RCC TELEVISION Service Manual

PUBLISHED BY RADIO COLLEGE OF CANADA, TORONTO

1963 Supplement No. 49

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Model

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TV-137K23 Uses chassis TV-572.
TV-138K23 Uses chassis TV-572.
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Model
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19TCR320 Circuit & layout - See CT1903 in Supp. #48. Other data see CT1905.
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23T386 (Eden) Uses chassis CT2303B.
23TC620 (Darwin) Uses chassis CT2303A.
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23TC623 (Commander) Uses chassis CT2303B.
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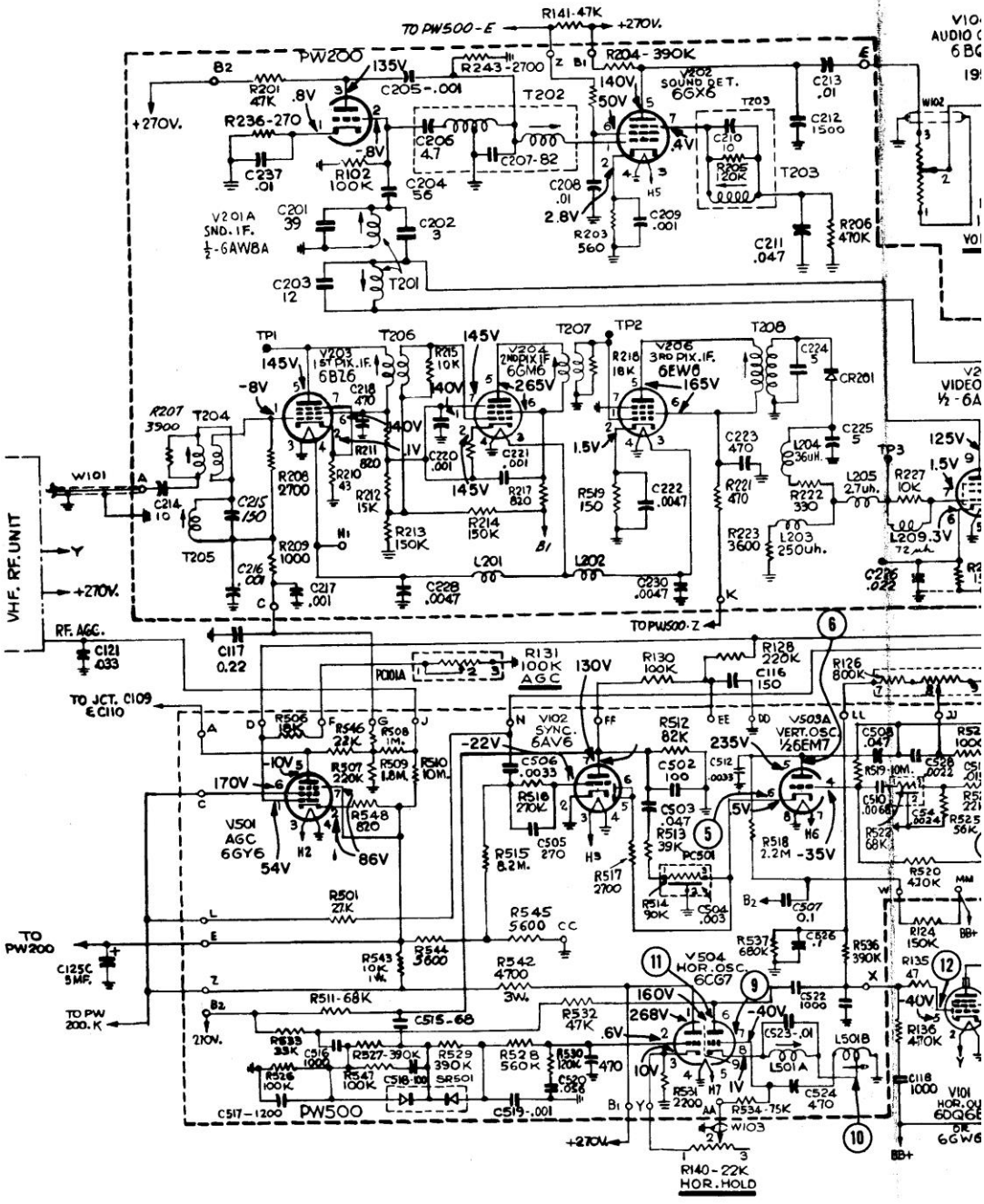
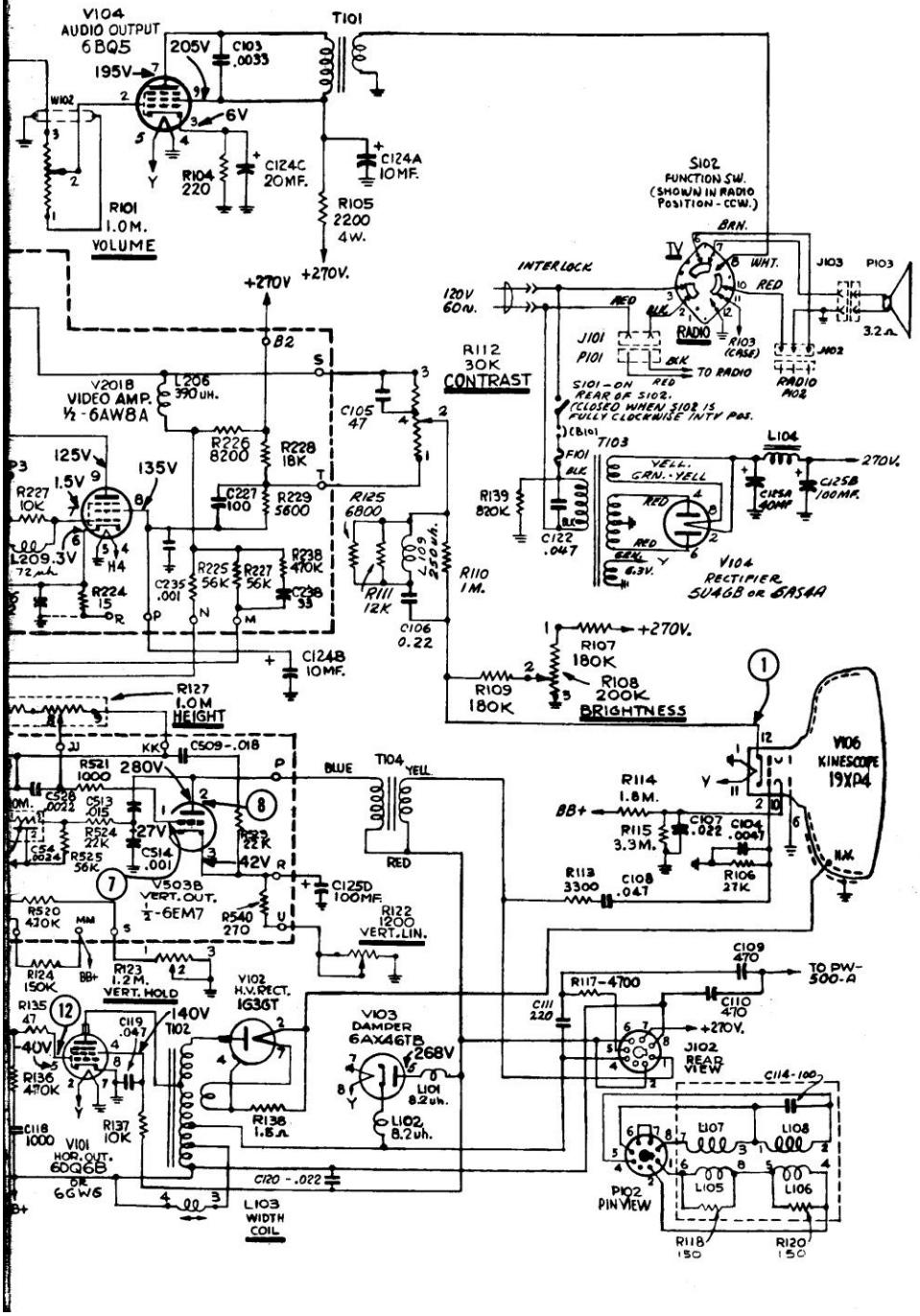

