

AMERICAN RADIO CO., INC.
445 PARK AVENUE
NEW YORK 22, N. Y.



RCA VICTOR

High-Fidelity Radio-Phonograph

MODEL 7-HF-3

Chassis Nos. RC-1155 and RS-151A
Record Changer RP-205-2

SERVICE DATA

— 1956 No. 13 —

PREPARED BY COMMERCIAL SERVICE
RCA SERVICE CO., INC.
CAMDEN 8, N. J.

FOR

RADIO CORPORATION OF AMERICA
RCA VICTOR RADIO AND "VICTROLA" DIVISION



PH-A1121
Model 7-HF-3
The "Mark III"
Mahogany or Blond Oak

*Order
with No 10-201*

SPECIFICATIONS

TUNING RANGE

Standard Broadcast (AM)540-1600 kc
Frequency Modulation (FM)88-108 mc

INTERMEDIATE FREQUENCIES

AM455 kc
FM10.7 mc

TUBE COMPLEMENT

TUNER CHASSIS RC-1155

- (1) RCA 6BJ6R.F. Amplifier
- (2) RCA 19X8Mixer-Oscillator
- (3) RCA 12BA6I.F. Amplifier
- (4) RCA 12AU6FM I.F. Amplifier
- (5) RCA 12AU6FM I.F. Amplifier
- (6) RCA 12AL5F.M. Detector
- (7) RCA 12AV6AM Det.-AVC
- (8) RCA 35W4Rectifier

AMPLIFIER CHASSIS RS-151A

- (1) RCA 6CG71st and 2nd A.F. Amplifier
- (2) RCA 6CG73rd A.F. Ampl. and Ph. Inverter
- (3) RCA 6V6GTOutput
- (4) RCA 6V6GTOutput
- (5) RCA 5Y3GTRectifier

LOUDSPEAKERS

One 12" PM "woofers"6.8 ohm v.c.
Two 3½ PM "tweeters"6.8 ohm v.c.

RECORD CHANGER (RP-205-2)

Turntable speed16⅔, 33⅓, 45 or 78 r.p.m.
Record capacityUp to fourteen 7 inch
or twelve 10 inch.
or ten 12 inch.
or ten 10 in. and 12 in. intermixed.
Pickup (Stock No. 100653)Ceramic

POWER SUPPLY RATING

115 volts, 60 cycles120 watts

AUDIO POWER OUTPUT

10 wattsWith less than 1½% distortion
15 wattsMaximum

TUNING DRIVE RATIO7½:1 (3¾ turns of knob)

NET WEIGHTapprox. 93 lbs.

DIMENSIONS (Overall)

Height34½" Width35" Depth16½"

DESCRIPTION

The "MARK III" is a high-fidelity radio-phonograph combination consisting of an AM-FM tuner chassis, an audio amplifier chassis, a four-speed record changer, one 12-inch wide-range speaker and two 3½-inch speakers housed in a traditional cabinet in mahogany, maple or blond oak finish. The two 3½-inch speakers are mounted at an angle to provide panoramic sound distribution. Provision is made for the use of a tape recorder attachment.

The tuner chassis provides R-F amplification on both AM and FM operation. The FM antenna input is broad-banded and resonates to the approximate center of the FM band. The mixer is pentode connected for AM operation and triode connected for FM operation. AM I-F circuits use a conventional I-F amplifier and a diode detector which provides AVC voltage. FM I-F circuits include three I-F amplifiers without AVC and a discriminator detector. AC supply voltage

for the 35W4 rectifier tube and the series connected tube heaters is obtained from an isolation transformer.

A four-position audio function switch is contained in the audio amplifier chassis and permits use of a tape recorder in conjunction with any other audio function. Two 6CG7 tubes provide three stages of A-F amplification and phase inversion; two 6V6-GT tubes are used for push-pull output. Negative feed-back, applied to the third A-F amplifier, is derived from a tapped resistive output load.

One 12-inch wide-range speaker and two 3½-inch speakers are used for wide acoustic range and panoramic sound distribution.

A four-speed record changer is used. It utilizes a ceramic dual-stylus pickup in a die-cast aluminum pickup arm.

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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 controls 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.

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 (No. 4) on AM RF coil			T2 bottom core (sec.) T2 top core (pri.)
3	Short wire placed near loop for radiated signal	1620 kc. (mod.)	1620 kc. (gang open)	C1E-T (osc.)
4		1400 kc. (mod.)	1400 kc. signal	C1A-T (ant.) C1C-T (rf.)
5		600 kc. (mod.)	600 kc. signal	L6 (osc.) (rock gang)
6				L4 (RF)
7	Repeat steps 4, 5 and 6 until maximum gain is obtained			

Oscillator frequency is above signal frequency on both AM and FM

FM SWEEP ALIGNMENT:

If an FM sweep generator is used for FM alignment, adjust for 10.7 mc, 0.4 mc sweep. Connect oscilloscope across C23, 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.

