

ICF-780S

SERVICE MANUAL

*AEP Model
E Model
Australian Model*



Photo : BLACK

SPECIFICATIONS

Frequency range	FM: 87.6 – 107.5 MHz MW: 531 – 1602 kHz SW: 5.95 – 18 MHz
Intermediate frequency	FM: 10.7 MHz AM: 455 kHz
Antennas	FM/SW: Telescopic antenna MW: Built-in ferrite bar antenna
Speaker	Approx. 10.2 cm (4 ¹ / ₈ inches) dia., 8 ohms
Power output	430 mW (at 10% harmonic distortion)
Output	Earphone jack (minijack)
Power requirements	With the supplied AC power cord: Australian model: 240 V AC, 50 Hz AEP/Germany/E91 model: 220 V AC, 50 Hz Central and South America model: 120V AC, 60Hz
Battery life	With four R6 (size AA) batteries: 6 V DC Approx. 35 hours using Sony batteries SUM-3 (NS)
Dimensions	Approx. 255 × 129 × 62.6 mm (w/h/d) (10 ¹ / ₈ × 5 ¹ / ₈ × 2 ¹ / ₂ inches) incl. projecting parts and controls with carrying handle pushed in
Weight	Approx. 965 g (2 lb 2 oz) incl. batteries
Supplied accessory	AC power cord (1)

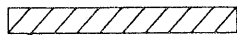
Design and specifications subject to change without notice.

MODEL IDENTIFICATION

— Model Number Portion —

Germany, AEP model: Carved on rear cabinet
Australian, E model: Model number label

SONY® MODEL NO. ICF-780S
FM/MW/SW 3BANDS



• MODEL IDENTIFICATION

— Power requirements —

E91 model: 220V AC, 50Hz

E92 model: Central and South America: 120V AC, 60Hz

Australian model: 3-365-970-01

E91 model: 3-365-969-01

E92 model: 3-365-968-01

FM/MW/SW 3 BAND RECEIVER

SONY®



SECTION 1
GENERAL

This section is extracted from instruction manual.

A Location of Controls

- | | |
|--|---|
| 1 Carrying handle | 8 Telescopic antenna |
| 2 POWER switch (ON \square / STANDBY \square) | 9 TUNE (tuning) control |
| 3 Ⓢ (earphone) jack (left side) | 10 VOL (volume) control |
| The sound through the speaker cannot be heard when an earphone is connected to the jack. | Turn clockwise to increase the volume. |
| 4 AC IN (input) jack (left side) | 11 TONE control |
| 5 Speaker | Turn clockwise to increase the treble. |
| 6 Battery compartment (bottom) | Turn counterclockwise to decrease the treble. |
| 7 Dial scales | 12 Band selector FM/MW/SW |
| | 13 TUNE (tuning) indicator |

Power Sources

B Batteries

Battery replacement

When the sound becomes weak or distorted, replace all the batteries with new ones.

Concerning the battery life, see "Specifications".

Note

If the unit is not to be used on batteries for a long period of time, remove them to avoid battery leakage and corrosion.

C House Current

D Radio Operation

- 1 Depress the POWER switch (\square) to turn on the unit.
- 2 Select a desired band.
- 3 Tune in a desired station.
- 4 Adjust the volume.
- 5 Adjust the tone to your preference.

The TUNE indicator lights up when a station is tuned in.

To turn off the radio, press the POWER switch (\square).

E To Improve Receiving Condition

FM

Extend the telescopic antenna and adjust its length, direction and angle for the best reception.

MW

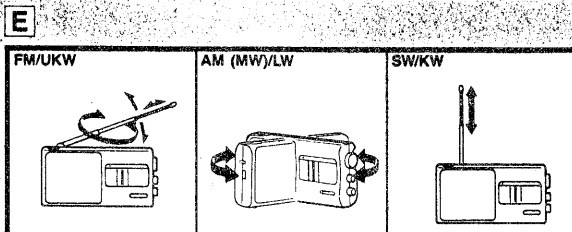
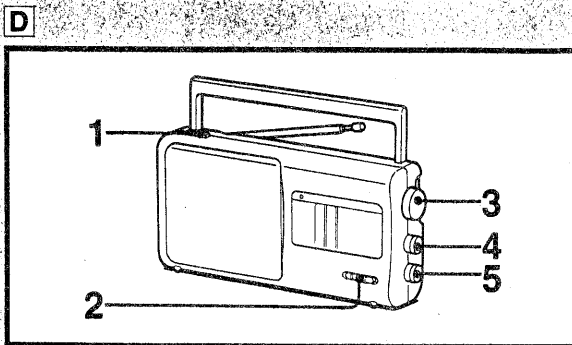
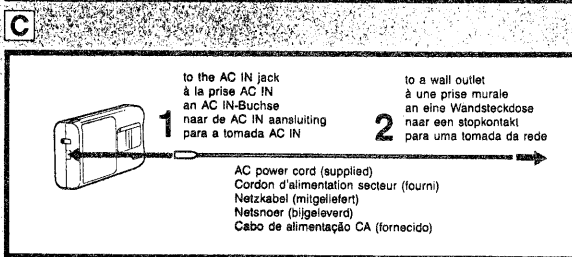
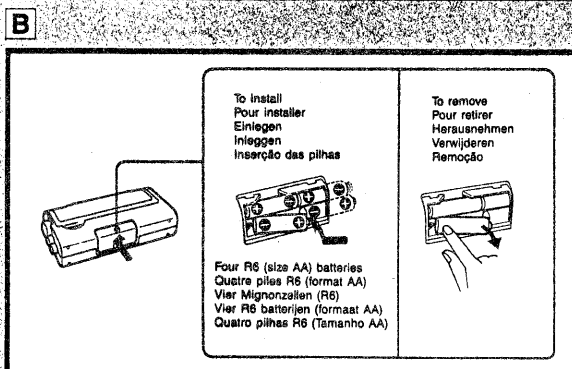
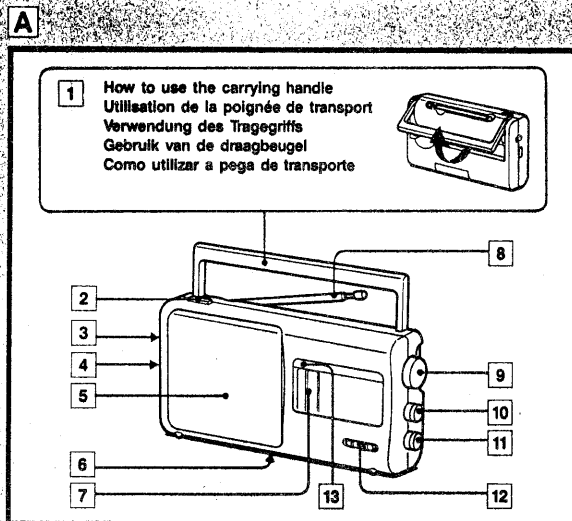
Since the reception is affected by the direction of the radio, rotate the unit horizontally for optimum reception.

