SERVICE MANUAL
MODEL DCD-425
MODEL DCD-335
STEREO CD PLAYER

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• Some illustration using in this service manual is slightly different from the actual set.

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 alter the power supply cord. If the power supply cord becomes damaged, it must be replaced with a cord approved by the National Electrical Code (NEC). When replacing the power supply cord, be sure to remove the plug by holding the plug's structure and not by pulling the cord.
2. Do not plug the top cover in order to prevent electric shock. Do not open the top cover.
3. Do not place anything inside the box. Print the visual objects may be damaged.
4. Do not place the CD player in a humid environment or near water. Place it in a well-ventilated area.
5. Do not expose the CD player to direct sunlight or strong light.
6. Do not disassemble or repair the CD player.

PLATES, RATED: See the Model name and serial number of the product on the rating label.
Model No. DCD-425
Serial No.

NOTE:
The CD player uses the semiconductor laser. To allow you to operate the appliance at a normal temperature, it is recommended to use the appliance in a room of 75°F (23°C) – 95°F (35°C).

LABELS (for U.S.A. model only)

CERTIFICATION
THE CEILING UNIT EXPOSED TO HAZARD RISK SHOCK DO NOT OPEN

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE 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.

SAFETY INSTRUCTIONS

1. Read Instructions – All the safety and operating instructions should be read before the appliance is operated.
2. Retain Instructions – The safety and operating instructions should be retained for future reference.
3. Heed Warnings – All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow Instructions – All operating and use instructions should be followed.
5. Water and Moisture – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. Carts and Stands – The appliance should be used only with a cart or stand that is recommended by the manufacturer.
7. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart to overturn.
8. Wall or Ceiling Mounting – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
9. Ventilation – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be: placed on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
10. Heat – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
11. Power Sources – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
12. Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. Cleaning – The appliance should be cleaned only as recommended by the manufacturer.
14. Power Lines – An outdoor antenna should be located away from power lines.
15. Outdoor Antenna Grounding – If an outside antenna or cable system is connected to the receiver, be sure the system is grounded to provide some protection against voltage surges and static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure A.
16. Nonuse Periods – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
17. Object and Liquid Entry – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
18. Damage Requiring Service – The appliance should be serviced by qualified service personnel when:
   A. The power-supply cord or the plug has been damaged; or
   B. Objects have fallen, or liquid has been spilled into the appliance; or
   C. The appliance has been exposed to rain; or
   D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
   E. The appliance has been dropped, or damaged.

19. Servicing – The user should not attempt to service the appliance beyond that which is described in the operating instructions. All other servicing should be referred to qualified service personnel.
Thank you for purchasing the DENON Compact Disc Player. Please read the operating instructions thoroughly in order to acquaint yourself with the CD player and achieve maximum satisfaction from it.

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FEATURES
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SPECIFICATIONS

Please check to make sure the following items are included with the main unit in the carton:
1. Operating instructions
2. Connection Cord
3. Remote Control Unit RC-262
4. RC-34A Dry Cell Battery

IMPORTANT (CANADIAN MODEL ONLY)
This digital apparatus does not exceed the Class B limits for ra-
dio noise emissions from digital apparatus set out in the Radio
Interference Regulations of the Canadian Department of Com-

UNICATIONS.

CAUTIONS DURING USE

- This compact disc player is capable of playing discs which have the mark at right. During track selection, during search and when the player assumes a strong impact, the clock


- Never disassemble or modify the set in any way.
- Do not attempt to modify or alter the player in any way.
- The CD-425 has a limited dynamic range. Please exercise caution when using headphones in the volume, since it can damage the speakers.
- Do not use any discs but questive audio discs with this CD player.
Names and Functions of Parts

1. Power Switch (POWER)
   - When the power is turned on, "ID" appears on the TRACK NO. display, and if a disc is loaded, the total number of tracks on the disc is displayed on the TRACK NO. display.
   - If a disc is loaded, the track list is displayed on the TIME display, the numbers on the master schedule light up, and the number of tracks on the disc and playback begin.
   - If the power switch is on the OFF side, the apparatus is still connected to AC-line voltage. Please be sure to unplug the cord when you leave home for, say, a vacation.

