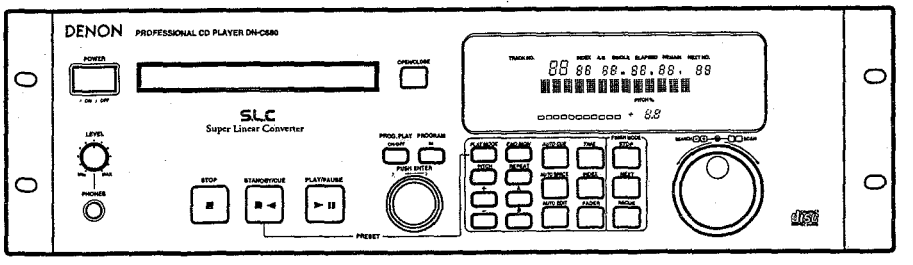
DENON

Hi-Fi Component

SERVICE MANUAL

MODEL DN-C680

CD PLAYER



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NIPPON COLUMBIA CO., LTD.

IMPORTANT TO SAFETY

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

CAUTION:

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

Please, record and retain the Model name and serial number of your set shown on the rating label.
Model No. DN-C680 Serial No. _____

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

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

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

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

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).

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

CERTIFICATION

THIS PRODUCT COMPLIES WITH DHHS RULES 21CFR SUBCHAPTER J APPLICABLE AT DATE OF MANUFACTURE.

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

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

NOTE:
This unit may cause interference to radio and television reception if you do not operate it in strict accordance with this OPERATING INSTRUCTIONS.
This unit complies with Class B computing device rules in accordance with the specifications in Sub-part J or Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. If the unit does cause interference to any radio or television reception, try to reduce it by one or more of the following means:
a) Turn the other unit to improve reception
b) Move this unit
c) Move this unit away from others
d) Plug this unit respectively into a different AC outlet

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

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

"CLASS 1 LASER PRODUCT"

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

VAROITUSI LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

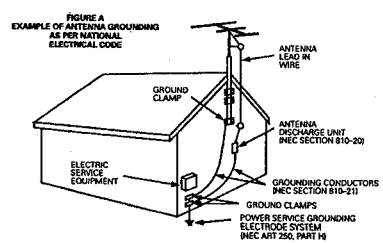
VARNING– OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

SAFETY INSTRUCTIONS

1. Read Instructions – All the safety and operating instructions should be read before the appliance is operated.
2. Retain Instructions – The safety and operating instructions should be retained for future reference.
3. Heed Warnings – All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow Instructions – All operating and use instructions should be followed.
5. Water and Moisture – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. Carts and Stands – The appliance should be used only with a cart or stand that is recommended by the manufacturer.

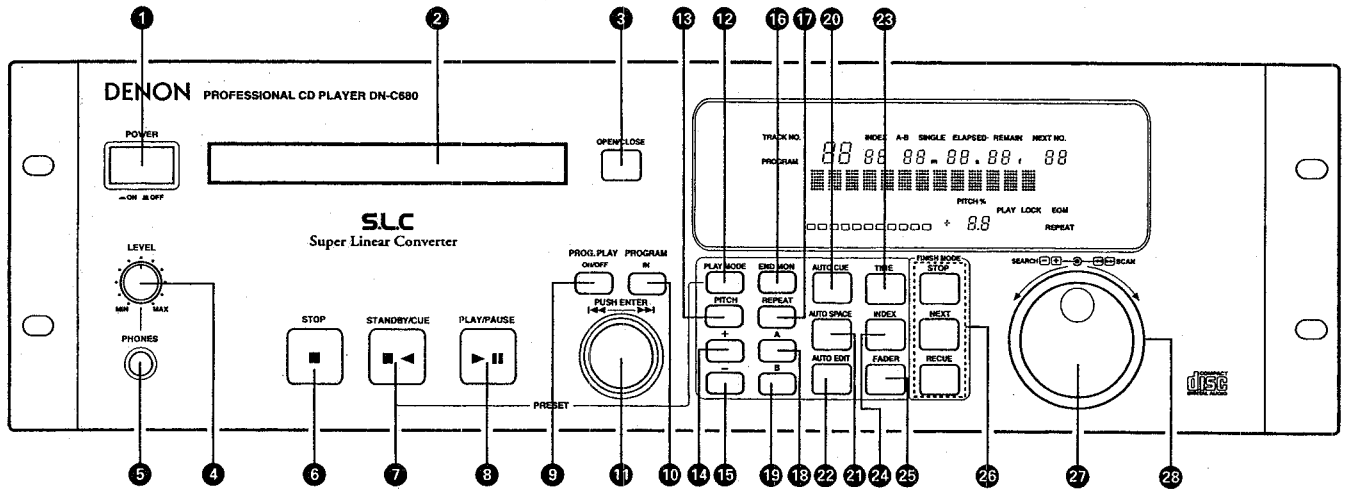
6A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

7. Wall or Ceiling Mounting – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. Heat – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization – Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

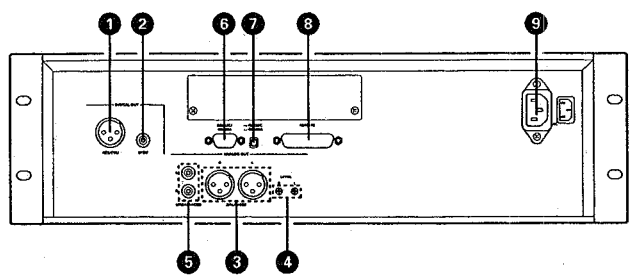


12. Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
14. Cleaning – The appliance should be cleaned only as recommended by the manufacturer.
15. Power Lines – An outdoor antenna should be located away from power lines.
16. Outdoor Antenna Grounding – If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna-discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure A.
17. Nonuse Periods – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
18. Object and Liquid Entry – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
19. Damage Requiring Service – The appliance should be serviced by qualified service personnel when:
    A. The power-supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the appliance; or
    C. The appliance has been exposed to rain; or
    D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
    E. The appliance has been dropped, or the enclosure damaged.
20. Servicing – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

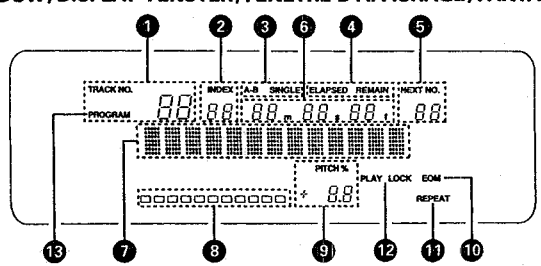
FRONT PANEL/FRONTPLATTE/PANNEAU AVANT/PANEL FRONTAL



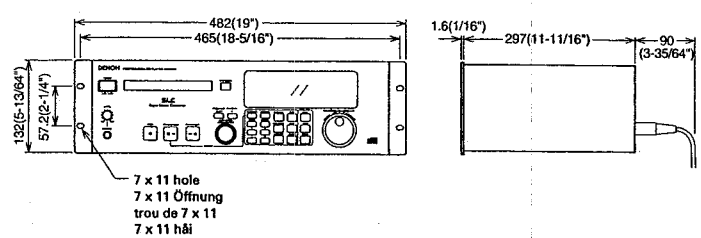
REAR PANEL/RÜCKWAND/PANNEAU ARRIERE/PANEL TRASERO



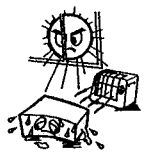
DISPLAY WINDOW/DISPLAY-FENSTER/FENETRE D'AFFICHAGE/PANTALLA DE VISUALIZACION



DIMENSIONS/ABMESSUNGEN/DIMENSIONS/DIMENSIÓNES



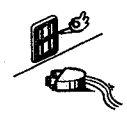
NOTE ON USE / HINWEISE ZUM GEBRAUCH / OBSERVATIONS RELATIVES A L'UTILISATION NOTE SULL'USO / NOTAS SOBRE EL USO / ALVORENS TE GEBRUIKEN / OBSERVERA OBSERVAÇÕES QUANTO AO USO



- Avoid high temperatures
  Allow for sufficient heat dispersion when installed on a rack.
- Vermeiden Sie hohe Temperaturen
  Beachten Sie, daß eine ausreichend Luftzirkulation gewährleistet wird, wenn das Gerät auf ein Regal gestellt wird.
- Eviter des températures élevées
  Tenir compte d'une dispersion de chaleur suffisante lors de l'installation sur une étagère.
- Evitate di esporre l'unità a temperature alte. Assicuratevi che ci sia un'adeguata dispersione del calore quando installate l'unità in un mobile per componenti audio.
- Evite altas temperaturas
  Permite la suficiente dispersión del calor cuando está instalado en la consola.
- Vermijd hoge temperaturen.
  Zorg voor een degelijk hitteafvoer indien het apparaat op een rek wordt geplaatst.
- Undvik höga temperaturer.
  Se till att det finns möjlighet till god värmeavledning vid montering i ett rack.
- Evite temperaturas altas
  Conceda suficiente dispersão de calor quando o equipamento for instalado numa prateleira.

- 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 den Stecker herausziehen.
- Manipuler le cordon d'alimentation avec précaution.
  Tenir la prise lors du débranchement du cordon.
- Maneggiate il filo di alimentazione con cura.
  Agite per la spina quando scollegate il cavo dalla presa.
- Maneje el cordón de energía con cuidado.
  Sostenga el enchufe cuando desconecte el cordón de energía.
- Hanteer het netsnoer voorzichtig.
  Houd het snoer bij de stekker vast wanneer deze moet worden aan- of losgekoppeld.
- Hantera nätkabeln varsamt.
  Håll i kabeln när den kopplas från el-uttaget.
- Manusée com cuidado o fio condutor de energia.
  Segure a tomada ao desconectar o fio.

- 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.
- Tenete l'unità lontana dall'umidità, dall'acqua e dalla 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 aparelho livre de qualquer umidade, água ou poeira.



- Unplug the power cord when not using the set for long periods of time.
- Wenn das Gerät eine längere Zeit nicht verwendet werden soll, trennen Sie das Netzkabel vom Netzstecker.
- Débrancher le cordon d'alimentation lorsque l'appareil n'est pas utilisé pendant de longues périodes.
- Disinnestate il filo di alimentazione quando avete l'intenzione di non usare il filo di alimentazione per un lungo periodo di tempo.
- Desconecte el cordón de energía 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.
- Koppla ur nätkabeln om apparaten inte kommer att användas i lång tid.
- Desligue o fio condutor de força quando o aparelho não tiver que ser usado por um longo período.

*(For sets with ventilation holes)

- Do not obstruct the ventilation holes.
- Die Belüftungsöffnungen dürfen nicht verdeckt werden.
- Ne pas obstruer les trous d'aération.
- Non coprite i fori di ventilazione.
- No obstruya los orificios de ventilación.
- De ventilatieopeningen mogen niet worden beblokkeerd.
- Täpp inte till ventilationsöppningarna.
- Não obstrua os orifícios de ventilação.

- Do not let foreign objects in the set.
- Keine fremden Gegenstände in das Gerät kommen lassen.
- Ne pas laisser des objets étrangers dans l'appareil.
- E' importante che nessun oggetto è inserito all'interno dell'unità.
- No deje objetos extraños dentro del equipo.
- Laat geen vreemde voorwerpen in dit apparaat vallen.
- Se till att främmande föremål inte tränger in i apparaten.
- Não deixe objetos estranhos no aparelho.

- Do not let insecticides, benzene, and thinner come in contact with the set.
- Lassen Sie das Gerät nicht mit Insektiziden, Benzin oder Verdünnungsmitteln in Berührung kommen.
- Ne pas mettre en contact des insecticides, du benzène et un diluant avec l'appareil.
- Assicuratevvi che l'unità non venga in contatto con insetticidi, benzolo o solventi.
- No permita el contacto de insecticidas, gasolina y diluyentes con el equipo.
- Laat geen insektenverdelgende middelen, benzine of verfverdunnar met dit apparaat in kontakt komen.
- Se till att inte insaktsmedel på spraybruk, bensen och thinner kommer i kontakt med apparatens höljo.
- Não permita que inseticidas, benzina e dissolvente entrem em contacto com o aparelho.

- Never disassemble or modify the set in any way.
- Versuchen Sie niemals das Gerät auseinander zu nehmen oder auf jegliche Art zu verändern.
- Ne jamais démonter ou modifier l'appareil d'une manière ou d'une autre.
- Non smontate mai, nè modificate l'unità in nessun modo.
- Nunca desarme o modifique el equipo de ninguna manera.
- Nooit dit apparaat demonteren of op andere wijze modifiëren.
- Ta inte isär apparaten och försök inte bygga om den.
- Nunca desmonte ou modifique o aparelho de alguma forma.

MAIN FEATURES

The DN–C680 CD player is a rack mount type CD player designed for use in broadcast stations, for production, etc.

- **19 inch Rack Mountable (Height 3U)**
- **Large FL Display, Illuminated Rubber Button**
- **Track Search Select knob (Easy track selection)**
- **Jog / Shuttle Wheel**
  Perform searches to 1 frame precision using the jog dial and easy scans using the shuttle ring.
- **Program Play (Max. 25 tracks)**
  (1) When the PLAY mode is set to Single, the player stands by at the beginning of next track. (at Finish mode Next)
  (2) When the PLAY mode is set to Continuous, the playback is continued according to your programmed sequence.
- **Play mode and Finish mode**
  (1) Play mode
  ① Continuous: Play a whole disc
  ② Single: Play a track
  ③ A–B: Play a A–B
  (2) Finish mode (Stop, Next, Recue)
  * only when Single Track play is selected.
  ① Stop: Stop after finishing to play a track.
  ② Next: Standby at the beginning of next track after finishing to play track.
  ③ Recue: After finishing to play a track, standby at the beginning of the track.
- **Auto Cue**
  After a disc is loaded, it is automatically cued to the point where audio starts.
  Cueing takes place at the point where audio starts rather than where the track starts. The level at which sound is first detected can be set between –36 to –72dB (7 steps).
- **End Monitor**
  Pressing the END MON button during standby instantly previews the end of the track, thus assuring perfect "end point". The point at which monitoring starts can be set within a range of 5 to 35 seconds (7 steps) prior to the track's end.
- **End of Message (EOM)**
  At the end of a track, the Display's **EOM** button flashes, providing a visual warning to the operator that the track will end shortly. The point at which the flashing begins can be set within a range of 0 to 30 seconds (7 steps) prior to the end of the track.
- **Pitch Control (±9.9%, 0.1% step)**
- **Index Search**
  The Select knob can be used to perform an Index Search when the INDEX button is ON. (The LED on the INDEX button light up.)
- **AUTO SPACE**
  During playback, it is possible to insert a silent space of about 4 seconds between tracks. To do this, simply press the AUTO SPACE button to ON. (The LED on the AUTO SPACE button light up.)
- **AUTO EDIT**
  This function automatically divides the total recorded time on the disc in half and rearranges the track so that they fit nearly onto the A and B sides.
- **Display of Playback Locations**
  A bar graph display indicates playback points on the track being played. Elapsed time and Remaining time displays are switched using the TIME button.
- **Rich Array of External Control Terminals**
  Serial Remote (RS232C/RS422A switchable, D–sub 9 pin)
  Parallel Remote (D–sub 25 pin)
- **ACD–25FSC (FS Converter Kit) Option**
  Digital output is possible at 32 and 48 kHz as well as 44.1 kHz.
  Output frequency can be preset to 32, 44.1, or 48 kHz.

CONTENTS

Checking the Contents

Check that the carton contains the following items:

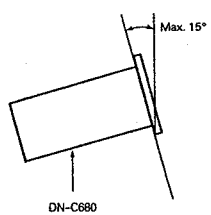
3P power supply cord	1 pc.
Operating instructions (this booklet)	1 pc.

Installing the Units

Mount the units onto your console or rack with 19" EIA rack rails.

CAUTION:

- The DN-C680 will work normally when the player unit is mounted with the front panel within 15 degrees of the vertical plane. If the unit is tilted excessively, discs may not load or unload properly.



● DECLARATION OF CONFORMITY

We declare under our sole responsibility that this product, to which this declaration relates, is in conformity with the following standards:
EN60065, EN55013, EN55020, EN60555-2 and EN60555-3.
Following the provisions of 73/23/EEC, 89/336/EEC and 93/68/EEC Directive.

[1] PART NAMES AND FUNCTIONS

(1) Front Panel

❶ POWER button
- This turns the set on and off.

❷ Disc holder
- Place discs in this holder.
- Press the OPEN/CLOSE button to open and close the disc holder.
- Load discs firmly inside the slot.

❸ OPEN/CLOSE button
- Press this button to open and close the disc holder.
- The disc holder will not open during playback.

❹ LEVEL control
- Use this to adjust the volume of the headphones.

❺ PHONES jack
- Connect headphones with an impedance of 30 to 40 Ω/ohms.

❻ STOP button
- Press this button to turn all the servo functions off and stop.
- Press this button during playback to set the stop mode.

❼ STANBDY/CUE button
- When this button is pressed during the play or pause mode, the pickup returns to the position at which playback started and the standby mode is set. **(Back Cue)**
- When pressed during playback when the next track has been programmed, the programmed track is searched for and the standby mode is set.
- The button lights when the standby mode is set.
- When the button is pressed while pressing the PLAY MODE button, the preset mode is set.

❽ PLAY/PAUSE button
- Press this button in the standby, pause or manual search mode to begin playback.
- Press the button in the stop mode to search for the first track and begin playback.
- The button lights during the play mode.
- When the button is pressed during playback, the pause mode is set. The button flashes while the pause mode is set.

❾ PROG. PLAY ON/OFF button
- When this button is pressed while the PROGRAM IN button is lit, the program play mode is set.
- The button will not function during the A–B play mode.
- The button lights during the program play standby and play modes.
- When the button is pressed during the program play standby or play mode, the program play mode is cleared.

❿ PROGRAM IN button
- Press this button to set the program input mode.
- The button will not function during the play mode.
- The button flashes when in the program input mode.
- The button lights when a program is set.

⓫ Select knob
- Turn this knob to select the next track (or index number) to be played.
- Use the INDEX button to choose whether to select tracks or index numbers.
- Turn the knob clockwise by one click to move one track (or one index number) forward, counterclockwise by one click to move one track (or one index number) backward.
- When the knob turned while pressing it in, one click corresponds to 10 tracks (or 10 index numbers).
- In the preset mode, use this knob to set and enter preset settings.
- When setting programs, use this knob to select, enter and check the program.

⓬ PLAY MODE button
- Press this button to switch the play mode.

⓭ PITCH button
- Press this button to switch to the play speed set with the + and – buttons.
- The button lights when the pitch play mode is set.
- Press the button again to cancel the pitch play mode and return to the normal speed.

⓮ + button
- Press this button once to increase the pitch by 0.1%.
- Hold the button in to increase the pitch continuously.
- Press the button in the program editing mode to set the program insert mode.

⓯ – button
- Press this button once to decrease the pitch by 0.1%.
- Hold the button in to decrease the pitch continuously.
- Press the button in the program editing mode to clear the program.

⓰ END MON button
- Press this button in the standby mode to monitor the end of the track. **(End Monitor)**
- The button lights when the end monitor mode is set.

⓱ REPEAT button
- Press this button to set the repeat mode.
- The button lights when the repeat mode is set.
- Press the button again to cancel the repeat mode.

⓲ A button
- Press this button when no A point is set to set the A point.
- The button lights when the A point is set.
- When pressed while the A point is set, the A point is searched for and the standby mode is set.
- When the button is pressed during manual search while the A point is set, the A point changes.

⓳ B button
- Press this button when no B point is set to set the B point.
- The button lights when the B point is set.
- When pressed while the B point is set, the B point is searched for and the standby mode is set.
- When the button is pressed during manual search while the B point is set, the B point changes.

⑳ AUTO CUE button
- Press this button to find the beginning of the playback signals on a track and automatically set the standby mode at that point. **(Auto Cue)**
- The button lights when the auto cue mode is set.
- Press the button again to cancel the auto cue mode.

㉑ AUTO SPACE button
- Press this button to automatically insert blank spaces of 4 seconds between tracks during continuous playback. **(Auto Space)**
- The button lights when the auto space mode is set.
- Press the button again to cancel the auto cue mode.

㉒ AUTO EDIT button
- Press this button to divide the tracks on the disc into a first half (side A) and second half (side B) at the point nearest to half of the disc's total playing time. **(Auto Edit)**
- When the A button is pressed while the auto edit mode is on, the A button lights and the number of the first track and total playing time of the first half (side A) are displayed on the character display.
- When the B button is pressed while the auto edit mode is on, the B button lights and the number of the first track and total playing time of the second half (side B) are displayed on the character display.
- Press the button again to cancel the auto edit mode.

㉓ TIME button
- Press this button to switch the time display between the remaining time (REMAIN) and the elapsed time (ELAPSED).

㉔ INDEX button
- Press this button to set the index select mode, then use the select knob to select the index number.
- The button lights when the index select mode is set.
- Press the button again to return to the track select mode.

㉕ FADER button
- Press this button to enable input of the fader input signals connected to the "PARALLEL REMOTE" connector.
- The button lights when fader input signal input is enabled.
- Press the button again to cancel the mode.

㉖ FINISH MODE button
One of the following three finish modes can be selected:
- Press the STOP button to light the button and set the finish mode to the stop mode.
- Press the NEXT button to light the button and set the finish mode to the next mode.
- Press the RECUE button to light the button and set the finish mode to the recue mode.

㉗ SEARCH dial (inner side)
- Turn this dial to set the manual search mode.
- Turn the dial clockwise to move the playback position forward, counterclockwise to move the playback position backward.
- One click corresponds to one frame of movement. The playback position can be moved anywhere between the beginning of the first track and the end of the last track.

㉘ SCAN dial (outer side)
- Turn this dial to set the manual search (fast forward or fast reverse) mode.
- Turn the dial clockwise to move the playback position forward, counterclockwise to move the playback position backward.
- The speed changes according to the angle at which the dial is turned.

(2) Rear Panel

① DIGITAL OUT (BALANCED) connector
- This is an active balanced output using an XLR type connector.
- Connect this connector to the balanced digital input connector on an amplifier or console.
- Signal format: Selectable (See Page 24, 8) 9))
- Pin layout:
  1. Common
  2. Cold
  3. Hot
- Applicable connector: Cannon XLR-3-31 or equivalent

② DIGITAL OUT (UNBALANCED) jack
- This is an unbalanced output using an RCA type jack.
- Connect this jack to the unbalanced digital input jack on an amplifier or console.
- Signal format: Selectable (See Page 24, 8) 9))

③ ANALOG OUT (BALANCE) connectors
- These are active balanced outputs using XLR type connectors.
- Connect these connectors to the balanced analog input connectors on an amplifier or console.
- Pin layout:

Pin No.	U.S.A. & Canada	Europe & Asia & Others
1	Common	Common
2	Cold	Hot
3	Hot	Cold

- Applicable connector: Cannon XLR-3-31 or equivalent

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

④ LEVEL L/R controls
- Use these controls to adjust the level of the audio signals from the ANALOG OUT (BALANCED) connectors.

⑤ ANALOG OUT (UNBALANCED) jacks
- These are unbalanced outputs using RCA type jacks.
- Connect these jacks to the unbalanced analog input jacks on an amplifier or console.

⑥ RS232C/RS422A connector
- This is a serial remote connector. A personal computer or other external controller can be connected to control the DN-C680 externally.
- Applicable connector: 9-pin D-sub (female)
- Baud rate: 9600 bps or 19200 bps
- Pin layout:

	RS232C		RS422A	
Pin no.	Signal name	I/O	Signal name	I/O
1	NC	—	NC	—
6	NC	—	S.GROUND	—
2	T×D	O	T×D(RETURN)	O
7	NC	—	T×D	O
3	R×D	I	R×D	I
8	NC	—	R×D(RETURN)	I
4	NC	—	NC	—
9	NC	—	NC	—
5	S.GROUND	—	S.GROUND	—

⑦ RS232C/RS422A selector switch
- Use this to switch the serial remote connector signal between RS232C and RS422A according to the external controller's signal.

⑧ REMOTE connector
- This is a parallel remote connector. Use it to control the DN-C680 with dry contact circuit connections.
- Applicable connector: 25-pin D-sub (male)
- Connector signal layout:

Pin no.	Signal name	I/O	
1	FG	—	
14	PLAY tally	O	TTL(Iol=20mA)
2	PLAY command	I	HCMOS(Ii=3mA)
15	PAUSE tally	O	TTL(Iol=20mA)
3	PAUSE command	I	HCMOS(Ii=3mA)
16	STDBY/CUE tally	O	TTL(Iol=20mA)
4	STDBY/CUE command	I	HCMOS(Ii=3mA)
17	INDEX2/INDEX3 tally	O	TTL(Iol=20mA)
5	TRACK(+) command	I	HCMOS(Ii=3mA)
18	Tally common	—	
6	TRACK(−) command	I	HCMOS(Ii=3mA)
19	Reserved	—	
7	SEARCH(FWD) command	I	HCMOS(Ii=3mA)
20	Reserved	—	
8	SEARCH(REV) command	I	HCMOS(Ii=3mA)
21	Reserved	—	
9	FADER START command	I	PHOTO COUPLER
22	Tally power supply	—	+5V, 20mA
10	Command common	—	(Ii=10mA)
23	Command common	—	
11	NC	—	
24	EOM tally	O	TTL(Iol=20mA)
12	Reserved	—	
25	Reserved	—	
13	Reserved	—	

NOTE: The tally output pin has open collector IC specifications (Imax. 20 mA, Vmax. 5V), but the maximum supply current is 80 mA, so use with a total load current of 80 mA or less.

⑨ AC inlet
- Connect the included power cord here.

(3) Display

① TRACK No. display
- This indicates the track number at the current position. The track number flashes during the track search operation and when switching to the standby mode.

② INDEX No. display
- This indicates the index number at the current position. If the next index is scheduled, that index number flashes on the INDEX No. display. The index number also flashes during the index search operation.

③ PLAY MODE indicators
- "A-B" lights when in the A-B play mode.
- "SINGLE" lights when in the single track play mode.

④ TIME MODE indicators
- "ELAPSED" lights when the elapsed time is displayed.
- "REMAIN" lights when the remaining time is displayed.

⑤ NEXT No. display
- This displays the number of the next track to be played.

⑥ Playing time display
- This indicates the time of the current position, in minutes (m), seconds (s) and frames (f).

⑦ Character display
- This displays operation messages in the preset and program modes.

⑧ Playing position display
- This indicates the current position within the track's total playing time.

⑨ PITCH display
- This indicates the set play speed in %.

⑩ EOM indicator
- This lights when the EOM is preset, and starts flashing when the EOM set time is reached.

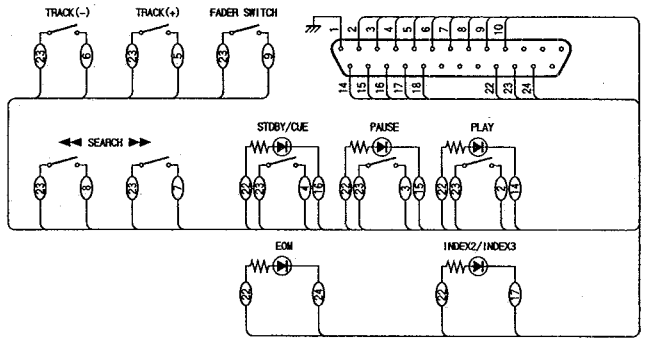
⑪ REPEAT indicator
- This lights when the repeat mode is set.

⑫ PLAY LOCK indicator
- This lights when the PLAY LOCK is preset. (See Page 25,17))

⑬ PROGRAM indicator
- This lights when the PROG. PLAY ON/OFF mode is set.

2 REMOTE CONTROL CONNECTIONS

To control the DN–C680 remotely, refer to the example of remote control connections given below.



The rating of REMOTE connector pin 22 (TALLY POWER SUPPLY) is +5 V, 80 mA maximum.
Avoid currents in excess of the rating.

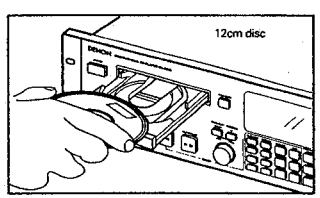
3 OPENING AND CLOSING THE DISC HOLDER AND LOADING DISCS

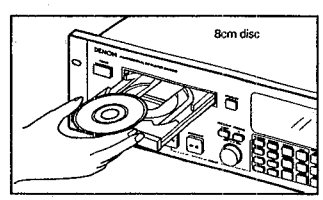
(1) Opening and closing the disc holder

- This operation only works when the power is on.
- Press the OPEN/CLOSE button to open or close the disc holder.
- The disc holders cannot be opened during playback to prevent playback from being interrupted if the OPEN/CLOSE button is pressed accidentally. Stop playback, then press the OPEN/CLOSE button.

(2) Loading discs

- Hold the disc by the edges and place it in the disc tray. Do not touch the signal surface (the glossy side).
- When using 12cm discs, place the disc in the outer tray guides, and when using 8cm discs, place them securely in the inner guides.

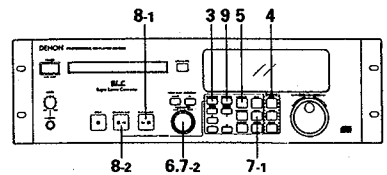




CAUTION:

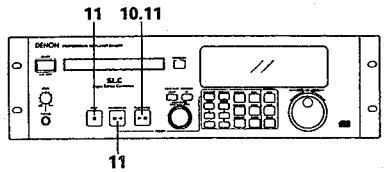
- Do not place any foreign objects in the disc tray, and do not place more than one disc in the disc tray at a time. Doing so may result in malfunction.
- Do not push the disc tray in manually when the power is off, as this may result in malfunction and damage the player.

4 BASIC OPERATION



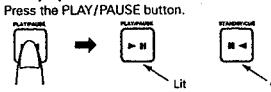
(1) Before Starting Playback

1	**Load a disc.**
2	**Make the presettings according to the usage purpose. (See Page 22.)** **NOTE:** Steps 1 and 2 can be performed in the opposite order.
3	**Select the play mode.** Press the PLAY MODE button. Single track play mode A-B SINGLE (Lit) ⇩ Continuous play mode A-B SINGLE (Lit) ⇩ A-B play mode A-B SINGLE **NOTE:** The A–B play mode cannot be set unless the A and B points are set.
4	**Select the play finish mode.** When the finish mode is selected, the selected button lights. STOP: The stop mode (the servo functions turn off) is set when playback finishes. NEXT: The standby mode is set at the beginning of the next track when playback is finished. • After the final track is played, the standby mode is set at the beginning of the first track. RECUE: When playback is finished, the standby mode is set at the position at which playback was started.
5	**To standby at the point where the sound begins** Press the AUTO CUE button. AUTO CUE (Lit) When a track is selected, the position at which the sound begins is found when a track is cued and the standby mode is set at that point.
6	**Select the track to be played.** Turn the select knob (I◀◀ — ▶▶I). 01 ⇨ 03 Flashing during search — Lit when in standby The selected track is cued and the standby mode is set.
7-1	**To select an index number** Press the INDEX button. INDEX (Lit) The index select mode is set. **NOTE:** The track select mode is set when the button is off. There is no need to select an index number when you want to play the track from the beginning.
7-2	Turn the select knob (I◀◀ — ▶▶I). INDEX 01 ⇨ 02 Flashing during search — Lit when in standby The selected index number is cued and the standby mode is set. If a non-existent index number is selected, "No Sel.Index" appears and the index number flashes.
8-1	**To check the play start position** Press the PLAY/PAUSE button. PLAY/PAUSE (Lit) — STANDBY/CUE (Off) Monitor the playback signals to check the play start position.
8-2	Press the STANDBY/CUE button. STANDBY/CUE (Flashing — Lit) The pickup returns to the play start position and the standby mode is set. **(Back Cue)**
9	**To check the play end position** Press the END MON button. END MON (Lit) The end is monitored, then the pickup returns to the play start position and the standby mode is set. **(End Monitor)** **NOTE:** If the STANDBY/CUE button is pressed during the end monitor operation, the end monitor operation is canceled, the pickup returns to the play start position and the standby mode is set.

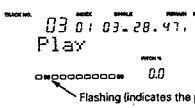


(2) Starting Playback

Start playback.
Press the PLAY/PAUSE button.



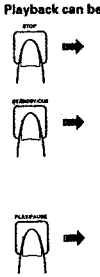
10 Playback begins and the playback signals are output.



(3) Stopping Playback

When playback is stopped, the play finish mode set in step 4 above is set.
Playback can be stopped in the following ways:

11



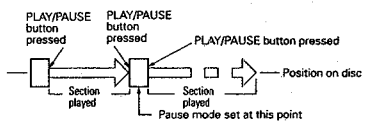
Sleep mode
The sleep mode is set if no operation is performed for 30 minutes in the standby, pause or manual search mode.
When in the sleep mode, press the PLAY/PAUSE button to search for the position before the sleep mode was set and start playback. Press the STANDBY/CUE button to search for the position before the sleep mode was set and standby at that point.

(4) PLAY /PAUSE and STANDBY / CUE Operations

- The operation switches between playback and pause each time the PLAY/PAUSE button is pressed.
- When the STANDBY/CUE button is pressed during playback, the pickup returns to the position at which playback was started.

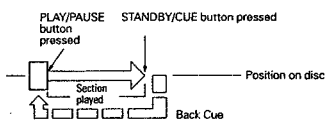
The diagrams below show playback patterns when the PLAY/PAUSE and STANDBY/CUE buttons are pressed.

