DENON

Hi-Fi Component

SERVICE MANUAL

STEREO CD PLAYER

MODEL DCD-3520

TABLE OF CONTENTS

NIPPON COLUMBIA CO., LTD.

IMPORTANT TO SAFETY

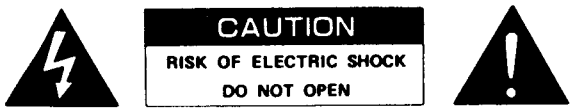
WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION:

1. **Handle the power supply cord carefully**
   Do not damage or deform the power supply cord. If it is damaged or deformed, it may cause electric shock or malfunction when used. When removing it from wall outlet, be sure to remove by holding the plug attachment and not by pulling the cord.
2. **Do not open the top cover**
   In order to prevent electric shock, do not open the top cover. If problems occur, contact your DENON DEALER.
3. **Do not place anything inside**
   Do not place metal objects or spill liquid inside the CD player. Electric shock or malfunction may result.

Please, record and retain the Model name and serial number of your set shown on the rating label.
Model No. DCD-3520 Serial No. _____



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instruction in the literature accompanying the appliance.

IMPORTANT (BRITISH MODEL ONLY)

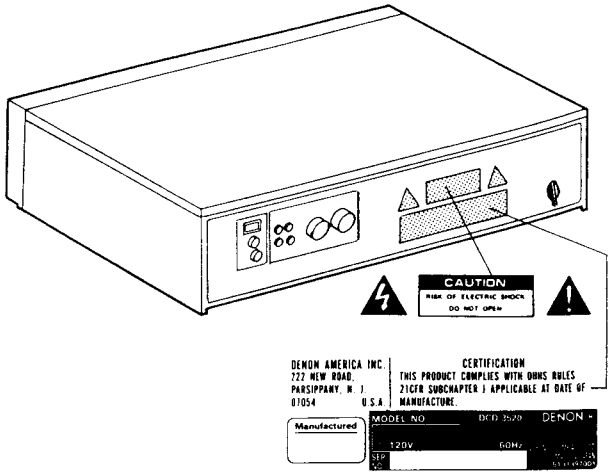
The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral Brown: Live

The colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows.
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

NOTE:
This CD player uses the semiconductor laser. To allow you to enjoy music at a stable operation, it is recommended to use this in a room of 5°C – 35°C.

LABELS



CAUTION:
USE OF CONTROLS OR ADJUSTMENTS OR REFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

NOTE:
This unit may cause interference to radio and television reception if you do not operate it in strict accordance with this OPERATING INSTRUCTIONS.

This unit complies with Class B computing device rules in accordance with the specifications in Sub-part J or Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. If the unit does cause interference to any radio or television reception, try to reduce it by one or more of the following means:
a) Turn the other unit to improve reception
b) Move this unit
c) Move this unit away from others
d) Plug this unit respectively into a different AC outlet

*** This is note in accordance with Section 15.838 of the FCC Rules.**

VAROITUS: **SUOJAKOTELOA EI SAA AVATA. LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTÄ SILMILLE VARRALLISTA LASERSÄTEILYÄ.**

ADVARSEL: **USYNLIG LASERSTRALING VED ABNING NAR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGA UDSAETTELSE FOR STRALING.**

VARNING: **OSYNLIG LASERSTRÅLNING VID AVLÄGSNANDE AV APPARATENS HÖLJE. UNDVIK EXPONERING AV LASERSTRÅLNING.**

"CLASS 1
LASER PRODUCT"

SAFETY INSTRUCTIONS FOR AUDIO SET

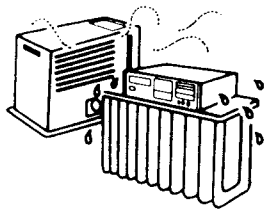
■ INSTALLATION

1. Operate the set only from a power source which is indicated on the rating label (indication) at the back of the set.
2. Frayed cords and broken plugs may cause a fire or shock hazard Do not damage the power cord.
   - Do not cut and splice the power cord.
   - When removing the power cord from wall outlet, be sure to unplug by holding the plug attachment and not by pulling the cord. Do not hold the plug with wet hands.
   - Call your service technician for replacement of damaged cords and plugs.
3. Select a place so that the location or position does not interfere with the proper ventilation of the set for releasing heat generated during operation.
   - Select a flat and level surface allowing enough space for setting up and operation.
   - Never block the bottom ventilation holes placing the set on a bed, sofa, rug, etc.
   - Never place the set in a "built-in" enclosure unless proper ventilation is provided.
   - Never place the set near or over a radiator, heat register or stove. Avoid locations where the set is exposed directly to the sun light.


Check voltage.

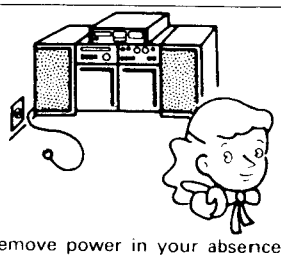

Do not pinch power cord.


Do not splice power cord.


Avoid heat.

■ USE

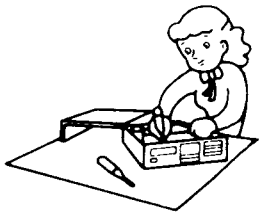
1. Do not expose the set to rain or water (liquid). Do not spill liquid or insert metal objects inside the set. Rain, water or liquid such as cosmetics as well as metal my cause electric shorts which can result in fire or shock hazard. If anything gets inside, unplug the power cord and have a DENON service technical check your set before further use.
2. Never leave your set switched on when leaving the house. For added protection of your audio system during lightning storm or when the set is to be left unused for a long period of time, be sure to unplug the power cord from the wall outlet.
3. Take care so that the set is not dropped to avoid damaging the cabinet which defeats safeguards or injuring yourself. If the set has been dropped or the cabinet has been damaged, unplug the set and have it checked by a DENON service technician to restore the safeguards.


Remove power in your absence.

■ SERVICING

1. The servicing of the set must not be attempted by yourself beyond that described in the operating instructions. In case of problems that cannot be settled by referring to your operating instructions, unplug the power cord and contact your DENON dealer. No user-serviceable parts are inside the set. Only qualified service technician can service inside your set.
2. Refer to the operating instructions for maintenance and cleaning.


Do not drop.


No user-serviceable parts inside.

FEATURES

The DCD-3520 Compact Disc Player incorporates DENON's Super Linear Converter which prevents deterioration of sound quality in PCM playback systems. This assures accurate reproduction of the digital signals recorded on compact discs no matter whether they are pure studio recordings or "live" performance recordings. All parts making up this CD player have been selected with the greatest care in order to produce high quality realistic playback of the full musical content on compact discs.

(1) Real 20-bit New Super Linear Converter and 8fs Digital Filter
The use of a pure 20-bit D/A converter and 8-times oversampling digital filter greatly improves playback resolution.
Also, in addition to MSB correction for reduction of zero cross distortion of the D/A converter which Denon has used from the start, the number of bits corrected has also been increased, further improving the D/A converter linearity, and making for sound field reproduction with rich musical expression.

(2) Thorough Anti-Vibration Structure
The optical pickup, which requires extremely high tracing precision, is installed on a BMC (Bulk Mold Compound) with high internal loss and excellent vibration absorption, and the interior of the optical pickup mechanism is also floated using rubber with low repellence elasticity and coil springs.
The entire mechanism is installed on a BMC chassis giving it a thorough anti-vibration structure.

(3) Exclusive Audio Power Transformers
In addition to the power transformer for the digital servo circuit, a independent transformer is used exclusively for the audio circuitry, combining with the high capacity power capacitor to provide stability.

(4) Audio Output System with Balanced Outputs
The DCD-3520 is equipped with balanced cannon connector outputs. There are total of three output systems, two fixed output systems (one unbalanced and one balanced) and one unbalanced variable output system, thus providing more than sufficient options even for professional use.

(5) Digital Outputs, Including an Optical Output
The data on the compact disc can be output in digital format to an external digital processor or D/A unit for playback.
Aside from the two coaxial output systems, the DCD-3520 also includes an optical output which improves sound quality and eliminates noise interference.

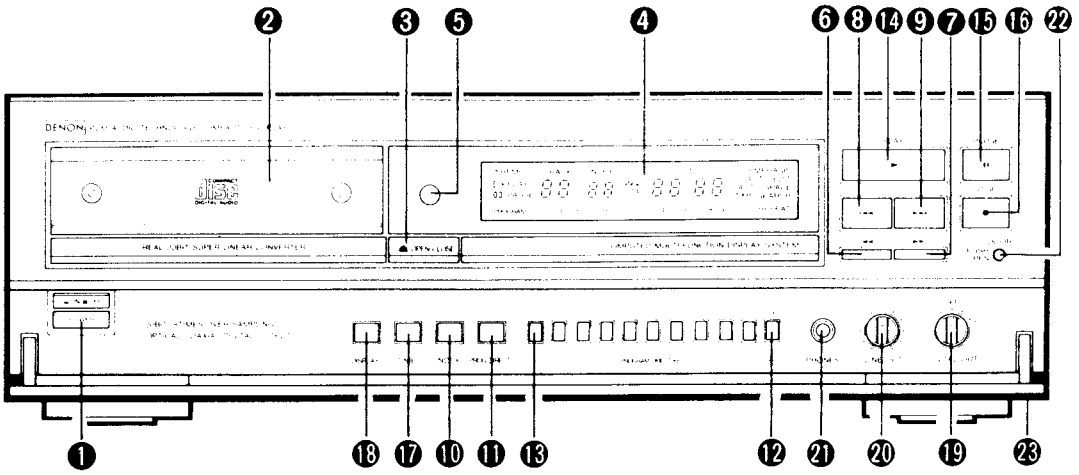
(6) Simple Design
The DCD-3520 has a simple, high quality design, with functions not often used tucked behind a door or on the remote control unit.

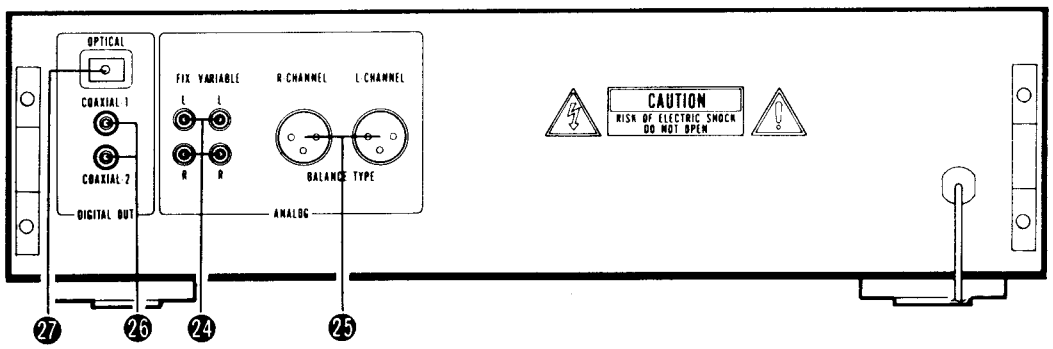
(7) Quick Time Search Function
The time search function makes it possible to indicate a point from the beginning of a track in units of seconds, making for simple use for reference or professional purposes.

(8) Original Linear Motor
A linear motor with smooth, rapid operation greatly reduces access time and improves tracking resolution for greatly fidelity in playback.

(9) Wireless Remote Control
Aside from the regular functions such as play, stop, and track buttons, the remote control unit also includes a numeric keypad for the direct search, direct program, and time search functions.
These remote control functions greatly enhance the operability of the DCD-3520.

NAMES AND FUNCTIONS OF PARTS





❶ Power Switch (POWER)

- When the power is turned on, "(00)" appears in the second portion of the TIME display, and if no disc is loaded, "(00:00:0000)" appears in the digital display and the calendar lights.
- If the power is turned on with a disc already loaded, the total number of tracks on the disc is displayed in the TRACK NO. display, the total time is displayed in the TIME display, and the numbers of the music calendar light up to the number of tracks on the disc, and playback begins automatically.

❷ Disc Holder

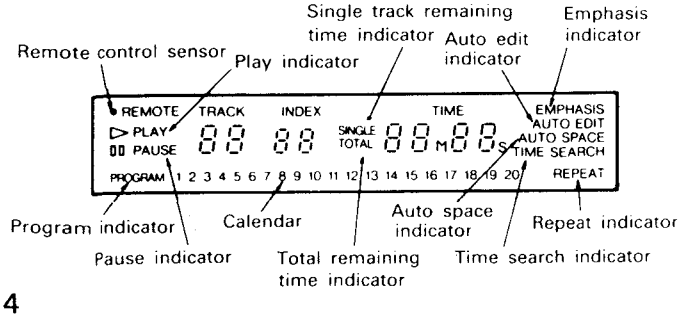
- Place the disc on the disc holder with the label facing up.
- Use the open/close button (⏏ OPEN/CLOSE) ❸ to open and close the disc holder.
- Press the play button (▶ PLAY), pause button (⏸ PAUSE), a number button, or the disc holder directly to close it.

❸ Open/Close Button (⏏ OPEN/CLOSE)

- The disc holder is opened and closed by pressing this button.
- Press this button once to open the disc holder, and once again to close it.
- When the disc holder is closed with a disc loaded, the disc will rotate for a couple of seconds while the disc contents are read. The number of tracks and total playback time on the disc are then displayed on the digital display ❹.

❹ Display

- The digital display is divided into sections, displays for track number, index, playback time and calendar, as shown below.



❺ Remote Control Sensor

- This sensor receives the infrared light transmitted from the wireless remote control unit.
- For remote control, point the supplied remote control unit RC-213 towards this sensor.
- When a signal is transmitted from the remote control unit, the remote control indicator in the display ❹ will light up briefly.

❻ Manual Search Reverse Button (◀◀)

- Press this button during playback for fast reverse search. As long as the button is kept pressed, music signals are played back faster than normal.
- Pressing this button when the pause mode is engaged, you can quickly reverse the pickup to a desired position, three times faster compared to manual reverse search during playback. During this time, no sound is heard.

❼ Manual Search Forward Button (▶▶)

- Press this button during playback for fast forward search. As long as the button is kept pressed, music signals are played back faster than normal.
- Pressing this button when the pause mode is engaged, you can quickly forward the pickup to a desired position, three times faster compared to manual forward search during playback. During this time, no sound is heard.

❽ Automatic Search Reverse Button (I◀◀)

- Press this button to return the pickup to the beginning of the present track. Press again to return to other tracks.
- By pressing the button a number of times, the pickup will move back to the corresponding number of tracks.

❾ Automatic Search Forward Button (▶▶I)

- Press this button to move the pickup forward to the beginning of the next track. Press again to move ahead to other tracks.
- By pressing the button a number of times, the pickup will advance to the corresponding number of tracks.

❿ Index Button (INDEX)

- Press this button to start playback from an index within a track. Use the number buttons ⓭ to specify the index number.

⓫ Program/Direct Button (PROG/DIRECT)

- Press this button when you want to enter tracks for programmed playback. (Refer to page 8 for details.)

⓬ +10 Button (+10)

- Press this button first when selecting track numbers over 10. Use it together with the number buttons. For example, to select track number 15, press [+10] then [5].
  For track number 33, press [+10] three times, then press [3].

⓭ Number Buttons (1, 2, 3, 4, 5, 6, 7, 8, 9 and 0)

- Use these buttons for the direct search, time search and program memory functions.
  For direct search, press for example button [3] if you want to hear track number 3. For track number 12, press [+10] then [2].
  To program tracks, press the PROG/DIRECT button to set the CD PLAYER into program mode.

⓮ Play Button (▶ PLAY)

- Press this button to start playback of a disc.
- When this button is pressed, [▶ PLAY] is displayed, and the track number being played is displayed together with the elapsed playback time of the track.
- Tracks are shown on the calendar display. Once a track has been played, the corresponding track number goes out on the calendar display.
- With the time search function, playback can be started from specified point on the disc.

⓯ Pause Button (II PAUSE)

- Press this button to stop playback temporarily.
- If this button is pressed during playback, playback is stopped temporarily, the [▶ PLAY] indicator goes out and the [II PAUSE] indicator lights.
- Press this button or the play button (▶ PLAY) again to continue playback.

⓰ Stop Button (■ STOP)

- Press this button to stop playback.
  The disc will stop rotating, and the number of tracks and total playing time of the disc are displayed in the TRACK NO. and TIME displays, respectively.
- In case programmed playback is engaged when this button is pressed, the number of tracks and total playing time of the program are displayed.

⓱ Time Mode Button (TIME)

- This button is used to select the desired indication in the TIME display. The indication of the display will change each time the button is pressed.
  Normally, the elapsed playback time of the current track is displayed.
  Pressing the button once, [SINGLE] is displayed and the remaining time of the current track is displayed.
  Pressing once more, [TOTAL] is displayed, and total playing time of remaining tracks is displayed. However, when programmed play is in progress, the total remaining time of the program is displayed.
  Press the button once again to return to the normal display of the elapsed playback time of the current track.

⓲ Display Button (DISPLAY)

- Press this button (DISPLAY) during playback to turn the indicators on the display window off.
- When pressed once during playback, only the track number [TRACK], index number [INDEX], and playing time [TIME] will remain lit, and when pressed again, all indicators are turned off. To set back to the normal display, press either the (DISPLAY) button, the (PROGRAM/DIRECT) button, or the time search button.
- When pressed once in the stop mode, the track number [TRACK], index number [INDEX], and playing time [TIME] are displayed, and when pressed again, only the track number [TRACK] remains lit.

⓳ Digital Output Switch (DIGITAL OUTPUT)

- Use this switch to turn the signals from the digital output terminals (DIGITAL OUTPUT) on and off.
- When off, no digital signals are present on the output.

⓴ Volume Control (LINE OUT)

- Use this to adjust the output level (volume) of the headphones or the line output (VARIABLE).
- The same operation is possible using the included remote control unit (RC-213).

㉑ Headphones Jack (PHONES)

- For private listening, you can connect your headphones to this jack (PHONES). Do not raise the volume level too much when listening through headphones. (Headphones are sold separately.)

㉒ Door Open Knob

- Press to open the door.

㉓ Trap Door

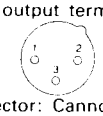
- Opens by pressing the door open knob. To close, press the right side of the door gently.

㉔ Output Terminal (FIX-VARIABLE)

- Connect these jacks to the input jacks on your amplifier. (Refer to page 6 for details on the connections.)

㉕ Output Terminals (BALANCED TYPE)

- These cannon type connectors are balanced outputs with an output impedance of 600Ω. Connect them to the balanced input terminals on the amplifier.
- Cannon connector signal layout
  (Rear output terminals ... see Page 4-㉕)



Pin 1 – common
Pin 2 – cold
Pin 3 – hot

- Connector: Cannon type XLR-3-32

NOTE: Do not short-circuit the hot or cold pin with the common pin.

㉖ Digital Output Terminals (COAXIAL-1, COAXIAL-2)

- These terminals supply digital data.
- Use the included RCA pin cords or 75Ω pin cords (available in stores) for connecting.

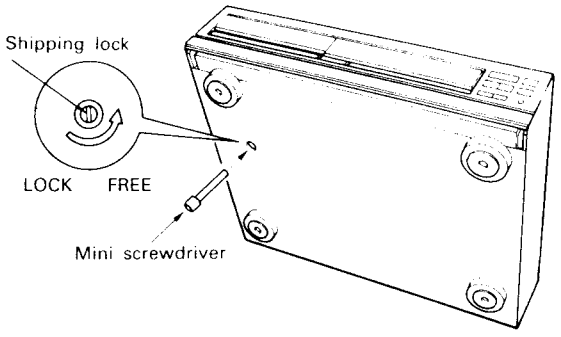
㉗ Digital Output Terminal (OPTICAL)

- This terminal outputs digital data optically.
- Signals are output when the (DIGITAL OUT) switch is at the 1, 2, or 1+2 positions.

Continuous Operation
If the automatic search reverse button ❽, the automatic search forward button ❾, or the +10 button ⓬ are held in, the function of that button will be repeated.

BEFORE USE — Be sure to release the shipping lock.

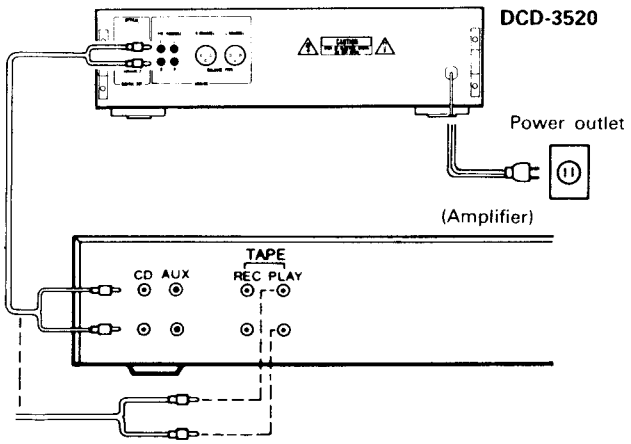
- Remove the two shipping cushions inserted in the trap door.
- **"Shipping lock"**
  The shipping lock keeps the laser pickup inside the player from moving during shipment.
- **When using the player**
  Before turning the power on, set the player so that the front panel is facing up, insert the included mini screwdriver into the shipping lock, then turn it counterclockwise until it stops. (APPROXIMATELY 1/2 TURN)
  Do not use any tool other than the included mini screwdriver.
  Remove the two shipping cushions inserted in the trap door.
- **Reshipping**
  (1) Turn the power on, open the disc holder, check that no disc is loaded, then close the disc holder.
  (2) Turn the power off, set the player so that front panel is facing up, then turn the shipping lock clockwise until it stops. (APPROXIMATELY 1/2 TURN)



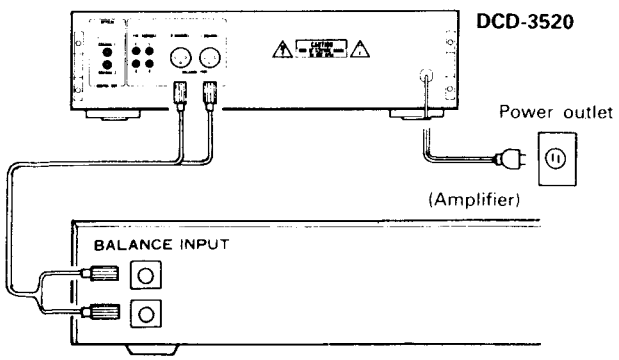
CAUTION
Be sure to release the shipping lock on the bottom panel before turning the power on.
When locking or freeing the shipping lock, be sure to set the player with the front panel facing up, the back panel facing down. (Refer to the diagram)

CONNECTION

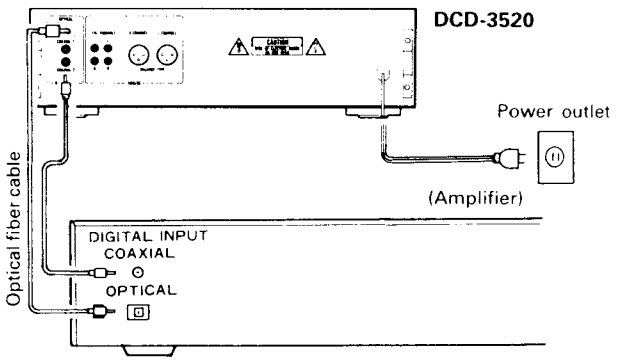
(1) Connecting the Output Terminals (FIX-VARIABLE)
Connect the left (L) and right (R) output terminals to the left (L) and right (R) (CD), (AUX), or (TAPE PLAY) input terminals on the amplifier using the included pin cords.
There are two types of output terminals, one variable, the other fixed. To vary the output level, use the variable output terminals.



(2) Connecting the Output Terminals (BALANCED TYPE)
Connect the left (L) and right (R) balanced output terminals to the left (L) and right (R) balanced inputs on the amplifier using 3-pin cords.



(3) Connecting the Digital Output Terminals (DIGITAL OUT)
Connect the (COAXIAL-1) or (COAXIAL-2) digital output terminals to the coaxial digital input terminals on a digital processor or D/A unit using 75Ω pin cords.
In the same way, connect the (OPTICAL) output terminal with the optical input terminal on a digital processor or D/A unit using an optical fiber cord.