PW200
PW500
TO PW500-E
R141-47K
+270V.
R204-390K
R243-2700
V202 SOUND DET. 6GX6
T202
T203
T201
V201A SND. IF. ½-6AW8A
V203 1ST PIX. IF. 6BZ6
V204 2ND PIX. IF. 6GM6
V206 3RD PIX. IF. 6EW6
T204
T205
T206
T207
T208
TP1
TP2
TP3
CR201
W101
VHF. RF. UNIT
RF. AGC.
TO JCT. C109 & C110
TO PW200
TO PW 200. K
TO PW500-Z
R131 100K AGC
PC101A
V102 SYNC. 6AV6
V501 AGC 6GY6
V503A VERT. OSC. ½6EM7
V504 HOR. OSC. 6CG7
PC501
SR501
W103
R140-22K HOR. HOLD
L201
L202
L203 250uh.
L204 36uH.
L205 2.7uh.
L209.3V 72mh.
145V
140V
135V
130V
125V
265V
165V
235V
170V
160V
268V
-8V
-22V
-10V
-40V
2.8V
1.5V
.8V
.4V
.6V
1V
5V
10V
54V
86V
2.1OV.


V104
AUDIO OUTPUT
6BQ5
T101
205V
C103
.0033
195V
6V
R104
220
C124C
20MF.
C124A
10MF.
R105
2200
4W.
R101
1.0M.
VOLUME
+270V
+270V.
S102
FUNCTION SW.
(SHOWN IN RADIO
POSITION - CCW.)
INTERLOCK
120V
60 CY.
RADIO
J101
P101
TO RADIO
R103
(CASE)
J103
P103
3.2Ω
J102
RADIO
R112
30K
CONTRAST
S101 - ON
REAR OF S102.
(CLOSED WHEN S102 IS
FULLY CLOCKWISE INTV POS.
CB101
F101
T103
L104
270V.
C125A
40MF.
C125B
100MF.
R139
820K
C122
.047
V104
RECTIFIER
5U4GB OR 6AS4A
V2018
VIDEO AMP.
½-6AW8A
L205
390 UH.
R226
8200
R228
18K
C105
47
R125
6800
R110
1M.
R111
12K
C106
0.22
C227
100
R229
5600
R227
10K
R225
56K
R238
470K
C235
.001
C236
33
R224
15
L209
3.3V
72 mA.
125V
135V
1.5V
C124B
10MF.
R107
180K
+270V.
R109
180K
R108
200K
BRIGHTNESS
R127
1.0M
HEIGHT
C509-.018
R521
1000
280V
C528
.0022
C513
.015
R524
22K
R525
56K
C54
.0024
C514
.001
+27V
R523
22K
42V
V503B
VERT. OUT.
½-6EM7
R520
430K
R540
270
C125D
100MF.
R122
1200
VERT. LIN.
R123
1.2M.
VERT. HOLD
R124
150K
BB+
V102
H.V. RECT.
1G3GT
R135
47
-40V
C119
.047
R136
470K
C118
1000
V101
HOR. OUT.
6DQ6B
OR
6GW6
140V
T102
R137
10K
R138
1.5Ω
C120 - .022
L103
WIDTH
COIL
V103
DAMPER
6AX4GTB
268V
L101
8.2 uh.
L102
8.2uh.
T104
BLUE
YELL.
RED
V106
KINESCOPE
19XP4
R114
1.8M.
R115
3.3M.
C107
.022
C104
.0047
R106
27K
R113
3300
C108
.047
H.V.
C109
470
TO PW-
500-A
R117-4700
C111
220
C110
470
+270V.
J102
REAR
VIEW
C114-100
L107
L108
L105
L106
P102
PIN VIEW
R118
150
R120
150

