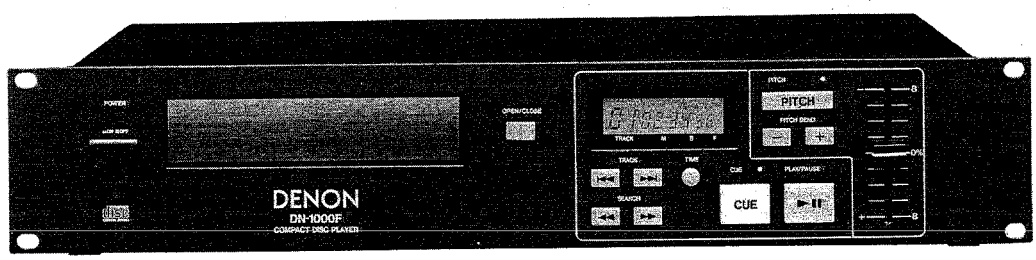
DENON

Hi-Fi Component

SERVICE MANUAL

MODEL DN-1000F

CD PLAYER



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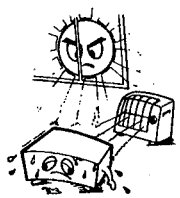
NIPPON COLUMBIA CO., LTD.

NOTE ON USE

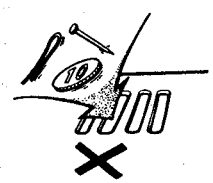


Be careful of high temperatures

- Do not place the set in a location where it will be exposed to direct sunlight or near a heating appliance.

Caution on rack/cabinet installation

- Avoid installing the set in a closed-type rack.
- When installing in a rack or cabinet, provide a sufficiently large ventilation opening to promote heat radiation.



Do not allow foreign matter into the equipment

- Be especially careful of needles, hair pins, and coins getting into the set.

Caution on humidity, water, and dust

- Do not place the set in a location where there is high humidity or a lot of dust.
  Flower vases or other items containing water should not be placed on top of the set.

Care of the case

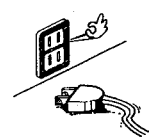
- Avoid the use of pesticides near the set as well as wiping the case with benzine, thinner or other solvents since they may cause a change in quality or color. Use a soft cloth when wiping away dirt and follow the instructions carefully when using chemically treated cloths.

Care with the power cord

- When removing the plug from the receptacle, do not pull the power cord; be sure to hold the plug when removing it.

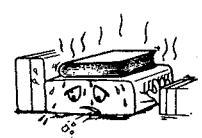
Do not open the case

- Opening the top cover or the bottom plate of the case and inserting your hand is dangerous. Do not open the case.
  If some trouble arises with the performance of the set, remove the power plug soon and contact the store where the set was purchased or a nearby dealer.



During your absence

- When not using the set for an extended period such as when taking a trip, be sure to disconnect the plug from the receptacle.



For sets with ventilation holes

Do not block the ventilation holes of the set

- Blocking of the ventilation holes will lead to damage of the set.
- The ventilation holes are very important for heat radiation from within the set. Care must be taken since placing an object against the holes will result in an extreme rise of temperature within the set.

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CAUTION:
Whenever the power switch is in the OFF state, the apparatus is still connected on AC line voltage. Please be sure to unplug the cord when you leave home for, say, a vacation.

1 GENERAL

Main Features

The DN-1000F is a CD player which provides excellent performance as well as a variety of functions ideal for DJ mixing. The unit can be mounted in a standard 19-inch rack.

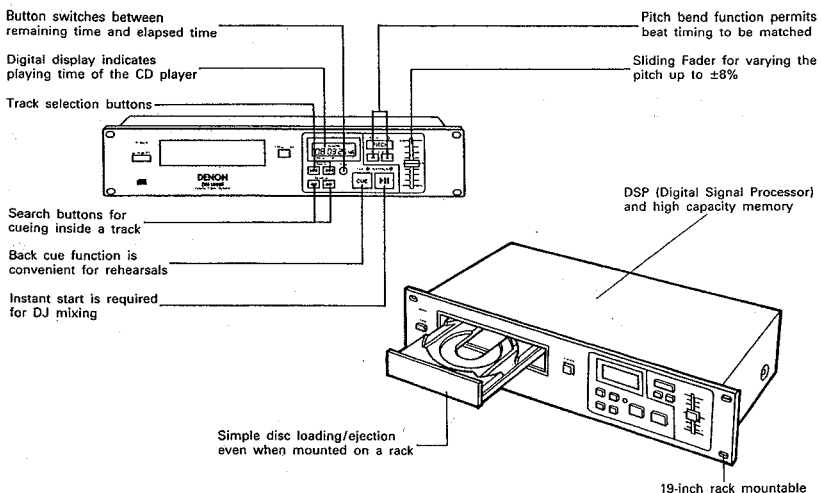


Figure 1

2 PREPARATION

(1) Check the Contents

Check that the carton contains the following items in addition to the main unit.

① Operating instructions 1
② Connection cords for signal output (RCA) 1

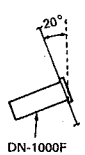


Figure 2

The DN-1000F will work normally when the player unit is mounted within 20 degrees off the vertical plane at the front panel. If the unit is tilted excessively, the disc may not be loaded or unloaded properly.

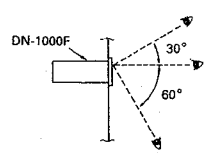


Figure 3

Install the DN-1000F to a rack so as to maintain an appropriate visual angle to read the display as shown here.

(2) Connections to the RC-35 (available separately as an option)

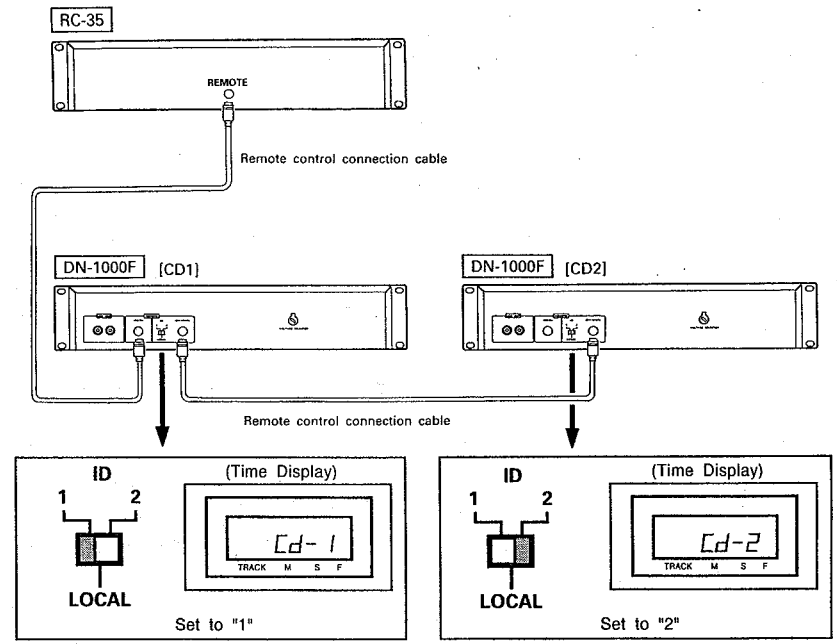


Figure 4

The DN-1000F can be controlled remotely using the RC-35 remote control unit available separately as a option. A total of two DN-1000Fs can be controlled remotely from the RC-35 by connecting and pre-setting indicated Figure 4.

CAUTION:

- Only operate the REMOTE ID slide switch when the power is off. The position of the REMOTE ID slide switch is only valid at the point when the power is on.
- When the REMOTE ID slide switch is set to "1" or "2", only the POWER switch and the OPEN/CLOSE button on the DN-1000F will function. When not using the RC-35, set the switch to the "LOCAL" position.
- Do not connect in ways other than as described above. Doing so will result in damage.
- The time display blinks if the setting of the REMOTE ID slide switch and the connection of the remote cable do not match.

3 DESCRIPTION OF THE FUNCTIONS

Names, Dimensions, and Functions of the Parts

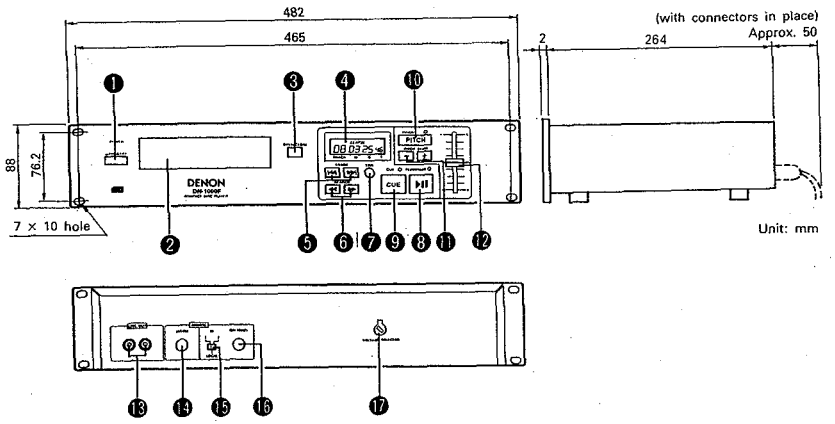


Figure 5

❶ POWER (Power Switch)
Switches the power of the unit.

❷ Disc Holder
The disc is placed on this holder. Pressing the disc holder open/close button ❸ will open and close the holder.
When loading the CD, place it securely in the disc holder.

❸ OPEN/CLOSE (Disc Holder Open/Close Button)
Press to load or eject the disc. Each press will open or close the disc holder ❷.

❹ Time Display
This display shows the track number, time (minute, second and frame), and elapsed or remaining time. Each frame represents 1/75 of a second.

❺ TRACK (Track Button)
This button selects the track to be played.

❻ SEARCH (Search Buttons)
These buttons are used to accurately change the positions where disc play will start.

❼ TIME (Time Button)
The TIME button switches the time display between elapsed time and remaining time. ELAPSE or REMAIN will be shown on the display.

❽ PLAY/PAUSE (Play/Pause Button)
Each press of the PLAY/PAUSE button causes the operation to change from play to pause or from pause back to play.

❾ CUE (Cue Button)
Pressing the CUE button during play provides a return to the position at which play was started. Alternately pressing the PLAY/PAUSE button and the CUE button allows the CD to be played from the same position any number of times. The red CUE LED will blink from the time the CUE button is pressed until the CD has reset to the position at which play was started. Steady lighting of this LED indicates the ready condition.

❿ PITCH (Pitch Button)
This button changes the play speed.
The pitch can be changed up to ±8% by pressing the PITCH button so the green PITCH LED is lit, then moving the sliding fader.
The pitch will not be changed if the green PITCH LED is off.

⓫ PITCH BEND (Pitch Bend Button)
When each of the two CD players are playing a CD, the pitch bend function allows the positioning of the bass beats to be matched after the pitch has been matched.
The pitch will automatically rise while the + button is pressed and return to the original pitch when the button is released.
The pitch will drop while the – button is pressed.
By changing the pitch in this way, the positioning of the beats can be matched.

⓬ Pitch Slider
Use this slider to adjust the Beats per Minute (BPM). Slide up to decrease the BPM, down to increase the BPM.

⓭ LINE OUT (Output Jacks)
The audio is output from these jacks.
Connect to the line input of the mixer.
Red is for the right channel and white the left channel.

⓮ REMOTE (RC-35 Remote Control Connector BLACK)
This connector accepts the cable which connects to the remote control unit RC-35. Insert the plug securely as far as it will advance.
Refer to 2 (2) Connections to the RC-35.
(The RC-35 remote control unit is available separately as a option.)

⓯ REMOTE (ID Slide Switch)
Use this switch when the RC-35 remote control unit is connected. (Refer to 2 (2) Connections to the RC-35.)
When the RC-35 remote control unit is not connected, set to the "LOCAL" position.

> When set to "1" or "2", only the POWER switch ❶ and the OPEN/CLOSE button ❸ will function.

⓰ REMOTE (DN-1000F Control Connector WHITE)
Use this to connect another DN-1000F.
(Refer to 2 (2) Connections to the RC-35.)

⓱ LINE VOLTAGE SELECTION
For multiple voltage model only.

4 BASIC OPERATION

(1) Loading and Ejecting the Disc

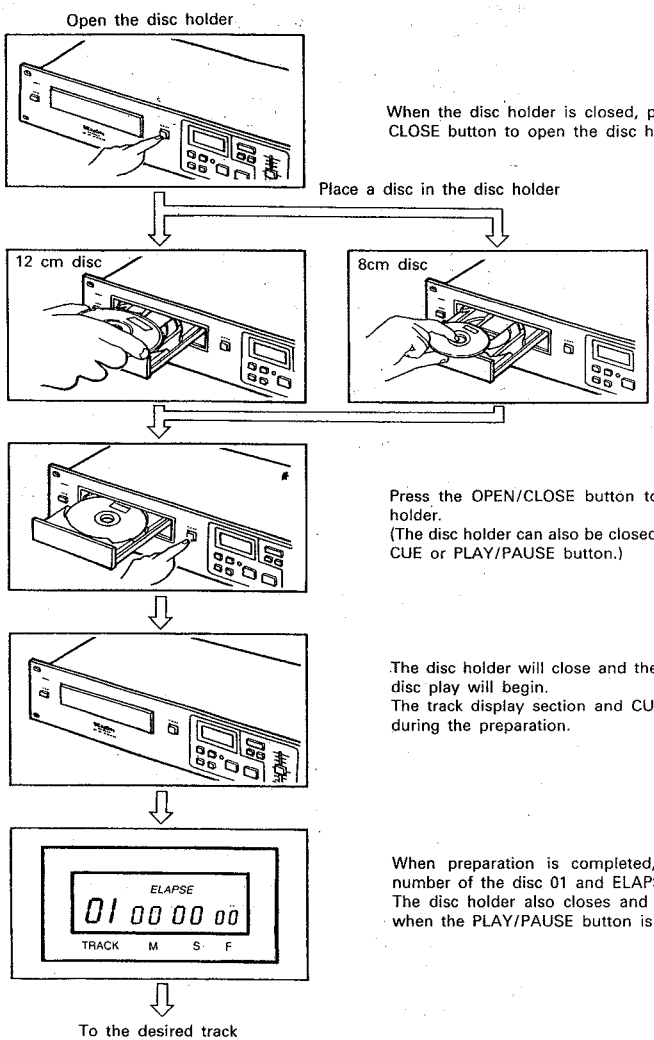


Figure 6

(2) Selecting Tracks and play mode

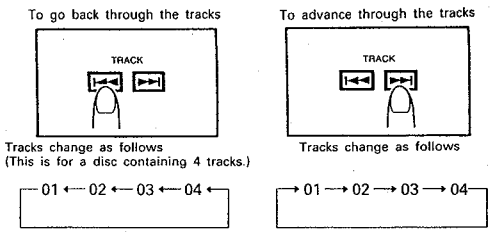
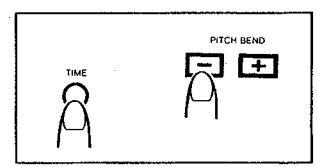


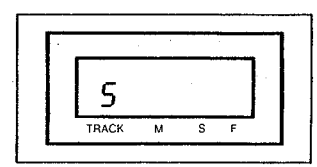
Figure 7

Each press of the TRACK button changes 1 track.
Continuing to hold the TRACK button down provides an automatic change at a higher speed which is convenient for discs that contain many tracks.
During the track selection operation, the track indication of the display will blink and the Minute, Second, Frame indication will be off.
When a new track is selected during play, after the selection operation is completed, play will immediately start from the beginning of the newly selected track.
The track number can be selected before loading a disc on DN-1000F.
You can select a track to play, then load a disc. DN-1000F will cue up to your selected track automatically.

