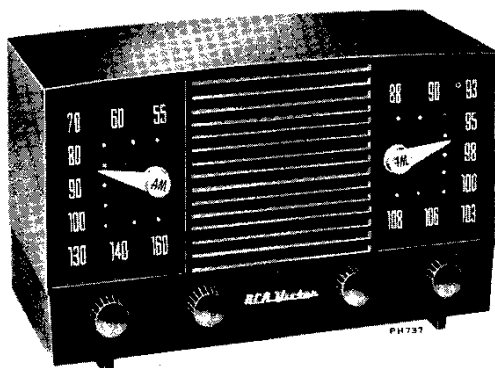


MODEL 2-XF-91, Ch.
RC1121, Forbes



Model 2-XF-91 "Forbes"
Maroon

SPECIFICATIONS

TUNING RANGE

Standard Broadcast (AM)..... 540-1600 kc
Frequency Modulation (FM)..... 88-108 mc
Intermediate Frequency (AM)..... 455 kc
Intermediate Frequency (FM)..... 10.7 mc

TUBE COMPLEMENT

- (1) RCA 6BJ6 R.F. Amplifier
 - (2) RCA 19X8 Mixer-Oscillator
 - (3) RCA 12BA6 I.F. Amplifier
 - (4) RCA 12AU6 FM I.F. Amplifier
 - (5) RCA 12AU6 FM I.F. Amplifier
 - (6) RCA 12AL5 F.M. Detector
 - (7) RCA 12AV6 AM Det.-AVC-Audio
 - (8) RCA 35C5 Audio Output
- RCA Stock No. 77519.....Selenium Rectifier

POWER SUPPLY RATING

115 volts, 50-60 cycles, or 115 volts d.c..... 35 watts

LOUDSPEAKER

Size and Type..... 5¼" P.M.
Voice Coil Impedance..... 3.2 ohms

AUDIO POWER OUTPUT

Undistorted 1.0 watt
Maximum 1.3 watts

TUNING DRIVE RATIO..... 3:1 (4½ turns of knob)

NET WEIGHT..... 8 lbs.

DIMENSIONS (Overall)

Height..... 8½" Width..... 13¾" Depth..... 7¾"

CIRCUIT DESCRIPTION

This instrument, an AM-FM table radio, has eight tubes, plus selenium rectifier. Individual dials are provided for AM and FM bands. RF circuits, contained on a two tube sub-chassis, include RF amplification for both bands and a combination mixer-oscillator circuit. The input circuit to the FM RF stage is broadbanded, and is tuned to the approximate FM band center at 100 mc. The mixer is pentode connected for AM operation; triode connected for FM operation. AM IF circuits use an IF amplifier and conventional diode detector with AVC. FM IF circuits include three IF amplifier stages and a discriminator detector. The two tube audio amplifier has an adjustable tone control circuit with combination bass and treble compensation. A hum-bucking circuit uses the tapped-winding output transformer. An inbuilt AM loop antenna, and line cord FM antenna, allow reception without the use of external antennas. A phono jack at the instrument rear permits the use of a record player attachment.

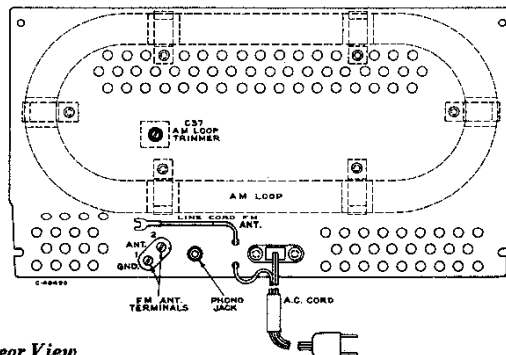
OPERATING INSTRUCTIONS

RADIO — Turn OFF-VOLUME control about half-way in a clockwise direction to turn receiver ON and provide for medium VOLUME. Allow a short warm-up period. Set FUNCTION control at desired service — AM or FM. Rotate TUNING control to move the pointers to the desired AM or FM frequency. Do not touch the pointers themselves. Adjust VOLUME and TONE controls as desired.

PHONOGRAPH — Connect attachment to PHONO jack at instrument rear. Switch the FUNCTION control to "PH" position. Turn on receiver and adjust VOLUME and TONE controls as desired.