SW

Extend the telescopic antenna vertically.

Notes

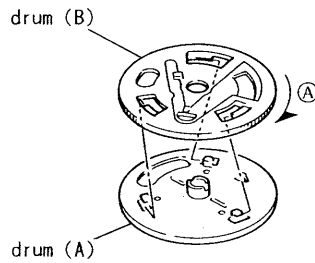
- In vehicles or in buildings, radio reception may be difficult or noisy. Try listening near a window.
- Keep the radio away from the metallic objects.



SECTION 2 DIAL POINTER FITTING

Note : Follow the dial pointer fitting procedure in the numeral over given.

1. INSTALL DRUM(1)

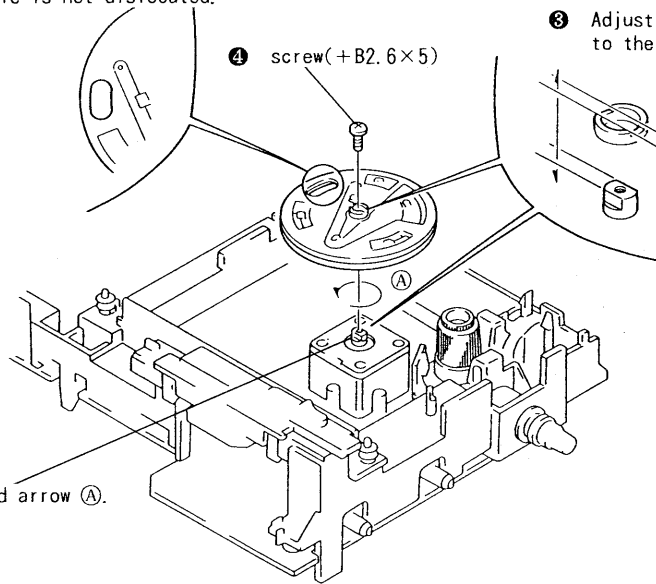


Rotate the drum (B) in arrow (A) direction while inserting it into the drum (A) as shown in the figure.

2. INSTALL DRUM(2)

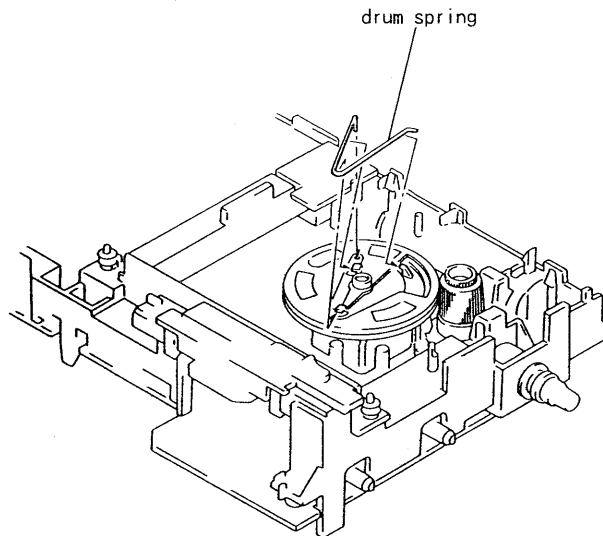
② Confirm that the drum hole is not dislocated.

⑤ Adjusting the position as shown, attach the drum to the CV1.

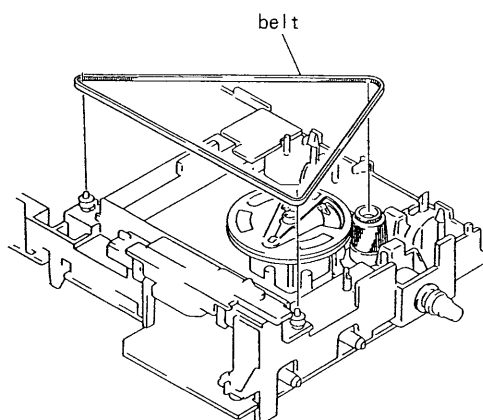


① Turn fully the CV1 toward arrow (A).

