

Service Manual

Radio Cassette

RX-FM27L

(Black) (Red) (White)

FM-AM-FM Stereo Cassette Recorder

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This is the Service Manual for the following areas.

- Z** ...For all European areas except **E** **F**.
- E** ...For United Kingdom.
- F** ...For France.

RX-FM27MECHANISM SERIES

■ SPECIFICATIONS

General:

Power Requirement: AC; **Z** **E** 220V, 50Hz
E 240V, 50Hz
 Battery; 9V (Six "D" Size Flashlight Batteries)
 (Panasonic UM-1 or equivalent)
 Power Consumption: 16W (AC only)
 Power Output: 7W (3.5W x 2) ... MPO
 7W (3.5W x 2) ... RMS (max.)
 Speaker: Woofer; 10cm, PM Dynamic Speaker (3Ω)
 Tweeter; 2cm, Ceramic Speaker (2kΩ)
 Output: Headphones; 32Ω, ϕ3.5
 Dimensions: 457mm(W) x 137mm(H) x 122mm(D)
 Weight: 2.3kg without batteries

Radio Section:

Radio Frequency Range: FM; 87.5 ~ 108MHz
 LW; 148.5 ~ 285kHz (2020 ~ 1053m)
 MW; 520 ~ 1610kHz (577 ~ 186m)
 SW; 5.9 ~ 18MHz (50.8 ~ 16.7m)

Intermediate Frequency: FM; 10.7MHz
 AM (LW/MW/SW); 455kHz
 (470kHz ... **E** only)

Sensitivity: FM; 4μV/50mW output
 (−3dB Limit Sens)
 LW; 126μV/m/50mW output
 MW; 100μV/m/50mW output
 SW; 5μV/50mW output

Tape Deck Section:

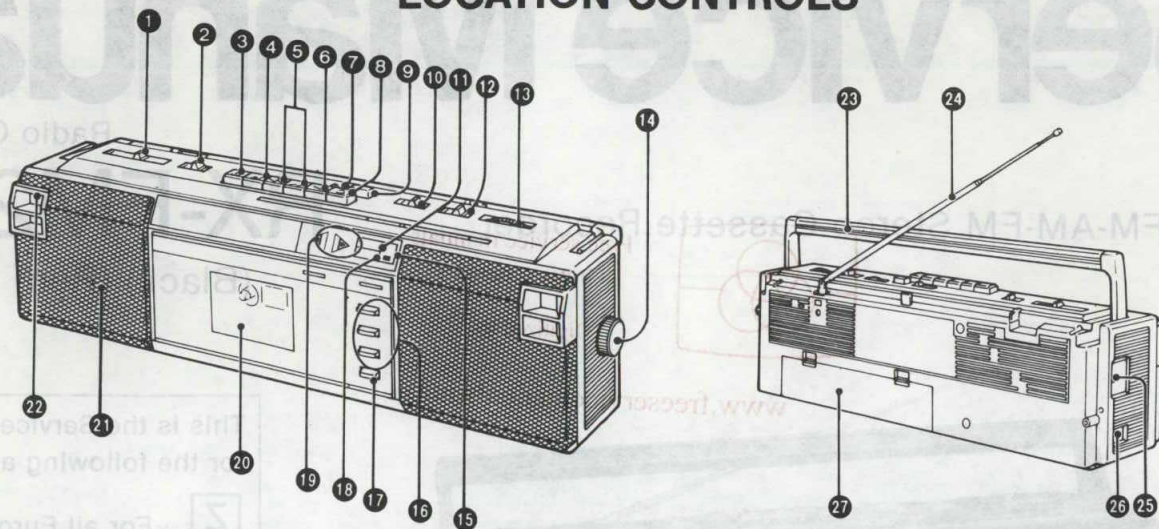
Frequency Response: 80 ~ 8,000Hz (with normal tape)
 Recording System: AC bias, Magnet erase
 Tape Speed: 4.8cm/s
 Track System: 4-track 2 channel stereo recording and playback

Design and specifications are subject to change without notice.

Panasonic

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

LOCATION CONTROLS



- 1 Volume Control (VOLUME)
- 2 Function Selector (SELECTOR)
- 3 Pause Button (|| PAUSE)
- 4 Stop/Eject Button (■ STOP/EJECT)
- 5 Fast/Cue Buttons (◀◀ ▶▶ FAST/CUE)
- 6 Playback Button (◀ PLAY)
- 7 Reverse Mode Selector (REVERSE MODE)
- 8 Record Button (● RECORD)
- 9 Direction Button (DIRECTION)
- 10 AM Band Selector (AM BAND)
- 11 Operation/Battery Check Indicator (OPERATION/BATT)
- 12 FM Mode Selector/Beat Proof Switch (FM MODE/B.P)
- 13 Tuning Control (TUNING)
- 14 Fine Tuning Control (FINE TUNING)
- 15 Built-in Microphone (MIC)

- 16 Combination Equalizer Switches (EQUALIZER)
- 17 Ambience Switch (AMBIENCE)
- 18 FM Stereo Indicator (FM STEREO)
- 19 Direction Indicators (FWD • REV)
- 20 Cassette Compartment
- 21 Speakers (Woofer) 10cm, 3Ω
- 22 Speakers (Tweeter) 2cm, 2kΩ
- 23 Handle
- 24 Telescopic Antenna
- 25 Headphones Jack (PHONES) 32Ω, ϕ3.5

When using the headphones, avoid listening to sound for a long period of time and avoid excessive volume levels, which may injure your ears. (Optional headphones; EAH-S10)