Radio Controls



Rear View

MODEL 2-XF-91,
Ch. RC1121

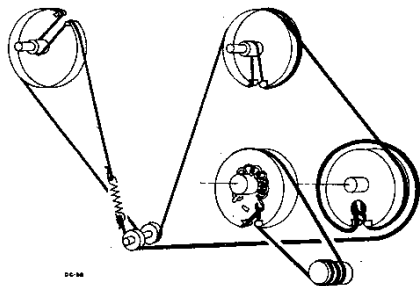


DIAGRAM OF DIAL CORD WITH GANG IN EXTREME COUNTER-CLOCKWISE POSITION (PLATES CLOSED)

Dial and Drive Cord Drive

ALIGNMENT PROCEDURE

ALIGNMENT INDICATORS:

An RCA VoltOhmyst or equivalent meter is necessary for measuring developed d-c voltage during FM alignment. Connections are specified in the alignment tabulation. An output meter is also necessary to indicate maximum audio output during AM alignment. Connect the output meter across the speaker voice coil. The RCA VoltOhmyst can also be used as an AM alignment indicator, either to measure audio output or to measure AVC voltage. When audio output is being measured, the volume control should be turned to maximum. Adjust tone control to mid-position.

SIGNAL GENERATOR:

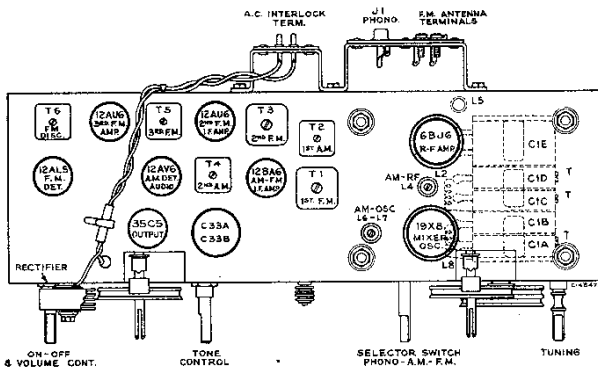
For all alignment operations, connect the low side of the signal generator to the receiver chassis. If output measurement is used for AM alignment, the output of the signal generator should be kept as low as possible to avoid AVC action.

If an FM sweep generator is used for FM alignment, adjust for 10.7 mc, 0.4 mc sweep. Connect oscilloscope across C26, adjusting discriminator T6 top core for 10.7 mc crossover, and T6 bottom core for balanced peaks. Peak separation should be approximately 330 kc. When aligning the other FM tuned circuits, connect oscilloscope lead through a 220K resistor to pin 1 of V5. Follow alignment table sequence, adjusting for maximum gain and symmetrical curves.

Tube Socket Voltages

Tube Type and Function	Tube Element	Pin No.	AM	FM	Phono
V1 6BJ6 R.F. Amp.	Plate	5	94	92	92
	Screen	6	94	92	92
	Cathode	2	0.7	0.9	0.5
	Grid	1	-0.5	0	-0.6
V2 19X8 Mixer	Plate	9	75	80	80
	Screen	1	75	80	80
	Cathode	6	0	0	0
	Grid	7	-1.6	-2.3	-2.3
Osc.	Plate	3	85	85.6	74
	Grid	2	-3.3	-3	-0.3
	Cathode	8	—	—	—
V3 12BA6 I.F. Amp.	Plate	5	94	92	90
	Screen	6	94	92.3	90
	Cathode	7	0.8	0.9	0.8
	Grid	1	-0.4	-0.2	-0.2
V4 12AU6 2nd I.F. Amp. (F.M.)	Plate	5	95	93.5	92
	Screen	6	95	94.1	92
	Cathode	7	0.8	0.8	0.8
	Grid	1	0	0	0
V5 12AU6 3rd I.F. Amp. (F.M.)	Plate	5	74	73	72
	Screen	6	74	73	72
	Cathode	7	0.3	0.3	0.4
	Grid	1	-0.2	-0.4	-0.2
V6 12AL5 F.M. Det.	Plate	2	—	—	—
	Cathode	5	—	—	—
	Plate	7	—	—	—
	Cathode	1	—	—	—
V7 12AV6 A.M. Det. Audio Amp.	Plate	7	58	57	57
	Grid	1	-0.8	-0.8	-0.8
	Plate	5	-0.5	-0.3	-0.3
	(Diode)	—	—	—	—
V8 35C5 Audio Output	Plate	7	130	130	130
	Screen	6	96	94.5	94.5
	Cathode	1	5.1	5.0	5.0
	Grid	2-5	—	—	—

Rectifier output should be approximately 139 volts, 70 ma.