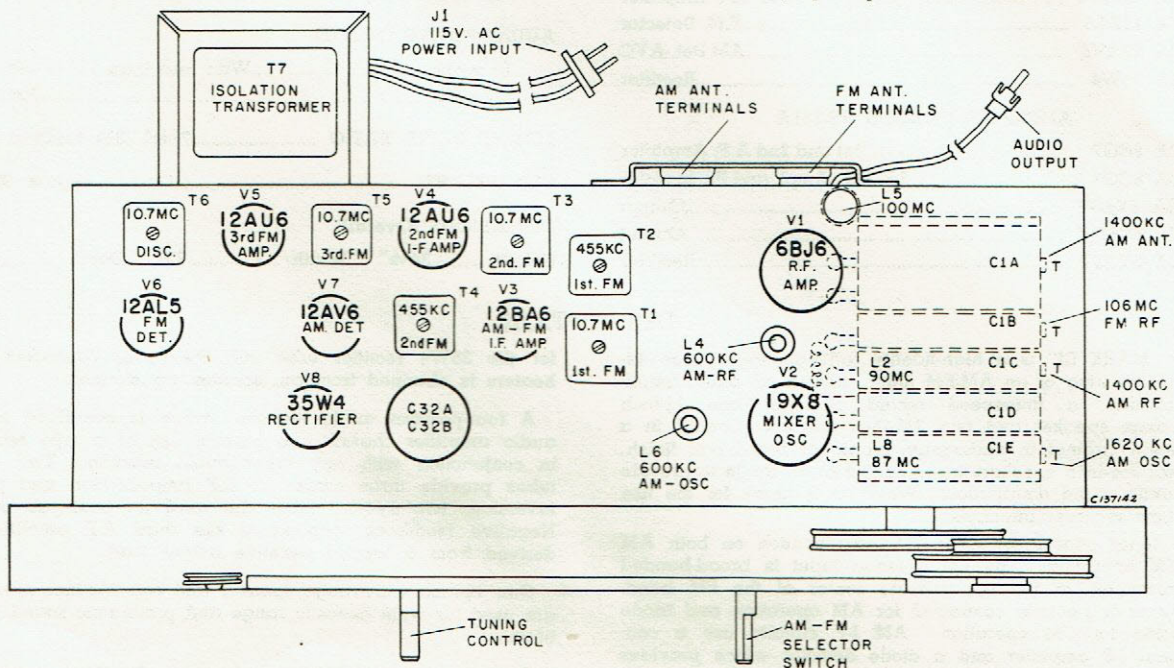
FM Alignment

FUNCTION SWITCH IN FM POSITION

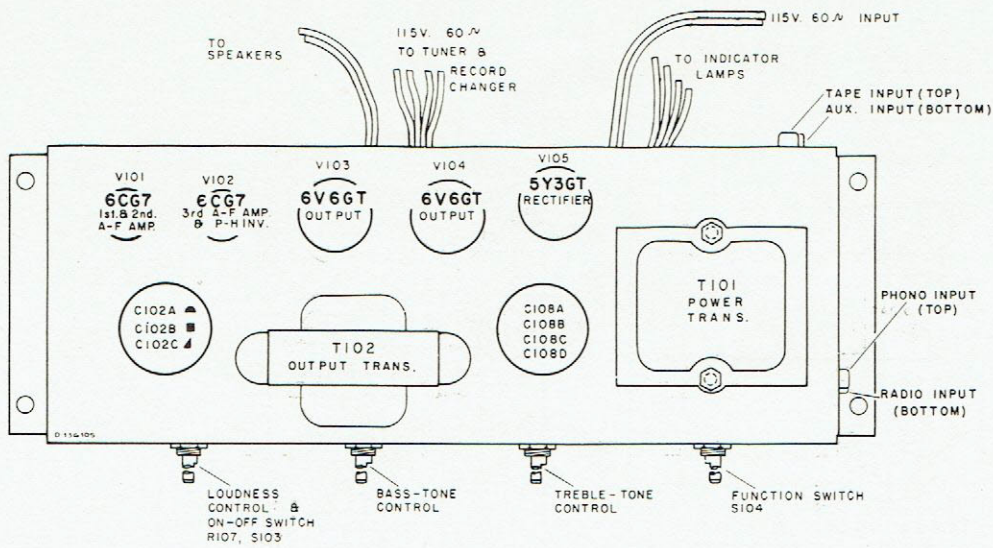
Steps	Connect high side of sig. gen. to—	Sig. gen. output	Turn radio dial to—	Adjust for max. output
1	Pin No. 1 of V5-12AU6	10.7 mc	Quiet point at low frequency end	T6 top core for zero d.c. across C23 T6 bottom core for maximum d.c. at junction of R18 and R19
2	Pin No. 1 of V4-12AU6			†T5 top core
3	Pin No. 1 of V3-12BA6			T3 top core †T3 bottom
4	C1-B Stator			T1 top core †T1 bottom core
5	FM Ant. terminals thru 270 ohm resistor	87 mc	87 mc (gang closed)	†FM osc. L8
6		106 mc	106 mc. signal	†FM R.F. C1B-T
7		90 mc.	90 mc. signal	†FM R.F. L2
8		Repeat steps 6 and 7 until maximum gain is obtained		
9		100 mc	100 mc signal	†FM ant. coil L5

*If necessary for accurate peaking, the winding in the same transformer not being peaked should be loaded with a 680 ohm resistor.
†Connect VoltOhmyst to pin 1 of V5 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.

