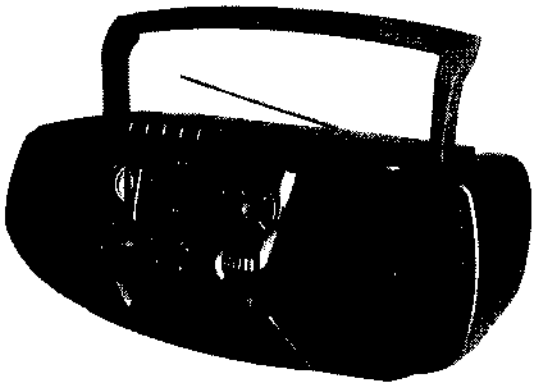
CFD-V27L

SERVICE MANUAL

AEP Model
UK Model



Model Name Using • Similar Mechanism	CFD-V17
CD Mechanism Type	KSM-213CDM
Optical Pick-up Type	KSS-213CDM
Tape Transport Mechanism Type	MF-V10-117

SPECIFICATIONS

CD player section

System: Compact disc digital audio system
Laser diode properties: Material: GaAlAs
Wavelength:780 nm
Emission duration : Continuous
Laser output : Less than 44.6 µW
(This output is the value measured at a distance of about 200 mm from the objective lens surface on the optical pick-up block with 7 mm aperture.)
Spindle speed: 200 r/min (rpm) to 500 r/min (rpm) (CLV)
Number of channels: 2
Frequency response: 20 – 20,000 Hz + 1/-2 dB
Wow and flutter: Below measurable limit

Radio section

Frequency range

FM	Italy	87.5 – 108 MHz
	Other models	87.6 – 107 MHz
MW	Italy	526.5 – 1,606.5 kHz
	Other models	531 – 1,602 kHz
LW	Italy	148.5 – 283.5 kHz
	Other models	153 – 279 kHz

IF: FM : 10.7 MHz
AM/MW/LW : 455 kHz
Aerials: FM : Telescopic aerial
AM/MW/LW : Built-in ferrite bar aerial

Cassette-corder section

Recording system: 4 -track 2 channel stereo
Fast winding time: Approx. 120 s (sec.) with Sony cassette C-60
Frequency response: TYPE I (normal) : 70 – 10,000 Hz

General

Speakers: Full range : 10 cm dia., 3.2 Ω, cone type (2)
Outputs: Headphones jack (stereo minijack)
For 16 – 68 Ω impedance headphones
Maximum power output: 2.3 W + 2.3 W
Power requirements: For CD radio cassette-corder :
230 V AC, 50 Hz
9 V DC, 6 R 20 (size D) batteries
Power consumption: AC 20 W
Battery life: For CD radio cassette-corder:

FM recording	
Sony R20P : approx. 13.5 h	
Sony alkaline LR20 : approx. 20 h	
Tape playback	
Sony R20P : approx. 7.5 h	
Sony alkaline LR20 : approx. 15 h	
CD playback	
Sony R20P : approx. 2.5 h	
Sony alkaline LR20 : approx. 7 h	

Dimensions: Approx. 420 × 165 × 256 mm (w/h/d) (16 5/8 × 6 1/2 × 10 1/8 inches) (incl. projecting parts)
Mass (incl. batteries): Approx. 4.1 kg (9 lb. 1 oz)
Supplied accessories: AC power cord (1)

Design and specifications are subject to change without notice.

CD RADIO CASSETTE-CORDER

MICROFILM

SONY®

TABLE OF CONTENTS

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.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. 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.

CFD-V177L

SERVICE MANUAL

AEP Model
UK Model

CFD-V177L is the CD Radio Cassette Corder.
The mechanical and electrical specifications of CFD-V177L are almost same as CFD-V27L.
So this manual contains only the points which differ from CFD-V27L service manual (9-926-951-11).

• PARTS LIST

Page	CFD-V27L				CFD-V177L		
	EXPLODED VIEWS				EXPLODED VIEWS		
	Ref. No.	Part No.	Description	Remarks	Part No.	Description	Remarks
38	1	X-3376-986-1	CABINET (FRONT) ASSY(SILVER)(AEP,UK,CET)		X-3377-897-1	CABINET (FRONT) ASSY (BLUE)(AEP,UK,CET)	
	1	X-3376-987-1	CABINET (FRONT) ASSY(SILVER)(IT)		X-3377-903-1	CABINET (FRONT) ASSY (BLUE)(IT)	
	1	X-3377-624-1	CABINET (FRONT) ASSY (VIOLET)(AEP,UK,CET)		X-3377-900-1	CABINET (FRONT) ASSY (GREEN)(AEP)	
	1	X-3377-623-1	CABINET (FRONT) ASSY (VIOLET)(IT)		X-3377-898-1	CABINET (FRONT) ASSY (RED)(AEP)	
	1	————	————		X-3377-899-1	CABINET (FRONT) ASSY (WHITE)(AEP,UK,CET)	
	1	————	————		X-3377-904-1	CABINET (FRONT) ASSY (WHITE)(IT)	
39	57	X-3376-881-1	HOLDER ASSY, CASSETTE (SILVER)		X-3377-499-1	HOLDER ASSY, CASSETTE (BLUE)	
	57	X-3377-492-1	HOLDER ASSY, CASSETTE (VIOLET)		X-3377-501-1	HOLDER ASSY, CASSETTE (GREEN)	
	57	————	————		X-3377-503-1	HOLDER ASSY, CASSETTE (RED)	
	57	————	————		X-3377-505-1	HOLDER ASSY, CASSETTE (WHITE)	
	58	3-031-538-11	LID (CD)(SILVER)		3-036-885-01	LID, CD (BLUE)	
	58	3-031-538-71	LID (CD)(VIOLET)		3-036-885-11	LID, CD (GREEN)	
	58	————	————		3-036-885-21	LID, CD (RED)	
	58	————	————		3-036-885-31	LID, CD (WHITE)	
	63	3-031-540-11	HANDLE (SILVER)		3-036-886-01	HANDLE (BLUE)	
	63	3-031-540-61	HANDLE (VIOLET)		3-036-886-41	HANDLE (GREEN)	
	63	————	————		3-036-886-21	HANDLE (RED)	
	63	————	————		3-036-886-31	HANDLE (WHITE)	
	68	3-036-134-11	LID, BATTERY CASE (VIOLET)		3-036-134-21	LID, BATTERY CASE (BLUE)	
	68	3-926-244-51	LID, BATTERY CASE (SILVER)		3-036-134-61	LID, BATTERY CASE (GREEN)	
	68	————	————		3-036-134-41	LID, BATTERY CASE (RED)	
	68	————	————		3-036-134-51	LID, BATTERY CASE (WHITE)	
	69	3-031-536-61	CABINET (REAR)(SILVER)(AEP,UK,IT)		3-036-683-31	CABINET (REAR) (BLUE)	
	69	3-031-536-91	CABINET (REAR)(SILVER)(CET)		3-036-697-41	CABINET (REAR) (GREEN)	
	69	3-032-549-41	CABINET (REAR)(VIOLET)(AEP,UK,IT)		3-036-697-01	CABINET (REAR) (WHITE)	
	69	3-032-549-51	CABINET (REAR)(VIOLET)(CET)		3-036-697-21	CABINET (REAR) (RED)	
40	124	3-031-537-11	CABINET (UPPER)(SILVER)		3-036-883-01	CABINET (UPPER) (BLUE)	
	124	3-031-537-81	CABINET (UPPER)(VIOLET)		3-036-883-11	CABINET (UPPER) (GREEN)	
	124	————	————		3-036-883-21	CABINET (UPPER) (RED)	
	124	————	————		3-036-883-31	CABINET (UPPER) (WHITE)	

• Abbreviation
IT : Italian model
CET : East European and Russian model

CD RADIO CASSETTE CORDER

SONY®

MICROFILM

9-927-122-11

Sony Corporation
Personal Audio Company

99E1651-1
Printed in Japan ©1999.5
Published by General Engineering Dept.

SECTION 1
SERVICE NOTES

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

The following caution label is located inside the unit.

CAUTION	;	INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
ADVARSEL	:	USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSÆTTELSE FOR STRÅLING
VARO!	:	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASERSÄTEILYLLE
VARNING	;	LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD
ADVARSEL	:	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

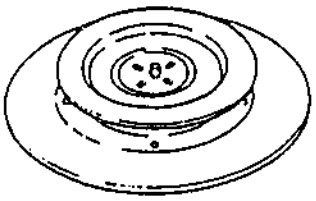
The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc., on clothing and the human body.
During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

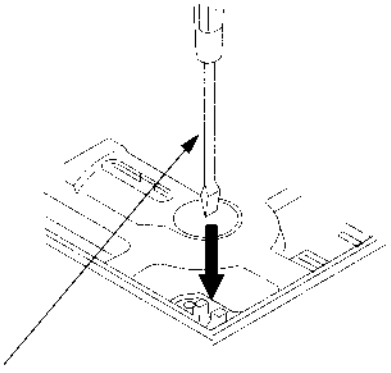
CHUCK PLATE JIG ON REPAIRING

On repairing CD section, playing a disc without the CD lid, use Chuck Plate Jig.
• Code number of Chuck Plate Jig : X-4918-255-1



LASER DIODE AND FOCUS SEARCH OPERATION CHECK

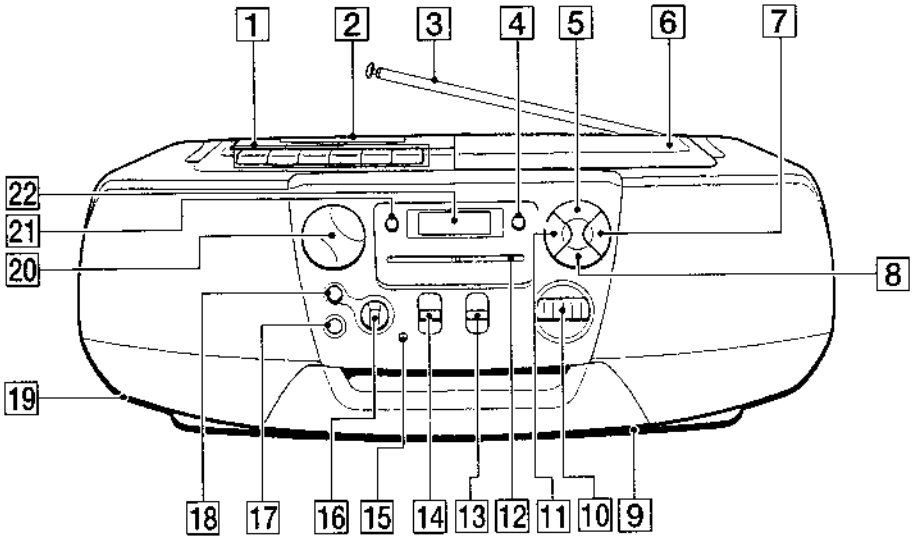
1. Press CD open knob.
2. Open the lid for CD.
3. Push on SWITCH (S801) as following figure.
4. Confirm the laser diode emission while observing the objecting lens. When there is no emission, Auto Power Control circuit or Optical Pick-up is broken.
   Objective lens moves up and down once for the focus search.



Insert a precision screw driver and push SWITCH(S801)

SECTION 2
GENERAL

LOCATION AND FUNCTION OF CONTROLS
MAIN UNIT



1. Tape operation buttons
   - ● button
   - ▷ button
   - ◀◀ button
   - ▶▶ button
   - ■, ⏏ button
   - ▮▮ button
2. CASSETE LID
3. FM rod antenna
4. DISPLAY ENTER button
5. CD ▶▮▮ button
6. CD ⏏ PUSH OPEN/CLOSE button
7. CD ▶▶▮ button
8. CD ■ button
9. Battery compartment
10. TUNE knob
11. CD ▮◀◀ button
12. DIAL
13. BAND switch
14. FUNCTION switch
15. OPR/BATT indicator
16. TONE knob
17. ∩ Phones jack
18. MEGA BASS knob
19. AC IN jack
20. VOLUME knob
21. PLAY MODE button
22. Information display

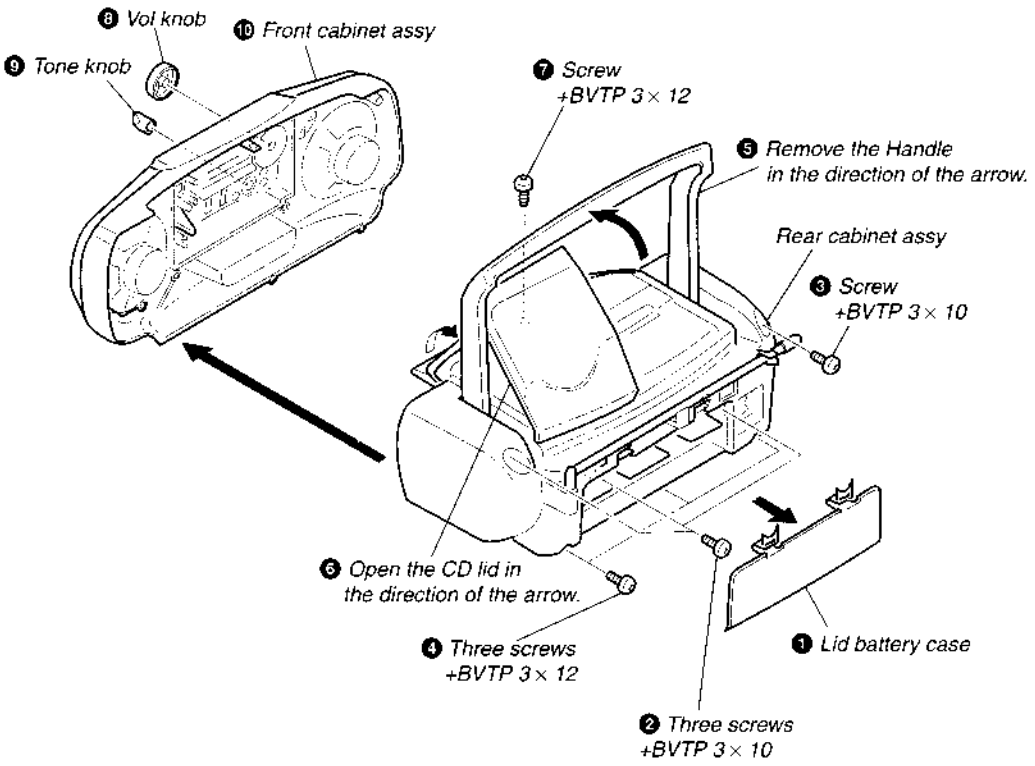
SECTION 3
DISASSEMBLY

• The equipment can be removed using the following procedure.

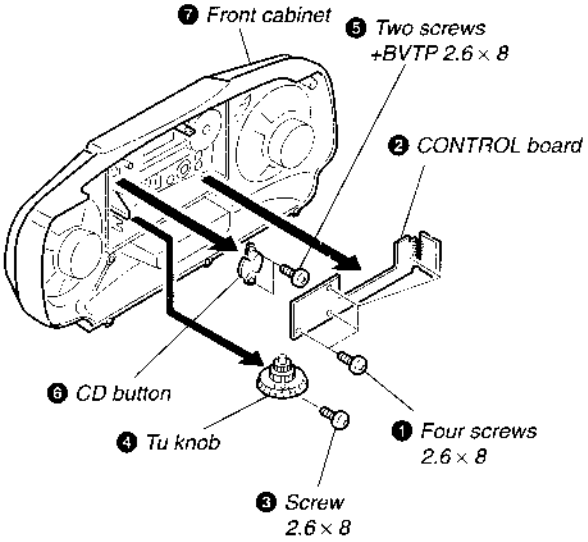
Set ➡ Front cabinet assy ┳➡ Cabinet (upper) assy ┳➡ Inlet, power, battery, half battery board
                          ┗➡ Control board   ┗➡ Main board ➡ Mechanism deck, optical pick-up section

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

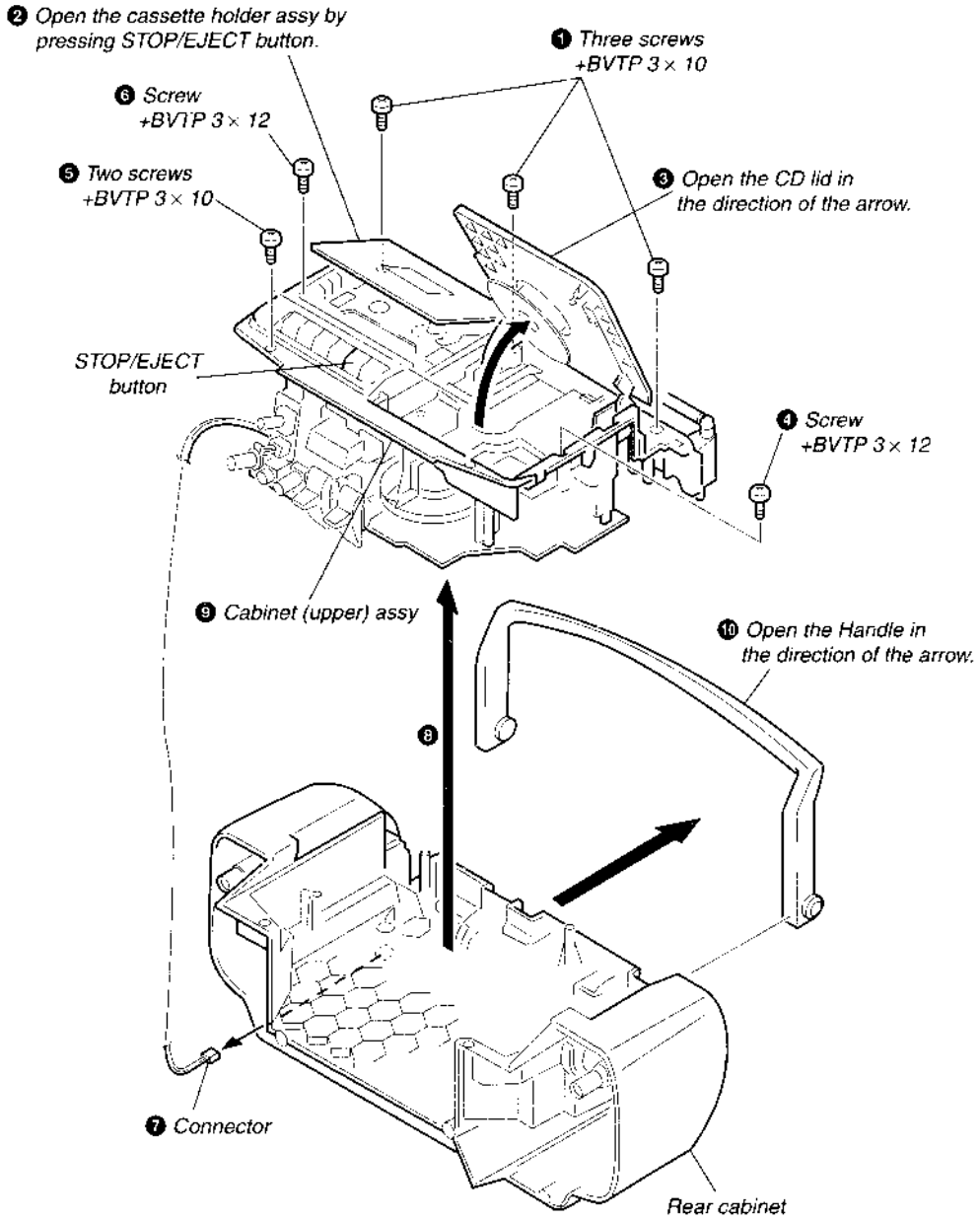
3-1. FRONT CABINET ASSY



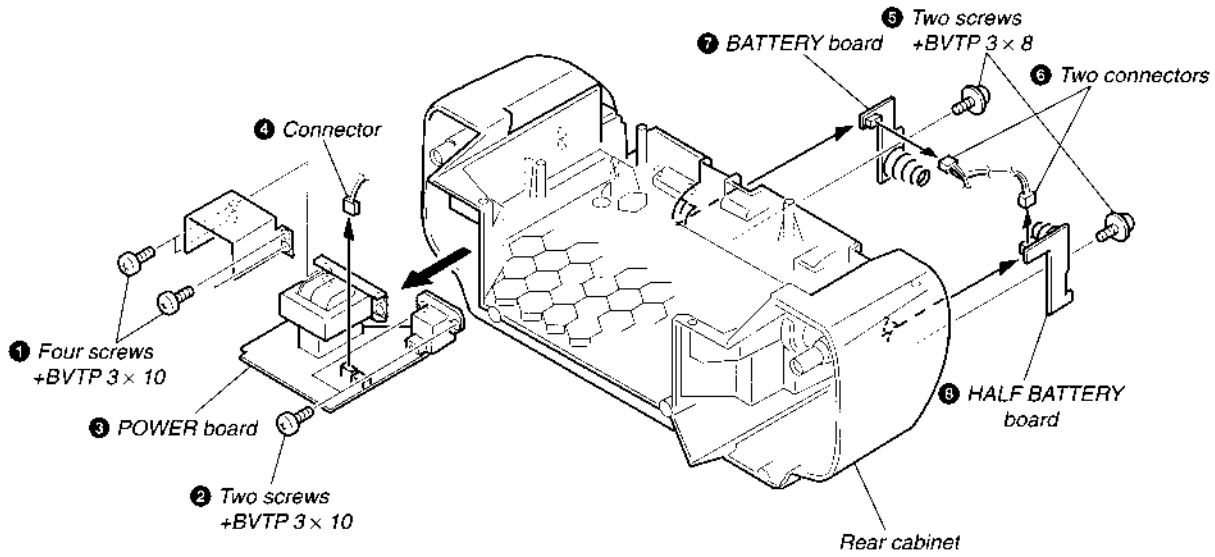
3-2. CONTROL BOARD



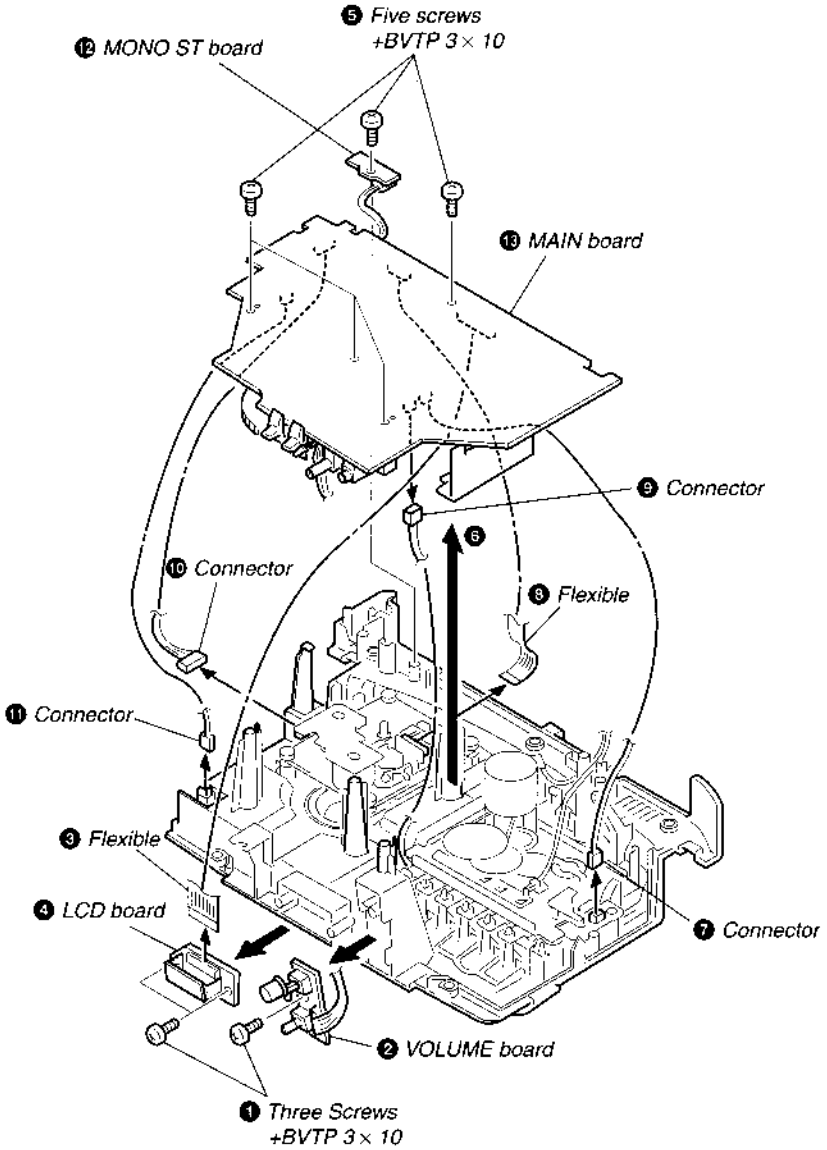
3-3. CABINET (UPPER) ASSY



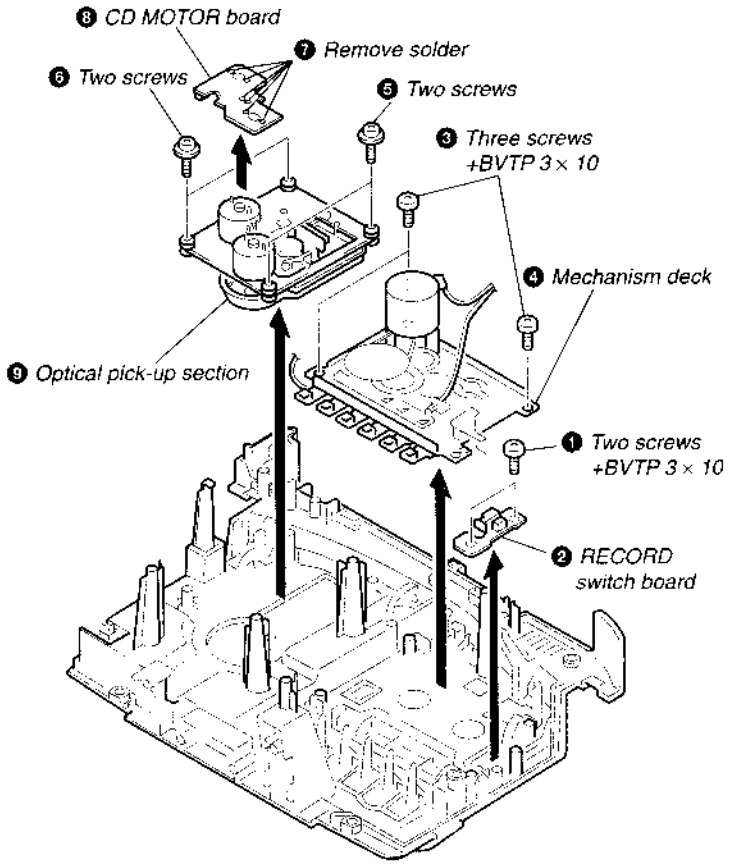
3-4. INLET, POWER, BATTERY, HALF BATTERY BOARD



3-5. MAIN BOARD



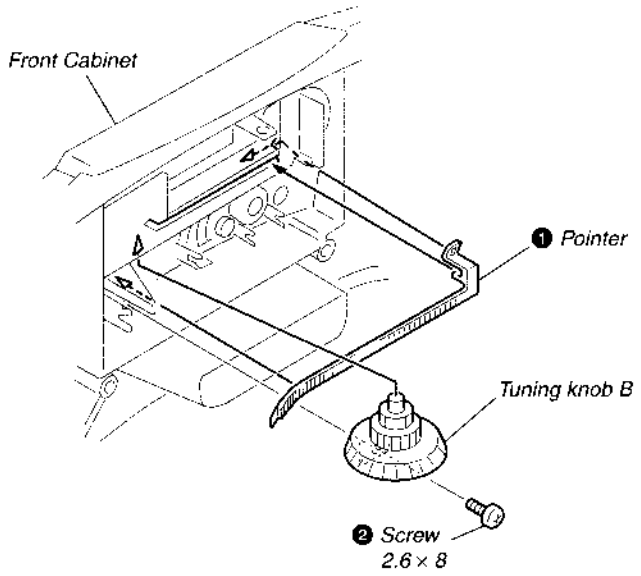
3-6. MECHANISM DECK, OPTICAL PICK-UP SECTION



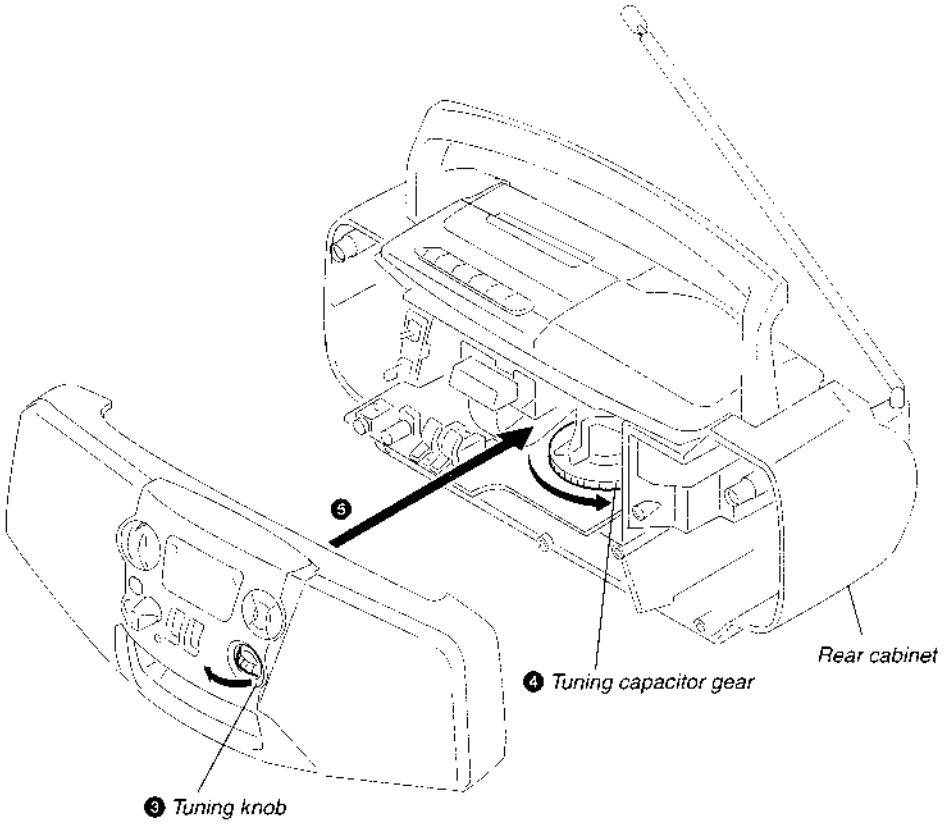
SECTION 4
DIAL POINTER INSTALLATION

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

❶ Align the pointer with the groove of front cabinet and insert it as shown in the illustration.
❷ Align Tuning knob with front cabinet and fasten the screw.



❸ Turn the Tuning knob in the direction of the arrow as shown in the illustration until pointer agrees with scale " 0 " (at leftmost end of scale).
❹ Turn the tuning capacitor gear fully in the direction of the arrow as shown in the illustration.
❺ Fasten the front cabinet and rear cabinet with the screws.



SECTION 5
ADJUSTMENTS

5-1. MECHANICAL ADJUSTMENT

PRECAUTION

1. Clean the following parts with a denatured-alchool-moistened swab:
   record/playback head　　pinch roller
   erase head　　rubber belts
   capstans
2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.

Torque Measurement

Mode	Torque Meter	Meter Reading
FWD	CQ-102C	18 – 60 g•cm (0.25 – 0.83 oz•inch)
FWD back tension		1.0 – 5.0 g•cm (0.014 – 0.069 oz•inch)
Fast Forward	CQ-201B	45 – 95 g•cm (0.62 – 1.32 oz•inch)
Rewind		45 – 95 g•cm (0.62 – 1.32 oz•inch)

Tape Tension Measurement

Torque Meter	Meter Reading
CQ-403A	more than 60 g (more than 2.12 oz)

5-2. ELECTRICAL ADJUSTMENT

TAPE RECODER SECTION　0dB = 0.775V

Standard output level

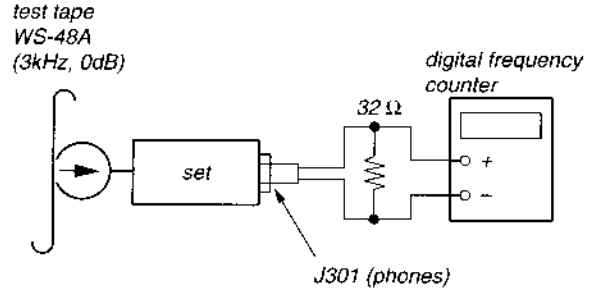
Output	HP OUT
Load impedance	32 Ω
Output signal level	0.25 V (–10 dB)

Test tape

Test Tape	Signal	Used for
WS-48A	3 kHz, 0 dB	Tape speed adjustment
P-4-A063	6.3 kHz, –10 dB	Head azimuth adjustment.

Tape Speed Adjustment

Procedure :
Mode : Playback



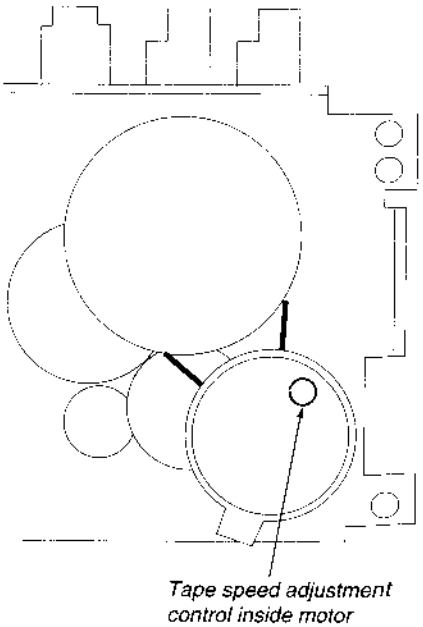
Adjustment Value : normal tape speed
Adjust the tape speed adjustment control inside motor, so that the frequency counter reading becomes 3,000 Hz.

Specification Value :

Digital frequency counter
2,910 – 3,090Hz

Frequency difference between the beginning and the end of the tape should be within 1.5% (45 Hz).

