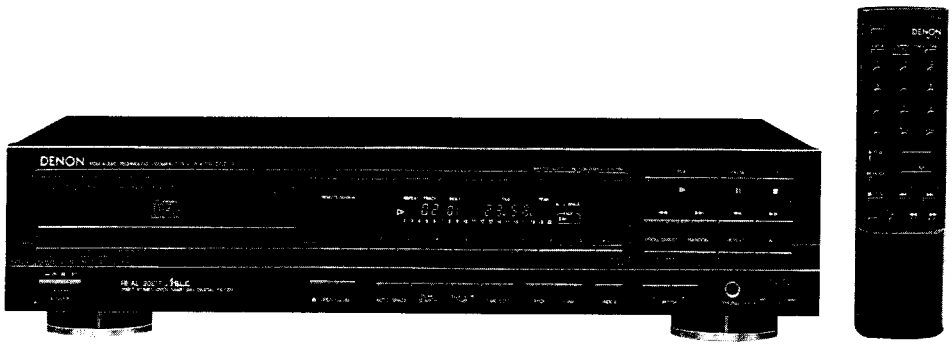
DENON

Hi-Fi Component

SERVICE MANUAL

MODEL DCD-980
MODEL DCD-970

STEREO CD PLAYER



(Photo: DCD-980)

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NIPPON COLUMBIA CO., LTD.

IMPORTANT TO SAFETY

WARNING:

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

IMPORTANT (BRITISH MODEL ONLY)

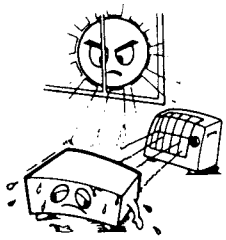
The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral Brown: Live

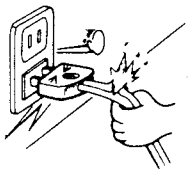
The colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows.
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is 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 41°F – 35°C 95°F.

NOTE ON USE

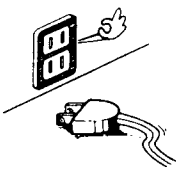


- Avoid high temperatures
  Allow for sufficient heat dispersion when installed on a rack.

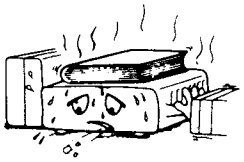


- Handle the power cord carefully.
  Hold the plug when unplugging the cord.

- Keep the set free from moisture, water, and dust.

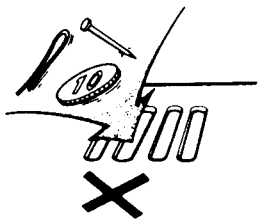


- Unplug the power cord when not using the set for long periods of time.

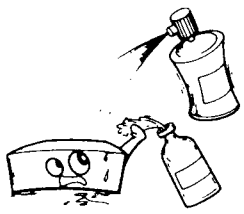


*(For sets with ventilation holes)

- Do not obstruct the ventilation holes.



- Do not let foreign objects in the set.



- Do not let insecticides, benzene, and thinner come in contact with the set.

- Never disassemble or modify the set in any way.

Thank you for purchasing this 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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Please check to make sure the following items are included with the main unit in the carton:

(1) Operating Instructions 1
(2) Connection Cord 1
(3) Remote Control Unit 1
(4) R6P AA Dry Cell Battery 2

FEATURES

This device is a CD player which uses DENON's unique ΔS.L.C. (Super Linear Converter) for eliminating loss of sound quality in the PCM playback section to offer playback of the same sounds as those in the studio or hall where the CD was recorded. In addition, the use of carefully selected parts makes this a high performance CD player reproducing the original sound field with rich musical expression.

(1) **Real 20-bit ΔS.L.C. (Super Linear Converter)**
The use of DENON's unique system for preventing zero cross distortion, the main factor in loss of sound quality in the PCM playback section, plus real 20-bit D/A converters with superior resolution, offers reproduction of the original sound field with rich musical expression.

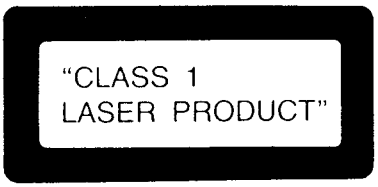
(2) **High performance digital filter**
The independent real 20-bit D/A converters for the left and right channels and a high precision digital filter with 8 times oversampling bring out the best of the analog filter to produce crisp, clear sound.

(3) **Remote control unit with volume control**
In addition to such functions as play, pause, stop and direct search using number buttons, the remote control unit also includes + and – volume buttons for remote control of the volume. The remote control functions greatly add to the operability of the set.

(4) **Optical digital output (DCD-980 Only)**
This jack makes it possible to output the data on the compact disc in its digital form to a digital processor or D/A unit for playback. The optical output eliminates noise interference and improves sound quality.

(5) **Playback of 8-centimeter CD singles**
8-centimeter CD singles can be played on the without an adapter.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

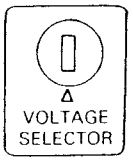


ADVARSEL: **USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSAETTELSE FOR STRÅLING.**

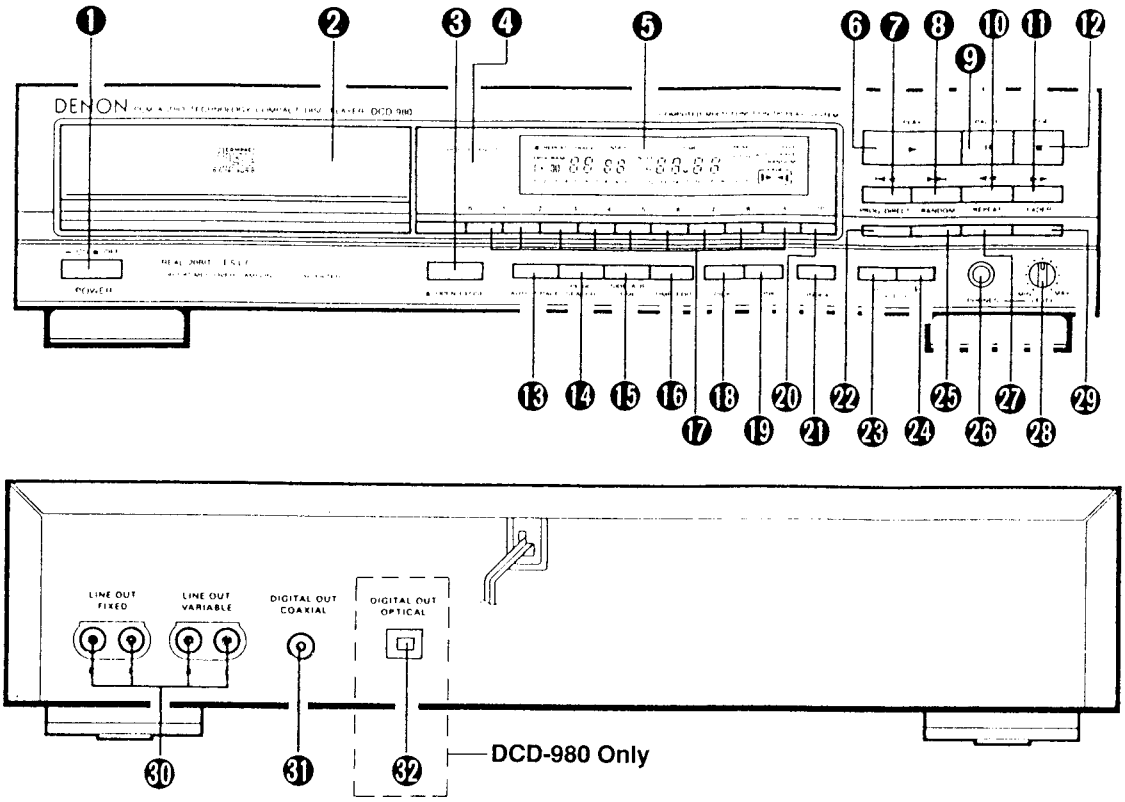
VAROITUS: **LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.**

VARNING: **OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.**

- **Line Voltage Selection (for multiple voltage model only)**
  - The desired voltage may be set with the VOLTAGE SELECTOR knob on the rear panel, using a screwdriver.
  - Do not twist the VOLTAGE SELECTOR knob with excessive force as this may cause damage.
  - If the VOLTAGE SELECTOR knob does not turn smoothly, please contact a qualified serviceman.



NAMES AND FUNCTIONS OF PARTS



❶ Power Switch (POWER)

- When the power is turned on, "(-20)" appears on the TIME display, and if no disc is loaded, "(00:00:0000)" appears on the digital display.
- If the power is turned on with a disc already loaded, the total number of tracks on the disc is displayed on the TRACK NO. display, the total time is displayed on the TIME display, the numbers on the music calendar light up to the number of tracks on the disc, and playback begins.
- When the power is turned off, the unit is set to the standby mode.

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.
- The disc holder may also be closed by pressing the play button (▶ PLAY) ❻ or pause button (II PAUSE) ❾

❸ Open/Close Button (⏏ OPEN/CLOSE)

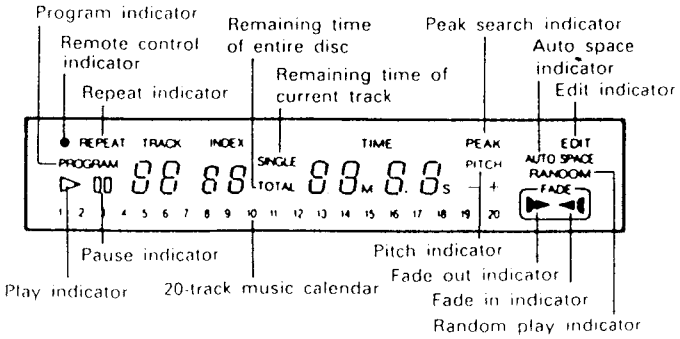
- The disc holder is opened and closed by pressing this button.
- Press this button once to open the disc holder, and once again to close it.
- When the disc holder is closed with a disc loaded, the disc will rotate for a couple of seconds while the disc contents are read. The number of tracks and total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

❹ Remote Control Sensor (REMOTE SENSOR)

- This sensor receives the infrared light transmitted from the wireless remote control unit.
- For remote control, point the supplied remote control unit RC-235 towards this sensor.
- When a signal is transmitted from the remote control unit, the remote control indicator in the display ❺ will light up briefly.

❺ Display

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



❻ Play Button (▶ PLAY)

- Press this button to start playback of a disc.
- When this button is pressed, ▶ 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.

⑦ Automatic Search Reverse Button (⏮)
- 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 the corresponding number of tracks.

⑧ Automatic Search Forward Button (⏭)
- 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 the corresponding number of tracks.

⑨ Pause Button (II PAUSE)
- Press this button to stop playback temporarily.
- If this button is pressed during playback, playback is stopped temporarily, the [▶] indicator goes out and the [II] indicator lights.
- Press this button or the play button (▶ PLAY) again to continue playback.

⑩ 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.

⑪ 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.

⑫ 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 on 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.

⑬ Auto Space Button (AUTO SPACE)
- Pressing this button will cause the [AUTO SPACE] indicator to light and a blank space of approximately 4 seconds is inserted between tracks during CD playback. Pressing the button once more, the [AUTO SPACE] indicator goes out and the Auto Space feature is cancelled.
- When one of the track search buttons (⏮ or ⏭) is pressed, the Auto Space function will not operate.
- The Auto Space function will work during normal playback as well as programmed playback.
- Although 4-second blanks are inserted between tracks, this additional time is not reflected by the indication on the time remaining display or time display when the Auto Edit function is engaged.

⑭ Peak Search Button (PEAK SEARCH)
- Press this button to search for the peak level. (Refer to Page 10, 11)

⑮ Side A/B and Time Mode Button (SIDE A/B TIME)
- Press this button to switch between the display of side A and side B of the tape during the time edit operation. (Only when stopped.)
- This button is used to select the desired indication on the TIME display. The indication on this 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.

⑯ Time Edit Button (TIME EDIT)
- Press this button to edit in conjunction with the tape time. (Refer to Page 9.)

⑰ Number Buttons (0, 1, 2, 3, 4, 5, 6, 7, 8, and 9)
- Use these buttons for the direct 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 ㉒ to set to the program mode.

⑱ Pick Button (PICK)
- Press this button when substituting a track with the time edit. (Refer to Page 9, 10.)

⑲ Link Button (LINK)
- Press this button when editing spans a number of discs. (Refer to Page 10.)

⑳ +10 Button (+10)
- Press this button first when selecting track numbers over 10. Use it together with the number buttons ⑰. For example, to select track number 15, press [+10] then [5].
  For track number 33, press [+10] three times, then press [3].

㉑ Index Button (INDEX)
- Press this button to start playback from an index within a track. Use the number buttons ⑰ to specify the index number.

㉒ Program/Direct Button (PROG/DIRECT)
- Press this button when you want to enter tracks for programmed playback. (Refer to page 7 for details.)

㉓ Pitch – Button (PITCH –)
- Press this button to slow down the playing speed. (Refer to Page 11.)

㉔ Pitch + Button (PITCH +)
- Press this button to make the playing speed faster. (Refer to Page 11.)

㉕ Random Play Button (RANDOM)
- Press this button to play the tracks on the disc in random order.

㉖ Headphones Jack (PHONES)
- For private listening, you can connect your headphones to this jack. Do not raise the volume level too much when listening through headphones. (Headphones are sold separately.)

㉗ Repeat Button (REPEAT)
- Press this button to repeat playback of all tracks.
- When this button is pressed, [REPEAT] lights on the display and all tracks on the disc or in a program will be repeatedly played back. Press this button once more to disengage the Repeat All function.

㉘ Volume Control (PHONES LEVEL)
- Use this to adjust the output level (VOLUME) of the headphones.

㉙ Fader Button (FADER)
- Press this button to perform fade out or fade in. (Refer to Page 10.)

㉚ Output Terminal (FIXED-VARIABLE)
- Connect these jacks to the input jacks on your amplifier. (Refer to page 6 for details on the connections.)

㉛ Digital Output Jack (COAXIAL)
- This jack outputs digital data.
- We recommend using a 75-ohm pin cord (available in stores) for connections.

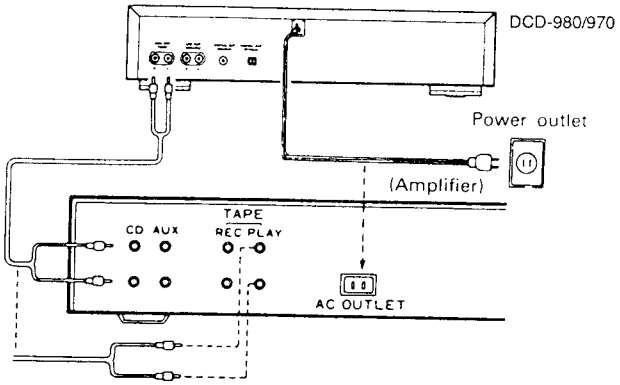
㉜ Digital Output Jack (OPTICAL) [DCD-980 Only]
- Digital data is output in optical form from this jack.
- Contact your nearest Denon Consumer Center or office for information on the optical fiber cable to be used for connection.

Continuous Button Operation

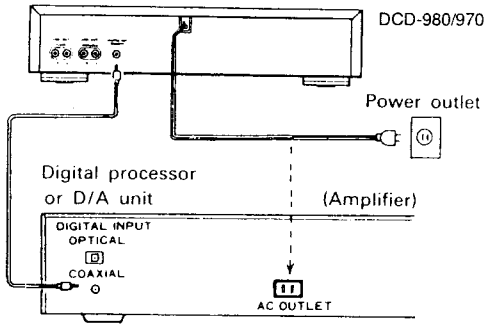
If the automatic search reverse button ⑦, the automatic search forward button ⑧, the pitch – button ㉓, the pitch +button ㉔ or the +10 button ⑳ are held in, the function of that button will be repeated.

CONNECTION

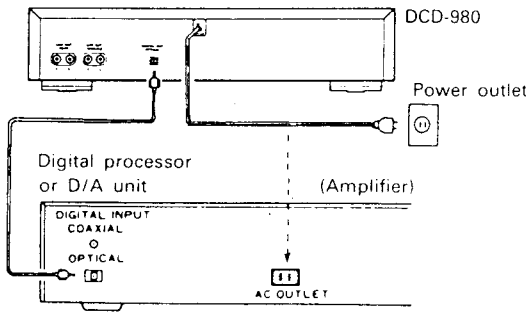
(1) **Connecting the Output Terminal (FIXED-VARIABLE)**
Use the included pin cords to connect the left (L) and right (R) output terminal (FIXED-VARIABLE) of the DCD-980 to the CD, AUX, or TAPE PLAY left (L) and right (R) input jacks of the amplifier.
There are two types of output jacks, one of the variable type and one of the fixed type. Be sure to use the variable outputs if you want to be able to control the output level from the DCD-980.



(2) **Connecting the Digital Output Jack (COAXIAL)**
Use a 75-ohm pin cord to connect the digital output jack (COAXIAL) of the DCD-980 to the digital input jack (COAXIAL) on a digital processor or D/A unit, available in stores.



(3) **Connections to the Digital Optical Output Jack (OPTICAL) (DCD-980 Only)**
Use an optical fiber cable to connect the digital optical output jack on the DCD-980 to the optical input jack on a digital processor or D/A unit.



Connection Precautions
- Before proceeding with connections or disconnections of cables and power cords, be sure to turn all system components off.
- Ensure that all cables are connected properly to the L (left) and R (right) jacks.
- Insert plugs fully into the terminals.
- Connect the output jacks to the amplifier CD, AUX or TAPE PLAY input jacks.

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 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 (▶ 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 Tray guide for 12 cm disc

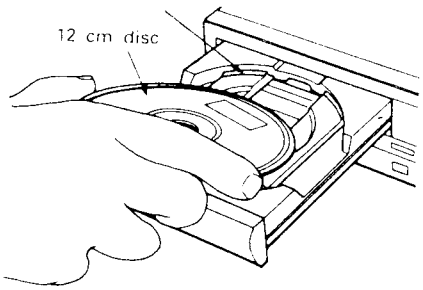
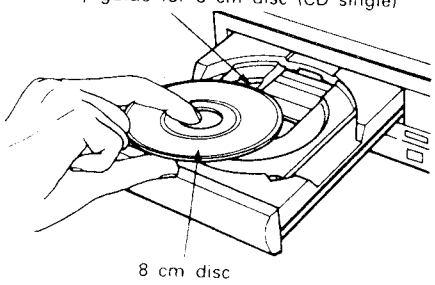


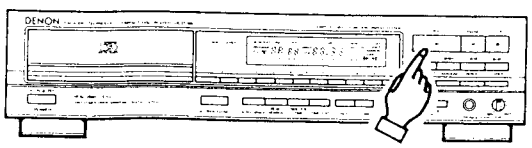
Fig. 2 Tray guide for 8 cm disc (CD single)



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 malfunction and damage the CD player.

NORMAL CD PLAYBACK

(1) **Starting Playback**

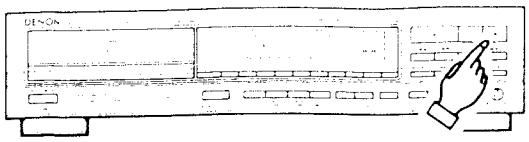


(▶ PLAY)

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.

