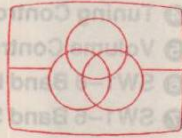


Service Manual

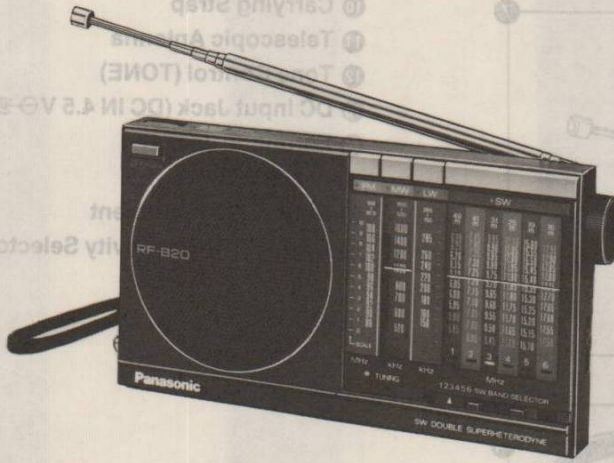
FM-MW-LW-SW1~6
9-Band Receiver



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Radio
RF-B20L
(Black)



This is the Service Manual for the following areas.

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

■ SPECIFICATIONS

Frequency Range: FM; 87.5~108 MHz
MW; 520~1610 kHz
LW; 150~285 kHz
SW1; 5.95~6.20 MHz (49 m)
SW2; 7.10~7.30 MHz (41 m)
SW3; 9.50~9.90 MHz (31 m)
SW4; 11.65~12.05 MHz (25 m)
SW5; 15.10~15.60 MHz (19 m)
SW6; 17.55~17.90 MHz (16 m)

Intermediate Frequency: FM; 10.7 MHz
AM (MW, LW, SW); 455 kHz

Sensitivity: 462 kHz (For U.K.)
FM; 2µV/50 mW output (-3 dB, Limit Sens)
MW; 100 µV/m/50 mW output
LW; 126 µV/m/50 mW output
SW1; 1.8 µV/50 mW output
SW2; 1.3 µV/50 mW output
SW3; 1.4 µV/50 mW output
SW4; 1.3 µV/50 mW output
SW5; 1.3 µV/50 mW output
SW6; 1.4 µV/50 mW output

Power Requirement: Battery; 4.5 V
(Three UM-3, "AA" size batteries)
(Panasonic UM-3 or equivalent)
AC; with optional AC adaptor RP-AC4

Power Output: 400 mW (max.)

Speaker: 6.5 cm PM Dynamic Speaker (8Ω)

Impedance: Earphone; 8Ω, Ø3.5

Dimensions: [173 (W)×92 (H)×29 (D)] mm

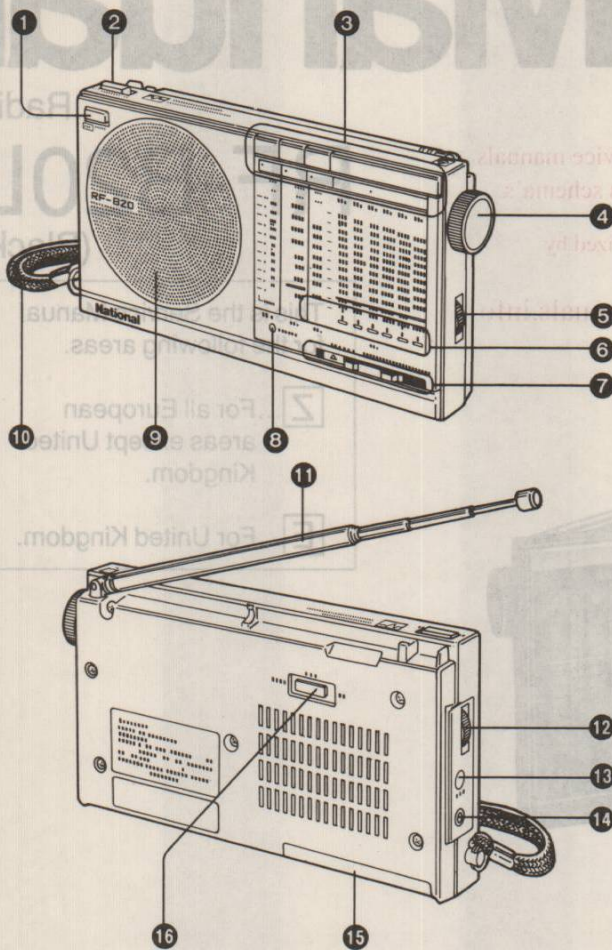
Weight: 320 g without batteries

Design and specifications are subject to change without notice.

Panasonic

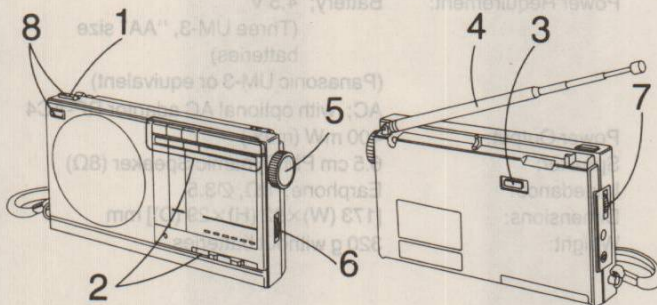
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS



- 1 Power Off Button (OFF POWER)
- 2 Hold Switch (HOLD)
- 3 FM/MW/LW/SW Band Select Buttons and Indicators
 - These buttons also have the function as a power on button.
- 4 Tuning Control (TUNING)
- 5 Volume Control (VOLUME)
- 6 SW1-6 Band Index Indicator
- 7 SW1-6 Band Selector (SW BAND SELECTOR)
- 8 Tuning Indicator (TUNING)
- 9 Speaker (6.5 cm 8Ω)
- 10 Carrying Strap
- 11 Telescopic Antenna
- 12 Tone Control (TONE)
- 13 DC Input Jack (DC IN 4.5 V ⊖ ⊕)
- 14 Earphone Jack (∅3.5, 8Ω)
- 15 Battery Compartment
- 16 DX-LOCAL Sensitivity Selector (SENS)

RADIO OPERATION



1. Slide the Hold Switch to the opposite direction of the arrow (HOLD). If this is not done, the Band Select Buttons do not operate.
 2. Press the Band Select Button that corresponds to the band on which the programme you want to listen to is being broadcast. When the unit is turned on, the Band Indicator will light up.
 - When you listen to SW broadcast, select the desired meter band by sliding the SW1-6 Band Selector. The SW1-6 Band Index Indicator appears.
- FM.....FM band (87.5-108 MHz)
 MWMedium wave band (520-1610 kHz)
 LW.....Long wave band (150-285 kHz)
 SWShort wave bands (Spread meter band system)
1. 5.95-6.20 MHz (49 m)
 2. 7.10-7.30 MHz (41 m)
 3. 9.50-9.90 MHz (31 m)

4. 11.65-12.05 MHz (25 m)

5. 15.10-15.60 MHz (19 m)

6. 17.55-17.90 MHz (16 m)

3. Set the DX-LOCAL Sensitivity Selector to the proper position for MW, LW and SW reception. Normally set the selector to "DX". When the reception is impaired or there is interference from a powerful station, set the selector to "LOCAL". This selector does not function for FM reception.
4. Adjust the antenna. (Refer to "Antennas" on page 3)
5. Tune in your favorite station using the Tuning Control. When tuned in correctly, the Tuning Indicator will light up.
6. Adjust the Volume Control to the desired level.
7. Adjust the Tone Control to the desired tonal quality. When this control is moved toward "LOW", the bass is accentuated. When moved toward "HIGH", the treble is accentuated.
8. After use, press the Power Off Button and slide the Hold Switch to the direction of the arrow (HOLD).