- 26 AC Socket (AC IN ~)
- 27 Battery Compartment

DISASSEMBLY INSTRUCTIONS

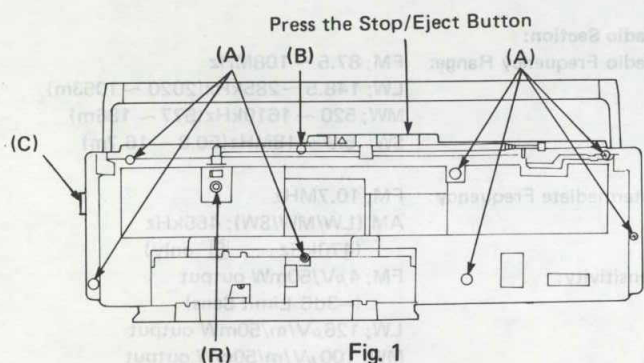


Fig. 1

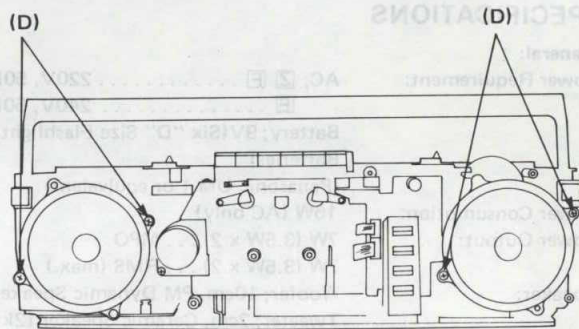


Fig. 2

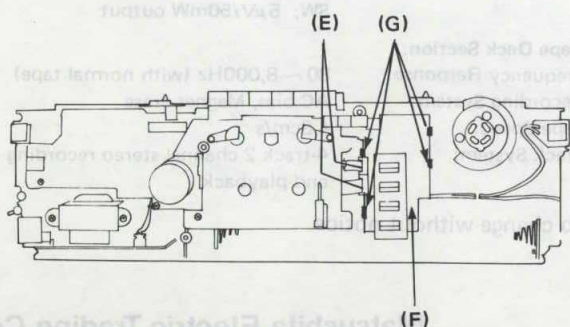


Fig. 3

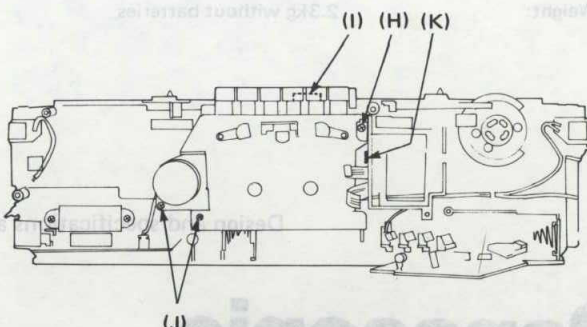


Fig. 4

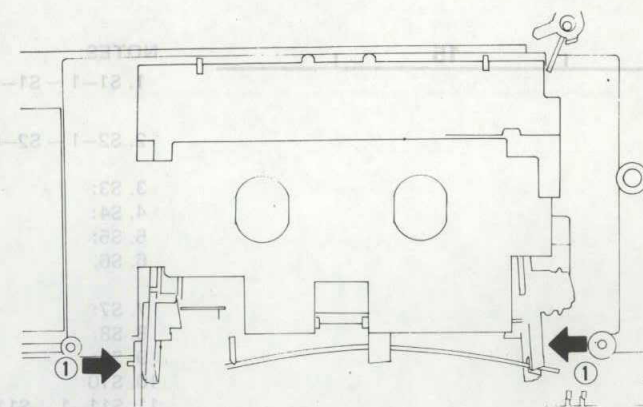


Fig. 6



- Hold the bottom of the socket with one hand, and push down on the top of the socket with the other to disconnect the lead wires.
- To attach the socket, hold the bottom of the socket with one hand, and push down on the top of the socket with the other to insert the lead wires. (There is no support on the bottom of the P.C.Board, so do not push down too hard as this may damage the P.C.Board.) (After connecting the socket, check to be sure that the lead wires are securely connected to the socket.) (Also be sure that the lead wires are connected in the right direction.)

■ ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set volume control to maximum.
2. Set FM mode switch to stereo/II.
3. Set band switch to LW, MW, SW, FM.
4. Set equalizer switch to OFF (HIGH/LOW BOOST, HIGH CUT).
5. Set function selector to AM or FM.
6. Set fine tuning to center.
7. Set power source voltage to 9V DC.
8. Output of signal generator should be no higher than necessary to obtain an output reading.

■ LW, MW and SW ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLT-METER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
AM-IF ALIGNMENT						
(1)	MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455kHz (470kHz ...[E] only) 30% Mod. at 400Hz	Point of non-interference. (on/about 600kHz)	Output meter across voice coil.	T3 (AM IFT) Adjust for maximum output.
LW-RF ALIGNMENT						
(2)	LW	"	136kHz	Tuning capacitor fully closed.	"	L9 (LW OSC Coil) "
(3)	LW	"	297kHz	Tuning capacitor fully open.	"	CT5 (LW OSC Trimmer) "
(4)	LW	"	145kHz	Tune to signal.	"	(* 1) L6 (LW ANT Coil) Adjust for maximum output. Adjust L6 by moving coil bobbin along ferrite core.
(5)	LW	"	285kHz	"	"	CT3 (LW ANT Trimmer) Adjust for maximum output. Repeat steps (2)~(5).
MW-RF ALIGNMENT						
(6)	MW	"	511kHz	Tuning capacitor fully closed.	"	L10 (MW OSC Coil) Adjust for maximum output.
(7)	MW	"	1,650 kHz	Tuning capacitor fully open.	"	CT6 (MW OSC Trimmer) "
(8)	MW	"	550kHz	Tune to signal.	"	(* 1) L7 (MW ANT Coil) Adjust for maximum output. Adjust L7 by moving coil bobbin along ferrite core.
(9)	MW	"	1,500kHz	"	"	CT4 (MW ANT Trimmer) Adjust for maximum output. Repeat steps (6)~(9).
(* 1) Cement antenna bobbin with wax after completing alignment.						
SW-RF ALIGNMENT						
(10)	SW	Connect to test point ▼ through ceramic capacitor (10pF). Negative side to test point ▼.	5.75MHz	Tuning capacitor fully closed.	"	L11 (SW OSC Coil) Adjust for maximum output.
(11)	SW		18.8MHz	Tuning capacitor fully open.	"	CT7 (SW OSC Trimmer) "
(12)	SW		5.9MHz	Tune to signal.	"	L8 (SW ANT Coil) Adjust for maximum output. Repeat steps (10)~(12).

■ FM ALIGNMENT

BAND		SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
		CONNECTIONS	FREQUENCY				
FM-IF ALIGNMENT							
(1)	FM	High side thru. 0.001 μ F to test point ∇ . Negative side to test point ∇ .	10.7 MHz (SWP.)	Point of non-interference. (on/ about 90 MHz)	Connect vert. amp. of scope to test point ∇ . Negative side to test point ∇ .	T1 (FM 1st IFT)	Adjust for maximum amplitude. (Refer to fig. 2.)
(2)	FM	"	"	"	"	T2 (FM 2nd IFT)	Adjust for maximum amplitude. (Refer to fig. 3.)

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS	
	CONNECTIONS	FREQUENCY					
FM-RF ALIGNMENT							
(3)	FM	Connect to test point  through FM dummy antenna. Negative side to test point 	86.2MHz	Variable capacitor fully closed.	Output meter across voice coil.	L5 (FM OSC Coil)	(*2) Adjust for maximum output.
(4)	FM		109.2MHz	Variable capacitor fully open.	"	CT2 (FM OSC Trimmer)	"
(5)	FM		106MHz	Tune to signal.	"	CT1 (FM ANT Trimmer)	(*2) Adjust for maximum output. Repeat steps (3)~(5).
(*2) Three output responses will be present; proper tuning is the center frequency.							

■ SEPARATION ALIGNMENT

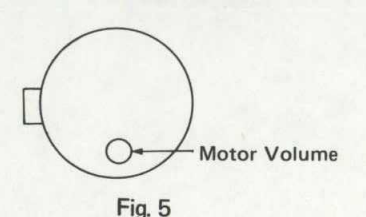
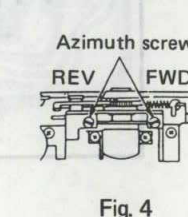
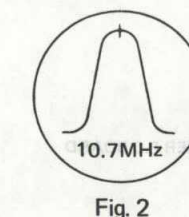
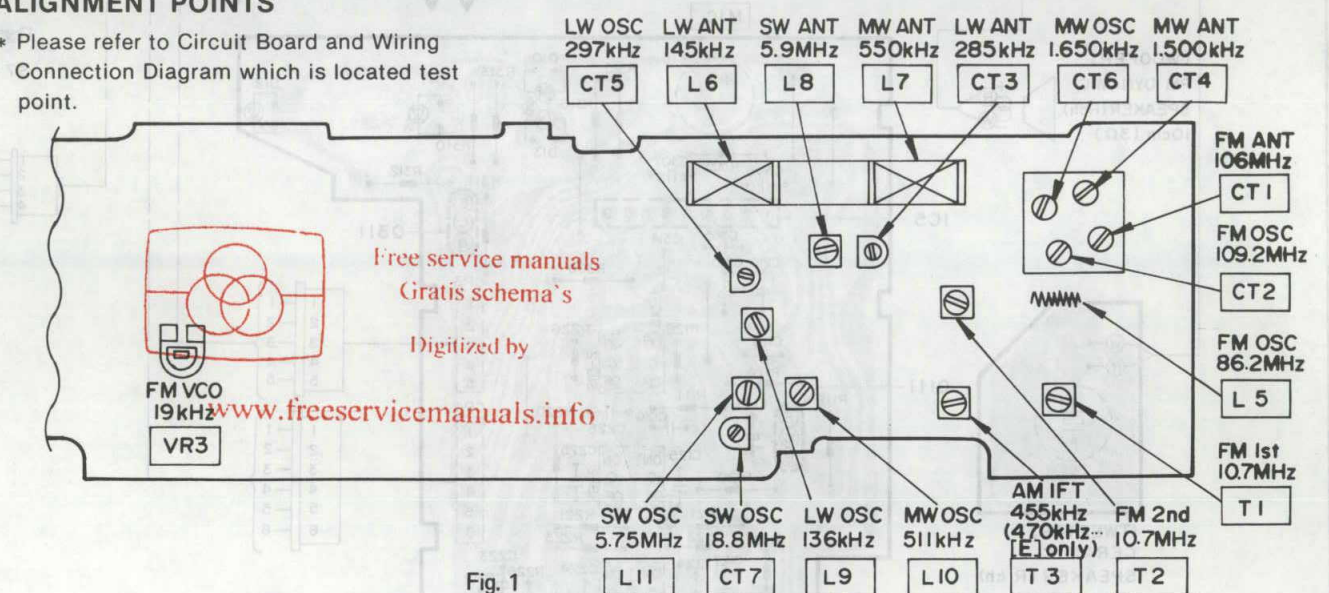
ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	SPECIFICATION	REMARKS
Adjustment of pilot signal.	98 MHz, 60dB Connect to test point ▼ through FM dummy antenna. Negative side to test point ②.		VR3	19kHz	Adjust VR3, for 19kHz (±100 Hz) reading on electronics counter.

