

Service Manual

Radio Cassette RX-1490/A

FM-AM Radio Cassette Recorder



■ SPECIFICATIONS

General:

Power Requirement: AC; 110~115/115~127/200~220/
230~250 V, 50/60 Hz
AC: 240 V 50 Hz (Australia Only)
Battery; 7.5 V (Five-UM-1 "D" Size
Flashlight Batteries)
(National UM-1 or equivalent)

Power Consumption: 8 W (AC only)

Power Output: 2.5 W . . . RMS (max.)

Speaker: Woofer; 12 cm (4²³/₃₂") PM Dynamic
Speaker (3Ω)
Tweeter; 3 cm (1³/₁₆") PM Dynamic
Speaker (4Ω)

Input: MIC; sensitivity 0.25 mV (−72 dB)/
applicable microphone impedance
200~600Ω EXT SP; 3~8Ω

Dimensions: 348 mm(W)×223 mm(H)×123 mm(D)
(13¹¹/₁₆×8¹³/₁₆×4⁷/₈")

Weight: 2.4 kg (5 lb. 4.7 oz.) without batteries

Radio Section:

Radio Frequency
Range: FM; 88~108 MHz
AM; 525~1605 kHz (571~187 m)

Intermediate Frequency: FM; 10.7 MHz
AM; 455 kHz

Sensitivity: FM; 2.8μV/50 mW output
AM; 50μV/m/50 mW output

Tape Deck Section:

Frequency Response: 80~9,000 Hz

Recording system: DC bias, Magnet erase

Tape Speed: 4.8 cm/s, (1⁷/₈ ips)

Program Time: 1 hour with C-60 cassette tape

Track System: 2-track 1 channel monaural recording
and playback

Specifications are subject to change without notice.

 **National Panasonic**

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS

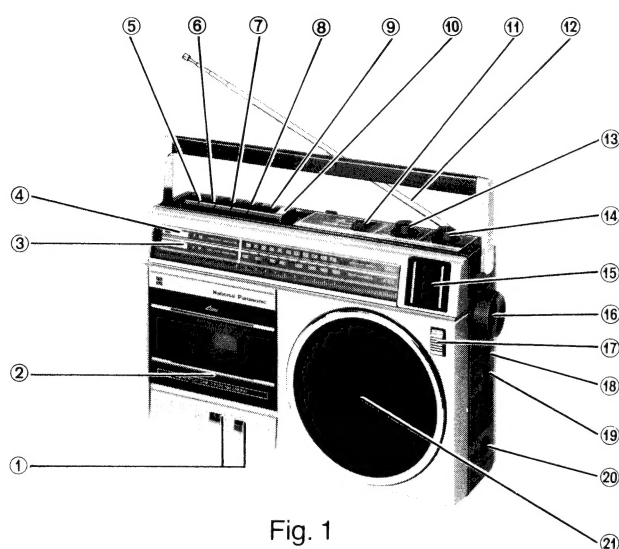


Fig. 1

- ① Tape Counter and Reset Button (COUNTER)
- ② Cassette Compartment
- ③ LED Power Indicator (POWER)
- ④ LED Record Indicator (RECORD)
- ⑤ Pause/Eject Button (PAUSE/EJECT)
- ⑥ Stop Button (STOP)
- ⑦ Fast Forward/Cue Button (FF/CUE)
- ⑧ Rewind/Review Button (REW/REVIEW)
- ⑨ Playback Button (PLAY)
- ⑩ Record Button (RECORD)
- ⑪ Selector Switch (SELECTOR)
[POWER OFF /TAPE, AM, FM]
- ⑫ Telescopic Antenna
- ⑬ Tone Control (TONE)
- ⑭ Volume Control (VOLUME)
- ⑮ Tweeter [3 cm ($1\frac{3}{16}$ ") 4Ω]
- ⑯ Tuning Control (TUNING)
- ⑰ Built-In Microphone (MIC)
- ⑱ EXT. MIC Jack [0.25 mV (−72 dB) 200~600Ω]
- ⑲ EXT. SP Jack [3~8Ω]
- ⑳ AC Socket
- ㉑ Woofer [12 cm ($4\frac{23}{32}$ ") 3Ω]

DISASSEMBLY INSTRUCTIONS

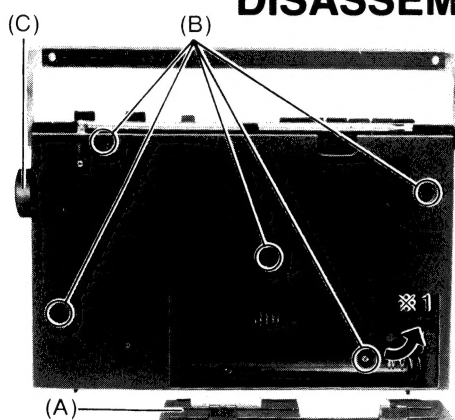


Fig. 2

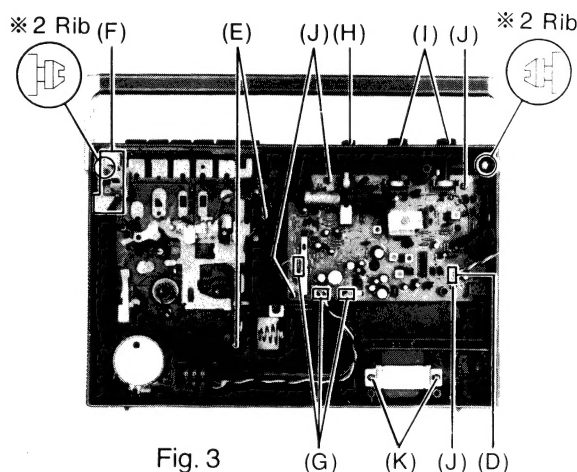


Fig. 3

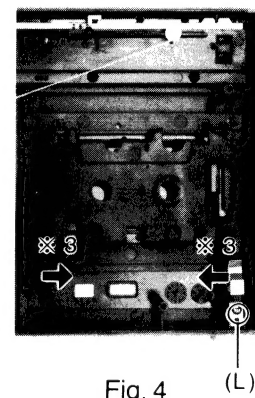


Fig. 4

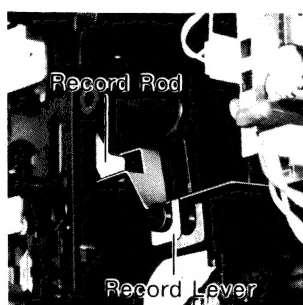


Fig. 5

- *1. When the tape is caught in the pinch roller, etc.
Remove this cap and release the tape by turning the pulley on the motor with the screwdriver in the direction of the arrow as shown in Fig. 2.
- *2. To remove the handle arm, cut the rib of handle arm.
- *3. Push the leg of cassette panel in the direction of arrows as shown in Fig. 4.
- *4. Put in the deck, watching the recording rod is set in the recording lever, as shown in Fig. 5.