Notes:

- When the broadcast signals are weak or the batteries have been exhausted, the Tuning Indicator may not light up even if the sound is still audible through the speaker.
- The Tuning Indicator may come on by mistake when using the unit near a TV receiver (Which has switched on) or near a fluorescent lamp.

MEASUREMENTS AND ADJUSTMENTS

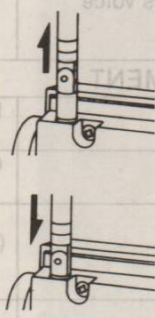
Hold Switch

- If you slide the switch to the direction of the arrow (**HOLD**) after the set has been turned off by pressing the Power Off Button, the set will not be turned on even if the Band Select Buttons are pressed by mistake. This prevents the batteries from being wasted. It is useful when carrying the set. Especially before putting the set into the carrying case, be sure to slide the switch to the direction of the arrow (**HOLD**).
- When listening to the radio, if you slide the switch to the direction of the arrow (**HOLD**), the other Band Select Buttons and the Power Off Button do not operate. So you can avoid changing the received band or turning the set off by mistake.

Antennas

Caution when adjusting the Telescopic Antenna

- If you wish to adjust the Telescopic Antenna, pull the base of the antenna until you hear a click, and then pull the remaining sections to extend it fully. If this unit is positioned horizontally and used, you will not be able to adjust the antenna unless the base has been pulled free of the set.
- When folding up the antenna, first push the base back into the set and then push the antenna elements back together starting with the thicker ones.



FM:

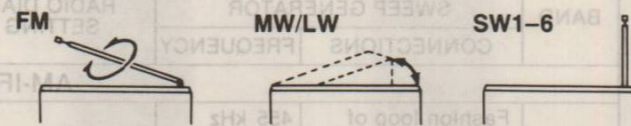
Pull out the Telescopic Antenna and adjust its length and angle for optimum reception.

MW/LW:

The sensitive ferrite core antenna inside the set will provide excellent MW/LW reception in most areas. For optimum reception, turn the set in the direction which gives the best results since the ferrite core antenna is directional.

SW1-6:

Extend the Telescopic Antenna fully, keep it vertical.



Listening with the Earphone

- Plug the supplied earphone into the Earphone Jack. The Speaker in the radio is automatically disconnected when the plug is inserted.
- Adjust the volume to lower level so as not to injure your ear.

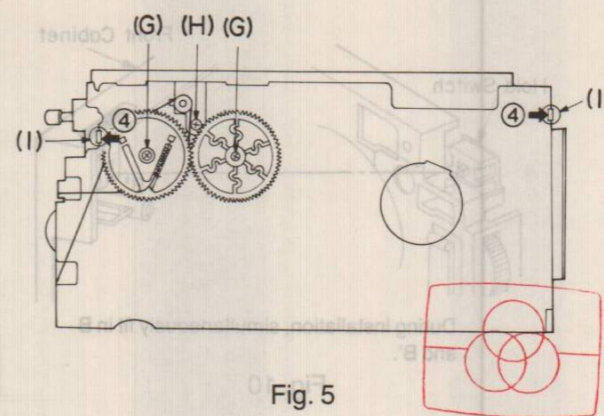


Fig. 5

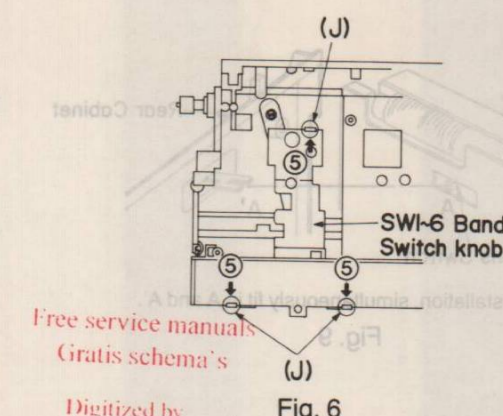


Fig. 6

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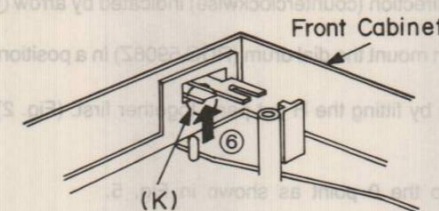


Fig. 7

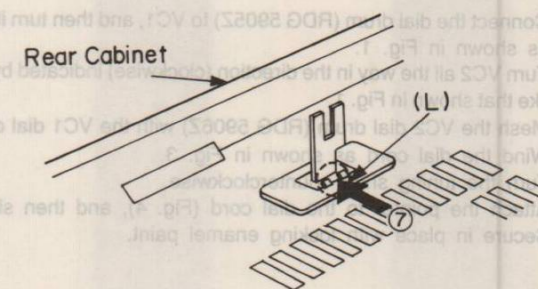


Fig. 8

DISASSEMBLY INSTRUCTIONS

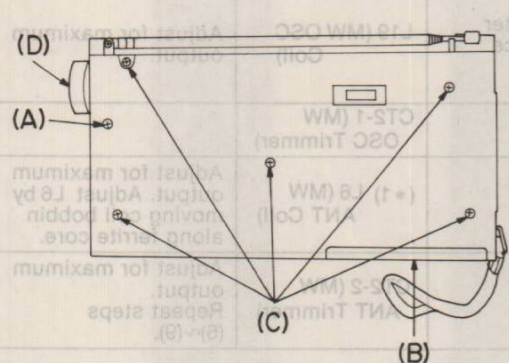


Fig. 1

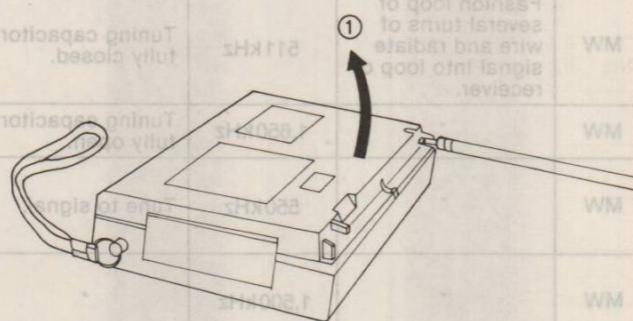


Fig. 2

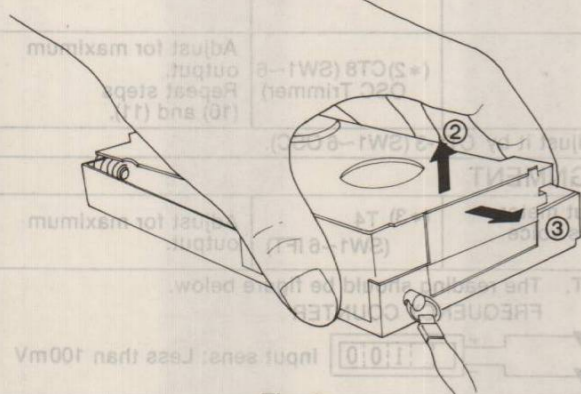


Fig. 3

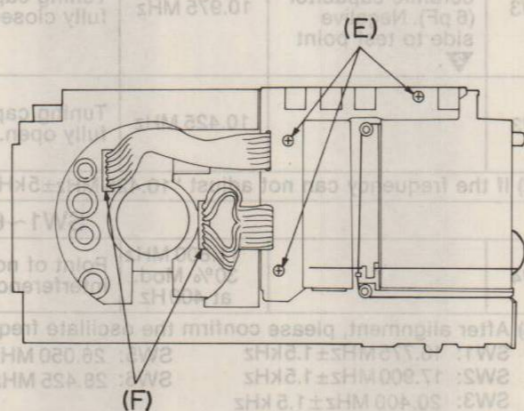
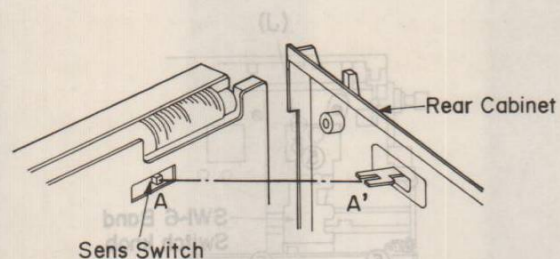