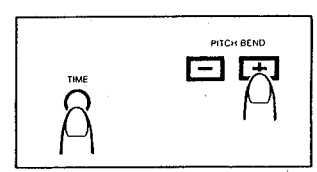
SINGLE/CONTINUE play mode selection

- Press the TIME and [−] buttons of PITCH BEND simultaneously to set DN-1000F for SINGLE track playback mode, " 5 " is displayed on TRACK section.
  During single playback mode, DN-1000F stops after a specified track is played back.
- When the power switch to ON, DN-1000F automatically set to SINGLE playback mode.





- Press the TIME and [+] button of PITCH BEND simultaneously to set DN-1000F for continuous playback mode, " C " is displayed on TRACK section.
  During continuous playback mode, DN-1000F continue playback until completion of playback of the last track on the disc.



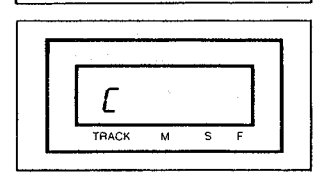


Figure 8

(3) Starting Play

Pressing the PLAY/PAUSE button during the pause condition or after the completion of back cue will start disc play.

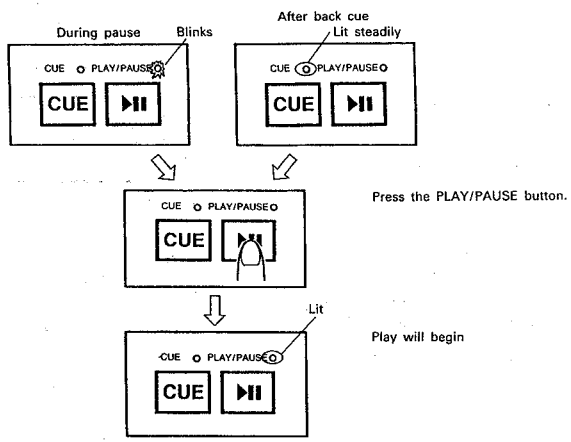
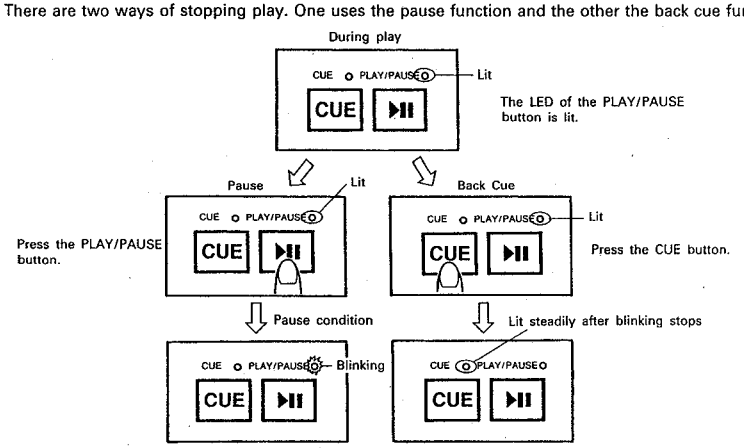


Figure 9

(4) Stopping Play

There are two ways of stopping play. One uses the pause function and the other the back cue function.



The LED of the PLAY/PAUSE button blinks.
(The CD pauses at the position where the PLAY/PAUSE button was pressed during play.

Back cue operation.
First the LED of the CUE button blinks, then it lights steadily after the operation is completed.
(The CD returns to the position where the disc was started from.)

Figure 10

(5) Description of the PLAY/PAUSE, and CUE Operations

- Each press of the PLAY/PAUSE button causes the operation to change from play to pause or from pause back to play.
- The play operation of this CD player is performed via DSP (Digital Signal Processor) and memory, so the audio starts instantly after the PLAY/PAUSE button is pressed.
- Pressing the CUE button during disc play resets the CD to the position at which play was started. (This is called the back cue function.)

The steps through which disc play is performed when the PLAY/PAUSE and CUE buttons are pressed are described with the aid of the following illustrations in Figures 11 through 13.

PLAY and PAUSE

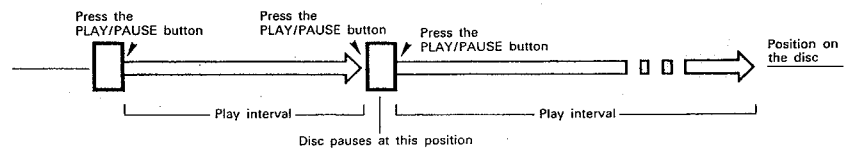


Figure 11

Pressing the PLAY/PAUSE button starts the disc play, the advancement of which is illustrated by the arrows of Figure 11. Pressing the PLAY/PAUSE button again during disc play causes the play operation to pause, and pressing this button once more causes the disc to be played again.

PLAY and CUE

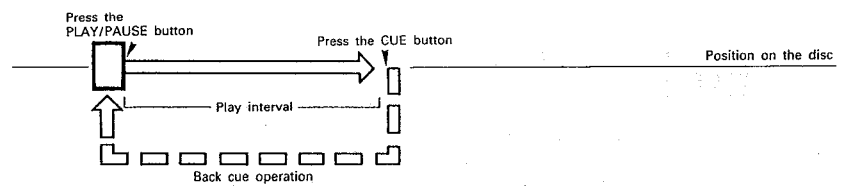


Figure 12

Pressing the PLAY/PAUSE button starts the disc. Pressing the CUE button will reset the disc to the position where play was started. By alternately pressing the PLAY/PAUSE button and the CUE button, the disc may be played from the same position any number of times. This function is called back cue.

PLAY, PAUSE, and CUE

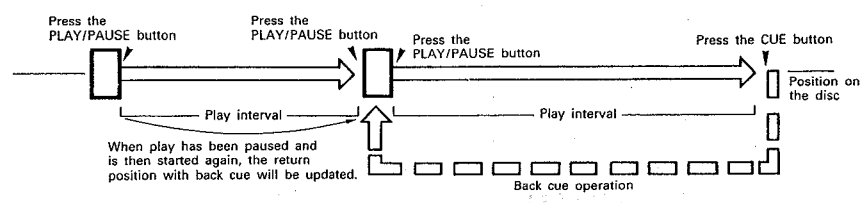


Figure 13

(6) Matching the Beats Per Minute (BPM)

Match the pitch by monitoring the music by ear. When the tempo of the music of the DN-1000F is slow compared to the tempo of the other music, move the pitch slider to the + side and match the tempo. When fast, move to the – side.

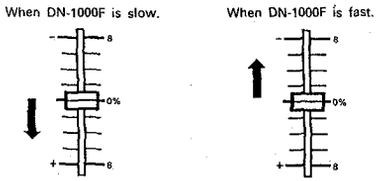
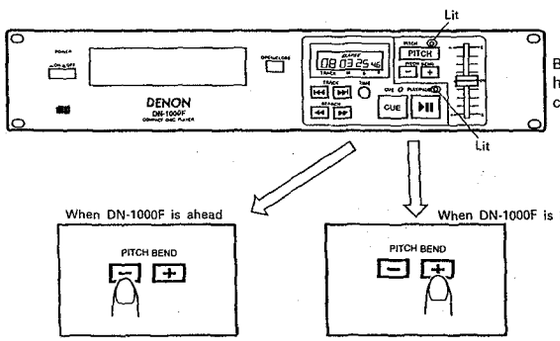


Figure 14

(7) Beat Matching Using Pitch Bend

A description of the procedure for matching the beat using the PITCH BEND button is given below. This description is for the case of matching the beat of DN-1000F to the beat of the music being played.

After Matching the BPM's According to Section (6)



BPM's (Beat Per Minute) are the same, however the bass beats are not matched.

Figure 15

The pitch changes automatically while the [+] or [–] button is being pressed. Releasing the button results in a return to the original pitch. (So the BPM's are once again the same.)

(8) Moving the Play Start Position

When a track is selected and the PLAY/PAUSE button is pressed, the play operation will start from the beginning of that track. However, when you want play to start from a different position, use the following procedure to find that position.

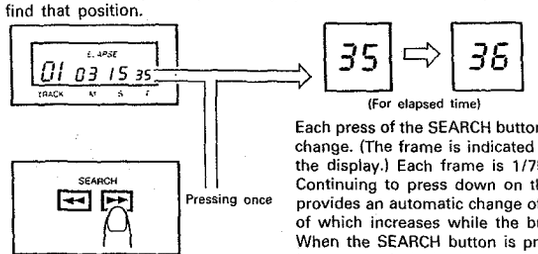


Figure 16

Each press of the SEARCH button causes 1 frame to change. (The frame is indicated at the F portion of the display.) Each frame is 1/75th of a second. Continuing to press down on the SEARCH button provides an automatic change of frames, the speed of which increases while the button is pressed. When the SEARCH button is pressed during playback, normal playback resumes after the button is released.

To Start Playback from the Middle of a track.

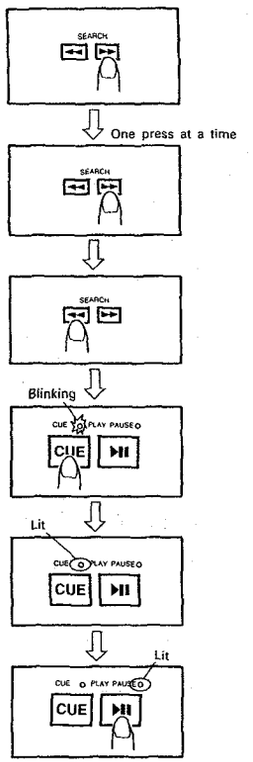


Figure 17

While monitoring the sound, press the SEARCH button until you come close to the desired position, in the track. Holding the SEARCH button down allows "course" searching.

While monitoring the sound, press the SEARCH button a number of times to find the desired position.
This allows "fine" searching.

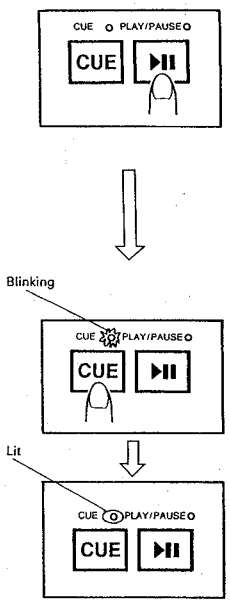
If you go past the desired position, return by pressing the [◀◀] button a few times to back up.

When the desired start position has been found, press the CUE button.
The sound will mute and the LED of the CUE button will blink.
When the CUE LED stops blinking, playback is ready.

Pressing the PLAY/PAUSE button will start the play operation.
The LED of the PLAY/PAUSE button will light steadily.

(9) Checking the Play Start Position

After selecting the track or after changing the play start position with the SEARCH button, use the following procedure to repeatedly check the position at which play will start.



Press the PLAY/PAUSE button.
Check that play will start from the desired position.

NOTE:
Once you have set up a new start position within a track, do not press the PLAY/PAUSE or SEARCH buttons. Pressing these buttons will change your start position.

Press the CUE button after checking the start position.
The player will return to the position where play was started.
When the CUE LED stops blinking, it is ready to start again.

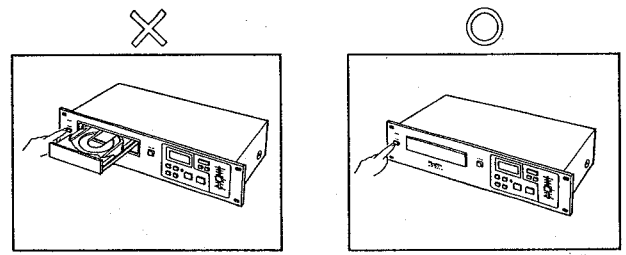
If the play start position is not to your liking, use the search function to change the position.

Figure 18

5 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

Figure 19

6 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.

SPECIFICATIONS

GENERAL

Type:	Compact Disc player
Disc type:	Standard Compact Discs (12 cm and 8 cm)
Dimensions:	482 (W) × 88 (H) × 268 (D) mm
Installation:	19-inch rack mountable, 2U
Weight:	4.5 kg
Power supply:	240 V AC±10%, 50/60 Hz (for U.K. model) 115/230 V AC±10%, 50/60 Hz (for multi voltage version)
Power consumption:	11 W
Environment:	Temperature; 5 to 35°C Humidity; 25 to 85% (without condensation) Storage Temperature; –20 to 60°C (without condensation) Storage Temperature; –20 to 60°C

AUDIO SECTION

Quantization:	18-bit linear/channel
Sampling frequency:	44.1 kHz
Oversampling rate:	8 times
Frequency response:	10 to 20,000 Hz
Total harmonic distortion:	0.006 %
Signal-to-noise ratio:	103 dB
Dynamic range:	98 dB
Channel separation:	96 dB
Output level:	2.0 V
Load impedance:	10 Kohm or more

FUNCTIONS

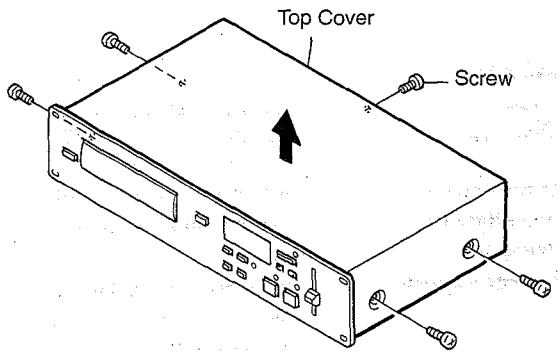
Track selection:	1 to 99 tracks
Fast search:	1 frame step and continuous search
Automatic cueing:	Beginning of music Back cueing to cued point
Instant start:	Within 0.03 sec.
Variable pitch:	±8% Slider with resume switch
Pitch bend:	±12% max.
Display:	Track number, Remaining time or Elapsed time in Min. Sec. and Frame

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

DISASSEMBLY

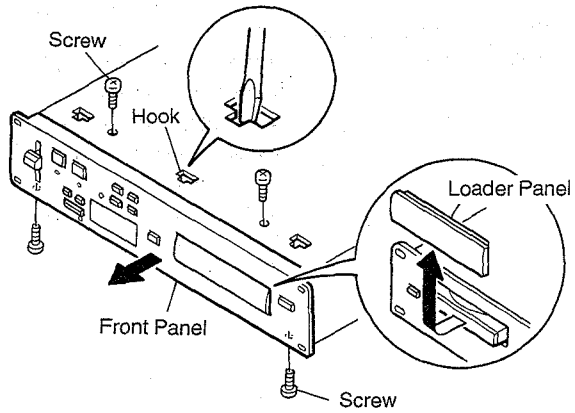
● TOP COVER

Remove 4 screws from both sides and 1 screw from Back Panel.



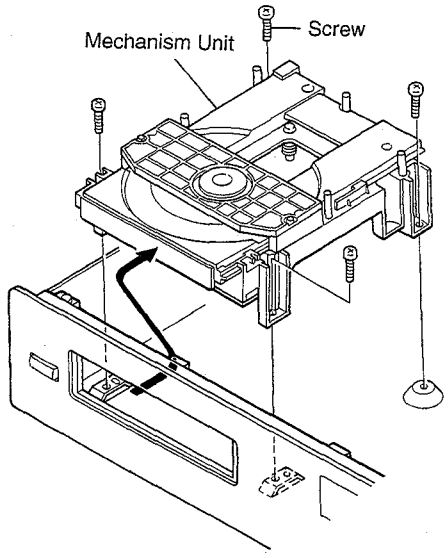
● FRONT PANEL

1. Pull Loader Frame frontward, and remove Loader Panel.
2. Remove 2 Front Panel upper screws.
3. Remove 2 Front Panel lower screws.
4. Undo 2 front panel upper hooks.
5. Pull Front Panel and undo a lower hook.