Adjustment Location :



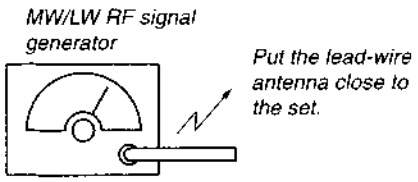
5-3. TUNER SECTION

0 dB = 1 µV

- Switch Location
  VOLUME : MAX
  MEGA BASS : OFF
  PRESET SOUND MODE : OFF

MW/LW SECTION

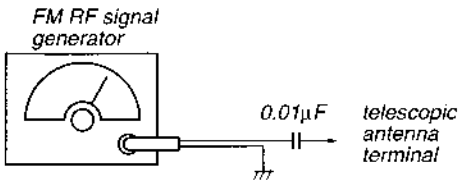
BAND : AM
Signal generator



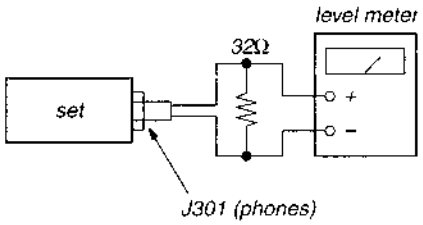
30% amplitude modulation by 400Hz signal.
Output level : as low as possible

FM SECTION

BAND : FM
Signal generator



75kHz (100%) amplitude modulation by 1kHz signal.
Output level : as low as possible



- Repeat the procedures in each adjustment several times for the maximum level meter indication.
- The frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

MW/LW IF ADJUSTMENT	
Adjust for a maximum reading on level meter.	
T2	455 kHz

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L3-1	620 kHz
CT3	1,400 kHz

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L4	516 kHz
CT4	1,680 kHz

LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L3-2	160 kHz
CT7	260 kHz

LW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L11	145 kHz[140 kHz]
CT8	300 kHz[293 kHz]

FM IF ADJUSTMENT	
Adjust for a maximum reading on level meter.	
T1	10.7 MHz

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L1	87.0 MHz[87.35 MHz]
CT1	108.3MHz[108.25MHz]

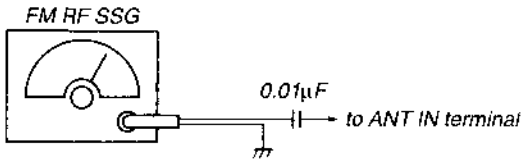
FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L2	86.5 MHz[87.35 MHz]
CT2	109.5MHz[108.25MHz]

no mark : AEP, UK, East European and Russian model
[ ] : Italian model

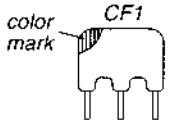
Adjustment Location : Main board (See page 13)

FM VCO Adjustment

Procedure :



Carrier frequency : 98MHz
IF frequency : According to the color of CF1.
Modulation : no modulation
Output level : 0.1V (100dB)

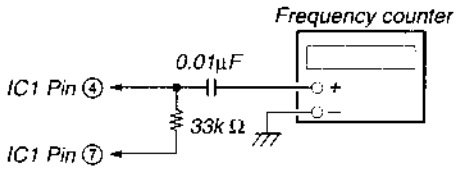


RED	10.70MHz
BLUE	10.67MHz
ORANGE	10.73MHz
BLACK	10.64MHz
WHITE	10.76MHz

1. Connect frequency counter to the positions shown below.
2. Tune the set to 98MHz.
3. Adjust RV1 so that the frequency counter reading becomes 75,000 Hz.

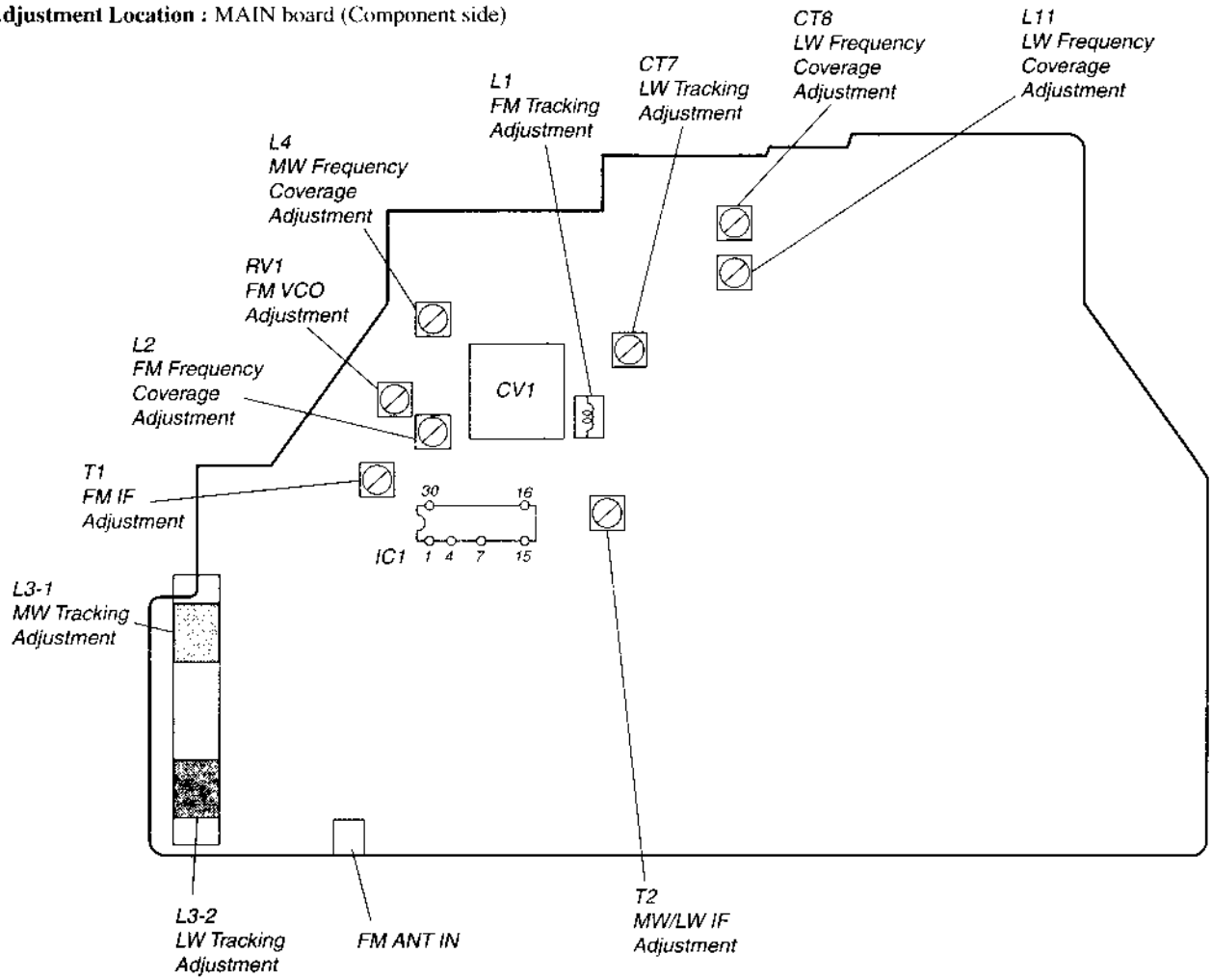
Specification Value :

Frequency counter
75,950 – 76,050 Hz

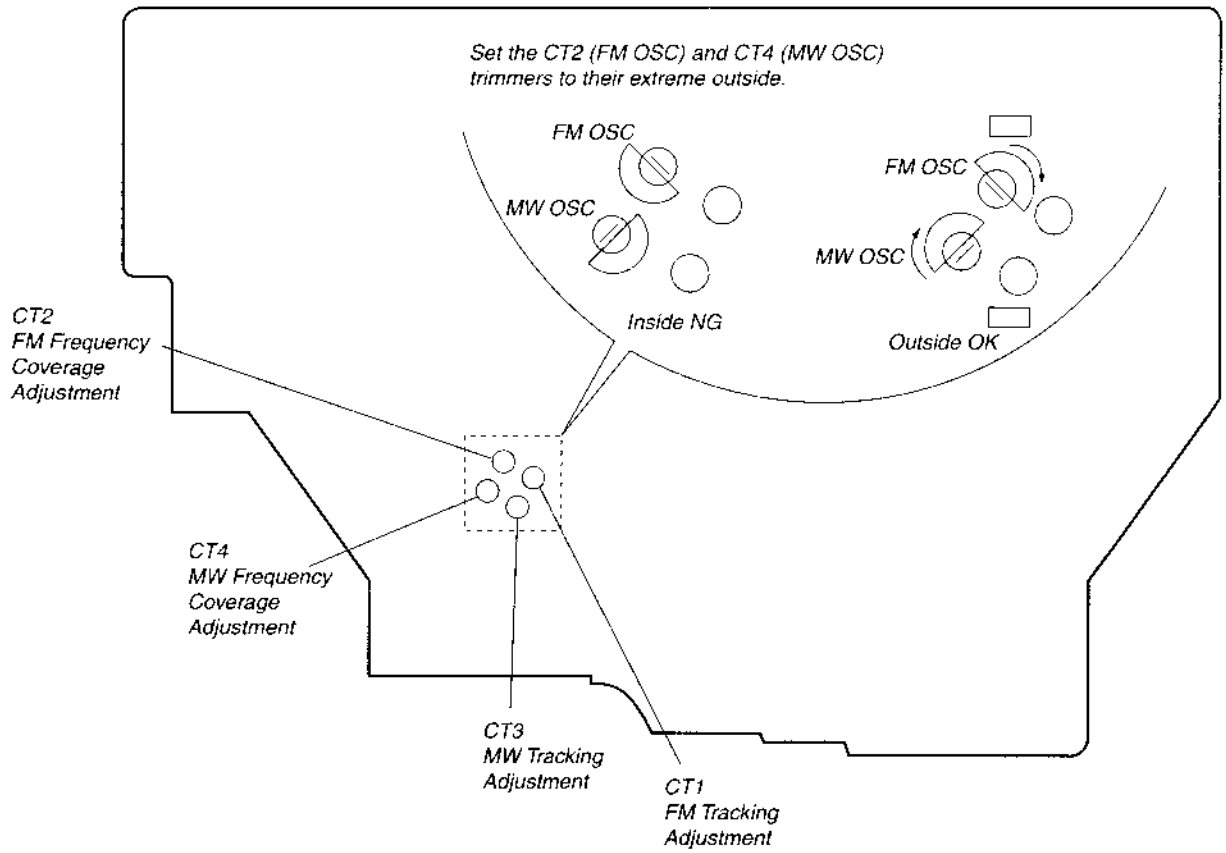


Adjustment Location : MAIN board (See page 13)

Adjustment Location : MAIN board (Component side)



Adjustment Location : MAIN board (Conductor side)



CD SECTION

Notes on Check

1. Perform the traverse check in the CD test mode.
   After check, be sure to exit the test mode.
2. Perform check in the order given.
3. Use the disc (YEDS-18. Parts No. 3-702-101-01) only when so indicated.

Before Check

Put the set into test mode and perform the following checks.
Repair if there are any problems.

• Sled Motor Check

Press ▶▶I , I◀◀ keys and confirm that the Optical pick-up moves smoothly from the innermost to outermost circumference and back smoothly and with no catching or abnormal noises.
(Cancellation of BTL mute)
▶▶I : Optical pick-up moves to the outer circumference.
I◀◀ : Optical pick-up moves to the inner circumference.

• Focus Search Check

1. Press the CD ▶II key. (Focus search operation is performed continuously.)
2. Look at the Optical pick-up objective lens and confirm that it moves up and down smoothly, with no catching or abnormal noises.
3. Press ■ button.
   Confirm that focus search operation stops. If it does not, press ■ button again longer.

How to Enter the Set into Test Mode

1. Set the function switch to power off.
2. Set the function switch to CD while I◀◀ key and ■ key pressing.
   The set is into CD test mode (88 is displayed).
3. Turn the power off to release test mode.

How to Exit the Test Mode

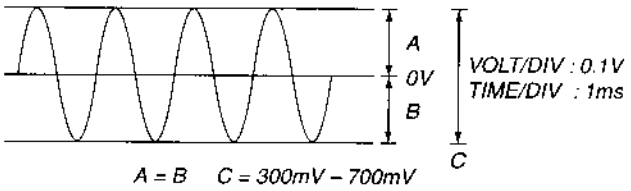
Turn the POWER OFF.

TRAVERSE Check

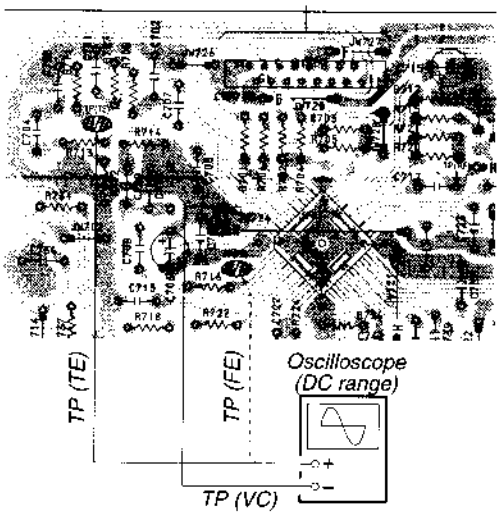
This check is to be done when the optical pick-up block is replaced.

Check Procedure:

1. Connect the oscilloscope to test point TP (VC) and TP (TE) on MAIN board.
2. Put the set into test mode.
3. Optical pick-up setting to the center by ▶▶I or I◀◀ button pushing.
4. Insert disk (YEDS-18) and press ▶II button.
5. Check that the oscilloscope traverse waveform is symmetrical, as shown in the figure below.
6. Release test mode after adjustment is completed.



[MAIN BOARD] (Conductor side)



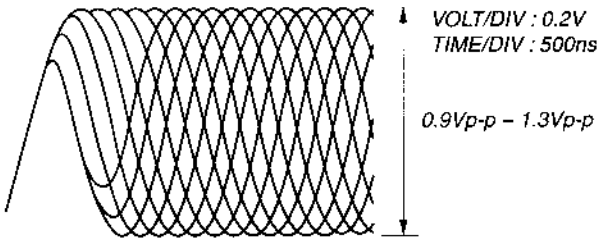
Focus Bias Check

This check is to be done when the optical block replaced.

Check Procedure:

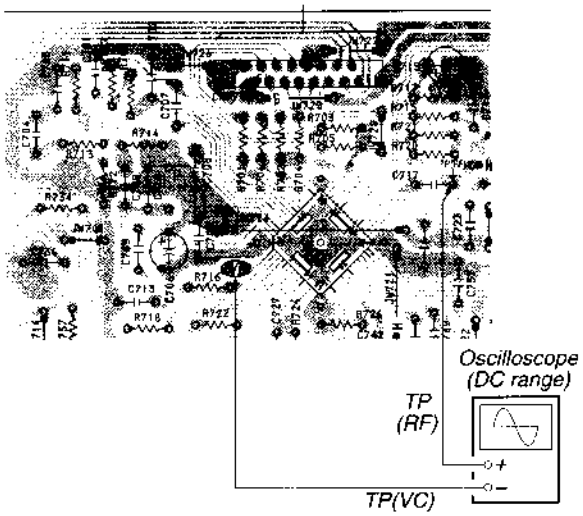
1. Connect the oscilloscope to test point TP (VC) and TP (RF) on MAIN board.
2. Put the set into test mode.
3. Optical pick-up setting to the center by + or – button pushing.
4. Insert disk (YEDS-18) and press ▶II button.
5. Press the MODE button. (Tracking servo ON)
6. Check that the oscilloscope wavewform is as shown in the figure below (eye pattern).
   A good eye pattern means that the diamond shape (◊) in the center of the waveform can be clearly distinguished.
7. Release test mode after adjustment is completed.

• RF signal reference waveform (eye pattern)



When observing the eye pattern, set the oscilloscope for AC range and raise vertical sensivity.

[MAIN BOARD] (Conductor side)



5-4. REFERENCE

Focus/Tracking Gain Check

Adjustment Location : MAIN board (Component side)

(See page 16)

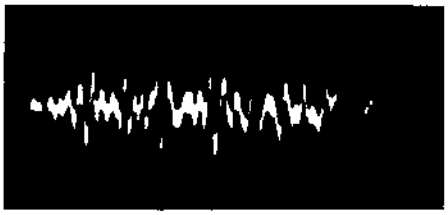
A frequency response analyzer is necessary in order to perform this check exactly.
However, this gain has a margin, so even if it is slightly off, there is no problem.
Focus/Tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when the 2-axis device operate.

Symptoms \ Gain	Focus	Tracking
• The time until music starts becomes longer for STOP ➡ CD ▶II or automatic selection (◀◀ , ▶▶ buttons pressed). (Normally takes about 2 seconds.)	low	low or high
• Music does not start and disc continues to rotate for STOP ➡ CD ▶II or automatic selection (◀◀ , ▶▶ buttons pressed.)	—	low
• Sound is interrupted during PLAY. Or time counter display stops progressing.	—	low
• More noise during 2-axis device operation.	high	high

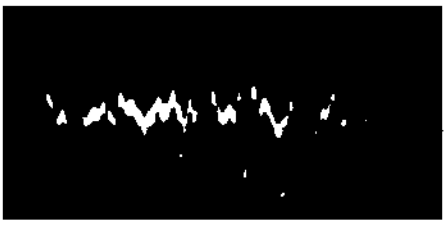
Check Procedure:

1. Keep the set horizontal.
2. Inset disk (YEDS-18) and press ▶II button.
3. Connect an oscilloscope to TP (FE) and TP (VC) on the MAIN board.
4. Check that the waveform is as shown in the figure below. (Focus waveform)

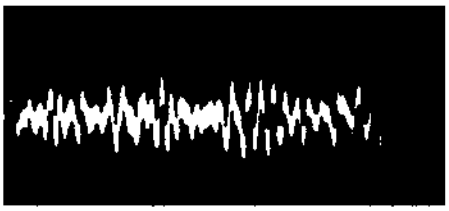
- Good Example



- Incorrent Examples (DC level changes more than on adjusted waveform)



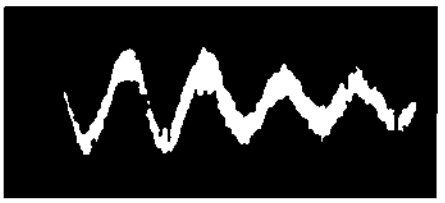
low focus gain



high focus gain

5. Connect an oscilloscope between TP (TE) and TP (VC).
6. Insert disc (YEDS-18) and press the CD ▶II button.
7. Check that the waveform is as shown in the figure below. (tracking waveform)

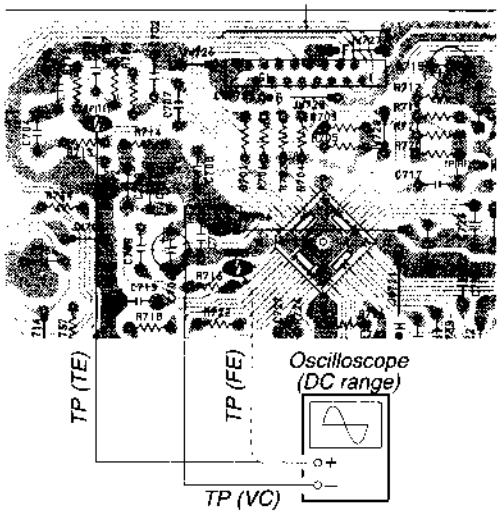
- Incorrect Examples (Fundamental wave appears)



low tracking gain

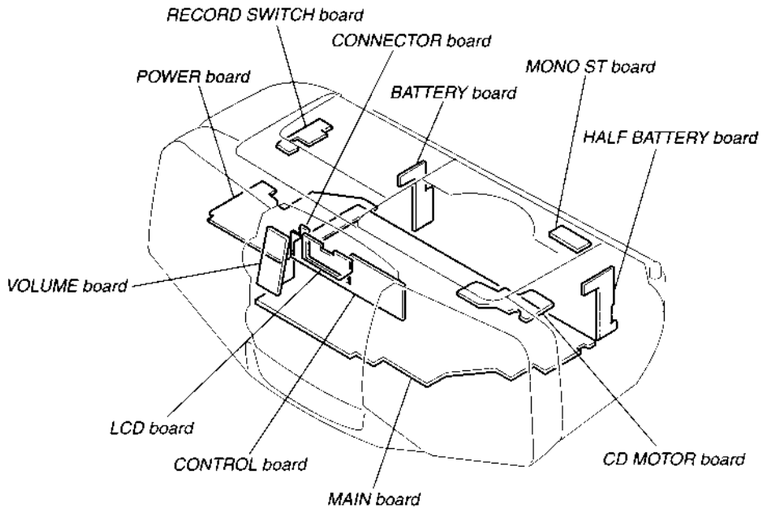
high tracking gain
(high fundamental wave than for low gain)

[MAIN BOARD] (Conductor side)

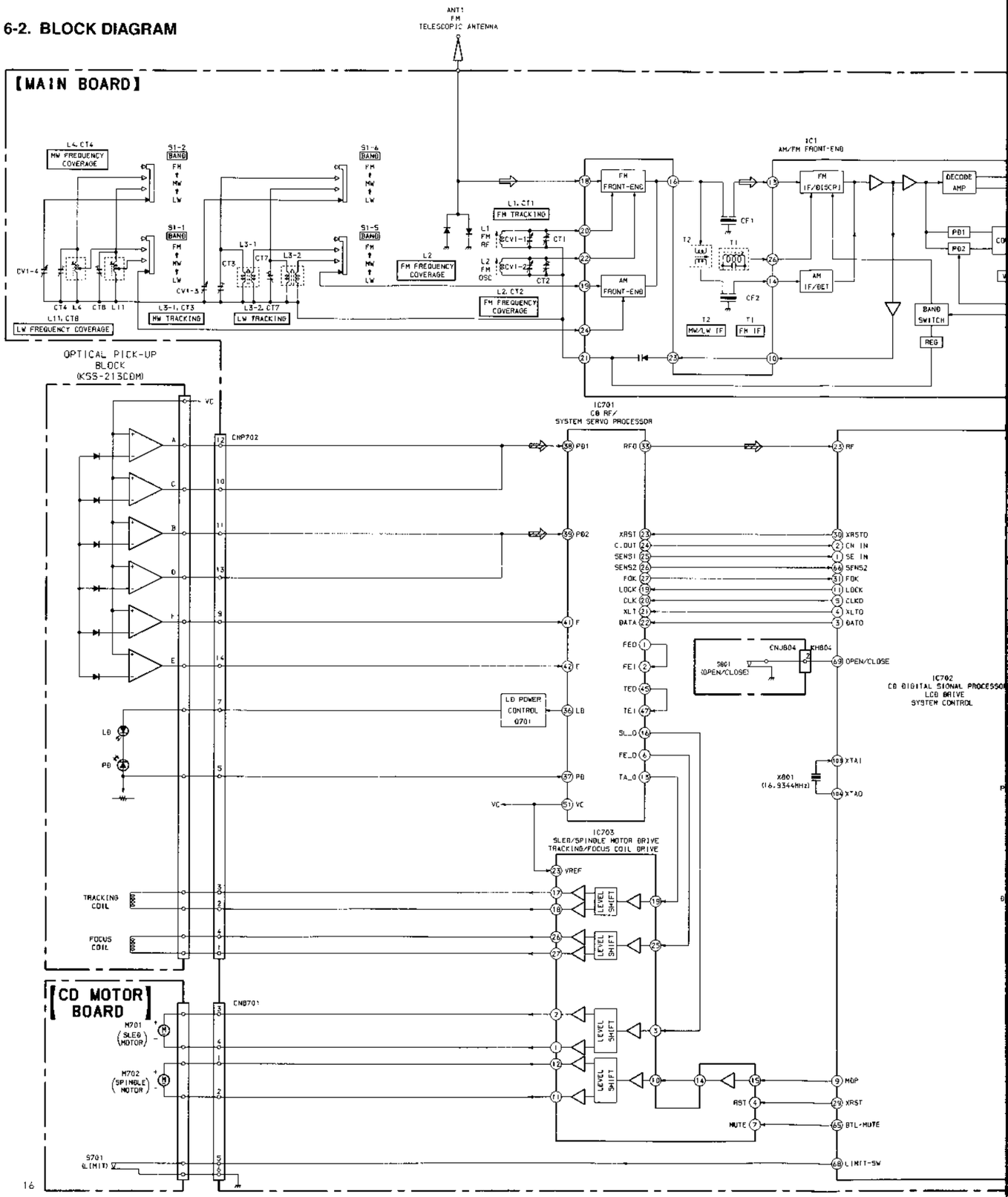


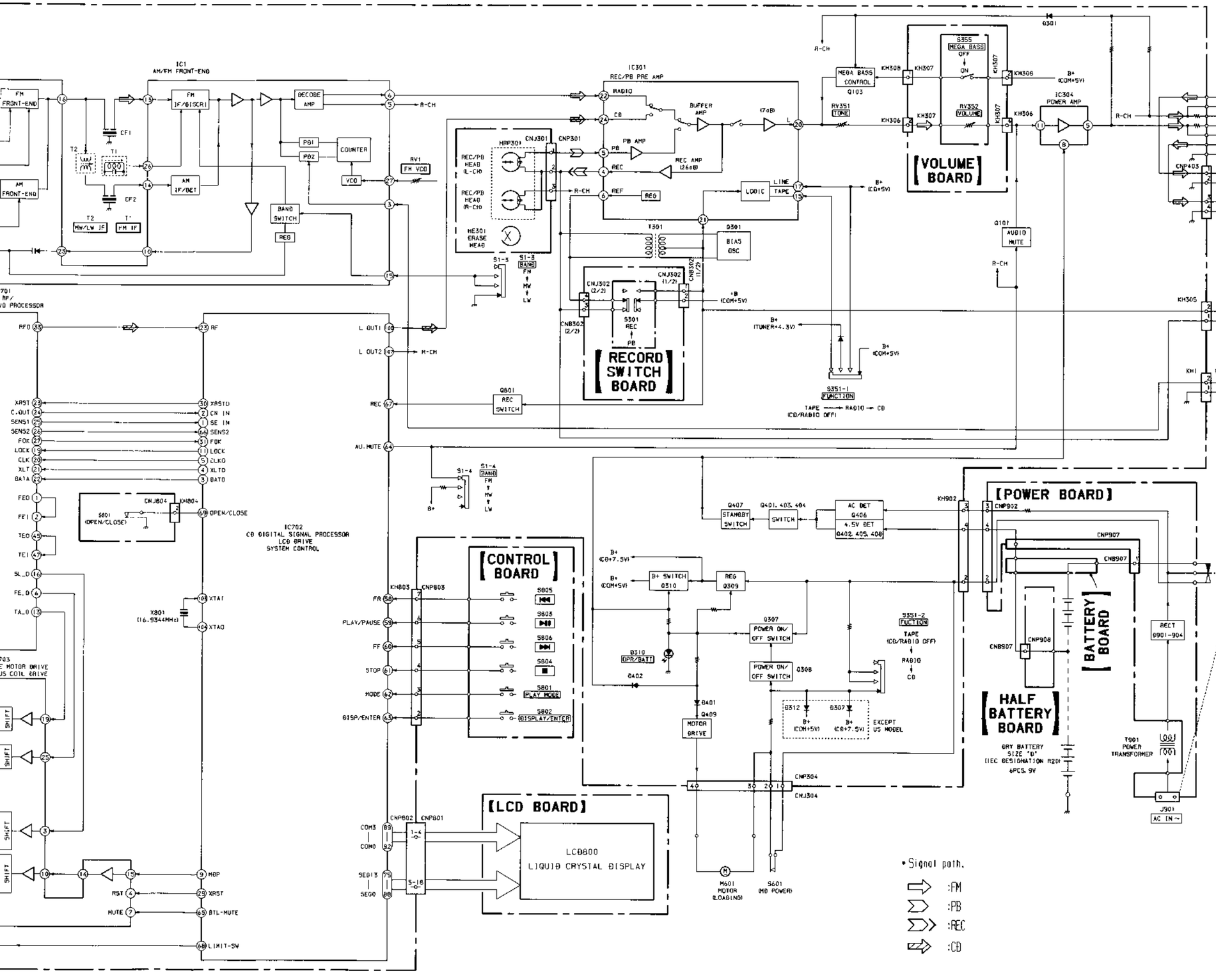
SECTION 6
DIAGRAMS

6-1. CIRCUIT BOARDS LOCATION



6-2. BLOCK DIAGRAM





Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ▨ : Pattern from the side which enables seeing.

Note on Schematic Diagrams:

- 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.
- ▭ : nonflammable resistor.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- B+ : B+ Line.
- Power voltage is dc 9 V and fed with regulated dc power supply from battery terminal.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.

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

– For MAIN BOARD (1/3) –
no mark : PLAY (TAPE SECTION)
CD STOP
( ) : REC (TAPE SECTION)
– For MAIN BOARD (2/3) –
no mark : CD PLAY
TAPE STOP
– For MAIN BOARD (3/3) –
no mark : FM
( ) : MW
[ ] : LW

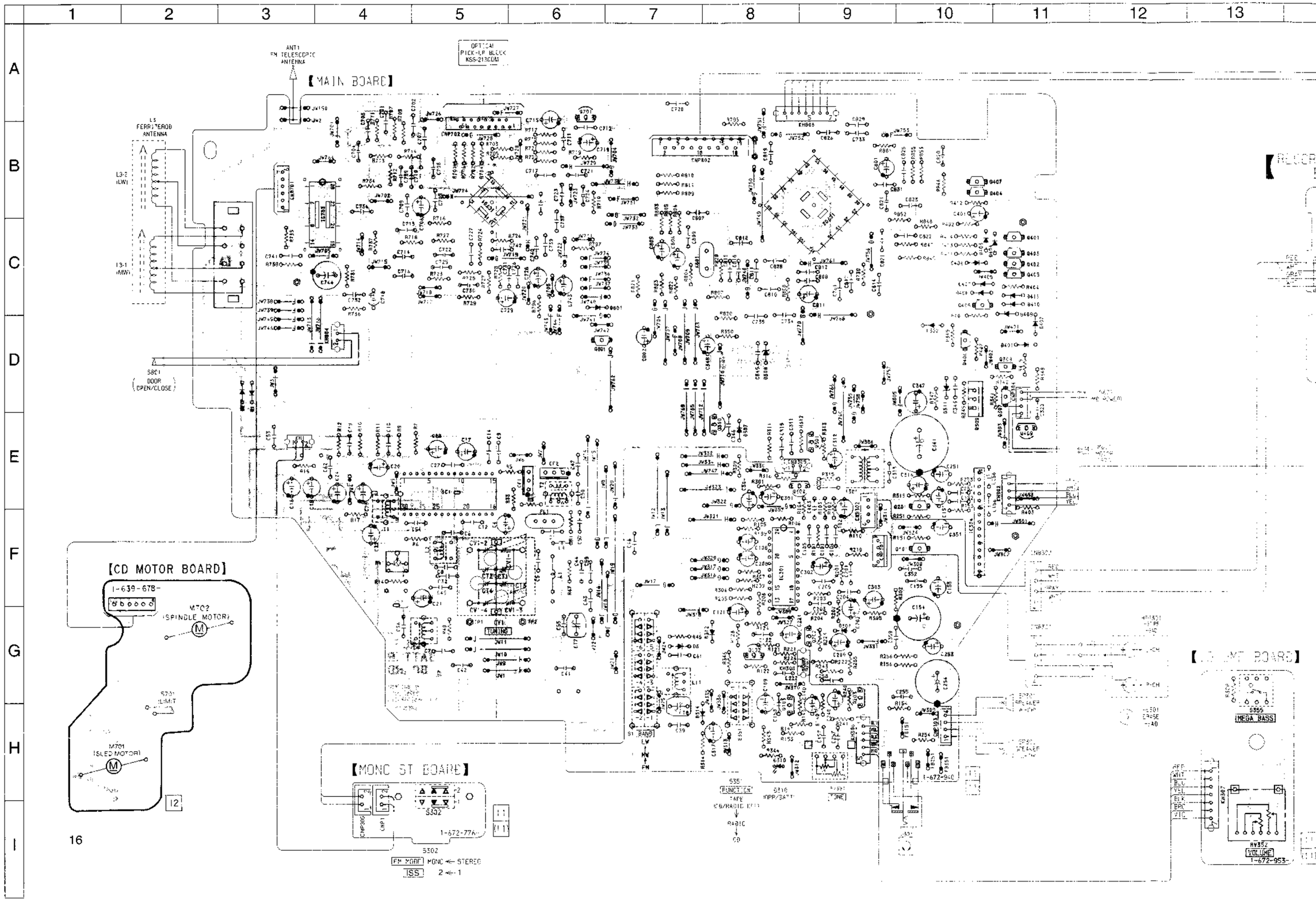
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM
  ⇨ : PB
  ⇨ : REC
  ⇨ : CD
- Abbreviation
  IT : Italian model
  CET : East European and Russian model

6-3. PRINTED WIRING BOARD

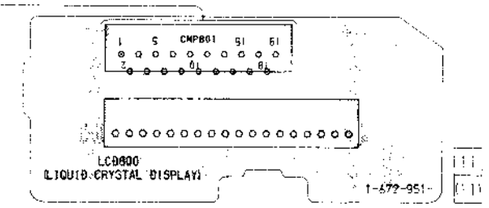
• Refer to page 20 for Note on Printed Wiring Board.

