Product Review Column from *QST* Magazine

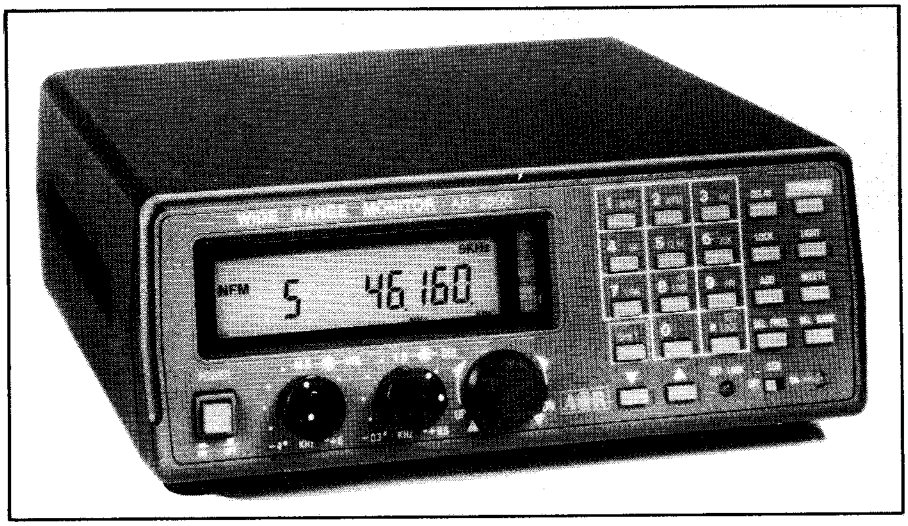
September 1991

AOR AR2500 Scanning Receiver

Rotating Tower Systems Rohn 25 Rotation System

AOR AR2500 Scanning Receiver

Reviewed by Kirk Kleinschmidt, NTØZ



If you're like most hams, you've probably wondered what it would be like to own a 1990s super receiver. You know, one with dc-to-daylight coverage, all bands, all modes, scanning, loads of memories and a computer interface, to boot. I know I have. As sweet as the dream may be, the cost of such a radio is somewhat prohibitive. That's why the AOR AR2500 piqued my interest. Its features are impressive: 2016 memory channels; 1- to 1500-MHz coverage; AM, FM (wide and narrow), SSB and CW modes; two scan modes and computer-control capability. The AR2500 has 62 scan banks (each holds up to 32 frequencies) and 16 search banks (enter the upper- and lower-frequency limits and the AR2500 scans between the two at a brisk 38 channels per second).

Ace Communications, the AR2500's importer, priced the radio at $499—well within the budget of price-conscious consumers. So, with a little arm-twisting, I got the go-ahead to review the AR2500. The order was placed and I waited with anticipation. Would the little radio perform? I didn't expect it to be a stellar performer on the ham or shortwave utility bands, but I hoped that it would be more than a scanner with the low bands thrown in as an afterthought.

First Impressions

I first noted the AR2500's small size. It's so small that it comes in a shoe-box-size package. I was expecting a small tabletop-sized radio, but the AR2500 is smaller than most scanners! It comes with a mobile-mounting bracket, is easily powered from your car's dc supply and should fit into all but the smallest cars. The AR2500 is lightweight, too, tipping the scales at just a pound. Even so, the radio has plenty of room inside for additions or modifications.

The AR2500 has no tuning knob. I had assumed that one of the front-panel knobs was for tuning, but it's not—not in the conventional sense, anyway. In search-bank mode (detailed later), the knob tunes up and down in any of the radio's selectable increments (5 kHz is the smallest, 25 kHz is the largest), but you can't literally "spin the knob" and glide up and down the bands. This is one factor that makes the AR2500 feel more like a scanner than a conventionally tuned radio.

Controls and Connections

The AR2500's front panel is somewhat congested, but not excessively so. The left side of the panel is dominated by the multifunction liquid-crystal display (LCD). In addition to displaying the receive frequency, the readout shows the selected tuning rate (5, 12.5 or 25 kHz), whether the **SCAN**, **DELAY** and **LOCK** functions are active, the mode (wideband FM, narrowband FM or AM) and the current scan or search bank. Just to the right of the LCD is a red and green LED signal-strength indicator.

