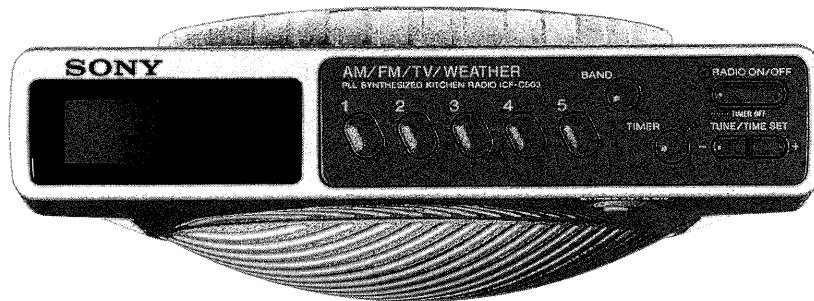


# ICF-C503

## SERVICE MANUAL

*US Model  
Canadian Model*



### SPECIFICATIONS

**Frequency range:**

TV: 2 – 13 ch

WEATHER: 1ch: 162.55 MHz

2ch: 162.40 MHz

3ch: 162.475 MHz

4ch: 162.425 MHz

5ch: 162.45 MHz

FM: 87.5 – 108.0 MHz

AM: 530 – 1,710 kHz

**Channel step:**

TV: 1ch

WEATHER: next memory channel

FM: 0.1MHz

AM: 10kHz

**Speaker:** Approx. 7.7cm (3 inches) dia.

**Power output:** 240 mW (at 10% harmonic distortion)

**Power requirements:** 120 V AC, 60 Hz

**Dimensions:** Approx. 222 × 81 × 229 mm  
(8 3/4 × 4 1/8 × 9 1/8 inches) (w/h/d) incl.  
projecting parts and controls

**Mass:** Approx. 930 g (2 lb 1 oz)

**Accessories supplied:** Mounting screws (3),  
Template (1), Bracket (1), Cord clamp (1)

Design and specifications are subject to change without notice.

### FEATURES

- PLL (phase locked loop) synthesized kitchen radio for easy operation
- Memory preset for up to 5 stations on each band
- Receives TV high/low frequency and weather audio
- Count down timer
- Easy mounting bracket
- Self power backup : Even if the power supply is interrupted, the time setting and the memory will be backed up for 1 hour without batteries.

TV/WEATHER/FM/AM PLL  
SYNTHESIZED KITCHEN RADIO  
**SONY**®

## SAFETY CHECK-OUT

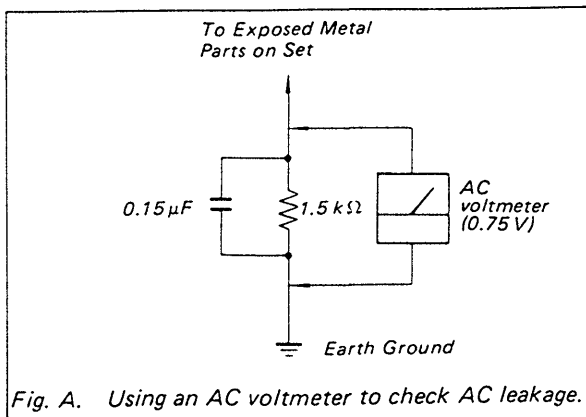
After correcting the original service problem, perform the following safety check before releasing the set to the customer:

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 2V AC range are suitable. (See Fig. A)



#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  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.

## TABLE OF CONTENTS

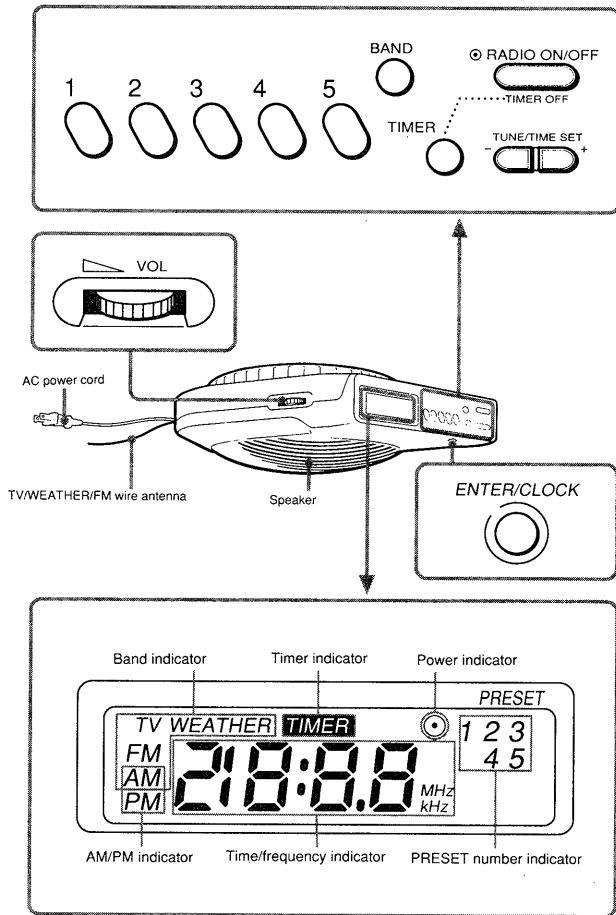
<u>Section</u>	<u>Title</u>	<u>Page</u>
<b>1. GENERAL</b>		
	• Setting the Clock .....	3
	• Playing the Radio .....	3
	• Setting the Count Down Timer .....	3
<b>2. ELECTRICAL ADJUSTMENTS</b> .....		4
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#### ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  $\triangle$  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

# SECTION 1 GENERAL

This section is extracted from instruction manual.



## Setting the Clock

1. Plug in the unit.  
The display will flash AM "12:00".
2. While holding down **ENTER/CLOCK**, press either + or – under **TUNE/TIME SET** till the correct time appears in the display. When you release **ENTER/CLOCK**, the clock begins to operate and ":" flashes.

- To set the current time rapidly, keep pressing the + or – button to advance or return to a time that is within a few minutes of the current time. Then press the + or – button to set the time to the current time.

