

D-151/151C

SERVICE MANUAL



Photo : D-151

US Model
D-151/151C
Canadian Model
AEP Model
UK Model
E Model
Australian Model
D-151

Model Name Using Similar Mechanism	D-141
CD Mechanism Type	KSM-530AAA/S-NP
Optical Pick-Up Name	KSS-530A

SPECIFICATIONS

System

Compact disc digital audio system

Laser diode properties

Material: GaAlAs

Wavelength: $\lambda = 780 \text{ nm}$

Emission duration: Continuous

Laser output: Less than $44.6 \mu\text{W}$ (measured at 200 mm away from the objective lens surface)

Error correction

Sony Super Strategy Cross Interleave Reed Solomon Code

D-A conversion

1-bit quartz time-axis control

Frequency response

20 - 20,000 Hz $\pm 1 \text{ dB}$ (measured by EIAJ CP-307)

Output (at 4.5 V input level)

Headphones (stereo minijack)

20 mW + 20 mW at 16 ohms

Line output (stereo minijack)

Output level 0.7 V rms at 47 kilohms

Recommended load impedance over 10 kilohms

General

Power requirements

- Rechargeable battery: 2.4 V DC
- Two LR6 (size AA) batteries: 3 V DC
- AC power adaptor (DC IN 4.5 V jack):
220 - 230 V, 50 Hz (European and Asian model)
120 V, 60 Hz (USA, Canadian, Central and South American model)
110 - 240 V, 50/60 Hz (Middle Eastern model)
230 - 240 V, 50 Hz (U.K. model)
240 V, 50 Hz (Australian model)
100 - 240 V, 50/60 Hz (Model for other countries and World model)
- Sony CPM-300P mount plate and DCC-E245 car battery cord for use on car battery: 4.5 V DC

Dimensions (w/h/d) (without projecting parts and controls)

Approx. 135 × 30.5 × 156 mm
(5 $\frac{3}{8}$ × 1 $\frac{1}{4}$ × 6 $\frac{1}{8}$ in.)

Mass (without rechargeable battery)

Approx. 250 g (8.8 oz)

Operating temperature

5°C - 35°C (41°F - 95°F)

Supplied accessories

AC power adaptor (1)
Connecting cord (Phono plug × 2 ↔ stereo miniplug) (1)
Stereo headphones (1)

Design and specifications are subject to change without notice.

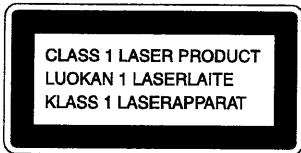
COMPACT DISC COMPACT PLAYER
SONY®



使用時は添付資料も参照のこと
Refer to the additional documents.

CAUTION

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



This Compact Disc player is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT label is located on the bottom exterior.

Flexible Circuit Board Repairing

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

Notes on Chip Component Replacement

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

D-151 "La Fiesta" model

The "La Fiesta" model is same as the D-151 E13, E33 or E92 models except for upper lid assy and individual carton.

See page 26 for part No. of upper lid assy, page 31 for part No. of individual carton.

- E13 : AC 220 -230V area in E model
- E33 : AC 100 -240V area in E model
- E92 : AC 120V area in E model

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.

Before Replacing the Optical Pick-Up Block

Please be sure to check throughly the parameters as par the "Optical Pick-Up Block Checking Procedures" (Part No.: 9-960-027-11) issued separately before replacing the optical pick-up block. Note and specifications required to check are given below.

- FOK output : IC501 ⑫ pin
When checking FOK, remove the lead wire to disc motor.
- S curve P-to-P value : 2.0Vp-p IC501 ⑬ pin
When checking S curve P-to-P value, remove the lead wire to disc motor.
- Adjusted part for focus gain adjustment : RV602
- RF signal P-to-P value : 0.6-1.3Vp-p
- Traverse signal P-to-P value : 0.8-2.8Vp-p
- The repairing grating holder is impossible.
- Adjusted part for tracking gain adjustment : RV601

SAFETY-RELATED COMPONENT WARNING!!

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

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

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

SECTION 1 GENERAL

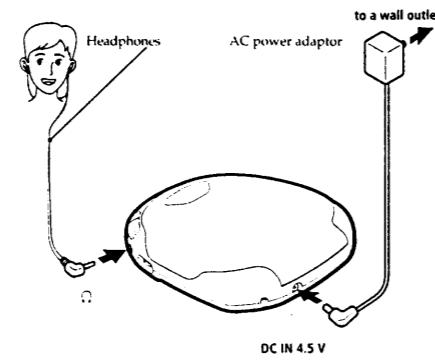
TABLE OF CONTENTS

1. GENERAL	
Playing a CD right away!	3
Other Operations	4
Power Sources	5
Additional Information	5
2. DISASSEMBLY	
2-1. Cabinet (Lower) Assy	6
2-2. MD Assy	6
2-3. Main Board	7
2-4. Upper Lid Assy	7
3. SERVICE NOTE	8
4. SERVICE MODE	9
5. ELECTRICAL ADJUSTMENTS	10
6. DIAGRAMS	
6-1. IC Pin Description	14
6-2. Printed Wiring Boards	16
6-3. Schematic Diagram	19
7. EXPLODED VIEWS	
7-1. Cabinet Section	26
7-2. Optical Pick-up Section	27
8. ELECTRICAL PARTS LIST	28

Playing a CD right away!

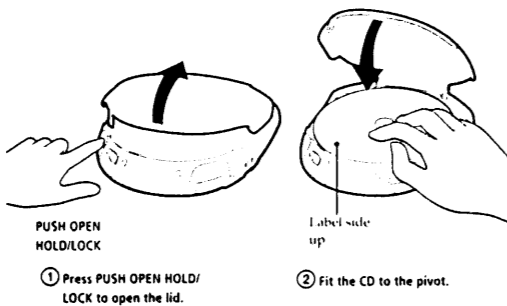
If you want to play a CD right now, choose to use your Discman on house current. Other choices are the following three: rechargeable battery, dry batteries (see "Power Sources" on the reverse side) and car battery.

1 Connect

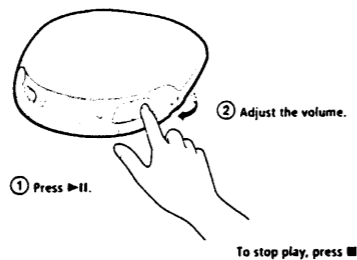


For models supplied with the AC plug adaptor
If the AC power adaptor does not fit the wall outlet, use the AC plug adaptor.

2 Place a CD



3 Play



To	Press
Pause	⏸
Resume play after pause	▶
Find the beginning of the current track (AMS*)	⏮ once**
Find the beginning of previous tracks (AMS)	⏮ repeatedly**
Find the beginning of the next track (AMS)	⏭ once**
Find the beginning of succeeding tracks (AMS)	⏭ repeatedly**
Go forward quickly	Hold down ▶
Go backwards quickly	Hold down ⏮

*AMS = Automatic Music Sense
**These operations are possible during both play and pause.

To remove the CD
Remove the CD while pressing the pivot.

Notes on display

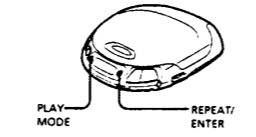
- When you press ▶, the total number of the tracks in the CD and the total playing time appear for 2 seconds.
- During play, the track number and the elapsed playing time of the current track appear.
- During pause, the elapsed playing time flashes in the display.
- Between the tracks, the time to the beginning of the next track will appear with the "—" indication.

Notes on handling CDs

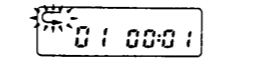
- Keep the CD clean, handle it by its edge. Do not touch the surface.
- Do not stick paper or tape onto the CD.
- Do not expose the CD to direct sunlight or heat sources such as hot air ducts. Do not leave the CD in a car parked in direct sunlight.

Other Operations

Playing tracks repeatedly (Repeat Play)
You can play tracks repeatedly in normal, INTRO PGM, shuffle or RMS (Random Music Sensor) play modes. Repeat all the tracks or only one track.

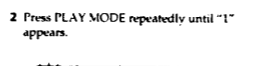
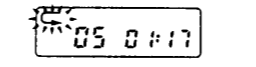


To repeat all the tracks
Press REPEAT/ENTER during play. The "R" indication appears.



To cancel repeat play, press REPEAT/ENTER again.

To repeat a single track
1 Press REPEAT/ENTER while the track you want to repeat is playing. The "R" indication appears.

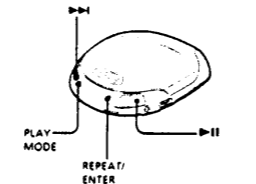


To repeat another track, press ⏮ or ▶.

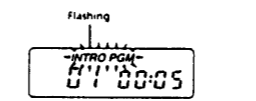
To cancel repeat play, press REPEAT/ENTER again.

Playing only the tracks you want (INTRO PGM Play)

You can choose and play your favorite tracks by scanning through the beginning of each track in a CD.



1 During play, press PLAY MODE repeatedly until "INTRO PGM" flashes.



2 Press ▶ to start scanning. The Discman plays the first 15 seconds of each track and "INTRO PGM" flashes faster.

3 Press REPEAT/ENTER while the track you want is playing. To skip the track, press ▶ or just wait for the next track.

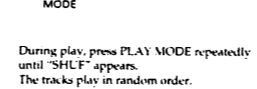
When you go through the CD, "INTRO PGM" stops flashing and the tracks you chose play automatically.

To finish programming before hearing through the CD, press ▶. The selected tracks are played.

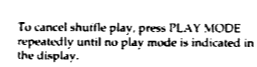
To cancel INTRO PGM play, press PLAY MODE repeatedly until no play mode is indicated in the display.

Playing tracks in random order (Shuffle Play)

You can play the tracks in a CD in random order.



During play, press PLAY MODE repeatedly until "SHUFFLE" appears. The tracks play in random order.

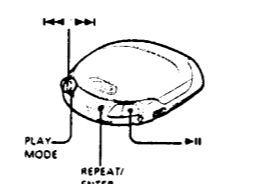


To cancel shuffle play, press PLAY MODE repeatedly until no play mode is indicated in the display.

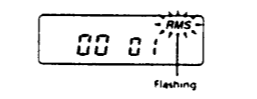
Note
During shuffle play, you cannot return to previous tracks by pressing ⏮.

Playing tracks in the order you want (RMS play)

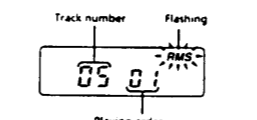
You can program up to 32 tracks to play in any order you choose.



1 During play, press PLAY MODE repeatedly until "RMS" flashes.



2 Press ⏮ or ▶ to choose a track. The track number and the playing order appear.



3 Press REPEAT/ENTER to program the track.

4 Repeat steps 2 and 3 to program the remaining tracks.

5 Press ▶. "RMS" stops flashing and the tracks you chose play in the order you specified.

To cancel RMS play, press PLAY MODE until "RMS" disappears.

To check the program
To check during programming, press REPEAT/ENTER before step 5 above. To check during RMS play, press PLAY MODE repeatedly until "RMS" flashes, then press REPEAT/ENTER.

Each time you press the button, the track numbers appear in the order you specified.

Note
If you program another track after the 32nd track, the first track programmed is cleared and the new track is programmed instead.

Using other functions

To enjoy more powerful bass sound
You can enjoy a powerful bass-booster sound.

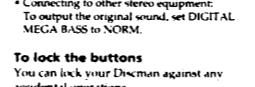


Set DIGITAL MEGA BASS to the desired position.

Notes

- If the sound is distorted when emphasizing bass, turn down the volume.
- Connecting to other stereo equipment: To output the original sound, set DIGITAL MEGA BASS to NORM.

To lock the buttons
You can lock your Discman against any accidental operations.



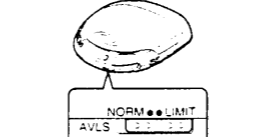
Slide PUSH OPEN HOLD LOCK in the direction of the arrow. When you press any button, "MD" appears in the display.



To unlock, slide PUSH OPEN HOLD LOCK back.

To protect your hearing (AVLS)

The AVLS (Automatic Volume Limiter) system function keeps down the maximum volume to protect your ears.



Set AVLS to LIMIT.

Note
If the sound is distorted when you listen to the bass-booster sound with the AVLS function, turn down the volume.

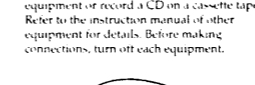
To turn off the beep

You can turn off the beep that sounds as you operate your Discman.

While you press and hold down ▶ on the main unit, connect the power source.

Connecting to other stereo equipment

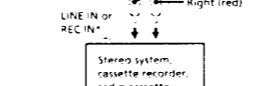
You can listen to the CD through other stereo equipment or record a CD on a cassette tape. Refer to the instruction manual of other equipment for details. Before making connections, turn off each equipment.



Notes

- Do not put the Discman on a dashboard. Do not leave the Discman in a car parked in sunlight.
- Use a heavy car connecting pack for reducing noise.

Switched ignition function
With this feature, your Discman stops automatically when you turn off the engine of the car. (This function is not available with some cars depending on the model.)



To connect an equipment on a car, use the REC IN jack on the RK-G124 connecting cord and connect to the car.

Notes

- Before using play, track ID, turn down the volume of the connected equipment or set it to "Energy" for the connected speakers.
- To output the original sound, set DIGITAL MEGA BASS to NORM.

Playing a CD in a car

You can use your Discman in a car as illustrated below.



To connect your Discman to a car cassette deck, you need the following accessories:

- Mount plate CPM-300P
- Car connecting pack CFA-4 or
- Mount kit CPM-300PC (Mount plate + Car connecting pack)
- Car battery cord with car connecting pack DCC-E24CP

Refer to the instruction manual of each accessory for details.

When you use the CPM-300P mount plate

Match the car mount adaptor supplied to the CPM-300P before installing the Discman.

Notes

- Do not put the Discman on a dashboard.
- Do not leave the Discman in a car parked in sunlight.
- Use a heavy car connecting pack for reducing noise.

When you use the CPM-300PC mount plate

Match the car mount adaptor supplied to the CPM-300PC before installing the Discman.

Notes

- Do not put the Discman on a dashboard.
- Do not leave the Discman in a car parked in sunlight.
- Use a heavy car connecting pack for reducing noise.

When you use the CPM-300PC mount plate

Match the car mount adaptor supplied to the CPM-300PC before installing the Discman.

Notes

- Do not put the Discman on a dashboard.
- Do not leave the Discman in a car parked in sunlight.
- Use a heavy car connecting pack for reducing noise.

Switched ignition function
With this feature, your Discman stops automatically when you turn off the engine of the car. (This function is not available with some cars depending on the model.)



To connect an equipment on a car, use the REC IN jack on the RK-G124 connecting cord and connect to the car.

Notes

- Before using play, track ID, turn down the volume of the connected equipment or set it to "Energy" for the connected speakers.
- To output the original sound, set DIGITAL MEGA BASS to NORM.

Power Sources

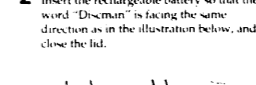
Using rechargeable battery

Charge the rechargeable battery BP-DM10 before using it for the first time.

1 Open the lid of the battery compartment.



2 Insert the rechargeable battery so that the word "Discman" is facing the same direction as in the illustration below, and close the lid.



3 Connect the AC power adaptor and charge for about 3 hours. The indication "CHG" lights up and the "number 1" shifts position in succession until the battery is fully charged.



4 When fully charged, disconnect the AC power adaptor.

When to charge the battery
When the battery is used up, "1" indication appears in the display. Charge the rechargeable battery.

Notes

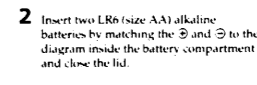
- Charging time is 3 hours depending on how the rechargeable battery is used.
- If the battery is new or has not been used for a long time, it may not be charged completely until you charge and discharge it several times.
- If the battery life reduces by about half to place it in a new BP-DM10 rechargeable battery, do not use any other rechargeable battery.

Using dry batteries

1 Open the lid of the battery compartment.



2 Insert two LR6 (size AA) alkaline batteries by matching the Ⓟ and ⊖ to the diagram inside the battery compartment and close the lid.



When to replace the dry batteries
When the battery is used up, "1" indication appears in the display. Replace all the batteries with new ones.

Notes

- Do not change the dry batteries.
- Do not mix new batteries with old ones.
- Do not use different types of batteries together.

Battery life (approx. hours)

LR6 (AA) × 2	BP-DM10
v	1

(When you use the Discman on a flat and stable place)

On headphones
Road safety
Do not use headphones while driving, cycling, or operating any motorized vehicle. It may create a traffic hazard and is illegal in some areas. It can also be potentially dangerous to play your headphones at high volume while walking, especially at pedestrian crossings. You should exercise extreme caution or discontinue use in potentially hazardous situations.

Preventing hearing damage
Avoid using headphones at high volume. Hearing experts do use against continuous, loud and extended play. If you experience ringing in your ears, reduce volume or discontinue use of your headphones.

Caring for others
Keep the volume at a moderate level. This will allow you to hear outside sounds and to be considerate to the people around you.

Additional Information

Precautions

On safety

- Should any solid objects or liquid fall into the unit, unplug it and have it checked by qualified personnel before operating it any further.
- Do not put any foreign objects in the DC IN, 4.5 V external power input jack.

On power sources

- When you are not using the unit for a long time, disconnect all power sources from the unit.
- The nameplate indicating operating voltage, power consumption, etc. is located at the back of the AC power adaptor (for Middle East only).

On the AC power adaptor

- Use only the supplied or recommended AC power adaptor. Do not use any other AC power adaptor.

Polarity of the plug

To plug the AC power adaptor from the wall outlet, grasp the adaptor shell, do not pull its cord.

To unplug the AC power adaptor from the wall outlet, grasp the adaptor shell, do not pull its cord.

On dry and rechargeable batteries

- Do not throw the batteries into fire.
- Do not carry the rechargeable battery with coins or other metallic objects. It can generate heat if the positive and negative terminals of the battery are accidentally contacted by a metallic object.

On the unit

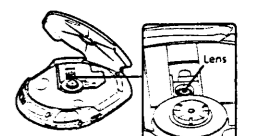
- Keep the lens on the unit clean and do not touch it. If you do, the lens may be damaged and the unit will not operate properly.
- Do not put any heavy object on top of the unit. The unit and the CD may be damaged.
- Do not leave the unit in a location near heat sources, or in a place subject to direct sunlight, excessive dust or sand, moisture, rain, mechanical shock, unlevelled surface, or in a car with its windows closed.
- If the unit causes interference to the radio or television reception, turn off the unit or move it away from the radio or television.
- Do not wrap the unit in a cloth or blanket during use as it may cause malfunction or serious accidents.

Preventing hearing damage
Avoid using headphones at high volume. Hearing experts do use against continuous, loud and extended play. If you experience ringing in your ears, reduce volume or discontinue use of your headphones.

Caring for others
Keep the volume at a moderate level. This will allow you to hear outside sounds and to be considerate to the people around you.

Maintenance

To clean the lens
Clean the lens with a lens cleaning kit KK-DM1.