Under the LCD are three knobs and a push-button power switch. The left-most controls are concentric. The first controls audio gain and the BFO (turning the inner knob shifts the BFO from −4 to +6 kHz). On the second control, the outer knob is **SQUELCH** and the inner knob is the BFO's fine-tune control (it shifts the BFO from −300 to +500 Hz). Both BFO controls are active only when the BFO is switched on and AM mode is selected. The **UP/DOWN** knob cycles through the frequencies programmed in any scan bank, or tunes up or down in the selected step in any search bank. It's in parallel with the ↑↓ keys.

The right side of the front panel is taken up by the BFO on/off switch and indicator LED, the keypad **LOCK** indicator LED and 20 pushbutton keys: 12 for the multifunction numeric keypad and eight stand-alone keys.

Two important keypad functions are **LINK** and **UNLINK**. Because the AR2500 has 62 programmable scan banks, you're probably not going to want every bank to be active at any given time. You might store public-service frequencies in banks 3, 4 and 5; shortwave broadcast frequencies in 6, 7 and 8; and local airport frequencies in bank 9, for example. This is where **LINK** and **UNLINK** come in.

To spend an evening scanning public-service frequencies, select banks 3, 4 and 5 (one at a time) with the **SEL BANK** key and press the **LINK** key. All banks linked in this fashion are in the active scan path. Unlinked banks aren't scanned. You can devote one or more banks to any group of frequencies and use the **LINK** and **UNLINK** functions to scan only the ones you're interested in at the moment. It's a handy and versatile way to handle 2000+ scannable channels.

If you select an unlinked bank for scanning, the AR2500 will scan only that bank—also a handy feature, and one that I frequently used.

The rig's back panel is much less crowded than the front. There's a power connector, an external-speaker jack, a BNC antenna connector, a 9-pin serial-data connector and a local/DX attenuator switch (which, in my opinion, should be mounted on the front panel).

Getting Started

When you power up the AR2500, the LCD scrolls the radio's self-test message—its model number—then displays the current frequency. This lets you know that everything's okay and that the data stored in the AR2500's EEPROM is intact (according to the manual, the radio retains stored data for at least 10 years, even with the power off).

Nearly 2000 of the AR2500's channels are preprogrammed, with all scan banks linked to the scan path. So if you want to

Table 1

AOR AR2500 Receiver, Serial No. 10368

Manufacturer's Claimed Specifications	*Measured in ARRL Lab*
Frequency coverage: 1 to 1500 MHz.	As specified.
Modes of operation: AM, CW, FM, LSB, USB.	As specified; receiver does not discriminate against the unwanted sideband in LSB and USB reception.
Sensitivity: AM/CW/SSB (bandwidth not specified): 1.0 μV (−107 dBm).	Minimum discernible signal (noise floor):*

	Atten Off	*Atten On*
1.02 MHz	−85 dBm	−74 dBm
3.52 MHz	−107.5 dBm	−98 dBm
14.02 MHz	−113.5 dBm	−104.5 dBm
28.02 MHz	−109.5 dBm	−101 dBm
50.2 MHz	−118 dBm	−108 dBm
144.2 MHz	−120.5 dBm	−110 dBm
220.2 MHz	−120 dBm	−108 dBm
430.2 MHz	−110 dBm	−100 dBm

Manufacturer's Claimed Specifications	*Measured in ARRL Lab*
Dynamic range: Not specified.	Blocking dynamic range, atten off:† 1 MHz, 43 dB; 3.5 MHz, 52 dB; 14 MHz, 56 dB; 28 MHz, 52 dB; 50 MHz, 60 dB; 144 MHz, 67 dB; 220 MHz, 61 dB; 430 MHz, 70 dB.
	Two-tone, third-order intermodulation distortion (IMD) dynamic range, atten off (signal spacing):† 1 MHz, 51 dB; 3.5 MHz, 53 dB; 14 MHz, 55 dB; 28 MHz, 56 dB; 50 MHz (80 kHz), 58 dB; 144 MHz (80 kHz), 62 dB; 220 MHz (100 kHz), 62 dB; 440 MHz (80 kHz), 66 dB.
	Third-order input intercept, atten off: 1 MHz, −8.5 dBm; 3.5 MHz, −28 dBm; 14 MHz, −27 dBm; 28 MHz, −25.5 dBm; 50 MHz, −31 dBm; 144 MHz, −27.5 dBm; 220 MHz, −27 dBm; 440 MHz, −11 dBm.
Squelch sensitivity: Not specified.	29 MHz, NFM mode, atten off: −103 dBm; 14 MHz, AM mode, atten off, −121 dBm.
S-meter sensitivity (for S9 reading): Not specified.	1 MHz, −80 dBm; 14 MHz, −106 dBm; 29 MHz, −105 dBm.
Receiver audio output: 1.2 W into a 4-Ω load (distortion not specified).	1.05 W at 10% total harmonic distortion into an 8-Ω load.
Receiver IF/audio response: Not specified.	AM mode, at −6 dB: 336 to 5245 Hz.
Supply requirement: 13.8 V dc at 300 mA.	As specified.

