WM-PSY02

SERVICE MANUAL

Ver 1.0 1999.03

US Model
Canadian Model

Model Name Using Similar Mechanism	WM-FX251
Tape Transport Mechanism Type	MF-WMFX251-114

SPECIFICATIONS

- **Frequency range**
  For U area indication: FM: 87.5-108MHz
  AM: 530-1710kHz
  For E area indication: FM: 87.5-108MHz
  AM: 531-1602kHz
- **Power requirements**
  3V DC batteries AA (R6) × 2/External DC 3V
  power sources
- **Dimensions**
  115 × 90.5 × 34.4mm (4 5/8 × 3 5/8 1 3/8 inches) (w/h/d)
  incl. projecting parts and controls
- **Mass**
  Approx. 150g (5.3 oz)
  Approx. 230g (8.2 oz) incl. batteries and a tape
- **Supplied accessories**
  Stereo headphones or earphones (1) /
  Bumper guard (1)/Chain (1)

Design and specifications are subject to change without notice.

RADIO CASSETTE PLAYER

MICROFILM

SONY®

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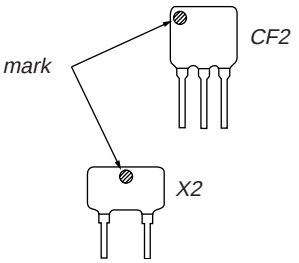
SERVICING NOTES

HOW TO CHANGE THE CERAMIC FILTERS

This model is used two ceramic filters of CF2 and X2.
You must used same type of color marked ceramic filters in order to meet same specifications.
Therefore, the ceramic filter must changed two pieces together since it's supply two pieces in one package as a spare parts.



Mark	Center frequency
red	10.70MHz
blue	10.67MHz
orange	10.73MHz
black	10.64MHz
white	10.76MHz

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

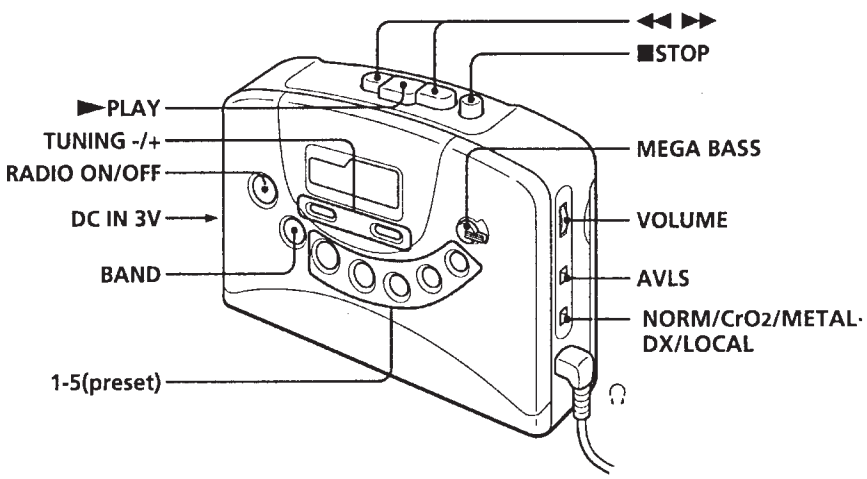
Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SECTION 1
GENERAL

This section is extracted from instruction manual.

Location of parts and controls



SECTION 2
DISASSEMBLY

● The equipment can be removed using the following procedure.

Set → Cabinet (Front) ASSY → Main board → Mechanism deck (MF-WMFX251-114) → Belt, Motor (Capstan/Reel) (M901), Playback head (HP901)

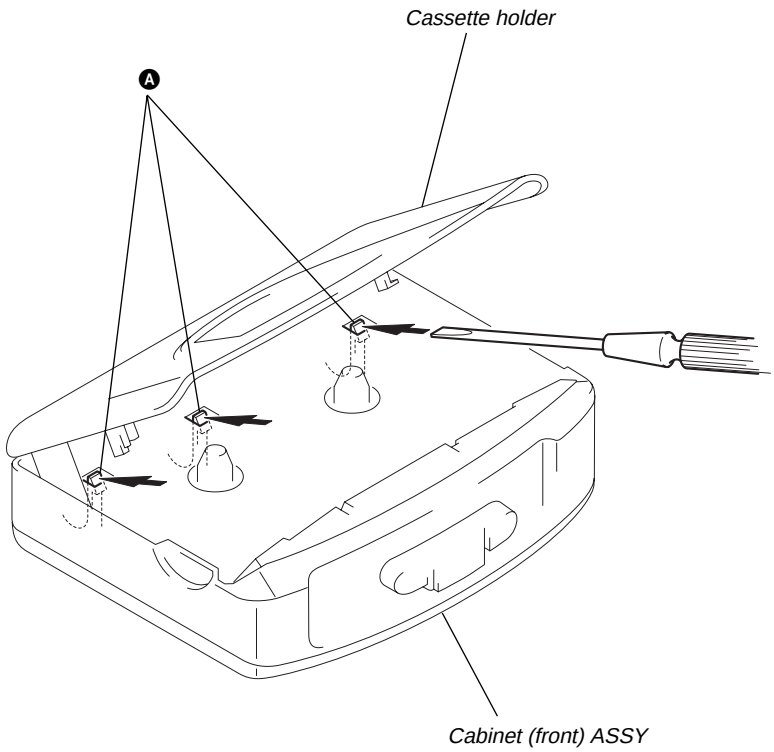
Cassette holder

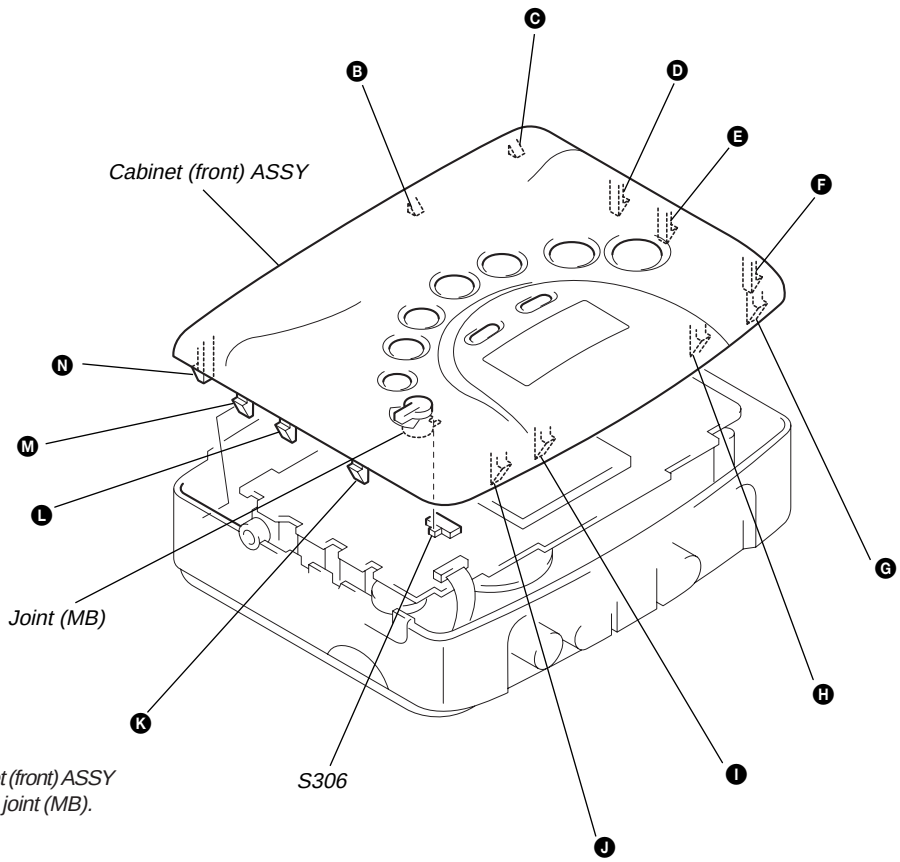
Note : Follow the disassembly procedure in the numerical order given.

2-1. CABINET (FRONT) ASSY

❶ *Insert the precision screwdriver (1.4 mm flat-blade) in to the slit at claw* Ⓐ *and release the claw.*
Note: To avoid the damage to the cabinet, wrap a point of screwdriver with cloth.

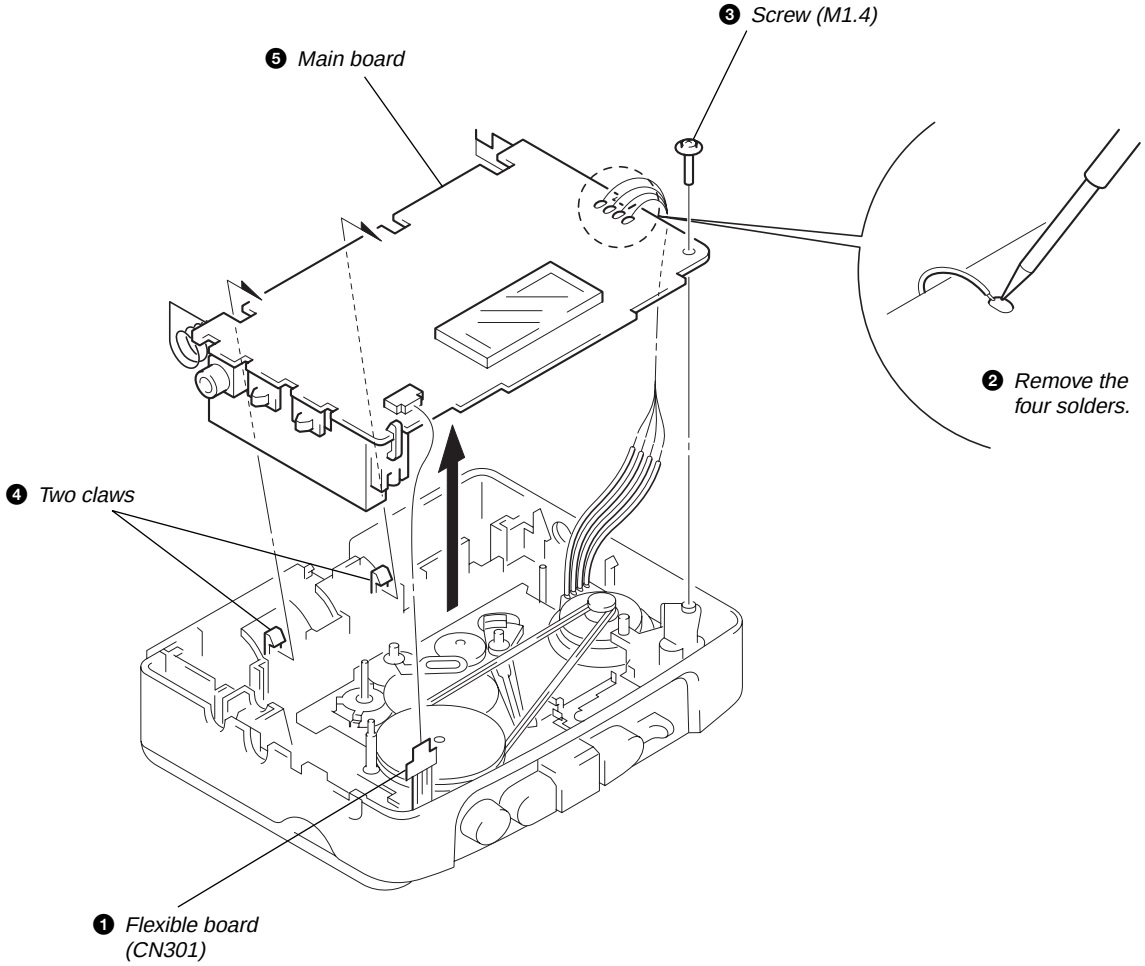
❷ *Remove the cabinet (front) ASSY. (Release all claw* Ⓑ *to* Ⓝ *in alphabetical order.)*





