AMERICAN PADIO 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

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

SPECIFICATIONS

TUNING RANGE	LOUDSPEAKERS
Standard Broadcast (AM)	One 12" PM "woofer"
AM	RECORD CHANGER (RP-205-2)
FM10.7 mc	Turntable speed16%, 331/3, 45 or 78 r.p.m.
TUBE COMPLEMENT	Record capacityUp to fourteen 7 inch
TUNER CHASSIS RC-1155	or twelve 10 inch.
(1) RCA 6BJ6	or ten 10 in. and 12 in. intermixed.
(2) RCA 19X8Mixer-Oscillator	Pickup (Stock No. 100653)Ceramic
(3) RCA 12BA6	POWER SUPPLY RATING
(5) RCA 12AU6FM I.F. Amplifier	115 volts, 60 cycles
(6) RCA 12AL5	AUDIO POWER OUTPUT
(8) RCA 35W4Rectifier	10 wattsWith less than 1½% distortion
AMPLIFIER CHASSIS RS-151A	15 watts
(1) RCA 6CG7lst and 2nd A.F. Amplifier	TUNING DRIVE RATIO7½:1 (3¾ turns of knob)
(2) RCA 6CG73rd A.F. Ampl. and Ph. Inverter (3) RCA 6V6GTOutput	NET WEIGHTapprox. 93 lbs.
(4) RCA 6V6GTOutput	DIMENSIONS (Overall)
(5) RCA 5Y3GTRectifier	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.

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.	Quiet point	T4 bottom core (sec.) T4 top core (pri.)
2	Tap lug (No. 4) on AM RF coil	(mod.)	at high freq. end	T2 bottom core (sec.) T2 top core (pri.)
3		1620 kc. (mod.)	1620 kc. (gang open)	ClE-T (osc.)
4	Short wile placed near loop for radiated signal	1400 kc. (mod.)	1400 kc. signal	ClA-T (ant.) ClC-T (rf.)
5		600 kc. (mod.)	600 kc. signal	L6 (osc.) (rock gang)
6		(mod.)	signai	L4 (RF)
7	Repe		and 6 until max	kimum

Oscillator frequency is above signal frequency on both AM and FM

FM SWEEP ALIGNMENT:

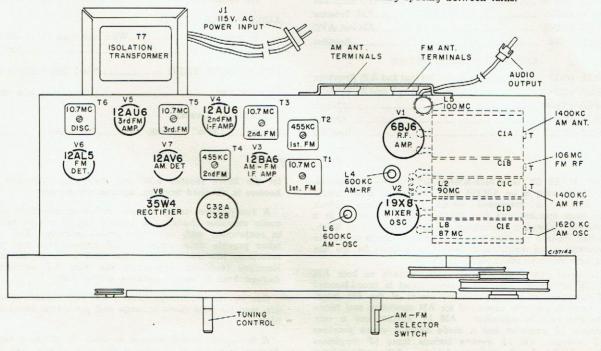
If an FM sweep generator is used for FM alignment, adjust for 10.7 mc, 0.4 mc sweep. Connect oscilloscope across C23, adjusting discriminator T6 top core for 10.7 mc crossover, and T6 bottom core for balanced peaks. Peak separation should be approximately 330 kc. When aligning the other FM tuned circuits, 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

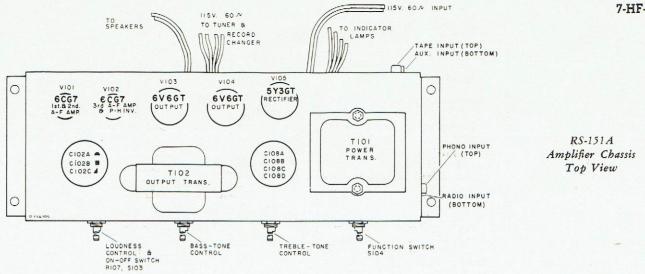
Steps	Connect high side of sig. gen. to—	Sig. gen. output	Turn radio dial to—	Adjust for max, output			
1	Pin No. 1 of V5-12AU6					T6 top core for zero d.c. across C23 T6 bottom core for maximum d.c at junction of R18 and R19	
2	Pin No. 1 of V4-12AU6	10.7 mc	point at low frequency	†T5 top core			
3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



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.

