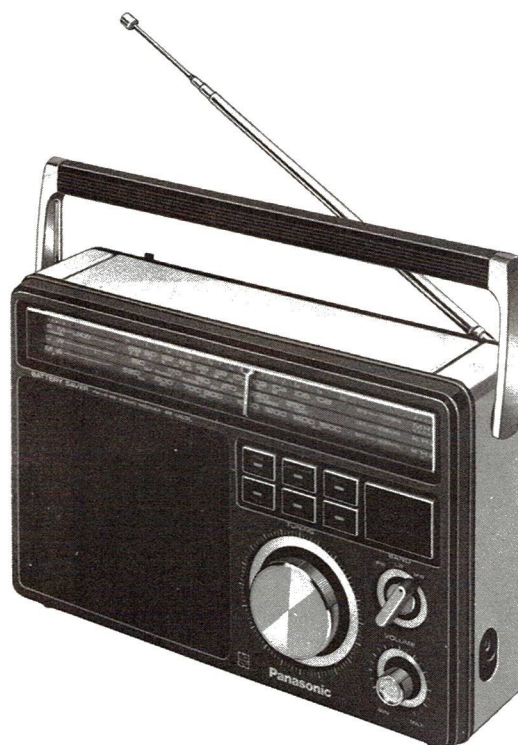


Service Manual

Radio RF-1403LBS

FM/LW/MW 3-BAND
PORTABLE RADIO



■ SPECIFICATIONS

Frequency Range: FM 87.5~108MHz
LW 150~255kHz (2000~1176m)
MW 520~1610kHz (577~186m)

Intermediate Frequency: FM 10.7MHz
AM (LW & MW) 455kHz

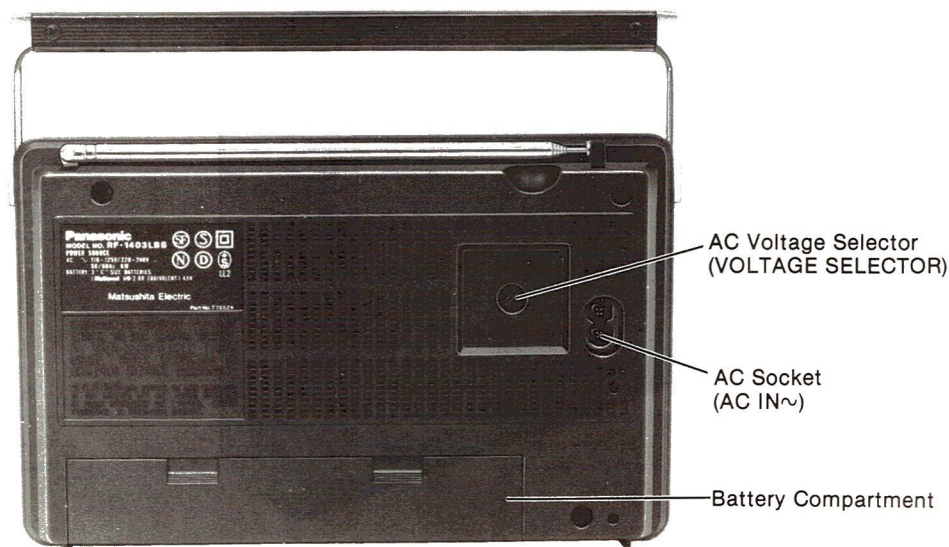
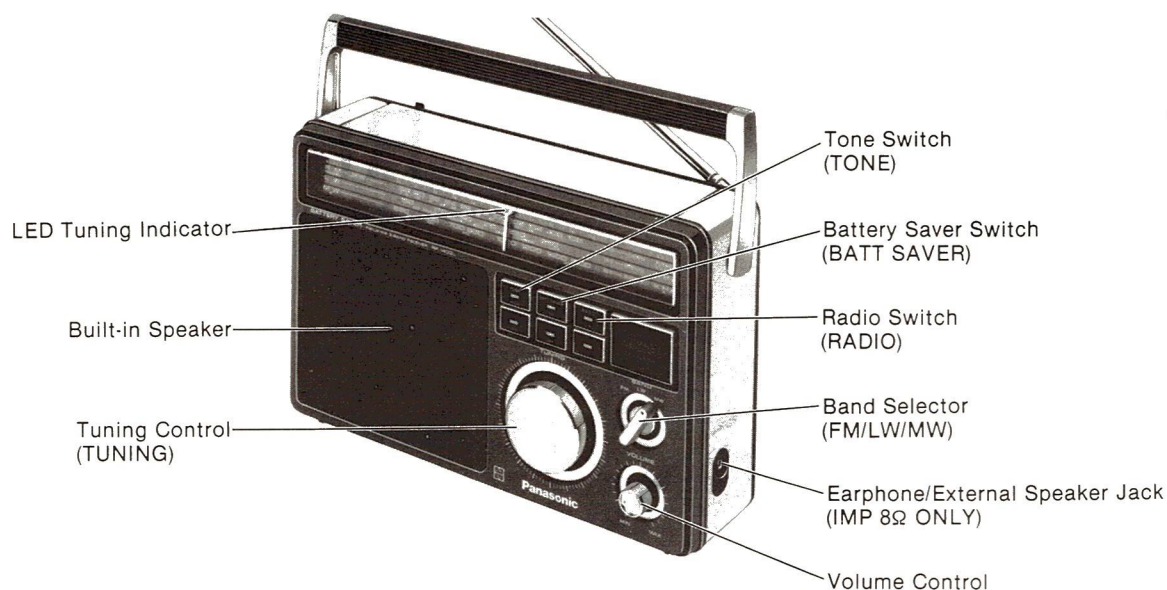
Sensitivity: FM 2.5 μ V (-10dB Limit Sens)
LW 150 μ V/m for 50mW Output
MW 60 μ V/m for 50mW Output

Power Source: AC 110~125/220~240V 50/60Hz
or DC 4.5V (Three "C" Size Flashlight
Batteries) (National UM-2 or
equivalent)

Power Consumption: 6W (AC Only)
Power Output: 1W (DC Max)
Speaker: 10cm (4") PM Dynamic Speaker
Dimensions: 9 $\frac{5}{16}$ "(Wide) $\times$ 6"(High) $\times$ 2 $\frac{7}{8}$ "(Deep)
(236 $\times$ 151 $\times$ 72.5)mm
Weight: 2 lb. 13.9 oz. (1.3kg) without
batteries
Impedance: Speaker.....8 Ω
Earphone Jack8 Ω

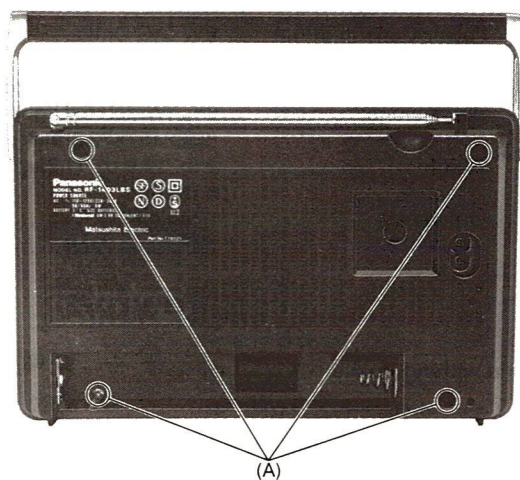
Specifications are subject to change without notice.