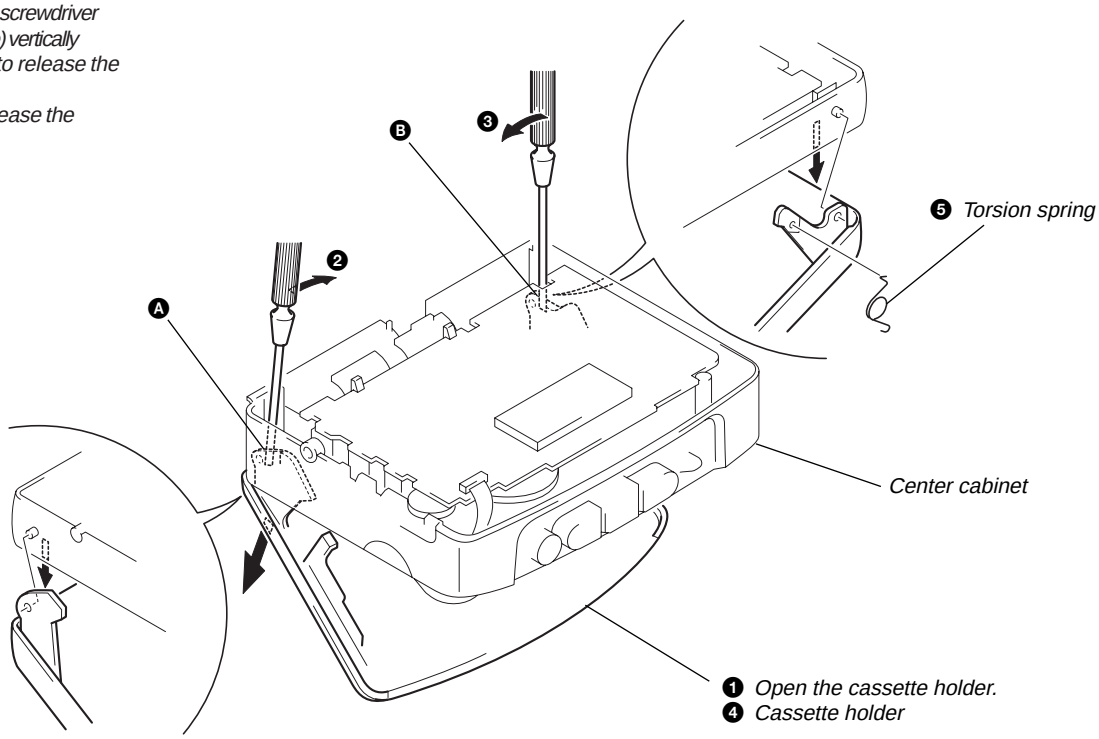
Note: On installation cabinet (front) ASSY adjust the S306 and joint (MB).

2-2. MAIN BOARD

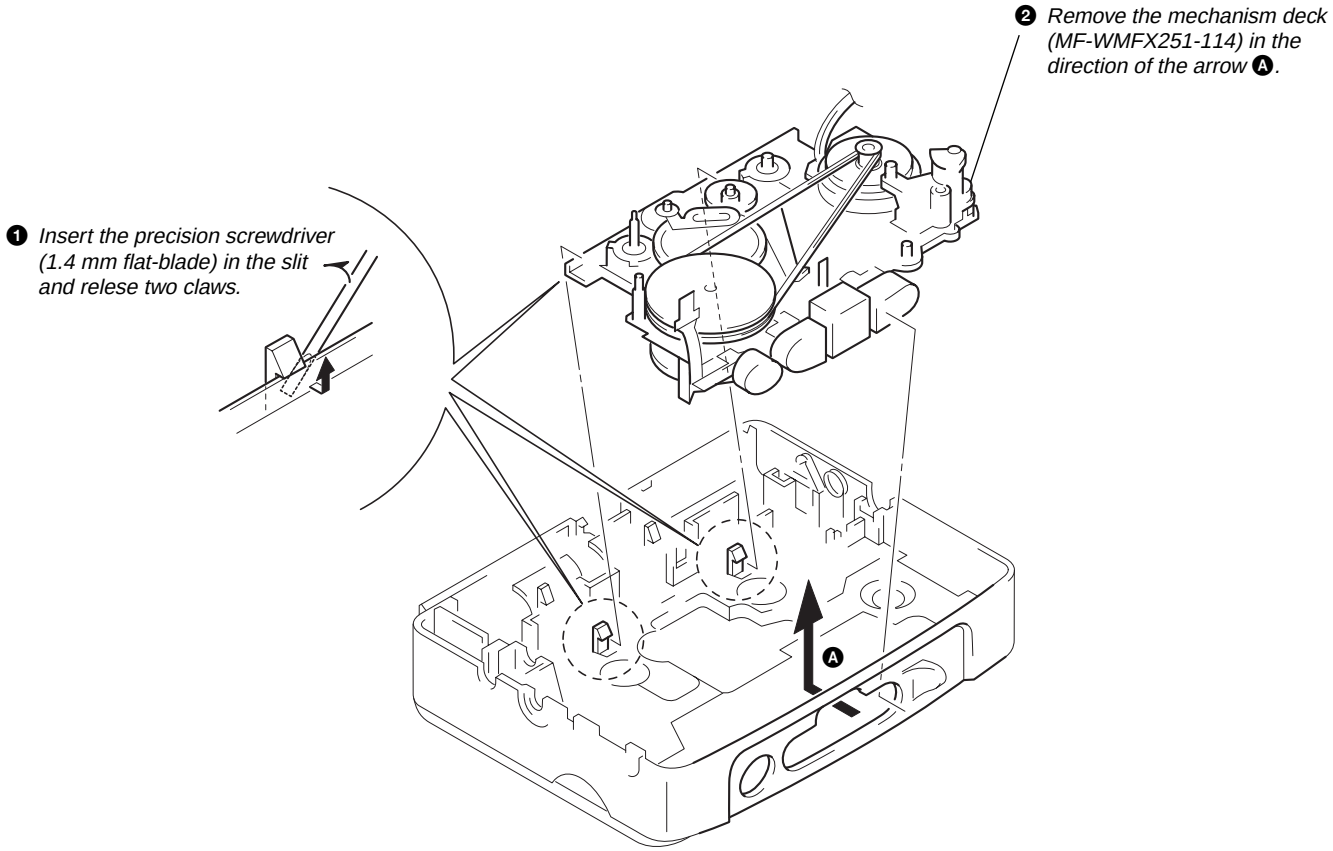


2-3. CASSETTE HOLDER

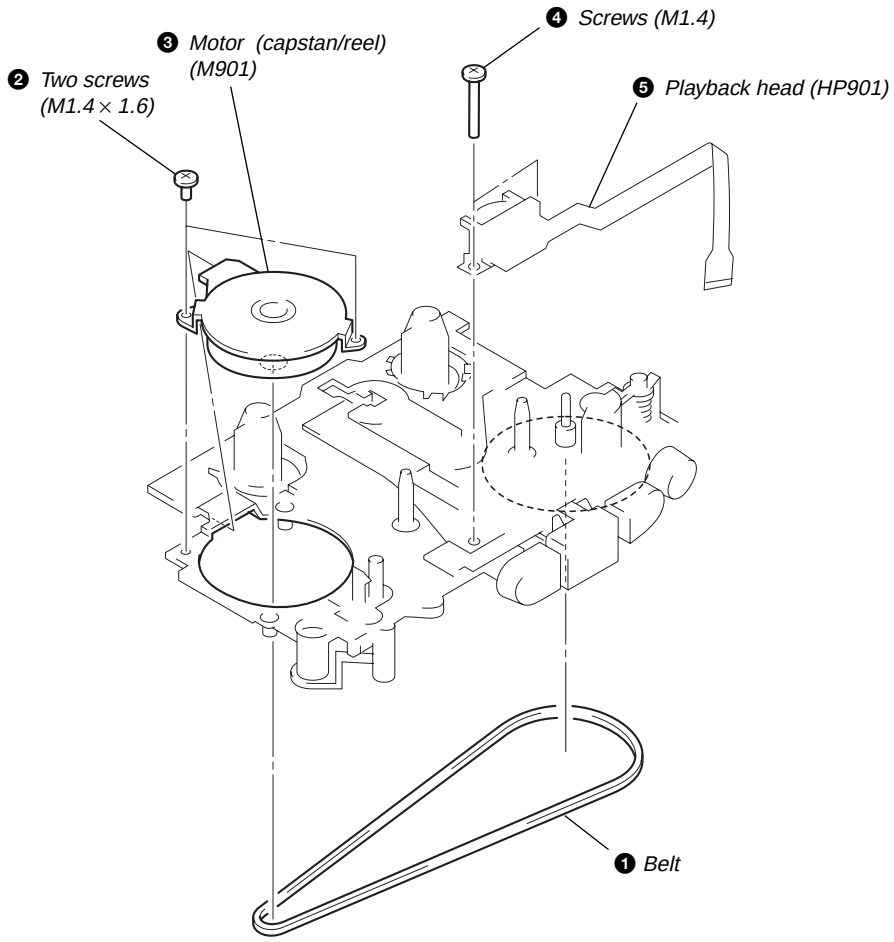
❷ Insert a precision screwdriver (1.4 mm flat-blade) vertically in to portion Ⓐ to release the hinge plate.
❸ Portion Ⓑ to release the hinge plate.