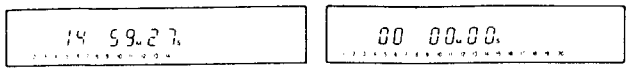
3 Press the play button (▶ PLAY).

(2) Stopping Playback



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

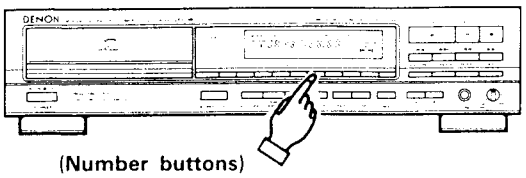
Precautions:
- If no disc has been loaded or the disc has been placed upside down, all indicators will light.
- When the information on the disc cannot be read correctly, for example due to dust or dirt on the disc, the indicators will read as shown below. Nothing will be shown on the TRACK NO. and TIME displays, and it may take quite a while to read the disc.



Normal display | Improper display

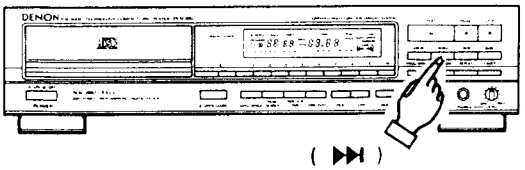
ADVANCED CD PLAYBACK

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



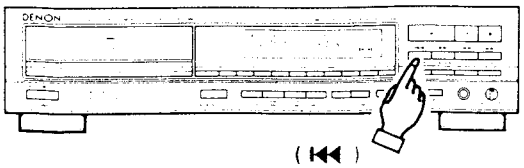
- Use the number buttons and the +10 button to input the number of the desired track.
  For example, to play track number 4, press [4], and to play track number 12, press [+10] and [2]. Playback will begin from that track.

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



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 tracks.

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

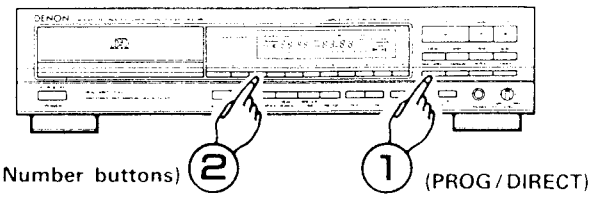


Press the Automatic search reverse button (|◀◀) during playback.
- The pickup will return to the beginning of the current track and playback will continue. Pressing the button several times will return the pickup the corresponding number tracks.

❹ **Playing Specific Tracks in a Specific Order** ..... Programmed Play

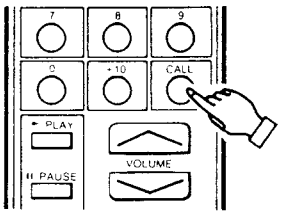
- With this function, you can choose any of the tracks on the disc and program them to play in any order.
- Programming is possible with the disc holder open.
- Up to 20 tracks can be programmed.
- The programmed tracks are shown on the calendar.

(1) Programming



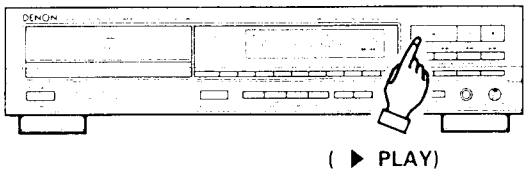
- Press the PROG/DIRECT button so that the [PROGRAM] indicator lights, then use the number buttons and the +10 button to program the tracks.
  For example, to program tracks 3, 12, and 7, press [PROG/DIRECT], [3], [+10], [2], and [7].
  The corresponding track number lights on the calendar each time a track is programmed, the track number is displayed on the TRACK NO. display, the number of tracks programmed is displayed on the INDEX 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 total number of tracks programmed is displayed on the TRACK NO. display and the total playing time of the programmed tracks is displayed on the TIME display.

(2) Checking the Programmed Tracks (Remote control only)



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

(3) Playing the Programmed Tracks



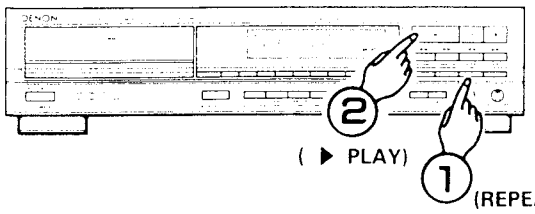
- Press the (▶ PLAY) button to play the tracks in the programmed order.

(4) 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.

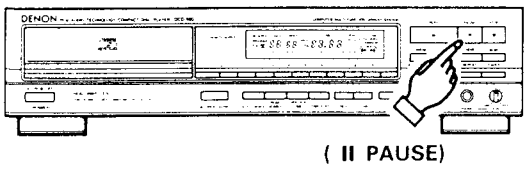
NOTES
- If programming is done in the play or pause mode, the track currently playing is programmed at the first position. Other tracks can be added to the program, but the number of programmed tracks and the playing time will not be displayed.
- Direct search is not possible during programmed play. 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.
- 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 tracks greater than track number 20 are programmed.

❺ Repeating playback ..... Repeat



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

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



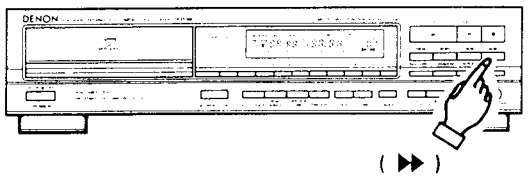
- Playback can be temporarily halted and then continued from the same point in the track.

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 Audible quick search ..... Manual Search

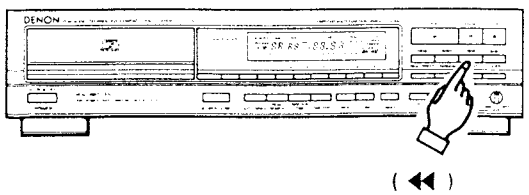
- Using this function, you can cue to a desired point within a track, either in the forward or reverse direction.
- Release the manual search button (◀◀ or ▶▶) when the desired point has been reached. Normal playback then continues.

(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. In this case, no sound is heard however.
- 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.

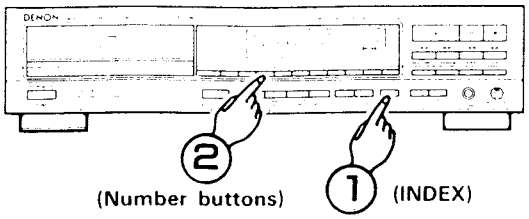
(2) Manual Search in Reverse



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. In this case, no sound is heard however.
- If the manual search reverse button (◀◀) is kept pressed after the beginning of the first track on the disc is reached, (CC) is displayed and manual search stops. To return to another point, press the manual search forward button (▶▶) until (CC) disappears.

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.

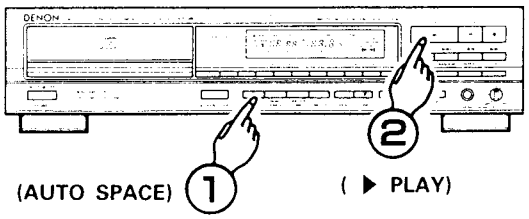


① "--" appears on the TRACK NO. display when the INDEX button is pressed.
② Input the track number using the number buttons.
Next, "--" appears on the INDEX display. Input the desired index number, and playback will start from that index number.
For example, to start from index 2 on track number 3, press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

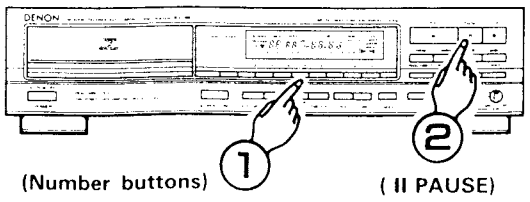


1. Pressing the auto space button (AUTO SPACE) will cause the AUTO SPACE indicator to light.
2. Press the play button (▶ PLAY) to start playback.
When a track has been played to its end, a 4-second silence is made before the next track starts playing.
3. Press the auto space button (AUTO SPACE) again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

❿ 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.



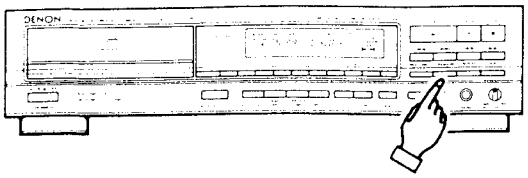
1 Press the number button(s) for the desired track.
2 Press the (II PAUSE) button.
- To start playback, press the (▶ PLAY) or (II PAUSE) button.

(2) With Program Search

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

⓫ Playing in Random Order ..... Random Play

- With this function, the tracks recorded on the disc can be played in a completely random order.



(RANDOM)

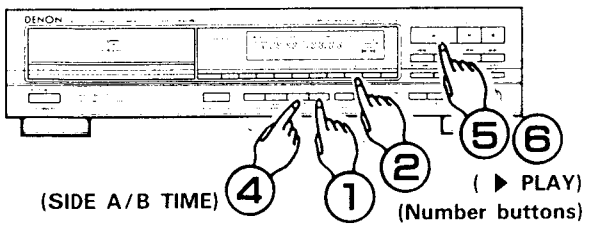
- When the RANDOM button is pressed, the RANDOM indicator lights and random play begins automatically.
- If the RANDOM button is pressed when tracks have been programmed, only the programmed tracks will be played, in random order.
- If the RANDOM button is pressed when the repeat function is set, the tracks will be played through once in random order, then played through again in a different order, etc.
- During random play, all of the tracks on the disc are displayed rapidly 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 random play.
- If the RANDOM button is pressed when in the time edit mode, the time edit mode is cleared.

⓬ Edit Recording on Sides A and B of the Tape ..... Edit Function

(1) Editing by Tape Time Specification (TIME EDIT)



(TIME EDIT)

The time edit function permits highly efficient editing in conjunction with the length (tape time) of the cassette tape to be recorded.

① When the TIME EDIT button is pressed, (C-...) will appear and the player will wait for the tape time to be input. EDIT will light up.

② Input the tape time with the number buttons.
(The tape time is the total time of sides A and B.)
Example: For a 46-minute tape, press 4 and 6.

③ When the tape time has been specified, the tracks of side A that can be recorded are displayed on the calendar and the blank time of tape side A is displayed at TIME. (S-) is displayed at TRACK NO. and the number of tracks that can be recorded are displayed at INDEX.

④ Pressing the SIDE A/B TIME button permits a check of the calendar display of the tracks that can be recorded on side B and the blank time (b-) is displayed at TRACK NO. and the number of tracks that can be recorded are displayed at INDEX.
Each press of this button alternately displays side A and side B.

⑤ Pressing the play button (▶ PLAY) starts the play from the first track of side A. When side A has finished playing, the player will automatically pause at the beginning of the first track of side B.

⑥ Pressing the play button (▶ PLAY) or the pause button (⏸ PAUSE) again will start the play mode. When side B has finished playing, the player automatically stop.

When a mistake has been made in the time specification and the play button (▶ PLAY) has not yet been pressed, pressing the TIME EDIT button will return the settings to the condition of Step 1. This can be done any number of times.

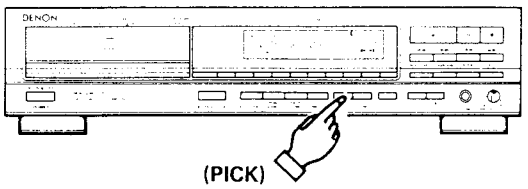
⑦ The time edit function also works in the program track selection mode (Page 7). In this mode, sides A and B can be divided according to the program order.
When the auto space function has been turned on, 4 seconds will be added to the play time of each track.

NOTE:

- The time edit function will not work for discs containing more than 20 tracks.
- The automatic search buttons (⏮, ⏭) and the manual search buttons (◀◀, ▶▶) do not function during the time edit operation.
- Pressing the stop button (■ STOP) or the open/close button (⏏ OPEN/CLOSE) (except for at the time of the link operation) will cancel the time edit operation.

(2) Pick Function (PICK)

In (1) time edit, the tracks are ordered from the first track or in the programmed order so that a large blank space might remain at the end of the tape. The pick function is used to shorten this blank space and effectively use the time of the specified tape.

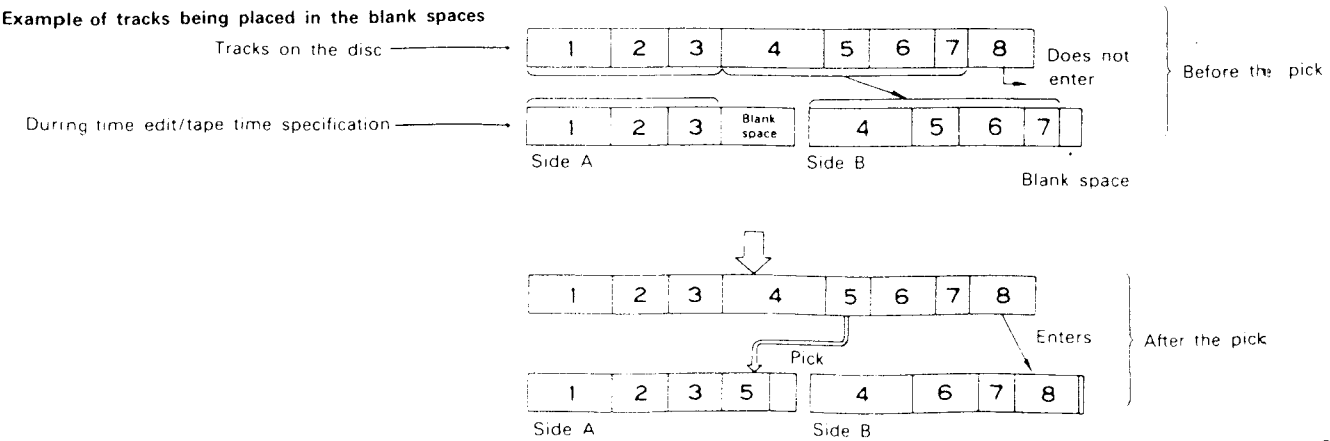


(PICK)

① In (1) time edit, press the pick button (PICK) following the tape time specification and before pressing the play button (▶ PLAY).

② When the display is showing side A, pick is executed from among the tracks other than those fixed on side A (in the blank portion of side A). When the display is showing side B, pick is executed from among the unfixed tracks (in the blank portion of side B).

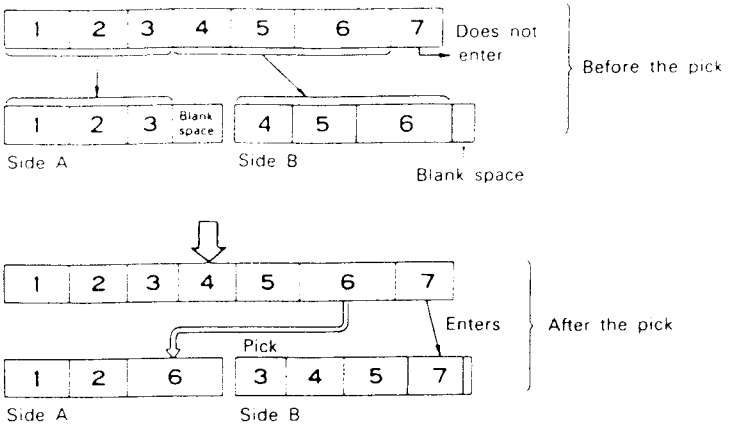
Example of tracks being placed in the blank spaces



③ When there are no tracks that can be picked in the blank portion of side A (side B), cancel the last track of side A (side B), increase the blank portion, and pick an available track in the new blank portion.
At this time the tracks cancelled from side A are automatically fixed on side B.
When there are no tracks that can be picked even though the last track of side A (side B) has been cancelled, the setting will remain the same even if the cancellation is suspended.

Example of tracks not being placed in the blank spaces

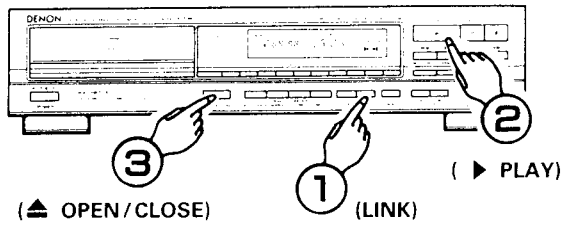
When tracks are not placed in blank spaces as shown in the diagram to the right, the last track (track 3 in the example) is cancelled and substituted with a track from side B.



(3) Link Function (LINK)

The link function provides the convenience of editing a number of discs in succession.
The link operation is used following the tape time specification of the time edit function and before the end of playback.

① When the link button (LINK) is pressed, EDIT will start flashing.
② After the tracks have been played, the player will stop automatically. The blank time of the tape will be displayed at this time.
③ Press the open/close button (⏏ OPEN/CLOSE) of the disc holder and change the disc.
④ Pressing the time edit (TIME EDIT) button will permit editing using the blank time of the tape in Step ②.



NOTE:
- The link operation is cancelled by the stop button (■ STOP). It will also be cancelled if the disc holder is opened during play.
- When editing has not been performed as far as side B with the time edit (i.e., only for part of side A), editing will be done within the blank time of side A and the blank time of side B.
- When editing has been performed as far as side B with the time edit, the blank time of side B will be used for editing.

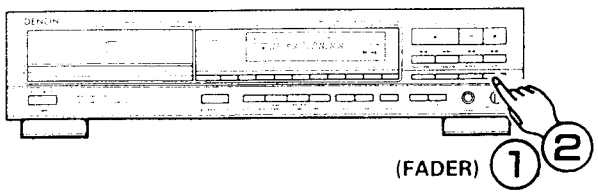
⑬ Fading Out or Fading In at the Desired Location ..... Fader Function

(Analog output only)

(1) Fading out and fading in is possible at the desired position during play — Manual Fader

① **Fade Out**
When the fader button (FADER) is pressed during play, fade out will be provided for about 5 seconds. FADE will light up during the operation and (▮►) will flash. When fade out is completed the player will automatically pause.

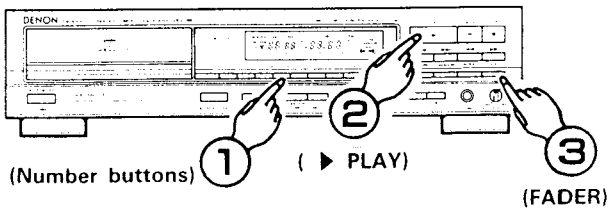
② **Fade In**
When the fader button (FADER) is pressed from the pause mode, the player will start playing and fade in will be provided for about 3 seconds. FADE will light up during the operation and (◄▮) will flash.



(2) Setting the Fade Out Time in Advance (TIME FADE)

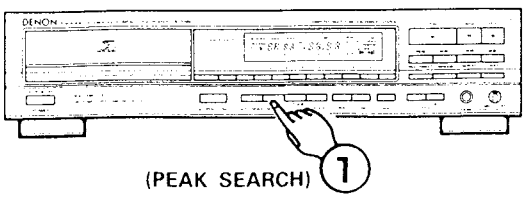
① When the fader button (FADER) is pressed in the stop mode, the FADE indicator (FADE) will light up, TIME will appear as —M—S, and the player will wait for the input of the fade out time.
② Input the fade out time with the (0~9) number buttons.
③ Pressing the play button (▶ PLAY) will start the playback and the FADE indicator (FADE) will light up.
④ The (▮►) indication will start flashing 5 seconds before the specified fade out time and then the fade out will begin. The fade out will end at the specified time and the player will automatically pause.