## Playing the Radio Manual Tuning

1. Press **RADIO ON/OFF/TIMER OFF** to turn on the radio.  
The band, frequency, power indication and the preset number will appear in the display window. After 5 seconds, the indication becomes the current time.
2. Adjust **VOL** (volume).
3. Press **BAND** to select the band.  
Every push changes the display as follows. (The last frequency selected in each band appears alternately.)  
AM → FM → TV  
↑ WEATHER ↓
4. Tune in a station by pressing the + or – button under **TUNE/TIME SET**.  
The FM channel step is set to 0.1 MHz and the AM channel step is set to 10 kHz.

- To turn off the radio, press **RADIO ON/OFF/TIMER OFF**.
- To improve reception  
TV/WEATHER/FM: Extend the wire antenna fully to improve reception.  
AM: Rotate the unit horizontally for optimum reception. A ferrite bar antenna is built into the unit.
- To check the station you are listening to, press the + button lightly. The band and frequency appear for 5 seconds.

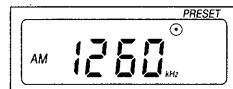
## Preset Tuning

### Presetting the Station

You can preset up to 15 TV/FM/AM stations (5 stations in each band with a numbered button, 1 to 5). You do not have to preset the WEATHER station as it is already programmed.

Example: To set AM 1260kHz in preset number 1.

1. Tune in to AM 1260kHz (See "Manual Tuning").



2. While holding down **ENTER/CLOCK**, press the "1" button. The beeps sound and the station is preset. Though the indication becomes the current time after 5 seconds, the preset number remains.



- To change the preset station, install a new station's frequency in the number of which you wish to change the stations. The previous frequency station is canceled.

## Tuning in a Preset Station

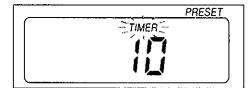
1. Press **RADIO ON/OFF/TIMER OFF** to turn on the radio.
  2. Press **BAND** to select the desired band.
  3. Press the preset number button of the station.  
The band, frequency, power indication and preset number appear in the display window. After 5 seconds, the indication becomes the current time. The preset number remains.
- To turn off the radio, press **RADIO ON/OFF/TIMER OFF**.
  - To check the station you are listening to, press the preset number button. The band and frequency appear for 5 seconds.

## Setting the Count Down Timer

Use the timer as a reminder. The beep sounds for 10 seconds when the preset time has passed. The beep sounds when the radio is on or off. The timer can be set at 1 minute intervals between 1 and 60.

Example: To set the 15 minutes timer

1. Press **TIMER**. The beep sounds and the display will flash "TIMER".

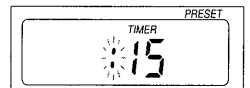


- When you first set the timer, the display shows "10". The next time you set the timer, the display shows the time you set previously.

2. While "TIMER" is flashing, press the + or – button. When "15" appears in the display, release the + or – button and press **TIMER**. The beep sounds twice, and the timer is set.

### Note

- Set the count down timer while "TIMER" is flashing for 10 seconds.



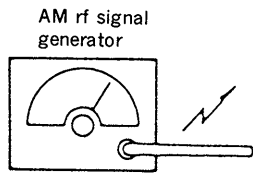
- While the timer is set, the display shows the remaining time. To display the current time, press **TIMER**. Press **TIMER** again, and the remaining time reappears.
- To stop the beep in the middle of beeping, press **RADIO ON/OFF/TIMER OFF**.
- To cancel the timer setting time, while holding down **TIMER**, press **RADIO ON/OFF/TIMER OFF**. When "TIMER" in the display disappears, release the both buttons. The timer setting time is canceled and the current time appears in the display.

## SECTION 2 ELECTRICAL ADJUSTMENTS

### ● AM Section

Setting :

BAND switch : AM



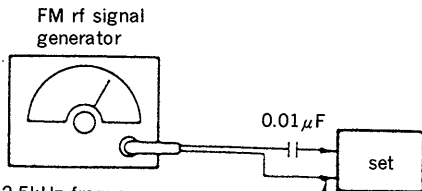
Put the lead-wire antenna close to the set.

30% amplitude modulation by 400Hz signal  
output level: as low as possible

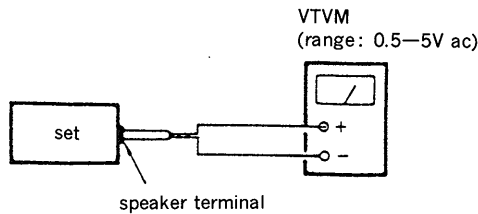
### ● FM/TV/WEATHER Section

Setting :

BAND switch : FM/TV/WEATHER



22.5kHz frequency deviation by 400Hz signal  
output level: as low as possible



- 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.		
Adjustment Part	Frequency Display	Reading on Digital voltmeter
T2		
450kHz		

AM VCO VOLTAGE ADJUSTMENT		
Adjustment Part	Frequency Display	Reading on Digital voltmeter
L11	1,710kHz	8.5±0.3V (check)
(confirmation)	530kHz	1.2±0.3V (check)

Note : Not use the AM RF signal generator in this adjustment.

AM TRACKING ADJUSTMENT		
Adjust for a maximum reading on VTVM.		
Adjustment Part	Frequency Display	Reading on Digital voltmeter
L8	CT3	
580kHz	1,490kHz	

FM-TVL VCO VOLTAGE ADJUSTMENT		
Adjustment Part	Frequency Display	Reading on Digital voltmeter
L10	108MHz	13.5±1.0V (check)
(confirmation)	59.75MHz	more than 0.8V (check)

Note : Not use the FM RF signal generator in this adjustment.