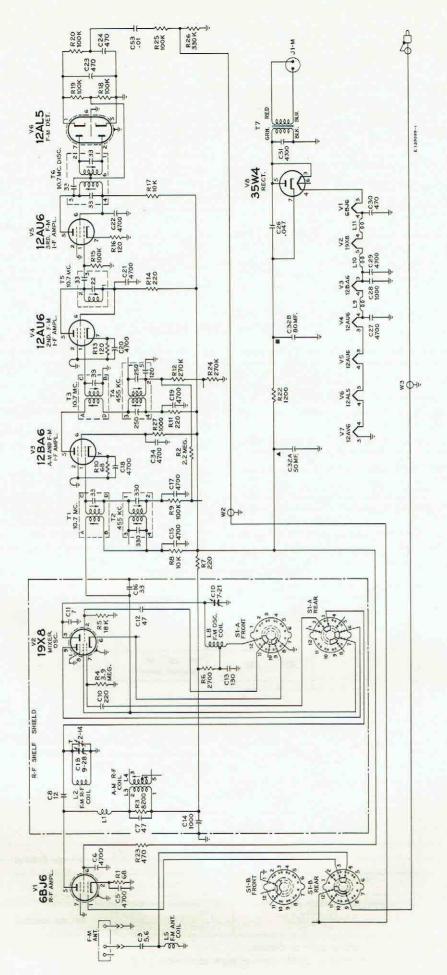
- 9. Green lead from AM oscillator stator gang terminal to AM oscillator coil should be dressed against front of shield box and up above filament choke.
- 10. RF plate choke L1, should be dressed at least 1/8" away from AM R.F. coil L4 and at least 1/8" from shield,
- 11. Mixer grid condenser C10 should 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		RADIO AUX DNO 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	и и	set as desired	RADIO
TO RECORD AM PROGRAMS†	" "	"	и и		"
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†‡		# (1) # (1)	" "		"
TO PLAY BACK RECORDED TAPE†			и и	set as desired	TAPE