• **Semiconductor Location**

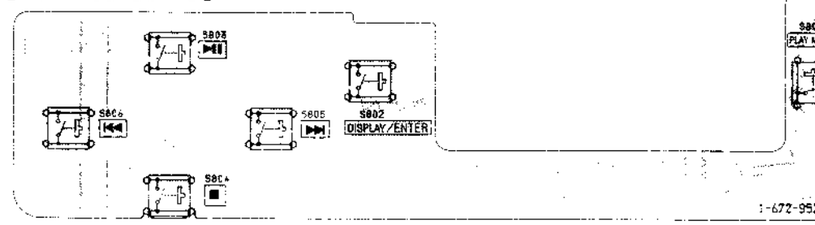
Ref. No.	Location
D1	D-3
D2	D-3
D3	G-7
D301	G-9
D302	D-10
D307	E-8
D308	D-8
D310	H-8
D311	D-10
D312	G-8
D314	H-7
D401	C-11
D402	D-11
D403	C-10
D404	C-10
D406	C-10
D407	C-10
D408	C-10
D409	C-11
D410	C-11
D411	C-11
D801	C-7
D901	E-20
D902	E-20
D903	F-20
D904	F-20
IC1	E-5
IC301	F-8
IC304	F-10
IC701	B-5
IC702	B-9
IC703	B-4
Q101	F-10
Q102	G-8
Q103	G-8
Q201	E-10
Q202	G-9
Q203	G-9
Q301	E-9
Q302	E-8
Q307	D-11
Q308	D-11
Q309	D-10
Q310	E-8
Q401	B-11
Q402	B-11
Q403	B-11
Q404	B-10
Q405	C-11
Q406	D-10
Q407	B-10
Q408	C-10
Q409	E-11
Q701	A-6
Q801	D-6



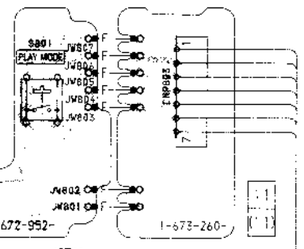
【LCD BOARD】



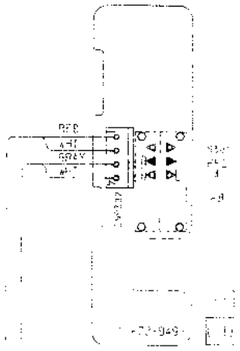
【CONTROL BOARD】

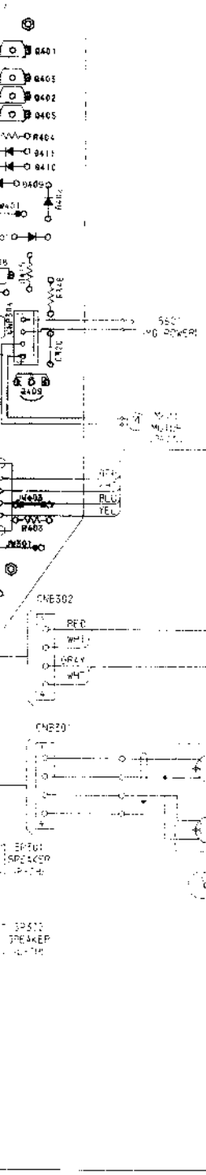


【CONNECTOR BOARD】

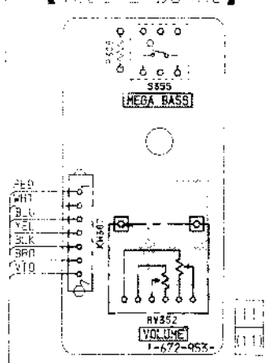


【RECORD SWITCH BOARD】

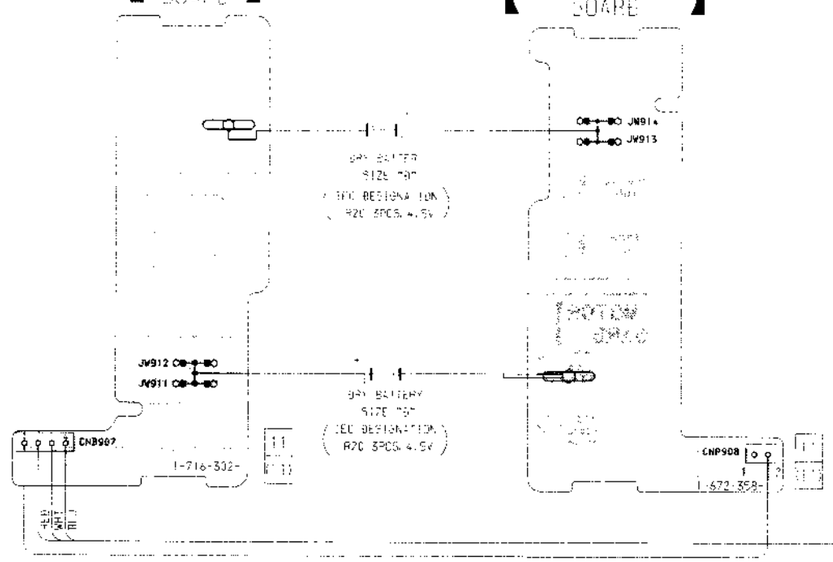




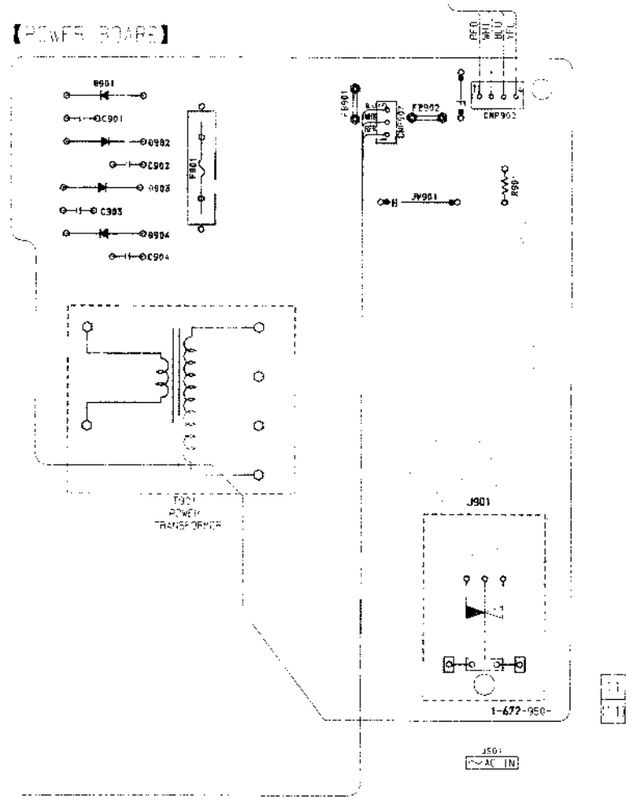
【VOLUME BOARD】



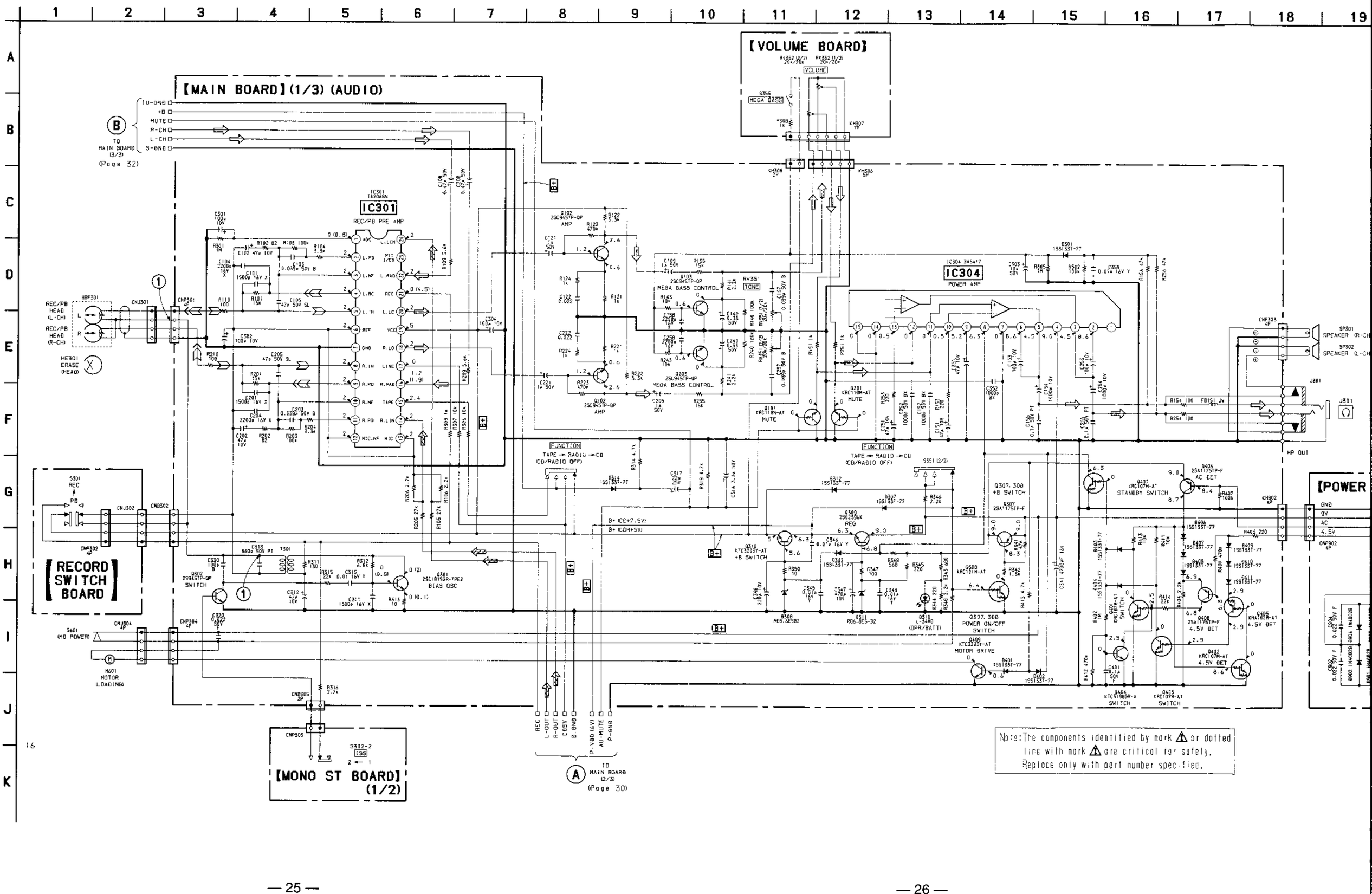
【BATTERY BOARD】



【POWER BOARD】



6-4. SCHEMATIC DIAGRAM – MAIN BOARD (1/3) – • Refer to page 20 for Note on Schematic Diagram.



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

chematic Diagram.

7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25

【VOLUME BOARD】

RV352 (2/2) 20k/20k
RV352 (1/2) 20k/20k
VOLUME
S355 MEGA BASS
R308 1k
KH307 7P
KH308 2P
KH306 5P

IC304 BA5417
IC304
POWER AMP

Q102 2SC945TP-QP AMP
Q103 2SC945TP-QP MEGA BASS CONTROL
RV351 TONE
Q205 2SC945TP-QP MEGA BASS CONTROL
Q202 2SC945TP-QP AMP
Q201 KRC110M-AT MUTE
Q101 KRC110M-A1 MUTE

D301 1SS133T-77
CNP303 4P
SP301 SPEAKER (R-CH)
SP302 SPEAKER (L-CH)
J301
HP OUT

FUNCTION
TAPE → RADIO → CD
(CD/RADIO OFF)

D514 1SS133T-77
D317 1SS133T-77
D307 1SS133T-77
Q307, 308 +B SWITCH
Q307 2SA1775TP-F
Q309 2SB766K REG
Q310 KTC5203Y-4T +B SWITCH
Q308 KRC101M-AT
Q307, 308 POWER ON/OFF SWITCH
Q309 KTC5203Y-AT MOTOR DRIVE
D401 1SS133T-77
D402 1SS133T-77
Q407 KRC107M-AT STANDBY SWITCH
Q406 2SA1775TP-F AC DET
Q401 KRC107M-A1 SWITCH
Q404 KTC5198OR-A SWITCH
Q403 KRC107M-AT SWITCH
Q408 2SA1775TP-F 4.5V DET
Q405 KRA102M-AT 4.5V DET
Q402 KRC107M-AT 4.5V DET

B+ (CD+7.5V)
B+ (COM+5V)

REC
L-OUT
R-OUT
CBSV
D.GND
P-VDD (6V)
AU-MUTE
P-GND

A TO MAIN BOARD (2/3) (Page 30)

TOTAL CURRENT
FM 87mA
MW 84mA
LW 85mA
TAPE PLAY 150mA
FF 190mA
REW 180mA
CD PLAY 450mA

【HALF BATTERY BOARD】
CNP908 2P
CN J908 2P
BRY BATTERY SIZE"D" IEC DESIGNATION R20 6PCS. 9V
CNP907 4P
CN J907 5P
【BATTERY BOARD】

【POWER BOARD】
KH902 4P
GND
9V
AC
4.5V
CNP902 4P
FB901 0UH
CNP907 3P
FB902
J901
~ AC IN
CNP901
F901 2.5A
POWER TRANSFORMER

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

6-5. SCHEMATIC DIAGRAM – MAIN BOARD (2/3) –

• Refer to page 20 for Note on Schematic Diagram.

【MAIN BOARD】(2/3) (CD)

【CD MOTOR BOARD】

M702 (SPINDLE MOTOR)
M701 (SLED MOTOR)
S701 (LIMIT)
CNP701 6P
SP+ SP- SL+ SL- LIMIT GND

IC703 BA6598FP
SLED/SPINDLE MOTOR DRIVE TRACKING/FOCUS COIL DRIVE

IC701 CXA1992BR
CD RF/SYSTEM SERVO PROCESSOR

IC702 CXP491-602R
CD DIGITAL SIGNAL PROCESSOR LCD DRIVE SYSTEM CONTROL

Q701 KTA1271Y-AT
LD POWER CONTROL

⚠ OPTICAL PICK-UP BLOCK (KSS-213CΘM)

CNP702 16P
VC VCC E Θ A B C F GND LD VR PD F+ T+ T- F-

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

ematic Diagram.

7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25

) (CD)

IC703 BA6890FP
C703
EB/SPINDLE
OTOR DRIVE
CKING/FOCUS
COIL DRIVE

SL- SL+ SP- SP+ R735 6.8k C741 0.015 50V B C736 0.001 50V BX C744 470 10V

VREF IIN R738 33k C732 0.01 16V R731 22k

JT MODEL

R798 6.2k R714 10k C709 0.033 50V C710 0.0022 16V X C705 0.01 16V Y R716 10k TP (FE) C706 47u 10V C708 0.1 50V C707 0.022 25V F R715 1M R712 330k R701 82k R706 82k

C725 0.018 50V R734 3.3k C727 10p 50V CH R737 56k R722 5.6k C722 0.033 50V C732 0.033 50V R724 68k R723 150k C723 50V C729 0.068 50V R726 2.2k R729 12k

C718 0.1 6.3V R722 100k R718 68k C716 0.1 50V R772 47k

C742 0.1 16V Y R728 100k C731 0.022 16V F C745 47u 10V

[C701] CXA1932BR
IC701
CD RF/SYSTEM SERVO PROCESSOR

FEO FEI FDFCT FOO FLB FE_O FE_M SRCH TGU TG2 FSET TA_M TA_O
FZC VC TDFCT FZC ATSC TEI LPF1 TEO VEE EI E F FE_BIAS
SL_P SL_M SL_O ISET VCC LOCK CLK XLT DATA XRST C.OUT SENI SENS2

RF_A RF_B RF_C RF_D RF_I CP CB CC1 CC2 FOK
RFTC RF_M RF_O
PA2 PA1 PA0 LD

C739 0.022 F C739 100p B C740 100p B

R721 20k R720 12k C717 0.01 50V C721 0.01 50V C723 0.01 16V Y C724 0.033 50V R718 180k C726 0.01 16V Y C728 47u 10V

R717 1M C715 10 50V C716 15p 50V CH C719 10k

C712 0.001 50V BX R719 10 C719 47 10V TP (RF)

Q701 KTA1271Y-AT
LD POWER CONTROL

R801 10k C831 0.01 16V Y C801 47 10V XRST

C826 0.01 16V Y C814 0.01u C829 0.01 16V Y C733 100p 50V B C824 0.22 50V C825 0.01 16V Y R853 220k R855 10k C823 220p 50V B R852 1M C720 0.01 16V Y C822 47p 50V B C821 0.01 16V Y R847 10k R846 1k C820 0.47 50V R845 3.3k R843 47k R730 33k C761 1000p 50V BX C817 0.01 16V Y R821 10k R820 1k C735 100p 50V B C734 100p 50V B

TEST2 TEST1 ASYD ASYI BIAS RF AVDD CLTV AVSS FILO FILI PCO VCTL VI6M VCKI VPCO1 VPCO2 LOCK MDS MDP MDN DVDD DVSS CLKO XLTO DATO CNIN SEIN

XRST XRSTO FOK LRCK LRCKI PCMO PCMDI BCK BCKI GTOP XPCK BFS RFCK C2PO BVSS BVDD XVDF MNT3 MNTI MNTO C4M EOUT EMPHI WFCK SCOR SBSO EXCK DTEST

[C702] CXP401-602R
IC702
CD DIGITAL SIGNAL PROCESSOR
LCD DRIVE
SYSTEM CONTROL

CTEST FR PLAY/PAUSE FF STOP MODE DISP/ENTER AU.MUTE BTL-MUTE SENSE2 REC LIMIT-SW OPEN/CLOSE RMC DVSS DVDD SEG15 SEG14 SEG13 SEG12 SEG11 SEG10 SEG09 SEG08 SEG07 SEG06 SEG05 SEG04

PCO PC1 PC2 PC3 PB0 PB1 PB2 PB3 PA0 PA1 PA2 PA3

S801 KRC111M REC SWITCH

D802 1SS133T-77

L701 0uH

C819 0.01 16V Y

R795 10k

P-GND P-VDD (6V) L-OUT R-OUT AU-MUTE CD5V D-GND REC

A MAIN BOARD (1/3) (Page 25)

C802 22u 25V

KH803 7P CNP803 7P

【CONTROL BOARD】

FR PLAY/PAUSE FF STOP MODE DISP/ENTER DGND

S801 PLAY MODE
S802 DISPLAY /ENTER
S803
S804
S805
S806

CMP802 19P

SEG13 SEG12 SEG11 SEG10 SEG09 SEG08 SEG07 SEG06 SEG05 SEG04 SEG03 SEG02 SEG01 SEG00 COM3 COM2 COM1 COM0

DGND SEG13 SEG12 SEG11 SEG10 SEG09 SEG08 SEG07 SEG06 SEG05 SEG04 SEG03 SEG02 SEG01 SEG00 COM3 COM2 COM1 COM0

LC6800 LIQUID CRYSTAL DISPLAY

CNP801 19P

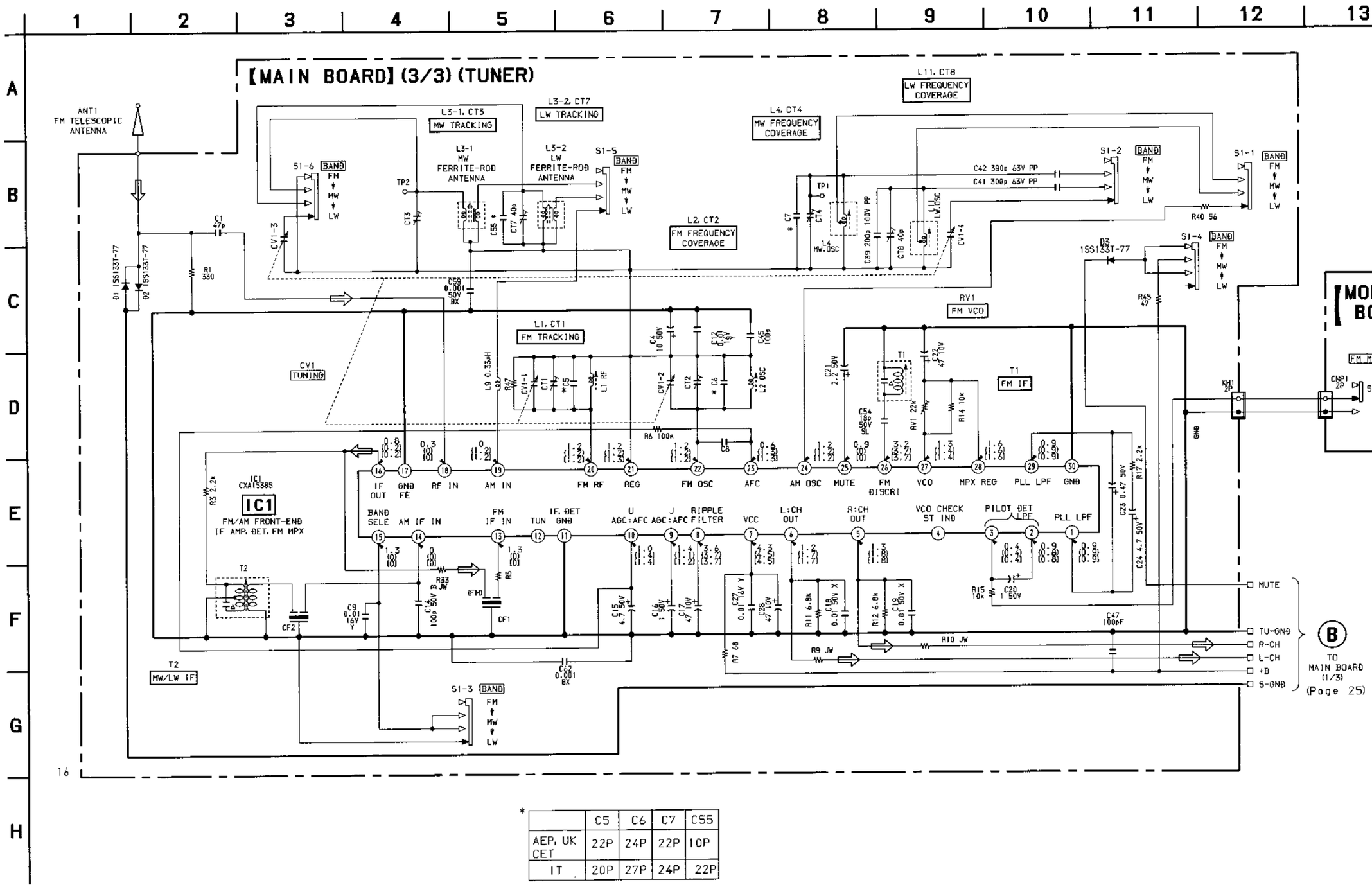
【LCD BOARD】

C805 4.7 50V C806 4.7 50V R822 100 R823 100

KH804 2P CNJ804 S801 (OPEN/CLOSE)

6-6. SCHEMATIC DIAGRAM – MAIN BOARD (3/3) –

• Refer to page 20 for Note on Schematic Diagram.



*

	C5	C6	C7	C55
AEP, UK CET	22P	24P	22P	10P
IT	20P	27P	24P	22P

6-7. IC PIN FUNCTION DESCRIPTION

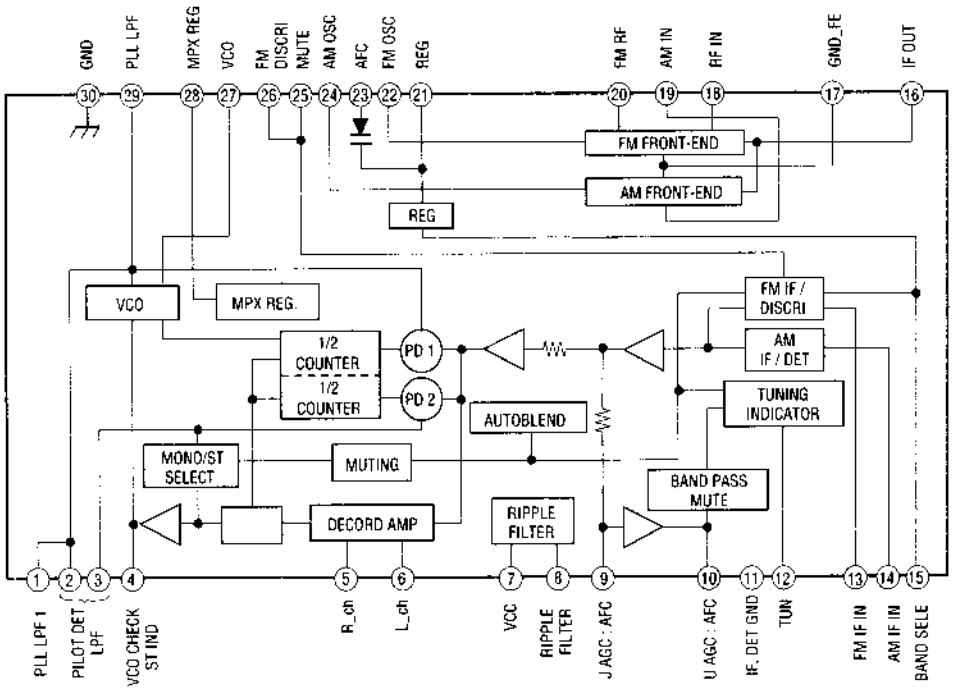
IC702 CD DIGITAL SIGNAL PROCESSOR, LED DRIVE, SYSTEM CONTROL (CXP401-602R)

Pin No.	Pin name	I/O	Description
1	SEIN	I	CD SENS input.
2	CNIN	I	CD SENS input.
3	DATO	O	CD DSP command data output.
4	XLTO	O	Latch output.
5	CLKO	O	Clock output for CD DSP command.
6	DVss	–	Digital ground.
7	DVDD	–	Digital power supply (+5V).
8	MON	–	Not used (Open).
9	MDP	O	Spindle motor drive control.
10	MDS	–	Not used (Open).
11	LOCK	O	Lock signal output.
12	VPCO2	–	Not used (Open).
13	VPCO1	–	Not used (Open).
14	VCKI	–	Not used (Connect to ⑮ pin).
15	V16M	–	Not used (Connect to ⑭ pin).
16	VCTL	–	Not used ("H" level).
17	PCO	O	Decoder PLL phase comparator output.
18	FILI	I	Decoder PLL filter input.
19	FILO	O	Decoder PLL filter output.
20	AVss	–	Analog ground.
21	CLTV	I	Decoder PLL VCO control voltage input.
22	AVDD	–	Analog power supply (+5V).
23	RF	I	CD RF signal input.
24	BIAS	I	Playback EFM asymmetry current constant input.
25	ASYI	I	Playback EFM asymmerty comparater voltage input.
26	ASYO	O	Playback EFM full swing output.
27	TEST1	I	Test terminal (Fixed at "L").
28	TEST2	I	Test terminal (Fixed at "L").
29	XRST	I	CD reset input.
30	XRSTO	O	CD reset output. "L" : Reset
31	FOK	I	FOK signal input.
32	LRCK	O	L/R clock signal output. (Connect to ㉝ pin)
33	LRCKI	I	L/R clock signal input. (Connect to ㉜ pin)
34	PCMD	O	PCM data output. (Connect to ㉟ pin)
35	PCMDI	I	PCM data input. (Connect to ㉞ pin)
36	BCK	O	Bit clock signal output. (Connect to ㊲ pin)
37	BCKI	I	Bit clock signal input. (Connect to ㊱ pin)
38	GTOP	–	Not used (Open).
39	XPCK	–	Not used (Open).
40	GFS	–	Not used (Open).
41	RFCK	–	Not used (Open).
42	C2PO	–	Not used (Open).
43	DVss	–	Digital ground.
44	DVDD	–	Digital power supply (+5V).
45	XROF	–	Not used (Open).

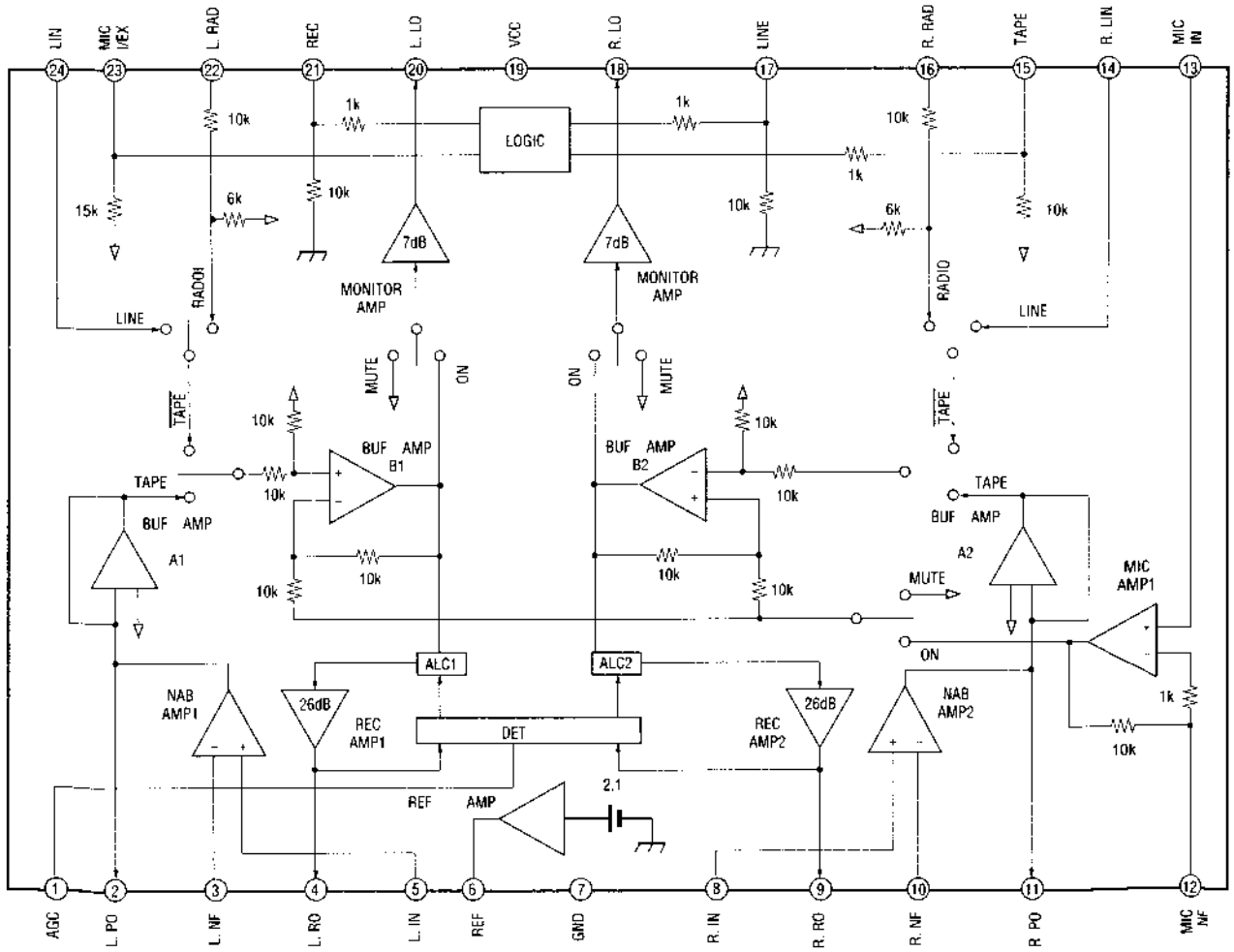
Pin No.	Pin name	I/O	Description
46	MNT3	–	Not used (Open).
47	MNT1	–	Not used (Open).
48	MNT0	–	Not used (Open).
49	C4M	–	Not used (Open).
50	DOUT	–	Not used (Open).
51	EMPHI	–	Not used (Open).
52	WFCK	–	Not used (Open).
53	SCOR	–	Not used (Open).
54	SBSO	–	Not used (Open).
55	EXCK	–	Not used (Open).
56	DTEST	I	Test terminal (Fixed at "L").
57	CTEST	I	Test terminal (Fixed at "L").
58	FR	I	⏮ key input.
59	PLAY/PAUSE	I	⏯ key input.
60	FF	I	⏭ key input.
61	STOP	I	■ key input.
62	MODE	I	PLAY MODE key input.
63	DISP/ENTER	I	DISPLAY/ENTER key input.
64	AU MUTE	O	Audio mute signal output.
65	BTL MUTE	O	BTL mute signal output.
66	SENCE2	I	CD SENCE input.
67	REC	I	Function REC input.
68	LIMIT SW	I	LIMIT switch input.
69	OPEN/CLOSE	I	CD door open/close switch input.
70	RMC	–	Not used (Fixed at "H").
71	DVss	–	Digital ground.
72	DVDD	–	Digital power supply (+5V).
73	SEG 15	–	Not used (Open).
74	SEG 14	–	Not used (Open).
75 – 88	SEG 0 – 13	O	LCD segment output.
89 – 92	COM 0 – 3	O	LCD common output.
93 – 95	VCL 1 – 3	I	LCD drive device voltage input.
96	AVss1	–	Analog ground.
97	AVDD1	–	Analog power supply (+5V).
98	AOUT1	O	Audio output.
99	AIN1	I	Audio input.
100	LOUT1	O	L-CH audio output.
101	AVss1	–	Analog ground.
102	XVDD	–	Oscillator power supply (+5V).
103	XTAI	I	Oscillator connect terminal (16.9344MHz).
104	XTAO	O	Oscillator connect terminal (16.9344MHz).
105	XVss	–	Oscillator ground.
106	AVss2	–	Analog ground.
107	LOUT2	O	R-CH audio output.
108	AIN2	I	Audio input.
109	AOUT2	O	Audio output.
110	AVDD2	–	Digital power supply (+5V).
111	AVss2	–	Ground terminal.
112	NC	–	Not used (Connect to ground).

