

Service Manual

Radio

FM/AM 2 BAND PORTABLE RADIO

RF-560BA



■ SPECIFICATIONS

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

Intermediate Frequency: FM 10.7MHz
 AM 455kHz

Sensitivity: FM $2\mu\text{V}$ for 50mW Output
 MW $50\mu\text{V/m}$ for 50mW Output

Power Output: 500mW Maximum

Power Source: AC 240V 50Hz or
 6V (Four "AA" Size Flashlight Batteries)
 (National UM-3 or equivalent)

Speaker: 8 cm(3") PM Dynamic Speaker

Dimensions: 222(Wide) × 137(High) × 61(Deep) mm
 ($8\frac{25}{32}$ " × $5\frac{13}{32}$ " × $2\frac{13}{32}$ ")

Weight: 920g (2 lb 4.6 oz.) Without Batteries

Impedance: Speaker.....8Ω
 Earphone Jack.....8Ω

Specifications are subject to change without notice.

 **National Panasonic**

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

DISASSEMBLY INSTRUCTIONS

■ TO REMOVE P.C BOARD

1. Remove battery cover and volume knob from cabinet.
2. Remove four (4) screws, No.1~4, for the cabinet back cover, as illustrated in Fig. 1.
3. Remove the cabinet back cover.
4. Pull out the socket from chassis.
5. Remove the two red screw for the chassis, as shown in Fig. 2.
6. To reassemble, reverse the above procedure.

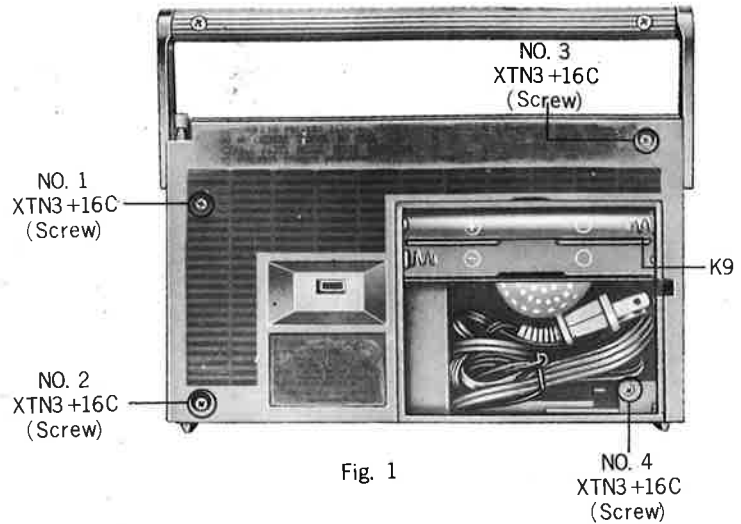


Fig. 1

Notes :

1. Turn Tuning capacitor shaft to fully counter-clockwise as illustrated in Fig. 3.
2. Insert the Tuning capacitor shaft in the hole of dial drum.