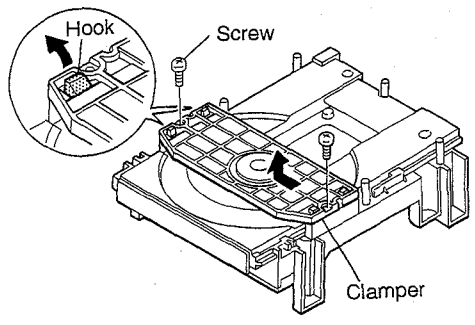
● MECHANISM UNIT

Remove 4 screws.



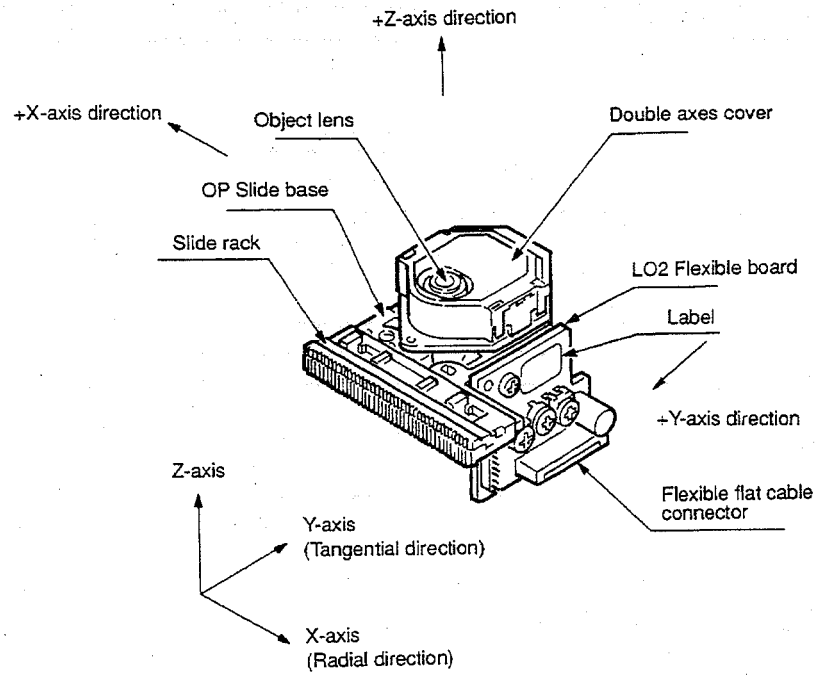
● CLAMPER

Remove 2 screws.
Pull clamper and undo 4 hooks.

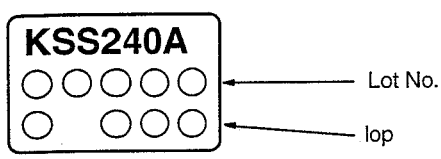


NOTE FOR HANDLING OF LASER PICK-UP

DESCRIPTION OF THE COMPONENTS



LABEL



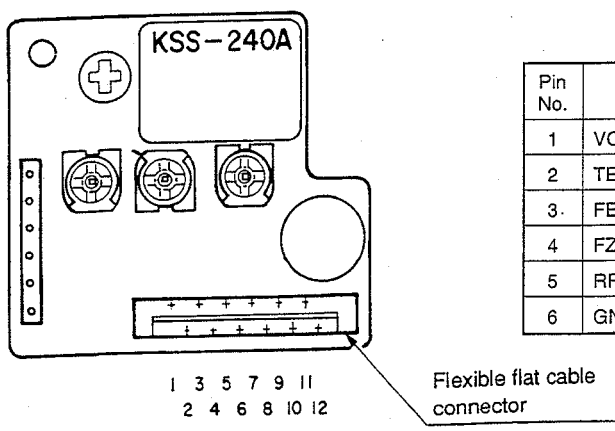
year
(last figure)
day month | quality control No.
○○ ○ ○ ○

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

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

The expressed unit is by mA, with omission of the decimal point as for example, 56.5mA will be expressed as 565, but the head of English letter means the control in the manufacturning plant.

PIN CONNECTOR



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

Caution for Handling the Laser Pick-up

The laser pick-up KSS-240A is assembled and precisely adjusted using a sophisticated manufacturing process in our plant. Do not disassemble or attempt to readjust it. Please keep the following instructions carefully in handling pick-up.

1. Handle with Care

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

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

2. Laser Diode (LD)

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

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

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

3. Actuator

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

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

4. Metal Bearing

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

5. Handling

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

6. Deterioration

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

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

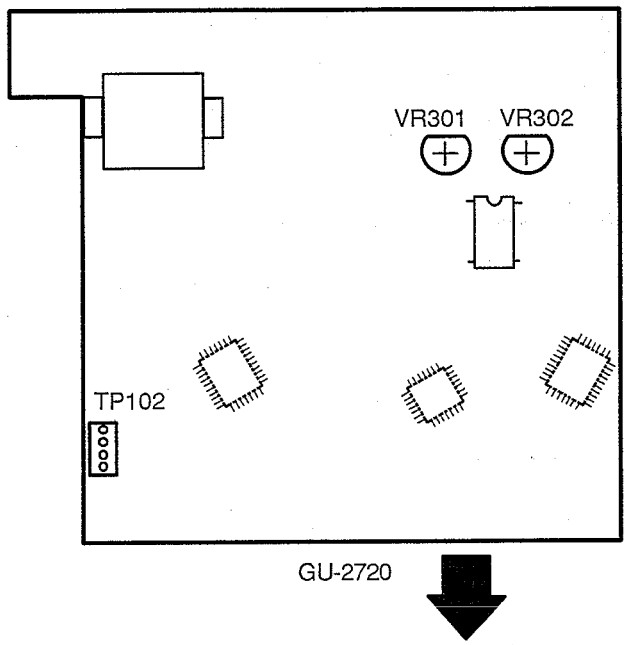
(2) Tracking offset (EF Balance) is out of order (Refer to "Confirmation Method of Adjustment " for confirmation on (1) and (2)).

SERVO ADJUSTMENT

NECESSARY EQUIPMENTS FOR ADJUSTMENT

1. Dual trace oscilloscope
2. Reference disc CA1094
3. Frequency Counter
4. Filter for measurement

LOCATION



ADJUSTMENT PROCEDURE

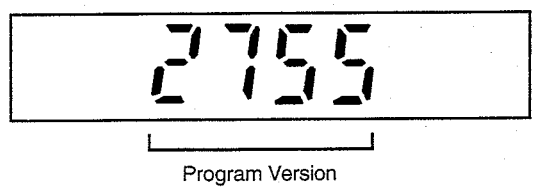
Be sure to perform servo confirmations by this order.

1 Actuating the Service Program.
2 Confirmation of Tracking Offset.
3 Confirmation of HF Waveform.

1. ACTUATING THE SERVO PROGRAM

① Turn the power off.
② While simultaneously pushing the SEARCH buttons (◀◀ ▶▶) and the TRACK button (▶▶|), turn the power on.
③ As the tray opens, set the disc.
④ Displayed indication is version number of microcomputer program 4 figures .

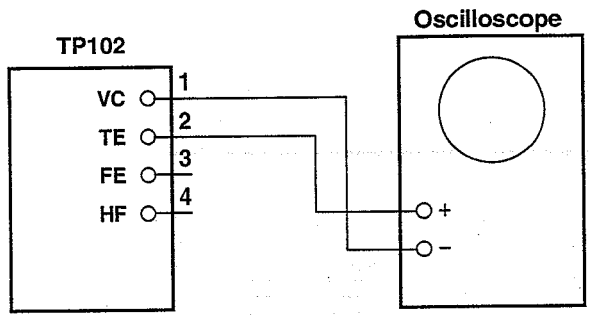
Example



⑤ Push the TRACK ▶▶| button of the mechanism intended to confirm for one time. After confirm that 01 is displayed, push the PLAY button. Then, the Tray will close.
⑥ Push the TRACK ▶▶| button (02 is indicated), then push the PLAY button.

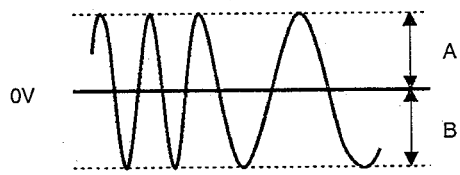
2. CONFIRMATION OF TRACKING OFFSET

① Connections



② Push the TRACK ▶▶| button (03 is indicated), then push the PLAY button.

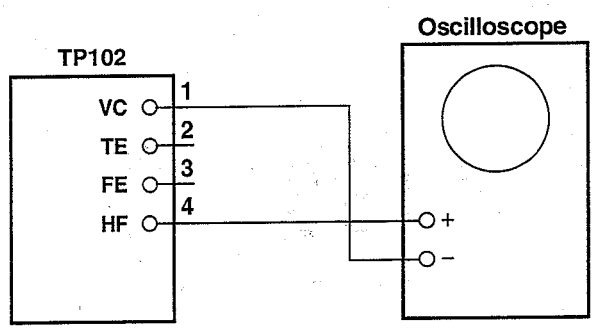
③ Observe TE on the scope.



Measure the voltage of A,B and in case $\frac{|A-B|}{A+B}$ exceeds 15%, please replace pick-up as it is defected.

3. CONFIRMATION OF HF WAVEFORM

① Connections



② Observe HF waveform on the scope.

③ The standard amplitude of HF waveform is 1.1V. If it is less than 0.8V, please replace pick-up as it is defected.

4. ADJUSTMENT OF SUPER LINEAR CONVERTER

Adjustment of Super Linear Converter is only performed at a time the DA Converter is replaced.

Adjustment Procedure

① Connections
Connect the LINE OUT to a distortion meter through the low-pass filter.
② Playback a disc obtains 1kHz, 0dB sine wave tone.
③ Adjust the RV301, RV302 and obtain minimum THD.

RV301..... L-channel
RV302..... R-channel

THD standard is less than 0.006%

ABOUT THE SERVICE PROGRAM

The service program is a program specially for servo confirmations.

ACTUATING THE SERVICE PROGRAM.

① Turn the power off.
② While simultaneously pushing the SEARCH buttons (◀◀ ▶▶) and the TRACK button (▶▶|), turn the power on.
③ Program version of microcomputer indicated on the remote control signifies start actuating of service program.

CONTENTS OF SERVICE PROGRAM

After actuating the service program, select an aiming process number with the TRACK (|◀◀ ▶▶|) buttons, TIME button, PITCH BEND button, and PITCH button, and push the PLAY button to execute processing, The process number is then displayed on the TRACK indication portion.

TRACK BUTTONS	Process No. (TRACK Indication)	Function	*Contents Explanation*
TRACK BUTTONS	01	OPEN/CLOSE	Performs OPEN/CLOSE each time the PLAY button is pushed.
	02	FOCUS ERROR	Confirm FOCUS Error signal (S curve).
	03	FOCUS SERVO ON	Turns the FOCUS Servo ON.
	04	Confirmation of TRACKING OFFSET	Rotates the disc. Checks divergence of Tracking Offset.
	05	Confirmation of HF	Normally the same as PLAY MODE.
	06	Cleaning of Pick-up Lens	Pick-up. moves when SEARCH (◀◀ ▶▶)button is pressed. Move the pick-up under the hole of mechanism PWB, and clean the lens.
TIME	0A	CHUCKING Test	Repeats OPEN/CLOSE of tray, servo ON, and TOC read.
PITCH	0d	Heat Run	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. (See the table below.)

Table of Error Code

Error Code	Contents
E0	Automatic adjustment of servo does not finish.
E1	Focus servo error. E1-00 No FOK is appeared. E1-01 FOK is appeared, but no FZC is shown. E1-02 Both FOK, FZC are appeared, but FZC is Shorter than mask time. E1-03 Both FOK, FZC are appeared, but FZC is not turned to "L" within prescribed time.
E2	Unable to detect sync pattern (GFS) however, rotating the disc. E2-00 FOK is turned to "L" after spindle kick. E2-01 GFS is not appeared.
E3	Unable to detect sync pattern (GFS). E3-00 In playing E3-01 in searching.
E4	Unable to read TOC when servo is actuated. E4-00 unable to read subcode. E4-02 Unable to read TOC within 15 seconds after finish reading subcode.
E5	Disc holder malfunction.
E6	Pick-up innermost circle switch does not turn OFF.
E7	Pick-up innermost circle switch does not turn ON.

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
- 2-digit effective number.
- Indicates number of zeros after 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 charge 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
- 2-digit effective number.
- Indicates number of zeros after effective number.

• Units: μF.

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

• Units: μF.

*** Capacity (except electrolyte)**

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

• Units: μF.

2 2 1 ⇒ 220pF
- (0 or 1) — Indicates number of zeros after effective number.
- 2-digit effective number.

• Units: pF.