• IC BLOCK DIAGRAMS

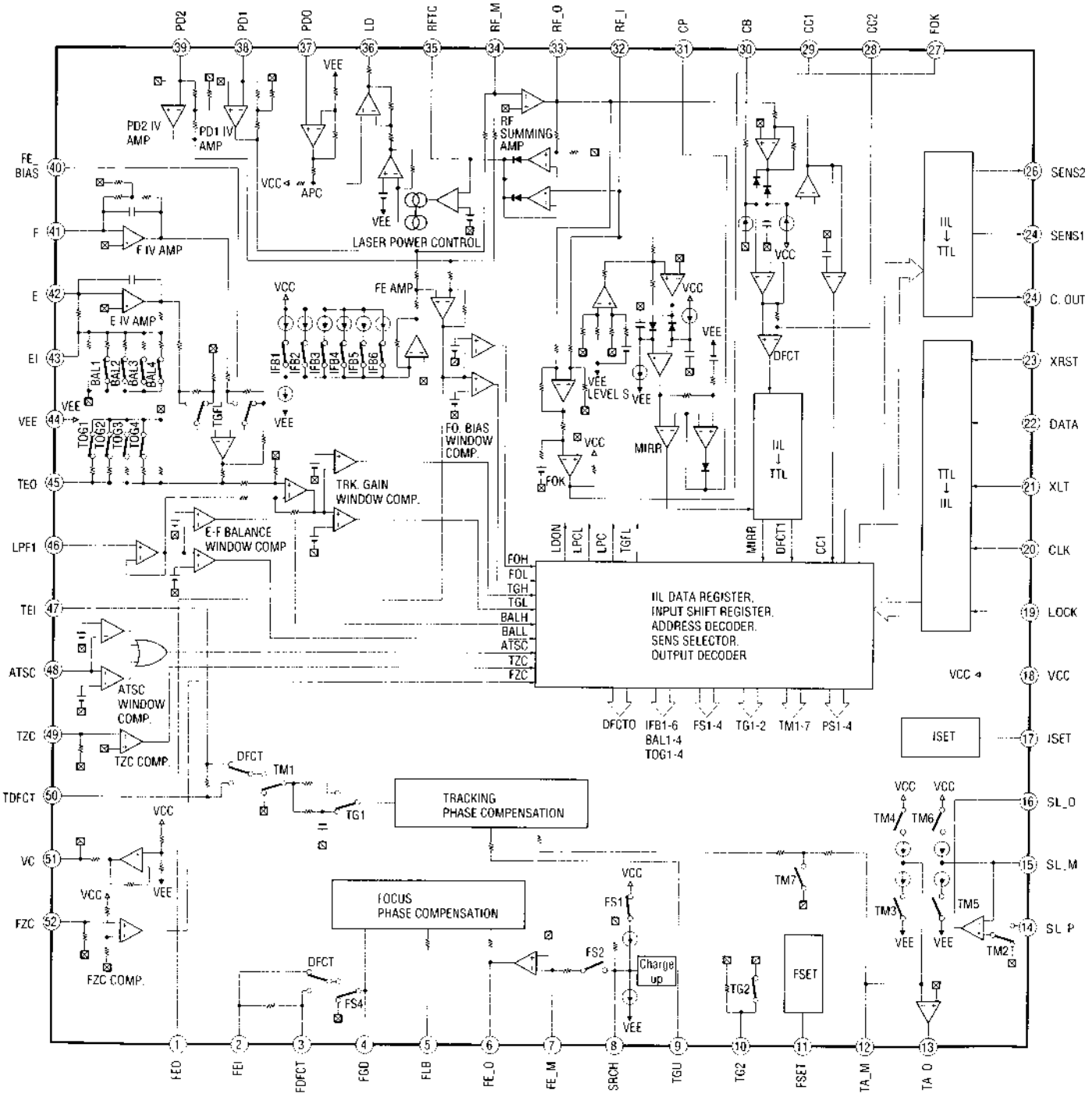
IC1 CXA1538S



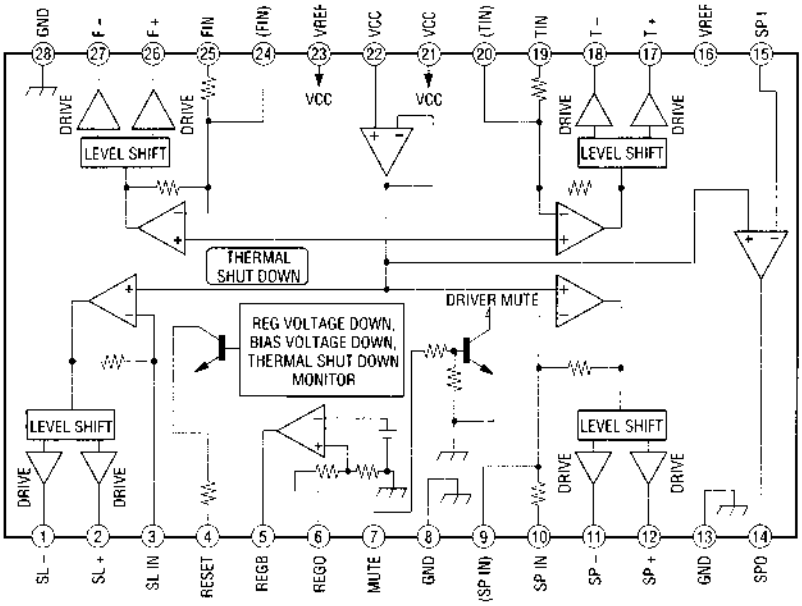
IC301 TA2068N



IC701 CXA1992BR



IC703 BA6898FP



SECTION 7
EXPLODED VIEWS

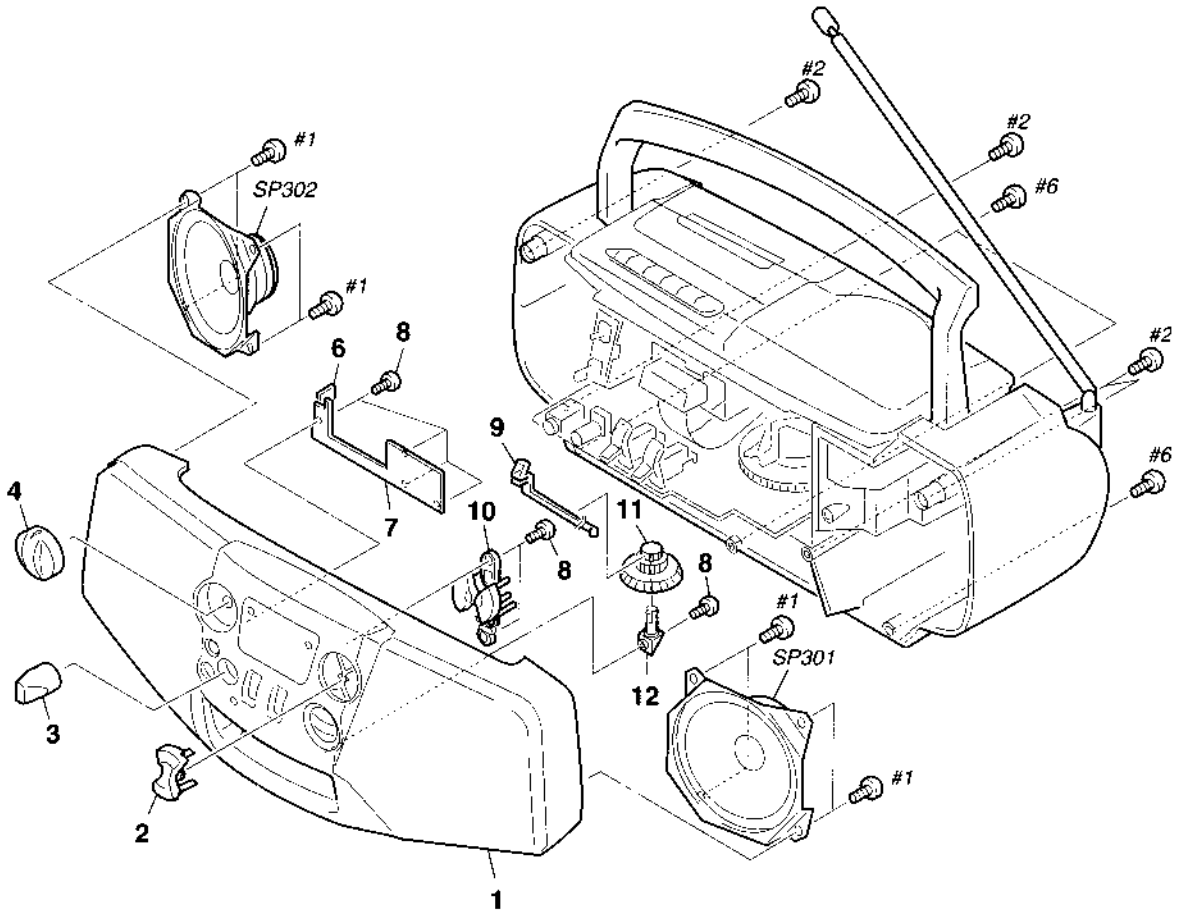
NOTE:

- -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.
- Abbreviation
  IT : Italian model
  CET : East European and Russian model
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts of Color Cabinet's Color
- 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.

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

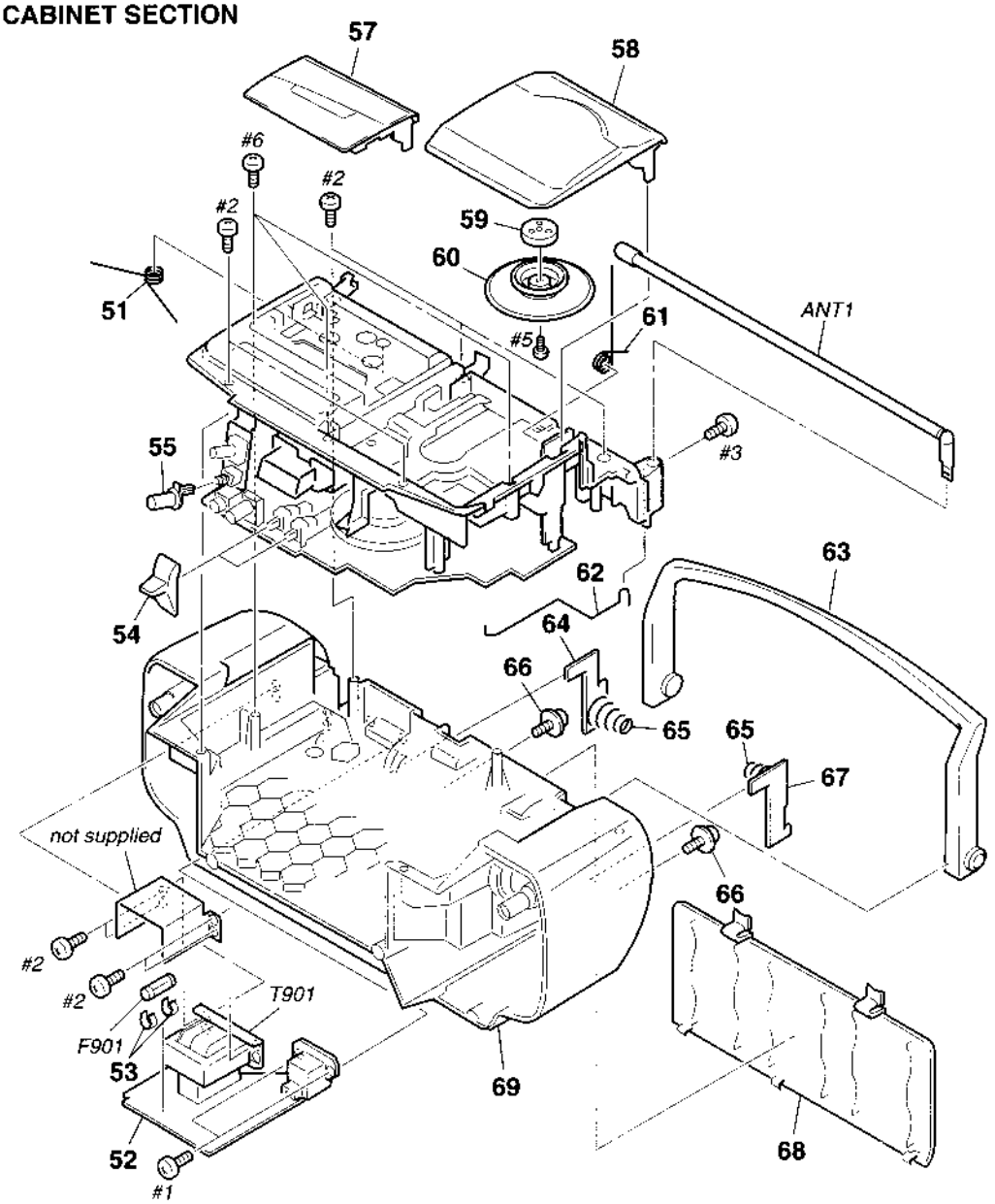
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

7-1. FRONT CABINET SECTION



Ref. No.	Part No.	Description	Remarks
1	X-3376-986-1	CABINET (FRONT) ASSY(SILVER)(AEP,UK,CET)	
1	X-3376-987-1	CABINET (FRONT) ASSY(SILVER)(IT)	
1	X-3377-624-1	CABINET (FRONT) ASSY (VIOLET)(AEP,UK,CET)	
1	X-3377-623-1	CABINET (FRONT) ASSY (VIOLET)(IT)	
2	3-031-547-11	BUTTON (CD) (PLAY/STOP) (SILVER) . . . (SILVER, VIOLET)	
3	3-018-837-41	KNOB (TONE)(SILVER) . . . (SILVER, VIOLET)	
4	3-031-549-11	KNOB (VOL)(SILVER) . . . (SILVER, VIOLET)	
* 6	1-673-260-11	CONNECTOR BOARD	
* 7	1-672-952-11	CONTROL BOARD	
8	4-951-620-01	SCREW (2.6 × 8), +BVTP	
9	3-031-551-01	POINTER	
10	3-031-548-11	BUTTON (CD)(AMS) (SILVER) . . . (SILVER, VIOLET)	
11	3-031-552-11	KNOB (TU)(SILVER) . . . (SILVER, VIOLET)	
12	3-031-558-01	SHAFT (TU)	
SP301	1-529-215-11	SPEAKER R-ch (10 cm)	
SP302	1-529-215-11	SPEAKER L-ch (10 cm)	

7-2. REAR CABINET SECTION

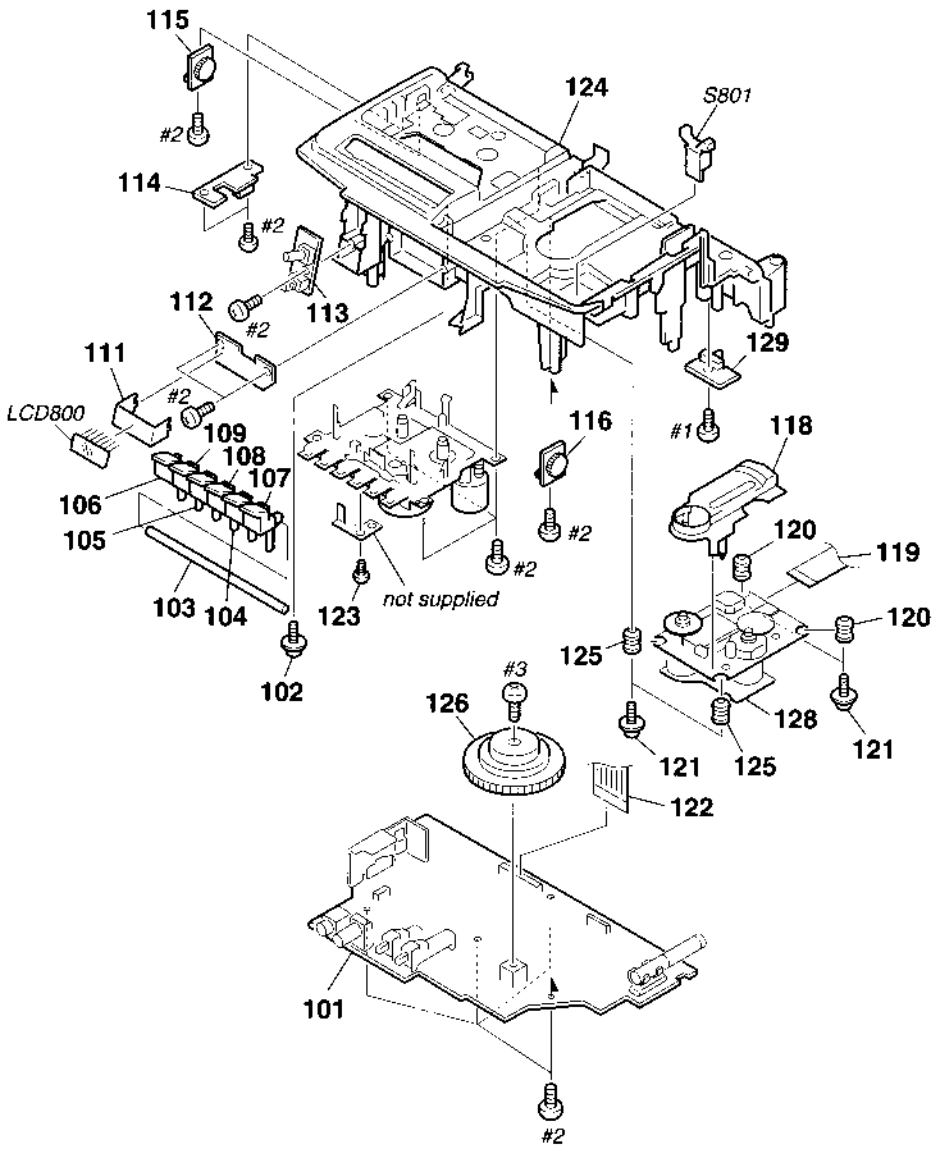


Ref. No.	Part No.	Description	Remarks
51	3-031-561-01	SPRING, CASSETTE UP	
* 52	1-672-950-11	POWER BOARD	
53	1-533-233-31	HOLDER, FUSE	
54	3-031-570-01	KNOB (FUNCTION) (SILVER) . . . (SILVER,VIOLET)	
55	3-031-550-01	BUTTON (MEGA BASS) (SILVER) . . . (SILVER,VIOLET)	
57	X-3376-881-1	HOLDER ASSY, CASSETTE (SILVER)	
57	X-3377-492-1	HOLDER ASSY, CASSETTE (VIOLET)	
58	3-031-538-11	LID (CD)(SILVER)	
58	3-031-538-71	LID (CD)(VIOLET)	
59	1-452-899-11	MAGNET	
60	3-019-395-01	PLATE, CHUCKING	
61	3-031-562-01	SPRING, CD UP	
62	3-031-564-01	TERMINAL (ANT)(IT)	
62	3-031-857-01	TERMINAL, ANTENNA (AEP, UK, CET)	

Ref. No.	Part No.	Description	Remarks
63	3-031-540-11	HANDLE (SILVER)	
63	3-031-540-61	HANDLE (VIOLET)	
* 64	1-672-302-11	BATTERY BOARD	
65	3-028-154-01	TERMINAL (–), BATT	
66	4-960-167-01	SCREW (3 × 8) (DIA. 10), +WH	
* 67	1-672-358-11	HALF BATTERY BOARD	
68	3-036-134-11	LID, BATTERY CASE (VIOLET)	
68	3-926-244-51	LID, BATTERY CASE (SILVER)	
69	3-031-536-61	CABINET (REAR)(SILVER)(AEP,UK,IT)	
69	3-031-536-91	CABINET (REAR)(SILVER)(CET)	
69	3-032-549-41	CABINET (REAR)(VIOLET)(AEP,UK,IT)	
69	3-032-549-51	CABINET (REAR)(VIOLET)(CET)	
ANT1	1-501-883-21	ANTENNA, TELESCOPIC	
⚠ F901	1-532-286-00	FUSE, TIME-LAG 2.5A/250V	
⚠ T901	1-433-578-11	TRANSFORMER, POWER	

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

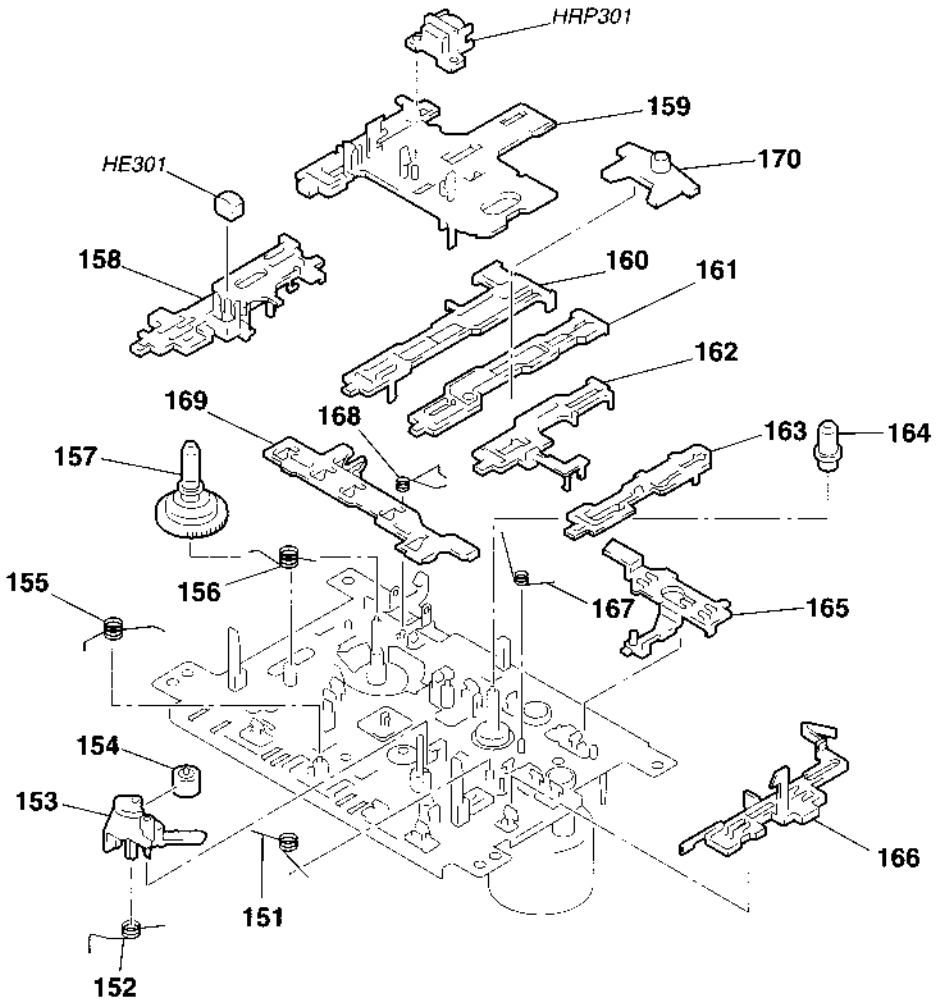
7-3. UPPER CABINET SECTION



Ref. No.	Part No.	Description	Remarks
* 101	A-3321-828-A	MAIN BOARD, COMPLETE (AEP,UK,CET)	
* 101	A-3321-839-A	MAIN BOARD, COMPLETE (IT)	
102	4-960-167-01	SCREW (3 × 8) (DIA. 10), +WH	
103	3-031-560-01	SHAFT (MD)	
104	3-031-545-11	BUTTON (STOP)(SILVER) . . . (SILVER,VIOLET)	
105	3-031-543-11	BUTTON (REW)(SILVER) . . . (SILVER,VIOLET)	
106	3-031-541-11	BUTTON (REC)(SILVER) . . . (SILVER,VIOLET)	
107	3-031-546-11	BUTTON (PAUSE) (SILVER) . . . (SILVER,VIOLET)	
108	3-031-544-11	BUTTON (FF)(SILVER) . . . (SILVER,VIOLET)	
109	3-031-542-11	BUTTON (PLAY)(SILVER) . . . (SILVER,VIOLET)	
111	3-018-845-01	HOLDER (406), LCD	
* 112	1-672-951-11	LCD BOARD	
* 113	1-672-953-11	VOLUME BOARD	
* 114	1-672-949-11	RECORD SWITCH BOARD	
115	3-922-112-21	DAMPER	

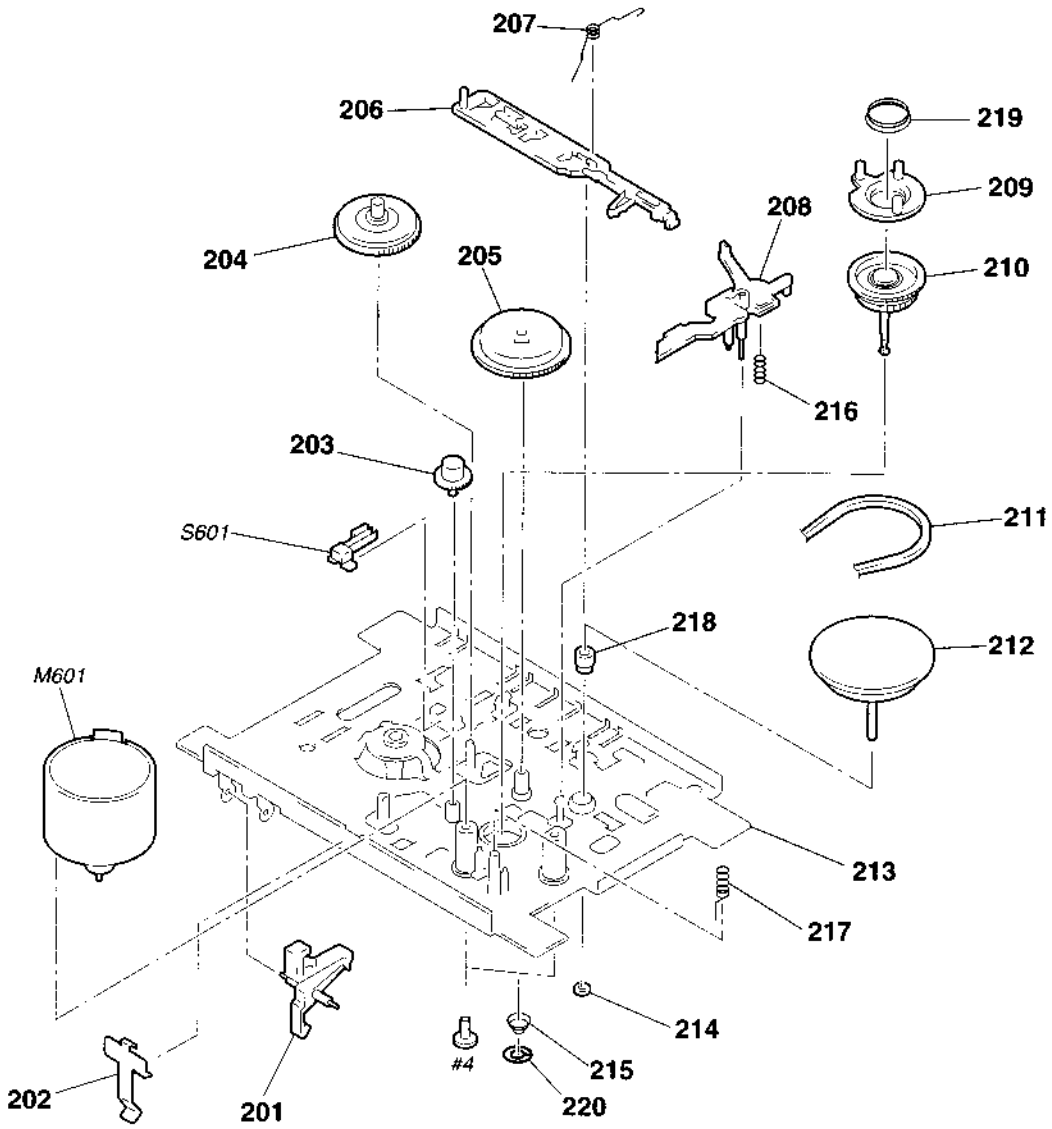
Ref. No.	Part No.	Description	Remarks
116	3-922-112-31	DAMPER	
118	3-923-736-01	COVER, CD	
119	1-777-955-11	WIRE (FLAT TYPE) (16 CORE)	
120	3-910-095-31	RUBBER, VIBRATION PROOF	
121	3-916-006-01	SCREW (2.6 × 16)(IT)	
121	3-921-725-01	SCREW (2.6 × 10), +PWH(AEP, UK, CET)	
122	1-773-119-11	WIRE (FLAT TYPE) (19 CORE)	
123	4-951-620-01	SCREW (2.6 × 8), +BVTP	
124	3-031-537-11	CABINET (UPPER)(SILVER)	
124	3-031-537-81	CABINET (UPPER)(VIOLET)	
125	3-910-095-21	RUBBER, VIBRATION PROOF	
126	3-032-102-01	GEAR (PVC 3BAND)	
* 128	1-639-678-12	CD MOTOR BOARD	
* 129	1-672-776-11	MONO ST BOARD	
LCD800	1-801-913-11	DISPLAY PANEL, LIQUID CRYSTAL	
S801	1-692-960-11	SWITCH, PUSH (1 KEY)	

7-4. MECHANISM DECK SECTION (1)
(MF-V10-117)



Ref. No.	Part No.	Description	Remarks
151	3-933-010-01	SPRING (S/P), TORSION	
152	3-933-025-01	SPRING (P), TORSION	
153	3-933-026-01	LEVER (P)	
154	3-933-024-01	ROLLER, PINCH	
155	3-933-019-01	SPRING (F/R), TORSION	
156	3-933-028-01	SPRING (FWD), TORSION	
157	3-933-016-01	GEAR (S REEL)	
158	3-008-590-01	SLIDER (REC)	
159	3-008-592-01	BASE (H), HEAD	
* 160	3-008-588-01	SLIDER (REW)	
* 161	3-008-589-13	SLIDER (FF)	
* 162	3-008-587-01	SLIDER (STOP)	
* 163	3-008-591-01	SLIDER (PAUSE)	
164	3-933-004-01	CLAW, REEL	
* 165	3-933-021-01	SLIDER (FRP)	
* 166	3-933-006-01	SLIDER (EJECT)	
167	3-934-833-01	SPRING (FRP)	
168	3-022-794-02	SPRING (BT)	
169	3-933-007-01	PLATE, LOCK	
* 170	3-012-114-01	LEVER (FR)	
HE301	1-543-876-11	HEAD (ERASE)	
HRP301	1-500-454-11	HEAD,MAGNETIC(RECORD/PLAYBACK)	

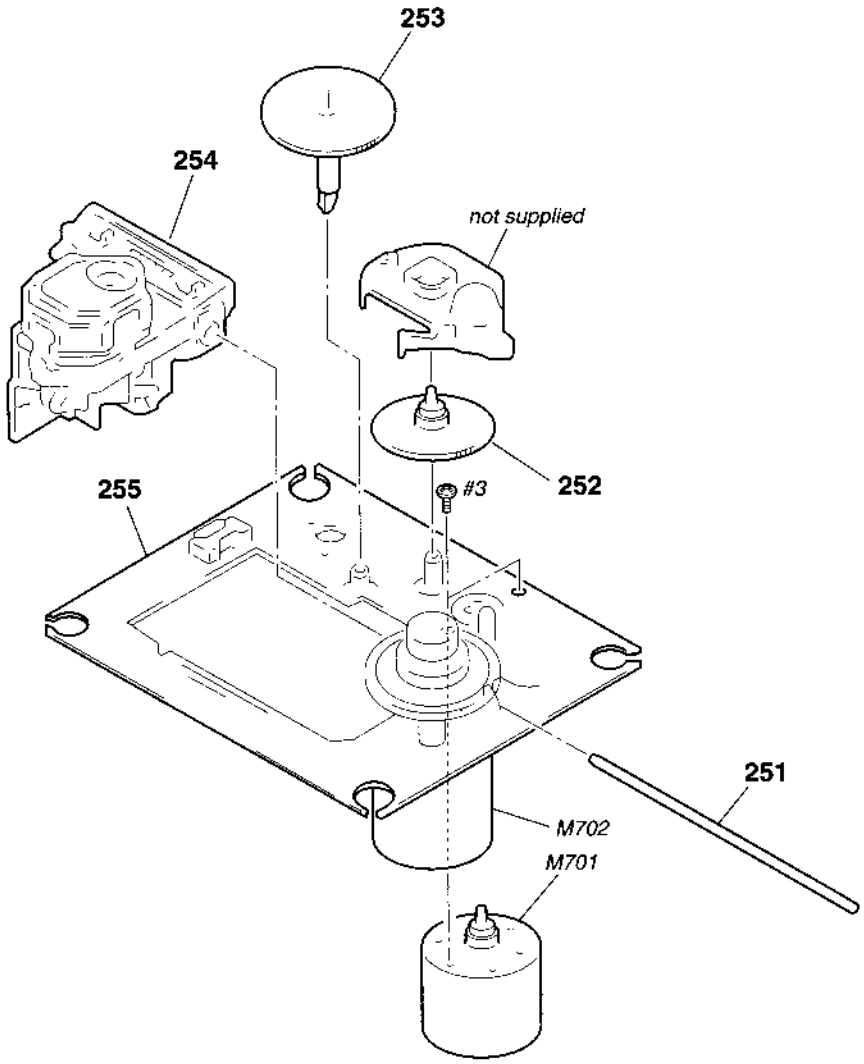
7-5. MECHANISM DECK SECTION (2)
(MF-V10-117)



Ref. No.	Part No.	Description	Remarks
201	3-933-029-01	LEVER, ERASING PREVENTION	
202	3-933-182-01	SPRING, CASSETTE	
203	3-932-995-01	GEAR (MID)	
204	X-3371-667-1	CLUTCH ASSY	
205	3-932-997-01	GEAR (CAM)	
* 206	3-932-999-01	SLIDER (SW)	
207	3-932-998-01	SPRING (GROUND), TORSION	
208	3-009-648-01	LEVER (S.OFF)	
209	3-936-438-01	LEVER (K)	
210	X-3373-572-1	REEL ASSY (N), T	
211	3-933-020-01	BELT	

Ref. No.	Part No.	Description	Remarks
212	X-3372-924-1	FLYWHEEL ASSY	
213	3-932-993-01	CHASSIS, OUTSERT	
214	3-343-358-01	RING, RETAINING	
215	3-933-005-01	SPRING (CAM), COMPRESSION	
216	3-939-383-02	SPRING, COMPRESSION	
217	3-937-760-01	SPRING (GROUND), COMPRESSION	
218	3-934-336-01	BEARING	
219	3-009-650-02	SPRING (K), COMPRESSION	
220	3-016-349-01	WASHER	
M601	A-3320-446-A	MOTOR ASSY(LOADING)(WITH PULLEY)	
S601	1-762-679-11	SWITCH, LEAF(MD POWER)	

7-6. OPTICAL PICK-UP SECTION (KSM-213CDM)



Ref. No.	Part No.	Description	Remarks
251	2-626-908-01	SHAFT, SLED	
252	2-627-003-02	GEAR (B)(RP)	
253	2-626-907-01	GEAR (A)(S)	
⚠254	8-848-483-05	OPTICAL PICK-UP KSS-213CDM	
255	X-2626-202-1	CHASSIS ASSY (MB)(RP), MOTOR (SPINDLE) (INCLUDING M702)	
M701	X-2625-769-1	GEAR ASSY (MB)(RP), MOTOR (SLED)	

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

SECTION 8
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.
- -XX, -X mean standardized parts, so they may have some difference 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
- Abbreviation
  IT : Italian model
  CET : East European and Russian model
- 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	Remarks
*	1-672-302-11	BATTERY BOARD	
		**********	
	3-028-154-01	TERMINAL (–), BATT	
**********			
*	1-639-678-12	CD MOTOR BOARD	
		**********	
		< CONNECTOR >	
CNP707	1-564-722-11	PIN, CONNECTOR (SMALL TYPE) 6P	
		< SWITCH >	
S701	1-572-085-11	SWITCH, LEAF (LIMIT)	
**********			
*	1-672-952-11	CONTROL BOARD	
		**********	
		< SWITCH >	
S801	1-762-798-11	SWITCH, KEYBOARD (MODE)	
S802	1-762-798-11	SWITCH, KEYBOARD (DISPLAY/ENTER)	
S803	1-762-798-11	SWITCH, KEYBOARD (PLAY)	
S804	1-762-798-11	SWITCH, KEYBOARD (STOP)	
S805	1-762-798-11	SWITCH, KEYBOARD (FR)	
S806	1-762-798-11	SWITCH, KEYBOARD (FF)	
**********			
*	1-673-260-11	CONNECTOR BOARD	
		**********	
		< CONNECTOR >	
* CNP803	1-785-673-11	PIN, CONNECTOR (PC BOARD) 7P	
**********			
*	1-672-358-11	HALF BATTERY BOARD	
		**********	
	3-028-154-01	TERMINAL (–), BATT	
		< CONNECTOR >	
* CNP908	1-785-668-11	PIN, CONNECTOR (PC BOARD) 2P	
**********			