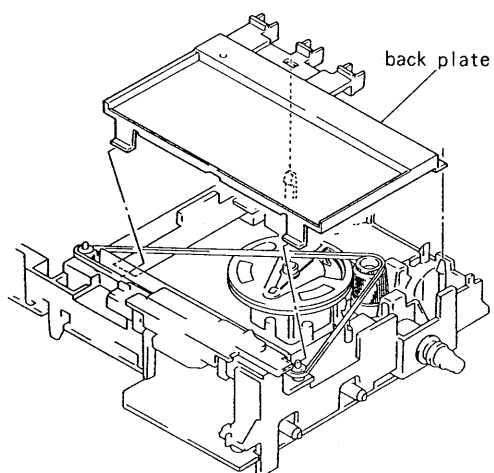
3. INSTALL DRUM SPRING



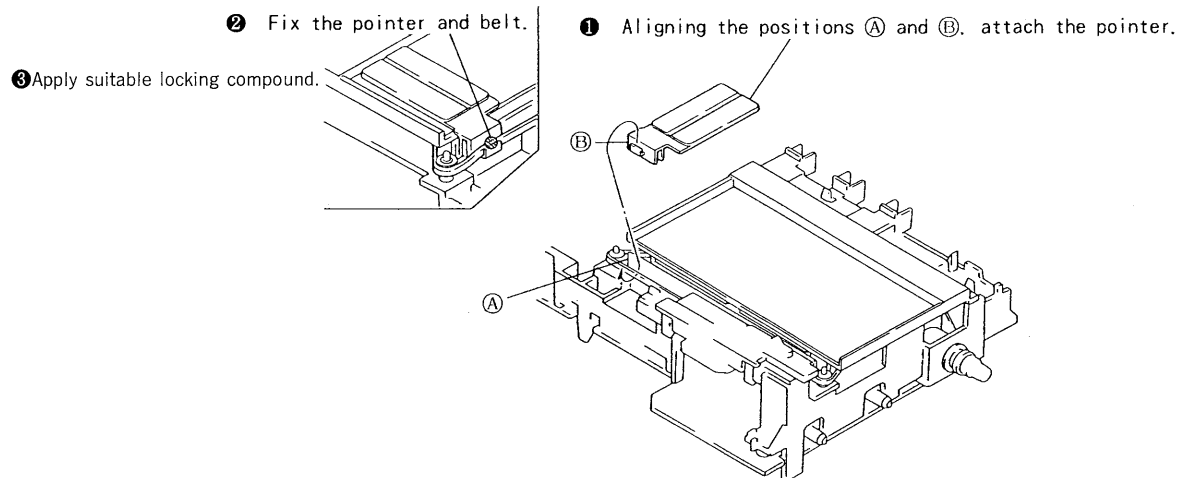
4. INSTALL BELT



5. INSTALL BACK PLATE



6. INSTALL DIAL POINTER

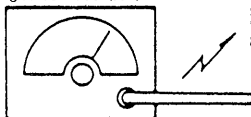


SECTION 3 ELECTRICAL ADJUSTMENT

MW/SW

BAND switch : MW/SW

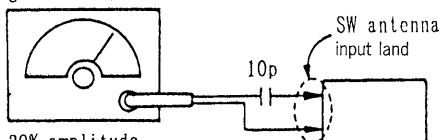
AM RF signal generator (MW)



Put the lead wire antenna close to the set.

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

AM RF signal generator (SW)

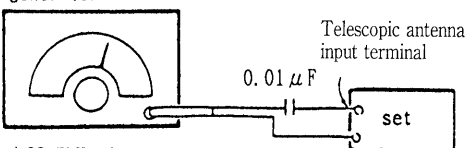


30% amplitude modulation by 400Hz signal output level: as low as possible.

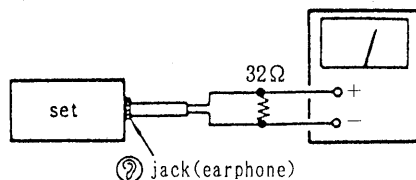
FM

BAND switch : FM

FM RF signal generator

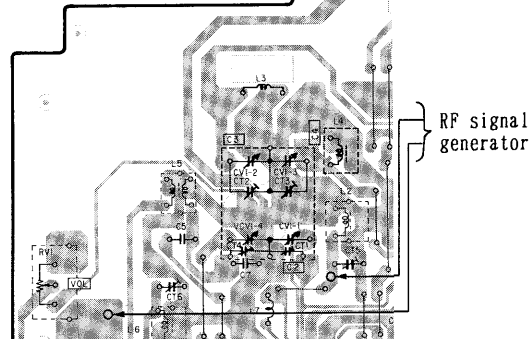


±22.5kHz frequency deviation by 400Hz signal output level: as low as possible. VTVM (range: 0.5-5V ac)



SW antenna input land :

[MAIN BOARD] (CONDUCTOR SIDE)



- 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.	
T1	455kHz

SW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L2	5.85MHz
CT5	18.2MHz

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L5	520kHz
CT4	1,650kHz

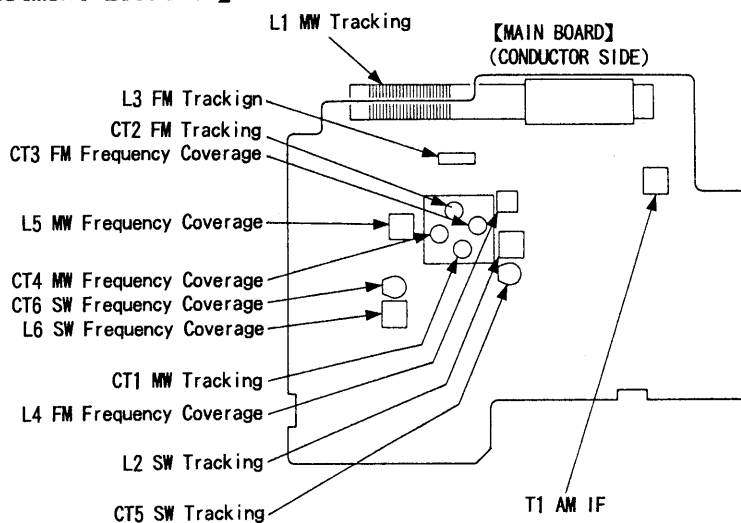
FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L3	Germany model: 87.35 ± 0.1MHz
	Others model: 87.35MHz
CT2	Germany model: 108.05 ± 0.4MHz
	Others model: 108.05MHz

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L1	620kHz
CT1	1,400kHz

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L4	Germany model: 87.35 ± 0.1MHz
	Others model: 87.35MHz
CT3	Germany model: 108.05 ± 0.4MHz
	Others model: 108.05MHz

SW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L6	5.85MHz
CT6	18.2MHz

[Adjustment Location]