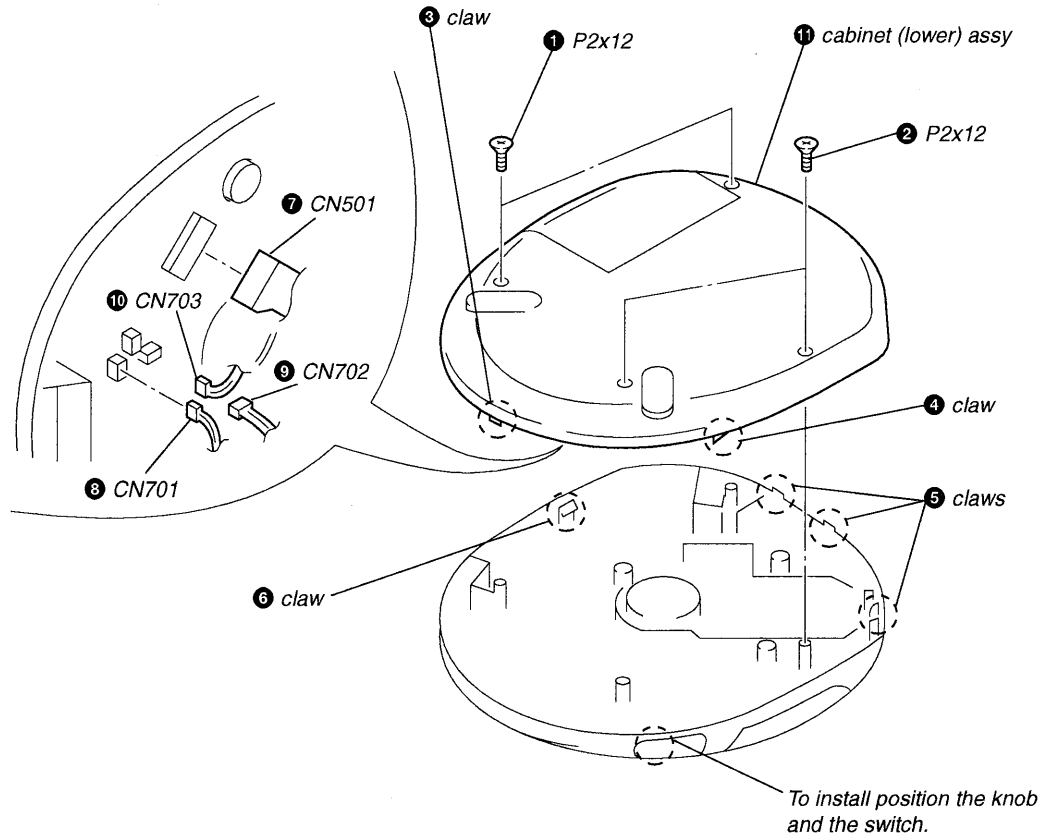


To clean the casing
Use a wet cloth slightly moistened in water or a mild detergent solution. Do not use alcohol, benzine or thinner.

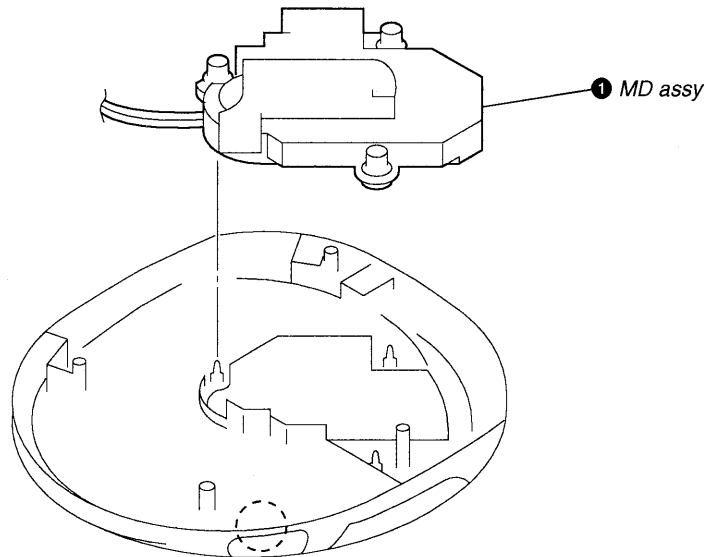
SECTION 2 DISASSEMBLY

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

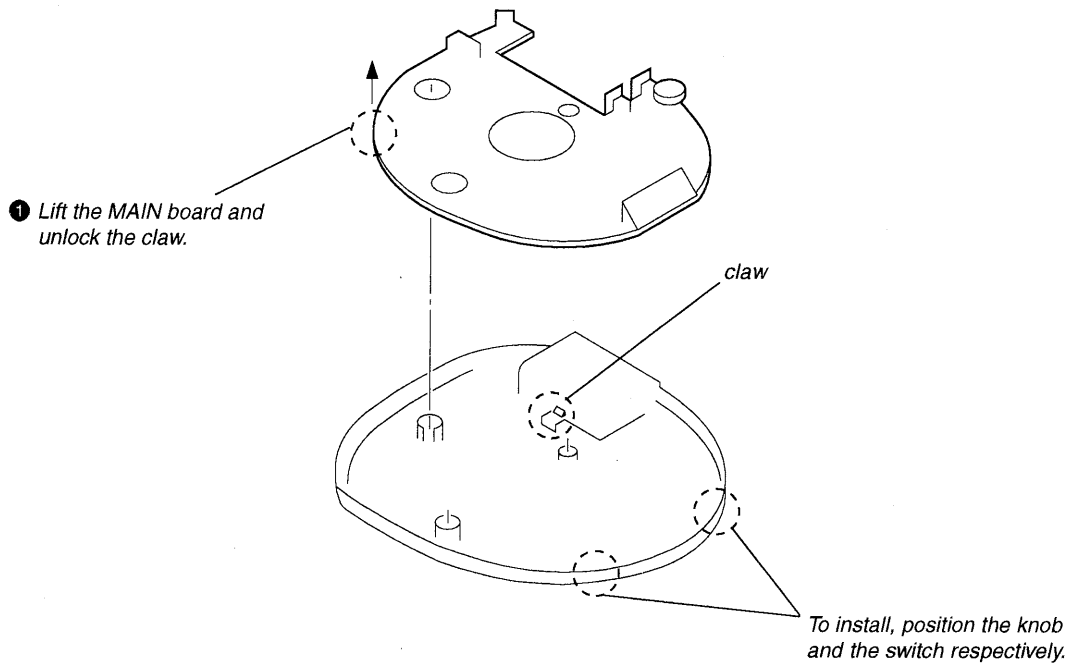
2-1. CABINET (LOWER) ASSY



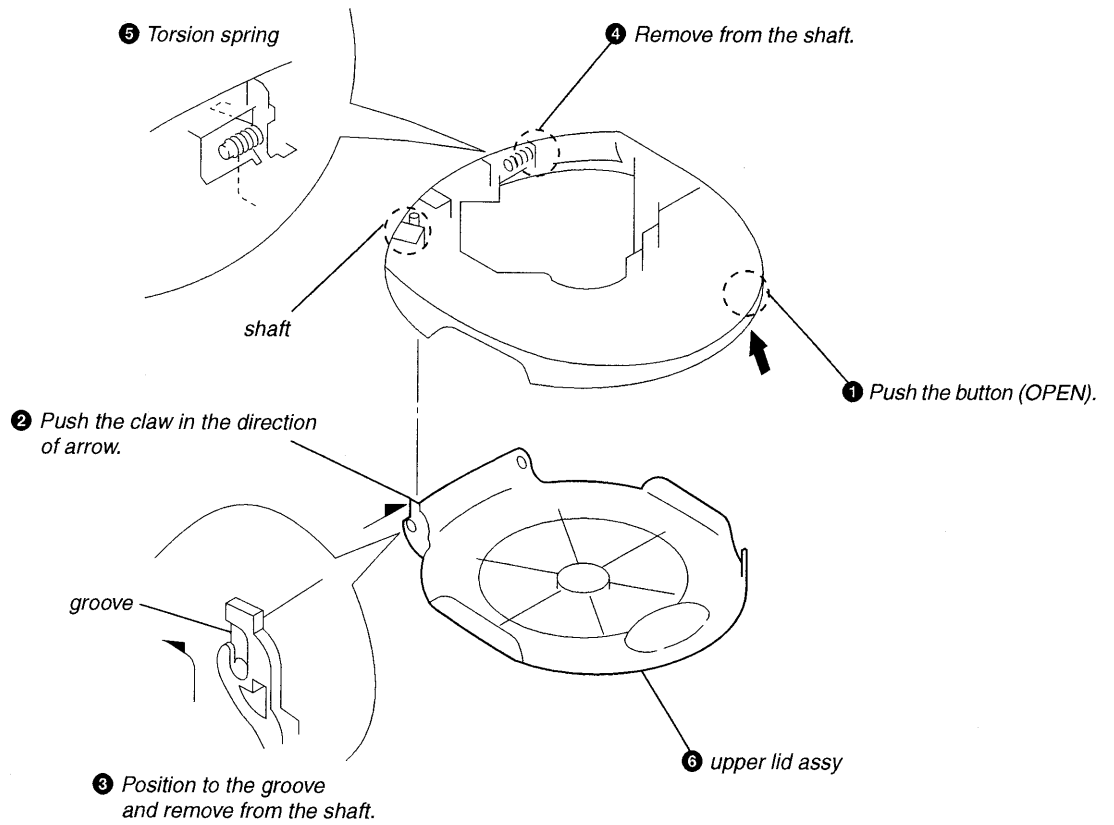
2-2. MD ASSY



2-3. MAIN BOARD



2-4. UPPER LID ASSY



SECTION 3 SERVICE NOTE

Precautions for Checking Emission of Laser Diode

Laser light of the equipment is focused by the objective lens in the optical pick-up so that the light focuses on the reflection surface of the disc.

Therefore, be sure to keep your eyes more than 30 cm apart from the objective lens when you check the emission of laser diode.

Laser Diode Checking Methods

During normal operation of the equipment, emission of the laser diode is prohibited unless the upper lid is closed while turning ON the S808 (push switch type).

The following two checking methods for the laser diode are operable.

• Method-1 (In the service mode or normal operation) : Emission of the laser diode is visually checked.

1. Open the upper lid.
2. Push the S808 as shown in Fig. 1.
3. Check the objective lens for confirming normal emission of the laser diode. If not emitting, there is a trouble in the automatic power control circuit or the optical pick-up.
During normal operation, the laser diode is turned ON about 2.5 seconds for focus searching.

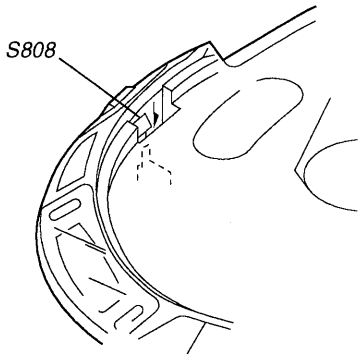


Fig. 1 Method to push the S808

6. Check that the current value is within the following range.

- Current value of the label ± 5 mA (25°C)
Variation by temperature : 0.4 mA/°C
(Current increases with temperature increased.)
(Current decreases with temperature decreased.)

If the current is more than the range above, there is a trouble in the automatic power control circuit or the laser diode is in deterioration.

If less than the range, a trouble exists in the automatic power control circuit or the optical pick-up.

— MAIN BOARD — (SIDE B)

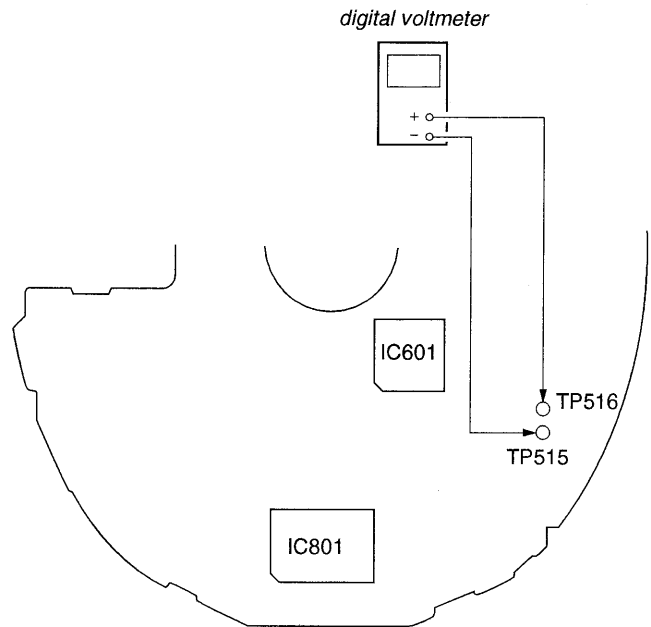
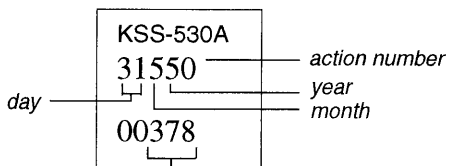


Fig. 2 Digital voltmeter connecting location

• Method-2 (In the service mode or normal operation) : Check the value of current flowing in the laser diode.

1. Remove the upper lid.
2. Read the current printed on the label attached on the rear side of the optical pick-up.

(Label stuck outside of the optical pick-up)



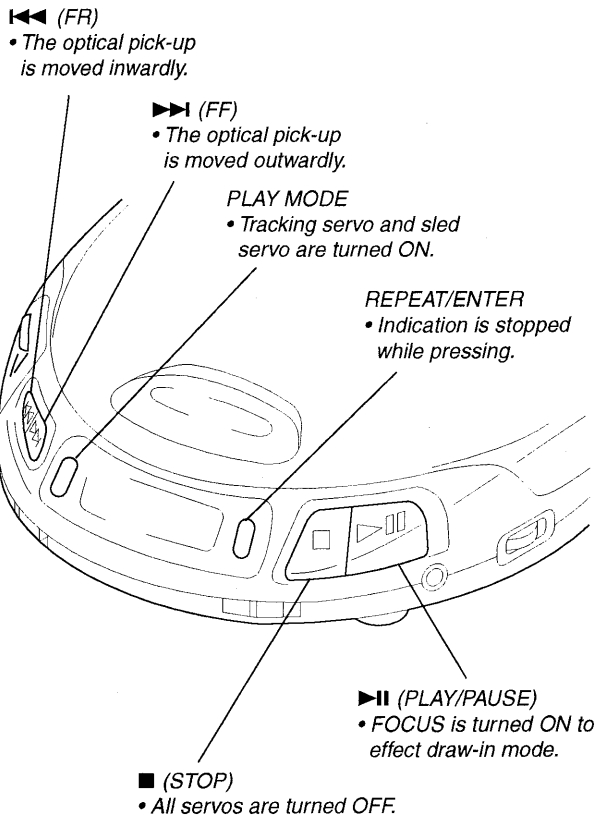
Indicates current value.
(In this case, 37.8 mA)

3. Connect a digital voltmeter as shown in Fig. 2.
4. Press the ►|| key.
5. Calculate current value by the reading of the digital voltmeter.

Reading of the tester (V) \div 2.2 (Ω) = current value (A)
(Example) Reading of the digital voltmeter of 0.0836 V :
 $0.0836 \text{ V} \div 2.2 \Omega = 0.038 \text{ (A)} = 38 \text{ mA}$

SECTION 4 SERVICE MODE

The equipment is provided with a service program built in the micro-computer, like conventional models.
Service program operation methods are described in the following.



Description in • indicate major operations in the service mode. For more information, see Step 2.

Fig. 3 Layout of each key

• Step 1 (Service mode setting methods)

1. Solder across the TEST terminal (pin ④, IC801 (TEST) is grounded). With external power supply disconnected.

Thus, the set is switched to the service mode.

• Step 2 (Operation in the service mode)

1. Once the service mode is effected, the LCD displays 5 indications each of which is repeatedly displayed.
However, the following operations can be activated even if LCD indication is effected.
2. By pressing the ▶|| key, focus is turned ON from focus searching while entering CLV-S (pull-in mode).
Without disc, focus searching is repeated continuously.
3. By pressing the PLAY MODE key, tracking servo, sled servo and CLV servo are turned ON.
4. By pressing the ▶▶ or ◀◀ key, the optical pick-up is movable inwardly or outwardly. However, if this is activated, tracking servo and sled servo are turned OFF, so it can be turned ON by pressing the PLAY MODE key if required.

5. By pressing the REPEAT/ENTER key, all indications light up.
With the key released, repeated indication is continued, so you can check each segment.
6. When steps 2 and 3 are performed, playing begins. No muting is ON in the service mode.
7. By pressing the ■ key, all servos (focus, tracking and sled) are turned OFF. However, the disc motor revolves for a while by inertia.

• Step 3 (Resetting of service mode)

1. Be sure to disconnect the external power supply and remove the solder bridge at the T801 (TEST) terminal.
2. The set thus becomes available for normal operation.

– MAIN BOARD – (SIDE A)

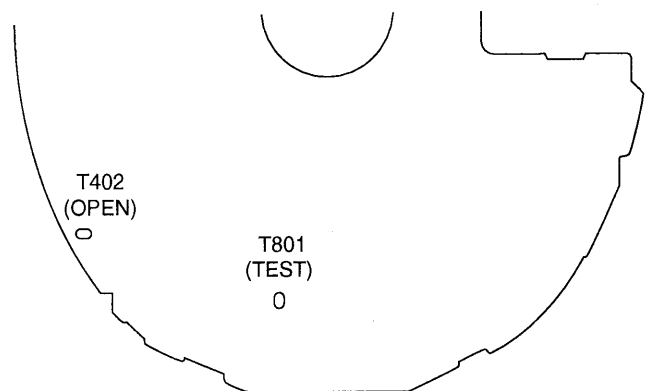


Fig. 4 Location of Test terminal and Open terminal

SECTION 5 ELECTRICAL ADJUSTMENTS

Precautions for Adjustment

1. Before beginning adjustment, set the equipment to service mode.
After the completion of adjustment, be sure to reset the service mode.

For more information, see "Service Mode" on page 9.

2. Perform adjustments in the order given.
3. Use YEDS-18 disc (Part No. : 3-702-101-01) unless otherwise indicated.
4. Power supply voltage requirement : DC4.5V

HOLD/LOCK switch	: OFF
VOL control	: MIN
DIGITAL MEGA BASS switch	: NORM
AVLS switch	: NORM

Before Beginning Adjustment

Set the equipment to service mode (See page 9.) and check the following.

If there is an error, repair the equipment.

• Checking of the sled motor

1. Open the upper lid.
2. Press the ►► or ◄◄ key and check that the optical pick-up can move smoothly without sluggishness or abnormal noise in inner most periphery → outermost periphery → innermost periphery.
 ►► : The optical pick-up moves outwardly.
 ◄◄ : The optical pick-up moves inwardly.

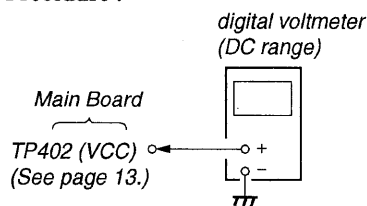
• Checking of focus searching

1. Open the upper lid.
2. Press the ►|| key. (Focus searching operation is activated continuously.)
3. Check the objective lens of the optical pick-up for smooth up/down motion without sluggishness or abnormal noise.
4. Press the ■ key.
 Check that focus searching operation is deactivated. If not, again press the ■ key slightly longer.

VCC Check

*Use a LR6 (size AA) battery for VCC check.

Checking Procedure :



1. Connect the digital voltmeter to TP402 (VCC) on main board.
2. Check for 3.20 ± 0.1 V reading on the digital voltmeter.

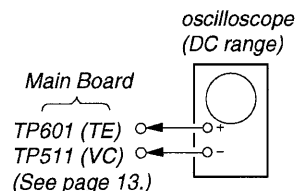
Connection Location : See page 13.

Tracking Balance Adjustment

Condition :

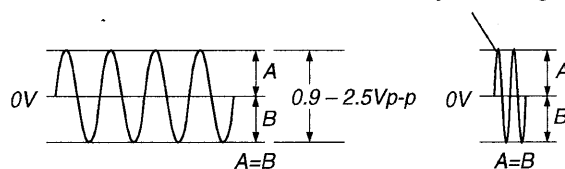
- Hold the set in horizontal state.