Procedure	To remove—	Remove—	Shown in Fig.—
1	Front Cabinet	Battery Cover (A)×1	2
2		Screw (3×35) (B)×5	2
3		Knob (C)×1	2
4		Socket (D)×1	3
5	Mechanism (*4)	Screw (3×30) (E)×2	3
6		Holder, LED & P.C.B. (F)×1	3
7		Socket (G)×3	3
8	Main Circuit Board	Lever Switch Ass'y (H)×1	3
9		Knob (I)×2	3
10		Screw (3×10) (J)×4	3
11	Power Circuit Board	Screw (3×10) (K)×2	3
12	Cassette Panel	Screw (3×10) (L)×1	4

DIAL THREADING

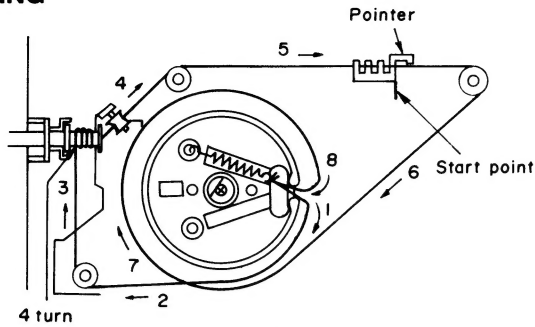


Fig. 6.

- Turn tuning Capacitor to fully counterclockwise direction
- Turn drum to fully clockwise direction

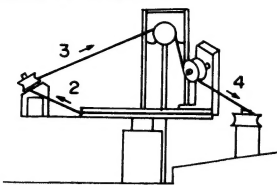


Fig. 7.

MEASUREMENTS AND ADJUSTMENTS

ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set volume control to maximum.
2. Set tone control to treble.
3. Selector switch to AM or FM.
4. Set power source voltage to 7.5 V DC.
5. Output of signal generator should be no higher than necessary to obtain an output reading.

AM AND FM ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS	
	CONNECTIONS	FREQUENCY					
AM-IF ALIGNMENT							
(1)	AM	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. at 400 Hz	Point of non-interference. (on/ about 600 kHz)	Output meter across voice coil.	T3 (AM 1st IFT) T4 (AM 2nd IFT) Adjust for maximum output.	
AM-RF ALIGNMENT							
(2)	AM	''	525 kHz	Tuning capacitor fully closed.	''	L6(AM OSC Coil) Adjust for aximum output.	
(3)	AM	''	1,650 kHz	Tuning capacitor fully open.	''	CT4 (AM OSC Trimmer) ''	
(4)	AM	''	550 kHz	Tune to signal.	''	(*1) L5 (AM ANT Coil) Adjust for maximum output. Adjust L5 by moving coil bobbin along ferrite core.	
(5)	AM	''	1,500 kHz	''	''	CT3 (AM ANT Trimmer) Adjust for maximum output. Repeat steps (2)~(5).	
(*1) Cement antenna bobbin with wax after completing alignment.							
FM-IF ALIGNMENT							
(6)	FM	High side thru. 0.001 μ F to test point $\blacktriangledown$. Negative side to test point $\blacktriangledown$.	10.7 MHz (SWP.)	Point of non-interference. (on/ about 90 MHz)	Connect vert. amp. of scope to test point $\blacktriangledown$. Negative side to test point $\blacktriangledown$.	T1 (FM 1st IFT) Adjust for maximum amplitude. (Refer to fig. 8.)	
(7)	FM	''	''	''	''	T2 (FM 2nd IFT) Adjust for maximum amplitude. (Refer to fig. 9.)	
FM-RF ALIGNMENT							
(8)	FM	Connect to test point $\blacktriangledown$ through FM dummy antenna. Negative side to test point $\blacktriangledown$.	86.2 MHz	Variable capacitor fully closed.	Output meter across voice coil.	L4 (FM OSC Coil) (*2) Adjust for maximum output.	
(9)	FM		109.3 MHz	Variable capacitor fully open.	''	CT2 (FM OSC Trimmer)	''
(10)	FM		106 MHz	''	''	CT1 (FM ANT Trimmer)	(*2) Adjust for maximum output. Repeat steps (8)~(10).
(*2) Three output responses will be present; proper tuning is the center frequency.							