Tube and Trimmer Locations

AM Alignment

FUNCTION SWITCH IN AM POSITION

Steps	Connect high side of sig. gen. to—	Sig. gen. output	Turn radio dial to—	Adjust for peak output
1	Pin No. 1 of V3 in series with .01 mfd.	455 kc. (mod.)	Quiet point at high freq. end	T4 bottom core (sec.) T4 top core (pri.)
2	Tap lug 4 on AM RF coil			T2 bottom core (sec.) T2 top core (pri.)
3		1620 kc. (mod.)	1620 kc.	C1A-T (osc.)
4		1400 kc. (mod.)	1400 kc.	C37 (ant.) C1C-T (rf.)
5	Short wire placed near loop for radiated signal	600 kc. (mod.)	600 kc.	L6 (osc.) with 10,000 ohm resistor from C1C RF stator to gnd. (rocking gang)
6				L4 (RF) with the 10,000 ohms removed
7	Repeat steps 4, 5 and 6 until maximum gain is obtained			

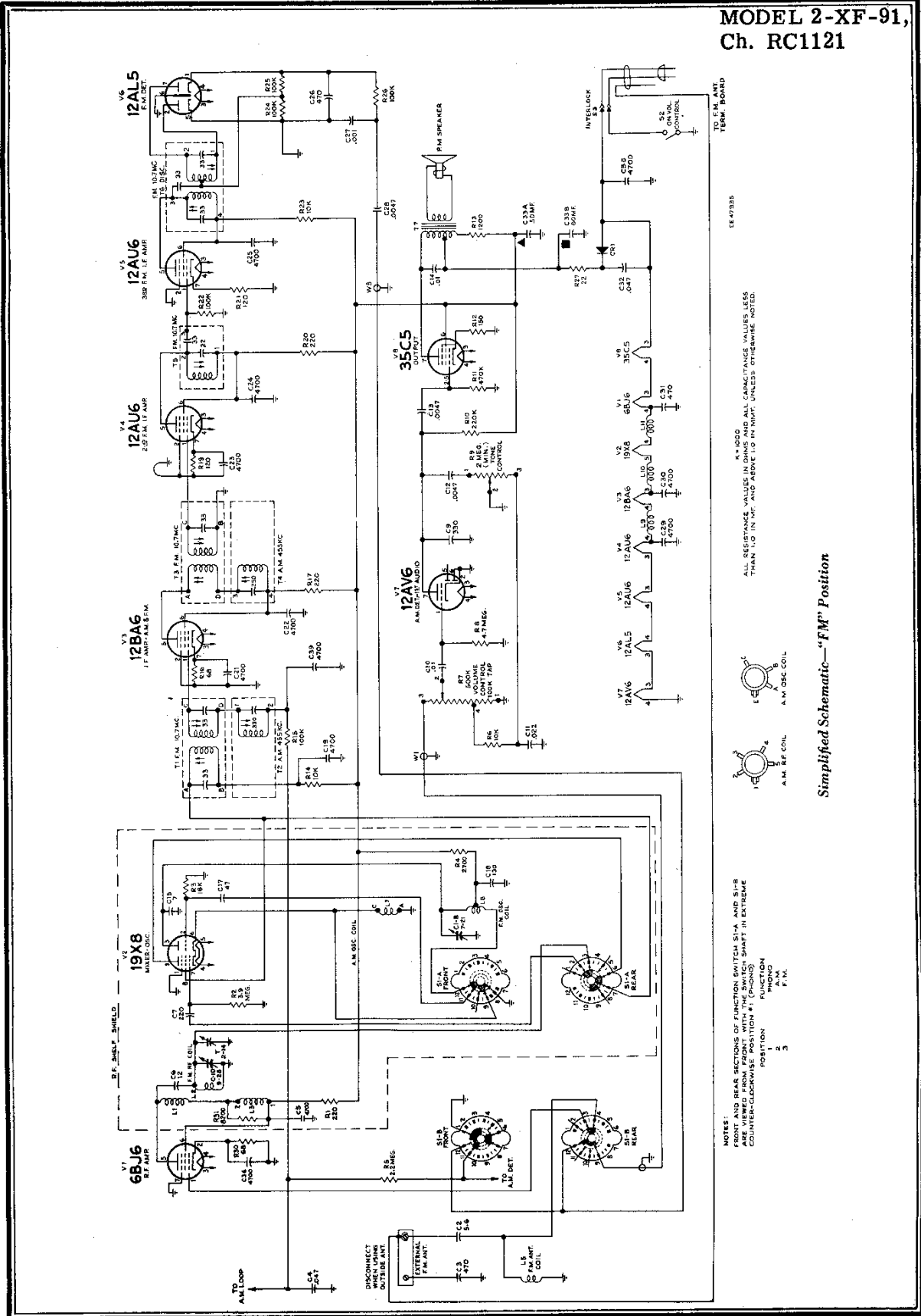
FM Alignment

FUNCTION SWITCH IN FM POSITION—VOLUME CONTROL MINIMUM—TONE CONTROL CENTER

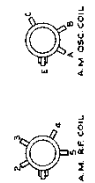
Steps	Connect high side of sig. gen. to—	Sig. gen. output	Turn radio dial to—	Adjust for max. output
1	Pin No. 1 of V5-12AU6			T6 top core for zero d.c. (across C26) T6 bottom core for maximum d.c. (junction of R24 and R25)
2	Pin No. 1 of V4-12AU6	10.7 mc.	Quiet point at low frequency end	†T5 top core
3	Pin No. 1 of V3-12BA6			†T3 top core †T3 bottom core
4	C1D Stator			†T1 top core †T1 bottom core
5		90 mc.	90 mc.	†FM osc. L8
6		106 mc.	106 mc.	†FM R.F. C1D-T
7	FM Ant. terminals thru 270 ohm resistor	90 mc.	90 mc.	†FM R.F. L2
8	Repeat steps 6 and 7 until maximum gain is obtained			
9		100 mc.	100 mc.	†FM Ant. coil L5

*If necessary for accurate peaking, the winding in the same transformer not being peaked should be loaded with a 500 ohm resistor. †Connect VoltOhmyst to pin 1 of V3 through a 220K isolating resistor with 1/4 inch maximum exposed lead at grid terminal end. Output adjusted for 1 volt d.c. Dress VoltOhmyst lead away from input circuits.

