



# The Ventenna Company LLC

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## Troubleshooting the HFp-Vertical antenna

If you are having trouble with your HFp, the issue is typically that you can't get the SWR to an acceptably low level.

This could be due to one of these issues -

1) If you are out in the open, at least a half-wavelength away from any large metal object, and the SWR is in the range of 2:1 or thereabouts, and you can't seem to get it lower, it's probably the radial length that will need to be adjusted. The marks on the radials are really starting points, and were established on my ground, which has some arbitrary amount of moisture in it. If your ground has more moisture than mine, then, for you, the best length will be somewhat shorter. And, if your ground has less moisture, the best length will be somewhat longer. Try changing the three lengths by about a foot, and see if the SWR gets a bit better. If so, keep going until it's the best you can get. If the SWR got worse, go the other way. (BTW - the 9th mark is for 60M - available with the 60/75/80M Option package)

2) If you are within a half-wavelength of some large metal object, it is probably de-tuning the antenna. You will have to adjust the element stack to compensate. The de-tuning effect lowers the resonant frequency of the element stack, so you will have to take steps to raise the frequency. You can do this by turning over the 2- or 3-stripe elements so the stripes are up, by moving the 2- or 3-stripe elements higher in the stack, or by taking out the Zero-stripe or a 1-stripe element. One of the portable SWR meters will help immensely with this re-tuning. And, after you get the element stack as good as possible, you may have to do the radial adjustments, as well.

3) If the SWR is out of sight - 3:1 or higher, one of the elements, or the pigtail, may have a problem. Use an Ohm-meter to measure the end-to-end continuity of each element. The resistance should be essentially zero. If all the elements check out, test the pigtail. The center contact of the connector should have zero resistance to the lug on the white wire, and infinite resistance to the lug on the black wire. Likewise, the outer shell of the connector should have zero resistance to the lug on the black wire, and infinite resistance to the lug on the white wire. (A note here - the white wire goes to bottom of the element stack, and the black wire goes to the ground lug, where the radials attach. The white wire can be on top of or under the Base Insulator IEC - there's no difference.)

One last comment - once you get the SWR to 1.5:1, there is little benefit to work at getting it lower. At 1.5:1, the amount of power lost is 4%, and at 1.3:1, it's 1.7%, a gain of only 2.3%. If you want, the HFp can typically be adjusted to get very close to 1.0:1, but it takes some work with the radials (as described above), and a fine-tuning of the element stack to do it.