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

PRINTED WIRING BOARD PARTS LIST

GU-2720 MAIN P.W.B. UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC101	262 1879 003	IC CXD2515Q	
IC102	263 0909 906	IC BA6392FPT-1	
IC103	263 0910 018	IC BA7042(20MH)	
IC104	262 1673 908	IC TC74HCU04AF	
IC105	263 0615 902	IC BA15218F	
IC201	262 1473 001	IC μPD78233GJ-5BG	
IC202	262 1721 902	IC TC74HC573AF	
IC203	205 0488 010	28P IC Socket	
IC203	GEN 2755	ROM Sub Ass'y	
IC204	263 0652 907	IC PST529C	
IC205	262 1597 903	IC M5M34051FP	
IC206	262 1346 905	IC TC74HC08AF	
IC207	262 1641 901	IC HD74HC157FP-TR	
IC208	262 1709 908	IC HD74HC245FP-TR	
IC301	262 1474 000	IC μPD6381GF	
IC302	262 1907 001	IC MSM514256B-70ZS	
IC303	262 1765 900	IC SM5841BS	
IC304	262 1805 006	IC PCM-1700L	
IC401	263 0931 000	IC LM2941C	
IC402	263 0800 005	IC NJM78M05FA(S)	
IC403	263 0501 003	IC NJM79M05FA	
IC501	263 0533 000	IC LC7582	
D203~223	276 0432 903	Diode 1SS270A	
D301	276 0432 903	Diode 1SS270A	
D401	276 0597 000	Diode RBA-402	
D402	276 0405 901	Diode S1WB(A)10	
D501	276 0438 910	Chip Diode MA151A	
D502	276 0438 910	Chip Diode MA151A	
D503	276 0438 910	Chip Diode MA151A	
TR101	274 0036 905	Transistor 2SD468(C)TF	
TR102	272 0025 907	Transistor 2SB562	
TR301	274 0160 907	Transistor 2SD2144STPU	
TR302	274 0160 907	Transistor 2SD2144STPU	
TR305	269 0083 901	Chip Transistor DTA114EKT96	Built in Resistor
TR306	269 0082 902	Chip Transistor DTC114EKT96	Built in Resistor
TR501	269 0082 902	Chip Transistor DTC114EKT96	Built in Resistor
TR502	269 0082 902	Chip Transistor DTC114EKT96	Built in Resistor
TR503	269 0082 902	Chip Transistor DTC114EKT96	Built in Resistor
RESISTORS GROUP (Not Included Carbon Film ±5% 1/4W)			
R101	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R102	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R103	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
⚠ R104	244 2051 945	Metal Oxide film 1ohm, 1W (Non-burning type)	RS14B3A010JNBST(S)
R105	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R106	247 0011 944	Chip 47kohm, 1/10W	RM73B--473J
R107	247 0011 944	Chip 47kohm, 1/10W	RM73B--473J
R108	247 0009 901	Chip 4.7kohm, 1/10W	RM73B--472J
R109	247 0011 902	Chip 33kohm, 1/10W	RM73B--333J
R110	247 0009 901	Chip 4.7kohm, 1/10W	RM73B--472J
R111	247 0007 903	Chip 680ohm, 1/10W	RM73B--681J
R112	247 0009 901	Chip 4.7kohm, 1/10W	RM73B--472J
R113	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R114	247 0012 927	Chip 100kohm, 1/10W	RM73B--104J
R115	247 0011 944	Chip 47kohm, 1/10W	RM73B--473J
R116	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R117	247 0011 944	Chip 47kohm, 1/10W	RM73B--473J
R118	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R119	247 0009 946	Chip 7.5kohm, 1/10W	RM73B--752J
R120	247 0008 931	Chip 2.4kohm, 1/10W	RM73B--242J
R121	247 0011 944	Chip 47kohm, 1/10W	RM73B--473J
R122	247 0011 944	Chip 47kohm, 1/10W	RM73B--473J
R123	247 0012 914	Chip 91kohm, 1/10W	RM73B--913J
R124	247 0005 989	Chip 220ohm, 1/10W	RM73B--221J
R125	247 0012 943	Chip 120kohm, 1/10W	RM73B--124J
R126	247 0010 987	Chip 27kohm, 1/10W	RM73B--273J
R127	247 0011 915	Chip 36kohm, 1/10W	RM73B--363J
R128	247 0008 960	Chip 3.3kohm, 1/10W	RM73B--332J
R129	247 0007 974	Chip 1.3kohm, 1/10W	RM73B--132J
R130	247 0014 967	Chip 1Mohm, 1/10W	RM73B--105J
R131	247 0012 927	Chip 100kohm, 1/10W	RM73B--104J
R132	247 0009 998	Chip 11kohm, 1/10W	RM73B--113J
R133	247 0008 960	Chip 3.3kohm, 1/10W	RM73B--332J
R134	247 0008 960	Chip 3.3kohm, 1/10W	RM73B--332J
R135	247 0008 960	Chip 3.3kohm, 1/10W	RM73B--332J
R136	247 0005 905	Chip 100ohm, 1/10W	RM73B--101J
R138	247 0009 998	Chip 11kohm, 1/10W	RM73B--113J
R201	247 0012 927	Chip 100kohm, 1/10W	RM73B--104J
R202	247 0005 905	Chip 1kohm, 1/10W	RM73B--102J
R206	247 0005 905	Chip 100ohm, 1/10W	RM73B--101J
R207	247 0005 905	Chip 100ohm, 1/10W	RM73B--101J
R208	247 0010 958	Chip 20kohm, 1/10W	RM73B--203J
R209	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R212	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R213	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R214	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R215	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R216	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R218	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R219	247 0011 944	Chip 47kohm, 1/10W	RM73B--473J
R220	247 0011 944	Chip 47kohm, 1/10W	RM73B--473J
R221	247 0011 944	Chip 47kohm, 1/10W	RM73B--473J
R222	247 0011 944	Chip 47kohm, 1/10W	RM73B--473J
R223	247 0011 944	Chip 47kohm, 1/10W	RM73B--473J
R224	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R225	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R226	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R251	247 0010 958	Chip 20kohm, 1/10W	RM73B--203J
R252	247 0009 914	Chip 5.1kohm, 1/10W	RM73B--512J
R253	247 0009 914	Chip 5.1kohm, 1/10W	RM73B--512J
R261	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R262	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R263	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R291~294	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R301	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R302	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R303	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R304	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R305	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R306	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R307	247 0018 905	Chip 0ohm, 1/10W	RM73B--0R0J
R308	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R309	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R310	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R311	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R312	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R313	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R314	247 0012 927	Chip 100kohm, 1/10W	RM73B--104J
R316	247 0006 917	Chip 300ohm, 1/10W	RM73B--301J
R317	247 0012 985	Chip 180kohm, 1/10W	RM73B--184J
R318	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J

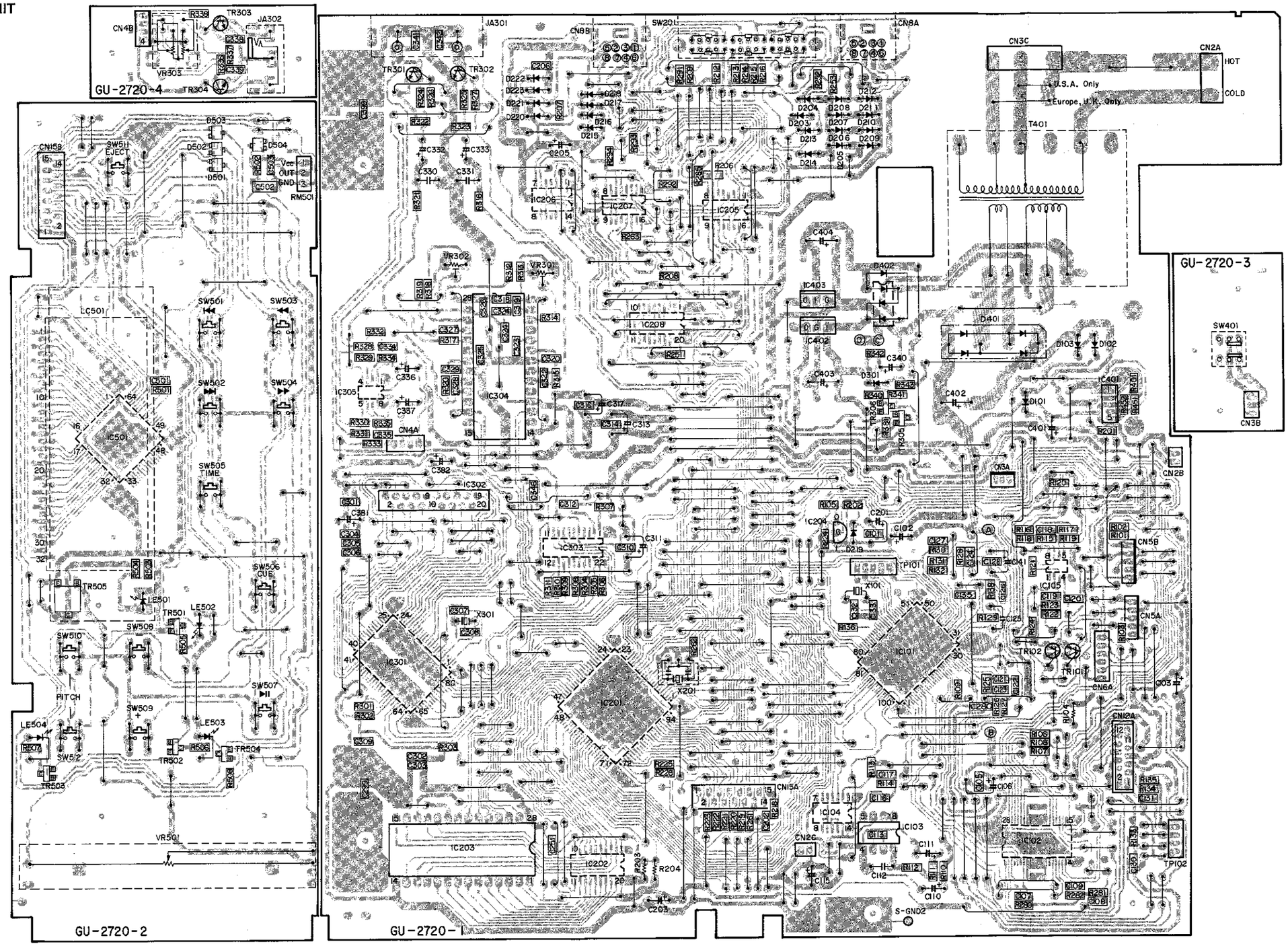
Ref. No.	Part No.	Part Name	Remarks
R319	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R321	247 0006 917	Chip 300ohm, 1/10W	RM73B--301J
R322	247 0010 990	Chip 30kohm, 1/10W	RM73B--303J
R323	247 0010 990	Chip 30kohm, 1/10W	RM73B--303J
R324	247 0007 903	Chip 680ohm, 1/10W	RM73B--681J
R325	247 0007 903	Chip 680ohm, 1/10W	RM73B--681J
R326	247 0008 944	Chip 2.7kohm, 1/10W	RM73B--272J
R327	247 0008 944	Chip 2.7kohm, 1/10W	RM73B--272J
R340	247 0012 998	Chip 200kohm, 1/10W	RM73B--204J
R341	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R342	247 0004 993	Chip 91ohm, 1/10W	RM73B--910J
R381	247 0009 985	Chip 10kohm, 1/10W	RM73B--103J
R401	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R451	247 0008 957	Chip 3kohm, 1/10W	RM73B--302J
R452	247 0007 945	Chip 1kohm, 1/10W	RM73B--102J
R501	247 0011 957	Chip 51kohm, 1/10W	RM73B--513J
R502	247 0013 942	Chip 330kohm, 1/10W	RM73B--334J
R503	247 0003 965	Chip 27ohm, 1/10W	RM73B--270J
R504	247 0003 965	Chip 27ohm, 1/10W	RM73B--270J
R505	247 0005 989	Chip 220ohm, 1/10W	RM73B--221J
R506	247 0005 989	Chip 220ohm, 1/10W	RM73B--221J
R507	247 0005 989	Chip 220ohm, 1/10W	RM73B--221J
R508	247 0003 965	Chip 27ohm, 1/10W	RM73B--270J
VR301	211 6079 949	V06PB104	Adjust 100kohm
VR302	211 6079 949	V06PB104	Adjust 100kohm
VR501	211 0763 015	Slide Volume	50kohm
CAPACITORS GROUP			
C101	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C102	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
C103	254 4327 904	Electrolytic 1000μF/6.3V	CE04W0J102M
C105	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C106	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C107	257 0004 961	Chip Ceramic 100pF/50V	CC73SL1H101J
C108	257 0004 961	Chip Ceramic 100pF/50V	CC73SL1H101J
C109	257 0004 961	Chip Ceramic 100pF/50V	CC73SL1H101J
C110	254 4260 964	Electrolytic 3.3μF/50V	CE04W1H3R3M
C111	254 4254 909	Electrolytic 10μF/16V	CE04W1C100M
C112	253 9031 904	Ceramic 0.047μF/25V	CK45=1E473K
C113	257 0002 992	Chip Ceramic 20pF/50V	CC73SL1H200J
C114	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C115	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
C116	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C117	257 0002 921	Chip Ceramic 10pF/50V	CC73SL1H100D
C118	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C119	257 0004 961	Chip Ceramic 100pF/50V	CC73SL1H101J
C120	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C121	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C122	257 0005 944	Chip Ceramic 220pF/50V	CC73SL1H221J
C123	257 0005 944	Chip Ceramic 220pF/50V	CC73SL1H221J
C124	257 0006 969	Chip Ceramic 680pF/50V	CC73SL1H681J
C125	253 9035 942	Ceramic 0.056μF/25V	CK45=1E563K
C126	257 0009 908	Chip Ceramic 0.0015μF/50V	CK73B1H152K
C127	257 0005 944	Chip Ceramic 220pF/50V	CC73SL1H221J
C128	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C130	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C131	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C132	257 0001 951	Chip Ceramic 3.0pF/50V	CC73SL1H3R0C
C133	257 0001 977	Chip Ceramic 5.0pF/50V	CC73SL1H5R0C
C135	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C141	254 4258 905	Electrolytic 4.7μF/35V	CE04W1V4R7M
C201	254 4254 954	Electrolytic 220μF/16V	CE04W1C221M
C202	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C203	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M

Ref. No.	Part No.	Part Name	Remarks
C204	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C205	254 4254 938	Electrolytic 47μF/16V	CE04W1C470M
C206	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C251	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C280	257 0004 961	Chip Ceramic 100pF/50V	CC73SL1H101J
C299	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C301	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C302	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C307	257 0003 904	Chip Ceramic 22pF/50V	CC73SL1H220J
C308	257 0003 904	Chip Ceramic 22pF/50V	CC73SL1H220J
C310	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C311	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
C312	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C313	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
C314	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C316	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C317	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
C318	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C319	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C320	257 0006 969	Chip Ceramic 680pF/50V	CK73SL1H681J
C321	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C322	257 0006 969	Chip Ceramic 680pF/50V	CK73SL1H681J
C323	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C324	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C325	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C326	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C327	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C328	257 0006 969	Chip Ceramic 680pF/50V	CC73SL1H681J
C329	257 0006 969	Chip Ceramic 680pF/50V	CC73SL1H681J
C330	255 1265 907	0.0068μF/50V	CQ93M1H682J
C331	255 1265 907	0.0068μF/50V	CQ93M1H682J
C332	254 4254 909	Electrolytic 10μF/16V	CE04W1C100M
C333	254 4254 909	Electrolytic 10μF/16V	CE04W1C100M
C340	254 4254 954	Electrolytic 220μF/16V	CE04W1C221M
C341	257 0007 900	Chip Ceramic 1000pF/50V	CC73SL1H102J
C342	257 0007 900	Chip Ceramic 1000pF/50V	CC73SL1H102J
C346	257 0011 909	Chip Ceramic 0.01μF/25V	CK73B1E103K
C381,382	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
C399	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C401	254 4254 912	Electrolytic 22μF/16V	CE04W1C220
C402	254 4255 717	Electrolytic 4700μF/16V	CE04W1C472M
C403	254 4255 704	Electrolytic 3300μF/16V	CE04W1C332M
C404	254 4255 704	Electrolytic 3300μF/16V	CE04W1C332M
C501	257 0006 969	Chip Ceramic 680pF/50V	CK73SL1H681J
C502	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C503	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
OTHERS PARTS GROUP			
X101	399 0036 013	Crystal 16.9344MHz	
X201	399 0038 901	Ceramic Vibrator CST12.0MTW-TF1	
X301	399 0141 005	Ceramic Vibrator CSA24.57MX040	
LC501	393 4139 002	LCD	
LE501	393 9511 201	LED Back Light	
LE502	393 9526 908	LED SLR-305VC(RED)	
LE503	393 9526 924	LED SLR-305MC(GRN)	
LE504	393 9526 924	LED SLR-305MC(GRN)	
JA301	204 8311 021	2P Pin Jack	
CN2A	205 0581 001	2P VH Conn.Base	
CN3A	205 0343 032	3P Conn.Base(KR-PH)	