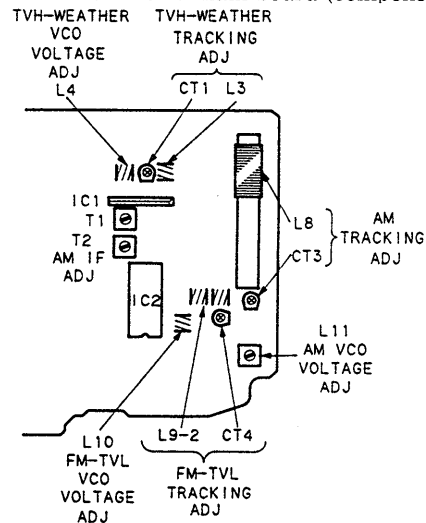
FM-TVL TRACKING ADJUSTMENT		
Adjust for a maximum reading on VTVM.		
Adjustment Part	Frequency Display	Reading on Digital voltmeter
L9-2	CT4	
59.75MHz	108MHz	

TVH-WEATHER VCO VOLTAGE ADJUSTMENT		
Adjustment Part	Frequency Display	Reading on Digital voltmeter
L4	215.75MHz	13.5±1.0V (check)
(confirmation)	162.40MHz (WEATHER 2ch)	more than 1.0V (check)

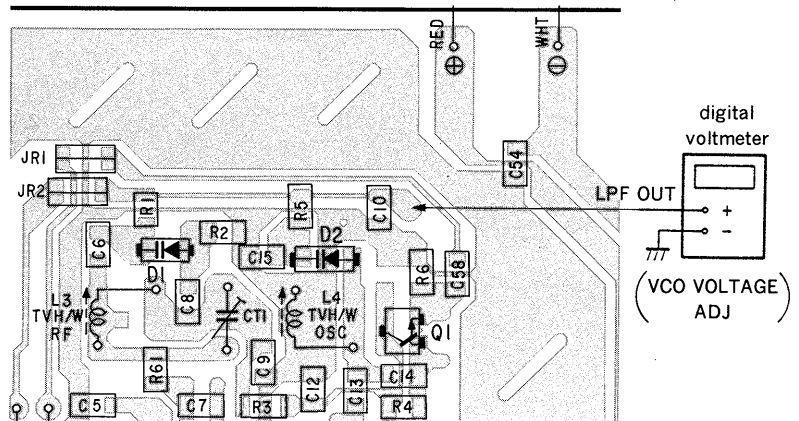
Note : Not use the FM RF signal generator in this adjustment.

TVH-WEATHER TRACKING ADJUSTMENT		
Adjust for a maximum reading on VTVM.		
Adjustment Part	Frequency Display	Reading on Digital voltmeter
L3	CT1	
162.40MHz (WEATHER 2ch)	215.75MHz (TV 13ch)	

Adjustment Location : main board (component side)

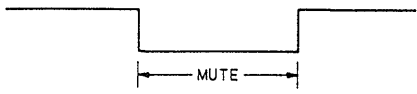


Adjustment Location : main board (conductor side)



## SECTION 3 PIN DESCRIPTION

### IC3 $\mu$ PD1724GB-616-1A7

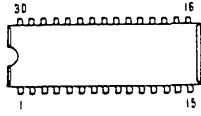
Pin No.	Pin Name	Signal Name	I/O	Description
1-10	LCD10-LCD1	LCD10-LCD1	O	LCD drive
11	NC		—	
12-14	COM3-COM1	COM3-COM1	I	LCD common
15	VSS3		—	Pin for doubler circuit capacitor connection to develop LCD drive voltage
16	CAP2			
17	CAP1			
18	VSS2			
19	VDP	MUTE	O	<p>Audio signal mute. Active : Low. LOW when MUTE ON.</p> 
20	CGP	BEEP	O	Activates buzzer. (1 kHz)
21	NC		—	
22	VDD		—	5V power supply input terminal
23	VCOH	TV VCO	I	TV VCO input
24	VCOM	FM VCO	I	FM VCO input
25	VCOL	AM VCO	I	AM VCO input
26	VSS1		—	GND
27	EO1		O	Unused pin
28	EO2		O	PLL error output pin
29	CE	CE	I	<p>Detects power supply line status.</p> <p>Power supply line OFF : Low</p> <p>Power supply line ON : High</p>
30	XO		O	Crystal oscillator connection pin
31	XI		I	
32	VSS4		—	Pin for regulator circuit capacitor connection to attain stable drive voltage of the oscillator
33	PA3	ALARM OUT	O	Unused pin
34	PA2	CST IN	I	Unused pin
35	PA1	MODE IN	I	<p>MODE select input</p> <p>A Mode/B Mode select signal input to switch the function of the keys</p> <p>Low : A Mode    High : B Mode</p>
36	PA0	CST OUT	O	Cassette control output. (Unused pin)
37	PB3	INIT OUT	O	<p>INITIALIZE OUT</p> <p>Generates INITIALIZE pulse to conduct BAND 12H/24H setting immediately following cold start.</p> <p>ON : High</p>
38	PB2	POWER OUT	O	Unused pin
39	PB1	AM/FM	O	Unused pin
40	PB0	LW/MW	O	<p>LW/MW select output (Unused pin)</p> <p>LW : High    MW : Low</p>

Pin No.	Pin Name	Signal Name	I/O	Description
41-44	PC3-PC0	KEY SOURCE	O	<p>Conducts Key Scan. Timing chart (Eg.) When the PC3 line key is pressed.</p>
45	K3	KEY RETURN	I	Unused pin
46-48	K2-K0	KEY RETURN	I	<p>Key Return input Key Scan</p> <ol style="list-style-type: none"> <li>① Set PC0, PC1, PC2 and PC3 to "High".</li> <li>② When no of the 15 keys is pressed, PC0-PC3 will be set to "Low".</li> <li>③ Each port is set to "High" (Key scan) in the following order PC0 → PC1 → PC2 → PC3 to determine the pressed key.</li> </ol> <p>K0-K3 input condition The figure in the right indicates that the key following PC1 is pressed.</p> <p>* When the initial key is pressed and held down while the next key is pressed, the second key input will not be accepted until the initial key is released (for +, - keys only). Release the initial key and press the next key so that the second key input will be accepted.</p>
49	NC		—	Connected to +5V.
50	NC		—	Connected to GND.
51-56	LCD16-LCD11	LCD16-LCD11	O	LCD drive

# SECTION 4 DIAGRAMS

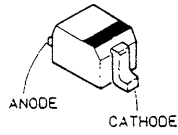
## 4-1. SEMICONDUCTOR LEAD LAYOUTS

**CXA1019S**

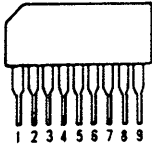


(TOPVIEW)