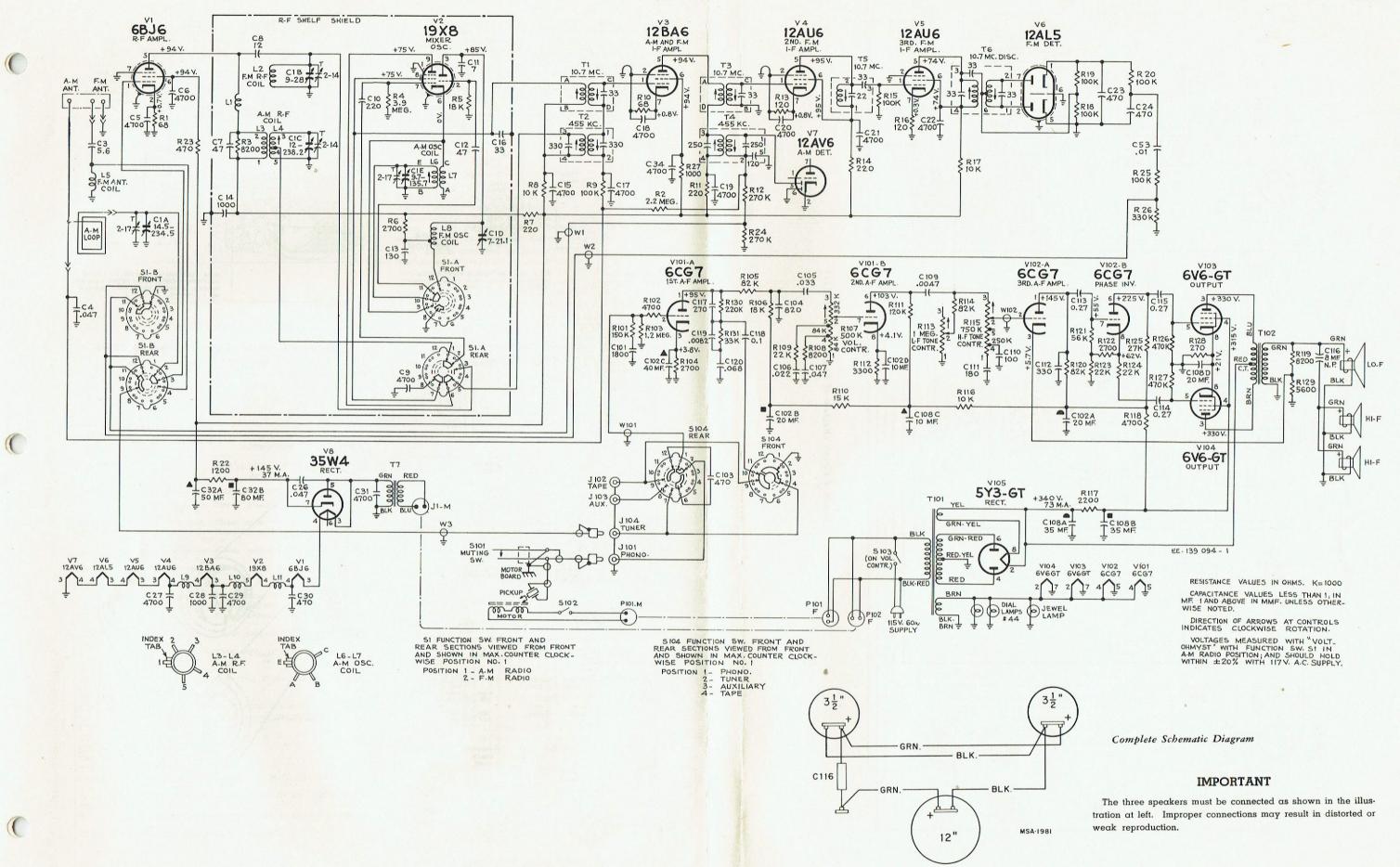
[†] Tape recorder connected to "TAPE" jack at back of chassis.

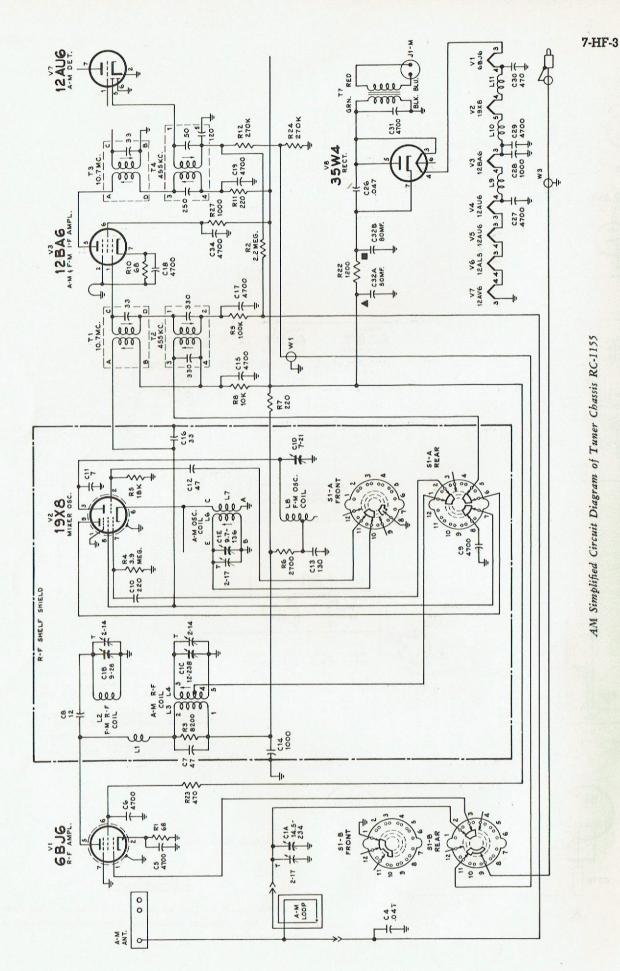
[#] Microphone or other sound input connected to "AUX" jack at back of chassis.



