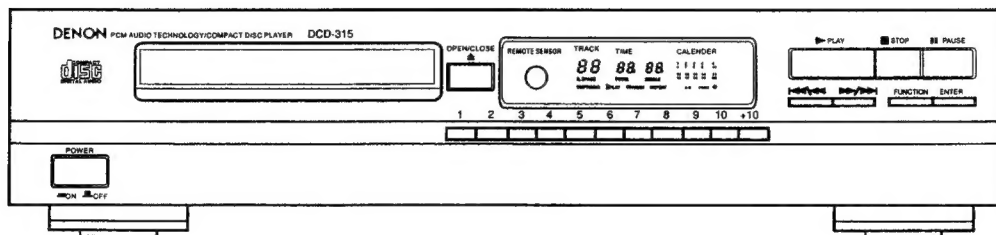V12080

# DENON

Hi-Fi Component

## SERVICE MANUAL

# MODEL DCD-315

## STEREO CD PLAYER



— TABLE OF CONTENTS —

# NIPPON COLUMBIA CO., LTD.

## NOTE ON USE / HINWEISE ZUM GEBRAUCH / OBSERVATIONS RELATIVES A L'UTILISATION
## NOTE SULL'USO / NOTAS SOBRE EL USO / ALVORENS TE GEBRUIKEN / OBSERVERA
## OBSERVAÇOES SOBRE O USO



* Avoid high temperatures.
  Allow for sufficient heat dispersion when installed on a rack.
* Vermeiden Sie hohe Temperaturen.
  Beachten Sie, daß eine ausreichende Luftzirkulation gewährleistet sein muß, wenn das Gerät in einem Regal aufgestellt werden soll.
* Eviter des températures élevées.
  Tenir compte d'une dispersion de chaleur suffisante lors de l'installation sur une étagère.
* Evitare di esporre l'unità ad alte temperature.
  Accertarsi che ci sia un'adeguata dispersione del calore quando l'unità è installata in un rack o in un mobile.
* Evite temperaturas elevadas.
  Asegúrese de garantizar una dispersión de calor suficiente al instalar la unidad en una consola.
* Vermijd hoge temperaturen.
  Zorg voor een degelijk hitteafvoer indien het apparaat op één rek wordt geplaatst.
* Undvik höga temperaturer.
  Se till att det finns möjlighet till god värmeavledning vid montering i ett rack.
* Evite temperaturas altas.
  Quando instalar o equipamento numa prateleira, coloque-o de modo a permitir uma dissipação suficiente do calor.

* Keep the set free from moisture, water and dust.
* Halten Sie das Gerät von Feuchtigkeit, Wasser und Staub fern.
* Protéger l'appareil contre l'humidité, l'eau et la poussière.
* Mantenere l'unità lontana da umidità, acqua e polvere.
* Mantenga el equipo libre de humedad, agua y polvo.
* Laat geen vochtigheid, water of stof in het apparaat binnendringen.
* Utsätt inte apparaten för fukt, vatten och damm.
* Mantenha o equipamento livre de humidade, água ou pó.

* Unplug the power cord when not using the set for long periods of time.
* Ziehen Sie das Netzkabel aus der Steckdose, wenn Sie das Gerät über einen längeren Zeitraum hinweg nicht verwenden.
* Débrancher le cordon d'alimentation lorsque l'appareil n'est pas utilisé pendant de longues périodes.
* Quando si prevede di non utilizzare l'unità per lunghi periodi di tempo, disinserire il cavo di alimentazione dalla presa.
* Desconecte el cordón de alimentación cuando no utilice el equipo por mucho tiempo.
* Neem altijd het netsnoer uit het stopkontakt wanneer het apparaat gedurende een lange periode niet wordt gebruikt.
* Dra ur nätkontakten om apparaten inte kommer att användas på länge.
* Desligue o cabo de alimentação quando não utilizar o equipamento durante periodos prolongados.

* Handle the power cord carefully.
  Hold the plug when unplugging the cord.
* Gehen Sie vorsichtig mit dem Netzkabel um.
  Halten Sie das Kabel am Stecker, wenn Sie es aus der Steckdose ziehen.
* Manipuler le cordon d'alimentation avec précaution.
  Tenir la prise lors du débranchement du cordon.
* Maneggiare con cura il cavo di alimentazione.
  Quando si scollega il cavo dalla presa, non tirare il cavo.
* Maneje el cordón de alimentación con cuidado.
  Sostenga el enchufe cuando desconecte el cordón de alimentación.
* Hanteer het netsnoer voorzichtig.
  Houd het snoer bij de stekker vast wanneer deze moet worden aan- of losgekoppeld.
* Hantera nätsladen varsamt.
  Håll i kontakten när du drar ut den. Dra inte i kabeln.
* Manuseie o cabo de alimentação com cuidado.
  Agarre na ficha para desligar o cabo de alimentação da tomada.

* Do not let foreign objects in the set.
* Lassen Sie keinerlei Gegenstände in das Gehäuseinnere eindringen.
* Ne pas laisser des objets étrangers dans l'appareil.
* Non far cadere alcun oggetto all'interno dell'unità.
* No inserte objetos extraños en el equipo.
* Laat geen vreemde voorwerpen in dit apparaat vallen.
* Se till att främmande föremål inte tränger in i apparaten.
* Evite deixar objectos estranhos sobre o aparelho.

* Do not let insecticides, benzene, and thinner come in contact with the set.
* Lassen Sie das Gerät nicht mit Insektiziden, benzenhaltigen oder anderen Verdünnungsmitteln in Berührung kommen.
* Ne pas mettre en contact des insecticides, du benzène et un diluant avec l'appareil.
* Evitare di utilizzare insetticidi, benzolo e solventi sull'unità.
* No ponga insecticidas, benceno o diluyentes en contacto con el equipo.
* Laat geen insectenverdelgende middelen, benzine of verfverdunner met dit apparaat in kontakt komen.
* Se till att inte insektsmedel, bensen och thinner kommer i kontakt med apparatens hölje.
* Evite que insecticidas, benzina e diluente entrem em contacto com o equipamento.

* Never disassemble or modify the set in any way.
* Versuchen Sie niemals, das Gerät selbständig auseinanderzunehmen oder auf jegliche Art zu verändern.
* Ne jamais démonter ou modifier l'appareil d'une manière ou d'une autre.
* Non smontare o modificare in alcun modo l'unità.
* Nunca desarme o modifique el equipo de ninguna manera.
* Nooit dit apparaat demonteren of op andere wijze modificeren.
* Ta inte isär apparaten och försök inte bygga om den.
* Nunca desmonte ou modifique o equipamento de alguma forma.

*(For sets with ventilation holes.)

* Do not obstruct the ventilation holes.
* Die Lüftungsschlitze dürfen nicht verdeckt werden.
* Ne pas obstruer les trous d'aération.
* Non ostruire i fori per la ventilazione.
* No tape las ranuras de ventilación.
* De ventilatieopeningen mogen niet worden beblokkeerd.
* Täpp inte till ventilationsöppningarna.
* Não tape os orifícios de ventilação.

## IMPORTANT TO SAFETY

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

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASSE 1 LASERAPPARAT

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA 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.

**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).

*CLASS 1
LASER PRODUCT*

---

## FRONT PANEL / VORDERSEITE / PANNEAU AVANT / PANNELLO FRONTALE
## PANEL ANTERIOR / VOORPANEEL / FRONT PANELEN / PAINEL FRONTAL
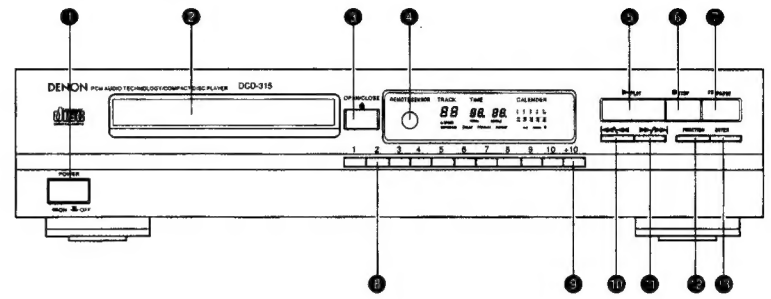


## DISPLAY / ANZEIGE / AFFICHAGE / DISPLAY / VISUALIZADOR / DISPLAY / DISPLAYEN / MOSTRADOR
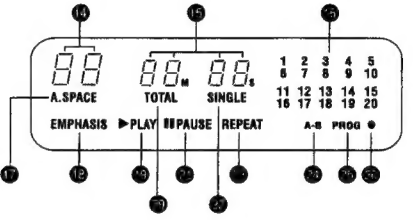


## REAR PANEL / RÜCKWAND / PANNEAU ARRIÈRE / PANNELLO POSTERIORE
## PANEL POSTERIOR / ACHTERPANEEL / BAKSIDAN / PAINEL TRASEIRO
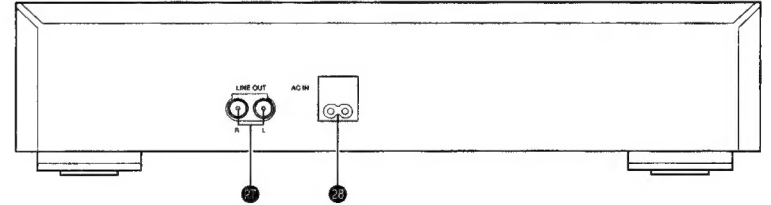


* NUR FÜR EUROPÄISCHE MODELLE

**Konformitätserklärung**

Die DENON Elektronik GmbH
Halskestr. 32
40880 Ratingen

erklärt als Hersteller/Importeur, daß das in dieser Bedienungsanleitung beschriebene Gerät den Technischen Vorschriften für Ton- und Fernseh-Rundfunkempfänger nach der Amtsblattverfügung 868/1989 (Amtsblatt des Bundesministers für Post und Telekommunikation vom 31.8.1989) entspricht.

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.

## — TABLE OF CONTENTS —

**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)  AC Cord ............................................................. 1

## FEATURES

The DCD-315 includes a multi-noise shaping D/A converter which has a built-in high performance digital filter. This assures accurate reproduction of the digital signals recorded on compact discs no matter whether they are pure studio recordings or "live" performance recordings. All parts making up this CD player have selected with the greatest care in order to produce high quality realistic playback of the full musical content on compact discs.

**(1)  Multi-Level Noise Shaping D/A Converter**
The newly developed multi-noise shaping system is employed in the D/A converter to control distortion and to permit rich sound playback.

**(2)  High Performance Digital Filter**
The DCD315 uses a highly accurate 8 times oversampling digital filter to achieve characteristics equal to those of the optimum analogue filter. This permits clear and vivid playback.

**(3)  Remote Sensor**
A remote sensor is built in, so if the remote control unit for DENON's receivers and amplifiers or a separately purchased remote control unit (RC-241) is used, the DCD-315 can be operated from the optimum listening position. The remote control unit, of course, includes play, stop, and pause functions, but is also capable of such functions as direct selection and direct programming.

## CONNECTION

**(1)  Connecting the Output Terminal (LINE OUT)**
Use the included pin cords to connect the left (L) and right (R) output terminal (LINE OUT) of the DCD-315 to the CD or AUX or TAPE PLAY left (L) and right (R) input jacks of the amplifier.
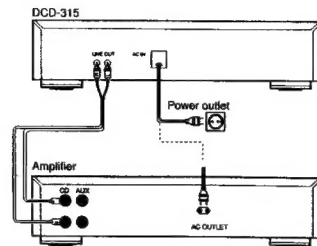


**Connection Precautions**
- Before proceeding with connections or disconnections of cables and power cords, be sure to turn all system components off.
- Ensure that all cables are connected properly to the L (left) and R (right) jacks.
- Insert plugs fully into the terminals.
- Connect the output jacks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

## 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.
- 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.

## NAMES AND FUNCTIONS OF PARTS (Refer to page 3.)

### FRONT PANEL

**①  Power Switch (POWER)**
- When the power is turned on, "(00)" appears on the TRACK NO. display.
- Whenever the power switch is in the OFF state, the apparatus is still connected on AC line voltage.
    Please be sure to unplug the cord when you leave home for, say, a vacation.

**②  Disc Holder**
- Load a disc here.

**③  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.

**④  Remote Control Sensor (REMOTE SENSOR)**
- This sensor receives the infrared light transmitted from the wireless remote control unit.
- For remote control, point the DENON's remote control unit towards this sensor.
- When a signal is transmitted from the remote control unit, the remote control indicator in the display ● will light up briefly.

**⑤  Play Button (▶ PLAY)**
- Press this button to start playing the disc.
- Even when the disc tray is open, the disc tray closes and playback begins when this button is pressed.

**⑥  Stop Button (■ STOP)**
- Press this button to stop playback.

**●  Pause Button (II PAUSE)**
- Press this button to stop playback temporarily.
- Press this button or the play button (▶ PLAY) again to continue playback.

**⑧  Number Buttons (1, 2, 3, 4, 5, 6, 7, 8, 9 and 10)**
- Use these buttons for the direct search and program memory functions.

**⑨  +10 Button (+10)**
- Press this button first when selecting track numbers over 10. Use it together with the number buttons ●.

**⑩  I◀◀ \ ◀◀ (automatic/manual search reverse) button**
Use this to move to the beginning of a specific track. When pressed during playback or in the pause mode, the pickup moves backward a number of tracks equal to the number of times the button is pressed.

**⑪  ▶▶/▶▶I (automatic/manual search forward) button**
Use this to move to the beginning of a specific track. When pressed during playback or in the pause mode, the pickup moves forward a number of tracks equal to the number of times the button is pressed.
- The automatic search mode is set if the I◀◀\◀◀ or ▶▶/▶▶I button is released within 0.5 seconds, and the manual search mode is set if the button is held for over 0.5 seconds.

**⑫  FUNCTION Button**
- Use this button to select program/direct, repeat, auto space, time display and auto edit function. (Refer to page 8, 9 for details.)

**⑬  Enter Button**
- Use this button to set the program/direct, repeat, auto space, time display and auto edit functions selected with the FUNCTION button. (Refer to page 8, 9 for details.)

### DISPLAY

**⑭  Track Number Indicator**

**⑮  Playback Time Indicator**

**⑯  20-Track Music Calendar**

**⑰  Auto Space Indicator**

**⑱  Emphasis Indicator**

**⑲  Play Indicator**

**⑳  Remaining Time of Entire Disc**

**㉑  Pause Indicator**

**㉒  Remaining Time of Current Track**

**㉓  All Repeat Indicator**

**㉔  A-B Repeat Indicator**

**㉕  Program Indicator**

**㉖  Remote Control Indicator**

### REAR PANEL

**㉗  Output Terminal (LINE OUT)**
- Connect these jacks to the input jacks on your amplifier. (Refer to page 4 for details on the connections.)

**㉘  AC INLET**
- Connect the included AC cord here.

**Continuous Button Operation**
If the +10 button ●, the automatic/manual search reverse button ● or the automatic/manual search forward button ● are held in function of that button will be repeated.

## 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
12 cm disc

Fig. 2
8 cm disc (CD single)    Tray guide for 8 cm disc
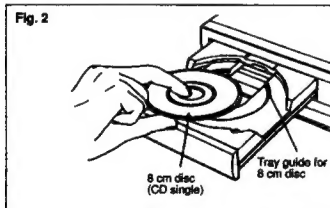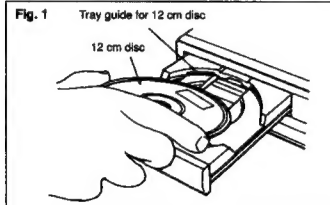
**Caution:**
- If your finger should get caught in the disc holder when it closes, press the open/close button (▲ OPEN/CLOSE).
- Do not place any foreign objects on the disc tray, and do not place more than one disc on the tray at a time. Otherwise malfunction may occur.
- Do not push in the disc tray manually when the power is off as this may cause malfunction and damage the CD player.
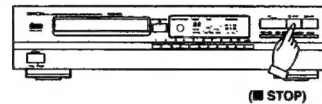
## NORMAL CD PLAYBACK

**(1) Starting Playback**
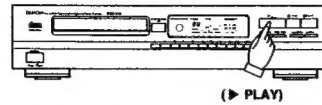
(▶ PLAY)

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**

(■ STOP)

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.

