

HF2B_dx 80/160mt Vertical antenna



ISTRUZIONI MONTAGGIO ANTENNA

HF2B_dx by IT9ZMX

Thank you for buying a HF2B DX antenna.

This manual will guide you to the perfect assemblage and montage of your **HF2B_dx**, as well as to the correct calibration process in the bands 3,5 e 1,8

To build up the antenna, you'll need:

- **wrenches:** 8/9, 10/11, 12/13, hexagonal 5 mm and 3 mm
- **screwdrivers** (both flat-bladed and Phillips)
- **chiavi esagonali 3 e 5**

N.B. We recommend the use of **2 - 3 wooden stands**.

PART LIST

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|---|---------------------|-------------------------|
| 1) Stainless steel tube Ø 60 x 1,5 x 245 mm with insulator | (Base) | (red sticker) |
| 2) Aluminium tube Ø 60 x 3 x 1800 mm with insulator (M - L) | | |
| 2a) Second insulator | (ring in aluminium) | |
| 3) Aluminium tube Ø 60 x 3 x 1950 mm | (L - K) | |
| 4) Aluminium tube Ø 60 x 2 x 1950 mm | (K - J) | |
| 5) Aluminium tube Ø 55x 2 x 1950 mm | (J - I) * | (fifth wheel tensioner) |
| 6) Aluminium tube Ø 50 x 2 x 1950 mm | (I - H) | |
| 7) Aluminium tube Ø 45 x 2 x 1450 mm | (H - G)* | (fifth wheel tensioner) |
| 8) Aluminium tube Ø 40 x 1,5 x 1450 mm | (G - F) | |
| 9) Aluminium tube Ø 35 x 1,5 x 1450 mm | (F - E) * | (fifth wheel tensioner) |
| 10) Aluminium tube Ø 30 x 1,5 x 1450 mm | (E - D) | |
| 11) Aluminium tube Ø 25 x 1,5 x 1250 mm | (D- C) * | (fifth wheel tensioner) |
| 12) Aluminium tube Ø 20 x 1,5 x 1250 mm | (C - B) | |
| 13) Aluminium tube Ø 16 x 1 x 1250 mm | (B - A) | |
| 14) Aluminium tube Ø 12 x 1 x 1250 mm | (A) | |
| 15) N. 6 pipe clamp rings | | |

- 16) Aluminium coil n. 14 turns for 1,8 MHz with ring
17) Aluminium coil n. 12 turns for 3,5 MHz with ring

- 18) Tuner box 1,8 MHz
19) N. 4 fifth wheels in Derlin upwind
20) N. 1 base in Ergal for antennas and radials
21) Stainless steel bolts

STEP 1

- 1) Put together the base of the antenna in Ergal following the instructions of the datasheet (**BASE ANTENNA**) and fasten it through the holes M 12 located at the angles of the base.
- 2) Fasten Tube 1 ($\text{Ø } 60 \times 1,5 \text{ mm INOX}$) through the lowest pivot of the antenna (M10,5 x 120 mm).
- 3) Connect Tube 1 ($\text{Ø } 60 \times 1,5 \text{ mm INOX}$) to Tube 2 ($\text{Ø } 60 \times 3 \times 1800 \text{ mm}$) in such way that the two red sticky notes match together by insering just one M6x70 mm screw. (Keep the two central holes free to permit the insert of the Tuner box) – see picture 1A
- 4) Insert the aluminium coil for 1,8 MHz by putting the aluminium ring in the tube $\text{Ø}60\text{mm}$ without connecting the other end (the Tuner box will be build up later)
- 5) Insert the second insulator on Tube 2 with the 2 hose clamps. Stainless steel and aluminium) – see picture 2A
- 6) Insert into Tube 3 (L - L) $\text{Ø } 60 \times 3 \times 1950 \text{ mm}$ the stainless steel hose clamps 60/65.
- 7) Insert the aluminium coil into Tube 3 for 3,5 MHz with his stainless steel rings $\text{Ø } 60 \text{ mm}$ and connect the other end of the coil in the stainless steel aluminium rings build previously on Tube . – see picture 3A
- 8) Insert into tube 4 (K - K) $\text{Ø } 60 \times 2 \times 1950 \text{ mm}$ in the second insulator and put the 60/65 steel band
- 9) Insert the first fifth wheel in Derlin for the tie rods
- 10) Insert the Tube 5 (J - J) $\text{Ø } 55 \times 2 \times 1950\text{mm}$ with the special 53/55 hose clamp and the M6x70mm screw

Before continuing with the assembly of the antenna, read the file "HOW TO RAISE THE ANTENNA".