The time fade function will be cancelled if an auto search or manual search is performed during playback.



⑭ To Search for the Peak Level of the Disc ..... Peak Search

- The player searches for the peak portion and plays a few seconds either side of this point repeatedly. This is convenient for making recording adjustments on the tape recorder.



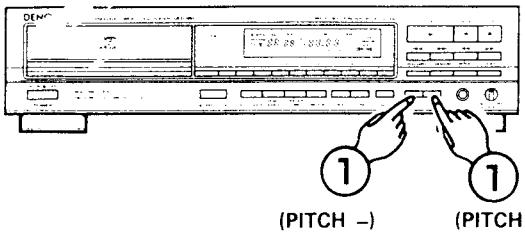
① When the peak search button (PEAK SEARCH) is pressed in the stop mode, the PEAK indicator will flash and the player will search for the portion having the peak level.

② After the search, the PEAK indicator lights up and a few seconds either side of the peak level point are played back repeatedly. This is convenient for making recording adjustments on the tape recorder.
③ To cancel the peak search, press the stop (■ STOP) button.
④ When the play button (▶ PLAY) or the pause button (⏸ PAUSE) is pressed during peak search or while playing the peak portion back repeatedly, the player will go to the beginning of the first track (the first track of the program for program playback, or the track that was first selected in the time edit) and begin playback from here if the play button was pressed or enter the pause mode if the pause button was pressed.

NOTE:
- The peak search function reads the level of the disc from the beginning of the disc to the end at a fixed inter··· and regards the maximum value that was read as the pe·
  Peak search takes a little time for this reason.
- The peak portion may change each time the disc is read and there may be a slight difference in the actual peak level, but since this difference ever so slight there will be no adverse affects on the adjustment of the recording level.
- The time fade function is cancelled when the peak search operation is performed. To use the time fade function, set to the stop mode then reset the function.
- Buttons other than the open/close button (⏏ OPEN/CLOSE), play button (▶ PLAY), pause button (⏸ PAUSE), and stop (■ STOP) button will not function during peak search or repeat play of the peak portion.

⑮ Changing the Speed of Playback ..... Pitch Control

- Playback can be speeded up or slowed down.



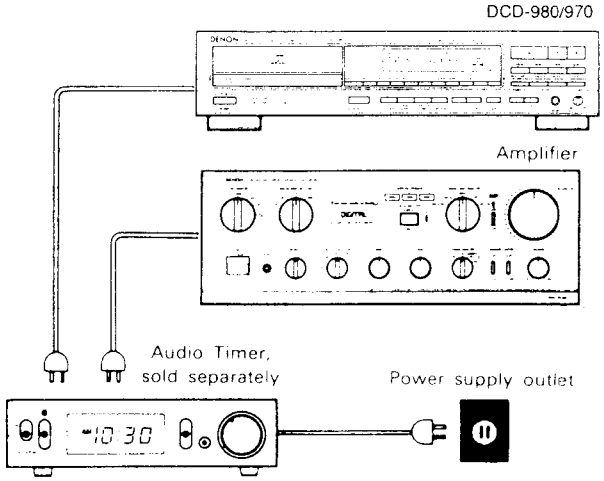
① Press the PITCH + or PITCH – button during the play or pause mode to change the speed of playback.
② When one of the PITCH buttons is pressed, the amount of the speed change appears on the seconds section ("S") of the TIME display for approximately 2 seconds. "PITCH –" appears when the speed is slower than normal, "PITCH +" when the speed is faster than normal. The speed can be changed in steps of 0.1% from –9.9% to +9.9%.
③ Press the PLAY button (▶ PLAY) during playback with a different speed to return to normal speed playback.
Also, the speed setting is cancelled if the stop mode is set during playback at a different speed.

NOTES
- No data is output from the digital output jack (COAXIAL) during playback with a different speed (when "PITCH" is lit). If you want to output data, press the PLAY button (▶ PLAY) to return to normal speed playback.
- The pitch also changes when the speed is changed.
- If the speed is changed during the time edit operation, the total playing time changes, so the time of the blank space is not calculated accurately.
- The time display (elapsed playback time, remaining time per track, or total remaining time) will not be accurate during playback with a different speed.
- A maximum of 1 second is required to return to the normal speed when the PLAY button (▶ PLAY) is pressed during playback with a different speed. During this time, only the OPEN/CLOSE (⏏ OPEN/CLOSE) and STOP buttons (■ STOP) will 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 inputs 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.

■ **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 and out.
  Use of DENON's AMC-20/21 CD cleaner is recommended.
- Do not use water, benzene, thinner, record sprays, electrostatic proof chemicals, or silicone-treated cloth to clean discs.
- Always use care when handling discs 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.

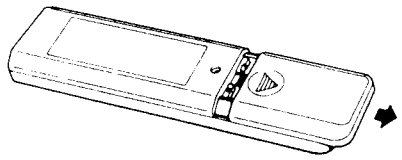
2. Precautions on storage
- After playing a disc, always return it to its case.
- Keep discs in the cases when they are not to be played. This will protect them from dust and dirt and prolong their service life.
- Do not store discs in the following places:
  1) Places exposed to direct sunlight for 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.

PLAYBACK USING THE REMOTE CONTROL UNIT

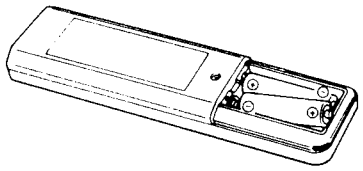
The accessory RC-235 remote control unit can be used to control the CD player from a convenient distance.

(1) Inserting the dry cell batteries

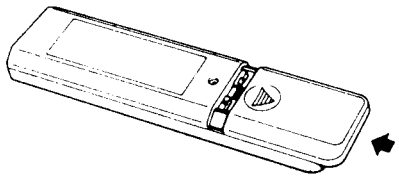
1. Remove the battery cover on the back of the remote control unit.



2. Insert two R6P (standard size AA) dry cell batteries with correct polarity as indicated inside the battery compartment.



3. Replace the battery cover.

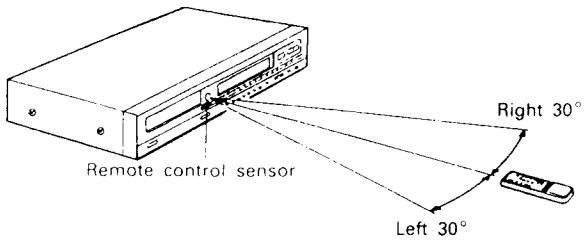


Notes on the Batteries

- The remote control unit uses standard size AA 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.

(2) Directions for Use

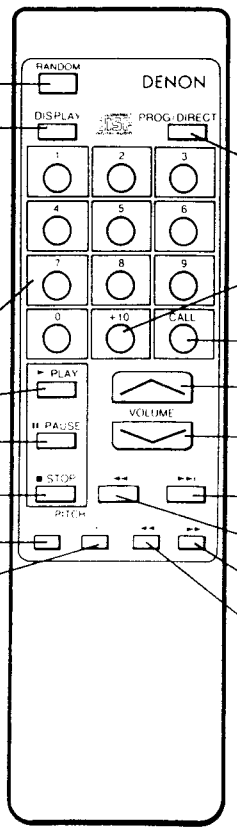
- Operate the remote control unit while pointing it towards the remote control sensor on the CD player (see below).



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 decreases 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.

REMOTE CONTROL UNIT



Randam Button (RANDOM)

Display Button (DISPLAY)

- Press this button to change the brightness of the display.
- Press once to make the display 2/3 as bright as normal.
- Press again to make the display 1/3 as bright as normal.
- Press once again to turn the entire display off during playback and all but the track number off in any other mode.

Number Buttons (0 ~ 9)

Play Button (▶ PLAY)

Pause Button (⏸ PAUSE)

Stop Button (■ STOP)

Pitch – Button (PITCH –)

Pitch + Button (PITCH +)

Checking Programmed Contents
By pressing the CALL button on the remote control unit, programmed contents will be displayed. Tracks entered into the memory, will be displayed starting from the first track entered, and will advance one step at a time each time the CALL button is pressed.

Setting to the Program Mode

- For program search, press the PROG/DIRECT button then the number buttons (0 through 9 and +10).
- The remote control unit is normally set to the direct mode.

Program/Direct Button (PROG/DIRECT)

+10 Button

Call Button (CALL)

Volume Buttons (+)

Volume Buttons (–)

The level of the Variable Output Terminal output can be varied. Pressing the (+) button increases the volume and pressing the (–) button decreases the volume.

Automatic Search Forward Button (⏭)

Automatic Search Reverse Button (⏮)

Manual Search Forward Button (▶▶)

Manual Search Reverse Button (◀◀)

Track Selection
Use the numeric track buttons (0 ~ 9 and +10) while programming and to access a desired track almost instantly.
The track search buttons (⏮ and ⏭) are best used to advance or return from the current track to the next track.

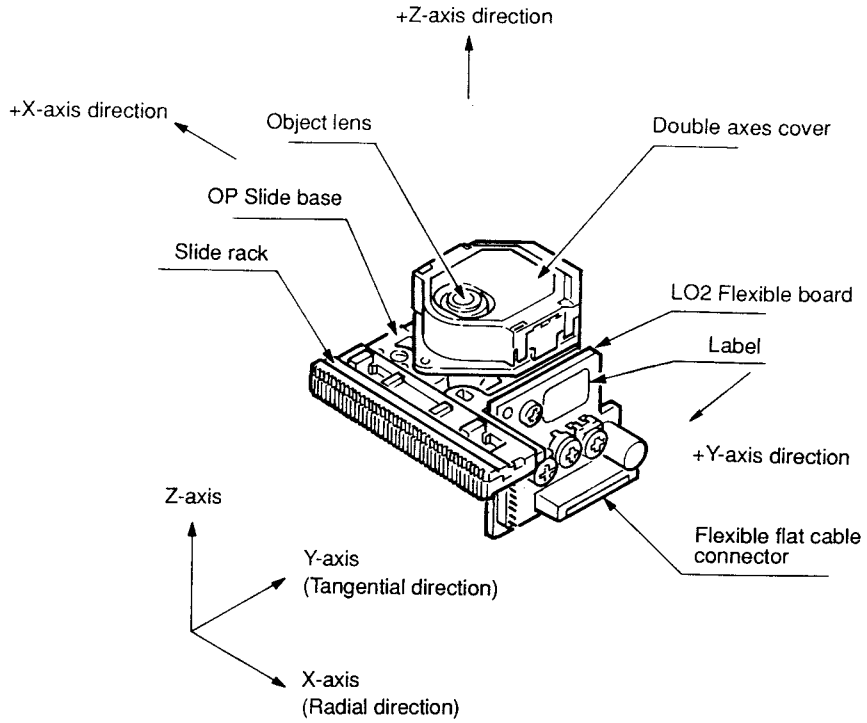
SPECIFICATIONS

	DCD-980	DCD-970
AUDIO		
No. of Channels:	2 channels	
Frequency Response:	2 ~ 20,000 Hz	
Dynamic Range:	99 dB	
Signal-to-Noise Ratio:	110 dB	
Harmonic Distortion:	0.0025% (1 kHz)	
Separation:	103 dB (1 kHz)	
Wow & Flutter:	Below measurable limit: (±0.001% W. peak)	
Output (Analog):	FIX. 2.0 V, VARIABLE 0 ~ 2.0 V	
Output (Digital):	COAXIAL (0.5V_{PP} 75 ohm) OPTICAL	COAXIAL (0.5V_{PP} 75 ohm) —
DISCS	Compact Disc format	
GENERAL CHARACTERISTICS		
Power Supply:	50/60 Hz, Voltage is shown on rating label.	
Power Consumption:	11W	
Dimensions:	434 (17.1 in) W × 110 (4.3 in) H × 280 (11.0 in) D mm	
Weight:	4.0 kg	
FUNCTIONS AND DISPLAY		
Functions:	Direct selection, automatic search, programmed playback, repeat playback, manual search, auto space, time mode, time edit, pitch control, peak search, fader	
Display:	Track number, time, music calendar, and engaged modes	
Others:	Headphones jack	
REMOTE CONTROL UNIT	RC-235	RC-234
Remote Control System:	Infrared pulse system	
Power Supply:	3 V DC; two R6P (standard size AA) dry cell batteries	
External Dimensions:	48 (1.9 in.) W × 177 (7.0 in.) H × 18 (0.7 in.) D mm	
Weight:	100 g (including batteries)	
SUPPLIED ACCESSORIES	Pin-plug connection cord	

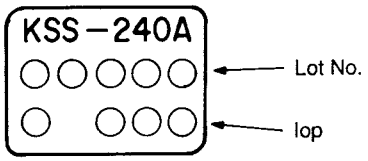
* Design and specifications are subject to change without notice in the course of product improvement.

NOTE FOR HANDLING OF LASER PICK-UP

DESCRIPTION OF THE COMPONENTS



Label



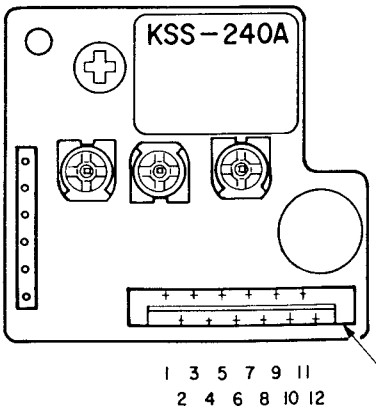
year
(last figure)
day month quality control No.
○○ ○ ○ ○

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

10 1 10^{-1}
quality control ○ ○ ○ ○
LD drive current

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 manufacturning plant.

PIN CONNECTOR



Pin No.	Description	Input/ Output	Pin No.	Description	Input/ Output
1	VC (+2.5V)	OUT	7	Vcc (+5V)	IN
2	TE (TRK ER signal)	OUT	8	LDC (LD Control)	IN
3	FE (FCS ER signal)	OUT	9	FCS+ (Double axes)	IN
4	FZC (FZC signal)	OUT	10	TRK+ (Double axes)	IN
5	RF (RF signal)	IN	11	TRK– (Double axes)	IN
6	GND	IN	12	FCS– (Double axes)	IN

Caution for Handling the Laser Pick-up

The laser pick-up KSS-240A 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 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 objective 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 (*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 side 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

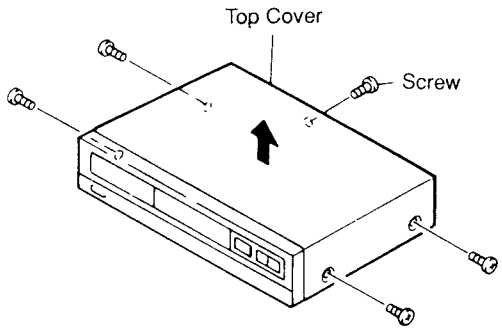
As KSS-240 comprises built-in RF Amp and APC curcuit, it resists stronger against external electrostatic damages than the former typed pickup. However, there is possibility of pickup distorioration in the following cases.

(1) Low HF level, or with great numbers of jitters.

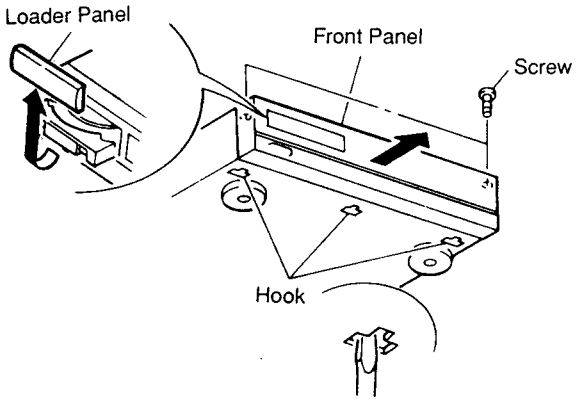
(2) Tracking offset (EF Balance) is out of order (Refer to "Confirmation Method of Adjustment " for confirmation on (1) and (2)).

DISASSEMBLY

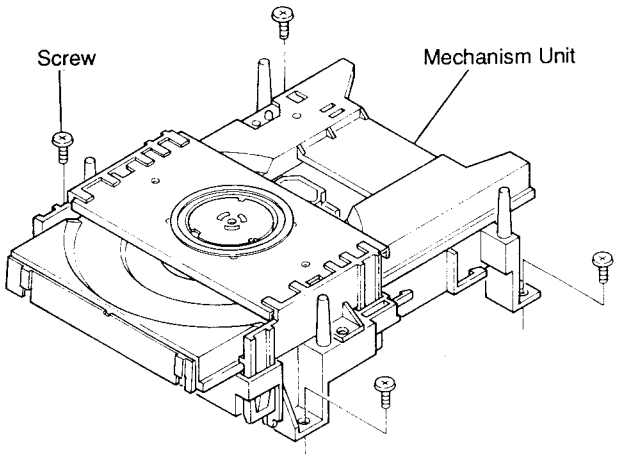
- **Top Cover**
  Remove 4 screws from both sides and 1 screw from Back Panel.



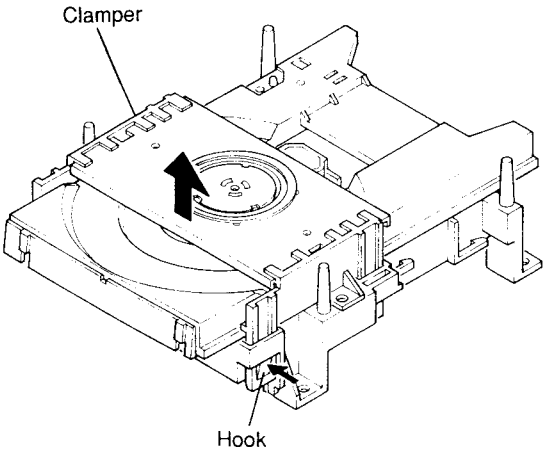
- **Front Panel**
  1. Pull Loader frame frontward, and remove loader panel.
  2. Remove 2 front panel upper screws.
  3. Undo 2 front panel upper hooks.
  4. Pull front panel and undo 3 lower hooks.



- **Mechanism Unit**
  Remove 4 screws.



- **Clamper**
  Pull clamper and undo 4 hooks.



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 JV055 (SWOP) and JV054 (SWCL) of TP102 on P.W.B. (Main Unit)
(Caution) Do not touch other jumper wires.