Size (HWD): 2.25 × 5.625 × 6.5 inches; weight, 1 lb.

*The ARRL Lab lacks calibrated test equipment to make sensitivity and dynamic-range measurements at frequencies above 500 MHz.

†Blocking dynamic range measurements were made at the ARRL Lab standard signal spacing of 20 kHz; third-order IMD dynamic range measurements were made at 40-kHz signal spacings unless otherwise specified.

go with the defaults, set the AF gain to a comfortable level, adjust the squelch, and press the **SCAN** key. The radio will start at bank 1 (about 30 MHz) and scan up through bank 62 (about 900 MHz). Remember, each scan bank holds 32 frequencies, automatically sorted high to low. When the squelch breaks, the '2500 stops until the signal ceases or falls below the squelch threshold. At that point, the radio resumes scanning. If you'd like the receiver to pause for a few seconds before resuming, press the **DELAY** key.

If you'd rather not stay with the defaults (you probably won't; the radio takes quite a while to scan through 2000 channels, even at 38 channels per second), programming the AR2500 is easy, although I initially had trouble with the rather disorganized owner's manual. (See "Operating Impressions" later in this review.)

Many modern scanners that feature extended frequency coverage have several coverage gaps. The cellular-telephone band near 850 MHz and certain military frequency blocks between 200 and 400 MHz are usually not supported. The AR2500's coverage, on the other hand, is continuous, so the manual includes a warning about receiving communications protected by the Communications Privacy Act of 1986.

Technical Details

Little technical data is supplied with the AR2500. There's no schematic, no block diagram and few receiver-performance specifications. An Ace Communications advertisement, however, claims the unit is a quadruple-conversion design with IFs of 750, 45.0275 and 5.5 MHz, and 455 kHz.

The AR2500's selectivity is not specified. Generally, however, the IF filters (they're in the 45-MHz IF) perform reasonably on WFM, NFM and AM modes, but when receiving SSB and CW signals in the ham or shortwave utility bands, bandwidth is too wide for my taste. SSB and CW IF bandwidths are not selectable.

Providing specific figures about dynamic range and sensitivity is difficult. In a crowded, urban VHF/UHF environment, *any* receiver will be pushed to its limits. The AR2500 performed as expected: It didn't distinguish itself in these areas, but it didn't fall on its face, either.

Because of its scanner-like heritage, the '2500 has no QRM-fighting controls, no noise blanker (at least none that is apparent) and non-switchable AGC characteristics.

Audio quality from the radio's internal speaker (mounted on the bottom of the cabinet) ranges from reasonable to almost unacceptable, depending on the source signal and other factors. Trying to improve the audio quality turned up more mysterious behavior.

For example, when I listened to Radio Japan at 5960 kHz, the audio from the internal speaker sounded quite good, even when compared side by side with a commercial-grade receiver. When I hooked up a small external hi-fi speaker, however, the audio quality was sharply degraded; noise and distortion dominated the audio from 5 to 900 MHz, regardless of the reception mode.

The Owner's Manual

As I mentioned earlier, the radio comes with no schematic, no block diagram and almost no technical information. The AR2500's Owner's Manual is disorganized. Information is scattered everywhere and there are few clear instructions on using the receiver—especially for beginners. The operating instructions are mostly suited to experienced scanner users and there's a notable lack of figures and diagrams. Almost everything you need to know is somewhere in the documentation, but you'll probably have to read the instructions several times while experimenting with the radio to figure things out.