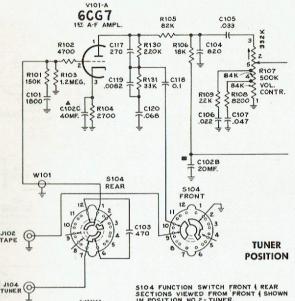
FM Simplified Circuit Diagram of Tuner Chassis RC-1155

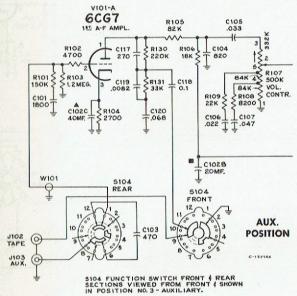
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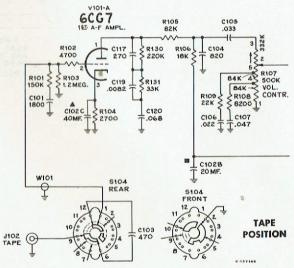




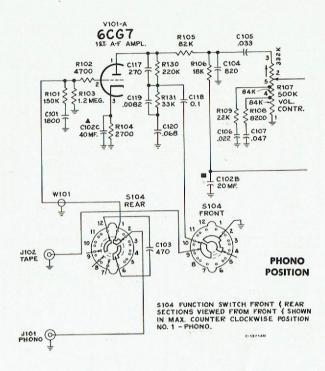
7-HF-3 C101 1800 J102 TAPE J103



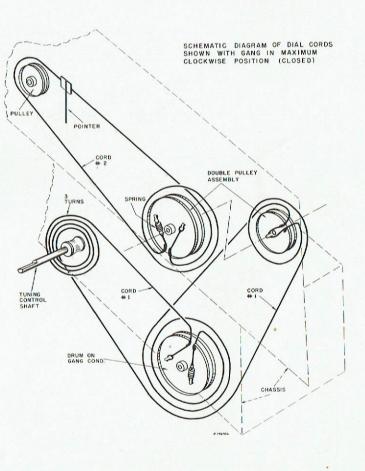




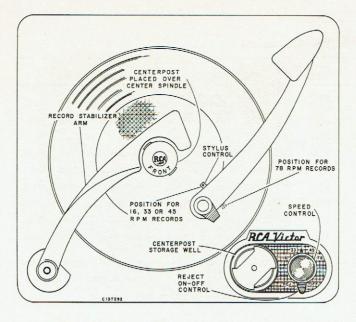
S104 FUNCTION SWITCH FRONT | REAR SECTIONS VIEWED FROM FRONT | SHOWN IN MAX. CLOCKWISE POSITION NO.4-TAPE.