Ref. No.	Part No.	Description	Remarks
*	1-672-951-11	LCD BOARD	
		*********	
	3-018-845-01	HOLDER (406), LCD	
		< CONNECTOR >	
CNP801	1-695-380-31	PIN, CONNECTOR (PC BOARD) 19P	
		< LIQUID CRYSTAL DISPLAY >	
LCD800	1-801-913-11	DISPLAY PANEL, LIQUID CRYSTAL	
**********			
*	A-3321-828-A	MAIN BOARD, COMPLETE (AEP,CET,UK)	
		**********	
*	A-3321-839-A	MAIN BOARD, COMPLETE (IT)	
		**********	
	3-031-570-11	KNOB (FUNCTION)	
	3-032-102-01	GEAR (PVC)(3 BAND)	
	7-621-775-20	SCREW +B 2.6 × 5	
	7-685-647-79	SCREW +BVTP 3 × 10 TYPE2 N-S	
		< CAPACITOR >	

C1	1-162-215-31	CERAMIC	47PF	5%	50V
C4	1-124-907-11	ELECT	10uF	20%	50V
C5	1-162-206-31	CERAMIC	20PF	5%	50V (IT)
C5	1-162-207-31	CERAMIC	22PF	5%	50V (AEP,CET,UK)
C6	1-102-960-00	CERAMIC	24PF	5%	50V (AEP,CET,UK)
C6	1-102-961-00	CERAMIC	27PF	5%	50V (IT)
C7	1-162-207-31	CERAMIC	22PF	5%	50V (AEP,CET,UK)
C7	1-162-208-31	CERAMIC	24PF	5%	50V (IT)
C8	1-162-191-31	CERAMIC	2.2PF	10%	50V
C9	1-162-306-11	CERAMIC	0.01uF	20%	16V
C12	1-162-306-11	CERAMIC	0.01uF	20%	16V
C14	1-162-282-31	CERAMIC	100PF	10%	50V
C15	1-126-963-11	ELECT	4.7uF	20%	50V
C16	1-124-903-11	ELECT	1uF	20%	50V
C17	1-104-664-11	ELECT	47uF	20%	10V
C18	1-127-876-21	CERAMIC	0.01uF	10%	50V
C19	1-127-876-21	CERAMIC	0.01uF	10%	50V
C20	1-124-903-11	ELECT	1uF	20%	50V
C21	1-126-961-11	ELECT	2.2uF	20%	50V
C22	1-104-664-11	ELECT	47uF	20%	10V

Ref. No.	Part No.	Description			Remarks
C23	1-124-902-00	ELECT	0.47uF	20%	50V
C24	1-126-963-11	ELECT	4.7uF	20%	50V
C27	1-162-306-11	CERAMIC	0.01uF	20%	16V
C28	1-104-664-11	ELECT	47uF	20%	10V
C39	1-104-730-11	FILM	200PF	5%	100V
C41	1-136-985-91	FILM	300PF	5%	63V
C42	1-110-342-11	FILM	390PF	5%	63V
C45	1-162-282-31	CERAMIC	100PF	10%	50V
C47	1-162-282-31	CERAMIC	100PF	10%	50V
C54	1-162-205-31	CERAMIC	18PF	5%	50V
C55	1-162-199-31	CERAMIC	10PF	5%	50V (AEP,CET,UK)
C55	1-162-207-31	CERAMIC	22PF	5%	50V (IT)
C59	1-162-294-31	CERAMIC	0.001uF	10%	50V
C62	1-162-294-31	CERAMIC	0.001uF	10%	50V
C101	1-162-301-11	CERAMIC	0.0015uF	20%	16V
C102	1-104-664-11	ELECT	47uF	20%	10V
C103	1-127-883-21	CERAMIC	0.039uF	10%	50V
C104	1-162-302-11	CERAMIC	0.0022uF	20%	16V
C105	1-162-215-31	CERAMIC	47PF	5%	50V
C108	1-124-902-00	ELECT	0.47uF	20%	50V
C109	1-124-903-11	ELECT	1uF	20%	50V
C121	1-124-903-11	ELECT	1uF	20%	50V
C122	1-127-880-21	CERAMIC	0.022uF	10%	50V
C140	1-124-252-00	ELECT	0.33uF	20%	50V
C151	1-104-664-11	ELECT	47uF	20%	10V
C152	1-162-294-31	CERAMIC	0.001uF	10%	50V
C153	1-124-443-00	ELECT	100uF	20%	10V
C154	1-124-473-11	ELECT	1000uF	20%	10V
C155	1-136-165-00	FILM	0.1uF	5%	50V
C157	1-127-883-21	CERAMIC	0.039uF	10%	50V
C158	1-162-302-11	CERAMIC	0.0022uF	20%	16V
C201	1-162-301-11	CERAMIC	0.0015uF	20%	16V
C202	1-104-664-11	ELECT	47uF	20%	10V
C203	1-127-883-21	CERAMIC	0.039uF	10%	50V
C204	1-162-302-11	CERAMIC	0.0022uF	20%	16V
C205	1-162-215-31	CERAMIC	47PF	5%	50V
C208	1-124-902-00	ELECT	0.47uF	20%	50V
C209	1-124-903-11	ELECT	1uF	20%	50V
C221	1-124-903-11	ELECT	1uF	20%	50V
C222	1-127-880-21	CERAMIC	0.022uF	10%	50V
C240	1-124-252-00	ELECT	0.33uF	20%	50V
C251	1-104-664-11	ELECT	47uF	20%	10V
C252	1-162-294-31	CERAMIC	0.001uF	10%	50V
C253	1-124-443-00	ELECT	100uF	20%	10V
C254	1-124-473-11	ELECT	1000uF	20%	10V
C255	1-136-165-00	FILM	0.1uF	5%	50V
C257	1-127-883-21	CERAMIC	0.039uF	10%	50V
C258	1-162-302-11	CERAMIC	0.0022uF	20%	16V
C301	1-124-443-00	ELECT	100uF	20%	10V
C302	1-124-443-00	ELECT	100uF	20%	10V
C303	1-124-907-11	ELECT	10uF	20%	50V
C304	1-124-443-00	ELECT	100uF	20%	10V
C311	1-162-301-11	CERAMIC	0.0015uF	20%	16V
C312	1-104-664-11	ELECT	47uF	20%	10V
C313	1-130-468-00	MYLAR	560PF	5%	50V
C313	1-137-431-11	FILM	560PF	5%	50V
C315	1-162-306-11	CERAMIC	0.01uF	20%	16V
C316	1-126-962-11	ELECT	3.3uF	20%	50V
C317	1-126-233-11	ELECT	22uF	20%	50V
C320	1-101-005-00	CERAMIC	22000PF		50V

Ref. No.	Part No.	Description			Remarks
C330	1-162-282-31	CERAMIC	100PF	10%	50V
C341	1-126-937-11	ELECT	4700uF	20%	16V
C343	1-162-306-11	CERAMIC	0.01uF	20%	16V
C345	1-162-306-11	CERAMIC	0.01uF	20%	16V
C346	1-162-306-11	CERAMIC	0.01uF	20%	16V
C347	1-126-925-11	ELECT	470uF	20%	10V
C348	1-104-666-11	ELECT	220uF	20%	10V
C351	1-104-664-11	ELECT	47uF	20%	10V
C352	1-162-294-31	CERAMIC	0.001uF	10%	50V
C359	1-162-306-11	CERAMIC	0.01uF	20%	16V
C401	1-124-903-11	ELECT	1uF	20%	50V
C701	1-162-600-11	CERAMIC	0.0047uF	20%	16V
C702	1-162-306-11	CERAMIC	0.01uF	20%	16V
C703	1-162-305-11	CERAMIC	0.0068uF	20%	16V
C704	1-137-374-11	FILM	0.047uF	5%	50V
C705	1-162-306-11	CERAMIC	0.01uF	20%	16V
C706	1-104-664-11	ELECT	47uF	20%	10V
C707	1-161-494-00	CERAMIC	0.022uF		25V
C708	1-136-165-00	FILM	0.1uF	5%	50V
C709	1-136-165-00	FILM	0.1uF	5%	50V
C710	1-162-302-11	CERAMIC	0.0022uF	20%	16V
C711	1-162-203-31	CERAMIC	15PF	5%	50V
C712	1-162-294-31	CERAMIC	0.001uF	10%	50V
C713	1-136-165-00	FILM	0.1uF	5%	50V
C714	1-136-165-00	FILM	0.1uF	5%	50V
C715	1-124-907-11	ELECT	10uF	20%	50V
C716	1-136-165-00	FILM	0.1uF	5%	50V
C717	1-137-370-11	FILM	0.01uF	5%	50V
C718	1-131-377-00	TANTALUM	10uF	10%	10V
C719	1-104-664-11	ELECT	47uF	20%	10V
C720	1-162-306-11	CERAMIC	0.01uF	20%	16V
C721	1-130-483-00	MYLAR	0.01uF	5%	50V
C721	1-137-370-11	FILM	0.01uF	5%	50V
C722	1-130-489-00	MYLAR	0.033uF	5%	50V
C723	1-162-306-11	CERAMIC	0.01uF	20%	16V
C724	1-130-489-00	MYLAR	0.033uF	5%	50V
C725	1-137-440-11	FILM	0.018uF	5%	50V
C726	1-162-306-11	CERAMIC	0.01uF	20%	16V
C727	1-162-199-31	CERAMIC	10PF	5%	50V
C728	1-104-664-11	ELECT	47uF	20%	10V
C729	1-126-962-11	ELECT	3.3uF	20%	50V
C730	1-137-375-11	FILM	0.068uF	5%	50V
C731	1-162-215-31	CERAMIC	47PF	5%	50V
C732	1-162-306-11	CERAMIC	0.01uF	20%	16V
C733	1-162-282-31	CERAMIC	100PF	10%	50V
C734	1-162-282-31	CERAMIC	100PF	10%	50V
C735	1-162-282-31	CERAMIC	100PF	10%	50V
C736	1-162-294-31	CERAMIC	0.001uF	10%	50V
C737	1-161-494-00	CERAMIC	0.022uF		25V
C739	1-162-282-31	CERAMIC	100PF	10%	50V
C740	1-162-282-31	CERAMIC	100PF	10%	50V
C741	1-127-878-21	CERAMIC	0.015uF	10%	50V
C742	1-162-306-11	CERAMIC	0.01uF	20%	16V
C743	1-104-664-11	ELECT	47uF	20%	10V
C744	1-126-925-11	ELECT	470uF	20%	10V
C761	1-162-294-31	CERAMIC	0.001uF	10%	50V
C799	1-130-489-00	MYLAR	0.033uF	5%	50V
C801	1-104-664-11	ELECT	47uF	20%	10V
C802	1-126-233-11	ELECT	22uF	20%	50V
C805	1-126-963-11	ELECT	4.7uF	20%	50V

MAIN

Ref. No.	Part No.	Description			Remarks
C806	1-126-963-11	ELECT	4.7uF	20%	50V
C807	1-162-292-31	CERAMIC	680PF	10%	50V
C808	1-162-292-31	CERAMIC	680PF	10%	50V
C809	1-162-284-31	CERAMIC	150PF	10%	50V
C810	1-162-284-31	CERAMIC	150PF	10%	50V
C811	1-124-907-11	ELECT	10uF	20%	50V
C812	1-162-306-11	CERAMIC	0.01uF	20%	16V
C814	1-162-306-11	CERAMIC	0.01uF	20%	16V
C815	1-162-203-31	CERAMIC	15PF	5%	50V
C816	1-162-203-31	CERAMIC	15PF	5%	50V
C817	1-162-306-11	CERAMIC	0.01uF	20%	16V
C818	1-162-306-11	CERAMIC	0.01uF	20%	16V
C819	1-162-306-11	CERAMIC	0.01uF	20%	16V
C820	1-137-194-81	FILM	0.47uF	5%	50V
C821	1-162-306-11	CERAMIC	0.01uF	20%	16V
C822	1-162-290-31	CERAMIC	470PF	10%	50V
C823	1-162-286-21	CERAMIC	220PF	10%	50V
C824	1-136-169-00	FILM	0.22uF	5%	50V
C825	1-162-306-11	CERAMIC	0.01uF	20%	16V
C826	1-162-306-11	CERAMIC	0.01uF	20%	16V
C828	1-162-306-11	CERAMIC	0.01uF	20%	16V
C829	1-162-306-11	CERAMIC	0.01uF	20%	16V
C831	1-162-306-11	CERAMIC	0.01uF	20%	16V
		< FILTER >			
CF1	1-760-738-61	FILTER, CERAMIC (10.7MHz)			
CF2	1-577-072-11	FILTER, CERAMIC (455KHz)			
		< CONNECTOR >			
* CNP301	1-785-656-11	PIN, CONNECTOR (PC BOARD) 4P			
* CNP303	1-785-656-11	PIN, CONNECTOR (PC BOARD) 4P			
* CNP304	1-785-656-11	PIN, CONNECTOR (PC BOARD) 4P			
CNP702	1-770-646-11	CONNECTOR, FFC/FPC 16P (IT)			
CNP702	1-770-674-11	CONNECTOR, FFC/FPC 16P			
CNP802	1-695-342-31	PIN, CONNECTOR (PC BOARD) 19P			
		< ADJUSTABLE CAPACITOR >			
CT1-4	1-141-583-11	CAP,ADJ (INCLUDING CV1)			
CT7	1-141-605-11	CAP, ADJ			
CT8	1-141-605-11	CAP, ADJ			
		< VARIABLE CAPACITOR >			
CV1	1-141-583-11	CAP, VAR			
		< DIODE >			
D1	8-719-991-33	DIODE 1SS133T-77			
D2	8-719-991-33	DIODE 1SS133T-77			
D3	8-719-991-33	DIODE 1SS133T-77			
D301	8-719-991-33	DIODE 1SS133T-77			
D302	8-719-991-33	DIODE 1SS133T-77			
D307	8-719-991-33	DIODE 1SS133T-77			
D308	8-719-109-89	DIODE MTZJ-T-77-5.6C			
D310	8-719-059-97	LED L-34HD(OPR/BATT)			
D311	8-719-109-97	DIODE MTZJ-T-77-6.8C			
D312	8-719-991-33	DIODE 1SS133T-77			
D314	8-719-991-33	DIODE 1SS133T-77			
D401	8-719-991-33	DIODE 1SS133T-77			
D402	8-719-991-33	DIODE 1SS133T-77			
D403	8-719-991-33	DIODE 1SS133T-77			
D404	8-719-991-33	DIODE 1SS133T-77			

Ref. No.	Part No.	Description	Remarks
D406	8-719-991-33	DIODE 1SS133T-77	
D407	8-719-991-33	DIODE 1SS133T-77	
D408	8-719-991-33	DIODE 1SS133T-77	
D409	8-719-991-33	DIODE 1SS133T-77	
D410	8-719-991-33	DIODE 1SS133T-77	
D411	8-719-991-33	DIODE 1SS133T-77	
D801	8-719-991-33	DIODE 1SS133T-77	
		< IC >	
IC1	8-752-050-20	IC CXA1538S	
IC301	8-759-264-71	IC TA2068N	
IC304	8-759-426-51	IC BA5417	
IC701	8-752-082-14	IC CXA1992BR	
IC702	8-752-891-81	IC CXP401-602R	
IC703	8-759-473-42	IC BA6898FP	
		< JACK >	
J301	1-568-267-11	JACK (HEADPHONES)	
		< CABLE HOLDER >	
* KH1	1-573-287-11	HOLDER, CABLE 2P	
* KH305	1-573-287-11	HOLDER, CABLE 2P	
* KH306	1-565-386-11	HOLDER, CABLE 5P	
* KH308	1-573-287-11	HOLDER, CABLE 2P	
* KH803	1-568-135-21	HOLDER, CABLE 7P	
* KH804	1-573-287-11	HOLDER, CABLE 2P	
* KH902	1-565-385-11	HOLDER, CABLE 4P	
		< COIL >	
L1	1-406-998-11	COIL, AIR-CORE	
L2	1-406-957-21	COIL (WITH CORE)(IT)	
L2	1-416-509-11	COIL, AIR-CORE (AEP,CET,UK)	
L3	1-501-958-11	ANTENNA, FERRITE-ROD (LW/MW)	
L4	1-406-253-11	COIL (OSC)	
L9	1-412-482-11	INDUCTOR 0.33uH	
L11	1-406-252-11	COIL (OSC)(AEP)	
L701	1-412-911-11	FERRITE 0uH	
		< TRANSISTOR >	
Q101	8-729-036-80	TRANSISTOR KRC110M-AT	
Q102	8-729-194-57	TRANSISTOR 2SC945TP-QP	
Q103	8-729-194-57	TRANSISTOR 2SC945TP-QP	
Q201	8-729-036-80	TRANSISTOR KRC110M-AT	
Q202	8-729-194-57	TRANSISTOR 2SC945TP-QP	
Q203	8-729-194-57	TRANSISTOR 2SC945TP-QP	
Q301	8-729-281-53	TRANSISTOR 2SC1815GR-TPE2	
Q302	8-729-194-57	TRANSISTOR 2SC945TP-QP	
Q307	8-729-119-76	TRANSISTOR 2SA1175TP-F	
Q308	8-729-036-57	TRANSISTOR KRC101M-AT	
Q309	8-729-021-82	TRANSISTOR 2SD2396K	
Q310	8-729-011-92	TRANSISTOR 2SC2001TP-K1K2	
Q310	8-729-036-86	TRANSISTOR KTC3203Y-AT	
Q401	8-729-036-77	TRANSISTOR KRC107M-AT	
Q402	8-729-036-77	TRANSISTOR KRC107M-AT	
Q403	8-729-036-77	TRANSISTOR KRC107M-AT	
Q404	8-729-036-89	TRANSISTOR KTC3198GR-A	
Q405	8-729-037-29	TRANSISTOR KRA102M-AT	
Q406	8-729-119-76	TRANSISTOR 2SA1175TP-F	
Q407	8-729-036-77	TRANSISTOR KRC107M-AT	

Ref. No.	Part No.	Description			Remarks
Q408	8-729-119-76	TRANSISTOR 2SA1175TP-F			
Q409	8-729-036-86	TRANSISTOR KTC3203Y-AT			
Q701	8-729-037-13	TRANSISTOR KTA1271Y-AT			
Q801	8-729-036-67	TRANSISTOR KRC111M-AT			
		< RESISTOR >			
R1	1-249-411-11	CARBON	330	5%	1/4W
R3	1-249-421-11	CARBON	2.2K	5%	1/4W F
R5	1-249-411-11	CARBON	330	5%	1/4W
R6	1-249-441-11	CARBON	100K	5%	1/4W
R7	1-249-403-11	CARBON	68	5%	1/4W F
R11	1-249-427-11	CARBON	6.8K	5%	1/4W F
R12	1-249-427-11	CARBON	6.8K	5%	1/4W F
R14	1-249-429-11	CARBON	10K	5%	1/4W
R15	1-249-429-11	CARBON	10K	5%	1/4W
R17	1-249-421-11	CARBON	2.2K	5%	1/4W F
R40	1-249-402-11	CARBON	56	5%	1/4W F
R45	1-249-401-11	CARBON	47	5%	1/4W F
R47	1-249-429-11	CARBON	10K	5%	1/4W
R101	1-249-431-11	CARBON	15K	5%	1/4W
R102	1-249-404-00	CARBON	82	5%	1/4W F
R103	1-249-441-11	CARBON	100K	5%	1/4W
R104	1-247-843-11	CARBON	3.3K	5%	1/4W
R105	1-249-434-11	CARBON	27K	5%	1/4W
R106	1-249-421-11	CARBON	2.2K	5%	1/4W F
R109	1-249-426-11	CARBON	5.6K	5%	1/4W
R110	1-247-807-31	CARBON	100	5%	1/4W
R121	1-249-417-11	CARBON	1K	5%	1/4W F
R122	1-247-843-11	CARBON	3.3K	5%	1/4W
R123	1-247-895-91	CARBON	470K	5%	1/4W
R124	1-249-417-11	CARBON	1K	5%	1/4W F
R140	1-249-441-11	CARBON	100K	5%	1/4W
R141	1-249-421-11	CARBON	2.2K	5%	1/4W F
R143	1-249-429-11	CARBON	10K	5%	1/4W
R151	1-249-417-11	CARBON	1K	5%	1/4W F
R153	1-247-815-91	CARBON	220	5%	1/4W
R154	1-247-807-31	CARBON	100	5%	1/4W
R155	1-249-431-11	CARBON	15K	5%	1/4W
R156	1-249-437-11	CARBON	47K	5%	1/4W
R201	1-249-431-11	CARBON	15K	5%	1/4W
R202	1-249-404-00	CARBON	82	5%	1/4W F
R203	1-249-441-11	CARBON	100K	5%	1/4W
R204	1-247-843-11	CARBON	3.3K	5%	1/4W
R205	1-249-434-11	CARBON	27K	5%	1/4W
R206	1-249-421-11	CARBON	2.2K	5%	1/4W F
R209	1-249-426-11	CARBON	5.6K	5%	1/4W
R210	1-247-807-31	CARBON	100	5%	1/4W
R221	1-249-417-11	CARBON	1K	5%	1/4W F
R222	1-247-843-11	CARBON	3.3K	5%	1/4W
R223	1-247-895-91	CARBON	470K	5%	1/4W
R224	1-249-417-11	CARBON	1K	5%	1/4W F
R240	1-249-441-11	CARBON	100K	5%	1/4W
R241	1-249-421-11	CARBON	2.2K	5%	1/4W F
R243	1-249-429-11	CARBON	10K	5%	1/4W
R251	1-249-417-11	CARBON	1K	5%	1/4W F
R253	1-247-815-91	CARBON	220	5%	1/4W
R254	1-247-807-31	CARBON	100	5%	1/4W
R255	1-249-431-11	CARBON	15K	5%	1/4W
R256	1-249-437-11	CARBON	47K	5%	1/4W
R301	1-247-903-00	CARBON	1M	5%	1/4W
R302	1-249-441-11	CARBON	100K	5%	1/4W

Ref. No.	Part No.	Description			Remarks
R305	1-247-903-00	CARBON	1M	5%	1/4W
R306	1-249-429-11	CARBON	10K	5%	1/4W
R307	1-249-429-11	CARBON	10K	5%	1/4W
R309	1-249-417-11	CARBON	1K	5%	1/4W F
R311	1-247-810-11	CARBON	130	5%	1/4W
R312	1-249-427-11	CARBON	6.8K	5%	1/4W F
R313	1-249-393-11	CARBON	10	5%	1/4W F
R314	1-249-425-11	CARBON	4.7K	5%	1/4W F
R315	1-247-863-91	CARBON	22K	5%	1/4W
R316	1-249-421-11	CARBON	2.2K	5%	1/4W F
R319	1-249-425-11	CARBON	4.7K	5%	1/4W F
R341	1-249-437-11	CARBON	47K	5%	1/4W
R342	1-249-419-11	CARBON	1.5K	5%	1/4W F
R343	1-249-415-11	CARBON	680	5%	1/4W F
R344	1-247-815-91	CARBON	220	5%	1/4W
R345	1-247-815-91	CARBON	220	5%	1/4W
R346	1-249-421-11	CARBON	2.2K	5%	1/4W F
R347	1-247-807-31	CARBON	100	5%	1/4W
R348	1-249-421-11	CARBON	2.2K	5%	1/4W F
R349	1-249-414-11	CARBON	560	5%	1/4W F
R350	1-249-393-11	CARBON	10	5%	1/4W F
R401	1-247-895-91	CARBON	470K	5%	1/4W
R402	1-247-903-00	CARBON	1M	5%	1/4W
R403	1-247-815-91	CARBON	220	5%	1/4W
R404	1-249-421-11	CARBON	2.2K	5%	1/4W F
R407	1-249-441-11	CARBON	100K	5%	1/4W
R411	1-249-429-11	CARBON	10K	5%	1/4W
R412	1-247-895-91	CARBON	470K	5%	1/4W
R413	1-249-429-11	CARBON	10K	5%	1/4W
R414	1-247-863-91	CARBON	22K	5%	1/4W
R415	1-249-425-11	CARBON	4.7K	5%	1/4W F
R701	1-249-440-11	CARBON	82K	5%	1/4W
R702	1-249-439-11	CARBON	68K	5%	1/4W
R703	1-249-439-11	CARBON	68K	5%	1/4W
R704	1-249-439-11	CARBON	68K	5%	1/4W
R705	1-249-439-11	CARBON	68K	5%	1/4W
R706	1-249-440-11	CARBON	82K	5%	1/4W
R707	1-247-887-00	CARBON	220K	5%	1/4W
R709	1-247-883-00	CARBON	150K	5%	1/4W
R710	1-247-885-00	CARBON	180K	5%	1/4W
R711	1-247-883-00	CARBON	150K	5%	1/4W
R712	1-247-891-00	CARBON	330K	5%	1/4W
R714	1-249-428-11	CARBON	8.2K	5%	1/4W F
R714	1-249-429-11	CARBON	10K	5%	1/4W
R715	1-249-429-11	CARBON	10K	5%	1/4W
R716	1-249-429-11	CARBON	10K	5%	1/4W
R717	1-247-903-00	CARBON	1M	5%	1/4W
R718	1-247-899-11	CARBON	680K	5%	1/4W
R719	1-249-393-11	CARBON	10	5%	1/4W F
R720	1-249-430-11	CARBON	12K	5%	1/4W
R721	1-247-862-11	CARBON	20K	5%	1/4W
R722	1-249-441-11	CARBON	100K	5%	1/4W
R723	1-247-896-11	CARBON	510K	5%	1/4W
R724	1-249-439-11	CARBON	68K	5%	1/4W
R725	1-247-883-00	CARBON	150K	5%	1/4W
R726	1-247-876-11	CARBON	75K	5%	1/4W
R727	1-249-437-11	CARBON	47K	5%	1/4W
R728	1-249-441-11	CARBON	100K	5%	1/4W
R729	1-249-430-11	CARBON	12K	5%	1/4W
R730	1-249-435-11	CARBON	33K	5%	1/4W

Ref. No.	Part No.	Description			Remarks
R731	1-247-863-91	CARBON	22K	5%	1/4W
R734	1-247-843-11	CARBON	3.3K	5%	1/4W
R735	1-249-427-11	CARBON	6.8K	5%	1/4W F
R736	1-247-863-91	CARBON	22K	5%	1/4W
R737	1-247-843-11	CARBON	3.3K	5%	1/4W
R738	1-249-435-11	CARBON	33K	5%	1/4W
R795	1-249-429-11	CARBON	10K	5%	1/4W
R798	1-249-428-11	CARBON	8.2K	5%	1/4W F (IT)
R801	1-249-429-11	CARBON	10K	5%	1/4W
R803	1-249-430-11	CARBON	12K	5%	1/4W
R804	1-249-430-11	CARBON	12K	5%	1/4W
R805	1-249-430-11	CARBON	12K	5%	1/4W
R806	1-249-430-11	CARBON	12K	5%	1/4W
R807	1-249-430-11	CARBON	12K	5%	1/4W
R808	1-249-430-11	CARBON	12K	5%	1/4W
R809	1-249-431-11	CARBON	15K	5%	1/4W
R810	1-249-431-11	CARBON	15K	5%	1/4W
R811	1-249-431-11	CARBON	15K	5%	1/4W
R820	1-249-417-11	CARBON	1K	5%	1/4W F
R821	1-247-807-31	CARBON	100	5%	1/4W
R822	1-247-807-31	CARBON	100	5%	1/4W
R823	1-247-807-31	CARBON	100	5%	1/4W
R828	1-247-815-91	CARBON	220	5%	1/4W
R843	1-249-437-11	CARBON	47K	5%	1/4W
R845	1-247-843-11	CARBON	3.3K	5%	1/4W
R846	1-249-417-11	CARBON	1K	5%	1/4W F
R847	1-249-429-11	CARBON	10K	5%	1/4W
R852	1-247-903-00	CARBON	1M	5%	1/4W
R853	1-247-887-00	CARBON	220K	5%	1/4W
R855	1-249-429-11	CARBON	10K	5%	1/4W
		< VARIABLE RESISTOR >			
RV1	1-228-995-00	RES, ADJ, METAL22K			
RV351	1-225-438-11	RES, VAR, CARBON 20K/20K (TONE)			
		< SWITCH >			
S1	1-771-192-11	SWITCH, LEVER SLIDE (BAND)			
S351	1-572-299-11	SWITCH, LEVER SLIDE (FUNCTION)			
		< TRANSFORMER >			
T1	1-409-944-11	COIL (DET)			
T2	1-416-522-11	COIL (IFT)			
T301	1-416-041-11	TRANSFORMER, BIAS OSCILLATION			
		< VIBRATOR >			
X801	1-760-793-11	VIBRATOR, CERAMIC (16.9344MHz)			
**********					
*	1-672-776-11	MONO ST BOARD			
		**********			
		< CONNECTOR >			
* CNP1	1-785-654-11	PIN, CONNECTOR (PC BOARD) 2P			
* CNP305	1-785-654-11	PIN, CONNECTOR (PC BOARD) 2P			
		< SWITCH >			
S302	1-771-061-11	SWITCH, SLIDE (FM MODE)			
**********					

Ref. No.	Part No.	Description			Remarks
*	1-672-950-11	POWER BOARD			
		**********			
		< CAPACITOR >			
C901	1-101-005-00	CERAMIC	22000PF	50V	
C902	1-101-005-00	CERAMIC	22000PF	50V	
C903	1-101-005-00	CERAMIC	22000PF	50V	
C904	1-101-005-00	CERAMIC	22000PF	50V	
		< CONNECTOR >			
CNJ901	1-526-838-11	INLET, AC 2P			
* CNP902	1-785-670-11	PIN, CONNECTOR (PC BOARD) 4P			
* CNP907	1-785-655-11	PIN, CONNECTOR (PC BOARD) 3P			
		< DIODE >			
D901	8-719-971-26	DIODE IN4002			
D902	8-719-971-26	DIODE IN4002			
D903	8-719-971-26	DIODE IN4002			
D904	8-719-971-26	DIODE IN4002			
		< FUSE >			
⚠F901	1-532-286-00	FUSE, TIME-LAG 2.5A/250V (20mm)			
		< FERRITE BEAD >			
FB901	1-412-911-11	FERRITE	0UH		
FB902	1-412-911-11	FERRITE	0UH		
		< FUSE HOLDER >			
FH901	1-533-233-31	HOLDER, FUSE			
FH902	1-533-233-31	HOLDER, FUSE			
		< RESISTOR >			
⚠R901	1-249-421-11	CARBON	2.2K	5% 1/4W F	
**********					
*	1-672-949-11	RECORD SWITCH BOARD			
		**********			
		< CONNECTOR >			
* CNP302	1-785-656-11	PIN, CONNECTOR (PC BOARD) 4P			
		< SWITCH >			
S301	1-762-565-11	SWITCH, SLIDE (REC/PB)			
**********					
*	1-672-953-11	VOLUME BOARD			
		**********			
		< CABLE HOLDER >			
* KH307	1-568-135-21	HOLDER, CABLE 7P			
		< RESISTOR >			
R308	1-249-417-11	CARBON	1K	5% 1/4W F	
		< VARIABLE RESISTOR >			
RV352	1-225-764-11	RES, VAR, CARBON 20K/20K (VOLUME)			

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	Remarks
		< SWITCH >	
S355	1-762-950-11	SWITCH, PUSH (1 KEY)(MEGA BASS)	
		**********	
		MISCELLANEOUS	
		**********	
59	1-452-899-11	MAGNET	
119	1-777-955-11	WIRE (FLAT TYPE)(16 CORE)	
122	1-773-119-11	WIRE (FLAT TYPE)(19 CORE)	
204	X-3371-667-1	CLUTCH ASSY	
210	X-3373-572-1	REEL ASSY (N), T	
212	X-3372-924-1	FLYWHEEL ASSY	
ANT1	1-501-883-21	ANTENNA, TELESCOPIC	
HE301	1-543-876-11	HEAD (ERASE)	
HRP301	1-500-454-11	HEAD,MAGNETIC (RECORD/PLAYBACK)	
M601	A-3320-446-A	MOTOR ASSY (LOADING)(WITH PULLEY)	
S601	1-762-679-11	SWITCH, LEAF (MD POWER)	
SP301	1-529-215-11	SPEAKER R-ch (10CM)	
SP302	1-529-215-11	SPEAKER L-ch (10CM)	
⚠ T901	1-433-578-11	TRANSFORMER, POWER	
		**********	
		ACCESSORIES&PACKING MATERIALS	
		**********	
⚠	1-769-412-11	CORD, POWER	
⚠	1-770-019-12	ADAPTOR, CONVERSION PLUG 3P (UK)	
	3-865-316-31	MANUAL, INSTRUCTION (ENGLISH/SPANISH)(AEP,UK)	
	3-865-316-41	MANUAL, INSTRUCTION (FRENCH/GERMAN)(AEP)	
	3-865-316-51	MANUAL, INSTRUCTION (DUTCH/PORTUGUESE)(AEP)	
	3-865-316-61	MANUAL, INSTRUCTION (ITALIAN)(IT)	
	3-865-316-71	MANUAL, INSTRUCTION (POLISH/ CZECH/HUNGARIAN)(CET)	
	3-865-316-81	MANUAL, INSTRUCTION (SWEDISH/FINNISH)(CET)	
		**********	
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-647-79	SCREW +BVTP 3 × 10 TYPE2 N-S	
#2	7-685-647-14	SCREW +BVTP 3 × 10 TYPE2 N-S	
#3	7-682-548-04	SCREW +B 3 × 8	
#4	7-621-775-20	SCREW +B 2.6 × 5	
#5	7-621-770-87	SCREW +B 2.6 × 5	
#6	7-685-648-79	SCREW +BVTP 3 × 12 TYPE2 N-S	

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

CFD-V27L

SONY

AEP Model
UK Model

SERVICE MANUAL

SUPPLEMENT-1

File this supplement with the Service Manual.

Subject : • Addition of East European Model
• Correction

Addition of East European Model

East European model have been added.
This is the same as AEP (SILVER) model which is not described in this suppliment-1.
Refer to CFD-V27L original service manual (9-926-951-00) for other information.