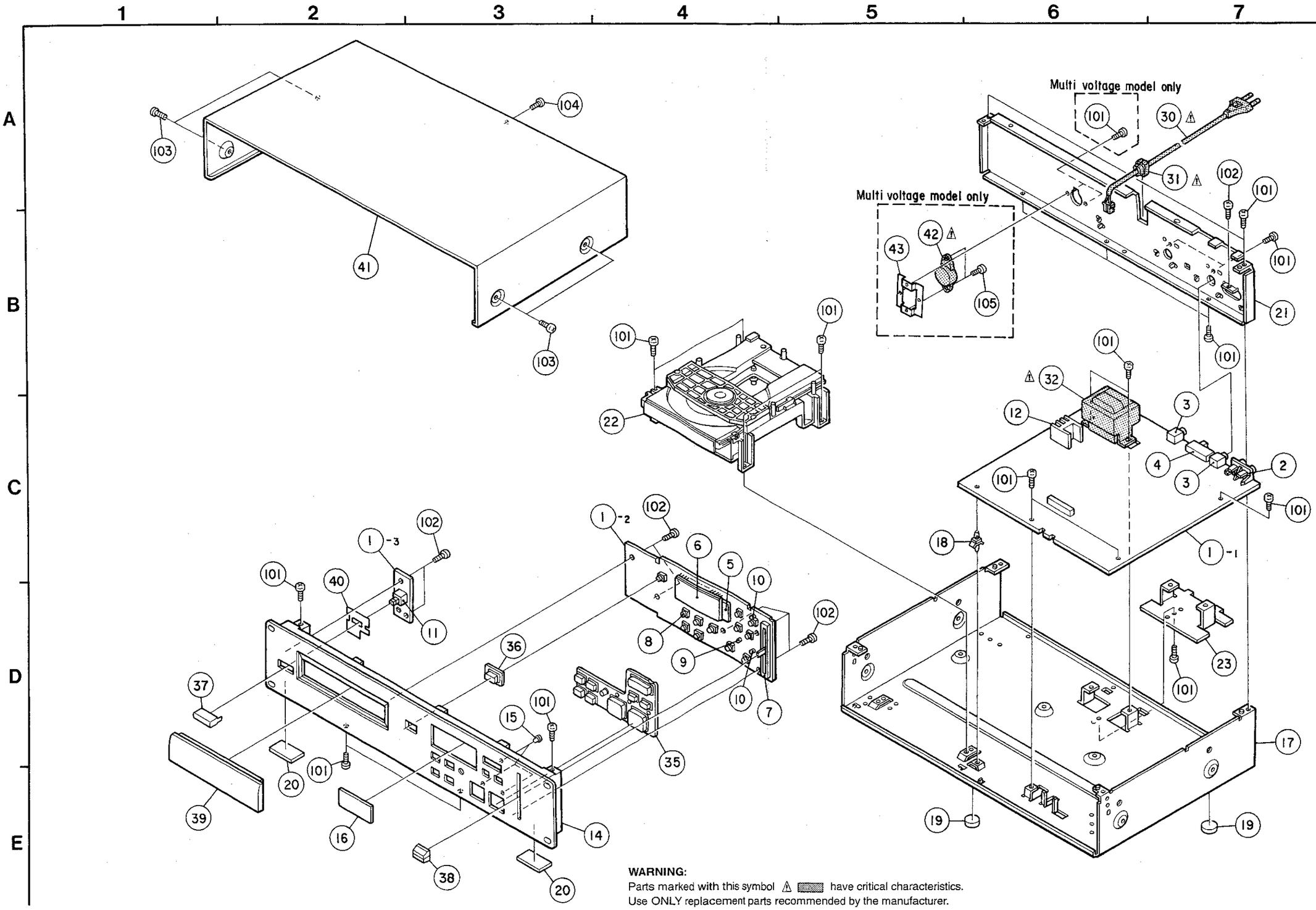
Ref. No.	Part No.	Part Name	Remarks
CN3B	203 5001 001	3P KR-DA Conn.Cord	
CN5A	205 0343 058	5P Conn.Base(KR-PH)	
CN5B	205 0321 054	5P Conn.Base(KR-PH)(RED)	
CN8A	205 0877 016	8P Mini Din Conn.Base(WHT)	
CN8B	205 0877 003	8P Mini Din Conn.Base(F-S)	
CN12A	205 0683 006	12P FFC Conn.Base	
CN15A	205 0688 005	15P FFC Conn.Base	
CN15B	205 0770 045	15P FFC Conn.Base(L)	
⚠ *	205 0825 000	3P AC Conn. Base	Multi-Voltage Model Only
S501~512	212 4775 905	Tact Switch	
SW201	212 1125 008	Slide Switch(6-3)	
SW401	212 1039 000	1P Push Switch	
⚠ T-401	233 6102 007	Power Trans	Multi-Voltage Model
⚠	233 6103 006	Power Trans	Europe Model
⚠	233 6100 009	Power Trans	U.S.A. and Canada Model
	009 0089 015	15P FFC Conn.Cord	
	203 8305 018	5P KR-KR Conn.Cord	
	203 8321 018	5P KR-KR Conn.Cord	
⚠ *	203 8389 021	5P VH Conn.Wire	Multi-Voltage Model Only
⚠	212 0359 008	Voltage Selector	Multi-Voltage Model Only
⚠	206 2089 106	AC Cord W/Conn.	Europe and Multi-Voltage Model
⚠	206 2110 004	AC Cord W/Conn.	U.S.A. and Canada Model
⚠	206 2128 009	AC Cord W/Conn.	U.K. Model

PRINTED WIRING BOARD PATTERNS

GU-2720 MAIN UNIT



EXPLODED VIEW OF CHASSIS AND CABINET



PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks	Q'ty
◉ 1	GU-2720	Main PWB Unit Ass'y		1
1-1		Main PWB Unit		1
1-2		Panel PWB Unit		1
1-3		Panel PWB Unit		1
2	204 8311 021	2P Pin Jack		1
3	205 0877 003	8P Mini DIN CONN. Base		2
4	212 1125 008	Slide Switch		1
5	393 9511 201	LED Back Light		1
6	393 4139 002	LCD		1
7	211 0763 015	Slide Volume		1
8	212 4775 905	Tact Switch (Long ST)		12
9	393 9526 908	LED (RED)	SLR-305VC	1
10	393 9526 924	LED (GRN)	SLR-305MC	2
11	212 1039 000	1P Push Switch		1
◉ 12	417 0462 105	Heat Sink		1
◉ 14	144 2371 008	Front Panel Ass'y		1
◉ 15	146 1371 005	LED Window		3
◉ 16	146 1496 003	Window		1
◉ 17	411 0962 801	Chassis		1
◉ 18	443 0518 003	PCB Holder		1
19	461 0706 114	Foot Sheet		2
20	461 0740 015	Sheet		2
◉ 21	105 1118 005	Back Panel	U.S.A. and Canada Model	1
◉	105 1118 018	Back Panel	Europe Model	1
◉	105 1118 021	Back Panel	Multi-Voltage Model	1
22	337 0028 007	CD MECH. Unit (FG-70)		1
◉ 23	441 1132 204	Bottom Plate		1
⚠ 30	206 2100 004	AC Cord W/CONN.	U.S.A. and Canada Model	1
⚠	206 2089 106	AC Cord W/CONN.	Europe and Multi-Voltage Model	1
⚠	206 2128 009	AC Cord W/CONN.	U.K.Model	1
⚠ 31	445 0056 008	Cord Bush		1
⚠ 32	233 6100 009	Power Trans	U.S.A. and Canada Model	1
⚠	233 6103 006	Power Trans	Europe and U.K. Model	1
⚠	233 6102 007	Power Trans	Multi-Voltage Model	1
35	119 0068 100	Rubber Button(A)		1
36	119 0072 015	Rubber Button(C)		1
37	113 1357 207	Power SW. Button		1
38	113 1523 002	Slide Knob		1
◉ 39	146 1394 121	Loader Panel		1
40	441 1627 007	P.Button Guide		1
◉ 41	102 0425 208	Top Cover		1
⚠ 42	212 0359 008	Voltage Selector	Multi-Voltage Model only	1
◉ 43	412 3629 005	VOL Selector Bracket	Multi-Voltage Model only	1
SCREWS				
101	473 7002 021	Tapping Screw 3×8(S)	Black	23
102	473 7002 005	Tapping Screw 3×6(S)		8
103	477 0263 005	3P Swelling Screw	Black	4
104	473 7015 018	Tapping Screw 3×8(S)	Black	1
105	473 7005 002	Tapping Screw 3×10(S)		2

● 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.

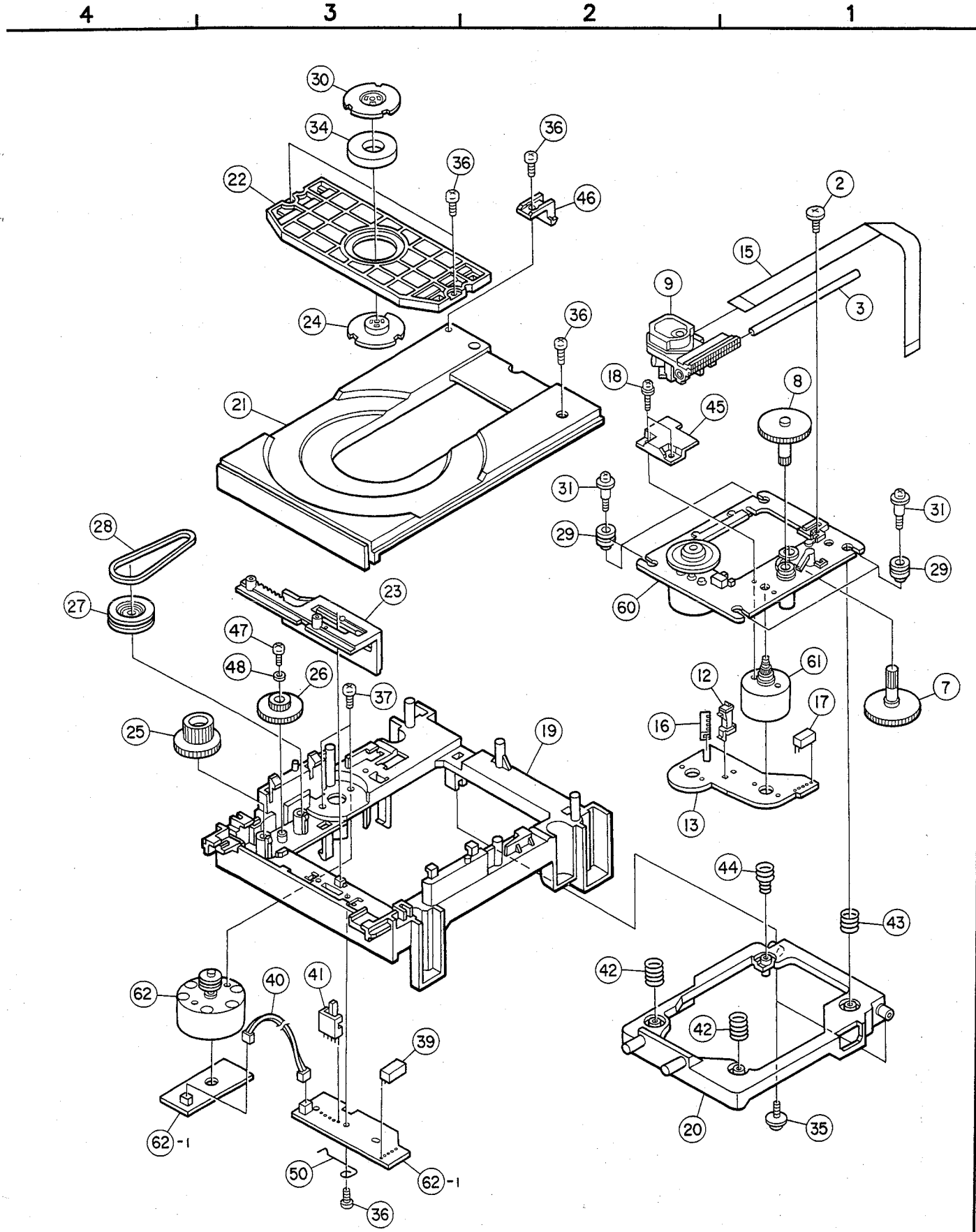
PACKING & ACCESSORIES

Ref. No.	Part No.	Part Name	Remarks	Q'ty
	511 2620 001	INST.Manual	U.S.A and Canada Model	1
	511 2626 005	INST.Manual	Europe Model	1
	511 2628 003	INST.Manual	U.K. and Multi-Voltage Model	1
	515 0626 009	DAI Warranty COM.	U.S.A. and Canada Model	1
	203 6305 007	2P Pin Cord		1
	504 0092 060	Styrene Paper		1
	505 0038 030	Poly Cover		1
	202 0042 004	AC Adapter	Multi-Voltage Model	1
	503 1130 009	Cushion		2
	501 1739 129	Carton Case		1