Connection Precautions
- Turn the power for all equipment off when connecting or disconnecting the connecting cords.
- Be sure to connect the left (L) and right (R) sides of the cords correctly.
- Connect to the amplifier's (CD), (AUX), or (TAPE PLAY) terminals.
- Note that not plugging the pin cords in securely could result in poor connections.

OPENING AND CLOSING THE DISC HOLDER AND LOADING A DISC

Opening and closing the disc holder (This operation only works while the power is on.)

1. Press the power switch (POWER) to turn on the power.
2. Press the open/close button (⏏ OPEN/CLOSE).

How to load a disc

- Make sure the disc holder is completely open.
- Hold the disc by the edges and place it on the disc tray. (Do not touch the signal surface, i.e., the glossy side.)
- When using 12 cm. diameter discs, make sure the outer edge matches the tray guide circumference (Fig. 1), and when using CD singles (8 cm. diameter) match the outer edge with the inner tray guide circumference. (Fig. 2)
- Press the open/close button (⏏ OPEN/CLOSE) to close the disc holder.
- When the disc is loaded, the total number of tracks is indicated in the TRACK display, the total time is indicated in the TIME display, and the numbers in the calendar light up to the total number of tracks.
- When the disc holder is open and a disc is loaded, you may also press the play (▶ PLAY) or pause (⏸ PAUSE) button to close the disc holder. (If the play button (▶ PLAY) is pressed, playback will start immediately upon the disc contents having been read.)

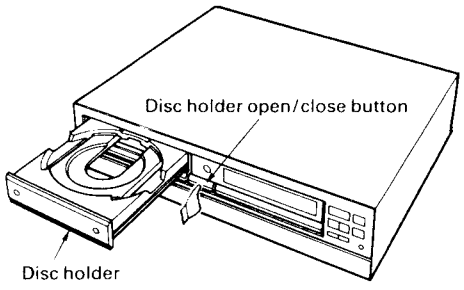


Fig. 1

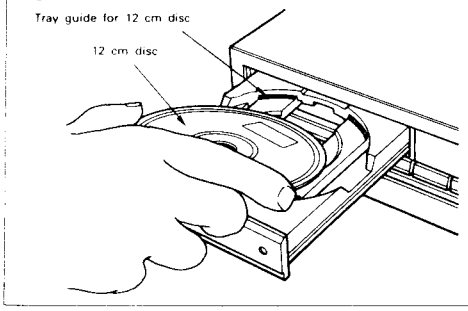
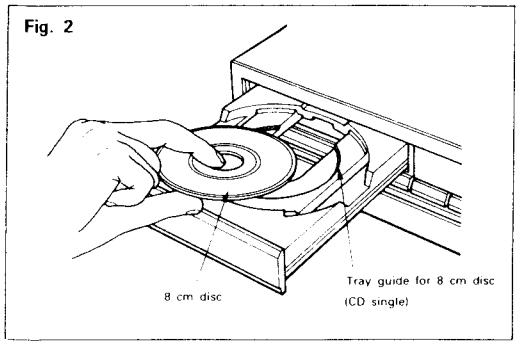


Fig. 2

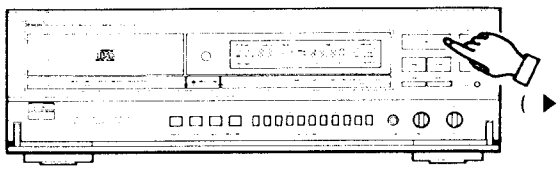


Caution:

- If your finger should get caught in the disc holder when it closes, press the open/close button (⏏ OPEN/CLOSE).
- Do not place any foreign objects on the disc tray, and do not place more than one disc on the tray at a time. Otherwise malfunction may occur.
- Do not push in the disc tray manually when the power is off as this may cause a malfunction and damage the CD player.

NORMAL CD PLAYBACK

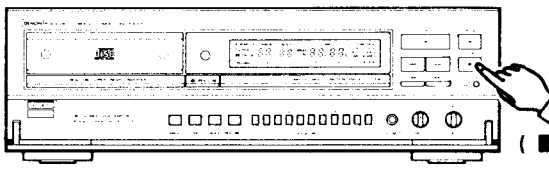
(1) Starting Playback



1 Press the power switch (POWER) to turn on the power.
2 Load the disc you want to play.
- When the disc holder is closed, the disc is read and the number of tracks and total playing time of the disc are displayed.

3 Press the play button (▶ PLAY).

(2) Stopping Playback



1 Press the stop button (■ STOP).
- When all tracks have been played on a disc, playback will stop by itself.

NOTE:

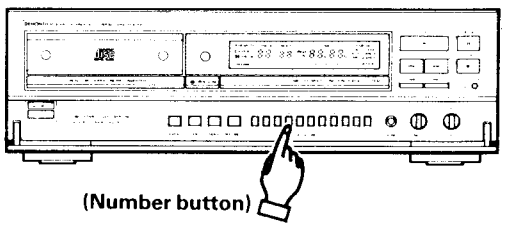
- If no disc is loaded or if the disc is loaded upside*down, "00" appears on the TRACK display, then the entire display window changes to "00:00:00".

- If the data at the innermost section of the disc cannot be read properly due to scratches, dirt, etc., the display window will be as shown below. If this happens, the search operation may take more time than usual.

Normal | Data cannot be read properly

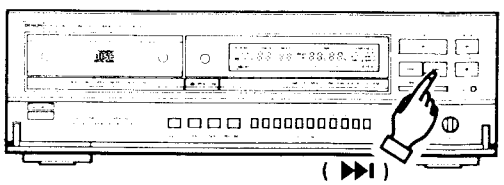
ADVANCED CD PLAYBACK

❶ **Playing a Specific Track Direct Search** ..... **Number buttons**



- Use the number buttons and the +10 button to input the number of the desired track.
  For example, to play track number 4, press [4], and to play track number 12, press [+10] and [2]. Playback will begin from that tract.

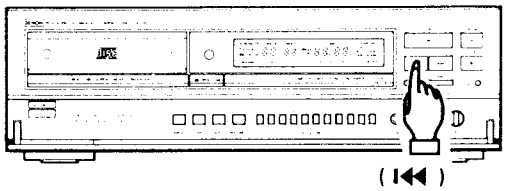
❷ **Advancing to the next track during playback** ..... **Automatic Search**



Press the Automatic search forward button (▶▶I) during playback.

- The pickup will advance to the beginning of the next track and playback will continue. Pressing the button several times will forward the pickup to the corresponding number tracks.

❸ Returning to the beginning of the current track during playback ..... Automatic Search



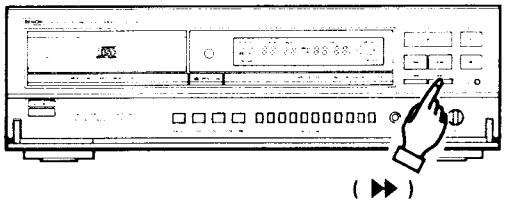
Press the Automatic search reverse button (I◀◀) during playback.

- The pickup will return to the beginning of the current track and playback will continue. Pressing the button several times will return the pickup the corresponding number tracks.

❹ Audible quick search ..... Manual Search

- Using this function, you can cue to a desired point within a track, either in the forward or reverse direction.
- Release the manual search button (◀◀ or ▶▶) when the desired point has been reached. Normal playback then continues.

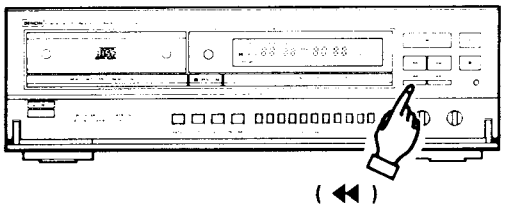
(1) Manual Search Forward



1. Press the manual search forward button (▶▶) during playback. Playback of the track is sped up.

- As a reference, the current track number and elapsed playback time within the track are displayed.
- Manual search forward is approximately three times faster when engaged during the pause state compared to playback. However, in this case, no sound is heard.
- If the manual search forward button (▶▶) is kept pressed after the end of the final track on the disc is reached, (𝔍𝔍) is displayed and manual search stops. To return to another point, press the manual search reverse button (◀◀) until (𝔍𝔍) disappears.

(2) Manual Search in Reverse



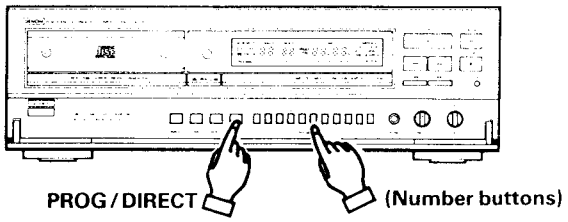
1. Press the manual search reverse button (◀◀) during playback. Reverse playback of the track is sped up.

- As a reference, the current track number and elapsed playback time within the track are displayed.
- Manual search in reverse is approximately three times faster when engaged during the pause state compared to playback. However, in this case, no sound is heard.
- If the manual search reverse button (◀◀) is kept pressed after the beginning of the first track on the disc is reached, (𝔈𝔈) is displayed and manual search stops. To return to another point, press the manual search forward button (▶▶) until (𝔈𝔈) disappears.

❺ Playing Specific Tracks in a Specific Order ..... Programmed Play

- With this function, you can choose any of the tracks on the disc and program them to play in any order.
- Programming is possible with the disc holder open.
- Up to 20 tracks can be programmed.
- The programmed tracks are shown on the calendar.

(1) Programming

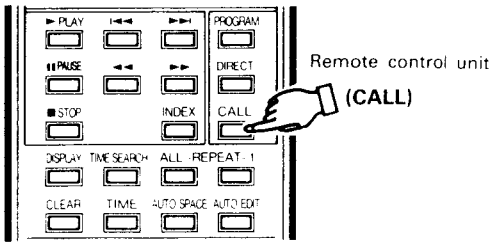


- Press the PROG/DIRECT button so that the PROGRAM indicator lights, then use the number buttons and the +10 button to program the tracks.
  For example, to program tracks 3, 12, and 7, press PROG/DIRECT, 3, +10, 2, and 7.
  The corresponding track number lights on the calendar each time a track is programmed, the track number is displayed in the TRACK NO. display, the number of tracks programmed is displayed in the INDEX display, and the total playing time of the programmed tracks is displayed in the TIME display. A few seconds after the last track has been programmed, the total number of tracks programmed is displayed in the TRACK NO. display and the total playing time of the programmed tracks is displayed in the TIME display.
- The program will remain in the memory for approximately 2 days, even if the power is turned off after setting the program or during program playback.

NOTE:

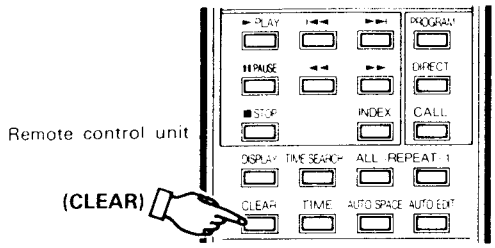
- Leave the power on for at least 10 minutes to fully charge the memory power supply. If the power is only left on a short while, the memory will be cleared that much sooner.
- It is not possible to program more than 20 tracks.
- The remaining time per track will only be displayed for the first 20 tracks on the disc.
- The total programmed time and the remaining time for the program will also not be displayed if track number 21 or greater is programmed.

(2) Checking Programmed Tracks



- Press the CALL button.
  The programmed tracks are displayed in order in the TRACK NO. display each time the CALL button is pressed.

(3) Correcting Programs



- To correct a programmed track, press the CLEAR button, then program the correct track. The last programmed track will be cleared and the correct track will take its place.
- To erase a programmed track, recall it with the CALL button, then press the CLEAR button and the STOP button, in that order. The track will be erased.

(4) Playing the Programmed Tracks

- Press the (▶ PLAY) button to play the tracks in the programmed order.

(5) Clearing the Program

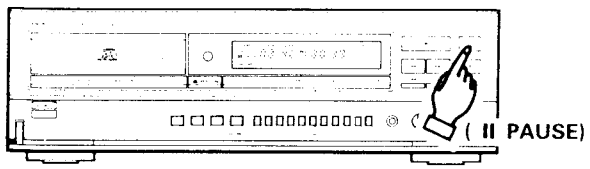
- The entire program is cleared when the PROG/DIRECT button is pressed again. The program is also cleared when the (⏏ OPEN/CLOSE) button is pressed.
- If the PROG/DIRECT button is pressed during programmed play, the program is cleared and playback continues normally through to the last track on the disc.

NOTES

- If programming is done in the play or pause mode, the track currently playing is programmed at the first position. Other tracks can be added to the program, but the number of programmed tracks and the playing time will not be displayed.
- Direct search is not possible during programmed play. If the number buttons are pressed, that track is added to the end of the program.
- Programming is possible with the disc holder open. Track numbers greater than the number of tracks recorded on the disc can be programmed, but will be automatically cleared before playback begins.

❻ Pausing playback at any point ..... Pause

- Playback can be temporarily halted and then continued from the same point in the track.

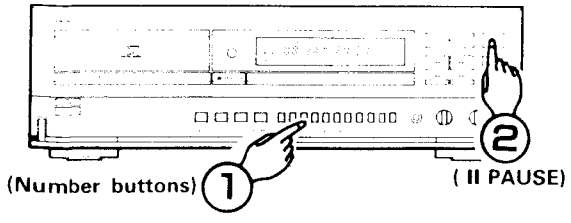


1. Press the pause button (II PAUSE) during playback.
2. To continue playback, press the play button (▶ PLAY) or the pause button (II PAUSE) once more.

❼ Searching and Pausing at the Beginning of the Track ..... Pause

(1) With Direct Search

- In this case, the set pauses at the beginning of the track found with the direct search operation.



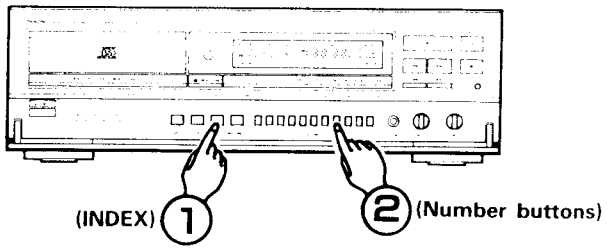
1 Press the (II PAUSE) button.
2 Press the number button(s) for the desired track.
- To start playback, press the (▶ PLAY) or (II PAUSE) button.

(2) With Program Search

- Press the (II PAUSE) button after the program search operation is completed. The set will pause at the beginning of the first programmed track.

❽ Finding Sections Within a Track ..... Index Search

- With this function, you can find and play from the beginning of sections within the track marked by index numbers.

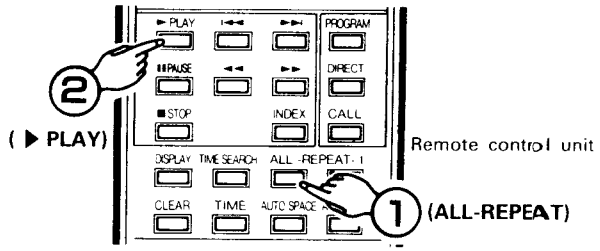


(1) "--" appears on the TRACK NO. display when the INDEX button is pressed.
(2) Input the track number using the number buttons.
Next, "--" appears on the INDEX display. Input the desired index number, and playback will start from that index number.
For example, to start from index 2 on track number 3, press INDEX, 3, then 2.

Indexes

- Indexes are numbers which are assigned to sections within a track. Check the disc's explanatory notes for the index numbers.
- If you input an index number not on the disc, playback will start from the last index number on the track.

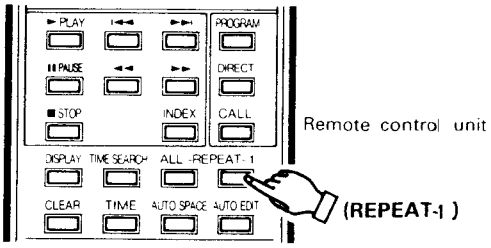
❾ Repeating playback of all tracks ..... Repeat All



(1) Press the repeat all button (ALL).
(2) Press the play button (▶ PLAY).
- When pressing the repeat all tracks button (ALL), ALL is displayed.
- Steps (1) and (2) above may be reversed.
- To cancel repeat playback of all tracks, press the repeat all button (ALL) once more.
- Pressing the repeat all button (ALL) during programmed playback, playback of the tracks entered into the memory will be repeated.

❿ Repeating a Single Track ..... 1-track Repeat

- Press this button if you want to hear a track repeatedly.



- When the 1-track repeat button (REPEAT-1) is pressed during playback, only the number of the track currently playing will remain lit on the calendar, as long as the track number is not over 20, and that track will be repeated.
- If the track number is 21 or over, the 1-track repeat function will work, but nothing will be lit on the calendar.

- When the 1-track repeat button (REPEAT-1) is pressed in the stop mode, track number 1 lights on the calendar and the 1 track repeat function is possible. To start, press the (▶ PLAY) button.
- To cancel 1-track repeat, press the 1-track repeat button (REPEAT-1) once again. Normal playback will resume.

⓫ Playing a desired time or interval ..... Time Search

- With this function you can specify the starting time and/or ending time in seconds, allowing playback of a very specific section of a track.

■ In the Stop Mode

- Specifying the starting time

(1) Press the TIME SEARCH button. The [TIME SEARCH] indicator will flash on the display, and the TRACK display will read "--".

2 Use the number buttons to set in order the track number and the time (minutes and seconds).
Example: Starting from 2 minutes 34 seconds into track 3
Press the following buttons in order: [TIME SEARCH], [0], [3], [0], [2], [3], [4].
NOTE: If a track number or time not on the disc is set, the unit will return to the mode it was in before the first buttons were pressed.

(3) Press the (▶ PLAY) button to begin playback from the specified time.

- Specifying the ending time
The ending time can be set before pressing the play button while the [TIME SEARCH] indicator is flashing using the following procedure:

(4) Press the TIME SEARCH button. The [TIME SEARCH] indicator will stop flashing and the TRACK display will read "--".

(5) Use the number buttons to set in order the track number and the time (minutes and seconds).
NOTE: It is not possible to set an ending time at a point before (or the same as) the starting time.

(6) After specifying the ending time, press the (▶ PLAY) button to begin repeated playback between the two specified points. (A-B repeat by specifying the time)

■ In the Play Mode

(1) When the TIME SEARCH button is pressed, the current track number and time (minutes and seconds) are stored in the memory and the [TIME SEARCH] indicator begins flashing.

(2) When the (▶ PLAY) button is pressed, playback starts from the starting point stored in the memory.
To start playback over from the specified point, press the (▶ PLAY) button again.

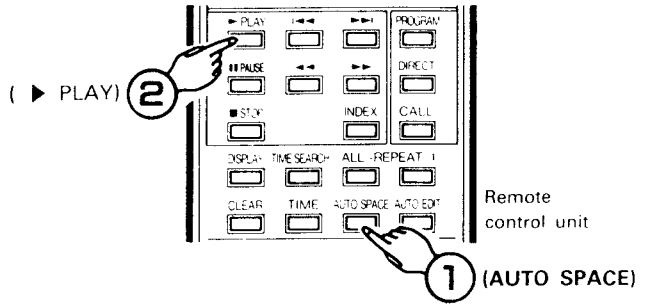
(3) If the TIME SEARCH button is pressed again, the ending time is stored in the memory, the [TIME SEARCH] indicator stops flashing, and the interval between the starting point and ending point is played repeatedly. (A-B repeat)
To cancel the time search function, press one of the following buttons:
(1) PROGRAM/DIRECT
(2) DIRECT (on remote control unit)
(3) OPEN/CLOSE

NOTE:

- If the search function is used after a track number and time (minutes and seconds) are specified with the disc holder open and no disc set, playback will start from the beginning of the first track on the disc.
- If a time over the time on the disc is specfied, playback will start from the beginning of the track following the specified track.

⓬ Inserting blanks between tracks ..... Auto Space

- This is convenient feature that will insert 4-second blanks between tracks, which can be used when recording compact discs on tape.



1. Pressing the auto space button (AUTO SPACE) will cause the [AUTO SPACE] indicator to light.
2. Press the play button (▶ PLAY) to start playback.
When a track has been played to its end, a 4-second silence is made before the next track starts playing.
3. Press the auto space button (AUTO SPACE) again to cancel the function.

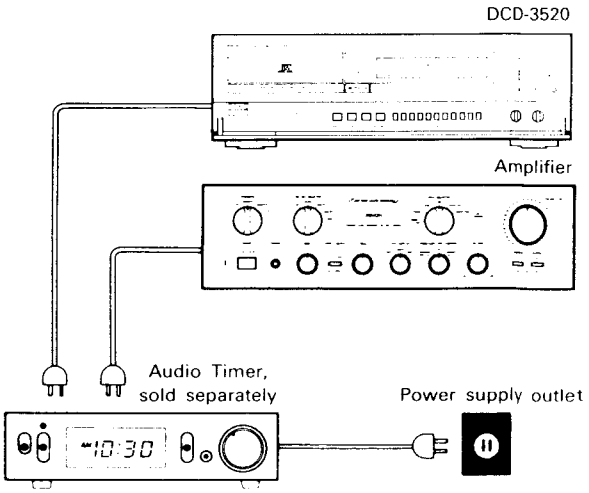
TIMER-CONTROLLED PLAYBACK

■ Operation

1. Turn on the power of all system components.
2. Set the input selector on the amplifier to correspond to the input the CD player is connected to.
3. Make sure a disc has been loaded in the disc holder.
4. Check the time on the timer and then set the desired turn-on time.
5. Turn the audio timer ON.
Power is turned off automatically in all components connected to the timer.
6. When the preset turn-on time is reached, power is turned on in the system components, and CD playback starts from the first track.

NOTE:
The program will remain in the memory even if the power is turned off after setting the program or during program playback. After approximately two days, however, the program memory is cleared, reset the program, as necessary.

■ Connection



THE COMPACT DISC

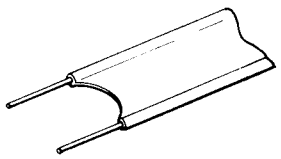
1. **Precautions on handling compact discs**
   - Do not allow fingerprints, oil or dust on the surface of the compact disc. If the signal surface is dirty, wipe it off with a soft, dry cloth. Wipe in circular motions from the center to the outside edge. Use of DENON's AMC-12 CD cleaner is recommended.
   - Do not use water, benzene, thinner, record sprays, electrostatic proof chemicals, or silicone-treated cloth to clean discs.
   - When handling discs always take care to prevent damaging the surface, in particular when removing a disc from the case and returning it.
   - Do not bend compact discs.
   - Do not apply heat to compact discs.
   - Do not enlarge the hole in the center of the disc.
   - Do not write on the disc and do not attach any labels.
   - Condensation will form on the disc surface if it is brought into a warm room from a cold area, such as outdoors during winter. Wait until the condensation disappears. Never dry discs with hair dryers, etc.

2. **Precautions on storage**
   - After playing a disc, always return it to its case.
   - Keep discs in the cases when they are not to be played. This will protect them from dust and dirt and prolong their service life.
   - Do not store discs in the following places:
     1) Places exposed to direct sunlight for a considerable time.
     2) Places subject to accumulation of dust or high humidity.
     3) Places exposed to high temperatures, such as close to heater outlets.

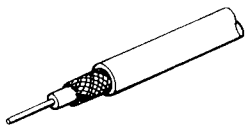
INSTALLATION PRECAUTIONS

The CD player uses a microcomputer for controlling internal electronic circuits. In the event that the player is used while a near-by tuner or TV is turned on, although unlikely, interference could occur either in the sound from the tuner or the picture of the TV. To avoid this, please take the following precautions.

- Keep the CD player as far away from the tuner or TV set as possible.
- Keep the power cable and connecting cable of the CD player separate from the antenna wires of the tuner and TV.
- Interference is particular likely to occur when an indoor antenna or a 300-ohm feeder cable is used. Thus, use of an outdoor antenna and 75-ohm coaxial cable is strongly recommended.