2-4. MECHANISM DECK (MF-WMFX251-114)



2-5. BELT, MOTOR (CAPSTAN/REEL) (M901), PLAYBACK HEAD (HP901)



SECTION 3
MECHANICAL ADJUSTMENTS

Precaution

1. Clean the following parts with a denatured-alcoholmoistened swab:
   playback head pinch roller
   capstan rubber belt
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage (2.5 V) unless otherwise noted.

Torque Measurement

Mode	Torque Meter	Meter Reading
FWD	CQ-102C	20 – 42 g•cm (0.28 – 0.58 oz•inch)
FWD Back Tension		less than 2 g•cm (less than 0.03 oz•inch)
FF, REW	CQ-201B	more than 60 g•cm (more than 0.83 oz•inch)

SECTION 4
ELECTRICAL ADJUSTMENTS

Precaution

- Supplied voltage: 2.5 V
- Switch and control position
  TAPE switch: NORM
  RADIO switch: DX
  VOLUME CONTROL: maximum
  AVLS switch: NORM
  MEGA BASS switch: OFF

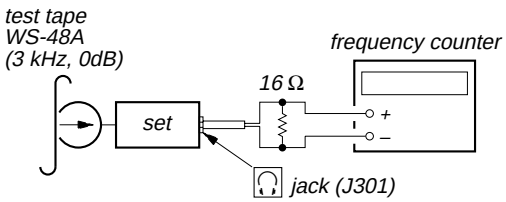
Test tape

Type	Signal	Used for
WS-48A	3 kHz, 0 dB	Tape Speed Adjustment

TAPE SECTION 0 dB=0.775 V

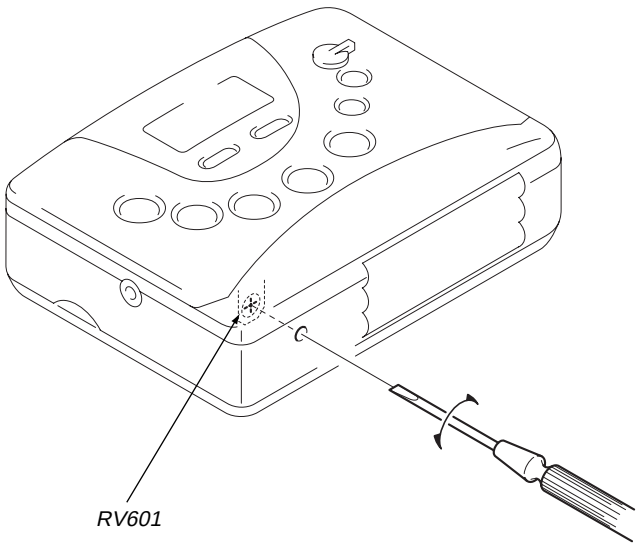
Tape Speed Adjustment

Procedure:



Playback WS-48A (tape center part) and adjust RV601 so that the frequency counter reading becomes 3,000 Hz.
Standard value: 2,985 to 3,015 Hz

Adjustment Location:



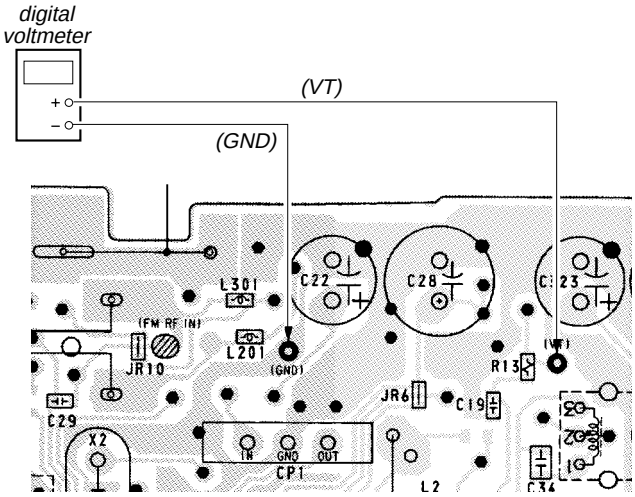
TUNER SECTION

0 dB=1μ V

FM SECTION

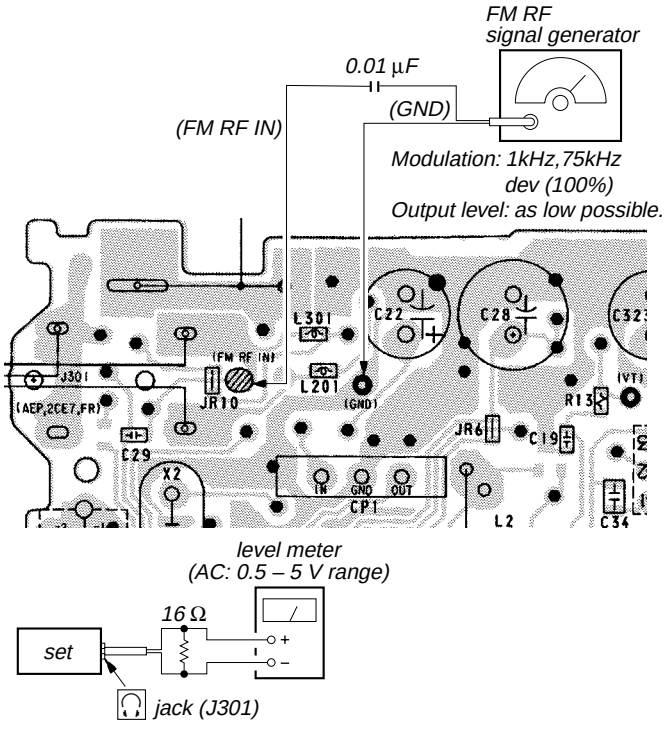
Setting:
RADIO ON/OFF switch: ON
BAND switch: FM

FM Tuning Voltage Adjustment



FM TUNING VOLTAGE ADJUSTMENT
Adjustment value: 9.0V
Standard value: 9.0 – 9.2V
L3
108 MHz

FM Tracking Adjustment

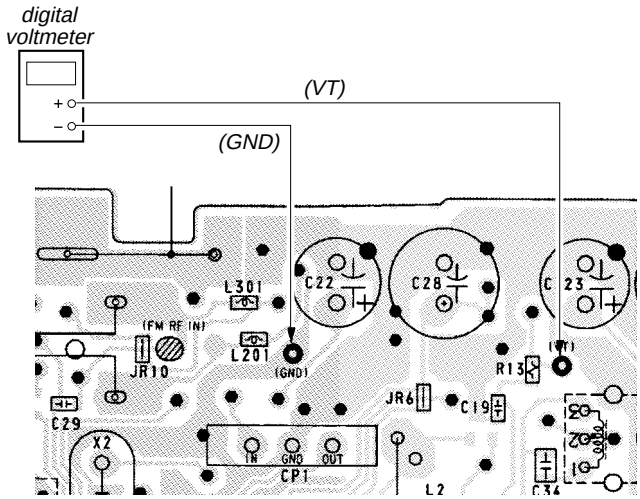


FM TRACKING ADJUSTMENT
Adjust for a maximum reading on level meter
L2
87.5MHz

AM SECTION

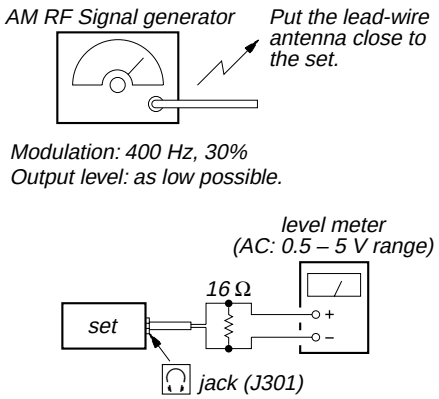
Setting:
RADIO ON/OFF switch: ON
BAND switch: AM

AM Tuning Voltage Adjustment



AM TUNING VOLTAGE ADJUSTMENT
Adjustment value: 1.0V
Standard value: 1.0 – 1.1V
L4
530 kHz