Adjustment Procedure :



1. Connect the oscilloscope to TP601 (TE) and TP511 (VC) on main board.
2. Set the equipment to service mode stop state. (See page 9.)
3. Move the optical pick-up to the center by pressing the ►► or ◄◄ key.
4. Put the disc (YEDS-18).
5. Press the ►|| key.
 - From focus searching, focus is turned ON while entering CLV drawing-in mode. Tracking and sled are servo turned OFF.
6. Adjust RV501 so that the waveform on the oscilloscope becomes up/down symmetrical with an axis of 0V.

Note: Take long sweep time for easy monitoring.



7. Stop removing of the disc motor by pressing the ■ key.
8. After the completion of adjustment, reset service mode. (See page 9.)

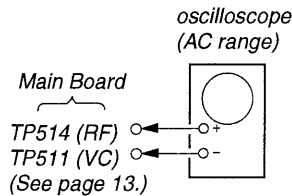
Adjustment Location : See page 13.

Focus Bias Adjustment

Condition :

- Hold the set in horizontal state.

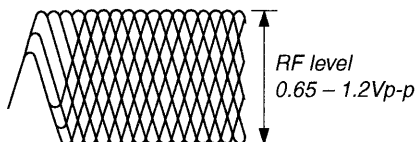
Adjustment Procedure :



1. Hold the set in service mode stop state. (See page 9.)
2. Connect the oscilloscope to the test point TP514 (RF) and TP511 (VC) on main board.
3. Move the optical pick-up to the center by pressing the ►► or ◄◄ key.
(To display the eye pattern more clearly, move the optical pick-up to the music range of the disc.)
4. Put the disc (YEDS-18).
5. Press the ►► key.
 - From focus searching, focus is turned ON while entering CLV drawing-in mode. Tracking and sled servo are turned OFF.
6. Press the PLAY MODE key. (Both tracking and sled servo are turned ON.)
7. Adjust RV502 so that the eye pattern in the waveform of the oscilloscope is clearly displayed. "Clear display of the eye pattern" means that the ◇ shape can be clearly discriminated at the center of the waveform.

RF SIGNAL WAVEFORM (EYE PATTERN)

VOLT DIV : 200 mV (With the 10 : 1 probe in use)
TIME DIV : 500 nS



To watch the eye pattern, set the oscilloscope to AC range and increase the vertical sensitivity of the oscilloscope for easy watching.

8. Stop revolving of the disc motor by pressing the ■ key.
9. After the completion of adjustment, reset service mode. (See page 9.)

Adjustment Location : See page 13.

Focus/Tracking Gain Adjustment

A servo analyzer is necessary in order to perform this adjustment exactly.

However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up relative to mechanical noise and mechanical shock when the 2-axis device operates.

However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is rised, the noise when 2-axis device operates increase.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.

This adjustment has to be performed upon replacing any of the following parts.

- Optical pick-up
- RV602 (Focus gain VR)
- RV601 (Tracking gain VR)

Normally, be sure not to turn RV602 (focus gain VR) and RV601 (tracking gain VR).

Adjustment method :

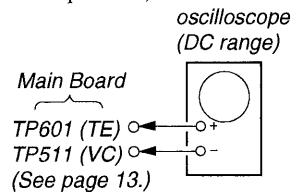
– Focus Gain Adjustment –

This adjustment is not performed.

If focus gain VR RV602 is turned, set to mechanical center.

– Tracking Gain Adjustment –

(perform at normal operation)



1. Place the optical pick-up level, horizontally. (If the optical pick-up is not level, the 2-axis device will be weighted and adjustment cannot be done.)
2. Connect the oscilloscope to TP601 (TE) and TP511 (VC) on main board.
3. Set the disc (YEDS-18) and press the ►► key.
4. Turn RV601 slightly clockwise (tracking gain drops) and obtain a waveform with a fundamental wave (waveform has large waves) as in Fig. 1.
5. Turn RV601 slowly counterclockwise (tracking gain rises) until the fundamental wave disappears (no large waves) as in Fig. 2.
6. Set RV601 to the position about 30° counterclockwise from the position obtained in step 5. If RV601 contact point is more than 90° counterclockwise from mechanical center, tracking gain is too high. In this case, readjust from step 4.
7. Press ►► or ◄◄ key and observe the 100 track jump waveform. Check that no traverse waveform appears for both ►► and ◄◄ directions. (See Fig. 3 and 4.) It is acceptable if the traverse waveform appears only now and then, but if it appears constantly, raise tracking gain slightly and check step 7 again.
8. Check that there is not abnormal amount of operation noise (white noise) from the 2-axis device. If there is, tracking gain is too high, readjust starting with step 4.

The waveforms are those measures with the oscilloscope set as shown below.

- VOLT/DIV : 0.2 V
- TIME/DIV : 5 ms

- Waveform when tracking gain is lowered.
Fundamental wave appears (large waves).



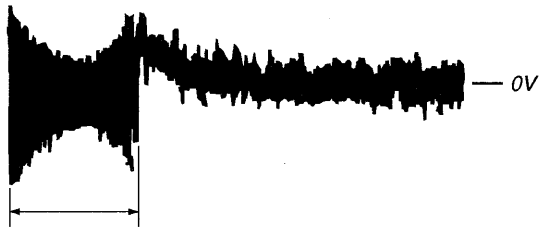
Fig. 1

- Waveform when fundamental wave disappears (no large waves).



Fig. 2

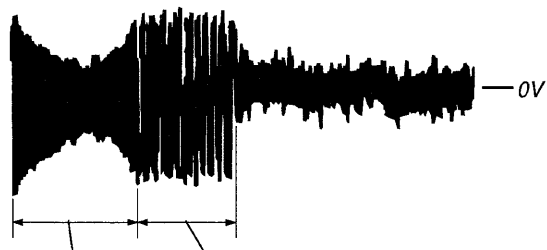
- Waveform with no traverse waveform during 100 track jump.
(Brake application is smooth because of adjustment.)



100 track jump waveform

Fig. 3

- Waveform with traverse waveform during 100 track jump.
(Brake application is poor because of adjustment.)



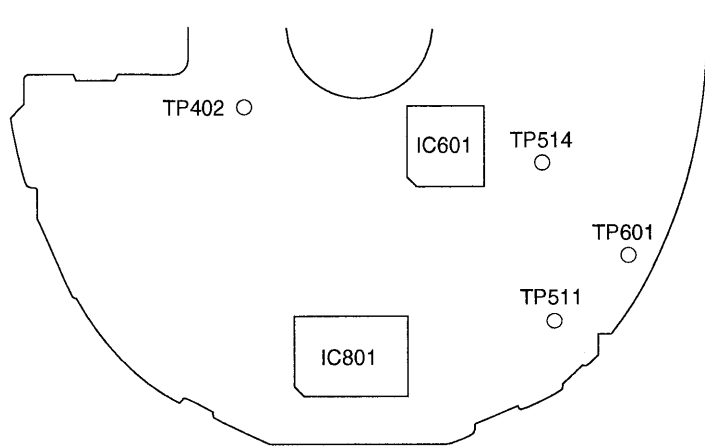
100 track jump waveform

traverse waveform

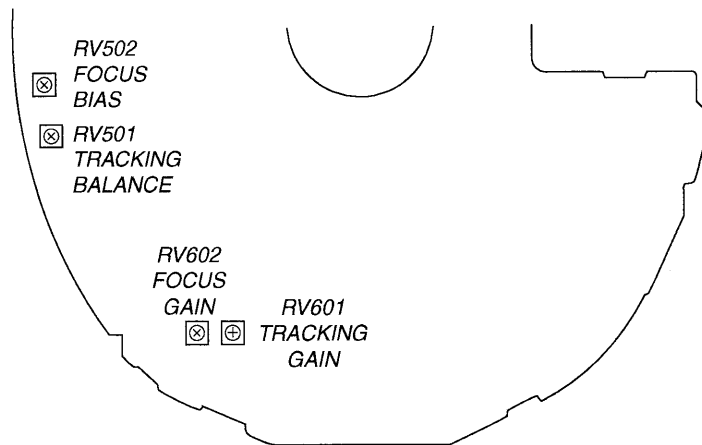
Fig. 4

Connection and Adjustment Location :

- MAIN BOARD - (SIDE B)



- MAIN BOARD - (SIDE A)



SECTION 6 DIAGRAMS

6-1. IC PIN DESCRIPTION

• IC801 MSM65344A-026GS (SYSTEM CONTROL/LCD DRIVE)

Pin No.	Pin Name	I/O	Pin Description
1	COM3	O	LCD common LINE control
2-14	SEG0-12	O	LCD segment LINE control
15-17	—	—	Open
18	AGND	—	Analog GND
19	RMKEY	I	A/D port for headphone remote control key input
20	HI-DC	I	DC jack input over voltage detection
21	HI-CURR	I	High current flow protection. "L" : POWER OFF
22	—	—	Connect to GND.
23	—	—	Connect to GND.
24	CHGMNT	I	Charge monitor A/D input
25	AVDD	—	Analog power supply
26	HP-ATT	O	Headphone attenuation during DIGITAL MEGA BASS OFF. "H" : ON, "L" : OFF
27	AMUTE	O	Analog mute control. "H" : Mute ON
28	CHGON	O	Charging control. "H" : Charge ON, "L" : Charge OFF
29	—	—	Open
30	HI-DC O/P	—	Open
31	PC	O	Power control. "H" : POWER OFF, "L" : POWER ON
32	RCHG-BAT	I	When "L" , rechargeable battery is used.
33	DC-IN	I	When "L" , DC-jack adaptor is used.
34	TEST	I	When "L" , Test Mode is selected.
35	HOLD	I	When "L" , HOLD is ON.
36	BB-MAX	I	When "L" , DIGITAL MEGA BASS is MAX.
37	OPEN	I	When "L" , upper lid is closed.
38	LIM-SW	I	When "L" , LIMIT switch is activated.
39	BB-MID	I	When "L" , DIGITAL MEGA BASS is MID.
40	LOBAT	I	To detect Low Battery. "L" : Low Battery
41	SHCK	O	DAC IC TC9414FN-EL (IC301) attenuator shift clock
42	LATCH	O	CPU serial data latch
43	ATT	O	Audio data output to DAC IC (IC301).
44	CLV-MUTE	O	CLV-MUTE control. "L" : MUTE ON
45	R/W	O	Read/Write control. "H" : Read, "L" : Write
46	SQCLK	O	Sub-Q clock output
47	SUBQ	I	Sub-Q data input from DSP.
48	CDATA	O	Serial data output to DSP.
49	—	—	Open
50	MODE	I	When "L" , PLAY MODE is selected.
51	REPEAT	I	When "L" , REPEAT function is activated.
52	VDD	—	Power supply
53	BEEP	O	BEEP pulse output
54	STOP	I	When "L" , STOP mode is selected.
55	FF	I	When "L" , FF function is selected.
56	SCOR	I	Subcode sync signal detection (S0+S1)
57	FR	I	When "L" , FR function is selected.
58	PLAY	I	When "L" , PLAY function is selected.
59	FOK	I	Focus OK detection. "H" : OK, "L" : NG
60	WP	I	"L" to Wake-up μ -COM from sleep mode.
61	OSC1	—	Clock oscillator input (3.58 MHz)

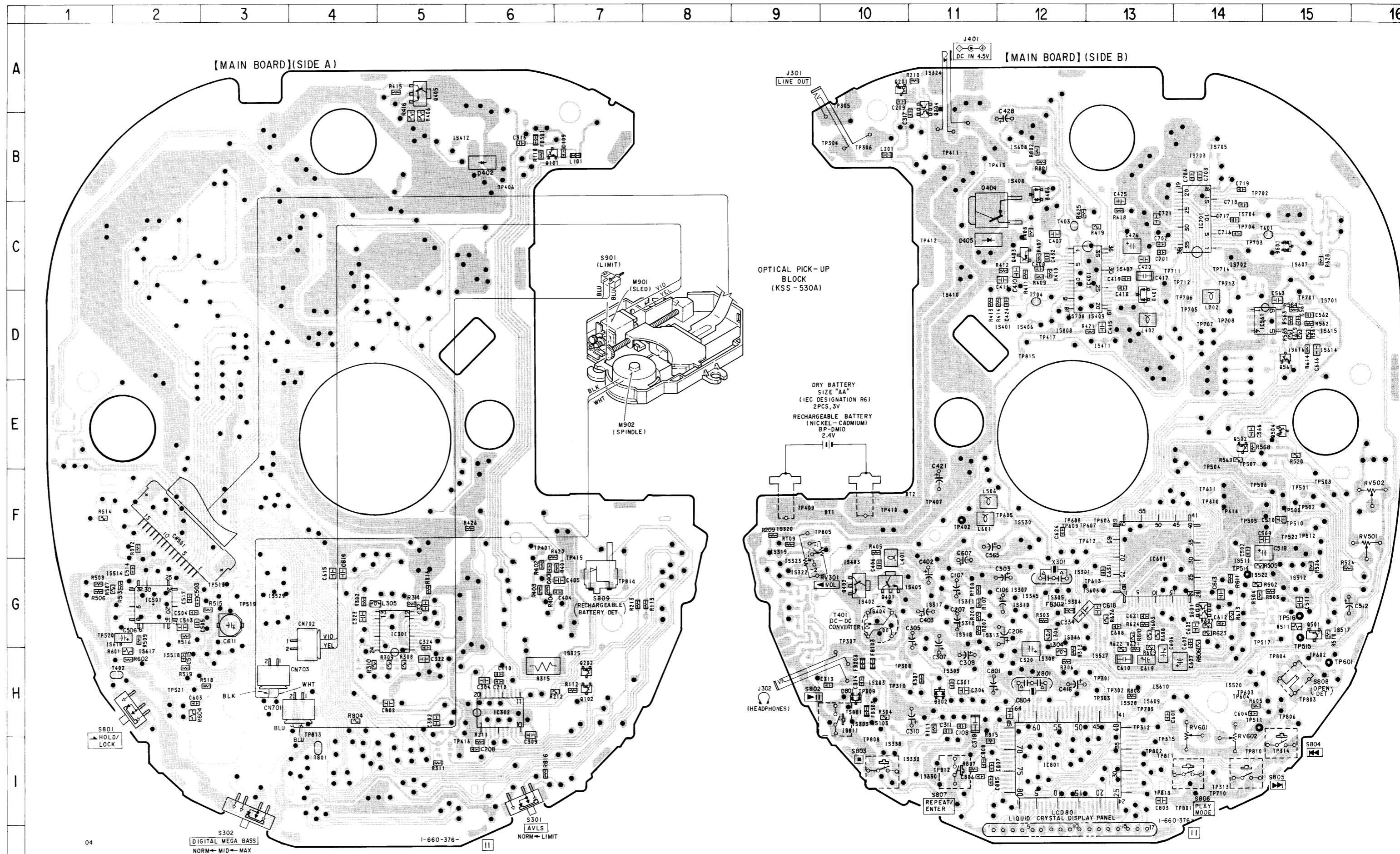
Pin No.	Pin Name	I/O	Pin Description
62	OSC0	—	Clock oscillator output (3.58 MHz)
63	DGND	—	Digital GND
64	RESET	I	System reset. "L" : Reset
65	—	—	Fixed at "H".
66	—	—	Open
67	TG SEL	—	Fixed at "H".
68	—	—	Fixed at "H".
69	XRST	O	To Reset DSP IC (IC601).
70	INTRO	—	Fixed at "L".
71	XBRAKE	—	Open
72	BUSY	I	"H" : Servo ON, "L" : During Track jump
73-75	VLCD1-3	—	LCD driver bias voltage output
76,77	C1,C2	—	LCD driver bias voltage condenser terminal
78-80	COM0-2	O	LCD common LINE control

6-2. PRINTED WIRING BOARDS

• Semiconductor Location

Ref. No.	Location
D302	H-11
D401	D-13
D402	B-6
D405	C-11
D406	B-12
D601	C-15
D801	H-10
IC301	G-5
IC302	H-6
IC401	C-13
IC501	G-2
IC561	D-15
IC601	F-14
IC701	C-14
IC801	I-12
Q101	B-6
Q102	H-7
Q201	A-10
Q202	H-7
Q304	A-11
Q401	G-10
Q402	G-10
Q403	C-12
Q404	B-11
Q405	A-5
Q501	G-15
Q502	E-14
Q504	E-15
Q561	D-15
Q601	G-14

Note :
 • : Through hole.
 • : Pattern on the side which is seen.
 (The other layer's patterns are not indicated.)



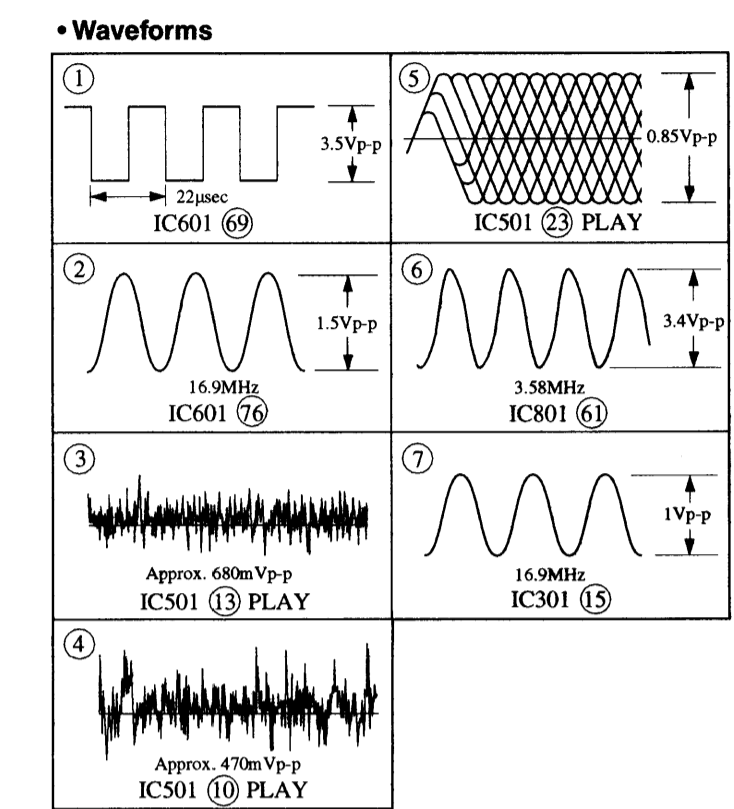
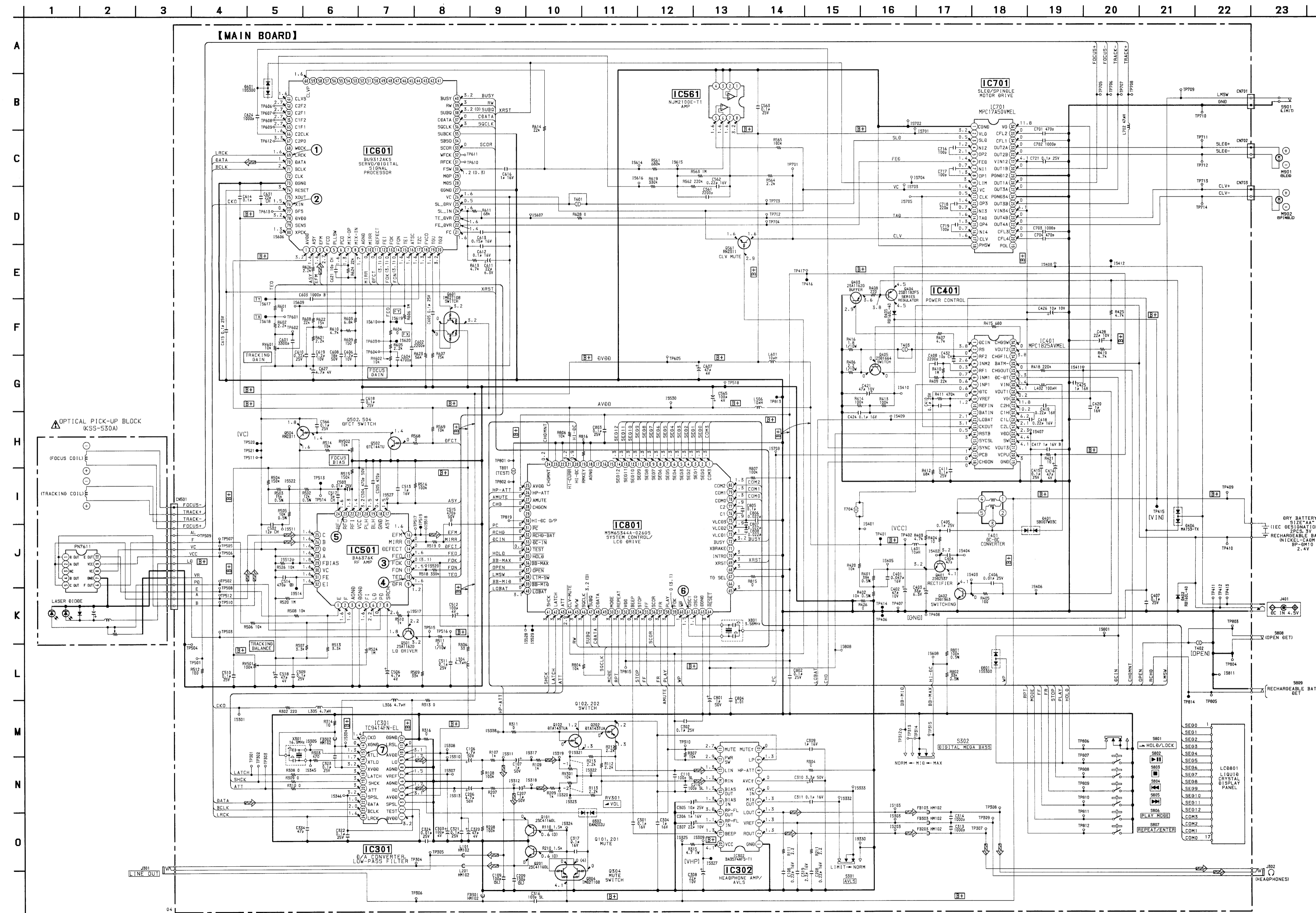
04

S302
DIGITAL MEGA BASS
NORM ← MID ← MAX

1-660-376-

S301
AVLS
NORM ← LIMIT

6-3. SCHEMATIC DIAGRAM • Refer to page 23 for IC Block Diagrams.