15 54 12    |    00 00 00

Normal display    |    Improper display
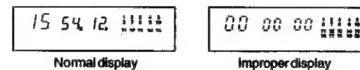
## ADVANCED CD PLAYBACK

**① Playing a Specific Track** .............. Direct Search
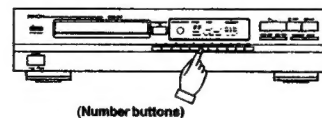
(Number buttons)

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

**② Advancing to the next track during playback** .............. Automatic Search

(▶▶ / ▶▶❘)
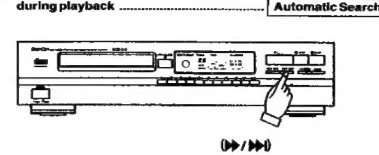
Press the Automatic search forward button (▶▶ / ▶▶❘) during playback, and it should be released within 0.5 seconds.
- The pickup will advance to the beginning of the next track and playback will continue. Pressing the button several times will forward the pickup the corresponding number tracks.

**③ Returning to the beginning of the current track during playback** .............. Automatic Search

(❘◀◀ \ ◀◀)
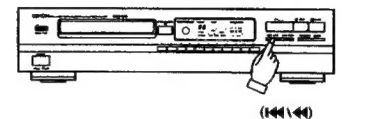
Press the Automatic search reverse button (❘◀◀ \ ◀◀) during playback, and it should be released within 0.5 seconds.
- The pickup will return to the beginning of the current track and playback will continue. Pressing the button several times will return the pickup the corresponding number tracks.

**④ 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**

(▶▶ / ▶▶❘)
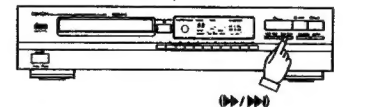
1. Press the manual search forward button (▶▶ / ▶▶❘) during playback in for more than 0.5 seconds. Playback of the track is sped up.
- As a reference, the current track number and elapsed playback time within the track are displayed.
- Manual search forward is approximately three times faster when engaged 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, (♪♪) is displayed and manual search stops. To return to another point, press the manual search reverse button (❘◀◀ \ ◀◀) until (♪♪) disappears.

**(2) Manual Search in Reverse**

(❘◀◀ \ ◀◀)
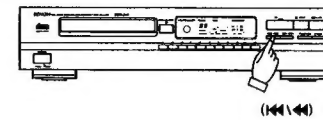
1. Press the manual search reverse button (❘◀◀ \ ◀◀) during playback in for more than 0.5 seconds. Reverse playback of the track is sped up.
- As a reference, the current track number and elapsed playback time within the track are displayed.
- Manual search in reverse is approximately three times faster 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, (⊏⊐) is displayed and manual search stops. To return to another point, press the manual search forward button (▶▶ / ▶▶❘) until (⊏⊐) disappears.

**⑤ Pausing playback at any point** .............. Pause
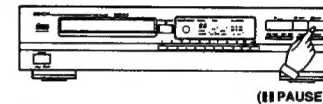
(❚❚ PAUSE)

- Playback can be temporarily halted and then continued from the same point in the track.
1. Press the pause button (❚❚ PAUSE) during the playback.
2. To continue playback, press the play button (▶ PLAY) or the pause button (❚❚ PAUSE) once more.

**⑥ 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    ②
(Number buttons)    (❚❚ PAUSE)
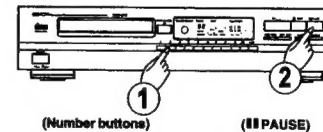
1. Press the number button ● for the desired track.
2. Press the (❚❚ PAUSE) button.
- To start playback, press the (▶ PLAY) or (❚❚ PAUSE) button.

**(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.

## ADVANCED FUNCTION

- The FUNCTION and ENTER buttons may be used to perform the following advanced functions.
- A different function in the following cycle may be accessed each time the FUNCTION button is pressed:

```
┌──► Programming ───────► Repeating playback ──┐
│                                              │
└──► Auto space ◄─── Time mode ◄─── Auto edit ◄┘
```

- After the respective functions have been accessed via the FUNCTION button, press the ENTER button to operate the respective functions.
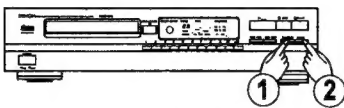
(FUNCTION Button)    (ENTER Button)

- Time mode is effective only during play and pause.
- Auto edit is effective only during stop.

### ① 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**
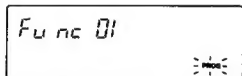
Fu nc 01
(PROG)

- Press the FUNCTION button to display "Func01" on the TRACK NO. and TIME display.
- The "PROG" indicator blinks when the last mode was normal playback mode.
- Press the ENTER button within four seconds after "Func01" has been accessed to set the programming function, and the "PROG" indicator will light.
- Then use the number buttons and the +10 button to program the tracks. For example, to program tracks 3, 12 and 7, press 3, +10, 2 and 7. The corresponding track number light on the calendar each time a track is programmed, the track number is displayed on the TRACK NO. display, and the total playing time of the programmed tracks is displayed on the TIME display. A few seconds after the last track has been programmed, the 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) Playing the Programmed Tracks**

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

**(3) Clearing the Program**

- Press the FUNCTION button to display "Func01" on the TRACK NO. and TIME display. The "PROG" indicator will light.
- Press the ENTER button within four seconds, and the "PROG" indicator will blink. Four seconds after "Func01" lights, "PROG" goes out, and the program is cleared.
- The program is also cleared when the OPEN/CLOSE button is pressed.
- When the program has been cleared during programmed play, playback will continue from the track presently being played back to the last track.

**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.
- During the four seconds in which "Func01" is lit, the ENTER button can be used to alternately select Accept Programming Mode and normal playback.

### ② Repeating Playback ........................... Repeat

**(1) Repeating Playback**

Fu nc 02
(REPEAT)

- Press the FUNCTION button to display "Func02" on the TRACK NO. and TIME display.
- The "REPEAT" indicator blinks when the last mode was normal playback mode.
- Press the ENTER button within four seconds after "Func02" has been accessed to set the repeat function, and the "REPEAT" indicator will light.
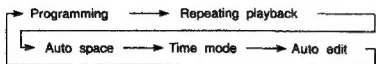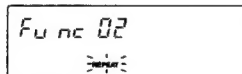- Then press the PLAY button. Playback of all tracks are repeated.
- Repeating playback may also be set during playback.
- When the repeat function has been set during programmed playback, playback of the programmed track is repeated.

**(2) Canceling repeating playback**

- Press the FUNCTION button to display "Func02" on the TRACK NO. and TIME display. The "REPEAT" indicator will light.
- The "REPEAT" indicator blinks when the ENTER button is pressed within four seconds. Four seconds after "Func02" lights, "REPEAT" goes out, and repeating playback is canceled.
- During the four seconds in which "Func02" is lit, the ENTER button can be used to alternately select Accept Repeating Playback Mode and normal playback.

### ③ Inserting blanks between tracks ......................... Auto Space

- This is a convenient feature that will insert 4-second blanks between tracks, which can be used when recording compact discs on tape.
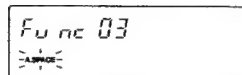
Fu nc 03
(A.SPACE)

**(1) Auto Space**

- Press the FUNCTION button to display "Func03" on the TRACK NO. and TIME display.
- The "A.SPACE" indicator blinks when the last mode was normal playback mode.
- Press the ENTER button within four seconds after "Func03" has been accessed to set the Auto Space function, and the "A.SPACE" indicator will light.
- Then press the PLAY button.

**(2) Canceling Auto Space**

- Press the FUNCTION button to display "Func03" on the TRACK NO. and TIME display. The "A.SPACE" indicator will light.
- Press the ENTER button within four seconds, and the "A.SPACE" indicator will blink. Four seconds after "Func03" lights, "A.SPACE" goes out, and Auto Space is canceled.
- During the four seconds in which "Func03" is lit, the ENTER button can be used to alternately select whether or not Accept Auto Space is effective.
- 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.

### ④ Time Mode

- This function is used to select the desired indication on the TIME display. The indication on this display will change each time the function is chosen. Normally, the elapsed playback time of the current track is displayed.
- When SINGLE is displayed, the remaining time of the current track is displayed.
- When TOTAL is displayed, total playing time of remaining tracks is displayed.
  However, when programmed play is in progress, the total remaining time of the program is displayed.

### (1) Time Mode Selection
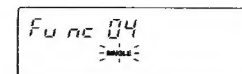
Fu nc 04
(SINGLE)

- Press the FUNCTION button to display "Func04" on the TRACK NO. and TIME display. If the last mode was "normal", the "SINGLE" indicator will blink. When in "SINGLE" mode, the "SINGLE" indicator lights. When in "TOTAL" mode, the "TOTAL" indicator lights.
- Press the ENTER button within four seconds after "Func04" has been accessed to select functions in the cycle "SINGLE" "TOTAL" normal.
- "SINGLE" mode is in effect when the "SINGLE" indicator lights.
- "TOTAL" mode is in effect when the "TOTAL" indicator lights.
- Normal mode is in effect when neither "SINGLE" nor "TOTAL" lights.

```
┌──► SINGLE ───► TOTAL ───► normal ──┐
└────────────────────────────────────┘
```

### ⑤ Auto Edit

- The tracks on a CD are automatically split into two halves, Side A and Side B, like an analog disc, with the division at the place between tracks which is closest to 1/2 the total playing time, and with the tracks remaining in the same order.

### (1) Setting Auto Edit
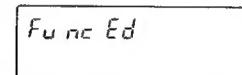
Fu nc Ed

- Press the FUNCTION button to display "FuncEd" on the TRACK NO. and TIME display.
- Press the ENTER button within four seconds after "FuncEd" is accessed to set the Auto Edit function.
- The total playing time for the first half and the track numbers on the calendar are displayed for approximately 2 seconds. Next, the same is done for the second half, after which the unit is automatically set to the pause mode at the beginning of the first track. When the PLAY or PAUSE button is pressed, playback begins, and the unit is automatically set to the pause mode at the beginning of the first track of the second half which was previously displayed. When the PLAY or PAUSE button is pressed again, playback begins, and the unit is automatically set to the stop mode at the end of the last track on the disc.
- This function will only work for discs with a total of 20 tracks or less. Also, when this function is used the mode is automatically set to the program mode, so direct search is not possible.
- The auto edit function is cleared when the STOP button is pressed.
- The data for the total playing time recorded on the disc and the actual total playing time of the tracks differ, so there may be a difference between the time displayed in the stop mode (the total playing time) and the total of the times of the first and second halves in the auto edit mode (about 2 seconds).

## 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 form the first track.

■ **Connection**



Amplifier

Audio Timer
sold separately

Power supply outlet
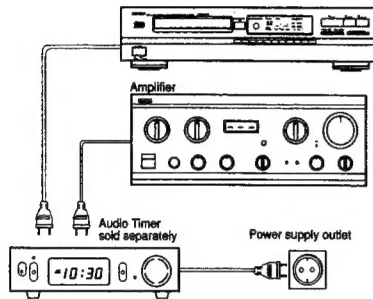
### PLAYBACK USING THE REMOTE CONTROL UNIT

If the remote control for Denon receivers and amplifiers or a separately purchased remote control unit (RC241) is used, the DCD315 can be operated from the optimum listening position.

**(1) Inserting the dry cell batteries**
1. Remove the battery cover on the back of the remote control unit.
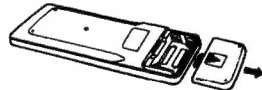


2. Insert dry cell batteries with correct polarity as indicated inside the battery compartment.
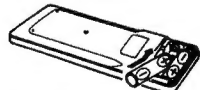


3. Replace the battery cover.
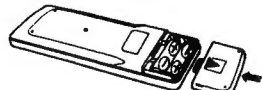


### Notes on the Batteries

- 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 remote control unit have identical functions with those on the CD player. However, the following functions cannot be remote controlled: Power ON/OFF.



Right 30°

Remote control sensor

Left 30°
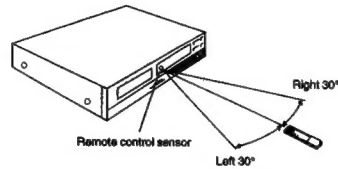
### Notes on Operation
- Do not press identical buttons on the CD player and remote control unit simultaneously as this may cause malfunction.
- The remote control unit may be difficult to operate if the remote control sensor is exposed to strong light, such as direct sunlight or light from fluorescent lamps, or if there are obstacles between the remote control unit and the sensor.
- **Direct track selection**
  Using the track number buttons (1 ~ 10, +10), tracks can be directly assigned for playback.
- **Track selection while programming**
  Press the program button (PROG) and then the track numbers you wish to enter into the memory.
  Example: PROG → 3 → +10 & 1 → 5 ...
  (Tracks 3, 11, 5 and so on are entered into the memory.)
  Memorized tracks are erased by pressing the Direct button (DIRECT).
- **Correct use of the track number buttons**
  Direct selection of single-digit tracks is easy by just pressing the desired track number button. For tracks with numbers from 11 and on, first press the +10 button and then a single-digit button. E.g., to select track 22, press the +10 button twice and then press the 2 button.

### INSTALLATION PRECAUTIONS

The CD player uses a microcomputer for controlling internal electronic circuits. In the event that the player is used while a near-by tuner or TV is turned on, although unlikely, interference could occur either in the sound from the tuner or the picture of the TV. To avoid this, please take the following precautions:
- Keep the CD player as far away from the tuner or TV set as possible.
- Keep the power cable and connecting cable of the CD player separate from the antenna wires of the tuner and TV.
- Interference is particular likely to occur when an indoor antenna or a 300-ohm feeder cable is used. Thus, use of an outdoor antenna and 75-ohm coaxial cable is strongly recommended.



300-ohm feeder cable          75-ohm coaxial cable

### TROUBLESHOOTING

**If the CD player does not seem to be functioning properly, check the following:**
**Disc holder does not open or close.**
- Is the power on?

**When a disc is loaded, 00 00 00 is displayed.**
- Is the disc loaded properly? .......................... See page 6

**When the play button (▶ PLAY) is pressed, playback does not start.**
- Is the disc dirty or scratched? ...................... See page 4

**There is no sound, or it is distorted.**
- Is the output cord properly connected to the amplifier .................................................. See page 4
- Have the amplifier controls been set correctly?

**A specific section of the disc will not play.**
- Is the disc dirty or scratched? ............................. See page 4

**Programmed playback does not work.**
- Have programming been properly done? ........................................... See pages 8, 10

**Incorrect operation when buttons on the remote control are pressed.**
- Is the remote control unit being operated too far from the CD player? .......................................... See page 10
- Are there obstacles blocking the ray?
- Is the remote control sensor exposed to strong light?
- Are the batteries exhausted?

# SPECIFICATIONS

| AUDIO | DCD-315 |
| --- | --- |
| No. of Channels: | 2 channels |
| Frequency Response: | 2 ~ 20,000 Hz |
| Dynamic Range: | 95 dB |
| Signal-to-noise Ratio: | 104 dB |
| Harmonic Distortion: | 0.004% (1 kHz) |
| Separation: | 93 dB (1 kHz) |
| Wow & Flutter: | Below measurable limit: (±0.001% W.peak) |
| Output Voltage: | 2.0 V |

| DISCS | Compact Disc format |
| --- | --- |
| **GENERAL CHARACTERISTICS** | |
| Power Supply: | 50 Hz, ~ 230 V |
| Power Consumption: | 10 W |
| Dimensions: | 434 (17-3/32") W x 105 (4-1/8") H x 279 (11-1/32") D mm |
| Weight: | 3.5 kg |

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

| FUNCTIONS AND DISPLAY | |
| --- | --- |
| Functions: | Automatic search, programmed playback, repeat playback, manual search, auto space, time mode, auto edit |
| Display: | Track number, time, music calendar, emphasis feature and engaged modes |

# DISASSEMBLY

## 1. LOADER PANEL

As removing front panel in power OFF status, use a screw driver to insert set Loader panel below hole and rotate counterclockwise ①, pull out disc table ②, then detach Loader panel ③.