AM IF Adjustment, AM Tracking Adjustment



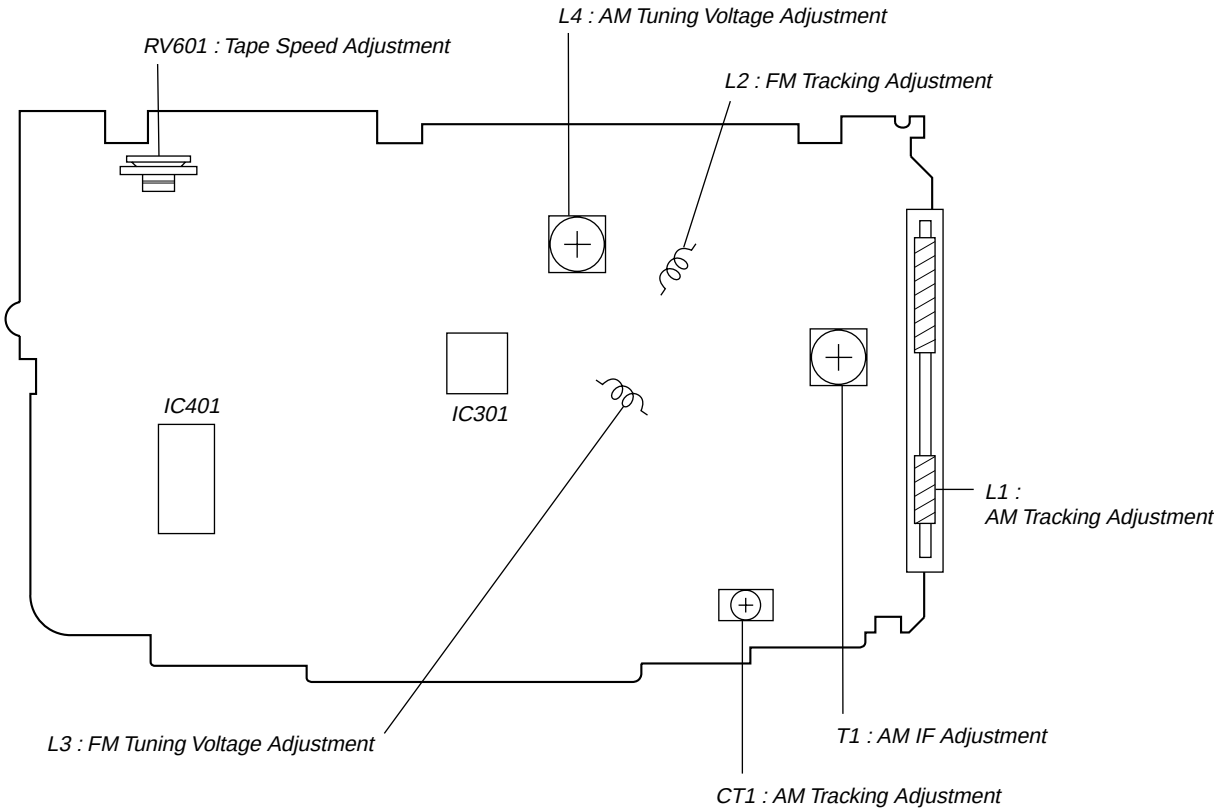
* Repeat the procedures in each adjustment several times, and the tracking adjustment should be finally done by the trimmer capacitors.

AM IF ADJUSTMENT
Adjust for a maximum reading on level meter
T1
450 kHz

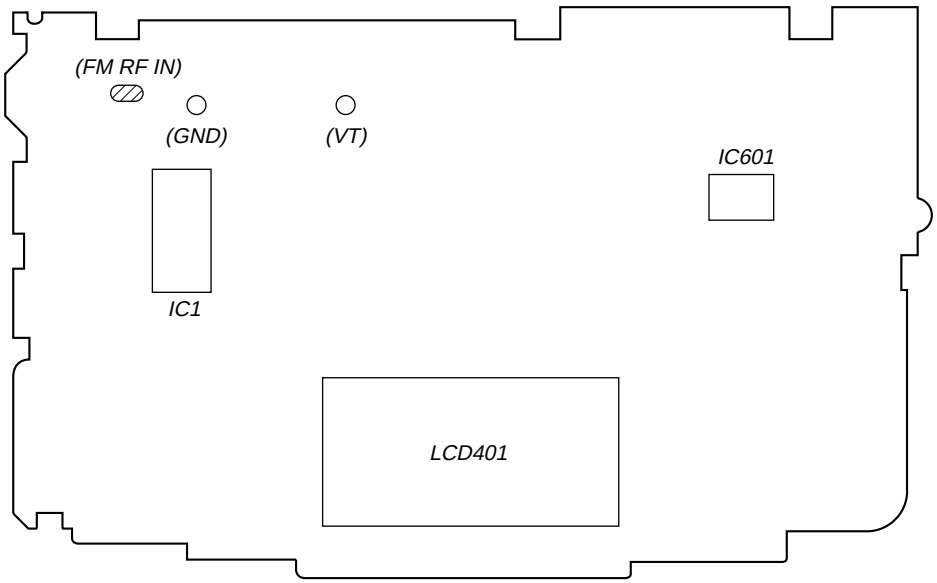
AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L1 (BAR ANTENNA)	CT1
620 kHz	1,400 kHz

Adjustment Location:

[MAIN BOARD]
– Component Side –



[MAIN BOARD]
– Conductor Side –



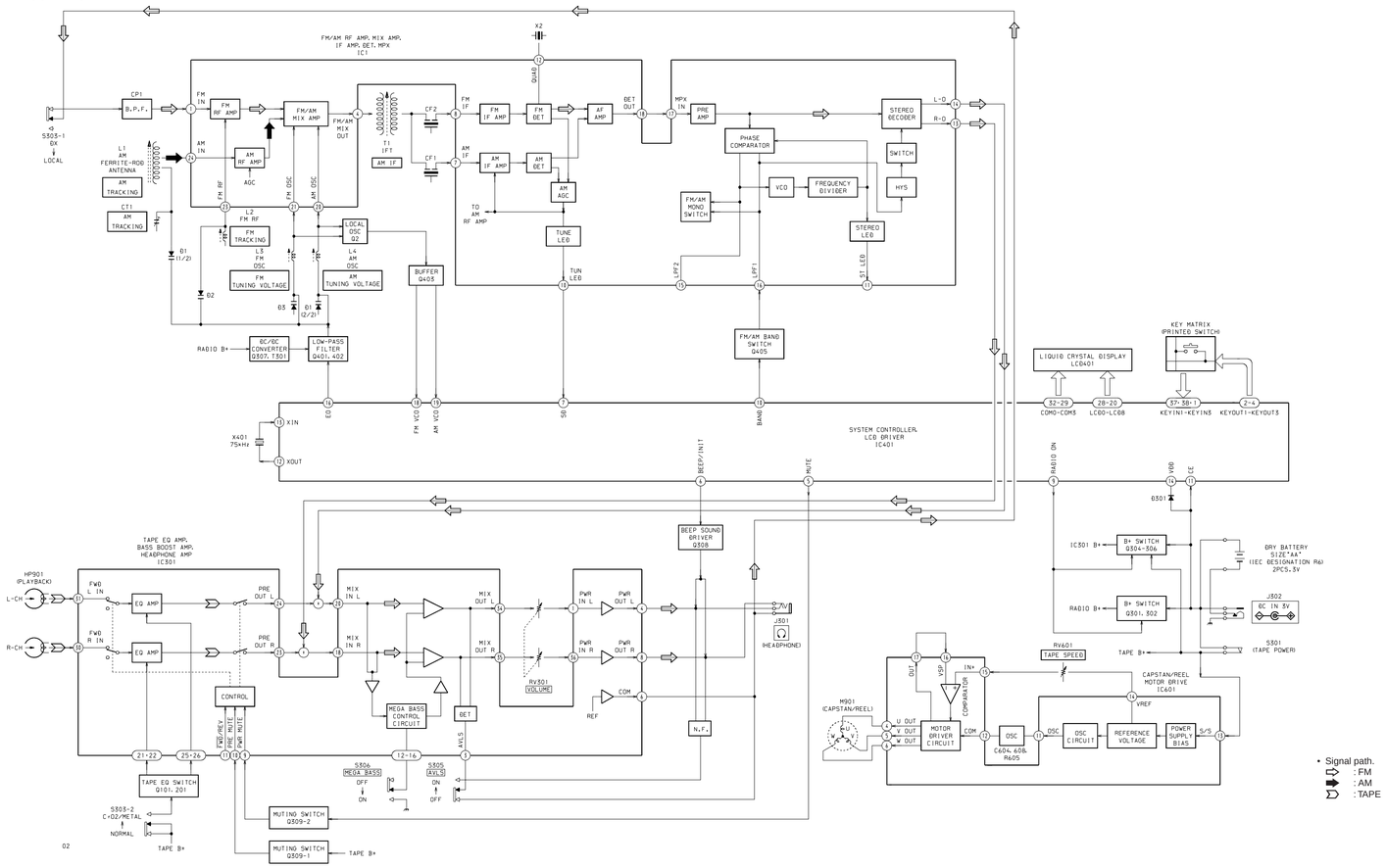
SECTION 5
DIAGRAMS

5-1. EXPLANATION OF IC TERMINALS

MAIN BOARD IC401 μPD17015GS-545-GJG-E1 (SYSTEM CONTROLLER, LCD DRIVER)

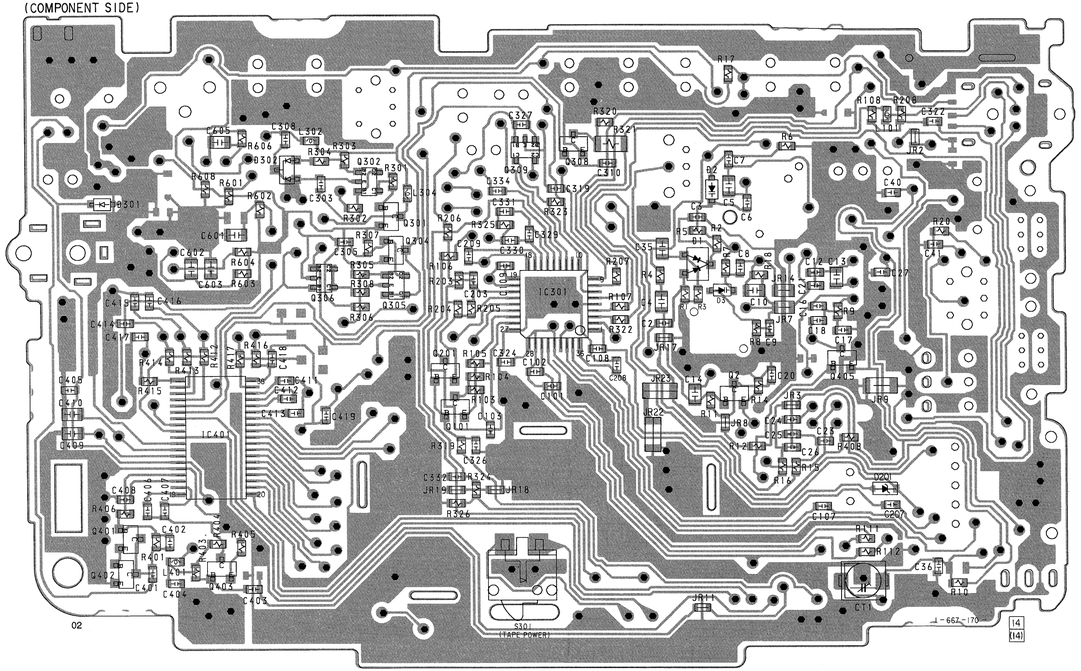
Pin No.	Pin name	I/O	Description
1	KEYIN3	I	Key return signal input terminal
2	KEYOUT1	O	Key strobe signal output terminal
3	KEYOUT2	O	
4	KEYOUT3	O	
5	MUTE	O	Muting on/off control signal output to the LA4582CM (IC301) "L": muting on
6	BEEP/INIT	O	Buzzer sound drive signal output terminal
7	SD	I	Station detector detect signal input from the TA2111F (IC1) SD is present at input of "L
8	TAPEON	I	Tape system power on/off monitor input terminal "H": tape on
9	RADIOON	O	Radio system power supply on/off control signal output "H": radio on
10	BAND	O	Band select signal output to the TA2111F (IC1) "H": FM, "L": AM (MW)
11	CE	I	Power failure detection signal input terminal (fixed at "H")
12	XOUT	O	System clock output terminal (75 kHz)
13	XIN	I	System clock input terminal (75 kHz)
14	VDD	—	Power supply terminal (+3V)
15	GND	—	Ground terminal
16	EO	O	PLL error signal output terminal
17	VREG	—	Power supply terminal (connected to the coupling capacitor)
18	VCOFM	I	FM VCO input terminal
19	VCOAM	I	AM (MW) VCO input terminal
20	LCD8	O	Segment drive signal output to the liquid crystal display (LCD401)
21	LCD7	O	
22	LCD6	O	
23	LCD5	O	
24	LCD4	O	
25	LCD3	O	
26	LCD2	O	
27	LCD1	O	
28	LCD0	O	
29	COM3	O	Common drive signal output to the liquid crystal display (LCD401)
30	COM2	O	
31	COM1	O	
32	COM0	O	
33	VLCD1	—	Terminal for doubler circuit capacitor connection to develop liquid crystal display drive voltage
34	CAP1	—	
35	CAP0	—	
36	VLCD0	—	
37	KEYIN1	I	Key return signal input terminal
38	KEYIN2	I	Key return signal input terminal

