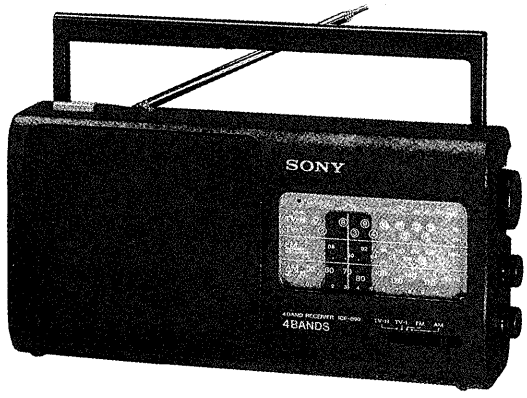
ICF-890

SERVICE MANUAL

US Model



SPECIFICATIONS

Frequency range	TV-H (high): channels 7 – 13 TV-L (low): channels 2 – 6 FM: 87.6 – 108 MHz AM: 530 – 1,710 kHz
Antennas	FM: Telescopic antenna AM: Built-in ferrite bar antenna
Speaker	Approx. 10.2 cm ($4^1/_8$ inches) dia., 8 Ω
Power output	430 mW (at 10% harmonic distortion)
Output	Earphone jack (minijack)
Power requirements	120 V AC, 60 Hz with the supplied AC power cord 6 V DC with four size AA (R6) batteries
Battery life	Approx. 29 hours of listening (for four hours a day at a normal volume) using Sony battery SUM-3 (NS)
Dimensions	Approx. 255 × 129 × 62.6 mm (w/h/d) ($10^1/_8 \times 5^1/_8 \times 2^1/_2$ inches) incl. projecting parts and controls with the carrying handle pushed in
Weight	Approx. 985 g (2 lb 3 oz) incl. batteries
Supplied accessory	AC power cord (1)

Design and specifications subject to change without notice.

FEATURES

- Two different power sources: batteries and house current.
- TONE control facilitates fine tone adjustment.
- TUNE indicator lights up during radio reception.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

TV-H/TV-L/FM/AM 4 BAND RECEIVER

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

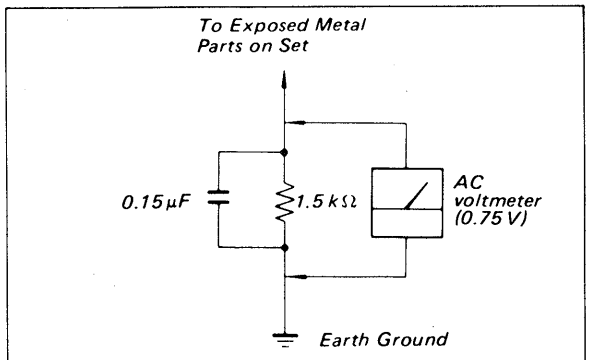
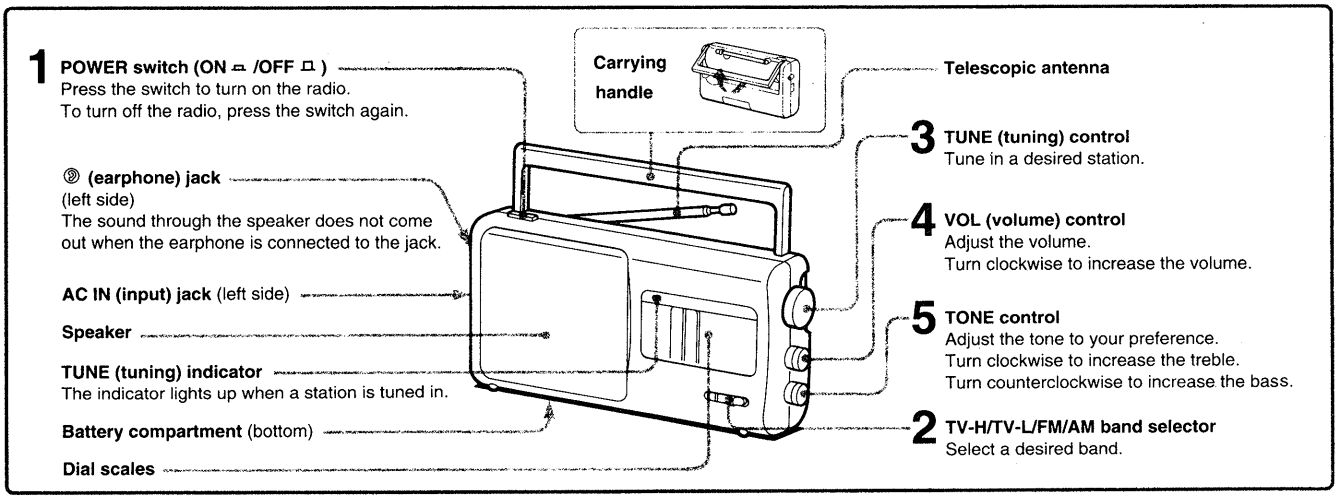


Fig. A. Using an AC voltmeter to check AC leakage.