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; " $16\frac{9}{7}$ ", "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% 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 STOCK NO.		DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION		
		AM/FM TUNER CHASSIS RC-1155	L9 to L11 Incl.	77535			
ClA to }	101355	Capacitor—Variable tuning capacitor	R1	502068	Resistor—Fixed, composition, 68 ohms, $\pm 10\%$		
C3	74182	Capacitor—Fixed, ceramic, 5.6 mmf., ±10%, 500 v.	R2	502522	Resistor—Fixed, composition, 2.2 megohms ±20%, ½ w.		
C4 C5, C6	73558 73473	Capacitor—Fixed, paper, .047 mf., ±20%, 200 v. Capacitor—Fixed, ceramic, 4700 mmf., +100	R3	502282	Resistor—Fixed, composition, 8200 ohms, ±10% ½ w.		
C7	101372	-0%, 500 v. Capacitor—Fixed, ceramic, 47 mmf., ±10%, 500 v.	R4	502539	Resistor—Fixed, composition, 3.9 megohms $\pm 10\%$, $\frac{1}{2}$ w.		
C8	70595	Capacitor—Fixed, ceramic, 12 mmf., ±5%, 500 v.	R5	502318	Resistor—Fixed, composition, 18,000 ohms ±10%, ½ w.		
C9 C10	73473 101374	Same as C5	R6	502227	Resistor—Fixed, composition, 2700 ohms ±10%, ½ w.		
C11 C12	77530	Capacitor—Fixed, ceramic, 7 mmf., ±5%, 500 v.	R7	502122	Resistor—Fixed, composition, 220 ohms, ±20%		
C12	77531 77532	Capacitor—Fixed, ceramic, 47 mmf., ±10%, 500 v.	R8	502310	Resistor—Fixed, composition, 10,000 ohms ±10%, ½ w.		
C13	77084	Capacitor—Fixed, ceramic, 130 mmf., ±21/2%, 500 v. Capacitor—Feed thru, 1000 mmf., +100 -0%,	R9	502410	Resistor—Fixed, composition, 100,000 ohms ±5%, ½ w.		
014	77001	500 v. DC	R10	502068	Same as R1		
C15	73473	Same as C5	R11	502122	Same as R7		
C16	100150	Capacitor—Feed-thru, 33 mmf., ±5%, 500 v. DC	R12	502427	Resistor-Fixed, composition, 270,000 ohms		
C17 to C22 Incl.	73473	Same as C5	R13	502112	±10%, ½ w. Resistor—Fixed, composition, 120 ohms, ±10%		
C23, C24 C26	76992 73592				½ w.		
C27	73473		R14	502122	Same as R7		
C28	77084	Same as C14	R15	502410	Same as R9		
C29	73473		R16	502112	Same as R13		
C30	76992		R17	502310	Resistor—Fixed, composition, 10,000 ohms ±10%, ½ w.		
C31	73473	Same as C5	R18, R19,	502410	Resistor—Fixed, composition, 100,000 ohms		
C32A, B	73520	Capacitor—Electrolytic, 50/80 mf., +100 -10%, 150 v.	R20 R22		±5%, ½ w. Resistor—Fixed, wire wound, 1200 ohms		
C33	79316		N22	76346	$\pm 10\%$, 4 w.		
C34	73473	Same as C5	R23	502147			
J1	30870	Connector—2 contact male connector—power in- put to tuner chassis	R24		½ w.		
Ll	77534			502427	Same as R12		
L2	77536	Coil—FM—RF coil	R25	502410			
L3, L4	77525	Coil—AM—RF coil	R26	502433	Resistor—Fixed, composition, 330,000 ohms ±10%, ½ w.		
L5	77538	Coil—FM antenna coil	R27	502210			
L6, L7	77526	Coil—AM oscillator coil	NZ/	302210	Hesistor—rixed, composition, 1000 onms, $\pm 10\%$		
L8	77537	Coil—FM oscillator coil	SIA, SIB	101356	Switch—AM/FM rotary selector switch		