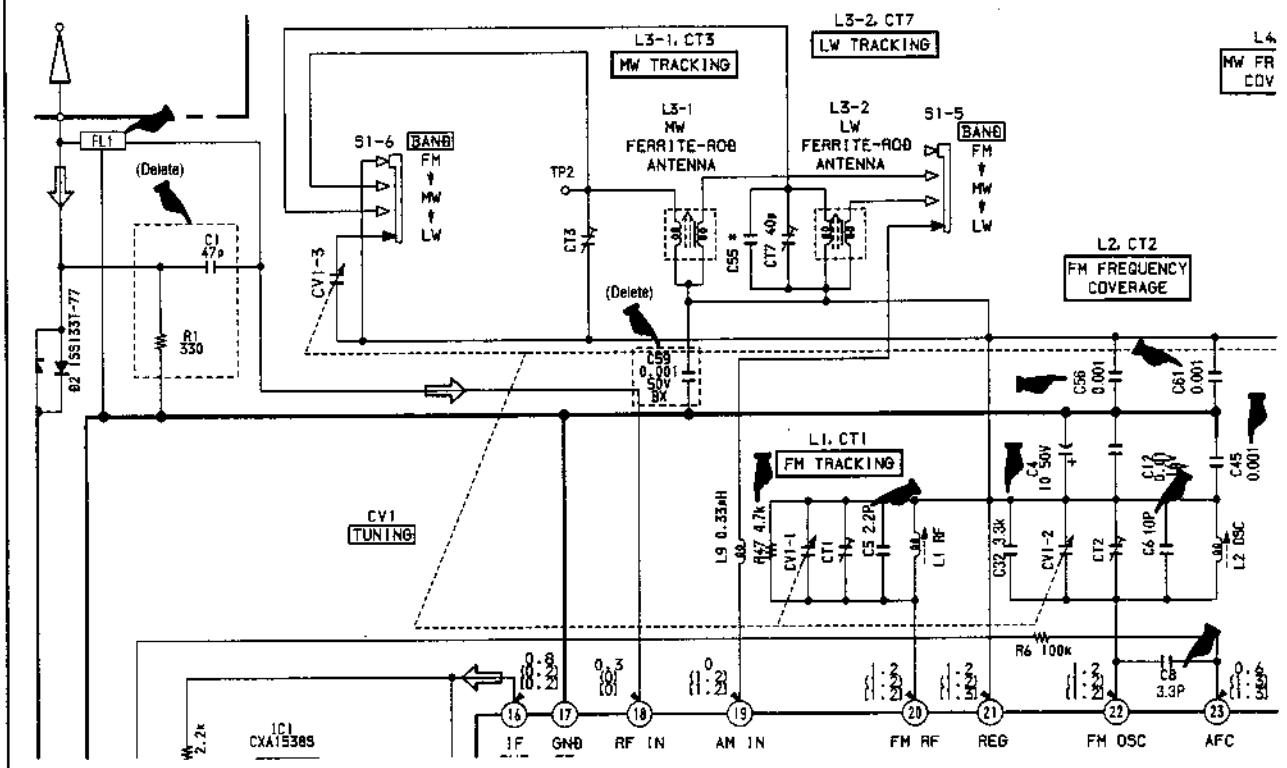
Page	AEP model			East European model	
	Ref No.	Part No.	Description	Part No.	Description
38	1	X-3376-986-1	CABINET (FRONT) ASSY (SILVER) (AEP,UK,CET)	X-3376-988-1	CABINET (FRONT) ASSY (SILVER)
39	69	3-031-536-61	CABINET (REAR)(SILVER)(AEP,UK,IT)	3-031-536-91	CABINET (REAR)(SILVER)
40	* 101	A-3321-828-A	MAIN BOARD, COMPLETE (AEP,CET,UK)	A-3321-840-A	MAIN BOARD, COMPLETE

• Abbreviation
CET : East European and Russian model

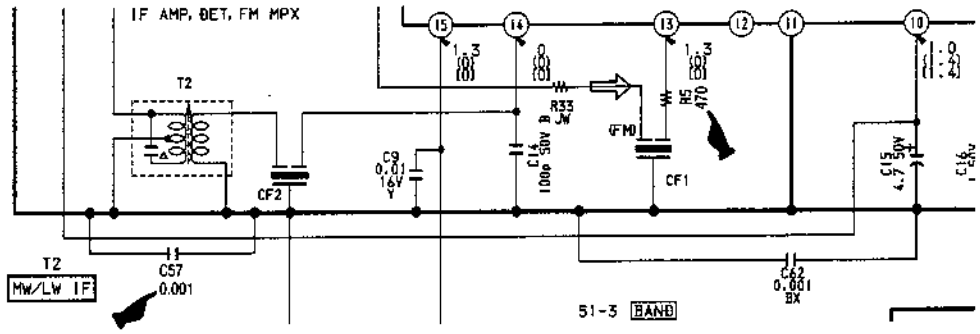
Page	AEP model					East European model				
	Ref No.	Part No.	Description			Part No.	Description			
44	*	A-3321-828-A	MAIN BOARD, COMPLETE (AEP,CET,UK)			A-3321-840-A	MAIN BOARD, COMPLETE			
	C1	1-162-215-31	CERAMIC	47PF	5% 50V	1-162-191-31	CERAMIC	2.2PF	10%	50V
	C5	1-162-207-31	CERAMIC	22PF	5% 50V (AEP,CET,UK)	1-102-284-00	CERAMIC	10PF	5%	50V
	C6	1-102-960-00	CERAMIC	24PF	5% 50V (AEP,CET,UK)	1-162-261-31	CERAMIC	3.3PF	10%	50V
	C8	1-162-191-31	CERAMIC	2.2PF	10% 50V					
45	C32	———	———			1-247-843-11	CARBON	3.3K	5%	1/4W
	C45	1-162-282-31	CERAMIC	100PF	10% 50V	1-162-294-31	CERAMIC	0.001uF	10%	50V
	C47	1-162-282-31	CERAMIC	100PF	10% 50V	1-162-294-31	CERAMIC	0.001uF	10%	50V
	C56	———	———							
	C59	1-162-294-31	CERAMIC	0.001uF	10% 50V	1-162-294-31	CERAMIC	0.001uF	10%	50V
	C57	———	———			1-162-294-31	CERAMIC	0.001uF	10%	50V
	C61	———	———							
46	CT1-4	1-141-583-11	CAP, VAR (INCLUDING CV1)			1-141-584-11	CAP, VAR (INCLUDING CV1)			
	CV1	1-141-583-11	CAP, VAR			1-141-584-11	CAP, VAR			
	FL1	———	———			1-233-452-11	FILTER, BAND PASS			
	JW26	———	———			1-412-911-11	FERRITE 0uH			
	L1	1-406-998-11	COIL, AIR-CORE			1-409-776-11	COIL, AIR-CORE			
	L2	1-416-509-11	COIL, AIR-CORE (AEP,CET,UK)			1-406-958-11	COIL (WITH CORE)			
47	R1	1-249-411-11	CARBON	330	5% 1/4W	———	———			
	R5	1-249-411-11	CARBON	330	5% 1/4W	1-249-413-11	CARBON	470	5%	1/4W F
	R47	1-249-429-11	CARBON	10K	5% 1/4W	1-249-425-11	CARBON	4.7K	5%	1/4W F
49		ACCESSORIES&PACKING MATERIALS **********					ACCESSORIES&PACKING MATERIALS **********			
		3-865-316-51	MANUAL, INSTRUCTION (DUTCH/PORTUGUESE)(AEP)			3-865-316-91	MANUAL, INSTRUCTION (RUSSIAN)			

☛ : East European model portion (Page 31, 32)

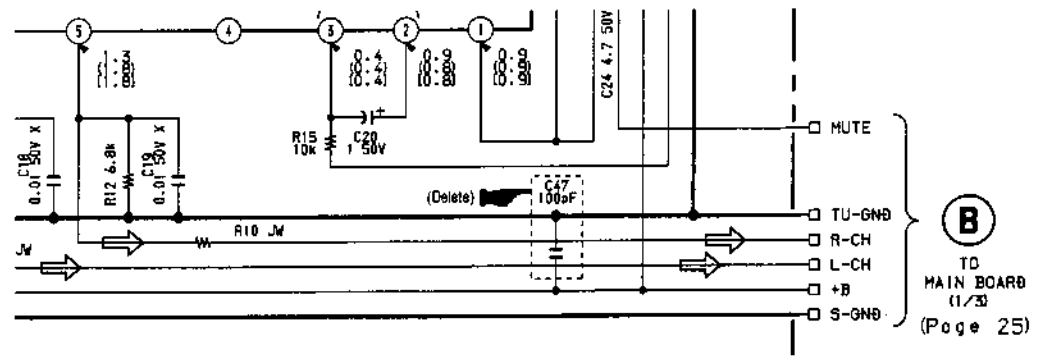
(location : B-D, 2-7)



(location : F-G, 2-5)

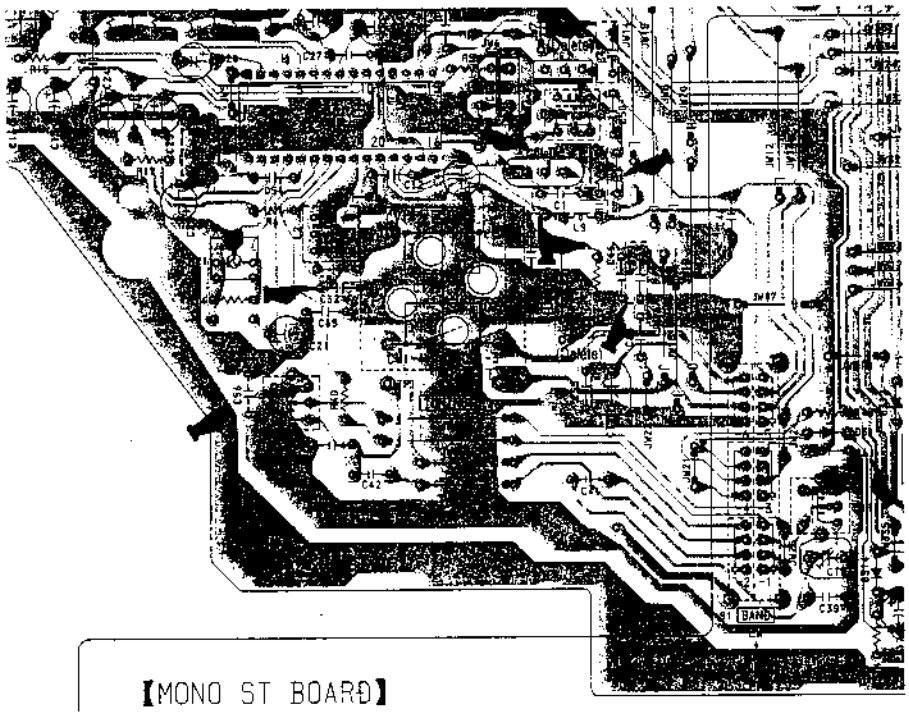


(location : F-G, 10-11)



☛ : East European model portion (Page 21, 22)

(location : E-G, 4-8)



Correction

Page	INCORRECT			CORRECT	
	Ref No.	Part No.	Description	Part No.	Description
38	1	X-3377-624-1	CABINET (FRONT) ASSY (VIOLET) (AEP,UK,CET)	X-3377-625-1	CABINET (FRONT) ASSY (VIOLET) (AEP,UK,CET)

(SPM-99032)

CFD-V27L

SONY

AEP Model
UK Model

SERVICE MANUAL

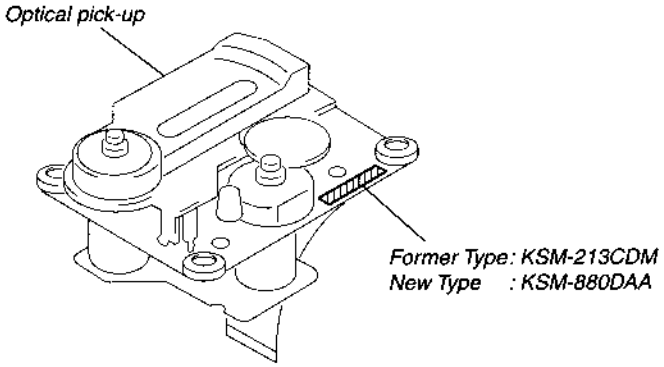
SUPPLEMENT-2

File this supplement with the Service Manual.

Subject : 1. Circuit Boards change
• IC microcomputer change
2. Optional pick up block change

(ECN-RCA00675)

How to distinguish the sets
You can distinguish the sets by the type name printed on the optical pick-up block.



SECTION 1
ADJUSTMENT

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

(Page 1) ☛ :Changed portion

Model Name Using Similar Mechanism	CFD-V17
CD Mechanism Type	KSM-880DAA
Optical Pick-up Name	———
Tape Transport Mechanism Type	MF-V10-117

(Page 14,15) ☛ : Changed portion

CD SECTION

Notes on Check

1. Perform the traverse check in the CD test mode.
   After check, be sure to exit the test mode.
2. Perform check in the order given.
3. Use the disc (YEDS-18, Parts No. 3-702-101-01) only when so indicated.

Before Check

Put the set into test mode and perform the following checks.
Repair if there are any problems.

• Sled Motor Check

Press ▶▶I , I◀◀ keys and confirm that the Optical pick-up moves smoothly from the innermost to outermost circumference and back smoothly and with no catching or abnormal noises.
(Cancellation of BTL mute)
▶▶I : Optical pick-up moves to the outer circumference.
I◀◀ : Optical pick-up moves to the inner circumference.

• **Focus Search Check**

1. Press the CD ▶II key. (Focus search operation is performed continuously.)
2. Look at the Optical pick-up objective lens and confirm that it moves up and down smoothly, with no catching or abnormal noises.
3. Press ■ button.
   Confirm that focus search operation stops. If it does not, press ■ button again longer.

How to Enter the Set into Test Mode

1. Set the function switch to power off.
2. ☛ Set the function switch to CD while MODE key and ▶▶I key pressing.
   The set is into CD test mode (88 is displayed).
3. Turn the power off to release test mode.

How to Exit the Test Mode

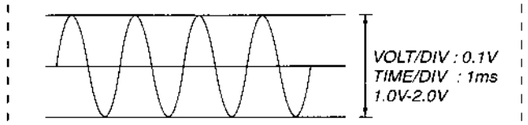
Turn the POWER OFF.

TRAVERSE Check

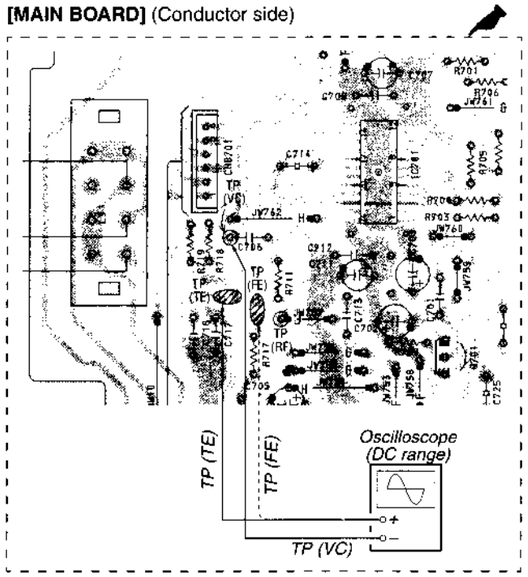
This check is to be done when the optical pick-up block is replaced.

Check Procedure:

1. Connect the oscilloscope to test point TP (VC) and TP (TE) on MAIN board. Insert disk (YEDS-18).
2. Put the set into test mode.
3. Optical pick-up setting to the center by ▶▶I or I◀◀ button pushing.
4. Press ▶II button.
5. Check that the oscilloscope traverse waveform is symmetrical, as shown in the figure below.
6. Release test mode after adjustment is completed.



[MAIN BOARD] (Conductor side)



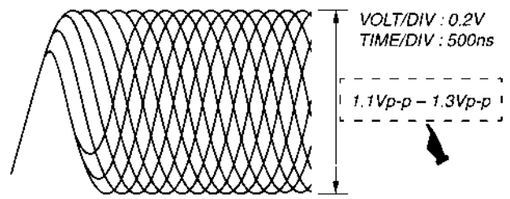
Focus Bias Check

This check is to be done when the optical block replaced.

Check Procedure:

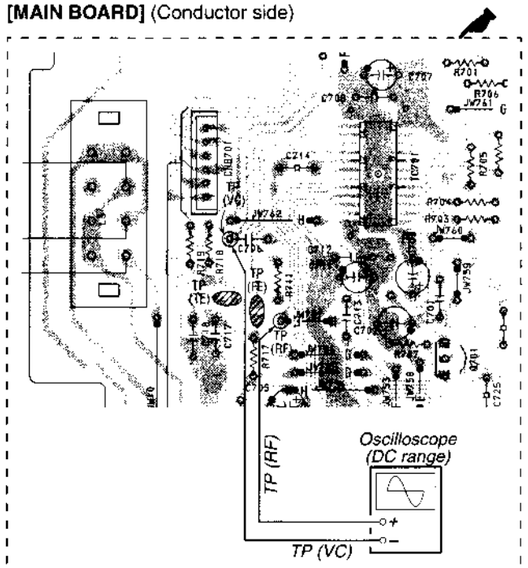
1. Connect the oscilloscope to test point TP (VC) and TP (RF) on MAIN board. Insert disk (YEDS-18).
2. Put the set into test mode.
3. Optical pick-up setting to the center by + or – button pushing.
4. Press the ▶II button and press the DISPLAY ENTER button. (Tracking servo ON)
5. Check that the oscilloscope wavewform is as shown in the figure below (eye pattern).
   A good eye pattern means that the diamond shape (◊) in the center of the waveform can be clearly distinguished.
6. Release test mode after adjustment is completed.

• RF signal reference waveform (eye pattern)



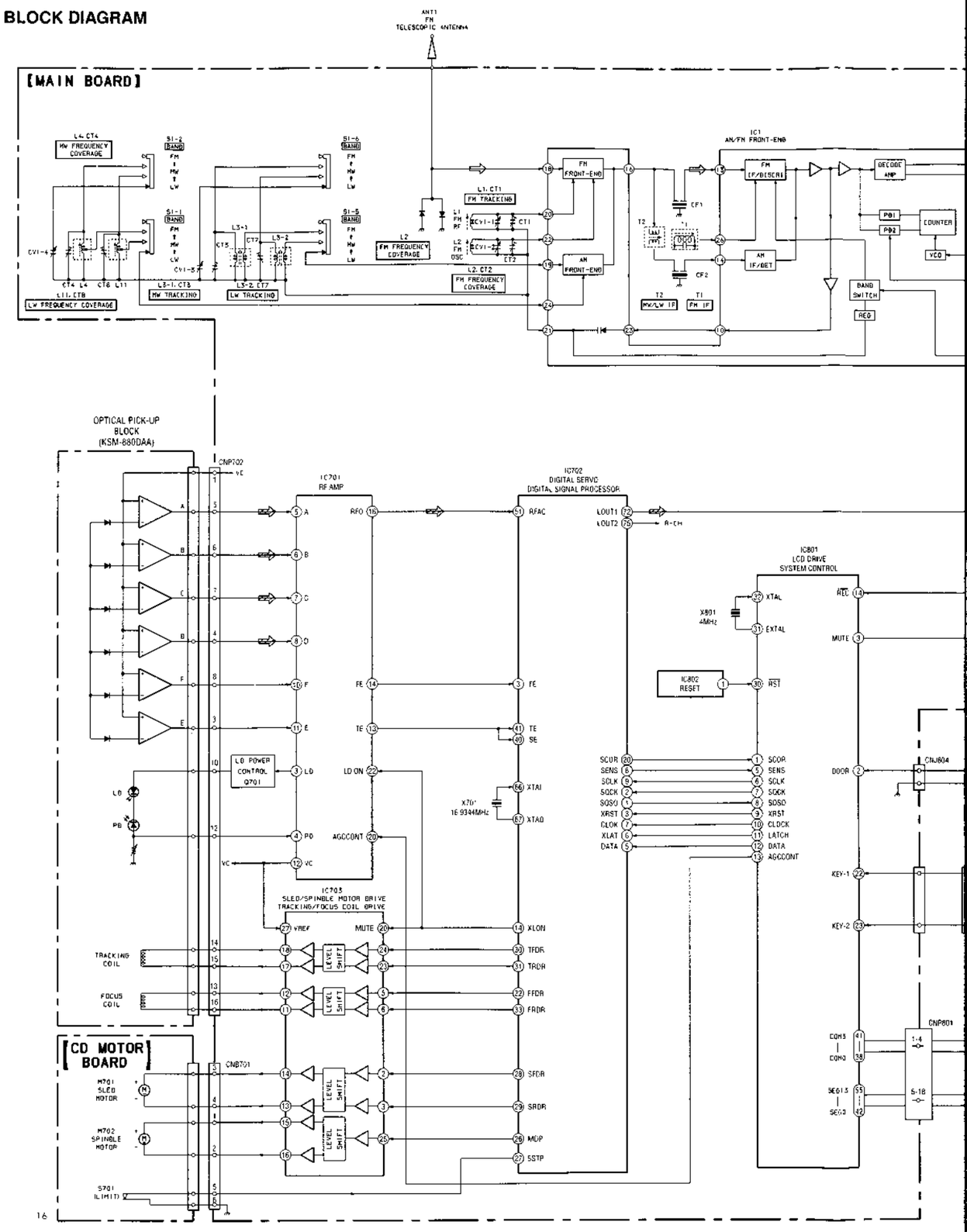
When observing the eye pattern, set the oscilloscope for AC range and raise vertical sensivity.

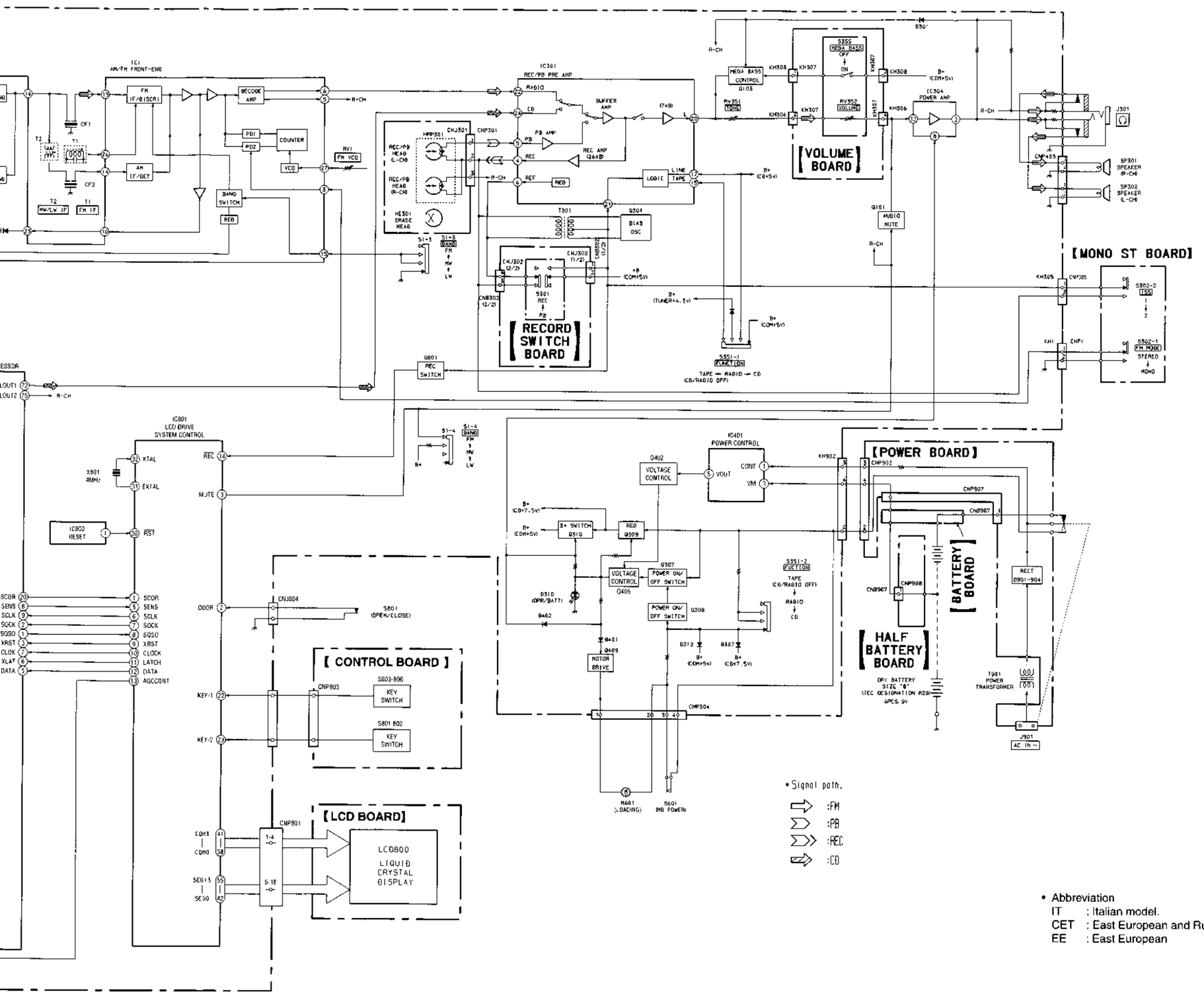
[MAIN BOARD] (Conductor side)



SECTION 2
DIAGRAMS

2-1. BLOCK DIAGRAM



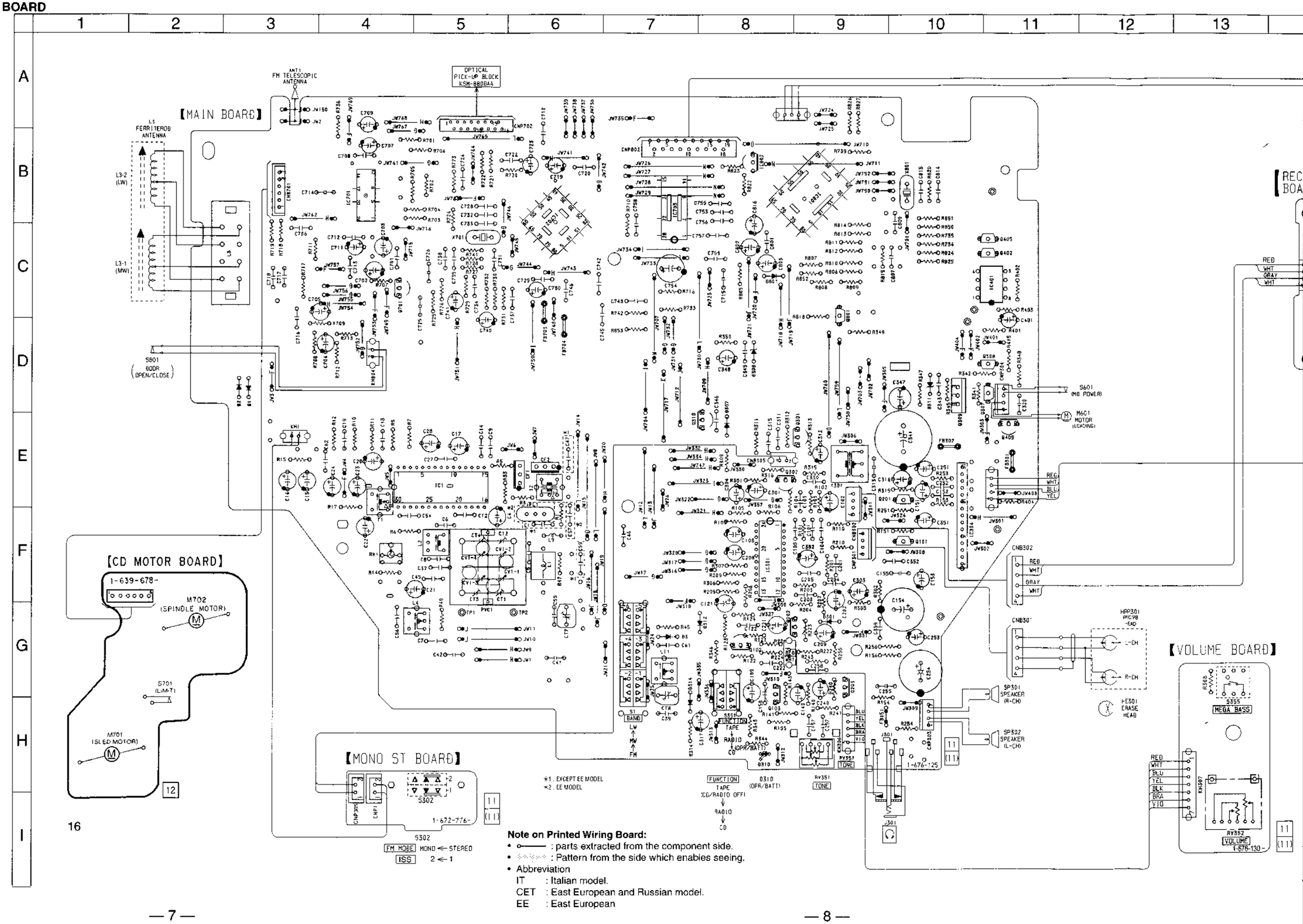


• Abbreviation
IT : Italian model.
CET : East European and Russian model.
EE : East European

2-2. PRINTED WIRING BOARD

• **Semiconductor Location**

Ref. No.	Location
D1	D-3
D2	D-3
D3	G-7
D301	G-9
D302	D-10
D307	E-8
D308	D-8
D310	H-8
D311	D-10
D312	G-8
D314	H-7
D401	C-11
D402	D-11
D403	C-10
D404	C-10
D406	C-10
D407	C-10
D408	C-10
D409	C-11
D410	C-11
D411	C-11
D801	C-7
D901	E-20
D902	E-20
D903	F-20
D904	F-20
IC1	E-5
IC301	F-8
IC304	F-10
IC701	B-5
IC702	B-9
IC703	B-4
Q101	F-10
Q102	G-8
Q103	G-8
Q201	E-10
Q202	G-9
Q203	G-9
Q301	E-9
Q302	E-8
Q307	D-11
Q308	D-11
Q309	D-10
Q310	E-8
Q401	B-11
Q402	B-11
Q403	B-11
Q404	B-10
Q405	C-11
Q406	D-10
Q407	B-10
Q408	C-10
Q409	E-11
Q701	A-6
Q801	D-6

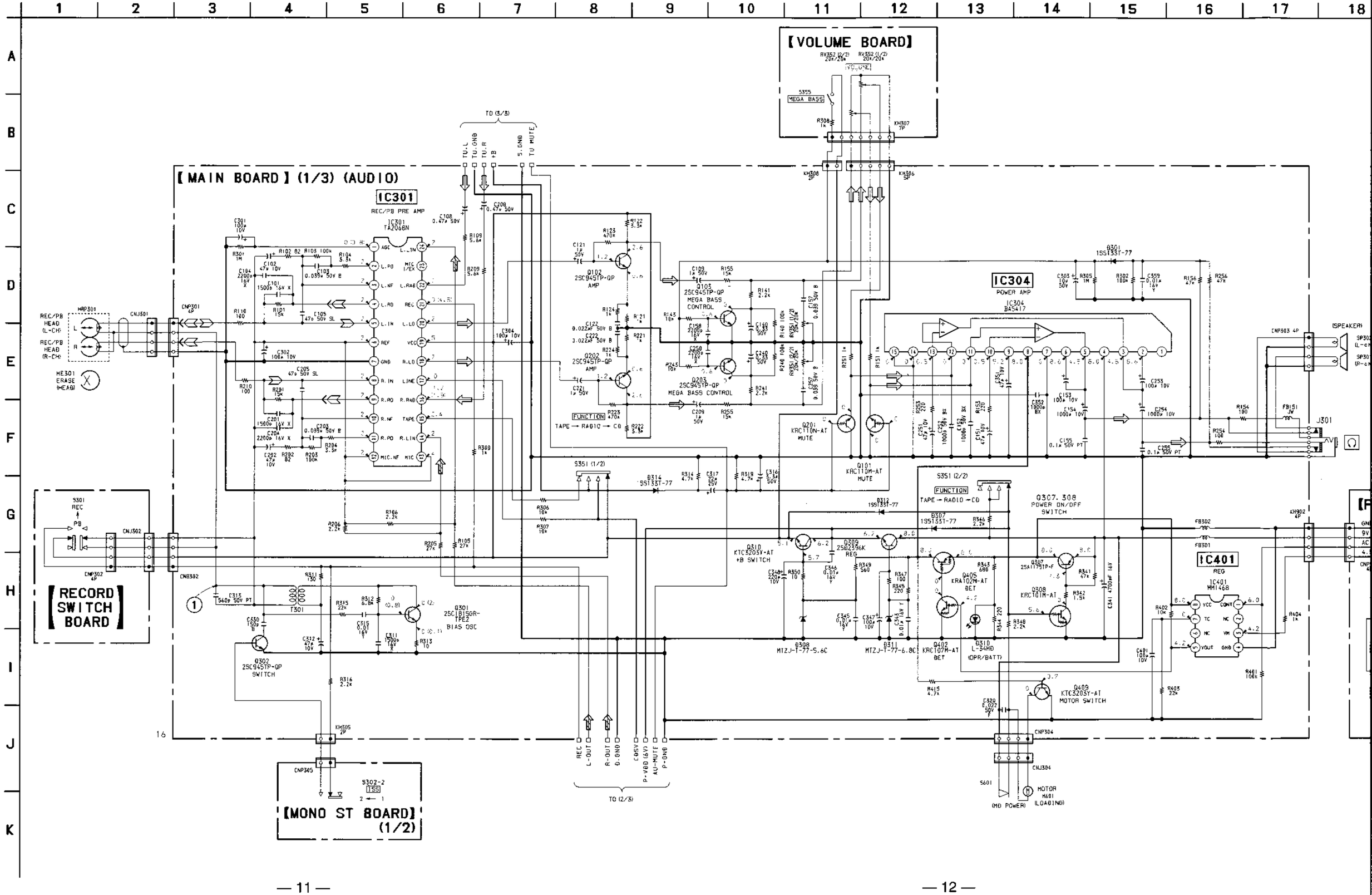


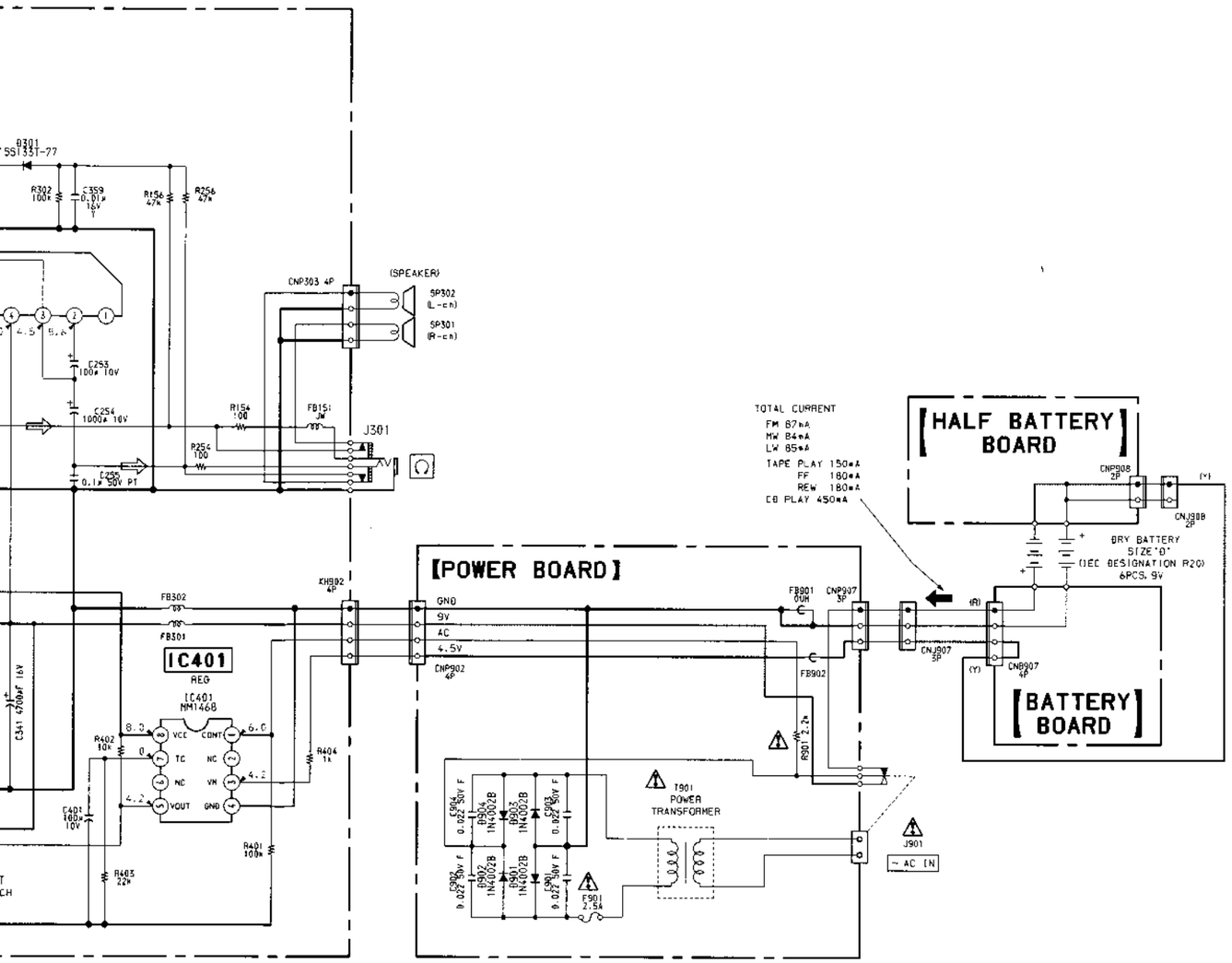
*1. EXCEPT EE MODEL
*2. EE MODEL

Note on Printed Wiring Board:

- ○—— : parts extracted from the component side.
- ▒▒▒▒ : Pattern from the side which enables seeing.
- Abbreviation
  - IT : Italian model.
  - CET : East European and Russian model.
  - EE : East European

2-3. SCHEMATIC DIAGRAM AUDIO SECTION • Refer to page 24 for IC Block Diagrams.