SECTION 1
GENERAL

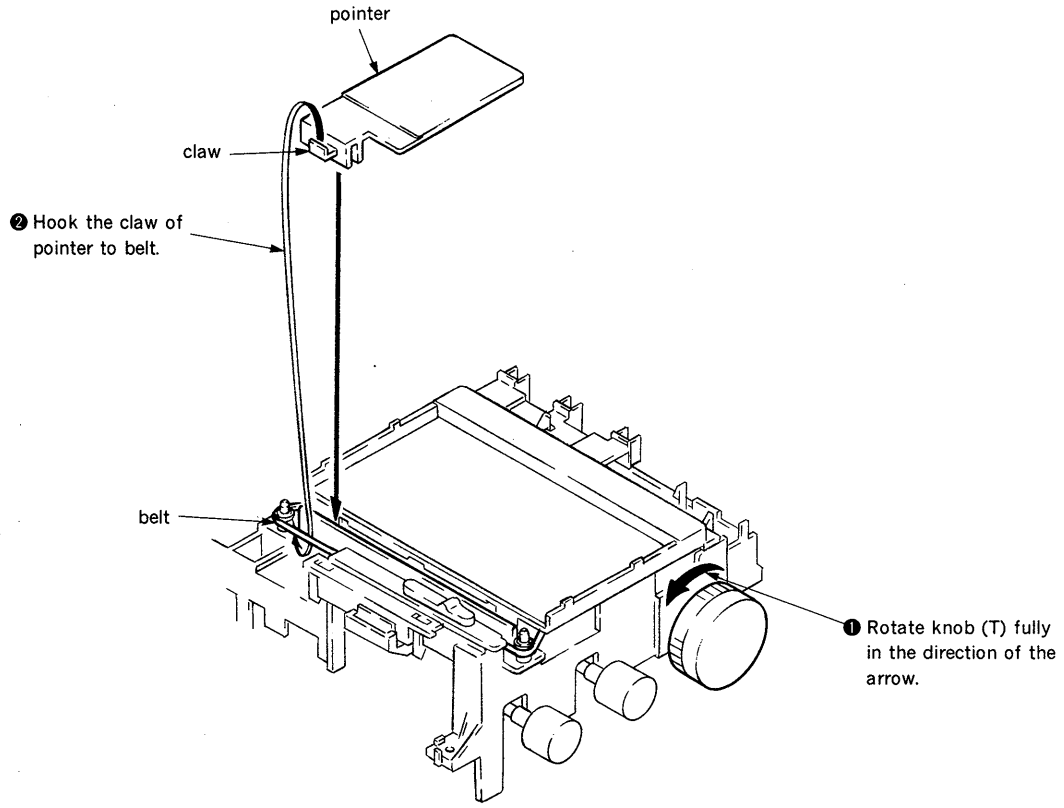
This section is extracted from instruction manual.

Radio Operation

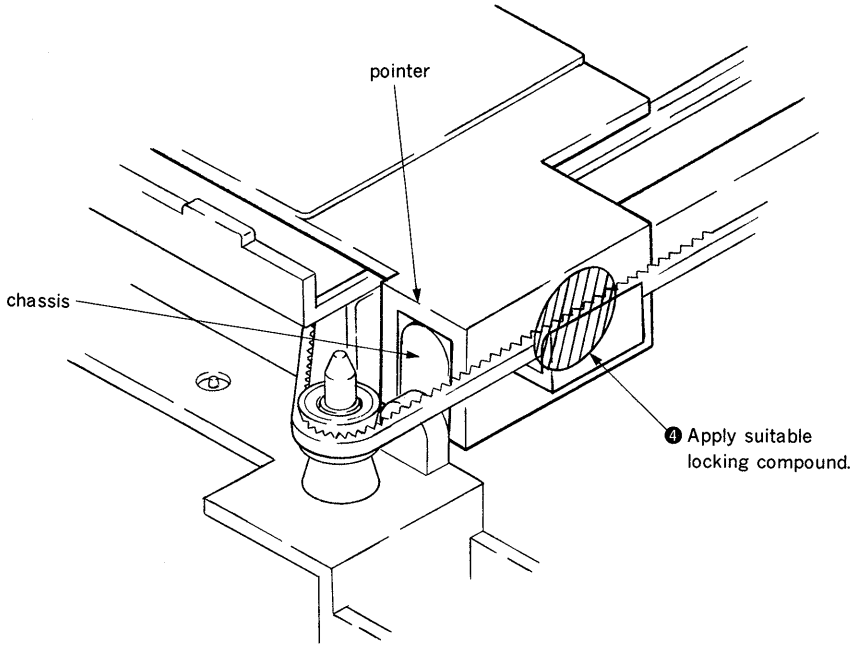


SECTION 2
DIAL POINTER INSTALLATION

2-1. POINTER SETTING



❸ Fit the end of chassis and end of pointer.

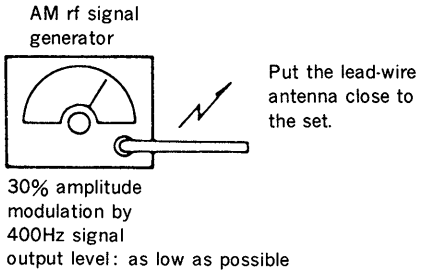


SECTION 3
ELECTRICAL ADJUSTMENTS

• AM Section

Setting :

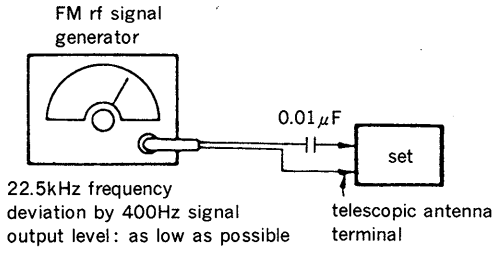
BAND switch : AM

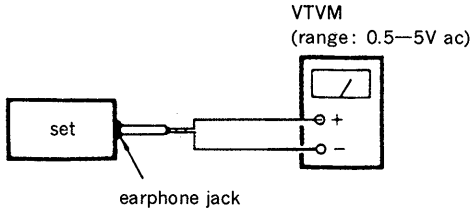


• FM/TV-L/TV-H Section

Setting :

