

INSTALLATION AND OPERATING INSTRUCTIONS
HX-50 CODE #5 MODIFICATION KIT #9004-14-00001

INTRODUCTION

This Instruction Sheet contains all the necessary information for Installation of the Code #5 Modification Kit and changes to the Technical Description and Operating Instructions Manual. Prior to installation of the Code #5 modification, Code #4 modifications must be incorporated.

INSTALLATION

- Step 1. Locate resistor R133 (470Ω 1/2W) between pin 7 of V105 and ground and replace with a 430 uh choke. (L123)
2. Locate capacitor C193 (1000 pf button feed thru) next to neutralizing control, under final amplifier. Remove capacitor C193 and existing buss wire on T21 and C189. Install new buss wire between T21 and C189. Connect one end of 500 pf disc-ceramic capacitor to buss wire and the other end to the chassis.
3. Locate resistor R172 ($15K \Omega$ 2W) on terminal board TB3, near V108 and parallel with a $10K \Omega$ 2W resistor. (R220)
4. Locate blue wire between pin 6 of V107 and coil K102 and replace with a $7K \Omega$ 5W resistor. (R219)
5. Locate resistor R142 (3900Ω 1W) near power transformer, between TB8 and bias control and parallel with a 1000Ω 1W resistor. (R217)
6. Locate resistor R212 (180Ω 1/2W) on TB2 near V108 and replace with a 22Ω 1/2W resistor.
7. Locate resistor R213 (1500Ω 1/2W) between pin 8 of V107 to ground and replace with 680Ω 1/2W resistor.
NOTE: After modification, measure idle current and change 680Ω to 1000Ω if over 3 MA.
8. Locate resistor R214 ($91K \Omega$ 2W) on TB2 near V108 and replace with two $25K \Omega$ 5W resistors.
NOTE: This may also be replaced with one $50K \Omega$ 10W resistor.
9. Locate resistor R174 (1000Ω 1W) and replace with a 470Ω 2W resistor.
10. Locate the blue wire between L113 (2.5 mh) and the bias source (junction of R172, R220 and R177) on TB3. Remove this blue wire and install the 15" blue wire (furnished with the kit) from L113 to the arm of R143 (Bias adjust). Remove the jumper installed between the arm of R143 and the end of the pot which has the blue wire running to the bias source on TB3.
11. Mount a single lug tie strip so that the lug is near pin 5 of V109. Label this lug TB9.
12. Disconnect the three red wires from pin 5 of V109 and reconnect them to TB9.
13. Locate capacitor C162C and disconnect the two white/red wires. Re-route the one that comes from TB7 (junction of R141 and R157) and reconnect it to pin 5 of V109. Cut the other wire close to where it enters the cable.
14. Locate resistor R156 (4.7Ω 2W) on TB2 near V108 and remove from unit.
15. Remove white/red wire from TB2 and cut it back to where it enters the cable.

16. Remove the 5R4 tube from its socket. Disconnect the yellow filament wires from socket pins 2 and 8 and tape the ends. Add four F10 diodes and four 680K 1/2W resistors to the underside of the 5R4 tube socket as shown on the drawing, taking care to keep clear of J103.
17. Add R218 a 12K ohm 10W resistor from C162B to TB9.
18. Add Zener Diode from TB9 to ground.
NOTE: Connect cathode end of Zener Diode to TB9.

After this modification has been completed, re-neutralization of the final amplifier and readjustment of the bias control is recommended. Refer to section 7-10 in the manual for re-neutralization of the final amplifier. Refer to sections 3-15 and 7-3 in the manual for readjustment of the BIAS CONTROL.

CHANGES TO TECHNICAL DESCRIPTION AND OPERATING INSTRUCTIONS MANUAL.

PAGE 14 CW TUNING

Change sub-paragraph 4-3-3 to read as follows:

Set METER switch to OUTPUT LEVEL and adjust the PA TUNING and PA LOAD controls for maximum meter deflection. (As the final amplifier stage is tuned, it will be necessary to re-adjust the METER SENS. control to keep the pointer on scale). Return the METER control to PA CATHODE and adjust the RF drive for 225 MA PA CATHODE current, except 10 meter operation where it should read 150 MA.