Note:

- All capacitors are in µF unless otherwise noted. pF = µF/50W 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.

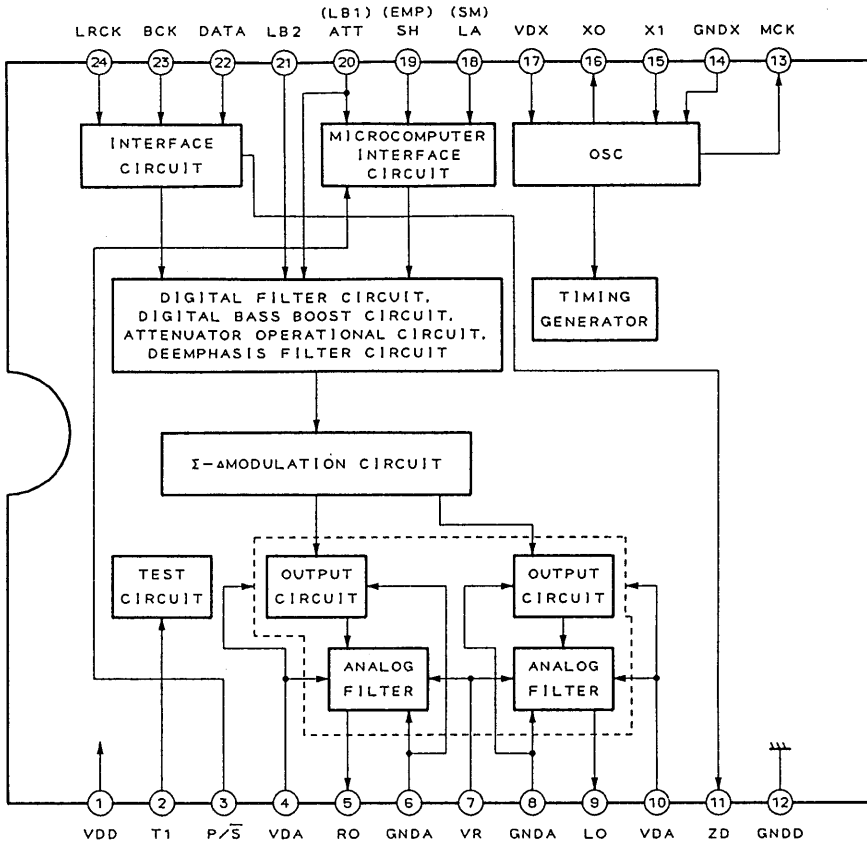
Note:
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

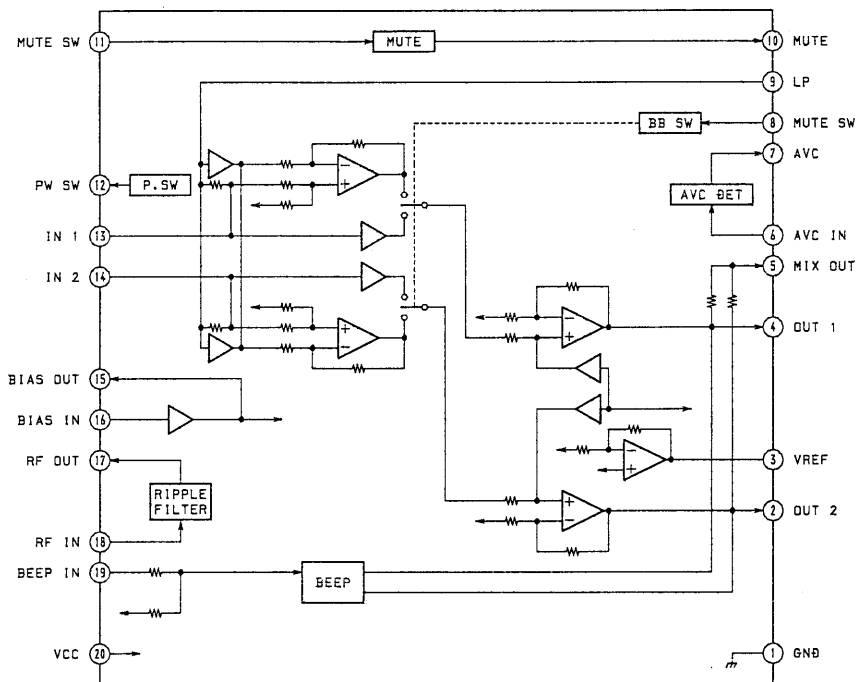
- ⊕ : B+ Line
- ⊞ : adjustment for repair.
- Power voltage is dc 4.5V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground in service mode.
- no mark: STOP (): PLAY
- Volts are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path
- ⇒ : CD

• IC Block Diagrams

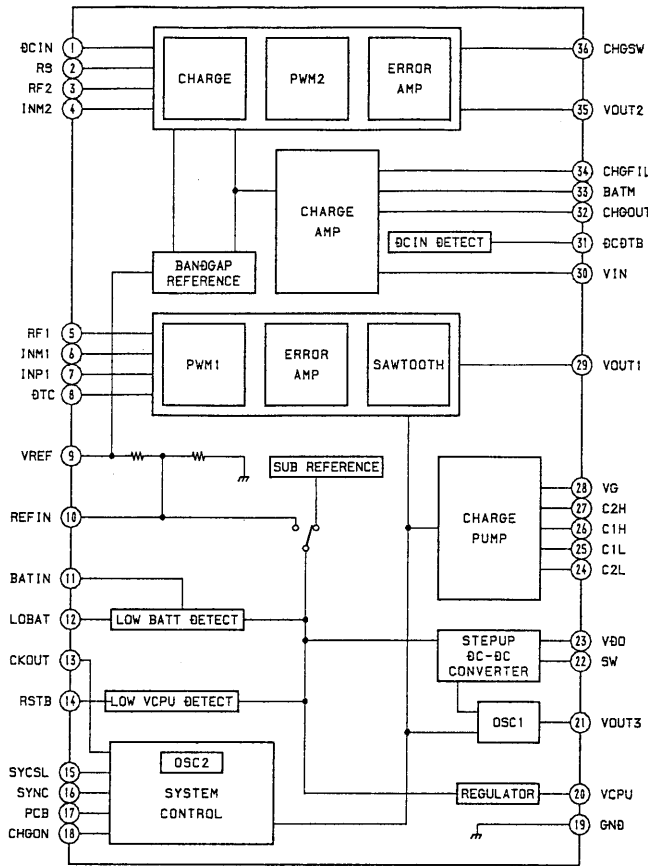
IC301 TC9414FN-EL



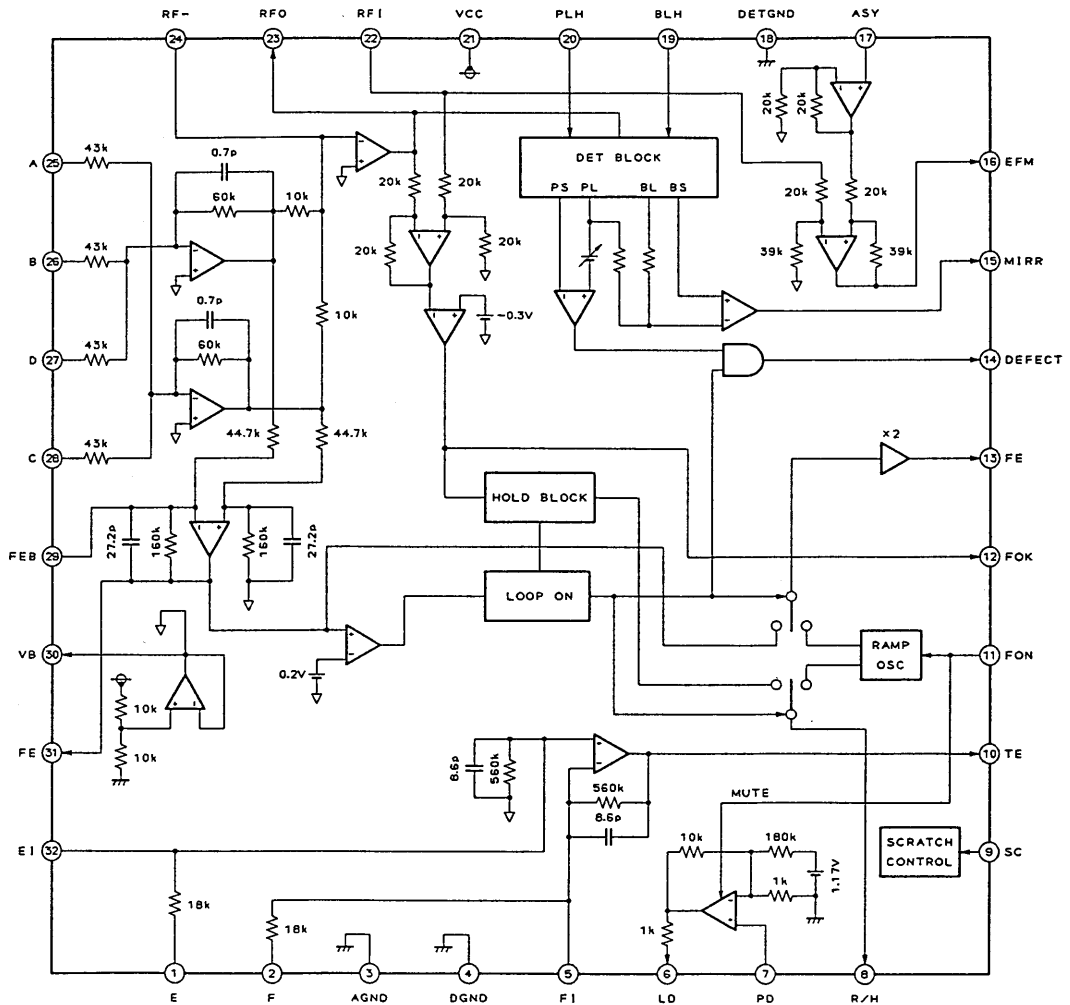
IC302 BA3574AFS-T1



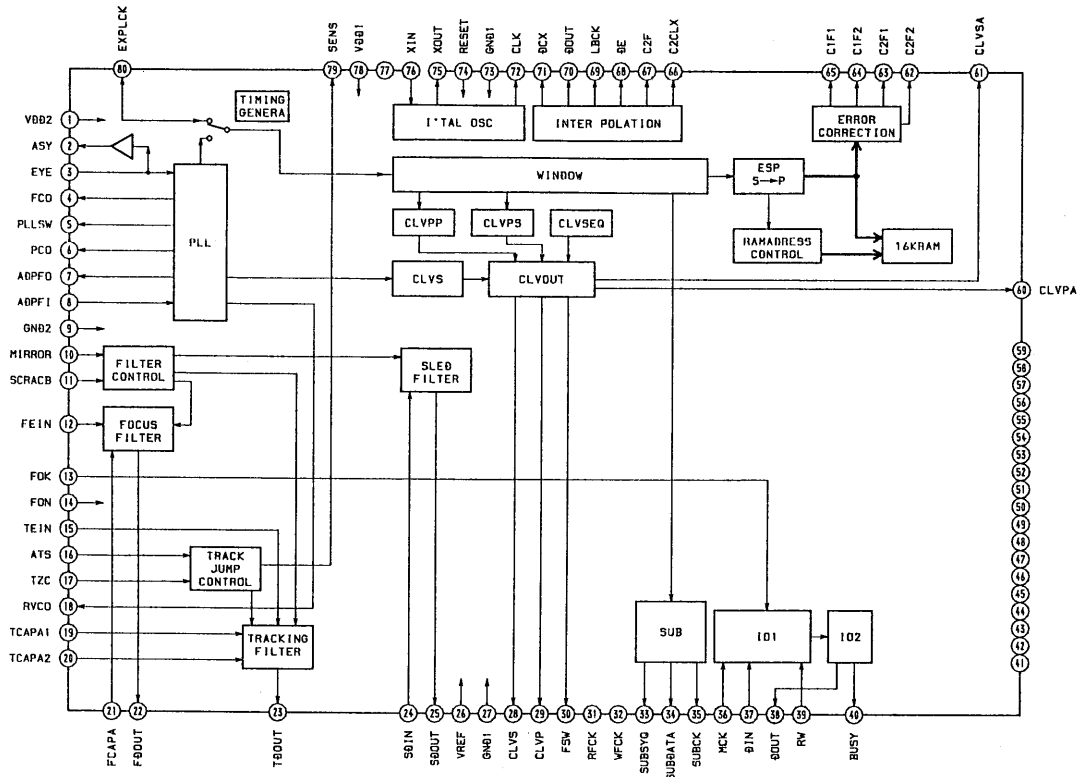
IC401 MPC1825AVMEL



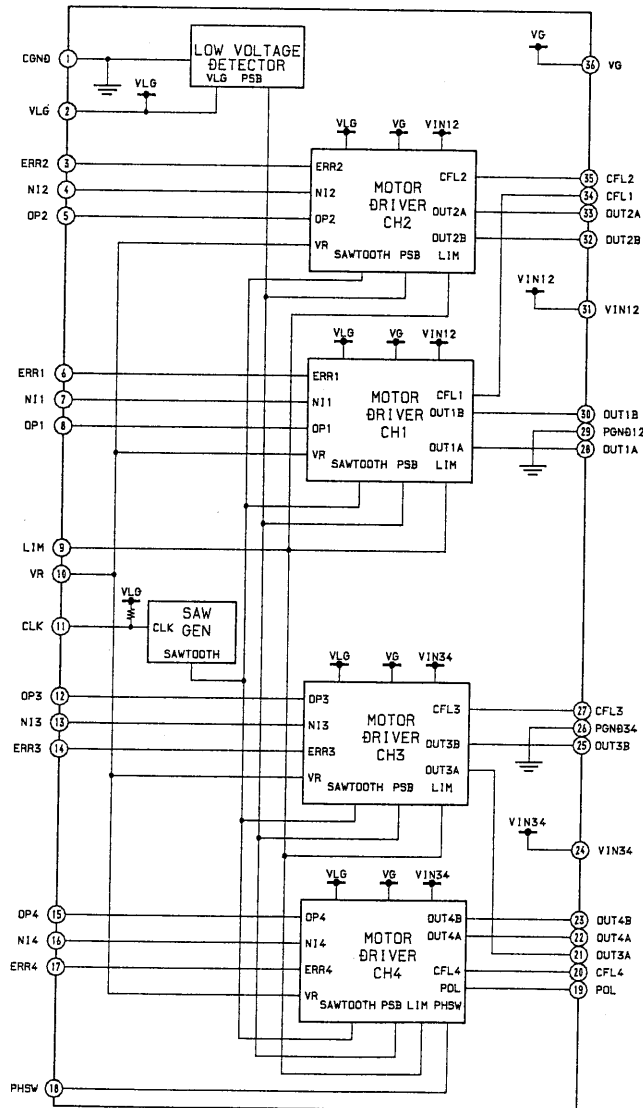
IC501 BA6376K



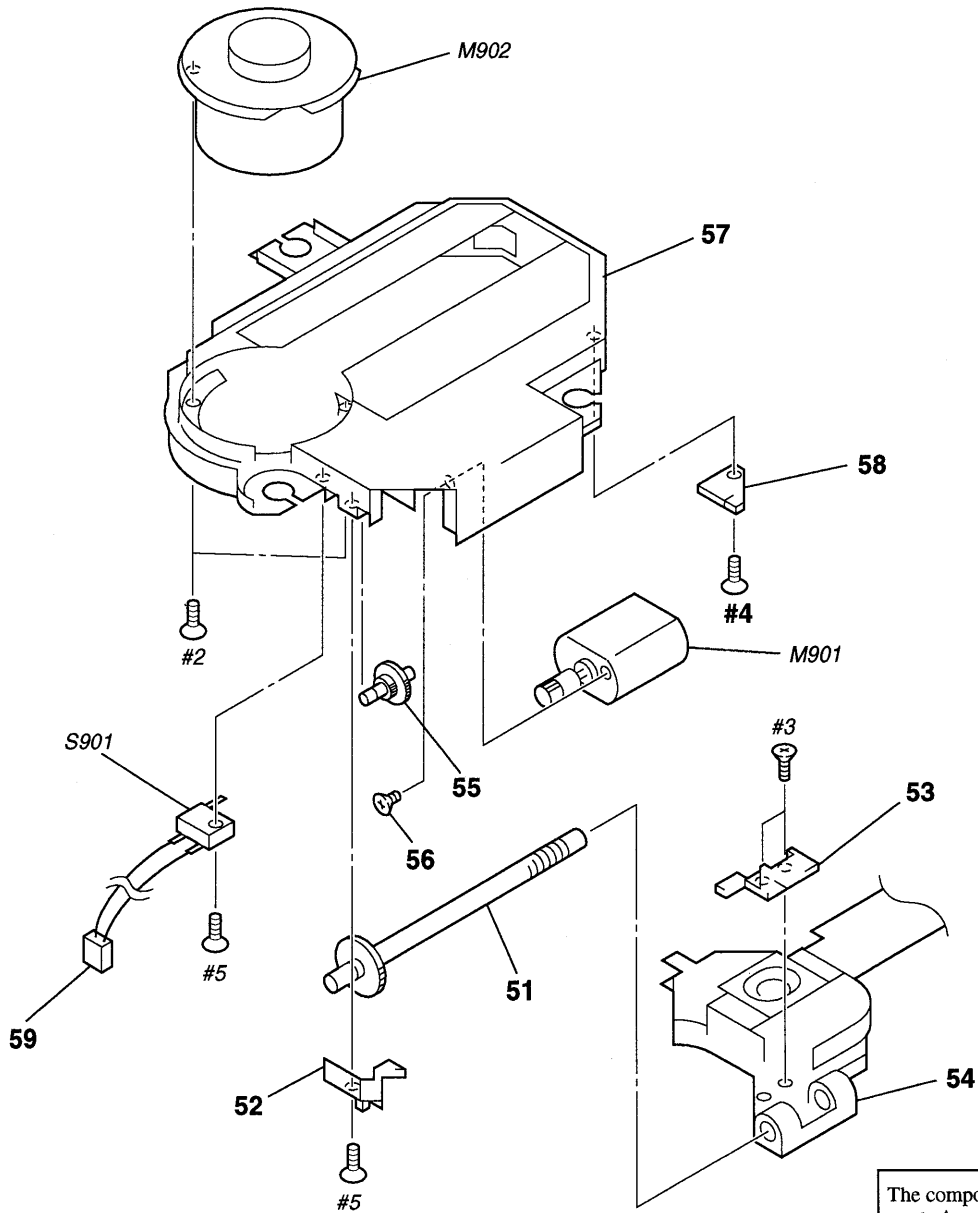
IC601 BU9312AKS



IC701 MPC17A50VMEL



**7-2. OPTICAL PICK-UP SECTION
(KSM-530AAA/S-NP)**



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

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-2625-483-1	SCREW ASSY, SLED		57	2-625-415-05	CHASSIS, MD	
52	2-625-412-02	SPRING, SLED		58	2-625-411-01	RETAINER, SHAFT	
53	2-625-414-02	RACK		59	1-948-418-21	HARNES	
Δ 54	8-848-403-11	PICK-UP, OPTICAL KSS-530A/Q-NP		M901	X-2625-171-2	MOTOR ASSY, SLED	
55	2-625-410-01	GEAR (B)		M902	X-2625-485-1	MOTOR ASSY (MS), T.T. (SPINDLE)	
56	3-732-988-01	SCREW (M2X2.5)		S901	1-570-771-11	SWITCH (LIMIT)	

