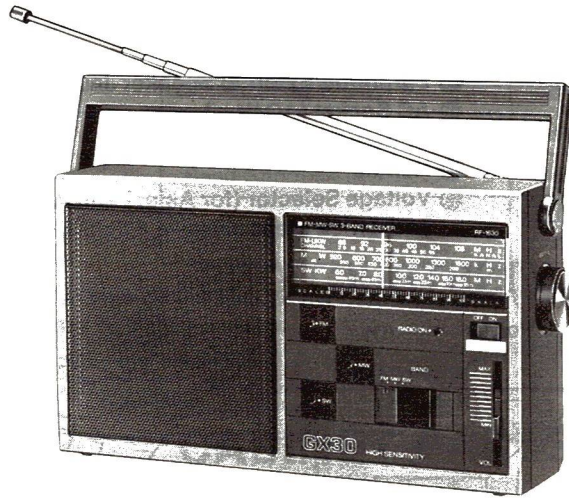


Service Manual

Radio
RF-1630J
(Black)

FM-MW-SW 3 Band Portable Receiver



This is the Service Manual for the following areas.

- ☒ **Z**...For all European areas except United Kingdom, F.R. Germany, France, Italy and Finland
- ☒ **X**...For Asia, Latin America, Middle East and Africa areas
- ☒ **L**...For Australia

■ SPECIFICATIONS

General:

Power Requirement: AC; ☒...220 V, 50 Hz
☒...110~127/220~240 V, 50/60 Hz
☒...240 V, 50 Hz
 Battery: ☒...6 V (Four "C" Size Flashlight Batteries)
 (Panasonic UM-2 or equivalent)
☒ ☒...6 V (Four "C" Size Flashlight Batteries)
 (National UM-2 or equivalent)

Power Consumption: 4 W (AC only)
 Power Output: ☒...1 W...RMS (max.)
☒ ☒...1.2 W...MPO
 1 W...RMS (max.)

Speaker: 8 cm PM Dynamic Speaker (3Ω)
 Output: Earphone/External Speaker; 3~8Ω/Ø3.5
 Dimensions: 246 mm (W)×131 mm (H)×79 mm (D)
 Weight: 900 g without batteries

Radio Section:

Radio Frequency
Range:

☒...FM; 87.5~108 MHz
 MW; 520~1610 kHz (577~186 m)
 SW; 5.9~18 MHz (50.8~16.7 m)
☒ ☒...FM; 88~108 MHz
 MW; 530~1605 kHz (566~187 m)
 SW; 5.9~18 MHz (50.8~16.7 m)

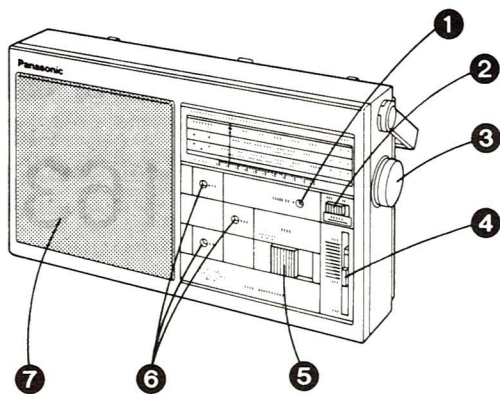
Intermediate
Frequency:

FM; 10.7 MHz
 AM (MW/SW); 455 kHz
 FM; 3.2 μV/50 mW output
 (-3 dB Limit Sens)
 MW; 80 μV/m/50 mW output
 SW; 13 μV/50 mW output

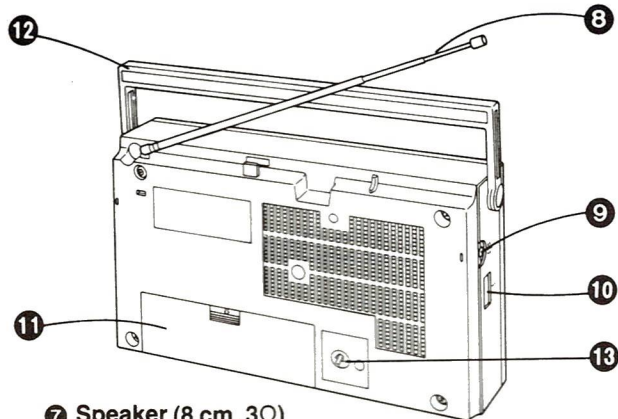
Sensitivity:

Design and specifications are subject to change without notice.

LOCATION OF CONTROLS AND COMPONENTS



- ① Radio On Indicator (RADIO ON)
- ② Radio Switch (RADIO)
- ③ Tuning Control (TUNING)
- ④ Volume Control (VOL)
- ⑤ Band Selector (BAND)
- ⑥ Band Indicators



- ⑦ Speaker (8 cm, 3Ω)
- ⑧ Telescopic Antenna
- ⑨ Earphone/External Speaker Jack (IMP 3-8Ω $\odot$ $\odot$ 3.5)
- ⑩ AC Socket (AC IN ~)
- ⑪ Battery Compartment
- ⑫ Handle
- ⑬ Voltage Selector (for Asia, Latin America, Middle East and Africa areas.)