ALIGNMENT POINTS

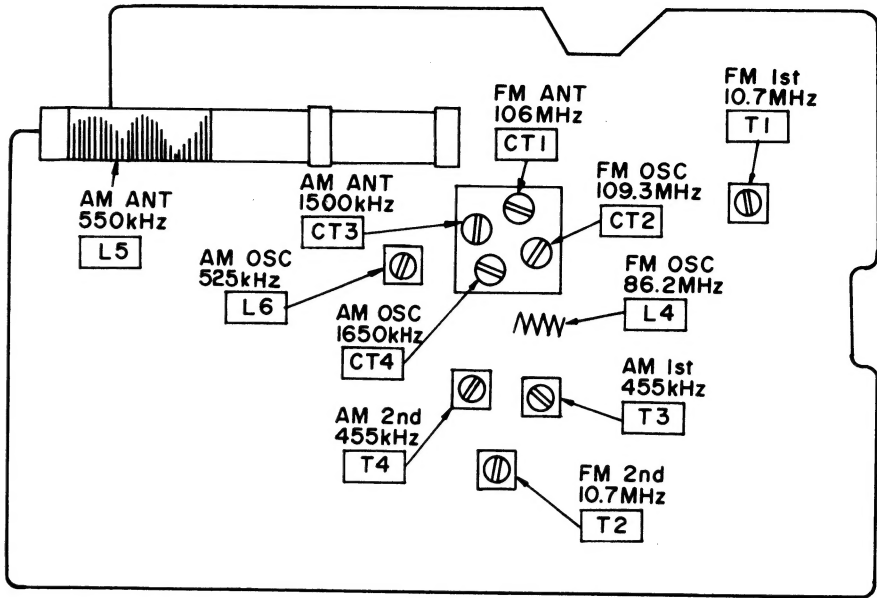


Fig. 10

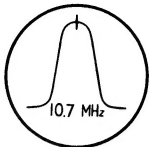


Fig. 8

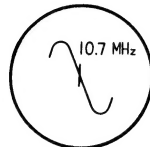
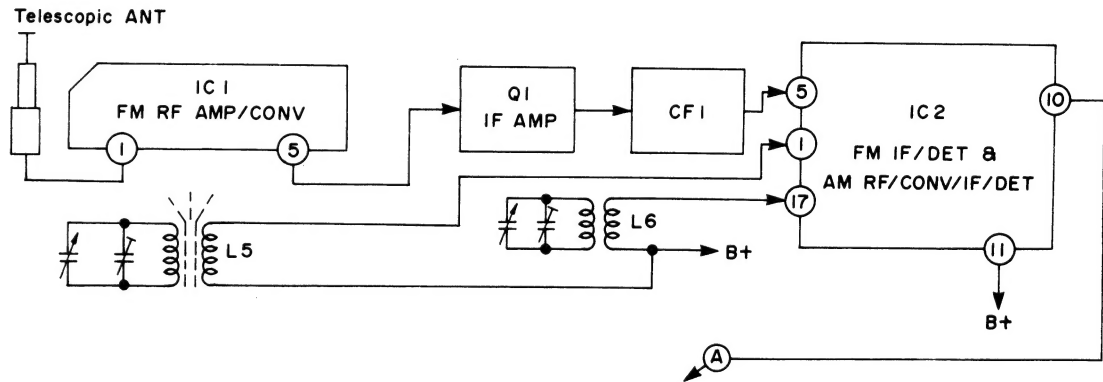