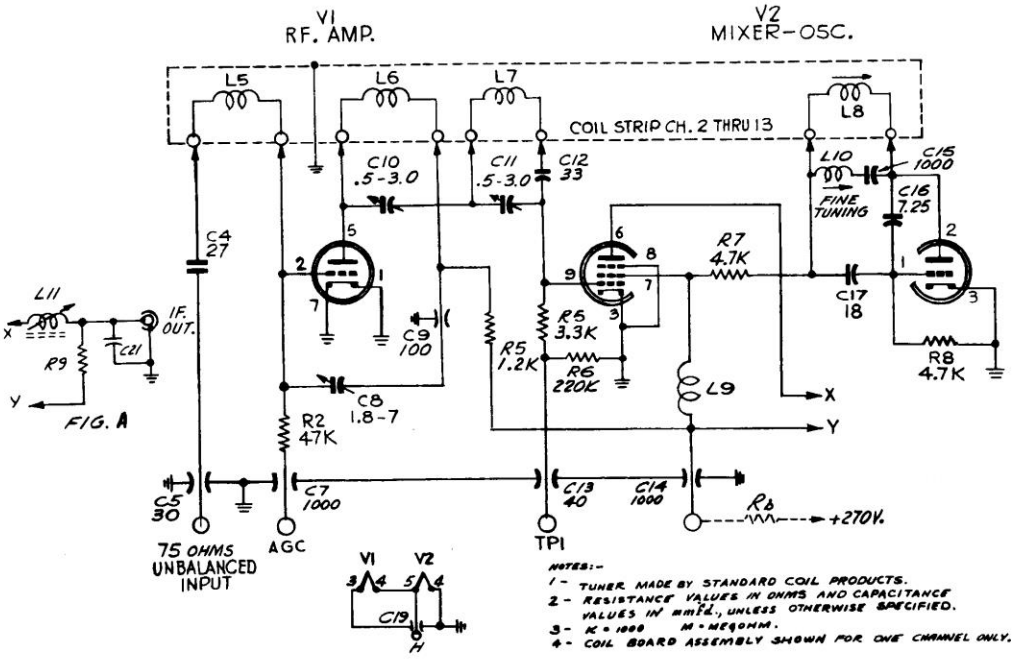


Figure 7—Schematic Diagram For 70-13882 Tuner.

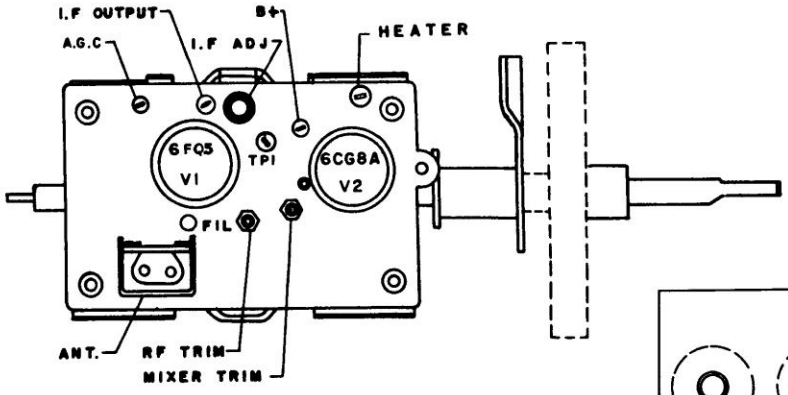
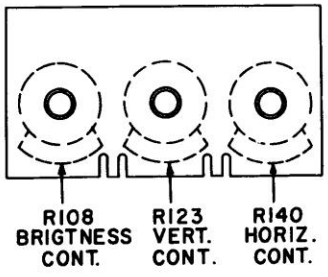
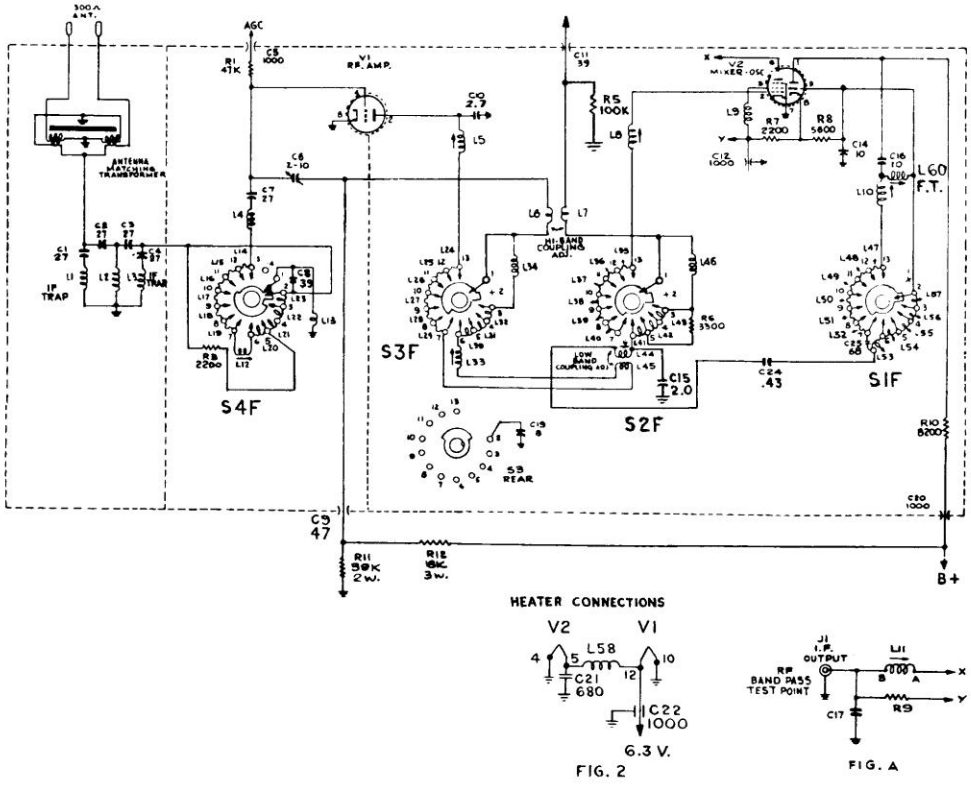


