# 40 meter shortened hexbeam above the 20 meter Hexbeam

The antenna is designed on a resonance frequency of 7.180 Mhz and has a bandwidth of 60 kHz (SWR < 1: 2)

A	B	C
B+C+loading coil	3840 mm (151,18inch)	1940 mm (76,378 inch)
	* Cut 4040 mm (159.06 inch)	* Cut 2340 mm (92,13 inch)

* to have enough wire to connect to the isolator increase each wire with 200 mm, For C take 200 mm twice to have enough wire to cut the wire to specific frequency. Antenna wire is made of 1.5mm2 HO7V-R

Loading coil

L= 18uH/20uH
N= 26
L= 54 mm (2,126 inch)
A= 1.5 + 42 +1.5 = 45 mm
Wire 1.5 mm winding wire (lacquered)

$$L = \frac{a^2 * N^2}{(18 * a) + (40 * l)}$$

Where:

L = Inductance (uH)
N = Total Number of Turns
l = Length of the Coil
a = Coil Outside Diameter
   (form diameter plus the wire)

PC4U, 40 meter shortened hexbeam on top of the 6 bander hexbeam

Hard to find a 42mm coil? do the recalculation by picking up your own coil dimension.

http://deepfriedneon.com/tesla_f_calchelix.html

Use this little online calculation application. Beware of the dimension D which is the coil diameter + wire Diameter!!

PVC 42 mm Coil form:

42

```
10    20          54          20    10
```

114
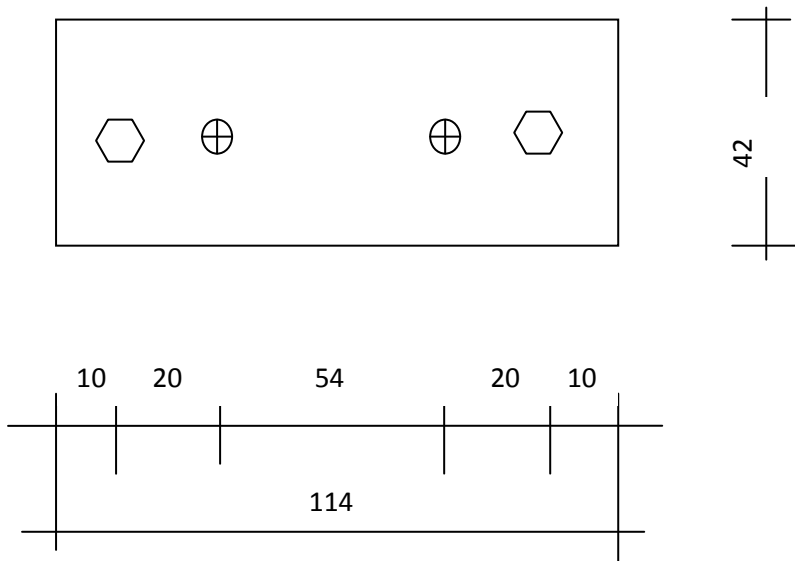
Take each piece of wire 200 mm longer in order to attach the wire.

1. Remove support cord between point 1-3 and 2-4
2. Connect the 4:1 step down Balun (12.5 balanced to 50 unbalanced) to the centre post so the connections are in line with the support cords
3. Connect the driven elements to the balun and connect the antenna wire to the support cord from center post to top of the spreader 1 and 2 with tyraps each 500 mm.
4. Connect the antenna wire to the eyebolt on top of the spreader with a tyrap.
5. Connect a part of the support wire to spreader 3 and 4 and connect this short support cord to the antenna isolator.
6. The short support card with the antenna part from spreader 1 and 2 replaces the original support wire

