

TELEVISION Service Manual

PUBLISHED BY RADIO COLLEGE OF CANADA, TORONTO

1963 Supplement No. 49

GORDON OLIVER TELEVISION
ADmiral RADIO SERVICE
YO 4815 923 CALVERHALL ST.
NORTH VANCOUVER, B. C.

Chassis Page
16A3X All available data 48, 49, 50
16A3Y See 16A3X.
16A3Z See 16A3X.
16B3X See 16A3X.
18E1X All available data 51, 52

CANADIAN GENERAL ELECTRIC

Chassis	Page
M587 (No Code) Circuit	53, 54
M587 Tuner Circuit	6
M587 Alignment	3 to 5
M587 Chassis layout	7, 8
M587 Printed boards	2
M587 Coil identification	3

Model

91T21 Uses chassis M587.
91T22 Uses chassis M587.
97T21 Uses chassis M587.

DUMONT

Chassis

DM19T See Emerson EM19T in Supp. #44.
DM21TB See DM21TA in Supp. #44.

ELECTROHOME

Model

Annapolis B See Courtleigh in Supp. #44.
Berwick B See Courtleigh in Supp. #44.
Lockport B See Courtleigh in Supp. #44.

EMERSON

Model

EM21T, A See Dumont DM21TA in Supp. #44.

MARCONI

Chassis	Page
TV-549 Circuit	20, 21
TV-549 Alignment	22 to 24
TV-549 Voltages	25
TV-549 Chassis layout	23
TV-565 Circuit	55, 56
TV-565 Tuner Circuit	19
TV-565 Alignment	15 to 18
TV-565 Chassis layout	17
TV-565 Coil identification	19
TV-566 See TV-565.	
TV-569 Circuit	57, 58
TV-569 Tuner Circuit	30
TV-569 Alignment	26 to 29
TV-569 Chassis layout	28
TV-572 See TV-569.	
TV-575 See TV-569.	

Model

TV-106K24 Uses chassis TV-575.
TV-106T19 Uses chassis TV-549.
TV-131K23 Uses chassis TV-572.
TV-132W23 Uses chassis TV-569.
TV-133W23 Uses chassis TV-569.
TV-134K23 Uses chassis TV-572.
TV-135K23 Uses chassis TV-572.
TV-136K23 Uses chassis TV-572.
TV-137K23 Uses chassis TV-572.
TV-138K23 Uses chassis TV-572.
TV-140K23 Uses chassis TV-572.
TV-141K23 Uses chassis TV-572.
TV-143K23 Uses chassis TV-572.
TV-320K23 Uses chassis TV-565.
TV-321K23 Uses chassis TV-565.
TV-322K23 Uses chassis TV-565.
TV-324W23 Uses chassis TV-566.

PHILCO

Chassis

Chassis	Page
12N31 Circuit	59, 60
12N31 Tuner circuit	34
12N31 Alignment	31, 35, 36
12N31 Layouts	32, 33
12N31 Coil identification	31
12N33 See 12N31.	

PHILIPS

Chassis

Chassis	Page
S-3 Circuit	61, 62
S-3 Tuner circuit	43
S-3 Alignment	37 to 41
S-3 Chassis layout	42
S-3 Printed boards	44, 45

Model

19TC012U Uses S-3 chassis.
19TC022U Uses S-3 chassis.
19TC612U Uses S-3 chassis.
19TC622U Uses S-3 chassis.
23CC042U Uses S-3 chassis.
23CC052U Uses S-3 chassis.
23CC062U Uses S-3 chassis.
23CC072U Uses S-3 chassis.
23TC032U Uses S-3 chassis.

RCA-VICTOR

Chassis

Chassis	Page
CT1905A to D Circuit	63, 64
CT1905 Tuner Circuits	77, 78
CT1905 Radio Circuit	79
CT1905 Alignment See CT2301 in Supp. #48.	
CT2303A, B Circuit	65, 66
CT2303 Tuner Circuit	82
CT2303 Alignment See CT2301 in Supp. #48.	
CT2303 Waveforms, Layout	80
CT2303 Printed Boards	81
CT2303 Coil Identification	80

Model

19T363 Uses chassis CT1905C.
19TCR318A to D Uses chassis CT1905A.
19TCR319A, B Uses chassis CT1905B.
19TCR320 Circuit & layout - See CT1903 in Supp. #48.
Other data see CT1905.
23T385 (Ensign) Uses chassis CT2303A.
23T386 (Eden) Uses chassis CT2303B.
23TC620 (Darwin) Uses chassis CT2303A.
23TC622 (Bentley) Uses chassis CT2303A.
23TC623 (Commander) Uses chassis CT2303B.
23TC624 (Ramsey) Uses chassis CT2303B.
23TC625 (Lindsey) Uses chassis CT2303A.