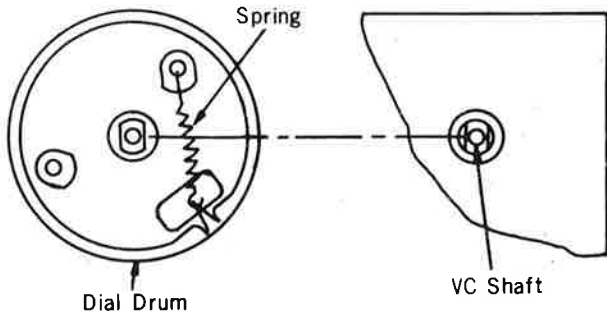


Fig. 3

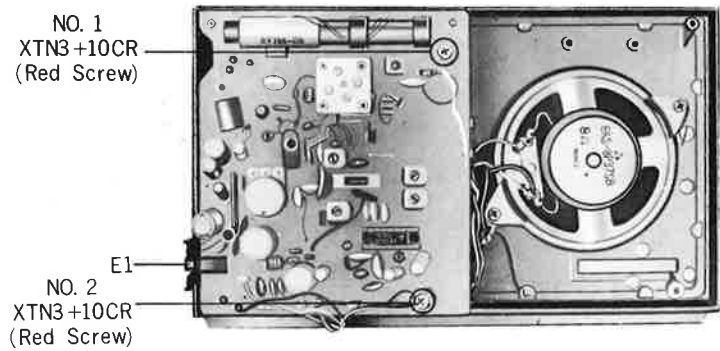


Fig. 2

■ ALIGNMENT POINTS

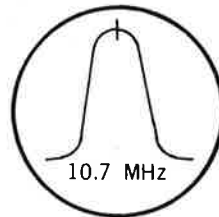
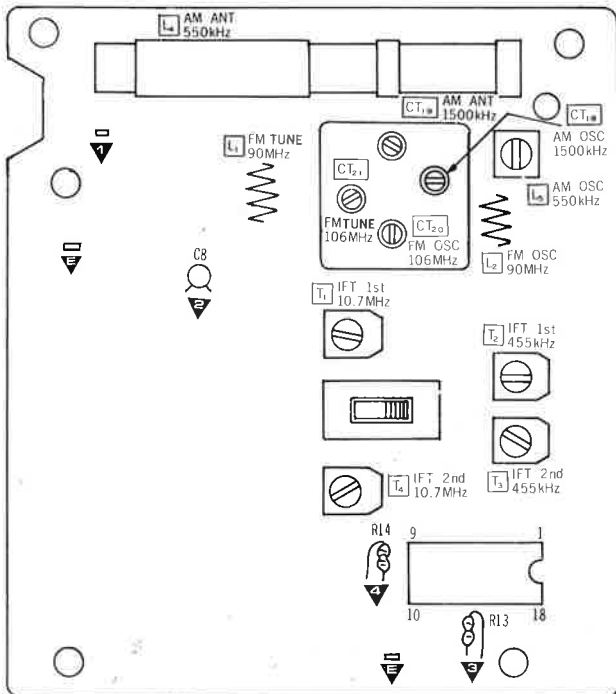