By contrast, the Owner's Manual contains tons of information on the programming and commands necessary to control the AR2500 with your personal computer—probably enough, in fact, that experienced programmers could write their own computer-control software based on it (Ace Communications' software for this application costs $295). I'd like to see the same level of detail in the computer-control instructions applied to the rest of the radio's operating instructions.

The manual contains the radio's default frequencies and Ace's 24-hour toll-free technical support number—a nice touch, and one that I took advantage of a couple of times during the review period.

Operating Impressions

The AR2500 comes with a 12-V wall-cube power supply, a mobile-mounting bracket and a collapsible whip antenna that connects to the radio's rear-panel BNC connector. The whip antenna performs well when it's fully extended when receiving below 50 MHz, and fully collapsed when used to receive 800-MHz public-service frequencies.

Initially, the review unit had a few problems. First, the squelch sensitivity varied greatly with frequency. In the 30- to 50-MHz region, undesired signals broke the squelch regardless of the squelch-control setting. In the public-service bands near 800 MHz, it took a whopping signal to break the squelch. I worked around these problems by avoiding frequencies below 150 MHz (the lowest frequency where proper squelch action was achieved) and by scanning only banks of similar frequencies, ie, scanning only 800-MHz channels or only 400- to 500-MHz channels, for example, at a given time.

After trying to figure out what was wrong, I spoke with an Ace Communications technician who told me that early AR2500s (which mine was) did have squelch-sensitivity problems and faxed me a simple one-transistor modification which, he said, had been incorporated into current production models. Call Ace Communications at 800-445-7717 to find out if your AR2500 includes this modification.

After the Product Review editor modified the radio and I adjusted the squelch sensitivity according to the technician's instructions, squelch performance improved considerably. It's not exactly the way I'd like it to be—where signals break the squelch at the same signal level regardless of frequency—but it's fine as long as the attenuator is switched to the **LOCAL** position. In the **DX** position, unwanted signals break the squelch at low VHF.

The other problem concerned SSB (BFO) reception. Whenever I switched on the BFO to listen to SSB and CW signals, the audio was distorted. The Ace technician said the problem was caused by an inadequately filtered wall-cube power supply. Early models were shipped with the suspect cubes, but current models come with a more suitable power supply (again, call Ace to find out if your radio is affected). The technician suggested I power the receiver from a battery or a well-regulated and filtered ac supply. I powered the radio from my bench supply and the situation improved.

Speaking of the BFO, this is one area where the AR2500 is somewhat disappointing. Monitoring CW or SSB signals in the ham and shortwave-utility bands is frustrating. The AR2500 can *receive* such signals, by definition, but even with the bench supply, the audio is still noticeably distorted. Also, because the IF bandwidth is quite broad, the passband is noisy and nearby signals (and sometimes even faraway ones) mercilessly pump the AGC. The AR2500's broad IF bandwidth also means that it can't *select* sidebands. Thus, I rate the AR2500's CW- and SSB-reception capability suitable only for casual listening.

The receiver's multifunction display is difficult to read unless you're looking at it head on. If you're at any other angle, you'll have trouble. The LCD's backlighting doesn't help. I was endlessly picking up the radio to look at the display, even when I was less than two feet from it. Reading the display in a mobile installation could be quite difficult.

After reading about the AR2500's problem areas, you might get the impression that I didn't have a bit of fun using it. But that's not true; I had a lot of fun—in spite of the radio's hard-to-read display, sometimes marginal audio and suboptimal squelch response. I listened to local and faraway AM broadcast stations, air traffic from several nearby airports, shortwave broadcasts, the ham bands, repeaters, public-service communications and CB-radio operators, among other things.

The AR2500 has thousands of memory channels—you'll never run out (famous last words)—and the multiple scan banks allow you to program the '2500 for many types of monitoring. And you can scan any combination of channels. The '2500 is amazing in its ability to pop from an 800-MHz narrowband-FM fire-department frequency to a 118-MHz aeronautical frequency to a 5.9-MHz shortwave broadcast frequency, each time in a thirty-eighth of a second!

One option that sounds quite useful and unique is AOR's computer-control software, which features a graphical spectrum display and frequency data base. Such a system could greatly expand the radio's operating flexibility.