5-2. BLOCK DIAGRAM

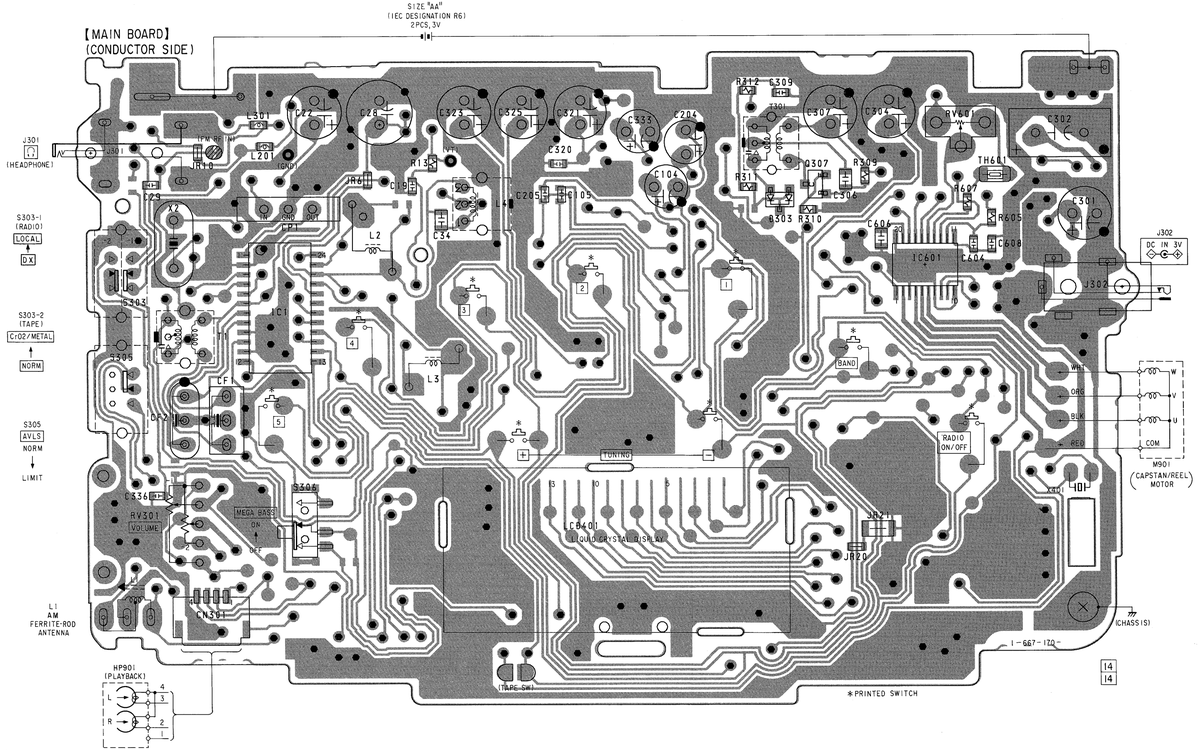


5-3. PRINTED WIRING BOARDS

【MAIN BOARD】
(COMPONENT SIDE)



【MAIN BOARD】
(CONDUCTOR SIDE)



Note:

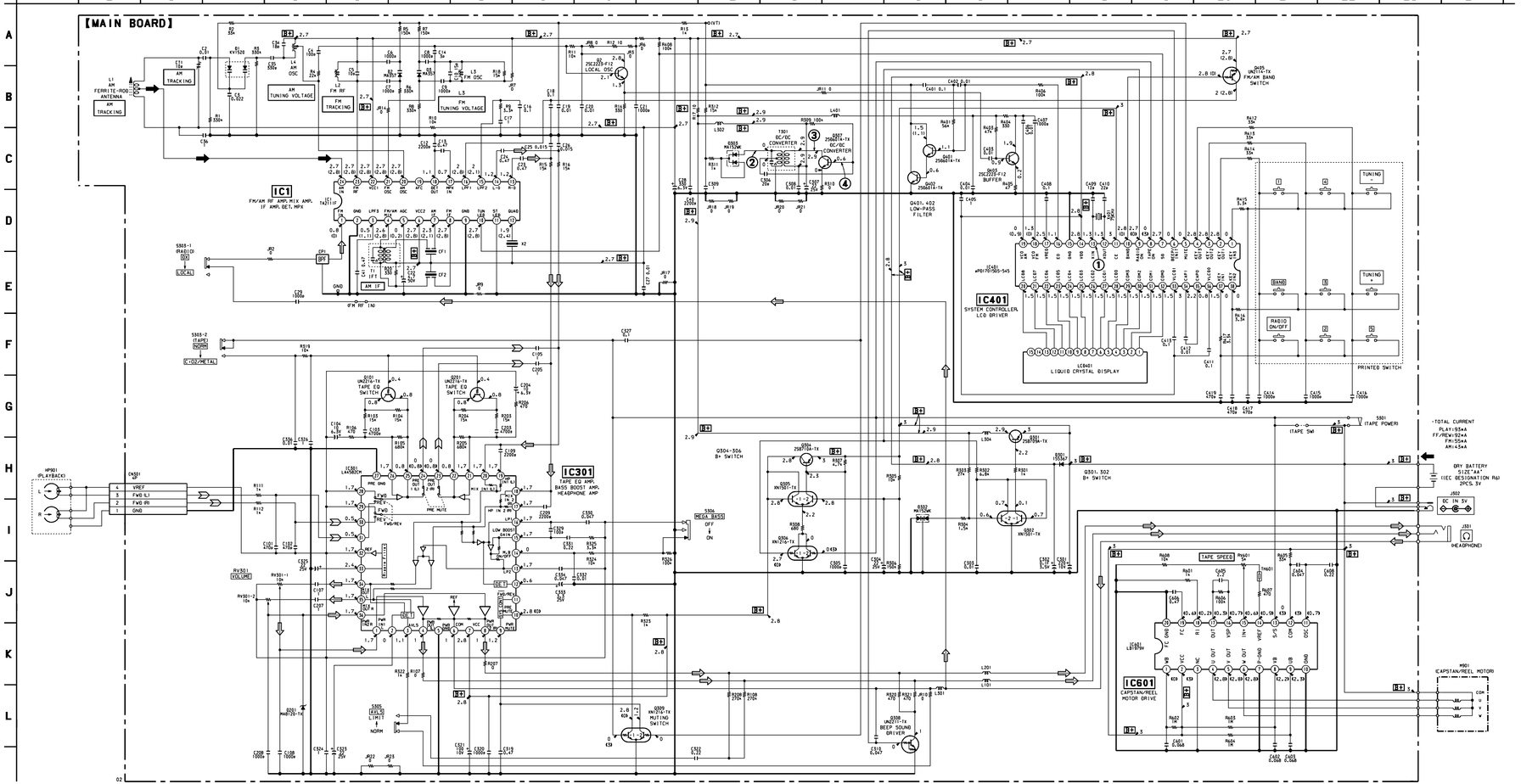
- ○——○ : parts extracted from the component side.
- ○——○ : parts extracted from the conductor side.
- ○—|—○ : indicates side identified with part number.
- ● : Through hole.
- △ : internal component.
- ▨ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

● **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D1	D-7	IC1	D-14	Q201	E-5	Q308	B-6
D2	C-7	IC301	D-6	Q301	C-4	Q309	C-5
D3	D-7	IC401	E-3	Q302	C-4	Q401	F-2
D201	F-9	IC601	C-20	Q304	C-4	Q402	G-2
D301	C-2			Q305	D-4	Q403	F-3
D302	C-3	Q2	E-7	Q306	D-4	Q405	D-8
D303	C-18	Q101	E-5	Q307	B-19		