■ TAPE ADJUSTMENT

ITEM	INPUT	MEASUREMENT POINT	SPECIFICATION	ADJUSTMENT POINT	REMARKS
Azimuth	QZZCFM (8kHz, -20dB)	Headphone Jack	Maximum output.	Azimuth screw	1. Adjust the FWD and REV outputs and inputs to their maximum values and lock the screw in place. 2. Refer to Fig. 4.
Tape Speed	QZZCWAT (3kHz)	"	3000±90Hz	Motor Volume	Playback mode (Refer to Fig. 5)

■ ALIGNMENT POINTS

* Please refer to Circuit Board and Wiring Connection Diagram which is located test point.





CAUTION
RISK OF ELECTRIC SHOCK
AC voltage line. Please do not touch this
portion

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itized in Heiloo, Holland.

NOTES:

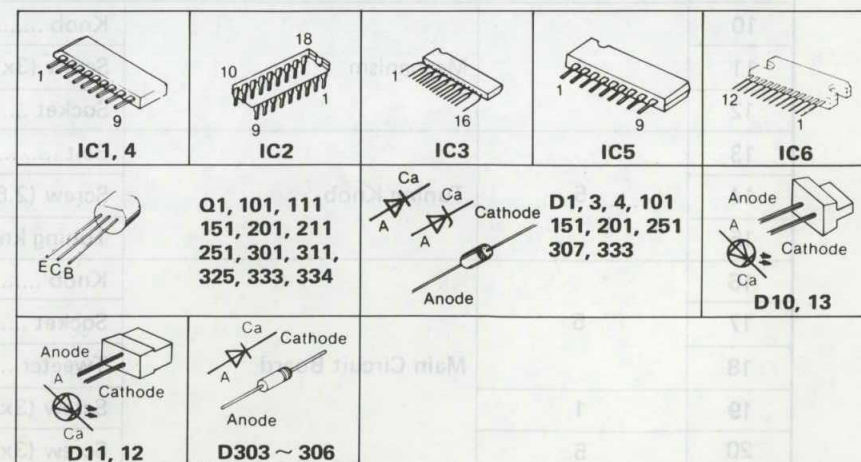
1. S1-1 ~ S1-7:
Recording/Playback switch in "PLAYBACK" position.
(R ... RECORDING, P ... PLAYBACK)
2. S2-1 ~ S2-6:
Function selector switch in "TAPE/POWER OFF" position.
(F ... FM, A ... AM, T ... TAPE/POWER OFF)
3. S3:
Motor switch in "OFF" position.
4. S4:
AC/DC selector switch in "DC" position.
5. S5:
Ambience switch in "OFF" position.
6. S6:
FM mode/B.P switch in "MONO I" position.
(MI ... MONO/I, S II ... STEREO/II, S III ... STEREO/III)
7. S7:
FWD/REV direction switch in "FWD" position.
8. S8:
Low Boost switch in "OFF" position.
9. S9:
High Boost switch in "OFF" position.
10. S10:
High Cut switch in "OFF" position.
11. S11-1 ~ S11-6:
AM band selector switch in "LW" position.
(L ... LW, M ... MW, S ... SW)
12. S12:
Playback switch in "OFF" position.
13. VR2-1, VR2-2
Volume control VR.
14. VR3:
FM VCO adjustment VR.
15. DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
No mark ... Playback position, < ... FM position,
() ... AM position, << ... FWD position, [[]] ... REV position,
[] ... Recording (M ... MONO, S ... STEREO II) position.
16. Battery current : No signal ... 90mA
Maximum output (radio) ... 870mA
Maximum output (tape) ... 780mA
17. Described in schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes.
One type number is used for supply parts number and production parts number which they are identical.
e.g. Q1

2 SC2412NRTB, LNSTB ← Production parts number
(2SC2412) ← Supply parts number

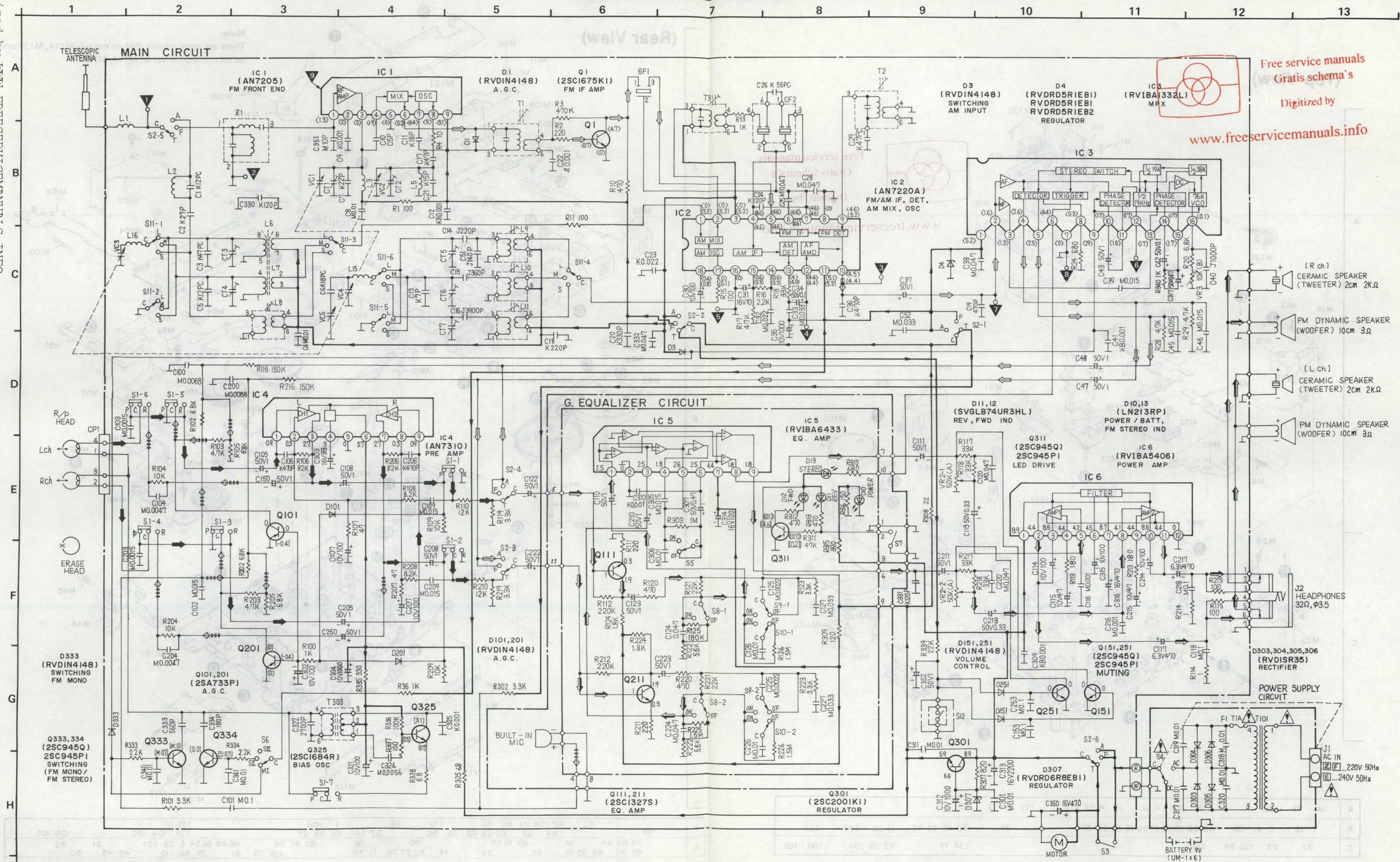
18. The supply parts number is described alone in the replacement parts list.
19. The mark (▼) shows test point, e.g. ▼ = test point 1.
20. Important safety notice
Components identified by ▲ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

- This schematic diagram may be modified at any time with the development of new technology.

