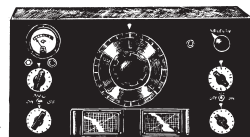


THE COMMUNICATIONS RECEIVER



EDITED BY **WILLIAM FIZETTE, W2DGB**, RR 1, BOX 55, HENRYVILLE, PA 18332

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The RME-69 — Most Famous of its Line

By Jim Hanlon, W8KGI

Once again communications receiver enthusiast and historian Jim Hanlon returns to the OTB pages, this time with a discussion of a very famous receiver, the RME-69. His interesting story adds a personal element not usually found in this column. Please read on.—W2DGB

According to Raymond Moore in his book, *Communications Receivers, the Vacuum Tube Era*, the first “modern” communications receiver built was the RME-9. This radio was introduced in December 1933 by E. G. Shalkhauser, W9CI, and Russ M. Plank, W9RGH, the “Radio Manufacturing Engineers” of Peoria, Illinois.

The set featured one RF amplifier stage, separate local oscillator and mixer tubes, two IF amplifiers with a crystal filter, a beat frequency oscillator, AVC on both phone and CW with a calibrated signal-strength “R” meter, bandswitched coverage from 550 kHz through 20 MHz in five ranges, a calibrated, “airplane” tuning dial with mechanical bandspread, and a built-in power supply.

Only about 100 RME-9s were built (in Shalkhauser’s basement according to Moore) before the design was upgraded in 1934. The RME-9D had a second bandspread tuning capacitor with its own arbitrary-calibration-scale “airplane” dial, and a “resonator” control that peaked the adjustment of both the RF amplifier and the mixer stage. That radio was soon upgraded again, in November 1935, to the RME 69. The upgrade added a sixth band to extend its coverage to 32 MHz, and the general coverage and bandspread dials were changed from the round, “airplane” style to larger, half-circle dials that had more room for calibrated scales and were easier to read.

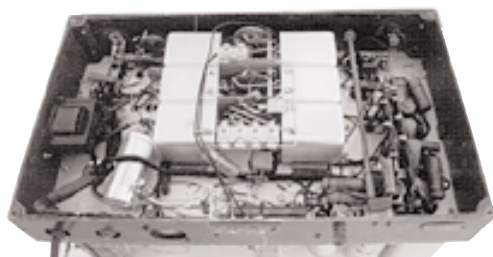
The W8KGI rack-mount version of the RME-69 with the unique RME speaker. The paint on the front panel is in very bad shape, possibly due to poor surface preparation during manufacturing. However, the receiver still works just fine.

Six-volt tubes of the 6C6, 6D6, 6B7 and 42 variety replaced the earlier 2½-volt tubes of the RME-9 and 9D. The RME-69 was the most popular radio RME ever built. It stayed in production until 1940, and Moore estimates that about 6500 were sold.

I found my RME-69 in an August 1979 classified ad in the *Columbus (Ohio) Dispatch*. The radio bears serial number HA4 and, since it received its final manufacturing test on 2/27/40, it is one of the last of the run. I was able to track its history because of an Ohio State University property tag that it still wears on the back of its cabinet.

The RME-69 had started out in life as a bridge-detector receiver in the Electrical Engineering Department labs, probably purchased by Professor Bob Higgy, W8IB. It was retired from that job in the early 1950s when Professor Jim Gilbert bought a new bunch of HRO-50s and -60s for the department. Professor Dean Davis acquired it and passed it along to his father-in-law. Both Jim and Dean were hams, of course. After his father-in-law died, Dean sold it to the person in Delaware, Ohio, who later sold it to me. So I am the fourth, and at this point the longest-term owner of this particular receiver.





Below the chassis of the RME-69. Note the cast-metal chassis. All capacitors are original except for the added electrolytic.

According to my September, 1979 notes in the instruction manual, the '69 responded favorably to alignment and proceeded to go to work in my hamshack. I did not have to replace any of its paper bypass capacitors then or since. I didn't open up the radio again until October of 1980 when I was looking for the source of some hum that was particularly annoying on 15 and 10 meters.

Swapping out the 6D6 local oscillator tube made some difference, but the hum was still there so I thought I would check out the health of the power supply filter capacitors. There was no can mounted on top of the chassis, and the manual has no picture or mechanical diagram of the under-chassis area, so I was having a little trouble finding the capacitors.

After a little looking around, I noticed an area where the wiring under the chassis was bent to clear a rather large, circular-shaped component, but that component wasn't there. The filter capacitor unit that I couldn't find was actually missing, and I'd been running the receiver quite satisfactorily for a year without it! Needless to say, addition of replacement cleared up my hum problem completely.

The RME-69 is an interesting receiver from several perspectives. It is mechanically very solidly built. The chassis, for example, is an aluminum casting that is quite rigid. The coils, located below decks adjacent to the bandswitch, are all encased in sturdy shield cans. My receiver is a rack-mount model, and its panel is a 1/4" inch thick aluminum sheet. This radio was built to take a lot of punishment and keep on working.

The front panel, which is original, is a grey crackle paint. It is now flaking off in large splotches. One of these days I may remove the panel and strip and repaint it if I can find a crackle paint that I like. One peculiarity about the RME-69 is that the receiver originally came without any labels on the knobs. It's fairly obvious that the two large knobs below the main tuning and bandspread dials are for tuning, and that

the knob below and between them is the bandswitch, but there was no hint of the function of the other knobs on the panel. On my particular receiver, this mystery was dispelled by a set of engraved labels added by a technician at the Ohio State EE Department so that the students wouldn't be confused.