LOCATION OF CONTROLS AND COMPONENTS

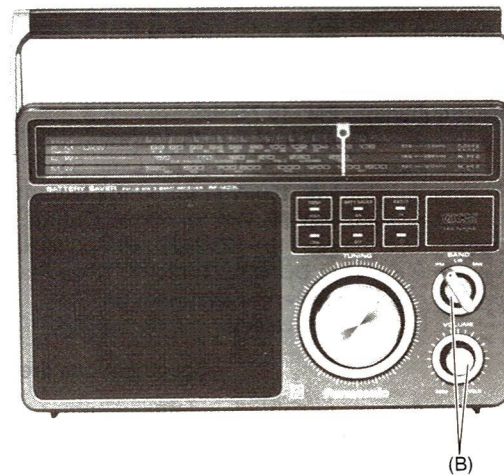


[Fig. 1]

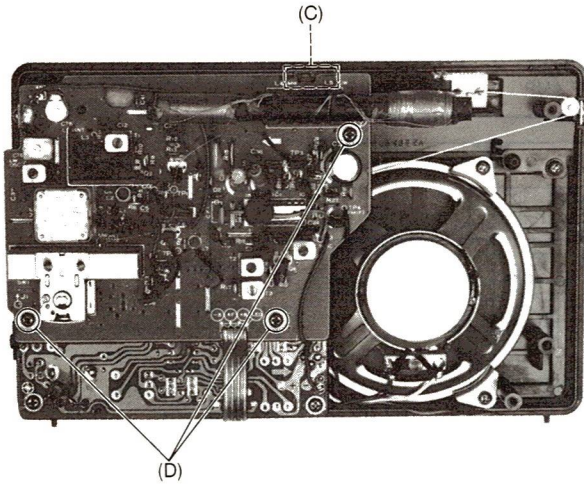
DISASSEMBLY INSTRUCTION



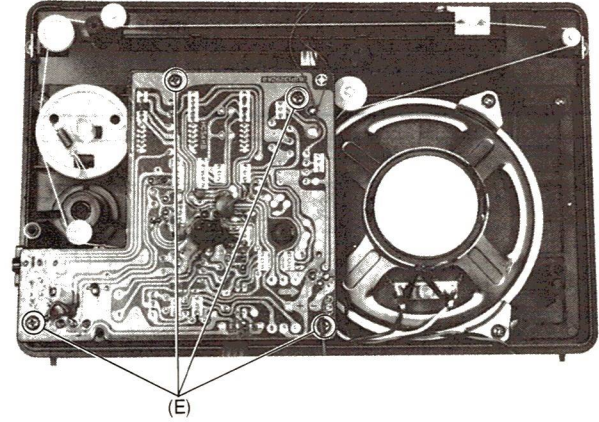
[Fig. 2]



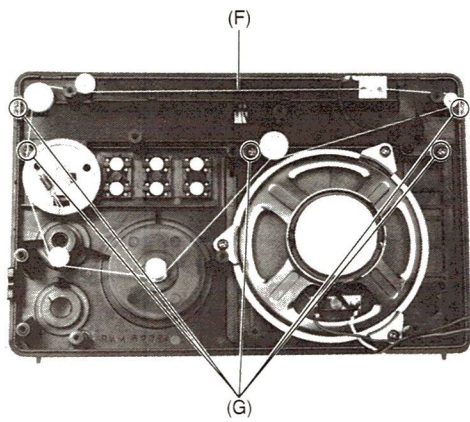
[Fig. 3]



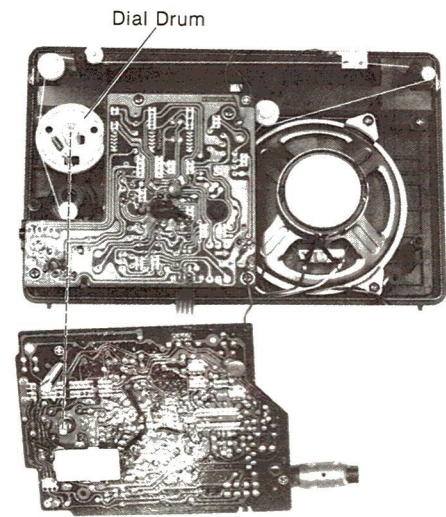
[Fig. 4]



[Fig. 5]



[Fig. 6]



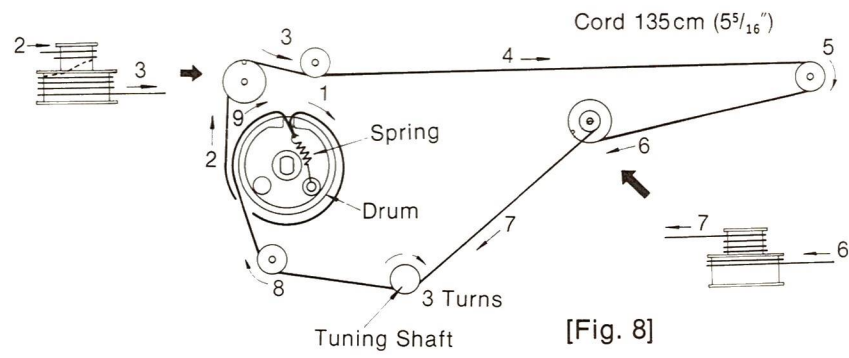
[Fig. 7]

Procedure	To remove —.	Remove —.	Shown in Fig. —.
1	Rear Cabinet	Screws (3×20)(A)×4	2
2	Printed Circuit Board	Konbs(B)×2	3
3		Adhesive tape(C)×1	4
4		Red screws (3×12).....(D)×3	4
5		Red screws (3×12).....(E)×4	5
6	Dial Chassis	Remove the dial cord(F)	6
7		Screws (3×12)(G)×5	6

Notes:

1. Turn the tuning gang shaft to fully counter-clockwise.
2. When assembling, insert the tuning gang shaft in the hole of dial drum as shown in fig. 7.

DIAL THREADING



[Fig. 8]

ALIGNMENTS

■ ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set radio switch to ON.
2. Set volume control to maximum.
3. Set tone control to high.
4. Set band switch to MW, LW or FM.
5. Set power source voltage to 4.5V DC.
6. Output of signal generator should be no higher than necessary to obtain an output reading.