ROGERS-MAJESTIC

Model

23CC642U See S-2 in Supp. #47.
24CC652U See S-2 in Supp. #47.

SIMPSON-SEARS

Chassis

Chassis	Page
C817.19310 Circuit	67, 68
C817.19310 Tuner Circuit	86
C817.19310 Alignment	83
C817.19310 Layouts	84, 85
C817.19310 Coil identification	84
C817.19310.5 See C817.19310.	
C817.19410 Circuit	69, 70
C817.19410 Layout	87
C817.19410 Other data see C817.19310.	
C817.19411 Circuit	71, 72
C817.19411 Layout	88
C817.19411 Other data see C817.19310.	
C817.19411.5 See C817.19411.	
C817.19415 See C817.19410	

Model

13380 See Dumont 19DP2 in Supp. #48.
(Not applicable in all cases.)
15340 Uses chassis C817.19310.
15345 Uses chassis C817.19310.5.
15360 Uses chassis C817.19410.
15365 Uses chassis C817.19415.
15385 Uses chassis C817.19310.5.
15380 Uses chassis C817.19310.
16390 Uses chassis C817.19411.
16395 Uses chassis C817.19411.5

VIKING

Model

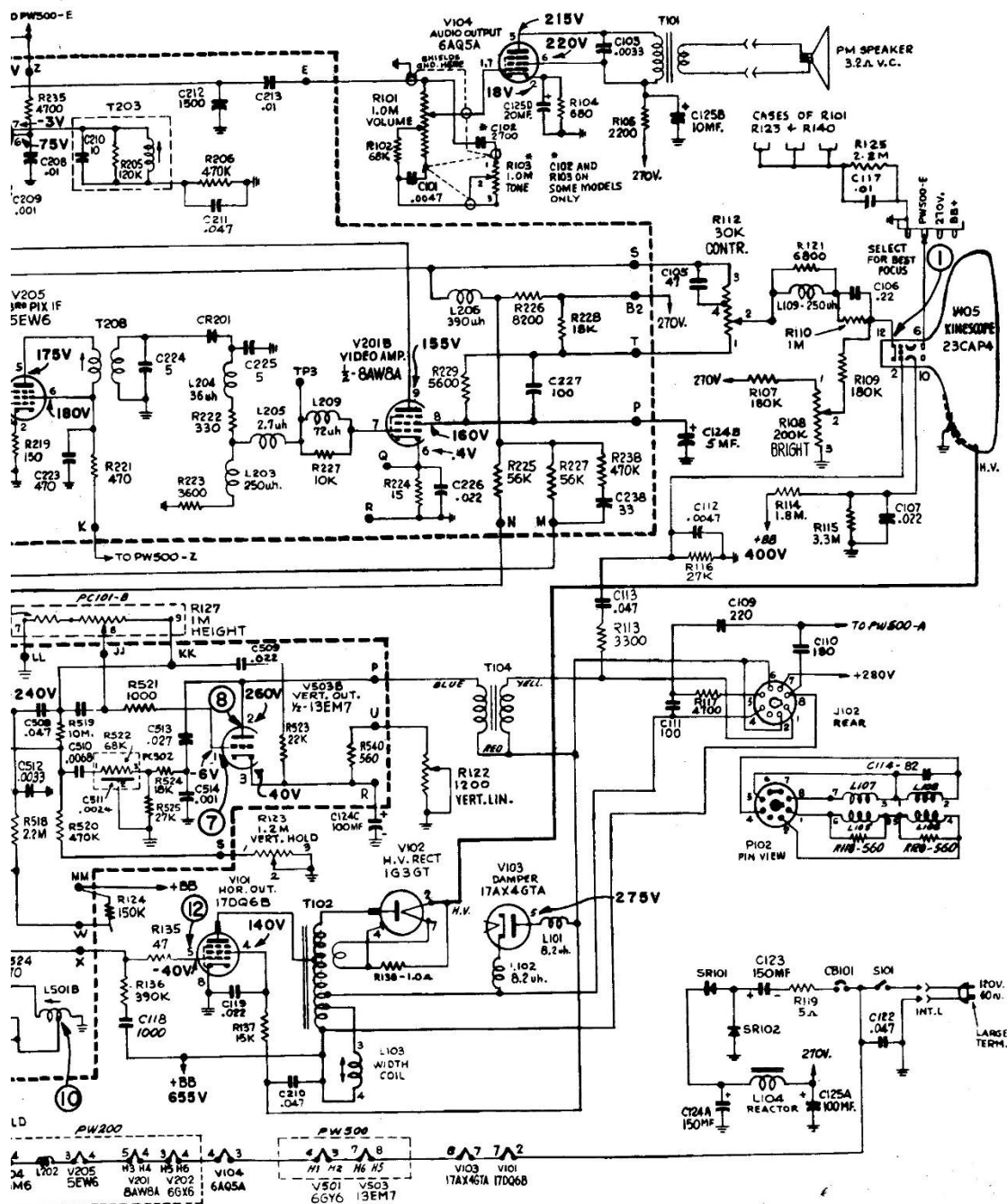
Model	Page
TPF-533 See TRPSE-530.	
TPF-561 See Electrohome Decor in Supp. #44.	
TRPSE-530 TV Circuit See Electrohome Courtleigh in Supp. #44.	
TRPSE-530 Tuner circuits	9, 11
TRPSE-530 Amplifier Circuit	10
TRPSE-530 Alignment (AM/FM)	13
TRPSE-530 Chassis layouts	12, 14