Oscillator frequency is above signal frequency on both AM and FM



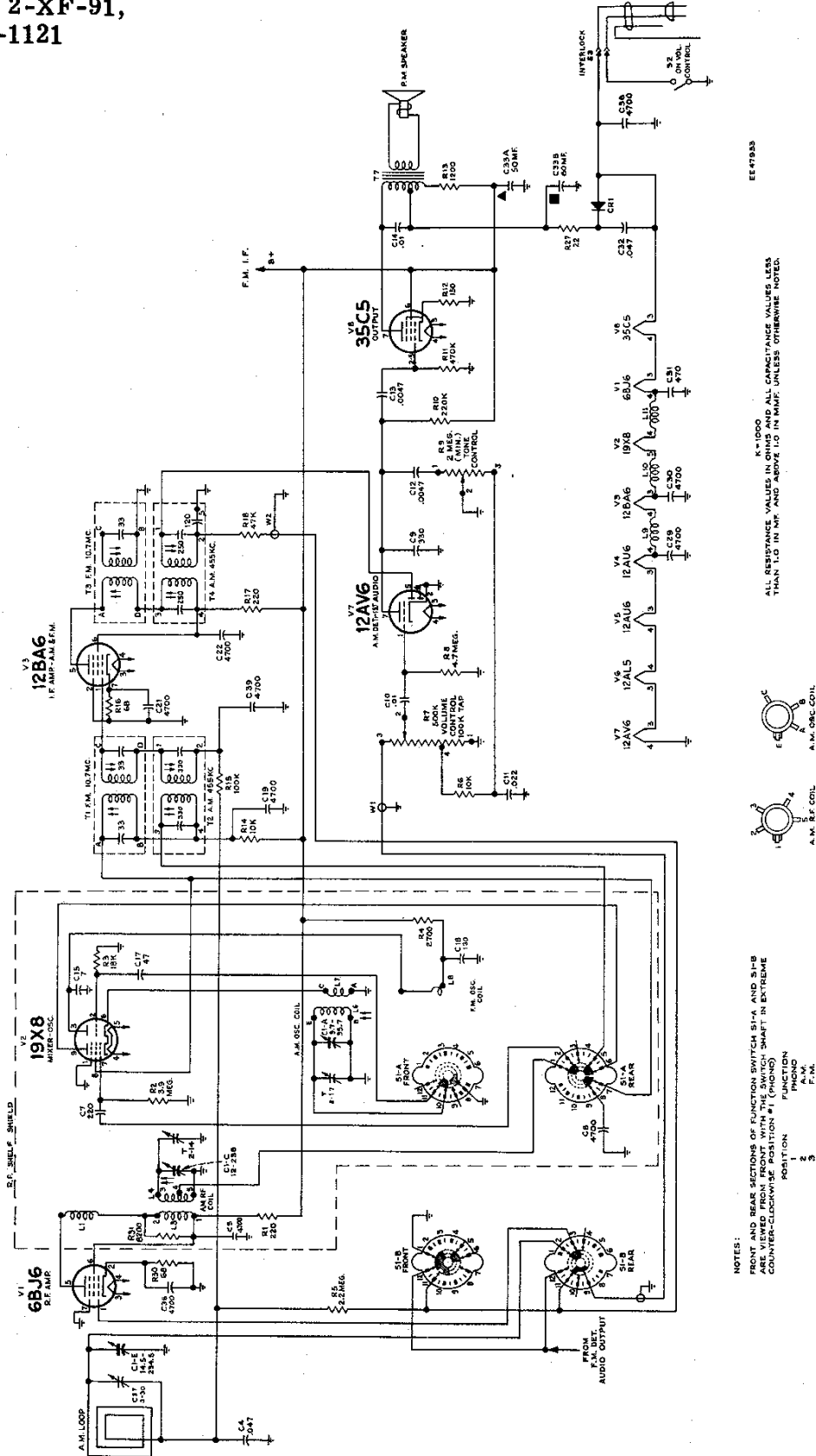
NOTE: ALL RESISTANCE VALUES IN OHMS AND ALL CAPACITANCE VALUES LESS THAN 1.0 IN MF. AND ABOVE 1.0 IN MMF. UNLESS OTHERWISE NOTED.



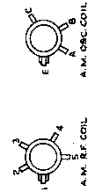
Simplified Schematic—"FM" Position

NOTES:
1. THIS AND REAR SECTIONS OF FUNCTION SWITCH S14 AND S15 ARE VIEWED FROM FRONT WITH THE SWITCH SHUNT IN EXTREME COUNTER-CLOCKWISE POSITION #1 (PHONE)
2. POSITION
3. FUNCTION
A.M.
F.M.

MODEL 2-XF-91,
Ch. RC-1121



NOTES:
FRONT AND REAR SECTIONS OF FUNCTION SWITCH S1-A AND S1-B ARE VIEWED FROM FRONT WITH THE SWITCH SHAFT IN EXTREME COUNTER-CLOCKWISE POSITION #1 (PHONE)
POSITION
FUNCTION
#1-A
#1-B
#2
#3
F.M.