Fig. 4

Ref. No.	Shown in Fig.—	To remove—	Remove—
1	1	Telescopic Antenna	Screw (2.6×14 mm) (A)×1
2	1	Rear Cabinet	Battery cover (B)×1
3	1		Screw (2.6×14 mm) (C)×5
4	2	Front Cabinet	Remove the rear cabinet in the direction of arrow ①.
5	1		Knob (D)×1
6	3		Remove the circuit board in the direction of arrow ②, ③.
7	4	LED Circuit Board	Screw (2×4 mm) (E)×3
8	5		Connector (CP1, CP2) (F)×2
9	5	Main Circuit Board	Screw (1.7×3 mm) (G)×2
10	5		Screw (2×8 mm) (H)×1
11	6		Remove the rib in the direction of arrow ④. (I)×2
12	7	SW1-6 Band Switch Knob (*1)	Remove the rib in the direction of arrow ⑤. (J)×3
13	7	Hold Switch Knob	Remove the rib in the direction of arrow ⑥. (K)×1
13	8	Sens Switch Knob	Remove the rib in the direction of arrow ⑦. (L)×1

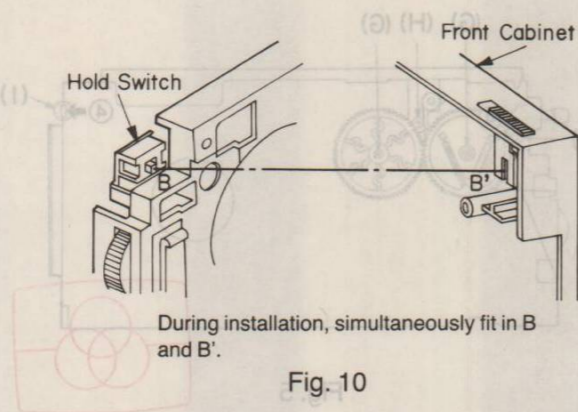
*1. Remove SW1-6 Band Switch Knob by removing 3 ribs of the chassis as shown in Fig. 6. At this time, be careful not to loose the steel ball and the spring.

HOW TO REPLACE



During installation, simultaneously fit in A and A'.

Fig. 9



During installation, simultaneously fit in B and B'.

Fig. 10

DIAL THREADING

1. Connect the dial drum (RDG 5905Z) to VC1, and then turn it all the way in the direction (counterclockwise) indicated by arrow ① as shown in Fig. 1.
2. Turn VC2 all the way in the direction (clockwise) indicated by arrow ②, and then mount the dial drum (RDG 5906Z) in a position like that shown in Fig. 1.
3. Mesh the VC2 dial drum (RDG 5906Z) with the VC1 dial drum (RDG 5905Z) by fitting the H cut parts together first. (Fig. 2)
4. Wind the dial cord as shown in Fig. 3.
5. Turn the tuning shaft counterclockwise.
6. Attach the pointer to the dial cord (Fig. 4), and then slide it downward to the 0 point as shown in Fig. 5.
7. Secure in place with locking enamel paint.

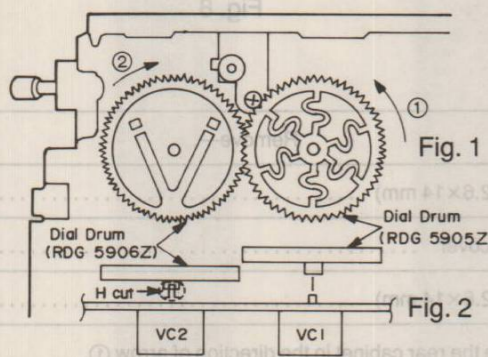


Fig. 1

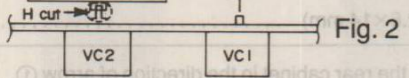


Fig. 2

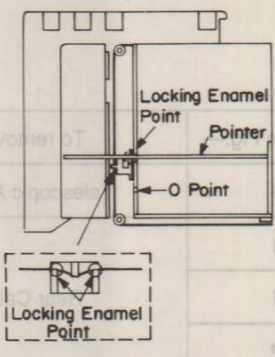


Fig. 5

Fig. 4

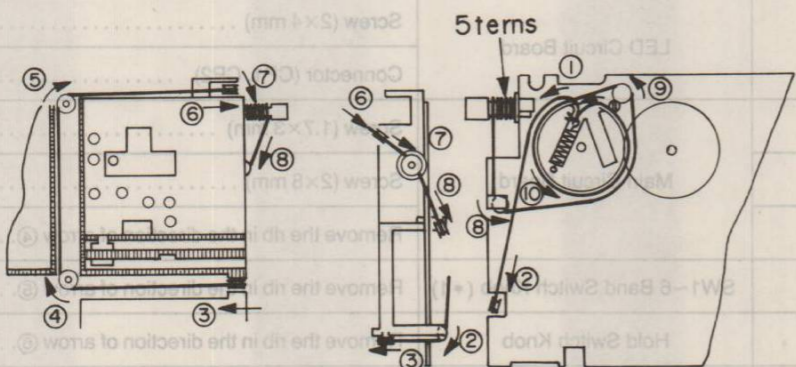


Fig. 3

MEASUREMENTS AND ADJUSTMENTS

ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set volume control to maximum.
2. Set tone control to high.
3. Set band switch to LW, MW, SW1~6 or FM.
4. Set hold switch to OFF.
5. Set sens switch to DX.
6. Set power source voltage to 4.5 V DC.
7. Output of signal generator should be no higher than necessary to obtain an output reading.

