

Since 1980 I have been chasing DX with various degrees of effort and varying degrees of success. I have had a variety of rigs including an HW-101, TS-530SP, IC-718, FT-950, and my current Flex-6400. I have used a variety of wire antennas when and where I could. The one constant companion has been my 6BTV vertical. (Fig. 1) Over the years, I have added the 12M and 17M kits, the radial ground plate and the tilt-over base. I have been able to confirm 310 countries, WAZ, and 1,600 in the Challenge. All good totals for a modest station. However, to get to the next level, I knew I had to get some aluminum in the air.

If you know me, then you know my limitations. I am 6'9" and not slim. However, my big challenge is that I have had 4 hip replacements. That really limits my climbing, whether it is a ladder or a tower section. So, I had to find a solution that met my physical needs and would not force a housing refinance!

At the 2022 DX Dinner®, I happened upon a discussion between several hams. One had just put up a hex beam and the other two hams were telling him how much he would love it. They mentioned that although it was a 2-element beam for 6M through 20M, it was lightweight, easy to build and easy to get into the air. You will see my inexperience with such matters as this in the rest of the article. However, I am always looking to learn!



Figure 2 32" x 6" ID PVC

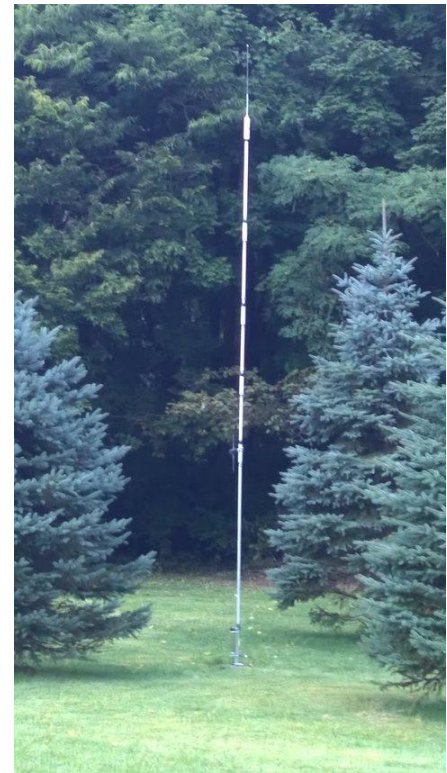


Figure 1 My 6BTV Vertical with the 17M kit installed.

I checked around and after reading several of the reviews in QST<sup>1</sup>, I settled on the K4KIO hexbeam<sup>2</sup>. Since I had not built a beam and raised it before, I thought this experience would be something I could share, and a few others might benefit. So, here it is...

I was having chili with Joe, W8GEX, and Janet, W8CAA, and the topic turned to the hex beam. I mentioned that I was trying to determine the concrete needed to get the push up mast secured. It really didn't seem like it would be a lot, but it would be permanent. I had the perfect area in a clearing in my woods for just such a project. Joe told me about a way to secure the pole that I had not heard of.

Sink a 32" piece of 6" I.D. PVC in the ground. (Fig. 2, Fig. 3) Pack the space around the outside of the PVC with pea gravel. (Fig. 4) Use a 4x4 as the "tower" portion of the assembly.



*Figure 3 My grandson digging the hole.  
Lucky Me!!!*

The 8' long 4x4 will go into the PVC, allowing over 5 feet of 4x4 to mount to. Once you put the 4x4 into the PVC, use more pea gravel around the 4x4 to really pack it down. I used a broom handle as a "tamp." Always keep an eye to make sure the 4x4 is plum. Once this is done and you have it packed, that 4x4 isn't going anywhere!

An added bonus is that if you need to take it down, a wet/dry shop vac can be used to remove the pea gravel allowing you to lift the 4x4 out!



*Figure 4 Finished Mount*



*Figure 5 4x4, rotor, and thrust bearing on  
"tower" portion. Looks crooked but it isn't!*

#### **Building the Hex Beam:**

Carefully unpack the hex beam components. I received 2 boxes from K4KIO, excellent instructions, and clearly marked components. However, I missed one of the bags that contained about 1/3 of the mounting hardware. I contacted K4KIO and ordered what I needed. They overnighted it to me. A few days later, I found the missing bag. I sent it back to K4KIO. Not

only did they give me full credit, but they paid for shipping both ways and then followed up!



*Figure 6 The spreaders laid out for painting.*



I painted the spreaders to protect the fiberglass from UV deterioration. Rust-oleum proved to be quite effective.