Fig. 4

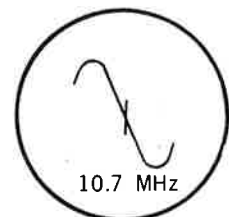


Fig. 5

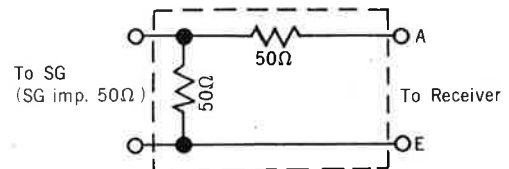








Fig.6 FM Dummy Antenna

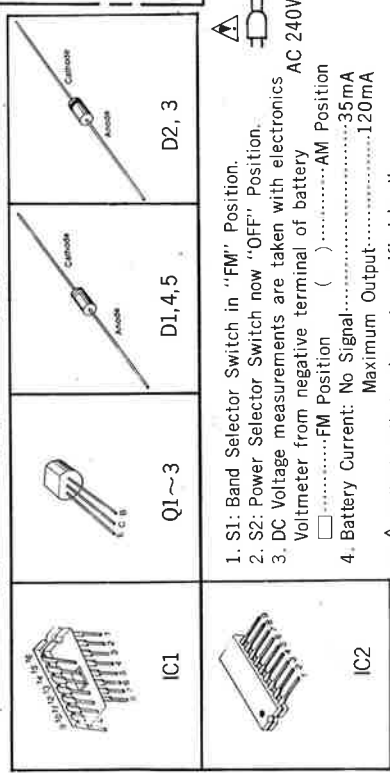
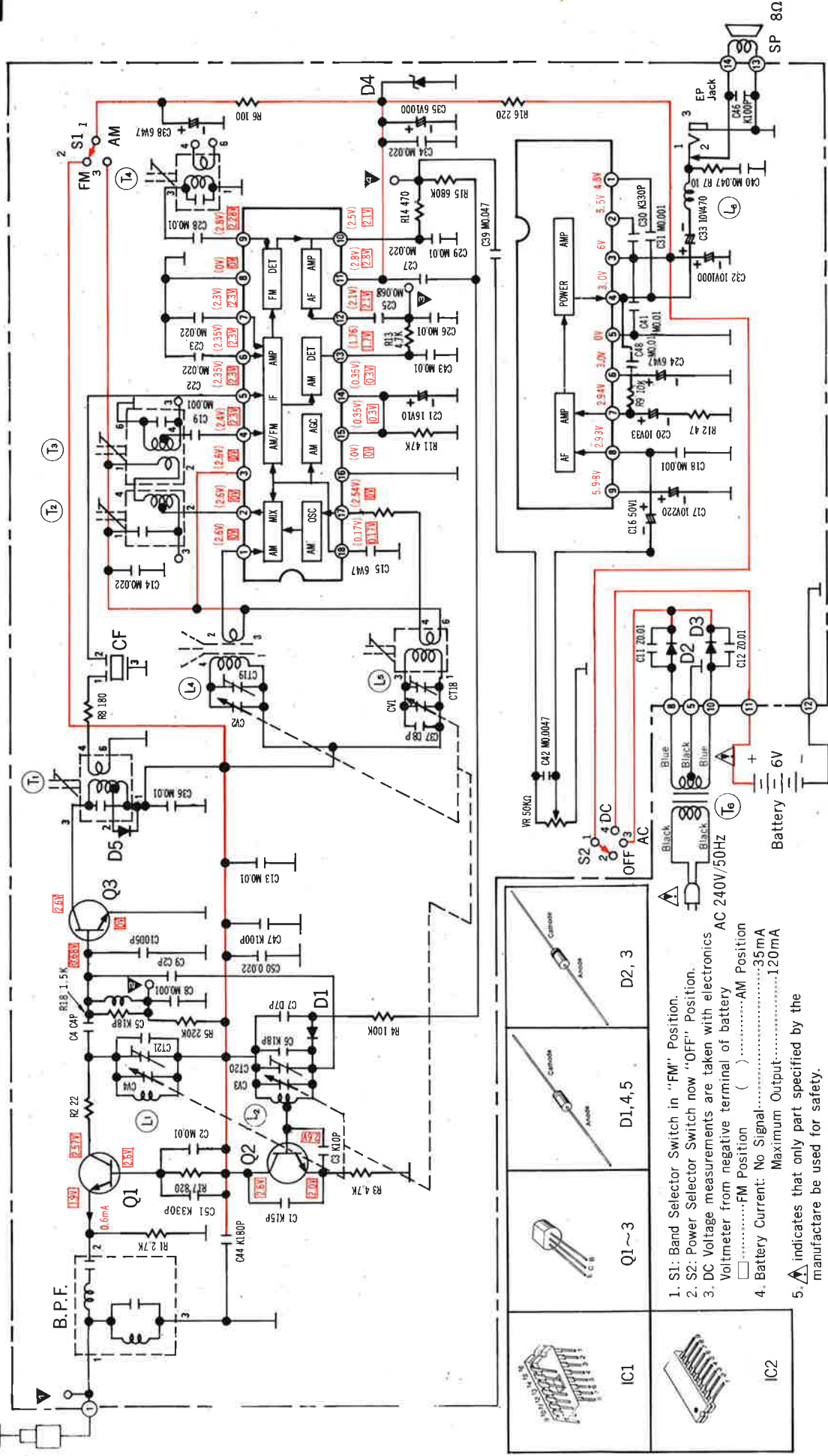
ALIGNMENTS

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT					
Notes: 1. Set volume control to minimum 2. Set band switch to AM, or FM 3. Set power source voltage to 6 volts DC. 4. Output of signal generator should be no higher than necessary to obtain an output reading.					
SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (TVM or SCOPE)	ADJUSTMENT	REMARKS
CONNECTIONS	FREQUENCY				
AM-IF ALIGNMENT					
(1)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 400Hz	Point of non-interference. (on/about 600 kHz)	Output meter across earphone Jack	T ₂ (AM 1st IFT) T ₃ (AM 2nd IFT) Adjust for maximum output.
AM-RF ALIGNMENT					
(2)	"	550 kHz	550 kHz [6.7mm($\frac{3}{8}$ ")]	"	L ₅ (AM OSC Coil) (*1)L ₄ (AM ANT Coil) Adjust for maximum output. Adjust L ₄ by moving coil bobbin along ferrite core.