Change sub-paragraph 4-3-4 to read as follows:

If necessary, re-adjust the RF DRIVE level and repeat the above tuning procedure until the PA TUNING and PA LOAD controls are set for maximum output (meter switch to OUTPUT LEVEL) while maintaining the PA cathode current at 225 MA.

In sub-paragraph 4-3-5, change RF output level at the 180 MA to read 225 MA.

PAGE 15 SSB TUNING

Change sub-paragraph 4-4-1 to read as follows:

Tune up the transmitter to a PA CATHODE CURRENT of 250 MA, (except on 10 meters where the limit is 200 MA), then set the METER SENS. control for 0 db reference on the OUTPUT LEVEL position.

Change sub-paragraph 4-4-3 to read as follows:

While monitoring the transmission on the OUTPUT LEVEL meter, adjust the AF

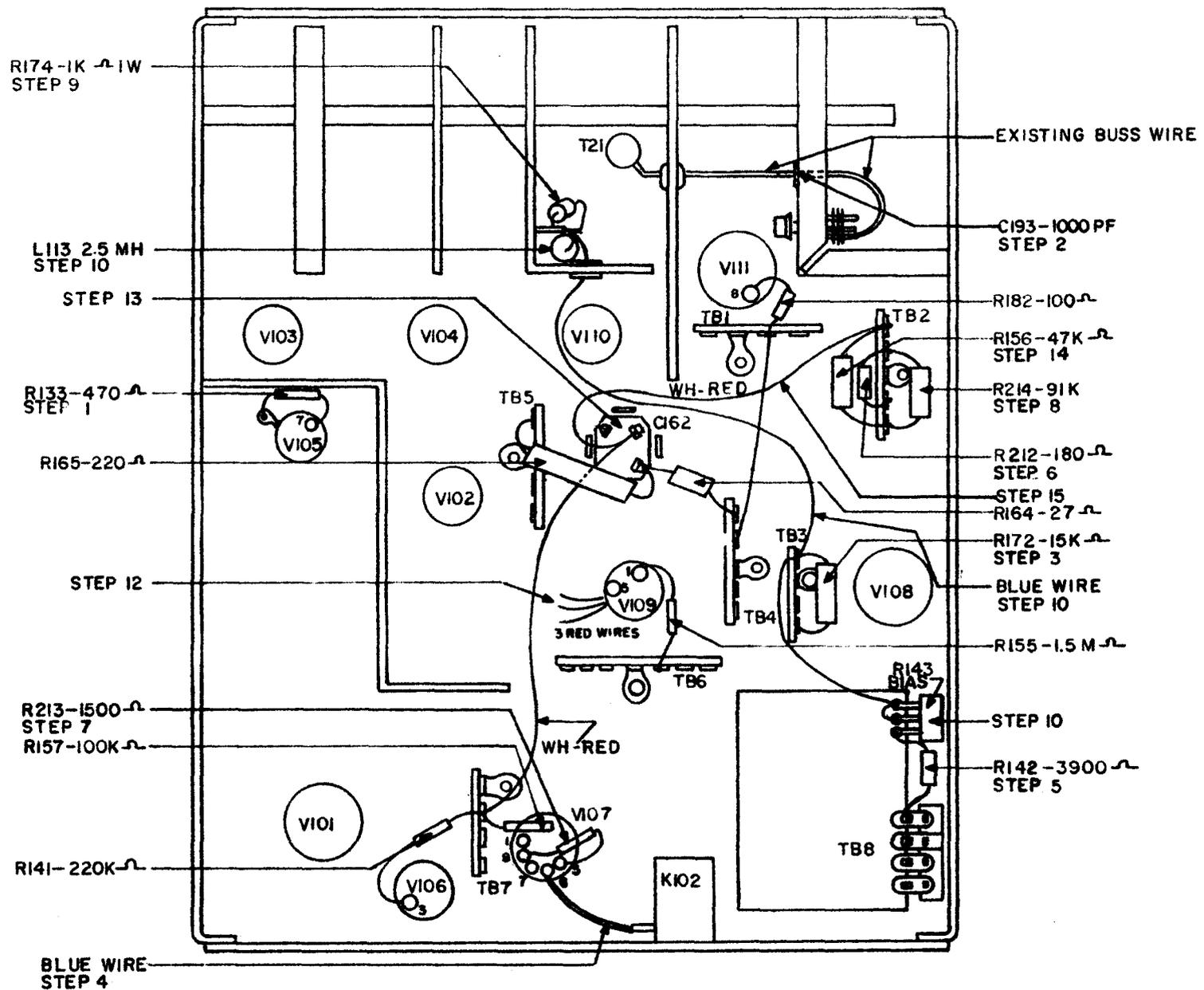
LEVEL control for the required audio gain which does not produce peak flattening or overload distortion of the output signal. Note: The output meter damping factor prevents the output level meter from indicating 0 db reference on voice peaks. The meter will indicate approximately 1/2 to 3/4 full scale with voice excitation. A higher reading may cause distortion.