In light of the AR2500's shortcomings, however, deciding whether to buy one is a difficult decision. On the positive side, the radio is very small, has tremendous frequency coverage and memory capacity and is suitable for mobile or base installation. The AR2500's weak points, however, are difficult to ignore and dampened my enthusiasm for it.

Distributor: Ace Communications Inc, Monitor Division, 10707 E 106 St, Indianapolis, IN 46256, tel 317-842-7115, fax 317-849-8794. Manufacturer's suggested retail prices: AR2500, $499; mobile-mount external speaker, $19.50; extended warranty (2 years, $65; 3 years, $75); computer-control software/cable package, $295; broadband preamplifier, $89.

ROTATING TOWER SYSTEMS ROHN 25 ROTATION SYSTEM

Reviewed by James W. ("Rus") Healy, NJ2L

A couple of years ago, I planned to install a Rohn 25 tower that would support a triband Yagi, stacked 6-meter beams, and Yagis for several other VHF and UHF bands. I needed to place the tower where it and the antennas would clear the trees, the guy wires would clear the house—and where the guy anchors would fit on the property. My planning came to a standstill, as these and other requirements seemed too greatly at odds for me to base the installation on a conventional Rohn 25 tower.

Then I heard that Dick Weber, K5IU, MSME, proprietor of Rotating Tower Systems (RTS), was about to augment his line of tower-rotation hardware with a Rohn 25 setup. RTS has manufactured rotating joints and guy-wire bearings for Rohn 45 and 55 towers for several years. Rotating towers allow several important advantages over fixed towers: Stacked, rotatable Yagi arrays; guy-wire placement that best fits the available property; placing rotatable antennas at optimum heights; no vertical rotator loading; and easy rotator replacement. In short, a rotating tower

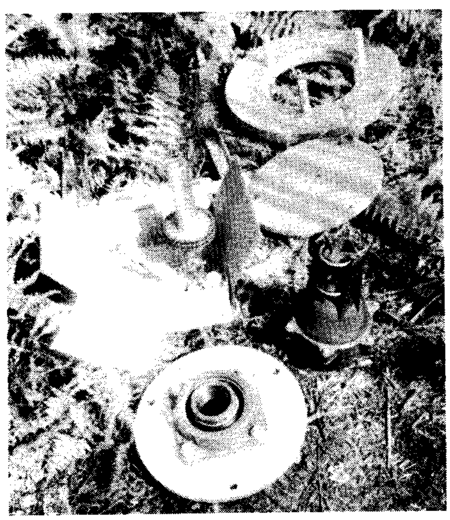


Photo A—Rotating Tower Systems' basic Rohn 25 rotation system, with a Hy-Gain Tailtwister rotator for size comparison. Clockwise from the bottom: The lower half of the rotating joint, with the heavy-duty bearing bolted to it; a box containing the drive shaft and bolts; gin-pole standoff (partially obscured by box); the guy-wire bearing; the rotating joint's upper plate; and the rotator (not included with the RTS hardware). *(photos A, C and D by the author)*

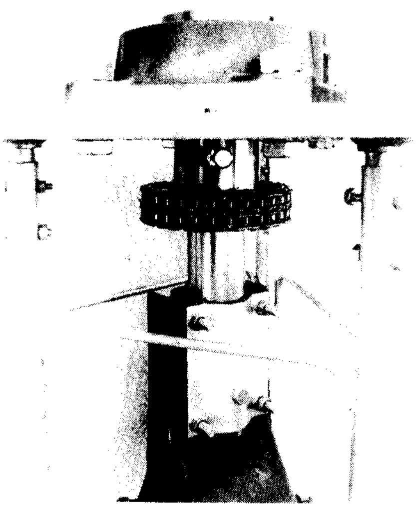


Photo B—The lower part of the rotating joint, with the rotator, drive shaft and bearing installed. The bearing bolts to the lower plate. The drive shaft slips through the bottom plate and bearing, and bolts to the upper plate, holding the joint together. *(photo by Dick Weber, K5IU)*

gives maximum efficiency from a single tower with the available real estate. Disadvantages include higher initial cost and few attachment points for wire antennas (you can tie antennas to the tower only at the guy-attachment points).

My original plans for a rotating tower didn't work out, but instead, Tom Frenaye, K1KI, volunteered to have the rotating tower installed at his new house, where it would increase his flexibility by allowing him to stack monoband Yagis for 10 and 15 meters.