(3)	"	1500 kHz	1500 kHz [63.6mm (2 $\frac{1}{2}$ ")]	"	CT ₁₈ (AM OSC Trimmer) CT ₁₉ (AM ANT Trimmer) Adjust for maximum output. Repeat steps (2) and (3)
(*1) Cement antenna bobbin with wax after completing alignment.					
FM-IF ALIGNMENT					
(4)	High side thru. to point  Common to point 	10.7 MHz (400kHz SWP.)	Point of non-interference. (on/about 90 MHz.)	Connect 0.033 μ F vert. amp. of scope to point  Common to point 	T ₁ (FM 1st IFT) Adjust for maximum amplitude and proper linearity between \pm 100kHz markers. (Refer to Fig. 4)
(5)	"	"	"	"	T ₄ (FM 2nd IFT) Adjust T ₄ so that 10.7 MHz marker appears at the center. (Refer to Fig.5)
FM-RF ALIGNMENT					
(6)	Connect to point  through FM Dummy antenna. Common to point  (Refer to Fig. 6)	90 MHz	90 MHz [8.1mm($\frac{11}{32}$ ")]	Output meter across earphone jack.	L ₂ (FM OSC Coil) L ₁ (FM Tuning Coil) (*2) Adjust for maximum output
(7)	"	106 MHz	106 MHz [57.5mm (2 $\frac{17}{64}$ ")]	"	CT ₂₀ (FM OSC Trimmer) CT ₂₁ (FM Tuning Trimmer) (*2) Adjust for maximum output. Repeat steps (6) and (7)
(*2) Three output responses will be present; Proper tuning is the center frequency.					