2. Disc Holder
   - Place the disc on the disc holder with the label facing up.
   - Use the OPEN/CLOSE button (A) to open and close the disc holder.
   - The disc holder may also be closed by pressing the PLAY/PAUSE button or the STOP button.

3. Remote Control Sensor (REMOTE SENSOR)
   - The sensor receives the infrared light transmitted from the wireless remote control unit.
   - For remote control, point the supplied remote control unit towards this sensor.
   - When a signal is transmitted from the remote control unit, the remote control indicator in the display will light up briefly.

4. Display
   - The display is divided into sections, such as displays for track number, playback time and calendar, as shown below:
   - Press the button to step playback temporarily. If this button is pressed, playback is stopped temporarily, the [PLAY] indicator goes out, and the [PAUSE] indicator lights. Press the button again to continue playback.
   - Press this button to stop playback.
   - The disc will stop rotating, and the number of tracks and total playback time of the disc are displayed on the TRACK NO. and TIME displays, respectively.
   - "STOP" is displayed, and the timer and counter displays of the program are displayed.
   - Press this button to return the pickup to the beginning of the previous 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.
   - 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.

   - Press this button during playback to 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, and press the button a number of times to return to theauto search during playback. (During this time, no sound is heard.)

   - 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 reverse the pickup to a desired position, and press the button a number of times to return to the auto search during playback. (During this time, no sound is heard.)

7. Program Button (PROGRAM)
   - Press this button when you want to enter tracks for programmed playback. (Refer to page 10 for details.)

8. Repeat Button (REPEAT)
   - Press this button once to repeat all tracks. When this button is pressed once, [REPEAT] turns on the display, and all tracks on the disc are played repeatedly.
   - Press the button twice to repeat one track only. When this button is pressed twice, [REPEAT] and the track number are displayed, and the track currently being played is repeated.
   - Press this button once more to disengage the repeat function.

9. Select Button (A/ B)
   - Press this button for normal playback between a designated starting point (A) and an ending point (B). (Refer to page 10 for details.)

10. Clear Button (CLEAR)
    - Press this button to start the last track from the program.

11. Time Mode Button (TIME)
    - This button is used to select the desired indication on the TIME display. The indication on the display will change each time the button is pressed.
    - Normally, the elapsed playback time of the current track is displayed.
    - Pressing this button once, [REMAIN] is displayed, and the remaining time of the current track is displayed.
    - Pressing this button twice, [TOTAL] is displayed, and the total time of the remaining tracks is displayed. However, when programmed play is in progress, the total remaining time of the program is displayed.
    - Press this button once again to return to the normal display of the elapsed playback time of the current track.

12. Intro Scan Button (INTRO)
    - Press this button to play only the first 10 seconds of each track in order.

13. Random Play Button (RANDOM)
    - Press this button to play the tracks on the disc in random order.

14. Auto Edit Button (A.EDIT)
    - The tracks on a CD are automatically split into halves. Sides A and B, like an analog disc, with the division at the middle between tracks which is closed in 1/2 or slightly more.
    - When this button is pressed in the stop mode, the total playback time of each half track and the total number of the calendar are displayed for approximately 4 seconds. Next, the disc is stopped for the second half, after which the unit automatically sets the pause mode at the beginning of the first track. When the [PLAY/PAUSE] button is pressed, the playback begins, and the unit is automatically set to the pause mode at the beginning of the first track. When the [PLAY/PAUSE] button is pressed again, the playback begins, and the unit is automatically set to the stop mode one track at a time.

15. Headphones Jack (PHONES)
    - For private listening, you can connect your headphones to this jack. Headphones are sold separately.

16. Output Terminal (LINE OUT)
    - Connect these jacks to the input jacks on your amplifier. (Refer to page 8 for details on the 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 (A).