NOTE—FM coils L8, L2 and L5 are adjusted by increasing or decreasing spacing between turns.



RC-1155 Tuner Chassis Top View



RS-151A
Amplifier Chassis
Top View

CRITICAL LEAD DRESS

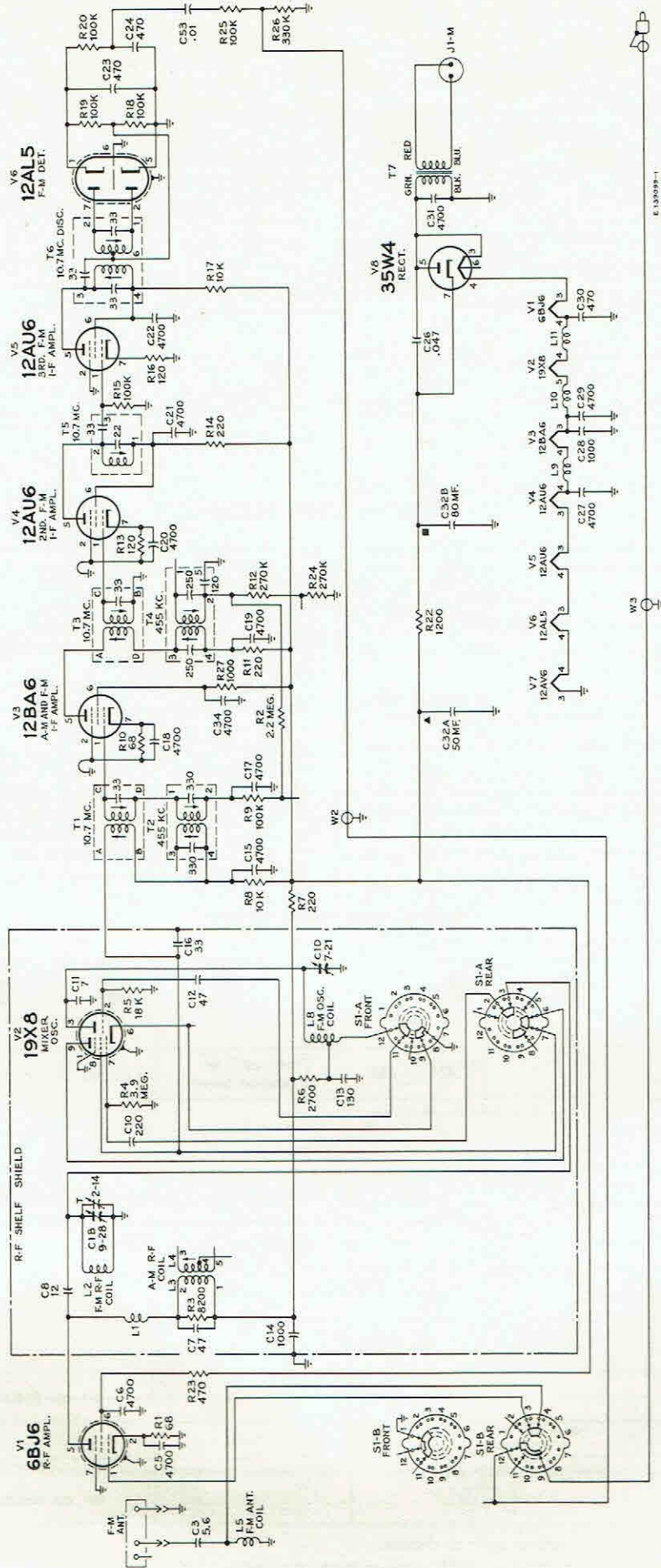
1. All FM IF transformer grid and plate leads should be short and direct as possible and kept low, near chassis.
2. C23 leads should be kept as short as possible.
3. C26 leads should be kept as short as possible.
4. R18 and R19 leads should be kept as short as possible on T6 terminal 6 side.
5. AM oscillator coil should not be tilted over toward function switch when wrapping short bus leads to switch.
6. Keep leads V5 pin 5, to T6 term 1, as short as possible and low near chassis.
7. Dress C23 down on chassis and against terminal board. Run filament lead between V5 and V6 on side of V6 socket opposite C33.
8. All ceramic button 4700 uuf condensers should have leads as short as possible.
9. 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.
10. RF plate choke L1, should be dressed at least 1/8" away from AM R.F. coil L4 and at least 1/8" from shield.
11. Mixer grid condenser C10 should be dressed away from FM oscillator gang stator terminal and away from leads connecting to terminals 8 and 9 of V2 socket.
12. Filament chokes L10 and L11 should be raised a minimum of 1/16" above chassis.
13. Use varnished tubing only on choke and coupling cond. leads coming through shield partition slot.
14. Oscillator grid condenser C12 should have short leads and be dressed away from filament choke L10.
15. Keep leads of R101, R102, R103 and C101 short, and dress these components close to chassis.
16. Dress R117 away from all other components.