BAND switch : FM/TV-L/TV-H





- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

AM IF ADJUSTMENT
Adjust for a maximum reading on VTVM.
T2
455kHz

AM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L10	CT4
520kHz	1780kHz

AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L3	CT3
620kHz	1500kHz

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L9	CT8
86.5MHz	109.5MHz

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L4, L5	CT5
86.5MHz	109.5MHz

TV-L FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L8	CT7
58MHz	90MHz

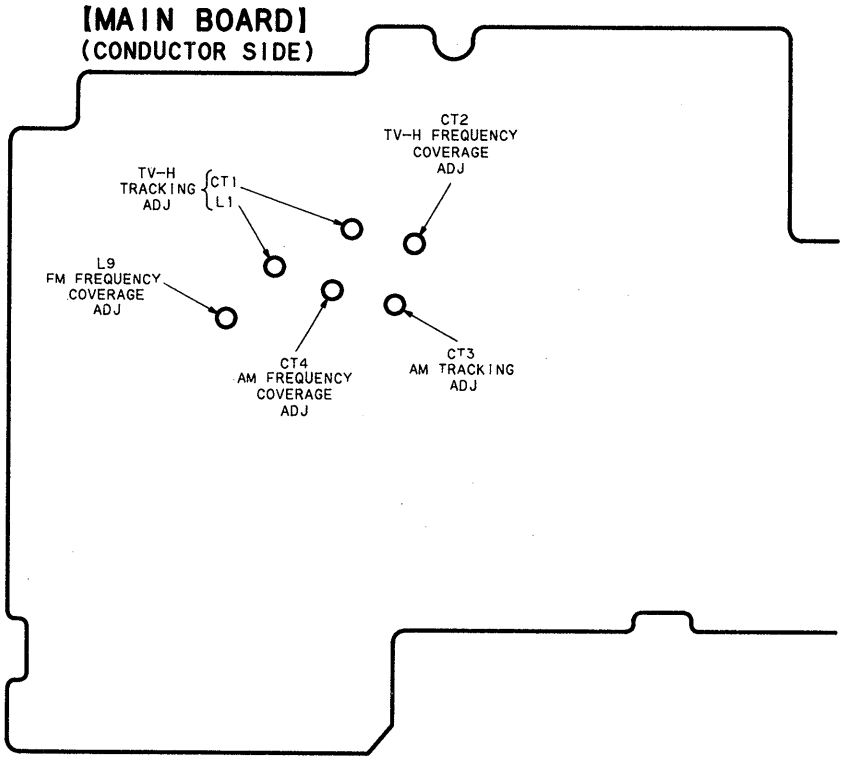
TV-L TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L6, L7	CT6
58MHz	90MHz

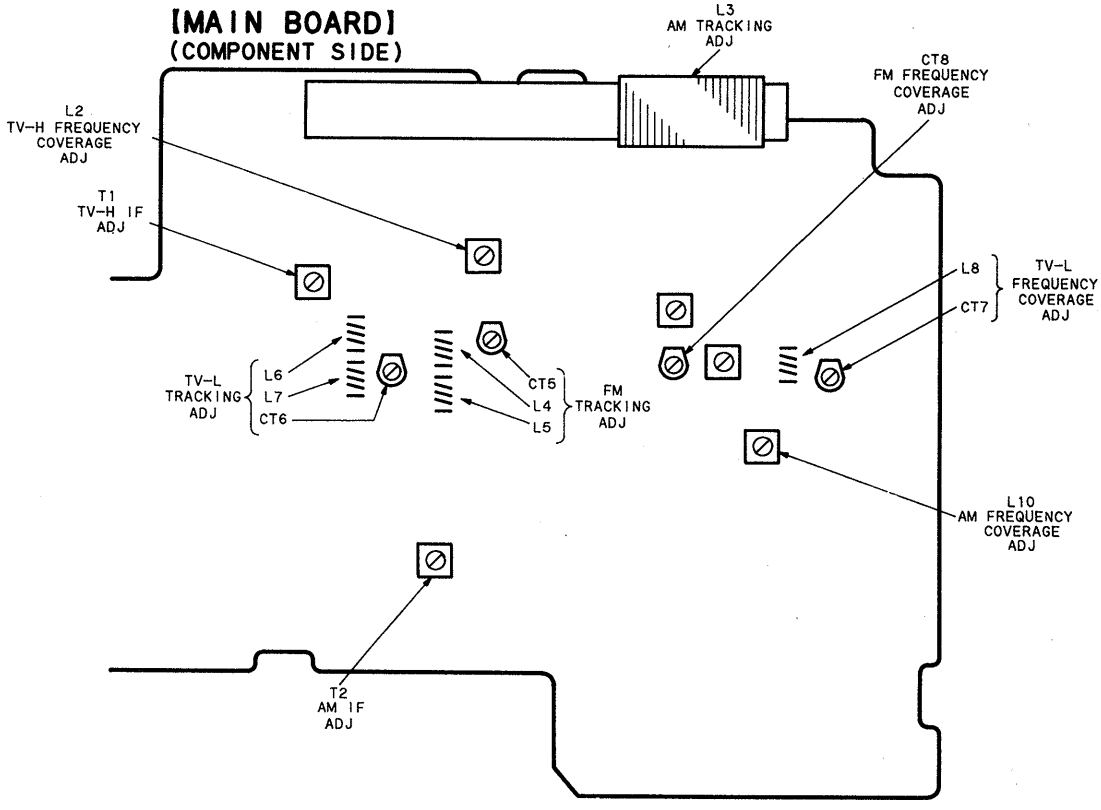
TV-H IF ADJUSTMENT
Adjust for a maximum reading on VTVM.
T1
10.7MHz