-  +B Voltage Line
-  Playback Signal
-  FM Signal
-  Record Signal
-  Main (Tape & Radio) Signal



SCHEMATIC DIAGRAM



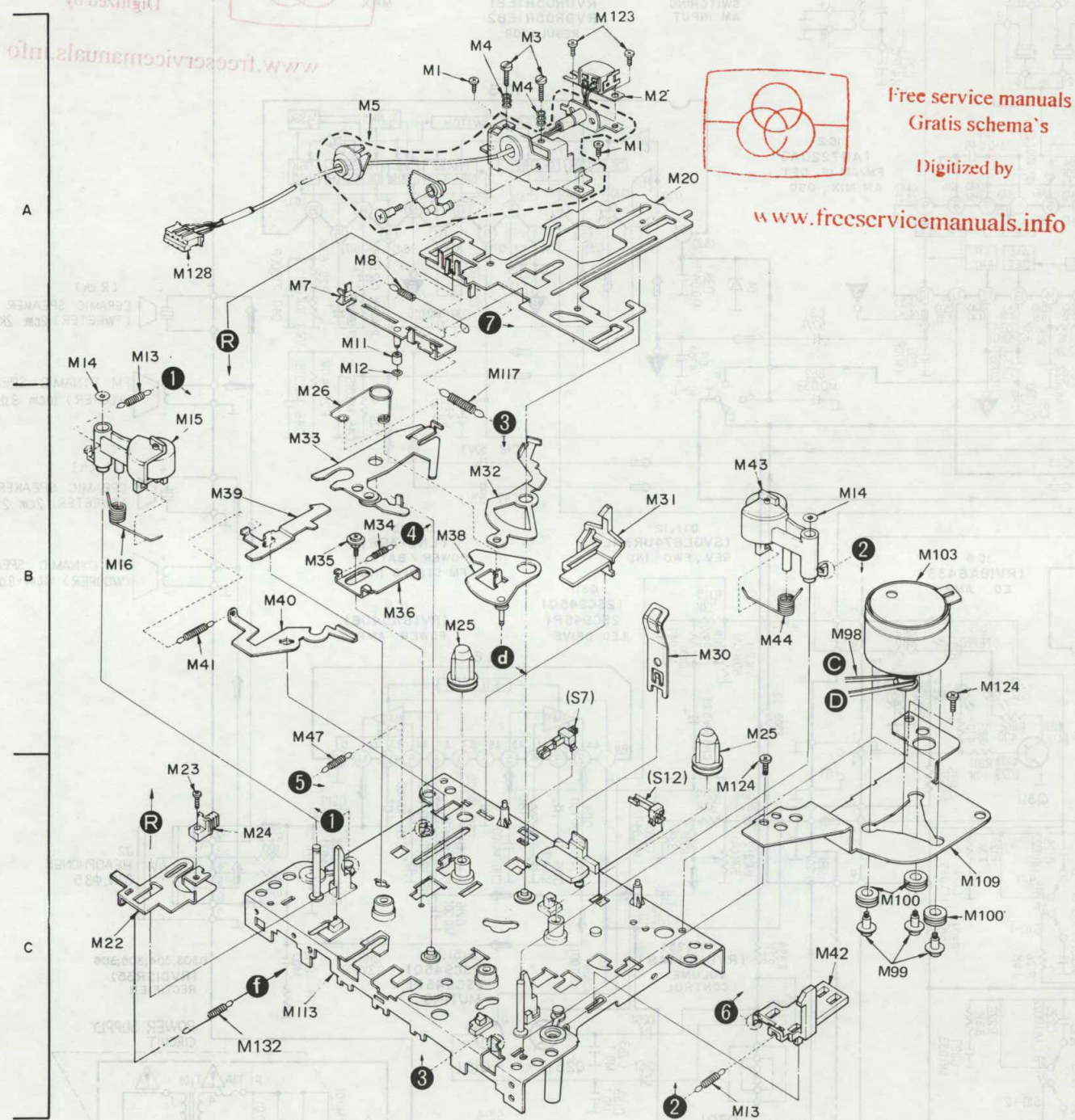
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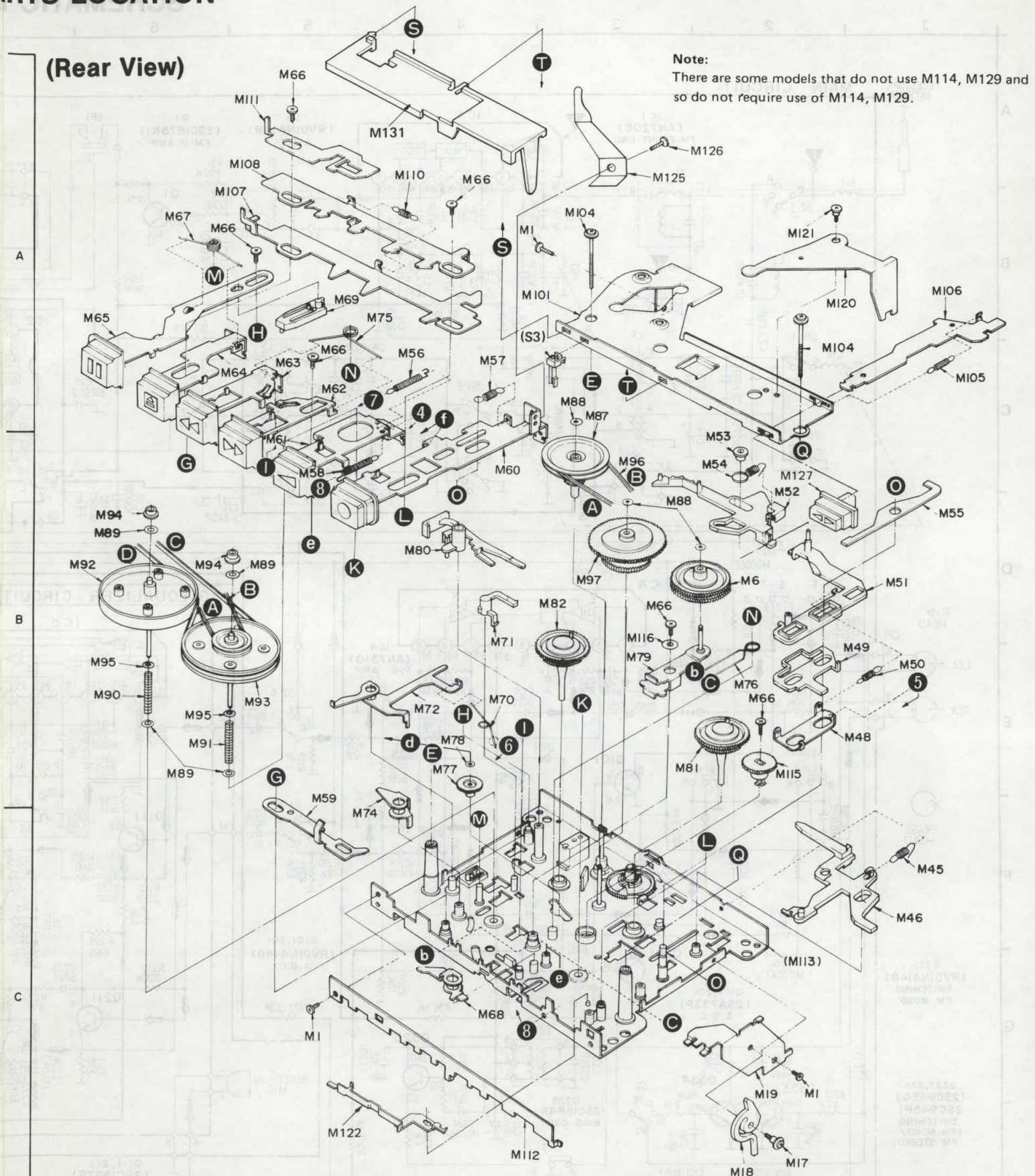
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MECHANISM PARTS LOCATION

(Top View)

[illegible]

(Rear View)



Note:
There are some models that do not use M114, M129 and so do not require use of M114, M129.