Schematic Diagram Model RF-560BA

- D1 RVDSD113 AFC
- Q1 2SC1359 FM RF AMP
- Q2,3 2SC1675 FM L. OSC, MIX
- D5 RVDVD1N60 AGC
- D2,3 RVD10E1 RECT
- D4 RVDZM7303 ZENER
- IC1 AN7220A
- IC2 RV1BA546
- AM MIX, AM FM IF AMP AF AMP, POWER AMP
- FM DET, AM OSC, AGC, DET, AF AMP

TELESCOPIC ANT

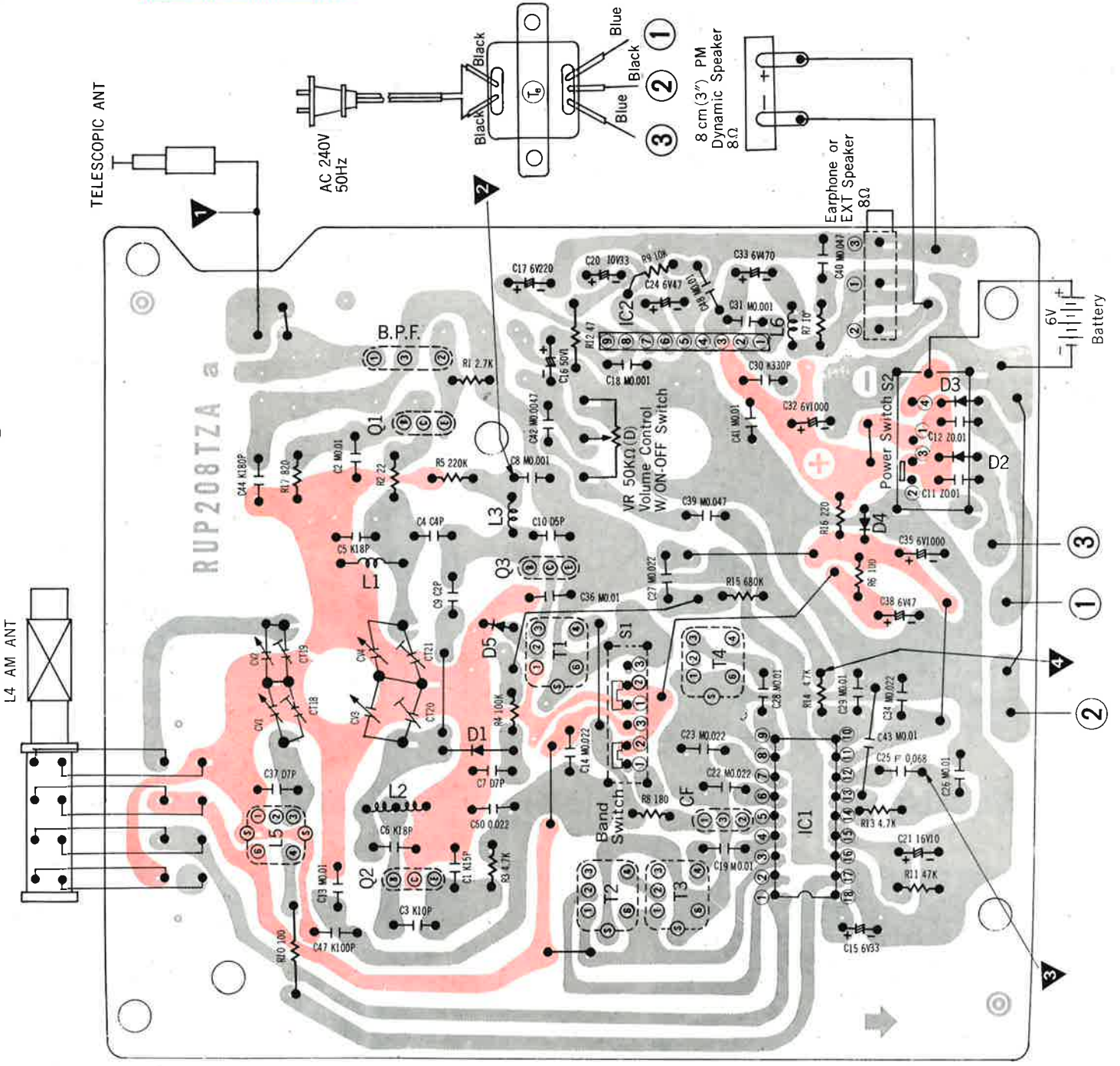


1. S1: Band Selector Switch in "FM" Position.
2. S2: Power Selector Switch now "OFF" Position.
3. DC Voltage measurements are taken with electronics Voltmeter from negative terminal of battery
 -FM Position
 -AM Position
4. Battery Current: No Signal.....35mA
Maximum Output.....120mA
5. ⚠ indicates that only part specified by the manufacturer be used for safety.

IMPORTANT SAFETY NOTICE
 The Shaded Area On This Schematic Diagram Incorporates Special Features Important For Safety. When Servicing It Is Essential That Only Manufacturer's Specified Parts Be Used For The Critical Components In The Shaded Areas Of The Schematic.

Circuit Board Wiring View Model RF-560BA

RF-560BA



IC₁

	AM	FM	AM	FM	
1	2.60V	0 V	10	2.50V	2.10V
2	2.60V	0 V	11	2.80V	2.80V
3	2.60V	0 V	12	2.10V	2.10V
4	2.40V	2.30V	13	1.76V	1.70V
5	2.35V	2.30V	14	0.35V	0.30V
6	2.35V	2.30V	15	0.35V	0.30V
7	2.30V	2.30V	16	0 V	0 V
8	0 V	0 V	17	2.54V	0 V
9	2.80V	2.28V	18	0.17V	0.17V

IC₂

1	4.80V
2	5.50V
3	6 V
4	3 V
5	0 V
6	3 V
7	2.94V
8	2.93V
9	5.98V

G₁

	FM
B	2.60V
C	1.90V
E	2.57V
Ie	0.6mA

G₂

	FM
B	2.60V
C	2.60V
E	2 V
Ie	0.43mA

G₃

	FM
B	0.68V
C	2.60V
E	0 V
Ie	0.6mA

■ DIAL CORD INSTALLATION GUIDE

1. Dial cord length is 80cm(31½").
2. Tuning capacitor is positioned at minimum capacity. (clockwise)
3. Arrows (1~7) indicate correct order and direction of dial cord installation, as illustrated in Fig. 7.
4. Cement dial cord ends.

■ TO MOUNT DIAL POINTER

1. Set Tuning capacitor to maximum capacity.
2. Set dial pointer to start point of dial scale.
3. Attach dial cord to dial pointer.