The RME-69 does a very credible job, even today, as an amateur or SWL receiver. It is stable, with negligible drift after about 15 minutes of warm-up. Thanks to its resonator control, it is sufficiently sensitive to hear antenna noise all the way up to 30 MHz. Images are 55 dB down on 20 meters, but only 20 dB on 10 meters—typical of a single conversion receiver of its day.

Its bandspread is quite generous, 18 turns of the bandspread knob to cover 160 meters, 26 turns for 80 meters, 12 turns for 40 meters, nine turns for 20 meters, six and a half turns for 15 meters, and nine turns for 10 meters. That's better bandspread than my HRO-50 has on every band, except for 15 meters!

Its selectivity is satisfactory for AM phone in the amateur and shortwave bands, and the crystal filter provides variable selectivity and a phasing notch for use on CW or when the phone bands get crowded. However, the skirt selectivity when the crystal is switched in is noticeably poorer than that of my National HRO in the same mode. This is probably due to stray coupling around the filter.

Another peculiarity of the RME-69 is that the amount of BFO signal coupled into the second detector for CW operation is, by design, relatively low. The R-meter only goes up to R3 when the BFO is turned on with the AVC operating. The manual explains that this low injection level produces less noise on CW reception and that it allows the AVC to be used to cut back higher-level CW signals automatically. In contrast, the HRO's BFO injection pins the S-meter. Conse-



Top view of the receiver. Note the high density of the layout. There is very little room for any additions above the chassis.

quently the AVC must be disabled and the RF gain control used for the volume control on CW.

The RME-69 also includes a unique, "monitor" feature. When the RF gain control knob is pulled out from the panel, the second detector is switched away from the IF output to a separate monitor antenna terminal on the rear apron of the chassis. An amateur operating AM phone could connect a short antenna to that terminal and listen to his modulation on the air.

If you acquire an RME-69, be prepared for its 4000 or 600-ohm audio output impedance. If you want to drive a speaker, look around for a matching transformer, or better yet, an original RME speaker. (NOTE: The uniquely shaped stand-alone speakers, in contrast to the receivers, are scarce items. *(The rack-mount speakers may be just as hard to come by. —ed.)* Plugging in headphones cuts off the 4000-ohm output but not the 600-ohm line. You may want to change this if you are using a 600-ohm to voice coil-matching transformer like I am.

The RME-69 instruction manual is quite interesting, and is really a very good engineering tutorial on superhet receiver design. Strangely though, it does not include any instructions on how to do an alignment, even though all of the normal adjustment points are there. This omission and the lack of labels on the controls suggested to me a certain "attitude" about the RME-69's maker. I was lucky to be able to investigate this further at the Dayton Hamvention in 1981.

It was a sunny, Saturday afternoon at the Hamvention, and I was a little tired after my double round of the flea market and fighting the crowds inside the arena. I retreated to a little grassy spot outside and sat down for a rest. There were a couple of old timers having an "eyeball QSO" out there, and I soon joined them. To my utter surprise and delight, one of them was "Shaw" Shalkhauser, W9CI, a founder of RME!

Shaw turned out to be very sure-of-himself, with definite strong opinions, just as I had come to expect. There were no labels on the RME-69 controls, Shaw explained, because any user worth his salt would soon learn what they were and how to operate them. Likewise, anyone who did not already know how to align a superhet had no business messing with his radio.

I complemented Shaw on the thoroughness of his manual. In a later letter that included an "eyeball QSO QSL," he said: "Most of the manuals in the early RME days were composed right on my desk with the assistance of the engineers supplying their lab data as necessary. Hams were very particular about the inner workings of equipment back in the tube days. We answered many more

questions direct from the factory than is done today. As you can see, it was possible to make your own repairs in the equipment after checking the manual. This is hardly possible with our modern units unless one wishes to tackle it."

Shaw's letter appears to have been typed on the same machine that was used for the RME-69 manual. His stationary announced that he was a Fellow of the Radio Club of America and QCWA life member number 8873. His QSL says, "Hooked-Branded Inoculated since 1912," and it lists his calls as "1915, MLA; 1916, 9AHO; 1920, 9XAF; 1921 9YAN; 1922, W9CSZ; 1952, W9CI." I treasure Shaw's letter and QSL only slightly less than our eyeball QSO as one of the best experiences that I have had as a collector of vintage amateur radios.

Because there were so many RME-69s built, and because they were so sturdily constructed, there are still quite a few of them around. If you are looking for a vintage receiver that will still turn in a very credible performance in more than just the occasional AWA contest, be sure to keep your eyes open for an RME-69.

The success of the RME-69 in the market place inevitably led to tinkering with the circuit and the introduction of variants. Along with other changes, the RME-69/LS-1 increased the tube complement to 11 tubes, replacing the two 6D6 IF tubes with a 6L7 and a 6K7 as well as adding a two-tube noise circuit. In 1936 this LS-1 noise silencer was also offered as an add-on to retrofit earlier '69 models. The RME-69/Battery was offered as an alternate to AC line power, and the RME-69/DB-20 incorporated the receiver and a DB-20 preselector in one long cabinet. The usual layout had the preselector on the left side of the cabinet, but I have seen one version with the preselector on the right, possibly a special order. A relay-rack model with a smooth gray finish and a matching speaker is shown in the November 1936 QST.

The RME-69 Single-Signal Super was announced in the October and November 1935 issues of R/9 and in the November 1935 QST. Detailed ads with photos appeared in December, with the one in R/9 showing the receiver next to its speaker in the trapezoidal cabinet, both in gleaming black crackle finish. While other publications were not checked, it is a safe bet that all the 1935 major information sources were used by RME to get out the story about this new receiver. Readers were invited to send for Bulletin No.69. RME advertised the receiver heavily in 1936. The Great Depression was at its peak, there were only just-so-many dollars out there for this type of product, and RME went after as many as it could snare.—W2DGB 