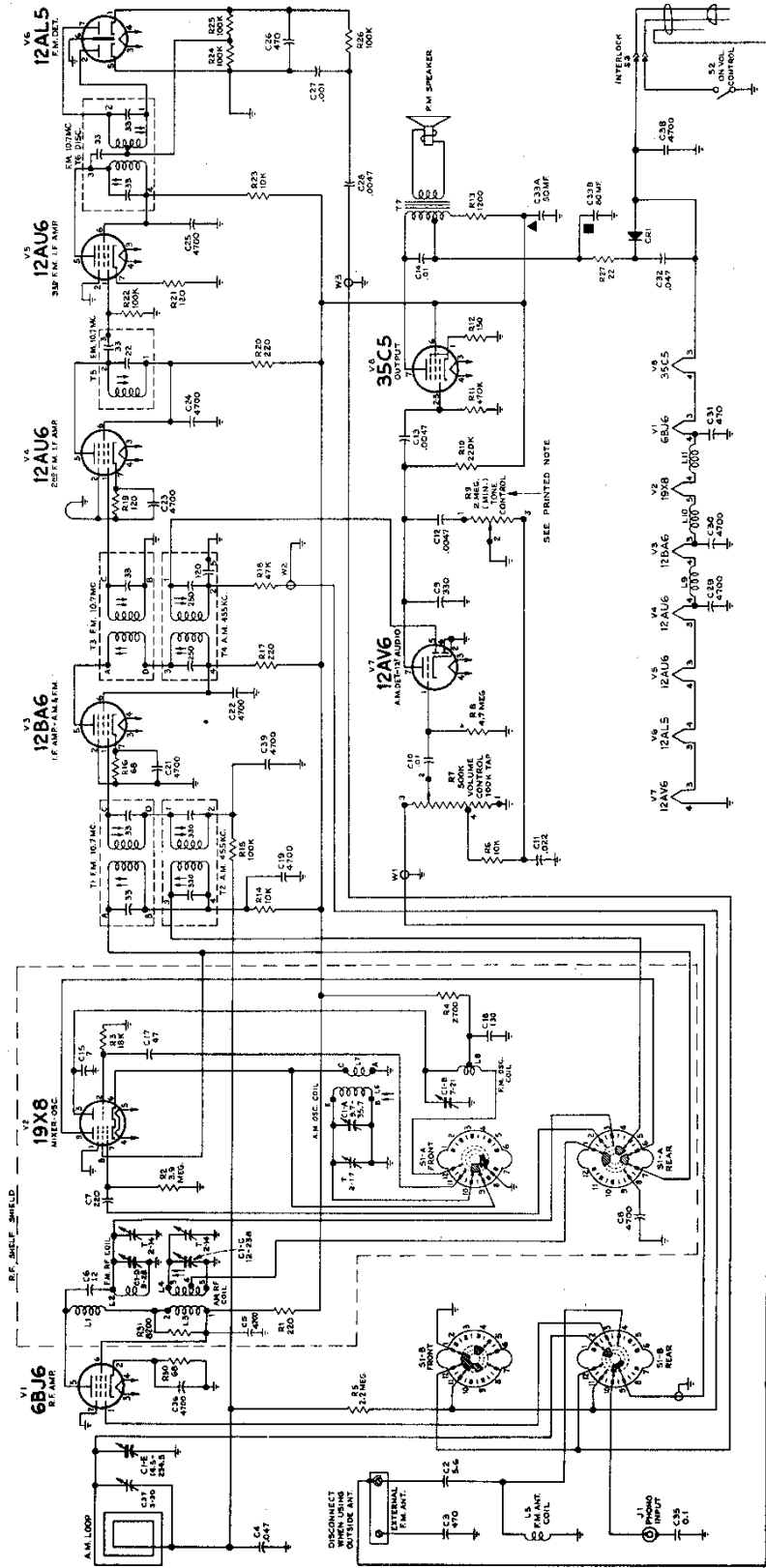


Simplified Schematic—"AM" Position

MODEL 2-XF-91,
Ch. RC1121

CRITICAL LEAD DRESS

1. All FM IF Transformer grid and plate leads should be short and direct as possible and kept low, near chassis.
2. C26 leads should be kept as short as possible.
3. C32 leads should be kept as short as possible.
4. R24 and R25 leads should be kept as short as possible on S terminal 6 side.
5. C27 should ground in hole near terminal 5 of V6 with short leads.
6. AM oscillator coil should not be tilted over toward function switch when wrapping short bus leads to switch.
7. Keep leads V5 pin 5, to T5 term 1, as short as possible and low near chassis.
8. Dress C28 down on chassis and against terminal board. Run filament lead between V5 and V6 on side of V6 socket opposite C28.
9. All ceramic button 4700 uuf condensers should have leads as short as possible.
10. Green lead from AM oscillator stator gang terminal to AM oscillator coil should be dressed against front of shield box and up above filament choke.
11. RF plate choke L1, should be dressed at least 1/8" away from AM RF coil L4 and at least 1/4" from shield.
12. Mixer grid condenser C7 should be dressed away from FM oscillator gang stator terminal and away from leads connecting to terminals 8 and 9 of V2 socket.
13. Filament chokes L10 and L11 should be raised a minimum of 1/16" above chassis.
14. Use varnished tubing only on choke and coupling cond. leads coming through shield partition slot.
15. Condenser C2 should have lead on antenna terminal end not more than 3/16" long to prevent possible contact of lead or body to "Hot" chassis.
16. Condensers C3 and C35 should use varnished tubing, not vinyl, to prevent breakthrough crossing chassis edge.
17. Oscillator grid condenser C17 should have short leads and be dressed away from filament choke L10.
18. Leads from loop terminal to chassis terminal board should have a minimum of three twists.