DIAL THREADING

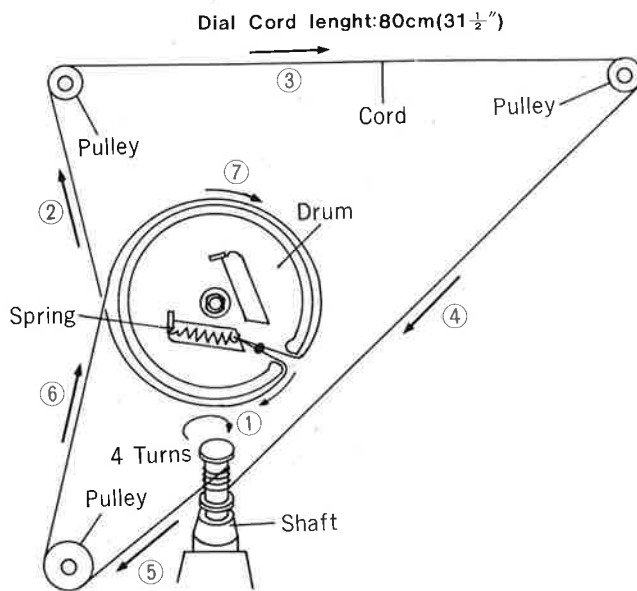


Fig. 7

CABINET PARTS

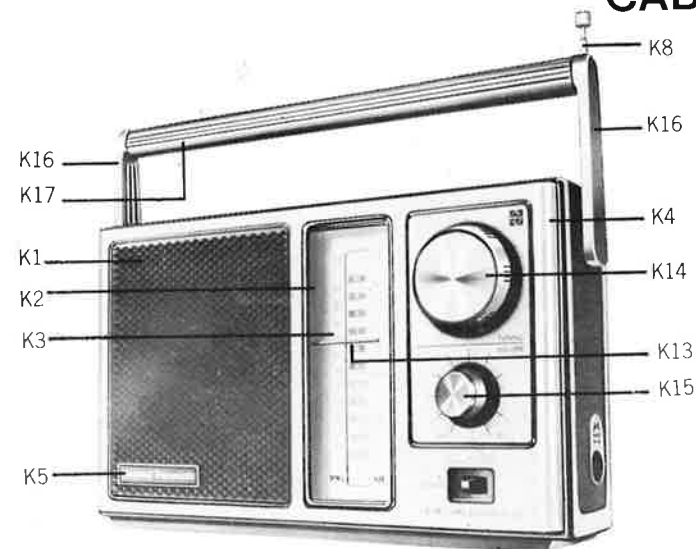


Fig. 8

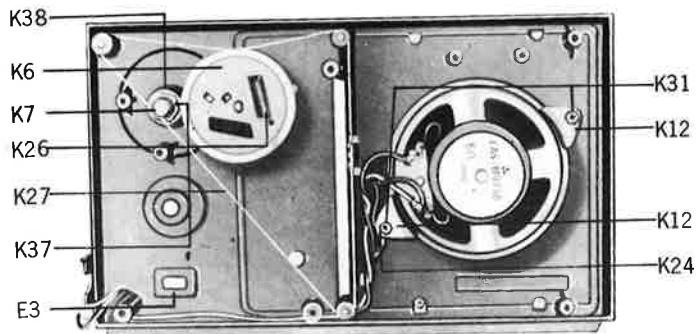


Fig. 9

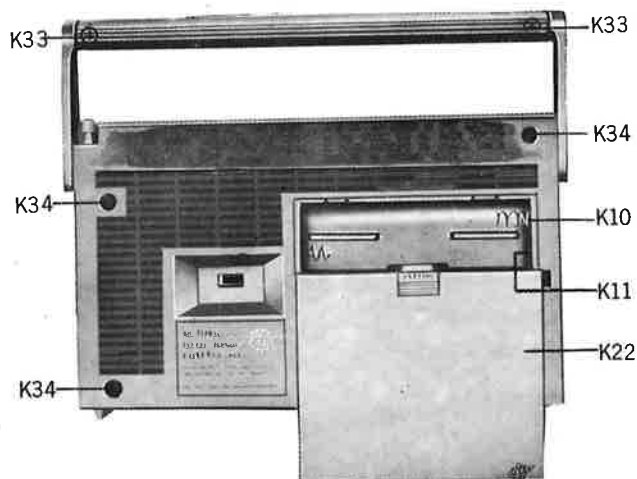


Fig. 10

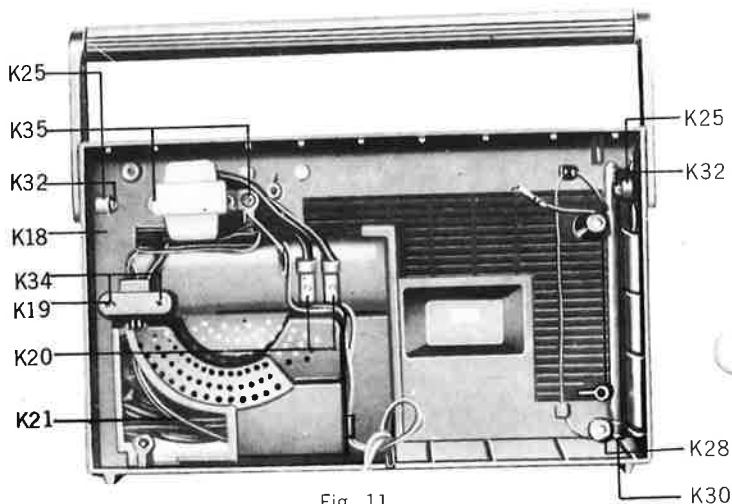


Fig. 11

REPLACEMENT PARTS LISTModel RF-560BA (TD8007-067)