LW, MW, SW1~6 ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER 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.	455 kHz (462 kHz... For U.K.) 30% Mod. at 400Hz	Point of non-interference. (on/about 600kHz)	Output meter across voice coil.	T2 (AM IFT)	Adjust for maximum output.								
LW-RF ALIGNMENT														
(2) LW	"	136 kHz	Tuning capacitor fully closed.	"	L20 (LW OSC Coil)	Adjust for maximum output.								
(3) LW	"	297 kHz	Tuning capacitor fully open.	"	CT1-1 (LW OSC Trimmer)	"								
(4) LW	"	150 kHz	Tune to signal.	"	(*1) L7 (LW ANT Coil)	Adjust for maximum output. Adjust L7 by moving coil bobbin along ferrite core.								
(5) LW	"	285 kHz	"	"	CT1-2 (LW ANT Trimmer)	Adjust for maximum output. Repeat steps (2)~(5).								
MW-RF ALIGNMENT														
(6) MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	511 kHz	Tuning capacitor fully closed.	Output meter across voice coil.	L19 (MW OSC Coil)	Adjust for maximum output.								
(7) MW	"	1,650 kHz	Tuning capacitor fully open.	"	CT2-1 (MW OSC Trimmer)	"								
(8) MW	"	550 kHz	Tune to signal.	"	(*1) L6 (MW ANT Coil)	Adjust for maximum output. Adjust L6 by moving coil bobbin along ferrite core.								
(9) MW	"	1,500 kHz	"	"	CT2-2 (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (6)~(9).								
(*1) Cement antenna bobbin with wax after completing alignment.														
SW1~6 2nd LOCAL OSC ALIGNMENT														
(10) SW3	Connect to test point through ceramic capacitor (6 pF). Negative side to test point.	10.975 MHz	Tuning capacitor fully closed.	"	L21 (SW1~6 OSC Coil)	Adjust for maximum output.								
(11) SW3	"	10.425 MHz	Tuning capacitor fully open.	"	(*2) CT8 (SW1~6 OSC Trimmer)	Adjust for maximum output. Repeat steps (10) and (11).								
(*2) If the frequency can not adjust "10.425 MHz±5kHz" please re-adjust it by CT1-3 (SW1~6 OSC).														
SW1~6 1st IF ALIGNMENT														
(12) SW4	"	11.800 MHz 30% Mod. at 400Hz	Point of non-interference.	Output meter across voice coil.	(*3) T4 (SW1~6 IFT)	Adjust for maximum output.								
(*3) After alignment, please confirm the oscillate frequency of T4 IFT. The reading should be figure below.														
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">SW1: 16.775 MHz±1.5 kHz</td> <td style="width: 50%;">SW5: 26.050 MHz±1.5 kHz</td> </tr> <tr> <td>SW2: 17.900 MHz±1.5 kHz</td> <td>SW6: 28.425 MHz±1.5 kHz</td> </tr> <tr> <td>SW3: 20.400 MHz±1.5 kHz</td> <td></td> </tr> <tr> <td>SW4: 22.550 MHz±1.5 kHz</td> <td></td> </tr> </table>							SW1: 16.775 MHz±1.5 kHz	SW5: 26.050 MHz±1.5 kHz	SW2: 17.900 MHz±1.5 kHz	SW6: 28.425 MHz±1.5 kHz	SW3: 20.400 MHz±1.5 kHz		SW4: 22.550 MHz±1.5 kHz	
SW1: 16.775 MHz±1.5 kHz	SW5: 26.050 MHz±1.5 kHz													
SW2: 17.900 MHz±1.5 kHz	SW6: 28.425 MHz±1.5 kHz													
SW3: 20.400 MHz±1.5 kHz														
SW4: 22.550 MHz±1.5 kHz														
<p style="text-align: right;">FREQUENCY COUNTER</p> <p style="text-align: right;">Input sens: Less than 100mV</p>														

SCHEMATIC DIAGRAM

■ ALIGNMENT POINTS

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

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
SW1-RF ALIGNMENT						
(13)	SW1	6.075 MHz	Tune to signal.		L8 (SW1 ANT Coil)	Adjust for maximum output.
SW2-RF ALIGNMENT						
(14)	SW2	7.20 MHz			L9 (SW2 ANT Coil)	Adjust for maximum output.
SW3-RF ALIGNMENT						
(15)	SW3	9.70 MHz			L10 (SW3 ANT Coil)	Adjust for maximum output.
SW4-RF ALIGNMENT						
(16)	SW4	11.85 MHz			L11 (SW4 ANT Coil)	Adjust for maximum output.
SW5-RF ALIGNMENT						
(17)	SW5	15.35 MHz			L12 (SW5 ANT Coil)	Adjust for maximum output.
SW6-RF ALIGNMENT						
(18)	SW6	17.725 MHz			L13 (SW6 ANT Coil)	Adjust for maximum output.

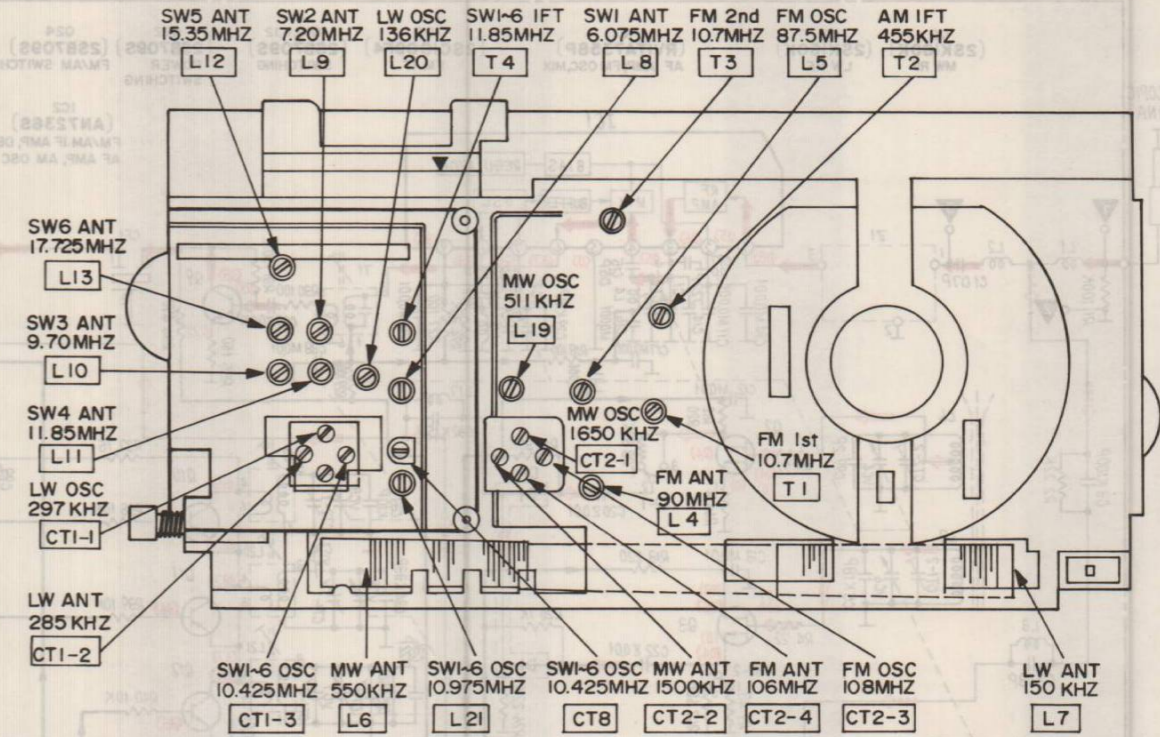
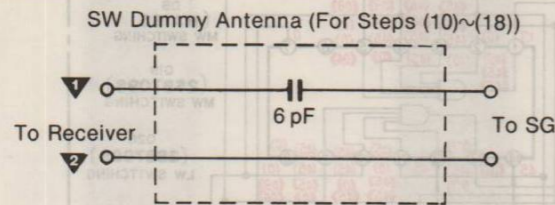


Fig. 3

Ⓜ...For All European areas except United Kingdom & Germany.
 Ⓡ...For United Kingdom.

■ FM ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
FM-IF ALIGNMENT						
(19)	FM	Connect to test point through 0.001 μF. 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. 1.)
(20)	FM					T3 (FM 2nd IFT) Adjust for maximum amplitude. (Refer to fig. 2.)
FM-RF ALIGNMENT						
(21)	FM		87.5 MHz	Variable capacitor fully closed.	Output meter across voice coil.	L5 (FM OSC Coil) (+4) Adjust for maximum output.
(22)	FM	Connect to test point through FM dummy antenna. Negative side to test point.	108 MHz	Variable capacitor fully open.		CT2-3 (FM OSC Trimmer)
(23)	FM		90 MHz	Tune to signal.		L4 (FM ANT Coil)
(24)	FM		106 MHz	Tune to signal.		CT2-4 (FM ANT Trimmer) (+4) Adjust for maximum output. Repeat steps (21)~(24).