(3) Turn power switch ON.
(Service program starts, and displays track number 01)

(Caution)

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

2. Service program function

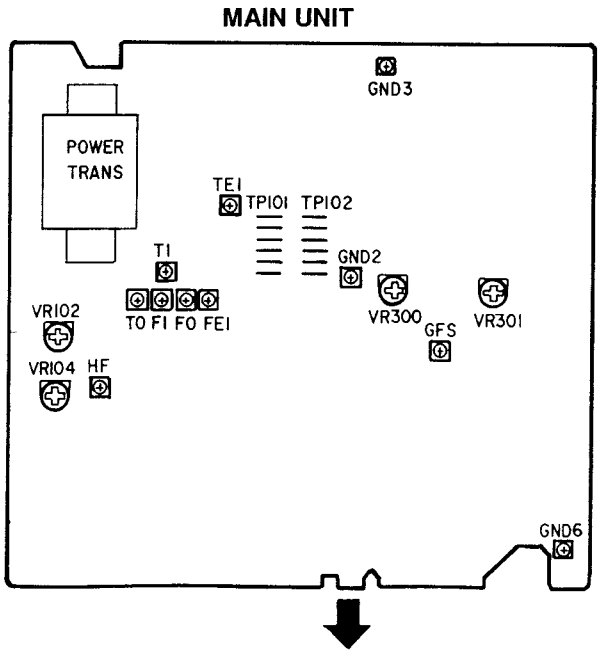
Button	Function	Description
▲ OPEN/CLOSE	Opens or closes the disc holder.	● Opens or closes only when disc is stopped. ● Operate other keys after open or close.
■ STOP	Stops system function.	● Displays track number 01. ● Push when adjustment completed, or do it again.
▶ PLAY	Starts focus servo and disc turns.	● Push when adjust tracking offset. ● When completed, displays track number 02.
II 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) Location



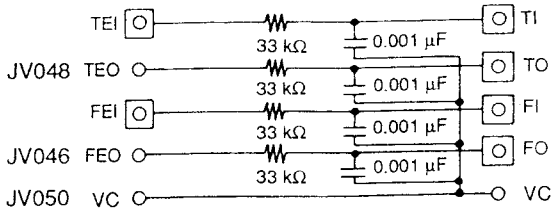
TP101
JV051: TEI
JV050: VC
JV049: FOK
JV048: TEO
JV047: FEI
JV046: FEO

TP102
JV057: +5V
JV056: N.C.
JV055: SWOP
JV054: SWCL
JV053: GND
JV052: HF

(Caution)
VR300, 301 are adjusted at the time of shipment; readjustment is not needed.

(2) Necessary equipment for adjustment

1. Dual trace oscilloscope
2. Reference disc (CA-1094) 富田靖子
3. Oscillator (10 Hz ~ 10 kHz, 0 ~ 3 Vp-p)
4. Frequency counter (readable more than 5 KHz)



" ⊡ " is Terminal Pin on Main Unit.

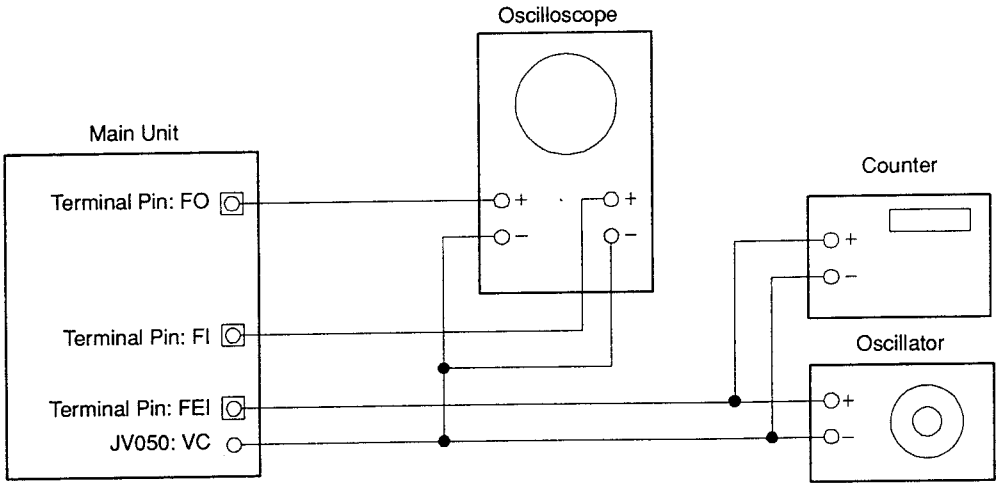
(Filter for measurement in Main Unit)

(3) Preset

1.	Start service program.	
2.	Preset VR102, 104 as per right figure.	VR102 (F-GAIN) 12 O'clock VR104 (T-GAIN) 12 O'clock
3.	Step.	1. Focus gain (VR102) 2. Tracking gain (VR104)

4. Focus gain

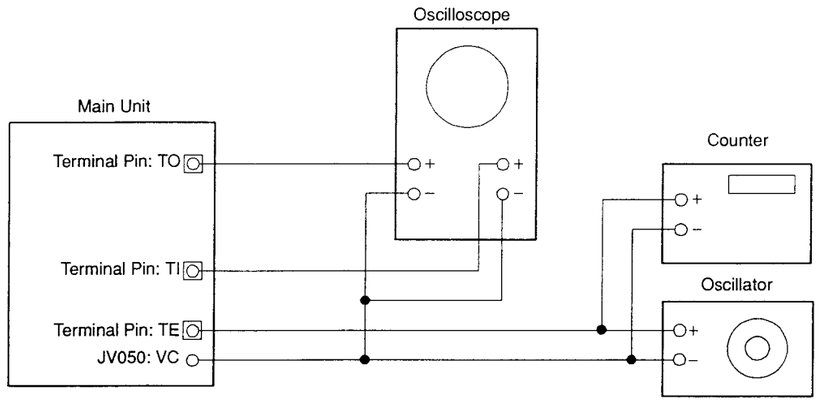
Connection



Oscillator	Counter	Oscilloscope V	Oscilloscope H	Adjust	Check	Step
930 Hz 4 Vp-p (±0.1 V)	930 Hz	● DC range ● X-Y mode		VR102	(Oscilloscope) Y axis X axis Phase 90° Waveform not right Y axis X axis	1. Push ⏸ PAUSE (Displays track number 03) 2. Set oscillator to 930 Hz/4 Vp-p. 3. Switch oscilloscope input to X-Y mode. 4. Adjust VR102 [F-GAIN] to symmetrize Lissajous figures to X and Y axes.

5. Tracking gain

Connection

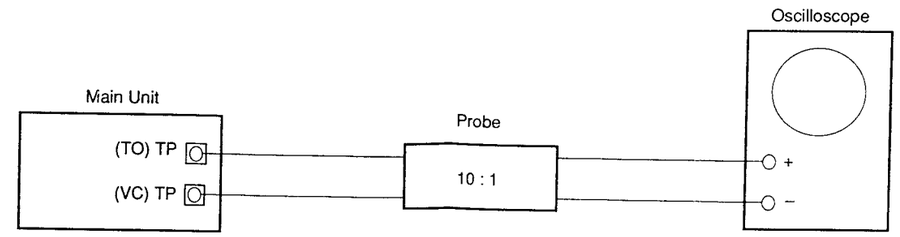


• Caution: Connect oscillator after [II PAUSE] pushed and servo function started.

Oscillator	Counter	Oscilloscope V	Oscilloscope H	Adjust	Check	Step
● 2.9 kHz (±120 Hz) ● 1.5 Vp-p (±0.1V)	2.9 kHz (±120 Hz)	● DC range ● X-Y mode		VR104	(Oscilloscope) Y axis / X axis / Phase 90° Waveform not right X axis / Y axis	1. Push [II PAUSE]. (Displays track number 03) 2. Connect oscillator. 3. Set oscillator to 2.9 kHz/1.5 Vp-p. 4. Switch oscilloscope input to X-Y mode. 5. Adjust VR104 [T-GAIN] to symmetrize Lissajous figures to X-Y axes.

6. Tracking offset (E/F Balance)

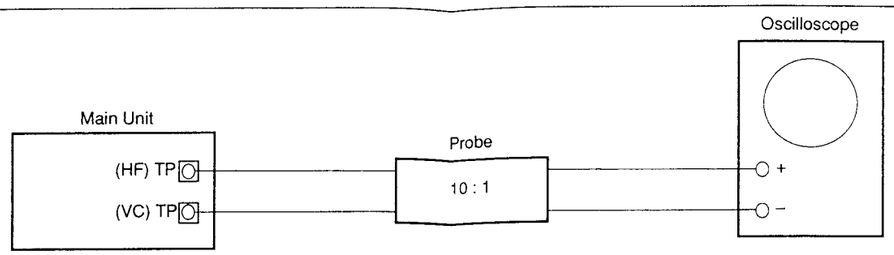
Connection

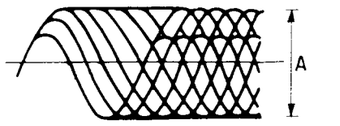
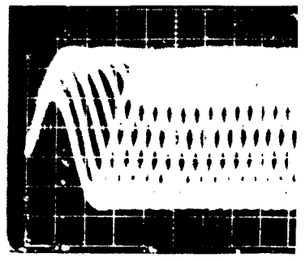


Osciloscope V	Osciloscope H	Check	Step
0.1v/div	1~2 ms/div	(Oscilloscope) A / B $\frac{A-B}{A+B} < 20\%$	1. Push [▲ OPEN/CLOSE] and load disc holder referrence disk. 2. Push [▲ OPEN/CLOSE] and close disc holder. 3. Push [▶ PLAY] to turn disc. (Displays track number 02) 4. Short (+)(–) of oscilloscope and check the base line. 5. Confirm that upper and lower amplitude of the waveform is symmetric against 0V.

7. HF level

Connection



Osciloscope		Check	Step
V	H	(Oscilloscope)	1. Push [II PAUSE]. (Displays track number 03)
50mv/div or 20mV/div	0.2µ/div or 0.5µ/div	 A=1.2+0.3Vp-p	2. Check HF level of oscilloscope. 3. Confirm that the waveform is in good shape. (♦ pattern in center must be able to discriminate cleary.)
• Set input mode to ALTERNATE or CHOPPER.			

HEAT RUN MODE FUNCTION

Heat Run Mode

1) To activate

While hold pushing ▶▶ , ◀◀ , ▶▶| 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 tracks; 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.

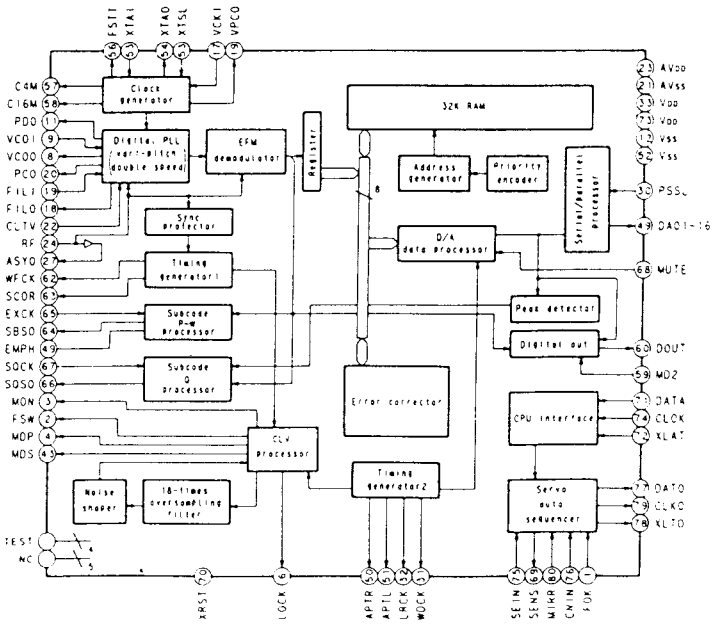
IC TERMINAL FUNCTION LIST

CXD2500Q Terminal Function

Terminal No.	Symbol	I/O	Terminal Function
1	FOK	I	Input terminal for OK focussing. Use for Servo-autosequencer.
2	FSW	O	Output to shift time constant of output filter for spindle motor.
3	MON	O	ON/OFF control output for spindle motor.
4	MDP	O	Servo control for spindle motor.
5	MDS	O	Servo control for spindle motor.
6	LOCK	O	Sampling GFS by 460 Hz and if it is "H", delivers "H" ; if it is continuously "L" 8 times, delivers "L".
7	NC	—	
8	VCOO	O	Oscillation current output for analog EFM PLL.
9	VCOI	I	Oscillation current output for analog EFM PLL. f LOCK=8.6436MHz.
10	TEST	I	TEST output. Normally GND.
11	PDO	O	Charge pump output for analog EFM PLL.
12	Vss		GND.
13	NC	—	
14	NC	—	
15	NC	—	
16	VPCO	O	Charge pump output for variable pitch PLL.
17	VCKI	O	Clock input from external VCO for variable pitch. fc center=16.9344MHz.
18	FILO	O	Filter output for master PLL. (slave=digital PLL)
19	FILI	I	Filter input for master PLL.
20	PCO	O	Charge pump output for master PLL.
21	AVss		Analog GND.
22	CLTV	I	Control voltage output for master VCO.
23	AV_{DD}		Analog power supply (+5V).
24	RF	I	EFM signal input.
25	TEST2	I	Put to GND.
26	TEST3	I	Put to GND.
27	ASYO	O	Full swing output for EFM. (L=Vss, H=VDD).
28	TEST4	I	Put to GND.
29	NC	—	
30	PSSL	I	Input to shift output mode of audio data. Serial output at L; parallel output at H.
31	WDCK	O	D/A Interface for 48 bit slot. Word-clock f=2 Fs.
32	LRCK	O	D/A Interface for 48 bit slot. LR-clock f= Fs.
33	V_{DD}		Power supply (+5V).
34	DA16	O	At PSSL=1 for DA16 (MBS) output; PSSL=0 for serial data of 48 bit slot. (2s'COMP, MSB first).
35	DA15	O	At PSSL=1 for DA15 output; PSSL=0 for bit clock of 48 bit slot.
36	DA14	O	At PSSL=1 for DA14 output; PSSL=0 for serial data of 64 bit slot. (2s'COMP, LSB first).
37	DA13	O	At PSSL=1 for DA13 output; PSSL=0 for bit clock of 64 bit slot.
38	DA12	O	At PSSL=1 for DA12 output; PSSL=0 for LR clock of 64 bit slot.
39	DA11	O	At PSSL=1 for DA11 output; PSSL=0 for GTOP output.
40	DA10	O	At PSSL=1 for DA10 output; PSSL=0 for XUGF output.
41	DA09	O	At PSSL=1 for DA09 output; PSSL=0 for XPLCK output.
42	DA08	O	At PSSL=1 for DA08 output; PSSL=0 for GFS output.
43	DA07	O	At PSSL=1 for DA07 output; PSSL=0 for RFCK output.
44	DA06	O	At PSSL=1 for DA06 output; PSSL=0 for C2PO output.
45	DA05	O	At PSSL=1 for DA05 output; PSSL=0 for XRAOF output.
46	DA04	O	At PSSL=1 for DA04 output; PSSL=0 for MNT3 output.
47	DA03	O	At PSSL=1 for DA03 output; PSSL=0 for MNT2 output.
48	DA02	O	At PSSL=1 for DA02 output; PSSL=0 for MNT1 output.
49	DA01	O	At PSSL=1 for DA01 output; PSSL=0 for MNT0 output.
50	APTR	O	Control output for aperture compensation. In H for R-ch.
51	APTL	O	Control output for aperture compensation. In H for L-ch.

Terminal No.	Symbol	I/O	Terminal Function
52	Vss		GND.
53	XTAI	I	X'tal oscillation circuit input. By selecting of mode, f=16.9344MHz or 33.8688MHz.
54	XTAO	O	X'tal oscillation circuit input. f=16.9344MHz.
55	XTSL	I	Selection input terminal of X'tal. "L" for X'tal 16.9344MHz; H for 33.8688MHz.
56	FSTT	O	2/3 Dividing output of 53 and 54 terminal. No change by variable pitch.
57	C4M	O	4.2336MHz output. When variable pitched, simultaneously changes.
58	C16M	O	16.9344MHz output. When variable pitched, simultaneously changes.
59	MD2	I	Digital-out ON/OFF control. ON at H; OFF at L.
60	DOUT	O	Digital-out output terminal.
61	EMPH	O	When playback disc emphasized, outputs H; otherwise outputs L.
62	WFCK	O	WFCK (Write Flame Clock) output.
63	SCOR	O	Output of subcode sync. S0+S1. H output when either one detected.
64	SBSO	O	Serial output of Sub P~W.
65	EXCK	I	Clock iutput for SBSO read-out.
66	SQSO	O	Output for Sub Q 80 bits and PCM peak level 16 bits.
67	SQCK	I	Clock input for SQSO read-out.
68	MUTE	I	Mute at H; remove mute at L.
69	SENS	—	SENS output. Outputs to CPU.
70	XRST	I	System reset input. Resets at "L".
71	DATA	I	Input of serial data from CPU.
72	XLAT	I	Input for latch from CPU. Latches serial data at release.
73	VDD		Power supply (+5V).
74	CLOK	I	Serial data transfer clock input from CPU.
75	SEIN	I	SENS input from SSP.
76	CNIN	I	Input of tracking pulse.
77	DATO	O	Serial data output to SSP.
78	XLTO	O	Serial data latch output to SSP.
79	CLKO	O	Serial data transfer clock output to SSP.
80	MIRR	I	Mirror signal input. Use for track jump for over 128 tracks, using autosequencer.