MAIN CONTROL PANEL

	TUNING	AM FM	LOUDNESS OFF	BASS	TREBLE	RADIO PHONO	AUX TAPE
TO PLAY RECORDS		AM or FM	Turn "on," set at desired level	set as desired		PHONO	
TO RECORD FROM PHONOGRAPH†		" "	" "			"	
TO RECEIVE AM PROGRAMS	Tune to desired station	AM	" "	set as desired		RADIO	
TO RECORD AM PROGRAMS†	" "	" "	" "			"	
TO RECEIVE FM PROGRAMS	" "	FM	" "	set as desired		"	
TO RECORD FM PROGRAMS†	" "	" "	" "			"	
AS A PUBLIC ADDRESS SYSTEM‡		AM or FM	" "	set as desired		AUX	
TO RECORD FROM AUXILIARY SOURCE†‡		" "	" "			"	
TO PLAY BACK RECORDED TAPE†		" "	" "	set as desired		TAPE	

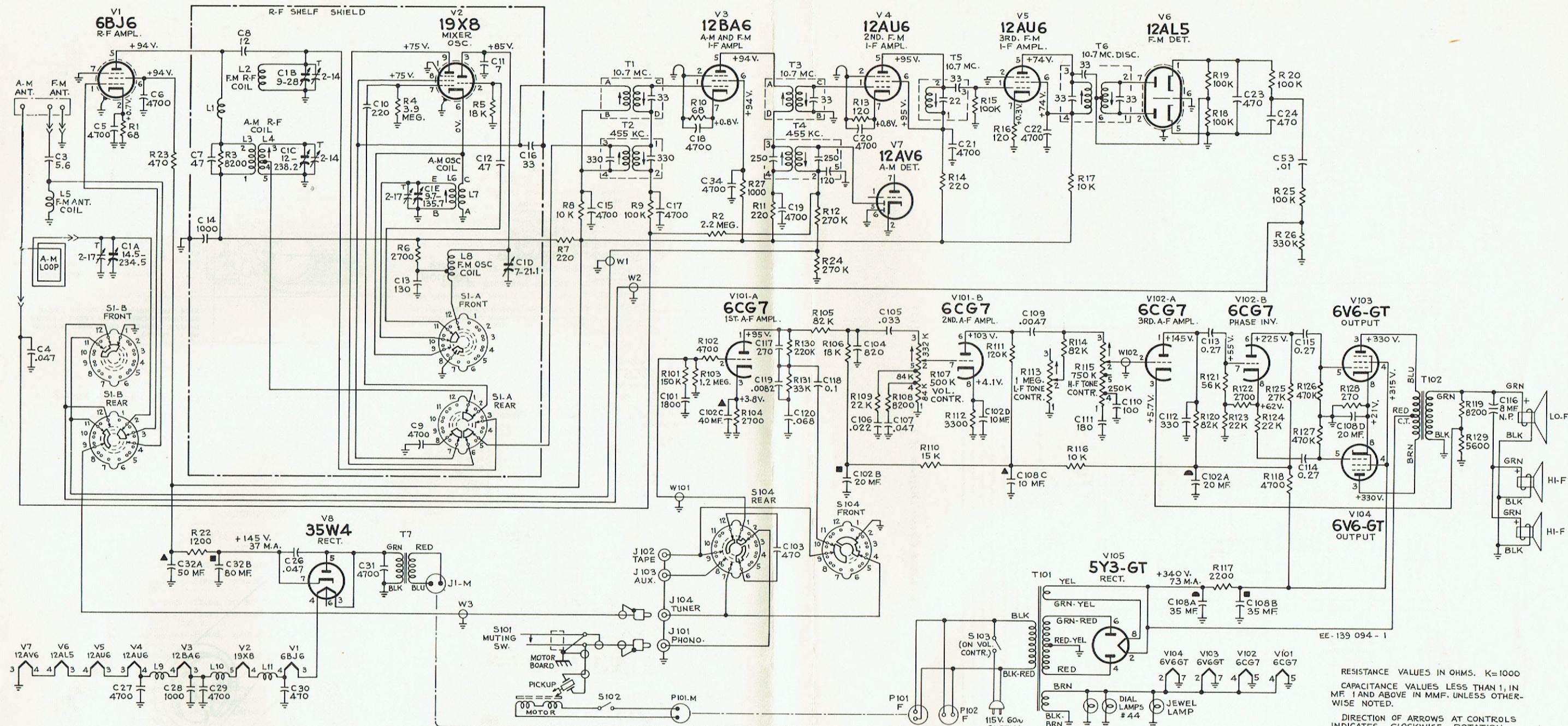
† Tape recorder connected to "TAPE" jack at back of chassis.

‡ Microphone or other sound input connected to "AUX" jack at back of chassis.