(+4) Three output responses will be present; proper tuning is the center frequency.

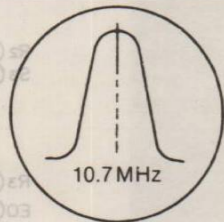


Fig. 1

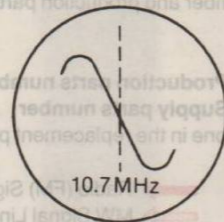


Fig. 2

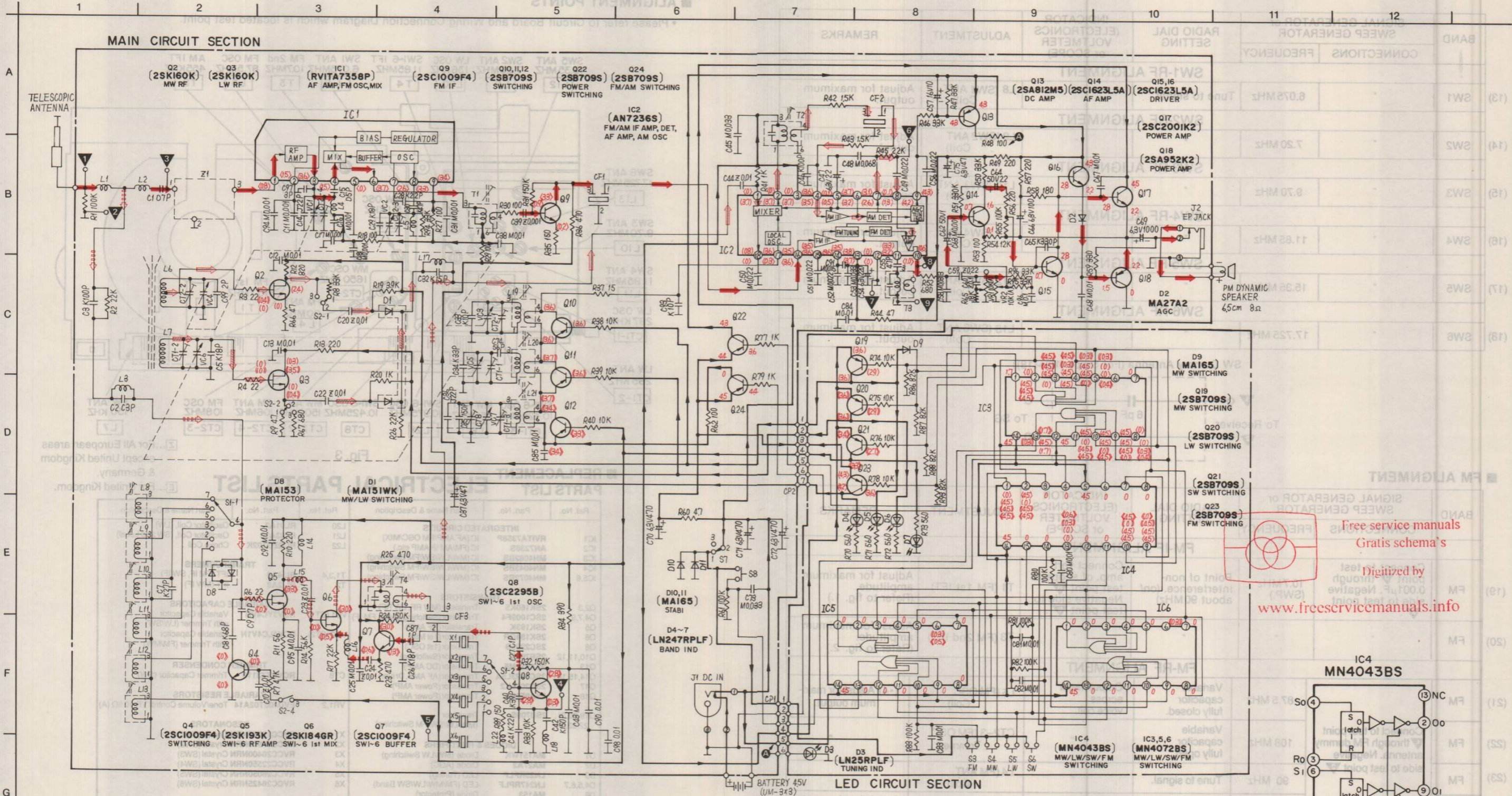
■ REPLACEMENT PARTS LIST

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS					
IC1	RVITA7358P	IC (AF AMP/FM OSC/MIX)	L20	RL01A3	Oscillator Coil, (LW)
IC2	AN7236S	IC (FM/AM IF AMP etc.)	L21	RL03A10	Oscillator Coil, (SW 2nd Local)
IC3	MN4082BS	IC (MW/LW/SW/FM Switching)	L22	RLQZG102K	Choke Coil
IC4	MN4043BS	IC (MW/LW/SW/FM Switching)	TRANSFORMERS		
IC5,6	MN4072BS	IC (MW/LW/SW/FM Switching)	T1,3,4	RL14A4	IFT (FM IF, SW IF)
TRANSISTORS					
Q2,3	2SK160K5	Transistor (MW RF, LW RF)	T2	RL12A8	IFT (MW IF)
Q4,7,9	2SC1009F4	Transistor (Switching, Buffer, FM IF)	VARIABLE CAPACITORS		
Q5	2SK193K	Transistor (RF AMP)	VC1 (CT1)	RCV3YC4VN	Variable Capacitor with Trimmer (LW/SW)
Q6	2SK184GR	Transistor (1st Mix)	VC2 (CT2)	RCV4LC4V1N	Variable Capacitor with Trimmer (FM/MW)
Q8	2SC2295B	Transistor (1st OSC)	TRIMMER CONDENSER		
Q10,11,12	2SB709S	Transistor (Switching)	CT8	RCVCT23110	Trimmer Capacitor (SW)
Q13	2SA812M5	Transistor (DC AMP)	VARIABLE RESISTORS		
Q14,15,16	2SC1623L5A	Transistor (AF AMP, Driver)	VR1,2	EVUJ05T02A14	Tone/Volume Control VR 10 kΩ (A)
Q17	2SC2001K2	Transistor (Power AMP)	RESONATORS		
Q18	2SA952K2	Transistor (Power AMP)	X1	RVCC16775NRN	Crystal (SW1)
Q19,20,21,22,23,24	2SB709S	Transistor (MW/LW/SW/FM Switching)	X2	RVCC17900NRN	Crystal (SW2)
DIODES & RECTIFIERS					
D1	MA151WK	Diode (MW/LW Switching)	X3	RVCC20400NRN	Crystal (SW3)
D2	MA27A2	Diode (AGC)	X4	RVCC22550NRN	Crystal (SW4)
D3	LN25RPLF	LED (Tuning)	X5	RVCC26050NRN	Crystal (SW5)
D4,5,6,7	LN247RPLF	LED (FM/MW/LW/SW Band)	X6	RVCC28425NRN	Crystal (SW6)
D8	MA153	Diode (Protector)	CERAMIC FILTERS		
D9,10,11	MA165	Diode (MW Switching, Stabi)	CF1	RVF107NAR	Ceramic Filter (FM)
COILS					
L1	RLQY25S5	Choke Coil	CF2	RVFSFP455G5	Ceramic Filter (MW)
L2	RLQY30S1	Choke Coil		RVFSFP462G5	Ceramic Filter (MW)
L3,16	RLQY10G5	Choke Coil	CF3	RVF107SM1	Ceramic Filter (SW)
L4	RL04N120	Antenna Coil, (FM)	FILTER		
L5	RL04N162	Oscillator Coil, (FM)	Z1	RXABPMB6A	Component Combinations
L6,7	RLF6B3	Antenna Coil, (MW)	SWITCHES		
L8	RLA3A8	Antenna Coil, (SW1)	S1	RSS6B02Z	Slide Switch (SW1~6 Band Selector)
L9	RLA3A9	Antenna Coil, (SW2)	S2	RSS2D11Z	Slide Switch (DX/Local Sens)
L10,11	RLA3A11	Antenna Coil, (SW3, SW4)	S3,4,5,6	RSH1A48Y	Push Switch (Band Selector)
L12	RLA3A12	Antenna Coil, (SW5)	S7	RSS2A37Z	Slide Switch (Hold)
L13	RLA3A13	Antenna Coil, (SW6)	S8	RSH1A28Z	Push Switch (Power OFF)
L14	RLQZP100K	Choke Coil	JACKS		
L15	RLQZP2R2M	Choke Coil	J1	RJJ1B1Z	Jack (DC IN)
L17	RLQZP150K	Choke Coil	J2	RJJ1D3Y	Jack (Earphone)
L18	RLQZP8R2K	Choke Coil			
L19	RL02A10	Oscillator Coil, (MW)			