● **Waveforms**

IC401 ⑬ (XIN)
500 mV/DIV, 5μs/DIV
1.5 Vp-p
75.2 kHz

Q307 (COLLECTOR)
500 mV/DIV, 100 ns/DIV
2 Vp-p
3.38 MHz

T301 (SECONDARY)
5 V/DIV, 200 ns/DIV
20.6 Vp-p
2.53 MHz

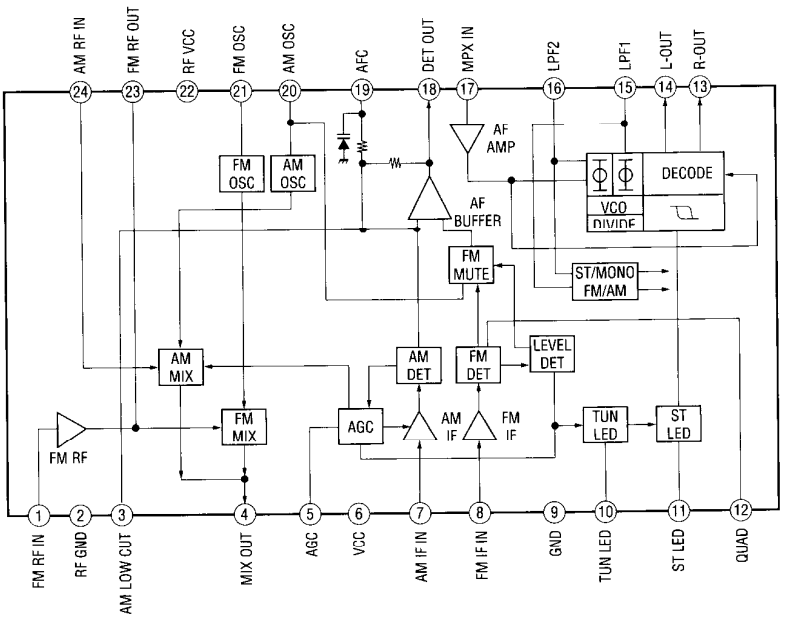
Q307 (BASE)
100 mV/DIV, 100 ns/DIV
0.3 Vp-p
3.38 MHz

Note:

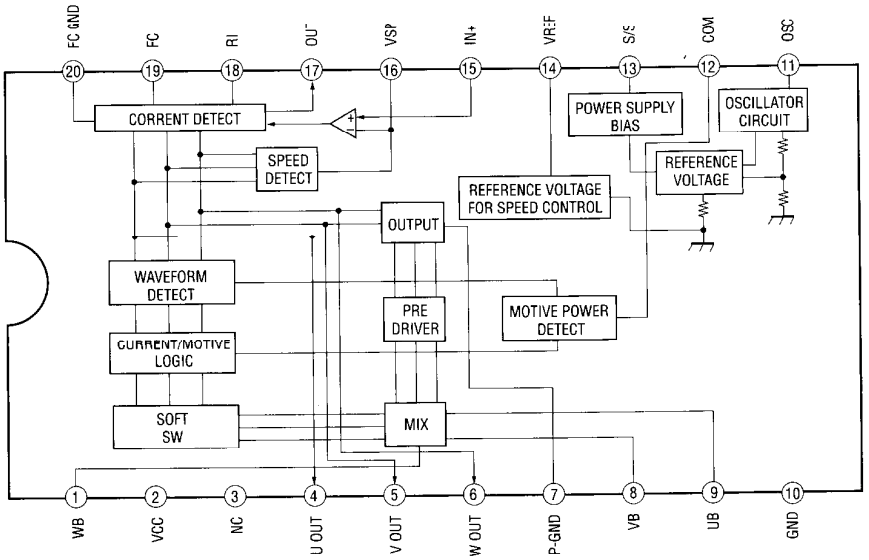
- All capacitors are in μF unless otherwise noted. pF: μμF
  50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.
- B+ : B+ Line.
- Power voltage is dc 3V and fed with regulated dc power supply from battery terminal.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : AM
  << >> : TAPE PLAYBACK
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ➡ : AM
  ⇨ : TAPE PLAYBACK

• IC Block Diagrams

IC1 TA2111F-(EL)



IC601 LB1979V-TLM

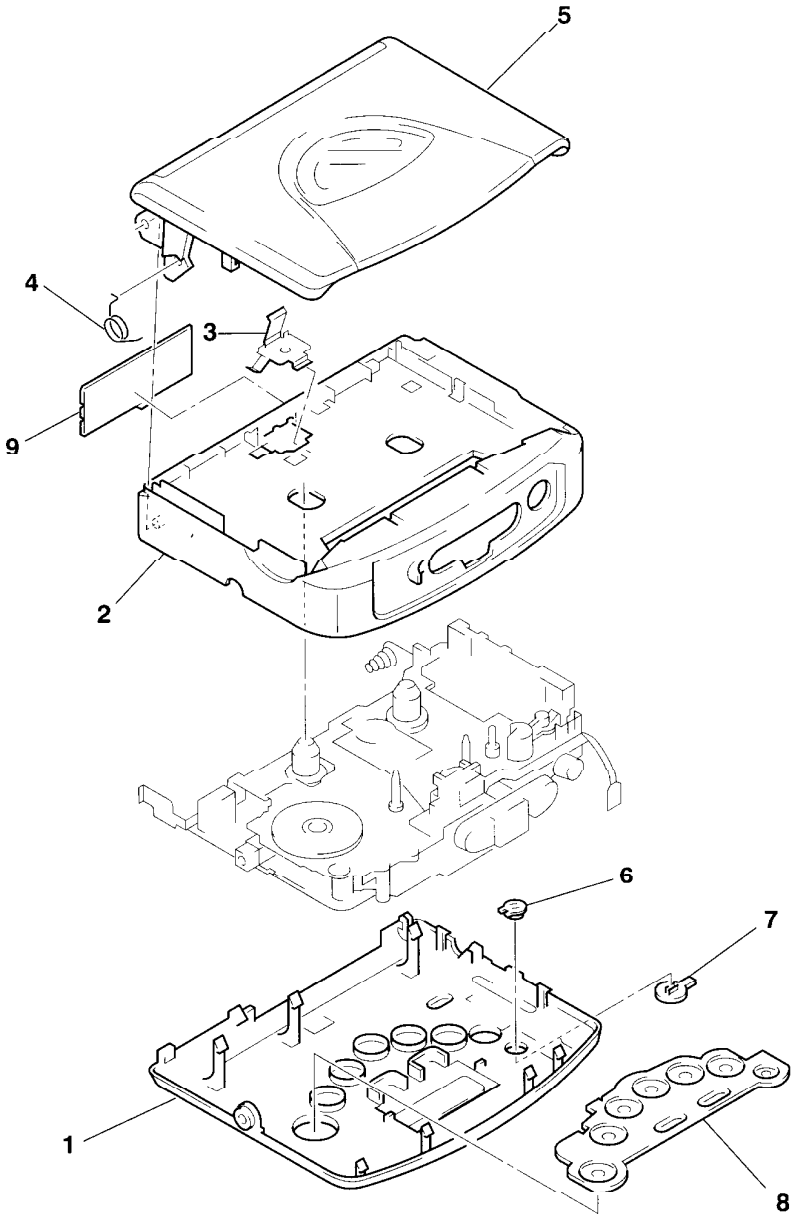


SECTION 6
EXPLODED VIEWS

NOTE :

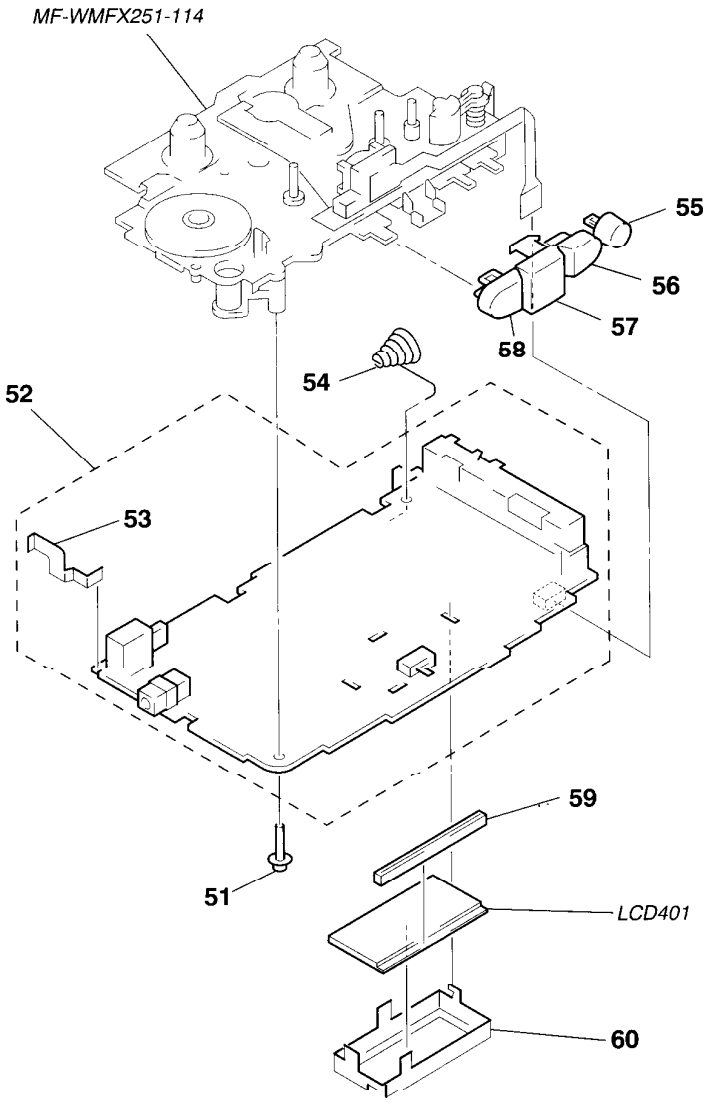
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Color indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ••• (RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked " * "are not stocked since they are seldom required for routine service. Some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

6-1. MAIN SECTION-1



Ref. No.	Part No.	Description	Remark
1	X-3377-275-1	CABINET (FRONT) SUB ASSY (BLUE)	
1	X-3377-276-1	CABINET (FRONT) SUB ASSY (PURPLE)	
2	X-3377-277-1	CABINET (CENTER) SUB ASSY (BLUE)	
2	X-3377-278-1	CABINET (CENTER) SUB ASSY (PURPLE)	
3	3-007-011-01	SPRING (CASSETTE)	
4	3-007-012-01	SPRING (TORSION)	
5	X-3377-279-1	HOLDER SUB ASSY, CASSETTE (BLUE)	
5	X-3377-280-1	HOLDER SUB ASSY, CASSETTE (PURPLE)	
6	3-019-484-01	JOINT (MB)	
7	3-035-412-01	KNOB (M/B) (BLUE)	
7	3-035-412-11	KNOB (M/B) (PURPLE)	
8	3-035-413-01	BUTTON (PRESET) (BLUE)	
8	3-035-413-11	BUTTON (PRESET) (PURPLE)	
9	3-035-415-01	LID, BATTERY CASE (BLUE)	
9	3-035-415-11	LID, BATTERY CASE (PURPLE)	