■ MW AND LW ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMMETER 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 30% Mod. at 400Hz	Point of non-interference.	Output meter across voice coil.	T2 (AM 1st IFT) T3 (AM 2nd IFT) Adjust for maximum output.
MW-RF ALIGNMENT						
(2)	MW	"	550 kHz	550 kHz [11 mm(⁷ / ₁₆ ")]	Output meter across voice coil.	L6 (MW OSC Coil) (* 1) L4 (MW ANT Coil) Adjust for maximum output. Adjust L4 by moving coil bobbin along ferrite core.
(3)	MW	"	1,500 MHz	1,500 MHz [100 mm(4")]	"	CT4 (MW OSC Trimmer) CT3 (MW ANT Trimmer) Adjust for maximum output. Repeat steps (2) and (3).
(* 1) Cement antenna bobbin with wax after completing alignment.						
LW-RF ALIGNMENT						
(4)	LW	"	267 kHz	Variable capacitor fully opened.	Output meter across voice coil.	CT6 (LW OSC Coil) Adjust for maximum output.
(5)	LW	"	150 kHz	150 kHz [7.1 mm(⁹ / ₃₂ ")]	"	(* 2) L5 (LW ANT Coil) Adjust for maximum output. Adjust L5 by moving coil bobbin along ferrite core.
(6)	LW	"	250 kHz	250 kHz [89.6 mm(3 ¹⁷ / ₃₂ ")]	"	CT5 (LW ANT Trimmer) Adjust for maximum output. Repeat steps (4)~(6).
(* 2) Cement antenna bobbin with wax after completing alignment.						

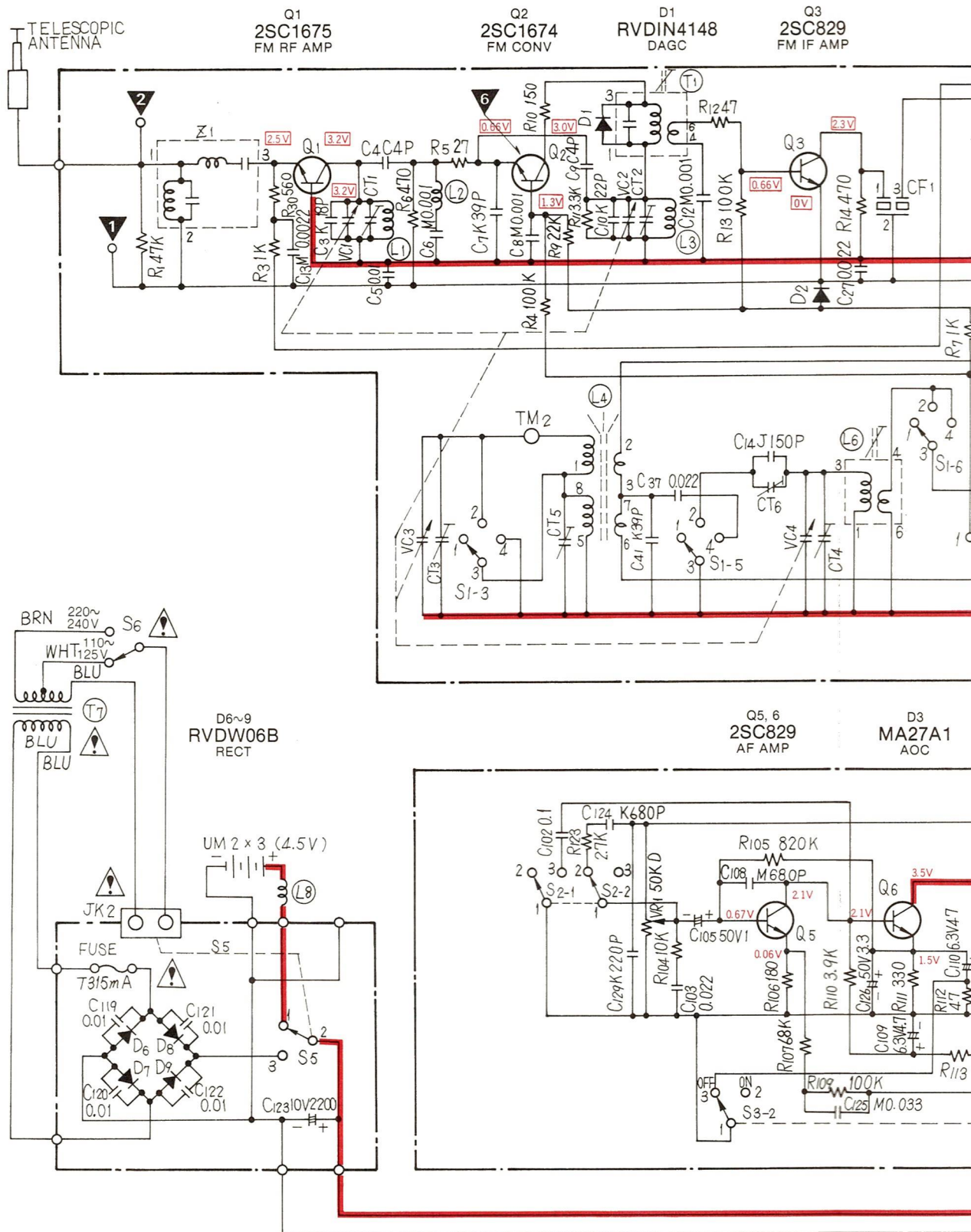
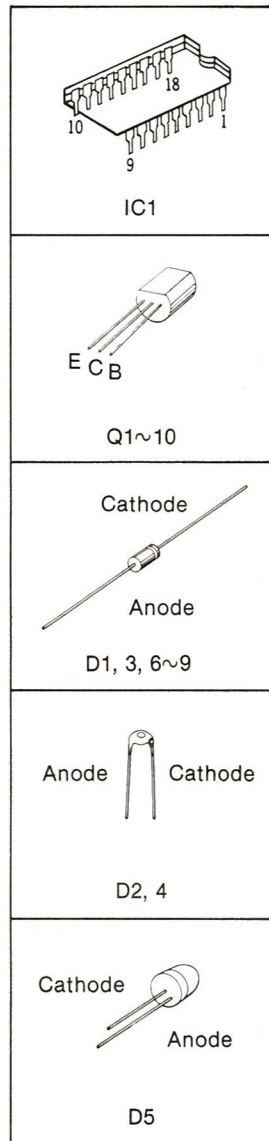
■ FM IF ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
(1) FM	Connect to test point ∇ through 0.001 μ F.	10.7 MHz	Point of non-interference.	Connect vert. amp of scope to test point ∇ . Negative side to test point ∇ .	T1 (FM 1st)	Adjust for maximum amplitude. (Refer to Fig. 10.)
(2) FM	"	"	"	"	T4 (FM 2nd)	Adjust for maximum amplitude. (Refer to Fig. 11.)

■ FM RF ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS	
	CONNECTIONS	FREQUENCY					
(1)	FM	Connect to test point  through FM dummy antenna. (Refer to fig. 12).	87.5 MHz	Variable capacitor fully closed.	Output meter across voice coil	L3 (FM OSC Coil)	(*3) Adjust for maximum output.
(2)	FM		90 MHz	90 MHz [13.3mm(¹⁷ / ₃₂ ")]	"	L1 (FM TUNE Coil)	(*3) Adjust for maximum output.
(3)	FM		106 MHz	106 MHz [92.2mm(3 ⁵ / ₈ ")]	"	CT2 (FM OSC Trimmer) CT1 (FM TUNE Trimmer)	(*3) Adjust for maximum output. Repeat steps. (1)~(3).
(*3) Three output responses will be present; proper tuning is the center frequency.							

