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## Heath HR-10 Modifications

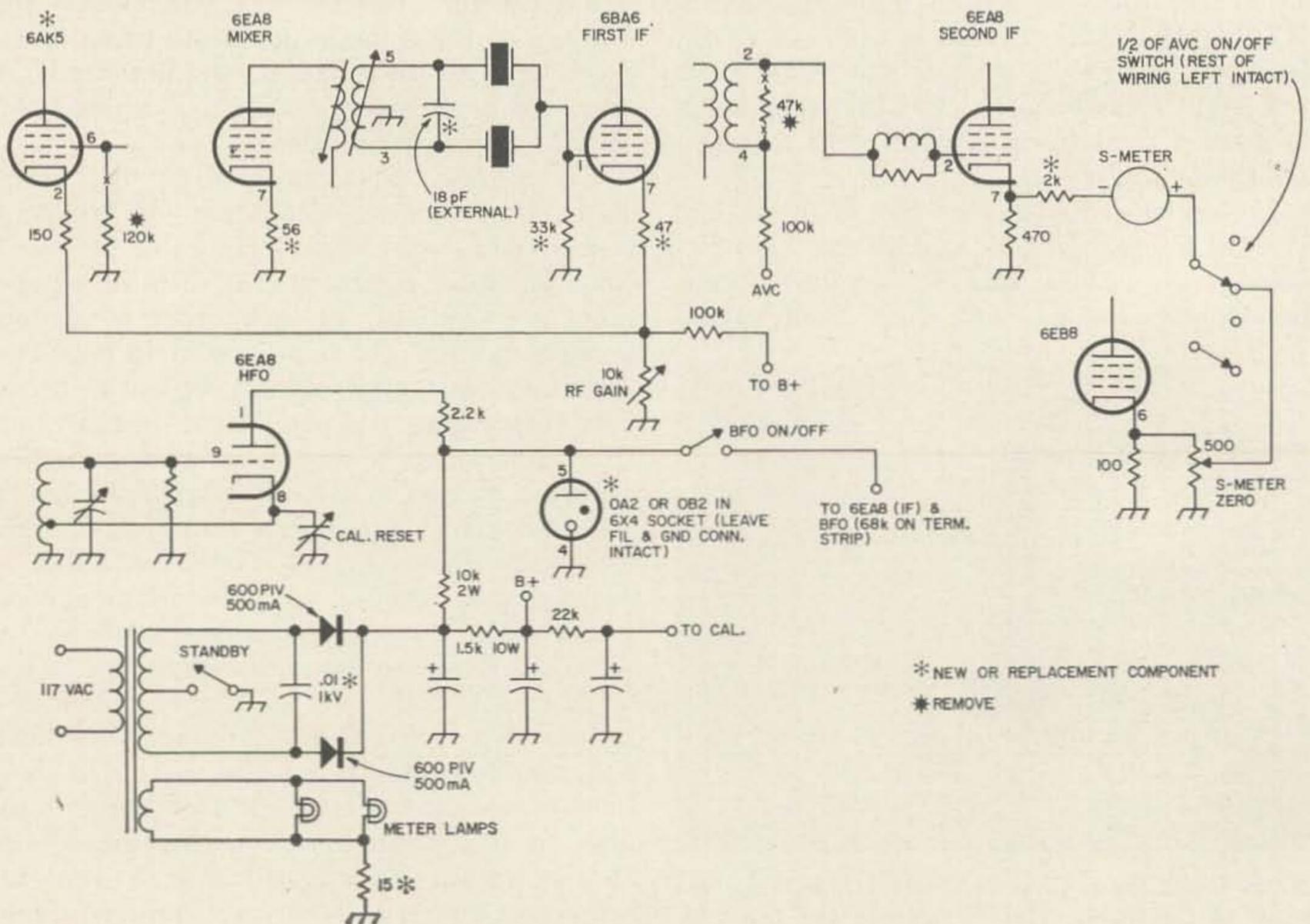
The Heath HR-10 receiver is an excellent choice for the novice, but with our crowded bands these days, improving the selectivity of any receiver is a worthwhile project. The modifications described here include increased selectivity and sensitivity and make the set act as if it cost much more than the total outlay for the circuit changes—a mere twelve dollars.

Since the HR-10 appears to be a very popular receiver with novices and generals alike, these modifications will be for the mutual benefit of all. In addition to the sensitivity and selectivity improvements, I added

voltage regulation, rearranged the rf gain control, put in a new S-meter circuit, and added a solid-state rectifier.

In the front-end I replaced the 6BZ6 rf amplifier with a 6AK5. Before installing the 6AK5, remove the 120k screen-grid resistor from the circuit and lift pin 7 of the tube socket from ground.

To improve the stability for SSB and CW operation, I added a voltage-regulator tube. I used an OA2 because I happened to have it in the junk box, but an OB2 should work just as well. Since the 6X4 rectifier is re-



Modified HR-10 circuitry. These changes result in improved sensitivity, selectivity and stability.

placed by two 500 mA, 600 PIV silicon diodes, the 6X4 socket is used for the VR tube. In addition, you will need some additional solder lugs. This can be accomplished by installing a 3-lug terminal strip in place of the 2-lug strip which is mounted near the 6EA8 in the mixer section.

In this modification most of the harness cable can be rewired and rerouted to the new point, saving wire and preserving overall neatness. To install the new S-meter (Lafayette 99R2514), remove the pilot light in the left-hand corner, remove the old S-meter and the black metal bracket and cut a 2½" hole through the front panel. Cut the hole so the old S-meter calibration points are removed in the waste plastic.

### Alignment

The HR-10 in its modified form is a very sensitive receiver, and since we are squeezing the last bit of performance out of it, the alignment of the various stages is a little painstaking. The first step is the alignment of the *if* stages. If you have a signal generator, all well and good. If not, use a beat note from the crystal calibrator. For proper selectivity the *if* transformer slugs are set for the first peak after the slugs are screwed all the way out and back in again.

If you encounter oscillation in the *if* stages, it can be cured by lowering the value of the 6BA6 grid resistor, slightly detuning the second or third *if* or shunting the second *if* transformer with a 68k resistor. After you are satisfied that the *if* stages are properly aligned, proceed with the alignment of the rf stages.

### Results

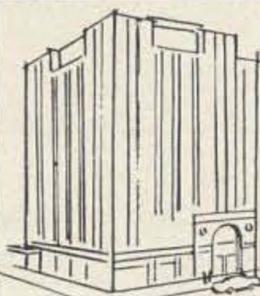
After these simple modifications, the set works like a charm. In fact, it is too selective for AM work, but just dandy for CW and SSB. In addition, frequency stability is excellent, and it takes a pretty large fluctuation in line voltage to make it jump off frequency.

Setting the rf gain control has no bearing on S-meter position—it just decreases sensitivity, lowering the reading, but not pinning it up scale. I find that on forty meters I seldom have the rf gain control much above the one o'clock position.

I would like to thank Ted, VE3ABN for typing, and John VE3FWX, for his constructive criticism.

... VE3FYL

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