PLAY and PAUSE



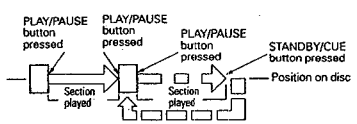
When the PLAY/PAUSE button is pressed, playback starts and proceeds as shown by the arrow on the diagram above.
If the PLAY/PAUSE button is pressed again during playback, the pause mode is set at that point. Press the PLAY/PAUSE button again to resume playback.

PLAY and CUE



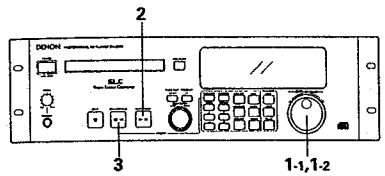
When the STANDBY/CUE button is pressed after starting playback by pressing the PLAY/PAUSE button, the pickup returns to the position at which playback was started and prepares for the next playback.
Press the PLAY/PAUSE and STANDBY/CUE buttons alternately to start playback repeatedly from the same position.
This function is called "Back Cue".

PLAY, PAUSE and CUE



If the pause mode is set and playback is then resumed, the position to which the pickup returns with the Back Cue function changes.

5 HANDY OPERATIONS



(1) Starting Playback from the Middle of a Track (Manual Search)

- When a track is selected and the PLAY/PAUSE button is pressed, playback starts from the beginning of that track. To start from a different position in the track, use the procedure described below to find the desired position.

Find the play start position.
Turn the SEARCH dial.

1-1

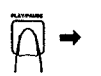
When the SEARCH dial (inner side) is turned, the frame move mode is set. The playback position moves one frame for each click.

When the dial is turned clockwise, the playback position moves as follows:
03.46.52, ⇨ 53, ⇨ 54,
Listen to the sound and find the desired play start position.

1-2 Turn the SCAN dial to change the playback position quickly.

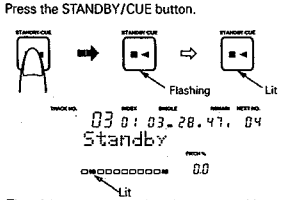
The fast forward/reverse mode is set when the SCAN dial (outer side) is turned. The speed changes according to the angle at which the dial is turned.

2 **To check the play start position:**
Press the PLAY/PAUSE button.

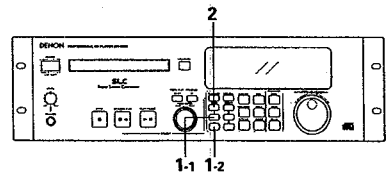


Playback starts.
Monitor the play signal to check the play start position.

3 **Cue the play start position.**
Press the STANDBY/CUE button.



The pickup returns to the play start position and the standby mode is set.

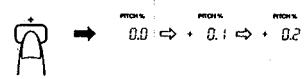


(2) Playing at a Different Speed (Pitch)

- Use this function to play discs at different speeds.
- The speed can be changed within the range of −9.9 to +9.9%.

Set the play speed.
(1) To increase the speed:
Press the "+" button.

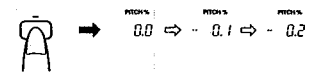
1-1



The speed increases by 0.1% each time the button is pressed. If the button is held in, the speed changes continuously.

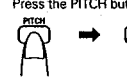
(2) To decrease the speed:
Press the "−" button.

1-2



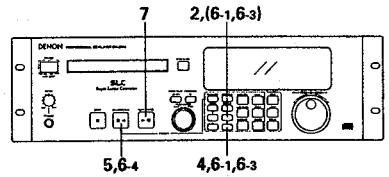
The speed decreases by 0.1% each time the button is pressed. If the button is held in, the speed changes continuously.

2 **Set the pitch play mode.**
Press the PITCH button.



The button lights and the set play speed is set.
NOTE: When the PITCH button is lit, the play speed can be changed by pressing the "+" and "−" buttons.

NOTE:
When the play speed (PITCH) is set, the display shows the set pitch, but the disc is played at the standard speed until the PITCH button is pressed (and the button is lit).
When the play speed is changed, the sampling frequency of the digital output signal also changes, so it may not be possible to receive digital signals.



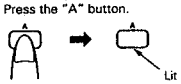
(3) Playing a Specific Section of the Disc (A–B Play)

- Use this function to set the play start and end positions and only play the desired section of the disc.

NOTE: The A–B play mode cannot be set unless the A point, B point or both the A and B points are set.

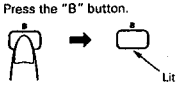
1 **Find the play start position (A point).**
- Turn the SEARCH or SCAN dial to find the desired play start position.

2 **Set the A point.**
Press the "A" button.



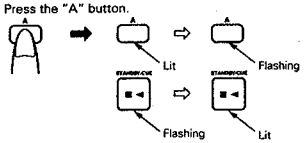
3 **Find the play end position (B point).**
- Turn the SEARCH or SCAN dial to find the desired play end position.

4 **Set the B point.**
Press the "B" button.



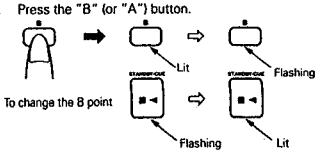
- When setting the B point during playback, the B point can only be set if the A point is set before it.

5 **Cue the A point.**
Press the "A" button.



" Standby " appears on the character display.
If the STANDBY/CUE button is pressed first, press the "A" button again.

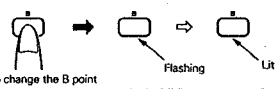
6-1 **To change the A–B section:**
Press the "B" (or "A") button.



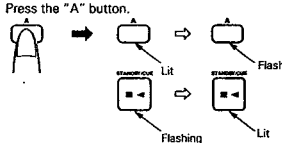
" Standby " appears on the character display.

6-2 **Find the play end point (B point) (or play start point (A point)).**
- Turn the SEARCH dial to find the desired play end point.

6-3 **Set the new B point (or A point).**
Press the "B" (or "A") button.

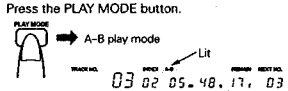


6-4 **Cue the A point.**
Press the "A" button.

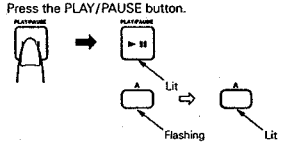


" Standby " appears on the character display.

7 **Set the A–B play mode.**
Press the PLAY MODE button.



8 **Start playback.**
Press the PLAY/PAUSE button.

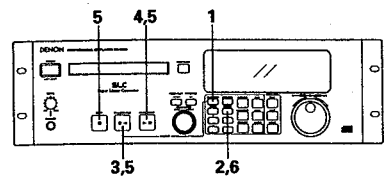


Playback starts from the A point and stops when the B point is reached.
"A–B" flashes on the display during the A–B play mode.

9 **Clearing the A and B points**
- The set A and B points are cleared when the disc is ejected.
- If the " – " button is pressed while the A or B button is flashing, the button turns off, the set A or B point is cleared and the play mode is set to the single track play mode.

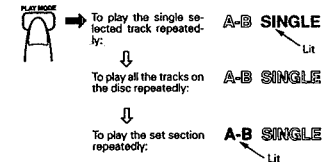
NOTE:
The following happens if either the A or B point is not set:
- If only the A point is set, the B point is automatically set at the end of the track for which the A point is set.
- If only the B point is set, the A point is automatically set at the beginning of the track for which the B point is set.

If the playing time of the A–B section is shorter than the total of the set fade in and fade out times, the fade in and fade out settings are ignored.
When the B point is before the A point, the section from the B point to the A point is played.



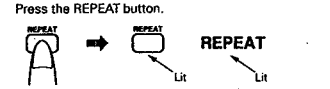
(4) Playing Repeatedly (Repeat)

1 **Select the play mode.**
Press the PLAY MODE button.



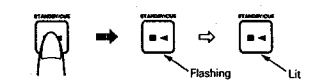
NOTE: The A–B repeat mode cannot be set unless the A point, B point or both the A and B points are set.

2 **Select the repeat mode.**
Press the REPEAT button.



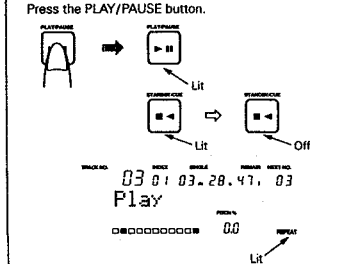
The button lights, and the repeat mode is set.

3 **Standby at the play start position.**
Press the STANDBY/CUE button.



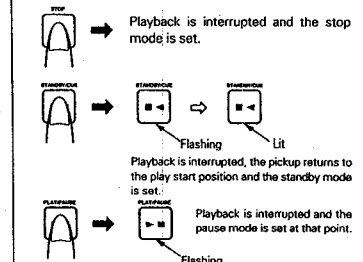
The pickup returns to the play start position and the standby mode is set.

4 **Start playback.**
Press the PLAY/PAUSE button.

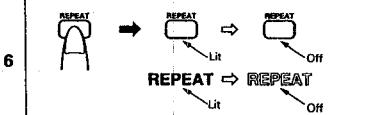


Repeat playback starts.

5 **Stopping playback**
Playback can be stopped in the following ways:



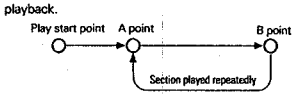
6 **Canceling the repeat mode during playback**
Press the REPEAT button.



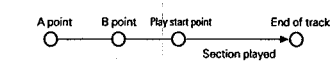
The normal play mode resumes and playback continues to the play end point.

A–B repeat play

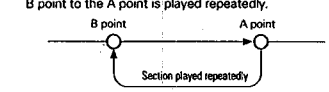
If playback is started before the A point, playback continues to the B point, then returns to the A point for repeat playback.



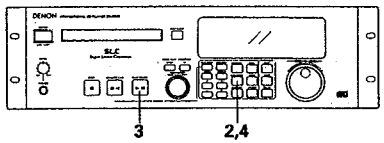
If playback is started after the B point, playback continues to the end of that track and nothing is repeated.



NOTE:
- When the B point is before the A point, the section from the B point to the A point is played repeatedly.



- The repeat mode cannot be set when the AUTO EDIT button is lit.

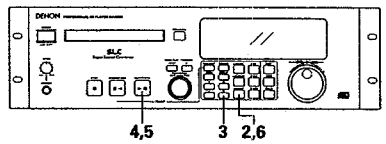


(5) Inserting Blank Spaces Between Tracks (Auto Space)

- Use this function to insert blank spaces of 4 seconds between tracks during continuous playback.

1	**Load a disc.**
2	**Set the auto space mode.** Press the AUTO SPACE button. AUTO SPACE → AUTO SPACE (Lit)
3	**Start playback.** Press the PLAY/PAUSE button. PLAY/PAUSE → PLAY/PAUSE (Lit) The playback signals are output as follows: Playback of track 1 / Playback of track 2 / Playback of track 3 Blank space (4 seconds) / Blank space (4 seconds) AUTO SPACE (Flashing) / AUTO SPACE (Flashing)
4	**Cancel the auto space mode.** Press the AUTO SPACE button. AUTO SPACE → AUTO SPACE (Lit) ⇨ AUTO SPACE (Off)

NOTE:
When non-consecutive tracks are played (when the search operation is performed), a blank space of over 4 seconds may be inserted automatically.



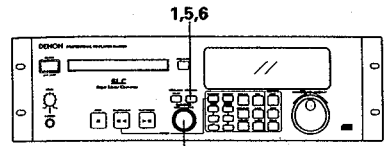
(6) Dividing the Playing Time in Two (Auto Edit)

- Use this function to divide the total playing time of the disc into side A (first half) and side B (second half).

1	**Load a disc.**
2	**Set the auto edit mode.** Press the AUTO EDIT button. AUTO EDIT → A (Lit) 01 18m37s00f First track and playing time for side A
3	**To check the playing time for side B:** Press the "B" button. B → A (Off) / B (Lit) 05 17m46s00f First track and playing time for side B Press the "A" button to display the playing time for side A. Press the "B" button to display the playing time for side B.
4	**Start playing side A.** Press the PLAY/PAUSE button. PLAY/PAUSE → PLAY/PAUSE (Lit) When playback of side A is finished, the pause mode is set at the starting position for side B. PLAY/PAUSE (Lit) ⇨ PLAY/PAUSE (Flashing) 05 17m46s00f
5	**Start playing side B.** Press the PLAY/PAUSE button. • When playback of side B is finished, the pickup returns to the starting point for side A and the standby mode is set. (at Finish mode Next or Recue) • When playback of side B is finished, the servo functions turn off.
6	**To cancel the auto edit mode:** Press the AUTO EDIT button to cancel the auto edit mode and return to normal playback. (at Finish mode Stop)

6 PROGRAMMED PLAYBACK

- The tracks can be programmed to play in a certain order.
- Up to 25 tracks can be programmed.
- Programmed playback is performed according to the play mode (single or continuous) and finish mode (stop, next or recue) settings.



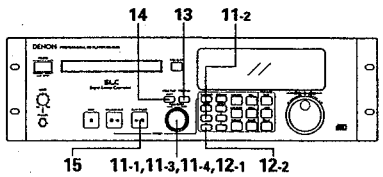
(1) Inputting the Program

1	**Set the program input mode.** Press the PROGRAM IN button. PROGRAM IN → PROGRAM IN (Flashing) -- --.--.--, 01 Select Tr? The step number flashes.
2	**Select the track to be programmed.** Turn the select knob (I◀◀ — ▶▶I). When track 3 is selected: 03 --.--.--, 01 Selected track number / Flashing
3	**Enter the selected track in the program.** Press the select knob. -- 03.42.57, 02 Select Tr? Lit The number of the next step in the program is displayed.
4	**Enter the next track in the program.** Press the select knob. -- 03.42.57, 02 Select Tr? Flashing The time display shows the total playing time for the program. Repeat steps **2**, **3** and **4** to program the tracks in the desired order.
5	**Exit the program input mode.** Press the PROGRAM IN button. PROGRAM IN → PROGRAM IN (Flashing) ⇨ PROGRAM IN (Lit) The set returns to the normal mode.

(2) Changing the Program

6	**Set the program edit mode.** Press the PROGRAM IN button. PROGRAM IN → PROGRAM IN (Flashing) 03 30.28.47, 01 Select Tr? The step number lights.
7	**Select the step number to be edited.** Turn the select knob (I◀◀ — ▶▶I). To edit the third step in the program: 05 30.28.47, 03 Select Tr? Lit
8	**Set the program change mode.** Press the select knob. 05 30.28.47, 03 Select Tr? The step number to be edited flashes.
9-1	**To change the track:** **Select the track to be changed.** Turn the select knob (I◀◀ — ▶▶I). When track 7 is selected: 07 30.28.47, 03 Select Tr? Selected track number / Flashing
9-2	**Enter the selected track.** Press the select knob. 07 31.57.26, 04 Select Tr? The number of the next step in the program lights. To continue editing the program, repeat steps **7**, **8**, **9-1** and **9-2**.

To exit the program editing mode, press the **PROGRAM IN** button. The set returns to the normal mode.

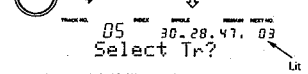


11-1 **Inserting a track in the program**

Select the position at which to insert a track.

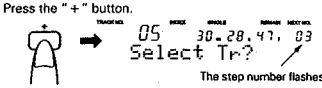
Turn the select knob (|◀◀ — ▶▶|).

To insert a track at the third step in the program:



11-2 **Set the program insert mode.**

Press the "+" button.

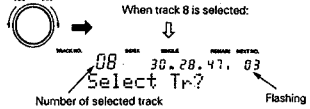


The step number flashes.

11-3 **Select the track to be inserted.**

Turn the select knob (|◀◀ — ▶▶|).

When track 8 is selected:

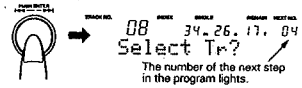


Number of selected track

Flashing

11-4 **Enter the selected track.**

Press the select button.



The number of the next step in the program lights.

To insert more tracks in the program, repeat steps **11-1**, **11-2**, **11-3** and **11-4**.

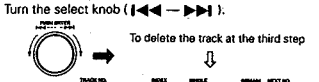
(To exit the program insert mode, press the **PROGRAM IN** button.)

Deleting tracks from the program

12-1 **Select the step to be deleted.**

Turn the select knob (|◀◀ — ▶▶|).

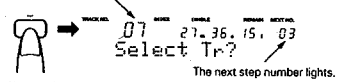
To delete the track at the third step



12-2 **Delete that track from the program.**

Press the "–" button.

Number of track at the next step in the program

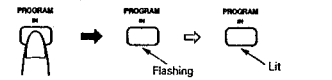


The next step number lights.

To continue deleting tracks from the program, repeat steps **12-1** and **12-2**.

13 **Exit the program editing mode.**

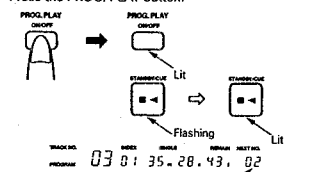
Press the PROGRAM IN button.



(3) Playing Programs

14 **Set the program play mode.**

Press the PROG. PLAY button.

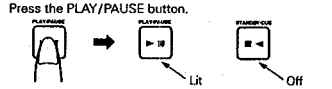


Number of next step

The first track in the program is cued and the standby mode is set.

15 **Start programmed playback.**

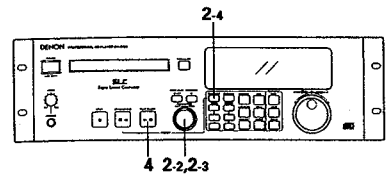
Press the PLAY/PAUSE button.



Programmed playback starts.

- When the disc is ejected, the set program is cleared.
- If a track that is not in the program is selected with a serial command during programmed playback, that command is ignored.

NOTE:
Programs cannot be input when no disc is loaded.



(4) Presetting Programs

- Programs can be stored in the preset memory. When a disc for which a program is preset is loaded, the programmed playback mode is set automatically.
- Programs can be stored for up to three discs.

1 **Input the program.**

Follow the instructions under "(1) Inputting the Program" to input the program. (See Page 19.)

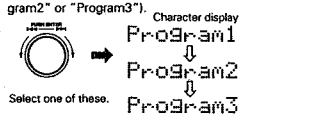
2-1 **Set the preset mode.**

Follow the instructions under "(2) Presetting Procedure" to set the preset mode. (See Page 23.)

2-2 **Select the preset item.**

Turn the select knob to select "Program1" (or "Program2" or "Program3").

Character display



Select one of these.

2-3 **Change the preset setting.**

Press the select knob.

The character display changes as follows:

Before change		After change
Program1 OFF	⇨	Program1 ON
Program2 OFF	⇨	Program2 ON
Program3 OFF	⇨	Program3 ON

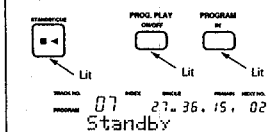
2-4 **Cancel the preset mode.**

Press the PLAY MODE button.

The preset setting mode is canceled and the set returns to the normal mode.

3 **To play a preset disc:**

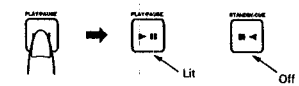
Load a disc for which a program is preset.



The pickup searches for the first programmed track and the standby mode is set.

4 **Start programmed playback.**

Press the PLAY/PAUSE button.



Programmed playback starts.

7 PRESET FUNCTIONS AND OPERATIONS

(1) List of Preset Functions

- Functions can be preset using the buttons on the front panel. These presettings are stored in a permanent memory, so they are not cleared even when the power is turned off.
- The functions shown on the table below can be preset. Set the functions according to the usage purpose to efficiently achieve even higher quality playback.
- One of the preset functions can be used to display information on this set (microprocessor version).

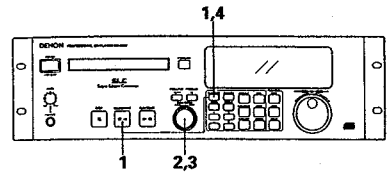
Preset function type	Description	Character display (as set upon shipment from factory)	No.
Preset type	Selection of preset type	Preset Type 1	1
Auto cue	Setting of audio startup level for auto cue function	CueDet.–60db	2
Auto stop	Setting of whether or not to automatically stop the servo functions	Sleep ON	3
FS converter	Setting of whether or not to use the FS converter and sampling frequency setting (when optional FS converter mounted)	FS OFF	4
Program 1	Setting of whether or not to play program 1	Program1 OFF	5
Program 2	Setting of whether or not to play program 2	Program2 OFF	6
Program 3	Setting of whether or not to play program 3	Program3 OFF	7
Digital output	Selection of output signal format	D.Out Pro	8
Digital output	Selection of whether or not to output subcodes	Subcode OFF	9
End monitor	Setting of whether or not to use the end monitor function and monitor time setting	End Mon. 10sec	10
E.O.M.	Setting of whether or not to display the EOM and display time setting	E.O.M. 10sec	11
Next track standby	Setting of whether or not to standby at the next track when the STANDBY/CUE button is pressed during playback	NextStb.OFF	12
Fade in time	Fade in time setting	FadeIn OFF	13
Fade out time	Fade out time setting	FadeOut OFF	14
Play speed	Standard playing speed setting	Normal Speed	15
Delay start	Delay start time setting	Delay OFF	16
Play lock	Selection of whether or not to inhibit the panel switches during playback	PlayLock OFF	17
Frame display	Selection of whether or not to display frames	FR Disp ON	18
CDR disc	Selection of whether or not to play CDR discs which do not include a TOC	CD–R NO TOC	19
CDR disc	Selection of whether or not to play skip tracks on CDR discs	CD–R Skip OFF	20
Serial remote	Baud rate setting	9600bps	21
Switch protect	Selection of whether or not to enable the panel switches	Switch ENA	22
Player ID	Selection of whether or not to set player IDs and selection of ID number	PlayerID OFF	23
Parallel remote	Selection of whether or not to accept parallel remote signals	Remote ENA	24
Parallel remote	Selection of whether or not to output standby tally	ST.Tally ON	25
Parallel remote	External control tally output signal setting	Index2 Tally	26
Parallel remote	Fader start mode selection	Fader Pause	27
Stereo/mono	Selection of stereo or monaural playback	Stereo	28
Pos Code	Selection of whether or read Pos codes	Pos OFF	29
Preset clear	Setting for clearing presets and setting them to the initial values	Init. Preset	30
Set information	Microprocessor version display	Ver. **** (* = number)	31

When presettings are made, the time display set with the TIME button, the play mode set with the PLAY MODE button and the finish mode set with the FINISH MODE button at that time are stored in the memory. These modes will be set when the power is next turned on.

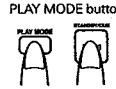
NOTE:
For CDR discs without TOCs, there are no pits (signals) at the disc's lead in and lead out sections, so errors may occur, particularly when searching for tracks. If an error should occur, open the disc holder, then close it and perform the operation again.

(2) Presetting Procedure

- Functions can be preset using the buttons on the front panel.
- The presettings can also be set using serial remote signals (RS232C/RS422A).
- Make the presettings with no disc loaded, in the stop or standby mode.



1 **Enter the preset mode.**
Press the STANDBY/CUE button while pressing the PLAY MODE button.



Character display
Preset Mode

2 **Select the preset item.**
Turn the select knob (⏮ — ⏭).

Turn the knob clockwise to move in the direction of the arrows, counterclockwise to move in the opposite direction.

Character display
Preset Type1
⇩
CueDet.-60dB
⇩
Sleep OFF
⇩
FS OFF
⇩
Ver.****

NOTE: The first preset item displayed is the last preset item displayed the last time the presettings were made.

3 **Change the preset values.**
Press the select knob.

The character display changes as shown below.

Before change		After change
Preset Type1	⇨	Preset Type2
CueDet.-60dB	⇨	CueDet.-54dB
Sleep OFF	⇨	Sleep ON
FS OFF	⇨	FS 32kHz

4 **Exit the preset mode.**
Press the PLAY MODE button.

The preset mode is canceled and the set returns to the previous mode.

5 To set the presettings back to the initial settings (the settings set upon shipment from the factory), turn the power on while holding in both the PLAY MODE and the END MON buttons. For the initial settings, refer to "(1) List of preset functions".

The character display changes as shown below.
Initial Set

NOTE:
If the message shown below appears, there is a problem with the preset memory. Contact a serviceperson.
Initial Error

(3) Detailed Description of Preset Functions

(* = initial setting)

1) "Preset Type (*)" (Three different sets (types) of presettings can be made and used for different purposes.)
   * Preset Type1 : Set to preset type 1.
   Preset Type2 : Set to preset type 2.
   Preset Type3 : Set to preset type 3.

2) "CueDet. (–**)dB"
   CueDet. (–**)dB : Set the audio detection level for cueing. (–72/–66/*–60/–54/–48/–42/–36)

3) "Sleep ON (OFF)"
   * Sleep ON : Automatically turn the servo functions off if no button is operated for 30 minutes in the pause, standby or manual search mode.
   Sleep OFF : Do not automatically turn the servo functions off.

4) "FS OFF (***kHz)" (This setting can only be made when an optional FS converter is mounted.)
   * FS OFF : Do not use the FS converter.
   FS (***kHz) : Select the digital output FS. (32kHz/44.1kHz/48kHz)

5) "Program1 OFF (ON)"
   Program1 OFF (ON) : Store the contents of program 1 when on. (Initial setting – OFF)

6) "Progam2 OFF (ON)"
   Program2 OFF (ON) : Store the contents of program 2 when on. (Initial setting – OFF)

7) "Program3 OFF (ON)"
   Program3 OFF (ON) : Store the contents of program 3 when on. (Initial setting – OFF)

8) "D.Out Pro (Cons)"
   * D.Out Pro : Output digital signals in AES/EBU format.
   D.Out Cons : Output digital signals in consumer format.

9) "Subcode ON (OFF)" (When "D.Out Cons" is set above, subcodes can be output with the digital output signals.)
   Subcode ON : Output subcodes with the digital output signals. (consumer SPDIF format)
   * Subcode OFF : Do not output subcodes with the digital output signals. (consumer IEC 958 Type II format)

   NOTE: 0 sec. start is not possible when the above is set to "Subcode ON".

10) "End Mon. (**)sec"
   End Mon. (**)sec : Set the end monitor time. (5/*10/15/20/25/30/35)
   End Mon. OFF : Do not use the end monitor function.

11) "E.O.M. (**)sec" (Output EOM tally signal to remote pint (24))
   E.O.M. (**)sec : Set the EOM time. (0/5/*10/15/20/25/30)
   E.O.M. OFF : Do not use the EOM function.

12) "Next Stb.Off (ON)"
   * Next Stb.OFF : Return to the play start position and standby when the STANDBY/CUE button is pressed during playback.
   Next Stb.ON : Standby at the beginning of the next track when the STANDBY/CUE button is pressed during playback.

13) "FeadIn OFF (***s)"
   FeadIn OFF (***s) : Set the fade in time. (*OFF/10m/50m/0.1/0.5/1/2)

14) "FeadOut OFF (***s)"
   FeadOut OFF (***s) : Set the fade out time. (*OFF/10m/50m/0.1/0.5/1/2)

15) "Normal (+/–***%) Speed"
   * Normal Speed : Play at normal speed.
   (+/–***%) Speed : Play at variable speed. ±(0.2/0.4/0.6/0.8/1.0/1.2/1.4/1.6/1.8/2.0/2.2/2.4/2.6/2.8/3.0)

16) "Delay OFF (***ms)"
   Delay OFF (***ms) : Set the time for delayed start after the play start operation. (*OFF/100m/200m/300m)

17) "PlayLock ON (OFF)"
   PlayLock ON : Inhibit all operations other than the PLAY/PAUSE, TIME and PLAY MODE buttons during playback.
   * PlayLock OFF : Enable all functions during playback.

18) "FR Disp ON (OFF)"
   * FR Disp ON : Display the frames on the time display during playback.
   FR Disp OFF : Do not display the frames on the time display during playback. (The frames are displayed in the manual search, standby, pause and end monitor modes.)

19) "CD–R TOC (NO TOC)"
   CD–R TOC : Play normal CDR discs containing TOCs.
   * CD–R NO TOC : Play CDR discs not containing TOCs.

20) "CD–R SkipON (OFF)"
   CD–R SkipON : Play skip tracks on CDR discs.
   * CD–R SkipOFF : Do not play skip tracks on CDR discs.

21) "9600 (19200) bps"
   * 9600 bps : Set the baud rate to 9600 bps.
   19200 bps : Set the baud rate to 19200 bps.

22) "Switch ENA (INH)"
   * Switch ENA : Enable operation of all the switches on the front panel.
   Switch INH : Inhibit operation of all panel switches other than those used for presetting operations.

23) "Player ID (**)"
   Player ID (**) : Set the player ID. (The ID can be set to OFF or to 0 to 15. The initial setting is "OFF".)

24) "Remote EMA (INH)"
   * Remote ENA : Enable input of control signals to the parallel remote connector.
   Remote INH : Inhibit input of control signals to the parallel remote connector.

25) "St. Tally ON (OFF)"
   * St. Tally ON : Output standby tally from parallel remote connector.
   St. Tally OFF : Do not output standby tally from parallel remote connector.

26) "(******) Tally"
   * INDEX2 Tally : Output index 2 tally signal to remote pin (17).
   INDEX3 Tally : Output index 3 tally signal to remote pin (17).

27) "Fader Pause (Play)"
   * Fader Pause : Start playback when remote fader pins (9–10) are short–circuited and pause when pins are open.
   Fader Play : Start playback when remote fader pins (9–10) are short–circuited and continue playback when pins are open.

28) "Stereo (Mono)"
   * Stereo : Output L and R stereo signals from the output connector.
   Mono : Output mixed L and R signals from the output connector.

29) "Pos ON (OFF)"
   Pos ON : Read Pos codes on CD and CDR discs.
   * Pos OFF : Do not read Pos codes on CD and CDR discs.

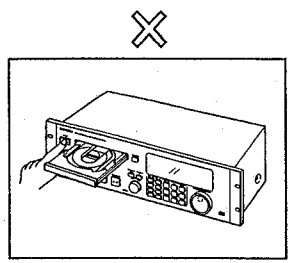
30) "Preset Clr? (Init. Preset)"
   Preset Clr? : Clear the presettings (set to the initial factory values).
   * Init. Preset : Do not clear the presettings.

31) "Ver. xxxx" : Display the microprocessor version. ("xxxx" is a number.)

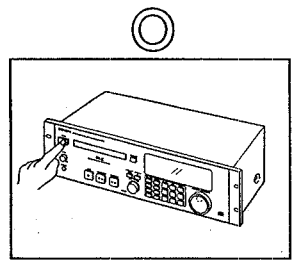
8 BEFORE SWITCHING OFF THE POWER

When you have finished using the CD player, before switching off the power be sure that the disc holder has been closed with the OPEN/CLOSE button.

CAUTION:
Do not forcibly close the disc holder when the power is off.
It may damage the unit when it is transported.



Do not switch off the power when the disc holder is open.
POWER OFF



Switch off the power after the disc holder has been closed with the OPEN/CLOSE button.
POWER OFF

9 COMPACT DISCS

(1) Precautions on handling compact discs

- Do not allow fingerprints, oil or dust to get on the surface of the disc.
  If the disc is dirty, wipe it off with a soft dry cloth.
- Do not use benzene, thinner, water, record spray, electrostatic-proof chemicals, or silicone-treated cloths to clean discs.
- Always handle discs carefully to prevent damaging the surface; in particular when removing a disc from its case or returning it.
- Do not bend the disc.
- Do not apply heat.
- Do not enlarge the hole in the center of the disc.
- Do not write on the label (printed side) with a hard-tipped implement such as a pencil or ball point pen.
- Condensation will form if a disc is brought into a warm area from a colder one, such as outdoors in winter. Do not attempt to dry the disc with a hair dryer, etc.

(2) Precaution on storage

- After playing a disc, always unload it from the player.
- Always store the disc in the jewel case to protect from dirt or damage.
- Do not place discs in the following areas:
  1) Areas exposed to direct sunlight for a considerable time.
  2) Areas subject to accumulation of dust or high humidity.
  3) Areas affected by heat from indoor heaters, etc.

10 TROUBLESHOOTING

When you think the player might be broken, please check the following items.

The disc holder does not open or close.
- Is the power switch set to ON?
- Is the player in the process of playing a disc? See page 12

The display still indicates "—" when a disc is loaded.
- Is the disc loaded properly?
- Is the disc dirty or scratched?

There is no sound or the sound is distorted.
- Are the output cables connected to the amplifier correctly?
- Is the adjustment of the amplifier's controls and switching correct?

The specified portion of the disc cannot be played back correctly.
- Is the disc dirty or scratched?