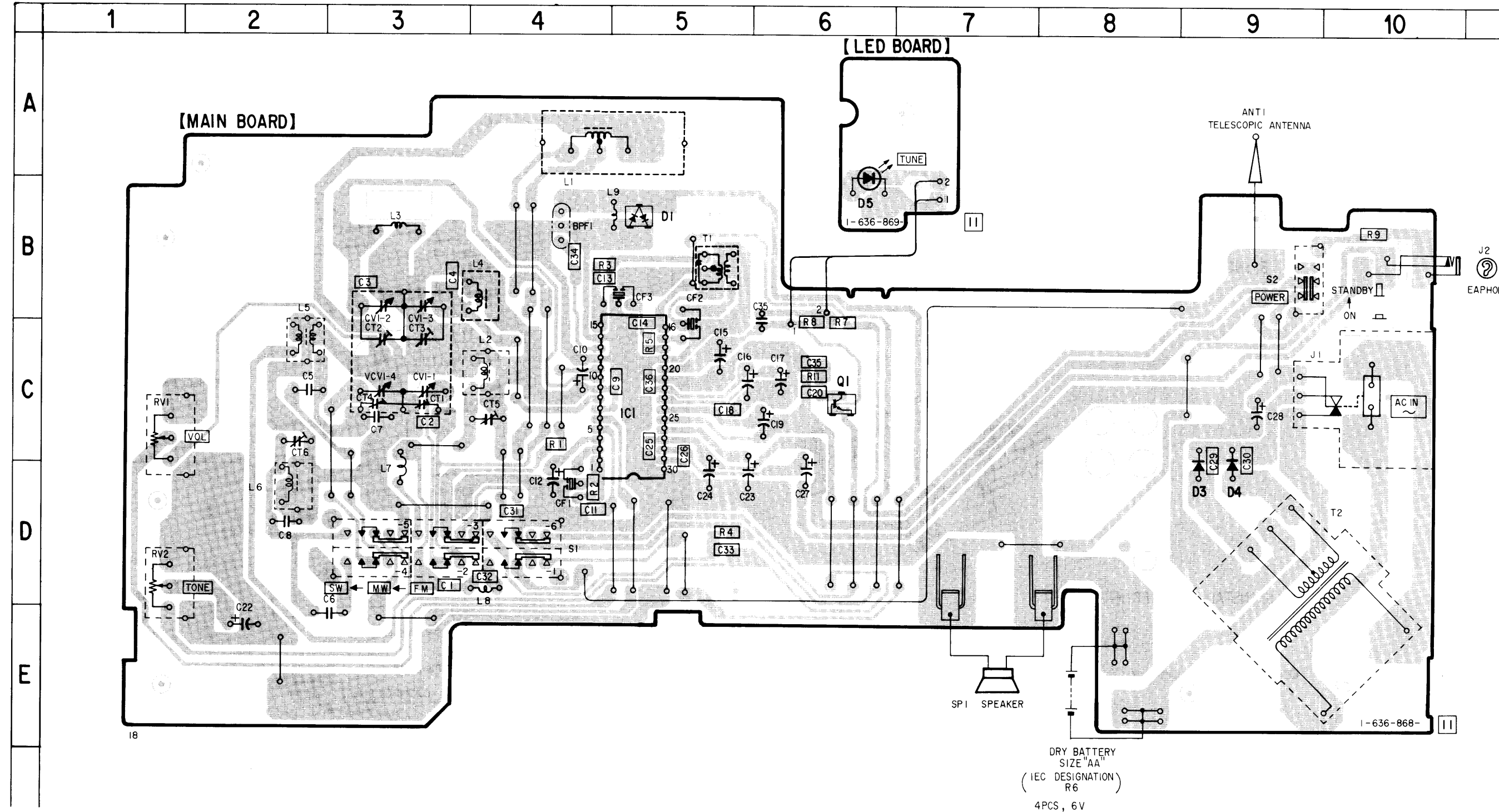


SECTION 4 DIAGRAMS

● Semiconductor Locations

Ref. No.	Location
D 1	B-5
D 3	D-9
D 4	D-9
D 5	B-6
IC 1	C-5
Q 1	C-6

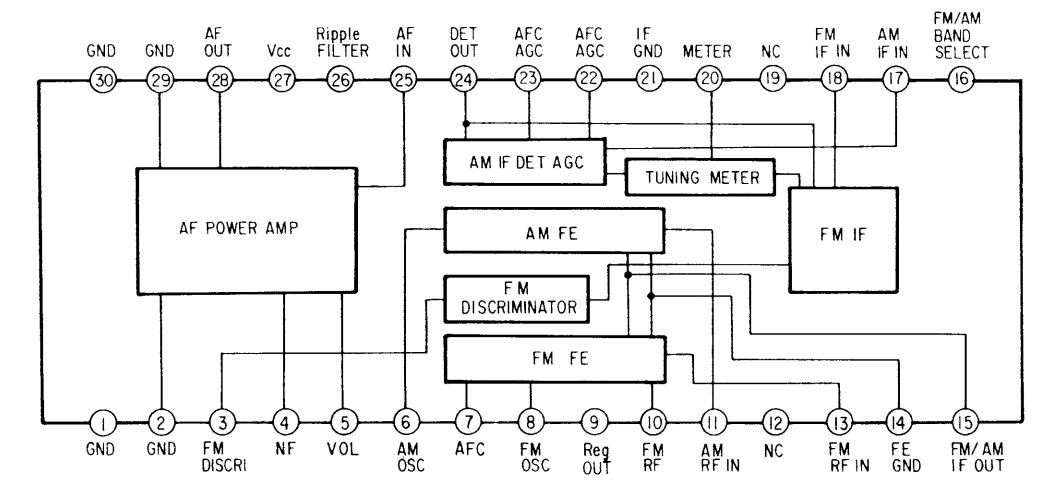
4-1. Schematic Diagram



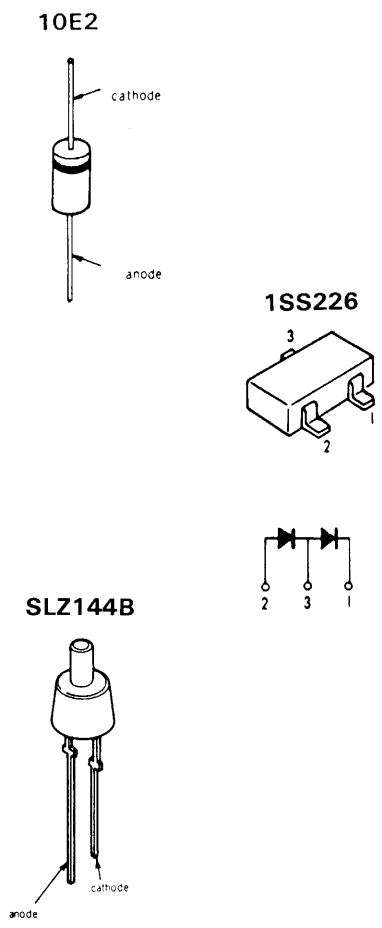
Note:
 • — : parts extracted from the component side.
 • — : parts extracted from the conductor side.