300-ohm feeder cable



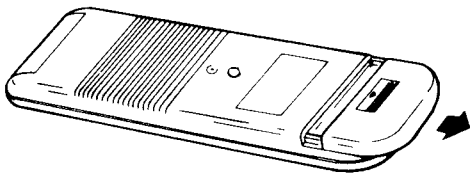
75-ohm coaxial cable

PLAYBACK USING THE REMOTE CONTROL UNIT

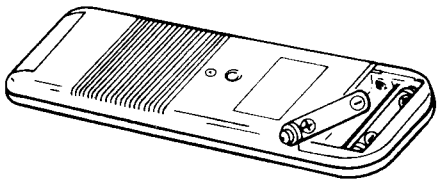
The accessory RC-213 remote control unit can be used to control the CD player from a convenient distance.

(1) Inserting the dry cell batteries

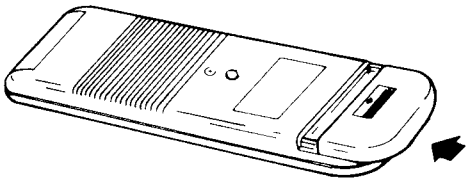
1. Remove the battery cover on the back of the remote control unit.



2. Insert two SUM-4 (standard size AAA) dry cell batteries with correct polarity as indicated inside the battery compartment.

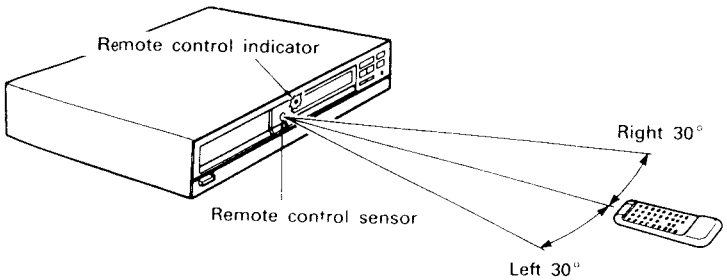


3. Replace the battery cover.



(2) Directions for Use

- Operate the remote control unit while pointing it towards the remote control sensor on the CD player (see below).



Notes on the Batteries

- The remote control unit uses standard size AAA dry cell batteries.
- The batteries will need to be replaced approximately once a year. Replacement may be necessary earlier depending on how much the remote control unit is used.
- If, in less than a year from the time new batteries were inserted, the remote control fails to operate the CD player from a near-by position, it is time to replace the batteries.
- Insert the batteries properly, following the polarity diagram inside the battery compartment, in other words make sure (+) and (–) terminals are properly aligned.
- Batteries are prone to damage and leakage.
  Therefore:
  - Do not combine new batteries with used ones.
  - Do not combine different types of batteries.
  - Do not jumper opposite poles of the batteries, expose them to heat, break them open nor expose of them in open fire.
- If the remote control unit is not to be used for a long period of time, remove the batteries from the unit.
- If the batteries have leaked, remove any traces of battery fluid from the battery compartment, wiping thoroughly with a dry cloth. Then insert new batteries.

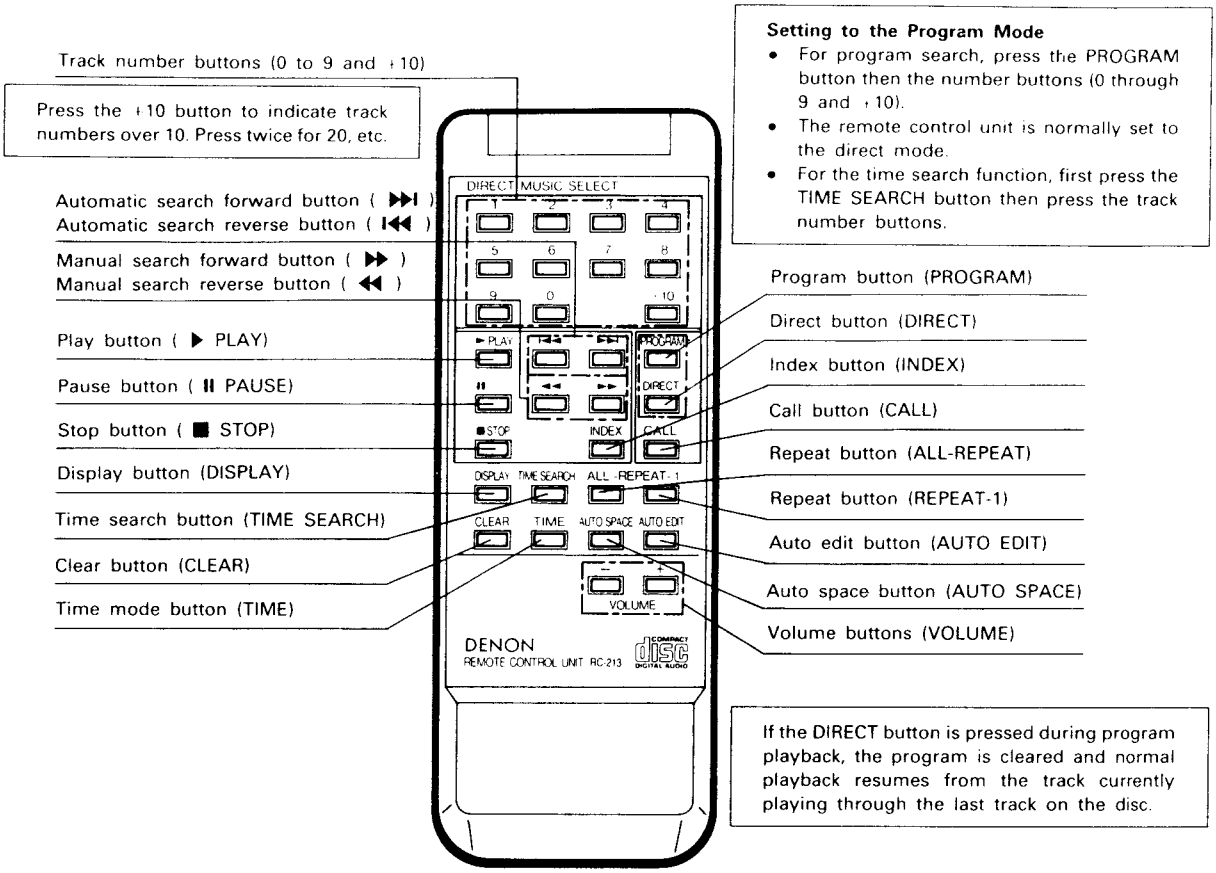
When a remote control signal is received, the remote control indicator on front of the CD player lights briefly.

- The remote control unit can be used at a distance up to 8 meters in a straight line from the CD player. This distance is decreased if there are obstructions blocking the signal path or when the remote control unit is operated at an angle from the remote control sensor.
- The buttons on the remote control unit have identical functions with those on the CD player.
  However, the following functions cannot be remote controlled: Power ON/OFF, Digital output switching and Trap door opening.

Cautions on Use

- Do not press the operation buttons on the main unit and on the remote control unit simultaneously, as this will result in malfunction.
- The remote control unit may not operate properly if the remote control sensor is exposed to direct sunlight or strong artificial lighting, or if there is an object between the remote control unit and the remote control sensor.

REMOTE CONTROL UNIT RC-213



- **Direct Search**
  Normally, direct search is possible simply by pressing the desired number buttons.
- **Program Search (programming is not possible during playback)**
  Press the PROGRAM button, then press the number buttons.
  For example, to program tracks number 3, 11, and 5, press PROGRAM → 3 → +10 and 1 → 5.
  To cancel the program, press the DIRECT button.
- **Inputting the Track Numbers**
  For track numbers below 9, simply press the corresponding button. For track numbers of 10 and greater, press the +10 then the number buttons.
  For example, for track number 22 press +10 twice then 2.
- **Volume**
  The volume control on the unit will operate when the volume buttons are pressed. The volume can be checked by looking at the position of the control.

- **Auto Edit Button (AUTO EDIT)**
  * The tracks on a CD are automatically split into two halves, Side A and Side B, like an analog disc, with the division at the place between tracks which is closest to 1/2 the total playing time, and with the tracks remaining in the same order.
  * When this button is pressed in the stop mode, the total playing time for the first half and the track numbers on the calendar are displayed for approximately 2 seconds. Next, the same is done for the second half, after which the unit is automatically set to the pause mode at the beginning of the first track. When the PLAY or PAUSE button is pressed, playback begins, and the unit is automatically set to the pause mode at the beginning of the first track of the second half which was previously displayed. When the PLAY or PAUSE button is pressed again, playback begins, and the unit is automatically set to the stop mode at the end of the last track on the disc.
  * This function will only work for discs with a total of 20 tracks or less. Also, when this function is used the mode is automatically set to the program mode, so direct search is not possible.
  * The auto edit function is cleared when the STOP or DIRECT button is pressed.
  * The data for the total playing time recorded on the disc and the actual total playing time of the tracks differ, so there may be a difference between the time displayed in the stop mode (the total playing time) and the total of the times of the first and second halves in the auto edit mode (about 2 seconds).

TROUBLESHOOTING

If the CD player does not seem to be functioning properly, check the following:

Disc holder does not open or close.
- Is the power on?

When a disc is loaded, 00 00 0000 is displayed.
- Is the disc loaded properly? ..... See page 7
- Has the shipping lock been released? ..... See page 6

When the play button (▶ PLAY) is pressed, playback does not start.
- Is the disc dirty or scratched? ..... See page 11

There is no sound, or it is distorted.
- Is the output cord properly connected to the amplifier? ..... See page 6
- Have the amplifier controls been set correctly?

A specific section of the disc will not play.
- Is the disc dirty or scratched? ..... See page 11

Programmed playback does not work.
- Have programming been properly done? ..... See pages 8 and 12

Index search does not work. (only 1 displayed)
- Is the index search option proper? ..... See page 9
- Check whether there are 2 or more index numbers for that track.

Incorrect operation when buttons on the remote control are pressed.
- Is the remote control unit being operated too far from the CD player? ..... See page 11
- Are there obstacles blocking the ray?
- Is the remote control sensor exposed to strong light?
- Are the batteries exhausted?

SPECIFICATIONS

AUDIO SECTION

Number of channels:	2
Frequency response:	2~20,000 Hz, ±0.2 dB
Dynamic range:	100 dB or greater
S/N ratio:	118 dB (1 kHz)
Harmonic distortion:	0.0015% (1 kHz)
Separation:	110 dB (1 kHz)
Wow/flutter:	Below measurable limits (±0.001% W peak)
Output voltage:	Fixed: 2.0 Vrms Balanced type: 2 Vrms/10 kΩ load Variable: 2.0Vrms/line out volume max. (Variable output voltage with no 600Ω load on balanced type output)

DISC Compact disc

Diameter:	120mm/80mm

SIGNAL FORMAT

Sampling frequency:	44.1 kHz
Quantization bit:	16-bit linear/channel
Transfer bit rate:	4.3218 Mb/sec.

DIGITAL OUTPUT SIGNAL FORMAT

Format:	Digital audio interface
Coaxial output voltage:	0.5 Vpp, 75Ω
Optical power:	−12 dBm
Light wavelength:	650 nm

PICKUP

Type:	Objective lens driving type optical pickup
Objective lens driving method:	Two-dimensional parallel driving
Light source:	Semiconductor laser
Wavelength:	780 nm

GENERAL

Power supply:	50/60 Hz voltage is shown on rating label.
Power consumption:	32 W
External dimensions:	434 (17.1 in)(W) × 135 (5.3 in)(H) × 390 (15.4 in)(D) mm
Weight:	19 kg

FUNCTIONS AND DISPLAYS

Functions:	Direct search, automatic search, program search, repeat play, manual search, index search, time search
Displays:	Track number, index, time, program
Others:	Headphones jack (variable level), digital output terminals (three systems – 2 coaxial, 1 optical), fixed level output terminals (unbalanced/balanced), variable level output terminals (unbalanced)

REMOTE CONTROL UNIT RC-213

Remote control method:	Infrared pulse type
Power supply:	DC3V, two SUM-4 batteries
External dimensions:	60 (W) × 164 (H) × 16 (D) mm
Weight:	98 g (including batteries)

INCLUDED ACCESSORIES Connection pin code, mini SCREW DRIVER, RC-213, Batteries and Owners Manual.

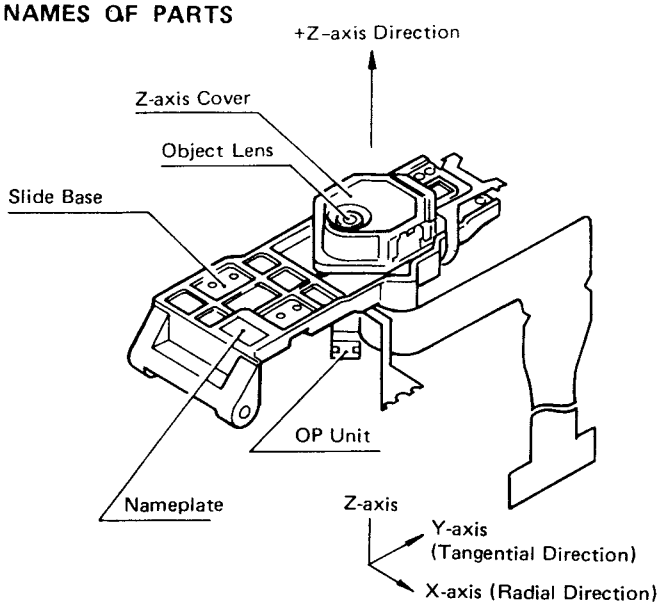
ADDITIONAL ACCESSORIES Wood side panels ACA-58

Please contact your local DENON dealer for any additional accessories you may need.

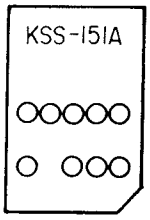
* For improvement purposes, specifications and design are subject to change without prior notice.

NOTE FOR HANDLING OF LASER PICK-UP

- **NAMES OF PARTS**



- **NAME PLATE**



Year (last figure)

Day Month | Quality Control No.

Lot No. ○○ ○ ○ ○

Note: Month indication X, Y, Z signify 10, 11,12.

Iop ○ ○ ○ ○

Control Letter by the Plant | 1 Figure 1st Decimal Place

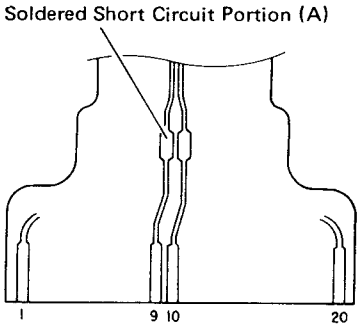
10 Figures

Indication unit is mA omitted a decimal point.

- **CONNECTION DIAGRAM OF CONECTOR (1)**

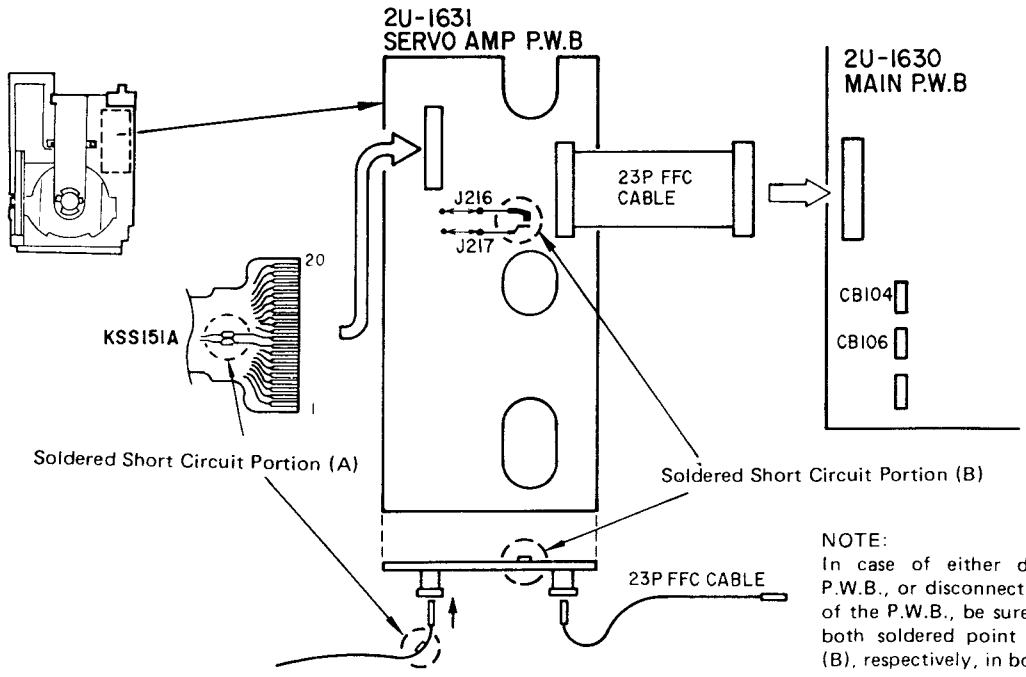
KSS 151A Accessory flexible wire terminals.

No.	Description	No.	Description
1	Linear motor	11	PD
2	Linear motor	12	VR
3	2-axis -F	13	GND
4	-T	14	PD D
5	+T	15	C
6	+F	16	A
7	Senser	17	B
8	Senser	18	K
9	LD GND	19	F
10	LD	20	E



- **CONNECTION DIAGRAM OF CONECTOR (2)**

KSS-151A → SERVO AMP P.W.B → MAIN P.W.B.



NOTE:
In case of either detaching the SERVO AMP P.W.B., or disconnecting the 23P FFC CABLE out of the P.W.B., be sure to make bridge soldered for both soldered point (A), and the soldered point (B), respectively, in both case.

Cautions for Handling the Laser Pick-up

The laser pick-up KSS-151A is assembled and precisely adjusted using a sophisticated manufacturing process in our plant. Do not disassemble or attempt to readjust it. Please keep the following instructions carefully in handling pick-up.

1. Handle with Care

(1) Storage
Do not store the pick-up in dusty, high-temperatured or high-humidity environments.

(2) Please take care for preventing from shock by falling down or careless handling.

2. Laser Diode (LD)

(1) Protect your eyes
The laser beam may damage the human eye, since the intensity of the focused spot may reach 7×10^3 W/cm^2 even if the intensity at the objective lens is 400 μW maximum. As the light beam spreads after focused through the objective lens, it does not effect you in the place as far as more than 30 cms. However, do not look at the laser light beam either through the objective lens directly nor another lens or a mirror.

(2) Poison of As
Since the LD chip contains As (Arsenic), as GaAs + GaAlAs, as known as the poison, although the poison is relatively weak, in comparing with others, e.g. As_2O_3, $AsCl_3$ etc., and the amount is small, avoid putting the chip in acid or an alkali solution, heating it over 200°C or putting it into your mouth.

(3) Avoid surge current or electrostatic discharge
The LD may be damaged or deteriorated by it's own strong light if a large current is supplied to it, even if only a short pulse.
Make sure that there is no surge current in the LD driving circuit by switches or else. Be careful to handle pick-up as it may be damaged in a moment by human electrostatic discharge. The pins of the LD are short-circuited by solder for protection during shipment.
For safety handling of an LD, grounding the human body, measuring equipments and jig is strongly recommended. And still it is further desirable to make use of mat on the platform and floor for handling the LD.
To open the short circuit, remove the soldering quickly with a soldering iron whose metal part is grounded. The temperature of the soldering iron should be less than 320°C (30W).

3. Actuator

(1) The performance of the actuator may be effected if magnetic material is located nearby, since the actuator has a strong magnetic circuit. Do not permit dust to enter through the clearance of the cover.

(2) Cleaning the lens
It may change the specifications by attaching dust or ash on the object lens. Clean the lens with a cleaning paper dampened a little water, not pressing lens with so much strength by the cleaning paper.

4. Metal Bearing

As the metal bearing of Cu-compound sintered alloy is impregnated with FROIL946P(*Part No. 529 0054 007), never fail to supply the bushing with the same lubricant at the time of replacing the pick-up.

5. Handling

Please handle the laser pick-up with holding the slide base (rosin molded part).
When either a part of human body or some other things may happen to touch directly with the circuit part of P.W. Board, it may cause deterioration, take careful attention in handling this base.

6. Deterioration

When difficulty occurs either in focus or tracking adjustment nor able to adjust the focus or tracking, it seems that the laser pick-up is deteriorated. In these cases, check a value of laser diode current and give a decision for deterioration.

7. Fundamental Deterioration Decision of Laser Pick-up

(1) If a voltage value in between No. 2 and No. 6 pins of TP102 of the servo and signal processor unit, the value of laser diode current "iop" can be found by a formula "iop1" = $\frac{V1}{22}$.

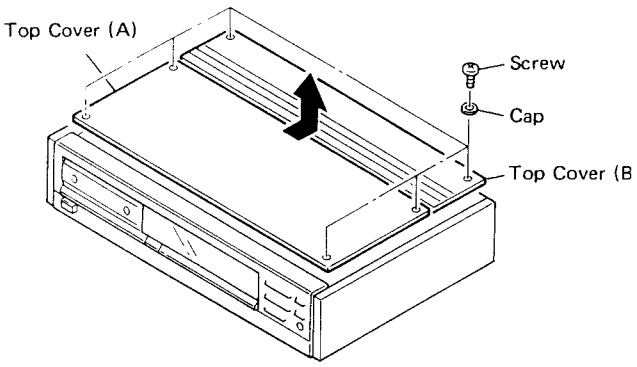
(2) If an "iop" exceeds ±10% compared with the IOP indication on the laser pick-up nameplate, there is a fair chance for deterioration when it is checked under a circumambient temperature 23°C.

(3) When the circumambient temperature changes ±10°C, "iop1" will change ±5%. The "iop1" will also be changed by the passage of time.

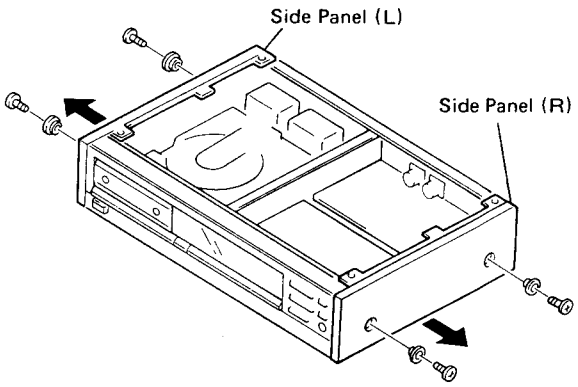
(4) In case of the above conditions taking into consideration and performed the adjustment in proper way, if the HF level at pin No. ① of TP102 on Main Unit, and in between GND4 becomes 1V or lesser values; or ajitter occurs great, the laser pick-up may be deteriorated.

DISASSEMBLY

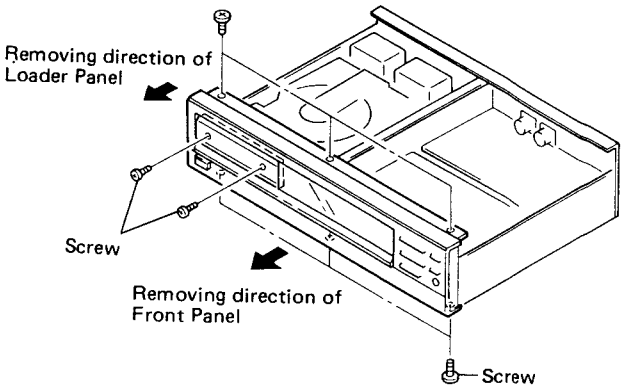
1. **Top Covers (A) (B) Removal**
   Remove 6 screws on the top and detach the Top Covers (A) (B) as per the arrow shows.



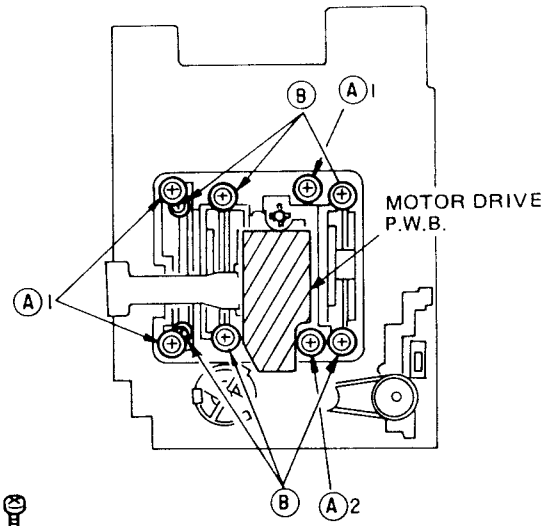
2. **Side Panels (L) (R) Removal**
   Unfasten 4 screws from the both sides and remove the Side Panels (L) (R) as per the arrow shows.