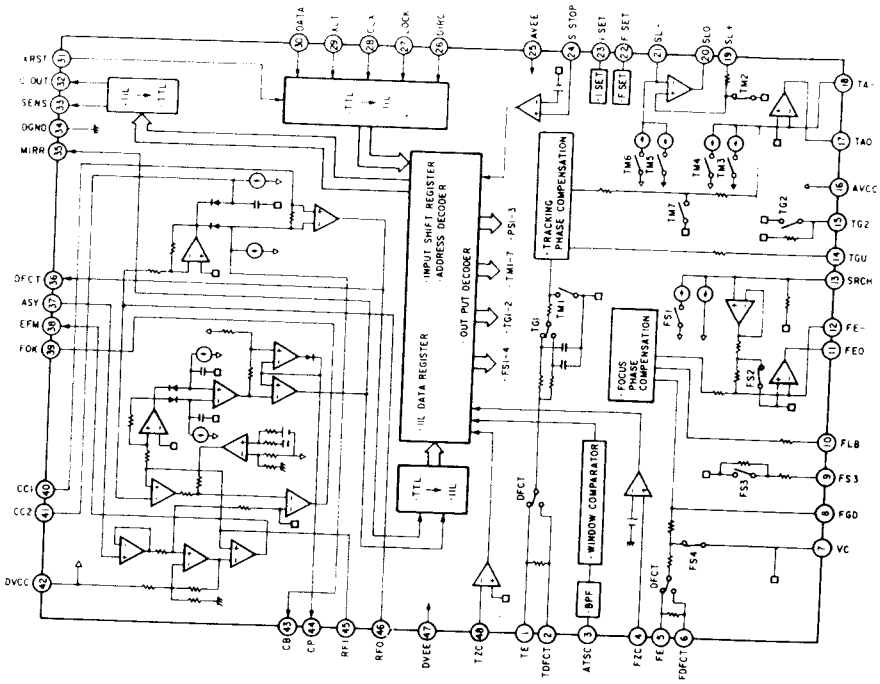
CXD2500Q



CXA1372S Treminal Function

Terminal No.	Symbol	I/O	Terminal Function
1	TE	I	Tracking error signal input terminal.
2	TDFCT	I	Capacitor connecting terminal for time constant at the time of defect.
3	ATSC	I	Input terminal of ATSC detecting window comparator.
4	FZC	I	Input terminal of focus zero-cross comparator.
5	FE	I	Focus error signal input terminal.
6	FDFCT	I	Capacitor connecting terminal for time constant at the time of defect.
7	Vc	I	Mid-point voltage input terminal.
8	FGD	I	In case of reducing higher range gain of focus servo, connect a capacitor between this terminal and terminal number (9).
9	FS3	I	Shifts higher range gain of focus servo by FS3 ON/OFF.
10	FLB	I	Terminal for external time constant to increase lower range of focus servo.
11	FEO	O	Focus drive output.
12	FE–	I	Reverse input terminal for focus amplifier.
13	SRCH	I	Terminal for external time constant to make focus search waveform.
14	TGU	I	Terminal for external time constant to shift higher range gain of tracking.
15	TG2	I	Terminal for external time constant to shift higher range gain of tracking.
17	TAO	O	Tracking drive output.
18	TA–	I	Reverse input terminal for tracking amplifier.
19	SL+	I	Non-reverse input terminal for sled amplifier.
20	SLO	O	Sled drive output.
21	SL–	I	Reverse input terminal for sled amplifier.
22	FSET	I	Terminal to compensate peak in focus/tracking phase.
23	ISET	I	Delivers a current to set the height of focus search, track jump, and sled kick.
24	SSTOP	I	Terminal for limit switch ON/OFF to detect disc innermost circle.
26	DIRC	I	Terminal is used at the time of 1 track jump. A 47 kohm pull up resistor is included.
27	LOCK	I	Reckless drive protection circuit of sled; activates at "L". A 47k ohm pull up resistor is included.
28	CLK	I	Serial data transfer clock input from CPU.
29	XLT	I	Latch input from CPU.
30	DATA	I	Serial data input from CPU.
31	XRST	I	Reset input terminal. Resets at "L".
32	C.OUT	O	Terminal to output signal for track number count.
33	SENS	O	Terminal to output FZC, AS, TZC, SSTOP by command from CPU.
35	MIRR	O	Output terminal for MIRR comparator.
36	DFCT	O	Output terminal for DEFECT comparator.
37	ASY	I	Input terminal for auto-symmetric control.
38	EFM	O	Output terminal for EFM comparator.
39	FOK	O	Output terminal for focus OK (FOK) comparator.
40	CC1	O	DEFECT bottom hold output terminal.
41	CC2	I	Input terminal to input DEFECT bottom hold output by capacitance combination.
43	CB	I	Capacitor connecting terminal for DEFECT bottom hold.
44	CP	I	MIRR hold capacitor connecting terminal. A non-reverse input terminal for MIRR comparator.
45	RFI	I	Input terminal to input RF summing amplifier output by capacitance combination.
46	RFO	O	Output terminal for RF summing amplifier. Check point for eye pattern.
48	TZC	I	Tracking zero-cross comparator input terminal.

CXA1372S



NOTE ON 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.

WARNING:

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

• Resistors

Ex.: RN 14K 2E 182 G FR

Type | Shape and performance | Power | Resistance | Allowable error | Others

RD : Carbon RC : Fixed RS : Metallic film RW : Winding RN : Metal film RK : Metal mixture	2B : ¼W 2E : ¼W 2H : ½W 3A : 1W 3D : 2W 3F : 3W 3H : 5W	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20%		P : Pulse-resistant type NL : Low noise type NB : Non-burning type FR : Fuse resistor F : Lead wire forming

★ **Resistance**

1 8 2 ⇨ 1800Ω = 1.8kΩ

- 1 8 2: Indicates number of zeros after effective number
- 1 8: 2-digit effective number, decimal point indicated by R
- Units: Ω

• Capacitors

Ex.: CE 04W 1H 2R2 M BP

Type | Shape and performance | Dielectric strength | Capacity | Allowable error | Others

CE : Aluminum foil electrolyte CA : Aluminum solid electrolyte CS : Tantalum electrolyte CQ : Film CK : Ceramic CC : Ceramic CP : Oil CM : Mica CF : Metallized CH : Metallized	0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1V : 35V 1H : 50V 2A : 100V 2B : 125V 2C : 160V 2D : 200V 2E : 250V 2H : 500V 2J : 630V	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20% Z : +80% −20% P : +100% 0% C : ±0.25pF D : ±0.5pF = : Others	HS : High stability type BP : Non-polar type HR : Ripple-resistant type DL : For charge and discharge HF : For assuring high frequency U : UL part C : CSA part W : UL·CSA type F : Lead wire forming	

★ **Capacity**

2 R 2 ⇨ 2.2μF

- 2 R 2: 1-digit effective number, decimal point indicated by R.
- 2 R: 2-digit effective number, decimal point indicated by R.
- Units: μF, (for P, pF (μμF))
- When the dielectric strength is indicated in AC, "AC" is included after the dielectric strength value

PARTS LIST OF P.W.BOARD

KU-9220/9221

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
[U.S.A. Canada Australia and Asia Models] DCD-970			
IC102	262 1305 001	IC CXA 1372S	
IC103~106	263 0565 007	IC BA15218	
IC201	262 1471 003	IC M50959-359SP	
IC202	262 1304 002	IC CXD2500Q(80P-QFP)	
IC203	262 0824 004	IC SN74LS624N	
IC204	262 1352 009	IC TC74HCT04AP	
IC300	262 1306 000	IC SM5840AP	
IC301,302	262 1180 006	IC CF37606	
IC303,304	262 1171 002	IC PCM61P	
IC305,306	262 1265 002	IC TC74HCU04AP	
IC307,308	263 0710 001	IC TC74HC4066AP	
IC309,310	262 0864 006	IC UPC4570C	
IC501	263 0693 005	IC M5290P	
IC502~505	268 0073 905	IC Protector ICP-N15T	
IC701	262 1265 002	IC TC74HCU04AP	
IC702,703	262 0864 006	IC UPC4570C	
IC704	262 0640 000	IC MN6632A	
IC705	263 0198 005	IC NJM4556D	
TR101	269 0025 905	Digital Transistor RN1202(10K-10K)T	
TR109	274 0036 905	Transistor 2SD468(C)TF	
TR110	272 0025 907	Transistor 2SB562(C)TF	
TR111	274 0036 905	Transistor 2SD468(C)TF	
TR112	272 0025 907	Transistor 2SB562(C)TF	
TR113	274 0036 905	Transistor 2SD468(C)TF	
TR114	272 0025 907	Transistor 2SB562(C)TF	
TR115	274 0136 009	Transistor 2SD1913	
TR116	272 0025 907	Transistor 2SB562(C)TF	
TR501	274 0036 905	Transistor 2SD468(C)TF	
TR502	272 0093 007	Transistor 2SB1274	
TR503	271 0101 925	Transistor 2SA933(Q)T-70	
TR600,601	274 0124 901	Transistor 2SD1504(E/F)TPE2	
TR702	269 0014 909	Digital Transistor DTA124XS(22K-47K)T	
TR703	269 0074 907	Digital Transistor DTC114TS(10K)T	
TR704	271 0101 925	Transistor 2SA933(Q)T-70	
TR706,707	274 0124 901	Transistor 2SD1504(E/F)TPE2	
TR710,711	274 0124 901	Transistor 2SD1504(E/F)TPE2	
D201~204	276 0432 903	Diode 1SS270ATE	
D501~506	276 0550 908	Diode 1SR139-200T-62	
D507,508	276 0084 919	Zener Diode HZS33-2TD	
D601~608	276 0049 914	Diode 1S2076ATE	
D701,703	276 0432 903	Diode 1SS270ATE	

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
[Europe and U.K. Models] DCD-980			
IC102	262 1305 001	IC CXA1372S	
IC103~106	263 0712 009	IC :RC4558P	
◆	263 0565 007	IC BA15218	
IC201	262 1471 003	IC M50959-359SP	
IC202	262 1304 002	IC CXD2500Q (80P-QFP)	
IC203	262 0824 004	IC SN74LS624N	
IC204	262 1355 006	IC :PC74HCU04P	
◆	262 1352 009	IC TC74HCT04AP	
IC300	262 1306 000	IC SM5840AP	
IC301,302	262 1180 006	IC CF37606	
IC303,304	262 1171 002	IC PCM61P	
IC305,306	262 1354 007	IC :PC74HCUP04P	
◆	262 1265 002	IC TC74HCU04AP	
IC307,308	263 0864 006	IC :PC74HC4066P	
◆	263 0710 001	IC TC74HC4066AP	
IC309,310	262 0864 006	IC UPC4570C	
IC501	263 0693 005	IC M5290P	
IC502~505	268 0073 905	IC Protector ICP-N15T	
IC701	262 1126 002	IC :PC74HC00P	
◆	262 1265 002	IC TC74HCU04AP	
IC702,703	262 0864 006	IC UPC4570C	
IC704	262 0640 00	IC MN6632A	
IC705	263 0198 005	IC NJM4556D	
TR101	269 0025 905	Digital Transistor RN1202(10K-10K)T	
TR109	274 0144 907	Transistor :BC368	
◆	274 0036 905	Transistor 2SD468(C)TF	
TR110	272 0101 902	Transistor :BC369	
◆	272 0025 907	Transistor 2SB562(C)TF	
TR111	274 0144 907	Transistor :BC368	
◆	274 0036 905	Transistor 2SD468(C)TF	
TR112	272 0101 902	Transistor :BC369	
◆	272 0025 907	Transistor 2SB562(C)TF	
TR113	274 0144 907	Transistor :BC368	
◆	274 0036 905	Transistor 2SD468(C)TF	
TR114	272 0101 902	Transistor :BC369	
◆	272 0025 907	Transistor 2SB562(C)TF	
TR115	274 0145 003	Transistor :BD935F	
◆	274 0136 009	Transistor 2SD1913	
TR116	272 0101 902	Transistor :BC369	
◆	272 0025 907	Transistor 2SB562(C)TF	
TR501	274 0144 907	Transistor :BC368	
◆	274 0036 905	Transistor 2SD468(C)TF	
TR502	272 0102 008	Transistor :BD936F	
◆	272 0093 007	Transistor 2SB1274	
TR503	271 0387 901	Transistor :JC557 A/B	
◆	271 0101 925	Transistor 2SA933(Q)T-70	
TR600,601	274 0124 901	Transistor 2SD1504(E/F)TPE2	
TR701	271 0102 908	Transistor 2SA1015(Y)TPE2	
TR702	269 0014 909	Digital Transistor DTA124XS(22K-47K)T	

● Parts indicated with the mark "◆ " is substitute in Japan.

Ref. No.	Part No.	Part Name	Remarks
TR703	269 0025 905	Digital Transistor RN1202(10K-10K)T	
TR704	271 0387 901	Transistor :JC557 A/B	
◆	271 0101 925	Transistor 2SA933(Q)T-70	
TR706~711	274 0124 901	Transistor 2SD1504(E/F)TPE2	
D201~204	276 0432 903	Diode 1SS270ATE	
D501~506	276 0550 908	Diode 1SR139-200T-62	
D507,508	276 0084 919	Zener Diode HZS33-2TD	
D601~608	276 0049 914	Diode 1S2076ATE	
D701,703	276 0432 903	Diode 1SS270ATE	
RESISTOR GROUP [All Models]			
VR102,104	211 6087 915	Adjust 22Kohm	V06PB223T
VR300,301	211 6087 928	Adjust 100Kohm	V06PB104T
VR601	211 0661 007	Valiable 2Kohm	V0920P07FC202
CAPACITOR GROUP [All Models]			
C106	255 1206 908	Film 0.0033μF/50V	CQ93M1H332JT
C107	256 1034 937	Metalized 0.047μF/50V	CF93A1H473JT
C108	255 1204 900	Film 0.0022μF/50V	CQ93M1H222JT
C109,110	256 1034 979	Metalized 0.1μF/50V	CF93A1H104JT
C111,112	256 1034 979	Metalized 0.1μF/50V	CF93A1H104JT
C113	254 4337 910	Electrolytic 6.8μF/50V	CE04W1H6R8MT
C114	256 1035 910	Metalized 0.22μF/50V	CF93A1H224JT
C116	255 1212 905	Film 0.01μF/50V	CQ93M1H103JT
C117	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C118	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C120	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C121	253 1180 921	Ceramic 0.001μF/50V	CK45B1H102KT
C122,123	254 4260 919	Electrolytic 0.22μF/50V	CE04W1HR22MT
C124	255 1212 905	Film 0.01μF/50V	CQ93M1H103JT
C125	256 1034 911	Metalized 0.033μF/50V	CF93A1H333JT
C126	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C127	255 1206 908	Film 0.0033μF/50V	CQ93M1H332JT
C128	255 1205 909	Film 0.0027μF/50V	CQ93M1H272JT
C129	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C130	253 1179 990	Ceramic 560pF/50V	CK45B1H561KT
C131	255 1212 905	Film 0.01μF/50V	CQ93M1H103JT
C132	253 1179 929	Ceramic150pF/50V	CK45B1H151KT
C133	253 4536 909	Ceramic 10pF/50V	CC45SL1H100DT
C134	256 1034 979	Metalized 0.1μF/50V	CF93A1H104JT
C135	254 3055 905	Electrolytic 4.7μF/35V(BP)	CE04D1V4R7MBPT
C136	253 4443 908	Ceramic 200pF/50V	CC45SL1H201JT
C137,138	254 4260 964	Electrolytic 3.3μF/50V	CE04W1H3R3MT
C140	255 1212 905	Film 0.01μF/50V	CQ93M1H103JT
C141	253 4538 949	Ceramic 100pF/50V	CC45SL1H101JT
C142	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C160~163	253 1180 921	Ceramic 0.001μF/50V	CK45B1H102KT
C164	253 4536 941	Ceramic 15pF/50V	CC45SL1H150JT
C166	253 4536 941	Ceramic 15pF/50V	CC45SL1H150JT
C168	253 4538 910	Ceramic 75pF/50V	CC45SL1H750JT

Ref. No.	Part No.	Part Name	Remarks
C170	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C171	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C173	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C174	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C201	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C202,203	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C210	256 1034 937	Metalized 0.047μF/50V	CF93A1H473JT
C211	253 1180 947	Ceramic 0.0015μF/50V	CK45B1H152KT
C212,213	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C214	254 4250 932	Electrolytic 220μF/6.3V	CE04W0J221MT
C215	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C220	254 4260 922	Electrolytic 0.33μF/50V	CE04W1HR33MT
C221	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C222	253 4537 937	Ceramic 36pF/50V	CC45SL1H360JT
C223	253 4535 939	Ceramic 3pF/50V	CC45SL1H030CT
C224	253 4535 955	Ceramic 5pF/50V	CC45SL1H050CT
C225	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C227	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C253	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C301	253 1179 961	Ceramic 330pF/50V	CK45B1H331KT
C305,306	253 1179 932	Ceramic 180pF/50V	CK45B1H181KT
C307,308	253 1180 918	Ceramic 820pF/50V	CK45B1H821KT
C311,312	253 1180 921	Ceramic 0.001μF/50V	CK45B1H102KT
C313,314	253 4443 908	Ceramic 200pF/50V	CC45SL1H201JT
C317	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C318	254 4254 925	Electrolytic 33μF/16V	CE04W1C330MT
C321,322	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT
C327	254 4250 929	Electrolytic 100μF/6.3V	CE04W0J101MT
C328,329	254 4254 954	Electrolytic 220μF/16V	CE04W1C221MT
C501	254 4254 792	Electrolytic 2200μF/16V	CE04W1C222MC
C502	254 4255 717	Electrolytic 4700μF/16V	CE04W1C472MC
C503,504	254 4254 954	Electrolytic 220μF/16V	CE04W1C221MT
C505	254 4260 948	Electrolytic 1μF/50V	CE04W1H010MT
C507	254 4262 946	Electrolytic 47μF/63V	CE04W1J470MT
C508	254 4261 921	Electrolytic 100μF/50V	CE04W1H101MT
C509,510	254 4261 905	Electrolytic 33μF/50V	CE04W1H330MT
C511	254 4260 964	Electrolytic 3.3μF/50V	CE04W1H3R3MT
C512~515	253 1122 905	Ceramic 0.0068μF/50V	CK45B1H682KT
C600,601	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C701	254 4260 977	Electrolytic 4.7μF/50V	CE04W1H4R7MT (DCD-980 Only)
C702	253 9036 909	Ceramic 0.1μF/25V	CK45=1E104ZT (DCD-980 Only)
C703	253 4443 908	Ceramic 200pF/50V	CC45SL1H201JT (DCD-980 Only)
C704	254 4254 954	Electrolytic 220μF/16V	CE04W1C221MT
C708,709	253 4537 924	Ceramic 33pF/50V	CC45SL1H330JT
C710~713	254 4254 941	Electrolytic 100μF/16V	CE04W1C101MT
C714,715	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C716,717	253 4537 982	Ceramic 56pF/50V	CC45SL1H560JT
C718,719	254 4250 929	Electrolytic 100μF/6.3V	CE04W0J101MT
C720,721	254 4254 941	Electrolytic 100μF/16V	CE04W1C101MT
C730	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C731	253 4538 949	Ceramic 100pF/50V	CC45SL1H101JT

● Parts indicated with the mark "◆ " is substitute in Japan.