ZENITH

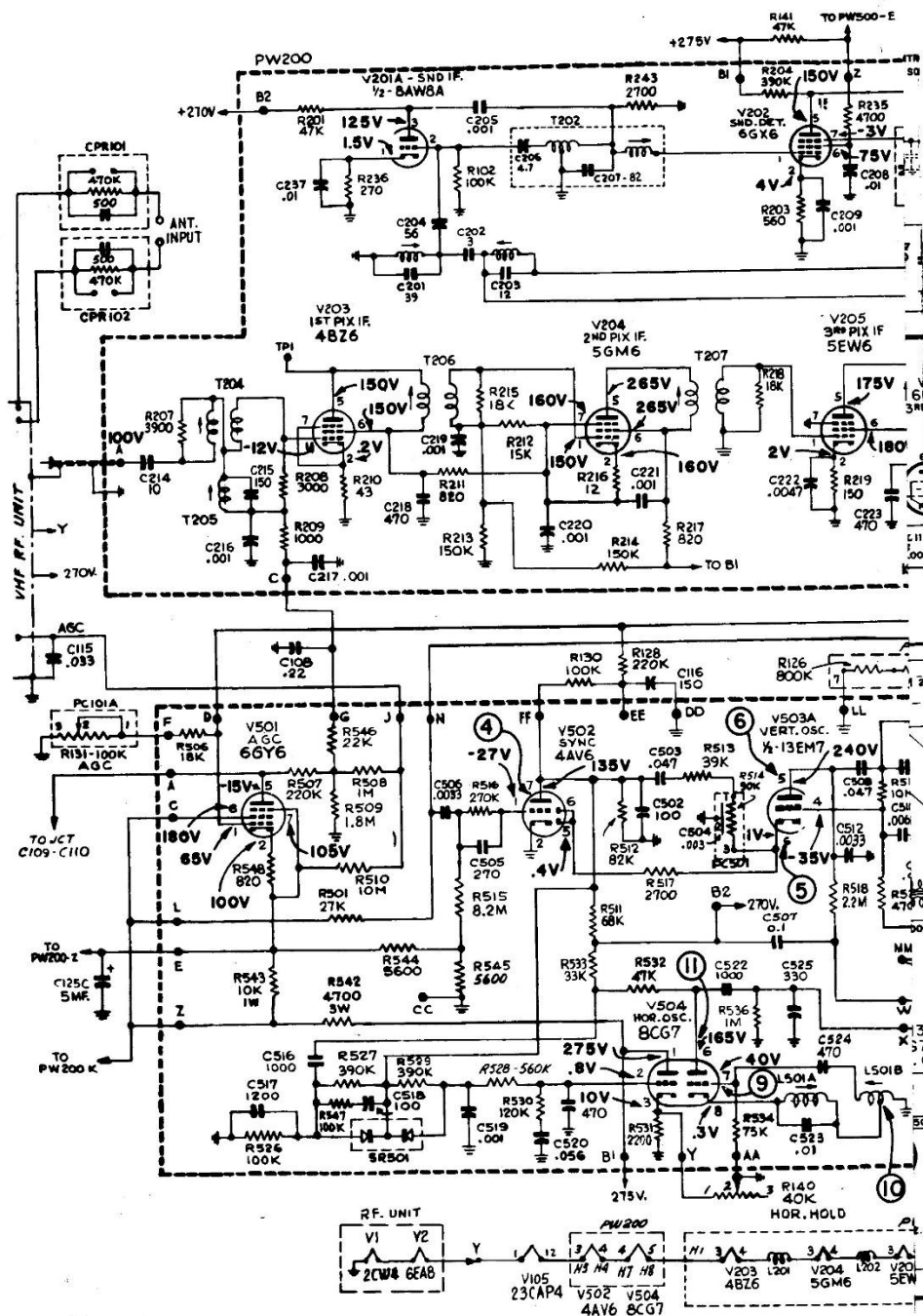
Chassis

Chassis	Page
16J22, Q, QS Circuit	73, 74
16J22 Layouts	89, 90
16J27, Q, T, QT, QS Circuit	75, 76
16J27 Layouts	91, 92
All 1962 tuners	93 to 110