How to load a disc
- Make sure the disc holder is completely open.
- Hold the disc by the edges and place on the disc tray. (Do not touch the signal surface, i.e., the glossy side.)
- When using 12 cm, 8 cm, or mini-discs, make sure the outer edge matches the tray guide (circumference of 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 (A) to close the disc holder.
- When the disc holder is closed, the disc is read and after a few seconds the number of tracks and total playing time are displayed on the TRACK NO. and TIME displays, respectively.
- When the disc holder is open and a disc is loaded, you may also press the PLAY/PAUSE button (B) to close the disc holder. (If the PLAY/PAUSE button (B) is pressed, playback will start immediately upon the disc contents having been read.)

ADVANCED CD PLAYBACK

(1) Playing a specific track
- Remote control only
- Use the number buttons and the +10 button to enter the number of the desired track.
- For example, to play track number 4, press ( 4 ) and to play track number 12, press ( 12 ) and ( ). Playback will begin from that track.

(2) Advancing to the next track during playback
- Remote control only
- Press the automatic search forward button ( ) 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 the corresponding number of tracks.

(3) Returning to the beginning of the current track during playback
- Remote control only
- Press the PROGRAM button (PRG) so that the PROGRAM indicator lights, then use the number buttons and the +10 button of the remote control unit to program the tracks.
- For example, to program tracks 3, 12, and 7, press ( 3 ) , ( 12 ) , and ( 7 ).
- The corresponding track number lights on the calendar each time a track is programmed, the track number is displayed on the TRACK NO. display, and the total playing time of the programmed tracks is displayed on the TIME display.
- A few seconds after the last track has been programmed, the first programmed track number is displayed on the TRACK NO. display.

NORMAL CD PLAYBACK

(1) Starting playback
- Remote control only
- Press the power switch (POWER) to turn on the power.
- When the disc is inserted, the disc is read and after a few seconds the number of tracks and total playing time are displayed on the TRACK NO. and TIME displays, respectively.
- When the disc holder is open and a disc is loaded, you may also press the PLAY/PAUSE button (B) to close the disc holder. (If the PLAY/PAUSE button (B) is pressed, playback will start immediately upon the disc contents having been read.)

(2) Stopping playback
- Press the STOP button ( )

Precautions:
- If no disc has been loaded or if the disc has been placed upside down, the indicators will light.
- When the information on the disc cannot be read correctly, for example due to dust or dirt on the disc, the indicators will read as shown below. In this case, only the OPEN/CLOSE button (A) will work.
6. Programming with the button of main unit

1. Press one of the automatic search buttons (| | | | | | | | |) to display the desired track number.
2. Press the PROGRAM button.
3. The corresponding track number lights on the display and the number of tracks programmed is displayed on the STEP display and the total number of tracks is displayed on the TIME display.
4. Press the automatic search button (| | | | | | | | | | | | | |) again, select another track, and press the PROGRAM button.
5. The operations in 3 can be repeated to program up to 20 tracks.

7. Checking the programmed tracks (Remote control only)

1. Press the CALL button.
2. The programmed tracks are displayed in order on the TRACK NO display. Each time the CALL button is pressed, the track number is shifted one position to the left.

7. Playing the programmed tracks

1. Press the PLAY/PAUSE button (| | |) to play the tracks in the programmed order.

8. Clearing program

1. The entire program is cleared when the STOP button (| | | | | | | | | | |) is pressed while the player is stopped.
2. If the CLEAR button is pressed while the player is stopped, the last programmed track is cleared.

NOTES
Direct search is not possible during programmed play.
Programming is possible with the disc holder open. Track numbers greater than the number of tracks recorded on the disc cannot be programmed, but will be automatically cleared before playback begins.
The remaining time per track will only be displayed for track numbers 1 through 20.
The total program time and remaining program time are not displayed if the tracks greater than track number 30 are programmed.

5. Repeating playback

1. Press the REPEAT button twice.
2. Press the PLAY/PAUSE button (| | | | | | | | | | | | | |) until the desired track number is displayed.
3. Press the PLAY/PAUSE button (| | | | | | | | | | | | | |) again.
4. To cancel repeat playback of all tracks, press the REPEAT button twice more.
5. Pressing the REPEAT button once during programmed playback, playback of the tracks entered into the memory will be repeated.