There is a button that doesn't function.
- Has a preset such as PLAY-LOCK been set? See Page 25

11 SPECIFICATIONS

GENERAL

Type:	CD Player
Disc type:	Standard Compact Discs (12 cm, 8 cm/5", 3")

AUDIO SECTION

Channels:	2 channels (Stereo), 1 channel (Mono)
Sampling Frequency:	44.1 kHz (32/48 kHz available using optional ACD-25FSC)
Digital Filter:	18 bit 8-times oversampling Digital filter
Frequency Response:	5 to 20,000 Hz (±1.0 dB)
Total Harmonic Distortion:	0.003% (1 kHz, 0 dB playback, A filter)
Signal to Noise Ratio:	105 dB (1 kHz, 0 dB playback, A filter)
Channel Separation:	100 dB (1 kHz, 0 dB playback, A filter)
Analog Output:	1 kHz, 0 dB playback
Transfer and Connector:	Balanced active, XLR connector Unbalanced, RCA jack
Output Level:	Balanced: +18 dBs, 600 Ω/ohms Unbalanced: 2 Vrms, 10 kΩ/kohms
Output Level Adjust Range:	+22 dBs to −20 dBs (Balanced)
Headphone Output:	20 mW (30 to 40 Ω/ohms)
Digital Output	
Transfer and Connector:	Balanced active, XLR connector (1. Common 2. Cold 3. Hot) Unbalanced, RCA jack
Signal Format:	AES/EBU or IEC 958 Type II or SPDIF
Output Level:	Balanced: 3 Vp-p, 110 Ω/ohms Unbalanced: 0.5 Vp-p, 75 Ω/ohms
Variable Pitch Control:	±9.9% max.
Audio Start-up Time:	0.01 second less
Frame Search Accuracy:	1 frame (1/75 second)

Pin No.	U.S.A. & Canada	Europe & Asia & Others
1	Common	Common
2	Cold	Hot
3	Hot	Cold

DIMENSIONS:	482(W)×132(H)×297(D)mm (19.0"×5-13/64"×11-11/16")
WEIGHT:	6.8 kg, 15 lbs
POWER CONSUMPTION:	19 W
POWER SUPPLY:	AC 120 V 10%, 60 Hz (U.S.A. and Canada) AC 230 V 10%, 50 Hz (Europe, Asia, Others)

ENVIRONMENTAL CONDITIONS

Operating Temperature:	+5°C to 35°C
Humidity:	25% to 85%, non condensing
Storage Temperature:	−20°C to 60°C

REMOTE

Serial Remote:	RS232C/RS422A (switchable), D-sub 9-pin
Parallel Remote:	D-sub 25-pin

* Specifications and design are subject to change without notice for purpose of improvement.

SOFTWARE SPECIFICATIONS

1. Command List (ASCII Code is used to the commands)

Code	Command	Parameter	Discription
A	Scan	1 byte, SCAN mode *(1)	Performs the manual search (scan) with the selected direction and speed.

(1)

b7	b6	b5	b4	b3	b2	b1	b0	
X	0	0	0	0	0	0	0	: Block Repeat
X	0	0	0	0	0	0	1	: Step 1 Speed (About 2 Times)
X	0	0	0	0	0	1	0	: Step 2 Speed (About 4 Times)
X	0	0	0	0	1	0	0	: Step 3 Speed (About 8 Times)
X	0	0	0	1	0	0	0	: Step 4 Speed (About 12 Times)
X	0	0	1	0	0	0	0	: Step 5 Speed (About 16 Times)
X	0	0	1	1	0	0	0	: Step 6 Speed (About 24 Times)
X	0	1	0	0	0	0	0	: Step 7 Speed (About 32 Times)
0	X	X	X	X	X	X	X	: Forward
1	X	X	X	X	X	X	X	: Reverse

B	Back Cue	Non	Returns to the playback start position.
D	End Moitor	Non	Starts the end monitor program.
E	Send Time	1 Byte, TIME mode *(1)	Requests the time code with the frame unit.

(1)

b7	b6	b5	b4	b3	b2	b1	b0	
0	0	0	0	0	0	0	0	: P-Time (Elapse)
0	0	0	0	0	0	0	1	: P-Time (Remain)
0	0	0	0	0	0	1	0	: A-Time (Elapse)
0	0	0	0	0	0	1	1	: A-Time (Remain)

F	Eject	Non	Performs the disc eject operation.
H	Send Reserved Track	Non	Requests the reserved track in the play mode, or programs step in the program mode.
I	Index Search	2 bytes (Track, Index)	Searches the selected index.
J	Jump	1 byte, JUMP mode *(1)	Jumps the track up or down with the selected type.

(1)

b7	b6	b5	b4	b3	b2	b1	b0	
X	X	X	X	0	0	0	1	: 1 Track Move
X	X	X	X		~			: ~
X	X	X	X	1	1	1	1	: 15 Tracks Move
X	1	X	X	X	X	X	X	: Track (fixed Code)
0	X	X	X	X	X	X	X	: Forward
1	X	X	X	X	X	X	X	: Reverse

K	Frame Cueing	1 byte, Frames *(1)	Moves the selected frames with block repeat form.

(1)

b7	b6	b5	b4	b3	b2	b1	b0	
X	0	0	0	0	0	0	0	: No Move
X	0	0	0	0	0	0	1	: 1 Frame Move
X				~				: ~
X	1	1	1	1	1	1	1	: 127 Frame Move
0	X	X	X	X	X	X	X	: Forward
1	X	X	X	X	X	X	X	: Reverse

Code	Command	Parameter	Discription
M	Mode Set	1 byte, Frames mode *(1)	Performs the playback or the record set mode.

(1)

b7	b6	b5	b4	b3	b2	b1	b0	
X	0	0	0	0	0	0	1	: Play Mode (Set : Single/Cancel : Continue)
X	0	0	0	0	0	1	0	: Play Repeat in the Playback Mode (Set : Repeat/Cancel : Repeat OFF)
X	0	0	0	0	0	1	1	: Time Code Display Mode (Set : Remain/Cancel : Elapse)
X	0	0	0	1	0	0	0	: Serial Multi-ID Mode (Set/Cancel)
X	0	0	0	1	0	0	1	: A-B Playback Mode (Set : A-B Playback Mode/Cancel : A-B Playback Mode → Single)
X	0	0	0	1	0	1	0	: Pitch (Set : Pitch ON/Cancel : Pitch OFF)
X	0	0	0	1	1	1	0	: Program (Set : Program ON/Cancel : Program OFF)
X	0	0	1	0	1	0	1	: Finish Next (Set : Next/Cancel : Next → Stop)
X	0	0	1	0	1	1	0	: Finish Recue (Set : Recue/Cancel : Recue → Stop)
X	0	0	1	1	0	0	0	: Auto Cue (Set/Cancel)
X	0	0	1	1	0	0	1	: Auto Edit (Set/Cancel)
X	0	0	1	1	0	1	0	: Fader (Set/Cancel)
X	0	0	1	1	0	1	1	: Auto Space (Set/Cancel)
X	0	0	1	1	1	0	0	: Index (Set/Cancel)
0	X	X	X	X	X	X	X	: Cancellation
1	X	X	X	X	X	X	X	: Set

Code	Command	Parameter	Discription
O	Option	12 bytes, Option No. *(1) ~ (12)	Requests the system, disc and track information.

(1) Information Request Item Code

b7	b6	b5	b4	b3	b2	b1	b0	
0	0	0	0	0	0	0	0	: (0) TOC Information
0	0	0	0	0	1	0	1	: (1) System Information : Old Format
0	0	0	0	0	1	1	0	: (2) System 1 Information : New Format
0	0	0	0	0	1	1	1	: (3) System 2 Information : New Format
0	0	0	0	1	0	0	1	: (4) CPU Version Number
0	0	0	1	0	0	0	0	: (5) Track playback Time and Track Mode
0	1	1	0	0	1	1	0	: (6) A Set Time
0	1	1	0	0	1	1	1	: (7) B Set Time
1	0	0	0	0	0	0	0	: (8) Category and Model Number : Old Format
1	0	0	0	0	0	0	1	: (9) Category and Model Number : New Format

(2) Old Format System Information 1 Code

b7	b6	b5	b4	b3	b2	b1	b0	
X	X	X	X	X	X	X	1	: FL Tube "EJECT LOCK" lights (0 : Unlight)
X	X	X	X	X	X	1	X	: LED "PITCH" lights (0 : Unlight)
X	X	X	X	X	1	X	X	: FL Tube "REMAIN" lights (0 : Unlight)
X	X	X	X	1	X	X	X	: FL Tube "DIGITAL" lights (0 : Unlight)
X	X	1	X	X	X	X	X	: FL Tube "CUE" lights (0 : Unlight)
X	1	X	X	X	X	X	X	: FL Tube "EDIT" lights (0 : Unlight)
1	X	X	X	X	X	X	X	: FL Tube "TOC" lights (0 : Unlight)

(3) Old Format System Information 2 Code

b7	b6	b5	b4	b3	b2	b1	b0	
X	X	X	X	X	X	1	X	: FL Tube "SINGLE" lights (0 : Continue)

Code	Command	Parameter	Discription

(4) New Format System Information 1 Code

b7	b6	b5	b4	b3	b2	b1	b0	
X	X	X	X	X	X	X	1	: FL Tube "REPEAT" lights (0 : Blink/Unlight)
X	X	X	X	X	X	1	X	: LED "PITCH" lights (0 : Blink/Unlight)
X	X	X	X	X	1	X	X	: FL Tube "EOM" lights (0 : Blink/Unlight)
X	X	X	X	1	X	X	X	: FL Tube "PROGRAM" lights (0 : Blink/Unlight)
X	X	X	1	X	X	X	X	: FL Tube "EJECT LOCK" lights (0 : Blink/Unlight)
X	X	1	X	X	X	X	X	: FL Tube "PLAY LOCK" lights (0 : Blink/Unlight)
X	1	X	X	X	X	X	X	: FL Tube "WORD SYNC" lights (0 : Blink/Unlight)
1	X	X	X	X	X	X	X	: FL Tube "VIDEO SYNC" lights (0 : Blink/Unlight)

(5) New Format System Information 2 Code

b7	b6	b5	b4	b3	b2	b1	b0	
X	X	X	X	X	X	X	1	: FL Tube "REPEAT" blinks (0 : Light/Unlight)
X	X	X	X	X	X	1	X	: LED "PITCH" blinks (0 : Light/Unlight)
X	X	X	X	X	1	X	X	: FL Tube "EOM" blinks (0 : Light/Unlight)
X	X	X	X	1	X	X	X	: FL Tube "PROGRAM" blinks (0 : Light/Unlight)
X	X	X	1	X	X	X	X	: FL Tube "EJECT LOCK" blinks (0 : Light/Unlight)
X	X	1	X	X	X	X	X	: FL Tube "PLAY LOCK" blinks (0 : Light/Unlight)
X	1	X	X	X	X	X	X	: FL Tube "WORD SYNC" blinks (0 : Light/Unlight)
1	X	X	X	X	X	X	X	: FL Tube "VIDEO SYNC" blinks (0 : Light/Unlight)

O

(6) New Format System Information 3 Code

b7	b6	b5	b4	b3	b2	b1	b0	
X	X	X	X	X	X	X	1	: FL Tube "SINGLE" lights (0 : Blink/Unlight)
X	X	X	X	X	X	1	X	: FL Tube "A-B" lights (0 : Blink/Unlight)
X	X	X	X	X	1	X	X	: FL Tube "ELAPSE" lights (0 : Blink/Unlight)
X	X	X	X	1	X	X	X	: FL Tube "REMAIN" lights (0 : Blink/Unlight)
X	X	X	1	X	X	X	X	: FL Tube "32 KHz" lights (0 : Blink/Unlight)
X	X	1	X	X	X	X	X	: FL Tube "44.1 KHz" lights (0 : Blink/Unlight)
X	1	X	X	X	X	X	X	: FL Tube "48 KHz" lights (0 : Blink/Unlight)

(7) New Format System Information 4 Code

b7	b6	b5	b4	b3	b2	b1	b0	
X	X	X	X	X	X	X	1	: FL Tube "SINGLE" blinks (0 : Light/Unlight)
X	X	X	X	X	X	1	X	: FL Tube "A-B" blinks (0 : Light/Unlight)
X	X	X	X	X	1	X	X	: FL Tube "ELAPSE" blinks (0 : Light/Unlight)
X	X	X	X	1	X	X	X	: FL Tube "REMAIN" blinks (0 : Light/Unlight)
X	X	X	1	X	X	X	X	: FL Tube "32 KHz" blinks (0 : Light/Unlight)
X	X	1	X	X	X	X	X	: FL Tube "44.1 KHz" blinks (0 : Light/Unlight)
X	1	X	X	X	X	X	X	: FL Tube "48 KHz" blinks (0 : Light/Unlight)

(8) New Format System Information 5 Code

b7	b6	b5	b4	b3	b2	b1	b0	
X	X	X	X	X	X	X	1	: FL Tube "TOC" lights (0 : Blink/Unlight)
X	X	X	X	X	X	1	X	: FL Tube "EDIT" lights (0 : Blink/Unlight)
X	X	X	X	X	1	X	X	: FL Tube "CUE" lights (0 : Blink/Unlight)
X	X	X	X	1	X	X	X	: FL Tube "DISE NAME" lights (0 : Blink/Unlight)
X	X	X	1	X	X	X	X	: FL Tube "TRACK NAME" lights (0 : Blink/Unlight)
X	X	1	X	X	X	X	X	: FL Tube "DATE" lights (0 : Blink/Unlight)
X	1	X	X	X	X	X	X	: FL Tube "DIGITAL IN" lights (0 : Blink/Unlight)

Code	Command	Parameter	Discription

O

(9) New Format System Information 6 Code

b7	b6	b5	b4	b3	b2	b1	b0	
X	X	X	X	X	X	X	1	: FL Tube "TOC" blinks (0 : Light/Unlight)
X	X	X	X	X	X	1	X	: FL Tube "EDIT" blinks (0 : Light/Unlight)
X	X	X	X	X	1	X	X	: FL Tube "CUE" blinks (0 : Light/Unlight)
X	X	X	X	1	X	X	X	: FL Tube "DISC NAME" blinks (0 : Light/Unlight)
X	X	X	1	X	X	X	X	: FL Tube "TRACK NAME" blinks (0 : Light/Unlight)
X	X	1	X	X	X	X	X	: FL Tube "DATE" blinks (0 : Light/Unlight)
X	1	X	X	X	X	X	X	: FL Tube "DIGITAL IN" blinks (0 : Light/Unlight)

(10) New Format System Information 7 Code

b7	b6	b5	b4	b3	b2	b1	b0	
X	X	X	X	X	X	X	1	: LED "Finish Stop" lights (0 : Blink/Unlight)
X	X	X	X	X	X	1	X	: LED "Finish Next" lights (0 : Blink/Unlight)
X	X	X	X	X	1	X	X	: LED "Finish Recue" lights (0 : Blink/Unlight)
X	X	X	X	1	X	X	X	: LED "Auto Cue" lights (0 : Blink/Unlight)
X	X	X	1	X	X	X	X	: LED "Auto Edit" lights (0 : Blink/Unlight)
X	X	1	X	X	X	X	X	: LED "Fader" lights (0 : Blink/Unlight)
X	1	X	X	X	X	X	X	: LED "Auto Space" lights (0 : Blink/Unlight)
1	X	X	X	X	X	X	X	: LED "Index" lights (0 : Blink/Unlight)

(11) New Format System New Information 8 Code

b7	b6	b5	b4	b3	b2	b1	b0	
X	X	X	X	X	X	X	1	: LED "Finish Stop" blinks (0 : Light/Unlight)
X	X	X	X	X	X	1	X	: LED "Finish Next" blinks (0 : Light/Unlight)
X	X	X	X	X	1	X	X	: LED "Finish Recue" blinks (0 : Light/Unlight)
X	X	X	X	1	X	X	X	: LED "Auto Cue" blinks (0 : Light/Unlight)
X	X	X	1	X	X	X	X	: LED "Auto Recue" blinks (0 : Light/Unlight)
X	X	1	X	X	X	X	X	: LED "Fader" blinks (0 : Light/Unlight)
X	1	X	X	X	X	X	X	: LED "Auto Space" blinks (0 : Light/Unlight)
1	X	X	X	X	X	X	X	: LED "Index" blinks (0 : Light/Unlight)

(12) A/B Set Code

b7	b6	b5	b4	b3	b2	b1	b0	
0	0	0	0	0	0	0	0	: No A/B Set Time
0	0	0	0	0	0	0	1	: A/B Set Time

P	Play	Non	Starts the playback.
Q	Track Search	1 byte	Searches selected Track.
R	Reset	Non	Initializes the system.
S	Stop	Non	Stops the playback (Servo : OFF).
T	Frame Time Search	5 bytes	Performs the time search with frame unit.
V	Pitch	1 byte, Pitch *(1)	Performs the set pitch function.

(1)

b7	b6	b5	b4	b3	b2	b1	b0	
0	0	0	0	0	0	0	0	: Pitch ±0
X	0	0	0	0	0	0	1	: Pitch 0.1
X	0	0	0	0	0	1	0	: Pitch 0.2
X				~				: ~
X	1	1	0	0	0	1	1	: Pitch 9.9
0	X	X	X	X	X	X	X	: + Pitch
1	X	X	X	X	X	X	X	: – Pitch

Code	Command	Parameter	Discription
W	Pause	Non	Pauses the playback.
X	Send Old Status	Non	Requests the system status (1 byte Answer).
Y	Standby	Non	Performs the standby operation in stop and manual search (scan) mode.
Z	Send Set Track	2 bytes, Track No *(1)	Requests the track number (program/hot track).
	(1) b7 b6 b5 b4 b3 b2 b1 b0 0 0 0 0 0 0 0 1 : Program Set		
g	POS code	Non	Requests POS code.
h	ISRC code	1 byte, Track Number (Binary)	Requests ISRC code.
i	Contents of Preset	1 byte, *(1)	Requests the preset information and contents.
	(1) Request Data Code b7 b6 b5 b4 b3 b2 b1 b0 0 0 0 0 0 0 0 0 : (1) Requests area No. of the used preset 0 0 0 0 0 0 0 1 : (2) Requests the data of the preset area No. 1. 0 0 0 0 0 0 1 0 : (3) Requests the data of the preset area No. 2. 0 0 0 0 0 0 1 1 : (4) Requests the data of the preset area No. 3.		
n	Preset Memory	7 bytes *(1) ~ (7)	Performs the set preset.
	(1) b7 b6 b5 b4 b3 b2 b1 b0 0 0 0 0 0 0 0 0 : (1) Changes the using area 0 0 0 0 0 0 0 1 : (2) Changes the set of the preset area No. 1. 0 0 0 0 0 0 1 0 : (3) Changes the set of the preset area No. 2. 0 0 0 0 0 0 1 1 : (4) Changes the set of the preset area No. 3. 0 0 0 0 0 1 0 0 : (5) Requests the write function to the set preset EEPROM. 0 0 0 0 0 1 0 1 : (6) Requests the write function to the set program EEPROM.		
q	Program	25 bytes	Performs the set program.
u	Repeat	1 byte *(1)	Performs the repeat program.
	(1) b7 b6 b5 b4 b3 b2 b1 b0 0 0 0 0 0 0 0 0 : Repeat OFF 0 0 0 0 0 0 0 1 : Repeat ON		
v	Send Pitch	Non	Requests the set pitch state.
x	Send Status	Non	Requests the system status with 2 bytes answer.
z	Canceling Operation	1 byte *(1)	Cancels the edit, program or preset mode.
	(1) b7 b6 b5 b4 b3 b2 b1 b0 0 0 0 0 0 0 1 0 : Program mode 0 0 0 0 0 1 0 0 : Preset mode		
:	Eeprom Work Status	Non	Requests the EEPROM access status.
@	Setting A/B Point	1 byte *(1)	Performs the A/B set time.
	(1) b7 b6 b5 b4 b3 b2 b1 b0 X 0 0 0 0 0 0 1 : A Set Time X 0 0 0 0 0 1 0 : B Set Time 0 X X X X X X X : Cancel 1 X X X X X X X : Set		

To control the player while attaching the ID (Player Number);

1) Set the Mode at first. [M]-[10001000]
   After the above, the player accepts commands with ID.
2) Attach and transfer the ID (1 byte) subsequent to the control command.

   Example: With ID [COMMAND]-[ID]-[DATA]
   Without ID [COMMAND]-[DATA]
3) When the ID is [11111111], all players accept the command.

2. Status and Auswer List

Code	Status	Parameter	Discription
A	Acknowledge	Non	Peceipt of Command (Answer for A, B, D, F, I, J, K, M, P, Q, S, T, V, W, Y, n, q, u, z, @ Commands).
B	Standby	Non	During standby (Answer for X and x Commands).
C	End Monitor	Non	During End Monitor (Answer for X and x Commands).
D	Tray-down	Non	During Tray-down (Answer for X and x Commands).
E	Error	1 byte *(1)	Transmits an Error Code. (Answer for X and x Commands)
F	Stop	Non	Answer for X and X commands.
H	Reserved Track	1 byte (1) Track Number (Binary)	Answer for H.
I	Invalid Command	Non	Invalid Command. (Answer for A, B, D, F, I, J, K, M, P, Q, S, T, V, W, Y, n, q, u, z and @ commands). (Answer for Parameter error.)
O	Option	6 bytes	Answer for the Option Command.
P	Play	Non	During Play (Answer for X and x commands)
Q	Manual Search and Scan	Non	Audio Signal is being output during Manual Search and Scan. (Answer ford X and x commands)
R	Ready	Non	No Disc is loaded. (Answer for X and x commands).
S	Search	Non	Pick-up is moving during the search function. (Answer for X and x commands)
T	Time	5 bytes	Sends the Time. (Answer for E command)
		(1) Track No. (Binary) (2) Index (Binary) (3) minute (BCD) (4) Second (BCD) (5) Frame (BCD)	
U	Pause	Non	During Pause. (Answer for X and x commands)
Z	Select Track	1 byte	Answer for Z command.
g	POS	1 or 14 bytes	Sends out POS Code. (Answer for g command)
h	ISRC	1 or 13 bytes *(1) or (1) ~ (13)	Sends out ISRC (Answer for h Command)
i	Preset	6 bytes	Answer for i Command.
n	No Select Track, Index	Non	Answer for X and x Commands.
o	Program input mode	Non	Answer for X and x Commands.
v	Pich	1 byte	Answer for v Command.
y	Preset mode	Non	Answer for X and x Commands.
z	Test	Non	Answer for X and x Commands.
:	EEP ROM status	1 byte	Answer for : Command.
NAK	NAK (0X15)	Non	Communication error.

3. Command Sequence

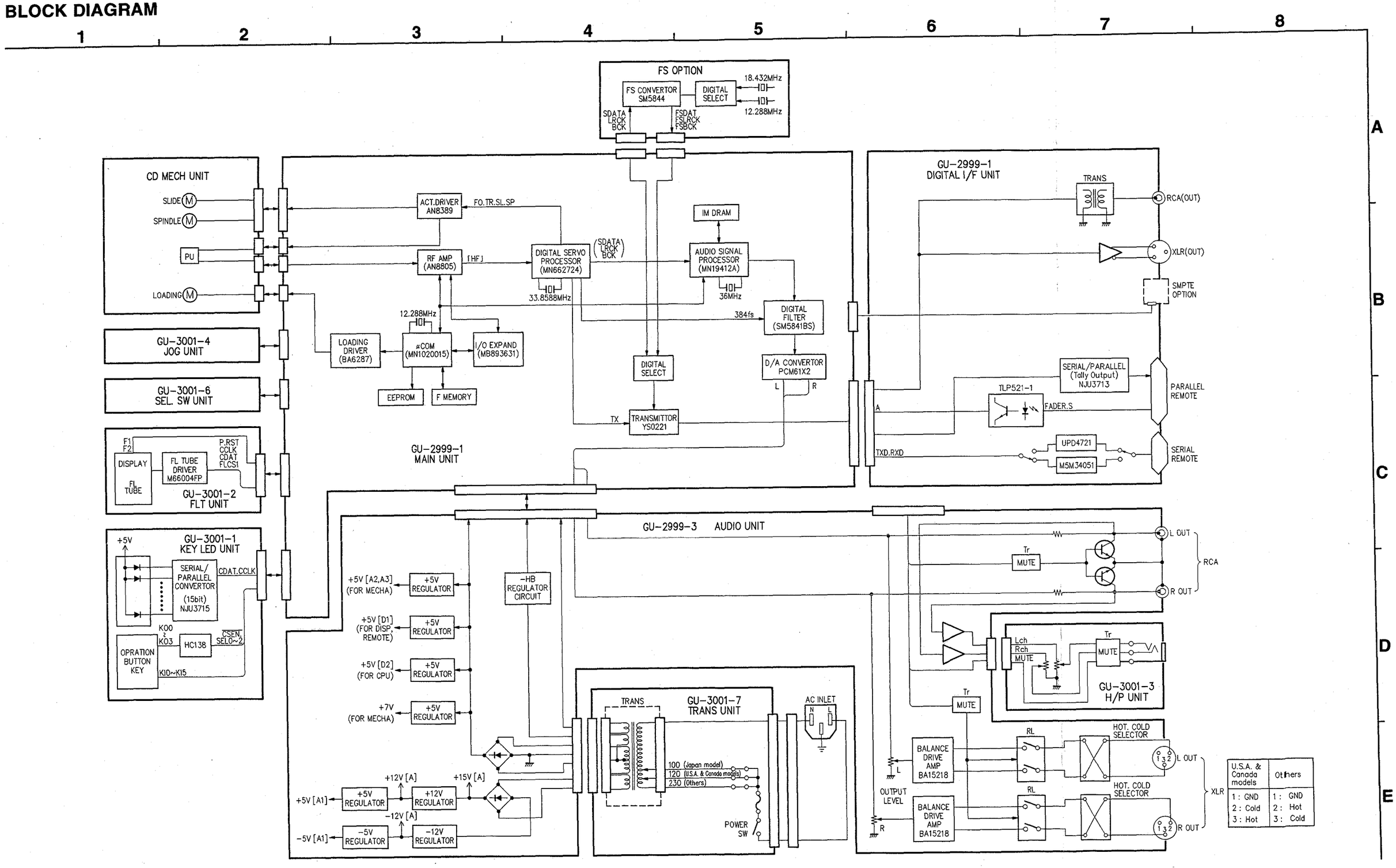
Apply the SEND STATUS COMMAND [X] or [x] from the Host Controller at all times for reading out the status of the DN-C680. Then take necessary steps.

4. Notice upon designing the Controller

1) After turning on the power or receipt of the Resetting Command [R], the unit will not accept new command for 0.5sec. in order for internal-unit initializing.
2) When a command is issued from the controller, send out next command after the acknowledge [A], Invalid [I] or the STATUS CODE is received.
3) Some of the commands may not be accepted except the unit is in the specific status mode.

These specifications and ratings are subject to change for improvement.

BLOCK DIAGRAM

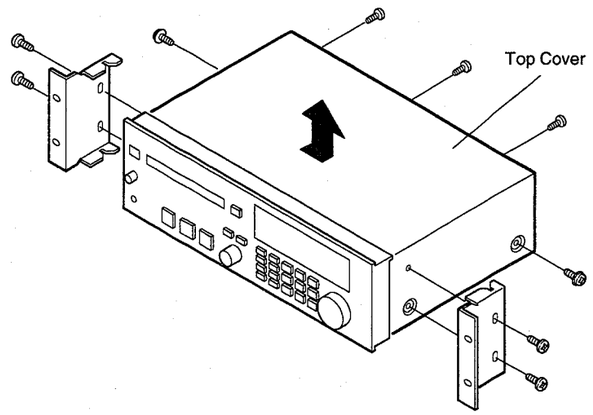


DISASSEMBLY

CAUTION:
The Optical Pick-up used for CD Player may invite defection by an external noise, such as electrostatic, etc., please pay the following attention.
1. Use a conductive mat on a working table to avoid electrostatic change.
2. A working personnel should use a wrist strap to ground human body.
3. Tools, etc., specially for a soldering iron must use with its tip grounded and without leakage of electricity.
Utmost care must be taken to your clothes for electrostatic changing in a low humidity environment.

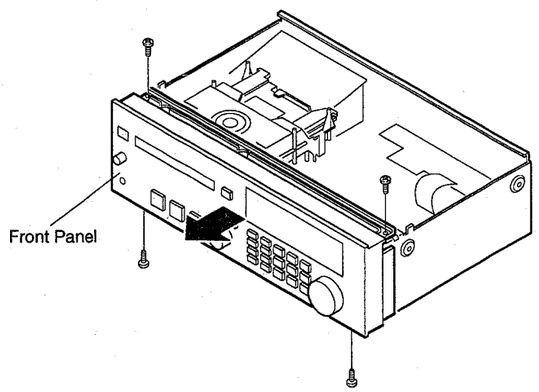
● TOP COVER

1. Remove 6 screws on the both sides, and 3 screws on the rear side.
2. Detach the Top Cover as shown in the arrow direction.



● FRONT PANEL

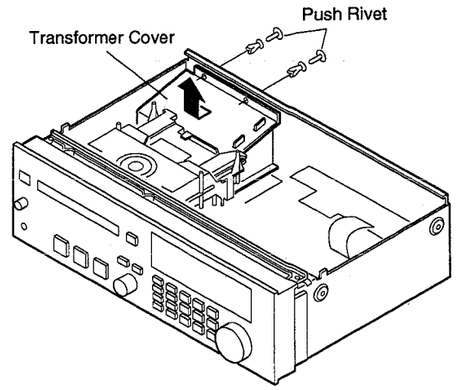
1. Remove 2 upper screws and 2 lower screws.
2. Detach the Front Panel in the arrow direction.



● TRANSFORMER COVER (SAFETY COVER)

1. Disconnect the power supply cord.
2. Remove 2 Push Rivets on the rear side.
3. Detach the Transformer Cover as shown in the arrow direction.

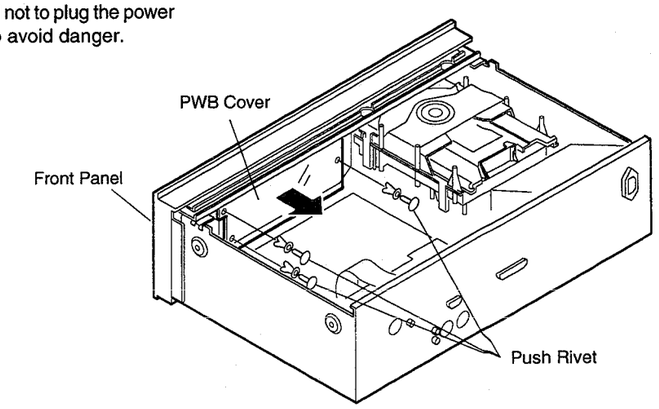
Note: When disassembling the set, be careful not to plug the power supply cord into the socket in order to avoid danger.



● PWB COVER (SAFETY COVER)

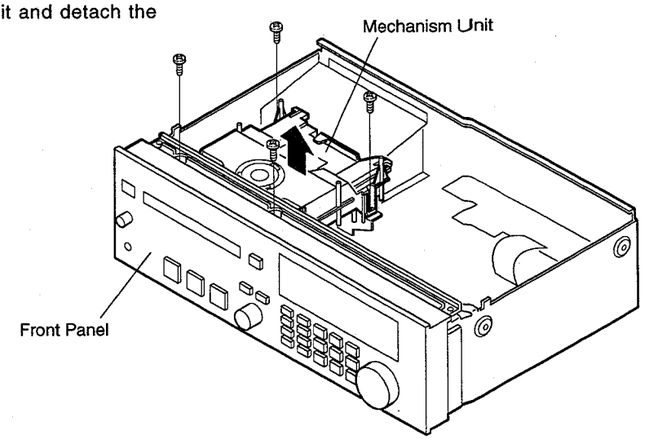
1. Disconnect the power supply cord.
2. Remove 3 Push Rivets and detach the PWB Cover.

Note: When disassembling the set, be careful not to plug the power supply cord into the socket in order to avoid danger.

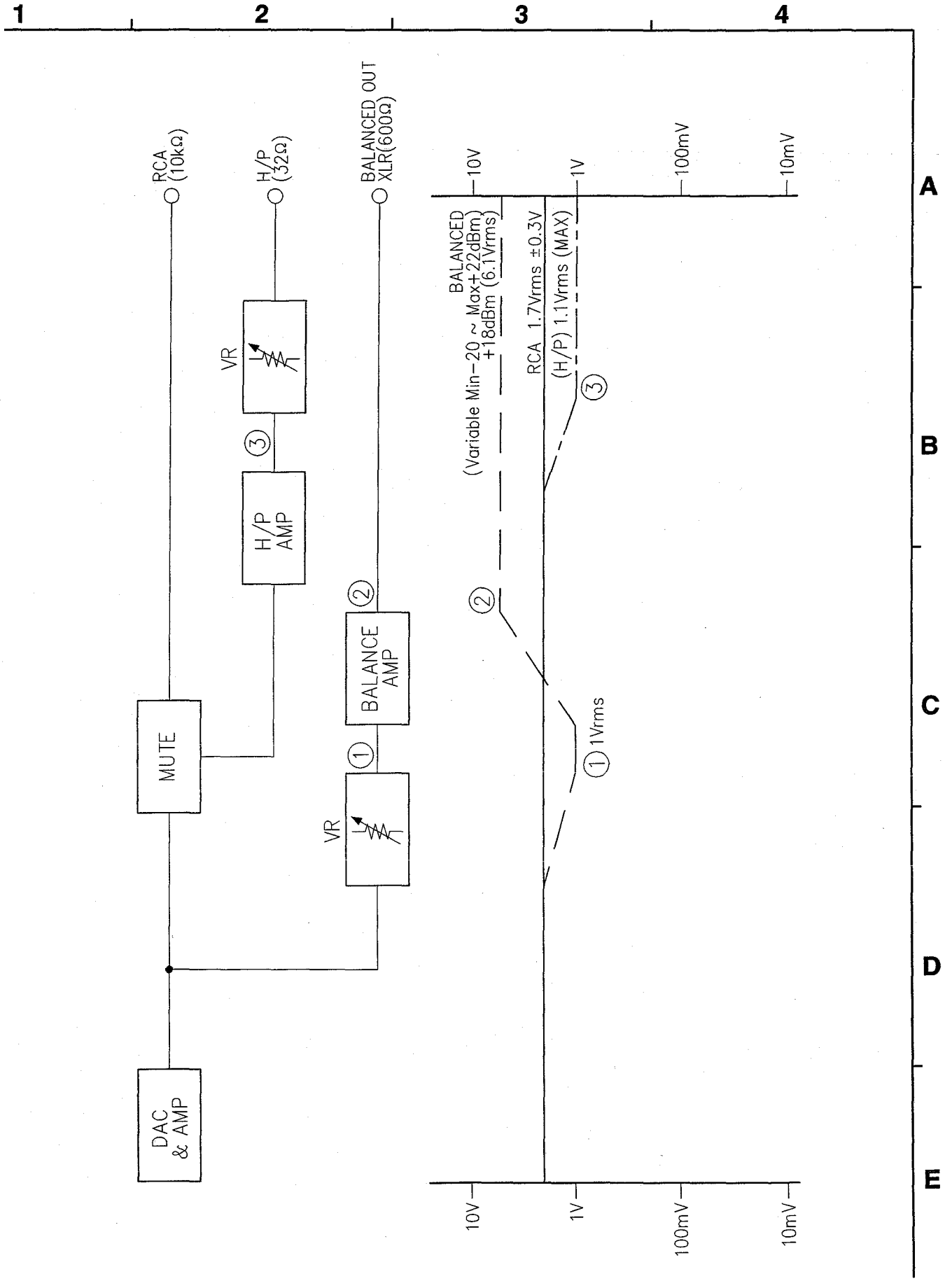


● MECHANISM UNIT

Remove 4 screws fixing the Mechanism Unit and detach the Mechanism Unit.