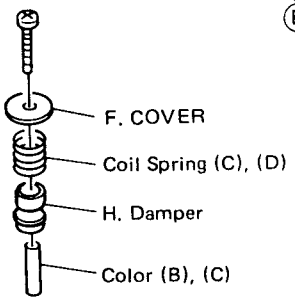
3. **Front Panel Removal**
   After unsecure 2 screws and remove the loader panel as indicated by the arrow, unfasten 6 screws on the top and bottom and detach the Front Panel as per the arrow shows.



- **Housing Ass'y Removal**
  - Removing 4 screws Ⓐ 1, Ⓐ 2 enables detaching the laser pick-up magnet, yoke, turntable, and spindle motor as one assembly.
  - Unfastening screws Ⓐ1, Ⓐ2 pemits disassembling the parts for floating as illustration shows.
  - A common type are used for F cover and H damper, but the 2 different types are utilized for coil spring and collar to keep balance. Remind this at the time of assembling.



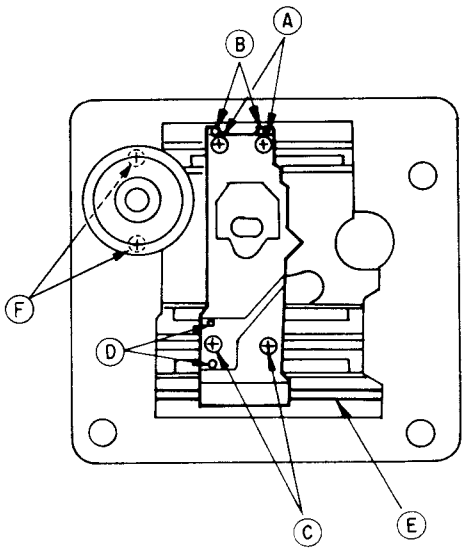
A -1	463 0515 000 Coil spring (D)	433 0485 100 Collar (B)
A -2	463 0514 001 Coil spring (C)	433 0514 107 Collar (C)



- Coil Spring (D) (utilizing 3 each) is marked in red.
- Coil Spring (C) (utilizing 1 each) is without marking.
- Collar (C) (utilizing 1 each) is nickel plated brass.
- Collar (B) (utilizing 3 each) is black plated brass.

- **Laser Pick-up KSS-151A Removal**

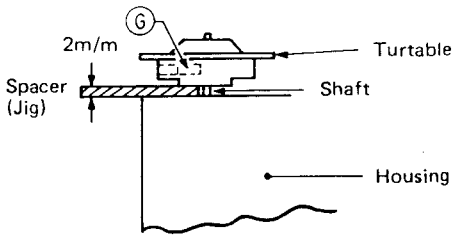
(1) Remove the housing ass'y in the first place, then loosen the screw (refer to "Mechanism Exploded View" (59)) mounting the turntable, and detach the turntable.
(2) Unfasten 2 screws Ⓕ and detach the spindle motor ass'y.
(3) Remove 6 screws Ⓑ as indicated in the illustration of "Housing Ass'y Removal".
(4) Unsecure 2 screws Ⓐ and unsolder 2 places Ⓑ and detach the speed detection coil.
(5) Remove 2 screws Ⓒ and unsolder 2 places Ⓓ and detach the drive coil.
(6) Pulling out the shaft in the portion Ⓔ permits detaching the Laser Pick-up.



MECHANISM UNIT ADJUSTMENT

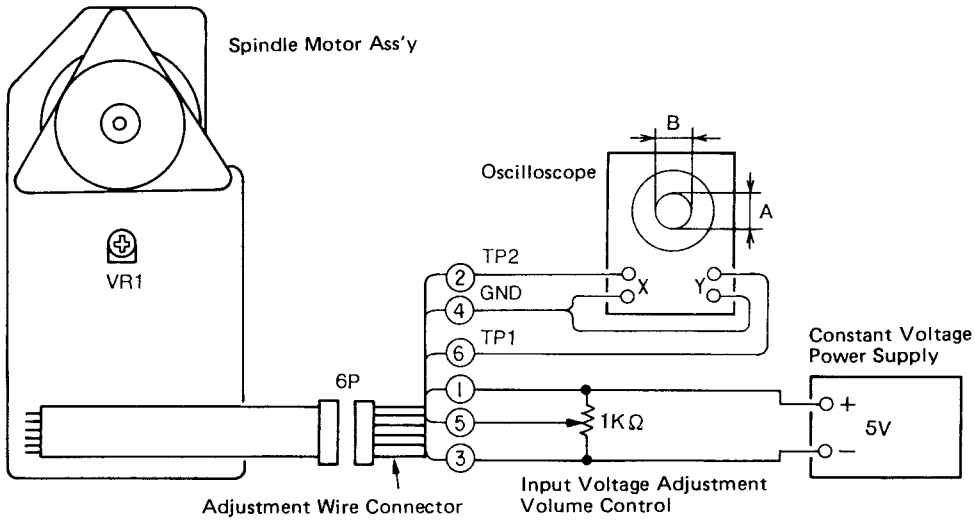
- **Turntable Height Adjustment**

(1) Mount the spindle motor ass'y to the housing with 2 screws. (Refer to the illustration of "Laser Pick-up KSS-151A Removal")
(2) Set the Turntable to the shaft and insert the 2 mm spacer (jig) between the Turntable and the housing as illustration shows.
(3) While lightly pressing the Turntable from the top side, tighten screw Ⓖ with a hex. wrench.

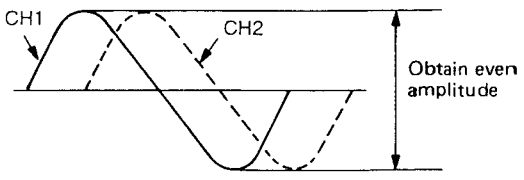


- **Spindle Motor Adjustment**

(1) Disassemble Mechanism Unit in the first place, then detach the Spindle Motor Ass'y.
(2) Connect the adjustment wire connector (6P) to the measuring equipments as per illustration shows.



(3) Adjust the balance volume control VR1 and obtain even amplitude for vertical (A) and horizontal (B). (Rotating the VR causes shifting (B) amplitude.)
(4) In case using a dual mode oscilloscope to execute adjustment, set it to ALTER or CHOPPER mode and apply a signal to CH1 and CH2. Then adjust the balance volume control VR1 and obtain even amplitude for both waveforms as illustration shows.



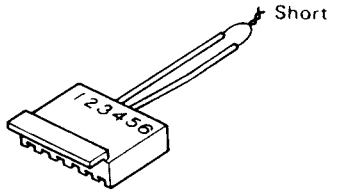
Note: Be noted that a greater input signal causing the saturation of waveform.

ADJUSTMENT

Microcomputer built in the unit, comprises service program to facilitate servo adjustment by pushing operation button.

1. Start service program

(1) Turn power switch OFF.
(2) Shortcircuit pins ③, ④ of connector (TP102) on P.W.B. (Main Unit)
(Caution) Do not touch other pins.
(3) Turn power switch ON.
(Service program starts, and displays track number 01)



Short-Circuit Connector Jig for TP102

(Caution)
- When service program started normal operation of buttons will be defeated.

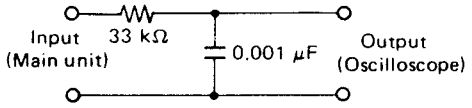
2. Service program function

Button	Function	Description
▲ OPEN/CLOSE	Opens or closes the disc holder.	• Opens or closes only when disc is stopped. • Operate other keys after open or close .
■ STOP	Stops system function.	• Displays track number 01. • Push when adjustment completed, or do it again.
▶ PLAY	Starts focus servo and disc turns.	• Push when adjust tracking offset. • When completed, displays track number 02.
❚❚ PAUSE	Starts focus servo, tracking servo, slide servo, spindle servo.	• When PLAY button is pushed, starts tracking servo and slide servo. • When completed, track number 03.
Other button	No normal operation.	• Do not operate buttons other than above. • If misoperated, immediately turn power switch OFF.

(Caution)
- Do not use remote control during service program mode.

3. Adjustment

(1) Prior to start adjustment
Before adjusting laser P.U. and spindle motor, be sure adjust turntable height at the time of turntable assembly.
(2) Necessary equipment for adjustment
1 Dual trace oscilloscope
2 Reference disk (CA-1094) 富田靖子
3 Oscillator (10 Hz ~ 10 kHz, 0 ~ 3 Vp-p)
4 Frequency counter (readable more than 5 MHz)
5 Filter for measurement



(Filter for measurement)

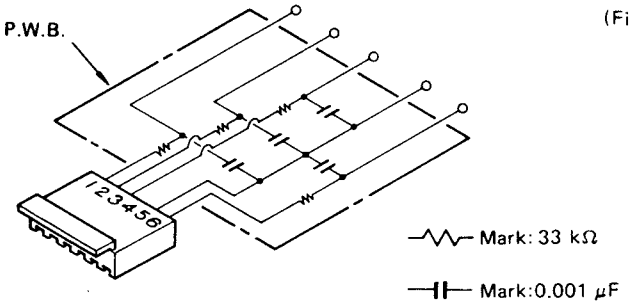
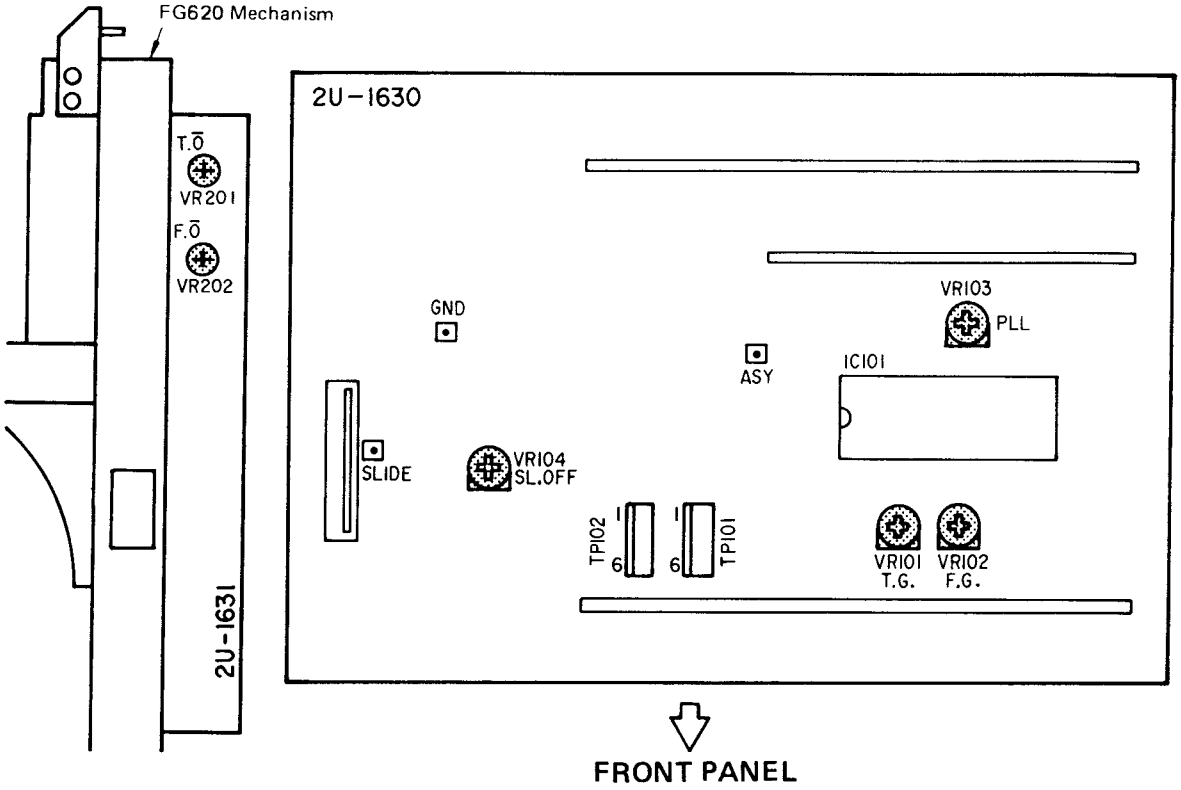


Figure Jig Combination

(3) Location

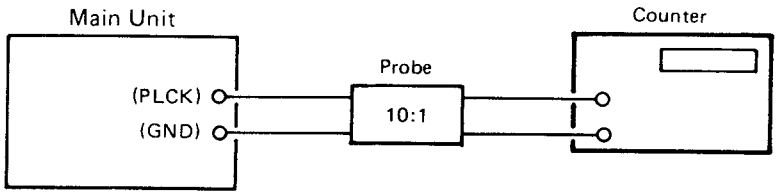


(4) Preset

1.	Start service program.	
2.	Preset VR101 ~ 104, 201, 202 as per left figure.	VR201 (T.O) Center; VR104 (S.O) 6 o'clock; VR103 (PLL) 6 o'clock; VR202 (F.O) Center; VR101 (T.G) 6 o'clock; VR102 (F.G) 6 o'clock
3.	Step.	1. PLL 2. Slide offset 3. Tracking offset 4. Focus gain 5. Focus offset 6. Tracking gain 7. Tracking offset recheck

4. PLL Adjust

Connection

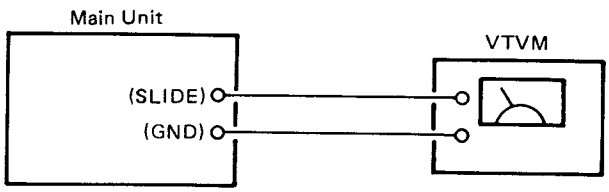


- Ground Test point [ASY] to GND.

Adjust	Check	Step
(Volume)	(Counter)	• Turn PLL volume VR103 so that frequency counter reads 4.32 MHz.
VR103	4.32 MHz ± 10 kHz	

5. Slide offset

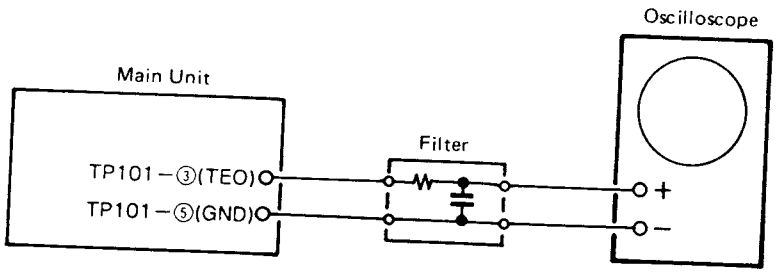
Connection Diagram

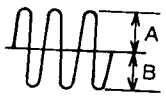


Adjustment Point	Confirming Matter	Adjustment Procedure
Volume Control	(VTVM)	Rotate the volume control VR104 (SLIDE OFFSET) and adjust the value to 0V on the VTVM. (Disc in the stop mode.)
VR104	0V ± 50 mV	

6. Tracking offset

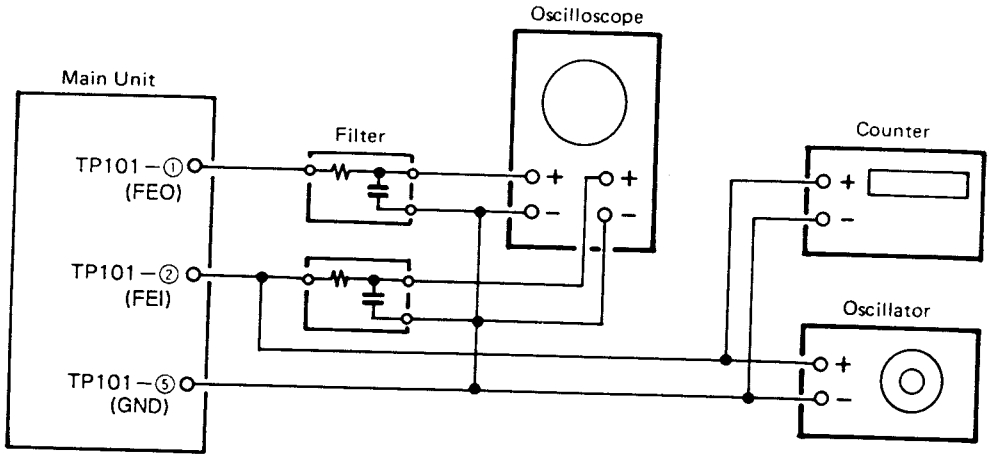
Connection



Oscilloscope (DC range)		Adjust	Check	Step
V	H	(Volume)	(Oscilloscope)	
0.1V/div	1~2 ms/div	VR201 [2U-1631 Servo Amp unit]	 A=B	1. Push [▲ OPEN/CLOSE] and load disc holder reference disk. 2. Push [▲ OPEN/CLOSE] and close disc holder. 3. Push [▶ PLAY] to turn disc. (Displays track number 02) 4. Short (+) (-) of oscilloscope and check the base line. 5. Adjust VR201 [T-OFFSET] to equalizer upper and lower amplitude of the waveform.

7. Focus gain

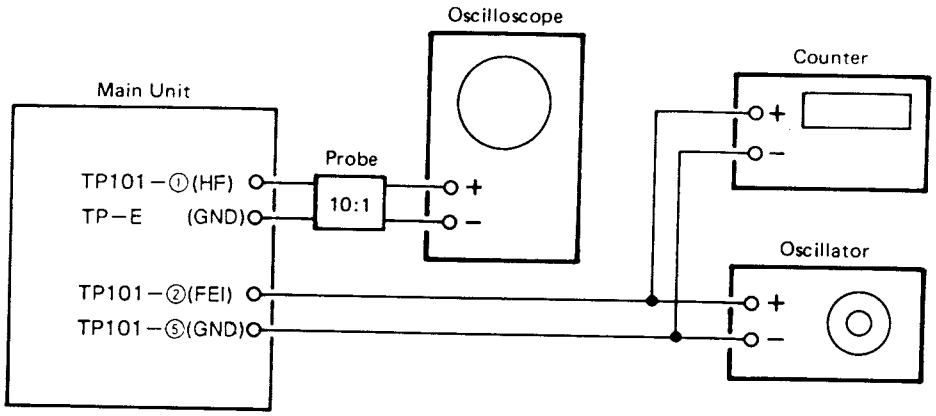
Connection

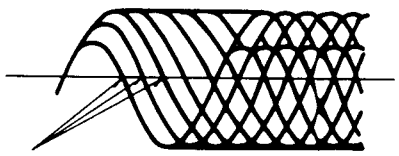
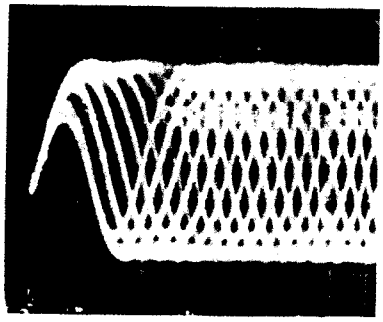


Oscillator	Counter	Oscilloscope V	Oscilloscope H	Adjust	Check	Step
580 Hz 1 Vp-p (±0.1 V)	580 Hz	• DC range • X-Y mode		VR102	(Oscilloscope) Y axis X axis Phase 90° Waveform not right X axis Y axis	1. Push [II PAUSE] (Displays track number 03) 2. Set oscillator to 580 Hz/1 Vp-p. 3. Switch oscilloscope input to X-Y mode. 4. Adjust VR102 [F-GAIN] to symmetrize Lissajous figures to X and Y axes.

8. Foucs offset

Connection



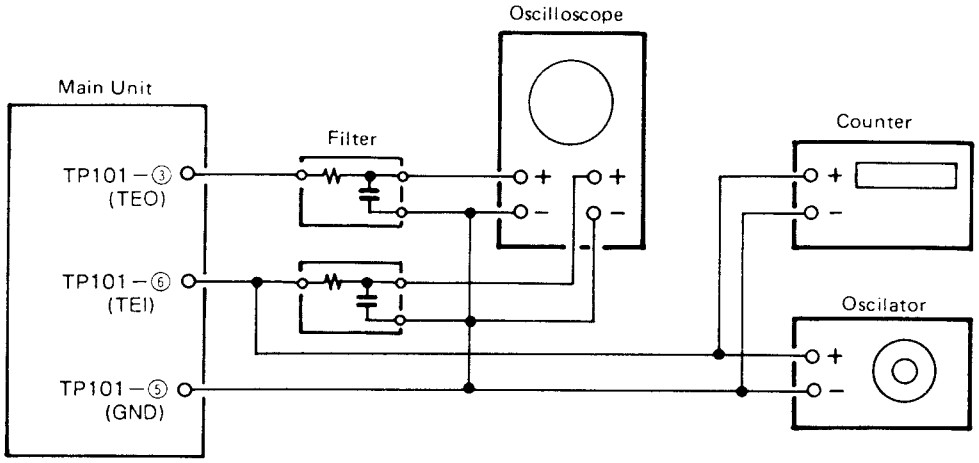
Oscillator	Counter	Oscilloscope		Adjust	Check
		V	H	(Volume)	(Oscilloscope)
580 Hz 1 Vp-p (±0.1 V)	580 Hz	50 mV/div or 20 mV/div	0.2 μs/div or 0.5 μs/div	VR202 [2U-1631 Servo Amp unit]	 Adjust to minimize pattern jitter.
		• Set input mode to ALTERNATE or CHOPPER.			 Pattern

Step

1. Push [II PAUSE].
2. Set oscillator to 580 Hz, 1 Vp-p (±0.5 V).
3. VR202 [F-OFFSET] to minimize pattern jitter.

9. Tracking gain

Connection



• Caution: Connect oscillator after [II PAUSE] pushed and servo function started.

Oscillator	Counter	Oscilloscope V	Oscilloscope H	Adjust	Check	Step
				(Volume)	(Oscilloscope)	1. Push [II PAUSE]. (Displays track number 03)
• 1.8 HkHz • 3 Vp-p (±0.1V)	1.8 kHz	• DC range • X-Y mode		VR101	Y axis / X axis / Phase 90°	2. Connect oscillator. 3. Set oscillator to 1.8 kHz/3 Vp-p. 4. Switch oscilloscope input to X-Y mode. 5. Adjust VR104 [T-GAIN] to symmetrize Liseajous figures to X-Y axes.

10. Tracking offset adjustment check

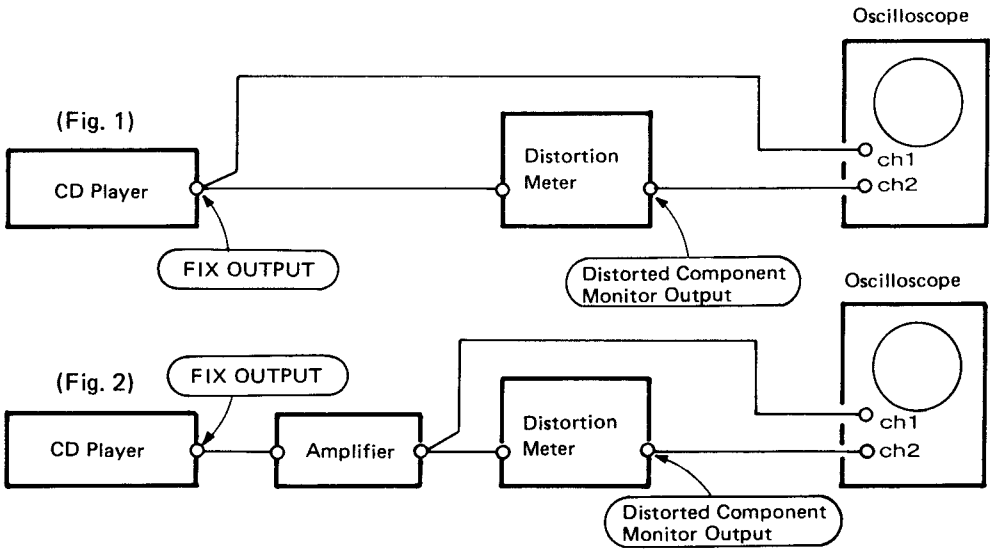
(1) Adjust tracking offset again.
(2) Push [■STOP] and stop disc.
(3) Push [▶PLAY] and check disc turns.
Note: If disc does not turn, push [▶PLAY] again and check track number 02 is diasplayed.
(4) Check oscilloscope waveform upper and lower amplitude are same to base line.
(5) Push [■STOP] and stop disc.
(6) Push [▲OPEN/CLOSE] and remove the reference disc.