② Pull out disc table

① Rotate as show as arrow

③ Remove Loader panel as show as arrow

\* Keep the set horizontally.

## 2. TOP COVER

1. Remove a push rivet ④.
   (Europe model: last four figures of Ser. No. 0001~06000)
   Remove a screws ④.
   (Europe model: last four figures of Ser. No. 06001and after)
   (U.K model: last four figures of Ser. No. 0001 and after)
2. Remove 4 screws ⑤.

⑤

④ ④

⑤
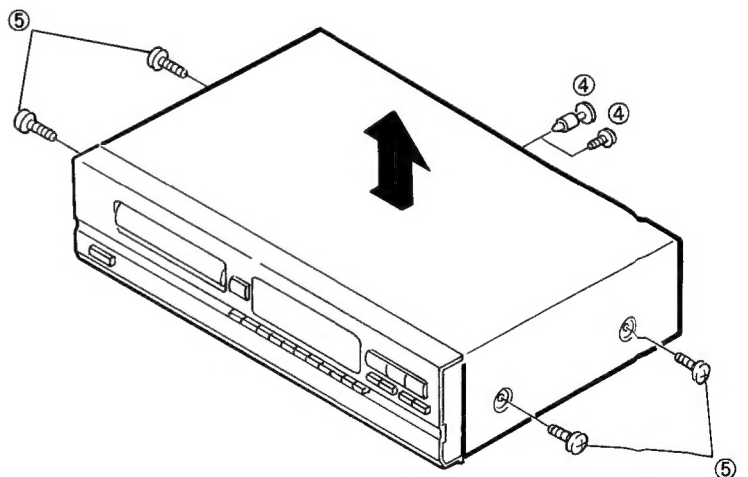
## 3. FRONT PANEL

1. Remove 2 screws ⑥ and undo hooks at 3 places.
2. Remove 2 screws ⑦ .

Hook

⑦
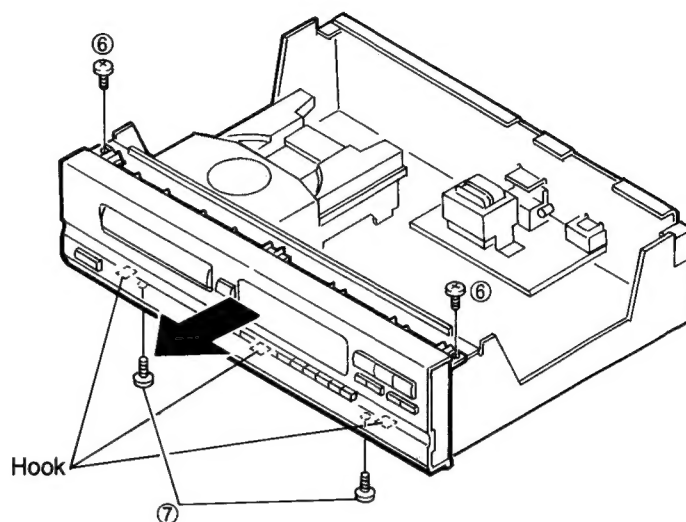
## 4. REAR PANEL

1. Remove 2 screws ⑧.
2. Remove 2 screws ⑨.
3. Remove 2 screws ⑩.
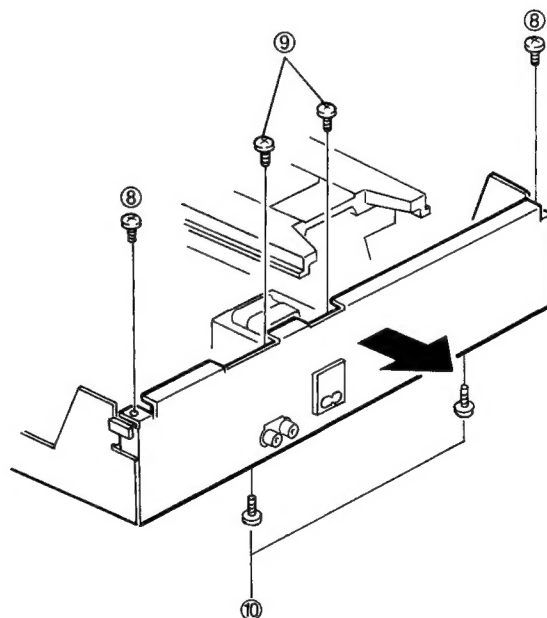
# CONFIRMING METHOD OF SERVO

A microcomputer adopted to this unit has the service programs so as to perform confirming more easily with the operation buttons. Digital servo adopted to this unit is became automatic adjustment status in focus gain and tracking gain.

## 1. Actuating the Service Program

(1) Press disc holder button, turn power switch OFF.

(2) Shortcircuit the main unit CN505 pin1 (SWOP) to pin3 (GND).
**Note:** don't touch another connector pin.

(3) Turn power switch ON.
(Service program start actuates and displays track No. *01* )

**Note:** The operation buttons do not function when service program actuates.

## 2. Operation Function at Service Program Actuation

| Button Operation | Operation Function | Explanation |
|---|---|---|
| ▲ OPEN/CLOSE | Opens or closes disc holder button. | ● Open or closes only when disc is stopped.<br>● Operate other keys after open or close. |
| ■ STOP | Stops system function. | ● Displays track number *01*.<br>● Press when adjustment completed or do it again. |
| ▶ PLAY | Starts Focus servo and disc turns. | ● Press when tracking adjustment.<br>● When completed, displays track number *02*. |
| ❙❙ PAUSE | Starts Focus servo, Tracking servo, Slide servo and Spindle servo. | ● Pressing PLAY button, starts Tracking servo and slide servo.<br>● When completed, displays track number *03*. |
| 1 | Displays a result of Focus gain automatic adjustment. | ● After completed PAUSE operation, pressing Button 1 of 10-key indicates a result of Focus gain automatic adjustment.<br>● When completed, Display shows:<br>　　　　TRACK　　　　TIME<br>　　　　*1-*　　　XX$_h$XX$_s$<br>TIME display shows automatic adjustment value.<br>Displays: *0 1$_m$2 7$_s$~00$_m$0 1$_s$* or *EE$_m$0 1$_s$* |
| 2 | Displays a result of Tracking gain automatic adjustment. | ● After completed PAUSE operation, pressing Button 2 of 10-key indicates a result of Tracking gain automatic adjustment.<br>● When completed, Display shows:<br>　　　　TRACK　　　　TIME<br>　　　　*2-*　　　XX$_h$XX$_s$<br>TIME display shows automatic adjustment value.<br>Displays: *0 1$_m$2 7$_s$~00$_m$0 1$_s$* or *EE$_m$02$_s$* |
| Other Buttons | Unable to obtain normal function. | ● Never attempt to operate the buttons other than the above.<br>● If the buttons are erroneously pressed, promptly turn OFF the power switch. |

**(Caution)**
● During the service program is in operation, do not use remote control.

## 3. Confirming Method

(1) Required Measuring Equipment

    1) Dual-trace oscilloscope

    2) Test disc: CA-1094

(2) Check Point

    CD Mechanical unit PWB (pattem view)
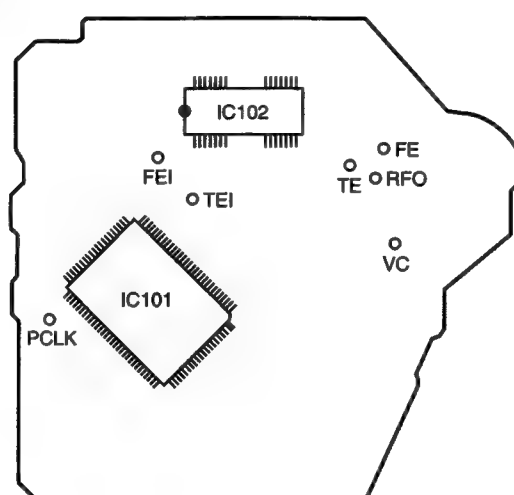


(3) Confirming Procedure

    1) Actuate the service program.

    2) Check the value of Focus gain automatic adjustment.

    3) Check the value of Tracking gain automatic adjustment.

    4) Check for Tracking offset.

    5) Finish the service program and return the mode to normal operation (turn ON the power switch in normal manner).

    6) Check for HF level.

(4) Confirming Focus Gain

    1) Press ⏸ PAUSE button. (Track No. indication $03$ )

    2) Press 1 button. (Track No. indication $1-$ )

    3) Check for automatic adjustment value.
        Automatic adjustment value: $00_M82_S \sim 00_M34_S$ (normal temperature) (Test disc: CA-1094)

                        $01_M04_S \sim 00_M28_S$ (0°C~40°C)

**Note:** As it is a possibility of abnormality in pick-up when automatic adjustment value is $EE_M01_S$ or less than $00_M27_S$, execute the confirmation for pick-up according to pick-up replacement standard.
If there is no abnormality in pick-up as described in pick-up replacement standard notes, no problem will occur for disc playback even though the automatic adjustment value is $EE_M01_S$ or less than $00_M27_S$.

(5) Confirming Tracking Gain

    1) Press ⏸ PAUSE button. (Track No. indication $03$ )

    2) Press 2 button. (Track No. indication $2-$ )

    3) Check for automatic adjustment value.
        Automatic adjustment value: $00_M81_S \sim 00_M23_S$ (normal temperature) (Test disc: CA-1094)

                        $01_M03_S \sim 00_M18_S$ (0°C~40°C)

**Note:** As it is a possibility of abnormality in pick-up when automatic adjustment value is $EE_M02_S$ or less than $00_M22_S$, execute the confirmation for pick-up according to pick-up replacement standard.
If there is no abnormality in pick-up as described in pick-up replacement standard notes, no problem will occur for disc playback even though the automatic adjustment value is $EE_M02_S$ or less than $00_M22_S$ .

**(6) Confirming Tracking offset (E/F Balance)**

| Connection |
|---|
|  |

| Oscilloscope | | Check | Step |
|---|---|---|---|
| V | H | (Oscilloscope) | 1. Push ▲ OPEN/CLOSE button and load disc holder referrence disk. |
| 0.1v/div | 1~2 ms/div |  $\dfrac{A-B}{A+B} < 20\%$ | 2. Push ▲ OPEN/CLOSE button and close disc holder. |
| | | | 3. Push ▶ PLAY button 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) Confirming HF Level**

| Connection |
|---|
|  |

| Osciloscope | | Check | Step |
|---|---|---|---|
| V | H | (Oscilloscope) | 1. Push ❚❚ PAUSE button. (Displays track number *03* ) |
| 50mv/div | 0.2μs/div |  A=1.54~0.85V | 2. Check HF level of oscilloscope. |
| or | or | | 3. Confirm that the waveform is in good shape. (eye pattern in center must be able to discriminate clearly.) |
| 20mV/div | 0.5μs/div | | |
| • Set input mode to ALTERNATE or CHOPPER. | | | |

# TEST METHOD FOR HEAT RUN MODE

## 1. Actuate

While hold pushing ▶ , 6 and 7 buttons simultaneously, turn the unit power on. The remote control sensor indicator will light to show that the unit is shifted in Heat Run mode.
Press the ▲ button to cancel Heat Run mode after loading disc.

## 2. Operation

### 1) Heat Run test

During the Heat Run mode to start in Play mode, it makes the unit replays from the first track after opens the loader when finishing with playing last track. After that, this operation is over again. When disc has over 21 tracks, makes the unit to search the last track and set operation times.

### 2) Chucking test

Press PAUSE button 2 times in the Heat Run mode, it makes the unit opens the loader, turns the servo ON, reads out TOC, operates first track search and does over again.

### 3) Sound out test

During the Heat Run mode, press +10 button to start in Play mode. If it generates over ± 8 frame sound out, stop the operate and display the error message.

## 3. Error Message

When the system error occurs in the Heat Run mode, display the error message with TRACK and operated times with TIME.

1) E1 error      Focus Servo does not activate.
2) E2 error      GFS does not drive.
3) E3 eroor      No GFS emit.
4) E4 error      TOC is unreadable.
5) E5 error      Does not turn the Loader switch ON.
6) E6 error      Does not turn the Pick-up inner circle switch OFF.
7) E7 error      Does not turn the Pick-up inner circle switch ON.
8) E8 error      Sound out.

# NOTE FOR HANDING OF THE LASER PICK UP

## Judgement standards for PICK-UP Replacement

### 1. PICK-UP REPLACEMENT

The pick-up(PU) replacement must be executed upon the following 4 items and found the abnormality in the PU.

When PU is abnormal, please write PU abnormality cause for PU sign column of connecting prompt report of market quality state clearly.

**1) Judgement by confirming of Focus search**

(cause of PU abnormality: Focus search does not function.)

**2) Judgement by checking of changing PU due to Focus error signal $V_{FE}$**

(cause of PU abnormality: No proper emission of focus error signal (s-curve) $V_{FE}$)

**3) Judgement by checking of changing PU due to Tracking Error signal $V_{TE}$**

(cause of PU abnormality: No proper emission of tracking error signal (traverse waveform) $V_{TE}$)

**4) Judgement by checking of changing PU due to HF level $V_{HF}$**

(cause of PU abnormality: No proper emission of HF waveform)

### 2. DISC TO BE USED FOR CONFIRMATION

Using disc: No. CA-1094

### 3. OTHER CAUSE OF PU CHANGING

If it happened other cause of PU replacement except the above-mentioned 4 items, please execute PU replacement and write this cause for connecting prompt report of market quality state in detail.

## 1. Judgement by Confirming of Focus Search
### (Check for focus search function of PU Lens)

```
┌─────────────────────────┐
│ Actuate the service     │
│ program.(service mode)  │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ Press PLAY button       │
│ without loading the disc.│
└─────────────────────────┘
            │
            ▼
       ◇ Does PU lens move ◇ ──── No ────┐
       ◇ up / down?        ◇             │
            │                            │
           Yes                           │
            │                            ▼
┌─────────────────────┐    ┌─────────────────────────────┐
│ Load the adjustment │    │ Trouble may exist in defection│
│ disc.               │    │ other than PU.               │
└─────────────────────┘    │ Cause of defection:          │
            │               │ 1.Is inner Switch OK?        │
            ▼               │ 2.Is loading Switch OK?      │
┌─────────────────────┐    │ 3.Is slide functioning?      │
│ Press PLAY button.  │    │ 4.Is any melting trace found │
│ Perform continuous  │    │   around PU lens?            │
│ focus search. (Note 1)│  │ (If yes, this is caused by   │
└─────────────────────┘    │ other defection, require PU  │
            │               │ replacement.) Check for 1 thru│
            ▼               │ 4, etc.                      │
       ◇ Does FOK signal ◇─ No ─┐└─────────────────────────────┘
       ◇ turned "L" to "H"? ◇   │
            │                   │
           Yes                  ▼
            │          ┌─────────────────────────┐
            │          │ Confirm that the connector│
            │          │ cable is properly inserted.│
            │          └─────────────────────────┘
            │                   │
            │                   ▼
            │              ◇ Does FOK signal ◇ ── No ──┐
            │              ◇ turned "L" to "H"? ◇      │
            │                   │                      │
            │                  Yes                     │
            │←──────────────────┘                      │
            ▼                                          ▼
┌─────────────────────┐          ┌─────────────────────────┐
│ Perform checking of │          │ Trouble may exist in PU │
│ item 2. (Next page) │          │ abnormality due to FOK. │
└─────────────────────┘          │ Execute PU replacement. │
                                 └─────────────────────────┘
                                      (FOK NG)
```

**Note 1**: Press PLAY button continually in FOK measuring.

## 2. Judgement by checking of changing PU due to Focus Error signal V~FE~
(check for proper S-surve)

Load the adjustment disc
(CA-1094). **(Note 1)**
(service mode)

↓

Press PLAY button.
Perform continuous
focus search. **(Note 2)**

↓

Observe with
oscilloscope
across test point
FE and VC.