SCHEMATIC DIAGRA

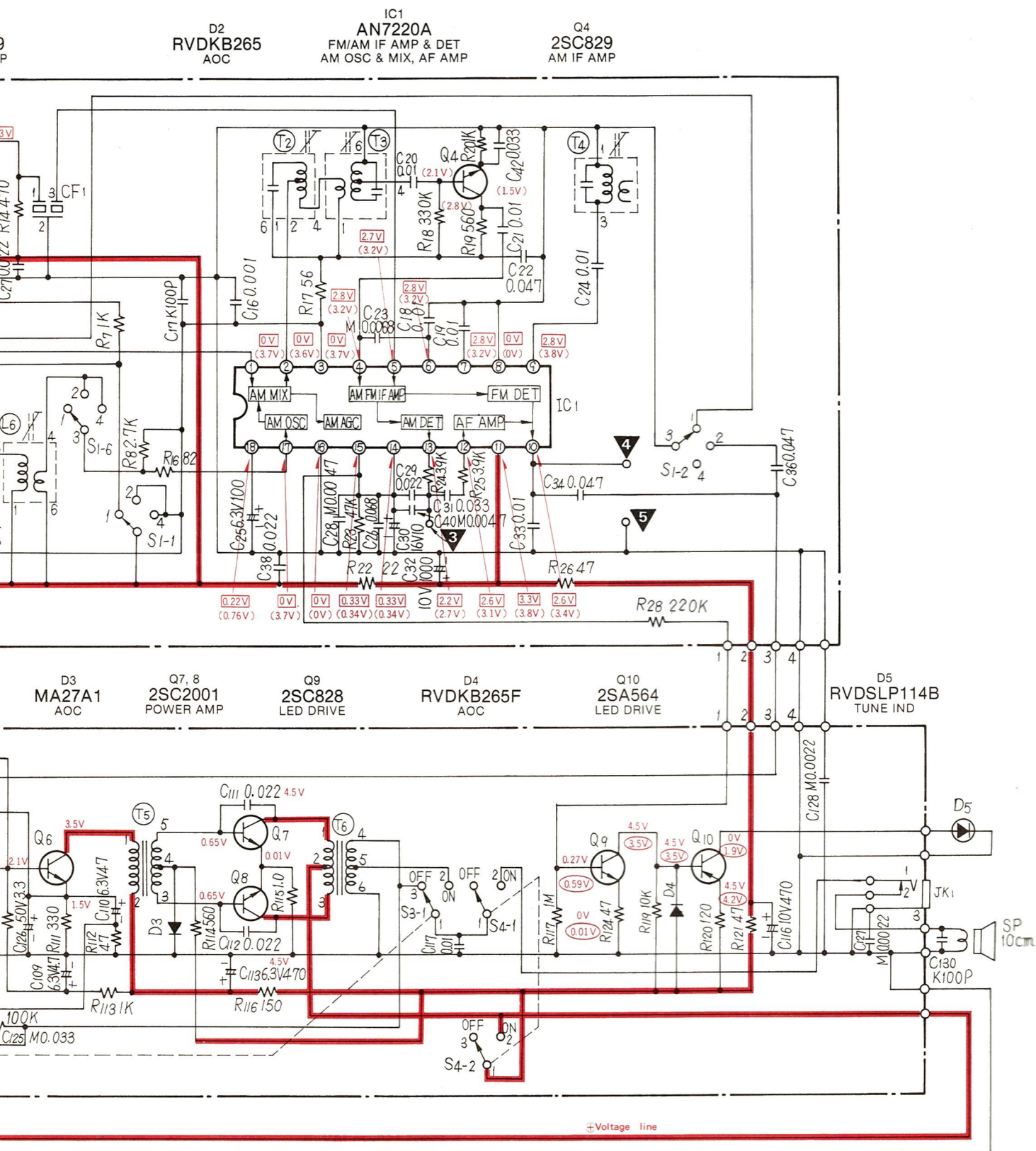


Notes:

1. S1-1~S1-6: Band switch in "FM" position.
(1...FM, 2...LW, 4...MW)
2. S2-1, S2-2: Tone switch in "HIGH" position.
(2...HIGH, 3...LOW)
3. S3-1, S3-2: Battery saver switch in "OFF" position.
(2...ON, 3...OFF)
4. S4-1, S4-2: Radio switch in "OFF" position.
(2...ON, 3... )
5. S5: AC/DC switch in "DC position.
6. S6: Voltage selector.

7. DC voltage measurements are taken with electronics from negative terminal of battery.
 ...FM position, ()...AM position,
 ...LED ON position.
8. Battery current: No signal.....
 Maximum output
9. Δ indicates that only parts specified by the manufacturer used for safety.
10. The mark () shows test point. e.g.  = test point 1.