Overview

The basic Rohn 25 rotation system consists of a three-piece rotating joint, a rotating guy-wire bearing and a drive shaft. All the parts except the nickel-plated-steel drive shaft are made of heavily galvanized steel (see Photo A). Special assembly equipment is included. For instance, during installation, you need to install a gin pole (sometimes called an *erection fixture*) on the tower such that the gin pole clears the rotating joint and guy-wire brackets; such a side mount is shipped with the system. The hardware necessary to lock the two halves of the rotating joint together during tower assembly is also included. Once you've installed the rotation hardware, you can use the gin-pole standoff as a side mount for a vertical antenna (or whatever).

Dick Weber designed the Rohn 25 hardware with the same safety factor Rohn used in designing their 25 hardware. Thus, it follows that RTS's maximum recommended guy-wire interval is the same as Rohn recommends for fixed Rohn 25 towers: 30 feet. With an RTS rotating tower, it's possible to rotate up to 100 feet of tower *above the rotating joint* when three guy-wire bearings are used (one 10-foot section can be mounted atop the topmost guy-wire bearing in any RTS rotating Rohn 25 installation).

Materials and Installation

RTS ships the Rohn 25 hardware by truck, COD. Although the rotating joint consists of three relatively lightweight pieces, the guy-wire bearing weighs about 80 pounds—just over UPS's maximum; therefore, the basic system is truck-shipped in one large wooden crate.

To install the RTS hardware, you'll need all the usual tower-installation tools (wrenches, deep sockets and such), and you'll definitely need a gin pole. I've heard stories about people who've installed Rohn 25 towers without gin poles, but that's simply unsafe—and a gin pole is an *absolute requirement* for installing an RTS-equipped tower.

You'll also need one spare set of guy wires (not included) to install an RTS tower. This is because the stability needed to hoist up and install an 80+-pound guy-wire bearing 30 feet above the rotating joint—especially with one or two people on the tower—is much more than a fixed tower requires under similar circumstances. Thirty feet above a set of guys, you'd usually be installing another set of guys, which doesn't place anywhere near the stress on the tower that a large off-center load does. Therefore, once you've installed 20 feet of tower above the rotating joint, you must install an extra set of guys until the third section and the guy-wire bearing are in place, and the permanent guys are attached and tensioned. If you're installing a rotation system with more than one guy-wire bearing, you'll need a set of spare guys long enough to guy the tower 10 feet below the topmost guy-wire bearing.

When you install a fixed tower, you should test-fit the pieces on the ground to avoid hassles in the air, such as tower legs and bolt holes that don't line up. This is a doubly important step before installing this system, as the pieces are heavier than those of a fixed tower.

The Rotating Joint

Once K1KI's tower reached the 60-foot level, I installed the three-piece rotating joint without difficulty. Photo B shows the lower part of the rotating joint, with the rotator in place. Five 5/8-inch-diameter hex-head bolts (Photo C) secure the drive shaft to the rotating joint's top plate and hold the joint together. The two-piece drive shaft uses a heavy coupling chain to transmit turning energy from the rotator to the upper part of the rotating joint. The heaviest of the rotating joint's three pieces is the 20+-pound bearing bolted to the bottom plate (see Photos A and B). The bearing, made for use in Dodge trucks, supports the rotating part of the tower's weight and has a vertical-load capacity of more than 3000 pounds.

After bolting the drive shaft in place, I installed the three threaded pinning rods to fix the rotating joint and made sure that the top plate stayed level while tightening them. (The pinning rods aren't shown in Photo C, but their mounting holes are visible.) Then, Dan Street, K1TO, and I stacked two sections of Rohn 25 above the rotating joint and secured the temporary guys. The level showed that the tower was vertical (it's important to verify this at this point). Next we bolted on the third section. So far, so good.

The Guy-Wire Bearing

After the ground crew tied the guy-wire bearing in place and began to lift it, the bearing's weight began to unravel the half-inch braided rope, spinning at an increasing rate in the process. The ground crew had to carefully stop the bearing from spinning so that it could be raised safely. Fortunately, that was the only surprise we encountered.

