Hints and Kinks For the Experimenter

SERVICE NOTES ON SOME HAMMARLUND RECEIVERS

When Hammarlund receivers type SP-100, SP-200, SP-400 and the surplus versions (BC-779, etc.) are operating properly, the maximum high-frequency oscillator drift is usually about 50 kc., and most of this takes place during the initial warm-up. The oscillator drift characteristics of these receivers can be materially improved by making a simple modification suggested by Jack Scheider of Hammarlund's Engineering Department.

First, obtain a 3.3-$\mu\mu$f. temperature compensating capacitor having the highest negative temperature coefficient available. Three 10-$\mu\mu$f. capacitors may be connected in series if the 3.3-$\mu\mu$f. job is not obtainable. Lift the top shield from the main tuning capacitor gang after removing the mounting screws from the top plate of the shield. Connect the 3.3-$\mu\mu$f. capacitor between the stator terminal of the oscillator tuning capacitor (the first section away from the panel) and ground.

Realignment of the oscillator trimmers is the next operation. Turn the receiver upside down, panel facing toward you, and remove the bottom cover. Using a signal generator or the standard frequencies from WWV, adjust the trimmers for on-the-noise calibration of the test signals. The trimmer control shafts are accessible through the line of holes running from left to right across the shielded coil compartment. The line of holes directly to the rear of the panel are over the oscillator trimmers. *Do not* touch any of the other trimmers. All of the more popular receivers in the group referred to above have the high-frequency band trimmer at the left end of the line. Move on one step to the right each time the range of the receiver is decreased to the next lowest band.

Since the shunt capacitance which has been added to the circuit is only 3.3 $\mu\mu$f., it is obvious that each oscillator trimmer will require only slight adjustment. Only a fraction of a turn of each adjustment screw should be necessary.

Everyone who has made this modification to his receiver reports complete satisfaction. One report stated that the drift had been reduced to less than 200 cycles, and another claimed that the modified set was *excellent* for s.s.b. reception.

Audio-Limiter Alterations

The following is a step-by-step procedure for improving the action of the noise limiter for the aforementioned receivers. If you have the bottom plate off the receiver because of the oscillator modification, now is a good time to go to work on the limiter.

Audio-Circuit Changes

Operations 1 through 5 involve the first-audio tube socket.

1) Remove .02-μf. coupling capacitor feeding grid of first-audio tube. Replace capacitor with a jumper.

2) Remove grid-leak resistor from grid pin.

3) Remove ground connection from Pin 8.

4) Remove lead from 3-volt bias to Pin 6.

5) Connect a 100-ohm ½-watt resistor between Pin 8 and ground.

Second Detector-Limiter Modifications

1) Disconnect all wiring to the second detector socket (6H6) except that terminated at Pins 1, 2 and 7.

2) Remove all components and wiring from the terminal strip adjacent to the 6H6 socket except heater leads on the last lug.

3) Remove *all* wiring from the 6N7 socket.

Note: Steps 4 through 8 to follow pertain to wiring of the 6H6 socket. Fig. 1 is a sketch of the socket and the new wiring.

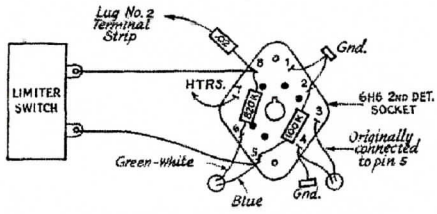

Fig. 1 — Sketch of the layout for the second-detector socket (Hammarlund SP series receivers) after modification.

4) Connect the lead that originally went to Pin 5 to Pin 3.

5) Ground Pins 1, 2 and 4.

6) Connect the following to Pin 5: a lead to the limiter switch; a 100K ½-watt resistor to ground; the blue lead from the i.f. transformer.

7) Connect an 820K ½-watt resistor between Pins 6 and 8, and connect the green-white lead that originally went to the 6N7 grids to Pin 6.

8) Connect the .02-μf. coupling capacitor (see Step 1 of audio-circuit changes) from Pin 8 to Lug No. 2 of the terminal strip. Wire a lead between Pin 8 and the remaining terminal on the limiter switch.

9) Solder the audio input lead to Lug No. 2 on the terminal strip.

Do not attempt these modifications unless you feel that you are thoroughly capable of diving into a superheterodyne receiver. If you have any hesitancy about operating on your set, either forget the whole idea or pass the job along to someone who is familiar with what makes a superhet tick. — *Frank Lester, W2AMJ*