DIAGRAM MODEL RF-1403LBS



with electronics voltmeter

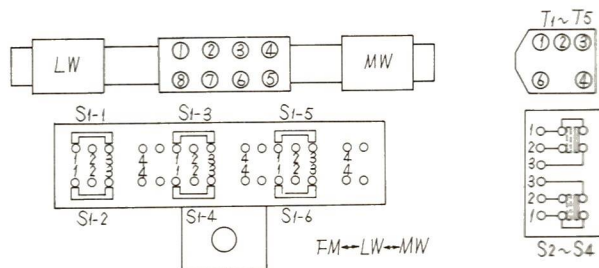
ition,

..... 32mA

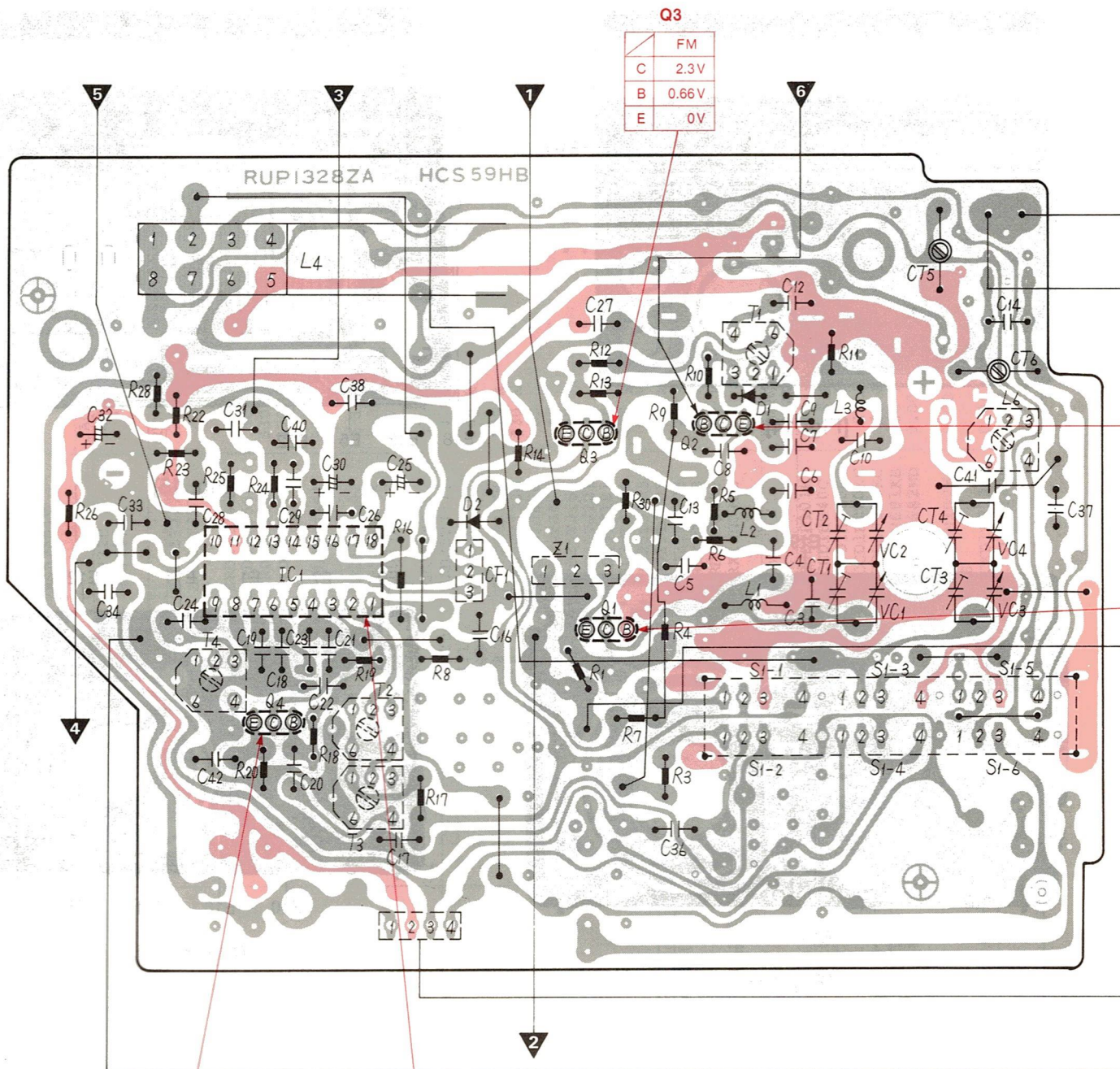
..... 480mA

by the manufacture be

▼ = test point 1.