SCHEMATIC DIAGRAM

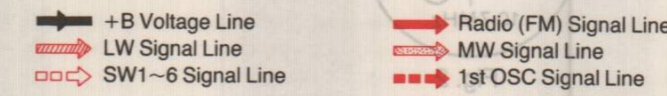
ALIGNMENT POINTS



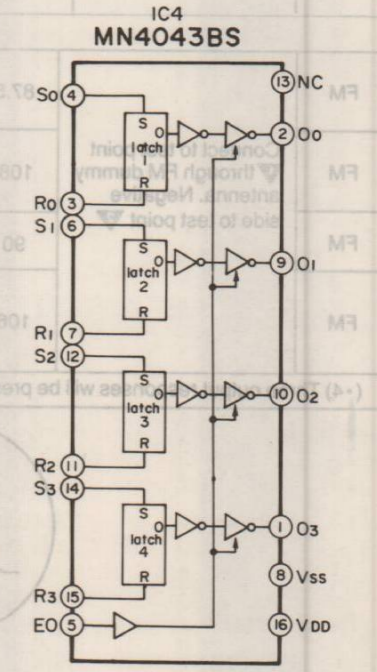
Notes:

- 1. S1-1, S1-2: SW1~6 Band switch in "SW1" position. (1...SW6, 2...SW5, 3...SW4, 5...SW3, 6...SW2, 7...SW1)
- 2. S2-1~S2-4: DX-Local Sensitivity Switch in "Local" position. (1...Local, 3...DX)
- 3. S3: FM Band switch in "OFF" position.
- 4. S4: MW Band switch in "OFF" position.
- 5. S5: LW Band switch in "OFF" position.
- 6. S6: SW Band switch in "OFF" position.
- 7. S7: Hold Switch in "OFF" position. (1...OFF, 3...ON)
- 8. S8: Power OFF switch.
- 9. VR1: Tone control VR.
- 10. VR2: Volume control VR.
- 11. The mark (▼) shows test point e.g. ▼=test point 1.
- 12. DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
 - < >...FM position, ()...MW position
 - (())...LW position, << >>...SW position
 - No mark...FM/MW/LW/SW position
- 13. Battery current: No signal 35 mA
Maximum output 139 mA

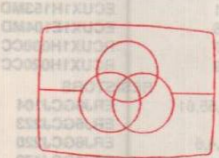
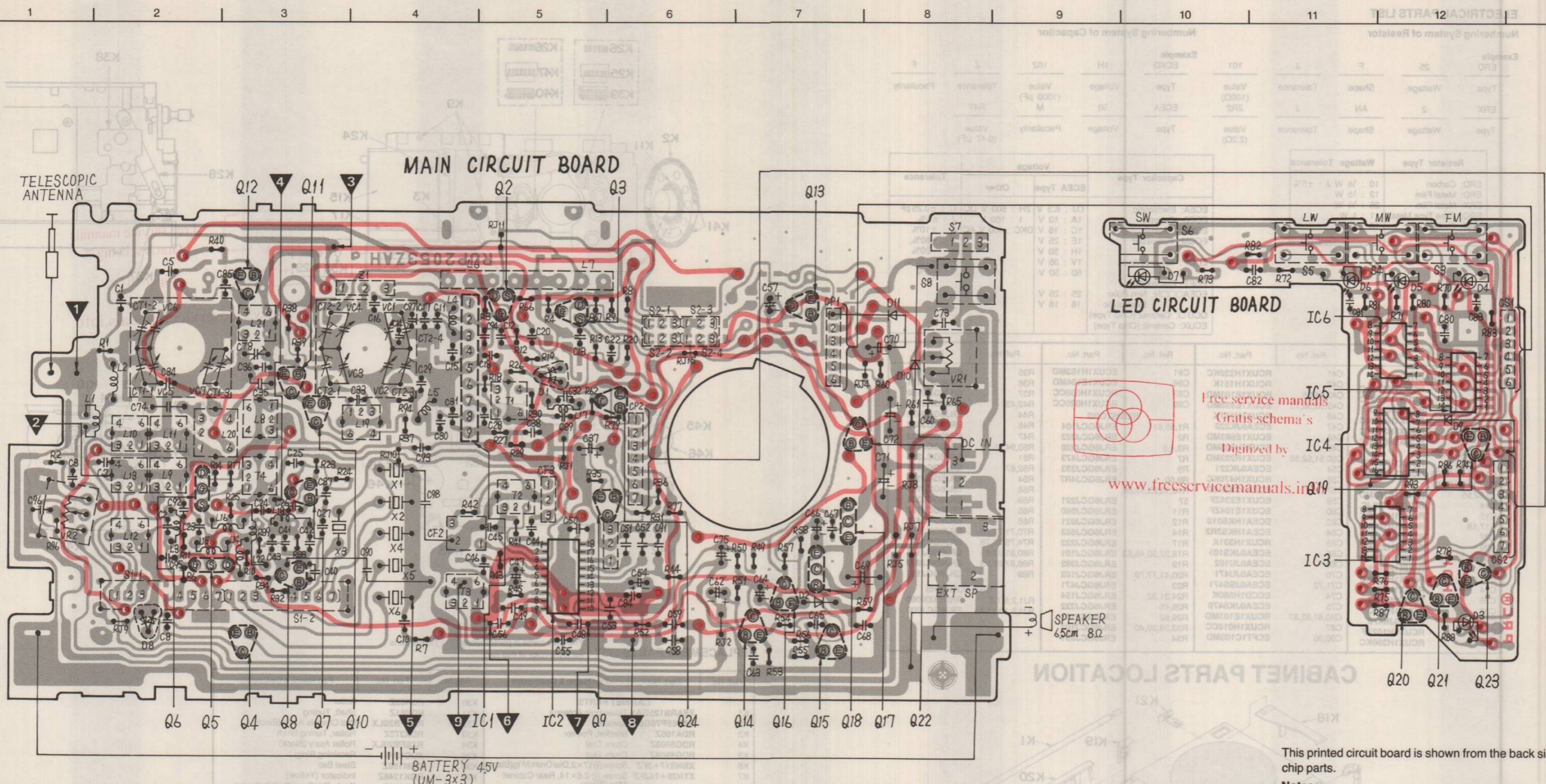
- Described in schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes. One type number is used for supply parts number and production parts number which they are identical.
- e.g. Q1
2SC2412NRTB, LN2TB ← Production parts number
[2SC2412] ← Supply parts number
- The supply parts number is described alone in the replacement parts list.