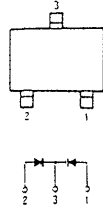
**DTZ4.7A**



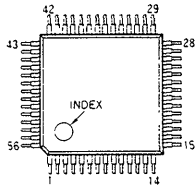
**TA7358P**



**KV1560**

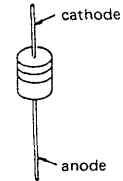


**μ PD1724GB-616-1A7**

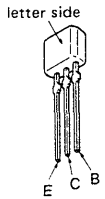


(TOP VIEW)

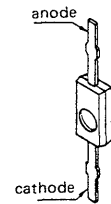
**1SS119**



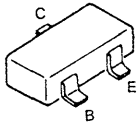
**DTC144ES  
2SA1175-HFE  
2SC2785-HFE**



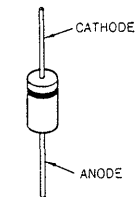
**1T32  
1T33**



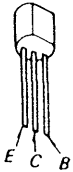
**2SA1162-G  
2SC2223-F13  
2SD601A-Q**



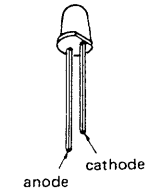
**10E2**



**2SC2001L-K**



**SLH-34MCF07**

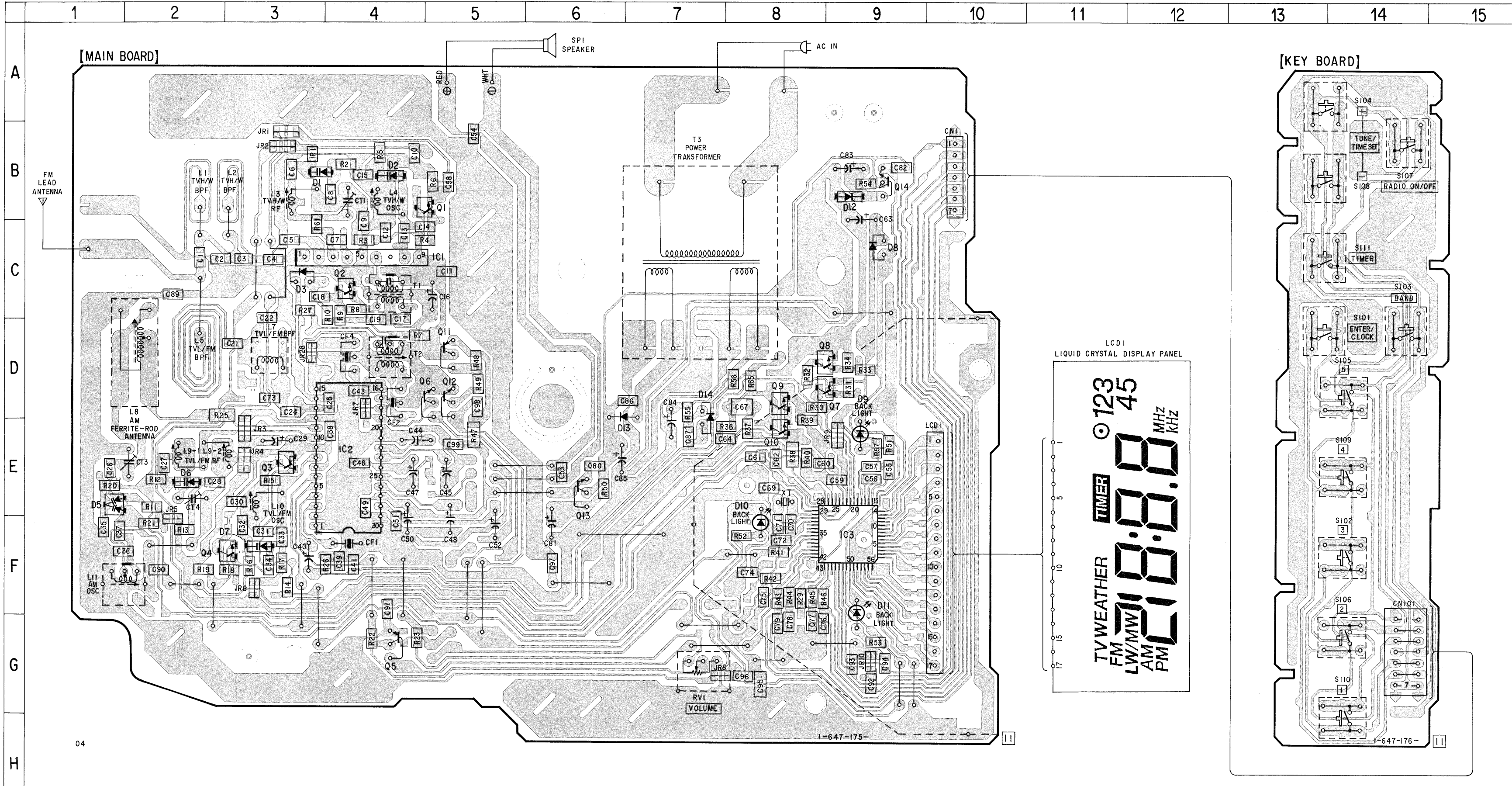


• Semiconductor Location

Ref. No.	Location
D1	B-3
D2	B-4
D3	C-3
D5	E-1
D6	E-2
D7	F-3
D8	C-9
D9	E-9
D10	F-8
D11	F-9
D12	B-9
D13	E-6
D14	D-7
IC1	C-4
IC2	E-4
IC3	F-9
Q1	B-4
Q2	C-4
Q3	E-3
Q4	F-3
Q5	G-4
Q6	D-5
Q7	D-8
Q8	D-8
Q9	D-8
Q10	E-8
Q11	D-5
Q12	D-5
Q13	E-6
Q14	B-9