11. Super Linear Converter

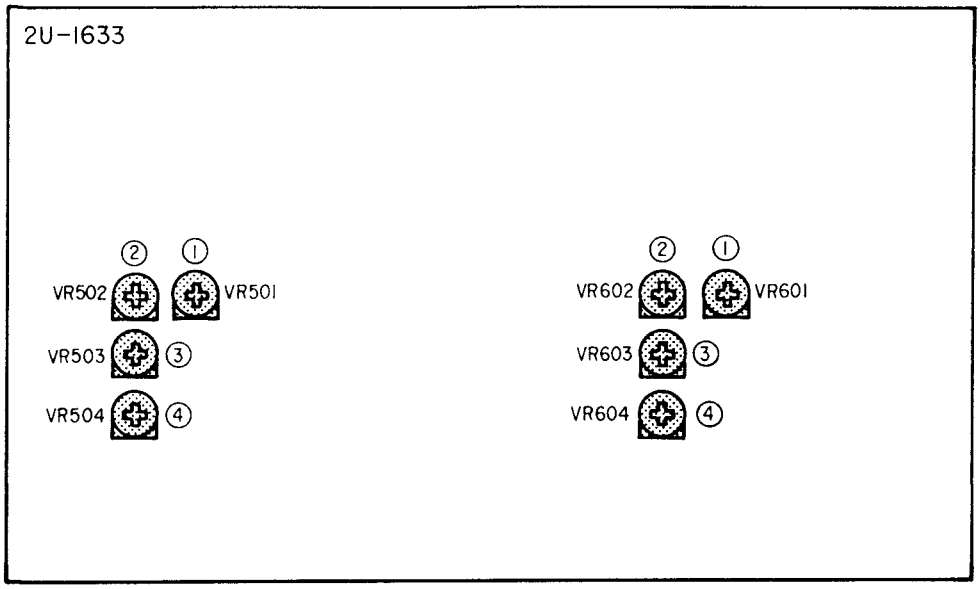
- Required Measuring Equipments
  (1) Distortion Meter: To be able to measure up to 0.001%.
  (2) Amplifier: Gain 60 dB, distortion – less than 0.1% (electronic VTVM, etc.).
  (3) DENON TECHNICAL DISC: 100 Hz / 0 dB, 1 kHz / -60 dB.
  (4) Oscilloscope

Note: Because the unit is precisely adjusted by the factory, do not attempt to adjust the unit easily if the above equipment are not on hand.

Connection Diagram



Distortion Meter	Adjustment Point	Confirming Matter	Adjustment Procedure
LPF "ON"	SLC Volume (L ch) VR501 ① 502 ② 503 ③ 504 ④	Oscilloscope 100Hz 0dB (ch1) Observe the dislorted component of this portion. (ch2) ①②③④ SLC Volume • Adjust the VRs consecutively to obtain the peak portions of distorted component become smooth.	1. Connect as per Connection Diagram (Fig. 1). 2. Playback DENON TECHNICAL DISC 100 Hz / 0 dB tone. 3. Adjust the SLC volume controls ①, ②, ③, ④ consecutively and obtain minimum distorted waveform on the scope. 4. Re-adjust step 3. 5. Connect as per Connection Diagram (Fig. 2). 6. Playback the Test Disc 1 kHz / –60 dB tone. 7. Adjust the SLC volume control ④ for minimum distorted waveform on the scope. 8. Apply the above adjustments for both channels.
Oscilloscope			
Trigger CH1	(R ch) VR601 ① 602 ② 603 ③ 604 ④		



HEAT RUN MODE FUNCTION

Heat Run Mode

1) To activate

While hold pushing AUTO EDIT, A-B and ⏮ keys simultaneously, turn the unit power on. The remote control sensor indicator will light to show that the unit is shifted in Heat Run mode.

Be sure to load the disc previously.

Press the disc holder open/close button (⏏OPEN/CLOSE) to cancel Heat Run mode.

★ **This mode functions only for a disc with 21 pieces of music or more. For a disc with 20 pieces of music or lesser, please do not use.**

2) Operation

During the Heat Run mode to shift the unit in Play mode makes the unit replays from the first music after opens the loader once and re-closes it when finish playing the last track (comes into lead out).

Hereafter, operates open/close of loader, servo on, reading of TOC, and playing repeatedly, and repeats playing the two traks; the first and the last ones.

3) Error Message

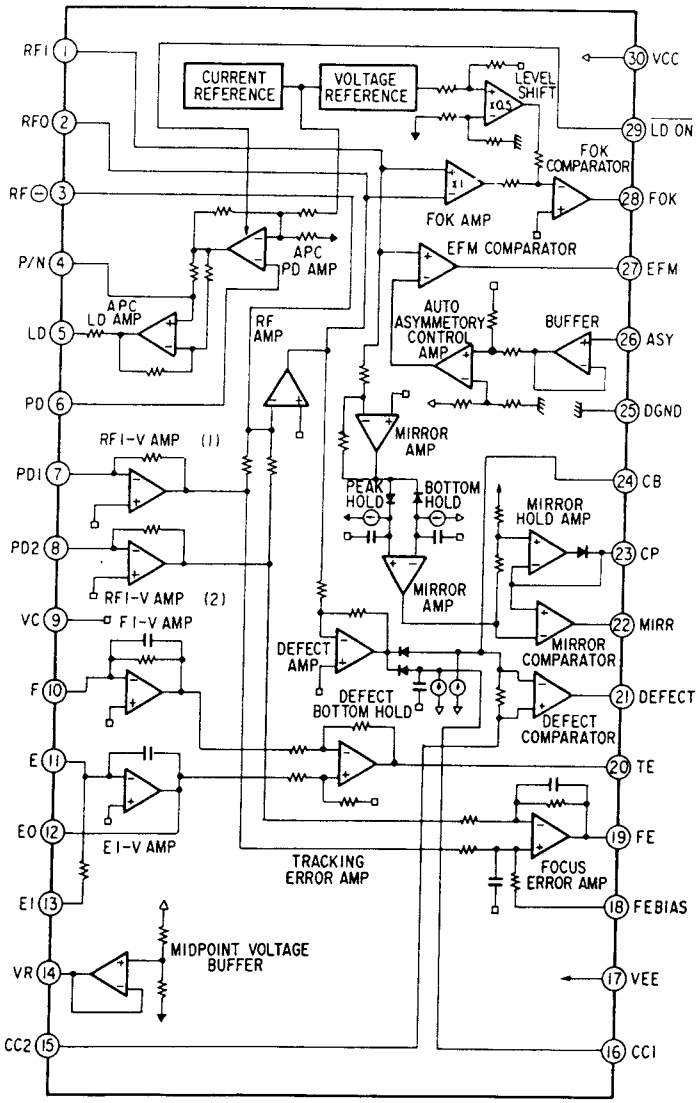
When the system error occurs while in Heat Run mode, the following error message will display on the Track No. indicator and stops operation.

1. E1
   At the time of Focus Servo does not activate.
2. E2
   When unable to detect synchronous pattern however the disc is in rotating. (GFS does not drive.)
3. E3
   No synchronous pattern can be detected while in Play mode. (No GFS drives.)
4. E4
   When TOC is unreadable in despite of servo is activated.
5. E5
   In case of loader malfunctions. (Unable to turn on the switch.)
6. E6
   The inner circle switch of Pick-up does not turn off.
7. E7
   The inner circle switch of Pick-up does not turn on.

★ The number of operation up to the stop will be displayed on the minute and second portion of the indicator.

IC TERMINAL FUNCTION LIST

CXA1081S



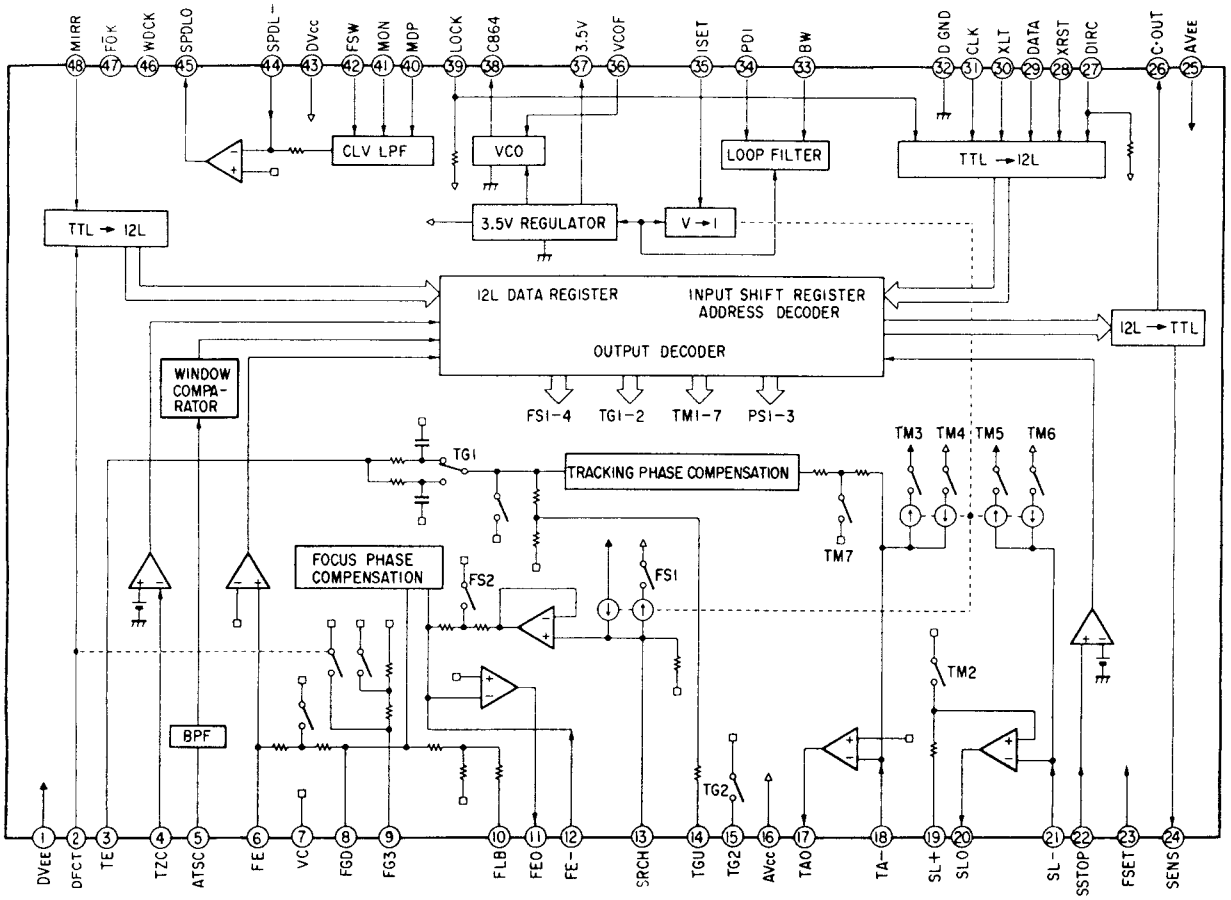
CXA1081S Terminal Function

Terminal No.	Terminal Symbol	I/O	DC voltage (V)	Terminal Function
1	RFI	I	0	Input terminal of capacitance coupled RF summing amplifier output.
2	RFO	O	V_{RFO}	Terminal for RF summing amplifier output. Check point of Eye pattern.
3	RF(–)	I	0	Feedback input terminal of RF summing amplifier.
4	P/N	I	0 (VC)	P-sub/N-sub shifting terminal for Laser Diode (LD). (DC voltage: at N-sub.)
5	LD	O	-1.8	Output terminal of APC (Automatic Power Control) LD amplifier. (DC voltage: at N-sub, PD opened.)
6	PD	I	0	Input terminal of APC (Automatic Power Control) PD amplifier. (DC voltage: opened.)
7	PD1	I	0	Reverse input terminal of RF I-V amplifier (1). Receives a input current through A + C terminals of photo diode.
8	PD2	I	0	Reverse input terminal of RF IV amplifier (2). Receives a input current through B + D terminals of photo diode.
9	VC	–	0	At ± dual-power supply: Becomes GND. At mono-power supply: Becomes VR. (connect to pin 14.)
10	F	I	0	Reverse input terminal of F I-V amplifier. Receives a input current through F terminal of photo diode.
11	E	I	0	Reverse input terminal of E I-V amplifier. Receives a input current through E terminal of photo diode.
12	EO	O	0	Output terminal of E I-V amplifier.
13	EI	I	0	Feedback input terminal of E I-V amplifier. For gain controlling of E I-V amplifier.
14	VR	O	V_{CVO}	Output terminal of DC voltages $(V_{CC} + V_{EE})/2$.
15	CC2	I	1.0	Input terminal of capacitance coupled defect bottom hold output.
16	CC1	O	1.2	Output terminal of defect bottom hold.
17	V_{EE}	–	-2.5	At ± dual-power supply: Becomes negative power supply terminal. At mono-power supply: Becomes GND.
18	FE BIAS	I	0	Bias terminal for non-reverse side of focus error amplifier. For CMR controlling of focus error amplifier.
19	FE	O	V_{FEO}	Output terminal of focus error amplifier.
20	TE	O	V_{TEO}	Output terminal of tracking error amplifier.
21	DEFECT	O	V_{DFCTL}	Output terminal of defect comparator. (DC voltage: Connect a 10 kΩ load resistance.)
22	MIRR	O	V_{MIRL}	Output terminal of MIRR comparator. (DC voltage: Connect a 10 kΩ load resistance.)
23	CP	I	-1.3	Connecting terminal for MIRR hold capacitor. Non-reverse input terminal of MIRR comparator.
24	CB	I	0	Connecting terminal for defect bottom hold capacitor.
25	D GND	–	-2.5	At ± dual-power supply: GND. At mono-power supply: GND (V_{EE}).
26	ASY	I	–	Input terminal of auto-asymmetry control.
27	EFM	O	V_{EFMH}	Output terminal of EFM comparator. (DC voltage: Connect a 10 kΩ load resistance.)
28	FOK	O	V_{FOKL}	Output terminal of focus OK comparator. (DC voltage: Connect a 10kΩ load resistance.)
29	$\overline{\text{LD ON}}$	I	-2.5 (D GND)	ON/OFF shifting terminal for laser diode (LD). (DC voltage: At LD ON.)
30	V_{CC}	–	2.5	Positive power supply terminal.

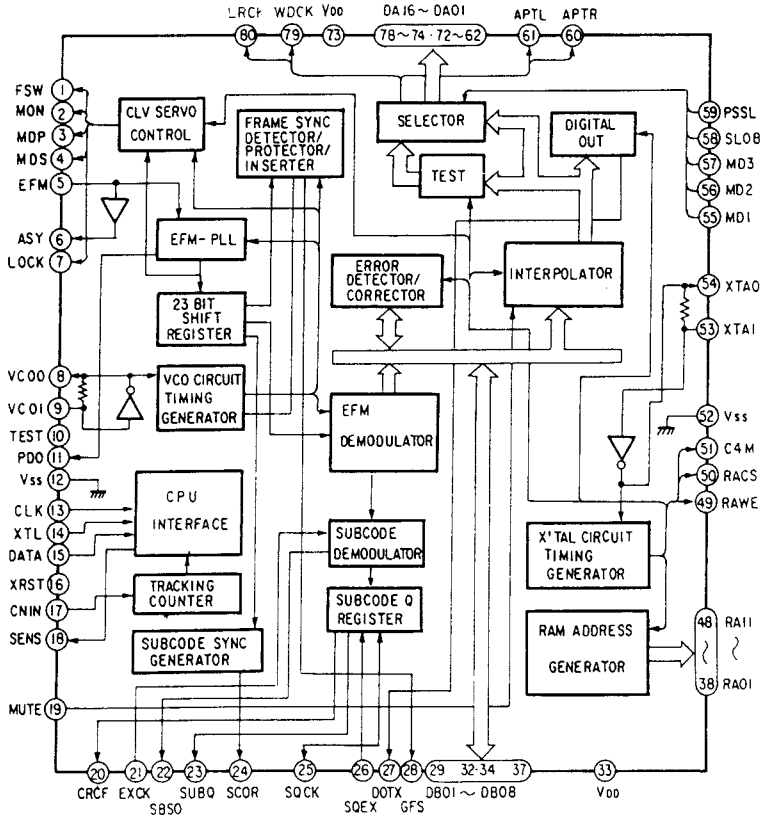
CXA1082AS/1182S Terminal Function

Terminal No.	Terminal Symbol	Terminal Function
2	DFCT	Defect signal input terminal. Defect measure circuit activates at "H".
3	TE	Tracking error signal input terminal.
4	TZC	Tracking zero cross comparator input terminal.
5	ATSC	Input terminal of ATSC detecting window comparator.
6	FE	Focus error signal input terminal.
8	FGD	In case of reducing higher range gain of focus servo, connect a capacitor between this terminal and terminal number (9).
9	FS3	Shifts higher range gain of focus servo by FS3 ON/OFF.
10	FLB	Terminal for external time constant to increase lower range of focus servo.
11	FEO	Focus drive output.
12	FE(–)	Reverse input terminal for focus amplifier.
13	SRCH	Terminal for external time constant to make focus search waveform.
14	TGU	Terminal for external time constant to shift higher range gain of tracking.
15	TG2	Terminal for external time constant to shift higher range gain of tracking.
17	TAO	Tracking drive output.
18	TA(–)	Reverse input terminal for tracking amplifier.
19	SL(+)	Non-reverse input terminal of sled amplifier.
20	SLO	Sled drive output.
21	SL(–)	Reverse input terminal of sled amplifier.
22	SSTOP	Terminal for limit switch ON/OFF to detect disc inner most circle.
23	FSET	Terminal to compensate peak in focus tracking phase, and for setting F_O in CLV LPF.
24	SENS	Terminal to output FZC, AS, TZC, SSTOP, $\overline{BUSY}$ by command from CPU.
26	C. OUT	Terminal to output signal for track number count.
27	DIRC	Terminal is used at the time of 1 track jump. A 47 kΩ pull up resistor is included.
28	XRST	Reset input terminal. Resets at "L".
29	DATA	Serial data input from CPU.
30	XLT	Latch input from CPU.
31	CLK	Serial data transfer clock input from CPU.
33	BW	Terminal for external time constant of loop filter.
34	PDI	Input terminal of PDO for CXD1125 phase comparator.
35	ISET	Delivers a current to set the height of focus search, track jump, and sled kick.
36	VCOF	Resistance value between this terminal and terminal (37) is nearly proportion to VCO free-run frequency.
38	C864	Output terminal of 8.64 MHz VCO.
39	LOCK	Reckless drive protection circuit activates at "L". A 47 kΩ pull up resistor is included.
40	MDP	Terminal to connect MDP terminal of CXD1125.
41	MON	Terminal to connect MON terminal of CXD1125.
42	FSW	Terminal for external LPF time constant of CLV servo error signal.
44	SPDL(–)	Reverse input terminal for spindle drive amplifier.
45	SPDLO	Spindle drive output.
46	WDCK	Clock input for auto-sequence. Normally applied 88.2 kHz.
47	FOK	FOK signal input terminal.
48	MIRR	MIRR signal input terminal.

CXA1082AS/1182S



CXD1125Q



CXD1125Q Terminal Function

Terminal No.	Terminal Symbol	I/O	Terminal Function
1	FSW	O	Output to shift time constant of output filter for spindle motor.
2	MON	O	ON/OFF control output for spindle motor.
3	MDP	O	Drive output for spindle motor. Rough control at CLV-S mode and phase control at CLV-P mode.
4	MDS	O	Drive output for spindle motor. Speed control at CLV-P mode.
5	EFM	I	Input of EFM signal from RF amplifier.
6	ASY	O	Output to control slice level of EFM signal.
7	LOCK	O	Sampling GFS signal by WFCK/16 and if it is "H", delivers "H"; if it is continuously "L" 8 times, delivers "L".
8	VCOO	O	VCO output. When EFM signal is locked, f=8.6436 MHz.
9	VCOI	I	VCO input.
10	TEST	I	(0V).
11	PDO	O	Phase comparing output for EFM signal and VCO/2.
12	Vss	–	GND (0V).
13	CLK	I	Serial data transfer clock input from CPU. Latches data by rising edge of clock.
14	XLT	I	Input of Latch from CPU. Latches 8-bit shift register data (serial data from CPU) to each register.
15	DATA	I	Input of serial data from CPU.
16	XRST	I	System reset input. Resets at "L".
17	CNIN	I	Input of tracking pulse.
18	SENS	O	Answer to address, output internal condition.
19	MUTG	I	Input of muting. When internal register A's ATTM is in "L", and MUTG is in "L" for normal condition; "H" for no sound condition.
20	CRCF	O	Output of CRC check result of sub-code Q.
21	EXCK	I	Clock input for serial output of sub-code.
22	SBSO	O	Serial output of sub-code.
23	SUBQ	O	Q output of sub-code.
24	SCOR	O	Output of sub-code sync. S0 + S1.
25	SQCK	I/O	Reading clock of sub-code Q.
26	SQEX	I	Selection input of SQCK.
27	DOTX	O	Digital out output. (When CXD1130Q or DO is OFF, output $\overline{\text{WFCK}}$.)
28	GFS	O	Output of indication for frame sync lock condition.
29	DB08	I/O	Data terminal of external RAM. DATA8 (MSB).
30	DB07	I/O	Data terminal of external RAM. DATA7.
31	DB06	I/O	Data terminal of external RAM. DATA6.
32	DB05	I/O	Data terminal of external RAM. DATA5.
33	V_{DD}	–	Power supply (+5V).
34	DB04	I/O	Data terminal of external RAM. DATA4.
35	DB03	I/O	Data terminal of external RAM. DATA3.
36	DB02	I/O	Data terminal of external RAM. DATA2.
37	DB01	I/O	Data terminal of external RAM. DATA1 (LSB).
38	RA01	O	Address output of external RAM. ADDR01 (LSB).
39	RA02	O	Address output of external RAM. ADDR02.
40	RA03	O	Address output of external RAM. ADDR03.
41	RA04	O	Address output of external RAM. ADDR04.
42	RA05	O	Address output of external RAM. ADDR05.
43	RA06	O	Address output of external RAM. ADDR06.
44	RA07	O	Address output of external RAM. ADDR07.
45	RA08	O	Address output of external RAM. ADDR08.