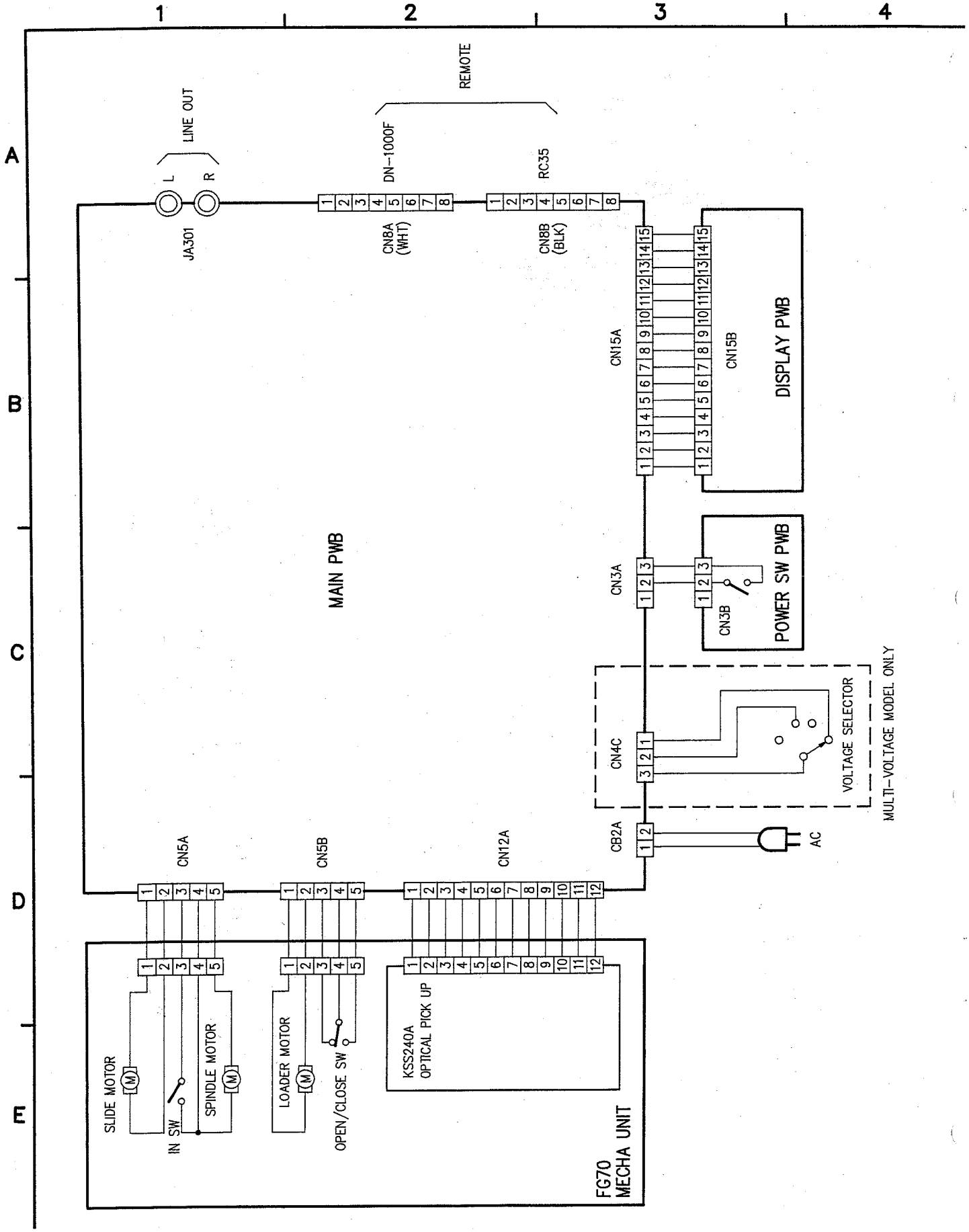
PARTS LIST OF FG-70 MECHANISM UNIT

Ref. No	Part No.	Part Name	Remarks
2	9KA 90H0 06	FS Fixing Screw	
3	9KA 90H0 05	Feed Shaft	
7	9KA 80G0 17	Drive Gear (A)	
8	9KA 80G0 18	Drive Gear (B)	
9	499 0191 009	Laser P.U	KSS-240A
12	9KS 01W1 47	Leaf Switch	
13	9KA 85P0 09	Motor P.W.B.	
15	009 0051 001	12P FFC Cable	
16	443 1093 006	FFC Bush	
17	9KA 82G2 53	S5B-PH Connector Base	
18	9KM 20S0 04	2x4 Screw	
19	9KA 85G0 26	MECHA.Plate(FG70)	
20	9KA 85G0 20	MECHA.Frame(FG70)	
21	9KA 85G0 21	CD Tray(FG70)	
22	9KA 85G0 04	Clamper Frame	
23	9KA 85G0 22	UD Plate Gear(FG70)	
24	9KA 85G0 06	Clamper (F)	
25	9KA 85G0 07	Relay Gear(A)	
26	9KA 85G0 08	Relay Gear(B)	
27	9KA 85G0 09	Relay Gear(C)	
28	9KA 85G0 10	Gear Belt(F)	
29	9KA 85G0 30	Damper(FG40)	
30	9KA 85P0 01	Clamper Plate (F)	
31	9KA 85H0 01	Screw(F)	
34	9KA 82G0 57	Magnet	
35	9KA 91H0 02	3x8 (W-10) Screw	
36	9KB 30B0 08	3x8 Baind Screw	
37	9KM 26B0 04	2.6x4 Baind Screw	
39	9KA 82G3 08	S5B-PH(RED)	
40	9KA 85G0 27	CNW2(FG70)	
41	9KS 01W1 48	OP/CL Switch(SSS12)	
42	9KA 85S0 01	Spring (A)	
43	9KA 85S0 02	Spring (B)	
44	9KA 85S0 03	Spring (C)	
45	9KA 85G0 33	Gear Guide	
46	9KA 85G0 36	Tray Stopper	
47	9KB 20B0 05	2x5 Baind (B)	
48	9KS 21W6 04	STW 2.1x6x0.4	
50	9KA 85S0 05	Hold Spring	
60	9KA 85A0 07	Spindle Motor Ass'y	
61	9KA 85A0 08	Feed Motor Ass'y	
62	9KA 85A0 06	Loading Motor Ass'y	
62-1		Motor P.W.B.	

EXPLODED VIEW OF FG-70 MECHANISM UNIT



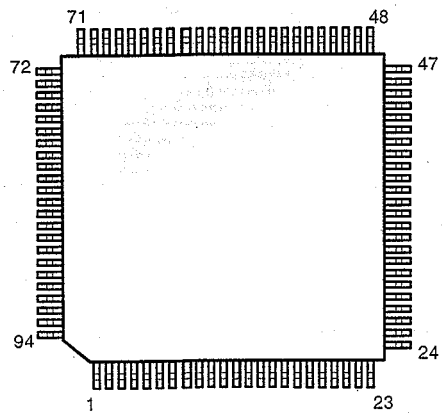
WIRING DIAGRAM



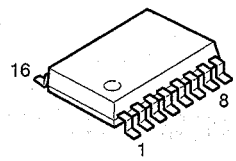
SEMICONDUCTORS

● IC's

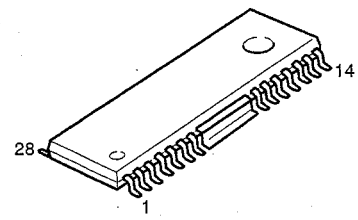
μPD78233GJ-5BG(IC201)



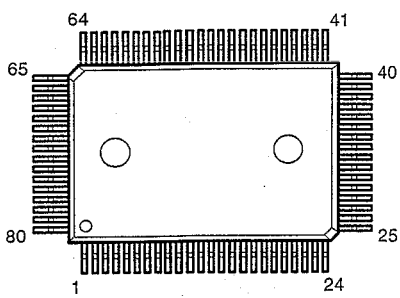
M5M34051P(IC205)
HD74HC157FP(IC207)



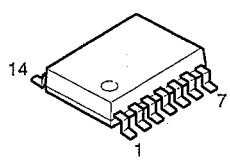
BA6392FP-T1(IC102)



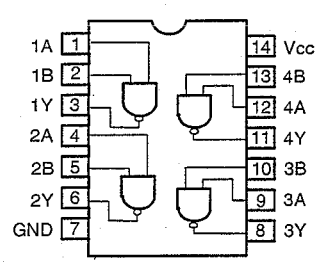
μPD6381GF(IC301)



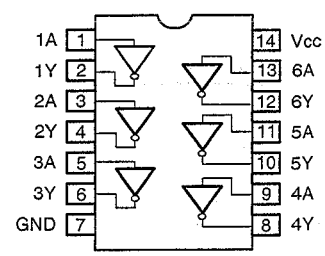
HD74HC00FP
HD74HC04FP



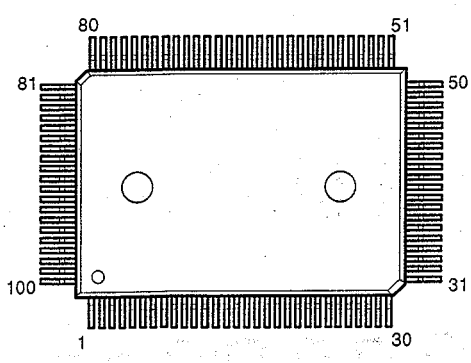
HD74HC00FP



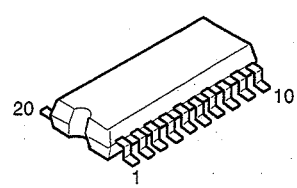
HD74HC04FP



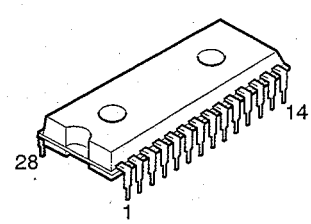
CXD2515Q(IC101)



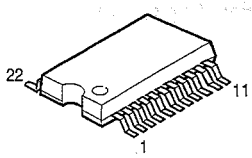
TC74HC573AF(IC202)
HD74HC245FP(IC208)



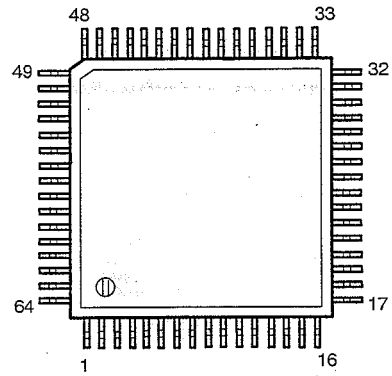
TMS27C256-15(IC203)
PCM-1700L(IC304)



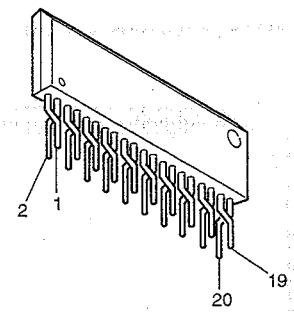
SM5841BS(IC303)



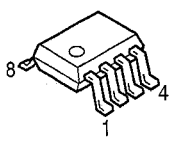
LC7582(IC501)

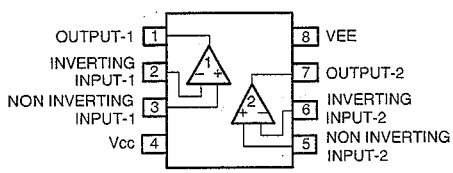


MSM514256B-70ZS (IC302)

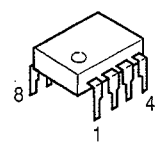


BA15218F(IC105)

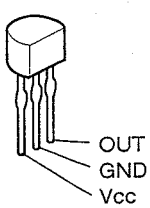




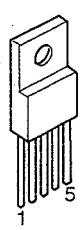
BA7042(IC103)



PST529C(IC204)

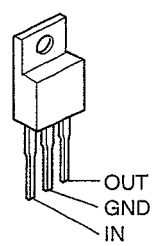


LM294IC(IC401)

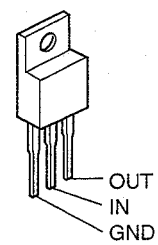


1.ADJUST
2.ON/OFF
3.GND
4.Vin
5.Vout

NJM78M05FA (IC402)

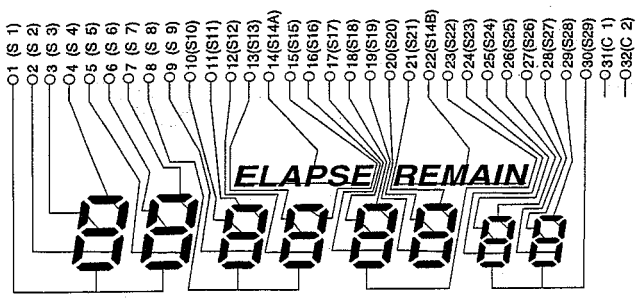


NJM79M05FA (IC403)

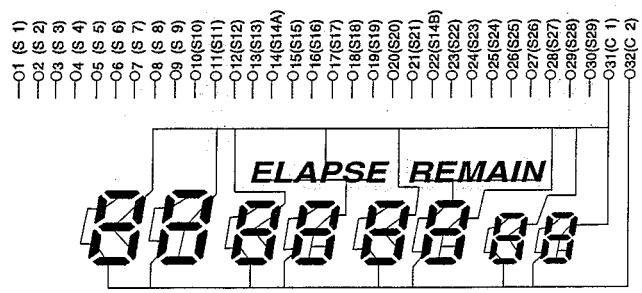


LCD(LC501)

Segment

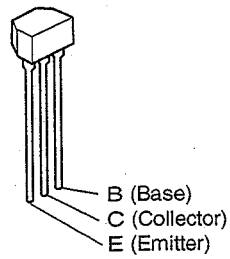


Common

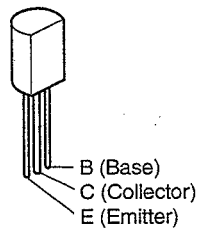


● TRANSISTORS

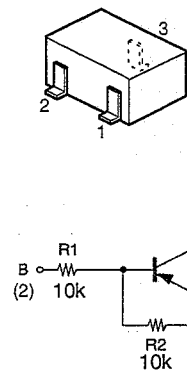
2SD2144STPU (TR301,302)



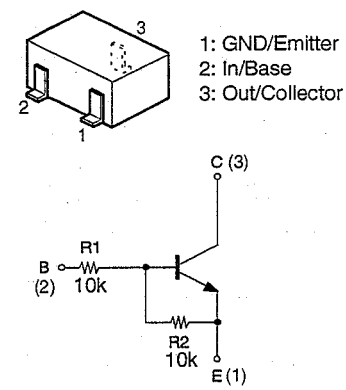
2SB562(C) (TR102) 2SD468(C) (TR101)



DTA114EK (TR305)

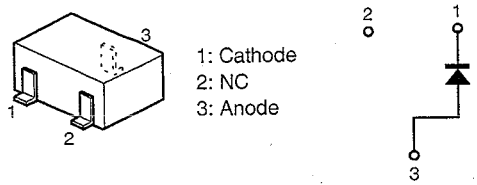


DTC114EK (TR306,501~503)

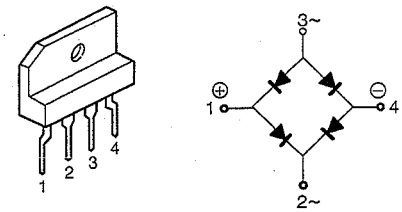


● DIODES

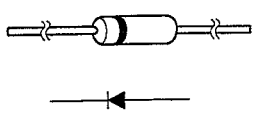
MA151A(D501~503)



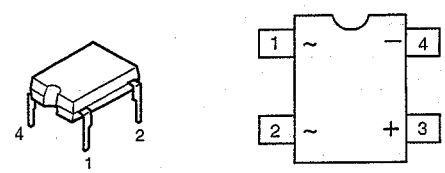
RBA402(D401)



1SS270ATE (D203~223,301)

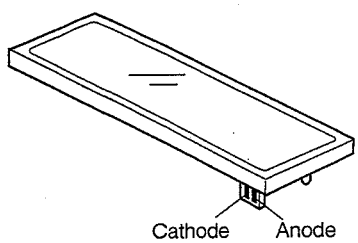


S1WB(A)10(D402)

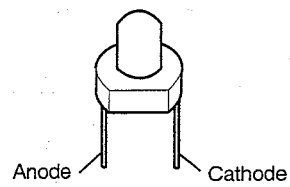


● LED

BACKLIGHT(LE501)



SLR-305VC(RED)(LE502)
SLR-305MC(GRN)(LE503,504)



IC TERMINAL FUNCTION LIST

TABLE OF MICROCOMPUTER μPD78233GJ-5BG (IC201) TERMINALS

Terminal No.	Symbol Name	I/O	Terminal Function
1	ENRC	—	Serial communication enable signal for connected RC-35
2	RST2	—	Reset signal of IC301 (μPD6381GF).
3	LED0	O	LED/KEY scan matrix signal 1.
4	LED1	O	LED/KEY scan matrix signal 2.
5	LED2	O	LED/KEY scan matrix signal 3.
6	TBSY1	I/O	Communication reserved signal or busy signal for CD1.
7	RST–	I	Hard reset input. Reset at "L".
8	V_{DD}	—	+5V power supply.
9	X2	I	Clock oscillation circuit input 2.
10	X1	I	Clock oscillation circuit input 1.
11	V_{SS}	—	0V power supply.
12	V_{SS}	—	0V power supply.
13	—	—	Not connected.
14	CLCK	O	Clock for servo command, level command. Connected to IC101 (CXD2515), 303 (SM5841BS).
15	DATA	O	Data for servo command, level command. Connected to IC101 (CXD2515), 303 (SM5841BS).
16	XLAT	O	Latch pulse of servo command. Latched at falling edge.
17	SCLK	—	Clock for data reading from IC101 (CXD2515).
18	LDON	O	Laser ON/OFF signal of optical pickup. Lase emits light at "H".
19	LCLK	O	Command transmitting clock for LCD driver.
20	LDAT	O	Command data for LCD driver.
21	—	—	Not connected.
22	LCE	O	Chip enable signal for LCD driver.
23	XRST	O	Reset signal of IC101 (CXD2515).
24	TBSY2	I/O	Communication reserved signal or busy signal for CD2.
25	WR–	O	Not used. Mask item... fixed to "L", external ROM... fixed to "H".
26	OE–	O	Enable signal output for external ROM. Mask item... fixed to "L", external ROM... pulse output for reading.
27	CS–	O	Chip select signal of IC301. Normally "H". "L" at select only.
28	C–/D	O	Command data designate signal of IC301. Command at "L", indicates data transmitting mode at "H".
29	SCK–	O	Clock for command transmission to IC301.
30	SI	O	Command data to IC301.
31	—	—	Not Connected.
32	A15	O	Memory address 15. Not used. Mask item... fixed to "L".
33	A14	O	Memory address 14. Mask item... fixed to "L".
34	A13	O	Memory address 13. Mask item... fixed to "L".
35	—	—	Not connected.
36	A12	O	Memory address 12. Mask item... fixed to "L".
37	A11	O	Memory address 11. Mask item... fixed to "L".
38	A10	O	Memory address 10. Mask item... fixed to "L".
39	A9	O	Memory address 9. Mask item... fixed to "L".
40	A8	O	Memory address 8. Mask item... fixed to "L".
41	—	—	Not connected.
42	AD7	I/O	Data bus 7. Mask item... fixed to "L".
43	AD6	I/O	Data bus 6. Mask item... fixed to "L".
44	AD5	I/O	Data bus 5. Mask item... fixed to "L".
45	AD4	I/O	Data bus 4. Mask item... fixed to "L".
46	AD3	I/O	Data bus 3. Mask item... fixed to "L".
47	AD2	I/O	Data bus 2. Mask item... fixed to "L".
48	AD1	I/O	Data bus 1. Mask item... fixed to "L".