Getting the guy-wire bearing in place is a two-person job. With only one person on the tower, it would have been difficult to place the bearing's stubs into the tower legs because the gin pole, and thus the bearing's weight, is so far off center on the tower. Fortunately, once that's done and the bolts are installed, the hard work is over. We then installed the guy wires, gin-poled the top section into place and bolted it to the top of the guy-wire bearing. One real advantage to this system is having a flat surface to stand on (the guy-wire bearing) near the tower top; it helps minimize fatigue and gives two people room to stand at the same height without having to squeeze their feet onto the same tower rungs.

Once the top tower section was in place, we installed the antennas, then climbed down the tower and removed the temporary guys and the pinning rods at the rotating joint. The tower turned smoothly and easily by hand, so we aligned the tower and rotator, bolted the drive shaft into the

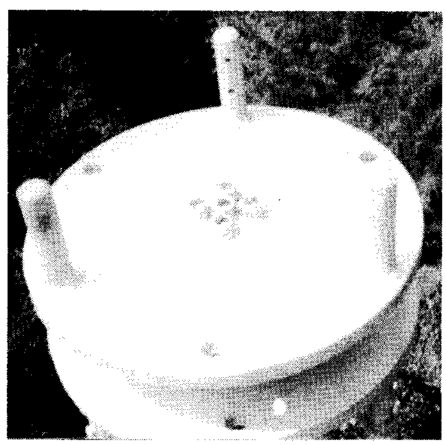


Photo C—A view of the assembled rotating joint from the top. The threaded-rod spacers had not yet been installed when this photo was taken, although the holes for them are visible.

rotator, and attached the supplied ground braid from the drive shaft to the tower leg. All together, it took us about half a day longer to install the rotating tower than a fixed tower would have required.

Cabling

Cabling a rotating tower is no more difficult than cabling a fixed tower; the flex loops just go in different places. You also save on rotator cable: In this case, we used 40 feet less rotator cable than we'd have needed if the rotator had been at the top of the tower. Also, rotator replacement is a snap with this system and you needn't climb all the way up the tower to do it.

The wooden standoff just above the rotating joint, visible in Photo D, is an idea I got from Chet Slabinski, N8RA, who has a 100-foot Rohn 45 tower that uses RTS hardware to rotate at 50 feet. The three-foot-long pressure-treated 2 × 4, bolted to the tower just above the rotating joint, keeps the flex loops from hitting the guy wires or being caught in the rotating joint.

The Instructions

Dick Weber supplies excellent step-by-step instructions, including large, clear photographs, with the hardware. One caution: *Follow the instructions to the letter.* Twice I tried to cut corners to speed assembly, and both times I had to backtrack to the beginnings of my "shortcuts" to do things per the instructions.

Maintenance

The instructions recommend regular tower inspections and a semiannual lubrication of the rotating joint and guy-wire bearing(s). The rotating joint's bearing has an automotive grease fitting, so it's easy to lubricate with a grease gun (available at auto-parts centers and most variety stores). The drive shaft's coupling chain should be sprayed with lubricant or lightly coated with automotive grease when the rotating joint is greased. Guy-bearing lubrication requires removal of the bearing's top plate, which is easily done by removing three retaining bolts. The top plate can be tied to the tower a couple of feet above the bearing to keep it out of the way, and the bearings are then sprayed with lubricant. Once every two years or so, the guy bearing(s) should be flushed with solvent and relubricated. That's all the additional maintenance the RTS-equipped tower requires.

Summary

So, you're asking yourself, "It *looks* good, but how does it *feel* to climb a rotating tower—especially above the rotating joint?" It's as solid as any fixed Rohn 25 tower I've ever climbed. The same goes for the RTS-equipped Rohn 45 rotating tower I've worked on. The major difference is that it requires considerably more concentration to climb over the guy bearings on a rotating Rohn 45 tower than it does with the Rohn 25 system, because the Rohn 45 guy-wire bearings extend much farther from the tower than those of the Rohn 25 version. It's a cinch to climb over the guy-wire bearing on the Rohn 25 tower, even with my 31-inch inseam, although it takes a little getting used to. Whenever you climb above the rotating joint, it's a good idea to bolt the two halves of the rotating joint together with the threaded rods, washers and nuts supplied with the system. This keeps things maximally safe and stops the tower from rocking back and forth with whatever play the rotator may have.