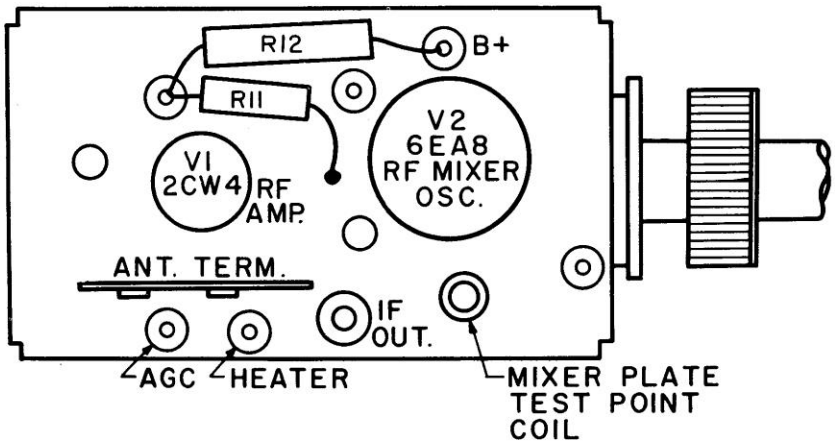
Figure 8—Tuner Layout Showing Test Points



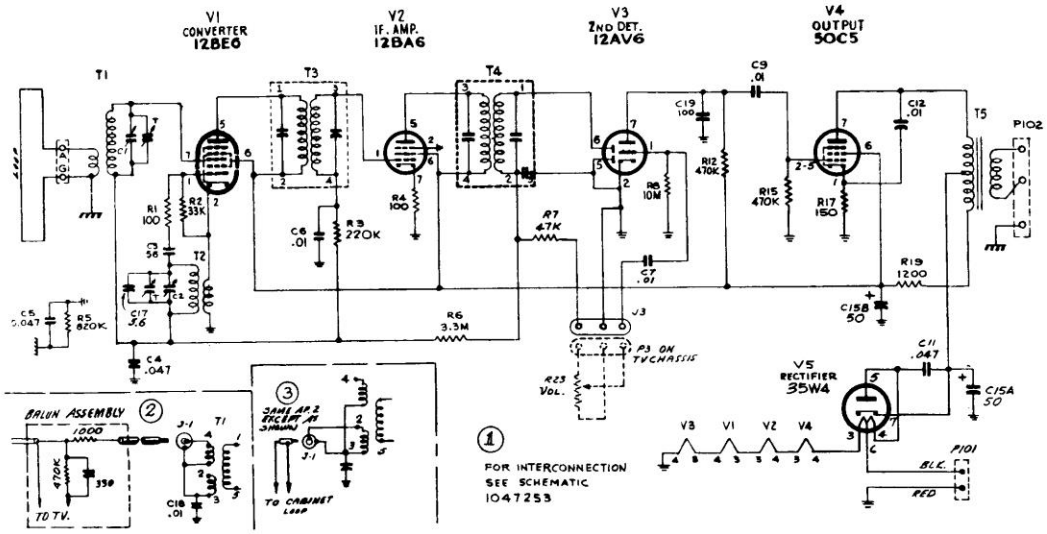
AUX. CONT. ASSEM. FOR CT1905A, B



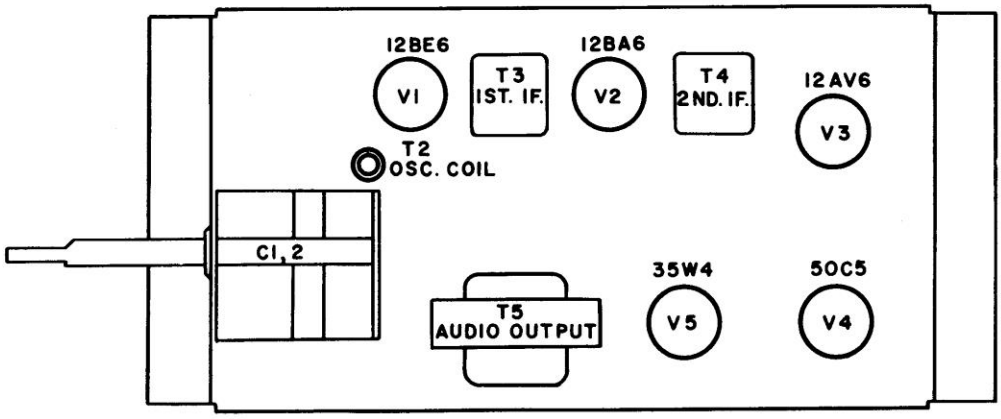
TUNER SCHEMATIC DIAGRAM FOR CHASSIS CT1905A, B & C.



TUNER LAYOUT SHOWING COMPONENTS AND
TEST POINTS FOR CHASSIS CT1905A, B & C.



RADIO SCHEMATIC FOR MODELS 19TCR318A, B, C & D, 19TCR318 & 19TCR319A, B



RADIO CHASSIS LAYOUT

RCC TELEVISION Service Manual

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PICTURE IF TRANSFORMER AND TRAP ADJUSTMENTS

TEST EQUIPMENT CONNECTIONS:

BIAS SUPPLY ..... Connect to terminal "C" of PW200, apply -3.5V.

SIGNAL GENERATOR ..... Connect to mixer grid injection point on tuner in series with 1000mmf capacitor. Use shortest leads possible. See figure.

VACUUM TUBE VOLTMETER ..... Connect to 2nd detector output at terminal TP-3 of PW200 using direct probe. Ground lead connected to chassis. Set Tuner to Channel 4.

STEP		SIGNAL GENERATOR	ADJUST	REMARKS
1	Peak mixer plate coil	45.0 Mcs.	T1 on tuner	Max. output on meter
2	Peak 1st IF grid coil	44.6 Mcs.	T-204 bottom coil	Max. output on meter
3	Preset 47.25 Mcs. trap	47.25 Mcs.	T-205 bottom coil	Minimum output indication on meter
4	Preset 41.25 Mcs. trap		T-204 top	Minimum output on meter
5	Preset 39.25 Mcs. trap		T-205 top	Minimum output on meter
6	Peak 2nd pix IF Trans.	45.5 Mcs.	T-207	Peak T-207 and T-206 on frequency for maximum output on meter. Adjust generator output for 3 volts on meter when finally peaked.
7	Peak 1st pix IF Trans.	43.0 Mcs.	T-206	

SWEEP ALIGNMENT OF PICTURE IF

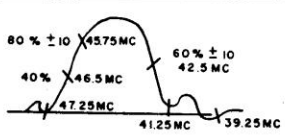
TEST EQUIPMENT CONNECTIONS:

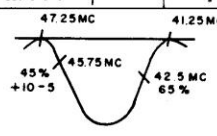
BIAS SUPPLY ..... Same as picture IF transformer and trap adjustment.

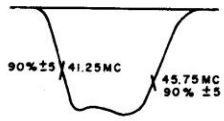