LEVEL DIAGRAM



CONFIRMING THE SERVO

CAUTION:
The Optical Pick-up used for CD player may invite defection by an external noise, such as electrostatic, etc., please pay the following attention.
1. Use a conductive mat on a working table to avoid electrostatic change.
2. A working personnel should use a wrist strap to ground human body.
3. Tools, etc., specially for a soldering iron must use with its tip grounded and without leakage of electricity.
Utmost care must be taken to your clothes for electrostatic changing in a low humidity environment.

Required Measuring Implement

1. Dual trace oscilloscope
2. Reference disc (TCD784 or CO-74176)

1. Actuating the Service Program and Servo Confirming Method

1. Turn the power switch off.
2. While simultaneously pushing the STANDBY/CUE button and PLAY/PAUSE button, turn the power on.
3. Displayed indication is version number of microcomputer program.
4 figures on the left are program version of remote control, and 4 figures on the right are program version of main body mechanism.
4. Turn SELECT knob. Display shows "01" and each pressing of PLAY button opens or closes the tray.
5. As the tray opens, set the adjustment disc (TCD784 or CO-74176)
6. Turn SELECT knob ("02" is displayed), also, press PLAY/PAUSE button.
Tracking error signal can be observed with the connection below. (Fig1)
7. Turn SELECT knob ("03" is displayed), also, press PLAY/PAUSE button.
HF signal can be observed with the connection below. (Fig2)
8. Turn SELECT knob ("04" is displayed), also, press PLAY/PAUSE button.
By pressing button servo automatic adjustment value can be called. (Ref. Table below)

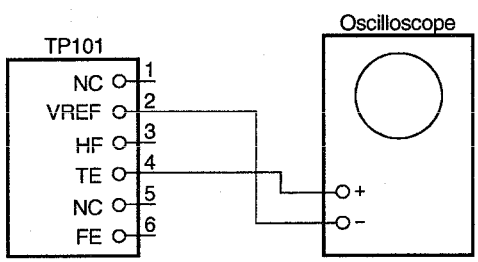


Fig1

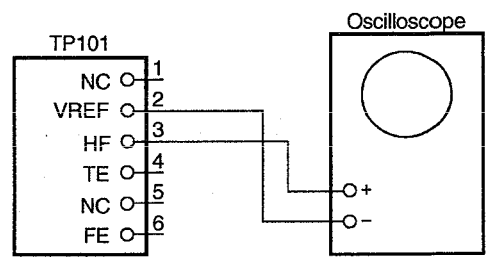


Fig2

TRACK Portion Indication	Adjustment Item	Adjustment Value indication at S and F portions.	Adjustment Item No. indication at M portion.
04	Error Code	—	00
	Focus Gain (FG)	146 ~ 764	01
	Focus Balance (FBAL)	–125 ~ 125	02
	Focus Offset (FOFS)	–35 ~ 35	03
	Tracking Gain (TG)	106 ~ 672	04
	Tracking Balance (TBAL)	–110 ~ 86	05
	Tracking Offset (TOFS)	–15 ~ 15	06

* When adjustment range exceeds, replace pick-up.

2. What is Service Program

Service program is a special program intended for confirming servo.

3. Contents of Service Program

While simultaneously pushing the STANDBY/CUE and PLAY/PAUSE buttons, turn the power on. (TRACK Indication "00") After actuating the service program, select an aiming process number with the SELECT KNOB, PLCH button, and TIME button, and push the PLAY/PAUSE button to execute processing, The process number is then displayed on the TRACK indication portion.

<table>
<tr><th></th><th>Work No.
(TRACK
Indication)</th><th>Function</th><th>Contents</th></tr>
<tr><td rowspan="8">SELECT knob</td><td>01</td><td>OPEN/CLOSE</td><td>Performs OPEN/CLOSE each tome when the PLAY/PAUSE button is pushed.</td></tr>
<tr><td>02</td><td>Tracking Error</td><td>Check tracking error signal, then performs the Automatic Adjustment.</td></tr>
<tr><td>03</td><td>HF Signal</td><td>Check HF signal.</td></tr>
<tr><td>04</td><td>Automatic
Adjustment call</td><td>Turn the Search dial to display the Automatic adjustment data.</td></tr>
<tr><td>05</td><td>Cleaning of
Pick-up Lens</td><td>Tray opens and pick-up moves out of mechanism, and clean the lens.</td></tr>
<tr><td>06</td><td>Focus Gain Changing</td><td>Select Gain with search dial. Press PLAY/PAUSE button, the display lights that will be newly memory in EEPROM.
when select data becomes big or small, the Gain is up or down.
In normally, do not change the data that is setted by 750.0.
The set No. and frequency in the EEPROM are storred as below:
<table>
<tr><th>No.
(SEC indicator)</th><th>Frequency
(FRAME indicator)</th><th>No.
(SEC indicator)</th><th>Frequency
(FRAME indicator)</th></tr>
<tr><td>–7</td><td>477 Hz</td><td>1</td><td>847 Hz</td></tr>
<tr><td>–6</td><td>509 Hz</td><td>2</td><td>956 Hz</td></tr>
<tr><td>–5</td><td>543 Hz</td><td>3</td><td>1079 Hz</td></tr>
<tr><td>–4</td><td>579 Hz</td><td>4</td><td>1218 Hz</td></tr>
<tr><td>–3</td><td>618 Hz</td><td>5</td><td>1375 Hz</td></tr>
<tr><td>–2</td><td>659 Hz</td><td>6</td><td>1552 Hz</td></tr>
<tr><td>–1</td><td>703 Hz</td><td>7</td><td>1753 Hz</td></tr>
<tr><td>0</td><td>750 Hz</td><td>8</td><td>1978 Hz</td></tr>
</table></td></tr>
<tr><td>07</td><td>Tracking Gain
Changing</td><td>Select Gain with Search dial. Press PLAY/PAUSE button, the display lights that will be newly memory in EEPROM.
When select data becomes big or small, the Gain is up or down.
In normally, do not change the data that is setted by 1000.0.
When sound out is occured by oscillation, please raise gain.
But there is sound out easily by defective disc.
The set No. and frequency in the EEPROM are storred as below:
<table>
<tr><th>No.
(SEC indicator)</th><th>Frequency
(FRAME indicator)</th><th>No.
(SEC indicator)</th><th>Frequency
(FRAME indicator)</th></tr>
<tr><td>–7</td><td>637 Hz</td><td>1</td><td>1129 Hz</td></tr>
<tr><td>–6</td><td>679 Hz</td><td>2</td><td>1274 Hz</td></tr>
<tr><td>–5</td><td>724 Hz</td><td>3</td><td>1439 Hz</td></tr>
<tr><td>–4</td><td>772 Hz</td><td>4</td><td>1624 Hz</td></tr>
<tr><td>–3</td><td>824 Hz</td><td>5</td><td>1834 Hz</td></tr>
<tr><td>–2</td><td>879 Hz</td><td>6</td><td>2070 Hz</td></tr>
<tr><td>–1</td><td>938 Hz</td><td>7</td><td>2337 Hz</td></tr>
<tr><td>0</td><td>1000 Hz</td><td>8</td><td>2638 Hz</td></tr>
</table></td></tr>
<tr><td>PITCH</td><td>08</td><td>CHUCKING Test</td><td>Repeats OPEN/CLOSE of tray, servo ON, and TOC read and displays the number of the tray OPEN/CLOSE times with the Time indicator.</td></tr>
<tr><td>TIME</td><td>09</td><td>Heat Run
(No Skip Check)</td><td>Repeats OPEN/CLOSE of tray, repeats playing the first and the last programs of music on the disc. When an error occurs, displays error code and stops.</td></tr>
<tr><td>REPEAT</td><td>11</td><td>Error code check</td><td>Turn the search dial to display the logging error codes in the occurred order.
Kinds of displayed Error Code
(1) Error Code Table (Appears only at Heat Run and Chucking Test function)
(2) E204····· Servo down during Cue
(3) E205····· Servo down during pause
(4) E206····· Servo down during manual search and scan
(5) E214····· Unable to read the subcode during CUE
(6) E215····· Unable to read the subcode during PAUSE
(7) E216····· Unable to read the subcode during the manual serach and scan</td></tr>
</table>

Error Code Table (Appears only at Heat Run and Chucking Test function

Error Code at TRACK portion	Contents No. at m portion	Contents
E1		Automatic Adjustment Error
	00	Unable to detect disc
	01	Unable to adjust tracking offset
	02	Unable to adjust focus offset
	03	Unable to adjust focus fine gain
	04	Unable to actuate focus
	05	Unable to actuate tracking
	06	Unable to adjust tracking fine gain
E2	00	Servo down during playback
	01	Servo down during search
	02	Servo down during automatic adjustment
	03	Servo down during TOC read
	10	Unable to read the subcode between 500 msec. during the playback
	11	Unable to read the subcode between 1 sec. during the search
	12	Unable to read the subcode between 500 msec. during the TOC read
E3		Unable to read TOC
E4	00	Unable to close the disc holder in the regular time
	01	Unable to open the disc holder in the regular time
E5		Slide error
E6		Sound skip error (only at the sound skip check)

Detailed error can be display by select knob when error occurs.

Error indication			
TR	MIN	SEC	FRAM
Error Code	Contents No.	Accumulated number of open/close function of the tray prior to Error occures.	
Indication state when error occurs			
—	01	FG data	
—	02	FBAL data	
—	03	FOFS data	
—	04	TG data	
—	05	TBAL data	
—	06	TOFS data	

CONFIRMING THE AUDIO

1. Necessary Equipment for Adjustment

Distortion--Factor Meter
VTVM
Low-Pass Filter (20kHz)
AF Oscillator (20Hz ~ 20kHz, +18dBm)
Reference Disc; DENON Audio Technical CD (38C39-7174)

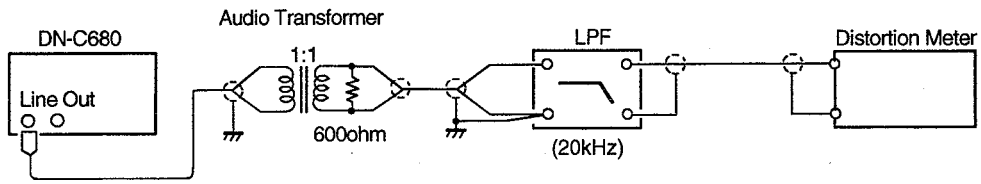
2. Prior to Starting the Adjustment

1) Audio circuit shall be adjusted after adjustment of servo circuit.

3. Adjustment of Super Linear Converter

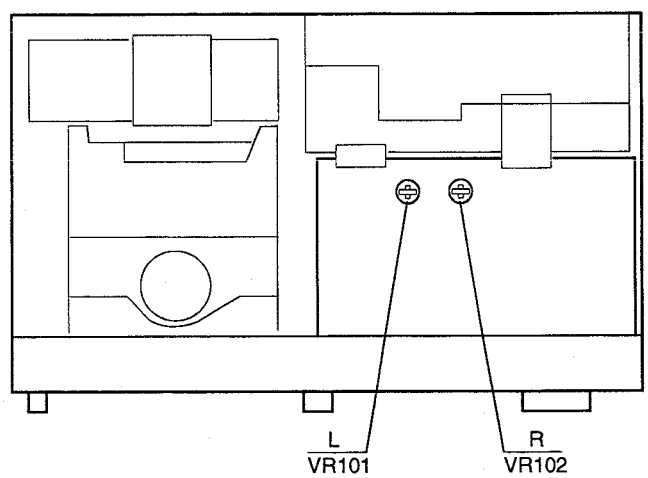
Adjustment of Super Linear Converter is only performed at a time the IC115,116 (PCM61P-K) DA converter is replaced.

1) Connect the LINE OUT to the distortion-factor meter through the low-pass filter.
   Note: If your distortion-factor meter has unbalanced input terminals, 1:1 ratio audio transformer is required between the unit and the measuring instrument in order to float the active balanced outputs from the ground.



Super Linear Converter Adjustment

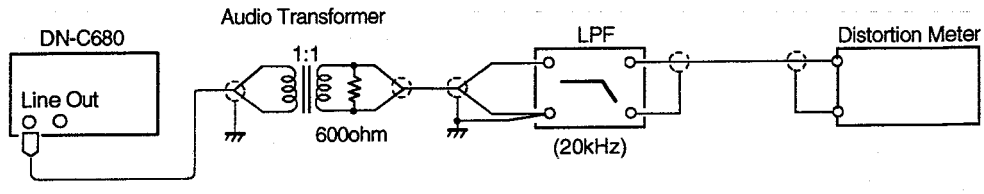
2) Turn the power switch ON.
3) Load the reference disc (DENON Audio Technical CD 38C39-7174)
4) Play track number "49".
5) Turn VR101 (L-ch) or VR102 (R-ch) on the MAIN unit so that distortion meter shows minimum distortion figures.



Location of Distortion-Factor Adjustment VRs

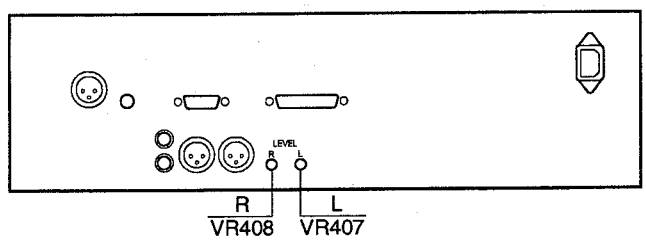
4. Output Level Adjustment

1) Connect VTVM to the output connector of DN-C680.
   Use 1:1 600 ohm Audio Transformer between the unit and VTVMs in order for matching the unbalanced input of VTVM and the active bakanced output of DN-C680 as shown in figure.



Connection for Output Level Adjustment

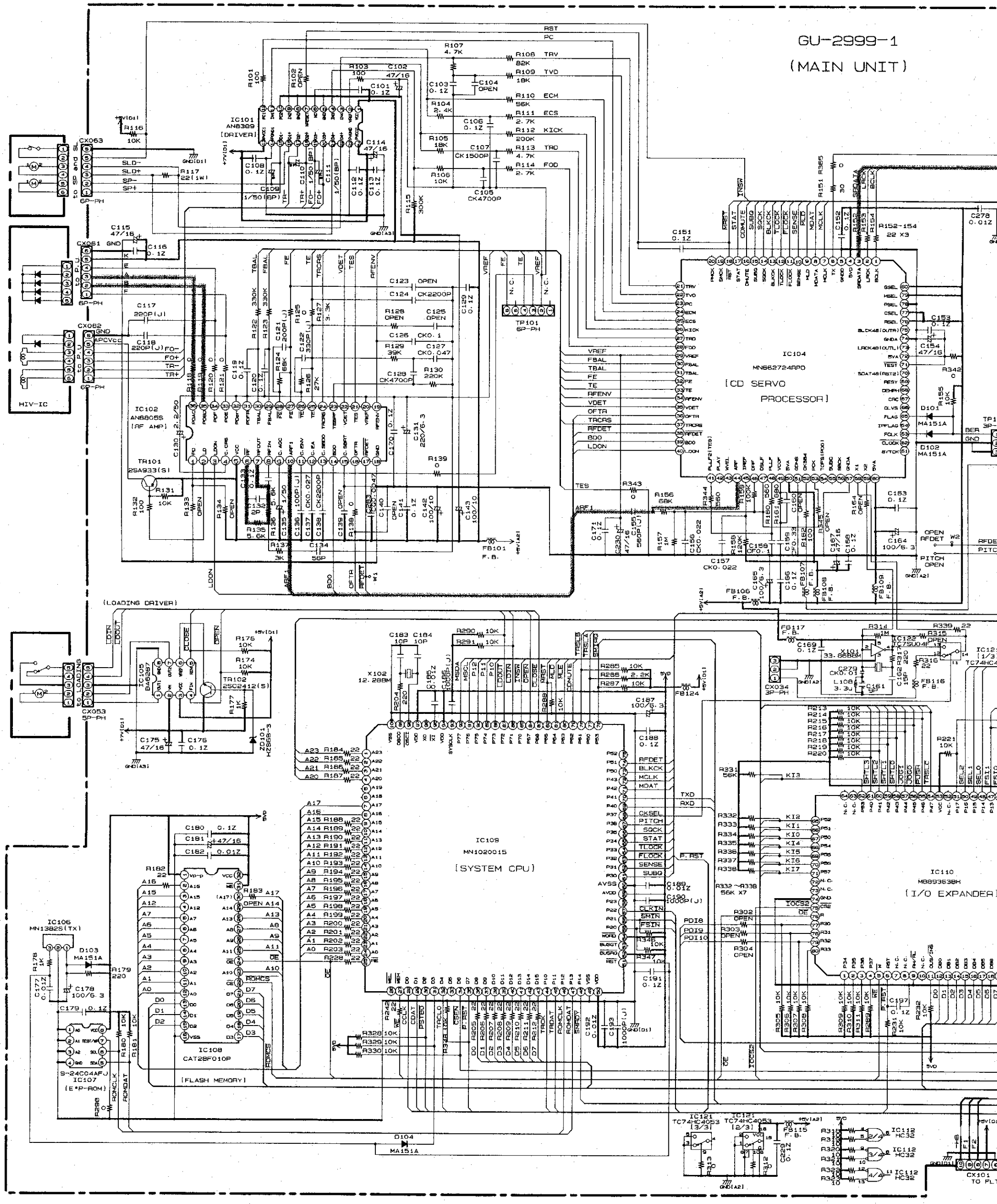
2) Play track number "49".
3) While reading VTVM indication, adjust VR407 (L-ch) and VR408 (R-ch) so that the output level attains +18dBm (or desired level).

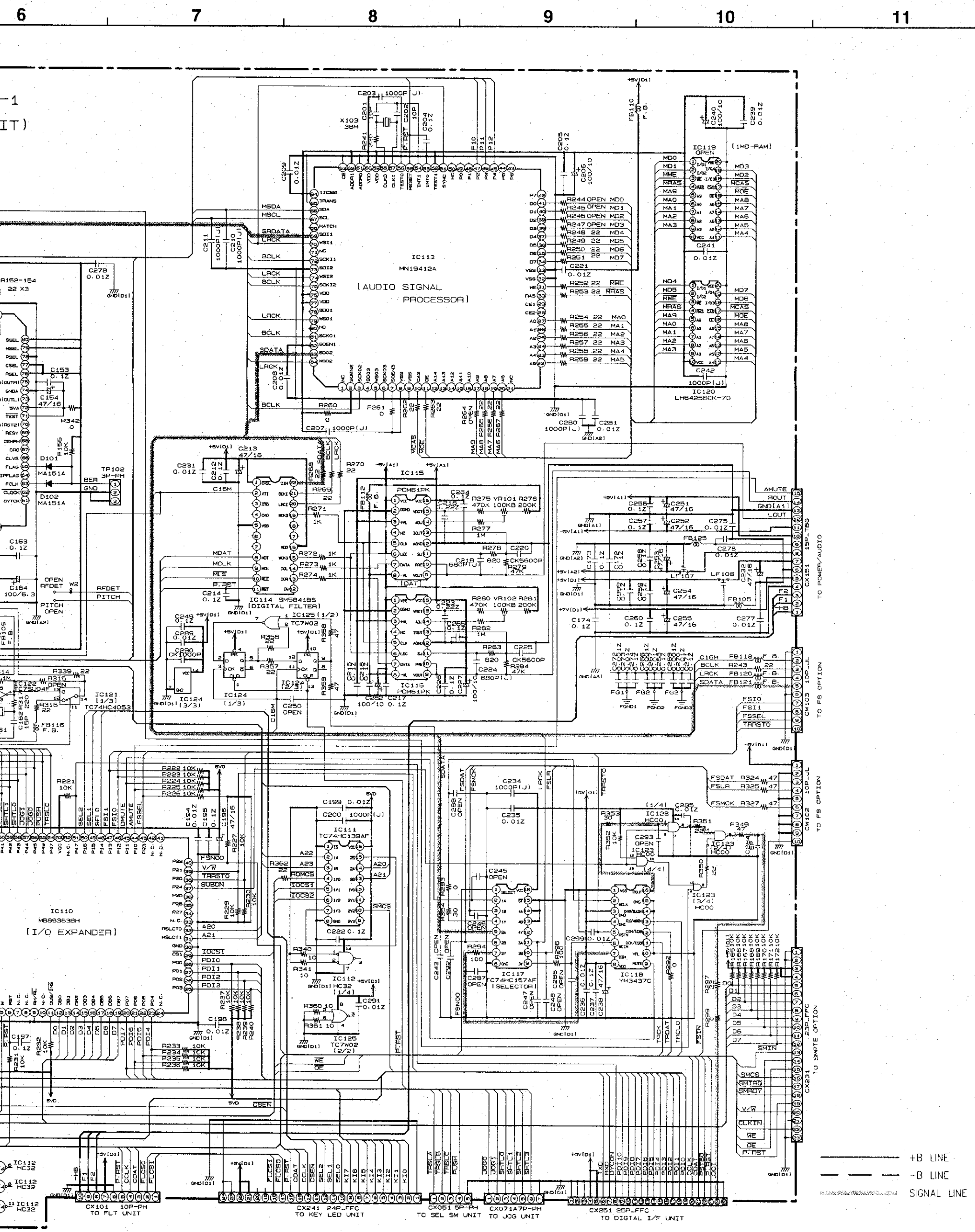


Location of Level Adjustment VRs

SCHEMATIC DIAGRAM (GU-2999-1)

1 2 3 4 5 6





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.

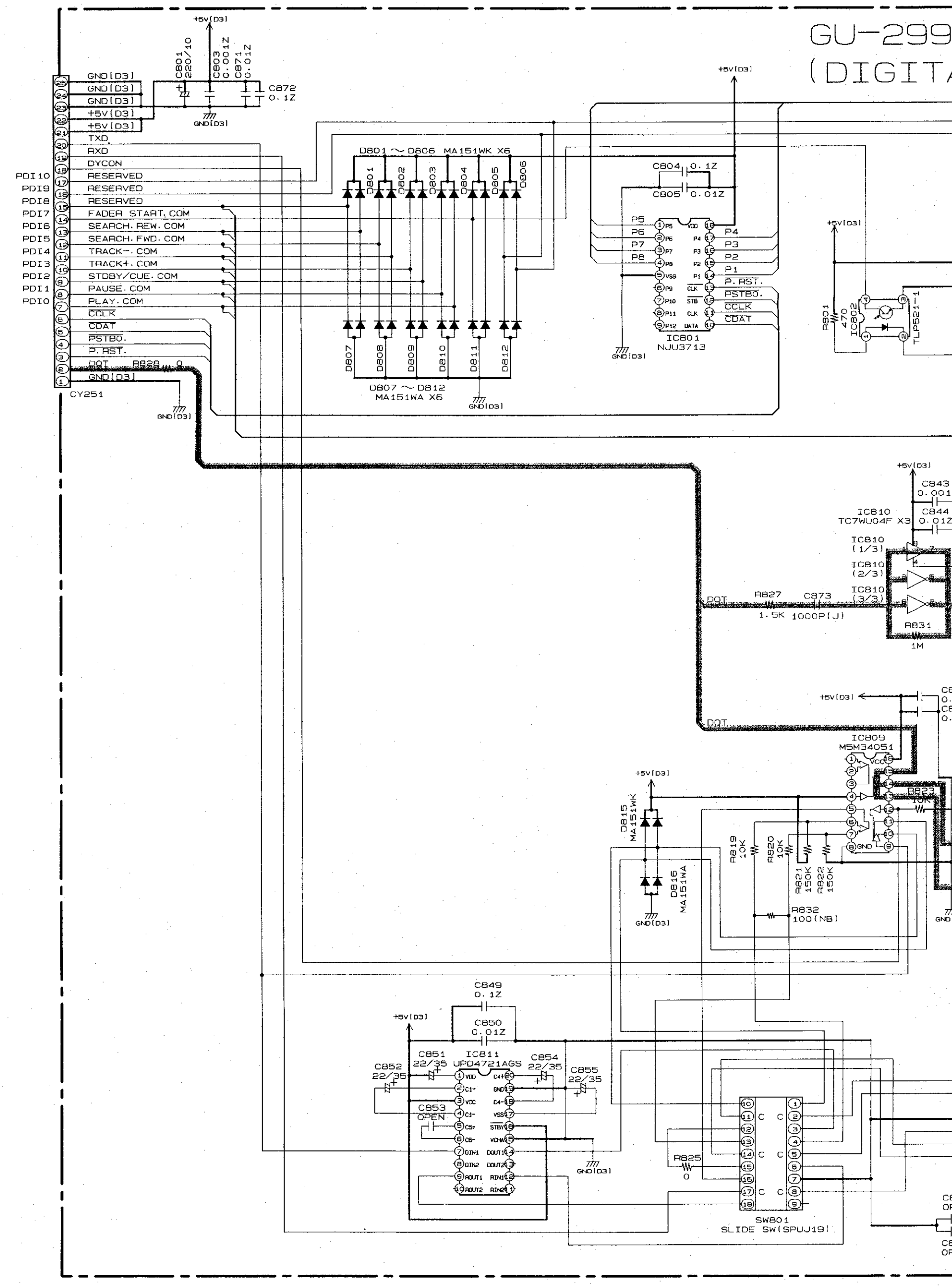
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

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

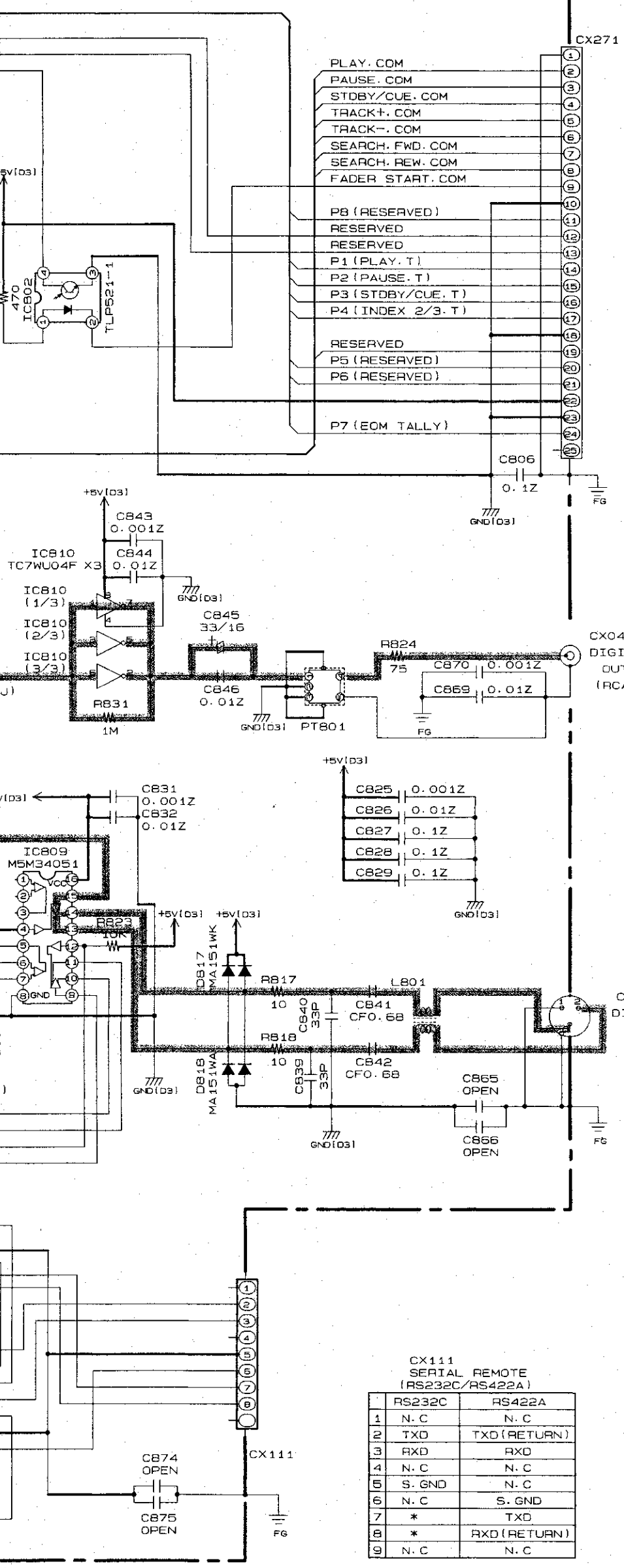
CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 kohms, the unit is defective.

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

SCHEMATIC DIAGRAM (GU-2992-2)



U-2999-2
DIGITAL I/F UNIT)



CX271
PARALLEL REMOTE

Pin No.	SIGNAL NAME	Pin No.	SIGNAL NAME	Pin No.	SIGNAL NAME
1	FG	13	RESERVED	25	RESERVED
2	PLAY. COM	14	PLAY. T		
3	PAUSE. COM	15	PAUSE. T		
4	STDBY/CUE. COM	16	STDBY/CUE. T		
5	TRACK+. COM	17	INDEX 2/3. T		
6	TRACK-. COM	18	TALLY COMMON		
7	SEARCH. FWD. COM	19	RESERVED		
8	SEARCH. REW. COM.	20	RESERVED		
9	FADER START. COM	21	RESERVED		
10	COMMAND. COM	22	TALLY POWER SUPPLY		
11	RESERVED	23	COMMAND. COM		
12	RESERVED	24	EOM TALLY		

CX111
SERIAL REMOTE
(RS232C/RS422A)

	RS232C	RS422A
1	N. C	N. C
2	TXD	TXD(RETURN)
3	RXD	RXD
4	N. C	N. C
5	S. GND	N. C
6	N. C	S. GND
7	*	TXD
8	*	RXD(RETURN)
9	N. C	N. C

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.