6. Repeating playback of a single track

1. Press the REPEAT button twice.
2. Press one of the automatic search buttons (| | | | | | | | | | | | | |) until the desired track number is displayed.
3. Press the PLAY/PAUSE button (| | | | | | | | | | | | | |) again.
4. Press the REPEAT button again to repeat the desired track.
5. If the CLEAR button is pressed while the player is stopped, the last programmed track is cleared.

7. Repeating playback of a desired interval

1. Start playback and press the A-B button when you reach the starting point of the interval. The A-B indicator lights up.
2. Continue playback or advance the pickup using the automatic search forward button (| | | | | | | | | | | | | |) until the ending point is reached. Press A-B button again to cancel the A-B repeat mode.
3. The pickup will now return to the starting point and repeat playback of the selected interval.
4. This interval will be repeated until the A-B repeat mode is canceled by pressing the A-B button again.
5. A-B repeat playback is not possible during programmed playback or random playback.

8. Pausing playback at any point

1. Press the PLAY/PAUSE button (| | | | | | | | | | | | | |) to play the track.

NOTES
If the RANDOM indicator is lit and random play begins automatically.
If the RANDOM button is pressed when tracks have been programmed, only the programmed tracks will play in random order.
If the RANDOM button is pressed when the repeat function is set, the tracks will be played through once in random order, then played through again in a different order, etc.
During random play, all the tracks on the disc are displayed on the TRACK NO display, and the track which will be played next cannot be known until playback starts.
NOTE
- The remaining time in the total mode cannot be displayed during playback.
- If the RANDOM button is pressed while in the auto mode, the auto exit mode is cleared.

12. Playing only the beginning of each track.
In Stop Play mode, pressing the play button (INTRO) before the beginning of each track is played back 10 seconds from the start track.
If the intro scan play button (INTRO) is pressed during playback, the beginning of each track is played back 10 seconds from the current track or the next track.

13. Synthesized Recording Function
Connecting the SYNCHRO jack with a DENON cassette deck which is equipped with a SYNCHRO jack will allow synthesized recordings to be made.
- To use this function, be sure to connect the SYNCHRO jack as well as the output terminal (LINE OUT) (See Page B for connections.)
- Then, lead a lead.

PLAYBACK USING THE REMOTE CONTROL UNIT
The accessory RC-262 remote control unit can be used to control the CD player from a convenient distance.

1. Inserting the dry cell batteries.
1-1. Remove the battery cover on the back of the remote control unit.
2. Insert two R6 size AAA dry batteries with correct polarity as indicated in the battery compartment.
3. Replace the battery cover.

Notes on the Batteries
- The remote control unit uses standard size AAA dry cell batteries.
- The batteries must be replaced appropriately once a year. Replacement may be necessary depending on how much the remote control unit is used.
- If less than one year from the time new batteries were installed, the remote control fails to operate. If this is the case, replace the batteries.

With the CD player in the stop or pause condition, starting a synchronized recording at the cassette deck side will automatically cause the CD player to start playing. (This is synchronized play.)
- The operation instructions at the display will also light during synchronized play.

NOTE
- Synchronized play is also possible in the program mode.
- The repeat mode is canceled when synchronized play is started.
- Except for the STOP, PLAY and A-Space buttons, the buttons will not operate during synchronized play.
- In the auto mode in the AUTO-EDT condition, it will light up again one second after playing time of the disc.
- In the play condition, even if you press a synchronized recording at the cassette deck side, CD player will not synchronize with the cassette deck and the cassette deck becomes synchronized operation condition. In this case, push the STOP button of the cassette deck, then the CD player in the stop condition and then a synchronized recording at the cassette deck side again.
- For further details, see the owner's manual for the cassette deck that has been connected.

REMOTE CONTROL UNIT RC-262

- Setting to the Program Mode:
  - Press the PROGRAM button (PROG) then the track number button 0 through 10 and 11.
- The remote control unit is normally set to the direct mode.

Checking Programmed Contents
Before pressing the CALL button on the remote control unit, program contents will not be displayed. Tracked entered into the memory will be displayed starting from the first track entered, and will decrement one slot in the battery compartment of the CALL button.