*Figure 7 Mast plate and feed point in place - ready for the spreaders.*

Figure 7 shows the mast plate and the feed point together ready for the spreaders. The next several pictures show the steps in putting it together.



*Figure 8*

Figure 8 shows the spreaders together and mounted to the mast plate. The spreaders each have 3 sections that slide into each other. Once the spreaders are pulled up and held in place, they are quite mechanically sound.





Figure 9

Figure 9 shows the assembled antenna at the “antenna farm”, ready to install. There was one spreader in the original box that had the wire holding clamps in place and that was used as a template for the rest. I did some minor physical adjustments of the wire tension.

I performed some SWR plots for each band to make sure there was nothing wrong. All checked out OK.

I was now feeling the pressure to finish for two reasons. First, I only had to install the rotor, the thrust bearing, the guy wires and the push-up mast to be on the air. Secondly, it is 2 weeks until CQWW CW and 2 days before a major cold front is due with wind and rain. So, I was up and out early on that Saturday!

Figure 10 shows the Yaesu 450G rotor mounted to a steel plate using “L”-channel hardware used in garage door systems. I used 1/8” 9” x 12” steel plate<sup>8</sup> to hold the thrust bearing and the rotator. Figure 11 shows the thrust bearing installed.



Figure 10



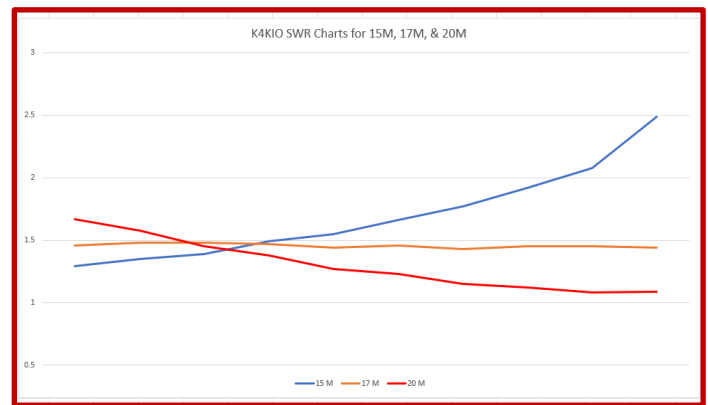
Figure 11

I dropped the pushup mast<sup>3</sup> through the thrust bearing<sup>4</sup> and into the rotator<sup>5</sup>. I used a 1/4” piece of wood as a spacer between the bottom of the mast and the rotator housing. This allows the thrust bearing to hold all the weight. I dropped the guy wire Ring Kit<sup>6</sup> over the mast between the top and middle sections. We (my son Patrick and I) secured the thrust bearing and then the rotator.

Once this was done, I attached the guy ropes to the Guy Ring. You must be careful not to get your feet tangled up in the ropes, the coax, and the rotator cable! I was able to lift the hex beam assembly up to Patrick and he was able to drop the antenna mast pipe into the push up mast. We secured it with two 2.5" stainless steel bolts. Patrick then pushed up each section and I secured it. Finally, we secured the guy ropes to the guy anchors, and we were ready to go!

The SWR charts are below. It has really performed well. The rotator interfaced beautifully with my DX Suite<sup>7,9</sup> logging program. Now I need to remember that this does work differently than a vertical!

If you have any questions, just drop me a line and we can set up a sked. I bet I can work you now!



<sup>1</sup> QST August 2017

<sup>2</sup> [KIO Technology \(k4kio.com\)](http://k4kio.com)

<sup>3</sup> [WiMo Antennen und Elektronik 18305-5 WiMo Aluminum Telescoping Masts | DX Engineering](#)

<sup>4</sup> [Yaesu GS-065 Yaesu Rotator Mast Bearings | DX Engineering](#)

<sup>5</sup> [Yaesu G-450ADC Yaesu G-450ADC Medium-Duty Rotator Systems | DX Engineering](#)

<sup>6</sup> [WiMo Antennen und Elektronik 23050 WiMo 23050 Metal Guy Ring Kits | DX Engineering](#)

<sup>7</sup> [DXLab \(dxlabsuite.com\)](http://dxlabsuite.com)

<sup>8</sup> [Amazon.com: 1/8" x 9" x 12" Steel Plate, A36, Hot Rolled, 1/8" Thick : Industrial & Scientific](#)

<sup>9</sup> [MDS-HAM Amateur Radio Products](#)