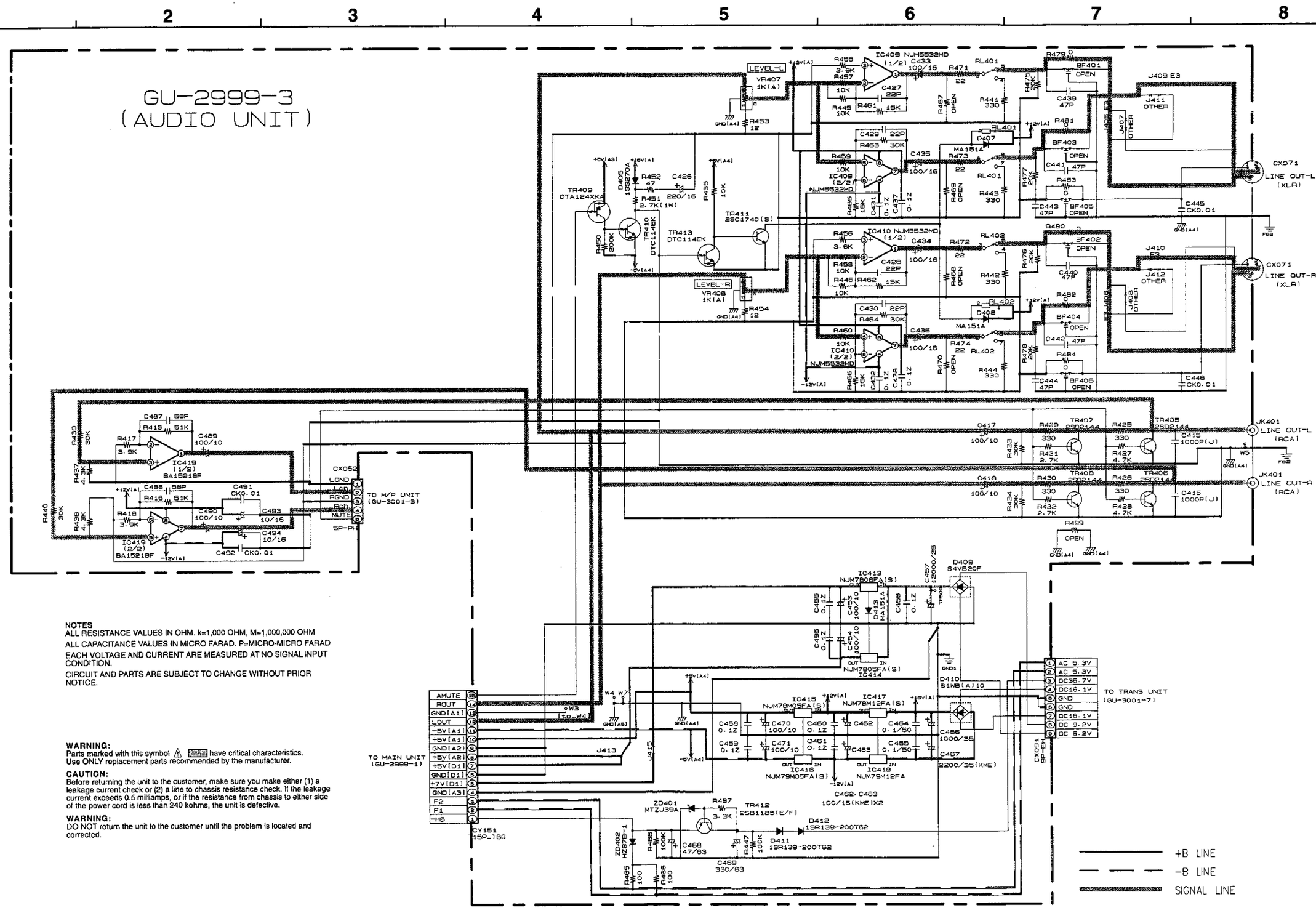
WARNING:
Parts marked with this symbol ⚠ ▒▒ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

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

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

+B LINE
SIGNAL LINE

SCHEMATIC DIAGRAM (GU-2999-3)



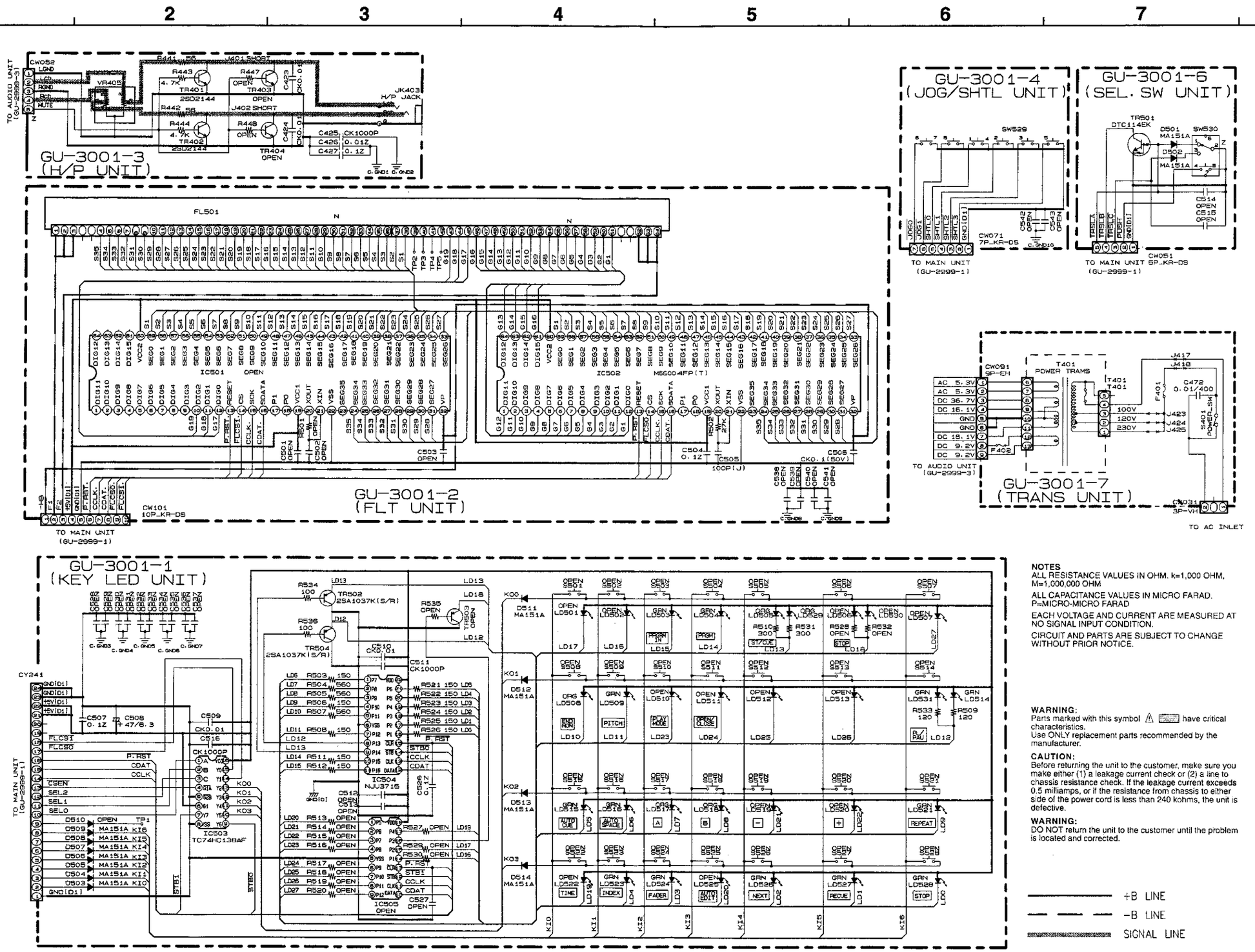
NOTES
ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

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

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

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

SCHEMATIC DIAGRAM (GU-3001)



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.

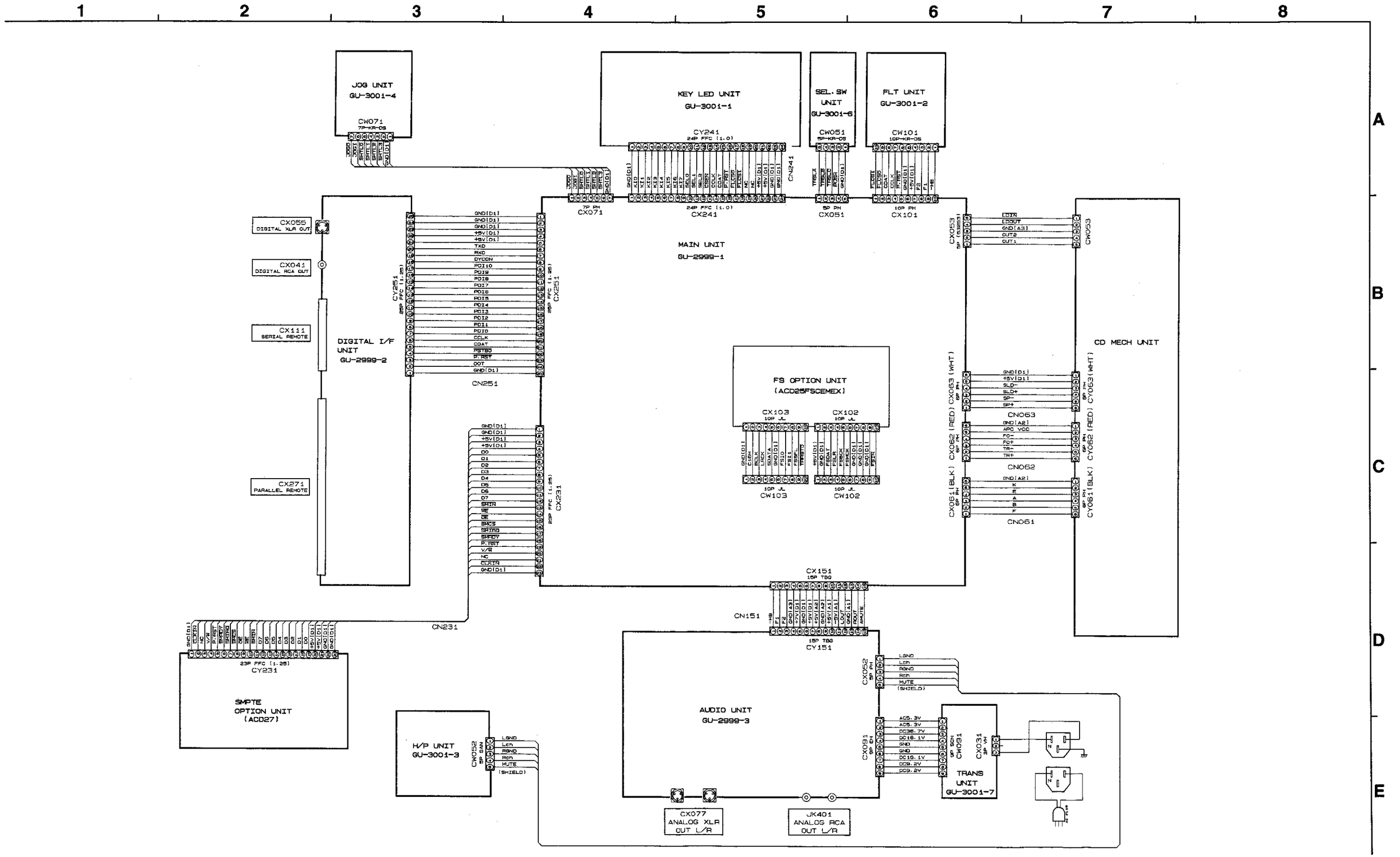
WARNING:
Parts marked with this symbol ⚠ ▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

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

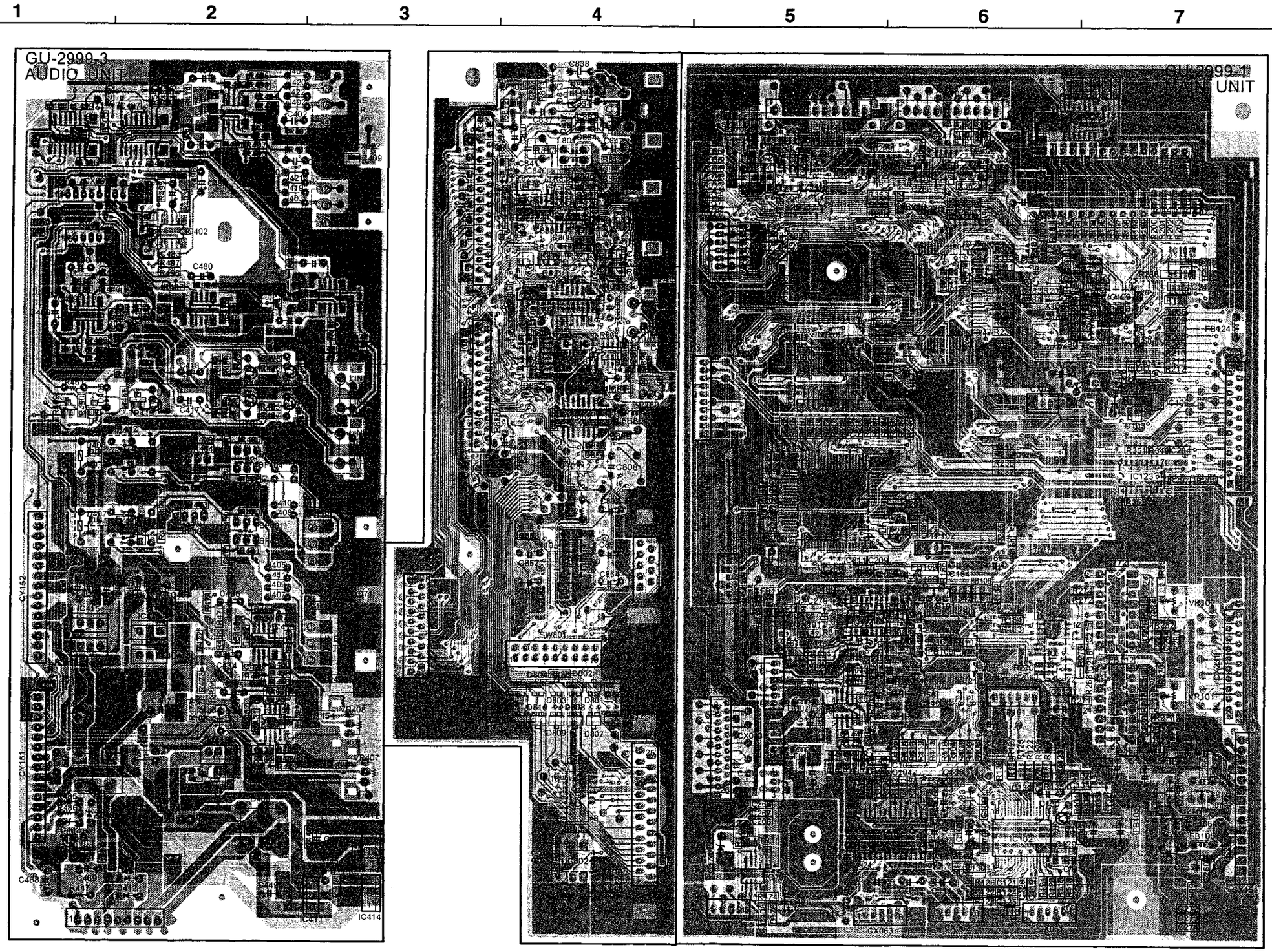
WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

+B LINE
−B LINE
SIGNAL LINE

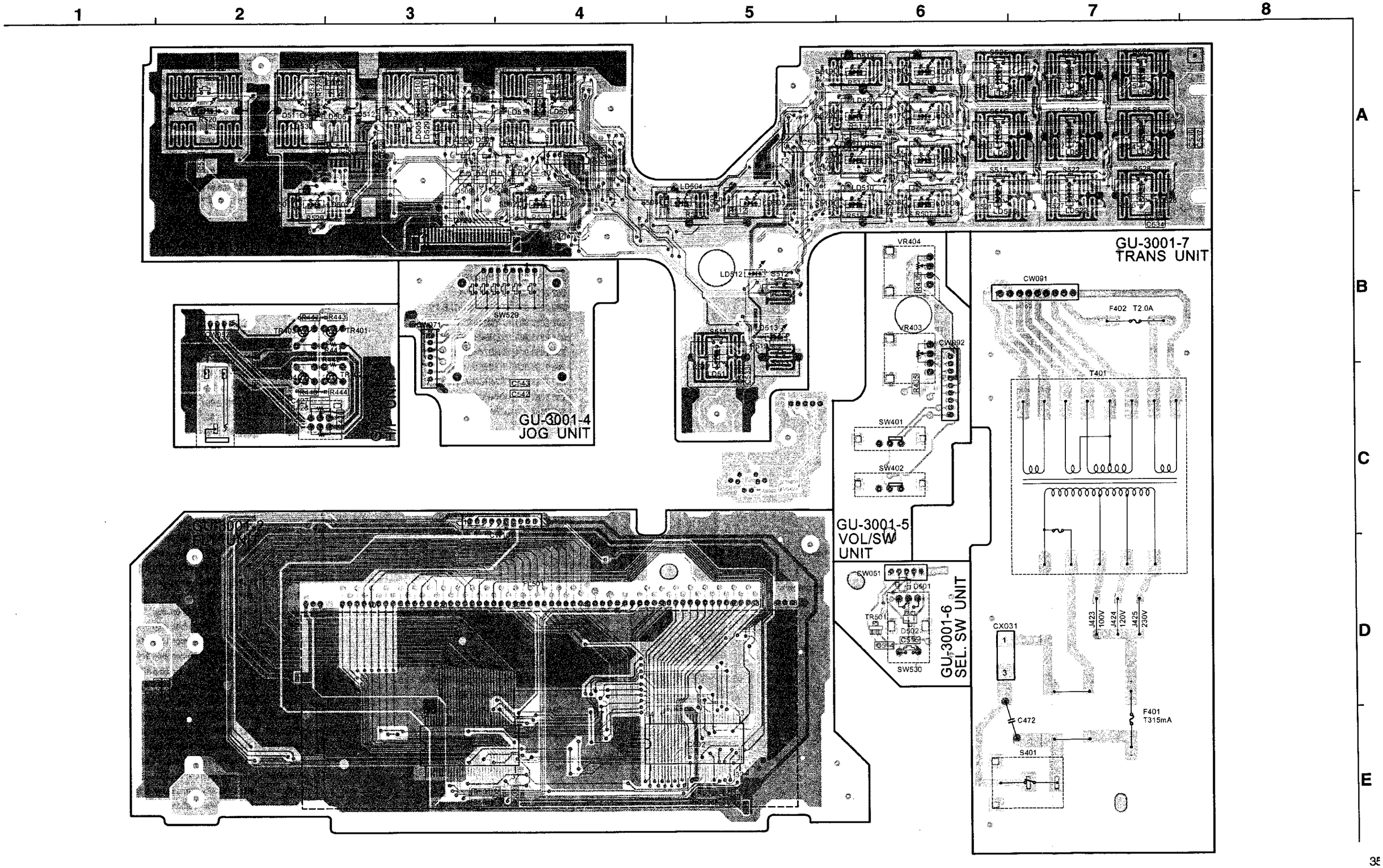
WIRING DIAGRAM



PRINTED WIRING BOARD (GU-2999)



PRINTED WIRING BOARD (GU-3001)



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 (Type) 14K (Shape and performance) 2E (Power) 182 (Resistance) G (Allowable error) FR (Others)

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

*** Resistance**

1 8 2 ⇒ 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 (Type) 04W (Shape and performance) 1H (Dielectric strength) 2R2 (Capacity) M (Allowable error) BP (Others)

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

*** 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: pF.

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 dieelectric strength value.

PRINTED WIRING BOARD PARTS LIST

GU-2999 MAIN P.W.B. UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC101	262 2143 903	IC AN8389	
IC102	262 2142 904	IC AN8805S	
IC104	262 2368 005	IC MN662724RPE	
IC105	263 0994 908	IC BA6287F	
IC106	262 1647 905	IC MN1382-S(TX)	
IC107	262 2363 903	IC S-24C04AFJ	
IC108	205 0488 036	IC 32P IC SOCKET	
IC108	262 2365 008	IC CAT28F010P_09 (P)	
IC109	262 2395 007	IC MN1020015-1	
IC110	262 2128 009	IC MB89363BH	
IC111	262 1637 902	IC TC74HC139AF	
IC112	262 2057 905	IC HD74HC32FP-TR	
IC113	262 2289 003	IC MN19412A	
IC114	262 1765 900	IC SM5841BS	
IC115,116	262 2393 009	IC PCM61P-K	
IC117	262 2230 900	IC TC74HC157AF-T1	
IC118	262 2359 904	IC YM3437C-F	
IC120	262 2313 908	IC LH64256(CK,BK-70)	
IC121	262 2058 904	IC HD74HC4053FP-TR	
IC122	262 1738 908	IC TC7SU04F	
IC123	262 1718 902	TC74HC00AF(TP1)	
IC124	262 1665 903	HD74HC74FP-TR	
IC125	262 2392 903	TC7W02F(TE12L)	
IC409,410	263 0898 907	IC NJM5532MD	
IC413	263 0793 002	IC NJM7806FA(S)	
IC414	263 0809 006	IC NJM7805FA(S)	
IC415	263 0800 005	IC NJM78M05FA(S)	
IC416	263 0842 005	IC NJM79M05FA(S)	
IC417	263 0794 001	IC NJM78M12FA(S)	
IC418	263 0539 004	IC NJM79M12FA	
IC419	263 0615 902	IC BA15218F	
IC801	262 1816 901	IC NJU3713GT1	
IC802	262 0874 009	IC TLP521-1(BL)	
IC809	262 1597 903	IC M5M34051FP	
IC810	262 1953 903	IC TC7WU04F	
IC811	262 2114 903	IC UPD4721GS-GJG	
TR101	271 0183 914	Transistor 2SA933(S)	
TR102	273 0384 900	Transistor 2SC2412K(S)	
TR405~408	274 0160 907	Transistor 2SD2144	
TR409	269 0156 906	Transistor DTA124XKA	
TR410	269 0082 902	Transistor DTC114EK	
TR411	273 0303 910	Transistor 2SC1740S(S)-T	
TR412	272 0083 004	Transistor 2SB1185(E/F)	
TR413	269 0156 906	Transistor DTC114EK	
D101~104	276 0438 910	Diode MA151A	
D405	276 0432 903	Diode 1SS270A	
D407,408	276 0438 910	Diode MA151A	
D409	276 0338 007	Diode S4VB20F	
D410	276 0405 901	Diode S1WB(A)10	
D411,412	276 0550 908	Diode 1SR139-200	
D413	276 0438 910	Diode MA151A	
D801~806	276 0438 949	Diode MA151WK	
D807~812	276 0438 907	Diode MA151WA	
D815	276 0438 949	Diode MA151WK	
D816	276 0438 907	Diode MA151WA	
D817	276 0438 949	Diode MA151WK	
D818	276 0438 907	Diode MA151WA	
ZD101	276 0462 928	Zener diode HZS6B-3	
ZD401	276 0645 981	Zener diode MTZJ39A	39V
ZD402	276 0465 909	Zener diode HZS7B-1	
RESISTORS GROUP			
R101	247 0005 905	Carbon chip 100ohm 1/10W	RM73B--101J
R103	247 0005 905	Carbon chip 100ohm 1/10W	RM73B--101J
R104	247 0008 931	Carbon chip 2.4kohm 1/10W	RM73B--242J
R105	247 0010 945	Carbon chip 18kohm 1/10W	RM73B--183J
R106	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R107	247 0009 901	Carbon chip 4.7kohm 1/10W	RM73B--472J
R108	247 0012 901	Carbon chip 82kohm 1/10W	RM73B--823J
R109	247 0010 945	Carbon chip 18kohm 1/10W	RM73B--183J
R110	247 0011 960	Carbon chip 56kohm 1/10W	RM73B--563J
R111	247 0008 944	Carbon chip 2.7kohm 1/10W	RM73B--272J
R112	247 0012 998	Carbon chip 200kohm 1/10W	RM73B--204J
R113	247 0009 901	Carbon chip 4.7kohm 1/10W	RM73B--472J
R114	247 0008 944	Carbon chip 2.7kohm 1/10W	RM73B--272J
R115	247 0013 939	Carbon chip 300kohm 1/10W	RM73B--304J
R116	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R117	244 2050 904	Metal oxide 22ohm 1W	RS14B3A220JNBS(S)
R118~121	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R122,123	247 0013 942	Carbon chip 330kohm 1/10W	RM73B--334J
R124	247 0011 986	Carbon chip 68kohm 1/10W	RM73B--683J
R125	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R126	247 0010 987	Carbon chip 27kohm 1/10W	RM73B--273J
R127	247 0008 960	Carbon chip 3.3kohm 1/10W	RM73B--332J
R129	247 0011 928	Carbon chip 39kohm 1/10W	RM73B--393J
R130	247 0013 900	Carbon chip 220kohm 1/10W	RM73B--224J
R131	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R132	247 0005 905	Carbon chip 100ohm 1/10W	RM73B--101J
R135	247 0009 927	Carbon chip 5.6kohm 1/10W	RM73B--562J
R136	247 0009 927	Carbon chip 5.6kohm 1/10W	RM73B--562J
R137	247 0008 957	Carbon chip 3.0kohm 1/10W	RM73B--302J
R138,139	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R151	247 0003 981	Carbon chip 33ohm 1/10W	RM73B--330J
R152~154	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R155	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R156	247 0011 986	Carbon chip 68kohm 1/10W	RM73B--683J
R157	247 0014 967	Carbon chip 1Mohm 1/10W	RM73B--105J
R158	247 0012 943	Carbon chip 120kohm 1/10W	RM73B--124J

Ref. No.	Part No.	Part Name	Remarks
R159	247 0012 927	Carbon chip 100kohm 1/10W	RM73B--104J
R160	247 0006 988	Carbon chip 560ohm 1/10W	RM73B--561J
R161	247 0007 903	Carbon chip 680ohm 1/10W	RM73B--681J
R162	247 0005 905	Carbon chip 100ohm 1/10W	RM73B--101J
R165~172	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R174	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R176	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R177	247 0007 945	Carbon chip 1kohm 1/10W	RM73B--102J
R178	247 0007 945	Carbon chip 1kohm 1/10W	RM73B--102J
R179	247 0005 989	Carbon chip 220ohm 1/10W	RM73B--221J
R180,181	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R182	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R184~203	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R204	247 0005 989	Carbon chip 220ohm 1/10W	RM73B--221J
R205~212	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R213~227	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R228	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R229~240	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R241	247 0005 989	Carbon chip 22ohm 1/10W	RM73B--221J
R242,243	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R248~259	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R260,261	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R262,263	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R265~270	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R271~274	247 0007 945	Carbon chip 1kohm 1/10W	RM73B--102J
R275	247 0013 984	Carbon chip 470kohm 1/10W	RM73B--474J
R276	247 0012 998	Carbon chip 200kohm 1/10W	RM73B--204J
R277	247 0014 967	Carbon chip 1Mohm 1/10W	RM73B--105J
R278	247 0007 929	Carbon chip 820ohm 1/10W	RM73B--821J
R279	247 0011 944	Carbon chip 47kohm 1/10W	RM73B--473J
R280	247 0013 984	Carbon chip 470kohm 1/10W	RM73B--474J
R281	247 0012 998	Carbon chip 200kohm 1/10W	RM73B--204J
R282	247 0014 967	Carbon chip 1Mohm 1/10W	RM73B--105J
R283	247 0007 929	Carbon chip 820ohm 1/10W	RM73B--821J
R284	247 0011 944	Carbon chip 47kohm 1/10W	RM73B--473J
R285	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R286	247 0008 928	Carbon chip 2.2kohm 1/10W	RM73B--222J
R287~291	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R292,293	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R294~296	247 0005 905	Carbon chip 100ohm 1/10W	RM73B--101J
R297	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R298,299	247 0018 905	Carbon chip 10kohm 1/10W	RM73B--103J
R305~311	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R312,313	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R314	247 0014 967	Carbon chip 1Mohm 1/10W	RM73B--105J
R316	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R317	247 0005 989	Carbon chip 220ohm 1/10W	RM73B--221J
R318~323	247 0002 966	Carbon chip 10ohm 1/10W	RM73B--100J
R324~327	247 0004 922	Carbon chip 47ohm 1/10W	RM73B--470J
R328~330	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J

Ref. No.	Part No.	Part Name	Remarks
R331~338	247 0011 960	Carbon chip 56kohm 1/10W	RM73B--563J
R339	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R340,341	247 0002 966	Carbon chip 10ohm 1/10W	RM73B--100J
R342	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R343	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R344	247 0006 988	Carbon chip 560ohm 1/10W	RM73B--561J
R346~348	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R349	247 0004 922	Carbon chip 47ohm 1/10W	RM73B--470J
R350,351	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R352	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R353,354	247 0003 981	Carbon chip 33ohm 1/10W	RM73B--330J
R356,357	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R358,359	247 0004 922	Carbon chip 47ohm 1/10W	RM73B--470J
R360,361	247 0002 966	Carbon chip 10ohm 1/10W	RM73B--100J
R362	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R365	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R415,416	247 0011 957	Carbon chip 51kohm 1/10W	RM73B--513J
R417,418	247 0008 986	Carbon chip 3.9kohm 1/10W	RM73B--392J
R425,426	247 0006 920	Carbon chip 330ohm 1/10W	RM73B--331J
R427,428	247 0009 901	Carbon chip 4.7kohm 1/10W	RM73B--472J
R429,430	247 0006 920	Carbon chip 330ohm 1/10W	RM73B--331J
R431,432	247 0008 944	Carbon chip 2.7kohm 1/10W	RM73B--272J
R433,434	247 0010 990	Carbon chip 30kohm 1/10W	RM73B--303J
R435	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R437,438	247 0008 999	Carbon chip 4.3kohm 1/10W	RM73B--432J
R439,440	247 0010 990	Carbon chip 30kohm 1/10W	RM73B--303J
R441~444	247 0006 920	Carbon chip 330ohm 1/10W	RM73B--331J
R445,446	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R447	241 2403 934	Carbon chip 100kohm 1/8W	RD14B2E104J
R450	247 0012 998	Carbon chip 200kohm 1/10W	RM73B--204J
R451	244 2052 902	Metal oxide 2.7kohm 1W	RS14B3A272JNBS(S)
R452	247 0004 922	Carbon chip 47ohm 1/10W	RM73B--470J
R453,454	247 0002 982	Carbon chip 12ohm 1/10W	RM73B--120J
R455,456	247 0008 973	Carbon chip 3.6kohm 1/10W	RM73B--362J
R457,458	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R460	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R461,462	247 0010 929	Carbon chip 15kohm 1/10W	RM73B--153J
R463,464	247 0010 990	Carbon chip 30kohm 1/10W	RM73B--303J
R465,466	247 0010 929	Carbon chip 15kohm 1/10W	RM73B--153J
R471~474	247 0003 949	Carbon chip 22ohm 1/10W	RM73B--220J
R475~478	247 0010 958	Carbon chip 20kohm 1/10W	RM73B--203J
R479~484	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R485,486	241 2396 928	Carbon 100ohm 1/4W	RD14B2E101J
R487	247 0008 960	Carbon chip 3.3kohm 1/10W	RM73B--332J
R488	247 0012 927	Carbon chip 100kohm 1/10W	RM73B--104J
R801	247 0006 962	Carbon chip 470ohm 1/10W	RM73B--471J
R817,818	247 0002 966	Carbon chip 10ohm 1/10W	RM73B--100J
R819,820	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J
R821,822	247 0012 969	Carbon chip 150kohm 1/10W	RM73B--154J
R823	247 0009 985	Carbon chip 10kohm 1/10W	RM73B--103J

Ref. No.	Part No.	Part Name	Remarks
R824	247 0004 977	Carbon chip 75ohm 1/10W	RM73B--750J
R825	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R827	247 0007 987	Carbon chip 1.5kohm 1/10W	RM73B--152J
R828	247 0018 905	Carbon chip 0ohm 1/10W	RM73B--0R0K
R831	247 0014 967	Carbon chip 1Mohm 1/10W	RM73B--105J
R832	241 2377 947	Metal oxide 100ohm 1/4W	RD14B2E101JNBST
VR101,102	211 6093 970	Semi fixed resistor 100kohm	V06PB104
VR407,408	211 0552 006	Variable resistor 1kohm	V09QA102
CAPACITORS GROUP			
C101	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C102	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C103	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C105	257 0009 966	Ceramic chip 4700pF/50V	CK73B1H472K
C106	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C107	257 0009 908	Ceramic chip 1500pF/50V	CK73B1H152K
C108	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C109~111	254 3061 902	Electrolytic 1μF/50V	CE04D1H010M
C112,113	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C114,115	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C116	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C117,118	257 0008 909	Ceramic chip 220pF/50V	CK73B1H221K
C119,120	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C121	257 0005 931	Ceramic chip 200pF/50V	CC73SL1H201J
C122	257 0005 986	Ceramic chip 330pF/50V	CC73SL1H331J
C124	257 0009 924	Ceramic chip 2200pF/50V	CK73B1H222K
C126	257 0011 996	Ceramic chip 0.1μF/25V	CK73B1E104K
C127	257 0010 984	Ceramic chip 0.047μF/25V	CK73B1H473K
C128	257 0009 966	Ceramic chip 4700pF/50V	CK73B1H472K
C129	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C130	254 4260 951	Electrolytic 2.2μF/50V	CE04W1H2R2M
C131	254 4250 932	Electrolytic 220μF/6.3V	CE04W0J221M
C132	257 0001 948	Ceramic chip 2.0 pF/50V	CC73SL1H2R0C
C133	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C134	257 0004 903	Ceramic chip 56pF/50V	CC73SL1H560J
C135	254 4260 948	Electrolytic 1μF/50V	CE04W1H010M
C136	257 0004 961	Ceramic chip 100pF/50V	CC73SL1H101J
C137	257 0010 955	Ceramic chip 0.027μF/25V	CK73B1E273K
C138	257 0009 924	Ceramic chip 2200pF/50V	CK73B1H222K
C141	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C142,143	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
C151~153	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C154	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C155	257 0006 943	Ceramic chip 560pF/50V	CC73SL1H561J
C156,157	257 0010 942	Ceramic chip 0.022μF/50V	CK73B1H223K
C158	256 1034 979	Metalized 0.1μF/50V	CF93A1H104J
C159	256 1035 936	Metallized 0.33μF/16V	CF93A1H334J
C161	257 0002 918	Ceramic chip 9.0 pF/50V	CC73SL1H9R0D
C162	257 0002 963	Ceramic chip 15pF/50V	CC73SL1H150J
C163	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C164,165	254 4250 929	Electrolytic 100μF/6.3V	CE04W0J101M

Ref. No.	Part No.	Part Name	Remarks
C166	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C167	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C168~174	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C175	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C176	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C177	257 0012 966	Ceramic chip 0.01μF/50V	CK73F1H103Z
C178	254 4250 929	Electrolytic 100μF/6.3V	CE04W0J101M
C179,180	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C181	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C182	257 0012 966	Ceramic chip 0.01μF/50V	CK73F1H103Z
C183,184	257 0002 921	Ceramic chip 10 pF/50V	CC73SL1H100D
C185	257 0012 966	Ceramic chip 0.01μF/50V	CK73F1H103Z
C186	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J
C187	254 4250 929	Electrolytic 100μF/6.3V	CE04W0J101M
C188	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C189	257 0012 966	Ceramic chip 0.01μF/50V	CK73F1H103Z
C190	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J
C191	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C192	257 0012 966	Ceramic chip 0.01μF/50V	CK73F1H103Z
C193	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J
C194	257 0012 966	Ceramic chip 0.01μF/50V	CK73F1H103Z
C195	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C196	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C197	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C198,199	257 0012 966	Ceramic chip 0.01μF/50V	CK73F1H103Z
C200	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J
C201,202	257 0002 921	Ceramic chip 10 pF/50V	CC73SL1H100D
C203	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J
C204,205	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C206	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
C207	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J
C208,209	257 0012 966	Ceramic chip 0.01μF/50V	CK73F1H103Z
C210,211	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J
C212	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C213	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C214~217	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C218	257 0014 948	Ceramic Chip 0.22μF/25V	CK73F1E224Z
C219	257 0006 969	Ceramic chip 680pF/50V	CC73SL1H681J
C220	257 0009 979	Ceramic chip 5600pF/50V	CK73B1H562K
C221	257 0012 966	Ceramic chip 0.01μF/50V	CK73F1H103Z
C222	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C223	257 0014 948	Ceramic Chip 0.22μF/25V	CK73F1E224Z
C224	257 0006 969	Ceramic chip 680pF/50V	CC73SL1H681J
C225	257 0009 979	Ceramic chip 5600pF/50V	CK73B1H562K
C226	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C227	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
C229	257 0014 935	Ceramic chip 0.1μF/25V	CK73F1E104Z
C230	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C231	257 0012 966	Ceramic chip 0.01μF/50V	CK73F1H103Z
C232	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C234	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J