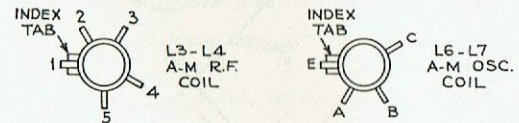


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FM Simplified Circuit Diagram of Tuner Chassis RC-1155

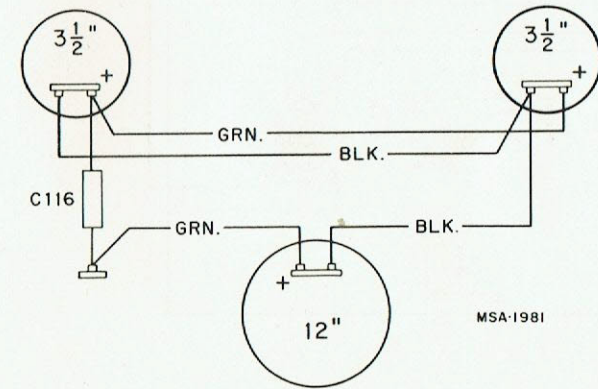


RESISTANCE VALUES IN OHMS. K=1000
 CAPACITANCE VALUES LESS THAN 1, IN MF AND ABOVE IN MMF. UNLESS OTHERWISE NOTED.
 DIRECTION OF ARROWS AT CONTROLS INDICATES COUNTERWISE ROTATION.
 VOLTAGES MEASURED WITH "VOLT-OHMYST" WITH FUNCTION SW. S1 IN A-M RADIO POSITION; AND SHOULD HOLD WITHIN ±20% WITH 117V. A.C. SUPPLY.



S1 FUNCTION SW. FRONT AND REAR SECTIONS VIEWED FROM FRONT AND SHOWN IN MAX. COUNTER CLOCKWISE POSITION NO. 1
 POSITION 1 - A-M RADIO
 2 - F-M RADIO

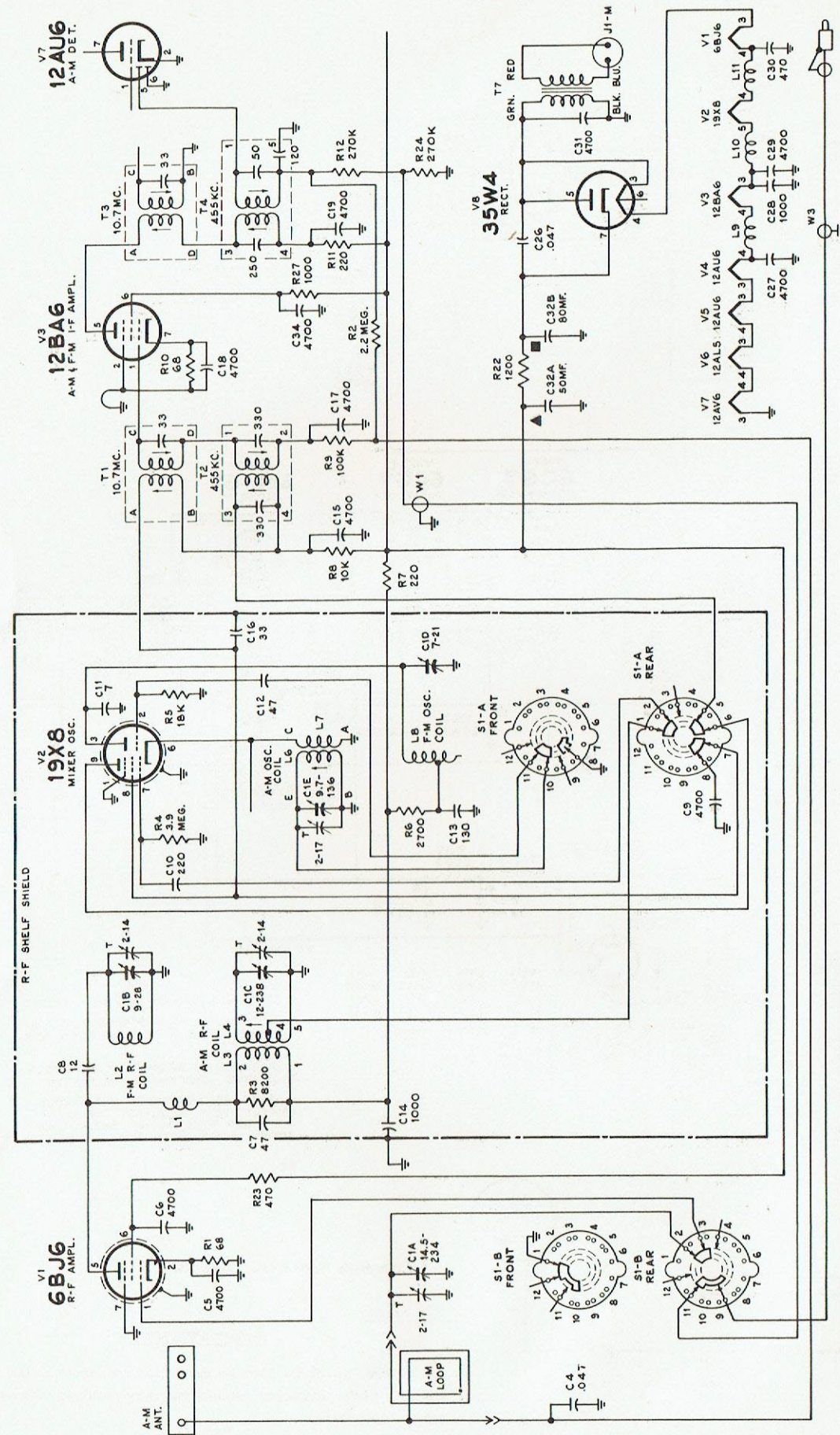
S104 FUNCTION SW. FRONT AND REAR SECTIONS VIEWED FROM FRONT AND SHOWN IN MAX. COUNTER CLOCKWISE POSITION NO. 1
 POSITION 1 - PHONO.
 2 - TUNER
 3 - AUXILIARY
 4 - TAPE