SIGNAL GENERATOR ..... Loosely coupled to sweep cable to provide markers.

VACUUM TUBE VOLTMETER ..... Connect to TP-3 on PW200. Use DC probe.

STEP		SWEEP GENERATOR	SIGNAL GENERATOR	ADJUST	REMARKS
Connect scope to TP-3 PW200 using direct probe in series with 100K resistor. Set scope sensitivity to 3V P-P. Connect sweep generator to V205-1.					
1	Adjust top and bottom T-208	40-50 Mc (IF)	41.25 Mc. 45.75 Mc.	T-208 top & bott.	Adjust for curve shown in Curve "C" bottom core controls frequency top core controls tilt.
Connect sweep to tuner IF injection point. Set tuner on Channel 4. Connect scope to TP-1 on PW200 thru plate loading jig on demod. probe. Ground grid of V-207. Set channel selector to Channel 4 and GRD grid of V-205-1					
2	Adjust mixer plate transformer	40-50 Mc (IF)	42.5 Mc. 45.75 Mc.	T-1 T-204 bott.	Set scope sensitivity to 180 MV.P.P. adjust for max. gain and response "A" below.
3	Adjust IF input	40-50 Mc (IF)	42.5 Mc. 45.75 Mc.		
Remove detector jig and ground from V-205-1. Turn sweep generator down, or off frequency for non-indication on meter.					
4	Readjust 47.25 trap		47.25	T-205 bott.	Minimum output
Increase bias to 5.5 volts. Remove ground from V-207-1. Connect scope to TP-3 on PW200, using direct probe in series with 100K resistor. Set scope sensitivity to 3 volt P.P.					
Connect sweep generator to test point on tuner. Adjust AGC control maximum ccw.					
5	Retouch IF Transformers	40-50 Mc (IF)	42.5 Mc. 45.0 Mc. 45.75 Mc.	T-206 T-207	Adjust T-206 and T-207 to obtain curve "B". If necessary retouch T-208 top to adjust tilt but do not adjust more than necessary.
Connect sweep to antenna terminals. Connect bias supply to RF AGC. on tuner, apply -2.5V.					
6	Check overall Channels 13 to 2		42.5 Mcs. 45. Mcs. 45.75 Mcs.	T-208 top	Retouch slightly to correct any overall tilt. Maintain response "B". Permissible tilt 15%, valley 10%.







