

The Buddipole™ User Manual

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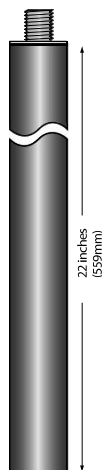
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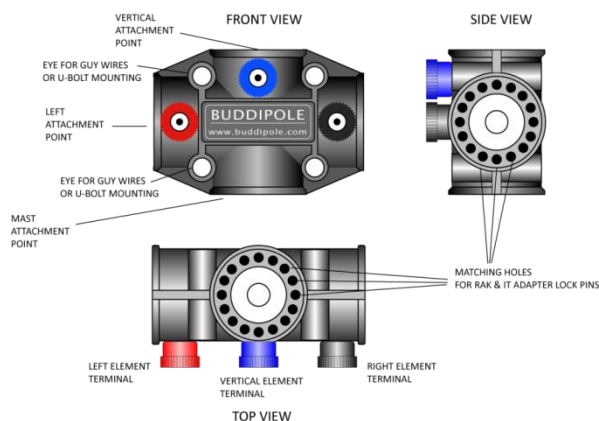
THE BUDDIPOLE SYSTEM

Welcome to the Buddipole antenna system, a unique, capable and adaptable antenna system for a wide range of applications. The light weight and modular design makes the antenna particularly suited for portable applications, but it is also well suited for other fixed situations where space is limited. Perhaps the most popular configuration is the horizontal dipole but there are many other configurations that you can try and more than we can describe in this manual. Instructions on how to set up as a horizontal dipole are provided later in this manual but first let's look at the pieces included in your Buddipole system.



The VersaTee™

The heart of this system is the central hub known as the VersaTee which provides the ability to configure the antenna in many different ways.



The red, black and blue terminals are the connection points to the left, right and vertical elements that make up the antenna. The antenna elements screw into the threaded inserts in the VersaTee body. Surrounding the central thread is a circle of holes which are used for the Rotating Arm Kit providing the ability to arrange the antenna elements to be set at different angles to suit alternative configurations of the antenna.

Antenna Arms

The Buddipole is provided with two rigid lightweight aluminum arms which can be attached to the VersaTee to create horizontal or vertically configured antennas. These standard arms are 22 inches in length and can be screwed together to make a longer arm which is particularly useful for the lower frequency bands.

In order to make a horizontal dipole the two arms are screwed into opposite sides of the VersaTee. Vertical configurations typically use a rigid arm screwed into the top of the VersaTee. To get additional length you can add the second arm to the top of the lower arm.

Telescopic Whips

Telescopic whips provide not only the convenience of small size when collapsed, but also the ability to trim the length of the antenna to resonate the antenna at the desired frequency. In conjunction with the loading coils this provides an antenna system that can be tuned for the HF bands continuously from 40m up to 6m and even the 2m band. There are two sizes of whips available. The standard whip extends to an overall length of 66 inches (1.7m) and a collapsed length of only 13 inches (330mm).



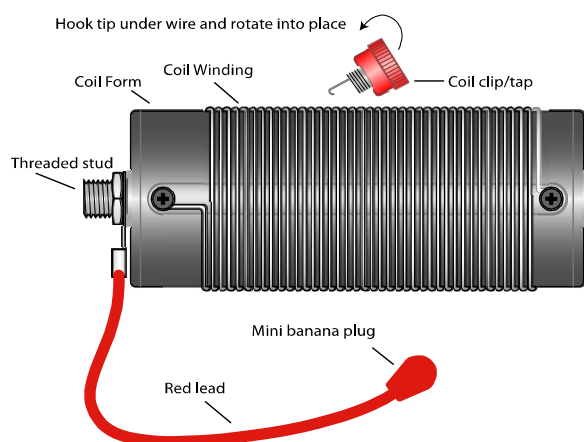
The long whip is 9.5 ft in length when fully extended.

There are six sections on each whip (including the base section). The whip should be extended by pulling out the section closest to the base section first and be sure to follow extend the section before proceeding to extending the next section.