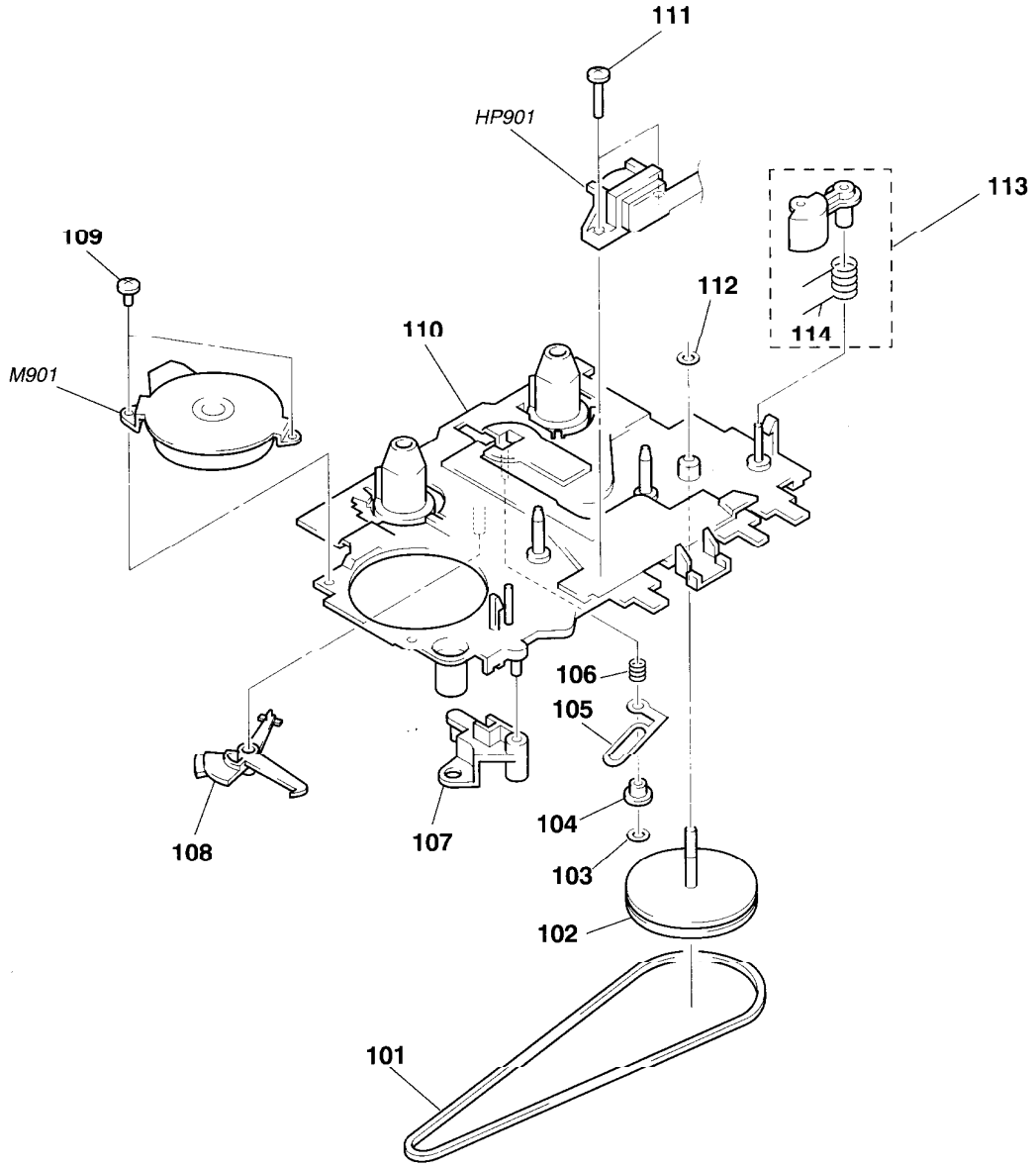
6-2. MAIN SECTION-2



Ref. No.	Part No.	Description	Remark
51	3-015-285-01	SCREW (M1.4),TOOTHED LOCK (WH)	
52	A-3016-995-A	MAIN BOARD, COMPLETE	
53	3-007-009-01	TERMINAL (+), BATTERY	
54	3-007-010-01	TERMINAL (-), BATTERY	
55	3-035-421-01	BUTTON (STOP) (■) (BLUE)	
55	3-035-421-11	BUTTON (STOP) (■) (PURPLE)	
56	3-035-419-01	BUTTON (FF) (▶▶) (BLUE)	
56	3-035-419-11	BUTTON (FF) (▶▶) (PURPLE)	
57	3-035-418-01	BUTTON (PLAY) (▶) (BLUE)	
57	3-035-418-11	BUTTON (PLAY) (▶) (PURPLE)	
58	3-035-420-01	BUTTON (REW) (◀◀) (BLUE)	
58	3-035-420-11	BUTTON (REW) (◀◀) (PURPLE)	
* 59	1-694-178-11	CONNECTOR, RUBBER	
* 60	3-007-007-01	HOLDER, LCD	
LCD401	1-801-462-11	DISPLAY PANEL, LIQUID CRYSTAL	

Remark

6-3. MECHANISM DECK SECTION (MF-WMFX251-114)



Ref. No.	Part No.	Description	Remark
101	3-013-560-11	BELT	
102	X-3369-747-1	WHEEL ASSY, CAPSTAN	
103	3-728-091-01	WASHER, STOPPER	
104	3-923-530-01	SLEEVE (M)	
105	3-921-335-01	WASHER, LEVER	
106	3-920-990-01	SPRING (UD), COMPRESSION	
107	3-007-762-01	STOPPER	
108	3-938-613-01	LEVER (OW), DETECTION	
109	3-703-816-31	SCREW (M1.4), SPECIAL HEAD	

Ref. No.	Part No.	Description	Remark
110	X-3372-959-1	CHASSIS COMP ASSY (GL-0)	
111	3-703-816-73	SCREW (M1.4), SPECIAL HEAD	
112	3-921-797-01	WASHER	
113	X-3369-749-1	PINCH LEVER (N) ASSY	
114	3-920-996-01	SPRING (PINCH N)	
HP901	1-500-403-11	HEAD, MAGNETIC (PLAYBACK)	
M901	1-763-073-11	MOTOR (INCLUDING PULLEY) (CAPSTAN/REEL)	

SECTION 7
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 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 : µ , for example :
  uA.... : µ A.... , uPA.... : µ PA....
  uPB.... : µ PB.... , uPC.... : µ PC....
  uPD.... : µ PD....
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H

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

Ref. No.	Part No.	Description			Remark
	A-3016-995-A	MAIN BOARD, COMPLETE			
		**********			
	3-007-009-01	TERMINAL (+), BATTERY			
	3-007-010-01	TERMINAL (-), BATTERY			
		< CAPACITOR >			
C2	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C3	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C4	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C5	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C6	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C7	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C8	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C9	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C10	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C12	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C13	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C14	1-163-220-11	CERAMIC CHIP	3PF	0.25PF	50V
C16	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C17	1-115-156-11	CERAMIC CHIP	1uF		10V
C18	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C19	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C20	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C21	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C22	1-126-963-11	ELECT	4.7uF	20%	50V
C23	1-113-619-11	CERAMIC CHIP	0.47uF		10V
C24	1-113-619-11	CERAMIC CHIP	0.47uF		10V
C25	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C26	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C27	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C28	1-126-924-11	ELECT	330uF	20%	6.3V
C29	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C34	1-163-163-00	CERAMIC CHIP	18PF	5%	50V
C35	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C36	1-115-156-11	CERAMIC CHIP	1uF		10V
C40	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C41	1-113-619-11	CERAMIC CHIP	0.47uF		10V
C101	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C102	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C103	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C104	1-126-157-11	ELECT	10uF	20%	16V
C105	1-115-156-11	CERAMIC CHIP	1uF		10V
C107	1-115-156-11	CERAMIC CHIP	1uF		10V
C108	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C109	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C203	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C204	1-126-157-11	ELECT	10uF	20%	16V
C205	1-115-156-11	CERAMIC CHIP	1uF		10V
C207	1-115-156-11	CERAMIC CHIP	1uF		10V
C208	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C209	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C301	1-126-934-11	ELECT	220uF	20%	10V
C302	1-117-579-11	DOUBLE LAYER	0.1F	0	3.5V
C303	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C304	1-128-551-11	ELECT	22uF	20%	25V
C305	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C306	1-163-100-00	CERAMIC CHIP	20PF	5%	50V
C307	1-128-551-11	ELECT	22uF	20%	25V
C308	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C309	1-115-156-11	CERAMIC CHIP	1uF		10V
C310	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C319	1-113-619-11	CERAMIC CHIP	0.47uF		10V
C320	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C321	1-104-665-11	ELECT	100uF	20%	10V
C322	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C323	1-128-551-11	ELECT	22uF	20%	25V
C324	1-115-156-11	CERAMIC CHIP	1uF		10V
C325	1-128-551-11	ELECT	22uF	20%	25V
C326	1-115-156-11	CERAMIC CHIP	1uF		10V
C327	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C329	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C330	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C331	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C332	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C333	1-126-162-11	ELECT	3.3uF	20%	50V
C334	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C336	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C401	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C402	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C403	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C404	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C405	1-115-156-11	CERAMIC CHIP	1uF		10V
C406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C407	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C408	1-164-156-11	CERAMIC CHIP	0.1uF		25V

MAIN

Ref. No.	Part No.	Description			Remark
C409	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C410	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C411	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C412	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C413	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C414	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C415	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C416	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C417	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C418	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C419	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C601	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C602	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C603	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C604	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C605	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C606	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C608	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
		< FILTER >			
CF1	1-760-345-21	FILTER, CERAMIC			
CF2	1-767-733-11	FILTER ASSY, CERAMIC			
		< CONNECTOR >			
* CN301	1-778-774-11	HOUSING, CONNECTOR (FPC) 4P			
		< COMPOSITION CIRCUIT BLOCK >			
CP1	1-236-711-21	FILTER, BAND PASS			
		< TRIMMER >			
CT1	1-141-422-11	CAP, ADJ 10PF (AM TRACKING)			
		< DIODE >			
D1	8-719-049-75	DIODE KV1520TL00			
D2	8-719-053-30	DIODE MA2S357-(TX). SO			
D3	8-719-053-30	DIODE MA2S357-(TX). SO			
D201	8-719-056-89	DIODE UDZ-TE-17-12B			
D301	8-719-049-09	DIODE 1SS367-T3SONY			
D302	8-719-801-78	DIODE 1SS184			
D303	8-719-801-78	DIODE 1SS184			
		< IC >			
IC1	8-759-493-20	IC TA2111F-(EL)			
IC301	8-759-285-29	IC LA4582CM			
IC401	8-759-459-71	IC uPD17015GS-545-GJG-E1			
IC601	8-759-447-73	IC LB1979V-TLM			
		< JACK >			
J301	1-565-287-11	JACK (🎧)			
J302	1-750-061-11	JACK,DC(POLARITY UNIFIED TYPE)			(DC IN 3V)
		< JUMPER RESISTOR >			
JR2	1-216-864-11	METAL CHIP	0	5%	1/16W
JR3	1-216-864-11	METAL CHIP	0	5%	1/16W
JR6	1-216-864-11	METAL CHIP	0	5%	1/16W