DISASSEMBLY INSTRUCTIONS

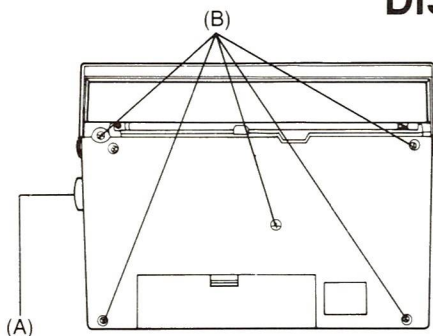


Fig. 1

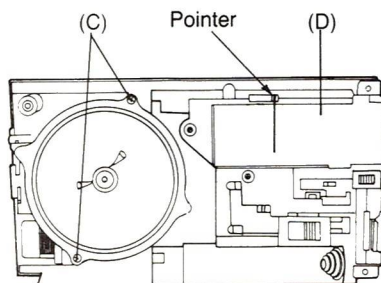


Fig. 2

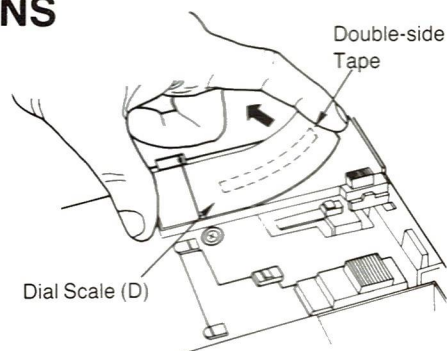


Fig. 3

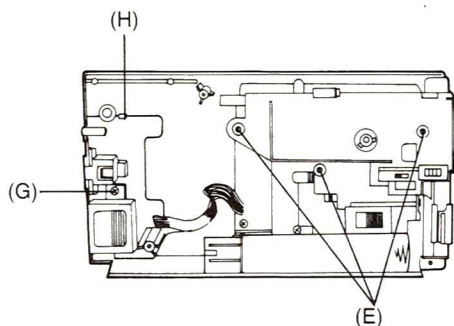


Fig. 4

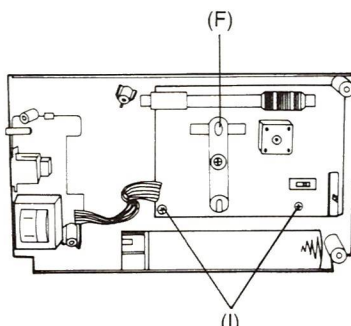


Fig. 5

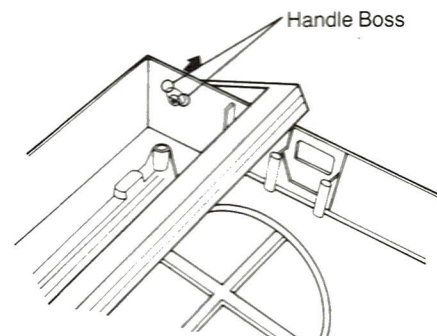


Fig. 6

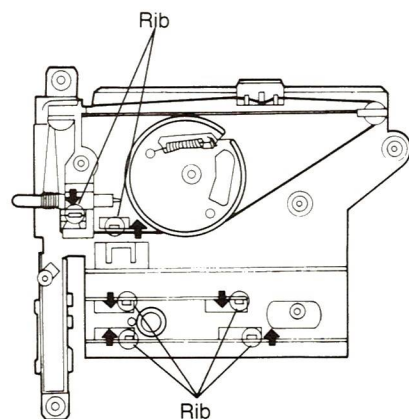


Fig. 7

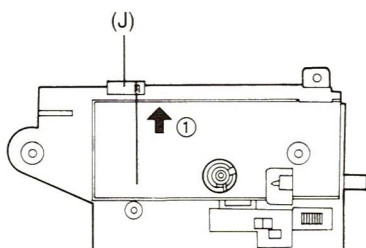
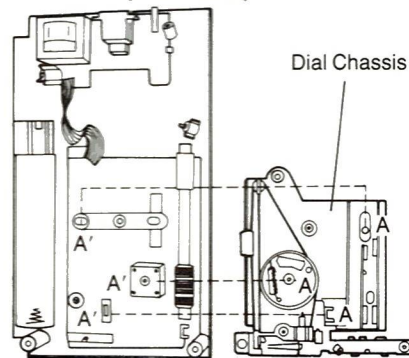


Fig. 8

■ HOW TO REPLACE (Dial chassis)



During installation, simultaneously fit in A and A'.