Terminal No.	Terminal Symbol	I/O	Terminal Function
46	RA09	O	Address output of external RAM. ADDR09.
47	RA10	O	Address output of external RAM. ADDR10.
48	RA11	O	Address output of external RAM. ADDR11.
49	RAWE	O	Write enable signal output for external RAM. (Active at "L".)
50	RACS	O	Chip select signal output for external RAM. (Active at "L".)
51	C4M	O	Dividing output of X'tal. f = 4.2336 MHz.
52	V_{SS}	–	GND (0V).
53	XTAI	I	X'tal oscillation circuit input. By selecting of mode, f = 8.4672 MHz or 16.9344 MHz.
54	XTAO	O	X'tal oscillation circuit output. By selecting of mode, f = 8.4672 MHz or 16.9344 MHz.
55	MD1	I	Mode selection input 1.
56	MD2	I	Mode selection input 2.
57	MD3	I	Mode selection input 3.
58	SLOB	I	Code switching input for audio data output. At "L" for 2's compliment output; at "H" for offset binary output.
59	PSSL	I	Mode switching input for audio data output. At "L" for serial output; at "H" for parallel output.
60	APTR	O	Control output for aperture compensation. In "H" for R-ch.
61	APTL	O	Control output for aperture compensation. In "H" for L-ch.
62	DA01	O	At PSSL = "H" for DA01 (LSB of parallel voice data) output. At PSSL = "L" for C1F1 output.
63	DA02	O	At PSSL = "H" for DA02 output; PSSL = "L" for C1F2 output.
64	DA03	O	At PSSL = "H" for DA03 output; PSSL = "L" for C2F1 output.
65	DA04	O	At PSSL = "H" for DA04 output; PSSL = "L" for C2F2 output.
66	DA05	O	At PSSL = "H" for DA05 output; PSSL = "L" for C2FL output.
67	DA06	O	At PSSL = "H" for DA06 output; PSSL = "L" for C2PO output.
68	DA07	O	At PSSL = "H" for DA07 output; PSSL = "L" for RFCK output.
69	DA08	O	At PSSL = "H" for DA08 output; PSSL = "L" for WFCK output.
70	DA09	O	At PSSL = "H" for DA09 output; PSSL = "L" for PLCK output.
71	DA10	O	At PSSL = "H" for DA10 output; PSSL = "L" for UGFS output.
72	DA11	O	At PSSL = "H" for DA11 output; PSSL = "L" for GTOP output.
73	V_{DD}	–	Power supply (+5V).
74	DA12	O	At PSSL = "H" for DA12 output; PSSL = "L" for RAOV output.
75	DA13	O	At PSSL = "H" for DA13 output; PSSL = "L" for C4LR output.
76	DA14	O	At PSSL = "H" for DA14 output; PSSL = "L" for $\overline{C21O}$ output.
77	DA15	O	At PSSL = "H" for DA15 output; PSSL = "L" for C21O output.
78	DA16	O	At PSSL = "H" for DA16 (MSB of parallel voice data) output. At PSSL = "L" for DATA output.
79	WDCK	O	Strobe signal output. At DF ON, 176.4 kHz. At CXD1125Q or DF OFF, 88.2 kHz.
80	LRCK	O	Strobe signal output. At DF ON, 88.2 kHz. At CXD1125Q or DF OFF, 44.1 kHz.

Note:

C1F1:] Monitor output for error correction state what C1 is at
C1F2:] decode.

C2F1:] Monitor output for error correction state what C2 is at
C2F2:] decode.

C2FL: Correction state output. Becomes "H" when C2 system in which presently under correction is unable to correct.

C2PO: C2 pointer indication output. Synchronizes with audio data output.

RFCK: Read frame clock output. 7.35 kHz of X'tal system.

WFCK: Write frame clock output. 7.35 kHz when locked on to X'tal system.

PLCK: VCO/2 output. When locked to EFM signal, f = 4.3218 MHz.

UGFS: Output of unprotected frame sync pattern.

GTOP: Indication output of frame synchro in protected condition.

RAOV: Overflow and underflow indication outputs of ±4 frame jitter absorbing RAM.

C4LR: Strobe signal. At DF ON, 352.8 kHz. At CXD1125Q or DF OFF, 176.4 kHz.

$\overline{C21O}$: Reverse output of C210.

C21O: Bit clock output. At DF ON, 4.2336 MHz. At CXD1125Q or DF OFF, 2.1168 MHz.

DATA: Serial data output of audio signal.

PARTS LIST OF P.W. BOARD

2U-1630 SERVO & SIG. UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC101	2620843001	CXA-1082AS	
IC102	2621001004	SM5803AP-1	
IC103	2630244001	NJM082D	
IC104,105	2630257001	M5218P	
IC106	2620729002	HD74HC08P	
IC107	2630569003	TC74HC02P	
IC108	2630570005	TC74HC112P	
	2680072003	ICP-N10	
IC301	2621039005	M50957-116SP	
IC302	2630423000	M51953B	
IC303	2620632005	BA6208A	
IC401	2630432907	NJM78L05AT	
IC402	2630254004	NJM78M05A	
IC403	2680047009	NJM7805A	
IC404	2630509005	NJM7905A	
IC405～407	2680074904	ICP-N20	
TR1,2,201	2690026900	RN2202(10K-10K)T	
TR101,103 107	2740123009	2SD1985(P/Q)	
TR102,104, 108	2720085002	2SB941A(Q)/(P)	
TR105	2740036002	2SD468(C)	
TR106,401	2720025004	2SB562(C)	
TR109,110	2730178019	2SC1740(S)	
TR111,112	2690038901	RN1210(4.7K--)T	
TR113	2710101925	2SA933(Q)T-70	
TR202	2690025901	RN1202(10K-10K)T	
D101,102	2760432000	1SS270A	
D201	2760049011	1S2076A	
D301～306	2760432000	1SS270A	
D401	2760405008	S1WB(A)10	
D402,403	2760427905	DSM1A2 Type2	
D404	2760303003	HZ6C-2	
D405	2760224014	HZ30-2	
D406	2760432000	1SS270A	
RESISTOR GROUP			
VR101,102	2116064051	V06PB203	20kΩB
VR103	2116064064	V06PB102	1kΩB
VR104	2116064019	V06PB473	47kΩB
VR151	2110540005	V1620V25FA103M	10kΩA
RK151	2462053004	RK99==103JP5	10kΩ×5
RK301	2462052005	RK99==103JP4	10kΩ×4

Ref. No.	Part No.	Part Name	Remarks
CAPACITOR GROUP			
C110	2533603008	CC45SL1H100D	10pF 50V
C123	2533645008	CC45SL1H561J	560pF 50V
C148,149 151	2533627000	CC45SL1H101J	100pF 50V
C157	2533633007	CC45SL1H181J	180pF 50V
C102,131, 135	2531024003	CK45F1H103Z	0.01μF 50V
C104,105, 159	2539036006	CK45=1E104Z	0.1μF 25V
C139,141	2531004007	CK45B1H102K	0.001μF 50V
C143,171	2531024003	CK45F1H103Z	0.01μF 50V
C150	2539036006	CK45=1E104Z	0.1μ 25V
C151	2531002009	CK45B1H471K	470pF 50V
C152,154 ～156	2539036006	CK45=1E104Z	0.1μF 25V
C304	2531024003	CK45F1H103Z	0.01μF 50V
C303,408	2539036006	CK45=1E104Z	0.1μF 25V
C101,153	2544288001	CE04W1E101M(AWF)	100μF 25V
C103,115, 116,132	2544260045	CE04W1H010M(SME)	1μF 50V
C002	2544254006	CE04W1C100M(SME)	10μF 16V
C113,114	2544260058	CE04W1H2R2M(SME)	2.2μF 50V
C117,118 140	2544254019	CE04W1C220M(SME)	22μF 16V
C126,127	2544260061	CE04W1H3R3M(SME)	3.3μF 50V
C130,134	2544252037	CE04W1A101M(SME)	100μF 10V
C146,147	2544254022	CE04W1C330M(SME)	33μF 16V
C201	2544254051	CE04W1C221M(SME)	220μF 16V
C301	2544260016	CE04W1HR22M(SME)	0.22μF 50V
C305～307	2544252037	CE04W1A101M(SME)	100μF 10V
C310	2544254064	CE04W1C331M(SME)	330μF 16V
C401	2544254048	CE04W1C101M(SME)	100μF 16V
C404	2544289738	CE04W1H101MC (AWF)	100μF 50V
C405,406	2544314797	CE04W1E332MC (AVF)	3300μF 25V
C407	2544261028	CE04W1H101M(SME)	100μF 50V
C409	2544261918	CE04W1J470M(SME)	47μF 63V
C410,411	2544261002	CE04W1H330M(SME)	33μF 50V
C402,403	2544288001	CE04W1E101M(AWF)	100μF 25V
C109	2551120097	CQ93M1H562J	0.0056μF 50V
C111	2551121041	CQ93M1H153J	0.015μF 50V
C119,120	2551120068	CQ93M1H332J	0.0033μF 50V
C121,129 137	2551121025	CQ93M1H103J	0.01μF 50V
C122	2551120042	CQ93M1H222J	0.0022μF 50V
C133	2551120084	CQ93M1H472J	0.0047μF 50V
C138	2551120000	CQ93M1H102J	0.001μF 50V
C112	2561034047	CF93A1H563J	0.056μF 50V
C124,136	2561034076	CF93A1H104J	0.1μF 50V
C125	2561034018	CF93A1H333J	0.033μF 50V

Ref. No.	Part No.	Part Name	Remarks
C128	2561035017	CF93A1H224J	0.22μF 50V
C302	2590005005	EECS5R5V104	
OTHER PARTS			
	2350049007	BEAD INDUCTOR	
	4170253000	RADIATOR	IC402~404
	2124691005	ROTALY SWITCH	
PT151,152	2318060002	PULSE TRANS	
	2690052000	TOTX172	Optical Terminal
TP101,102	2050190065	6P NH CONN.BASE	
TP103	2050190036	3P NH CONN.BASE	
CB101	2050190065	6P NH CONN.BASE	
CB102	2050298006	23P FFC BASE(S)	
CB103	2050343061	6P CONN.BASE (KR-PH)	
CB104	2050323036	3P CONN.BASE (BLK)	
CB105	2050321038	3P CONN.BASE (RED)	
CB106	2050343032	3P CONN.BASE (KR-PH)	
CB301	2050375013	11P CONN.BASE (KR-PH)	
CB302	2050375000	10P CONN.BASE (KR-PH)	
CB302	2050321041	4P CONN.BASE (RED)	
CB303	2050343058	5P CONN.BASE (KR-PH)	
CB304	2050323049	4P CONN.BASE (BLK)	
CB305	2050483028	12P MQ-ST CONN.BASE	
CB305	2050330016	12P MQ CONN.BASE	
CB306	2050483086	8P MQ-ST CONN.BASE	
CB306	2050330029	8P MQ CONN.BASE	
CB307	2050483057	5P MQ-ST CONN.BASE	
CB307	2050330032	5P MQ CONN.BASE	
CB308	2050321041	4P CONN.BASE (RED)	
CB309	2050323052	5P CONN.BASE (BLK)	
CB310	2050343032	3P CONN.BASE (KR-PH)	
CB311	2050323036	3P CONN.BASE (BLK)	
CB312	2050343032	3P CONN.BASE (KR-PH)	

Ref. No.	Part No.	Part Name	Remarks
CB312	2050279038	3P PH CONN.BASE SIDE	
CB313	2050330032	5P MQ CONN.BASE	
CB313	2050483057	5P MQ-ST CONN.BASE	
CB314	2050330058	10P MQ CONN.BASE	
CB314	2050483002	10P MQ-ST CONN.BASE	
CB315	2050330032	5P MQ CONN.BASE	
CB315	2050483057	5P MQ-ST CONN.BASE	
CB701	2050343074	7P CONN.BASE (KR-PH)	
CB704	2050406034	3P CONN.BASE (KR-PH)	
CB708	2050343045	4P CONN.BASE (KR-PH)	
CB709	2050343061	6P CONN.BASE (KR-PH)	
CB710	2050323036	3P CONN.BASE (BLK)	
CB001	2050343032	3P CONN.BASE (KR-PH)	
KU-5865 DIGTAL SIG.PRO UNIT			
IC1	2620736008	CXD1125	
IC2	2620673006	HM6116FP/LFP-4 /3/2	
C1,2	2533605006	CC45SL1H120J	12pF 50V
C3	2539036006	CK45=1E104Z	0.1μF 25V
C4	2544288001	CE04W1E101M (AWF)	100μF 25V
X-1	3990036013	X'TAL(16.9344MHz)	

2U-1632 POWER SUPPLY UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC811	2760405008	SIWB(A)10	
IC812,813	2630483008	NJM7915M	
IC814	2680046000	NJM7815A	
CAPACITOR GROUP			
C801~803	2538014003	CK45F2GA103M	0.01μF 400V
C810,814, 815	2544289738	CE04W1H101MC (AWF)	100μF 50V
C811,812	2546138007	CE64W1H472M	4700μF 50V
C813	2531024003	CK45F1H103Z	0.01μF 50V
OTHER PARTS GROUP			
CH801	2398019002	LINE FILTER COIL	
	4150299000	CONDENSER COVER	
F801	2061015045	FUSE(315MA)	Europe,U.K. Australia
F801	2061015003	FUSE(500MA)	Asia
F801	2061039018	FUSE(800MA)	U.S.A.,Canada
	2020022008	FUSE HOLDER	
	5131451002	FUSE LABEL(315MA)	Europe,U.K. Australia
	5130637063	FUSE LABEL(500MA)	Asia
	5130637092	FUSE LABEL(800MA)	U.S.A.,Canada
	4170253000	RADIATOR	IC813,814
SW801	2120286003	POWER SWITCH	
SW801, 802	2050217032	3P CONN.BASE (ULTR)	
CB811	2050190065	6P NH CONN. BASE	
CB812	2050190049	4P NH CONN. BASE	
CB803	2050217045	4P CONN.BASE (ULTR)	Asia

2U-1633 AUDIO UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC501,601	2621014004	HG61H04B22P	
IC502,602	2621002003	PCM64	
IC503,603	2630257001	M5218P	
IC504,604	2621032002	CD74HC4066	
IC505,605	2630127005	NE5534AN	
IC506,606	2620891008	CD74HC4053	
IC507 ~509	2630360008	NE5532	
IC510,511	2630432004	NJM78L05A	
IC607 ~609	2630360008	NE5532	
IC610,611	2630432004	NJM78L05A	
IC701	2620593005	HD74HC04P	
IC702	2630198005	NJM4556D	
TR502~ 508 602~608	2740124901	2SD1504(E/F)	
D501,502 601,602	2760460904	HZS5C-1TD	
RESISTOR GROUP			
R502,602	2452375912	RN14K2E102GT(5)	1kΩ
R503,603	2452375925	RN14K2E202GT(5)	2kΩ
R506~509 606~609	2452375938	RN14K2E104GT(5)	100kΩ
R510~513 610~613	2452375941	RN14K2E304GT(5)	300kΩ
R542,545 642,645	2412413005	RD05A2H151J (RMA)	150Ω 1/2W
VR501~ 504 601~604	2116075008	V06PB104(CERMET)	100kΩB
RA501,601	2462056001	RK===300KP8	
RA502~ 504 602~604	2462055002	RK===300KP4	
CAPACITOR GROUP			
C503,506 ~510,526 560,561, 563~567 603,606 ~610,626 660,661 663~667 706,713	2531184901	CK93E1H104MT (TCD)	0.1μF 50V
C704,705	2531100901	CK45B1H101K	100pF 50V
C707	2531108903	CK45B1H471K	470pF 50V

2U-1631 SERVO AMP UNIT

Ref. No.	Part No.	Part Name	Remarks
C502,511	2544289026	CE04W1H470M	47μF 50V
535,602		(AWF)	
611,635			
C527,528	2544316779	CE04W1H102MC	1000μF 50V
627,628		(AWFB)	
C513,514	2544289738	CE04W1H101MC	100μF 50V
613,614		(AWF)	
C537,637	2544289725	CE04W1H470MC	47μF 50V
		(AWF)	
C550,553	2544289068	CE04W1H471M	470μF 50V
650,653		(AWF)	
C562,662	2544313031	CE04W1H470M	47μF 50V
		(ASF)	
C505,605	2544313905	CE04W1H3R3MT	3.3μF 50V
		(ASF)	
C520,620	2556175021	CQ09S2B821KF(B)	820pF 125V
C521,621	2556175018	CQ09S2B181KF(B)	180pF 125V
C529,530	2556167000	CQ09S2B103KF(B)	0.01μF 125V
551,629			
630,651			
C541,542	2556175005	CQ09S2B272KF(B)	0.0027μF 125V
544,641			
C555,655	2554232034	CQ93P2A102J	0.001μF 100V
		(NH)	
C552,568	2554232021	CQ93P2A390J	39pF 100V
652,668		(NH)	
714			
C642,644	2556175005	CQ09S2B272KF(B)	0.0027μF 125V
OTHER PARTS			
	0010006007	BUS BAR	
	2048265009	4P RCA PIN JACK	
		(EM1)	
	2048223009	2P RCA PIN JACK	
	2050428009	3P CANNON CONN.	
	2048264000	H/P JACK(AU)	
CB501,601	2050330016	12P MQ CONN.BASE	
CB502,602	2050330003	6P MQ CONN.BASE	
CB503,603	2050483028	12P MQ-ST	
		CONN.BASE	
CB504,604	2050483060	6P MQ-ST	
		CONN.BASE	

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC201	2620842002	CXA-1081S	
TR201	2720025004	2SB562(C)	
TR202	2730178019	2SC1740(S)	
RESISTOR GROUP			
R202	2452033908	RN14K2E360GT	36Ω 1/4W
R203	2452038903	RN14K2E560GT	56Ω 1/4W
VR201	2116057026	V08PB203	20kΩB
VR202	2116057013	V08PB103	10kΩB
CAPACITOR GROUP			
C201	2544260061	CE04W1H3R3M	3.3μF 50V
		(SME)	
C202	2544254048	CE04W1C101M	100μF 16V
		(SME)	
C203	2533617007	CC45SL1H390J	39pF 50V
C204	2551120055	CQ93M1H272J	0.0027μF 50V
C205	2531024003	CK45F1H103Z	0.01μF 50V
C206	2544252037	CE04W1A101M	100μF 10V
		(SME)	
C207	2544260032	CE04W1HR47M	0.47μF 50V
		(SME)	
C208,209	2551121025	CQ93M1H103J	0.01μF 50V
C210,211	2561034018	CF93A1H333J	0.033μF 50V
OTHER PARTS			
	2050298051	20P FFC	
		CONN.BASE(S)	
	2050298006	23P FFC BASE(S)	

2U-1644 MOTOR DRIVE UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC1	2630424902	M5218FP(TAPE)	
TR1,4	2720081909	2SB766S (TAPE)	
TR2,5	2740114908	2SD874R (TAPE)	
T3,6	2790024909	FMY1-T99	
H1,2	2680053022	HW-101C(Q,R)	
RESISTOR GROUP			
VR1	2118003913	K05=B202	
R1,8	2471006961	RM73B2B471JT	470Ω
R2	2470006904	RM73B--271JT	270Ω
R3	2470009985	RM73B--103JT	10kΩ
R4,11	2471012926	RM73B2B104JT	100kΩ
R5,12	2470012927	RM73B--104JT	100kΩ
R6,7,13,14	2471008985	RM73B392JT	3.9kΩ
R9	2471006903	RM73B2B271JT	270Ω
R10	2471009984	RM73B2B103JT	10kΩ
R15	2471007902	RM73B2B681JT	680Ω
CAPACITOR GROUP			
C1	2570006927	CC73SL1H471JT	470pF 50V
C3	2571006926	CC73SL1H471JT	470pF 50V
C5,7	2570014935	CK73F1E104ZT	0.1μF 25V
OTHER PARTS			
	3460070004	ROTOR COIL	

2U-1688 DISPLAY UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
D307~312	2760049011	1S2076A	
OTHER PARTS			
	2124388004	TACT SWITCH	
	4990088002	QH3031H0	
	3934065008	FIP11BHM7	
CC301	2046200008	11P KR-DA	
		CONN. CORD	
CC302	2042297002	10P KR-DA	
		CONN. CORD	
CC303	2038228001	5P KR-DA	
		CONN. CORD	
CC304	2050323049	4P CONN.BASE	
		(BLK)	

NOTE FOR PARTS LIST

- Part indicated with the mark "◉" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/6W, 1/4W Type in the P.W. Board parts list.
- ⚠ Means important safety item, which must be replaced when necessary, by a part specified or meeting the specification by the manufacturer.

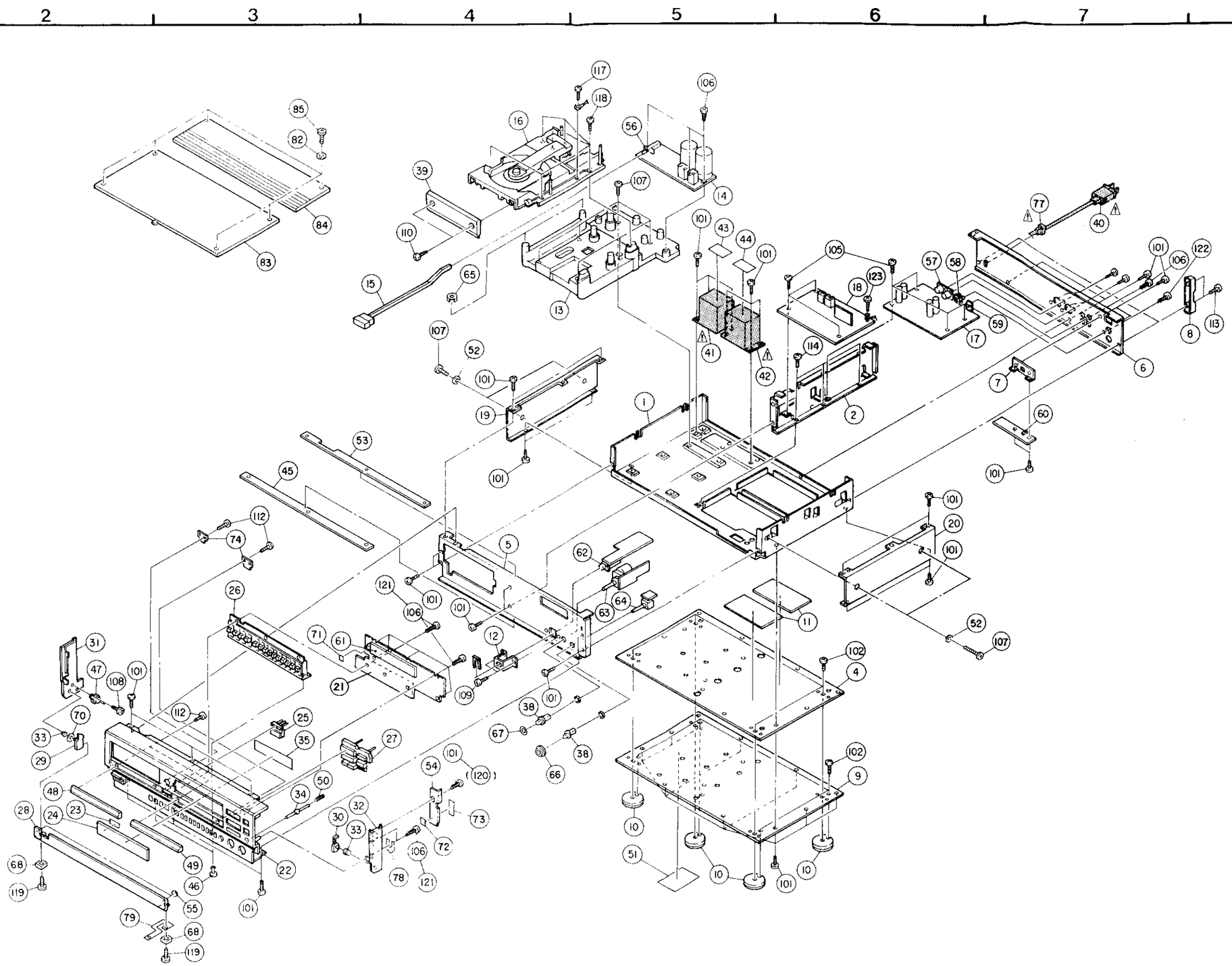
PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks
1	4110770307	CHASSIS	
2	4110771209	CENTER CHASSIS	
3	–	–	
4	1050769206	SUB BOTTOM COVER	
5	4110772208	FRONT CHASSIS	
6	1050770127	BACK PANEL	
7	4122127003	OPTICAL PLATE	
8	1460970106	BACK FOOT	
9	1050768304	BOTTOM COVER	
10	1040155118	FOOT ASS'Y	
11	4030047000	BOTTOM WEIGHT	
12	4122470103	H/P BRACKET	
13	1460954517	MECHA CHASSIS	
14	2U-1632	POWER SUPPLY UNIT	
15	1131051312	P.SW LEVER ASS'Y	
16	FG-621	CD MECHA UNIT	
17	2U-1633	AUDIO UNIT	
18	2U-1630	SERVO & SIG.UNIT	
19	1441765110	SIDE PANEL(L)ASS'Y	
20	1441767118	SIDE PANEL(R)ASS'Y	
21	2U-1688	DISPLAY UNIT	
22	1441734219	FRONT PANEL ASS'Y	
23	1430582003	REMOTE SHEET	
24	1430548209	WINDOW	
25	1131133010	OP/CL KNOB ASS'Y	
26	1131059314	TEN KEY KNOB	
27	1131055211	KNOB BASE ASS'Y	
28	1441739337	TRAP DOOR	
29	4010153215	HINGE(L)	
30	4010154214	HINGE(R)	
31	1460952218	SIDE ESC(L)ASS'Y	
32	1460963113	SIDE ESC(R)ASS'Y	
33	4250211014	BEARING	
34	1131060112	DOOR OPEN KNOB	
35	1430549004	DISPLAY SHEET	
36	–	–	
37	–	–	
38	1131050216	ROTARY KNOB	
39	1441740313	LOADER PANEL	
⚠ 40	2062063009	AC CORD	Europe
40	2062061001	AC CORD	U.S.A.
40	2062025005	AC CORD	Australia
40	2062024006	AC CORD	U.K.
40	2062054005	AC CORD	Asia
⚠ 41	2335579013	POWER TRANS	Europe,U.K Australia
41	2335577015	POWER TRANS	U.S.A.
41	2335701001	POWER TRANS	Asia
⚠ 42	2335580015	POWER TRANS	Erope,U.K Australia
42	2335578014	POWER TRANS	U.S.A.
42	2335702000	POWER TRANS	Asia
43	5131404004	POWER TRANS LABEL(A)	
44	5131405003	POWER TRANS LABEL(B)	
45	4122596100	SPACER(B)	
46	4770096007	PUSH RIVET	
47	4210505003	MINI DAMPER	
48	1441736217	ESC BAR(A)	
49	1441737216	ESC BAR(B)	
50	4630182080	SPRING	
51	5131411000	LOCK CAUTION BOTTOM	
52	4430829006	WASHER	
53	4122597002	SPACER(T)	
54	4630582004	SPRING PLATE	
55	1220039038	SPACER	
⚠ 56	2120286003	POWER SWITCH	
57	2050428009	3P CANNON CONN.	
58	2048265009	4P PIN JACK	
59	2048223009	2P PIN JACK	
60	2690052000	TOTX 172	OPTICAL OUT
61	3934065008	FIP11BHM7	DISPLAY
62	2048264000	H/P JACK	
63	2110540005	V1620V25FA103M	LINE OUT
64	2124691005	ROTARY SWITCH	DIGITAL OUT SW
65	4430855106	BOSS CAP	
66	1140109103	ROTARY KNOB GUIDE	
67	4620095103	BLIND WASHER	
68	4030051216	HINGE GUIDE	
69	–	–	
70	4770265074	WASHER	
71	1430568001	FILTER	
72	1220084009	SPACER	
73	4610269143	DAMP SHEET	
74	4610590003	EARTH PLATE(ESC)	
75	–	–	
76	–	–	
⚠ 77	4450020005	CORD BUSH	
78	4122662005	EARTH PLATE (DOOR)	
79	2221755006	FLEXIBLE BOARD	
82	1469086004	SCREW CAP	
83	PTO1A30	TOP COVER(A) ASS'Y	
84	PTO1A31	TOP COVER(B) ASS'Y	
85	4737007071	4×12 CBTS(S)ZNB	
101	4737015018	3×8 CBTS(S)-B	
102	4713404012	4×8 CBS-Z	
103	4713304015	3×8 CBS-Z	
104	4733800010	3×8 CBTS(2)	
105	4737002021	3×8 CBTS(S)-B	
106	4737500044	3×8 CBTS(P)-B	
107	4737007013	4×10 CBTS(S)-B	
108	4737022001	2×4 CPTS(S)-Z	
109	4737003017	3×8 CFTS(S)-B	
110	4738021014	4×12 HSTS(P)-N	
111	–	–	
112	4713302017	3×5 CBS	
113	4737006030	3×12 CBTS(S)-B	
114	4713301021	3×4 CBS	
115	4737508017	3×10 CBTS(P)-B	
116	4737501014	3×14 CBTS(P)-Z	
117	4737002005	3×6 CBTS(S)-Z	
118	4713303029	3×6 CBS-B	
119	4737511017	3×12 CFTS(P)-Z	
120	4737002034	3×6 CBTS(S)-B	
121	4737508017	3×10 CBTS(P)-B	
122	4770276018	EARTH SCREW	
123	4770262006	SPECIAL SCREW	