● IC Block Diagram

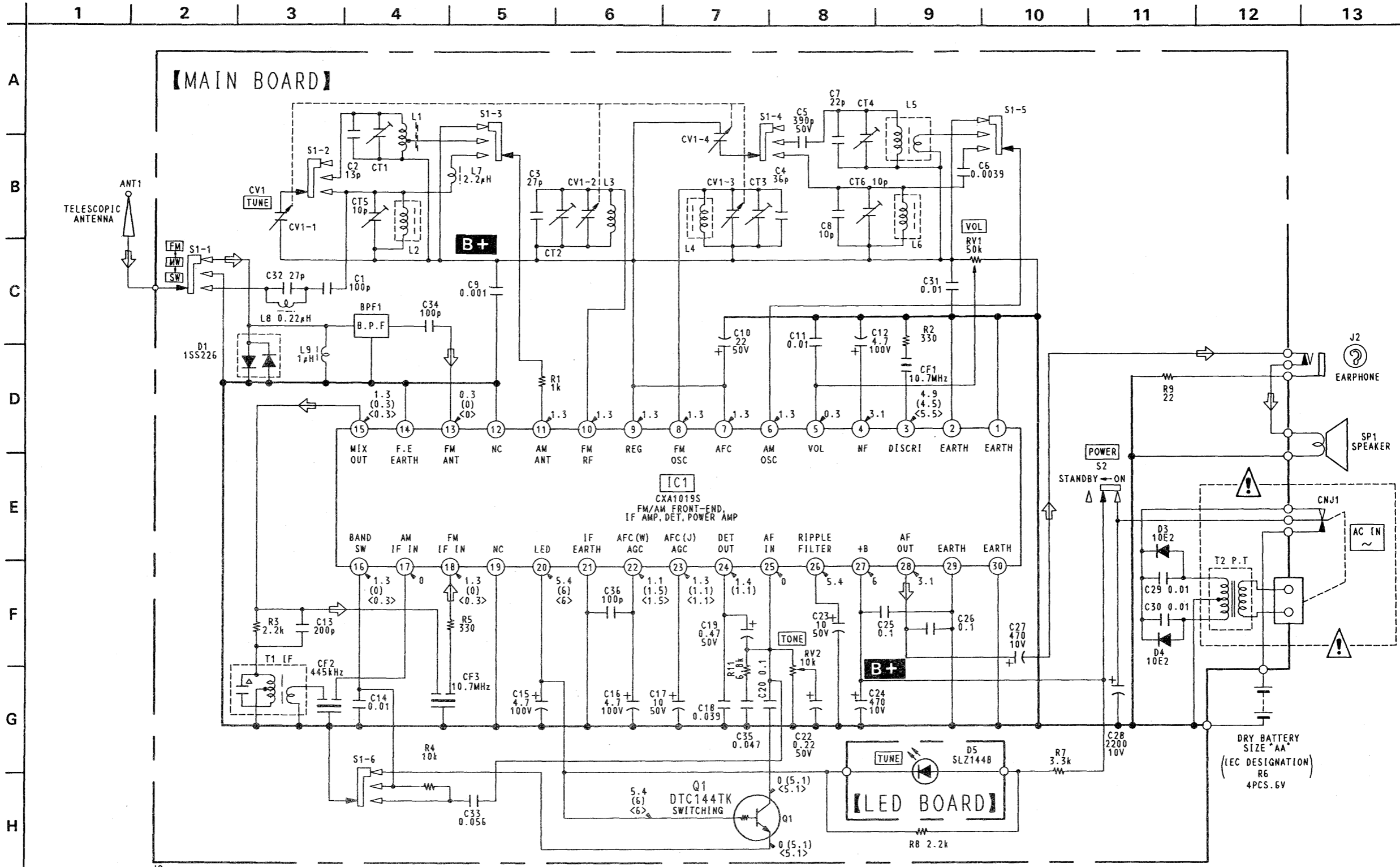
IC 1
CXA1019S



● Semiconductor Lead Layouts



4-2. Schematic Diagram



Note:

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

Note: The components identified by mark Δ or dotted line with mark Δ 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
() : MW
< > : SW
- 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 VIEWS

NOTE:

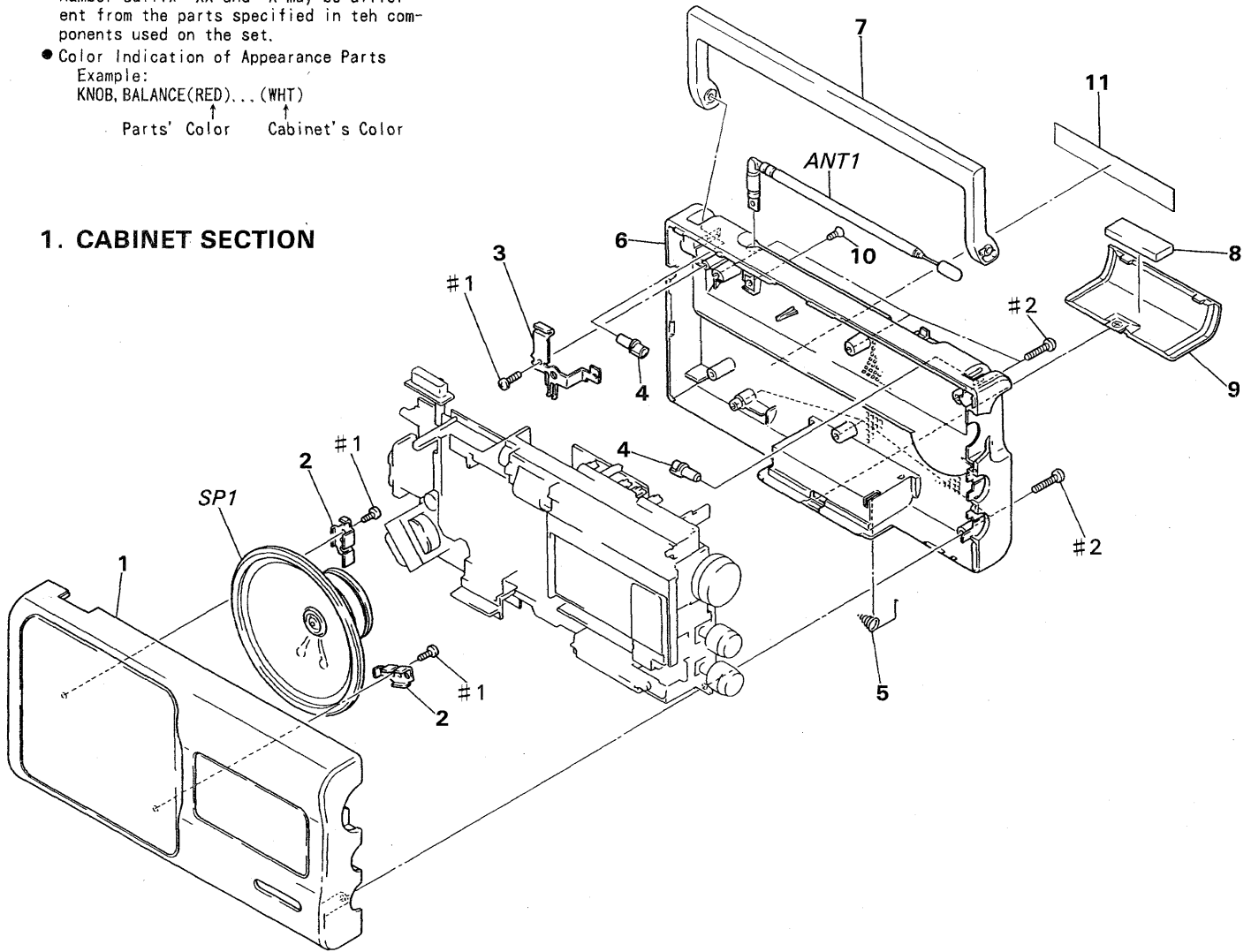
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (RED)... (WHT)
 ↑ ↑
Parts' Color Cabinet's Color