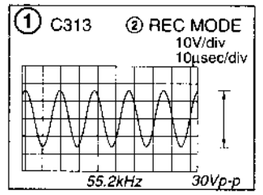


Note on Schematic Diagram:

- 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.
- ——— : B+ Line.
- Power voltage is dc 9V 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 : TAPE PLAY
  ( ) : TAPE REC
- 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.
- Signal path.
  ⇨ : FM
  Σ : PB (TAPE)
  Σ» : REC (TAPE)
  ⇨ : CD
- Abbreviation
  IT : Italian model.
  CET : East European and Russian model.
  EE : East European

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

• Waveform



2-4. SCHEMATIC DIAGRAM CD SECTION

• Refer to page 21 for IC Pin Function. • Refer to page 25 for IC Block Diagrams.

【MAIN BOARD】(2/3) (CD)

【CD MOTOR BOARD】

M702 SPINDLE MOTOR
M701 SLED MOTOR
S701 LIMIT

⚠ OPTICAL PICK-UP BLOCK (KSM-880ĐAA)

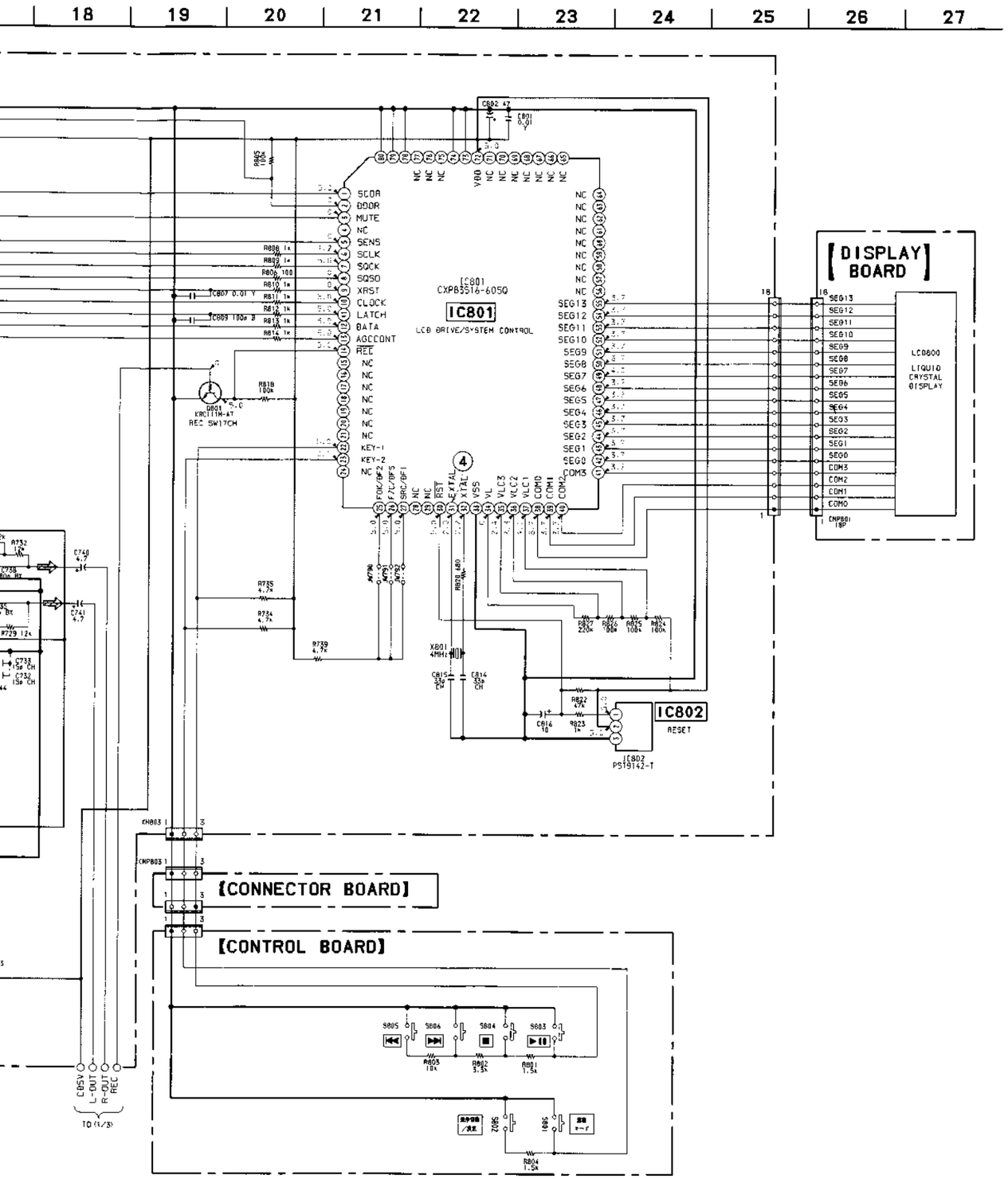
IC703 BA5974FP
SLED SPINDLE MOTOR DRIVE TRACKING/FOCUS COIL DRIVE

IC701 CXA2566M
CD RF/SYSTEM SERVO PROCESSOR

IC702 CXD2587Q
CD DIGITAL SIGNAL PROCESSOR

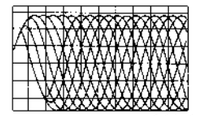
【CONNECTOR BOAR

【CONTROL BOARD】



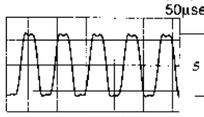
• **Waveforms**

② IC701 ⑯ RFO 0.2V/div 0.5µsec/div



1.1 to 1.3 Vp-p

③ IC702 ⑰ XTAO 2V/div 50µsec/div



5 Vp-p

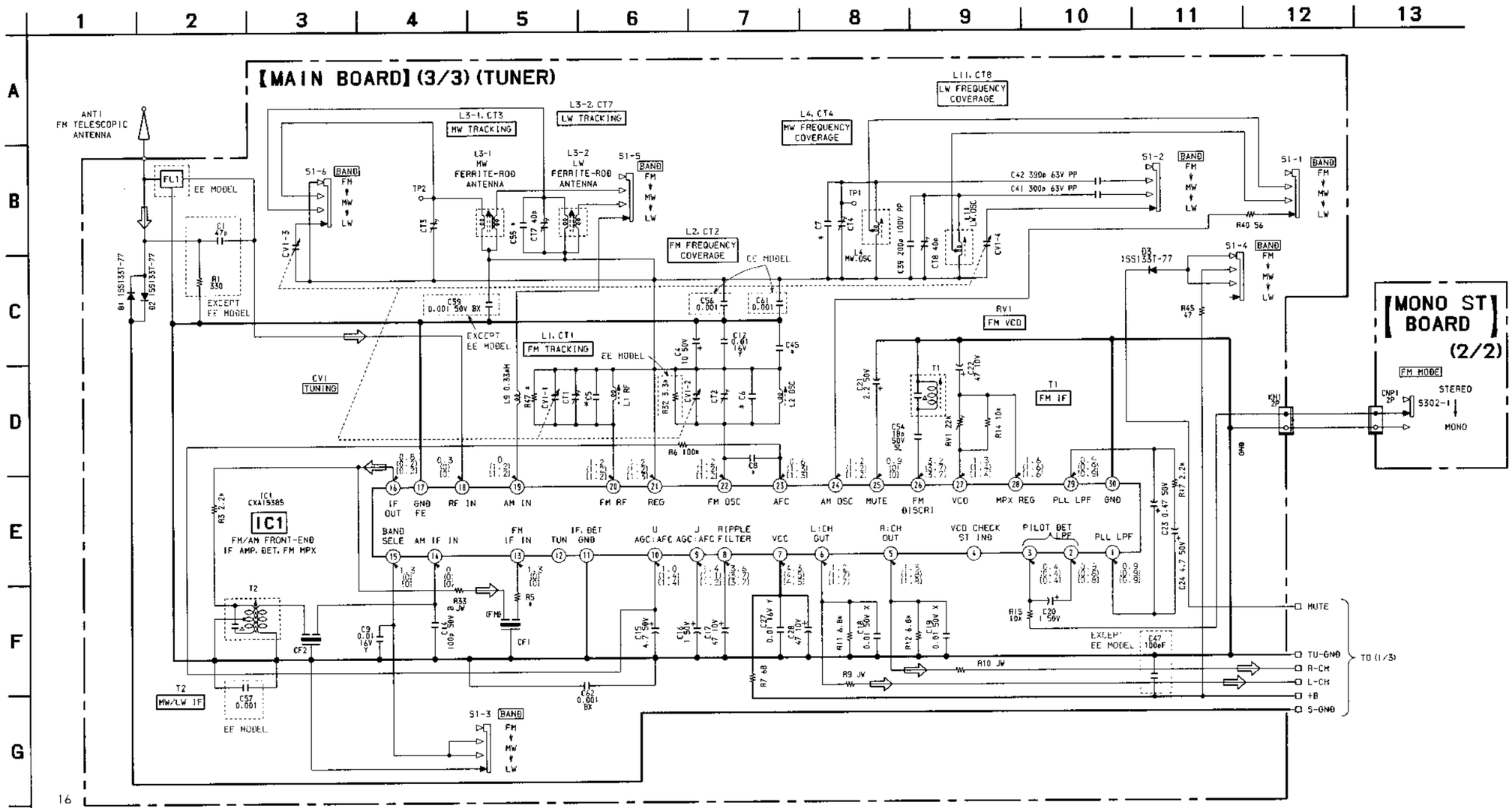
16.9 MHz

Note on Schematic Diagram:

- 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 ¼ W or less unless otherwise specified.
- △ : internal component.
- ——— : B+ Line.
- Power voltage is dc 9V 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 : CD
- 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.
- Signal path.
  ⇨ : CD

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

2-5. SCHEMATIC DIAGRAM TUNER SECTION • Refer to page 24 for IC Block Diagrams.



	C5	C6	C7	R47	C45	C8	R5
AEP, UK CET	22P	24P	22P	10K	100P	2.2P	330
IT	20P	27P	24P	10K	100P	2.2P	330
EE	2.2P	10P	22P	4.7K	0.001	3.3P	470

Note on Schematic Diagram:

- 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 ¼ W or less unless otherwise specified.
- △ : internal component.
- ——— : B+ Line.
- ▭ : adjustment for repair.
- Power voltage is dc 9V 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
  ( ) : MW
  [ ] : SW
- Voltages are taken with a VOM (Input impedance 10 MΩ).
  Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM
- Abbreviation
  IT : Italian model.
  CET : East European and Russian model.
  EE : East European

2-6. IC PIN FUNCTION DESCRIPTION

• MAIN BOARD IC702 CXD2587Q CD DIGITAL SIGNAL PROCESSOR

Pin No.	Pin Name	I/O	Description
1	SQSO	O	SubQ 80 bit and PCM peak, level data output. CD TEXT data output
2	SQCK	I	Clock input for SQSO read out
3	XRST	I	System reset Resets at "L"
4	SYSM	I	Mute input Mutes at "H"
5	DATA	I	Serial data input from CPU
6	XLAT	I	Latch input from CPU Latches the serial data by trailing
7	CLK	I	Serial data transfer clock input from the CPU
8	SENS	O	SENS output. Outputs to the CPU
9	SCLK	I	Clock input for SENS serial data reading
10	VDD	—	Digital power supply
11	ATSK	I/O	Input/output for anti-shock (Not used)
12	SPOA	I	Micro processing extension interface (input A)
13	SPOB	I	Micro processing extension interface (input B)
14	XLON	O	Micro processing extension interface (output) "H" when resetting
15	WFCK	O	WFCK output (Not used)
16	XUGF	O	XUGF output. MNT1, RFCK output by switching of command (Not used)
17	XPCK	O	XPCK output. MNT0 output by switching of command (Not used)
18	GFS	O	GFS output. MNT3, XROF output by switching of command (Not used)
19	C2PO	O	C2PO output. GTOP output by switching of command (Not used)
20	SCOR	O	"H" output when the sub-code sync S0 or S1 is detected
21	COUT	I/O	Truck number counting signal input/output
22	MIRR	I/O	Mirror signal input/output
23	DFCT	I/O	Defect signal input/output
24	FOK	I/O	Focus OK signal input/output
25	LOCK	I/O	Samples the GFS at 460 Hz. "H" output when the GFS is "H". "L" output when the GFS is "L" continuously three times
26	MDP	O	Or, input when LKIN = "1". Servo control output of spindle motor
27	SSTP	I	Disc innermost circumference detection signal input
28	SFDR	O	Sled drive output
29	SRDR	O	Sled drive output
30	TFDR	O	Tracking drive output
31	TRDR	O	Tracking drive output
32	FFDR	O	Focus drive output
33	FRDR	O	Focus drive output
34	VSS	—	Digital GND
35	TEST	I	Terminal for TEST Normally GND
36	TES1	I	Terminal for TEST Normally GND
37	XTSL	I	X'tal selection input terminal "L" when X'tal is 16.9344 MHz. "H" when X'tal is 33.8688 MHz
38	VC	I	Center point voltage input
39	FE	I	Focus error signal input
40	SE	I	Sled error signal input
41	TE	I	Tracking error input
42	CE	I	Center point servo analog input
43	RFDC	I	RF signal input
44	ADIO	O	Terminal for TEST Do not connect anything (Not used)
45	AVSS	—	Analog ground

Pin No.	Pin Name	I/O	Description
46	IGEN	I	Constant-current input for OP amplifier
47	AVDD	—	Analog power supply
48	ASYO	O	EFM full swing output ("L" = Vss, "H" = VDD)
49	ASYI	I	Asymmetry comparator voltage input
50	BIAS	I	Asymmetry circuit constant-current input
51	RFAC	I	EFM signal input
52	AVSS	—	Analog ground
53	CLTV	I	VCO1 control voltage input for frequency-multiplication
54	FILO	O	Filter output for master PLL (Sleeve = digital PLL)
55	FILI	I	Filter input for master PLL
56	PCO	O	Charge pump for master PLL
57	AVDD	—	Analog power supply
58	VSS	—	Digital ground
59	VDD	—	Digital power supply
60	DOUT	O	Digital Out output terminal (Not used)
61	LRCK	O	D/A interface LR clock output f = Fs (Not used)
62	PCMD	O	D/A interface Serial data output (2`s COMP, MSB fast) (Not used)
63	BCK	O	D/A interface Bit clock output (Not used)
64	EMPH	O	"H" output when the playback disc is emphasis ON. "L" output when emphasis OFF (Not used)
65	XVDD	—	Power supply for master clock
66	XTAI	I	Crystal oscillation circuit input terminal. When the master clock is input from the outside, input from this terminal
67	XTAO	O	Crystal oscillation circuit output terminal
68	XVSS	—	Ground terminal for master clock
69	AVDD1	—	Analog power supply
70	AOUT1	O	L-ch: analog output terminal
71	AIN1	I	L-ch: OPAMP input terminal
72	LOUT1	O	L-ch/LINE output terminal
73	AVSS1	—	Analog ground
74	AVSS2	—	Analog ground
75	LOUT2	O	R-ch: LINE output terminal
76	AIN2	I	R-ch: OPAMP input terminal
77	AOUT2	O	R-ch: analog output terminal
78	AVDD2	—	Analog power supply
79	RMUT	O	R-ch/"O" detection flag (Not used)
80	LMUT	O	L-ch/"O" detection flag (Not used)

Note) • The PCMD is 2´s complement output of the MSB first.
- The GTOP is to monitor the protection status of the frame sync. ("H": sync protection window open)
- The XUGF is the frame sync obtained by the EFM signal and negative pulse. Signal before sync protection
- The XPCK is the inverted signal of the EFM PLL clock. The PLL is made so that the trailing edge and the changing point of the EFM signal agree.
- The GFS becomes "H" when the frame sync and inner protection timing agree.
- The RFCK is the signal of 136 µs cycle from the X´tal accuracy.
- The C2PO is the signal to indicate the error status of the data.
- The XROF is the signal when the 16K RAM exceeds the jitter margin of +/- 4frames.

Combination of MONITOR output

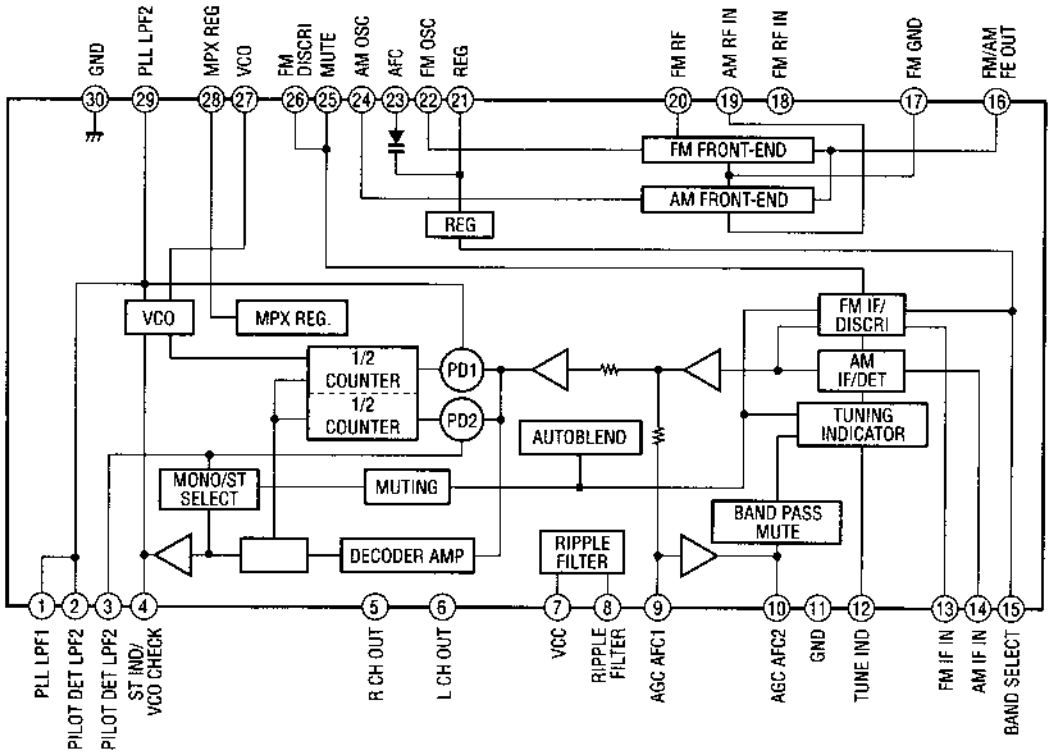
COMMANDBIT		OUTPUT DATA			
MTSL1	MTSL0				
0	0	XUGF	XPCK	GFS	C2PO
0	1	MNT1	MNT0	MNT3	C2PO
1	0	RFCK	XPCK	XROF	GTOP

• MAIN BOARD IC801 CXP83516-605Q LCD DRIVE/SYSTEM CONTROL

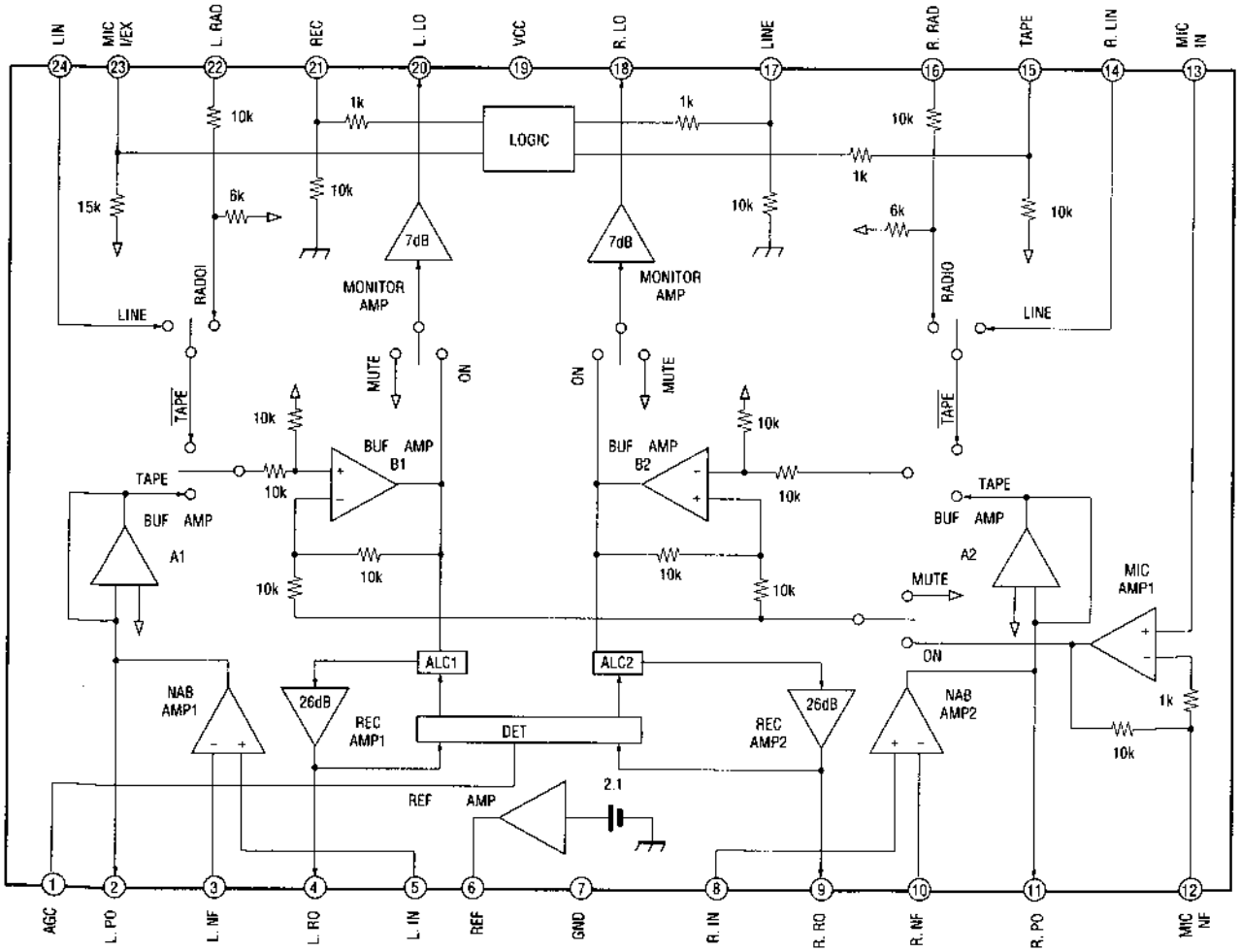
Pin No.	Pin Name	I/O	Description
1	SCOR	I	Sub-code sync detection signal
2	DOOR	I	CD lid detection H: OPEN L: CLOSE
3	MUTE	O	Audio signal MUTE H: MUTE ON L: MUTE OFF
4	NC	—	Not used (OPEN)
5	SENS	I	SENS signal
6	SCLK	O	SENS serial data reading clock
7	SQCK	O	Clock for SQSO reading
8	SQSO	I	SUB-Q serial data
9	XRST	O	System reset
10	CLOCK	O	Serial data transfer clock
11	LATCH	O	Latches the serial data by trailing
12	DATA	O	Serial data
13	AGCCONT	O	ON/OFF control of LPC
14	$\overline{\text{REC}}$	I	TAPE recording detection L:REC
15–21	NC	—	Not used (OPEN)
22	KEY-1	I	AD processing (PLAY/PAUSE, STOP, AMS+, AMS-)
23	KEY-2	I	AD processing (MODE, DISP/ENT)
24	NC	—	Not used (OPEN)
25	FOK/DF2	—	Not used
26	FZC/DFS	—	Not used
27	SRC/DF1	—	Not used
28	NC	—	Not used (OPEN)
29	NC	—	Not used (OPEN)
30	$\overline{\text{RST}}$	I	Micro processing reset L: reset
31	EXTAL	I	4. 19 MHz
32	XTAL	O	4. 19 MHz
33	Vss	—	Ground
34	VL	O	Bias control for LCD
35–37	VLC3–1	—	Bias power supply for LCD
38–41	COM0–3	O	Common signal output for LCD
42–55	SEG0–13	O	Segment signal output for LCD
56–71	NC	—	Not used (OPEN)
72	VDD	—	Positive power supply +5V
73, 74	NC	—	Not used (Connected to ground.)
75–77	NC	—	Not used (OPEN)
78–80	NC	—	Not used (Connected to ground.)

2-7. IC BLOCK DIAGRAMS

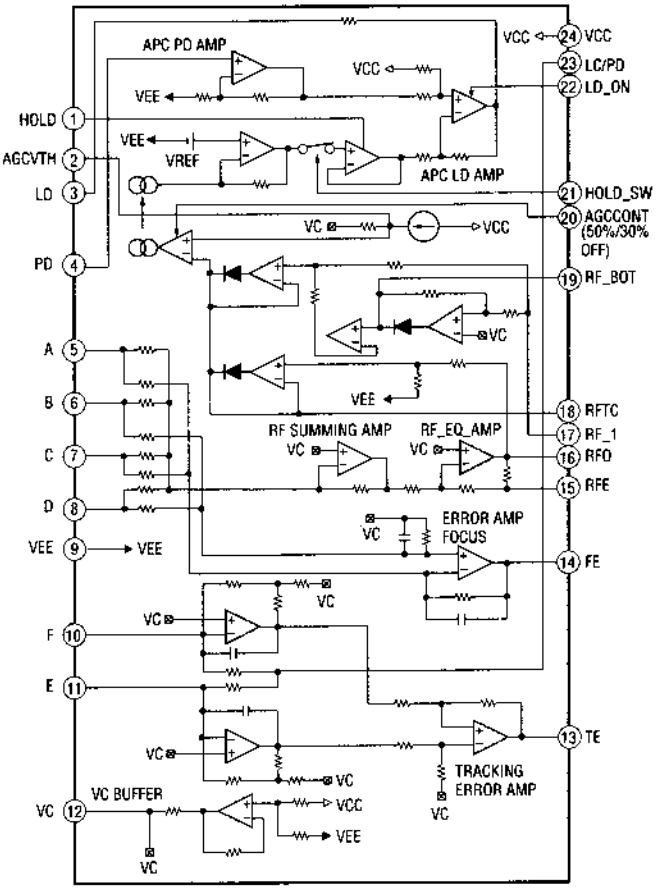
IC1 CXA1238S



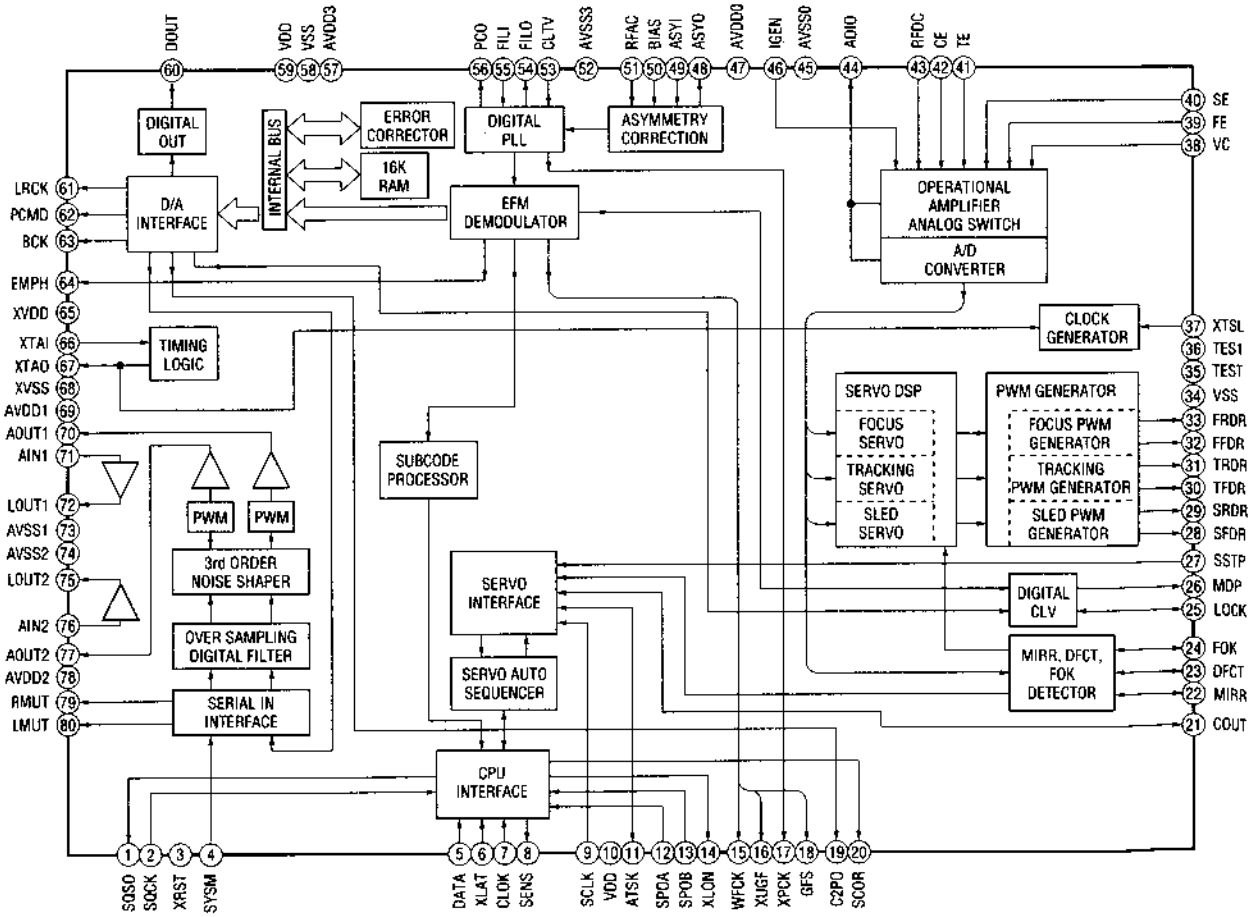
IC301 TA2068N



IC701 CXA2568M



IC702 CXD2587Q



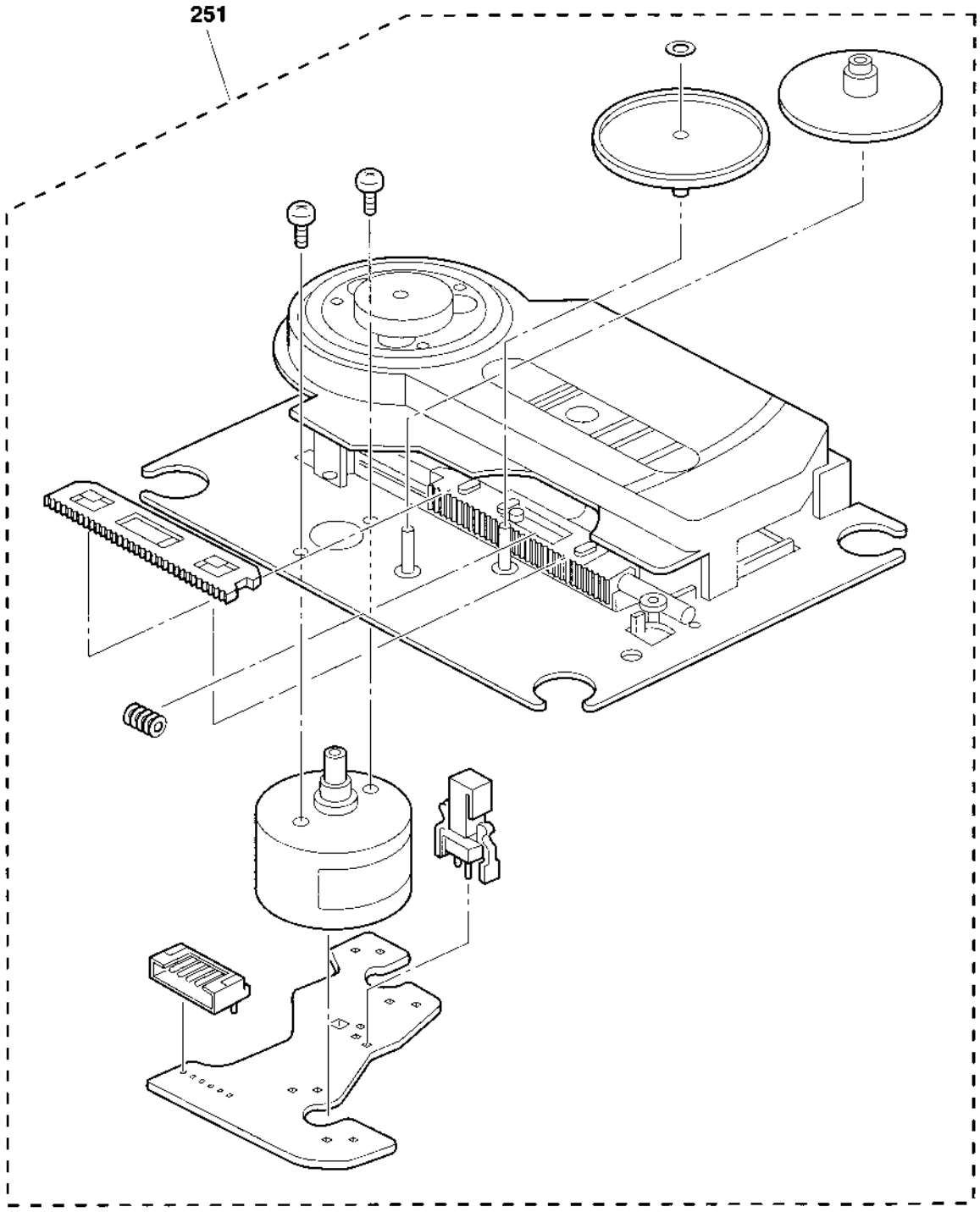
SECTION 3
EXPLODED VIEWS

• DIFFERENT PARTS LIST

Page	Ref.No.	Before Change			After Change		
		Part No.	Description	Remarks	Part No.	Description	Remarks
38	* 6	1-673-260-11	CONNECTOR BOARD		1-676-131-11	CONNECTOR BOARD	
	* 7	1-672-952-11	CONTROL BOARD		1-676-129-11	CONTROL BOARD	
39	* 52	1-672-950-11	POWER BOARD		1-676-127-11	POWER BOARD	
40	* 112	1-672-951-11	LCD BOARD		1-676-128-11	LCD BOARD	
	* 113	1-672-953-11	VOLUME BOARD		1-676-130-11	VOLUME BOARD	
	* 114	1-672-949-11	RECORD SWITCH BOARD		1-676-126-11	RECORD SWITCH BOARD	