Loading Coils

The physical size of an antenna is directly related to the wavelength of the band that you are operating on. Antennas are often classified as one half or one quarter wave length, although other sizes may be used. For example a $\frac{1}{2}$ wave dipole for the 40m band would be around 20m in overall length (approximately 65 ft). Loading coils effectively shorten the antenna physically to a more practical size by adding inductance. The amount of inductance required varies depending upon what band you are operating on. The amount of inductance can be set by the position of coil clips

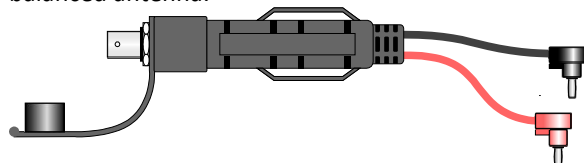
that attach to the coil. The clips have little hooks that attach to the coil so they can be placed along the length of the coil. The tap point is set by the position of the clip, so multiple taps can be set by adding clips to the coil at the desired position. This allows quick switching between bands. The clips are held in place by tightening the terminal screw. The active tap is selected by plugging in the mini banana plug into the appropriate clip terminal.



Changing the position of the coil clips or adding additional ones is easy if you follow a few simple tips. Before installing the clip unscrew the terminal knob almost completely to expose the maximum length of the clip. Then angle the clip sharply to the coil and slip the clip under the coil turn that you want (see figure above). Tighten the terminal gently taking care not to overtighten as that may stretch the coil winding. Take care not to twist the clip when tightening or it may short to an adjacent turn which will inadvertently change the inductance.

Choke Balun

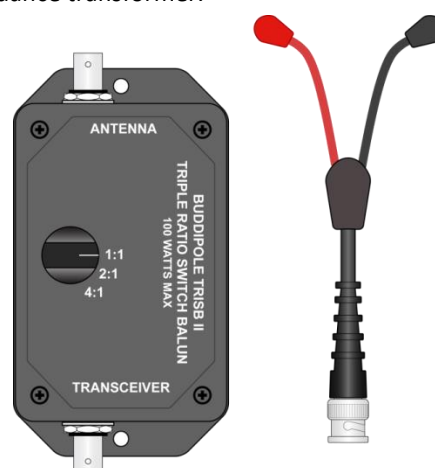
The system is normally used with coaxial cable (as supplied). It is important to have the antenna isolated from the coax by a balun which provides a conversion between the unbalanced coax and the balanced antenna.



The choke balun provided helps to minimize this problem and also provide the conversion between the mini-banana plugs and the BNC connectors used on the coaxial cable. The balun should be attached snugly to the mast using the Velcro strap provided to avoid the weight of the coax from pulling on the flexible leads.

TRSB

The TRSB (Triple Ratio Switched Balun) is an optional higher performance balun than the choke balun. It also adds capability of a built-in switchable impedance transformer.



Using the TRSB in place of the choke balun allows the antenna to be setup as a symmetrical antenna even on the lower frequency bands.

Coax Cable

The coaxial cable provided is Mil spec RG58 style cable 25 feet in length and terminated with male BNC connectors at each end. An adapter is provided to convert to the PL259 style of connector commonly used on many transceivers. This cable is well suited for use on the HF bands and also VHF bands for moderately long lengths of cable. Do not use long lengths of RG 174 type cable as it has significant loss even at HF frequencies. Be careful not to put kinks into the coaxial cable as that may adversely affect the performance of the cable and cause permanent damage.

SETTING UP YOUR BUDDIPOLE™

The basic configuration for the Buddipole is the half wave dipole which can be configured for 40 through 10m bands.

There are many configurations that you can set up your Buddipole. Here we will set up the system as a half wave dipole. For other configurations please see the document “Buddipole in the Field” which you can download directly from the Buddipole web site for free (hard copies may be purchased from the website).

Half Wave Horizontal Dipole

The term half wave dipole refers to the electrical length in wavelengths for the total antenna. This means that if the physical length is the same as the electrical length an antenna for the 40m band would be 20m in length which is impractical for a portable antenna. Fortunately an antenna can have the electrical length required but have a much shorter physical length by using loading coils. This technique is used on the lower frequency bands and is illustrated in Figure 1 below:

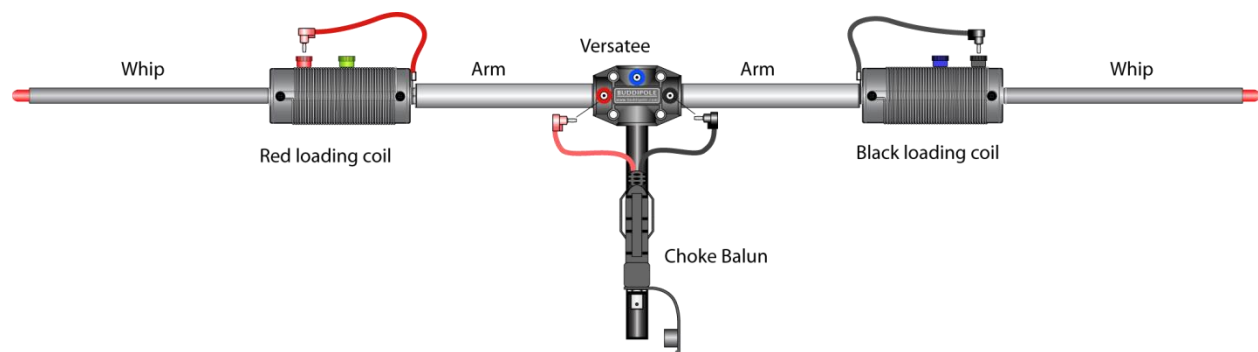


Figure 1 Configuration for horizontal Buddipole with loading coils

Set up the antenna on a sturdy tripod and mast so that the dipole is a convenient height above ground level.

- Connect the red lead of the choke balun to the red terminal of the VersaTee, and connect the black lead of the choke balun to the black terminal of the VersaTee. Strap the choke balun to the mast with the Velcro strap and connect the coaxial cable to the choke balun as shown in the figure above.
- Install the antenna arms to each end of the VersaTee and attach the loading coils at the end of each arm. Make sure that the coil with the red lead is placed on the side of the VersaTee that has the red terminal (left side of the antenna).
- Add a telescopic whip to the end of each loading coil.
- Inspect the loading coil on the left side of the antenna (red lead) and note that there are two coil clips installed. Plug the red lead into either the red or green tap depending upon the desired setting (see next page for details).
- Note that the loading coil on the right side should have two different colored taps installed. Plug the black lead into either the black or blue tap depending upon the desired setting (see next page for details).
- Attach the coaxial cable to the bottom of the choke balun and attach the other end to your rig.

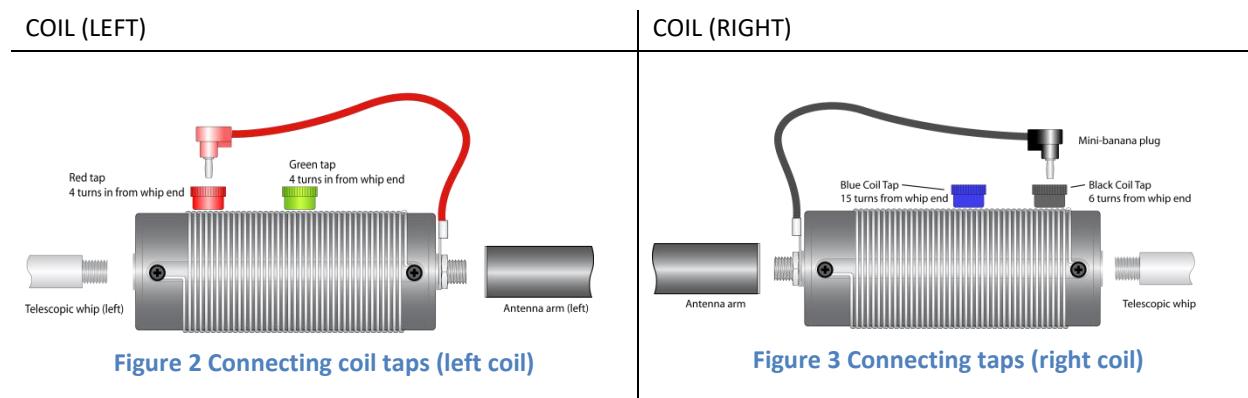
Basic configuration of the antenna configure as a horizontal dipole is now complete. Adjustments needed to set the antenna for the desired band may now be required. Consult the instructions on the next page for details.

It may be necessary to move or add taps to the coil for use on additional bands. See hints on the previous page for guidelines about how to accomplish that.