RCC
TELEVISION
Supplement
No. 49

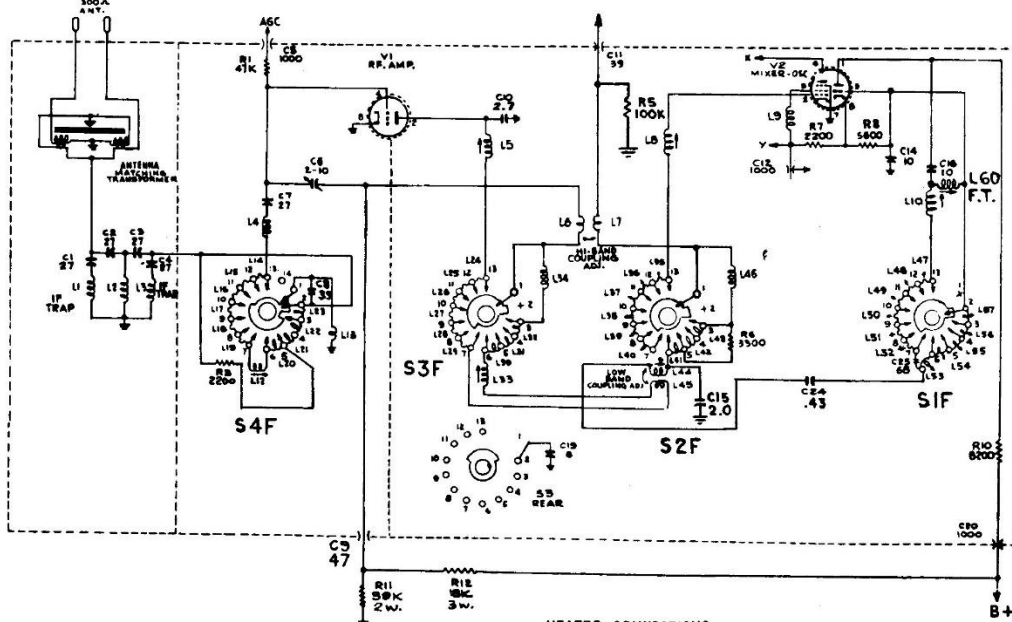


65



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

C-502	C3	C-515	C4	C-528	B3	R-508	E1	R-520	A2	R-532	D4	R-548	E3
C-503	B2	C-516	D4	C-529	E1	R-509	E1	R-521	B3	R-533	D4		
C-505	C2	C-517	C4			R-510	D1	R-523	A2	R-534	E4	SR-501	C3
C-506	C1	C-518	C4	L-501		R-511	C3	R-524	A1	R-535	B4		
C-507	B4	C-519	C2			R-512	C2	R-525	A3	R-536	A3		
C-508	B3	C-520	C2	PC-501	B1	R-513	B1	R-526	C3	R-542	D2		
C-509	A4	C-521	D3	PC-502	A4	R-515	C2	R-527	C4	R-543	D2		
C-510	A3	C-522	A3			R-516	C2	R-528	E3	R-544	E2		
C-512	A2	D-523	E4	R-501	D1	R-517	C2	R-529	D3	R-545	E2		
C-513	A1	C-524	E4	R-506	E1	R-518	B3	R-530	D3	R-546	E1		
C-514	A3	C-525	E4	R-507	E1	R-519	A3	R-531	D4	R-547	E2		

CT2303 Series
Chassis

HEATER CONNECTIONS

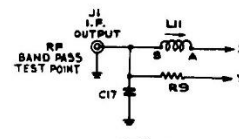
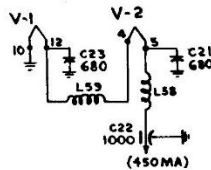
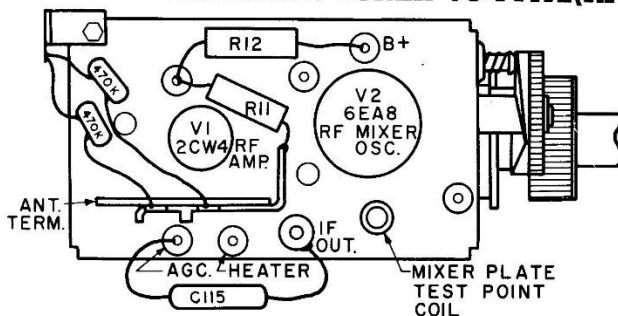