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 and -X mean standardized parts, so they may have some difference from the original one.
- **RESISTORS**
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable
- Abbreviation
AUS : Australian model
CND : Canadian model
EA : Saudi Arabia model
E33 : AC 100-240V area model
E13 : AC 220-230V area model
E92 : AC 120V area model

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

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

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

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-3276-999-A	MAIN BOARD, COMPLETE *****		C316	1-162-953-11	CERAMIC CHIP 100PF 5%	50V
	4-978-689-01	HOLDER, LCD < BATTERY TERMINAL >		C317	1-164-360-11	CERAMIC CHIP 0.1uF	16V
BT1	4-978-695-01	PLATE, TERMINAL, BATTERY		C319	1-164-337-11	CERAMIC CHIP 2.2uF	16V
BT2	4-978-695-01	PLATE, TERMINAL, BATTERY < CAPACITOR >		C320	1-104-908-11	TANTAL. CHIP 47uF 20%	4V
C106	1-126-794-11	ELECT 4.7uF	20% 50V	C321	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C107	1-126-160-11	ELECT 1uF	20% 50V	C322	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C108	1-165-128-11	CERAMIC CHIP 0.22uF	16V	C323	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C109	1-162-953-11	CERAMIC CHIP 100PF	5% 50V	C324	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C110	1-162-953-11	CERAMIC CHIP 100PF	5% 50V	C334	1-163-173-11	CERAMIC CHIP 47PF 5%	50V
C206	1-126-794-11	ELECT 4.7uF	20% 50V	C401	1-165-176-11	CERAMIC CHIP 0.047uF 10%	16V
C207	1-126-160-11	ELECT 1uF	20% 50V	C402	1-126-785-11	ELECT 47uF 20%	10V
C208	1-165-128-11	CERAMIC CHIP 0.22uF	16V	C403	1-127-485-00	ELECT(SOLID) 33uF 20%	6.3V
C209	1-162-953-11	CERAMIC CHIP 100PF	5% 50V	C404	1-162-949-11	CERAMIC CHIP 47PF 5%	50V
C210	1-162-953-11	CERAMIC CHIP 100PF	5% 50V	C405	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C301	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C406	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C302	1-163-038-00	CERAMIC CHIP 0.1uF	25V	C407	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C303	1-124-584-00	ELECT 100uF	20% 10V	C408	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
C304	1-164-346-11	CERAMIC CHIP 1uF	16V	C410	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C305	1-126-096-11	ELECT 10uF	20% 35V	C411	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C306	1-164-346-11	CERAMIC CHIP 1uF	16V	C415	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C307	1-126-514-11	ELECT 22uF	20% 10V	C416	1-126-513-11	ELECT 47uF 20%	4V
C308	1-126-514-11	ELECT 22uF	20% 10V	C417	1-107-682-11	CERAMIC CHIP 1uF 10%	16V
C309	1-164-346-11	CERAMIC CHIP 1uF	16V	C418	1-165-128-11	CERAMIC CHIP 0.22uF	16V
C310	1-126-162-11	ELECT 3.3uF	20% 50V	C419	1-165-128-11	CERAMIC CHIP 0.22uF	16V
C311	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C420	1-164-346-11	CERAMIC CHIP 1uF	16V
C313	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C421	1-126-785-11	ELECT 47uF 20%	10V
C314	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C424	1-164-360-11	CERAMIC CHIP 0.1uF	16V
				C425	1-164-346-11	CERAMIC CHIP 1uF	16V
				C426	1-135-216-11	TANTALUM CHIP 10uF 20%	10V
				C428	1-126-514-11	ELECT 22uF 20%	10V
				C432	1-162-915-11	CERAMIC CHIP 10PF 0.5PF	50V
				C502	1-162-916-11	CERAMIC CHIP 12PF 5%	50V
				C503	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
				C504	1-162-962-11	CERAMIC CHIP 470PF 10%	50V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C505	1-162-962-11	CERAMIC CHIP	470PF 10% 50V	C804	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C506	1-135-151-21	TANTALUM CHIP	4.7uF 20% 4V	C805	1-164-360-11	CERAMIC CHIP	0.1uF 16V
C509	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C806	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V
C510	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C807	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V
C511	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C808	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V
C512	1-124-584-00	ELECT	100uF 20% 10V	< CONNECTOR >			
C513	1-164-346-11	CERAMIC CHIP	1uF 16V	CN501	1-566-531-11	CONNECTOR, FPC (ZIF) 15P	
C514	1-162-962-11	CERAMIC CHIP	470PF 10% 50V	* CN701	1-695-320-51	PIN, CONNECTOR (1.5MM)(SMD) 2P	
C515	1-162-962-11	CERAMIC CHIP	470PF 10% 50V	* CN702	1-695-320-31	PIN, CONNECTOR (1.5MM)(SMD) 2P	
C517	1-162-910-11	CERAMIC CHIP	5PF 0.25PF 50V	* CN703	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P	
C518	1-104-908-11	TANTAL. CHIP	47uF 20% 4V	< DIODE >			
C561	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	D302	8-719-941-86	DIODE DAN202U	
C562	1-165-128-11	CERAMIC CHIP	0.22uF 16V	D401	8-719-986-76	DIODE SB007W03C	
C563	1-163-038-00	CERAMIC CHIP	0.1uF 25V	D402	8-719-048-98	DIODE RB160L-40TE25	
C565	1-124-584-00	ELECT	100uF 20% 10V	D405	8-719-048-98	DIODE RB160L-40TE25	
C566	1-163-038-00	CERAMIC CHIP	0.1uF 25V	D406	8-719-800-76	DIODE 1SS226	
C601	1-162-967-11	CERAMIC CHIP	0.0033uF 10% 50V	D601	8-719-024-81	DIODE 1SS300-TE85L	
C602	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	D801	8-719-024-81	DIODE 1SS300-TE85L	
C603	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	< FERRITE BEAD >			
C604	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V	FB103	1-414-385-11	INDUCTOR, FERRITE BEAD	
C605	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V	FB203	1-414-385-11	INDUCTOR, FERRITE BEAD	
C606	1-109-994-11	CERAMIC CHIP	2.2uF 10% 10V	FB301	1-414-385-11	INDUCTOR, FERRITE BEAD	
C607	1-126-513-11	ELECT	47uF 20% 4V	FB302	1-414-385-11	INDUCTOR, FERRITE BEAD	
C608	1-162-944-11	CERAMIC CHIP	18PF 5% 50V	FB303	1-414-385-11	INDUCTOR, FERRITE BEAD	
C610	1-164-299-11	CERAMIC CHIP	0.22uF 10% 25V	< IC >			
C611	1-124-778-00	ELECT CHIP	22uF 20% 6.3V	IC301	8-759-351-67	IC TC9414FN(EL)	
C612	1-107-826-11	CERAMIC CHIP	0.1uF 10% 16V	IC302	8-759-386-50	IC BA3574BFS-T1	
C613	1-164-492-11	CERAMIC CHIP	0.15uF 10% 16V	IC401	8-759-373-57	IC MPC1825A/SC285VMEL	
C614	1-163-038-00	CERAMIC CHIP	0.1uF 25V	IC501	8-759-335-59	IC BA6376K	
C615	1-163-038-00	CERAMIC CHIP	0.1uF 25V	IC561	8-759-293-74	IC NJM2100E	
C616	1-164-346-11	CERAMIC CHIP	1uF 16V	IC601	8-759-394-55	IC BU9312AKS-O	
C618	1-163-038-00	CERAMIC CHIP	0.1uF 25V	IC701	8-759-326-66	IC MPC17A50VMEL	
C619	1-109-994-11	CERAMIC CHIP	2.2uF 10% 10V	IC801	8-759-387-63	IC MSM65344A-026GS-BK	
C621	1-162-915-11	CERAMIC CHIP	10PF 0.5PF 50V	< JACK >			
C624	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	J301	1-565-287-41	JACK (LINE OUT)	
C627	1-135-151-21	TANTALUM CHIP	4.7uF 20% 4V	J302	1-774-804-11	JACK (HEADPHONES)	
C631	1-162-945-11	CERAMIC CHIP	22PF 5% 50V	J401	1-691-099-51	JACK, DC (POLARITY UNIFIED TYPE)	(DC IN 4.5V)
C701	1-162-962-11	CERAMIC CHIP	470PF 10% 50V	< COIL >			
C702	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	L101	1-414-385-11	INDUCTOR, FERRITE BEAD	
C703	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	L201	1-414-385-11	INDUCTOR, FERRITE BEAD	
C704	1-162-962-11	CERAMIC CHIP	470PF 10% 50V	L304	1-412-002-31	INDUCTOR CHIP 4.7uH	
C716	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	L305	1-412-002-31	INDUCTOR CHIP 4.7uH	
C717	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	L306	1-412-002-31	INDUCTOR CHIP 4.7uH	
C718	1-162-957-11	CERAMIC CHIP	220PF 5% 50V				
C719	1-162-953-11	CERAMIC CHIP	100PF 5% 50V				
C721	1-163-038-00	CERAMIC CHIP	0.1uF 25V				
C801	1-126-160-11	ELECT	1uF 20% 50V				
C802	1-163-038-00	CERAMIC CHIP	0.1uF 25V				
C803	1-163-038-00	CERAMIC CHIP	0.1uF 25V				

MAIN

Ref. No.	Part No.	Description	Remark
L401	1-412-029-11	INDUCTOR CHIP 10uH	
L402	1-412-032-11	INDUCTOR CHIP 100uH	
L506	1-412-029-11	INDUCTOR CHIP 10uH	
L601	1-412-029-11	INDUCTOR CHIP 10uH	
L702	1-414-402-11	INDUCTOR 47uH	
< LIQUID CRYSTAL DISPLAY >			
LCD801	1-810-768-21	DISPLAY PANEL, LIQUID CRYSTAL	
< TRANSISTOR >			
Q101	8-729-231-74	TRANSISTOR 2SC4116-GL	
Q102	8-729-028-87	TRANSISTOR DTA143TUA-T106	
Q201	8-729-231-74	TRANSISTOR 2SC4116-GL	
Q202	8-729-028-87	TRANSISTOR DTA143TUA-T106	
Q304	8-729-907-39	TRANSISTOR IMD2	
Q401	8-729-031-11	TRANSISTOR 2SD2537-T100VW	
Q402	8-729-923-36	TRANSISTOR 2SD1963-Q.R	
Q403	8-729-216-22	TRANSISTOR 2SA1162-G	
Q404	8-729-921-93	TRANSISTOR 2SB1182F5-QR	
Q405	8-729-035-85	TRANSISTOR 2SD1664-T113-Q	
Q501	8-729-216-22	TRANSISTOR 2SA1162-G	
Q502	8-729-029-15	TRANSISTOR DTC144TUA-T106	
Q504	8-729-014-34	TRANSISTOR RN2311-TE85L	
Q561	8-729-014-34	TRANSISTOR RN2311-TE85L	
Q601	8-729-907-39	TRANSISTOR IMD2	
< RESISTOR >			
R107	1-216-821-11	METAL CHIP 1K	5% 1/16W
R108	1-216-845-11	METAL CHIP 100K	5% 1/16W
R109	1-216-821-11	METAL CHIP 1K	5% 1/16W
R110	1-216-823-11	METAL CHIP 1.5K	5% 1/16W
R111	1-216-789-11	METAL CHIP 2.2	5% 1/16W
R112	1-216-825-11	METAL CHIP 2.2K	5% 1/16W
R113	1-216-825-11	METAL CHIP 2.2K	5% 1/16W
R207	1-216-821-11	METAL CHIP 1K	5% 1/16W
R208	1-216-845-11	METAL CHIP 100K	5% 1/16W
R209	1-216-821-11	METAL CHIP 1K	5% 1/16W
R210	1-216-823-11	METAL CHIP 1.5K	5% 1/16W
R211	1-216-789-11	METAL CHIP 2.2	5% 1/16W
R212	1-216-825-11	METAL CHIP 2.2K	5% 1/16W
R213	1-216-825-11	METAL CHIP 2.2K	5% 1/16W
R302	1-216-813-11	METAL CHIP 220	5% 1/16W
R303	1-216-817-11	METAL CHIP 470	5% 1/16W
R304	1-216-864-11	METAL CHIP 0	5% 1/16W
R306	1-216-803-11	METAL CHIP 33	5% 1/16W
R307	1-216-833-11	METAL CHIP 10K	5% 1/16W
R308	1-216-864-11	METAL CHIP 0	5% 1/16W
R309	1-216-864-11	METAL CHIP 0	5% 1/16W
R310	1-216-864-11	METAL CHIP 0	5% 1/16W

Ref. No.	Part No.	Description	Remark
R311	1-216-864-11	METAL CHIP 0	5% 1/16W
R313	1-216-864-11	METAL CHIP 0	5% 1/16W
R314	1-216-797-11	METAL CHIP 10	5% 1/16W
R315	1-218-610-11	METAL CHIP 4.7	5% 1W
R316	1-216-864-11	METAL CHIP 0	5% 1/16W
R401	1-218-730-11	METAL CHIP 39K	0.50% 1/16W
R402	1-218-716-11	METAL CHIP 10K	0.50% 1/16W
R403	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
R404	1-216-797-11	METAL CHIP 10	5% 1/16W
R405	1-216-809-11	METAL CHIP 100	5% 1/16W
R406	1-216-298-00	METAL CHIP 2.2	5% 1/10W
R407	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
R408	1-216-813-11	METAL CHIP 220	5% 1/16W
R409	1-216-837-11	METAL CHIP 22K	5% 1/16W
R410	1-216-857-11	METAL CHIP 1M	5% 1/16W
R411	1-216-853-11	METAL CHIP 470K	5% 1/16W
R412	1-216-843-11	METAL CHIP 68K	5% 1/16W
R413	1-216-845-11	METAL CHIP 100K	5% 1/16W
R414	1-216-845-11	METAL CHIP 100K	5% 1/16W
R415	1-216-819-11	METAL CHIP 680	5% 1/16W
R416	1-217-907-11	METAL GLAZE 1.8	5% 1/10W
R418	1-216-849-11	METAL CHIP 220K	5% 1/16W
R419	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
R420	1-216-833-11	METAL CHIP 10K	5% 1/16W
R421	1-216-797-11	METAL CHIP 10	5% 1/16W
R425	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
R426	1-216-864-11	METAL CHIP 0	5% 1/16W
R502	1-218-873-11	METAL CHIP 12K	0.50% 1/16W
R503	1-218-720-11	METAL CHIP 15K	0.50% 1/16W
R504	1-216-847-11	METAL CHIP 150K	5% 1/16W
R505	1-218-716-11	METAL CHIP 10K	0.50% 1/16W
R506	1-216-833-11	METAL CHIP 10K	5% 1/16W
R507	1-216-827-11	METAL CHIP 3.3K	5% 1/16W
R508	1-216-833-11	METAL CHIP 10K	5% 1/16W
R509	1-216-839-11	METAL CHIP 33K	5% 1/16W
R510	1-216-821-11	METAL CHIP 1K	5% 1/16W
R511	1-216-298-00	METAL CHIP 2.2	5% 1/10W
R512	1-216-809-11	METAL CHIP 100	5% 1/16W
R513	1-216-827-11	METAL CHIP 3.3K	5% 1/16W
R514	1-216-833-11	METAL CHIP 10K	5% 1/16W
R515	1-216-847-11	METAL CHIP 150K	5% 1/16W
R516	1-216-845-11	METAL CHIP 100K	5% 1/16W
R518	1-216-851-11	METAL CHIP 330K	5% 1/16W
R519	1-216-864-11	METAL CHIP 0	5% 1/16W
R520	1-216-857-11	METAL CHIP 1M	5% 1/16W
R524	1-216-857-11	METAL CHIP 1M	5% 1/16W
R526	1-216-833-11	METAL CHIP 10K	5% 1/16W
R561	1-216-855-11	METAL CHIP 680K	5% 1/16W
R562	1-216-849-11	METAL CHIP 220K	5% 1/16W