- 11) Insert the Tube 6 (H - H) $\text{Ø } 50 \times 2 \times 1950\text{mm}$ with a special band 48/51 and 2 screws M5x60mm - see picture 4A
- 12) Insert the second fifth wheel in Derlin for the tie rods
- 13) Insert the Tube 7 (G - G) $\text{Ø } 45 \times 2 \times 1450\text{mm}$ with appropriate 2 screws M4x50mm
- 14) Insert the Tube 8 (F - F) $\text{Ø } 40 \times 2 \times 1450\text{mm}$ with appropriate 2 M4x45mm screws
- 15) Insert the third fifth wheel in Derlin for the tie rods
- 16) Insert the Tube 9 (E - E) $\text{Ø } 35 \times 2 \times 1450\text{mm}$ with 2 M4x40mm screws
- 17) Insert the Tube 10 (D - D) $\text{Ø } 30 \times 2 \times 1450\text{mm}$ with appropriate 2 M4x35mm screws
- 18) Insert the fourth fifth wheel in Derlin for the tie rods
- 19) Insert the Tube 11 (C - C) $\text{Ø } 25 \times 2 \times 1450\text{mm}$ with 2 M4x30mm screws
- 20) Insert the Tube 12 (B - B) $\text{Ø } 20 \times 2 \times 1450\text{mm}$ with appropriate 2 screws M4x25mm
- 21) Insert the Tube 13 (A - A) $\text{Ø } 16 \times 2 \times 1450\text{mm}$ with appropriate 2 M4x20mm screws
- 22) After the antenna is lifted upright, insert the Tuner box, and connect the 160 mt coil to the latter

STEP 2

- 1) Connect the radials in the 48 holes in the base of the antenna; (it is advisable, initially, to put at least 4, and subsequently, after the calibration, put all the others)
- 2) Position both coils (through the collars) so as to have a spacing of about 8/10 mm between each coil;
- 3) Connect the coaxial cable to the RTX transceiver or to the analyzer;
- 4) It is recommended to make a Stub of 26 turns of RG213 cable or similar on $\text{Ø } 120 \text{ mm}$ tube, to be connected directly under the antenna.

Picture 1A



Picture 2A



Picture 3A



Picture 4A



STEP 3

ANTENNA CALIBRATION

The calibration is done starting from the lowest to the highest band (1.8 MHz, 3.5 MHz). This operation can be done several times, in order to obtain the best performance of the antenna.

1,8 MHz Band

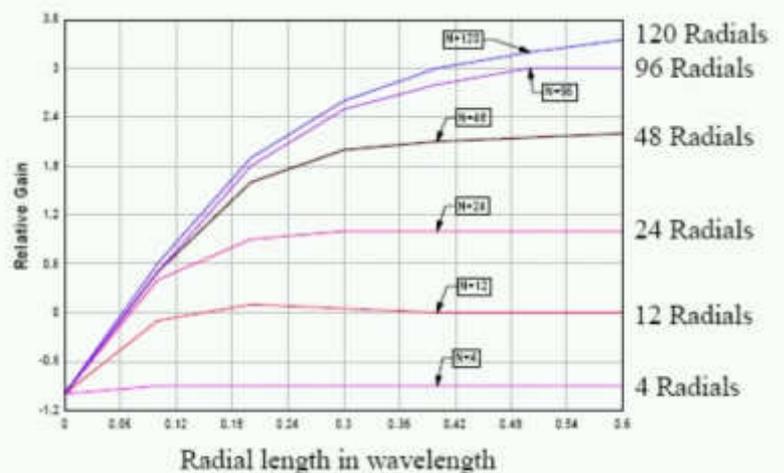
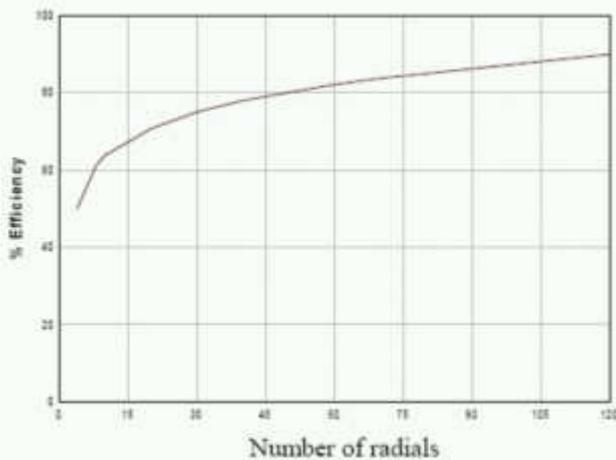
Loosen the two screws of the coil ring, and act on the same or up or down. This involves lengthening or shortening the coil, and therefore increasing or decreasing the resonant frequency, until the desired frequency is obtained.

