

# Improving NC-300

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## SSB Reception

Now that NC-300's are on the used market at attractive prices there are many people interested in modifying them. The NC-300 was designed in 1954, and is rather inconvenient for SSB operation, but not very much work is required to improve it considerably. The agc system gets the most effort, since stronger control and a more appropriate attack/decay performance are required.

The first thing you need is a good schematic. I'll suppose you have that, and let's go to Fig. 1. A five volt signal at the second detector gives about six volts at pin 2, and this feeds the S meter and the agc bus.

In the original circuit the charge time constant was something like 25 milliseconds and the discharge time constant only slightly longer. These values seem good for AM, especially on a fluttering VHF signal.

But for sideband, the cathode follower becomes operative, thanks to a spare clip on the mode switch, and drives a voltage-doubling rectifier which provides about 12 volts of agc for the same drive at the second detector. This is applied through a diode to a point on the agc string where the discharge

resistance is over a megohm, in order that a long time constant can be obtained more easily.

The actual charge time depends on the value of the 470 pF capacitor and the cathode resistor, but the 1 mF capacitor can be charged in less than 30 milliseconds without loading that last tuned circuit any more than it is already. The one-second discharge time constant seems about right, in listening tests.

The net effect is to hold down the level in the *if* amplifier, but there still seems to be adequate audio in the "SSB" position of the mode switch.

The cathode follower socket can be mounted in one of the ventilation holes next to the 6AL5, or the whole thing can be hung in midair, so to speak, in the considerable space beneath the chassis and under the accessory socket. The tube type is not critical, but do try to use the resistor values specified.

The mode switch has an unused, accessible clip next to that grounding out the agc bus in the CW position. This serves to turn on the cathode follower in the sideband position only. The wire runs along the cable which threads through the dial mechanism over to the vicinity of the audio gain control, then back to the second detector region.

A two-lug strip is attached to a bolt handy on the coil compartment, and carries the hundred ohm resistor and the bypass. Keep that grid lead short. The whole thing looks sort of temporary the way I did it, but seems to work okay.

### Other Suggestions

The selectable-sideband feature used in some Hallicrafter receivers is easily added. See the second half of W6HOG's article in the April 1966 issue of 73, page 95. Ignore the first part of this, and item 2 is in error.

A 2135 kHz oscillator will have a harmonic in the 15 meter band. It is desirable to crystal-control the second oscillator on 2295 kHz because the second oscillator is responsible for most of the receiver's drift, especially drift due to varying humidity.

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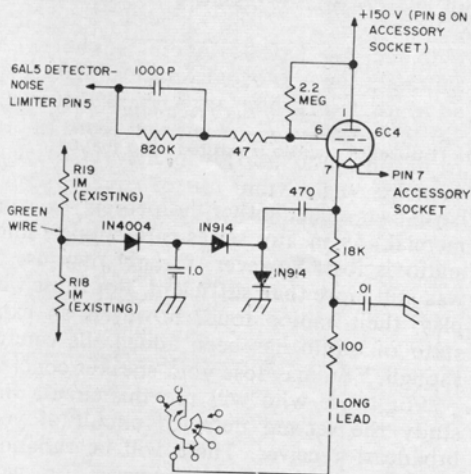


Fig. 1. Schematic diagram for modifying the NC-300 for improved SSB reception.