Ref. No.	Part No.	Part Name	Remarks
C235,236	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C237	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C238	254 4254 938	Electrolytic 47µF/16V	CE04W1C470M
C239	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C240	254 4252 930	Electrolytic 100µF/10V	CE04W1A101M
C241	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C242	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J
C249	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C251~255	254 4254 938	Electrolytic 47µF/16V	CE04W1C470M
C256~260	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C264,265	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C266	257 0012 908	Ceramic chip 1000pF/50V	CK73F1H102Z
C267	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C268	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C269	257 0012 908	Ceramic chip 1000pF/50V	CK73F1H102Z
C270	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C271	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C272	257 0012 908	Ceramic chip 1000pF/50V	CK73F1H102Z
C273	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C274	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C275~278	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C279	257 0010 900	Ceramic chip 0.01µF/50V	CK73B1H103K
C280	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J
C281	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C282	254 4252 930	Electrolytic 100µF/10V	CE04W1A101M
C283	255 1264 982	Metalized 4700pF/50V	CQ93M1H472J
C284	257 0001 977	Ceramic chip 5.0pF/50V	CC73SL1H5R0C
C285,289	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C291,299	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C415,416	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J
C417,418	254 4252 930	Electrolytic 100µF/10V	CE04W1A101M
C426	254 4254 954	Electrolytic 220µF/16V	CE04W1C221M
C427~430	257 0003 904	Ceramic chip 22pF/50V	CC73SL1H220J
C431,432	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C433	254 4440 904	Electrolytic 100µF/16V	CE04W1C101M
C434~436	254 4254 941	Electrolytic 100µF/16V	CE04W1C101M
C437,438	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C439~444	257 0003 988	Ceramic chip 47pF/50V	CC73SL1H470J
C445,446	257 0010 900	Ceramic chip 0.01µF/50V	CK73B1H103K
C453,454	254 4389 913	Electrolytic 100µF/10V	CE04W1A101M
C455	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C456	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C457	254 4509 706	Electrolytic 12000µF/25V	CE04W1E123MC
C458~461	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C462,463	254 4440 904	Electrolytic 100µF/16V	CE04W1C101M
C464,465	257 1015 920	Ceramic chip 0.1µF/50V	CK73F1H104Z
C466	254 4372 713	Electrolytic 1000µF/35V	CE04W1V102M
C467	254 4344 709	Electrolytic 2200µF/35V	CE04W1V222M
C468	254 4262 946	Electrolytic 47µF/63V	CE04W1J470M
C469	254 4262 072	Electrolytic 330µF/63V	CE04W1J331M
C470,471	254 4389 913	Electrolytic 100µF/10V	CE04W1A101M

Ref. No.	Part No.	Part Name	Remarks
C487,488	257 0004 903	Ceramic chip 56pF/50V	CC73SL1H560J
C489,490	254 4252 930	Electrolytic 100µF/10V	CE04W1A101M
C491,492	257 0010 900	Ceramic chip 0.01µF/50V	CK73B1H103K
C493,494	254 4254 909	Electrolytic 10µF/16V	CE04W1C100M
C495	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C801	254 4252 943	Electrolytic 220µF/10V	CE04W1A221M
C803	257 0012 908	Ceramic chip 1000pF/50V	CK73F1H102Z
C804	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C805	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C806	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C825	257 0012 908	Ceramic chip 1000pF/50V	CK73F1H102Z
C826	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C827	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C828	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C829	257 0012 908	Ceramic chip 1000pF/50V	CK73F1H102Z
C831	257 0012 908	Ceramic chip 1000pF/50V	CK73F1H102Z
C832	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C839,840	257 0003 946	Ceramic chip 33pF/50V	CC73SL1H330J
C841,842	256 1035 978	Metalized 0.68µF/50V	CF93A1H684J
C843	257 0012 908	Ceramic chip 1000pF/50V	CK73F1H102Z
C844	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C845	254 4254 925	Electrolytic 33µF/16V	CE04W1C330M
C846	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C849	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C850	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C851,852	254 4258 921	Electrolytic 22µF/35V	CE04W1V220M
C854,855	254 4258 921	Electrolytic 22µF/35V	CE04W1V220M
C867	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C868	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C869	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C870	257 0012 908	Ceramic chip 1000pF/50V	CK73F1H102Z
C871	257 0012 966	Ceramic chip 0.01µF/50V	CK73F1H103Z
C872	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C873	257 0007 900	Ceramic chip 1000pF/50V	CC73SL1H102J
C999	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z

Ref. No.	Part No.	Part Name	Remarks	Q'ty
OTHER PARTS GROUP				
CW102,103	205 0696 006	JL connector (BT-E)		2
CX34	205 0343 032	3P connector base(KR-PH)		1
CX41	204 8406 020	1P pin jack		1
CX51	205 0343 058	5P connector base(KR-PH)		1
CX52	205 0321 054	5P connector base (RED)		1
CX53	205 1054 003	5P connector base (53253)		1
CX55	205 0956 005	3P CANNON connector		1
CX61	205 0323 065	6P connector base (BLK)		1
CX62	205 0321 067	6P connector base (RED)		1
CX63	205 0343 061	6P connector base(KR-PH)		1
CX71A	205 0343 074	7P connector base(KR-PH)		1
CX71	205 1046 008	3P CANNON (OUT)		1
CX91	205 0233 090	9P EH connector base		1
CX101	205 0375 000	10P connector base (KR-PH)		1
CX111	205 0922 000	9P DSUB pin - F		1
CX151	205 0711 091	15P TBG connector base		1
CX231	205 1049 005	23P FFC base (9603C)		1
CX241	205 0892 046	24P FFC base (P=1)		1
CX251	205 0736 089	25P FFC connector base		1
CX271	205 0618 110	25P DSUB SKT		1
CY151	205 0711 091	15P TBG connector base		1
CY251	205 1050 010	25P FFC base (9603F)		1
FB101	235 0106 908	Chip emifil (21A05)		1
FB105	235 0049 900	Beads inductor		1
FB106~109	235 0106 908	Chip emifil (21A05)		5
FB110	235 0049 900	Beads inductor		1
FB112	235 0106 908	Chip emifil (21A05)		1
FB115~118	235 0106 908	Chip emifil (21A05)		12
FB120,121	235 0106 908	Chip emifil (21A05)		2
FB124,125	235 0049 900	Beads inductor		2
J405	209 0008 146	Jumper (L=5) E3		1
J406	209 0008 146	Jumper (L=5) E3		1
J407	209 0008 146	Jumper (L=5) E2/EK/JPN		1
J408	209 0008 146	Jumper (L=5) E2/EK/JPN		1
J409	209 0008 146	Jumper (L=5) E3		1
J410	209 0008 146	Jumper (L=5) E3		1
J411	209 0008 146	Jumper (L=5) E2/EK/JPN		1
J412	209 0008 146	Jumper (L=5) E2/EK/JPN		1
J413,415	209 0008 146	Jumper (L=5)		1
JK401	204 8553 009	2P pin jack (FG-ANA)		1
LF106,107	235 0086 905	EMI filter		2
L108	235 0080 901	Inductor 3.3µH		1
L801	231 0083 003	Low volt line filter		1
PT801	231 8063 009	Pulse trans.		1

Ref. No.	Part No.	Part Name	Remarks	Q'ty
RL401,402	214 0127 003	Relay (RY-12W)		2
SW801	212 1142 007	Slide switch (SPUJ19)		1
TP101	205 0343 061	6P connector base(KR-PH)		1
TP102	205 0343 032	3P connector base(KR-PH)		1
X101	399 0224 003	Crystal 33.8688 MHz		1
X102	399 0219 021	Crystal 12.288 MHz		1
X103	399 0353 903	Crystal (CSA36.0MXZ040)		1
W003	203 0503 012	1P Sin con ASS		1
W005	203 0503 025	1P Sin con ASS		1
	513 8013 003	P-ROM seal		1

GU-3001 DISPLAY/KEY P.W.B. UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC502	262 1954 902	IC M66004FP	
IC503	262 1708 909	IC TC74HC138AF	
IC504	262 2367 909	IC NJU3715G	
TR401,402	274 0160 907	Transistor 2SD2144STPU	
TR501	269 0082 902	Transistor DTC114EK	
TR502	271 0238 908	Transistor 2SA1037K(S/R)	
TR504	271 0238 908	Transistor 2SA1037K(S/R)	
D501~509	276 0438 910	Diode MA151A	
D511~514	276 0438 910	Diode MA151A	
LD503,504	393 9571 908	LED TLGU1002 (GRN)	
LD505	393 9571 911	LED TLOU1002 (ORG)	
LD508	393 9571 911	LED TLOU1002 (ORG)	
LD509	393 9571 908	LED TLGU1002 (GRN)	
LD514~516	393 9571 908	LED TLGU1002 (GRN)	
LD517,518	393 9571 911	LED TLOU1002 (ORG)	
LD521	393 9571 908	LED TLGU1002 (GRN)	
LD523,524	393 9571 908	LED TLGU1002 (GRN)	
LD526~528	393 9571 908	LED TLGU1002 (GRN)	
LD529	393 9571 911	LED TLOU1002 (ORG)	
LD531	393 9571 908	LED TLGU1002 (GRN)	
FL501	393 8024 003	FLD BJ528GK	
RESISTORS GROUP			
R441,442	241 2395 961	Carbon 56ohm 1/4W	RD14B2E560J
R443,444	247 0009 901	Carbon chip 4.7kohm 1/10W	RM73B--472J
R502	247 0010 987	Carbon chip 27kohm 1/10W	RM73B--273J
R503	247 0005 947	Carbon chip 150ohm 1/10W	RM73B--151J
R504,505	247 0006 988	Carbon chip 560ohm 1/10W	RM73B--561J
R506	247 0005 947	Carbon chip 150ohm 1/10W	RM73B--151J
R507	247 0006 988	Carbon chip 560ohm 1/10W	RM73B--561J
R508	247 0005 947	Carbon chip 150ohm 1/10W	RM73B--151J
R509	247 0005 921	Carbon chip 120ohm 1/10W	RM73B--121J
R510	247 0006 917	Carbon chip 300ohm 1/10W	RM73B--301J
R511,512	247 0005 947	Carbon chip 150ohm 1/10W	RM73B--151J
R521~526	247 0005 947	Carbon chip 150ohm 1/10W	RM73B--151J
R531	247 0006 917	Carbon chip 300ohm 1/10W	RM73B--301J
R533	247 0005 921	Carbon chip 120ohm 1/10W	RM73B--121J
R534	247 0005 905	Carbon chip 100ohm 1/10W	RM73B--101J
R536	247 0005 905	Carbon chip 100ohm 1/10W	RM73B--101J
VR405	211 0879 006	Variable resistor 2kohm	V0920B17FA202K

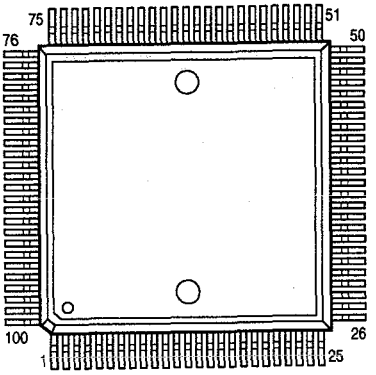
Ref. No.	Part No.	Part Name	Remarks
CAPACITORS GROUP			
C423,424	257 0010 900	Ceramic chip 0.01µF/50V	CK73B1H103K
C425	257 0008 983	Ceramic chip 1000pF/50V	CK73B1H102K
C426	257 0010 900	Ceramic chip 0.01µF/50V	CK73B1H103K
C427	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C472	253 8014 702	Ceramic 0.01µF/400V(AC)	CK45F2GAC103MC
C504	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C505	257 0004 961	Ceramic chip 100pF/50V	CC73SL1H101J
C506	257 1015 920	Ceramic Chip 0.1µF/50V	CK73F1H104Z
C507	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z
C508	257 2002 961	Tantalum E. 47pF/ V	CS77B--470M
C509,510	257 0010 900	Ceramic chip 0.01µF/50V	CK73B1H103K
C511	257 0008 983	Ceramic chip 1000pF/50V	CK73B1H102K
C516	257 0008 983	Ceramic chip 1000pF/50V	CK73B1H102K
C526	257 0014 935	Ceramic chip 0.1µF/25V	CK73F1E104Z

OTHER PARTS GROUP			Q'ty
CW51	203 8273 014	5P KR-DS connector cord	1
CW52	203 8224 018	5P PH-SAN connector cord	1
CW71	204 2382 001	7P KR-DS connector cord	1
CW91	204 2747 015	9P EH-SCN connector cord	1
CW101	204 2412 036	10P KR-DS connector cord	1
CX31	205 0581 001	2P VH connector base	1
CY241	205 0856 930	24P FFC connector base	1
FH401,402	202 0040 909	Fuse clip	4
J401,402	209 0008 146	Jumper (L=5)	2
J417,418	209 0008 120	Jumper (L=10)	2
J423	209 0008 120	Jumper (L=10) JPN	1
J424	209 0008 120	Jumper (L=10) E3	1
J425	209 0008 120	Jumper (L=10) E2/EK	1
JK403	204 8264 000	Headphone jack (AU)	1
S401	212 0286 003	Power switch	1
SW529	212 0352 018	Jog-shuttle	1
SW530	212 0387 009	Rotary encorder - jog	1
	461 0961 001	FL spacer	2

SEMICONDUCTORS

● IC's

MN1020015 (Main Unit)
(IC109)

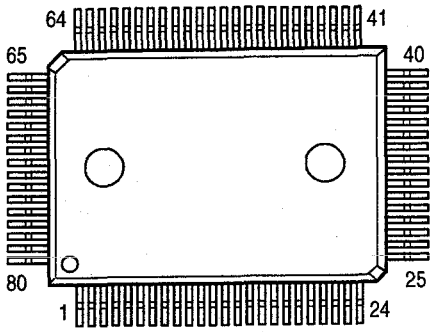


MN1020015 Terminal Function

Pin No.	Terminal Name	Symbol	I/O	DET	Ext	Ini	Res	Function
1	A23	A23	O	—	—	—	L	Address bus 23 (Non connection).
2	A22	A22	O	—	—	—	L	Address bus 22 (Non connection).
3	A21	A21	O	—	—	—	L	Address bus 21 (Non connection).
4	A20	A20	O	—	—	—	L	Address bus 20 (Non connection).
5	A19	A19	O	—	—	—	L	Address bus 19.
6	A18	A18	O	—	—	—	L	Address bus 18.
7	A17	A17	O	—	—	—	L	Address bus 17.
8	A16	A16	O	—	—	—	L	Address bus 16.
9	A15	A15	O	—	—	—	L	Address bus 15.
10	A14	A14	O	—	—	—	L	Address bus 14.
11	A13	A13	O	—	—	—	L	Address bus 13.
12	A12	A12	O	—	—	—	L	Address bus 12.
13	A11	A11	O	—	—	—	L	Address bus 11.
14	A10	A10	O	—	—	—	L	Address bus 10.
15	A09	A9	O	—	—	—	L	Address bus 09.
16	A08	A8	O	—	—	—	L	Address bus 08.
17	A07	A7	O	—	—	—	L	Address bus 07.
18	A06	A6	O	—	—	—	L	Address bus 06.
19	A05	A5	O	—	—	—	L	Address bus 05.
20	A04	A4	O	—	—	—	L	Address bus 04.
21	A03	A3	O	—	—	—	L	Address bus 03.
22	A02	A2	O	—	—	—	L	Address bus 02.
23	A01	A1	O	—	—	—	L	Address bus 01.
24	A00	A0	O	—	—	—	L	Address bus 00.
25	!RE	!0E	O	—	—	—	—	Read enable output terminal.
26	!WEL	!WEL	O	—	—	—	—	Not used (open).
27	!WHE	!WE	O	—	—	—	—	Write enable output terminal (D08~D15).
28	P00 D00	CCLK	O	—	—	H	—	Clock signal for FL tube, LED, parallel out, pitch control (DN1050).
29	P01 D01	CDAT	O	—	—	H	—	Data signal for FL tube, LED, parallel out and pitch control (DN1050).
30	P02 D02	!PSTB0	O	—	Pu	H	H	Parallel output strobe 0 signal.
31	P03 D03	SYSRSTO	O	—	Pu	—	H	System reset output (L: reset).
32	P04 D04	TRCL0	O	—	—	H	—	Digital output transmitter strobe 0 signal.
33	P05 D05	TRCL1	O	—	—	H	—	Digital output transmitter strobe 1 signal for FS option.
34	P06 D06	!CSEN	O	—	Pu	H	H	SEL0~2 (HC138) enable signal for LED and FL tube.
35	P07 D07	!P. RST	O	Lv	—	L	—	Power ON reset output (L: RESET).
36	D08	D0	I/O	—	—	—	—	Data bus 0 (F memory, I/O, SMPTE).
37	D09	D1	I/O	—	—	—	—	Data bus 1 (F memory, I/O, SMPTE).
38	D10	D2	I/O	—	—	—	—	Data bus 2 (F memory, I/O, SMPTE).
39	D11	D3	I/O	—	—	—	—	Data bus 3 (F memory, I/O, SMPTE).
40	D12	D4	I/O	—	—	—	—	Data bus 4 (F memory, I/O, SMPTE).

Pin No.	Terminal Name	Symbol	I/O	DET	Ext	Ini	Res	Function
41	D13	D5	I/O	—	—	—	—	Data bus 5 (F memory, I/O, SMPTE).
42	D14	D6	I/O	—	—	—	—	Data bus 6 (F memory, I/O, SMPTE).
43	D15	D7	I/O	—	—	—	—	Data bus 7 (F memory, I/O, SMPTE).
44	P10 !RAS	TRCK	O	—	—	—	—	Transmitter control clock.
45	P11 !CAS0/CS0	TRDAT	O	—	—	—	—	Transmitter control data.
46	P12 !CAS1/CS1	ROMCLK	O	—	—	—	—	EEPROM clock output signal.
47	P13 !CAS2/CS2	ROMDAT	I/O	—	—	—	—	EEPROM data input/output signal (initial value is for input).
48	P14 !CAS3/CS3	!SMRDY	I	Lv	—	L	—	SMPTE interrupt input R/W identification signal.
49	VSS	VSS	—	—	—	—	—	GND (0v)
50	VDD	VDD	—	—	—	—	—	Power supply (+5.0V).
51	!RST	!RST	I	—	—	—	—	Reset input terminal.
52	!BUSRQ	!BUSRQ	I	—	—	—	—	Bus request signal (Not used, fixed at +5.0V)
53	!BUSGT	!BUSGT	O	—	—	—	—	Bus request enable terminal (Not used, open).
54	!WORD	!WORD	I	—	—	—	—	Data bus width selection terminal (8 bit mode, +5V).
55	P20 AD0	!FSIN	I	Lv	Pu	—	H	L: FS converter option IN.
56	P21 AD1	!SMIN	I	Lv	Pu	—	H	L: SMPTE option IN.
57	P22 AD2	!CLKIN	I	Lv	Pu	—	H	Video/Word clock input detection signal (L: clock IN).
58	P23 AD3	RESERVE	O	—	—	L	—	Not used.
59	AVDD	AVDD	—	—	—	—	—	Power supply (+5.0V).
60	AVSS	AVSS	—	—	—	—	—	GND (0v)
61	P30 RTOA0	F0	I	Lv	Pu	—	H	Sampling frequency detection signal for identifying F0, F1, F2 pattern.
62	P31 RTOA1/ADTRG	F1	I	Lv	Pu	—	H	Sampling frequency detection signal for identifying F0, F1, F2 pattern.
63	P32 RTOA2/VREFL	F2	I	Lv	Pu	—	H	Sampling frequency detection signal for identifying F0, F1, F2 pattern.
64	P33 RTOA3/VREFH	!DRST	O	Lv	Pd	L	L	Drive microcomputer reset signal (L: reset).
65	P34 RTOB0/AD4	!D. PGM	O	Lv	Pu	H	H	Drive microcomputer program rewriting signal (L: rewriting).
66	P35 RTOB1/AD5	INMON	O	Lv	—	—	—	Audio input, monaural/stereo switching signal (H: monaural).
67	P36 RTOB2/AD6/TC16C	F. SELCT	O	—	—	—	—	Selection signal for Pin61, 62 and 63 pattern.
68	P37 RTOB3/AD7/TC17C	DSEL	O	—	—	—	—	Digital input selection signal (H: RCA input).
69	P40 SB10	RXD	I	—	—	—	—	Receiving line for external serial communication.
70	P41 SB00	TXD	O	—	—	—	—	Transmitting line for external serial Communication.
71	P42 SB11	SIN	I	—	—	—	—	Receiving line from the microcomputer communication (System microcomputer reference).
72	P43 SB01	SOUT	O	—	—	—	—	Transmitting line to the microcomputer communication (System microcomputer reference).
73	P50 IRQ1/TC106B	ACK	I	Ed	Pu	—	—	ACK input signal from the microcomputer communication (interruption).
74	P51 IRQ1/TC107B	KBIRQ	I	Ed	Pu	—	—	Keyboard TXE/RXE RDY interrupt input.
75	P52 IRQ3/TC108B	TMSYNC	I	Ed	Pu	—	—	Time code sync input (interruption).
76	P53 IRQ3	!SMIRQ	I	Ed	Pu	—	—	SMPTE data R/W input (interruption).
77	!KI0	!TRSLA	I	Ed	Pu	—	—	Track select pulse input terminal (interruption).
78	!KI1	!TRSLB	I	Ed	Pu	—	—	Track select pulse inverting input terminal (interruption).
79	!KI2	CLKSEL0	O	—	—	—	—	Operation clock switching signal 0 for 44.1k, SMPTE and pitch control.
80	!KI3	CLKSEL1	O	—	—	—	—	Operation clock switching signal 1 for 44.1k, SMPTE and pitch control
81	!KI4	R/!W	O	Lv	Pu	H	H	Read/write switching signal for microcomputer communication (H: read).
82	!KI5	SYSACK	O	—	Pd	L	L	System microcomputer ACK output signal for the microcomputer communication.
83	!KI6	KEYS/!D	O	—	Pu	—	H	Keyboard control data switching signal.
84	!KI7	OUTMON	O	Lv	—	—	—	Audio output, monaural/stereo switching signal (H: monaural).
85	TCI00	ERF	I	—	—	—	—	Digital audio interface receiving error signal.
86	TCI01	PLAYSW	I	—	—	—	—	Disc reset input signal (H: disc reset).
87	TCI02	PROTECT	I	—	—	—	—	Write protect input signal (H: record inhibition).
88	TCI03/SBT0	CO	I	—	—	—	—	PRO/COS format detection signal.
89	TCI04/SBT1	UCLK	O	—	—	—	—	Clock output for the microcomputer communication.
90	TCI6A	!DRVTRY	I	—	—	—	—	Drive microcomputer status input.
91	TCI07A	OUTSW	I	—	—	—	—	Disc set detecting switch signal (L: disc set).
92	TCI08A	KBR/!W	I	—	—	—	—	Keyboard interrupt R/W identification input signal.
93	SYSCLK	SYSCLK	O	—	—	—	H	System clock output terminal (a half of OSCI frequency).
94	VDD	VDD	—	—	—	—	—	Power supply (+5.0V).
95	!XI	!XI	I	—	—	—	—	GND (0V).
96	X0	X0	O	—	—	—	—	Open.
97	VDD	VDD	—	—	—	—	—	Power supply (+5.0V).
98	!OSCI	!OSCI	I	—	—	—	—	System clock input (12.288 MHz).
99	OSCO	OSC0	O	—	—	—	—	System clock output (12.288 MHz).
100	VSS	VSS	—	—	—	—	—	GND (0v).

MB89363 (Main Unit)
(IC110)

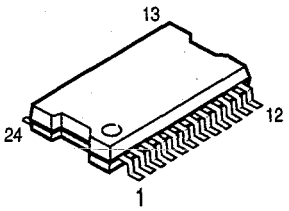


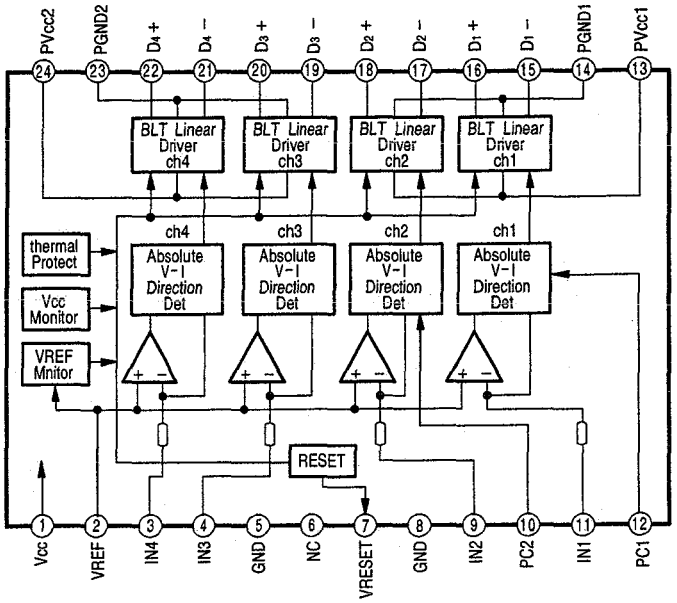
MB89363 Terminal Function

Pin No.	Terminal Name	Symbol	Address	I/O	DET	Ext	Ini	Res	Function
1	P34	DIG/!ANA	0001	I	Lv	Pu	—	H	MD audio signal input, status selecting switch input (L: analog).
2	P35	UNB/!BL	0001	I	Lv	Pu	—	H	MD audio signal input, status selecting switch input (L: balance).
3	P36	RESERVE	0001	I	—	Pu	—	H	Not used.
4	P37	RESERVE	0001	I	—	Pu	—	H	Not used.
5	!W	!WE		I	—	—	—	—	Data writing signal, connect with the microcomputer "!WR".
6	RST	!P. RST		I	—	—	—	—	Reset signal input (L: reset).
7	N.C.	N.C.		—	—	—	—	—	Open.
8	N.C.	N.C.		—	—	—	—	—	Open.
9	RH/!RL	!RL		I	—	—	—	—	Reset polarity: select active low (fixed at 0V).
10	N.C.	N.C.		—	—	—	—	—	Open.
11	OUS/!INS	OUS		I	—	—	—	—	Port 0 and 3 read value selection (external terminal value read, fixed at +5V).
12	DB0	D0		I	—	—	—	T	Data bus 0 (Connect with the microcomputer data bus D0).
13	DB1	D1		I	—	—	—	T	Data bus 1 (Connect with the microcomputer data bus D1).
14	DB2	D2		I	—	—	—	T	Data bus 2 (Connect with the microcomputer data bus D2).
15	DB3	D3		I	—	—	—	T	Data bus 3 (Connect with the microcomputer data bus D3).
16	DB4	D4		I	—	—	—	T	Data bus 4 (Connect with the microcomputer data bus D4).
17	DB5	D5		I	—	—	—	T	Data bus 5 (Connect with the microcomputer data bus D5).
18	DB6	D6		I	—	—	—	T	Data bus 6 (Connect with the microcomputer data bus D6).
19	DB7	D7		I	—	—	—	T	Data bus 7 (Connect with the microcomputer data bus D7).
20	PO7	PDI7	0010	I	—	Pu	—	H	Parallel input 7 (FADER, START, COM).
21	PO6	PDI6	0010	I	—	Pu	—	H	Parallel input 6 (SERCH, REW, COM).
22	PO5	PDI5	0010	I	—	Pu	—	H	Parallel input 5 (SERCH, FWD, COM).
23	PO4	PDI4	0010	I	—	Pu	—	H	Parallel input 4 (TRACK–, COM).
24	N.C.	N.C.		—	—	—	—	—	Open.
25	PO3	PDI3	0010	I	—	Pu	—	H	Parallel input 3 (TRACK+, COM).
26	PO2	PDI2	0010	I	—	Pu	—	H	Parallel input 2 (STDBY/CUE, COM).
27	PO1	PDI1	0010	I	—	Pu	—	H	Parallel input 1 (PAUSE, COM).
28	PO0	PDI0	0010	I	—	Pu	—	H	Parallel input 0 (PLAY, COM).
29	!CS1	!IOCS1		I	—	—	—	—	Chip selection 1 input.
30	GND	GND		—	—	—	—	—	—

Pin No.	Terminal Name	Symbol	Address	I/O	DET	Ext	Ini	Res	Function
31	RSLCT1	RSLCT1		I	—	—	—	—	Access object selection I signal (connect with the microcomputer address bus A17.
32	RSLCT0	RSLCT0		I	—	—	—	—	Access object selection 0 signal (connect with the microcomputer address bus A16).
33	N.C.	N.C.		—	—	—	—	—	Open.
34	P27	PCSTB	0110	O	Lv	Pu	H	H	Strobe signal for pitch control.
35	P26	!PCRST	0110	O	Lv	Pd	L	L	Reset signal for pitch control (L: reset).
36	P25	!FSNOI	0110	O	Lv	Pu	H	H	44.1 kHz through output switching signal (L: 44.1 kHz through).
37	P24	!VCOON	0110	O	Lv	Pu	H	H	VCO circuit ON/OFF control signal (L: VCO ON).
38	P20	!TRRSTO	0110	O	Lv	Pd	L	L	Transmitter reset output signal for output (YM3437C) (L: reset).
39	P21	V/!W	0110	O	Lv	Pd	L	L	Video/wide sync switching signal (H: video sync).
40	P22	!FSNOO	0110	O	Lv	Pd	L	L	44.1 kHz through input switching signal (H: 44.1 kHz through).
41	N.C.	N.C.		—	—	—	—	—	Open.
42	N.C.	N.C.		—	—	—	—	—	Open.
43	P23	FSSEL	0110	O	Lv	Pd	L	L	32k/48k switching signal (L:32 kHz).
44	P10	AMUTE	1010	O	Lv	Pu	H	H	Analog mute control signal (H: mute ON).
45	P11	DMUTE	1010	O	Lv	Pu	H	H	Mute signal for transmitter (YM3437C) output system (H: mute ON).
46	P12	!FSIO	1010	O	—	Pu	H	H	FS converter crystal oscillator ON/OFF switching signal (32 kHz) (L: ON).
47	P13	!FSI1	1010	O	—	Pu	H	H	FS converter crystal oscillator ON/OFF switching signal (48 kHz) (L: ON).
48	P14	SEL0	1010	O	—	—	—	T	Panel control signal for selecting KS0, KS1, KS2, KS3, FLCS0, FLCS1 STB0 and STB1.
49	P15	SEL1	1010	O	—	—	—	T	
50	P16	SEL2	1010	O	—	—	—	T	
51	P17	DYCON	1010	O	—	Pu	—	H	RS422 daisy chain control signal (L: high impendance).
52	N.C.	N.C.		—	—	—	—	—	Open.
53	Vcc	AVDD		—	—	—	—	—	—
54	P47	!TRSLC	1001	I	—	Pu	—	—	Track selector "select C" input.
55	P46	!PUSH	1001	I	—	Pu	—	H	Track selector " push" input.
56	P45	!JOG0	1001	I	—	Pu	—	H	Jog 0 input.
57	P44	!JOG1	1001	I	—	Pu	—	H	Jog 1 input
58	P43	!SHTL0	1001	I	—	Pu	—	H	Shuttle 0 input.
59	P42	!SHTL1	1001	I	—	Pu	—	H	Shuttle 1 input.
60	P41	!SHTL2	1001	I	—	Pu	—	H	Shuttle 2 input.
61	P40	!SHTL3	1001	I	—	Pu	—	H	Shuttle 3 input.
62	P53	KI3	0101	I	—	Pu	—	H	Key input.
63	N.C.	N.C.		—	—	—	—	—	Open.
64	N.C.	N.C.		—	—	—	—	—	Open.
65	P52	KI2	0101	I	—	Pu	—	H	Key input.
66	P51	KI1	0101	I	—	Pu	—	H	Key input.
67	P50	KI0	0101	I	—	Pu	—	H	Key input.
68	P54	KI4	0101	I	—	Pu	—	H	Key input.
69	P55	KI5	0101	I	—	Pu	—	H	Key input.
70	P56	KI6	0101	I	—	Pu	—	H	Key input.
71	P57	KI7	0101	I	—	Pu	—	H	Key input (Stand-by).
72	N.C.	N.C.		—	—	—	—	—	Open.
73	N.C.	N.C.		—	—	—	—	—	Open.
74	GND	GND		—	—	—	—	—	—
75	!CS2	!I0CS2		I	—	—	—	—	Chip select 2 input.
76	!R	!OE		O	—	—	—	—	Data read signal, connect with the microcomputer "!OE".
77	P30	PDI8	0001	I	—	Pu	—	H	Parallel input 8 (REC, COM).
78	P31	PDI9	0001	I	—	Pu	—	H	Parallel input 9 (HOT, START, MODE) (L: HOT START).
79	P32	PDI10	0001	I	—	Pu	—	H	Parallel input 10 (HOT, START, 10/20, SELECT) (L: 20 TRACK).
80	P33	!HOTOP	0001	I	Lv	Pu	—	H	Hot start option input signal (L: option IN).