↓

Record V~FE~max data
with maesuring focus
error signal (S-curve)
3 times.

↓

Is V~FE~max shown
more than 1.58V?

— No →

Is PU lens
cleaned?

— No →

Clean the PU lens.
**(Note 3)**

Yes ↓

Record V~FE~max data
with measuring V~FE~
signal 10 times by turn
disc about approx. 90°.

↓

Is VFEmax shown
more than 1.58V?

— No →

Trouble may exist in PU
abnormality due to focus
error signal (S-curve) V~FE~.
Execute PU replacement.

Yes ↓

Yes ↓

Perform checking of
item 3. (Next page)

**S-curve wave**

[0.5V/div]

GND

VFE

[2msec/div]

**Note 1:** Adjustment disc (CO-76143) V~FE~ = 1.67 V.
**Note 2:** Press PLAY button continually in V~FE~ measuring.
**Note 3:** Gently wipe out the lens surface with a little amount of isopropyl
alcohol soaked lens cleaning paper without apply excessive force to the lens.

## 3. Judgement by checking of changing PU due to Tracking Error Signal V$_{TE}$ (check for proper Traverse waveform)

Actuate the service program.
(service mode)

↓

Load the adjustment disc.
(CA-1094) **(Note 1)**

↓

Press PLAY button, and
display $\mathrm{O2}$.
(focus search only ON)

↓

Observe with oscilloscope
across test point TE and VC.

↓

Measure tracking error
signal.

↓

**Is V$_{TE}$max shown more than 0.64V?** — No → **Is PU lens cleaned?** — No → **Clean the PU lens.**

Yes ↓    Is PU lens cleaned? — Yes →

**Is V$_{TE}$ signal continuously shown?** — No →

Yes ↓

**Is $\dfrac{|A-B|}{A+B} \times 100$ less than 20%?** — No →

Yes ↓

Perform checking item 4.
(Next page)

Trouble may exist in PU
abnormality due to V$_{TE}$.
Execute PU replacement.

1. Tracking error signal level without undulation.

[0.5V / div]
A
GND
B
Half turn of disc
Traverse waveform
V$_{TE}$
Thin    Thick    Thin [2msec/div]

2. Tracking error signal level with undulation.

[0.5V / div]
A
GND
B
V$_{TE}$
[2msec/div]

3. Occasionally no tracking error signal level.

[Defective PU]
A
GND
B
V$_{TE}$
Thin    Thick    Thin [2msec/div]

**Note 1**: Adjustment disc (CO-76143) V$_{TE}$ = 0.70 V.

**4. Judgement by checking of changing PU due to HF level $V_{HF}$ (check for proper HF waveform)**

Actuate the service program. (service mode)

↓

Load the adjustment disc (CA-1094), **(Note 1)** Press PAUSE button, and playback disc. (display *03* )

↓

Observe with oscilloscope across test point RFO and VC.

↓

Measure RFO level $V_{HF}$ signal

↓

Is $V_{HF}$ shown more than 0.85V

Yes → No abnormality in PU.

No → Is PU lens cleaned?

Yes → PU abnormality due to $V_{HF}$ signal. Execute PU replacement.

No → Clean the PU lens.

[0.2V/div]

HF waveform

$V_{HF}$

GND          [0.5μ/div]

**Note 1:** Adjustment disc (CO-76143) $V_{HF} = 0.85$ V.

# SEMICONDUCTORS

## ● IC's

### BA6297AFP
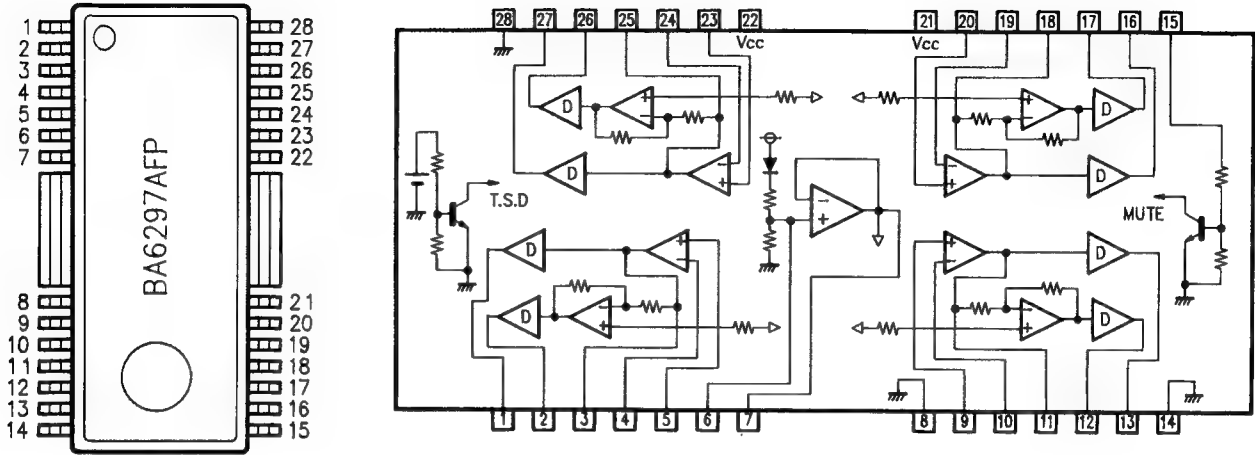


T.S.D; thermal short down
D; driver buffer

## BA6297AFP Terminal Function

| Pin No. | Symbol | I/O | Function |
|---|---|---|---|
| 1 | | O | CH1 output terminal (+). |
| 2 | | O | CH1 output terminal (−). |
| 3 | | O | CH1 Pre-Amplifier output terminal. |
| 4 | | I | CH1 Pre-Amplifier negative input terminal. |
| 5 | | I | CH1 Pre-Amplifier positive input terminal. |
| 6 | | | Internal Vref-Amplifier resistor bias terminal. |
| 7 | | O | Internal Vref-Amplifier output terminal. |
| 8 | GND | | Vref-Amplifier and constant current ground. |
| 9 | | I | CH2 Pre-Amplifier positive input terminal. |
| 10 | | I | CH2 Pre-Amplifier negative input terminal. |
| 11 | | O | CH2 Pre-Amplifier output terminal. |
| 12 | | O | CH2 output terminal (−). |
| 13 | | O | CH2 output terminal (+). |
| 14 | GND | | CH2 and CH3 driver ground. |

| Pin No. | Symbol | I/O | Function |
|---|---|---|---|
| 15 | | I | Driver mute control terminal. |
| 16 | | O | CH3 output terminal (+). |
| 17 | | O | CH3 output terminal (−). |
| 18 | | O | CH3 Pre-Amplifier output terminal. |
| 19 | | I | CH3 Pre-Amplifier negative input terminal. |
| 20 | | I | CH3 Pre-Amplifier positive input terminal. |
| 21 | Vcc | | CH2 and CH3 driver power supply. |
| 22 | Vcc | | CH1 and CH4 driver power supply. |
| 23 | | I | CH4 Pre-Amplifier positive input terminal. |
| 24 | | I | CH4 Pre-Amplifier negative input terminal. |
| 25 | | O | CH4 Pre-Amplifier output terminal. |
| 26 | | O | CH4 output terminal (−). |
| 27 | | O | CH4 output terminal (+). |
| 28 | GND | | CH1 and CH4 driver ground. |

**Note:** Each driver output polarity is reference to Pre-Amplifier output terminal polarity (+).

## CXD2515Q
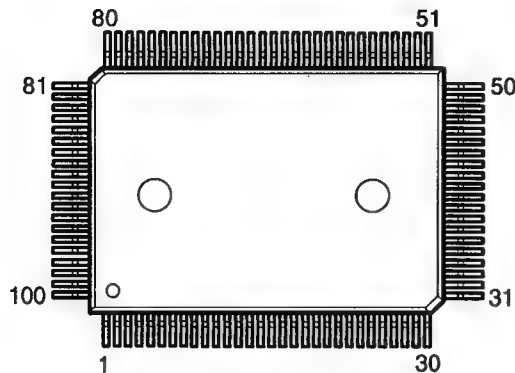


## CXD2515Q Terminal Function

| Pin No. | Symbol | I/O | Function |
|---|---|---|---|
| 1 | SRON | O | Sled drive output signal. |
| 2 | SRDR | O | Sled drive output signal. |
| 3 | SFON | O | Sled drive output signal. |
| 4 | TFDR | O | Tracking drive output signal. |
| 5 | TRON | O | Tracking drive output signal. |
| 6 | TRDR | O | Tracking drive output signal. |
| 7 | TFON | O | Tracking drive output signal. |
| 8 | FFDR | O | Focus drive output signal. |
| 9 | FRON | O | Focus drive output signal. |
| 10 | FRDR | O | Focus drive output signal. |
| 11 | FFON | O | Focus drive output signal. |
| 12 | VCOO | O | Osc. circuit output for analog EFM PLL. |
| 13 | VCOI | I | Osc. circuit output for analog EFM PLL. |
| 14 | TEST | I | Test terminal, normally GND. |
| 15 | DVss | — | Digital ground. |
| 16 | TES2 | I | Test terminal, normally GND. |
| 17 | TES3 | I | Test terminal, normally GND. |
| 18 | PDO | O | Charge pump output for analog EFM PLL. |
| 19 | VPCO | O | PLL charge pump output for variable pitch. |
| 20 | VCKI | I | Clock input from external VCO for variable pitch. |
| 21 | AVD2 | — | Analog power supply. |
| 22 | IGEN | I | Power supply terminal for OP amplifier. |
| 23 | AVS2 | — | Analog ground. |
| 24 | ADII | I | A/D converter input terminal. |
| 25 | ADIO | O | OP amplifier output terminal. |
| 26 | RFDC | I | RF signal input. |
| 27 | TE | I | Tracking error signal input. |
| 28 | SE | I | Sled error signal input. |
| 29 | FE | I | Focus error signal input. |
| 30 | VC | I | Middle point voltage input termianl. |
| 31 | FILO | O | Filter output for master PLL. |
| 32 | FILI | I | Filter input for master PLL. |
| 33 | PCO | O | Charge pump output for master PLL. |
| 34 | CLTV | I | VCO control voltage input for master. |
| 35 | AVSI | — | Analog ground. |
| 36 | RFAC | I | EFM signal input. |
| 37 | BIAS | I | Asymmetry circuit constant current output. |
| 38 | ASY1 | I | Asymmetry comparator voltage input. |
| 39 | ASY0 | O | EFM full swing output. |
| 40 | AVDI | — | Analog power supply. |

| Pin No. | Symbol | I/O | Function |
|---|---|---|---|
| 41 | DV$_{DD}$ | — | Digital power supply. |
| 42 | ASYE | I | Asymmetry circuit ON/OFF. |
| 43 | PSSL | I | Mode shift input of audio data output. |
| 44 | WDCK | O | 48 bit slot D/A interface. word clock. |
| 45 | LRCK | O | 48 bit slot D/A interface. LR clock. |
| 46 | DATA | O | DA16 output at PSSL=1, 48 bit slot serial data at PSSL=0. |
| 47 | BCLK | O | DA15 output at PSSL=1, 48 bit slot bit clock at PSSL=0. |
| 48 | 64DATA | O | DA14 output at PSSL=1, 64 bit slot serial data at PSSL=0. |
| 49 | 64BCLK | O | DA13 output at PSSL=1, 64 bit slot bit clock at PSSL=0. |
| 50 | 64LRCK | O | DA12 output at PSSL=1, 64 bit slot LR clock at PSSL=0. |
| 51 | GTOP | O | DA11 output at PSSL=1, GTOP output at PSSL=0. |
| 52 | XUGF | O | DA10 output at PSSL=1, XUGF output at PSSL=0. |
| 53 | XPLCK | O | DA09 output at PSSL=1, XPLCK output at PSSL=0. |
| 54 | GFS | O | DA08 output at PSSL=1, GFS output at PSSL=0. |
| 55 | RFCK | O | DA07 output at PSSL=1, RFCK output at PSSL=0. |
| 56 | C2PO | O | DA06 output at PSSL=1, C2PO output at PSSL=0. |
| 57 | XRAOF | O | DA05 output at PSSL=1, XRAOF output at PSSL=0. |
| 58 | MNT3 | O | DA04 output at PSSL=1, MNT3 output at PSSL=0. |
| 59 | MNT2 | O | DA03 output at PSSL=1, MNT2 output at PSSL=0. |
| 60 | MNT1 | O | DA02 output at PSSL=1, MNT1 output at PSSL=0. |
| 61 | MNT0 | O | DA01 output at PSSL=1, MNT0 output at PSSL=0. |
| 62 | XTAI | I | X'tal Osc, circuit input. |
| 63 | XTAO | O | X'tal Osc, circuit output. |
| 64 | XTSL | I | X'tal select input terminal. |
| 65 | DVss | — | Digital ground. |
| 66 | FSTI | I | 2/3 cycle input of Pin 62, 63. |
| 67 | FSTO | O | 2/3 cycle output of Pin 62, 63. |
| 68 | C4M | O | 4.2336 MHz output. |
| 69 | C16M | O | 16.9344 MHz output. |
| 70 | MD2 | I | Digital-Out ON/OFF control terminal. |
| 71 | DOUT | O | Digital-Out output terminal. |
| 72 | EMPH | O | Playback disc emphasis mode output. |
| 73 | WFCK | O | WFCK output. |
| 74 | SCOR | O | Sub code sync output terminal. |
| 75 | SBSO | O | Sub P~W serial output. |
| 76 | EXCK | I | Clock input for SBSO read out. |
| 77 | SUBQ | O | Sub Q 80 bit output. |
| 78 | SQCK | I | Clock input for SQSO read out. |
| 79 | MUTE | I | Mute shift terminal. |
| 80 | SENS | O | SENS output. |
| 81 | XRST | I | System reset. |
| 82 | DIRC | I | Using at 1 track jump. |
| 83 | SCLK | I | Clock for SENS serial data read out. |
| 84 | DFSW | I | DFCT shift terminal. |
| 85 | ATSK | I | Anti-shock terminal. |
| 86 | DATA | I | Serial data input from CPU. |
| 87 | XLAT | I | Latch input from CPU. |
| 88 | CLOK | I | Serial data transfer clock input from CPU. |

## PCM1710U



## PCM1710U Terminal Function

| Pin No. | Symbol | I/O | Function |
|---|---|---|---|
| 1 | LRCIN | I | Reference sample rate clock input (fs). |
| 2 | DIN | I | Data input. |
| 3 | BCKIN | I | Data bit clock input. |
| 4 | CLKO | O | Osc, buffer (XTI inverting) output. |
| 5 | XTI | I | Osc, input* (external clock input). |
| 6 | XTO | O | Osc, output*. |
| 7 | DGND | | Digital ground. |
| 8 | Vdd | | Digital power supply (+5V). |
| 9 | VCC2R | | Rch analog DAC power supply (+5V). |
| 10 | AGND2R | | Rch analog DAC ground. |
| 11 | EXT1R | | Rch amplifier common output. |
| 12 | EXT2R | | Rch amplifier bias output. |
| 13 | VOUTR | | Rch voltage output. |
| 14 | AGND | | Analog ground. |
| 15 | VCC | | Analog power supply (+5V). |
| 16 | VOUTL | | Lch voltage output. |
| 17 | EXT2L | | Lch amplifier bias output. |
| 18 | EXT1L | | Lch amplifier common output. |
| 19 | AGND2L | | Lch analog DAC ground. |
| 20 | VCC2L | | Lch analog DAC power supply (+5V). |
| 21 | Vdd | | Digital power supply (+5V). |
| 22 | DGND | | Digital ground. |
| 23 | CKSL | | System clock selection.          H: 384 fs          L: 256 fs |
| 24 | MODE | | Operation mode selection (H/Serial) |
| 25 | MUTE | | Mute control signal (H: OFF, L: ON). |
| 26 | MD/DM1 | | Control data at serial/De-emphasis at parallel |
| 27 | MC/DM2 | | Control bit clock at serial/De-emphasis at parallel. |
| 28 | ML/DSD | | Control data wode at serial/Double speed at parallel. |

\* If XTI input signal is from external clock, XTO terminal must be in OFF status. All input terminal with pull up resister.