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CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



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Replacing Chip Parts

(Removal) Hold the chips with tweezers as shown in Fig. 1, and alternately touch the soldering iron (for less than three seconds) to the soldered part on either side of the chip. Gradually lift the chip up and remove it. Caution: Removing the chips all at once will break the plating on the circuit board.

(Attachment) Carefully solder the replacement parts to the same location (do not permit the parts to shift). Note: If allowed to shift, the part may interfere with the mechanism.

*** Use only one millimeter at the end of the soldering iron**

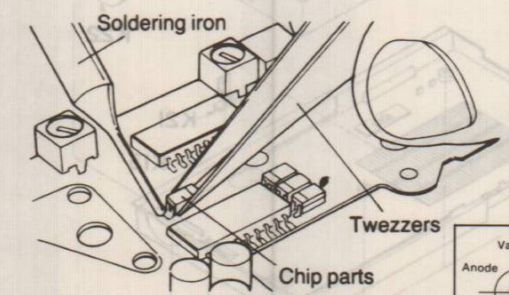
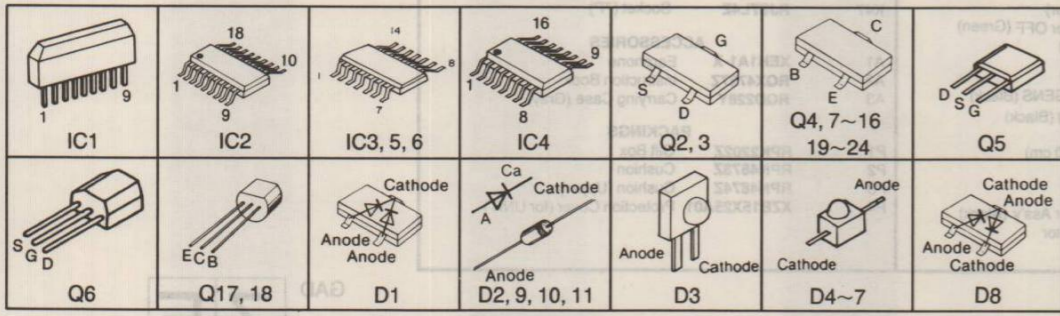
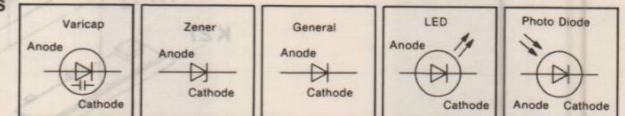


Fig. 1



This printed circuit board is shown from the back side of chip parts.

- Notes:**
1. The circuit shown in (●) on the conductor indicates printed circuit on the back side of the printed circuit board.
 2. The circuit shown in (○) on the conductor indicates printed circuit on the front side of the printed circuit board.
 3. The symbols (●) shown in the circuit board indicate connection points between conductors on the front side and back side of the circuit board.

• This circuit board diagram may be modified at any time with the development of new technology.

ELECTRICAL PARTS LIST

Numbering System of Resistor

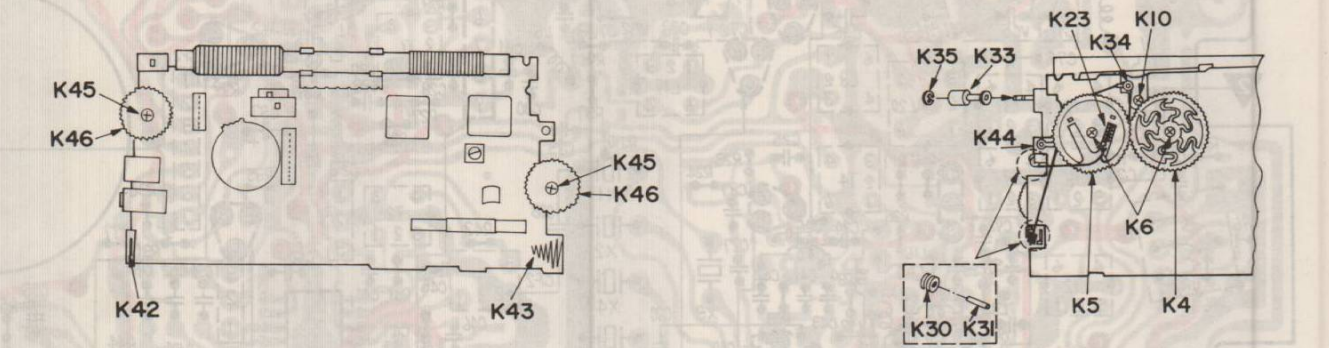
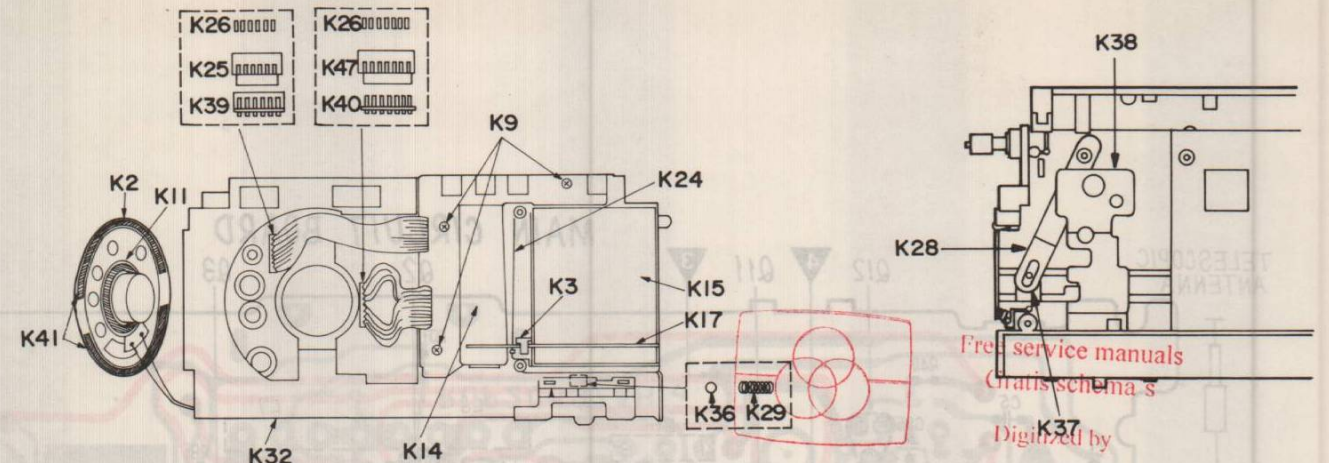
Example	25	F	J	101	Example	1H	102	Z	F
ERD	Wattage	Shape	Tolerance	Value (100Ω)	ECKD	Voltage	Value (1000 pF)	Tolerance	Peculiarity
ERX	2	AN	J	2R2	ECEA	50	M	R47	
ERD	Wattage	Shape	Tolerance	Value (2.2Ω)	ECEA	Voltage	Peculiarity	Value (0.47 μF)	

Numbering System of Capacitor

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
ECEA: Electrolytic	OJ : 6.3 V	2H : 500 V DC	C : ±0.25 pF
ECCD: Ceramic	1A : 10 V	1 : 100 V	J : ±5%
ECKD: Ceramic	1C : 16 V	DKC : 400 V AC	K : ±10%
ECQM: Polyester	1E : 25 V		Z : +80%, -20%
	1H : 50 V		P : +100%, -0%
ECQP: Polypropylene	1V : 35 V		
	50 : 50 V		
ECET: Electrolytic	25 : 25 V		
ECEA□□□□N: Non Polar Electrolytic	16 : 16 V		
QCU □: Ceramic (Chip Type)			
ECUX: Ceramic (Chip Type)			