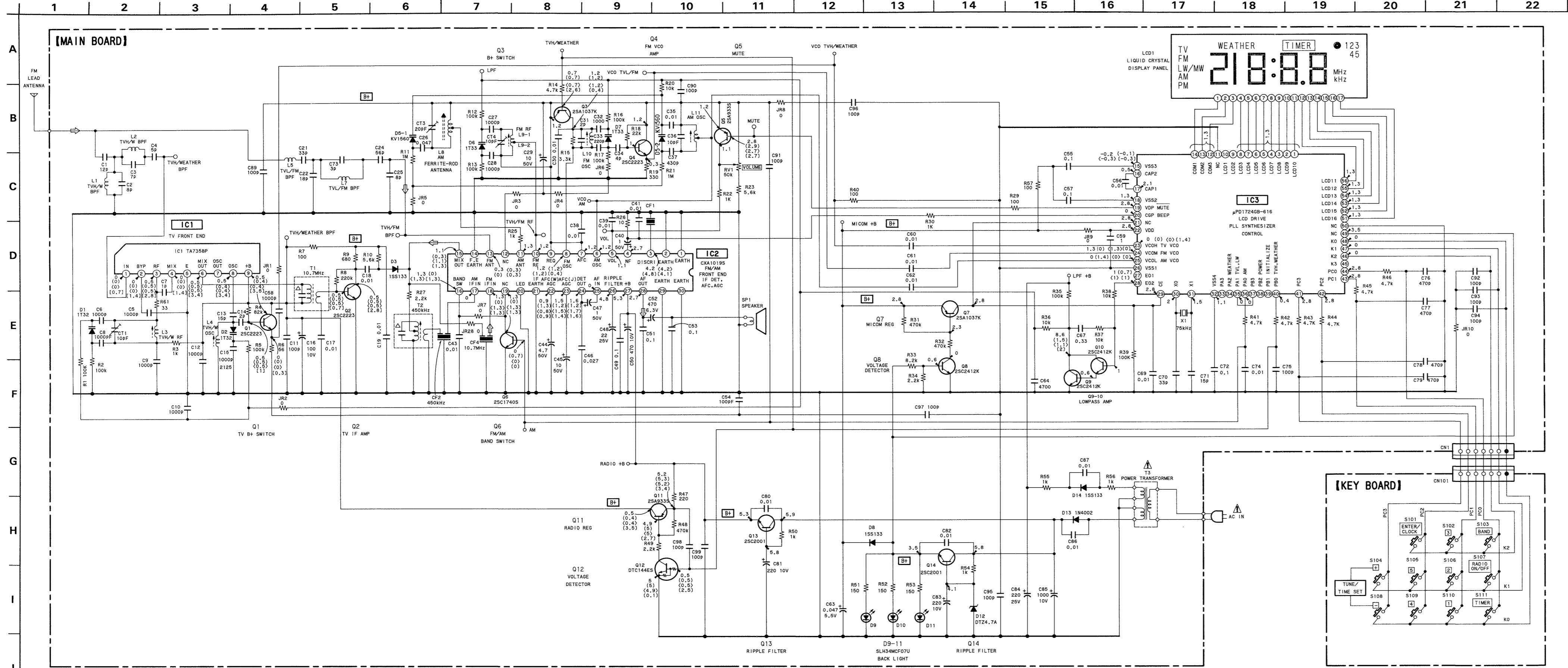
Note:  
 • ○ — : parts extracted from the component side.  
 • □ — indicates side identified with part number.

4-2. PRINTED WIRING BOARDS • Refer to page 7 for Semiconductor Lead Layouts.

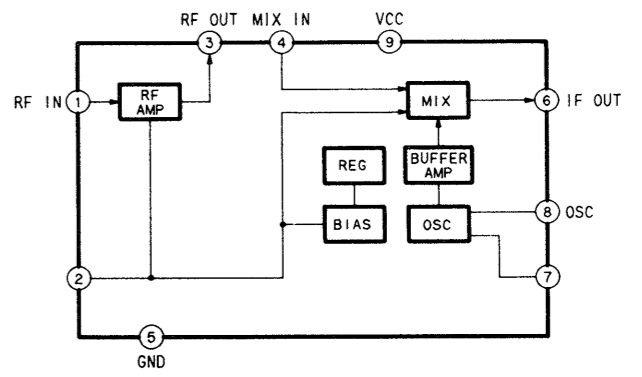




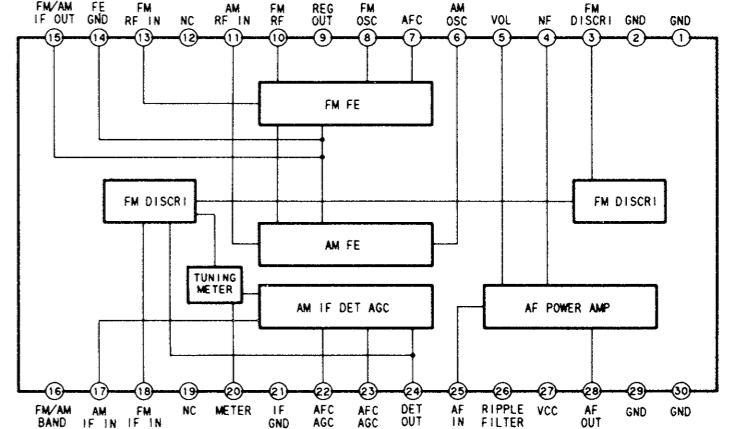
4-3. SCHEMATIC DIAGRAM



IC Block Diagrams  
IC1 TA7358P



IC2 CXA1019S



- Note:
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF} = \mu\text{mF}$  50WV or less are not indicated except for electrolytics and tantalums.
  - All resistors are in  $\Omega$  and  $1/4\text{W}$  or less unless otherwise specified.
  - $\Delta$  : internal component.