SOUND IF, SOUND DETECTOR AND 4.5 Mc. TRAP ALIGNMENT

TEST EQUIPMENT CONNECTIONS:

BIAS SUPPLY ..... Apply 10 volts to the IF AGC, terminal "C" on PW200
SIGNAL GENERATOR ..... Connect to terminal TP-3 on PW200
VACUUM TUBE VOLTMETER ..... Connect to output of diode detector shown in Fig. 7. Set meter for negative voltage reading.
MISCELLANEOUS ..... Connect test diode detector as shown below.

	STEP	SIGNAL GENERATOR	ADJUST	REMARKS
	Set contrast control maximum clockwise position. Connect oscilloscope to terminal "A" on PW200, use demodulator probe.			
1	Adjust 4.5 Mc. trap	4.5 AM Modulated 400 cycles	T-201 bott.	Adjust for minimum 400 cycle indication on oscilloscope.
2		4.5 Mcs.	T-202	Adjust T-202 for maximum on meter. Set generator for 1.0 to 1.5 volts when peaked. Peak cores at open of coils.
3	Adjust sound take-off trans.	4.5 Mcs.	T-201 top	Adjust T-201 for maximum on meter. Set generator for 1.0 to 1.5 volts on meter.
4	Disconnect the diode test detector. Turn off signal generator and remove bias. Connect scope to voice coil terminal. Tune in strongest signal in area by adjusting volume control for normal volume. (¼ turn from C.C.W.) Turn core of T-203 flush with top of coil form.			
5	Adjust sound detector trans.	Observing oscilloscope and listening to audio output adj. T-203 clockwise to a peak. Continue clockwise to second louder peak and adjust for maximum on this peak.		

L-101	62-12931	Coil-8.2 uh
L-102	62-12931	Coil-8.2 uh
L-103	62-12795	Coil-Width
L-104	*62-14050	Coil-Reactor
L-105		Coil-In Yoke
L-106		Coil-In Yoke
L-107		Coil-In Yoke
L-108		Coil-In Yoke
L-109	62-10950	Coil-Peaking-250 uh
L-201		Coil-Printed
L-202	62-73477	Coil-16 Turn
L-203	*62-14071	Coil-250 uh
L-204	*62-14062	Coil-36 uh
L-205	62-107463	Coil-2.7 uh
L-206	*62-14104	Coil-72 uh
L-207	*62-14105	Coil-390 uh
L-501	*62-14061	Coil-Horizontal Freq

T-101	*62-14048	Transformer-Audio Output Transformer
T-102	*62-14052	Transformer-H.V. Transformer
T-103	*62-14087	Transformer-Power Transformer-60cyc
T-104	*62-14051	Transformer-Vertical Output Trans.
T-201	*62-14073	Transformer-4.5 mcs. & Sound Take-off Transformer
T-202	*62-14070	Transformer-Sound Detector Grid trans.
T-203	*62-14072	Transformer-Sound Detector-3rd Grid Transformer
T-204	*62-14065	Transformer-1st IF Grid Transformer
T-205	*62-14064	Transformer-1st IF Link Transformer
T-206	*62-14066	Transformer-1st IF Plate Transformer
T-207	*62-14067	Transformer-2nd IF Plate Transformer
T-208	*62-14063	Transformer-3rd IF Plate Transformer

All schematics are shown in the latest condition at the time of printing.

All resistance value in ohms. K = 1000.

All capacitance values less than 1 in MF and above 1 in MMF unless otherwise noted.

Continued on page 89

All voltages measured with "Volt-Ohmyst" and with no signal input. Voltages should hold within ±20% with 117 v. a-c supply.

***Measured with 1 megohm, ½ watt resistor in series with meter probe.**

Balloons ① ② etc., shown on schematics indicate points of observation of the waveforms shown below the individual schematic.

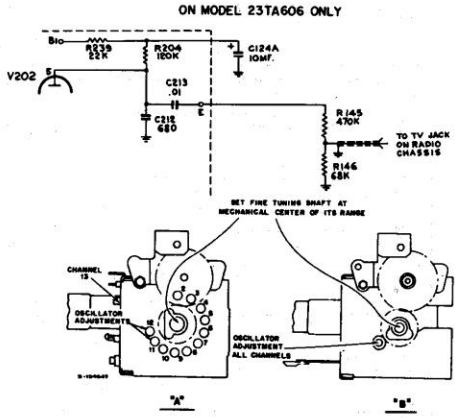
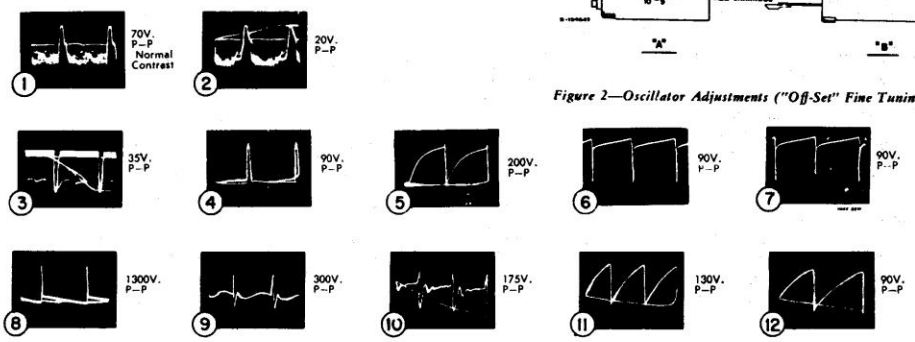


