CUSTOMER SERVICE BULLETIN

April 29, 1966

NCX-5
CSB 66-1

National Radio Customer Service Bulletins are provided free to all registered owners of our equipment. Information contained herein is gathered from our factory and field service organizations as well as from National owners.

We do not recommend the "automatic" incorporation of modifications except when the trouble description is identical to your problem, or when suggested for preventative maintenance.

IMPROVED TUBE LIFE---FINAL AMPLIFIERS

Numerous reports indicate some of our customers believe reduced loading is desirable for extra tube life. Just the opposite is true. Per NCX-5 instruction manual, finals should be loaded to not less than 300 ma. for optimum life. Underloading tubes results in excess screen current and hence reduced life. Power output may be reduced, if desired, by inserting less carrier.

TUBE CONVERSION

Due to a cutback in the production of 6GJ5 tubes, late-run models have incorporated the 6JB6 tube, which is identical except that the suppressor grid is brought out to Pin 8 (in the 6GJ5, it is grounded internally).

If your equipment uses the 6GJ5 tubes, Pin 8 of V-1 is used as a common tie point and conversion is mandatory before substituting 6JB6's. Such conversion may be accomplished as follows:

1. Locate the terminal strip running parallel to the final amplifier tubes. On the lug nearest the rear of the chassis--
   (a.) Remove the white wire.
   (b.) Remove the end of the .01 capacitor.

2. Locate V-1, Pin 8--
   (a.) Remove the end of 100-ohm resistor.
   (b.) Remove the white wire.
   (c.) Reconnect the resistor and white wire to the empty terminal lug mentioned in Step #1, above.
   (d.) Ground Pin 8.

3. Connect the white wire (removed in Step #1--(a.)) to the free end of the .01 capacitor (removed in Step #1--(b.)). Cover this joint with insulated sleeving.

When 6JB6 tubes are used it might be necessary to change R36 to obtain proper idling current of 60 ma. Values of resistance from 12K to 27K ohms may be selected to meet your unit's particular requirement.

NOTE: It is imperative that only a matched pair of tubes be used in the final amplifier. Reports suggest Sylvania 6JB6 tubes exhibit superior operating life.

CHIRP ON C. W.

This generally results from excessive carrier insertion. Carrier should be limited to a level which allows plate current to just approach normal plate current obtained in Tune position.

DRIVE FALLS OFF AT HIGH END---15 METERS

L-13 and associated wiring sets up a stray resonant trap which acts as a suck-out on 15 meters.

The following steps should be taken to eliminate this condition:

1. Disconnect the white coax lead (labelled #11), at 10 o'clock on the switch wafer section (S1-G) located between power amplifier cage and crystal mixer shield.

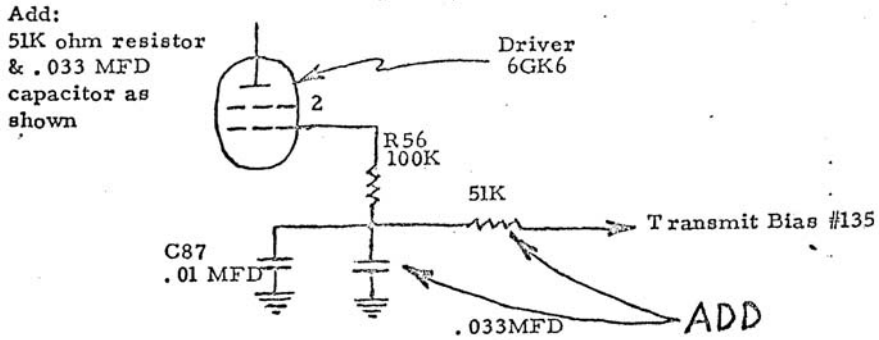
2. Reconnect the coax to the fourth (4th) unused terminal on S1-G, counting clockwise from the original terminal. This unused terminal is located at approximately 2 o'clock.

3. Connect a 100-ohm 1/2 watt resistor between the two terminals of S1-G mentioned above.

KEY CLICKS

To eliminate possible key clicks, we suggest the circuit modification on the following page. The RC component changes noted will alter the key pulse wave shape and eliminate undesirable transients.

KEY CLICKS
(cont.)



LOW MIKE GAIN
(MK I modified to MK II)

Carefully check T-1 and T-7 located in the balanced modulator circuit for proper alignment. If alignment checks OK, change R-15, 1K cathode resistor of V6A, to 470 ohms, thereby effectively increasing the gain of the speech amplifier.

S-METER ZEROS LOW

The following change was incorporated in late production runs to eliminate the possibility of S-Meter not being adjustable above S-Ø. Replace R 43 (82K ohms) in the plate circuit of V6B with a 68K ohm 1/2 watt resistor.

NOISY, ERRATIC VFO TUNING
(Often Described as "burble)

Solder the VFO wiper brush rivet to the VFO tuning condenser frame. This will insure positive ground connection and eliminate a resistive path which may build up through corrosion at the rivet contact.

Additional corrective action consists in cleaning the wiper contacts with a commercial type contact cleaner such as IRC.

LOW RECEIVER GAIN

MARK I Remove R119, Pin 6 to ground (V16).

MARK II Replace 150-ohm resistor, located in series with the RF gain control to ground, with a 47-ohm 1/2 watt resistor.

LOW RECEIVER GAIN
(cont.)

NOTE: The 150-ohm resistor is a production change not shown on the schematic.

As a secondary measure, R119 may also be removed.

NO LOCAL OSCILLATOR (V4A) ON 40 METERS

Equipment operates normally on all bands except 40 meters. This condition can be eliminated by the following modification--

1. Disconnect the wire between C8 and the 10 meter mixer coil at the coil end. Back this wire through the sub-chassis and reconnect it to V4A, Pin 1.

2. Change R74 from 47K ohms to 4700 ohms.

3. Adjust C 8 and C9 to maximum drive at 7.3 Mc.

   Series 74 (If above fails to give results)
   (a.) Decrease C103 from 560 Pf to 510 Pf
   (b.) If still intermittent after above, shunt C103 with from 22 to 47Pf.

   Series 77 and 82
   (a.) In this series C103 is already 510Pf. Simply shunt with from 22 to 47Pf as in (b.) above.

4. If oscillator is still intermittent, replace L-12.

5. Re-align 10 meter mixer and driver coils.

CARRIER LEAKAGE
(after bal. mod. installation)

This is usually due to faulty lead dress. Solution: Keep all leads as short as possible and dress close to chassis.

LOOSE DIAL COUNTER GEAR

A simple field cure consists in bonding the fiber gear to its metal shaft with Epoxy Cement. Use sparingly and keep cement off sliding shaft.

The following bulletin was produced by National and intended for the National NCX 5 transceiver.

The customer Service bulletin is CSB 66 - 1

An additional modification to the NCX 5 transceiver:
Low AM receive audio level/ SSB audio level normal
Change L22 inductor at diode D11 (am detector) from the single layer unit supplied to a larger inductance. A small 3 section choke works well. This will raise the received am audio and prevent the operator from having to reset the volume control when changing receive modes.