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R563	1-216-857-11	METAL CHIP	1M 5% 1/16W	S807	1-692-014-11	SWITCH, KEY BOARD (REPEAT/ENTER)	
R564	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	S808	1-570-953-11	SWITCH, PUSH (1 KEY) (OPEN DET)	
R565	1-216-848-11	METAL CHIP	180K 5% 1/16W	S809	1-692-532-21	SWITCH, PUSH (1 KEY) (RECHARGEABLE BATTERY)	
R568	1-216-864-11	METAL CHIP	0 5% 1/16W				
R569	1-216-833-11	METAL CHIP	10K 5% 1/16W			< TRANSFORMER >	
R601	1-216-295-00	CONDUCTOR, CHIP (2012)		T401	1-427-847-11	TRANSFORMER, DC-DC CONVERTER	
R602	1-216-825-11	METAL CHIP	2.2K 5% 1/16W			< VIBRATOR >	
R603	1-216-831-11	METAL CHIP	6.8K 5% 1/16W	X301	1-760-307-11	VIBRATOR, CERAMIC (16.9MHZ)	
R604	1-216-295-00	CONDUCTOR, CHIP (2012)		X801	1-579-956-11	VIBRATOR, CERAMIC (3.58MHZ)	
R605	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	*****			
R606	1-216-857-11	METAL CHIP	1M 5% 1/16W			MISCELLANEOUS	
R607	1-216-835-11	METAL CHIP	15K 5% 1/16W			*****	
R608	1-216-837-11	METAL CHIP	22K 5% 1/16W	△ 54	8-848-403-11	PICK-UP, OPTICAL KSS-530A/Q-NP	
R609	1-216-811-11	METAL CHIP	150 5% 1/16W	59	1-948-418-21	HARNES	
R610	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	M901	X-2625-171-2	MOTOR ASSY, SLED	
R611	1-216-843-11	METAL CHIP	68K 5% 1/16W	M902	X-2625-485-1	MOTOR ASSY (MS), T. T. (SPINDLE)	
R613	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	S901	1-570-771-11	SWITCH (LIMIT)	
R614	1-216-837-11	METAL CHIP	22K 5% 1/16W	*****			
R619	1-216-851-11	METAL CHIP	330K 5% 1/16W				
R621	1-216-825-11	METAL CHIP	2.2K 5% 1/16W				
R622	1-216-835-11	METAL CHIP	15K 5% 1/16W				
R623	1-216-842-11	METAL CHIP	56K 5% 1/16W				
R624	1-216-837-11	METAL CHIP	22K 5% 1/16W				
R626	1-216-825-11	METAL CHIP	2.2K 5% 1/16W				
R628	1-216-864-11	METAL CHIP	0 5% 1/16W				
R801	1-218-740-11	METAL CHIP	100K 0.50% 1/16W				
R802	1-218-883-11	METAL CHIP	33K 0.50% 1/16W				
R804	1-216-833-11	METAL CHIP	10K 5% 1/16W				
R806	1-216-833-11	METAL CHIP	10K 5% 1/16W				
R807	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R815	1-216-864-11	METAL CHIP	0 5% 1/16W				
R816	1-216-864-11	METAL CHIP	0 5% 1/16W				
		< VARIABLE RESISTOR >					
RV301	1-225-226-11	RES, VAR, CARBON 10K/10K (◄ VOL)					
RV501	1-238-603-11	RES, ADJ, CARBON 100K					
RV502	1-238-600-11	RES, ADJ, CARBON 10K					
RV601	1-238-600-11	RES, ADJ, CARBON 10K					
RV602	1-238-600-11	RES, ADJ, CARBON 10K					
		< SWITCH >					
S301	1-572-922-11	SWITCH, SLIDE (AVLS)					
S302	1-692-605-11	SWITCH, SLIDE (DIGITAL MEGA BASS)					
S801	1-572-922-11	SWITCH, SLIDE (► HOLD/LOCK)					
S802	1-692-014-11	SWITCH, KEY BOARD (► ■)					
S803	1-692-014-11	SWITCH, KEY BOARD (■)					
S804	1-692-014-11	SWITCH, KEY BOARD (◄◄)					
S805	1-692-014-11	SWITCH, KEY BOARD (►►)					
S806	1-692-014-11	SWITCH, KEY BOARD (PLAY MODE)					

<p>The components identified by mark △ or dotted line with mark. △ are critical for safety. Replace only with part number specified.</p>	<p>Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
--	---

Ref. No.	Part No.	Description	Remark
----------	----------	-------------	--------

ACCESSORIES & PACKING MATERIALS

△	1-467-007-21	ADAPTOR, AC (AC-E455) (AUS)	
△	1-467-009-11	ADAPTOR, AC (AC-E455) (US, CND, E92)	
△	1-467-012-11	ADAPTOR, AC (AC-E455) (EA)	
△	1-467-550-11	ADAPTOR, AC (AC-E455A) (E33)	
△	1-473-115-11	ADAPTOR, AC (AC-E455D) (UK)	
△	1-473-116-31	ADAPTOR, AC (AC-E455D) (AEP,E13)	
	1-558-145-32	CORD, CONNECTION	
△	1-569-007-11	ADAPTOR, CONVERSION 2P (E33)	
△	1-569-008-11	ADAPTOR, CONVERSION 2P (E13, EA)	
	3-810-755-11	MANUAL, INSTRUCTION (SPANISH) (AEP,E)	
	3-810-755-21	MANUAL, INSTRUCTION (ENGLISH)	
	3-810-755-31	MANUAL, INSTRUCTION (FRENCH) (CND,AEP)	
	3-810-755-41	MANUAL, INSTRUCTION (DUTCH) (AEP)	
	3-810-755-51	MANUAL, INSTRUCTION (SWEDISH) (AEP)	
	3-810-755-61	MANUAL, INSTRUCTION (PORTUGUESE) (AEP)	
	3-810-755-71	MANUAL, INSTRUCTION (GERMAN) (AEP)	
	3-810-755-81	MANUAL, INSTRUCTION (ITALIAN) (AEP)	
	3-810-956-11	MANUAL, INSTRUCTION (CHINESE) (E)	
	3-810-956-21	MANUAL, INSTRUCTION (ENGLISH) (E)	
*	4-981-670-01	INDIVIDUAL CARTON (151:US,CND)	
*	4-981-671-01	INDIVIDUAL CARTON (AEP:MDR-E741//K1)	
*	4-981-672-01	INDIVIDUAL CARTON (E)	
*	4-981-673-01	INDIVIDUAL CARTON (AUS)	
*	4-981-674-01	INDIVIDUAL CARTON (EA)	
*	4-981-969-01	INDIVIDUAL CARTON (AEP:MDR-24/K1,UK)	
*	4-982-134-01	INDIVIDUAL CARTON (La Fiesta)	
	8-953-342-93	HEADPHONE MDR-24/K1 SET (US,AEP,UK,AUS)	
	8-953-538-91	HEADPHONE MDR-E741//K1 SET (CND,AEP,E,EA)	

HARDWARE LIST

#1	7-685-107-19	SCREW +P 2X12 TYPE2 NON-SLIT
#2	7-627-852-18	SCREW, PRECISION +P 1.7X4 TYPE3
#3	7-627-852-17	SCREW +P 1.7X4
#4	7-685-104-19	SCREW (2X6), TAPPING (B)
#5	7-685-105-19	SCREW (2X8), TAPPING (B)

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

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

D-151/151C

SONY[®] SERVICE MANUAL

US Model
D-151/151C

Canadian Model

AEP Model

UK Model

E Model

Australian Model

D-151

SUPPLEMENT-1

File this supplement with the service manual.

Subject : PC Board Change from Change of CD Mechanism

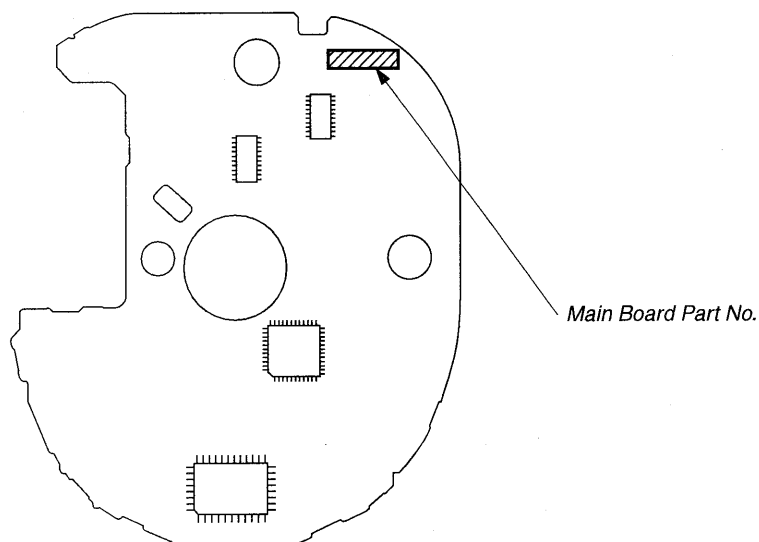
The CD mechanism of this set has been changed on the way of production. Along with this change, the main board has been changed.

This manual only describes differences from the former type. For other information, refer to the service manual previously issued.

• New/Former Discrimination

	Former Type	New Type
CD Mechanism Type	KSM-530AAA/S-NP	CDM-151
Optical pick-up Name	KSS-530A	DAX-11A
Main Board Part No.	1-660-376-□□	1-660-996-□□

—main board (side B)—



SECTION 1 SERVICE NOTE

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.

Before Replacing the Optical Pick-Up Block

Please be sure to check thoroughly the parameters as per the "Optical Pick-Up Block Checking Procedures" (Part No.: 9-960-027-11) issued separately before replacing the optical pick-up block.

Note and specifications required to check are given below.

- FOK output : IC501 ⑫ pin
When checking FOK, remove the lead wire to disc motor.
- S curve P-to-P value : 2.0Vp-p (IC501 ⑬ pin)
When checking S curve P-to-P value, remove the lead wire to disc motor.
- Adjusted part for focus gain adjustment : RV602
- RF signal P-to-P value : 0.8-1.2Vp-p
- Traverse signal P-to-P value : 1.5-2.5Vp-p
- The repairing grating holder is impossible.
- Adjusted part for tracking gain adjustment : RV601

Precautions for Checking Emission of Laser Diode

Laser light of the equipment is focused by the objective lens in the optical pick-up so that the light focuses on the reflection surface of the disc.

Therefore, be sure to keep your eyes more than 30 cm apart from the objective lens when you check the emission of laser diode.

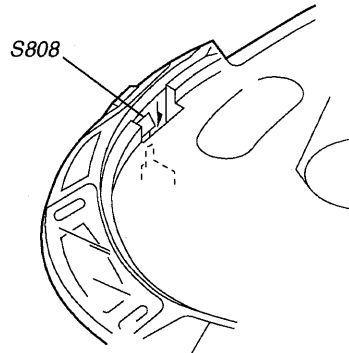
Laser Diode Checking Methods

During normal operation of the equipment, emission of the laser diode is prohibited unless the upper lid is closed while turning ON the S808 (push switch type).

The following two checking methods for the laser diode are operable.

• Method (In the service mode or normal operation) : Emission of the laser diode is visually checked.

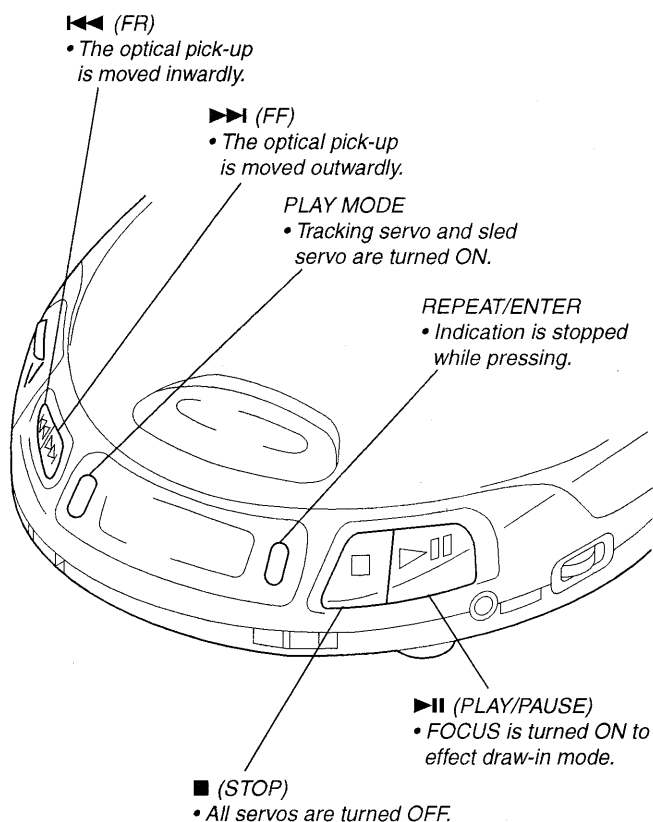
1. Open the upper lid.
2. Push the S808 as shown below.
3. Check the objective lens for confirming normal emission of the laser diode. If not emitting, there is a trouble in the automatic power control circuit or the optical pick-up.
During normal operation, the laser diode is turned ON about 2.5 seconds for focus searching.



SECTION 2 SERVICE MODE

The equipment is provided with a service program built in the micro-computer, like conventional models.

Service program operation methods are described in the following.



Description in • indicate major operations in the service mode. For more information, see Step 2.

• Step 1 (Service mode setting methods)

1. Solder across the TEST terminal (pin ③4, IC801 (TEST)) is grounded. With external power supply disconnected.

Thus, the set is switched to the service mode.

• Step 2 (Operation in the service mode)

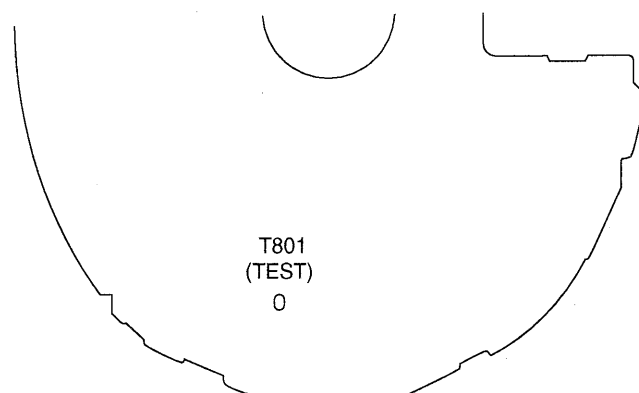
1. Once the service mode is effected, the LCD displays 5 indications each of which is repeatedly displayed. However, the following operations can be activated even if LCD indication is effected.
2. By pressing the ▶|| key, focus is turned ON from focus searching while entering CLV-S (pull-in mode). Without disc, focus searching is repeated continuously.
3. By pressing the PLAY MODE key, tracking servo, sled servo and CLV servo are turned ON.
4. By pressing the ▶▶ or ◀◀ key, the optical pick-up is movable inwardly or outwardly. However, if this is activated, tracking servo and sled servo are turned OFF, so it can be turned ON by pressing the PLAY MODE key if required.

5. By pressing the REPEAT/ENTER key, all indications light up. With the key released, repeated indication is continued, so you can check each segment.
6. When steps 2 and 3 are performed, playing begins. No muting is ON in the service mode.
7. By pressing the ■ key, all servos (focus, tracking and sled) are turned OFF. However, the disc motor revolves for a while by inertia.

• Step 3 (Resetting of service mode)

1. Be sure to disconnect the external power supply and remove the solder bridge at the T801 (TEST) terminal.
2. The set thus becomes available for normal operation.

– MAIN BOARD – (SIDE A)



SECTION 3 ELECTRICAL ADJUSTMENTS

Precautions for Adjustment

1. Before beginning adjustment, set the equipment to service mode.
After the completion of adjustment, be sure to reset the service mode.
For more information, see "Service Mode" on page 3.
2. Perform adjustments in the order given.
3. Use YEDS-18 disc (Part No. : 3-702-101-01) unless otherwise indicated.
4. Power supply voltage requirement : DC2.5V from battery terminal

HOLD/LOCK switch	: OFF
VOL control	: MIN
DIGITAL MEGA BASS switch	: NORM
AVLS switch	: NORM

Before Beginning Adjustment

Set the equipment to service mode (See page 3.) and check the following.
If there is an error, repair the equipment.

• Checking of the sled motor

1. Open the upper lid.
2. Press the ►► or ◄◄ key and check that the optical pick-up can move smoothly without sluggishness or abnormal noise in innermost periphery → outermost periphery → innermost periphery.
 ►► : The optical pick-up moves outwardly.
 ◄◄ : The optical pick-up moves inwardly.

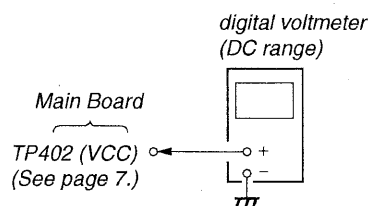
• Checking of focus searching

1. Open the upper lid.
2. Press the ►|| key. (Focus searching operation is activated continuously.)
3. Check the objective lens of the optical pick-up for smooth up/down motion without sluggishness or abnormal noise.
4. Press the ■ key.
Check that focus searching operation is deactivated. If not, again press the ■ key slightly longer.

VCC Check

Condition :

- Use a LR6 (size AA) battery for VCC check.



Checking Procedure :

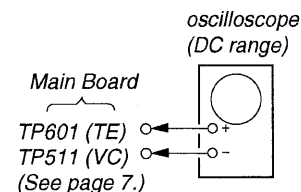
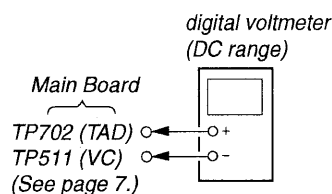
1. Connect the digital voltmeter to TP402 (VCC) on main board.
2. Set the equipment to service mode stop state. (See page 3.)
3. Check for 3.20 ± 0.1 V reading on the digital voltmeter.
4. After the completion of checking, reset service mode.
(See page 3.)

Checking Location : See page 7.

Tracking Balance Adjustment

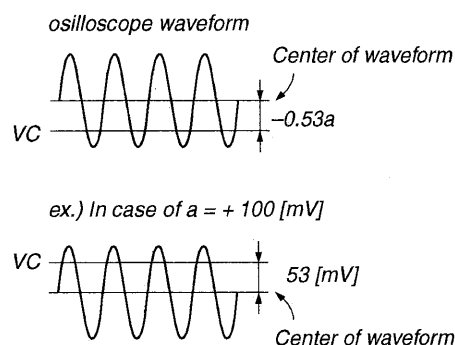
Condition :

- Hold the set in horizontal state.



Adjustment Procedure :

1. Connect the digital voltmeter to TP702 (TAD) and TP511 (VC) on main board.
2. Connect the oscilloscope to TP601 (TE) and TP511 (VC) on main board.
3. Connect the jumper wire between IC601 pin ⑬ and TP511 (VC).
4. Set the equipment to service mode stop state. (See page 3.)
5. Move the optical pick-up to the center by pressing the ►► or ◄◄ key.
6. Put the disc (YEDS-18).
7. Press the PLAY MODE key to turn tracking servo ON.
8. Measure the reading on the digital voltmeter. Assume the measured voltage as a [mV].
9. Remove the jumper wire connected in item 3.
10. Press the ►|| key.
11. Adjust RV501 so that the center value of the output waveform on the oscilloscope is $VC - 0.53a \pm 50$ [mV].



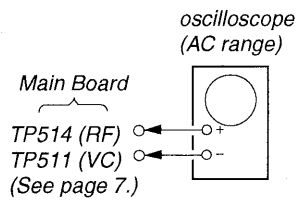
12. After the completion of adjustment, reset service mode.
(See page 3.)

Adjustment Location : See page 7.

Focus Bias Check

Condition :

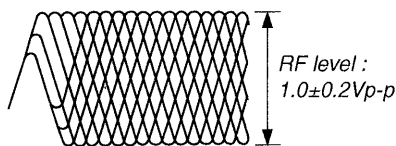
- Hold the set in horizontal state.



Checking Procedure :

1. Connect the oscilloscope to the test point TP514 (RF) and TP511 (VC) on main board.
2. Set the equipment to service mode stop state. (See page 3.)
3. Move the optical pick-up to the center by pressing the ►► or ◄◄ key.
(To display the eye pattern more clearly, move the optical pick-up to the music range of the disc.)
4. Put the disc (YEDS-18).
5. Press the ►► key.
 - From focus searching, focus is turned ON while entering CLV drawing-in mode. Tracking and sled servo are turned OFF.
6. Press the PLAY MODE key. (Both tracking and sled servo are turned ON.)
7. Confirm that the eye pattern in the waveform of the oscilloscope is clearly displayed. "Clear display of the eye pattern" means that the ◇ shape can be clearly discriminated at the center of the waveform.

RF SIGNAL WAVEFORM (EYE PATTERN)



VOLT DIV : 200 mV (With the 10 : 1 probe in use)

TIME DIV : 500 nS

To watch the eye pattern, set the oscilloscope to AC range and increase the vertical sensitivity of the oscilloscope for easy watching.

8. Stop revolving of the disc motor by pressing the ■ key.
9. After the completion of checking, reset service mode.
(See page 3.)

Checking Location : See page 7.

