

## Bob Morton VE3BFM's "Bobbipole" A Portable HF Antenna Solution

By Al Duncan VE3RRD

This dipole antenna consists of two OPEK HVT-400B mobile verticals mounted "Buddipole" fashion to an aluminum center bracket and connected to the 50 ohm coax via a 1:1 balun. The center mount can be clamped to either a metallic or non-metallic mast.



The OPEK HVT-400 covers the 6, 10, 15, 20, 40 and 80M bands by moving the supplied jumper to different plugs (taps) along the length of the antenna coil. The HVT-400 antenna connector is a PL-259.



Here, the center mounting bracket designed by Bob Morton VE3BFM is clamped to a one foot piece of 1-3/16" painted hardwood dowel which fits into the end of the top mast section – a pipe clamp keeps it from sliding all the way in. Construction of the center bracket-balun assembly is very sturdy and can accept masts up to 1-1/2 inch, all connectors are SO-239.



The overall tip-to-tip length of the "Bobbipole" dipole is 11 ft 2-1/2 in.



Jack VE3RDQ stands beside the Bobbipole mounted on a 16 foot guyed mast (since the 4 foot mast sections plug into each other 3-1/2", the actual height of the dipole was 15ft 8in). A 75 foot length of RG8X coax leads into the house for some testing.



Above is the entire antenna system – 16 feet of mast, guys and pegs, "Bobbipole" and 75 feet of coax packed into a 4 foot long rubberized canvas bag; all ready to "grab and go".



At left – the two small bolts clamped to the top of the mast fit around the clamp on the wooden dowel so that it cannot rotate in the wind. The antenna can be rotated by twisting the entire mast, the steel guy collar easily slips on the mast. I apply vinyl tape to each joint of the mast sections during assembly to keep them locked together.

At right – the whip sections must be removed every time the antenna is packed away. "Stops" made from Marrette screw type electrical connectors clamp to the whip so it can be easily returned to the correct length (165.5 cm) when assembled. Be sure to tighten the antenna set screw after removing the whip or vibration during transport may cause it to fall out and be lost.



Each HVT-400 antenna (with whip removed) slides into one of the 4 foot mast sections when packed into the carry bag. This provides protection against damage to the antennas during transport and storage.

The frequency coverage chart supplied by the manufacturer is for when the antenna is used as a vertical mobile whip, and I noticed that the measurements I was obtaining from the dipole configuration differed.

The following measurements were taken with an MFJ-269 antenna analyzer, the bandwidth given is for a VSWR of 3:1 (most any built-in auto tuner can match a 3:1 or worse). Your results may be different since nearby objects such as wires or a car or even the ground conductivity could change the antenna response when mounted this low (the 16 foot antenna height qualifies as NVIS on the lower frequency bands).

<b>Band</b>	<b>Center freq.</b>	<b>3:1 VSWR bandwidth</b>	<b>Jumper</b>
6m	55.760	54.890 to 57.830 MHz	P1 to P6
10m	28.000	26.910 to 29.060	P1 to P5
15m	21.450	20.780 to 22.145	P1 to P4
20m	14.205	13.980 to 14.410	P1 to P3
40m	7.130	7.071 to 7.170	P1 to P2
80m	3.538	3.521 to 3.555	no jumper used

The 80m coverage was OK for CW but too low for the SSB portion of the band. I found that jumpering P2 to P3 (the 40m portion of the coil) raised the center frequency.

So here is what I ended up with on 75/80M:

<b>Band</b>	<b>Center freq.</b>	<b>3:1 VSWR bandwidth</b>	<b>Jumper</b>
80m	3.538	3.521 to 3.555	no jumper
75m	3.720	3.699 to 3.736	P2 to P3
75m	3.770	3.749 to 3.787	P2 to P4
75m	3.785	3.767 to 3.804	P2 to P5
75m	3.795	3.778 to 3.816	P2 to P6

Bob also carries the plugs needed to make up your own jumpers, so I made up a pair that were shorter. Mine ended up at 325mm tip-to-tip while the jumpers supplied with the antenna are 435mm tip-to-tip (you can't go too much shorter than 325mm or they won't reach between P1 and P2).

Using the short jumper from P1 to P2 for 40m, raised the center frequency slightly.

<b>Band</b>	<b>Center freq.</b>	<b>3:1 VSWR bandwidth</b>	<b>Jumper</b>
40m	7.120	7.071 to 7.170	long jumper P1 to P2
40m	7.128	7.089 to 7.186	short jumper P1 to P2

By making up different jumper lengths, you can experiment with combinations that will work on other bands/frequencies. In the following examples, the long jumper is the one that came with the antenna (435mm) and the short jumper is the one that I made (325mm).

With the long jumper into P1 and P3, and the short jumper into P4 and P6 I was able to get usable coverage of the 17m band with a VSWR of 2.0:1 at 18.168 MHz rising to a 3.2:1 at 18.068 MHz.

This same jumper configuration also gave usable results over the entire 6m band with a VSWR of 3.5:1 at 54.0 MHz rising to 3.6:1 at 50.0 MHz.

The long jumper into P1 and P5 and the short jumper into P3 and P6 results in a center frequency of 29.303 with a 3:1 VSWR bandwidth of 28.830 to 30.055. This covers the FM portion of the 10m band.

The whip length can be adjusted (to something other than 165.5 cm) which will also change the frequencies covered by the "Bobbipole". There is much room for experimentation with whip length, jumper length and jumper position combinations.

### What's it cost?

Opek dipole package (two Opek HVT-400 antennas & center mount with balun)	\$229.95
4 - four foot fiberglass plug together mast sections (includes stainless steel guy collar)	\$39.95
75 feet RG-8X coax with PL-259 connectors installed	\$39.95
100 feet Dacron cord for guys	\$16.00
Rubberized canvas carry bag	\$6.00
<b>TOTAL</b>	<b>\$331.85</b>

Other items that were picked up at Princess Auto or elsewhere (on sale) and added to the package:

- 12 inch "PowerFist" zippered cloth tool bag (great for containing the center mounting bracket, guys, pegs, antenna jumper cables, instructions etc.)
- 3 snaps to attach to the guy cords – for instantly attaching the guys to the guy collar ring.
- 3 metal spike style 10 inch tent pegs.
- 3 "Nite ize" figure 9 rope tighteners (available at some sporting equipment stores)
- A roll of wide black vinyl electrical tape (to make connectors water resistant, fasten mast sections together etc.)
- A small hammer to drive the tent pegs into hard soil (and to pull them out again).

## How does it compare to the Buddipole?

Well, the Buddipole is designed to break down into a very small, lightweight back-packable package. If this is what you want, then the Buddipole might be better suited to your needs. Bob Morton's package breaks down into a 4 foot long bag and the system is not exactly light weight.

Although the costs of the two antennas are similar, the Buddipole requires the purchase of additional (expensive) coils to cover the 80m band.

A number of ham clubs and ARES groups are purchasing Bob's "Bobbipole" system for use as a "rapid deploy" HF antenna. Although not a high-performance or efficient antenna, it can be quickly erected and put on the air, while the more time consuming job of erecting a G5RV or other more efficient dipole is taking place (assuming there is space available for a large wire antenna).

Most ARES HF communications would be medium to short range and thus probably take place on 40m or 80m. A dipole covering these two bands that is only a little over 11 feet long and is mounted on a single support mast can be very useful.

Bob Morton VE3BFM can be contacted through the Maple Leaf Communications website at: <http://www.mapleleafcom.com/>



<http://www.on.ec.gc.ca/canwarn/home-e.html>



<http://www.rac.ca/fieldorg/racares.htm>

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