TV-H FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L2	CT2
178MHz	218MHz

TV-H TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L1	CT1
178MHz	218MHz

Adjustment Location :

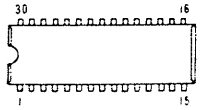




SECTION 4
DIAGRAMS

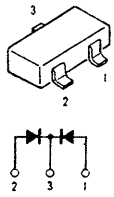
4-1. SEMICONDUCTOR LEAD LAYOUTS

CXA1019S

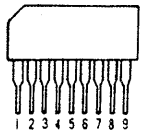


(TOP VIEW)

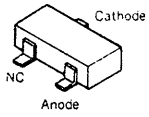
MA152WK



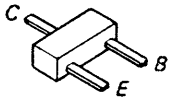
TA7358P



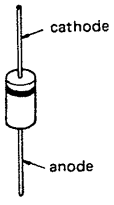
1SV160



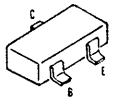
2SC1009A-FA4



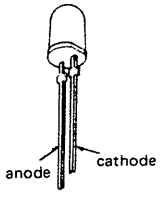
10E2



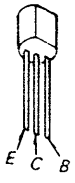
2SC1623-L6



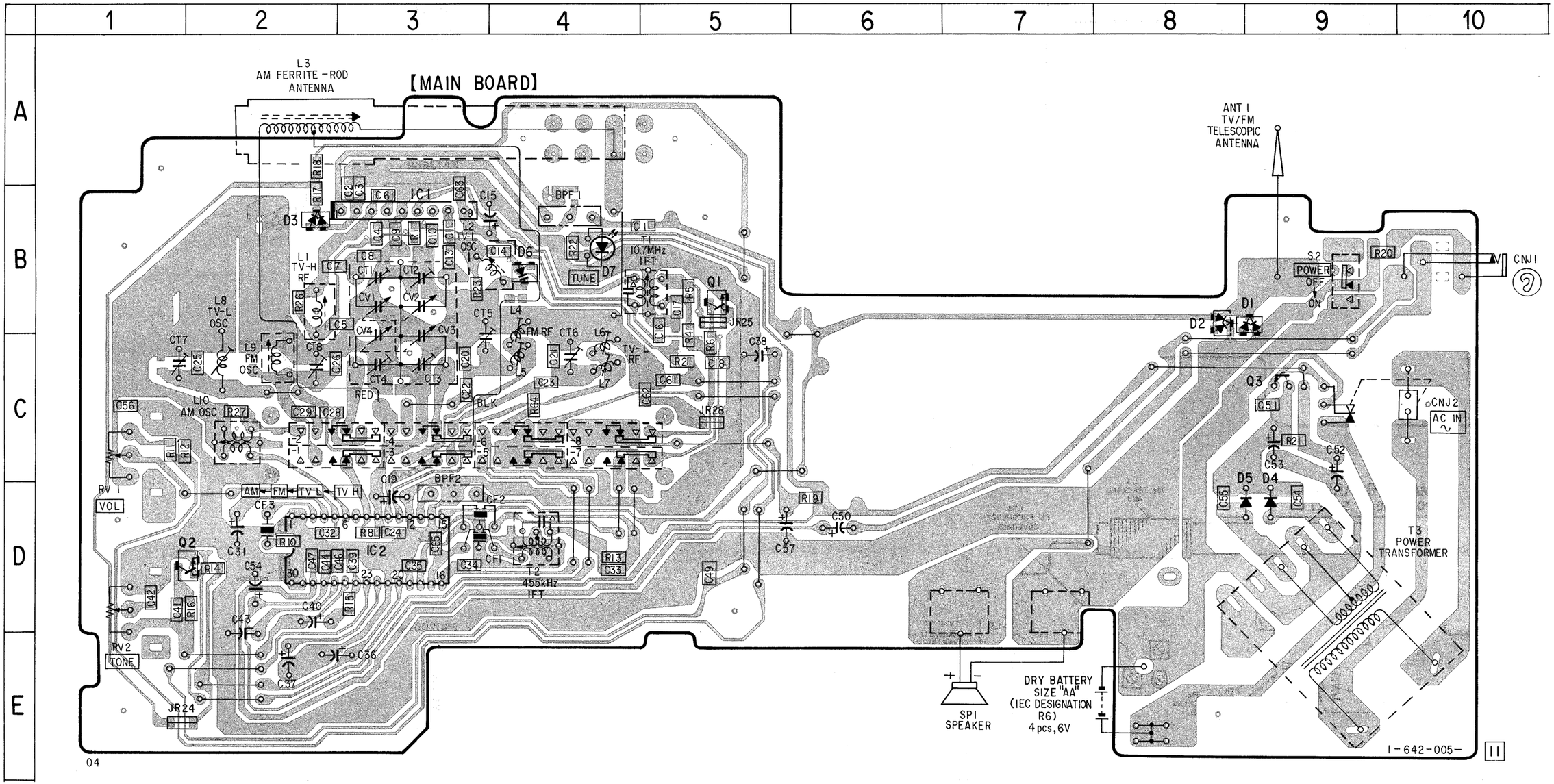
GL-5PR8



2SC2001-K2



4-2. PRINTED WIRING BOARD ● Refer to page 6 for Semiconductor Lead Layouts.