**HD6433714H**
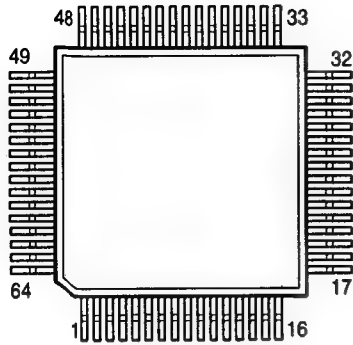


**BA6287**
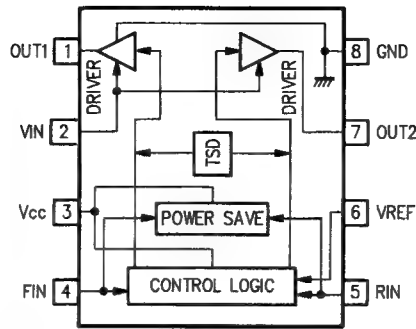


**BA15218F**
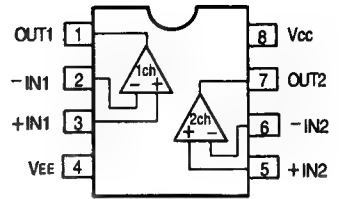


**BA6287
BA15218F**



**PST529C**



3. Out
2. GND
1. V$_{DD}$
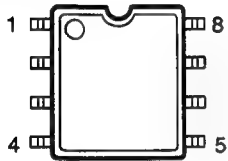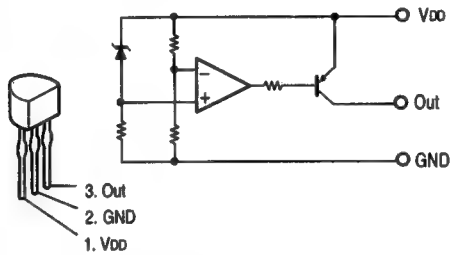
● **IC PROTECTOR
ICP-N15T**
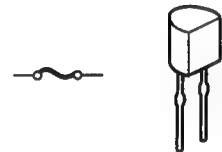


● **TRANSISTORS**

**NJM7805FA (S)**



1: Output
2: GND
3: Input

**2SA934 (Q)**



B (Base)
C (Collector)
E (Emitter)

**2SD1762 (E/F)**



E (Emitter)
C (Collector)
B (Base)
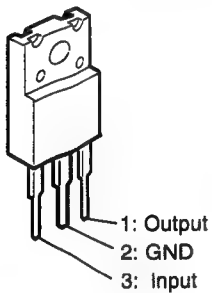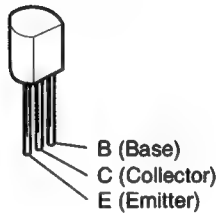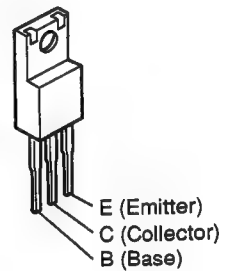
**DTA124EK
DTC114EK
DTC144EK
DTC323TK
2SA1362 (Y/GR)**
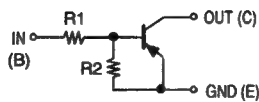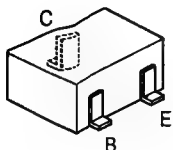




|  | R1 | R2 |
|---|---|---|
| DTA124EK | 22K | 22K |



|  | R1 |
|---|---|
| DTC323TK | 2.2K |



|  | R1 | R2 |
|---|---|---|
| DTC114EK | 10K | 10K |
| DTC144EK | 47K | 47K |
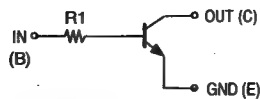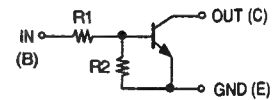
23

## ● DIODES

MTZJ4.3A    MTZJ6.8A
MTZJ4.7A    MTZJ8.2A
MTZJ5.6A    MTZJ22A
MTZJ6.2A

Black

Blue

1SR35-200A        1SS252

## ● OTHERS

### 6-ST-33GK (FL)

1                              30
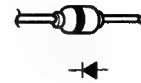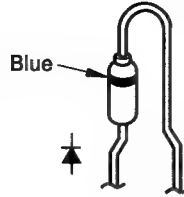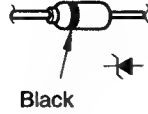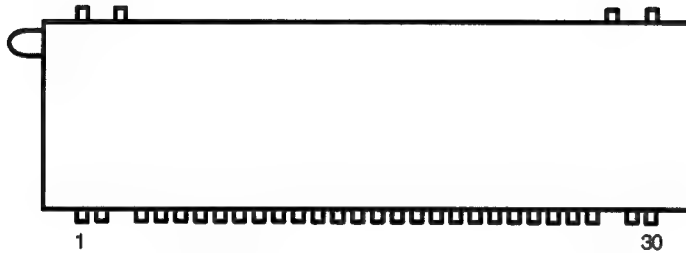
### PIN CONNECTION

| PIN NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONNECTION | F1 | F1 | NP | 1G | 2G | 3G | 4G | 5G | 6G | NX | NX | P16 | P15 | P14 | P13 | P12 | P11 | P10 | P9 | P8 | P7 | P6 | P5 | P4 | P3 | P2 | P1 | NP | F2 | F2 |

NOTE:  1) F1,F2 ----- Filament
       2) NP --------- No pin
       3) DL --------- Datum Line
       4) 1G~6G --- Grid
       5) NX --------- No extend pin

### SBX1610-52 (Remote Control Receiver)

1 2 3    5
   4
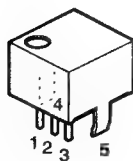
1. Vcc
2. Output
3. GND
4. Case Fin
5. Case Fin

STANDARD
TRANSMITTER

IC1

D1  R1  C2
C1
1μ   33μ

R2  C3  R3
300P  22k

C4
47μ

R4
47

GND              Vcc
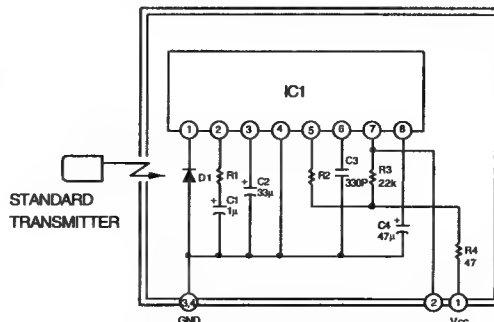
IC1        : CX20106A Chip
D1         : PIN Photodiode Chip
C1,C2,C4 : Aluminum Electrolytic Capacitor
C3         : SL Characteristic ±5%
R1         : Gain control resistor
R2         : fo control resistor (Using ±1%)
R (Other than above items)
           : ±5%

# NOTE FOR PARTS LIST

- Part indicated with the mark " ◉ " are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

**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 per-formance | Power | Resist-ance | Allowable error | Others |

| | | | |
|---|---|---|---|
| RD : Carbon | 2B : 1/8W | F : ±1% | P : Pulse-resistant type |
| RC : Composition | 2E : 1/4W | G : ±2% | NL : Low noise type |
| RS : Metal oxide film | 2H : 1/2W | J : ±5% | NB : Non-burning type |
| RW : Winding | 3A : 1W | K : ±10% | FR : Fuse-resistor |
| RN : Metal film | 3D : 2W | M : ±20% | F : Lead wire forming |
| RK : Metal mixture | 3F : 3W | | |
| | 3H : 5W | | |

**＊ Resistance**

**1 8 2** ⇒ 1800 ohm = 1.8 kohm
- Indicates number of zeros after effective number.
- 2-digit effective number.
- Units: ohm

**1 R 2** ⇒ 1.2 ohm
- 1-digit effective number.
- 2-digit effective number, decimal point indicated by R.
- Units: ohm

## ● Capacitors

| Ex.: | CE | 04W | 1H | 2R2 | M | BP |
|------|-----|-----|-----|-----|-----|-----|
| | Type | Shape and per-formance | Dielectric strength | Capacity | Allowable error | Others |

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

**＊ Capacity (electrolyte only)**

**2 2 2** ⇒ 2200μF
- Indicates number of zeros after effective number.
- 2-digit effective number.
- Units: μF.

**2 R 2** ⇒ 2.2μF
- 1-digit effective number.
- 2-digit effective number, decimal point indicated by R.
- Units: μF.

**＊ Capacity (except electrolyte)**

**2 2 2** ⇒ 2200pF = 0.0022μF
- (More than 2) – Indicates number of zeros after effective number.
- 2-digit effective number.
- Units: μF.

**2 2 1** ⇒ 220pF
- (0 or 1) – Indicates number of zeros after effective number.
- 2-digit effective number.
- Units: pF.

- When the dielectric strength is indicated in AC, "AC" is included after the dielectric strength value.

# PARTS LIST OF PRINTED WIRING BOARD

## 1U-2820 CD P.W.B. UNIT ASS'Y

| Ref No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| **SEMICONDUCTORS GROUP** | | | |
| IC101 | 262 2107 907 | IC PCM1710U | |
| IC102 | 263 0615 902 | IC BA15218F | |
| IC501 | 262 2136 017 | IC HD6433714A65H | |
| IC502 | 263 0652 907 | IC PST529C | |
| IC503 | 499 0150 008 | IC SBX1610-52 | |
| IC504 | 263 0994 908 | IC BA6287F | |
| IC901, 902 | 268 0073 905 | IC ICP-N15T | |
| TR102 | 269 0082 902 | Transistor DTC114EK | Built in Resistor |
| TR103 | 269 0119 901 | Transistor DTA124EK | Built in Resistor |
| TR201, 202 | 269 0066 902 | Transistor DTC323TK | Built in Resistor |
| TR501~506 | 269 0054 901 | Transistor DTC144EK | Built in Resistor |
| TR507 | 274 0120 002 | Transistor 2SD1762(E/F) | |
| TR901, 902 | 263 0809 006 | Transistor NJM7805FA(S) | |
| TR903 | 271 0264 901 | Transistor 2SA1362(Y/GR) | |
| TR904 | 271 0271 907 | Transistor 2SA934(Q) | |
| D101 | 276 0616 907 | Diode 1SS252 | |
| D901~906 | 276 0553 905 | Diode 1SR35-200A | |
| ZD101 | 276 0643 996 | Zener Diode MTZJ5.6A | |
| ZD102 | 276 0637 902 | Zener Diode MTZJ6.2A | |
| ZD501 | 276 0643 970 | Zener Diode MTZJ4.7A | |
| ZD502 | 276 0644 924 | Zener Diode MTZJ8.2A | |
| ZD902 | 276 0644 908 | Zener Diode MTZJ6.8A | |
| ZD903 | 276 0645 923 | Zener Diode MTZJ22A | |
| **RESISTORS GROUP** | | | |
| R071, 072 | 247 0018 905 | Chip 0ohm,1/10W | RM73B--0R0KT |
| R076, 077 | 247 0018 905 | Chip 0ohm,1/10W | RM73B--0R0KT |
| R082 | 247 0018 905 | Chip 0ohm,1/10W | RM73B--0R0KT |
| R101 | 247 0006 962 | Chip 470ohm,1/10W | RM73B--471JT |
| R105, 106 | 247 0009 985 | Chip 10kohm,1/10W | RM73B--103JT |
| ⚠ R113 | 244 2052 973 | Metal Oxide Film 560ohm,1w | RS14B3A561JNBST(S) |
| R119 | 247 0007 945 | Chip 1kohm,1/10W | RM73B--102JT |
| R120 | 247 0004 993 | Chip 91ohm,1/10W | RM73B--910JT |
| R124 | 247 0007 945 | Chip 1kohm,1/10W | RM73B--102JT |
| R125, 126 | 247 0007 903 | Chip 680ohm,1/10W | RM73B--681JT |
| R201,202 | 247 0011 944 | Chip 47kohm,1/10W | RM73B--473JT |
| R203~206 | 247 0009 985 | Chip 10kohm,1/10W | RM73B--103JT |
| R209, 210 | 247 0011 944 | Chip 47kohm,1/10W | RM73B--473JT |
| R211, 212 | 247 0009 985 | Chip 10kohm,1/10W | RM73B--103JT |
| R213, 214 | 247 0009 930 | Chip 6.2kohm,1/10W | RM73B--622JT |
| R501 | 247 0007 945 | Chip 1kohm,1/10W | RM73B--102JT |
| R502 | 247 0005 947 | Chip 150ohm,1/10W | RM73B--151JT |