- Screw(#mark) list is given in the last of this parts list.

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

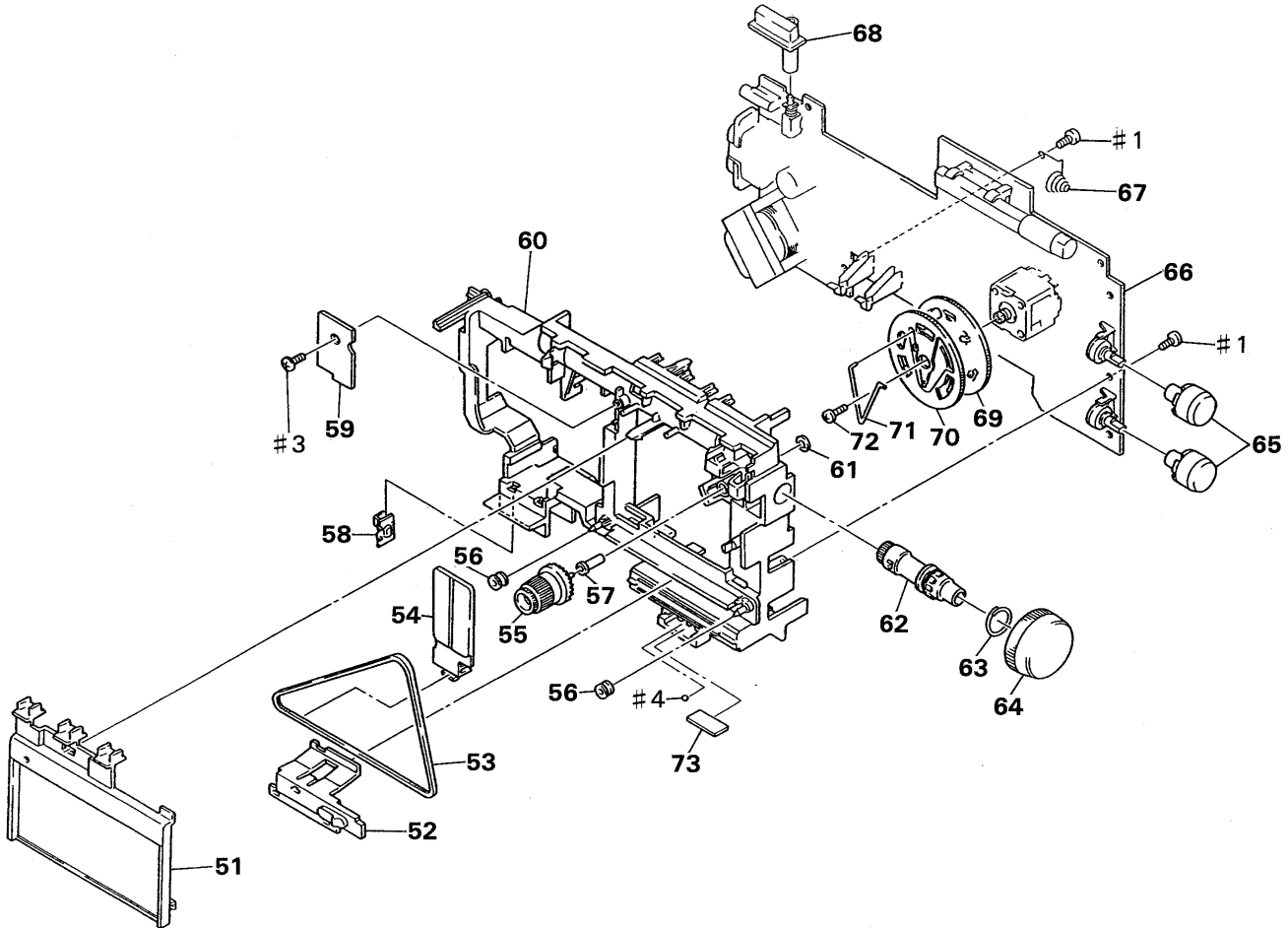
- E92 : Central and South America

1. CABINET SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3362-619-1	CABINET (FRONT) ASSY (BLACK) .. (BLACK)		7	3-363-379-01	HANDLE (BLACK) ... (BLACK)	
1	X-3362-620-1	CABINET (FRONT) ASSY (WHITE) .. (WHITE)		7	3-363-379-11	HANDLE (WHITE) ... (WHITE)	
2	3-364-730-01	CLAW, SPEAKER		8	9-911-815-02	CUSHION	
3	3-363-360-01	SPRING, HANDLE		9	3-363-392-01	LID, BATTERY CASE (BLACK) ... (BLACK)	
4	3-363-372-01	SHAFT (HANDLE)		9	3-363-392-11	LID, BATTERY CASE (WHITE) ... (WHITE)	
5	3-363-363-01	SPRING, PLUS. MINUS		10	3-364-994-11	SCREW (+K) (3X6), NYLOK	
6	3-364-728-31	CABINET (REAR) (NO. 1) (BLACK) ... (BLACK: E91, E92, Australian)		11	* 3-365-970-01	LABEL, MODEL NUMBER ... (Australian)	
6	3-364-728-01	CABINET (REAR) (NO. 1) (BLACK) ... (BLACK: AEP, Germany)		11	* 3-365-969-01	LABEL, MODEL NUMBER ... (E91)	
6	3-364-728-11	CABINET (REAR) (NO. 1) (WHITE) ... (WHITE: AEP, Germany)		11	* 3-365-968-01	LABEL, MODEL NUMBER ... (E92)	
				ANT1	1-501-362-11	ANTENNA, TELESCOPIC	
				SP1	1-544-406-11	SPEAKER	

2. CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
51	* 3-363-391-01	PLATE, BACK	
52	3-363-389-01	KNOB (B) (BLACK) ... (BLACK)	
52	3-363-389-11	KNOB (B) (WHITE) ... (WHITE)	
53	3-363-369-01	BELT	
54	3-363-377-01	POINTER	
55	3-363-373-01	GEAR, MIDWAY	
56	3-304-108-00	PULLEY	
57	3-363-367-01	BEARING	
58	3-363-361-01	TERMINAL BOARD, BATTERY	
59	* 1-636-869-11	PC BOARD, LED	
60	* 3-363-383-01	CHASSIS	
61	3-364-731-01	WASHER, POLY-SLIDER	
62	3-363-375-01	SHAFT (TUNING)	
63	3-363-365-01	RING	
64	3-363-374-01	KNOB (T) (BLACK) ... (BLACK)	
64	3-363-374-11	KNOB (T) (WHITE) ... (WHITE)	

Ref. No.	Part No.	Description	Remark
65	3-363-393-01	KNOB (CONTROL) (BLACK) ... (BLACK)	
65	3-363-393-11	KNOB (CONTROL) (WHITE) ... (WHITE)	
66	* A-3661-264-A	MOUNTED PCB (HAND), MAIN ... (Australian)	
66	* A-3661-263-A	MOUNTED PCB (HAND), MAIN ... (E92)	
66	* A-3661-199-A	MOUNTED PCB (HAND), MAIN ... (AEP, Germany, E91)	
67	3-363-364-01	SPRING, MINUS	
68	3-363-371-01	BUTTON (POWER)	
69	3-363-387-01	DRUM (A)	
70	* 3-363-397-01	DRUM (B)	
71	3-363-366-01	SPRING, DRUM	
72	3-364-941-11	SCREW (+B) (2.6X5), NYLOK	
73	3-363-362-01	SPRING, LEAF	

SECTION 6
ELECTRICAL PARTS LIST

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.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS :
uF: μ F

RESISTORS

- All resistors are in ohms.
- F: nonflammable

INDUCTOR :

uH: μ H