ALL RESISTANCE VALUES IN OHMS AND ALL CAPACITANCE VALUES LESS THAN 1.0 IN MF AND ABOVE 1.0 IN MMF, UNLESS OTHERWISE NOTED.

Schematic Circuit Diagram—Chassis No. RC1121

NOTES:
FRONT AND REAR SECTIONS OF FUNCTION SWITCH S1-A AND S1-B ARE VIEWED FROM FRONT WITH THE SWITCH SHAFT IN EXTREME COUNTER-CLOCKWISE POSITION.
FUNCTION POSITION PHONO P.M. A.M.
A.M. S.F. COIL
A.M. OSC. COIL

MODEL 2-XF-91, Ch. RC1121

STOCK No.	PART DESCRIPTION	STOCK No.	PART DESCRIPTION
CHASSIS ASSEMBLIES		RC1121	
77520	Bushing—Laminated bushing (3/8" long with shoulder) for station selector pointer pulley and shaft assembly.	77519	Rectifier—Selenium rectifier, 100 MA (CR1)
77522	Capacitor—Variable tuning capacitor (C1A, C1B, C1C, C1D, C1E, C1A-T, C1C-T, C1D-T)	76346	Resistor—Wire wound, 1200 ohms, 4 watts (R13)
70997	Capacitor—Fixed, ceramic, non-insulated, 5.6 mmf., ±1 mmf., 500 volts D.C. Temp. coef. = 0 (C2)	503022	Resistor—Fixed, composition: 22 ohms, ±10%, 1/2 watt (R27)
77530	Capacitor—Fixed, ceramic, non-insulated, 7 mmf., ±.5 mmf., 500 volts D.C. Temp. coef. = 80 (C15)	503068	68 ohms, ±10%, 1/2 watt (R16, R30)
33380	Capacitor—Fixed, ceramic, non-insulated, 12 mmf., ±5%, 500 volts D.C. Temp. coef. = 0 (C6)	503112	120 ohms, ±10%, 1/2 watt (R19, R21)
77531	Capacitor—Fixed, ceramic, non-insulated, 47 mmf., ±10%, 500 volts D.C. Temp. coef. = 0 (C17)	503115	150 ohms, ±10%, 1/2 watt (R12)
77532	Capacitor—Fixed, ceramic, non-insulated, 130 mmf., ±2 1/2%, 500 volts D.C. Temp. coef. = -750 (C18)	503122	220 ohms, ±10%, 1/2 watt (R1, R17, R20)
39636	Capacitor—Fixed, mica, 220 mmf., 500 volts D.C. (C7)	503227	2700 ohms, ±10%, 1/2 watt (R4)
75792	Capacitor—Fixed, ceramic, insulated, 330 mmf., ±20%, 500 volts D.C. High K (C9)	503282	8200 ohms, ±10%, 1/2 watt (R31)
76992	Capacitor—Fixed, mica, 470 mmf., 300 volts D.C. (C26, C31)	503310	10,000 ohms, ±10%, 1/2 watt (R6, R14, R23)
39644	Capacitor—Fixed, mica, 470 mmf., 500 volts D.C. (C3)	503318	18,000 ohms, ±10%, 1/2 watt (R3)
73473	Capacitor—Fixed, ceramic, 4700 mmf., +100%, -0%, 500 volts D.C. High K disc (C5, C8, C19, C21, C22, C23, C24, C25, C29, C30, C36, C38, C39)	503347	47,000 ohms, ±10%, 1/2 watt (R18)
73520	Capacitor—Electrolytic comprising 1 section of 80 mfd., 150 volts and 1 section of 50 mfd., 150 volts (C33A, C33B)	502410	100,000 ohms, ±5%, 1/2 watt (R24, R25)
77533	Capacitor—Fixed, miniature, tubular, paper, .001 mfd., 200 volts D.C. (C27)	503410	100,000 ohms, ±10%, 1/2 watt (R15, R22, R26)
73820	Capacitor—Fixed, tubular, paper, .0047 mfd., 600 volts (C12, C13, C28)	503422	220,000 ohms, ±10%, 1/2 watt (R10)
73561	Capacitor—Fixed, tubular, paper, .01 mfd., 400 volts (C10)	503447	470,000 ohms, ±10%, 1/2 watt (R11)
73594	Capacitor—Fixed, tubular, paper, .01 mfd., 600 volts (C14)	503522	2.2 megohm, ±10%, 1/2 watt (R5)
73562	Capacitor—Fixed, tubular, paper, .022 mfd., 400 volts (C11)	503539	3.9 megohm, ±10%, 1/2 watt (R2)
73558	Capacitor—Fixed, tubular, paper, .047 mfd., 200 volts (C4)	503547	4.7 megohm, ±10%, 1/2 watt (R8)
75071	Capacitor—Fixed, tubular, moulded, .047 mfd., 400 volts (C32)	77527	Shaft—Tuning knob shaft