| Ref No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| R503 | 247 0005 963 | Chip 180ohm,1/10W | RM73B--181JT |
| R504 | 247 0006 904 | Chip 270ohm,1/10W | RM73B--271JT |
| R505 | 247 0006 946 | Chip 390ohm,1/10W | RM73B--391JT |
| R506 | 247 0007 903 | Chip 680ohm,1/10W | RM73B--681JT |
| R507 | 247 0007 974 | Chip 1.3kohm,1/10W | RM73B--132JT |
| R508 | 247 0007 945 | Chip 1kohm,1/10W | RM73B--102JT |
| R509 | 247 0005 947 | Chip 150ohm,1/10W | RM73B--151JT |
| R510 | 247 0005 963 | Chip 180ohm,1/10W | RM73B--181JT |
| R511 | 247 0006 904 | Chip 270ohm,1/10W | RM73B--271JT |
| R512 | 247 0006 946 | Chip 390ohm,1/10W | RM73B--391JT |
| R513 | 247 0007 903 | Chip 680ohm,1/10W | RM73B--681JT |
| R514 | 247 0007 974 | Chip 1.3kohm,1/10W | RM73B--132JT |
| R515 | 247 0007 945 | Chip 1kohm,1/10W | RM73B--102JT |
| R516 | 247 0005 947 | Chip 150ohm,1/10W | RM73B--151JT |
| R517 | 247 0005 963 | Chip 180ohm,1/10W | RM73B--181JT |
| R518 | 247 0006 904 | Chip 270ohm,1/10W | RM73B--271JT |
| R519 | 247 0006 946 | Chip 390ohm,1/10W | RM73B--391JT |
| R520 | 247 0014 967 | Chip 1Mohm,1/10W | RM73B--105JT |
| R521 | 247 0009 985 | Chip 10kohm,1/10W | RM73B--103JT |
| R522 | 247 0007 945 | Chip 1kohm,1/10W | RM73B--102JT |
| R523 | 247 0008 944 | Chip 2.7kohm,1/10W | RM73B--272JT |
| R524 | 247 0009 901 | Chip 4.7kohm,1/10W | RM73B--472JT |
| R526 | 247 0009 985 | Chip 10kohm,1/10W | RM73B--103JT |
| R527~529 | 247 0009 985 | Chip 10kohm,1/10W | RM73B--103JT |
| R530 | 247 0009 985 | Chip 10kohm,1/10W | RM73B--103JT |
| R531 | 247 0005 963 | Chip 180ohm,1/10W | RM73B--181JT |
| R532~534 | 247 0009 985 | Chip 10kohm,1/10W | RM73B--103JT |
| R535~538 | 247 0012 927 | Chip 100kohm,1/10W | RM73B--104JT |
| R539 | 247 0011 944 | Chip 47kohm,1/10W | RM73B--473JT |
| R540~563 | 247 0012 927 | Chip 100kohm,1/10W | RM73B--104JT |
| R564 | 247 0005 963 | Chip 180ohm,1/10W | RM73B--181JT |
| R701, 702 | 247 0018 905 | Chip 0ohm,1/10W | RM73B--0R0KT |
| R904 | 247 0012 927 | Chip 100kohm,1/10W | RM73B--104JT |
| R905, 906 | 241 2396 928 | Carbon 100ohm,1/4W | RD14B2E-101JT(S) |
| R907 | 247 0012 927 | Chip 100kohm,1/10W | RM73B--104JT |
| R908 | 247 0007 987 | Chip 1.5kohm,1/10W | RM73B--152JT |
| R910 | 241 2403 934 | Carbon 100kohm,1/4W | RD14B2E--104JT(S) |
| **CAPACITORS GROUP** | | | |
| C101~104 | 254 4299 906 | Electrolytic 10μF/16V | CE0W1C100MT(SRE) |
| C105, 106 | 257 0002 921 | Ceramic 10pF/50V | CC7SL1H100DT |
| C107, 108 | 254 4299 906 | Electrolytic 10μF/16V | CE0W1C100MT(SRE) |
| C109 | 254 4299 906 | Electrolytic 10μF/16V | CE0W1C100MT(SRE) |
| C114 | 254 4193 947 | Electrolytic 100μF/16V | CE0W1C101MT(SRA) |
| C115, 116 | 257 0001 977 | Ceramic 5pF/50V | CC7SL1H5R0CT |
| C118 | 254 4193 947 | Electrolytic 100μF/16V | CE0W1C101MT(SRA) |
| C120 | 257 0001 977 | Ceramic 5pF/50V | CC7SL1H5R0CT |
| C121~123 | 257 0014 935 | Ceramic 0.1μF/25V | CK7F1E104ZT |
| C124 | 254 4193 947 | Electrolytic 100μF/16V | CE0W1C101MT(SRE) |
| C125, 126 | 257 0014 935 | Ceramic 0.1μF/25V | CK7F1E104ZT |
| C127, 128 | 253 1181 904 | Ceramic 0.01μF/50V | CK4F1H103ZT(DD-3) |
| C129 | 254 4299 964 | Electrolytic 47μF/16V | CE0W1C470MT(SRE) |
| C201, 202 | 254 4305 984 | Electrolytic 2.2μF/50V | CE0W1H2R2MT(SRE) |
| C203~206 | 257 0005 986 | Ceramic 330pF/50V | CC7SL1H331JT |

| Ref No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| C207, 208 | 254 4299 906 | Electrolytic 10μF/16V | CE04W1C100MT(SRE) |
| C501 | 254 4299 906 | Electrolytic 10μF/16V | CE04W1C100MT(SRE) |
| C502 | 257 0012 966 | Ceramic 0.01μF/50V | CK73F1H103ZT |
| C503 | 254 4299 906 | Electrolytic 10μF/16V | CE04W1C100MT(SRE) |
| C504 | 257 0012 966 | Ceramic 0.01μF/50V | CK73F1H103ZT |
| C505 | 254 4299 906 | Electrolytic 10μF/16V | CE04W1C100MT(SRE) |
| C506, 507 | 254 4299 906 | Electrolytic 10μF/16V | CE04W1C100MT(SRE) |
| C508 | 254 4305 942 | Electrolytic 0.47μF/50V | CE04W1HR47MT(SRE) |
| C509 | 257 0012 966 | Ceramic 0.01μF/50V | CK73F1H103ZT |
| C510 | 254 4299 906 | Electrolytic 10μF/16V | CE04W1C100MT(SRE) |
| C511 | 254 4254 954 | Electrolytic 220μF/16V | CE04W1C221MT(SME) |
| C701, 702 | 257 0007 900 | Ceramic 0.001μF/50V | CC73SL1H102JT |
| C901 | 257 0012 966 | Ceramic 0.01μF/50V | CK73F1H103ZT |
| C902 | 254 4299 964 | Electrolytic 47μF/16V | CE04W1C470MT(SRE) |
| C903 | 257 0014 935 | Ceramic 0.1μF/25V | CK73F1E104ZT |
| C904 | 254 4254 909 | Electrolytic 10μF/16V | CE04W1C100MT(SME) |
| C905 | 254 4254 954 | Electrolytic 220μF/16V | CE04W1C221MT(SME) |
| C906 | 254 4255 717 | Electrolytic 4700μF/16V | CE04W1C472MC(SME) |
| C907 | 257 0012 966 | Ceramic 0.01μF/50V | CK73F1H103ZT |
| C908 | 254 4258 918 | Electrolytic 10μF/35V | CE04W1V100MT(SME) |
| C909 | 254 4261 918 | Electrolytic 47μF/50V | CE04W1H470MT(SME) |
| C910 | 254 4261 921 | Electrolytic 100μF/50V | CE04W1H101MT(SME) |
| C911, 912 | 254 4258 934 | Electrolytic 33μF/35V | CE04W1V330MT(SME) |
| C913, 914 | 257 0012 966 | Ceramic 0.01μF/50V | CK73F1H103ZT |
| C916, 917 | 257 0012 966 | Ceramic 0.01μF/50V | CK73F1H103ZT |

| OTHER PARTS | | | |
|---|---|---|---|
| CB506 | 205 0343 032 | 3P Connector Base(KR-PH) | |
| CN501 | 205 0549 085 | 11P FFC Connector Base | |
| CN502 | 205 0408 087 | 4P JQ Connector Base | |
| CN503 | 205 0919 000 | 4P JQ Socket (Side) | |
| CN504 | 205 0549 072 | 23P FFC Connector Base | |
| CN505 | 203 8424 009 | 5P Connector Cord(AMP) | |
| CN506 | 205 0343 032 | 3P Connector Base(KR-PH) | |
| CN901 | 205 0549 085 | 11P FFC Connector Base | |
| JK901 | 204 8487 007 | 2P Pin Jack | |
| ⚠ JK902 | 203 3959 003 | 2P Inlet | |
| SW501~519 | 212 5604 910 | Tact Switch-TA | |
| SW520 | 212 1039 000 | 1P Push SW | |
| ⚠ T901 | 233 6159 102 | Power Trans | |
| L101,102 | 235 0080 901 | Inductor(3R3)ST | |
| L501 | 235 0049 900 | Beads Inductor | |
| FL501 | 393 8021 006 | VFD | |
| XL101 | 399 0112 005 | X'TAL(16.9344MHZ) | |
| XL501 | 399 0111 909 | CST4.23MGW040-TF01 | |
| | 412 3100 003 | P.W.B Earth | |
| | 461 0877 014 | Rubber Sheet | |
| W-001 | 203 0503 009 | 1P SIN Connector Cord | |
| W-002 | 001 0063 082 | Vinyl Wire | |
| W-901 | 203 0503 041 | 1P SIN Connector Cord | |
| W-902 | 001 0063 079 | Vinyl Wire | |

# PARTS LIST OF CD MECHANISM UNIT

## SA4 6494 32A CD MECHANISM P.W.B. UNIT ASS'Y

| Ref No. | Part No. | Part Name | Remarks |
|---------|----------|-----------|---------|
| **SEMICONDUCTORS GROUP** | | | |
| IC101 | 262 1879 003 | IC CXD2515Q | |
| IC102 | 926 0000 100 | IC BA297AFP | |
| | | | |
| **RESISTORS GROUP (not included Carbon Film ±5% 1/4W type)** | | | |
| R101 | 247 0010 929 | Chip 15kohm, 1/10W | RM73B--153J |
| R102 | 247 0012 927 | Chip 100kohm, 1/10W | RM73B--104J |
| R103 | 247 0010 929 | Chip 15kohm, 1/10W | RM73B--153J |
| R104 | 247 0011 902 | Chip 33kohm, 1/10W | RM73B--333J |
| R105 | 247 0012 927 | Chip 100kohm, 1/10W | RM73B--104J |
| R106, 107 | 247 0008 960 | Chip 3.3kohm, 1/10W | RM73B--332J |
| R108 | 247 0009 985 | Chip 10kohm, 1/10W | RM73B--103J |
| R109 | 247 0014 967 | Chip 1Mohm, 1/10W | RM73B--105J |
| R110 | 247 0005 905 | Chip 100ohm, 1/10W | RM73B--101J |
| R112 | 247 0007 945 | Chip 1kohm, 1/10W | RM73B--102J |
| R113, 114 | 247 0010 929 | Chip 15kohm, 1/10W | RM73B--153J |
| R117, 118 | 247 0010 929 | Chip 15kohm, 1/10W | RM73B--153J |
| R121, 122 | 247 0010 929 | Chip 15kohm, 1/10W | RM73B--153J |
| R123 | 247 0009 985 | Chip 10kohm, 1/10W | RM73B--103J |
| R124 | 247 0012 927 | Chip 100kohm, 1/10W | RM73B--104J |
| R125~127 | 247 0007 945 | Chip 1kohm, 1/10W | RM73B--102J |
| R131 | 247 0006 920 | Chip 330ohm, 1/10W | RM73B--331J |
| R151~156 | 247 0009 956 | Chip 7.5kohm, 1/10W | RM73B--752J |
| R157 | 247 0011 986 | Chip 68kohm, 1/10W | RM73B--683J |
| R158 | 247 0010 916 | Chip 13kohm, 1/10W | RM73B--133J |
| R159 | 247 0011 902 | Chip 33kohm, 1/10W | RM73B--333J |
| R160 | 247 0010 961 | Chip 22kohm, 1/10W | RM73B--223J |
| R161 | 247 0101 980 | Chip 4.7ohm, 1/10W | RM73B--4R7J |
| R162, 163 | 247 0011 986 | Chip 68kohm, 1/10W | RM73B--683J |
| | | | |
| **CAPACITORS GROUP** | | | |
| C101 | 257 0008 941 | Chip (Ceramic) 470pF/50V | CK73B1H471K |
| C102 | 257 0014 935 | Chip (Ceramic) 0.1µF/25V | CK73F1E104Z |
| C103 | 257 0008 941 | Chip (Ceramic) 470pF/50V | CK73B1H471K |
| C105 | S11 3515 521 | Chip (Ceramic) 4.7µF/16V | |
| C106 | S11 6434 611 | Chip (Ceramic) 1µF/16V | |
| C107 | S11 6450 511 | Chip (Ceramic) 2.2µF/16V | |
| C108 | 257 0013 907 | Chip (Ceramic) 0.047µF/50V | CK73F1H473Z |
| C109 | 257 0009 908 | Chip (Ceramic) 1500pF/50V | CK73B1H152K |
| C110 | S11 6301 700 | Chip (Ceramic) 4700pF/50V | |
| C111 | 257 0004 961 | Chip (Ceramic) 100pF/50V | CC73SL1H101J |
| C112, 113 | 257 0014 935 | Chip (Ceramic) 0.1µF/25V | CK73F1E104K |
| C123 | 257 0012 966 | Chip (Ceramic) 0.01µF/50V | CK73F1H103Z |
| C124 | S11 6400 511 | Chip (Ceramic) 0.47µF/25V | |
| C151, 152 | 257 0008 967 | Chip (Ceramic) 680pF/50V | CK73B1H681K |
| C153 | 257 0014 935 | Chip (Ceramic) 0.1µF/25V | CK73F1E104K |
| C154 | 257 0014 906 | Chip (Ceramic) 0.33µF/25V | CK73F1E334K |
| C155, 156 | 257 0008 967 | Chip (Ceramic) 680pF/50V | CK73B1H681K |
| C157, 158 | 257 0012 982 | Chip (Ceramic) 0.022µF/50V | CK73F1H223Z |
| C159 | S11 6302 300 | Chip (Ceramic) 0.015µF/50V | CK73B1H153K |
| C160 | 257 0012 953 | Chip (Ceramic) 6800pF/50V | CK73F1H682Z |
| C161 | 257 0014 935 | Chip (Ceramic) 0.1µF/25V | CK73F1E104Z |
| | | | |
| **OTHER PARTS** | | | |
| CN101 | S15 6886 511 | 23P Connector Base | |
| CN102 | S15 6879 511 | 12P Connector Base | |
| S101 | S15 7208 511 | Leaf switch(LIMIT) | |

## S16 4572 111 LOADING P.W.B. UNIT ASS'Y

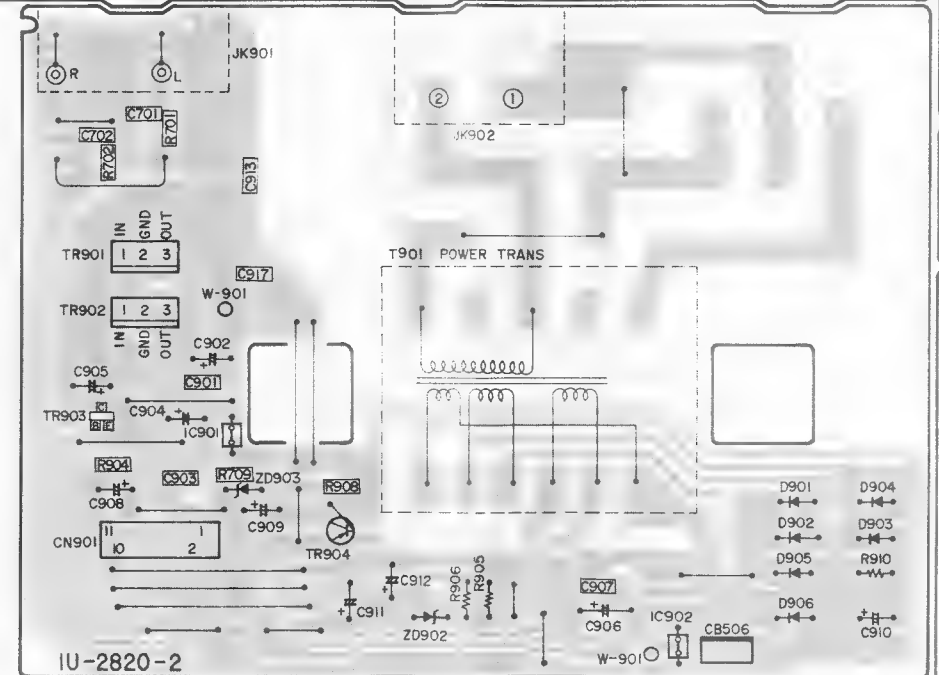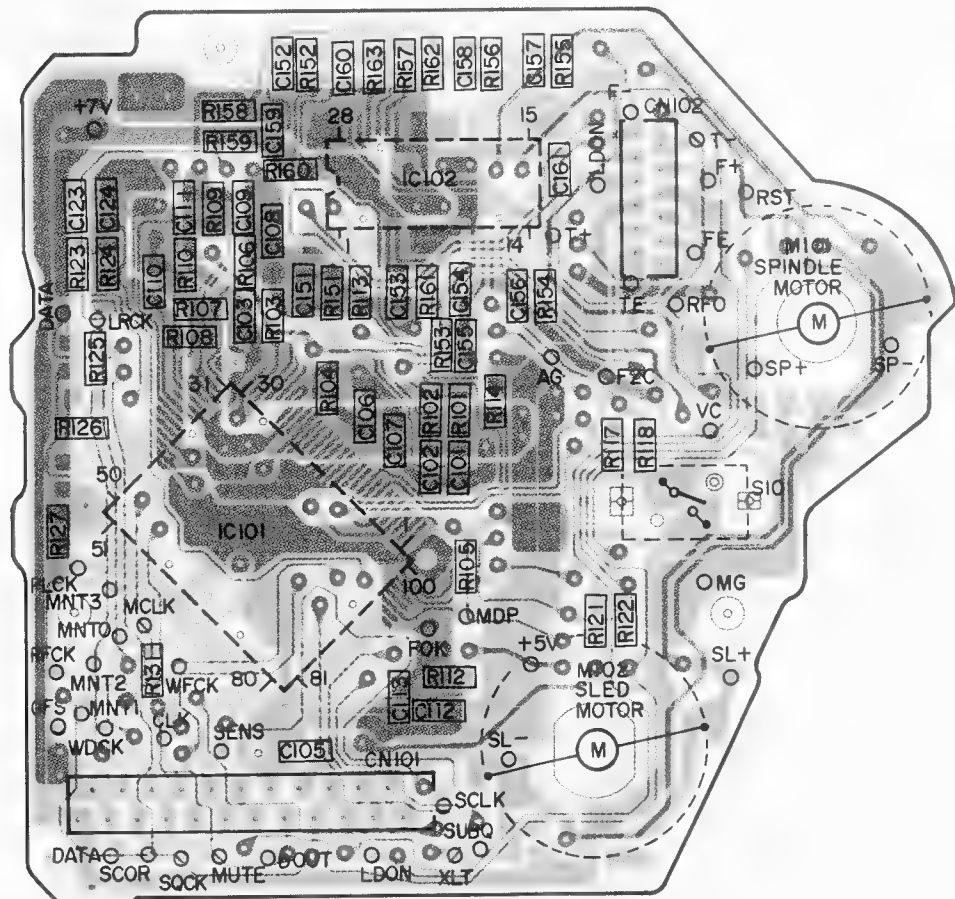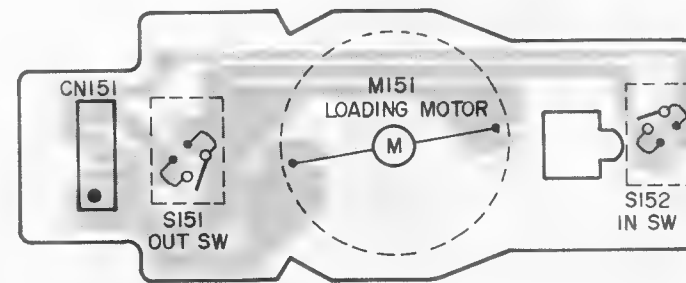| Ref No. | Part No. | Part Name | Remarks |
|---------|----------|-----------|---------|
| **OTHER PARTS** | | | |
| S151 | S15 7208 511 | Leaf Switch(LIMIT) | |
| S152 | S15 7208 511 | Leaf Switch(LIMIT) | |
| CN151 | S15 6894 311 | 5P Connector Base(L Type) | |