Focus/Tracking Gain Adjustment

A servo analyzer is necessary in order to perform this adjustment exactly.

However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up relative to mechanical noise and mechanical shock when the 2-axis device operates.

However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is risen, the noise when 2-axis device operates increase.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.

This adjustment has to be performed upon replacing any of the following parts.

- Optical pick-up
- RV602 (Focus gain VR)
- RV601 (Tracking gain VR)

Normally, be sure not to turn RV602 (focus gain VR) and RV601 (tracking gain VR).

– Focus Gain Adjustment –

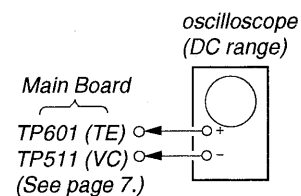
This adjustment is not performed.

If focus gain VR RV602 is turned, set to mechanical center.

– Tracking Gain Adjustment –

Condition :

- Perform at normal operation.
- Hold the set in horizontal state.



Adjustment Procedure :

1. Connect the oscilloscope to TP601 (TE) and TP511 (VC) on main board.
2. Set the disc (YEDS-18).
3. Press the ►► key.
4. Turn RV601 slightly clockwise (tracking gain drops) and obtain a waveform with a fundamental wave (waveform has large waves) as in Fig. 1.
5. Turn RV601 slowly counterclockwise (tracking gain rises) until the fundamental wave disappears (no large waves) as in Fig. 2.
6. Set RV601 to the position about 30° counterclockwise from the position obtained in step 5. If RV601 contact point is more than 90° counterclockwise from mechanical center, tracking gain is too high. In this case, readjust from step 4.
7. Press ►► or ◄◄ key and observe the 100 track jump waveform. Check that no traverse waveform appears for both ►► and ◄◄ directions. (See Fig. 3 and 4.) It is acceptable if the traverse waveform appears only now and then, but if it appears constantly, raise tracking gain slightly and check step 7 again.
8. Check that there is not abnormal amount of operation noise (white noise) from the 2-axis device. If there is, tracking gain is too high, readjust starting with step 4.

The waveforms are those measures with the oscilloscope set as shown below.

- VOLT/DIV : 50 mV
- TIME/DIV : 5 mS

- Waveform when tracking gain is lowered.
Fundamental wave appears (large waves).



Fig. 1

- Waveform when fundamental wave disappears (no large waves).



Fig. 2

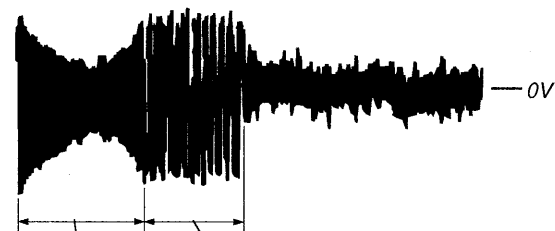
- Waveform with no traverse waveform during 100 track jump.
(Brake application is smooth because of adjustment.)



100 track jump waveform

Fig. 3

- Waveform with traverse waveform during 100 track jump.
(Brake application is poor because of adjustment.)



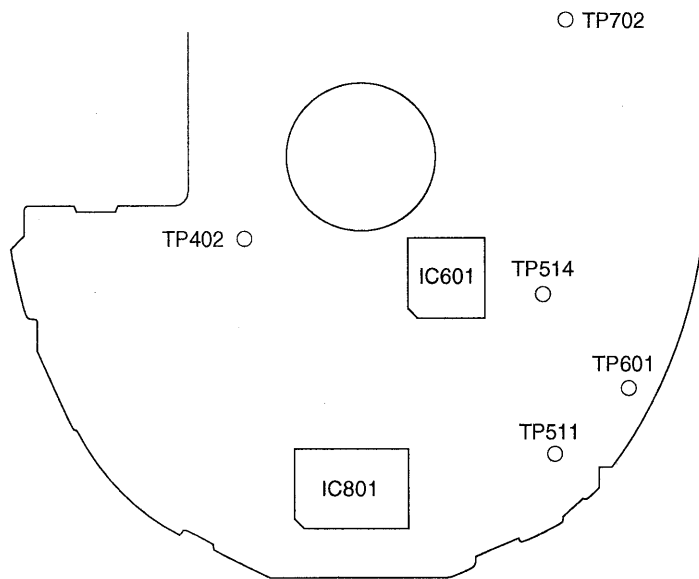
100 track jump waveform

traverse waveform

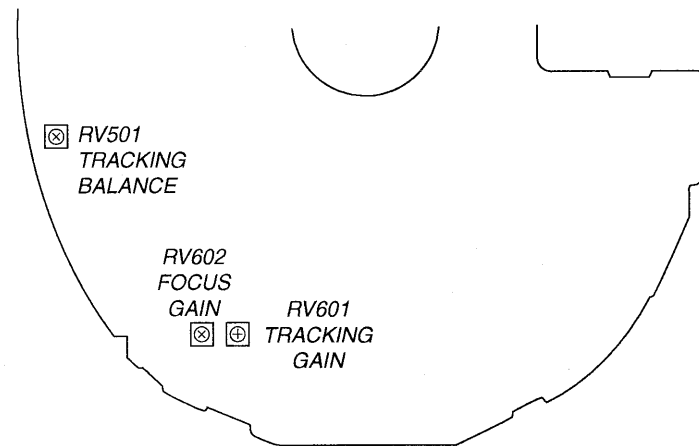
Fig. 4

Connection and Adjustment Location :

- MAIN BOARD - (SIDE B)



- MAIN BOARD - (SIDE A)



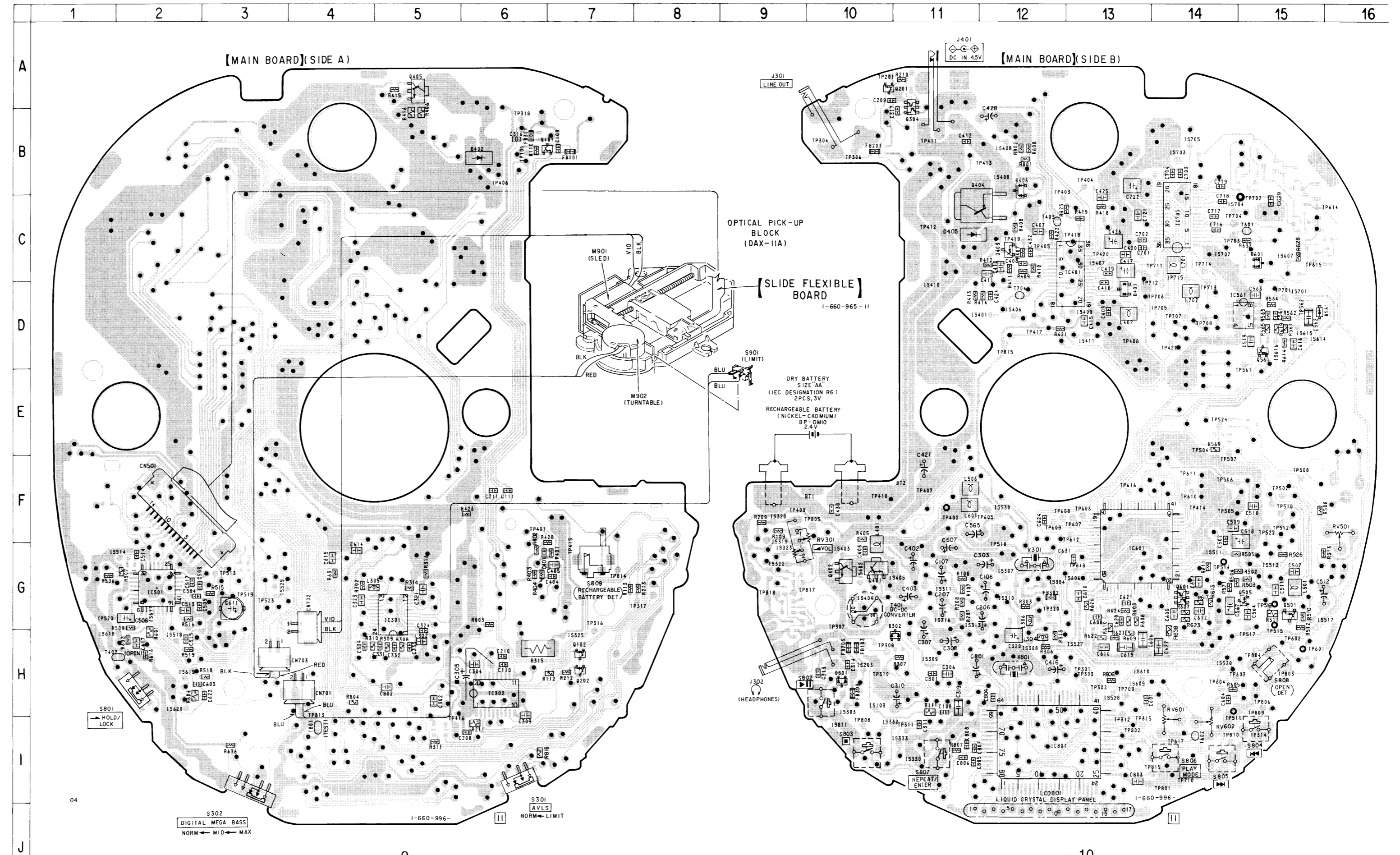
SECTION 4
DIAGRAMS

4-1. PRINTED WIRING BOARD

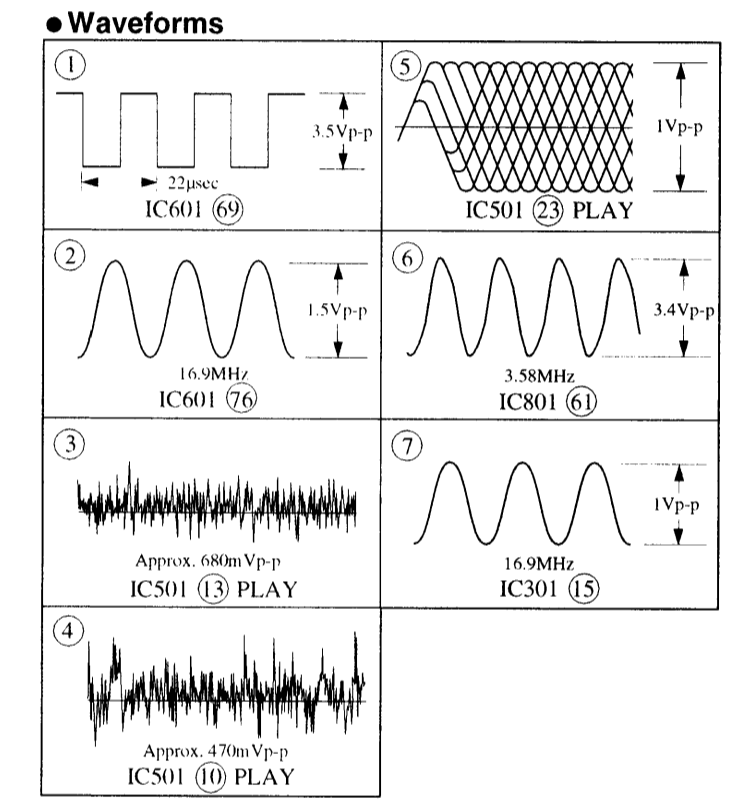
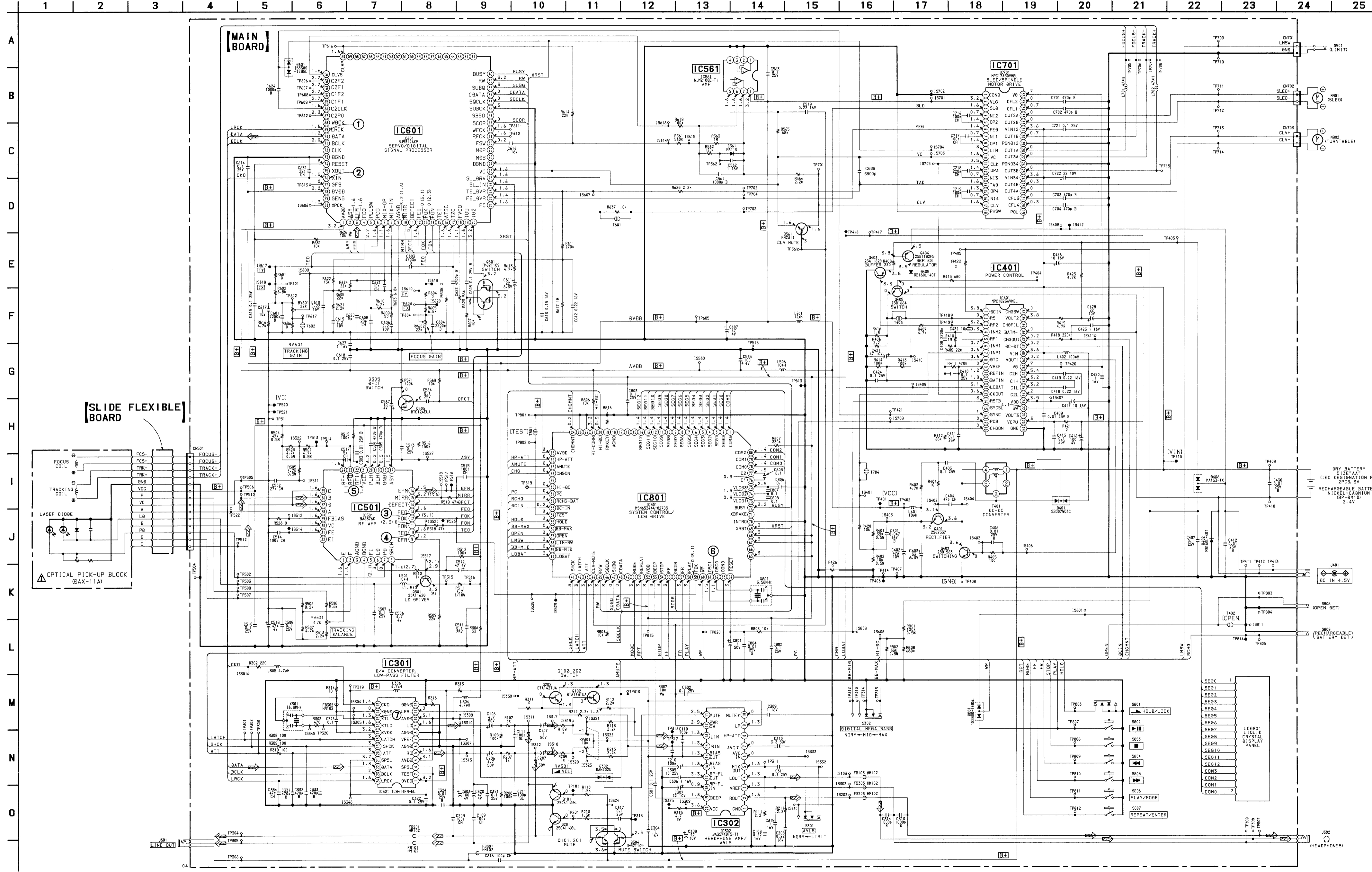
• Semiconductor Location

Ref. No.	Location
D302	H-11
D401	D-13
D402	B-6
D405	C-11
D406	B-12
D561	D-15
D601	C-15
D801	H-10
IC301	G-5
IC302	H-6
IC401	C-13
IC501	G-2
IC561	D-15
IC601	G-13
IC701	C-14
IC801	I-12
Q101	B-6
Q102	H-7
Q201	A-10
Q202	H-7
Q304	B-11
Q401	G-10
Q402	G-10
Q403	C-12
Q404	C-11
Q405	A-5
Q501	G-15
Q505	G-15
Q561	D-15
Q601	G-14

Note:
 • : Through hole.
 • : Pattern on the side which is seen.
 (The other layer's patterns are not indicated.)



4-2. SCHEMATIC DIAGRAM



Note:

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

Note:

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Ne les remplacer que par une pièce portant le numero specifié.

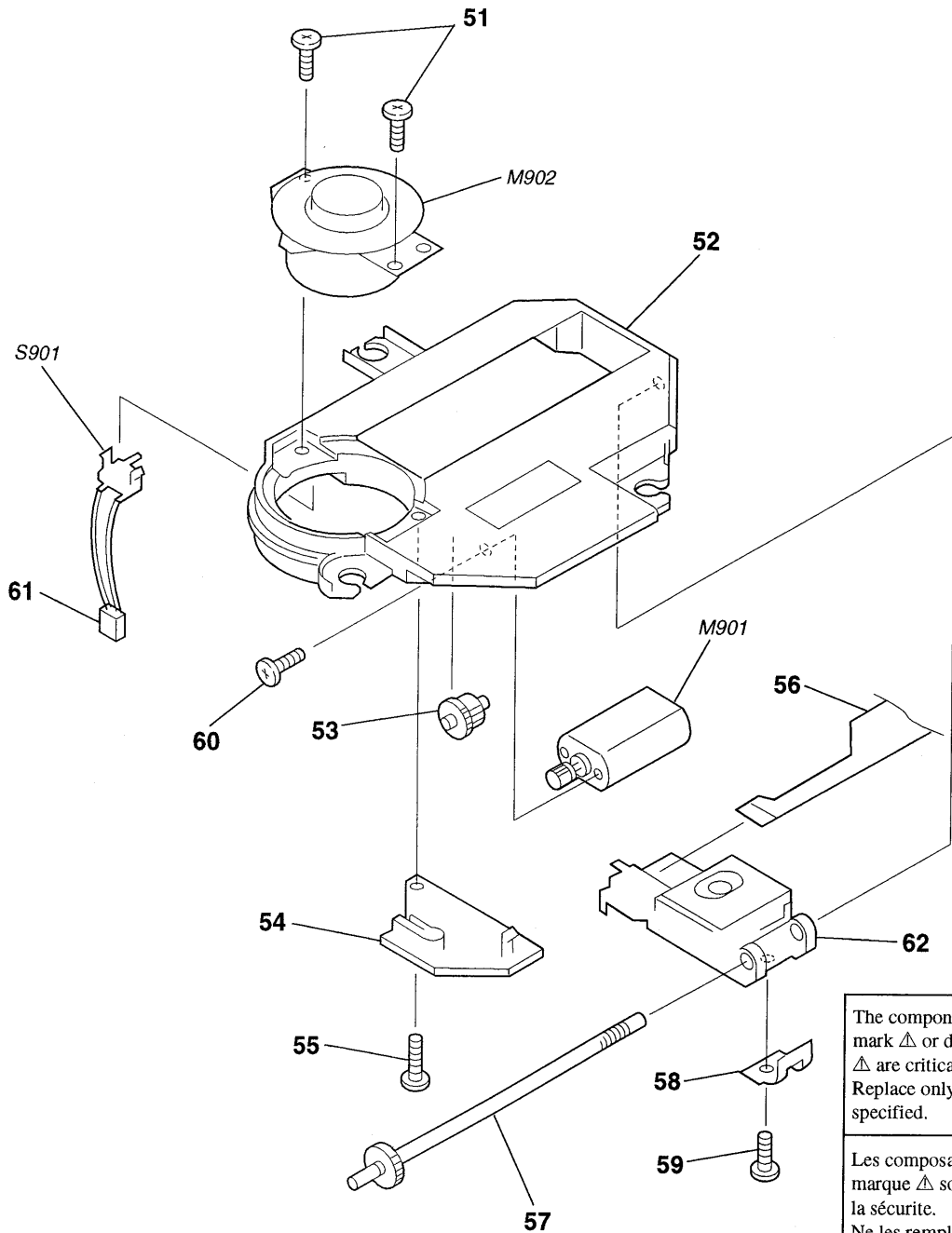
Note:

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numero specifié.

