

## SECTION 4 MAINTENANCE

### 4.1 GENERAL

Information contained in this section will aid qualified service personnel in servicing and aligning your NC109.

### 4.2 REPLACING PILOT LAMPS

Two bayonet-type pilot lamps are clipped to the dial structure. Before attempting to replace a pilot lamp, unplug the a-c power cord. Then remove the back cover by unscrewing the five holding screws. Reach in and slide clip to the side and withdraw it through the aperture in the dial structure. Replace defective lamp with a type GE 44 lamp and return lamp clip to its original position.

### 4.3 TEST EQUIPMENT

The following test equipment is required to align your NC109.

- a. AM signal generator having:
  - (1) 30% modulation at 400 cps.
  - (2) Frequency range from 455 kc to 30 mc.
- b. Output meter.
- c. Accurate frequency standard (XCU-109)

### 4.4 IF ALIGNMENT

IF alignment must be made at the frequency of the crystal in Z4. Connect a signal generator to the main tuning condenser mixer stator. Set the SENSITIVITY and VOLUME controls at maximum. Remove modulation from the input signal. Set the SELECTIVITY

switch to 5 and input level to 200 microvolts. Tune the generator around 455 kc until a sharp peak is obtained on the S-meter. The generator is now tuned to the crystal frequency. Set the MODE switch to CW. With the dot on the PITCH control vertical, set the BFO to zero-beat by adjusting the slug in L10. Set the MODE switch to AM and modulate the input signal. Set the SELECTIVITY switch to OFF and adjust Z1, Z2 and Z3 for maximum audio output keeping the output level around 100 milliwatts by adjusting the input level. With modulation off and the generator tuned to crystal frequency, set the MODE switch to CW. Set the PHASING and PITCH controls with their dots vertical. The BFO should nearly zero-beat with the generator frequency. Set the SELECTIVITY switch to 1 and detune the generator approximately 2 kc in either direction. Adjust the slug in Z4 for maximum audio output. Check the PHASING control by adjusting it to a position where the beat note is completely eliminated. Repeat this check with the generator detuned to the other side of zero-beat. (Complete elimination of the beat note should be possible.) The two phasing positions should occur near the center of the PHASING control range. Tune the generator to the crystal frequency with modulation on. Set the MODE switch to AM, SELECTIVITY to OFF and adjust C20 in Z4 for maximum audio output. The IF section is now properly aligned.

TABLE IV RF CHART

BAND	A	B	C	D
SET GENERATOR	.6 mc	1.6 mc	5 mc	14 mc
SET MAIN TUNING	.6 mc	1.6 mc	5 mc	14 mc
ADJUST TO TUNE	L-5	L-6	L-7	L-8
SET GENERATOR			5.5 mc	16 mc
SET MAIN TUNING			To signal	To signal
ADJUST FOR MAXIMUM			Loop in L-1c Loop in L-3c	L-2 L-4
SET GENERATOR	1.5 mc	4 mc	14 mc	30 mc
SET MAIN TUNING	1.5 mc	4 mc	14 mc	30 mc
ADJUST TO TUNE	C-53	C-54	C-55	C-56
ADJUST FOR MAX.	C-8	C-9	C-10	—
SET MAIN TUNING				26 mc
ADJUST FOR MAXIMUM NOISE				C-11