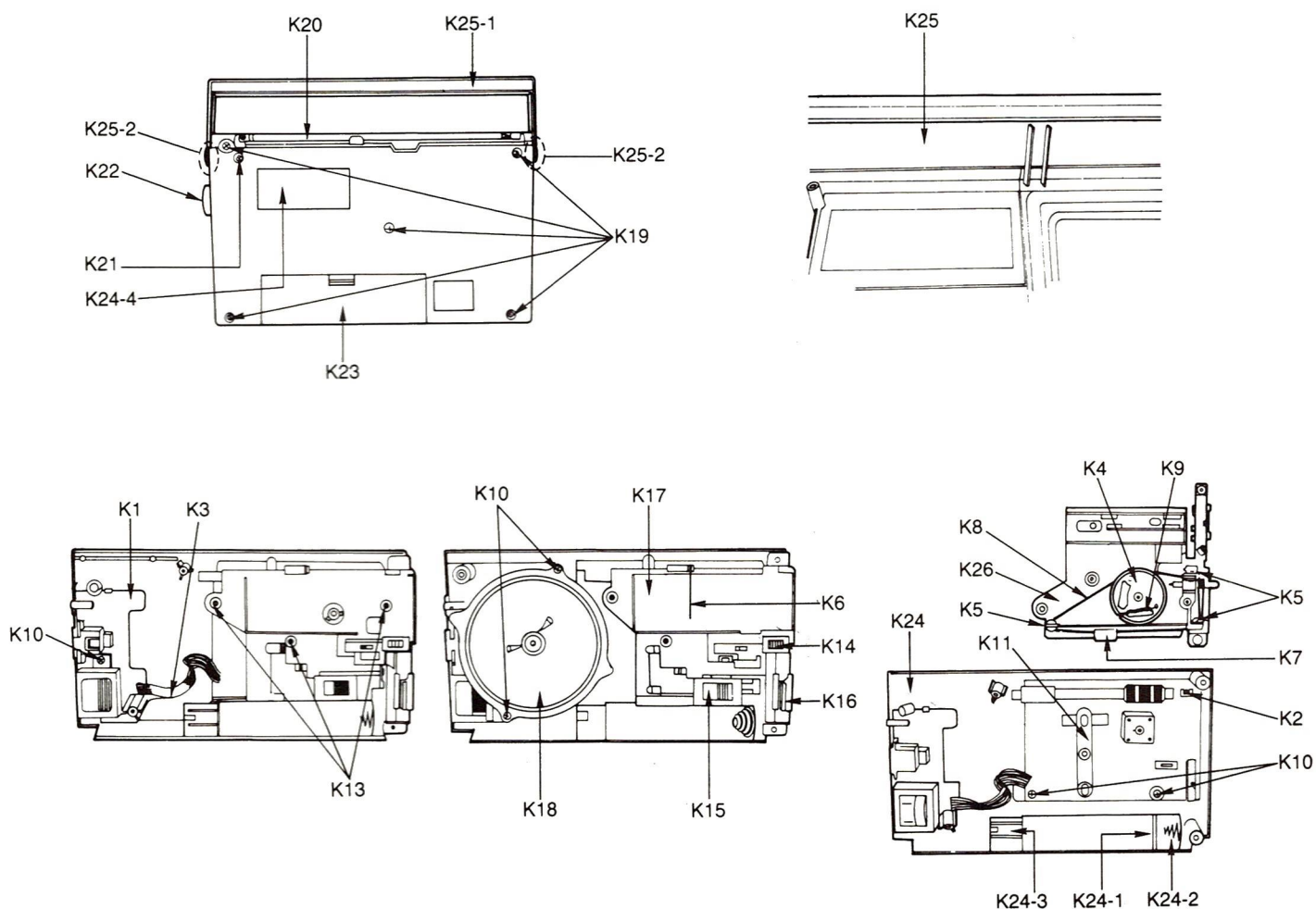
Fig. 9

Ref. No.	Shown in Fig. —.	To remove —.	Remove —.
1	1	Front Cabinet	Knob(A)×1
2	1		Screw (3×16)mm(B)×5
3	2	Speaker	Screw (3×12)mm(C)×2
4	2	Dial Chassis (*1)	Turn the tuning shaft until the pointer reaches the left end.
5	2, 3		Remove the dial scale in the direction of the arrow ... (D)×1
6	4		Screw (3×30)mm(E)×3
7	5	Band Switch Lever (*2)	Lever(F)×1
8	4	Power Supply Circuit Board	Screw (3×12)mm(G)×1
9	4		Rib (H)×1
10	5	Main Circuit Board	Screw (3×12)mm (I)×2
11	6	Handle	Remove the handle both in the direction of arrow.
12	7	Band Knob	Remove the ribs in the direction of arrows.
13	8	Pointer	Pull out the dial pointer in the direction of arrow ①. (J)×1

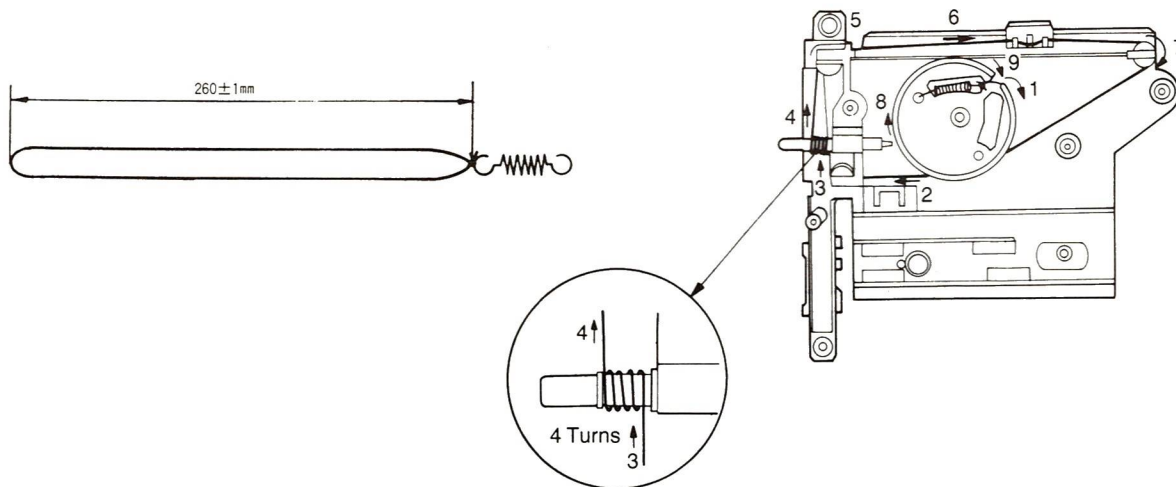
*1. If the double-sided tape on the back of the Dial Scale its not adhesive qualities, replace it.

*2. Note that they may be tightly engaged.