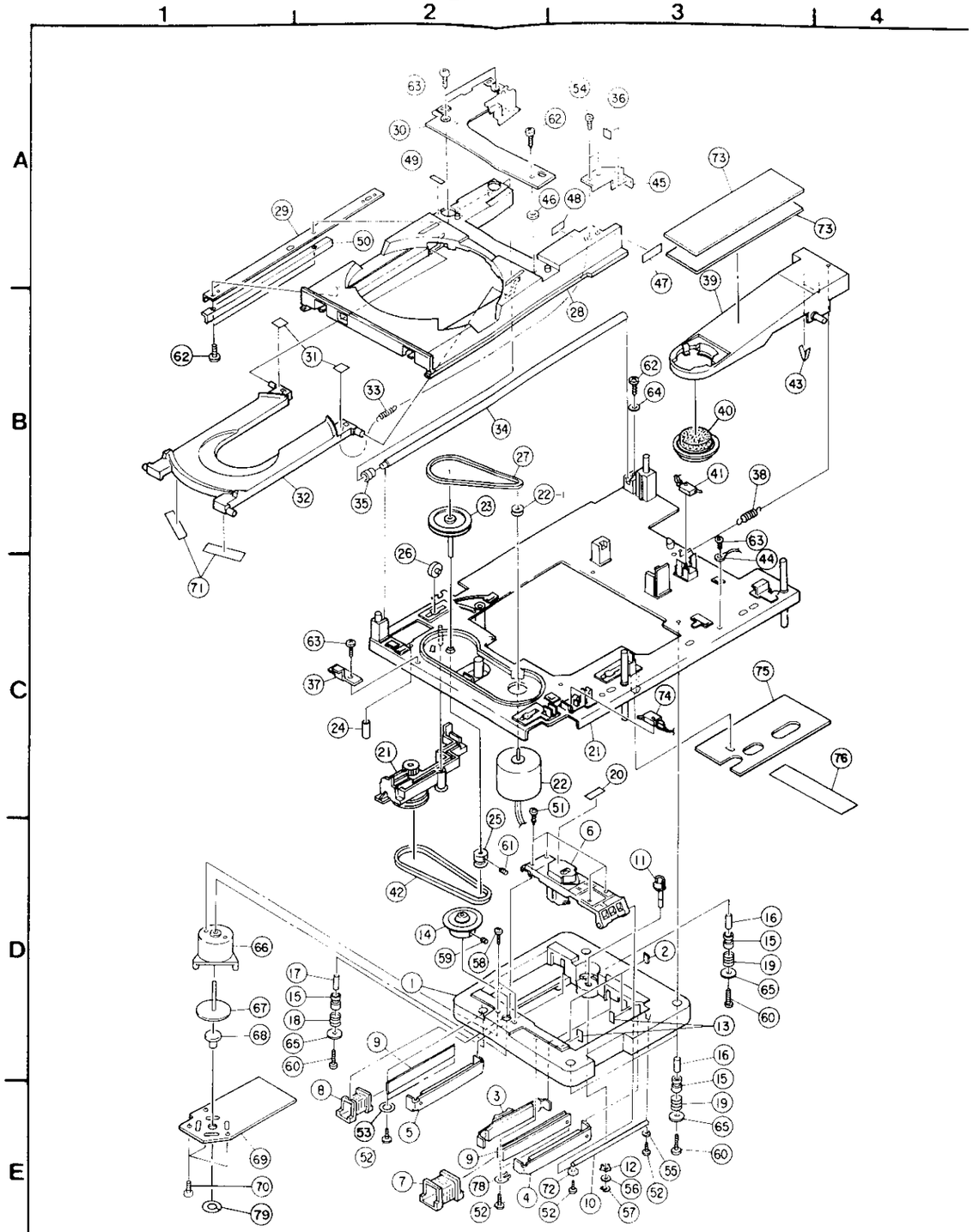
PARTS LIST OF PACKING & ACCESSORIES

Ref. No.	Part No.	Part Name	Remarks
	5131319050	E2 RATING SHEET	Europe
	4610450101	DOOR CUSHION(L)	
	4610451100	DOOR CUSHION(R)	
	5050131076	CABINET COVER	
	5030695008	CUSHION ASS'Y	
	4610452002	FRONT CUSHION(L)	
	4610453001	FRONT CUSHION(R)	
	5011273025	CARTON CASE	
	5020707003	UPPER CARTON	
	5050038030	POLY COVER	
	5111729000	INST. MANUAL	
	5111731001	SWEDISH INST. MANUAL	Europe
	2032204005	PIN CORD	
	5290073004	MINI DRIVER	
	4990114002	RC-213	
	5130985003	INST.LABEL	
	5131220000	CAUTION LABEL	
	5131338002	CONTROL CARD BASE	
	5131349004	THERMAL CARBON FILM	
	5131284004	E2 LASER CAUTION	Europe
	5131397137	EU SERIAL SHEET	U.S.A.
	5131381004	MANUFAC. DATE LABEL	U.S.A.
	5150418107	DAI WARRANTY HOME	U.S.A.
	5150439102	SAFETY INSTRUCTION	U.S.A.
	5131222008	DATE LABEL	U.S.A.
	5138266009	DANGEROUS MARK	U.S.A.
	5131320052	EK RATING SHEET	U.K Australia
	5130209019	NOTICE SHEET	U.K Australia
	5131321048	E1 RATING SHEET	Asia
	2033667007	PLUG ADAPTER	Asia
	5158030008	PRESET LABEL	Asia

EXPLODED VIEW



EXPLODED VIEW OF FG-621 MECHA UNIT



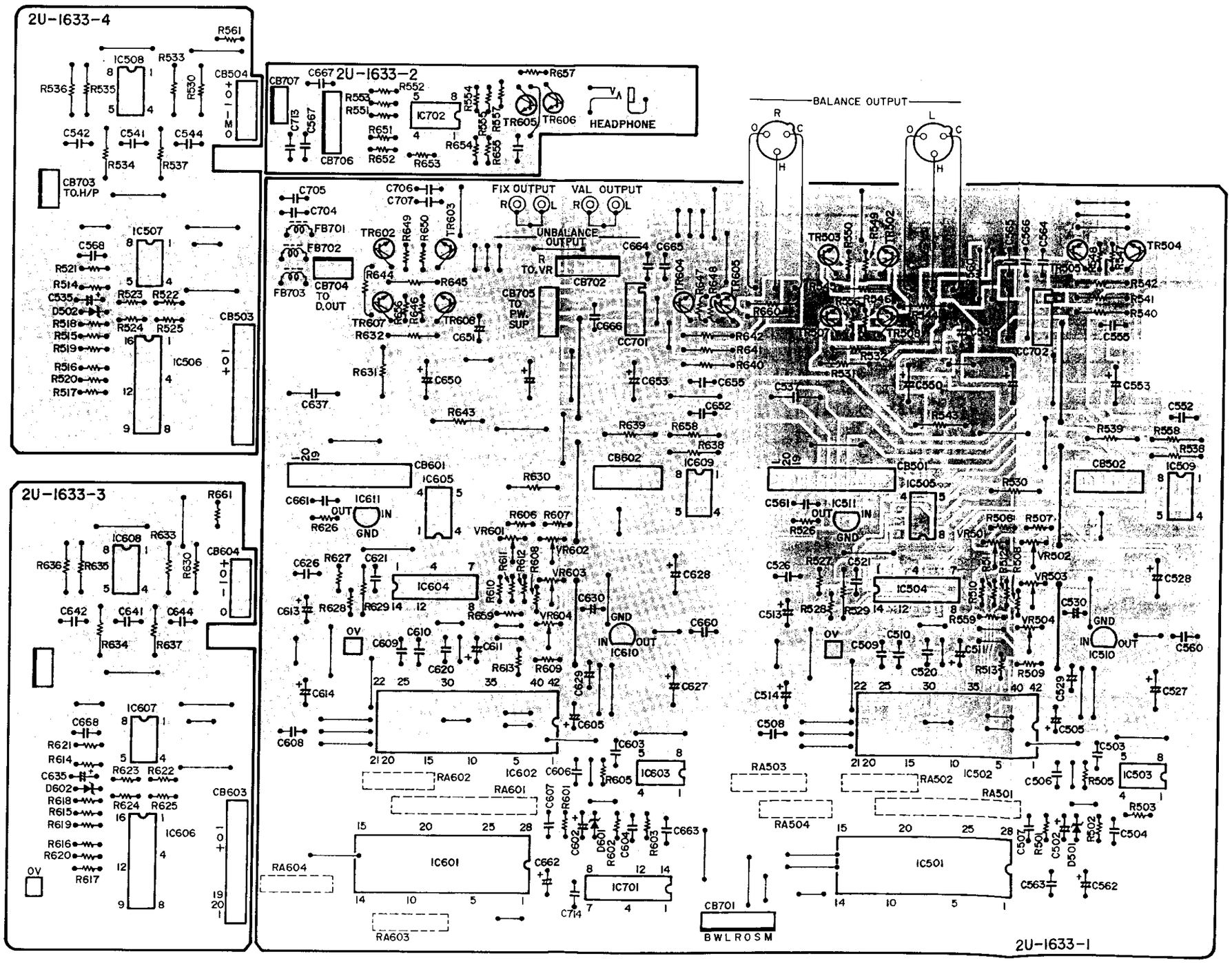
PARTS LIST OF FG-621 MECHA UNIT

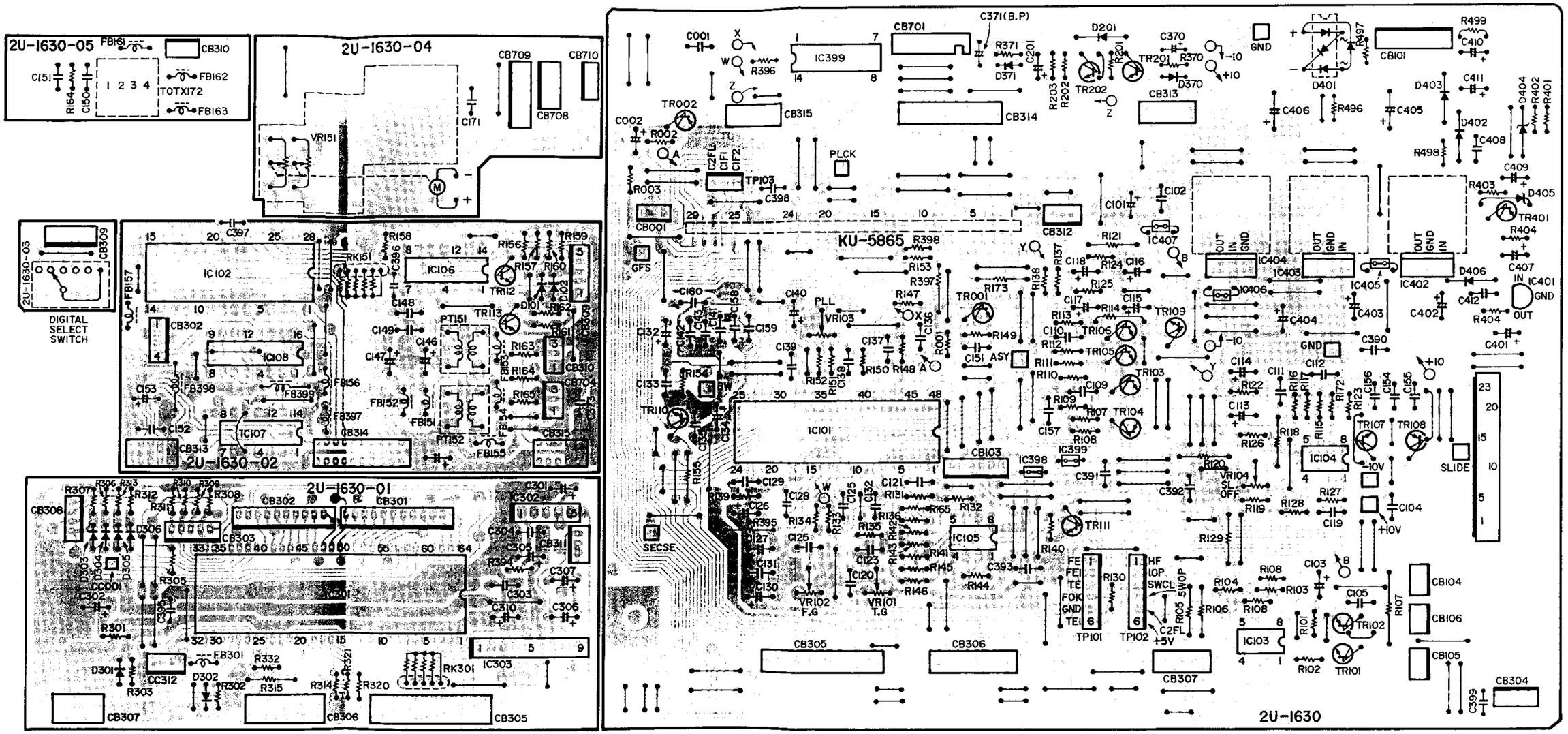
Ref. No.	Part No.	Part Name	Remarks
1	3150338302	P.U HOUSING	
2	4610409000	P.U STOPPER	
3	PMO1A15	MAGNET SUB ASS'Y	
4	PMO1A20	MAGNET SUB ASS'Y	
5	PMO1A21	MAGNET SUB ASS'Y (C)	
6	4990078009	PICK-UP KSS151A	
7	2390014209	M.COIL ASS'Y	
8	2390015208	G.COIL ASS'Y	
9	4330480008	YOKE(B)	
10	4430617302	P.U SHAFT	
11	4210431300	STOPPER COLLAR	
12	3158451003	FRICTION WASHER	
13	4411002004	SPACER	
14	4210423224	TURNTABLE ASS'Y	
15	4620083005	H.DAMPER	
16	4330513108	COLLAR(D)	
17	4330514107	COLLAR(C)	
18	4630514001	COIL SPRING(C)	
19	4630515000	COIL SPRING(D)	
20	4410997000	P.U PLATE	
21	4110715304	BASE PLATE GEN. ASS'Y	
22	PLO1A34	LOADING M.SUB ASS'Y	
23	4210439108	GEAR PULLEY ASS'Y	
24	4620084017	TUBE(φ6)	
15	4210425002	MOTOR PULLEY	
26	4250170003	SLIDER ROLLER	
27	4230046102	BELT(A)	
28	4310273002	LOADER FRAME	
29	4122177105	LOADER BRACKET	
30	4110831000	LOADER GUIDE	
31	1220110083	HIMERON SHEET	
32	4310265214	DISC TRAY	
33	4630574009	D.TRAY SPRING	
34	4430874006	LOADER RAIL	
35	4620084004	TUBE(φ5)	
36	4610449002	LOADER CUSHION	
37	4122512003	BRACKET	
38	4630505104	CLAMPER SPRING	
39	4330477406	CLAMPER ARM	
40	PCO1A27	CLAMP PRESS SUB ASS'Y	
41	2124650004	LEAF SW.	
42	4230047004	BELT(B)	
43	1220110096	HIMERON SHEET	
44	2030240032	1P CONTACT CORD	
45	4111007008	LOADER STOPPER	
46	1250042008	GUIDE SPACER	
47	1250039008	STOPPER SPACER	
48	1220163014	SPACER(M)	
49	1220163001	SPACER(M)	
50	4122589007	LOADER SPACER	

Ref. No.	Part No.	Part Name	Remarks
51	4738010009	M1.7×4#0(W) ZNIB	
52	4738014005	3×8 CBTS(H-L)ZNB	
53	4751140008	3 WASHER	
54	4770096007	PUSH RIVET	
55	4751106042	WASHER	
56	4751005017	4W BKNI	
57	4410856002	G RING	
58	4713812002	2×8 CBS B	
59	4744300004	2.6×4 BSS(A)	
60	4711807022	3×18 CPS BK	
61	4744300033	2.6×6 BSS(A)	
62	4737508017	3×10 CBTS(P)-B	
63	4737002005	3×6 CBTS(S)-Z	
64	4751005004	4W	
65	4122296002	F COVER	
66	3460067305	MOTOR HOUSING ASS'Y	
67	PRO1A93	ROTOR ASS'Y	
68	4310271004	THRUST METAL	
69	2U-1644	MOTOR DRIVE UNIT	
70	4713302017	3×5 CBS	
71	4610260058	DAMP SHEET	
72	4430857001	P.RING	
73	4610269114	DAMP SHEET	
74	2124650004	LEAF SW	
75	2U-1631	SERVO AMP UNIT	
76	2090117008	23P FFC	
77	—	—	
78	4410993004	YOKE HOLDER	
79	4770298038	CUT WASHER	