REPLACEMENT PARTS—Continued

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
T1 T2 T3 T4 T5 T6	100112 76335 77513 76328 77512 77511	Transformer—1st FM—IF transformer Transformer—1st AM—IF transformer Transformer—2nd FM—IF transformer Transformer—2nd AM—IF transformer Transformer—3rd FM—IF transformer Transformer—Discriminator transformer	R118 R119 R120 R121	502247 502282 502382 502356 502227	Same as R102 Same as R108 Same as R105 Resistor—Fixed, composition, 56,000 chms, ±10%, ½ w. Same as R104
Ī7	101359 101344 75627	Transformer—Isolation transformer Bushing—Tuning shaft chassis bushing Clip—Cable clamp for isolation transformer	R123, R124 R125	502322 502327	Same as R109 Same as R109 Resistor—Fixed, composition, 27,000 ohms, ±10%, ½ w.
and the state of	73935	leads Clip—IF transformer mounting spring clip	R126, R127	502447	Resistor—Fixed, composition, 470,000 ohms, ±10%, ½ w.
	31048 74879	Connector—Pin plug for audio cable	R128	522127	Resistor—Fixed, composition, 270 ohms, ±10%, 2 w.
A . The	72953	tenna leads Cord—Dial cord	R129	502256	Resistor—Fixed, composition, 5600 ohms, ±10%,
		Eyelet—Metal eyelet for RF shelf mounting grommet (4 req'd)	R130	502422	Resistor—Fixed, composition, 220,000 ohms, ±10%, ½ w.
	16058	shelf assembly (4 req'd)	R131	502333	Resistor—Fixed, composition, 33,000 ohms, ±10%, ½ w.
	101349 101352	Pulley—Drive cord pulley assy, for dial back- plate assy.	S103 S104	101350	Part of R107 Switch—Radio/phono/aux/tape rotary function switch
	101351 34300	Pulley—Drive cord pulley assembly for RF shelf Screw—#6-32 x 1/4" cup point set screw for	T101 T102	101354 101358	Transformer—Power transformer Transformer—AF output transformer
	101346	Shaft—Tuning shaft assy, with bobbin—steel		70392 100270	Cord—AC power cord and plug Grommet—AC power cord strain relief grom-
	75192 79721 79263	Shield—Tube shield for V2			met (1 set) Lamp—Mazda #44
	77087 73117	Socket-Tube socket, 7 pin miniature for V1		76972	(3 req'd) Shield—Tube shield for VIA, VIB
100	101375	to V7 incl.		101371 100643 68590	Socket—Dual dial lamp socket assy. Socket—Insulated pilot indicator socket
	100111	Socket-Tube socket, 9 pin miniature for V2		31251 76971	Socket—Tube socket, octal for V3 & V4 Socket—Tube socket, octal for V5 Socket—Tube socket, 9 pin miniature for V1A,
	77585	Spring—Dial cord tension spring Washer—"C" type retaining washer for tun- ing shaft bushing Washer—"C" type retaining washer for pulley		100474	VIB Socket—Tube socket, 9 pin miniature for V2A,
	77586	assy. (RCA 101352)			V2B
		AMPLIFIER ASSEMBLY RS-151A	C116	100509	SPEAKER ASSEMBLIES Capacitor—Electrolytic, 8 mf., ±25%, 10 v. AC
C101	74850	Capacitor—Fixed, ceramic, 1800 mmf., ±10%,		100909	Cone—Speaker cone and voice coil for 12" speaker stamped 961628-1
C102A to . }	101357	500 v. Capacitor—Electrolytic, 4 section: 20/20/40/10		100467	Housing—Plastic housing for mounting of 31/2" speaker (2 reg'd)
C102D Incl. 5 C103	39644	mf., 400/400/25/25 volts DC Capacitor—Fixed, mica, 470 mmf., ±10%, 500 v.		100897	Speaker—12" P.M. speaker complete with cone and voice coil (6.8 ohms)—speaker stamped
C104 C105 C106	73552	Capacitor—Fixed, paper, 033 mf., ±10%, 300 v.		100465	961628-1
C107 C108	73558 101414	Capacitor—Fixed, mica, 470 mmf., ±10%, 500 v. Capacitor—Fixed, mica, 820 mmf., ±10%, 300 v. Capacitor—Fixed, paper, .033 mf., ±10%, 400 v. Capacitor—Fixed, paper, .022 mf., ±10%, 200 v. Capacitor—Fixed, paper, .047 mf., ±10%, 200 v. Capacitor—Electorytic, 4 section: 35/35/10/20			and voice coil (6.8 ohms) (2 req'd)—speaker stamped 961616-1