CABINET PARTS LOCATION



DIAL THREADING



MEASUREMENTS AND ADJUSTMENTS

■ ALIGNMENT INSTRUCTION

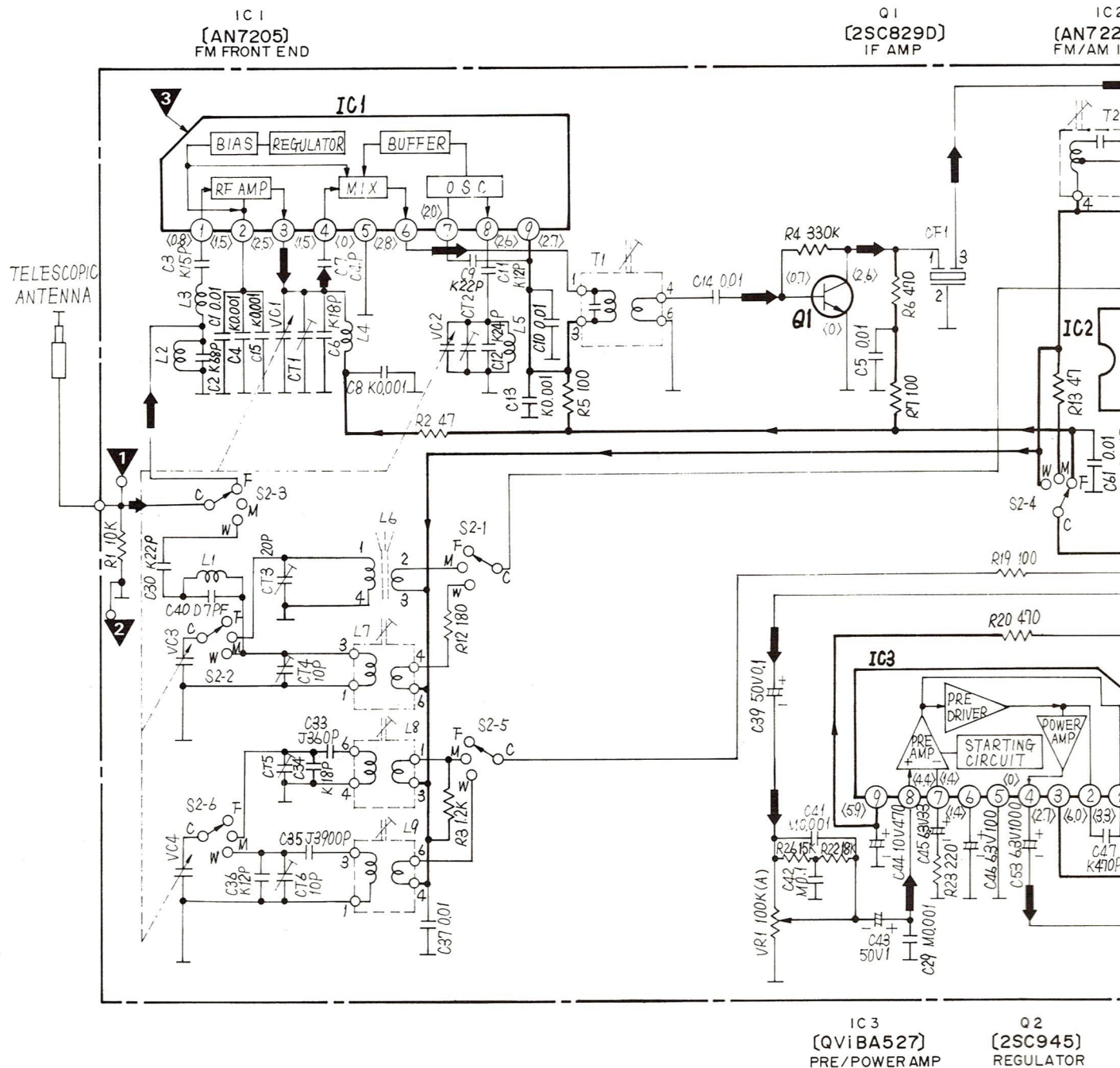
READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set volume control to maximum.
2. Set loudness switch to OFF.
3. Set tone switch to OFF.
4. Set band switch to MW, SW or FM.
5. Set radio (power) switch to ON.
6. Set power source voltage to 6 V DC.
7. 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 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 30% Mod. at 400 Hz	Point of non-interference. (on/ about 600 kHz)	Output meter across voice coil.	T2 (AM 1st IFT) T3 (AM 2nd IFT)	Adjust for maximum output.
MW-RF ALIGNMENT							
(2)	MW	"	511 kHz	Tuning capacitor fully closed.	"	L8 (MW OSC Coil)	Adjust for maximum output.
(3)	MW	"	1650 kHz	Tuning capacitor fully open.	"	CT5 (MW OSC Trimmer)	"
(4)	MW	"	550 kHz	Tune to signal.	"	(* 1) L6 (MW ANT Coil)	Adjust for maximum output. Adjust L6 by moving coil bobbin along ferrite core.
(5)	MW	"	1,500 kHz	"	"	CT3 (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (2)~(5).
(* 1) Cement antenna bobbin with wax after completing alignment.							
SW-RF ALIGNMENT							
(6)	SW	"	5.75 MHz	Tuning capacitor fully closed.	"	L9 (SW OSC Coil)	Adjust for maximum output.
(7)	SW	Connect to test point ▼ through ceramic capacitor (10 pF) Negative side to test point ▼	18.8 MHz	Tuning capacitor fully open.	"	CT6 (SW OSC Trimmer)	"
(8)	SW		5.9 MHz	Tune to signal.	"	L7 (SW ANT Coil)	"
(9)	SW		18 MHz	"	"	CT4 (SW ANT Trimmer)	Adjust for maximum output. Repeat steps (6)~(9).

