

The AR88 Again

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Many improvements to the performance of the AR88-D have been suggested (see references). These include the replacement of the 6SG7 first RF stage with a 717A. This modification requires a reduction in HT to the 717A, which has a working anode voltage of 120V compared with 250V for the 6SG7. Adding a 10kΩ resistor in series with R3 (RF stage decoupling, value 1kΩ) will achieve this. Although the improvement in sensitivity and signal to noise ratio may be measurable with a noise generator, I found no audible difference on the HF bands, except possibly on 28Mc/s, and reverted back to the 6SG7.

However, a method of improving the sensitivity given to me by Tony Hibberd, G8AQN, is worth passing on. The gain of the receiver is determined by the RF gain control potentiometer R46 (66kΩ), which is in series with R55 (6.8kΩ) to chassis. This resistor provides a fixed minimum amount of negative bias to the RF and IF stages, limiting the gain obtainable when the RF gain control is fully advanced (minimum resistance).

I have added a 2.5kΩ resistor [2.5k resistors have been obsolete for many years, 2.7k is the nearest modern equivalent- Ed.] in parallel with R55 thus

reducing the negative bias when the RF gain control is at maximum. The increase in sensitivity is dramatic, especially on 28Mc/s, and the receiver has a more lively feel on all bands, but is still adequately controlled by the RF gain. It was recognised that this modification could produce instability but, even if the fixed resistor is shorted out, all is well, although the signal to noise decreases.

In terms of sensitivity, the AR88-D is better than, or the equal of, the HRO-MX, Hammarlund SP600-JX, Racal RA17L, Collins 390A, CR100, Eddystone 830 and Yaesu 101ZD. The maximum selectivity is about 600c/s at 6db down whereas the others can achieve 100 c/s. (I have no figures for the HRO-MX but it seems similar to the AR88-D). However, very narrow bandwidths are not conducive to receiving good quality AM signals!

References

- Practical Wireless*, August 1987
- Shortwave Magazine*, October 1965, May 1993, August 1993
- Radio Bygones Christmas 1992*