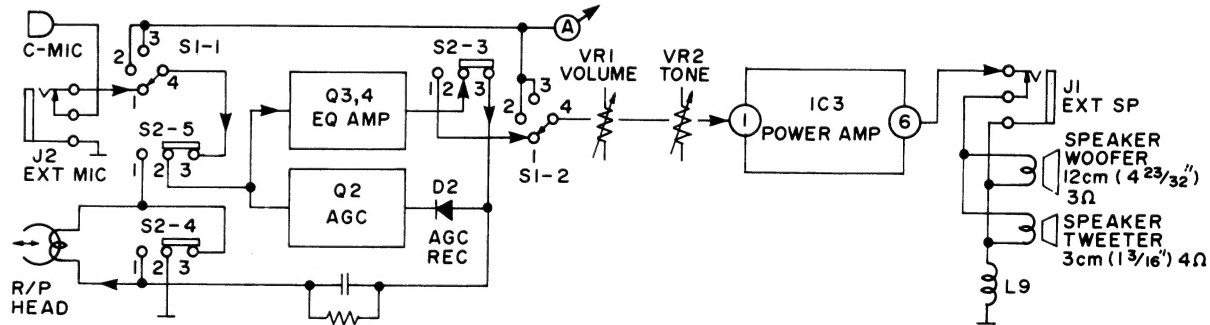
Fig. 9

BLOCK DIAGRAM

< RADIO >



< RECORD >



< PLAYBACK >

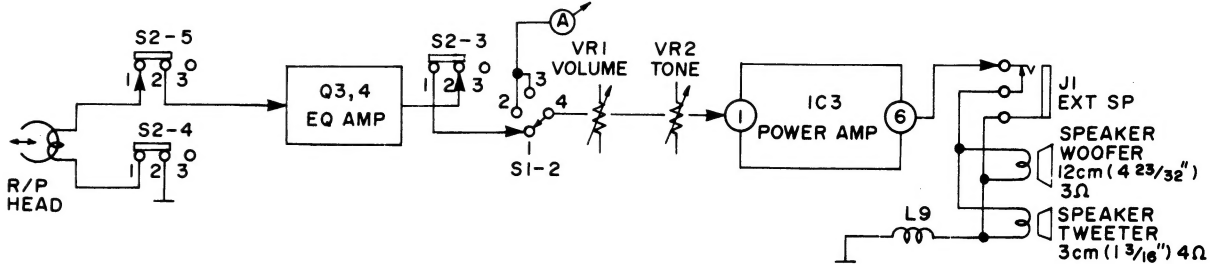
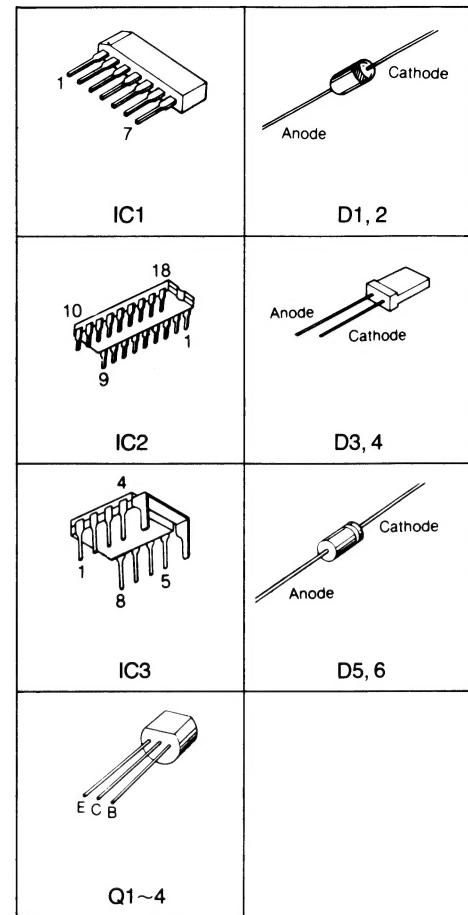
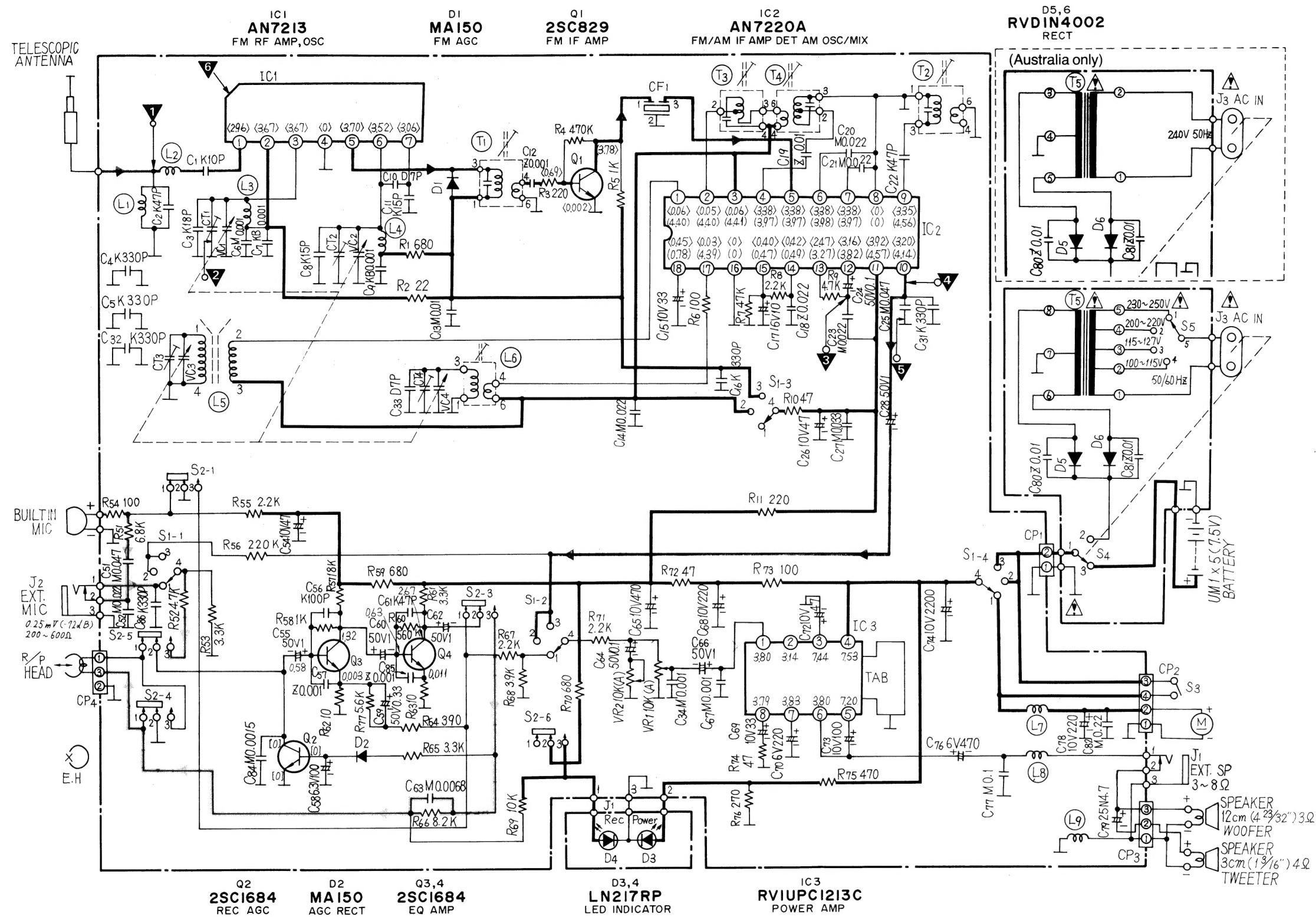


