Cushcraft AR-2 "Ringo" 2-Meter Antenna

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The Cushcraft AR-2 "Ringo" is a home-station ½-wave, end-fed vertical antenna designed for the 2-meter amateur band. It can also be tuned to the commercial or marine frequencies within the 135 to 180 MHz range, using dimensions provided. Other versions include the AR-6 (6 meters), AR-10 (10 meters), and AR-450 (70 centimeters), as well as the larger Ringo Ranger II series (for example, the ARX-2), and even a dual-band version, the AR-270.

The antenna reviewed here, the original AR-2 Ringo designed by Cushcraft founder Les Cushman, W1BX, was first advertised in *QST* back in the 1970s. The antenna is enduringly popular among 2-meter FM operators, and we thought it would be worth a look at the current version.

Figure 10 — The AR-2 comes partly assembled with some final assembly required — mainly assembling the pieces of the base matching ring.

Assembling the AR-2

The AR-2 is a straightforward design, with fairly easy final assembly required. Much of the antenna is preassembled, as shown in Figure 10. If fully preassembled, the matching ring would require a larger box, but if left to the user to assemble, it is a fairly straightforward task. In addition, the two sections of the element must be connected using the supplied strap-type tubing clamp. It took less than an hour to put it all together. The two-sheet instructions are well illustrated and, while not quite step-by-step, are easy to follow.

The only assembly discontinuities were that one ⅝-inch-long and two ⅜-inch-long 8-32 machine screws were specified, but I received three screws that were ⅝-inch length. I just used them anyway, without any problems. I also received far more #8 lockwashers than specified, but managed to use them all up on connections that didn't specify them. Better too many than too few in most cases.

Bottom Line

The venerable Cushcraft AR-2 Ringo provides a low-impact 2-meter base-station antenna that performs as expected, extending range well beyond what an indoor antenna can do.

Tuning the AR-2

There are just two adjustments that must be made to set the AR-2 to operate on the desired frequencies. The instructions specify the monopole length versus frequency in 5 MHz increments. I set the length to the 38.5 inches specified for 145 MHz and found it worked fine across the 2-meter FM portion of the band. Once set, it will cover the whole 2-meter FM band with a low SWR — 1.4:1 at 145 MHz, rising to 2:1 at 147.5 MHz.

The connection from the feed to the matching ring should be set for minimum SWR across the band, and I found that it's not an especially critical adjustment. For my adjustments, I elevated the antenna using the mast I purchased for the installation, to get the antenna near-field above my test position (see Figure 11).

While there is a lot of ring tubing, the connecting rod can only reach a limited region of the ring without distorting its shape. Not surprisingly, the best match occurred with the connecting rod in the location to which it fit best. I placed marking-pen indications every ½ inch or so on the ring within the connection region, so I could keep track of the locations I had tried. While adjustment with an antenna analyzer or SWR meter is strongly suggested, I expect that if test equipment were not available, the AR-2 would work reasonably well if the rod were just connected to the ring opposite the feed location.

◀ **Figure 11** — The completed antenna AR-2 temporarily positioned for adjustment on top of a 1.25-inch aluminum TV mast section.

▼ **Figure 12** — The author's son-in-law, Michael Phillis, finalizes the installation of the AR-2 on top of a 6-foot mast attached to a TV antenna-designed chimney mount. [Katie Phillis, photo]

Installation

The AR-2 is light, and at 38.5 inches tall it doesn't provide much wind load, so any of the typical light-duty TV antenna mounts should be suitable. I used a two-strap chimney mount that was left over from a previous antenna test, and that was begging to be put to use.

Because Nancy, W1NCY, forbade me to climb on the roof, I enlisted my son-in-law Michael Phillis, who runs his own audio system installation and operation company (Performance Audio in Westport, Connecticut), but is familiar with antenna installations as well. The installation was quite straightforward and was completed in just a few minutes (see Figure 12).

On the Air

Wiring the antenna to the station (Nancy's kitchen 2-meter transceiver) was straightforward and went together without a hitch. A coaxial cable that was prepositioned between the joists and extended through a wall plate was put to its intended use, and I connected it to the basement coax run from the antenna.

Not surprisingly, the antenna offers much more consistent results than the horizontal Yagi we previously used. In addition to very solid signals to and from all desired regional repeaters, I am now also bringing up repeaters on the same frequency pair in southern New Jersey, perhaps 60 miles away. Setting up the tone-squelch for the desired local repeaters solved that problem.

Manufacturer: Cushcraft Amateur Radio Antennas, 300 Industrial Park Rd., Starkville, MS 39759. **www.cushcraftamateur.com**.