

Bobby Brainwave

Independent Antenna Control Using Coaxial Masts by Bobby Brainwave, N3VGS

Do you suffer from a shortage of antenna towers? Can't use your two meter beam because the little woman's watching television and your rotator swings both antennas? If momma's not happy, then no one is happy? This is my situation since I bought this expensive computer to write articles for the newsletter and can't afford cable TV. And with five towers in the air, I have no room for another. What would Bobby Brainwave do? Think coaxial, like the cable, with one conductor surrounded by another. Why not one antenna mast inside another? Here's how to do it.

Start with your usual rotator of choice mounted inside the tower. Inside mounting relieves the rotator of wind shear. You must use 1 1/4" masting. Next secure an Alliance U-100 or U-110 TV rotator. This company is no longer in business but has manufactured rotators for TV use since W.W.II. With the advent of cable TV, many of these units have been removed from service or are about to be. They are available cheaply at Hamfests and junk boxes everywhere. To my knowledge these were the only rotators where the mast slipped completely through the unit and was secured with clamps at top and bottom. There are two types of these 4 wire rotators. One had a rheostat inside that changed resistance with position and direction was indicated by a meter on the control box. The other offered automatic operation from a switch in the rotator that pulsed every five degrees of rotation operating a solenoid in the control box that ratcheted a pointer in synchronization with antenna position. Either unit will work fine and the outdoor units are extremely RUGGED and long-lived. I have taken apart some that were 50 years old and only needed light cleaning and new grease to return them to service. Mount one of these units above the lower rotator so that the inner mast rotates freely through the Alliance unit. Next slip a piece of 1 1/2" masting over the 1 1/4" and up through the tower top. You may need a piece of tubing larger in diameter to act as a coupling between the rotator ends and the 1 1/2" mast if the belled end is no longer available. You now have two rotators mounted inside one tower and independent control of two or more antenna arrays. See sketches on next page for physical arrangement.

If your antenna array is too large or heavy for a TV type rotator, then a tower bearing can support the weight and the outer mast turned with a heavy-duty rotator offset and connected with sprockets and chain or pulleys and a Vee belt. A combination of these two arrangements with three mast diameters can be used to give independent control of three antenna arrays on one tower. Another method could be a heavy-duty rotator designed to turn the tower with another rotator mounted near the tower top. However, this scheme would not yield independent control. I wonder if a coaxial rotator was ever manufactured?