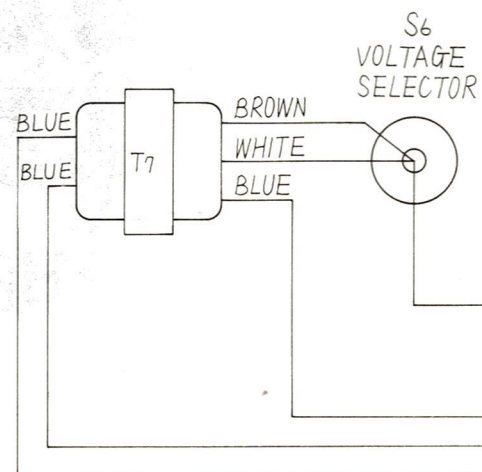


CIRCUIT BOARD WIRING VI

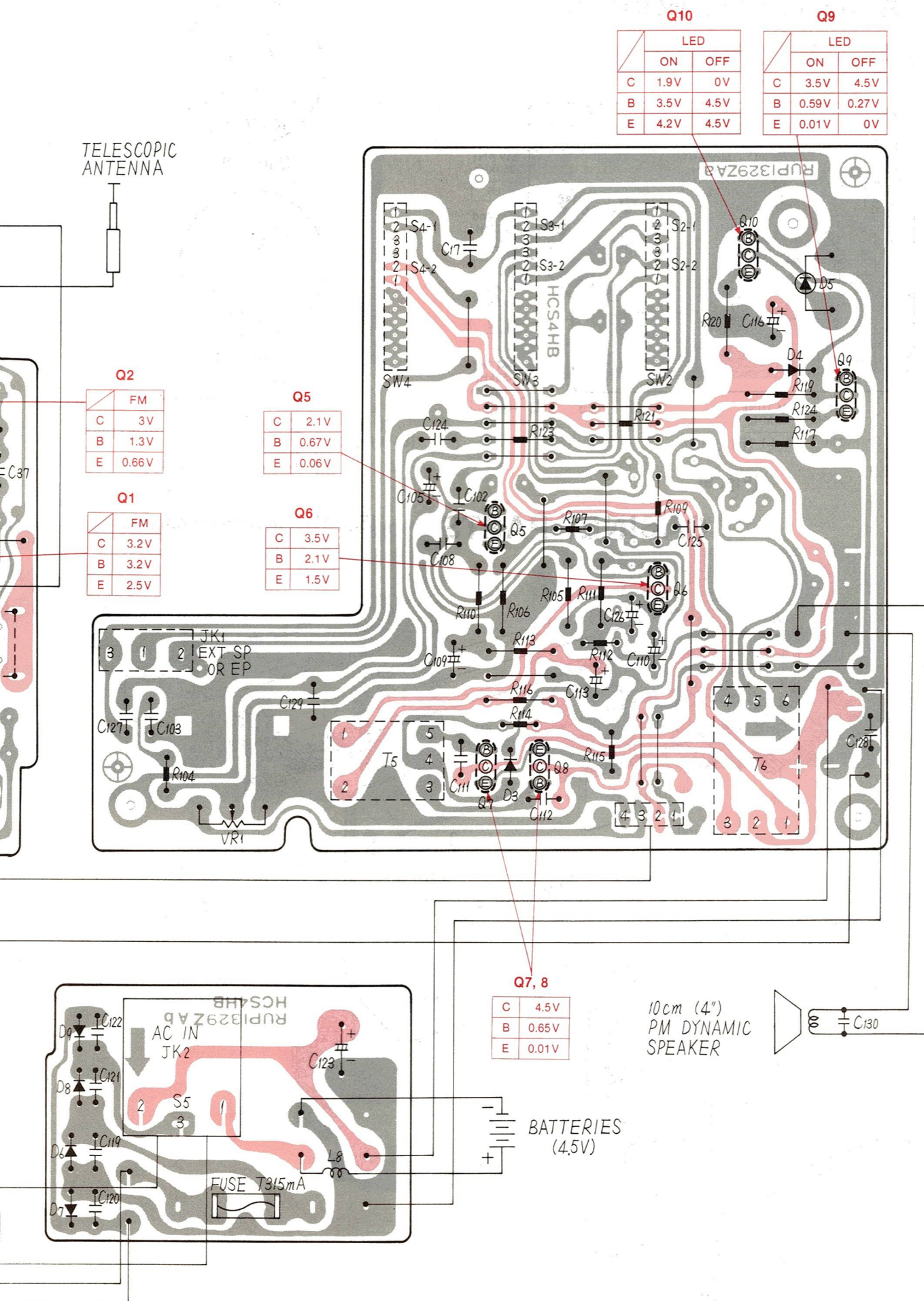


	AM
C	2.8V
B	2.1V
E	1.5V

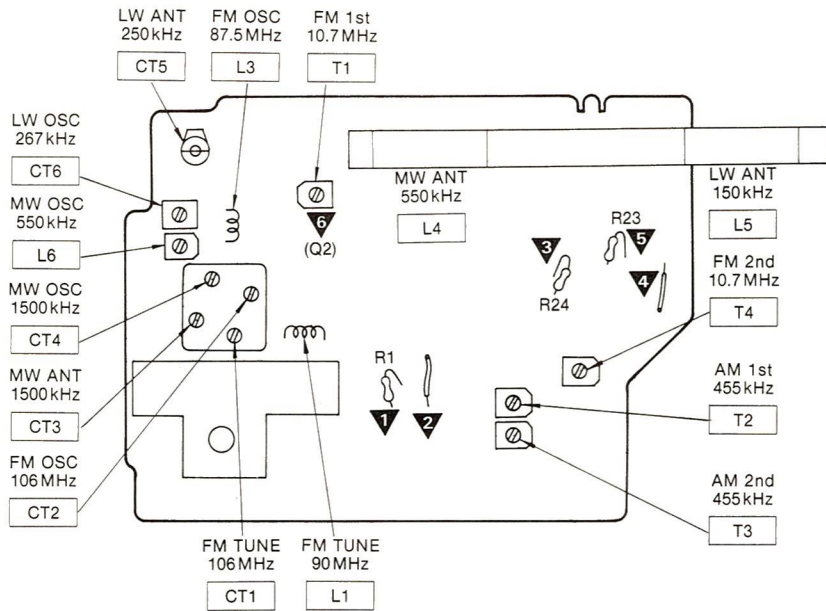
	FM	AM		FM	AM
1	0V	3.7V	10	2.6V	3.4V
2	0V	3.6V	11	3.3V	3.8V
3	0V	3.7V	12	2.6V	3.1V
4	2.8V	3.2V	13	2.2V	2.7V
5	2.7V	3.2V	14	0.33V	0.34V
6	2.8V	3.2V	15	0.33V	0.34V
7	2.8V	3.2V	16	0V	0V
8	0V	0V	17	0V	3.7V
9	2.8V	3.8V	18	0.22V	0.76V



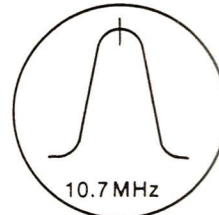
VIEW MODEL RF-1403LBS



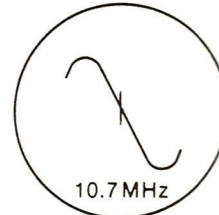
ALIGNMENT POINTS



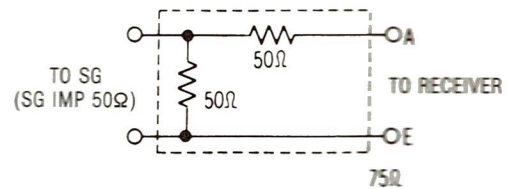
[Fig. 9]



[Fig. 10]

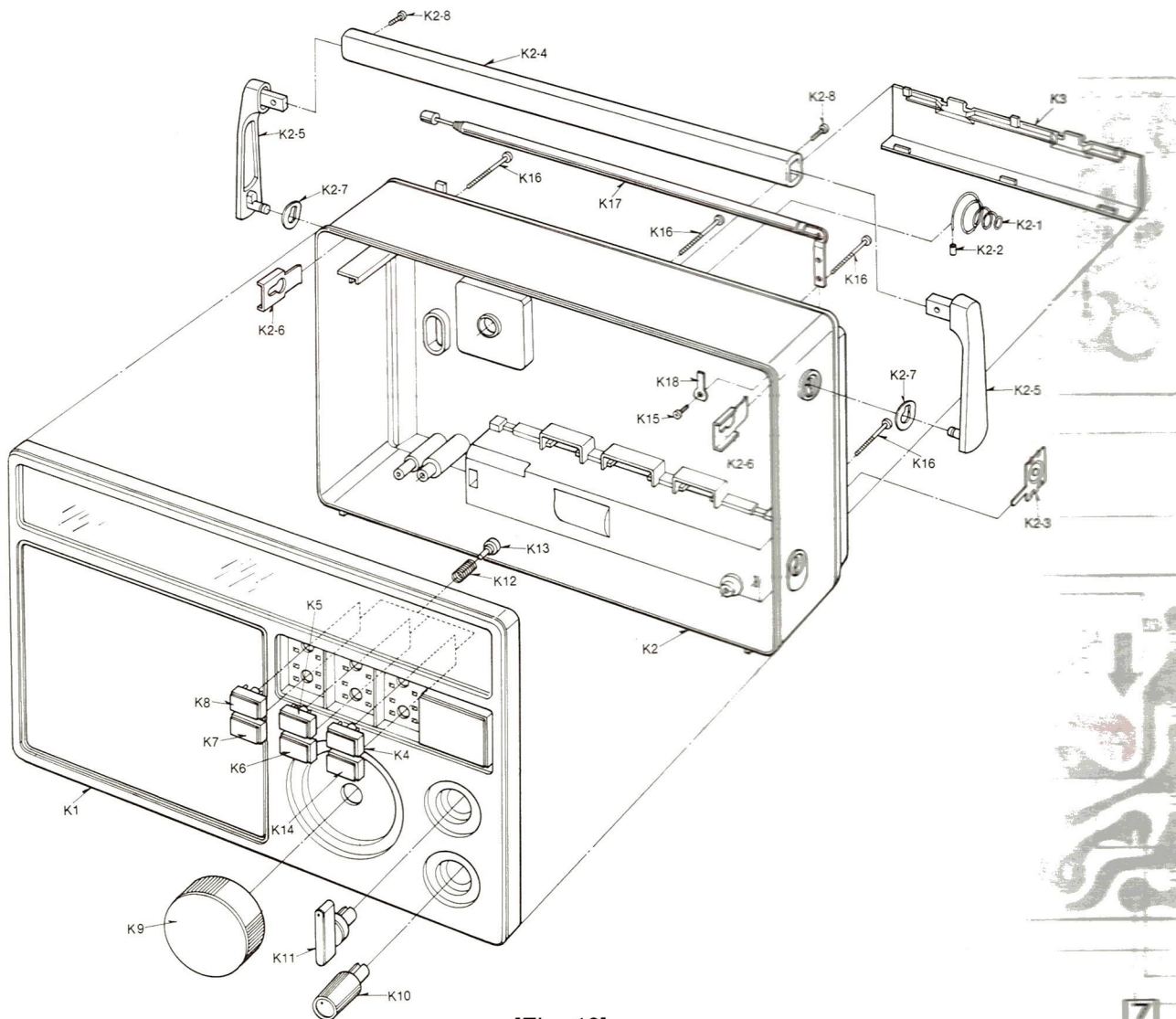


[Fig. 11]