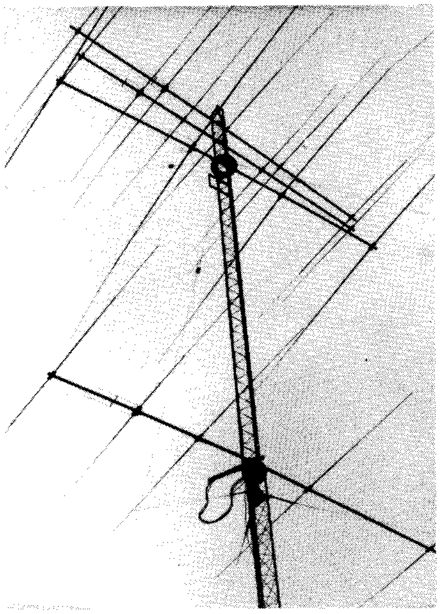


Photo D—The 100-foot rotating Rohn 25 tower after being populated with (bottom to top) a 5-element 10-m beam, 4-element 20-m beam, another 5-element 10-m beam and a 5-element 15-m beam. A second 15-m beam had not yet been installed when this photo was taken. The gin-pole standoff is visible just below the guy-wire bearing. This photo shows the tower from roughly 50 feet and up; the rotating joint is at 60 feet and the guy-wire bearing is at 90 feet.

A rotating tower can solve lots of problems and give you flexibility that you didn't think was possible with readily available materials. As a bonus, the RTS hardware is easy on rotators. The Hy-Gain Tailtwister we installed in K1KI's rotating tower has turned the top 40 feet of tower and four HF Yagis for more than a year without any sign of trouble—even after last winter's 100-mi/h winds and icing.

If you're in the process of putting up a Rohn 25 tower and planning anything other than a simple installation, consider investing in RTS's hardware. It'll easily last at least as long as the tower and you'll reap the many benefits of a rotating tower. In short, Rotating Tower Systems's Rohn 25 rotation hardware is elegant in its simplicity and inspires great confidence—but heed all of Rohn's and RTS's cautions and instructions. You only live once.

As usual, I enlisted the help of several other people in this review. I appreciate the efforts of Tom Frenaye, K1KI; Kacy Colston; Jim Kearman, KR1S; Mike Kaczynski, W1OD; Chet Slabinski, N8RA; and especially Dan Street, K1TO, one of the most capable and deft tower climbers I've had the pleasure of working with.

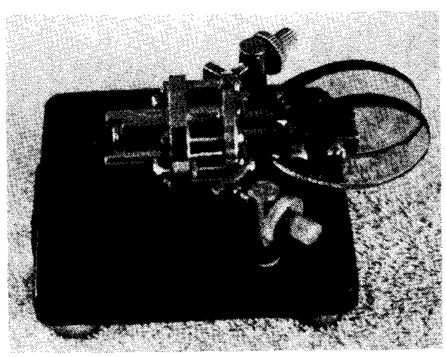
Manufacturer: Rotating Tower Systems Inc, PO Box 44, Prosper, TX 75078, tel 214-347-2560. Prices: Rohn 25 tower-rotation system with rotating joint and one guy-wire bearing, $1330; rotating joint and two guy-wire bearings, $1830; rotating joint and three guy-wire bearings, $2330. Prices do not include shipping. The guy-wire bearings and rotating joint are not available separately, although RTS sells guy-wire bearings separately to customers who have already purchased the basic system. A thorough information package is available to potential customers. Call or write RTS for more information. QST

New Products

The ARRL and QST *in no way warrant products described under the New Products banner.*

HAND-BUILT CW KEYS

☐ Gordon Crowhurst, G4ZPY, of Lancashire, England, makes more than 30 varieties of hand-crafted CW keys and paddles, ranging from a pump (straight) key in kit form with no base for $23 to the $215 Sovereign Trophy Supreme Grande Luxe pump (straight) key with a gold-plated key and plate, mounted on a mahogany base. The most popular G4ZPY model is the Very High Speed twin-paddle key of polished brass with thick oval fingerpieces mounted on a glazed black steel base with nonskid feet (photo), which sells for $270.95. Prices do not include shipping.



G4ZPY products are sold by the manufacturer and carry a two-year guarantee. For a brochure, send a business-sized SASE to US distribution agent Charles Tryor, N4LMY, 7809 10th Ave S, Birmingham, AL 35206-4904.