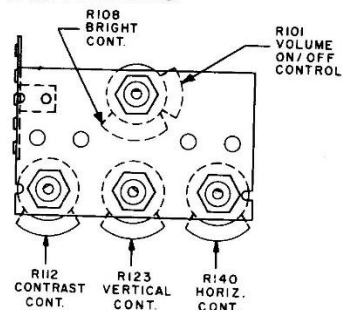


FIG. A

NUVISTOR TUNER 70-14412(RF15B) SCHEMATIC



70-14412 TUNER LAYOUT



AUX. CONTROL PANEL

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.

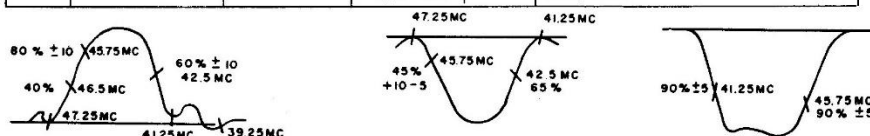
STEP		SIGNAL GENERATOR	ADJUST	REMARKS
1	Peak mixer plate coil	45.0 Mcs.	T1 on tuner	Max. output on meter
2	Peak 1st IF grid coil	44.6 Mcs.	T-204 bottom coil	Max. output on meter
3	Preset 47.25 Mcs. trap	47.25 Mcs.	T-205 bottom coil	Minimum output indication on meter
4	Preset 41.25 Mcs. trap		T-204 top	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 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	*62-14081	Coil-Horizontal Freq

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.

All voltages measured with "Volt-Ohmyst" and with no signal input. Voltages should hold within $\pm 20\%$ 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.