Ref. No.	Part No.	Part Name	Remarks
OTHER PARTS			
[U.S.A. Canada Australia and Asia Models] DCD-970			
X200	399 0036 013	Crystal X'tal (16.9344MHz)	
X201	399 0111 006	Crystal CST4.23MGW040	
R601	499 0150 008	Remote Sensor SBX1610-52	
PT300	231 8063 009	Pulse Trans	
JK701	204 8262 002	1P Pin Jack	Coaxial Output
JK702	204 8311 021	2P Pin Jack	Fix output
JK703	204 8311 021	2P Pin Jack	Variable Output
HJ601	204 8354 017	Head Phone Jack	
LCD601	393 4095 007	Display FIP10SM6	
S601~632	212 5604 910	Tact Switch-TA	
SW600	212 1039 000	1P Push Switch	Power
CB101	205 0321 054	5P Conn. Base (Red)	
CB102	205 0343 058	5P Conn. Base (KR-PH)	
CB103	205 0683 006	FFC Conn. Base (12P)	
CB203	205 0549 014	FFC Conn. Base (35P)	
CB500	205 0581 001	2P VH Conn. Base	
CB601	205 0549 014	FFC Conn. Base (35P)	
CB602	205 0343 045	4P Conn. Base (KR-PH)	
TP103	205 0343 058	5P Conn. Base (KR-PH)	
CC603	203 6304 008	4P KR-DA Conn. Cord	
CC604	203 6465 024	4P DA-DA Conn. Cord	
CC605	203 6465 024	4P DA-DA Conn. Cord	
⚠	445 0056 008	Cord Bush	
⚠	206 2086 002	AC Cord with Conn.	U.S.A. Canada
⚠	206 2087 001	AC Cord with Conn.	Australia
⚠	206 2088 000	AC Cord with Conn.	Asia
⚠	233 5820 005	Power Transformer	U.S.A. Canada
⚠	233 5821 004	Power Transformer	Australia
⚠	233 5822 003	Power Transformer	Asia
⚠	212 4698 008	Voltage Selector	Asia Only
OTHER PARTS			
[Europe and U.K. Models] DCD-980			
X200	399 0036 013	Crystal X'tal (16.9344MHz)	
X201	399 0111 006	Crystal CST4.23MGW040	
R601	499 0150 008	Remote Sensor SBX1610-52	
PT300	231 8063 009	Pulse Trans	
JK701	204 8262 002	1P Pin Jack	Coaxial Output
JK702	204 8311 021	2P Pin Jack	Fix Output
JK703	204 8311 021	2P Pin Jack	Variale Output
U701	269 0096 008	Connector HFBR1550	Optical Output
HJ601	204 8341 004	Head Phone Jack	
LCD601	393 4095 007	Display FIP10SM6	
S601~632	212 5604 910	Tact Switch-TA	
SW600	212 1039 000	1P Push Switch	Power
CB101	205 0321 054	5P Conn. Base (Red)	
CB102	205 0343 058	5P Conn. Base (KR-PH)	
CB103	205 0683 006	FFC Conn. Base (12P)	
CB203	205 0549 014	FFC Conn. Base (35P)	
CB500	205 0624 007	:2P AC Conn. Base	
CB601	205 0549 014	FFC Conn. Base (35P)	
CB602	205 0343 045	4P Conn. Base (KR-PH)	
TP103	205 0343 058	5P Conn. Base (KR-PH)	
CC603	203 6315 000	:4P KR-DA Conn. Cord	
CC604	203 6290 015	:4P DA-DA Conn. Cord	
CC605	203 6290 015	:4P DA-DA Conn. Cord	
⚠	445 0056 008	Cord Bush	
⚠	206 2098 003	:AC Cord with Conn.	Europe
⚠	206 2092 009	:AC Cord with Conn.	U.K.
⚠	233 5823 002	:Power Transformer	Europe U.K.

PARTS LIST OF PACKING & ACCESOORIES
DCD-980

Ref. No.	Partr No.	Part Name	Remarks
[EUROPE and U.K. models]			
	504 0125 005	:STYRENE PAPER	AC Cord
◆	504 0092 060	STYRENE PAPER	AC Cord
	505 0131 050	CABINET COVER	
◆	505 0102 089	STYRENE PAPER	
	503 9223 002	:CUSHION	
◆	503 9221 004	CUSHION	
	501 9205 008	:CARTON CASE	
	505 0178 000	:POLY COVER	Accessories
◆	505 0038 030	POLY COVER	Accessories
	511 9301 006	:INST. MANUAL	
	203 2223 002	2P PIN CORD	
◆	203 6305 007	2P PIN CORD	
	499 9005 002	:RC-235 (REMOTE CONTROL UNIT)	Without Battery
	394 0021 007	:BATTERY (SUM-3)	
	513 9111 001	COLOR LABEL	(Gold) only

● Parts indicated with the mark "◆ " is substitute in Japan.

PARTS LIST OF PACKING & ACCESOORIES
DCD-970

Ref. No.	Partr No.	Part Name	Remarks
[I.S.A., CANADA, AUSTRALIA, and ASIA models]			
	504 0092 060	:STYRENE PAPER	AC Cord
	504 0102 089	STYRENE PAPER	
	503 9221 004	:CUSHION	
	501 9196 007	CARTON CASE	
	505 0038 030	POLY COVER	Accessories
	511 9296 001	INST. MANUAL	U.S.A., AUSTRALIA, ASIA
	511 9302 005	INST. MANUAL	CANADA
	203 6305 007	2P PIN CORD	
	499 9004 003	RC-234 (REMOTE CONTROL UNIT)	
	203 3667 007	PLUG ADAPTER	ASIA only

PARTS LIST OF EXPLODED VIEW (DCD-980)

Ref. No.	Part No.	Part Name	Remarks
⊙ 1	KU- 9221		
1-1		MAIN UNIT	
1-2		DISPLAY / KEY UNIT	
1-3		HEAD PHONE UNIT	
1-4		POWER SWITCH UNIT	
2	204 8341 004	HEAD PHONE JACK	HJ601
3	393 4095 007	FL TUBE (FIP10SM6)	
4	212 1039 000	1P PUSH SWITCH	SW600
5	211 0661 007	VARIABLE RESISTOR	VR601
6	FG5 0	CD MECHA. UNIT	
⊙ 7	122 0187 100	TOP COVER SPACER	
⊙ 9	144 9140 313	FRONT PANEL	
⊙	144 9140 339	FRONT PANEL	(Gold)
⊙ 10	146 9249 100	:SUB PANEL	
⊙	146 9249 113	:SUB PANEL	(Gold)
11	113 9244 215	SERIES KNOB	
	113 9244 228	SERIES KNOB	(Gold)
12	113 9245 117	TENKEY	
	113 9245 120	TENKEY	(Gold)
13	113 9246 310	FUNCTION KNOB	
	113 9246 323	FUNCTION KNOB	(Gold)
⊙ 14	441 1204 006	BRACKET	
15	009 9025 009	35P FFC CORD (Z-TYPE)	
⊙ 16	412 3072 005	PANEL BRACKET	
17	113 1357 210	POWER SWITCH KNOB	
	113 1357 223	POWER SWITCH KNOB	(Gold)
18	146 9239 122	:LOADER PANEL	
◆	146 9238 108	LOADER PANEL	
	146 9239 136	:LOADER PANEL	(Gold)
19	112 0645 111	HEAD PHONE KNOB	
	112 0645 124	HEAD PHONE KNOB	(Gold)
21	473 7508 017	3×10 CBTS(P)-B	
22	473 7002 021	3×8 CBTS(S)-B	
24	473 7002 005	3×6 CBTS(S)-Z	
25	473 7007 000	4×8 CBTS(S)-B	
	473 4801 005	4×8 CTTS	(Gold)
⊙ 30	411 0959 500	:CHASSIS	
⊙ 31	105 9197 002	:BACK PANEL	
32	104 0228 100	:FOOT ASS'Y	
◆	104 0194 001	FOOT ASS'Y	
⊙ 33	441 1132 204	BOTTOM PLATE	
⊙ 34	443 1003 009	:P.C.B. SPACER	
◆	443 0518 003	P.C.B. HOLDER	
37	204 8311 021	2P PIN JACK	JK702,703
⚠ 38	233 5823 002	:POWER TRANSFORMER (E2)	Europe, U.K.
⚠ 40	206 2098 003	:AC CORD WITH CONNECTOR (E2)	Europe
⚠	206 2092 009	:AC CORD WITH CONNECTOR (EK)	U.K.
⚠ 41	445 0056 008	CORD BUSH	
⊙ 43	102 0424 005	:TOP COVER	
⊙◆	102 0425 101	TOP COVER	
⊙	102 0424 018	:TOP COVER	(Gold)
44	204 8262 002	1P PIN JACK	JK701
⊙ 70	412 3371 007	SUPPORT BRACKET	
⊙ 71	122 0197 006	SPACER	

- Parts indicated with the mark "◆" is substitute in japan.
- (Gold) in the Remarks column with gold front panels.

PARTS LIST OF EXPLODED VIEW (DCD-970)

Ref. No.	Part No.	Part Name	Remarks
⊙ 1	KU- 9220		
1-1		MAIN UNIT	
1-2		DISPLAY/KEY UNIT	
1-3		HEAD PHONE UNIT	
1-4		POWER SWITCH UNIT	
2	204 8354 017	HEAD PHONE JACK	HJ601
3	393 4095 007	FL TUBE (FIP10SM6)	
4	212 1039 000	1P PUSH SWITCH	SW600
5	211 0661 007	VARIABLE RESISTOR	VR601
6	FG5 0	CD MECHA. UNIT	
⊙ 7	122 0187 113	TOP COVER SPACER	U.S.A. Canada
⊙	122 0187 100	TOP COVER SPACER	Australia Multi Voltage (Asia)
⊙ 9	144 9140 300	FRONT PANEL	
⊙ 10	146 9235 305	SUB PANEL	U.S.A.
⊙	146 9235 318	SUB PANEL	Canada Australia Multi Voltage (Asia)
11	113 9244 202	SERIES KNOB	
12	113 9245 104	TENKEY	
13	113 9246 307	FUNCTION KNOB	
⊙ 14	441 1204 006	BRACKET	
15	009 9025 009	35P FFC CORD (Z-TYPE)	
⊙ 16	412 3072 005	PANEL BRACKET	
17	113 1357 207	POWER SWITCH KNOB	
18	146 9238 108	LOADER PANEL	
19	112 0645 108	HEAD PHONE KNOB	
21	473 7508 017	3×10 CBTS(P)-B	
22	473 7002 021	3×8 CBTS(S)-B	
24	473 7002 005	3×6 CBTS(S)-Z	
25	473 7007 000	4×8 CBTS(S)-B	
⊙ 30	411 0962 306	CHASSIS	
⊙ 31	105 9186 000	BACK PANEL	
⊙	105 9186 013	BACK PANEL (E1)	Multi Voltage (Asia) Only
32	104 0194 001	FOOT ASS'Y	
⊙ 33	441 1132 204	BOTTOM PLATE	
⊙ 34	443 0518 003	P.C.B. HOLDER	
37	204 8311 021	2P PIN JACK	JK702,703
⚠ 38	233 5820 005	POWER TRANSFORMER (EU)	U.S.A. Canada
⚠	233 5821 004	POWER TRANSFORMER (EA)	Australia
⚠	233 5822 003	POWER TRANSFORMER (E1)	Multi Voltage (Asia)
⚠ 40	206 2086 002	AC CORD WITH CONNECTOR (EU)	U.S.A. Canada
⚠	206 2087 001	AC CORD WITH CONNECTOR (EA)	Australia
⚠	206 2088 000	AC CORD WITH CONNECTOR (E1)	Multi Voltage (Asia)
⚠ 41	445 0056 008	CORD BUSH	
⊙ 43	102 0425 101	TOP COVER	
44	204 8262 002	1P PIN JACK	JK701
⊙ 70	412 3371 007	SUPPORT BRACKET	
⊙ 71	122 0197 006	SPACER	

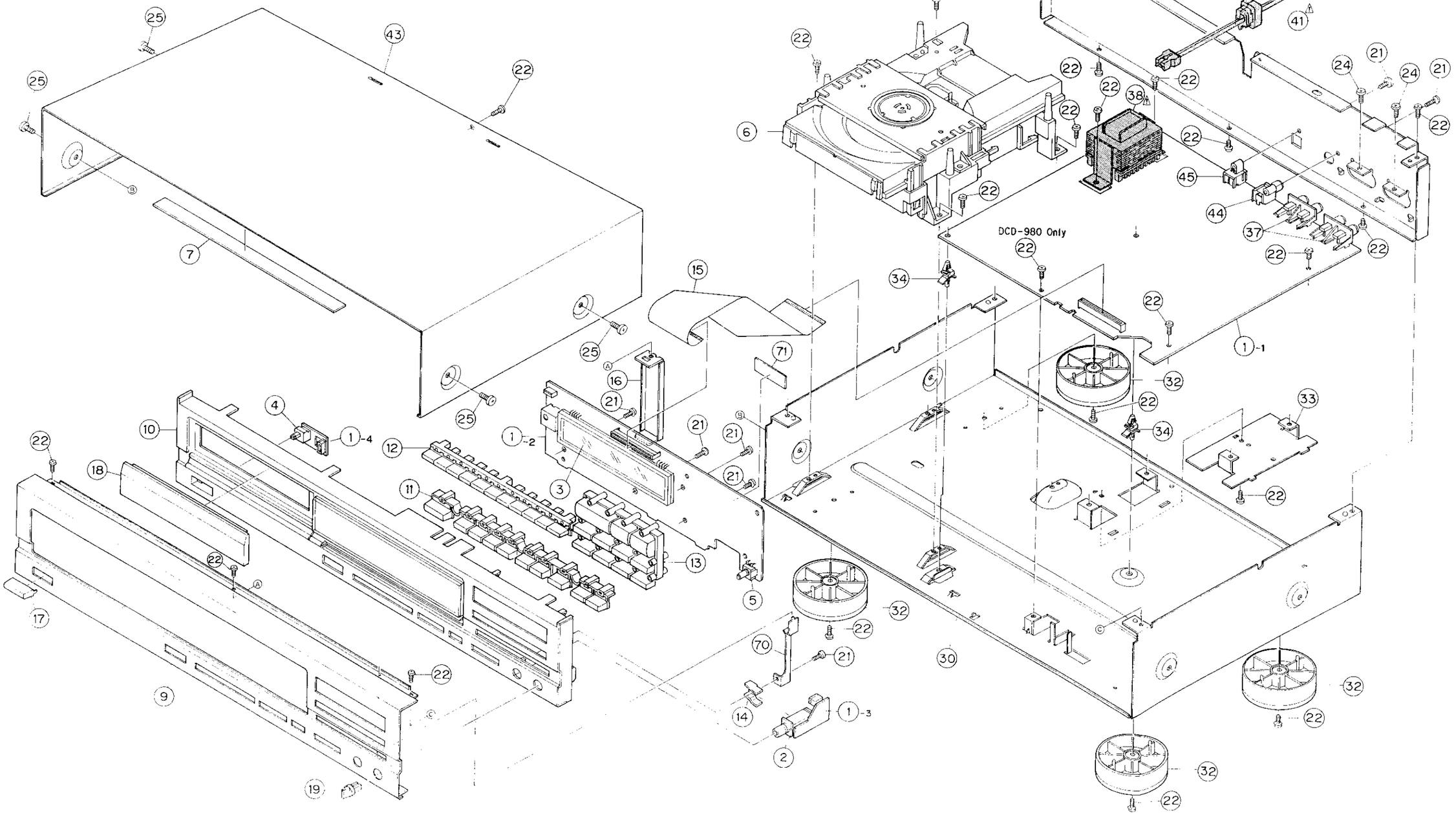
- Parts marked with ⚠ and/or shading have special characteristics important to safety.
- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.

EXPLODED VIEW

1 2 3 4 5 6 7 8

A B C D E

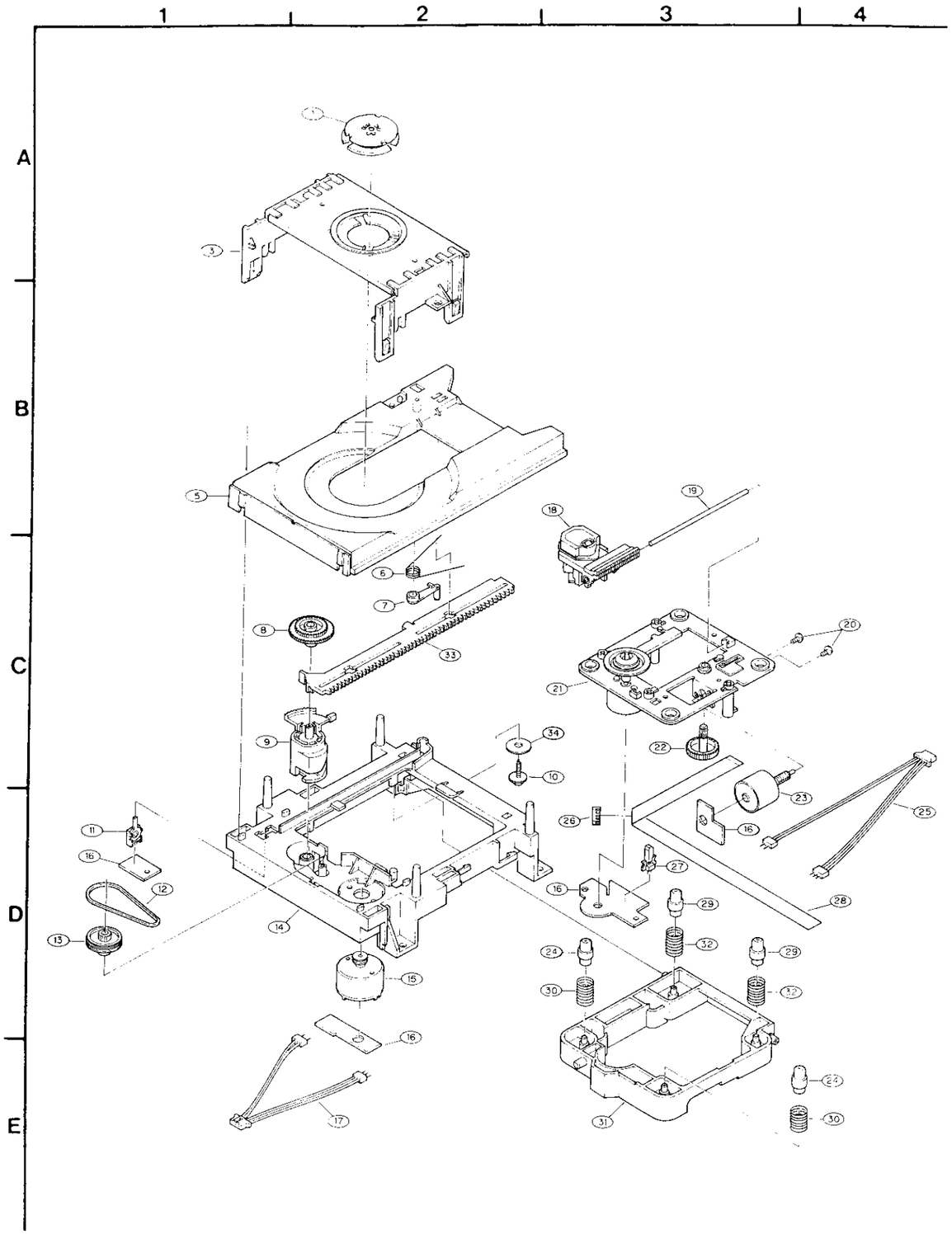
WARNING:
Parts marked with this symbol ⚠ ▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.