[illegible]

Playback torque	25~60 g · cm
Fast Forward torque	75~135 g · cm
Rewind torque	75~135 g · cm
Pressure of pressure roller	220~330 g
Wow and flutter	Less than 0.2% (WRMS)

- Types

Precision machine screw	Machine screw	Tapping/Tap-tight machine screw
XQC Flat head	XSB Binding head	XTB Binding head
XQG Oval fillister head	XSC Oval countersunk head	XTC Oval countersunk head
XQH Flat fillister head	XSH Flat fillister head	XTN Pan head
XQS Flat head	XSN Pan head	XTS Flat head
	XSS Flat head	

Exploded view diagram of the front cover assembly for a trimmer head. The diagram shows the front cover with various screws and their dimensions. The screws are labeled as follows:

- M41 (15.3mm, $\phi 2.4$)
- M34 (7.9mm, $\phi 2.6$)
- M7 (13mm, $\phi 7$)
- M26 (13mm, $\phi 7$)
- M13 (10.3mm, $\phi 3.1$)
- M44 (23.1mm, $\phi 6.1$)
- M16 (20.6mm, $\phi 6.1$)
- M8 (33.6mm, $\phi 2.3$)
- M117 (16.2mm, $\phi 3.5$)
- M54 (12.8mm, $\phi 3.5$)
- M45 (9.8mm, $\phi 3.5$)
- M50 (7mm, $\phi 2.6$)
- M57 (11.4mm, $\phi 3.3$)
- M105 (9.5mm, $\phi 2.5$)
- M75 (19mm, $\phi 6.1$)
- M110 (7.4mm, $\phi 2.5$)
- M76 (26.7mm, $\phi 5.3$)
- M56 (24.6mm, $\phi 3.4$)
- M58 (21.5mm, $\phi 3.3$)

This technical drawing shows an exploded view of a mechanical assembly. The central component is a large metal plate with two circular openings. Various smaller parts are shown around it, each with its own label and dimensions:

- M54**: (12.8 mm, $\phi 3.5$) - A small cylindrical part with a hole.
- M45**: (9.8 mm, $\phi 3.5$) - A small cylindrical part with a hole.
- M50**: (7 mm, $\phi 2.6$) - A small cylindrical part with a hole.
- M57**: (11.4 mm, $\phi 3.3$) - A small cylindrical part with a hole.
- M105**: (9.5 mm, $\phi 2.5$) - A small cylindrical part with a hole.
- M56**: (24.6 mm, $\phi 3.4$) - A small cylindrical part with a hole.
- M58**: (21.5 mm, $\phi 3.3$) - A small cylindrical part with a hole.
- M76**: (26.7 mm) - A small cylindrical part with a hole.
- M110**: (7.4 mm, $\phi 2.5$) - A small cylindrical part with a hole.
- M75**: $\phi 6.1$ - A small cylindrical part with a hole.
- M67**: (13 mm, 13 mm) - A rectangular part with a hole.
- M70**: (11.6 mm, 11.6 mm) - A rectangular part with a hole.
- M54**: (12.8 mm, $\phi 3.5$) - A small cylindrical part with a hole.
- M45**: (9.8 mm, $\phi 3.5$) - A small cylindrical part with a hole.
- M50**: (7 mm, $\phi 2.6$) - A small cylindrical part with a hole.
- M57**: (11.4 mm, $\phi 3.3$) - A small cylindrical part with a hole.
- M105**: (9.5 mm, $\phi 2.5$) - A small cylindrical part with a hole.
- M56**: (24.6 mm, $\phi 3.4$) - A small cylindrical part with a hole.
- M58**: (21.5 mm, $\phi 3.3$) - A small cylindrical part with a hole.
- M76**: (26.7 mm) - A small cylindrical part with a hole.
- M110**: (7.4 mm, $\phi 2.5$) - A small cylindrical part with a hole.
- M75**: $\phi 6.1$ - A small cylindrical part with a hole.
- M67**: (13 mm, 13 mm) - A rectangular part with a hole.
- M70**: (11.6 mm, 11.6 mm) - A rectangular part with a hole.

M8	M13	M16	M26	M34	M41
M44	M45	M47	M50	M54	M56
M67	M70	M75	M110	M117	M105
M132	M58	M76			

This exploded view diagram illustrates the assembly of a radio receiver chassis. The components are labeled with 'K' codes, which correspond to the parts list on the right. The diagram shows the following components and their assembly relationships:

- Chassis and Cabinet:** The main chassis (K1) is shown with the front panel (K20) and the rear panel (K48) attached. The chassis is mounted on the rear panel using screws (K21, K22).
- Power Section:** The power transformer (K6) is mounted on the chassis. The main power cord (K6-1) is connected to the transformer. The power cord is also connected to the main power cord board (K6-2).
- Audio Section:** The audio amplifier (K12) is mounted on the chassis. The audio output is connected to the speaker (K40) via a speaker cord (K45).
- Control Section:** The control panel (K13) is mounted on the chassis. The control panel is connected to the control panel board (K14) via a control panel cord (K15).
- Other Components:** Various other components are shown, including the antenna (K16), the antenna coil (K17), the antenna switch (K18), the antenna switch control (K19), the antenna switch control board (K23), the antenna switch control board (K24), the antenna switch control board (K25), the antenna switch control board (K26), the antenna switch control board (K27), the antenna switch control board (K28), the antenna switch control board (K29), the antenna switch control board (K30), the antenna switch control board (K31), the antenna switch control board (K32), the antenna switch control board (K33), the antenna switch control board (K34), the antenna switch control board (K35), the antenna switch control board (K36), the antenna switch control board (K37), the antenna switch control board (K38), the antenna switch control board (K39), the antenna switch control board (K40), the antenna switch control board (K41), the antenna switch control board (K42), the antenna switch control board (K43), the antenna switch control board (K44), the antenna switch control board (K45), the antenna switch control board (K46), the antenna switch control board (K47), the antenna switch control board (K48), the antenna switch control board (K49), the antenna switch control board (K50), the antenna switch control board (K51), the antenna switch control board (K52), the antenna switch control board (K53), the antenna switch control board (K54), the antenna switch control board (K55), the antenna switch control board (K56), the antenna switch control board (K57), the antenna switch control board (K58), the antenna switch control board (K59), the antenna switch control board (K60).

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RESISTORS & CAPACITORS

Numbering System of Resistor

Example:

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value (100Ω)
ERJ	6G	C	J	2R2
Type	Wattage	Shape	Tolerance	Value (2.2Ω)

Numbering System of Capacitor

Example:

ECKD	1H	102	Z	F
Type	Voltage	Value (1000pF)	Tolerance	Peculiarity
ECEA	50	M	R47	
Type	Voltage	Peculiarity	Value (0.47 μF)	

Resistor Type	Wattage	Tolerance
ERD: Carbon Resistor	10 : 1/8W	F : ±1%
ERC: Solid Resistor	25 : 1/4W	G : ±2%
ERF: Incombustible	50 : 1/2W	J : ±5%
Box-Shaped	18 : 1/8W	K : ±10%
Wire-Wound	14 : 1/4W	H : ±20%
Resistor	12 : 1/2W	
ERG: Metal Oxide-Film	1 : 1W	
Resistor	2 : 2W	
ERM: Wire-Wound	3 : 3W	
Resistor	S1 : 1/2W	
ERO: Superstable	S2 : 1/4W	
Metal Film	6G : 1/10W	
Resistor	8G : 1/8W	
ERX: Metal-Film		
Resistor		
RRJ: Chip Resistor		
ERJ: Chip Resistor		