Continued on page 89

ON MODEL 23TA606 ONLY

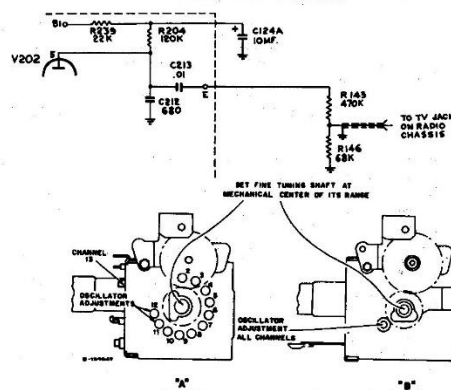
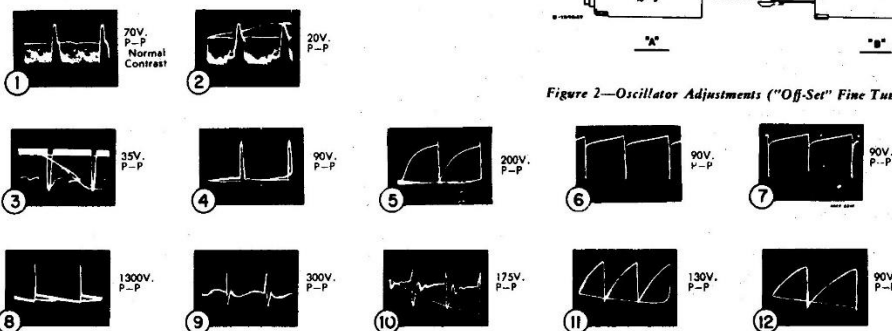
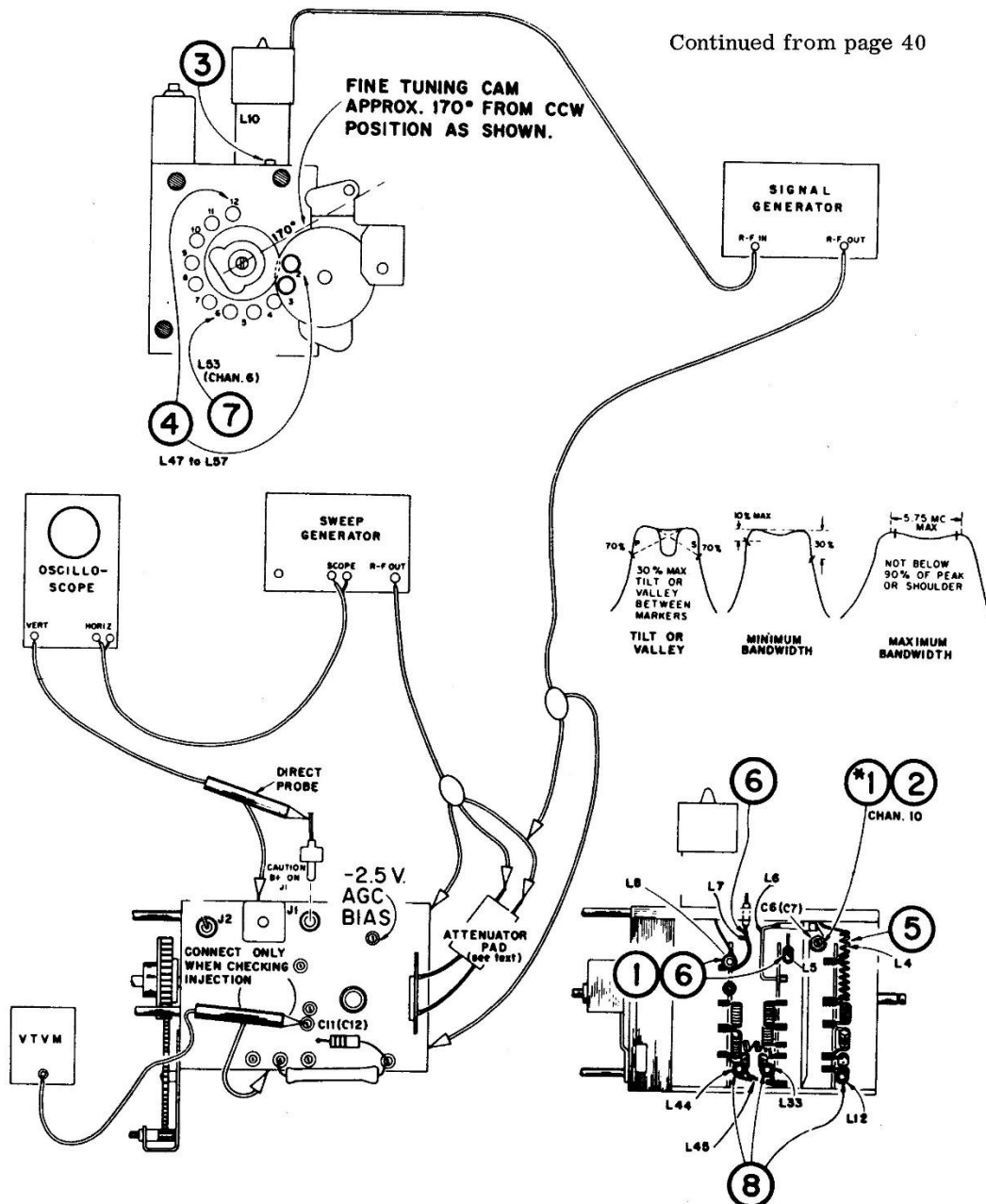