C109		mf., 400/400/350/25 volts DC Capacitor—Fixed, paper, .0047 mf., ±10%,			MISCELLANEOUS
C110	39628	400 v. Capacitor—Fixed, mica, 100 mmf., ±10%, 500 v.		101363	Antenna—AM antenna loop with terminals—
C111 C112	79344 79191	Capacitor—Fixed, mica, 180 mmf., ±10%, 500 v. Capacitor—Fixed, mica, 330 mmf., ±10%, 500 v.		102449	less cable and connector Back—Back cover for cabinet.
C113 to C115 Incl.	78571	Capacitor—Fixed, paper, 0.27 mf., ±10%, 400 v.		102450 102452 102451	Back—Record changer back cover—mahogany Back—Record changer back cover—maple
C116 C117	100509 101373	Part of Speaker Assembly Capacitor—Fixed, ceramic, 270 mmf., ±10%,		100523	Back—Record changer back cover—oak Board—Terminal board for antenna cable
C118	73551	500 v. Capacitor—Fixed, paper, 0.1 mf., ±20%, 400 v.			Bracket—Escutcheon mounting bracket and stud (between tone controls) Bracket—Escutcheon mounting bracket and stud
C119 C120	79019 73792	Capacitor—Fixed, paper, .0082 mf., ±10%, 400 v. Capacitor—Fixed, ceramic, .068 mf., ±10%,		71892	(center and ends) Catch—Door catch
J101, J102,	33514	400 v. Connector—2 contact female connector—"phono,"	- v- 608 / 658	X3582 X3574	Cloth—Grille cloth for manogany cabinet Cloth—Grille cloth for maple cabinet
J103, J104 P101A	30868	"tape," "aux.," or "radio" Connector—2 contact female connector for		X3583 74752	Cloth—Grille cloth for oak cabinet Connector—2 contact male connector for AM/
P102	30868	phono motor power Connector—2 contact female connector for radio power supply			FM antenna terminal board cable Connector—3 contact male polarized connector
R101	502415	Resistor—Fixed, composition, 150,000 ohms, ±10%, ½ w. Resistor—Fixed, composition, 4700 ohms, ±10%,	25-602 (4.5)	101365	for AM antenna cable Dial—Tuning dial, AM and FM bands
R102	502247	Resistor—Fixed, composition, 4700 ohms, ±10%,		101367 100539	Escutcheon—Control panel escutcheon Escutcheon—Tuning dial escutcheon
R103	502512	Resistor—Fixed, composition, 1.2 megohms, ±10%, ½ w.		16058 74308	Grommet—Rubber grommet for mounting tuner Hinge—Cabinet door hinge (1 set)
R104	502227	Resistor—Fixed, composition, 2700 ohms, ±10%,		79957	Insulator—Rubber insulator for mounting record changer
R105	502382	Resistor—Fixed, composition, 82,000 ohms, ±10%, ½ w.		13103 102347	Jewel—Pilot lamp jewel amber Knob—Control knob with spring (has indicator
R106	502318	Resistor—Fixed, composition, 18,000 ohms, $\pm 10\%$, $\frac{1}{2}$ w.		102453	Knob—Tuning control knob with spring
R107	101347	S103		76894	RCA Victor" nameplate
R109	502282	1/2 w.		1	Nut—#10-32 spring nut for changer mounting stud Nut—Speednut retainer for nameplate
R110	502322	Resistor—Fixed, composition, 22,000 ohms, ±10%, ½ w. Resistor—Fixed, composition, 15,000 ohms,		102454	Slide—Slide mechanism assembly for record
RIII	502313	±10%, ½ w.		100248	Spring—Conical spring for mounting record changer
R112	502233			30900 72936	Spring—Control knob retaining spring
R113	78580	±10%, ½ w. Control—Low frequency tone control	To Lawrey	78750 101787	Stud—Record changer mounting stud Washer—Felt washer for control knob
R114 R115	502382 101348	Same as R105		79340	Washer—Fiber insulating washer for mounting
R116	502310	Resistor—Fixed, composition, 10,000 ohms, ±10%, ½ w.			Washer—Rubber insulating washer for mount- ing record changer
R117	73637	Resistor—Fixed, wire wound, 2200 ohms, ±10%, 5 watts		61455	Washer—Vellutex washer for escutcheon and dial