The transmitter should then be talked up to an indicated plate current of 150 MA. Since the meter movement indicates average current, the peak (or instantaneous) values will be approximately twice that value. As the high voltage applied to the PA stage is in the vicinity of 700 volts, the peak envelope power input will be 200 watts.

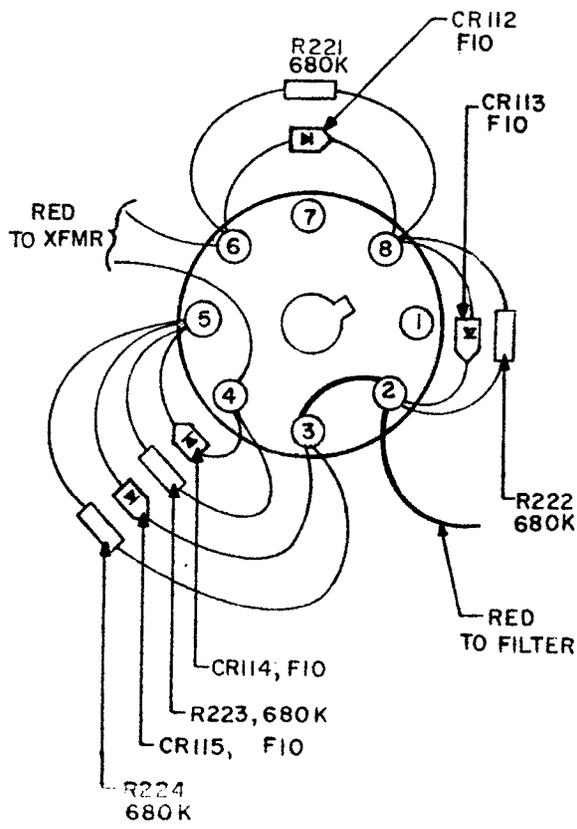