Notes: 1. Part numbers are indicated on most mechanical parts.
 Please use this part number for parts orders.
 2. The S mark is service standard parts and may differ from production parts.
 3. The O mark is used by the manufacturing plant only.
 4. Δ indicates that only parts specified by the manufacture be used for safety.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
INTEGRATED CIRCUITS, TRANSISTORS AND DIODES				
I C1	AN7220A	IC, AM MIX, AM FM IF AMP, FM DET, AM AM OSC, AM AGC AM DET, AF AMP	1	
I C2	RV1BA546	IC, AF AMP, POWER AMP	1	
Q1	2SC1359	Transistor (Si), FMRF AMP	1	
Q2, 3	2SC1675	Transistor (Si), FML, OSC, MIX	2	
D1	RVDSJ113	Diode (Si), AFC	1	S
D4	RVDZM2303	Diode (Si), Zener	1	S
D5	OA90	Diode (Ge), AGC	1	S
RECTIFIER				
D2, 3	SM112	Diode (Si), RECT	2	S Δ
CERAMIC FILTER, COILS AND TRANSFORMER				
BPF	RXARPMB3	Band Pass Filter	1	TAMAGO
CF	RVFSFE107MS2	Ceramic Filter	1	
L1	RLD4Y44	Detection Coil, FM	1	
L2	RL04Y43	Oscillator Coil, FM	1	
L4	RLF2V154	Antenna Coil, AM	1	TAMAGO
L5	RL02B87	Oscillator Coil, AM	1	TAMAGO
T1, 4	RL4AM101	IFT, FM 1st & 2nd	2	S
T2	RLI2M216	IFT, AM 1st	1	
T3	RLI2M217	IFT, AM 2nd	1	
T6	RLT51110	Power Transformer	1	Δ
VARIABLE RESISTOR				
VR	RVV54D125	Variable Resistor, 50K (N/D), Volume Control	1	TAMAGO
VARIABLE CAPACITOR				
CV1-4	RCV4LC2VM	Tuning Capacitor, W/Trimmer Capacitor (CT18-21)	1	
SPEAKER				
SP	EAS8P87SA	Speaker, 8cm (3") Imp, 8.0 PPM Dynamic	1	TAMAGO
SWITCHES				
S1	RSS145Z	Switch, Band	1	TAMAGO
S2	RSS9A02Z	Switch, AC/Battery, Power	1	TAMAGO
RESISTORS				
R7	ERD25TJ100	10 Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R2	ERD25TJ270	27 Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R12	ERD25TJ470	47 Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R6, 10	ERD25TJ101	100 Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	2	S
R8	FRD25TJ181	180 Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R16	FRD25TJ221	220 Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R14	ERD25TJ471	470 Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R17	ERD25TJ821	820 Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R1	ERD25TJ272	2.7K Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R3, 13	ERD25TJ472	4.7K Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	2	S
R9	ERD25TJ103	10K Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R11	ERD25TJ473	47K Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R4	ERD25TJ104	100K Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R5	ERD25TJ224	220K Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R15	ERD25TJ684	680K Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
R18	ERD25TJ152	1.5K Ω , $\frac{1}{4}$ Watt, $\pm 5\%$, Carbon	1	S
CAPACITORS				
C9	ECCDIH020C	50WV, $\pm 0.25\mu F$, Ceramic	1	
C4	FCCDIH040CC	50WV, $\pm 0.25\mu F$, Ceramic	1	
C10	FCCDIH050DC	50WV, $\pm 0.25\mu F$, Ceramic	1	
C7, 37	ECCDIH07DC	50WV, $\pm 0.25\mu F$, Ceramic	2	
C3	ECCDIH100KC	50WV, $\pm 10\%$, Ceramic	1	
C1	ECCDIH150KC	50WV, $\pm 10\%$, Ceramic	1	
C5, 6	ECCDIH180KC	50WV, $\pm 10\%$, Ceramic	1	
C46, 47	FCCDIH101K	50WV, $\pm 10\%$, Ceramic	2	
C44	ECCDIH181K	50WV, $\pm 10\%$, Ceramic	1	
C30, 51	ECCDIH331K	50WV, $\pm 10\%$, Ceramic	2	
C8, 18, 19, 31	ECKDHI102MD	0.001 μF , Ceramic	4	
C42	ECKDHI472MD	0.0047 μF , Ceramic	1	
C2, 13, 26, 28, 29, 36, 41, 43, 48	ECKDHI103MD	0.01 μF , Ceramic	9	
C11, 12	EKVD223MD	50WV, $\pm 80\%$, $\pm 20\%$, Semi-conductor	2	
C14, 22, 23, 27, 34, 50	ECFVDB473MD	25WV, $\pm 20\%$, Sdm-conductor	6	
C39, 40	ECFVDB83MD	25WV, $\pm 20\%$, Sdm-conductor	2	
C25	ECEA1HS010	1 μF , Electrolytic	1	S
C6	ECEA1CS100	10 μF , Electrolytic	1	S
C21	ECEA1S380	33 μF , Electrolytic	1	S
C15, 20	ECEA1S470	47 μF , Electrolytic	2	S
C24, 38	ECEA1AS221	220 μF , Electrolytic	2	S
C17	ECEA1AS471	470 μF , Electrolytic	1	S
C33	ECEA1AS102	1000 μF , Electrolytic	1	S
C32, 35			2	S