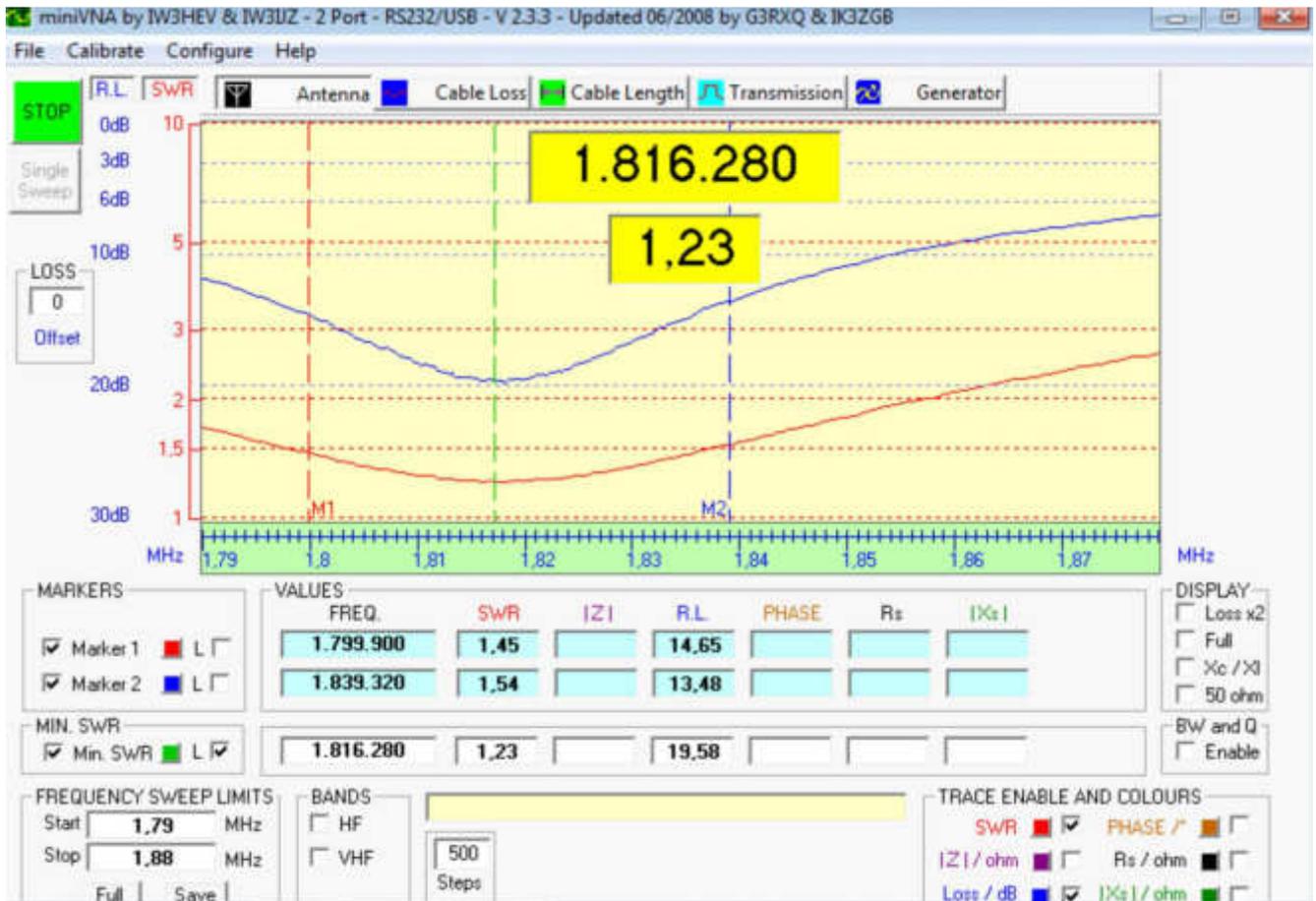
(Example: if the antenna resonates at 1.780 MHz it means that it is long, so you have to raise the ring of the coil upwards, vice versa if the antenna resonates at 1.890 MHz means that it is short and then you have to lower the ring of the coil downwards).