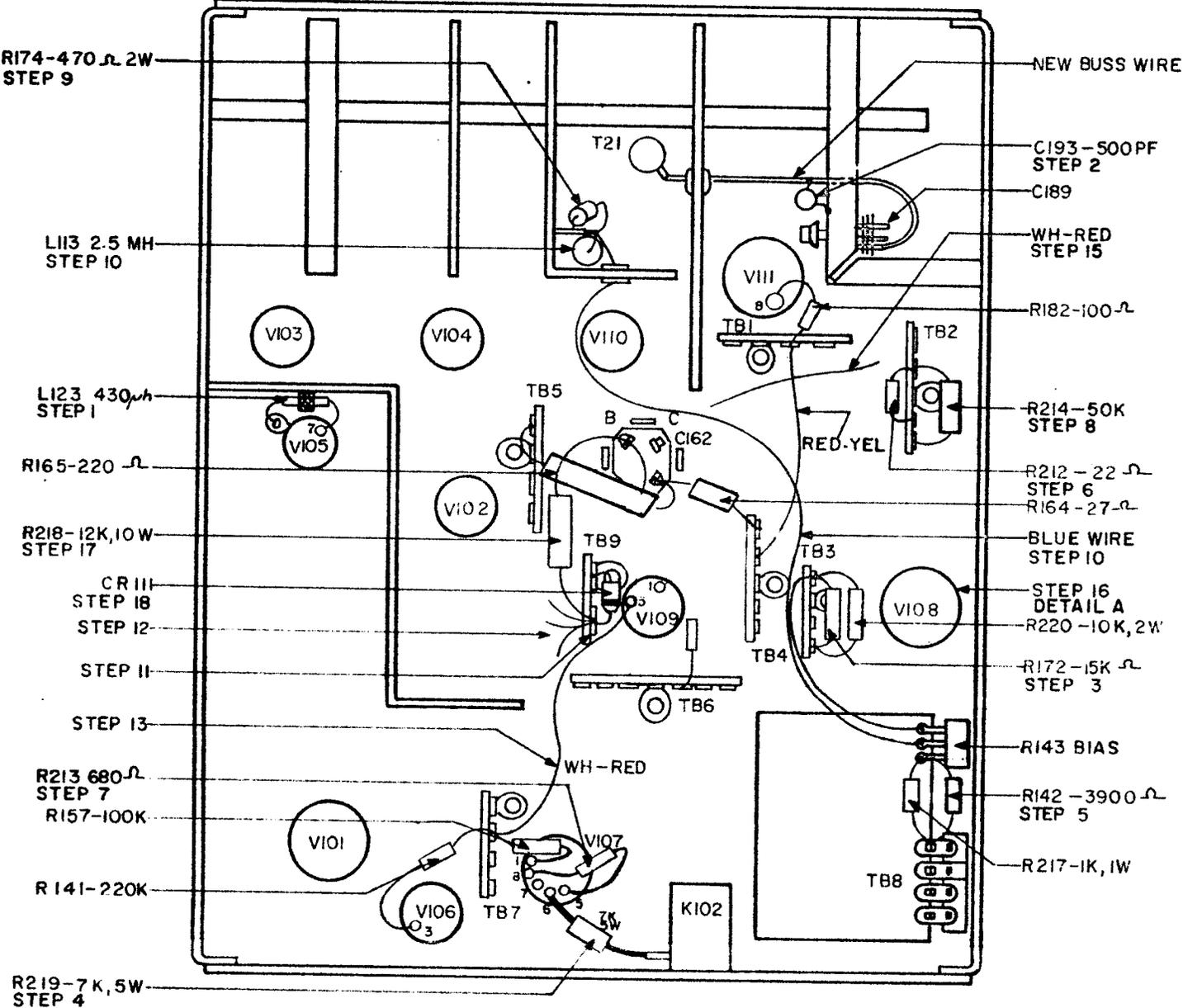
For best performance, all single sideband transmitters should be adjusted and loaded with the aid of an oscilloscope or similar instantaneous reading instrument. When such an instrument is available, a single tone input should produce a meter reading of 150 MA, as the output tuning and loading controls are adjusted for linear performance (no flattopping).