Figure 2—Oscillator Adjustments ("Off-Set" Fine Tuning)



70-14111(R-12F) NUVISTOR VHF TUNER R-F ALIGNMENT

Continued from page 40



70-14111(R-12F) NUVISTOR VHF TUNER R-F ALIGNMENT

TEST EQUIPMENT CONNECTIONS:

BIAS SUPPLY Apply —2.5 volts to AGC terminal on tuner. Ground positive lead to tuner case.

OSCILLOSCOPE Connect to J1 as shown in Figure 8 using direct probe. Set scope for 1½ to 2 v. peak to peak.

SWEEP GENERATOR Connect to antenna terminals through pad

SIGNAL GENERATOR Couple R-F output cable loosely to sweep cable to provide markers. Insert insulated wire into top of Osc./Mixer tube shield. Connect other end to "R-F IN" terminals of generator.

VACUUM TUBE VOLTMETER Connect to mixer grid at C11 as shown in Figure 9. (Note:—Connect only when checking injection.—Do not have connected during adjustment.)

MISCELLANEOUS Insert head into I-F input jack J2. Set fine tuning approximately 170° from counter-clockwise (see Figure 8).

STEP	SWEEP GENERATOR	SIGNAL GENERATOR	ADJUST	REMARKS
------	-----------------	------------------	--------	---------

Shield must be in place with shutter removed. Channel selector at channel being aligned in each step outlined below

1	Preset R-F Plate & Mixer Grid on Chan. 10	Chan. 10	193.25 mc. 197.75 mc.	L5 (Knife) L8 & C6	Refer to Figure 8 for adjustment locations and responses. Adjust for approx. correct waveshape as shown in Figure 8. * (If spiked response or oscillation is obtained, adjust C6 (C7) for minimum response and repeat adjustment of L5 & L8 (L11).—Do not adjust bandwidth).
Change the bias at the AGC terminal to —10 to —15 volts.					
2	Adjust neutralization on Chan. 10	Chan. 10 (Maximum Output)	—	C6	Adjust C6 (C7) for minimum response.
Return bias at the AGC terminal to —2.5 volts.					
3	Adjust osc. Chan. 13	—	257 mc.	L10	Adjust for beat with Sig. Gen.
4	Adjust osc. Chan. 12 downward to Chan. 2	—	Osc. Freq. for Chan. involved	L47 to L57	Adjust for beat with Sig. Gen. From Chan. 12 down to Chan. 2.
5	Adjust Antenna Loop	Chan. 12	205.25 209.75	L4	Adjust position of L4 with respect to L13 for maximum amplitude at center of response.
6	Adjust R-F Plate-Mixer Grid-Bandwidth on Chan. 12	Chan. 12	205.25 209.75	L5, L8 & L7	Adjust L5 (Freq.) and L8 (L11) (Tilt) for response shown in Figure 8. Move L7 (L14) with respect to L6 (L13) for bandwidth.

Check tracking and response on all channels from 13 to 7, if necessary, knife R-F plate and mixer-grid loops on channels 10, 9, 8 and 7 for flat response. Turn off generators, check osc. injection (—2.0 to —5.0 volts) on meter, see Note above under VTVM. Replace V2 if outside limits and repeat steps 1 to 6.

7	Adjust osc. Chan. 6	—	129 mc.	L53	Adjust for beat with Sig. Gen.
8	Adjust Ant.-R-F Plate, Mixer Grid & Bandwidth coils Chan. 6	Chan. 6	83.25 mc. 87.75 mc.	L12, L33, L44 & L45	Adjust L12 (L6) (Ampl.), L33 (L7) (Freq.) L44 (L9) (Tilt) and L45 with respect to L44 or L8 with respect to L9 (bandwidth) for response in Figure 8. Check for injection within limits.