SCHEMATIC DI



Notes:

- S1: Radio ON/OFF switch in "ON" position.
- S2-1~S2-6: Band select switch in "FM" position.
(F...FM, M...MW, W...SW)
- S3: Voltage select switch in "220~240 V" position. (X) only
- S4: AC/DC IN select switch in "AC IN" position.
- VR1: Volume control.
- The mark (▼) shows test point e.g. ▼ = test point 1.
- DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
< ...FM position, ()...AM position
- Battery current: No signal 24 mA
Maximum output (radio) 290 mA

9. Important safety notice

Components identified by ▲ mark have special characteristics important for safety.

When replacing any of these components, use manufacturer's specified parts.

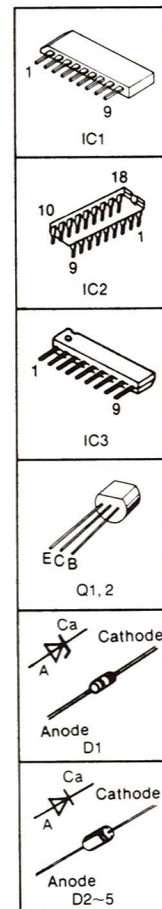
- Described in schematic diagram are two types of the supply parts number and production parts number for transistors and diodes.

One type number is used for supply parts number and production parts number which they are identical.

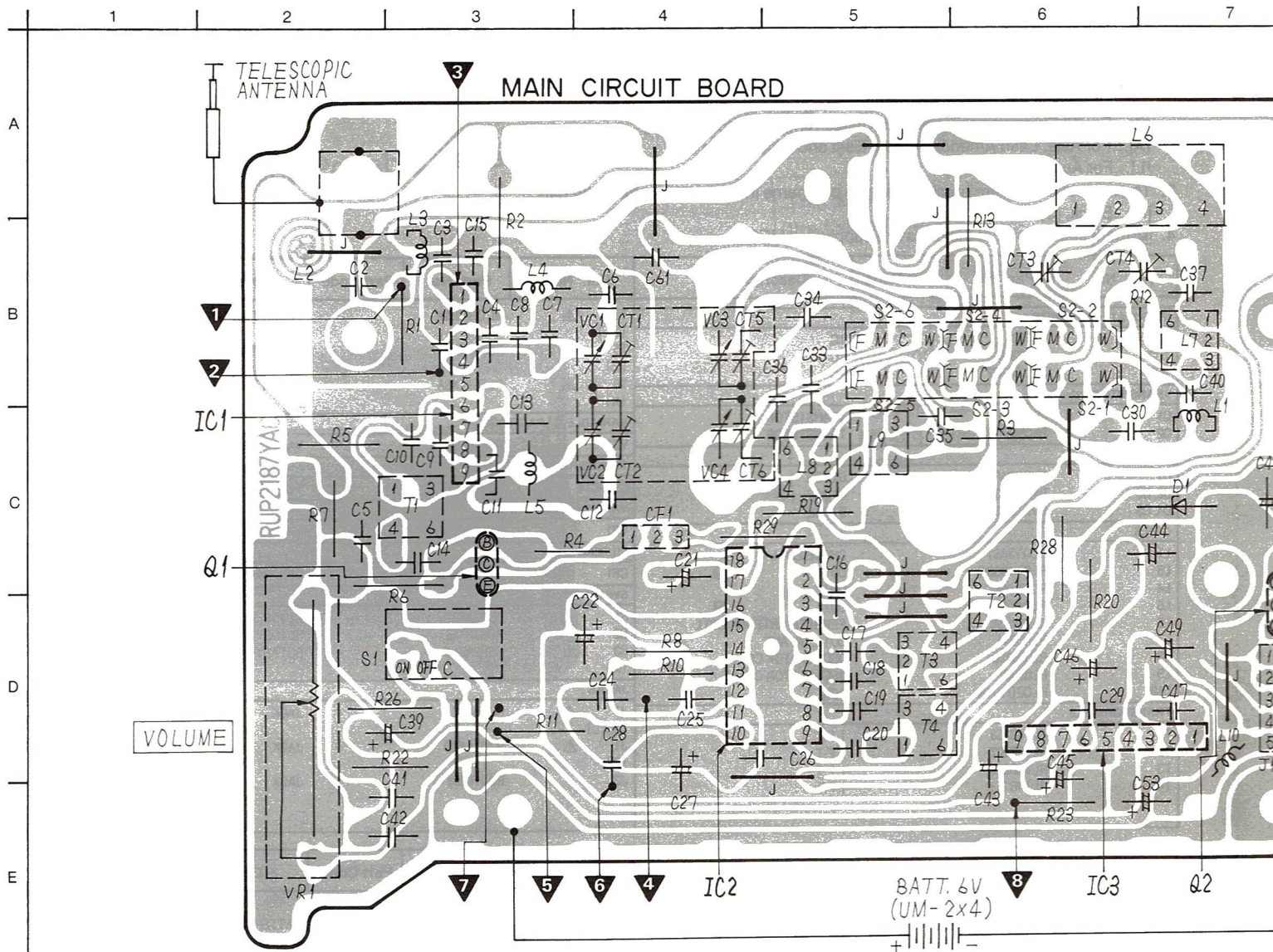
☒ ...For all European areas except United Kingdom, F.R. Germany, France, Italy and Finland

☒ ...For Asia, Latin America, Middle East and Africa areas

☐ ...For Australia



➡ +B Voltage Line
➡ Radio (FM) Signal Line



ELECTRICAL PARTS LIST

Numbering System of Resistor

Example:

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

Numbering System of Capacitor

Example:

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

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

※ 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

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

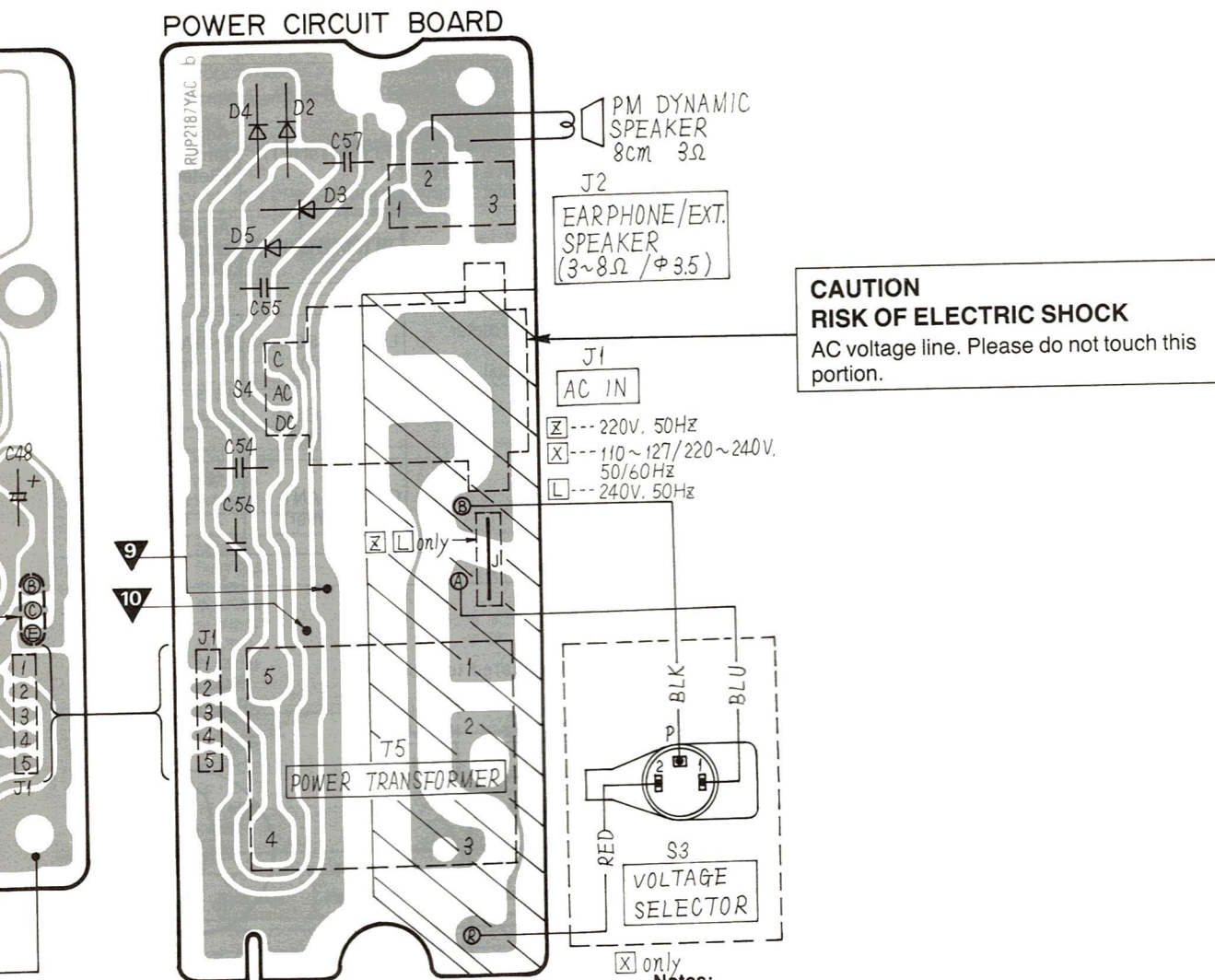
Ref.

CAPACITORS

C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18, C19
C20
C21
C22
C24

Wiring Connection Diagram

8	9	10	11	12
---	---	----	----	----



Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code
CAPACITORS			C25	ECFT1C683MD		C54, C55	ECKT1H103ZFD	
	ECKT1H690K		C26	ECFT1C223MD		C56, C57	ECKT1H103ZFD	
	ECCT1H150K		C27	ECEA0JU221		C61	ECKT1H103ZFD	
	ECKT1H102KBD		C28	ECFT1C153MD		RESISTORS		
	ECKT1H103ZFD		C29	ECKT1H102MD		R1	ERD25FJ103	
	ECCT1H180KC		C30	ECCT1H220KC		R2	ERD25TJ470	
	ECCT1H040C		C33	ECQP2A361JZ		R3	ERD25TJ122T	
	ECKT1H102KBD		C34	ECCT1H180KC		R4	ERD25TJ334	
	ECCT1H220KC		C35	ECQP2A392JZ		R5	ERD25TJ101	
	ECKT1H103ZFD		C36	ECCT1H120KC		R6	ERD25TJ471	
	ECCT1H220KC		C37	ECKT1H103ZFD		R7	ERD25TJ101	
	ECKT1H103ZFD		C39	ECEA1HU0R1		R8	ERD25TJ473	
	ECCT1H120KC		C40	ECCT1H070DC		R10	ERD25FJ332	
	ECCT1H240KC		C41	ECKT1H102MD		R11	ERD25TJ471	
	ECKT1H102KBD		C42	ECFV1C104MD		R12	ERD25FJ181	
	ECKT1H103ZFD		C43	ECEA1HU010		R13	ERD25TJ470	
	ECKT1H102KBD		C44	ECEA1AU471		R19	ERD25TJ101	
	ECFV1E473MD		C45	ECEA0JU330		R20	ERD25TJ471	
	ECKT1H103ZFD		C46	ECEA0JU101B		R22	ERD25TJ183	
	ECFT1C223MD		C47	ECKD1H471KB		R23	ERD25TJ221	
	ECCT1H470K		C48	ECEA0JU101B		R26	ERD25TJ153	
	ECEA0JU470		C49	ECEA1CS2102		R28	ERD25TJ470	
	ECEA1EU4R7		C53	ECEA0JU102		R29	ERD25TJ101	
	ECFT1C333MD							