Basic Horizontal Dipole Tuning Examples for Standard Whips

The chart below (Table 1) provides setup examples for all bands from 40m to the 2m band for a Buddipole using standard (66 inch) whips.

When tuning an antenna, please note that antennas can be affected by close proximity to other objects such as the ground, buildings or trees. The settings provided are guidelines for antennas that are set up about 12 feet from the ground and in the clear. You may have to use slightly different settings if you set up your antenna close to a building or at a different height. In general when you reduce the distance between the antenna and the ground the resonant frequency of the antenna will also be reduced slightly. This can usually be compensated for by reducing the length of the whips.



The coils may have several coil taps set in place so that rapid change between settings can be accomplished by moving the mini-banana plug from one coil tap to another. Popular settings are shown in the figure above, but you can move or add taps to give you extra capability.

Example settings

Consult the table below for standard length whips. You will see that the recommended settings for the 17 m band are with the left whip (red side) extended to 5 sections and the right whip extended to 5.3 sections total is approximately 5 fully extended sections with 2 inches extended on the final section. The red coil lead would be plugged into the green tap (positioned at 10 turns) and the black coil lead would be plugged into the black tap which is positioned at 6 turns.

IMPORTANT NOTE: Tap positions are measured from the TOP end of the coil. That is end of the coil connected to the telescopic whip>

NOTE: The antenna does not use loading coils on the 6m or 2m bands. Remove the coils and attach the whips directly to the ends of the 22 inch arms (see Figure 4 Full size Horizontal Dipole setup)

Table 1 COIL AND WHIP SETTINGS 40 - 1m BANDS (STANDARD WHIPS)

Bands	Center Freq	2:1 BW	LEFT SIDE COIL		RIGHT SIDE COIL	
			Whip length	Tap position	Whip length	Tap position
40 m	7.16 MHz	0.23 MHz	66"	Yellow	55.0"	Yellow
30 m	10.07 MHz	0.15 MHz	66"	24	55"	20
20 m	14.19 MHz	0.48 MHz	51"	10 (Green)	61.5"	15 (Blue)
17 m	17.94 MHz	0.75 MHz	55.5"	10 (Green)	51"	6 (Black)
15m	21.3 MHz	1.43 MHz	66"	4 (Red)	65"	6 (Black)
12m	25.15 MHz	2.2 MHz	66"	2	63"	4
10m	29.25 MHz	4.21 MHz	66"	2	64"	2

Note: All antenna configurations in the table above use a 22 inch arm on each side of the antenna as shown in Figure 1 (page 4).

The Buddipole horizontal dipole will also work very well on the 6m and 2m bands. On those bands you can make a full size horizontal dipole with the added benefits that the relatively large diameter of the whips provides excellent bandwidth. A full-size antenna means that you won't need the coils and in fact you won't need the antenna arms either. The antenna should be set up as shown in Figure 4 below, and the tuning information is provided in Table 2.

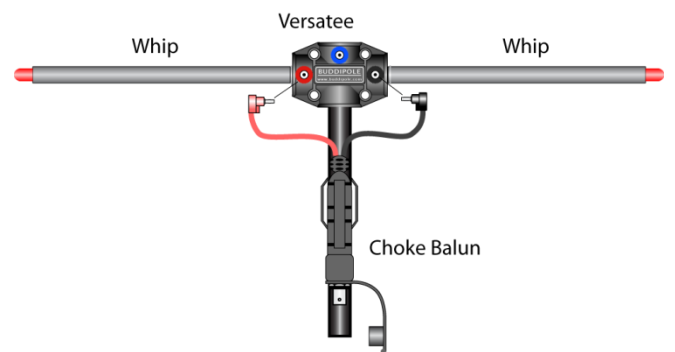


Figure 4 Full size Horizontal Dipole setup without loading coils or arms

Table 2 COIL AND WHIP SETTINGS 6m - 2m (STANDARD WHIPS)

Bands	Center Freq	2:1 BW	RED SIDE			BLACK SIDE		
			Whip length	Arm	Coil	Whip length	Arm	Coil
6m ¹	52 MHz	6MHz	50"	No	No	50"	No	No
2m ¹²	145 MHz		15"	No	No	15"	No	No

¹ Antenna with standard whips does not use coils for the 6m or 2m bands.

² TRSB II Is recommended for use on the 2m band