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

- Voltage is dc with respect to ground under no-signal (detuned) conditions.
- no mark: FM
- ( ): AM
- < : TV
- [ ] : WEATHER
- Voltages are taken with a VOM (Input Impedance  $10\text{M}\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
- $\Rightarrow$  : FM

## SECTION 5 EXPLODED VIEW

**NOTE:**

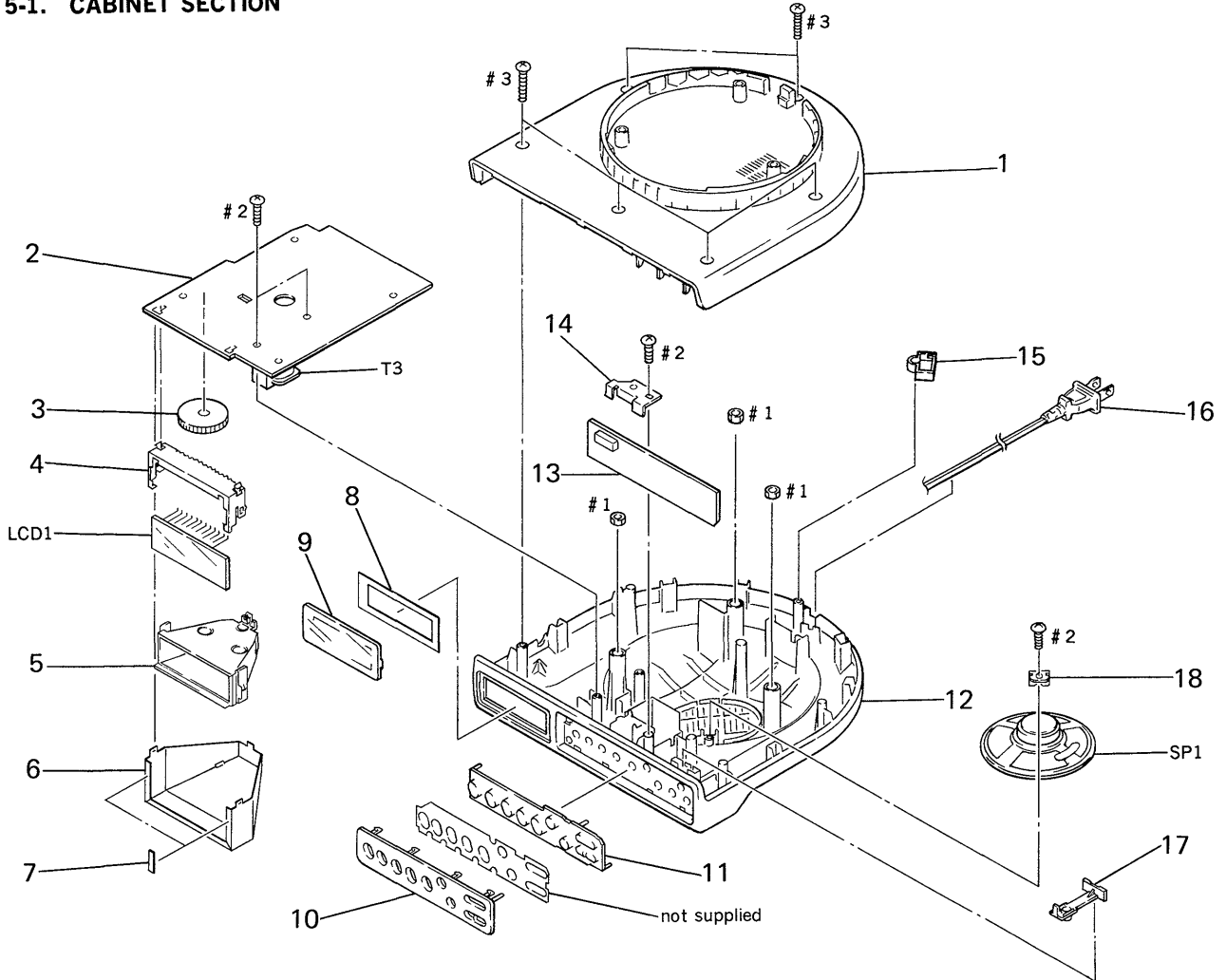
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- -XX and -X mean standardized parts, so they may have some difference 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.

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

Les composants identifiés par une marque  $\triangle$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

### 5-1. CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	3-385-696-01	CABINET (UPPER)	
* 2	A-3679-487-A	MAIN BOARD, COMPLETE	
3	3-368-840-11	KNOB (VOLUME)	
4	3-385-689-01	HOLDER (LCD)	
5	3-385-690-01	FRAME, REFLECTION	
* 6	3-377-638-11	CASE (LCD), SHIELD	
7	9-911-839-XX	CUSHION, LOCK PLATE	
8	3-385-700-01	SHEET, ADHESIVE	
9	3-385-694-01	PLATE, TRANSPARENT	
10	3-385-693-01	PANEL	
11	3-385-692-01	BUTTON (MAIN)	

Ref. No.	Part No.	Description	Remark
12	3-385-695-01	CABINET (LOWER)	
* 13	1-647-176-11	KEY BOARD	
14	3-385-698-01	HOLDER (PCB)	
* 15	3-368-845-01	STOPPER, CORD	
$\triangle$ 16	1-751-167-21	CORD, POWER	
17	3-385-691-01	BUTTON (ENTER)	
18	3-903-217-01	CLAW, SPEAKER	
LCD1	1-810-029-11	DISPLAY PANEL, LIQUID CRYSTAL	
SP1	1-504-262-11	SPEAKER (7.7CM)	
$\triangle$ T3	1-423-519-11	TRANSFORMER, POWER	

# SECTION 6 ELECTRICAL PARTS LIST

<b>KEY</b>	<b>MAIN</b>
------------	-------------

**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 and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS  
All resistors are in ohms.  
METAL: Metal-film resistor.  
METAL OXIDE: Metal oxide-film resistor.  
F: nonflammable

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS  
In each case, u:  $\mu$ , for example:  
uA.:  $\mu$ A.    uPA.:  $\mu$ PA.  
uPB.:  $\mu$ PB.    uPC.:  $\mu$ PC.    uPD.:  $\mu$ PD.
- CAPACITORS  
uF:  $\mu$ F
- COILS  
uH:  $\mu$ H