1   2

Loading coil   Loading coil

Isolator

short support cord   Step down balun   short support cord
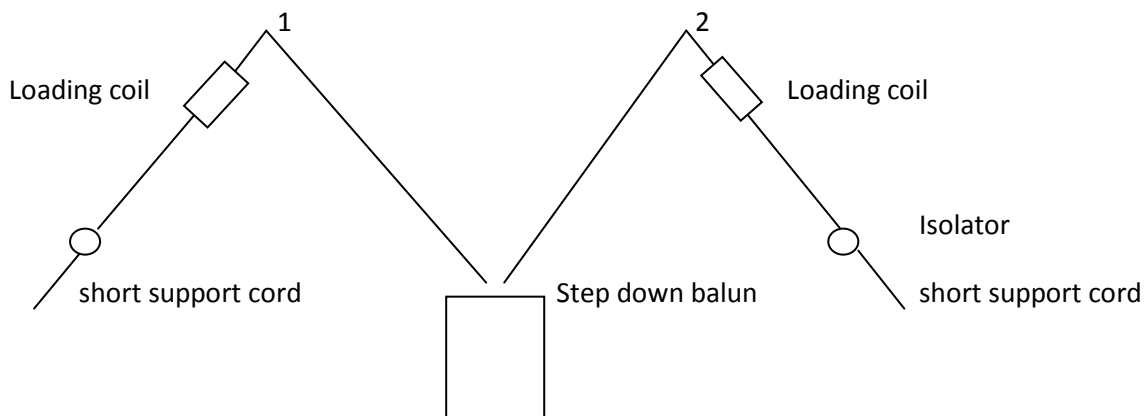
PC4U, 40 meter shortened hexbeam on top of the 6 bander hexbeam
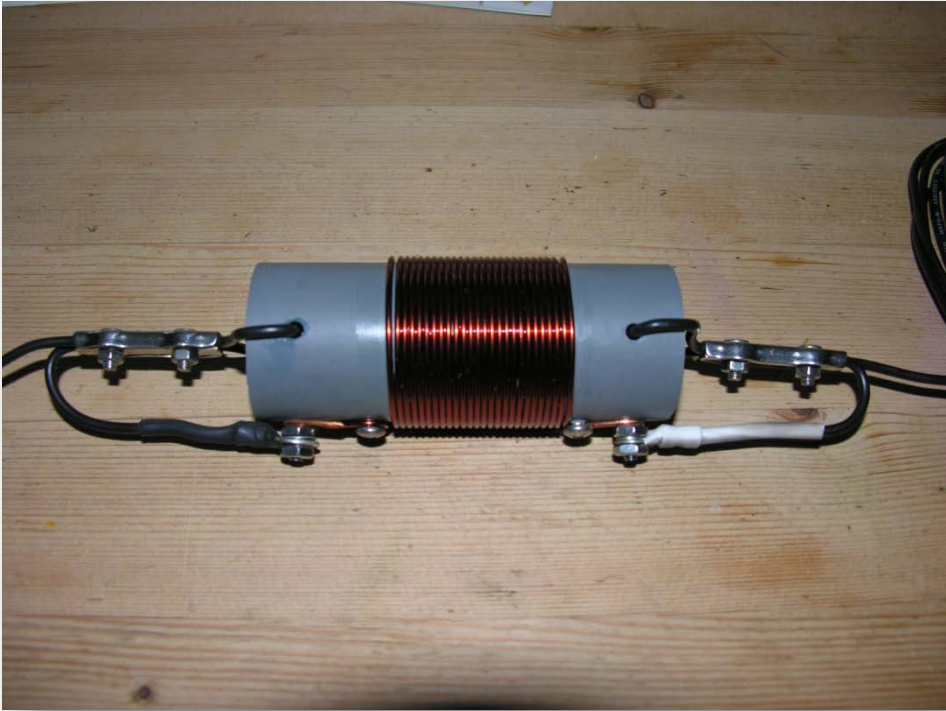
Loading Coil

PC4U, 40 meter shortened hexbeam on top of the 6 bander hexbeam
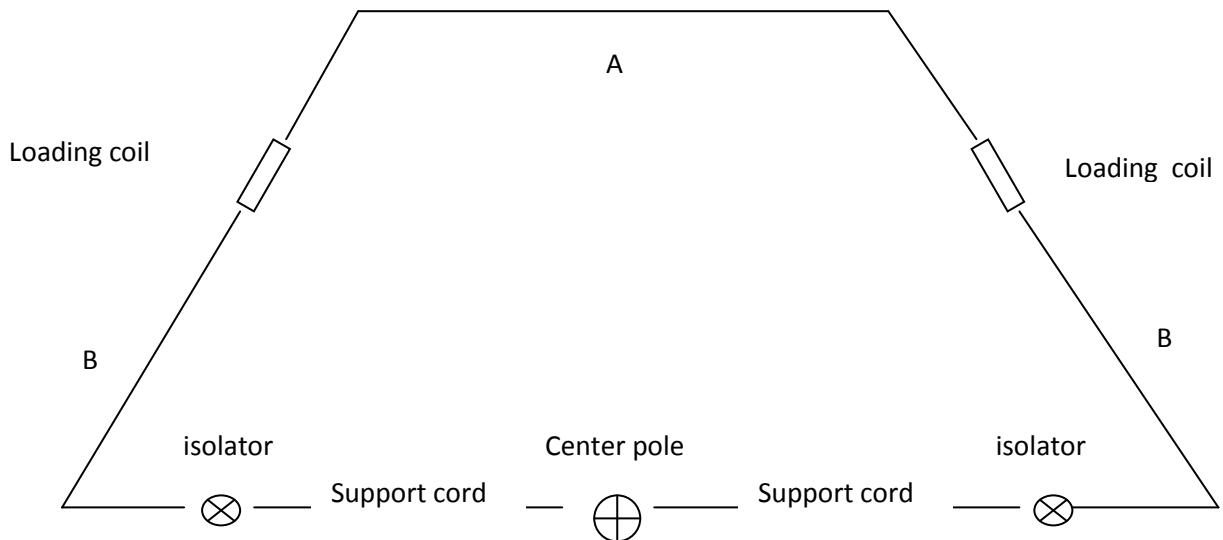
Step down Balun 4:1 CWS Bytemark bal 12.5