Notes on Operation
- Do not press identical buttons on the CD player and remote control simultaneously as this may cause malfunction.
- The remote control unit may be difficult to operate if the remote control sensor is exposed to strong light, such as direct sunlight or light from fluorescent lamps, or if there are obstacles between the remote control unit and the sensor.
- Direct track selection:
  - The following functions cannot be remote controlled: Power On/Off.

Track selection while programming (Programming must be done while the player is stopped):
- Press the PROGRAM button (PROG) and then the track numbers you wish to enter into the memory.
Example: PROG: 2, 4, 6, 8, 10, 12
- If no track numbers are entered, the STOP button will be pressed automatically.
- The remote control unit is now ready to operate.

Memory track are entered by pressing the STOP button while the player is stopped.
- Direct use of the track number buttons:
  - Direct selection of single-digit track numbers (1-9) by pressing the desired track number button. For tracks with numbers 11 and on, first press the +10 button then the single-digit button. E.g., track 27, press the +10 button twice and then press the 2 button.
**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 the disc has been loaded into the disc holder.
  4. Check the time on the timer and then set the desired turn-on time.
  5. Turn the audio timer ON.

- **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. Also wipe any drops from the center and out.
     - Do not expose to heat or direct sunlight for extended periods of time.
     - Do not place on the disc and do not attach any tape 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. Press until the condensation disappears. Never dry the disc with heat 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 considerable time
       2) Places subject to accumulation of dust or high humidity
       3) Places exposed to high temperatures, such as close to heater or outlets.

**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?
    - See page 8
    - Is the disc dirty or scratched?
    - See page 8
  - Is the disc holder plate bad?
    - See page 8
  - When the PLAY / PAUSE button (Ⅱ/Ⅰ) is pressed, playback does not start.
    - See page 8
  - Is the disc dirty or scratched?
    - See page 14
  - There is no sound, or it is distorted.
    - See page 14
  - Is the output cord properly connected to the amplifier?
    - See page 8
  - Have the amplifier controls been set correctly?
    - See page 8

**Specifications**

- **Audio**
  - Number of Channels: 2 channels
  - Frequency Response: 2—20,000 Hz
  - Dynamic Range: 95 dB
  - Signal-to-noise Ratio: 103 dB
  - Distortion: 0.005% (1 kHz)
  - Separation: 92 dB (1 kHz)
  - Wow and Flutter: Below measurable limits
  - Output Voltage: 2 V peak

- **Disks**
  - Compact Disc Format

- **General Characteristics**
  - Power Supply: Voltage and frequency shown on rear label
  - Power Consumption: 11 W
  - Dimensions: 434.96 x 125.45 x 255.05 mm
  - Weight: 3.6 kg (8 lbs)

- **Functions and Display**
  - Automatic search, programmed playback, repeat playback
  - Manual search, auto space, tone mode, zero seek, random, iron scan
  - Track number, time, music calendar, and engaged modes

**Remote Control Unit**

- RC-252
- Infared pulse system
- Power Supply: 9-VDC, two R6 or standard size AAA dry cell batteries
- External Dimensions: 179 x 44 x 34.5 mm
- Weight: 90 g (3.2 oz) including batteries

**Supplied Accessories**

- Pin-plug connection cord

* Design and specifications are subject to change without notice in the course of product improvement.
NOTE FOR HANDLING OF LASER PICK-UP

Description of the Components

Label
1. Serial number

This denotes the serial number used for quality control in the manufacturing plant.
Note: The numbers of figures in English numerals may be changed.

2. Label

KSS-210A

Lot No.

lop

Quality control

day month year

(last figure) quality control No.

but Oct., Nov., and Dec. are expressed by alphabetical letters of X, Y and Z.