Figure 2—Oscillator Adjustments ("Off-Set" Fine Tuning)



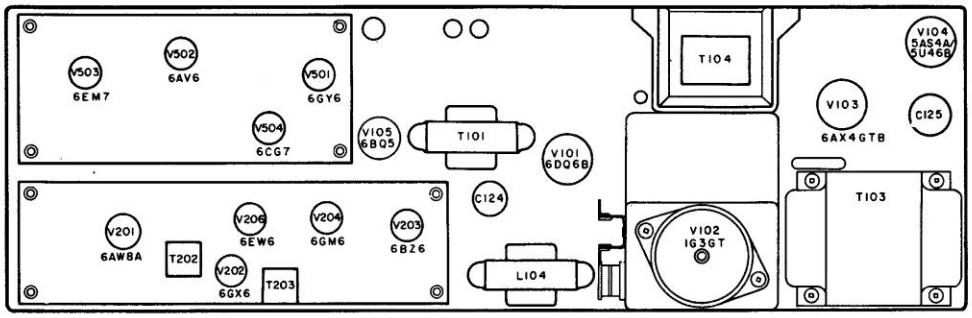


FIG. 12—CHASSIS LAYOUT — TOP VIEW — SHOWING COMPONENTS

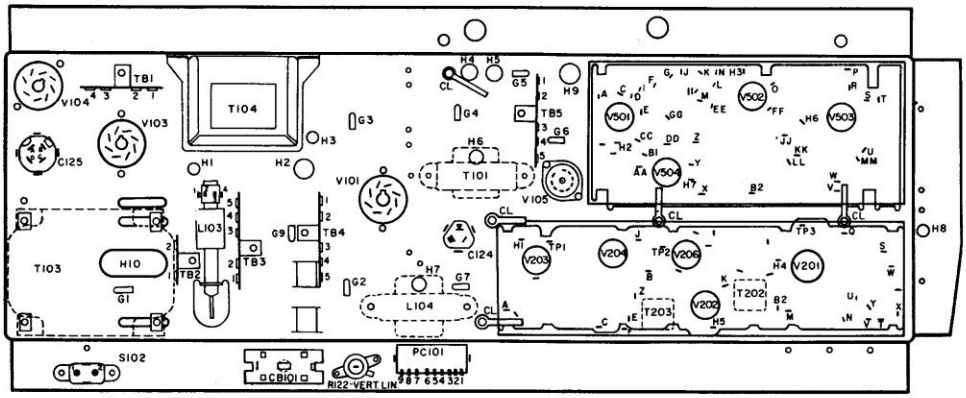
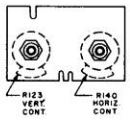
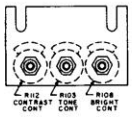


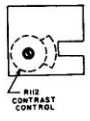
FIG. 13—CHASSIS LAYOUT — BOTTOM VIEW



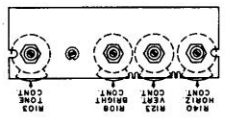
AUX. CONTROL PLATE FOR CT2301A.



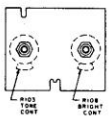
AUX. CONTROL PLATE FOR CT2301A.



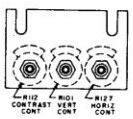
CONTROL PLATE FOR CT2301C.



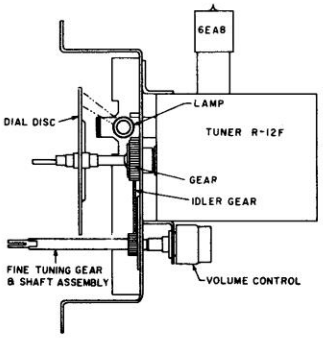
CONTROL PLATE FOR CT2301C.



CONTROL PLATE FOR CT2301B.



AUX. CONTROL PLATE FOR CT2301B & D.