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

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

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
*	1-647-176-11	KEY BOARD *****  < CONNECTOR >	
* CN101	1-695-228-11	PIN, CONNECTOR (PC BOARD) 7P  < SWITCH >	
S101	1-554-937-11	SWITCH, KEY BOARD (ENTER/CLOCK)	
S102	1-554-937-11	SWITCH, KEY BOARD (3)	
S103	1-554-937-11	SWITCH, KEY BOARD (BAND)	
S104	1-554-937-11	SWITCH, KEY BOARD (TUNE/TIME SET +)	
S105	1-554-937-11	SWITCH, KEY BOARD (5)	
S106	1-554-937-11	SWITCH, KEY BOARD (2)	
S107	1-554-937-11	SWITCH, KEY BOARD (RADIO ON/OFF)	
S108	1-554-937-11	SWITCH, KEY BOARD (TUNE/TIME SET -)	
S109	1-554-937-11	SWITCH, KEY BOARD (4)	
S110	1-554-937-11	SWITCH, KEY BOARD (1)	
S111	1-554-937-11	SWITCH, KEY BOARD (TIMER)	
*****			
*	A-3679-487-A	MAIN BOARD, COMPLETE *****	
*	3-377-638-11	CASE (LCD), SHIELD	
	3-385-689-01	HOLDER (LCD)	
	3-385-690-01	FRAME, REFLECTION	
	9-911-839-XX	CUSHION, LOCK PLATE	
		< CAPACITOR >	
C1	1-163-095-00	CERAMIC CHIP 12PF	5% 50V
C2	1-163-091-00	CERAMIC CHIP 8PF	50V
C3	1-163-090-00	CERAMIC CHIP 7PF	50V
C4	1-163-088-00	CERAMIC CHIP 5PF	50V
C5	1-163-025-11	CERAMIC CHIP 0.001uF	50V
C6	1-163-141-00	CERAMIC CHIP 0.001uF	5% 50V
C7	1-163-083-00	CERAMIC CHIP 1PF	50V
C8	1-163-141-00	CERAMIC CHIP 0.001uF	5% 50V
C9	1-163-141-00	CERAMIC CHIP 0.001uF	5% 50V
C10	1-163-025-11	CERAMIC CHIP 0.001uF	50V
C11	1-163-117-00	CERAMIC CHIP 100PF	5% 50V

Ref. No.	Part No.	Description	Remark
C12	1-163-141-00	CERAMIC CHIP 0.001uF	5% 50V
C13	1-163-097-00	CERAMIC CHIP 15PF	5% 50V
C14	1-163-085-00	CERAMIC CHIP 2PF	50V
C15	1-163-141-00	CERAMIC CHIP 0.001uF	5% 50V
C16	1-124-443-00	ELECT 100uF	20% 10V
C17	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C18	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C19	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C21	1-163-105-00	CERAMIC CHIP 33PF	5% 50V
C22	1-163-099-00	CERAMIC CHIP 18PF	5% 50V
C24	1-163-111-00	CERAMIC CHIP 56PF	5% 50V
C25	1-163-091-00	CERAMIC CHIP 8PF	50V
C26	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C27	1-163-141-00	CERAMIC CHIP 0.001uF	5% 50V
C28	1-163-141-00	CERAMIC CHIP 0.001uF	5% 50V
C29	1-124-907-11	ELECT 10uF	20% 50V
C30	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C31	1-163-085-00	CERAMIC CHIP 2PF	50V
C32	1-163-141-00	CERAMIC CHIP 0.001uF	5% 50V
C33	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C34	1-163-087-00	CERAMIC CHIP 4PF	50V
C35	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C36	1-163-093-00	CERAMIC CHIP 10PF	5% 50V
C37	1-163-132-00	CERAMIC CHIP 430PF	5% 50V
C38	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C39	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C40	1-124-903-11	ELECT 1uF	20% 50V
C41	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C43	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C44	1-124-927-11	ELECT 4.7uF	20% 100V
C45	1-124-907-11	ELECT 10uF	20% 50V
C46	1-163-986-00	CERAMIC CHIP 0.027uF	10% 25V
C47	1-124-903-11	ELECT 1uF	20% 50V
C48	1-124-916-11	ELECT 22uF	20% 63V
C49	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C50	1-124-472-11	ELECT 470uF	20% 10V
C51	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C52	1-124-472-11	ELECT 470uF	20% 10V
C53	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C54	1-163-117-00	CERAMIC CHIP 100PF	5% 50V

Ref. No.	Part No.	Description	Remark
C55	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C56	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C57	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C58	1-163-025-11	CERAMIC CHIP 0.001uF	50V
C59	1-164-346-11	CERAMIC CHIP 1uF	16V
C60-62			
	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C63	1-125-733-31	CAP, DOUBLE LAYER 0.047F	5.5V
C64	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V
C67	1-136-171-00	FILM 0.33uF	5% 50V
C69	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C70			
C70	1-163-239-11	CERAMIC CHIP 33PF	5% 50V
C71	1-163-097-00	CERAMIC CHIP 15PF	5% 50V
C72	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C73	1-163-086-00	CERAMIC CHIP 3PF	50V
C74	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C75			
C75	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
C76-79			
	1-163-133-00	CERAMIC CHIP 470PF	5% 50V
C80	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C81	1-126-176-11	ELECT 220uF	20% 10V
C82	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C83			
C83	1-126-176-11	ELECT 220uF	20% 10V
C84	1-128-483-11	ELECT 220uF	20% 25V
C85	1-124-473-11	ELECT 1000uF	20% 10V
C86	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C87	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C89-99			
	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
< FILTER >			
CF1	1-579-312-81	FILTER, CERAMIC	
CF2	1-577-319-11	FILTER, CERAMIC	
CF4	1-579-312-81	FILTER, CERAMIC	
< CONNECTOR >			
* CN1	1-695-234-11	SOCKET, CONNECTOR (PC BOARD) 7P	
< TRIMMER >			
CT1	1-141-304-21	CAP, TRIMMER 10PF	
CT3	1-141-442-91	TRIMMER, CERAMIC 20PF	
CT4	1-141-304-21	CAP, TRIMMER 10PF	
< DIODE >			
D1	8-719-949-46	DIODE 1T32	
D2	8-719-949-46	DIODE 1T32	
D3	8-719-911-19	DIODE 1SS119	
D5	8-719-951-05	DIODE KV1560	
D6	8-713-300-57	DIODE 1T33	