Terminal No.	Symbol Name	I/O	Terminal Function
49	AD0	I/O	Data bus 0. Mask item... fixed to "L".
50	ASTB	O	Pulse for address latch. Mask item... fixed to "L".
51	V_{SS}	—	0V power supply.
52	V_{SS}	—	0V power supply.
53	—	—	Not connected.
54	MODE	I	Memory mode selection terminal. Use external ROM at "H", use mask ROM at "L". Mask item... "L", external ROM "H".
55	—	—	Not connected.
56	AMUTE	O	Audio output mute signal. Mute at "H".
57	SQCK	O	Clock for sub-code reading.
58	SENS	I	Indication signal of servo actuating condition. Emits from IC101.
59	CLOSE–	I	Tray CLOSE switch. CLOSE state at "L".
60	—	—	Not connected.
61	OPEN	I	Tray OPEN switch. OPEN state at "L".
62	SQSO	I	Sub-code data input. Emits from IC101.
63	DFLAT	O	Command latch pulse for digital filter. Ouptut to IC303.
64	DE2	O	Serial communication enable signal for connected DN-1000F.
65	V_{DD}	—	+5V power supply.
66	V_{DD}	—	+5V power supply.
67	CDNO	O	Machanism number input. Mechanism 1 at "L". Mechanism 2 at "H".
68	ISENS+	I	Analog input for tray drive servo.
69	ISENS–	I	Analog input for tray drive servo.
70	—	—	Not connected.
71	PITCH	I	Pitch volume input.
72	PMODE	I	Mode input for player.
73	SO	I	Serial communication input to IC301. (Normally "H")
74	—	I	Not used. Fixed to "L".
75	FOK	I	Input terminal.
76	AV_{DD}	—	+5V power supply for A/D converter.
77	AVREF1	—	+5V. A/D converter reference voltage.
78	—	—	Not connected.
79	AV_{SS}	—	0V power supply for A/D converter.
80	LOADER	O	Tray drive signal. Stops at 2.5V. CLOSE action at 3V. OPEN action at 2V.
81	—	O	Not used.
82	AVREF2	—	+5V. D/A converter reference voltage.
83	AVREF3	—	0V. D/A converter reference voltage.
84	—	—	Not connected.
85	KIN0	I	Key data 0.
86	KIN1	I	Key data 1.
87	KIN2	I	Key data 2.
88	KIN3	I	Key data 3.
89	KIN4	I	Key data 4.
90	RST	I	Input for +5V voltage observation. Shifts to "H" when POWER switch is turned off.
91	SCOR	I	Sub code sink input. Connect to IC101. Input 75 pulses per 1 second.
92	REMOT	I	Infrared-ray remote control signal input.
93	RXD–	I	Serial interface reception data.
94	TXD–	O	Serial interface transmission data.

TABLE OF DIGITAL SIGNAL PROCESSOR μPD6381GF (IC301) TERMINALS

Terminal No.	Symbol Name	I/O	Terminal Function
1	DRDY	O	Command reception READY signal from microcomputer. Normally "H".
2	FSMASK	I	LRCK mask signal. Fixed to "L".
3	SEL	I	Clock input select. Fixed to "H".
4	—	I	Not used.
5	XO	O	X'tal oscillation output.
6	XI	I	X'tal oscillation input.
7	GND	—	0V power supply.
8	XFSO	O	Clock Output. Not used.
9	—	—	Not connected.
10	LRCKO	O	LR clock output. 44.1kHz.
11	WCLKO	O	Word clock output. 88.2kHz. Not used.
12	BCLKO	O	Bit clock output. 2.1MHz.
13	BRAK–	O	Break acknowledge output. Fixed to "H".
14	GND	—	0V power supply.
15	BRRQ–	I	Break request input. Fixed to "H".
16	FSRST–	I	Program counter reset input. Fixed to "H".
17	RST2–	I	Soft reset input. Normally "H".
18	RST–	I	Hard reset input. Normally "H".
19	A0	O	External RAM address 0.
20	A1	O	External RAM address 1.
21	A2	O	External RAM address 2.
22	A3	O	External RAM address 3.
23	A4	O	External RAM address 4.
24	A5	O	External RAM address 5.
25	A6	O	External RAM address 6.
26	A7	O	External RAM address 7.
27	A8	O	External RAM address 8.
28	A9	O	External RAM address 9. Not used.
29	A10	O	External RAM address 10. Not used.
30	A11	O	External RAM address 11. Not used.
31	A12	O	External RAM address 12. Not used.
32	A13	O	External RAM address 13. Not used.
33	V_{DD}	—	+5V power supply.
34	A14	O	External RAM address 14. Not used.
35	A15	O	External RAM address 15. Not used.
36	A16	O	External RAM address 16. Not used.
37	RAS–	O	External RAM low address strobe signal.
38	CAS–	O	External RAM column address strobe signal.
39	WE–	O	External RAM write enable signal.
40	I01	I/O	External RAM data 1.
41	I02	I/O	External RAM data 2.
42	I03	I/O	External RAM data 3.
43	I04	I/O	External RAM data 4.
44	I05	I/O	External RAM data 5. Not used.
45	I06	I/O	External RAM data 6. Not used.
46	I07	I/O	External RAM data 7. Not used.
47	I08	I/O	External RAM data 8. Not used.
48	I09	I/O	External RAM data 9. Not used.

Terminal No.	Symbol Name	I/O	Terminal Function
49	I010	I/O	External RAM data 10. Not used.
50	I011	I/O	External RAM data 11. Not used.
51	I012	I/O	External RAM data 12. Not used.
52	I013	I/O	External RAM data 13. Not used.
53	I014	I/O	External RAM data 14. Not used.
54	I015	I/O	External RAM data 15. Not used.
55	I016	I/O	External RAM data 16. Not used.
56	GND	—	0V power supply.
57	MD0	I	Mode select 0. Fixed to "L".
58	MD1	I	Mode select 1. Fixed to "H".
59	MD2	I	Mode select 2. Fixed to "L".
60	BCLK1	I	Bit clock input. 2.18MHz.
61	LRCK1	I	LR clock input. 44.1kHz.
62	BCLK2	I	Fixed to "L". Not used.
63	LRCK2	I	Fixed to "L". NOt used.
64	DI1	I	Data input.
65	DO1	O	Data output.
66	DI2	I	Fixed to "L". Not used.
67	DO2	O	Not used.
68	DO3	O	Not used.
69	DORQ–	I	Not used. Fixed to "H".
70	GF–	O	G flag output. Normally "H".
71	OVF–	O	Over flag output. Normally "H".
72	V_{DD}	—	+5V power supply.
73	TEST0	I	Fixed to "H".
74	TEST1	I	Fixed to "H".
75	SETRDY	O	Not used.
76	SO	O	Serial data output.
77	SCK–	I	Serial data input/output clock.
78	SI	I	Serial data input.
79	C–/D	I	Command /data designation signal. "L" - command, "H" - data.
80	CS–	I	Chip select input.

CXD2515Q (IC101) TERMINAL FUNCTION

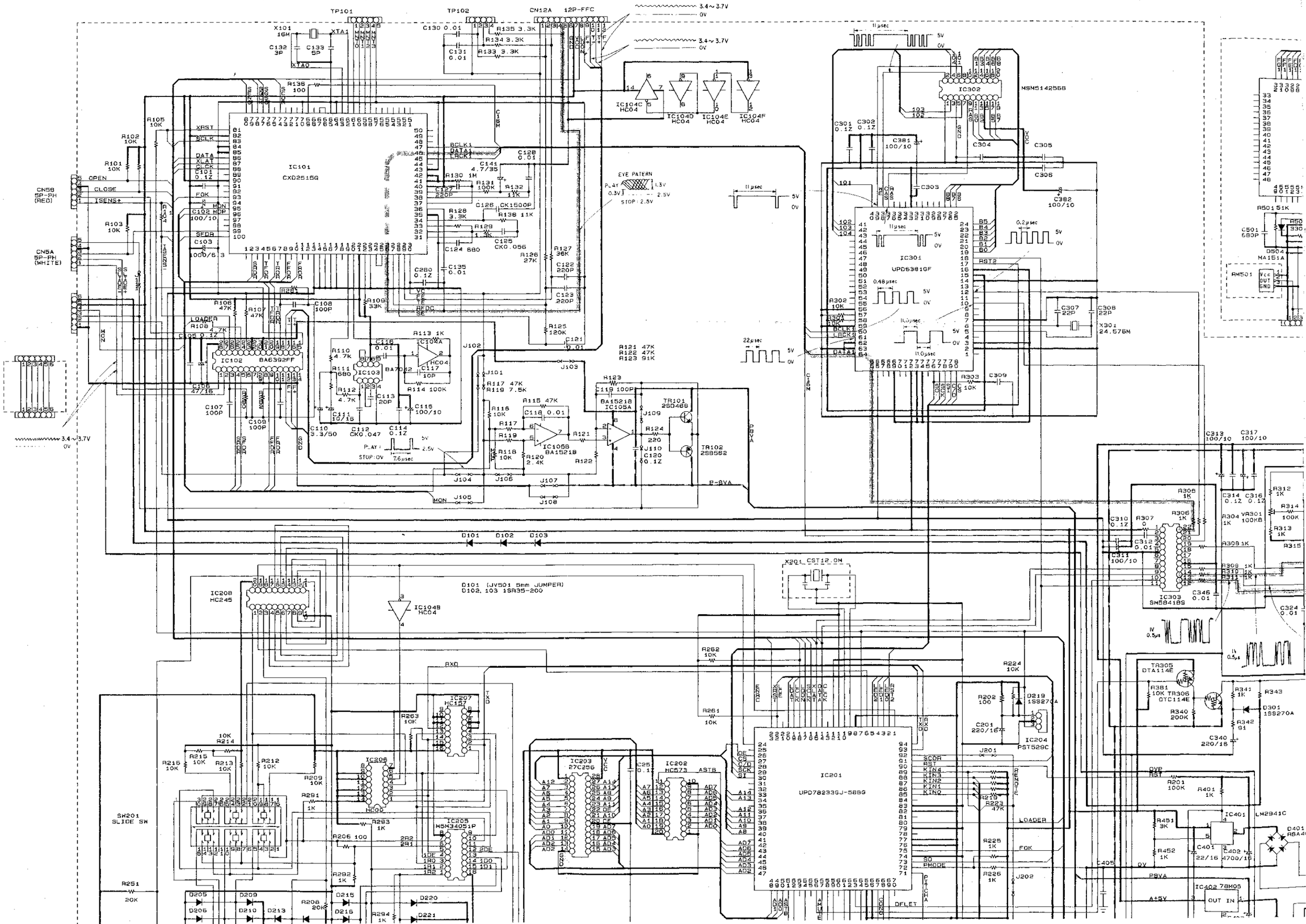
Terminal No.	Symbol Name	I/O	Terminal Function
1	SRON	O	Sled drive output.
2	SRDR	O	Sled drive output.
3	SFON	O	Sled drive output.
4	TFDR	O	Tracking drive output.
5	TRON	O	Tracking drive output.
6	TRDR	O	Tracking drive output.
7	TFON	O	Tracking drive output.
8	FFDR	O	Focus drive output.
9	FRON	O	Focus drive output.
10	FRDR	O	Focus drive output.
11	FFON	O	Focus drive output.
12	VCOO	O	Oscillation circuit output for analog EFM PLL.
13	VCOI	I	Oscillation circuit input for analog EFM PLL. fLOCK=8.6436MHz.
14	TEST	I	Test terminal, normally GND.
15	V_{SS}	—	Digital GND.
16	TES2	I	Test terminal, normally GND.
17	TES3	I	Test terminal, normally GND.
18	PDO	O	Charge pump output for analog EFM PLL.
19	VPCO	O	PLL charge pump output for variable pitch.
20	VCKI	I	Clock input from external VCO for variable pitch. fCENTER=16.9344MHz.
21	AV_{DD}	—	Analog power supply.
22	IGEN	I	Current source reference resistor connecting terminal for OP amplifier.
23	AV_{SS}	—	Analog GND.
24	ADII	I	A/D converter input terminal.
25	ADIO	O	OP amplifier output terminal.
26	RFDC	I	RF signal input. Input range 2.15~5.0V (at V_{DD}=AV_{DD}=5.0V).
27	TE	I	Tracking error signal input. Input range 2.5V±1.0V (at V_{DD}=AV_{DD}=5.0V).
28	SE	I	Sled error signal input. Input range 2.5V±1.0V (at V_{DD}=AV_{DD}=5.0V).
29	FE	I	Focus error signal input. Input range 2.5V±1.0V (at V_{DD}=AV_{DD}=5.0V).
30	VC	I	Mid-point voltage input terminal.
31	FILO	O	Filter output for master PLL.
32	FILI	I	Filter input for master PLL.
33	PCO	O	Charge pump output for master PLL.
34	CLTV	I	VCO control voltage input for master.
35	AV_{SS}	—	Analog GND.
36	RFAC	I	EFM signal input.
37	BIAS	I	Asymmetry circuit constant current input.
38	ASYI	I	Asymmetry compare voltage input.
39	ASYO	O	EFM full swing output. (L=V_{SS}, H=V_{DD}).
40	AV_{DD}	—	Analog power supply.
41	V_{DD}	—	Digital power supply.
42	ASYE	I	Asymmetry circuit ON/OFF (L=OFF, H=ON).
43	PSSL	I	Audio data output mode shifting input. L to serial output, H to parallel output.
44	WDCK	O	48-bit slot D/A interface. Word clock f=2Fs.
45	LRCK	O	48-bit slot D/A interface. LR clock f=Fs.
46	DA16	O	DA16 output at PSSL=1. Serial data of 48-bit slot at PSSL=0.
47	DA15	O	DA15 output at PSSL=1. Bit clock of 48-bit slot at PSSL=0.
48	DA14	O	DA14 output at PSSL=1. Serial data of 64-bit slot at PSSL=0.

