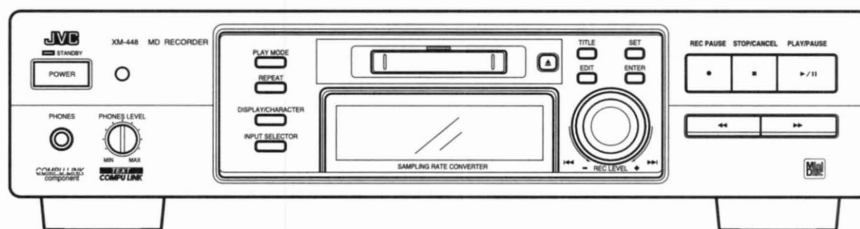
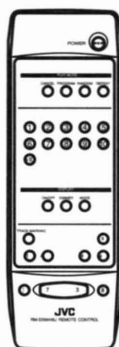


JVC

SERVICE MANUAL

MINI DISC RECORDER

XM-448BK



Area Suffix

B	-----	U.K.
E	-----	Continental Europe
EN	-----	Northern Europe
J	-----	U.S.A.
C	-----	Canada
US	-----	Singapore
UY	-----	Argentina

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Safety Precautions

1. This design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (Δ) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

5. Leakage current check (Electrical shock hazard testing)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

Do not use a line isolation transformer during this check.

- Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.)

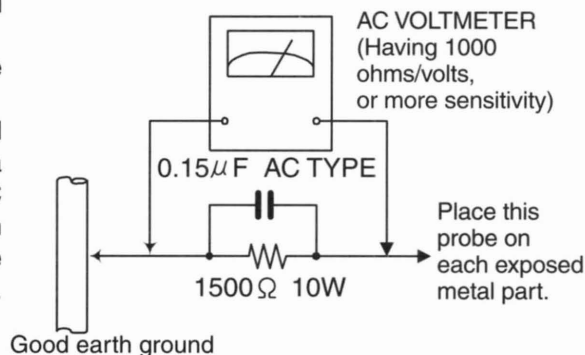
● Alternate check method

Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500 Ω 10W resistor paralleled by a 0.15 μ F AC-type capacitor between an exposed metal part and a known good earth ground.

Measure the AC voltage across the resistor with the AC voltmeter.

Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now reverse the plug in the AC outlet and repeat each measurement voltage measured any must not exceed 0.75 V AC (r.m.s.).

This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

CAUTION Burrs formed during molding may be left over on some parts of the chassis. Therefore, pay attention to such burrs in the case of preforming repair of this system.

Safety Precautions (U.K only)

1. This design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits.
2. Any unauthorised design alterations or additions will void the manufacturer's guarantee ; furthermore the manufacturer cannot accept responsibility for personal injury or property damage resulting therefrom.
3. Essential safety critical components are identified by () on the Parts List and by shading on the schematics, and must never be replaced by parts other than those listed in the manual. Please note however that many electrical and mechanical parts in the product have special safety related characteristics. These characteristics are often not evident from visual inspection. Parts other than specified by the manufacturer may not have the same safety characteristics as the recommended replacement parts shown in the Parts List of the Service Manual and may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

Warning

1. Service should be performed by qualified personnel only.
2. This equipment has been designed and manufactured to meet international safety standards.
3. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
4. Repairs must be made in accordance with the relevant safety standards.
5. It is essential that safety critical components are replaced by approved parts.
6. If mains voltage selector is provided, check setting for local voltage.

 **CAUTION** Burrs formed during molding may be left over on some parts of the chassis. Therefore, pay attention to such burrs in the case of preforming repair of this system.

Important for Laser Products

1.CLASS 1 LASER PRODUCT

2.DANGER : Invisible laser radiation when open and inter lock failed or defeated. Avoid direct exposure to beam.

3.CAUTION : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.

4.CAUTION : The compact disc player uses invisible laserradiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.

5.CAUTION : If safety switches malfunction, the laser is able to function.

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

**CAUTION** Please use enough caution not to see the beam directly or touch it in case of an adjustment or operation check.

WARNING : Osynlig laserstrålning är denna del är öppnad och spårren är urkopplad. Betrakta ej strålen.

VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

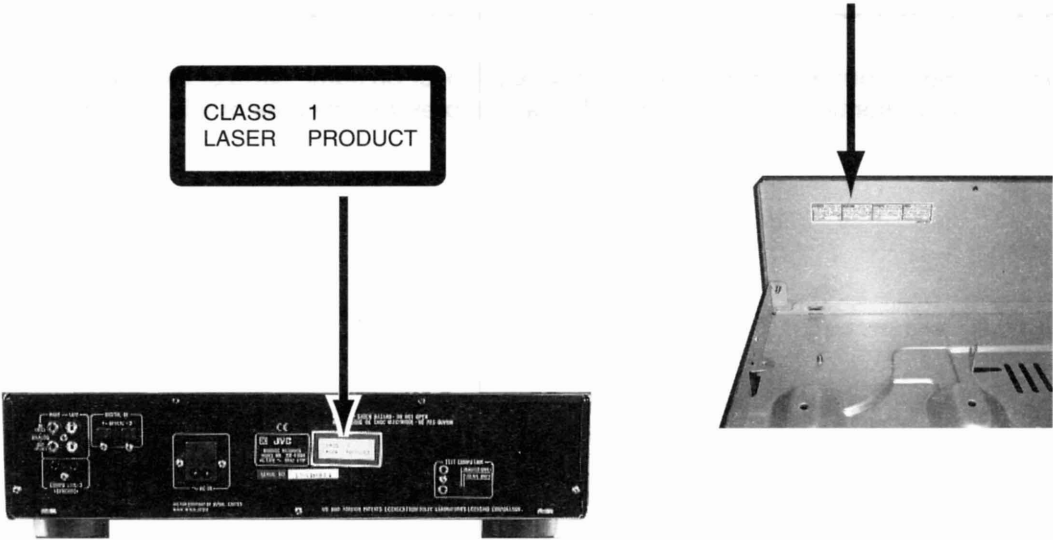
ADVARSEL : Usynlig laserstrålning ved åbning , når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

ADVARSEL : Usynlig laserstrålning ved åpning,når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

WARNING LABEL

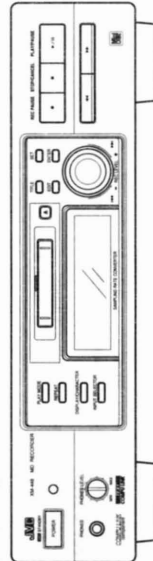
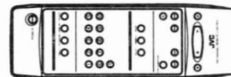
DANGER : Invisible laser radiation when open and interlock or defeated. AVOID DIRECT EXPOSURE TO BEAM (e)	ADVARSEL :Usynlig laserstrålning ved åbning , når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling. (f)	WARNING : Osynlig laserstrålning är denna del är öppnad och spårren är urkopplad. Betrakta ej strålen. (s)	VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen. (d)
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JVC

MINI DISC RECORDER

XM-448BK



INSTRUCTIONS

For Customer Use:
Enter below the Model No. and Serial No. which are located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No. _____
Serial No. _____

LVT0222-001A [J]

Instructions

Warnings, Cautions and Others

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

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

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

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



WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Caution — POWER switch!
Disconnect the mains plug to shut the power off completely. The POWER switch in any position does not disconnect the mains line. The power can be remote controlled.

CAUTION
To reduce the risk of electrical shocks, fire, etc.:
1. Do not remove screws, covers or cabinet.
2. Do not expose this appliance to rain or moisture.

1. **CLASS 1 LASER PRODUCT**
DANGER: Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
2. **CAUTION:** Do not open the top cover. There are no user serviceable parts inside the Unit; leave all servicing to qualified service personnel.

For U.S.A.
This equipment has been tested and found to comply with the limits for Class B digital devices, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the user is experiencing harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.

Welcome !

We would like to thank you for purchasing one of our JVC products. Before connecting this unit to the wall outlet, please read the instructions carefully to ensure that you obtain the best possible performance. If you have any questions, please consult your JVC dealer.

Important cautions

Installation of the Unit

- Select a place which is level, dry and neither too hot nor too cold (between 5°C and 35°C or 41°F and 95°F).
- Leave sufficient distance between the unit and a TV set.
- Be sure to place the unit in a location with good ventilation.
- Do not use the unit in a place subject to vibrations.
- Do not place the unit on a carpet.
- Do not place the unit on top of another heat-generating piece of equipment.

Power cord

- Do not handle the power cord with wet hands!
- When unplugging the unit from the wall outlet, always pull the plug, not the power cord.

Malfunctions, etc.

- There are no user serviceable parts inside. If anything goes wrong, turn off the power immediately. If the same problem occurs again when the power is turned on once more, turn off the power again, unplug the power cord and consult your dealer.
- Do not insert any metallic object into the unit.

For safe use, observe the following

Avoid moisture, water and dust

Do not set your machine in moist or dusty places.

Avoid high temperatures

Do not expose your machine to direct sunlight or set near a heating device.

Do not block the vents

Poor ventilation may damage your machine. So do not block the vents or put the unit in a poorly ventilated place.

When you're away

When away on travel or otherwise for an extended period of time, turn off the power and pull the plug from the electrical socket.

Do not insert any foreign matter into the unit

Do not insert wires, hairpins, coins, etc. into your unit.

Care for the cabinet

When cleaning your unit, use a soft cloth and follow the relevant instructions on the use of chemically-coated cloths. Avoid applying benzene, thinner or other organic solvents and disinfectants. This may cause deformation or discoloring.

If water gets inside the unit

Turn off the power and pull the plug from the electrical socket, then call the store where you made your purchase. Using the unit in this state may cause a fire or electrical shock.

US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

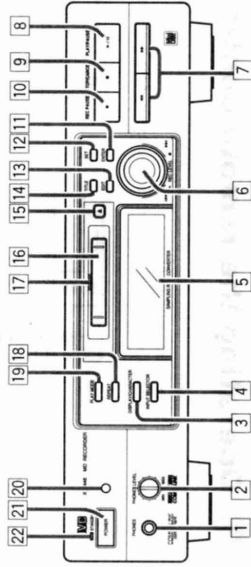
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Parts Index

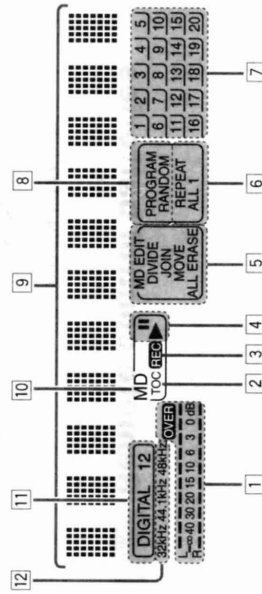
Become familiar with the buttons and controls before use. Refer to the pages in parentheses for details.

Front panel



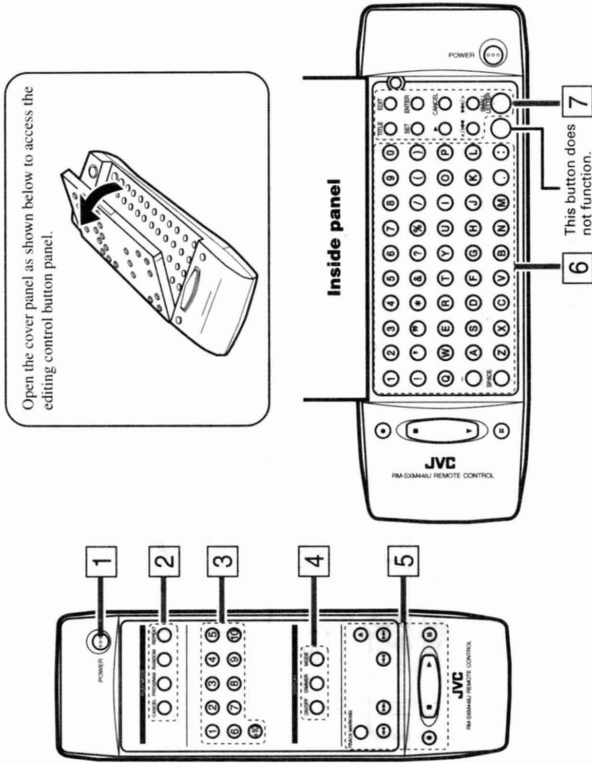
- 1 PHONES jack (9)
- 2 PHONES LEVEL control (9)
- 3 DISPLAY/CHARACTER button (8, 11, 19, 27)
- 4 INPUT SELECTOR button (15)
- 5 Display (10, 26)
- 6 Jog dial (◀▶) (9, 16)
- 7 ◀▶ buttons (9)
- 8 ▶/II PLAY/PAUSE button (8, 9)
- 9 ■ STOP/CANCEL button (8, 11, 19, 27)
- 10 ● REC PAUSE button (14)
- 11 ENTER button (20, 27)
- 12 SET button (11, 19, 26)
- 13 EDIT button (19)
- 14 TITLE button (26)
- 15 ▲ (Eject) button (8)
- 16 MD insertion slot (8)
- 17 Disc indicator (7, 14)
- 18 REPEAT button (13)
- 19 PLAY MODE button (10, 12)
- 20 Remote sensor (5)
- 21 POWER button (7)
- 22 STANDBY indicator (7)

Display



- 1 Level indicators and OVER indicator (16)
- 2 TOC indicator (20)
- 3 REC indicator (14)
- 4 Play/Pause indicators (▶ (Play), II (Pause)) (8, 9, 14)
- 5 MD editing mode indicators (19 - 25)
- 6 Repeat mode indicators (13)
- 7 Music calendar (19)
- 8 Play mode indicators (10, 12)
- 9 Character display (11 digits) (26)
- 10 MD indicator (7)
- 11 Input mode indicators (15)
- 12 Sampling frequency indicators (15)

Remote control unit



Buttons on the Inside Panel

- 6 Character input keyboard (28)
Numbers, Alphabets, and Symbols
- 7 MD editing buttons
TITLE (28)
EDIT (19)
SET (19, 28)
ENTER (20, 28)
▶ (Play) (8)
CANCEL (19, 28)
◀/▶◀, ▶▶/▶ (20, 28)
SMALL LETTER (28)

Setting up the System

Supplied accessories

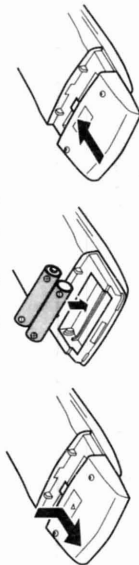
Before setting up your system make sure you received all of the following supplied accessories.

- Remote control unit (1)
- Batteries R03 (UM-4)/AAA (24F) (2)
- Audio pin cord (2)
- Optical digital cable (1)
- Compu Link cable (1)
- Text Compu Link cable (1)
- AC power cord (1)

Remote control batteries

Match the polarity (+ and -) on the batteries with the + and - markings in the battery compartment.

R03 (UM-4)/AAA (24F)



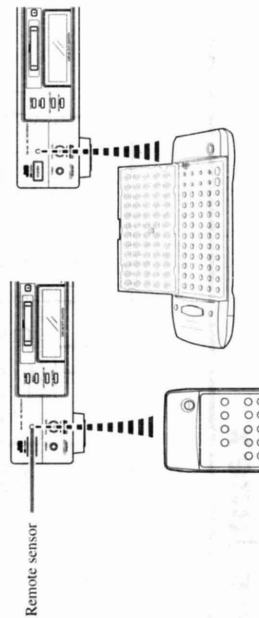
CAUTION: Handle batteries properly.

To avoid battery leakage or explosion:

- Remove batteries when the remote control unit will not be used for a long time.
- When you need to replace the batteries, replace both batteries at the same time with new ones.
- Do not use an old battery with a new one.
- Do not use different types of batteries together.

Operating the remote control unit

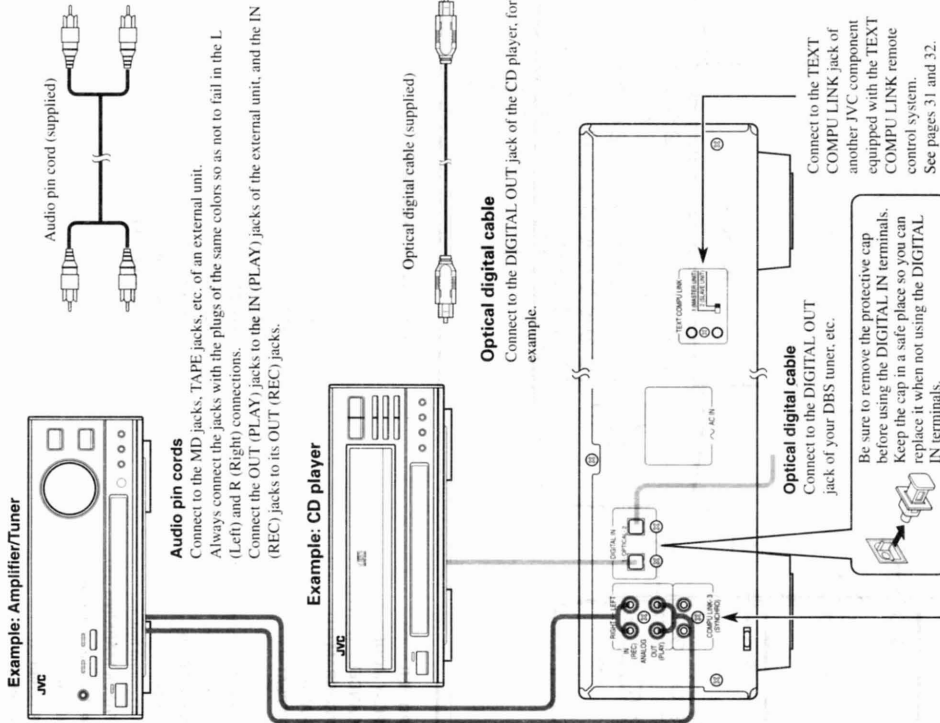
The remote control unit makes it easy to use many of the functions of the system from a distance of up to 7 m (23 feet) away. You need to point the remote control unit at the remote sensor on the front panel.



5

Connection

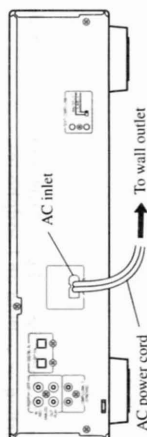
Signal cable connections



6

AC power cord connection

First, firmly insert the supplied AC power cord into the AC inlet on the back of the unit. Next, plug the AC power cord plug into the wall outlet.



Cautions

- Use only the JVC AC power cord provided with this unit to avoid malfunction or damage to the unit.
- Be sure to unplug the power cord from the outlet when going out or when the unit is not in use for an extended period of time.

Turning the Power On and Off

Power On

- 1 Press **POWER** on the main unit or on the remote control unit.

The **STANDBY** indicator goes out, the disc indicator lights in green, and the display comes on. The MD indicator lights up on the display.

When no MD is loaded:

"NO DISC" is shown on the display.

When an MD is already loaded:

The following messages are shown on the display in succession.

- "TOC Reading"
- The disc title, if the MD has.
- Number of tracks and the total playing time of the MD

You can play the MD by pressing **▶/II** on the main unit or **▶** on the remote control unit. For detailed description, see "Playback" on the next page.

Power Off

- 1 Press **POWER** again.

The **STANDBY** indicator lights up, the disc indicator goes out, and the display blanks.

- Some power (7W) is always consumed even though power is turned off (called Standby mode).
- To switch off the unit completely, unplug the AC power cord from the AC outlet.

Playback

Continuous playback

The basic operation for playing an MD is described below. When no MD is loaded yet, "NO DISC" is shown on the display.

- 1 Load an MD.

Hold an MD with the side on which an arrow is marked facing up, and insert it into the slot in the direction of the arrow. The MD will be pulled in automatically from the middle.



• If the MD has a disc title, the display shows the disc title then the number of tracks and total playing time of the MD.

• The tracks in the MD appear on the music calendar.

Loading
TOC Reading
6
32:00
Number of tracks **Total playing time**

Note: To allow easy insertion, insert the MD along the upper part of the MD insertion slot.

Caution

- Do not fail to observe the MD insertion direction, otherwise a malfunction will result.

Shortcut:

You can insert an MD in Standby mode. Then, the power is turned on and the MD is pulled in automatically.

- 2 Press **▶/II** on the main unit or **▶** on the remote control unit.

Playback starts.

The **▶** indicator blinks for a while and then stays lit.

The playback levels for the L and R channels are shown on the level indicators.

- If the track has a title, the track title will be displayed before playing the track.
- The track number that has been played disappears from the music calendar.
- The MD automatically stops when the last track of the MD has finished playing.

Shortcut:

When you press **▶/II** on the main unit or **▶** on the remote control unit in Standby mode, the power is turned on and the MD is automatically played. However, if no MD is loaded, "NO DISC" is shown on the display.

To stop the MD:

Press **■** on the main unit or on the remote control unit.

- If the MD has a disc title, the display shows the disc title then the number of tracks and total playing time of the MD.

To eject the MD:

Press **▲** on the main unit or on the remote control unit. The MD is ejected and the display changes as follows:

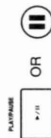
EJECT **▶** **NO DISC**



To pause the MD:

Press **II** on the main unit or press **II** on the remote control unit. The **II** indicator lights up.

To cancel pause, press **II** on the main unit or press **II** on the remote control unit. The MD starts from the position where it has paused.



To select a track

You can select a desired track during playback or in Stop mode.

Main unit:

During playback, turn the jog dial to the right or left to select the track you want. Then, the selected track starts playing.

- Turn the jog dial to the right to skip to the beginning of the next tracks.
- Turn the jog dial to the left to return to the beginning of the current track (or the previous tracks).



In Stop mode, you can select a track in the same way. To start playback, press **II**.

Remote control unit:

Using **14** or **15**:

- During playback, press **14** or **15** to select the track you want. Then, the selected track starts playing.
- Press **14** to skip to the beginning of the next tracks.
- Press **15** once to return to the beginning of the current track (or the previous tracks).



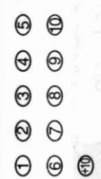
In Stop mode, you can select a track in the same way. To start playback, press **II**.

Using the numeric keys:

During playback or in Stop mode, select a track with the numeric keys. Then, the selected track starts playing.

Selecting a track with the numeric keys:

- To select track No. 5: Press 5.
- To select track No. 15: Press +10 then 5.
- To select track No. 20: Press +10 then 10.
- To select track No. 52: Press +10 five times then press 2.

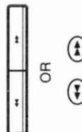


- When you try to select a track number greater than the recorded tracks in the MD, the last track is automatically selected.

Search play

During playback, you can fast forward/backwards the MD to quickly find a particular passage in the track.

To perform this, press and hold **14** or **15** on the main unit or on the remote control unit.



Using headphones

Connect a pair of headphones (not supplied) to the PHONES jack to listen to the playback sound of the MD or rec-monitor sound.

You can adjust the headphones output level by turning the PHONES LEVEL control.



- The output from the unit is not cut off even if the headphones are used.

Caution

- Be sure to turn down the PHONES LEVEL control before connecting or putting on headphones.

Using the display mode

To switch the display information

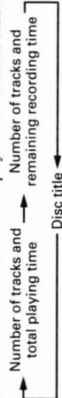
The display can show the disc title, track title and remaining time (recording time available when a recordable MD is loaded) information.



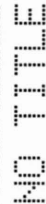
When no track is selected (In Stop mode):

Press DISPLAY/CHARACTER on the main unit or MODE on the remote control unit.

Each press of the button switches the displayed information as follows.



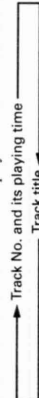
- A disc title composed of more than 11 characters is scrolled, and the first 11 characters are displayed after scrolling.
- The display shows "NO TITLE" if the disc has no title.



When a track has already been selected (During playback or in Stop mode):

Press DISPLAY/CHARACTER on the main unit or MODE on the remote control unit.

Each press of the button switches the displayed information as follows.



- A track title composed of more than 11 characters is scrolled, and the first 11 characters are displayed after scrolling.

Note: When using the TEXT COMPU LINK remote control system (see page 31), titles will not be scrolled.

- The display shows "NO TITLE" if the track has no title.

To change the brightness of the display

- You can turn on or off the display by pressing ON/OFF on the remote control unit. Each press of the button turns on or off the display alternately.



Notes: • When editing MDs or assigning titles (see pages 17 to 29), you cannot turn on or off the display.

- Even though the display is turned off, it turns on temporarily while you operate the unit (for example, pause or stop) during play or recording.
- You can dim the display by pressing DIMMER on the remote control unit. Each press of the button turns the display dim or bright alternately.



Program playback

You can program up to 32 tracks in any desired order including the same tracks.

- You can only make a program in Stop mode.

1 Load an MD.

See "Continuous playback" on page 8.

2 Select Program Play mode.

Main unit:

Press PLAY MODE until "PROGRAM" is shown. Then, the PROGRAM indicator lights up. Each time PLAY MODE is pressed, the play mode indicators switch as follows:



Remote control unit:

Press PROGRAM "PROGRAM" is shown and the PROGRAM indicator lights up.



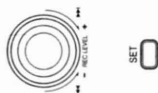
The display shows the following for programming.



3 Select desired track numbers to be programmed.

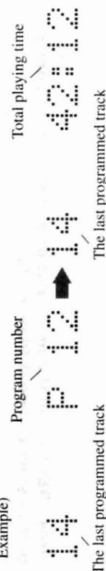
Main unit:

- 1 Turn the jog dial to the right or left to select the desired track number to be programmed. (Turning it to the right increases the track number and vice versa.) The selected track number will blink.
- 2 Press SET.



The track number stays lit and the program number increases by 1. Also, the programmed track is indicated on the music calendar. Then, the total playing time is displayed instead of the program number.

Example)



- 3 Repeat steps 1 and 2 to select the other tracks for the program.

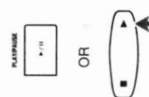
Remote control unit:

- 1 Select the desired track number with the numeric keys. The selected track number is programmed and the program number is displayed. Then, the total playing time is displayed instead of the program number. To select a track, see "Selecting a track with the numeric keys" on page 9.
- 2 Repeat step 1 to select the other tracks for the program.

4 Press ►/II on the main unit or ► on the remote control unit.

Program playback starts in the programmed order.

- Program playback stops after having played all programmed tracks.
 - To stop playing, press ■ on the main unit or on the remote control unit.
 - To skip programmed tracks, turn the jog dial on the main unit to the right or press ►► on the remote control unit.
- To return to the beginning of the current track or previous tracks, turn the jog dial on the main unit to the left or press ◀◀ on the remote control unit.



To check the programmed tracks and their order (In Stop mode):

Press ◀◀ or ►► on the remote control unit in Stop mode. The programmed tracks will be successively displayed in the programmed order. (The track title will be displayed before the track number, if it is written.)



If you make a mistake in programming (In Stop mode):

Press ■ STOP/CANCEL on the main unit or CANCEL on the cover panel of the remote control unit in Stop mode to clear the last track. Each press of the button clears the last track in the program.

Press the button repeatedly until the track you do not want is cleared and then re-program tracks from that point.

To cancel Program Play mode (In Stop mode):

Main unit:

Press PLAY MODE in Stop mode to select any mode other than Program Play mode.

Remote control unit:

Press PROGRAM in Stop mode to turn off the PROGRAM indicator.

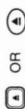
The program contents remain in memory even after the unit has exited from Program Play mode.

To clear the program:

Press ► on the main unit or on the remote control unit.

The programmed tracks are cleared then the MD is ejected.

Note: The program contents are cleared from memory when the power cord is unplugged or in case of power failure.



To play programmed tracks repeatedly:

Combine the program playback and repeat playback to play the programmed tracks repeatedly.

For the repeat playback, see page 13.

Random playback

Tracks in the MD can be played at random. Random Play may bring you a surprising effect by playing tracks in a different order every time.

- You can only select Random Play in Stop mode.

1 Load an MD.

See "Continuous playback" on page 8.

2 Select Random Play mode.

Main unit:

Press PLAY MODE until "RANDOM" is shown. Then, the RANDOM indicator lights up.



Each time PLAY MODE is pressed, the play mode indicators switch as follows:

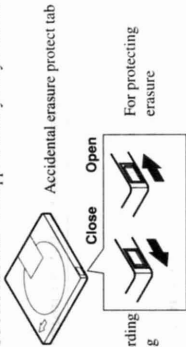


Recording

An audio signal from a variety of sources can be recorded by using either digital or analog input as required.

Things to know before recording

- It should be noted that it may be unlawful to re-record pre-recorded tapes, records, or discs without the consent of the owner of copyright in the sound or video recording, broadcast or cable programme and in any literary, dramatic, musical, or artistic embodied therein.
- Carefully read the "Rule on Digital Copying" on page 33.
- The MD recorder supports the following sampling frequencies for digital sources and lights the sampling frequency being received on the display.
32 kHz, 44.1 kHz and 48 kHz
- Recording level adjustment:
 - When recording through a digital input terminal, the recording level is automatically set correctly.
 - When recording through an analog input terminal, it is necessary to adjust the recording level properly.
- The accidental erasure protect tab is provided on the back of an MD cartridge to prevent accidental erasure or recording. It must be set to the close position before recording. Otherwise, "DISC PROTECTED" will appear when you try to record a signal to the MD.



- When you stick an adhesive label onto the MD cartridge, adhere it securely. If it peels off, ejection trouble, etc. will occur.
- Be sure that the MD is not of Playback-only type. (See "Two disc types" on page 34.)
- Be sure that the MD has enough space for recording. If not, carry out ALL ERASE or ERASE function to erase all the tracks or unwanted tracks in the MD. You can check the recordable remaining time of the MD. (See "To display the remaining recording time" on page 16.)

Recording operation

- Load a recordable MD.
- Press **REC PAUSE** on the main unit or **●** on the remote control unit.

The MD recorder enters Rec/Pause mode. The REC and **II** (Pause) indicators light up and the first track to be recorded is displayed. Also, the disc indicator lights in red.

Example) When 14 tracks are already recorded



14

13

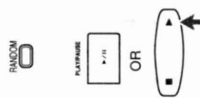
Remote control unit:

Press RANDOM. "RANDOM" is shown and the RANDOM indicator lights up.

- Press **▶/II** on the main unit or **▶** on the remote control unit.

Random playback starts.

- Random playback stops after having played every track once.
- To stop playing, press **■** on the main unit or on the remote control unit.



To cancel Random Play mode (In Stop mode):

Main unit:

Press PLAY MODE in Stop mode to select any mode other than Random Play mode.

Remote control unit:

Press RANDOM in Stop mode to turn off the RANDOM indicator.

To repeat random playback:

Combine the random playback and repeat playback to play tracks repeatedly in random orders. The order tracks are played differs every time random playback is repeated. For the repeat playback, see below.

Repeat playback

You can repeat all the tracks or a single track in each playback mode.

- Press **REPEAT** on the main unit or on the remote control unit to select Repeat Play mode.

Each time REPEAT is pressed, the repeat mode indicators switch as follows:



REPEAT ALL: In Continuous Play mode, repeats all the tracks.

In Program Play mode, repeats all the tracks in the program.

In Random Play mode, repeats all the tracks at random.

REPEAT 1: Repeats one track.

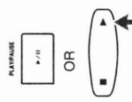
- Press **▶/II** on the main unit or **▶** on the remote control unit.

Repeat playback starts.

- To stop playing, press **■** on the main unit or on the remote control unit.

To cancel repeat playback:

Press REPEAT on the main unit or on the remote control unit until the repeat mode indicator goes out.



3 Select the input by pressing INPUT SELECTOR on the main unit.

Each press of INPUT SELECTOR switches the inputs as follows.



DIGITAL1 IN : Select this to record the digital input from the digital source component connected to the DIGITAL IN 1 OPTICAL terminal.

The DIGITAL 1 indicator lights up.

DIGITAL2 IN : Select this to record the digital input from the digital source component connected to the DIGITAL IN 2 OPTICAL terminal.

The DIGITAL 2 indicator lights up.

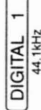
ANALOG IN : Select this to record the analog input from the analog source component (cassette deck, tuner, etc.) connected to the ANALOG IN (REC) jacks.

4 Play the source to be recorded.

The level indicators show the input levels.

- The input level should be adjusted when the analog input is recorded (see "To adjust the analog input level" on page 16).
- The input level for the digital inputs does not need adjustment.
- When DIGITAL 1 or DIGITAL 2 is selected, one of the sampling frequency indicators lights up. For example, 44.1 kHz indicator is displayed for a CD player input.

However, if no source component is connected to the digital input or the sampling frequency input is other than 32 kHz, 44.1 kHz, or 48 kHz, "DIGITAL IN UNLOCK" scrolls on the display showing that the recording is impossible.



5 Press ►/II on the main unit or ► on the remote control unit.

Recording starts.

The ► indicator lights up.

- When the MD becomes full, "UTOCwriting" is displayed indicating that the recording is successfully completed. Then, the MD stops. The disc indicator lights in green.

To stop recording:

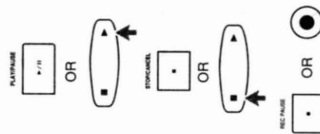
Press ■ on the main unit or on the remote control unit.

"UTOCwriting" is displayed and the MD stops. The disc indicator lights in green.

To pause the MD:

Press ● REC PAUSE on the main unit or ● on the remote control unit.

To resume recording, press ►/II on the main unit or ► on the remote control unit.



To adjust the analog input level

The input level should be adjusted before recording the analog input.

- In Rec/Pause mode, start playing the source for level adjustment. The level indicators show the input levels.

- Turn the jog dial on the main unit to the right or left or press ►/◄ or ◀/▶ on the remote control unit to increase or decrease the recording level.

As you adjust the recording level, "VOL. -10" will appear, for example. You can adjust the recording level between VOL.-50 and VOL.0 (-50 dB and 0 dB), or to VOL. - - (below -50 dB).



- Normally the input level should be adjusted so that the segments for 0 dB blink at the peak level.
- When the input level is too high, the OVER indicator will light up, resulting in distorted recording.

To display the remaining recording time

In Rec/Pause or during recording, press DISPLAY/CHARACTER on the main unit or MODE on the remote control unit.

Each press of the button switches the elapsed recording time display and remaining recording time display alternately.



Track marking

The track numbers on the MD are marked at the beginning of each track. The track numbers are identified by these "track markings" and each section between two track markings is considered as a track.

For analog input:

When the point you want to record a track marking comes during recording, press SET on the main unit or on the inside panel of the remote control unit. This operation records a track marking at the point where the button is pressed.

To use automatic track marking:

Press TRACK MARKING on the remote control unit to select "AUTO".



- A track marking is automatically recorded every time a blank of more than 3 seconds is detected.

To cancel automatic track marking, press TRACK MARKING on the remote control unit again to select "MANUAL".



For digital input:

When tracks are recorded from a CD player by digital input, track markings are recorded automatically at the points where the CD tracks change.

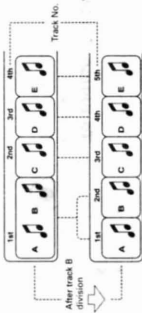
Editing Functions

MD editing functions

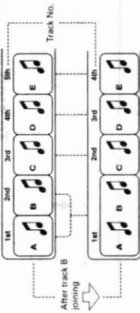
A recorded MD can be edited in many ways. The editing functions include the dividing, joining, moving, erasing a single track, erasing the entire disc and assigning titles to the disc and tracks, and more than one of them can be combined as required.

- Editing operations are possible both while the MD recorder is playing and while it is in Stop mode.

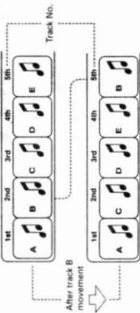
Dividing a track (DIVIDE) Page 19
This function divides a track by adding a track marking(s) in the middle or where you want to search later.



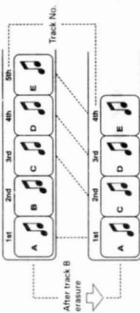
Joining tracks (JOIN) Page 20
This function joins two adjacent tracks into a single track by deleting a track marking in between.



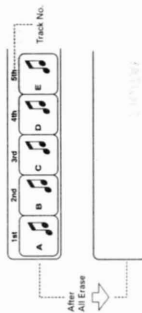
Moving a track (MOVE) Page 22
This function moves a track by reordering the track numbers.



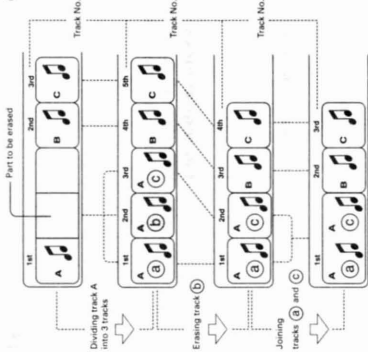
Erasing a track (ERASE) Page 23
This function erases a specified track. After the erasure, the subsequent tracks are renumbered automatically.



Erasing all tracks (ALL ERASE) Page 25
This function erases data in a disc entirely.



Combining editing functions
By combining "DIVIDE", "ERASE" and "JOIN", for example, it is possible to erase only a part of existing track.

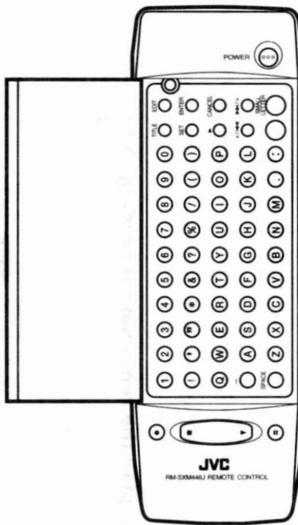


Assigning titles

A title can be assigned to a track or disc. Once a title is assigned, it is displayed in later playback for confirmation. Each title can be composed of up to 64 characters, and can be input using any of character types, alphabets (uppercase and lowercase), symbols and numerals.

When using the remote control unit:

For editing and title assignment operations, use the buttons on the inside panel of the remote control unit.



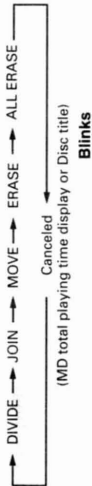
Dividing a track (DIVIDE)

A track can be divided into desired number of tracks by adding track markings in the middle, in the desired points or where you want to search later. This makes it possible to assign track numbers after recording medley music or FM broadcast. The track numbers after the divided track are renumbered automatically.

1 Press EDIT on the main unit or on the remote control unit to select "DIVIDE".

The DIVIDE indicator lights up.

Each press of the button switches the editing functions as follows.



Blinks

DIVIDE

2 Press SET on the main unit or on the remote control unit.

Blinks

1

3 Play a track to be divided.

Select a track number by turning the jog dial on the main unit or by pressing </> or >/> on the remote control unit.

Then, press >II on the main unit or > on the remote control unit.

Blinks

3

Example)

When track No. 3 is selected

- You can also use the numeric keys on the cover panel of the remote control unit to select the track number. To select a track, see "Selecting a track with the numeric keys" on page 9.
- You can use >>> (or <<<) to fast forward (or reverse) the track.

4 Press SET when a point where you want to divide the track comes.

"POSITION" is displayed and the track marking fine-adjustment display appears.

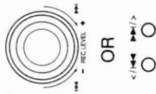
Blinks

OK

Increments by 1

Example) Track No. 3 and 4 blink in the music calendar and the 4-second section from the divided point will be played repeatedly.

- When the track has been divided as desired, go to step 6.
- If the track has not been divided as desired, fine-adjust the track marking position. Go to step 5.
- If you notice that the selected track number is wrong, press ■STOP/CANCEL on the main unit or CANCEL on the remote control unit and repeat from step 3.
- If the display shows "TRACK PROTECTED", the selected track has been protected against accidental erasure by another component. You cannot edit such a protected track. To cancel the editing, press EDIT on the main unit or on the remote control unit.



5 Fine-adjust the track marking position.

Turn the jog dial on the main unit or press </> or >/> on the remote control unit.

The track marking position can be fine-adjusted in the range of ±128 positions (approx. ±8 sec.).

As you adjust, the track marking is displaced slightly and the 4-second section from the newly divided point will be played repeatedly.

- After completing the fine-adjustment, go to step 6.
- To cancel the current track marking position, press ■STOP/CANCEL on the main unit or CANCEL on the remote control unit and repeat from step 3.

6 Press ENTER on the main unit or on the remote control unit.

The change made above is entered temporarily in memory. The display shows

EDITING

"EDITING" and the TOC indicator lights

up.

TOC indicator:

The TOC indicator shows that the MD has new data that should be memorized.

The data writing operation is done by ejecting the MD or by turning the power off. Before the MD is ejected or the power is turned off, "UTOOC writing" is displayed until the data is completely written.

7 Press ▲ on the main unit or on the cover panel of the remote control unit to eject the MD.

The data in memory is written in the MD before it is ejected.

The display shows "UTOOC writing" during MD writing operation.

- Be careful not to apply impact to the MD recorder during writing temporarily stored data into the MD. Otherwise the recording may not be able to play later.
- The data in memory is written in the MD also when the power is turned off while "EDITING" is being displayed.

To cancel editing:

Press EDIT repeatedly on the main unit or on the remote control unit before pressing ENTER in step 6.

To restore the original track from the divided tracks:

Use the JOIN editing function mentioned below.

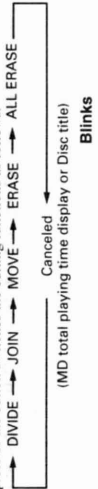
Joining tracks (JOIN)

Two adjacent tracks can be joined into a single track by deleting an unnecessary track marking. This also makes it possible to join more than two tracks into a single track or a piece of music divided into multiple tracks into a single piece. The track numbers after the joined tracks are renumbered automatically.

1 Press EDIT on the main unit or on the remote control unit to select "JOIN".

The JOIN indicator lights up.

Each press of the button switches the editing functions as follows.



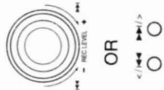
Blinks

JOIN



2 Press SET on the main unit or on the remote control unit.

Select a track number by turning the jog dial on the main unit or by pressing </1< or >2> on the remote control unit.



3 Select a track to be joined with the previous track.

Each press of the button switches the editing functions as follows.
→ DIVIDE → JOIN → MOVE → ERASE → ALL ERASE
(MD total playing time display or Disc title)
Canceled

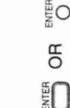


4 Press SET on the main unit or on the remote control unit.

The selected track numbers blink in the music calendar, indicating that these tracks will be joined into one.



If you selected wrong track numbers, press ■STOP/CANCEL on the main unit or CANCEL on the remote control unit and repeat from step 3.
If the display shows "TRACK PROTECTED", one of the selected tracks has been protected against accidental erasure by another component. You cannot edit such a protected track. To cancel the editing, press EDIT on the main unit or on the remote control unit.



5 Press ENTER on the main unit or on the remote control unit.

The change made above is entered temporarily in memory. The display shows "EDITING" and the TOC indicator lights up.



6 Press Δ on the main unit or on the cover panel of the remote control unit to eject the MD.

The data in memory is written in the MD before it is ejected.
The display shows "UTOCwriting" during MD writing operation.
Be careful not to apply impact to the MD recorder during writing temporarily stored data into the MD. Otherwise the recording may not be able to play later.
The data in memory is written in the MD also when the power is turned off while "EDITING" is being displayed.

To cancel editing:

Press EDIT repeatedly on the main unit or on the remote control unit before pressing ENTER in step 5.

To restore the original tracks from the track obtained by joining:

Use the DIVIDE editing function.
See "Dividing a track (DIVIDE)" on page 19.

Moving a track (MOVE)

A track can be moved to the desired position by selecting its track number and the destination track number.

1 Press EDIT on the main unit or on the remote control unit to select "MOVE".

The MOVE indicator lights up.
Each press of the button switches the editing functions as follows.
→ DIVIDE → JOIN → MOVE → ERASE → ALL ERASE
(MD total playing time display or Disc title)
Canceled



2 Press SET on the main unit or on the remote control unit.

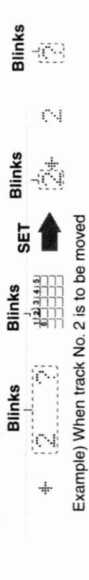
The current track number will blink on the display.



3 Select a track number to be moved, then press SET.

Select a track number by turning the jog dial on the main unit or by pressing </1< or >2> on the remote control unit.

Then press SET on the main unit or on the remote control unit.

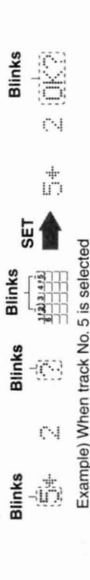


You can also use the numeric keys on the cover panel of the remote control unit to select a track number, then press SET. To select a track, see "Selecting a track with the numeric keys" on page 9.
If you selected a wrong track number, press ■STOP/CANCEL on the main unit or CANCEL on the remote control unit and select the correct track number.

4 Select the movement destination track number, then press SET.

Select another track number to be given to the selected track by turning the jog dial on the main unit or by pressing </1< or >2> on the remote control unit.

Then press SET on the main unit or on the remote control unit.



You can also use the numeric keys on the cover panel of the remote control unit to select the track number, then press SET. To select a track, see "Selecting a track with the numeric keys" on page 9.
If you selected a wrong track number, press ■STOP/CANCEL on the main unit or CANCEL on the remote control unit and repeat from step 3.

5 Press ENTER on the main unit or on the remote control unit.

The change made above is entered temporarily in memory. The display shows "EDITING" and the TOC indicator lights up.



6 Press Δ on the main unit or on the cover panel of the remote control unit to eject the MD.

The data in memory is written in the MD before it is ejected.

The display shows "UTOC writing" during MD writing operation.



- Be careful not to apply impact to the MD recorder during writing temporarily stored data into the MD. Otherwise the recording may not be able to play later.
- The data in memory is written in the MD also when the power is turned off while "EDITING" is being displayed.

To cancel editing:

Press EDIT repeatedly on the main unit or on the remote control unit before pressing ENTER in step 5.

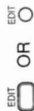
Erasing a track (ERASE)

A track can be erased from the MD. The track numbers after the erased track are renumbered automatically.

1 Press EDIT on the main unit or on the remote control unit to select "ERASE".

The ERASE indicator lights up.

Each press of the button switches the editing functions as follows.



Blinks



2 Press SET on the main unit or on the remote control unit.

The current track number will blink on the display.



3 Select a track number to be erased, then press SET.

Select a track number by turning the jog dial on the main unit or by pressing </44 or >44 / > on the remote control unit.

Then press SET on the main unit or on the remote control unit.



Example) When track No. 2 is to be erased

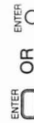


Example) When SET is pressed

- You can also use the numeric keys on the cover panel of the remote control unit to select a track number, then press SET. To select a track, see "Selecting a track with the numeric keys" on page 9.
- If you selected a wrong track number, press ■STOP/CANCEL on the main unit or CANCEL on the remote control unit and select the correct track number.
- If the display shows "TRACK PROTECTED", the selected track has been protected against accidental erasure by another component. You cannot edit such a protected track. To cancel the editing, press EDIT on the main unit or on the remote control unit.

4 Press ENTER on the main unit or on the remote control unit.

The change made above is entered temporarily in memory. The display shows "EDITING" and the TOC indicator lights up.



Decrements by 1

5 Press Δ on the main unit or on the cover panel the remote control unit to eject the MD.

The data in memory is written in the MD before it is ejected.

The display shows "UTOC writing" during MD writing operation.



- Be careful not to apply impact to the MD recorder during writing temporarily stored data into the MD. Otherwise the recording may not be able to play later.
- The data in memory is written in the MD also when the power is turned off while "EDITING" is being displayed.

To cancel editing:

Press EDIT repeatedly on the main unit or the remote control unit before pressing ENTER in step 4.

Caution

- Once erased, the track can never be restored. An MD containing recording that you do not want to erase should be protected by sliding the protect tab (see page 14).

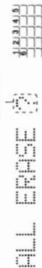
Erasing all tracks in an MD (ALL ERASE)

The data recorded in an MD can be erased entirely.

- 1 Press **EDIT** on the main unit or on the remote control unit to select "ALL ERASE".

The ALL ERASE indicator lights up.

Each press of the button switches the editing functions as follows.



- 2 Press **SET** on the main unit or on the remote control unit.



- If the display shows "TRACK PROTECTED" one or more of the tracks in the MD has been protected against accidental erasure by another component. You cannot edit such a protected track. To cancel the editing, press EDIT on the main unit or on the remote control unit.

- 3 Press **ENTER** on the main unit or on the remote control unit.

The change made above is entered temporarily in memory. The display shows "EDITING" and the TOC indicator lights up.



- 4 Press **Δ** on the main unit or on the cover panel of the remote control unit to eject the MD.

The data in memory is written in the MD before it is ejected.

The display shows "UTOC writing" during MD writing operation.

- Be careful not to apply impact to the MD recorder during writing temporarily stored data into the MD. Otherwise the recording may not be able to play later.
- The data in memory is written in the MD also when the power is turned off while "EDITING" is being displayed.

To cancel editing:

Press EDIT repeatedly on the main unit or on the remote control unit before pressing ENTER in step 3.

Caution

- Once erased, the tracks can never be restored. An MD containing recording that you do not want to erase should be protected by sliding the protect tab (see page 14).

Assigning the disc title and track titles

You can assign a title to each MD and to each track. Once a title is assigned, it is displayed for later playback for confirmation.

Each title can be composed of up to 64 characters, and can be input using alphabetic characters — uppercase (A to Z) and lowercase (a to z), symbols (see "Available symbols" on the next page), and numerals (0 to 9).

To assign a title using the buttons on the main unit
In the following example, the process is explained from the very first — that is, inserting an MD. If you already start recording or playing, see "To assign a track title during playback or recording" on page 29.

- 1 Load a recorded MD.

- 2 Press **TITLE**.

The display will show "DISC/NO TITLE".
Each press of the button switches the title assignment function on and off.



- If a disc title has already been assigned, the title is displayed.

When you assign the disc title: Go to step 3.

When you assign the track titles:

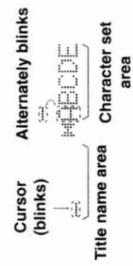
First select the track to be titled by turning the jog dial to the right or left. Then, go to step 3.



- 3 Press **SET**.

The title assignment display appears.

The display is divided into the title name area and the character set area.

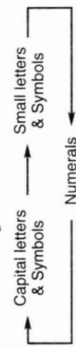


- 4 Enter a character

Example: When entering character "n".

1 Press DISPLAY/CHARACTER repeatedly.

Each press of the button changes the character sets as follows:



- 2 Turn the jog dial until "n" blinks on the character set area.

- Turning the jog dial continuously can also change the character sets.

- 3 Press **SET**.

The selected character is entered, and the cursor moves to the next character entry position.

To assign a title using the buttons on the remote control unit

In the following example, the process is explained from the very first — that is, inserting an MD. If you already start recording or playing, see “To assign a track title during playback or recording” on page 29.

1 Load a recorded MD.

2 Press TITLE.

The display shows “DISC/NO TITLE”.



Blinks Scrolls

- If a disc title has already been assigned, the title is displayed.

If you want to assign the disc title, go to step 3.

If you want to assign the track titles, press </> or >/> to select the track to be titled then go to step 3.

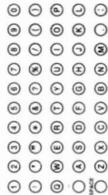
3 Press SET.

The cursor starts blinking on the first character entry position.



4 Input the disc or track title.

- 1 Select the character case.
Each press of SMALL LETTER switches the character case. Lowercase letters can be input when the button is lit in green, and uppercase letters can be input when the button is not lit.
- 2 Input characters by using the character input keyboard.
The selected character is entered, and the cursor moves to the next character entry position.
 - To move the cursor while entering a title, press </> or >/>.
 - If you have entered an incorrect character, press CANCEL to cancel the last entry.



To make a correction or change the title:

- 1 Press </> or >/> to move the cursor on an incorrect character, and press CANCEL.
- 2 Input the correct character by using the character input keyboard.

To erase all the input characters:

Press CANCEL repeatedly until all the input characters are erased.

5 Press ENTER.

The display shows “EDITING” and the TOC indicator lights up. Next, the display shows the disc title name and then shows the track number and the total playing time.

EDITING

(Disc Title)

- To enter a space, press >>> to move the cursor to the right (or turn the jog dial to select a space, then press SET).
- To move the cursor while entering a title, press <<< or >>>.
- If you have entered an incorrect character, press ■STOP/CANCEL to cancel the last entry.

To make a correction or change the title:

- 1 Press <<< or >>> to move the cursor on an incorrect character, and press ■STOP/CANCEL.
- 2 Turn the jog dial to select the correct character, then press SET.

To erase all the input characters:

Press ■STOP/CANCEL repeatedly until all the input characters are erased.

5 Press ENTER.

The display shows “EDITING” and the TOC indicator lights up. Next, the display shows the disc title name and then shows the track number and the total playing time.



EDITING

(Disc Title)

- If the disc title is longer than 11 characters, it scrolls on the display.
Note: When using the TEXT COMPU LINK remote control system (see page 31), titles will not be scrolled.
- After editing the track title, the name of the track is not displayed.

6 Press ▲ to eject the MD.

- The data in memory is written in the MD before it is ejected.
The display shows “UTOCwriting” during MD writing operation.
- Be careful not to apply impact to the MD recorder during writing temporarily stored data into the MD. Otherwise the title may not be able to appear during a later playback.
 - The data in memory is written in the MD also when the power is turned off while “EDITING” is being displayed.

To cancel editing:

Press TITLE before pressing ENTER in step 5.

Available symbols

(Space)	!	"	#	\$	%	&	'	(	)
*	+	,	-	.	/	:	;	<	=
>	?	@	_	^	~				

COMPU LINK

6 Press  to eject the MD.
The data in memory is written in the MD before it is ejected.
The display shows "UTOC writing" during MD writing operation.

- Be careful not to apply impact to the MD recorder during writing temporarily stored data into the MD. Otherwise the title may not be able to appear during a later playback.
- The data in memory is written in the MD also when the power is turned off while "EDITING" is being displayed.

To cancel editing:
Press TITLE before pressing ENTER in step 5.

To assign a track title during playback or recording
You cannot assign a disc title during playback or recording. To assign a disc title, follow the procedure explained on pages 26 to 28.

1 Press TITLE on the main unit or on the remote control during playback or recording.
Each press of the button switches the title assignment function on and off.



- You can assign a title to the currently playing or recording track.

2 Input the track title name.

- For detailed description, refer to pages 26 to 28.
However, note that the function of STOP/CANCEL on the main unit differs. If you press the button, MD recorder stops playing or recording and finishes the title assignment procedure at this point ("EDITING" appears).

3 Press ENTER on the main unit or on the remote control unit.
The display shows "EDITING" and the TOC indicator lights up.
Next, the display shows the disc title name and then shows the track number and the total playing time.



- If it is during playback, the track will be played repeatedly until ENTER is pressed. Pressing ENTER stops the playback.
- If it is during recording, recording continues even after ENTER is pressed. If ENTER is not pressed until the end of the track, the characters input before the end of the track are recorded as a track title.

4 Press  on the main unit or on the cover panel of the remote control unit to eject the MD.
The data in memory is written in the MD before it is ejected.
The display shows "UTOC writing" during MD writing operation.



- Be careful not to apply impact to the MD recorder during writing temporarily stored data into the MD. Otherwise the title may not be able to appear during a later playback.
- The data in memory is written in the MD also when the power is turned off while "EDITING" is being displayed.

To cancel editing:

Press TITLE on the main unit or on the remote control unit before pressing ENTER in step 3.

Linked Operation of the Other Optional Components (Compu Link)

The XM-448BK MD recorder can be controlled under linked operation provided by the JVC's Compu Link remote control system.

What is Compu Link

The world of single components, in which you purchase a cassette deck, CD player, amplifier and other components separately and enjoy your own composition, is an effective means for pursuit of high-quality reproduction. However, in terms of operability, the need of controlling components independently makes their control complicated and their linked operation impossible. Then, isn't it possible to combine single component and control them as simply as an integrated audio system? The Compu Link remote control system is the response to such a requirement.

By connecting the COMPU LINK jacks to the components equipped with jacks named COMPU LINK-3 (COMPU LINK jacks), they can be controlled simply with a systematized, linked operation.

Compu Link connections

Using Compu Link cables (one cable is supplied with this unit - the cable with the monaural min-plugs: black), connect the COMPU LINK jacks of the components. Connect so that the Compu Link cables can bridge all of the components you have. The components can be connected in any order.

Compu Link-3 features

The Compu Link-3 system makes the following operations possible.

Shortcut playback:

Simply selecting an input source of the receiver starts playback of the selected source component (CD player, MD recorder or cassette deck).
Also, even if you do not touch the receiver, starting playback of a source component sets the receiver's input source automatically to the played component.
*Refer to the instruction manual of the receiver.

A single remote control unit:

The remote control unit provided with the receiver can also be used to control the CD player, MD recorder, or cassette deck.

Synchronized recording:

Recording can be started automatically in synchronism with the start of playback of a source component.

Timer operation:

The timer function built into the receiver can be used to start recording or playback of other components at the reserved time of the day or switch the power to the Standby mode in the reserved time period.
*Refer to the instruction manual of the receiver.

TEXT COMPU LINK

JVC's TEXT COMPU LINK remote control system allows you to transfer text information recorded on the CD Text or MD among JVC audio components.

- Each component must have the same remote control system.

Connection with receiver (or amplifier)

This system enables text information on the MD to be displayed on the receiver (or amplifier).

- If the receiver (or amplifier) has the on-screen function, you can display the text information on any TV screen, and can do the following, using the on-screen function while watching the TV screen:
 - Operate this MD recorder.
 - Assign titles to the MD and its tracks.
 - If the CD player equipped with the TEXT COMPU LINK remote control system is also connected to the receiver (or amplifier), you can record the track title information of the CD Text onto an MD in its original form, when recording from the CD player.
- To use this control system, connect the receiver and this MD recorder as follows:

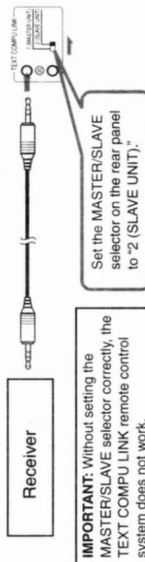
1. If the receiver (or amplifier) and this unit have already been plugged into the AC outlets, disconnect their AC power cords.

2. Connect the receiver and this unit as described below using the COMPU LINK-3 (SYNCHRO) and TEXT COMPU LINK jacks.

- COMPU LINK-3 (SYNCHRO) jacks: Use the supplied Compu Link cable (with the monaural mini-plugs; black).



- TEXT COMPU LINK jacks: Use the supplied Text Compu Link cable (with the stereo mini-plugs; green).



3. Connect the receiver and this unit using the audio pin cord (and a digital cable if any) (see page 6).

4. Connect the AC power cords of this unit to the AC outlets.

5. Finally connect the AC power cord of the receiver.

For further details on how to use the TEXT COMPU LINK remote control system, refer to the manual supplied with your receiver (or amplifier).

Connection to CD player or CD changer

Without connecting the receiver (or amplifier) equipped with the TEXT COMPU LINK remote control system, this connection enables you to record the track title information of the CD Text onto an MD in its original form, when recording from the CD player.

To use this control system, connect the units as follows:

1. If the CD player (or CD changer) and this unit have already been plugged into the AC outlets, disconnect their AC power cords.

2. Connect the CD player (or CD changer) and this unit as described below using the COMPU LINK-3 (SYNCHRO) and TEXT COMPU LINK jacks.

- COMPU LINK-3 (SYNCHRO) jacks: Use the supplied Compu Link cable (with the monaural mini-plugs; black).



- TEXT COMPU LINK jacks: Use the supplied Text Compu Link cable (with the stereo mini-plugs; green).



IMPORTANT: Without setting the MASTER/SLAVE selector correctly, the TEXT COMPU LINK remote control system does not work.

Set the MASTER/SLAVE selector on the rear panel to "1" (MASTER UNIT).

3. Connect the CD player and this unit using the audio pin cord (and a digital cable if any) (see page 6).

4. Connect the AC power cord of the CD player to the AC outlets.

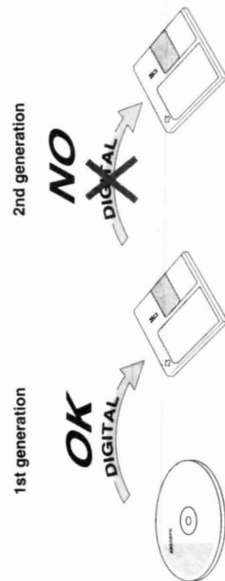
5. Finally connect the AC power cord of this unit.

Rule on Digital Copying

The digital audio equipment exchanges audio signals in the digital forms through digital input/output jacks, and include the CD (Compact Disc) player, MD (Mini Disc) recorder and DAT (Digital Audio Tape) recorder. The digital audio equipment allows digital copy of signals with little deterioration of music signals. This has made it necessary to have a copy restriction rule for protecting the copyright, and the SCMS has been established as a result.

SCMS (Serial Copy Management System)

With a view to protecting the copyright, the SCMS restricts the number of generations permitted for copying of signals in the digital form between digital audio equipment to only one generation.



Caution

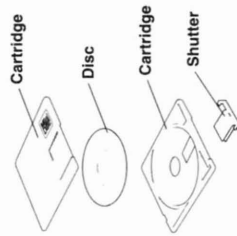
- Because of this rule, the MD obtained by recording a CD on the MD recorder cannot be copied in the digital form on other digital equipment.

About MD (Mini Disc)

The MD (Mini Disc) is a new digital audio medium using a disc with a diameter of 64 millimeters. In spite of the small size, the MD has multiple functions, high audio quality and recording/playback capabilities for up to 74 minutes.

Role of the cartridge

The MD cartridge has a pocket size of 68 mm × 72 mm with a thickness of 5 mm. The cartridge accommodates the 64 mm diameter disc for ease of transportation and storage. The internal disc is usually protected by the cartridge shells and shutter so no dust, dirt, scratch or fingerprint is left on the disc and the disc handling is easy.



Two disc types

The MD (Mini Disc) includes two disc types, the recordable MD that can be recorded onto and the playback-only MD that can exclusively be played back. Although both types of discs are played in the same way, that is, by irradiating a laser beam on the disc and reading signals from the reflected light, the ways they are recorded are completely different.

Playback-only MD

This type of disc is used in prerecorded MD software marketed in music stores. It cannot be recorded by the user and data is recorded in the same way as a CD, i.e. according to the presence or absence of small holes called pits. A disc recorded in this way is referred to as an "optical disc".



Playback-only MD

Recordable MD

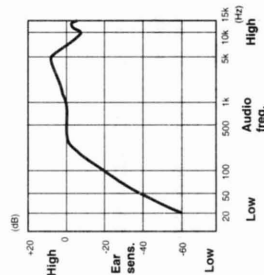
This type of disc records data using the magnetism to allow repeated data recording operations. A disc recorded in this way is referred to as an "MO (Magneto-Optical) disc".



Recordable MD

ATRAC (Adaptive Transform Acoustic Coding)

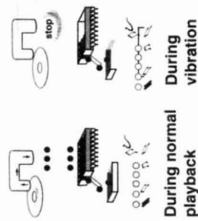
The MD (Mini Disc) has half the size of the CD but can record data for the same period of time. This has been made possible by the newly developed ATRAC (Adaptive Transform Acoustic Coding), which compresses data by cutting the audio components that are inaudible to the human sense of audition. This technology reduces the recorded data to about 1/5 the original data quantity and enables recording/playback of data for up to 74 minutes.



Sound skip guard memory

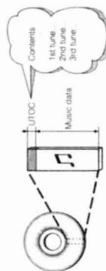
The sound skip guard memory stores some data of the played track so that the played audio does not skip due to vibration during MD (Mini Disc) playback.

In case the optical laser cannot read disc signal due to vibration, the actually reproduced audio is not interrupted because the data stored in the guard memory is available.



UTOC (User Table Of Contents)

The recordable MD (Mini Disc) contains the recording of UTOC (User Table Of Contents) in addition to music data itself. The UTOC includes the information on the positions the tracks are recorded, markings between tracks and order of tracks, so tracks can be searched quickly by referring to it. The editing operations consist of altering the UTOC contents and the actual music data does not need to be re-recorded.



Handling MDs

MD handling precautions

To maintain high quality audio for a long period

Since the disc is accommodated inside a cartridge, it can be handled easily without caring about dust and dirt. However, to maintain the high audio quality for an extended period, use care in the following points.

Installation location

Do not install the MD in following places.

- In a place subject to direct sunlight or where the temperature rises, for example in a closed automobile. The disc may be warped and unusable in these places.
- In a bathroom or where the humidity is high. The disc may be rusted in these places.
- On a beach or sandbox. The disc surface may be scratched or damaged if grit penetrates through an opening on the cartridge.

Periodical maintenance

When the cartridge gets dusty or dirty, wipe with a soft, dry cloth.

Do not open the shutter.

The shutter is usually locked to prevent opening. Do not force to open it or the disc may be destroyed.



MD Messages

The display of the MD recorder may show the messages which are explained in the following table.

Messages	Description	Treatment
BLANK DISC	The loaded disc is a non-recorded disc.	Use a recorded disc unless you want to start recording on a blank disc.
CANNOT JOIN	An attempt is made to join tracks that cannot be joined.	This is one of system restrictions on the MD. [See page 38.]
DISC ERROR	The MD is abnormal (damaged).	Use another MD.
DISC FULL	The disc has no available space or the number of tracks has reached 254.	Use another recordable MD.
EMERGENCY STOP	An abnormality occurred during recording.	Press ■ STOP/CANCEL on the main unit or ■ on the remote control unit to enter Stop mode, then press ▲ to eject the MD and retry recording.
NO DISC	No MD is loaded.	Load an MD.
NON-AUDIO CANNOT COPY	An attempt is made to digitally dub a CD-ROM (Video CD, etc.).	Stop recording.
PLAYBACK DISC	An attempt is made to record on or edit a playback-only MD.	Use a recordable MD.
DISC PROTECTED	The MD is protected against accidental erasure.	Slide the protect tab of the MD. [See page 14.]
TRACK PROTECTED	A track has been protected against accidental erasure by other component than the MD recorder in use.	This protection cannot be released by this MD recorder. To stop editing the protected track, press EDIT.
SCMS CANNOT COPY	An attempt is made to copy a digitally dubbed copy.	Use the analog input for recording.
DIGITAL IN UNLOCK	A wrong digital input is selected.	Press INPUT SELECTOR to select the correct digital input.

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MD Restrictions

The MD records data in an original format that differs from that of conventional cassette tapes or DATs. Since there are some limitations with this recording format, the following types of symptoms may occur. These symptoms are not malfunctions.

Symptom	Cause
"DISC FULL" appears, even though there is still enough remaining time on MD.	There is a maximum number of tracks which can be recorded, regardless of recording time. More than 254 tracks cannot be recorded on an MD.
"DISC FULL" appears even though the number of tracks and recording time do not reach the limit.	- Repeating erasure and recording on the same MD creates many blank portions sparsely on the MD. When recording on such an MD, a track is recorded on these blank portions sparsely. If a track is divided and recorded into so many portions, "DISC FULL" appears. - If a divided portion of less than 8 seconds is made while a track is recorded on the MD, that track cannot be joined to another track using the JOIN function. Furthermore, if that track is erased, the remaining time of the MD may not increase exactly by the erased amount. - If a track has been divided into many portions while being recorded on the MD, sounds will drop out while fast forwarding or reversing such an MD.
The JOIN function sometimes does not work.	
The remaining time on the MD does not increase even when tracks are erased.	
The sound drops out during fast forward or fast rewind.	
The amount of recorded time on the MD added to the amount of remaining time is shorter than the MD's total possible recording time.	You cannot record on a blank portion of less than 2 seconds in the MD. For this reason, the actual recording time of discs may become shorter.

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Troubleshooting

In case of difficulty, check the following before calling for service.

Symptom	Cause	Treatment
Sound is not heard.	• Cables are not connected properly.	• Connect cables properly by referring to "Connection".
	• The power cord is unplugged from the power outlet.	• Plug the power cord securely into the power outlet.
	• A playback-only MD is loaded.	• Use a recordable MD.
Recording is not possible.	• The MD is protected against accidental erasure ("DISC PROTECTED" is displayed in this case).	• Close the accidental erasure protect tab of the MD.
Remote control is not possible.	• The batteries are exhausted.	• Replace batteries with new ones.
	• The batteries are inserted with wrong polarity (+, -).	• Insert batteries with correct polarity.
	• There is an obstacle between the remote control unit and remote control sensor.	• Remove the obstacle.
Operation is abnormal.	• The remote control sensor is under direct sunlight.	• Screen the direct sunlight.
	• Condensation is produced inside the MD recorder immediately after starting the room heating or when it is transported from a cold to warm place.	• Unplug the power cord, wait a few hours and plug it again.
	• The microcomputer is malfunctioning due to external noise or lightning.	• Unplug the power cord then plug it in again.

QUALITY **JVC** SERVICE

HOW TO LOCATE YOUR JVC SERVICE CENTER

TOLL FREE : 1-800-537-5722
<http://www.jvc-service.com>

Dear customer:
 In order to receive the most satisfaction from your purchase, read the instruction booklet before operating the unit. In the event that repair is necessary, or for the address nearest your location, please refer to the factory service center list below or within the Continental United States. Call 1-800-537-5722 for your authorized service. Remember to retain your Bill of Sale for Warranty Service.

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5665 Corporate Avenue Cypress, CA 90630-0024 (714) 229-8011	2969 Mapunapuna Place Honolulu, HI 96819-2040 (808) 833-5828	10700 Hammerly, Suite 110 Houston, TX 77043 (713) 835-9331
13 Cummings Park Woburn, MA 01801 (781) 376-8100	8192 State Road 84 Darien, CT 06412-3324 (954) 472-1960	890 Dubuque Avenue South San Francisco, CA 94080-1804 (650) 871-2066

Sophisticated electronic products may require occasional service. Just as quality is a keyword in the engineering and production of the wide array of JVC products, so is the high level of performance for which JVC is world famous. The JVC service and engineering organization stands behind our products.

NATIONAL HEADQUARTERS
 JVC SERVICE & ENGINEERING COMPANY OF AMERICA
 DIVISION OF JVC AMERICAS CORP.
 1700 Valley Road
 Wayne, NJ 07470

If you ship the product...

Pack your JVC unit in the original carton or one of equivalent size and strength. Enclose, with the unit, a letter stating the problem or symptom that exists and also a copy of the receipt or bill of sale you received when you purchased your product. Write your return address on the outside and the inside of the carton. Send to the appropriate JVC Factory Service Center as listed above.

Don't service it yourself.

CAUTION

To prevent electrical shock, do not open the cabinet. No user serviceable parts inside.
 Refer servicing to qualified service personnel.

ACCESSORIES

To purchase accessories for your JVC product, you may contact your local JVC Dealer.
 Or from the 48 Continental United States call toll free : 800-892-2345

(1098)



LIMITED WARRANTY AUDIO-1

JVC COMPANY OF AMERICA warrants this product and all parts thereof, except as set forth below ONLY TO THE ORIGINAL PURCHASER AT RETAIL TO BE FREE FROM DEFECTIVE MATERIAL AND WORKMANSHIP from the date of original retail purchase for the period as shown below. (The Warranty Period.)

PARTS	LABOR
1YR	1YR

THIS LIMITED WARRANTY IS VALID ONLY IN THE FIFTY(50) UNITED STATES, THE DISTRICT OF COLUMBIA AND IN COMMONWEALTH OF PUERTO RICO.

WHAT WE WILL DO:

If this product is found to be defective, JVC will repair or replace defective parts at no charge to the original owner. Such repair and replacement services shall be rendered by JVC during normal business hours at JVC authorized service centers. Parts used for replacement are warranted only for the remainder of the Warranty Period. All products and parts thereof may be brought to a JVC authorized service center on a carry-in basis except for television sets having a screen size 25 inches and above which are covered on an in-home basis.

WHAT YOU MUST DO FOR WARRANTY SERVICE:

Return your product to a JVC authorized service center with a copy of your bill of sale. For your nearest JVC authorized service center, please call toll free: (800)537-5722. If service is not available locally, box the product carefully, preferably in the original carton, and ship, insured, with a copy of your bill of sale plus and letter of explanation of the problem to the nearest JVC Factory Service Center, the name and location of which will be furnished to you upon request. If you have any questions concerning your JVC Product, please contact our Customer Relations Department.

WHAT IS NOT COVERED:

This limited warranty provided by JVC does not cover:
1. Products which have been subject to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, or service by anyone other than a service facility authorized by JVC to service your product.
2. Products which have been altered, tampered with, delaced or removed.

3. Initial installation and installation and removal for repair.

4. Operational adjustments covered in the Owner's Manual, normal maintenance, video and audio head cleaning.

5. Damage that occurs in shipment, due to act of God, and cosmetic damage;

6. Signal reception problems and failures due to line power surge;

7. Video Pick-up Tubes/CCD Image Sensor, Cartridge, Stylus/Needle) are covered for 90 days from the date of purchase;

8. Accessories;

9. Batteries (except the Rechargeable Batteries are covered for 90 days from the date of purchase);

There are no express warranties except as listed above.

THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN.

JVC SHALL NOT BE LIABLE FOR THE LOSS OF USE OF THE PRODUCT, INCONVENIENCE, LOSS OR ANY OTHER DAMAGES, WHETHER DIRECT, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, WITHOUT LIMITATION, DAMAGE TO TAPES, RECORDS OR DISCS) RESULTING FROM THE USE OF THIS PRODUCT OR ARISING OUT OF ANY BREACH OF THIS LIMITED WARRANTY. JVC MAKES NO WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE LIMITED TO THE WARRANTY PERIOD SET FORTH ABOVE.

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REFURBISHED PRODUCTS CARRY A SEPARATE WARRANTY. THIS WARRANTY DOES NOT APPLY. FOR DETAILS OF REFURBISHED PRODUCT WARRANTY, PLEASE REFER TO THE REFURBISHED PRODUCT WARRANTY INFORMATION PACKAGED WITH EACH REFURBISHED PRODUCT.

For customer use:

Enter below the Model No. and Serial No. which is located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No. _____ Serial No. _____
Purchase date: _____ Name of dealer: _____

Specifications

Format	Minidisc digital audio system
Recording format	Magnetic modulation overwrite format
Reading format	Non-contacting optical method by semiconductor laser ($\lambda=780\text{ nm}$)
Sampling frequency	44.1 kHz
Number of channels	2 channels
Frequency response	ATRAC (Adaptive Transform Acoustic Coding) method 5 Hz to 20,000 Hz ($\pm 0.5\text{ dB}$)
S/N ratio	93 dB
Dynamic range	91 dB
Wow/flutter	Less than measurable limit
Input terminals	ANALOG IN (pin jack), OPTICAL DIGITAL IN (square optical connector jack)
(Analog)	Terminal name Reference input level Minimum input level ANALOG IN 275 mV rms. 100 mV rms.
(Digital)	Received optical Terminal name signal wave length Input level DIGITAL IN 660 nm -24 dBm to -15 dBm 1, 2
Output terminal	ANALOG OUT (pin jack)
(Analog)	Terminal name Load impedance Output level ANALOG OUT 10 kohms 1.1 V
Power requirements	AC 120 V $\pm$ %, 60 Hz
Power consumption	11 watts (ON), 7 watts (STANDBY)
Dimensions	435 $\times$ 112 $\times$ 335 mm (W/H/D) (17 $\frac{1}{8}$ $\times$ 4 $\frac{1}{2}$ $\times$ 13 $\frac{1}{4}$ inches)
Mass	4.3 kg (9.5 lbs)
Accessories	Remote control unit (1) Batteries R03 (UM-4)/AAA (24F) (2) Audio pin cord (2) Optical digital cable (1) Compu Link cable (1) Text Compu Link cable (1) AC power cord (1)

Specifications and appearance subject to change for improvements without prior notice.



VICTOR COMPANY OF JAPAN, LIMITED



0199JTMMDWJEM

Disassembly Method

< Main body >

■ Removing the Top Cover (see Fig.1 to 3)

1. From the left side of the body, remove the two screws A attaching the top cover.
2. From the right side of the body, remove the two screws B attaching the top cover.
3. From the rear body, remove the two screws C attaching the top cover.
4. Remove the top cover upward from the rear body while pulling lower parts of the sides of the top cover.

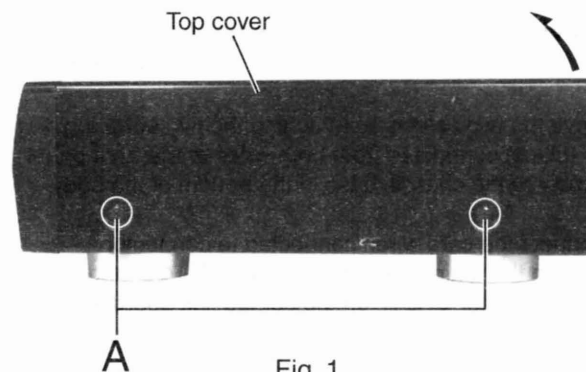


Fig. 1

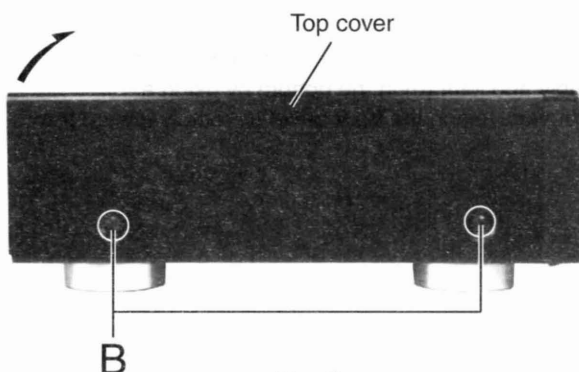


Fig. 2

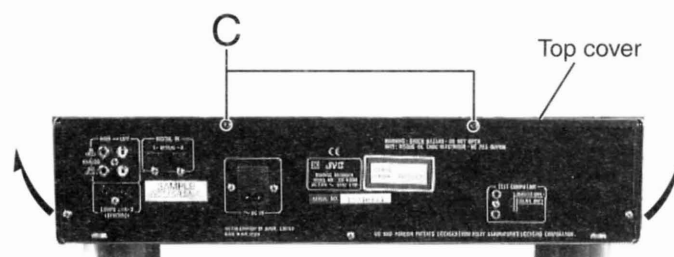


Fig. 3

■ Removing the MD Mechanism Assembly

(see Fig.4)

1. Remove the four screws D attaching the MD mechanism assembly.
2. Disconnect the card wire connected to connector CN489 on the audio board.
3. Detach the MD mechanism assembly.

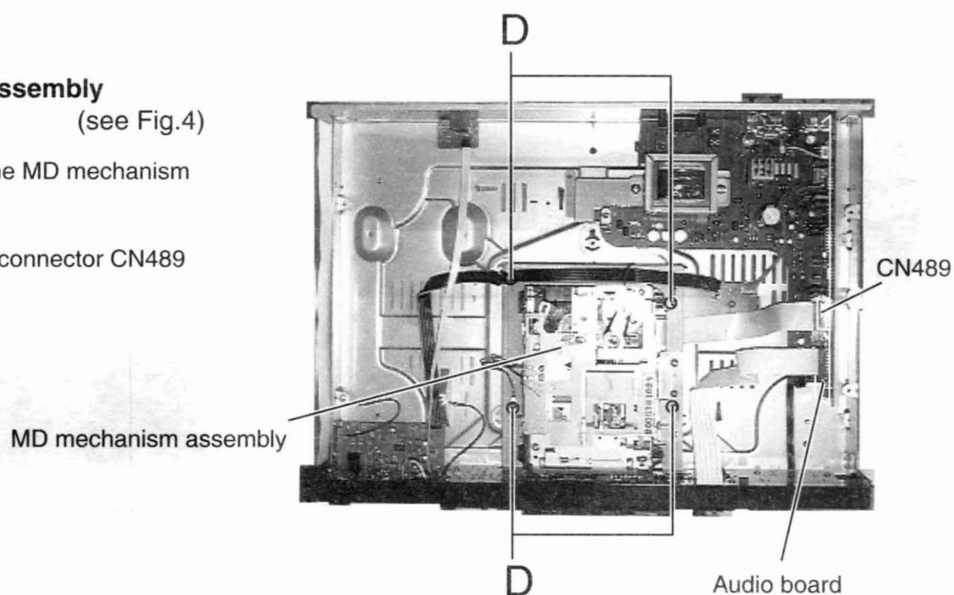


Fig. 4

■ Removing the Front Panel Assembly

(see Fig.5 to 8)

1. Remove the two screws E attaching the two earth lug wires (black) connected from both sides of the front panel assembly to the chassis base in the bottom of the body.
2. Disconnect the card wires connected to connector CN103 on the main board, connector CN214 on the relay board, connector CN217 on the compu link board and connector CN201 on the audio board respectively.
3. From the bottom of the body, remove the three screws F attaching the front panel assembly.
4. Release two joint (a)s on both sides of the front panel assembly and joint (b) in the bottom by using a screwdriver. Detach the front panel assembly toward the front.

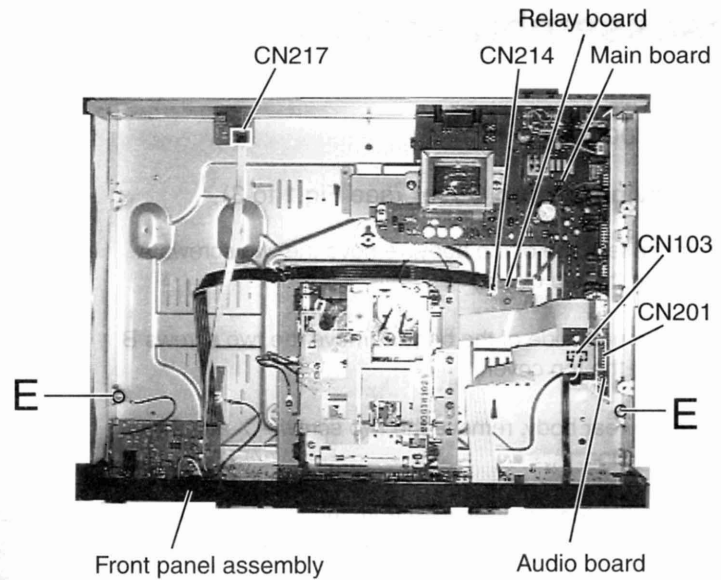


Fig. 5

Front panel assembly

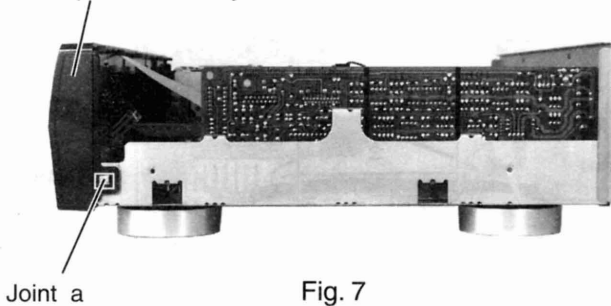


Fig. 7

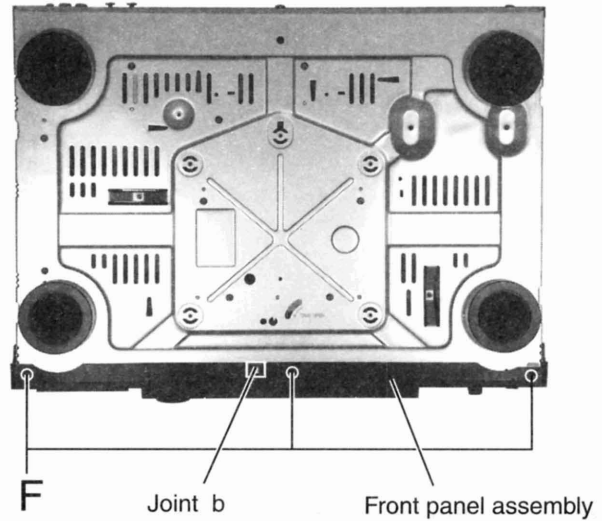


Fig. 6

Front panel assembly

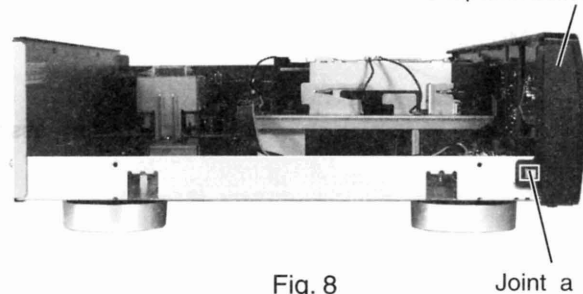


Fig. 8

■ Removing the Relay Board (see Fig. 9)

1. Remove the one screw G attaching the relay board.
2. Disconnect the card wire connected to connector CN214 on the relay board, then disconnect the harness connected to connector CN215 on the relay board.

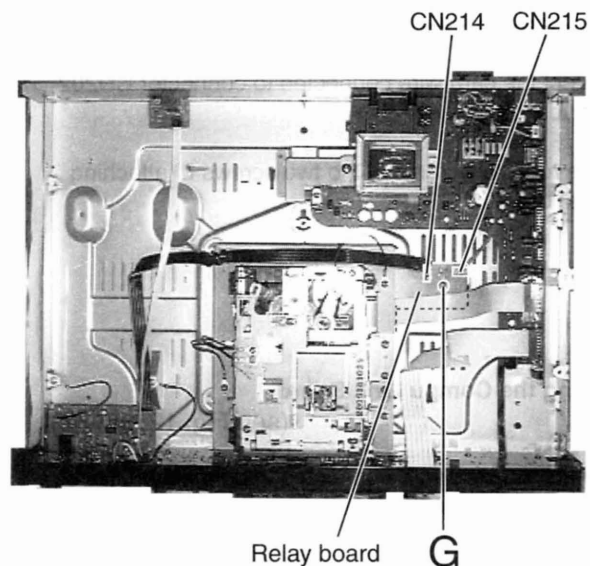


Fig. 9

■ Removing the Main Board and the Audio Board (see Fig. 10 and 11)

1. Disconnect the card wires and harnesses connected to connector CN103 on the main board, connector CN215 on the relay board, connector CN201, CN489 and CN202 on the audio board respectively.
2. From the rear body, remove the two screws J attaching the main board and two screws K attaching the Audio board.
3. Disconnect connector CN101 and CN102 on the main board, then detach the Audio board upward.
4. Remove the three screws H attaching the main board and the two screws I attaching the transformer unit.
(For US and UY version are remove the two screws attaching the voltage selector.)

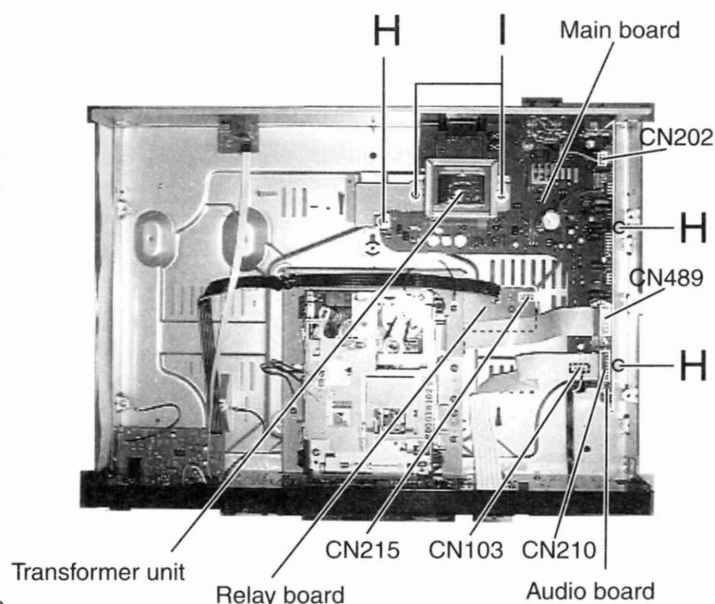


Fig. 10-1

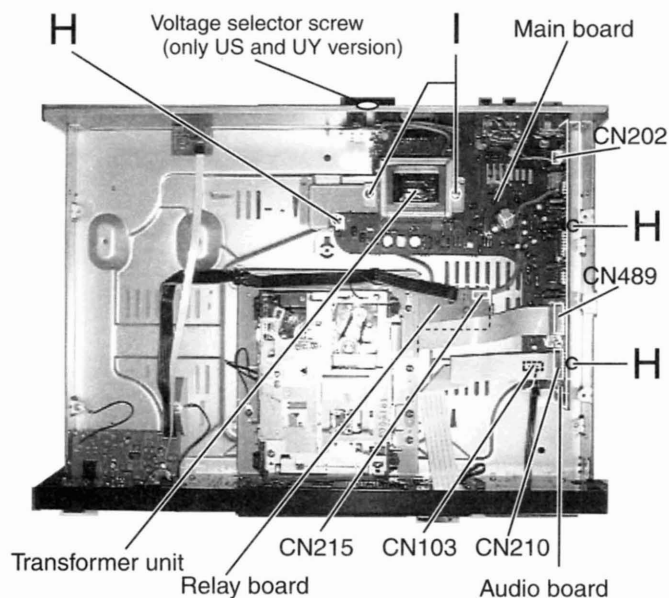


Fig. 10-2 Only US and UY version

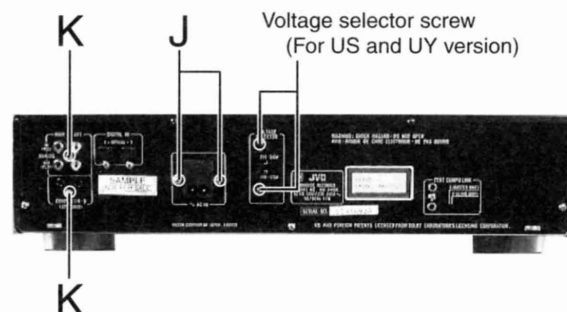


Fig. 11

■ **Removing the Digital Board** (see Fig. 12 and 13)

1. Disconnect the card wire connected to connector CN202 on the audio board.
2. From the rear body, remove the two screws L attaching the digital board.

■ **Removing the Compu Link Board**

(see Fig. 12 and 13)

1. Disconnect the card wire connected to connector CN217 on the compu Link board.
2. From the rear body, remove the one screws M attaching the compu link board.

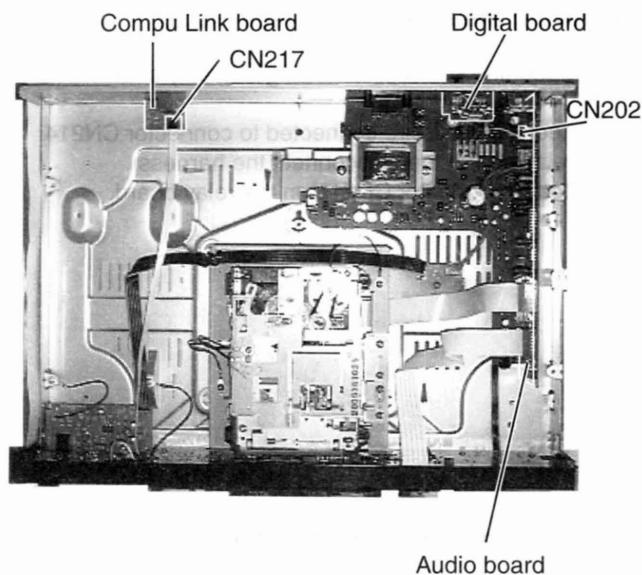


Fig. 12

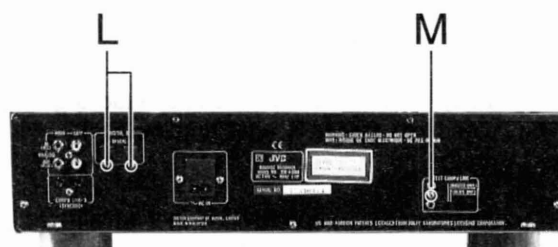


Fig. 13

■ Removing the Jog Dial Board

(see Fig.14 and 15)

1. Detach the front panel assembly from the body.
2. Draw the jog dial toward the front, then detach the jog dial board from the front panel assembly.
3. Remove the two screws N attaching the jog dial board.

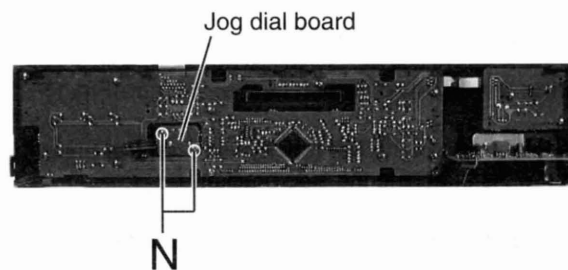


Fig. 14



Fig. 15

■ Removing the System Micon Board (see Fig.16)

1. Detach the front panel assembly from the body.
2. Detach the jog dial board.
3. Remove the ten screws O attaching the System Micon board.
4. Disconnect the card wire connected to connector CN303 on the System Micon board.

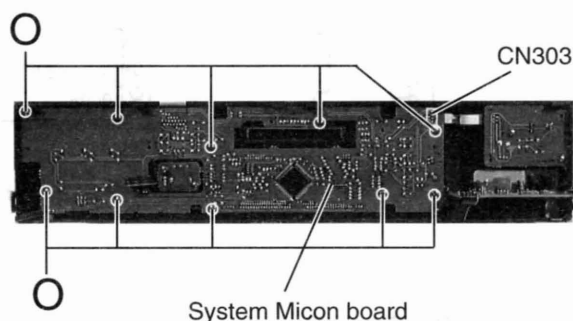


Fig. 16

■ Removing the Power Switch Board (see Fig.16)

1. Detach the front panel assembly from the body.
2. Remove the twelve screws P attaching the power switch board.
3. Disconnect the card wire connected to connector CN313 on the power switch board.

■ Removing the Headphone Amplifier Board

(see Fig.15 and 17)

1. Detach the front panel assembly from the body.
2. Pull out the dial toward the front.
3. Remove the two screws Q attaching the Phones amplifier board.
4. Remove the Phones amplifier board with the bracket.

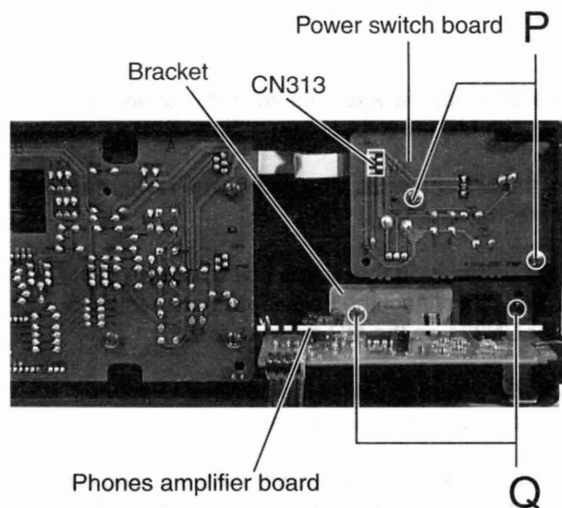
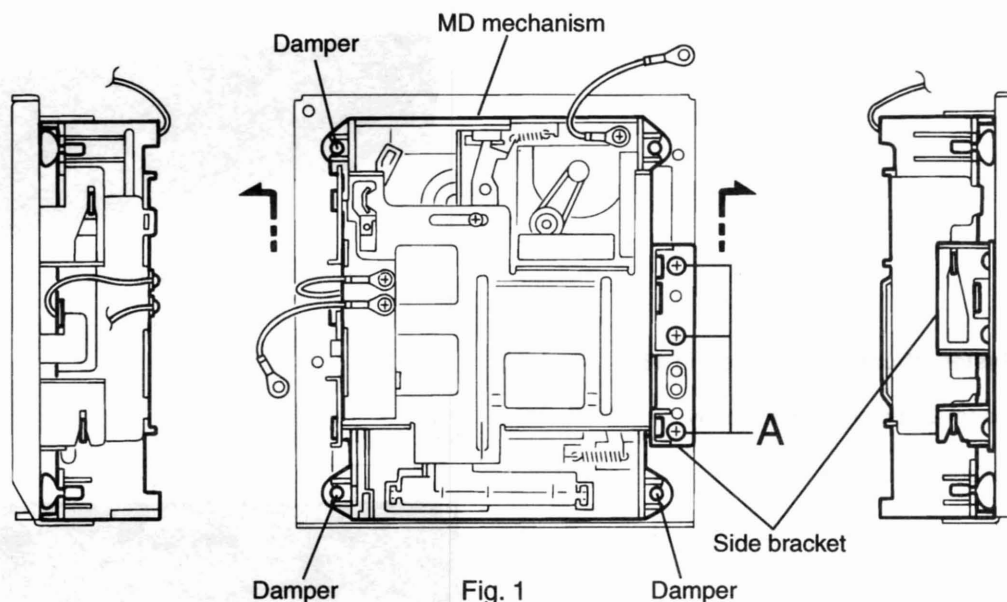


Fig. 17

< MD Mechanism Assembly >

■ Removing the MD Mechanism assembly (see Fig.1)

1. From the right side of the MD mechanism, remove the three screw As attaching the side bracket.
2. Remove the four dampers in the corners of the MD mechanism.
3. Slide and remove the side bracket and MD mechanism base in the directions of the arrows.

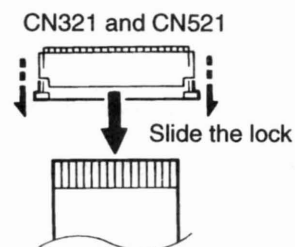
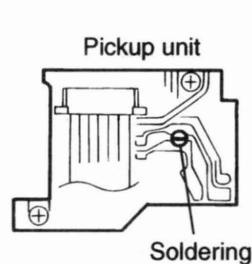
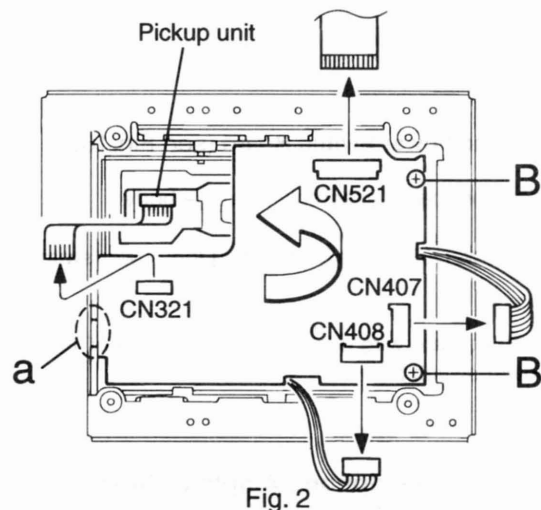


■ Removing the MD Servo Board (see Fig.2)

1. Remove the MD mechanism assembly.
2. Turn over the MD mechanism, then disconnect the harnesses connected to connector CN407 and CN408 on the MD servo board.
3. Disconnect the flexible wire connected to connector CN521 on the MD servo board (see Fig.2-2).
4. Remove the two screw Bs attached on the reverse side of the MD mechanism.
5. Solder the patterns on the pickup unit as shown in the Fig.2-1, and disconnect the flexible wire connected to connector CN321 on the MD servo board.

Caution: Make sure to solder the patterns to prevent damage to the pickup unit.

6. Remove the MD servo board upward while pulling out (a) inserted to the front holder of the MD servo board toward the rear.



■ Removing the MD traverse mechanism (see Fig.3,4)

1. Remove the MD mechanism assembly.
2. Remove the MD servo P.C.board.
3. Remove the one screw C attaching the slide bracket.
4. Remove the one screw D attaching the earth lag terminal.
5. Remove the two screws E attaching the MD traverse mechanism, then remove the bracket.
6. Remove the soldered two wires from magnetic head on loading P.C.board.

[CAUTION]

1. When remove the MD mechanism, take care the handling of the magnetic head. Do not broken by hanging other parts.
2. Confirm the pickup is inside position, if remove the pick up at the outside magnetic head hang the other parts.

7. Slide and remove the bracket, then remove the MD traverse mechanism.

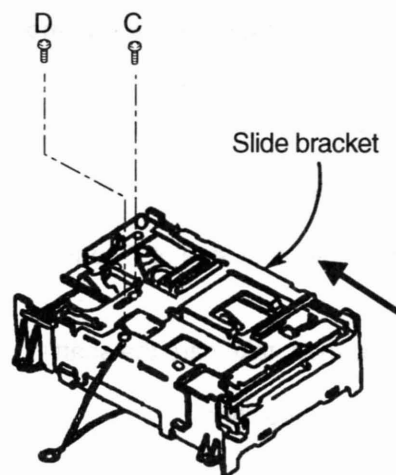


Fig.3

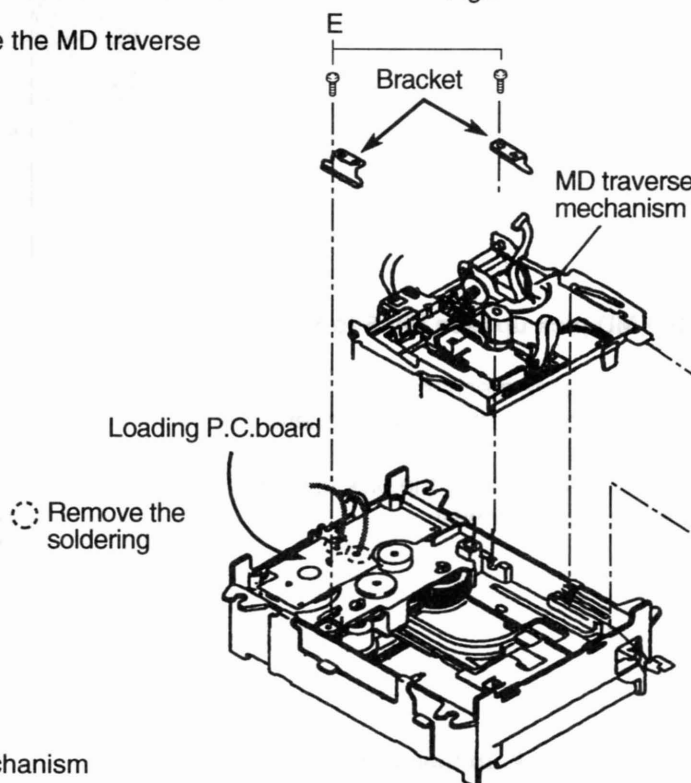


Fig.4

■ Caution of reassemble MD traverse mechanism

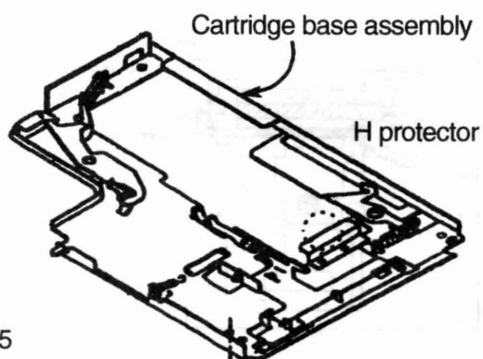
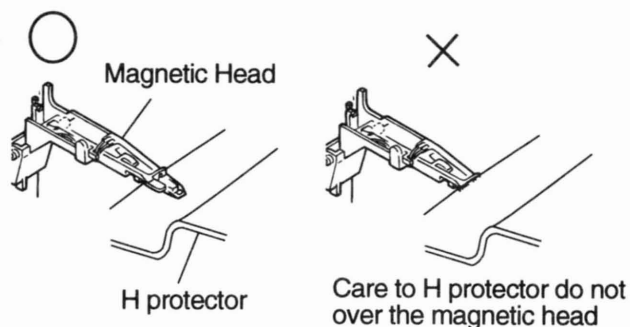


Fig.5

Care to cartridge base assembly
do not hang the magnetic head

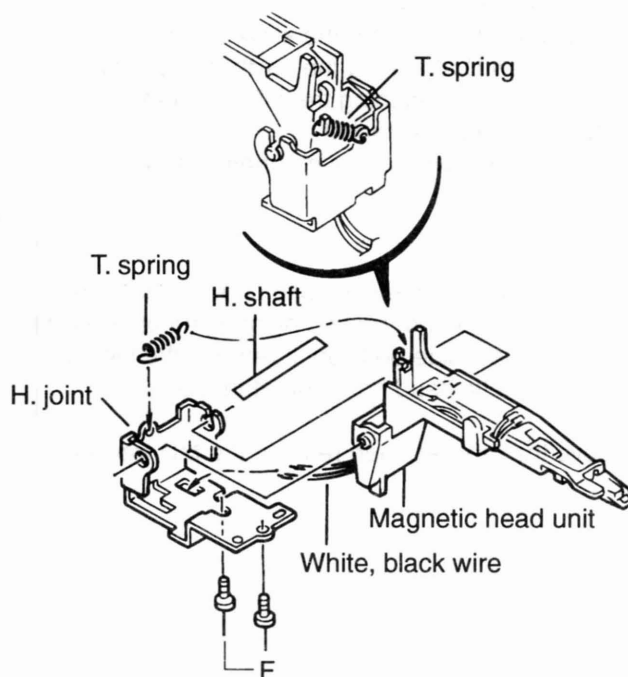


■ Removing the magnetic head (see Fig.6 and 7)

1. Remove the MD traverse mechanism.
2. Remove the two screws F attaching the H. joint.
3. Extract the magnetic head, in this time do not touch the lens.
4. Pull out the H. shaft the other side of T. spring.

[CAUTION]

When attach the H. shaft, take care the shaft push in at bent. Magnetic head to out of position.



■ Removing the MD pick up (see Fig.6 to 8)

1. Remove the MD traverse mechanism.
2. Remove the two screws F attach the magnetic head unit. (see Fig.6)
3. Remove the hook, then remove the pick up with the guide shaft to the arrow way.

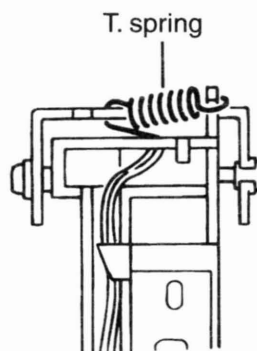


Fig.7

■ Reassembly the MD pick up (see Fig.8)

1. Attach the part of **a** of the pick up to the guide then attach the guide shaft.
2. Confirm the hook fixing the guide shaft.

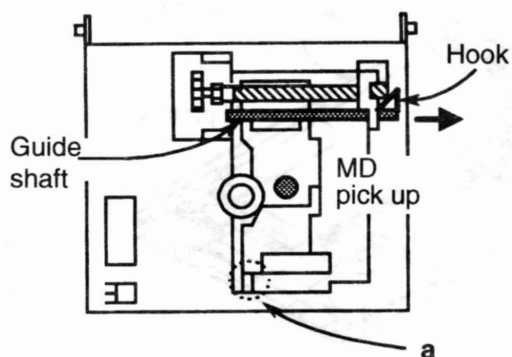


Fig.8

■ Removing the feed motor assembly (see Fig.9)

1. Remove the traverse mechanism.
2. Turnover the MD traverse mechanism, then remove the soldering two wires attach the P.C.board. (White and black wires)
3. Remove the one screw G attach the motor bracket.
4. Remove the food from the chassis base, then remove the feed motor assembly.

■ Removing the spindle motor assembly (see Fig.6 to 9)

1. Remove the MD traverse mechanism.
2. Pull up the turn table assembly.
3. Turnover the MD traverse mechanism, then remove the soldering two wires attach the P.C. board. (Red and black wires)
4. Remove the two screws H attach the spindle motor.

[CAUTION]

When change the spindle motor, turn table assembly should change together.
Turn table assembly can not reuse.

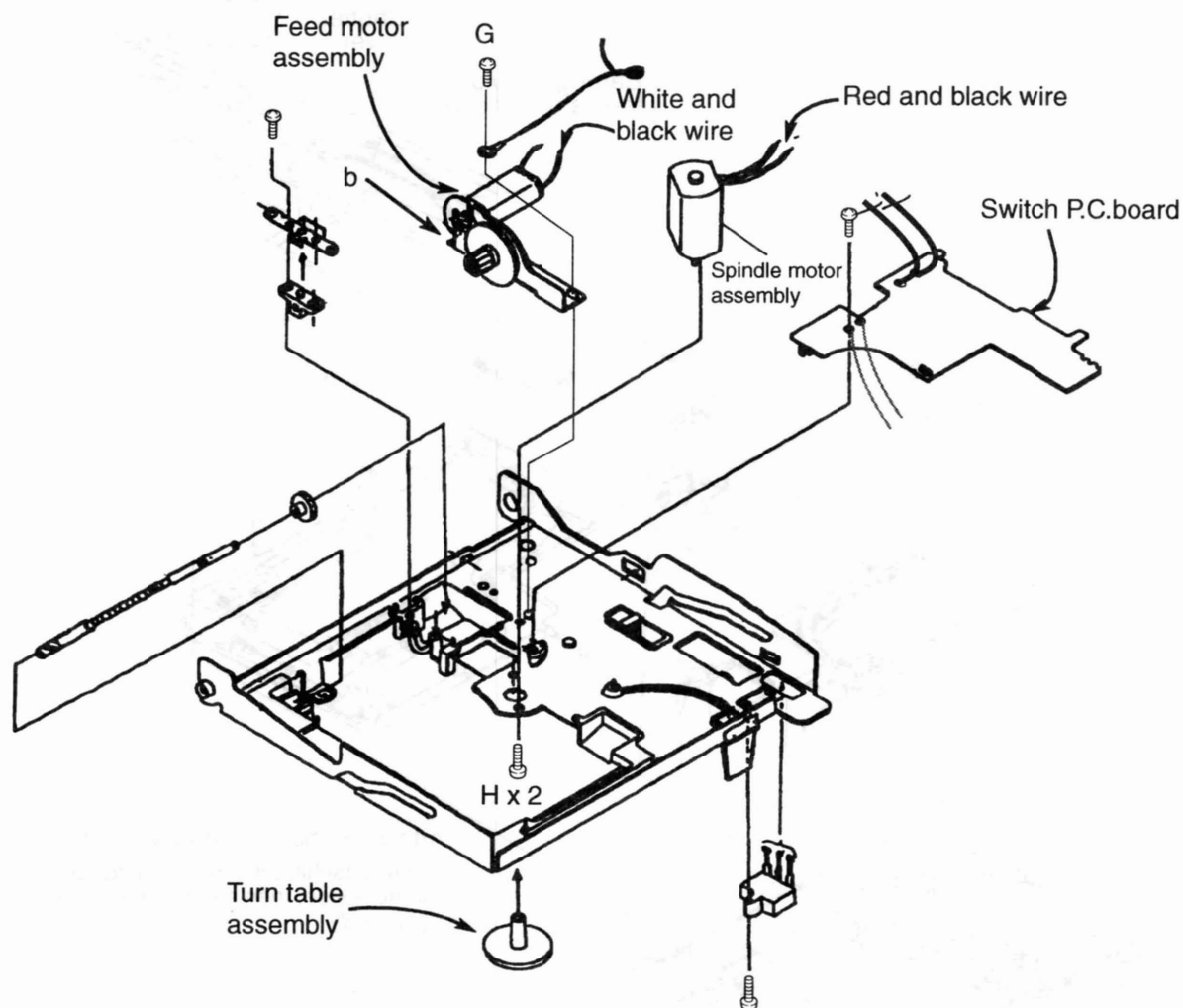


Fig.9

■ Removing the slide bracket (see Fig.10)

1. Remove the MD mechanism
2. Remove the two screws I attaching the slide bracket (L).
3. Remove the slide bracket (L), then remove the slide bracket (R).

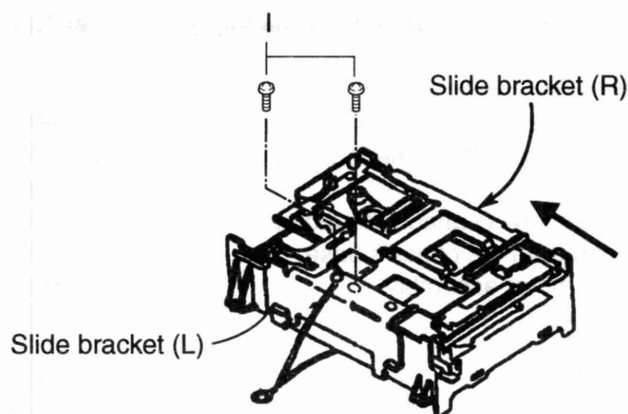


Fig.10

■ Removing the car. base assembly (see Fig.11 to 13)

1. Remove the MD mechanism assembly, then remove the MD servo P.C.board.
2. Remove the slide bracket (L) and slide bracket (R).
3. Remove the three screws J attaching the car. base assembly, then remove the car. base assembly and lack.

[CAUTION]

When reassembly the car. base assembly and lack, according Fig.12 and 13.

[Attaching the lack]
Through the hook of the shutter lever
as follow the fig.11

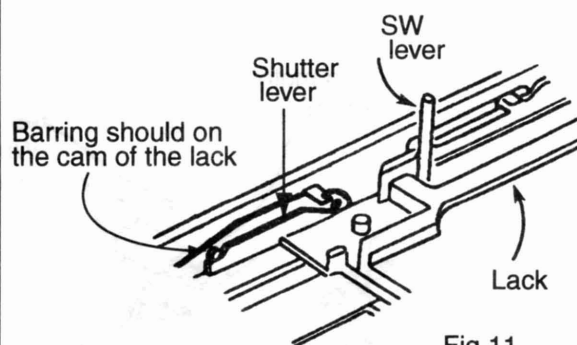


Fig.11

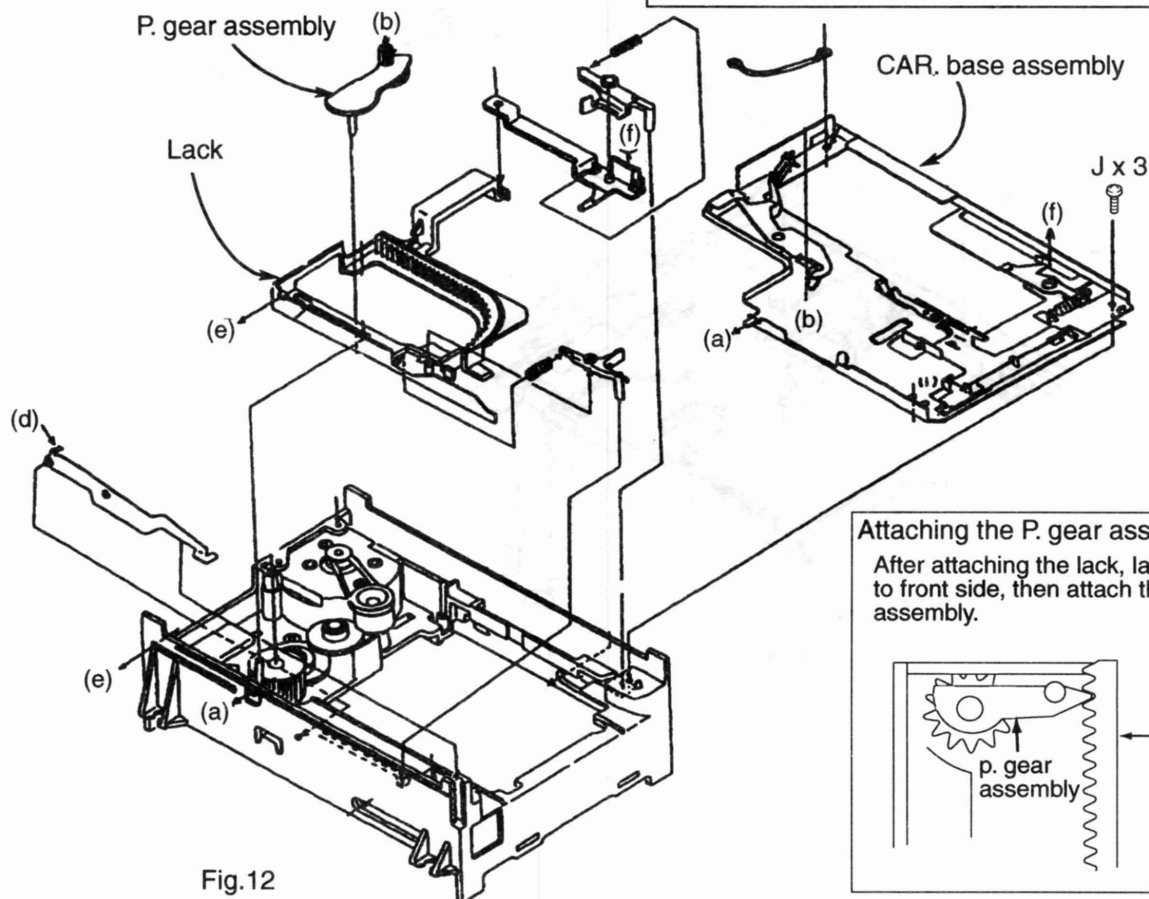


Fig.12

Attaching the P. gear assembly
After attaching the lack, lack full shift
to front side, then attach the P. gear
assembly.

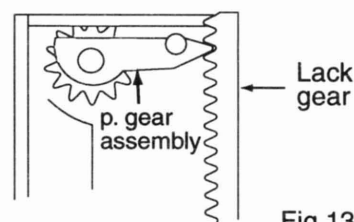
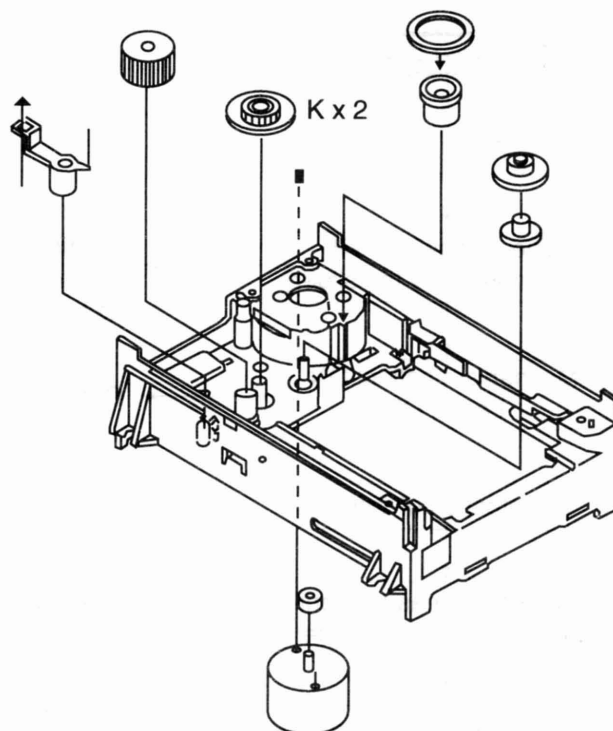


Fig.13

■ Removing the loading base assembly (see Fig.14)

1. Remove the car. base assembly and lack.
2. Remove the two screws K attaching the loading motor.
3. Remove the soldering loading motor assembly on the loading P.C.board.

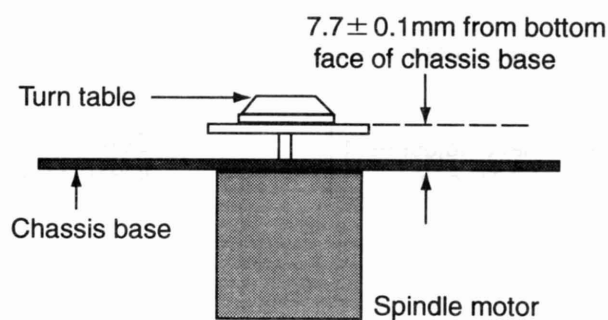


Loading motor assembly

Fig.14

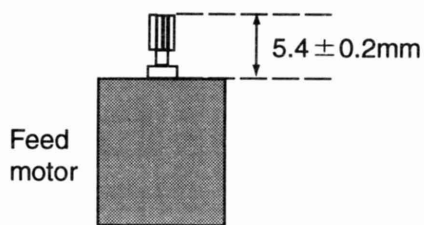
■ Attaching the parts for each motors (see Fig.15 to 17)

1. Attach the turn table assembly to spindle motor is according Fig.15.
2. Attach the gear to feed motor is according Fig.16.
3. Attach the pulley to loading motor is according Fig.17.



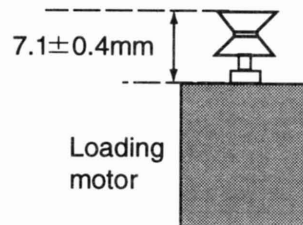
Attachment of turn table

Fig.15



Attachment of gear

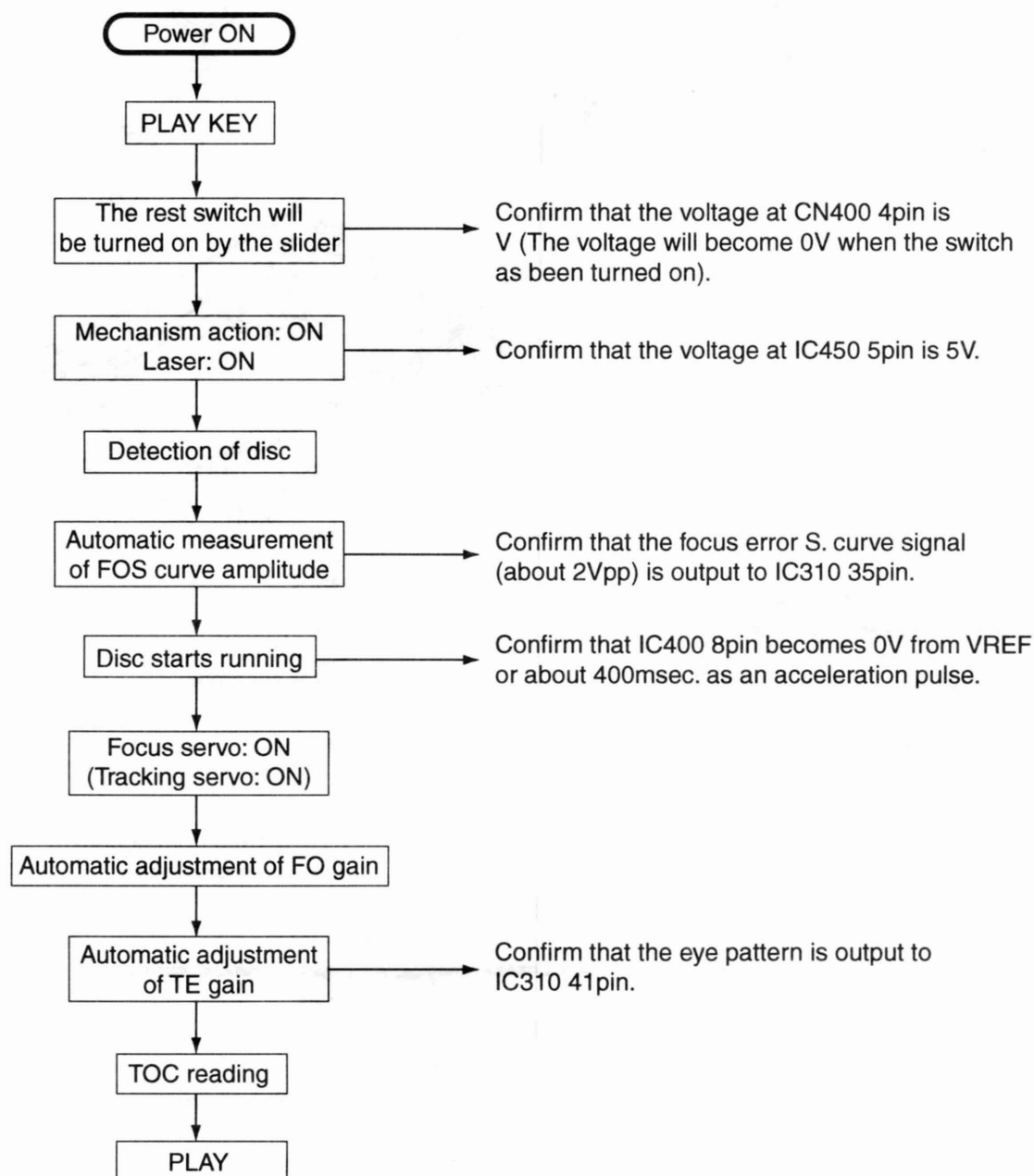
Fig.16



Attachment of pulley

Fig.17

Flow of Functional Operation Until TOC Read



Maintenance of Laser Pickup

1. Cleaning of pickup lens

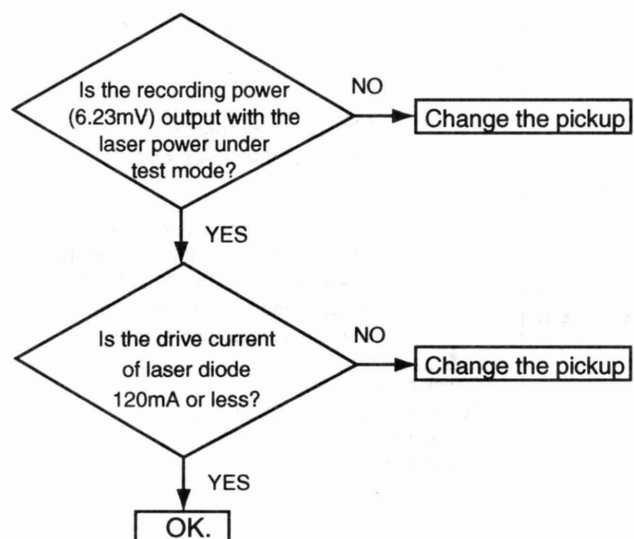
- (1) Prior to changing the pickup, clean the pickup lens.
- (2) For cleaning the lens, use the following cotton swab after mearsing it in alcohol.

Product No. JCB-B4; Manufacturer;Nippon Cotton Swab

2. Confirmation of the service life of laser diode when the service life of the laser diode has been exhausted, the following symptoms will appear.

- (1) Recording will become impossible.
- (2) The RF output (EFM output and eye pattern amplitude) will become lower.
- (3) The drive current required for light emitting of laser diode will be increased.

Confirm the service life according to the following flow chart:

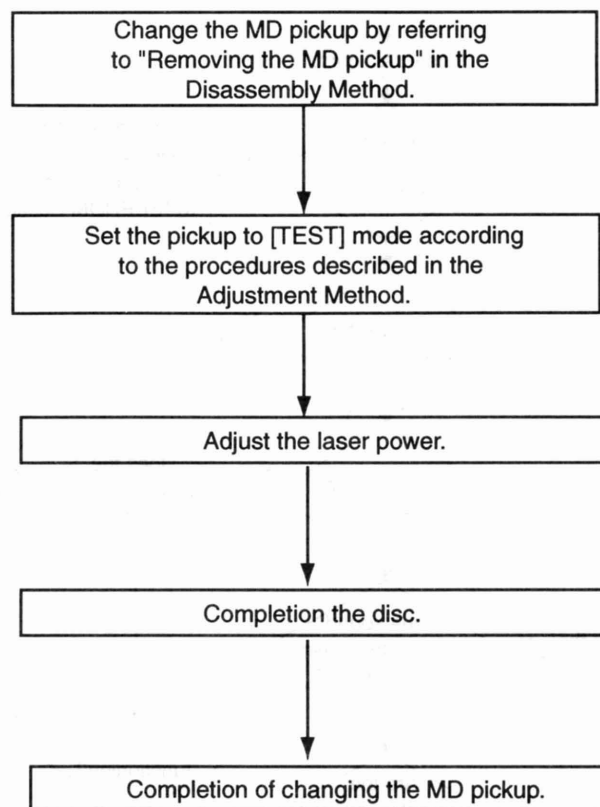


3. Method of measuring the drive current of laser diode

When the voltage measured at TP ILCC (Q301 emitter) and +5V (Q303 emitter) of the MD servo P.C. board (ENX-0223) have become 600mV or over, the service life of the laser diode is judged to have been exhausted.

[Caution] When TP ILCC (Q301 collector) and +5V (Q303 emitter) have been is short circuit on such an occasion, then the laser diode will be broken. Therefore, take utmost care in handling the MD pickup.

Replacement of Laser pickup



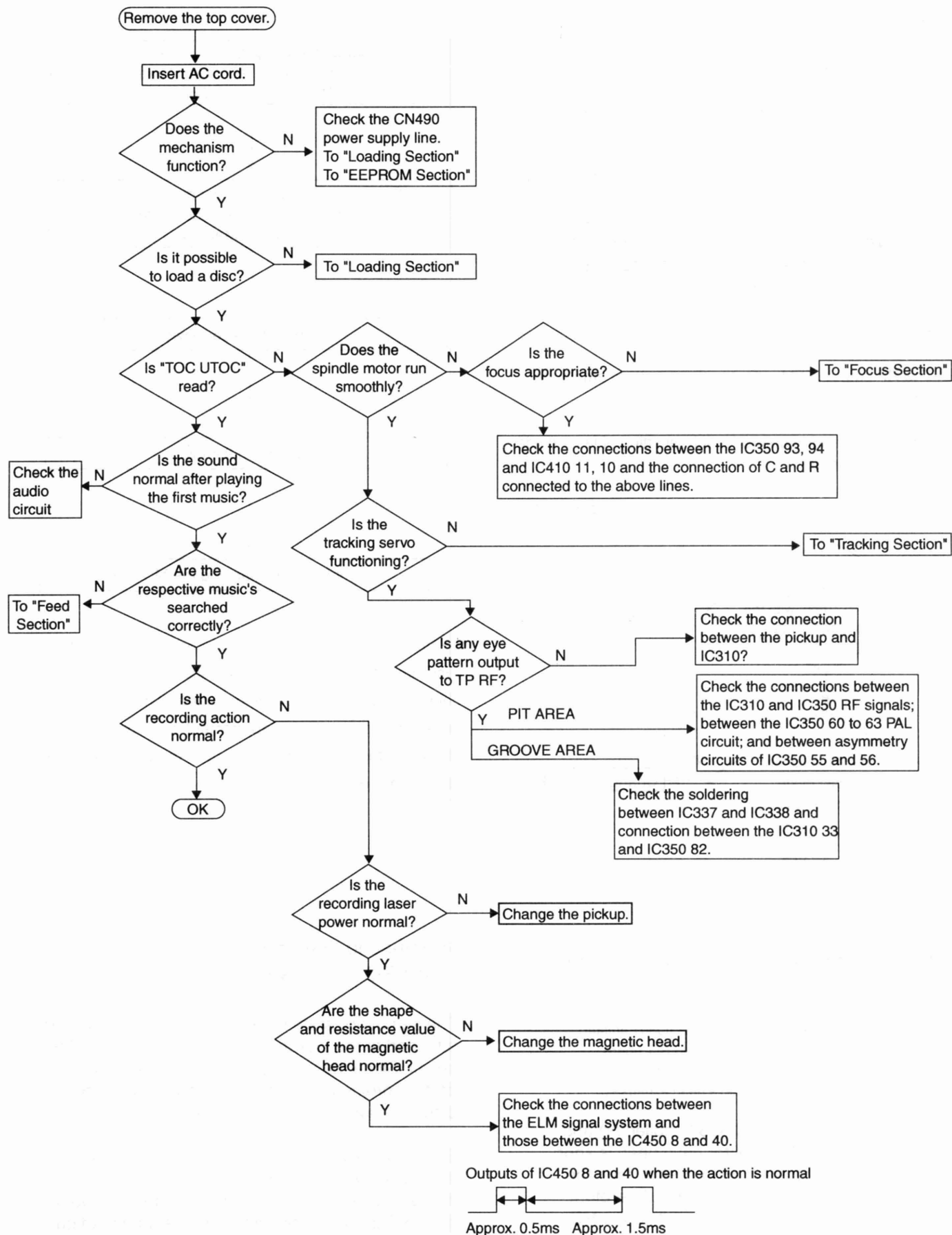
● Since this system is designed to perform magnetic recording, the laser power ten times or over of the conventional MD player will be output. Therefore, be sure to perform not only adjustment and operation of this system so carefully as not to directly look at the laser beam or touch on the body.

4. Semi-solid state resistors on the APC P.C. board

The semi-solid state resistor on the APC P.C.board attached to the pickup is used for adjusting the laser power. Since these resistor should be adjusted in pair according to the characteristics of the optical block, be sure not to touch on the resistors.

Since the service life of the laser diode will be exhausted when the laser power is low, it is necessary to change the pickup. Meanwhile, do not pickup. Otherwise, the pickup will be damaged due to over current.

Procedures for Repairing



Tracking Section

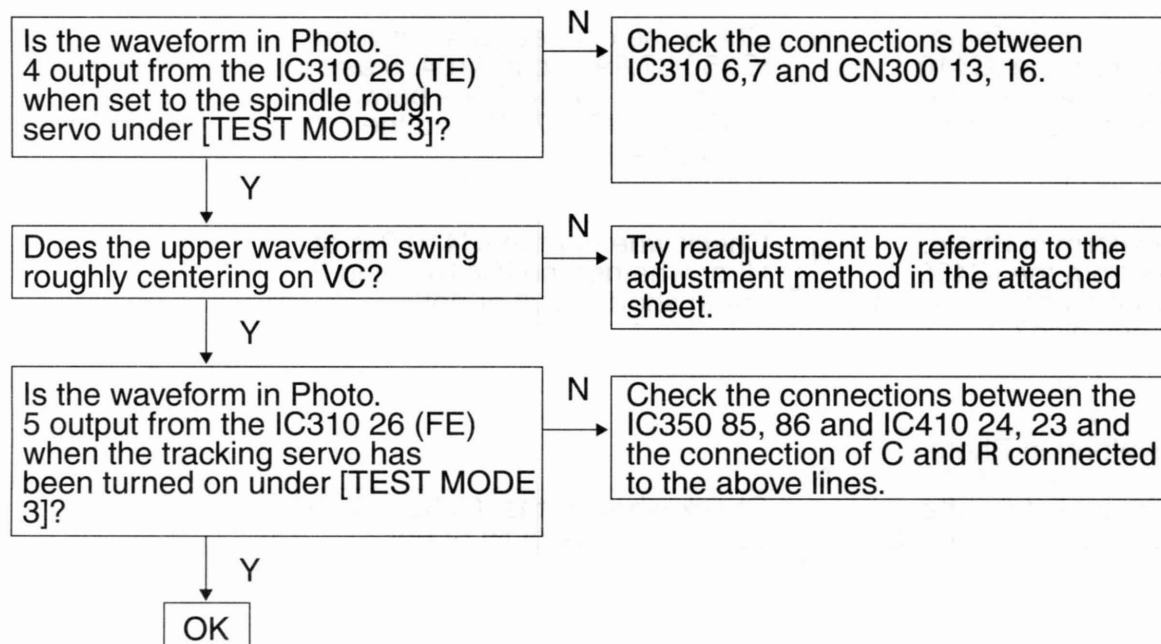
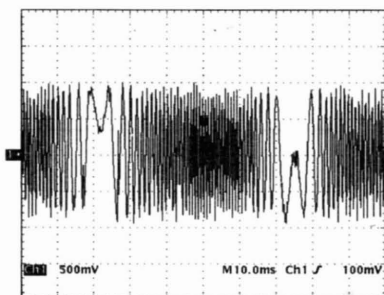
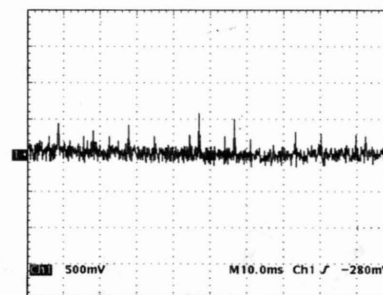


Photo. 4 (Recordable group)



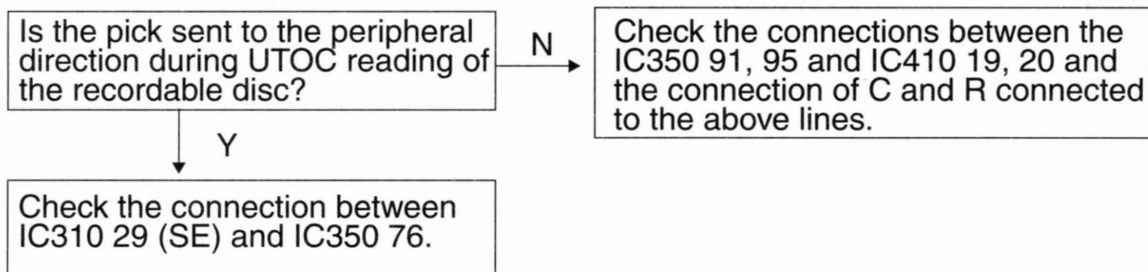
Connect VC to GND
of the oscilloscope.

Photo. 5 (Recordable Group)



Connect VC to GND
of the oscilloscope.

Feed Section



Focus Section (prior to executing the following steps, change the source of this set to MD)

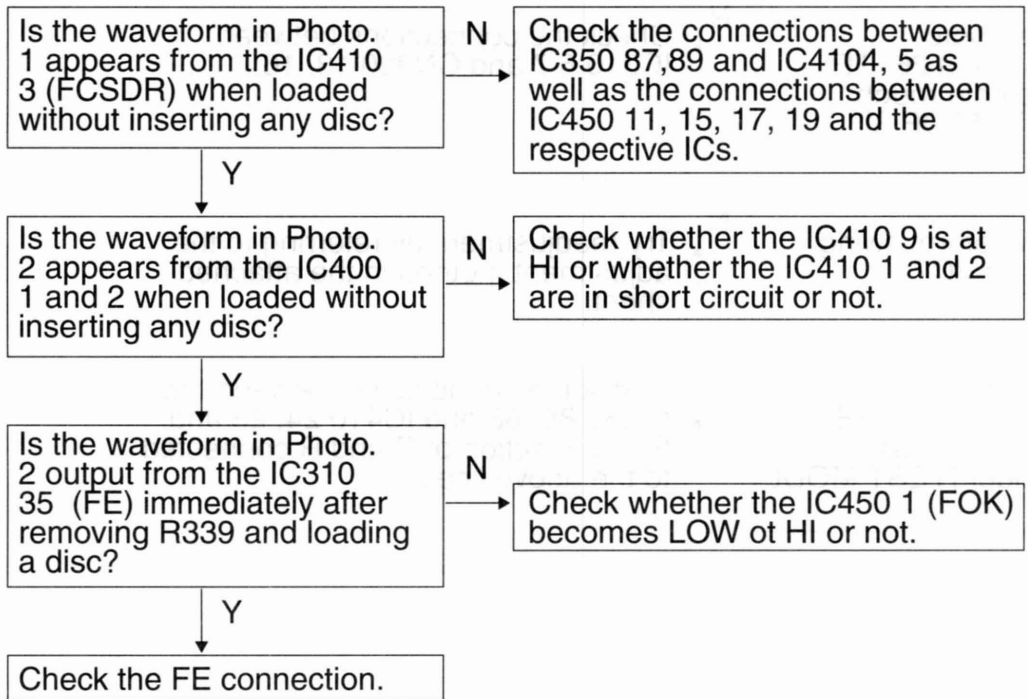
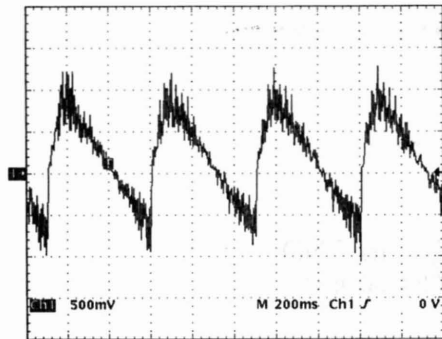


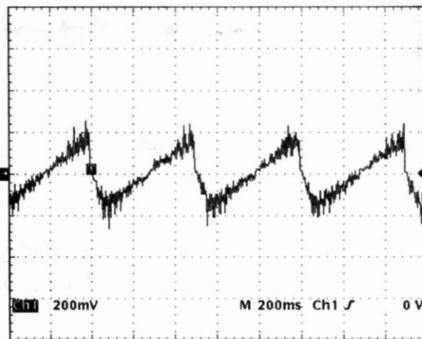
Photo. 1

Photo. 2

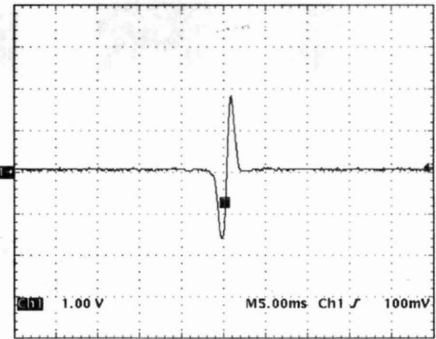
Photo. 3



Connect VC to GND of the oscilloscope.



Voltage between IC401 (a) and (2).

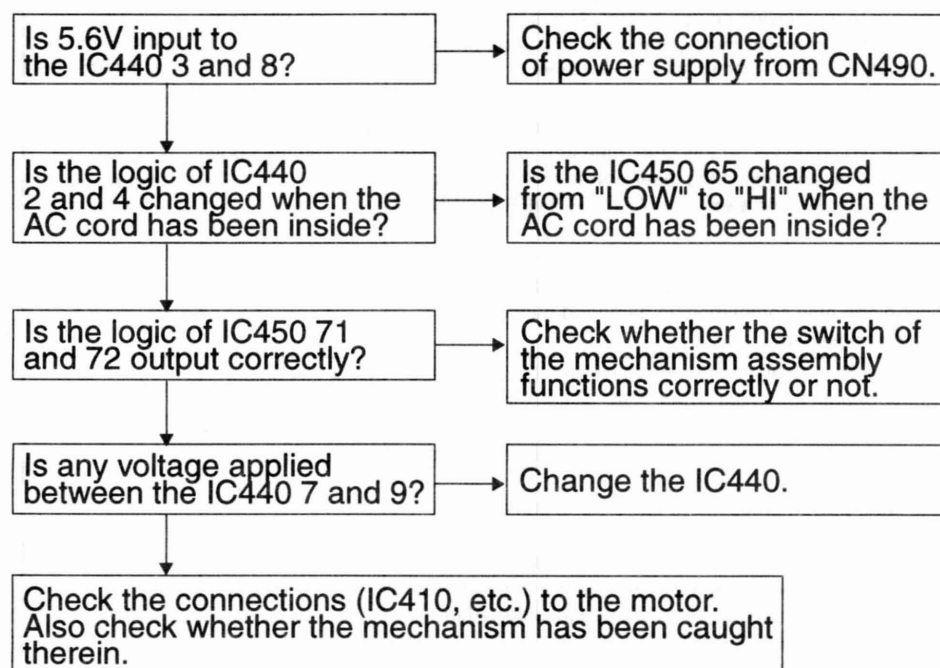


Connect VC to GND of the oscilloscope.

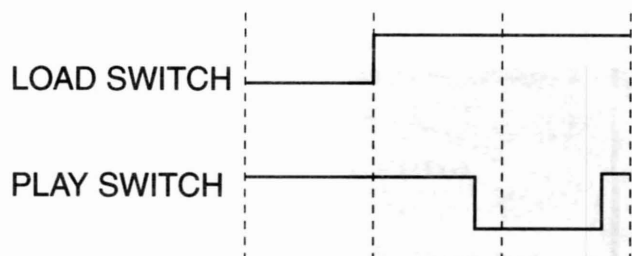
EEPROM SECTION

After resetting, the microcomputer will access to EEPROM and read out all of the address values. In case the address data which have been read out this time do not coincide with those on the microcomputer program, the EEPROM data will all be rewritten and read out once again. Should the address values read out at this time do not coincide with those on the microcomputer program, then a cycle from writing through to reading and comparison will be repeated until the values which have been read out coincide with the written values. Therefore, the program will not proceed any further. When the contents of EEPROM have been damaged or EEPROM has been replaced with a new one, this system will placed into this state. In such a case, turn of the AC power supply, and after connecting IC450 50 to GND, turn on the AC power supply. At this time, the mechanism will perform the [EJECT] action (Otherwise, repeat the adjustment steps). In case the mechanism does not perform any [EJECT] action, an electrical breakdown of EEPROM (IC453) can be considered.

Loading Section



Timing of the mechanism switch



Adjustments Method

1. Jig List

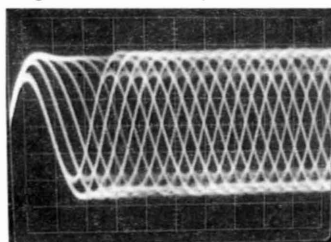
- (1) Measuring instruments : Oscilloscope, Laser power meter (ADVANTEST TQ8210 or equivalent) and recordable disc Remote controller.
- (2) Test Disc : Premastered disc "MRG-1018"

2. Setting of adjustment test mode

Adjust the electrical circuits after turning on the test mode. For setting to test mode, plug in the AC receptacle while pressing the [POWER] key and [INPUT] key. Next, confirm that [C.MODE] is indicated on the FL when the [INPUT] key has been released after releasing the [POWER] key.

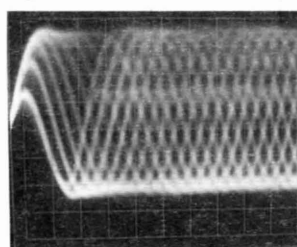
Items	Adjustment method	Adjusting position	Reference value
1. Adjustment of laser power	(1) When the key "2" of the remote controller has been pressed, the laser power will emitted due to the playing power (beam). At this time, measure the laser beam with the laser power meter, and adjust the laser power while pressing the ►► key (LASER POWER UP) and ◄◄ key (LASER POWER DOWN) on the body. (2) Press the ten key "4" of the remote controller. Then, the laser power will emitted due to the recording power. At this time, measure the laser beam with the laser power meter, and adjust the laser power while pressing the ►► key (LASER POWER UP) and ◄◄ key (LASER POWER DOWN) on the body. (3) After completion of this adjustment, press the [STOP] key of the remote controller at first. Then, press the [EJECT] key of the remote controller. NOTE: Since the laser diode may sometimes be damaged during this adjustment with utmost care.	►► key on the body ◄◄ key on the body	(1) 0.68mW or more and close to 0.68 (1) 6.23mW or more and close to 6.23
2. Adjustment of disc	(1) After adjustment of the laser power, load a premastered disc and press the [PLAY] key of the remote controller. Then, "OK" will be indicated on the FL about 8 seconds after pressing the above key. At this time, confirm that the waveform of the RF signal is as indicated in the diagram below (left side). After adjusting the laser power, press the [STOP] key at first and the [EJECT] of the remote controller next. (2) Load a recordable disc, and about 15 seconds after pressing the [PLAY] key, "OK" will be indicated on the FL. At this time, confirm that the RF signal waveform is as indicated the diagram below (right side). After completion of measurement, press the [STOP] key at first and the [EJECT] key of the remote controller next. (3) When "NG" is indicated on the FL, this adjustment will be in failure. In such a case, change the disc and perform this adjustment again. NOTE: Be sure to confirm the disc after adjusting the laser power. Moreover, the disc to be used for confirmation should be free from any scratch or other foreign matter, and the recordable disc to be used fully recorded.	Since this adjustment is made automatically, there is no adjusting.	—

RF signal waveform of premastered disc



0.2V/div. 0.5msec/div.

RF signal waveform of recordable disc



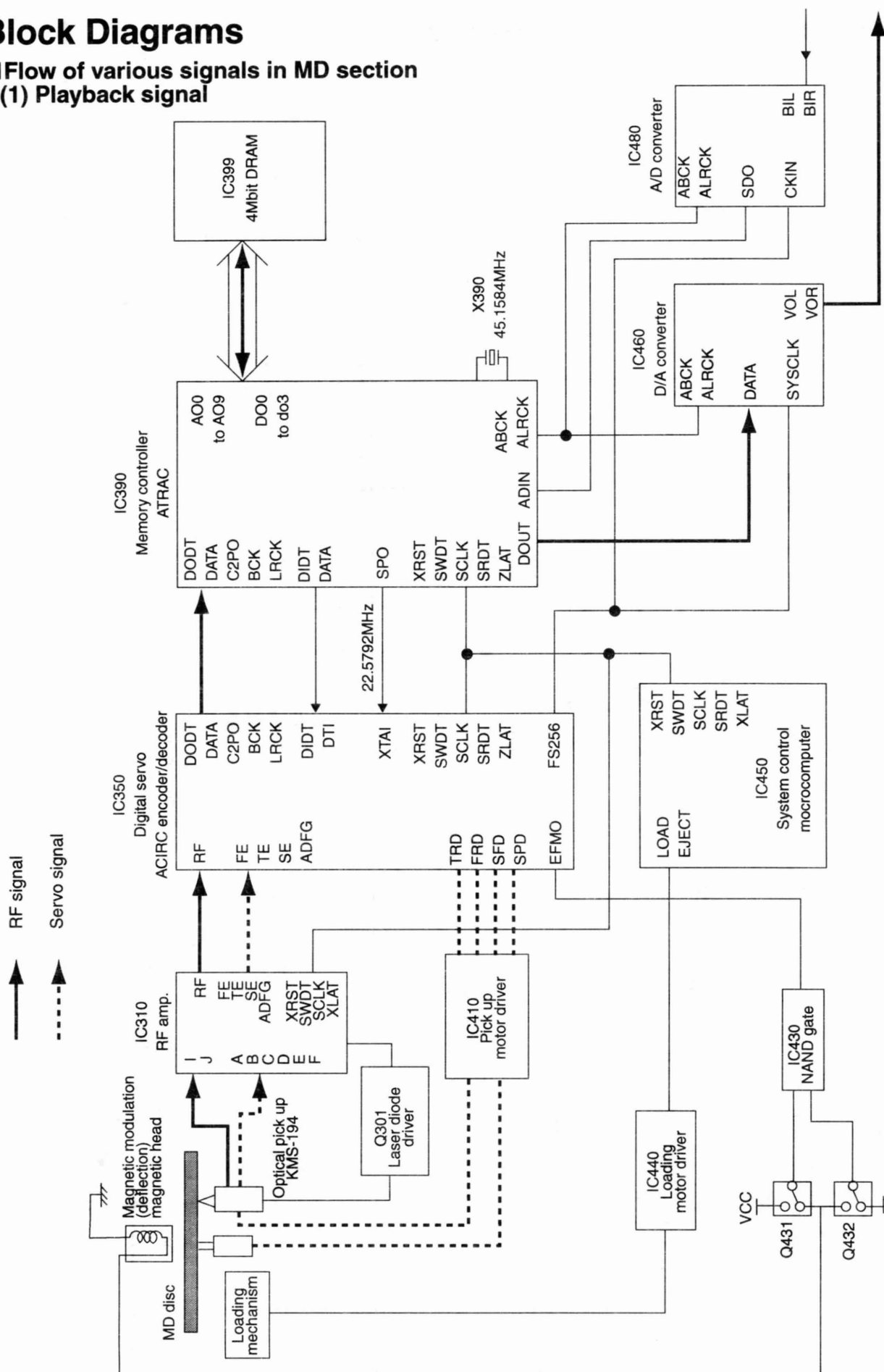
0.2V/div. 0.5msec/div.

4. Test mode releasing method

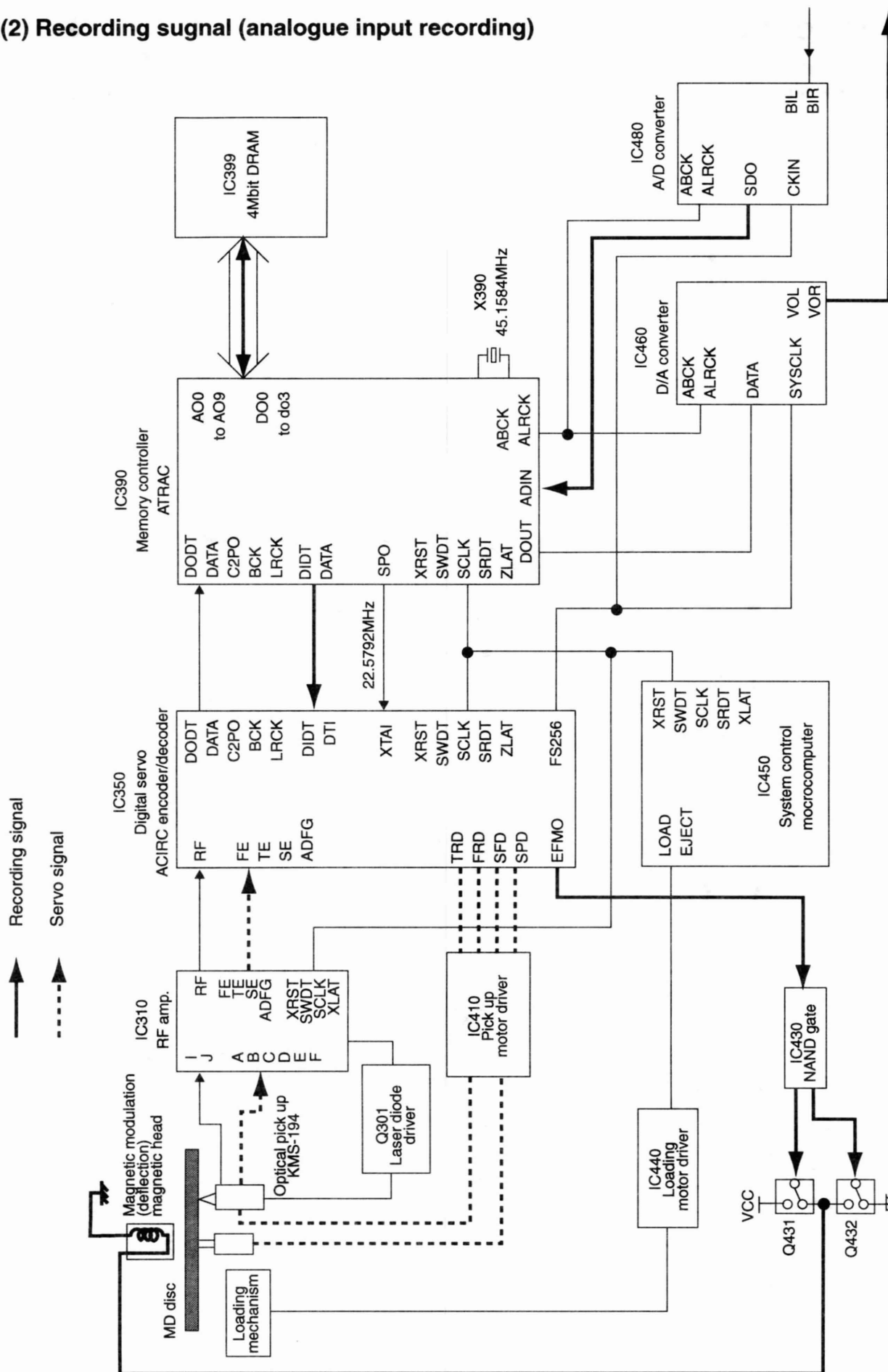
After completion of the above confirmation, draw out the AC receptacle and release the test mode (When any key other than specified above has been pressed prior to drawing out the AC receptacle, it may sometimes be impossible to perform correct adjustment).

Block Diagrams

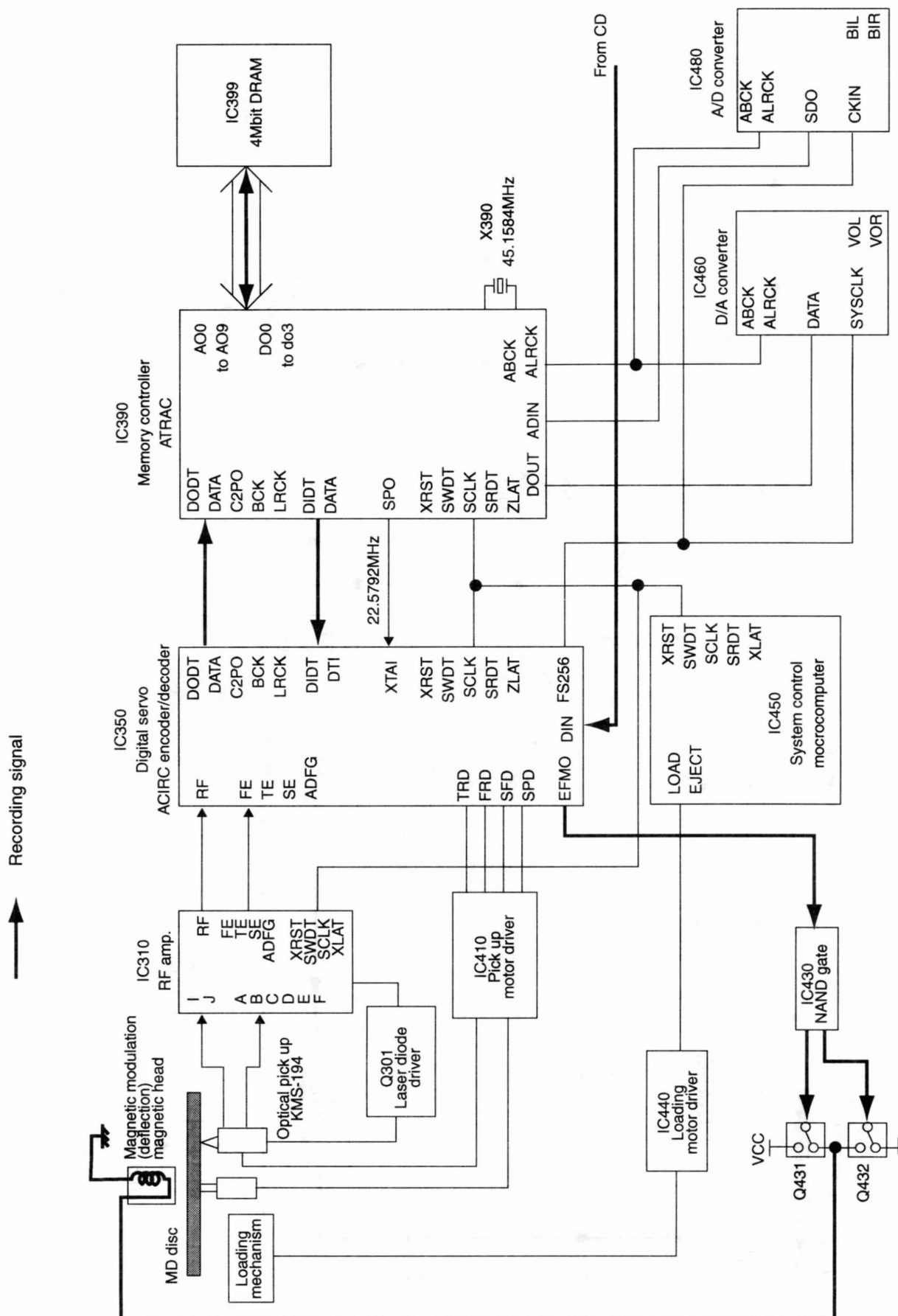
■ Flow of various signals in MD section (1) Playback signal



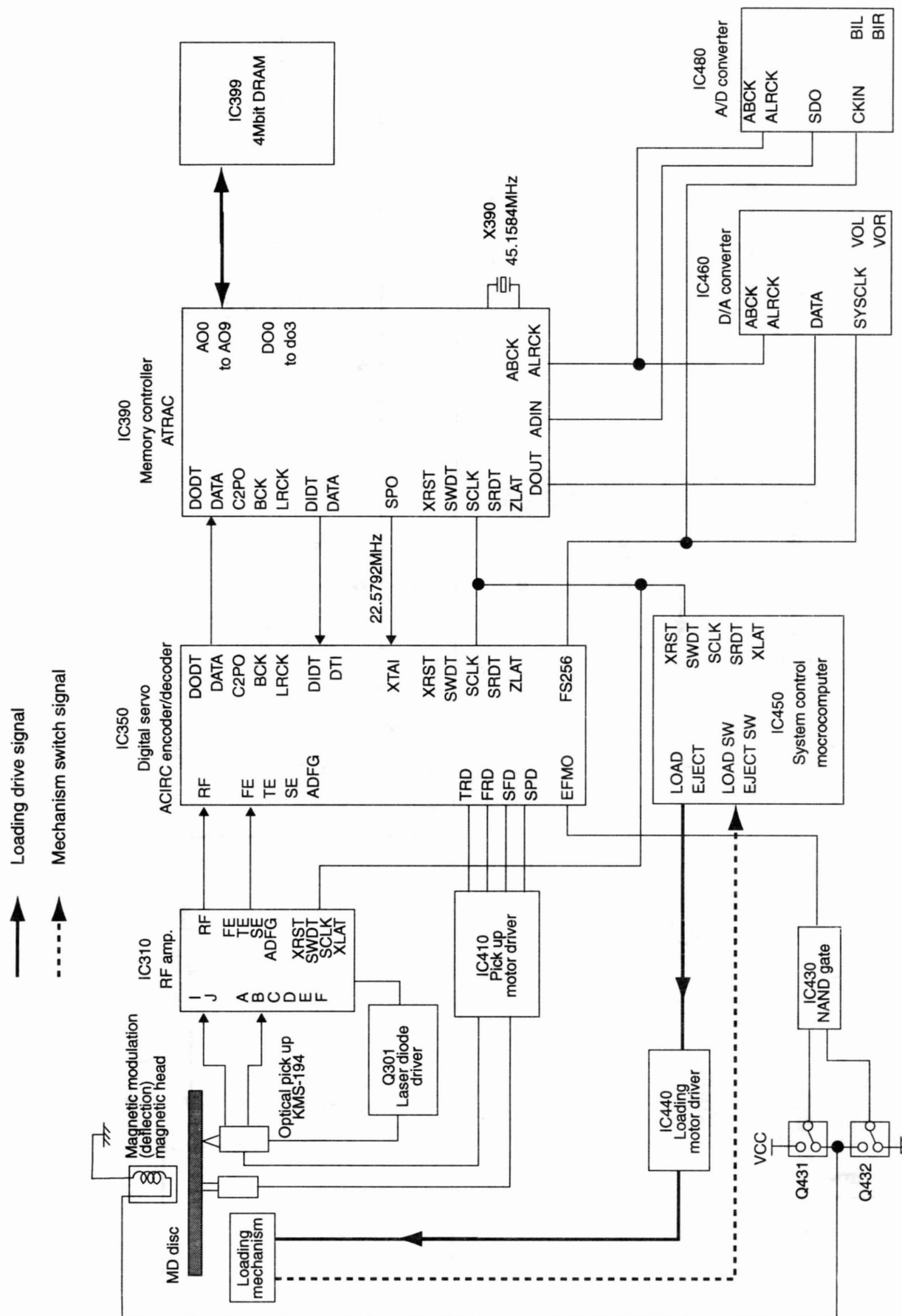
(2) Recording signal (analogue input recording)



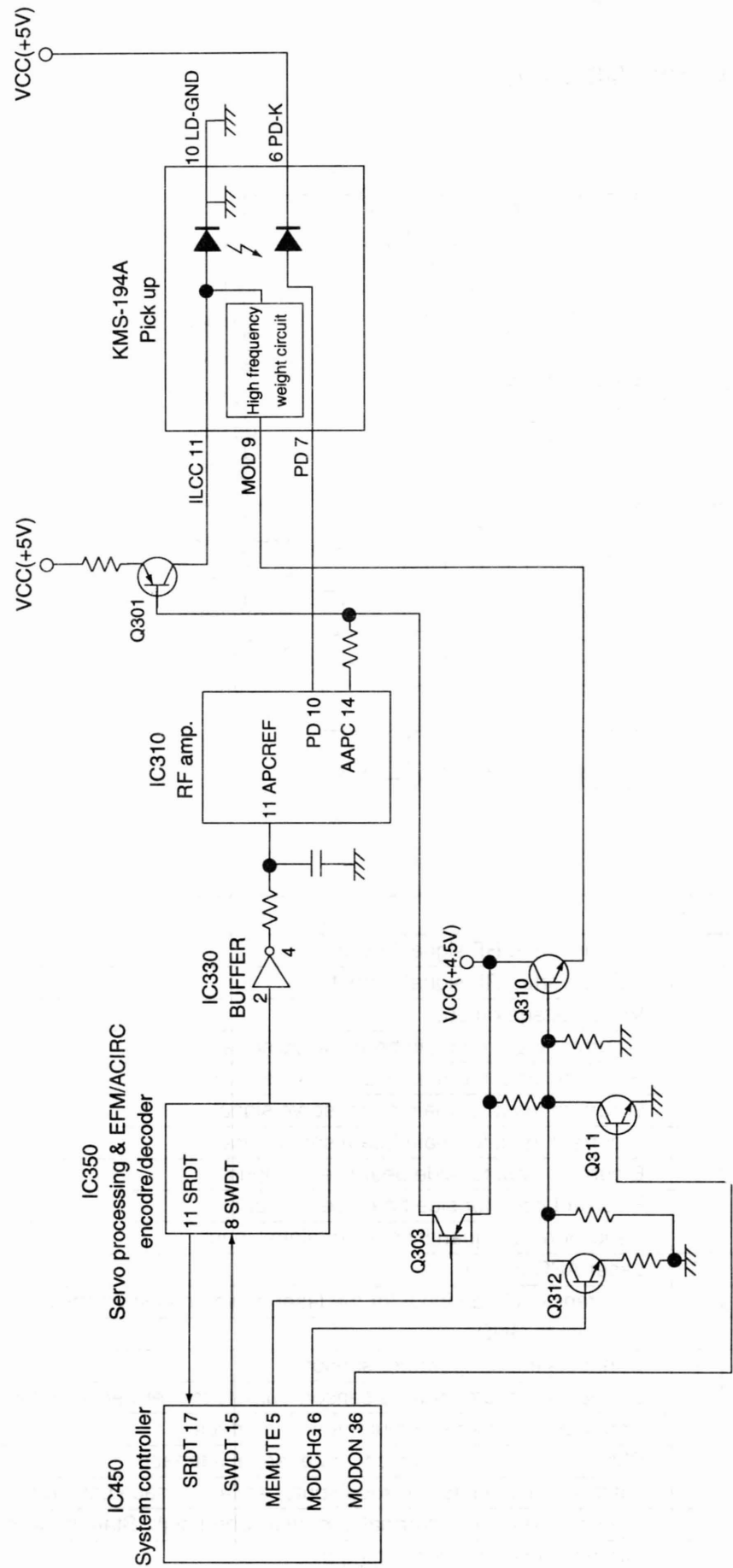
(3) Recording signal (digital input recording)



(4) Disc loading and eject signal



(5) Pick up laser power control signal

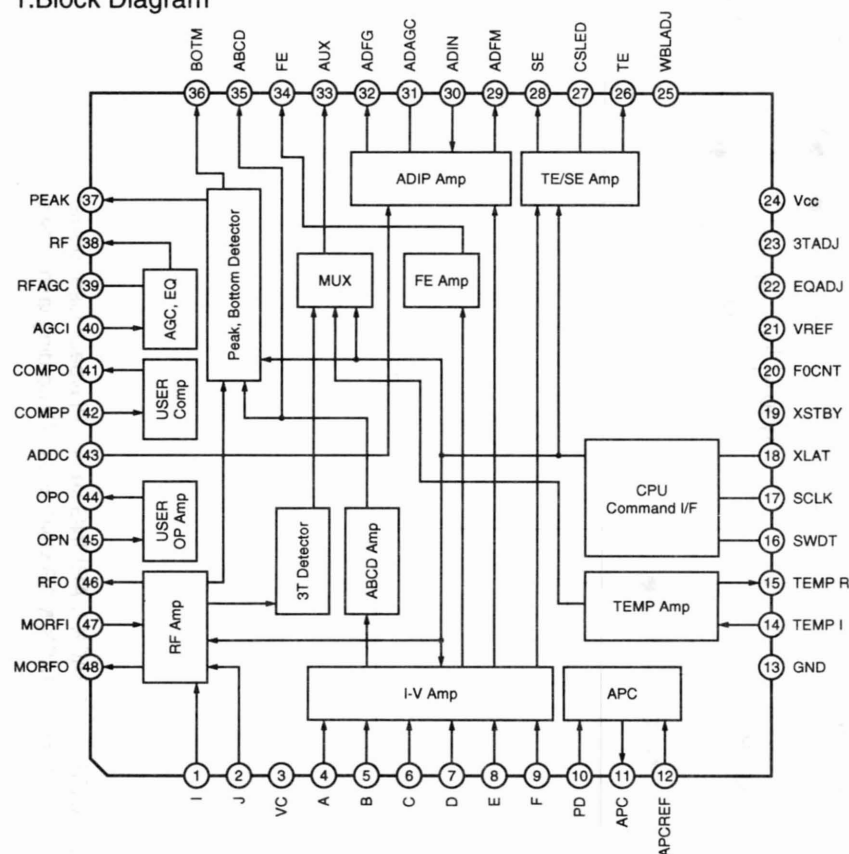


- (1) Adjust the laser power to 0.68mW with the REC.START and TRACK MARKING keys. - Playback laser power
- (2) Adjust the laser power to 6.23mW with the REC.START and TRACK MARKING keys. - Recording laser power

Description of Major ICs

■ CXA2523AR (IC310) : MD Servo

1. Block Diagram



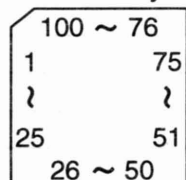
2. Pin Function

Pin No.	Symbol	I/O	Function
1	I	I	I-V converted RF signal I input.
2	J	I	I-V converted RF signal J input.
3	VC	O	Vcc/2 voltage output.
4	A	I	A current input for main beam servo signal.
5	B	I	B current input for main beam servo signal.
6	C	I	C current input for main beam servo signal.
7	D	I	D current input for main beam servo signal.
8	E	I	E current input for side beam servo signal.
9	F	I	F current input for side beam servo signal.
10	PD	I	Reflection light quantity monitor signal input.
11	APC	O	Laser APC output.
12	APCREF	I	Reference voltage input for the laser power intensity setting.
13	GND	-	Connect to GND.
14	TEMPI	I	Connects the temperature sensor.
15	TEMP R	I	Connects the temperature sensor. outputs the reference voltage.
16	SWDT	I	Data input for microcomputer serial interface.
17	SCLK	I	Shift clock input for microcomputer serial interface.
18	XLAT	I	Latch signal input for microcomputer serial interface. Latched when low.
19	XSTBY	I	Standby setting pin. Normal operation when high Standby when low.
20	F0CNT	I	Internal current source setting pin.

Pin No.	Symbol	I/O	Function
21	VREF	O	Reference voltage output.
22	EQADJ	I/O	Equalizer center frequency setting pin.
23	3TADJ	I/O	BPF3T center frequency setting pin.
24	Vcc	-	Power supply.
25	WBLADJ	I/O	BPF22 center frequency setting pin.
26	TE	O	Tracking error signal output.
27	CSLED	-	Connects the sled error signal LPF capacitor.
28	SE	O	Sled error signal output.
29	ADFM	O	ADIP FM signal output.
30	ADIN	I	ADIP signal comparator input.
31	ADAGC	-	Connects the ADIPAGC capacitor.
32	ADFG	O	ADIP2 binary value signal output.
33	AUX	O	13 output / temperature signal output. Switched with serial commands.
34	FE	O	Focus error signal output.
35	ABCD	O	Reflection light quantity signal output for the main beam servo detector.
36	BOTM	O	RF/ABCD bottom hold signal output.
37	PEAK	O	Peak hold signal output for the RF/ABCD signals.
38	RF	O	RF equalizer output.
39	RFAGC	-	Connects the RFAGC capacitor.
40	AGCI	I	RFAGC input.
41	COMPO	O	User comparator output.
42	COMPP	I	User comparator non-inverted input.
43	ADDC	I/O	Connects the capacitor for ADIP amplifier feedback circuit.
44	OPO	O	User operational amplifier output.
45	OPN	I	User operational amplifier inverted input.
46	RFO	O	RF amplifier output. Eye pattern checkpoint.
47	MORFI	I	Input of the groove RF signal with AC coupling.
48	MORFO	O	Groove RF signal output.

■ HD6433045SV06F (IC500) : MD Control Micon

1. Terminal Layout



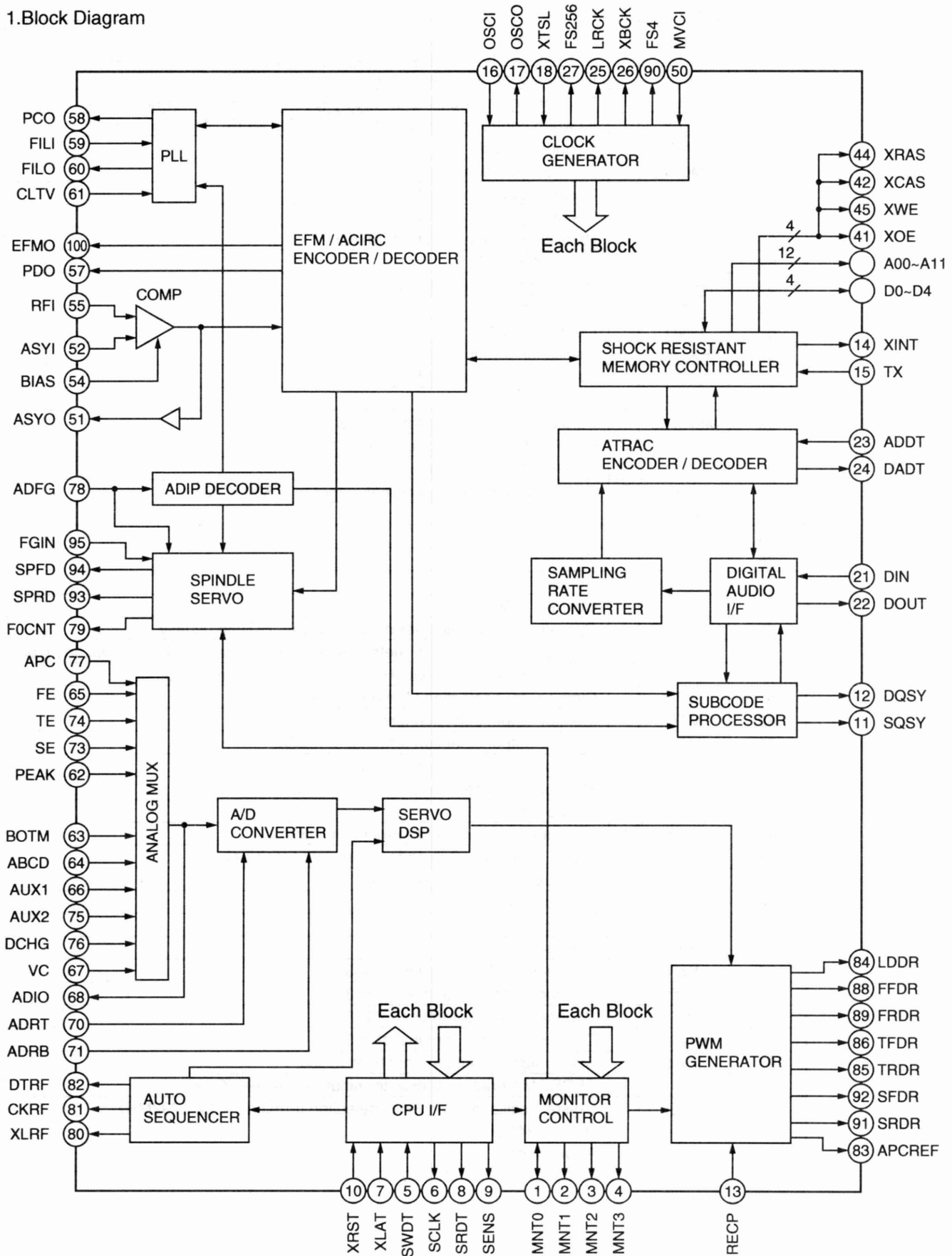
2. Pin Function

PIN No.	Symbol	I/O	Function
1	VCC	-	Power supply.
2	DIUNL	-	"H" is output at "Digital IN unlock".
3	MODON	O	L:Harmonic weight ON, at playback.
4	MODCHG	O	L:PLAY H:REC (Harmonic weight power).
5	TX	O	Data output enable signal when recording.
6	RECP	O	Connect to RECP terminal for IC350.
7	XTSL	O	Connect to XTSL terminal for IC350.
8	XRST	O	Connect to XRDT terminal for IC350.
9	XLAT	O	Connect to XLAT terminal for IC350.
10	RESO	-	When the flash memory is written it is the voltage supply of +12V terminal.
11	GND	-	Connect to GND.
12	STATUS	O	Status signal output to IC901.
13	SWDT	O	Serial bus light output terminal to IC350.
14	COMMAND	I	command data input from IC901.
15	SRDT	I	Serial bus lead input terminal to IC350.
16	COMCLK	O	Clock signal to IC901.
17	SCLK	I	Serial bus clock output terminal to IC350.
18	STSRDY	O	Ready signal from IC901.
19	MEMUTE	O	Pick up drive mute terminal.
20	MHON	O	Magnetic head drive control terminal L:At recording.
21	P.ON	O	Power ON/OFF control terminal H:Power ON.
22	GND	-	Connect to GND.
23	PWAD	O	A/D converter ON/OFF control terminal for audio, L:Power down.
24	PWDA	O	D/A converter ON/OFF control terminal for audio, L:Power down.
25	EMPHE	O	Playback signal emphasis ON/OFF signal L:ON.
26	NC	-	Non connect.
27	EJECT	O	Motor driver control signal output. H:EJECT L:LOAD
28	LOAD	O	Motor driver control signal output. H:LOAD L:EJECT
29~34		-	Non connect.
35	VCC	-	Power supply.
36	SSTOP	I	Limit switch ON/OFF detect signal terminal for surroundings detection the in disc.
37	MREF	I	Disc hole detect switch (Reflectivity detection input).
38	MPROT	I	Disc hole detect switch (Recording protection detection input).
39~43		-	Non connect.

PIN No.	Symbol	I/O	Function
44	GND	-	Connect to GND.
45	PLAY SW	I	Play switch detection.
46	LOAD SW	I	Load switch detection.
47 to 52		-	Non connect.
53	SEL0	I	ID when controlling simultaneously (pull up MOS) At normal use:H.
54	SEL1	I	ID when controlling simultaneously (pull up MOS) At normal use:H.
55	SEL2	I	ID when controlling simultaneously (pull up MOS) At normal use:H.
56	SEL3	I	ID when controlling simultaneously (pull up MOS) At normal use:H.
57	GND	-	Connect to GND.
58	MMONI0	O	Parallel operation monitor terminal.
59	MMONI1	O	Parallel operation monitor terminal.
60	MMONI2	O	Parallel operation monitor terminal.
61	0	O	Parallel operation monitor terminal.
62	STBY	-	Connect to VCC.
63	RESET	I	Reset signal input terminal.
64	NMI	I	Connect to VCC.
65	GND	-	Connect to GND.
66	EXTAL	-	Oscillation terminal (8MHz).
67	XTAL	-	Oscillation terminal (8MHz).
68	VCC	-	Power supply.
69	MMONI3	O	Parallel operation monitor terminal.
70	SCL	O	EEPROM Serial clock output to IC590,IC591.
71	DI	O	EEPROM Data output to IC590,IC591.
72	CS	O	EEPROM Chip select terminal output to IC590,IC591.
73	MD0	-	Connect to VCC.
74	MD1	-	Connect to VCC.
75	MD2	-	Connect to VCC.
76	AVCC	-	Connect to VCC.
77	Vref	-	Connect to VCC.
78	MODESE	I	Operation mode select terminal for Micon H:Time usually.
79	SET1	I	External communication method selection terminal, H:UART L:four line type.
80	SET2	I	DOUT selection terminal, H:DIN output L:FS convert output.
81	SET3	I	Digital output selection terminal H:OFF L:ON.
82	MT0	I	Monitor output selection terminal of IC350.
83	MT1	I	Monitor output selection terminal of IC350.
84	MT2	I	Monitor output selection terminal of IC350.
85	MT3	I	Monitor output selection terminal of IC350.
86	GND	-	Connect to GND.
87	XINT	I	Interruption status input terminal of IC350.
88	DQSY	I	Digital in of U-bit, Sub code Q sink input terminal.
89	SQSY	I	Sub code Qsink input terminal.
90	NC	-	Non connect.
91	NC	-	Non connect.
92	GND	-	Connect to GND.
93	MNT0	I	Connect to MNT0 terminal of IC350.
94	MNT1	I	Connect to MNT1 terminal of IC350.
95	MNT2	I	Connect to MNT2 terminal of IC350.
96	MNT3	I	Connect to MNT3 terminal of IC350.
97	SENS	I	Status signal input terminal from IC350.
98	DO	I	EEPROM Serial data input terminal from IC590,IC591.
99	X.SEL	I	Crystal oscillation frequency selection terminal, L:22.5792MHz H:45.1584MHz.
100	VCC	-	Power supply.

CXD2652AR(IC350) : Digital Servo Processor

1. Block Diagram



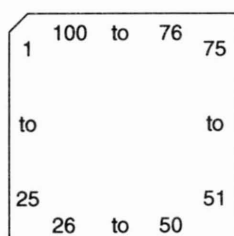
2.Pin Function

Pin No.	Symbol	I/O	Function
1	MNT0	I/O	Monitor output.
2	MNT1	O	Monitor output.
3	MNT2	O	Monitor output.
4	MNT3	O	Monitor output.
5	SWDT	I	Data input for microcomputer serial interface.
6	SCLK	I	Shift clock input for microcomputer serial interface
7	XLAT	I	Latch input for microcomputer serial interface.Latched at the falling edge.
8	SRDT	O	Data output for microcomputer serial interface.
9	SENS	O	Output the internal status corresponding to the microcomputer serial interface address.
10	XRST	I	Reset input. Low:reset
11	SQSY	O	Disc sub code Q sync/ADIP sync output.
12	DQSY	O	Sub code Q sync output in U-bit CD or MD format when the Digital in source is CD or MD
13	RECP	I	Laser power switching input. High:recording power Low:playback power.
14	XINT	O	Interruption request output. Low:when the interruption status occurs.
15	TX	I	Enable signal input for recording data output. High:enabled.
16	OSCI	I	Crystal oscillation circuit input.
17	OSCO	O	Crystal oscillation circuit output. (inverted output of the OSCI pin)
18	XTSL	I	OSCI input frequency switching. High:512Fs(22.5792MHz) Low:1024Fs(45.1584MHz)
19	DVDD	-	Digital power supply.
20	DVss	-	Digital ground.
21	DIN	I	Digital audio interface signal input.
22	DOUT	O	Digital audio interface signal output.
23	ADDT	I	Analog recording input (Connect to the external A/D converter output).
24	DADT	O	REC monitor output/decoded audio data output.
25	LRCK	O	LRCK(44.1kHz) output to the external audio block.
26	XBCK	O	Bit clock(2.8224MHz) output to the external audio block.
27	FS256	O	256Fs output.(11.2896MHz)
28	DVdd	-	Digital power supply.
29	A03	O	External DRAM address output.
30	A02	O	External DRAM address output.
31	A01	O	External DRAM address output.
32	A00	O	External DRAM address output.
33	NC	-	Non connect.
34	A04	O	External DRAM address output.
35	A05	O	External DRAM address output.
36	A06	O	External DRAM address output.
37	A07	O	External DRAM address output.
38	A08	O	External DRAM address output.
39		-	Non connect.
40	DVss	-	Digital ground.
41	XOE	O	External DRAM output enable.
42	XCAS	O	External DRAM $\overline{\text{CAS}}$ output.
43	A09	O	External DRAM address output.
44	XRAS	O	External DRAM $\overline{\text{RAS}}$ output.
45	XWE	O	External DRAM write enable.
46	D1	I/O	External DRAM data bus.
47	D0	I/O	External DRAM data bus.
48	D2	I/O	External DRAM data bus.
49	D3	I/O	External DRAM data bus.
50	MVCI	I	External VCO (784Fs) clock input.

Pin No.	Symbol	I/O	Function
51	ASYO	O	Playback EFM full-swing output. (Low:Vss High:Vdd)
52	ASYI	I	Playback EFM comparator slice voltage input.
53	AVdd	-	Analog power supply.
54	BIAS	I	Playback EFM comparator bias current input.
55	RFI	I	Playback EFM RF signal input.
56	AVss	-	Analog ground.
57	PDO	O	Phase comparison output for analog PLL of EFM decoder.
58	PCO	O	Phase comparison output for master PLL of playback digital PLL and recoding EFM PLL.
59	FILI	I	Filter input for master PLL of playback digital PLL and recording EFM PLL.
60	FILO	O	Filter output for master PLL of playback digital PLL and recording EFM PLL.
61	CLTV	I	Internal VCO control voltage input for master PLL of playback digital PLL and recording EFM PLL.
62	PEAK	I	Peak hold signal input for quantity of light.
63	BOTM	I	Bottom hold signal input for quantity of light.
64	ABCD	I	Signal input for quantity of light.
65	FE	I	Focus error signal input.
66	AUX1	I	Auxiliary input1.
67	VC	I	Center voltage input.
68	ADIO	O	Monitor output for A/D converter input signal.
69	AVdd	-	Analog power supply.
70	ADRT	I	Voltage input for the upper limit of the A/D converter operating range.
71	ADRB	I	Voltage input for the lower limit of the A/D converter operating range.
72	AVss	-	Analog ground.
73	SE	I	Sled error signal input.
74	TE	I	Tracking error signal input.
75	AUX2	I	Auxiliary input 2.
76	DCHG	I	Connect to the low-impedance power supply.
77	TEST4	I	Error signal input for laser digital APC.
78	ADFG	I	ADIP binary FM signal ($22.05 \pm 1\text{kHz}$) input.
79	F0CNT	O	CXA2523 current source setting output.
80	XLRF	O	CXA2523 control latch output. Latched at the falling edge.
81	CKRF	O	CXA2523 control shift clock output.
82	DTRF	O	CXA2523 control data output.
83	APCREF	O	Reference PWM output for laser APC.
84	TEST0	-	Non connect
85	TRDR	O	Tracking servo drive PWM output.(-)
86	TFDR	O	Tracking servo drive PWM output.(+)
87	DVdd	-	Digital power supply.
88	FFDR	O	Focus servo drive PWM output.(+)
89	FRDR	O	Focus servo drive PWM output.(-)
90	FS4	-	Non connect.
91	SRDR	O	Sled servo drive PWM output.(-)
92	SFDR	O	Sled servo drive PWM output.(+)
93	SPRD	O	Spindle servo drive output.(PWM(-) or polarity)
94	SPFD	O	Spindle servo drive output.(PWM(+) or PWM absolute value)
95	FGIN	I	Spindle CAV servo FG input.
96	TEST1	I	Test pin.Connect to GND.
97	TEST2	I	Test pin.Connect to GND.
98	TEST3	I	Test pin.Connect to GND.
99	DVss	-	Digital ground.
100	EFMO	O	Low when playback:EFM (encoded data) output when recording.

■ MN101C23DBE (IC250) : System Micon

1. Pin Layout

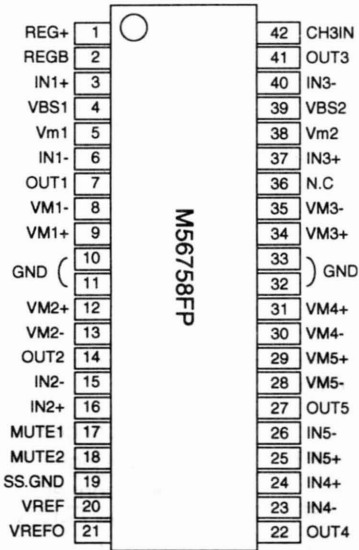


2. Pin Function

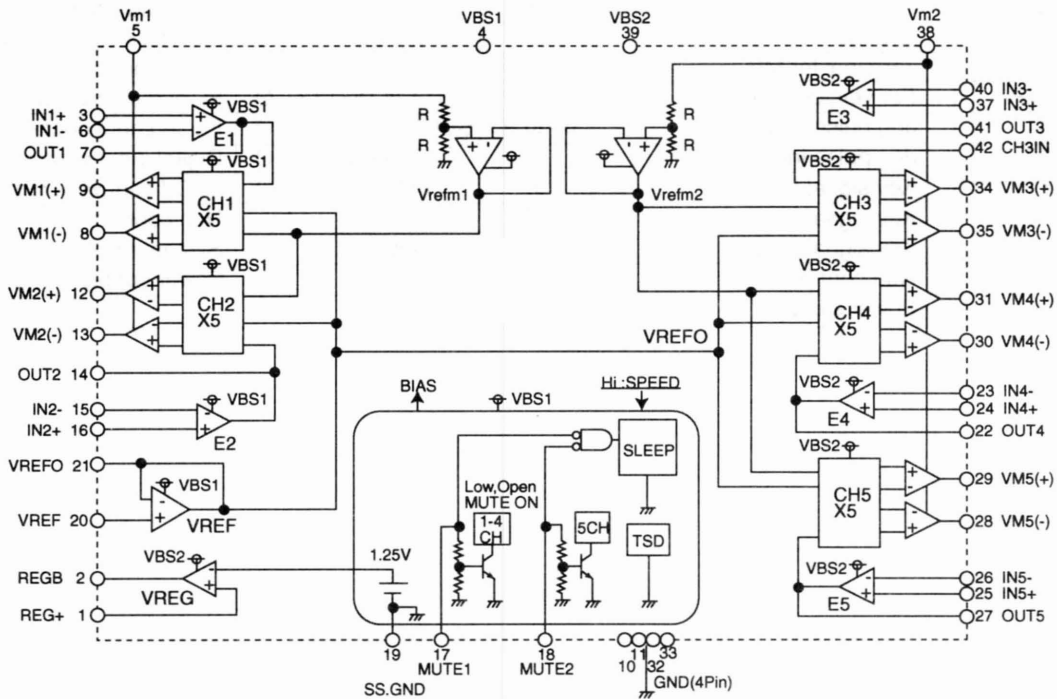
Pin No.	Symbol	I/O		Pin No.	Symbol	I/O	
1	UARTO	O	Compulink signal output	25		--	Non connect
2	UARTI	I	Compulink signal input	26	RESET	I	Reset signal input
3	CLKO	O	Non connect	27		--	Non connect
4	DV DATA	O	Data signal output for IC800	28	MODE	I	Master / Slave mode input
5	DV STB	O	Strobe signal output for IC800	29	LED RED	O	Red LED control output
6	DV CLK	O	Clock signal output for IC800	30	LED GREEN	O	Green LED control output
7	SMUTE1	O	System mute 1	31	LED POWER	O	Power LED control output
8	+5V	--	Power supply	32	DCS O	O	DCS signal output
9	OSC IN	I	Oscillation terminal	33	DCS IN	I	DCS signal input
10	OSC OUT	O	Oscillation terminal	34 to 36		--	Non connect
11	GND	--	Ground	37	REM	I	Remocon signal input
12	GND	--	Ground	38	MD READY	I	MD ready signal input
13		--	Non connect	39	MD COM	O	MD command signal output
14	GND	--	Ground	40	MD STAT	I	MD status signal input
15	GND	--	Ground	41	MD CLK	O	MD clock signal output
16	TEST MODE	I	Terminal for MP	42 to 46		--	Non connect
17	DO/EXP	I	For version change	47 to 59	DGT1 to DGT13	O	FL grid control output
18	JOG1	I	Jog pulse input	60 to 95	SEG36 to SEG1	O	FL segment control output
19	JOG2	I	Jog pulse input	96	DINSW	O	Digital input control output
20	KEY1	I	Key signal input	97	POWON	O	10V control output
21	KEY2	I	Key signal input	98		--	Non connect
22	KEY3	I	Key signal input	99	SMUTE2	O	System mute 2
23		--	Non connect	100	VPP	--	Power supply for FL
24	+5V	--	Power supply				

M56758FP-X(IC410):5Channel actuator driver

1.Terminal Layout

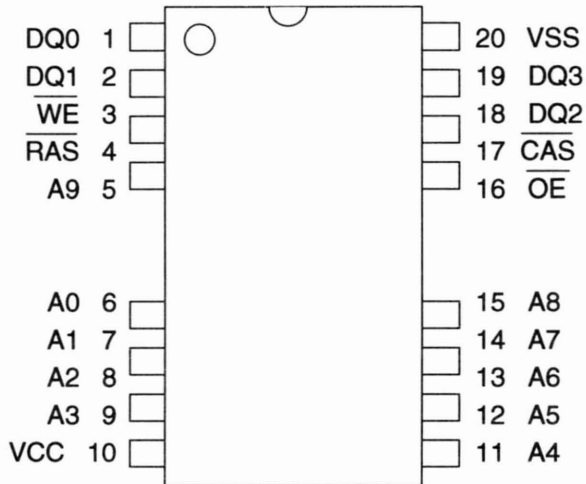


2.Block Diagram



■ MN41V4400TT-08 (IC390) : D RAM

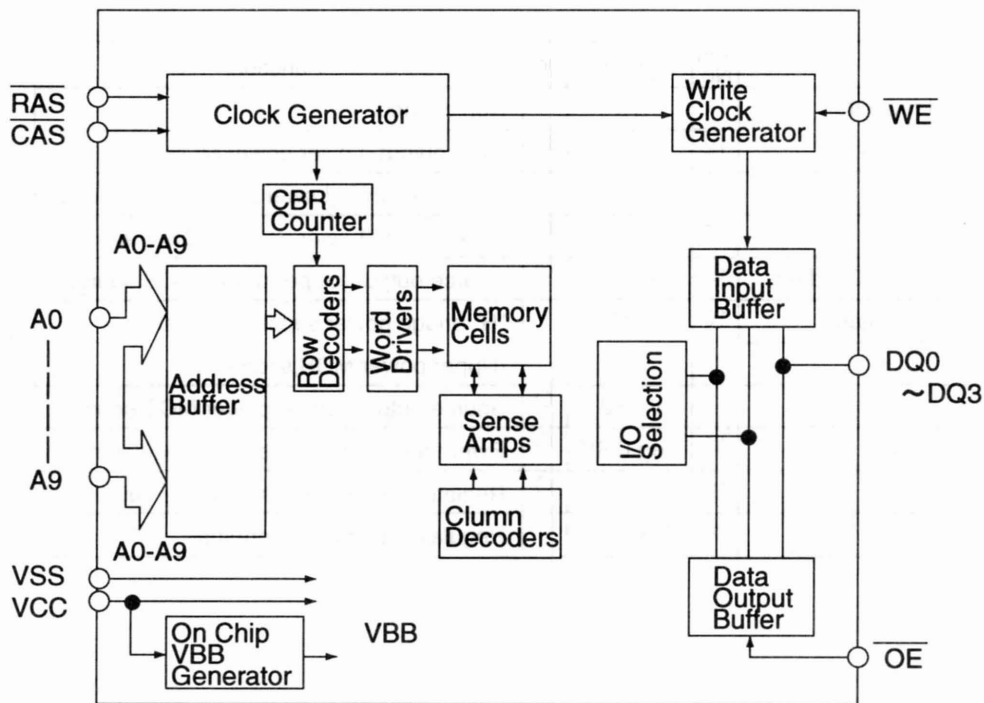
1.Pin Layout



2.Pin Functions

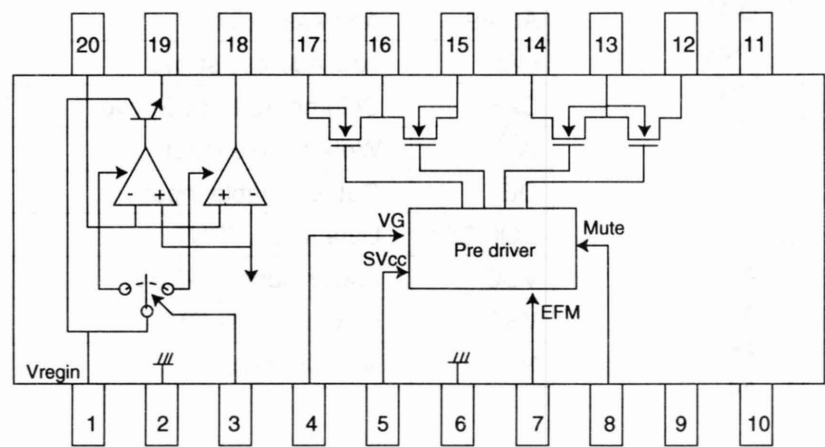
Symbol	Functions
A0-A9	Address Input
$\overline{\text{RAS}}$	Low Address strove
$\overline{\text{CAS}}$	Column Address Strove
$\overline{\text{WE}}$	Write enable Input
$\overline{\text{OE}}$	Output Enable Input
DQ0-DQ3	Data IN OUTPUT
VCC	Power Supply (+3.3V)
VSS	Power Supply (0V)
NC	Non Connect

3.Block Diagram



BD7910FV-X(IC450):Pre driver

1.Block Diagram

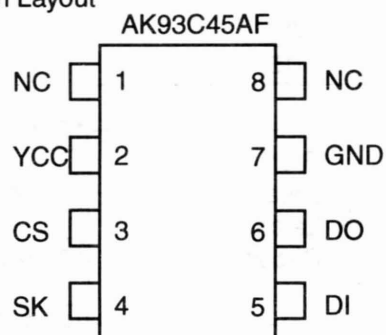


2.Pin Function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	Vreg IN	I	Regulator input and regulator power supply	11	NC	-	Non connect
2	Reg GN	-	Regulator GND	12	VOD2	O	Sync.output (Lower power MOS,drain)
3	NC	-	Non connect	13	VSS	-	"H"bridge GND (Lower power MOS,source)
4	VG	I	Voltage input for power MOS drive	14	VOD1	O	Sync.output (Lower power MOS,drain)
5	SVCC	O	EFM high level output voltage	15	VOS1	O	Source output (Upper power MOS,source)
6	PDGND	-	Pre-driver GND	16	VDD	-	"H" bridge power supply terminal (Upper power MOS,source)
7	EFM	I	EFM signal input	17	VOS2	O	Source output (Upper power MOS,source)
8	MUTE	I	Mute control (Low active)	18	Reg DRV	O	External PNP drive output for regulator
9	NC	O	Non connctet	19	Reg OUT	O	Reglator output (Emitter follower output)
10	NC	O	Non connect	20	Reg NF	-	Regulator feedbaack terminal

AK93C45AF-W(IC590):CMOS EEPROM

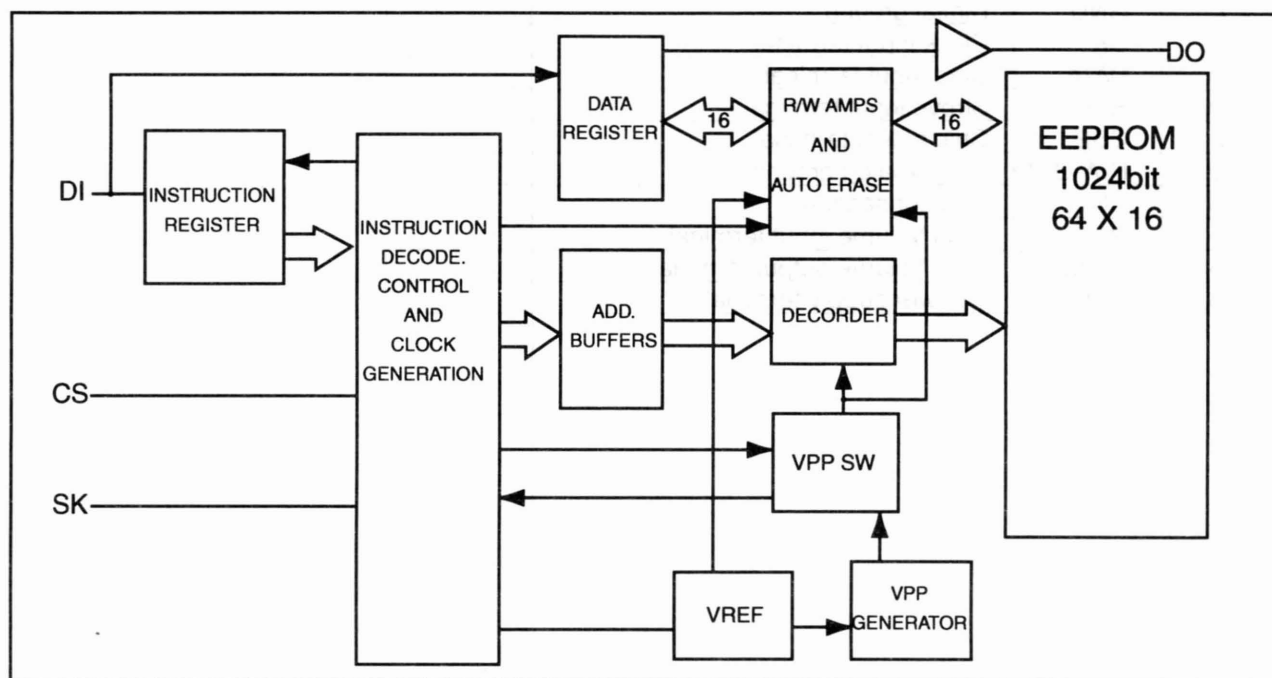
1.Pin Layout



2.Pin Functions

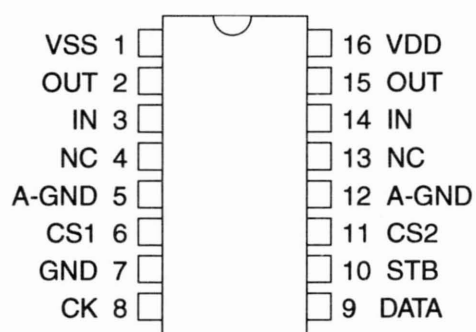
Symbol	Function
CS	Chip Select
SK	Serial Clock Input
DI	Serial Data Input
DO	Serial Data Output
Vcc	Power Supply
GND	Ground
NC	Non connection

3.Block Diagram

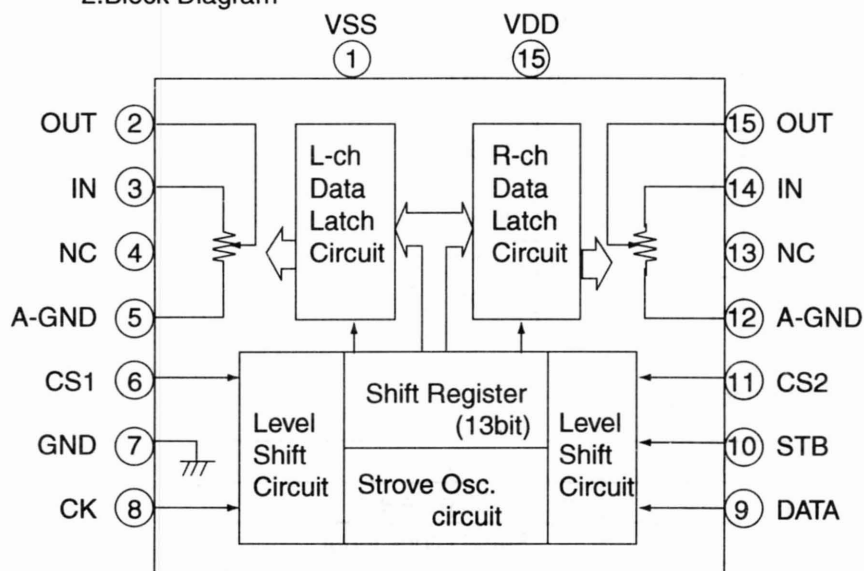


■ TC9413AP (IC800) : Rec Level

1.Pin Layout



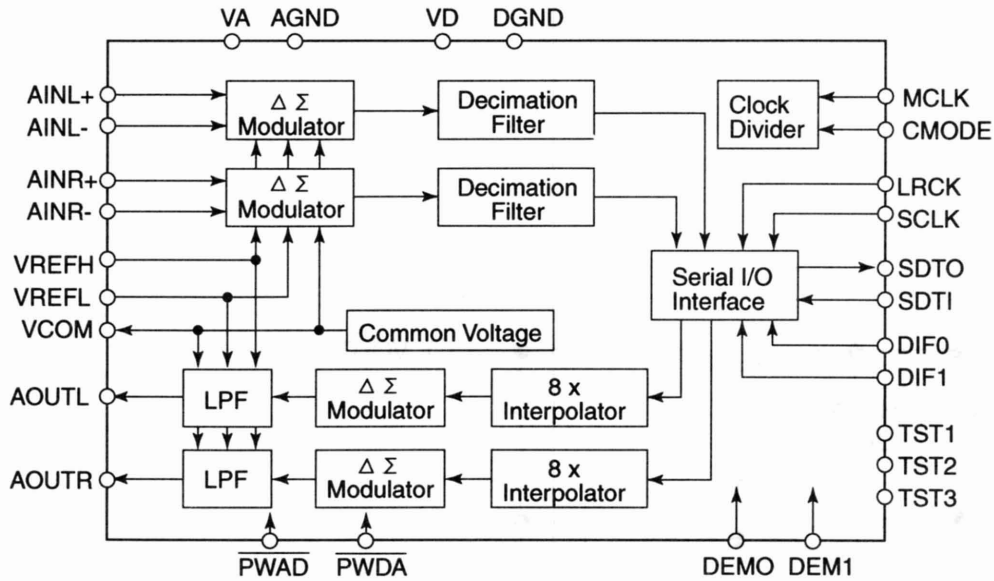
2.Block Diagram



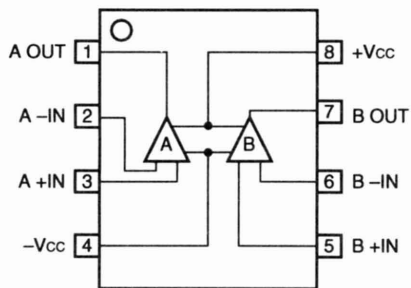
3.Pin Functions

Pin No.	Symbol	Functions
1	VSS	- Power supply terminal
2	L-OUT	L-ch Volume output terminal
3	L-IN	L-ch Volume input terminal
4	NC	Non connection
5	L-A-GND	L-ch Analog ground
6	CS1	Chip select input terminal
7	GND	Digital ground
8	CK	Clock input terminal
9	DATA	Data input terminal
10	STB	Strobe input terminal
11	CS2	Chip select terminal
12	R-A-GND	R-ch Analog ground
13	NC	Non connection
14	R-IN	R-ch Volume input terminal
15	R-OUT	R-ch Volume output terminal
16	VDD	+ power supply terminal

■ AK4520A-VF-X (IC480) : A/D&D/A Converter

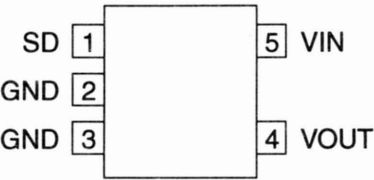


■ NJM4580D (IC220,IC750,IC850,IC870) : Dual Ope. Amp

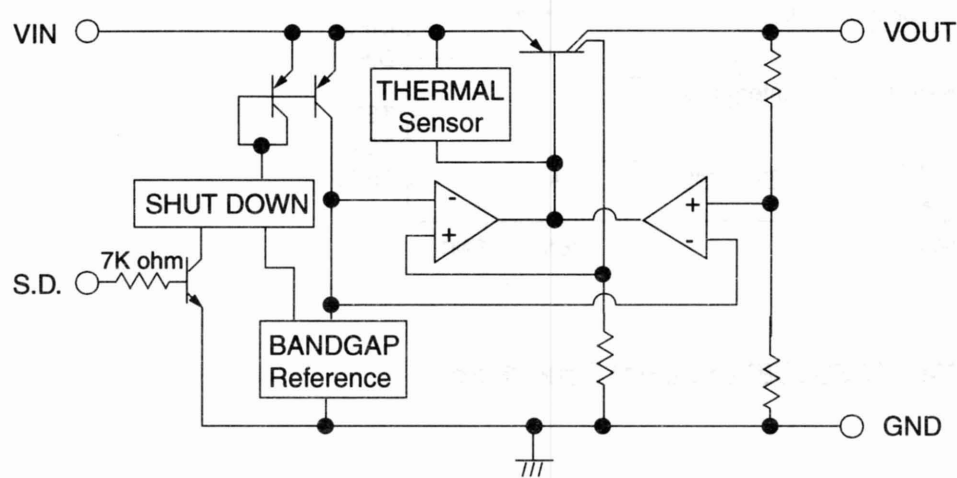


TK71340M-W (IC485) : Regulator

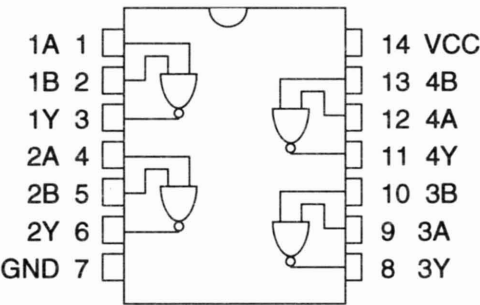
1.Pin Layout



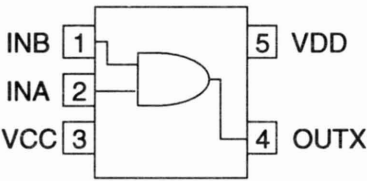
2.Block Diagram



TC74HC00AP (IC280) : 2-Input Nand Gate

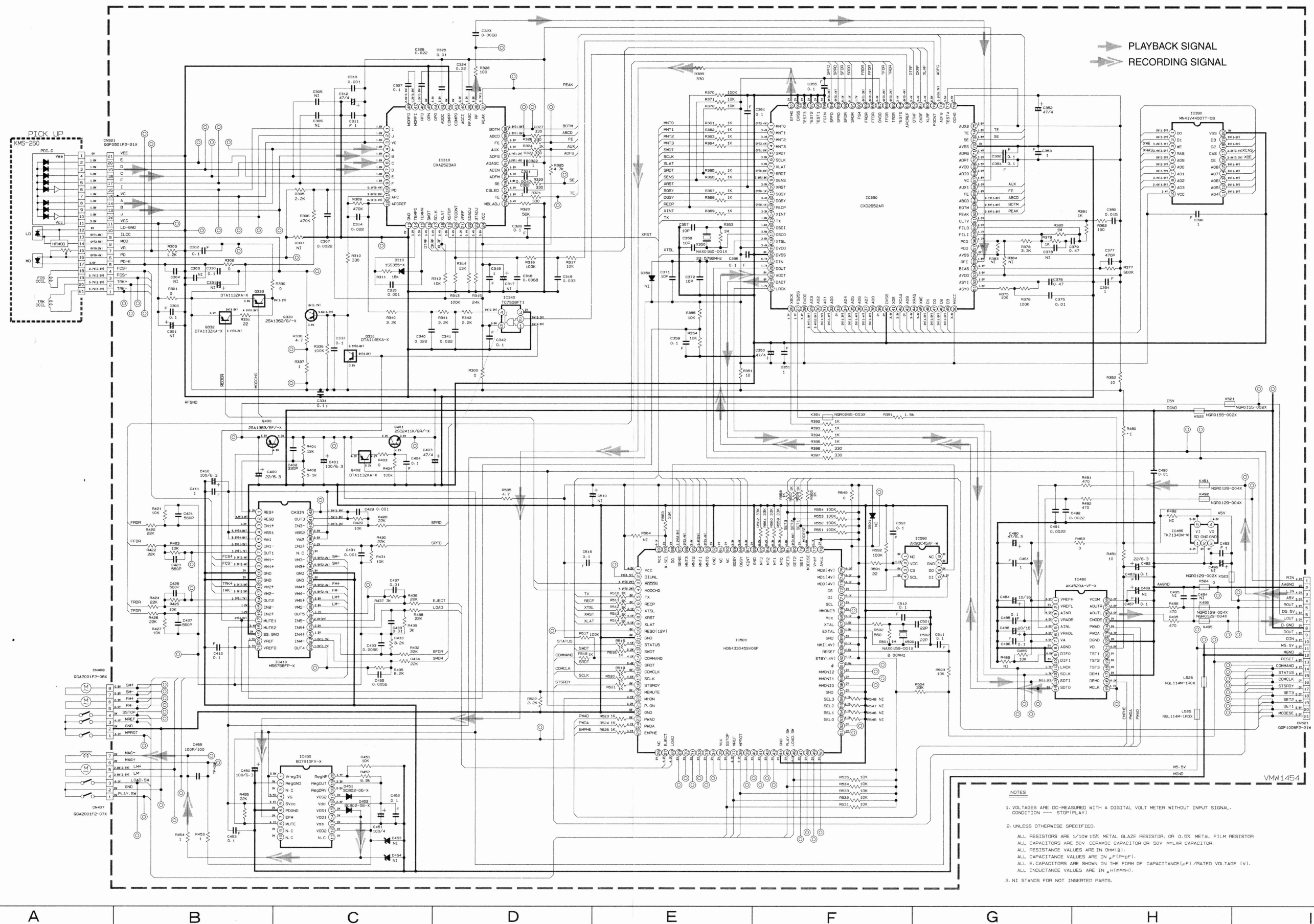


TC7S08F-W (IC340) : Single Ope. Amp



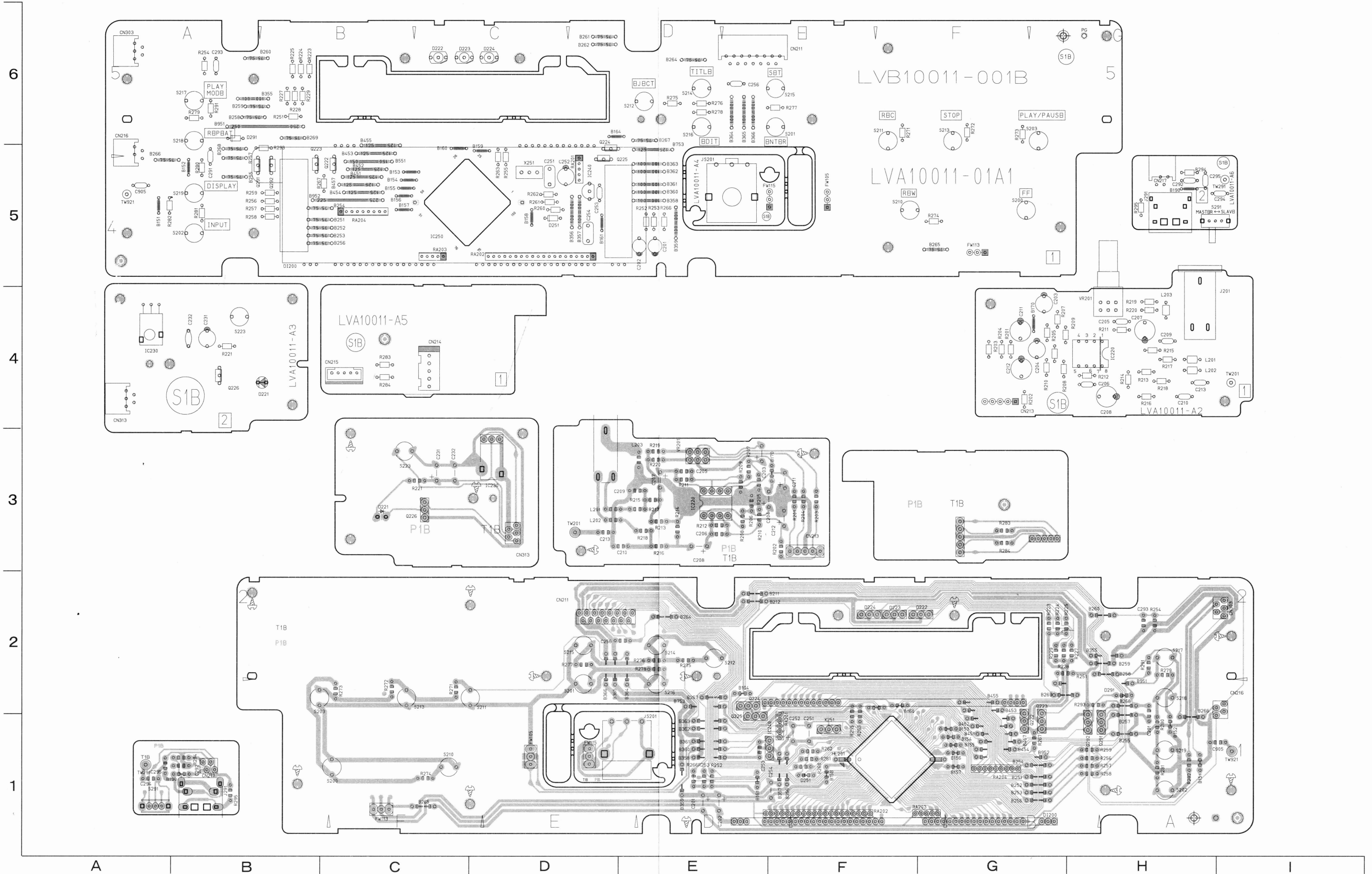


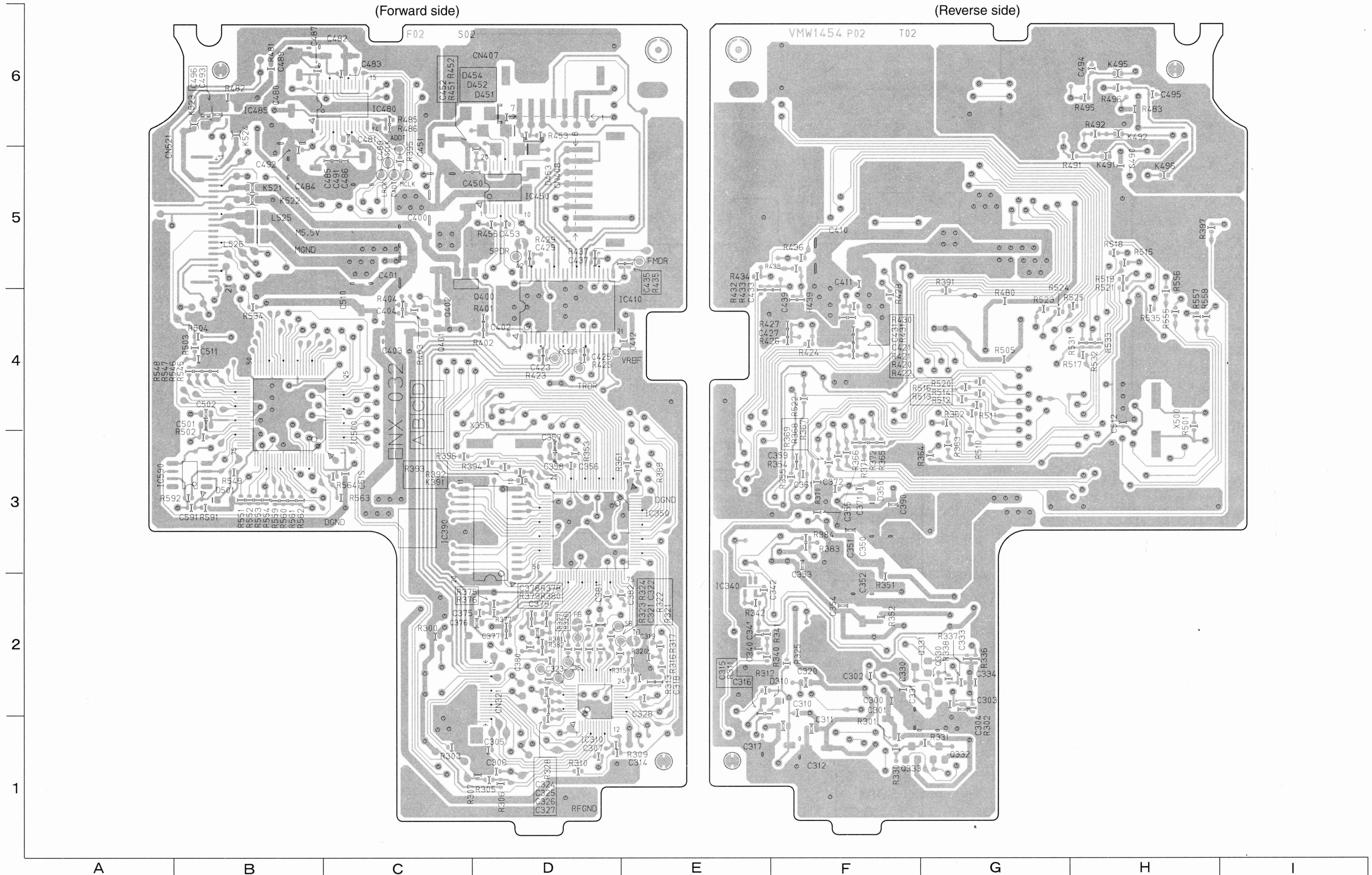
■ MD Servo Control Section



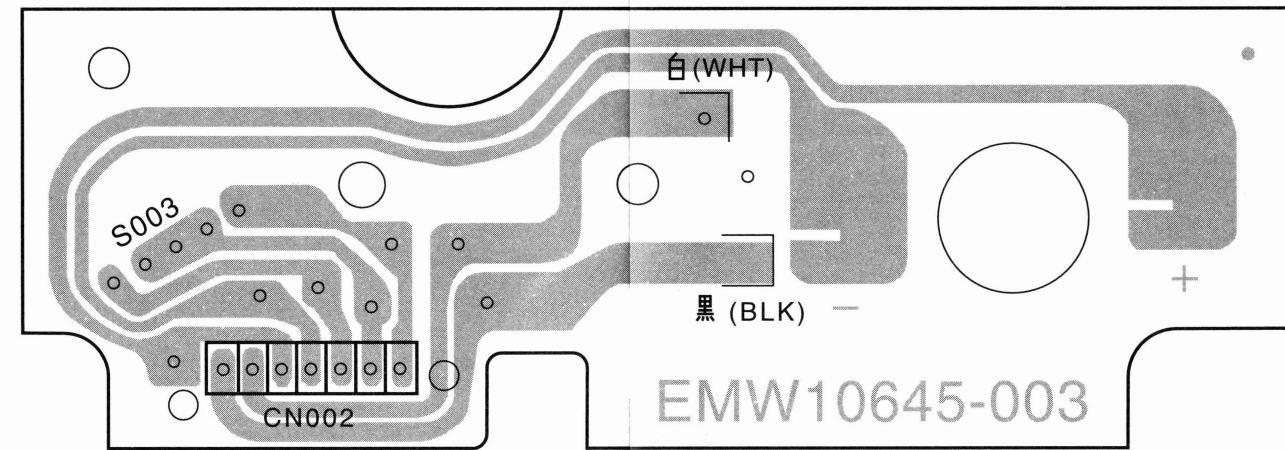


■ System Micon P. C. Board

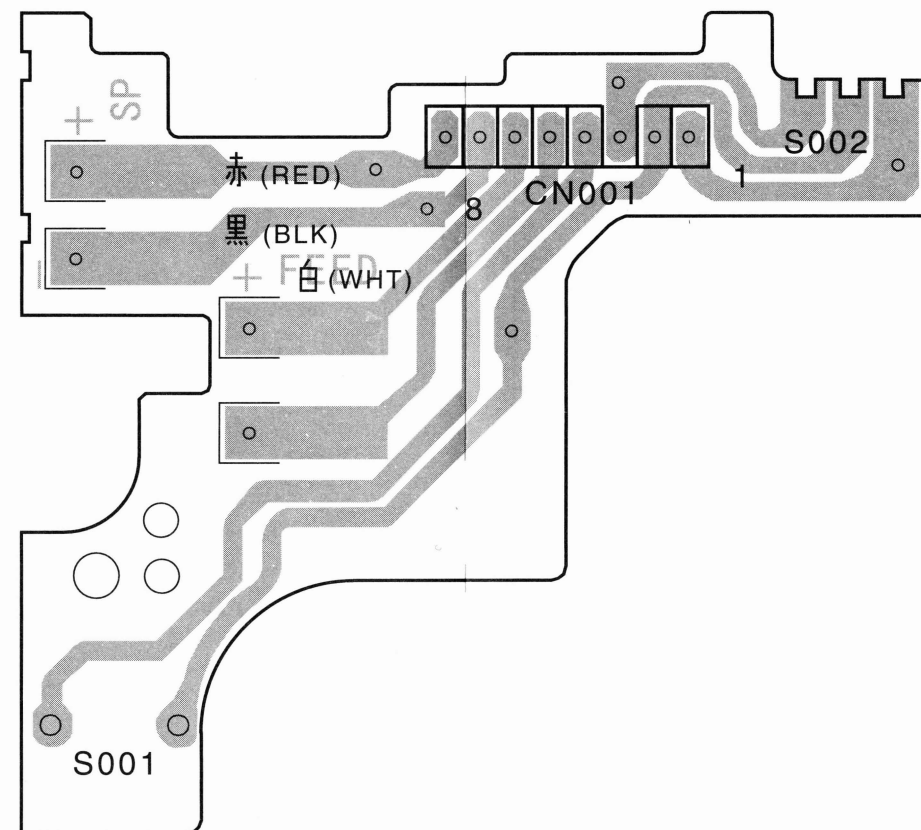




■ MD Mechanism Board



■ Switch Circuit Board



PARTS LIST

[XM-448BK]

* All printed circuit boards and its assemblies are not available as service parts.

Areas Suffix

B ----- U.K.
 E ----- Continental Europe
 EN ----- Northern Europe
 J ----- U.S.A.
 C ----- Canada
 US ----- Singapore
 UY ----- Argentina

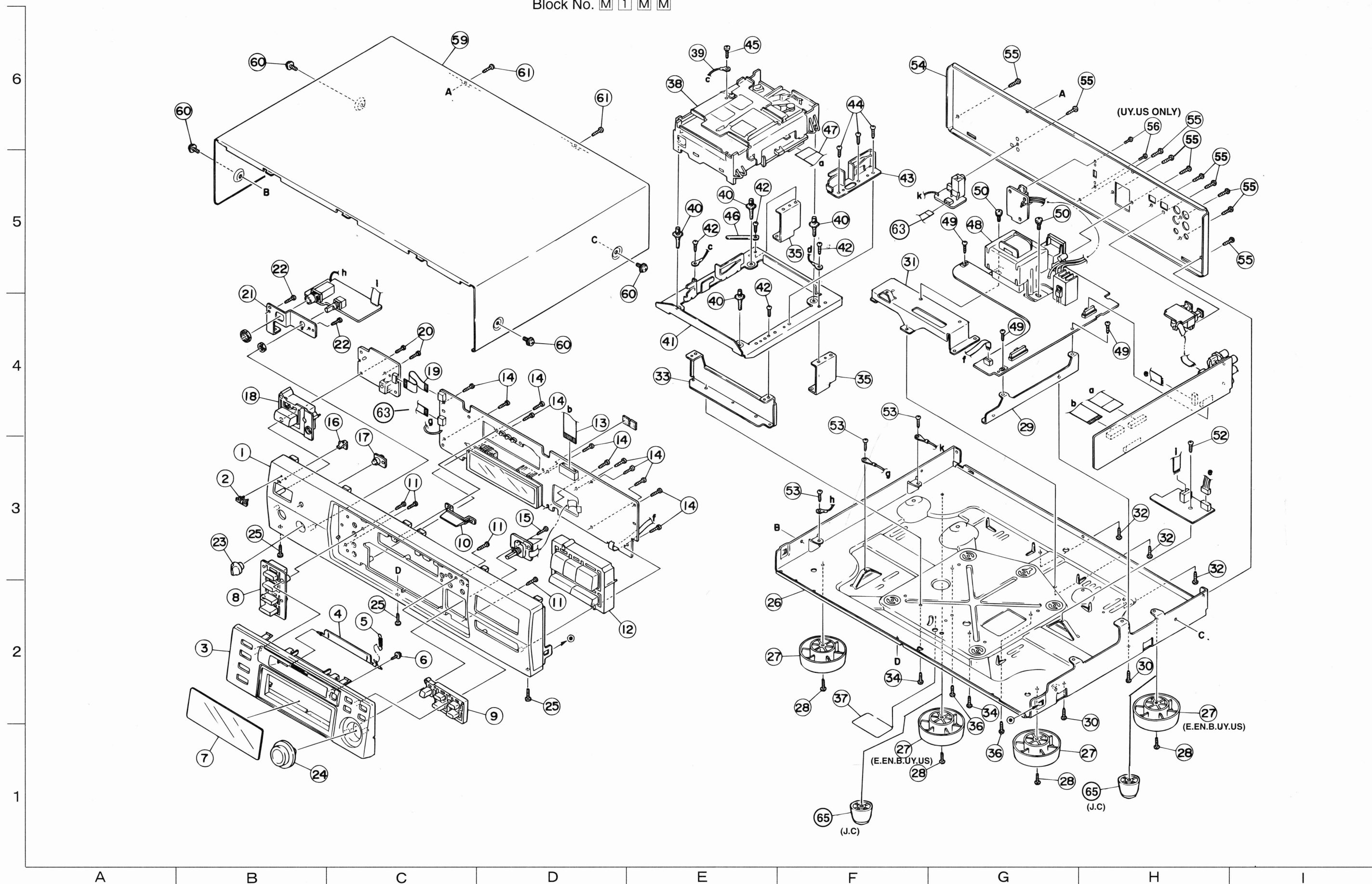
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Packing Materials and Accessories Parts List	3-16

<<MEMO>>

Exploded View of General Assembly and Parts List

Block No. M 1 M M



■ Parts List (General Assembly)

BLOCK NO. M1MM

△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY	SUFFIX	CLR
	1	LV10087-002A	FRONT PANEL		1	C,J	
		LV10087-003A	FRONT PANEL		1	UY,EN	
		LV10087-003A	FRONT PANEL		1	B,E,US	
	2	VJD5429-001SS	JVC MARK		1		
	3	LV10089-002A	CONTROL PANEL		1		
	4	LV30039-001A	SHUTTER		1		
	5	LV40412-002A	SPRING		1		
	6	E72405-001SS	SPECIAL SCREW		1		
	7	LV30487-001A	WINDOW SCREEN		1		
	8	LV20146-002A	PUSH BUTTON		1		
	9	LV20144-002A	PUSH BUTTON		1		
	10	LV30486-001A	INDICATOR		1		
	11	QYSDSF2608Z	SCREW		4		
	12	LV20142-001A	PUSH BUTTON		1		
	13	QUQ412-1522DJ	FFC WIRE		1		
	14	QYSDSF2608Z	SCREW		11		
	15	QYSDSF2608Z	SCREW		2		
	16	E409509-001	INDICATOR		1		
	17	LV40075-001A	REMOCON FILTER		1		
	18	LV30484-001A	PUSH BUTTON		1	US,UY	
		LV30484-001A	PUSH BUTTON		1	B,E,EN	
		LV30484-002A	PUSH BUTTON		1	C,J	
	19	QUQ412-0507CJ	FFC WIRE		1		
	20	QYSDSF2608Z	SCREW		2		
	21	E310160-001SM	H.P.BKT		1		
	22	QYSDSF2608Z	SCREW		2		
	23	E309394-002	KNOB		1		
	24	LV30506-001A	JOG KNOB		1		
	25	QYSDSG3008M	SCREW		3		
	26	E103252-004YP	CHASSIS BASE		1		
	27	E307427-005	FOOT ASSY		4	B,E,EN	
		E307427-005	FOOT ASSY		2	C,J	
		E307427-005	FOOT ASSY		4	US,UY	
	28	QYSBST3010Z	TH TAP SCREW		4		
	29	LV30490-001A	CB BRACKET		1		
	30	QYSBSG3008Z	T.SCREW		2		
	31	LV30488-001A	TRANS BRACKET		1		
	32	QYSBSG3008Z	T.SCREW		3		
	33	LV30491-001A	FRONT BRACKET		1		
	34	QYSBSG3008Z	T.SCREW		2		
	35	LV30492-001A	REAR BRACKET		2		
	36	QYSBSG3008Z	T.SCREW		2		
	37	LV40712-001A	SEAL		1		
	38	-----	JEM MD MECHA UN		1		
	39	QUB220-10DMDM	TERMINAL WIRE		1		
	40	E406294-003	C.D INSULATOR		4		
	41	LV20022-001A	MD BASE		1		
	42	QYSBSG3008Z	T.SCREW		4		
	43	LV30042-001A	SIDE BRACKET		1		
	44	QYSBSG3008Z	T.SCREW		3		
	45	QYSDSG3006E	T.SCREW		1		
	46	VKZ4001-111S	WIRE CLAMP		1		
	47	QUQ110-2117AJ	FFC WIRE		1		
	48	QQT0177-004	POWER TRANS		1	US,UY	
		QQT0177-002	POWER TRANS		1	C,J	

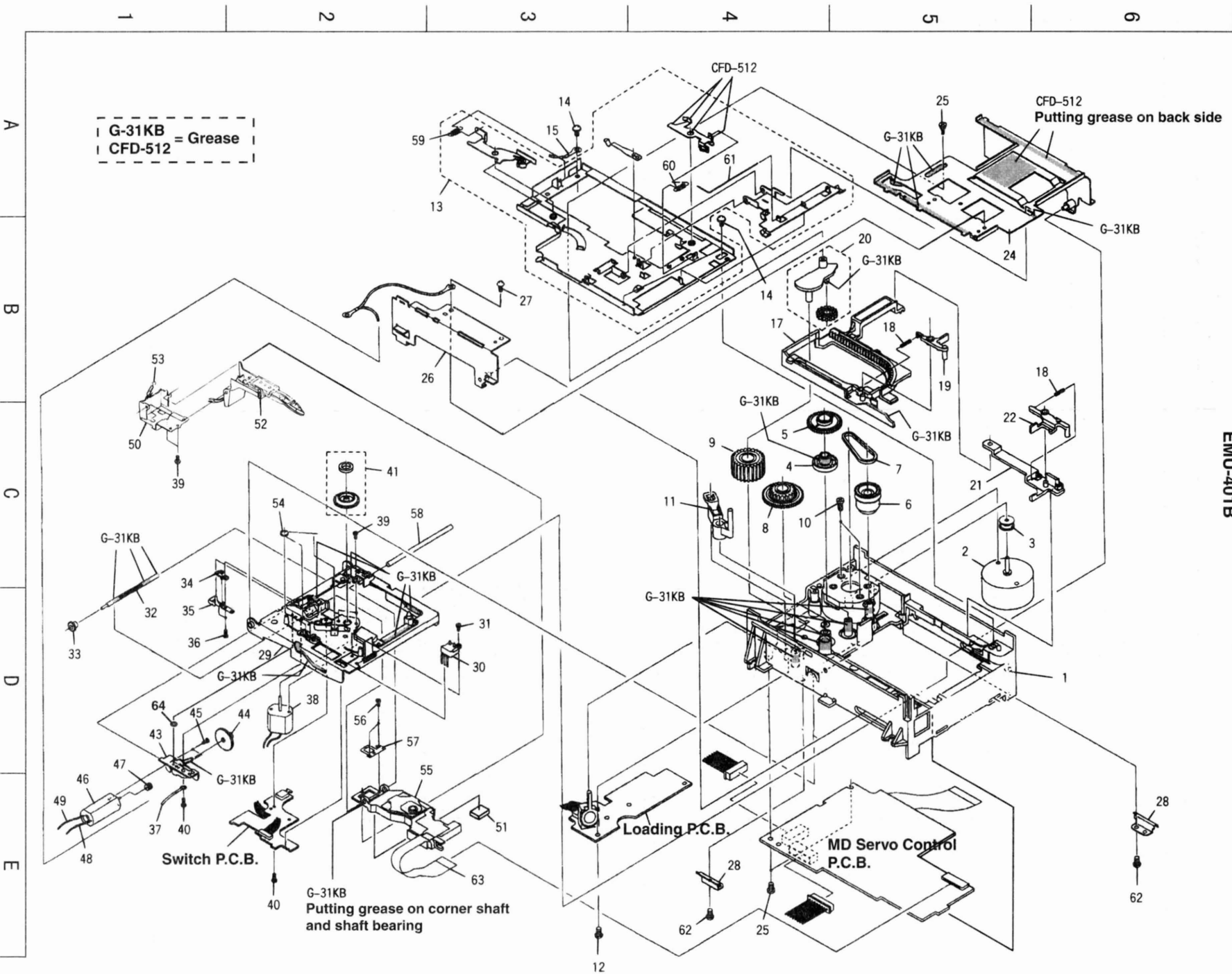
[illegible]

Exploded View of MD Mechanism and Parts List

EMU-401B

Block No.

M
2
M
M



■Parts List (MD Mechanism)

BLOCK NO. M2MM

△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY	SUFFIX	CLR
	1	E103156-002	LOADING BASE		1		
	2	MSN5G543C	MOTOR		1		
	3	E75984-222SS	MOTOR PULLEY		1		
	4	E409146-001	GEAR(5)		1		
	5	E409143-001	GEAR(2)		1		
	6	E409142-002	GEAR(1)		1		
	7	E75950-002	BELT		1		
	8	E409144-001	GEAR(3)		1		
	9	E409145-001	GEAR(4)		1		
	10	QYSPSPT2640Z	MINI SCREW		2		
	11	E409149-002	SW LEVER		1		
	12	QYSBSF2606M	SCREW		1		
	13	E309825-010	CAR.BASE ASSY		1		
	14	QYSBSFG2606Z	SCREW		3		
	15	EWZ01-027	TERMINAL WIRE		1		
	17	E208853-001	RACK		1		
	18	E409153-002	SPRING		2		
	19	E409152-002	HOOK(L)		1		
	20	E409195-002	P.GEAR ASSY		1		
	21	E309824-001	LINK		1		
	22	E409154-002	HOOK(R)		1		
	24	E309829-004KP	S.BKT (R) ASSY		1		
	25	E409163-001	SPECIAL SCREW		3		
	26	E409164-003	S.BKT (L) ASSY		1		
	27	QYSBST2606Z	T.SCREW		1		
	28	LV40591-001A	BRACKET		2		
	29	E103258-001	CHASSIS BAS		1		
	30	QSW0508-001	PUSH SW		1		
	31	QYSPSGT2035M	MINI SCREW		1		
	32	E409553-001	LEAD SCREW		1		
	33	E409542-001	GEAR F.LEAD		1		
	34	E409548-001	TH.PLATE		1		
	35	E409135-001	THRUST SPRING		1		
	36	E409332-001	SPECIAL SCREW		2		
	37	EWZ025-008	TERMINAL WIRE		1		
	38	FF-110PH-08280	SP.MOTOR		1		
	39	QYSPSPU1720M	MINI SCREW		4		
	40	QYSPST2606Z	SCREW		2		
	41	LE30470-001A	TURN TABLE		1		
	43	E409129-005	M.BKT ASSY		1		
	44	E409133-001	MIDDLE GEAR		1		
	45	QYSPSPU1420Z	MINI SCREW		2		
	46	FF-N30VA-09210	FEED MOTOR		1		
	47	E409550-001	F.M.GEAR		1		
	48	QWE269-06BB	WIRE ASSY		1		
	49	QWE260-05BB	WIRE ASSY		1		
	50	E310179-001	H.JOINT		1		
	51	LE30001-008A	SPACER		1		
	52	HMD-7B	HEAD UNIT		1		
	53	E409158-004	SPRING		1		
	54	E409165-001	M.SPRING		1		
	55	KMS-260C	MD PICK UNIT		1		
	56	QYSPSPT1414Z	SCREW		2		
	57	E408255-003	RACK SPRING		1		

Electrical Parts List

Main P.C.B.

BLOCK NO. 01111111				
A REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
C101	QFLC1HJ-1042	M CAPACITOR	.10MF 5% 50V	
C102	QFLC1HJ-1042	M CAPACITOR	.10MF 5% 50V	
C111	QFLC1HJ-1042	M CAPACITOR	.10MF 5% 50V	
C112	QETN1VM-4772	E CAPACITOR	470MF 20% 35V	
C113	QET41HM-226	E CAPACITOR	TOUCH ON Q111	
C114	QET41CM-477	E CAPACITOR	470MF 20% 16V	
C115	QCF11H2-103	C CAPACITOR	.010MF +80% -20%	
C116	QETN1HM-2272	E CAPACITOR	220MF 20% 50V	
C117	QTE1H28-4752	E CAPACITOR	22MF 20% 50V	
C118	QET41HM-226	E CAPACITOR	22MF 20% 50V	
C121	QETB1CM-108	E CAPACITOR	1000MF 20% 16V	
C122	QET41CM-477	E CAPACITOR	470MF 20% 16V	
C123	QET41EM-476	E CAPACITOR	47MF 20% 25V	
C124	QET41EM-476	E CAPACITOR	47MF 20% 25V	
C127	QET41CM-227	E CAPACITOR	220MF 20% 16V	
C128	QET41CM-227	E CAPACITOR	220MF 20% 16V	
C131	QET41EM-476	E CAPACITOR	47MF 20% 25V	
C132	QET41CM-107	E CAPACITOR	100MF 20% 16V	
C141	QFLC1HJ-1042	M CAPACITOR	.10MF 5% 50V	B,E,EN
C141	QFLC1HJ-1042	M CAPACITOR	.10MF 5% 50V	US,UY,C
C142	QETB1CM-688	E CAPACITOR	6800MF 20% 16V	
C143	QCF31H2-2232	C CAPACITOR	.022MF +80% -20%	
C148	QET41CM-107	E CAPACITOR	100MF 20% 16V	
C149	QCF31H2-2232	C CAPACITOR	.022MF +80% -20%	
C152	QET41CM-107	E CAPACITOR	100MF 20% 16V	
C153	QET41CM-107	E CAPACITOR	100MF 20% 16V	
C161	QET41EM-476	E CAPACITOR	47MF 20% 25V	
C162	QET41CM-227	E CAPACITOR	220MF 20% 16V	
C243	QDYB1CM-103Y	C CAPACITOR	100MF 20% 16V	
C281	QET41CM-107	E CAPACITOR	100MF 20% 16V	
C282	QDVB1EZ-223Y	C CAPACITOR	1000PF 5% 50V	
C751	QFN41HJ-102	M CAPACITOR	1000PF 5% 50V	
C752	QFN41HJ-102	M CAPACITOR	1000PF 5% 50V	
C753	QTE1E28-4762	E.CAPA. I.M		
C754	QTE1E28-4762	E.CAPA. I.M		
C755	QTE1E28-4762	E.CAPA. I.M		
C756	QTE1E28-4762	E.CAPA. I.M		
C759	QCB81HK-561Y	C CAPACITOR	560PF 10% 50V	
C760	QCB81HK-561Y	C CAPACITOR	560PF 10% 50V	
C761	QTE1H28-4752	E CAPACITOR		
C762	QTE1H28-4752	E CAPACITOR		
C765	QFN31HJ-8212	M.CAPA.I.M	820PF 5% 50V	
C766	QFN31HJ-8212	M.CAPA.I.M	820PF 5% 50V	
C800	QDVB1EZ-223Y	C CAPACITOR		
C801	QDVB1EZ-223Y	C CAPACITOR		
C802	QDVB1EZ-223Y	C CAPACITOR		
C851	QTE1E28-4762	E.CAPA. I.M		
C852	QTE1E28-4762	E.CAPA. I.M		
C853	QCB81HK-101Y	C CAPACITOR	100PF 10% 50V	
C854	QCB81HK-101Y	C CAPACITOR	100PF 10% 50V	
C855	QTE1E28-4762	E.CAPA. I.M		
C856	QTE1E28-4762	E.CAPA. I.M		
C859	QTE1H28-4752	E CAPACITOR		
C860	QTE1H28-4752	E CAPACITOR		
C871	QTE1H28-1062	E CAPACITOR		

BLOCK NO. 01111111				
A REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
C872	QTE1H28-1062	E CAPACITOR		
C873	QTE1E28-4762	E.CAPA. I.M		
C874	QTE1E28-4762	E.CAPA. I.M		
C901	QCZ0205-1552	ML C CAP I/M	1.5MF	
C902	QDVB1EZ-223Y	C CAPACITOR		
C903	QDVB1EZ-223Y	C CAPACITOR		
C906	QCZ0205-1552	ML C CAP I/M	1.5MF	
C920	QDVB1EZ-223Y	C CAPACITOR		
D111	11E2-T5	DIODE		
D112	11E2-T5	DIODE		
D113	11E2-T5	DIODE		
D115	MTZJ6.2C-T2	ZENER DIODE		
D116	MTZJ33C-T2	Z DIODE I M		
D121	11E2-T5	DIODE		
D122	11E2-T5	DIODE		
D123	MTZJ10C-T2	Z DIODE I.M		
D124	MTZJ10C-T2	Z DIODE I.M		
D131	MTZJ5.6C-T2	ZENER DIODE		
D141	11E2-T5	DIODE		
D142	11E2-T5	DIODE		
D143	11E2-T5	DIODE		
D144	11E2-T5	DIODE		
D145	MTZJ6.2C-T2	ZENER DIODE		
D161	1SS133-T2	DIODE		
D245	11E2-T5	DIODE		
D255	1SS133-T2	DIODE		
D256	1SS133-T2	DIODE		
H001	E70945-H35	HEAT SINK		
J280	GP1F32R	OPTICAL JACK	OPT-IN1	
J281	GP1F32R	OPTICAL JACK	OPT-IN2	
J290	QNS0016-001	3.5 JACK	DCS JACK	
J850	QNN0173-001	PIN JACK	4PIN PIN JACK	
K910	QOR0601-001Z	F.BEADS I.M		
K911	QOR0601-001Z	F.BEADS I.M		
K914	QOR0601-001Z	F.BEADS I.M	FOR MGND(EMC)	
L291	QQL231K-1R0Y	INDUCTOR I.M		
P001	QNC0026-001	AC INLET		C,J
P001	QNC0051-001	AC INLET		US,UY
P001	QNC0051-001	AC INLET		B,E,EN
Q111	2SA934/QR/-T	TR I/M		
Q121	2SD2037/EF/-T	TR I/M		
Q122	2SA934/QR/-T	TR I/M		
Q123	DTA114ESA-T	D.TRANSISTOR		
Q124	DTA114WSA-T	D.TR.I.M		
Q131	2SC2060/QR/-T	TR I/M		
Q142	2SB1565/EF/	TRANSISTOR		
Q143	2SC1740S/RS/-T	TR I/M		
Q161	2SA933S/RS/-T	TRANSISTOR		
Q162	2SD2144S/VW/-T	TRANSISTOR I/M		
Q251	DTA114ESA-T	D.TRANSISTOR		
Q253	2SD1302/ST/-T	TR I/M		
Q754	2SD1302/ST/-T	TR I/M	330 5% 1/4W	
R111	QRJ146J-331X	C RESISTOR	330 5% 1/4W	
R112	QRJ146J-331X	C RESISTOR	10 1/0W	
R113	QRZ9005-100X	F RES I/M		

BLOCK NO. 01

REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
R113	QRJ146J-100X	UNF.C RES. I/M	10 5% 1/4W	
R114	QRJ141J-223Y	C RESISTOR	22K 5% 1/4W	
R115	QRJ146J-3R3X	UNF C RES I/M	3.3 5% 1/4W	
R116	QRJ146J-3R3X	UNF C RES I/M	3.3 5% 1/4W	
R117	QRJ141J-2R2Y	C RESISTOR	2.2 5% 1/4W	
R118	QRJ141J-2R2Y	C RESISTOR	2.2 5% 1/4W	
R121	QRJ141J-681Y	C RESISTOR	680 5% 1/4W	
R122	QRJ141J-681Y	C RESISTOR	680 5% 1/4W	
R123	QRJ141J-771Y	C RESISTOR	270 5% 1/4W	
R124	QRJ141J-771Y	C RESISTOR	270 5% 1/4W	
R127	QRZ9006-4R7X	F RESISTOR	4.7 1/0W	B,E,EN
R127	QRJ146J-4R7X	C RESISTOR	4.7 5% 1/4W	J
R127	QRZ9006-4R7X	F RESISTOR	4.7 1/0W	US,UY,C
R128	QRZ9006-4R7X	F RESISTOR	4.7 1/0W	UY,US,C
R128	QRJ146J-4R7X	C RESISTOR	4.7 5% 1/4W	J
R128	QRZ9006-4R7X	F RESISTOR	4.7 1/0W	B,E,EN
R131	QRJ141J-681Y	C RESISTOR	680 5% 1/4W	
R132	QRJ141J-681Y	C RESISTOR	680 5% 1/4W	
R143	QRJ141J-101Y	C RESISTOR	100 5% 1/4W	
R144	QRJ141J-221Y	C RESISTOR	220 5% 1/4W	
R145	QRJ141J-102Y	C RESISTOR	1.0K 5% 1/4W	
R146	QRJ141J-102Y	C RESISTOR	1.0K 5% 1/4W	
R147	QRJ141J-221Y	C RESISTOR	220 5% 1/4W	
R161	QRJ141J-103Y	C RESISTOR	10K 5% 1/4W	
R162	QRJ141J-333Y	C RESISTOR	33K 5% 1/4W	
R163	QRJ141J-221Y	C RESISTOR	220 5% 1/4W	
R164	QRJ141J-221Y	C RESISTOR	220 5% 1/4W	
R165	QRJ141J-223Y	C RESISTOR	22K 5% 1/4W	
R166	QRJ141J-223Y	C RESISTOR	22K 5% 1/4W	
R263	QRJ141J-154Y	C RESISTOR	150K 5% 1/4W	
R292	QRJ141J-101Y	C RESISTOR	100 5% 1/4W	
R749	QRJ141J-272Y	C RESISTOR	2.7K 5% 1/4W	
R750	QRJ141J-272Y	C RESISTOR	2.7K 5% 1/4W	
R751	QRJ141J-151Y	C RESISTOR	150 5% 1/4W	
R752	QRJ141J-151Y	C RESISTOR	150 5% 1/4W	
R757	QRJ141J-103Y	C RESISTOR	10K 5% 1/4W	
R758	QRJ141J-103Y	C RESISTOR	10K 5% 1/4W	
R759	QRJ141J-681Y	C RESISTOR	680 5% 1/4W	
R760	QRJ141J-681Y	C RESISTOR	680 5% 1/4W	
R761	QRJ141J-104Y	C RESISTOR	100K 5% 1/4W	
R762	QRJ141J-104Y	C RESISTOR	100K 5% 1/4W	
R763	QRJ141J-912Y	C RESISTOR	9.1K 5% 1/4W	
R764	QRJ141J-912Y	C RESISTOR	9.1K 5% 1/4W	
R765	QRJ141J-273Y	C RESISTOR	27K 5% 1/4W	
R766	QRJ141J-273Y	C RESISTOR	27K 5% 1/4W	
R767	QRJ141J-104Y	C RESISTOR	100K 5% 1/4W	
R768	QRJ141J-104Y	C RESISTOR	100K 5% 1/4W	
R769	QRJ141J-272Y	C RESISTOR	2.7K 5% 1/4W	
R770	QRJ141J-272Y	C RESISTOR	2.7K 5% 1/4W	
R851	QRJ141J-473Y	C RESISTOR	47K 5% 1/4W	
R852	QRJ141J-473Y	C RESISTOR	47K 5% 1/4W	
R853	QRJ141J-123Y	C RESISTOR	12K 5% 1/4W	
R854	QRJ141J-123Y	C RESISTOR	12K 5% 1/4W	
R855	QRJ141J-153Y	C RESISTOR	15K 5% 1/4W	
R856	QRJ141J-153Y	C RESISTOR	15K 5% 1/4W	

BLOCK NO. 02

REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
R857	QRJ141J-221Y	C RESISTOR	220 5% 1/4W	
R858	QRJ141J-221Y	C RESISTOR	220 5% 1/4W	
R859	QRJ141J-302Y	C RESISTOR	3.0K 5% 1/4W	
R860	QRJ141J-302Y	C RESISTOR	3.0K 5% 1/4W	
R861	QRJ141J-104Y	C RESISTOR	100K 5% 1/4W	
R862	QRJ141J-104Y	C RESISTOR	100K 5% 1/4W	
R863	QRJ141J-473Y	C RESISTOR	47K 5% 1/4W	
R864	QRJ141J-473Y	C RESISTOR	47K 5% 1/4W	
R871	QRJ141J-103Y	C RESISTOR	10K 5% 1/4W	
R872	QRJ141J-103Y	C RESISTOR	10K 5% 1/4W	
R873	QRJ141J-221Y	C RESISTOR	220 5% 1/4W	
R874	QRJ141J-221Y	C RESISTOR	220 5% 1/4W	
R875	QRJ141J-104Y	C RESISTOR	100K 5% 1/4W	
R876	QRJ141J-104Y	C RESISTOR	100K 5% 1/4W	
R879	QRJ141J-182Y	C RESISTOR	1.8K 5% 1/4W	
R880	QRJ141J-182Y	C RESISTOR	1.8K 5% 1/4W	
S101	QSW0513-001	SLIDE SW		US,UY
CN101	QGR2510J1-09	CONNECTOR		
CN102	QGR2510J1-04	CONNECTOR		
CN103	QGD2501C1-03Z	SOCKET I.M		
CN111	QGR2510K2-09	CONNECTOR		
CN112	QGR2510K2-04	CONNECTOR		
CN201	QGF1203C1-15	CONNECTOR	17PIN 1.25FFC	
CN202	QGD2501C1-04Z	SOCKET I.M		
CN203	QJB001-051300	CONNECTOR	TO LVA10009-5	
CN489	QGF1016C1-21	CONNECTOR	21PIN 1.0FFC CO	
CP141	ICP-N20-T	ICP I.M	(=B1104)	B,E,EN
CP901	ICP-N20-T	ICP I.M	(=B1101)	US,UY,C
CP901	ICP-N20-T	ICP I.M	(=B1101)	US,UY
CP902	ICP-N25-T	ICP I.M	(=B1102)	B,E,EN
CP902	ICP-N25-T	ICP I.M	(=B1102)	J,E,EN
CP903	ICP-N50-T	ICP I.M	(=B1103)	UY,US,C
EP001	QN70136-001Z	EARTH PLATE		
EP002	QN70136-001Z	EARTH PLATE		
FW114	QUM134-060G24	FLAT WIRE ASSY		
IC280	TC74HC00AP	IC	ENX-039-2	
IC750	NJM4580D	IC		
IC800	TC9413AP	IC	REC LEVEL IC	
IC850	NJM4580D	IC		
IC870	NJM4580D	IC		

System Micon P.C.B.

BLOCK NO. 02				
A	REF.	PARTS NO.	PARTS NAME	SUFFIX
C 201	QER41HM-105	E CAPACITOR	1.0MF 20% 50V	
C 202	QER41HM-105	E CAPACITOR	1.0MF 20% 50V	
C 203	QEK41HM-4752	E CAPACITOR	4.7MF 20% 50V	
C 204	QEK41HM-4752	E CAPACITOR	4.7MF 20% 50V	
C 205	QCB41HK-181Y	C CAPACITOR	180PF 10% 50V	
C 206	QCB41HK-181Y	C CAPACITOR	180PF 10% 50V	
C 207	QEK41CM-476	E CAPACITOR	47MF 20% 16V	
C 208	QEK41CM-476	E CAPACITOR	47MF 20% 16V	
C 209	QDYB1CM-103Y	C CAPACITOR	33MF 20% 10V	
C 210	QDYB1CM-103Y	C CAPACITOR	33MF 20% 10V	
C 211	QEK41CM-476	E CAPACITOR	47MF 20% 16V	
C 212	QEK41CM-476	E CAPACITOR	47MF 20% 16V	
C 213	QDV81E2-223Y	C CAPACITOR	22MF 20% 10V	
C 231	QEK41AM-536Z	E CAPACITOR	10MF 5% 50V	
C 232	QDX31EM-223Z	C CAPACITOR	22MF 20% 10V	
C 251	QFV41HJ-104	TF CAPACITOR	10MF 5% 50V	
C 252	QER61AM-226Z	E CAPACITOR	22MF 20% 10V	
C 253	QDYB1CM-103Y	C CAPACITOR	33MF 20% 10V	
C 254	QFV41HJ-104	TF CAPACITOR	10MF 5% 50V	
C 291	QDYB1CM-103Y	C CAPACITOR	33MF 20% 10V	
C 292	QCB41HK-221Y	C CAPACITOR	220PF 10% 50V	
C 293	QCB41HK-221Y	C CAPACITOR	220PF 10% 50V	
C 294	QDYB1CM-103Y	C CAPACITOR	33MF 20% 10V	
C 905	QDYB1CM-103Y	C CAPACITOR	33MF 20% 10V	
CN211	QGF1205F1-15	CONNECTOR	15P1.25PR-FFC	
CN213	QUM135-40DG24	PARA RIBON WIRE	TOLINEAMP	
CN214	QGD2501C1-05Z	SOCKET I.M		
CN215	QGA2001C1-05	SP PLUG ASSY		
CN216	QGF1205F1-04	CONNECTOR	4P1.25PR-FFC	
CN217	QGF1205F1-04	CONNECTOR		
CN303	QGF1205F1-05	CONNECTOR	5P1.25PR-FFC	
CN313	QGF1205F1-05	CONNECTOR	TOFRONTPWB	
D 221	SLR-342VC-T	LED I.M	STANDBY	
D 222	SPR-325MW/L/-T	LED		
D 223	SPR-325MW/L/-T	LED		
D 224	SPR-325MW/L/-T	LED		
D 251	1SS133-T2	DIODE		
D 291	1SS133-T2	DIODE		
D1200	QLF0052-001	FL TUBE		
FW113	QUM135-16DG24	PARA RIBON WIRE		
FW115	QUM135-08Z4Z4	FF FLAT WIRE		
HL201	VYH7237-002	IC HOLDER	TOFRONTPWB	
IC220	NJM4580D	IC	FOR IC250	
IC230	GP1U271X	RM RECIVER	REMDTECT	
IC240	IC-PS1593/G/-T	IC I.M	RESEIC	
IC250	MN101C23DBE	IC	NICON FROM MP	
J 201	QNS0065-001	6.3 JACK	HPJACK	
J 291	QNS0077-001	3.5 JACK	TEXTCOMPU	
JS201	QSW0446-001	R ENCODER	JOG	
L 201	QGL231K-1ROY	INDUCTOR I.M		
L 202	QGL231K-1ROY	INDUCTOR I.M		
L 203	QGL231K-1ROY	INDUCTOR I.M		
Q 222	DTA114YS-T	TR I/M	FOR RED LED	
Q 223	DTA114YS-T	TR I/M	FORGREENLED	
Q 224	DTA114YS-T	TR I.M		

BLOCK NO. 02				
A	REF.	PARTS NO.	PARTS NAME	SUFFIX
Q 225	DTA114YS-T	TR I.M		
Q 226	DTA114YS-T	TR I.M		
Q 291	DTA114YS-T	TR I.M		
Q 292	DTA114YS-T	TR I.M		
R 201	QRE141J-331Y	C RESISTOR	330 5% 1/4W	
R 202	QRE141J-331Y	C RESISTOR	330 5% 1/4W	
R 203	QRE141J-182Y	C RESISTOR	1.8K 5% 1/4W	
R 204	QRE141J-182Y	C RESISTOR	1.8K 5% 1/4W	
R 205	QRE141J-104Y	C RESISTOR	100K 5% 1/4W	
R 206	QRE141J-104Y	C RESISTOR	100K 5% 1/4W	
R 207	QRE141J-103Y	C RESISTOR	10K 5% 1/4W	
R 208	QRE141J-103Y	C RESISTOR	10K 5% 1/4W	
R 209	QRE141J-103Y	C RESISTOR	10K 5% 1/4W	
R 210	QRE141J-103Y	C RESISTOR	10K 5% 1/4W	
R 211	QRE141J-183Y	C RESISTOR	18K 5% 1/4W	
R 212	QRE141J-183Y	C RESISTOR	18K 5% 1/4W	
R 213	QRE141J-473Y	C RESISTOR	47K 5% 1/4W	
R 214	QRE141J-473Y	C RESISTOR	47K 5% 1/4W	
R 215	QRE141J-390Y	C RESISTOR	39 5% 1/4W	
R 216	QRE141J-390Y	C RESISTOR	39 5% 1/4W	
R 217	QRE141J-390Y	C RESISTOR	39 5% 1/4W	
R 218	QRE141J-390Y	C RESISTOR	39 5% 1/4W	
R 219	QRE141J-151Y	C RESISTOR	150 5% 1/4W	
R 220	QRE141J-151Y	C RESISTOR	150 5% 1/4W	
R 221	QRE141J-471Y	C RESISTOR	470 5% 1/4W	
R 223	QRE141J-331Y	C RESISTOR	GREENLED	
R 224	QRE141J-331Y	C RESISTOR	GREENLED	
R 225	QRE141J-331Y	C RESISTOR	GREENLED	
R 227	QRE141J-471Y	C RESISTOR	REDLED	
R 228	QRE141J-471Y	C RESISTOR	REDLED	
R 229	QRE141J-471Y	C RESISTOR	REDLED	
R 231	QRE141J-103Y	C RESISTOR	10K 5% 1/4W	
R 232	QRE141J-103Y	C RESISTOR	10K 5% 1/4W	
R 233	QRE141J-103Y	C RESISTOR	10K 5% 1/4W	
R 234	QRE141J-223Y	C RESISTOR	22K 5% 1/4W	
R 235	QRE141J-103Y	C RESISTOR	10K 5% 1/4W	
R 256	QRE141J-151Y	C RESISTOR	150 5% 1/4W	
R 257	QRE141J-151Y	C RESISTOR	150 5% 1/4W	
R 258	QRE141J-151Y	C RESISTOR	150 5% 1/4W	
R 259	QRE141J-151Y	C RESISTOR	150 5% 1/4W	
R 260	QRE141J-151Y	C RESISTOR	150 5% 1/4W	
R 261	QRE141J-151Y	C RESISTOR	150 5% 1/4W	
R 262	QRE141J-151Y	C RESISTOR	150 5% 1/4W	
R 263	QRE141J-103Y	C RESISTOR	10K 5% 1/4W	
R 266	QRE141J-472Y	C RESISTOR	4.7K 5% 1/4W	
R 267	QRE141J-103Y	C RESISTOR	10K 5% 1/4W	
R 271	QRE141J-152Y	C RESISTOR	1.5K 5% 1/4W	
R 272	QRE141J-182Y	C RESISTOR	1.8K 5% 1/4W	
R 273	QRE141J-272Y	C RESISTOR	2.7K 5% 1/4W	
R 274	QRE141J-392Y	C RESISTOR	3.9K 5% 1/4W	
R 275	QRE141J-152Y	C RESISTOR	1.5K 5% 1/4W	
R 276	QRE141J-182Y	C RESISTOR	1.8K 5% 1/4W	
R 277	QRE141J-272Y	C RESISTOR	2.7K 5% 1/4W	
R 278	QRE141J-392Y	C RESISTOR	3.9K 5% 1/4W	
R 279	QRE141J-152Y	C RESISTOR	1.5K 5% 1/4W	

■ MD Servo P. C. B.

BLOCK NO. 02

REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
R 280	GRE141J-182Y	C RESISTOR	1.8K 5% 1/4W	
R 281	GRE141J-182Y	C RESISTOR	2.7K 5% 1/4W	
R 282	GRE141J-392Y	C RESISTOR	3.9K 5% 1/4W	
R 283	GRE141J-822Y	C RESISTOR	8.2K 5% 1/4W	
R 284	GRE141J-822Y	C RESISTOR	8.2K 5% 1/4W	
R 291	GRE141J-221Y	C RESISTOR	220 5% 1/4W	
R 293	GRE141J-223Y	C RESISTOR	22K 5% 1/4W	
R 294	GRE141J-221Y	C RESISTOR	220 5% 1/4W	
R 295	GRE141J-101Y	C RESISTOR	100 5% 1/4W	
RA201	GRB049J-103	R.NETWORK	10K 5% 1/4W	
S 200	QSW0683-001Z	PUSH SW I.M	>>	
S 201	QSW0683-001Z	PUSH SW I.M	ENTER	
S 202	QSW0683-001Z	PUSH SW I.M	INPUT	
S 203	QSW0683-001Z	PUSH SW I.M	PLAY	
S 210	QSW0683-001Z	PUSH SW I.M	<<	
S 211	QSW0683-001Z	PUSH SW I.M	RECPAUSE	
S 212	QSW0683-001Z	PUSH SW I.M	EJECT	
S 213	QSW0683-001Z	PUSH SW I.M	STOP	
S 214	QSW0683-001Z	PUSH SW I.M	TITLE	
S 215	QSW0683-001Z	PUSH SW I.M	SET	
S 216	QSW0683-001Z	PUSH SW I.M	EDIT	
S 217	QSW0683-001Z	PUSH SW I.M	PLAYMODE	
S 218	QSW0683-001Z	PUSH SW I.M	REPEAT	
S 219	QSW0683-001Z	PUSH SW I.M	DISPLAY	
S 223	QSW0683-001Z	PUSH SW I.M	STANDBY	
S 291	QSW0800-001	LEVER SWITCH		
TW201	QUB230-11DMHP	SIN TWIST WIRE		
TW291	QUB230-11DMHP			
TW921	QUB230-11DMHP			
VR201	QVQ0030-A24	V.RES	HPVOLUME	
X 251	QAX0246-001Z	RESONATOR I.M	8MHZ CERA-LOCK	

BLOCK NO. 03

REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
C 300	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 302	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 307	NCB31HK-222X	C CAPACITOR	2200PF 10% 50V	
C 310	NCB31HK-102X	C CAPACITOR	1000PF 10% 50V	
C 311	NCF21C2-105X	C CAPACITOR	1.0MF +80:-20%	
C 312	NEA20GM-476NZ	E CAPACITOR	47MF 20%	
C 314	NCB31C2-223X	C CAPACITOR	.022MF 10% 16V	
C 315	NCB31HK-102X	C CAPACITOR	1000PF 10% 50V	
C 316	NCF21C2-105X	C CAPACITOR	1.0MF +80:-20%	
C 318	NCB31HK-682X	C CAPACITOR	6800PF 10% 50V	
C 319	NCB31C2-333X	C CAPACITOR	.033MF 10% 16V	
C 320	NCB21AK-105X	C CAPACITOR	1.0MF 10% 10V	
C 321	NCB31HK-472X	C CAPACITOR	4700PF 10% 50V	
C 322	NCB21AK-105X	C CAPACITOR	1.0MF 10% 10V	
C 323	NCB31HK-682X	C CAPACITOR	6800PF 10% 50V	
C 324	NCB21C2-224X	C CAPACITOR	.22MF 10% 16V	
C 325	NCB31C2-103X	C CAPACITOR	.010MF 10% 16V	
C 326	NCB31C2-223X	C CAPACITOR	.022MF 10% 16V	
C 327	NCB31C2-104X	C CAPACITOR	.10MF 10% 16V	
C 328	NCB31C2-104X	C CAPACITOR	.10MF 10% 16V	
C 330	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 333	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 334	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 340	NCB31C2-223X	C CAPACITOR	.022MF 10% 16V	
C 341	NCB31C2-223X	C CAPACITOR	.022MF 10% 16V	
C 342	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 350	NEA20GM-476NZ	E CAPACITOR	47MF 20%	
C 351	NCF21C2-105X	C CAPACITOR	1.0MF +80:-20%	
C 352	NEA20GM-476NZ	E CAPACITOR	47MF 20%	
C 353	NCF21C2-105X	C CAPACITOR	1.0MF +80:-20%	
C 354	NCF21C2-105X	C CAPACITOR	1.0MF +80:-20%	
C 355	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 356	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 357	NCB21HJ-100X	C CAPACITOR	10PF 5% 50V	
C 359	NCB31C2-103X	C CAPACITOR	.010MF 10% 16V	
C 361	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 371	NCB31HJ-100X	C CAPACITOR	10PF 5% 50V	
C 372	NCB31HJ-100X	C CAPACITOR	10PF 5% 50V	
C 375	NCB31C2-103X	C CAPACITOR	.010MF 10% 16V	
C 376	NCB21C2-474X	C CAPACITOR	.47MF 10% 16V	
C 377	NCB31HJ-471X	C CAPACITOR	470PF 5% 50V	
C 379	NCB21C2-474X	C CAPACITOR	.47MF 10% 16V	
C 380	NCB31C2-153X	C CAPACITOR	.015MF 10% 16V	
C 381	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 382	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 390	NCF21C2-105X	C CAPACITOR	1.0MF +80:-20%	
C 400	NEA20JM-226NZ	E CAPACITOR	22MF 20% 6.3V	
C 401	NEA20JM-107NZ	E CAPACITOR	100MF 20% 6.3V	
C 402	NCB31HK-331X	C CAPACITOR	330PF 10% 50V	
C 403	NEA20GM-476NZ	E CAPACITOR	47MF 20%	
C 404	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	
C 410	NEA20JM-107NZ	E CAPACITOR	100MF 20% 6.3V	
C 411	NCF31A2-105X	C CAPACITOR	1.0MF +80:-20%	
C 412	NCF31C2-104X	C CAPACITOR	.10MF +80:-20%	

BLOCK NO. 03

A	REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
	C 421	NCB31HK-561X	C CAPACITOR	560PF 10% 50V	
	C 423	NCB31HK-561X	C CAPACITOR	560PF 10% 50V	
	C 425	NCB31HK-561X	C CAPACITOR	560PF 10% 50V	
	C 427	NCB31HK-561X	C CAPACITOR	560PF 10% 50V	
	C 429	NCB31HK-102X	C CAPACITOR	1000PF 10% 50V	
	C 431	NCB31HK-102X	C CAPACITOR	1000PF 10% 50V	
	C 433	NCB31HK-562X	C CAPACITOR	5600PF 10% 50V	
	C 435	NCB31HK-562X	C CAPACITOR	5600PF 10% 50V	
	C 437	NCB31CK-103X	C CAPACITOR	.010MF 10% 16V	
	C 439	NCB31CK-103X	C CAPACITOR	.010MF 10% 16V	
	C 450	NEA20JM-107N2	E CAPACITOR	100MF 20% 6.3V	
	C 451	NEA20GM-107N2	E CAPACITOR	100MF 20%	
	C 452	NEA20GM-107N2	E CAPACITOR	.10MF +80%-20%	
	C 453	NEA20GM-107N2	E CAPACITOR	.10MF +80%-70%	
	C 455	NEA20GM-107N2	E CAPACITOR	.10MF +80%-20%	
	C 480	NEA20JM-107N2	E CAPACITOR	47MF 20% 6.3V	
	C 481	NEA20JM-107N2	E CAPACITOR	1.0MF +80%-20%	
	C 482	NEA20JM-107N2	E CAPACITOR	22MF 20% 6.3V	
	C 483	NEA20JM-107N2	E CAPACITOR	.10MF +80%-20%	
	C 484	NEA20JM-107N2	E CAPACITOR	10MF 20% 16V	
	C 485	NEA20JM-107N2	E CAPACITOR	.10MF +80%-20%	
	C 486	NEA20JM-107N2	E CAPACITOR	.10MF +80%-20%	
	C 487	NEA20JM-107N2	E CAPACITOR	.10MF +80%-20%	
	C 488	NEA20JM-107N2	E CAPACITOR	10MF 20% 16V	
	C 490	NEA20JM-107N2	E CAPACITOR	.010MF 10% 16V	
	C 491	NEA20JM-107N2	E CAPACITOR	2200PF 10% 50V	
	C 492	NEA20JM-107N2	E CAPACITOR	2200PF 10% 50V	
	C 493	NEA20JM-107N2	E CAPACITOR	1.0MF +80%-20%	
	C 501	NEA20JM-107N2	E CAPACITOR	22PF 5% 50V	
	C 502	NEA20JM-107N2	E CAPACITOR	22PF 5% 50V	
	C 511	NEA20JM-107N2	E CAPACITOR	.10MF +80%-20%	
	C 512	NEA20JM-107N2	E CAPACITOR	.10MF +80%-20%	
	C 515	NEA20JM-107N2	E CAPACITOR	.10MF +80%-20%	
	C 591	NEA20JM-107N2	E CAPACITOR	.10MF +80%-20%	
	CN321	GGF0501F2-21X	CONNECTOR C.M		
	CN407	GGF0501F2-07X	SOCKET		
	CN408	GGF0501F2-08X	SOCKET		
	CN521	GGF1006F2-21W	SOCKET		
	D 310	1SS355-X	DIODE C.M		
	D 451	SC802-06-X	DIODE		
	D 452	SC802-06-X	DIODE		
	IC310	CXA2523AR	IC		
	IC340	TC7S08F-W	IC		
	IC350	CXD2652AR	IC		
	IC390	MN41V4400TT-08	IC		
	IC410	M56758FP-X	IC 5CH DRIVER		
	IC450	BD7910FV-X	IC M-HEAD DRIVE		
	IC480	AK4520A-VF-X	IC A/D.DVA CONV		
	IC485	TK1340M-W	IC 4.0V REG		
	IC500	HD6433045SV06F	MPU		
	IC590	AK9345AF-W	IC		
	K 391	NGR0129-004X	FERRITE BEADS		
	K 491	NGR0129-004X	FERRITE BEADS		
	K 492	NGR0129-004X	FERRITE BEADS		
	K 495	NGR0129-004X	FERRITE BEADS		

BLOCK NO. 03

A	REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
	K 496	NGR0129-004X	FERRITE BEADS		
	K 521	NGR0155-002X	INDUCTOR		
	K 522	NGR0155-002X	INDUCTOR		
	K 523	NGR0129-002X	FERRITE BEADS		
	K 524	NGR0129-002X	MG RESISTOR	5%	
	L 525	NGL114M-1ROX	INDUCTOR		
	L 526	NGL114M-1ROX	INDUCTOR		
	Q 330	2SA1362/G/-X	TRANSISTOR		
	Q 331	DTA114EKA-X	DIGITAL.TR		
	Q 332	DTA1132KA-X	TRANSISTOR		
	Q 333	DTA1132KA-X	TRANSISTOR		
	Q 400	2SA1363/EF/-X	CHIP TRANSISTOR		
	Q 401	2SC2411K/QR/-X	CHIP TRANSISTOR		
	Q 402	DTA1132KA-X	TRANSISTOR		
	R 300	NRSA63J-0ROX	MG RESISTOR	5%	
	R 301	NRSA63J-0ROX	MG RESISTOR	5%	
	R 302	NRSA63J-0ROX	MG RESISTOR	1.2K 5%	
	R 303	NRSA63J-122X	MG RESISTOR	2.2K 5%	
	R 305	NRSA63J-222X	MG RESISTOR	470K 5%	
	R 306	NRSA63J-474X	MG RESISTOR	470K 5%	
	R 310	NRSA63J-331X	MG RESISTOR	330 5%	
	R 311	NRSA63J-183X	MG RESISTOR	18K 5%	
	R 312	NRSA63J-103X	MG RESISTOR	10K 5%	
	R 313	NRSA63J-104X	MG RESISTOR	100K 5%	
	R 314	NRSA63J-133X	MG RESISTOR	13K 5%	
	R 315	NRSA63J-243X	MG RESISTOR	24K 5%	
	R 316	NRSA63J-104X	MG RESISTOR	100K 5%	
	R 317	NRSA63J-103X	MG RESISTOR	10K 5%	
	R 320	NRSA63J-563X	MG RESISTOR	56K 5%	
	R 321	NRSA63J-331X	MG RESISTOR	330 5%	
	R 322	NRSA63J-331X	MG RESISTOR	330 5%	
	R 323	NRSA63J-331X	MG RESISTOR	330 5%	
	R 324	NRSA63J-102X	MG RESISTOR	1.0K 5%	
	R 325	NRSA63J-472X	MG RESISTOR	4.7K 5%	
	R 326	NRSA63J-331X	MG RESISTOR	330 5%	
	R 327	NRSA63J-331X	MG RESISTOR	330 5%	
	R 328	NRSA63J-101X	MG RESISTOR	100 5%	
	R 330	NRSA63J-0ROX	MG RESISTOR	5%	
	R 331	NRSA63J-220X	MG RESISTOR	22 5%	
	R 336	NRSA63J-104X	MG RESISTOR	100K 5%	
	R 337	NRSA63J-1ROX	MG RESISTOR	1.0 5%	
	R 338	NRSA63J-4R7X	MG RESISTOR	4.7 5%	
	R 340	NRSA63J-222X	MG RESISTOR	2.2K 5%	
	R 341	NRSA63J-222X	MG RESISTOR	2.2K 5%	
	R 342	NRSA63J-222X	MG RESISTOR	2.2K 5%	
	R 351	NRSA63J-100X	MG RESISTOR	10 5%	
	R 352	NRSA63J-100X	MG RESISTOR	10 5%	
	R 353	NRSA63J-103X	MG RESISTOR	1.0M 5%	
	R 354	NRVA63D-103X	MF RESISTOR	10K	
	R 355	NRVA63D-103X	MF RESISTOR	10K	
	R 361	NRSA63J-102X	MG RESISTOR	1.0K 5%	
	R 362	NRSA63J-102X	MG RESISTOR	1.0K 5%	
	R 363	NRSA63J-102X	MG RESISTOR	1.0K 5%	
	R 364	NRSA63J-102X	MG RESISTOR	1.0K 5%	

BLOCK NO. 03

A. REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
R 365	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 366	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 367	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 368	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 369	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 370	NRSA63J-104X	MG RESISTOR	100K 5%	
R 371	NRSA63J-103X	MG RESISTOR	10K 5%	
R 372	NRSA63J-103X	MG RESISTOR	10K 5%	
R 373	NRSA63J-103X	MG RESISTOR	10K 5%	
R 374	NRSA63J-104X	MG RESISTOR	100K 5%	
R 377	NRSA63J-684X	MG RESISTOR	680K 5%	
R 378	NRSA63J-332X	MG RESISTOR	3.3K 5%	
R 379	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 380	NRSA63J-105X	MG RESISTOR	1.0M 5%	
R 381	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 382	NRSA63J-151X	MG RESISTOR	150 5%	
R 389	NRSA63J-331X	MG RESISTOR	330 5%	
R 391	NRSA63J-152X	MG RESISTOR	1.5K 5%	
R 392	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 393	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 394	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 395	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 396	NRSA63J-331X	MG RESISTOR	330 5%	
R 397	NRSA63J-331X	MG RESISTOR	330 5%	
R 401	NRVA63D-123X	MG RESISTOR	12K	
R 402	NRVA63D-512X	MG RESISTOR	5.1K	
R 403	NRSA63J-OROX	MG RESISTOR	5%	
R 404	NRSA63J-104X	MG RESISTOR	100K 5%	
R 420	NRVA63D-223X	MF RESISTOR	22K	
R 421	NRVA63D-103X	MF RESISTOR	10K	
R 422	NRVA63D-223X	MF RESISTOR	22K	
R 423	NRVA63D-103X	MF RESISTOR	10K	
R 424	NRVA63D-223X	MF RESISTOR	22K	
R 425	NRVA63D-103X	MF RESISTOR	10K	
R 426	NRVA63D-223X	MF RESISTOR	22K	
R 427	NRVA63D-103X	MF RESISTOR	10K	
R 428	NRVA63D-223X	MF RESISTOR	22K	
R 429	NRVA63D-103X	MF RESISTOR	10K	
R 430	NRVA63D-223X	MF RESISTOR	22K	
R 431	NRVA63D-103X	MF RESISTOR	10K	
R 432	NRVA63D-223X	MF RESISTOR	22K	
R 433	NRVA63D-223X	MF RESISTOR	8.2K	
R 434	NRVA63D-223X	MF RESISTOR	22K	
R 435	NRVA63D-822X	MF RESISTOR	8.2K	
R 436	NRSA63J-223X	MF RESISTOR	22K 5%	
R 437	NRSA63J-302X	MG RESISTOR	3.0K 5%	
R 438	NRSA63J-223X	MF RESISTOR	22K 5%	
R 439	NRSA63J-302X	MG RESISTOR	3.0K 5%	
R 451	NRSA63J-103X	MG RESISTOR	10K 5%	
R 452	NRSA63J-682X	MG RESISTOR	6.8K 5%	
R 453	NRSA63J-1R0X	MG RESISTOR	1.0 5%	
R 454	NRSA63J-1R0X	MG RESISTOR	1.0 5%	
R 455	NRSA63J-223X	MF RESISTOR	22K 5%	
R 481	NRSA63J-100X	MG RESISTOR	10 5%	
R 483	NRSA63J-OROX	MG RESISTOR	5%	

BLOCK NO. 03

A. REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
R 485	NRSA63J-103X	MG RESISTOR	10K 5%	
R 491	NRSA63J-471X	MG RESISTOR	470 5%	
R 492	NRSA63J-471X	MG RESISTOR	470 5%	
R 495	NRSA63J-471X	MG RESISTOR	470 5%	
R 496	NRSA63J-471X	MG RESISTOR	470 5%	
R 501	NRSA63J-105X	MG RESISTOR	1.0M 5%	
R 502	NRSA63J-561X	MG RESISTOR	560 5%	
R 503	NRSA63J-103X	MG RESISTOR	10K 5%	
R 504	NRSA63J-333X	MG RESISTOR	33K 5%	
R 505	NRSA63J-47X	MG RESISTOR	4.7 5%	
R 510	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 511	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 512	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 513	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 514	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 515	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 516	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 517	NRSA63J-104X	MG RESISTOR	100K 5%	
R 518	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 519	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 520	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 521	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 523	NRSA63J-222X	MG RESISTOR	2.2K 5%	
R 524	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 525	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 531	NRSA63J-103X	MG RESISTOR	10K 5%	
R 532	NRSA63J-103X	MG RESISTOR	10K 5%	
R 533	NRSA63J-103X	MG RESISTOR	10K 5%	
R 534	NRSA63J-103X	MG RESISTOR	10K 5%	
R 535	NRSA63J-103X	MG RESISTOR	10K 5%	
R 549	NRSA63J-OROX	MG RESISTOR	5%	
R 551	NRSA63J-104X	MG RESISTOR	100K 5%	
R 552	NRSA63J-104X	MG RESISTOR	100K 5%	
R 553	NRSA63J-104X	MG RESISTOR	100K 5%	
R 554	NRSA63J-104X	MG RESISTOR	100K 5%	
R 555	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 556	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 557	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 558	NRSA63J-102X	MG RESISTOR	1.0K 5%	
R 559	NRSA63J-333X	MG RESISTOR	33K 5%	
R 560	NRSA63J-333X	MG RESISTOR	33K 5%	
R 561	NRSA63J-333X	MG RESISTOR	33K 5%	
R 562	NRSA63J-333X	MG RESISTOR	33K 5%	
R 563	NRSA63J-333X	MG RESISTOR	33K 5%	
R 591	NRSA63J-220X	MG RESISTOR	22 5%	
R 592	NRSA63J-104X	MG RESISTOR	100K 5%	
X 350	NAX0160-001X	CRYSTAL		
X 500	NAX0159-001X	CRYSTAL		

MD Switch P. C. B.

BLOCK NO. 05					SUFFIX
REF.	PARTS NO.	PARTS NAME	REMARKS		
A S001 CN001	QSW0104-001 EWS268-F911	SWITCH SKT WIRE ASSY			

MD Loading P. C. B.

BLOCK NO. 04					SUFFIX
REF.	PARTS NO.	PARTS NAME	REMARKS		
A S003 CN002	QSW0472-001 EWS267-F908	SWITCH SKT WIRE ASSY			

<<MEMO>>



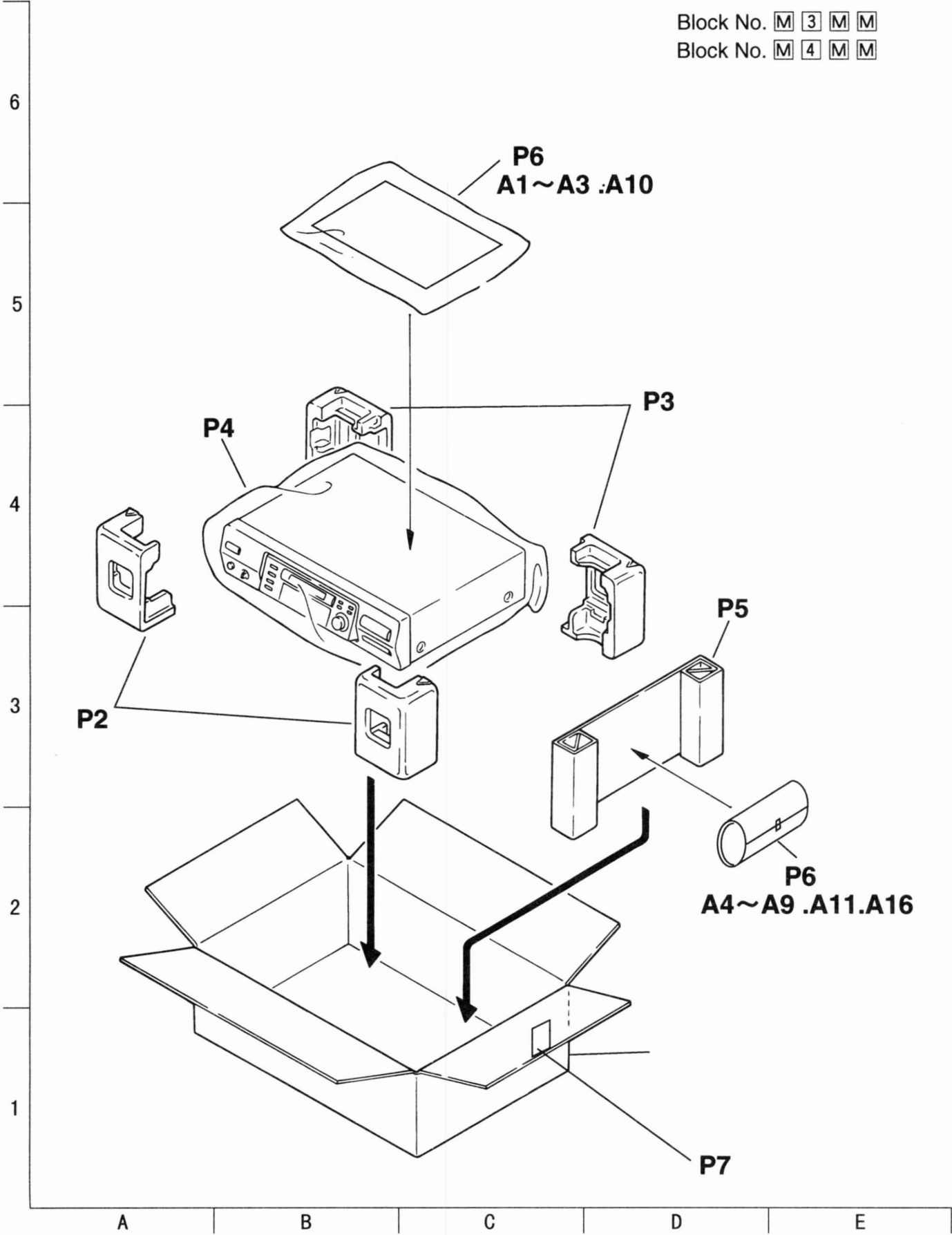
Packing Materials and Accessories Parts List

Block No.

M	3	M	M
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Block No.

M	4	M	M
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■ Accessories Parts List

BLOCK NO. M3MM

△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY	SUFFIX	CLR
	A 1	LVT0222-005A	INST BOOK	ENG	1	B	
		LVT0222-001A	INST BOOK	ENG	1	J	
		LVT0222-002A	INST BOOK	ENG.FRE	1	C	
		LVT0222-003A	INST BOOK	APA.ITA	1	E	
		LVT0222-003A	INST BOOK	ENG.GER.FRE.DUT	1	E	
		LVT0222-004A	INST BOOK	FIN.DAN	1	EN	
		LVT0222-004A	INST BOOK	GER.FRE.DUT.SWE	1	EN	
		LVT0222-006A	INST BOOK	ENG.SPA.CHI	1	US,UY	
	A 2	E43486-340A	SAFETY INST		1	B	
		BT-20044G	SAFETY INST		1	J	
	A 3	BT-51020-1	REGIST CARD		1	J	
		BT-52002-1	W.CARD		1	C	
		BT-54008-2	W.CARD		1	B,E,EN	
	A 4	EWP302-023	SIGNAL CORD		2		
	A 5	EWP805-014	1P PLUG CORD(JE		1		
	A 6	QAM0006-001	OPTICAL CORD		1		
	A 7	QMPE090-183-JD	POWER CORD		1	C,J	
		QMPS050-183-JC	POWER CORD		1	UY	
		QMP39F0-183E	POWER CORD		1	E,EN,US	
		QMP5520-183E	POWER CORD		1	B	
	A 8	RM-SXM448E	REMOCON		1	B,E,EN	
		RM-SXM448E	REMOCON		1	US,UY	
		RM-SXM448J	REMOCON		1	C,J	
	A 9	RO3BPA/2STS	BATTERY		2	C,J	
		RO3UPTT/2STS	BATTERY		2	US,UY	
		RO3UPTT/2STS	BATTERY		2	B,E,EN	
	A 10	VNA3000-202	SVC CENTER LIST		1	B	
		BT-20071B	SVC CENTER LIST		1	C	
	A 11	QAM0109-001	PLUG-CORD		1		
	A 16	QAM0112-001	AC PLUG ADAPTER		1	US,UY	

■ Packing Parts List

BLOCK NO. M4MM

△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY	SUFFIX	CLR
	P 1	LV20149-005A	CARTON BOX		1	C,J	
		LV20149-006A	CARTON BOX		1	US,UY	
		LV20149-006A	CARTON BOX		1	B,E,EN	
	P 2	LV20150-201A	CUSHION		1		
	P 3	LV20151-201A	CUSHION		1		
	P 4	QPC06506515P	POLY BAG		1		
	P 5	LV30631-003A	SHEET		1		
	P 6	QPC02503510P	POLY BAG		2		
	P 7	LV30259-003A	UY LABEL		1	UY	

XM-448BK

JVC

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