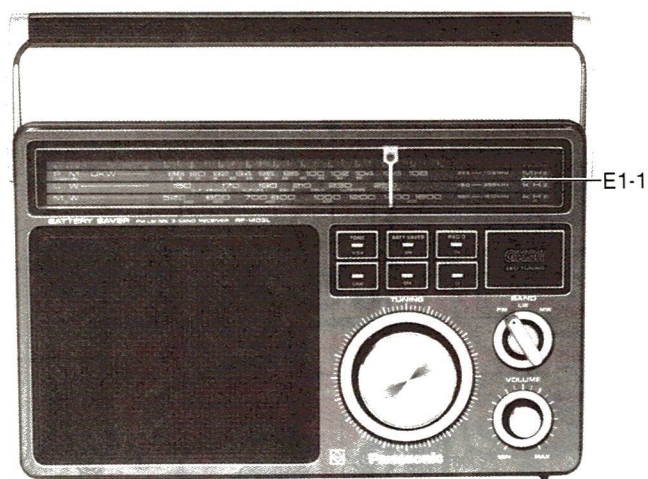
[Fig. 12] FM Dummy Antenna

CABINET PARTS

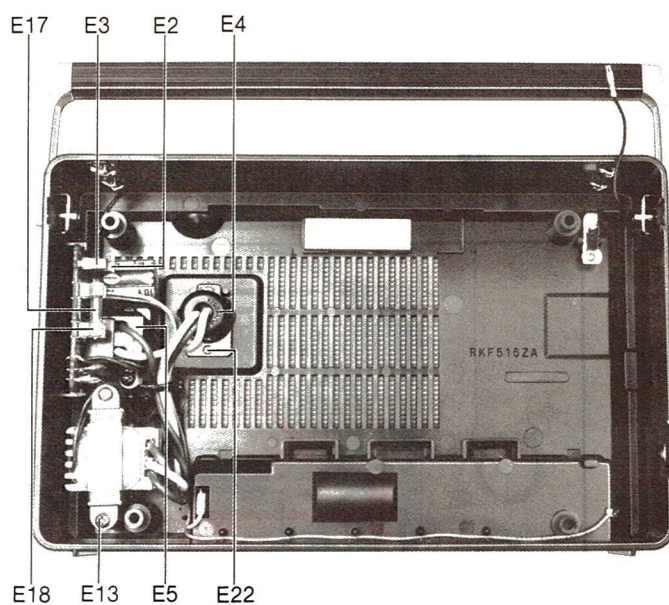


[Fig. 13]

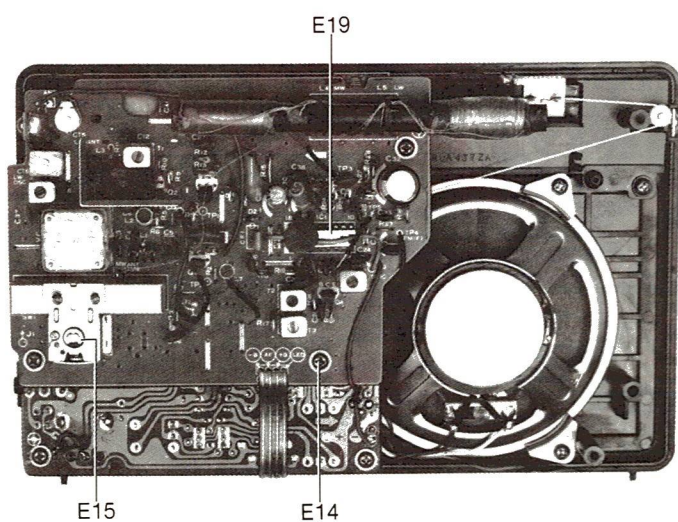
ELECTRICAL PARTS



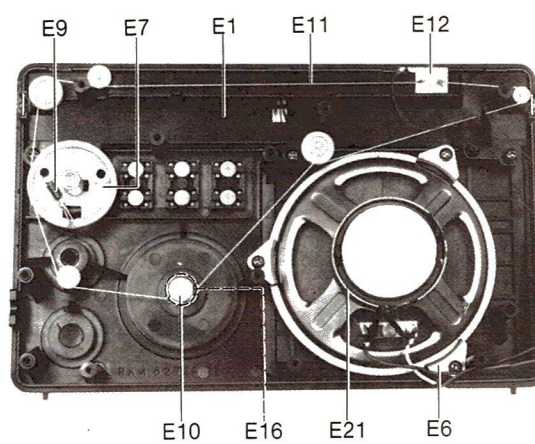
[Fig. 14]



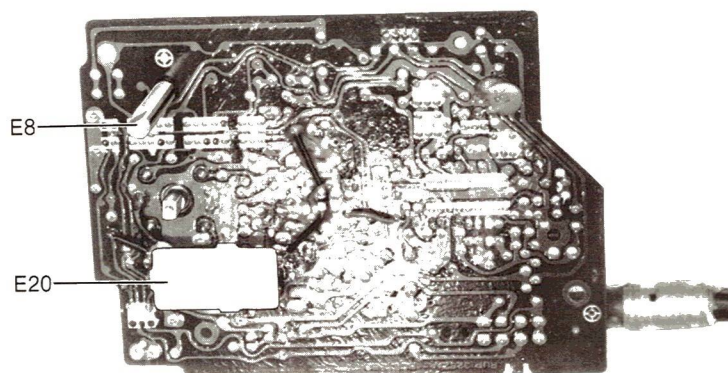
[Fig. 15]



[Fig. 16]



[Fig. 17]



[Fig. 18]

■ REPLACEMENT PARTS LISTModel RF-1403LBS (RD8007-5136C)