SEMICONDUCTORS

In each case, u: μ , for example:

uA...: μ A..., uPA...: μ PA...,

uPC...: μ PC..., uPD..., μ PD...

- Screw(#mark)list is given in the last of this parts list.

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

- E92 : Central and South America

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	* 1-636-869-11	LED BOARD ***** < DIODE >		C15	1-124-927-11	ELECT 4.7uF 20% 100V	
D5	8-719-988-88	LED SLZ144B		C16	1-124-927-11	ELECT 4.7uF 20% 100V	
*****				C17	1-123-875-11	ELECT 10uF 20% 50V	
	* A-3661-199-A	MAIN BOARD (HAND), COMPLETE ... (AEP, Germany, E91)		C18	1-162-587-11	CERAMIC CHIP 0.039uF 10% 25V	
	* A-3661-263-A	MAIN BOARD (HAND), COMPLETE... (E92)		C19	1-124-902-00	ELECT 0.47uF 20% 50V	
	* A-3661-264-A	MAIN BOARD (HAND), COMPLETE... (Australian)		C20	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
	3-363-359-01	PLATE, CONTACT, SPEAKER		C22	1-124-464-11	ELECT 0.22MF 20% 50V	
	* 3-364-732-01	PLATE (A), SHIELD		C23	1-123-875-11	ELECT 10uF 20% 50V	
BPF1	1-236-022-11	FILTER, BAND PASS < CAPACITOR >		C24	1-124-472-11	ELECT 470uF 20% 10V	
				C25	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C1	1-163-117-00	CERAMIC CHIP 100PF 5% 50V		C26	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C2	1-163-096-00	CERAMIC CHIP 13PF 5% 50V		C27	1-124-472-11	ELECT 470uF 20% 10V	
C3	1-163-103-00	CERAMIC CHIP 27PF 5% 50V		C28	1-126-927-11	ELECT 2200uF 20% 10V	
C4	1-164-240-91	CERAMIC CHIP 36PF 5% 50V		C29	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C5	1-104-067-00	POLYSTYRENE 390PF 5% 50V		C30	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C6	1-104-091-00	POLYSTYRENE 0.0039uF 5% 50V		C31	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C7	1-102-959-00	CERAMIC 22PF 5% 50V		C32	1-163-103-00	CERAMIC CHIP 27PF 5% 50V	
C8	1-102-947-00	CERAMIC 10PF 5% 50V		C33	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	
C9	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V		C34	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C10	1-126-233-11	ELECT 22uF 20% 50V		C35	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C11	1-164-232-11	CERAMIC CHIP 0.01uF 50V		C36	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C12	1-124-927-11	ELECT 4.7uF 20% 100V		< FILTER >			
C13	1-163-124-00	CERAMIC CHIP 200PF 5% 50V		CF1	1-567-166-00	FILTER, CERAMIC	
C14	1-164-232-11	CERAMIC CHIP 0.01uF 50V		CF2	1-567-177-00	FILTER, CERAMIC	
				CF3	1-567-166-00	FILTER, CERAMIC	
				< TRIMMER >			
				CT1-4	1-151-679-11	CAP, VAR (TUNE)	
				CV1			
				CT5	1-141-354-21	CAP, VAR, TRIMMER	
				CT6	1-141-354-21	CAP, VAR, TRIMMER	