PC4U, 40 meter shortened hexbeam on top of the 6 bander hexbeam

Upper balun is the step down balun. Lower balun is the 1:1 balun for the hexbeam

The reflector contains **t**wo loading coils (use the same dimension and value as in the driven element). The tip of the reflector is folded inside due to its length!

*	A	B
B+C+loading coil	5440 mm (214,173 inch)	2680 mm (105,512 inch)
	* Cut 5840 mm (229,921 inch)	* Cut 2880 mm (113,386 inch)

* to have enough wire to connect to the isolator increase each wire with 200 mm. Antenna wire is made of 1.5mm2 HO7V-R

PC4U, 40 meter shortened hexbeam on top of the 6 bander hexbeam
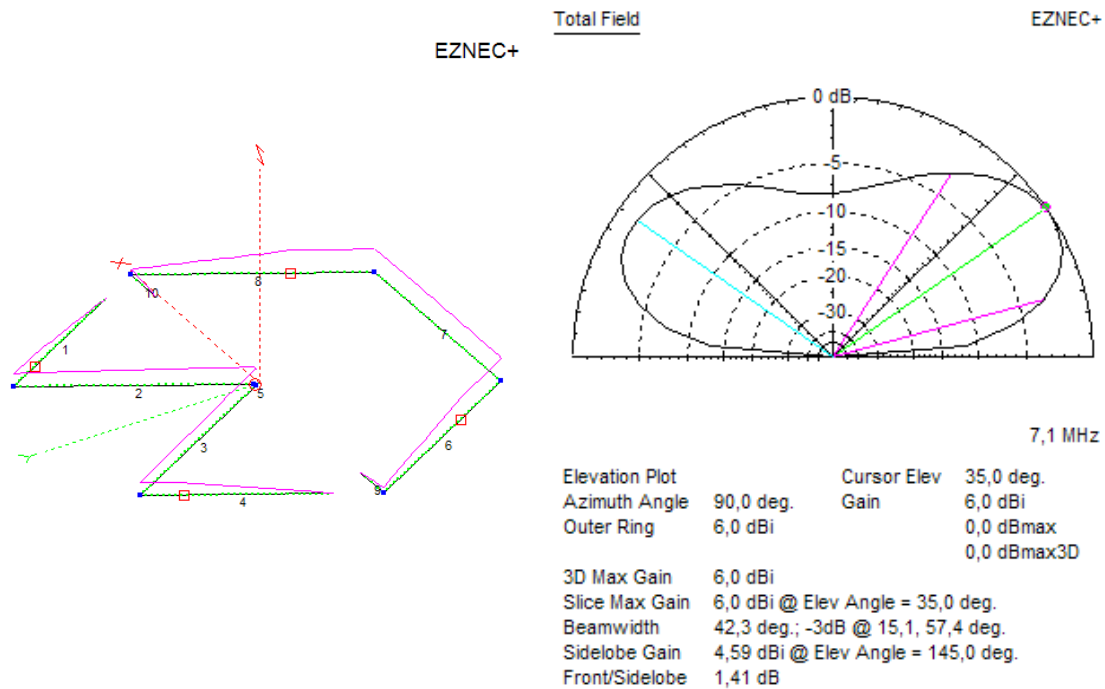
You can't compare a fullsize 40 meter antenna with this compromised shortened one. If you do, you will be disappointed. If you used to work with a fixed dipole you will be happy.

Due to the spacing , which is of course too short for 40 meter, the working is less than a real 40 meter antenna, but there is directivity with this 40 meter shortened hex. I can only compare my 40m hex with my inverted v double bazooka 40 meter antenna (fixed of course). Most of the time, the bazooka shows a higher signal strength on my TRX, but that's mostly noise showing.

With the hex I can hear station I can't hear with the bazooka, although the signal is less. No noise is the reason why.

I did some testing with the antenna and turning it off direction makes receiving 2 s-points less.

And of course don't forget propagation. For short connections a have better results with the bazooka, but on dx better results with the hex. In RX the hex always wins (no noise and clear signals).

There is no interference between the 40m hex and one of the other 6 bands. Of course you have to feed them separately!

The 40 meter is located about 10 cm above the 20 meter antenna.

73

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