Resistor Type	Wattage	Tolerance
ERD: Carbon	10 : 1/8 W	J : ±5%
ERD: Metal Film	12 : 1/2 W	
ERX: Metal Film	25 : 1/4 W	
ERC: Fuse Type Metal	1 : 1 W	
RRD: Carbon (Chip Type)	18 : 1/8 W	

Ref. No.	Part. No.	Ref. No.	Part. No.	Ref. No.	Part. No.	Ref. No.	Part. No.
CAPACITORS							
C1,9	RCUX1H070DC	C41	RCUX1H220KC	C91	ECUX1H153MD	R35	ERJ6GCJ151
C2	RCUX1H030CC	C42	RCUX1H151K	C96	ECUX1E104MD	R36	ERJ6GCJ471
C3	RCUX1H101K	C43,84,85	RCUX1E103MD	C97	RCUX1H030CC	R37	ERJ6GCJ150
C5,26,29	RCUX1H180KC	C45,53,58,73	ECUX1E333MD	C99	RCUX1H020CC	R42,43	ERJ6GCJ152
C7	RCUX1H270KC	C46	RCUX1H101K	RESISTORS			
C8	RCUX1H680KC	C47	ECEA0JK220	R1,55,61	ERJ6GCJ104	R46	ERJ6GCJ332
C10,20,22,23,24,44	RCUX1H103ZF	C48	ECUX1E683MD	R2	ERJ6GCJ223	R47	ERJ6GCJ333
C11,16,31,63,94	RCUX1H102MD	C49	ECUX1H223MD	R3,4,6	ERJ6GCJ220	R50,94,95,96	ERJ6GCJ332
C12,13,25,38,67,68,92,95	RCUX1E103MD	C50,51,52,56	ECUX1H223MD	R7	ERJ6GCJ473	R51	ERJ6GCJ334
C14	RCUX1H220JC	C54	ECEA0JK221	R8	ERJ6GCJ333	R52,67	ERJ6GCJ681
C15	RCUX1H050DC	C55	RCUX1H470KC	R9,60	ERJ6GCJ4R7	R54	ERJ6GCJ123
C17,18	RCUX1H102MD	C57	ECEA1CKS100	R10,13,25,49,56,57	ERJ6GCJ221	R58	ERJ6GCJ181
C27	RCUX1H010CC	C59	ECUX1E224ZF	R11	ERJ6GCJ560	R59	ERJ6GCJ331
C28	RCUX1H220KC	C60	ECUX1E104ZF	R12	ERJ6GCJ821	R65	ERJ6GCJ183
C30	RCUX1H470KC	C62	ECEA1HKS010	R14	ERJ6GCJ563	R66	ERJ6GCJ470
C32	RCUX1H150KC	C64	ECEA1HKS2R2	R14	ERJ6GCJ563	R70,71,72,73	ERJ6GCJ561
C33,93	RCUX1H100KC	C65	RCUX1H331K	R17	ERJ6GCJ222	R74,75,76,78	ERJ6GCJ103
C34	RCUX1H330KC	C66	ECEA0JKS101	R18,27,30,48,53	ERJ6GCJ101	R80,81,82,83	ERJ6GCJ104
C35	ECMS05151J	C69	ECEA0JU102	R19	ERJ6GCJ392	R86,87,88,93	ERJ6GCJ823
C36	RCUX1H220J	C70	ECEA0JU471	R20,41,77,79	ERJ6GCJ102	R89	ERJ6GCJ151
C37	ECEA0JK470	C71,72	ECEA0JSS471	R23	ERJ6GCJ471	CHIP JUMPERS	
C39	RCUX1H102ZF	C74	ECDD1H560K	R24,31,32	ERJ6GCJ154	RJ1,2,5,7,8	RRD18XK000
C40	RCUX1H390KC	C75	ECEA0JKS470	R26,45	ERJ6GCJ222	RJ4,9,10,11,15	ERJ6GCJ000
		C80,81,82,83	RCUX1E103MD	R29,62	ERJ6GCJ101		
		C87	RCUX1H010CC	R33,38,39,40	ERJ6GCJ103		
		C90,98	ECFT1C103MD	R34	ERJ6GCJ391		



Note:
The color name in parentheses () in the parts list is the color of that part.

REPLACEMENT PARTS LIST

Ref. No.	Part. No.	Part Name & Description	Ref. No.	Part. No.	Part Name & Description
CABINET PARTS					
K1	XEARS125GAY	Telescopic Antenna	K30	RDR82Z	Roller
K2	EAS65P76GB	Speaker	K31	RDY61Z	Shaft, Tuning
K3	RDA105Z	Bracket, Pointer	K32	RZAFB20LX	Dial Chassis Ass'y (Black)
K4	RDG5905Z	Drum, Dial	K33	RDX372Z	Roller, Tuning Shaft
K5	RDG5906Z	Drum, Dial	K34	RZEFB20LX	Roller Ass'y (Black)
K6	XSHR17+3FZ	Screw ⊕1.7×2, Dial Drum M'tg (Black)	K35	XUC12FT	Retaining Ring
K7	XTN26+14JFZ	Screw ⊕ 2.6×14, Rear Cabinet M'tg (Black)	K36	RHM156Z	Steel Ball
K8	XUC2FT	Stop Ring (2Ø), Hand Strap M'tg	K37	RGK1246Z	Indicator (Yellow)
K9	XQN2+A4	Screw ⊕ 2×4, Dial Scale M'tg	K38	RBD380Z	Knob, SW Band Switch (Black)
K10	XQS2+A4	Screw ⊕ 2×8, P.C.B. M'tg	K39	RJP6G10Z	Plug (6P)
K11	RHG1150Z	Rubber Cushion, Speaker	K40	RJP7G10Z	Plug (7P)
K12	RYMFB20LZ	Front Cabinet Ass'y (Black)	K41	RHG1153Z	Rubber Cushion
K13	RKF812Y	Rear Cabinet (Black)	K42	RJC370Z	Battery Terminal (+)
K14	RKD697Y	Dial Scale, MW (Black)	K43	RJC70006Z	Battery Spring (-)
K15	RKD698Z	Dial Scale, SW (Black)	K44	QJT102Z	Lug Terminal
K16	RKH96Y	Hand Strap (Black)	K45	XSHR17+2FZ	Screw, Volume/Tone Knob M'tg (Black)
K17	RDP907Z	Pointer (Silver)	K46	RBT260Z	Knob, Volume/Tone (Black)
K18	RBC860Z	Button, Power OFF (Green)	K47	RJS7L4Z	Socket (7P)
K19	RBC868Z	Button, Band	ACCESSORIES		
K20	RBC869Z	Button, Band	A1	XEH1A1-X	Earphone
K21	RBD381Z	Knob, Hold, SENS (Black)	A2	RQX4727Z	Instruction Book
K22	RBN736Z	Knob, Tuning (Black)	A3	RQD228Y	Carrying Case (Gray)
K23	RUD49Z	Spring, Dial	PACKINGS		
K24	RDZ03Y	Cord, Dial (60 cm)	P1	RPK2202Z	Gift Box
K25	RJS6L4Z	Socket (6P)	P2	RPN4873Z	Cushion
K26	RJT807Y	Contact	P3	RPN4874Z	Cushion (Upper)
K27	RYNFB20LX	Battery Cover Ass'y (Black)	P4	XZB15X25A01	Protection Cover (for UNIT)
K28	RUB423Z	Lever, Indicator			
K29	RDS2042Z	Coil Spring			

CABINET PARTS LOCATION