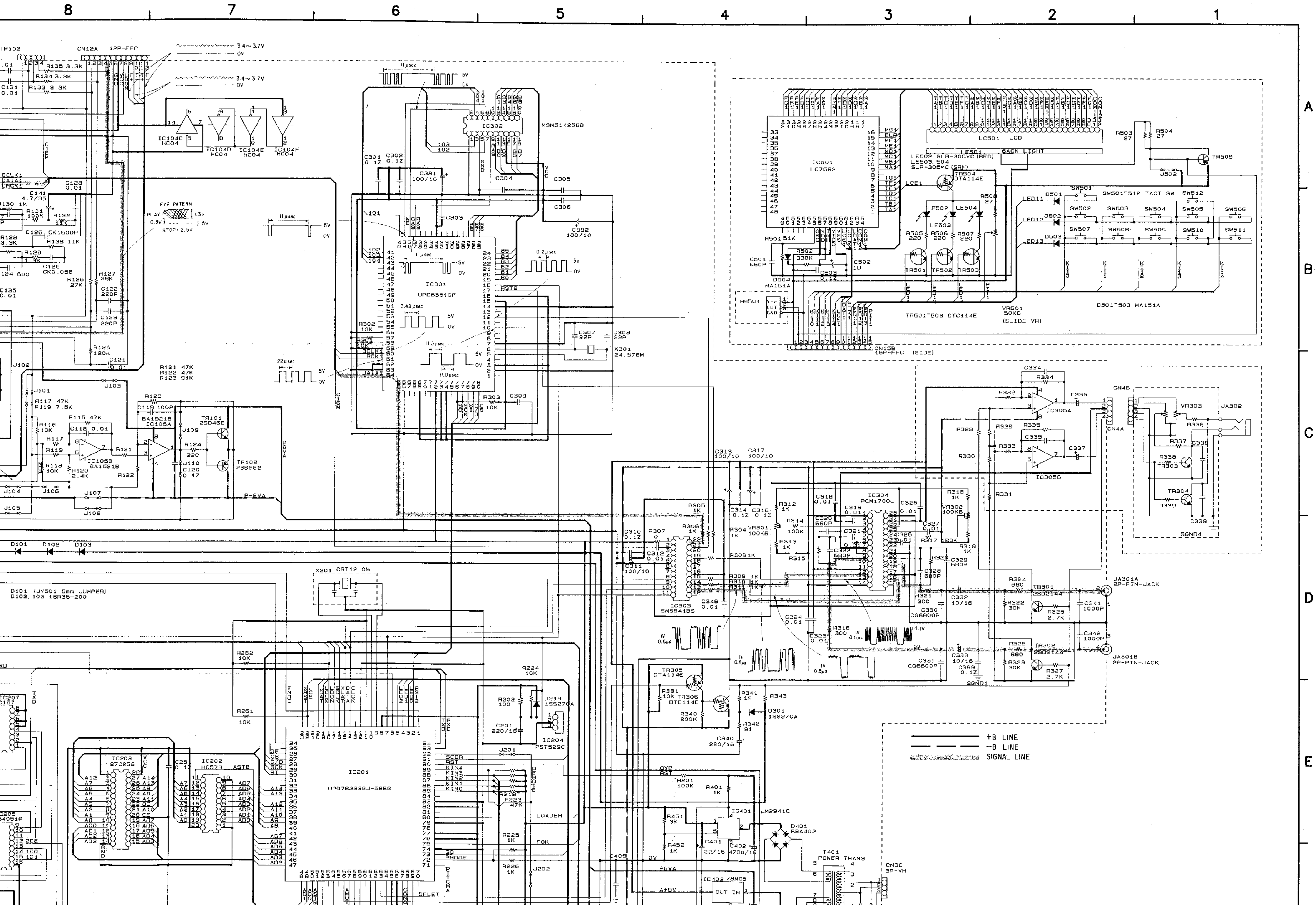
Terminal No.	Symbol Name	I/O	Terminal Function
49	DA13	O	DA13 output at PSSL=1. Bit clock of 64-bit slot at PSSL=0.
50	DA12	O	DA12 output at PSSL=1. LR clock of 64-bit slot at PSSL=0.
51	DA11	O	DA11 output at PSSL=1. GTOP output at PSSL=0.
52	DA10	O	DA10 output at PSSL=1. XUGF output at PSSL=0.
53	DA09	O	DA09 output at PSSL=1. XPLCK output at PSSL=0.
54	DA08	O	DA08 output at PSSL=1. GFS output at PSSL=0.
55	DA07	O	DA07 output at PSSL=1. RFCK output at PSSL=0.
56	DA06	O	DA06 output at PSSL=1. C2PO output at PSSL=0.
57	DA05	O	DA05 output at PSSL=1. XRAOF output at PSSL=0.
58	DA04	O	DA04 output at PSSL=1. MNT3 output at PSSL=0.
59	DA03	O	DA03 output at PSSL=1. MNT2 output at PSSL=0.
60	DA02	O	DA02 output at PSSL=1. MNT1 output at PSSL=0.
61	DA01	O	DA01 output at PSSL=1. MNT0 output at PSSL=0.
62	XTAI	I	X'tal oscillation circuit input. 16.9344MHz or 33.8688MHz input.
63	XTAO	O	X'tal oscillation circuit output.
64	XTSL	I	X'tal selection input terminal. L at X'tal for 16.9344MHz, at 33.8688MHz turns to H.
65	V_{SS}	—	Digital GND.
66	FSTI	I	2/3 divided input of terminals 62 and 63.
67	FSTO	O	2/3 divided input of terminals 62 and 63. Unvarying by variable pitch.
68	C4M	O	4.2366MHz output. Simultaneously varies when variable pitched.
69	C16M	O	16.9344MHz output. Simultaneously varies when variable pitched.
70	MD2	I	Digital-out ON/OFF control terminal (L=OFF, H=ON).
71	DOUT	O	Digital-out output terminal.
72	EMPH	O	Emphasis mode output of playback disc (L at without emphasis, H at emphasized).
73	WFCK	O	WFCK output.
74	SCOR	O	Subcode sync output terminal (H at detecting either one of SO or SI subcode sync).
75	SBSO	O	Serial output of sub P~W.
76	EXCK	I	Clock input for SBSO read out.
77	SQSO	O	SubQ 80-bit output. PCM peak data, level data 16-bit output.
78	SQCK	I	Clock input for SQSO read out.
79	MUTE	I	Mute shifting terminal (H to mute).
80	SENS	O	SENS output. Outputs to CPU.
81	XRST	I	System reset (L to reset).
82	DIRC	I	Used for at I-track jump.
83	SCLK	I	Clock for SENS serial data reading.
84	DFSW	I	DFCT shifting terminal (H to DFCT countermeasure circuit OFF).
85	ATSK	I	Anti-shock terminal.
86	DATA	I	Serial data input from CPU.
87	XLAT	I	Latch input from CPU.
88	CLOK	I	Serial data transfer clock input from CPU.
89	COUT	O	Number of track count signal output.
90	V_{DD}	—	Digital power supply.
91	MIRR	O	Mirror signal output.
92	DFCT	O	Defect signal output.
93	FOK	O	Focus OK output.
94	FSW	O	Output filter shifting output of spindle motor.
95	MON	O	ON/OFF control output of spindle motor.
96	MDP	O	Servo control of spindle motor.
97	MDS	O	Servo control of spindle motor.
98	LOCK	O	Sampling GFS with 460Hz and outputs H at GFS is H. Outputs L when continuously 8 times L.
99	SSTP	I	Terminal for inner most circle detection signal of disc.
100	SFDR	O	Sled drive output.

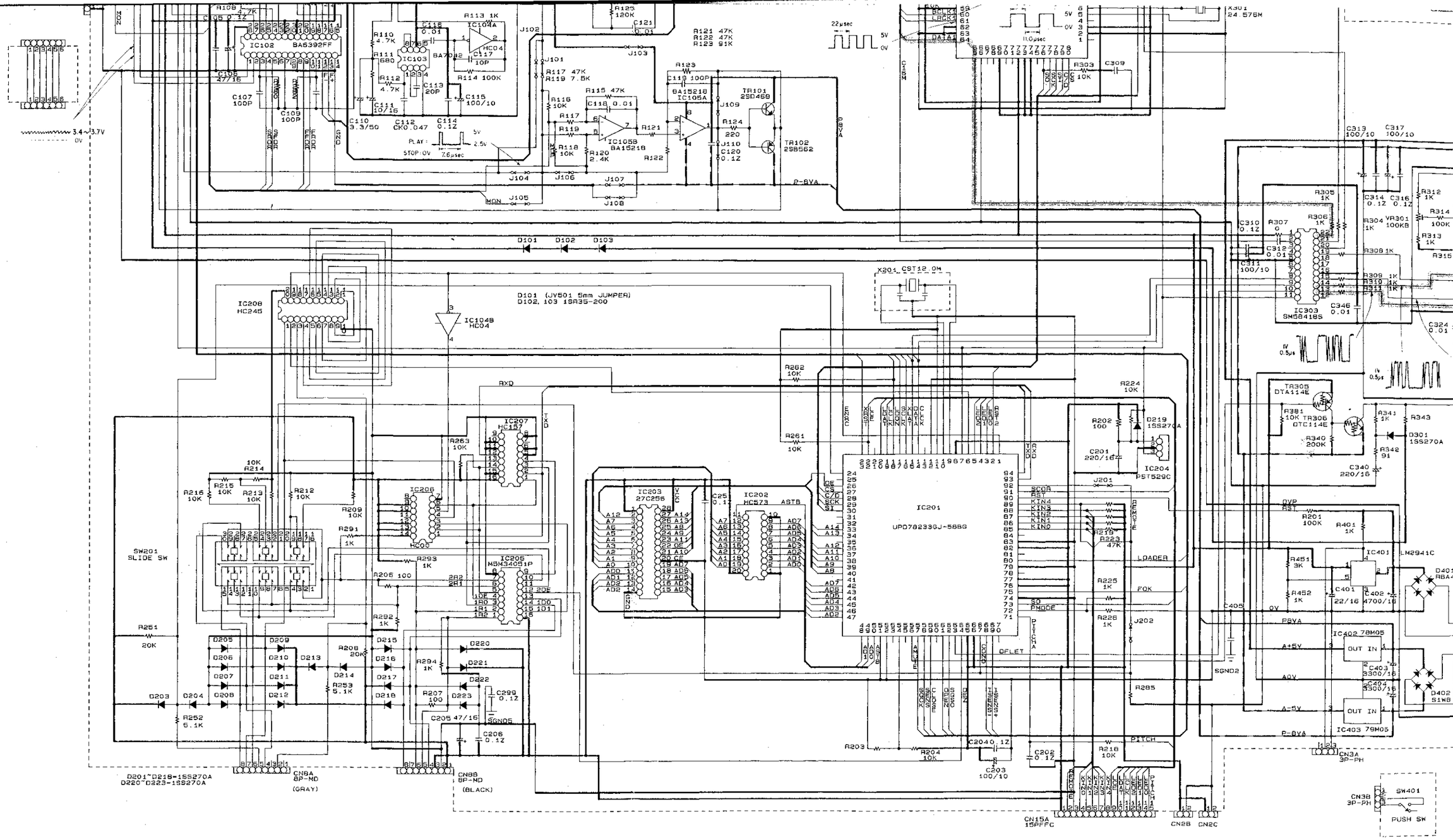
Note:
- 64-bit slot is 2's compliment output of LSB first, 48-bit slot is 2's compliment output of MSB first.
- GTOP is to monitor the protection condition of Frame Sync. (H: Sync protect window open.)
- XUGF is Frame Sync obtained from EFM signal and is negative pulse.
- XPLCK is reversal of EFM PLL clock. PLL is so made the rising edge to meet shifting point of EFM signal.
- GFS signal is a signal to turn to H when frame Sync and inserted protection timing coincide.
- RFCK is obtained with the accuracy of X'tal. The signal of 136μs cycle.
- C2PO is a signal to indicate the state of data error.
- XRAOF is a generating signal when 32kRAM exceeds ±28 frame jitter margin.

SCHEMATIC DIAGRAM

11 | 10 | 9 | 8 | 7 | 6 | 5 | 4



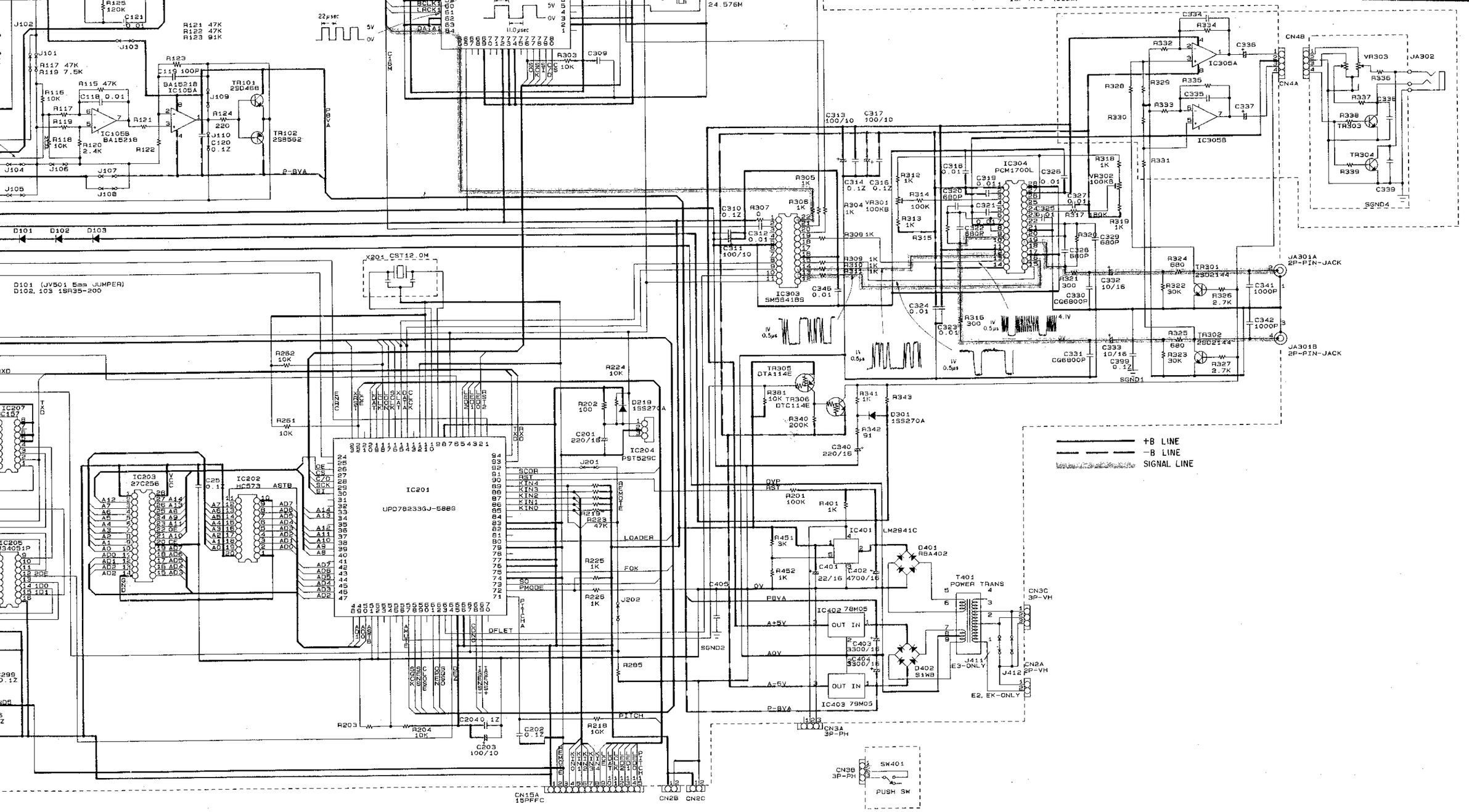

8
7
6
5
4
3
2
1
A
B
C
D
E
IC301
UPD6381GF
IC302
MSM514256B
IC501
LC7582
LC501 LCD
IC304
PCM1700L
IC303
SM5841BS
IC201
UPD78233GJ-5BG
IC203
27C256
IC202
HC573
IC401
LM2941C
T401
POWER TRANS
D401
RBA402
X301
24.576M
X201 CST12.0M
EYE PATTERN
SW501~512 TACT SW
D501~503 MA151A
TR501~503 DTC114E
VR501
50KB
(SLIDE VR)
D101 (JV501 5mm JUMPER)
D102, 103 1SR35-200
JA301A
2P-PIN-JACK
JA301B
2P-PIN-JACK
+B LINE
-B LINE
SIGNAL LINE



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.



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

NOTES
ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 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.