Ref. No.	Part No.	Description	Remark
D7	8-713-300-57	DIODE 1T33	
D8	8-719-911-19	DIODE 1SS119	
D9-11			
	8-719-037-81	LED SLH-34MCF07	
D12	8-719-976-94	DIODE DTZ4.7A	
D13	8-719-200-02	DIODE 10E2	
D14			
D14	8-719-911-19	DIODE 1SS119	
< IC >			
IC1	8-759-204-01	IC TA7358P	
IC2	8-752-035-29	IC CXA1019S	
IC3	8-759-165-63	IC uPD1724GB-616-1A7	
< JUMPER RESISTOR >			
JR1-4			
	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR5-8			
	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR9	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR10	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR28	1-216-295-00	METAL CHIP 0 5% 1/10W	
< COIL >			
L3	1-428-222-11	COIL, AIR-CORE	
L4	1-428-229-11	COIL, AIR-CORE	
L7	1-406-597-11	COIL (WITH CORE)	
L8	1-402-616-11	ANTENNA, FERRITE-ROD (AM)	
L9	1-406-546-11	COIL, AIR-CORE	
L10			
L10	1-406-545-11	COIL, AIR-CORE	
L11	1-406-485-11	COIL (OSC)	
< LIQUID CRYSTAL DISPLAY >			
LCD1	1-810-029-11	DISPLAY PANEL, LIQUID CRYSTAL	
< TRANSISTOR >			
Q1	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q2	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q3	8-729-216-22	TRANSISTOR 2SA1162-G	
Q4	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q5	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q6			
Q6	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q7	8-729-216-22	TRANSISTOR 2SA1162-G	
Q8-10			
	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q11	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q12	8-729-900-89	TRANSISTOR DTC144ES	
Q13			
Q13	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q14	8-729-142-46	TRANSISTOR 2SC2001-LK	

**MAIN**

Ref. No.	Part No.	Description	Remark		
< RESISTOR >					
R1	1-216-097-00	METAL CHIP	100K	5%	1/10W
R2	1-216-097-00	METAL CHIP	100K	5%	1/10W
R3	1-216-198-00	METAL CHIP	1K	5%	1/8W
R4	1-216-095-00	METAL CHIP	82K	5%	1/10W
R5	1-216-097-00	METAL CHIP	100K	5%	1/10W
R6	1-216-019-00	METAL CHIP	56	5%	1/10W
R7	1-216-025-00	METAL CHIP	100	5%	1/10W
R8	1-216-105-00	METAL CHIP	220K	5%	1/10W
R9	1-216-045-00	METAL CHIP	680	5%	1/10W
R10	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R11	1-216-121-00	METAL CHIP	1M	5%	1/10W
R12	1-216-097-00	METAL CHIP	100K	5%	1/10W
R13	1-216-097-00	METAL CHIP	100K	5%	1/10W
R14	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R15	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R16	1-216-097-00	METAL CHIP	100K	5%	1/10W
R17	1-216-097-00	METAL CHIP	100K	5%	1/10W
R18	1-216-081-00	METAL CHIP	22K	5%	1/10W
R19	1-216-037-00	METAL CHIP	330	5%	1/10W
R20	1-216-073-00	METAL CHIP	10K	5%	1/10W
R21	1-216-121-00	METAL CHIP	1M	5%	1/10W
R22	1-216-049-00	METAL CHIP	1K	5%	1/10W
R23	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R25	1-216-198-00	METAL CHIP	1K	5%	1/8W
R26	1-216-001-00	METAL CHIP	10	5%	1/10W
R27	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R29	1-216-097-00	METAL CHIP	100K	5%	1/10W
R30	1-216-049-00	METAL CHIP	1K	5%	1/10W
R31	1-216-113-00	METAL CHIP	470K	5%	1/10W
R32	1-216-113-00	METAL CHIP	470K	5%	1/10W
R33	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R34	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R35	1-216-097-00	METAL CHIP	100K	5%	1/10W
R36	1-216-073-00	METAL CHIP	10K	5%	1/10W
R37	1-216-073-00	METAL CHIP	10K	5%	1/10W
R38	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R39	1-216-097-00	METAL CHIP	100K	5%	1/10W
R40	1-216-025-00	METAL CHIP	100	5%	1/10W
R41-46	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R47	1-216-182-00	METAL GLAZE	220	5%	1/8W
R48	1-216-113-00	METAL CHIP	470K	5%	1/10W
R49	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R50	1-216-049-00	METAL CHIP	1K	5%	1/10W
R51-53	1-216-029-00	METAL CHIP	150	5%	1/10W
R54-56	1-216-049-00	METAL CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description	Remark		
R57	1-216-025-00	METAL CHIP	100	5%	1/10W
R61	1-216-013-00	METAL CHIP	33	5%	1/10W
< VARIABLE RESISTOR >					
RV1	1-241-542-11	RES, VAR, CARBON 50K (VOLUME)			
< TRANSFORMER >					
T1	1-406-598-11	TRANSFORMER, IF			
T2	1-404-341-00	TRANSFORMER, IF			
△T3	1-423-519-11	TRANSFORMER, POWER			
< VIBRATOR >					
X1	1-567-769-11	VIBRATOR, CRYSTAL (75kHz)			
*****					
MISCELLANEOUS					
*****					
△16	1-751-167-21	CORD, POWER			
SP1	1-504-262-11	SPEAKER (7.7CM)			
*****					
ACCESSORIES & PACKING MATERIALS					
*****					
*	3-387-515-01	INDIVIDUAL CARTON (US)			
*	3-387-520-01	INDIVIDUAL CARTON (Canadian)			
*	3-387-929-01	TEMPLATE			
*	3-756-562-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH)			
*	3-897-241-01	CLAMP, CORD			
	3-902-011-01	SCREW (+B 5X65), FITTING			
*****					
*****					
HARDWARE LIST					
*****					
#1	7-684-025-04	N 5, TYPE 2			
#2	7-685-647-79	SCREW +P 3X10 TYPE2 NON-SLIT			
#3	7-685-649-79	SCREW +P 3X14 TYPE2 NON-SLIT			

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