MAIN

Ref. No.	Part No.	Description	Remark
< DIODE >			
D1	8-719-800-76	DIODE 1SS226	
D3	8-719-200-02	DIODE 10E2	
D4	8-719-200-02	DIODE 10E2	
< IC >			
IC1	8-752-035-29	IC CXA1019S	
< JACK >			
J1	△ 1-526-838-11	INLET, AC 2P (AC IN)	
J2	1-563-836-21	JACK (EARPHONE)	
< COIL >			
L1	1-402-537-11	ANTENNA, FERRITE-ROD (MW)	
L2	1-402-538-11	SW COEL (ANT)	
L3	* 1-422-342-11	COIL, AIR-CORE	
L4	1-460-135-11	COIL (WITH CORE) (RF)	
L5	1-406-092-11	COIL, OSC (MW)	
L6	1-406-413-11	COIL, SW (OSC)	
L7	1-410-501-11	INDUCTOR 2.2uH	
L8	1-410-312-11	INDUCTOR 0.22uH	
L9	1-410-316-11	INDUCTOR 1uH	
< TRANSISTOR >			
Q1	8-729-903-30	TRANSISTOR DTC144TK	
< RESISTOR >			
R1	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R2	1-216-037-00	METAL CHIP 330 5% 1/10W	
R3	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R4	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R5	1-216-037-00	METAL CHIP 330 5% 1/10W	
R7	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R8	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R9	1-216-009-00	METAL CHIP 22 5% 1/10W	
R11	1-216-069-00	METAL CHIP 6.8K 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	1-571-170-11	SWITCH, SLIDE (BAND)	
S2	1-571-042-11	SWITCH, PUSH (1 KEY) (POWER)	

Ref. No.	Part No.	Description	Remark
< TRANSFORMER >			
T1	1-404-953-11	TRANSFORMER, IF	
T2	△ 1-450-324-11	TRANSFORMER, POWER (220V) ... (E91, Germany, AEP)	
T2	△ 1-540-323-11	TRANSFORMER, POWER (120V)... (E92)	
T2	△ 1-540-325-11	TRANSFORMER, POWER (240V)... (Australian)	

MISCELLANEOUS *****			
59	* 1-636-869-11	PC BOARD, LED	
ANT1	1-501-362-11	ANTENNA, TELESCOPIC	
SP1	1-544-406-11	SPEAKER	

ACCESSORY & PACKING MATERIAL *****			
	△ 1-555-074-00	CORD, POWER... (Australian)	
	△ 1-555-234-00	CORD, POWER... (AEP, Germany, E91)	
	△ 1-559-047-11	CORD, POWER... (E92)	
	* 3-364-699-01	INDIVIDUAL CARTON... (AEP, Germany)	
	* 3-364-700-01	INDIVIDUAL CARTON... (E91, E92, Australian)	
	* 3-364-706-01	CUSHION (R)	
	* 3-364-721-01	CUSHION (L)	
	3-752-572-41	MANUAL, INSTRUCTION (ENGLISH, GERMAN, SPANISH, ITALIAN, SWEDISH, ARABIC)	
	3-898-942-01	SHEET, PROTECTION... (AEP, Germany)	

SCREW *****			
#1	7-685-647-79	SCREW +BTP 3X10 TYPE2 N-S	
#2	7-685-651-79	SCREW +BTP 3X20 TYPE2 N-S	
#3	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S	
#4	7-671-112-11	BALL, STEEL	

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

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Personal Communication Group

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ICF-780S


SONY SERVICE MANUAL

*AEP Model
E Model
Australian Model*

SUPPLEMENT-1

File this supplement with the service manual.

SUBJECT : Addition to the Saudi Arabia Model and correction of the Service Manual released previously.

[Added]  : added portion

1. SPECIFICATIONS (Service Manual Page 1)

Power requirements With the supplied AC power cord :
AEP/Germany/E91/Saudi Arabia model : 220V AC, 50Hz

2. SECTION 5 EXPLODED VIEWS (Service Manual Page 11, 12)

Ref.No.	Part No.	Description	Remark
6	3-364-728-31	CABINET (REAR) (NO.1) (BLACK) ... (BLACK: E91, E92, Saudi Arabia, Australian)	
11	* 3-365-969-01	LABEL, MODEL NUMBER... (E91, Saudi Arabia)	
66	* A-3661-199-A	MAIN BOARD (HAND), COMPLETE ... (AEP, Germany, E91, Saudi Arabia)	

3. SECTION 6 ELECTRICAL PARTS LIST (Service Manual Page 13, 14)

Ref.No.	Part No.	Description	Remark
	* A-3661-199-A	MAIN BOARD (HAND), COMPLETE ... (AEP, Germany, E91, Saudi Arabia)	
		ACCESSORY & PACKING MATERIAL *****	
△	1-506-401-31	ADAPTOR, CONVERSION... (Saudi Arabia)	
△	1-555-234-00	CORD, POWER ... (AEP, Germany, E91, Saudi Arabia)	
*	3-364-700-01	INDIVIDUAL CARTON ... (E91, E92, Saudi Arabia, Australian)	

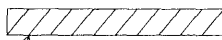
[Corrected]  : corrected portion

1. MODEL IDENTIFICATION (Service Manual Page 1)

— Model Number Portion —

Australian, E91, Central and South America, Saudi Arabia model : Model number label

SONY® MODEL NO. ICF-780S
FM/MW/SW 3 BANDS



E91, Saudi Arabia model : 3-365-969-01
Central and South America model : 3-365-968-01

• MODEL IDENTIFICATION

— Power requirements —

E91, Saudi Arabia model : 220V AC, 50Hz
Central and South America model : 120V AC, 60Hz

— Continued on next page —

2. SECTION 6 ELECTRICAL PARTS LIST (Service Manual Page 13, 14)

(Incorrect)				→	(Correct)			
<u>Ref.No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref.No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	
C4	1-164-240-91	CERAMIC CHIP 36PF 5% 50V		C4	1-163-106-00	CERAMIC CHIP 36PF 5% 50V		
		MISCELLANEOUS *****						
59	* 1-636-869-11	PC BOARD. LED					Delete	