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
CABINET				
K1	RYMF560BAKT	Cabinet Body Assy	1	
K2		Forner Cabinet	(1)	
K3		Panel, Dial	(1)	
K4		Scale, Dial	(1)	
K5	Not Available Order	Ornament	(1)	
		Badge	(1)	
		Pulley, Dial	(1)	
		Shaft, Dial	(1)	
		Drum, Dial	(5)	
		Shaft, Drum	(5)	
		Shaft, Tuning	(1)	
K7	RDT20TZ	Telescopic Antenna	1	
K8	XEARV116FB	Terminal, Assy	1	
K9	RWEF560BAKT	Terminal, \oplus Side	1	
K10	RJC322Z	Terminal, \ominus Side	1	
K11	RJC717Z	Terminal, \oplus Side	1	
K12	RMS30	Bracket, Speaker	1	
K13	RDP206TZ	Pointer	1	
K14	RYTIF560BAKT	Tuning Knob Assy	1	
K15	RBN202TZ	Volume Knob	1	
K16	RKX202TZ	Arm, Handle	2	
K17	RKX201T	Handle	1	
K18	RHR134Z	Cover, Cabinet	1	
K19	RKR134Z	Cover, Cabinet	1	
K20	RHR108A	Bracket, Cord	1	
K21	RJA9Y	Terminal	2	
K22	RKK201TZ	Cord, AC	1	
K23	RHR822Z	Cover, Battery	1	
K24	RJT202TZ	Sponge	1	
K25	RHR433Z	Terminal	1	
K26	RDS-090A	Bracket	1	
		Spring	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks	
K27	RDZ05A	Cord, Dial	1 Roll	} TAMACO	
K28	RJT201TZ	Terminal	1		
K29	RJS17A	Plug	1		
K30	XSN26D+6BN	Screw	1		
K31	XTN3+8B	Screw	2		
K32	XTW3+10B	Screw	2		
K33	XTS3+8CFZ	Screw	1		
K34	XTN3+16B	Screw	6		
K35	XTN3+12B	Screw	2		
K36	XWG3	Washer	1		
K37	XNS 9	Nut, Tuning Shaft	1		
K38	XWG9D15AW	Washer, Tuning Shaft	1		
CHASSIS					
E1	RJJ19Y	Jack	1		} TAMACO
E2	RUV202TZ	Cover, Volume	1		
E3	RUV203TZ	Cover, Jack	1	} TAMACO	
E4	XTN3+12CR	Red Screw	2		
E5	RME70Z	Terminal	1		
E6	RJT733-1	Terminal	6		
ACCESSORY					
	XEH1A1-P	Earphone Impedance 8Ω	1	S	
PACKING MATERIALS					
	RPK215TZ	Gift Box	1	} TAMACO	
	RPN1112TZ	Pad	2		
	RQX234TZ	Instruction Book	1		
	RPF205TZ	Polyethylene Cover	1		