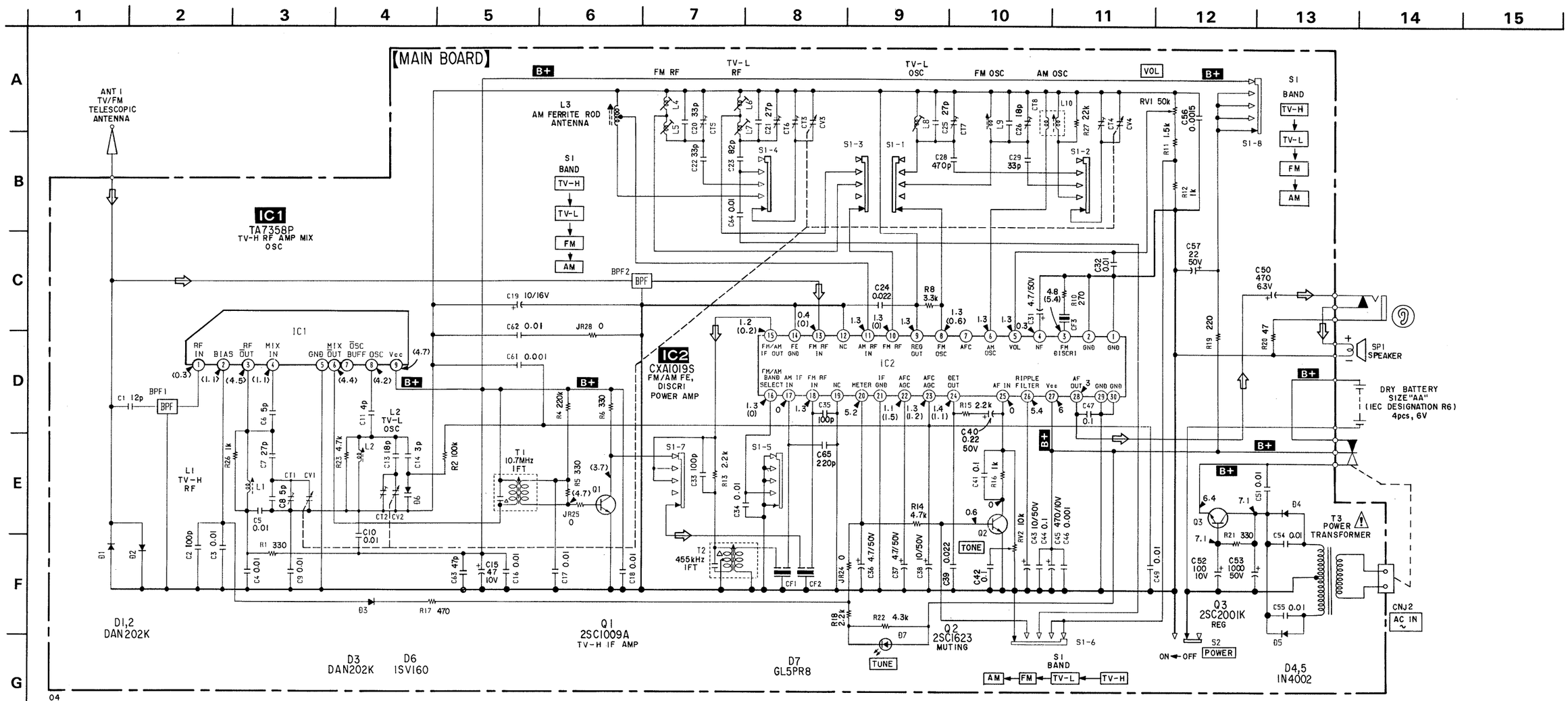
● **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D1	B-8	IC1	B-3
D2	B-8	IC2	D-3
D3	B-2		
D4	D-9	Q1	B-5
D5	D-8	Q2	D-2
D6	B-4	Q3	C-9
D7	B-4		

Note:

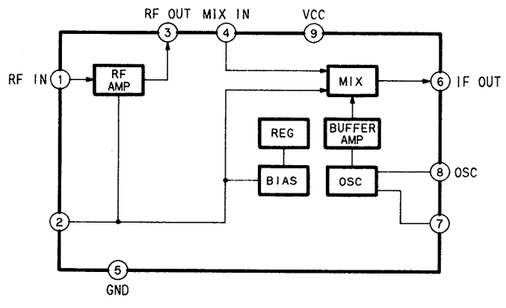
- ○—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.