NOTES: 1. Δ indicates that only parts specified by the manufacturer be used for safety.
2. The S mark indicates service standard parts and may differ from production parts.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		INTEGRATED CIRCUIT, TRANSISTORS AND DIODES		
IC1	AN7220A	IC	1	
Q1	2SC1675	Transistor (Si)	1	
Q2	2SC1674	Transistor (Si)	1	
Q3,6	2SC945	Transistor (Si)	4	
Q7,8	2SC2001	Transistor (Si)	2	
Q9	2SC828	Transistor (Si)	1	
Q10	2SA564	Transistor (Ge)	1	
D1	RVD1N4148	Diode (Si)	1	
D2,4	RVDKB265F	Diode (Si)	2	
D3	MA27A1	Diode (Si)	1	
D5	RVDSLPL114B	LED (Ga)	1	
D6,9	RVDW06B	Diode (Si)	4	
		COILS AND TRANSFORMERS		
L1	RLD4Y44	Tuning Coil, FM	1	
L3	RLD4Y43	Oscillator Coil, FM	1	
L4,5	RLF6D14	Antenna Coil, LW, MW	1	
L6	RL02M3	Oscillator Coil, LW, MW	1	
T1,4	RLI4M101	IFT, FM	2	S
T2	RLI2M216	IFT, AM	1	
T3	RLI2M217	IFT, AM	1	
T5	RLT3F30	Input Transformer	1	
T6	RLT2G28	Output Transformer	1	
T7	RLT5I108	Power Transformer	1	Δ
VR1	EVHL0AF25A54	VARIABLE RESISTOR Variable Resistor, 50kΩ (A)	1	
VC1,4	RCV4LC2VL	VARIABLE CAPACITORS Tuning Capacitor, w/Trimmer Capacitor (CTL,4)	1	
CT5	RCV1-T16M	Trimmer Capacitor	1	
CT6	RCV1PX30AS	"	1	
CF1	RVFSFEL07MSR	CERAMIC FILTER Ceramic Filter	1	
Z1	RXABPW5	COMPONENT COMBINATION Component Combination	1	
	EAS10P182SA	SPEAKER Speaker, 10cm (4"), 8Ω	1	
		SWITCHES		
S1	RSR3F02Z	Switch, Band	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
S2, S4 S6	RSHX028Z RSR2A01Y	Switch, TONE/BATT SAVER/RADIO Voltage Selector	3 1	Δ
J1 J2	RJJ32E RJJ115Z	JACKS Jack, EXT SP " AC IN	1 1	S Δ
R22 R5 R12,26,112	ERD25TJ220 ERD25TJ270	RESISTORS (Value is in OHMS) 22 27 1/4W Carbon	1 1	S S
R17 R11 R6,14 R19,30,114	ERD25TJ470 ERD25TJ560 ERD25TJ331 ERD25TJ471	" " " " "	3 1 1 2	S S S S
R3,7,20,113	ERD25TJ561	"	3	S
R11 R8 R24,25,110	ERD25TJ102 ERD25TJ332 ERD25TJ272	1 k 3.3 k 2.7 k "	4 1 1	S S S
R1,23 R4,13, 109	ERD25TJ392 ERD25TJ473 ERD25TJ104	" " "	3 2 3	S S S
R28 R18 R16 R121,124	ERD25TJ224 ERD25TJ334 ERD25TJ820 ERD25TJ470	" " " "	1 1 1 2	S S S S
R10,116 R120 R106 R105 R104,119	ERD25TJ151 ERD25TJ121 ERD25TJ181 ERD25TJ824 ERD25TJ103	" " " " "	1 1 1 1 2	S S S S S
R117 R123 R9 R107 R115	ERD25TJ105 ERD25TJ273 ERD25TJ223 ERD25TJ683 EXLANJ1R0	1 M 27 k 22 k 68 k 1W Metal	1 1 1 1 1	S S S S S
C17,130 C4,9 C3 C10 C7,41 C108,124 C23 C6,8,16,124	ECCDLH10LK ECCDLH040C ECCDLH180KC ECCDLH220KC ECCDLH390KC ECCDLH681KB ECCDLH682MD ECCDLH102MD	CAPACITORS (Value is in MICRO FARADS except P.P=PICO FARADS) 100 P 50V Ceramic 4 P 18 P 22 P 39 P 680 P 0.0068 0.001	2 2 1 1 2 2 1 4	
C13,127,128 C28,40	ECCDLH222MD ECCDLH472MD	0.0022 0.0047 "	3 2	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C12, 20, 21, 24, 117, 119, 122	0.01	50V Ceramic	9	
C37, 38	ECKDLH103ZF		2	
C42	ECKDLH223ZF		1	
C125	ECKDLH333ZF		1	
C129	ECKDLH332MD		1	
C14	ECKDLH221K		1	
C5, 18, 19, 33	ECQS05151JZ	150 P Styrol	1	
C27, 29, 103, 111, 112	ECFVD103MD	0.01 25V Semi-Conductor	4	
C31	ECFVD223MD	0.022	5	
C22, 34, 36	ECFVD333MD	0.033	1	
C26	ECFVD473MD	0.047	3	
C102	ECFVD683MD	0.068	1	
C25, 110	ECFVD104MD	0.1	1	
C32	ECEALAS101	100 10V Electrolytic	2	
C30	ECEALAS102	1000	1	
C105	ECEALHS100	10 50V	1	
C126	ECEA50Z1	1	1	
C109	ECEA50Z3R3	3.3	1	
C113	ECEALAS470	47 10V	1	
C116	ECEA0JS471	470 6.3V	1	
C123	ECEALAS471	470 10V	1	
	ECEALCS222	2200 16V	1	
CABINET PARTS				
K1	RYMFL403LBSX	Front Cabinet Assembly	1	
K2	RYFFL403LBSX	Rear Cabinet Assembly	1	
K2-1	RJC603Z	Spring, Battery - Side	1	
K2-2	RJT398A	Connecting Pipe	1	
K2-3	RJC205B	Terminal, Battery + Side	1	
K2-4	RKX203Z	Handle	1	
K2-5	RKX204Z	Arm, Handle	1	
K2-6	QBP1817	Stopper, Arm	2	
K2-7	RKX184Z	Spacer, Arm	2	
K2-8	XS33+6FZ	Screw, Handle M'tg	2	
K3	RYNFI403MKSN	Battery Cover Assembly	1	
K4	RBC279P	Button, RADIO ON	1	
K5	RBC279S	" BATT SAVER ON	1	
K6	RBC279R	" OFF	1	
K7	RBC279M1	" TONE LOW	1	
K8	RBC279N1	" TONE HIGH	1	
K9	RBN533Z	Knob, Tuning	1	
K10	RBN534Z	" Volume	1	
K11	RBS168Z	" Band	1	
K12	RDS5104Z	Spring, Button	6	
K13	RHR1127Z	Stopper, Button	6	
K14	RBC279Q	Button, RADIO OFF	1	
K15	XTN23+8B	Screw, Telescopic Antenna	1	
K16	XTB3+20C	" Cabinet M'tg	4	
K17	XEARK162FDY	Telescopic Antenna	1	
K18	RJT202B	Terminal, Telescopic Antenna	1	
ELECTRICAL PARTS				
E1	RZAF1403LBSX	Dial Chassis Assembly	1	
E1-1	RKD561Y	Dial Scale	1	
E2	RJS198Z	Connector, 1 Pin	1	
E3	RJS198Y	" 1 Pin	1	
E4	RUV426Z	Cover, Voltage Selector	1	
E5	RUV482Z	Cover, AC IN Jack	1	
E6	RMS12B	Bracket, Speaker	3	
E7	RDD367Z	Drum, Dial	1	
E8	RDF862Z	Shaft, Band Switch	1	
E9	RDS4062Z	Spring, Drum	1	
E10	RDT2191Z	Shaft, Tuning	1	
E11	RDZ05Z	Cord	1	
E12	RDP223Z	Pointer, Dial	1	
E13	XTV3+12G	Screw, Transformer etc. M'tg	12	
E14	XTW3+12FR	Red Screw, Circuit Board M'tg	7	
E15	XUC25FT	Circlip, Band Switch Shaft	1	
E16	XNS9	Nut, Tuning Shaft	1	
E17	XBA2C03TR0	Fuse, T315mA	1	
E18	QTF1054	Terminal, Fuse	1	
E19	RMC506Z	Shield Cover, IC	2	
E20	RMC382Z	Shield Cover, Circuit Board	1	
E21	RMC697Z	" Speaker	1	
E22	XTN26+8B	Screw, Voltage Selector M'tg	2	
ACCESSORIES				
	XEHLA1-P	Magnetic Earphone	1	
	RJA20Z	Power Cord, AC	1	
	RQE13Z	Caution Tag	1	
PACKING MATERIALS				
	XZB36X30A04	Polyethylene Cover	1	
	XZB10X25A04	"	1	
	RPK988Z	Gift Box	1	
	RPN9351Z	Pad Complete	1	
PRINTED MATERIAL				
	RQX6597Z	Instruction Book	1	