Capacitor Type	Voltage	Tolerance
ECCD: Ceramic Capacitor (Chitacon)	(ECCD, ECKD Type) 1H : 50V DC 2H : 500V DC	K : ±10% M : ±20% Z : +80% -20%
ECKD: Ceramic Capacitor (Chitabari)	(ECFD Type) C : 12V DC D : 25V DC	J : ±5% G : ±2% F : ±1% C : ±0.25pF D : ±0.5pF F : ±1pF
ECFD: Semiconductor	E : 50V DC	
Ceramic Capacitor	(ECQ Type) 05 : 50WV DC 1 : 100WV DC	
ECE□: Electrolytic Capacitor	(ECE, ECS Type) 0G : 4V 0J : 6.3V	
ECS□: Tantalum Fixed	1A : 10V 1C : 16V	
Electrolytic Capacitor	1E : 25V 1V : 35V	
ECQ□: Polystyrene Film	1H : 50V 1J : 63V	
Capacitor	2A : 100V	
ECQS: Polystyrene Film		
Capacitor		
ECQS: Polypropylene Film		
Capacitor		
ECQV: T.F. Capacitor		
ECU□: Chip Capacitor		
RCU□: Cylindrical Ceramic		
ECBT: Capacitor		

※ Capacity are in microfarads (μF) unless specified otherwise, P=Pico-farads.
※ Resistance are in ohms (Ω), unless specified otherwise, 1K=1,000Ω, 1M=1,000KΩ

Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code
CAPACITORS								
C1	ECCT1H120KC		C101	ECFVD104MD		C304	ECEA1CS2102	
C2	ECCT1H270KC		C102	ECFV1E153MD		C305	ECFV1E153MD	
C3	ECCD1H470KC		C103	ECKT1H152MD		C306	ECFT1E103MD	
C4	ECKD1H103ZF		C104	ECFT1E472MDY		C307	ECEA1HUR47B	
C5	ECCT1H120KC		C105	ECEA1HU010		C309, C310	ECKF1H102KB	
C6	ECCT1H180KC		C106	ECKD1H471KB		C311	ECKD1H103ZF	
C7	ECCD1H220KC		C107	ECEA1AU101		C312	ECEA1CS2102	
C8	ECKD1H103ZF		C108	ECEA1HU010		C313	ECEA1CS222	
C9	ECKF1H102KB		C109	ECFV1E153MD		C314, C315	ECEA1AU101	
C10	ECCD1H050CC		C110, C111	ECEA1HU010		C316	ECEA1CU471E	
C11	ECCT1H180KC		C113	ECEA1HUR33		C317	ECEA1HUR470B(Main P.C.B.)	
C12	ECKF1H102KB		C114	ECEA1AU101		C317, C318	ECKW1H103MD (Power Supply P.C.B.)	
C13	ECCT1H070DC		C115	ECEA1AU470		C319, C320	ECKW1H103MD (Power Supply P.C.B.)	
C14	ECQ P2A221JZ		C116	ECKT1H102MD		C321	ECEA1AU101	
C15	ECQ P2A361JZ		C117	ECEA0JU471E		C322	ECQS2B272KZ	
C16	ECQ P2A392JZ		C118	ECFVD104MD		C324	ECFT1E562MDY	
C17	ECCD1H470KC		C120	ECFDD473KXY		C325	ECKF1H102KB	
C18	ECKT1H331KB		C122, C123	ECEA1HU010		C330, C331	ECCT1H121K	
C19	ECKD1H471KB		C124	ECFDD473KXY		C332	ECFDD473KXY	
C20	ECKT1H331KB		C125	ECKV1H222MD		C333	ECKT1H561KB	
C21	ECCT1H150KC		C126	ECFT1E103MD		C334	ECCT1H181K	
C22	ECKF1H102KB		C127	ECFD1E333MD		C340, C341	ECKD1H103ZF	
C23	ECFT1E223MD		C150	ECEA1HU010		C350	ECEA1CU471E	
C24	ECCT1H121K		C153	ECFVD104MD		C351	ECCT1H100KC	
C25	ECFDD473KXY		C200	ECKT1H682MD		C352	ECEA1HU010	
C26	ECCT1H560KC		C203	ECKT1H152MD		RESISTORS		
C28	ECFDD473KXY		C204	ECFT1E472MDY		R1	ERD25TJ101	
C29	ECCD1H470KC		C205	ECEA1HU010		R2	ERD25TJ221	
C30	ECEA1AU101		C206	ECKD1H471KB		R3	ERD25TJ474	
C31	ECEA1CU100		C207	ECEA1AU101		R4	ERD25FJ100	
C32	ECFD1E223MD		C208	ECEA1HU010		R10	ERD25TJ471	
C33	ECFD1E333MD		C209	ECFV1E153MD		R11	ERD25TJ101	
C34	ECEA1HU0R1		C210, C211	ECEA1HU010		R13	ERD25FJ102	
C35	ECEA1CS2102		C213	ECEA1HUR33		R15	ERD25TJ101	
C36	ECKD1H471KB		C214	ECEA1AU101		R16	ERD25TJ222	
C37	ECEA1HU010		C215	ECEA1AU470		R17	ERD25TJ473	
C38	ECFDD473KXY		C216	ECKT1H102MD		R18	ERD25TJ332	
C39	ECFV1E153MD		C217	ECEA0JU471E		R20	ERD25TJ682	
C40	ECQ P2A102JZT		C218	ECFVD104MD		R24	ERD25TJ681	
C41	ECKF1H102KB		C220	ECFDD473KXY		R28, R29	ERD25FJ472	
C42	ECEA1HU0R1		C224	ECFDD473KXY		R36, R100	ERD25FJ102	
C43	ECEA1HU010		C225	ECKV1H222MD		R101	ERD25TJ332	
C45, C46	ECFV1E153MD		C226	ECFT1E103MD		R102	ERD25TJ682	
C47, C48	ECEA1HU010		C227	ECFD1E333MD		R103	ERD25FJ472	
			C250	ECEA1HU010		R104	ERD25TJ103	
			C253	ECFVD104MD		R105	ERD25TJ682	
C51	ECQ P2A141JZT		C301	ECKD1H103ZF		R106	ERD25TJ823	
C52	ECFD1E333MD		C302	ECEA1AU101		R107	ERD25TJ470	
C100	ECKT1H682MD		C303	ECEA1CU330		R108	ERD25TJ822	

Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code
R109	ERD25TJ103		R206	ERD25TJ823		R303	ERD25TJ105	
R110	ERD25TJ123		R207	ERD25TJ470		R305	ERD25TJ680	
R111	ERD25TJ221		R208	ERD25TJ822		R307	ERD25TJ821	
R112	ERD25TJ224		R209	ERD25TJ103		R308	ERD25TJ220	
R113	ERD25TJ181		R210	ERD25TJ123		R309	ERD25TJ121	
R114	ERD25FJ1R0		R211	ERD25TJ221		R310	ERD25TJ681	
R115	ERD25TJ101		R212	ERD25TJ224		R311	ERD25TJ473	
R116	ERD25TJ154		R213	ERD25TJ181		R312, R313	ERD25TJ471	
R117, R118	ERD25TJ333		R214	ERD25FJ1R0		R315	ERD25TJ391	
R119	ERD25TJ332		R215	ERD25TJ101		R316	ERD25TJ151	
R120	ERD25TJ471		R216	ERD25TJ154		R333, R334	ERD25TJ222	
R121	ERD25TJ223		R217, R218	ERD25TJ333		R335	ERD25TJ331	
R122	ERD25TJ562		R219	ERD25TJ332		R336	ERD25TJ104	
R123	ERD25TJ332		R220	ERD25TJ471		R337	ERD25TJ101	
R124	ERD25TJ182		R221	ERD25TJ223		R338	ERD25TJ688	
R125	ERD25TJ184		R222	ERD25TJ562		R339	ERD25TJ223	
R126	ERD25TJ155		R223	ERD25TJ332		R340	ERD25TJ102	
R202	ERD25TJ682		R224	ERD25TJ182				
R203	ERD25FJ472		R225	ERD25TJ184				
R204	ERD25TJ103		R226	ERD25TJ155				
R205	ERD25TJ682		R302	ERD25TJ332				

REPLACEMENT PARTS LIST

Notes:

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Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
INTEGRATED CIRCUITS				TRANSFORMERS			
IC1	AN7205	IC		T1, T2	RL14B153		I.F.T. FM
IC2	AN7220A	IC		T3	RL12B153		I.F. TRANSFORMER, AM
IC3	RV1BA1332L	IC		T101	RLT5K3E2A		POWER TRANSFORMER
IC4	AN7310	IC		(Z, F)			
IC5	RV1BA6433	IC		T101	RLT5K3G3A		POWER TRANSFORMER
IC6	RV1BA5406	IC		(E)			
TRANSISTORS				VARIABLE CAPACITORS			
Q1	2SC1675K1	TRANSISTOR,		VC1	RCV4RC2RA		VARIABLE CAPACITOR, FM ANT
Q101	2SA733P	TRANSISTOR		TRIMMER CAPACITORS			
Q111	2SC1328-S	TRANSISTOR,		CT3, CT5	RCVTZ20F		TRIMMER CAPACITOR, LW ANT
Q151	2SC945Q	TRANSISTOR,		CT7	RCVTZ20F		TRIMMER CAPACITOR, LW ANT
Q201	2SA733P	TRANSISTOR		VC7	RCVRH7UC16		VARIABLE RESISTOR, FINE
Q211	2SC1328-S	TRANSISTOR,		VARIABLE RESISTORS			
Q251	2SC945Q	TRANSISTOR,		VR2	EWASE3VABA54		VARIABLE RESISTOR
Q301	2SC2001L1	TRANSISTOR,		(Z)			
Q311	2SC945Q	TRANSISTOR,		VR3	EVNMA4A00B14		TRIMMER CAPACITOR, FINE
Q325	2SC1685-Q	TRANSISTOR,		FILTERS			
Q333, Q334	2SC945Q	TRANSISTOR,		CF1	RVFSFE107MAZ		CERAMIC FILTER, 10.7MHZ
DIODES				CF2	QCRZ470A7W		CERAMIC FILTER, 470KHZ
D1, D3	RVD1N4148	DIODE,		(E)			
D4	RVDRD5R1EB1	DIODE,		CF2	RVFSFZ455A		CERAMIC FILTER, 455KHZ
D10	LN213RP	DIODE,		(Z, F)			
D11, D12	SVGLB74UR3HL	DIODE, SI, LED		COMPONENTS COMBINATION			
D13	LN213RP	DIODE,		Z1	RXABPMB6A		COMPONENT COMBINATIONS
D101, D151	RVD1N4148	DIODE,		SWITCHES			
D201, D251	RVD1N4148	DIODE,		S1	RSH2G03ZA-A		PUSH SWITCH
D303, D304	RVD1SR35	DIODE		S2	RSS3F06Y		SLIDE SWITCH, FUNCTION
D305, D306	RVD1SR35	DIODE		S3	RFA67Z		LEAF SWITCH, MOTOR
D307	RVDRD6R8EB1T	DIODE, SI		S5	ESB6483		PUSH SWITCH
D333	RVD1N4148	DIODE,		S6	RSS3B31Z		SWITCH, FM MODE
COILS				S7	RFA67Z		LEAF SWITCH, MOTOR
L1, L2	RLQY30S1	CHOKE COIL		S8, S9	ESB6483		PUSH SWITCH
L5	RL04N184	OSCILLATOR COIL, FM OSC		S10	ESB6483		PUSH SWITCH
L6, L7	RLF6W7-M	BARANTENNA, LM/MW		S11	RSS3F06Y		SLIDE SWITCH, AM BAND
L8	RLA3B41	COIL, SW ANT		S12	RFA67Z		LEAF SWITCH, MOTOR
L9	RL01B12	COIL, LW OSC		JACKS			
L10	RL02B108	OSCILLATOR COIL, MW OSC		J1	RJJ1A4ZD		JACK, AC 1N/S4
L11	RL03B90	OSCILLATOR COIL, SW OSC		J2	RJJ1D27Z		JACK, HEADPHONES
L15, L16	RL04Y84W	COIL		FUSES			
L303	RL09B17	OSCILLATOR COIL, BIAS		F1	XBA2C10TB0		FUSE

REPLACEMENT PARTS LIST

Notes:

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When replacing any of these components, use only manufacturer's specified parts.
- The letter in the square bracket bottom the Ref. No. indicates the shipping destination.
[Z] ... For All European areas except [E] and [F], [E] For United Kingdom, [F] For France.
- The letter in circles in the Ref. No. column indicates the color of the product.
(K) Black Type, (W) White Type, (R) Red Type.
- The letter in the square bracket after the part name indicates the color of the part.
[K] Black, [W] White, [R] Red, [H] Gray, [S] Silver.
- [M] mark stands for that the parts are supplied in MESA.

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
CABINET PARTS							
K1	RUP2222ZA		PC BOARD W/COMPONENT M	K27	RDP326ZA		POINTER, DIAL W
K2	RJP4G10Z		PLUG(4P), CP1	K28	RDV40Z		DIAL BELT M
K3	RME414ZA		ANGLE, LED M	K29	RKK318ZA2		BATTERY COVER (R) M
K4	RJM166Z		CONDENSER MICROPHONE	K29	RKK318ZB		BATTERY COVER (K) M
K5	RME432ZA		ANGLE, MIC M	K29	RKK318ZB-7		BATTERY COVER (H) M
K6	Δ RYFXFM27LZEK		REAR CABINET (K) M	K30	RUA721ZA		CHASSIS, EQ. M
(E)			ASS'Y	K31	XYN3+F25FN		SCREW M
K6	Δ RYFXFM27LZE2		REAR CABINET (R) M	K32	XTN3+35G		TAPPING SCREW
(E)			ASS'Y	K33	XTV3+12G		SCREW
K6	Δ RYFXFM27LZE7		REAR CABINET (H) M	K34	XSN26+8		SCREW
(E)			ASS'Y	K35	RME431ZB		ANGLE, EQ, SW(K) M
K6	Δ RYFXFM27LZFS		REAR CABINET (K) M	K35	RME431ZB1		ANGLE, EQ, SW(W) M
(F)			ASS'Y	K35	RME431ZB2		ANGLE, EQ, SW(R) M
K6	Δ RYFXFM27LZF2		REAR CABINET (R) M	K37	XTW2+8S		SCREW
(F)			ASS'Y	K38	RBN733ZC-5		KNOB, TUNG (S) M
K6	Δ RYFXFM27LZF7		REAR CABINET (H) M	K39	RBC991YA		BUTTON, EQ (S) M
(F)			ASS'Y	K40	RAS10P22ZAD1		SPEAKER, WOOFER M
K6	Δ RYFXFM27LZKS		REAR CABINET (K) M	K41	XEARR225EAY		TELESCOPIC ANTENNA
(Z)			ASS'Y	K44	RBN762ZA		KNOB, FINE(K) M
K6	Δ RYFXFM27LZK2		REAR CABINET (R) M	K44	RBN762ZA1		KNOB, FINE(W) M
(Z)			ASS'Y	K44	RBN762ZA2		KNOB, FINE(R) M
K6	Δ RYFXFM27LZK7		REAR CABINET (H) M	K45	QTF105A		FUSE HOLDER
(Z)			ASS'Y	K46	XTV3+14G		TAPPING SCREW
K6-1	RJC91003Z		BATTERY TERMINAL, (+/-) M	K47	RME1SZA		PIECE, SWITCH
K6-2	RGT1245YA		NAME PLATE M	K48	RYQXFM27MKS		CASSETTE LID ASS'Y M
(E)				K49	Δ RYMXFM27LZES		FRONT CABINET ASS'Y (K) M
K7	RWEXFM27LZKS		SPEAKER, TWEETER M	(E)			
K8	SJT30543-V		PLUG, CS3,4 M	K49	Δ RYMXFM27LZE2		FRONT CABINET (R) M
K9	RJP2G4Y		PLUG, CP2, 5	(E)			ASS'Y
K10	RJS2L3Z		SOCKET, CS2, 5	K49	Δ RYMXFM27LZE8		FRONT CABINET (W) M
K11	RJT707Z		TERMINAL, CONTACT	(E)			ASS'Y
K12	RUP2142ZA		PC BOARD W/COMPONENT, P.SUM	K49	Δ RYMXFM27LZKS		FRONT CABINET (K) M
K13	RJC610Z		BATTERY SPRING, (-)	(Z, F)			ASS'Y
K16	RJT865Z		TERMINAL, ANTENNA	K49	Δ RYMXFM27LZK2		FRONT CABINET (R) M
K17	Δ RKX347Z		ARM, HANDLE (K) M	(Z, F)			ASS'Y
K17	Δ RKX347ZA2		ARM, HANDLE (R) M	K49	Δ RYMXFM27LZK8		FRONT CABINET (W) M
K17	Δ RKX347ZA8		ARM, HANDLE(W) M	(Z, F)			ASS'Y
K18	Δ RKX365ZA		HANDLE (K) M	K51	RDR72Z		PULLEY, DIAL M
K18	Δ RKX365ZA1		HANDLE (W) M	K52	RHS634ZA		FELT, VOLUME M
K18	Δ RKX365ZA2		HANDLE (R) M	ACCESSORIES			
K19	XTC3+8CFZ		TAPPING SCREW	A1	Δ RJA20Z		AC CORD, AC
K20	RDG5782Y		GEAR, EJECT M	(Z, F)			
K21	RHG720W		MIC RUBBER M	A1	Δ RJA43Z		POWER CORD(CAUTION LABEL)
K22	RUS528Y		COIL SPRING, EJECT	(E)			
K23	RBC992ZB		BUTTON, VOLUME (S) M	A2	RQX4912ZA		OPERATING INSTRUCTIONS M
K24	RBC990ZA		BUTTON (S)	PACKINGS			
K25	RBD371ZB3		KNOB, FUNCTION[H] M	P2	RPK24052ZA		GIFT BOX M
K26	RBD372ZA2		KNOB, FM/MODE(H) M	P3	RPN9538ZA		PAD COMPLETE M