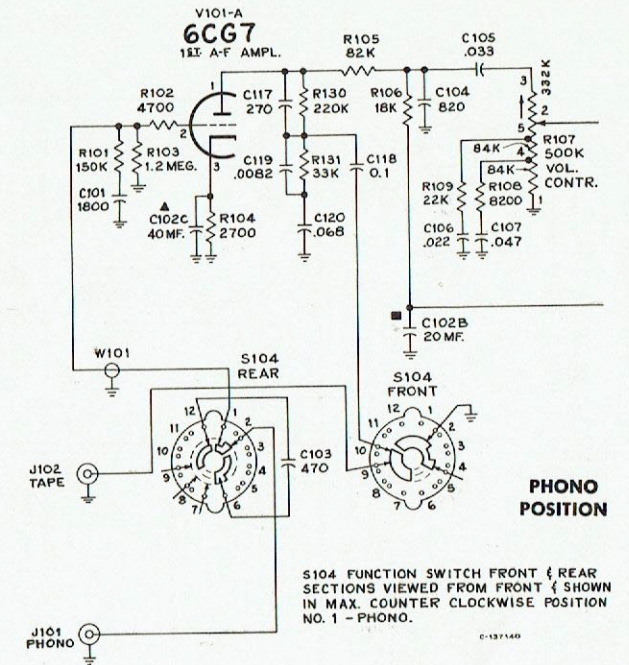
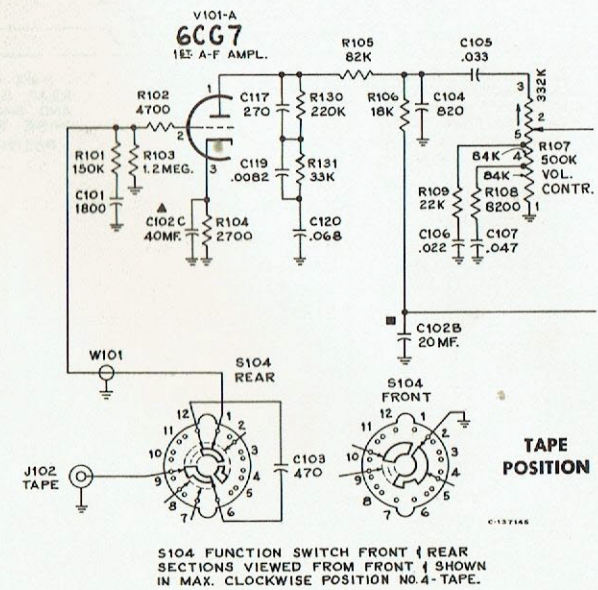
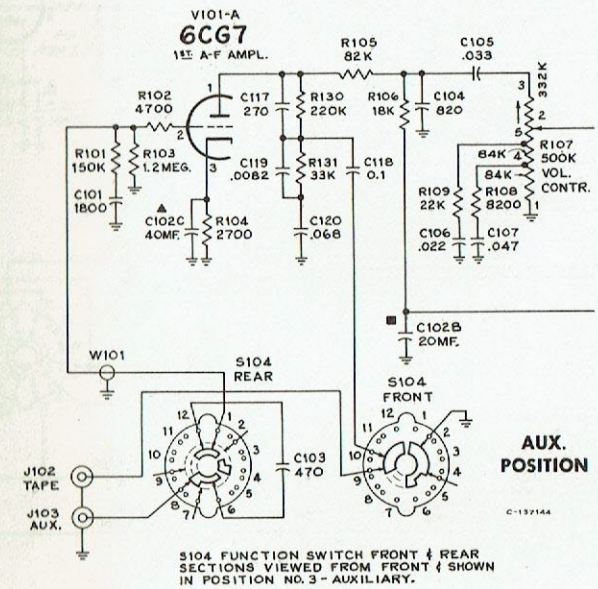
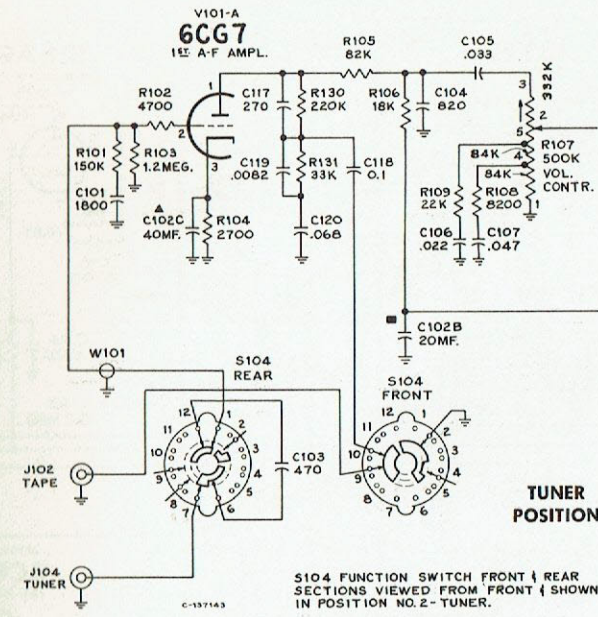
Complete Schematic Diagram