3,5 MHz Band

Loosen the two screws of the coil ring, and act on the same or up or down. This involves lengthening or shortening the coil, and therefore increasing or decreasing the resonant frequency until the desired frequency is obtained.

(Example: if the antenna resonates at 3.470 MHz it means that it is long, so you have to raise the ring of the coil upwards, vice versa if the antenna resonates at 3.850 MHz means that it is short and then you have to lower the ring of the coil downwards).





BASE ANTENNA

- 1) Screw the two side supports of the antenna base through the 6 M8 pivots with a conical head;
- 2) Assemble in stainless steel tube using the lower hole of the vertical supports of the base

Picture B1



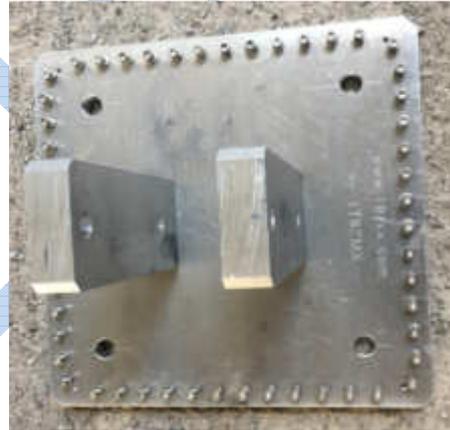
Picture B2



Picture B3



Picture B4



Picture B5



Picture B6



HOW TO RAISE THE ANTENNA

- 1) From the point where the antenna base is mounted on the antenna, prepare the tie rod anchors at a 90 ° angle and a minimum distance of 9 meters from the base. see <figure 1>.
- 2) At point 8 of the "assembly instructions", position the antenna on the ground exactly as shown in <figure 1>
- 3) Raise the first part of the antenna already mounted, and hook the first order of tie rods in the 4 anchor points. Then adjust the tie rods so that the antenna is perfectly vertical. Now, unhook only the tie rod connected to base 3 (see figure 1) and leaving the other three hooked, lower the antenna.
- 4) Continue with the installation of the antenna up to point 11 of the instructions, then raise the second part of the antenna already mounted and adjust the second order of tie rods so that the antenna is in a perfectly vertical position. Lower the antenna by releasing only the tie rod connected to base 3
- 5) Continue with the installation of the antenna up to point 14 of the instructions, then raise the third part of the antenna already mounted and adjust the third order of tie rods so that the antenna is in a perfectly vertical position. Lower the antenna by releasing only the tie rod connected to base 3
- 6) Mounted the whole antenna, raise the antenna leaving the 4th order of free tie rods. Raise the antenna for the last time by pulling only the first 3 rows of tie rods. ATTENTION do not use the last order of tie rod as a rope to raise the antenna, it may break the final part of the antenna.
- 7) Insert the second pivot M10 x 120 mm into the base of the antenna and lock both pivots.
- 8) Once the antenna is raised connect and put the slight pull also the fourth and last order of tie rods.
- 9) Insert the second antenna fixing pivot (M10.5 x 120 mm) to lock the antenna in a vertical position. **
- 10) Then mount the radials, the coaxial cable, and proceed with the antenna calibration.

* This system prevents the antenna from falling from the opposite side by raising the antenna. In fact as soon as the antenna is in a vertical position, the three fixed tie-rods (base 1 and base 2 and base 4) are already in position by blocking the antenna vertically. So all that remains is to connect only the tie rods in base 3.

** If the antenna base in Ergal is not mounted in a perfectly horizontal plane, DO NOT insert the second fixing pivot (M10.5 x 120 mm).

NOTE:

We recommend using 4mm Bayco cables for the first two tie rods, while the 2.5mm bayco for the third order. For the fourth order we recommend a 3mm or 2.5mm Mastrant type rope.

Figure 1