(Page 43)

7-6. OPTICAL PICK-UP SECTION (KSM-880DAA)



Ref. No.	Part No.	Description	Remarks
⚠ 251	8-820-095-04	OPTICAL PICK-UP BLOCK (KSM-880DAA)	

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

SECTION 4
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.
- -XX, -X mean standardized parts, so they may have some difference 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...
- Abbreviation
  IT : Italian model.
  CET : East European and Russian model.
  EE : East European

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				Remarks
*	1-672-302-11	BATTERY BOARD				
		**********				
	3-028-154-01	TERMINAL (-), BATT				
**********						
	1-639-678-12	CD MOTOR BOARD				
		**********				
		< CONNECTOR >				
CNP707	1-564-722-11	PIN, CONNECTOR (SMALL TYPE)6P				
		< SWITCH >				
* S701	1-572-085-11	SWITCH, LEAF (LIMIT)				
**********						
*	1-676-131-11	CONNECTOR BOARD				
		**********				
		< CONNECTOR >				
* CNP803	1-785-669-11	PIN, CONNECTOR (PC BOARD) 3P				
**********						
*	1-676-129-11	CONTROL BOARD				
		**********				
	3-831-441-11	CUSHION (B)				
		< RESISTOR >				
R801	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R802	1-247-843-11	CARBON	3.3K	5%	1/4W	
R803	1-249-429-11	CARBON	10K	5%	1/4W	
R804	1-249-419-11	CARBON	1.5K	5%	1/4W	F
		< SWITCH >				
S801	1-762-798-11	SWITCH, KEYBOARD (MODE)				
S802	1-762-798-11	SWITCH, KEYBOARD (DISPLAY/ENTER)				
S803	1-762-798-11	SWITCH, KEYBOARD (PLAY)				
S804	1-762-798-11	SWITCH, KEYBOARD (STOP)				
S805	1-762-798-11	SWITCH, KEYBOARD (FR)				
S806	1-762-798-11	SWITCH, KEYBOARD (FF)				
**********						
*	1-672-358-11	HALF BATTERY BOARD				
		**********				
	3-028-154-01	TERMINAL (-), BATT				

Ref. No.	Part No.	Description				Remarks
		< CONNECTOR >				
* CNP908	1-785-668-11	PIN, CONNECTOR (PC BOARD) 2P				
**********						
*	1-676-128-11	LCD BOARD				
		**********				
	3-018-845-01	HOLDER (406), LCD				
CNP801	1-695-380-31	PIN, CONNECTOR (PC BOARD) 19P				
		< LIQUID CRYSTAL DISPLAY >				
LCD800	1-801-913-11	DISPLAY PANEL, LIQUID CRYSTAL				
**********						
*	A-3321-828-A	MAIN BOARD, COMPLETE (AEP,UK,CET)				
		**********				
*	A-3321-840-A	MAIN BOARD, COMPLETE (EE)				
		**********				
*	A-3321-839-A	MAIN BOARD, COMPLETE (IT)				
		**********				
	3-031-570-11	KNOB (FUNCTION)				
	3-032-102-01	GEAR (PVC 3 BAND)				
	7-621-775-20	SCREW +B 2.6X5				
	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S				
		< CAPACITOR >				
C1	1-162-215-31	CERAMIC	47PF	5%	50V	(AEP,UK,CET,IT)
C4	1-126-964-11	ELECT	10uF	20.00%	50V	
C5	1-162-207-31	CERAMIC	22PF	5%	50V	(AEP,UK,CET)
C5	1-162-191-31	CERAMIC	2.2PF	10.00%	50V	(EE)
C5	1-162-206-31	CERAMIC	20PF	5%	50V	(IT)
C6	1-102-960-00	CERAMIC	24PF	5.00%	50V	(AEP,UK,CET)
C6	1-102-947-00	CERAMIC	10PF	5%	50V	(EE)
C6	1-102-961-00	CERAMIC	27PF	5%	50V	(IT)
C7	1-162-207-31	CERAMIC	22PF	5%	50V	(AEP,UK,CET,EE)
C7	1-162-208-31	CERAMIC	24PF	5.00%	50V	(IT)

Ref. No.	Part No.	Description			Remarks
C8	1-162-191-31	CERAMIC	2.2PF	10.00% 50V	(AEP,UK,CET,IT)
C8	1-162-193-31	CERAMIC	3.3PF	10.00% 50V	(EE)
C9	1-162-306-11	CERAMIC	0.01uF	20.00% 16V	
C12	1-162-306-11	CERAMIC	0.01uF	20.00% 16V	
C14	1-162-282-31	CERAMIC	100PF	10% 50V	
C15	1-126-963-11	ELECT	4.7uF	20.00% 50V	
C16	1-124-903-11	ELECT	1uF	20.00% 50V	
C17	1-104-664-11	ELECT	47uF	20.00% 10V	
C18	1-127-876-31	CERAMIC	0.01uF	10% 50V	
C19	1-127-876-31	CERAMIC	0.01uF	10% 50V	
C20	1-124-903-11	ELECT	1uF	20.00% 50V	
C21	1-126-961-11	ELECT	2.2uF	20.00% 50V	
C22	1-104-664-11	ELECT	47uF	20.00% 10V	
C23	1-124-902-00	ELECT	0.47uF	20% 50V	
C24	1-126-963-11	ELECT	4.7uF	20.00% 50V	
C27	1-162-306-11	CERAMIC	0.01uF	20.00% 16V	
C28	1-104-664-11	ELECT	47uF	20.00% 10V	
C39	1-104-730-11	FILM	200PF	5.00% 100V	
C41	1-136-355-11	FILM	300PF	5.00% 63V	
C42	1-110-342-11	FILM	390PF	5.00% 63V	
C45	1-162-294-31	CERAMIC	0.001uF	10% 50V	(EE)
C45	1-162-282-31	CERAMIC	100PF	10% 50V	(AEP,UK,CET,IT)
C47	1-162-282-31	CERAMIC	100PF	10% 50V	(AEP,UK,CET,IT)
C54	1-162-205-31	CERAMIC	18PF	5% 50V	
C55	1-162-199-31	CERAMIC	10PF	5% 50V	
C56	1-162-294-31	CERAMIC	0.001uF	10% 50V	(EE)
C57	1-162-294-31	CERAMIC	0.001uF	10% 50V	(EE)
C59	1-162-294-31	CERAMIC	0.001uF	10% 50V	(AEP,UK,CET,IT)
C61	1-162-294-31	CERAMIC	0.001uF	10% 50V	(EE)
C62	1-162-294-31	CERAMIC	0.001uF	10% 50V	
C101	1-162-301-11	CERAMIC	0.0015uF	20.00% 16V	
C102	1-104-664-11	ELECT	47uF	20.00% 10V	
C103	1-127-883-31	CERAMIC	0.039uF	10% 50V	
C104	1-162-302-11	CERAMIC	0.0022uF	20.00% 16V	
C105	1-162-215-31	CERAMIC	47PF	5% 50V	
C108	1-124-902-00	ELECT	0.47uF	20% 50V	
C109	1-124-903-11	ELECT	1uF	20.00% 50V	
C121	1-124-903-11	ELECT	1uF	20.00% 50V	
C122	1-127-880-31	CERAMIC	0.022uF	10% 50V	
C140	1-124-252-00	ELECT	0.33uF	20% 50V	
C151	1-104-664-11	ELECT	47uF	20.00% 10V	
C152	1-162-294-31	CERAMIC	0.001uF	10% 50V	
C153	1-104-665-11	ELECT	100uF	20.00% 10V	
C154	1-126-767-11	ELECT	1000uF	20.00% 10V	
C155	1-136-165-00	FILM	0.1uF	5.00% 50V	
C157	1-127-883-31	CERAMIC	0.039uF	10% 50V	
C158	1-162-302-11	CERAMIC	0.0022uF	20.00% 16V	
C201	1-162-301-11	CERAMIC	0.0015uF	20.00% 16V	
C202	1-104-664-11	ELECT	47uF	20.00% 10V	
C203	1-127-883-31	CERAMIC	0.039uF	10% 50V	

Ref. No.	Part No.	Description			Remarks
C204	1-162-302-11	CERAMIC	0.0022uF	20.00% 16V	
C205	1-162-215-31	CERAMIC	47PF	5% 50V	
C208	1-124-902-00	ELECT	0.47uF	20% 50V	
C209	1-124-903-11	ELECT	1uF	20.00% 50V	
C221	1-124-903-11	ELECT	1uF	20.00% 50V	
C222	1-127-880-31	CERAMIC	0.022uF	10% 50V	
C240	1-124-252-00	ELECT	0.33uF	20% 50V	
C251	1-104-664-11	ELECT	47uF	20.00% 10V	
C252	1-162-294-31	CERAMIC	0.001uF	10% 50V	
C253	1-104-665-11	ELECT	100uF	20.00% 10V	
C254	1-126-767-11	ELECT	1000uF	20.00% 10V	
C255	1-136-165-00	FILM	0.1uF	5.00% 50V	
C257	1-127-883-31	CERAMIC	0.039uF	10% 50V	
C258	1-162-302-11	CERAMIC	0.0022uF	20.00% 16V	
C301	1-104-665-11	ELECT	100uF	20.00% 10V	
C302	1-104-665-11	ELECT	100uF	20.00% 10V	
C303	1-126-964-11	ELECT	10uF	20.00% 50V	
C304	1-104-665-11	ELECT	100uF	20.00% 10V	
C311	1-162-301-11	CERAMIC	0.0015uF	20.00% 16V	
C312	1-104-664-11	ELECT	47uF	20.00% 10V	
C313	1-107-737-11	MYLAR	560PF	5.00% 50V	
C313	1-137-431-11	MYLAR	560PF	5.00% 50V	
C315	1-162-306-11	CERAMIC	0.01uF	20.00% 16V	
C316	1-126-962-11	ELECT	4700uF	20.00% 16V	
C343	1-162-306-11	CERAMIC	0.01uF	20.00% 16V	
C345	1-162-306-11	CERAMIC	0.01uF	20.00% 16V	
C346	1-162-306-11	CERAMIC	0.01uF	20.00% 16V	
C347	1-104-665-11	ELECT	100uF	20.00% 10V	
C348	1-104-666-11	ELECT	220uF	20.00% 10V	
C351	1-104-664-11	ELECT	47uF	20.00% 10V	
C352	1-162-290-31	CERAMIC	470PF	10% 50V	
C359	1-162-306-11	CERAMIC	0.01uF	20.00% 16V	
C401	1-104-665-11	ELECT	100uF	20.00% 10V	
C701	1-162-294-31	CERAMIC	0.001uF	10% 50V	
C702	1-104-664-11	ELECT	47uF	20.00% 10V	
C703	1-126-964-11	ELECT	10uF	20.00% 50V	
C704	1-126-233-11	ELECT	22uF	20% 50V	
C705	1-126-233-11	ELECT	22uF	20% 50V	
C706	1-162-211-31	CERAMIC	33PF	5% 50V	
C707	1-104-665-11	ELECT	100uF	20.00% 10V	
C708	1-162-306-11	CERAMIC	0.01uF	20.00% 16V	
C709	1-104-665-11	ELECT	0.01uF	5% 50V	
C714	1-137-150-11	MYLAR	0.01uF	5.00% 50V	
C715	1-130-493-00	MYLAR	0.068uF	5% 50V	
C715	1-137-375-11	MYLAR	0.068uF	5.00% 50V	
C716	1-162-286-21	CERAMIC	220PF	10.00% 50V	
C717	1-162-851-11	CERAMIC	0.1uF	10.00% 16V	
C718	1-162-286-21	CERAMIC	220PF	10.00% 50V	
C719	1-104-664-11	ELECT	47uF	20.00% 10V	
C720	1-162-306-11	CERAMIC	0.01uF	20.00% 16V	
C722	1-162-306-11	CERAMIC	0.01uF	20.00% 16V	
C723	1-124-902-00	ELECT	0.47uF	20% 50V	
C724	1-162-286-21	CERAMIC	220PF	10.00% 50V	
C725	1-137-365-11	MYLAR	0.0015uF	5.00% 50V	
C726	1-130-491-00	MYLAR	0.047uF	5% 50V	
C726	1-137-374-11	MYLAR	0.047uF	5.00% 50V	

MAIN

Ref. No.	Part No.	Description			Remarks
C728	1-162-306-11	CERAMIC	0.01uF	20.00%	16V
C729	1-162-306-11	CERAMIC	0.01uF	20.00%	16V
C730	1-104-665-11	ELECT	100uF	20.00%	10V
C731	1-162-306-11	CERAMIC	0.01uF	20.00%	16V
C732	1-162-203-31	CERAMIC	15PF	5.00%	50V
C733	1-162-203-31	CERAMIC	15PF	5.00%	50V
C734	1-162-284-31	CERAMIC	150PF	10.00%	50V
C735	1-162-292-31	CERAMIC	680PF	10%	50V
C737	1-162-284-31	CERAMIC	150PF	10.00%	50V
C738	1-162-292-31	CERAMIC	680PF	10%	50V
C740	1-126-963-11	ELECT	4.7uF	20.00%	50V
C741	1-126-963-11	ELECT	4.7uF	20.00%	50V
C742	1-162-306-11	CERAMIC	0.01uF	20.00%	16V
C743	1-162-282-31	CERAMIC	100PF	10%	50V
C745	1-162-282-31	CERAMIC	100PF	10%	50V
C746	1-162-306-11	CERAMIC	0.01uF	20.00%	16V
C753	1-162-306-11	CERAMIC	0.01uF	20.00%	16V
C754	1-126-925-11	ELECT	470uF	20.00%	10V
C755	1-162-306-11	CERAMIC	0.01uF	20.00%	16V
C756	1-162-282-31	CERAMIC	100PF	10%	50V
C757	1-162-290-31	CERAMIC	470PF	10%	50V
C758	1-162-282-31	CERAMIC	100PF	10%	50V
C759	1-162-306-11	CERAMIC	0.01uF	20.00%	16V
C801	1-162-306-11	CERAMIC	0.01uF	20.00%	16V
C802	1-104-664-11	ELECT	47uF	20.00%	10V
C803	1-126-233-11	ELECT	22uF	20%	50V
C807	1-162-306-11	CERAMIC	0.01uF	20.00%	16V
C809	1-162-282-31	CERAMIC	100PF	10%	50V
C814	1-128-803-11	CERAMIC	33PF	5%	50V
C815	1-128-803-11	CERAMIC	33PF	5%	50V
C816	1-126-964-11	ELECT	10uF	20.00%	50V
		< FILTER >			
CF1	1-760-738-61	FILTER, CERAMIC			
CF2	1-577-072-11	FILTER, CERAMIC			
		< CONNECTOR >			
* CNP301	1-785-656-11	PIN, CONNECTOR (PC BOARD) 4P			
* CNP303	1-785-656-11	PIN, CONNECTOR (PC BOARD) 4P			
* CNP304	1-785-656-11	PIN, CONNECTOR (PC BOARD) 4P			
CNP702	1-770-674-11	CONNECTOR, FFC/FPC 16P			
CNP802	1-695-342-31	PIN, CONNECTOR (PC BOARD) 19P			
		< TRIMMER >			
CT1-4	1-141-583-11	CAP, VAR (AEP,UK,CET,IT)			
CT1-4	1-141-584-11	CAP, VAR (EE)			
CT7	1-141-605-11	CAP, ADJ			
CT8	1-141-605-11	CAP, ADJ			
		< VARIABLE CAPACITOR >			
CV1	1-141-583-11	CAP, VAR (TUNING)(AEP,UK,CET,IT)			
CV1	1-141-584-11	CAP, VAR (TUNING)(EE)			
		< DIODE >			
D1	8-719-991-33	DIODE 1SS133T-77			
D2	8-719-991-33	DIODE 1SS133T-77			
D3	8-719-991-33	DIODE 1SS133T-77			
D301	8-719-991-33	DIODE 1SS133T-77			
D302	8-719-991-33	DIODE 1SS133T-77			
D307	8-719-991-33	DIODE 1SS133T-77			
D308	8-719-109-90	DIODE RD5.6ESB3			
D310	8-719-038-29	LED SLP-181B-51 (OPR/BATT)			
D311	8-719-109-98	DIODE RD6.8ES-B3			
D312	8-719-991-33	DIODE 1SS133T-77			
D314	8-719-991-33	DIODE 1SS133T-77			
D801	8-719-991-33	DIODE 1SS133T-77			
		< FERRITE BEAD >			
FB301	1-412-911-11	FERRITE 0uH			
FB302	1-412-911-11	FERRITE 0uH			
FB703	1-412-911-11	FERRITE 0uH			
FB704	1-412-911-11	FERRITE 0uH			
		< FILTER >			
FL1	1-233-452-11	FILTER, BAND PASS (EE)			
		< IC >			
IC1	8-752-050-20	IC CXA1238S			
IC301	8-759-264-71	IC TA2068N			
IC304	8-759-426-51	IC BA5417			
IC401	8-759-646-86	IC IC MM1468XD			
IC701	8-752-085-50	IC CXA2568M			
IC702	8-752-386-85	IC CXD2587Q			
IC703	8-759-549-27	IC BA5974FP			
IC801	8-752-906-19	IC CXP83516-605Q			
IC802	8-759-648-11	IC PST9142-T			
		< JACK >			
J301	1-568-267-11	JACK (∩)			
		< COIL >			
L1	1-406-998-11	COIL, AIR-CORE (AEP,UK,CET,IT)			
L1	1-409-776-11	COIL, AIR-CORE (EE)			
L2	1-416-509-11	COIL, AIR-CORE (AEP,UK,CET)			
L2	1-406-958-11	COIL (WITH CORE) (EE)			
L2	1-406-957-21	COIL (WITH CORE) (IT)			
L3	1-501-958-11	ANTENNA, FERRITE-ROD (LW/MW)			
L4	1-406-253-11	COIL (OSC)			
L9	1-412-482-11	INDUCTOR 0.33uH			
L11	1-406-252-11	COIL (OSC)			
		< TRANSISTOR >			
Q101	8-729-036-80	TRANSISTOR KRC110M			
Q102	8-729-194-57	TRANSISTOR 2SC945-P			
Q103	8-729-194-57	TRANSISTOR 2SC945-P			
Q201	8-729-036-80	TRANSISTOR KRC110M			
Q202	8-729-194-57	TRANSISTOR 2SC945-P			
Q203	8-729-194-57	TRANSISTOR 2SC945-P			
Q301	8-729-281-53	TRANSISTOR 2SC1815-GR			
Q302	8-729-194-57	TRANSISTOR 2SC945-P			
Q307	8-729-119-76	TRANSISTOR 2SA1175-HFE			
Q308	8-729-036-57	TRANSISTOR KRC101M-AT			
Q309	8-729-021-82	TRANSISTOR 2SD2396K			
Q310	8-729-011-92	TRANSISTOR 2SC2001TP-K1K2			
Q402	8-729-036-77	TRANSISTOR KRC107M			
Q405	8-729-029-20	TRANSISTOR DTA114ESA-TP			
Q409	8-729-036-92	TRANSISTOR KTC3203Y-AT			
Q701	8-729-037-13	TRANSISTOR KTA1271Y			
Q801	8-729-036-67	TRANSISTOR KRC111M-AT			

Ref. No.	Part No.	Description				Remarks
		< RESISTOR >				
R1	1-249-411-11	CARBON	330	5%	1/4W	
					(AEP,UK,CET,IT)	
R3	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R5	1-249-411-11	CARBON	330	5%	1/4W	
					(AEP,UK,CET,IT)	
R5	1-249-413-11	CARBON	470	5%	1/4W	F
					(EE)	
R6	1-249-441-11	CARBON	100K	5%	1/4W	
R7	1-249-403-11	CARBON	68	5%	1/4W	F
R11	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R12	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R14	1-249-429-11	CARBON	10K	5%	1/4W	
R15	1-249-429-11	CARBON	10K	5%	1/4W	
R17	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R32	1-247-843-11	CARBON	3.3K	5%	1/4W	
					(EE)	
R40	1-249-402-11	CARBON	56	5%	1/4W	F
R45	1-249-401-11	CARBON	47	5%	1/4W	F
R47	1-249-429-11	CARBON	10K	5%	1/4W	
					(AEP,UK,CET,IT)	
R47	1-249-425-11	CARBON	4.7K	5%	1/4W	F
					(EE)	
R101	1-249-431-11	CARBON	15K	5%	1/4W	
R102	1-249-404-00	CARBON	82	5%	1/4W	F
R103	1-249-441-11	CARBON	100K	5%	1/4W	
R104	1-247-843-11	CARBON	3.3K	5%	1/4W	
R105	1-249-434-11	CARBON	27K	5%	1/4W	
R106	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R109	1-249-426-11	CARBON	5.6K	5%	1/4W	
R110	1-247-807-31	CARBON	100	5%	1/4W	
R121	1-249-417-11	CARBON	1K	5%	1/4W	F
R122	1-247-843-11	CARBON	3.3K	5%	1/4W	
R123	1-247-895-91	CARBON	470K	5%	1/4W	
R124	1-249-417-11	CARBON	1K	5%	1/4W	F
R140	1-249-441-11	CARBON	100K	5%	1/4W	
R141	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R143	1-249-429-11	CARBON	10K	5%	1/4W	
R151	1-249-417-11	CARBON	1K	5%	1/4W	F
R153	1-249-409-11	CARBON	220	5%	1/4W	F
R154	1-247-807-31	CARBON	100	5%	1/4W	
R155	1-249-431-11	CARBON	15K	5%	1/4W	
R156	1-249-437-11	CARBON	47K	5%	1/4W	
R201	1-249-431-11	CARBON	15K	5%	1/4W	
R202	1-249-404-00	CARBON	82	5%	1/4W	F
R203	1-249-441-11	CARBON	100K	5%	1/4W	
R204	1-247-843-11	CARBON	3.3K	5%	1/4W	
R205	1-249-434-11	CARBON	27K	5%	1/4W	
R206	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R209	1-249-426-11	CARBON	5.6K	5%	1/4W	
R210	1-247-807-31	CARBON	100	5%	1/4W	
R221	1-249-417-11	CARBON	1K	5%	1/4W	F
R222	1-247-843-11	CARBON	3.3K	5%	1/4W	
R223	1-247-895-91	CARBON	470K	5%	1/4W	
R224	1-249-417-11	CARBON	1K	5%	1/4W	F
R240	1-249-441-11	CARBON	100K	5%	1/4W	
R241	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R243	1-249-429-11	CARBON	10K	5%	1/4W	
R251	1-249-417-11	CARBON	1K	5%	1/4W	F
R253	1-249-409-11	CARBON	220	5%	1/4W	F
R254	1-247-807-31	CARBON	100	5%	1/4W	
R255	1-249-431-11	CARBON	15K	5%	1/4W	
R256	1-249-437-11	CARBON	47K	5%	1/4W	
R301	1-247-903-00	CARBON	1M	5%	1/4W	
R302	1-249-441-11	CARBON	100K	5%	1/4W	
R305	1-247-903-00	CARBON	1M	5%	1/4W	
R306	1-249-429-11	CARBON	10K	5%	1/4W	
R307	1-249-429-11	CARBON	10K	5%	1/4W	
R309	1-249-417-11	CARBON	1K	5%	1/4W	F
R311	1-247-810-11	CARBON	130	5%	1/4W	
R312	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R313	1-249-393-11	CARBON	10	5%	1/4W	F
R314	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R315	1-249-433-11	CARBON	22K	5%	1/4W	
R316	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R319	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R341	1-249-437-11	CARBON	47K	5%	1/4W	
R342	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R343	1-249-415-11	CARBON	680	5%	1/4W	F
R344	1-249-409-11	CARBON	220	5%	1/4W	F
R345	1-249-409-11	CARBON	220	5%	1/4W	F
R346	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R347	1-247-807-31	CARBON	100	5%	1/4W	
R348	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R349	1-249-414-11	CARBON	560	5%	1/4W	F
R350	1-249-393-11	CARBON	10	5%	1/4W	F
R401	1-249-441-11	CARBON	100K	5%	1/4W	
R402	1-249-429-11	CARBON	10K	5%	1/4W	
R403	1-249-433-11	CARBON	22K	5%	1/4W	
R404	1-249-417-11	CARBON	1K	5%	1/4W	F
R415	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R701	1-247-893-11	CARBON	390K	5%	1/4W	
R702	1-249-429-11	CARBON	10K	5%	1/4W	
R703	1-249-429-11	CARBON	10K	5%	1/4W	
R704	1-249-429-11	CARBON	10K	5%	1/4W	
R705	1-249-429-11	CARBON	10K	5%	1/4W	
R706	1-247-893-11	CARBON	390K	5%	1/4W	
R707	1-249-393-11	CARBON	10	5%	1/4W	F
R708	1-247-903-00	CARBON	1M	5%	1/4W	
R709	1-247-903-00	CARBON	1M	5%	1/4W	
R710	1-249-429-11	CARBON	10K	5%	1/4W	
R711	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R712	1-249-429-11	CARBON	10K	5%	1/4W	
R713	1-249-429-11	CARBON	10K	5%	1/4W	
R716	1-249-433-11	CARBON	22K	5%	1/4W	
R717	1-249-435-11	CARBON	33K	5%	1/4W	
R718	1-247-881-00	CARBON	120K	5%	1/4W	
R719	1-249-435-11	CARBON	33K	5%	1/4W	
R720	1-249-435-11	CARBON	33K	5%	1/4W	
R721	1-249-429-11	CARBON	10K	5%	1/4W	
R722	1-249-441-11	CARBON	100K	5%	1/4W	
R723	1-247-903-00	CARBON	1M	5%	1/4W	
R724	1-249-429-11	CARBON	10K	5%	1/4W	
R725	1-247-843-11	CARBON	3.3K	5%	1/4W	
R726	1-247-843-11	CARBON	3.3K	5%	1/4W	
R727	1-249-430-11	CARBON	12K	5%	1/4W	
R728	1-249-430-11	CARBON	12K	5%	1/4W	

Ref. No.	Part No.	Description			Remarks
R729	1-249-430-11	CARBON	12K	5%	1/4W
R730	1-249-430-11	CARBON	12K	5%	1/4W
R731	1-249-430-11	CARBON	12K	5%	1/4W
R732	1-249-430-11	CARBON	12K	5%	1/4W
R733	1-249-417-11	CARBON	1K	5%	1/4W F
R734	1-249-425-11	CARBON	4.7K	5%	1/4W F
R735	1-249-425-11	CARBON	4.7K	5%	1/4W F
R736	1-249-437-11	CARBON	47K	5%	1/4W
R739	1-249-425-11	CARBON	4.7K	5%	1/4W F
R741	1-249-413-11	CARBON	470	5%	1/4W F
R742	1-249-417-11	CARBON	1K	5%	1/4W F
R805	1-249-441-11	CARBON	100K	5%	1/4W
R806	1-247-807-31	CARBON	100	5%	1/4W
R808	1-249-417-11	CARBON	1K	5%	1/4W F
R809	1-249-417-11	CARBON	1K	5%	1/4W F
R810	1-249-417-11	CARBON	1K	5%	1/4W F
R811	1-249-417-11	CARBON	1K	5%	1/4W F
R812	1-249-417-11	CARBON	1K	5%	1/4W F
R813	1-249-417-11	CARBON	1K	5%	1/4W F
R814	1-249-417-11	CARBON	1K	5%	1/4W F
R818	1-249-441-11	CARBON	100K	5%	1/4W
R819	1-249-437-11	CARBON	47K	5%	1/4W
R820	1-249-415-11	CARBON	680	5%	1/4W F
R822	1-249-437-11	CARBON	47K	5%	1/4W
R823	1-249-417-11	CARBON	1K	5%	1/4W F
R824	1-249-441-11	CARBON	100K	5%	1/4W
R825	1-249-441-11	CARBON	100K	5%	1/4W
R826	1-249-441-11	CARBON	100K	5%	1/4W
R827	1-247-887-00	CARBON	220K	5%	1/4W
R850	1-249-417-11	CARBON	1K	5%	1/4W F
R851	1-249-417-11	CARBON	1K	5%	1/4W F
R852	1-249-417-11	CARBON	1K	5%	1/4W F
R853	1-249-417-11	CARBON	1K	5%	1/4W F
		< VARIABLE RESISTOR >			
RV1	1-228-995-00	RES, ADJ, METAL 22K			
RV351	1-225-438-11	RES, VAR, CARBON 20K/20K (TONE)			
		< SWITCH >			
S1	1-771-192-11	SWITCH, LEVER SLIDE (BAND)			
S351	1-572-299-11	SWITCH, LEVER SLIDE (FUNCTION)			
		< TRANSFORMER >			
T1	1-409-944-11	COIL (DET)			
T2	1-416-522-11	COIL (IFT)			
T301	1-416-041-11	TRANSFORMER, BIAS OSCILLATION			
		< VIBRATOR >			
X701	1-760-793-11	VIBRATOR, CERAMIC 19.9344MHz			
X801	1-781-668-11	VIBRATOR, CERAMIC 4MHz			
**********					
*	1-672-776-11	MONO ST BOARD			
		**********			
		< CONNECTOR >			
* CNP1	1-785-654-11	PIN, CONNECTOR (PC BOARD) 2P			
* CNP305	1-785-654-21	PIN, CONNECTOR (PC BOARD) 2P			

Ref. No.	Part No.	Description			Remarks
		< SWITCH >			
S302	1-771-061-11	SWITCH, SLIDE (FM MODE)			
**********					
	1-676-127-11	POWER BOARD			
		**********			
	1-533-233-31	HOLDER, FUSE			
		< CAPACITOR >			
C901	1-101-005-00	CERAMIC	22000PF	50V	
C902	1-101-005-00	CERAMIC	22000PF	50V	
C903	1-101-005-00	CERAMIC	22000PF	50V	
C904	1-101-005-00	CERAMIC	22000PF	50V	
		< CONNECTOR >			
* CNP902	1-785-670-11	PIN, CONNECTOR (PC BOARD) 4P			
* CNP907	1-785-655-11	PIN, CONNECTOR (PC BOARD) 3P			
		< DIODE >			
D901	8-719-063-79	DIODE 1N4002B			
D902	8-719-063-79	DIODE 1N4002B			
D903	8-719-063-79	DIODE 1N4002B			
D904	8-719-063-79	DIODE 1N4002B			
		< FERRITE BEAD >			
FB901	1-410-397-21	FERRITE BEAD INDUCTOR			
FB902	1-410-397-21	FERRITE BEAD INDUCTOR			
		< FUSE >			
⚠F902	1-532-464-31	FUSE TL 2.5A/250V			
		< JACK >			
⚠J901	1-526-838-11	INLET, AC 2P (AC IN)			
		< RESISTOR >			
⚠R901	1-249-421-11	CARBON	2.2K	5% 1/4W F	
**********					
*	1-676-126-11	RECORD SWITCH BOARD			
		**********			
		< CONNECTOR >			
* CNP302	1-785-656-11	PIN, CONNECTOR (PC BOARD) 4P			
		< SWITCH >			
S301	1-762-565-11	SWITCH, SLIDE			
**********					

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	Remarks
*	1-676-130-11	VOLUME BOARD **********	
		< HOLDER >	
* KH307	1-568-135-21	HOLDER, CABLE 7P	
		< RESISTOR >	
R308	1-249-417-11	CARBON 1K 5% 1/4W F	
		< VARIABLE RESISTOR >	
RV352	1-225-764-11	RES, VAR, CARBON 20K/20K (VOLUME)	
		< SWITCH >	
S355	1-762-950-11	SWITCH, PUSH (1 KEY)(MEGA BASS)	