73551	Capacitor—Fixed, tubular, paper, 0.1 mfd., 400 volts (C35)	75192	Shield—Tube shield for V1
73935	Clip—Mounting clip for I.F. transformers	76331	Shield—Tube shield for V2
77538	Coil—Antenna coil—F.M. (L5)	77087	Socket—Tube socket, 7 pin, miniature, moulded, saddle mounted for V1
77534	Coil—Choke coil (L1)	76336	Socket—Tube socket, 9 pin, miniature, moulded, saddle mounted for V2
77535	Coil—Choke coil (L9, L10, L11)	73117	Socket—Tube socket, 7 pin, miniature, wafer for V3, V4, V5, V6, V7, V8
77526	Coil—Oscillator coil—A.M.—complete with adjustable core (L6, L7)	31970	Spring—Dial cord spring
77537	Coil—Oscillator coil—F.M. (L8)	31418	Spring—Drive cord spring
77525	Coil—RF coil—A.M.—complete with adjustable core (L3, L4)	77524	Switch—Function switch (S1)
77536	Coil—RF coil—F.M. (L2)	77517	Transformer—Output transformer (T7)
77528	Connector—Combination phono input connector and antenna terminal board (J1)	77511	Transformer—Ratio detector transformer—complete with adjustable cores (T6)
75474	Connector—Single contact male connector for speaker lead	76335	Transformer—First I.F. transformer—A.M.—complete with adjustable cores (T2)
77529	Connector—Two (2) contact male connector for power cord	77514	Transformer—First I.F. transformer—F.M.—complete with adjustable cores (T1)
77516	Control—Tone control (R9)	76328	Transformer—Second I.F. transformer—A.M.—complete with adjustable cores (T4)
77515	Control—Volume control and power switch (R7, S2)	77513	Transformer—Second I.F. transformer—F.M.—complete with adjustable cores (T3)
72953	250' Dial Cord Reel—Dial cord (approx. 49" overall required)	77512	Transformer—Third I.F. transformer—F.M.—complete with adjustable cores (T5)
77523	Drive cord (approx. 11" overall required)	33726	Washer—"C" washer for station selector pointer pulley and shaft or tuning knob shaft
16058	Drum—Variable tuning capacitor drive drum and hub	34373	Washer—"C" washer to fasten idler pulleys
77521	Grommet—Rubber grommet for mounting RF shelf (4 required)	SPEAKER ASSEMBLIES	
77510	Nut—Speednut for station selector pointer pulley and shaft bushing	971933-1	
72602	Pulley—Idler pulley for indicator cord (2 required)	77539	Speaker—5 1/4" P.M. speaker complete with cone and voice coil (3.2 ohms)
77510	Pulley—Pulley and shaft (split) for station selector pointers	MISCELLANEOUS	
		77543	Antenna—Antenna loop and back assembly complete with power cord (includes C37)
		77543	Back—Cabinet back complete with loop, capacitor and power cord (includes C37)
		Y2467	Cabinet—Maroon plastic cabinet less "RCA Victor" emblem and function decal
		77544	Capacitor—Adjustable, mica trimmer, 3-30 mmf. (C37)
		77545	Cord—Power cord and plugs
		77542	Decal—Control function decal
		77033	Emblem—"RCA Victor" emblem
		77548	Knob—Function switch knob
		77547	Knob—Tuning control, tone control or volume control and power switch knob
		73203	Nut—Speednut to fasten "RCA Victor" emblem to cabinet.
		77541	Pointer—Station selector pointer—A.M.
		77540	Pointer—Station selector pointer—F.M.
		73992	Retainer—Knob retainer (knob to cabinet)
		76837	Spring—Retaining spring for knobs (knob to shaft)

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