3. Position of the labels

Nameplate

Notes:
- The expressed unit is by mA, with omission of the decimal point as for example, 56.5mA will be expressed as 565, but the head of English letter means the control in the manufacturing plant.
Electrical Pin Connection

1. PD connector (JAPAN SOLDERLESS TERMINAL MFG CO. LTD "PH series" 8 pin)

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>PD element</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>F</td>
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<tr>
<td>2</td>
<td>E</td>
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<tr>
<td>3</td>
<td>K</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
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<td>5</td>
<td>A</td>
</tr>
<tr>
<td>6</td>
<td>B</td>
</tr>
<tr>
<td>7</td>
<td>C</td>
</tr>
<tr>
<td>8</td>
<td>D</td>
</tr>
</tbody>
</table>

COLOR: WHITE

PD Circuit Diagram

2. Actuator and LD connector (JAPAN SOLDERLESS TERMINAL MFG CO. LTD "PH series" 8 pin)

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>Laser</td>
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<tr>
<td>2</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>monitor</td>
</tr>
<tr>
<td>4</td>
<td>reference</td>
</tr>
<tr>
<td>5</td>
<td>Fo (-)</td>
</tr>
<tr>
<td>6</td>
<td>Tr (+)</td>
</tr>
<tr>
<td>7</td>
<td>Tr (-)</td>
</tr>
<tr>
<td>8</td>
<td>Fo (+)</td>
</tr>
</tbody>
</table>

COLOR: RED

LD Actuator Circuit Diagram

Short-round

Focus

Tracking

CAUTION

When replacing Pick-up section, connect red connector cord to PD connector (white) of Pick-up section, and white connector cord to LD connector (red) of Pick-up section.
Cautions for Handling the Laser Pick-up

The laser pick-up KSS-210A 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-temperature 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 7x10^8 W/cm² even if the intensity at the objective lens is 400µW maximum. As the light beam spreads after focused through the objective lens, it does not affect you in the place as far as no more than 30 cm. However, do not look at the laser light beam either through the objective lens directly or 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. As₂O₃, AsCl₃ 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 its 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 with 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 (by the Kanto Kasei Kogyo), 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. (resin 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 +5V and Q101(Emitter) of the Main Unit, the value of laser diode current "Iop" can be found by a formula
      \[ I_{op} = V \times \frac{1}{22} \]
   (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, "Iop" will change ±5%. The "Iop" 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 TP4 (RF) on Main Unit, and in between GND4 becomes 1V or lesser values; or a jitter occurs great, the laser pick-up may be deteriorated.
DISASSEMBLY
(To reassemble reverse disassembly)

1. Top Cover
   1) Remove 9 screws A on the left, right and rear side.
   2) Detach the Top Cover in the arrow direction.

2. Front Panel
   1) Disconnect a connector connecting with the PO S/W & H/P P.W.B. Unit, and 2 wires connecting with the PO S/W & H/P P.W.B. Unit and Front P.W.B. Unit.
   2) Remove 5 screws B and a screw C.
   3) Undo 2 Hooks and detach Front panel in the arrow direction.
3. CD Mechanism
Remove 4 screws ($) and detach the CD mechanism in the arrow direction.

4. Rear Panel
1) Remove 2 screws (©) and 5 screws (©).
2) Remove the Cord Bush.
3) Unfasten 3 hooks and detach the Rear Panel in the arrow direction.
ADJUSTMENT

1. Adjustment method

(1) Necessary equipment for adjustment
1. Dual trace oscilloscope
2. Reference disc TOMITA YASUKO
   (CA-1094 or CA-1094A)
3. Oscillator (10 Hz ~ 10 kHz, 0 ~ 3 Vp-p)
4. Frequency counter (readable no less than 5 kHz)
5. Lissajous jig

(2) Location

(3) Preset

<table>
<thead>
<tr>
<th>1. Preset VR101 to 103.</th>
<th>VR103 (Focus offset)</th>
<th>VR101 (Tracking offset)</th>
<th>VR102 (Tracking gain)</th>
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<td>3 O'clock</td>
<td>3 O'clock</td>
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2. Step.

1. Focus offset
2. Tracking offset
3. Tracking gain
Adjustment Disc: CA-1094 or CA-1094A

1. Focus offset Adjustment
1. Connect an oscilloscope to TP3 (FEO) and TP5 (GND).
2. Insert the disc and set the unit in stop mode.
3. Adjust VR103 so as a DC voltage value on the scope becomes 0 V.