4-3. SCHEMATIC DIAGRAM

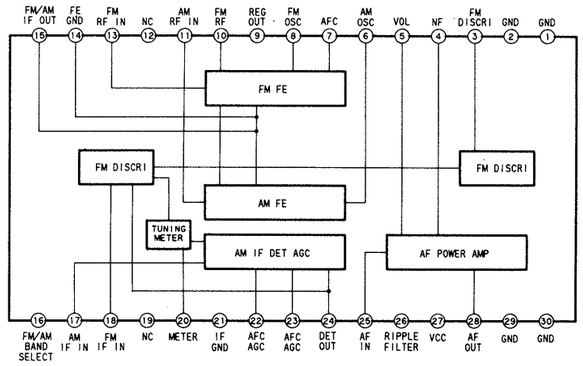


• IC Block Diagrams

IC1 TA7358P



IC2 CXA1019S



Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

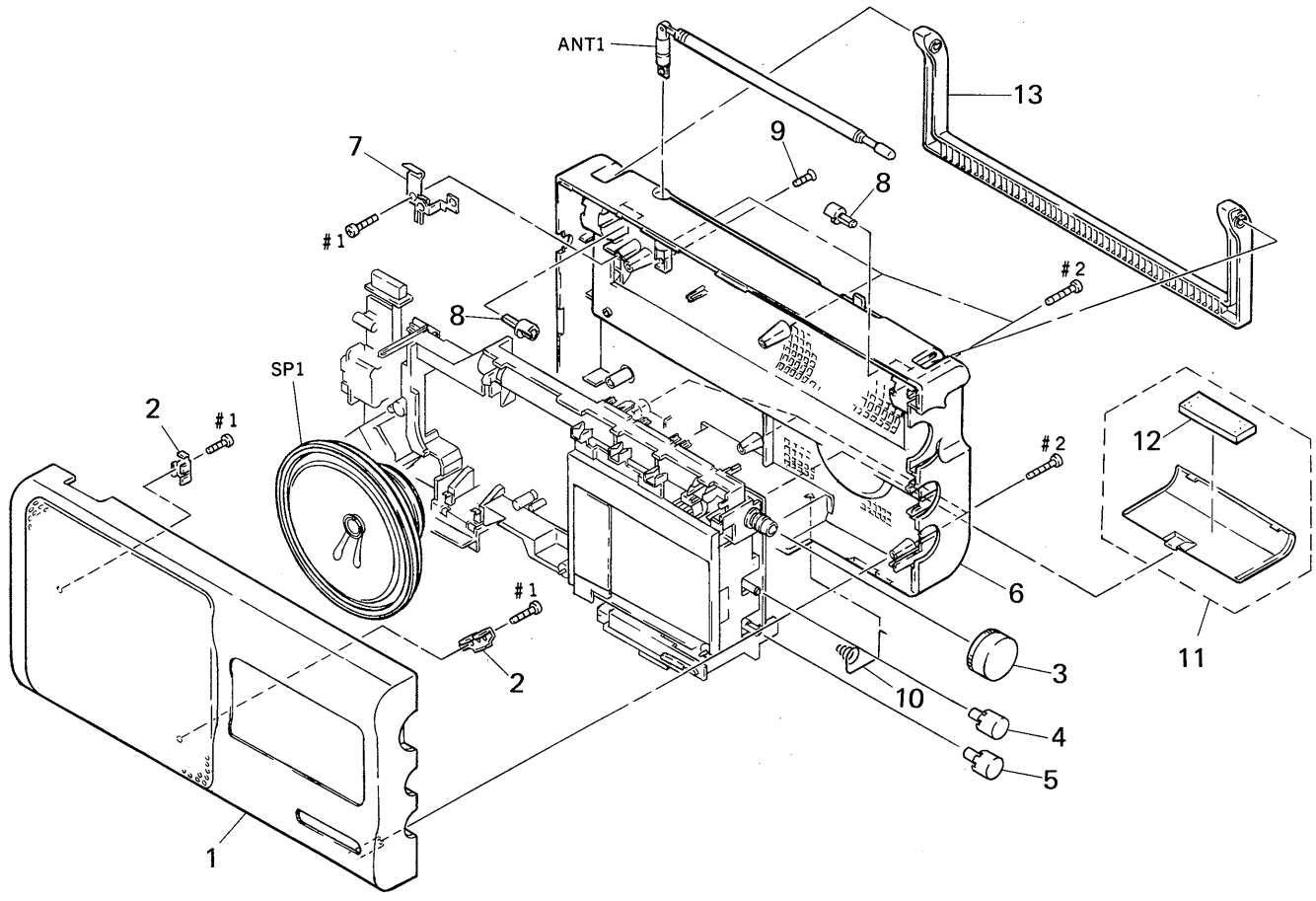
- Power voltage is dc 6V and fed with regulated dc power supply from battery terminal.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : AM
  < > : TV-H
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM

SECTION 5
EXPLODED VIEWS

NOTE:

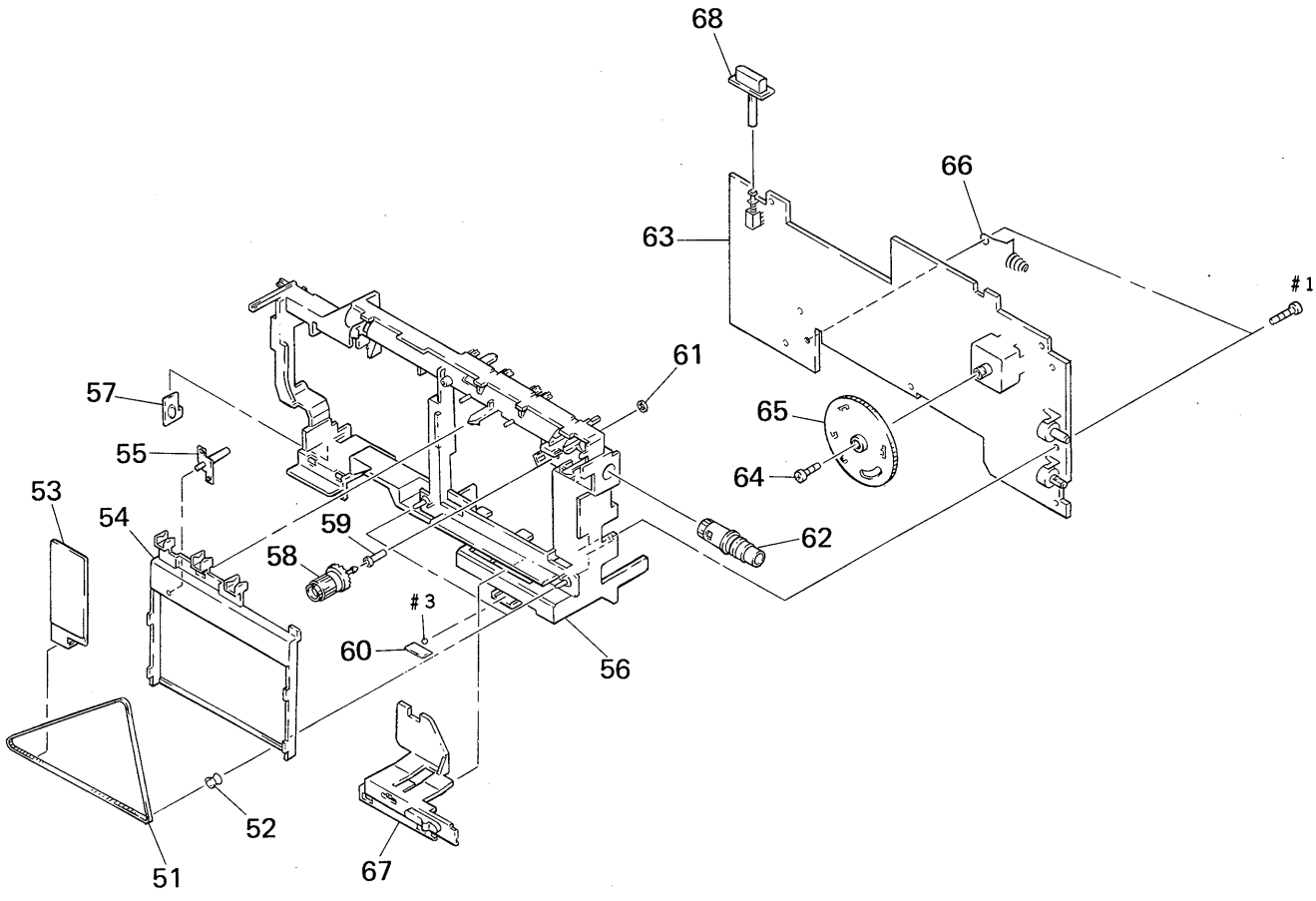
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE)...(RED)
  ↑ Parts Color ↑ Cabinet's Color
- Hardware (# mark) list is given in the last of this parts list.

5-1. CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	X-3364-502-1	CABINET (FRONT) ASSY	
2	3-364-730-01	CLAW, SPEAKER	
3	X-3362-904-1	KNOB (T) ASSY (BLACK)	
4	X-3362-907-1	KNOB (CONTROL) ASSY (BLACK)	
5	X-3362-910-1	KNOB (CONTROL) ASSY (BLACK)	
6	3-364-728-31	CABINET (REAR) (NO. 1)	
7	3-363-360-01	SPRING, HANDLE	
8	3-363-372-01	SHAFT (HANDLE)	
9	3-364-994-11	SCREW (+K) (3X6), NYLOK	
10	3-363-363-01	SPRING, PLUS. MINUS	
11	X-3362-879-1	LID ASSY, BATTERY CASE	
12	9-911-815-02	CUSHION	
13	3-363-379-01	HANDLE	
ANT1	1-501-362-11	ANTENNA, TELESCOPIC	
SP1	1-544-406-11	SPEAKER	

5-2. CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
51	3-363-369-01	BELT	
52	3-304-108-00	PULLEY	
53	3-363-377-01	POINTER	
* 54	3-363-391-01	PLATE, BACK	
55	3-375-445-01	LENS, LIGHT GUIDE	
* 56	3-363-383-01	CHASSIS	
57	3-363-361-01	TERMINAL BOARD, BATTERY	
58	3-363-373-01	GEAR, MIDWAY	
59	3-363-367-01	BEARING	
60	3-363-362-01	SPRING, LEAF	
61	3-364-731-01	WASHER, POLY-SLIDER	
62	3-363-375-01	SHAFT (TUNING)	
* 63	A-3661-454-A	MOUNTED PCB, MAIN	
64	3-364-941-11	SCREW (+B) (2.6X5), NYLOK	
65	3-363-387-01	DRUM (A)	
66	3-363-364-01	SPRING, MINUS	
67	3-375-442-01	KNOB (B)	
68	3-363-371-11	BUTTON (POWER)	

SECTION 6
ELECTRICAL PARTS LIST

MAIN

NOTE :

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS
  uF : μF
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- COILS
  uH : μH
- SEMICONDUCTORS
  In each case, u : μ, for example :
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD....

