

Improving the Heath Mohawk

Although it has recently been superseded in the Heath line, there are still many Heath-kit model RX-1, "Mohawk" receivers in various ham shacks. It is still an excellent ham receiver, but a few simple modifications will increase its sensitivity and improve its audio quality on SSB.

Pepping up the Front End

The Mohawk uses a 6B6 tube in its rf amplifier stage. However, the tube is prevented from doing the full job it is capable of by the use of a 220 ohm cathode bias resistor instead of the 56 ohm resistor recommended by the tube designers for maximum gain. Reducing the value of the cathode resistor to 56 ohms improves the signal-to-noise ratio a couple of db on 10 and 15 meters. It also increases the receiver gain a trifle, although this is of minor importance.

As the 6BZ6, rf amplifier, 6CS6, mixer, and 12AT7, oscillator tubes are mounted on a pre-

assembled subchassis in the front-end section of the receiver, it looks like a major task to change the 6BZ6 cathode resistance. Actually the job is not difficult. The left side of the chassis on which these tubes are mounted is removable to expose the components connected to the three tube sockets.

To remove the side plate, unscrew the hex-head screws at the front and back of the subchassis. After removing the plate, locate the 220 ohm (red-red-brown), ½ watt resistor connected between pin 2 of the 6BZ6 tube socket and the nearby, insulated terminal strip. Do not attempt to remove the resistor; instead, connect an 82 ohm, ½ watt resistor in parallel with it. This may be done by cutting the leads of the new resistor to a length of approximately ¾", forming a small hook on the end of each wire with long-nose pliers and hooking them on the leads of the original resistor. Naturally, a small soldering iron is helpful in soldering these connections.

Noise-generator measurements indicate a 2 db improvement in the signal-to-noise ratio of the receiver on 10 meters after the change in the 6BZ6 cathode resistor. In practice, extremely weak signals are slightly easier to read than they were before the change. But don't expect to notice any change on strong signals.

Incidentally, if extremely-strong, local signals tend to block the receiver (especially on the lower-frequency amateur bands) after the resistance change, retard the 6BZ6, rf gain control sufficiently to eliminate the blocking while the locals are on the air.

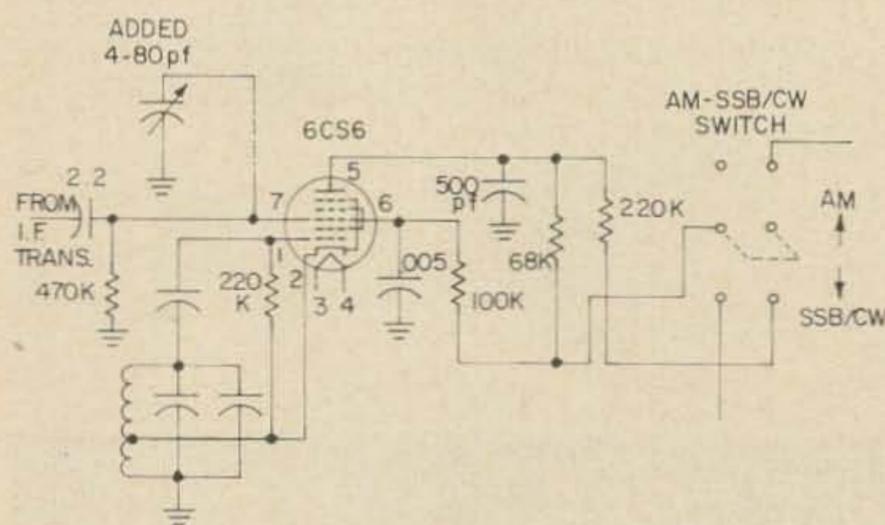


Fig. 1. Changes for improved audio.

Better SSB Quality

The audio quality of the Mohawk receiver leaves something to be desired when receiving SSB signals. The principle cause of this seems to be that, in order to hold down the audio output of the 6CS6 product detector to the same level as from the diode (AM) detector, the 6CS6 is operated with considerably less voltage on its plate than on its screen. Much better audio quality is obtained on SSB if the screen voltage of the 6CS6 product detector is reduced and its plate voltage is increased.

To modify these voltages, disconnect the 68,000 ohm resistor from the screen terminal (pin 6) of the product detector socket. Then, reconnect the resistor to the insulated tie point where the 10,000 ohm resistor (which also goes to the screen terminal) is terminated. Next, replace the 10,000 ohm resistor with a 100,000 ohm, ½ watt resistor.

After these changes are made, the audio output of the product detector will be far too high, until a small capacitor is connected from pin 7 of the product-detector socket to ground to decrease the *if* signal fed into the detector. A 4 to 80 mmfd mica trimmer capacitor, such as the Lafayette C-732 trimmer capacitor, is ideal for the purpose. Adjust it so that there is no change in the volume level from the loudspeaker when the receiver is switched from AM to SSB/CW reception. A 47-50 mmfd fixed capacitor may also be used, if you don't mind touching up the volume control setting a bit when switching modes.

Slowing down the AVC action on SSB also improves the receiver's audio quality a bit. This change is simple: connect an additional 0.1 mfd. paper or mylar bypass capacitor in parallel with the original 0.01 mfd capacitor across the AVC line. The additional capacitance does not impair AVC action for AM.

Taming the Mohawk S Meter

As you Mohawk receiver owners know, the Mohawk S-meter has a tendency to be a mite generous—indicating 40 db over 9 on the lower frequency bands with no signal tuned in, unless the *if* or rf gain control is turned away back. If this generosity bothers you, try substituting a 12AU7 for the 12AT7 in the S-meter/1st audio tube socket. It will have to be few db off of the readings. You will have to re-zero the meter with the meter-adjust control, but this takes only a few seconds. Also, with the 12AU7 in the socket, you'll have to advance the audio gain control about five per cent to compensate for the lower gain of the 12AU7 compared to the 12AT7.

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