# PRINTED WIRING BOARD

## 1U-2828 CD P.W.B. UNIT ASS'Y
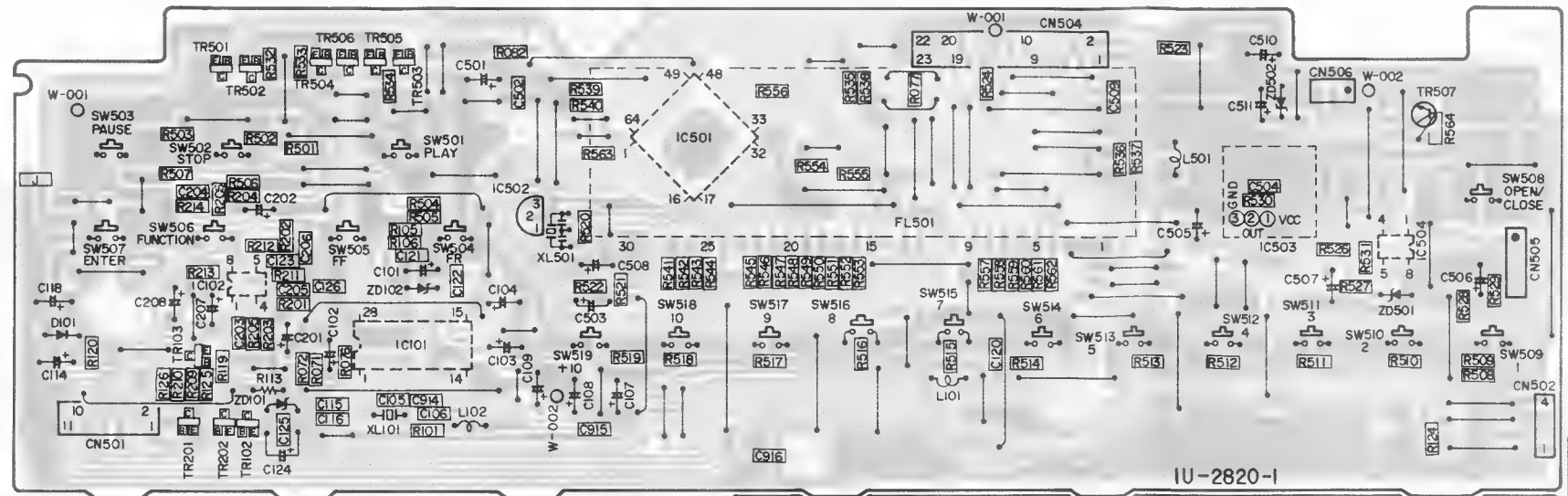


## CD MECHANISM UNIT

### SA4 6494 32A CD MECHANISM P.W.B. UNIT ASS'Y



## S16 4572 111 LOADING P.W.B. UNIT ASS'Y

# WIRING DIAGRAM
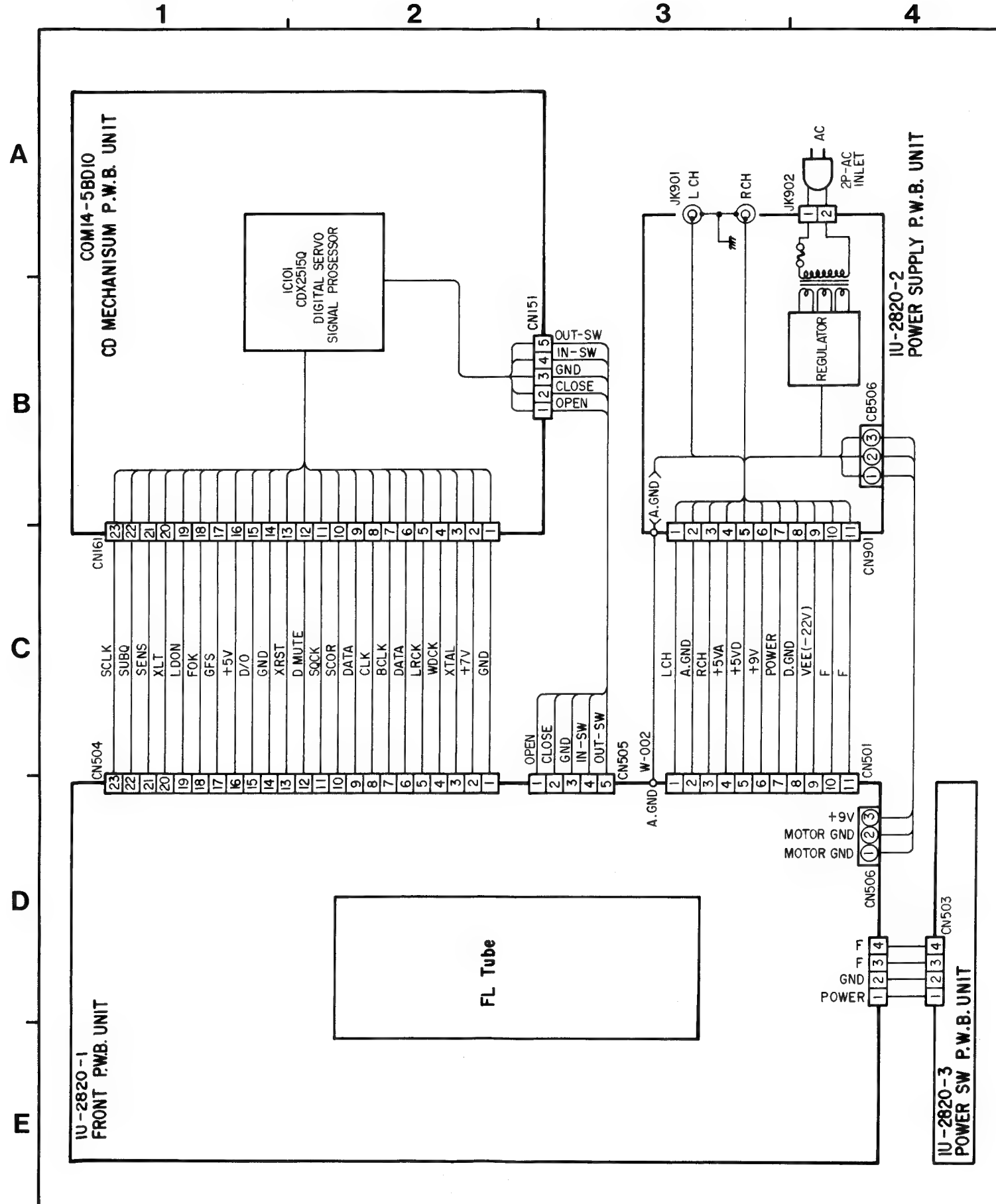


## PARTS LIST OF EXPLODED VIEW

| Ref No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| ◉ 1 | 1U 2820 | CD P.W.B. Unit Ass'y | |
| 1-1 | — | Front P.W.B. Unit | |
| 1-2 | — | Power Supply P.W.B. Unit | |
| 1-3 | — | Power SW. P.W.B. Unit | |
| ◉ 2 | 146 1551 207 | Front Panel | |
| 3 | 143 0925 000 | Window | |
| 4 | 113 1724 005 | Function Button | |
| 5 | 113 1725 004 | Ten Key | |
| 6 | 009 0120 000 | 23P FFC Cable | CN504 |
| 7 | 009 0119 008 | 11P FFC Cable | CN501 |
| 8 | 203 4975 028 | 3P PH-PH Con. Cord | CN506 |
| 9 | 113 1357 210 | P.SW Button | |
| ◉ 10 | 411 1323 119 | Chassis | |
| ◉ 11 | 105 1157 008 | Rear Panel | |
| ◉ 12 | 104 0230 101 | :Foot Ass'y | |
| ◉ 13 | 337 0040 001 | CD Mechanism Unit | |
| 14 | 146 1552 109 | Loader Panel | |
| ◉ 15 | 102 0424 005 | :Top Cover | |
| ⚠ 16 | 212 1039 000 | 1P Push Switch | |
| ⚠ 17 | 233 6159 102 | Power Trans | |
| ⚠ 18 | 203 3959 003 | 2P Inlet | JK902 |
| 19 | 204 8487 007 | 2P Pin Jack | JK901 |
| 20 | 499 0150 008 | IC SBX1610-52 | IC503 |
| 21 | 393 8021 006 | FL Tube | FL501 |
| 22 | 412 9458 005 | Hold Blacket | |
| 23 | 461 0878 000 | PVC Sheet | |
| 101 | 473 7505 007 | Screw 2.6×8 CBTS(P)-Z | |
| 102 | 473 7002 021 | Screw 3×8 CBTS(S)-B | |
| 102 | 473 7002 021 | Screw 3×8 CBTS(S)-B | Europe Model: SERIAL No.O6001~ U.K. Model: SERIAL No.O0001~ |
| 103 | 473 7500 044 | Screw 3×8 CBTS(P)-B | |
| 104 | 473 7007 013 | Screw 4×10 CBTS(S)-B | |
| 105 | 477 0096 023 | Push Rivet | Europe Model: SERIAL No.O0001~06000 |
| ◉ ★ | 461 9063 007 | Rubber Sheet | |
| ★ | 513 2358 007 | E2 Laser Caution | |
| ★ | 449 0050 035 | Card Spacer | |
| ◉ ★ | FPC 315K E2 | Front Unit | |
| ◉ ★ | 122 9006 004 | Spacer | |
| ◉ ★ | 513 2359 006 | Inst. Label | |
| ◉ ★ | 513 1642 002 | NO. Sheet | |

## PACKING & ACCESSORIES

| Ref No. | Part No. | Part Name | Remarks | Q'ty |
|---|---|---|---|---|
| | 203 2310 009 | 2P Pin Cord | | 1 |
| ⚠ | 206 2108 003 | :AC Cord With Plug | Europe Model | 1 |
| ⚠ | 206 2113 001 | :AC Cord With Connector | U.K. Model | 1 |
| ◉ | 501 1803 026 | :Carton Case | Europe Model | 1 |
| ◉ | 501 1817 038 | :Carton Case | U.K. Model | 1 |
| ◉ | 503 1173 008 | :Cushion | U.K. Model | 2 |
| ◉ | 503 9223 002 | :Cushion | Europe Model | 2 |
| ◉ | 505 0131 050 | :Cabinet Cover | | 1 |
| ◉ | 504 0125 005 | :Stylen Paper | U.K. Model | 1 |
| ◉ | 505 0283 018 | :Poly Cover | U.K. Model | 1 |
| ◉ | 511 2742 002 | Operating Instructions | | 1 |
| ◉ | 513 1349 004 | Thermal Carbon Film | | 1 |
| ◉ | 513 1389 006 | Control Card Base | | 1 |

# EXPLODED VIEW OF CHASSIS AND CABINET
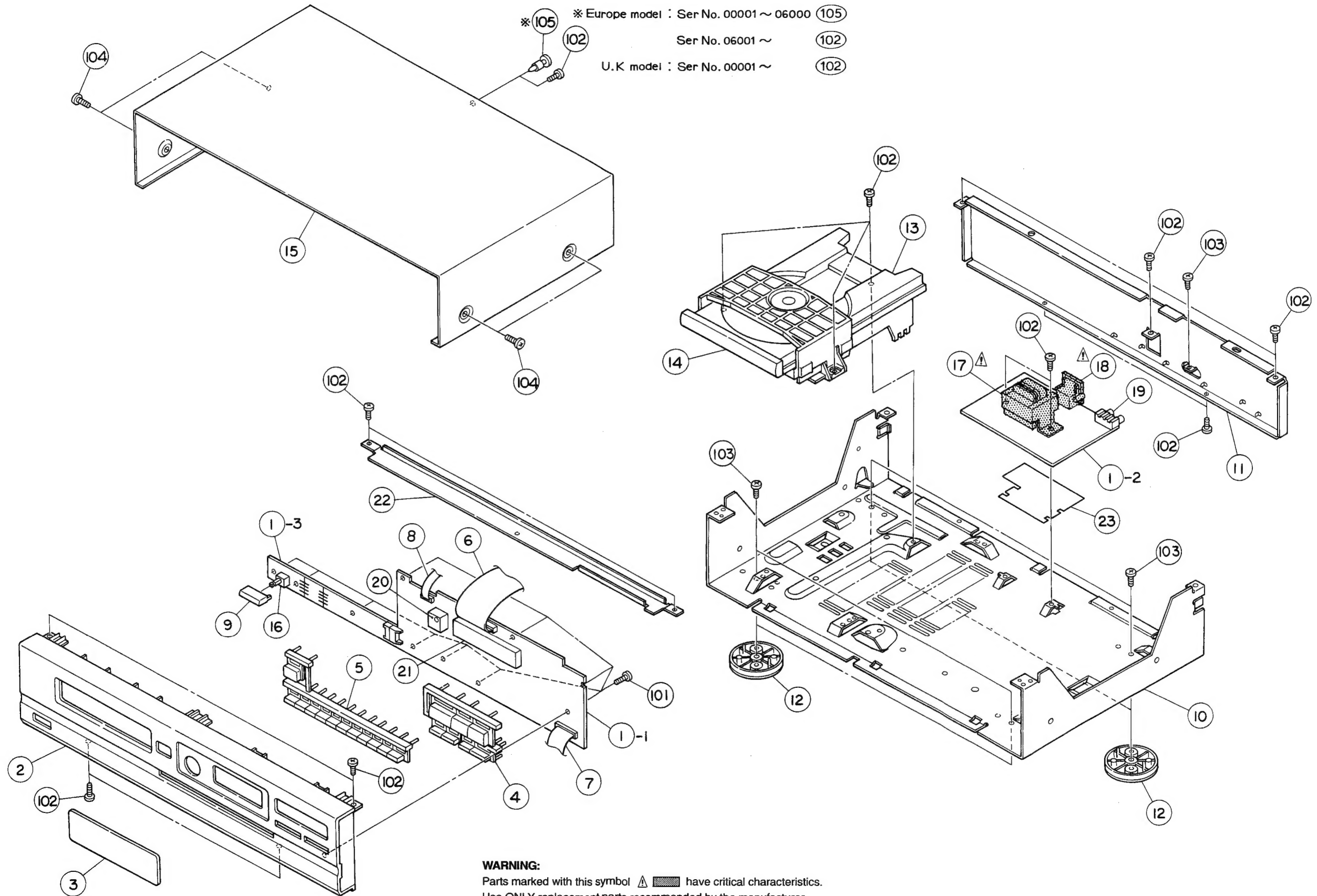
※ Europe model : Ser No. 00001 ~ 06000 (105)

Ser No. 06001 ~ (102)

U.K model : Ser No. 00001 ~ (102)

**WARNING:**

Parts marked with this symbol ⚠ ▨▨▨ have critical characteristics.