IMPORTANT

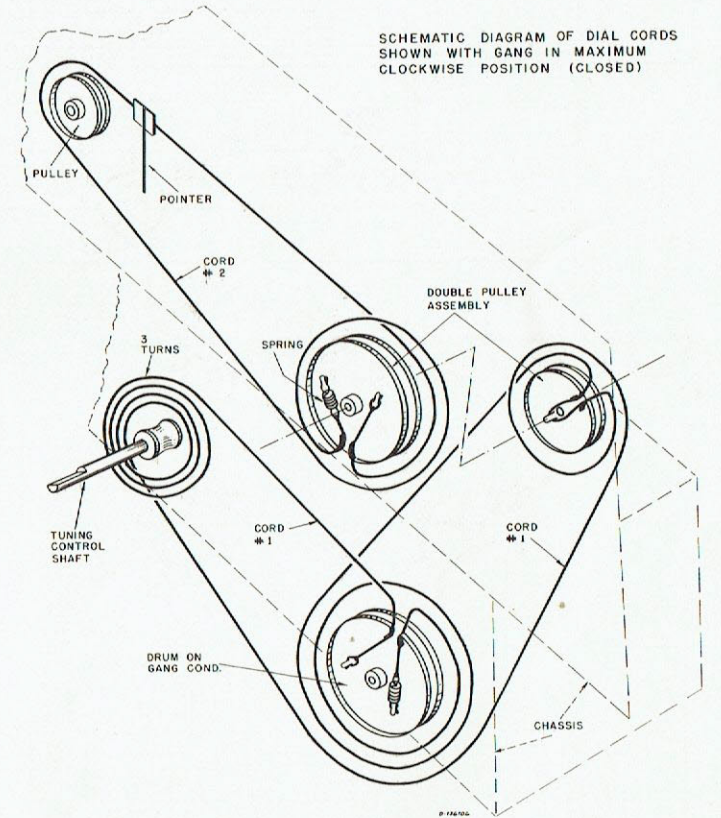
The three speakers must be connected as shown in the illustration at left. Improper connections may result in distorted or weak reproduction.



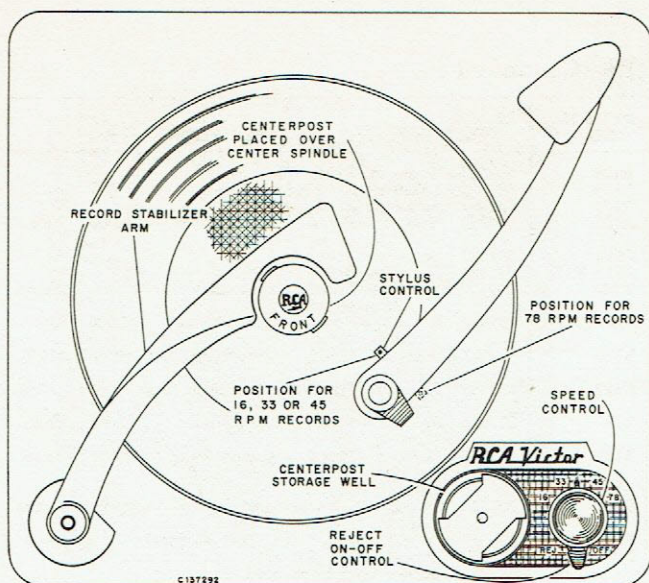
AM Simplified Circuit Diagram of Tuner Chassis RC-1155



Simplified Schematic Diagrams of Function Switch in Amplifier Chassis RS-151A



Tuning Drive Cord Assembly



Record Changer Controls

STYLUS REPLACEMENT

The dual stylus is held in position by a spring clamp. To remove stylus, simply hold pickup sideways and pull spring clamp away from stylus and allow it to drop out. When inserting stylus, be certain that the small diameter rod holding the styli rests in the notch of the drive arm connecting to the cartridge element.

RECORD CHANGER CONTROLS

The record changer has a dual control on the motorboard and a stylus selector control on the pickup arm. The metal lever of the dual control is the OFF-ON-REJECT control. Turning this lever to the center position energizes the motor and starts the turntable, when turned to the clockwise position it starts the mechanism into complete automatic operation. The mechanism will shut off automatically after the last record has been played but can be shut off manually by turning this lever counter-clockwise.

The circular knob of the dual control is the speed control. It has four positions; "16 $\frac{2}{3}$ ", "33", "45", "78", to select the turntable speed desired.

The stylus control has two positions; to change position, push the end of the control lever down and under.

The removable centerpost is for use with 16 $\frac{2}{3}$ or 45 r.p.m. records having the large centerhole. It must be placed over the center spindle with the word "FRONT" FACING to the FRONT. Care should be exercised in inserting and removing the centerpost so as to prevent damage to smaller spindle.

A well is provided on the record changer for storage of the centerpost when not in use. Projections on the sides of the well enable the centerpost to be secured by pressing down on the centerpost until a slight click is heard. It may be necessary to twist slightly while pressing down.

To load or remove records, lift and turn the record stabilizer arm off to the side. After loading, the stabilizer arm should be turned to the center so it rests on the stack of records.