PARTS LIST OF FG-50 MECHANISM UNIT

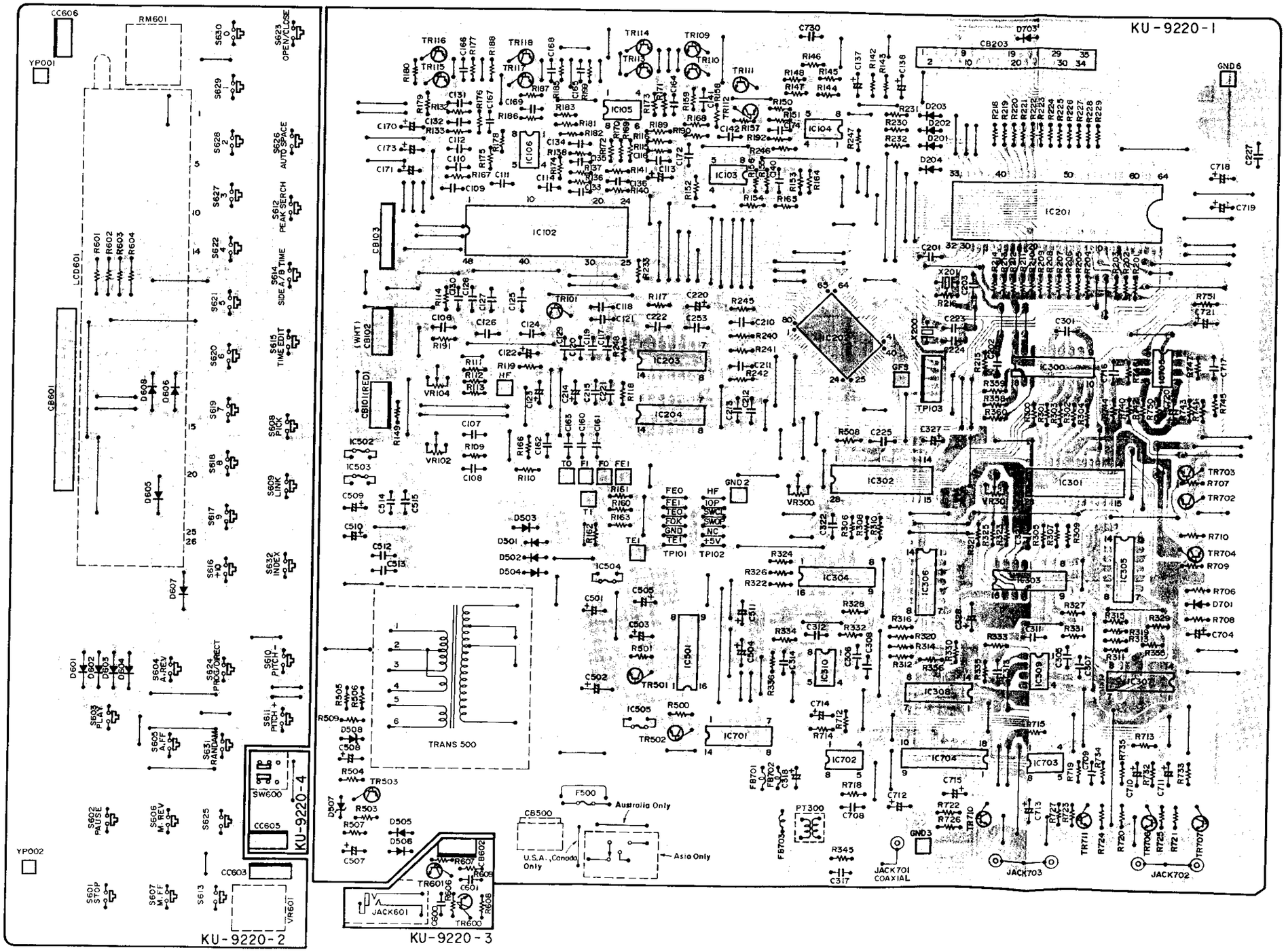
Ref. No.	Partr No.	Part Name	Remarks
1	GEN 1396	Clamper Press Sub Ass'y	
3	412 3133 006	Clamper Frame	
5	431 0300 302	Loader Frame	
6	463 0669 008	Lock Lever Spring	
7	412 3215 202	Lock Lever	
8	424 0162 005	Gear	
9	424 0160 104	Lift Cam	
10	477 0262 006	Special Screw	
11	212 1059 006	Open/Close SW.	
12	423 0056 011	Belt	
13	424 0161 103	Pulley Gear	
14	411 1019 300	Mecha. Chassis	
15	GEN 1492	L. Motor Sub Ass'y	
16	222 2275 006	Motor SW. P.W.B.	
17	203 8302 008	5-3, 2P PH-SAN CORD-R	
18	499 0191 009	Laser P.U	KSS-240A
19	443 1094 005	P.U. Shaft	
20	471 3801 039	2x3 CBS-Z	
21	GEN 1636	Spindle Motor Ass'y	
22	424 0164 003	Helical Gear	
23	GEN 1397	Slide Motor Sub Ass'y	
24	462 0078 104	Damper	
25	203 8301 009	5-3, 2P PH-SAN CORD-W	
26	443 1093 006	FFC Clamper	
27	212 6013 005	Inner SW. (PU)	
28	009 0051 001	12P FFC	
29	462 0078 117	Damper	
30	463 0583 100	Spring (F)	
31	GEN 1408	Mecha. Frame Sub Ass'y	
32	461 0661 000	Spring F. (R)	
33	435 0117 403	Slide Rack	
34	462 0113 014	Rubber Washer	

EXPLODED VIEW OF FG-50 MECHANISM UNIT

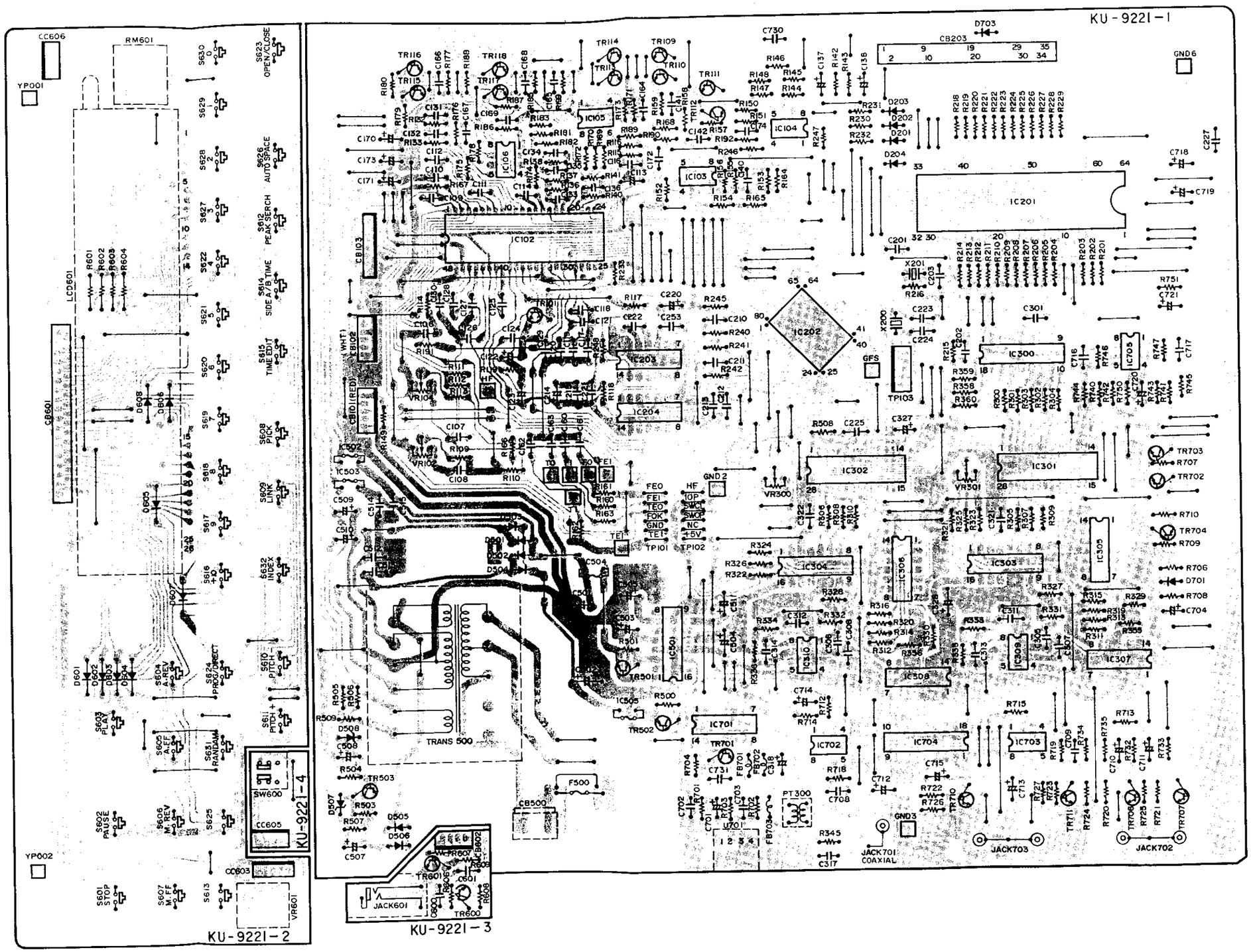


P.W.BOARD

KU-9220



KU-9221


KU-9221-1
KU-9221-2
KU-9221-3
KU-9221-4
CC606
RM601
YP001
LCD601
CB601
YP002
CC605
SW600
CC603
VR601
CB103
CB101 (RED)
CB102 (WHT)
CB203
CB500
TRANS 500
F500
JACK601
JACK701 COAXIAL
JACK703
JACK702
IC102
IC105
IC106
IC103
IC104
IC201
IC202
IC203
IC204
IC300
IC301
IC302
IC303
IC304
IC305
IC306
IC307
IC308
IC309
IC310
IC501
IC505
IC701
IC702
IC703
IC704
IC705
TP103
TP101
TP102
VR104
VR102
VR300
VR501
PT300
X200
X201
GND2
GND3
GND6
GFS
S601 STOP
S602 PAUSE
S603 PLAY
S604 A.REV
S605 A.FF
S606 M.REV
S607 M.FF
S608 PICK
S609 LINK
S610 PITCH +
S611 PITCH -
S612 PEAK SERCH
S613
S614 SIDE A/B TIME
S615 TIME EDIT
S616 +10
S617 9
S618 8
S619 7
S620 6
S621 5
S622 4
S623 OPEN/CLOSE
S624 PROG/DIRECT
S625
S626 AUTO SPACE
S627 3
S628 2
S629 1
S630 0
S631 RANDAM
S632 INDEX
D601
D602
D603
D604
D605
D606
D607
D608
D501
D502
D503
D504
D505
D506
D507
D508
D701
D703
TR101
TR102
TR103
TR104
TR105
TR106
TR107
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TR109
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TR710
TR711
FB701
FB702
FB703
U701
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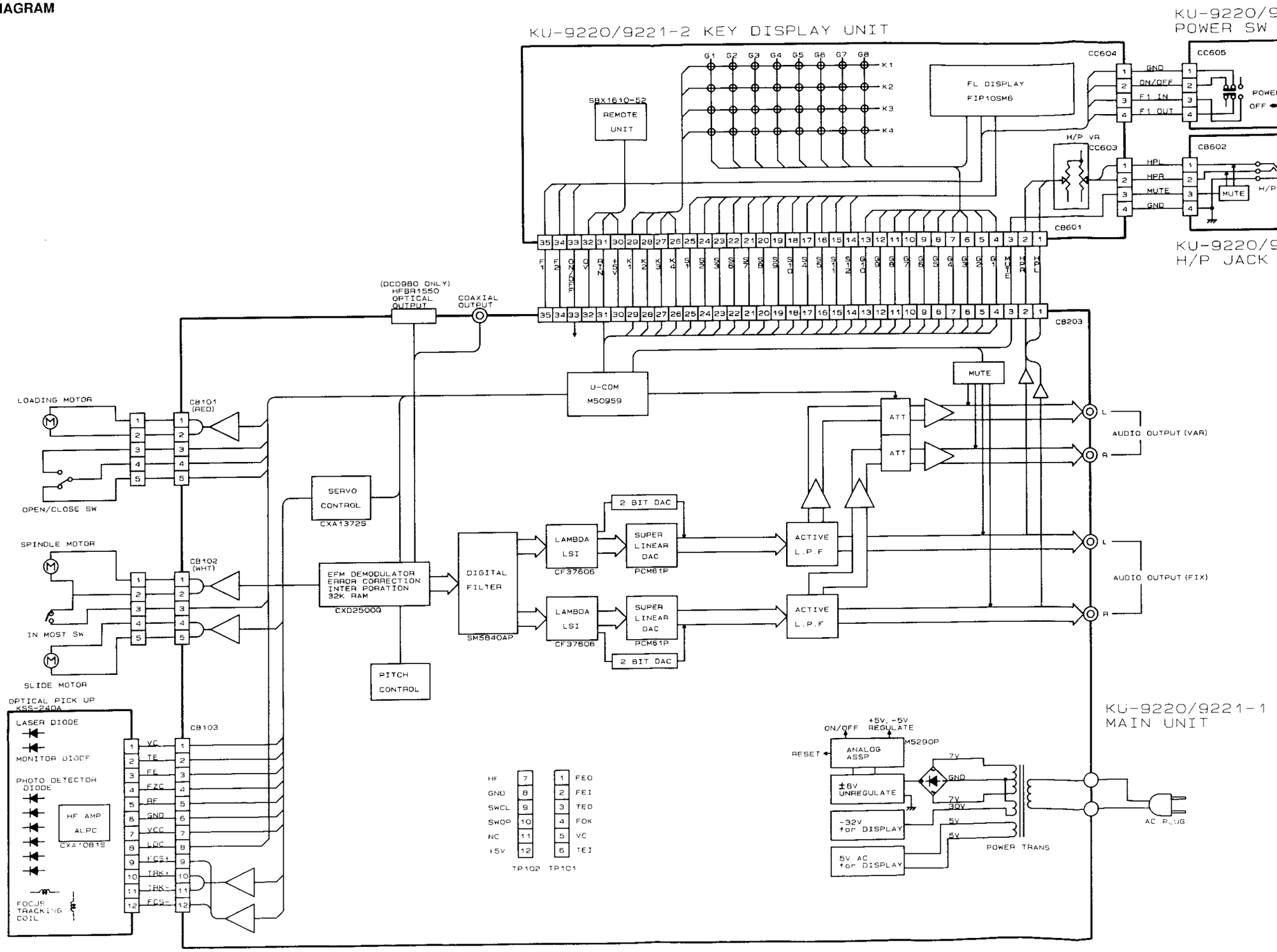
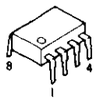
FE1
TE0
TE1
FOK
GND
HF
10P
SW0
SW1
NC
+5V

WIRING DIAGRAM



SEMICONDUCTORS

• IC's



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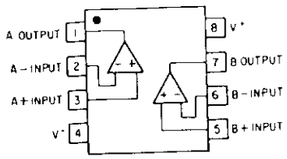
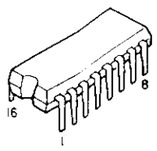
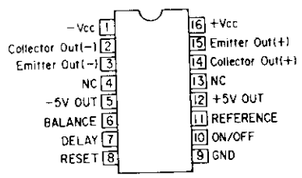
:RC4558P





PCM61P
M5290P



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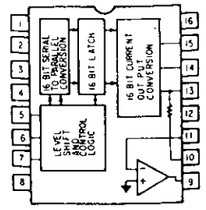

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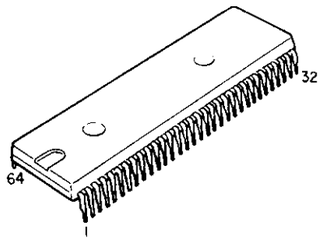

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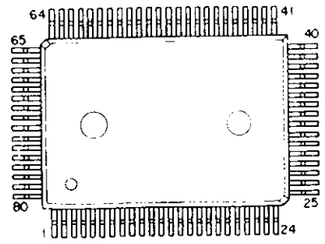
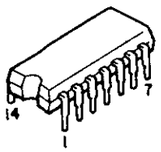


CXD2500Q



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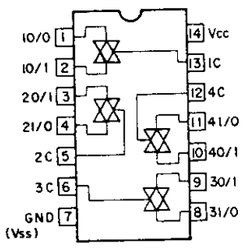
TC74HCU04AP
SN74LS624
TC74HCT04AP
:PC74HCT04P
:PC74HCU04P
:PC74HC4066P



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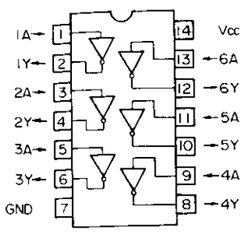

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:PC74HCU04P
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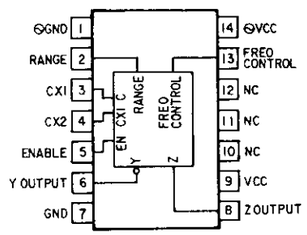
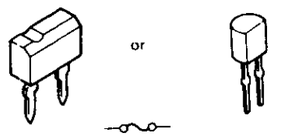


SN74LS624

• IC PROTECTOR



ICP-F15

ICP-N15

• DIODES

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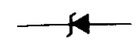
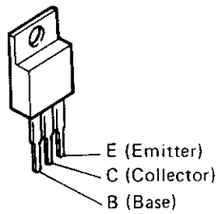
1SS270A
1SR139



HZS7B-2
HZS33-2

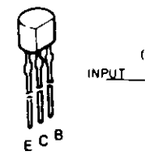
• TRANSISTORS

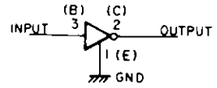


2SD1913
2SB1274
:BC935F
:BD936F

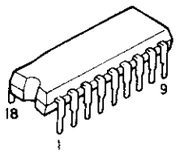
2SA1015
2SA933(Q)
2SD1504(E/F)
:JC557A/B

2SB562
2SD468(C)
:BC369
:BC368

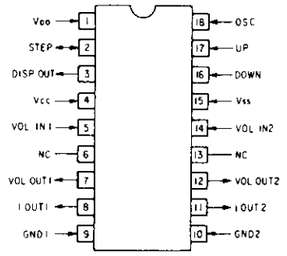




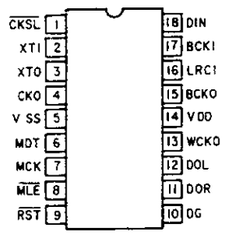
RN1202(10K-10K)NPN
DTA124XS(22K-47K)



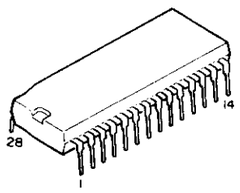
MN6632A
SM5840AP



MN6632A



SM5840AP



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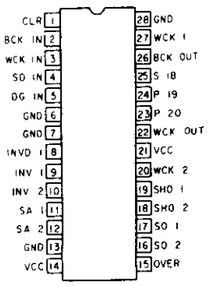