Ref. No.	Part No.	Description			Remark
JR7	1-216-295-00	METAL CHIP	0	5%	1/10W
JR8	1-216-864-11	METAL CHIP	0	5%	1/16W
JR9	1-216-296-91	METAL CHIP	0	5%	1/8W
JR10	1-216-864-11	METAL CHIP	0	5%	1/16W
JR11	1-216-864-11	METAL CHIP	0	5%	1/16W
JR14	1-216-295-00	METAL CHIP	0	5%	1/10W
JR17	1-216-864-11	METAL CHIP	0	5%	1/16W
JR18	1-216-864-11	METAL CHIP	0	5%	1/16W
JR19	1-216-864-11	METAL CHIP	0	5%	1/16W
JR20	1-216-864-11	METAL CHIP	0	5%	1/16W
JR21	1-216-296-91	METAL CHIP	0	5%	1/8W
JR22	1-216-296-91	METAL CHIP	0	5%	1/8W
JR23	1-216-296-91	METAL CHIP	0	5%	1/8W
		< COIL >			
L1	1-501-960-11	ANTENNA, FERRITE-ROD (MW)			(AM TRACKING)
L2	1-416-528-11	COIL, AIR-CORE (FM TRACKING)			
L3	1-416-449-11	COIL, AIR-CORE (FM TUNING VOLTAGE)			
L4	1-416-423-11	COIL (WITH CORE) (AM OSC)			(AM TUNING VOLTAGE)
L101	1-414-760-21	FERRITE			
L201	1-414-760-21	FERRITE			
L301	1-414-760-21	FERRITE			
L302	1-414-760-21	FERRITE			
L304	1-414-760-21	FERRITE			
L401	1-414-760-21	FERRITE			
		< TRANSISTOR >			
Q2	8-729-102-27	TRANSISTOR 2SC2223-T1F12			
Q101	8-729-424-67	TRANSISTOR UN2216			
Q201	8-729-424-67	TRANSISTOR UN2216			
Q301	8-729-216-22	TRANSISTOR 2SA1162-G			
Q302	8-729-402-13	TRANSISTOR XN1501			
Q304	8-729-041-05	TRANSISTOR 2SB710A-TX			
Q305	8-729-402-13	TRANSISTOR XN1501			
Q306	8-729-421-23	TRANSISTOR XN1216			
Q307	8-729-422-27	TRANSISTOR 2SD601A-Q			
Q308	8-729-421-22	TRANSISTOR UN2211			
Q309	8-729-421-23	TRANSISTOR XN1216			
Q401	8-729-422-27	TRANSISTOR 2SD601A-Q			
Q402	8-729-422-27	TRANSISTOR 2SD601A-Q			
Q403	8-729-102-27	TRANSISTOR 2SC2223-T1F12			
Q405	8-729-901-46	TRANSISTOR DTA114YK			
		< RESISTOR >			
R1	1-216-851-11	METAL CHIP	330K	5%	1/16W
R2	1-216-839-11	METAL CHIP	33K	5%	1/16W
R3	1-216-851-11	METAL CHIP	330K	5%	1/16W
R4	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5	1-216-847-11	METAL CHIP	150K	5%	1/16W
R6	1-216-851-11	METAL CHIP	330K	5%	1/16W
R7	1-216-847-11	METAL CHIP	150K	5%	1/16W
R8	1-216-851-11	METAL CHIP	330K	5%	1/16W
R9	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R10	1-216-833-91	RES,CHIP	10K	5%	1/16W
R11	1-216-833-91	RES,CHIP	10K	5%	1/16W
R12	1-216-797-11	METAL CHIP	10	5%	1/16W

Ref. No.	Part No.	Description			Remark
R13	1-216-821-11	METAL CHIP	1K	5%	1/16W
R14	1-216-815-11	METAL CHIP	330	5%	1/16W
R15	1-216-835-11	METAL CHIP	15K	5%	1/16W
R16	1-216-835-11	METAL CHIP	15K	5%	1/16W
R17	1-216-797-11	METAL CHIP	10	5%	1/16W
R18	1-216-835-11	METAL CHIP	15K	5%	1/16W
R20	1-216-815-11	METAL CHIP	330	5%	1/16W
R103	1-216-835-11	METAL CHIP	15K	5%	1/16W
R104	1-216-835-11	METAL CHIP	15K	5%	1/16W
R105	1-216-855-11	METAL CHIP	680K	5%	1/16W
R106	1-216-817-11	METAL CHIP	470	5%	1/16W
R107	1-216-864-11	METAL CHIP	0	5%	1/16W
R108	1-216-850-11	METAL CHIP	270K	5%	1/16W
R111	1-216-821-11	METAL CHIP	1K	5%	1/16W
R112	1-216-821-11	METAL CHIP	1K	5%	1/16W
R203	1-216-835-11	METAL CHIP	15K	5%	1/16W
R204	1-216-835-11	METAL CHIP	15K	5%	1/16W
R205	1-216-855-11	METAL CHIP	680K	5%	1/16W
R206	1-216-817-11	METAL CHIP	470	5%	1/16W
R207	1-216-864-11	METAL CHIP	0	5%	1/16W
R208	1-216-850-11	METAL CHIP	270K	5%	1/16W
R301	1-216-821-11	METAL CHIP	1K	5%	1/16W
R302	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R303	1-216-838-11	METAL CHIP	27K	5%	1/16W
R304	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R305	1-216-833-91	RES,CHIP	10K	5%	1/16W
R306	1-216-847-11	METAL CHIP	150K	5%	1/16W
R307	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R308	1-216-819-11	METAL CHIP	680	5%	1/16W
R309	1-216-845-11	METAL CHIP	100K	5%	1/16W
R310	1-216-864-11	METAL CHIP	0	5%	1/16W
R311	1-216-821-11	METAL CHIP	1K	5%	1/16W
R312	1-216-835-11	METAL CHIP	15K	5%	1/16W
R319	1-216-833-91	RES,CHIP	10K	5%	1/16W
R320	1-216-817-11	METAL CHIP	470	5%	1/16W
R321	1-216-190-00	RES,CHIP	470	5%	1/8W
R322	1-216-821-11	METAL CHIP	1K	5%	1/16W
R323	1-216-821-11	METAL CHIP	1K	5%	1/16W
R324	1-216-833-91	RES,CHIP	10K	5%	1/16W
R325	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R326	1-216-845-11	METAL CHIP	100K	5%	1/16W
R401	1-216-842-11	METAL CHIP	56K	5%	1/16W
R403	1-216-841-11	METAL CHIP	47K	5%	1/16W
R404	1-216-815-11	METAL CHIP	330	5%	1/16W
R405	1-216-805-11	METAL CHIP	47	5%	1/16W
R406	1-216-845-11	METAL CHIP	100K	5%	1/16W
R408	1-216-845-11	METAL CHIP	100K	5%	1/16W
R412	1-216-839-11	METAL CHIP	33K	5%	1/16W
R413	1-216-839-11	METAL CHIP	33K	5%	1/16W
R414	1-216-839-11	METAL CHIP	33K	5%	1/16W
R415	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R416	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R417	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R601	1-216-821-11	METAL CHIP	1K	5%	1/16W
R602	1-216-857-11	METAL CHIP	1M	5%	1/16W
R603	1-216-857-11	METAL CHIP	1M	5%	1/16W
R604	1-216-857-11	METAL CHIP	1M	5%	1/16W
R605	1-216-839-11	METAL CHIP	33K	5%	1/16W
R606	1-216-845-11	METAL CHIP	100K	5%	1/16W
R607	1-216-817-11	METAL CHIP	470	5%	1/16W
R608	1-216-833-91	RES,CHIP	10K	5%	1/16W

< VARIABLE RESISTOR >

RV301	1-225-362-11	RES, VAR, CARBON (VOLUME)
RV601	1-241-784-11	RES, ADJ, CARBON 5K (TAPE SPEED)

< SWITCH >

S301	1-762-742-31	SWITCH, DETECTION (SMALL TYPE) (TAPE POWER)
S303	1-692-298-11	SWITCH, SLIDE (NORM, CrO2/METAL DX/ LOCAL)
S305	1-692-298-11	SWITCH, SLIDE (AVLS)
S306	1-572-922-11	SWITCH, SLIDE (MEGA BASS)

< TRANSFORMER >

T1	1-406-694-11	COIL, AM IFT (AM IF)
T301	1-426-917-11	TRANSFORMER, DC-DC CONVERTER

< THERMISTOR >

TH601	1-810-794-11	THERMISTOR, POSITIVE

< VIBRATOR >

X2	1-767-733-11	FILTER ASSY, CERAMIC
X401	1-577-262-11	VIBRATOR, CRYSTAL (75kHz)

****

MISCELLANEOUS
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* 59	1-694-178-11	CONNECTOR, RUBBER	
HP901	1-500-403-11	HEAD, MAGNETIC (PLAYBACK)	
LCD401	1-801-462-11	DISPLAY PANEL, LIQUID CRYSTAL	
M901	1-763-073-11	MOTOR (INCLUDING PULLEY) (CAPSTAN/ REEL)	

****

ACCESSORIES & PACKING MATERIALS
****

	3-861-492-11	MANUAL, INSTRUCTION (ENGLISH) (US)
	3-861-492-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH) (Canadian)
	8-953-342-99	HEADPHONE,STEREO MDR-24//C5SET

9-926-987-11

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