Japan ©

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	"	"	"	"	T4 (FM 2nd IFT)	Adjust for maximum amplitude. (Refer to fig. 3).
FM-RF ALIGNMENT							
(3)	FM	Connect to test point ∇ through FM dummy antenna. Negative side to test point ∇ .	86.2 MHz	Variable capacitor fully closed.	Output meter across voice coil.	L5 (FM OSC Coil)	(* 2) Adjust for maximum output.
(4)	FM		109.2 MHz	Variable capacitor fully open.	"	CT2 (FM OSC Trimmer)	"
(5)	FM		106 MHz	"	"	CT1 (FM ANT Trimmer)	(* 2) Adjust for maximum output. Repeat steps (3)~(6).
(* 2) Three output responses will be present; proper tuning is the center frequency.							

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

ALIGNMENT POINTS

(Please refer to Circuit Board and Wiring Connection Diagram which is located test points)

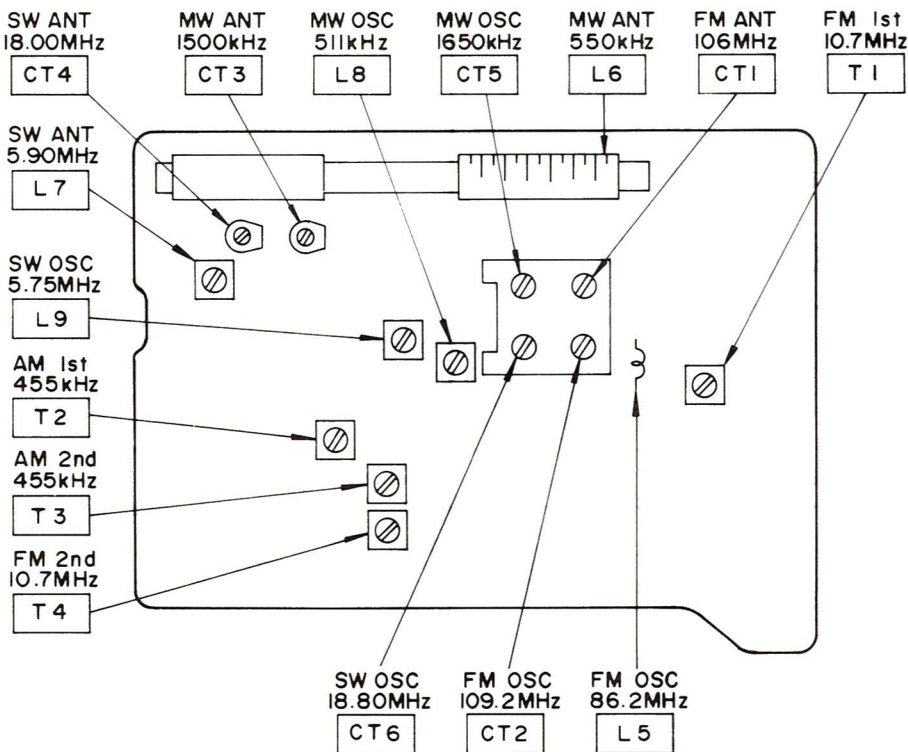


Fig. 1

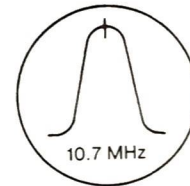


Fig. 2

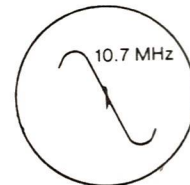


Fig. 3

DIAL POINTS (0 Point adjustment)

1. Turn the Variable Capacitor to fully counter-clockwise.
2. Position the pointer over the slot.

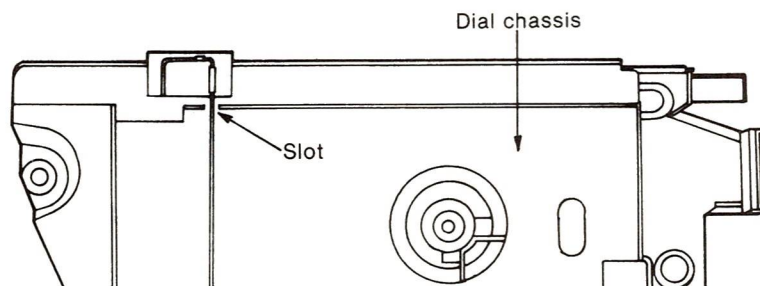


Fig. 4

Notes:

1. Important s
Component
When repla
2. The letter in
[Z]...For All
[X]...For As
[L]...For Au
3. The letter in
[K]...Black,
4. [M] mark sta

Ref. No.
INTEGRATED CIRCUITS
IC1
IC2
IC3
TRANSISTORS
Q1
Q2
DIODES
D1
D2, D3
D4, D5
COILS
L1
L3
L4
L5
L6
L7
L8
L9
L10
TRANSFORMERS
T1
T2
T3
T4