2. Tracking offset Adjustment
1. Connect an oscilloscope to TP1 (TEO) and TP5 (GND).
2. Insert the disc and set the unit in play mode.
3. Set VR102 fully counterclockwise.
4. Adjust VR101 and obtain a waveform on the scope becomes A = B.

3. Tracking Gain Adjustment
1. Connect INPUT terminal of Lissajous jig and TP2 (TE)."
**TRANSISTORS**

DTA144WS (PNP)
DTC114ES (NPN)
DTC343TS (NPN)

**PNP Type**
DTA WS Series

**NPN Type**
DTC ES/TS Series

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KTA1266 (Y)
KTA1273 (Y)
KTC3205 (Y)

**DIODES**

IN4002A

IN4148M

MTZJ5.1B
MTZJ5.6B
MTZJ24B

**REMOTE SENSOR**

SBX8025L (RM851)
### PRINTED WIRING BOARD PARTS LIST

**MAIN UNIT ASS'Y**

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<tr>
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<th>Part No.</th>
<th>Part Name</th>
<th>Remarks</th>
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<td>IC CA13171M</td>
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<tr>
<td>IC102</td>
<td>960 0038 204</td>
<td>IC CA13720A</td>
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### SEMICONDUCTORS GROUP

- **IC101**: 960 0038 107 - IC CA13171M
- **IC102**: 960 0038 204 - IC CA13720A
- **IC103**: 265 0306 004 - IC MAVN108D
- **C201**: 262 1819 005 - IC CDX20550B
- **C202**: 960 0568 301 - IC PCM1712U
- **C203**: 265 0006 004 - IC MAVN556D
- **C204**: 263 0118 001 - IC MAVN56D
- **C205**: 262 2105 416 - IC GL7805
- **C206**: 262 2105 415 - IC GL7805
- **C207**: 262 0073 905 - IC proctor XIC N15
- **C208**: 263 0505 001 - IC MAVN706F
- **C209**: 960 0568 505 - IC GL7905
- **C210**: 262 0073 905 - IC proctor XIC N15
- **C211**: 960 0011 107 - IC CRP2316-3630C
- **C212**: 262 2105 425 - IC KITA42P

### RESISTORS GROUP

- **VR101**: 960 0057 700 - Semi fixed 10kohm-B
- **VR103**: 262 2105 409 - Semi fixed 4.7kohm-B

### CAPACITORS GROUP

- **C101**: 254 4254 938 - Electrolyte 47 µF 16V
- **C102**: 254 4250 027 - Electrolyte 100 µF 15V
- **C103**: 254 4250 027 - Electrolyte 100 µF 15V
- **C104**: 255 2403 988 - Film 0.033 µF 50V
- **C105**: 255 4122 056 - Film 0.1 µF 50V
- **C106**: 255 4122 056 - Film 0.1 µF 50V
- **C107**: 255 2403 988 - Electrolyte 100 µF 15V
- **C108**: 255 4122 056 - Film 0.1 µF 50V
- **C109**: 255 2403 988 - Electrolyte 100 µF 15V
- **C110**: 255 4122 056 - Film 0.1 µF 50V
- **C111**: 255 2403 988 - Electrolyte 100 µF 15V
- **C112**: 255 4122 056 - Film 0.1 µF 50V
- **C113**: 255 2403 988 - Electrolyte 100 µF 15V
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OTHER PARTS GROUP

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<td>XT801</td>
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<td>JK252</td>
<td>960 0004 407</td>
<td>Jack D3.5</td>
<td>HEADPHONE</td>
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<td>JK301</td>
<td>960 0057 807</td>
<td>2P RCA jack</td>
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<td>JK302</td>
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<td>DCD 2150 426</td>
<td>Tact switch</td>
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<td>960 0058 903</td>
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<td>8SW502</td>
<td>960 0062 407</td>
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#### CHASSIS AND CABINET

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DCD-425(U.S.A., CANADA, EUROPE, U.K.) DCD-335(EUROPE)

9 10 11 U.S.A. ONLY

14 LABEL, UPC: ONLY U.S.A. AND CANADA TYPE
NOTE: