

TOSHIBA

FILE NO. 810-200008

SERVICE MANUAL



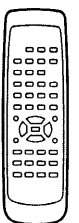
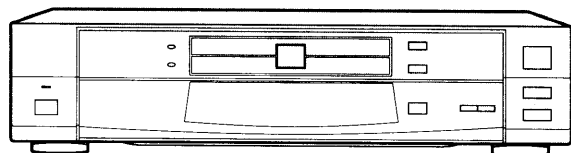
SPATIALIZER®
N-2-2™



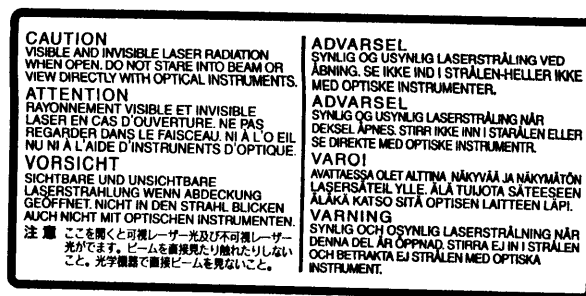
DVD VIDEO PLAYER

SD-200EB

SD-200EE



LASER BEAM CAUTION LABEL



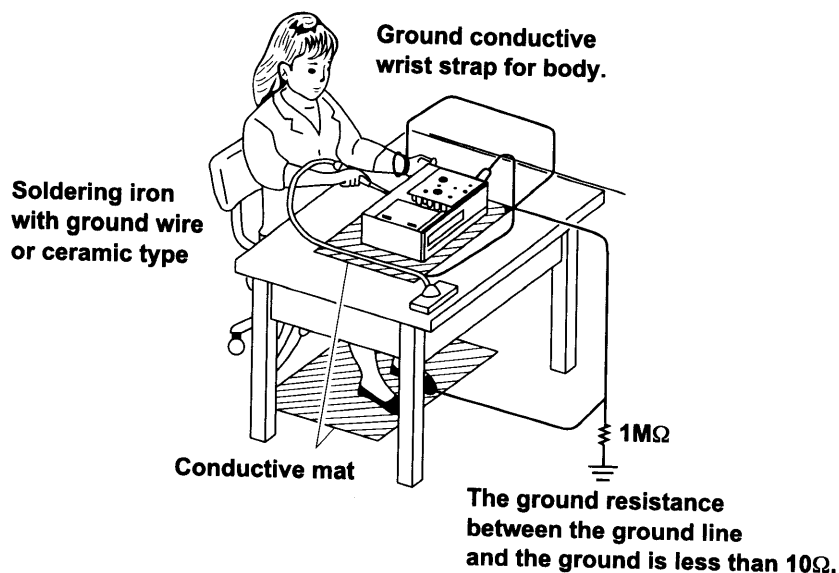
When the power supply is being turned on, you may not remove this laser cautions label. If it removes, radiation of a laser may be received.

PREPARATION OF SERVICING

Pickup Head consists of a laser diode that is very susceptible to external static electricity.

Although it operates properly after replacement, if it was subject to electrostatic discharge during replacement, its life might be shortened. When replacing, use a conductive mat, soldering iron with ground wire, etc. to protect the laser diode from damage by static electricity.

And also, the LSI and IC are same as above.



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SAFETY PRECAUTIONS

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

CAUTION:

This Digital Video Disc Player employs a Laser System. To ensure proper use of this product, please read this owner's manual carefully and retain for future reference. Should the unit require maintenance, contact an authorized service location - see service procedure.

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

To prevent direct exposure to laser beam, do not try to open the enclosure. Visible and invisible laser radiation when open and interlocks defeated. DO NOT STARE INTO BEAM.



In the spaces provided below, record the Model and Serial No. located on the rear panel of your DVD video player.

Model No. _____

Serial No. _____

Retain this information for future reference.

The following information applies only to SD-200EB, the model for U.K.

General Information

If the socket outlets in your home are not suitable for the plug supplied with this unit, the plug must be cut off and an appropriate one fitted.

The plug severed from this mains lead must be destroyed as it is hazardous if inserted into a live socket.

IMPORTANT

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

BLUE: NEUTRAL

BROWN: LIVE

As the colours of the wires in the mains lead of this unit may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire that is coloured blue must be connected to the terminal in the plug which is marked with the letter N or coloured black.

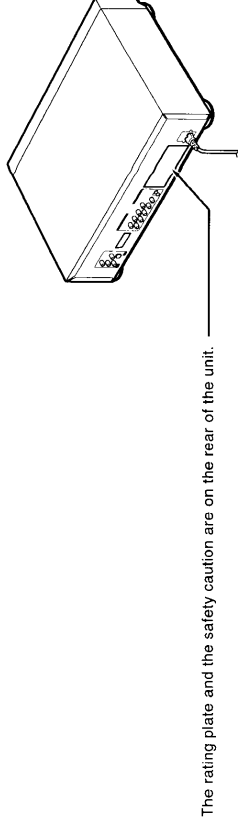
The wire that is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

Do not connect either wire to the earth terminal which is marked by the letter E or by the safety earth symbol $\perp$ or coloured green or green-and-yellow.

Use a 5A fuse which is approved by ASTA or BSI to BS1362.

Always replace the fuse cover after changing the fuse.

Location of the required label



The rating plate and the safety caution are on the rear of the unit.

SECTION 1 GENERAL DESCRIPTIONS

1. OPERATING INSTRUCTIONS

IMPORTANT SAFETY INSTRUCTIONS

CAUTION: PLEASE READ AND OBSERVE ALL WARNINGS AND INSTRUCTIONS GIVEN IN THIS OWNER'S MANUAL AND THOSE MARKED ON THE UNIT. RETAIN THIS BOOKLET FOR FUTURE REFERENCE.

This set has been designed and manufactured to assure personal safety. Improper use can result in electric shock or fire hazard. The safeguards incorporated in this unit will protect you if you observe the following procedures for installation, use and servicing. This unit is fully transistorized and does not contain any parts that can be repaired by the user.

DO NOT REMOVE THE CABINET COVER, OR YOU MAY BE EXPOSED TO DANGEROUS VOLTAGE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.

1. Read owner's manual
After unpacking this product, read the owner's manual carefully, and follow all the operating and other instructions.



2. Power Sources

This product should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.



3. Ventilation

Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.



4. Heat

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.



5. Water and Moisture

Do not use this product near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool and the like.



6. Cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.



7. 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 product.



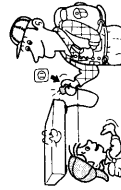
8. Overloading

Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.



9. Lightning

For added protection for this product during storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.



10. Object and Liquid Entry

Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.



11. Attachments

Do not use attachments not recommended by the product manufacturer as they may cause hazards.

IMPORTANT SAFETY INSTRUCTIONS

12. Accessories

Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer. A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.



13. Disc Tray

Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.



14. Burden

Do not place a heavy object on or step on the product. The object may fall, causing serious personal injury and serious damage to the product.



15. Headphones

When you use headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.



16. Disc

Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.



17. Damage Requiring Service

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power-supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- If the product has been dropped or damaged in any way.
- When the product exhibits a distinct change in performance - this indicates a need for service.

18. Servicing

Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

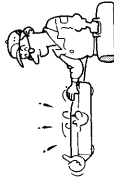


19. Replacement Parts

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

20. Safety Check

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.



Precautions

Notes on handling

- When shipping the DVD video player, the original shipping carton and packing materials come in handy. For maximum protection, repack the unit as it was originally packed at the factory.
- Do not use volatile liquids, such as insect spray, near the DVD video player. Do not leave rubber or plastic products in contact with the DVD video player for a long time. They will leave marks on the finish.
- The top and rear panels of the DVD video player may become warm after a long period of use. This is not a malfunction.
- When the DVD video player is not in use, be sure to remove the disc and turn off the power.
- If you do not use the DVD video player for a long period, the unit may not function properly in the future. Turn on and use the DVD video player occasionally.

Notes on locating

- Place the DVD video player on a level surface. Do not use it on a shaky or unstable surface such as a wobbling table or inclined stand. The loaded disc may come off the proper position and cause damage to the DVD video player.
- When you place this DVD video player near a TV, radio, or VTR, the playback picture may become poor and the sound may be distorted. In this case, place the DVD video player away from the TV, radio, or VTR.

Notes on cleaning

- Use a soft, dry cloth for cleaning.
- For stubborn dirt, soak the cloth in a weak detergent solution, wring well and wipe. Use a dry cloth to wipe it dry.
 - Do not use any type of solvent, such as thinner and benzene, as they may damage the surface of the DVD video player.
 - If you use a chemical saturated cloth to clean the unit, follow that product's instructions.

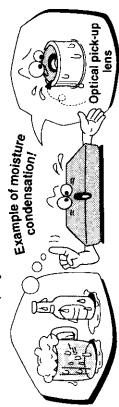
To obtain a clear picture

The DVD video player is a high technology, precision device. If the optical pick-up lens and disc drive parts are dirty or worn down, the picture quality becomes poor. To obtain a clear picture, we recommend regular inspection and maintenance (cleaning or parts replacement) every 1,000 hours of use depending on the operating environment. For details, contact your nearest dealer.

Notes on moisture condensation

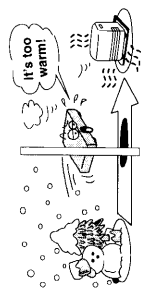
Moisture condensation damages the DVD video player. Please read the following carefully.

Moisture condensation occurs, for example, when you pour a cold drink into a glass on a warm day. Drops of water form on the outside of the glass. In the same way, moisture may condense on the optical pick-up lens inside this unit, one of the most crucial internal parts of the DVD video player.



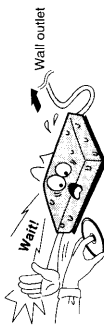
Moisture condensation occurs during the following cases.

- When you bring the DVD video player directly from a cold place to a warm place.
- When you use the DVD video player in a room where you just turned on the heater, or a place where the cold wind from the air conditioner directly hits the unit.
- In summer, when you use the DVD video player in a hot and humid place just after you move the unit from an air conditioned room.
- When you use the DVD video player in a humid place.



Do not use the DVD video player when moisture condensation may occur.

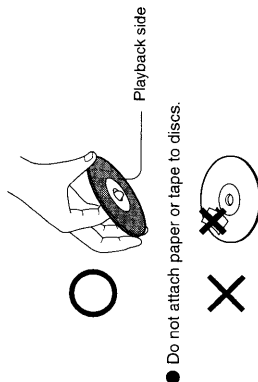
If you use the DVD video player in such a situation, it may damage discs and internal parts. Remove the disc, connect the power cord of the DVD video player to the wall outlet, turn on the DVD video player, and leave it for two or three hours. After two or three hours, the DVD video player will have warmed up and evaporated any moisture. Keep the DVD video player connected to the wall outlet and moisture condensation will seldom occur.



Notes on Discs

On handling discs

- Do not touch the playback side of the disc.



On cleaning discs

- Fingerprints and dust on the disc cause picture and sound deterioration. Wipe the disc from the center outwards with a soft cloth. Always keep the disc clean.



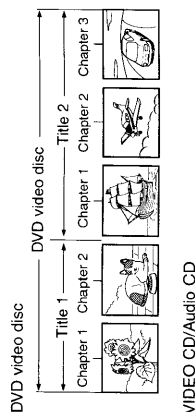
- If you cannot wipe off the dust with a soft cloth, wipe the disc lightly with a slightly moistened soft cloth and finish with a dry cloth.
- Do not use any type of solvent such as thinner, benzene, commercially available cleaners or antistatic spray for vinyl LPs. It may damage the disc.

On storing discs

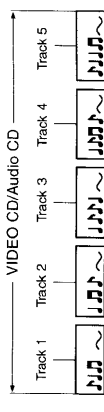
- Do not store discs in a place subject to direct sunlight or near heat sources.
- Do not store discs in places subject to moisture and dust such as a bathroom or near a humidifier.
- Store discs vertically in a case. Stacking or placing objects on discs outside of their case may cause warping.

Structure of disc contents

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs/audio CDs are divided into tracks.



VIDEO CD/Audio CD



Each title, chapter or track is assigned a number, which is called "title number", "chapter number" or "track number" respectively. There may be discs that do not have these numbers.

Notes on copyright

It is forbidden by law to copy, broadcast, show, broadcast on cable, play in public, and rent copyrighted material without permission.

DVD video discs are copy protected, and any recordings made from these discs will be distorted.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes on Discs (continued)

About this owner's manual

This owner's manual explains the basic instructions of this DVD video player. Some DVD video discs are produced in a manner that allows specific or limited operation during playback. As such, the DVD video player may not respond to all operating commands. This is not a defect in the DVD video player. Refer to instruction notes of discs.

A "Q" may appear on the TV screen during operation. A "Q" means that the operation is not permitted by the DVD video player or the disc.

Notes on region numbers

The region number of this DVD video player is 2. If region numbers, which stand for their playable area, are printed on your DVD video disc and you do not find 2 or Q, disc playback will not be allowed by the player. (In this case, the DVD video player will display a message on-screen.)

On VIDEO CDs

This DVD video player supports VIDEO CDs equipped with the PBC (Version 2.0) function. (PBC is the abbreviation of Playback Control.) You can enjoy two playback variations depending on types of discs.

- **VIDEO CD not equipped with PBC function (Version 1.1)**
Sound and movie can be played on this DVD video player in the same way as an audio CD.
- **VIDEO CD equipped with PBC function (Version 2.0)**
In addition to operation of a VIDEO CD not equipped with the PBC function, you can enjoy playback of interactive software with search function by using the menu displayed on the TV screen (Menu Playback). Some of the functions described in this owner's manual may not work with some discs.

Playable discs

This DVD video player can play the following discs.

Disc Mark	Contents	Disc Size	Maximum playback time
 DVD video discs	Audio + video (moving pictures)	12 cm	Approx. 4 hours (single sided disc) Approx. 8 hours (double sided disc)
 VIDEO CDs	Audio + video (moving pictures)	12 cm 8 cm	Approx. 80 minutes (single sided disc) Approx. 160 minutes (double sided disc)
 Audio CDs	Audio	12 cm 8 cm (CD single)	Approx. 74 minutes Approx. 20 minutes

The following discs are also available.

- CD-R
- CD-RW
- CD-R/RW discs recorded by CD-DA method can be played. Some CD-R/RW discs may be incompatible.

- You cannot play discs other than those listed above.
- You cannot play discs of DVD-RAM, DVD-RW, etc., even if they may be labeled marks listed above.
- This DVD video player uses the PAL/NTSC color system, and cannot play DVD video discs recorded in any other color system (SECAM, etc.).

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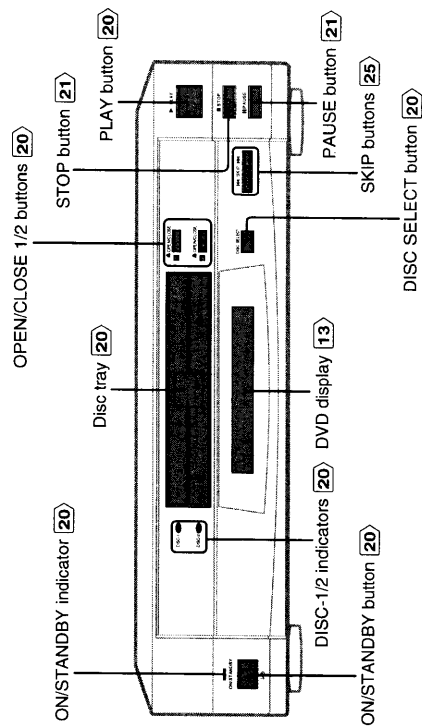
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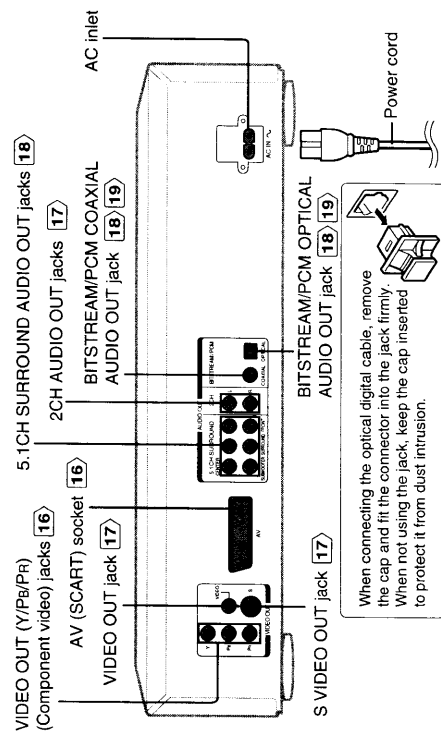
Identification of Controls

See the page in for details.

Front panel

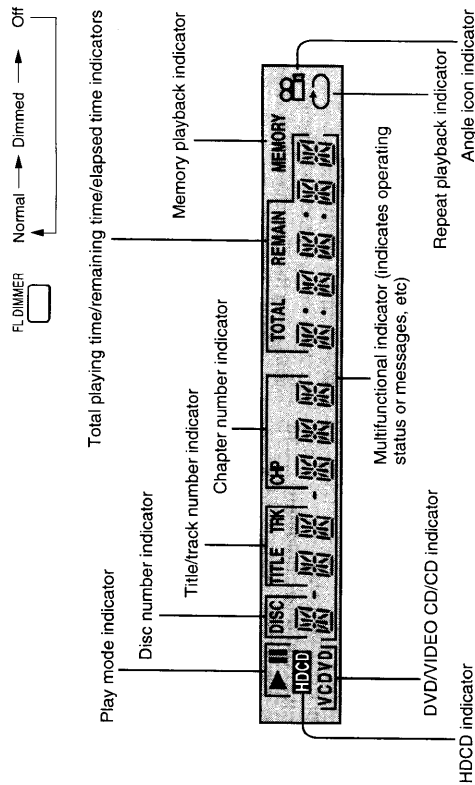


Rear panel



DVD display

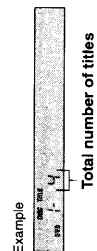
- Pressing of the FL DIMMER button on the remote control changes the brightness of the display.



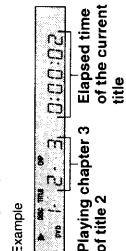
The indicators vary depending on the kinds of discs you play.

DVD video disc

- When closing the disc tray:



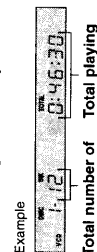
- During playback:



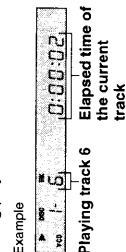
Some discs may not display chapter numbers or elapsed time.

VIDEO CD

- When closing the disc tray:



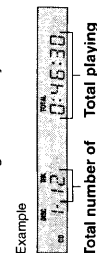
- During playback:



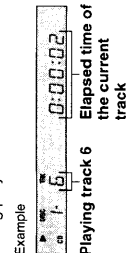
Some discs may not display track numbers or elapsed time.

Audio CD

- When closing the disc tray:



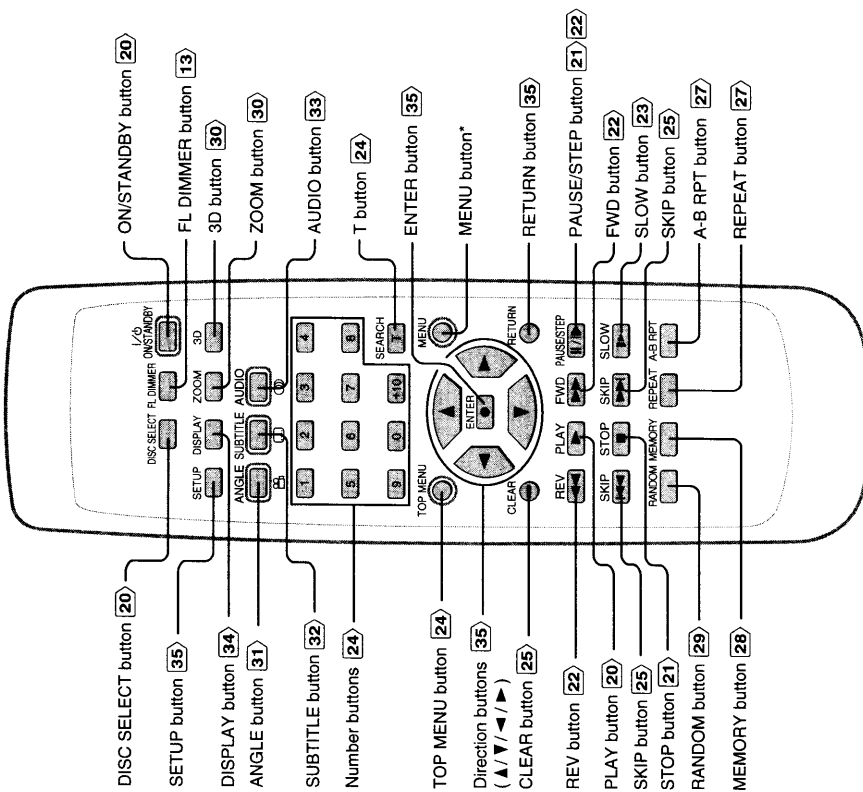
- During playback:



Identification of Controls (continued)

The instructions in this manual describe the functions on the remote control. See the page in  for details.

Remote control

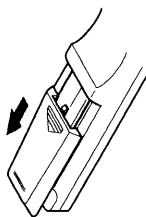


* MENU button

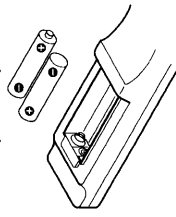
Use the MENU button to display the menu included on many DVD video discs. To operate a menu, follow the instructions in "Locating a title using the top menu." 

Loading batteries

1 Open the cover.

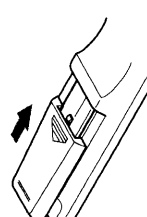


2 Insert batteries (R6 size).



Make sure to match the + and - on the batteries to the marks inside the battery compartment.

3 Close the cover.



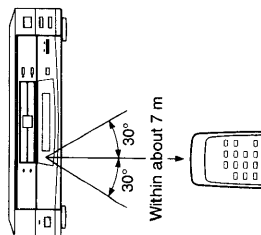
Notes on batteries

Improper use of batteries may cause battery leakage and corrosion. To operate the remote control correctly, follow the instructions below.

- Do not insert batteries into the remote control in the wrong direction.
- Do not charge, heat, open, or short-circuit the batteries. Do not throw batteries into a fire.
- Do not leave dead or exhausted batteries in the remote control.
- Do not use different types of batteries together, or mix old and new batteries.
- If you do not use the remote control for a long period of time, remove the batteries to avoid possible damage from battery corrosion.
- If the remote control does not function correctly or if the operating range becomes reduced, replace all batteries with new ones.
- If battery leakage occurs, wipe the battery liquid from the battery compartment, then insert new batteries.

Operating with the remote control

Point the remote control at the remote sensor and press the buttons.



Distance: About 7 m from the front of the remote sensor
Angle: About 30° in each direction of the front of the remote sensor

- Do not expose the remote sensor of the DVD video player to a strong light source such as direct sunlight or other illumination. If you do so, you may not be able to operate the DVD video player via the remote control.

Notes on the remote control

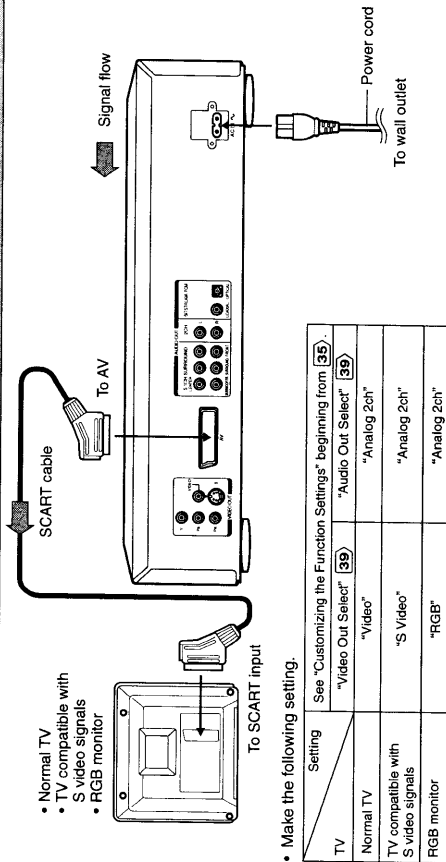
- Direct the remote control at the remote sensor of the DVD video player.
- Do not drop or give the remote control a shock.
- Do not leave the remote control near an extremely hot or humid place.
- Do not spill water or put anything wet on the remote control.
- Do not open the remote control.

Connecting to a TV

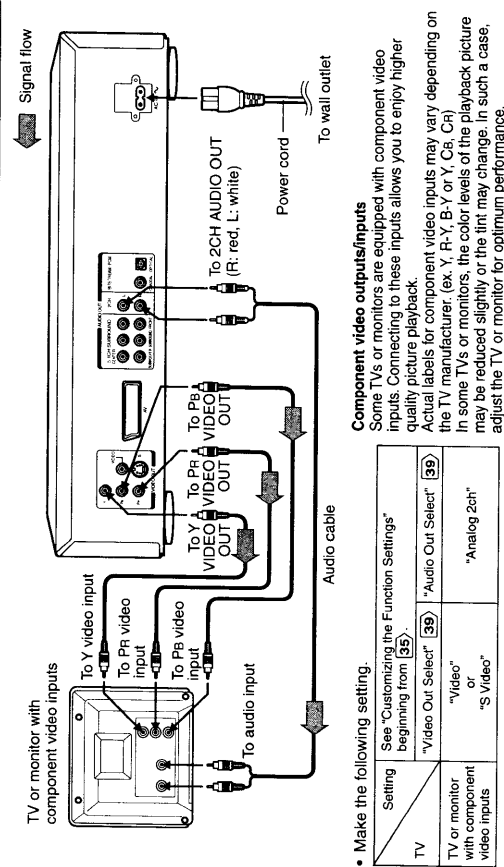
Connect the DVD video player to your TV. For details of output sound, see [33].

Connect the DVD video player directly to your TV. If you connect the DVD video player to a VTR, TV/VTR combination or video selector, the playback picture may be distorted as DVD video discs are copy protected.

Connecting to a TV (Using the SCART socket)

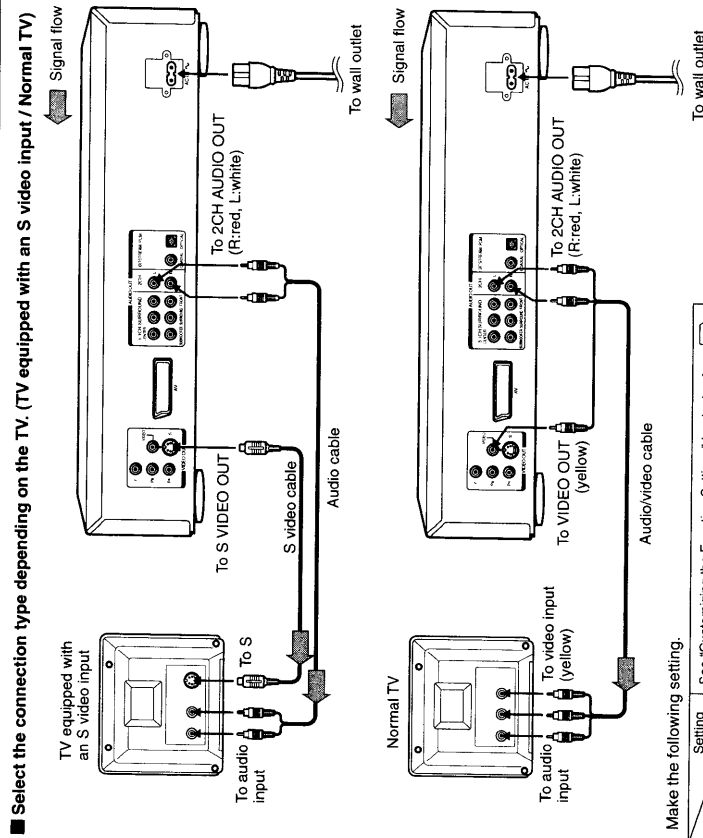


Connecting to a TV (Using the component video jacks)



Component video outputs/inputs
Some TVs or monitors are equipped with component video inputs. Connecting to these inputs allows you to enjoy higher quality picture playback.
Actual labels for component video inputs may vary depending on the TV manufacturer. (ex. Y, R-Y, B-Y or Y, Cr, Cb)
In some TVs or monitors, the color levels of the playback picture may be reduced slightly or the tint may change. In such a case, adjust the TV or monitor for optimum performance.

Connecting to a TV (Using the phono type jacks)



- Notes**
- Refer to the owner's manual of the connected equipment as well.
 - When you connect the DVD video player to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
 - If you place the DVD video player near a tuner or radio, the radio broadcast sound might be distorted. In this case, place the DVD video player away from the tuner and radio.
 - The output sound of the DVD video player has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
 - Turn off the amplifier before you connect or disconnect the DVD video player's power cord. If you leave the amplifier power on, the speakers may be damaged.
 - If your television set has one audio input, connect the DVD video player to a Y cable adapter (not supplied) and then connect to your TV.

Connecting to Optional Equipment

You can enjoy high quality dynamic sounds by connecting the DVD video player to optional audio equipment.

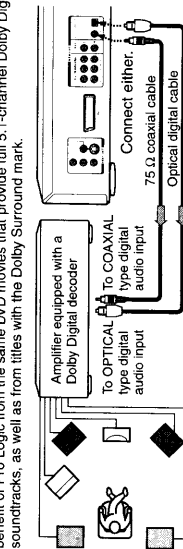
For connection to your TV, see "Connecting to a TV" (16) (17).
For details of output sound, see (33).

■ Front speaker
□ Rear speaker
□ Sub woofer

□ : Center speaker
⇒ : Signal flow

Connecting to an amplifier equipped with a Dolby Digital decoder

Dolby Digital
Dolby Digital is the surround sound technology used in theaters showing the latest movies, and is now available to reproduce this realistic effect in the home. You can enjoy motion picture and live concert DVD video discs with this dynamic realistic sound by connecting the DVD video player to a 6 channel amplifier equipped with a Dolby Digital decoder or Dolby Digital processor. If you have a Dolby Pro Logic Surround decoder, you will obtain the full benefit of Pro Logic from the same DVD movies that provide full 5.1-channel Dolby Digital soundtracks, as well as from titles with the Dolby Surround mark.

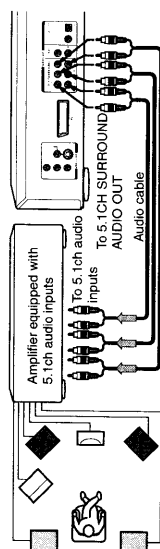


- Use DVD video discs encoded via the Dolby Digital recording system.
- Make the following setting.

Setting	Select	Page
"Audio Out Select"	"Bitstream"	(35) (39)
Recording system	Dolby D	(33)

Connecting to an amplifier equipped with 5.1ch audio inputs

5.1ch surround sound
The Dolby Digital decoder and MPEG2 audio decoder equipped with this DVD video player enable you to obtain the full benefit of 5.1 channel sound tracks when you connect the DVD video player to an amplifier equipped with 5.1 channel audio inputs.



- Use DVD video discs encoded via the Dolby Digital or MPEG2 audio recording system.
- Make the following setting.

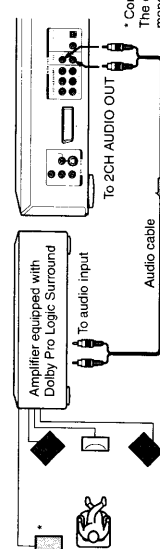
Setting	Select	Page
"Audio Out Select"	"Analog 6ch"	(35) (39)
Recording system	5.1CH SURROUND	(33)

2 channel sound is output in the Dolby Pro Logic format. To obtain the original 2 channel sound, select "Analog 2ch".

Connecting to an amplifier equipped with Dolby Pro Logic Surround

Dolby Pro Logic Surround
You can enjoy the dynamic realistic sound of Dolby Pro Logic Surround by connecting an amplifier and speaker system (right and left front speakers, a center speaker, and one or two rear speakers).

- With an amplifier equipped with Dolby Digital
Connect the equipment the same way as described in "Connecting to an amplifier equipped with a Dolby Digital decoder." Refer to that amplifier's owner's manual and set the amplifier so you can enjoy Dolby Pro Logic Surround sound.
- With an amplifier not equipped with Dolby Digital
Connect the equipment as follows.



- Connect one or two rear speakers.
The output sound from the rear speakers will be monaural even if you connect two rear speakers.

Setting	Select	Page
"Audio Out Select"	"Analog 2ch"	(35) (39)

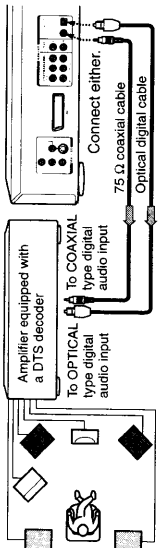
Be sure to set "Audio Out Select" to "Analog 2ch" when you enjoy sounds of Dolby Pro Logic Surround using this connection.

Warning

- When you are connecting (via the BITSTREAM/PCM AUDIO OUT jack) an AV decoder that does not have Dolby Digital, Digital Theater Systems (DTS) or MPEG2 decoding function, be sure to set "Audio Out Select" to "PCM" from the on-screen displays (35) (39). Otherwise, high volume sound may damage your hearing as well as the speakers.
- When playing DTS-encoded discs (DVD video discs and audio CDs), excessive noise may be output from the analog stereo jacks. To avoid possible damage to the audio system, you should take proper precautions when the 2CH AUDIO OUT (L/R) jacks of the DVD video player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1 channel DTS Digital Surround™ decoder system must be connected to the BITSTREAM/PCM AUDIO OUT jack of the DVD video player.

Connecting to an amplifier equipped with a DTS decoder

Digital Theater Systems (DTS)
DTS is a high quality surround technology used in theaters and now available for home use. If you have a DTS decoder or processor, you can obtain the full benefit of 5.1 channel DTS encoded sound tracks on DVD video discs or audio CDs.

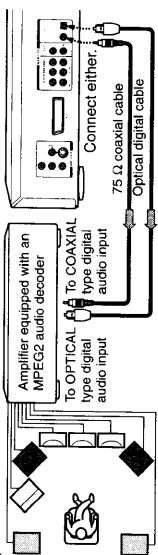


- Use DVD video discs or audio CDs encoded via the DTS recording system.
- Make the following setting.

Setting	Select	Page
"Audio Out Select"	"Bitstream"	(35) (39)
Recording system	DTS	(33)

Connecting to an amplifier equipped with an MPEG2 audio decoder

MPEG2 sound
You can enjoy motion picture and live concert DVD video discs with dynamic realistic sound by connecting an amplifier equipped with an MPEG2 audio decoder or MPEG2 audio processor.

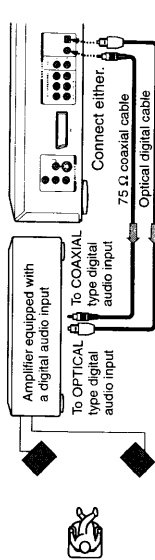


- Use DVD video discs encoded via the MPEG2 recording system.
- Make the following setting.

Setting	Select	Page
"Audio Out Select"	"Bitstream"	(35) (39)
Recording system	MPEG	(33)

Connecting to an amplifier equipped with a digital audio input

2 channel digital stereo
You can enjoy the dynamic sound of 2 channel digital stereo by connecting an amplifier equipped with a digital audio input and speaker system (right and left front speakers).



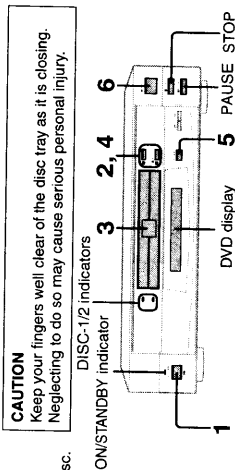
Notes

- DO NOT connect the BITSTREAM/PCM AUDIO OUT jack of the DVD video player to the AC-3 RF input of a Dolby Digital Receiver. This input on your AV Receiver is reserved for Laserdisc use only and is incompatible with the BITSTREAM/PCM AUDIO OUT jack of the DVD video player.
- Connect the BITSTREAM/PCM AUDIO OUT jack of the DVD video player to the "OPTICAL" or "COAXIAL" input of a Receiver or Processor.
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD video player to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- The output sound of the DVD video player has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD video player's power cord. If you leave the amplifier power on, the speakers may be damaged.

Setting	Select	Page
"Audio Out Select"	"PCM"	(35) (39)

Playing a Disc

This section shows you the basics on how to play a disc.



Basic playback

Preparations

- When you want to view a disc, turn on the TV and select the video input connected to the DVD video player.
- When you want to enjoy the sound of discs from the audio system, turn on the audio system and select the input connected to the DVD video player.

1 Press ON/STANDBY.

The DVD video player turns on and the ON/STANDBY indicator on the player illuminates.

When the DVD video player is turned on for the first time, an initial set-up display appears. See "Initial set-up" to make the settings before proceeding to step 2.

2 Press OPEN/CLOSE (1/2).

Press either button you want. The disc tray opens.

3 Place a disc on the disc tray.

With the playback side down.
Do not place more than one disc.

- There are two different disc sizes. Place the disc in the correct guide on the disc tray. If the disc is out of the guide, it may damage the disc and cause the DVD video player to malfunction.
- Do not place anything except DVD video discs, VIDEO CDs or audio CDs on the disc tray.

4 Press OPEN/CLOSE (1/2) to close the disc tray.

Press the button which you pressed in step 2.
To set another disc, press the other button.

- Some discs may be automatically played after having been set. Even in the playback, you can select a disc to play in step 5.

5 Press DISC SELECT repeatedly to select the disc you want.

DISC SELECT / DISC-1 Red (titl): The disc is on standby or is being played.
DISC-2 Green (titl): Secondary standby.
Off: Playback does not start.

6 Press PLAY.

▶ PLAY
Playback starts.

If you insert a DVD video disc that contains a top menu, a menu may appear. See "Locating a title using the top menu." (24)

- You may need to press the TOP MENU or MENU button to display disc menu (depending on the actual DVD video disc.)

Note

Even while playing a disc, you can set another disc. Press the OPEN/CLOSE (1/2) button for a disc which is not played.

Initial set-up

Make the following settings on the display.

On-Screen Language:

Select the appropriate on-screen language.

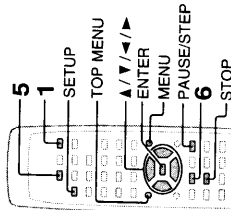
TV Shape:

Select a picture size according to the aspect ratio of your TV. (See (36) for details.)

- 1 Press Δ/∇ to select "On-Screen Language," and press ENTER.
- 2 Select a language using Δ/∇ , and press ENTER.
- 3 Press $\blacktriangledown$ to select "TV Shape," and press ENTER.
- 4 Select a picture size using Δ/∇ , and press ENTER.
- 5 Finally press SETUP.

All your selections are entered and the display disappears.

To change your settings, see "Customizing the Function Settings." (36)



To obtain a higher quality picture

Occasionally, some picture noise not usually visible during a normal broadcast may appear on the TV screen while playing a DVD video disc because the high resolution pictures on these discs include a lot of information. While the amount of noise depends on the TV you use with this DVD video player, you should generally reduce the sharpness adjustment on your TV when viewing DVD video discs.

About icons

The icons on the heading bar show the playable discs for the function described under that heading.

: You can use this function with DVD video discs.

: You can use this function with VIDEO CDs.

To pause playback (still mode)

Press PAUSE/STEP during playback.

PAUSE/STEP
 To resume normal playback, press the PLAY button.

- The sound is muted during still mode.

To stop playback

Press STOP.

STOP

To remove the disc

Press OPEN/CLOSE (1/2) for the disc you want to remove.

Remove the disc after the disc tray opens completely.



Be sure to press the OPEN/CLOSE (1/2) button to close the disc tray after you remove the disc.

About the screen saver

If you pause a picture of a DVD video disc and leave it still for a long while, the screen saver of the DVD video player automatically appears (when "Screen Saver" is set to "On (1/2)"). To turn off the screen saver, press the PLAY button.

Automatic Power Off function

If the DVD video player is stopped, or the screen saver is engaged for about 20 minutes, the DVD video player will automatically turn itself off.

HDCD (High Definition Compatible Digital®)

HDCD® (High Definition Compatible Digital®) is a recording system that has improved audio CD sound in dynamic range, sound field reproducibility and vocal acoustics.

This DVD video player is equipped with an HDCD decoder. The HDCD indicator illuminates when playing an HDCD-encoded audio CD.

HDCD®, High Definition Compatible Digital® and Pacific Microsonics™ are either registered trademarks or trademarks of Pacific Microsonics, Inc. in the United States and/or other countries. HDCD system manufactured under license from Pacific Microsonics, Inc. This product is covered by one or more of the following patents: United States: 5,479,168; 5,638,074; 5,640,161; 5,608,574; 5,838,274; 5,854,600; 5,872,531 and 5,864,311. Australia 669114. Other patents pending.

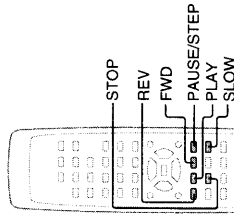
Notes

- Do not move the DVD video player during playback. Doing so may damage the disc.
- Use the OPEN/CLOSE (1/2) button to open and close the disc tray. Do not push the disc tray while it is moving. Doing so may cause the DVD video player to malfunction.
- Do not push up on the disc tray or put any objects other than discs on the disc tray. Doing so may cause the DVD video player to malfunction.
- In many instances, a menu screen will appear after playback of a movie is completed. Prolonged display of an on-screen menu may damage your television set, permanently etching that image onto its screen. To avoid this, be sure to press the STOP button on your remote control once the movie is completed.



Playing a Disc (continued)

You can play discs at various speeds, and resume playback from the location where you stopped playback.



Playing fast in reverse or forward

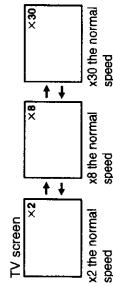
- To resume normal playback
Press **PLAY**.



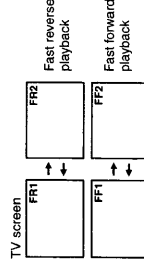
Press REV or FWD during playback.

REV: Fast reverse playback
FWD: Fast forward playback

Each time you press the REV or FWD button, the playback speed changes.



Each time you press the REV or FWD button, the two speeds alternates.



Notes

- The DVD video player does not play sound and subtitles during reverse and forward scan of DVD video discs.
- The playback speed may differ depending on the disc.

Playing frame by frame

Press PAUSE/STEP during still playback.

Each time you press the PAUSE/STEP button, the picture advances one frame.

Note

The sound is muted during frame by frame playback.

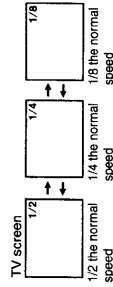
Playing in slow-motion

- To resume normal playback
Press **PLAY**.



Press SLOW during playback.

Each time you press the SLOW button, the slow-motion speed changes.



Notes

- The sound is muted during slow-motion playback.
- The playback speed may differ depending on the disc.

Resuming playback from the same location

- 1 Press **STOP** at the location where you want to interrupt playback.

The DVD video player memorizes the location where playback is stopped.

2 Press **PLAY**.

The DVD video player resumes playback from the location where you stopped playback.

2 Press **PLAY**.



- Playback starts from the beginning of the current title.
- Playback starts from the beginning of the disc.

- If you want to return to the beginning of a DVD video disc, open and close the disc tray once with the OPEN/CLOSE (1/2) button for the disc you want to play before pressing the PLAY button.

Notes

- The DVD video player's memory is also cleared when:
 - you unplug the DVD video player from the wall outlet after you stop playback.
 - you change the parental lock setting [42] or select a disc menu language [37].
 - you open the disc tray for a disc which is played.
 - you switch the discs by pressing the DISC SELECT button.
- There may be a difference in the location where playback resumes depending on the disc.
- Settings you changed using the on-screen displays while the DVD video player keeps a location in the memory may function only after the memory is cleared.

- To start playback from the beginning regardless of the location where you stopped playback

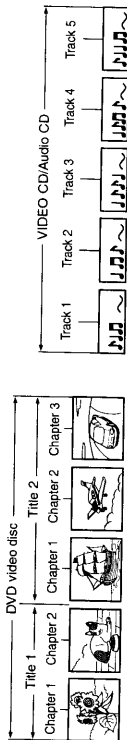
1 Press **STOP** twice.

The DVD video player's memory is cleared.



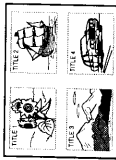
Locating a Specific Title, Chapter, or Track

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs and audio CDs are divided into tracks. You can quickly locate any specific title, chapter, or track.



Locating a title using the top menu

- 1 Press TOP MENU.**
The top menu appears on the TV screen.
e.g.



- 2 Press $\Delta/\nabla/\leftarrow/\rightarrow$ to select the title you want.**

If the titles in the top menu are assigned a number, you can directly locate a specific title by pressing its designated number with the number buttons.



Locating a title by entering the title number

- 1 Press T.**
SEARCH
T
Make sure that the space next to "Title" is highlighted.
(You can shift the highlight using the Δ/∇ buttons.)



- 2 Press the corresponding number buttons for the title you want.**
e.g. To select title 2: 2
To select title 12: 1 $\rightarrow$ 2

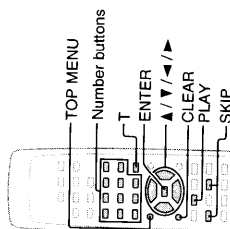
- 3 Press PLAY.**
PLAY
Playback starts from chapter 1 of the selected title.

Notes

- The instructions above describe basic procedures which may vary depending on the contents of the DVD video disc. If different instructions appear on the TV screen, follow those instructions.
- If you display the top menu during playback and press the TOP MENU button again without selecting any title, the DVD video player may resume playback from the point where you first pressed the TOP MENU button (depending on the actual DVD video disc.)
- This method of locating a title is available only on a disc that contains a top menu.
- Instruction notes of discs may refer to the button that displays the top menu as TITLE button.

Notes

- Pressing the CLEAR button resets the title and chapter numbers. To clear the "Title" and "Chapter" display, press the T button several times.
- This method of locating a title is available only on a disc that contains title numbers.



Locating a specific chapter or track directly

- 1 Press T.**
Skip steps 1 and 2 if you are using a VIDEO CD/ audio CD.
SEARCH
T



- 2 Press ∇ to highlight the space next to "Chapter."**



- 3 Press the corresponding number buttons for the chapter or track you want.**

You can use the +10 button to select numbers from 10 through 99.

e.g. To select chapter or track 25

2 $\rightarrow$ 5
or
+10 $\rightarrow$ +10 $\rightarrow$ 5

Locating a specific chapter or track

- Press SKIP $\leftarrow$ or $\rightarrow$ repeatedly to display the chapter or track number you want.**

Playback starts from the selected chapter or track.

SKIP $\rightarrow$ To locate succeeding chapters or tracks

SKIP $\leftarrow$ Playback starts from the beginning of the current chapter or track.

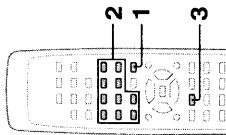
When you press twice, playback starts from the beginning of the preceding chapter or track.

Notes

- Some titles may not display chapter numbers.
- When you set "Title Stop" to "Off" (43), you can access chapters in another title. If you go back to the preceding title by pressing the SKIP $\leftarrow$ button, the DVD video player locates the first chapter of the title. When "Title Stop" is set to "On," you can access chapters only within the current title.
- If you press and hold the SKIP $\leftarrow$ or $\rightarrow$ button during playback, the DVD video player performs fast reverse or fast forward playback. You can select the speed by pressing the button further.
- To locate chapters or tracks during fast reverse or fast forward playback, first press the PLAY button to resume normal playback, and then use the SKIP $\leftarrow$ or $\rightarrow$ button.

1 Locating a Specific Location Directly

You can locate a specific location by entering its corresponding time (hours, minutes, seconds).



Entering the time of the desired location

1 Press T twice.

SEARCH
You may have to press further depending on the disc. Press the button repeatedly until the following display appears.



2 Press the number buttons to enter the time.

e.g.
[1] - [2] - [5] - [3] - [0]
Time 1:25:30

3 Press PLAY.

PLAY
Playback starts from the desired location.

Notes

- Some discs may not respond to this process.
- Some scenes may not be located precisely as you specified.
- This method for accessing specific locations is available only within the current title of the DVD video disc or within the current track of the VIDEO CD/audio CD.

Playing Repeatedly

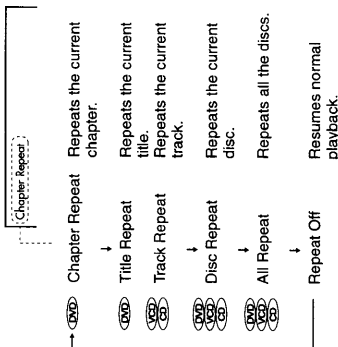
You can play a specific title, chapter, track, or segment repeatedly.



Repeating a title, chapter, or track

1 Press REPEAT.

REPEAT
Each time you press the REPEAT button, the repeat mode changes as follows.



2 Press PLAY.

PLAY
The DVD video player starts repeat playback.
Press the PLAY button within about 5 seconds after you press the REPEAT button.

To resume normal playback

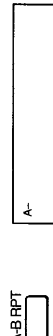
Press **CLEAR**.

Notes

- Some discs may not permit repeat operation.
- When using a DVD video disc, "All Repeat" may be canceled when the DVD video player switches the discs.

Repeating a specific segment

1 Press A-B RPT at the beginning of the segment (point A) you want to play repeatedly.



2 Press A-B RPT again at the end of the segment (point B).

A-B RPT
The DVD video player automatically returns to point A and starts repeat playback of the selected segment (A-B).



To resume normal playback

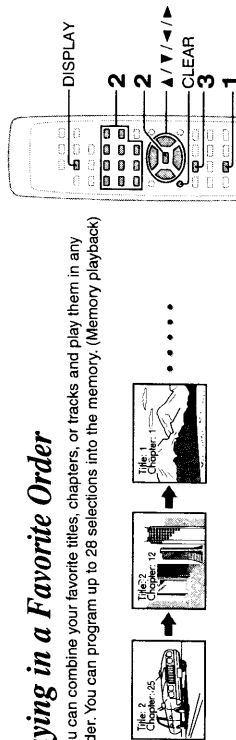
Press **CLEAR**.

Notes

- Some discs may not permit A-B repeat operation.
- You cannot set the A-B repeat function for a segment that includes multiple camera angles (3D).
- You can specify a segment only within the current title or track.
- There may be a slight difference between point A and the location where playback actually resumes depending on the disc.

Playing in a Favorite Order

You can combine your favorite titles, chapters, or tracks and play them in any order. You can program up to 28 selections into the memory. (Memory playback)



Setting titles, chapters, or tracks in a favorite order

To change the programmed selections

- 1 While the MEMORY display appears on the TV screen, press Δ / ∇ to move the highlighted bar to the item you want to change.
- 2 Change the selection following the instructions in step 2.

To cancel the programmed selections

- 1 While the MEMORY display appears on the TV screen, press Δ / ∇ to move the highlighted bar to the item you want to cancel.
- 2 Press CLEAR.

To resume normal playback from memory playback

- Press CLEAR.
- The memory playback indicator disappears.

To program during playback

- If you press the MEMORY button during playback, a display appears to accept your programming. If you further press the DISPLAY button, you can display the MEMORY setting also. Follow steps 2 and 3.

Notes

- Some discs may not permit memory playback operation.
- If you press the REPEAT button during memory playback, the DVD video player repeats the current memory playback.
- If you press the MEMORY or RETURN button while the MEMORY display appears on the TV screen, the MEMORY display disappears.
- The programmed selections will be cleared when you turn off the DVD video player.
- When using a DVD video disc, the memory playback may be canceled when the DVD video player switches the discs.

1 Insert a disc and press MEMORY during stop.

The following display appears.

MEMORY

	D	T	C	D	T	C
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9
10	10	10	10	10	10	10
11	11	11	11	11	11	11
12	12	12	12	12	12	12
13	13	13	13	13	13	13
14	14	14	14	14	14	14
15	15	15	15	15	15	15
16	16	16	16	16	16	16
17	17	17	17	17	17	17
18	18	18	18	18	18	18
19	19	19	19	19	19	19
20	20	20	20	20	20	20
21	21	21	21	21	21	21
22	22	22	22	22	22	22
23	23	23	23	23	23	23
24	24	24	24	24	24	24
25	25	25	25	25	25	25
26	26	26	26	26	26	26
27	27	27	27	27	27	27
28	28	28	28	28	28	28

D: Disc number
T: Title number or
C: Chapter number

2 Select the items in the order you want by pressing the number buttons, then ENTER for each item.

Each time you press the Δ / ∇ button, the spaces of "D", "T", and "C" are highlighted in turn. Highlight where you want to enter, then press the number buttons.

To select tracks from a VIDEO CD/audio CD in order, press the number buttons for the track, then press the ENTER button for each selection you want.

To select another title, chapter or track in the same disc, you do not need to select the disc number.

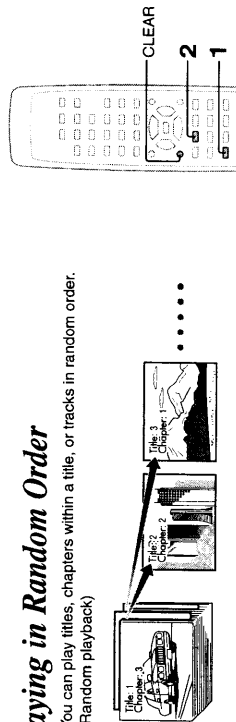
To select another chapter in the same title, you do not need to select the title number.

3 Press PLAY while the MEMORY display appears on the TV screen.

The DVD video player starts memory playback.

Playing in Random Order

You can play titles, chapters within a title, or tracks in random order. (Random playback)



Playing titles, chapters or tracks in random order

To resume normal playback

Press CLEAR.

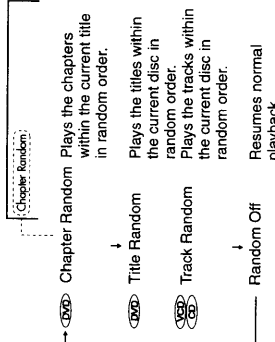
CLEAR

Notes

- Some discs may not permit random playback operation.
- You cannot use the random playback function in conjunction with the memory playback function.

1 Press RANDOM.

Each time you press the RANDOM button, the random playback mode changes as follows.



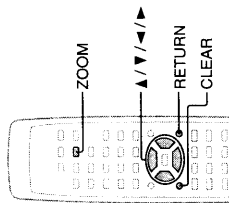
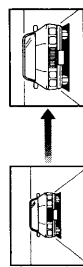
2 Press PLAY.

The DVD video player starts random playback. Press the PLAY button within about 5 seconds after you press the RANDOM button.

If you press the RANDOM button during playback, the DVD video player automatically starts random playback after finishing the current title, chapter or track.

Selecting a Picture

You can magnify areas within a picture.



Zooming a picture

Press ZOOM during normal, slow or still playback.

If you further press the ZOOM button repeatedly, the magnification level increases.

To reduce the magnification level, press the RETURN button.

If you press the $\blacktriangle$ / $\blacktriangledown$ / $\blacktriangleleft$ / $\blacktriangleright$ buttons, the zoom point shifts. When the zoom point reaches an edge of the picture, the color of "Zoom" changes.

Pressing the CLEAR button restores the zoom point to the center of the picture.

To resume normal playback

Press ZOOM repeatedly so that "Zoom Off" appears.

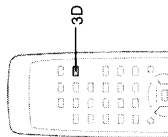


Notes

- Some discs may not respond to zoom feature.
- During some scenes, the buttons may not work as described in the left column.
- Zooming does not work on subtitles or menus included on DVD video discs.
- During zoom playback, the $\blacktriangle$ / $\blacktriangledown$ / $\blacktriangleleft$ / $\blacktriangleright$ buttons cannot work on menus included on the DVD video discs. If you want to view the menus, cancel the zoom playback.
- The magnification level varies depending on the picture size you select. [39]

Selecting 3-D (N-2-2) Sound Enhancement

You can enjoy expansive virtual surround sound effects from just two speakers.

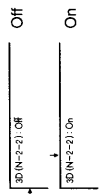


Selecting 3-D (N-2-2) sound enhancement

Press 3D during playback.

The current setting is displayed.

Each time you press the 3D button, the setting changes as follows.



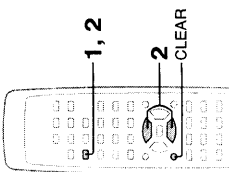
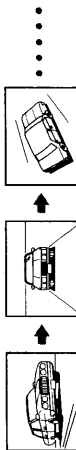
Notes

- You may sense a difference in volume between normal and 3-D (N-2-2) enhanced sound.
- 3-D (N-2-2) sound enhancement may not function (or may not be realized) depending on the sound output setting or recording system [33].
- If 3-D (N-2-2) sound enhancement is on, Dolby Pro Logic Surround may not function on output sounds at all, or may function differently than usual.

Spatializer® 3-Dimensional Sound Processing provided by Desper Products, Inc.
Certain audio features of this product manufactured under a license from Desper Products, Inc., Spatializer® and the circle-in-square device are trademarks owned by Desper Products, Inc.

Selecting the Camera Angle

If the scene was recorded from multiple angles, you can easily change the camera angle of the scene you are watching.



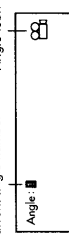
Changing the camera angle

1 Press ANGLE while playing a scene recorded with multiple angles.

While playing a scene recorded with multiple angles, the angle icon ($\square$) appears in the DVD display and on the TV screen.

Press the ANGLE button while the angle icon is displayed.

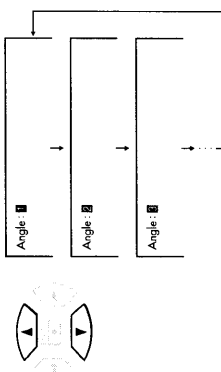
Current angle number



2 Press ANGLE or $\blacktriangle$ while the angle number is displayed on the TV screen.

Each time you press the ANGLE or $\blacktriangle$ button, the camera angle changes.

e.g.



▼ : Cycles backwards

You can change the camera angle directly by pressing the number buttons corresponding to its angle number instead of using the $\blacktriangle$ / $\blacktriangledown$ buttons.

To turn off the angle number display

Press CLEAR.



To disable the angle icon display on the TV

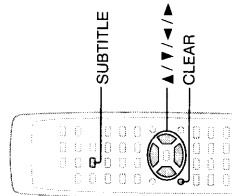
From the on-screen displays, set "On-Screen Displays" to "Off" [41]. Monitor the DVD display when you want to change the camera angle.

Notes

- You can change the camera angle during still playback. The camera angle changes to the new setting when you resume normal playback.
- If you pause a picture immediately after changing a camera angle, the resumed playback picture may not display the new camera angle.

Selecting Subtitles

You can select subtitles on the TV screen and select a subtitle language from those included on the DVD video disc.



Selecting a subtitle language

■ To turn subtitles on or off

- 1 Press **SUBTITLE** during playback.



SUBTITLE

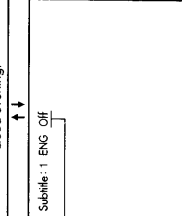
- 2 Press **▲ / ▼** while the subtitle setting is displayed on the TV screen, to select "On" or "Off."

Displayed for about 3 seconds.



Subtitles: 1 ENG On

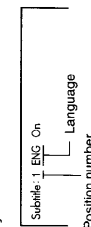
Subtitles



Subtitles are not displayed.

1 Press **SUBTITLE** during playback.

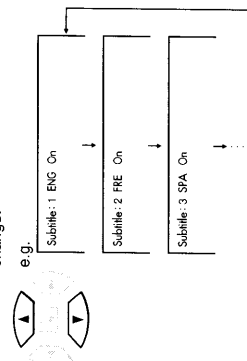
The current subtitle setting is displayed for about 3 seconds.



The abbreviation of the language appears instead of the language name. Refer to the list of languages and their abbreviations. [44]

2 Press **SUBTITLE** or **▲** while the subtitle setting is displayed on the TV screen.

Each time you press the **SUBTITLE** or **▲** button, the subtitle languages included on the DVD video disc change.



▼ : Cycles backwards

To turn off the subtitle setting display, press the **CLEAR** button.

Notes

- When you turn on the DVD video player or replace a disc, the player returns to the initial default setting [37].
- When you select a subtitle language which is not included on the disc, the DVD video player plays a prior language programmed on the disc.
- During some scenes, the subtitles may not appear immediately after you change the subtitle language by pressing the **▲ / ▼** buttons.

Selecting a Language

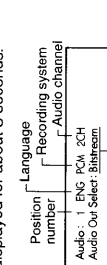
You can select a preferred language and sound recording system from those included on the DVD video disc.



Selecting a playback audio setting

1 Press **AUDIO** during playback.

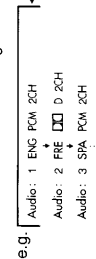
The current audio setting is displayed for about 3 seconds.



The abbreviation of the language appears instead of the language name. Refer to the list of languages and their abbreviations. [44]

2 Press **AUDIO** or **▲** while the audio setting is displayed on the TV screen.

Each time you press the **AUDIO** or **▲** button, the audio settings included on the DVD video disc change.



▼ : Cycles backwards

If you press the **▲ / ▼** buttons, you can select output sound format. [39]

To turn off the audio setting display, press the **CLEAR** button.

Notes

- When you turn on the DVD video player or replace a disc, the player returns to the initial default setting [37].
- When you select a sound track which is not included on the disc, the DVD video player plays a prior sound track programmed on the disc.
- Some discs allow you to change audio selections only via the disc menu. If this is the case, press the **MENU** button and choose the appropriate language from the selections on the disc menu.

■ Selecting sound channels of VIDEO CDs

You can switch left and right channels by pressing the **AUDIO** button repeatedly during playback.



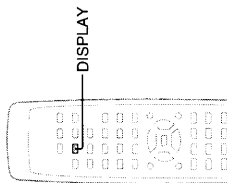
■ Output sound conversion table (sampling frequency/quantization bit)

Discs	Sound recording system	Audio selection from the menu [35] [39] and output jacks on the rear panel			
		"Bitstream"	"Analog 6ch"	"Analog 2ch"	"PCM"
DVD video discs	Dolby Digital	BTSTREAM/PCM 5.1CH SURROUND AUDIO OUT jacks	BTSTREAM/PCM 5.1CH SURROUND AUDIO OUT jacks	2CH AUDIO OUT jacks	2CH AUDIO OUT jacks
	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
	48 kHz/20 bit	48 kHz/20 bit	48 kHz/20 bit	48 kHz/20 bit	48 kHz/20 bit
	48 kHz/24 bit	48 kHz/24 bit	48 kHz/24 bit	48 kHz/24 bit	48 kHz/24 bit
	96 kHz/20 bit	96 kHz/20 bit	96 kHz/20 bit	96 kHz/20 bit	96 kHz/20 bit
VIDEO CDs	MPEG2	BTSTREAM	BTSTREAM	BTSTREAM	BTSTREAM
	MPEG1	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit
	Linear PCM 4.1	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit
Audio CDs	HDCD	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit
	DTS	BTSTREAM	BTSTREAM	BTSTREAM	BTSTREAM

- HDCD sound via the 2CH AUDIO OUT jacks and the 5.1CH SURROUND AUDIO OUT jacks is output in a normal audio CD format when 3-D (N-2-2) sound enhancement is on or when "Analog 6ch" is selected.

Viewing the Operational Information and DVD/CD-Text

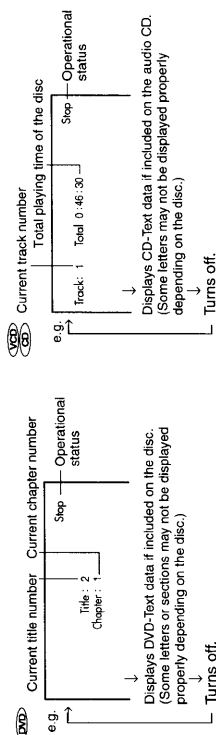
You can view information about a disc and its operational status on the TV screen.



Checking the operational status

Press DISPLAY during stop.

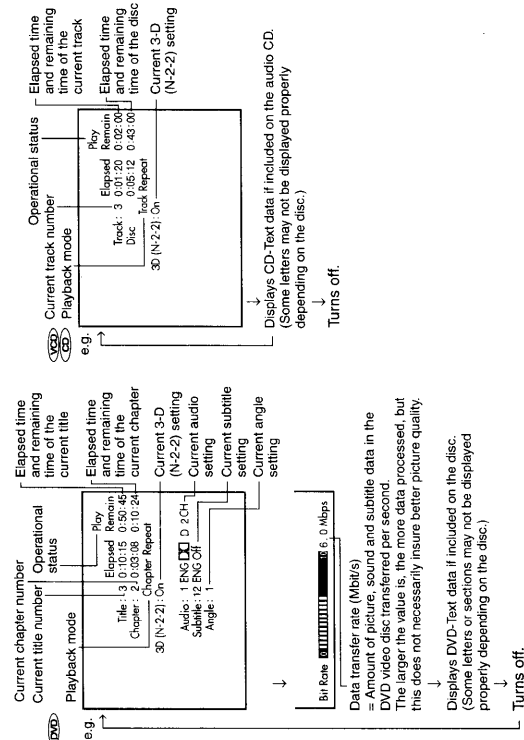
Each time you press the DISPLAY button, the on-screen display changes as follows.



Checking the remaining time and setting status

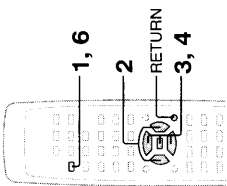
Press DISPLAY during playback.

Each time you press the DISPLAY button, the on-screen display changes as follows.



Customizing the Function Settings

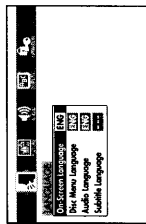
You can change the default settings to customize performance to your preference.



Setting procedure

1 Press SETUP during stop.

The following on-screen display appears.



2 Press ◀/▶ to select a symbol for the setting you want to change.

(See the next page.)



Settings on languages



Settings on playback picture conditions



Settings on sound output



Settings on displays



Settings on operational options



3 Press ▲/▼ to select the setting you want to change, then press ENTER.



4 Change the selection by ▲/▼ or other buttons, referring to the pages from 37, then press ENTER.



5 Repeat steps 3 and 4 to change other settings.

To select another symbol, go back to step 2.

6 Press SETUP.

The on-screen display disappears.

■ To return to the previous display

Press RETURN.



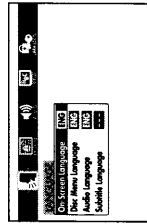
Notes

- The on-screen display disappears when you press the SETUP button.
- The SETUP button can function even during normal playback, however some operations may be inaccessible, and a message will appear. In this case, try again after playback is stopped.

Customizing the Function Settings (continued)

Setting	Details	Page
 On-Screen Language	 To select a preferred language for on-screen displays.	37
Disc Menu Language	 To select a preferred language for disc menus.	37
Audio Language	 To select a preferred language for the sound track.	37
Subtitle Language	 To select a preferred language for subtitles.	37
TV Shape	 To select a picture size according to the aspect ratio of your TV.	38
Black Level	 To select the black level of playback pictures.	38
PAL/Auto	 To select the video system of a disc.	39
Video Out Select	 To select the video output type corresponding to your TV system.	39
Audio Out Select	 To select an output sound format corresponding to your system connection.	39
Dynamic Range Control	 To turn on or off a function that makes faint sounds easier to hear even if you lower the volume during late hours playback.	41
Karaoke Vocal	 To turn on or off the vocal output during DVD KARAOKE disc playback.	41
CD Attenuation	 To attenuate sound distortion during playback of an audio CD.	41
On-Screen Displays	 To turn on or off the operational status display on the TV screen.	41
OSD Background Color	 To select the background color for on-screen displays.	41
Screen Saver	 To turn on or off the screen saver.	41
Pause/Still	 To select the resolution of still pictures. (Field/Frame)	42
Parental Lock	 To turn on or off the parental lock function.	42
Remote Confirmation	 To turn on or off the confirmation beeper for each remote command received.	43
Title Stop	 To turn on or off a feature that automatically stops playback after a title has been viewed.	43
PBC	 To use the menu screen when playing a PBC-controllable VIDEO CD.	43

Setting details



On-Screen Language

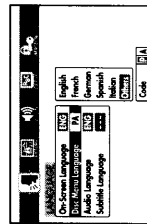
English: To view on-screen displays in English.
 French: To view on-screen displays in French.
 German: To view on-screen displays in German.
 Spanish: To view on-screen displays in Spanish.
 Italian: To view on-screen displays in Italian.

Disc Menu Language

English: To display disc menus in English.
 French: To display disc menus in French.
 German: To display disc menus in German.
 Spanish: To display disc menus in Spanish.
 Italian: To display disc menus in Italian.
 Others: To make a further choice.

After pressing the ENTER button, follow steps 1) - 4) below.

- 1) Obtain the abbreviation of the preferred language from the list .
- 2) Select the first character by pressing the  / .
- 3) Press the  /  buttons to shift and select the second character by pressing the  / .



- 4) Press the ENTER button.

Note

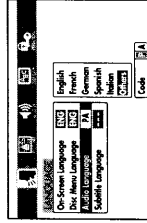
Some DVD video discs may not include your pre-selected language. In this case, the DVD video player automatically displays disc menus consistent with the disc's initial language setting.

Audio Language

English: To play sound tracks in English.
 French: To play sound tracks in French.
 German: To play sound tracks in German.
 Spanish: To play sound tracks in Spanish.
 Italian: To play sound tracks in Italian.
 Others: To make a further choice.

After pressing the ENTER button, follow steps 1) - 4) below.

- 1) Obtain the abbreviation of the preferred language from the list .
- 2) Select the first character by pressing the  / .
- 3) Press the  /  buttons to shift and select the second character by pressing the  / .



- 4) Press the ENTER button.

Note

Some DVD video discs may be played in a different language than you selected. A prior language may be programmed on the disc.

Subtitle Language

English: To display subtitles in English.
 French: To display subtitles in French.
 German: To display subtitles in German.
 No Subtitle: To disable subtitles.
 Others: To make a further choice.

After pressing the ENTER button, follow steps 1) - 4) below.

- 1) Obtain the abbreviation of the preferred language from the list .
- 2) Select the first character by pressing the  / .

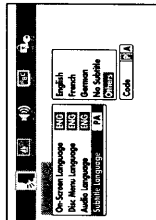
(Continued)

Customizing the Function Settings (continued)

Setting details

(Continued)

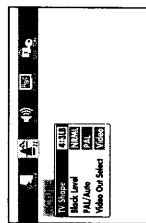
- 3) Press the $\blacktriangle/\blacktriangleright$ buttons to shift and select the second character by pressing the $\blacktriangle/\blacktriangleright$ buttons.



- 4) Press the ENTER button.

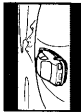
Notes

- Some DVD video discs may be set to display subtitles in a different language than you selected. A prior subtitle language may be programmed on the disc.
- Some DVD video discs allow you to change subtitle selections only via the disc menu. If this is the case, press the MENU button and choose the appropriate subtitle language from the selection on the disc menu.



TV Shape

Select when a standard 4:3 TV is connected.
Displays theatrical images with masking bars above and below the picture.



4:3 Normal

Select when a standard 4:3 TV is connected.
Displays pictures cropped to fill your TV screen. Either or both sides of the picture are cut off.



16:9 Widescreen: Select when a 16:9 wide TV is connected.

Notes

- The displayable picture size is preset on the DVD video disc. Therefore, the playback picture of some DVD video discs may not conform to the picture size you select.
- When you play DVD video discs recorded in the 4:3 picture size only, the playback picture always appears in the 4:3 picture size regardless of the TV shape setting.
- If you select "16:9 Widescreen" and you own a 4:3 TV set, the DVD playback picture will be horizontally distorted during playback. Images will appear to be horizontally compressed. Always be sure that your TV shape conforms to the actual TV in use.

Black Level

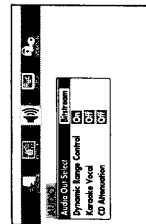
Set to your preference and monitor's ability.

Normal: Standard black level.

Light: Brighter than in "Normal".

Note

This option is applicable to NTSC TVs only and has no effect on PAL TVs, though it can be selected on the screen.



Audio Out Select

Select the output sound format corresponding to your system connection.
For details of sound recording systems, see [39].

Bitstream

Select when connected to an amplifier equipped with a Dolby Digital, DTS, MPEG1 or MPEG2 decoder. [18] [19]
The DVD video player outputs digital audio information in the bitstream format when you play a DVD video disc recorded on the Dolby Digital, DTS, MPEG1 or MPEG2 recording system.

Analog 6ch

Select when connected to an amplifier equipped with 5.1ch audio inputs. [18]
This DVD video player is equipped with a Dolby Digital decoder and an MPEG2 audio decoder.
The next screen will appear for the detailed setting.

Analog 2ch

Select when connected to a TV or Dolby Pro Logic or stereo system via the analog audio jacks. [16] [17] [18]

PCM

Select when connected to a 2 channel digital stereo amplifier. [19]
The DVD video player outputs sounds in the PCM 2ch format when you play a DVD video disc recorded on the Dolby Digital, MPEG1 or MPEG2 recording system.

(Continued)

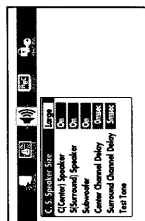
Customizing the Function Settings (continued)

Setting details

(Continued)

When you select "Analog 6ch":

Make the following settings for the built-in 5.1 ch surround decoder.



- 1) Select an item by pressing the $\blacktriangle$ / $\blacktriangledown$ buttons, and press the ENTER button.
- 2) Make the settings (see below) by pressing the $\blacktriangle$ / $\blacktriangledown$ / $\blacktriangleleft$ / $\blacktriangleright$ buttons, and press the ENTER button.

C. S. Speaker Size

Small: When the center speakers or surround speakers cannot reproduce low frequency signals below 120 Hz.
Large: When the center speakers and surround speakers can reproduce low frequency signals below 120 Hz.

C(Center) Speaker

Off: When center speakers are not connected.
On: When you connect center speakers.

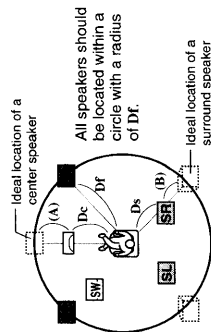
S(Surround) Speaker

Off: When surround speakers are not connected.
On: When you connect surround speakers.

Subwoofer

Off: When a sub woofer is not connected.
On: When you connect a sub woofer.

Adjusting the delay time:
When enjoying 5.1ch surround playback, it is ideal to choose a listening position that is the same distance from each speaker. By adjusting the delay time of the center/surround speakers, you can virtually create an ideal listening environment (as if the center/surround speakers were at their ideal locations respectively as below.)



Center Channel Delay

0msec: When Df equals Dc.
1msec: When (A) is approx. 34 cm (13 inch)
2msec: When (A) is approx. 68 cm (27 inch)
3msec: When (A) is approx. 102 cm (40 inch) ...
*(A) = Df - Dc
Get your optimum value (0, 1, 2 ... 15) dividing (A) by 34.

Surround Channel Delay

0msec: When Df equals Ds.
1msec: When (B) is approx. 34 cm (13 inch)
2msec: When (B) is approx. 68 cm (27 inch)
3msec: When (B) is approx. 102 cm (40 inch) ...
*(B) = Df - Ds
Get your optimum value (0, 1, 2 ... 15) dividing (B) by 34.

- 3) Select "Test Tone" and press the ENTER button.

The DVD video player outputs a test signal to each speaker when it is in stop mode. When playing a DVD video disc, it substitutes the current sound for the test signal.

Press the $\blacktriangleleft$ / $\blacktriangleright$ buttons to switch the receiving speakers, and adjust the volume of each speaker at the same level by pressing the $\blacktriangle$ / $\blacktriangledown$ buttons.

If all the volume levels cannot be equalized, adjust them on the amplifier.

Note

Depending on the disc, 6 channel sounds may not be output via the 5.1CH SURROUND AUDIO OUT jacks.



Dynamic Range Control

Off: Full dynamic range is maintained.
On: Dynamic range is reduced.

Notes

- This function works only during playback of Dolby Digital recorded discs.
- The level of Dynamic Range Reduction may differ depending on the DVD video disc.

Karaoke Vocal

Off: The primary vocal is not output.
On: The primary vocal is output when it is recorded on the disc.

Notes

- The vocal output feature is used during playback of Dolby Digital (multi-channel) recorded DVD KARAOKE discs. This feature allows you to turn off vocal audio tracks, or restore them for background accompaniment.
- When playing KARAOKE, connect appropriate audio equipment such as an amplifier to the DVD video player.

CD Attenuation

HDCD enhances the output sound level of audio CD by approximately 6 dB. As such, distortion may occur in some connected products that are unable to compensate for a wide range of input signal levels. (e.g. TV, stereo receivers)

Off: For normal use.

On: Select when an audio CD sound is distorted.
Sound volume of an audio CD is lessened.

On-Screen Displays

Off: Operational modes (e.g. "Play", "PA") are not displayed.
On: Operational modes (e.g. "Play", "PA") are displayed on-screen.

OSD Background Color

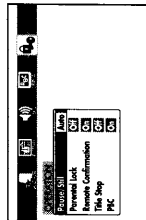
Blue: Blue background.
Gray: Gray background.

Screen Saver

Off: The screen saver does not work.
On: The screen saver works.

Customizing the Function Settings (continued)

Setting details



Pause/Still

Auto: For normal use. Still and fast motion images can be paused.
Frame: The resolution of still pictures is improved, so that you can make a motionless picture more clearer when you pause it.

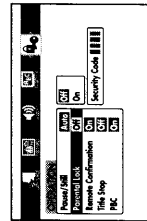
Parental Lock

DVD video discs equipped with the parental lock function are rated according to their content. The contents are allowed by a parental lock level and the way a DVD video disc can be controlled may vary from disc to disc. For example, if the disc allowed you could edit out violent scenes unsuitable for children and replace them with more suitable scenes, or lock out playback of the disc altogether.

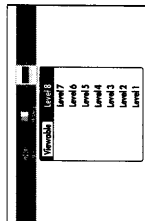
• DVD video discs may or may not respond to the parental lock settings. This is not a defect in the DVD video player. Make sure this function works with your DVD video discs.

Off: The parental lock feature does not function. After pressing the ENTER button, follow step 1) below.

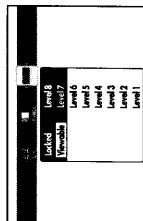
On: To activate the parental lock feature or change the settings. After pressing the ENTER button, follow steps 1) - 3) below.



- 1) Press the number buttons to create a personal 4-digit security code, then press ENTER. If you make a mistake before pressing the ENTER button, press the CLEAR button and enter your 4-digit security code again.
- 2) Press the ◀/▶ buttons to select the country whose standards were used to rate the DVD video disc.



- 3) Press the ▲/▼ buttons to select the parental lock level, then press the ENTER button.



You cannot play DVD video discs rated higher than the level you selected unless you cancel the parental lock function.
 For example, when you select level 7, discs rated higher than level 7 are locked out and cannot be played.

■ **To change the parental lock level**
 Follow steps 1) - 3).

■ **To change your 4-digit security code**

- 1) After selecting "On" or "Off", press the STOP button four times, then press the ENTER button.



- The 4-digit security code is cleared.
- 2) Press the number buttons to create a new 4-digit security code.
 - 3) Press the ENTER button.

Remote Confirmation

Off: The beeper does not sound.
On: The beeper sounds with each remote operation.

Title Stop

Off: The DVD video player continues after playback of a title is completed.
On: The DVD video player stops after playback of a title is completed.

PBC

Off: When playing a VIDEO CD without using the menu.
On: To use the menu when playing a PBC-featured VIDEO CD.

Table of Languages

Table of languages and their abbreviations

Abbreviation	Language	Abbreviation	Language	Abbreviation	Language
---	No alternate language	GN	Guarani	PT	Portuguese
CHI (ZH)	Chinese	GU	Gujarati	QU	Quechua
DUT (NL)	Dutch	HA	Hausa	RM	Rhaeto-Romance
ENG (EN)	English	HI	Hindi	RN	Rundi
FRE (FR)	French	HR	Croatian	RO	Rumanian
GER (DE)	German	HU	Hungarian	RJ	Russian
ITA (IT)	Italian	HY	Armenian	RW	Kinyarwanda
JPN (JA)	Japanese	IA	Interlingua	SA	Sanskrit
KOR (KO)	Korean	IE	Interlingue	SD	Sindhi
MAY (MS)	Malay	IN	Indonesian	SG	Sango
SPA (ES)	Spanish	IS	Icelandic	SH	Serbo-Croatian
AA	Afar	IW	Hebrew	SI	Singhalese
AB	Abkhazian	JY	Yiddish	SK	Slovak
AF	Afrikaans	JW	Javanese	SL	Slovenian
AM	Amharic	KA	Georgian	SM	Samoan
AR	Arabic	KK	Kazakh	SN	Shona
AS	Assamese	KL	Greenlandic	SO	Somali
AY	Aymara	KM	Cambodian	SQ	Albanian
AZ	Azerbaijani	KN	Kannada	SR	Serbian
BA	Bashkir	KS	Kashmiri	SS	Siswati
BE	Belorussian	KU	Kurdish	ST	Sesotho
BG	Bulgarian	KY	Kirghiz	SU	Sundanese
BH	Bhatri	LA	Latin	SV	Swedish
BI	Bislama	LN	Lingala	SW	Swahili
BN	Bengali, Bangla	LO	Laotian	TA	Tamil
BO	Tibetan	LT	Lithuanian	TE	Telugu
BR	Breton	LV	Latvian, Lettish	TG	Tajik
CA	Catalan	MG	Malagasy	TH	Thai
CO	Corsican	MI	Maori	TI	Tigrinya
CS	Czech	MK	Macedonian	TK	Turkmen
CY	Welsh	ML	Malayalam	TL	Tagalog
DA	Danish	MN	Mongolian	TN	Setswana
DZ	Brutani	MO	Moldavian	TO	Tongan
EL	Greek	MR	Marathi	TR	Turkish
EO	Esperanto	MT	Maltese	TS	Tsonga
ET	Estonian	MY	Burmese	TT	Tatar
EU	Basque	NA	Nauru	TW	Twi
FA	Persian	NE	Nepali	UK	Ukrainian
FI	Finnish	NO	Norwegian	UR	Urdu
FJ	Fiji	OC	Occitan	UZ	Uzbek
FO	Faroese	OM	(Afan) Oromo	VI	Vietnamese
FY	Frisian	OR	Oriya	VO	Volapük
GA	Irish	PA	Panjabi	WO	Wolof
GD	Scottish Gaelic	PL	Polish	XH	Xhosa
GL	Galician	PS	Pashto, Pushto	YO	Yoruba
				ZU	Zulu

Before Calling Service Personnel

Check the following guide for the possible cause of a problem before contacting service.

Symptoms and correction

Symptom	Cause	Correction	Page
No power.	• The power plug is disconnected.	• Connect the power plug securely into the wall outlet.	16
The DVD video player turned off by itself.	• The automatic power off function turned the unit off.	• Press the PLAY button.	21
No picture.	• The TV is not set to receive DVD signal output.	• Select the appropriate video input mode on the TV so the picture from the DVD video player appears on the TV screen.	20
	• The video cable is not connected securely.	• Connect the video cable securely into the appropriate jacks.	16, 17
No sound.	• The equipment connected with the audio cable is not set to receive DVD signal output.	• Select the correct input mode of the audio receiver so you can listen to the sound from the DVD video player.	20
	• The audio cable is not connected securely.	• Connect the audio cable securely into the appropriate jacks.	16, 17
	• The audio receiver or TV is turned off.	• Turn on the equipment connected with the audio cable.	18, 19
	• The setting of output sound format is incorrect.	• Select the proper audio setting.	20
The playback picture has occasional distortion.	• The disc is dirty.	• Eject the disc and clean it.	33, 35, 39
	• It is in fast forward or fast reverse playback.	• Sometimes a small amount of picture distortion may appear. This is not a malfunction.	9
Brightness is unstable or noises are present in the playback pictures.	• The effect of copy protection.	• Connect the DVD video player directly to the TV. Avoid connecting the DVD video player to a VTR or TV/VTR combination.	16
The DVD video player does not start playback.	• No disc is inserted.	• Insert a disc.	20
	• An unplayable disc is inserted.	• Insert a playable disc. (Check the disc type and color system.)	10
	• The disc is placed upside down.	• Place the disc with the playback side down.	20
	• The disc is not placed within the guide.	• Place the disc correctly inside the guide on the disc tray.	20
	• The disc is dirty.	• Clean the disc.	9
	• The parental lock function is set.	• Cancel the parental lock function or change the parental lock level.	35, 42
Playback does not follow the course of the disc's program.	• It is in the mode of repeat playback, memory playback, etc.	• These operations may prevent a proper progress of the contents.	—
Buttons do not work.	• Power supply fluctuations or other abnormalities such as static electricity may interrupt correct operations.	• Turn the power on or off with the ON/STANDBY button. Or disconnect the power plug and insert it into the wall outlet again.	—
The remote control does not work properly.	• The remote control is not pointed at the remote sensor of the DVD video player.	• Point the remote control at the remote sensor of the DVD video player.	15
	• The remote control is too far from the DVD video player.	• Operate the remote control within about 7 m.	15
	• The batteries in the remote control are exhausted.	• Replace the batteries with new ones.	15

DVD video player / outputs / supplied accessories

DVD Video Player

Power supply	100 – 240V AC, 50/60 Hz
Power consumption	16 W
Mass	3.5 kg
External dimensions	430 x 102 x 313 mm (W/H/D)
Signal system	PAL/3.58 NTSC
Laser	Semiconductor laser, wavelength 650 nm/780 nm
Frequency range	DVD linear sound : 48 kHz sampling 4 Hz to 22 kHz 96 kHz sampling 4 Hz to 44 kHz
Signal-to-noise ratio	More than 112 dB
Audio dynamic range	More than 106 dB
Harmonic distortion	Less than 0.001 %
Wow and flutter	Below measurable level (less than ± 0.001 % (W/PEAK))
Operating conditions	Temperature: 5 °C to 35 °C, Operation status: Horizontal

Outputs

Video output (SCART)	1.0 V (p-p), 75 Ω , SCART socket x 1
Video output (phono type)	1.0 V (p-p), 75 Ω , negative sync., pin jack x 1
S video output	(Y) 1.0 V (p-p), 75 Ω , negative sync., Mini DIN 4-pin x 1 (C) 0.3 V (p-p), 75 Ω
Component video output	(Y) 1.0 V (p-p), 75 Ω , negative sync., pin jack x 1 (Pb)/(Pr) 0.7 V (p-p), 75 Ω , pin jack x 2
Audio output (SCART)	2.0 V (rms), 220 Ω , SCART socket x 1
Audio output (BITSTREAM/PCM OPTICAL)	Optical connector x 1
Audio output (BITSTREAM/PCM COAXIAL)	0.5 V (p-p), 75 Ω , pin jack x 1
Audio output (2CH AUDIO OUT)	2.0 V (rms), 220 Ω , pin jacks (L, R) x 1
Audio output (5.1CH SURROUND)	2.0 V (rms), 220 Ω , pin jacks x 6

Supplied Accessories

Audio/video cable	1
Remote control (SE-R0037)	1
Batteries (R6)	2
Power cord	1

• Designs and specifications are subject to change without notice.

2. LOCATION OF MAIN PARTS AND MECHANISM PARTS

2-1. Location of Main Parts

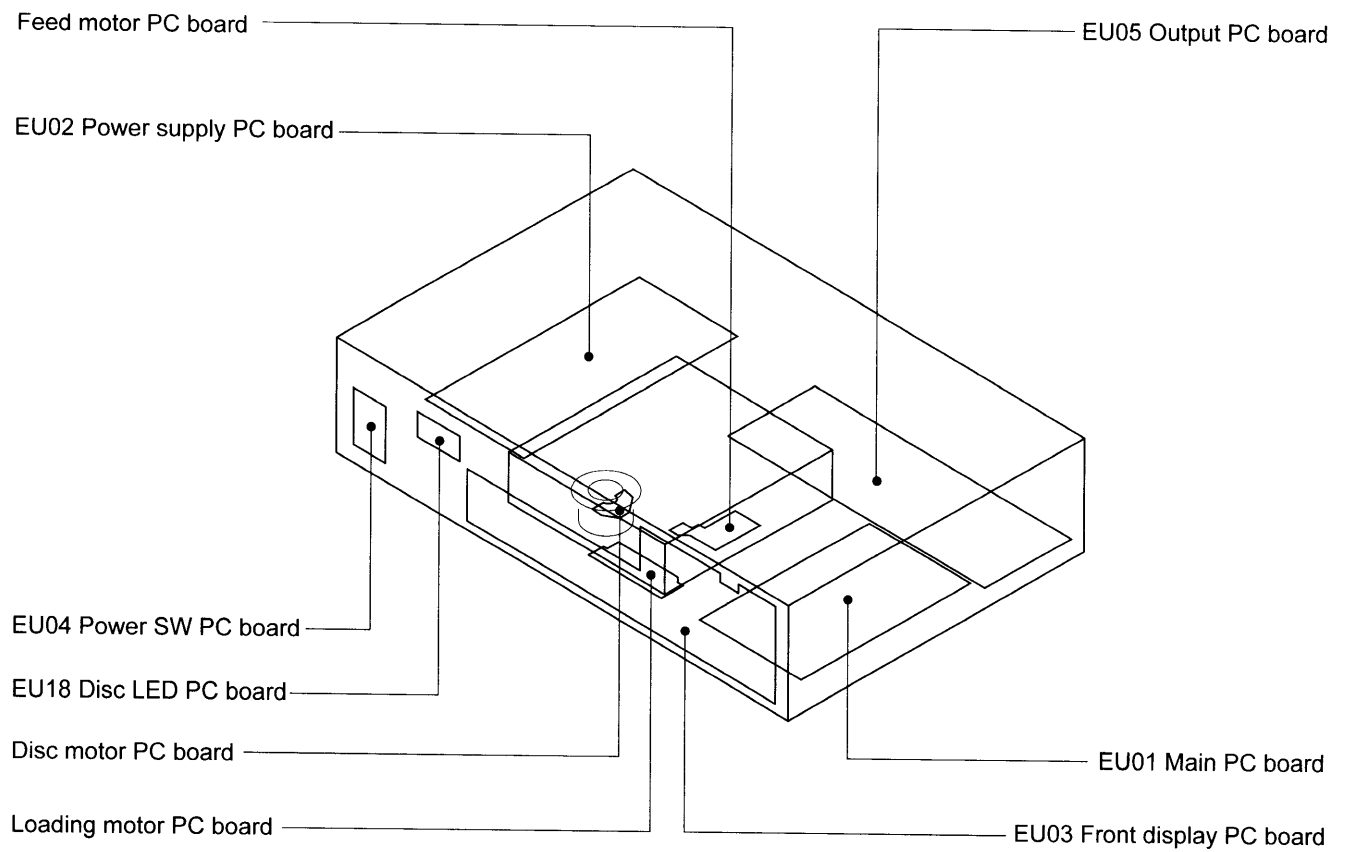


Fig. 1-2-1

2-2. Location of Mechanism Parts

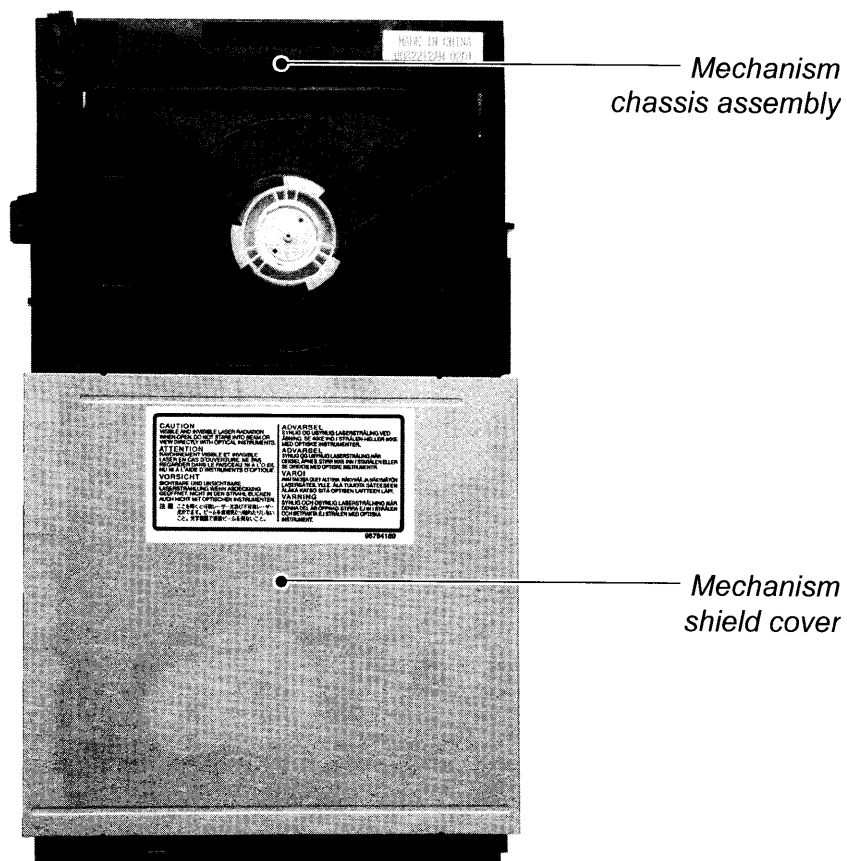


Fig. 1-2-2 Mechanism chassis assembly (Top side)

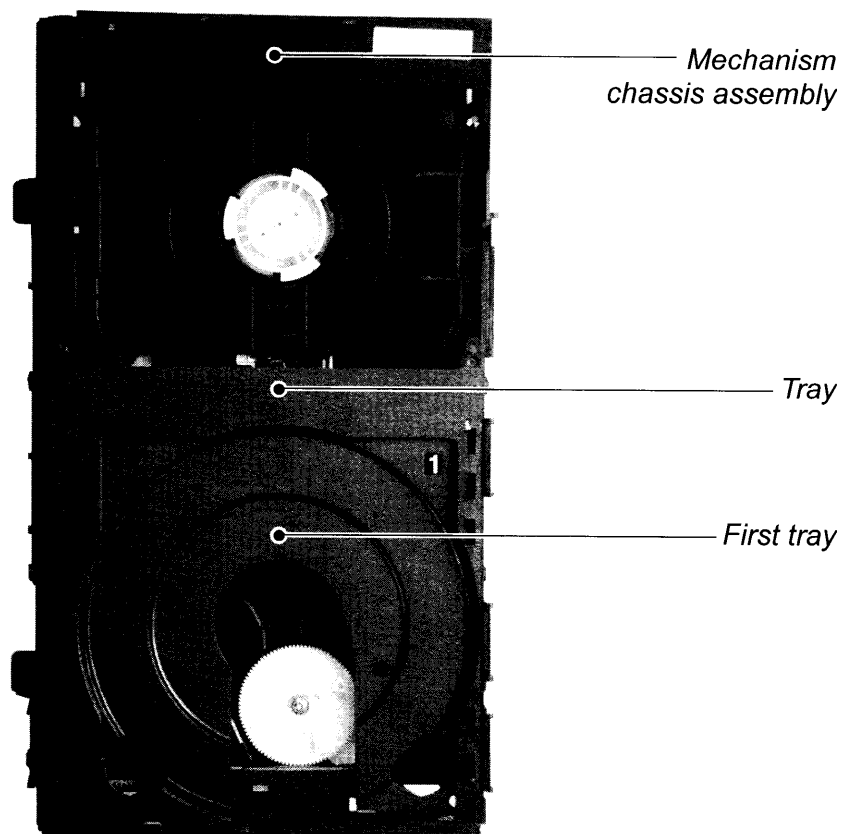


Fig. 1-2-3 Mechanism chassis assembly (Bottom side)

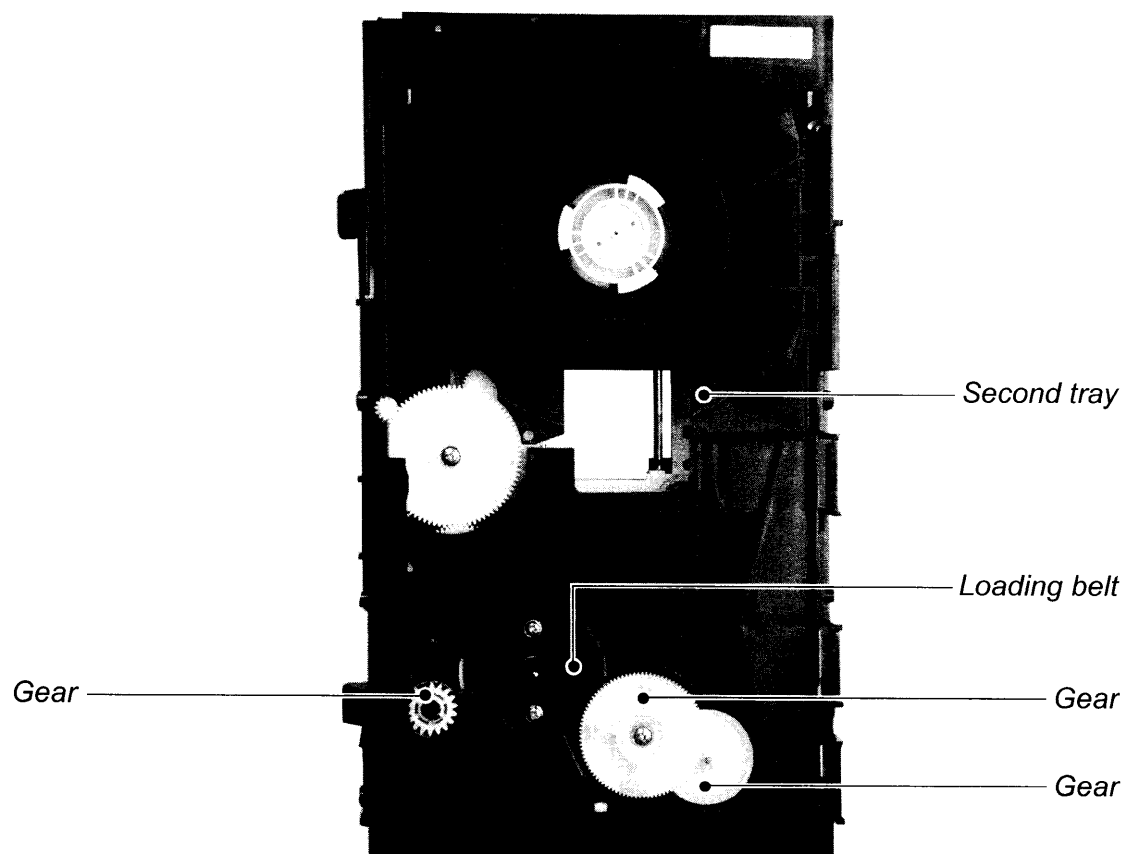


Fig. 1-2-4 Mechanism chassis assembly (Internal side)

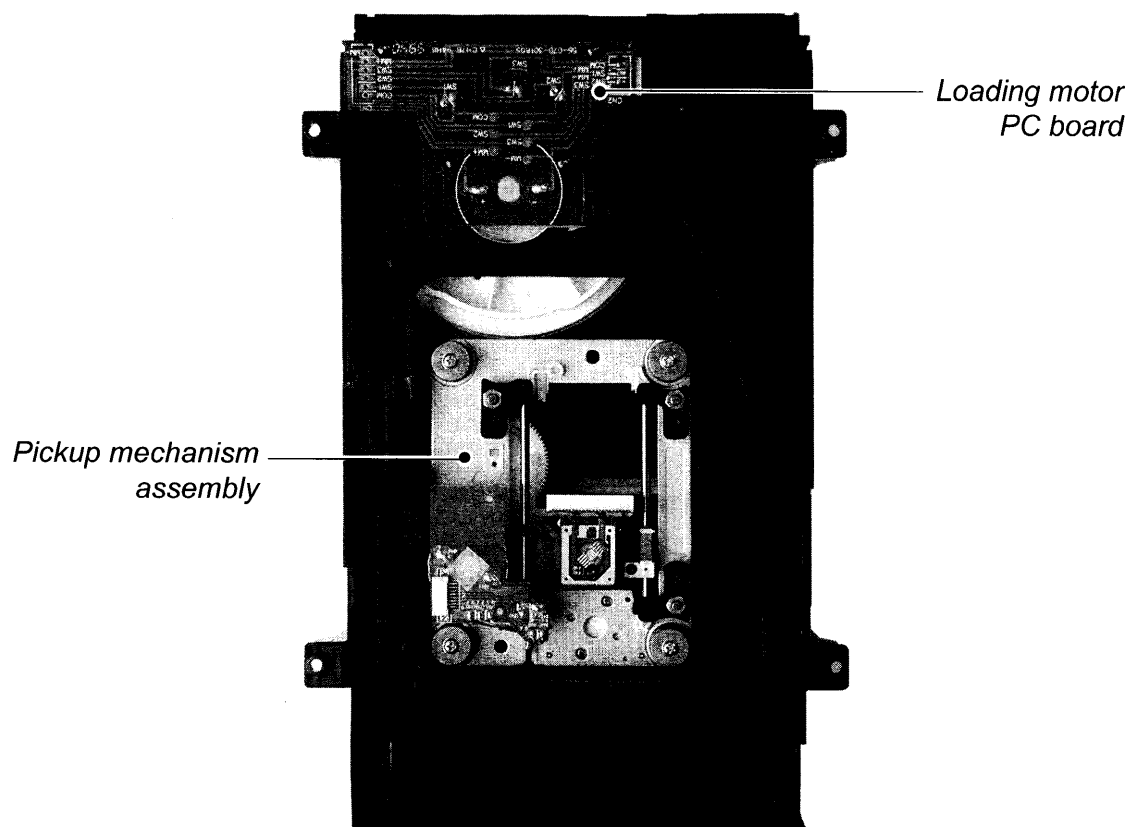


Fig. 1-2-5 Mechanism chassis assembly (Bottom side)

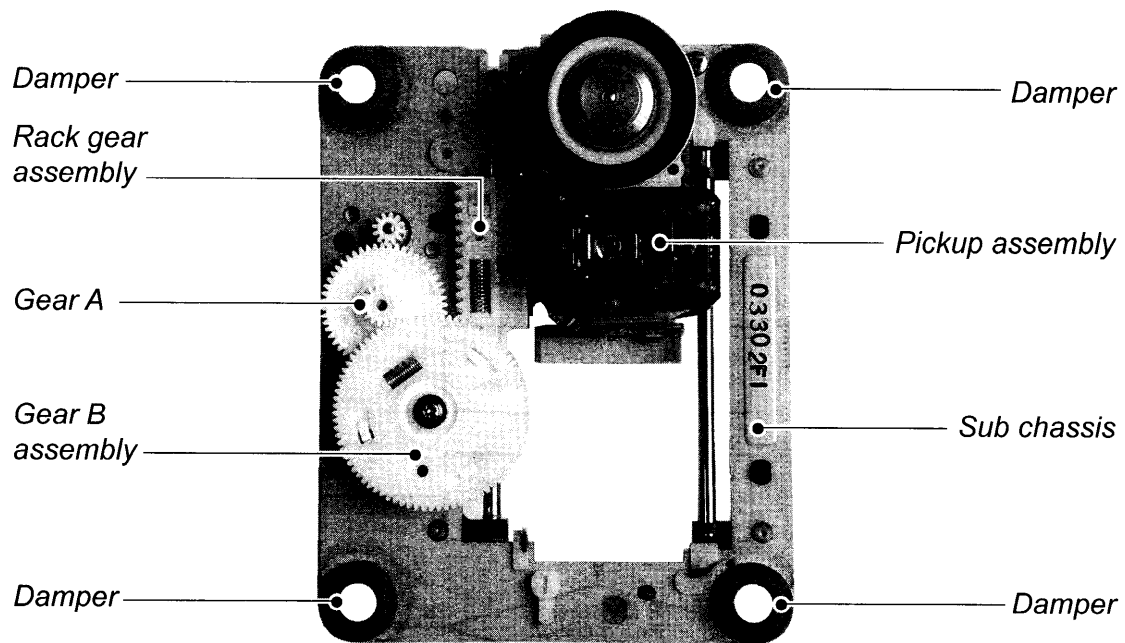


Fig. 1-2-6 Pickup mechanism chassis assembly (Top side)

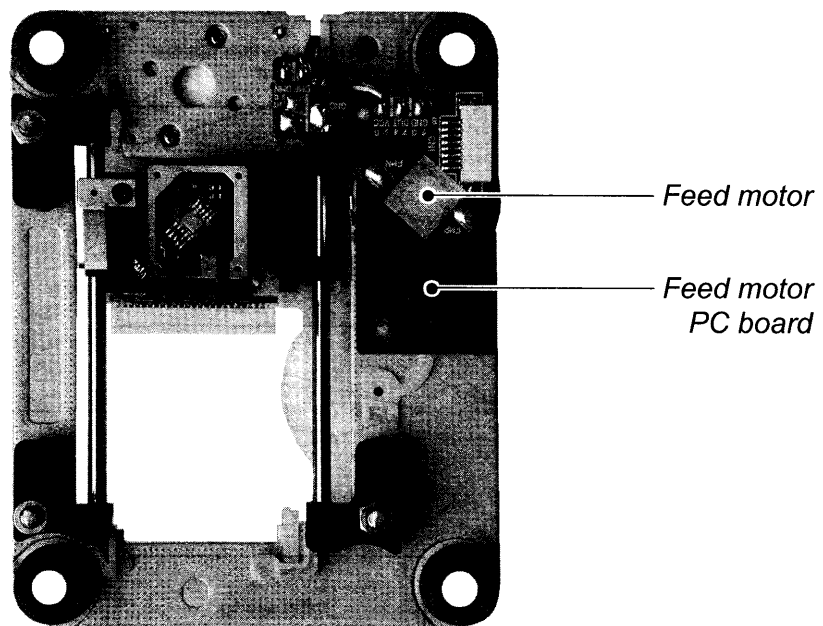


Fig. 1-2-7 Pickup mechanism chassis assembly (Bottom side)

3. TROUBLESHOOTING

3-1. Main Circuit

3-1-1. Servo System

(1) Initial Operation after Power ON

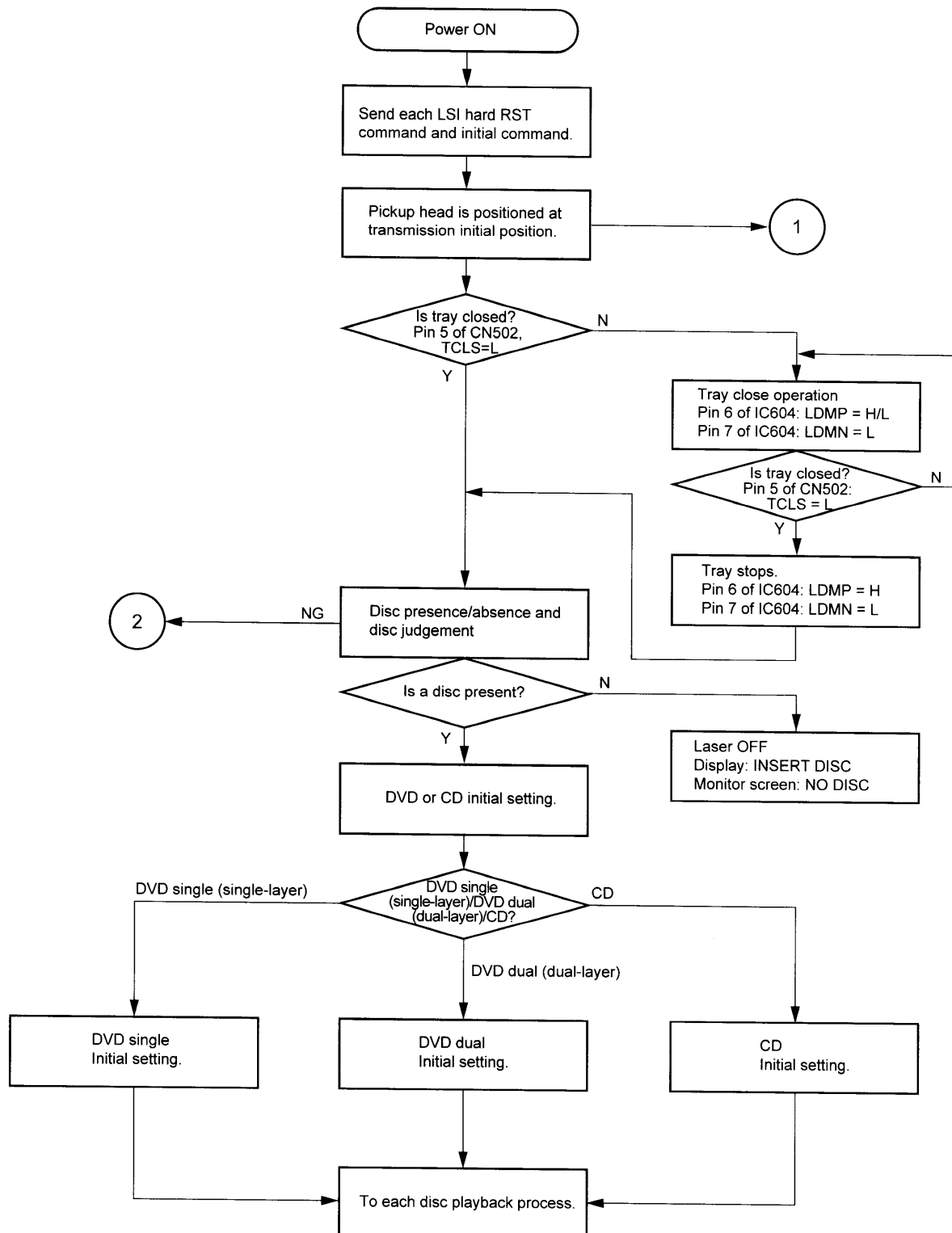


Fig. 1-3-1

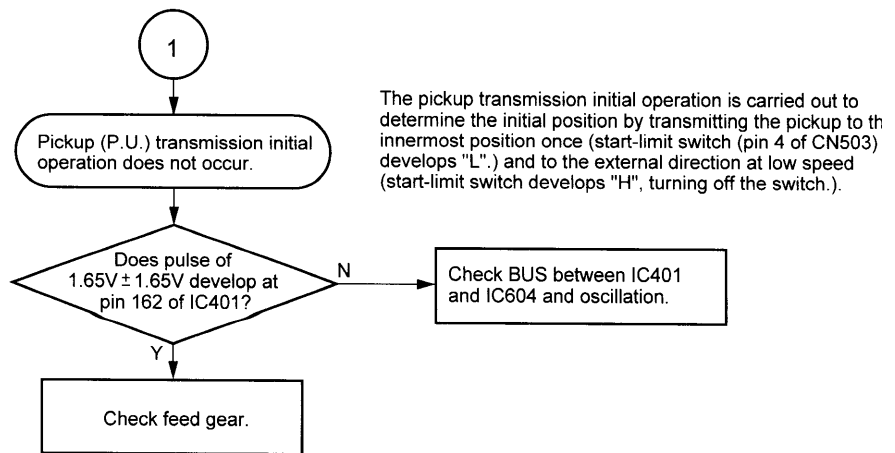


Fig. 1-3-2

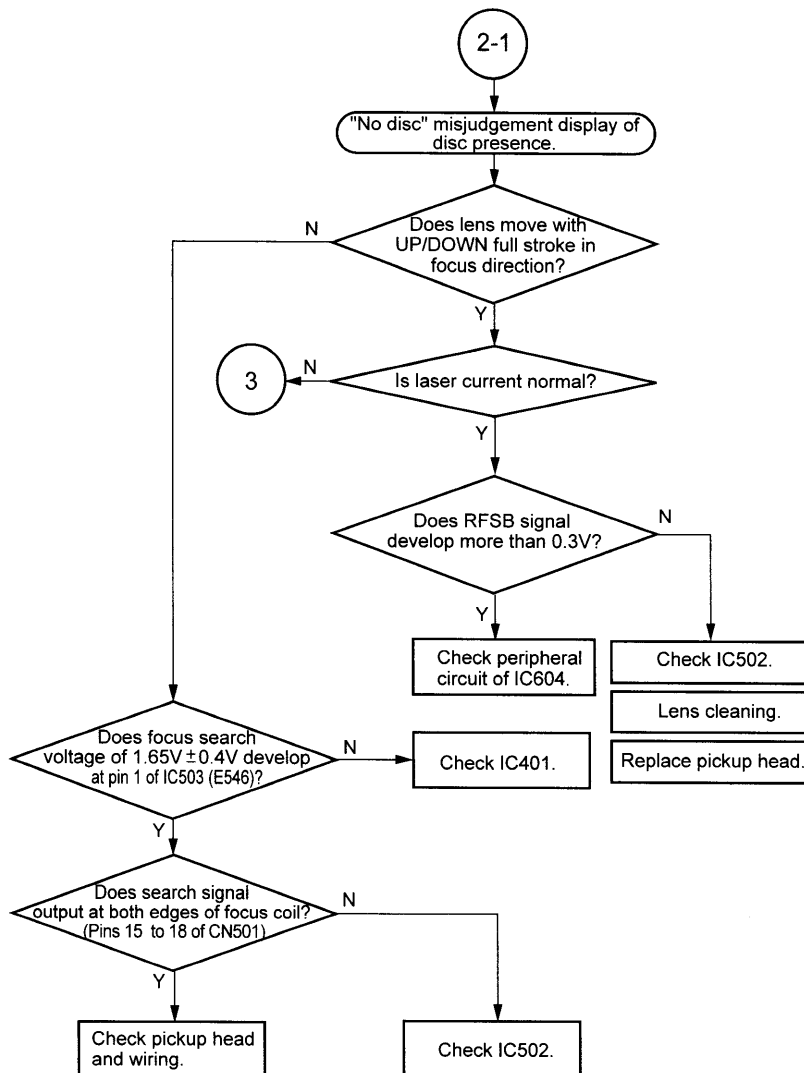


Fig. 1-3-3

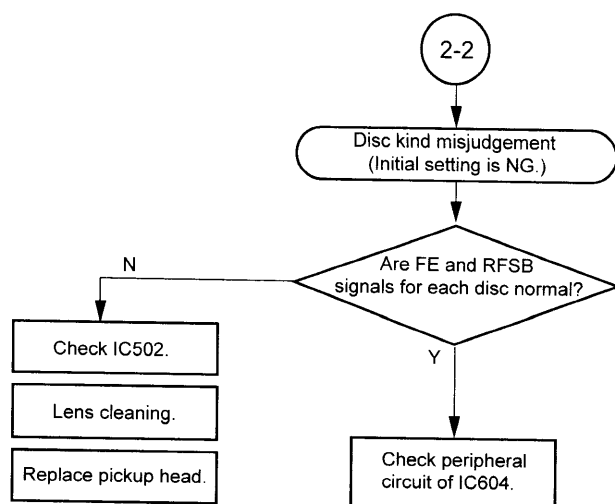
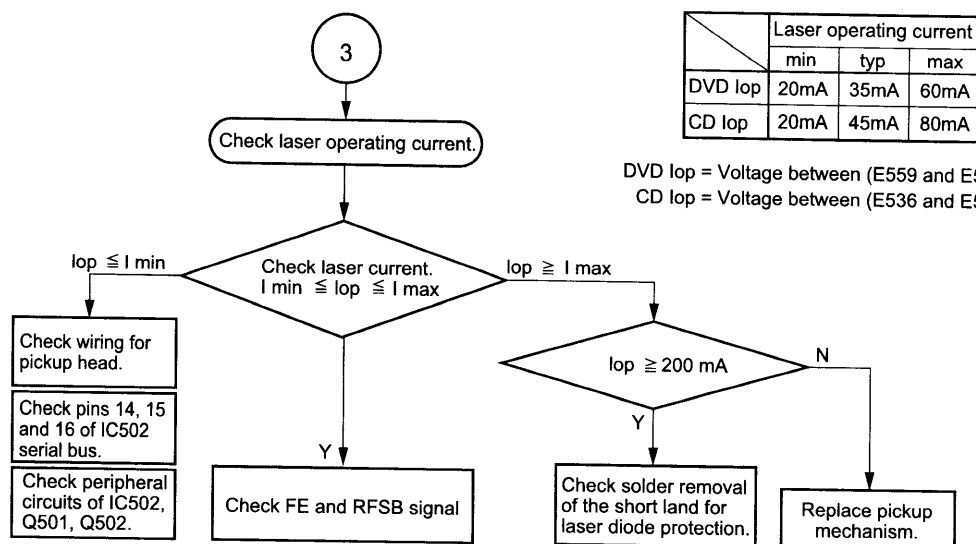


Fig. 1-3-4



To turn on each laser diode forcibly, press the following buttons on the remote.
DVD LD: ZOOM, 0, 3, 0, ZOOM
CD LD: ZOOM, 0, 3, 1, ZOOM
After checked the laser current, press POWER or OPEN/CLOSE button to turn it off.

CAUTION

- The laser ray emitting out from the pickup head is very harmful to your eyes. Keep your eyes from the objective lens at least 300mm distance during the pickup head operating.
- When you perform solder removal work, please turn OFF a set power supply and perform the ground of human body and a tool.

Fig. 1-3-5

DVD single (single-layer) disc detection waveform

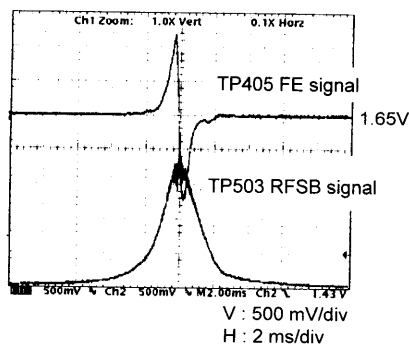


Fig. 1-3-6

DVD dual (dual-layer) disc detection waveform

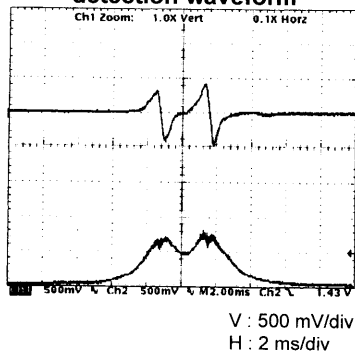


Fig. 1-3-7

CD disc detection waveform

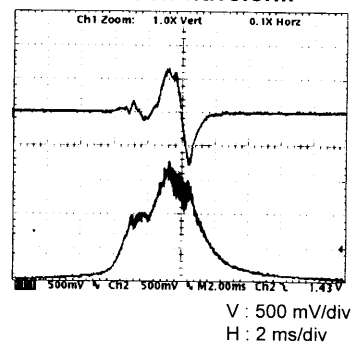


Fig. 1-3-8

(2) Picture appears (PLAY)

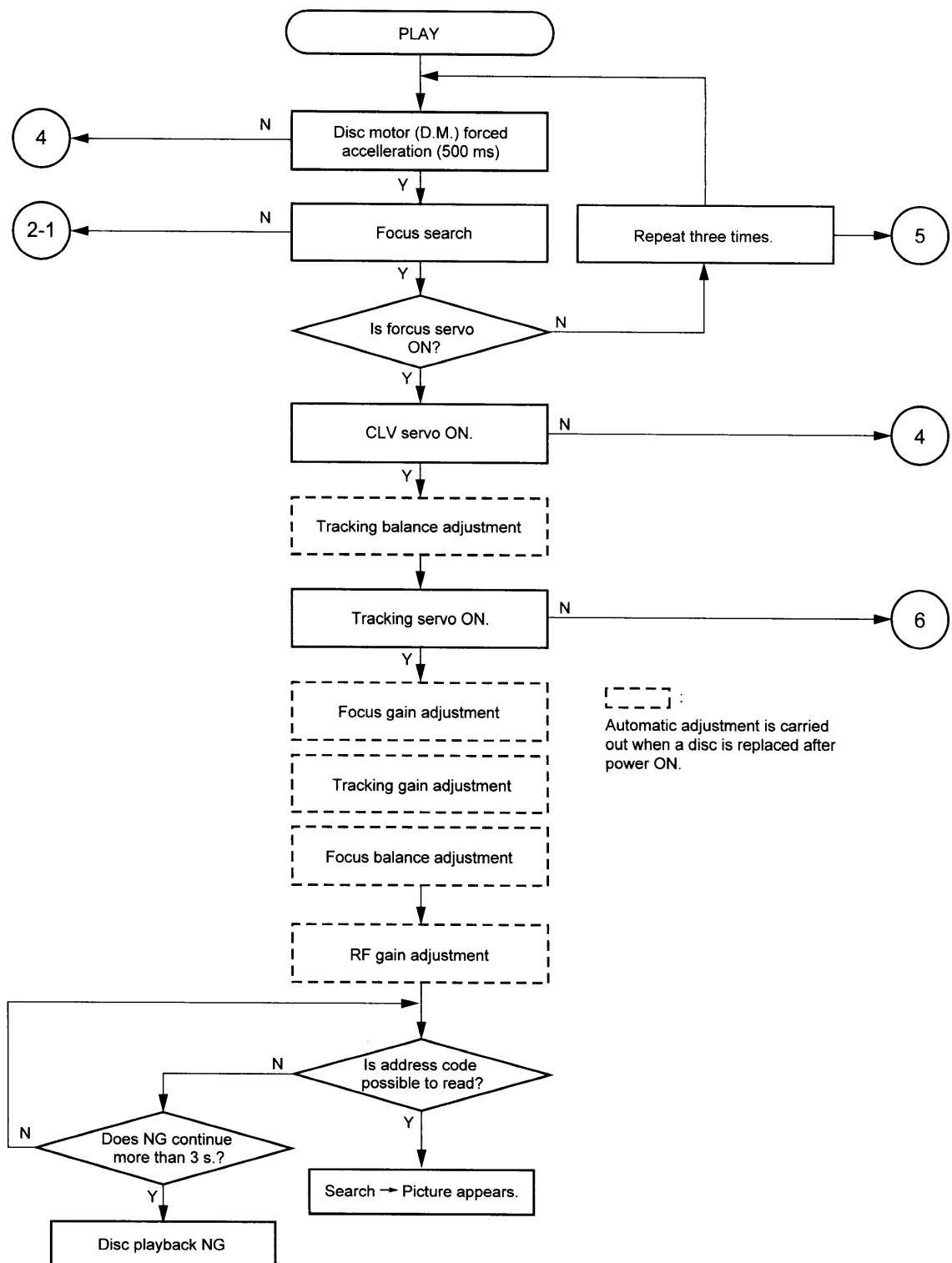


Fig. 1-3-9

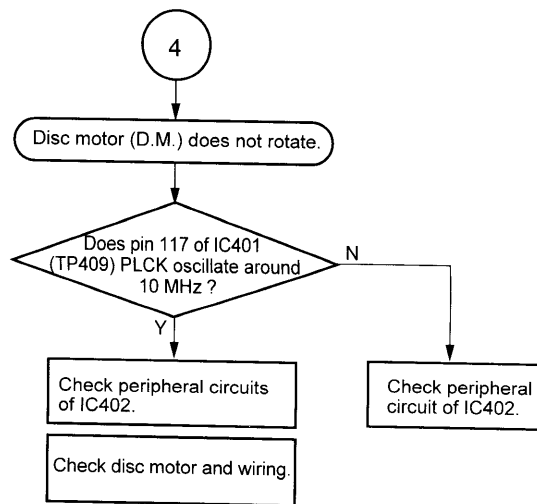


Fig. 1-3-10

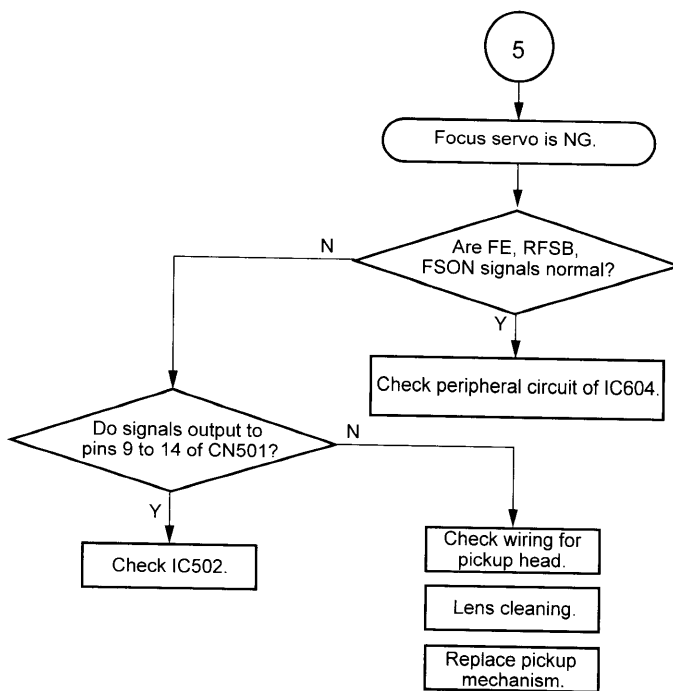


Fig. 1-3-11

Focus servo ON
signal waveform

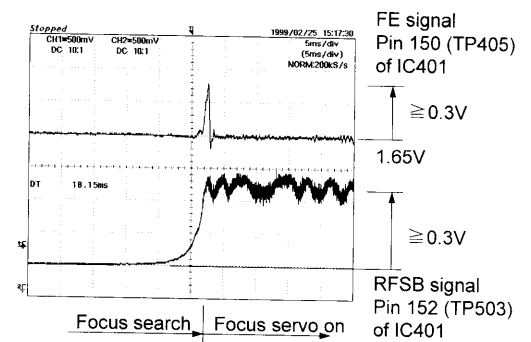


Fig. 1-3-12

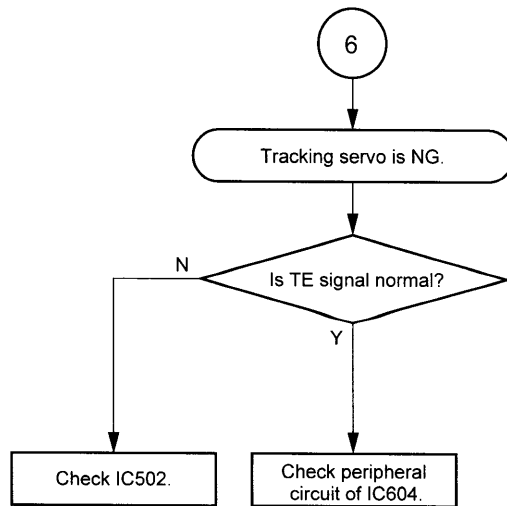


Fig. 1-3-13

Signal waveform at tracking servo ON (CD)

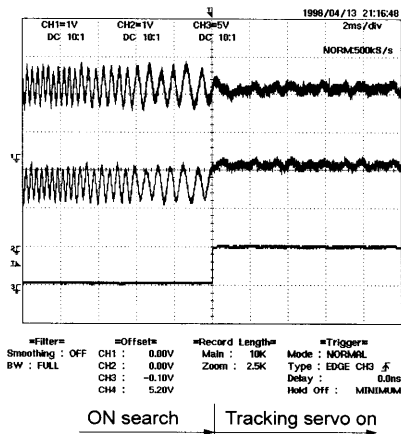


Fig. 1-3-14

Signal waveform at tracking servo ON (DVD)

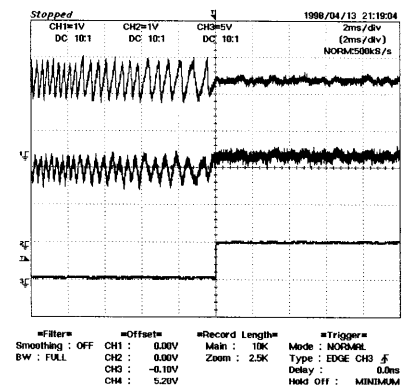


Fig. 1-3-15

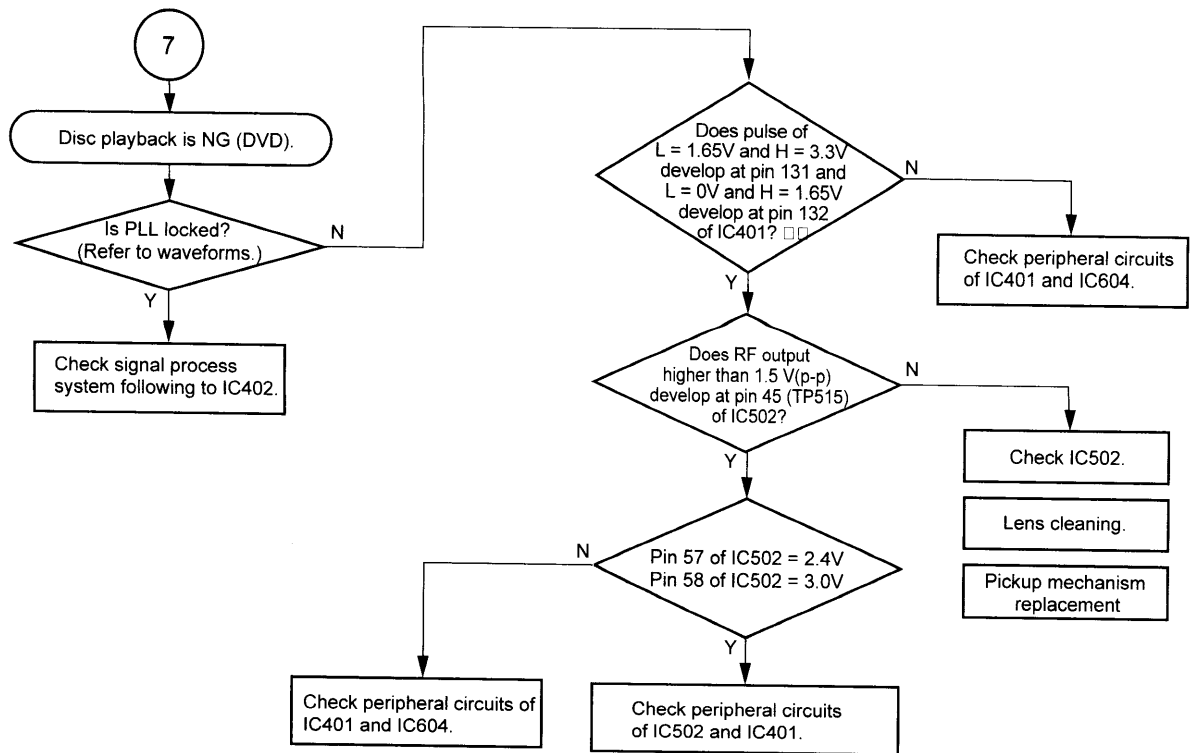


Fig. 1-3-16

PLL works as a servo loop to generate a clock signal for reading RF signal binary data. With the PLL locked, the eye pattern is identified clearly when triggered with the read clock PLCK.

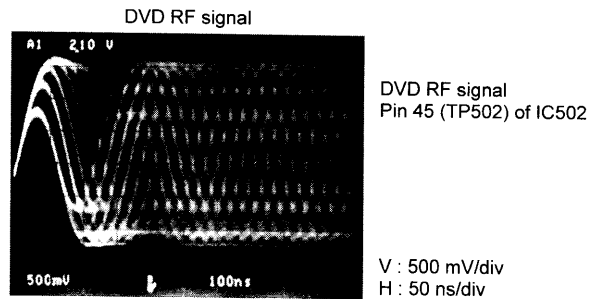


Fig. 1-3-17

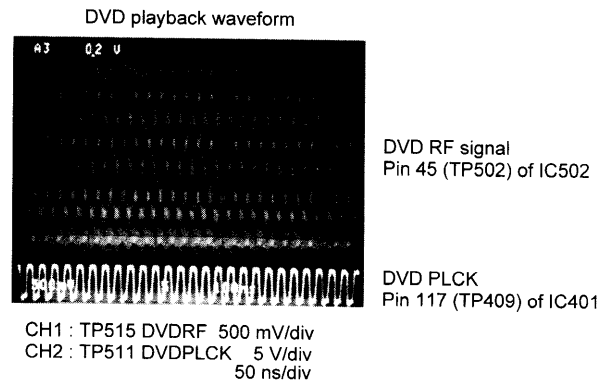


Fig. 1-3-19

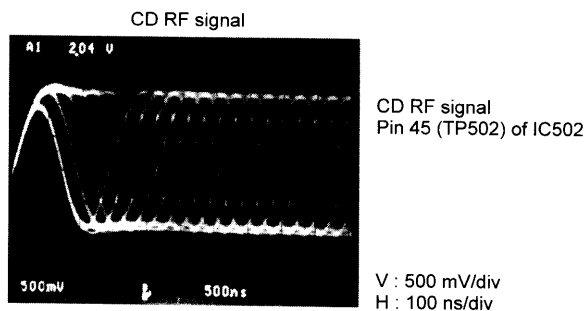


Fig. 1-3-18

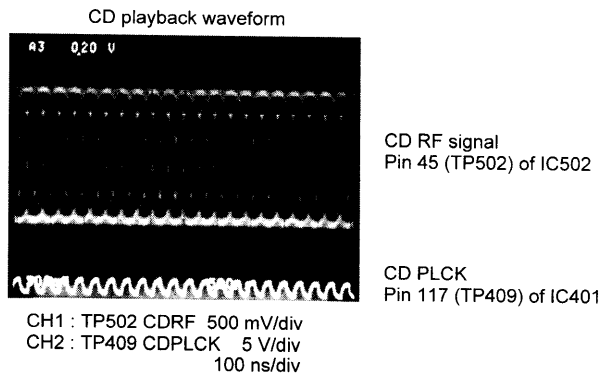


Fig. 1-3-20

3-1-2. Location Diagram of Servo Test Point

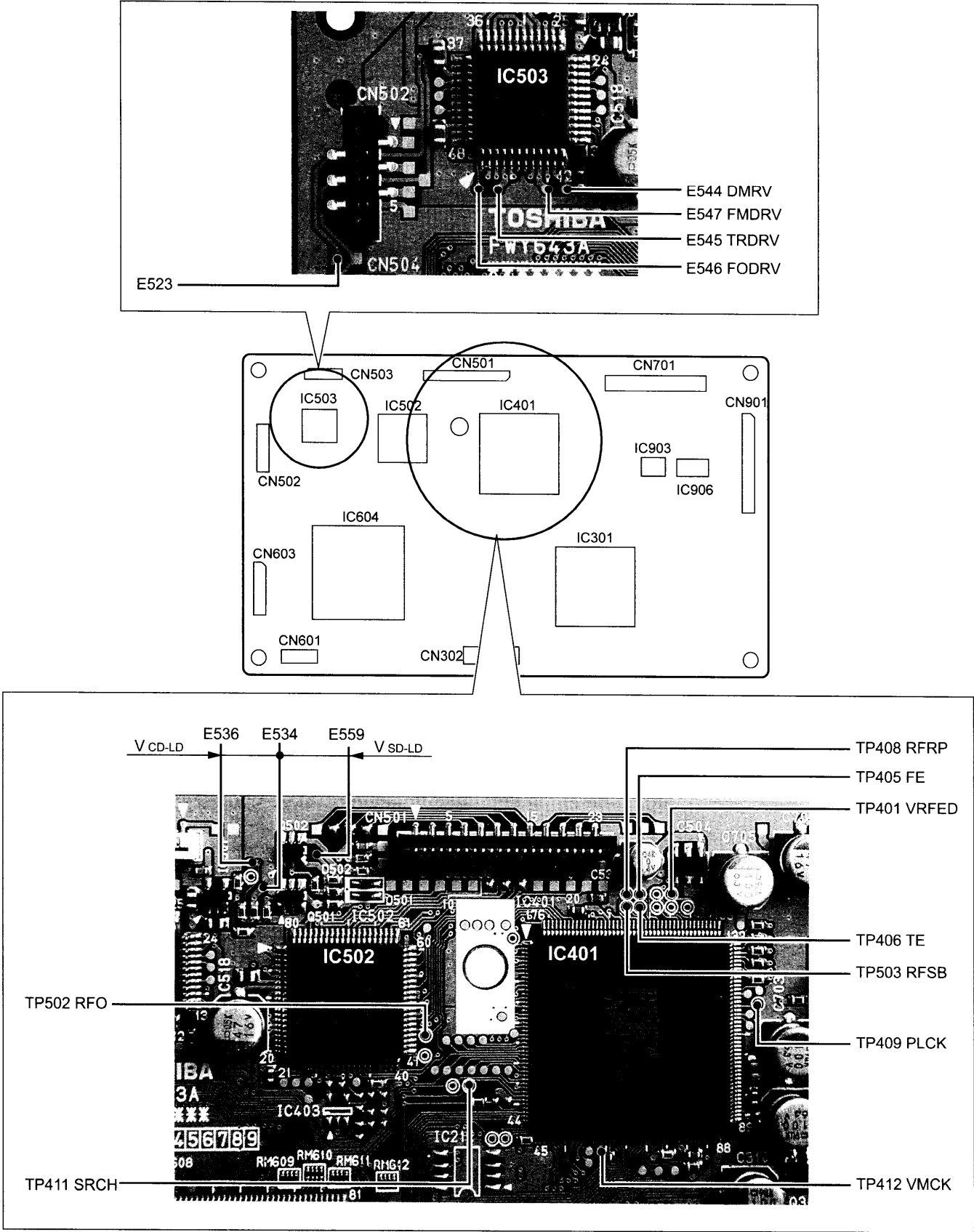


Fig. 1-3-21

SECTION 2

PART REPLACEMENT AND ADJUSTMENT PROCEDURES

CAUTIONS BEFORE STARTING SERVICING

Electronic parts are susceptible to static electricity and may easily be damaged, so do not forget to take a proper grounding treatment as required.

Many screws are used inside the unit. To prevent missing, dropping, etc. of the screws, always use a magnetized screwdriver in servicing. Several kinds of screws are used and some of them need special cautions. That is, take care of the tapping screws securing molded parts and fine pitch screws used to secure metal parts. If they are used improperly, the screw holes will be easily damaged and the parts can not be fixed.

1. REPLACEMENT OF MECHANICAL PARTS

1-1. Cabinet Replacement

1-1-1. Top Cover

1. Remove five screws (1) and remove the top cover (2).

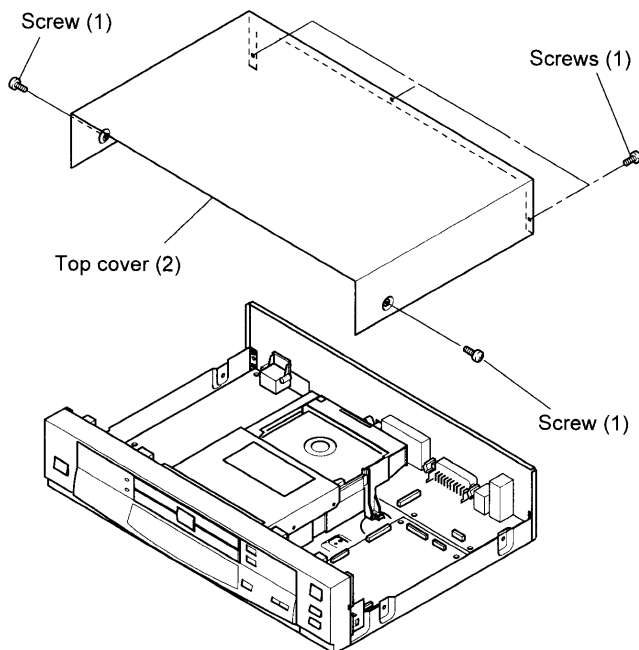


Fig. 2-1-1

1-1-2. Tray Panel

<Tray Ejection>

1. Remove four screws (1) and remove the mechanism shield cover (2).

Note:

- When mounting the mechanism shield cover (2), tighten four screws (1) with the cover lifted as much as possible, since a little gap is provided between the cover and the mechanism chassis.

2. Turn the gear (4) clockwise to eject the tray (5). (Refer to Fig. 2-1-3.)

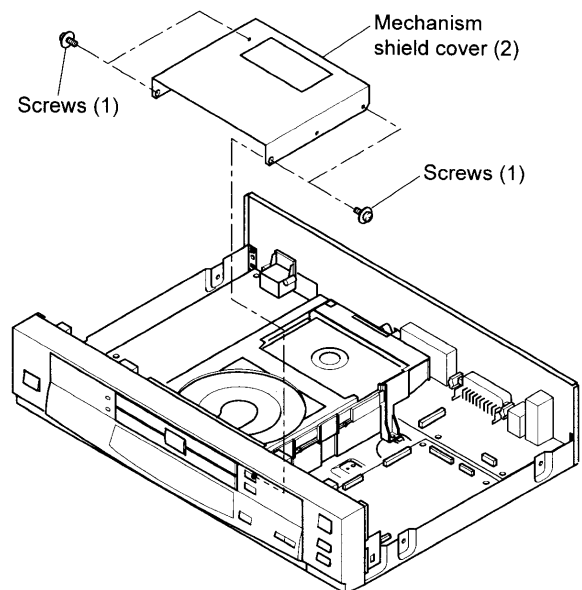


Fig. 2-1-2

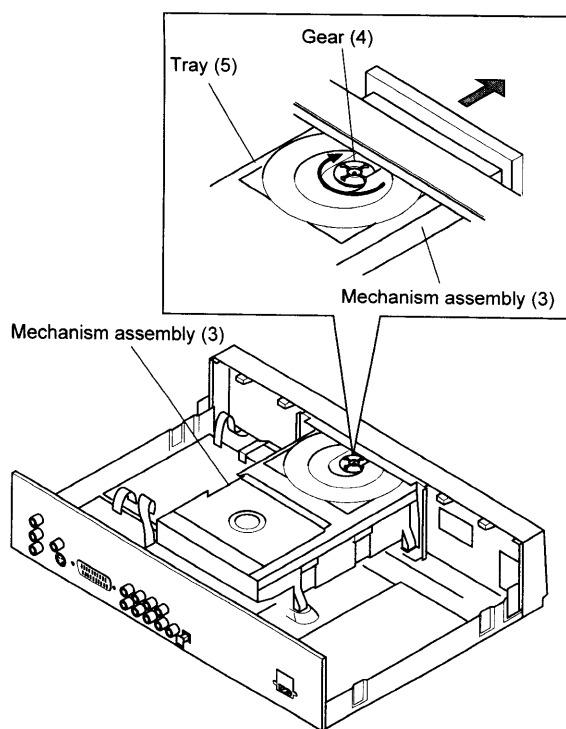


Fig. 2-1-3

<Tray Panel Removal>

1. Eject the tray (3).
2. Twist the tray panel (4) a little in the arrow A direction with the tray (3) held to release two claws and lift up the tray panel (4) in the arrow B direction, then the tray panel (4) is removed.
3. When mounting the tray panel (4), fit the tray panel (4) into the groove of the both sides of the tray (3) until it clicks.

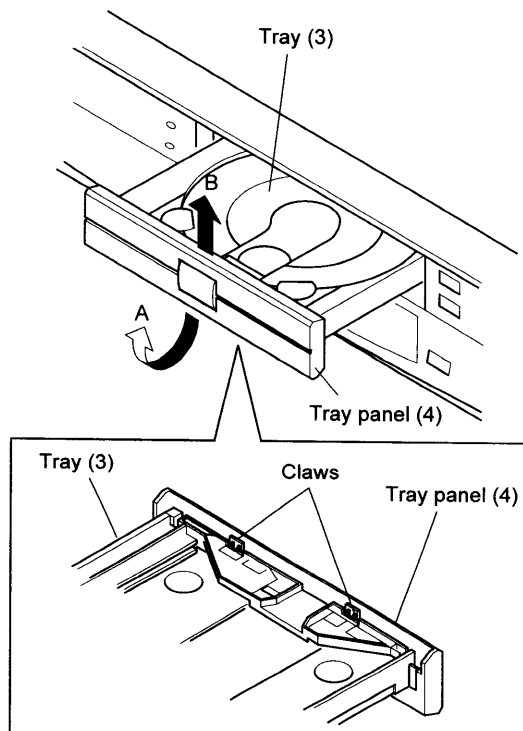


Fig. 2-1-4

1-1-3. Front Panel

1. Remove the flexible cable (1).
2. Remove one screw (2) and remove the GND lead (3).
3. Release four claws (4) and remove the front panel (5).

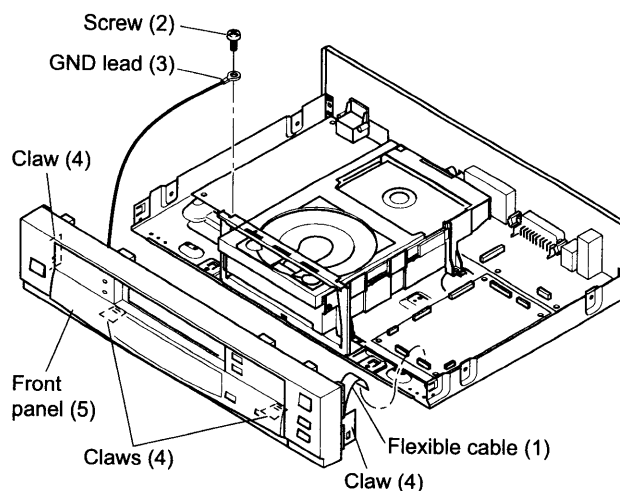


Fig. 2-1-5

1-1-4. Rear Panel

1. Remove ten screws (1) and remove the rear panel (2).

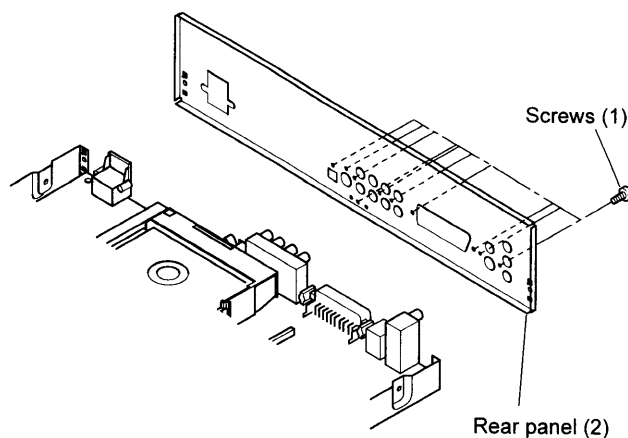


Fig. 2-1-6

1-2. PC Board Replacement

1-2-1. Main PC Board

Note:

- Before removing the main PC board (4), be sure to short-circuit the laser diode output land.

After replacing, open the land after inserting the flexible cables (1).

1. Remove the top cover. (Refer to item 1-1-1.)
2. Remove six flexible cables (1) and remove one connector (2).
3. Remove four screws (3).
4. Release two claws and remove the main PC board (4).

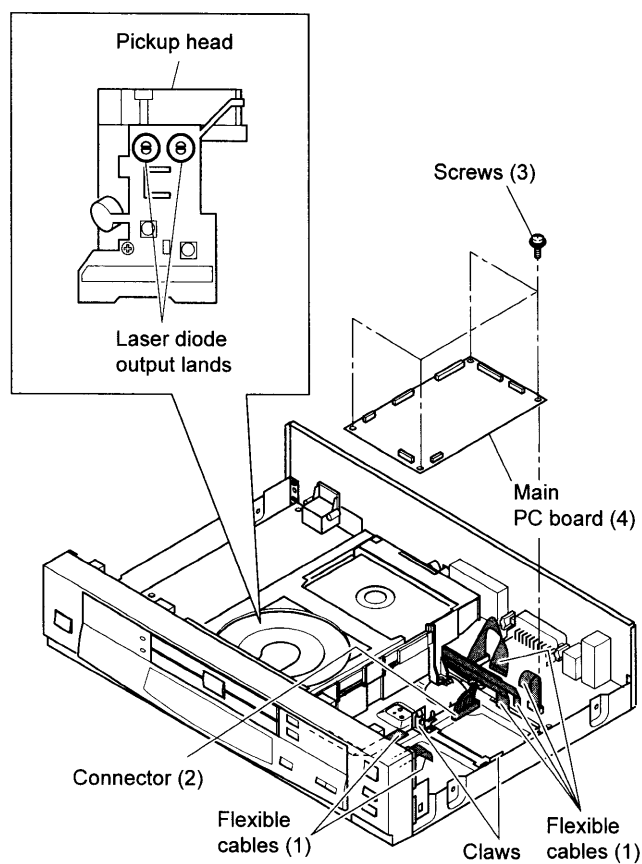


Fig. 2-1-7

1-2-2. Output PC Board

1. Remove the rear panel. (Refer to item 1-1-4.)
2. Release the wire part of the connector (2) from the binding band (1)
3. Remove the connector (2).
4. Remove two flexible cables (3).
5. Release the wire part of the connector (5) from the binding band (4).
6. Remove three screws (6) and remove the output PC board (7).

Note:

- When mounting, be sure to keep the wire part of the connector (2) with the binding band (1), and the wire of the connector (5) with the binding band (4).

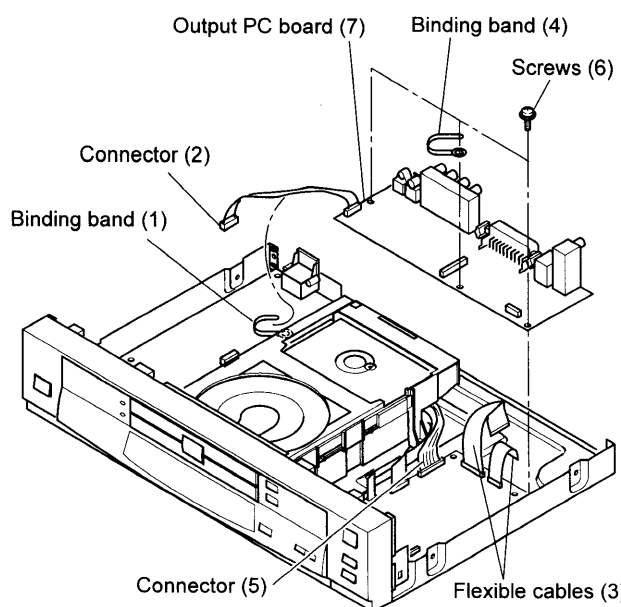


Fig. 2-1-8

1-2-3. Power Supply PC Board

1. Peel off the tape (1).
2. Remove the connector (2).
3. Remove the connector (3).
4. Release the wire part of the connector with the binding band (4) tightened.
5. Remove three screws (5).
6. Remove two screws (6).
7. Release two claws and remove the power PC board (7).

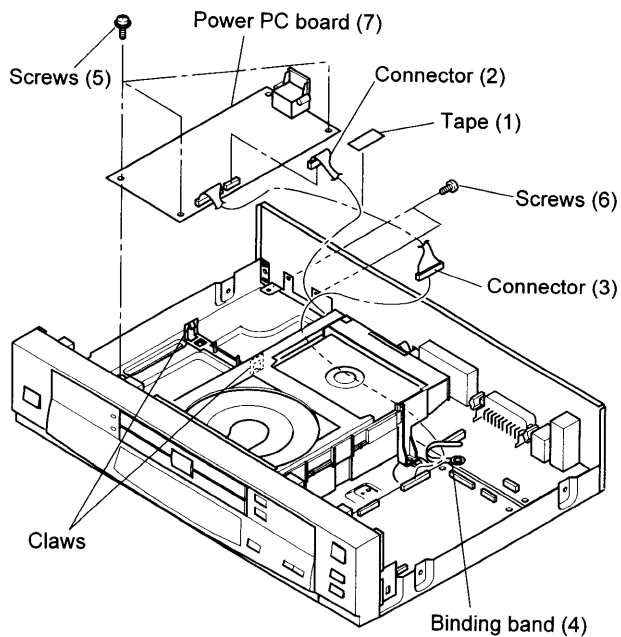


Fig. 2-1-9

1-2-4. Front Display and Power SW PC Boards

1. Remove the front panel. (Refer to item 1-1-3.)
2. Remove eight screws (1) and remove the front display PC board (2).
3. Remove two screws (3) and remove the power switch PC board (4).
4. Remove one screw (5) and remove the LED PC board (6).

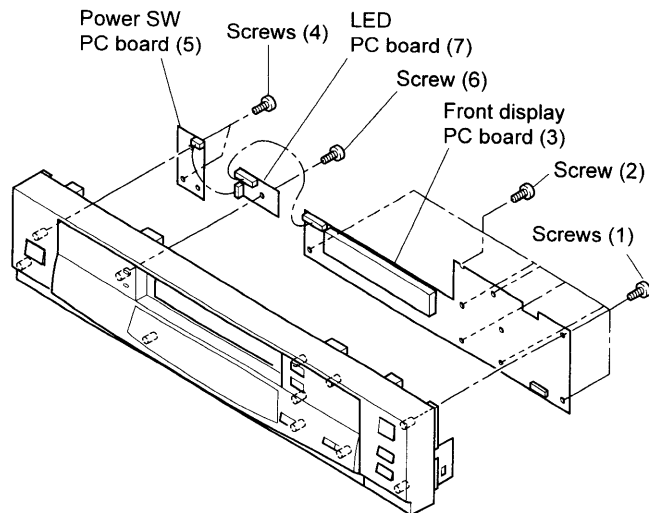


Fig. 2-1-10

1-3. Mechanism Parts Replacement

1-3-1. Mechanism Chassis Assembly

Note:

- Before removing the connectors and flexible cables, be sure to short-circuit the laser diode output land. After replacing the mechanism chassis assembly, open the land after inserting the connectors and flexible cables.

1. Remove the front panel. (Refer to item 1-1-3.)
2. Remove three flexible cables (1).
3. Remove four screws (2) and remove the mechanism chassis assembly (3).

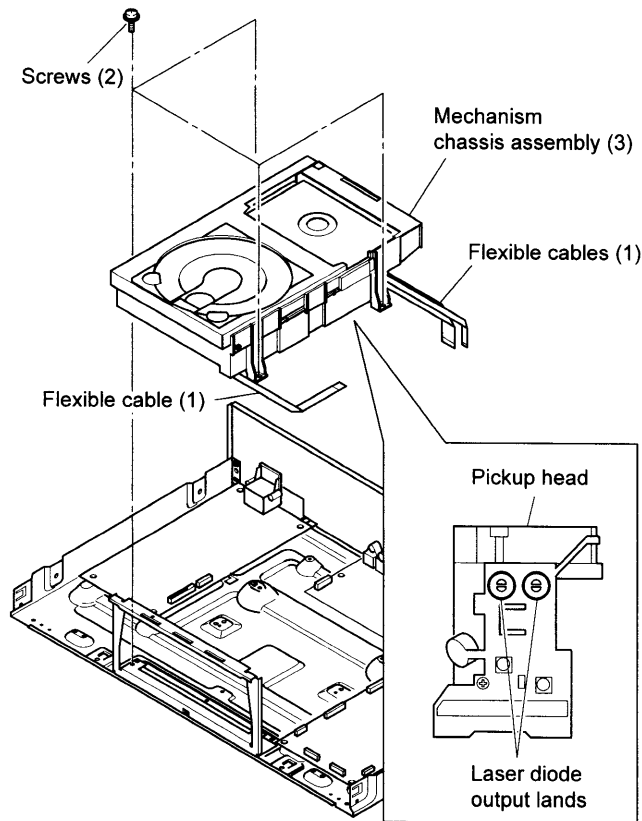


Fig. 2-1-11

1-3-2. Loading Belt

1. Eject the tray (1). (Refer to item 1-1-2.)

Pull out the tray (1) to this side until it stops.

2. Remove one screw (2) and remove the gear (3).
3. Remove the gear (4) and loading belt (5).
4. Replace the loading belt (5).
5. Perform the reverse steps of removal described above for mounting.

Note:

- When mounting the loading belt (5), take care not to twist it or attach grease, etc.

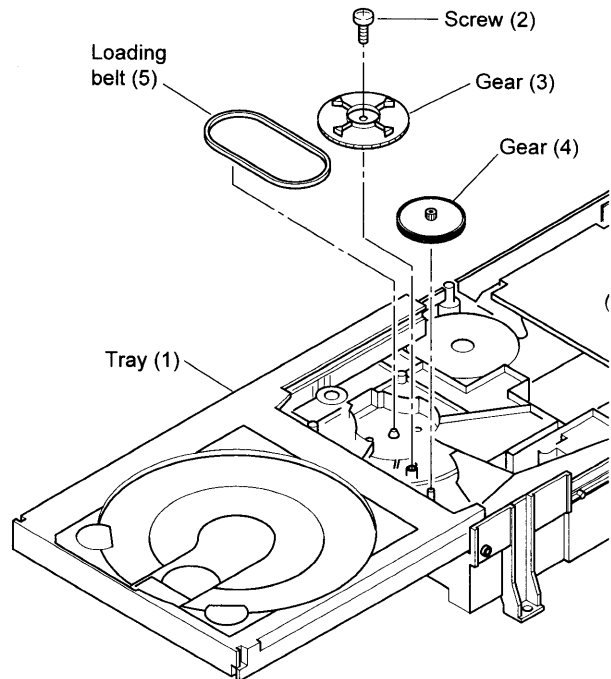


Fig. 2-1-12

1-3-3. Loading Motor

<Removal>

1. Remove the loading belt. (Refer to item 1-3-2.)
2. Remove two screws (1).
3. Remove four screws (2) and remove the loading motor (3) (with the loading motor PC board (4) attached).
4. Desolder the terminal part of the loading motor (3) and remove the loading motor PC board (4).
5. Replace the loading motor (3).

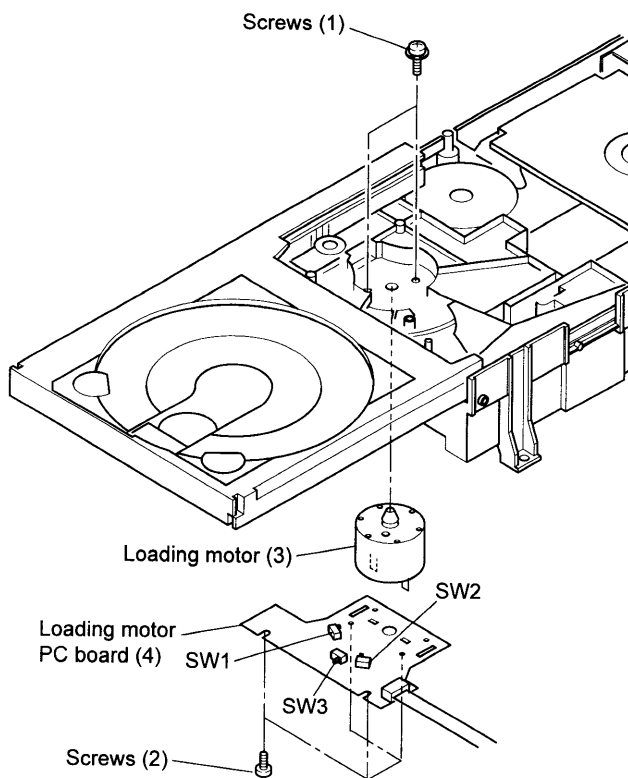


Fig. 2-1-13

<Mounting>

1. Eject the second tray [2]. (Set the POM mark of the cam to the position as shown in Fig. 2-1-14.)

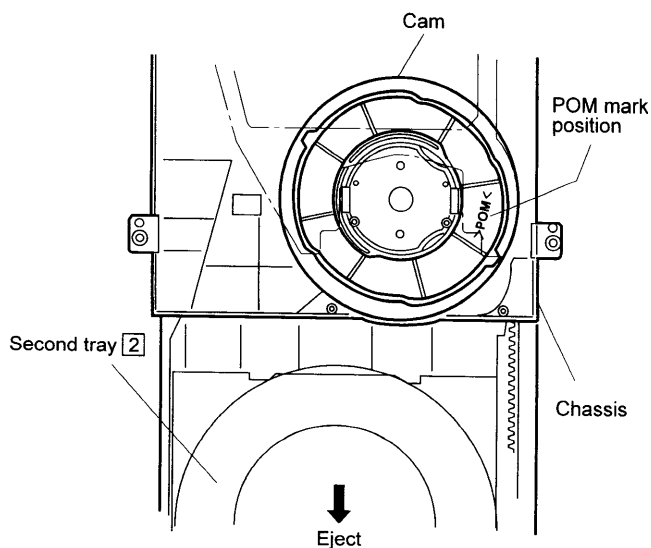


Fig. 2-1-14

2. Solder the terminals of the loading motor (3) on the loading motor PC board (4).
3. Since the switch of SW3 comes over the external peripheral portion of the cam, push the switch by inserting a spacer to the clearance between the chassis and the loading motor PC board (4). (Refer to Fig. A.)
4. With the loading motor PC board (4) held, tighten two screws (2)-1 on the loading motor (3) side and then fix two screws (2)-2.
5. Tighten two screws (1).
6. Mount the loading belt.
7. Close the second tray [2].

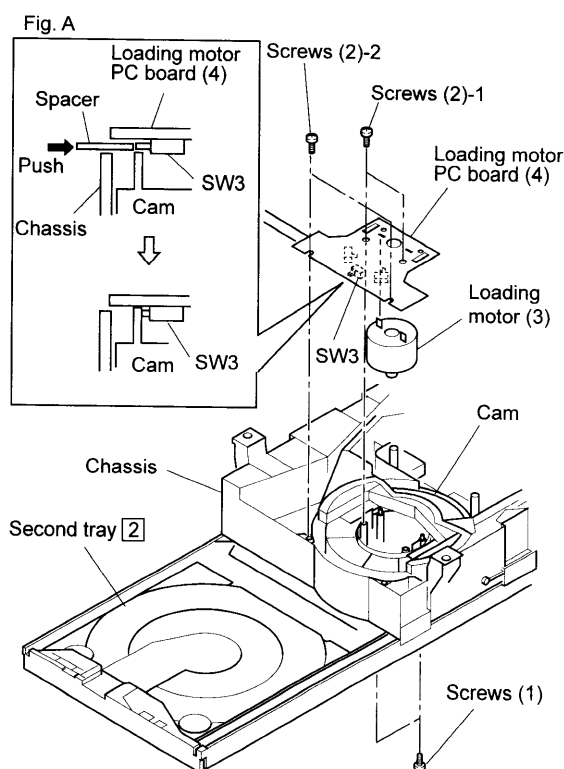


Fig. 2-1-15

1-3-4. Pickup Mechanism Assembly

<Removal>

1. Turn over the mechanism chassis assembly (1).
2. Remove the flexible cables (2) at two locations.
3. Remove four screws (3) and remove the pickup mechanism assembly (4).

<Mounting>

1. Replace the pickup mechanism assembly (4) with a new one.

Remove dampers from the old pickup mechanism assembly used and mount the dampers on the new pickup mechanism assembly.

2. When mounting, perform the reverse steps of the removal described above.

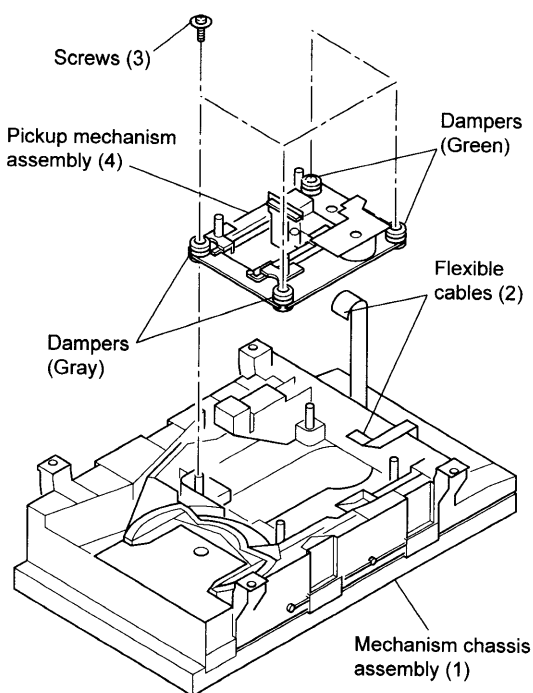


Fig. 2-1-16

Note:

- The dampers' color differs when used for the front side and the rear.
- When mounting the pickup mechanism assembly (4) with the screws (3), push the pickup mechanism assembly (4) downward without being caught and tighten the screws (3) after placing the washer with the damper bent.

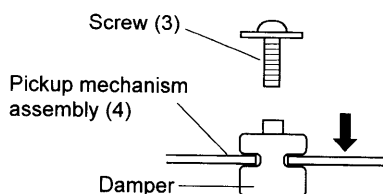


Fig. 2-1-17

1-3-5. Gear B Assembly, Gear A and Rack Gear Assembly

<Removal>

1. Remove one screw (1) and remove the gear B assembly (2).
2. Remove the gear A (3).
3. Remove one screw (4) and remove the rack gear assembly (5).

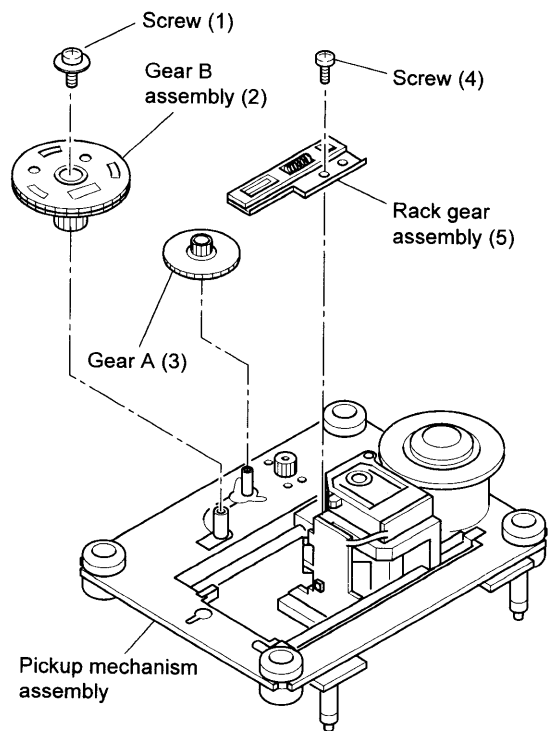


Fig. 2-1-18

<Mounting>

1. When mounting, perform the reverse order of the removal.
2. Mount the gear B assembly (1) by pushing the pickup head (5) to the disc motor side (arrow A direction) and shifting the upper gear of the rack gear assembly (4) in the arrow B direction. (Refer to Fig. 2-1-19.)
3. Fit the positioning holes on the upper gear and lower gear of the gear B assembly (1) and mount on the pickup mechanism assembly with the phase matched. At this time, note that the phase of the gear B assembly (1) and the gear A (2) shows the status in the Fig. 2-1-20.

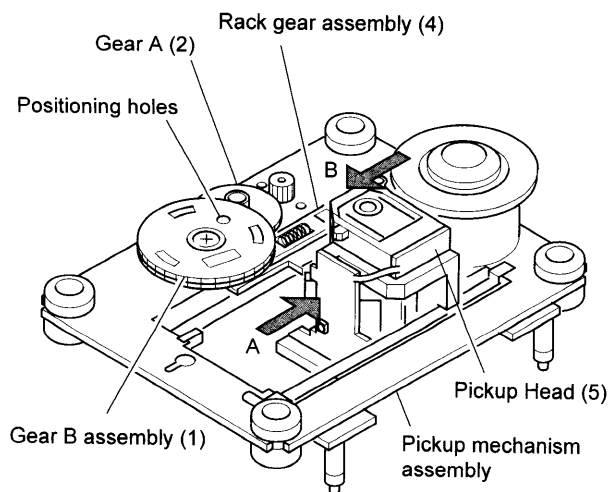


Fig. 2-1-19

Note:

- Mount the gear B assembly (1) and the gear A (2) with their gear teeth placed more than one tooth at least inside the shaded portion.

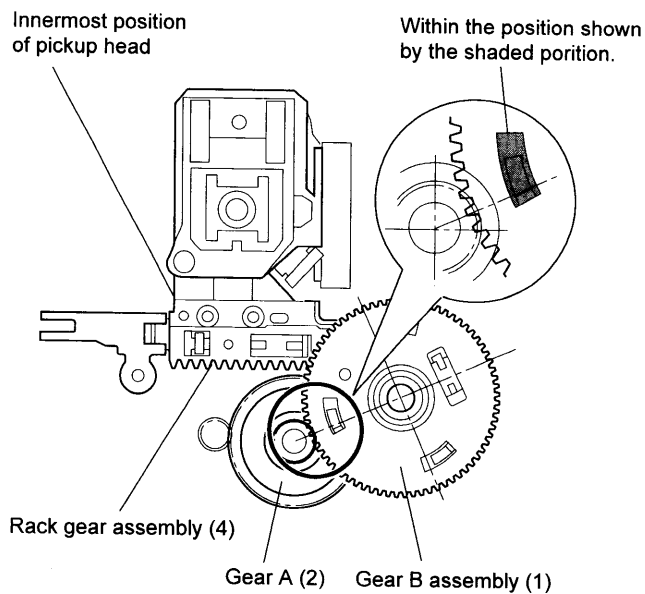


Fig. 2-1-20

1-3-6. Feed Motor

<Removal>

1. Remove the gear B assembly (1) and the gear A (2). (Refer to item 1-3-5.)
2. Remove two screws (1) and remove the feed motor (2) (with the feed motor PC board (3) attached). (Refer to Fig. 2-1-21.)
3. Desolder the terminals of the feed motor (2) and remove the feed motor PC board (3).

<Mounting>

1. Tighten the feed motor (2) on the pickup mechanism assembly with two screws (1).
2. Insert the feed motor PC board (3) with the positioning pin on the chassis matched and solder the terminals.
3. Perform the reverse order of the removal.

Note:

- After mounting, put the lead wires through the notch of the pickup mechanism assembly.

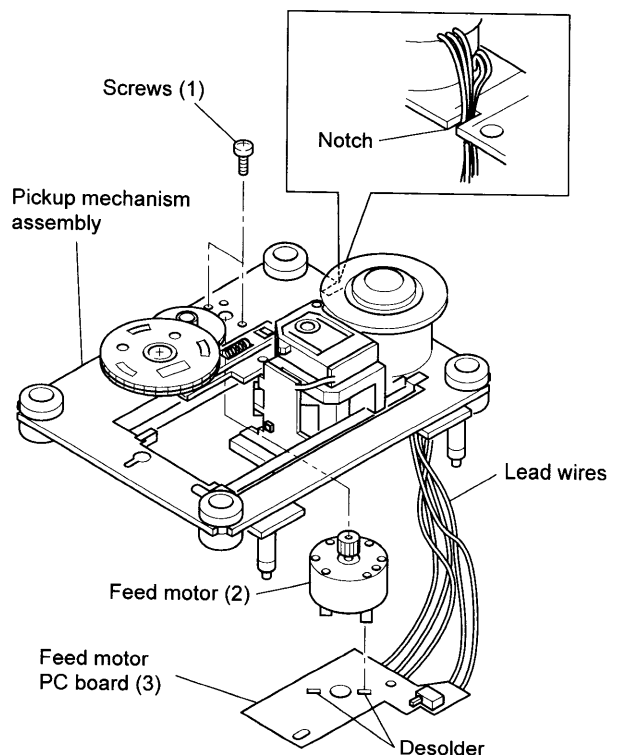


Fig. 2-1-21

1-4. Tray Replacement

Note:

- Perform this service only when a defective with a disc not ejected, etc. occurs.

1-4-1. Tray Removal

1. Remove the mechanism chassis assembly. (Refer to item 1-3-1.)
2. Turn the gear (2) clockwise to eject the tray (1).
3. Pull out the tray (1) to this side until it stops.
4. Release the claws on the right side of the mechanism chassis assembly (part A) and pull out the tray (1) with it obliquely lifted up.

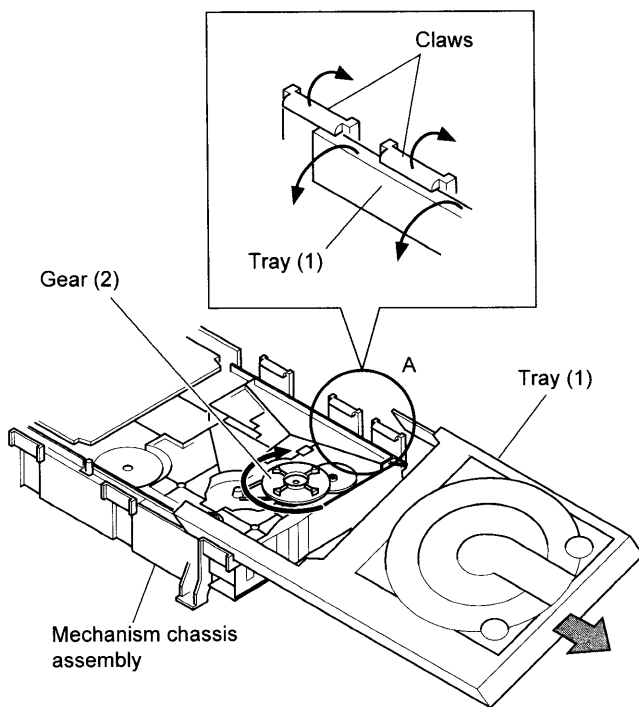


Fig. 2-1-22

<The First Tray 1 Removal>

1. Slide the tray marked 1 in the arrow direction, then remove it from two bosses.

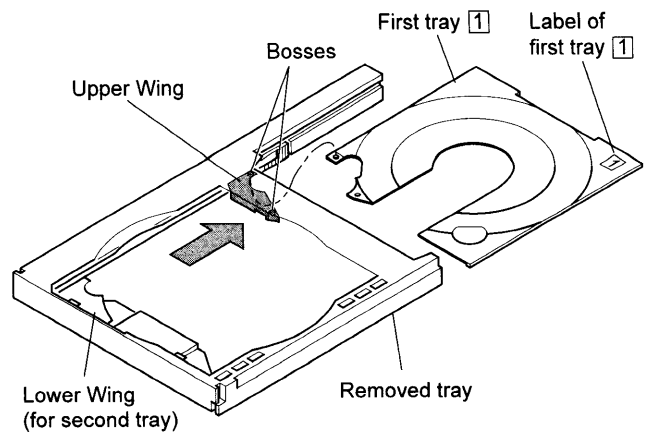


Fig. 2-1-23

<The Second Tray 2 Removal>

1. Turning the gear counterclockwise ascends the tray. Pull out the second tray marked 2.

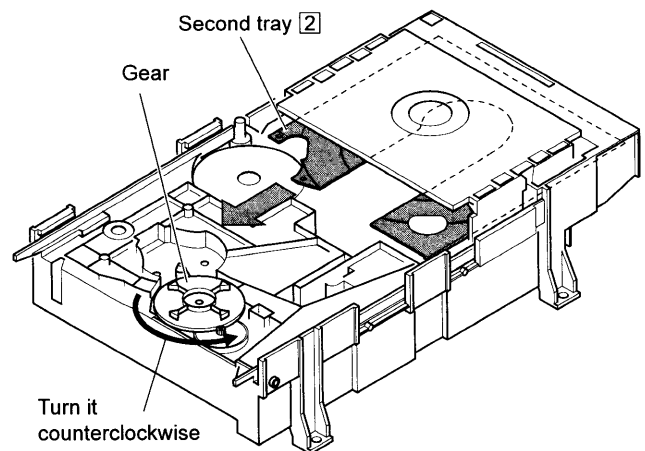


Fig. 2-1-24

1-4-2. Tray Mounting

<The First Tray 1 Mounting>

1. Mount the first tray 1 by fitting to the bosses at two locations after sliding the upper wing to the inner side.
2. Slide the first tray 1 to front side (arrow A direction) until it stops.

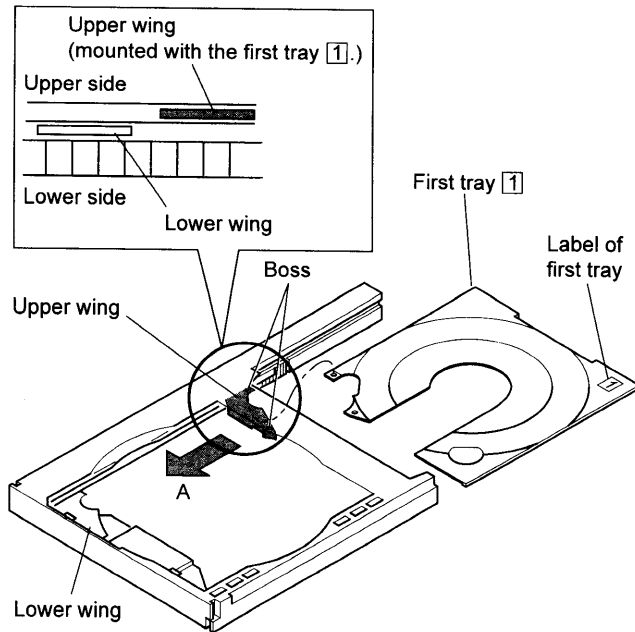


Fig. 2-1-25

<Tray mounting>

1. Remove the gear (1).
2. Insert the tray (2) horizontally.
3. Set the gear (1) to fit the rack gear of the tray.
4. Insert the tray (2) to the inner side until it stops.
5. Turn the gear (3) to confirm the movement.

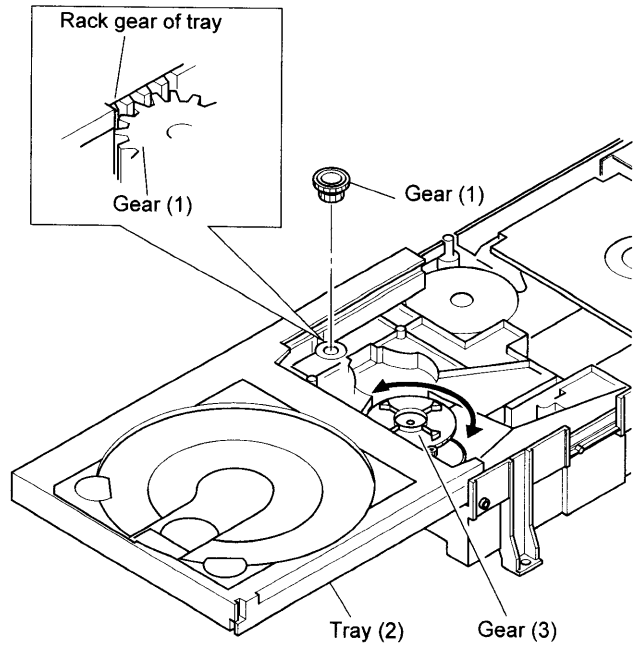


Fig. 2-1-27

<The Second Tray 2 Mounting>

1. Insert the second tray 2 along the lower groove.
2. Turn the gear clockwise until it stops and descend the tray.

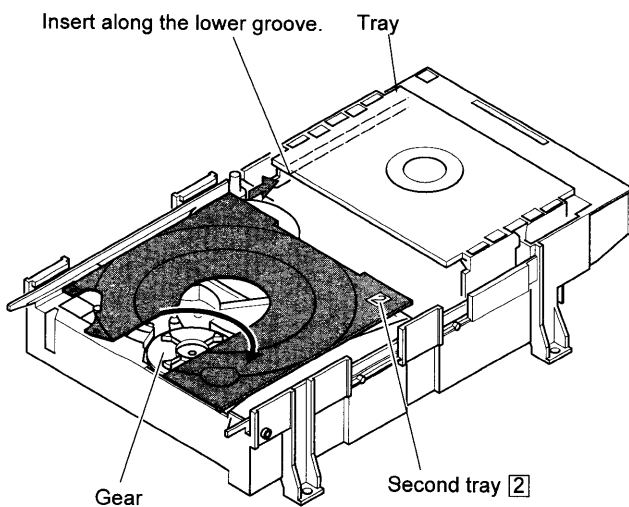


Fig. 2-1-26

SECTION 4 PARTS LIST

SAFETY PRECAUTION

The parts identified by ! ($\triangle$) mark are critical for safety. Replace only with part number specified.

The mounting position of replacement is to be identical with originals.

The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

NOTICE

The part number must be used when ordering parts in order to assist in processing, be sure to include the model number and description.

ABBREVIATIONS

1. Integrated Circuit (IC)

2. Capacitor (Cap)

- Capacitance Tolerance (for Nominal Capacitance more than 10pF)

Table 4-2-1

Symbol	B	C	D	F	G	J	K	M	N
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20	± 30

Symbol	P	Q	T	U	V	W	X	Y	Z
Tolerance %	+ 100 0	+ 30 - 10	+ 50 - 10	+ 75 - 10	+ 20 - 10	+ 100 - 10	+ 40 - 20	+ 150 - 10	+ 80 - 20

Ex. 10MF J = 10 μ F $\pm 5\%$

- Capacitance Tolerance (for Nominal Capacitance 10pF or less)

Table 4-2-2

Symbol	B	C	D	F	G
Tolerance pF	± 0.1	± 0.25	± 0.5	± 1	± 2

Ex. 10pF G = 10pF ± 2 pF

3. Resistor (Res)

- Resistance tolerance

Table 4-3-1

Symbol	B	C	D	F	G	J	K	M
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20

Ex. 470ohmJ = 470ohm $\pm 5\%$

4. EXPLODED VIEWS

4-1. Packing Assembly

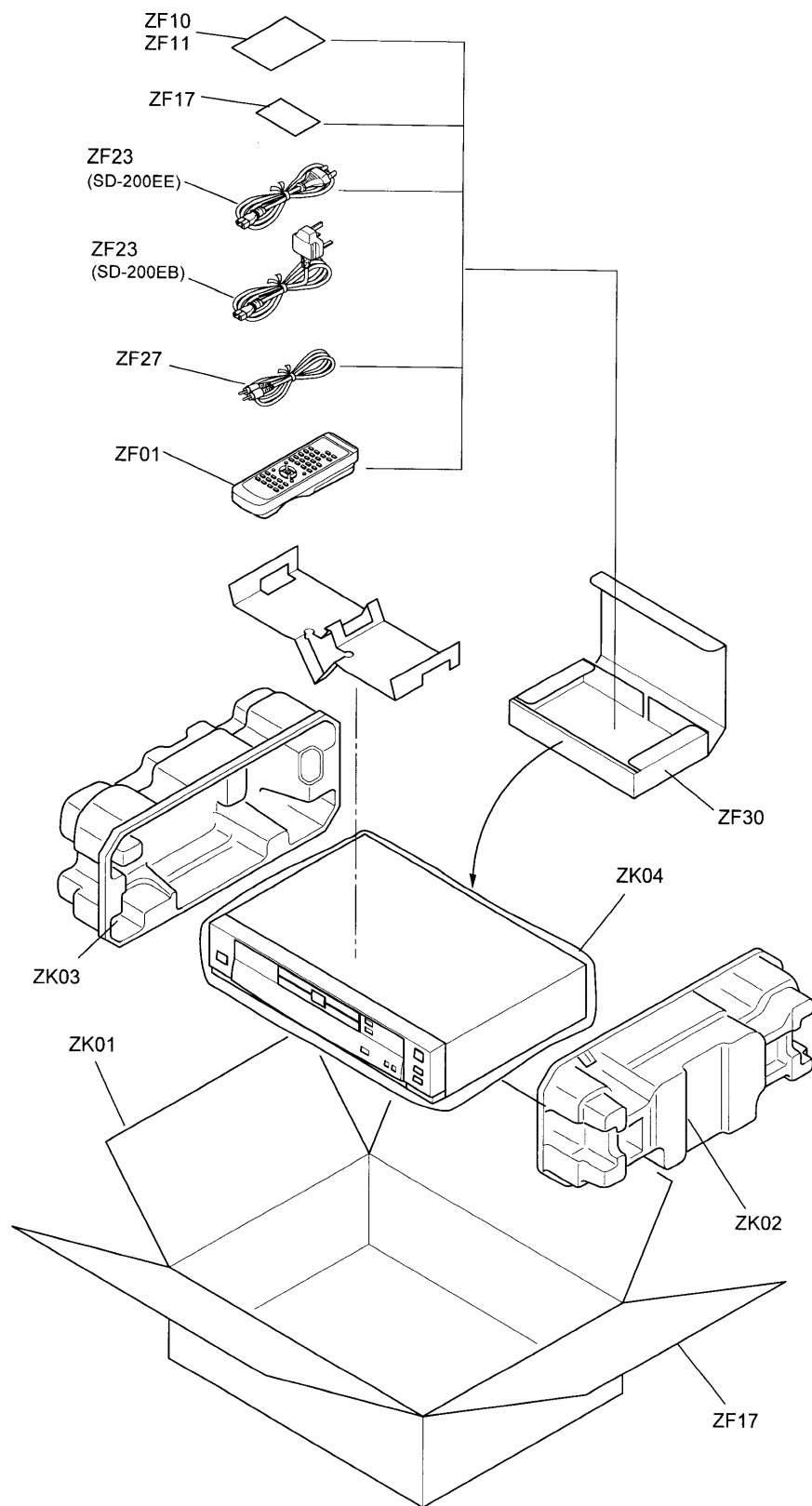


Fig. 4-4-1

4-2. Chassis Assembly

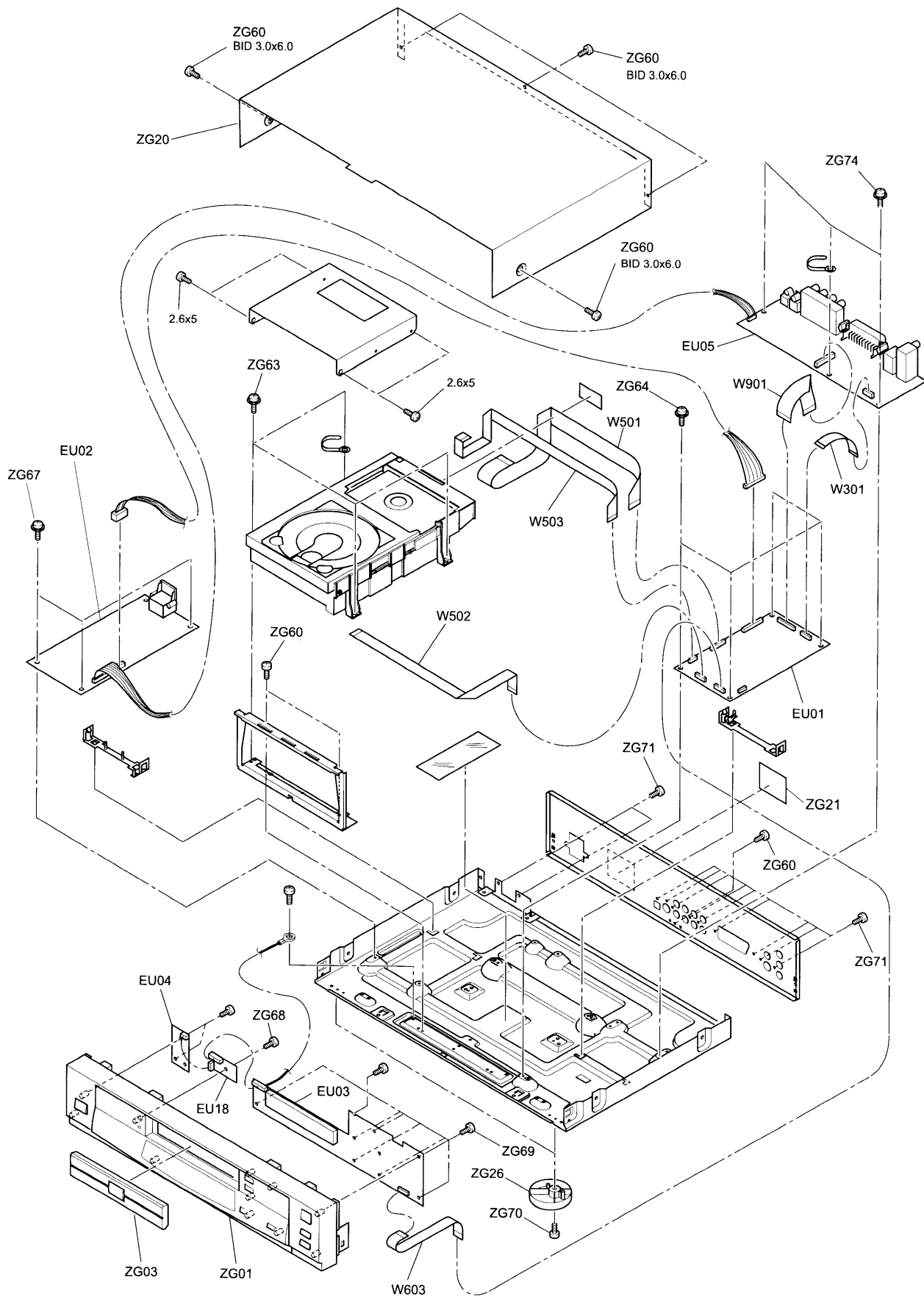


Fig. 4-4-2

4-3. Mechanism Assembly

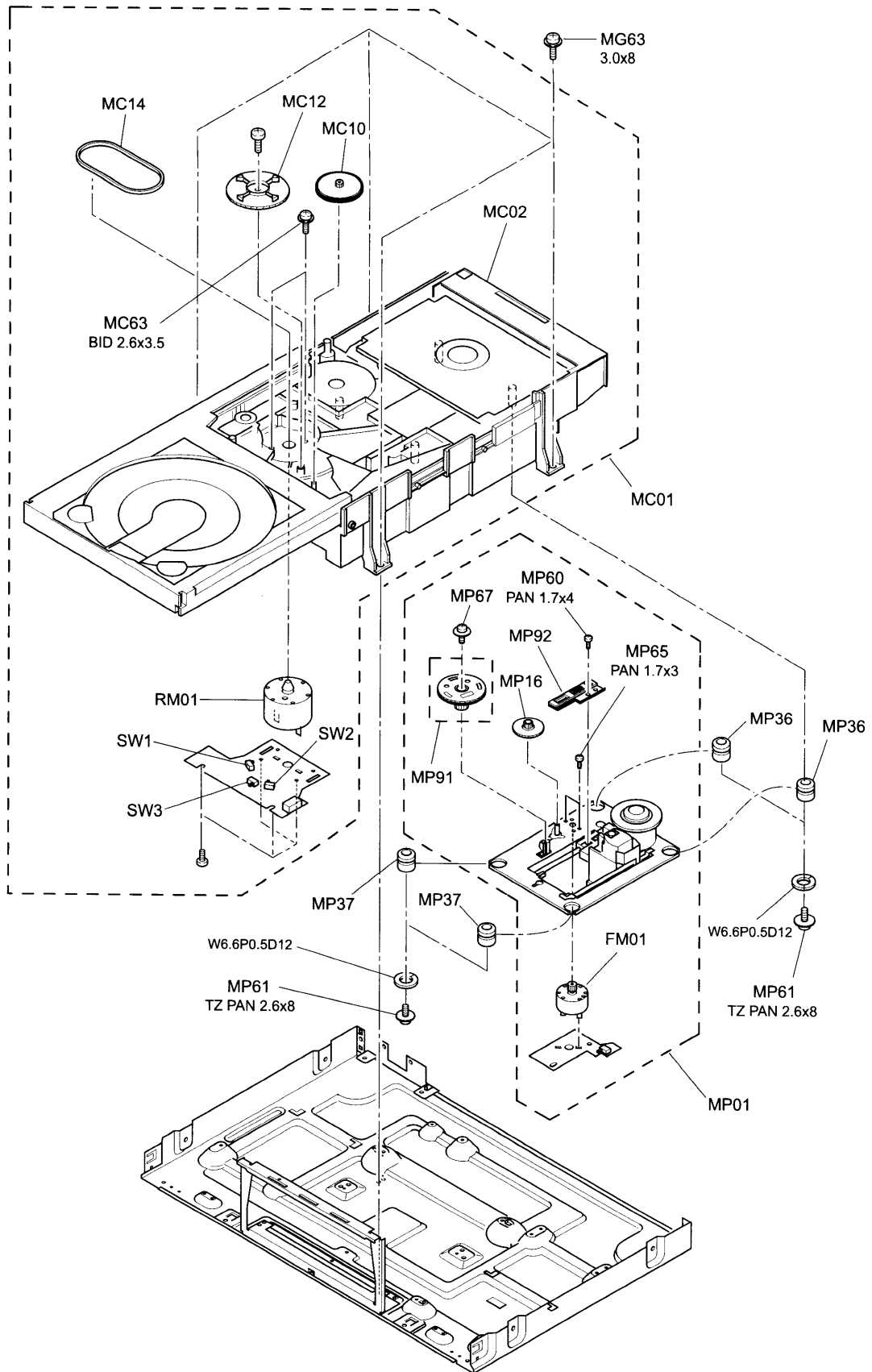


Fig. 4-4-3

5. PARTS LIST

LOCATION NUMBER	PART NUMBER	DESCRIPTION	LOCATION NUMBER	PART NUMBER	DESCRIPTION
- MECHANICAL PARTS -					
FM01	79070421	Motor Assy, Feed			
MC01	79070426	Chassis Assy			Mechanism
MC14	79070429	Belt, Loading			
MP01	79070470	Mechanism Assy, Pickup			
MP16	79070422	Gear			
MP36	79070424	Dumper, Rubber			Front
MP37	79070425	Dumper, Rubber			Rear
MP60	79070020	Screw			1. 7x4. 0mm
MP61	79070064	Screw			2. 6x8W12mm
MP65	79079038	Screw			PAN1. 7x3. 0
MP91	79070419	Gear Assy, Kit B			
MP92	79070420	Gear Assy, Rack			
RM01	79070430	Motor Assy, Loading			
SW1	79089033	Switch			Push
SW2	79089033	Switch			Push
SW3	79089033	Switch			Push
W301	79080226	Cable, Flexible			FFC, 14P, L70
W501	79080246	Cable, Flexible			FFC, 23P, L370
W502	79080199	Cable, Flexible			FFC, 6P, L180
W503	79080200	Cable, Flexible			FFC, 8P, L380
W603	79080197	Cable, Flexible			FFC, 13P, L150
W901	79080236	Cable, Flexible			FFC, 26P, L120
ZF01	79078050	Remote Control Unit, SE-R0037			
△ZF10	79077086	Owners Manual, French/German, SD-200EE			
△ZF11	79077087	Owners Manual, English			
ZF20	79070037	Cable, AV			
△ZF23	79088009	Power Cord			SD-200EB
△ZF23	79088010	Power Cord			SD-200EE
ZF30	79070042	Bag, Polyethylene			
ZG01	79071121	Panel Assy, Front			
ZG03	79071122	Panel Assy, Tray			
ZG20	79073066	Cover, Top			
△ZG21	79073059	Label, Rating			
ZG26	79073036	Foot Assy, Front			
△ZG27	79070469	Label, Caution			
ZK01	79075111	Case			
ZK02	79075097	Packing, R			
ZK03	79075098	Packing, L			
ZK04	79070033	Bag, Polyethylene			
ZZ01	79070274	Test Disc			DVDZ-9044
ZZ03	79080074	Kit, Data Update			

LOCATION NUMBER	PART NUMBER	DESCRIPTION		LOCATION NUMBER	PART NUMBER	DESCRIPTION	
- ELECTRICAL PARTS -				D825	79060013	Diode	AG01
				D826	79060013	Diode	AG01
				D827	79060013	Diode	AG01
				D828	79060012	Diode	ERA15-02
				D830	79060012	Diode	ERA15-02
				D831	79060007	Diode, Zener	UZ3.0BSB
				D832	79060034	Diode, Zener	MTZJT-77-10B
				D833	79060005	Diode, Zener	UZ11BSB
				D834	79060034	Diode, Zener	MTZJT-77-10B
				- CAPACITORS -			
				△C801	79020111	Cap, Film	0.22μF M 270V
				△C802	79020028	Cap, Ceramic	470pF Z 250V
				△C803	79020028	Cap, Ceramic	470pF Z 250V
				△C804	79020189	Cap, Ceramic	1000pF M 250V
				△C805	79020042	Cap, Electrolytic	100μF D 450V
				△C806	79020016	Cap, Film	0.033μF J 630V
				△C811	79020193	Cap, Ceramic	220pF K 250V
				- RESISTORS -			
				△R802	79030055	Res, Oxide Metal	1MΩ J 1/2W
				△R808	79030011	Res, Oxide Metal	0.47Ω J 1W
				- MISCELLANEOUS -			
				△F801	79087001	Fuse	1.6A, 250V
				△F821	79070061	Fuse	125V, 3.0A
				△F822	79070054	Fuse	125V, 3.5A
				△F823	79070054	Fuse	125V, 3.5A
				△P802	79089029	Jack	AC Inlet
				△RF823	79030015	Res, Fusible	2.2Ω J 1/4W
				△T801	79080006	Line Filter	253YOR7
				△T802	79010026	Power Transformer	SRW3020ED5-210
				■EU03	79081045	PC Board Assy	Front
				- INTEGRATED CIRCUITS -			
				IC101	79040160	IC	TMP87CH70BF-1A07
				- TRANSISTORS -			
				Q101	79050002	Transistor, Chip	RN1421
				- DIODES -			
				D102	79060022	Diode, Chip	1SS368
				D103	79060022	Diode, Chip	1SS368
				- MISCELLANEOUS -			
				A101	79089034	Display, FL	13-ST-42GNK
				MT101	79080140	Module, RMT	GP1U261X
				S105	79089020	Switch	Push
				S106	79089020	Switch	Push
				S107	79089020	Switch	Push
				S108	79089020	Switch	Push
				S109	79089020	Switch	Push
				S110	79089020	Switch	Push
				S111	79089020	Switch	Push
				S112	79089020	Switch	Push
				SP101	79089086	Buzzer	HAS-RP2-14-41-11
				X101	79089095	Oscillator, Ceramic	8MHz
				■EU04	79081050	PC Board Assy	Power Switch
				- TRANSISTORS -			
				Q106	79050001	Transistor, Chip	RN2402
				Q107	79050001	Transistor, Chip	RN2402
				- DIODES -			
				D106	79060033	Diode, LED	
				- MISCELLANEOUS -			
				S113	79089020	Switch	Push
				■EU05	79085049	PC Board Assy	Output
				- INTEGRATED CIRCUITS -			
				ICX01	79040029	IC	TC74HC4053AF
				ICX02	79040229	IC	LA7106M-TLM
				ICX03	79040229	IC	LA7106M-TLM
				ICX04	79040229	IC	LA7106M-TLM
				ICY01	79040240	IC	AD1854JRSRL
				ICY02	79040241	IC	R5510HO20C-T
				ICY03	79040044	IC	NJM4580E
				ICY04	79040044	IC	NJM4580E
				ICY07	79089024	Terminal, Optical	TOTX178
				ICY08	79040240	IC	AD1854JRSRL
				ICY09	79040074	IC	TC74HCU04AF
				ICY11	79040044	IC	NJM4580E
■△EU01	79083056	PC Board Assy	Main				
				- INTEGRATED CIRCUITS -			
IC201	79040145	IC	NN514800AJ-60T				
IC202	79040154	IC	TC203G08AF-0103Z				
IC301	79040122	IC	MD36710X				
IC302	79040063	IC	HY57V16160ATC-10				
IC303	79040096	IC	ADV7170KS				
IC304	79040063	IC	HY57V16160ATC-10				
IC401	79040224	IC	TC9489F				
IC402	79040148	IC	V53C16128HK-30				
IC501	79040006	IC	TC7S04F				
IC502	79040225	IC	TC1313F				
IC503	79040150	IC	KA3032				
IC504	79040066	IC	UPC29L33T				
IC601	79040226	IC	S-24C01BFJ-TB-0				
IC602	79040007	IC	TC7S08F				
IC603	79040041	IC	PST591-IDT				
IC604	79040230	IC	TMP94CS40AF-1A58				
IC605	79040148	IC	V53C16128HK-30				
IC606	79040153	IC	MBM29F800BA55TN				
IC607	79040007	IC	TC7S08F				
IC608	79040153	IC	MBM29F800BA55TN				
IC609	79040007	IC	TC7S08F				
IC610	79040087	IC	TC7W241FU				
IC901	79040087	IC	TC7W241FU				
IC902	79040102	IC	NJM2370U05				
IC903	79040227	IC	PLL1700E-T				
IC904	79040007	IC	TC7S08F				
IC905	79040006	IC	TC7S04F				
IC906	79040228	IC	PLL1716E-T				
				- TRANSISTORS -			
Q301	79050078	Transistor, Chip	DTC114EKA-T				
Q302	79050078	Transistor, Chip	DTC114EKA-T				
Q401	79050014	Transistor, Chip	HN1C03F				
Q501	79050015	Transistor, Chip	HN1B01F				
Q502	79050015	Transistor, Chip	HN1B01F				
Q601	79050031	Transistor, Chip	DTA114EKA				
Q602	79050031	Transistor, Chip	DTA114EKA				
				- DIODES -			
D501	79060022	Diode, Chip	1SS368				
D502	79060022	Diode, Chip	1SS368				
D901	79060022	Diode, Chip	1SS368				
D902	79060022	Diode, Chip	1SS368				
				- MISCELLANEOUS -			
X401	79089021	Oscillator, Ceramic	22.58MHz				
X601	79089022	Oscillator, Ceramic	9.00MHz				
X901	79089003	Oscillator	SMD49, 27MHz				
■EU02	79085046	PC Board Assy	Power				
				- TRANSISTORS -			
△Q801	79040221	IC	STR-G6551LF1105				
△Q802	79050044	Photo Coupler	TLP621				
Q821	79040146	IC	TA76431S				
Q822	79050076	Transistor	2SA1585STP-Q				
Q823	79050005	Transistor	2SC2236-Y				
Q824	79050077	Transistor	2SC1740STP-Q				
Q825	79050076	Transistor	2SA1585STP-Q				
Q826	79040222	IC	SI-3050CALF1101				
Q827	79040223	IC	SI-3033CALF1101				
				- DIODES -			
△D802	79060016	Diode	ERA15-06				
△D803	79060016	Diode	ERA15-06				
△D804	79060016	Diode	ERA15-06				
△D805	79060016	Diode	ERA15-06				
△D806	79060009	Diode	RU-1P				
D807	79060013	Diode	AG01				
D808	79060015	Diode	1SS133				
D821	79060032	Diode	RK49LF-L1				
D822	79060010	Diode	RK46				
D823	79060008	Diode	RU2YX				
D824	79060013	Diode	AG01				

LOCATION NUMBER	PART NUMBER	DESCRIPTION		LOCATION NUMBER	PART NUMBER	DESCRIPTION
ICY12	79040044	IC	NJM4580E			
ICY13	79040241	IC	R5510H020C-T			
ICY16	79040166	IC	TC4S66F			
ICY17	79040166	IC	TC4S66F			
		- TRANSISTORS -				
QX01	79050078	Transistor, Chip	DTC114EKA-T			
QX02	79050031	Transistor, Chip	DTA114EKA			
QX03	79050016	Transistor, Chip	2SC2712			
QX04	79050078	Transistor, Chip	DTC114EKA-T			
QX05	79050078	Transistor, Chip	DTC114EKA-T			
QX06	79050078	Transistor, Chip	DTC114EKA-T			
QX07	79050018	Transistor, Chip	2SA1162			
QX08	79050018	Transistor, Chip	2SA1162			
QX09	79050018	Transistor, Chip	2SA1162			
QX10	79050018	Transistor, Chip	2SA1162			
QX13	79050016	Transistor, Chip	2SC2712			
QX14	79050016	Transistor, Chip	2SC2712			
QX15	79050016	Transistor, Chip	2SC2712			
QY01	79050012	Transistor, Chip	RN4601			
QY02	79050001	Transistor, Chip	RN2402			
QY03	79050001	Transistor, Chip	RN2402			
QY05	79050001	Transistor, Chip	RN2402			
QY06	79050001	Transistor, Chip	RN2402			
QY07	79050001	Transistor, Chip	RN2402			
QY08	79050012	Transistor, Chip	RN4601			
QY10	79050001	Transistor, Chip	RN2402			
QY12	79050012	Transistor, Chip	RN4601			
QY13	79050001	Transistor, Chip	RN2402			
QY15	79050043	Transistor, Chip	RN1402			
QY16	79050001	Transistor, Chip	RN2402			
QY18	79050001	Transistor, Chip	RN2402			
QY20	79050014	Transistor, Chip	HN1C03F			
QY21	79050014	Transistor, Chip	HN1C03F			
QY23	79050014	Transistor, Chip	HN1C03F			
QY24	79050014	Transistor, Chip	HN1C03F			
QY25	79050043	Transistor, Chip	RN1402			
QY27	79050014	Transistor, Chip	HN1C03F			
QY28	79050014	Transistor, Chip	HN1C03F			
QY29	79050001	Transistor, Chip	RN2402			
QZ78	79050014	Transistor, Chip	HN1C03F			
		- DIODES -				
DX01	79060028	Diode, Chip	1SS226			
DX02	79060028	Diode, Chip	1SS226			
DX03	79060028	Diode, Chip	1SS226			
DX05	79060028	Diode, Chip	1SS226			
DX06	79060028	Diode, Chip	1SS226			
DX09	79060028	Diode, Chip	1SS226			
DY01	79060022	Diode, Chip	1SS368			
DY02	79060022	Diode, Chip	1SS368			
DY03	79060022	Diode, Chip	1SS368			
DY04	79060022	Diode, Chip	1SS368			
DY06	79060022	Diode, Chip	1SS368			
DY07	79060022	Diode, Chip	1SS368			
DY08	79060022	Diode, Chip	1SS368			
DY10	79060022	Diode, Chip	1SS368			
		- MISCELLANEOUS -				
JX01	79089096	Plate, Jack	Video-S			
JX02	79089097	Plate, Jack	Video			
JX03	79089102	Jack	Scart			
JY01	79089098	Plate, Jack	2CH			
JY02	79089099	Plate, Jack	5. 1CH			
JY03	79089100	Plate, Jack	Digital Audio			
■EU18	79081047	PC Board Assy	Disc LED			
		- TRANSISTORS -				
Q102	79050001	Transistor, Chip	RN2402			
Q103	79050001	Transistor, Chip	RN2402			
Q104	79050001	Transistor, Chip	RN2402			
Q105	79050001	Transistor, Chip	RN2402			
		- DIODES -				
D104	79060033	Diode, LED				
D105	79060033	Diode, LED				

SPECIFICATIONS

DVD Video Player/Outputs/Supplied Accessories

[DVD Video Player]

Power supply	100 - 240V AC, 50/60 Hz
Power consumption	16W
Mass	3.5 kg
External dimensions	430 x 102 x 313 mm (W/H/D)
Signal system	PAL/3.58 NTSC
Laser	Semiconductor laser, wavelength 650 nm/780nm
Frequency range	DVD linear sound : 48 kHz sampling 4 Hz to 22 kHz 96 kHz sampling 4 Hz to 44 kHz
Signal-to-noise ratio	More than 112 dB
Audio dynamic range	More than 106 dB
Harmonic distortion	Less than 0.001%
Wow and flutter	Below measurable level (less than $\pm 0.001\%$ (W. PEAK))
Operating conditions	Temperature: 5 °C to 35 °C, Operation status: Horizontal

[Outputs]

Video output (SCART)	1.0 V (p-p), 75 Ω , SCART socket x 1
Video output (phone type)	1.0 V (p-p), 75 Ω , negative sync., pin jack x 1
S video output	(Y) 1.0 V (p-p), 75 Ω , negative sync., Mini DIN 4-pin x 1 (C) 0.3 V (p-p), 75 Ω
Component video output	(Y) 1.0 V (p-p), 75 Ω , negative sync., pin jack x 1 (P _B)/(P _R) 0.7 V (p-p), 75 Ω , pin jack x 2
Audio output (SCART)	2.0 V (rms), 220 Ω , SCART socket x 1
Audio output (BITSTREAM/PCM OPTICAL)	Optical connector x 1
Audio output (BITSTREAM/PCM COAXIAL)	0.5 V (p-p), 75 Ω , pin jack x 1
Audio output (2CH AUDIO OUT)	2.0 V (rms), 220 Ω , pin jacks (L,R) x 1
Audio output (5.1CH SURROUND)	2.0 V (rms), 220 Ω , pin jacks x 6

[Supplied Accessories]

Audio/video cable	1
Remote control (SE-R0037)	1
Batteries (R6)	2
Power cord	1

* Designs and specifications are subject to change without notice.

SECTION 3

SERVICING DIAGRAMS

1. STANDING PC BOARDS FOR SERVICING

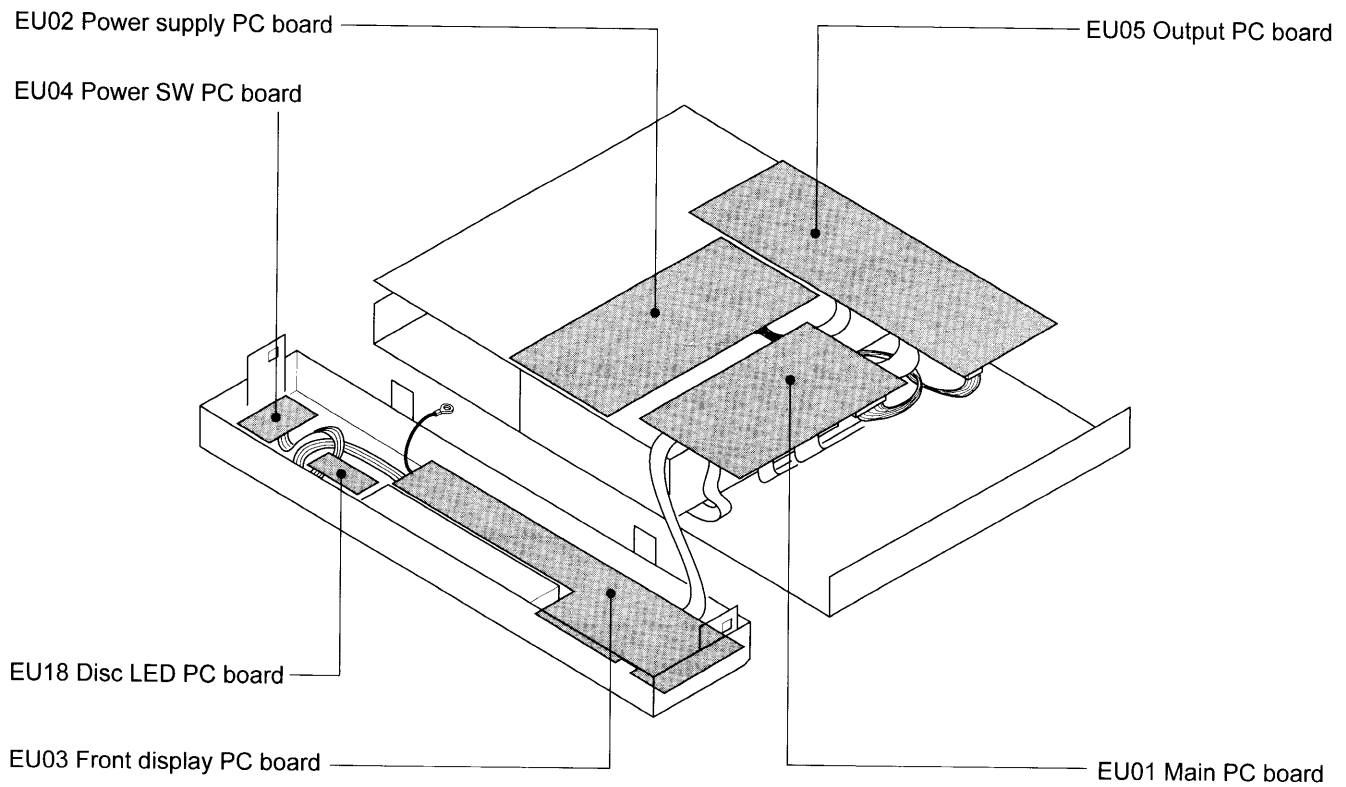


Fig. 3-1-1

2-4. Inductor Indication

Unit	None	H
	μ	μH
	m	mH
Tolerance	None	±5%
	B	±0.1%
	C	±0.25%
	D	±0.5%
	F	±1%
	G	±2%
	K	±10%
	M	±20%

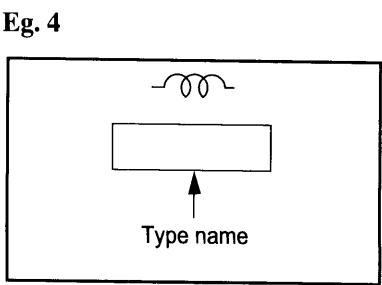


Fig. 3-2-4

2-5. Waveform and Voltage Measurement

- The waveforms for CD/DVD and RF shown in the circuit diagrams are obtained when a test disc is played back.
- All voltage values except the waveforms are expressed in DC and measured by a digital voltmeter.

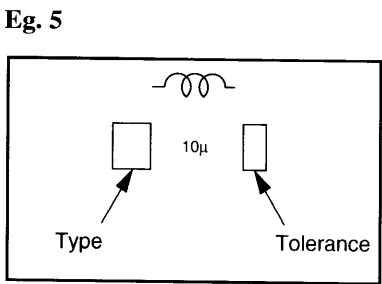


Fig. 3-2-5

2-6. When Replaced ROM ICs or Upgraded Firmware

1. When replaced the following ROM ICs, it is necessary to write the data into the new ICs.
 - 1) IC606 (firmware)
 - 2) IC601 (Setup default data and other information)
2. When the firmware is upgraded, rewriting the new firmware into IC606 may be requested for servicing.
3. Connect a computer to the main PC board of the DVD video player with using DATA UPDATE KIT (P/No. 79080074). (Fig. 3-2-6)
4. Writing operation
Refer to the instruction attached to the data floppy disc.

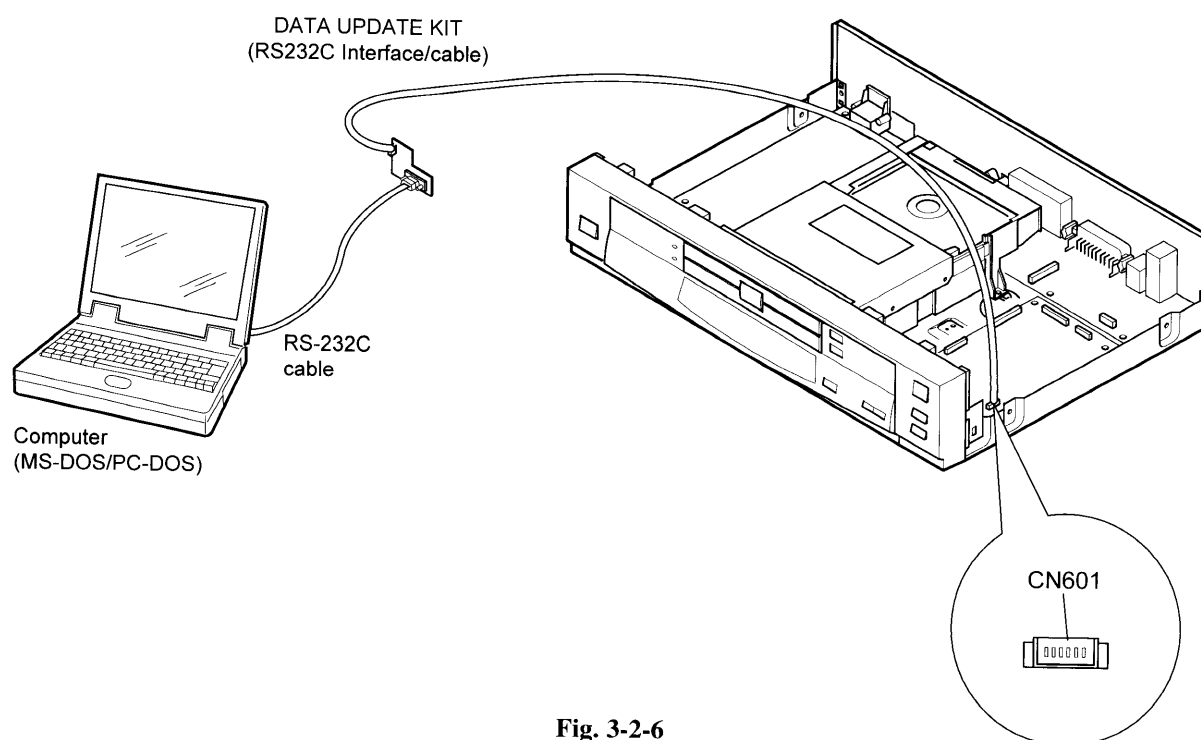


Fig. 3-2-6

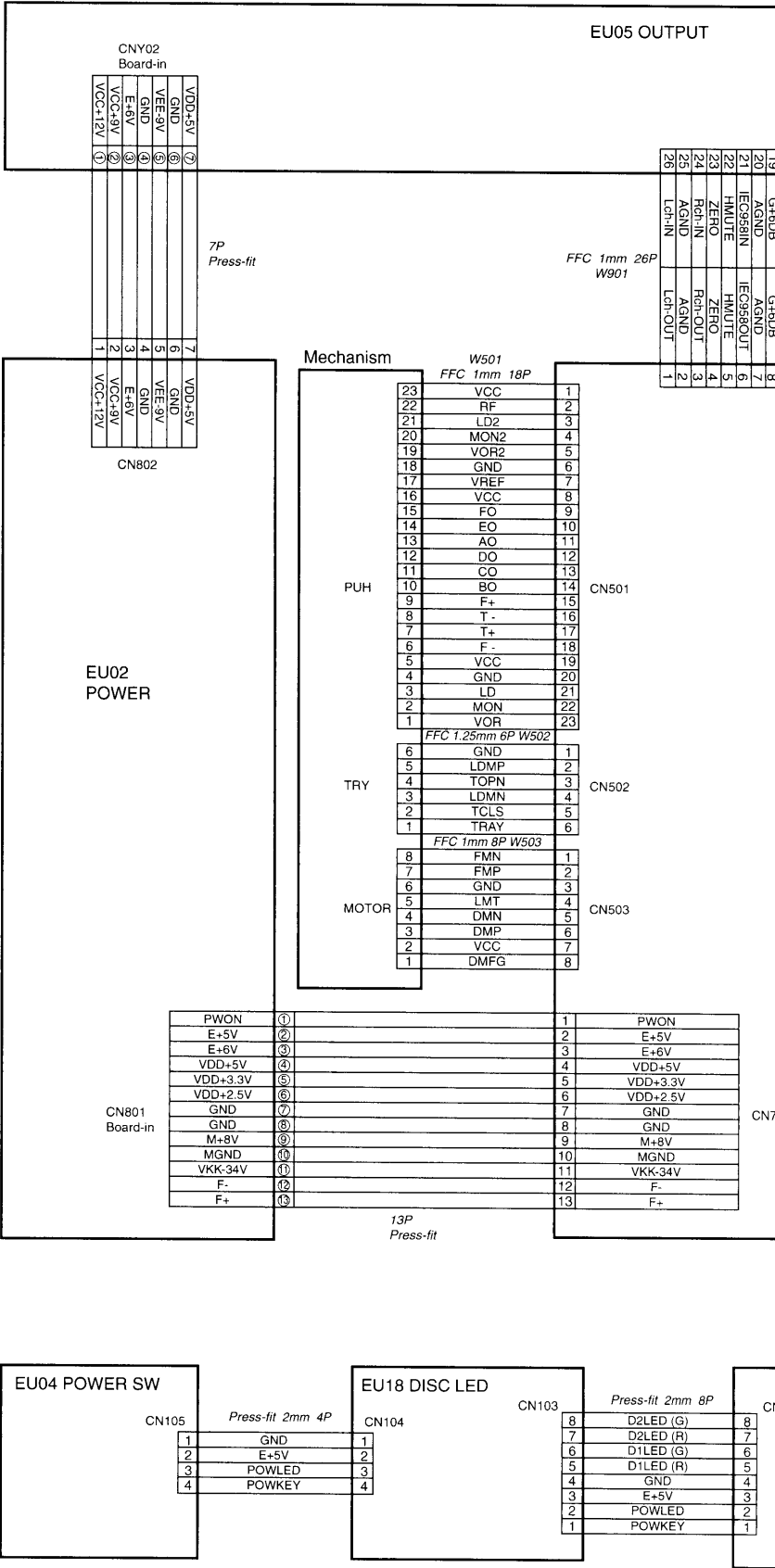
Note:

- The firmware and setup data floppy discs are not available as service parts.
For more information, consult TOSHIBA service office in your area.

[illegible]

3-5

3. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM



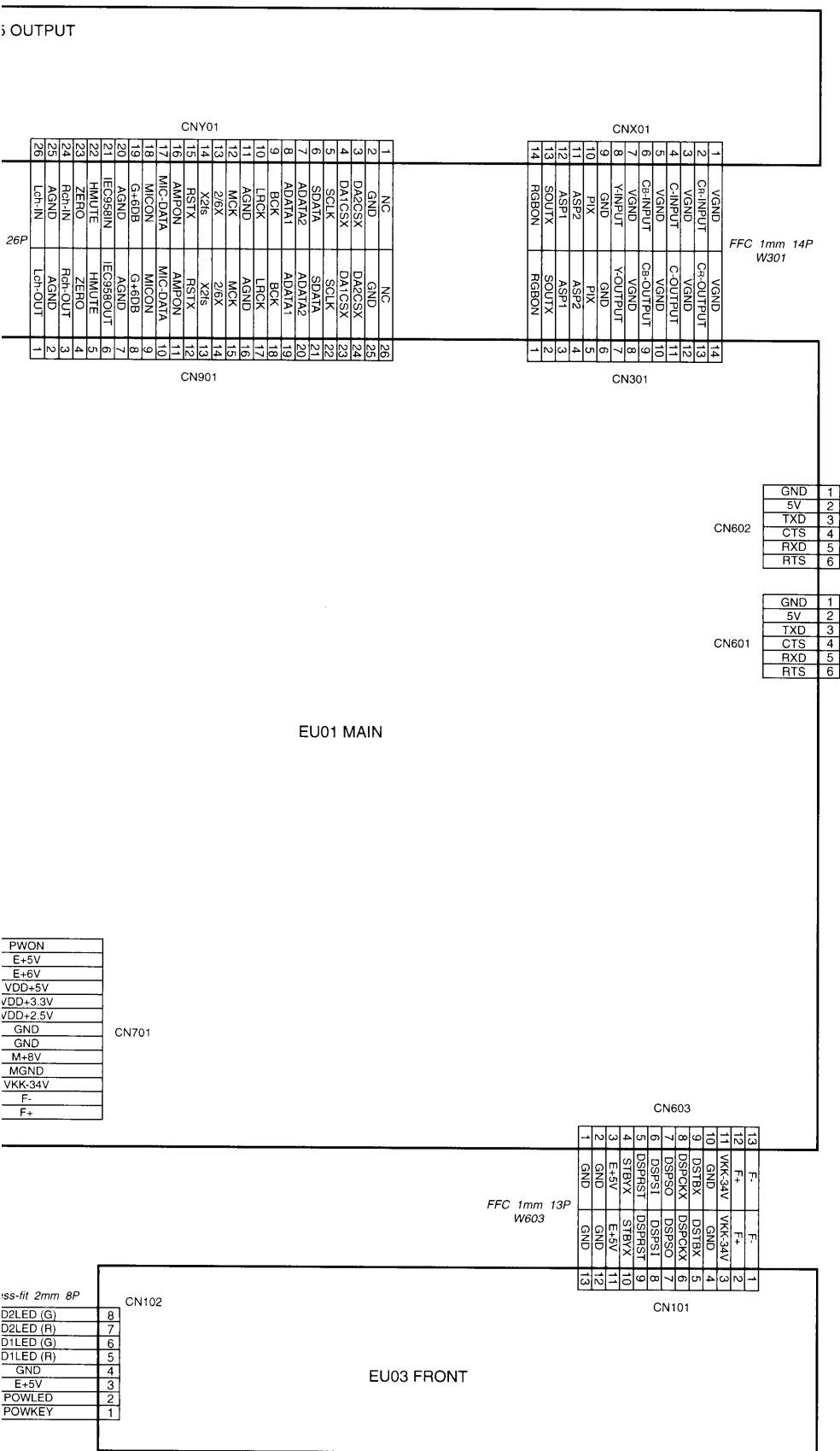


Fig. 3-3-1

4. BLOCK DIAGRAMS

4-1. Overall Block Diagram

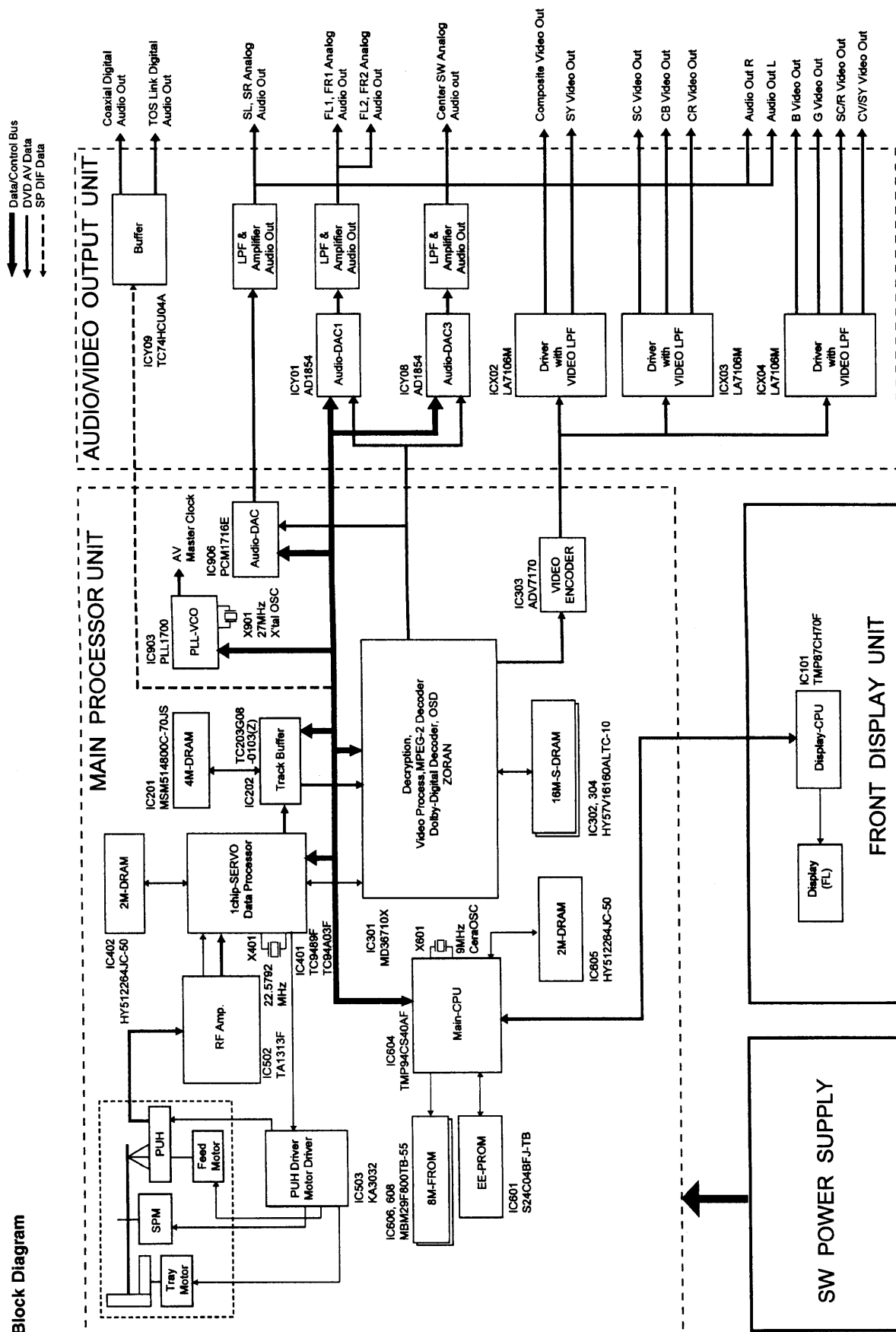
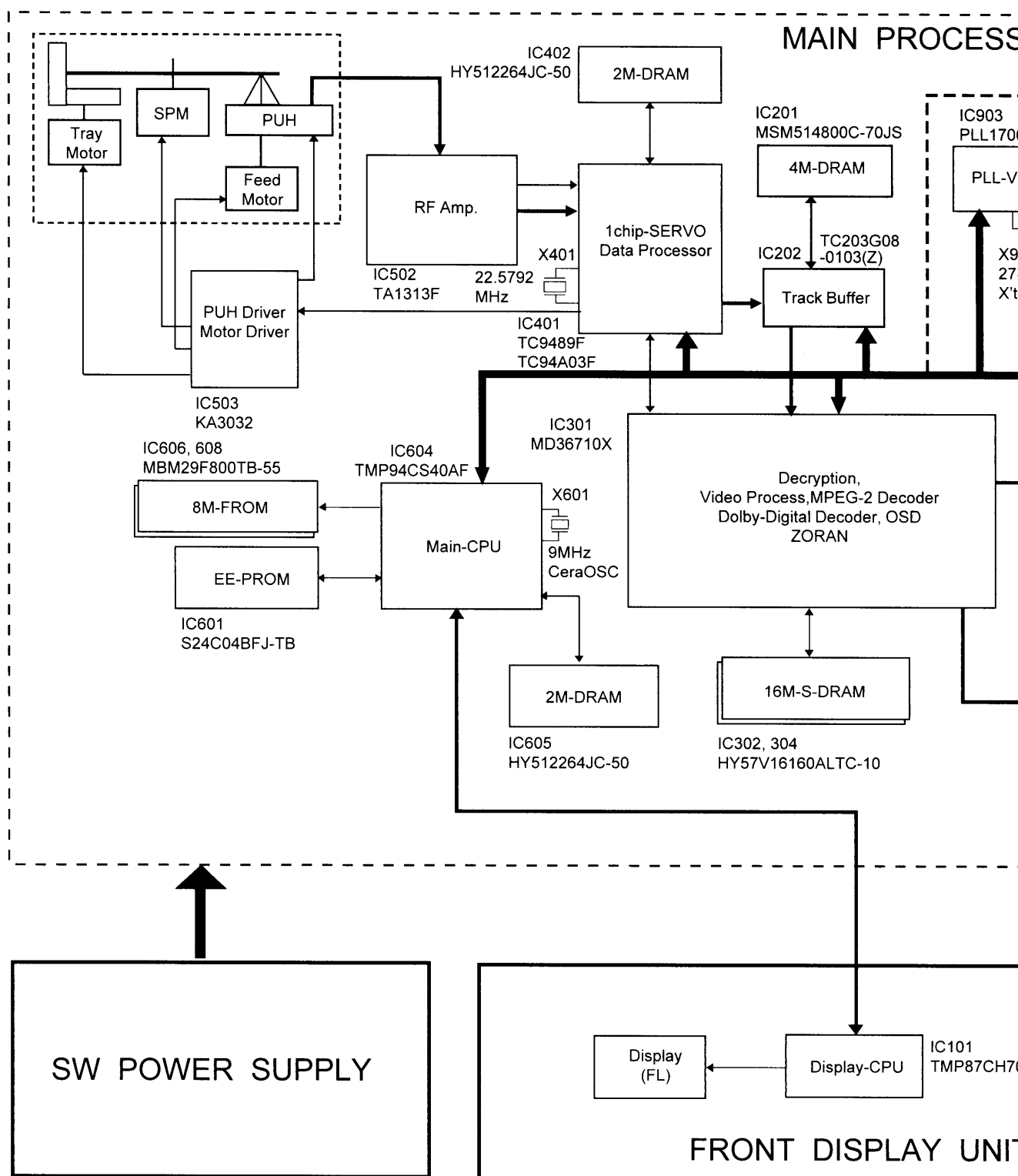


Fig.3-4-1

4. BLOCK DIAGRAMS

4-1. Overall Block Diagram



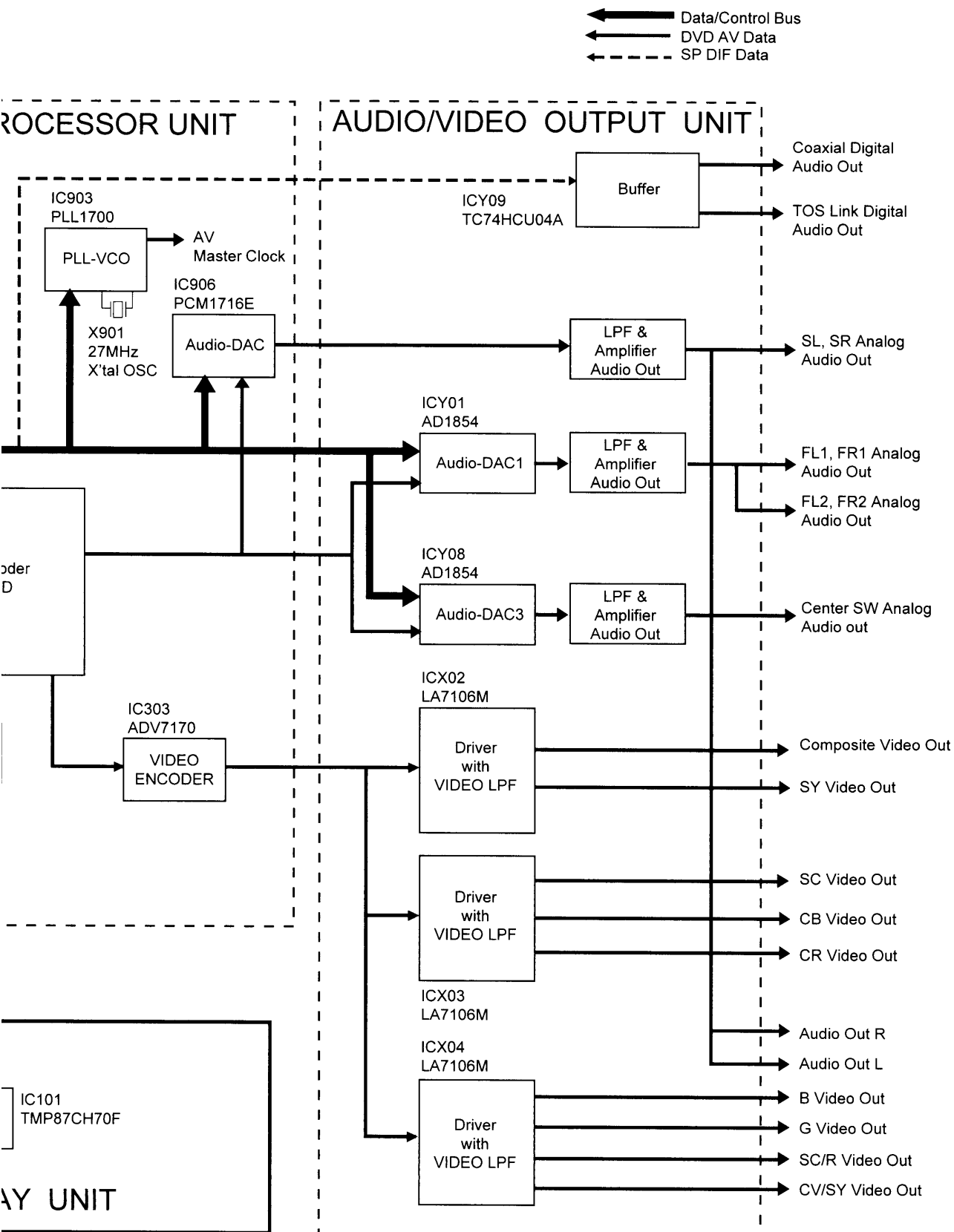


Fig.3-4-1

4-2. Power Supply Block Diagram

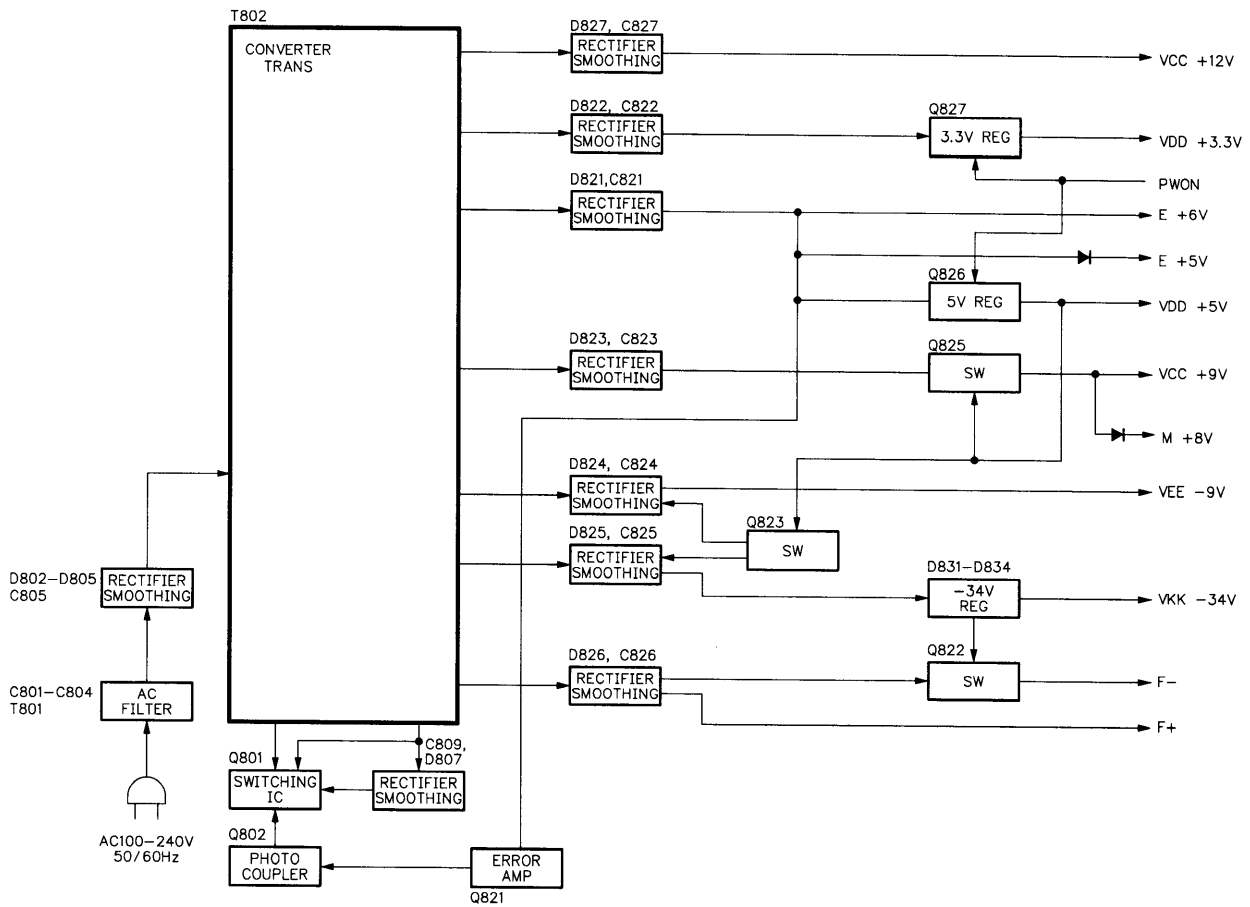


Fig. 3-4-2

4-3. Front Display, Power Switch Block Diagram

4-3-1. Front Display

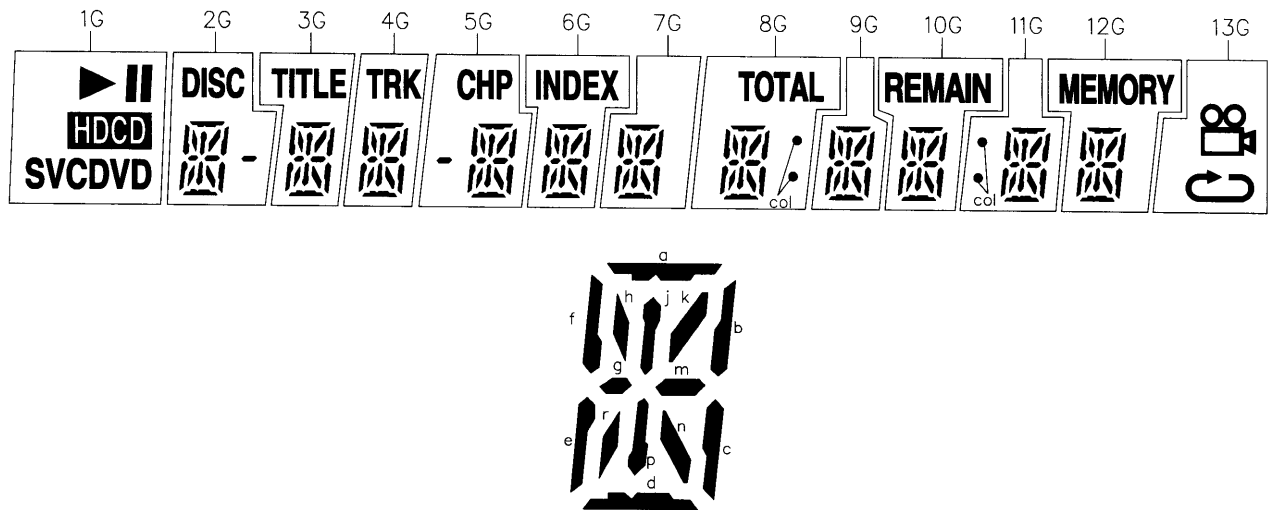


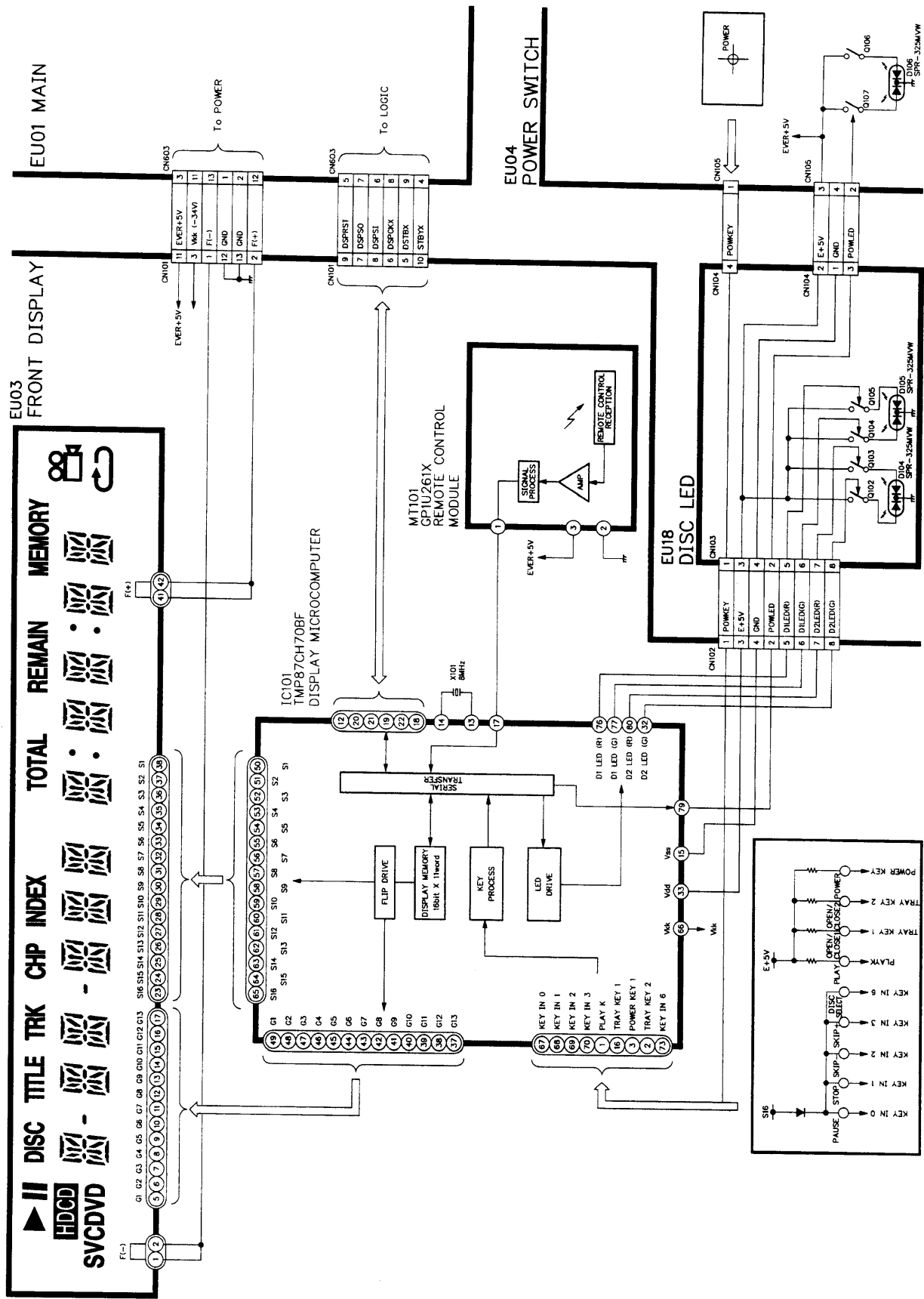
Fig. 3-4-3

4-3-2. Front Display Pattern

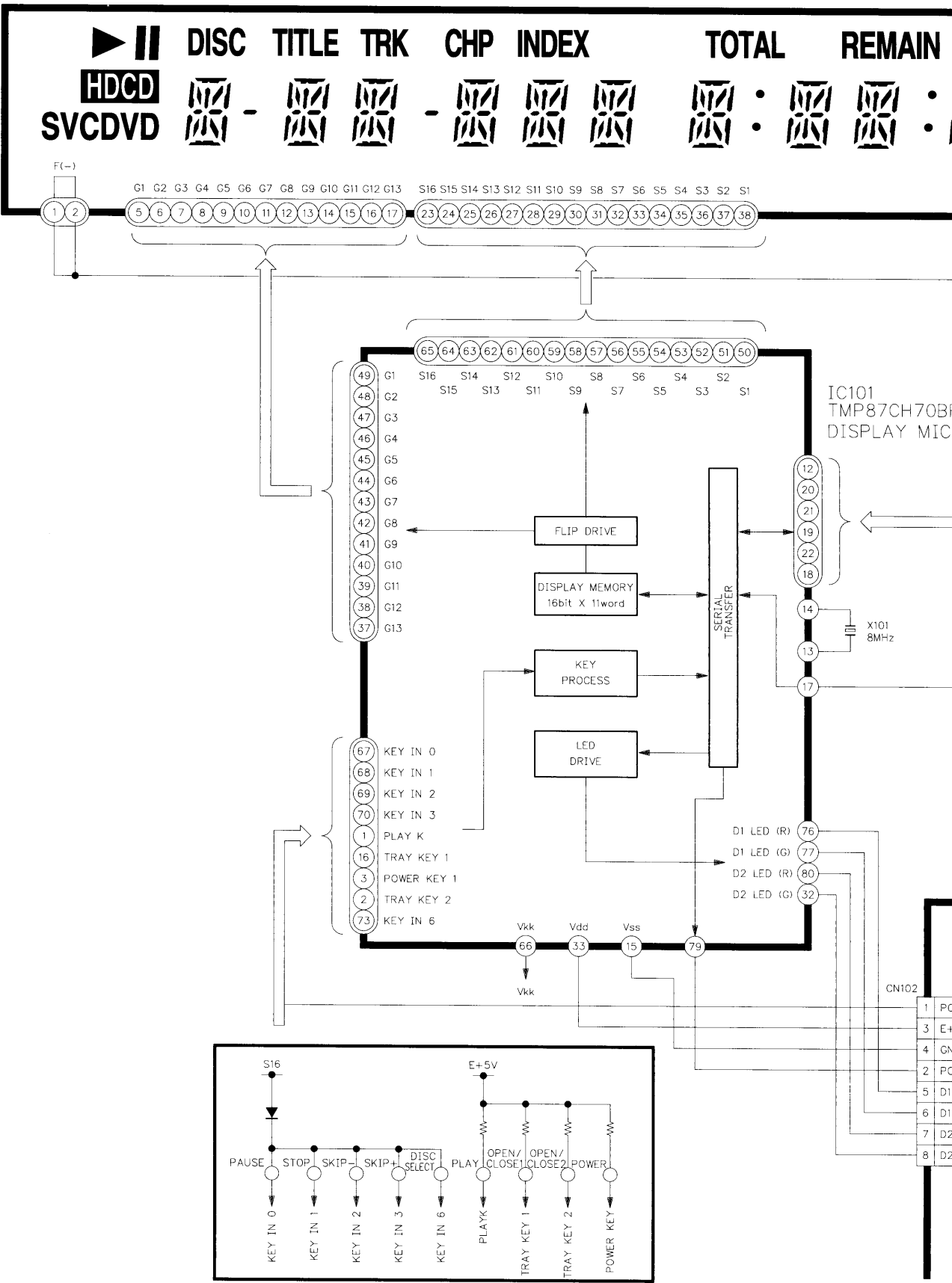
	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G
P1	▶	a	a	a	a	a	a	a	a	a	a	a	—
P2	⏸	b	b	b	b	b	b	b	b	b	b	b	—
P3	V	c	c	c	c	c	c	c	c	c	c	c	—
P4	C	d	d	d	d	d	d	d	d	d	d	d	—
P5	D	e	e	e	e	e	e	e	e	e	e	e	—
P6	VD	f	f	f	f	f	f	f	f	f	f	f	—
P7	S	g	g	g	g	g	g	g	g	g	g	g	—
P8	HD/CD	h	h	h	h	h	h	h	h	h	h	h	—
P9	—	j	j	j	j	j	j	j	j	j	j	j	⏹
P10	—	k	k	k	k	k	k	k	k	k	k	k	↺
P11	—	m	m	m	m	m	m	m	m	m	m	m	—
P12	—	n	n	n	n	n	n	n	n	n	n	n	—
P13	—	p	p	p	p	p	p	p	p	p	p	p	—
P14	—	r	r	r	r	r	r	r	r	r	r	r	—
P15	—	-	—	—	-	—	—	col	—	—	col	—	—
P16	—	DISC	TITLE	TRK	CHP	INDEX	—	TOTAL	—	REMAIN	—	MEMORY	—

Fig. 3-4-4

4-3-3. Front Display, Power Switch Block Diagram



4-3-3. Front Display, Power Switch Block Diagram



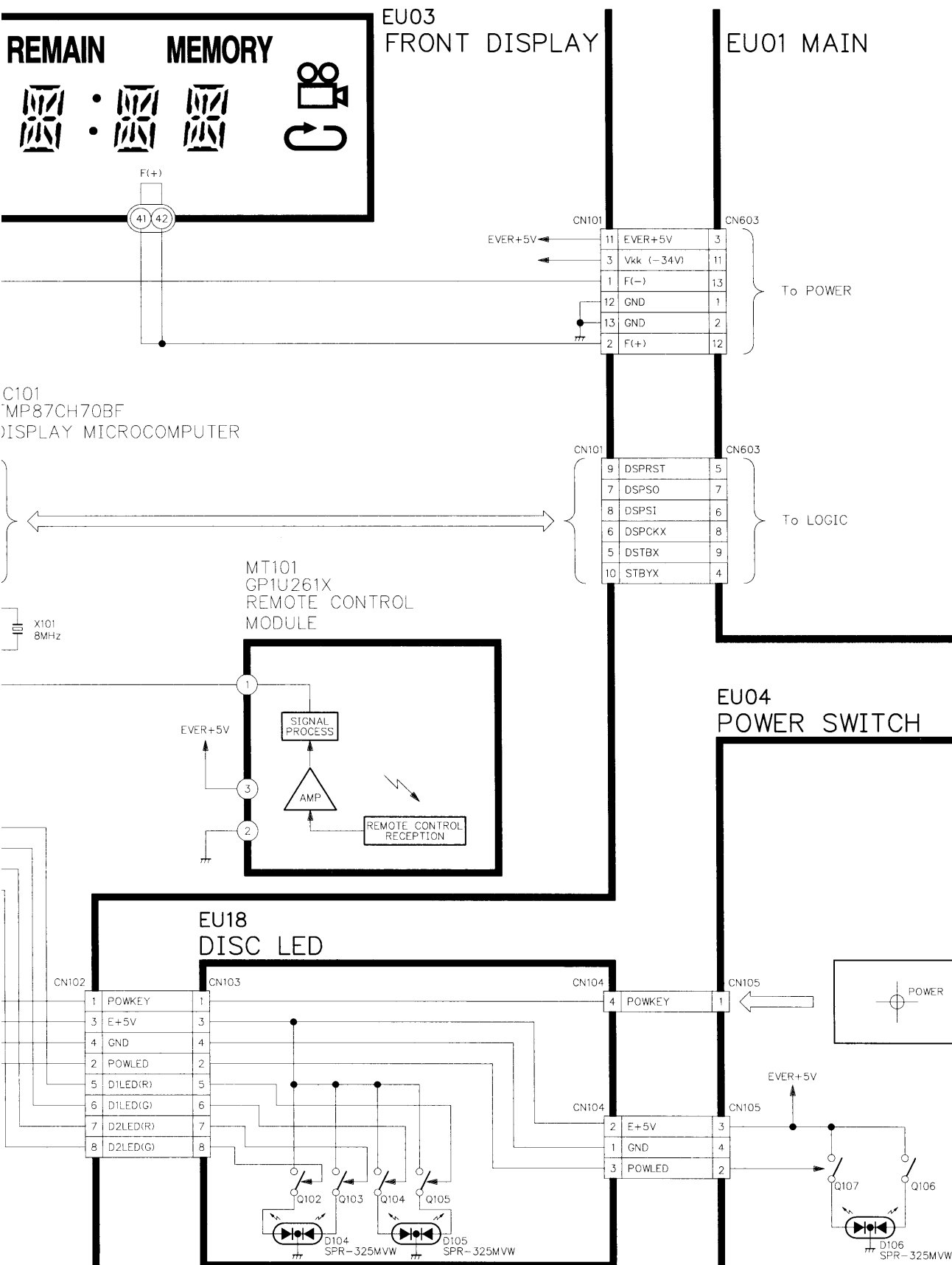
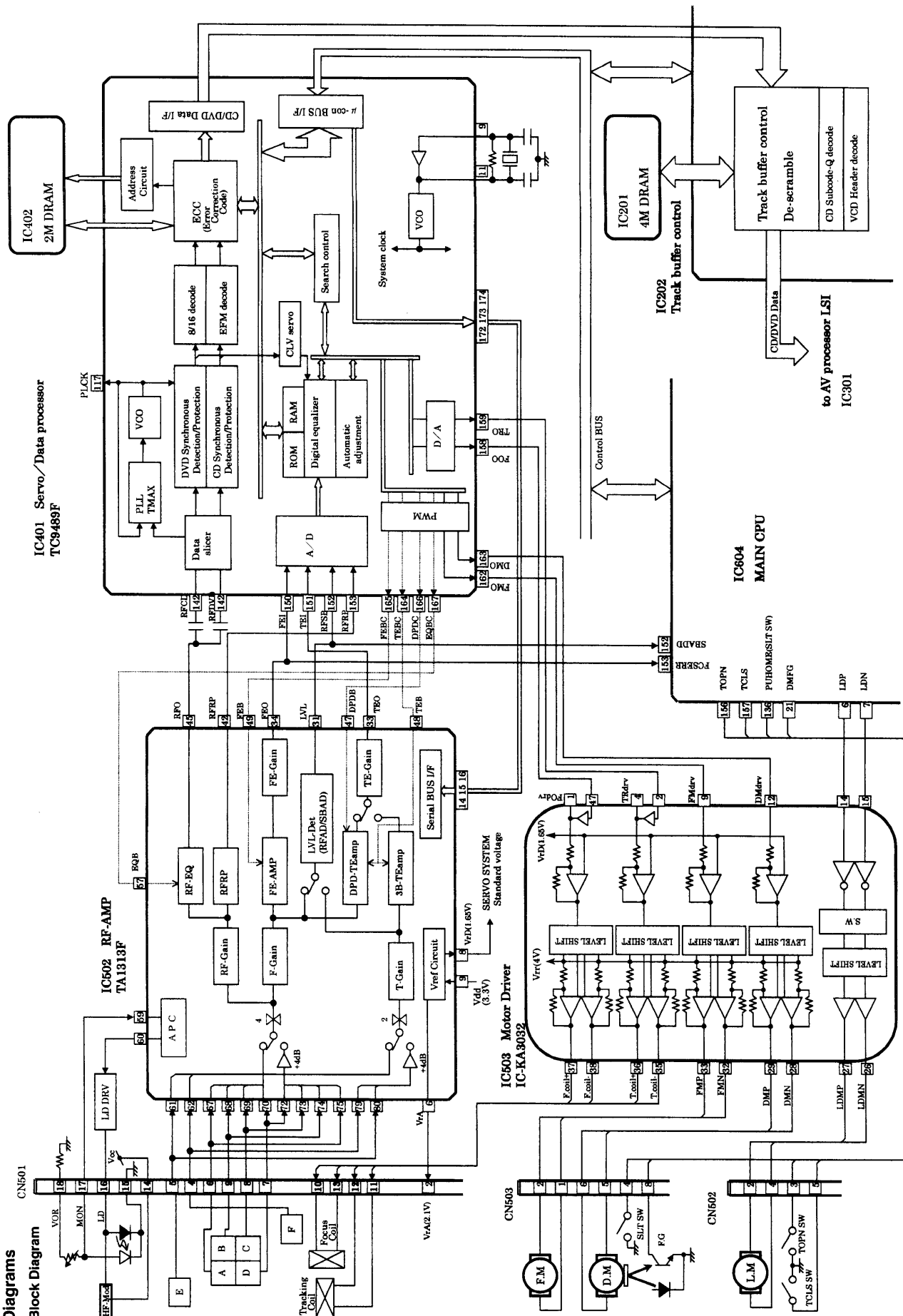


Fig. 3-4-5

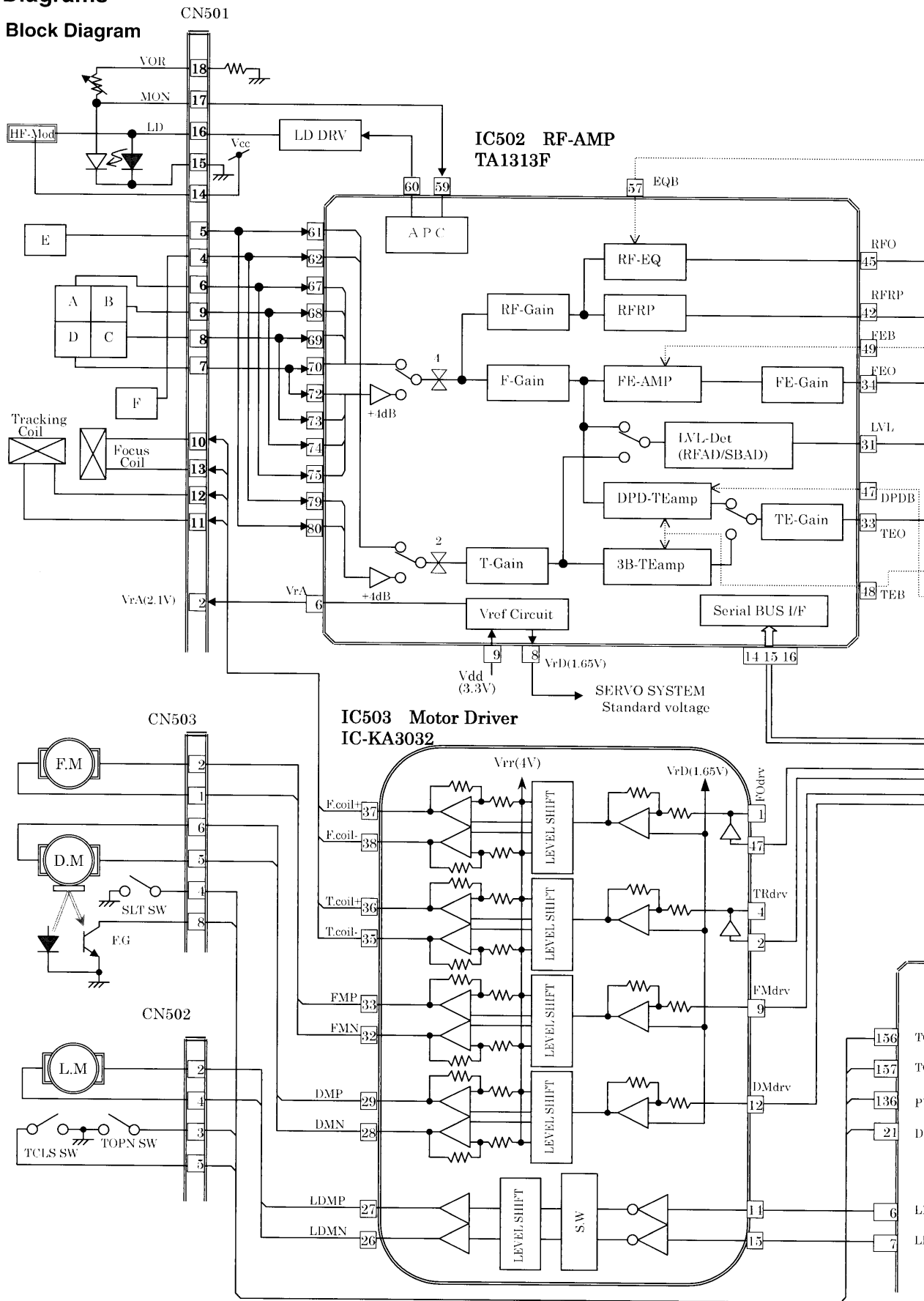
4-4. Main Block Diagrams

4-4-1. Servo System Block Diagram



4-4. Main Block Diagrams

4-4-1. Servo System Block Diagram



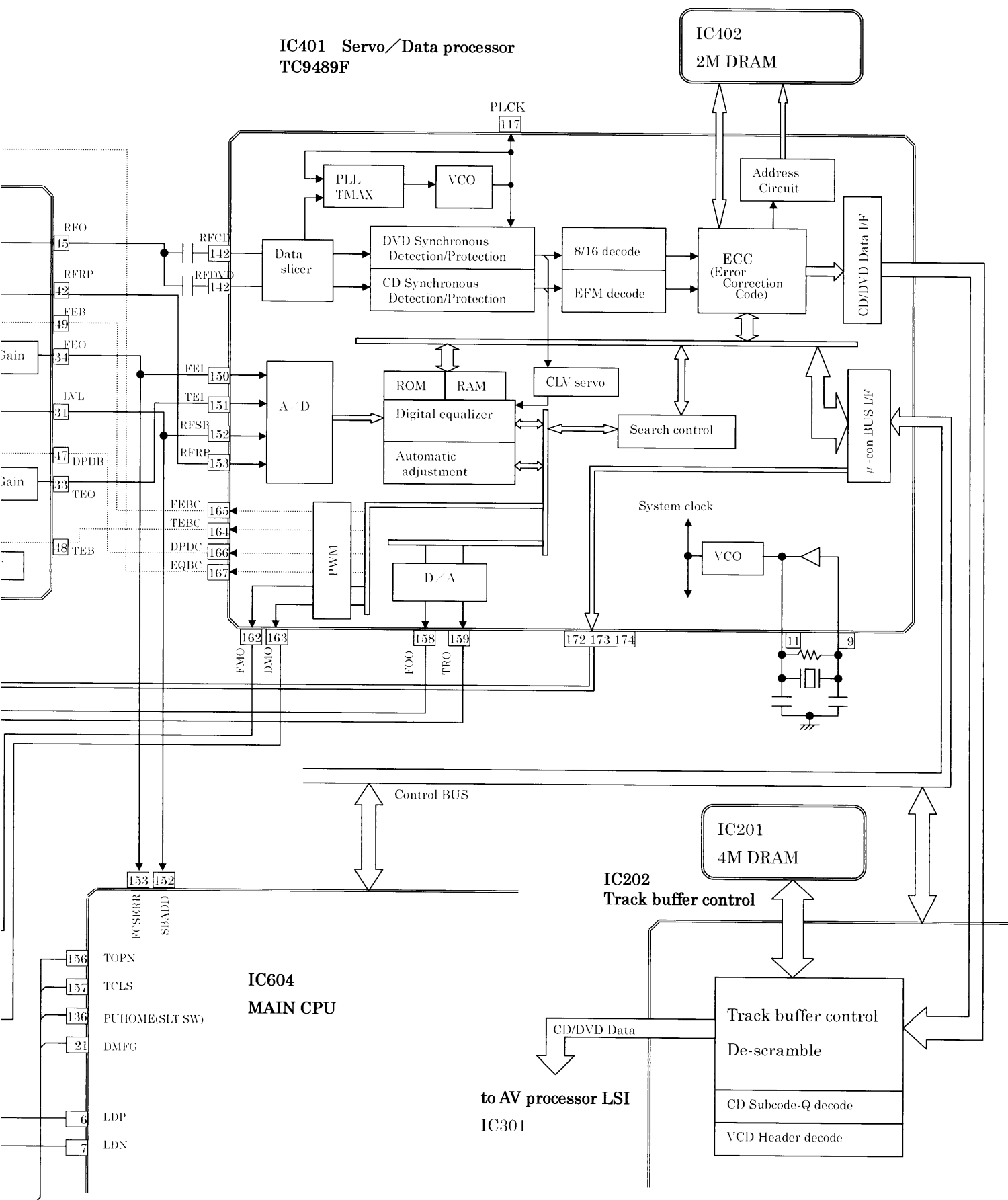


Fig.3-4-6

4-4-2. Logical System Block Diagram

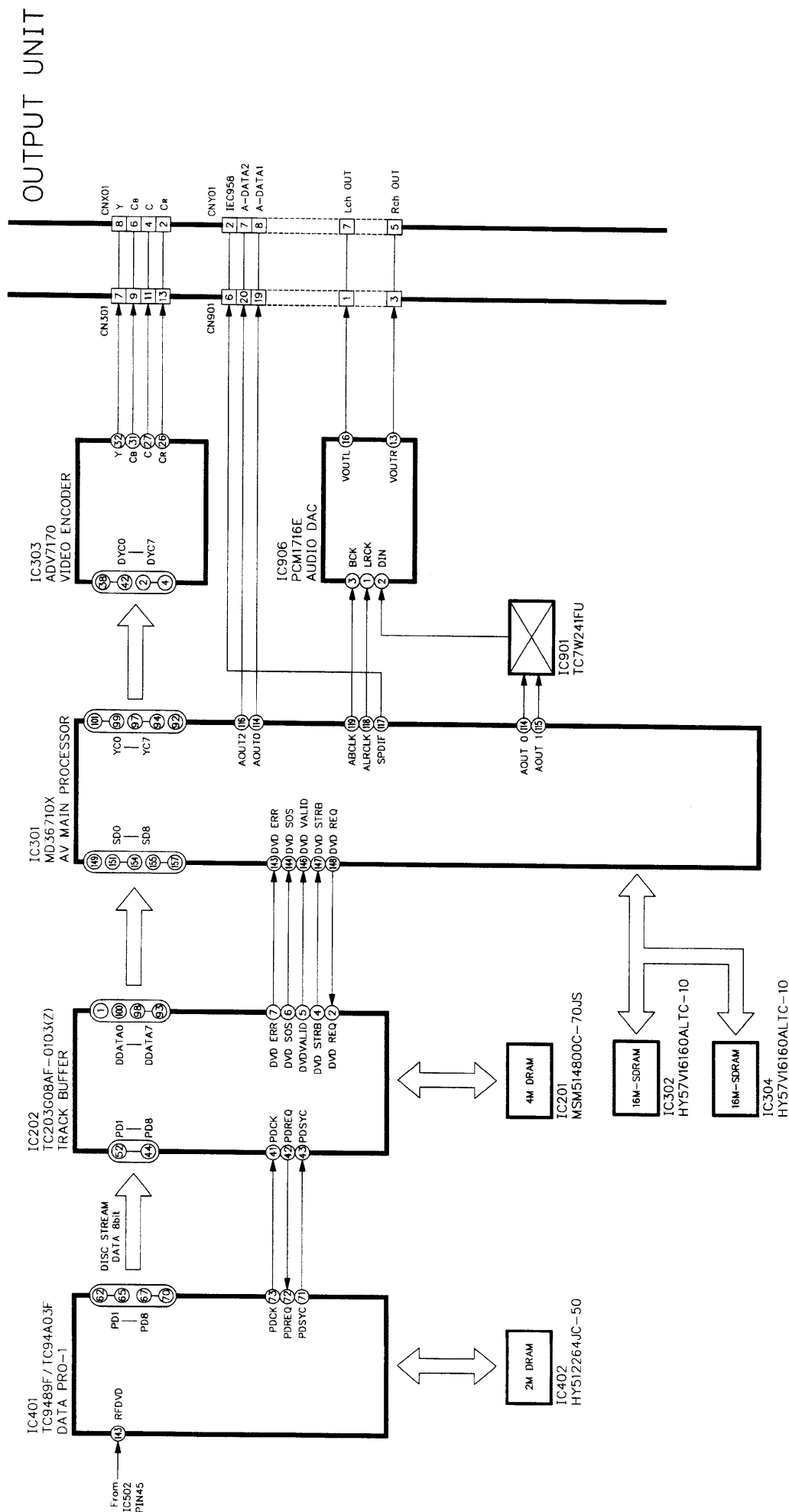
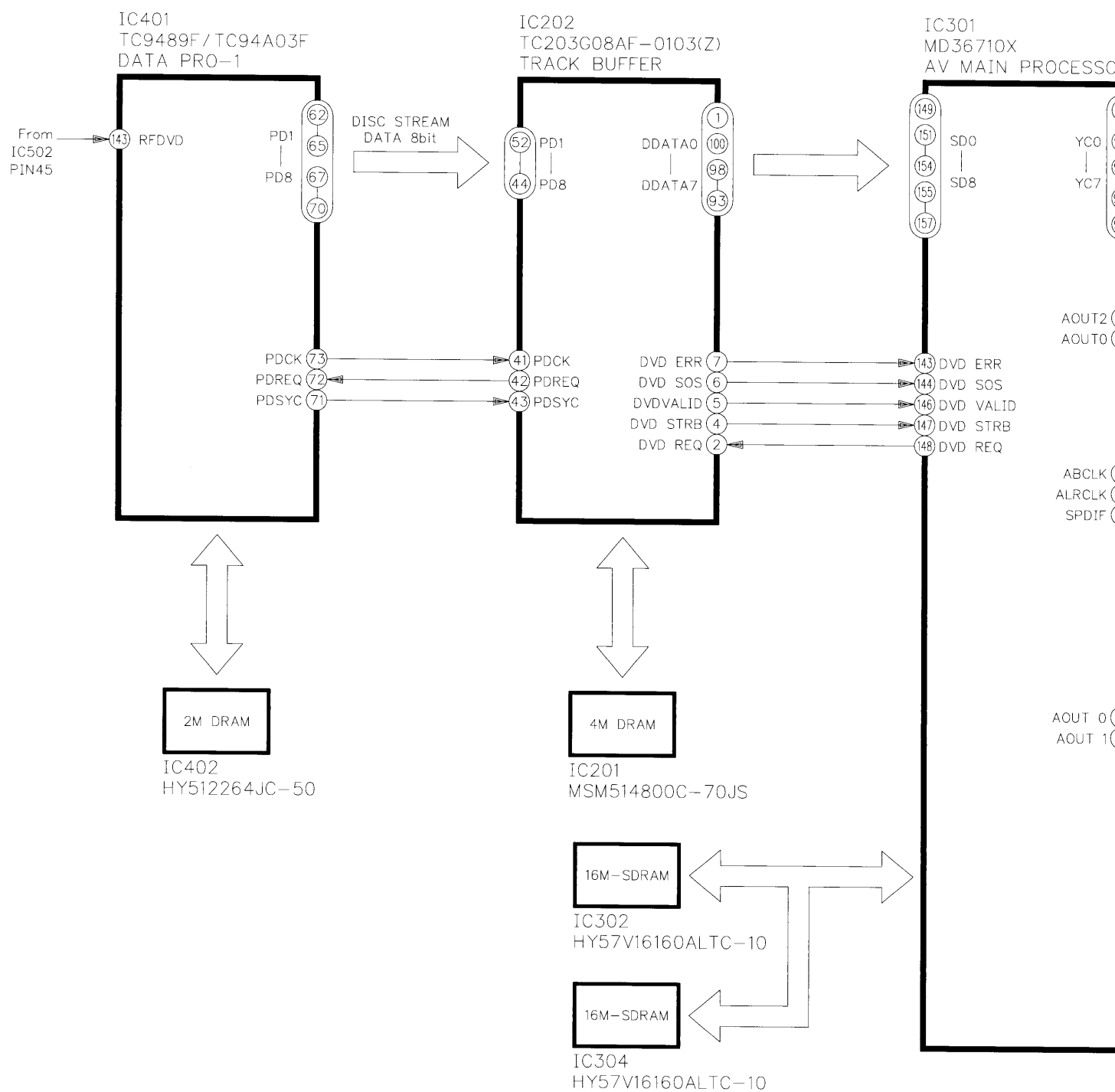
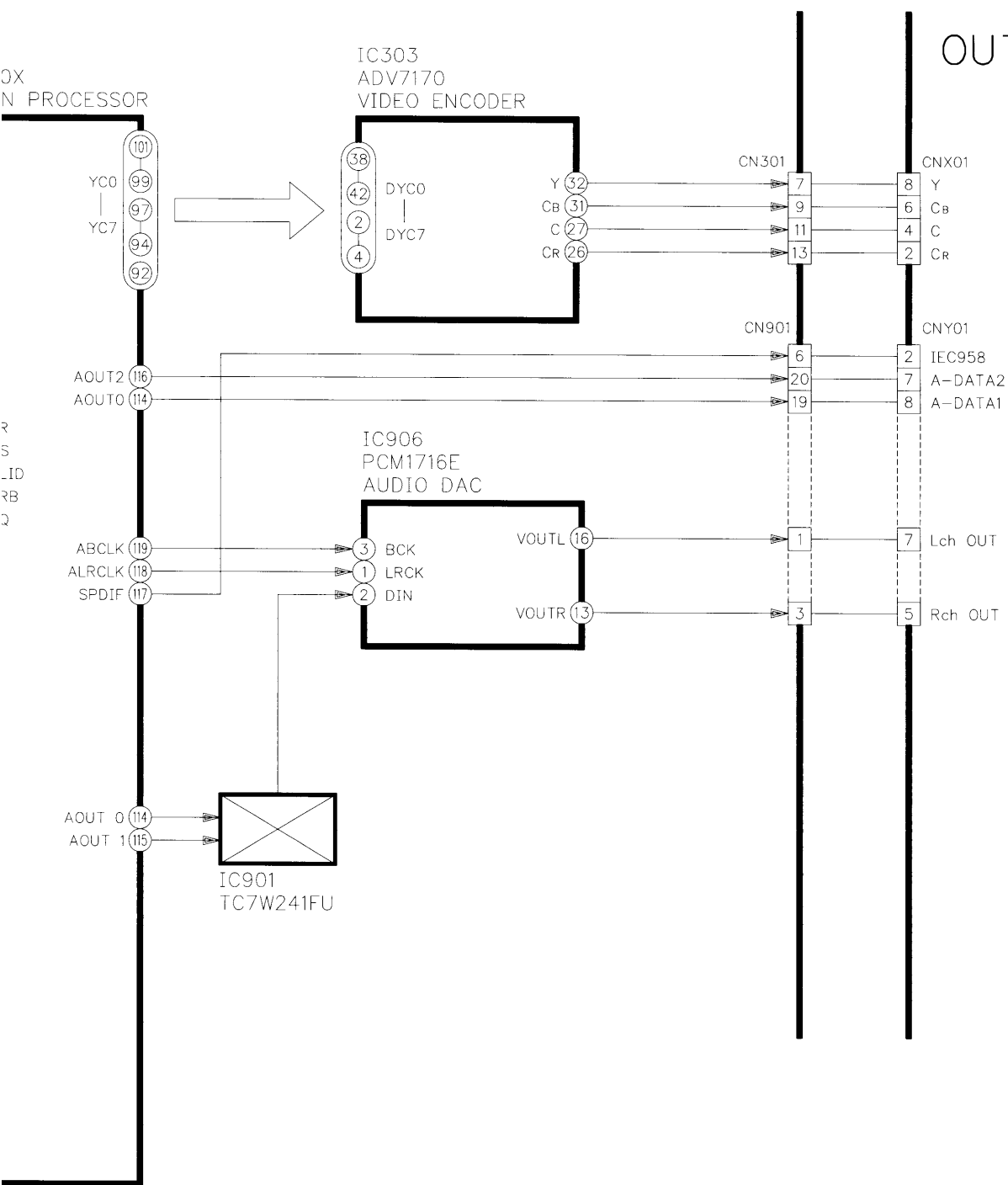


Fig. 3-4-7

4-4-2. Logical System Block Diagram





OUTPUT UNIT

Fig. 3-4-7

5. CIRCUIT DIAGRAMS

4-5. Output Block Diagram

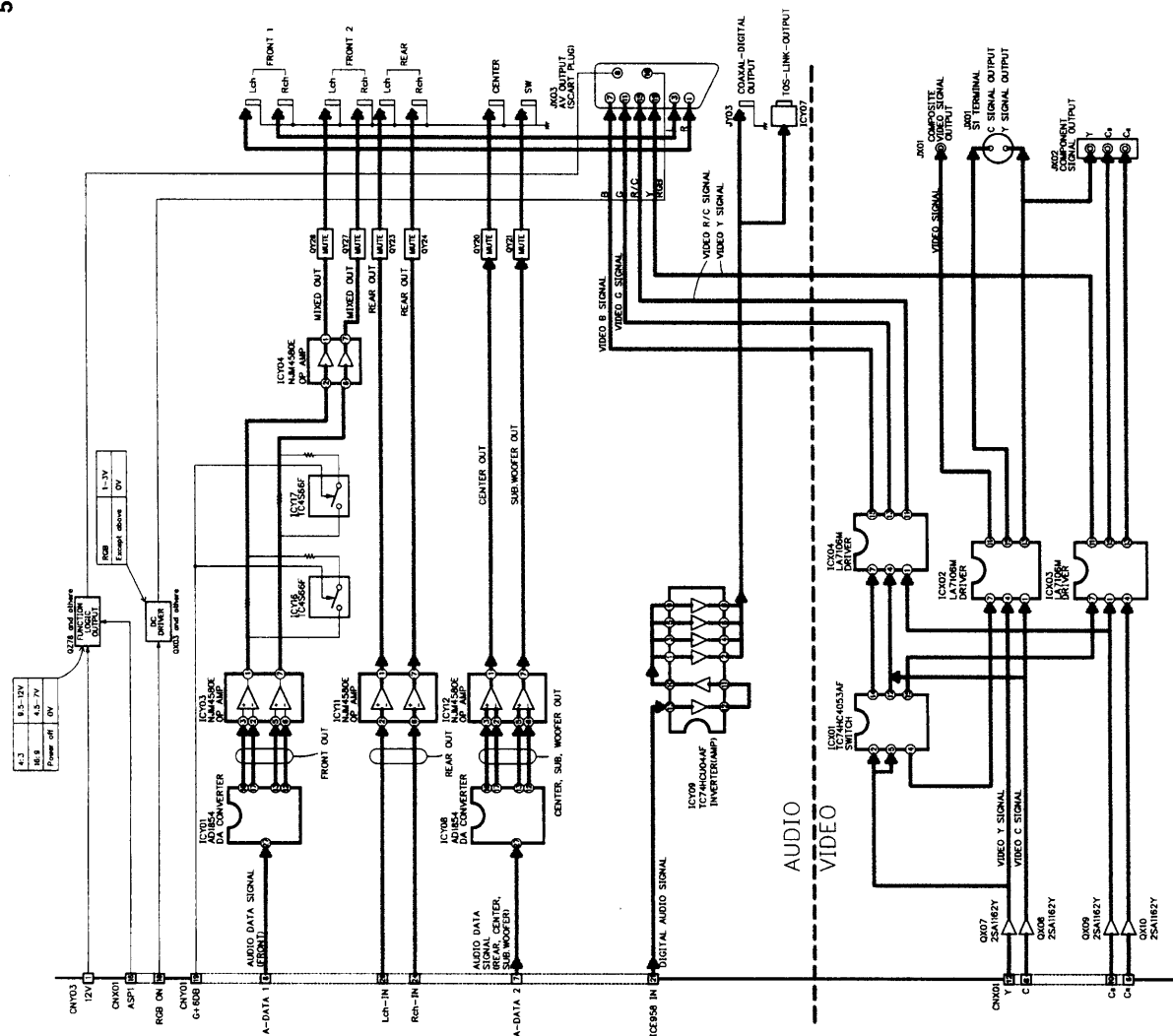


Fig. 3-4-8

5. CIRCUIT DIAGRAMS

5-1. Power Supply Circuit Diagram

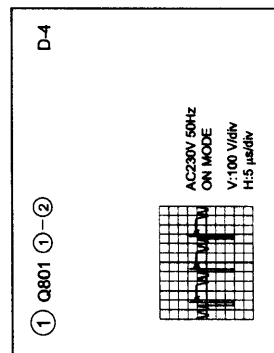


Fig. 3-5-1

Loca- tion	Part No.	Loca- tion	Part No.	Loca- tion	Part No.	Loca- tion	Part No.
E2	C801	D4	D807	D4	Q828	C6	
C2	C802	D8	D808	D8	R801	F2	
C3	C803	C3	D809	C3	R802	E2	
C2	C804	D8	D821	C5	R803	C2	
C3	C805	D8	D822	C8	R804	C4	
C4	C806	D8	D823	C5	R805	C4	
C4	C807	D8	D824	C8	R806	C3	
C3	C808	D8	D825	D5	R807	C3	
C8	C809	D4	D826	E5	R808	E4	
D4	C810	D4	D827	B5	R809	D4	
E3	C811	E4	D828	B6	R810	F4	
E4	C812	E4	D829	C7	R811	D4	
C6	C821	C6	D830	D8	R812	D4	
C2	C822	C6	D831	D7	R813	D4	
C6	C823	C6	D832	E7	R821	F5	
C6	C824	D6	D833	E7	R822	F5	
D6	C825	D6	D834	E7	R823	F5	
C8	C826	D6	D835	E6	R824	F5	
B6	C827	B6	D836	B6	R825	F5	
C8	C828	D7	D837	B7	R826	D6	
D7	C829	D7	D838	B7	R827	D6	
C8	C830	D7	D842	C7	R828	D7	
D8	C831	D8	F801	E2	R829	D8	
C7	C832	B7	F821	B5	R830	C7	
C8	C833	B7	F822	C3	R831	D7	
C3	C834	C7	F823	C6	R832	C7	
B6	C835	B6	L801	C4	R833	D7	
B6	C836	B6	L821	B6	R835	E6	
C7	C837	C7	P802	F2	R837	D6	
C8	C838	C8	P801	D3	R838	B6	
C7	C839	C7	Q801	E5	R839	C8	
C8	C840	C8	Q821	F5	R840	D7	
B9	C8602	B9	R822	F6	R841	D7	
C8	C8603	C8	R823	F6	R842	B7	
C2	C8604	C2	Q824	D7	R843	C8	
C2	C8605	C2	Q825	C7	RF823	D6	
C8	C8606	C8	Q826	B7	T801	D2	
C4	C8607	C4	Q827	B6	T802	B5	

4-5. Output Block Diagram

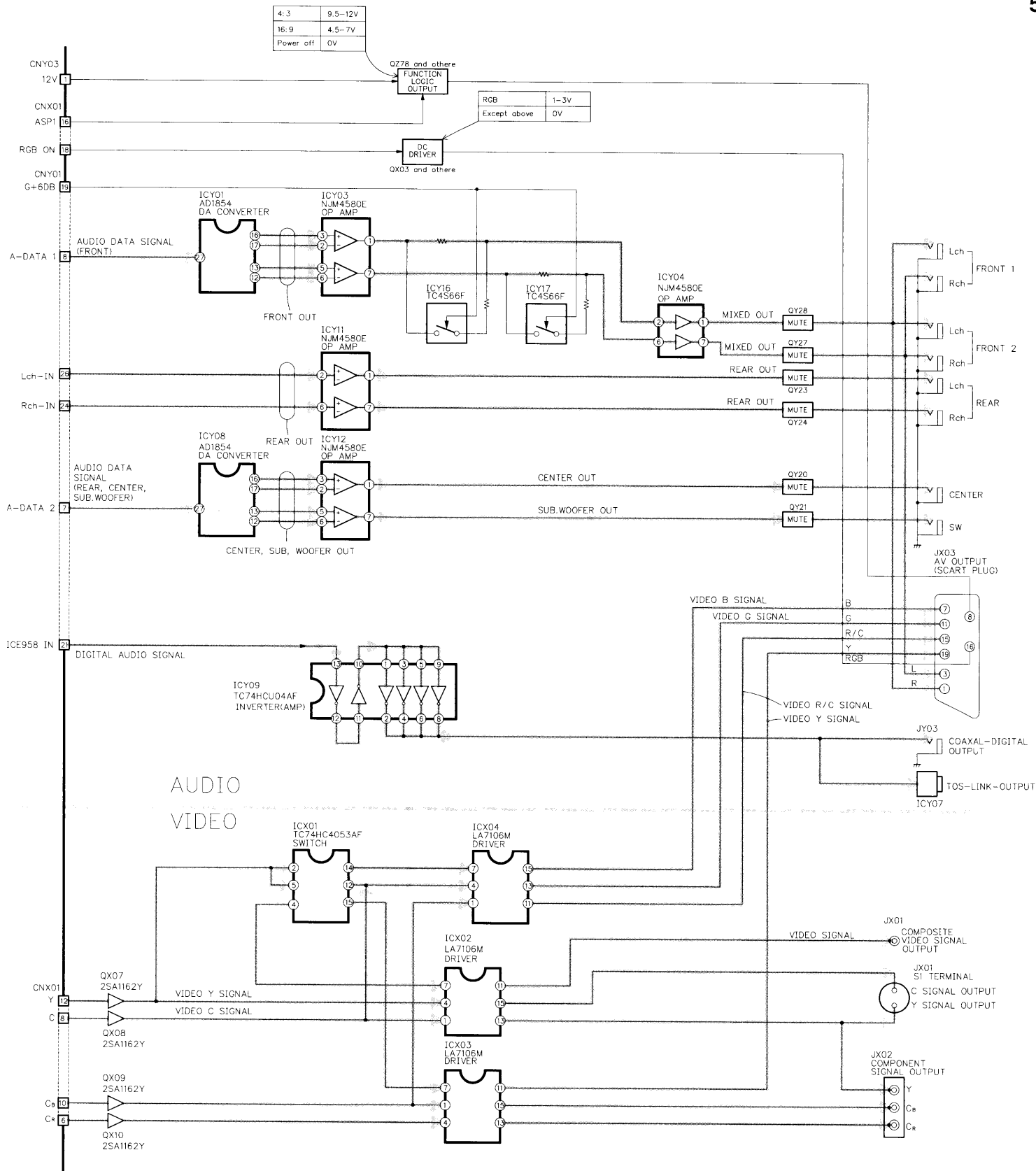


Fig. 3-4-8

5. CIRCUIT DIAGRAMS

5-1. Power Supply Circuit Diagram

Lch
Rch
FRONT 1

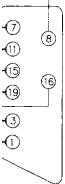
Lch
Rch
FRONT 2

Lch
Rch
REAR

CENTER

SW

IX03
4V OUTPUT
SCART PLUG)



COAXIAL-DIGITAL
OUTPUT

TOS-LINK-OUTPUT

7

ITE
SIGNAL

RMINAL

NAL OUTPUT

NAL OUTPUT

UT

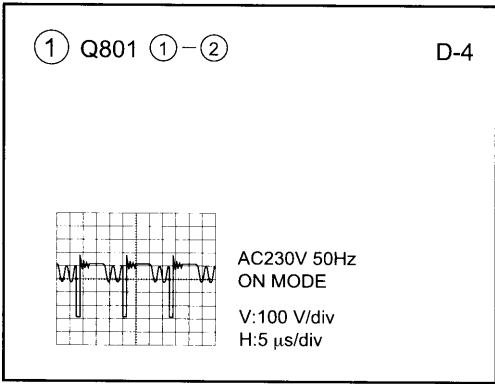
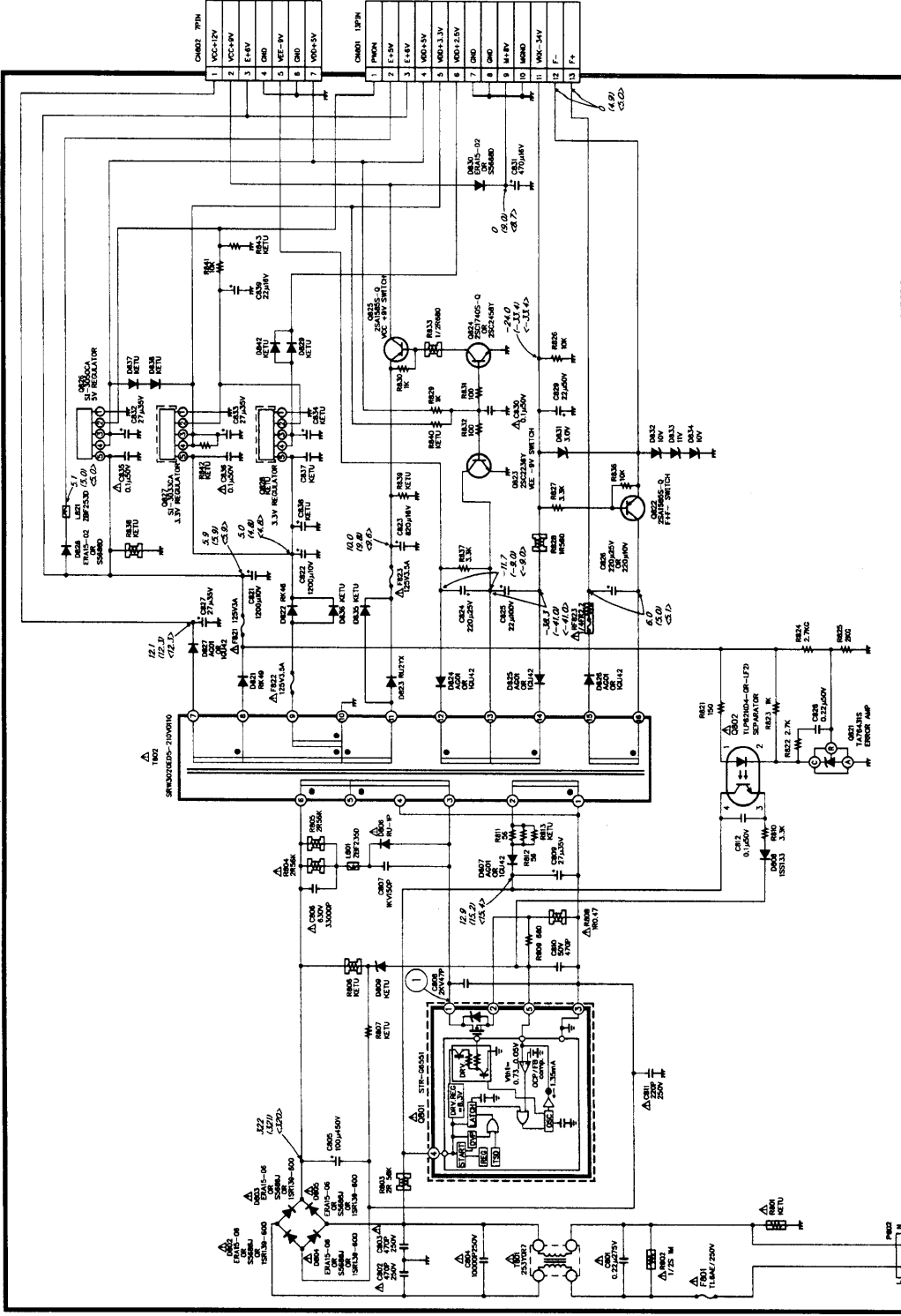


Fig. 3-5-1

Part No.	Loca- tion	Part No.	Loca- tion	Part No.	Loca- tion
C801	E2	D807	D4	Q828	C6
C802	C2	D808	F4	R801	F2
C803	C2	D809	C3	R802	E2
C804	D2	D821	C5	R803	C2
C805	C3	D822	C6	R804	C4
C806	C4	D823	C5	R805	C4
C807	C4	D824	D5	R806	C3
C808	D4	D825	D5	R807	C3
C809	D4	D826	E5	R808	E4
C810	D4	D827	B5	R809	D4
C811	E3	D828	B6	R810	F4
C812	E4	D829	C7	R811	D4
C821	C6	D830	D8	R812	D4
C822	C6	D831	D7	R813	D4
C823	C6	D832	E7	R821	E5
C824	D6	D833	E7	R822	F5
C825	D6	D834	E7	R823	F5
C826	E6	D835	C6	R824	F5
C827	B6	D836	C6	R825	F5
C828	F5	D837	B7	R826	D7
C829	D7	D838	B7	R827	D6
C830	D7	D842	C7	R828	D6
C831	D8	F801	E2	R829	D7
C832	B7	F821	B5	R830	C7
C833	B7	F822	C5	R831	D7
C834	C7	F823	C6	R832	D7
C835	B6	L801	C4	R833	D7
C836	B6	L821	B6	R836	E6
C837	C6	P802	F2	R837	D6
C838	C6	Q801	D3	R838	B6
C839	C7	Q802	E5	R839	C6
CN801	C9	Q821	F5	R840	D7
CN802	B9	Q822	E6	R841	B7
D802	B2	Q823	D6	R842	B6
D803	C2	Q824	D7	R843	C8
D804	C2	Q825	C7	RF823	D6
D805	C2	Q826	B7	T801	D2
D806	C4	Q827	B6	T802	B5

Fig. 3-4-8

POWER



		Q621		Q622		Q623		Q624		Q625	
A	C	A	C	A	C	A	C	A	C	A	C
OFF	0	4.6	2.5	-23.0	-23.0	0	12.0	0	10.0	0	10.0
ON	0	4.7	2.5	-50.0	-50.0	0	0.7	0	0.7	0	0.7
PLAY	0	4.7	2.5	-50.0	-50.0	0	0.7	0	0.7	0	0.7

		Q626		Q627		Q628		Q629		Q630	
A	C	A	C	A	C	A	C	A	C	A	C
OFF	0	0	0	0	0	0	0	0	0	0	0
ON	0	0	0	0	0	0	0	0	0	0	0
PLAY	0	0	0	0	0	0	0	0	0	0	0

Fig. 3-5-2

G

	Q826					Q827					(V)
	1	2	3	4	5	1	2	3	4	5	
OFF	0	0	0	0	5.9	0	0	0	0	5.0	
ON	0	5.0	5.0	5.0	5.9	0	5.0	3.3	3.3	4.8	
PLAY	0	5.0	5.0	5.0	5.9	0	5.0	3.3	3.3	4.8	

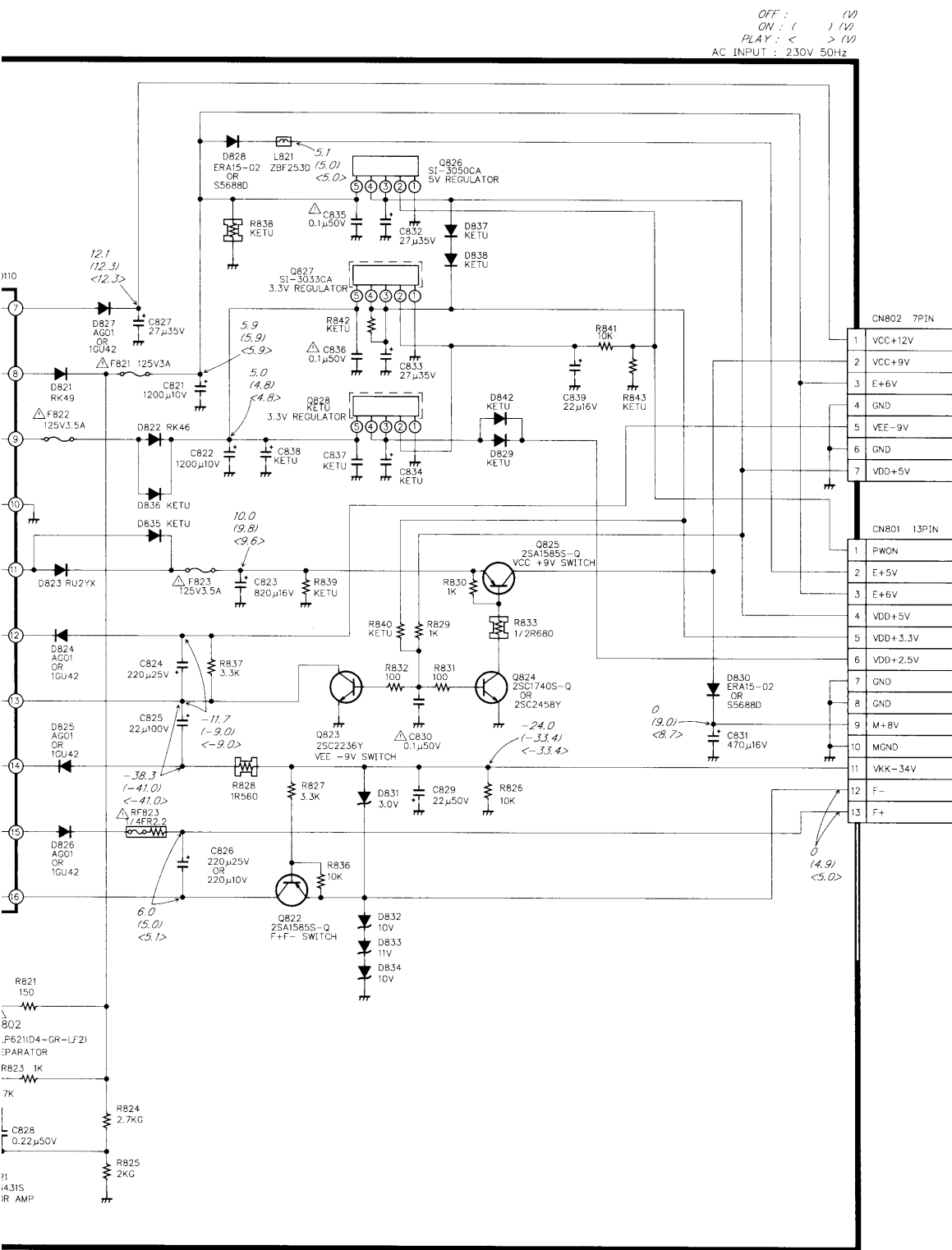


Fig. 3-5-2

5-2. Front Display, Power Switch Circuit Diagram

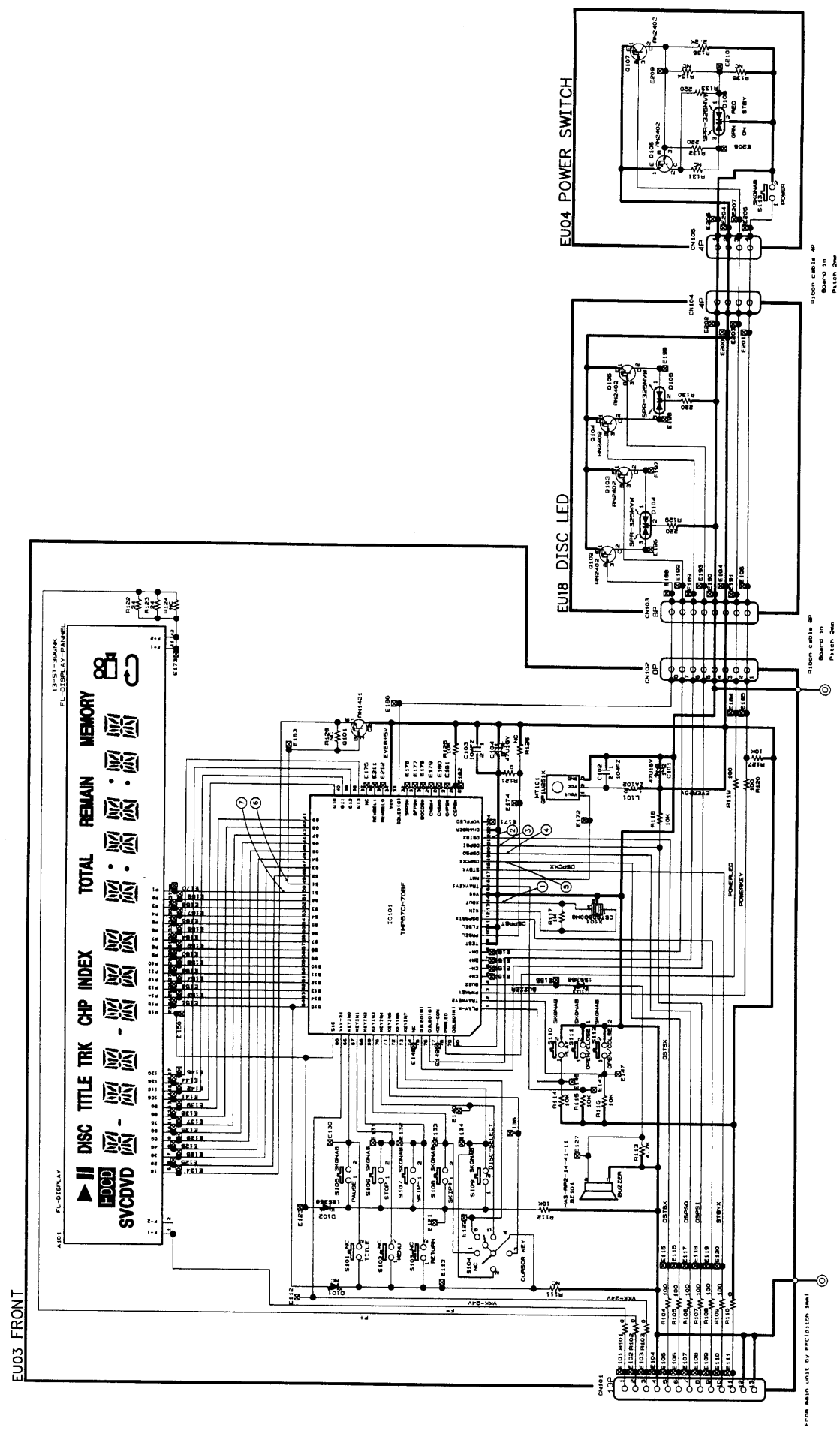


Fig. 3-5-3

1

2

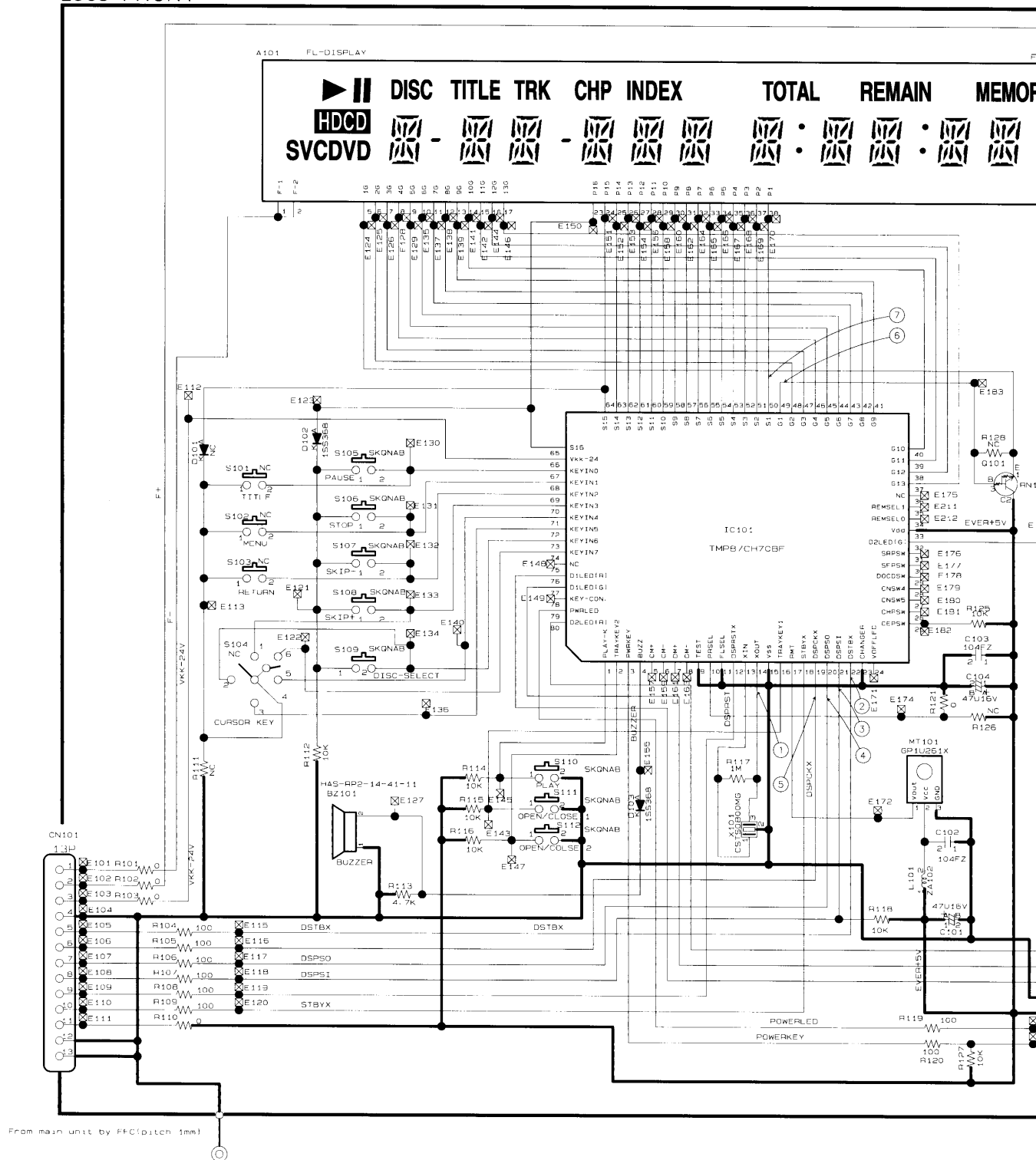
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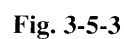
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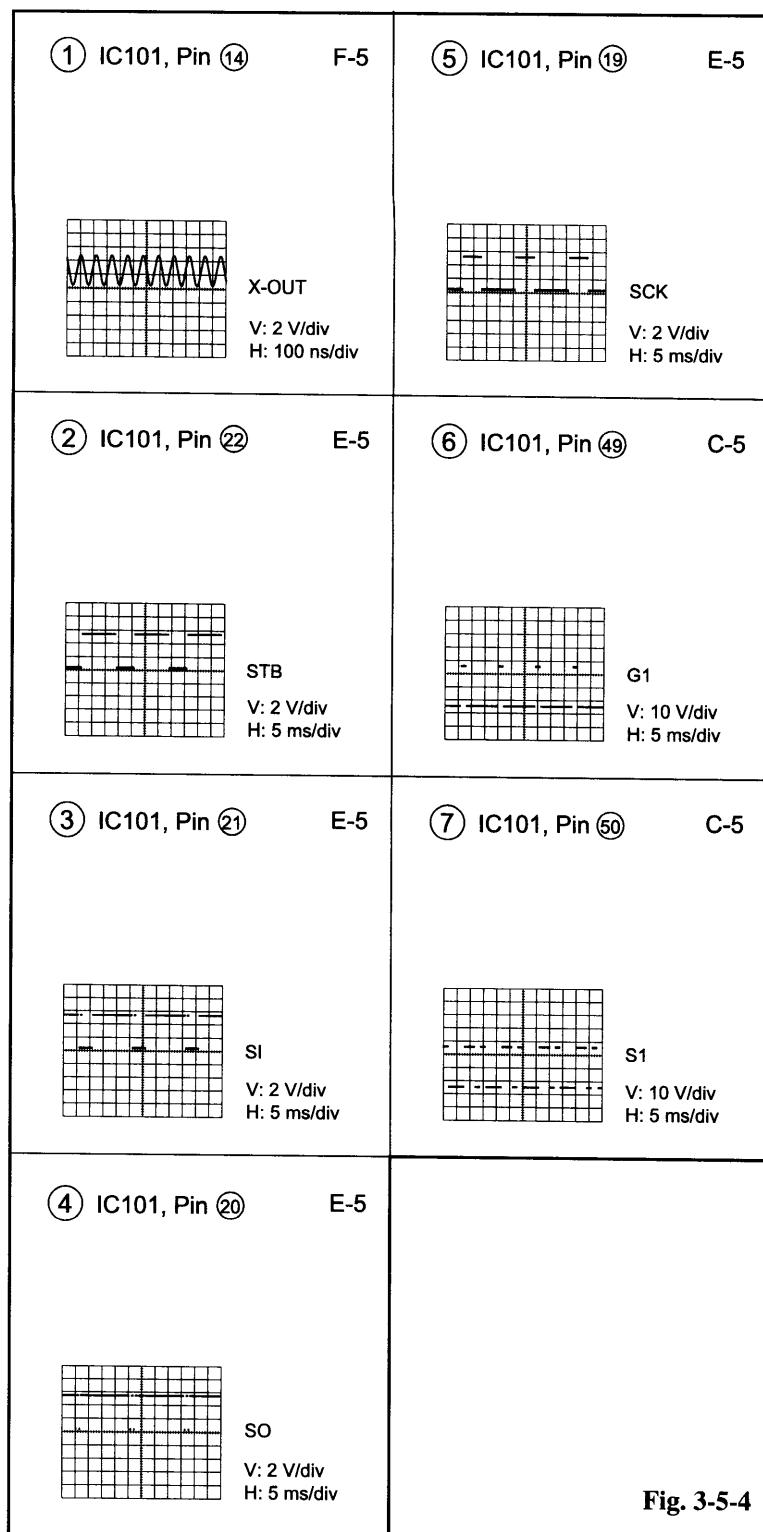
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5-2. Front Display, Power Switch Circuit Diagram

EU03 FRONT







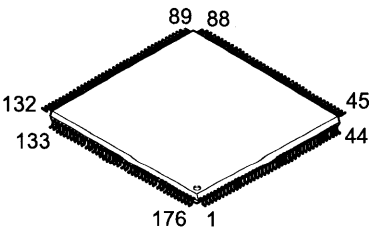
Part No.	Location	Part No.	Location	Part No.	Location
A101	B2	E147	E3	E210	F10
BZ101	E3	E148	D3	E211	D5
C101	F5	E149	D3	E212	D5
C102	E5	E150	B4	IC101	D4
C103	D5	E151	B4	L101	E5
C104	D5	E152	B4	MT101	E5
CN101	E1	E153	B4	Q101	C6
CN102	F6	E154	B4	Q102	E7
CN103	F6	E155	E4	Q103	E7
CN104	F8	E156	B4	Q104	E8
CN105	F9	E157	E4	Q105	E8
D101	C2	E158	B4	Q106	F9
D102	C2	E159	E4	Q107	E10
D103	E4	E160	B4	R101	E2
D104	F7	E161	E4	R102	E2
D105	F8	E162	B4	R103	F2
D106	F10	E163	E4	R104	F2
E101	E1	E164	B4	R105	F2
E102	E1	E165	B4	R106	F2
E103	F1	E166	B4	R107	F2
E104	F1	E167	B4	R108	F2
E105	F1	E168	B4	R109	F2
E106	F1	E169	B5	R110	F2
E107	F1	E170	B5	R111	E2
E108	F1	E171	E5	R112	E2
E109	F1	E172	E5	R113	E3
E110	F1	E173	B6	R114	E3
E111	F1	E174	E5	R115	E3
E112	C2	E175	D5	R116	E3
E113	D2	E176	D5	R117	E4
E115	F2	E177	D5	R118	F5
E116	F2	E178	D5	R119	F5
E117	F2	E179	D5	R120	F5
E118	F2	E180	D5	R121	E5
E119	F2	E181	D5	R122	B6
E120	F2	E182	D5	R123	B6
E121	D2	E183	C6	R124	B6
E122	D2	E184	F6	R125	D5
E123	C2	E185	F6	R126	E6
E124	B3	E186	D6	R127	F5
E125	B3	E188	F7	R128	C6
E126	B3	E189	F7	R129	F7
E127	E3	E190	F7	R130	F8
E128	B3	E191	F7	R131	F9
E129	B3	E192	F7	R132	F9
E130	C3	E193	F7	R133	F10
E131	D3	E194	F7	R134	F10
E132	D3	E195	F7	R135	F10
E133	D3	E196	F7	R136	F10
E134	D3	E197	F7	S101	D2
E135	B3	E198	F8	S102	D2
E136	E3	E199	F8	S103	D2
E137	B3	E200	F8	S104	D2
E138	B3	E201	F8	S105	C3
E139	B3	E202	F8	S106	D3
E140	D3	E203	F8	S107	D3
E141	B3	E204	F9	S108	D3
E142	B3	E205	F9	S109	D3
E143	E3	E206	F9	S110	E4
E144	B3	E207	F9	S111	E4
E145	E3	E208	F9	S112	E4
E146	B3	E209	F10	S113	F9
				X101	E4

Fig. 3-5-4

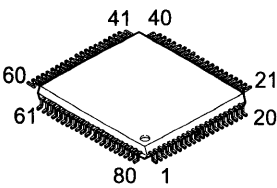
5-3. Main Circuit Diagram

5-3-1. New Main ICs Information

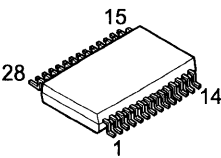
TC9489F
TC94A03F



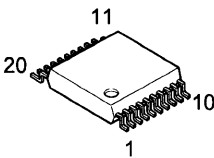
TA1313F



PCM1716-E



PLL1700E



Main ICs Function

Table 3-5-1

Ref. No.	IC Name	Function	Detail
IC601	S24C04BFJ-TB	EE-PROM	Setup default, memorization of specification setting.
IC303	ADV7170	Video Encoder	Built-in D/A converter. Encodes digital video signal to analog video signal of NTSC/PAL system.
IC301	MD36710X	AV Decoder	Decryption, MPEG-2 Decode, Audio Decode, Sub Picture Decode, OSD.
IC401	TC9489F/TC94A03F	SERVO & Data Processor	Performs servo control of DVD or CD, and performs demodulation and correction of RF signal.
IC502	TA1313F	RF Signal processing IC	Equalizes of playback RF signal and generates error detection signal required for each servo operation.
IC503	KA3032	5-CH Motor Driver	5ch driver for motor driving.
IC906	PCM1716E	DA Converter	Stereo audio DA converter with a dual PPL built-in.
IC604	TMP94CS40AF	Main Micro Processor	Performs system control for all circuits.
IC202	TC203G08F0103	Track Buffer	Rate control and Buffer control.
IC606	MBM29F800TB-55	Flash ROM	Memorization for firmware.

Table 3-5-2 PCM1716E-T

Pin No.	Name	Function
1	LRCIN	Left and Right Clock Input. This clock is equal to the sampling rate - f_s . ⁽¹⁾
2	DIN	Serial Audio Data Input. ⁽¹⁾
3	BCKIN	Bit Clock Input for Serial Audio Data. ⁽¹⁾
4	CLKO	Buffered Output of Oscillator. Equivalent to System Clock.
5	XTI	Oscillator Input (External Clock Input)
6	XTO	Oscillator Output
7	DGND	Digital Ground
8	V _{DD}	Digital Power +5V
9	V _{CC2R}	Analog Power +5V
10	AGND2R	Analog Ground
11	EXTR	Rch, Common Pin of Analog Output Amp
12	NC	No Connection
13	V _{OUTR}	Rch, Analog Voltage Output of Audio Signal
14	AGND1	Analog Ground
15	V _{CC1}	Analog Power +5V
16	V _{OUTL}	Lch, Analog Voltage Output of Audio Signal
17	NC	No Connection
18	EXTL	Lch, Common Pin of Analog Output Amp
19	AGND2L	Analog Ground
20	V _{CC2L}	Analog Power +5V
21	ZERO	Zero Data Flag
22	RST	Reset. When this pin is low, the DF and modulators are held in reset. ⁽²⁾
23	CS/IWO	Chip Select/Input Format Selection. When this pin is low, the Mode Control is effective. ⁽³⁾
24	MODE	Mode Control Select. (H: Software, L: Hardware) ⁽²⁾
25	MUTE	Mute Control.
26	MD/DM0	Mode Control, DATA/De-emphasis Selection 1 ⁽²⁾
27	MC/DM1	Mode Control, BCK/De-emphasis Selection 2 ⁽²⁾
28	ML/I ² S	Mode Control, WDCK/Input Format Selection ⁽²⁾

Notes: (1) Pins 1,2,3; Schmitt Trigger input
(2) Pins 22,24,25,26,27,28; Schmitt Trigger input with pull-up resistor.
(3) Pin 23; Schmitt Trigger input with pull-down resistor.

Table 3-5-3 PLL1700E-T

Pin No.	Name	Function
1	ML/SR0	Latch Enable for Software Mode/Sampling Rate Selection for Hardware Mode. When MODE pin is LOW, ML is selected. ⁽¹⁾
2	MODE	Mode Control Select. When this pin is HIGH, device is operated in hardware mode using SR0 (pin 1), FS0 (pin 19), and FS1 (pin 20). When this pin is LOW, device is operated in software mode by three-wire interface using ML (pin 1), MD (pin 19) and MC (pin 20). ⁽¹⁾
3	V _{DD}	Digital Power Supply. +5V.
4	GND	Digital Ground.
5	XT2	27MHz Crystal. When an external 27MHz clock is applied to XT1 (pin 6), this pin must be connected to GND.
6	XT1	27MHz Oscillator Input/External 27MHz input.
7	GNDDP	Ground for PLL.
8	V _{DDP}	Power Supply for PLL +5V.
9	RSV	Reserved. Must be left open.
10	MCKO	27MHz Output.
11	MCKO	Inverted 27MHz Output.
12	SCKO1	Fixed 33.8688MHz Clock Output.
13	SCKO4	768/s Clock Output.
14	SCKO2	256/s Clock Output.
15	GNDB	Digital Ground for V _{DC8}
16	V _{DC8}	Digital Power Supply for Clock Output Buffers. +3.3V.
17	SCKO3	3841/s Output. This output has been optimized for the lowest jitter and should be connected to the audio DAC(s).
18	RST	Reset. When this pin is LOW, device is held in reset. ⁽¹⁾
19	MD/FS0	Serial Data Input for Software Mode/ Sampling Frequency Selection for Hardware Mode. When MODE pin is LOW, MD is selected. ⁽¹⁾
20	MC/FS1	Shift Clock Input for Software Mode/ Sampling Frequency Selection for Hardware Mode. When MODE pin is LOW, MC is selected. ⁽¹⁾

Note:(1) Schmitt-trigger input with internal pull-down resistors.

Table 3-5-4 TA1313F (1/2)

Pin No.	Name	Function
1	GNDP	GND terminal
2	LDO2	Drive output 2
3	MD2	Monitor input 2
4	NC	—
5	NC	—
6	VrA	Analog VREF
7	Vrfi	Filter capacity for the reference
8	VrD	Digital VREF
9	Vdd	Power supply terminal
10	DPAC	DPD interchange combination capacity 1
11	DPBD	DPD interchange combination capacity 2
12	DPD1	DPD integral capacity 1
13	DPD2	DPD integral capacity 2
14	SCB	Control line (bit clock)
15	SCL	Control line (latch signal)
16	SCD	Control line (serial data)
17	VRCK	Input of standard clock
18	NC	—
19	NC	—
20	VCKF	Capacity for the VRCK time constant adjustment
21	VccP	Power supply terminal
22	NC	—
23	NC	—
24	NC	—
25	DFIN	DPD filter capacity 1
26	DFHPF	DPD filter capacity 2
27	VccS	Power supply terminal (servo)
28	DFLPF	DPD filter capacity 2 (LPF)
29	NC	—
30	NC	—
31	LVL	Servo addition output
32	NC	—
33	TEO	TE ouptut
34	FEO	FE output
35	NC	—
36	NC	—
37	DFLVL	Defect detection threshold value
38	NC	—
39	NC	—
40	DFTN	DPD defect
41	RPZ	RF ripple ouptut 2
42	RPO	RF ripple output 1
43	RPB	The bottom of the RF ripple
44	RPP	The peak of the RF ripple
45	RFO	Equivalent RF ouptut
46	VccR	Power supply terminal
47	DPDB	Pit depth adjustment
48	TEB	TE balance
49	FEB	FE balance
50	TCC	Time constant adjustment

Table 3-5-4 TA1313F (2/2)

Pin No.	Name	Function
51	—	—
52	Vcc2	Power supply terminal
53	NC	—
54	NC	—
55	GND2	GND terminal
56	RFDC	DC feedback capacity
57	EQB	Boost adjustment
58	EQF	Frequency adjustment
59	MDI1	Input of monitor
60	LDO1	Drive output
61	P1TN	TE-Input (DVD)
62	P1TP	TE+Input (DVD)
63	P1FN	FE-Input (DVD)
64	P1FP	FE+Input (DVD)
65	LDP1	APC polarity 1
66	GNDR	GND terminal (RF)
67	P1DI	D input (DVD)
68	P1CI	C input (DVD)
69	P1BI	B input (DVD)
70	P1AI	A input (DVD)
71	LDP2	APC polarity 2
72	P2AI	A input (CD)
73	P2BI	B input (CD)
74	P2CI	C input (CD)
75	P2DI	D input (CD)
76	GNDS	GND terminal (Servo)
77	P2FP	FE+Input (CD)
78	P2FN	FE-Input (CD)
79	P2TP	TE+Input (CD)
80	P2TN	TE-Input (CD)

Table 3-5-5 TC9489F/TC94A03F (1/4)

Pin No.	Name	Function
1	ASLCN	Data slice negative output
2	ASLCO	Analog data slice output
3	DVSS	DAC-only ground
4	RO	R-channel output signal
5	DVDD	DAC-only power supply
6	DVR	Amp reference signal output
7	LO	L-channel output signal
8	DVSS	DAC-only power ground
9	XVSS	Oscillator-only ground
10	XI	Crystal oscillator input
11	XO	Crystal oscillator output
12	XVDD	Oscillator-only power supply
13	TESM0	Test pin
14	TESM1	Test pin
15	TESM2	Test pin
16	VDD3	3.3V digital power supply
17	VSS3	3.3V digital ground
18	VPFC	Clock PLL block phase/frequency comparator output
19	TEST0	Test mode pin
20	VLPFI	VCO filter input for the clock PLL
21	VLPFO	VCO filter output for the clock PLL
22	VSS3	3.3V digital ground
23	MON0	Test monitor
24	MON1	Test monitor
25	MON2	Test monitor
26	MON3	Test monitor
27	MON4	Test monitor
28	MON5	Test monitor
29	MON6	Test monitor
30	MON7	Test monitor
31	MON8	Test monitor
32	MON9	Test monitor
33	VDD3	3.3V digital power supply
34	NC	—
35	NC	—
36	TEST1	Test mode pin
37	FLGA	General-purpose I/O or flag monitor
38	FLGB	General-purpose I/O or flag monitor
39	VSS3	3.3V digital ground
40	/RST	Reset pin
41	/MA	Microcomputer address enable signal
42	/MRD	Microcomputer data read signal
43	/MWR	Microcomputer data write signal
44	/MCE	Microcomputer chip enable signal
45	/MINT	Microcomputer interrupt signal
46	MD0	Microcomputer data bus
47	MD1	Microcomputer data bus
48	MD2	Microcomputer data bus
49	MD3	Microcomputer data bus
50	MD4	Microcomputer data bus

Table 3-5-5 TC9489F/TC94A03F (2/4)

Pin No.	Name	Function
51	MD5	Microcomputer data bus
52	MD6	Microcomputer data bus
53	MD7	Microcomputer data bus
54	VDD5	5V power supply
55	NC	—
56	NC	—
57	SMCK	22M block clock output
58	VMCK	Data output block (signal processing block) clock output
59	VDD3	3.3V digital power supply
60	PD0	DVD/CD data output
61	VSS5	5V ground
62	PD1	DVD/CD data ground
63	PD2	DVD/CD data ground
64	PD3	DVD/CD data ground
65	PD4	DVD/CD data ground
66	VSS3	3.3V digital ground
67	PD5	DVD/CD data output
68	PD6	DVD/CD data output
69	PD7	DVD/CD data output
70	PD8	DVD/CD data output
71	/PSYC	DVD data selector sync signal
72	/PDRQ	DVD data transfer block
73	PDCK	DAD data transfer clock
74	VDD5	5V power supply
75	TESM3	Test pin
76	DIGI	1-bit DAC Digital In Input
77	TESM4	Test pin
78	VDD3	3.3V digital power supply
79	BA0	External RAM address output
80	BA1	External RAM address output
81	BA2	External RAM address output
82	BA3	External RAM address output
83	VSS5	5V ground
84	BA4	External RAM address output
85	BA5	External RAM address output
86	BA6	External RAM address output
87	BA7	External RAM address output
88	BA8	External RAM address output
89	VDD3	3.3V digital power supply
90	/BOE	External RAM/OE signal
91	/BRAS	External RAM/RAS signal
92	/BCAS	External RAM/CAS signal
93	/BWL	External RAM Lower/WE signal
94	/BWU	External RAM Upper/WE signal
95	VDD5	5V power supply
96	BD0	External RAM data input/output
97	BD1	External RAM data input/output
98	BD2	External RAM data input/output
99	BD3	External RAM data input/output
100	BD4	External RAM data input/output

Table 3-5-5 TC9489F/TC94A03F (3/4)

Pin No.	Name	Function
101	BD5	External RAM data input/output
102	BD6	External RAM data input/output
103	BD7	External RAM data input/output
104	BD8	External RAM data input/output
105	VSS3	3.3V digital ground
106	BD9	External RAM data input/output
107	BD10	External RAM data input/output
108	BD11	External RAM data input/output
109	BD12	External RAM data input/output
110	VSS5	5V ground
111	BD13	External RAM data input/output
112	BD14	External RAM data input/output
113	BD15	External RAM data input/output
114	NC	—
115	NC	—
116	VDD3	3.3V digital power supply
117	PLCK	PLL block clock input/output
118	TESM5	Test pin
119	TESM6	Test pin
120	TESM7	Test pin
121	TESM8	Test pin
122	VCC3	3.3V digital ground
123	CFC1	VCO frequency control signal
124	CFC2	VCO frequency control signal
125	PPW	Phase comparator offset adjusting voltage output
126	PESV	Phase comparator offset adjusting voltage input
127	PVSS	3.3V PLL block-only ground
128	PESP	Phase comparator offset adjusting signal output
129	PDOP1	DVD/CD phase control signal (positive)
130	PDON1	DVD/CD phase control signal (negative)
131	PDOP2	DVD/CD phase control signal (positive)
132	PDON2	DVD/CD phase control signal (negative)
133	LPFN	Data PLL low-pass filter inverted input
134	LPFO	Data PLL low-pass filter output
135	PVREF	Data PLL block-only reference power supply
136	VCOREF	VCO reference
137	VCOT	VCO automatic adjusting filter output
138	PVDO	3.3V PLL block-only power supply
139	SLCO1	Data slice 6-bit DAC output
140	TESM9	Test pin
141	TEST2	Test mode pin
142	RFC	CD RF signal input
143	RFDVD	DVD RF signal input
144	AVDD	3.3V analog block-only power supply
145	RFCT	RFRP center voltage input (latched at zero-cross)
146	RFZI	RFRP signal input (latched at zero-cross)
147	TEZI	Tracking error signal input (latched at zero-cross)

Table 3-5-5 TC9489F/TC94A03F (4/4)

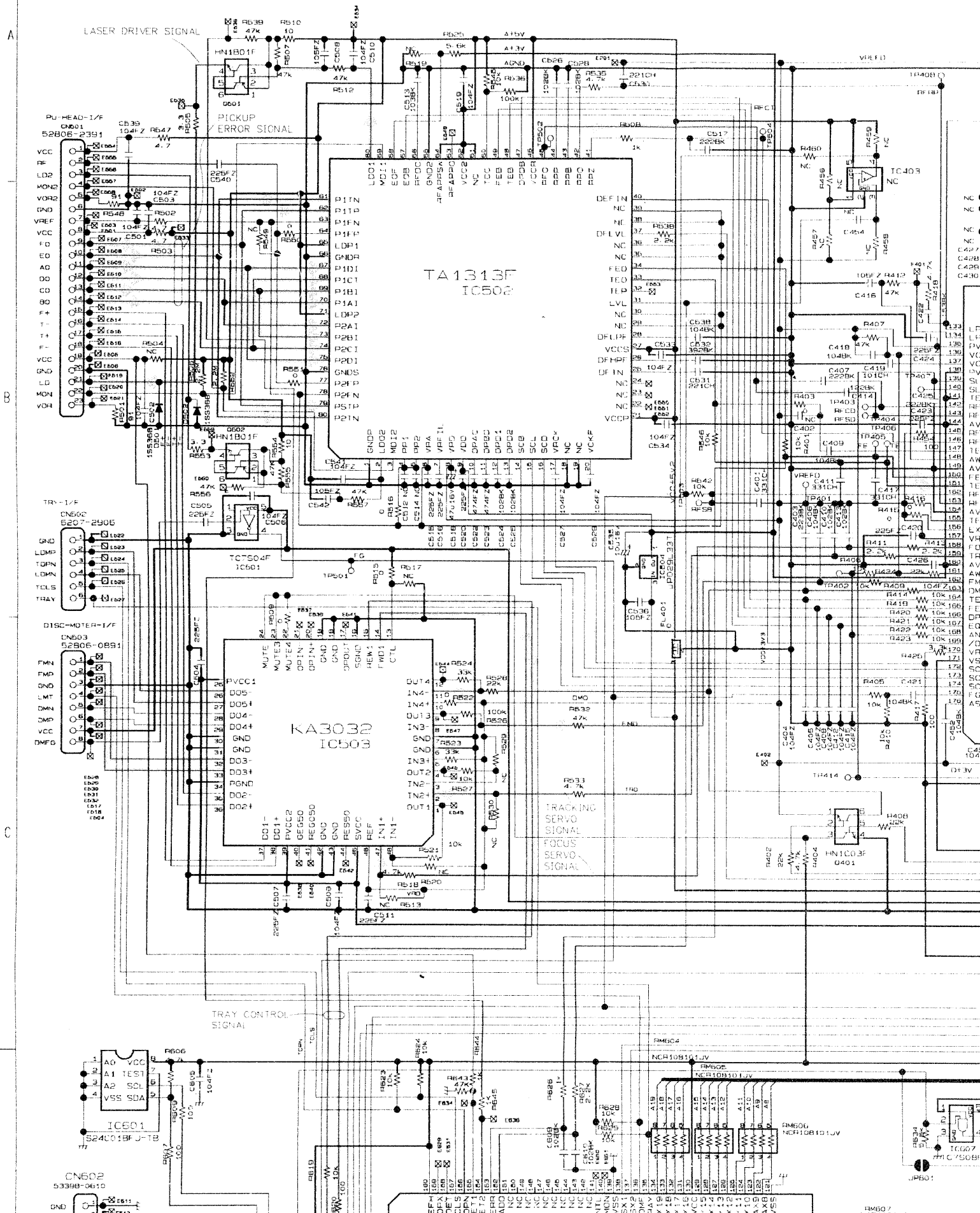
Pin No.	Name	Function
148	AWIN	Active-wide PLL control signal input
149	AVSS	3.3V analog block-only ground
150	FEI	Focus error signal input
151	TEI	Tracking error signal input
152	RFSB	RF level or subbeam signal summing input
153	RFRP	RFRP signal input
154	AVSS	3.3V analog block-only ground
155	TESM10	Test pin
156	EXTAD	General-purpose external ADC input
157	VREF	Analog block-only reference power supply: 1.65V
158	FOO	Focus EQ output
159	TRO	Tracking EQ output
160	AVDD	3.3V analog block-only power supply
161	AWCTL	Active-wide PLL control output
162	FMO	Feed EQ output
163	DMO	Disc EQ output
164	TEBC	Tracking balance control signal
165	FEBC	Focus balance control signal
166	DPDC	DPD error signal's pit depth adjusting signal
167	EQBC	RF wideband boost adjusting signal
168	ANMON	General-purpose PWM output
169	/DFCT	Black dot detection signal
170	VRCK	RF EQ response control clock
171	VSS3	3.3V digital ground
172	SCD	Head amp serial data
173	SCL	Head amp serial data latch pulse
174	SCB	Head amp serial data clock
175	FGIN	Disc FG signal input (with self-biasing circuit)
176	ASLCP	Data slice positive output

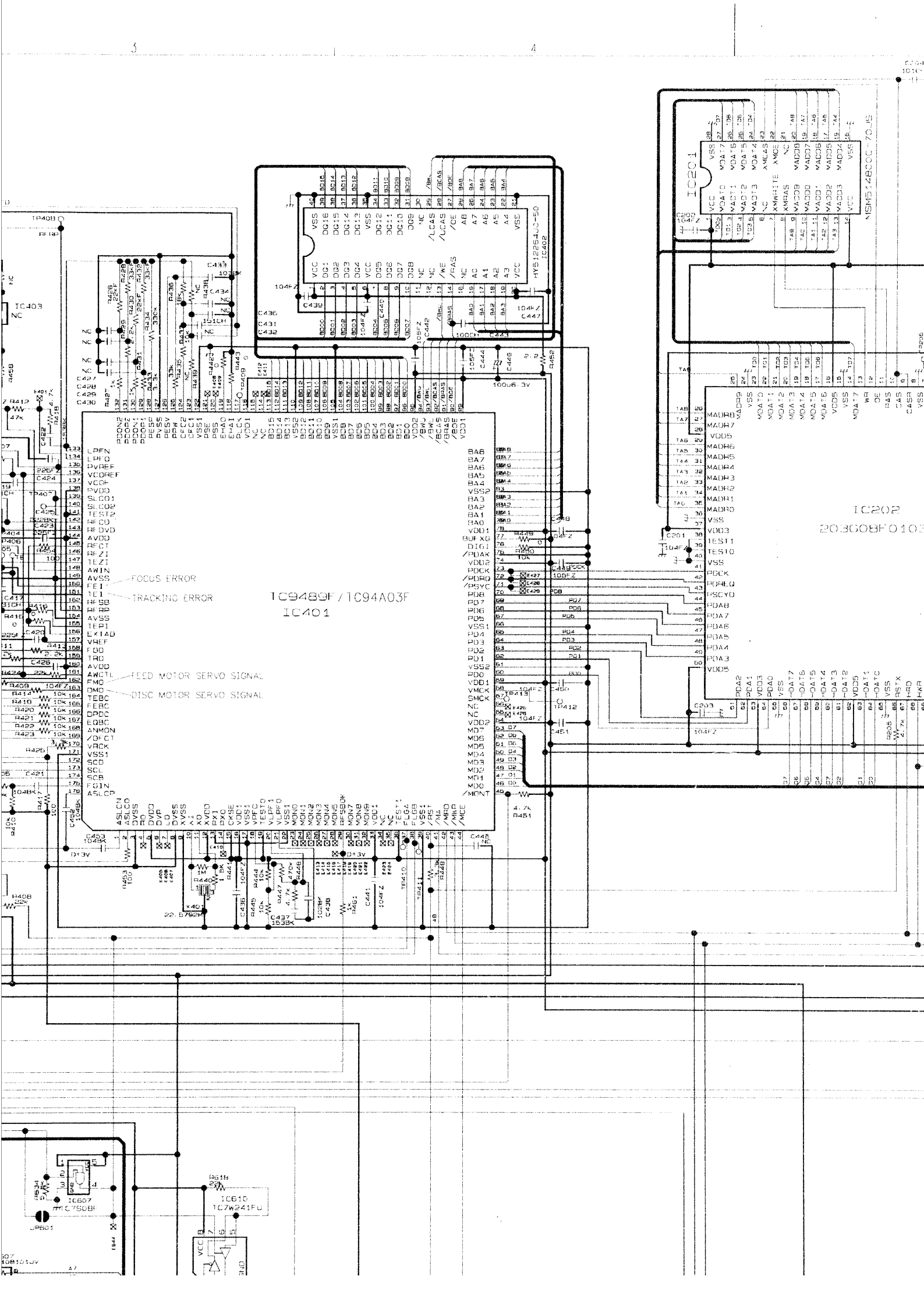
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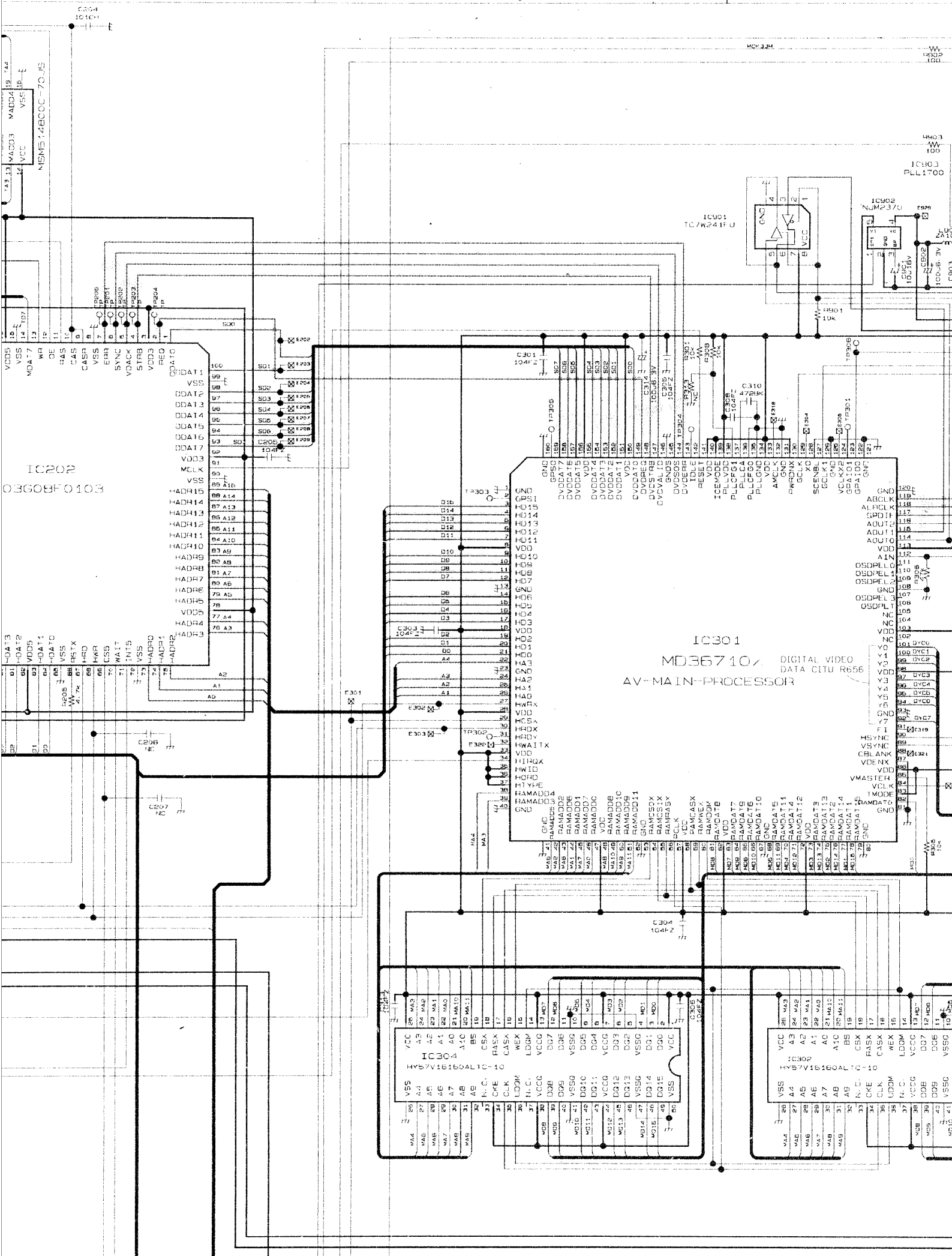
5-3-2. Main Circuit Diagram

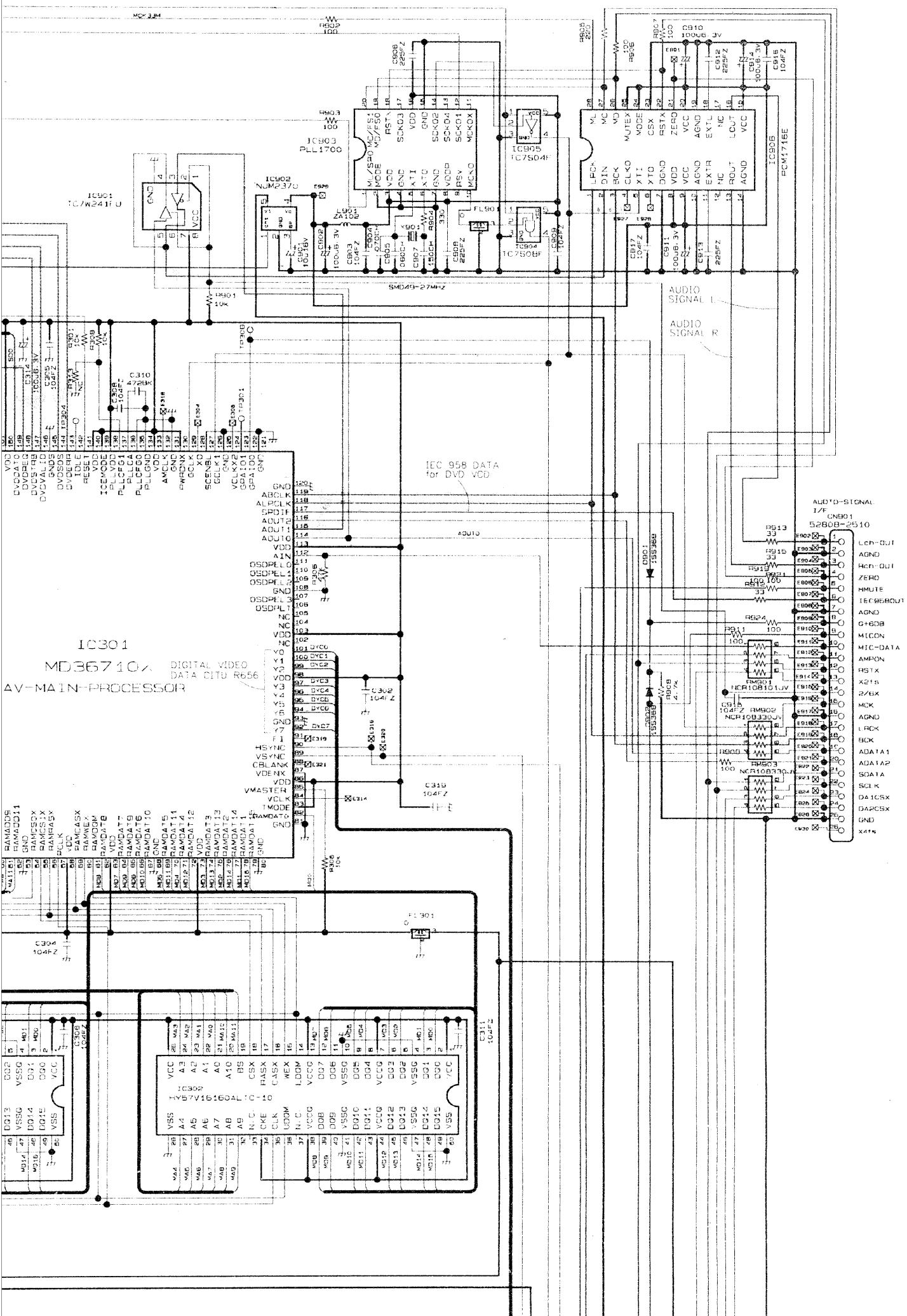
Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location
C201	B4	C453	C3	CN603	E1	E508	B1	E637	E2	IC603	E2	R440	C3	R620	D1
C202	A4	C454	B3	CN701	E8	E510	B1	E638	E2	IC604	C2	R441	C3	R621	E2
C203	B4	C501	B1	CN901	B8	E511	B1	E639	E2	IC605	F2	R442	B3	R622	E2
C204	A5	C502	B1	D501	B1	E512	B1	E640	E2	IC606	F3	R443	B3	R623	C2
C205	B5	C503	B1	D502	B1	E513	B1	E641	E2	IC607	D3	R444	C3	R625	E1
C206	C5	C504	C1	D901	B8	E514	B1	E642	E2	IC608	F4	R445	C3	R626	C2
C207	C5	C505	B1	D902	C8	E515	B1	E643	E2	IC609	E3	R446	C3	R627	C2
C301	B6	C506	B1	E201	A2	E516	B1	E644	D3	IC610	D3	R447	C3	R628	C2
C302	B7	C508	A1	E202	B5	E517	C1	E645	E2	IC901	A6	R448	C4	R629	C2
C303	B6	C509	C1	E203	B5	E518	C1	E646	E2	IC902	A7	R449	B4	R630	F2
C304	C6	C510	A2	E204	B5	E519	B1	E647	D3	IC903	A7	R450	B4	R631	F3
C305	B6	C512	B2	E205	B5	E520	B1	E648	D3	IC904	A7	R451	C4	R632	E3
C306	B7	C513	A2	E206	B5	E521	B1	E650	C2	IC905	A7	R452	B4	R633	E1
C307	E7	C514	B2	E207	B5	E522	B1	E651	C2	IC906	A8	R453	C3	R634	D3
C308	C6	C515	B2	E208	B5	E523	B1	E654	D3	JP601	D3	R454	B3	R635	F3
C309	E7	C516	B2	E209	B5	E524	B1	E701	E7	Q301	E8	R456	A3	R636	E3
C310	B7	C517	A2	E301	C6	E525	B1	E702	F8	Q302	E8	R457	B3	R637	E3
C311	C7	C518	B2	E302	C6	E526	B1	E703	E8	Q303	E8	R458	B3	R638	E2
C312	E7	C519	A2	E303	C6	E527	B1	E704	F8	Q304	E8	R459	A3	R639	D3
C313	C6	C520	B2	E304	B7	E528	C1	E706	E8	Q401	C3	R460	A3	R643	C2
C314	B6	C522	B2	E305	B7	E529	C1	E710	E8	Q501	A1	R461	C4	R644	C2
C315	E7	C523	B2	E306	E6	E530	C1	E713	F8	Q502	B1	R501	B1	R645	C2
C316	E7	C524	B2	E307	E6	E531	C1	E714	F8	Q555	B1	R502	B1	R701	E8
C317	E7	C525	B2	E308	E6	E532	C1	E715	F8	Q601	E3	R503	B1	R901	B7
C318	E7	C526	A2	E309	E6	E533	B1	E716	F8	Q602	E3	R504	B1	R902	A7
C319	C7	C527	B2	E310	E6	E534	A1	E724	E8	R205	C5	R505	B1	R903	A7
C320	E7	C528	A2	E311	E6	E535	A1	E725	E8	R301	B6	R506	B1	R904	A7
C321	E7	C529	B2	E312	E6	E536	A1	E726	E8	R302	E7	R507	A1	R905	A8
C322	E7	C530	A2	E313	E6	E537	B1	E727	E8	R303	E7	R508	A2	R906	A8
C323	E7	C531	B2	E314	C7	E538	C1	E728	E8	R304	E7	R510	A1	R907	A8
C324	E7	C532	B2	E315	E7	E539	B1	E729	F8	R305	C7	R512	A1	R908	B8
C325	E7	C533	B2	E316	C7	E540	C1	E730	E8	R306	B7	R513	C2	R909	C8
C326	E8	C534	B2	E317	E7	E541	B1	E901	A8	R307	E8	R515	B2	R911	B8
C327	E7	C535	B2	E318	B7	E542	C1	E902	B8	R308	B6	R516	B2	R912	B8
C328	E7	C536	B2	E319	C7	E544	C2	E903	B8	R309	E7	R517	B2	R913	B8
C401	B2	C538	B2	E320	C7	E545	C2	E904	B8	R310	E8	R519	A2	R915	B8
C402	B3	C539	A1	E321	C7	E546	C2	E905	B8	R311	E7	R520	C2	R919	B8
C403	B2	C540	A1	E322	C6	E547	C2	E906	B8	R312	E8	R521	C2	R921	B8
C404	C2	C541	B1	E326	E7	E548	A2	E907	B8	R313	B6	R522	C2	R924	B8
C405	C3	C542	B1	E327	E8	E550	B2	E908	B8	R314	E8	R523	C2	RM601	E2
C406	B3	C601	F1	E328	E8	E551	B2	E909	B8	R315	E7	R524	C2	RM602	E2
C407	B3	C602	F1	E329	E8	E552	B2	E910	B8	R316	E8	R525	A2	RM603	E2
C408	C3	C603	F1	E330	E8	E553	B2	E911	B8	R319	E6	R526	C2	RM604	C2
C409	B3	C604	E1	E331	E8	E554	A1	E912	B8	R320	E7	R527	C2	RM605	C2
C410	B3	C605	D1	E332	E8	E555	A1	E913	B8	R322	E7	R528	C2	RM606	C2
C411	B3	C606	E1	E333	E8	E556	A1	E914	B8	R323	E7	R529	C2	RM607	D3
C412	C3	C607	E2	E334	E8	E557	A1	E915	B8	R325	E7	R530	C2	RM608	D3
C413	B3	C608	E2	E335	E8	E558	B1	E916	C8	R326	E8	R532	C2	RM609	E3
C414	B3	C610	C2	E336	E8	E559	B1	E917	C8	R401	B3	R533	C2	RM610	E3
C415	C3	C611	F2	E337	E8	E580	B1	E918	C8	R402	C2	R535	A2	RM611	E3
C416	B3	C613	E3	E338	E8	E601	E1	E919	C8	R403	B3	R536	A2	RM612	E3
C417	B3	C614	D3	E339	E8	E602	E1	E920	C8	R404	C3	R538	B2	RM613	D1
C418	B3	C615	F3	E340	E8	E603	E1	E921	C8	R405	C3	R539	A1	RM801	B8
C419	B3	C621	E2	E401	B3	E604	E1	E922	C8	R406	B3	R540	F1	RM902	C8
C420	B3	C702	E8	E402	C2	E605	E1	E923	C8	R407	B3	R541	F1	RM903	C8
C421	C3	C703	F8	E405	C3	E606	E1	E924	C8	R408	C3	R542	F1	S602	E2
C422	B3	C704	F8	E406	C3	E607	E1	E925	C8	R409	B3	R545	A2	TP201	B5
C423	B3	C705	E8	E407	C3	E608	E1	E926	C8	R410	C3	R546	B2	TP202	B5
C424	B3	C706	E8	E408	B3	E609	E1	E927	A8	R411	B3	R547	A1	TP203	B5
C425	B3	C707	E8	E409	B3	E610	E1	E928	A8	R412	B3	R548	B1	TP204	B5
C426	B3	C708	F8	E410	C3	E611	D1	E929	A7	R413	B3	R549	B1	TP205	B5
C427	B3	C709	F8	E411	B3	E612	D1	E930	C8	R414	B3	R550	B1	TP301	B7
C428	B3	C710	F8	E412	B3	E613	D1	FL301	C7	R415	B3	R551	B1	TP302	C6
C429	B3	C711	F8	E413	C3	E614	D1	FL306	E7	R416	B3	R552	B1	TP303	B6
C430	B3	C901	A7	E414	C3	E615	D1	FL401	B2	R417	C3	R553	B1	TP304	B6
C431	B3	C902	A7	E415	C3	E616	D1	FL701	E8	R418	B3	R554	B1	TP305	B6
C432	B3	C903	A7	E416	C4	E617	D1	FL702	F8	R419	B3	R556	B1	TP306	B7
C433	A3	C904	A7	E417	C4	E618	D1	FL703	E8	R420	B3	R557	B1	TP402	B3
C434	A3	C905	A7	E418	C4	E619	D1	FL704	E8	R421	C3	R601	E1	TP403	B3
C435	A3	C906	A7	E419	C4	E620	D1	FL705	E8	R422	C3	R602	E1	TP404	B3
C436	C3	C907	A7	E420	C4	E621	D1	FL901	A7	R423	C3	R603	E1	TP405	B3
C437	C3	C908	A8	E421	C4	E622	D1	IC201	A4	R424	B3	R604	E1	TP406	B3
C438	C3	C909	A7	E422	C4	E623	E1	IC202	B5	R425	C3	R605	E1	TP407	B3
C439	A3	C910	A8	E423	C4	E624	D1	IC301	B6	R426	A3	R606	D1	TP408	A3
C440	A4	C911	A8	E424	C4	E625	D1	IC302	C7	R427	B3	R607	D1	TP409	B3
C441	C4	C912	A8	E425	B4	E626	E1	IC303	E7	R428	A3	R608	E1	TP410	C4
C442	B4	C913	A8	E426	B4	E627	E1	IC304	C6	R429	B3	R609	D1	TP411	C4
C443	B4	C914	A8	E427	B4	E628	E2	IC401	B3	R430	A3	R610	E1	TP412	B4
C444	B4	C915	C8	E428	B4	E629	C2	IC402	A4	R431	B3	R611	E1	TP413	B4
C445	C4	C916	A8	E429	B4	E630	E2	IC403	A3	R432	A3	R612	D1	TP414	C3
C446	B4	C917	A8	E501	B1	E631	C2	IC501	B1	R433	B3	R613	E1	TP501	B1
C447	A4	CN301	E8	E502	B1	E632	E2	IC502	B2	R434	B3	R614	D1	TP502	A2
C448	B4	CN501	A1	E503	B1	E633	E2	IC503	C1	R435	B3	R615	D1	TP503	B2
C449	B4	CN502	B1	E504	C1	E634	C2	IC504	B2	R436	A3	R616	D1	TP504	A2
C450	B4	CN503	C1	E505	B1	E635	E2	IC601	D1	R437	B3	R617	D1	X401	C3
C451	C4	CN601	D1	E506	B1	E636	C2	IC602	E1	R438	A3	R618	D3	X601	E2
C452	C3	CN602	D1	E507	B1					R439	B3	R619	D1	X901	A7

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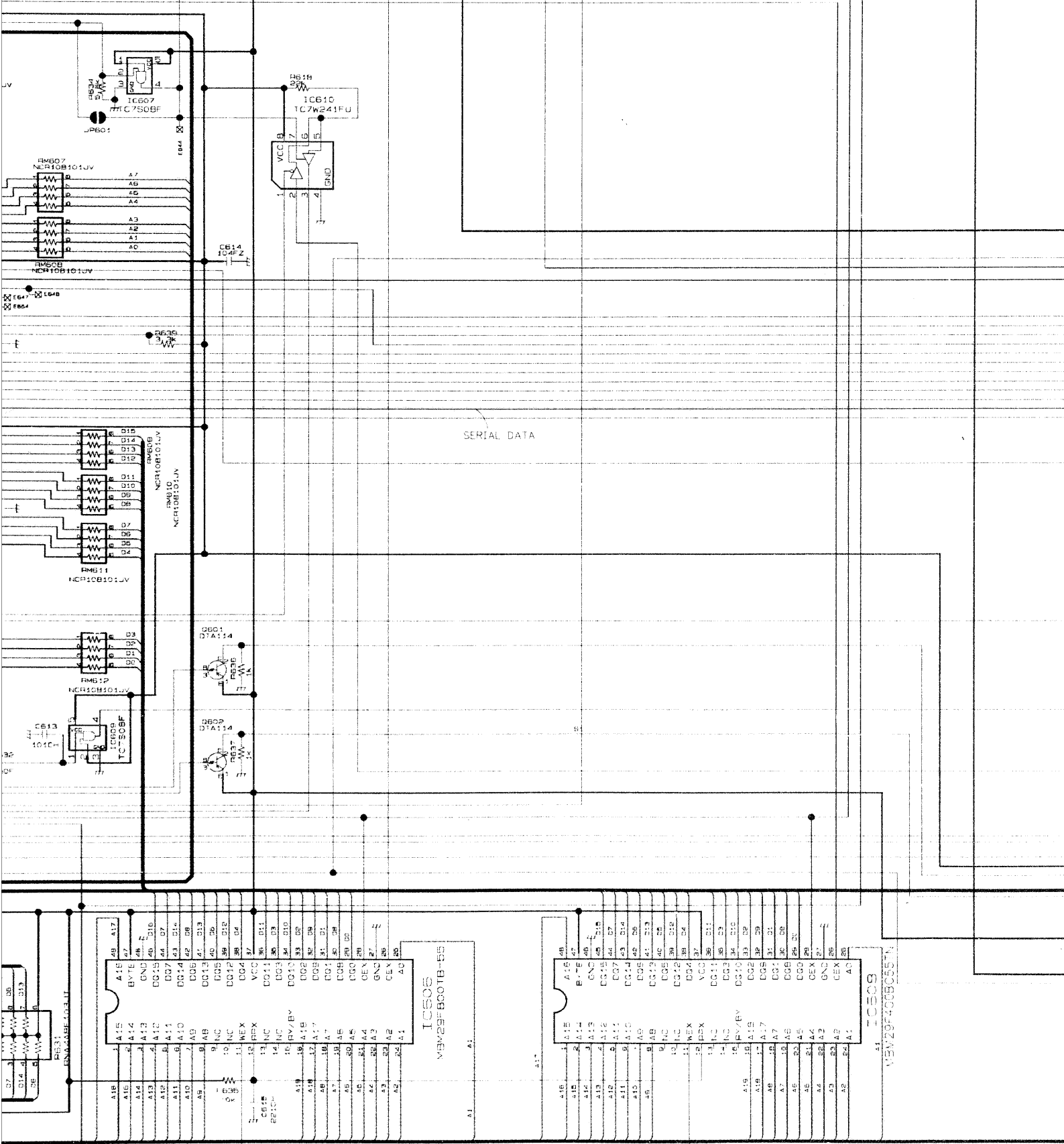


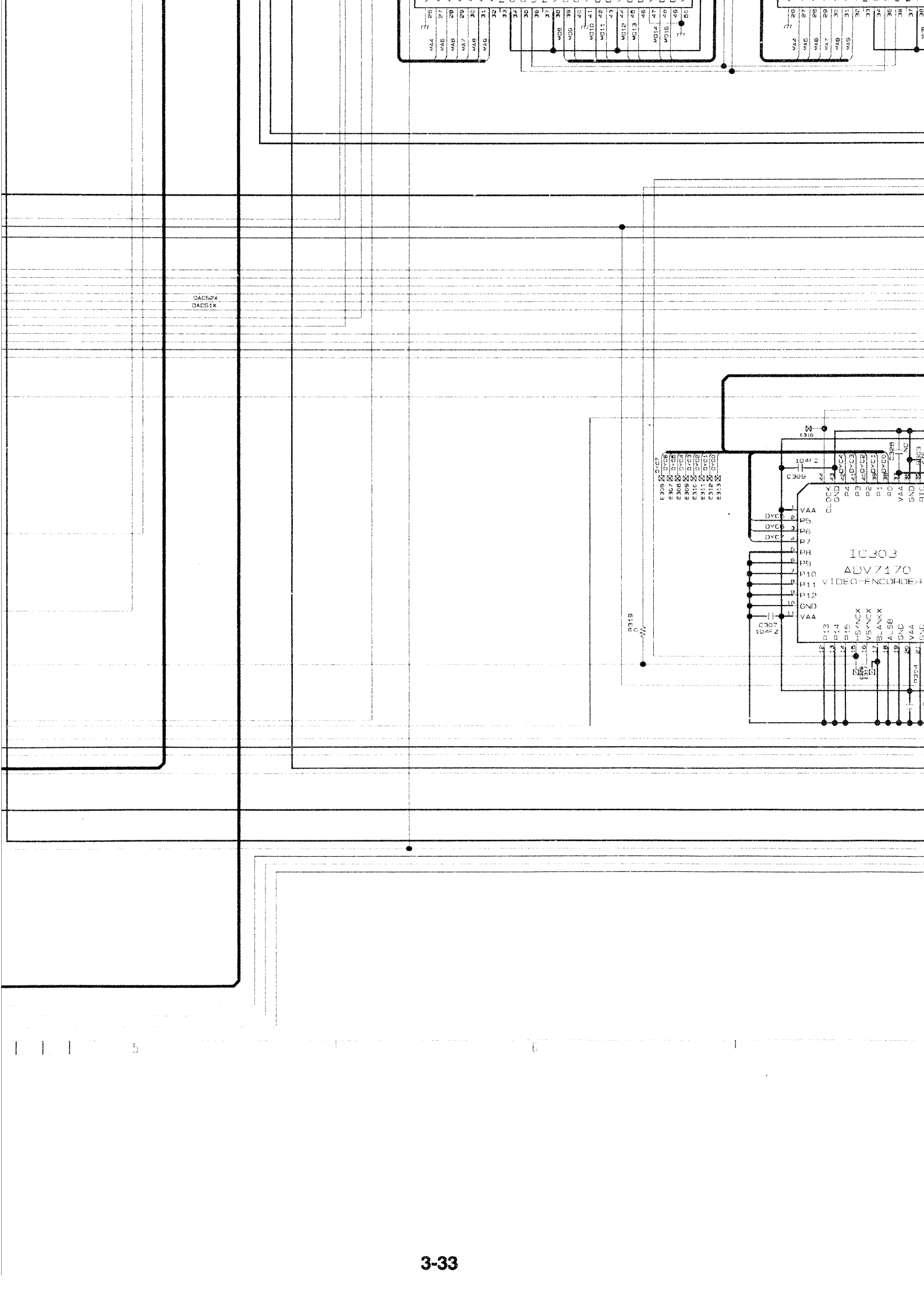
A

B

C









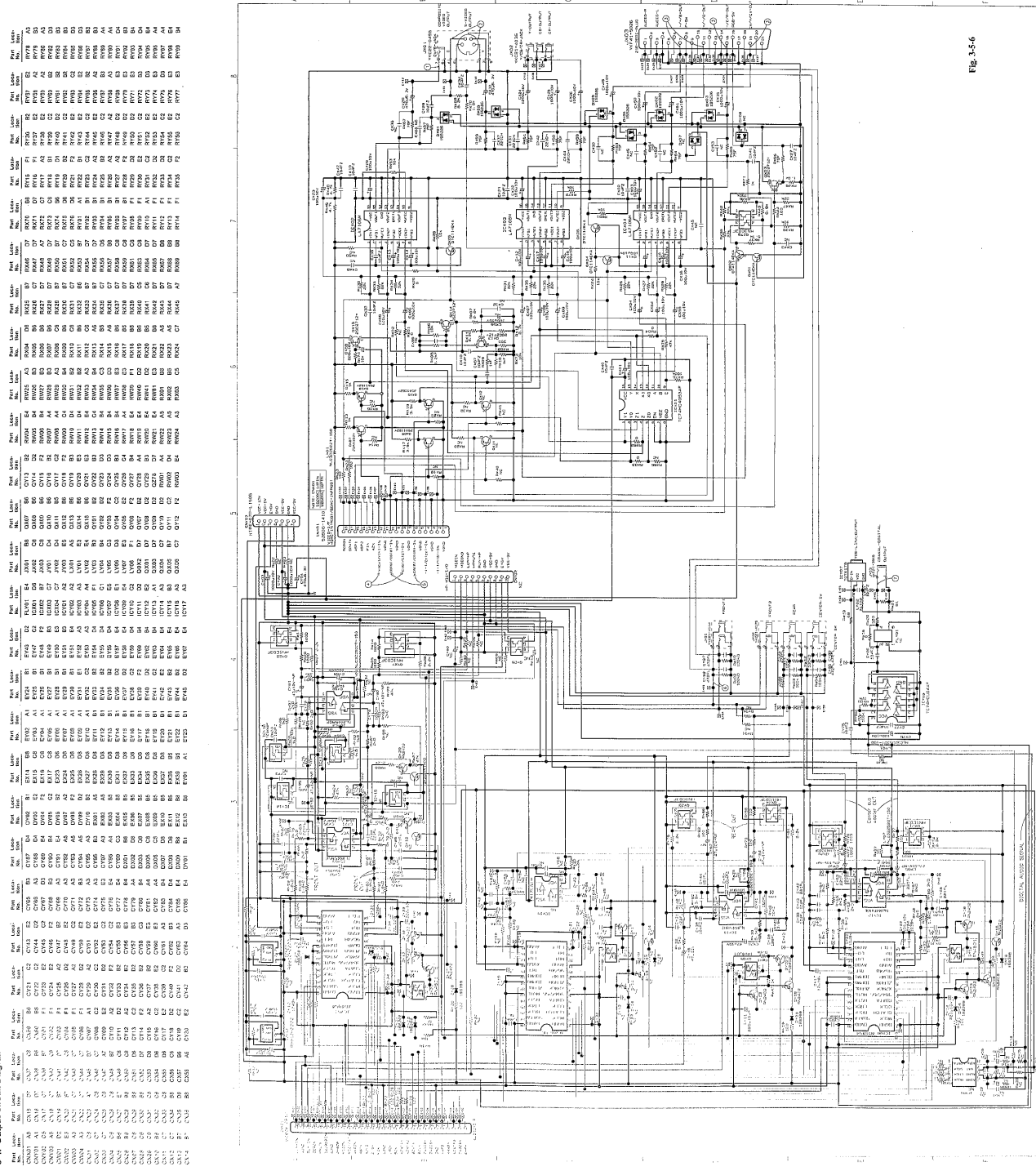


Fig. 3-5-6

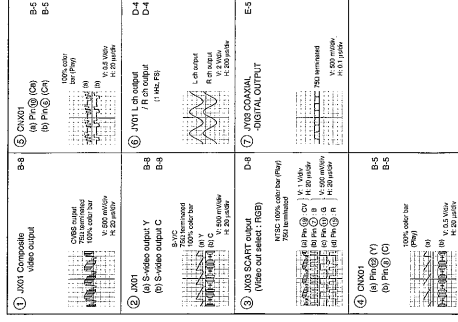
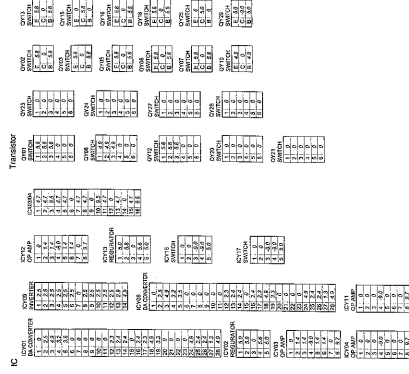


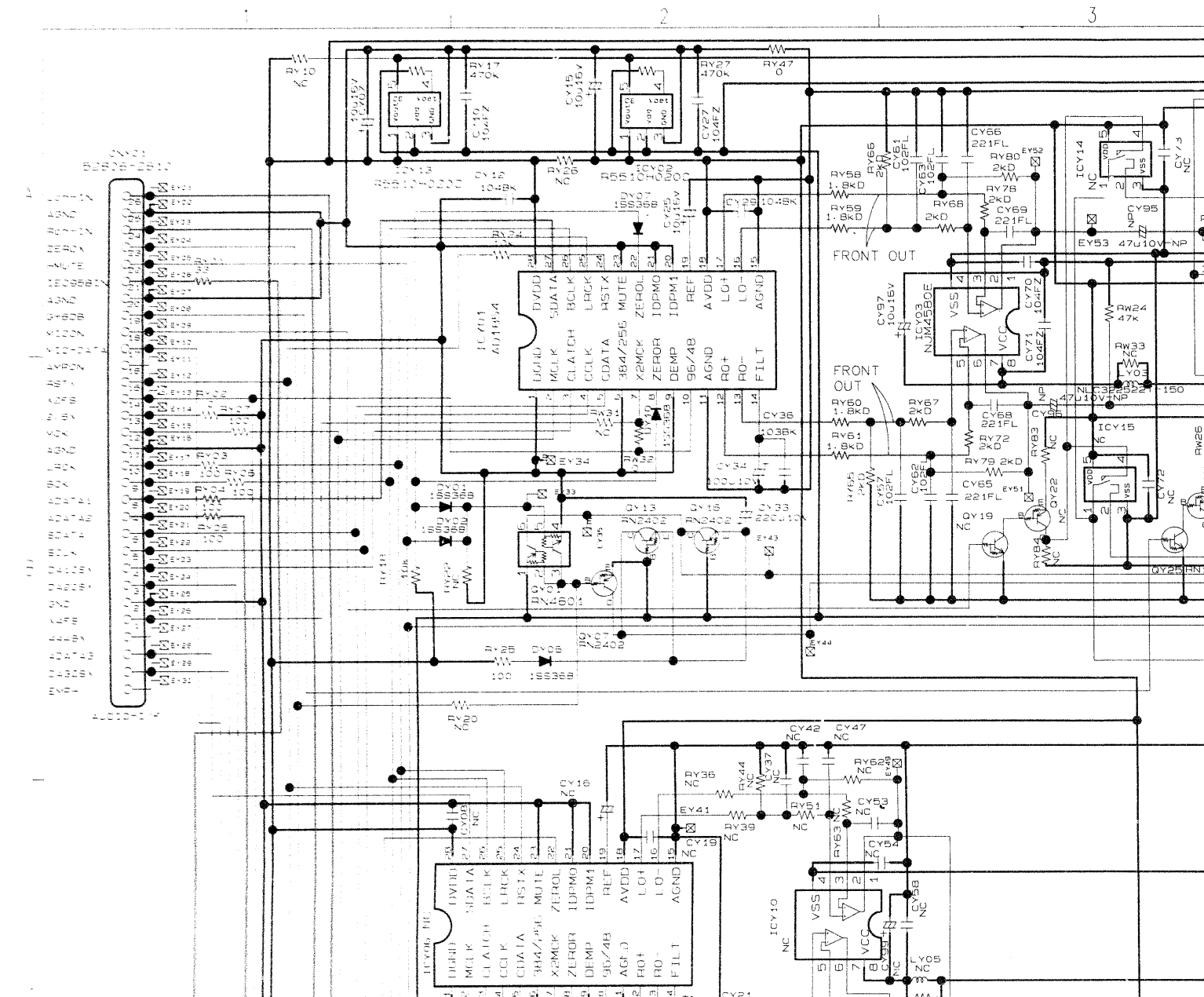
Fig. 3-5-7



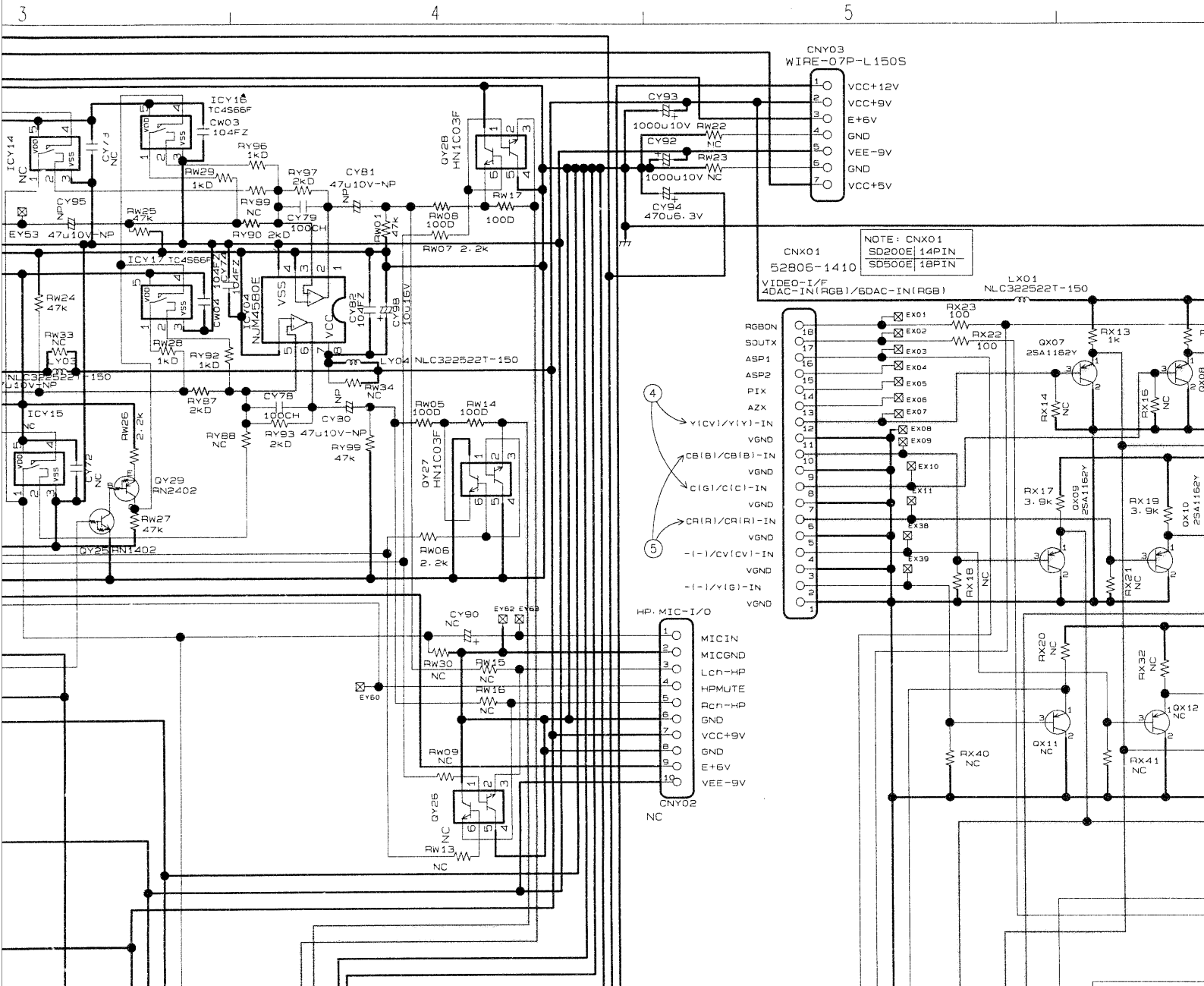
5-4. Output Circuit Diagram

810200008

Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location
CNX01	A5	CX15	D7	CX37	C8	CX59	B6	CY21	C2	CY43	E2	CY65	B3	CY87	D4	DY02	B1
CNY01	A1	CX16	D7	CX38	B6	CX60	B8	CY22	C2	CY44	D2	CY66	A3	CY88	D4	DY03	E2
CNY02	C5	CX17	C7	CX39	B7	CY01	F1	CY23	E2	CY45	C2	CY67	D3	CY89	E4	DY04	F2
CNY03	A5	CX18	C7	CX40	C6	CY02	F1	CY24	E2	CY46	F2	CY68	B3	CY90	B4	DY05	C2
CW01	D2	CX19	B7	CX41	D7	CY03	F1	CY25	A2	CY47	B2	CY69	A3	CY91	E4	DY06	B2
CW02	E3	CX20	B7	CX42	C8	CY04	F1	CY26	D2	CY48	E2	CY70	A3	CY92	A5	DY07	A2
CW03	A3	CX21	C7	CX43	D7	CY05	F1	CY27	A2	CY49	C2	CY71	A3	CY93	A5	DY08	F2
CW04	A3	CX22	C7	CX44	C7	CY06	F1	CY28	D2	CY50	E2	CY72	B3	CY94	A5	DY09	D2
CX01	C6	CX23	A7	CX45	D7	CY07	A1	CY29	A2	CY51	D2	CY73	A3	CY95	A3	DY10	B2
CX02	C7	CX24	C8	CX46	C7	CY08	C2	CY30	C2	CY52	E2	CY74	A3	CY95	B3	EX01	A5
CX03	C7	CX25	C8	CX47	A7	CY09	E2	CY31	D2	CY53	C2	CY75	E3	CY97	A3	EX02	A5
CX04	C6	CX26	C8	CX48	B7	CY10	A2	CY32	F2	CY54	C2	CY76	E4	CY98	A4	EX03	B5
CX05	B6	CX27	E7	CX49	C8	CY11	D2	CY33	B2	CY55	E3	CY77	E4	CY99	C3	EX04	B5
CX06	B6	CX28	B8	CX50	C8	CY12	A2	CY34	B2	CY56	E3	CY78	B4	DX01	B8	EX05	B5
CX07	C6	CX29	B8	CX51	D8	CY13	C2	CY35	D2	CY57	B3	CY79	A4	DX02	D8	EX06	B5
CX08	C6	CX30	B8	CX52	D7	CY14	F2	CY36	B2	CY58	C3	CY80	B4	DX03	D8	EX07	B5
CX09	C6	CX31	C8	CX53	D8	CY15	A2	CY37	B2	CY59	E3	CY81	A4	DX05	C8	EX08	B5
CX10	B6	CX32	C6	CX54	D6	CY16	C2	CY38	E2	CY60	E3	CY82	A4	DX06	C8	EX09	B5
CX11	C7	CX33	C8	CX55	D6	CY17	E2	CY39	C2	CY61	A3	CY83	D4	DX07	D8	EX10	B5
CX12	C7	CX34	B8	CX56	C6	CY18	D2	CY40	F2	CY62	B3	CY84	D4	DX08	D8	EX11	B5
CX13	B7	CX35	D8	CX57	B6	CY19	C2	CY41	D2	CY63	A3	CY85	E4	DX09	B8	EX12	B8
CX14	B7	CX36	B8	CX58	A6	CY20	E2	CY42	B2	CY64	D3	CY86	E4	DY01	B1	EX13	B8



Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.
B1	EX14	B8	EY02	A1	EY24	B1	EY46	D2	FLY01	E4	JX01	B8	QX07	B6	QY13	B2	RW04	E4	RW25
E2	EX15	C8	EY03	A1	EY25	B1	EY47	C2	ICX01	D6	JX02	C8	QX08	B6	QY14	D2	RW05	B4	RW26
F2	EX16	C8	EY04	A1	EY26	B1	EY48	F2	ICX02	B7	JX03	C8	QX09	B6	QY15	F2	RW06	B4	RW27
C2	EX17	C8	EY05	A1	EY27	B1	EY49	B3	ICX03	C7	JY01	D4	QX10	B6	QY16	B2	RW07	A4	RW28
B2	EX23	D8	EY06	A1	EY28	B1	EY50	E3	ICX04	C7	JY02	D4	QX11	B5	QY17	C2	RW08	A4	RW29
A2	EX24	D8	EY07	A1	EY29	B1	EY51	B3	ICY01	A2	JY03	E5	QX12	B6	QY18	F2	RW09	C4	RW30
F2	EX25	D8	EY08	A1	EY30	B1	EY51	E4	ICY02	A2	LX01	A5	QX13	B6	QY19	B3	RW10	D4	RW31
D2	EX26	D8	EY09	A1	EY31	E1	EY52	A3	ICY03	A3	LY01	E3	QX14	B6	QY20	E3	RW11	D4	RW32
B2	EX27	D8	EY10	A1	EY32	C2	EY53	A3	ICY04	A4	LY02	E4	QX15	B6	QY21	E3	RW12	E4	RW33
A5	EX28	D8	EY11	B1	EY33	B2	EY54	D4	ICY05	F1	LY03	B3	QY01	B2	QY22	B3	RW13	C4	RW34
A5	EX29	D8	EY12	B1	EY34	B2	EY55	D4	ICY06	C1	LY04	B4	QY02	D2	QY23	D3	RW14	B4	RW35
B5	EX30	D8	EY13	B1	EY35	B2	EY56	D4	ICY07	E5	LY05	C3	QY03	F2	QY24	D3	RW15	B4	RW36
B5	EX31	D8	EY14	B1	EY36	D2	EY57	E4	ICY08	E1	LY06	D3	QY04	C2	QY25	B3	RW16	B4	RW37
B5	EX32	D8	EY15	B1	EY37	D2	EY58	E4	ICY09	E4	LY07	E3	QY05	E2	QY26	C4	RW17	A4	RW38
B5	EX33	D8	EY16	B1	EY38	C2	EY59	D4	ICY10	C2	LY08	F1	QY06	F2	QY27	B4	RW18	E4	RW39
B5	EX34	D8	EY17	B1	EY39	F2	EY60	B4	ICY11	D2	QX02	D7	QY07	B2	QY28	A4	RW19	E4	RW40
B5	EX35	D8	EY18	B1	EY40	D2	EY62	B4	ICY12	E2	QX01	D7	QY08	D2	QY29	B3	RW20	E4	RW41
B5	EX36	D8	EY19	B1	EY41	C2	EY63	B4	ICY13	A1	QX03	D7	QY09	D2	QZ78	D7	RW21	E4	RW42
B5	EX37	D8	EY20	B1	EY42	E2	EY64	E4	ICY14	A3	QX04	C7	QY10	D2	RW01	A4	RW22	A5	RX01
B5	EX38	B5	EY21	B1	EY43	B2	EY65	E4	ICY15	B3	QX05	B7	QY11	C2	RW02	D4	RW23	A5	RX02
B8	EX39	B5	EY22	B1	EY44	B2	EY66	E4	ICY16	A3	QX06	C7	QY12	F2	RW03	E4	RW24	A3	RX03
B8	EY01	A1	EY23	B1	EY45	D2	EY67	E4	ICY17	A3									

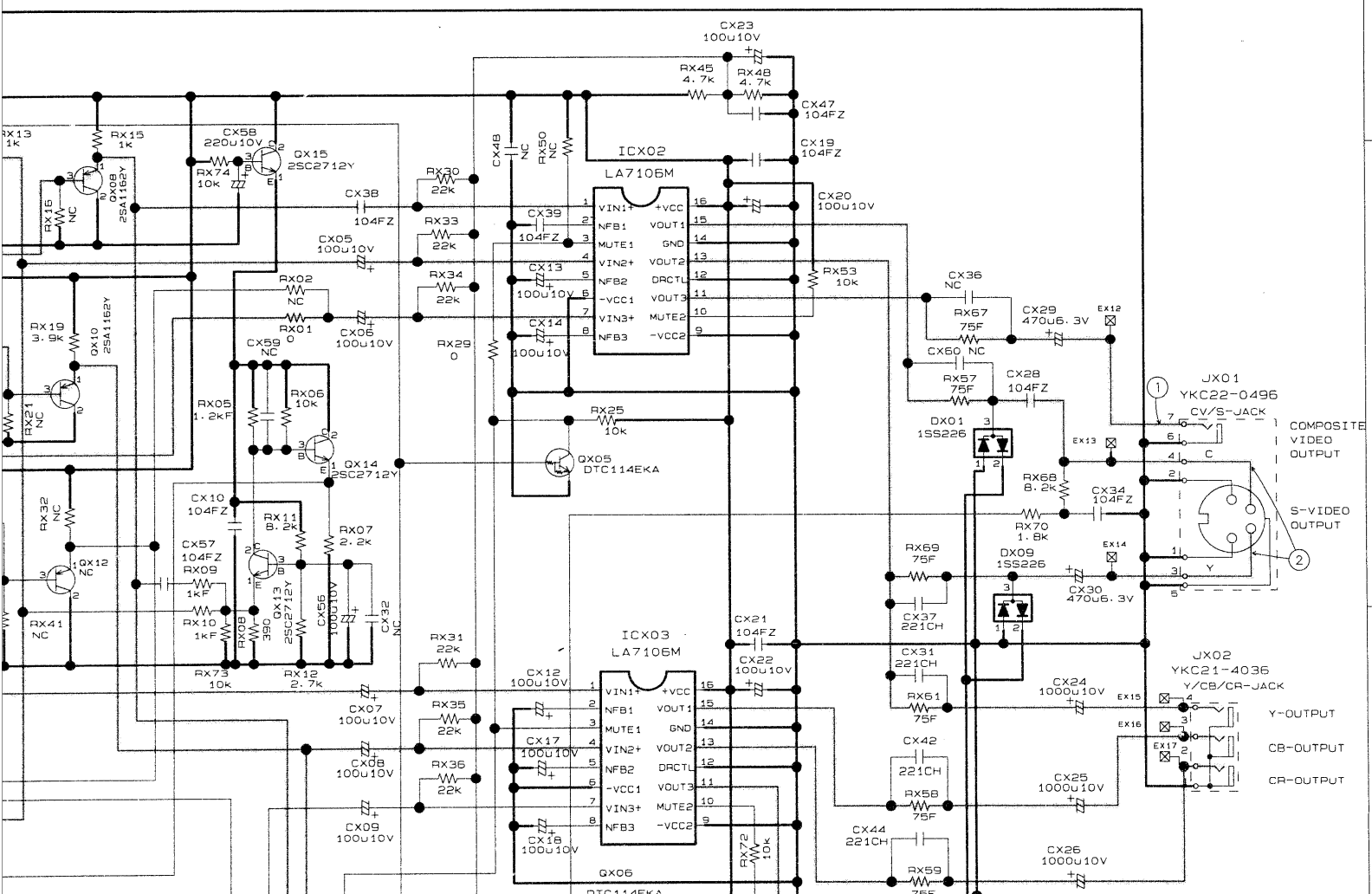


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E4	RW25	A3	RX04	D6	RX25	B7	RX46	D7	RX70	B8	RY15	F1	RY36	B2	RY57	E2	RY78	A3
B4	RW26	B3	RX05	B6	RX26	C7	RX47	D7	RX71	D7	RY16	F1	RY37	E2	RY58	A2	RY79	B3
B4	RW27	B3	RX06	B6	RX27	D7	RX48	A7	RX72	C7	RY17	A2	RY38	E2	RY59	A2	RY80	A3
A4	RW28	B3	RX07	B6	RX28	D7	RX49	D7	RX73	C6	RY18	B1	RY39	C2	RY60	B2	RY82	D3
A4	RW29	A3	RX08	C6	RX29	B7	RX50	B7	RX74	B6	RY19	D1	RY40	D2	RY61	B2	RY83	B3
C4	RW30	B4	RX09	B6	RX30	B7	RX51	C7	RX75	D6	RY20	B2	RY41	C2	RY62	B2	RY84	B3
D4	RW31	B2	RX10	C6	RX31	C7	RX52	C5	RX76	D6	RY21	F2	RY42	E2	RY63	C2	RY85	D3
D4	RW32	B2	RX11	B6	RX32	B6	RX53	B7	RY01	A1	RY22	B1	RY43	E2	RY64	E2	RY86	D3
E4	RW33	A3	RX12	C6	RX33	B7	RX54	D7	RY02	B1	RY23	C2	RY44	C2	RY65	B2	RY87	B3
C4	RW34	B4	RX13	A6	RX34	B7	RX55	D7	RY03	B1	RY24	A2	RY45	E2	RY66	A2	RY88	B3
B4	RW35	C3	RX14	B5	RX35	C7	RX56	D5	RY04	B1	RY25	B2	RY46	C2	RY67	B3	RY89	A4
B4	RW36	D3	RX15	A6	RX36	C7	RX57	B8	RY05	B1	RY26	A2	RY47	A2	RY68	A3	RY90	A4
B4	RW37	E3	RX16	B6	RX37	D7	RX58	C8	RY06	B1	RY27	A2	RY48	D2	RY69	E3	RY91	D4
A4	RW38	E3	RX17	B5	RX38	D7	RX59	C8	RY07	B1	RY28	F2	RY49	D2	RY70	E3	RY92	B3
E4	RW39	F1	RX18	B5	RX39	D7	RX61	C8	RY08	F1	RY29	D2	RY50	D2	RY71	E3	RY93	B4
E4	RW40	D2	RX19	B6	RX40	C5	RX63	C8	RY09	F1	RY30	E2	RY51	C2	RY72	B3	RY94	D4
E4	RW41	D2	RX20	B5	RX41	C6	RX64	D7	RY10	A1	RY31	C2	RY52	E2	RY73	D3	RY95	E4
E4	RW81	E3	RX21	B6	RX42	D7	RX65	D7	RY11	F1	RY32	D2	RY53	E2	RY74	E3	RY96	A4
A5	RX01	B6	RX22	A5	RX43	D7	RX67	B8	RY12	F1	RY33	D2	RY54	C2	RY75	D3	RY97	A4
A5	RX02	B6	RX23	A5	RX44	D7	RX68	B8	RY13	F1	RY34	C2	RY55	E2	RY76	E3	RY98	E4
A3	RX03	C5	RX24	C7	RX45	A7	RX69	B8	RY14	F1	RY35	F2	RY56	C2	RY77	E3	RY99	B4

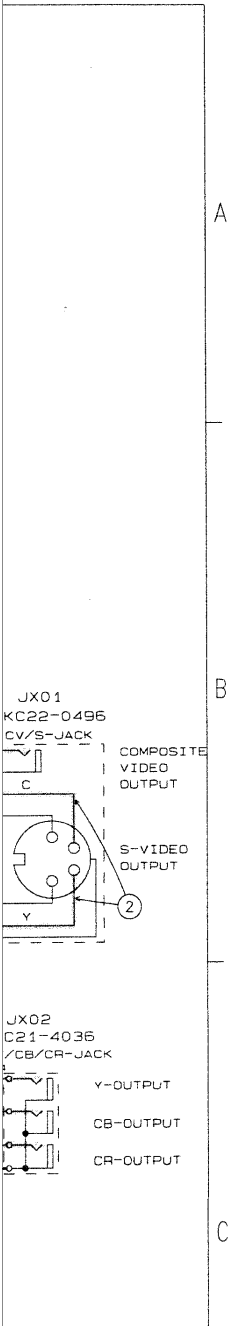
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7

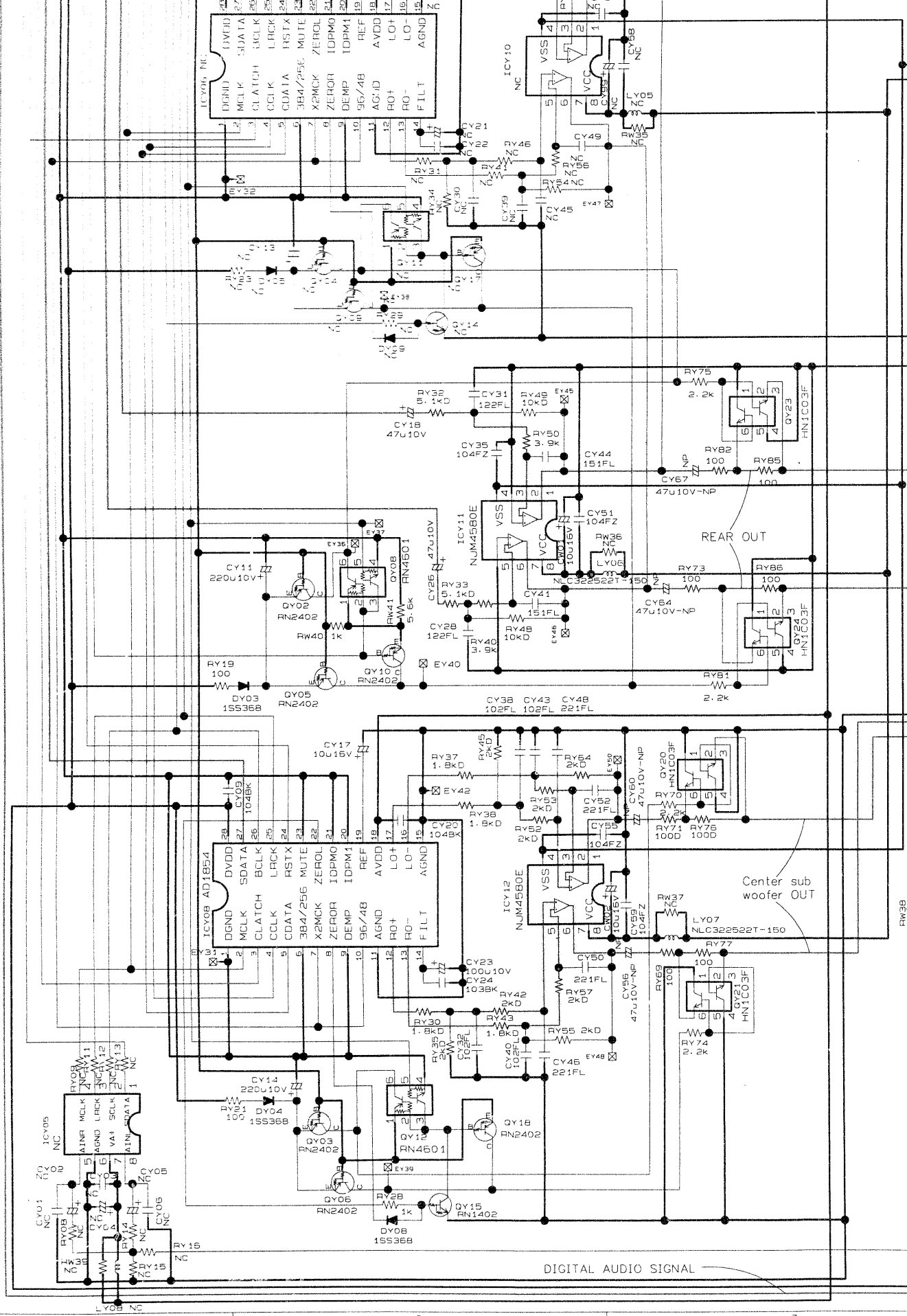
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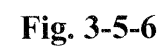
Part No.	Loca- tion
RY78	A3
RY79	B3
RY80	A3
RY82	D3
RY83	B3
RY84	B3
RY85	D3
RY86	D3
RY87	B3
RY88	B3
RY89	A4
RY90	A4
RY91	D4
RY92	B3
RY93	B4
RY94	D4
RY95	E4
RY96	A4
RY97	A4
RY98	E4
RY99	B4



① JX01 Composite video output B-8 CVBS output 75Ω terminated 100% color bar V: 500 mV/div H: 20 μs/div	⑤ CNX01 B-5 (a) Pin ⑩ (CB) B-5 (b) Pin ⑥ (CR) B-5 100% color bar (Play) (a) (b) V: 0.5 V/div H: 20 μs/div
② JX01 B-8 (a) S-video output Y B-8 (b) S-video output C B-8 S-Y/C 75Ω terminated 100% color bar (a) Y (b) C V: 500 mV/div H: 20 μs/div	⑥ JY01 L ch output D-4 / R ch output D-4 (1 kHz, FS) L ch output R ch output V: 2 V/div H: 200 μs/div
③ JX03 SCART output D-8 (Video out select : RGB) NTSC 100% color bar (Play) 75Ω terminated (a) Pin ⑩ : CV V: 1 V/div (b) Pin ⑦ : B H: 20 μs/div (c) Pin ⑪ : G V: 500 mV/div (d) Pin ⑮ : R H: 20 μs/div	⑦ JY03 COAXIAL E-5 -DIGITAL OUTPUT 75Ω terminated V: 500 mV/div H: 0.1 μs/div
④ CNX01 B-5 (a) Pin ⑫ (Y) B-5 (b) Pin ⑧ (C) B-5 100% color bar (Play) (a) (b) V: 0.5 V/div	







(a) Pin 12 (Y)

B-5

(b) Pin 8 (C)

B-5

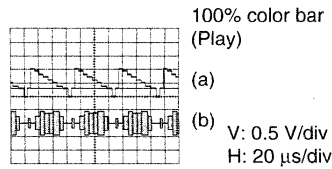


Fig. 3-5-7

IC

ICY01
DA CONVERTER

1	0
2	2.5
3	4.9
4	3.2
5	3.5
6	0
7	0
8	0
9	0
10	0
11	0
12	2.3
13	2.4
14	2.4
15	0
16	2.4
17	2.3
18	4.9
19	3.3
20	0
21	0
22	0
23	0
24	4.9
25	2.4
26	2.4
27	1.3
28	4.9

ICY02
REGULATOR

1	5.0
2	5.8
3	0
4	5.6
5	5.0

ICY03
OP AMP

1	0
2	1.4
3	1.4
4	-9.0
5	1.4
6	1.4
7	0
8	9.7

ICY04
OP AMP

1	0
2	0
3	0
4	-9.0
5	0
6	0
7	0
8	9.7

ICY09
INVERTER

1	2.5
2	2.5
3	2.5
4	2.5
5	2.5
6	2.5
7	0
8	2.5
9	2.5
10	2.5
11	2.5
12	2.5
13	2.9
14	4.9

ICY08
DA CONVERTER

1	0
2	2.5
3	4.9
4	3.2
5	3.5
6	0
7	0
8	0
9	0
10	0
11	0
12	2.3
13	2.4
14	2.4
15	0
16	2.4
17	2.3
18	4.9
19	3.3
20	0
21	0
22	0
23	0
24	4.9
25	2.4
26	2.4
27	1.3
28	4.9

ICY11
OP AMP

1	0
2	0
3	0
4	-9.0
5	0
6	0
7	0
8	9.7

ICY12
OP AMP

1	0
2	1.4
3	1.4
4	-9.0
5	1.4
6	1.4
7	0
8	9.7

ICY13
REGULATOR

1	5.0
2	5.8
3	0
4	5.6
5	5.0

ICY16
SWITCH

1	0
2	0
3	-9.0
4	-9.0
5	5.0

ICY17
SWITCH

1	0
2	0
3	-9.0
4	-9.0
5	5.0

ICX03/04

1	4.7
2	4.7
3	9.5
4	4.7
5	4.7
6	0
7	4.7
8	4.7
9	0
10	9.5
11	4.7
12	0
13	4.7
14	0
15	4.7
16	9.5

Transistor

QY01
SWITCH

1	5.8
2	5.8
3	5.8
4	0
5	0
6	0

QY08
SWITCH

1	4.9
2	4.9
3	4.9
4	0
5	0
6	0

QY12
SWITCH

1	5.8
2	5.8
3	5.8
4	0
5	0
6	0

QY20
SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY21
SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY23
SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY24
SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY27
SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY28
SWITCH

1	0
2	0
3	0
4	0
5	0
6	0

QY02
SWITCH

E	5.8
C	0
B	5.8

QY03
SWITCH

E	5.8
C	0
B	5.8

QY05
SWITCH

E	5.8
C	0
B	5.8

QY06
SWITCH

E	5.8
C	0
B	5.8

QY07
SWITCH

E	5.8
C	0
B	5.8

QY10
SWITCH

E	4.9
C	0
B	4.9

QY13
SWITCH

E	5.8
C	0
B	5.8

QY15
SWITCH

E	0
C	5.8
B	0

QY16
SWITCH

E	5.8
C	0
B	5.8

QY18
SWITCH

E	5.8
C	0
B	5.8

QY25
SWITCH

E	0
C	5.0
B	0

QY29
SWITCH

E	5.0
C	-9.0
B	5.0

5-5. Motor System Circuit Diagram

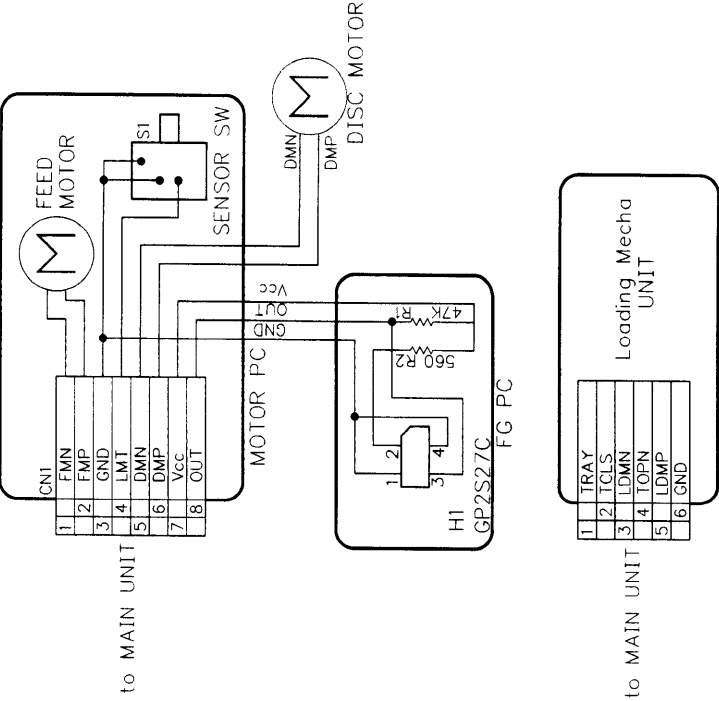


Fig. 3-5-8

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1

2

3

4

5

A

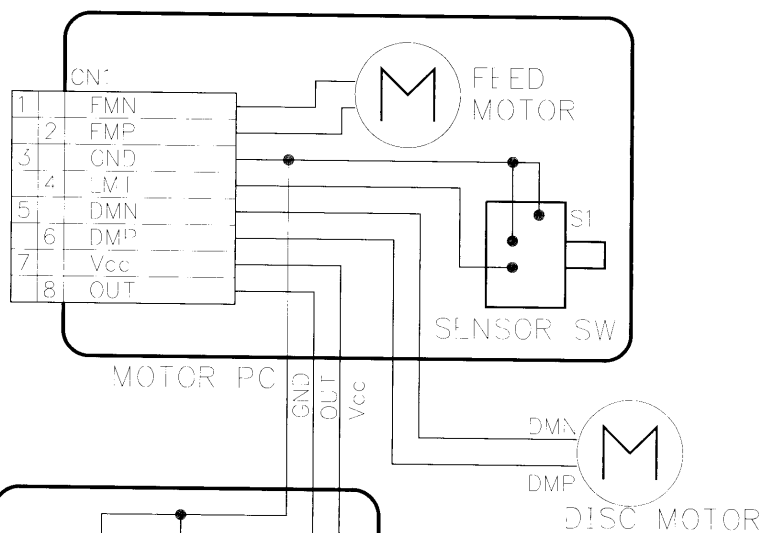
5-5. Motor System Circuit Diagram

B

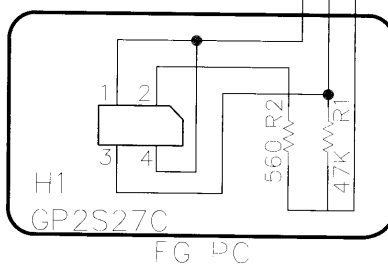
Part No.	Location
CN1	B3
R1	D4
R2	D3
S1	C4

C

to MAIN UNIT

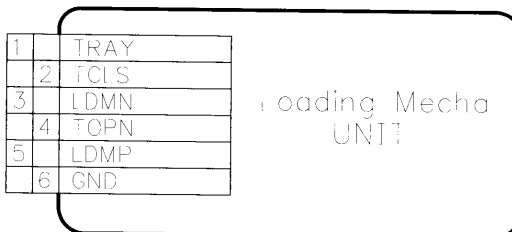


D



E

to MAIN UNIT



F

G

Fig. 3-5-8

5	6	7	8	9	10
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OR

3-5-8

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6. PC BOARDS

6-1. Power Supply PC Board

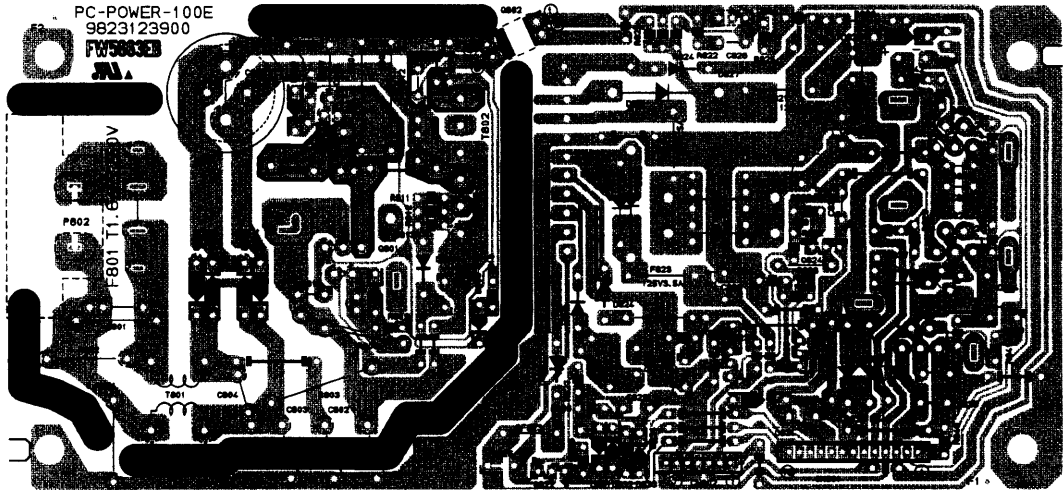


Fig. 3-6-1 EU02 Power Supply PC Board (Bottom side)

Part No.	Location	Part No.	Location
C801	B2	F821	F3
C802	C1	F822	E3
C803	C1	F823	E2
C804	C2	L801	C3
C805	C3	L821	F3
C806	C3	P802	B2
C807	C3	Q801	D2
C808	D3	Q802	D3
C809	D2	Q821	E3
C810	D2	Q822	D1
C811	D1	Q824	F2
C812	D3	Q825	F2
C821	F3	Q826	F2
C822	F3	Q827	F2
C823	E2	Q828	F2
C824	E2	Q829	F2
C825	E2	R801	B2
C826	D1	R802	B2
C827	F3	R803	C2
C828	E3	R804	C3
C829	E2	R805	C3
C830	F2	R806	C3
C831	F1	R807	C3
C832	F2	R808	C2
C833	F3	R809	D2
C834	G2	R810	D2
C835	G1	R811	D3
C836	F3	R812	D2
C837	F3	R813	D2
C838	F3	R821	E3
C839	G2	R822	E3
C840	F1	R823	E3
C841	F1	R824	E3
C842	F1	R825	E3
D801	C2	R826	D1
D802	C2	R827	D2
D803	C2	R828	E2
D804	C2	R829	F2
D805	C3	R830	F2
D806	C3	R831	F2
D807	D2	R832	F2
D808	D2	R833	F2
D809	C3	R836	D1
D821	E3	R837	E2
D822	E3	R838	F3
D823	E3	R840	F2
D824	E2	R841	G2
D825	D2	R842	F3
D826	D2	R843	F1
D827	E3	T801	B2
D828	F3	T802	D3
D829	F1		
D830	F2		
D831	F1		
D832	E1		
D833	E1		
D834	E1		
D835	E3		
D836	E2		
D837	F2		
D838	F2		
D842	F1		

6-2. Power Switch PC Board

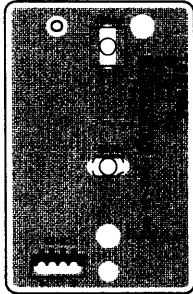


Fig. 3-6-2 EU04
Power Switch PC Board
(Top side)

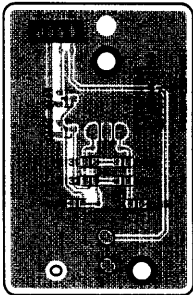


Fig. 3-6-3 EU04
Power Switch PC Board
(Bottom side)

6-3. Disc LED PC Board

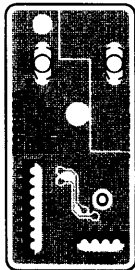


Fig. 3-6-4 EU18
Disc LED PC Board
(Top side)

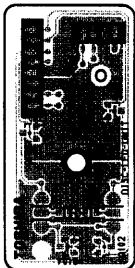


Fig. 3-6-5 EU18
Disc LED PC Board
(Bottom side)

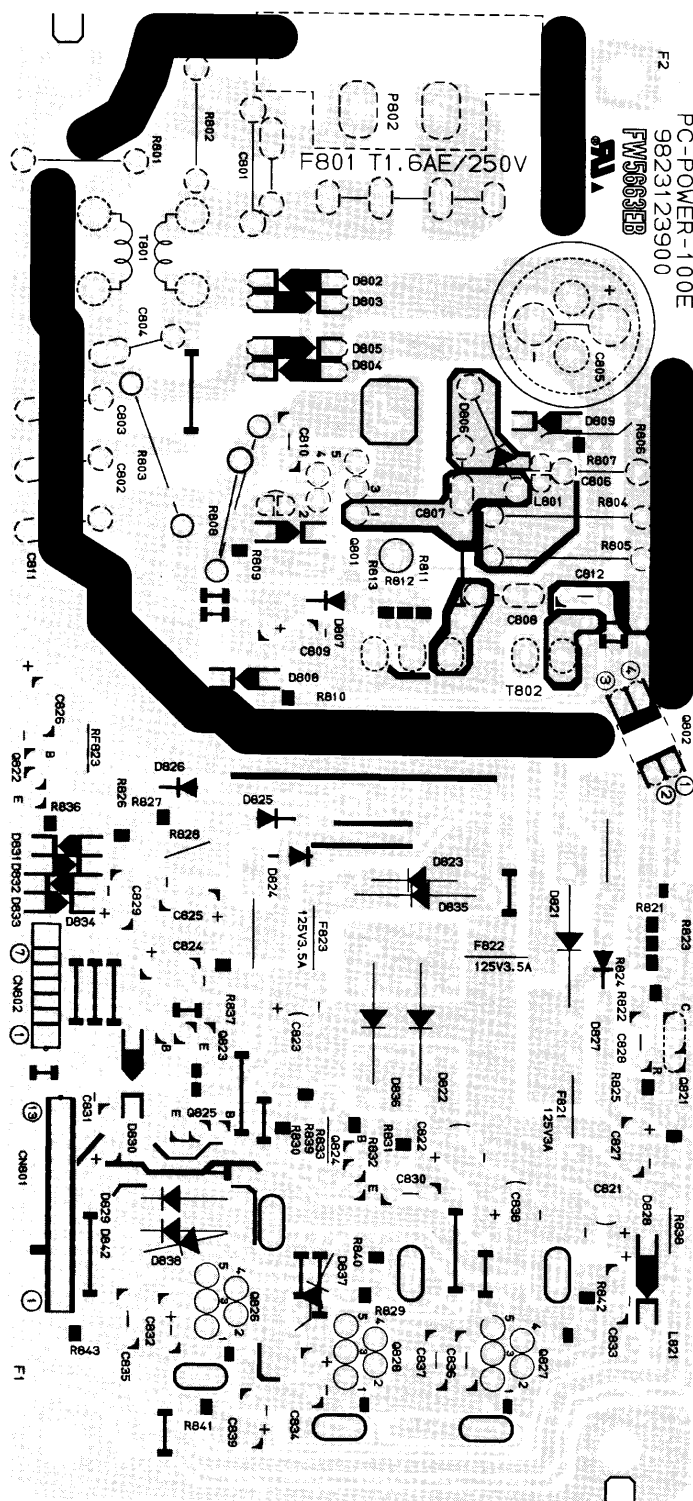
The parts location list shows ex-
A1/B1 = top side/bottom side.

Part No.	Location
CNT05	B1/-
D106	B2/-
Q106	-/B4
Q107	-/B4
R131	-/B4
R132	-/B3
R133	-/B4
R134	-/B3
R135	-/B3
R136	-/B3
S113	B2/-

Part No.	Location
CN103	D1/-
CN104	D1/-
D104	D2/-
D105	D2/-
Q102	-/E3
Q103	-/D4
Q104	-/D3
Q105	-/D3
R129	-/D3
R130	-/D3

6. PC BOARDS

6-1. Power Supply PC Board



Part No.	Location	Part No.	Location
C801	B2	F821	F3
C802	C1	F822	E3
C803	C1	F823	E2
C804	C2	L801	C3
C805	C3	L821	F3
C806	C3	P802	B2
C807	C3	Q801	D2
C808	D3	Q802	D3
C809	D2	Q821	E3
C810	C2	Q822	D1
C811	D1	Q824	F2
C812	D3	Q825	F2
C821	F3	Q826	F2
C822	F3	Q827	F3
C823	E2	Q828	F2
C824	E2	Q829	E2
C825	E2	R801	B2
C826	D1	R802	B2
C827	F3	R803	C2
C828	E3	R804	C3
C829	E2	R805	C3
C830	F2	R806	C3
C831	F1	R807	C3
C832	F2	R808	C2
C833	F3	R809	D2
C834	G2	R810	D2
C835	G1	R811	D3
C836	F3	R812	D2
C837	F3	R813	D2
C838	F3	R821	E3
C839	G2	R822	E3
CN801	F1	R823	E3
CN802	E1	R824	E3
D802	C2	R825	E3
D803	C2	R826	D1
D804	C2	R827	D2
D805	C2	R828	E2
D806	C3	R829	F2
D807	D2	R830	F2
D808	D2	R831	F2
D809	C3	R832	F2
D821	E3	R833	F2
D822	E3	R836	D1
D823	E3	R837	E2
D824	E2	R838	F3
D825	D2	R839	F2
D826	D2	R840	F2
D827	E3	R841	G2
D828	F3	R842	F3
D829	F1	R843	F1
D830	F2	RF823	D1
D831	E1	T801	B2
D832	E1	T802	D3
D833	E1		
D834	E1		
D835	E3		
D836	E2		
D837	F2		
D838	F2		
D842	F1		

Fig. 3-6-1 EU02 Power Supply PC Board (Bottom side)

6-2. Power Switch PC Board

The parts location list shows ex.
A1/B1= top side/bottom side.

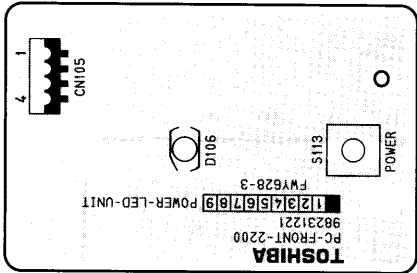


Fig. 3-6-2 EU04
Power Switch PC Board
(Top side)

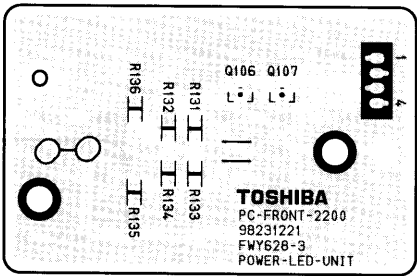


Fig. 3-6-3 EU04
Power Switch PC Board
(Bottom side)

Part No.	Location
CN105	B1/ -
D106	B2/ -
Q106	- /B4
Q107	- /B4
R131	- /B4
R132	- /B3
R133	- /B4
R134	- /B3
R135	- /B3
R136	- /B3
S113	B2/ -

6-3. Disc LED PC Board

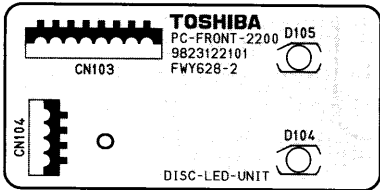


Fig. 3-6-4 EU18
Disc LED PC Board
(Top side)

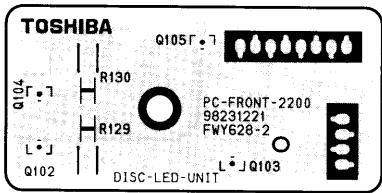


Fig. 3-6-5 EU18
Disc LED PC Board
(Bottom side)

Part No.	Location
CN103	D1/ -
CN104	D1/ -
D104	D2/ -
D105	D2/ -
Q102	- /E3
Q103	- /D4
Q104	- /D3
Q105	- /D3
R129	- /D3
R130	- /D3

6-4. Front Display PC Board

Part No.	Location
A101	B2
BZ101	A6
C101	A6
C104	B1
CW101	B7
CW102	B1
R1101	B1
S101	A5
S102	A5
S103	A6
S104	A6
S105	B7
S106	B7
S107	B6
S108	B6
S109	B5
S110	A7
S111	A5
S112	A5
X101	A6

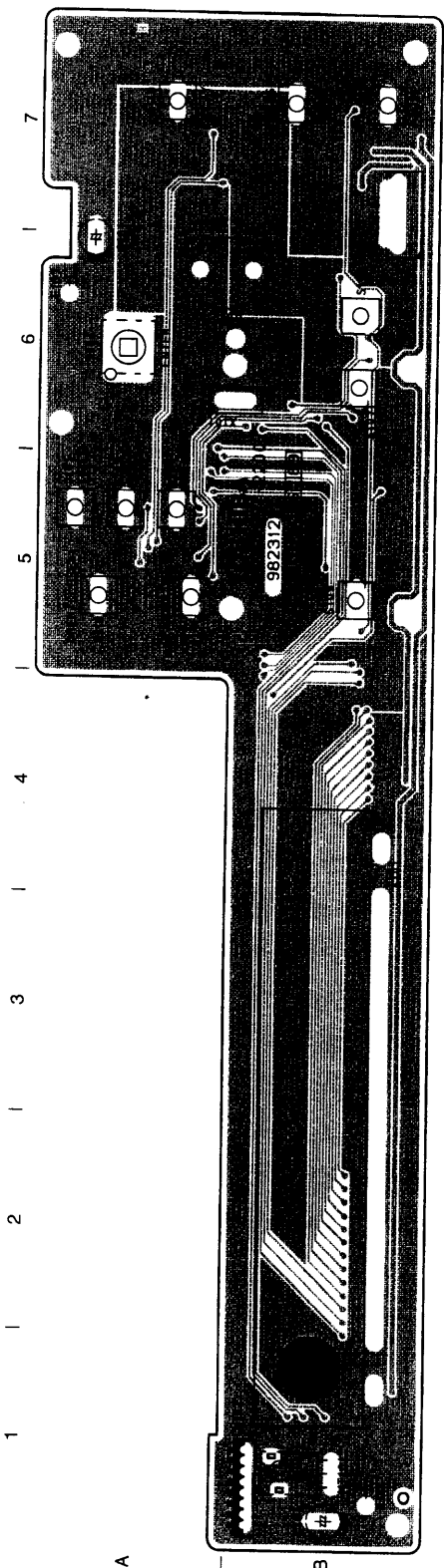


Fig. 3-6-6 EU03 Front Display PC Board (Top Side)

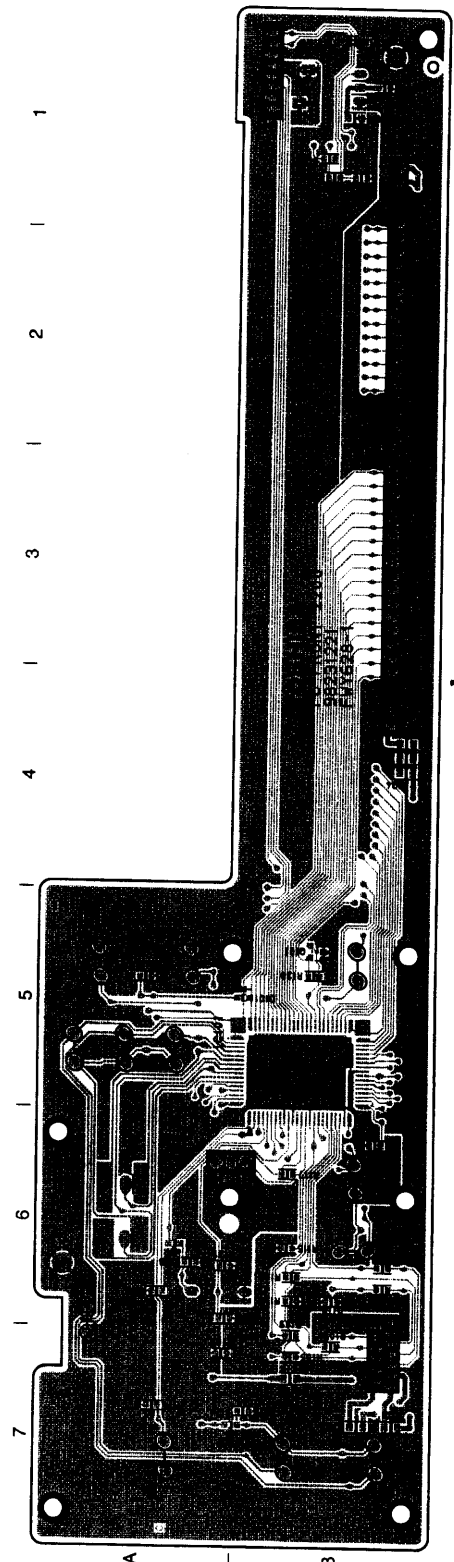


Fig. 3-6-7 EU03 Front Display PC Board (Bottom Side)

Part No.	Location
C102	B1
C103	A7
D101	B5
D102	A7
D103	A6
IC101	B5
L101	B1
Q101	B5
R101	B7
R102	B7
R103	B7
R104	B6
R105	B6
R106	B6
R107	B7
R108	B7
R109	B7
R110	B6
R111	A5
R112	B7
R113	A6
R114	A7
R115	B6
R116	A6
R117	B6
R118	B6
R119	B1
R120	B1
R121	A6
R122	B4
R123	B4
R124	B4
R125	B6
R126	A6
R127	B1
R128	B5

6-4. Front Display PC Board

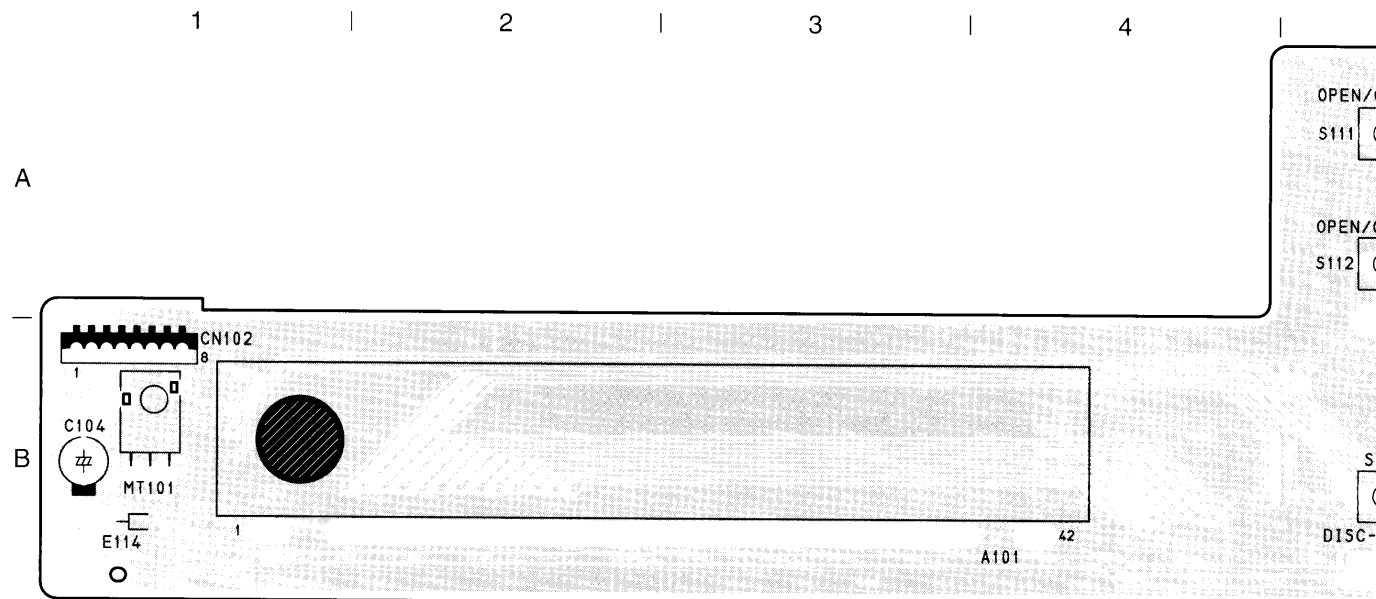


Fig. 3-6-6 EU03 Front Display PC Board (Top S

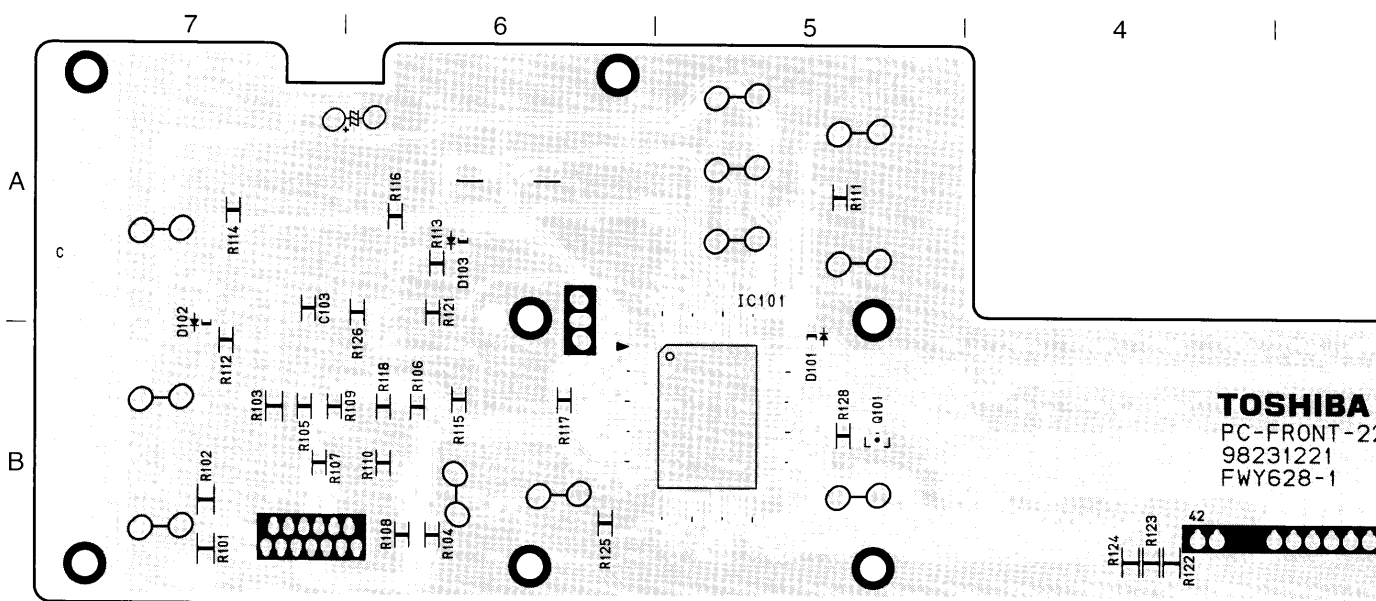
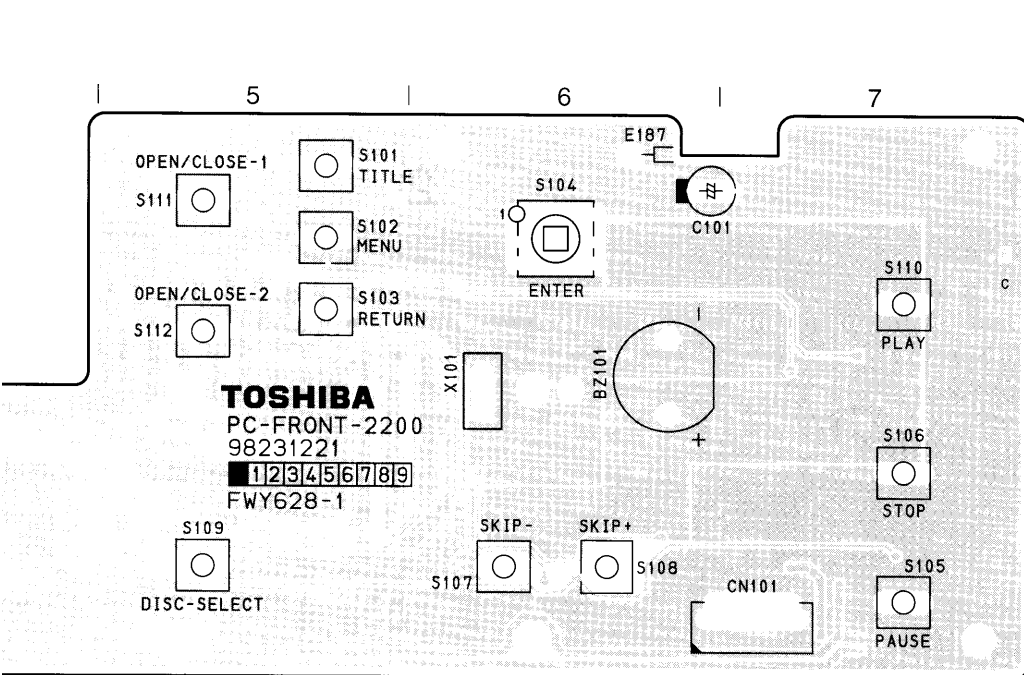
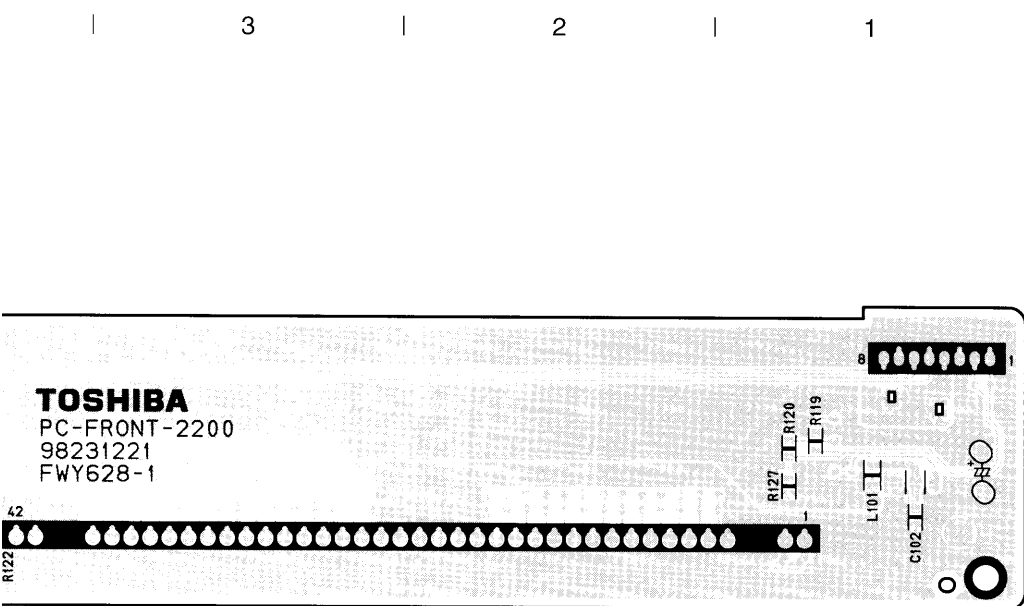


Fig. 3-6-7 EU03 Front Display PC Board (Bottom



Part No.	Location
A101	B2
BZ101	A6
C101	A6
C104	B1
CN101	B7
CN102	B1
MT101	B1
S101	A5
S102	A5
S103	A5
S104	A6
S105	B7
S106	B7
S107	B6
S108	B6
S109	B5
S110	A7
S111	A5
S112	A5
X101	A6

PC Board (Top Side)



Part No.	Location
C102	B1
C103	A7
D101	B5
D102	A7
D103	A6
IC101	B5
L101	B1
Q101	B5
R101	B7
R102	B7
R103	B7
R104	B6
R105	B7
R106	B6
R107	B7
R108	B6
R109	B7
R110	B6
R111	A5
R112	B7
R113	A6
R114	A7
R115	B6
R116	A6
R117	B6
R118	B6
R119	B1
R120	B1
R121	A6
R122	B4
R123	B4
R124	B4
R125	B6
R126	A6
R127	B1
R128	B5

C Board (Bottom Side)

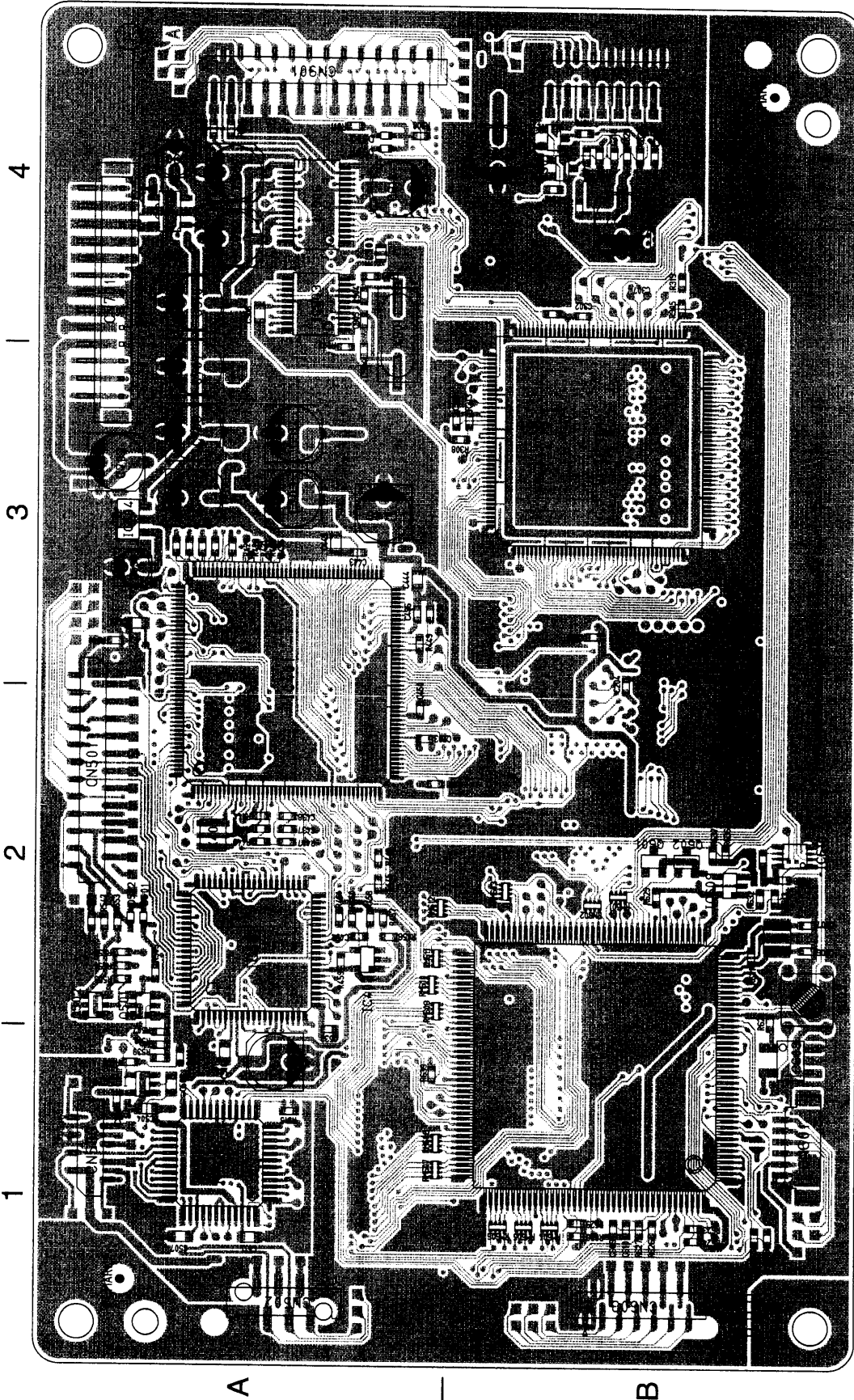


Fig. 3-6-8 EU01 Main PC Board (Top pattern and Top parts location diagram)

6-5. Main PC Board

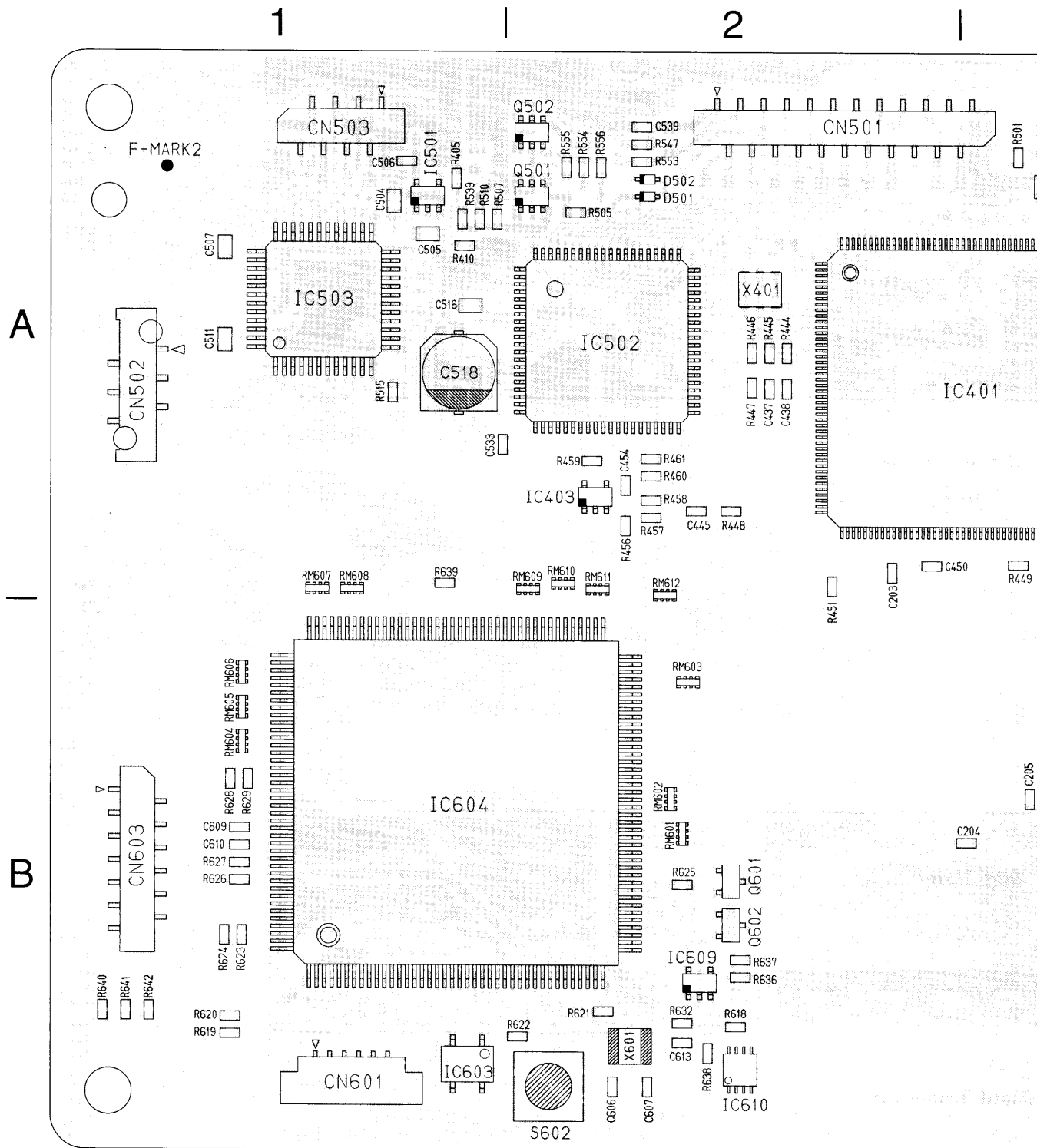
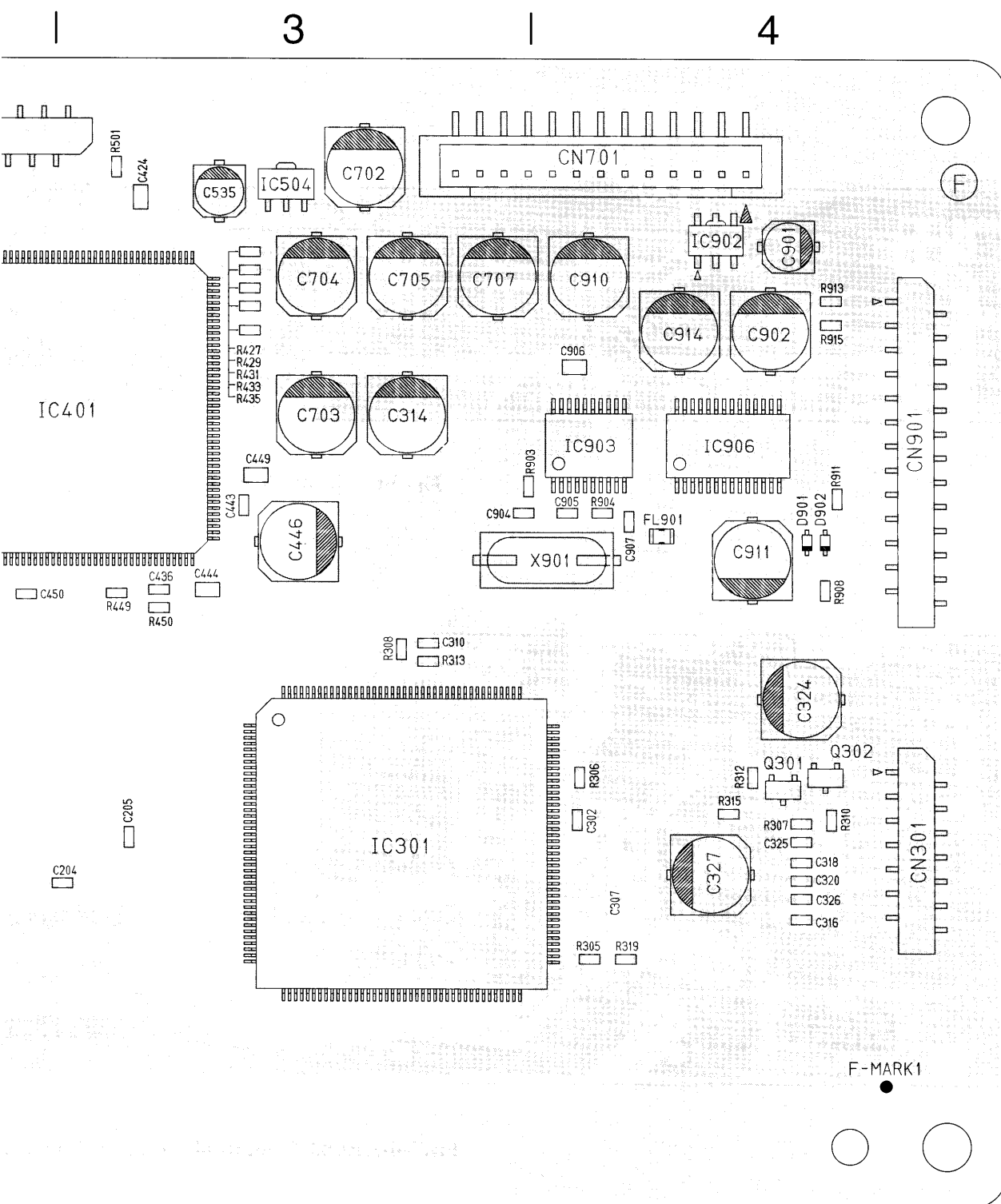


Fig. 3-6-8 EU01 Main PC Board (Top pattern a



(Top pattern and Top parts location diagram)

Part No.	Location	Part No.	Location	Part No.	Location
C203	A2	CN601	B1	R459	A2
C204	B3	CN603	B1	R460	A2
C205	B3	CN701	A4	R461	A2
C302	B4	CN901	A4	R501	A3
C310	B3	D501	A2	R505	A2
C314	A3	D502	A2	R507	A1
C316	B4	D901	A4	R510	A1
C318	B4	D902	A4	R515	A1
C320	B4	FL901	A4	R539	A1
C324	B4	IC301	B3	R547	A2
C325	B4	IC401	A3	R553	A2
C326	B4	IC403	A2	R554	A2
C327	B4	IC501	A1	R555	A2
C424	A3	IC502	A2	R556	A2
C436	A3	IC503	A1	R618	B2
C437	A2	IC504	A3	R619	B1
C438	A2	IC603	B1	R620	B1
C443	A3	IC604	B1	R621	B2
C444	A3	IC609	B2	R622	B2
C445	A2	IC610	B2	R623	B1
C446	A3	IC902	A4	R624	B1
C449	A3	IC903	A4	R625	B2
C450	A2	IC906	A4	R626	B1
C454	A2	JP601	B1	R627	B1
C504	A1	Q301	B4	R628	B1
C505	A1	Q302	B4	R629	B1
C506	A1	Q501	A2	R632	B2
C507	A1	Q502	A2	R636	B2
C511	A1	Q601	B2	R637	B2
C516	A1	Q602	B2	R638	B2
C518	A1	R305	B4	R639	A1
C533	A1	R306	B4	R640	B1
C535	A3	R307	B4	R641	B1
C539	A2	R308	B3	R642	B1
C606	B2	R310	B4	R903	A3
C607	B2	R312	B4	R904	A4
C609	B1	R313	B3	R908	A4
C610	B1	R315	B4	R911	A4
C613	B2	R319	B4	R913	A4
C702	A3	R405	A1	R915	A4
C703	A3	R410	A1	RM601	B2
C704	A3	R427	A3	RM602	B2
C705	A3	R429	A3	RM603	B2
C707	A3	R431	A3	RM604	B1
C901	A4	R433	A3	RM605	B1
C902	A4	R435	A3	RM606	B1
C904	A3	R444	A2	RM607	A1
C905	A4	R445	A2	RM608	A1
C906	A4	R446	A2	RM609	A2
C907	A4	R447	A2	RM610	A2
C910	A4	R448	A2	RM611	A2
C911	A4	R449	A3	RM612	A2
C914	A4	R450	A3	S602	B2
CN301	B4	R451	A2	X401	A2
CN501	A2	R456	A2	X601	B2
CN502	A1	R457	A2	X901	A4
CN503	A1	R458	A2		

Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location
C201	B2	C509	A1	IC608	B1	R516	A2
C202	B3	C510	A2	IC901	B4	R517	A1
C206	B3	C512	A2	IC904	A4	R518	A1
C207	B3	C513	A2	IC905	A4	R519	A2
C301	B3	C514	A2	L901	A4	R520	A1
C303	B3	C515	A1	Q303	B4	R521	A1
C304	B3	C517	A2	Q304	B4	R522	A1
C305	B3	C519	A2	Q401	A1	R523	A1
C306	B4	C520	A3	R205	B3	R524	A1
C307	B4	C522	A2	R301	B3	R525	A2
C308	B3	C523	A2	R302	B4	R526	A1
C309	B4	C524	A2	R303	B4	R527	A1
C311	B3	C525	A2	R304	B4	R528	A1
C312	B4	C526	A2	R309	B4	R529	A1
C313	B3	C527	A2	R311	B4	R530	A1
C315	B4	C528	A2	R314	B4	R532	A1
C317	B4	C529	A2	R316	B4	R533	A1
C319	B4	C530	A2	R320	B4	R535	A2
C321	B4	C531	A2	R322	B4	R536	A2
C322	B4	C532	A2	R323	B4	R538	A2
C323	B4	C534	A2	R325	B4	R542	A2
C328	B4	C536	A3	R326	B4	R545	A2
C401	A2	C538	A2	R401	A3	R546	A3
C402	A2	C540	A2	R402	A1	R548	A2
C403	A2	C541	A1	R403	A3	R549	A2
C404	A2	C542	A2	R404	A1	R550	A2
C405	A2	C601	B1	R406	A2	R551	A2
C406	A2	C602	B1	R407	A3	R552	A2
C407	A3	C603	B1	R408	A1	R557	A2
C408	A2	C604	B1	R409	A2	R601	B1
C409	A3	C605	B2	R411	A2	R602	B1
C410	A2	C608	B2	R412	A3	R603	B1
C411	A3	C611	B2	R413	A2	R604	B1
C412	A2	C612	B2	R414	A2	R605	B1
C413	A2	C614	B1	R415	A3	R606	B1
C414	A3	C615	B2	R416	A3	R607	B1
C415	A2	C706	A4	R417	A2	R608	B1
C416	A3	C708	A3	R418	A3	R609	B1
C417	A3	C709	A3	R419	A2	R610	B1
C418	A3	C710	A3	R420	A2	R611	B1
C419	A3	C711	A4	R421	A2	R612	B1
C420	A3	C903	A4	R422	A2	R613	B1
C421	A2	C908	A4	R423	A2	R614	B2
C422	A3	C909	A4	R424	A2	R615	B1
C423	A2	C912	A4	R425	A2	R616	B1
C425	A3	C913	A4	R426	A3	R617	B1
C426	A2	C915	B4	R428	A3	R630	B2
C427	A3	C916	A4	R430	A3	R631	B2
C428	A3	C917	A4	R432	A3	R633	B2
C429	A3	CN602	B2	R434	A3	R634	B1
C430	A3	FL301	A3	R436	A3	R635	B2
C431	A3	FL306	B4	R437	A3	R643	B1
C432	A3	FL401	A3	R438	A3	R644	B1
C433	A3	FL701	A3	R439	A3	R645	B1
C434	A3	FL702	A3	R440	A2	R701	A4
C435	A3	FL703	A3	R441	A2	R901	B4
C439	A3	FL704	A3	R442	A3	R902	A4
C440	A2	FL705	A3	R443	A3	R905	A4
C441	A2	IC201	B2	R452	A3	R906	A4
C442	A2	IC202	B2	R453	A3	R907	A4
C447	A2	IC302	B3	R454	A2	R909	A4
C448	A2	IC303	B4	R502	A2	R912	A4
C451	B1	IC304	B3	R503	A2	R919	A4
C452	A2	IC402	A3	R504	A3	R921	A4
C453	A2	IC601	B1	R506	A3	R924	A4
C501	A2	IC602	B2	R508	A2	RM613	B1
C502	A2	IC605	A1	R509	A1	RM901	A4
C503	A2	IC606	B2	R512	A2	RM902	A4
C508	A1	IC607	B1	R513	A1	RM903	A4

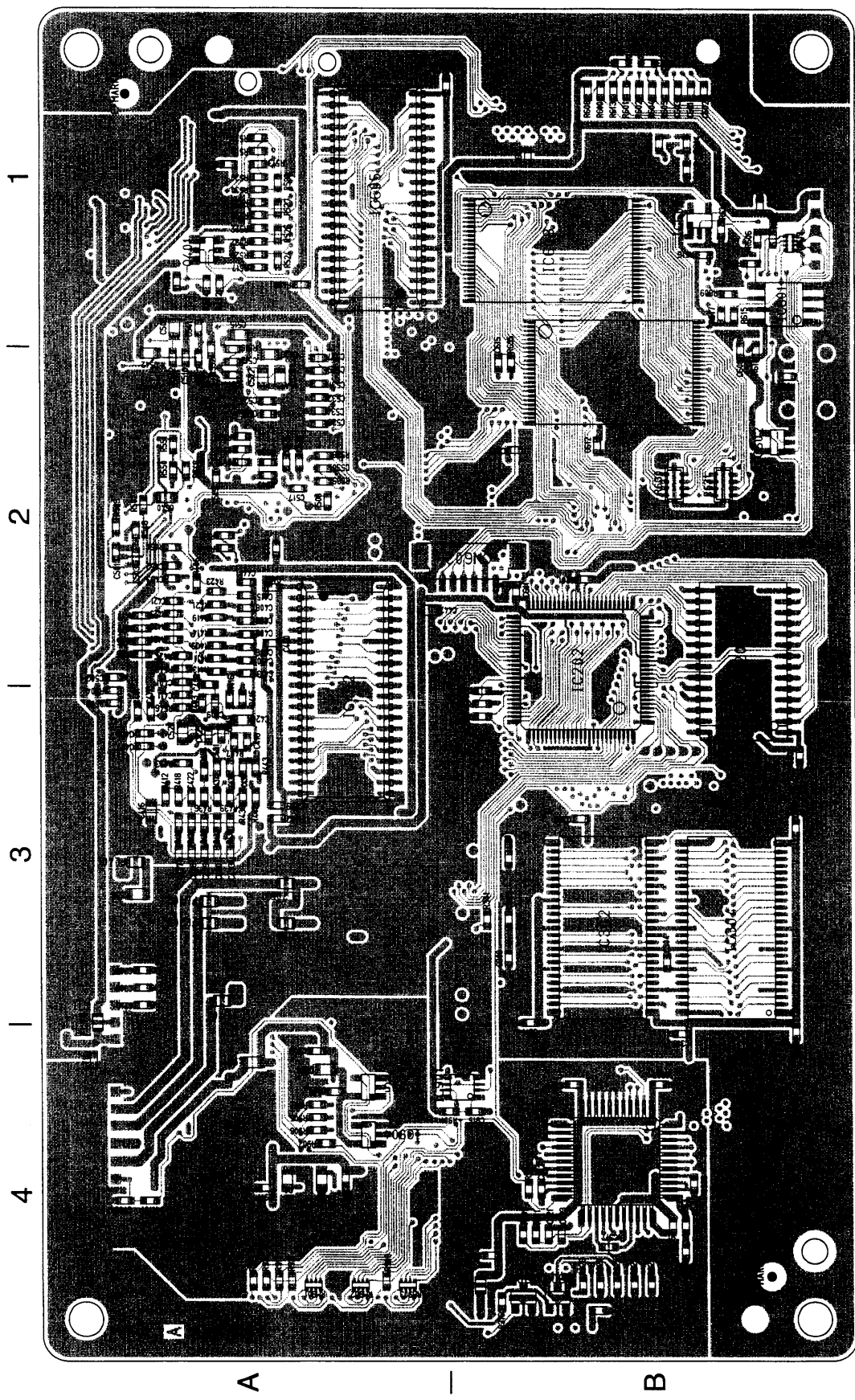


Fig. 3-6-9 EU01 Main PC Board (Bottom pattern and Bottom parts location diagram)

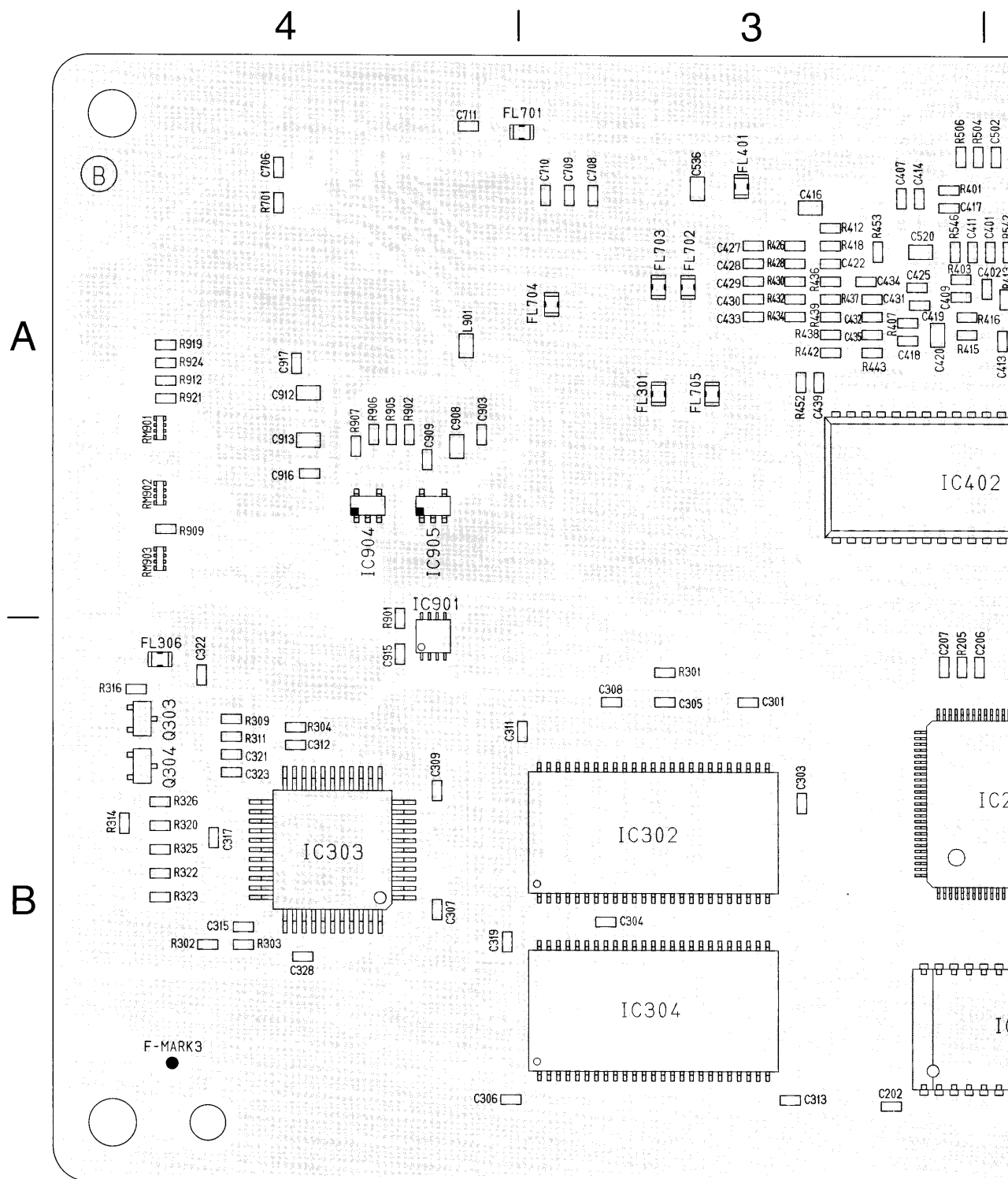
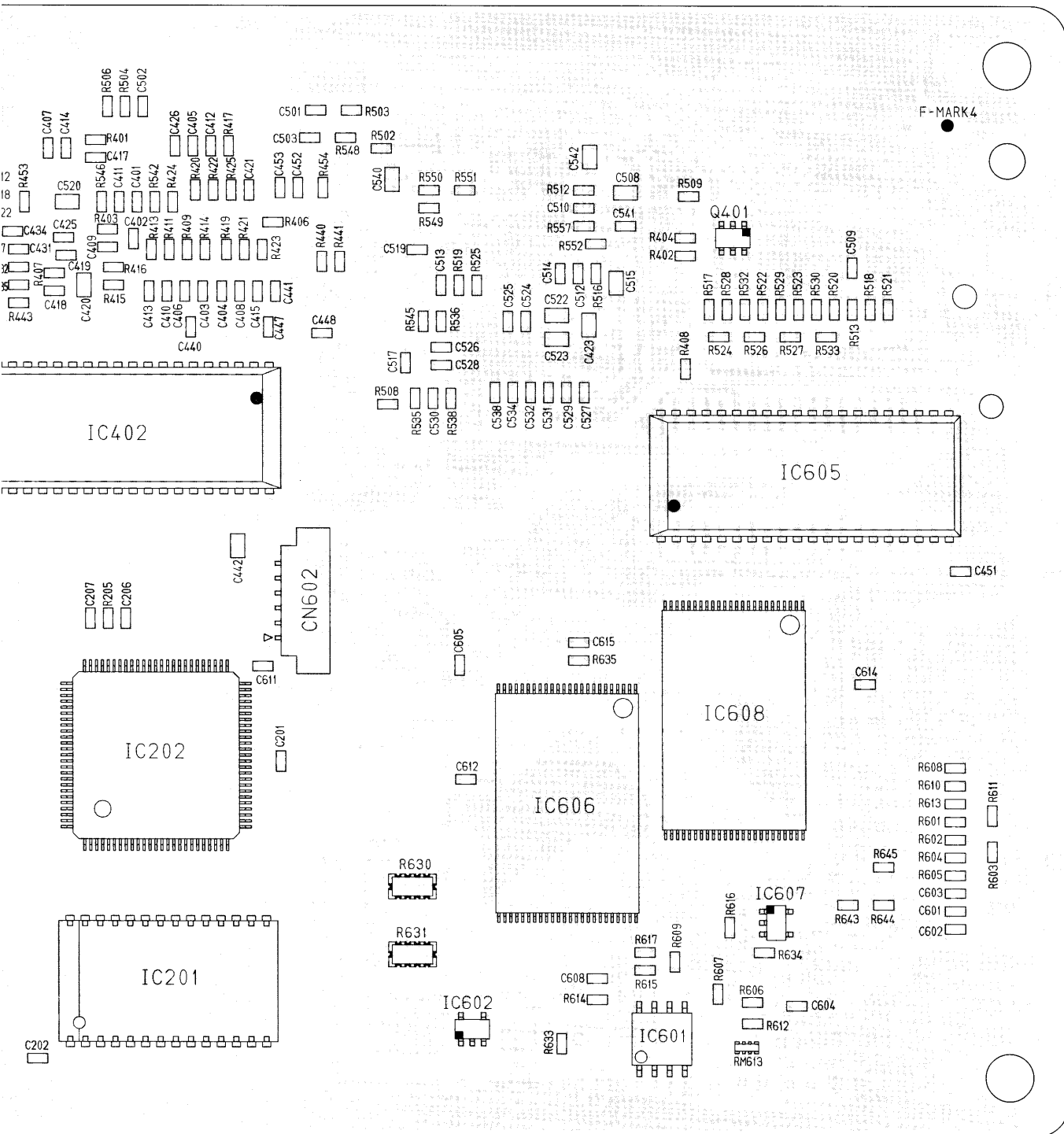


Fig. 3-6-9 EU01 Main PC Board (Bottom pattern)

2

1



ard (Bottom pattern and Bottom parts location diagram)

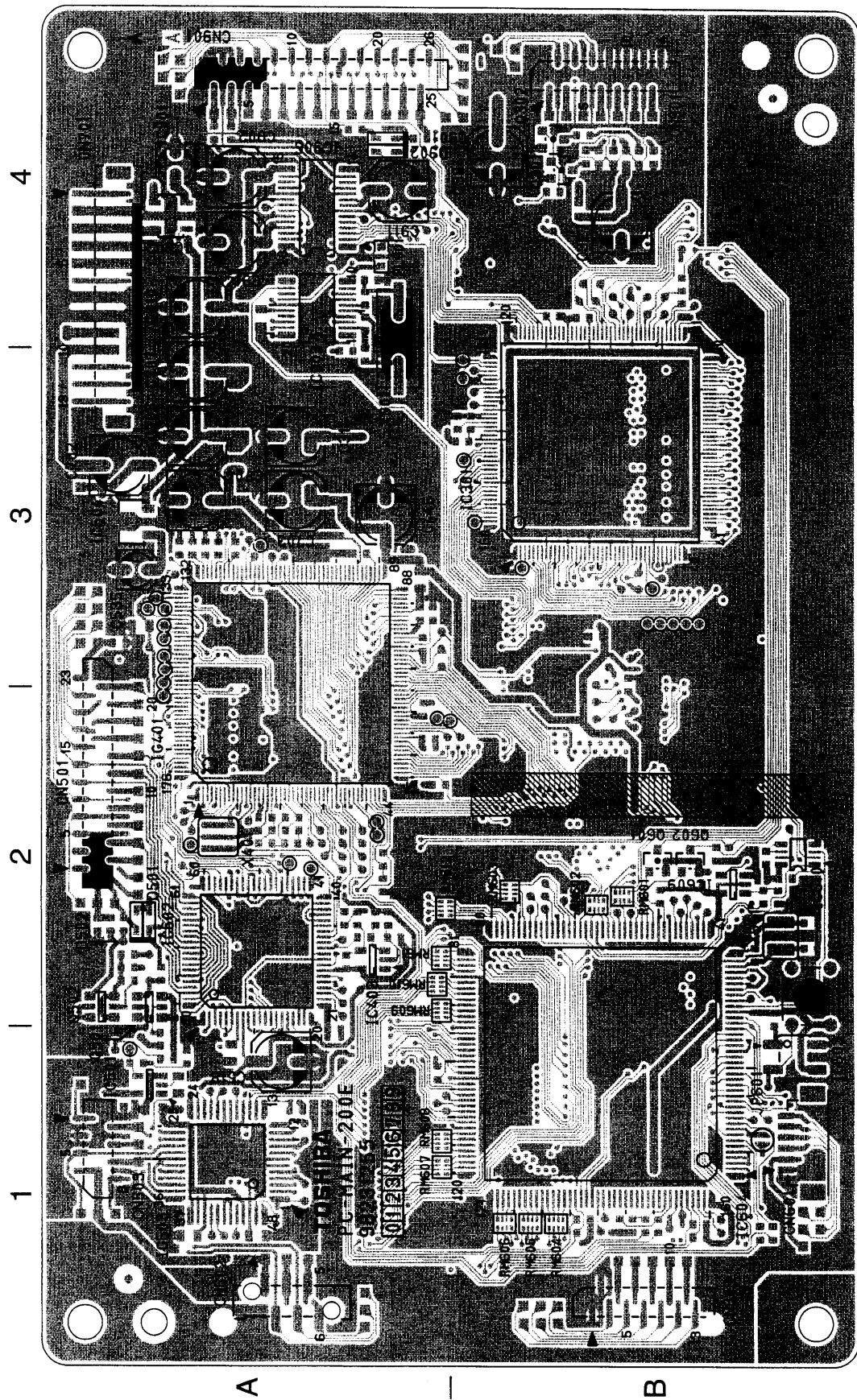


Fig. 3-6-10 EU01 Main PC Board (Top pattern and character/symbol)

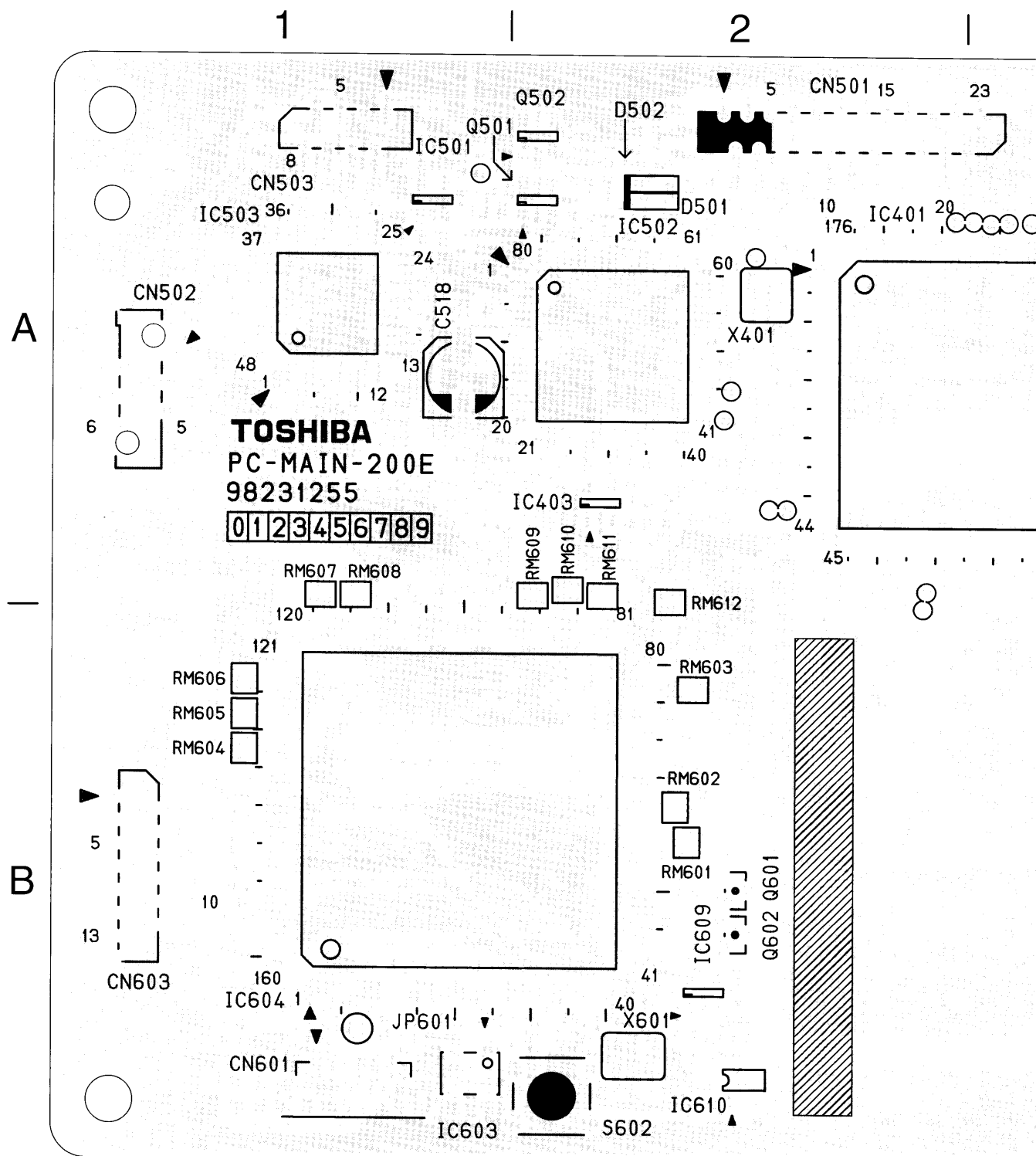
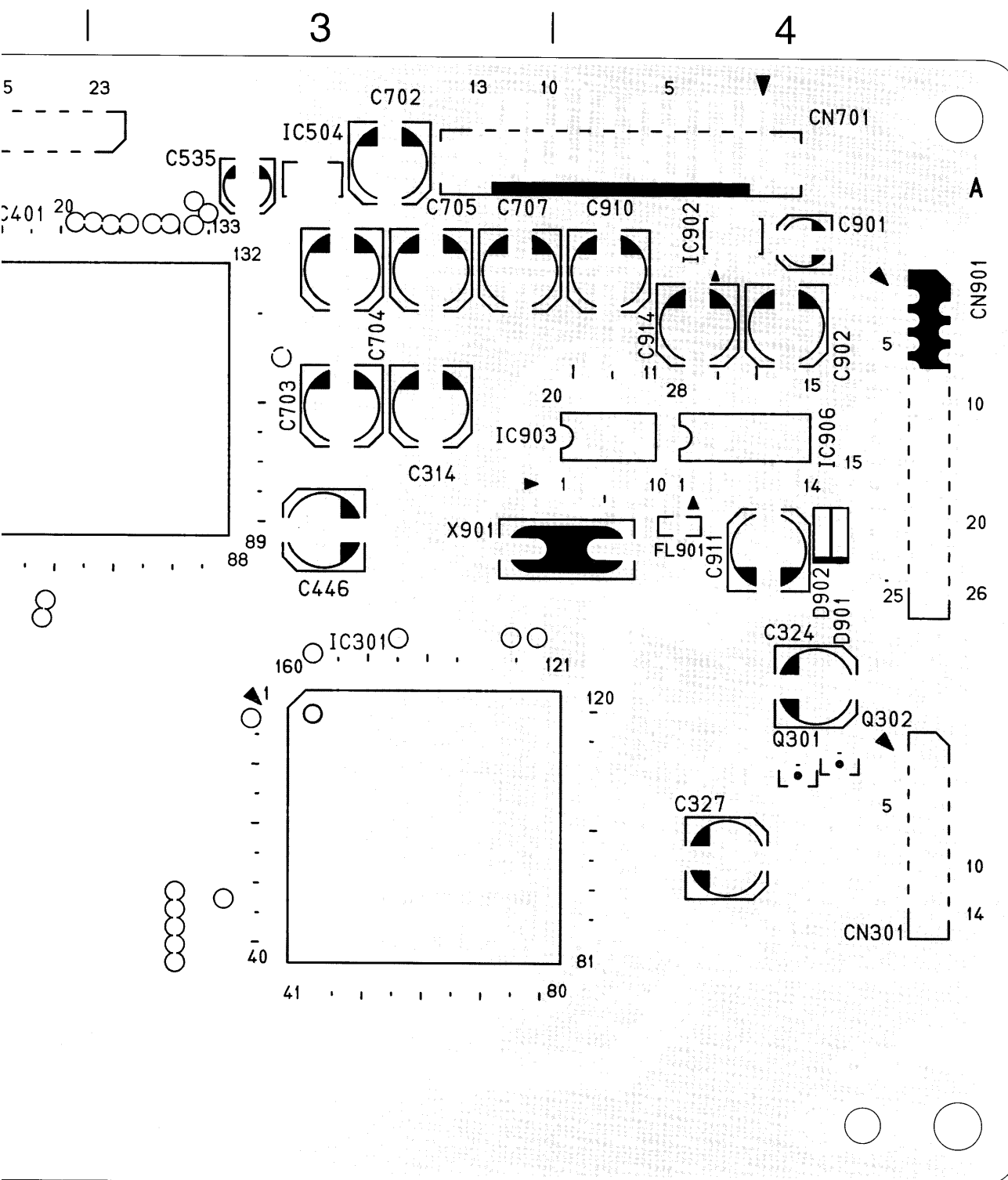


Fig. 3-6-10 EU01 Main PC Board (Top pat



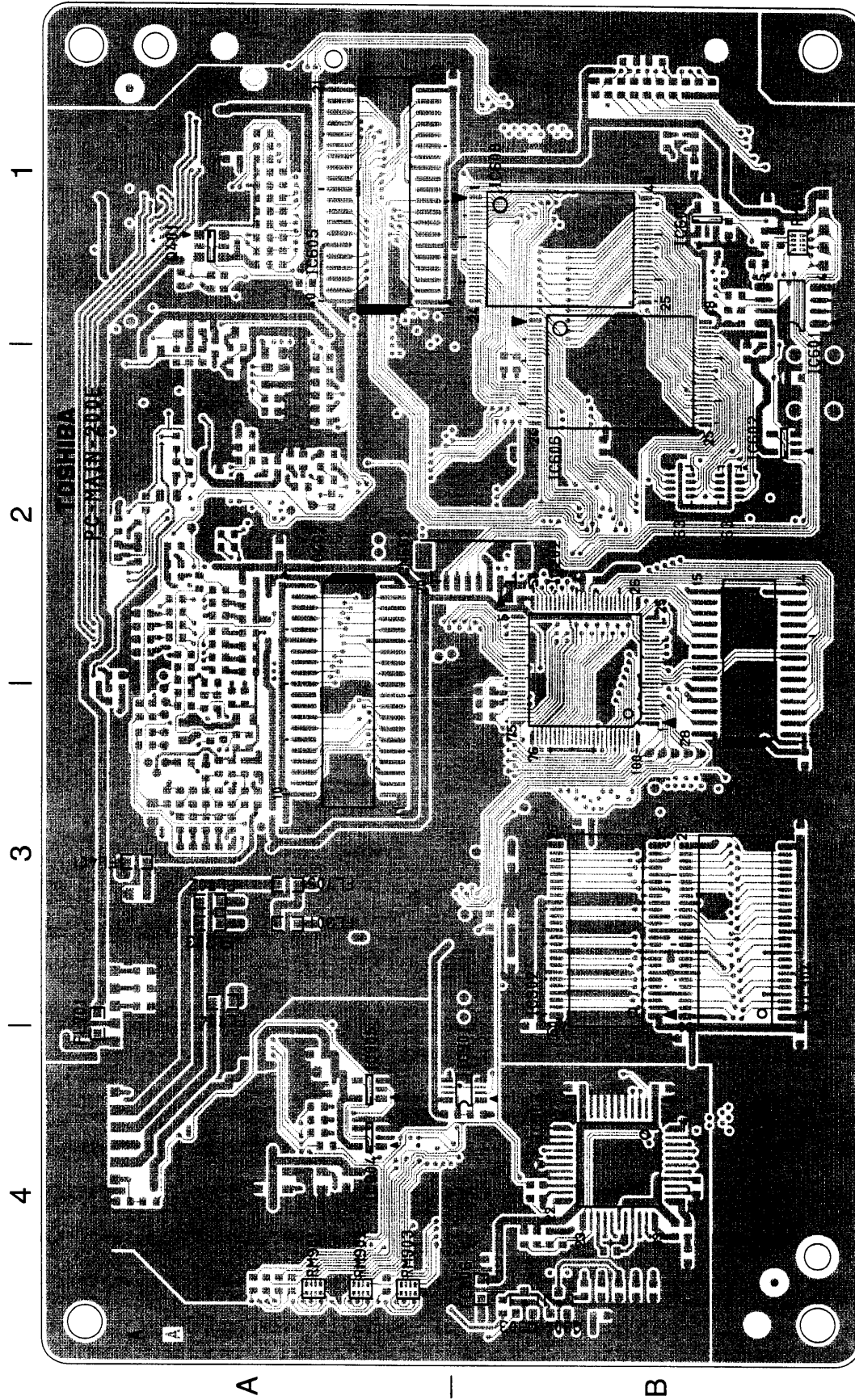


Fig. 3-6-11 EU01 Main PC Board (Bottom pattern and character/symbol)

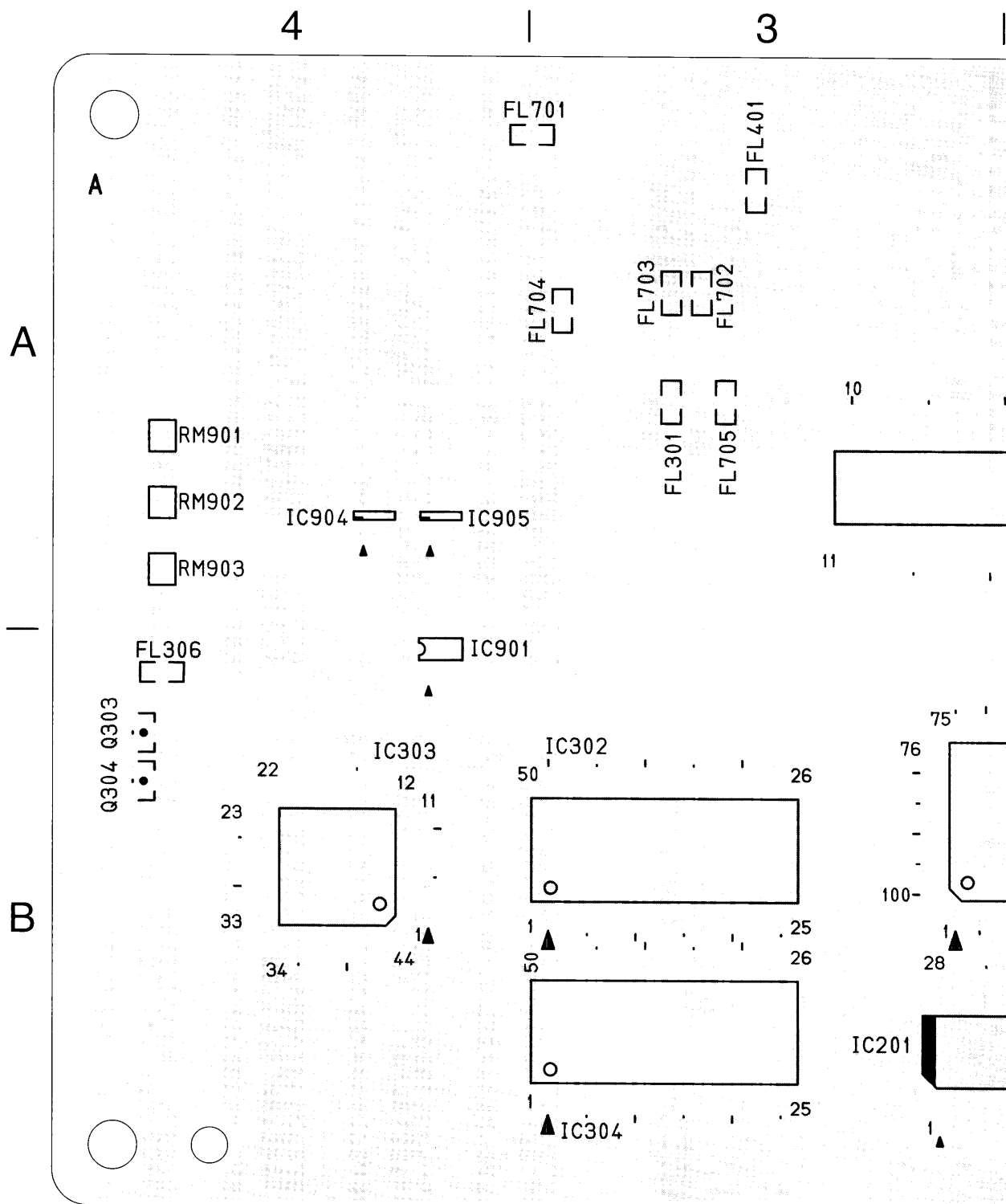
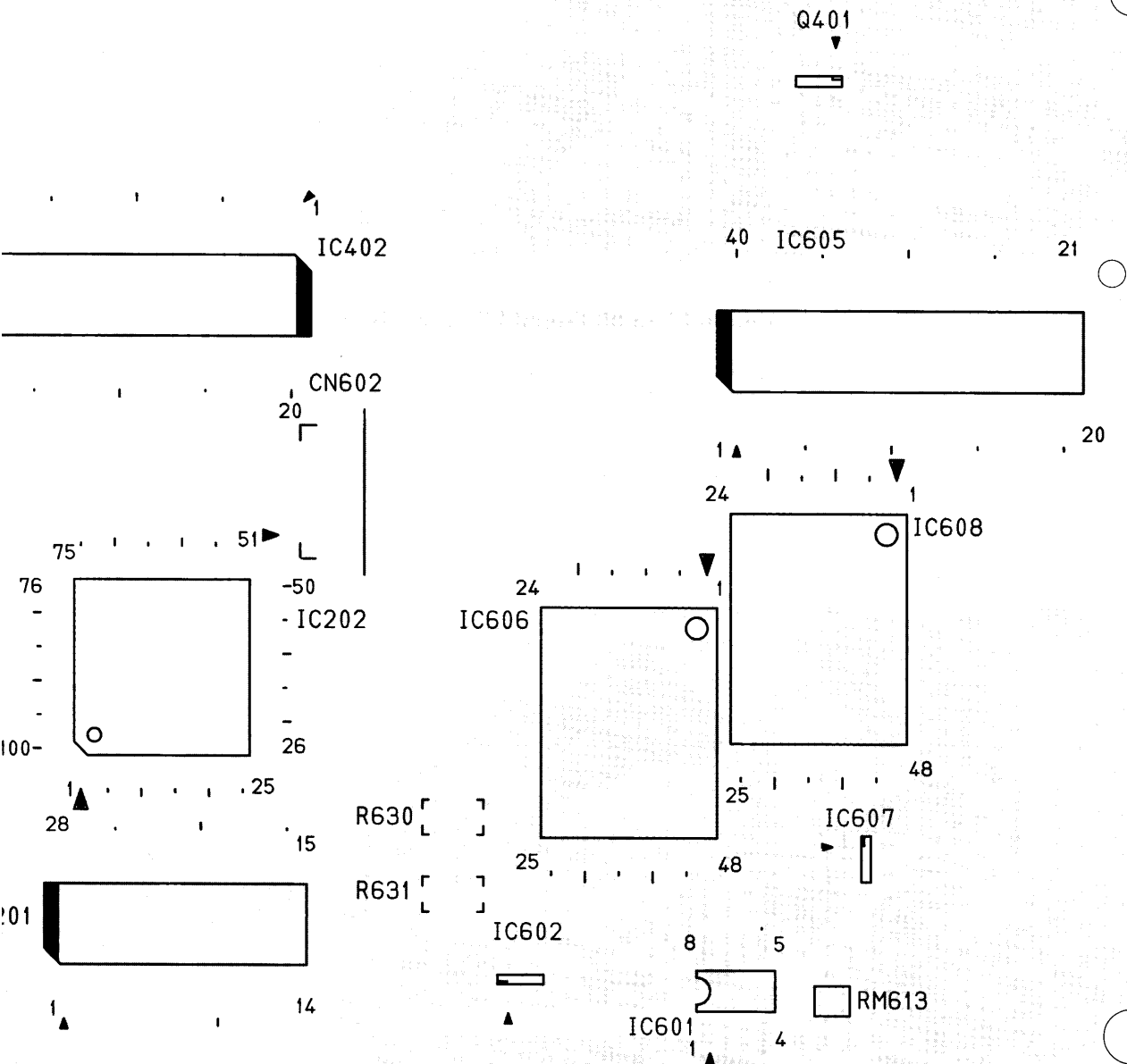


Fig. 3-6-11 EU01 Main PC Board (B)

TOSHIBA
PC-MAIN-200E



PC Board (Bottom pattern and character/symbol)

6-6. Output PC Board

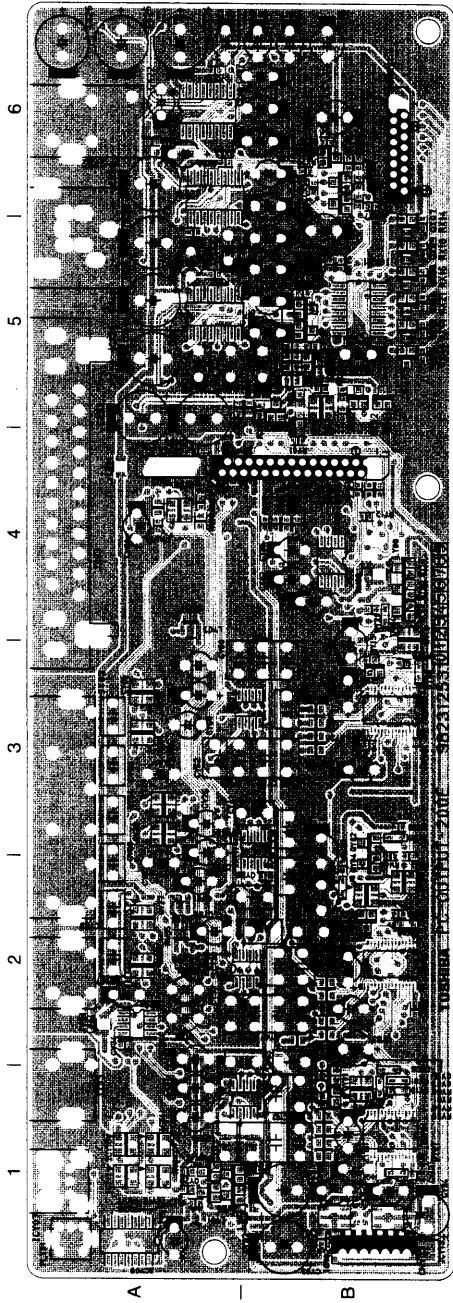


Fig. 3-6-12 EU05 Output PC Board (Top side)

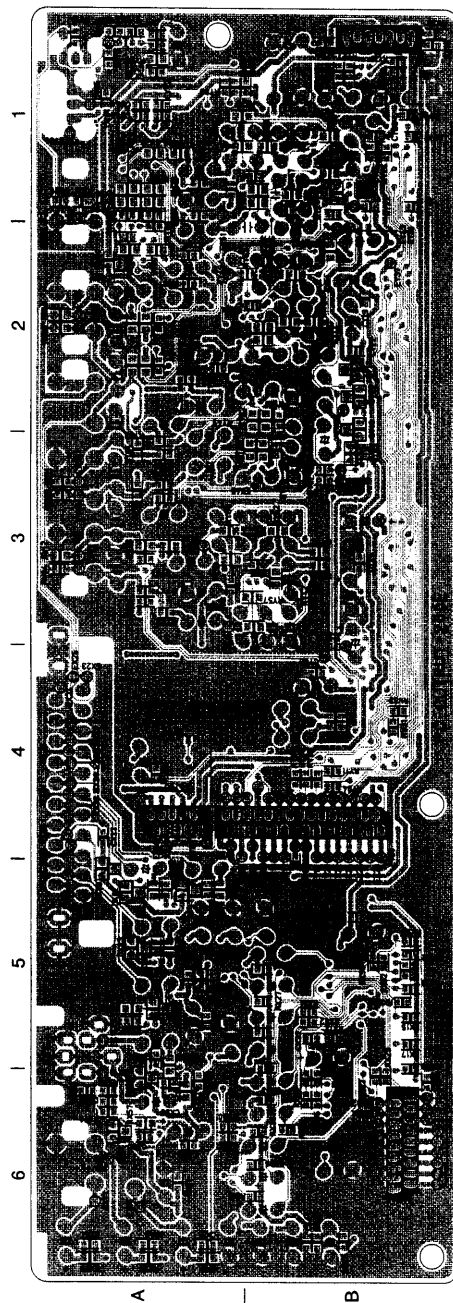


Fig. 3-6-13 EU05 Output PC Board (Bottom side)

Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location
CN001 B6	CY05 B4	CY63 B1	IC05 B4	QY06 B4	B4	IC05 B4	QY06 B4
CN001 A4	CY07 B1	CY64 A3	IC06 B2	QY07 B1	B1	IC06 B2	QY07 B1
CN002 B4	CY08 B2	CY65 B2	IC07 A1	QY08 B2	B2	IC07 A1	QY08 B2
CN003 B1	CY09 B3	CY66 B1	IC08 B3	QY09 B1	B1	IC08 B3	QY09 B1
CN001 A2	CY10 B1	CY67 B2	IC09 A1	QY10 B2	B2	IC09 A1	QY10 B2
CN001 B5	CY11 B2	CY68 B2	IC10 B2	QY11 B2	B5	IC10 B2	QY11 B2
CN001 B3	CY12 B3	CY69 B2	IC11 B1	QY12 B3	B3	IC11 B1	QY12 B3
CN001 B4	CY13 B3	CY70 A2	IC12 B3	QY13 B1	B4	IC12 B3	QY13 B1
CN001 A5	CY14 B3	CY71 A1	IC13 B1	QY14 A1	B5	IC13 B1	QY14 A1
CN001 B5	CY15 B1	CY72 A2	IC14 A1	QY15 A2	B4	IC14 A1	QY15 A2
CN001 A6	CY16 B2	CY73 B1	IC15 A1	QY16 B1	B5	IC15 A1	QY16 B1
CN001 B6	CY17 B3	CY74 A2	IC16 A1	QY17 A2	B4	IC16 A1	QY17 A2
CN001 B7	CY18 A3	CY75 A2	IC17 A2	QY18 A3	B5	IC17 A2	QY18 A3
CN001 B8	CY19 B3	CY76 A3	IC18 A3	QY19 B3	B4	IC18 A3	QY19 B3
CN001 B9	CY20 B2	CY77 A3	IC19 A3	QY20 B2	A3	IC19 A3	QY20 B2
CN001 B0	CY21 B2	CY78 A3	IC20 A3	QY21 B2	A3	IC20 A3	QY21 B2
CN001 A8	CY22 B3	CY79 A2	IC21 A6	QY22 B3	A3	IC21 A6	QY22 B3
CN001 A9	CY23 B3	CY80 A2	IC22 A6	QY23 B3	A4	IC22 A6	QY23 B3
CN001 A10	CY24 A6	CY81 A2	IC23 A6	QY24 A6	A4	IC23 A6	QY24 A6
CN001 A11	CY25 B3	CY82 A2	IC24 A2	QY25 B3	A4	IC24 A2	QY25 B3
CN001 A12	CY26 A3	CY83 A2	IC25 A2	QY26 A3	A4	IC25 A2	QY26 A3
CN001 A13	CY27 B3	CY84 A3	IC26 A3	QY27 B3	A2	IC26 A3	QY27 B3
CN001 A14	CY28 B3	CY85 A3	IC27 A3	QY28 B3	A2	IC27 A3	QY28 B3
CN001 A15	CY29 B3	CY86 A3	IC28 A3	QY29 B3	A2	IC28 A3	QY29 B3
CN001 A16	CY30 A2	CY87 A3	IC29 A3	QY30 A2	A2	IC29 A3	QY30 A2
CN001 A17	CY31 B2	CY88 A3	IC30 A3	QY31 B2	A2	IC30 A3	QY31 B2
CN001 A18	CY32 B3	CY89 A3	IC31 A3	QY32 B3	A4	IC31 A3	QY32 B3
CN001 A19	CY33 B3	CY90 A2	IC32 A3	QY33 B3	A4	IC32 A3	QY33 B3
CN001 A20	CY34 B1	CY91 B1	IC33 A3	QY34 B1	A4	IC33 A3	QY34 B1
CN001 A21	CY35 B1	CY92 B1	IC34 A3	QY35 B1	A4	IC34 A3	QY35 B1
CN001 A22	CY36 B1	CY93 B1	IC35 A3	QY36 B1	A4	IC35 A3	QY36 B1
CN001 A23	CY37 B2	CY94 B1	IC36 A3	QY37 B2	A4	IC36 A3	QY37 B2
CN001 A24	CY38 B2	CY95 A2	IC37 A3	QY38 B2	A4	IC37 A3	QY38 B2
CN001 A25	CY39 B2	CY96 A2	IC38 A3	QY39 B2	A4	IC38 A3	QY39 B2
CN001 A26	CY40 B3	CY97 B5	IC39 A3	QY40 B3	A4	IC39 A3	QY40 B3
CN001 A27	CY41 B3	DY01 B1	IC40 B5	QY41 B3	A4	IC40 B5	QY41 B3
CN001 A28	CY42 B3	DY02 B1	IC41 B5	QY42 B3	A4	IC41 B5	QY42 B3
CN001 A29	CY43 B3	DY03 B3	IC42 B5	QY43 B3	A4	IC42 B5	QY43 B3
CN001 A30	CY44 B2	DY04 B4	IC43 B5	QY44 B2	A4	IC43 B5	QY44 B2
CN001 A31	CY45 B2	DY05 B2	IC44 B5	QY45 B2	A4	IC44 B5	QY45 B2
CN001 A32	CY46 B2	DY06 B1	IC45 B5	QY46 B2	A4	IC45 B5	QY46 B2
CN001 A33	CY47 B2	DY07 B3	IC46 B5	QY47 B2	A4	IC46 B5	QY47 B2
CN001 A34	CY48 B2	DY08 B3	IC47 B5	QY48 B2	A4	IC47 B5	QY48 B2
CN001 A35	CY49 B2	DY09 B2	IC48 B5	QY49 B2	A4	IC48 B5	QY49 B2
CN001 A36	CY50 B4	DY10 B1	IC49 B5	QY50 B4	A4	IC49 B5	QY50 B4
CN001 A37	CY51 A3	FLY01 A1	IC50 B5	QY51 A3	A4	IC50 B5	QY51 A3
CN001 A38	CY52 A3	ICX02 A6	IC51 B5	QY52 A3	A4	IC51 B5	QY52 A3
CN001 A39	CY53 A2	ICX03 A6	IC52 B5	QY53 A2	A4	IC52 B5	QY53 A2
CN001 A40	CY54 B1	ICX04 A5	IC53 B5	QY54 B1	A4	IC53 B5	QY54 B1
CN001 A41	CY55 B4	ICX05 B6	IC54 B5	QY55 B4	A4	IC54 B5	QY55 B4
CN001 A42	CY56 B4	ICX06 B6	IC55 B5	QY56 B4	A4	IC55 B5	QY56 B4
CN001 A43	CY57 B6	ICX07 B6	IC56 B5	QY57 B6	A4	IC56 B5	QY57 B6
CN001 A44	CY58 B6	ICX08 B6	IC57 B5	QY58 B6	A4	IC57 B5	QY58 B6
CN001 A45	CY59 B6	ICX09 B6	IC58 B5	QY59 B6	A4	IC58 B5	QY59 B6
CN001 A46	CY60 A3	ICX10 B4	IC59 B5	QY60 A3	A4	IC59 B5	QY60 A3
CN001 A47	CY61 B1	ICY02 B1	IC60 B5	QY61 B1	A4	IC60 B5	QY61 B1
CN001 A48	CY62 B1	ICY03 A2	ICY04 B2	QY62 B1	A4	ICY03 A2	QY62 B1
CN001 A49	CY63 B1	ICY04 A2	ICY05 B4	QY63 B1	A4	ICY04 A2	QY63 B1
CN001 A50	CY64 B1	ICY05 B4	ICY06 B2	QY64 B1	A4	ICY05 B4	QY64 B1
CN001 A51	CY65 B1	ICY06 B2	ICY07 A1	QY65 B1	A4	ICY06 B2	QY65 B1
CN001 A52	CY66 B1	ICY07 A1	ICY08 B3	QY66 B1	A4	ICY07 A1	QY66 B1
CN001 A53	CY67 B2	ICY08 B3	ICY09 A1	QY67 B2	A4	ICY08 B3	QY67 B2
CN001 A54	CY68 B2	ICY09 A1	ICY10 B2	QY68 B2	A4	ICY09 A1	QY68 B2
CN001 A55	CY69 B3	ICY10 B2	ICY11 B4	QY69 B3	A4	ICY10 B2	QY69 B3
CN001 A56	CY70 A1	ICY11 B4	ICY12 B3	QY70 A1	A4	ICY11 B4	QY70 A1
CN001 A57	CY71 A1	ICY12 B3	ICY13 B6	QY71 A1	A4	ICY12 B3	QY71 A1
CN001 A58	CY72 A1	ICY13 B6	ICY14 A1	QY72 A1	A4	ICY13 B6	QY72 A1
CN001 A59	CY73 A1	ICY14 A1	ICY15 A1	QY73 A1	A4	ICY14 A1	QY73 A1
CN001 A60	CY74 A1	ICY15 A1	ICY16 A1	QY74 A1	A4	ICY15 A1	QY74 A1
CN001 A61	CY75 A1	ICY16 A1	ICY17 A5	QY75 A1	A4	ICY16 A1	QY75 A1
CN001 A62	CY76 A1	ICY17 A5	ICY18 A5	QY76 A1	A4	ICY17 A5	QY76 A1
CN001 A63	CY77 A1	ICY18 A5	ICY19 A1	QY77 A1	A4	ICY18 A5	QY77 A1
CN001 A64	CY78 A1	ICY19 A1	ICY20 A3	QY78 A1	A4	ICY19 A1	QY78 A1
CN001 A65	CY79 A1	ICY20 A3	ICY21 A3	QY79 A1	A4	ICY20 A3	QY79 A1
CN001 A66	CY80 A1	ICY21 A3	ICY22 A3	QY80 A1	A4	ICY21 A3	QY80 A1
CN001 A67	CY81 A1	ICY22 A3	ICY23 A3	QY81 A1	A4	ICY22 A3	QY81 A1
CN001 A68	CY82 A1	ICY23 A3	ICY24 A3	QY82 A1	A4	ICY23 A3	QY82 A1
CN001 A69	CY83 A1	ICY24 A3	ICY25 A3	QY83 A1	A4	ICY24 A3	QY83 A1
CN001 A70	CY84 A1	ICY25 A3	ICY26 A4	QY84 A1	A4	ICY25 A3	QY84 A1
CN001 A71	CY85 A1	ICY26 A4	ICY27 A2	QY85 A1	A4	ICY26 A4	QY85 A1
CN001 A72	CY86 A1	ICY27 A2	ICY28 A2	QY86 A1	A4	ICY27 A2	QY86 A1
CN001 A73	CY87 A1	ICY28 A2	ICY29 B5	QY87 A1	A4	ICY28 A2	QY87 A1
CN001 A74	CY88 A1	ICY29 B5	ICY30 B1	QY88 A1	A4	ICY29 B5	QY88 A1
CN001 A75	CY89 A1	ICY30 B1	ICY31 A4	QY89 A1	A4	ICY30 B1	QY89 A1
CN001 A76	CY90 A1	ICY31 A4	ICY32 B1	QY90 A1	A4	ICY31 A4	QY90 A1
CN001 A77	CY91 A1	ICY32 B1	ICY33 B2	QY91 A1	A4	ICY32 B1	QY91 A1
CN001 A78	CY92 A1	ICY33 B2	ICY34 B1	QY92 A1	A4	ICY33 B2	QY92 A1
CN001 A79	CY93 A1	ICY34 B1	ICY35 B2	QY93 A1	A4	ICY34 B1	QY93 A1
CN001 A80	CY94 A1	ICY35 B2	ICY36 B1	QY94 A1	A4	ICY35 B2	QY94 A1
CN001 A81	CY95 A1	ICY36 B1	ICY37 B2	QY95 A1	A4	ICY36 B1	QY95 A1
CN001 A82	CY96 A1	ICY37 B2	ICY38 B2	QY96 A1	A4	ICY37 B2	QY96 A1
CN001 A83	CY97 A1	ICY38 B2	ICY39 B2	QY97 A1	A4	ICY38 B2	QY97 A1
CN001 A84	CY98 A1	ICY39 B2	ICY40 B2	QY98 A1	A4	ICY39 B2	QY98 A1
CN001 A85	CY99 A1	ICY40 B2	ICY41 B2	QY99 A1	A4	ICY40 B2	QY99 A1
CN001 A86	CY100 A1	ICY41 B2	ICY42 B2	QY100 A1	A4	ICY41 B2	QY100 A1
CN001 A87	CY101 A1	ICY42 B2	ICY43 B2	QY101 A1	A4	ICY42 B2	QY101 A1
CN001 A88	CY102 A1	ICY43 B2	ICY44 B2	QY102 A1	A4	ICY43 B2	QY102 A1
CN001 A89	CY103 A1	ICY44 B2	ICY45 B2	QY103 A1	A4	ICY44 B2	QY103 A1
CN001 A90	CY104 A1	ICY45 B2	ICY46 B2	QY104 A1	A4	ICY45 B2	QY104 A1
CN001 A91	CY105 A1	ICY46 B2	ICY47 B2	QY105 A1	A4	ICY46 B2	QY105 A1
CN001 A92	CY106 A1	ICY47 B2	ICY48 B2	QY106 A1	A4	ICY47 B2	QY106 A1
CN001 A93	CY107 A1	ICY48 B2	ICY49 B2	QY107 A1	A4	ICY48 B2	QY107 A1
CN001 A94	CY108 A1	ICY49 B2	ICY50 B4	QY108 A1	A4	ICY49 B2	QY108 A1
CN001 A95	CY109 A1	ICY50 B4	ICY51 B5	QY109 A1	A4	ICY50 B4	QY109 A1
CN001 A96	CY110 A1	ICY51 B5	ICY52 B5	QY110 A1	A4	ICY51 B5	QY110 A1
CN001 A97	CY111 A1	ICY52 B5	ICY53 B5	QY111 A1	A4	ICY52 B5	QY111 A1
CN001 A98	CY112 A1	ICY53 B5	ICY54 B5	QY112 A1	A4	ICY53 B5	QY112 A1
CN001 A99	CY113 A1	ICY54 B5	ICY55 B5	QY113 A1	A4	ICY54 B5	QY113 A1
CN001 A100	CY114 A1	ICY55 B5	ICY56 B5	QY114 A1	A4	ICY55 B5	QY114 A1
CN001 A101	CY115 A1	ICY56 B5	ICY57 B5	QY115 A1	A4	ICY56 B5	QY115 A1
CN001 A102	CY116 A1	ICY57 B5	ICY58 B5	QY116 A1	A4	ICY57 B5	QY116 A1
CN001 A103	CY117 A1	ICY58 B5	ICY59 B5	QY117 A1	A4	ICY58 B5	QY117 A1
CN001 A104	CY118 A1	ICY59 B5	ICY60 B5	QY118 A1	A4	ICY59 B5	QY118 A1
CN001 A105	CY119 A1	ICY60 B5	ICY61 B5	QY119 A1	A4	ICY60 B5	QY119 A1
CN001 A106	CY120 A1	ICY61 B5	ICY62 B5	QY120 A1	A4	ICY61 B5	QY120 A1
CN001 A107	CY121 A1	ICY62 B5	ICY63 B5	QY121 A1	A4	ICY62 B5	QY121 A1
CN001 A108	CY122 A1	ICY63 B5	ICY64 B5	QY122 A1	A4	ICY63 B5	QY122 A1
CN001 A109	CY123 A1	ICY64 B5	ICY65 B5	QY123 A1	A4	ICY64 B5	QY123 A1
CN001 A110	CY124 A1	ICY65 B5	ICY66 B5	QY124 A1	A4	ICY65 B5	QY124 A1
CN001 A111	CY125 A1	ICY66 B5	ICY67 B5	QY125 A1	A4	ICY66 B5	QY125 A1
CN001 A112	CY126 A1	ICY67 B5	ICY68 B5	QY126 A1	A4	ICY67 B5	QY126 A1
CN001 A113	CY127 A1	ICY68 B5	ICY69 B5	QY127 A1	A4	ICY68 B5	QY127 A1
CN001 A114	CY128 A1	ICY69 B5	ICY70 B5	QY128 A1	A4	ICY69 B5	QY128 A1
CN001 A115	CY129 A1	ICY70 B5	ICY71 B5	QY129 A1	A4	ICY70 B5	QY129 A1
CN001 A116	CY130 A1	ICY71 B5	ICY72 B5	QY130 A1	A4	ICY71 B5	QY130 A1
CN001 A117	CY131 A1	ICY72 B5	ICY73 B5	QY131 A1	A4	ICY72 B5	QY131 A1
CN001 A118	CY132 A1	ICY73 B5	ICY74 B5	QY132 A1	A4	ICY73 B5	QY132 A1
CN001 A119	CY133 A1	ICY74 B5	ICY75 B5	QY133 A1	A4	ICY74 B5	QY133 A1
CN001 A120	CY134 A1	ICY75 B5	ICY76 B5	QY134 A1	A4	ICY75 B5	QY134 A1
CN001 A121	CY135 A1	ICY76 B5	ICY77 B5	QY135 A1	A4	ICY76 B5	QY135 A1
CN001 A122	CY136 A1	ICY77 B5	ICY78 B5	QY136 A1	A4	ICY77 B5	QY136 A1
CN001 A123	CY137 A1	ICY78 B5	ICY79 B5	QY137 A1	A4	ICY78 B5	QY137 A1
CN001 A124	CY138 A1	ICY79 B5	ICY80 B5	QY138 A1	A4	ICY79 B5	QY138 A1
CN001 A125	CY139 A1	ICY80 B5	ICY81 B5	QY139 A1	A4	ICY80 B5	QY139 A1
CN001 A126	CY140 A1	ICY81 B5	ICY82 B5	QY140 A1	A4	ICY81 B5	QY140 A1
CN001 A127	CY141 A1	ICY82 B5	ICY83 B5	QY141 A1	A4	ICY82 B5	QY141 A1
CN001 A128	CY142 A1	ICY83 B5	ICY84 B5	QY142 A1	A4	ICY83 B5	QY142 A1
CN001 A129	CY143 A1	ICY84 B5					

6-6. Output PC Board

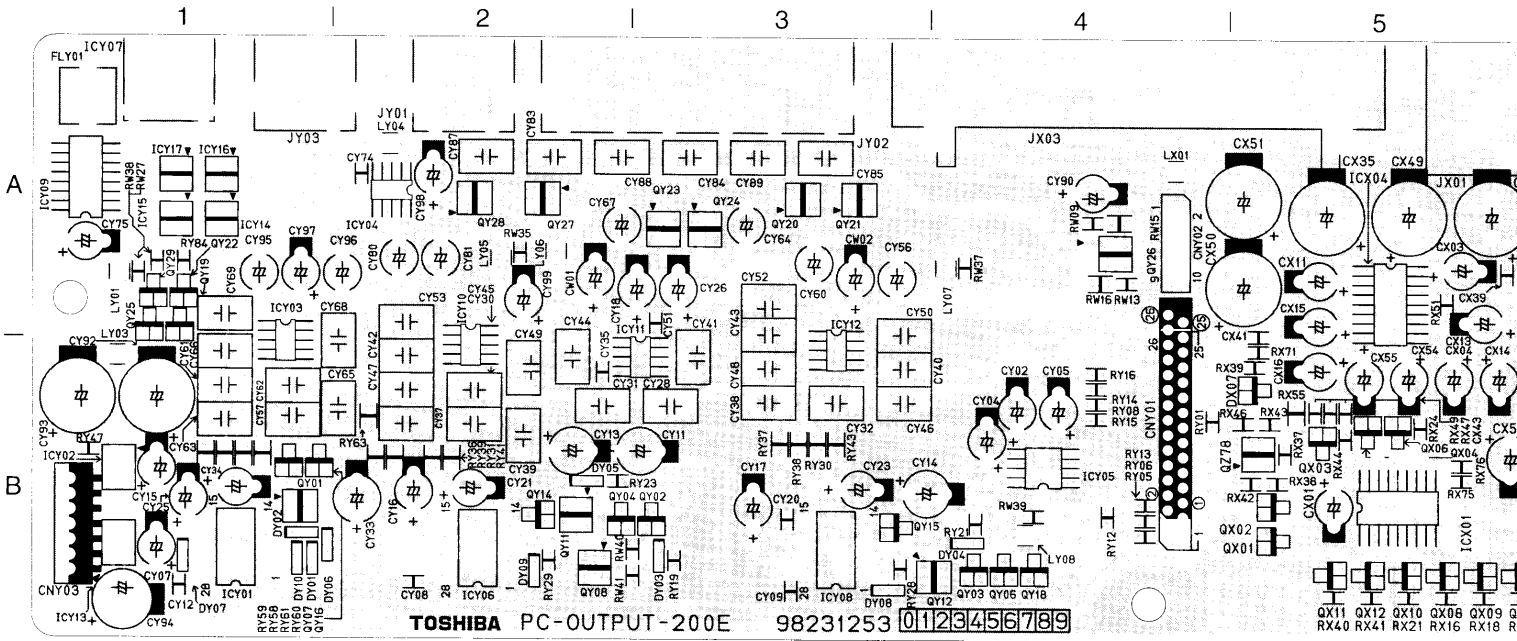


Fig. 3-6-12 EU05 Output PC Board (Top side)

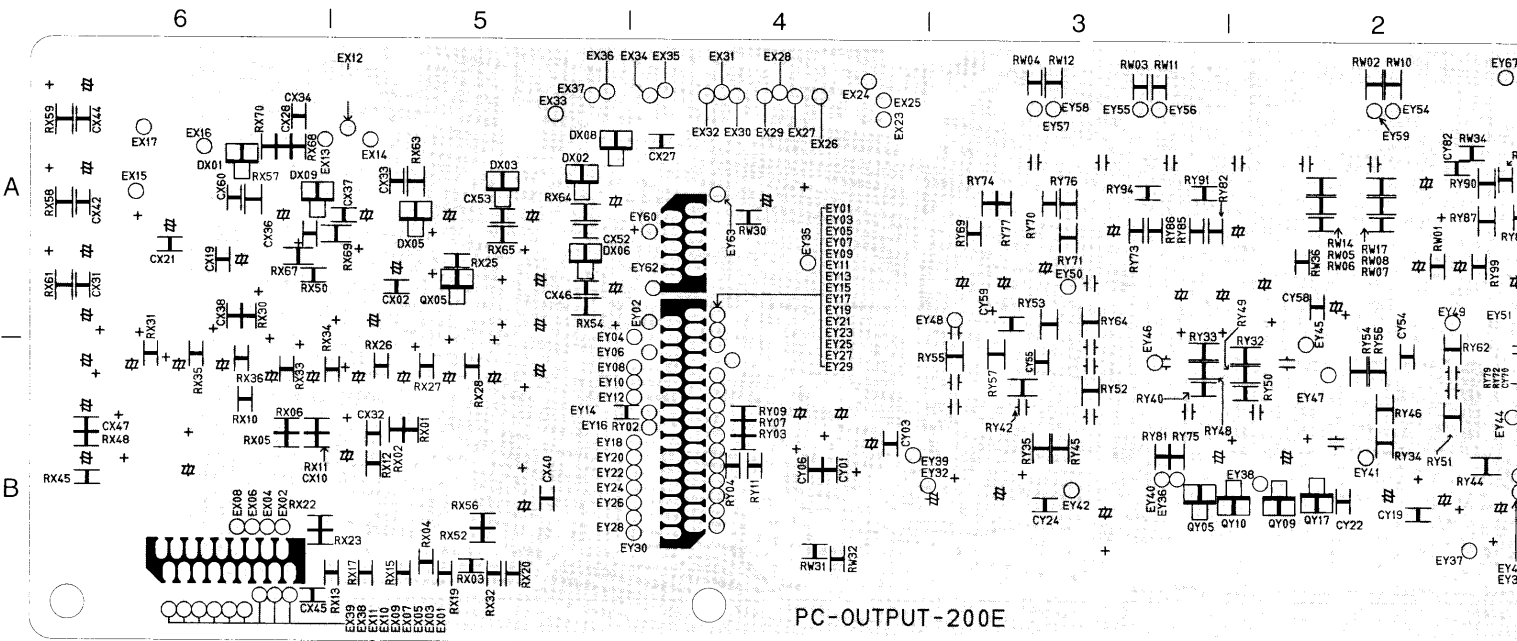
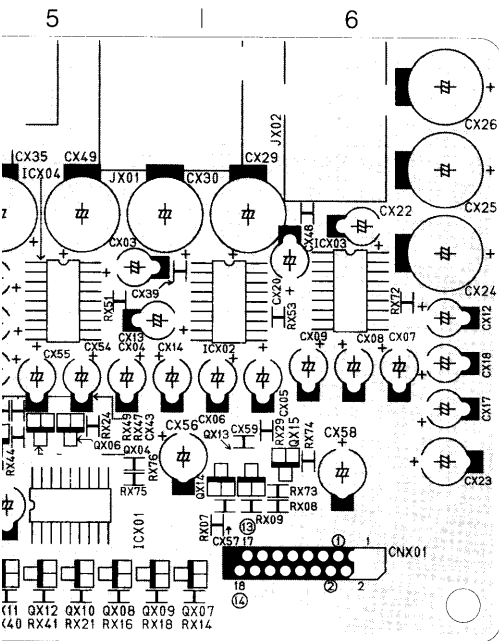
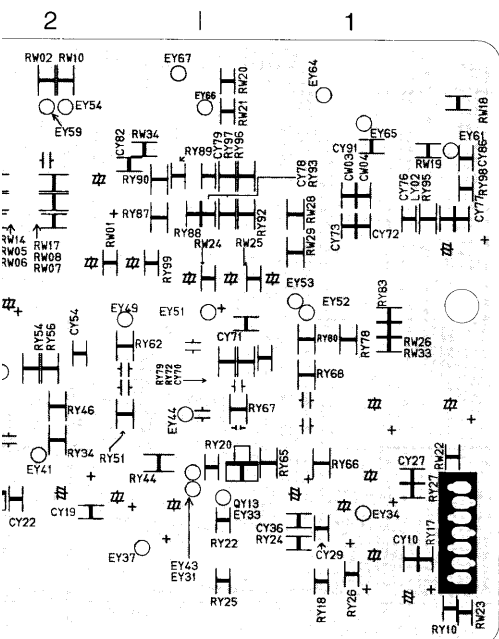


Fig. 3-6-13 EU05 Output PC Board (Bottom side)



Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location
CNX01	B6	CY05	B4	CY63	B1	ICY05	B4	QY06	B4	RX41	B5
CNY01	B4	CY07	B1	CY64	A3	ICY06	B2	QY07	B1	RX42	B5
CNY02	A4	CY08	B2	CY65	B2	ICY07	A1	QY08	B2	RX43	B5
CNY03	B1	CY09	B3	CY66	B1	ICY08	B3	QY11	B2	RX44	B5
CW01	A2	CY11	B2	CY67	A2	ICY09	A1	QY12	B4	RX46	B5
CW02	A3	CY12	B1	CY68	B2	ICY10	B2	QY14	B2	RX47	B5
CX01	B5	CY13	B2	CY69	A1	ICY11	B3	QY15	B3	RX49	B5
CX03	A5	CY14	B3	CY74	A2	ICY12	B3	QY16	B1	RX51	A5
CX04	B5	CY15	B1	CY75	A1	ICY13	B1	QY18	B4	RX53	A6
CX05	B6	CY16	B2	CY80	A2	ICY14	A1	QY19	A1	RX55	B5
CX06	B6	CY17	B3	CY81	A2	ICY15	A1	QY20	A3	RX71	B5
CX07	B6	CY18	A3	CY83	A2	ICY16	A1	QY21	A3	RX72	A6
CX08	B6	CY20	B3	CY84	A3	ICY17	A1	QY22	A1	RX73	B6
CX09	B6	CY21	B2	CY85	A3	JX01	A5	QY23	A3	RX74	B6
CX11	A5	CY23	B3	CY87	A2	JX02	A6	QY24	A3	RX75	B5
CX12	A6	CY25	B1	CY88	A2	JX03	A4	QY25	A1	RX76	B5
CX13	A5	CY26	A3	CY89	A3	JY01	A2	QY26	A4	RY01	B4
CX14	B5	CY28	B3	CY90	A4	JY02	A3	QY27	A2	RY05	B4
CX15	A5	CY30	B2	CY92	B1	JY03	A1	QY28	A2	RY06	B4
CX16	B5	CY31	B2	CY93	B1	LX01	A4	QY29	A1	RY08	B4
CX17	B6	CY32	B3	CY94	B1	LY001	A1	QZ78	B5	RY12	B4
CX18	B6	CY33	B2	CY95	A1	LY03	B1	RW09	A4	RY13	B4
CX20	A6	CY34	B1	CY96	A2	LY04	A2	RW13	A4	RY14	B4
CX22	A6	CY35	B2	CY97	A1	LY05	A2	RW15	A4	RY15	B4
CX23	B6	CY37	B2	CY98	A2	LY06	A2	RW16	A4	RY16	B4
CX24	A6	CY38	B3	CY99	A2	LY07	A4	RW27	A1	RY19	B3
CX25	A6	CY39	B2	DX07	B5	LY08	B4	RW35	A2	RY21	B4
CX26	A6	CY40	B3	DY01	B1	QX01	B5	RW37	A4	RY23	B2
CX29	A6	CY41	B3	DY02	B1	QX02	B5	RW38	A1	RY28	B3
CX30	A5	CY42	B2	DY03	B3	QX03	B5	RW39	B4	RY29	B2
CX35	A5	CY43	A3	DY04	B4	QX04	B5	RW40	B3	RY30	B3
CX39	A5	CY44	B2	DY05	B2	QX06	B5	RW41	B3	RY31	B2
CX41	A5	CY45	B2	DY06	B1	QX07	B5	RX07	B6	RY36	B2
CX43	B5	CY46	B3	DY07	B1	QX08	B5	RX08	B6	RY37	B3
CX48	A6	CY47	B2	DY08	B3	QX09	B5	RX09	B6	RY38	B3
CX49	A5	CY48	B3	DY09	B2	QX10	B5	RX14	B5	RY39	B2
CX50	A5	CY49	B2	DY10	B1	QX11	B5	RX16	B5	RY41	B2
CX51	A5	CY50	A3	FLY01	A1	QX12	B5	RX18	B5	RY43	B3
CX54	B5	CY51	A3	ICX01	B5	QX13	B6	RX21	B5	RY47	B1
CX55	B5	CY52	A3	ICX02	A6	QX14	B6	RX24	B5	RY58	B1
CX56	B5	CY53	A2	ICX03	A6	QX15	B6	RX29	B6	RY59	B1
CX57	B6	CY56	A3	ICX04	A5	QY01	B1	RX37	B5	RY60	B1
CX58	B6	CY57	B1	ICY01	B1	QY02	B3	RX38	B5	RY61	B1
CX59	B6	CY60	A3	ICY02	B1	QY03	B4	RX39	B5	RY63	B2
CY02	B4	CY61	B1	ICY03	B1	QY04	B2	RX40	B5	RY84	A1
CY04	B4	CY62	B1	ICY04	A2						



Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location	Part No.	Location
CW03	A1	CY55	B3	RW08	A2	RX19	B5	RY04	B4	RY65	B1
CW04	A1	CY58	A2	RW10	A2	RX20	B5	RY07	B4	RY66	B1
CX02	A5	CY59	A3	RW11	A3	RX22	B6	RY09	B4	RY67	B1
CX10	B6	CY70	B1	RW12	A3	RX23	B6	RY10	B1	RY68	B1
CX19	A6	CY71	A1	RW14	A2	RX25	A5	RY11	B4	RY69	A3
CX21	A6	CY72	A1	RW17	A2	RX26	B5	RY17	B1	RY70	A3
CX27	A4	CY73	A1	RW18	A1	RX27	B5	RY18	B1	RY71	A3
CX28	A6	CY76	A1	RW19	A1	RX28	B5	RY20	B1	RY72	B1
CX31	A6	CY77	A1	RW20	A1	RX30	A6	RY22	B1	RY73	A3
CX32	B5	CY78	A1	RW21	A1	RX31	B6	RY24	B1	RY74	A3
CX33	A5	CY79	A1	RW22	B1	RX32	B5	RY25	B1	RY75	B3
CX34	A6	CY82	A2	RW23	B1	RX33	B6	RY26	B1	RY76	A3
CX36	A6	CY86	A1	RW24	A1	RX34	B5	RY27	B1	RY77	A3
CX37	A5	CY91	A1	RW25	A1	RX35	B6	RY32	B2	RY78	A1
CX38	A6	DX01	A6	RW26	A1	RX36	B6	RY33	B3	RY79	B1
CX40	B5	DX02	A5	RW28	A1	RX45	B6	RY34	B2	RY80	A1
CX42	A6	DX03	A5	RW29	A1	RX48	B6	RY35	B3	RY81	B3
CX44	A6	DX05	A5	RW30	A4	RX50	A6	RY40	B3	RY82	A3
CX45	B6	DX06	A5	RW31	B4	RX52	B5	RY42	B3	RY83	A1
CX46	A5	DX08	A5	RW32	B4	RX54	A5	RY44	B2	RY85	A3
CX47	B6	DX09	A6	RW33	B1	RX56	B5	RY45	B3	RY86	A3
CX52	A5	LY02	A1	RW34	A2	RX57	A6	RY46	B2	RY87	A2
CX53	A5	QX05	A5	RW36	A2	RX58	A6	RY48	B3	RY88	A2
CX60	A6	QY05	B3	RX01	B5	RX59	A6	RY49	B2	RY89	A2
CY01	B4	QY09	B2	RX02	B5	RX61	A6	RY50	B2	RY90	A2
CY03	B4	QY10	B2	RX03	B5	RX63	A5	RY51	B2	RY91	A3
CY06	B4	QY13	B1	RX04	B5	RX64	A5	RY52	B3	RY92	A1
CY10	B1	QY17	B2	RX05	B6	RX65	A5	RY53	A3	RY93	A1
CY19	B2	RW01	A2	RX06	B6	RX67	A6	RY54	B2	RY94	A3
CY22	B2	RW02	A2	RX10	B6	RX68	A6	RY55	B3	RY95	A1
CY24	B3	RW03	A3	RX11	B6	RX69	A5	RY56	B2	RY96	A1
CY27	B1	RW04	A3	RX12	B5	RX70	A6	RY57	B3	RY97	A1
CY29	B1	RW05	A2	RX13	B5	RY02	B5	RY62	B2	RY98	A1
CY36	B1	RW06	A2	RX15	B5	RY03	B4	RY64	A3	RY99	A2
CY54	B2	RW07	A2	RX17	B5						