Ref. No.
CABINET PARTS
K1
K2
K3
K4
K5
K6
K7
K8
K9
K10
K11
K13
K14
K15
K16
K17
[Z]
K17
[X,X1]
K18
K19
K20
K21
K22
K23
K24
[X]
K24
[XL]
K24

REPLACEMENT PARTS LIST

Notes:

- Important safety notice
Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
- The letter in the square bracket bottom the Ref. No. indicates the shipping destination.
[Z]...For All European areas except United Kingdom and Germany
[X]...For Asia, Latin America, Middle East and Africa areas
[L]...For Australia
- The letter in the square bracket after the part name indicates the color of the part.
[K]...Black, [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
INTEGRATED CIRCUITS				T5 Δ	RLT512E1A		POWER TRANSFORMER [M]
IC1	AN7205	IC		(XL)			
IC2	AN7220A	IC		T5 Δ	RLT512G3A		POWER TRANSFORMER [M]
IC3	QV1BA527	IC		(Z)			
TRANSISTORS				T5 Δ	RLT512X3A		POWER TRANSFORMER [M]
Q1	2SC829D	TRANSISTOR		(X)			
Q2	2SC945	TRANSISTOR		VARIABLE CAPACITORS			
DIODES				VC1	RCV4RC2R1A		VARIABLE CAPACITOR
D1	RVDRD4R3EBT	DIODE [M]		TRIMMER CAPACITORS			
D2, D3	RV01SR35	DIODE		CT3, CT4	RCVTZ20F		TRIMMER CAPACITOR
D4, D5	RV01SR35	DIODE		VARIABLE RESISTORS			
COILS				VR1	EWASL2C95A14		VARIABLE RESISTOR
L1	RLQY24S1	CHOKE COIL		FILTERS			
L3	RLQY18S3W	COIL [M]		CF1	RVF107WAZ		CERAMIC FILTER
L4	RLD4Y44	COIL		SWITCHES			
L5	RLD4Y43W	COIL [M]		S1	RSS2A43Z		SLIDE SWITCH [M]
L6	RLF2W156	FERRITE ANTENNA COIL		S2	RSS3F14Z		SLIDE SWITCH [M]
L7	RLA3B41	COIL SW ANT		S3 Δ	RSR2A01Y		ROTARY SWITCH
L8	RL02B108	OSCILLATOR COIL		(X)			
L9	RL03B87	OSCILLATOR COIL		JACKS			
L10	RLQZD101K	COIL		J1 Δ	RJJ1A3Y		JACK
TRANSFORMERS				(X,XL)			
T1	RL14B153	I.F.T		J1 Δ	RJJ1A4ZD		JACK
T2	RL12B207	I.F.T		(Z)			
T3	RL12B217	I.F.T		J2	RJJ1D20Y		JACK
T4	RL14B153	I.F.T					

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
CABINET PARTS				(Z)			
K1 Δ	RUP2187YAC	POWER P.C.B		K24-1	RJC20005ZA		BATTERY TERMINAL [M]
K2	RJT865Z	TERMINAL		K24-2	RJC60008ZA		BATTERY TERMINAL [M]
K3	WBB5CB-9K1K1	CORD [M]		K24-3	RJC92005ZA		BATTERY TERMINAL [M]
K4	RDD414YC	DRUM [M]		K24-4	RGT1250YA-0		NAME PLATE [M]
K5	RDR54Z	ROLLER, DIAL [M]		(XL)			
K6	RDP289Z	POINTER [S] [M]		K25	RYMF1630JXKS		FRONT CABINET ASS'Y [K] [M]
K7	RDA104Z	HOLDER [M]		(X,XL)			
K8	RZZ0303	DIAL ROPE		K25	RYMF1630JZKS		FRONT CABINET ASS'Y [K] [M]
K9	RDS4060A	SPRING		(Z)			
K10	XTV3+10G	SCREW		K25-1	RYHF1630LZKS		HANDLE [K] [M]
K11	RUB464ZA	LEVER [M]		K25-2	RKX165Z		SPACER
K13	XTB3+30CFN	TAPPING SCREW		K26	RZAF1630LZKS		CHASSIS ASS'Y [K] [M]
K14	RBD439ZA-0	KNOB [K] [M]		ACCESSORIES			
K15	RBD440ZA-0	KNOB [K] [M]		A1 Δ	QFC1081		AC CORD
K16	RBD441ZA-0	KNOB [K] [M]		(X)			
K17	RKD713WA-0	SCALE [K] [M]		A1 Δ	RJA20Z		AC CORD
(Z)				(Z)			
K17	RKD713XA-0	SCALE [K] [M]		A1 Δ	RJA26Z		AC CORD
(X,XL)				(XL)			
K18	RAS8P30ZA-D	SPEAKER [M]		A2	RQX4925ZA		OPERATING INSTRUCTIONS [M]
K19	XTB3+16CFZ	SCREW		(Z)			
K20	XEARK162EJY	TELESCOPIC ANTENNA [M]		A2	RQX4948ZA		INSTRUCTION BOOK [M]
K21	XYN3+F25FN	SCREW [M]		(X,XL)			
K22	RBN704Z	KNOB [K] [M]		PACKINGS			
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K24	RYFF1630JXKS	REAR CABINET ASS'Y [K] [M]		P2	RPK2464ZA		GIFT BOX [M]
(X)				(X,XL)			
K24	RYFF1630JXLK	REAR CABINET ASS'Y [K] [M]		P2	RPK2468ZA		GIFT BOX [M]
(XL)				(Z)			
K24	RYFF1630JZKS	REAR CABINET ASS'Y [K] [M]		P3	XZB36X35A04		POLYETHYLENE COVER

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