AN8389 (IC101) (Main unit)

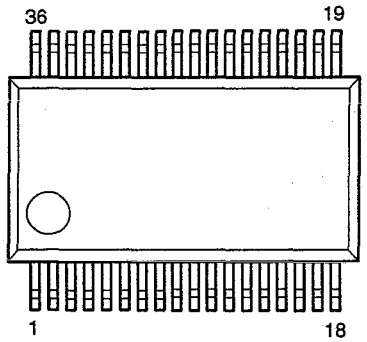




AN8389 Terminal Function

Pin No.	Symbol	I/O	Function
1	Vcc	—	Power supply.
2	VREF	I	VREF input terminal.
3	IN4	I	Motor driver 4 input terminal.
4	IN3	I	Motor driver 3 input terminal.
5	GND	—	GND.
6	NC	—	
7	NRESET	O	Reset output terminal.
8	GND	—	GND.
9	IN2	I	Motor driver 2 input terminal.
10	PC2	I	PC2 (power cut) input terminal.
11	IN1	I	Motor driver 1 input terminal.
12	PC1	I	PC1 (power cut) input terminal.
13	PVCC1	—	Power supply terminal1 for driver.
14	PGND1	—	GND terminal1 for driver.
15	D_{1-}	O	Motor driver 1 reversal output terminal, spindle motor drive.
16	D_{1+}	O	Motor driver 1 obverse output terminal, spindle motor drive.
17	D_{2-}	O	Motor driver 2 reversal output terminal, tracking actuator drive.
18	D_{2+}	O	Motor driver 2 obverse output terminal, tracking actuator drive.
19	D_{3-}	O	Motor driver 3 reversal output terminal, focus actuator drive.
20	D_{3+}	O	Motor driver 3 obverse output terminal, focus actuator drive.
21	D_{4-}	O	Motor driver 4 reversal output terminal, slide motor drive.
22	D_{4+}	O	Motor driver 4 obverse output terminal, slide motor drive.
23	PGND2	—	GND terminal 2 for driver.
24	PVCC2	—	Power supply terminal2 for driver.

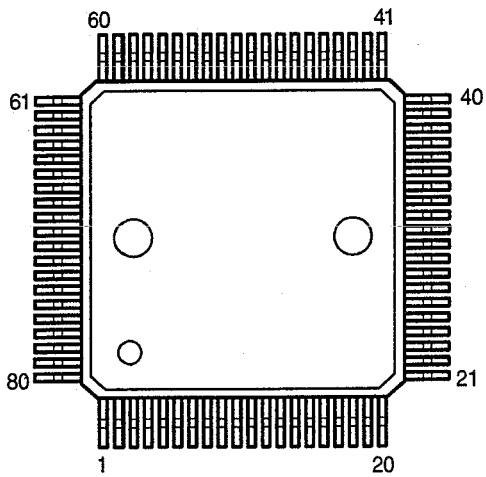
AN8805S (IC102) (Main unit)



AN8805S Terminal Function

Pin No.	Symbol	I/O	Function
1	PD	I	Inputs PD signal for output monitor of LD.
2	LD	O	Connet to external transistor's base for LD drive.
3	LDON	I	Shifts LD APC ON/OFF.
4	C.CRS	—	Capacitor connecting terminal for CROSS.
5	VCC	—	Power supply connecting terminal.
6	RF–	I	RF AMP reversal input terminal. Connect a resistor.
7	RFOUT	O	RF AMP output terminal (reversal AMP).
8	RFIN	I	Input terminal of RF AGC.
9	C. AGC	—	Capacitor connecting terminal for RF AGC loop filter.
10	ARF	O	RF output terminal of after AGC.
11	C. ENV	—	Capacitor connecting terminal for RF.
12	C. EA	—	Capacitor connecting terminal for AMP.
13	C. SBDO	—	Capacitor connecting terminal for low speed detection of dark level DO detection.
14	BDO	O	BDO detection output terminal. Positive logic.
15	C. SBRT	—	Capacitor connecting terminal for low speed detection of OFTR detection.
16	OFTR	O	Output terminal of OFF TRACK detection. Positive logic.
17	NRFDET	O	Output terminal of RF signal amplitude detection. Negative logic.
18	GND	—	GND.
19	ENV	O	ENV output terminal.
20	VREF	O	VCC x 0.5(V) output terminal.
21	LD OFF	I	Input terminal of LD APC forcible stop.
22	VDET	O	Output terminal of vibration detection.
23	TEBPF	I	Input terminal of vibration detection.
24	CROSS	O	Output terminal of TE CROSS detection signal.
25	TEOUT	O	Output terminal of TEAMP.
26	TE–	I	TEAMP reversal input terminal. Connect a resistor.
27	FEOUT	O	Output terminal of FEAMP.
28	FE–	I	FEAMP reversal input terminal. Connect a resistor.
29	FBAL	I	Control signal input terminal of FO balance adjustment.
30	TBAL	I	Control signal input terminal of TE balance adjustment.
31	PDFR	—	Resistor connecting terminal for setting IV converting resistance value of PDE.
32	PDER	—	Resistor connecting terminal for setting IV converting resistance value of PDF.
33	PDE	I	Connect to PIN diode E.
34	PDF	I	Connect to PIN diode F.
35	PDBD	I	Connect to B,D of astigmatism 1/4 divided PD.
36	PDAC	I	Connect to A,C of astigmatism 1/4 divided PD.

MN662724 (Main unit)
(IC104)

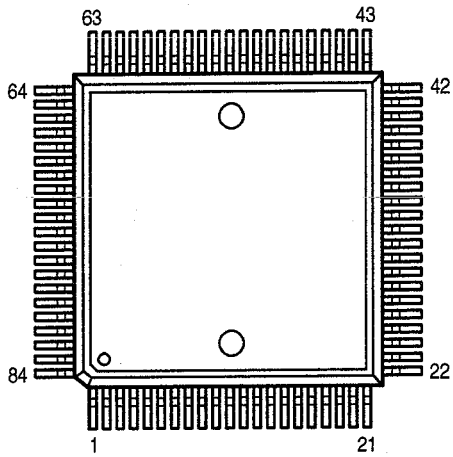


MN662724 Terminal Function

Pin No.	Symbol	I/O	Function
1	BCLK	O	Bit clock output for SRDATA.
2	LRCK	O	L,R discrimination signal output.
3	SRDATA	O	Serial data output.
4	DVDD1	–	Power supply for digital circuit.
5	DVSS1	–	GND for digital circuit.
6	TX	O	Digital audio interface output signal.
7	MCLK	I	Microcomputer command clock signal input (latches data at rising edge).
8	MDATA	I	Microcomputer command data input.
9	MLD	I	Microcomputer command load signal input. ("L": load)
10	SENSE	O	Sens signal output (OFT, FESL, NACEND, NAJEND, POSAD, SFG).
11	$\overline{\text{FLOCK}}$	O	Focus servo draw in signal ("L": draw in state).
12	$\overline{\text{TLOCK}}$	O	Tracking servo draw in signal ("L": draw in state).
13	BLKCK	O	Subcode block clock signal (fBLKCK=75Hz).
14	SQCK	I	External clock input for subcode Q register.
15	SUBQ	O	Subcode Q code output.
16	DMUTE	I	Muting input ("H": mute).
17	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQOK).
18	$\overline{\text{RST}}$	I	Reset input ("L": reset).
19	SMCK	O	8.4672MHz clock signal output at MSEL="H". 4.2336MHz clock signal output at MSEL="L".
20	PMCK	O	88.2kHz clock output.
21	TRV	O	Traverse forcible sending output. 3-state.
22	TVD	O	Traverse drive output.
23	PC	O	Spindle motor ON signal ("L": ON).
24	ECM	O	Spindle motor drive signal (forcible mode output). 3-state.
25	ECS	O	Spindle motor drive signal (servo error signal output).
26	KICK	O	Kick pulse output. 3-state.
27	TRD	O	Tracking drive output.
28	FOD	O	Focus drive output.
29	VREF	I	Reference voltage for DA output portion (TVD,BCS,TRD,FOD,FBAL,TBAL).
30	FBAL	O	Focus balance adjusting output.

Pin No.	Symbol	I/O	Function
31	TBAL	O	Tracking balance adjusting output.
32	FE	I	Focus error signal input (analog input).
33	TE	I	Tracking error signal input (analog input).
34	RFENV	I	RF envelope signal input (analog input).
35	VDET	I	Vibration detecting signal input ("H": detect).
36	OFT	I	Off track signal input ("H": off track).
37	TRCRS	I	Track cross signal input.
38	$\overline{\text{RFDET}}$	I	RF detecting signal input ("L": detect).
39	BDO	I	Drop out signal input ("H": drop out).
40	LDON	O	Laser ON signal output ("H": ON).
41	PLLF2	I/O	Loop filter terminal for PLL.
42	PLAY	O	Play signal output ("H": play).
43	WVEL	O	Double speed status signal output.
44	ARF	I	RF signal input.
45	IREF	I	Reference current input terminal.
46	DRF	I	Bias terminal for DSL.
47	DSLF	I/O	Loop filter terminal for DSL.
48	PLLF	I/O	Loop filter sterminal for PLL.
49	VCOF	I/O	Loop filter terminal for VCO.
50	AVDD2	–	Power supply for analog circuit (for DSL, PLL, DA output sections).
51	AVSS2	–	GND for analog circuit (for DSL, PLL, DA output sections).
52	CK384	O	384 fs clock output.
53	PCK	O	PLL extract clock output (fPCK=4.3218MHz).
54	TOFS	O	Tracking offset adjust signal output.
55	SUBC	O	Subcode serial output data output.
56	SBCK	I	Clock input for subcode serial output.
57	VSS	–	GND for osc. circuit.
58	X1	I	X'tal osc. circuit input terminal. f=16.9344MHz or 33.8688MHz.
59	X2	O	X'tal osc. circuit output terminal.
60	VDD	–	Power supply for osc. circuit.
61	BYTCK	O	Byte clock output.
62	$\overline{\text{CLDCK}}$	O	Subcode frame clock signal output (fCLDCK=7.35kHz).
63	FCLK	O	X'tal frame clock output (fFCLK=7.35kHz).
64	IPFLAG	O	Interpolation flag output ("H": interpolation).
65	FLAG	O	Flag output.
66	CLVS	O	Spindle servo phase sync state signal output ("H":CLV, "L":rough servo).
67	CRC	O	Subcode CRC check result output ("H":OK, "L":NG).
68	DEMPH	O	Deemphasis detecting signal output ("H":ON).
69	RESY	O	Flag 6 output at SSEL:"H"(RAM address reset generating signal by Jitter margin over of CLV servo. "L":address reset generates). RESY output at SSBL:"L"(Re-sync signal output of frame sync. "H": sync, "L":out sync).
70	SDAT48	O	48 fs serial data output.
71	$\overline{\text{TEST}}$	I	Test terminal (normally "H").
72	AVDD1	–	Power supply for digital circuit.
73	LRCK48	O	48 fs L, R discrimination signal output.
74	AVSS1	–	GND for digital circuit.
75	BCLK48	O	48 fs bit clock output for SDAT48.
76	RSEL	I	RF signal polarity specify terminal (RSEL="H" at brightness level "H". RSEL="L" at brightness level "L").
77	CSEL	I	X'tal osc. frequency specify terminal, X'tal osc. freq. 33.8688MHz:CSEL"H", 16.9344MHz:CSEL"L".
78	PSEL	I	Test terminal (normally "L").
79	MSEL	I	SMCK terminal. Output frequency shifting terminal ("H":SMCK=8.4672MHz, "L":SMCK=4.2336MHz).
80	SSEL	I	Sub Q teminal. Output mode shifting terminal ("H":Q code buffer using mode).

MN19412A (Main Unit)
(IC113)



MN19412A Terminal Function

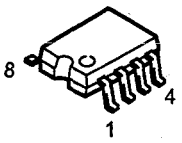
Pin No.	Symbol	I/O/T	Function
1	N.C.	—	Non connection.
2	SOEN2	I	Output enable for serial output 2.
3	SCKO2	I	Serial clock for serial output 2.
4	SDO3	O/T	Data for serial output 3.
5	WSO3	I	Word select for serial output 3.
6	SCKO3	I	Serial clock for serial output 3.
7	SOEN3	I	Output enable for serial output 3.
8	Vss	—	GND terminal (0V).
9	Vss	—	GND terminal (0V).
10	XCAS	O	Column address strobe for external DRAM. Open when not used.
11	XOE	O	Output enable for external RAM.
12	A14	O	Address 14 for external RAM.
13	A13	O	Address 13 for external RAM.
14	A12	O	Address 12 for external RAM.
15	A11	O	Address 11 for external RAM.
16	A10	O	Address 10 for external RAM.
17	A9	O	Address 9 for external RAM.
18	A8	O	Address 8 for external RAM.
19	A7	O	Address 7 for external RAM.
20	A6	O	Address 6 for external RAM.
21	N.C.	—	Non connection.
22	A5	O	Address 5 for external RAM.
23	A4	O	Address 4 for external RAM.
24	A3	O	Address 3 for external RAM.
25	A2	O	Address 2 for external RAM.
26	A1	O	Address 1 for external RAM.
27	A0	O	Address 0 for external RAM.
28	XCE2	O	Chip enable 2 for external SRAM.
29	XCE1	O	Chip enable 1 for external SRAM.
30	XRAS	O	Row address strobe for external DRAM. Open when not used.

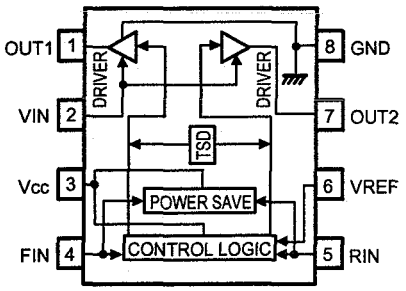
Pin No.	Symbol	I/O/T	Function
31	XWE	O	Write enable for external RAM.
32	VSS	—	GND terminal (0V).
33	VSS	—	GND terminal (0V).
34	D7	I/O	Data 7 for external RAM (Connect to D4~7 when one DRAM is used).
35	D6	I/O	Data 6 for external RAM.
36	D5	I/O	Data 5 for external RAM.
37	D4	I/O	Data 4 for external RAM.
38	D3	I/O	Data 3 for external RAM.
39	D2	I/O	Data 2 for external RAM.
40	D1	I/O	Data 1 for external RAM.
41	D0	I/O	Data 0 for external RAM.
42	P7	I/O/T	General purpose port 7.
43	P6	I/O/T	General purpose port 6.
44	P5	I/O/T	General purpose port 5.
45	P4	I/O/T	General purpose port 4.
46	P3	I/O/T	General purpose port 3.
47	P2	I/O/T	General purpose port 2.
48	P1/PT1	I/O/T	General purpose port 1/Flag 1 for condition dividing.
49	P0/PT0	I/O/T	General purpose port 0/Flag 0 for condition dividing.
50	N.C.	—	Non connection.
51	SYNC	I	Input for program sync (condition input).
52	VDD	—	Power supply terminal.
53	INT0	I	Interrupt input 0.
54	INT1	I	Interrupt input 1.
55	XRESET	I	System reset input.
56	Vss	—	GND terminal (0V).
57	CLKI	I	System clock input.
58	CLKO	O	System clock output.
59	VDD	—	Power supply terminal.
60	VDD	—	Power supply terminal.
61	ADDR0	I	Address select 0 for IIC bus.
62	ADDR1	I	Address select 1 for IIC bus.
63	XCE	I	Chip enable for IIC bus.
64	IICSEL	I	IIC/IC switching for IIC bus.
65	XTRANS	I	Data transfer control for IIC bus.
66	SDA	I/O	Serial data for IIC bus.
67	SCL	I/O	Serial clock for IIC bus.
68	MATCH	O	Address match at coefficient input for IIC bus.
69	SDI1	I	Data for serial input 1.
70	WSI1	I	Word select for serial input 1.
71	N.C.	—	Non connection.
72	SCKI1	I	Serial clock for serial input 1.
73	SDI2	I	Data for serial input 2.
74	WSI2	I	Word select for serial input 2.
75	SCKI2	I	Serial clock for serial input 2.
76	VDD	—	Power supply terminal.
77	VDD	—	Power supply terminal.
78	SDO1	O/T	Data for serial output 1.
79	WSO1	I	Word select for serial output 1.
80	N.C.	—	Non connection.
81	SCKO1	I	Serial clock for serial output 1.
82	SOEN1	I	Output enable for serial output 1.
83	SDO2	O/T	Data for serial output 2.
84	WSO2	I	Word select for serial output 2.

SMICONDUCTORS

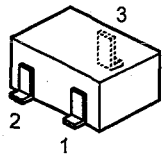
● IC's

BA6287F(IC105)
(Main unit)



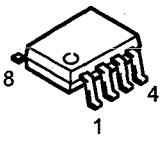


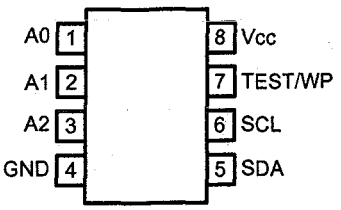
MN1382-S(IC106)
(Main unit)



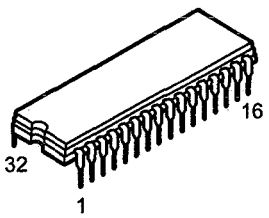
1: GND
2: V_{DD}
3: OUT

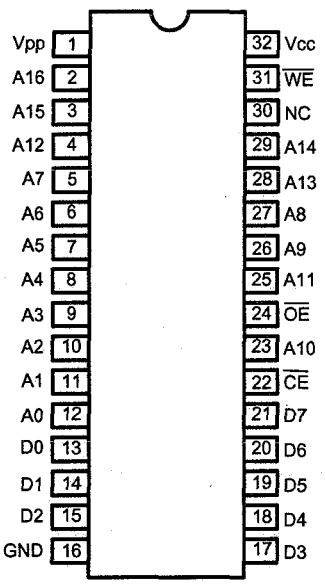
S-24C04AFJ(IC107)
(Main unit)



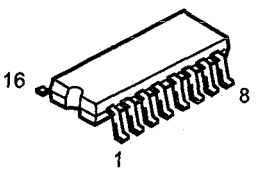


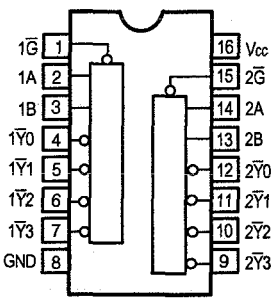
CAT28F010-09(IC108)
(Main unit)



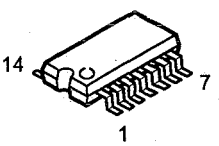


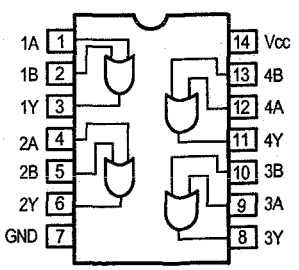
TC74HC139AF(IC111)
(Main unit)



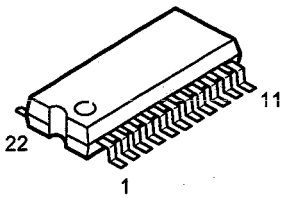


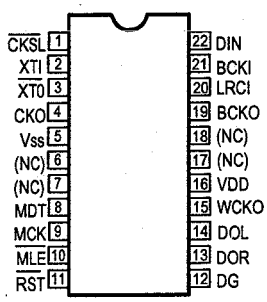
HD74HC32AFP(IC112)
(Main unit)



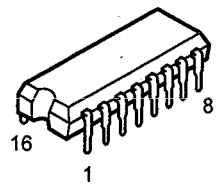


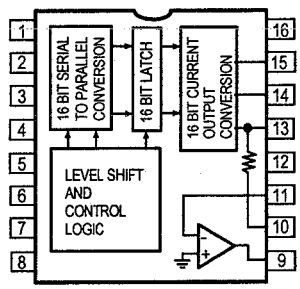
SM5841BS(IC114) (Main unit)



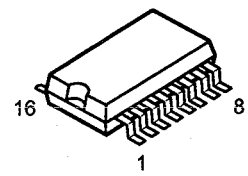


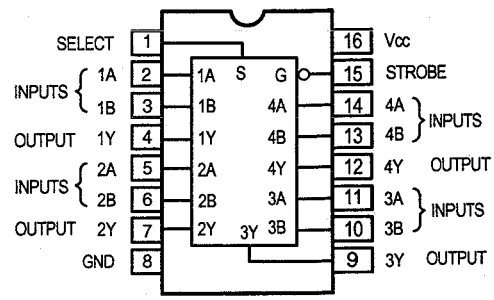
PCM61P-K(IC115,116) (Main unit)



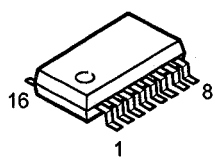


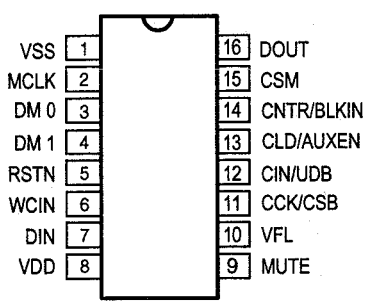
TC74HC157AF(IC117) (Main unit)



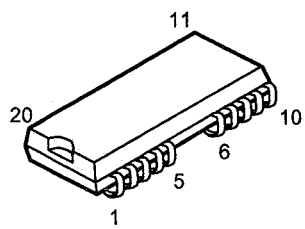


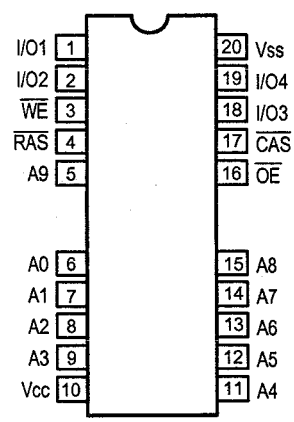
YM3437C-F(IC118) (Main unit)



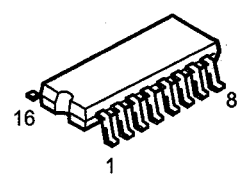


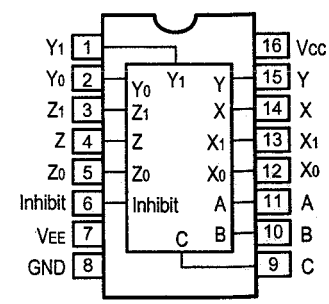
LH64256(CK, BK-70) (IC120) (Main unit)



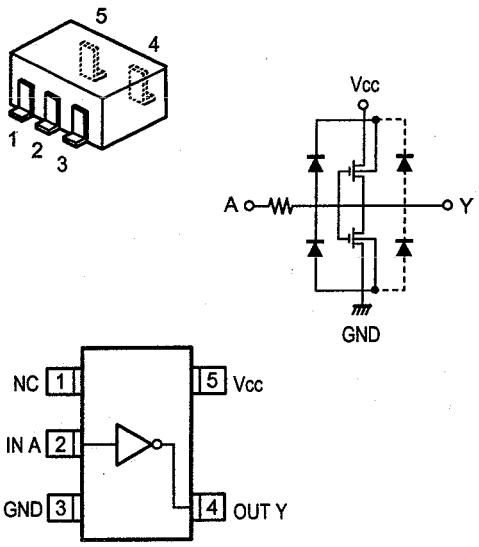


HD74HC4053FP(IC121) (Main unit)

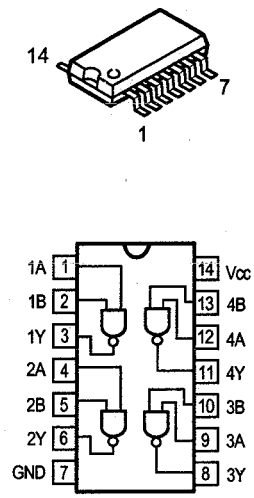




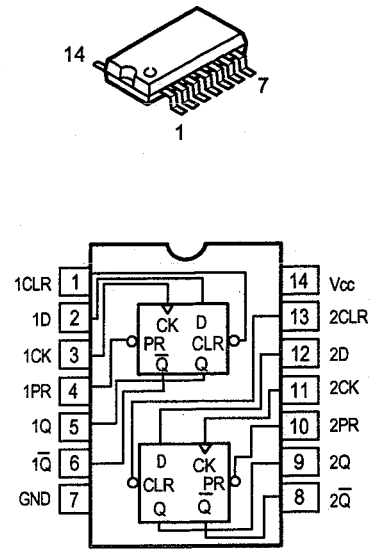
TC7SU04F(IC122)
(Main unit)



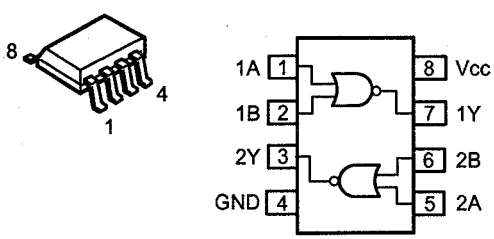
TC74HC00FP(IC123)
(Main unit)



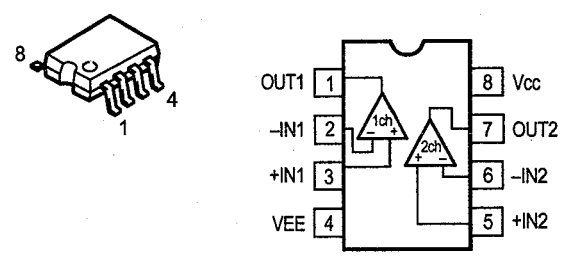
HD74HC74FP(IC124)
(Main unit)



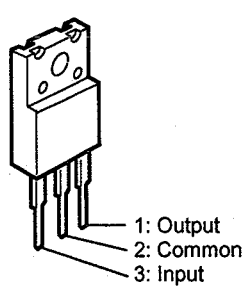
TC7W02F(IC125)
(Main unit)



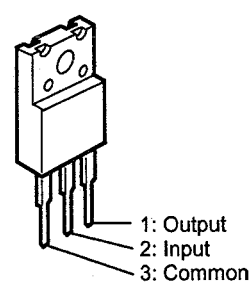
BA15218F(IC419)
NJM5532MD(IC409,410)
(Main unit)



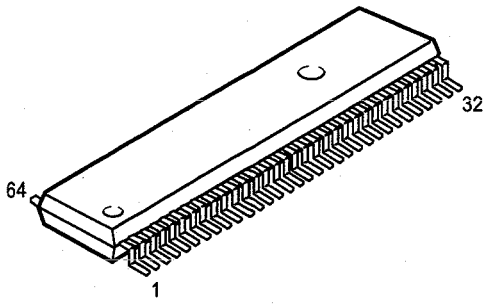
NJM7805FA(S) (IC414)
NJM78M05FA(S) (IC415)
NJM7806FA(S) (IC413)
NJM78M12FA(S) (IC417)
(Main unit)

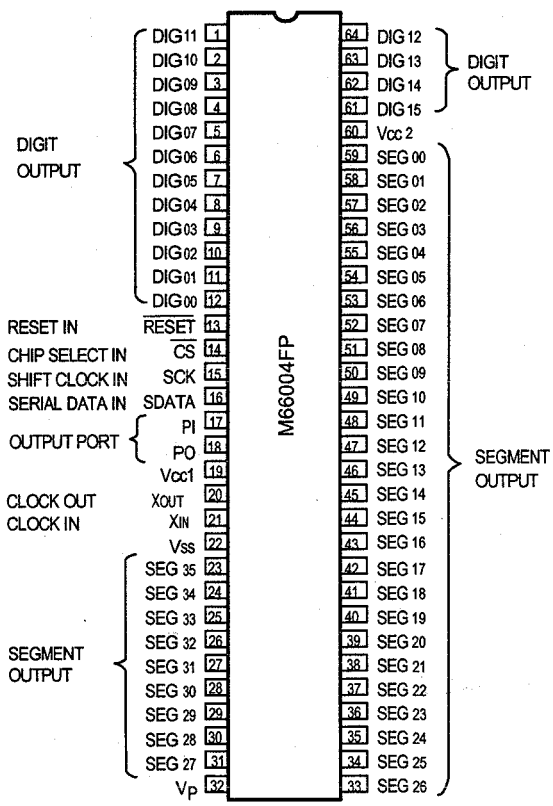


NJM79M05FA(S) (IC416)
NJM79M12FA (IC418)
(Main unit)

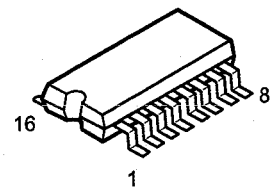


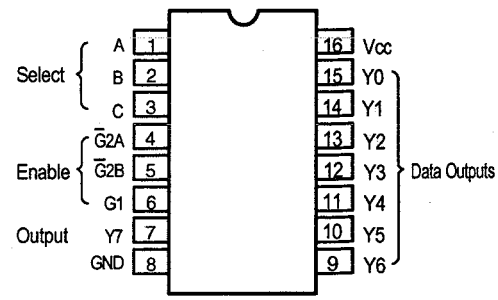
M66004FP(IC502)
(Display/Key unit)



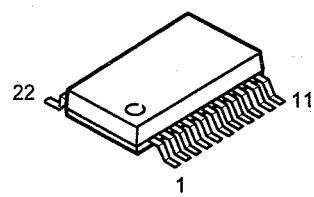


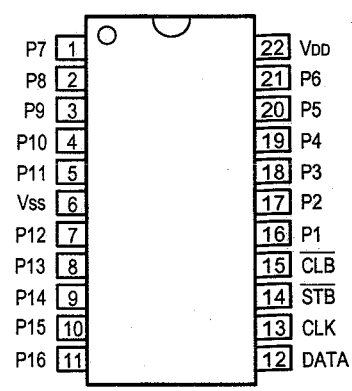
TC74HC138AF(IC503)
(Display/Key unit)



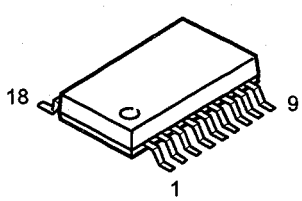


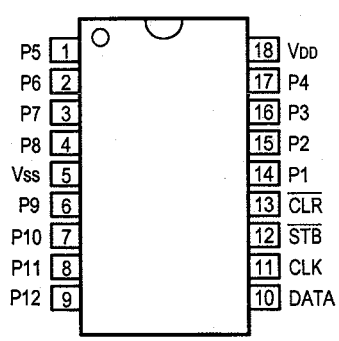
NJU3715G(IC504)
(Display/Key unit)



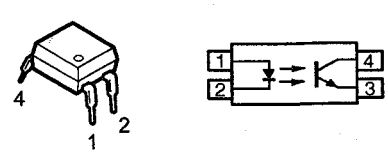


NJU3713GTI(IC801)
(Main unit)

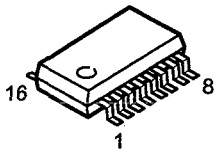


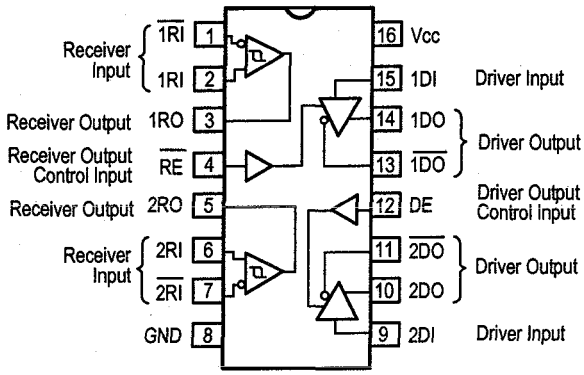


TLP521-1(BL) (IC802)
(Main unit)

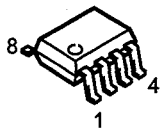


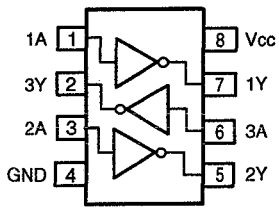
M5M34051FP(IC809)
(Main unit)



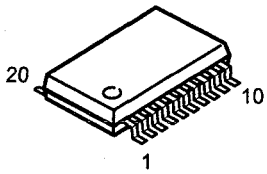


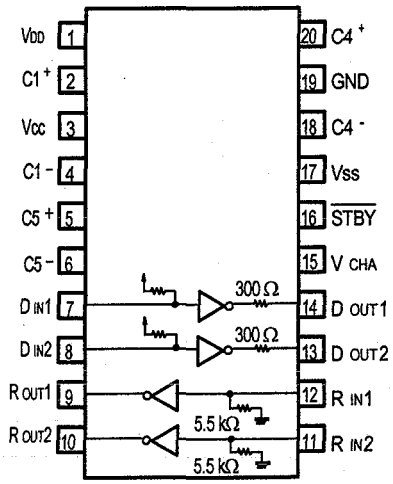
TC7WU04F(IC810)
(Main unit)





μPD4721GS-GJG (IC811)
(Main unit)

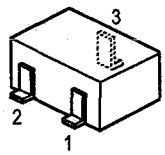




● TRANSISTOR

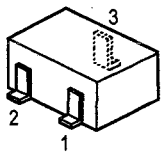
2SA933
(TR101)