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
*	A-3661-454-A	MOUNTED PCB, MAIN			
		**********			
	3-363-359-01	PLATE, CONTACT, SPEAKER			
		< FILTER >			
BPF1	1-236-099-11	FILTER, BAND PASS			
BPF2	1-235-826-11	FILTER, BAND PASS			
		< CAPACITOR >			
C1	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C2	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C3	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C4	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C5	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C6	1-163-088-00	CERAMIC CHIP	5PF		50V
C8	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C9	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C10	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C11	1-163-087-00	CERAMIC CHIP	4PF		50V
C13	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C14	1-163-086-00	CERAMIC CHIP	3PF		50V
C15	1-124-126-00	ELECT	47uF	20%	10V
C16	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C17	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C18	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C19	1-126-157-11	ELECT	10uF	20%	16V
C20	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C21	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C22	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C23	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C24	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C25	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C26	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C28	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C29	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C31	1-124-927-11	ELECT	4.7uF	20%	100V
C32	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C33	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C34	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C35	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C36	1-124-927-11	ELECT	4.7uF	20%	100V
C37	1-124-927-11	ELECT	4.7uF	20%	100V
C38	1-124-907-11	ELECT	10uF	20%	50V
C39	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C40	1-124-464-11	ELECT	0.22uF	20%	50V
C41	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C42	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C43	1-124-907-11	ELECT	10uF	20%	50V
C44	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C45	1-126-103-11	ELECT	470uF	20%	16V
C46	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C47	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C49	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C50	1-124-472-11	ELECT	470uF	20%	10V
C51	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C52	1-124-443-00	ELECT	100uF	20%	10V
C53	1-124-473-11	ELECT	1000uF	20%	10V
C54	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C55	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C56	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C57	1-126-233-11	ELECT	22uF	20%	50V
C61	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C62	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C63	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C64	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C65	1-163-001-11	CERAMIC CHIP	100PF		50V

MAIN

Ref. No.	Part No.	Description	Remark
		< CERAMIC >	
CF1	1-527-870-00	FILTER	
CF2	1-567-166-00	FILTER, CERAMIC	
CF3	1-567-166-00	FILTER, CERAMIC	
		< CONNECTOR >	
CNJ1	1-563-836-21	JACK (EARPHONE)	
⚠ CNJ2	1-526-818-11	INLET, AC (AC IN ~)	
		< TRIMMER >	
CT5	1-141-304-21	CAP, TRIMMER 10PF	
CT6	1-141-304-21	CAP, TRIMMER 10PF	
CT7	1-141-304-21	CAP, TRIMMER 10PF	
CT8	1-141-304-21	CAP, TRIMMER 10PF	
CT1-4, CV1-4	1-151-631-11	CAP, VARIABLE	
		< DIODE >	
D1	8-719-400-18	DIODE MA152WK	
D2	8-719-400-18	DIODE MA152WK	
D3	8-719-400-18	DIODE MA152WK	
D4	8-719-200-02	DIODE 10E2	
D5	8-719-200-02	DIODE 10E2	
D6	8-719-821-39	DIODE 1SV160	
D7	8-719-941-45	LED GL-5PR8	
		< IC >	
IC1	8-759-204-01	IC TA7358P	
IC2	8-752-055-05	IC CXA1019S	
		< METAL >	
JR24	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR25	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR28	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< COIL >	
L1	1-460-212-11	COIL (WITH CORE) (TV-H RF)	
L2	1-460-215-11	COIL (WITH CORE) (TV-H OSC)	
L3	1-402-587-11	ANTENNA, FERRITE-ROD (MW)	
L4	1-428-288-11	COIL, AIR-CORE	
L5	1-428-289-11	COIL, AIR-CORE	
L6	1-428-290-11	COIL, AIR-CORE	
L7	1-428-291-11	COIL, AIR-CORE	
L8	1-428-292-11	COIL, AIR-CORE	
L9	1-459-815-11	COIL (WITH CORE)	
L10	1-406-028-00	COIL, OSC (MW)	

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q1	8-729-101-25	TRANSISTOR 2SC1009A-FA4	
Q2	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q3	8-729-100-13	TRANSISTOR 2SC2001-K2	
		< RESISTOR >	
R1	1-216-037-00	METAL CHIP 330 5% 1/10W	
R2	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R4	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R5	1-216-037-00	METAL CHIP 330 5% 1/10W	
R6	1-216-037-00	METAL CHIP 330 5% 1/10W	
R8	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R10	1-216-035-00	METAL CHIP 270 5% 1/10W	
R11	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R12	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R13	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R14	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R15	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R16	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R17	1-216-041-00	METAL CHIP 470 5% 1/10W	
R18	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R19	1-216-033-00	METAL CHIP 220 5% 1/10W	
R20	1-216-017-00	METAL CHIP 47 5% 1/10W	
R21	1-216-037-00	METAL CHIP 330 5% 1/10W	
R22	1-216-064-00	METAL CHIP 4.3K 5% 1/10W	
R23	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R26	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R27	1-216-081-00	METAL CHIP 22K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV1	1-241-362-11	RES, VAR, CARBON 50K (VOL)	
RV2	1-241-361-11	RES, VAR, CARBON 10K (TONE)	
		< SWITCH >	
S1	1-571-172-11	SWITCH, SLIDE (BAND)	
S2	1-571-042-11	SWITCH, PUSH (1 KEY) (POWER)	
		< TRANSFORMER >	
T1	1-403-872-00	I.F.T CONVERTER FM(SMALL TYPE)	
T2	1-404-341-00	TRANSFORMER, IF	
⚠ T3	1-450-323-11	TRANSFORMER, POWER	

****

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

N

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		*************	
ANT1	1-501-362-11	ANTENNA, TELESCOPIC	
SP1	1-544-406-11	SPEAKER	
**********			
		ACCESSORIES & PACKING MATERIALS	
		********************************	
⚠	1-559-047-11	CORD, POWER	
*	3-374-007-01	INDIVIDUAL CARTON	
*	3-375-441-01	LABEL, MODEL NUMBER (SEAL)	
	3-754-357-21	MANUAL, INSTRUCTION (ENGLISH)	
**********			

HARDWARE LIST

#1	7-685-647-79	SCREW +BTP	3X10 TYPE2 N-S
#2	7-685-651-79	SCREW +BTP	3X20 TYPE2 N-S
#3	7-671-112-11	BALL, STEEL	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

9-956-838-11

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