FOR RECORD CHANGER SERVICE INFORMATION— REFER TO RP-205 SERIES SERVICE DATA

REPLACEMENT PARTS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
AM/FM TUNER CHASSIS RC-1155					
C1A to C1E Incl. }	101355	Capacitor—Variable tuning capacitor	L9 to L11 Incl. }	77535	Coil—Filament RF choke coil
C3	74182	Capacitor—Fixed, ceramic, 5.6 mmf., $\pm 10\%$, 500 v.	R1	502068	Resistor—Fixed, composition, 68 ohms, $\pm 10\%$, $\frac{1}{2}$ w.
C4	73558	Capacitor—Fixed, paper, .047 mf., $\pm 20\%$, 200 v.	R2	502522	Resistor—Fixed, composition, 2.2 megohms, $\pm 20\%$, $\frac{1}{2}$ w.
C5, C6	73473	Capacitor—Fixed, ceramic, 4700 mmf., $\pm 10\%$, 500 v.	R3	502282	Resistor—Fixed, composition, 8200 ohms, $\pm 10\%$, $\frac{1}{2}$ w.
C7	101372	Capacitor—Fixed, ceramic, 47 mmf., $\pm 10\%$, 500 v.	R4	502539	Resistor—Fixed, composition, 3.9 megohms, $\pm 10\%$, $\frac{1}{2}$ w.
C8	70595	Capacitor—Fixed, ceramic, 12 mmf., $\pm 5\%$, 500 v.	R5	502318	Resistor—Fixed, composition, 18,000 ohms, $\pm 10\%$, $\frac{1}{2}$ w.
C9	73473	Same as C5	R6	502227	Resistor—Fixed, composition, 2700 ohms, $\pm 10\%$, $\frac{1}{2}$ w.
C10	101374	Capacitor—Fixed, mica, 220 mmf., $\pm 20\%$, 500 v.	R7	502122	Resistor—Fixed, composition, 220 ohms, $\pm 20\%$, $\frac{1}{2}$ w.
C11	77530	Capacitor—Fixed, ceramic, 7 mmf., $\pm 5\%$, 500 v.	R8	502310	Resistor—Fixed, composition, 10,000 ohms, $\pm 10\%$, $\frac{1}{2}$ w.
C12	77531	Capacitor—Fixed, ceramic, 47 mmf., $\pm 10\%$, 500 v.	R9	502410	Resistor—Fixed, composition, 100,000 ohms, $\pm 5\%$, $\frac{1}{2}$ w.
C13	77532	Capacitor—Fixed, ceramic, 130 mmf., $\pm 2\frac{1}{2}\%$, 500 v.	R10	502068	Same as R1
C14	77084	Capacitor—Feed thru, 1000 mmf., $\pm 100\%$, 500 v. DC	R11	502122	Same as R7
C15	73473	Same as C5	R12	502427	Resistor—Fixed, composition, 270,000 ohms, $\pm 10\%$, $\frac{1}{2}$ w.
C16	100150	Capacitor—Feed-thru, 33 mmf., $\pm 5\%$, 500 v. DC	R13	502112	Resistor—Fixed, composition, 120 ohms, $\pm 10\%$, $\frac{1}{2}$ w.
C17 to C22 Incl. }	73473	Same as C5	R14	502122	Same as R7
C23, C24	76992	Capacitor—Fixed, mica, 470 mmf., $\pm 10\%$, 300 v.	R15	502410	Same as R9
C26	73592	Capacitor—Fixed, paper, .047 mf., $\pm 20\%$, 600 v.	R16	502112	Same as R13
C27	73473	Same as C5	R17	502310	Resistor—Fixed, composition, 10,000 ohms, $\pm 10\%$, $\frac{1}{2}$ w.
C28	77084	Same as C14	R18, R19, R20	502410	Resistor—Fixed, composition, 100,000 ohms, $\pm 5\%$, $\frac{1}{2}$ w.
C29	73473	Same as C5	R22	76346	Resistor—Fixed, wire wound, 1200 ohms, $\pm 10\%$, 4 w.
C30	76992	Same as C23	R23	502147	Resistor—Fixed, composition, 470 ohms, $\pm 20\%$, $\frac{1}{2}$ w.
C31	73473	Same as C5	R24	502427	Same as R12
C32A, B	73520	Capacitor—Electrolytic, 50/80 mf., $\pm 100\%$, 150 v.	R25	502410	Same as R9
C33	79316	Capacitor—Fixed, paper, .01 mf., $\pm 10\%$, 200 v.	R26	502433	Resistor—Fixed, composition, 330,000 ohms, $\pm 10\%$, $\frac{1}{2}$ w.
C34	73473	Same as C5	R27	502210	Resistor—Fixed, composition, 1000 ohms, $\pm 10\%$, $\frac{1}{2}$ w.
J1	30870	Connector—2 contact male connector—power input to tuner chassis	S1A, S1B	101356	Switch—AM/FM rotary selector switch
L1	77534	Coil—RF choke coil			
L2	77536	Coil—FM—RF coil			
L3, L4	77525	Coil—AM—RF coil			
L5	77538	Coil—FM antenna coil			
L6, L7	77526	Coil—AM oscillator coil			
L8	77537	Coil—FM oscillator coil			