Use ONLY replacement parts recommended by the manufacturer.

## PARTS LIST OF CD MECHANISM UNIT

### MD UNIT



Optical Pick-up unit

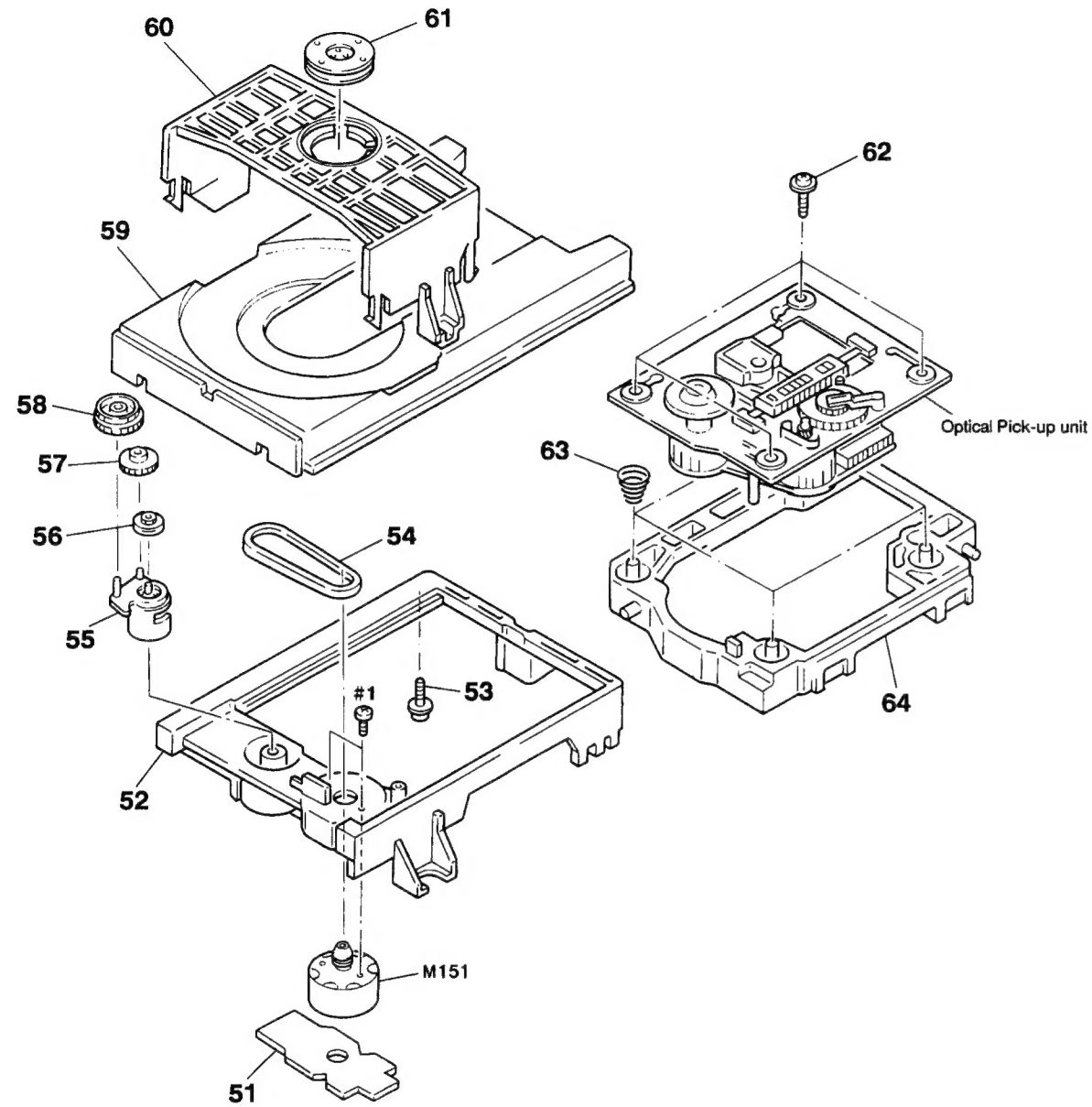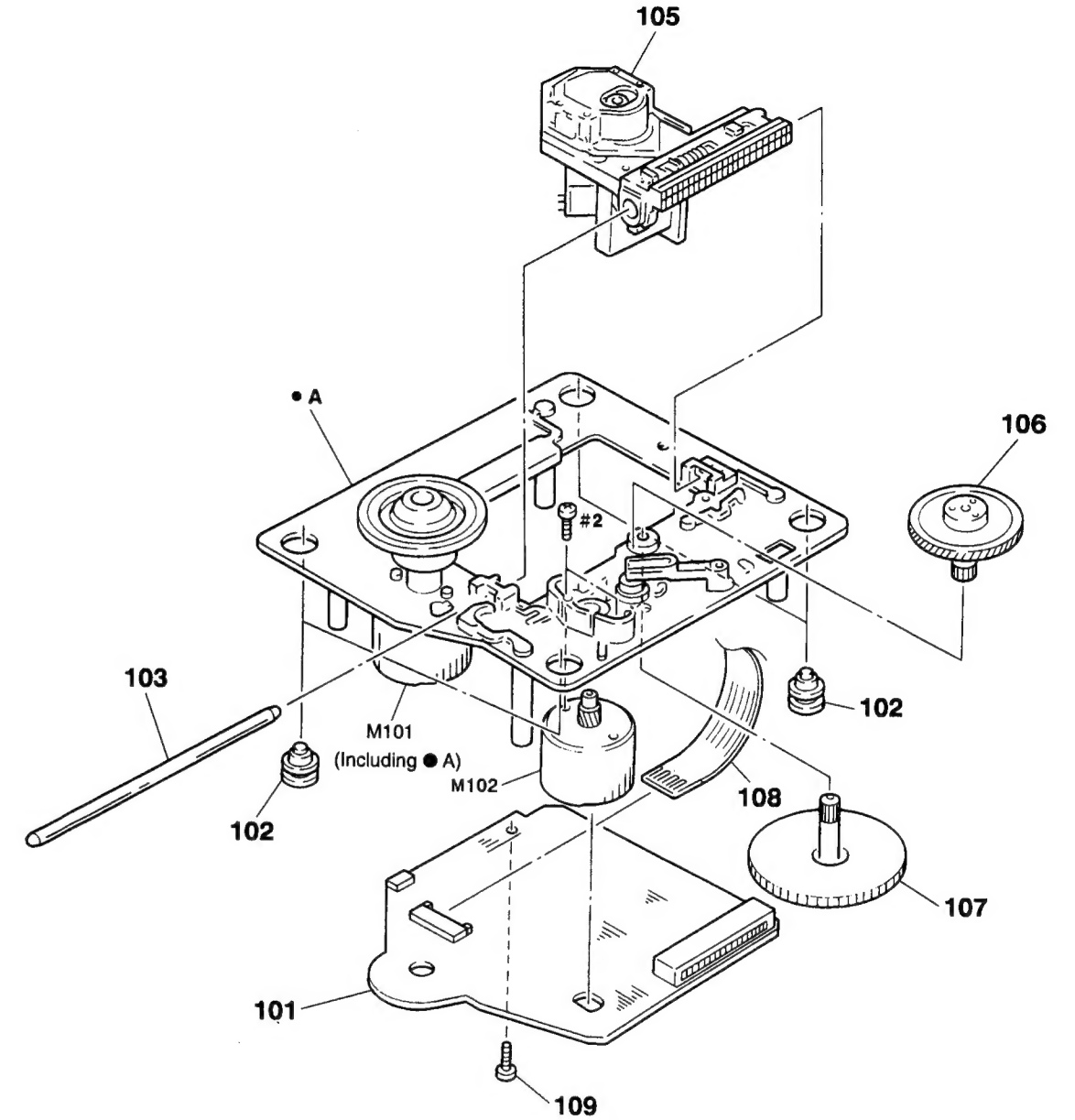## OPTICAL PICK-UP UNIT



M101
(Including ● A)
M102

## PARTS LIST OF CD MECHANISM UNIT

| Ref No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| 51 | S16 4572 111 | Loading P.W.B. Unit Ass'y | See page 28, 29 |
| 52 | S49 3311 101 | Chassis(MD) | |
| 53 | S49 1758 321 | Yoke Bracket | |
| 54 | S49 2764 901 | Belt | |
| 55 | S49 3310 901 | Cam | |
| 56 | S49 2765 101 | Pulley(S) | |
| 57 | S49 2762 801 | Gear(C) | |
| 58 | S49 3310 701 | Gear(PL) | |

| Ref No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| 59 | S49 3311 201 | Disk Table | |
| 60 | S49 3311 001 | Holder(MG) | |
| 61 | S14 5253 811 | Magnet | |
| 62 | S49 3313 401 | Screw | |
| 63 | S49 4850 301 | Spring(BU) | |
| 64 | S49 3312 901 | Holder(BU) | |
| M151 | SA4 6043 63A | Motor(L)Ass'y | |
| #1 | 471 3201 024 | 2.6×4 CBS | |

## PARTS LIST OF OPTICAL PICK-UP UNIT

| Ref No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| ◉ 101 | SA4 6494 32A | CD Mechanism P.W.B. Unit Ass'y | See page 28, 29 |
| 102 | S49 3312 601 | Insulator Rubber | |
| 103 | S49 1756 501 | Sled Shaft | |
| 105 | 499 0191 009 | Optical PU KSS240A | |
| 106 | S49 1756 701 | Gear(M) | |
| 107 | S49 1756 401 | Gear(P) | |

| Ref No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| 108 | S15 7500 111 | Flat Cable | |
| M101 | SX4 9175 233 | Motor(Spindle)Ass'y | |
| M102 | SX4 9175 041 | Motor(Sled)Ass'y | |
| 109 | S49 5162 001 | Screw | |
| #2 | 471 1810 019 | 2×3 CPS | |

# SCHEMATIC DIAGRAM



1U-2820-1 FRONT P.W.B. UNIT

1U-2820-3
POWER SW P.W.B. UNIT

6  7  8  9  10  11

A

CN102
12P

VC
TE
FE
FZC
RFO
GND
VCC
LDON
F+
T+
T-
F-

B

C106
1.0
C107
2.2
C106
0.1
C107
470P

R109
1M

C111
100P
C109
1500P

R108
10K

R102
100K

C123
10000P
C124
0.47

R124
100K
R123
10K

R106
3.3K
C108
0.047

C103
470P
R101
15K

R107
3.3K
R103
15K

C110
RFI
R110
100

IC102
BA6297FP

R127 1K
R126 1K
R125 1K

GTOP
XUGF
GFS
RFCK
C2PO
XRADF
MNT3
MNT2
MNT1
MNT0
XTAI
XTAO
XTSL
DVSS
FSTI
FSTO
C4M
C16M
MD2
DOUT
EMPH
WFCK
SCOR
SBSO
EXCK
SUBQ
SOCK
MUTE
SENS

IC101
CXD2515Q

DIGITAL SERVO
&
DIGITAL SIGNAL PROSESSOR

VC
FE
SE
TE
RFDC
ADIO
ADII
AVS2
IGEN
VCKI
VPCO
TES3
TES2
DVSS
TEST
VCOI
VCOO
FFDN
FRDR
FRON
FFDR
TFDR
TRON
TFDR
SFDN
SRDR
SRON

GFS

R131
330

CB504
23P

R151 7.5K
R152 7.5K
R153 7.5K

C151 680P
C153 0.1
C152 680P
C154 0.33
C155 680P

C160 6800P
R163 68K

R157 68K
R161 4.7
C157 22000P

R162 68K
R156 7.5K

C159 0.015
R160 22K

R159 33K

C171 0.1  R171 10
M101 SPDL

C172 0.1  R172 10
NOT MOUNT

R113 15K
R114 15K
R117 15K
R118 15K
R121 15K
R122 15K

R104 33K

R154 7.5K
C156 680P
R155 7.5K

C161 0.1

R158 13K

C173 0.1  R173 10
M102 SLED
C174 0.1  R174 10

CN504

SCLK
SUBQ
SENS
XLT
LDON
FOK
GFS
+5V
D/O
GND
XRST
AMUTE
SOCK
SCOR
DATA
CLK
BCLK
DATA
LRCK
VDCK
XTAL
+7V
GND

C105
4.7/16

C112 0.1  R112 1K

C113 0.1

R105 100K

16.9M

CDM14-5BD10

C

D

C701 0.001
JK901 L

C913 0.01 Z

TR902 NJM7805FA
TR903 2SA1362

IC901 ICP-N15
IC902 ICP-N15

D901 1SR35-200A
D902 1SR35-200A

C702 0.001
R

C507 10/16
C506 10/16

IC504 BA6287F

R531 470

R526 10K
R527 10K
R528 10K
R529 10K

ZD501 MTZJ4.7A

C903 C904 0.1 10/16
OUT IN

C906 4700/16
OUT IN

C901 C902 0.01 47/16

TR901 NJM7805FA

C907 0.01

D903 1SR35-200A
D906 1SR35-200A

D905 1SR35-200A

DRIVER.F
DRIVER.R

C125 47/16 SRE

CN505
1 OPEN
2 CLOSE
3 GND
4 IN-SW
5 OUT-SW

E

ZD903 MTZJ22A  C909 47/50

R907 100K

T901 POWER TRANS

W-002  W-002

R904 100K
C908 10/35

R908 1.5K
C910 100/50

D904 1SR35-200A

JK902 2P-AC-INLET

CN506
1 MOTOR GND
2 AGND
3 +7V

CB506

CN901

CN501

TR904 2SA934
ZD902 MTZJ6.8A

R910 100K

R905 100
R906 100

AGND
+5VA
+8V
POWER
DGND
VEE
F

AGND
+5VA
+8V
POWER
DGND
VEE
F

C912 33/35  C911 33/35

C128 0.01 Z

C126 0.1 Z  C107 0.01 Z

TR507 2SD1762

R564 680

C510 10/16
C511 220/16

ZD502 MTZJ8.2A

F

1U-2820-2 POWER SUPPLY P.W.B. UNIT

+B LINE
-B LINE
SIGNAL LINE

G

...stics.
...er.

...either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current
...r side of the power cord is less than 240 kohms, the unit is defective.

...ted and corrected.

...tice.

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.

H