Note:

- ⊕: B+ Line.
- ⊖: adjustment for repair.
- Power voltage is dc 4.5V and led with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground in service mode.
- no mark : STOP
- () : PLAY
- Voltage are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerance.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerance.
- Circled numbers refer to waveforms.
- Signal path.
- ⊕: CD

**5-2. OPTICAL PICK-UP SECTION
(CDM-151)**



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

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-719-401-11	SCREW (B1.7), TAPPING		59	4-973-631-01	SCREW	
* 52	4-972-162-01	CHASSIS		60	7-627-850-17	SCREW, PRECISION +P 1.4X2.5	
53	4-974-003-01	GEAR (B)		61	1-690-530-21	LEAD (WITH CONNECTOR)	
54	4-972-163-01	SPRING, SLED		Δ 62	X-4946-311-1	PICK-UP, OPTICAL (DAX- 01A)	
55	3-318-203-11	SCREW (B1.7X6), TAPPING		M901	A-3303-403-A	MOTOR ASSY, SLED	
56	1-660-965-11	SLIDE FLEXIBLE BOARD		M902	A-3303-971-A	MOTOR ASSY, TURNTABLE	
57	A-3303-970-A	SCREW ASSY, FEED		S901	1-571-099-21	SWITCH (1 KEY) (LIMIT)	
58	4-972-165-03	RACK					

SECTION 6 ELECTRICAL PARTS LIST

MAIN

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- **RESISTORS**
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable

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

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

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

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-3293-088-A	MAIN BOARD, COMPLETE *****		C322	1-163-038-00	CERAMIC CHIP 0.1uF	25V
	4-978-689-01	HOLDER, LCD < BATTERY TERMINAL >		C323	1-163-038-00	CERAMIC CHIP 0.1uF	25V
BT1	4-978-695-01	PLATE, TERMINAL, BATTERY		C324	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
BT2	4-978-695-01	PLATE, TERMINAL, BATTERY < CAPACITOR >		C331	1-162-962-11	CERAMIC CHIP 470PF	10% 50V
				C332	1-162-962-11	CERAMIC CHIP 470PF	10% 50V
C106	1-126-794-11	ELECT 4.7uF	20% 50V	C333	1-162-962-11	CERAMIC CHIP 470PF	10% 50V
C107	1-126-160-11	ELECT 1uF	20% 50V	C334	1-162-923-11	CERAMIC CHIP 47PF	5% 50V
C108	1-165-128-11	CERAMIC CHIP 0.22uF	16V	C401	1-165-176-11	CERAMIC CHIP 0.047uF	10% 16V
C109	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C402	1-126-785-11	ELECT 47uF	20% 10V
C110	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C403	1-127-485-00	ELECT(SOLID) 33uF	20% 6.3V
C111	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C404	1-162-923-11	CERAMIC CHIP 47PF	5% 50V
C206	1-126-794-11	ELECT 4.7uF	20% 50V	C405	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C207	1-126-160-11	ELECT 1uF	20% 50V	C406	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C208	1-165-128-11	CERAMIC CHIP 0.22uF	16V	C407	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C209	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C408	1-162-966-11	CERAMIC CHIP 0.0022uF	10% 50V
C210	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C409	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C211	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C410	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C301	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C411	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C302	1-163-038-00	CERAMIC CHIP 0.1uF	25V	C412	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C303	1-124-584-00	ELECT 100uF	20% 10V	C415	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C304	1-164-346-11	CERAMIC CHIP 1uF	16V	C416	1-124-584-00	ELECT 100uF	20% 10V
C305	1-126-096-11	ELECT 10uF	20% 35V	C417	1-104-913-11	TANTAL. CHIP 10uF	20% 16V
C306	1-164-346-11	CERAMIC CHIP 1uF	16V	C418	1-165-128-11	CERAMIC CHIP 0.22uF	16V
C307	1-126-514-11	ELECT 22uF	20% 10V	C419	1-165-128-11	CERAMIC CHIP 0.22uF	16V
C308	1-126-514-11	ELECT 22uF	20% 10V	C420	1-164-346-11	CERAMIC CHIP 1uF	16V
C309	1-164-346-11	CERAMIC CHIP 1uF	16V	C421	1-126-785-11	ELECT 47uF	20% 10V
C310	1-126-162-11	ELECT 3.3uF	20% 50V	C424	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C311	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C425	1-164-346-11	CERAMIC CHIP 1uF	16V
C313	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C426	1-104-913-11	TANTAL. CHIP 10uF	20% 16V
C314	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C428	1-126-514-11	ELECT 22uF	20% 10V
C316	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C430	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C317	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C432	1-162-915-11	CERAMIC CHIP 10PF	0.5PF 50V
C319	1-107-682-11	CERAMIC CHIP 1uF	10% 16V	C502	1-162-920-11	CERAMIC CHIP 27PF	5% 50V
C320	1-104-908-11	TANTAL. CHIP 47uF	20% 4V	C503	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C321	1-163-038-00	CERAMIC CHIP 0.1uF	25V	C504	1-162-962-11	CERAMIC CHIP 470PF	10% 50V
				C505	1-162-962-11	CERAMIC CHIP 470PF	10% 50V
				C506	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
				C507	1-163-038-00	CERAMIC CHIP 0.1uF	25V
				C509	1-163-038-00	CERAMIC CHIP 0.1uF	25V
				C510	1-163-038-00	CERAMIC CHIP 0.1uF	25V

MAIN

Ref. No.	Part No.	Description	Remark		
C511	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C512	1-126-513-11	ELECT	47uF	20%	4V
C513	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C514	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C515	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C517	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C518	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C519	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C561	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C562	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C563	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C564	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C565	1-124-584-00	ELECT	100uF	20%	10V
C567	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C601	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C602	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C603	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C604	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C605	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C606	1-109-994-11	CERAMIC CHIP	2.2uF	10%	10V
C607	1-126-513-11	ELECT	47uF	20%	4V
C608	1-164-160-11	CERAMIC CHIP	20PF	5%	50V
C610	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C611	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C612	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C613	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C614	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C615	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C616	1-164-346-11	CERAMIC CHIP	1uF		16V
C617	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C618	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C619	1-109-994-11	CERAMIC CHIP	2.2uF	10%	10V
C620	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C621	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C622	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C624	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C627	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C629	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C631	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C701	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C702	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C703	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C704	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C716	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C717	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C718	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C719	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C721	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C722	1-104-852-11	TANTAL. CHIP	22uF	20%	10V

Ref. No.	Part No.	Description	Remark		
C801	1-126-160-11	ELECT	1uF	20%	50V
C802	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C803	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C804	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C805	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C806	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C807	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C808	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
< CONNECTOR >					
CN501	1-566-530-11	CONNECTOR, FPC (ZIF) 14P			
* CN701	1-695-320-51	PIN, CONNECTOR (1.5MM)(SMD) 2P			
* CN702	1-695-320-31	PIN, CONNECTOR (1.5MM)(SMD) 2P			
* CN703	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P			
< DIODE >					
D302	8-719-941-86	DIODE DAN202U			
D401	8-719-986-76	DIODE SB007W03C			
D402	8-719-048-98	DIODE RB160L-40TE25			
D405	8-719-048-98	DIODE RB160L-40TE25			
D406	8-719-800-76	DIODE 1SS226			
D561	8-719-404-46	DIODE MA110			
D601	8-719-024-81	DIODE 1SS300-TE85L			
D801	8-719-024-81	DIODE 1SS300-TE85L			
< FERRITE BEAD >					
FB101	1-414-385-11	INDUCTOR, FERRITE BEAD			
FB103	1-414-385-11	INDUCTOR, FERRITE BEAD			
FB201	1-414-385-11	INDUCTOR, FERRITE BEAD			
FB203	1-414-385-11	INDUCTOR, FERRITE BEAD			
FB301	1-414-385-11	INDUCTOR, FERRITE BEAD			
FB302	1-414-385-11	INDUCTOR, FERRITE BEAD			
FB303	1-414-385-11	INDUCTOR, FERRITE BEAD			
< IC >					
IC301	8-759-351-67	IC TC9414FNEL			
IC302	8-759-386-50	IC BA3574BFS			
IC401	8-759-373-57	IC MPC1825A/SC285VMEL			
IC501	8-759-335-59	IC BA6376K			
IC561	8-759-293-74	IC NJM2100E			
IC601	8-759-394-55	IC BU9312AKS-0			
IC701	8-759-326-66	IC MPC17A50VMEL			
IC801	8-759-394-07	IC MSM65344A-027GS-BK			
< JACK >					
J301	1-565-287-41	JACK (LINE OUT)			
J302	1-774-804-11	JACK (⊕)			
J401	1-691-099-51	JACK, DC (POLARITY UNIFIED TYPE)			
(DC IN 4.5V)					

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
		< COIL >					
L304	1-412-002-31	INDUCTOR CHIP 4.7uH		R303	1-216-817-11	METAL CHIP 470 5%	1/16W
L305	1-412-002-31	INDUCTOR CHIP 4.7uH		R306	1-216-803-11	METAL CHIP 33 5%	1/16W
L306	1-412-002-31	INDUCTOR CHIP 4.7uH		R307	1-216-833-11	METAL CHIP 10K 5%	1/16W
L401	1-414-398-11	INDUCTOR 10uH		R308	1-216-809-11	METAL CHIP 100 5%	1/16W
L402	1-414-404-11	INDUCTOR 100uH		R309	1-216-809-11	METAL CHIP 100 5%	1/16W
				R310	1-216-809-11	METAL CHIP 100 5%	1/16W
L501	1-414-398-11	INDUCTOR 10uH		R311	1-216-864-11	METAL CHIP 0 5%	1/16W
L506	1-414-398-11	INDUCTOR 10uH		R313	1-216-864-11	METAL CHIP 0 5%	1/16W
L601	1-414-398-11	INDUCTOR 10uH		R314	1-216-797-11	METAL CHIP 10 5%	1/16W
L701	1-414-402-11	INDUCTOR 47uH		R315	1-218-610-11	METAL CHIP 4.7 5%	1W
L702	1-414-402-11	INDUCTOR 47uH		R316	1-216-864-11	METAL CHIP 0 5%	1/16W
		< LIQUID CRYSTAL DISPLAY >					
LCD801	1-810-768-21	DISPLAY PANEL, LIQUID CRYSTAL		R401	1-218-730-11	METAL CHIP 39K 0.50%	1/16W
				R402	1-218-716-11	METAL CHIP 10K 0.50%	1/16W
				R403	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
				R404	1-216-797-11	METAL CHIP 10 5%	1/16W
				R405	1-216-809-11	METAL CHIP 100 5%	1/16W
		< TRANSISTOR >					
Q101	8-729-231-74	TRANSISTOR 2SC4116-GL		R406	1-216-298-00	METAL CHIP 2.2 5%	1/10W
Q102	8-729-028-87	TRANSISTOR DTA143TUA-T106		R407	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
Q201	8-729-231-74	TRANSISTOR 2SC4116-GL		R408	1-216-813-11	METAL CHIP 220 5%	1/16W
Q202	8-729-028-87	TRANSISTOR DTA143TUA-T106		R409	1-216-837-11	METAL CHIP 22K 5%	1/16W
Q304	8-729-907-39	TRANSISTOR IMD2		R410	1-216-857-11	METAL CHIP 1M 5%	1/16W
Q401	8-729-031-11	TRANSISTOR 2SD2537-T100VW		R411	1-216-853-11	METAL CHIP 470K 5%	1/16W
Q402	8-729-923-40	TRANSISTOR 2SD1963-T101-R		R412	1-216-843-11	METAL CHIP 68K 5%	1/16W
Q403	8-729-216-22	TRANSISTOR 2SA1162-G		R413	1-216-845-11	METAL CHIP 100K 5%	1/16W
Q404	8-729-921-93	TRANSISTOR 2SB1182F5-QR		R414	1-216-845-11	METAL CHIP 100K 5%	1/16W
Q405	8-729-920-85	TRANSISTOR 2SD1664-QR		R415	1-216-819-11	METAL CHIP 680 5%	1/16W
Q501	8-729-216-22	TRANSISTOR 2SA1162-G		R416	1-217-907-11	METAL GLAZE 1.8 5%	1/10W
Q505	8-729-029-06	TRANSISTOR DTC124EUA-T106		R418	1-216-849-11	METAL CHIP 220K 5%	1/16W
Q561	8-729-014-34	TRANSISTOR RN2311-TE85L		R419	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
Q601	8-729-907-39	TRANSISTOR IMD2		R420	1-216-833-11	METAL CHIP 10K 5%	1/16W
		< RESISTOR >		R421	1-216-864-11	METAL CHIP 0 5%	1/16W
R107	1-216-821-11	METAL CHIP 1K 5%	1/16W	R422	1-216-864-11	METAL CHIP 0 5%	1/16W
R108	1-216-845-11	METAL CHIP 100K 5%	1/16W	R425	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R109	1-216-821-11	METAL CHIP 1K 5%	1/16W	R426	1-216-864-11	METAL CHIP 0 5%	1/16W
R110	1-216-823-11	METAL CHIP 1.5K 5%	1/16W	R502	1-218-708-11	METAL CHIP 4.7K 0.50%	1/16W
R111	1-216-298-00	METAL CHIP 2.2 5%	1/10W	R503	1-218-708-11	METAL CHIP 4.7K 0.50%	1/16W
R112	1-216-825-11	METAL CHIP 2.2K 5%	1/16W	R504	1-218-732-11	METAL CHIP 47K 0.50%	1/16W
R113	1-216-825-11	METAL CHIP 2.2K 5%	1/16W	R505	1-218-708-11	METAL CHIP 4.7K 0.50%	1/16W
R207	1-216-821-11	METAL CHIP 1K 5%	1/16W	R506	1-216-832-11	METAL CHIP 8.2K 5%	1/16W
R208	1-216-845-11	METAL CHIP 100K 5%	1/16W	R507	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R209	1-216-821-11	METAL CHIP 1K 5%	1/16W	R508	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
R210	1-216-823-11	METAL CHIP 1.5K 5%	1/16W	R509	1-216-837-11	METAL CHIP 22K 5%	1/16W
R211	1-216-298-00	METAL CHIP 2.2 5%	1/10W	R510	1-216-821-11	METAL CHIP 1K 5%	1/16W
R212	1-216-825-11	METAL CHIP 2.2K 5%	1/16W	R511	1-216-308-00	METAL CHIP 4.7 5%	1/10W
R213	1-216-825-11	METAL CHIP 2.2K 5%	1/16W	R512	1-216-845-11	METAL CHIP 100K 5%	1/16W
R302	1-216-813-11	METAL CHIP 220 5%	1/16W	R513	1-216-828-11	METAL CHIP 3.9K 5%	1/16W
				R515	1-216-845-11	METAL CHIP 100K 5%	1/16W
				R516	1-216-847-11	METAL CHIP 150K 5%	1/16W

MAIN

Ref. No.	Part No.	Description	Remark
R518	1-216-841-11	METAL CHIP	47K 5% 1/16W
R519	1-216-841-11	METAL CHIP	47K 5% 1/16W
R526	1-216-864-11	METAL CHIP	0 5% 1/16W
R561	1-216-854-11	METAL CHIP	560K 5% 1/16W
R562	1-216-846-11	METAL CHIP	120K 5% 1/16W
R563	1-216-857-11	METAL CHIP	1M 5% 1/16W
R564	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R565	1-216-843-11	METAL CHIP	68K 5% 1/16W
R569	1-216-833-11	METAL CHIP	10K 5% 1/16W
R571	1-216-845-11	METAL CHIP	100K 5% 1/16W
R601	1-216-295-00	CONDUCTOR, CHIP	(2012)
R602	1-216-831-11	METAL CHIP	6.8K 5% 1/16W
R603	1-216-831-11	METAL CHIP	6.8K 5% 1/16W
R604	1-216-295-00	CONDUCTOR, CHIP	(2012)
R605	1-216-831-11	METAL CHIP	6.8K 5% 1/16W
R607	1-216-836-11	METAL CHIP	18K 5% 1/16W
R608	1-216-837-11	METAL CHIP	22K 5% 1/16W
R609	1-216-811-11	METAL CHIP	150 5% 1/16W
R610	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R611	1-216-850-11	METAL CHIP	270K 5% 1/16W
R613	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R614	1-216-837-11	METAL CHIP	22K 5% 1/16W
R616	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R617	1-216-857-11	METAL CHIP	1M 5% 1/16W
R619	1-216-845-11	METAL CHIP	100K 5% 1/16W
R621	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R622	1-216-835-11	METAL CHIP	15K 5% 1/16W
R623	1-216-842-11	METAL CHIP	56K 5% 1/16W
R624	1-216-837-11	METAL CHIP	22K 5% 1/16W
R626	1-216-833-11	METAL CHIP	10K 5% 1/16W
R628	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R631	1-216-833-11	METAL CHIP	10K 5% 1/16W
R636	1-216-864-11	METAL CHIP	0 5% 1/16W
R637	1-216-821-11	METAL CHIP	1K 5% 1/16W
R638	1-216-864-11	METAL CHIP	0 5% 1/16W
R801	1-218-740-11	METAL CHIP	100K 0.50% 1/16W
R802	1-218-883-11	METAL CHIP	33K 0.50% 1/16W
R803	1-216-833-11	METAL CHIP	10K 5% 1/16W
R804	1-216-833-11	METAL CHIP	10K 5% 1/16W
R806	1-216-833-11	METAL CHIP	10K 5% 1/16W
R807	1-216-851-11	METAL CHIP	330K 5% 1/16W
R808	1-216-855-11	METAL CHIP	680K 5% 1/16W
R816	1-216-864-11	METAL CHIP	0 5% 1/16W
< VARIABLE RESISTOR >			
RV301	1-225-226-11	RES, VAR, CARBON 10K/10K (VOL)	
RV501	1-241-629-11	RES, ADJ, CARBON 4.7K	
RV601	1-241-765-11	RES, ADJ, CARBON 22K	
RV602	1-241-765-11	RES, ADJ, CARBON 22K	

Ref. No.	Part No.	Description	Remark
< SWITCH >			
S301	1-572-922-11	SWITCH, SLIDE (AVLS)	
S302	1-692-605-11	SWITCH, SLIDE (DIGITAL MEGA BASS)	
S801	1-572-922-11	SWITCH, SLIDE (HOLD/LOCK)	
S802	1-692-014-11	SWITCH, KEY BOARD (▶ ■)	
S803	1-692-014-11	SWITCH, KEY BOARD (■)	
S804	1-692-014-11	SWITCH, KEY BOARD (◀ ◀ ◀)	
S805	1-692-014-11	SWITCH, KEY BOARD (▶ ▶ ▶)	
S806	1-692-014-11	SWITCH, KEY BOARD (PLAY MODE)	
S807	1-692-014-11	SWITCH, KEY BOARD (REPEAT/ENTER)	
S808	1-570-953-11	SWITCH, PUSH (1 KEY) (OPEN/DET)	
S809	1-692-532-21	SWITCH, PUSH (1 KEY) (RECHARGEABLE BATTERY DET)	
< TRANSFORMER >			
T401	1-427-847-11	TRANSFORMER, DC-DC CONVERTER	
< VIBRATOR >			
X301	1-760-307-11	VIBRATOR, CERAMIC (16.9MHZ)	
X801	1-579-956-11	VIBRATOR, CERAMIC (3.58MHZ)	

MISCELLANEOUS			

61	1-690-530-21	LEAD (WITH CONNECTOR)	
△ 62	X-4946-311-1	PICK-UP, OPTICAL (DAX-01A)	
M901	A-3303-403-A	MOTOR ASSY, SLED	
M902	A-3303-971-A	MOTOR ASSY, TURNTABLE	
S901	1-571-099-21	SWITCH (1 KEY) (LIMIT)	

<p>The components identified by mark △ or dotted line with mark. △ are critical for safety. Replace only with part number specified.</p>	<p>Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
--	---