2SA1037K (S/R)
(TR502,504)
2SC2412K
(TR102)



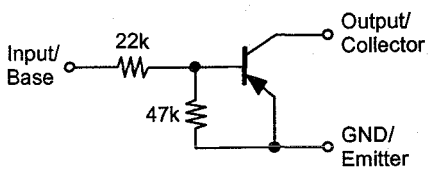
1: GND/Emitter
2: Input/Base
3: Output/Collector

DTA124XK
(TR409)
DTC114EK
(TR410,413,501)

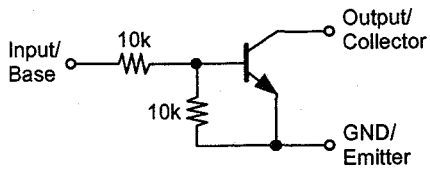


1: GND/Emitter
2: Input/Base
3: Output/Collector

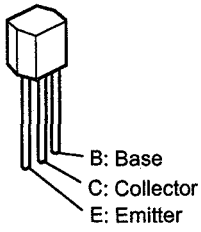
DTA124XK



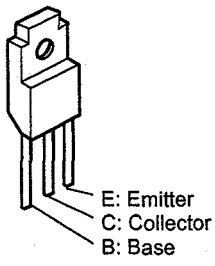
DTC114EK



2SC1740 (S)
(TR411)
2SD2144STPU
(TR401,402,405~408)



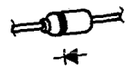
2SB1185 (E/F)
(TR412)



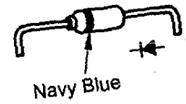
● DIODE

MA151A(D101~104, 407,408,413, 501~509,511~514)
MA151WA(D807~812,816,818)
MA151WK(D801~806, 815,817)

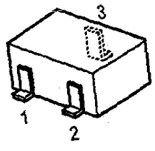
1SS270A (D405)

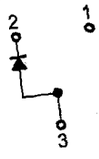


1SR139-200T-62 (D411,412)



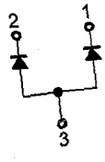
MA151A





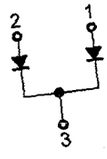
1: NC
2: Cathode
3: Anode

MA151WA



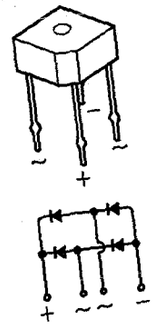
1: Cathode
2: Cathode
3: Anode

MA151WK

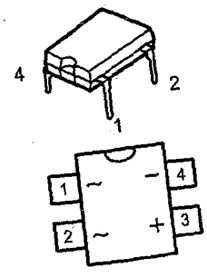


1: Anode
2: Anode
3: Cathode

S4VB20F(D409)

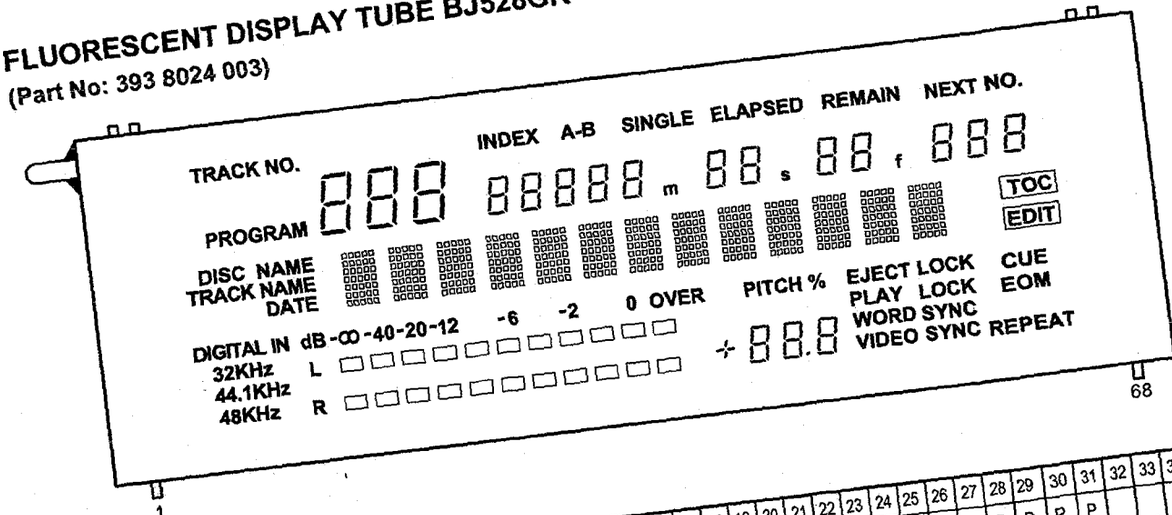


S1WB(A) 10 (D410)



● FLUORESCENT DISPLAY TUBE BJ528GK

(Part No: 393 8024 003)



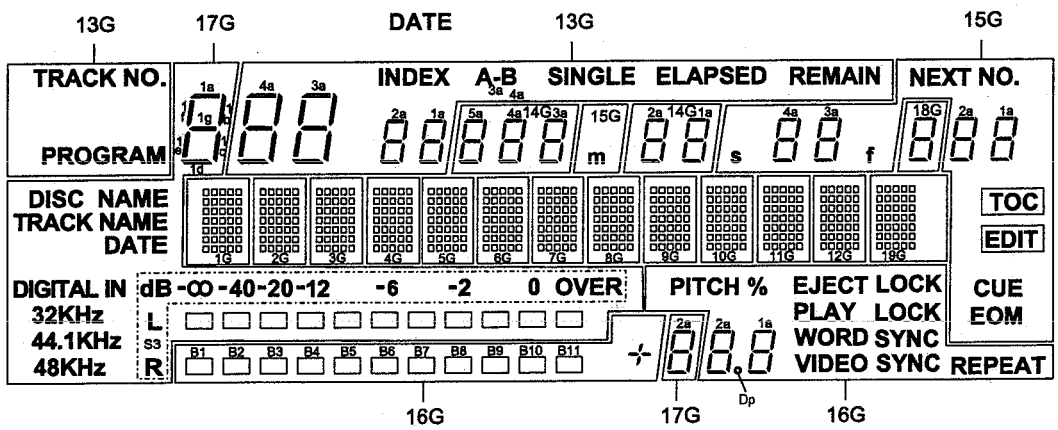
Pin Connection

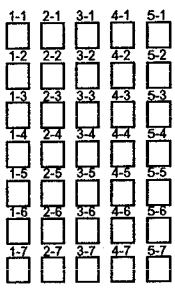
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Connection	F1	F1	F1	NP	NP	P35	P34	P33	P32	P31	P30	P29	P28	P27	P26	P25	P24	P23	P22	P21	P20	P19	P18	P17	P16	P15	P14	P13	P12	P11	P10	P9	P8	P7	P6

Pin No.	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
Connection	P5	P4	P3	P2	P1	NC	NC	NC	NC	19G	18G	17G	16G	15G	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	F2	F2	F2

Note:
1) F1, F2 ——— Filament
2) NP ——— No pin
3) NC ——— No connection
4) DL ——— Datum Line
5) 1G~19G ——— Grid
6) IC ——— Internal connection

GRID ASSIGNMENT





ANODE CONNECTION

	1G~12G	13G	14G	15G	16G	17G	18G	19G
P1	1-1	TRACK NO	5d	m s	B11	B11	—	1-1
P2	2-1	4d	4d	4d	B10	B10	—	2-1
P3	3-1	3d	3d	3d	B9	B9	—	3-1
P4	4-1	2d	2d	2d	2d	2d	—	4-1
P5	5-1	1d	1d	1d	1d	1d	1d	5-1
P6	1-2	PROGRAM	5e	f	B8	B8	—	1-2
P7	2-2	4e	4e	4e	B7	B7	—	2-2
P8	3-2	3e	3e	3e	B6	B6	—	3-2
P9	4-2	2e	2e	2e	2e	2e	—	4-2
P10	5-2	1e	1e	1e	1e	1e	1e	5-2
P11	1-3	INDEX	5c	TOC	B5	B5	—	1-3
P12	2-3	4c	4c	4c	B4	B4	—	2-3
P13	3-3	3c	3c	3c	B3	B3	—	3-3
P14	4-3	2c	2c	2c	2c	2c	—	4-3
P15	5-3	1c	1c	1c	1c	1c	1c	5-3
P16	1-4	A-B	5g	EDIT	B2	B2	—	1-4
P17	2-4	4g	4g	4g	B1	B1	—	2-4
P18	3-4	3g	3g	3g	S1	DATA	—	3-4
P19	4-4	2g	2g	2g	2g	2g	—	4-4
P20	5-4	1g	1g	1g	1g	1g	1g	5-4
P21	1-5	SINGLE	5f	CUE	S2	—	—	1-5
P22	2-5	4f	4f	4f	VIDEO SYNC	DISC NAME	—	2-5
P23	3-5	3f	3f	3f	REPEAT	TRACK NAME	—	3-5
P24	4-5	2f	2f	2f	2f	2f	—	4-5
P25	5-5	1f	1f	1f	1f	1f	1f	5-5
P26	1-6	ELAPSED	5b	EOM	—	—	—	1-6
P27	2-6	4b	4b	4b	—	DIGITAL IN	—	2-6
P28	3-6	3b	3b	3b	WORD SYNC	32KHz	—	3-6
P29	4-6	2b	2b	2b	2b	2b	—	4-6
P30	5-6	1b	1b	1b	1b	1b	1b	5-6
P31	1-7	REMAIN	5a	NEXT NO.	PLAY LOCK	44.1KHz	—	1-7
P32	2-7	4a	4a	4a	EJECT LOCK	48KHz	—	2-7
P33	3-7	3a	3a	3a	PITCH % Dp	S3	—	3-7
P34	4-7	2a	2a	2a	2a	2a	—	4-7
P35	5-7	1a	1a	1a	1a	1a	1a	5-7

ANODE CONNECTION

	1G~12G	13G	14G	15G	16G	17G	18G	19G
P36	—	—	5d	m s	—	—	—	—
P37	—	—	4d	4d	—	—	—	—
P38	—	—	3d	3d	—	—	—	—
P39	—	—	2d	2d	—	—	—	—
P40	—	—	1d	1d	—	—	1d	—
P41	—	—	5e	f	—	—	—	—
P42	—	—	4e	4e	—	—	—	—
P43	—	—	3e	3e	—	—	—	—
P44	—	—	2e	2e	—	—	—	—
P45	—	—	1e	1e	—	—	1e	—
P46	—	—	5c	TOC	—	—	—	—
P47	—	—	4c	4c	—	—	—	—
P48	—	—	3c	3c	—	—	—	—
P49	—	—	2c	2c	—	—	—	—
P50	—	—	1c	1c	—	—	1c	—
P51	—	—	5g	EDIT	—	—	—	—
P52	—	—	4g	4g	—	—	—	—
P53	—	—	3g	3g	—	—	—	—
P54	—	—	2g	2g	—	—	—	—
P55	—	—	1g	1g	—	—	1g	—
P56	—	—	5f	CUE	—	—	—	—
P57	—	—	4f	4f	—	—	—	—
P58	—	—	3f	3f	—	—	—	—
P59	—	—	2f	2f	—	—	—	—
P60	—	—	1f	1f	—	—	1f	—
P61	—	—	5b	EOM	—	—	—	—
P62	—	—	4b	4b	—	—	—	—
P63	—	—	3b	3b	—	—	—	—
P64	—	—	2b	2b	—	—	—	—
P65	—	—	1b	1b	—	—	1b	—
P66	—	—	5a	NEXT NO.	—	—	—	—
P67	—	—	4a	4a	—	—	—	—
P68	—	—	3a	3a	—	—	—	—
P69	—	—	2a	2a	—	—	—	—
P70	—	—	1a	1a	—	—	1a	—

PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	GU- 2999	Main P.W.B. unit ass'y		1
1-1	GU- 2999 -1	Main PWB unit		
1-2	GU- 2999 -2	Digital I/F P.W.B. unit		
1-3	GU- 2999 -3	Audio P.W.B. unit		
2	GU- 3001 B	Display/key P.W.B. unit ass'y		1
2-1	GU- 3001 -1	Key LED P.W.B. unit		
2-2	GU- 3001 -2	FLT P.W.B. unit		
2-3	GU- 3001 -3	H/P P.W.B. unit		
2-4	GU- 3001 -4	Jog P.W.B. unit		
2-5	GU- 3001 -6	Sel. SW P.W.B. unit		
2-6	GU- 3001 -7	Trans. P.W.B. unit		
3	411 1360 101	Chassis		1
4	449 0050 064	Card spacer		8
5	415 9016 064	P.C.B. holder		1
6	461 0911 006	Foot sheet		2
7	412 4214 008	Trans. bracket		1
8	412 4218 101	Mecha. bracket		1
9	412 4216 006	P.W.B. bracket (A)		1
10	105 1228 102	Back panel		1
11	414 0811 003	Blind plate		1
12	479 0003 025	Push rivet		8
13	513 2063 004	E2 laser caution	Europe and U.K. models	1
⚠ 14	203 3962 003	AC inlet		1
15	203 5169 011	3P VH connector cord	CN31	1
16	203 0657 023	1P terminal wire	W11	1
17	412 4217 005	P.W.B. bracket (B)		1
⚠ 18	233 6219 000	Power trans.	T401	1
19	513 1869 005	Caution label		1
⚠ 20	206 1039 034	Fuse 1A	F401	1
⚠ 21	206 1039 050	Fuse 1.6A T	F402	1
22	513 1220 000	Caution label		1
23	337 0043 008	CD mecha. unit		1
24	204 0494 014	6P shield wire	CN61	1
25	204 0524 007	6P connector cord (M-P)	CN63	1
26	204 0479 026	6P connector cord	CN62	1
27	412 9371 001	Spring plate		1
28	205 0712 090	15P TBG-S connector		2
29	009 0105 038	25P FFC cable		1
30	144 2526 112	Front panel		1
31	441 1822 103	Inner panel ass'y		1
32	146 0919 002	Knob guide		1
33	146 1674 003	Window		1
34	461 0912 005	Sheet		2
35	119 0090 107	Rubber key (A)		1
36	119 0091 106	Rubber key (B)		1
37	009 0148 008	24P FFC cable (turn)		1
38	445 0048 016	Cord holder (L50)		1
39	412 4188 008	H/P bracket		1
40	445 8028 009	Cord holder		1
42	113 1188 227	P.S. lever ass'y		1
43	113 1642 019	Jog dial		1
44	112 0526 418	Select knob A		1
45	112 0555 007	Vol. knob (B)		1
46	146 1571 106	Loader panel		1
47	102 0565 142	Top cover		1
48	412 4087 002	Mounter		2

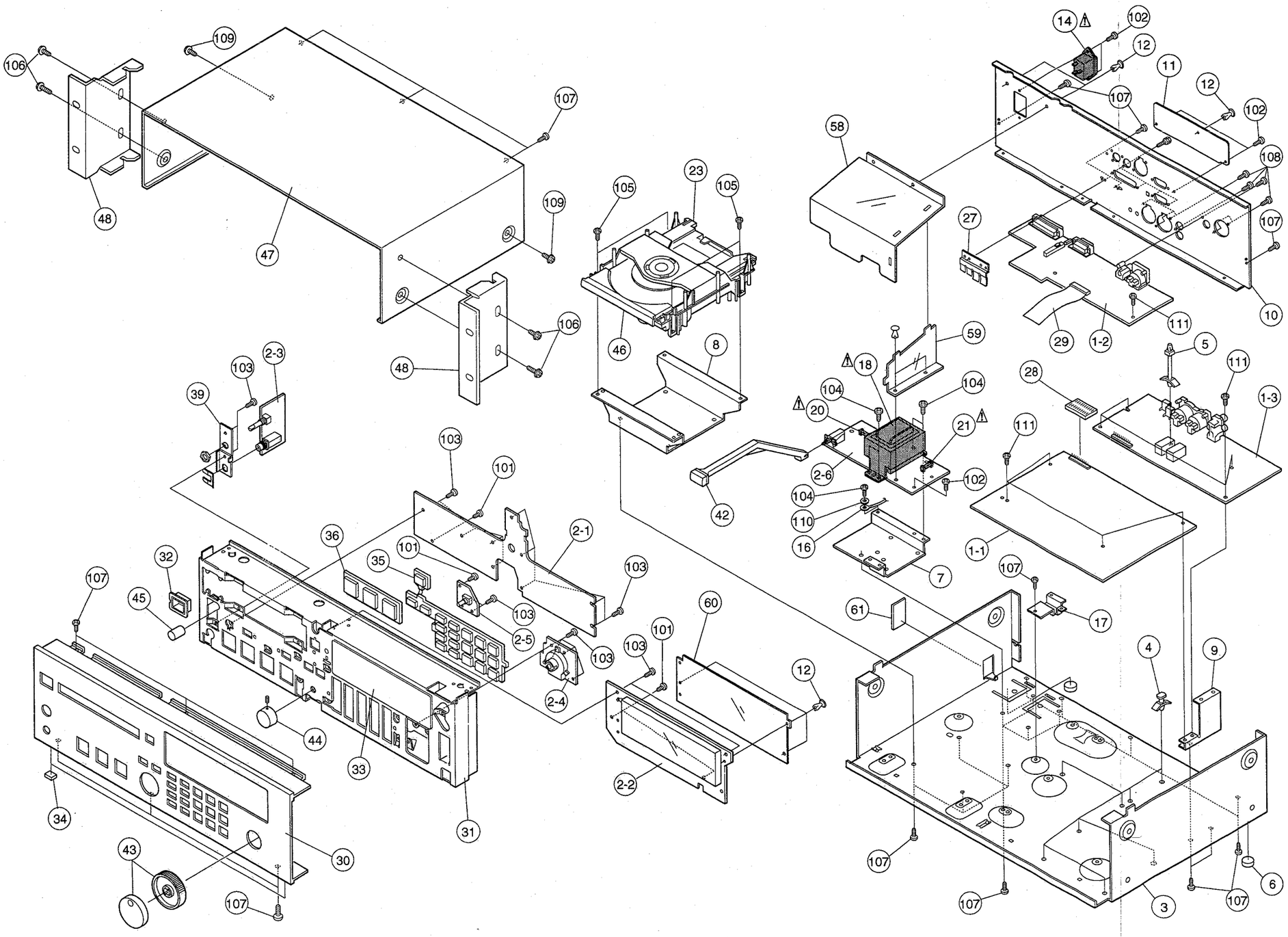
Ref. No.	Part No.	Part Name	Remarks	Q'ty
49	513 2674 011	Rating sheet	Europe and U.K. models	1
	513 2674 008	Rating sheet	U.S.A. and Canada models	1
50	513 2521 009	CE label	Europe and U.K. models	1
51	513 2303 007	Version label		1
52	513 0985 003	Inst. label		1
53	513 2696 002	CUL label		1
54	513 1560 003	GND caution label	U.S.A. and Canada models	1
55	513 1451 099	Fuse label	U.S.A. and Canada models	1
56	513 1829 016	Fuse label	U.S.A. and Canada models	1
57	513 2697 001	E3 label	U.S.A. and Canada models	1
58	414 0812 002	Trans cover (A)		1
59	414 0813 001	Trans cover (B)		1
60	414 0814 000	PWB cover (A)		1
61	414 0815 009	Side cover		1
SCREWS				
101	471 3301 018	Screw 3X4 CBS-Z		4
102	473 7002 021	Screw 3X8 CBTS(S)-B		4
103	473 7002 034	Screw 3X6 CBTS(S)-B		20
104	473 7004 003	Screw 4X8 CBTS(S)-Z		5
105	473 7005 002	Screw 3X10 CBTS(S)-Z		4
106	473 7007 013	Screw 4X10 CBTS(S)-B		4
107	473 7015 018	Screw 3X8 CBTS(S)-B		32
108	473 7508 017	Screw 3X10 CBTS(P)-B		7
109	477 0263 005	3P. swelling screw		2
110	475 2004 004	4SW ZN		1
111	473 7002 018	Screw 3X8 CBTS (S)-Z		10
PACKING & ACCESSORIES				
201	505 8092 007	Laminate envelope		1
202	503 1240 009	Cushion		2
203	505 0038 030	Poly. cover		1
204	511 3080 006	Inst. manual (4)		1
205	504 0092 073	Stylen paper		1
⚠ 206	206 2068 004	3P AC cord set	Others	1
⚠	206 2153 003	AC Cordset (EK)	U.K. model	1
⚠	206 2107 004	AC cord set (SJT)	U.S.A. and Canada models	1
207	501 1924 028	Carton case	Others	1
	501 1924 044	Carton case	U.K. model	1
208	513 2303 007	Version label		1
209	502 0990 004	PAD Ass'y	U.K. model	1

EXPLODED VIEW

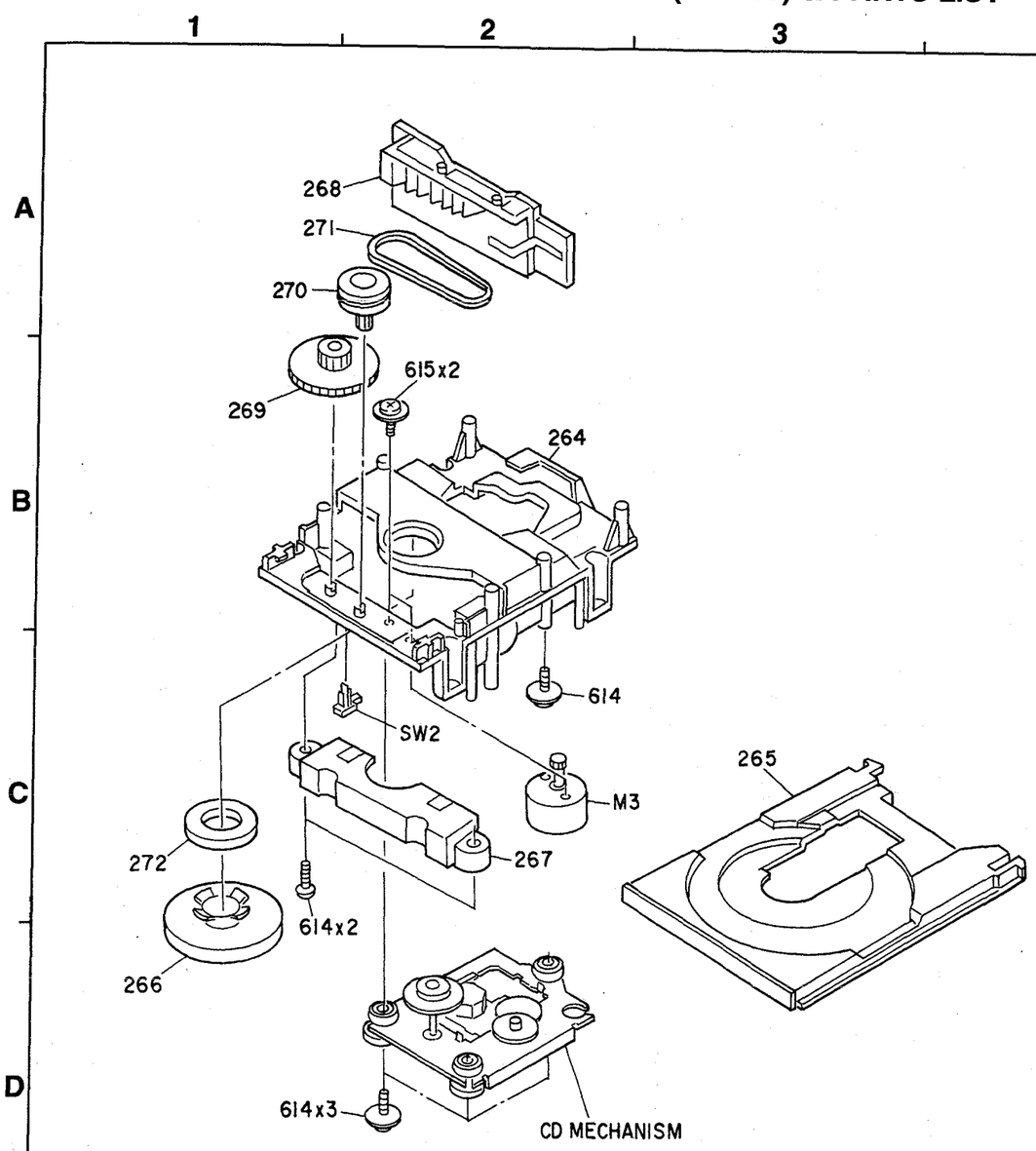
1 2 3 4 5 6 7 8

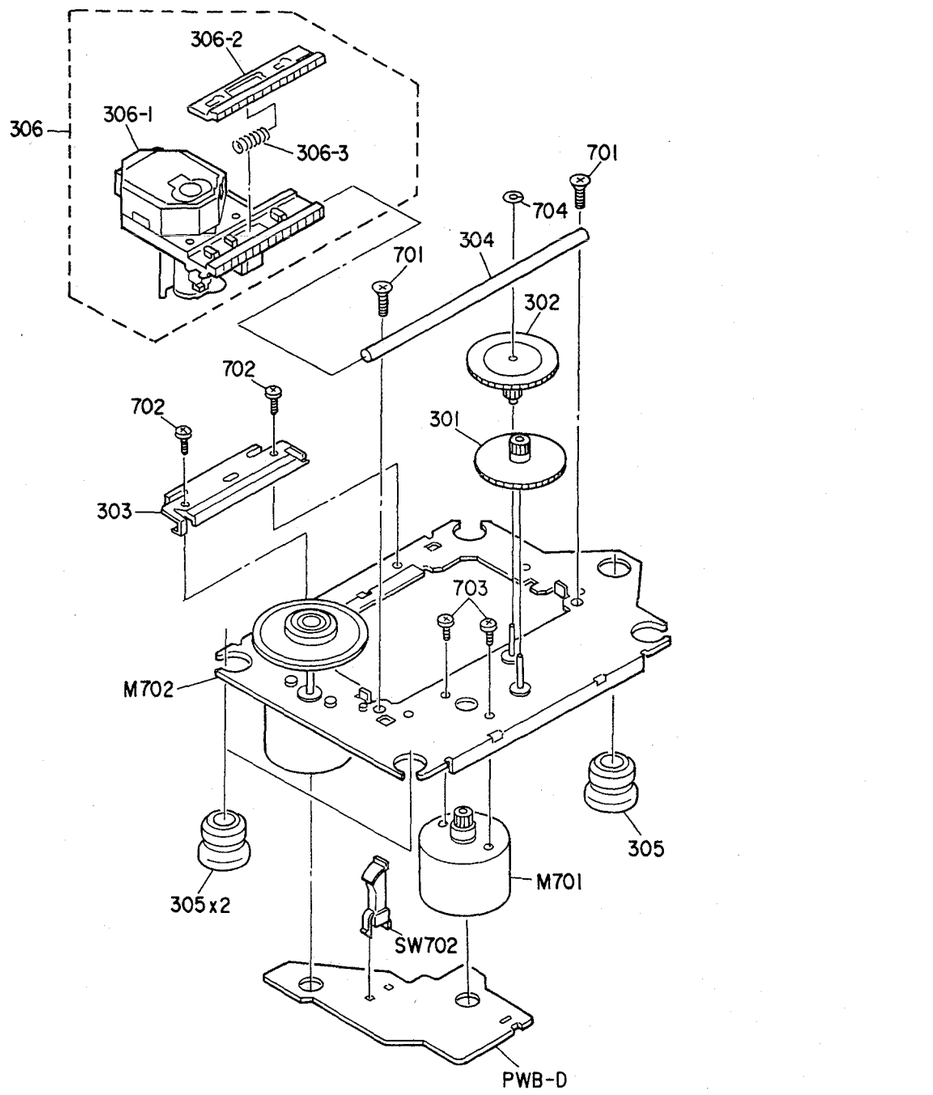
A B C D E

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



EXPLODED VIEW OF CD MECHANISM UNIT (FG-110) & PARTS LIST





PARTS LIST OF MECHANISM UNIT (TRAY)

Ref.No.	Part No.	Part Name	Remarks	Q'ty
264	937 0122 402	Body chassis		1
265	937 0122 509	Disc holder		1
266	937 0122 606	Stabilizer		1
267	937 0122 703	Mecha. holder		1
268	937 0122 800	Gear rack		1
269	937 0122 907	Gear tray		1
270	937 0123 003	Pully drive		1

Ref.No.	Part No.	Part Name	Remarks	Q'ty
271	937 0123 100	Belt drive		1
272	937 0123 207	Magnet		1
M3	937 0123 304	Loading motor		1
SW2	937 0123 401	Switch		1
614	937 0121 830	Screw 2.6×10		6
615	937 0121 843	Screw 2.6×5		2

PARTS LIST OF MECHANISM UNIT (CD MECHA.)

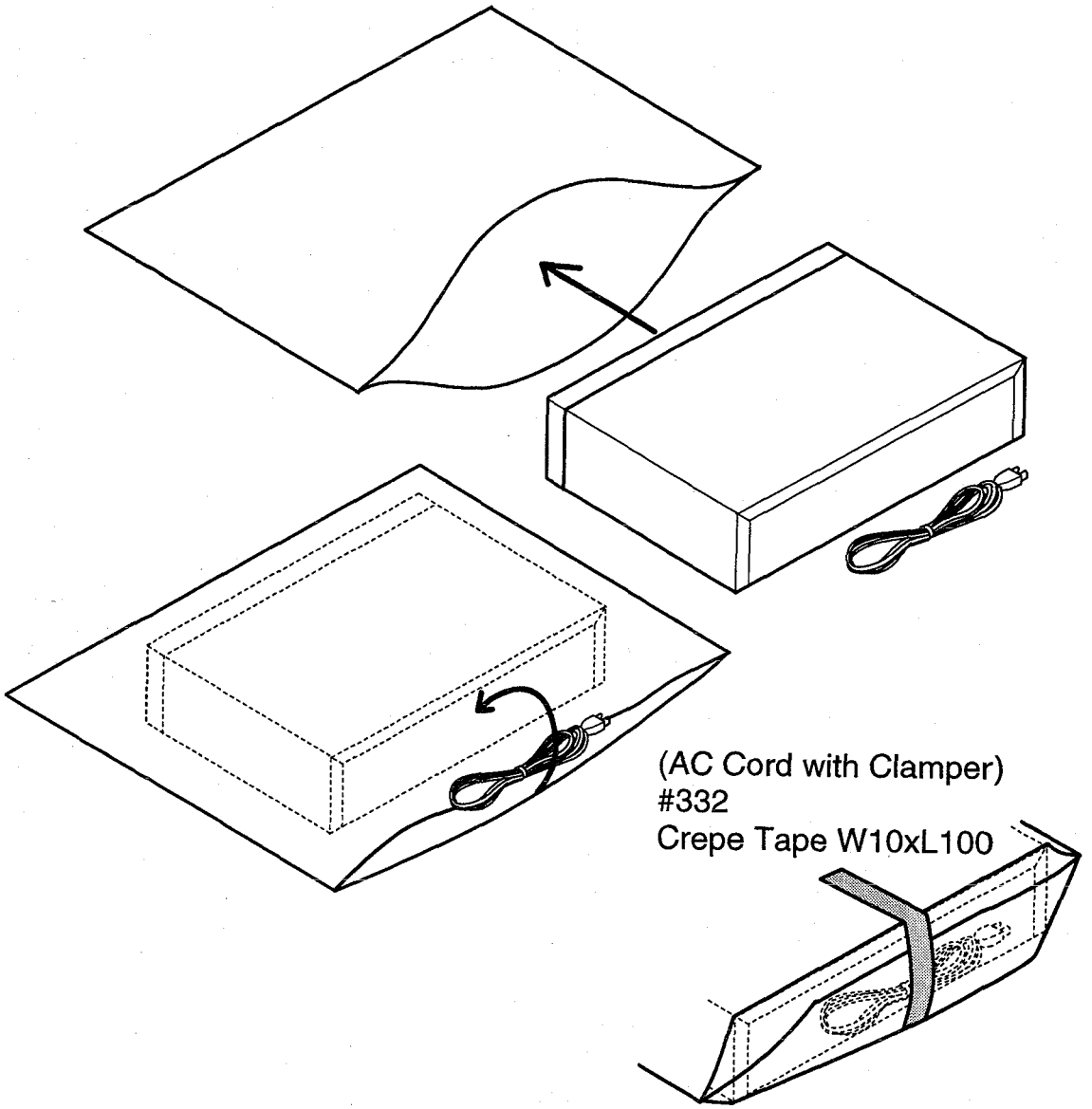
Ref.No.	Part No.	Part Name	Remarks	Q'ty
301	937 0121 005	Gear middle		1
302	937 0121 102	Gear drive		1
303	937 0121 209	Rail guide		1
304	937 0121 306	Shaft guide		1
305	937 0121 403	Cushion		3
306	937 0121 500	Pickup Ass'y		1
306-2	937 0121 607	Gear rack		1
306-3	937 0121 704	Spring rack		1

Ref.No.	Part No.	Part Name	Remarks	Q'ty
701	937 0121 801	Screw 2.6×6		2
702	937 0121 814	Screw 2.0×5		2
703	937 0121 827	Screw 2.0×3		2
704	937 0121 908	Washer		1
M701	937 0122 004	Motor+Gear		1
M702	937 0122 101	Motor+Chassis		1
SW702	937 0122 208	Switch		1
PWB-D	937 0122 305	Board only		1

PACKING VIEW

1 2 3 4

* Refer to the Packing & Accessories on the page 60.



(AC Cord with Clamper)
#332
Crepe Tape W10xL100

A B C D E