PARTS LIST

SCHEMATIC DESIGNATION	HAMMARLUND PART NO.	DESCRIPTION
C193	1509-01-01006	Capacitor, Disc Ceramic, 500 pf
CR111	4833-01-00002	Zener Diode
CR112, CR113, CR114, CR115	4808-01-00004	F10 Diode
L123	1803-01-00052	Choke 430 uh
R174	4705-01-00928	Resistor, 470 Ω , 2W, 10%
R212	4703-01-00312	Resistor, 22 Ω , 1/2W
R213	4703-01-00330	Resistor, 680 Ω , 1/2W
R214	4714-01-01014	Resistor, 25K, 10W
R217	4704-01-00632	Resistor, 1K, 1W
R218	4714-02-01013	Resistor, 12K, 10W
R219	4713-02-00004	Resistor, 7K, 5W
R220	4705-01-00944	Resistor, 10K, 2W
R221, R222, R223, R224	4703-01-00366	Resistor, 680K, 1/2W, 10%
TB9	2885-01-00024	Terminal Strip (1 Term.)
	6006-01-00024	Wire, #20 Red/Yellow 2" Lg.
	6003-01-00008	Wire, #14 Buss 5" Lg.
	6006-02-00166	Wire, #20 Blue 15" Lg.

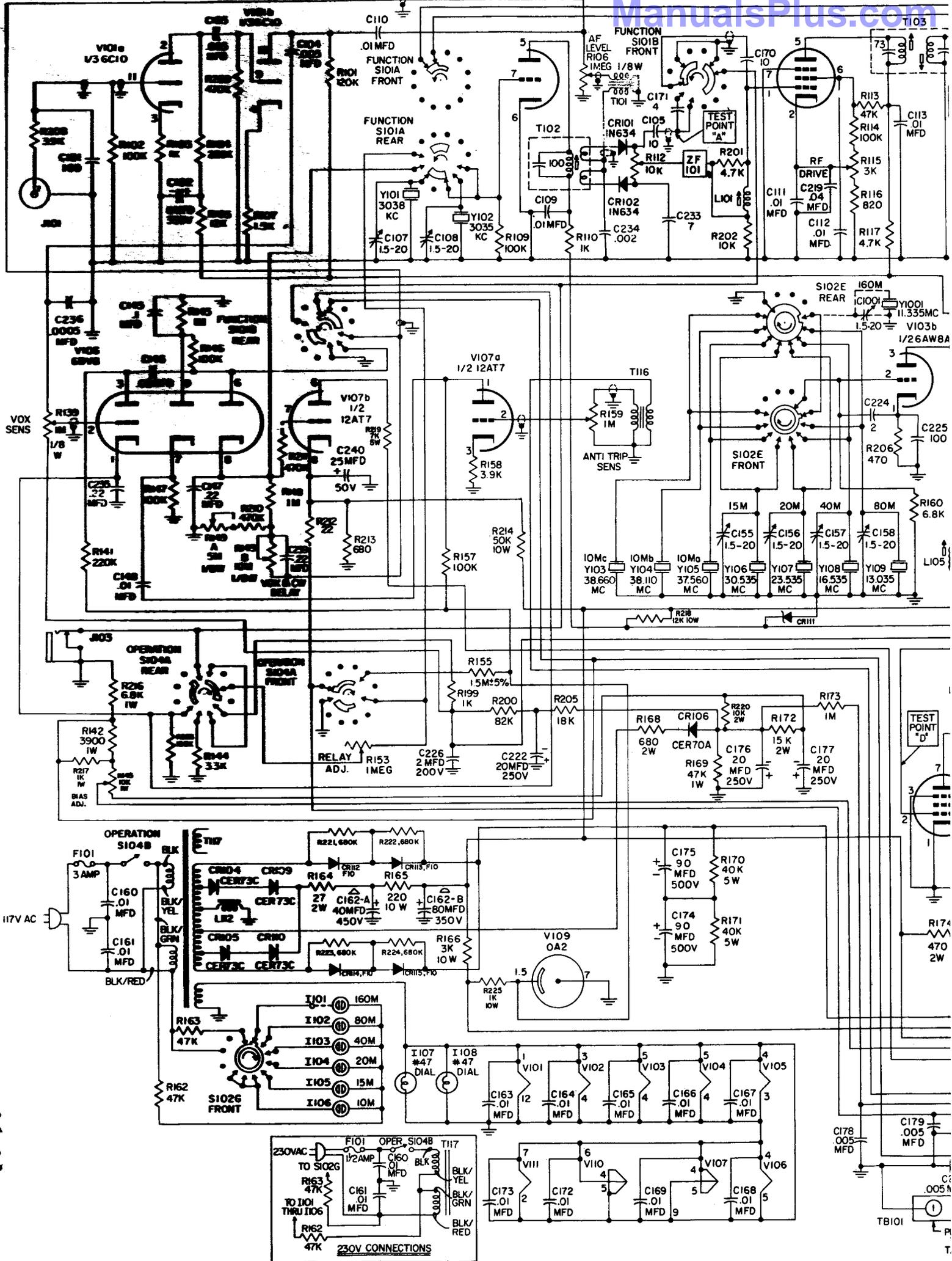


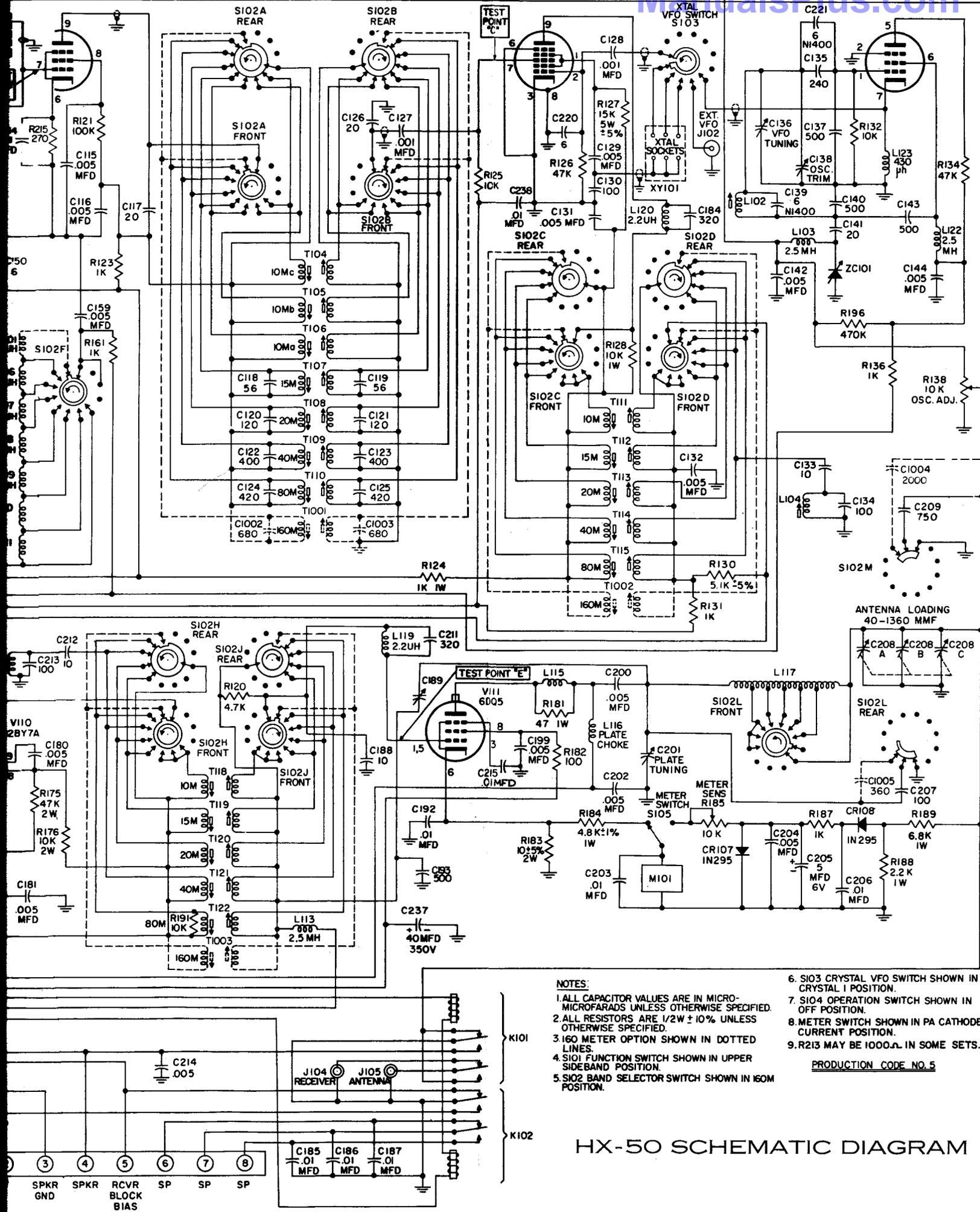
HX-50
 BEFORE
 CODE #5 MODIFICATION



HX-50
AFTER
CODE #5 MODIFICATION

DETAIL A





- NOTES:
1. ALL CAPACITOR VALUES ARE IN MICRO-MICROFARADS UNLESS OTHERWISE SPECIFIED.
 2. ALL RESISTORS ARE 1/2W ± 10% UNLESS OTHERWISE SPECIFIED.
 3. 160 METER OPTION SHOWN IN DOTTED LINES.
 4. S101 FUNCTION SWITCH SHOWN IN UPPER SIDEBAND POSITION.
 5. S102 BAND SELECTOR SWITCH SHOWN IN 160M POSITION.
 6. S103 CRYSTAL VFO SWITCH SHOWN IN CRYSTAL 1 POSITION.
 7. S104 OPERATION SWITCH SHOWN IN OFF POSITION.
 8. METER SWITCH SHOWN IN PA CATHODE CURRENT POSITION.
 9. R213 MAY BE 1000Ω IN SOME SETS.

PRODUCTION CODE NO. 5

HX-50 SCHEMATIC DIAGRAM