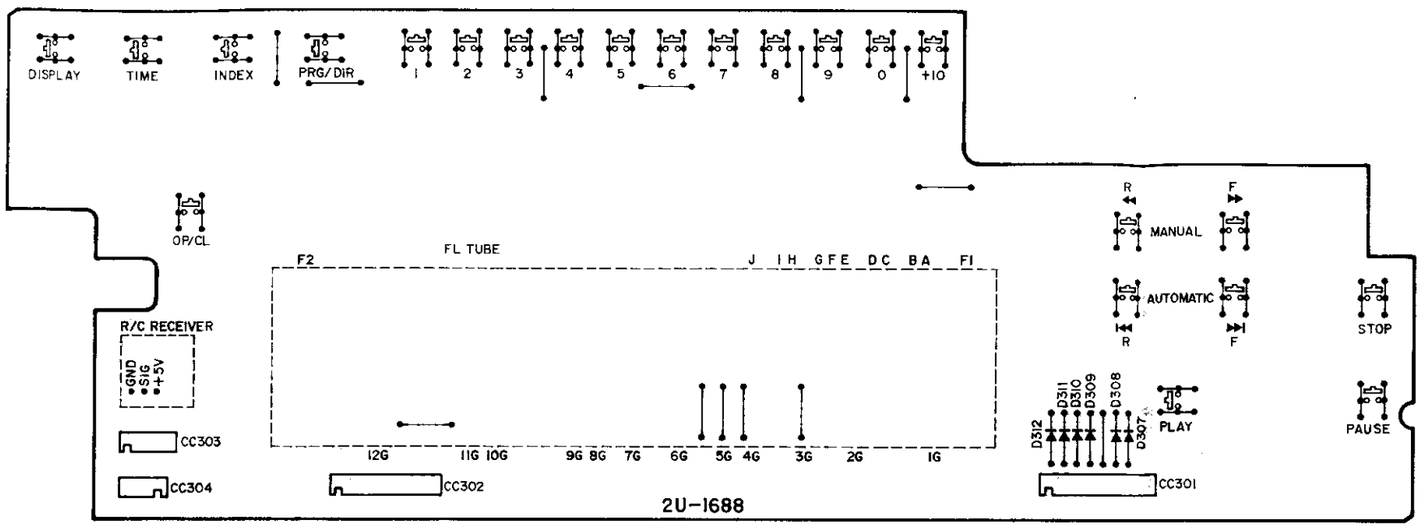
P.W. BOARD

2U-1633 AUDIO UNIT

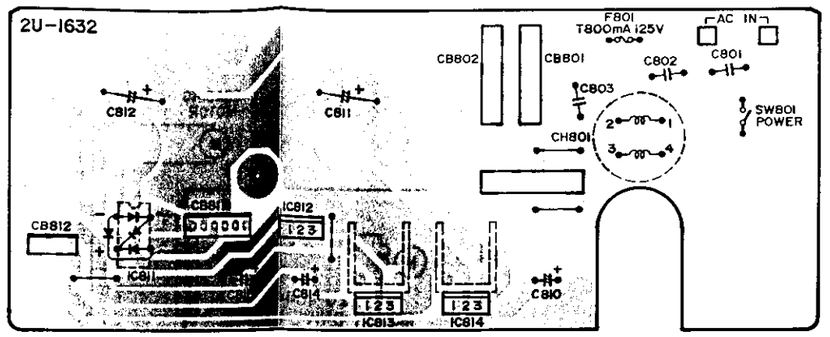



2U-1630-05
2U-1630-04
2U-1630-03
DIGITAL SELECT SWITCH
2U-1630-02
2U-1630-01
KU-5865
2U-1630

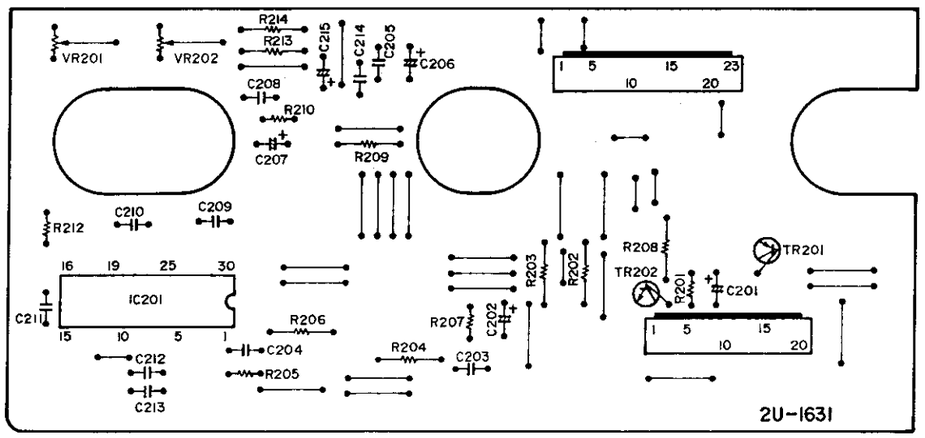
2U-1688 DISPLAY UNIT



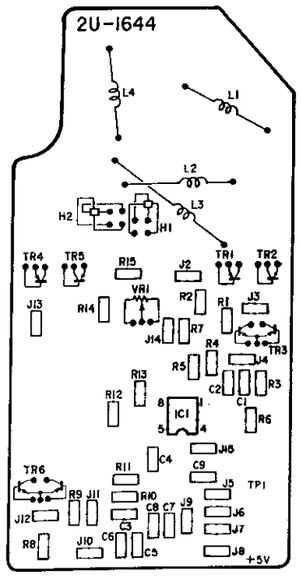
2U-1632 POWER SUPPLY UNIT



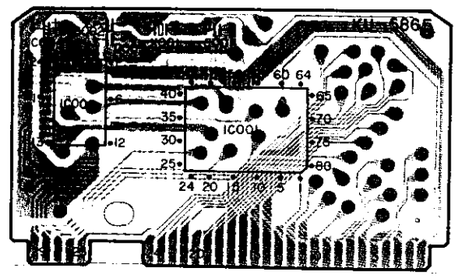
2U-1631 SERVO AMP UNIT



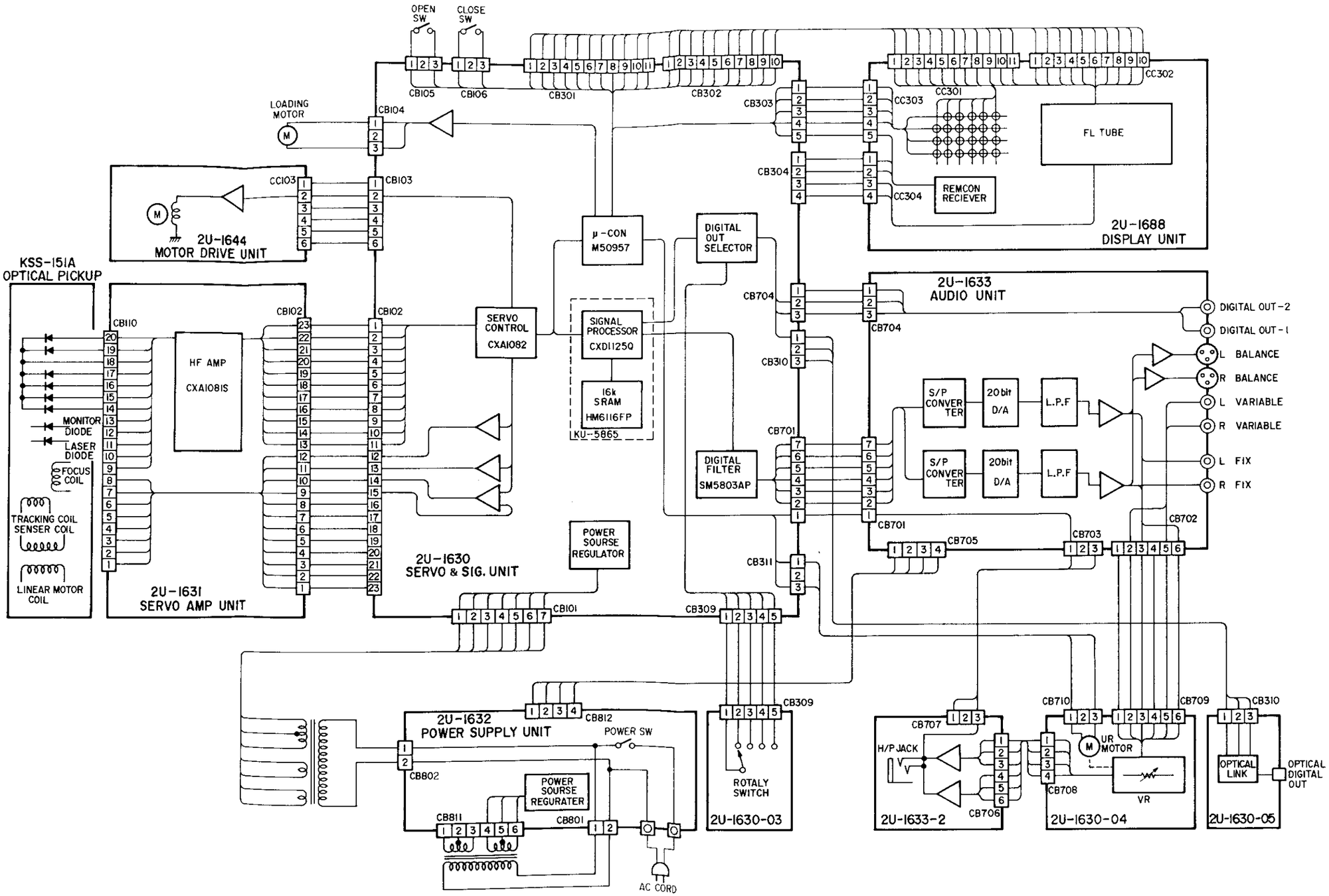
2U-1644 MOTOR DRIVE UNIT



KU-5865 DIGITAL SIG. PRO. UNIT

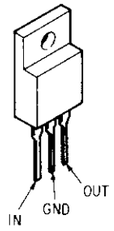


WIRING DIAGRAM

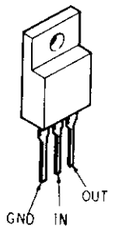


SEMICONDUCTORS

● IC



NJM7805A
NJM7815A
NJM78M05A



NJM7905A
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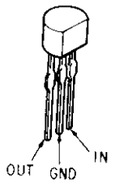
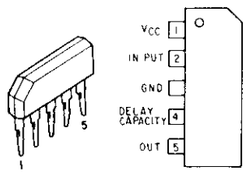
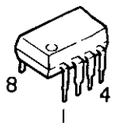


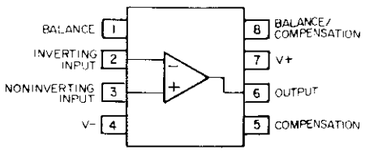
NJM78L05A



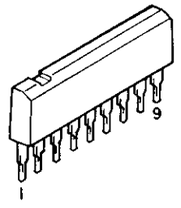
M51953B

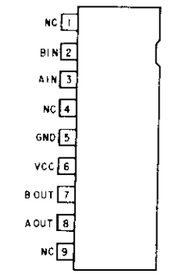


NJM082D
NJM4556D
NE5532
M5218P

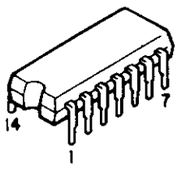


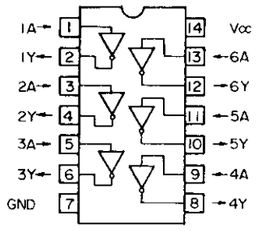
NE5534



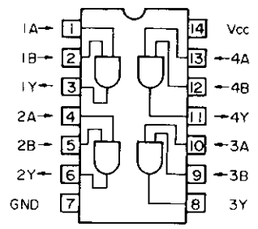


BA6208A





HD74HC04P



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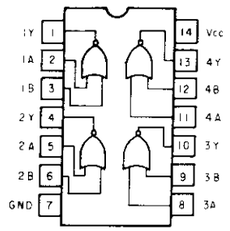
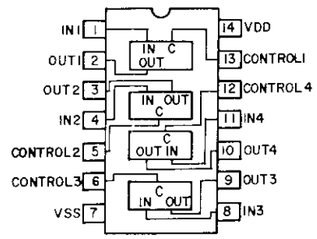


TC74HC02P



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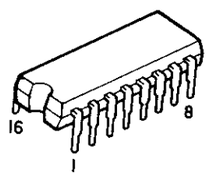

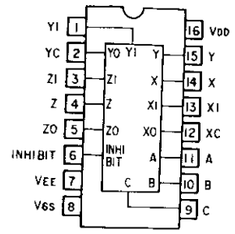

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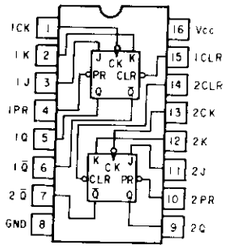
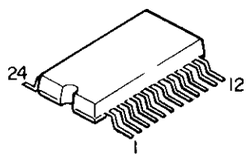
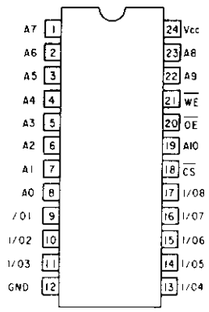


TC74HC112





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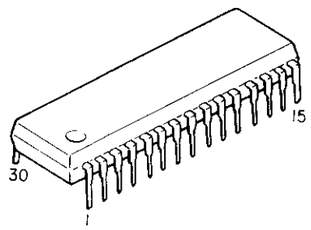
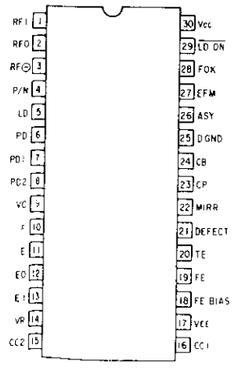
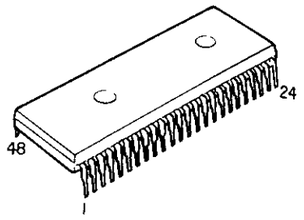
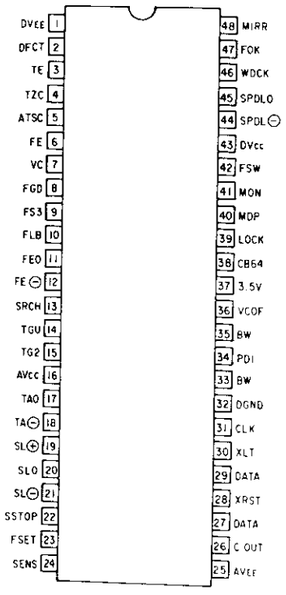


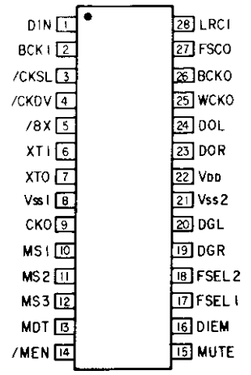
CXA1081S



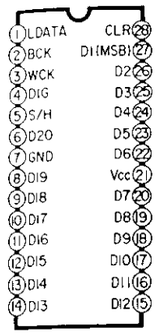


CXA1082AS

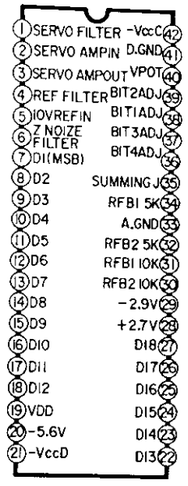




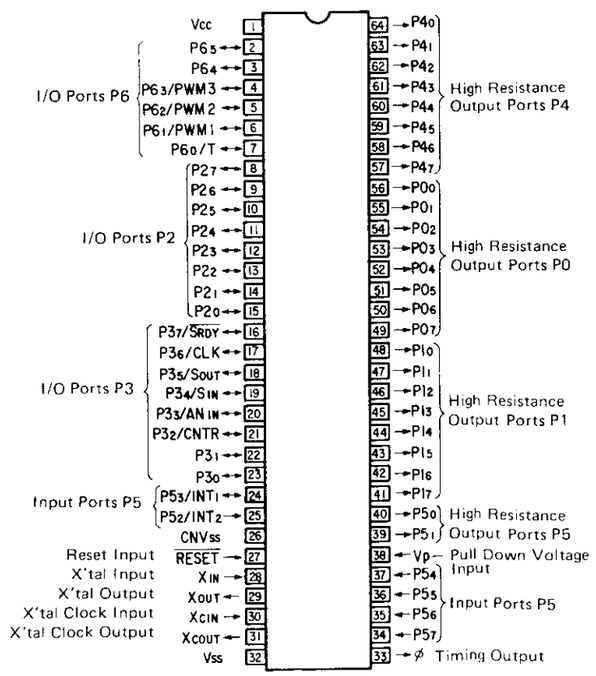
SM5803AP-1



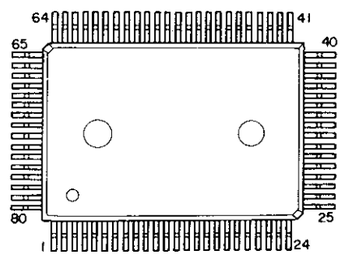
HG61H04B22P



PCM64

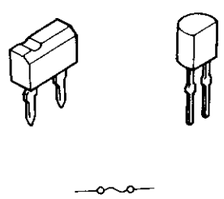


M50957



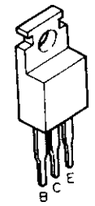
CXD1125

• IC PROTECTOR

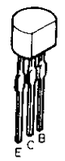


ICP-N10
ICP-N20

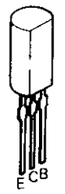
• TRANSISTORS



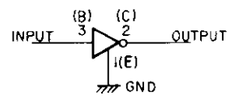
2SB941A(P/Q)
2SD1985(P/Q)



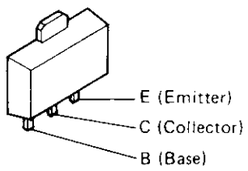
2SA933(Q)
2SC1740(R/S)
2SD1504(E/F)



2SB562(C)
2SD468(C)

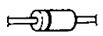


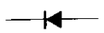
RN1202(10K-10K) NPN
RN2202(10K-10K) PNP
RN1210(4.7K- - -) NPN



2SB766
2SD874

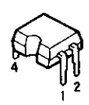
• DIODES

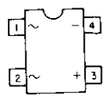




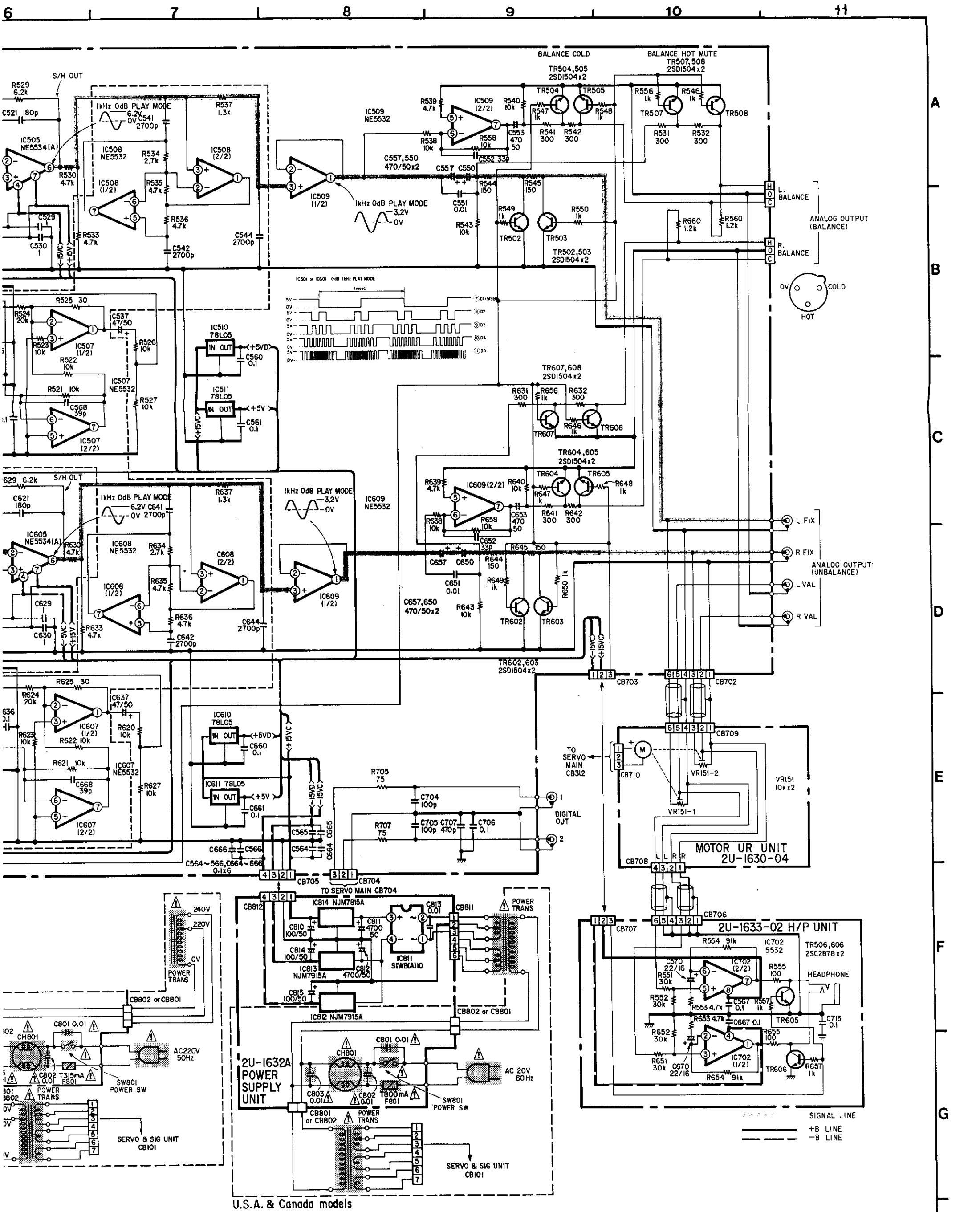
1S2076A
1SS270A
DSM1A2

HZ5C-1
HZ6C-1
HZ30-2





S1WB(A)10



This symbol ⚠ ▨ have critical characteristics.
Use ent parts recommended by the manufacturer.

e unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance
e current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 k
ective.

unit to the customer until the problem is located and corrected.

NOTES
ALL RESISTANCE VALUES IN OHM k = 1,000 OHM M = 1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD P = MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

SCHEMATIC DIAGRAM

1 2 3 4 5 6

2U-1633 AUDIO UNIT

IC503 M5218 — IC503 (1/2), IC503 (2/2)
IC501 HG61H04B22P
IC502 PCM64
IC701 (2/6) 74HC04
IC504 74HC4066
IC505 NE5534(A)
IC506 74HC4053
IC507 (1/2)
IC603 M5218 — IC603 (1/2), IC603 (2/2)
IC601 HG61H04B22P
IC602 PCM64
IC604 74HC4066
IC605 NE5534(A)
IC606 74HC4053
IC60 (1/2)
IC60 (2/2)

R506~509 100k x4
VR501~504 100kx4
R510~513 300kx4
R606~609 100kx4
VR601~604 100kx4
R610~613 300kx4
RA501~504 30x20
RA601~604 30x20

D501 HZS5C-1
D502 HZS5C1
D601 HZ5C-1
D602 HZS5C1

CB701: BCK, WCK, LDATA, RDATA, 0V, DIGR, MUTE — TO SERVO MAIN CB701

MUTE
PLAY MODE = -12V
PAUSE, STOP MODE 0V

S/H OUT

+5V, +5VD, -15VC, +15VC

2U-1632D POWER SUPPLY UNIT — Asia model

CB801 or CB802, CB803, CH801, C801 0.01, C803 0.01, C802 0.01, T500mA F801, SW801 POWER SW, AC120/220/240V 50/60Hz, V. SELECTOR, POWER TRANS, 240V, 220V, 120V, 0V, SERVO & SIG UNIT CB101

2U-1632C POWER SUPPLY UNIT — U.K. & Australia models

J801, CH801, C801 0.01, C803 0.01, C802 0.01, T315mA F801, SW801 POWER SW, AC240V 50Hz, CB801 or CB802, POWER TRANS, 240V, 220V, 0V, SERVO & SIG UNIT CB101

12U-1632B POWER SUPPLY UNIT — Europe model

J802, CH801, C801 0.01, C803 0.01, C802 0.01, T315mA F801, CB801 or CB802, POWER TRANS, 240V, 220V, 0V

WARNING:
Parts marked with this symbol ⚠ ▨ ha
Use ONLY replacement parts recommend

CAUTION:
Before returning the unit to the custor
check. If the leakage current exceeds 0.
ohms, the unit is defective.

WARNING:
DO NOT return the unit to the customer

SCHEMATIC DIAGRAM

KU-5865
DIGITAL SIG. PRO. UNIT

2U-1630
SERVO & SIG UNIT

KU-1644
MOTOR DRIVE UNIT

2U-1631
SERVO AMP
UNIT

LASER P.U.
KSS151A

WARNING:
Parts marked with this symbol ⚠ ▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.

WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

NOTES
ALL RESISTANCE VALUES IN OHM k = 1,000 OHM M = 1,000,000 OHI
ALL CAPACITANCE VALUES IN MICRO FARAD P = MICRO-MICRO FA
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INP
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NO

2U-1630-01

2U-1688
DISPLAY UNIT

2U-1630-02

2U-1630-03

2U-1630-05

IC303 BA6208A

IC301 M50957

IC102 SM5803AP

IC74HC112

IC74HC02

IC74HC08

FIP FIP11BJM7

IC101 CXA1082AS

IC104 M5218

IC105 M5218

IC405 ICPN20

IC401 NJM-78L05

IC402 NJM-78M05

IC403 NJM-7805

IC404 NJM-7905F

IC407 ICPN20

IC406 ICPN20

D307 ~ 312 ISS270A

D303 ISS270A

D304 ISS270A

D305 ISS270A

D306 ISS270A

D370 ISS270A

D371 ISS270A

D101,102 ISS270x2

D401 SIWB(A)10

TR001 RN2202

TR201 RN2202

TR202 RN1202

TR111 RN1210

TR112 RN1210

TR113 2SA933

TR110 2SC1740

TR401 78L05

DIGITAL SELECT SWITCH

TO AUDIO UNIT CB704

TO AUDIO UNIT CB701

TO POWER TRANS

EPTICAL OUTPUT UNIT

TO 2U-1630-04 (CB701)

NORMAL : 0V
REMOTE CONTROL ⊕ : 5V
REMOTE CONTROL ⊖ : 5V

IC301 OUTPUT
219 μsec (Vary)

IC301 Interface Waveform
≒5msec (Vary)

When Remote control PLAY Key pressed

ICI02 Initial data input
(Trausfered in approximately 80msec after Power Switch ON)
Immediately after XRST rise

ICI02 Input Waveform
When CB314 ⑩ LRCK triggered

Waveform of 2U-1630, CB314, CB701 respectively.
When ⑩ LRCK triggered.

SIGNAL LINE
+B LINE
−B LINE

,000 OHM M = 1,000,000 OHM
ARAD P = MICRO-MICRO FARAD
ASURED AT NO SIGNAL INPUT CONDITION.
HANGE WITHOUT PRIOR NOTICE.