PW200 SECURITY SEALED CIRCUIT ASSEMBLY

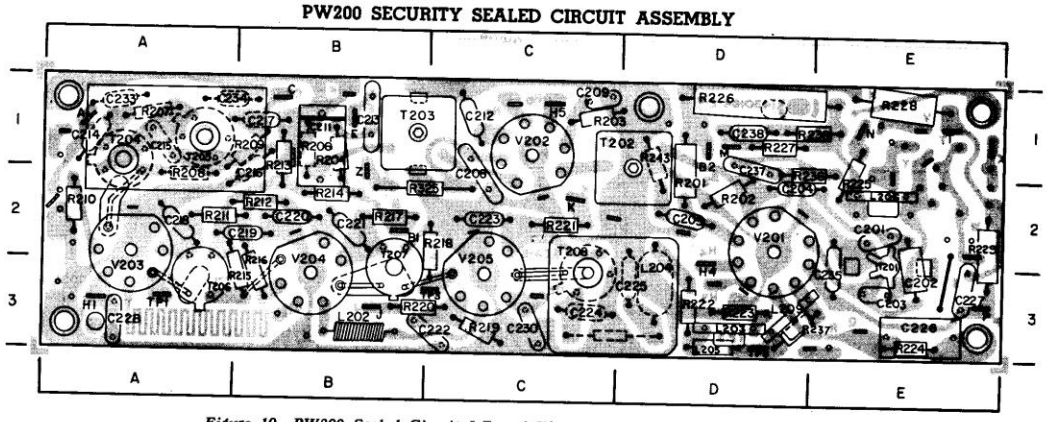


Figure 10—PW200 Sealed Circuit I-F and Video Assembly Composite Diagram

PW200 COMPONENT LOCATION GUIDE

C-201.....E2	C-216.....B2	C-228.....A3	L-206.....E2	R-211.....A2	R-223.....D3	R-243.....D1
C-202.....E2	C-217.....B1	C-230.....C3	L-209.....D3	R-212.....B2	R-224.....E3	T-201.....E2
C-203.....E3	C-218.....A2	C-233.....A1		R-213.....B1	R-225.....E2	T-202.....D1
C-204.....D2	C-219.....B2	C-234.....A1	R-201.....D2	R-214.....B2	R-226.....D1	T-203.....B1
C-205.....D2	C-220.....B2	C-235.....E3	R-202.....D2	R-215.....B3	R-227.....D1	T-204.....A1
C-208.....C2	C-221.....B2	C-237.....D1	R-203.....C1	R-216.....B3	R-228.....E1	T-205.....A1
C-209.....C1	C-222.....C3	C-238.....D1	R-204.....B1	R-217.....B2	R-229.....E2	T-206.....A3
C-211.....B1	C-223.....C2		R-206.....B1	R-218.....C2	R-230.....E1	T-207.....B3
C-212.....C1	C-224.....C3	L-202.....B3	R-207.....A1	R-219.....C3	R-235.....B2	T-208.....C2
C-213.....B1	C-225.....D3	L-203.....D3	R-208.....A2	R-220.....B3	R-236.....D1	
C-214.....A1	C-226.....E3	L-204.....D3	R-209.....B1	R-221.....C2	R-237.....D3	CR-201.....C3
C-215.....A1	C-227.....E3	L-205.....D3	R-210.....A2	R-222.....D3	R-238.....D1	

PW500 SECURITY SEALED CIRCUIT ASSEMBLY

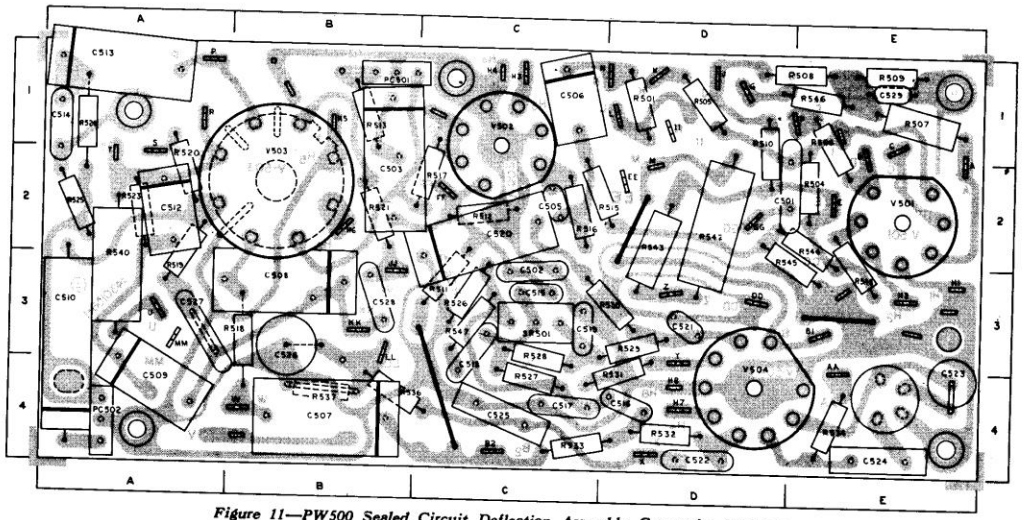


Figure 11—PW500 Sealed Circuit Deflection Assembly Composite Diagram

PW500 COMPONENT LOCATION GUIDE

C-501.....E2	C-515.....C3	C-527.....A3	R-506.....E1	R-518.....B3	R-530.....D3	R-545.....E2
C-502.....C3	C-516.....D4	C-528.....B3	R-507.....E1	R-519.....A3	R-531.....D4	R-546.....E1
C-503.....B2	C-517.....C4	C-529.....E1	R-508.....E1	R-520.....A2	R-532.....D4	R-547.....C3
C-505.....C2	C-518.....C4	C-531	R-509.....E1	R-521.....B2	R-533.....C4	R-548.....E3
C-506.....C1	C-519.....C3		R-510.....D1	R-523.....A2	R-534.....E4	
C-507.....B4	C-520.....C2	PC-501.....B1	R-511.....C3	R-524.....A1	R-536.....B4	SR-501.....C3
C-508.....B3	C-521.....D3	PC-502.....A4	R-512.....C2	R-525.....A2	R-537.....B4	
C-509.....A4	C-522.....D4		R-513.....B1	R-526.....C3	R-540.....A3	
C-510.....A3	C-523.....E4	R-501.....D1	R-515.....C2	R-527.....C4	R-542.....D2	
C-513.....A1	C-524.....E4	R-504.....E2	R-516.....C2	R-528.....C3	R-543.....D2	
C-514.....A1	C-526.....B3	R-505.....D1	R-517.....C2	R-529.....D3	R-544.....E2	