REPLACEMENT PARTS LIST

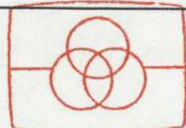
Notes:

1. The letter in the square bracket after the part name indicates the color of the part.

[S] Silver, [K] Black

2. [M] mark stands for the parts are supplied in MESA.

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
MECHANICAL PARTS				M65	RZL6XFM27MKS		LEVER, PAUSE [M]
M1	XSN2+3		SCREW	M66	RFE261Z		SCREW
M2	RJH4C29GZ		HEAD, R/P	M67	RFS613Z		SPRING
M3	RFE263Z		SCREW	M68	RFY669Z		LEVER, CUE
M4	RFS597Z		SPRING, AZIMUTH	M69	RFY670Z		PAUSE LOCK ARM
M5	RFU84Z		HAED FRAME ASS'Y	M70	RFS622Z		SPRING
M6	RFK19Z		FF IDLER ASSY	M71	RFX142Z		STOPPER, CLUTH
M7	RFY654Z		SLIDE PLATE ASSY	M72	RFD265Z		PLATE, DET. INHI
M8	RFS598Z		SPRING, S.PLATE	M74	RFY671Z		PAUSE ARM
M11	RFX139Z		SPACER(C)	M75	RFS615Z		SPRING
M12	RFN180Z		WASHER	M76	RFS616Z		SPRING
M13	RFS599Z		SPRING, P.ROLLER	M77	RFG90Z		IDLER GEAR
M14	RFN110Z		WASHER	M78	RFN162Z		WASHER
M15	RFR37Z		PINCH ROLLER, REVERSE ASS'Y	M79	RFD263Z		FF IDLER PLATE ASSY
M16	RFS600Z		SPRING	M80	RFY672Z		LEVER, DET. INHI
M17	RFE267Z		SCREW	M81	RFJ58Z		REEL TABLE(L) ASSY
M18	RFY655Z		ARM, DR	M82	RFJ59Z		REEL TABLE (R) ASSY
M19	RFD255Z		ANGLE, DR ARM	M87	RFQ44Z		PULLER, DRIVE
M20	RFU85Z		HEAD BASE, RP	M88	RFN163Z		WASHER
M22	RFD285ZA		HEAD BASE, ERASE	M89	RFN164Z		WASHER
M23	XSN17+5		SCREW	M90	RFS619Z		SPRING, FLYWHEEL(R)
M24	RJH1 C03XZCG		HEAD, ERASE	M91	RFS620Z		SPRING, FLYWHEEL(L)
M25	RFE257Z		REEL TABLE	M92	RFF41Z		FLYWHEEL(R) ASS'Y
M26	RFS601Z		SPRING, REVERSE	M93	RFF42Z		FLYWHEEL(L) ASS'Y
M30	RFS645Z		SPRING, C.T.HOLDER	M94	RFE258Z		METAL
M31	RFY656Z		LOCK, E.SAFETY [K]	M95	RFN116Z		WASHER
M32	RFD257Z		REVERSE PLATE(A)	M96	RFB69Z		BELT, D.PULLEY
M33	RFY657Z		REVERSE(A) LEVER ASSY	M97	RFQ45Z		TENSION PULLEY ASS'Y
M34	RFS603Z		SPRING, S.PLATE	M98	RFB70Z		BELT, MOTOR
M35	RFE265Z		SCREW	M99	RFE142Z		SCREW
M36	RFD258Z		STOPPER PLATE	M100	RFI24Z		RUBBER CUSHION
M38	RFD259Z		IDLER PLATE ASS'Y	M101	RFE298Z		FLYWHEEL BRACKET
M39	RFD260Z		LEVER, R. INHIBIT	M103	RFM93ZA		MOTOR ASS'Y
M40	RFD261Z		LEVER, MO	M104	RFE268Z		SCREW
M41	RFS604Z		SPRING, MO LEVER	M105	RFS621Z		SPRING, DIRE.PLATE
M42	RFY658Z		LEVER, LATCH(B) [K]	M106	RFD266Z		PLATE, DIRECTION
M43	RFR38Z		PINCH ROLLER, FOWARD ASS'Y	M107	RFY673Z		ROD, SLIDE(B)
M44	RFS605Z		SPRING	M108	RFY674Z		ROD, SLIDE(A)
M45	RFS606Z		SPRING	M109	RFD286ZA		ANGLE, MOTOR
M46	RFY659Z		LEVER, DR	M110	RFS617Z		SPRING, S.ROD(A)
M47	RFS607Z		SPRING	M111	RFD267Z		SWITCH PLATE(B)
M48	RFD262Z		MODE PLATE	M112	RFD268Z		BUTTON PLATE HOLDER
M49	RFY660Z		MODE LEVER, REVERSE	M113	RFU86YA		MECHANISM BASE ASS'Y
M50	RFS608Z		SPRING	M115	RFG91Z		FLYWHEEL GEAR
M51	RFY661Z		LEVER, DETECTION	M116	RFX143Z		WASHER
M52	RFE259Z		ROD, DETECTION	M117	RFS618Z		SPRING, S.PLATE
M53	RFE260Z		BUSH, DET.ROD	M120	RFY675Z		PLATE, REV.MODE
M54	RFS609Z		SPRING, DET.ROD	M121	RFE269Z		SCREW
M55	RFY705Z		LEVER, REVERSE	M122	RFD272Z		SWITCH PLATE(D)
M56	RFS610Z		SPRING, HEAD BASE	M123	RFE318ZA		SCREW
M57	RFS611Z		SPRING, REC LEVER	M124	RFE319Z		SCREW
M58	RFS612Z		SPRING, PB LEVER	M125	RUS696ZA		SPRING R/P LEVER [M]
M59	RFD264Z		SWITCH PLATE	M126	XTN2+5F		SCREW
M60	RZL1XFM27MKS		LEVER ASS'Y, RECORD [S] [M]	M127	RBC989ZA-0		BUTTON [M]
M61	RZL2XFM27MKS		LEVER ASS'Y, PLAYBACK [S] [M]	M128	RZWXFM27MKS		WIRING MATERIAL [M]
M62	RZL3XFM27MKS		LEVER ASS'Y, REWIND [S] [M]	M131	RME27YA		ANGLE, SW [M]
M63	RZL4XFM27MKS		LEVER ASS'Y, F.F. [S] [M]	M132	RFS646Z		SPRING, ERASE
M64	RZL5XFM27MKS		LEVER ASS'Y, EJECT/STOP [S] [M]				



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