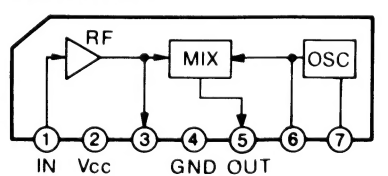
Fig. 11

SCHEMATIC DIAGRAM MODEL RX-1490/A

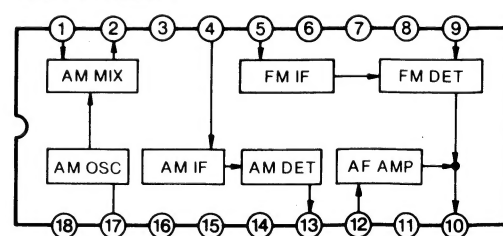


— +Ⓑ Voltage Line
 — Tape (PLAY BACK) Signal Line
 — Radio (FM) Signal Line
 — Tape (RECORD) Signal Line

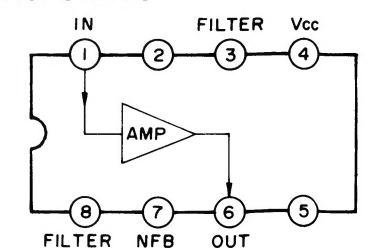
IC1 AN7213



IC2 AN7220A



IC3 RVIUPC1213C



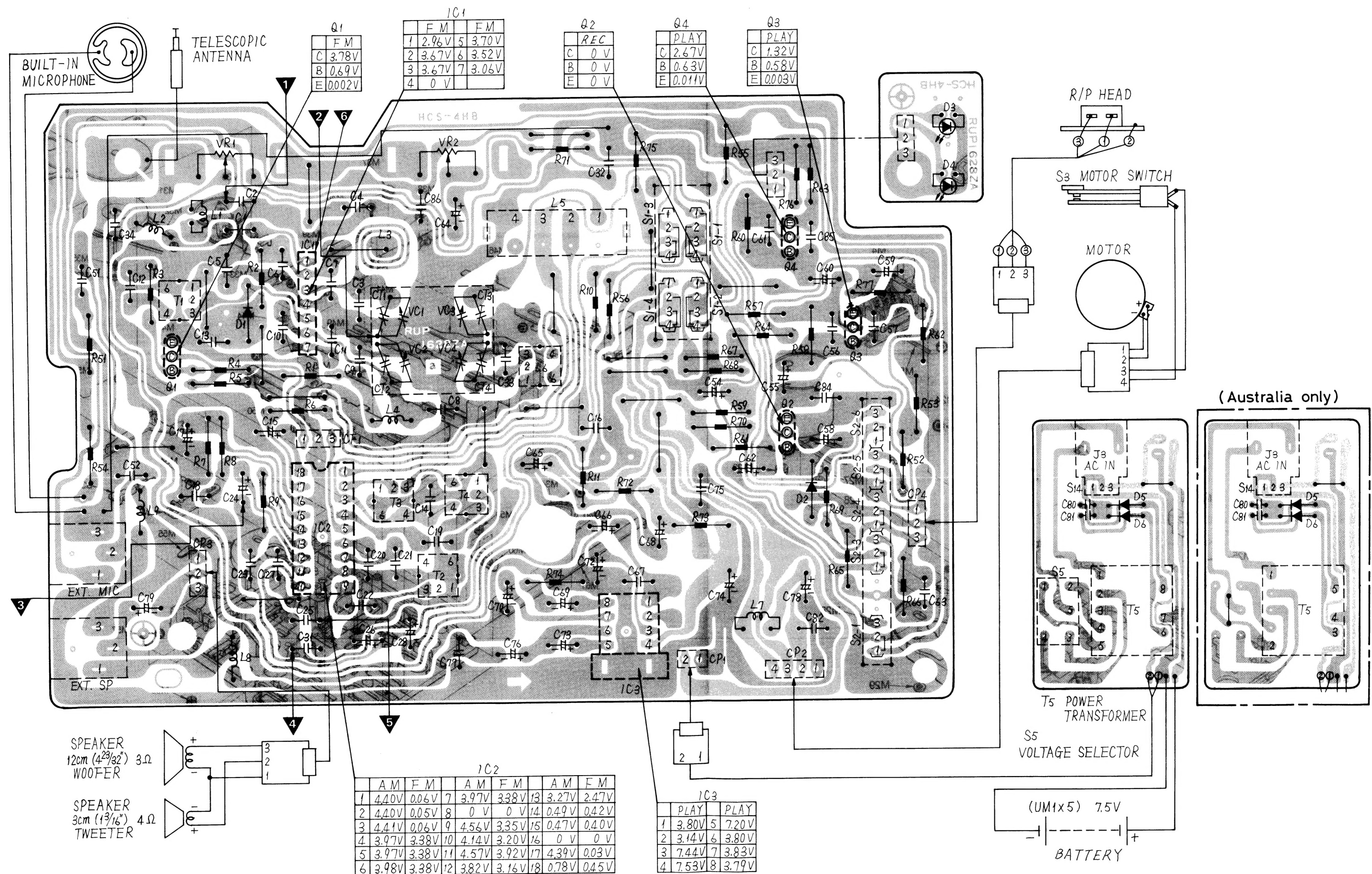
Notes:

- S1-1~S1-4: Selector switch in "TAPE" position.
(1 ... TAPE, 2 ... AM, 3 ... FM)
- S2-1~S2-6: Record/playback switch in "playback" position.
(1 ... Playback, 3 ... Record)
- S3: Motor ON/OFF switch in "OFF" position.
- S4: AC/DC IN select switch in "DC IN" position.
(2 ... AC, 3 ... DC)
- S5: Voltage select switch.
(The model for Australia has no AC voltage selector)
- VR1: Volume control.
- VR2: Tone control.
- The mark (▼) shows test point, e.g. ▼ = test point 1.
- DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
 < ... FM position, () ... AM position,
 [] ... Recording position.
- Battery current: No signal 38 mA
 Maximum output (radio) 260 mA
 Maximum output (tape) 320 mA

11. Important safety notice

Components identified by ⚡ mark have special characteristics important for safety.
 When replacing any of these components, use only manufacturer's specified parts.

CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM MODEL RX-1490/A



MECHANISM PARTS LOCATION

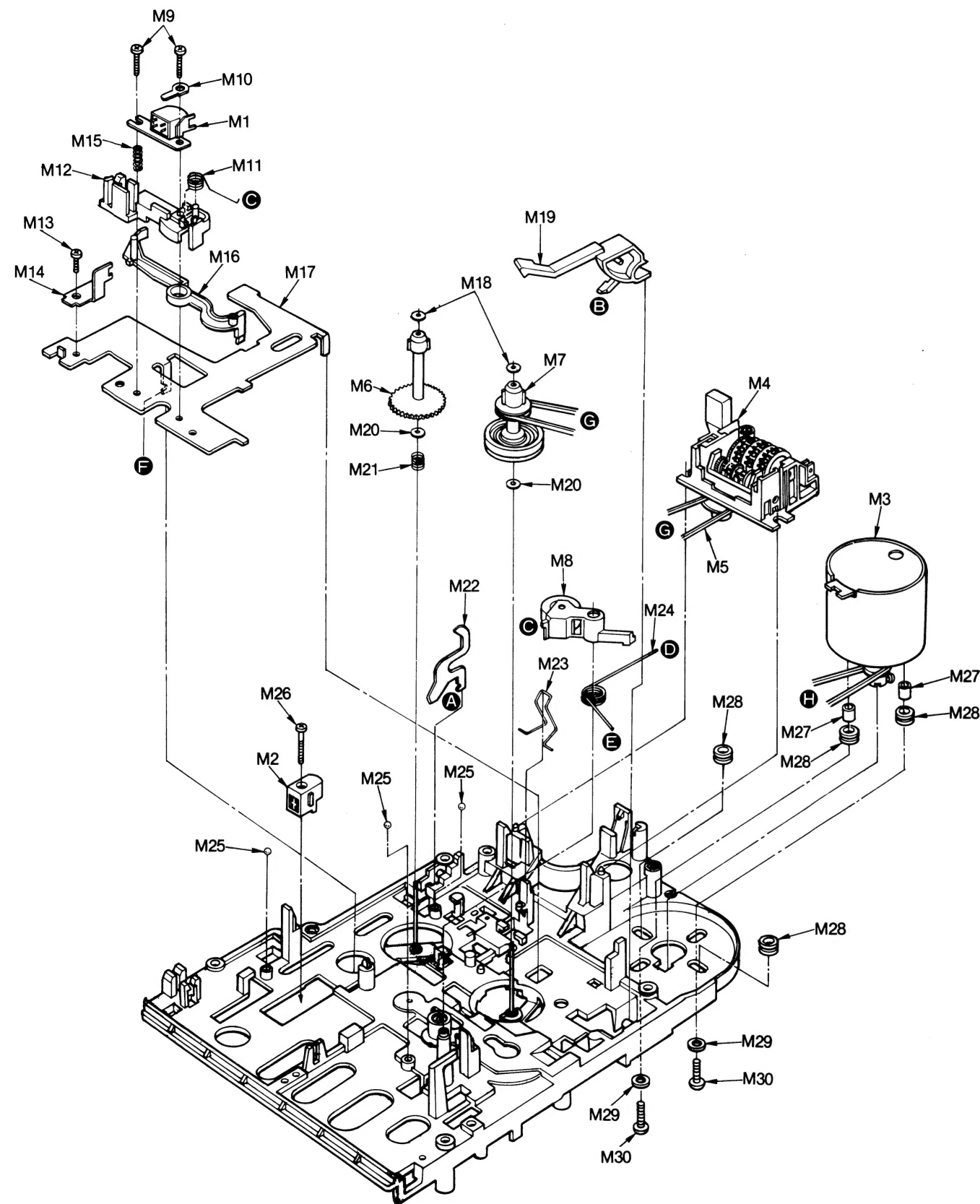


Fig. 12

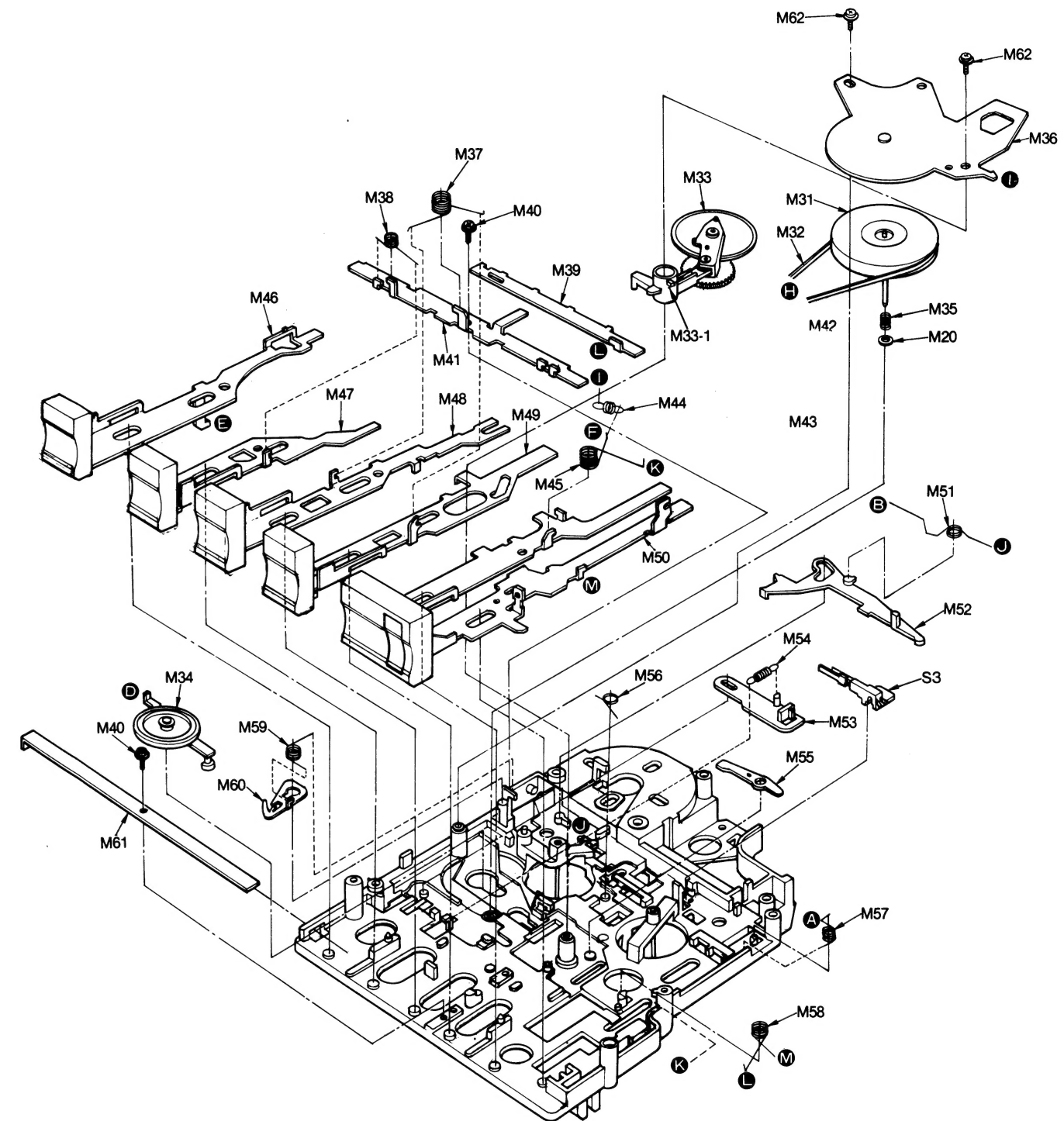


Fig. 13

CABINET AND ELECTRICAL PARTS LOCATION

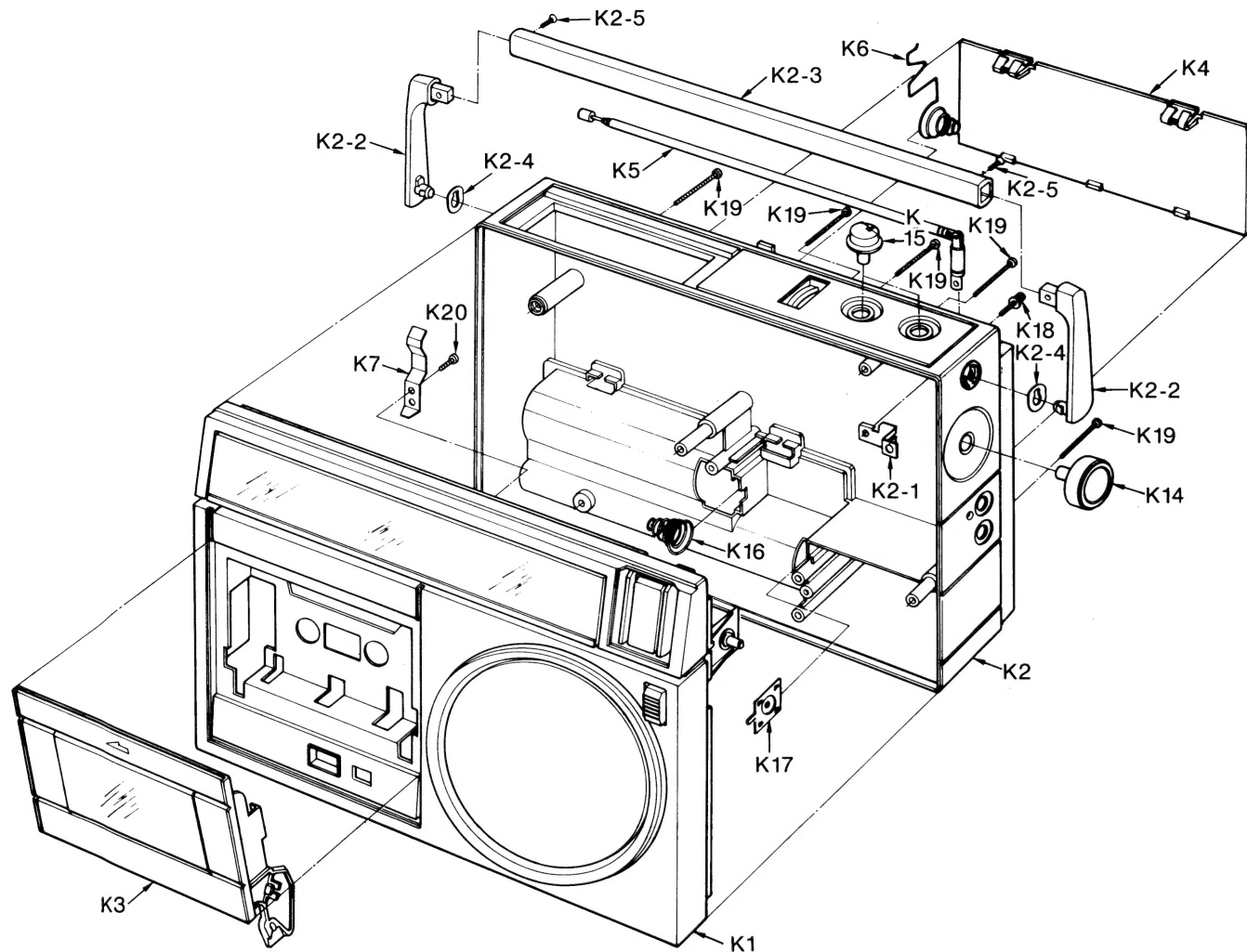


Fig. 14

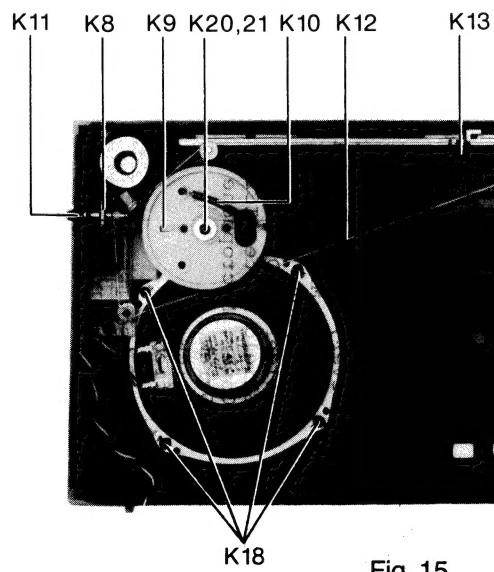


Fig. 15

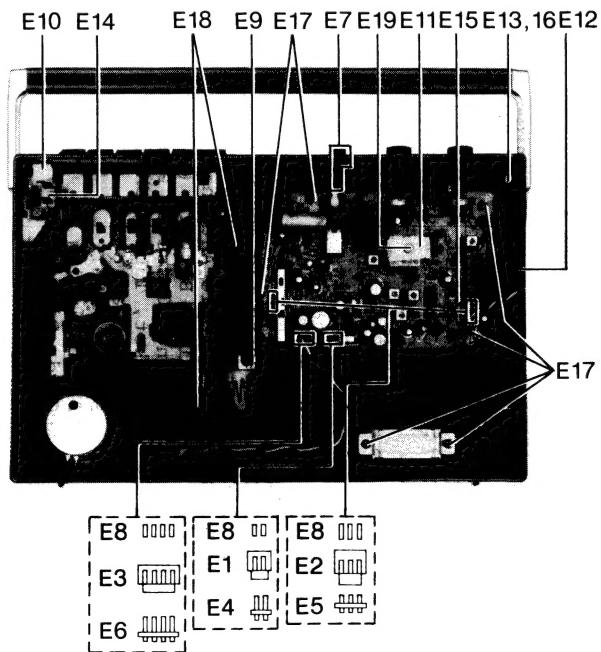


Fig. 16

REPLACEMENT PARTS LIST.....Model RX-1490/A (RD82112046C3)

NOTES:

1. Important safety notice.
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. The S mark indicates service standard parts and may differ from production parts.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		MECHANICAL PARTS		
M1	QW010142Z	Head, Record/Playback	1	
M2	QW2127Z	Head, Erase	1	
M3	OXU4R0300	Motor Ass'y	1	
M4	QDC4R0153	Counter	1	
M5	QDB4R0336	Belt, Counter	1	
M6	QDR1149	Supply Reel Table Ass'y	1	
M7	QXD0118	Takeup Reel Table Ass'y	1	
M8	QXL1401	Pressure Roller Ass'y	1	
M9	QSN2+10	Screw, + 2x10	1	S
M10	QJT0039	Terminal, Head Earth	1	
M11	QBN1774	Spring, Pressure Roller	1	
M12	QML1255	Table Head	1	
M13	XSN26+3	Screw, + 2.6x3	1	S
M14	QMG0062	Guide, Tape	1	
M15	QBC1298	Spring, Head Adjusting	1	
M16	QML3672	Lever, Auto-Stop Detector	1	
M17	QMK1874	Plate, Head Base	1	
M18	QBW2008	Washer	2	
M19	QMK3670	Lever, Cassette-Up	1	
M20	QW00043	Washer	3	
M21	QBC4R1434	Spring, Back Tension	1	
M22	QML3669	Lever, Erase Safety	1	
M23	QBN1775	Spring, Cassette Retainer	1	
M24	QBN1773	Spring, Idler	1	
M25	QDK1012	Ball, Steel	3	
M26	XTN26+14F	Screw, + 2.6x14	1	
M27	QMC0079	Pipe, Motor	2	
M28	QBG1420	Cushion, Motor	4	
M29	QBW0042	Washer	2	
M30	XYN26+B7.5	Screw, + 2.6x8	2	
M31	QXF4R0202	Flywheel Ass'y	1	
M32	QDB4R0337	Belt, Flywheel	1	
M33	QXL4R1563	Fast Forward Frame Ass'y	1	
M33-1	QBN1710	Spring, Fast Forward Lever	1	
M34	QXL1400	Idler Lever Ass'y	1	
M35	QBC1359	Spring, Flywheel	1	
M36	QXH4R0419	Flywheel Holding Plate Ass'y	1	
M37	QBN1777	Spring, Fast Forward Rod	1	
M38	QBN4R1709	Spring, Stop Rod	1	
M39	QMR1783	Rod, Lock	1	
M40	XTW26+8S	Screw, + 2.6x8	2	S
M41	OMF2085	Plate, Rod Holding	1	
M44	QBT4R1972	Spring, Base Plate Retainer	1	
M45	QBN1776	Spring, Playback Rod	1	
M46	QXR4R0840	Eject/Pause Rod Ass'y	1	
M47	QXR4R0839	Stop Rod Ass'y	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
M48	QXR4R0838	Fast Forward/Cue Rod Ass'y	1	
M49	QXR4R0837	Rewind/Review Rod Ass'y	1	
M50	QXR4R0836	Playback Rod Ass'y	1	
M51	QBN1701	Spring, Change Lever	1	
M52	QML3531	Lever, Change	1	
M53	QMR1784	Rod, Auto-Stop Detection	1	
M54	QBT1889	Spring, Auto-Stop Detection Rod	1	
M55	QML3668	Lever, Review	1	
M56	QBN4R1976	Spring, Fast Forward	1	
M57	QBN1783	Spring, Erase Safety Lever	1	
M58	QBN1706	Spring, Record Rod	1	
M59	QBN1705	Spring, Pause Lock Lever	1	
M60	QML3528	Lever, Pause Lock	1	
M61	QMF2131	Plate, Rod Holding	1	
M62	XTW26+10S	Screw, + 2.6x10	2	S
		INTEGRATED CIRCUITS,		
		TRANSISTORS AND DIODES		
IC1	AN7213	IC	1	
IC2	AN7220A	IC	1	
IC3	RV1UPC1213C	IC	1	
Q1	2SC829-C	Transistor (Si)	1	S
Q2	2SC1685-Q	Transistor (Si)	1	S
Q3,4	2SC1684S	Transistor (Si)	2	
D1,2	MA161	Diode (Si)	2	S
D3,4	LN217RP	Diode (LED)	2	
D5,6	RVD1N4002	Diode (Si)	2	
		COILS AND TRANSFORMERS		
L4	RLD4Y43	Oscillator Coil, FM	1	
L5	RLF2V72	Antenna Coil, AM	1	
L6	RL02B87	Oscillator Coil, AM	1	
L7	RLQZB4R7K	Choke Coil	1	
T1,2	RLI4B153	IFT, FM 1st, 2nd	2	
T3	RLI2B216	IFT, AM 1st	1	
T4	RLI2B217	IFT, AM 2nd	1	
T5	RLT5J6X1A	Power Transformer	1	A
T5	RLT5J6A2A	Power Transformer (Australia Only)	1	A
		VARIABLE RESISTOR		
VR1,2	EWB3NAF20A14	Variable Resistor, 10kΩ (A) Volume & Tone Control	2	
		VARIABLE CAPACITOR		
VC1~4	RCV4LC2R1A	Tuning Capacitor, w/Trimmer Capacitor (CT1, 2, 3, 4)	1	
		CERAMIC FILTER		
CF1	RVFSFE107MSZ	Ceramic Filter	1	
		SPEAKERS		
	EAS12P218SC	Speaker, 12cm (4-23/32"), 3Ω, Woofer	1	
	RAS3PH02Z	Speaker, 3cm (1-3/16"), 4Ω, Tweeter	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
S1	RS2F08Z	SWITCHES		
S2	RST3D18Z	Switch, Selector	1	
S3	QSB0170	Switch, R/P Head	1	
S4	Refer to J3	Switch, Motor	1	
S5	RSR4A07Z	Switch, AC/DC	1	
		Switch, Voltage Selector (Not Australia)	1	A
J1,2	QJA0172A	JACKS	2	
J3	RJJ1A2Z	Jack, EXT SP/EXT MIC Jack, AC IN	1	A
R1	ERD25FJ681	RESISTORS (Value is in OHMS)	1	S
R2	ERD25FJ220	680 1/4W Carbon	1	S
R3	ERD25FJ221	220 "	1	S
R4	ERD25FJ474	470 k "	1	S
R5	ERD25FJ102	1 k "	1	S
R6	ERD25FJ101	100 "	1	S
R7	ERD25FJ473	47 k "	1	S
R8	ERD25FJ222	2.2 k "	1	S
R9	ERD25FJ472	4.7 k "	1	S
R10	ERD25FJ470	47 "	1	S
R11	ERD25FJ221	220 "	1	S
R51	ERD25FJ682	6.8 k "	1	S
R52	ERD25FJ472	4.7 k "	1	S
R53	ERD25FJ332	3.3 k "	1	S
R54	ERD25FJ101	100 "	1	S
R55	ERD25FJ222	2.2 k "	1	S
R56	ERD25FJ224	220 k "	1	S
R57	ERD25FJ183	18 k "	1	S
R58	ERD25FJ105	1 M "	1	S
R59	ERD25FJ681	680 "	1	S
R60	ERD25FJ564	560 k "	1	S
R61	ERD25FJ332	3.3 k "	1	S
R62,63	ERD25FJ100	10 "	2	S
R64	ERD25FJ391	390 "	1	S
R65	ERD25FJ332	3.3 k "	1	S
R66	ERD25FJ822	8.2 k "	1	S
R67	ERD25FJ222	2.2 k "	1	S
R68	ERD25FJ392	3.9 k "	1	S
R69	ERD25FJ103	10 k "	1	S
R70	ERD25FJ681	680 "	1	S
R71	ERD25FJ222	2.2 k "	1	S
R72	ERD25FJ470	47 "	1	S
R73	ERD25FJ101	100 "	1	S
R74	ERD25FJ470	47 "	1	S
R75	ERD25FJ471	470 "	1	S
R76	ERD25FJ271	270 "	1	S
R77	ERD25FJ562	5.6 k "	1	S
C1	ECDD1H100KC	CAPACITORS (Value is in MICRO FARADS except P.P=PICO FARADS)		
C2	ECDD1H470KC	10 P 50V Ceramic	1	
C3	ECDD1H180KC	47 P " "	1	
		18 P "	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C86	ECDD1H331K	330 P 50V Ceramic	1	
K1	RYMX1490X8	CABINET PARTS	1	
K2	RYFX1490X	Front Cabinet Ass'y	1	
K2	RYFX1490AXL	Rear Cabinet Ass'y	1	
K2-1	RJT796Z	Terminal, Antenna	1	
K2-2	RKX200Y	Arm, Handle	2	
K2-3	RKX266Z	Handle	1	
K2-4	RKX165Z	Spacer	2	
K2-5	XTC3+8CFZ	Screw	2	
K3	RYQX1490X	Cassette Lid Ass'y	1	
K4	RYNX1490X	Battery Cover Ass'y	1	
K5	XEACR228EAY	Telescopic Antenna	1	
K6	RJC950Z	Terminal Battery (+, -)	1	
K7	RUS485Z	Spring, Cassette Panel	1	
K8	RME317Z	Bracket, Tuning Shaft	1	
K9	RDD656Z	Drum, Dial	1	
K10	RDS4170A	Spring, Dial	1	
K11	RD8111Z	Shaft, Tuning	1	
K12	RDZ05Z1	Cord, Dial (120cm)	1	
K13	RDP858Z1	Pointer	ROLL 1	
K14	RBN624Z	Knob, Tuning	1	
K15	RBN625Z	Knob, Tone/Volume	1	
K16	QJB0016	Terminal Battery (-)	2	
K17	QJB0042	Terminal Battery (+)	1	
K18	XYN3+P12	Screw	1	
K19	XTB3+35C	Screw	5	
K20	XTV3+10G	Screw	2	
K21	XWG3F13	Washer	1	
E1	RJS2L1Z	ELECTRICAL PARTS		
E2	RJS3L1Z	Socket (2 Pin)	1	
E3	RJS4L1Z	Socket (3 Pin)	2	
E4	RJP2G1Z	Socket (4 Pin)	1	
E5	RJP3G1Z	Plug (2 Pin)	1	
E6	RJP4G1Z	Plug (3 Pin)	2	
E7	RYTX1490X	Plug (4 Pin)	1	
E8	RJT462Z	Lever, Switch Ass'y	1	
E9	RUS486Z	Terminal	12	
E10	RME320Z	Lever, Record	1	
E11	RDE131Z	Holder, LED & P.C.B.	1	
E12	RHR1183Z	Lever, Tuning Capacitor	1	
E13	RJM144Z	Holder, Microphone	1	
E14	RMP197Z	Microphone	1	
E15	RMC506Z	Holder, LED	1	
E16	RHG553Z	Shield Plate (IC2)	1	
E17	XTV3+10G	Cover, Microphone	1	
E18	XTN3+30C	Screw	10	
E19	XYN26+C10	Screw	2	
			1	
	RJA21Z	ACCESSORIES		
		Power Cord, AC	1	A