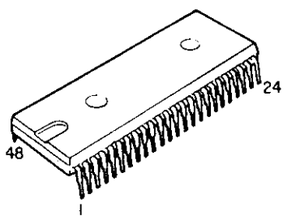

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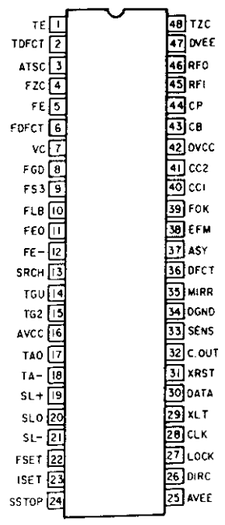
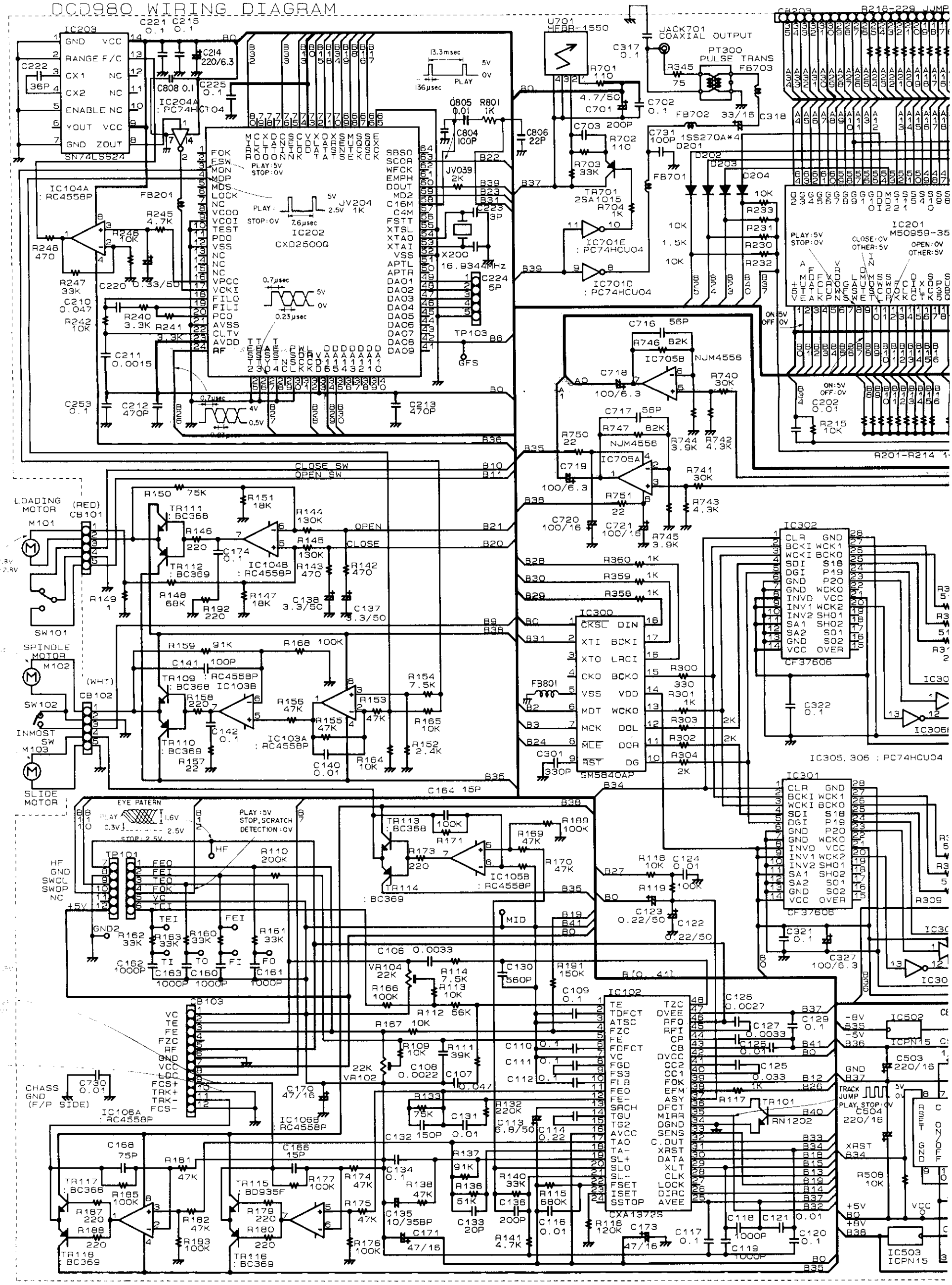
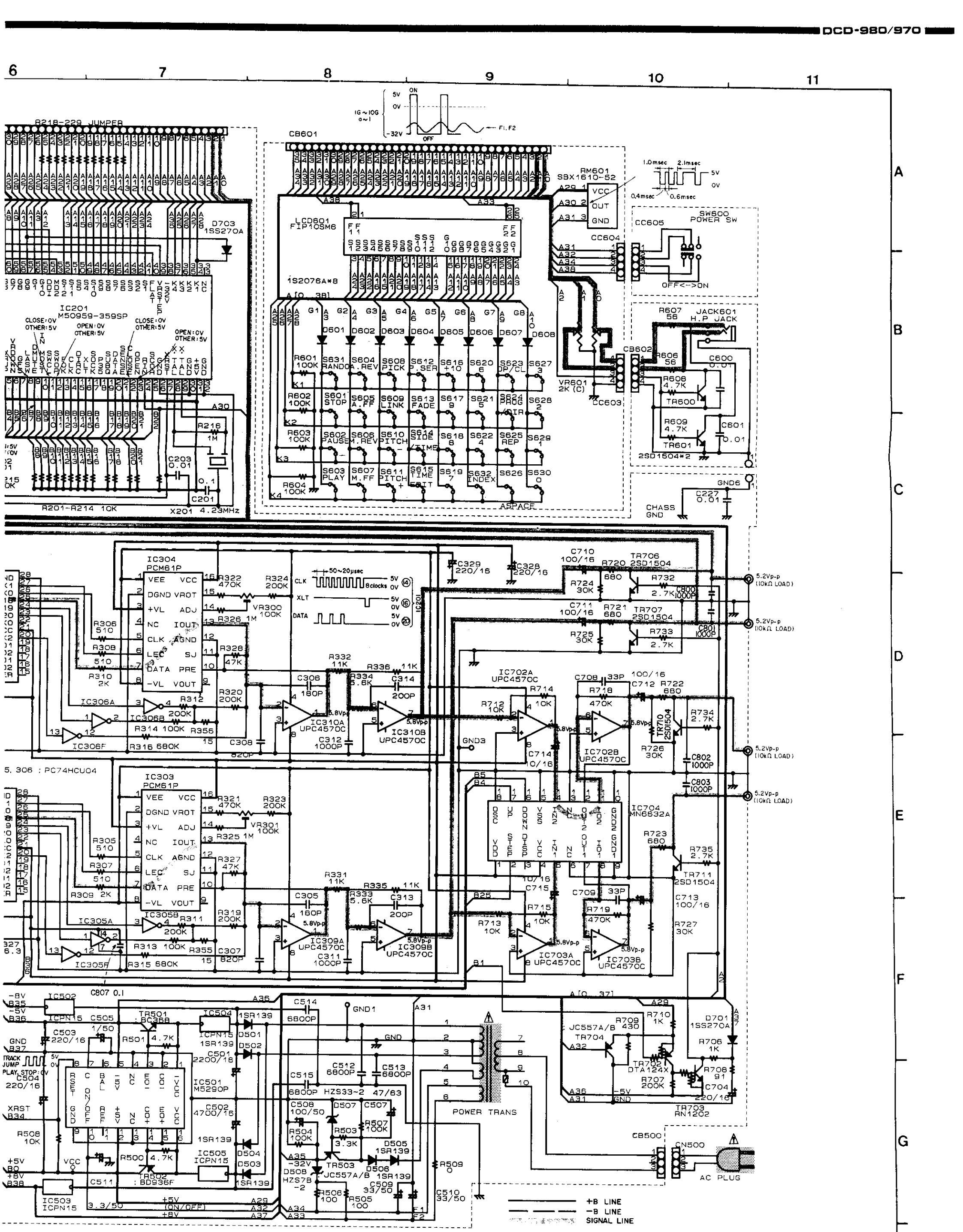


DCD980 WIRING DIAGRAM

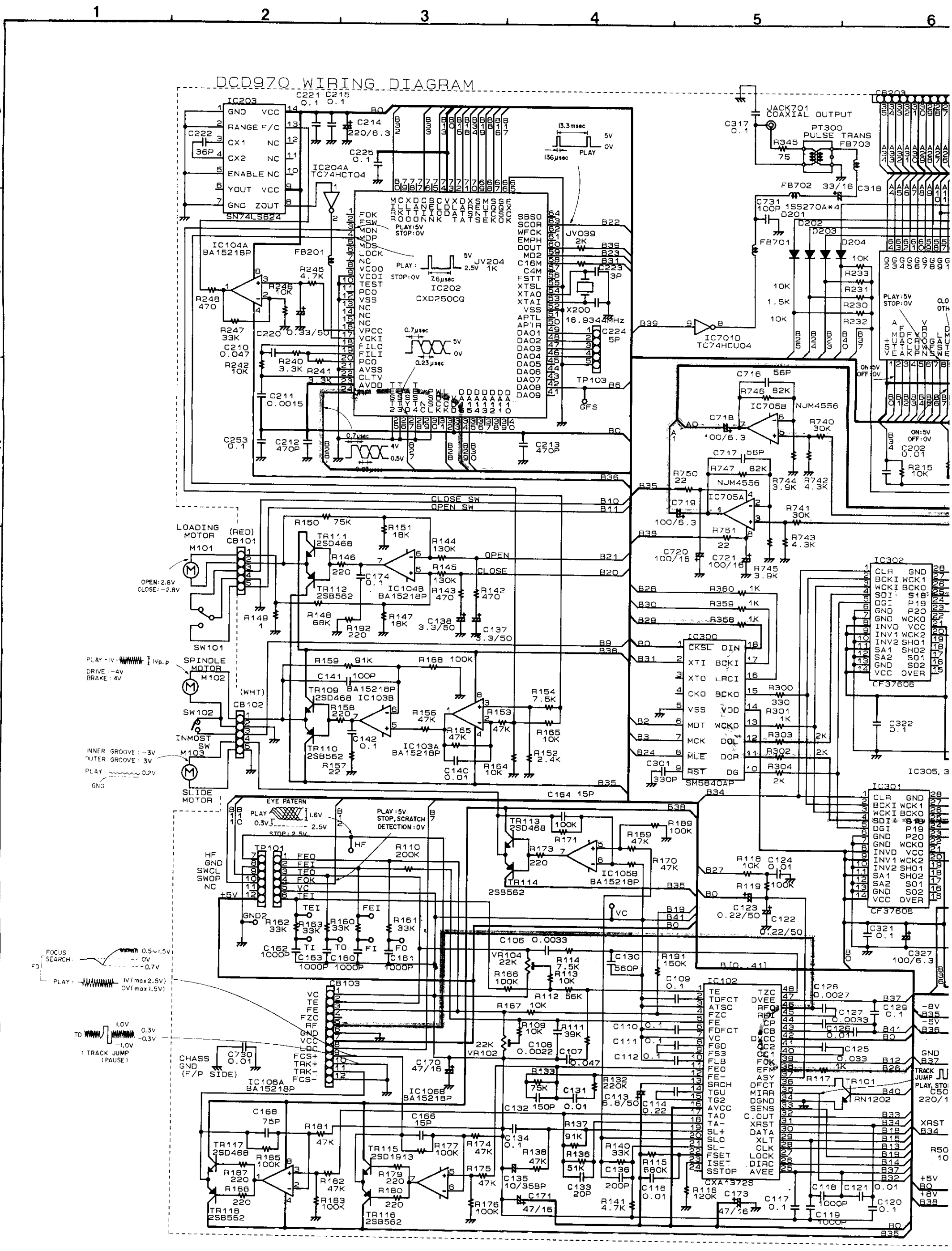




NOTES

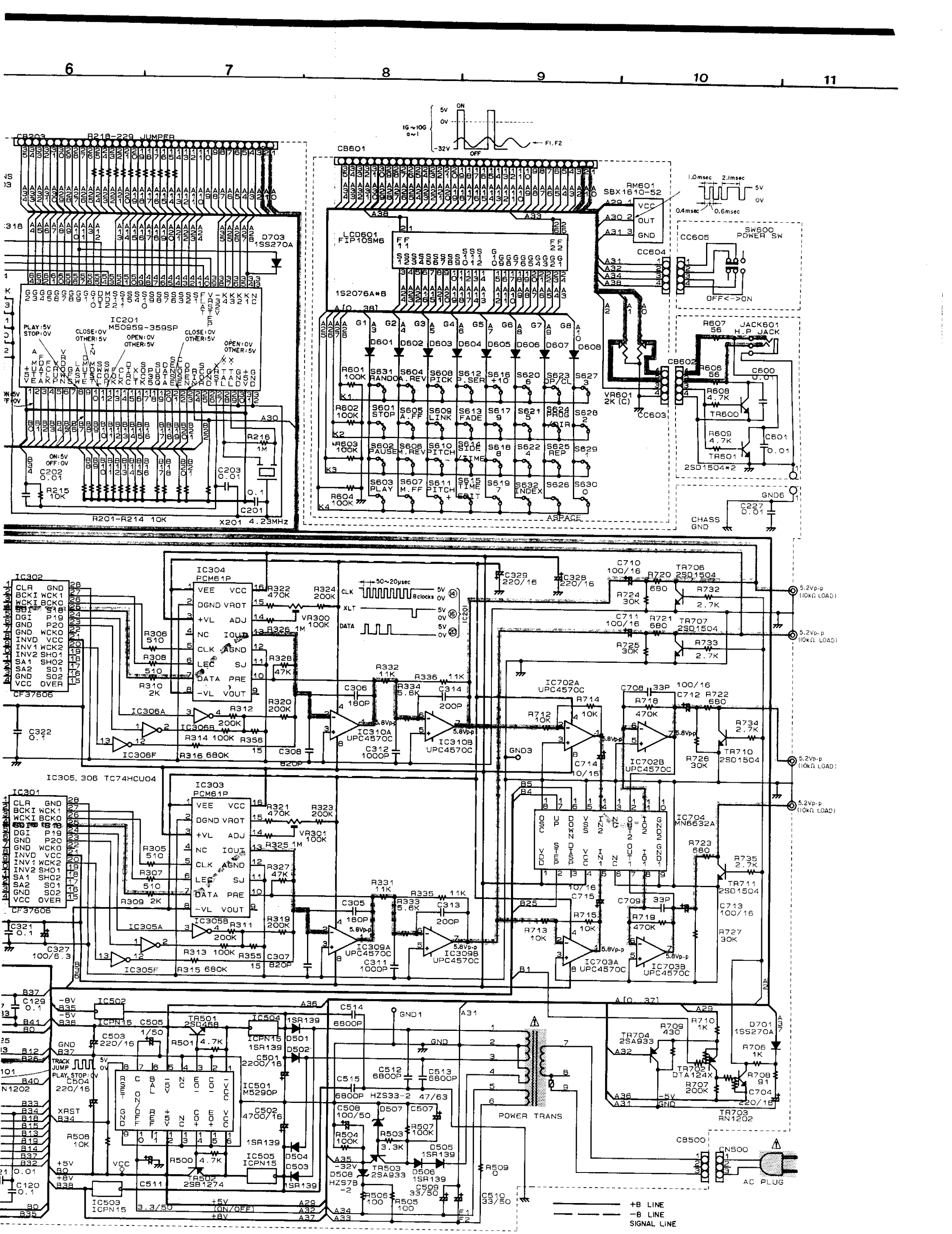
ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

SCHEMATIC DIAGRAM DCD-970



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.


6
7
8
9
10
11
CB203
R218-229 JUMPER
D703
1SS270A
IC201
M50959-359SP
PLAY:5V
STOP:0V
CLOSE:0V
OTHER:5V
OPEN:0V
OTHER:5V
CLOSE:0V
OTHER:5V
OPEN:0V
OTHER:5V
A30
R216
1M
C202
0.01
R215
10K
C203
0.01
0.1
C201
R201-R214 10K
X201 4.23MHz
CB601
LCD601
FIP10SM6
1S2076A*8
D601
D602
D603
D604
D605
D606
D607
D608
R601
100K
S631
RANDOM
S604
A.REV
S608
PICK
S612
P.SEL
S616
+10
S620
6
S623
UP/CL
S627
3
K1
R602
100K
S601
STOP
S605
A.FF
S609
LINK
S613
FADE
S617
9
S621
5
S624
PROG
/AIR
S628
2
K2
R603
100K
S602
PAUSE
M.REV
S606
PITCH
S610
+
S614
SIDE
/TIME
S618
8
S622
4
S625
REP
S629
1
K3
R604
100K
S603
PLAY
S607
M.FF
S611
PITCH
-
S615
TIME
EDIT
S619
7
S632
INDEX
S626
S630
0
K4
A SPACE
RM601
SBX1610-52
VCC
OUT
GND
CC604
CC605
SW600
POWER SW
OFF<->ON
VR601
2K (C)
CC603
CB602
R607
56
JACK601
H.P JACK
C600
0.01
R606
56
R608
4.7K
TR600
R609
4.7K
C601
0.01
TR601
2SD1504*2
GND6
C227
0.01
CHASS
GND
5V
ON
0V
-32V
OFF
F1,F2
1G~10G
a~l
1.0msec
2.1msec
0.4msec
0.6msec
IC302
CF37606
IC304
PCM61P
R322
470K
R324
200K
VR300
100K
R326 1M
R306
510
R308
510
R310
2K
R328
47K
R320
200K
R312
200K
R314 100K
R356
R316 680K
C322
0.1
IC306A
IC306B
IC306F
C306
180P
C308
820P
R332
11K
R334
5.6K
C314
200P
R336
11K
C312
1000P
IC310A
UPC4570C
IC310B
UPC4570C
5.8Vp-p
IC305, 306 TC74HCU04
IC301
CF37606
IC303
PCM61P
R321
470K
R323
200K
VR301
100K
R325 1M
R305
510
R307
510
R309 2K
R327
47K
R319
200K
R311
200K
R313 100K
R355
R315 680K
C321
0.1
C327
100/6.3
IC305A
IC305B
IC305F
C305
180P
C307
820P
R331
11K
R335
11K
R333
5.6K
C313
200P
C311
1000P
IC309A
UPC4570C
IC309B
UPC4570C
C329
220/16
C328
220/16
C710
100/16
R720
680
TR706
2SD1504
R724
30K
R732
2.7K
C711
100/16
R721
680
TR707
2SD1504
R725
30K
R733
2.7K
IC702A
UPC4570C
R714
10K
R712
10K
C708
33P
100/16
C712
R722
680
R718
470K
R734
2.7K
TR710
2SD1504
R726
30K
IC702B
UPC4570C
GND3
C714
10/16
B5
B4
B1
B25
IC704
MN6632A
R723
680
R735
2.7K
TR711
2SD1504
C715
10/16
R715
10K
R713
10K
C709
33P
R719
470K
C713
100/16
R727
30K
IC703A
UPC4570C
IC703B
UPC4570C
5.2Vp-p
(10kΩ LOAD)
IC502
ICPN15
C505
1/50
TR501
2SD468
IC504
1SR139
ICPN15
C503
220/16
R501
4.7K
D501
D502
C501
2200/16
IC501
M5290P
C502
4700/16
C504
220/16
XRST
B34
R508
10K
R500
4.7K
TR502
2SB1274
IC505
ICPN15
D504
D503
1SR139
C511
3.3/50
IC503
ICPN15
+5V
(ON/OFF)
+8V
C514
6800P
GND1
C512
6800P
C513
6800P
C515
6800P
HZS33-2
47/63
C508
100/50
D507
C507
R507
100K
R504
100K
R503
3.3K
D505
1SR139
TR503
2SA933
D506
1SR139
D508
HZS7B
-2
R506
100
R505
100
C509
33/50
C510
33/50
R509
0
POWER TRANS
A[0..37]
R709
430
R710
1K
D701
1SS270A
TR704
2SA933
R706
1K
TR702
DTA124X
R708
91
R707
200K
C704
220/16
TR703
RN1202
CB500
CN500
AC PLUG
+B LINE
-B LINE
SIGNAL LINE