ORDER NO. AD9403073C2

Service Manual

Digital Compact Cassette Deck

RS-DC8

DIGITAL dcc COMPACT CASSETTE

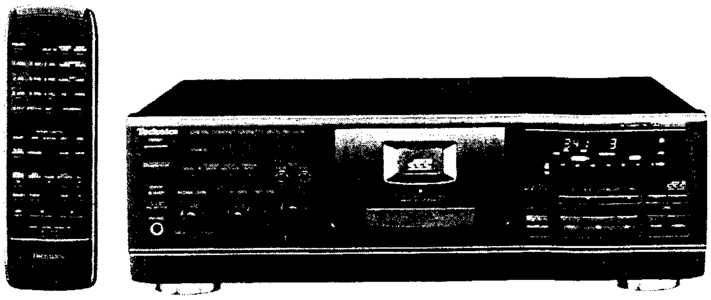
※ DOLBY B·C NR

Colour

(K) ... Black Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe.	(K)
(EB)	Great Britain.	
(EG)	Germany and Italy	



* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

AR1D MECHANISM SERIES

SPECIFICATIONS

■ Digital Recording/Playback

Tape recording system	Stationary head type DCC
Sampling frequencies	
(Analog input recording)	44.1 kHz
(Playback/Digital input recording)	48 kHz, 44.1 kHz, 32 kHz (selected automatically)
No. of quantizing bits	16-bit linear
Audio coding system	PASC
No. of channels	2-channel (stereo)
Frequency response	
(44.1 kHz sampling frequency)	10 Hz – 20 kHz (±0.2 dB)
(48 kHz sampling frequency)	10 Hz – 22 kHz (±0.2 dB)
(32 kHz sampling frequency)	10 Hz – 14.5 kHz (±0.2 dB)
Total harmonic distortion	
(Playback)	0.007% or less (1 kHz, 0 dB)
(Recording/playback)	0.009% or less (1 kHz, 0 dB)
Dynamic range	
(Playback)	95 dB or more (A-weighted)
(Recording/playback)	90 dB or more (A-weighted)
S/N	
(Playback)	95 dB or more (A-weighted)
(Recording/playback)	90 dB or more (A-weighted)
Channel separation	
(Playback)	95 dB or more (1 kHz)
(Recording/playback)	80 dB or more (1 kHz)
Wow and flutter	Below measurable limit

■ Analog Cassette Tape Playback

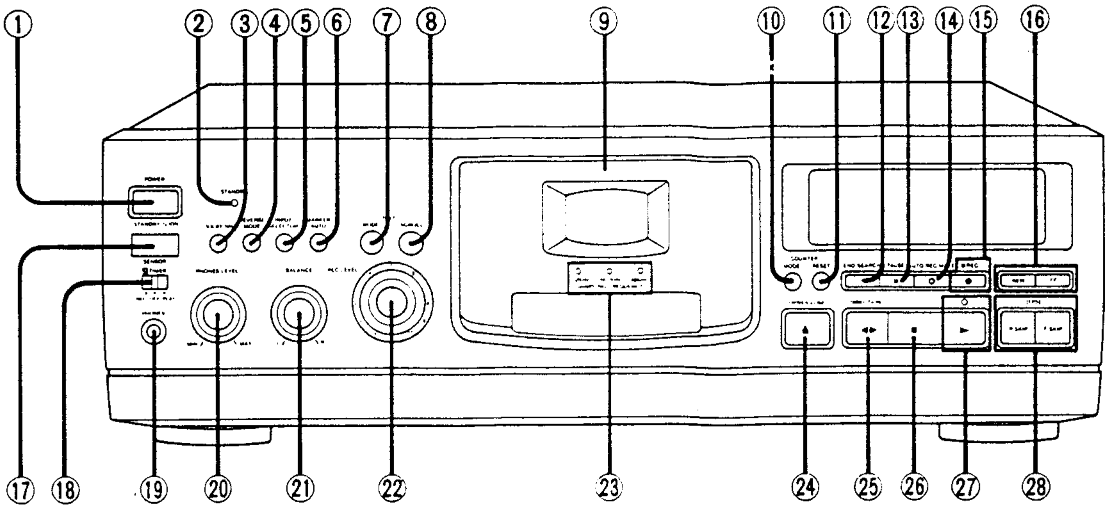
Deck system	Analog compact cassette
Track system	4-track, 2-channel (Stereo)
Frequency response (Dolby NR off)	
Normal	30 Hz – 15 kHz (DIN)
CrO_2	30 Hz – 16 kHz (DIN)
Metal	30 Hz – 17 kHz (DIN)
S/N	
(Signal level = 250 nwb/m, CrO_2 type tape)	
NR off	56 dB (A-weighted)
Dolby B NR on	65 dB (CCIR)
Dolby C NR on	74 dB (CCIR)
Wow and flutter	0.08% (WRMS) ±0.2% (DIN)

■ Terminals

Analog input	
Input sensitivity	100 mV
Input impedance	47 kΩ
Analog output (fixed)	
Output level	500 mV (DCC −12 dB)
Maximam output level	2 V (DCC 0 dB)
Output impedance	1 kΩ
Headphones output	
Maximum level	30 mW + 30 mW (32 Ω load)
Load impedance range	8 – 600 Ω
Digital input	Optical 2 input (with select SW)
Digital output	Optical

Technics

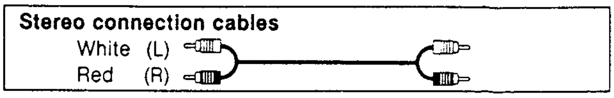
■ FRONT PANEL CONTROLS



No.	Name	Ref. page
①	**Power "STANDBY ⏻/ON" switch (POWER, STANDBY ⏻/ON)** Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.	7
②	**"STANDBY" indicator (STANDBY)** When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.	–
③	**Dolby noise-reduction button (DOLBY NR)**	8
④	**Reverse-mode selection button (REVERSE MODE)**	7
⑤	**Recording input selection button (INPUT SELECTOR)**	13
⑥	**Automatic marker writing button (MARKER AUTO)**	13
⑦	**Text mode selection button (TEXT MODE)**	10
⑧	**Text scroll button (TEXT SCROLL)**	10
⑨	**Cassette holder**	7
⑩	**Counter mode selection button (COUNTER MODE)**	11
⑪	**Counter reset button (COUNTER RESET)**	11
⑫	**End search button (END SEARCH)**	15
⑬	**Pause button (❚❚ PAUSE)**	7, 14
⑭	**Automatic-record-muting button (○ AUTO REC MUTE)**	16
⑮	**Record button/indicator (● REC)**	13
⑯	**Rewind/fast-forward buttons (REW/FF)**	9
⑰	**Remote control signal sensor (SENSOR)**	–
⑱	**Timer switch (TIMER)**	25
⑲	**Headphones jack (PHONES)**	9
⑳	**Headphone level adjustment control (PHONES LEVEL)**	9
㉑	**Recording-balance control (BALANCE)**	15
㉒	**Recording-level control (REC LEVEL)**	15
㉓	**Sampling frequency indicators (SAMPLING FREQUENCY)**	16
㉔	**Open/close button (▲ OPEN/CLOSE)**	7
㉕	**Tape side selection button (◀▶ DIRECTION)**	9
㉖	**Stop button (■)**	7, 14
㉗	**Playback button/indicator (▶)**	7, 13
㉘	**Skip/TPS buttons (TPS/R.SKIP/F.SKIP)**	11

■ CONNECTIONS

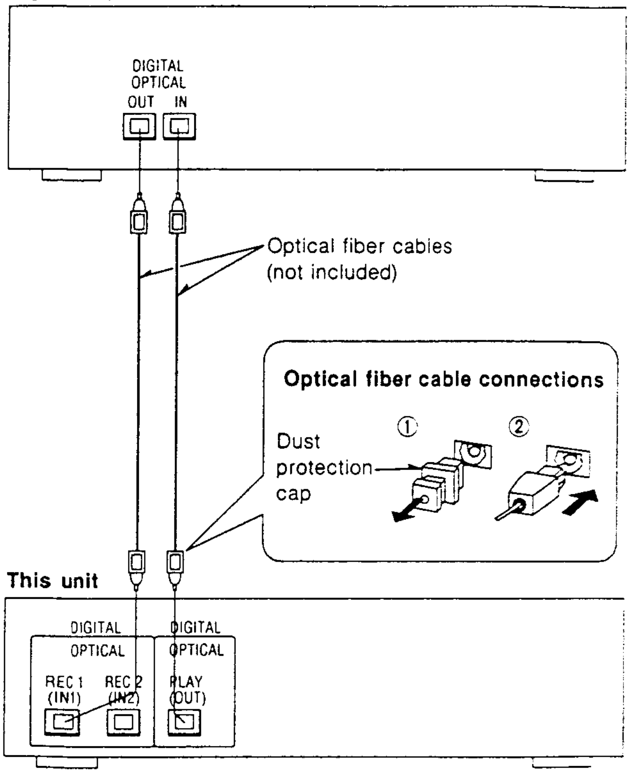
- Before connecting any components to the deck, make sure that they are all turned OFF.
- See the Operating Instructions of each component for detailed connection information.



Connecting the deck to an amplifier with digital optical terminals

(Digital Connection)

Digital Amplifier (not included)



Note on connection using an optical fiber cable

For this connection, you can use the same type of optical fiber cable that you have used for your digital amplifier or CD player.

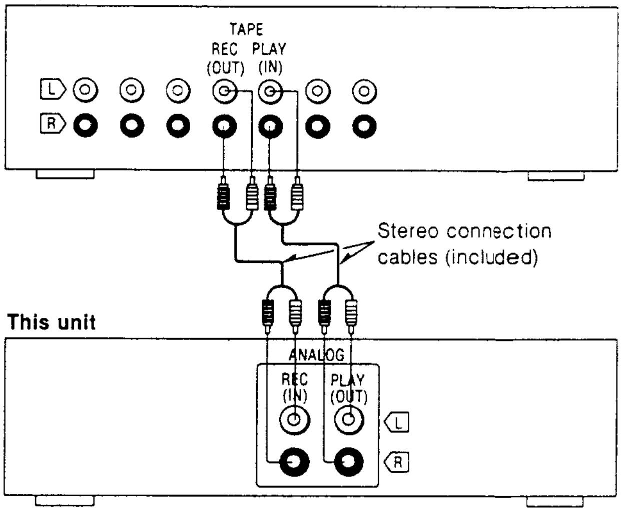
Note

- Never force the optical fiber cables to bend excessively.
- Store the dust protection cap securely, and replace it whenever cables are not connected to the terminals.

Connecting the deck to an amplifier without digital optical terminals

(Analog Connection)

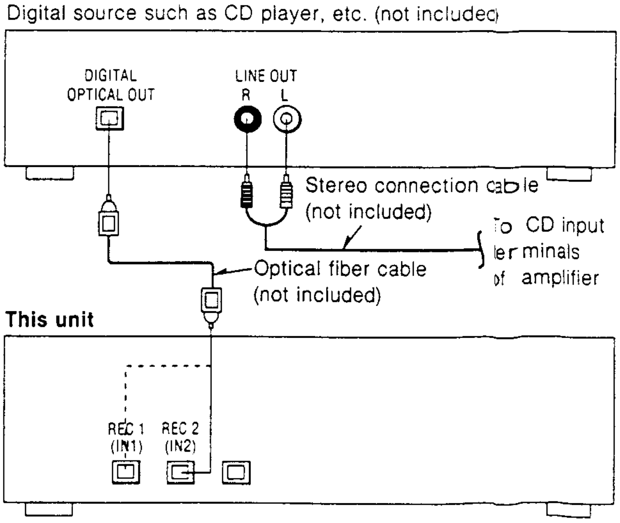
Amplifier (not included)



To digitally record directly from another digital source

Use the optical fiber cable to connect the optical recording input terminal [REC 1 (IN 1) or REC 2 (IN 2)] of this deck to the digital optical out terminal of the CD player, or a second DCC or DAT.

Digital source such as CD player, etc. (not included)

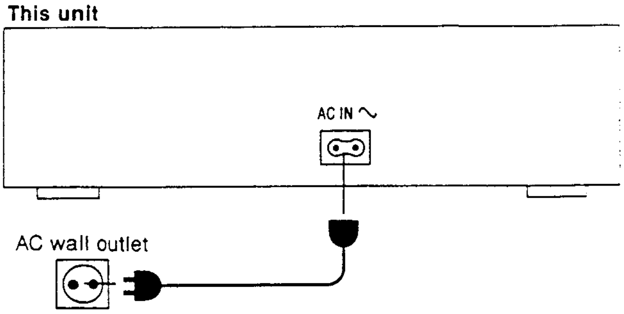


Note

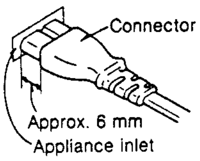
When a component with recording capabilities is connected to the deck, be careful not to set both the component and the deck to the recording standby mode at the same time. This may result in a malfunction.

To connect the AC power supply cord

(For (EB) area only)
BE SURE TO READ THE CAUTION FOR AC POWER SUPPLY CORD ON PAGE 4 BEFORE THE FOLLOWING CONNECTIONS.



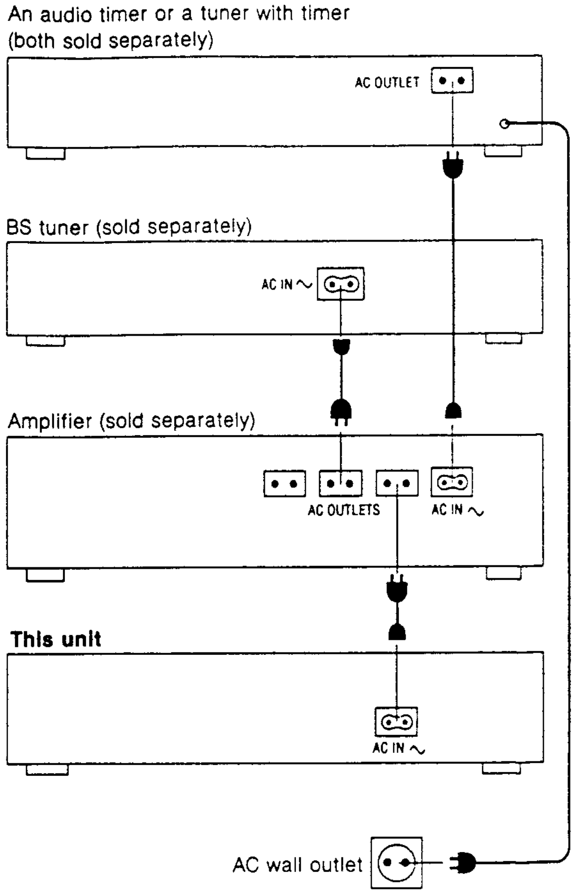
Insertion of Connector
Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing.
However there is no problem using the unit.



Connections for playback or recording using the timer

Connect the power cables between the deck and each unit as shown below. The diagram does not illustrate signal connections. (See the operating instrucions of your timer for further information.)

(Example of a system configuration using a BS tuner)



Notes on installation

Do not install this deck near a tuner or TV.
Since this deck uses high-frequency signals, placing it near a tuner or TV may cause noise or interference with the tuner or TV reception.
This phenomenon may also occur when an indoor antenna is used with the tuner or TV. It is recommended that an outdoor antenna be used.

■ PLAYBACK OF TAPE

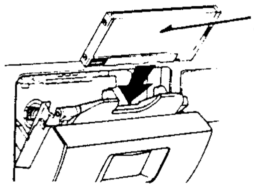
Make sure that the Timer selector is set to the OFF position.

DCC You can use self-recorded DCC tapes and commercially sold DCC music tapes.

1 **Press POWER.**
(The deck is turned ON.)

The above message indicates that no cassette is loaded in the deck.

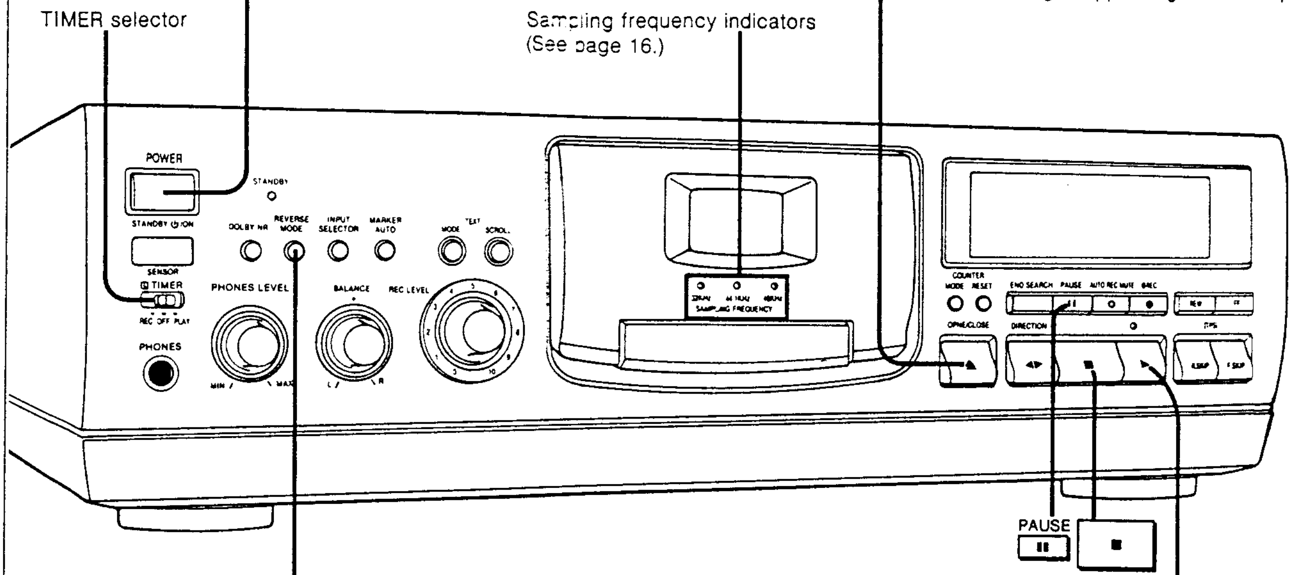
2 **Press OPEN/CLOSE and load the DCC tape as shown below.**



After the tape is loaded, the cassette compartment closes automatically.

For your reference

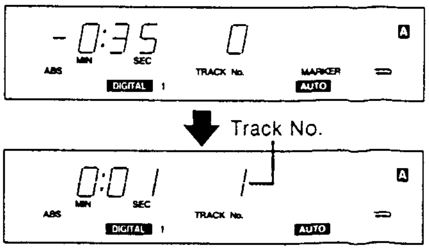
Refer to page 11 for further information about messages appearing on the display.



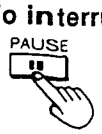
3 **Press REVERSE MODE to select the desired reverse mode.**
Each time this button is pressed, the reverse mode indicator "⊐" or "⟲" is displayed alternately.

⊐ : Both tape sides are played, and then the tape stops automatically.
⟲ : Playback of both tape sides is repeated up to 8 times, and then the tape stops automatically.

4 **Press ▶.** (The indicator above the button lights up and playback starts.)
When the deck plays a DCC tape from its beginning, it takes a while for the deck to start playback since the deck reads the time information written onto the DCC tape.

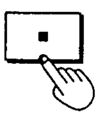


To interrupt playback temporarily



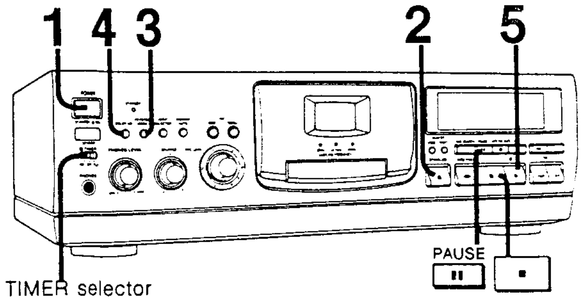
Press ❚❚ PAUSE.
Press ▶ to continue playback (or press ❚❚ PAUSE again).

To stop playback



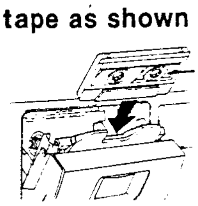
Press ■.

ACC You can play ACC tapes such as normal, CrO_2 and metal tapes.



1 Press POWER. (The deck is turned ON.)

2 Press OPEN/CLOSE and load the ACC tape as shown below.



After the tape is loaded the cassette compartment closes automatically.

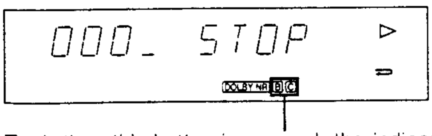
3 Press REVERSE MODE to select the desired reverse mode.

: Both sides (forward side ▷ and backward side ◁) are played, and then the tape stops automatically.

: Playback of both sides are repeated up to 8 times, and then the tape stops automatically.

4 Press DOLBY NR to select the specific type of Dolby noise-reduction system desired.

(Select the same type that was used for recording.)



Each time this button is pressed, the indication on the display changes in the following order:

B → C → No indication

Commercially sold ACC tapes with the Dolby NR (double-D symbol " DD ") mark have been recorded with the Dolby B NR system. When using a tape that has not been recorded with the Dolby NR system, set the Dolby NR system to OFF (no indication on the display).

5 Press ▶. (Playback starts.)

About the Dolby noise-reduction system *ACC only*

The Dolby noise-reduction system is designed to effectively reduce the annoying high-frequency "hissing" noise typical of cassette tapes. During recording, the system functions to increase the high-frequency sound level, the sound, and then, during playback, that same portion is weakened to bring it back to the previous level.

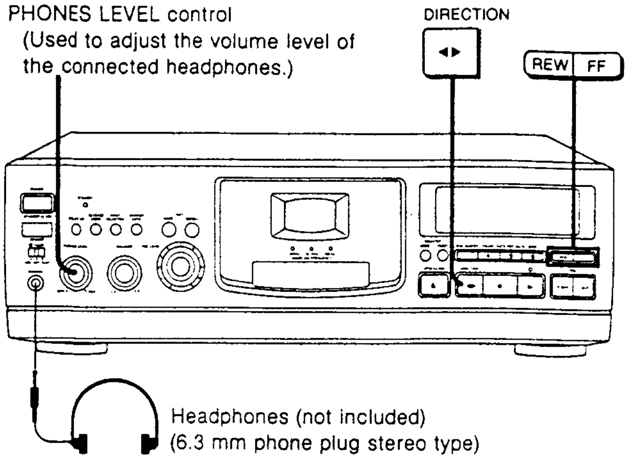
This unit includes two types of Dolby noise-reduction systems, the Dolby B NR-type and C NR-type.

Dolby B-type noise-reduction

Noise is reduced to about one-third.
Use this system when playing back tapes recorded by the Dolby-B noise-reduction system, such as prerecorded music tapes, etc.

Dolby C-type noise-reduction

Noise is reduced to about one-tenth.
Use this system for the recording and playback of sound sources that have a wide dynamic range and good tone quality, such as FM broadcasts of live performances, etc., and for playing back such tapes.

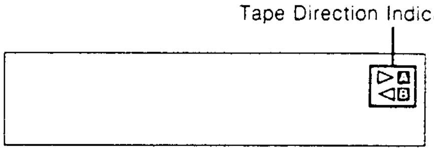


To change the tape side

DIRECTION

Press ◀▶ DIRECTION.

Each time this button is pressed, the tape direction indicator changes alternately as shown below.



When using a DCC tape, the indicator A or B indicates the side being played.
When using an ACC tape, the indicator ▷ is displayed for the forward side and ◁ for the backward side.

To rewind and fast-forward the tape

Press REW or FF in the stop mode.

To rewind	To fast-forward
	

If the REW button is pressed at the end of the tape, or the FF button is pressed at the beginning of the tape, the tape will wind either backward or forward at a higher speed.
(The indication "H" appears on the display during high-speed tape winding.)

For your reference

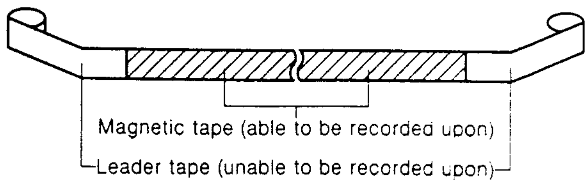
Sometimes, the high speed function will not be performed if either the FF or REW button is pressed in the middle of the tape.

When using the headphones

- Reduce the volume level with the PHONES LEVEL control and connect the headphones to the PHONES Jack of the deck.
- Avoid listening for prolonged periods of time to prevent hearing damage.

Quick Reverse Function *DCC only*

This function detects the leader tape (transparent tape) and changes the tape direction for playback (recording) automatically in about 1 second.



This leader tape detecting function becomes operational about 15 seconds after playback (or recording) starts. This function prevents the leader tape from being detected when playback (or recording) starts from the beginning of the tape. If this function does not work, the tape will reverse at the end.

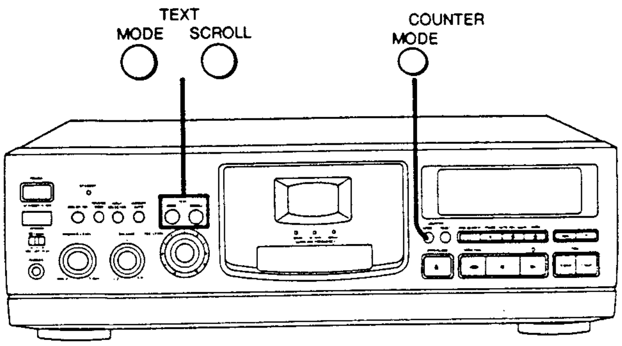
Note

- This function may not work correctly in the following cases:
  - When tapes with colored leader tapes are used,
  - When dirty tapes or tapes with a very thin magnetic coating are used, and
  - When the deck's cassette compartment is exposed to strong light such as direct sunlight.
- This function may not work depending on the type of DCC tapes.

CHANGING THE INFORMATION OF THE DISPLAY DCC only

To change the display of text information display

On the display, the text information (such as the album title, artist name, track title, etc.) which has been written onto a commercially sold DCC music tape can be displayed.
The deck can also display text information which you have personally written onto a self-recorded DCC tape. (See page 26.)



TEXT
MODE

Press TEXT MODE during playback.

How to display text information of a commercially sold DCC music tape:

Pressing the TEXT MODE button changes the text information on the display in the following order:
ALBUM TITLE → ARTIST → TRACK TITLE

① **Album title**

ALBUM TITLE ➡ PIANO WORKS

(Several seconds later)

② **Artist name**

ARTIST ➡ BEETHOVEN

(Several seconds later)

③ **Current track title**

TRACK TITLE ➡ MOONLIGHT

(Several seconds later)

Using a self-recorded DCC tape

Each time the TEXT MODE button is pressed, text information that has been written by the procedure described on page 26 is displayed after the "TEXT 1", "TEXT 2", "TEXT 3" or "TEXT 4" indications.

Note

Text information is written onto the beginning of each track of your recorded DCC tape. Therefore, if you start playback midway through the track, you cannot display the text information from that track.

When a line of text information has been written using 12 characters or more,

TEXT
SCROLL

Press TEXT SCROLL.

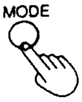
The characters will advance sequentially.

If no text information has been written on the tape or before text information is read,

"--------" will appear on the display.

To display time information

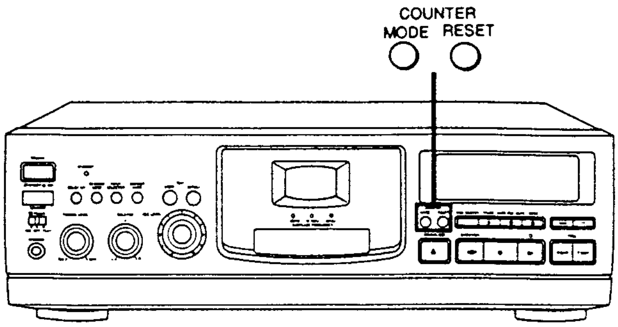
COUNTER
MODE



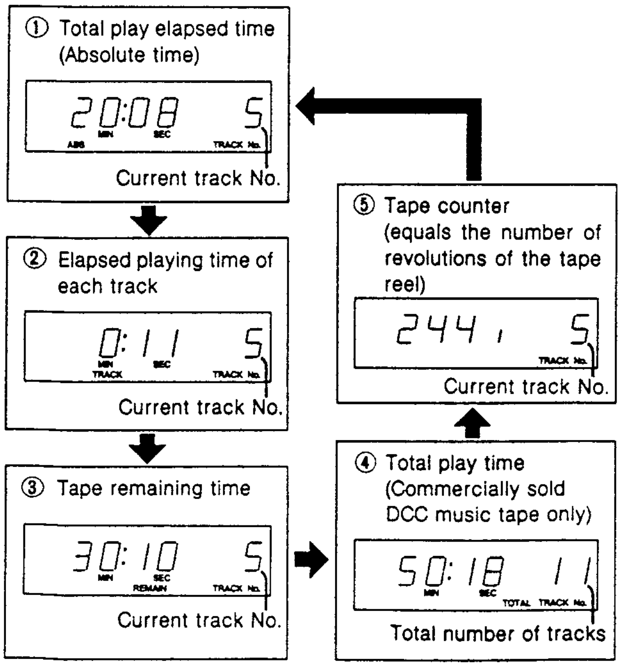
Press COUNTER MODE.

To change time information on the display

If you are using an ACC tape, only the tape counter indication will be displayed.



Press COUNTER MODE.
Each time this button is pressed, the display is changed in the following order:

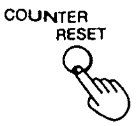


The display "-:--:-----" appears if the track No. or time information is not written onto the tape correctly.

For your reference

- The absolute time (the total playing elapsed time) contains unrecorded segments between each track. Therefore, when a commercially sold music tape is played, the absolute time indicated on the display may be several seconds longer than the total play elapsed time listed on the commercially sold music tape label.
- If the side is changed during playback or the FF or REW button is pressed, the tape remaining time display is changed to the "-:--:-----" display.

To reset the tape counter to "000"



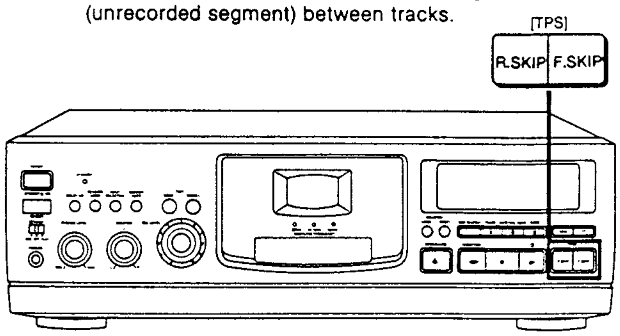
Press COUNTER RESET in the tape counter mode.
The counter display returns to "000."

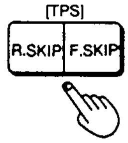
■ PLAYBACK OF THE DESIRED TRACK

Skip play

DCC The Skip Play function allows you to access the desired track marked with a START marker.

ACC The TPS (Tape Program Sensor) function allows you to access the desired track by detecting the interval (unrecorded segment) between tracks.





■ To skip to the beginning of the current track or the previous track

Press R.SKIP.

■ To skip to the beginning of the following track

Press F.SKIP.

Tracks are skipped according to the number of times the R.SKIP or F.SKIP buttons are pressed.

- When the R.SKIP or F.SKIP button is pressed in the stop (or pause) mode, the deck will return to the stop (or pause) mode after the R.SKIP or F.SKIP is performed.
- Up to 99 tracks can be skipped.

Note

The Skip play may not function properly in the following cases:

When a DCC tape is used
When two START markers are written too close each other.

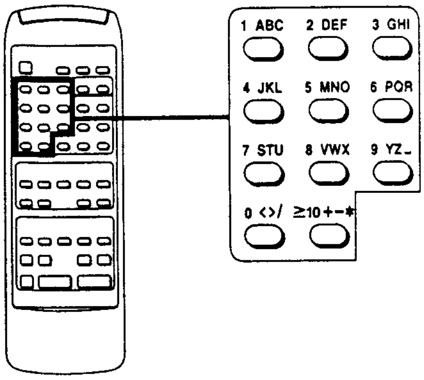
When an ACC tape is used

- when the length of a blank section or the interval between tracks is 3 seconds or less.
- when there is a section with an extremely low volume level or unrecorded segment in the recording.
- when the R.SKIP or F.SKIP button is pressed within 10 seconds after the beginning of a current track, or before the beginning of the following track.
- when the tape has been recorded with fade-ins (gradual increase in signal strength) and fade-outs (gradual loss of signal).

Accessing to song tracks by their track Nos. DCC only

This function works only with commercially sold DCC music tapes or self-recorded DCC tapes onto which track Nos. have been written.

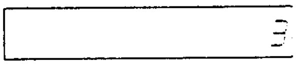
(With Remote Control Only)



3 GHI

Input the desired track No. with the alphanumeric buttons on the Remote Control.

Example: If track No. "3" is input during playback,



The deck locates the beginning of the designated track and then returns to its previous mode (ie. playback, stop or pause).

■ To select track Nos. 10−99

Press the " ≥10+-* " button and then input the desired track No.

Example: To input "15", press the following buttons within 4 seconds.

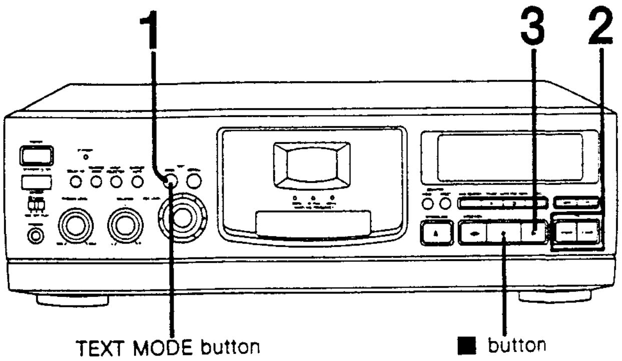
≥10+-* → 1 ABC → 5 MNO

(within 4 seconds) (within 4 seconds)

• Up to 99 tracks can be selected.

Selecting tracks by their track titles DCC only

This function is operational only with commercially sold DCC music tapes.
Up to 16 tracks can be selected by their track titles.

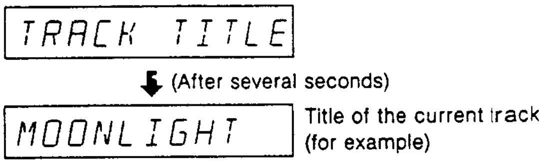


Before operation

Press TEXT MODE to let the deck read text information and then press ■ button.

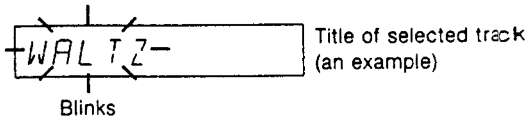
1 Press TEXT MODE until the "TRACK TITLE" indication appears on the display.

Each time this button is pressed, the display changes in the following order:
ALBUM TITLE → ARTIST → TRACK TITLE



2 Select the desired title by pressing the R.SKIP or F.SKIP.

Press R.SKIP to change the track title display to the reverse direction.
Press F.SKIP to change the track title display to the forward direction.



3 Press ▶ while the track title display blinks (this lasts for about 10 seconds,)

The deck locates the track of the designated tracktitle and starts playback.

• When the ▶ button is not pressed within the 10 seconds while the track title is blinking, the display returns to the display mode of operation step 1 above.

For your reference

After 17 tracks or more, select the desired track by track No. In this case, the track title will appear on the display after the playback starts.

■ RECORDING

Make sure that the TIMER selector is set to the OFF position.

You cannot record onto a tape with the erasure-protect switch set to the protect position (close position) or commercially sold DCC music tapes.

Preparation Turn on the deck and load a recordable DCC tape into it with the label side facing toward you.

1 [After selecting side A with ◀▶ DIRECTION button,]

Press REW to fully rewind the tape to its beginning.

Note

- Be sure to press REW so that the absolute time (see the bottom of the next page) can be written onto the tape correctly.
- Do not press any other button until the tape stops automatically after tape rewinding.

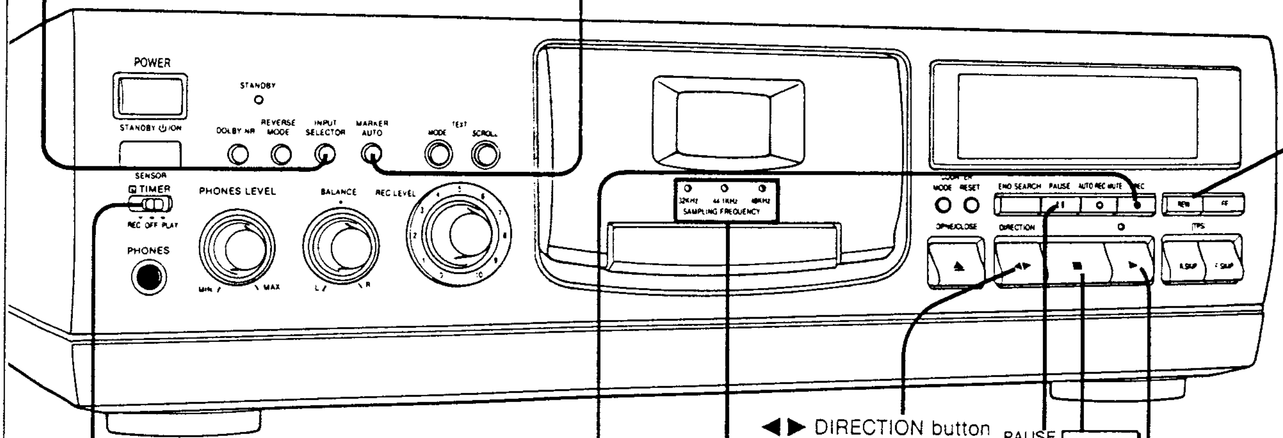
2 Select the marker writing mode by pressing MARKER AUTO.

(See next page for further information about the marker writing mode.)
For normal use, select the AUTO mode.

3 Select recording input mode by pressing INPUT SELECTOR.

Each time this button is button is pressed, the indication on the display changes in the following order:
DIGITAL 1 → DIGITAL 2 → ANALOG

DIGITAL 1: Recording through the "DIGITAL 1" terminal
DIGITAL 2: Recording through the "DIGITAL 2" terminal
ANALOG: Recording through the "ANALOG" terminals



◀▶ DIRECTION button

PAUSE

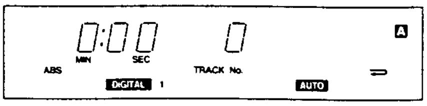
TIMER selector

Sampling frequency indicators
(See page 16.)

4 Press ● REC.

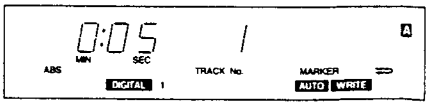
(The LED above the ● REC button lights up.)
There is a 10-second "lead-in area" written onto the tape (see page 16). This is a digital process unique to DCC tapes. Then, the deck is set to the recording standby mode. (The LED above the ▶ button lights up.)

Display after lead-in area writing is finished



If you've selected the ANALOG input in operation step 3 above, be sure to adjust the recording level/balance before proceeding to step 5 according to the section "Adjusting the recording level/balance" on page 15.

5 Press ▶ to start recording and then, start playing the recording source.



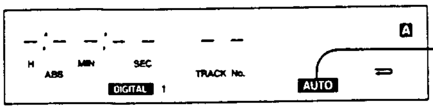
Recording stops at the end of side B irrespective of the REVERSE MODE button setting ( ) or ( ).

Note

Do not press the INPUT SELECTOR button during recording to change the recording input mode.

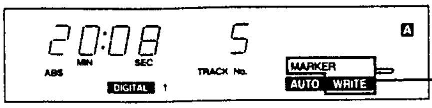
Marker writing mode

In addition to the audio signals or time information, you can write a "marker" that controls the tape movement onto the tape. (See pages 17 and 18.)
There are two types of marker writing modes: AUTO and MANUAL. These can be selected by pressing the MARKER AUTO button.
In the AUTO writing mode:
The **AUTO** indicator appears on the display.
In the MANUAL writing mode:
The **AUTO** indicator disappears.



This indication appears:

After finishing recording by pressing the ■ button, the END marker indicating the recording end position is written onto the tape automatically.



This indication appears:

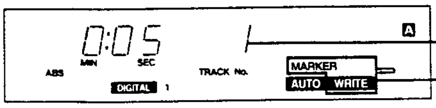
During playback, when the tape comes to the position where the END marker is written onto the tape, the deck operates according to the REVERSE MODE button setting as shown below:

In ⮐ mode: Tape stops at the END marker position.
In ⟲ mode: Tape is played repeatedly from the beginning of the tape to the END marker position 8 times, and then stops automatically.

AUTO writing mode

The "START marker" that marks the beginning of each track (including the track No.) is written automatically onto the tape in the following cases:
This is helpful when recording from a DCC music tape, CD or DAT which contains track Nos.
- When the input signal contains a signal indicating the beginning of a track. (Only during digital input recording)
- When there is an unrecorded segment or a section with an extremely low level for 3 seconds or more (i.e. at which the peak level meter does not fluctuate).

For your reference
If you repeatedly record the same track of a CD with the digital input using the CD player's repeat play function, the START marker may not be written onto the second recording of the track.



Track No.
This indication appears:

MANUAL writing mode

Only the first START marker is written onto the tape. Additional START markers are not written onto the tape automatically.

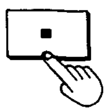
Therefore, select the MANUAL writing mode when recording a source which does not contain track Nos. (such as BS broadcast), or when you want to write markers manually onto a desired position during the recording of a CD.

Refer to pages 19–21 on how to write markers when you select the MANUAL writing mode.

To interrupt recording temporarily

Press ❚❚ PAUSE.
Press ▶ to continue recording (or press ❚❚ PAUSE again).

To stop recording



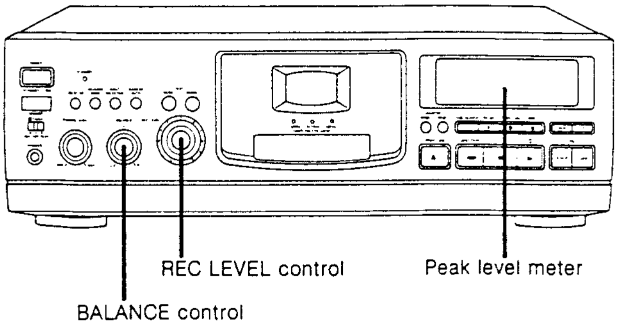
Press ■.
It takes about 2 or 3 seconds until the deck stops completely.

What is absolute time?
Absolute time is the total elapsed time of recording or playback from the beginning of the tape to the current tape position. If the absolute time is not recorded correctly, it is not possible to check the current tape position or locate the desired tape position accurately.

Your attention is drawn to the fact that recording prerecorded tapes or discs on other published or broadcast material may infringe copyright laws.

Adjusting the recording level/ balance *(only during ANALOG input mode)*

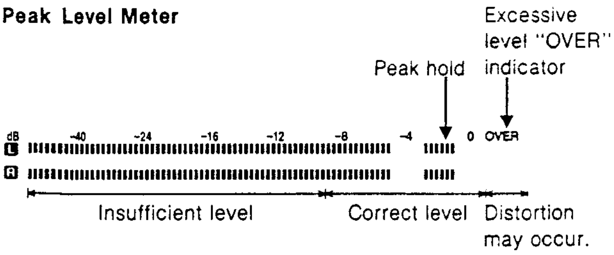
This adjustment should be made after pressing the ● REC button (step 4 of recording on page 13).
Make sure that the deck is in the recording standby mode, start playing recording source and make adjustments as follows:



Recording level adjustment

By observing the peak level meters, rotate the REC LEVEL control so that the indicators reach "0 dB" at the track's peak level as closely as possible without exceeding it.
The scale bar of the meter holds the peak level for about 1 second. This function lets you know the maximum input.

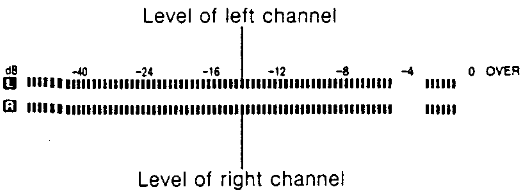
Peak Level Meter



Note
If the level meter exceeds "0 dB" and reaches the "OVER" indication, sound at this level will be distorted during playback.

Recording balance (left/right) adjustment

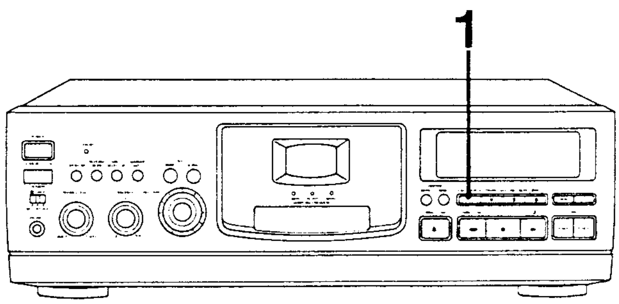
Set the BALANCE control to the center position for recording from a regular stereo source.
If the balance of the left and right channels have to be adjusted for recording, e.g. from a monaural source, make adjustments by observing the left-right balance of the peak level meter.



Append editing

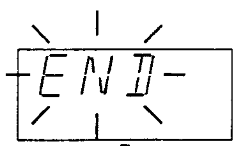
This function enables you to append (join) a new recording to the end of an existing recording on the tape with consecutive absolute time.
It is necessary to record the absolute time (see page 14) sequentially without interruption onto the tape if you want to write the track Nos and time information up to the end of the tape.
To write the absolute time onto the tape sequentially, perform the END SEARCH operation before starting recording as shown below.

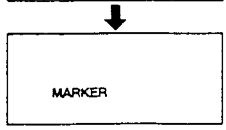
What is END SEARCH?
This function detects the tape position automatically where the previous recording ended (i.e. where the END marker was written onto the tape).
Note
When using a tape onto which any END marker has not been written, (in other words, a tape recorded in the MANUAL writing mode), be sure to write the END marker at the end of the previous recording. (See page 20.)



[In the stop mode at any tape position,]

1 Press END SEARCH.
The END SEARCH locates the tape position where the END marker is written and then stops the tape.



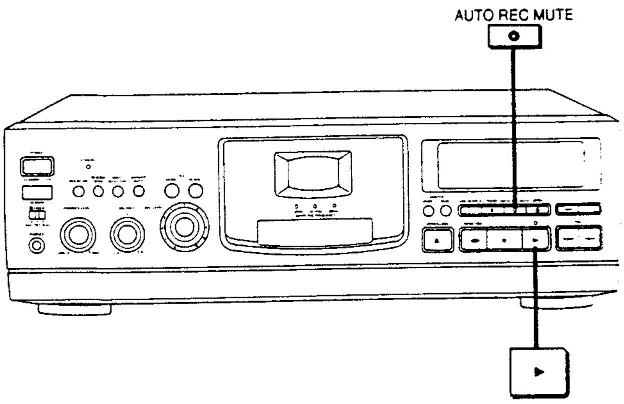


2 Start recording by following steps 2–5 on page 13.
The END marker written onto the tape where the Append Editing starts is erased and a new START marker (including track No.) is written.

For your refernce
- The END SEARCH also detects blank segments where both audio and control signals have not been recorded for about 10 to 30 seconds, and the deck then stops the tape. If you perform the Append Editing from this position, the track No. may not be written onto the beginning of a track.
- When there is more than one END marker (or 10-to-30-second blank intervals on the tape as mentioned above), the first END marker or the blank intervals are detected and the deck automatically stops the tape.

To create unrecorded segments (blank interval):

You can make a 4-second unrecorded segment or 4-second blank interval between tracks to avoid recording unwanted materials during recording of broadcasts with a BS tuner, etc

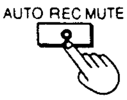


To make a 4-second unrecorded segment

Quickly press AUTO REC MUTE during recording.

The tape will advance for 4 seconds without recording audio signals and the deck will be set to the recording standby mode automatically.

To make a unrecorded segment more than 4 seconds



Hold AUTO REC MUTE pressed as desired.

Releasing this button automatically sets the deck to the recording standby mode.

To continue recording

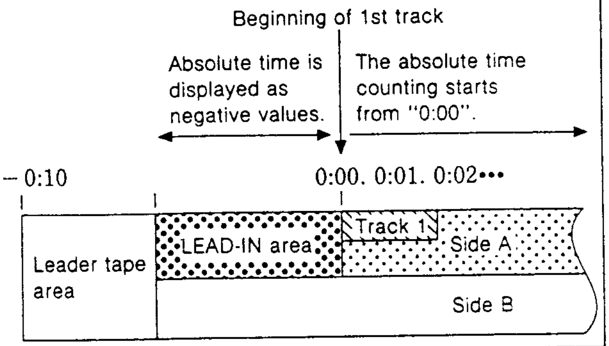
Press ▶.

For your reference

The START marker (including track No.) is written onto the tape position where recording resumes.

LEAD-IN Area

The LEAD-IN area between the leader tape and the beginning of the first track is an area where control signals (for ensuring correct playback) of digital audio signals are written. When the deck's ● REC button is pressed with the tape fully rewound, the control signals are written in this area.



Sampling frequency indicators

Because the deck has three types of sampling frequencies for digital signals (i.e. 48 kHz, 44.1 kHz and 32 kHz), the deck can perform recording of digital signals from not only CDs but also from DAT and other digital sources.

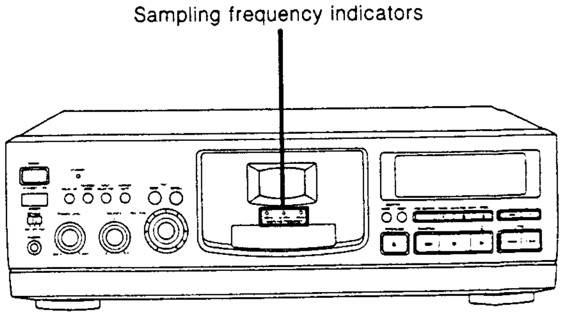
The sampling frequency indicators light up according to the current sampling frequency of input signals.

48 kHz: Used for DAT tapes recorded with analog input signals, etc.

44.1 kHz: Used for CD, commercially sold DCC music tapes or analog-recorded DCC tapes, etc.

32 kHz: Used for a source with a sampling frequency of 32 kHz.

(The 44.1 kHz indicator lights up during analog input recording.)

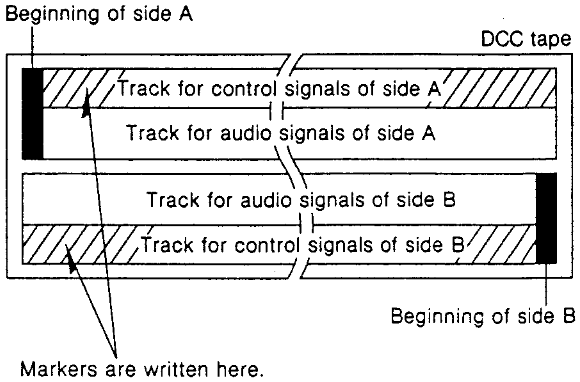


■ MARKERS (Type and Function)

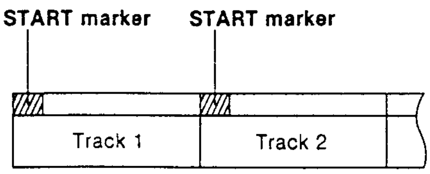
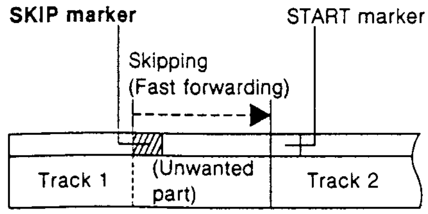
You can write various markers onto the tape (control signals for tape movement) that are helpful for editing onto the DCC tape in addition to the audio signals and time information. Five types of markers can be written onto the DCC tape in the two writing modes (AUTO and MANUAL): These are as follows:

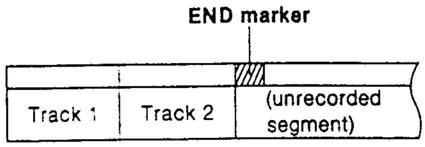
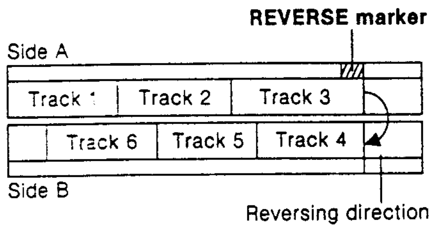
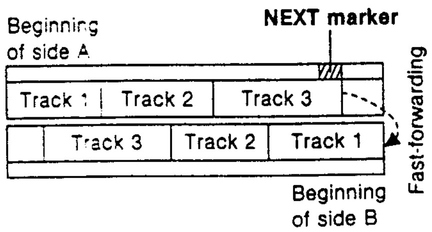
Note
You cannot add any markers to a commercially sold DCC music tape.

Position where a marker can be written



You cannot write more than one marker onto the same position, or onto positions set very closely to each other.

Purpose	Marker name	Function	AUTO Writing	MANUAL Writing During recording	MANUAL Writing After recording
To access the desired track (Skip play)	**START marker**	This is used to mark the beginning of each track and enables you to access the desired track during Skip play. 	Operational (See page 14.)	Operational (See page 19.)	Operational (See page 19.)
To skip unwanted material such as commercials or unrecorded segment during playback	**SKIP marker**	This is used to mark the beginning of the unwanted material or inaudible parts you want to skip after recording is finished. This part will fast forward to the next track marked with the START marker automatically. 	Non-operational	Non-operational	Operational (See page 19.)

<table>
<tr><th rowspan="2">Purpose</th><th rowspan="2">Marker name</th><th rowspan="2">Function</th><th rowspan="2">AUTO Writing</th><th colspan="2">MANUAL Writing</th></tr>
<tr><th>During recording</th><th>After recording</th></tr>
<tr><td>To mark the end position of recording (This is helpful for Append Editing.)</td><td>END marker</td><td>The deck accesses the end of previous recording when the END SEARCH is performed (see page 15). This enables you to perform Append Editing from this point.
</td><td>Operational (See page 14.)</td><td>Non-operational</td><td>Operational (See page 20.)</td></tr>
<tr><td>To skip the remaining unrecorded segment of side A, and then access side B in order to continue recording or playback quickly.</td><td>REVERSE marker</td><td>During recording or playback of side A, the tape side is reversed to B at the position marked with the REVERSE marker on side A. (This marker cannot be written onto side B.)
</td><td>Non-operational</td><td>Operational (See page 20.)</td><td>Operational (See page 20.)</td></tr>
<tr><td>To fast forward the tape automatically from the remaining unrecorded segment of side A to the beginning of side B (This is helpful to separately record different albums onto side A or B.)</td><td>NEXT marker</td><td>During recording or playback of side A, the tape is fast forwarded from the position marked with the NEXT marker to the beginning of side B. (This marker cannot be written onto side B.)

Note
The first track on side B is recorded as track 1, and the absolute time writing starts from 0:00.</td><td>Non-operational</td><td>Operational (See page 21.)</td><td>Operational (See page 21.)</td></tr>
</table>

Renumbering function

The markers written onto the tape are checked and all track Nos. are renumbered in sequence automatically by this function. After writing markers in the MANUAL writing mode, be sure to renumber after the writing is finished. (See page 21 for further information.)

■ MARKER WRITING IN MANUAL MODE DCC only

Before writing markers

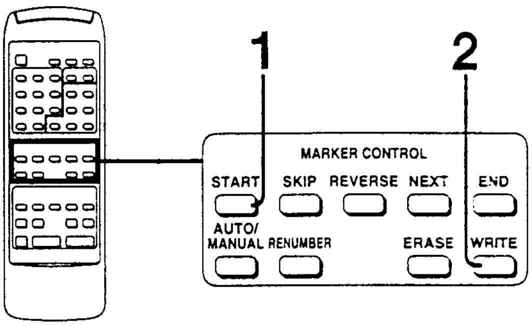
- Set the erasure-protect switch on the DCC tape to the record position.
- Select the MANUAL writing mode. (See page 14.)

To write the START marker
(during or after recording)

This is used to access to the desired track.

To write during recording

(With Remote Control Only)



[During recording, before the position where you want to write,]

1 Press START.
Press again when you want to delete the "STA" display.

2 Press WRITE at the desired position.

To write after recording is finished

[During playback, before the position where you want to write,]

1 Press START.

2 Press WRITE at the desired position.
(Playback sound is not heard while the marker is being written.)

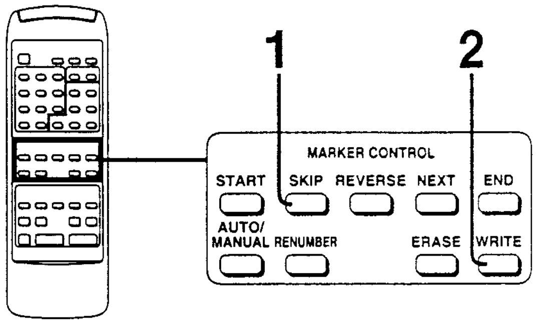
For your reference
In the pause or stop mode, you can also write the START marker onto the tape using the same operation as instructed above.

Track numbers cannot be input if the START marker is written after recording. Be sure to do the renumbering after the marker writing is finished. (See page 21.)

To write the SKIP marker
(after recording)

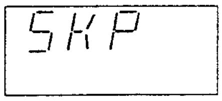
This is used to skip unwanted material during playback.

(With Remote Control Only)



[During playback, when you are right before the position where you want to write,]

1 Press SKIP.
Press again when you want to delete the "SKP" display.



2 Press WRITE at the desired position.
(Playback sound is not heard while the marker is being written.)

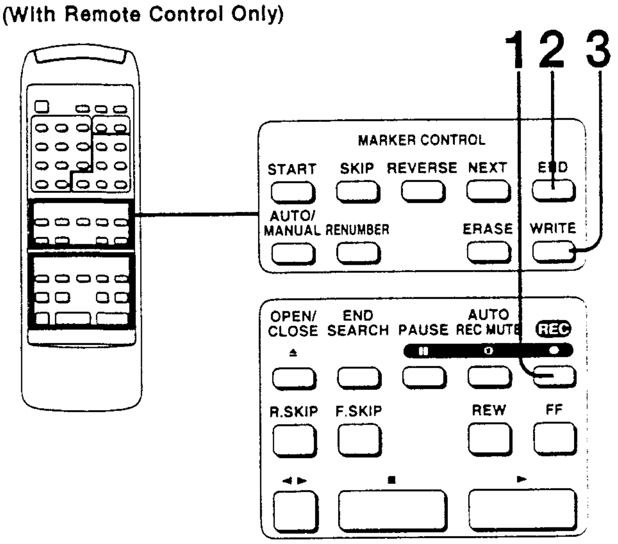
For your reference
In the pause or stop mode, you can also write the SKIP marker onto the tape using the same operation as instructed above.

To write the END marker

(after recording)

This is used to mark the end position of recording.

(With Remote Control Only)

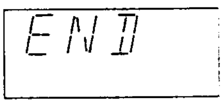


[At the position where you want to write the marker, after stopping the tape,]

1 Press ● REC to set the deck to the recording standby mode.

2 Press END.

Press again when you want to delete the "END" display.



3 Press WRITE.

After writing is completed, the deck changes from the standby mode to the stop mode.

For your reference

The END marker written onto the tape does not allow further playback of the next part. If you wish to play the tape after the END marker, press the FF button to advance the tape and then play.

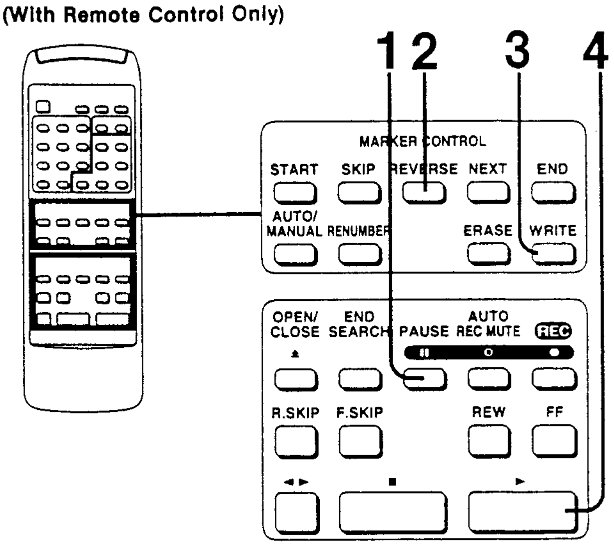
To write the REVERSE marker

(during or after recording)

This is used to skip the remaining part of side A and continue recording onto side B quickly.

Writing during recording

(With Remote Control Only)



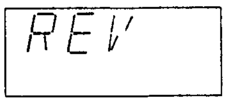
[During recording on side A, at the desired position where you want to change to side B,]

1 Press ❚❚ PAUSE to set the deck to the recording standby mode.

Also, temporarily stop the playing of a source such as a CD player, etc.

2 Press REVERSE.

Press again when you want to delete the "REV" display.



3 Press WRITE.

The recording side changes to side B and the deck remains in the recording standby mode.

4 Press ▶ to start recording.

Resume the playing of a source such as a CD player, etc.

For your reference

You can make a recording continuously from side A to side B without having to write the REVERSE marker (as instructed above), if you have no time to pause the deck during recording a broadcast.

Press the ◀▶ button to change the recording side to side B. In this case, the REVERSE marker is temporarily written onto side B. Be sure to do the renumbering after recording is finished in order to rewrite the correct REVERSE marker onto side A.

Writing markers after recording

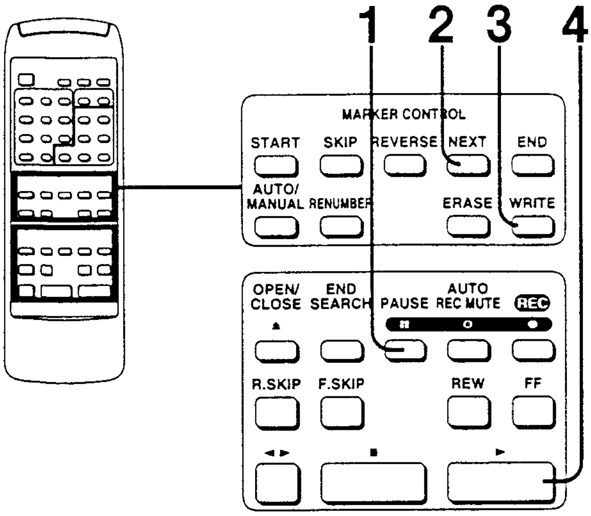
Press the ● REC button at the desired position where the REVERSE marker is to be written, and follow operation steps 2 and 3 above.

To write the NEXT marker
(during or after recording)

This is used to mark the beginning of the remaining unrecorded segment of side A when you want to fast forward to the beginning of side B immediately.

Writing markers during recording

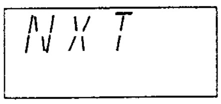
(With Remote Control Only)



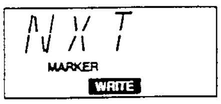
[While recording on side A, at the position where you want to fast-forward the tape to side B,]

1 Press ❚❚ PAUSE to set the deck to the recording standby mode.
Stop the playing of a source such as a CD player, etc.

2 Press NEXT.
Press again when you want to delete the "NXT" display.



3 Press WRITE.
The tape will fast forward to the beginning of side B.



4 (Then, it will be set to the recording standby mode at the beginning of side B.)
Press ▶.
Continue the recording.
(OR)
If you wish to stop recording, press ■.

Note
The first track on side B is written as the first track (track No. 1) and the absolute time is written from "0:00".

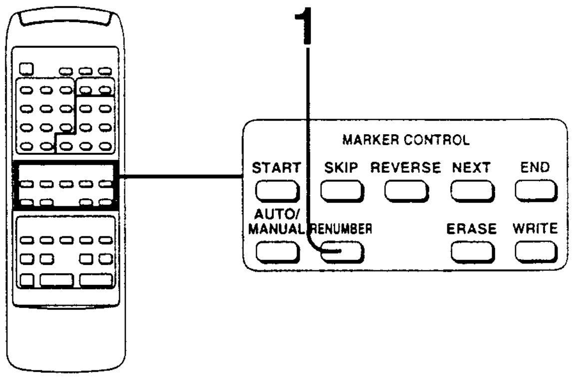
Writing after recording

Press the ● REC button at the desired position where you wish to write the REVERSE marker in order to set the deck to the recording standby mode and follow operation steps 2 and 3 above.

To perform the renumbering function

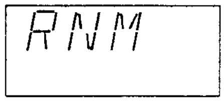
Renumbering must be performed after MANUAL writing and/or erasing of markers has been completed.
Renumbering has the following functions:
- To add track Nos. to START markers written in the MANUAL mode.
- To renumber sequentially the tracks that are no in order after markers are written or erased.
- To rewrite the REVERSE marker that was temporarily written from side B onto side A.

(With Remote Control Only)



[In the stop mode, at any tape position,]

1 Press RENUMBER.
Renumbering starts. When the following procedures are finished, renumbering is completed.



Renumbering procedure:
① The tape should be fully rewound to the beginning of side A.
② Track Nos. are renumbered sequentially while the tape is moving.
- The tape is fast forwarded except at the position marked with the START marker.
- The tape moves according to the REVERSE and/or NEXT marker instructions written onto the tape.

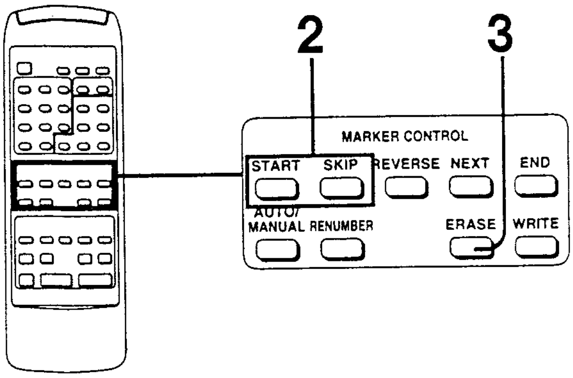
It takes some time for the deck to complete renumbering because the deck checks each track number.

③ After renumbering is finished, the deck fully rewinds the tape to the beginning of side A and stops.

■ ERASING WRITTEN MARKERS DCC only

START or SKIP markers can be erased according to your needs.

(With Remote Control Only)



To observe the marker's tape position, press the COUNTER MODE button to select the tape counter mode. (See page 11.)

1 Play the tape and locate the marker to be erased.

To erase the START marker

The "MARKER" indication appears on the display for about 3 seconds when the tape comes to a position where a START marker is located. Stop playback at this position.

To erase the SKIP marker

When the tape comes to the position marked with the SKIP marker, fast-forwarding starts.

Write down that tape position by reading the tape counter. Then, rewind the tape to 2 or 3 counts (counter reading) before that position.

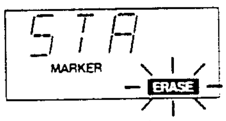
2 Press START or SKIP depending on the marker you wish to delete.

(Example of START marker)

Press again when you want to delete the "STA" or "SKP" display.

3 Press ERASE.

When a marker is deleted, the **ERASE** indication stops blinking and remains lit for a while and then goes off.



Blinks

If the "**ERASE**" indication disappears before coming to a marker to be erased, (the **ERASE** will blink for about a maximum of 10 seconds), the marker cannot be erased. If this occurs, press the ERASE button again.

Be sure to renumber the markers after erasing them. (See previous page.)

Note

If the tape position passes the position of the marker that you wish to be deleted, and the ERASE button is pressed, possible erasure of the next marker may occur.

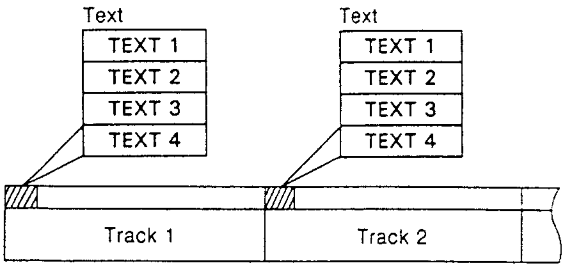
For your reference

New records over the existing records erase all markers (START, SKIP, END, REVERSE and NEXT) written to the tape.

WRITING TEXT INFORMATION ONTO THE TAPE *DCC only*

You can write text information such as album title, artist name or track title, etc. onto your recorded DCC tape.

There are 4 categories of text information (TEXT 1 – TEXT 4) that can be written onto the beginning of each track.



Recordable DCC tape

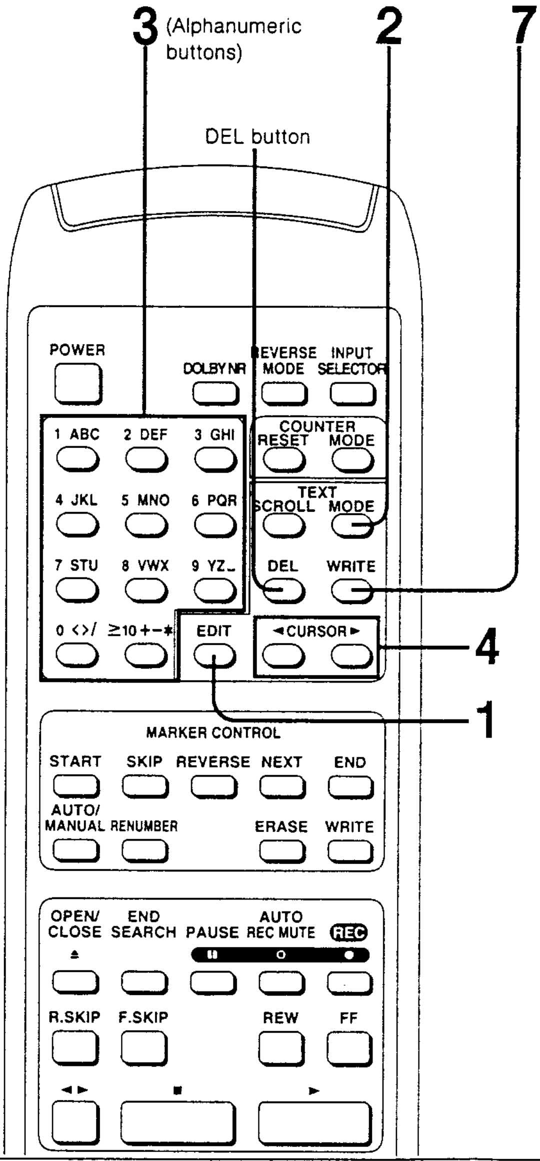
Examples of categories of texts
TEXT 1: Album title
TEXT 2: Artist name
TEXT 3: Track title
TEXT 4: Date of recording

Up to 40 characters can be entered in each TEXT line. (If more than 8 characters are displayed, the leftmost character of the line is scrolled to the left.

Note

- No text information can be written onto the following types of DCC tapes:
  ① Commercially sold music tapes.
  ② Blank unrecorded tapes.
  ③ Tape onto which no START marker has been written.
- Set the erasure-protect switch and safety tab on the recordable DCC tape to the record position.
- Use an already renumbered tape. (See page 21.)
- You cannot select the desired tracks by their track title written onto the tape.

(With Remote Control Only)



Alphanumeric buttons

Each time an alphanumeric button is pressed, the alphanumeric character above the button is displayed in the following order.

(For example) 1 ABC ➡ A→B→C→1

For your refernce

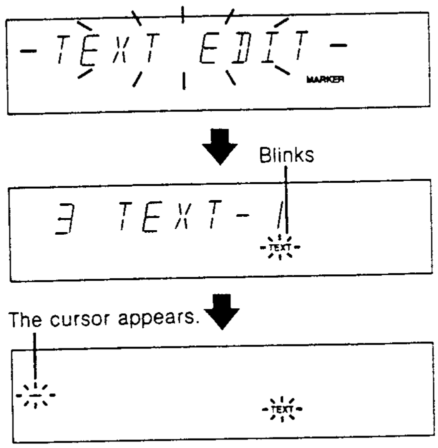
- If you want to enter a space, select the underline mark "_" by pressing the "9 YZ_" button.
- The characters "≥10" of the "≥10+−※" button is not displayed.

Before operation

Access the beginning of the desired track onto which you want to write text information, using the R.SKIP or F.SKIP button. Then, press the ■ button.

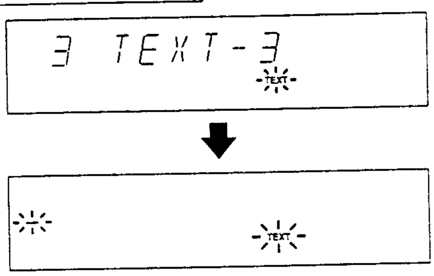
Example:
To write the track title "TAKE IT EASY" in the TEXT 3 line of the third track.

1 Press EDIT.



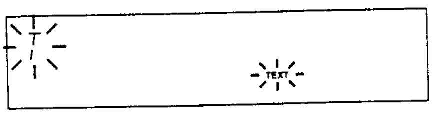
2 Press TEXT MODE to select the desired TEXT line.

Each time this button is pressed, the display is changed in the following order:
TEXT 1 → TEXT 2 → TEXT 3 → TEXT 4
↑_________________________________|



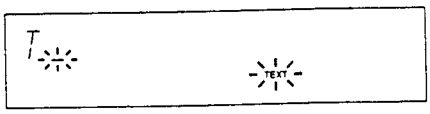
3 Press the alphanumeric button to display the desired character.

In this example, press the "7 STU" button. Each time this button is pressed, the character changes in the following order:
S → T → U → 7
↑_____________|



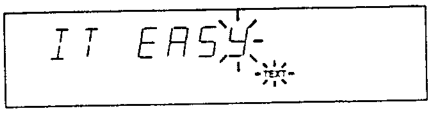
4 Press CURSOR ▶ (right one).

The cursor moves to the right.



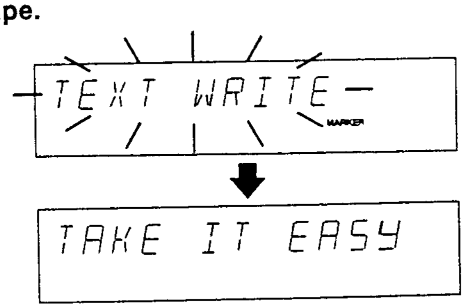
5 Repeat steps 3 and 4 to enter other characters.

To enter a space between characters, move the cursor without entering a character or select "␣" with the "9YZ␣" button. (You cannot enter a space at the beginning of a line.)



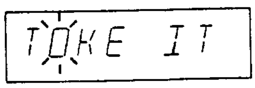
6 Repeat steps 2–5 to enter characters in TEXT 1, 2 and 4.

7 Press WRITE to write the text information onto the tape.

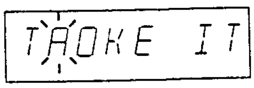


To edit character of information

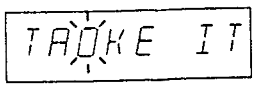
① Press CURSOR ◀ or ▶ to move the cursor to the incorrect character.



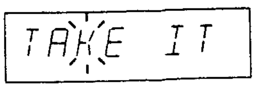
② Enter the correct character. (See operation step 3 above.)



③ Press CURSOR ◀ or ▶ to move the cursor to the incorrect character.



④ Press DEL.
The character is deleted without leaving any spaces.



To correct text information written onto the tape

Display the text information to be corrected. After correcting, press the WRITE button.

See page 10 on how to change the display of text information written onto the tape.

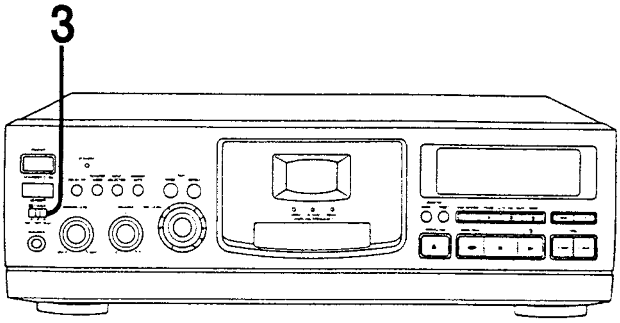
■PLAYBACK AND RECORDING WITH TIMER

Using the optional timer (or tuner with a timer) enables you to perform playback of tape or record a broadcast with a tuner (or BS tuner) at a pre-programmed time.

For timer playback

Preparation

After the connections are made as instructed on page 9, set your amplifier to the tape playback mode.



1 Make preparations for playback on the deck.

DCC For DCC tape playback, follow the operation steps 1－3 described on page 7.

ACC For ACC tape playback, follow the operation steps 1－4 described on page 8.

2 Set the timer to the desired time for playback and complete the timer settings.

(The deck and components connected to the timer will be turned off.)

For further information about timer setting, refer to the Operating Instructions of your component.

3 Set TIMER selector to "PLAY".

(At the pre-programmed time, playback starts automatically.)

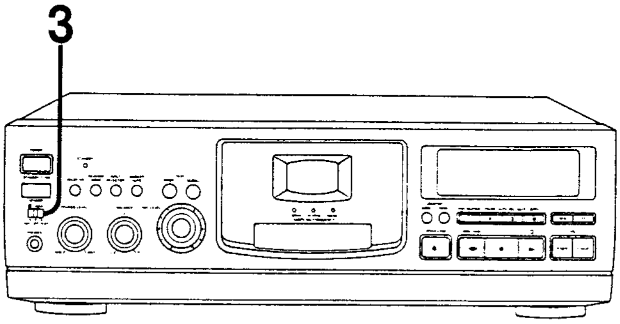
After Timer playback is finished,

Be sure to return the TIMER selector to "OFF".

For timer recording DCC only

Preparation

After the connections are made as instructed on page 6, set your amplifier and tuner (or BS tuner) to the broadcast reception mode.



1 Make preparations for recording.

Follow steps 1－3 described on page 13.

2 Set the timer to the desired time for recording and complete the timer settings.

(The deck and components connected to the timer will be turned off.)

For further information about timer setting, refer to the Operating Instructions of your component.

3 Set TIMER selector to "REC".

(At the pre-programmed time, recording starts automatically.)

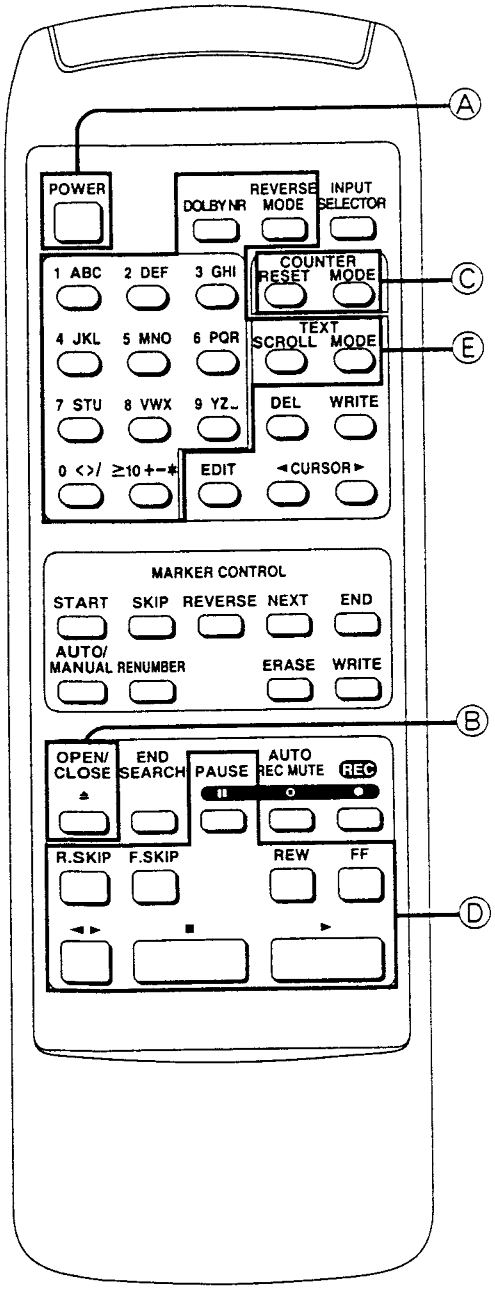
After recording with the timer is finished,

- Be sure to return the TIMER selector to the "OFF" position.
- The END marker is not automatically written at the end of the recording. If you intend to make "Append Editing" starting at the end of a recording, use MANUAL writing to write the END marker. (See page 20.)

Note

- To perform Append Editing using the timer, set the timer after END SEARCH is finished. (See page 15.)
- It takes about 30 seconds for the deck to start recording after the timer is turned on at a pre-programmed time. Therefore, in order not to miss recording the beginning of a broadcast, set the recording start time 30 seconds or more before the actual time of a broadcast according to your timer's timer setting function.

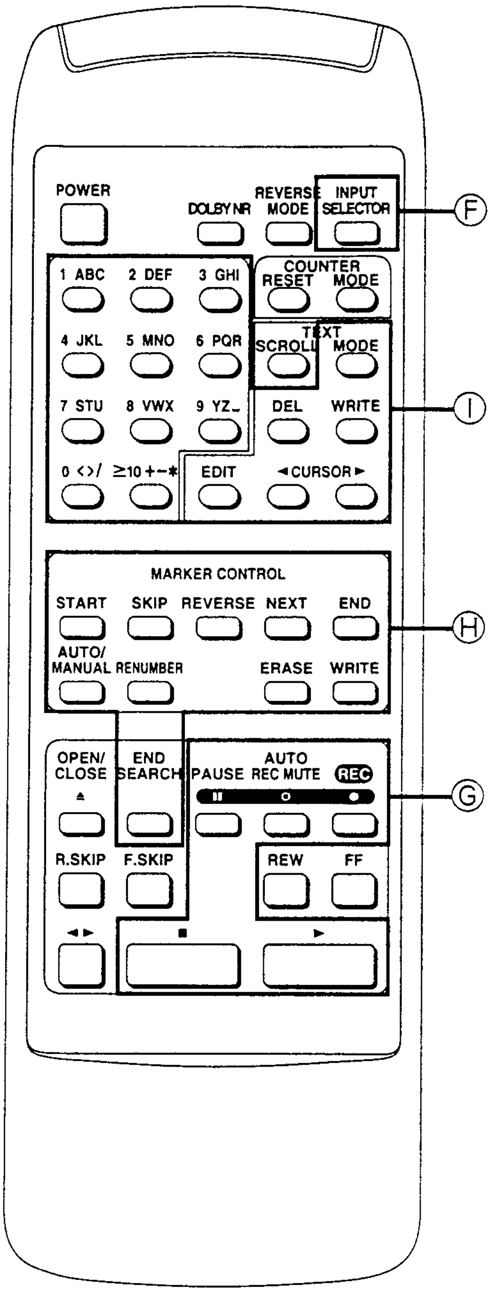
■ QUICK REFERENCE FOR REMOTE CONTROL USE



	Common operations		*page*
Ⓐ	Turn the unit on and off	POWER	7
Ⓑ	Cassette compartment OPEN/CLOSE	OPEN/ CLOSE ▲	7
Ⓒ	Selecting time information **DCC only**	COUNTER MODE	11
	Resetting the tape counter	COUNTER RESET	11

	For playback		*page*
Ⓓ	To start playback	►	7
	To temporarily interrupt playback	PAUSE ❚❚	7
	To stop playback	■	7
	To rewind or fast-forward	REW FF	9
	To change direction of the tape	◄►	9
	To perform Skip play	R.SKIP F.SKIP	11
Ⓔ	To select the type of Dolby NR system *ACC only*	DOLBY NR	8
	To select the reverse mode	REVERSE MODE	7
	To access the desired track by selecting the track No.	1 ABC ~ ≥10 +-*	12
	To display text information such as album title, etc. **DCC only**	TEXT MODE	10
	To scroll text information **DCC only**	TEXT SCROLL	10

	For recording **DCC only**		*page*
Ⓕ	To select the recording input mode	INPUT SELECTOR	13
Ⓖ	To set the deck to the recording standby mode	REC ●	13
	To start recording	►	13
	To temporarily interrupt recording	PAUSE ❚❚	14
	To stop recording	■	14
	To make an unrecorded segment	AUTO REC MUTE ○	16

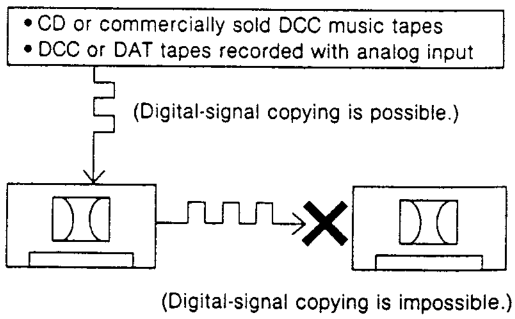


	For marker editing **DCC only**		*page*
Ⓗ	To select the AUTO or MANUAL mode of marker writing	AUTO/ MANUAL	13
	For the START marker writing or erasure mode	START	19, 22
	For the SKIP marker writing or erasure mode	SKIP	19, 22
	For the REVERSE marker writing mode	REVERSE	20
	For the NEXT marker writing mode	NEXT	21
	For the END marker writing mode	END	20
	To write markers	WRITE	19–21
	To erase markers	ERASE	22
	To renumber	RENUMBER	21
	For END SEARCH	END SEARCH	15
Ⓘ	To set the text information input mode	EDIT	24
	To select text information mode	TEXT MODE	10, 24
	To enter characters	1 ABC ~ ≥10 +-*	24
	To move the cursor	◄CURSOR►	24
	To write text information on the tape	WRITE	24
	To delete a character	DEL	24

■ SCMS (Serial Copy Management System)

Important notice on recording of digital source

The deck has adopted an SCMS (Serial Copy Management System) which prohibits unrestricted copying of digitally-recorded tapes.
The SCMS allows only one generation of digital signal-copy CDs and digitally recorded tapes to another tape for protection of copyrights. (This deck stops recording operation.)



Note
It should be noted that it may not be possible to make digital copies from tapes which do not conform to the SCMS format.

For your reference
You can make analog input recordings from a digital tape when digital recordings cannot be made. (The SCMS format does not apply to this situation.)

■ SELF-DIAGNOSTIC FUNCTION DISPLAY

■ Self-diagnostic Function

Should faults occur, this unit incorporates a self-diagnostic function. Make the most of this function during maintenance or service.

Display procedure

• When the cassette mechanism or the cassette holder fails to operate, be sure to check the self-diagnostic display according to the procedure below.

Self-diagnostic display mode

Step 1: Hold down the DOLBY NR button for more than 2 seconds and simultaneously press the STOP button.
[E1 09216] will appear in the FL display.

Step 2: Press the COUNTER MODE button three times. If there is a fault, one of the self-diagnostic codes (H04, H01 or F01) will appear on the FL display.

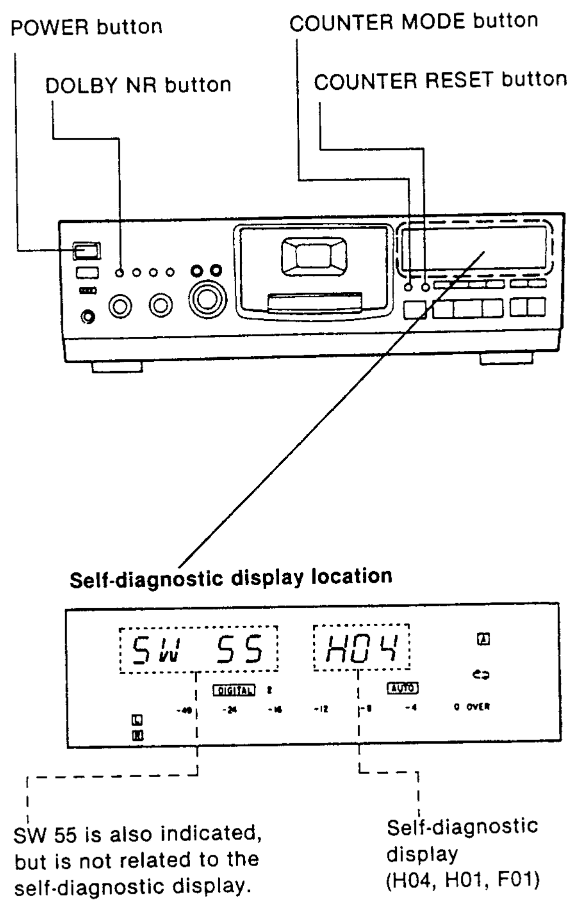
Note: Since there might be multiple faults, repair the first fault, then repeat steps 1 and 2 to check for additional faults.
If there is no fault, nothing will appear at the self-diagnostic display location (however, "SW 55" will remain on the FL display).

Return to the normal display mode

When the COUNTER RESET button is pressed, the unit returns to the normal display mode.

Note: To turn off the unit, be sure ot return to the normal display mode before pressing the POWER button. Never turn the unit off while in the self-diagnostic display mode.

Display position



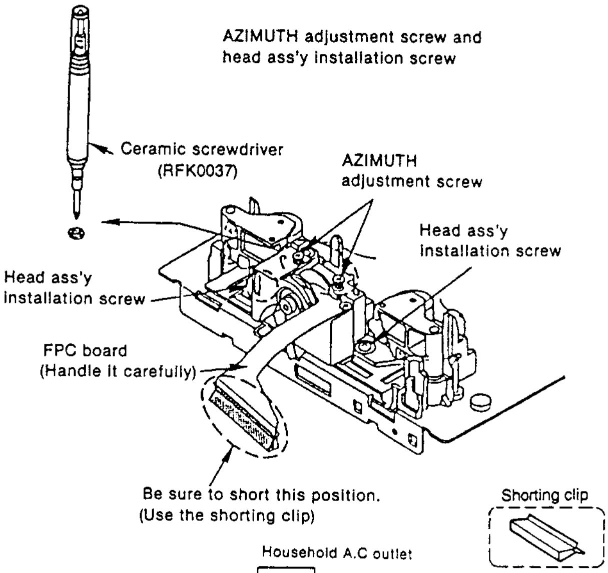
Display Contents

Display symbol	Symptom and status	Remedy
H01	The cassette mechanism does not operate. Example: Playback is not possible even when the ▶ (Replay Start) button is pressed.	Cassette mechanism mode switches (S971 to S976), Z971 or plunger have failed. Check and replace as required.
H04	The cassette holder does not open even when the ▲ (Open/Close) button is pressed.	The open switch (S291) is not in contact or has short-circuited. Check and replace as required.
F01	When the ▶ (Replay Start) button is pressed, the tape soon stops (after a short run).	Reel pulses are faulty. Check IC971, 972, 202, 203 and 204, as well as servo control IC201 pins 52, 64 and 65, replace as required.

Note: The self-diagnostic display of a fault (if any) is made after step 2 above. If any other button is pressed, an incorrect display will appear that has nothing to do with the self-diagnostic function.

HANDLING PRECAUTIONS FOR DCC HEAD

Because static electricity or magnetism can damage the DCC head, please observe the following when handling the DCC head.



1) Caution on magnetism

Be sure to use only the ceramic screwdriver (RFKZ0037) when making azimuth adjustment.

Never use a steel screwdriver or other screwdriver whose blade or tip is magnetized.
Keep the DCC head away from all magnetized objects.

2) Caution on static electricity

Be sure to insert a shorting clip in the terminal of the FPC board (DCC head).

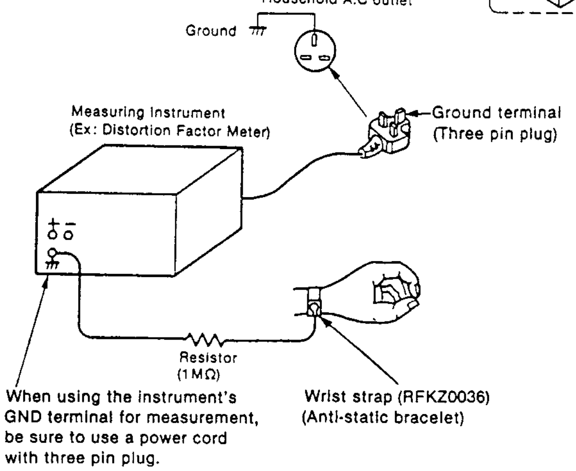
Connect the FPC board to the PCB connector as quickly as possible.

3) Others

Be especially careful not to use force when manipulating the FPC board or it will break or disconnect.

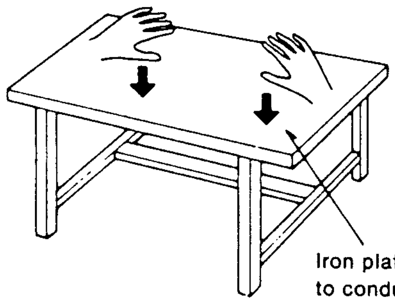
• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the DCC head is placed, and ground the sheet.

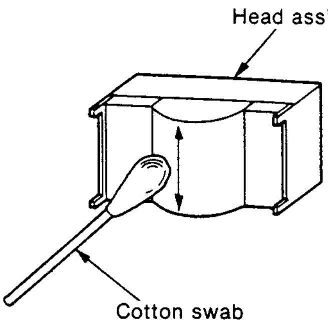


Note:
It is important to ground the instrument before testing. Use either the ground contact of a nearby 3P wall outlet, or connect it to the frame ground of an instrument which is connected a 3P wall outlet.

Caution:
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the DCC head.



HEAD CLEANING METHOD



Clean the head up and down with a cotton swab slightly moistened with alcohol.

■ OPERATION CHECKS AND MAIN COMPONENT REPLACEMENT PROCEDURES

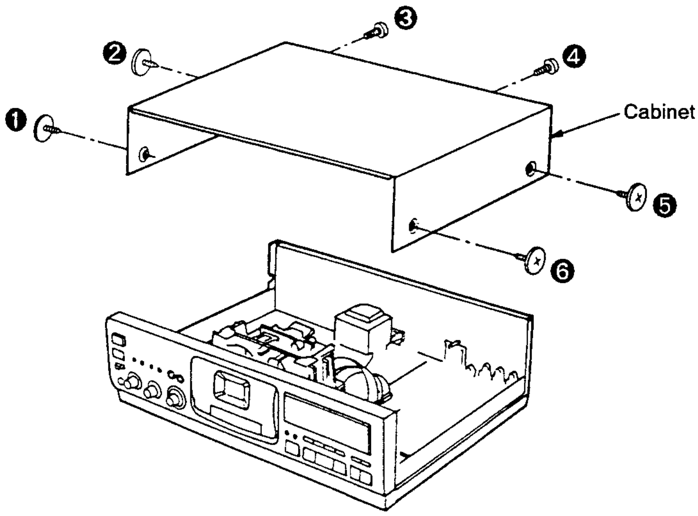
NOTE

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Select items from the following index when checks or replacement are required.
4. Illustrated screws are equivalent to actual size.
5. [ ] indicates parts No.

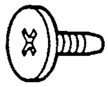
• Contents

page.

1. Common disassembly procedures
(Follow this procedure prior to other disassembly.)



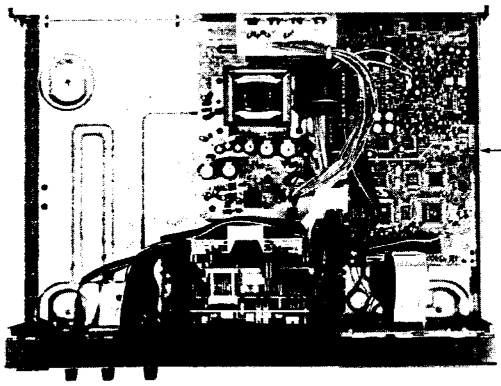
Step 1 Remove the 6 screws.


❶,❷,❺,❻
[RHD30035-K] (Black)

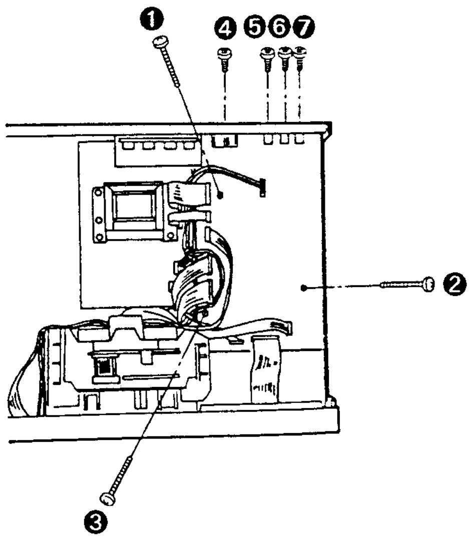

❸,❹
[XTBS3+8JFZ1] (Black)

2. Checking for the main P.C.B.

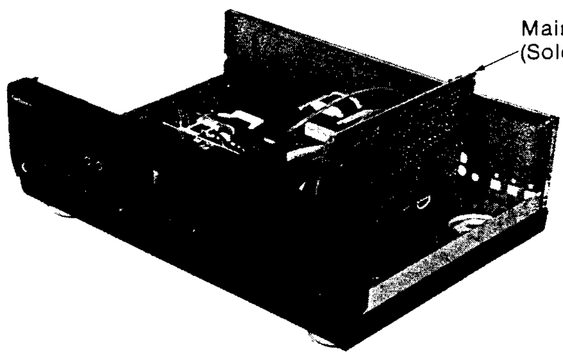
Step 1 Follow the disassembly procedure described in item 1 on page 31.

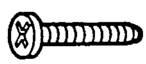


Step 2 Remove the 7 screws.



Step 3 Place the main P.C.B. as shown below.

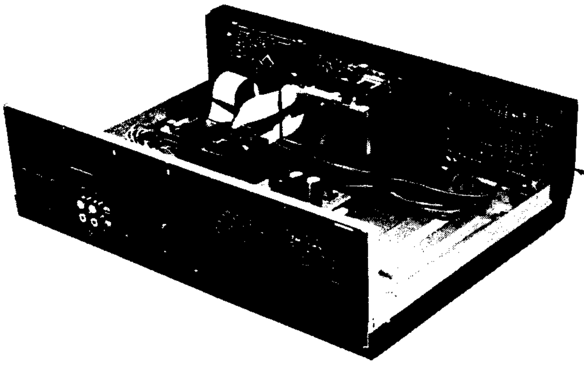



❶~❸
[XTB3+16JFZ] (Black)

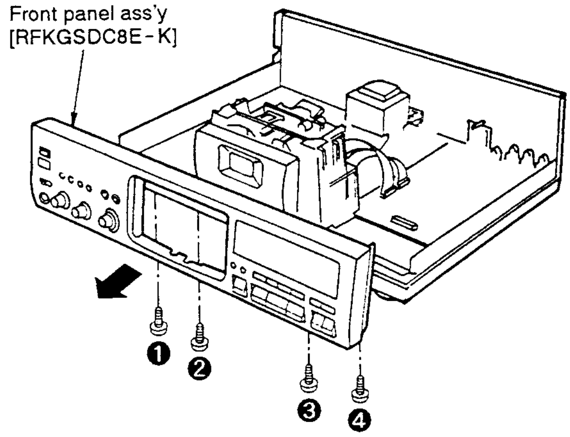

❹~❼
[XTBS3+8JFZ1] (Black)

3. Checking for the operation P.C.B.

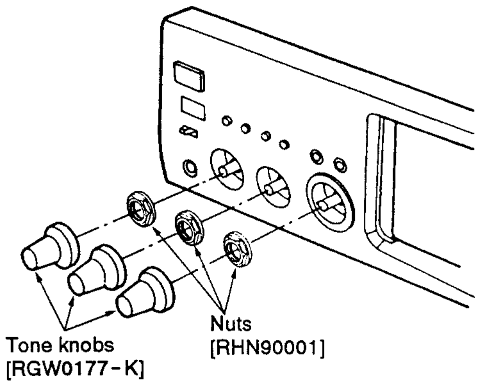
Step 1 Follow the disassembly procedure described in item 1 on page 31.



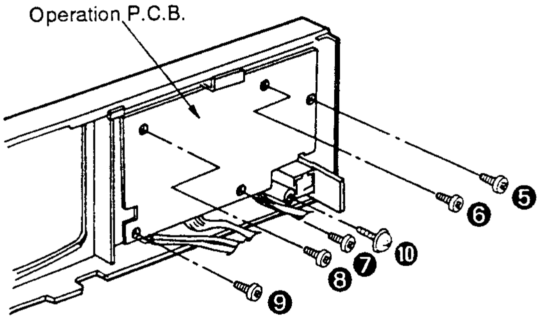
Step 2 Remove the 4 screws.

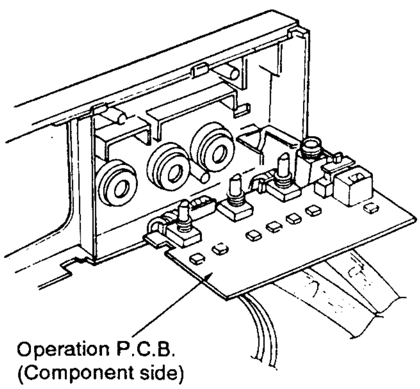


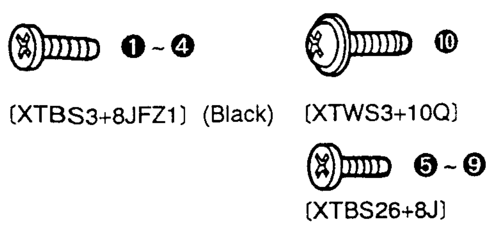
Step 3 Remove the tone knobs and nuts.



Step 4 Remove the 6 screws.

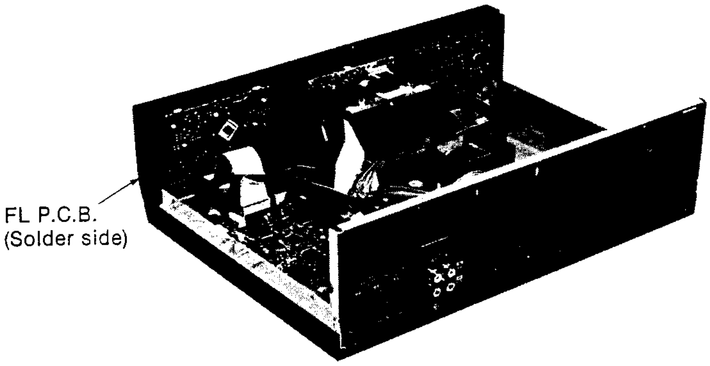




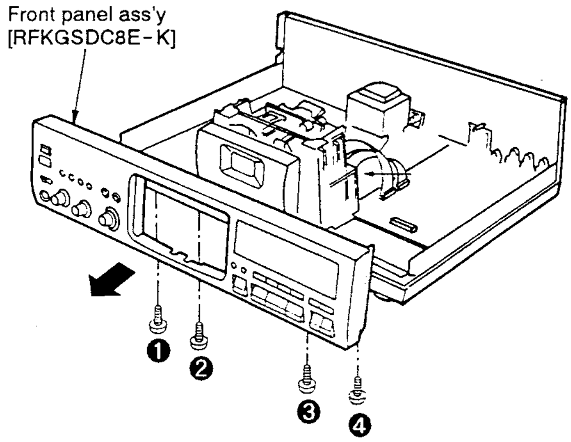


4. Checking for the FL P.C.B.

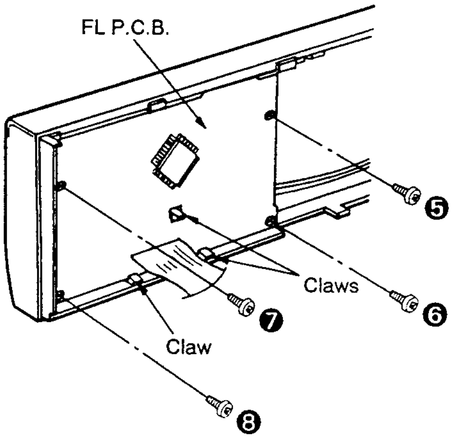
Step 1 Follow the disassembly procedure described in item 1 on page 31.



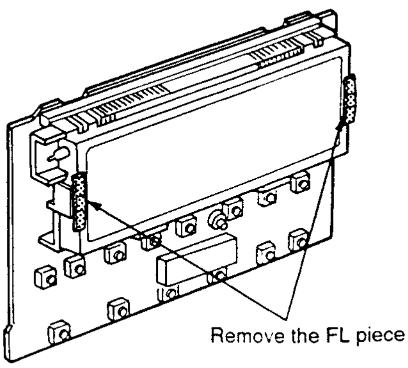
Step 2 Remove the 4 screws.

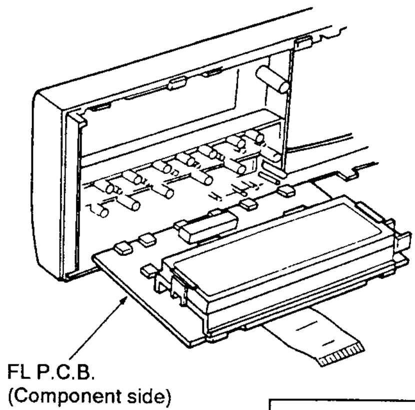


Step 3 Remove the 4 screws and 3 claws.



Removal of the FL meter





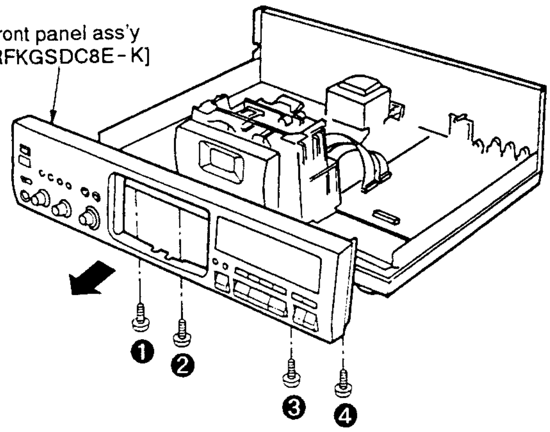
❶ ~ ❹
[XTBS3+8JFZ1] (Black)

❺ ~ ❽
[XTBS26+8J]

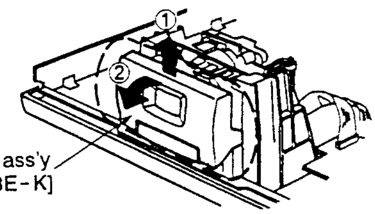
5. Replacement for the mechanism unit

Step 1 Follow the disassembly procedure described in item 1 on page 31.

Step 2 Remove the 4 screws.

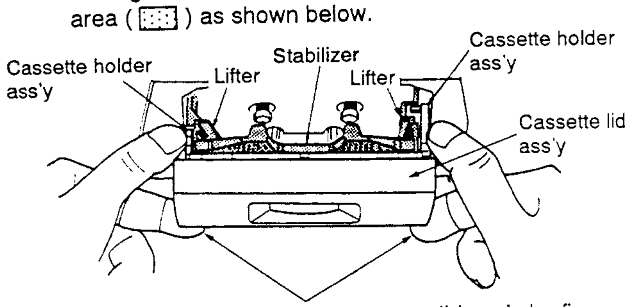


Step 4 Lift the cassette lid in the direction of arrow ①, and remove it in the direction of arrow ②.



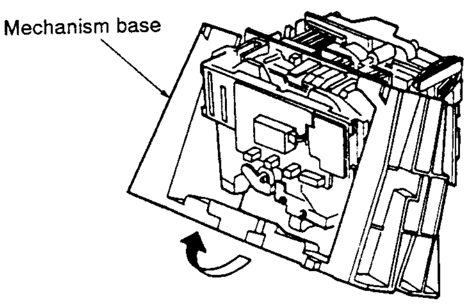
■ **Note for disassembling the cassette lid ass'y**

NOTE When disassembling/reassembling the cassette lid ass'y, handle the cassette lid ass'y carefully to avoid damage to the lifter or the stabilizer indicated by dots area ( ) as shown below.

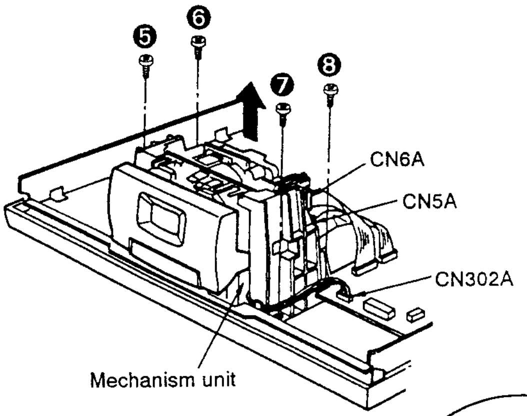


※ Lift up the back side of cassette lid ass'y by finger.

Step 6 Remove the mechanism base.

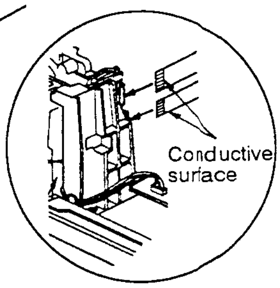


Step 3 Remove the 4 screws and 3 connectors.

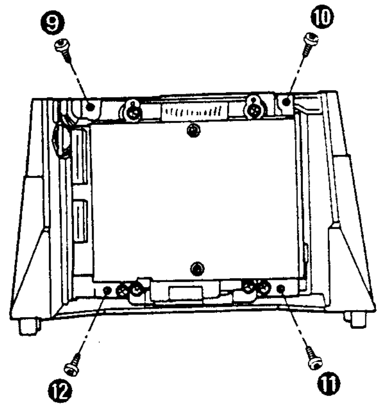


NOTE

When connecting the FPC boards to the CN5A/CN6A, arrange the FPC boards as shown right.

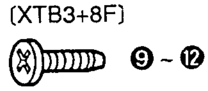


Step 5 Remove the 4 screws.



[XTBS3+8JFZ1] (Back)

[XTB3+8F]

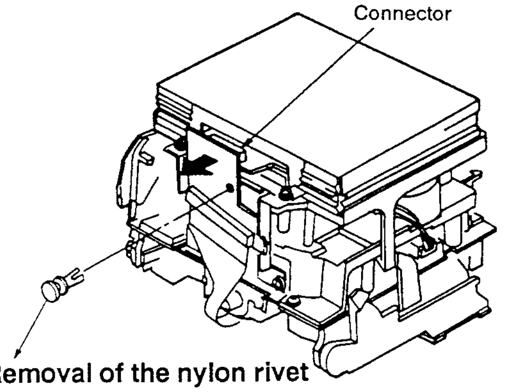


[XTB3+10JFZ]

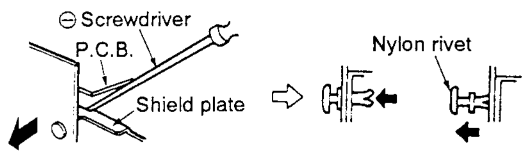
6. Replacement for the connector P.C.B.

Step 1 Follow the disassembly procedure described in item 1(on page 31) and item 5(on page 34).

Step 2 Remove the nylon rivet.

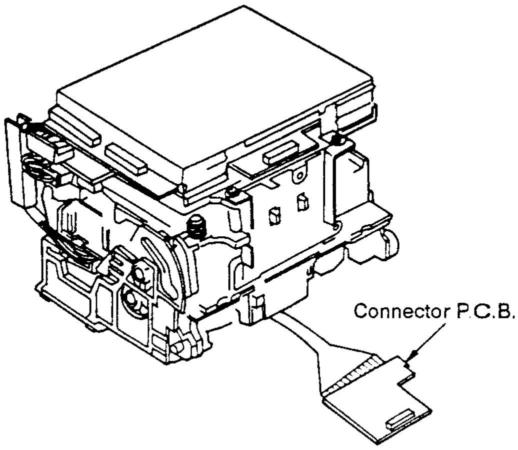


※ **Removal of the nylon rivet**



※ Insert the ⊖ screwdriver to the clearance between P.C.B. and shield plate, and then push the nylon rivet with ⊖ screwdriver in the diretion of arrow.

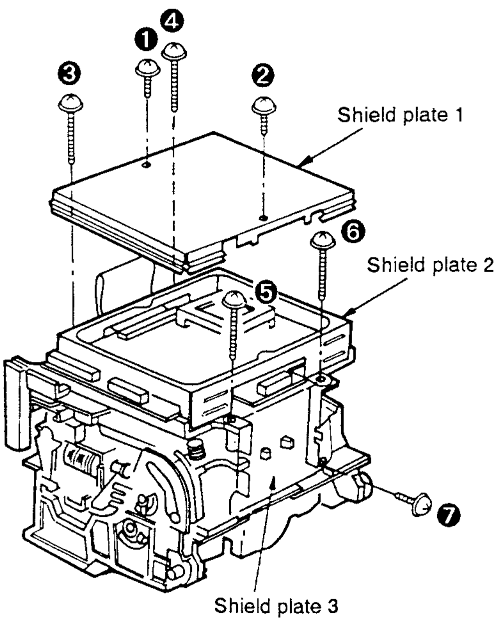
Step 3 Remove the connector P.C.B.



7. Replacement for the motor P.C.B.

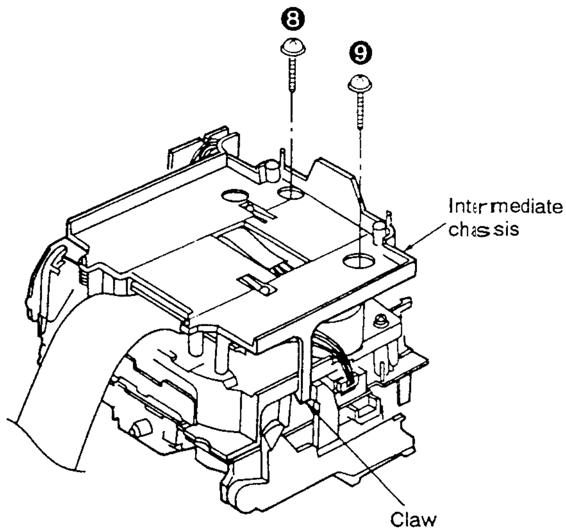
Step 1 Follow the disassembly procedure described in item 1(on page 31), item 5(on page 34) and item 6(on page 35).

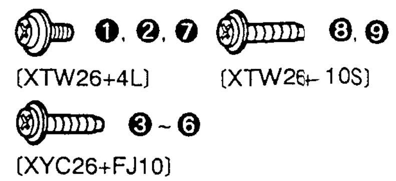
Step 2 Remove the 7 screws.



Step 3 Remove the 2 screws and claw.

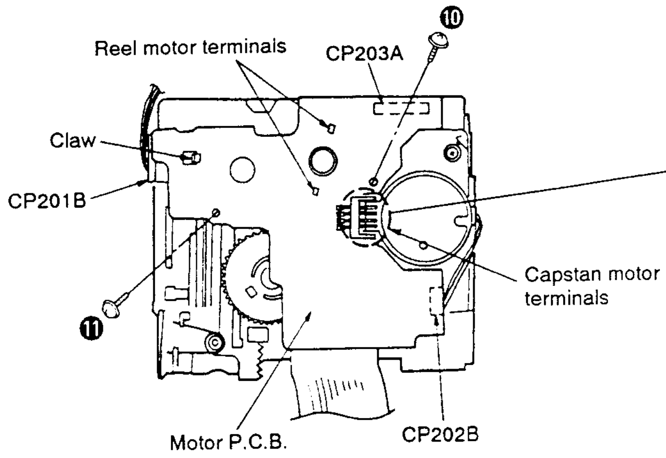
Step 4 Remove the intermediate chassis.
(The solder side of motor P.C.B. can be checked.)





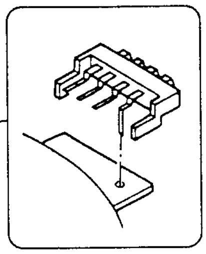
Step 5 Unsolder the reel motor and capstan motor terminals.

Step 6 Remove the 2 screws, claw and connectors.



NOTE

Handle the connector with care so that the shape of terminal is different from others.



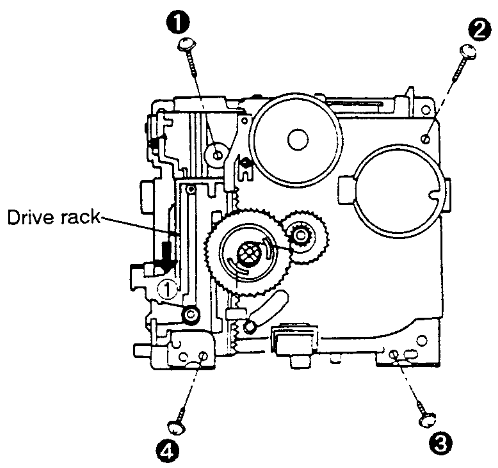
⑩, ⑪ [XTW26+6S]

8. Replacement for the belt, flywheel ass'y, reel motor and capstan motor

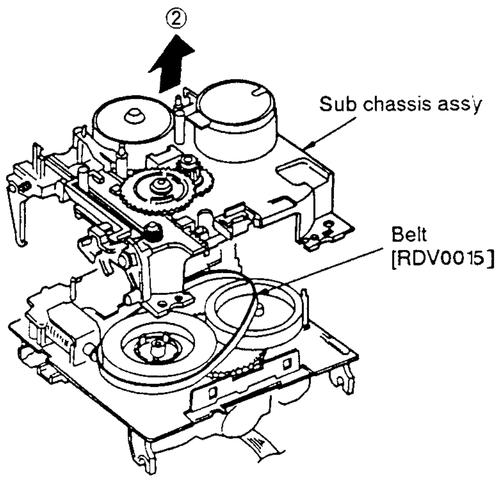
Step 1 Perform the **Step 1** ~ **Step 6** in item 7 on page 35, 36.

Step 2 Push the drive rack in the direction of arrow ①.

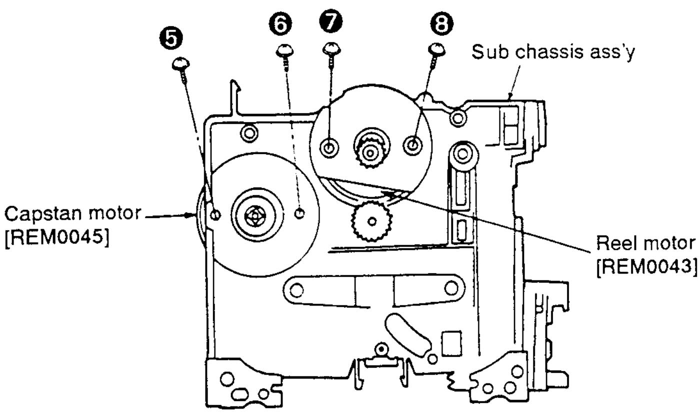
Step 3 Remove the 4 screws.



Step 4 Remove the sub chassis ass'y.



Step 5 Remove the 4 screws.



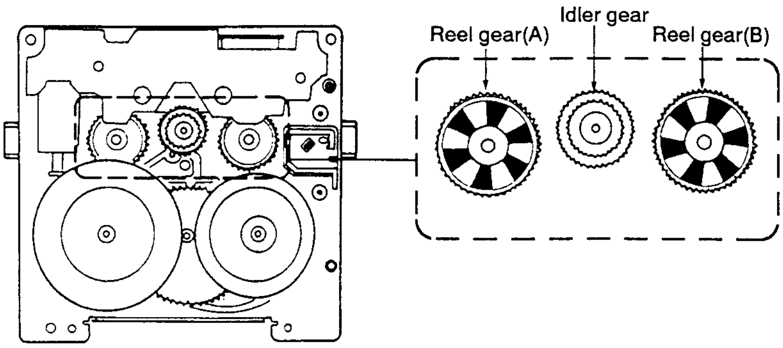
❶, ❷ [XTW26+12S]

❸, ❹ [XTW26+6L]

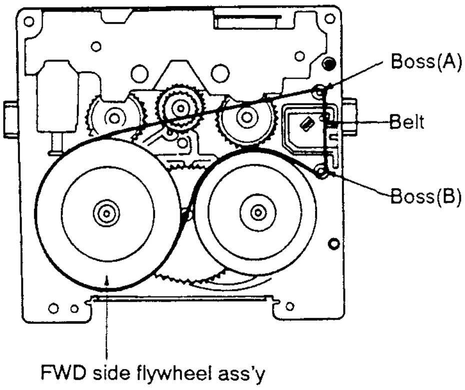
❺ ~ ❽ [RHD26013]

Installation of the sub chassis ass'y after replacement

Step 6 Place the idler gear in the center as shown below.

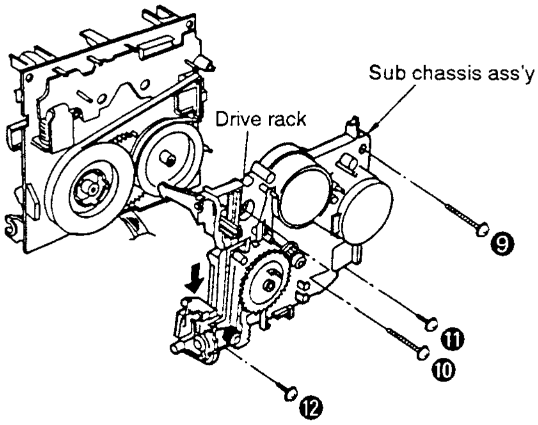


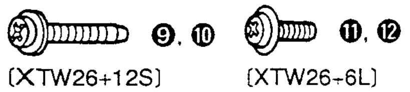
Step 7 Temporarily secure the belt as shown below.



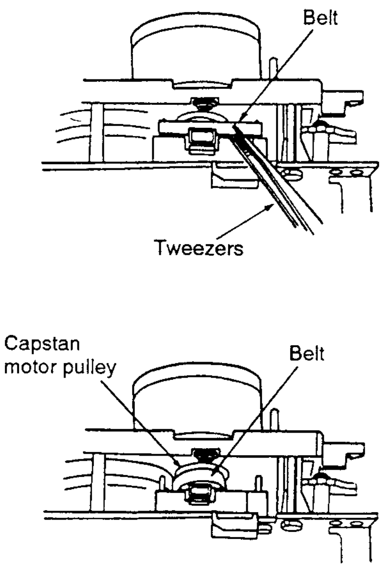
Step 8 Push the drive rack in the direction of arrow.

Step 9 Install the sub chassis ass'y to the chassis ass'y with 4 screws.





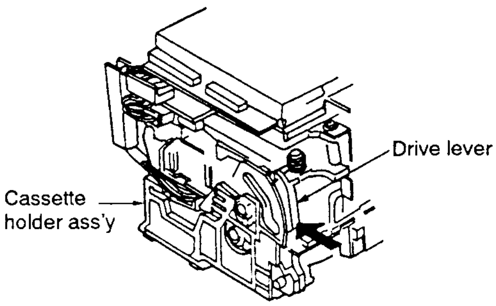
Step 10 Secure the belt with the capstan motor pulley.



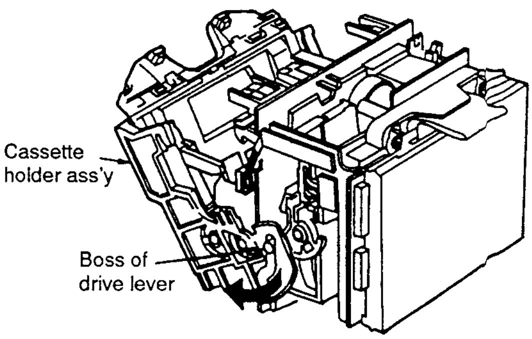
9. Replacement for the head block ass'y(R/P) and pinch roller ass'y

Step 1 Follow the disassembly procedure described in item 1(on page 31)and item 5(on page 34).

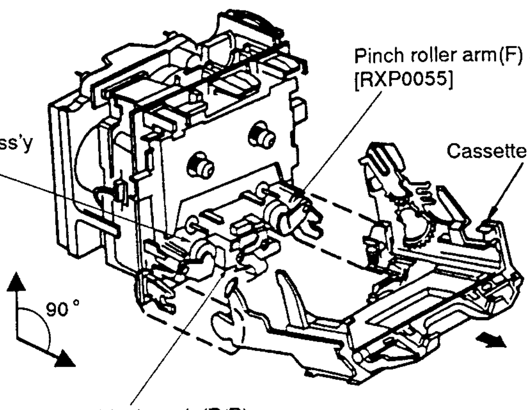
Step 2 Push the drive lever and open the cassette holder ass'y.



Step 3 Operate the cassette holder ass'y in the direction of arrow, and then remove it from the boss drive lever.

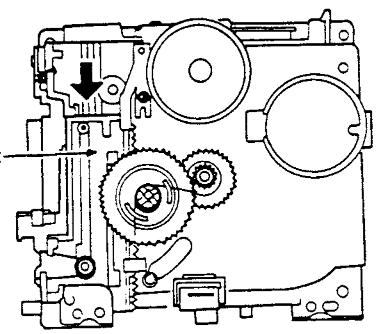


Step 4 Locate the cassette holder ass'y and mechanism unit at a 90 degree angle as shown below, and then pull the cassette holder ass'y.

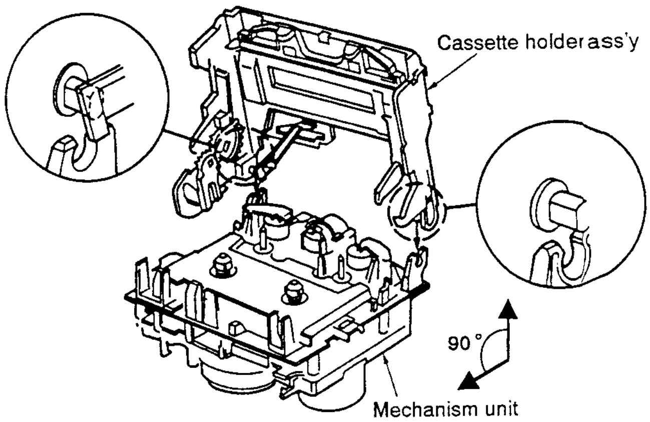


Installation of the cassette holder ass'y after replacement

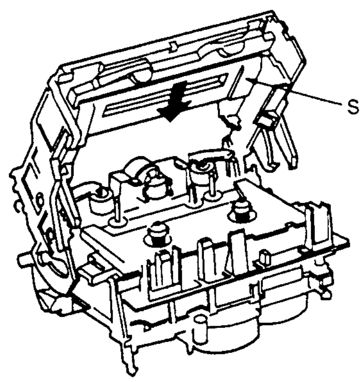
Step 5 Push the drive rack in the direction of arrow.



Step 6 Locate the cassette holder ass'y and mechanism unit at a 90 degree angle, and then install the cassette holder ass'y.

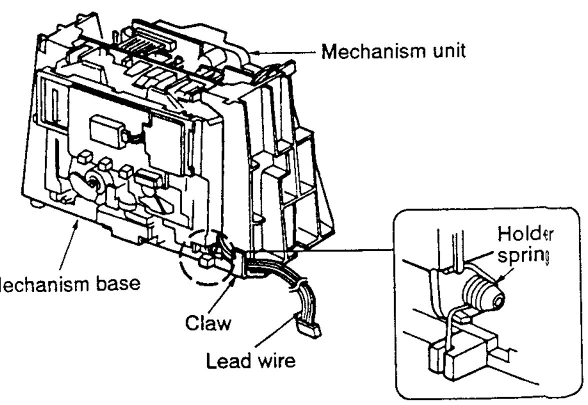


Step 7 Lower the slider in the direction of arrow.



Step 8 Install the mechanism base to the mechanism unit. (Refer to the **Step 6** and **Step 7** in item 5 on page 34.)

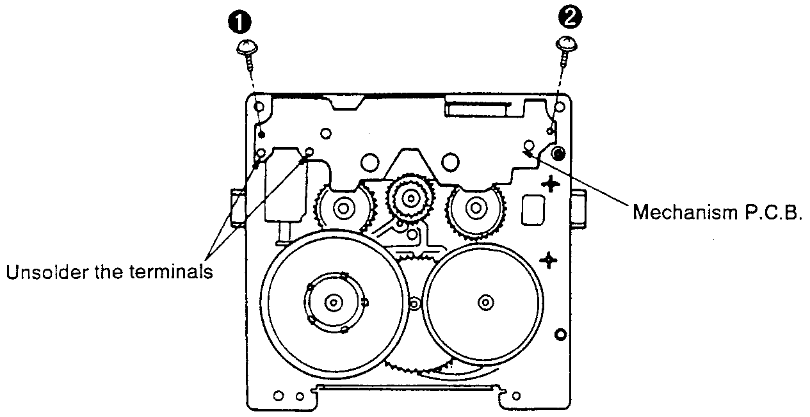
NOTE When installing the mechanism base, the holder spring should be attached as shown below.



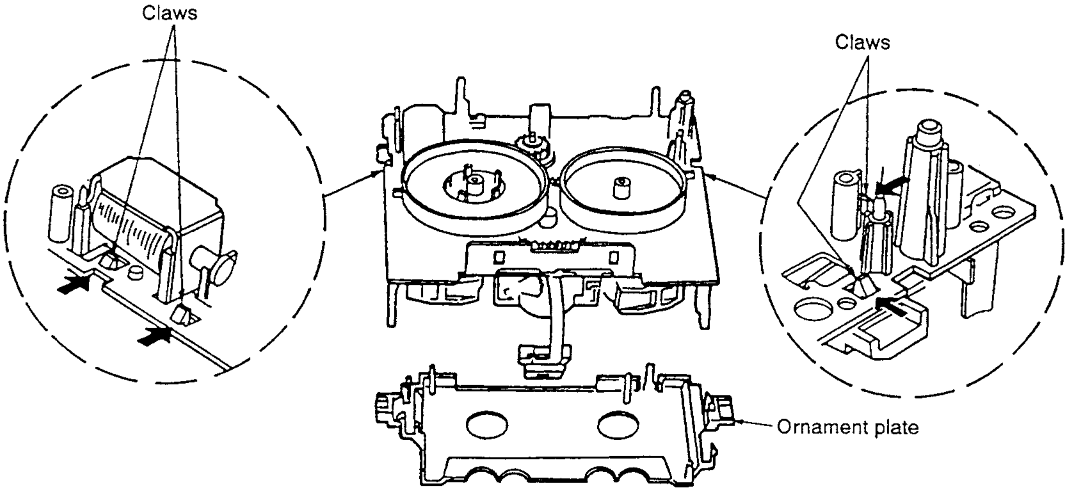
10. Replacement of the parts mounted on mechanism P.C.B. and solenoid

Step 1 Perform the **Step 1** ~ **Step 6** in item 7 on page 35, 36.

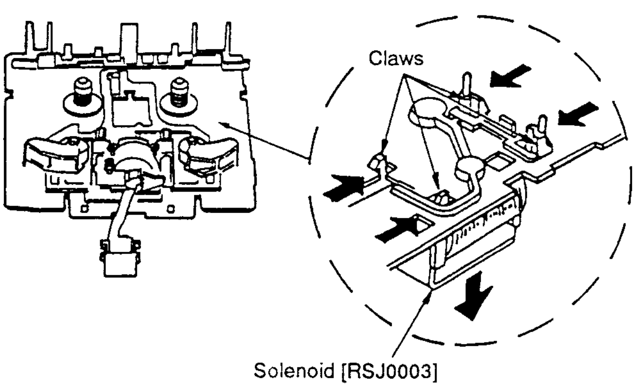
Step 2 Remove the 2 screws and unsolder the terminals (2 points), and then remove the mechanism P.C.B.

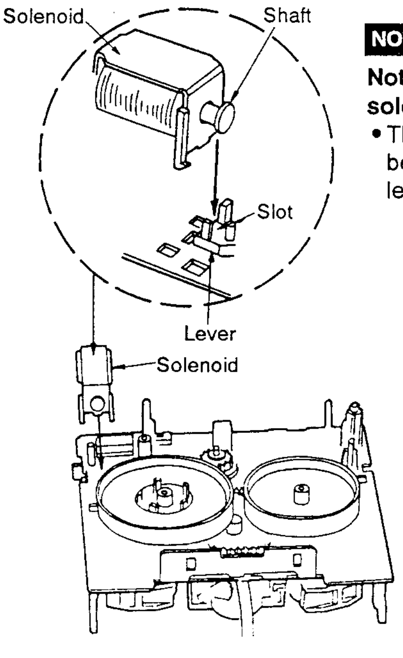


Step 3 Release the 4 claws, and then remove the ornament plate.



Step 4 Release the 4 claws.





NOTE

Notice for installing the solenoid

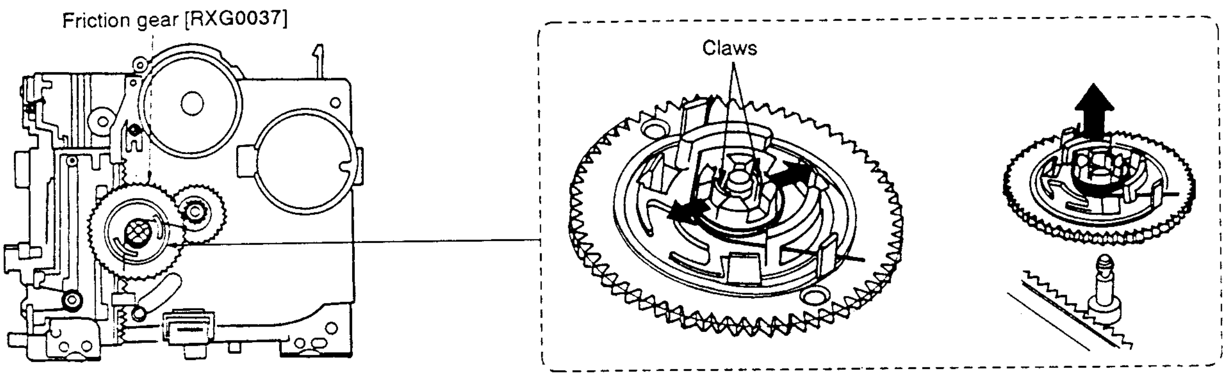
- The shaft of plunger should be aligned with the slot of lever.

❶, ❷
[XTW2+6S]

11. Replacement for the drive rack and friction gear

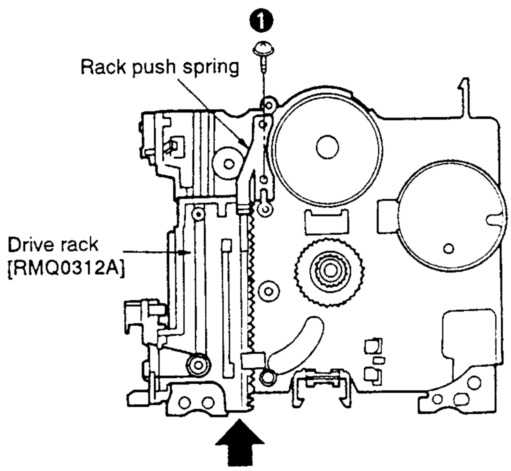
Step 1 Perform the **Step 1** ~ **Step 6** in item 7 on page 35, 36.

Step 2 Remove the friction gear.

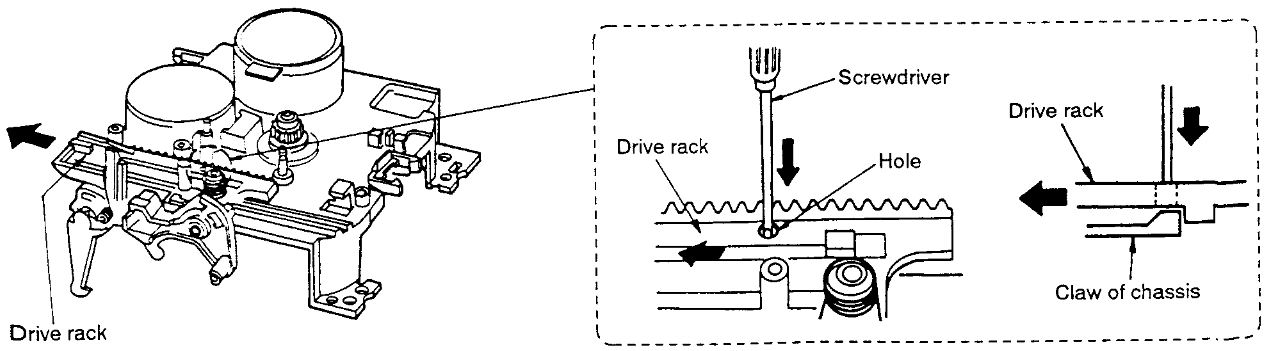


Step 3 Remove the screw and rack push spring.

Step 4 Force the drive rack in the direction of arrow.



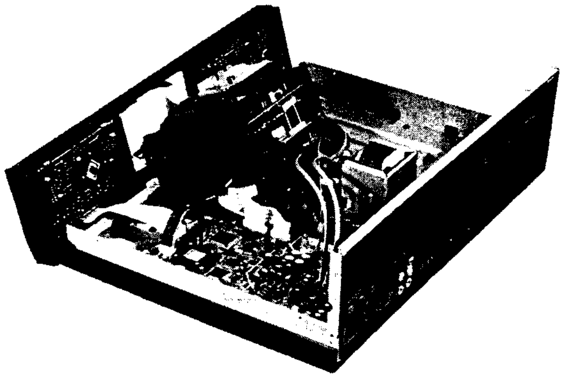
Step 5 Remove the drive rack using the screwdriver inserted into the hole.



■ MEASUREMENTS AND ADJUSTMENTS

■ Disassembly Procedure for Adjustments

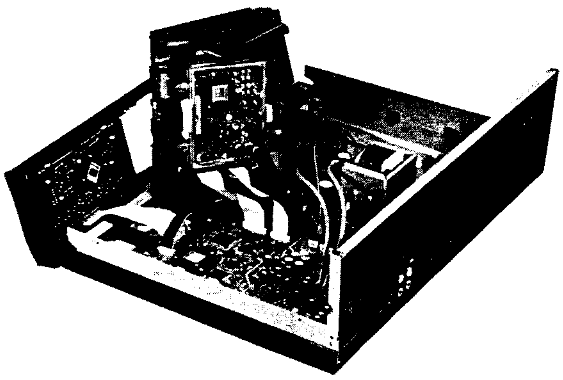
To make mechanism (azimuth) and electrical adjustments, prepare the mechanism block as shown below.



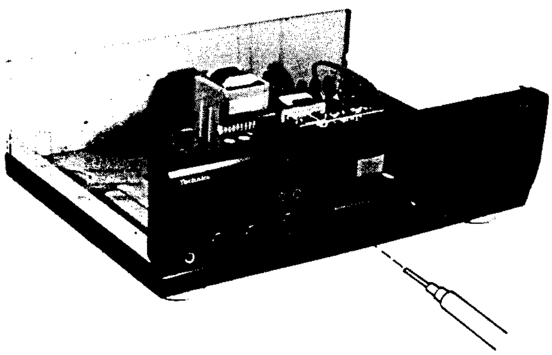
Disassembly Procedure

1. Unfasten 6 screws to remove cabinet.
2. Unfasten 4 screws to remove front panel ass'y.
3. Unfasten 4 screws to remove mechanism unit from chassis.

〈AZIMUTH ADJUSTMENT〉



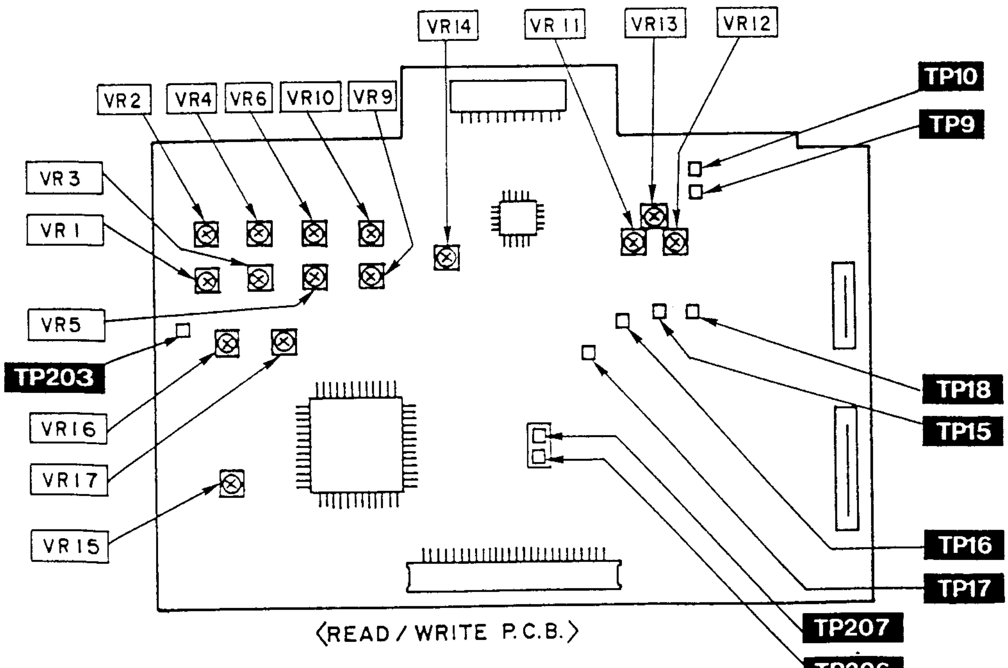
〈ELECTRICAL ADJUSTMENT〉



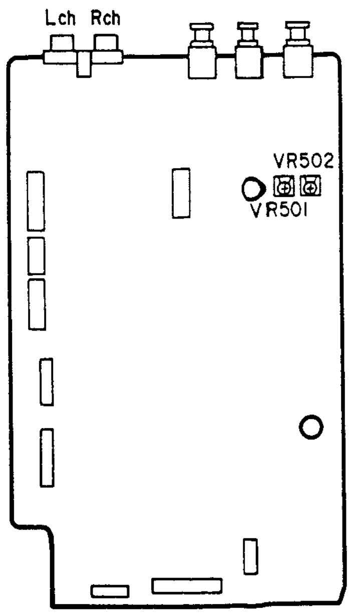
〈AZIMUTH ADJUSTMENT〉
At this stage, azimuth can easily be adjusted.

■ Adjustment locations and test points

	Adjustment item	Adjustment locations	Measurement location
Mechanical adjustments	1. AZIMUTH adjustment	FWD/REV azimuth screws	Line-out/error rate display
Electrical adjustments	2. Tape speed adjustment	VR16: FWD VR17:REV Short between TP206 and TP207.	Analog playback terminal: Rch
	3. Analog output level adjustment	VR1, VR3, VR9: Lch VR2, VR4, VR10: Rch	TP16 : Lch TP17 : Rch
	4. Check and adjustment of analog output distortion	VR1: Lch VR2: Rch	TP16 : Lch TP17 : Rch
	5. Analog playback frequency response adjustment	VR5: Lch VR6: Rch	TP16 : Lch TP17 : Rch
	6. DCC playback level adjustment	VR14	TP18 : CH1 TP15 : CH2
	7. Adjustment and check of optimum current for DCC recording	VR13: Vm VR11: Va VR12: Ve	TP9 : (+) TP10 : (−)
	8. Adjustment of quick reverse sensor	VR15	TP203
	9. Output level adjustment	VR501: Lch VR502: Rch	Analog playback terminal: Lch, R ch



⟨READ / WRITE P.C.B.⟩



⟨MAIN P.C.B.⟩

■ Preparations for adjustments

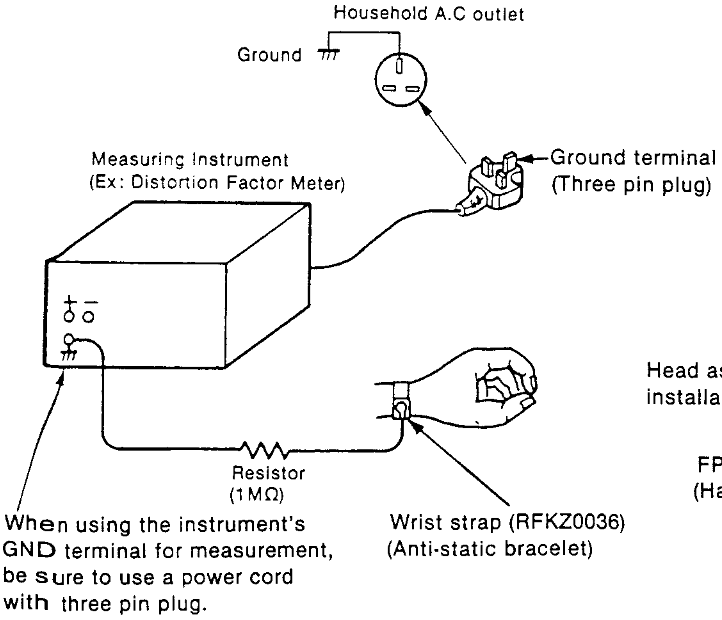
	Tape product number	Tape name	Use
AZIMUTH adjustments	QZZCAC	10kHz, −20dB test tape	1. AZIMUTH adjustments
	QZZCRD	Mirror tape	
	RFTRD002	DCC music tape	
Electrical adjustments	QZZCWAT	3kHz, −10dB (250nwb/m)	2. Tape speed adjustment
	QZZCLA	315Hz, 0dB (160nwb/m)	3. Analog output level adjustment 4. Check and adjustment of analog output distortion 9. Output level adjustment
	QZZCFM	ACC frequency response tape 12.5kHz~63Hz: −20dB 315Hz: 0dB, 8kHz: −20dB (160nwb/m)	5. Analog playback frequency response adjustment
	Commercially available analog tape	Analog • blank tape	8. Adjustment of quick reverse sensor
	Commercially available DCC tape	DCC blank tape	7. Adjustment and check of optimum current for DCC recording
	DCC-S1	DCC characteristics tape	6. DCC playback level adjustment

- Required tools, etc.
  - Wrist strap (RFKZ0036)
  - Ceramic screwdriver (RFKZ0037)
  - Commercially available music CD
  - CD player (SL-PS700, SL-P900, etc.)
  - 10kΩ resistance

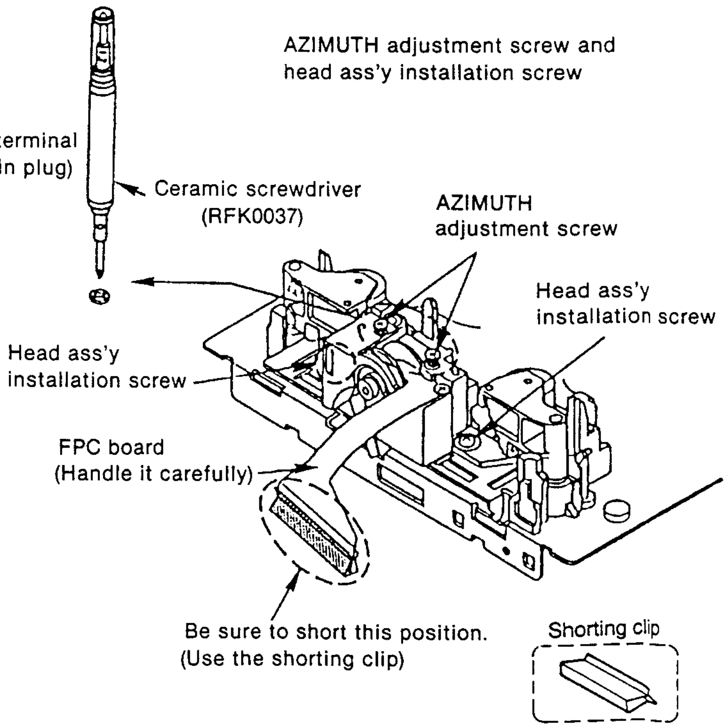
- Measurement equipment
  - Oscilloscope (30MHz or higher)
  - EVM (electronic voltmeter)
  - Frequency counter
  - Distortion meter

■ To prevent Electrostatic Damage to the DCC Head

1. Wear the wrist strap (RFKZ0036).



2. Use the ceramic screwdriver (RFKZ0037).



■ Setting Service Mode for Adjustments

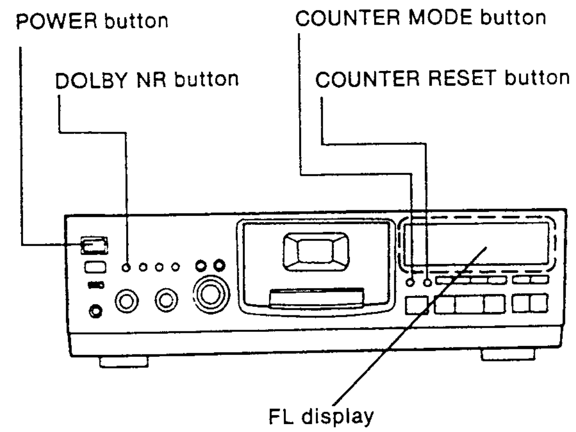
AZIMUTH Adjustment using Error Rate Display

This unit incorporates service mode functions to check its major ICs.
One of these is the error rate display function for all individual DCC head channels. The use of this function allows adjustment of the AZIMUTH.

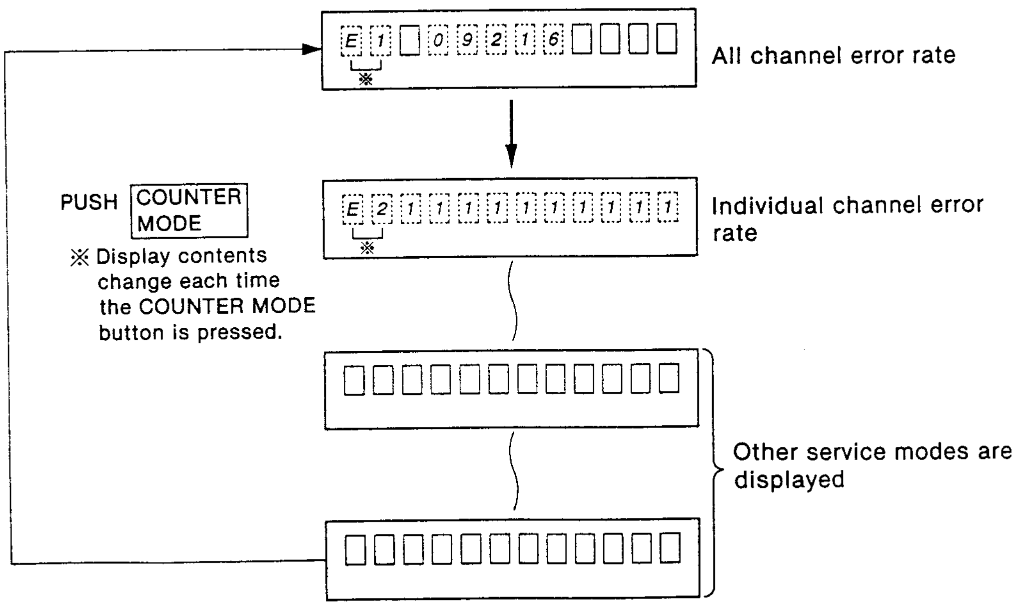
What is the error rate?

The error rate is a numerical expression of the accuracy of the digital signal received from the head during DCC tape replay.
The digital signal has an error correction function to remove dropouts caused by dirt on the head surface or scratches on the tape.

Setting the error rate display



1. Press the POWER button on.
2. Play a DCC tape.
3. Press and hold the DOBLY NR button for more than 3 seconds.
4. Press the STOP button simultaneously.
5. The following display appears.



■ Adjustment Items by Symptom

(Symptom)	(Adjustment Item Reference Pages)
If the playback output level for ACC tape* is too low. If there is a difference in playback output level between left and right channels for ACC tape. If there is a difference in playback output level between forward and reverse directions for ACC tape.	1. AZIMUTH adjustment (See page 46.) 3. Analog output level adjustment (See page 48.) 4. Check and adjustment of analog output distortion (See page 48.) 5. Analog playback frequency response adjustment (See page 49.) 9. Output level adjustment (See page 52.)
If there is distortion in playback output for ACC tape.	3. Analog output level adjustment (See page 48.) 4. Check and adjustment of analog output distortion (See page 48.) 9. Output level adjustment (See page 52.)
If there is a dropout in playback output for DCC tape. If an error rate of "00250" or higher is indicated in the service mode check.	6. DCC playback level adjustment (See page 49.)
If, when re-recording on a previously recorded DCC tape, the previously recorded sound can be heard in the newly recorded sound.	7. Adjustment and check of optimum current for DCC recording (See page 50.)
If the motor, belt, flywheel, or electrical components of the motor drive circuitry have been replaced. If the tape speed is not within the specified range (3000 Hz ± 5 Hz).	2. Tape speed adjustment (See page 47.)
If there is a problem with the quick reverse function. (Such as the tape reverses at some mid-point, or reversing is not possible without winding the tape all the way to the end.)	8. Adjustment of quick reverse sensor (See page 47.)
If the head has been replaced.	1. AZIMUTH adjustment (See page 46.) 3. Analog output level adjustment (See page 48.) 4. Check and adjustment of analog output distortion (See page 48.) 5. Analog playback frequency response adjustment (See page 49.) 6. DCC playback level adjustment (See page 49.) 7. Adjustment and check of optimum current for DCC recording (See page 50.) 8. Adjustment of quick reverse sensor (See page 47.) 9. Output level adjustment (See page 52.)

Note: *ACC tape is conventional cassette tape

Adjustment procedures

• Mechanical adjustments

1. AZIMUTH ADJUSTMENT

When the head is replaced, AZIMUTH adjustment (AZTEC) is required to optimize the head travel conditions for the tape. (Adjustment is also needed for dropouts.)

• Adjustment Procedure (After Head Replacement)

(1) Set the mechanism to the adjustment position (refer to page 41).

(2) Rough Adjustment

Play the ACC AZIMUTH adjustment tape (QZZCAC: 10kHz, −20dB).

↓

Adjust AZIMUTH screws on the forward and reverse sides so that line outputs are maximized for both channels (use an oscilloscope).

↓

(3) Fine Adjustment I

Play the DCC music tape (RFTRD002).

↓

Set the error display for each channel using the service mode (refer to page 44).

↓

Adjust the AZIMUTH adjustment screws on the forward and reverse sides so that "0" is displayed for each channel.

↓

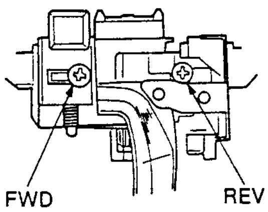
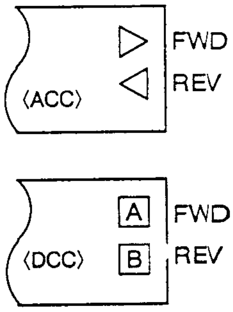


Fig. 1



E	2	0	1	0	1	1	0	0	0	0	1

* The display changes to "1" or "0".

(4) Fine Adjustment II

Adjust the display to [E 1 □ 0 0 0 2 5] using the COUNTER MODE button.
All error rate

↓

Adjust the AZIMUTH adjustment screws on the forward and reverse sides so the error rate is minimized.

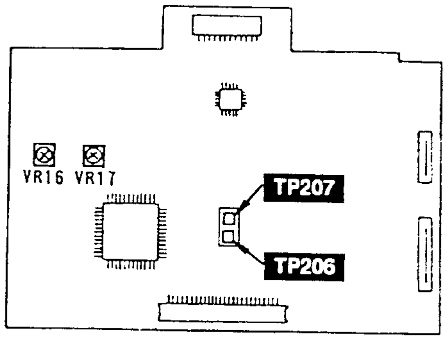
[Note: The display does not change immediately after the adjustment screw is rotated. Wait for a few seconds to check the error rate.]

(5) Check the tape travel conditions with the mirror tape (QZZCRD).

(6) After head AZIMUTH adjustment, secure the AZIMUTH screws in position with screw locking fluid.

• **Electrical adjustments**

2. Tape speed adjustment

Preparations for adjustments	Connections and settings
Measurement instrument required • Frequency counter	 READ/WRITE P.C.B. **Fig. 2**
Test tapes required • QZZCWAT: (3kHz)	
Tools required • Wrist strap (RFKZ0036) • Ceramic screwdriver (RFKZ0037)	
Output points • Analog playback terminal: Rch • Line out (connector CN405 ⑬ pin: Rch)	
Adjustment locations • Forward (FWD) side: **VR16** • Reverse (REV) side: **VR17**	
Adjustment value: 3000±5Hz	

If the motor, belt, flywheel, or electrical components of the motor drive circuitry have been replaced, be sure to check and adjust tape speed.

Checking tape speed

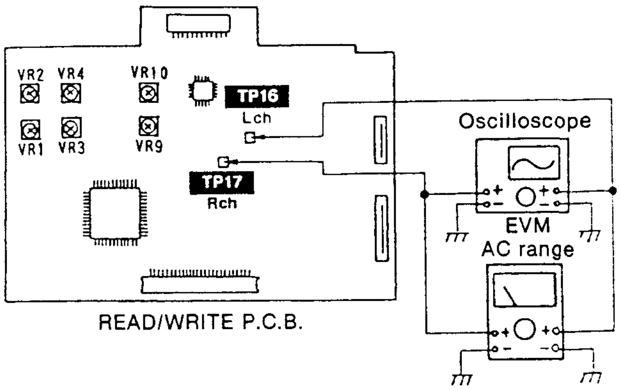
(1) Switch the power on and insert the 3kHz, −10dB test tape **(QZZCWAT)**.
(2) Playback the test tape in both the forward and reverse directions, and confirm that the output frequency is within the range of 3000±5Hz. If the output is not within the specified range, use the following procedure to adjust tape speed.

Adjustment of tape speed

(1) Disconnect the power cord, and then use lead wire to **short** between TP206 and TP207.
(2) Plug the power cord back in and play back the test tape in the forward direction.
(3) Adjust **VR16** so that the output frequency is within the range of **3000±5Hz**.
(4) Playback the test tape in the reverse direction.
(5) Adjust **VR17** so that the output frequency is within the range of **3000±5Hz**.
(6) Confirm that output frequency is within the range of **3000±5Hz** for both forward and reverse directions.
(7) Switch off the power and **remove the short** from TP206 and TP207.

Because tape speed is locked, it cannot be adjusted using variable resistors **VR16** and **VR17** without first shorting TP206 and TP207. When adjusting tape speed, always be sure to short, between TP206 and TP207.
After adjustment, when the short between TP206 and TP207 is removed, the adjusted tape speed will be locked.

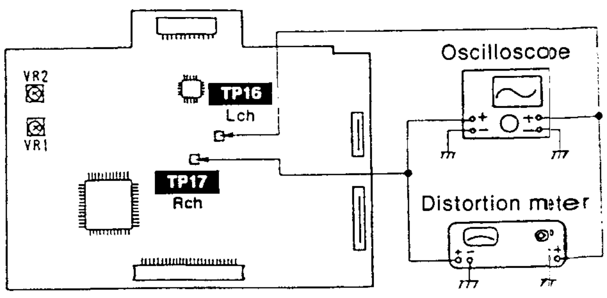
3. Analog output level adjustment

Preparations for adjustments	Connections and settings
Measurement instrument required • Oscilloscope (30MHz or higher) • EVM (AC range)	
Test tapes required • QZZCLA 315Hz, 0dB test tape	
Tools required • Wrist strap (RFKZ0036) • Ceramic screwdriver (RFKZ0037)	
Output points • TP16: Lch, TP17: Rch	
Adjustment locations • Lch: **VR1, VR3, VR9** • Rch: **VR2, VR4, VR10**	Fig. 3
Adjustment value: 158mV output voltage	

• Adjustment procedure

(1) Switch on the power and insert the 315Hz, 0dB test tape **(QZZCLA)**.
(2) Playback the test tape and adjust **VR1 (left channel)** and **VR2 (right channel)** to minimize the waveform distortion.
(3) Adjust **VR3 (left channel)** and **VR4 (right channel)** to maximize the output level.
(4) Adjust **VR3 (left channel)** and **VR4 (right channel)** to obtain optimum output level by attenuating **−10dB** from the maximum output level.
(5) Adjust **VR9 (left channel)** and **VR10 (right channel)** so that output voltage is **158mV**.

4. Check and adjustment of analog output distortion (READ/WRITE P.C.B.)

Preparations for adjustments	Connections and settings
Measurement instrument required • Oscilloscope (30MHz or higher) • Distortion meter	
Test tapes required • QZZCLA 315Hz, 0dB test tape	
Tools required • Wrist strap (RFKZ0036) • Ceramic screwdriver (RFKZ0037)	
Output points • TP16: Lch, TP17: Rch	Fig. 4
Adjustment locations • Lch: **VR1** • Rch: **VR2**	
Adjustment value: **Less than 1.6% THD** (total harmonic distortion)	

• Adjustment procedure

(1) Switch on the power and insert the 315Hz, 0dB test tape **(QZZCLA)**.
(2) Playback the test tape and confirm that THD is **less than 1.6%**.
(3) If THD is more 1.6%, adjust **VR1 (left channel)** and **VR2 (right channel)** until it is **less than 1.6%**.

5. Analog playback frequency response adjustment

Preparations for adjustments

Measurement instrument required
- Frequency counter
- EVM (AC range)

Test tapes required
- QZZCFM ACC frequency response tape
  315Hz, −20dB
  12.5kHz, −20dB

Tools required
- Wrist strap (RFKZ0036)
- Ceramic screwdriver (RFKZ0037)

Output points
- TP16: Lch, TP17: Rch

Adjustment locations
- Lch: **VR5**
- Rch: **VR6**

Adjustment value: +0.4dB~0.6dB

Connections and settings

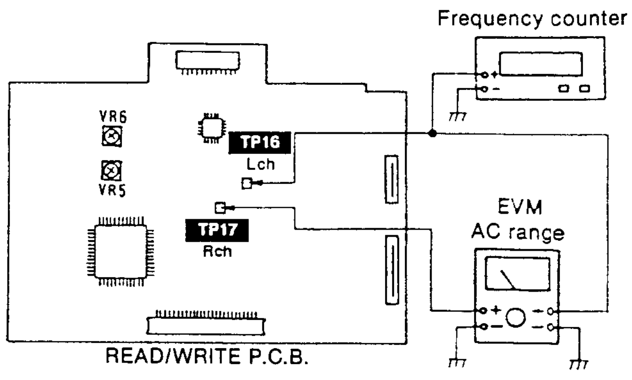


Fig. 5

- Adjustment procedure

(1) Switch on the power and insert the ACC frequency response tape **(QZZCFM)**.
(2) While using a frequency counter to monitor the output frequency, play back the 315Hz, −20dB and 12.5kHz, −20dB test tones on the ACC frequency response tape.
(3) Using the output level during playback of the 315Hz, −20dB test tone as a reference, adjust **VR5 (left channel)** and **VR6 (right channel)** so that the output level during playback of the 12.5kHz, −20dB test tone is within the range of **+0.4dB~0.6dB**.

6. DCC playback level adjustment

Preparations for adjustments

Measurement instrument required
- Oscilloscope (30MHz or higher)

Test tapes required
- DCC-S1 DCC characteristics tape

Tools required
- Wrist strap (RFKZ0036)
- Ceramic screwdriver (RFKZ0037)

Output points
- TP18: CH1, TP15: CH2

Adjustment locations
- Lch: **VR14**

Adjustment value: 1.1Vp-p±100mV average output

Connections and settings

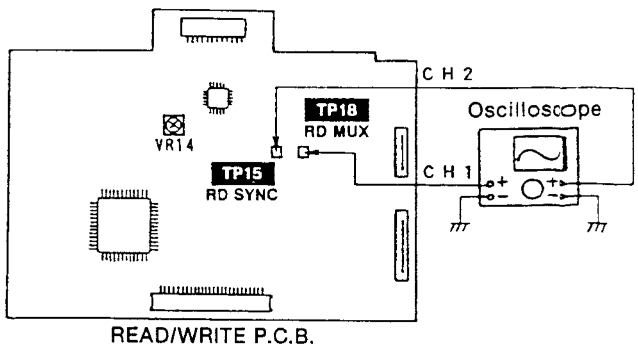
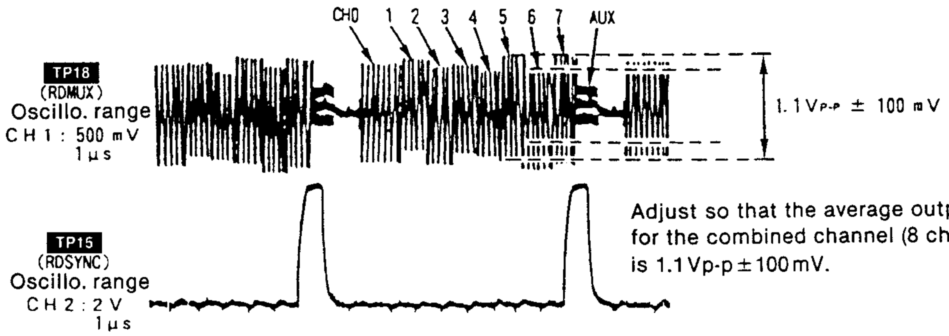


Fig. 6

This adjustment is performed so that a digital signal of a specific level is applied from the DCC RF circuit to the PASC digital circuit.

- Adjustment procedure

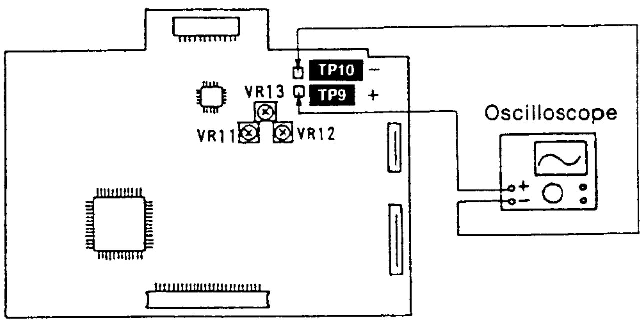
(1) Switch on the power and insert the DCC characteristics tape **(DCC-S1)**.
(2) Playback the DCC characteristics tape. (Any test tone on the tape can be used.)
(3) Adjust **VR14** so that, for output waveforms from TP18 (CH1), the average output level for each channel (*DMUX CH0~7) is **1.1Vp-p±100mV**.



Adjust so that the average output level for the combined channel (8 channel) is 1.1 Vp-p ± 100 mV.

Fig. 7

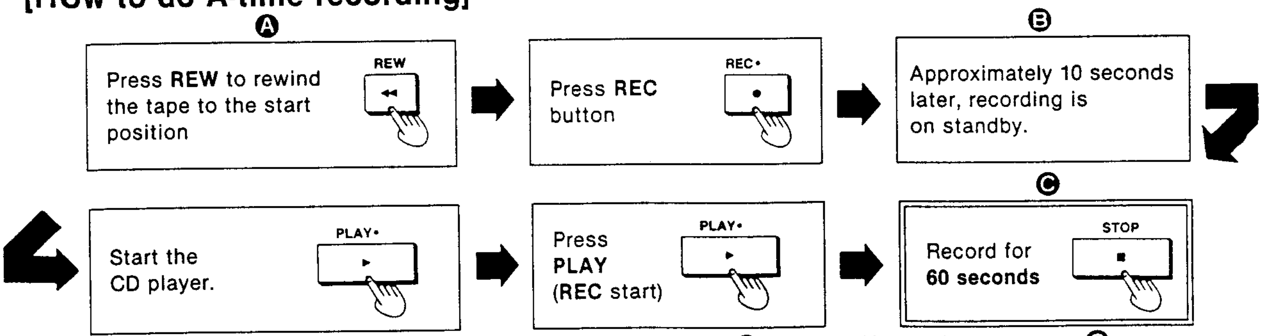
7. Adjustment and check of optimum current for DCC recording

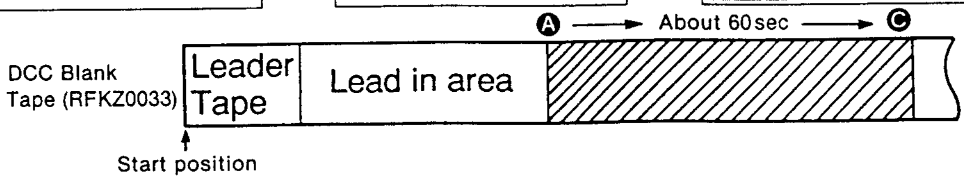
Preparations for adjustments	Connections and settings
Measurement instrument required • Oscilloscope (30 MHz or higher)	READ/WRITE P.C.B. Fig. 8
Test tapes required • DCC blank tape	
Tools required • Wrist strap (RFKZ0036) • Ceramic screwdriver (RFKZ0037) • Commercially available music CD • CD player	
Output points • TP9: + Side, TP10: − Side	
Adjustment location and value **• Va: VR13: I (Specified current)** **• Vb: VR11: 1.15 × Vm** **• Vc: VR12: Va + 50 mV**	

〈Preparation〉

- Connect the CD player output terminal with the DCC recording terminal (either analog input, digital input, or optical input). Record the CD sound onto the DCC Blank tape (RFKZ0033). This recording gives A-time.

[How to do A-time recording]





• Adjustment procedure

(1) Determine the **optimum voltage value** according to the current specified on the back of each head FPC.

Va=I (Specified current)	Va=160mV
Vb=[1.15]×Va	Vb=184mV ([1.15]×160mV)
Vc=[50mV]×Vb	Vc=234mV ([50mV]+184mV)

※[ ] Constant value

(2) Adjust **each VR** so the voltages are Va, Vb or Vc.

Note: Specified current varies with individual heads.

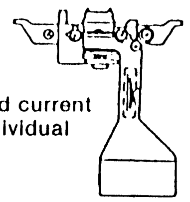


Fig. 9

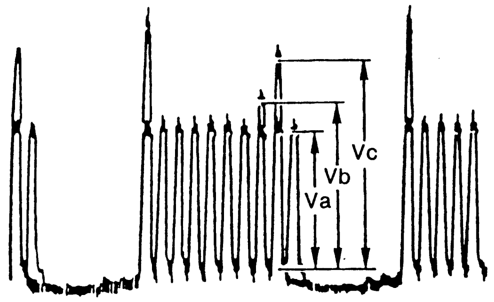


Fig. 10 (Oscillo. range 50 mV 1 μs)

(I) **Method of Verification** (Must be performed atter adjustment.)

Overwrite with another music source part of the section that was recorded during preparation.

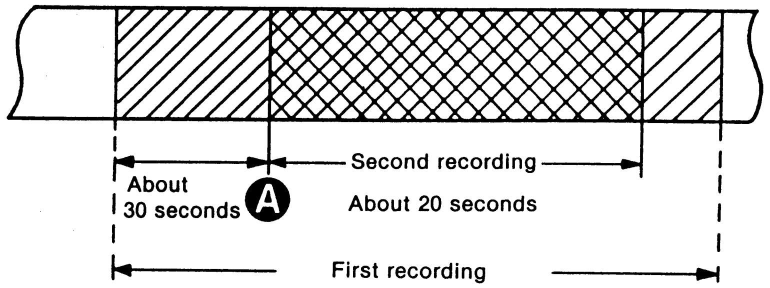


Fig. 11

〔How to overwrite〕

Press **REW** to rewind the tape to the start position (REW) → Press **PLAY** (PLAY•) → Press **PAUSE** when A-Time reaches **30 seconds** (PAUSE) → Press **REC AUTO** (REC•) → Press **PLAY** (record another music source) (PLAY•) → Press **STOP** (After 20 seconds) (STOP)

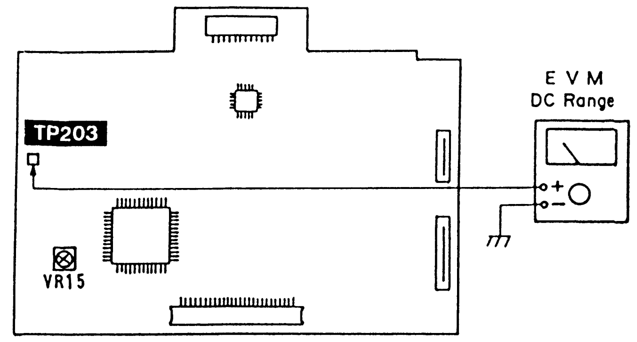
(II) **Verification Items**

Rewind the tape and play it back, and check the following at the breaks between tracks.

1. Check that A-Time is played back.
   (Fails if the recording current is low.)

2. Check the Error Rate
   ① Stop after about 20 seconds from the tape start position.
   ② Use the service mode to set the error display for all channels (refer to page 44). Display the service mode on the fluorescent (FL) display and playback the tape.
   ③ After instantaneous deterioration of the error rate to [E1 00251-09216], use the service mode display to check the error rate display returns to [E1 00000-00250] at A (A-time joint) in Figure 11.

8. Adjustment of quick reverse sensor

Preparations for adjustments	Connections and settings
Measurement instrument required • EVM (DC Range)	
Test tapes required • Analog blank tape	
Tools required • Wrist strap (RFKZ0036) • Ceramic screwdriver (RFKZ0037)	
Output points • TP203	
Adjustment locations • **VR15**	READ/WRITE P. C. B. **Fig. 12**
Adjustment value: 1.0±0.1V	

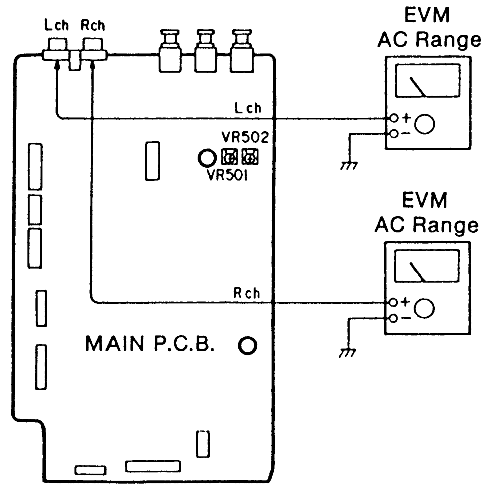
Sets the sensitivity of the PHOTO sensor for detection of leader and magnetic parts of the tape.

• Adjustment procedure

(1) Switch on the power and insert a commercially available **analog tape (blank tape)**.

(2) Playback the magnetic part of the tape and adjust **VR15** so that the DC voltage using the EVM is **1.0V±0.1V**.

9. Output level adjustment

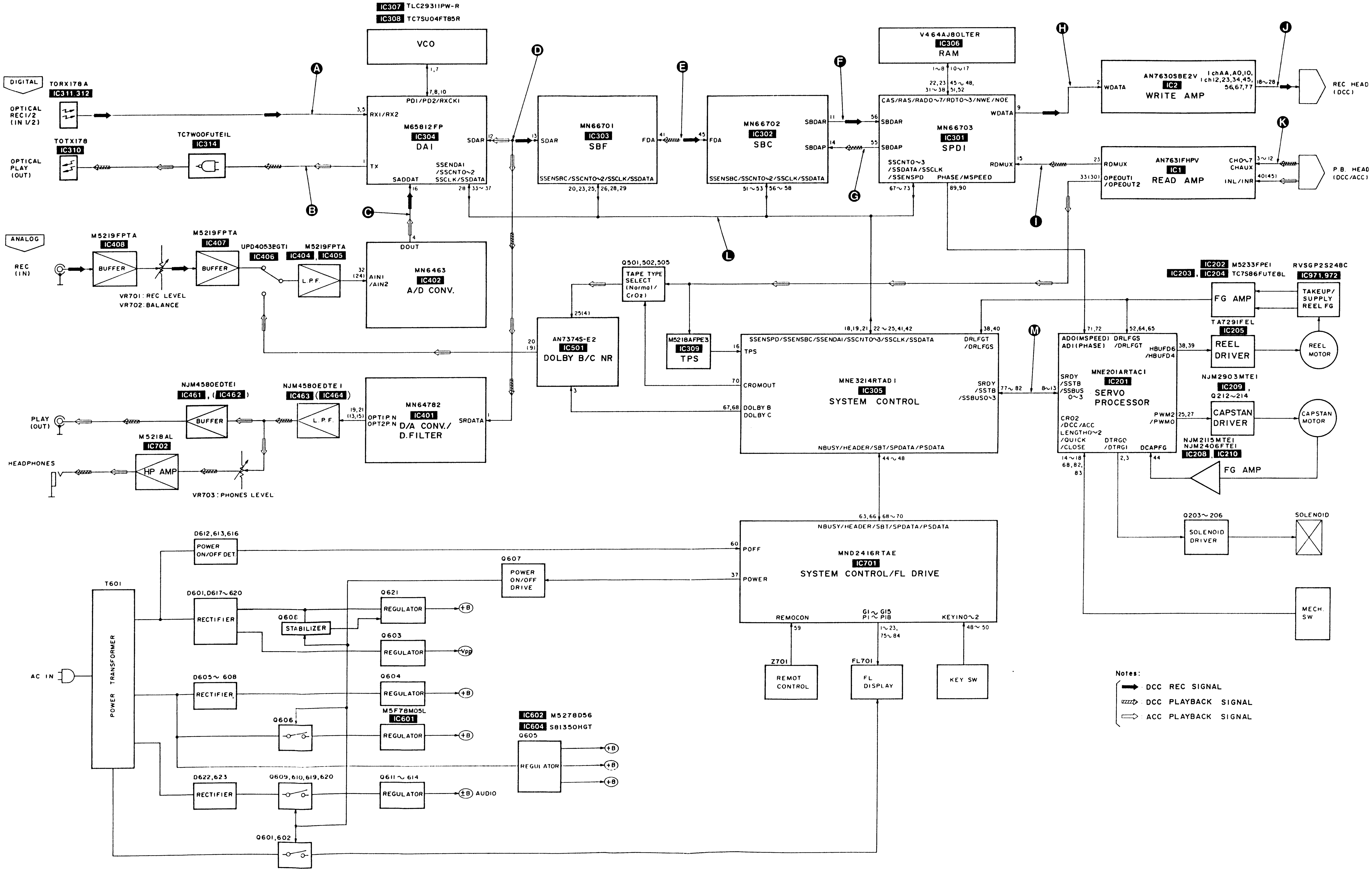
Preparations for adjustments	Connections and settings
Measurement instrument required • EVM (AC Range)	
Test tapes required • QZZCLA 315Hz, 0dB test tape	
Tools required • Wrist strap (RFKZ0036) • Ceramic screwdriver (RFKZ0037) • 10kΩ resistance	
Output points • Analog playback terminal: Rch, Lch	
Adjustment locations • Lch: **VR501** • Rch: **VR502**	**Fig. 13**
Adjustment value: 315mV	

• Adjustment procedure

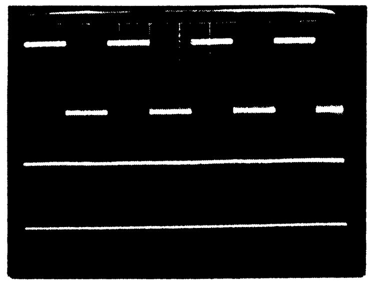
(1) Switch on the power and insert the 315Hz, 0dB test tape **(QZZCLA)**.

(2) Playback the test tape and adjust **VR501 (left channel)** and **VR502 (right channel)** so that the AC voltage using the EVM is **315mV**.

■ BLOCK DIAGRAM

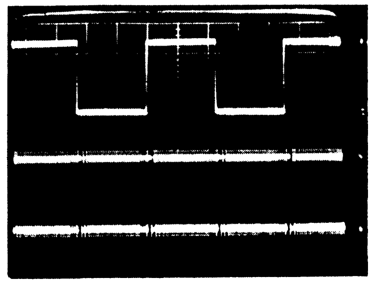


Ⓐ IC304 Pin ⑭ SWS (CH1)
IC304 Pin ③ RX1、⑤ RX2 (CH2)



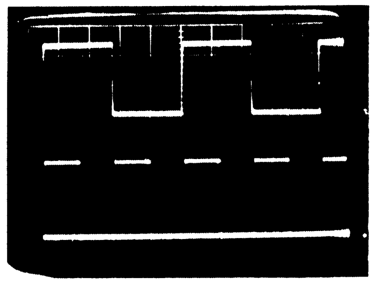
REC WITHOUT MUSIC SIGNAL
Y : 0.2V × 10
X : 5μs

Ⓑ IC304 Pin ⑭ SWS (CH1)
IC304 Pin ① TX (CH2)



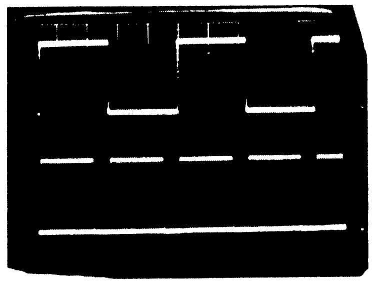
PLAY/BACK WITH MUSIC SIGNAL
Y : 0.2V × 10
X : 5μs

Ⓒ IC402 Pin ⑥ WCK (CH1)
IC402 Pin ④ DOUT (CH2)



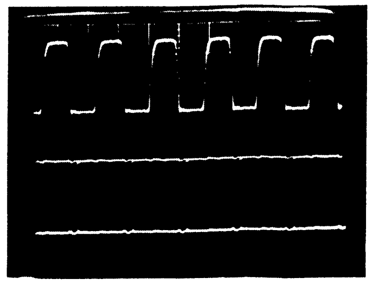
REC WITHOUT MUSIC SIGNAL
Y : 0.2V × 10
X : 5μs

Ⓓ-1 IC401 Pin ㊸ LRCK (CH1)
IC401 Pin ① SRDATA (CH2)



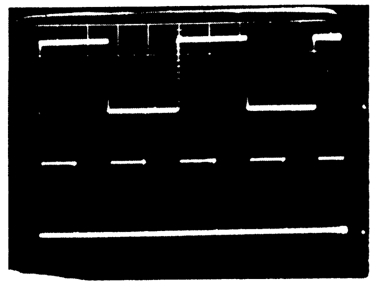
PLAY/BACK WITH MUSIC SIGNAL
Y : 0.2V × 10
X : 5μs

Ⓓ-2 IC401 Pin ㊹ BCLK (CH1)
IC401 Pin ① SRDATA (CH2)



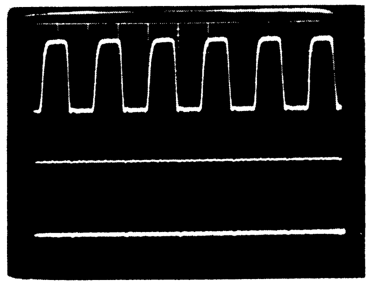
PLAY/BACK WITH MUSIC SIGNAL
Y : 0.2V × 10
X : 0.2μs

Ⓓ-3 IC303 Pin ⑰ SWS (CH1)
IC303 Pin ⑬ SDAR (CH2)



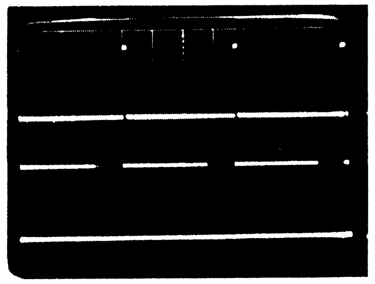
REC WITHOUT MUSIC SIGNAL
Y : 0.2V × 10
X : 5μs

Ⓓ-4 IC303 Pin ⑱ SCL (CH1)
IC303 Pin ⑬ SDAR (CH2)



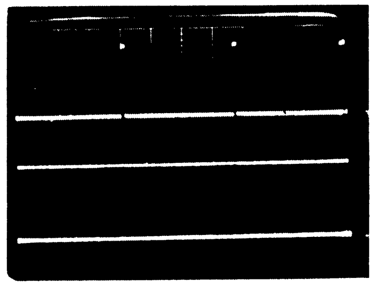
REC WITHOUT MUSIC SIGNAL
Y : 0.2V × 10
X : 0.2μs

Ⓔ-1 IC302 Pin ㊽ FSYNC (CH1)
IC302 Pin ㊾ FDA (CH2)



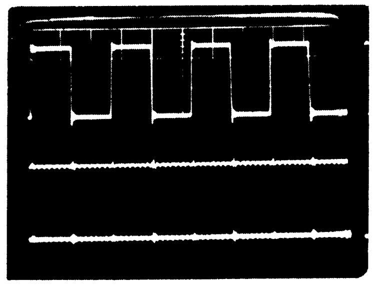
PLAY/BACK WITH MUSIC SIGNAL
Y : 0.2V × 10
X : 0.2ms

Ⓔ-2 IC302 Pin ㊽ FSYNC (CH1)
IC302 Pin ㊾ FDA (CH2)



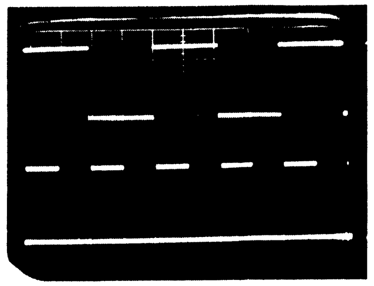
REC WITHOUT MUSIC SIGNAL
Y : 0.2V × 10
X : 0.2ms

Ⓕ-1 IC302 Pin ⑨ SBCL (CH1)
IC302 Pin ⑪ SBDAR (CH2)



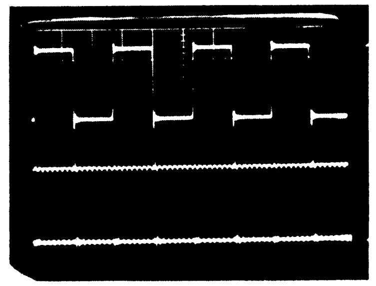
REC WITHOUT MUSIC SIGNAL
Y : 0.2V × 10
X : 0.5μs

Ⓕ-2 IC302 Pin ⑩ SBWS (CH1)
IC302 Pin ⑪ SBDAR (CH2)



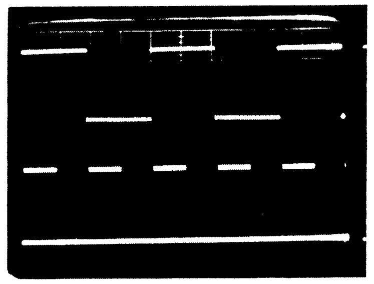
REC WITHOUT MUSIC SIGNAL
Y : 0.2V × 10
X : 20μs

Ⓖ-1 IC302 Pin ⑨ SBCL (CH1)
IC302 Pin ⑭ SBDAP (CH2)



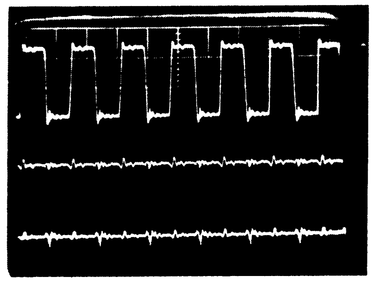
PLAY/BACK WITH MUSIC SIGNAL
Y : 0.2V × 10
X : 0.5μs

Ⓖ-2 IC302 Pin ⑩ SBWS (CH1)
IC302 Pin ⑭ SBDAP (CH2)



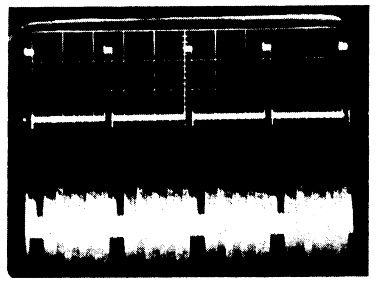
PLAY/BACK WITH MUSIC SIGNAL
Y : 0.2V × 10
X : 20μs

Ⓗ IC301 Pin ⑧ WCLOCK (CH1)
IC301 Pin ⑨ WDATA (CH2)



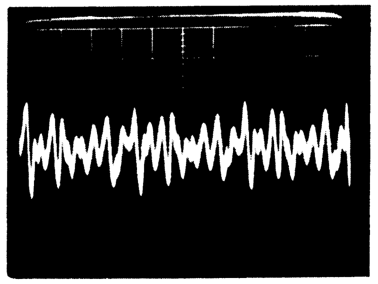
REC WITHOUT MUSIC SIGNAL
Y : 0.2V × 10
X : 0.2μs

Ⓘ IC301 Pin ⑥ RDSYNC (CH1)
IC301 Pin ⑮ RDMUX (CH2)



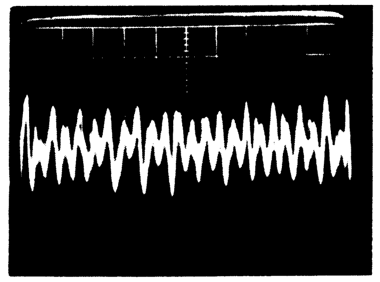
PLAY/BACK WITH MUSIC SIGNAL
CH1 Y : 0.2V × 10
X : 0.2μs
CH2 Y : 50mV × 10
X : 2μs

Ⓙ IC2 Pin ⑱~㉘



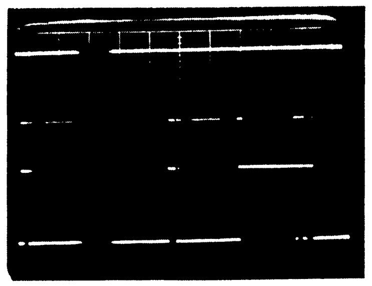
REC WITHOUT MUSIC SIGNAL
Y : 2mV × 10
X : 0.1μs

Ⓚ IC1 Pin ③~⑥、⑧~⑫
EYE MONITOR



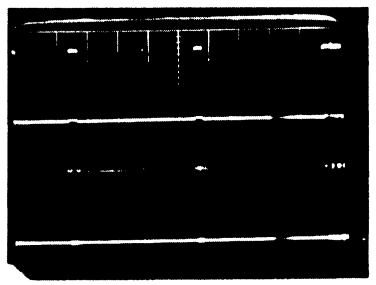
PLAY/BACK WITH MUSIC SIGNAL
Y : 2mV × 10
X : 0.1μs

Ⓛ-1 IC301 Pin ⑫ SSCLK (CH1)
IC301 Pin ⑪ SSDATA (CH2)



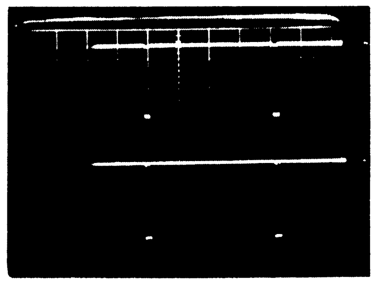
PLAY/BACK WITH MUSIC SIGNAL
Y : 0.2V × 10
X : 10ms

Ⓛ-2 IC301 Pin ⑬ SSENSTD (CH1)
IC301 Pin ⑰~⑳ SSCNT0~3 (CH2)



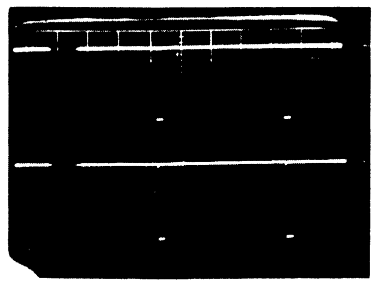
PLAY/BACK WITH MUSIC SIGNAL
Y : 0.2V × 10
X : 10ms

Ⓜ-1 IC305 Pin ⑱ SSTB (CH1)
IC305 Pin ⑲~㉒ SSBUS0~3 (CH2)



PLAY/BACK WITH MUSIC SIGNAL
Y : 0.2V × 10
X : 10ms

Ⓜ-2 IC305 Pin ⑰ SRDY (CH1)
IC305 Pin ⑲~㉒ SSBUS0~3 (CH2)



PLAY/BACK WITH MUSIC SIGNAL
Y : 0.2V × 10
X : 10ms

■ SCHEMATIC DIAGRAM

(Parts list on pages 96~103.)

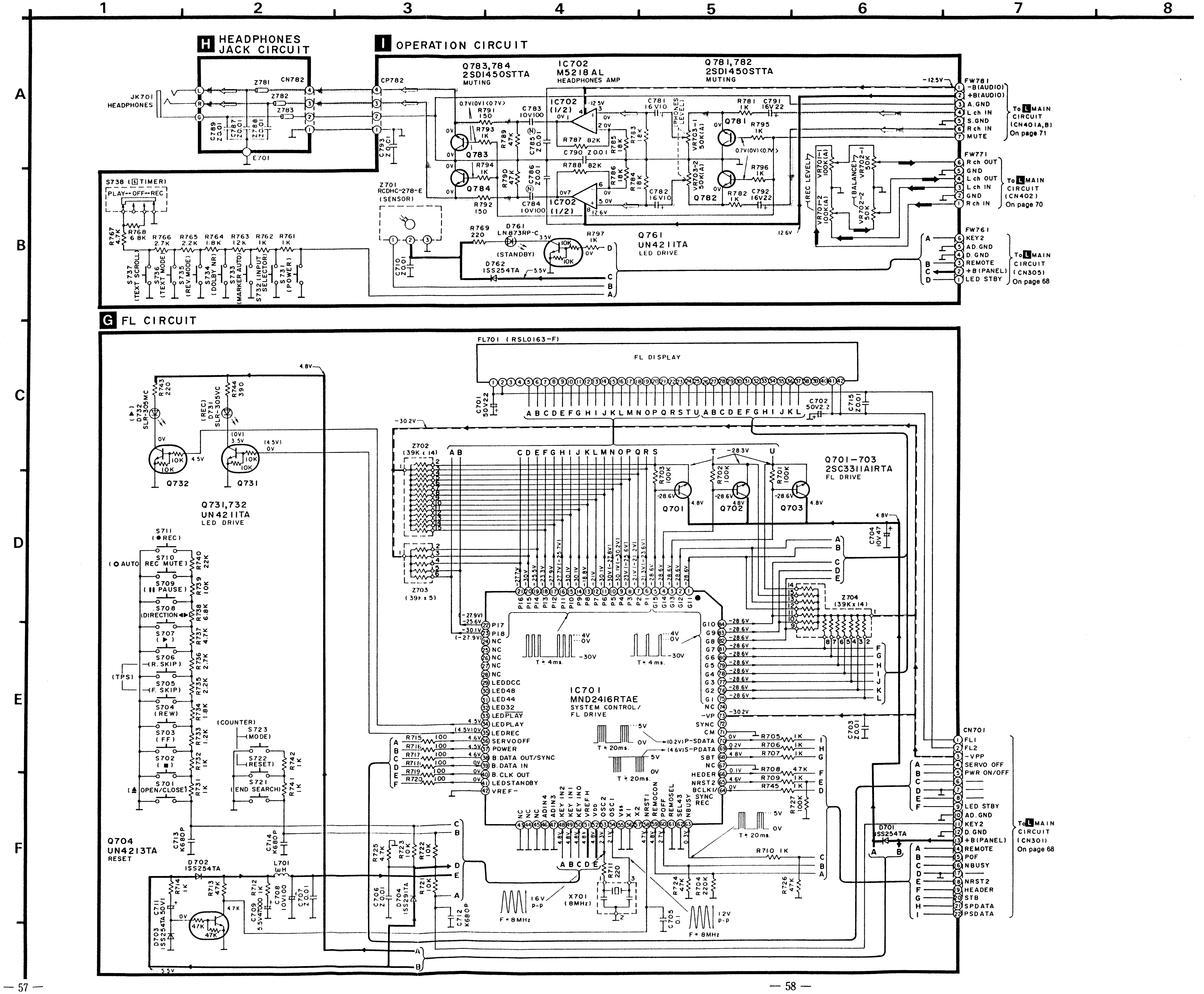
(This schematic diagram may be modified at any time with the development of new technology.)

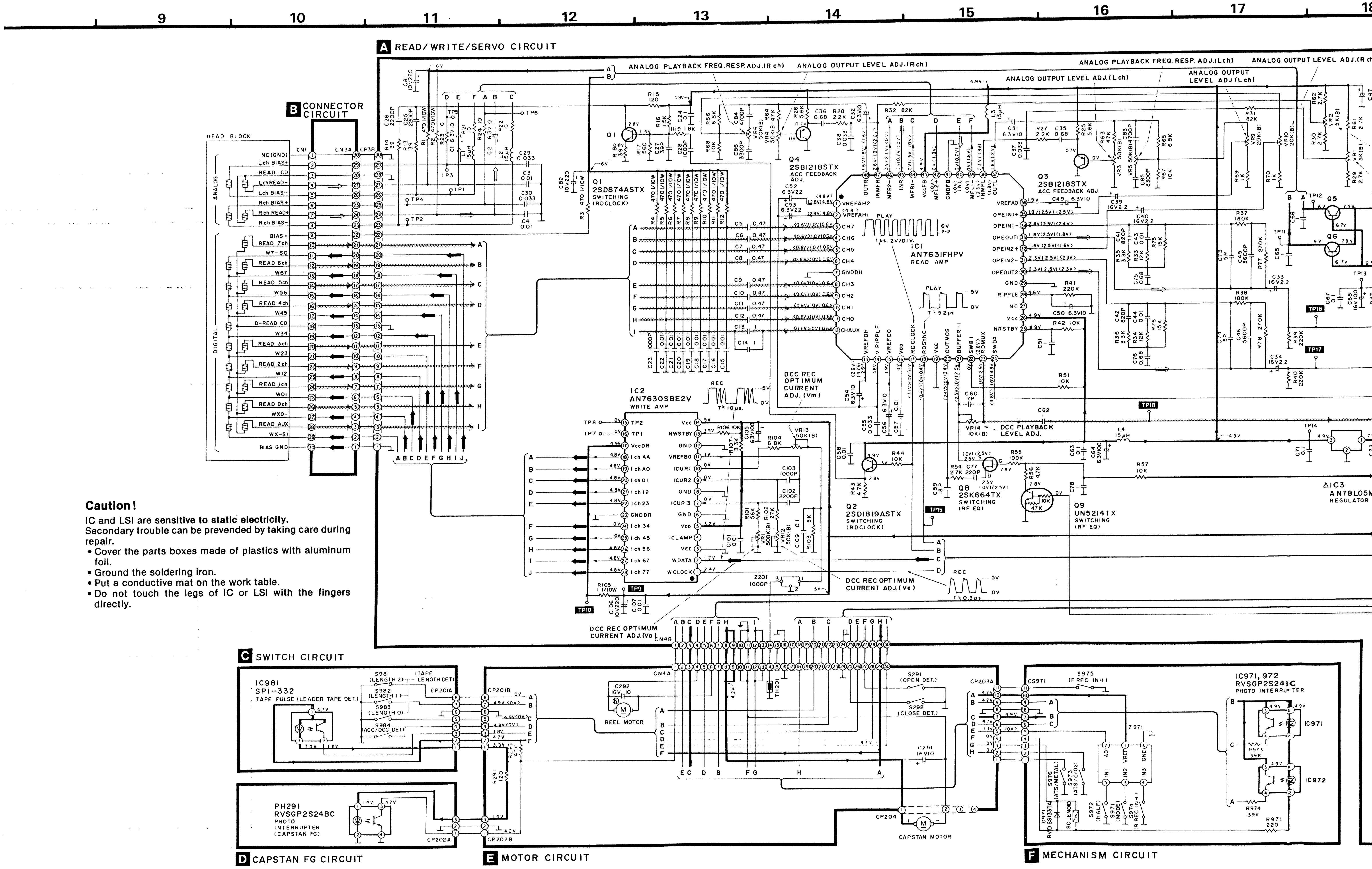
Note:

- **S291** : Cassette lid open detector switch.
- **S292** : Cassette lid close detector switch.
- **S701** : Cassette lid open/close switch (▲ OPEN/CLOSE).
- **S702** : Stop switch (■).
- **S703** : Fast-forward switch (FF).
- **S704** : Rewind switch (REW).
- **S705, 706**: Skip/TPS switches. [S705: F. SKIP/TPS, S706: R. SKIP/TPS]
- **S707** : Playback switch (▶).
- **S708** : Tape side selection switch (◀▶ DIRECTION).
- **S709** : Pause switch (❚❚ PAUSE).
- **S710** : Automatic-record-muting switch (● AUTO REC MUTE).
- **S711** : Rec pause switch (❚❚ PAUSE).
- **S721** : End search switch (END SEARCH).
- **S722** : Counter reset switch (COUNTER RESET).
- **S723** : Counter mode selector switch (COUNTER MODE).
- **S731** : Power "STANDBY ⏻ /ON" switch (POWER, STANDBY ⏻ /ON).
- **S732** : Recording input selection switch (INPUT SELECTOR).
- **S733** : Automatic marker writing switch (MARKER AUTO).
- **S734** : Dolby noise-reduction switch (DOLBY NR).
- **S735** : Reverse-mode selection (REVERSE MODE).
- **S736** : Text mode selection (TEXT MODE).
- **S737** : Text scroll switch (TEXT SCROLL).
- **S738** : Timer switch (TIMER).
- **S971** : Mode detection switch in "off" position.
- **S972** : Half detection switch in "off" position.
- **S973** : ATS (CrO_2) detection switch in "off" position.
- **S974** : Reverse rec. inhibit switch in "off" position.
- **S975** : Forward rec. inhibit switch in "off" position.
- **S976** : ATS (Metal) detection switch in "off" position.
- **S981~983**: DCC Tape length (LENGTH 2~0) detection switch.
- **S984** : DCC/ACC Cassette half detection switch in "off" position.
- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.
  Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
  No mark .....DCC playback
  ( ).........Voltage values at DCC record mode.
  〈 〉.........Voltage values at ACC playback mode.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used as occation calls. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
- The supply part number is described alone in the replacement parts.

Part No.	Production Part No.	Supply Part No.
IC309	M5218AFPE3	M5218FPE2
IC604	S81350HGT	S81350HG
IC702	M5218AL	M5218L
ICP601	SRUN25T	SRUN25
Z701	RCDHC-278-E	RCDHC-278

- ▬▬▬ / ▬ ▬ ▬ : Positive voltage lines and negative voltage lines.
- ⇢ : DCC (Playback) signal lines.
- ➡ : DCC (Record) signal lines.
- ⇨ : ACC (Playback) signal lines.

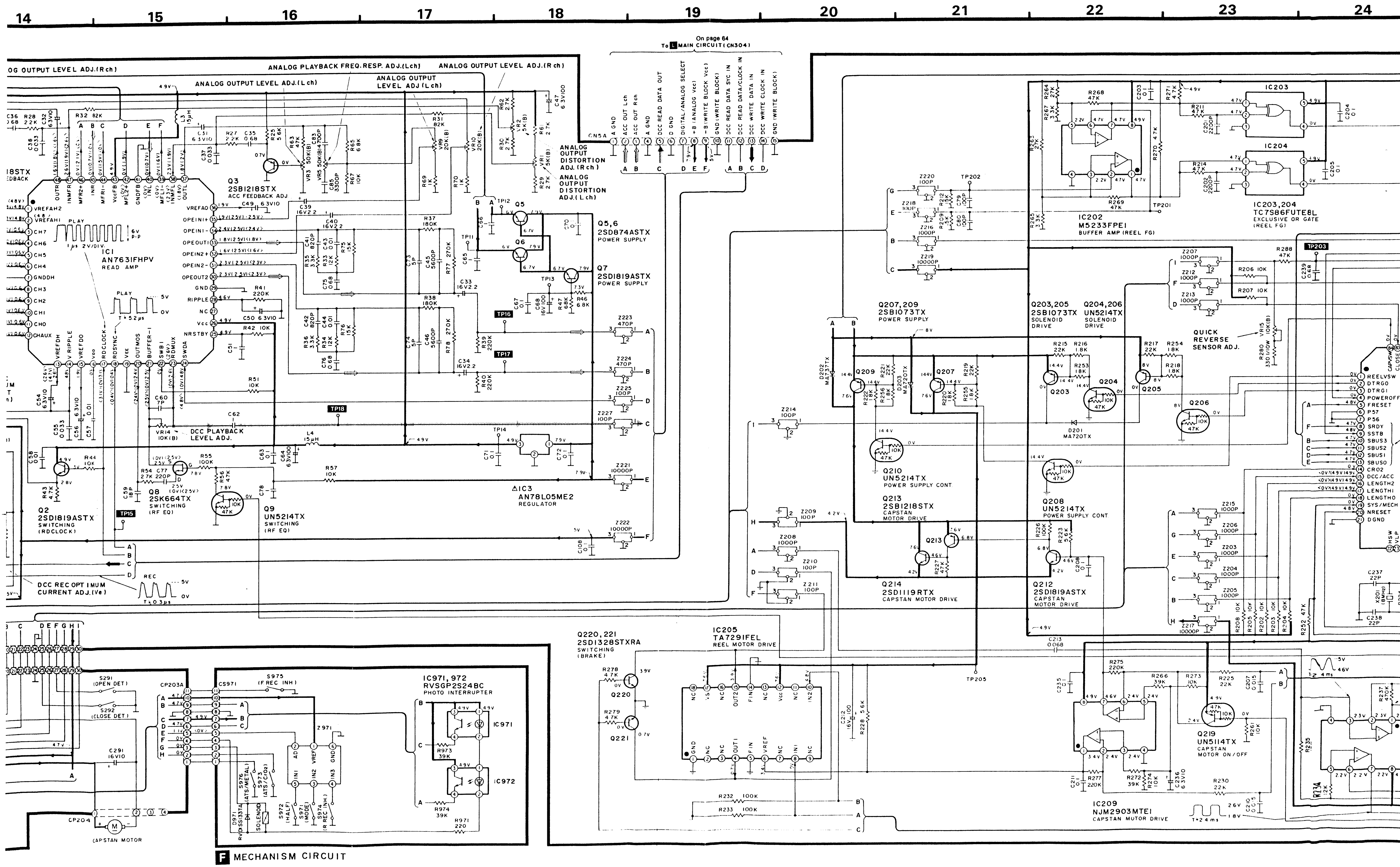




Caution!

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevended by taking care during repair.

- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the legs of IC or LSI with the fingers directly.


14
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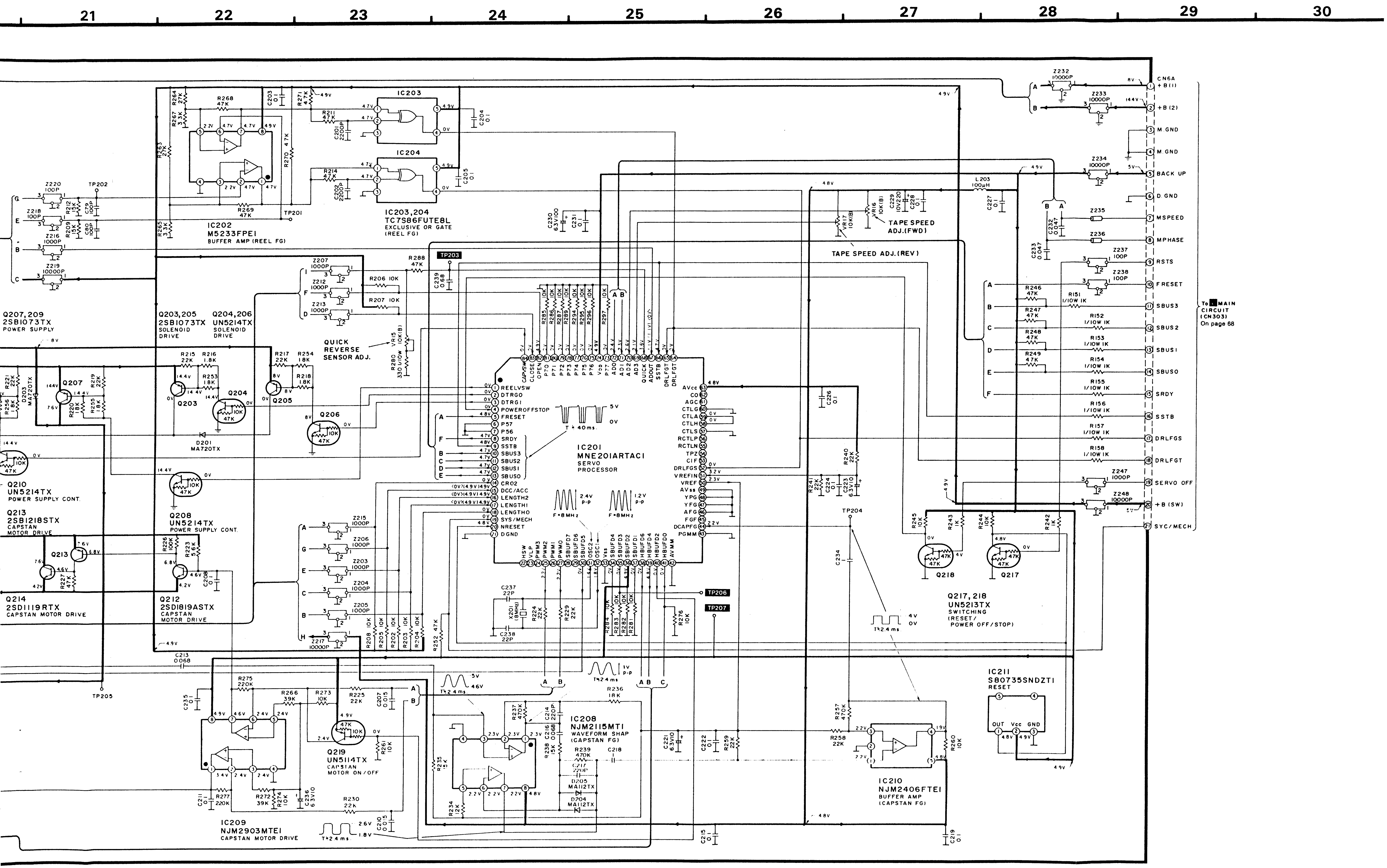
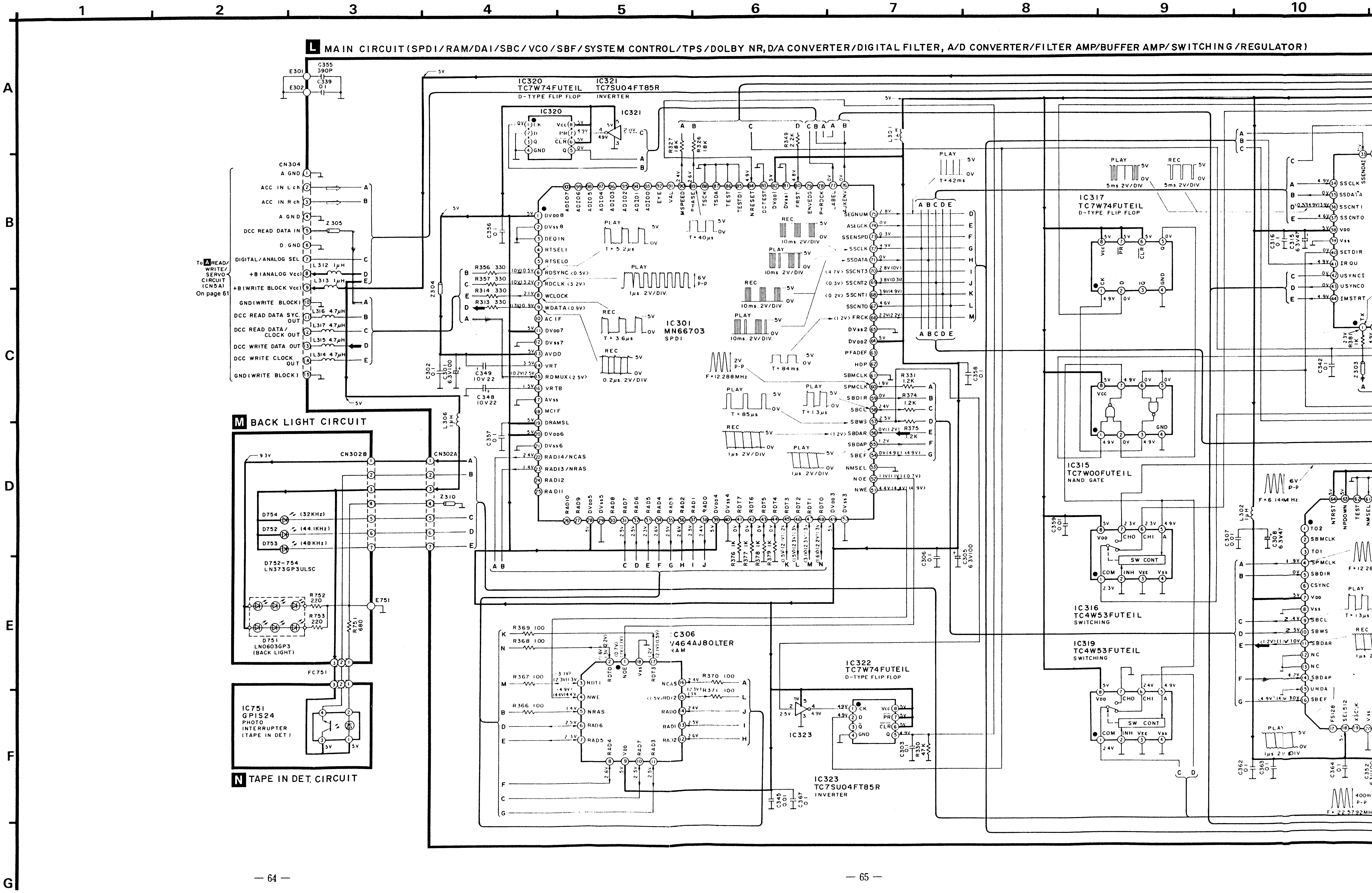
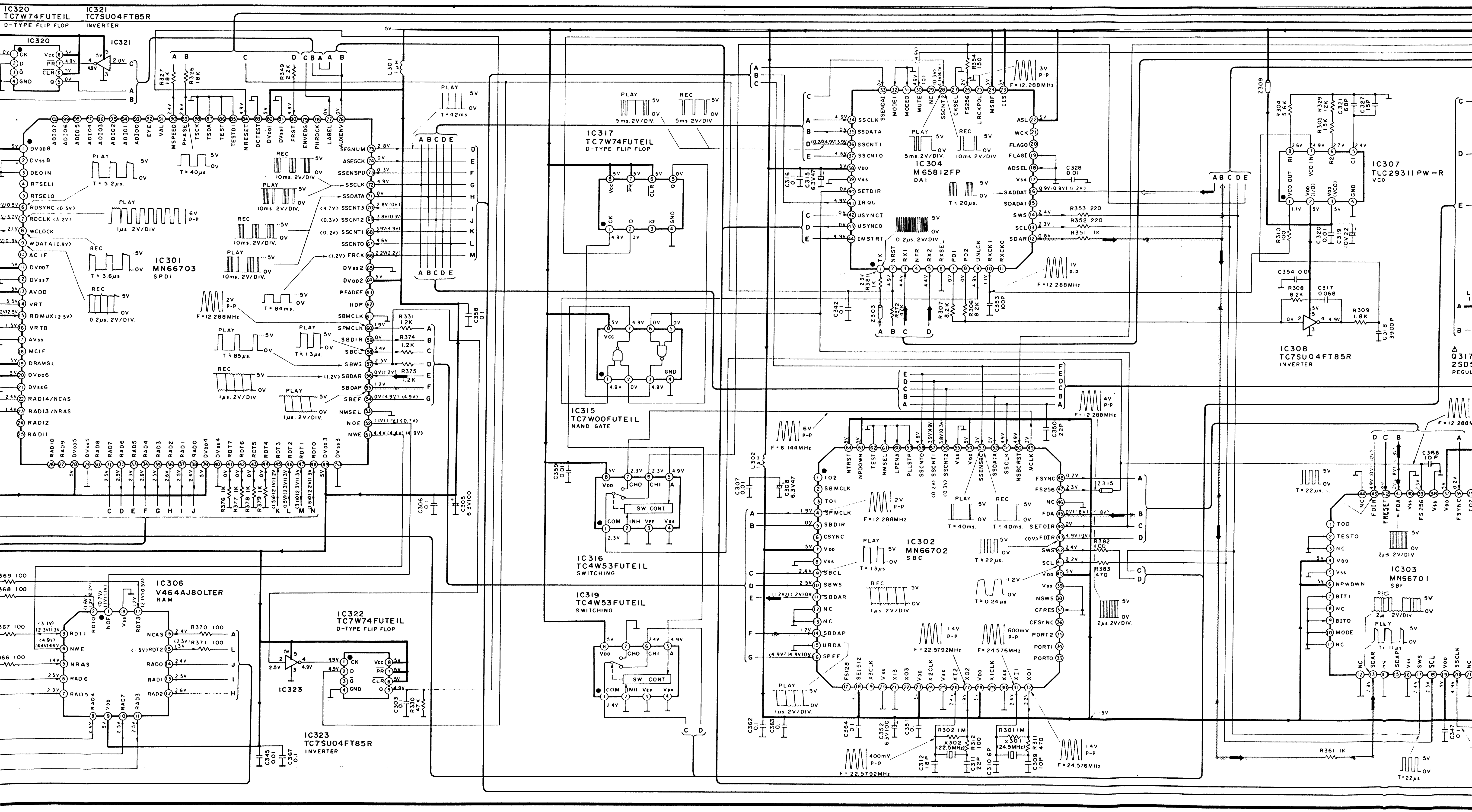
21
22
23
24
On page 64
To L MAIN CIRCUIT (CN304)
ANALOG PLAYBACK FREQ. RESP. ADJ. (Lch)
ANALOG OUTPUT LEVEL ADJ. (Rch)
ANALOG OUTPUT LEVEL ADJ. (Lch)
ANALOG OUTPUT LEVEL ADJ (Lch)
ANALOG OUTPUT DISTORTION ADJ. (Rch)
ANALOG OUTPUT DISTORTION ADJ. (Lch)
IC1
AN7631FHPV
READ AMP
Q3
2SB1218STX
ACC FEEDBACK ADJ
Q5,6
2SD874ASTX
POWER SUPPLY
Q7
2SD1819ASTX
POWER SUPPLY
Q2
2SD1819ASTX
SWITCHING (RDCLOCK)
Q8
2SK664TX
SWITCHING (RF EQ)
Q9
UN5214TX
SWITCHING (RF EQ)
ΔIC3
AN78L05ME2
REGULATOR
DCC PLAYBACK LEVEL ADJ.
DCC REC OPTIMUM CURRENT ADJ. (Ve)
Q207,209
2SB1073TX
POWER SUPPLY
Q210
UN5214TX
POWER SUPPLY CONT
Q213
2SB1218STX
CAPSTAN MOTOR DRIVE
Q214
2SD1119RTX
CAPSTAN MOTOR DRIVE
Q203,205
2SB1073TX
SOLENOID DRIVE
Q204,206
UN5214TX
SOLENOID DRIVE
Q208
UN5214TX
POWER SUPPLY CONT
Q212
2SD1819ASTX
CAPSTAN MOTOR DRIVE
IC202
M5233FPE1
BUFFER AMP (REEL FG)
IC203,204
TC7S86FUTE8L
EXCLUSIVE OR GATE (REEL FG)
QUICK REVERSE SENSOR ADJ.
Q220,221
2SD1328STXRA
SWITCHING (BRAKE)
IC205
TA7291FEL
REEL MOTOR DRIVE
IC209
NJM2903MTE1
CAPSTAN MOTOR DRIVE
Q219
UN5114TX
CAPSTAN MOTOR ON/OFF
IC971,972
RVSGP2S24BC
PHOTO INTERRUPTER
S291 (OPEN DET)
S292 (CLOSE DET)
S975 (F REC INH)
CAPSTAN MOTOR
F MECHANISM CIRCUIT

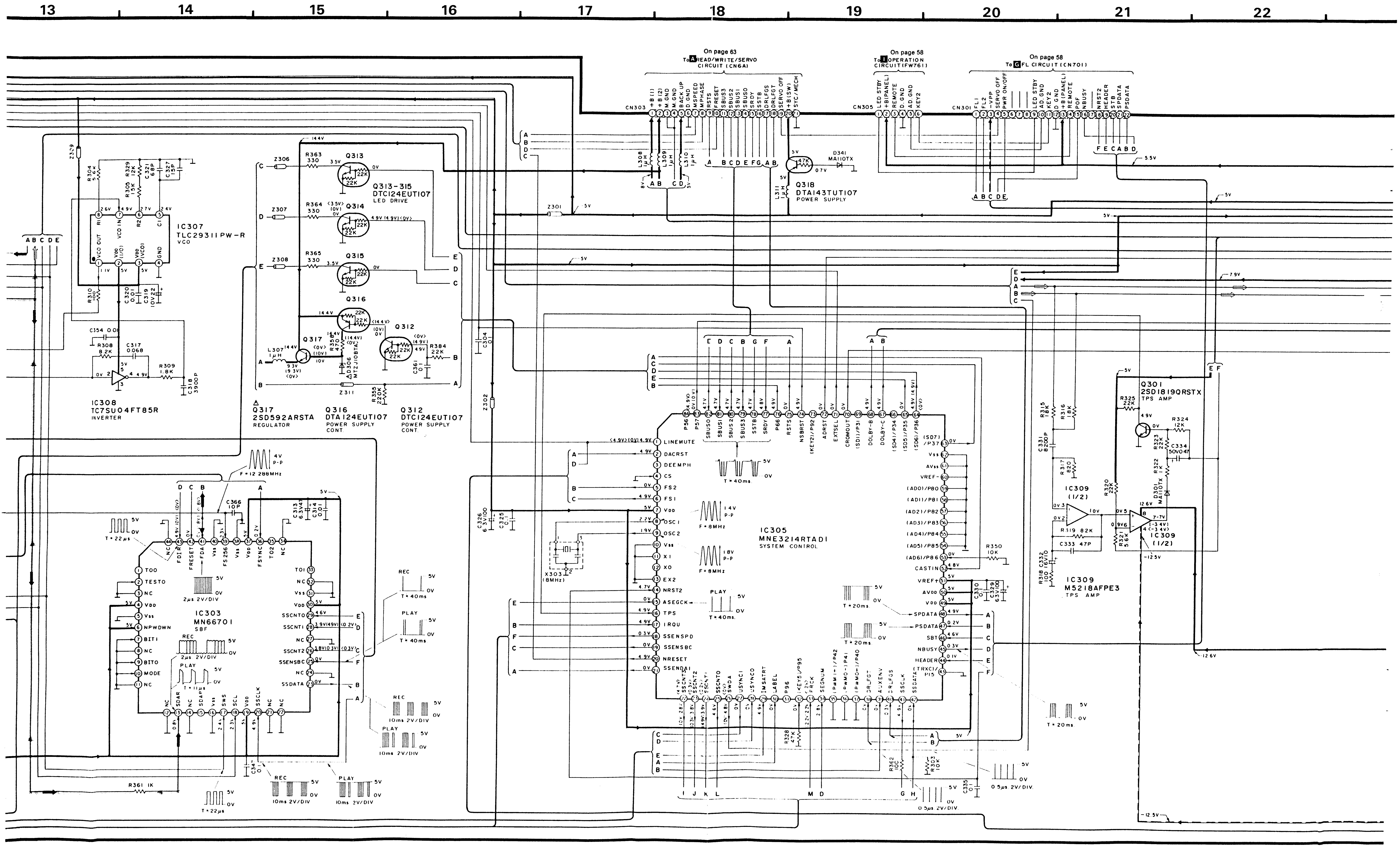


21 22 23 24 25 26 27 28 29 30
IC202
M5233FPEI
BUFFER AMP (REEL FG)
IC203
IC204
IC203,204
TC7S86FUTE8L
EXCLUSIVE OR GATE
(REEL FG)
Q207,209
2SB1073TX
POWER SUPPLY
Q203,205
2SB1073TX
SOLENOID DRIVE
Q204,206
UN5214TX
SOLENOID DRIVE
QUICK REVERSE SENSOR ADJ.
Q210
UN5214TX
POWER SUPPLY CONT.
Q213
2SB1218STX
CAPSTAN MOTOR DRIVE
Q214
2SD1119RTX
CAPSTAN MOTOR DRIVE
Q208
UN5214TX
POWER SUPPLY CONT.
Q212
2SD1819ASTX
CAPSTAN MOTOR DRIVE
IC201
MNE201ARTACI
SERVO PROCESSOR
TAPE SPEED ADJ.(FWD)
TAPE SPEED ADJ.(REV)
IC208
NJM2115MTI
WAVEFORM SHAP (CAPSTAN FG)
IC209
NJM2903MTEI
CAPSTAN MOTOR DRIVE
Q219
UN5114TX
CAPSTAN MOTOR ON/OFF
IC210
NJM2406FTEI
BUFFER AMP (CAPSTAN FG)
IC211
S80735SNDZTI
RESET
Q217,218
UN5213TX
SWITCHING
(RESET/POWER OFF/STOP)
CN6A
+B (1)
+B (2)
M.GND
M.GND
BACK UP
D GND
MSPEED
MPHASE
RSTS
FRESET
SBUS3
SBUS2
SBUS1
SBUS0
SRDY
SSTB
DRLFGS
DRLFGT
SERVO OFF
+B (SW)
SYC/MECH
To MAIN CIRCUIT (CN303) On page 68
TP201
TP202
TP203
TP204
TP205
TP206
TP207

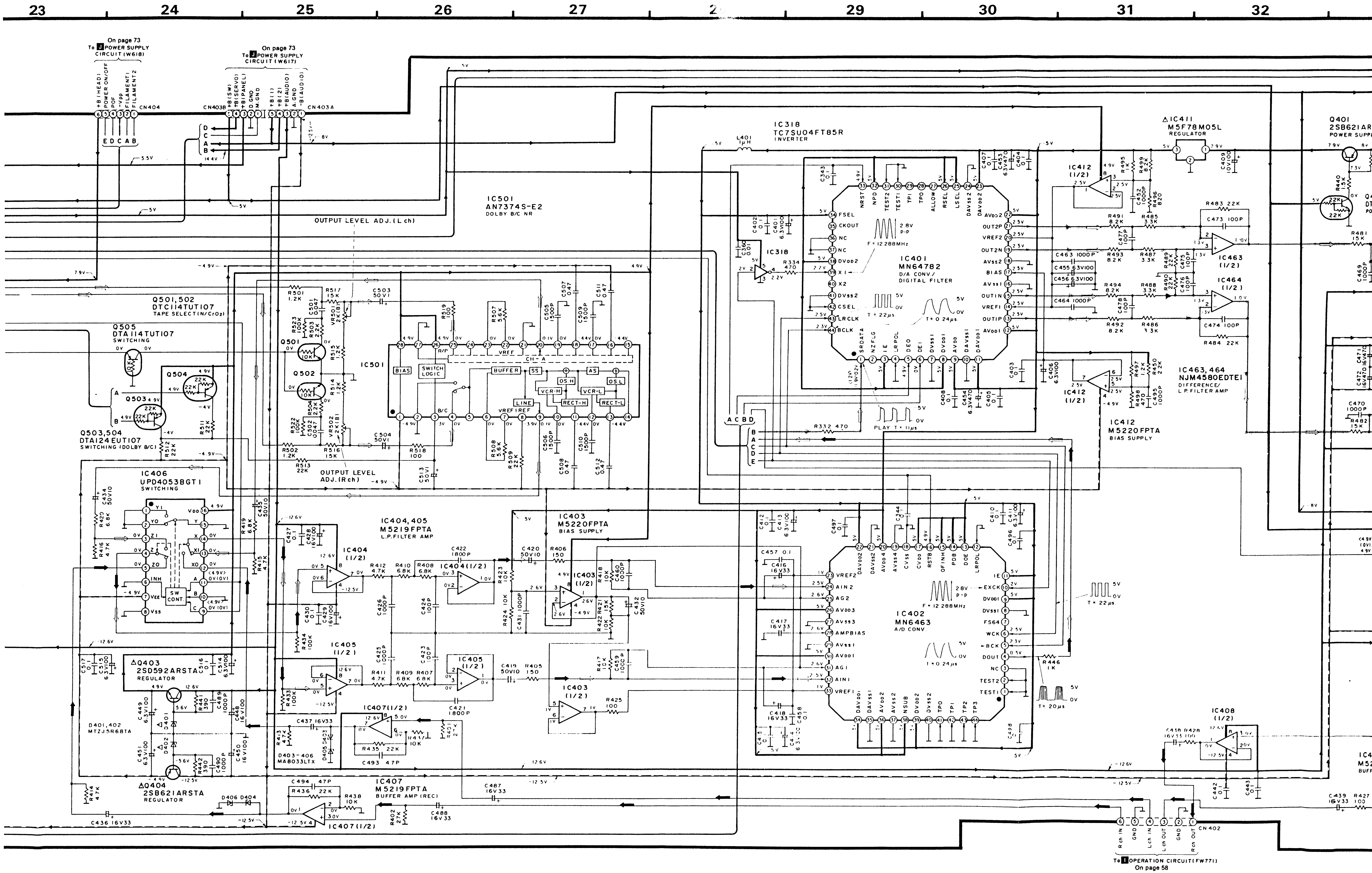

L MAIN CIRCUIT (SPDI/RAM/DAI/SBC/VCO/SBF/SYSTEM CONTROL/TPS/DOLBY NR, D/A CONVERTER/DIGITAL FILTER, A/D CONVERTER/FILTER AMP/BUFFER AMP/SWITCHING/REGULATOR)
M BACK LIGHT CIRCUIT
N TAPE IN DET. CIRCUIT
IC320 TC7W74FUTEIL D-TYPE FLIP FLOP
IC321 TC7SU04FT85R INVERTER
IC301 MN66703 SPDI
IC317 TC7W74FUTEIL D-TYPE FLIP FLOP
IC315 TC7W00FUTEIL NAND GATE
IC316 TC4W53FUTEIL SWITCHING
IC319 TC4W53FUTEIL SWITCHING
IC322 TC7W74FUTEIL D-TYPE FLIP FLOP
IC323 TC7SU04FT85R INVERTER
IC751 GP1S24 PHOTO INTERRUPTER (TAPE IN DET)
D752-754 LN373GP3ULSC
D751 LN0603GP3 (BACK LIGHT)
To A READ/WRITE/SERVO CIRCUIT (CN5A) On page 61

C/VCO/SBF/SYSTEM CONTROL/TPS/DOLBY NR, D/A CONVERTER/DIGITAL FILTER, A/D CONVERTER/FILTER AMP/BUFFER AMP/SWITCHING/REGULATOR)





On page 63 To A READ/WRITE/SERVO CIRCUIT (CN6A)
On page 58 To I OPERATION CIRCUIT (FW761)
On page 58 To G FL CIRCUIT (CN701)
CN303
CN305
CN301
IC307 TLC29311PW-R VCO
IC308 TC7SU04FT85R INVERTER
Q313-315 DTC124EUT107 LED DRIVE
Q318 DTA143TUT107 POWER SUPPLY
Q317 2SD592ARSTA REGULATOR
Q316 DTA124EUT107 POWER SUPPLY CONT.
Q312 DTC124EUT107 POWER SUPPLY CONT.
IC303 MN66701 SBF
IC305 MNE3214RTAD1 SYSTEM CONTROL
X303 (8MHz)
Q301 2SD1819QRSTX TPS AMP
IC309 M5218AFPE3 TPS AMP
D341 MA110TX
D301 MA110TX
D306 MTZJ10BTA


23
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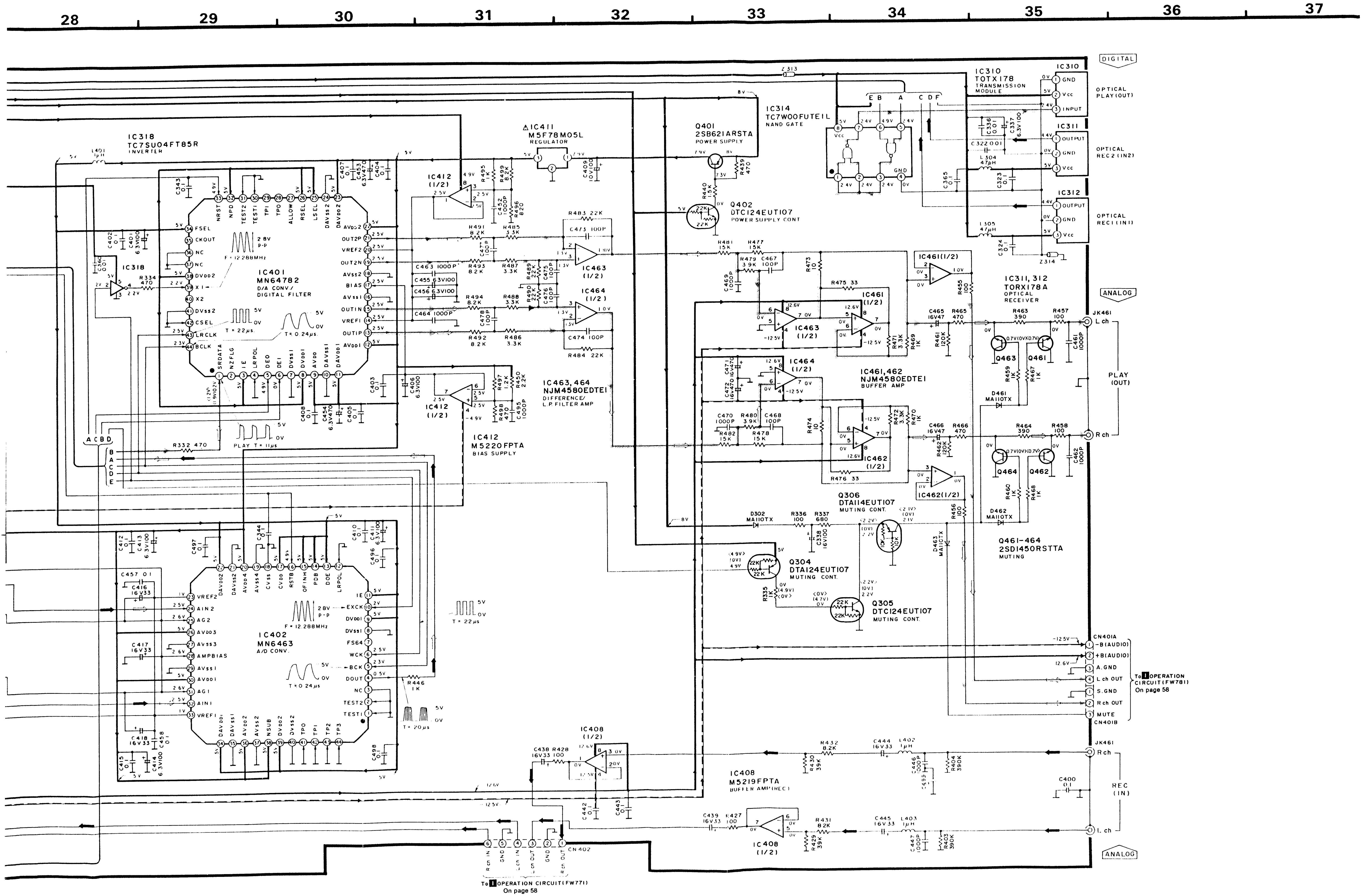
30
31
32
On page 73
To J POWER SUPPLY CIRCUIT (W618)
On page 73
To J POWER SUPPLY CIRCUIT (W617)
CN404
CN403B
CN403A
IC318
TC7SU04FT85R
INVERTER
△IC411
M5F78M05L
REGULATOR
Q401
2SB621AR
POWER SUPPLY
IC501
AN7374S-E2
DOLBY B/C NR
OUTPUT LEVEL ADJ. (L ch)
OUTPUT LEVEL ADJ. (R ch)
Q501,502
DTC114TUT107
TAPE SELECT (N/CrO2)
Q505
DTA114TUT107
SWITCHING
Q503,504
DTA124EUT107
SWITCHING (DOLBY B/C)
IC401
MN64782
D/A CONV./
DIGITAL FILTER
IC412
M5220FPTA
BIAS SUPPLY
IC463,464
NJM4580EDTE1
DIFFERENCE/
L.P. FILTER AMP
IC406
UPD4053BGT1
SWITCHING
IC404,405
M5219FPTA
L.P. FILTER AMP
IC403
M5220FPTA
BIAS SUPPLY
IC402
MN6463
A/D CONV
△Q403
2SD592ARSTA
REGULATOR
△Q404
2SB621ARSTA
REGULATOR
D401,402
MTZJ5R6BTA
D403-406
MA8033LTX
IC407
M5219FPTA
BUFFER AMP (REC)
IC408
(1/2)
CN402
To I OPERATION CIRCUIT (FW771)
On page 58


28
29
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34
35
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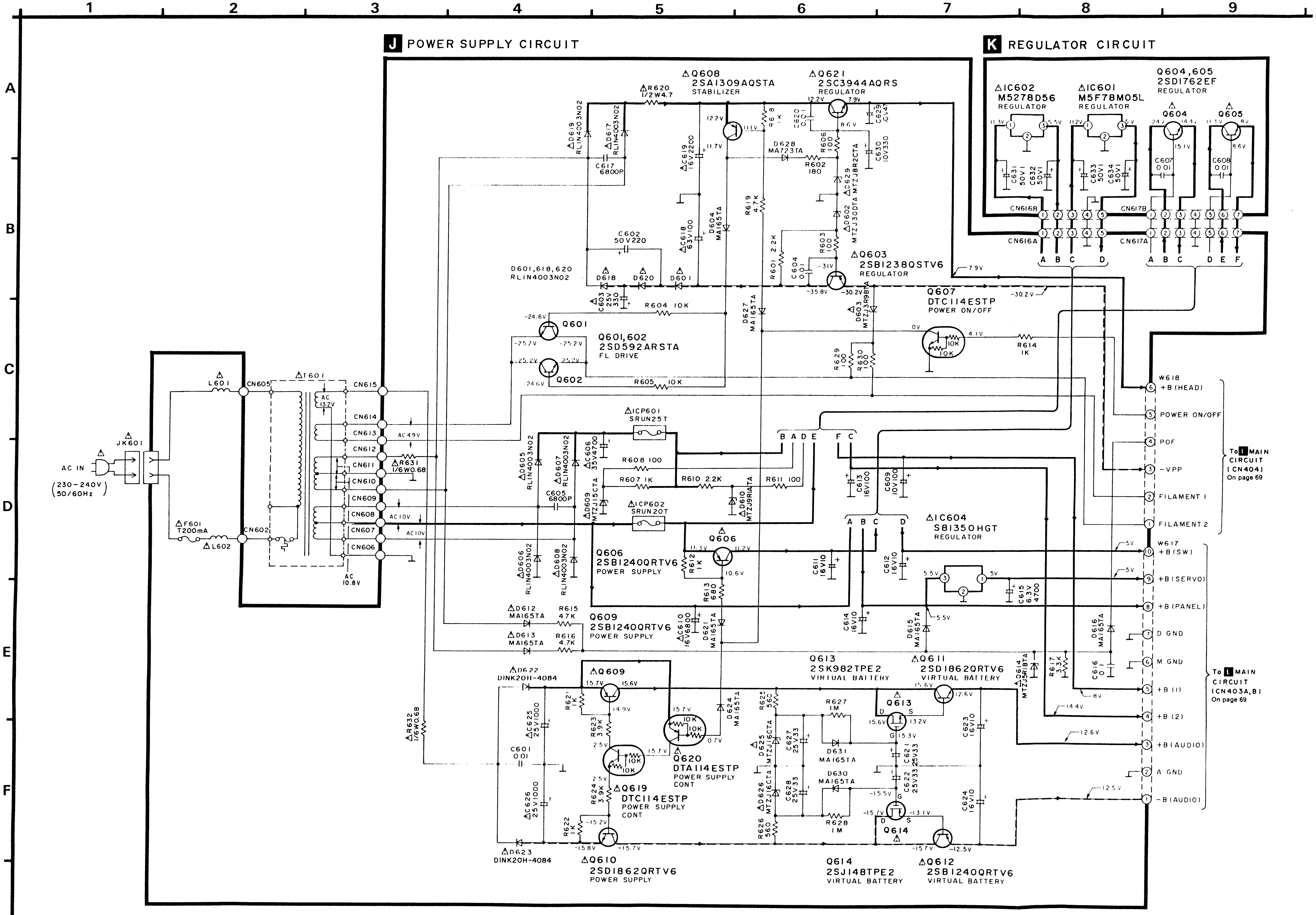
37
DIGITAL
ANALOG
IC318
TC7SU04FT85R
INVERTER
ΔIC411
M5F78M05L
REGULATOR
Q401
2SB621ARSTA
POWER SUPPLY
Q402
DTC124EUT107
POWER SUPPLY CONT
IC314
TC7W00FUTE1L
NAND GATE
IC310
TOTX178
TRANSMISSION MODULE
IC310
GND
Vcc
INPUT
OPTICAL PLAY(OUT)
IC311
OUTPUT
GND
Vcc
OPTICAL REC2(IN2)
IC312
OUTPUT
GND
Vcc
OPTICAL REC1(IN1)
IC311, 312
TORX178A
OPTICAL RECEIVER
IC401
MN64782
D/A CONV./ DIGITAL FILTER
IC412 (1/2)
IC463 (1/2)
IC464 (1/2)
IC463, 464
NJM4580EDTE1
DIFFERENCE/ L.P FILTER AMP
IC412
M5220FPTA
BIAS SUPPLY
IC461(1/2)
IC461 (1/2)
IC463 (1/2)
IC464 (1/2)
IC461, 462
NJM4580EDTE1
BUFFER AMP
IC462 (1/2)
IC462(1/2)
Q463
Q461
Q464
Q462
D461
MA110TX
D462
MA110TX
Q461-464
2SD1450RSTTA
MUTING
JK461
L ch
R ch
PLAY (OUT)
Q306
DTA114EUT107
MUTING CONT.
D302
MA110TX
Q304
DTA124EUT107
MUTING CONT.
Q305
DTC124EUT107
MUTING CONT.
D463
MA110TX
IC402
MN6463
A/D CONV.
IC408 (1/2)
IC408
M5219FPTA
BUFFER AMP(REC)
CN401A
-B(AUDIO)
+B(AUDIO)
A.GND
L ch OUT
S.GND
R ch OUT
MUTE
CN401B
To 1 OPERATION CIRCUIT(FW781) On page 58
JK461
R ch
L ch
REC (IN)
CN402
To 1 OPERATION CIRCUIT(FW771) On page 58
F = 12.288MHz
T = 22μs
T = 0.24μs
PLAY T = 11μs
T = 20μs

RS-DC8

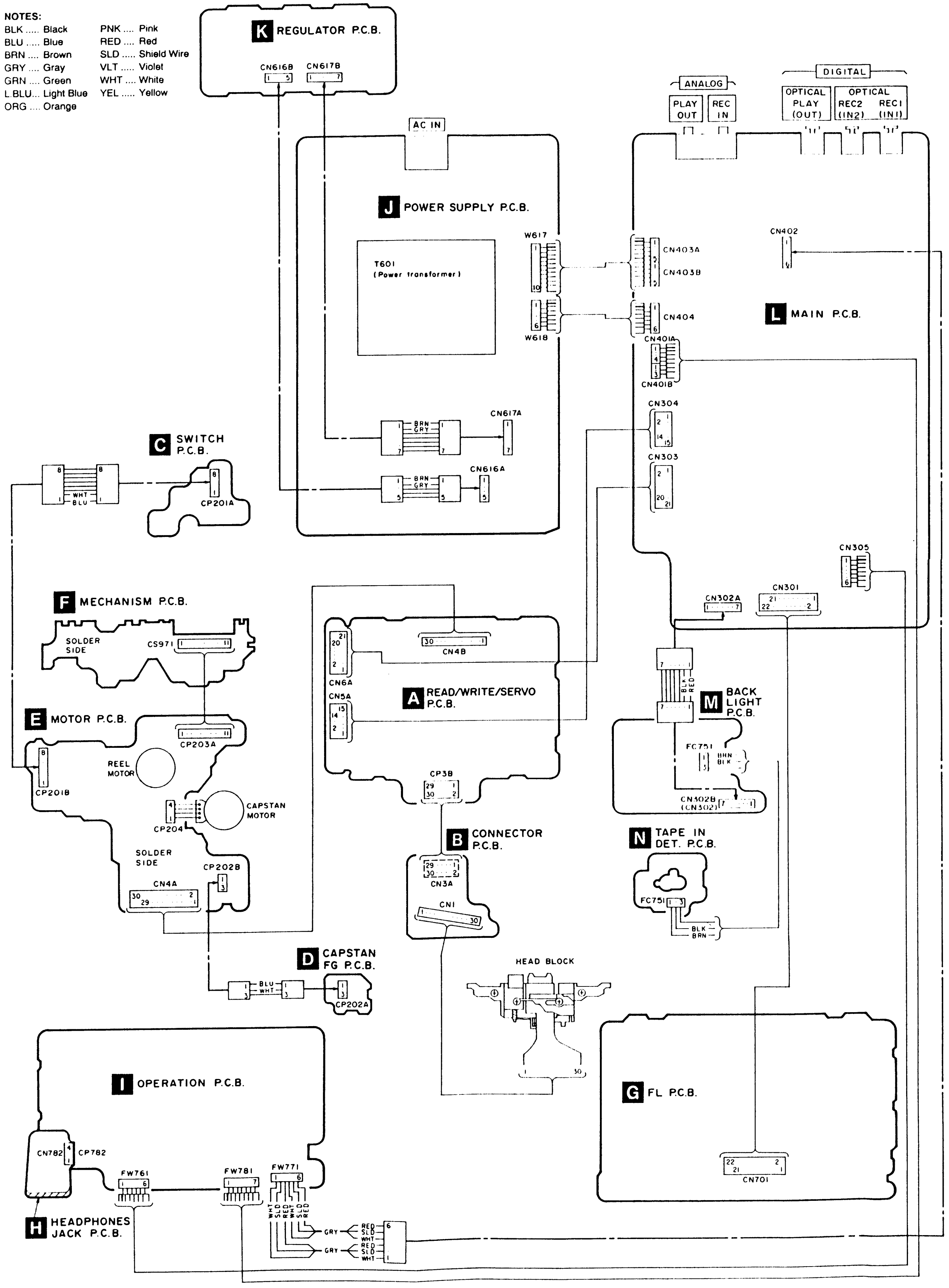


J POWER SUPPLY CIRCUIT
K REGULATOR CIRCUIT
ΔQ608
2SA1309AQSTA
STABILIZER
ΔQ621
2SC3944AQRS
REGULATOR
ΔIC602
M5278D56
REGULATOR
ΔIC601
M5F78M05L
REGULATOR
Q604,605
2SD1762EF
REGULATOR
Q604
Q605
CN616B
CN616A
CN617B
CN617A
D601,618,620
RLIN4003N02
ΔQ603
2SB1238QSTV6
REGULATOR
Q607
DTC114ESTP
POWER ON/OFF
Q601
Q601,602
2SD592ARSTA
FL DRIVE
Q602
ΔICP601
SRUN25T
ΔICP602
SRUN20T
ΔIC604
S81350HGT
REGULATOR
Q606
2SB1240QRTV6
POWER SUPPLY
Q609
2SB1240QRTV6
POWER SUPPLY
ΔQ609
Q620
DTA114ESTP
POWER SUPPLY
CONT
ΔQ619
DTC114ESTP
POWER SUPPLY
CONT.
ΔQ610
2SD1862QRTV6
POWER SUPPLY
Q613
2SK982TPE2
VIRTUAL BATTERY
ΔQ611
2SD1862QRTV6
VIRTUAL BATTERY
Q614
2SJ148TPE2
VIRTUAL BATTERY
ΔQ612
2SB1240QRTV6
VIRTUAL BATTERY
AC IN
(230-240V 50/60Hz)
ΔJK601
ΔL601
ΔF601 T200mA
ΔL602
ΔT601
CN605
CN602
CN615
CN614
CN613
CN612
CN611
CN610
CN609
CN608
CN607
CN606
W618
+B (HEAD)
POWER ON/OFF
POF
-VPP
FILAMENT 1
FILAMENT 2
To L MAIN CIRCUIT (CN404) On page 69
W617
+B (SW)
+B (SERVO)
+B (PANEL)
D GND
M GND
+B (1)
+B (2)
+B (AUDIO)
A GND
-B (AUDIO)
To L MAIN CIRCUIT (CN403A,B) On page 69

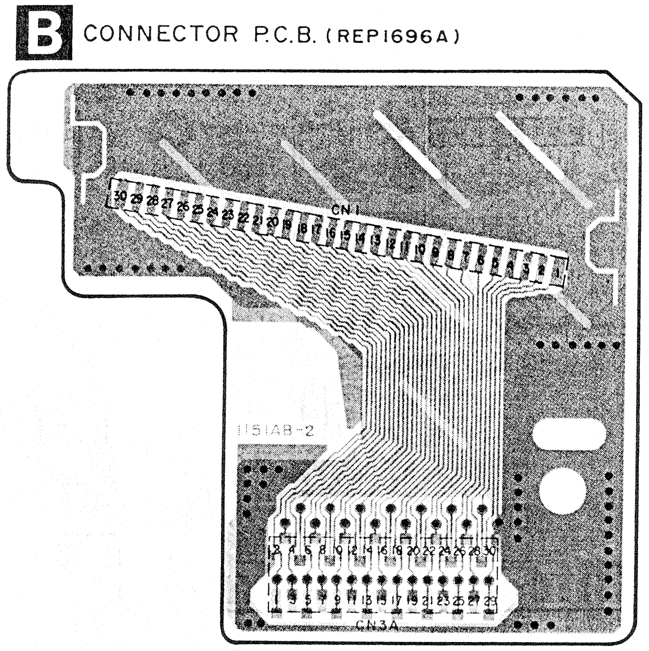
■ WIRING CONNECTION DIAGRAM

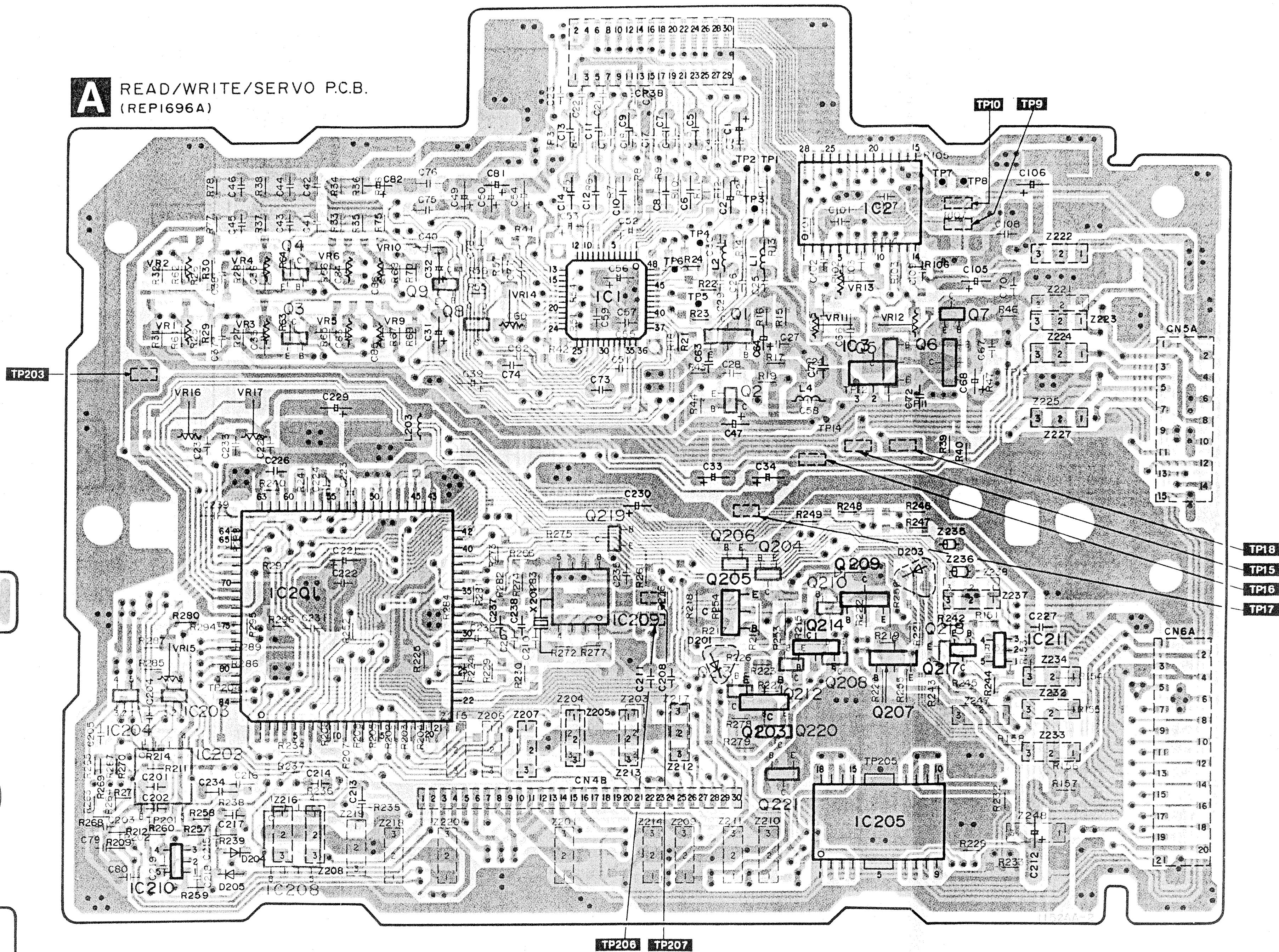
NOTES:

BLK	Black	PNK	Pink
BLU	Blue	RED	Red
BRN	Brown	SLD	Shield Wire
GRY	Gray	VLT	Violet
GRN	Green	WHT	White
L BLU	Light Blue	YEL	Yellow
ORG	Orange		

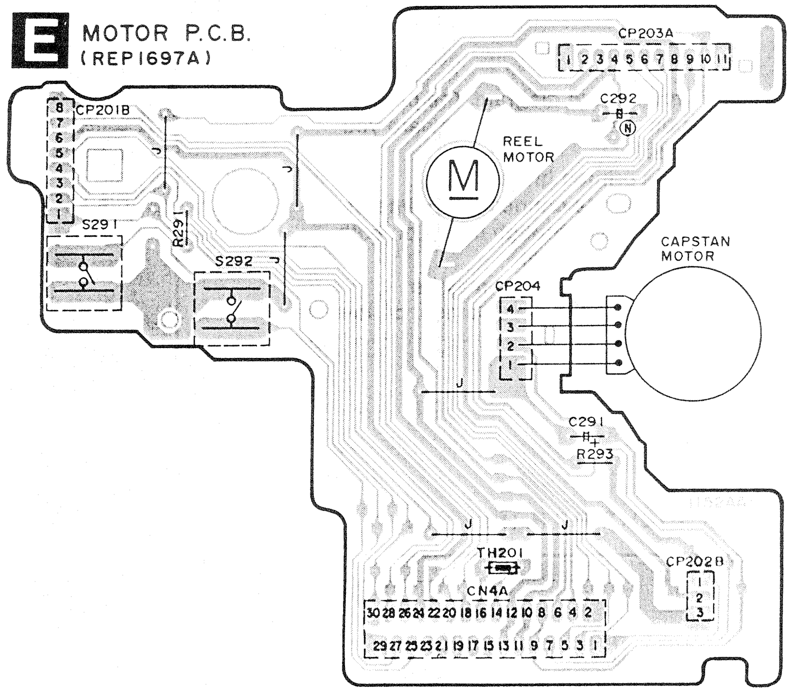


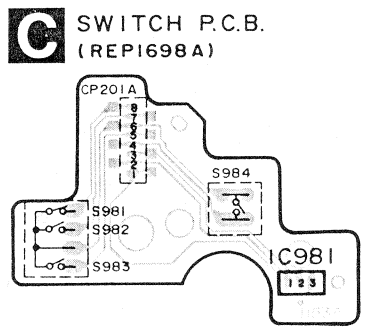
PRINTED CIRCUIT BAORDS

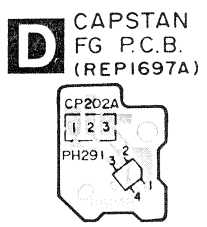


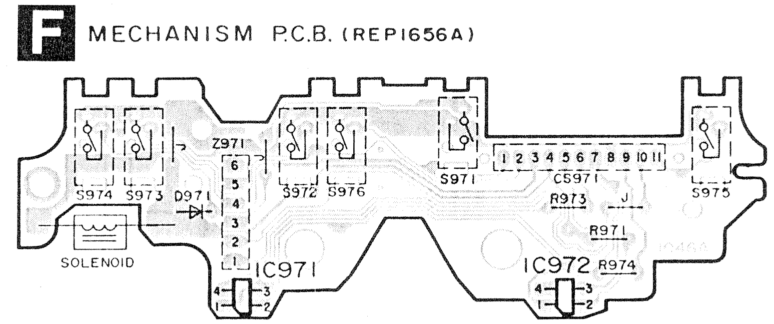


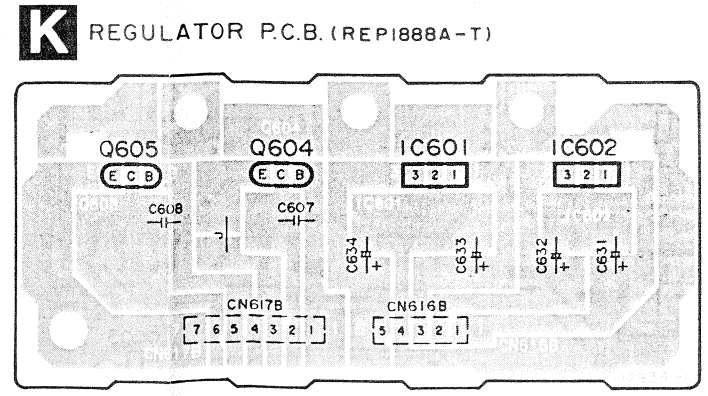
Notes:
- In this printed circuit boa and foil patterns on the b are printed in black. The opposite side is prin
- The " ◦ " mark denotes t double-faced foil patterns side of the printed circui
- This printed circuit board modified at any time with technology.

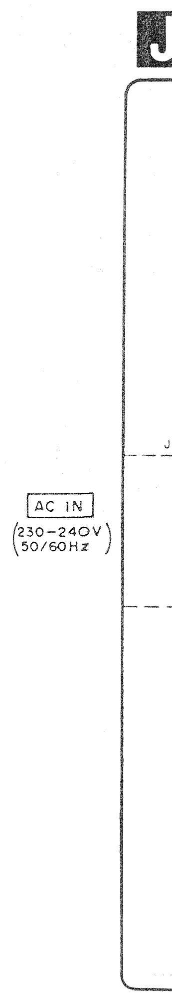






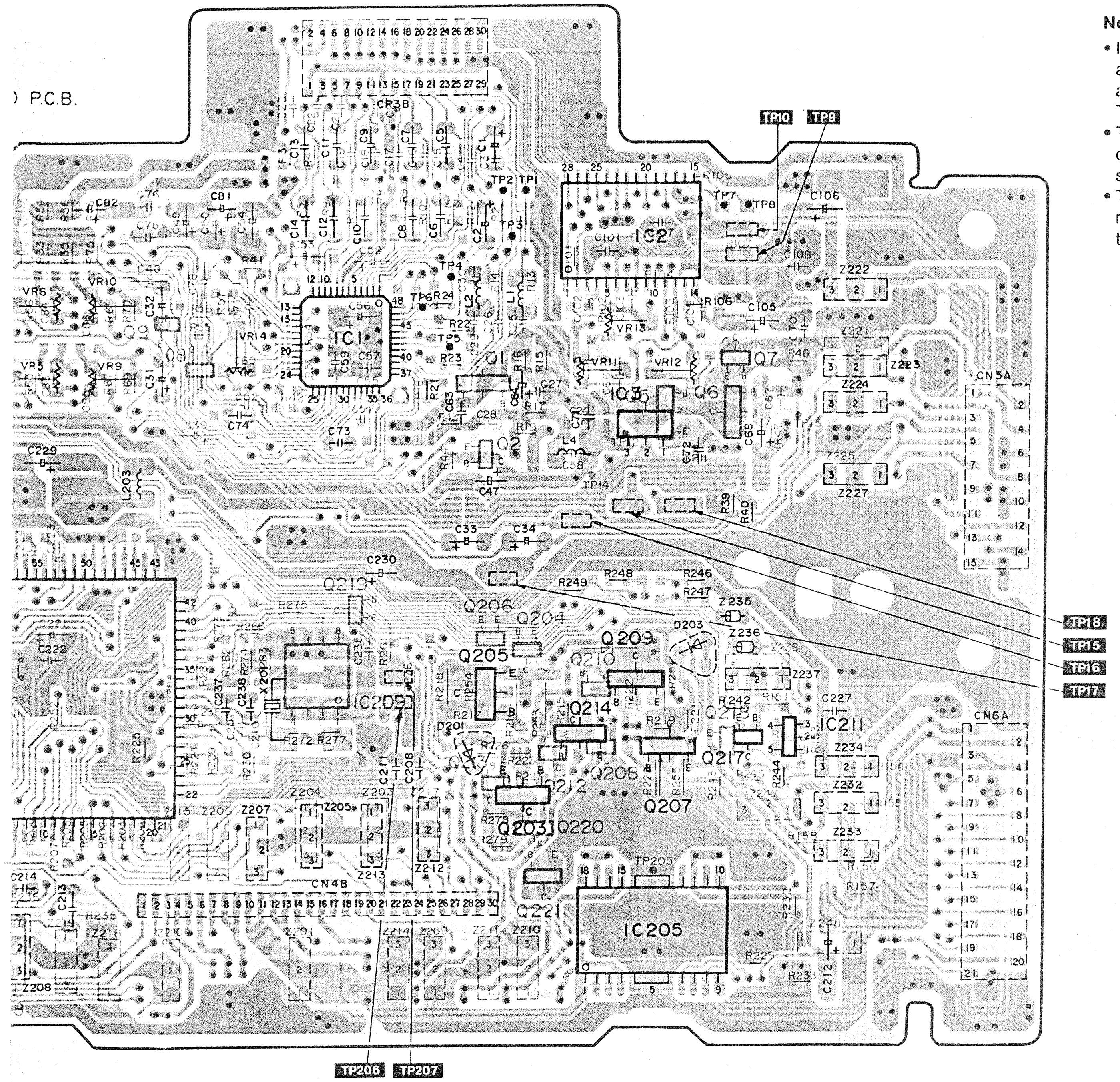






5 6 7 8 9 10 11 12 13 14

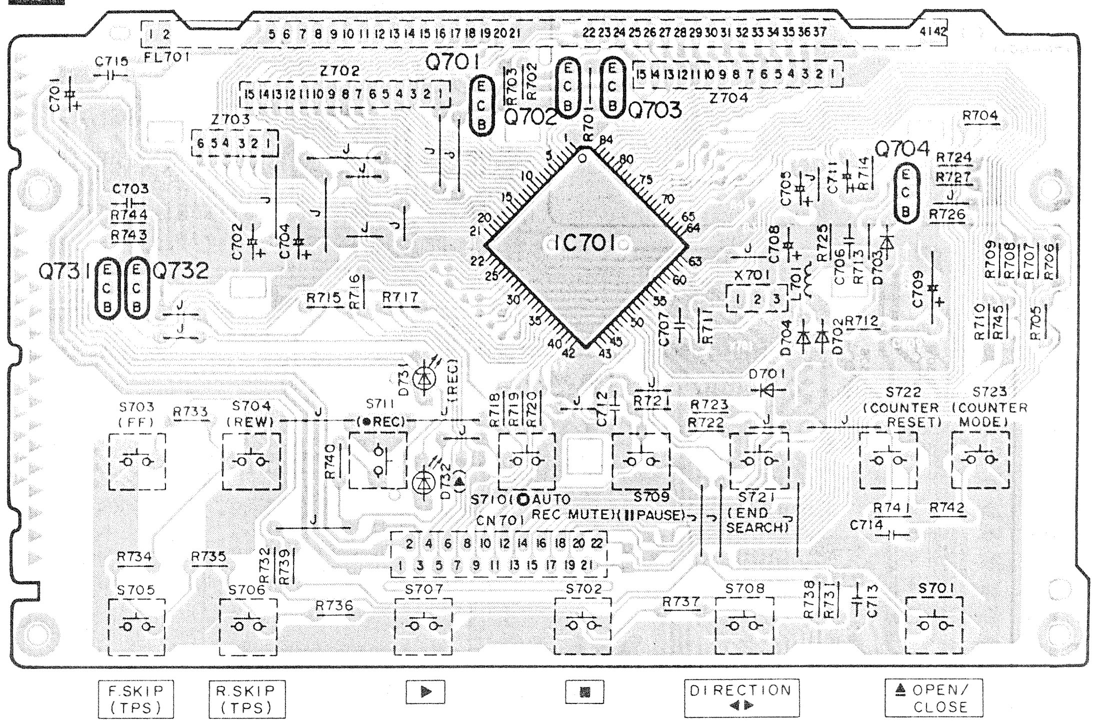
) P.C.B.



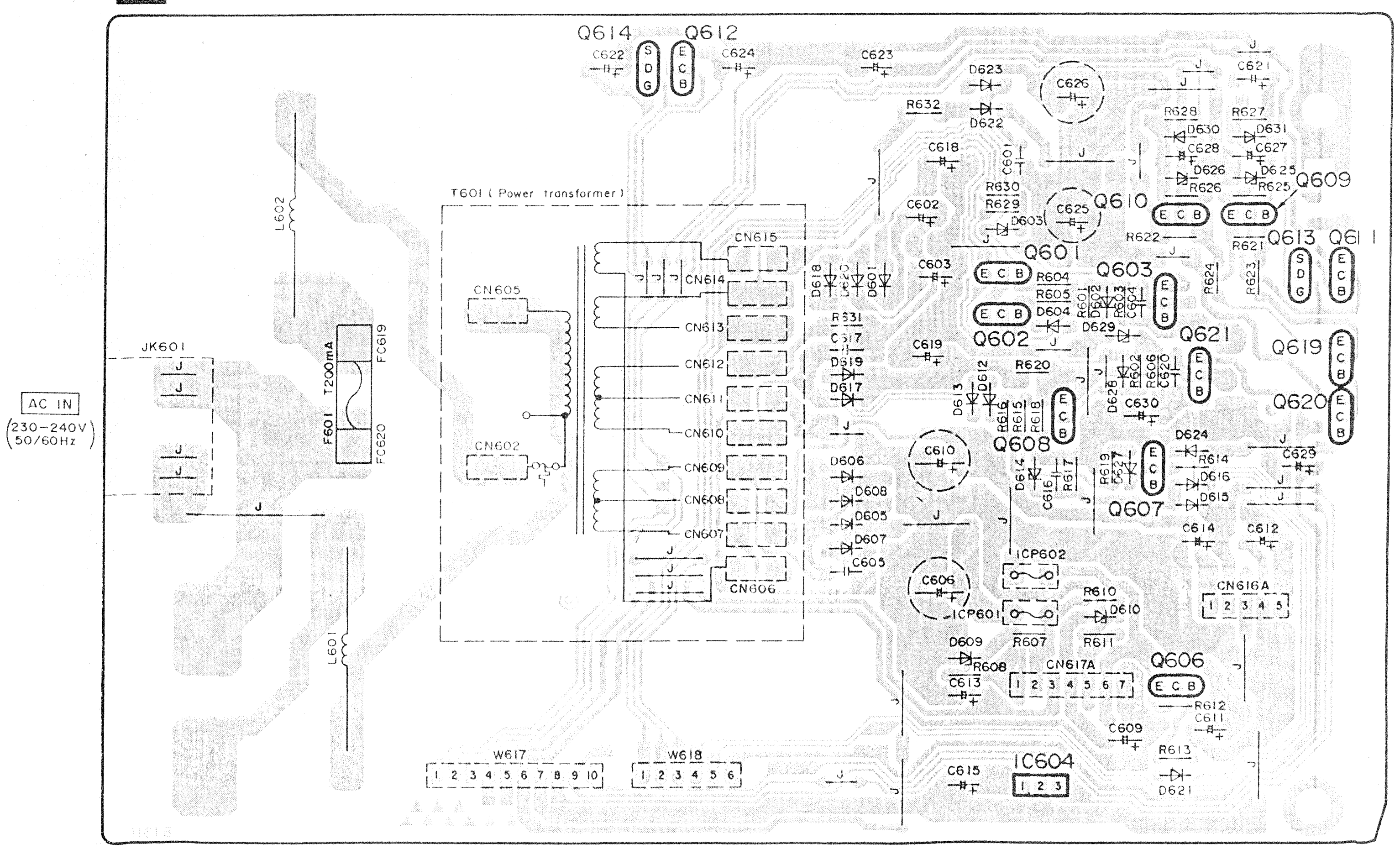
Notes:

- In this printed circuit board diagram, the parts and foil patterns on the board facing toward you are printed in black.
  The opposite side is printed in blue.
- The " ◦ " mark denotes the connection points of double-faced foil patterns (through holes) on both side of the printed circuit board.
- This printed circuit board diagram may be modified at any time with the development of new technology.

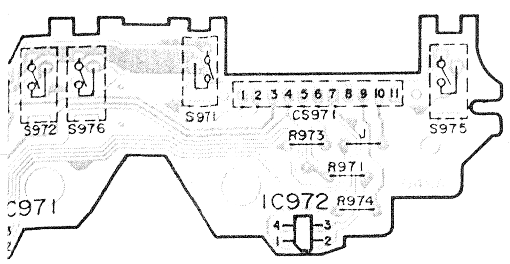
G FL P.C.B. (REP1702A-S)



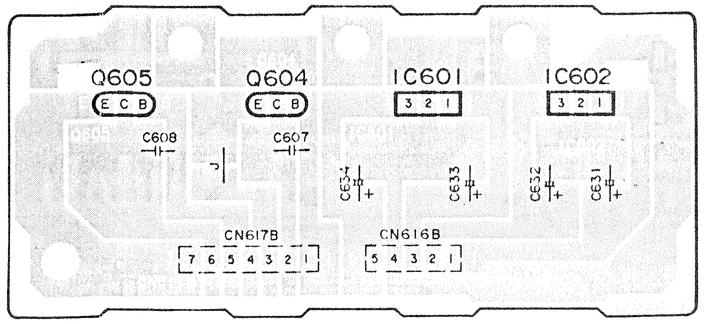
J POWER SUPPLY P.C.B. (REP1721D-P)

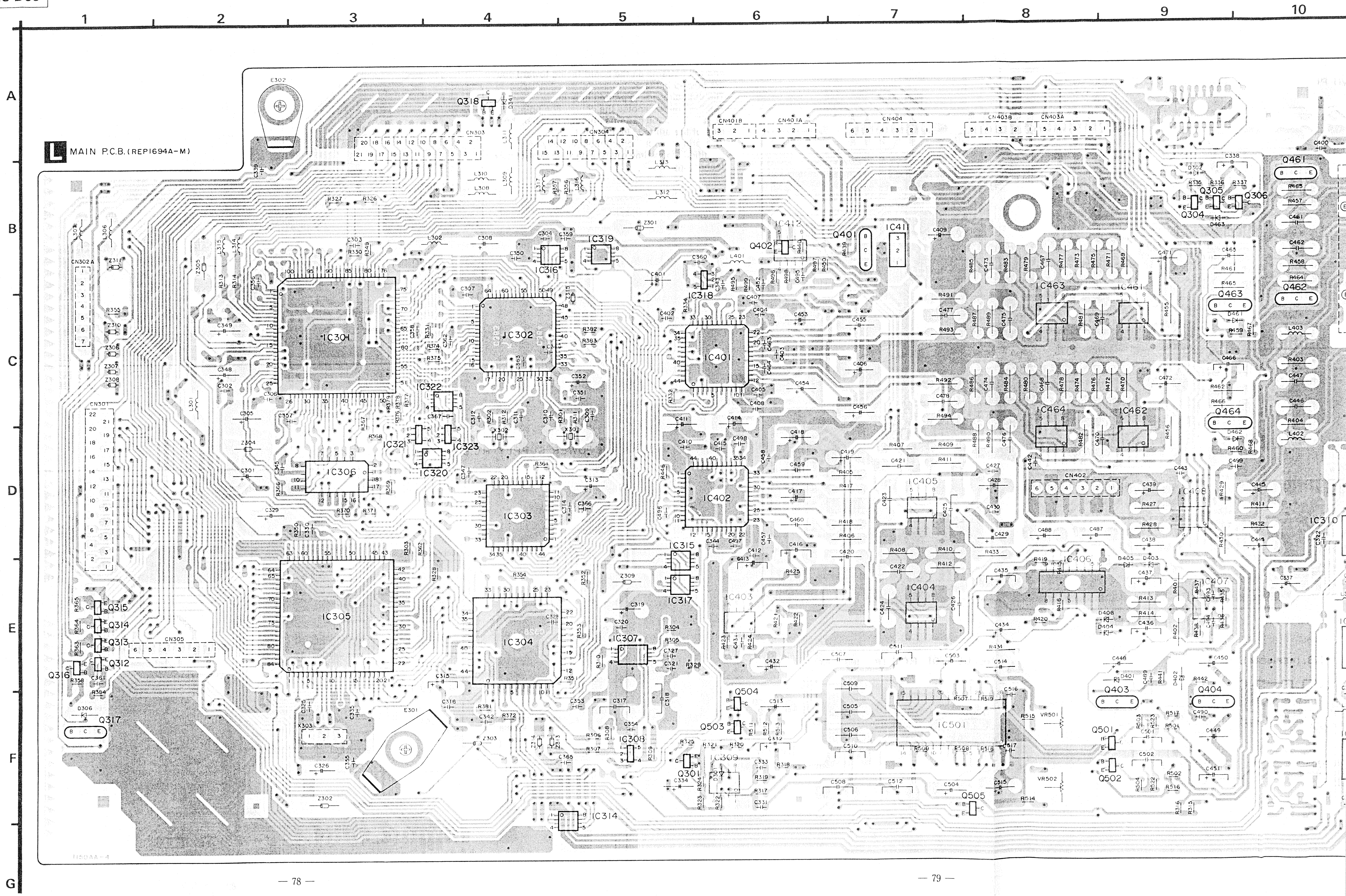


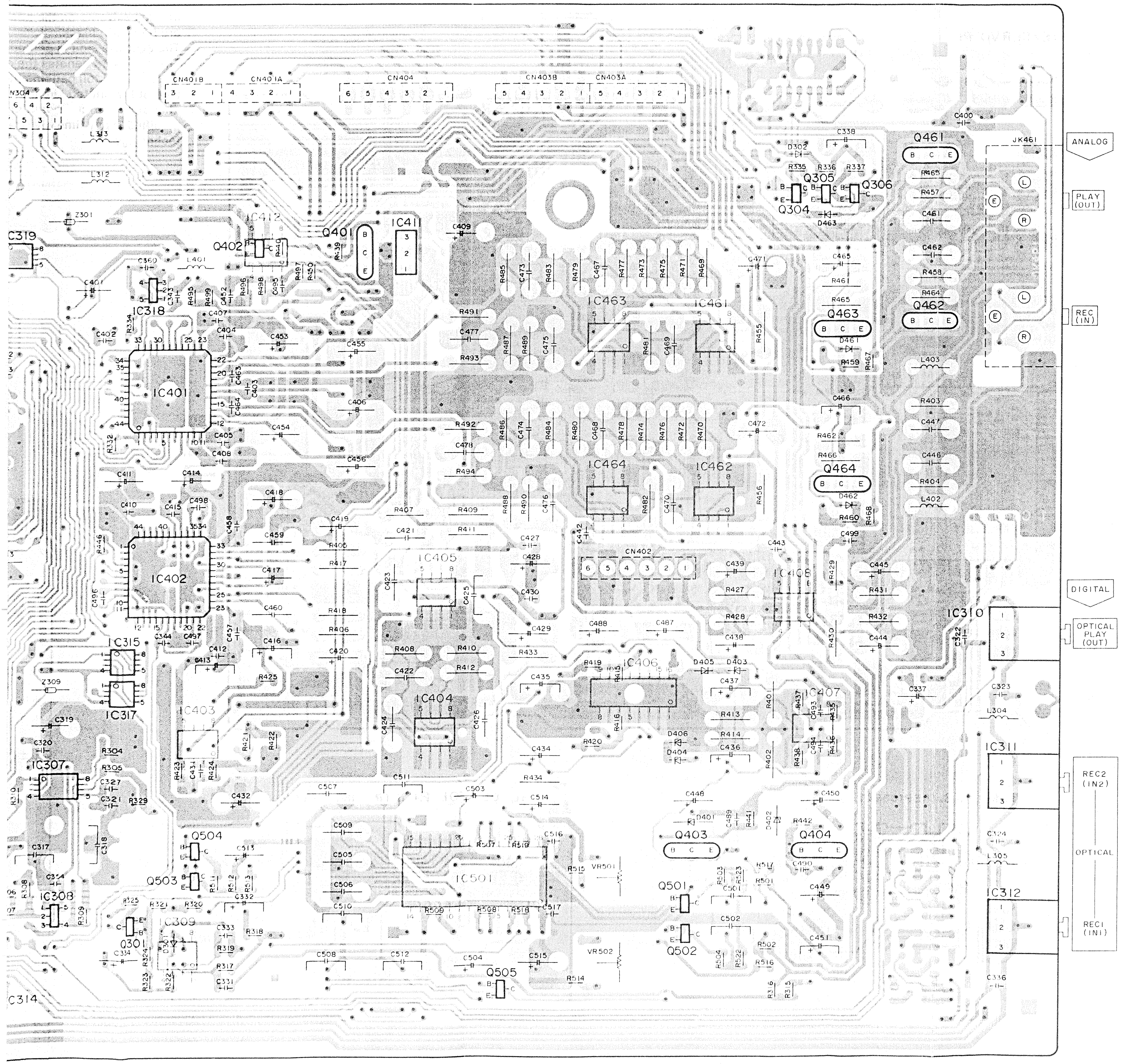
P.C.B. (REP1656A)



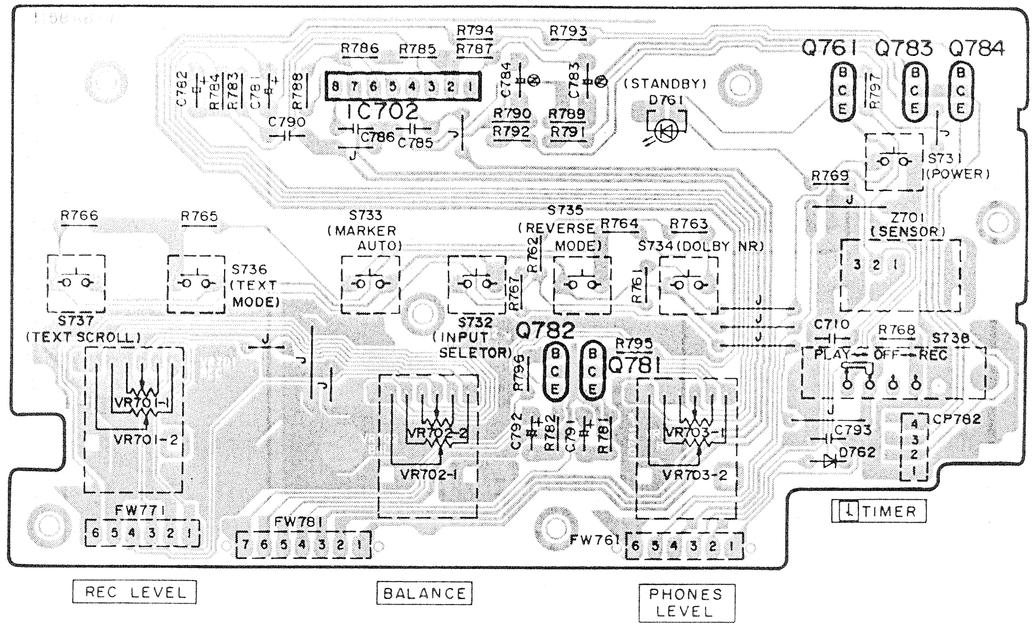
K REGULATOR P.C.B. (REP1888A-T)




L MAIN P.C.B. (REP1694A-M)
IC301
IC302
IC303
IC304
IC305
IC306
IC401
IC402
IC501



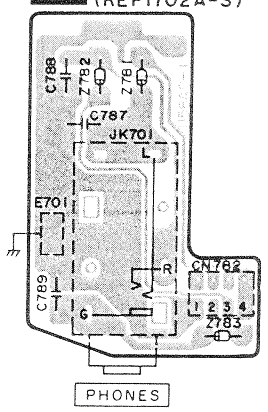
I OPERATION P.C.B. (REP1702A-S)



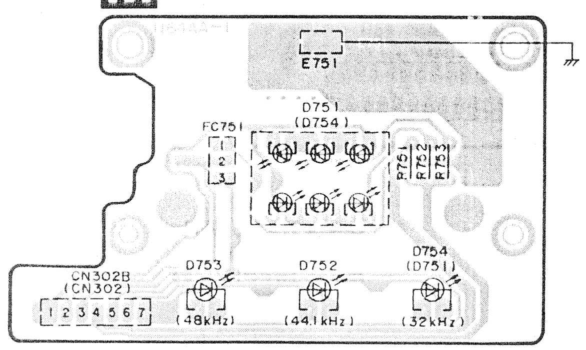
Notes:

- In this printed circuit board diagram, the parts and foil patterns on the board facing toward you are printed in black.
  The opposite side is printed in blue.
- The " • " mark denotes the connection points of double-faced foil patterns (through holes) on both side of the printed circuit board.
- This printed circuit board diagram may be modified at any time with the development of new technology.

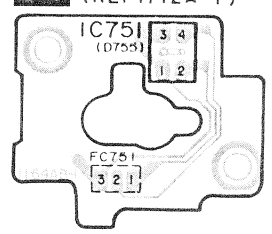
H HEADPHONES JACK P.C.B. (REP1702A-S)



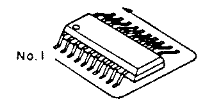
M BACK LIGHT P.C.B. (REP1712A-T)



N TAPE IN DET P.C.B. (REP1712A-T)

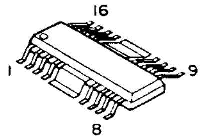


■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

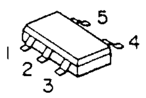


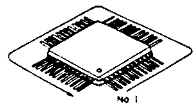
M5218AFPE3	8 Pin	NJM2903MTE1	8 Pin	TLC2931IPW-R	8 Pin
M5219FPTA	8 Pin	NJM4580EDTE1	8 Pin	UPD4053BGT1	16 Pin
M5220FPTA	8 Pin	TC4W53FUTE1L	8 Pin	AN7374S-E2	28 Pin
M5233FPE1	8 Pin	TC7W00FUTE1L	8 Pin	AN7630SBE2V	28 Pin
NJM2115MT1	8 Pin	TC7W74FUTE1L	8 Pin		

TA7291FEL



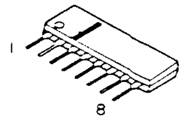
NJM2406FTE1
TC7S86FUTE8L
TC7SU04FT85R
S80735SNDZT1



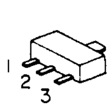


MN6463	44 Pin	MN66702	64 Pin
MN64782	44 Pin	MND2416RTAE	84 Pin
MN66701	44 Pin	MNE201ARTAC1	84 Pin
M65812FP	44 Pin	MNE3214RTAD1	84 Pin
AN7631FHPV	48 Pin	MN66703	100 Pin

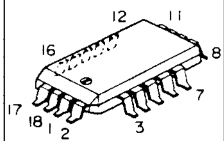
M5218AL



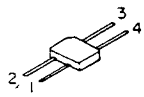
AN78L05ME2



V464AJ80LTER

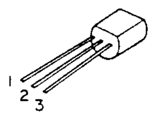


RVSGP2S24BC

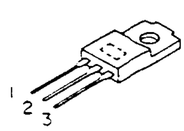


GP1S24

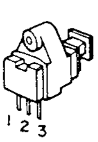
S81350HGT

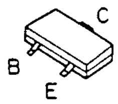


M5F78M05L
M5278D56



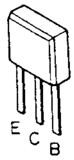
TOTX178
TORX178A





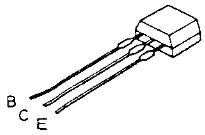
2SB1073TX
2SB1218STX
2SD1328STXRA
2SD1819ASTX
2SD1819QRSTX
UN5114TX
UN5213TX

UN5214TX
DTA114EUT107
DTA114TUT107
DTA124EUT107
DTA143TUT107
DTC114TUT107
DTC124EUT107

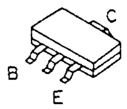


2SA1309AQSTA
2SC3311AIRTA
2SD1450RSTTA
2SD1450STTA
UN4211TA
UN4213TA

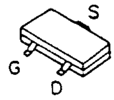
DTA114ESTP
DTC114ESTP



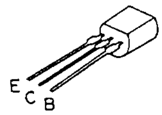
2SD874ASTX
2SD1119RTX



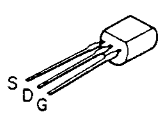
2SK664TX



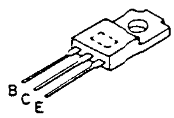
2SB621ARSTA
2SD592ARSTA



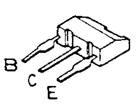
2SK982TPE2
2SJ148TPE2



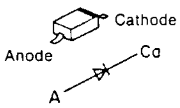
2SC3944AQRS
2SD1762EF



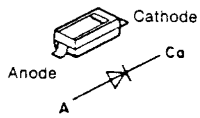
2SB1238QSTV6
2SB1240QRTV6
2SD1862QRTV6



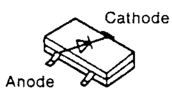
MA110TX
MA112TX



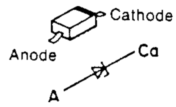
MA737TX



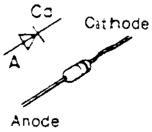
MA720TX

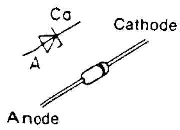


MA8033LTX



1SS254TA

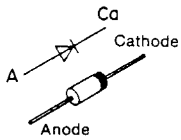


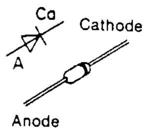


MTZJ3R9BTA
MTZJ5R1BTA
MTZJ5R6BTA
MTZJ8R2CTA
MTZJ9R1ATA
MTZJ10BTA

MTZJ15CTA
MTZJ16CTA
MTZJ30DTA

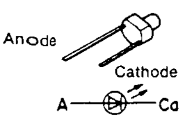
D1NK20H-4084
RL1N4003N02



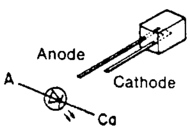


MA165TA
MA723TA
RVD1SS133TA
1SS291TA

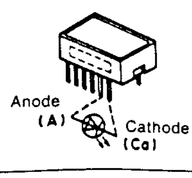
SLR-305MC
SLR-305VC



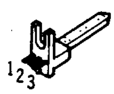
LN373GP3ULSC
LN873RP-C



LN0603GP3



SPI-332



TERMINAL FUNCTION OF IC

• **IC1 (AN7631FHPV): Playback head amplifier**

Pin No.	Mark	I/O Division	Function
1	VREFAH2	O	Analog head amplifier bias (Lch)
2	VREFAH1	O	Analog head amplifier bias (Rch)
3	CH7	I	Digital head amplifier input (CH7)
4	CH6	I	Digital head amplifier input (CH6)
5	CH5	I	Digital head amplifier input (CH5)
6	CH4	I	Digital head amplifier input (CH4)
7	GNDDH	O	Digital head amplifier ground
8	CH3	I	Digital amplifier input (CH3)
9	CH2	I	Digital amplifier input (CH2)
10	CH1	I	Digital amplifier input (CH1)
11	CH0	I	Digital amplifier input (CH0)
12	CHAUX	I	Digital amplifier input (CHAU)
13	VREFDH	O	Digital first-stage amplifier bias
14	V.RIPPLE	O	Digital first-stage amplifier power supply terminal
15	VREFDO	O	Digital second-stage amplifier bias
16	V_{DD}	I	MOS circuit power supply
17	RDCLOCK	I	Clock for digital playback signal selection
18	RDSYNC	I	Signal for digital playback signal selection
19	V_{EE}	O	MOS circuit ground
20	OUTMOS	O	C-MOS switch output
21	BUFFER-I	I	Digital buffer amplifier input
22	SWBI	I	Normal speed/double-speed switching terminal
23	RDMUX	O	Digital playback signal output
24	SWDA	I	Digital/analog switching terminal
25	NRSTBY	I	Standby terminal
26	V_{CC}	I	Power supply terminal
27	NC	–	Not connected (floating)
28	RIPPLE	I	Ripple removal terminal
29	GND	–	Ground terminal
30	OPEOUT2	O	Analog operational amplifier 2 output
31	OPEIN2–	I	Analog operational amplifier 2 negative (–) input
32	OPEIN2+	I	Analog operational amplifier 2 positive (+) input
33	OPEOUT1	O	Analog operational amplifier 1 output
34	OPEIN1–	I	Analog operational amplifier 1 negative (–) input
35	OPEIN1+	I	Analog operational amplifier 1 positive (+) input
36	VREFAO	O	Analog first-stage bias
37	OUTL	O	Analog playback output (Lch)
38	INMFL	I	Analog FB input (L channel)
39	MFLI–	O	Analog FB negative (–) output (Lch)
40	INL	I	Analog head amplifier input (Lch)
41	GADFB	O	FB amplifier ground
42	MFL2+	O	Analog FB positive (+) output (Lch)
43	V_{CC}FB	I	FB amplifier V_{CC}
44	MFR1–	O	Analog FB negative (–) output (Rch)
45	INR	I	Analog head amplifier input (Rch)
46	MFR2+	O	Analog FB positive (+) output (Rch)
47	INMFR	I	Analog FB input (Rch)
48	OUTR	O	Analog playback output (Rch)

• IC2 (AN7630SBE2V): Recording amplifier

Pin No.	Mark	I/O Division	Function
1	WCLOCK	I	Clock for selection of writing data
2	WDATA	I	Writing data
3	V_{EE}	–	MOS circuit ground terminal
4	ICLAMP	O	Output for reversing recording current
5	V_{DD}	I	MOS circuit power supply terminal
6	GNDAUD	O	Ground of terminal for determining AUX data current
7	ICUR3	I	Terminal for adjusting AUX data current
8	GNDAUE	–	Ground terminal for determining AUX erase current
9	ICUR2	I	Terminal for adjusting AUX erase current
10	ICUR1	I	Terminal for adjusting PCM recording current
11	VREFBG	O	Head gap voltage output terminal
12	GND	–	Ground terminal
13	NWSTBY	I	Write standby
14	V_{CC}	I	Power supply terminal
15	TP2	I	Test terminal 2 for current measurement
16	TP1	I	Test terminal 1 for current measurement
17	V_{CC}DR	I	Driver power supply terminal
18	IchAA	O	Recording current output (WX-Si)
19	IchA0	O	Recording current output (WX0)
20	Ich01	O	Recording current output (W01)
21	Ich12	O	Recording current output (W12)
22	Ich23	O	Recording current output (W23)
23	GNDDR	O	Driver ground terminal
24	Ich34	O	Recording current output (W34)
25	Ich45	O	Recording current output (W45)
26	Ich56	O	Recording current output (W56)
27	Ich67	O	Recording current output (W67)
28	Ich77	O	Recording current output (W7-S0)

• IC201 (MNE201ARTAC1): Servo processor

Pin No.	Mark	I/O Division	Function
1	P64 (REELVSW)	O	Reel driver VS switching (+7V: L, +14V: H)
2	P63 (DTRG0)	O	Solenoid control 0 (off: L, on: H)
3	P62 (DTRG1)	O	Solenoid control 1 (off: L, on: H)
4	P61 (POWER• OFF•STOP)	I	POWER, OFF and STOP commands inputs (STOP command: H)
5	P60 (FRESET)	O	SPD1 reference signal reset commmand (reset by trailing edge)
6 • 7	P57 (DGND) • P56 (DGND)	–	Ground terminal
8	P55 (SRDY)	O	Communications bus: mechanism control ready (communication with system control)
9	P54 (SSTB)	I	Communications bus: system control strobe (communication with system control)
10 ∫ 13	P53 (SBUS3) ∫ P50 (SBUS0)	I/O	Communications bus: data (0–3)
14	P07 (CRO2)	I	Mechanism detection switch (NORMAL: L, CrO_2: H)
15	P06 (DCC/ACC)	I	Mechanism detection switch (ACC: L, DCC: H)
16	P05 (LENGTH2)	I	Mechanism detection switch LENGTH 2 (L: SW ON)
17	P02 (LENGTH1)	I	Mechanism detection switch LENGTH 1 (L: SW ON)
18	P01 (LENGTH0)	I	Mechanism detection switch LENGTH 1 (L: SW ON)

Pin No.	Mark	I/O Division	Function
19	P00 (SYS/MECH)	I	System control/operation board mode (operation board: H)
20	NRST (NRESET)	I	Reset terminal (reset: L)
21	EXI (DGND)	I	Operation mode selection terminal (single-chip mode: L)
22	HSW	–	Unused, open
23	VLP		
24	PWM3		
25	PWM2 (PWM0)	O	Capstan motor drive voltage output (0 % maximum voltage, 100 % minimum voltage)
26	PWM1	–	Unused, open
27	PWM0 (PWM1)	O	Reel motor drive voltage output (0 % maximum voltage, 100 % minimum voltage)
28	SBUFD7 (MODESW)	O	Mode switch data (on: L, off: H)
29	SBUFD6 (QUICKFLG)	O	Quick sensor detection flag (not detected: L, detected: H)
30	SBUFD5 (RFSW)	O	RF equalizer switching (search: L, normal speed: H)
31	OSC2 (CRISTAL)	I	Oscillation input terminal
32	OSC1 (CRISTAL)	O	Oscillation output terminal
33	V_{SS} (DGND)	–	Digital ground terminal
34	SBUFD4 (MECHALED)	I	Operation board LED indication switching (unused, connected to external resistance)
35	SBUFD3	I	Unused, connected to external resistance
36	SBUFD2 (TARUMI)	I	On/off processor detection to eliminate slack during closing; on: L, off: H (unused, connected to external resistance)
37	SBUFD2 (TARUMI)	I	On/off detection of reel voltage control according to ratio between winding diameters; off: L, on: H (unused, connected to external resistance)
38	HBUFD6 (REELIN1)	O	Reel motor driver control
39	HBUFD4 (REELIN2)	O	

STOP	CW/CCW	CCW/CW	BRAKE
0	0	1	1
0	1	0	1

Pin No.	Mark	I/O Division	Function
40	HBUFD2	O	Capstan start/stop control
41	HBUFD0 (REELBRK)	O	Reel motor output control (H: forced brake)
42	AVMM (AGND)	–	Ground terminal
43	PGMM (AGND)	–	
44	FGI (DCAPFG)	I	Capstan FG input
45	FGF (AGND)	–	Unused, open
46	AFG (VREF)	–	Unused, connected to ground
47	YFG (AGND)		
48	YPG (AGND)		
49	AV_{SS} (AGND)	–	Analog ground terminal
50	VR0 (VREF)	O	Reference voltage output terminal
51	VR1 (VREFIN)	I	Reference voltage input terminal
52	CIR (DRLFGS)	I	Reel FG (supply) input
53	CIF (DRLFGS)	I	Reel FG (supply) input (unused, open)
54	TPZ	–	Unused, open
55	RCTLN		
56	RCTLP		
57	CTLS	–	Unused, connected to ground
58	CTLH	–	Unused, CTLA and CTLH connected together
59	CTLA	–	
60	CTLG	–	Unused, connected to ground
61	AGC	–	Unused, open
62	CO		
63	AV_{DD} (AV_{CC})	I	Analog power supply terminal

Pin No.	Mark	I/O Division	Function
64	VSYN (DRLFGT)	I	Reel FG (take-up) inputs
65	AD7 (DRLFGT)		
66	AD6 (SSTB)	I	Communications bus: system control strobe (system control communication)
67	AD5 (ADOUT)	I	Mechanism switch detection
68	AD4 (QUICK)	I	Tape-end detection
69	AD3 (MOTORSPR)	I	Speed adjustment (RVS) terminal
70	AD2 (MOTORSPF)	I	Speed adjustment (FWD) terminal
71	AD1 (AMPHS)	I	Phase error PWM signal
72	AD0 (AMSPD)	I	Speed error PWM signal for main channel
73	P77 (MERR3)	O	Mechanism error code
74	V_{DD} (SERVO+5V)	I	Digital power supply terminal
75	P76 (MERR2)	O	Mechanism error code
76	P75 (MERR1)	O	Mechanism error code
77	P74 (MERR0)	O	Mechanism error code
78	P73 (CAPLK)	O	Capstan FG lock output
79	P72 (PHSLK)	O	Phase lock flag terminal
80	P71 (SRLSTOP)	O	SRL • STOP • FLAG terminal
81	P70 (TRLSTOP)	O	TRL • STOP • FLAG terminal
82	P67 (OPEN)	I	Cassette holder (open) switch detection
83	P66 (CLOSE)	I	Cassette holder (close) switch detection
84	P65 (CAPVSW)	O	Capstan driver VS switching terminal

• IC301 (MN66703): SPD1

Pin No.	Mark	I/O Division	Function
1	$DV_{DD}8$	I	Digital power supply terminal
2	$V_{SS}8$	–	Digital ground terminal
3	DEQIN	I	Digital input for playback signal
4	RTSEL1	O	Unused, open
5	RTSEL0		
6	RDSYNC	O	Sync signal (H during search) for playback signal (RDMUX) transfer
7	RDCLK	O	Channel switching clock (ADC sampling at trailing edge) for playback signal
8	WCLOCK	O	Sync clock for recording signal (WDATA)
9	WDATA	O	Recording signal sent to recording amplifier
10	AC1F	O	AUX channel C1 flag monitor
11	$DV_{DD}7$	I	Digital power supply terminal
12	$DV_{SS}7$	I	Digital ground terminal
13	AV_{DD}	I	Analog power supply terminal
14	VRT	–	Reference voltage for A/D converter
15	RDMUX	I	Analog playback signal input (head amplifier output from each channel synchronized to RDCLK)
16	VRTB	–	Reference voltage for A/D converter
17	AV_{SS}	–	Analog ground terminal
18	MC1F	O	Main channel C1 flag monitor
19	DRAMSL	I	External RAM type selection signal (SRAM: 0, DRAM: 1)
20	$DV_{DD}6$	I	Digital power supply terminal

Pin No.	Mark	I/O Division	Function
21	$DV_{SS}6$	–	Digital ground terminal
22 ∫ 27 • 30 ∫ 38	RAD14 ∫ RAD0	O	• When DRAMSL: 0 RAD (0–14): RAM address outputs of DRAM • When DRAMSL: 1 RAD14: NCAS (DRAM column address strobe signal) Strobe: 0 Non-strobe: 1 RAD13: NRAS (DRAM row address strobe signal) Strobe: 0 Non-strobe: 1 RAD (0–7): RAM address outputs of DRAM
28	$DV_{DD}5$	I	Digital power supply terminal
29	$DV_{SS}5$	–	Digital ground terminal
39	$DV_{DD}4$	I	Digital power supply terminal
40	$DV_{SS}4$	–	Digital ground terminal
41 ∫ 48	RDT7 ∫ RDT0	I/O	• When DRAMSL: 0 RDT (0–7): Bi-directional data bus of SRAM • When DRAMSL: 1 RDT (0–3): Bi-directional data bus of DRAM RDT (4–7): Should be pulled down
49	$DV_{DD}3$	I	Digital power supply terminal
50	$DV_{SS}3$	–	Digital ground terminal
51	NWE	O	Write enable signal for SRAM/DRAM
52	NOE	O	Output enable signal for SRAM/DRAM
53	NMSEL	I	Interface mode with SBC standard mode: 0, DDSP interchange mode: 1
54	SBEF	O	Word error flag No error: 0, error:1
55	SBDAP	I/O	Coding data input/output Output only when NMSEL=0
56	SBDAR	I	Coding data input
57	SBWS	I/O	Word clock Input only when NMSEL=0 Frequency=12kHz
58	SBCL	I/O	Bit clock Input only when NMSEL=0 Frequency=768kHz

Pin No.	Mark	I/O Division	Function
59	SBDIR	O	Bi-directional switching of SBDAP, SBCL and SBWS

NMSEL	DATA PLB SSB BUS SSCNT=0	SBDIR	SBDAR	SBDAP
0	0 (REC)	0	INPUT	OUTPUT
	1 (PLAY)	0	INPUT	OUTPUT
1	0 (REC)	0	INPUT	INPUT
	1 (PLAY)	1	INPUT	OUTPUT

NMSEL	DATA PLB SSB BUS SSCNT=0	SBDIR	SBCL	SBWS
0	0 (REC)	0	INPUT	INPUT
	1 (PLAY)	0	INPUT	INPUT
1	0 (REC)	0	INPUT	INPUT
	1 (PLAY)	1	OUTPUT	OUTPUT

Pin No.	Mark	I/O Division	Function
60	SPMCLK	I	SPD1 master clock NMSEL=0, 12.288MHz NMSEL=1, 24.576MHz
61	SBMCLK	I	Coding data processing master clock NMSEL=1, average Frequency=6.144MHz NMSEL=0, connected to ground
62	HDP	O	Header parity OK flag
63	PFADEF	O	Frame address error flag
64	$DV_{DD}2$	I	Digital power supply terminal
65	$DV_{SS}2$	–	Digital ground terminal
66	FRCK	O	Frame clock (cycle time=170.7ms)
67 ∫ 70	SSCNT0 ∫ SSCNT3	I	System control interface address signals (0–3)
71	SSDATA	I/O	System control interface bi-directional data bus
72	SSCLK	I	System control interface data transfer clock
73	SSENSPD	I	System control interface SPD1 selection signal
74	ASEGCK	O	AUX segment clock [During playback] Pulse width (Tw): 193µs to 2370µs (dependent on AUX C1 correction processing time) Cycle (Tp): 42.67ms average (dependent on tape speed) [During recording/dubbing/search] Fixed: L
75	SEGNUM	O	Main data segment number clock (cycle time=170.7ms)
76	AUXENV	O	AUX envelope signal (detects changes in amplitude of AUX signal, outputs to prevent dropout)

Pin No.	Mark	I/O Division	Function
77	LABEL	O	AUX label detection signal (leading edge time constant is 1 frame set by AUXSP from system control, trailing edge is leading edge of next AUXENV)
78	PHRDCK	O	Phase error data read-out clock (generates a pulse when changes occur in phase error data and speed error data so that system control can generate PWM signal from system control data of SS bus interface, used for interrupt processing of system control)
79	ENVEDG	O	AUX envelope edge signal
80	FRST	I	Frame reset signal
81	$DV_{SS}1$	–	Digital ground terminal
82	$DV_{DD}1$	I	Digital power supply terminal
83	DCTEST	I	DC test mode input (normal: 0, test mode: 1)
84	NRESET	I	Reset signal input (reset: 0, normal: 1)
85	TESTD1	I	Test data input (normal operation: 0)
86	TEST	I	Test mode signal (normal operation: L)
87	TSDA	I	Test mode setting data (normal operation: L)
88	TSCK	I	Test mode setting clock (normal operation: 1)
89	PHASE	O	Phase error PWM signal for main channel
90	MSPEED	O	Speed error PWM signal for main channel
91	VAL	O	Timing signal for eye pattern
92	EYE	O	Test output for eye pattern
93 ∫ 100	ADI00 ∫ ADI07	I/O	A/D converter output data (DEQIN: L)

• **IC302 (MN66702): SBC**

Pin No.	Mark	I/O Division	Function
1	TO2	O	Test output 2 (normally open)
2	SBMCLK	O	Master clock for SPD I/F; normal speed: 6.144 MHz, LP: 3.072 MHz (unused, open)
3	TO1	O	Test output 1 (normally open)
4	SPMCLK	O	SPD master clock (double-speed: 24.576 MHz, normal speed (including double-speed LP): 12.288 MHz, LP: 6.144 MHz)
5	SBDIR	I	Direction control input for SBCL, SBWS, and SBDAP, normally fixed at L (SBCL and SBWS out: L, SBCL and SBWS in: H)
6	CSYNC	O	SPD1 coded sync timing signal (sync slot: H)
7	V_{DD}	I	Power supply terminal
8	V_{SS}	–	Ground terminal
9	SBCL	I/O	SBDAR and SBDAP bit clock (SBDIR out: L, SBDIR in: H) SBMCLK/8 (normal speed: 768 kHz, LP: 384 kHz, double-speed: 1536 kHz)
10	SBWS	I/O	SBDAR and SBDAP word clock (SBDIR out: L, SBDIR in: H) SBMCLK/512 (normal speed: 12 kHz, LP: 6 kHz)
11	SBDAR	O	Coded signal output (16 bit I²S format)
12	NC	–	Not connected
13	NC	–	Not connected
14	SBDAP	I/O	Coded signal output, SBDIR out: L (16 bit I²S format)
15	URDA	I	Coded signal unreliable flag input (OK: L, error: H)
16	SBEF	I	Coded signal error flag input (OK: L, error: H)
17	FS128	O	128 Fs output (unused, open)
18	SEL512	I	256/512 Fs crystal selection (256 Fs: L, 512 Fs: H)
19	X3CLK	O	X3 clock output, stopped when Fs=32 kHz or SEL512=H and speed is normal (unused, open)
20	V_{SS}	–	Ground terminal

Pin No.	Mark	I/O Division	Function
21	X13	I	Fs=32kHz system master clock input, connected to crystal (SEL512: L, 8.192MHz; SEL512: H, 16.384MHz)
22	X03	O	Connected to crystal, Fs=32kHz system master clock output; stopped when Fs≠32kHz or when SEL512=H and speed is normal (unused, open)
23	V_{DD}	I	Power supply terminal
24	X2CLK	O	X2 clock output (stopped when Fs=44.1kHz)
25	V_{SS}	–	Ground terminal
26	X12	I	Fs=44.1kHz system master clock input, connected to crystal
27	X02	O	Fs=44.1kHz system master clock output, connected to crystal (stopped when Fs=44.1kHz)
28	V_{DD}	I	Power supply terminal
29	X1CLK	O	SPD master clock (SEL512: L, 12.288MHz; SEL512: H, 24.576MHz)
30	V_{SS}	–	Ground terminal
31	XI1	I	Fs=48kHz system master clock input, connected to crystal (SEL512: L, 12.288MHz; SEL512: H, 24.576MHz)
32	XO1	O	Fs=48kHz system master clock output, connected to crystal (SEL512: L, 12.288MHz; SEL512: H, 24.576MHz)
33 ∫ 35	PORT0 ∫ PORT2	O	General-purpose output ports (0–2), L when reset
36	CFSYNC	O	SBF coded processing frame timing signal output
37	CFRES	O	Coded processing frame timing reset (when H, reset by leading edge of SWS)
38	NSWS	O	SWS output (L channel: H)
39	V_{SS}	–	Ground terminal
40	V_{DD}	I	Power supply terminal
41	SCL	I/O	Bit clock input/output for FDA (64Fs)

Pin No.	Mark	I/O Division	Function
42	SWS	I/O	Word clock input/output for FDA (Lch: L, Lch: first)
43	FDIR	O	SBF direction control signal
44	SETDIR	O	Timing reference signal for changing direction of FS256, SCL, SWS and FDA (connected to SBF (FRESET) and DAI (SYNCDAI)
45	FDA	I/O	SBF data input/output (24 bit I²S format)
46	NC	–	Unused, connected to Ground
47	FS256	I/O	256Fs input/output
48	FSYNC	O	SBF band sync signal (band 0: H)
49	MCLK	O	Master clock output (F=6.144MHz)
50	NSBCRST	I	SBC chip reset (reset: L)
51	SSCLK	I	System control interface data transfer clock
52	SSDATA	I/O	System control interface bi-directional data bus
53	SSENSBC	I	System control interface enable (enabled: H)
54	V_{DD}	I	Power supply terminal
55	V_{SS}	–	Ground terminal
56 ∫ 58	SSCNT2 ∫ SSCNT0	I	System control interface address signals (0–2)
59	PLLSTP	I	Internal PLL operation control (synchronized: L, free-running: H)
60	LPENA	I	LP (192kHz) mode enable (LP operation disabled: L, LP operation enabled: H)
61	NMSEL	I	SPD I/F mode selection (M mode: L, P mode: H)
62	TEST	I	Test input (normally L)
63	NPDOWN	I	Power-down (power-down: L)
64	NTRST	I	Test reset (normally L)

- **IC303 (MN66701): SBF**

Pin No.	Mark	I/O Division	Function
1	TO0	O	Test output 0 (normally open)
2	TEST0	I	Test/normal mode operation switching input, normally fixed at VSS (normal mode: 0, test mode: 1)
3	NC	–	Not connected
4	V_{DD}	I	Power supply terminal
5	V_{SS}	–	Ground terminal
6	NPDOWN	I	Normal/power-down mode operation switching input (power-down mode: 0, normal mode: 1)
7	BIT1	I	Broad-band interface serial data bit length switching input 1
8	NC	–	Not connected
9	BIT0	I	Broad-band interface serial data bit length switching input 0
10	MODE	I	Broad-band interface serial data format switching input (signal processing: 0, I^2S: 1)
11	NC	–	Not connected
12	NC	–	Not connected
13	SDAR	I/O	Broad-band interface serial data input/output (I^2S format: input/output; signal processing format: input only)
14	NC	–	Not connected
15	SDAP	O	Broad-band interface serial data input/output (I^2S format: unused; signal processing format: output only)
16	V_{SS}	–	Ground terminal
17	SWS	I	L/R word clock input (fs)
18	SCL	I	Bit clock input (64 fs)
19	V_{DD}	I	Power supply terminal
20	SSCLK	I	System control interface clock input
21	NC	–	Not connected

Pin No.	Mark	I/O Division	Function
22	NC	–	Not connected
23	SSDATA	O	System control interface data output (3-state)
24	NC	–	Not connected
25	SSENSBC	I	System control interface SBF enable signal input
26	SSCNT2	I	System control interface control signal input 2
27	NC	–	Not connected
28	SSCNT1	I	System control interface control signal input 1
29	SSCONT0	I	System control interface control signal input 0
30	V_{DD}	I	Power supply terminal
31	V_{SS}	–	Ground terminal
32	NC	–	Not connected
33	TO1	O	Test output (normally open)
34	NC	–	Not connected
35	TO2	O	Test output 2 (normally open)
36	FSYNC	I	Sub-band interface cycle input (fs/32)
37	V_{DD}	I	Power supply terminal
38	V_{SS}	–	Ground terminal
39	FS256	I	Master clock input (256 fs)
40	V_{SS}	–	Ground terminal
41	FDA	I/O	Subband interface serial data input/output
42	FRESET	I	LSI reset signal input
43	FDIR	I	LSI operation mode switching input (encode: 0, decode: 1)
44	NC	–	Not connected

- **IC304 (M65812FP): DAI**

Pin No.	Mark	I/O Division	Function
1	TX	O	Digital audio interface format output
2	NRST	I	Reset terminal (reset: 0)
3	RX1	I	EIAJ format digital audio data input 1: coaxial cable
4	NFR	O	RX1 level converter output (connected to feedback resistance)
5	RX2	I	EIAJ format digital audio data input 2: optical cable
6	RXSEL	I	RX input switching (RX2: 1, RX1: 0, RXSEL polarity switched during microprocessor mode)
7	PD1	O	Phase comparison outputs for charge pump VCO
8	PD2		
9	UNCLK	O	Unlock detection output (I: unlock)
10	RXCKI	I	VCO clock input (256fs)
11	RXCKO	O	VCO clock output ($\overline{\text{RXCKI}}$)
12	SDAR	I/O	Serial audio data input/output (input only when format is other that I^2S)
13	SCL	I/O	Audio data bit clock input/output
14	SWS	I/O	Audio data word selection input/output
15	SDADAT	O	Serial audio data output
16	SADDAT	I	A/D converter serial audio data input
17	V_{SS}	–	Ground terminal
18	ADSEL	I	Serial audio data source switching (digital (RX): 0, analog (A/D converter): 1; RXSEL polarity switched during microprocessor mode)
19	FLAGI	I	Error flag input
20	FLAGO	O	Error flag output
21	WCK	O	Word clock output (2fs during reception)
22	ASL	I	Audio data sample length switching (16 bit: 0, 24 bit: 1)
23	IIS	I	Audio data format switching (other formats: 0, I^2S: 1)
24	MSBF	I	MSB switching (LSB: 0, MSB: 1)
25	LRCKPOL	I	LRCK polarity switching (Lch-0: 0, Lch-1: 1)
26	FS256	I/O	Master clock input/output (128fs or 256fs)
27	CKSEL	I	Master clock frequency switching (256fs: 0, 128fs: 1)
28	SSCNT2	I	System control interface address signal
29	NC	–	Not connected
30	MUTE	I	Mute control (mute: 1; mute control polarity switched during microprocessor mode)
31	MODE0	I	Mode switching (mircoprocessor: 0, 0, easy: 0, 1, full transparent mode: 0, 1, test mode: 1, 1)
32	MODE1		
33	SSENDAI	I	Enable signal
34	SSCLK	I	System control interface data transfer clock
35	SSDATA	I/O	System control interface bi-directional data bus
36	SSCNT1	I	System control interface address signals
37	SSCNT0		
38	V_{DD}	I	Power supply terminal
39	V_{SS}	–	Ground terminal
40	SETDIR	I	Setting clock input
41	IRQU	O	U bit data information message indicator output
42	USYNCI	I	U bit data unit indicator input (during transmission)
43	USYNCO	O	U bit data unit indicator output (during reception)
44	IMSTRT	O	U bit data message start indicator output

• IC305 (MNE3214RTAD1): System control

Pin No.	Mark	I/O Division	Function
1	P55 (LINEMUTE)	O	Analog mute control
2	P54 (DACRST)	O	DAC reset (L for 500 ms after power is switched on; L during FS/input selector switching)
3	P53 (DEEMPH)	O	De-emphasis control
4	P52 (CS)	I	Matsushita/JVC switching (Matsushita: L, JVC: H)
5	P51 (FS2)	O	Digital filters FS switching (valid when DEEMPH is on)
6	P50 (FS1)	O	
7	V_{DD}	I	Power supply terminal
8	OSC1	I	Crystal oscillator terminals (f=8 MHz)
9	OSC2	O	
10	V_{SS}	–	Ground terminal
11	X1 (GND)	–	Ground terminal
12	X0 (NC)	–	Not connected
13	EX2 (GND)	–	Ground terminal
14	/RST (NRST2)	I	Reset terminal
15	(IRQ2)/P26 (ASEGCK)	I	AUX segment sync signal (interrupt)
16	(IRQ1)/P25 (TPS)	I	Detection of distance between ACC peaks (port input)
17	(IRQ0)/P24 (IRQU)	I	DAI U bit detection input (interrupt)
18	P77 (SSENSPD)	O	SSBUS SPD1 enable signal
19	P76 (SSENSBC)	O	SSBUS SBC enable signal
20	P75 (NRESET)	O	Reset signal
21	P74 (SSEMDAI)	O	DAI enable signal
22 ∫ 25	P73 (SSCNT3) ∫ P70 (SSCNT0)	O	System control interface address signals

	44.1 kHz	32 kHz	48 kHz	deemph OFF (MEI)	JVC
FS2	L	H	H	L	L
FS1	L	H	L	H	L

Pin No.	Mark	I/O Division	Function
26	P47 (SWDA)	O	ACC/DCC switching (DCC REC or REP; or L for ACC)
27	(SIFIN)/P46 (USYNCI)	O	U bit sync signal from DAI (during input)
28	(PWM2–)/P45 (USYNCO)	I	U bit sync signal from DAI (during output)
29	(PWM2+)/P44 (IMSTART)	I	U bit data message start indicator output
30	P97 (LABEL)	I	AUX label detection
31	P96 (MECHAMUT)	O	Mechanism mute (radio/cassette recorder specifications), H during mechanism movement
32	(KEY5)/P95 (TEST)	I	Test input
33	(KEY4)/P94 (FRCK)	I	Frame sync signal (main data, 170 ms)
34	(PWM1–)/P43 (SEGNUM)	I	Segment number clock
35	(PWM1+) /P42	I	Unused, connected to Ground
36	(PWM0–) /P41		
37	(PWM0+) /P40		
38	(TCI04)/P22 (DRLFGT)	I	Take-up side of lead FG (interrupt)
39	(TCI02)/P21 (AUXENV)	I	AUX envelope signal (with envelope: H)
40	(TCI01)/P20 (DRLFGS)	I	Supply side of lead FG
41	(SBT2)/P17 (SSCLK)	O	System control interface data transfer clock
42	(SBD2)/P16 (SSDATA)	I/O	System control interface bi-directional data bus
43	(TRXC)/P15 (SERGAIN)	O	Gain amplifier control during search (during search: L, except during search: H)
44	(RXD)/P14 (HEADER)	I	Header signal (panel controls/ system control interface)
45	(TXD)/P13 (NBUSY)	O	Serial communications busy output
46	(SBT1)/P12 (SBT)	I	Serial communications clock input
47	(SBI1)/P11 (PSDATA)	I	System control data from panel controls
48	(SBO1)/P10 (SPDATA)	O	Panel control data from system control

Pin No.	Mark	I/O Division	Function
49	V_{DD}	I	Power supply terminal
50	AV_{DD}		
51	VREF+	I	Reference voltage terminal
52	(AD7)/P87 (CASTIN)	I	Cassette detection signal (no cassette: L, cassette loaded: H)
53	(AD6)/P88 (PLYMUT)	I	Start of play sound output time (350ms: L, 600ms: H)
54 ~ 59	(AD5)/P85 ~ (AD0)/P60	I	Unused, connected to Ground
60	VREF−	−	Unused, connected to Ground
61	AV_{SS}		
62	V_{SS}		
63	(SD7)/P37 (LED48)	O	Sampling frequency LED 48kHz control output (LED off: L, LED on : H)
64	(SD6)/P36 (LED441)	O	Sampling frequency LED 44.1kHz control output (LED off: L, LED on : H)
65	(SD5)/P35 (LED32)	O	Sampling frequency LED 32kHz control output (LED off: L, LED on : H)
66	(SD4)/P34 (KH6MUTE)	O	Special mute for model KH6 (H output only during DCC/ACC play)
67	(SD3)/P33 (DOLBY-C)	O	Dolby output
68	(SD2)/P32 (DOLBY-B)	O	
69	(SD1)/P31	O	Not connected (L fixed output)
70	(SD0)/P30 (CROMOUT)	O	CrO_2/normal tape switching output (NORMAL: L, CrO_2: H)
71	P67/EXTSEL (SEL256)	O	SBC hang compatibility
72	(KEY3)/P93 (ADRST)	O	A/D converter reset signal (L to H 500ms after DACRST)
73	(KEY2)/P92 (MAINOUT)	O	Pulse output synchronized to main cycle (unused, open)
74	(KEY1)/P91 (NSBRST)	O	Reset signal for SBC
75	(KEY0)/P90 (RSTS)	O	Reset signal for servo processor
76	P66 (ACC/DCC)	O	ACC/DCC indicator switch output (DCC: L, ACC: H)
77	P65 (SRDY)	I	Communications bus: mechanism control ready (communication with servo microprocessor)
78	P64 (SSTB)	O	Communicataions bus: system control strobe (communication with servo microprocessor)
79 ~ 82	P63 (SBUS3) ~ P60 (SBUS0)	I/O	Communications bus: data (0−3)
83	P57 (NDCC)	O	Analog circuit DCC/ACC switching (DCC: L, ACC: H)
84	P56 (DACMUTE)	O	DAC mute (changes with same timing and reverse polarity to line mute)

Dolby output:

	OFF	B	C
DOLBY-C	H	H	L
DOLBY-B	H	L	H

• IC401 (MN64782): Digital filter and D/A converter

Pin No.	Mark	I/O Division	Function
1	SRDATA	I	Digital data input terminal
2	$\overline{NZFLG}$	O	Zero input detection flag output terminal
3	IE	I	SRDATA input format selection terminal (LSI signal processing: L, I^2S: H)
4	LRPOL	I	LRCLK polarity selection terminal
5	DE0	I	De-emphasis filter mode selection terminal
6	DE1		
7	$DV_{SS}1$	−	Digital system ground terminal

De-emphasis filter mode selection:

LSEL	L	H	L	H
RSEL	L	L	H	H
Analog output	L and R chs stereo output	L ch output only	R ch output only	Reverse output of L and R chs

Pin No.	Mark	I/O Division	Function
8	$DV_{DD}1$	I	Digital system power supply terminal
9	AV_{DD}	I	Terminal for clamping electric potential of silicon substrate (analog system power supply)
10	$DAV_{SS}1$	–	Digital system ground terminal
11	$DAV_{DD}1$	I	Lch digital system power supply terminal
12	$AV_{DD}1$	I	Lch analog system power supply terminal
13	OUT1P	O	Lch forward-phase analog output terminal
14	VREF1	I	Lch reference voltage input terminal
15	OUT1N	O	Lch reverse-phase analog output terminal
16	$AV_{SS}1$	–	Lch reverse-phase analog output terminal
17	BIAS	I	Operational amplifier bias voltage input terminal
18	$AV_{SS}2$	–	Rch analog system ground terminal
19	OUT2N	O	Rch reverse-phase analog output terminal
20	VREF2	I	Rch reference voltage input terminal
21	OUT2P	O	Rch forward-phase analog output terminal
22	$AV_{DD}2$	I	Rch analog system power supply terminal
23	$DAV_{DD}2$	–	Rch digital system power supply terminal
24	$DV_{SS}4$	–	Digital system ground terminal
25	LSEL	I	Analog system selection terminal
26	RSEL		

LSEL	L	H	L	H
RSEL	L	L	H	H
Analog output	L and R chs stereo output	L ch output only	R ch output only	Reverse output of L and R chs

Pin No.	Mark	I/O Division	Function
27	ALLOW	O	MASH zero output detection flag terminal
28	TPO	O	Output testing terminal
29	TPI	I	Output testing terminal
30	TEST1	I	Output testing terminal (connected to DVSS)
31	TEST2	I	Output testing terminal (connected to DVSS)
32	NPD	I	Power-down terminal (power-down mode: L)
33	NRST	I	Reset terminal (LSI internal reset: L)
34	FSEL	I	MASH clock selection terminal (32 times over-sampling: L, 64 times over-sampling: H)
35	CKOUT	O	Clock output terminal
36	NC	–	Not connected
37	NC	–	Not connected
38	$DV_{DD}2$	I	Digital system power supply terminal
39	X1	I	Clock signal input or crystal oscillator input terminal
40	X2	O	Crystal oscillator output terminal
41	$DV_{SS}2$	–	Digital system ground terminal
42	CSEL	I	Master clock selection terminal (master clock 256fs: L, master clock 384fs: H)
43	LRCLK	I	L/R clock input terminal
44	BCLK	I	Bit clock input terminal

LRPOL	"L"		"H"	
LRCLK	"L"	Lch	"L"	Rch
	"H"	Rch	"H"	Lch

• IC402 (MN6463): A/D converter

Pin No.	Mark	I/O Division	Function
1	TEST1	I	Test terminal (normally L)
2	TEST2	I	Test terminal (normally L)
3	NC	–	Not connected
4	DOUT	O	Serial data terminal

Pin No.	Mark	I/O Division	Function
5	BCK	I	Bit clock terminal
6	WLK	I	LRCLR terminal LRPOL: "L" / "H" LRCLK: "L" Lch, "H" Rch (LRPOL "L"); "L" Rch, "H" Lch (LRPOL "H")
7	FS64	O	Test clock terminal (L or open)
8	$DV_{SS}1$	–	Digital system ground terminal
9	$DV_{DD}1$	I	Digital system power supply terminal
10	EXCLK	I	256Fs clock input terminal
11	IE	I	Output format selection terminal (LSI format: L, format: H)
12	LRPOL	I	LRCK polarity selection terminal
13	DOE	I	Output control terminal (DOUT high impedance: L)
14	$\overline{PDB}$	I	Power-down terminal (power-down mode: L)
15	OFINH	I	Offset removal circuit stop terminal (offset removal function stopped: L)
16	RSTB	I	Reset terminal (reset: L)
17	$DV_{DD}3$	I	Digital system power supply terminal
18	$DV_{SS}3$	–	Digital system ground terminal
19	$AV_{SS}4$	–	Rch analog system ground terminal
20	$AV_{DD}4$	I	Rch analog system power supply terminal
21	$AV_{SS}2$	–	Ground terminal for Rch analog switch driver
22	$AV_{DD}2$	I	Power supply terminal (+5V) for Rch analog switch driver
23	VREF2	I	Rch refernece terminal
24	AIN2	I	Rch analog signal terminal
25	AG2	I	Rch reference voltage terminal
26	$AV_{DD}3$	I	Rch analog system power supply terminal
27	$AV_{SS}3$	–	Rch analog system ground terminal
28	AMPBIAS	I	Operational amplifier bias terminal
29	$AV_{SS}1$	–	Ground terminal for Lch analog switch driver
30	$AV_{DD}1$	I	Power supply terminal (+5V) for Lch analog switch driver
31	AG1	I	Lch reference voltage terminal
32	AIN1	I	Lch analog signal terminal
33	VREFL	I	Lch reference terminal
34	$AV_{DD}1$	I	Lch analog system power supply terminal
35	$AV_{SS}1$	–	Lch analog system ground terminal
36	$AV_{DD}2$	I	Lch analog system power supply terminal
37	$AV_{SS}2$	–	Lch analog system ground terminal
38	NSUB	–	Terminal for clamping electric potential of silicon substrate (analog system power supply)
39	$DV_{DD}2$	I	Digital system power supply terminal
40	$DV_{SS}2$	–	Digital system ground terminal
41 ∫ 44	TP0 ∫ TP3	I	Test terminal (L or open)

• IC701 (MND2416RTAE): Panel control

Pin No.	Mark	I/O Division	Function
1 ∫ 5	DGT4 (G11) ∫ DGT0 (G15)	O	Digit outputs for FL display
6 ∫ 23	SEG0 (P1) ∫ SEG17 (P18)	O	Segment outputs for FL display

Pin No.	Mark	I/O Division	Function
24 ∫ 29	P62 ∫ P67 (LEDDCC)	O	Unused, open
30	P37 (LED48)	I/O	Unused, open
31	P36 (LED44)	I/O	Unused, open
32	P35 (LED32)	I/O	Unused, open
33	P34 (LEDPLAY)	I/O	Unused, open
34	P33 (LEDPLAY)	O	LED (PALY) control signal
35	P32 (LEDREC)	O	LED (REC) control signal
36	P31 (SERVO OFF)	O	Output for POWER-OFF, STOP commands (STOP: H)
37	P30 (POWER)	O	Power supply control signal
38	P93 (B. DATA OUT/SYNC)	O	Technics bus data output
39	P92 (B. DATAIN)	I/O	Techincs bus data input
40	P91 (B. CLKOUT)	O	Techincs bus clock output
41	P90 (LED STANDBY)	O	LED (STANDBY) control signal
42	VREF−	−	Reference voltage negative (−) terminal, connected to ground
43 ∫ 47	P27 ∫ P23	−	Unused, connected to ground
48 ∫ 50	KEYIN2 ∫ KEYIN0	I	Key switch detection
51	VREFH	I	Reference voltage positive (+) input
52	V_{DD}	I	Power supply terminal
53	OSC2	O	Clock terminal (F=8.0MHz)
54	OSC1	I	Clock terminal (F=8.0MHz)
55	V_{SS} (GND)	−	Ground terminal

Pin No.	Mark	I/O Division	Function
56	X1	I	Clock input (unused, connected to ground)
57	X2	O	Clock output (unused, open)
58	IRST (NRST1)	I	Reset input
59	IRQ1 (REMOCN)	I	Remote control pulse input
60	IRQ0 (POFF)	I	Power-off detection
61	P13 (REMOSEL)	−	Unused, connected to ground
62	P12 (SEL43)	I	Model selection terminal (DC8: L, KH6: H)
63	P11 (NBUSY)	I	Serial communications busy input
64	P10 (B. CLK1/ SYNCREC)	I	Technics bus clock input
65	P05 (NRST2)	O	System control reset control output
66	P04 (HEDER)	O	Serial communications header signal output
67	P03 (NC)	−	Unused, connected to ground
68	SBT0 (SBT)	O	Serial communications clock output
69	SBIC (S-PDATA)	I	Serial communications system control data input
70	SBO0 (P-DATA)	O	Serial communications panel control data output
71	CM	I	Chip mode selection terminal
72	SYNC	O	Timing output (unused, open)
73	−VP	I	Pull-down voltage input
74	P70 (NC)	−	Not connected
75 ∫ 84	DGT14 (G1) ∫ DGT5 (G10)	O	Digit output for FL display

■ REPLACEMENT PARTS LIST

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC1	AN7631FHPV	P.B. HEAD AMP	
IC2	AN7630SBE2V	REC AMP	
IC3	AN78L05ME2	REGULATOR	
IC201	MNE201ARTAC1	SERVO PROCESSOR	
IC202	M5233FPE1	REEL FG AMP	
IC203, 204	TC7S86FUTE8L	REEL FG AMP	
IC205	TA7291FEL	REEL DRIVER	
IC208	NJM2115MT1	CAPSTAN FG AMP	
IC209	NJM2903MTE1	CAPSTAN FG AMP	
IC210	NJM2406FTE1	CAPSTAN FG AMP	
IC211	S80735SNDZT1	SIGNAL GENERATOR	
IC301	MN66703	SPD1	
IC302	MN66702	SBC	
IC303	MN66701	SBF	
IC304	M65812FP	DAI	
IC305	MNE3214RTAD1	SYSTEM CONTROL	
IC306	V464AJ80LTER	RAM	
IC307	TLC2931IPW-R	VCO	
IC308	TC7SU04FT85R	INVERTER	
IC309	M5218FPE2	TPS	
IC310	TOTX178	DIGITAL OUT	
IC311, 312	TORX178A	DIGITAL IN	
IC314, 315	TC7W00FUTE1L	NAND GATE	
IC316	TC4W53FUTE1L	SWITCHING	
IC317	TC7W74FUTE1L	D. FLIP-FLOP	
IC318	TC7SU04FT85R	INVERTER	
IC319	TC4W53FUTE1L	SWITCHING	
IC320	TC7W74FUTE1L	D. FLIP-FLOP	
IC321	TC7SU04FT85R	INVERTER	
IC322	TC7W74FUTE1L	D. FLIP-FLOP	
IC323	TC7SU04FT85R	INVERTER	
IC401	MN64782	D/A CONV.&DIGITAL FILTER	
IC402	MN6463	A/D CONVERTER	
IC403	M5220FPTA	BIAS CONTROL	
IC404, 405	M5219FPTA	L. P. F.	
IC406	UPD4053BGT1	SWITCHING	
IC407, 408	M5219FPTA	BUFFER AMP	
IC411	M5F78M05L	REGULATOR	⚠
IC412	M5220FPTA	BIAS CONTROL	
IC461-464	NJM4580EDTE1	BUFFER AMP	
IC501	AN7374S-E2	DOLBY B/C NR	
IC601	M5F78M05L	REGULATOR	⚠
IC602	M5278D56	REGULATOR	⚠
IC604	S81350HG	REGULATOR	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
IC701	MND2416RTAE	PANEL MICROCOMPUTER	
IC702	M5218L	HEADPHONES AMP	
IC751	GP1S24	PHOTO COUPLER	
IC971, 972	RVSGP2S24BC	PHOTO INTERRUPTER	
IC981	SPI-332	END SENSOR	
		TRANSISTOR(S)	
Q1	2SD874ASTX	TRANSISTOR	
Q2	2SD1819ASTX	TRANSISTOR	
Q3, 4	2SB1218STX	TRANSISTOR	
Q5, 6	2SD874ASTX	TRANSISTOR	
Q7	2SD1819ASTX	TRANSISTOR	
Q8	2SK664TX	TRANSISTOR	
Q9	UN5214TX	TRANSISTOR	
Q203	2SB1073TX	TRANSISTOR	
Q204	UN5214TX	TRANSISTOR	
Q205	2SB1073TX	TRANSISTOR	
Q206	UN5214TX	TRANSISTOR	
Q207	2SB1073TX	TRANSISTOR	
Q208	UN5214TX	TRANSISTOR	
Q209	2SB1073TX	TRANSISTOR	
Q210	UN5214TX	TRANSISTOR	
Q212	2SD1819ASTX	TRANSISTOR	
Q213	2SB1218STX	TRANSISTOR	
Q214	2SD1119RTX	TRANSISTOR	
Q217, 218	UN5213TX	TRANSISTOR	
Q219	UN5114TX	TRANSISTOR	
Q220, 221	2SD1328STXRA	TRANSISTOR	
Q301	2SD1819QRSTX	TRANSISTOR	
Q304	DTA124EUT107	TRANSISTOR	
Q305	DTC124EUT107	TRANSISTOR	
Q306	DTA114EUT107	TRANSISTOR	
Q312-315	DTC124EUT107	TRANSISTOR	
Q316	DTA124EUT107	TRANSISTOR	
Q317	2SD592ARSTA	TRANSISTOR	⚠
Q318	DTA143TUT107	TRANSISTOR	
Q401	2SB621A-R	TRANSISTOR	
Q402	DTC124EUT107	TRANSISTOR	
Q403	2SD592ARSTA	TRANSISTOR	⚠
Q404	2SB621A-R	TRANSISTOR	⚠
Q461-464	2SD1450RTA	TRANSISTOR	
Q501, 502	DTC114TUT107	TRANSISTOR	
Q503, 504	DTA124EUT107	TRANSISTOR	
Q505	DTA114TUT107	TRANSISTOR	
Q601, 602	2SD592ARSTA	TRANSISTOR	
Q603	2SB1238QSTV6	TRANSISTOR	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
Q604, 605	2SD1762EF	TRANSISTOR	⚠
Q606	2SB1240-P	TRANSISTOR	⚠
Q607	DTC114ESTP	TRANSISTOR	
Q608	2SA1309A-R	TRANSISTOR	⚠
Q609	2SB1240-P	TRANSISTOR	⚠
Q610, 611	2SD1862QRTV6	TRANSISTOR	⚠
Q612	2SB1240-P	TRANSISTOR	⚠
Q613	2SK982TPE2	TRANSISTOR	⚠
Q614	2SJ148TPE2	TRANSISTOR	⚠
Q619	DTC114ESTP	TRANSISTOR	⚠
Q620	DTA114ESTP	TRANSISTOR	⚠
Q621	2SC3944AQRS	TRANSISTOR	⚠
Q701-703	2SC3311AIRTA	TRANSISTOR	
Q704	UN4213	TRANSISTOR	
Q731, 732	UN4211	TRANSISTOR	
Q761	UN4211	TRANSISTOR	
Q781-784	2SD1450STTA	TRANSISTOR	
		DIODE(S)	
D201	MA720TX	DIODE	
D202	MA737TX	DIODE	
D203	MA720TX	DIODE	
D204, 205	MA112TX	DIODE	
D301, 302	MA110TX	DIODE	
D306	MTZJ10BTA	DIODE	⚠
D341	MA110TX	DIODE	
D401, 402	MTZJ5R6BTA	DIODE	⚠
D403-406	MA8033LTX	DIODE	
D461-463	MA110TX	DIODE	
D601	RL1N4003N02	DIODE	⚠
D602	MTZJ30DTA	DIODE	⚠
D603	MTZJ3R9BTA	DIODE	⚠
D604	MA165	DIODE	
D605-608	RL1N4003N02	DIODE	⚠
D609	MTZJ15CTA	DIODE	⚠
D610	MTZJ9R1ATA	DIODE	⚠
D612, 613	MA165	DIODE	⚠
D614	MTZJ5R1BTA	DIODE	⚠
D615, 616	MA165	DIODE	
D617-620	RL1N4003N02	DIODE	⚠
D621	MA165	DIODE	
D622, 623	D1NK20H-4084	DIODE	⚠
D624	MA165	DIODE	
D625, 626	MTZJ16CTA	DIODE	⚠
D627	MA165	DIODE	
D628	MA723TA	DIODE	
D629	MTZJ8R2CTA	DIODE	⚠
D630, 631	MA165	DIODE	
D701-703	1SS254TA	DIODE	
D704	1SS291TA	DIODE	
D731	SLR-305VC	L. E. D.	

Ref. No.	Part No.	Part Name & Description	Remarks
D732	SLR-305MC	L. E. D.	
D751	LN0603GP3	L. E. D.	
D752-754	LN373GP3ULSC	L. E. D.	
D761	LN873RP-C	L. E. D.	
D762	1SS254TA	DIODE	
D971	RVD1SS133TA	DIODE	
		IC PROTECTOR(S)	
ICP601	SRUN25	IC PROTECTOR	⚠
ICP602	SRUN20T	IC PROTECTOR	⚠
		VARIABLE RESISTOR(S)	
VR1, 2	EVM1YSX50B53	ANALOG OUTPUT LEVEL ADJ.	
VR3-6	EVM1YSX50B54	ANALOG OUTPUT LEVEL ADJ.	
VR9	EVM1YSX30B24	ANALOG OUTPUT LEVEL ADJ.	
VR10	EVM1YSX30B24	ANALOG OUTPUT LEVEL ADJ.	
VR11	EVM1YSX50B55	DCC REC OPTIMUM CURRENT ADJ	
VR12, 13	EVM1YSX50B54	DCC REC OPTIMUM CURRENT ADJ	
VR14	EVM1YSX30B14	DCC P. B. LEVEL ADJ.	
VR15	EVM1YSX30B14	QUICK REVERSE SENSOR ADJ.	
VR16, 17	EVM1YSX30B14	TAPE SPEED ADJ.	
VR501, 502	EVNDXAA00B23	OUTPUT LEVEL ADJ.	
VR701	EVJYL0F02A24	REC LEVEL ADJ.	
VR702	EVJY91F02375	REC BALANCE ADJ.	
VR703	EVJY10F02A54	HEADPHONES LEVEL ADJ.	
		THERMISTOR(S)	
TH201	RRSDPTM103WL	THERMISTOR	
		PHOTO INTERRUPTER(S)	
PH291	RVSGP2S24BC	PHOTO INTERRUPTER	
		COIL(S)	
L1-4	ELJPA150KF	COIL	
L203	ELJPA101KF	COIL	
L301, 302	ELEXT1R0KA9	COIL	
L304, 305	ELEXT470KA9	COIL	
L306-313	ELEXT1R0KA9	COIL	
L314-317	ELJFA4R7KF	COIL	
L401-403	ELEXT1R0KA9	COIL	
L601, 602	RLZ0026-0	COIL	⚠
L701	ELEXT1R0KA9	COIL	
		TRANSFORMER(S)	
T601	RTP1L4B004	POWER TRANSFORMER	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
		COMPONENT COMBINATION(S)	
Z201	EXCCET102U	FILTER	
Z203-208	EXCCET102U	FILTER	
Z209-211	EXCCET101U	FILTER	
Z212, 213	EXCCET102U	FILTER	
Z214	EXCCET101U	FILTER	
Z215, 216	EXCCET102U	FILTER	
Z217	EXCCET103U	FILTER	
Z218	EXCCET101U	FILTER	
Z219	EXCCET103U	FILTER	
Z220	EXCCET101U	FILTER	
Z221, 222	EXCCET103U	FILTER	
Z223, 224	EXCCET471U	FILTER	
Z225	EXCCET101U	FILTER	
Z227	EXCCET101U	FILTER	
Z232-234	EXCCET103U	FILTER	
Z235, 236	RLBN102V-D	FILTER	
Z237, 238	EXCCET101U	FILTER	
Z247	EXCCET102U	FILTER	
Z248	EXCCET103U	FILTER	
Z301-305	BL02RN2R62T4	FERRITE BEADS	
Z306-308	RLB0003	FERRITE BEADS	
Z309	BL02RN2R62T4	FERRITE BEADS	
Z310, 311	RLB0003	FERRITE BEADS	
Z313-315	RLB0003	FERRITE BEADS	
Z701	RCDHC-278	REMOTE SENSOR	
Z702	EXBZ15E393J	COMPONENT COMBINATION	
Z703	EXBZ6E393J	COMPONENT COMBINATION	
Z704	EXBZ15E393J	COMPONENT COMBINATION	
Z781-783	ELEVR56MA	FERRITE BEADS	
Z971	EXBF6L306SYV	COMPONENT COMBINATION	
		OSCILLATOR(S)	
X201	RSXC8M00S02T	OSCILLATOR(8MHz)	
X301	RSXC24M5S03T	OSCILLATOR(24. 5MHz)	
X302	RSXC22M5S01T	OSCILLATOR(22. 5MHz)	
X303	EF0EC8004T4	OSCILLATOR(8. 0MHz)	
X701	EF0EC8004T4	OSCILLATOR(8. 0MHz)	
		DISPLAY TUBE(S)	
FL701	RSL0163-F	DISPLAY TUBE	
		FUSE(S)	
F601	XBA2C02TB0	FUSE 250V, 2A	⚠
		SWITCH(ES)	
S291	RSH1A024-U	CASSETTE OPEN DET.	

Ref. No.	Part No.	Part Name & Description	Remarks
S292	RSH1A024-U	CASSETTE CLOSE DET.	
S701	EVQ21405R	OPEN/CLOSE	
S702	EVQ21405R	STOP	
S703	EVQ21405R	FF	
S704	EVQ21405R	REW	
S705	EVQ21405R	F. SKIP/TPS	
S706	EVQ21405R	R. SKIP/TPS	
S707	EVQ21405R	PLAY	
S708	EVQ21405R	DIRECTION	
S709	EVQ21405R	PAUSE	
S710	EVQ21405R	AUTO REC MUTE	
S711	EVQ21405R	REC PAUSE	
S721	EVQ21405R	END SEARCH	
S722	EVQ21405R	COUNTER RESET	
S723	EVQ21405R	COUNTER MODE	
S731	EVQ21405R	POWER	
S732	EVQ21405R	REC INPUT	
S733	EVQ21405R	MAKER AUTO/MANUAL	
S734	EVQ21405R	DOLBY NR/ACC	
S735	EVQ21405R	REVERSE MODE	
S736	EVQ21405R	TEXT MODE	
S737	EVQ21405R	TEXT SCROLL	
S738	RSS3A18YA-H	TIMER	
S971	RSH1A018-U	MODE DET.	
S972	RSH1A019-U	HALF DET.	
S973	RSH1A019-U	CrO2 DET.	
S974	RSH1A019-U	R. REC INH.	
S975	RSH1A019-U	F. REC INH.	
S976	RSH1A019-U	METAL DET.	
S981-983	RSP1C002-A	DCC TAPE LENGTH(2, 1, 0) DET.	
S984	RSP1A013-A	DCC/ACC CASSETTE HALF DET.	
		CONNECTOR(S) AND SOCKET(S)	
CN1	RJS2A0630T	CONNECTOR(30P)	
CN3A	RJU075W30VT	SOCKET(30P)	
CN4A	RJS1A1430-D	CONNECTOR(30P)	
CN4B	RJS2A0630T	CONNECTOR(30P)	
CN5A	RJS1A6915	CONNECTOR(15P)	
CN6A	RJS1A6921	CONNECTOR(21P)	
CN301	RJS1A6822	CONNECTOR(22P)	
CN302A	RJP7G18ZA	CONNECTOR(7P)	
CN302B	RJP7G18ZA	CONNECTOR(7P)	
CN303	RJS21Q11ZA	CONNECTOR(21P)	
CN304	RJS15Q11ZA	CONNECTOR(15P)	
CN305	RJS1A6606	CONNECTOR(6P)	
CN401A	RJS1A6604	CONNECTOR(4P)	
CN401B	RJS1A6603	CONNECTOR(3P)	
CN402	RJT029W06VT	CONNECTOR(6P)	
CN403A	RJS1A6605	CONNECTOR(5P)	
CN403B	RJS1A6605	CONNECTOR(5P)	
CN404	RJS1A6606	CONNECTOR(6P)	

Ref. No.	Part No.	Part Name & Description	Remarks
CN602	RJS1A1101T1	CONNECTOR(1P)	
CN605-615	RJS1A1101T1	CONNECTOR(1P)	
CN616A	RJT029W05VT	CONNECTOR(5P)	
CN616B	RJT029W05VT	CONNECTOR(5P)	
CN617A	RJT029W07VT	CONNECTOR(7P)	
CN617B	RJT029W07VT	CONNECTOR(7P)	
CN701	RJS1A6222	CONNECTOR(22P)	
CN782	RJU057W004	SOCKET(4P)	
CP3B	RJT075W30HT	CONNECTOR(30P)	
CP201A	RJT036W008	CONNECTOR(8P)	
CP201B	RJP8G17ZA	CONNECTOR(8P)	
CP202A	RJP3G17ZA	CONNECTOR(3P)	
CP202B	RJP3G17ZA	CONNECTOR(3P)	
CP203A	RJT071H11A	CONNECTOR(11P)	
CP204	RJR0113	MOTOR CONNECTOR TERMI. (4P)	
CP782	RJT057W004-1	CONNECTOR(4P)	
CS971	RJU071H11M	SOCKET(11P)	
FC751	REX0544	CONNECTOR(3P) ASS'Y	
		JACK(S)	
JK461	SJF3069-4A	ANALOG(REC/PLAY) TERMINAL	
JK601	SJS9236	AC INLET	⚠
JK701	RJJ63TA01	HEADPHONES JACK	
		RADIATOR	
F1N602	SMY937	RADIATOR	
		GND PLATE(S)	
E301	SNE1004-2	GND PLATE	
E302	SNE75	GND PLATE	
E701	RMC0210	GND PLATE	
E751	RMC0230	GND PLATE	
		FUSE HOLDER(S)	
FC619, 620	EYF52BC	FUSE HOLDER	
		HOLDER(S) AND FLAT CABLE(S)	
FW761	RJS1A5506	CABLE HOLDER(6P)	
FW781	RJS1A5507	CABLE HOLDER(7P)	
W4	RWJ5530180CC	FLAT CABLE(30P)	
W201	RFKESDC8AK	CABLE(8P) ASS'Y	
W202	RFKESDC8BK	CABLE(3P) ASS'Y	
W617	RJS1A5510	CABLE HOLDER(10P)	
W618	RJS1A5506	CABLE HOLDER(6P)	

RESISTORS AND CAPACITORS

Notes : * Capacity values are in microfarads (uF) unless specified otherwise, P = Pico-farads (pF) F = Farads (F)
* Resistance values are in ohms, unless specified otherwise, 1 K = 1,000 (OHM), 1 M = 1,000 k (OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R1-9	ERJ6GEYJ471V	1/10W 470
R10-12	ERJ6GEYJ471V	1/10W 470
R13, 14	ERJ3GEYJ390V	1/16W 39
R15	ERJ3GEYJ121V	1/16W 120
R16	ERJ3GEYJ152V	1/16W 1.5K
R17	MCR03PZHJ561	1/16W 560
R18	ERJ3GEYJ390V	1/16W 39
R19	ERJ3GEYJ182V	1/16W 1.8K
R21-24	ERJ3GEYJ100V	1/16W 10
R25, 26	ERJ3GEYJ562V	1/16W 5.6K
R27, 28	ERJ3GEYJ222V	1/16W 2.2K
R29, 30	ERJ3GEYJ272V	1/16W 2.7K
R31, 32	ERJ3GEYJ823V	1/16W 82K
R33, 34	ERJ3GEYJ123V	1/16W 12K
R35, 36	ERJ3GEYJ332V	1/16W 3.3K
R37, 38	ERJ3GEYJ184V	1/16W 180K
R39-41	ERJ3GEYJ224V	1/16W 220K
R42	ERJ3GEYJ103V	1/16W 10K
R43	ERJ3GEYJ472V	1/16W 4.7K
R44	ERJ3GEYJ103V	1/16W 10K
R46	ERJ3GEYJ682V	1/16W 6.8K
R47	ERJ3GEYJ683V	1/16W 68K
R51	ERJ3GEYJ103V	1/16W 10K
R54	ERJ3GEYJ272V	1/16W 2.7K
R55	ERJ3GEYJ104V	1/16W 100K
R56	ERJ3GEYJ472V	1/16W 4.7K
R57	ERJ3GEYJ103V	1/16W 10K
R61, 62	ERJ3GEYJ272V	1/16W 2.7K
R63, 64	ERJ3GEYJ473V	1/16W 47K
R65, 66	ERJ3GEYJ682V	1/16W 6.8K
R67, 68	ERJ3GEYJ103V	1/16W 10K
R69, 70	ERJ3GEYJ102V	1/16W 1K
R75, 76	ERJ3GEYJ153V	1/16W 15K
R77, 78	ERJ3GEYJ274V	1/16W 270K
R101	ERJ3GEYJ563V	1/16W 56K
R102	ERJ3GEYJ273V	1/16W 27K
R103	ERJ3GEYJ153V	1/16W 15K
R104	ERJ3GEYJ682V	1/16W 6.8K
R105	ERJ6GEYJ1R0V	1/10W 1.0
R106	ERJ3GEYJ103V	1/16W 10K
R107	ERJ3GEYJ332V	1/16W 3.3K
R151-158	ERJ6GEYJ102V	1/10W 1K
R202-208	ERJ3GEYJ103V	1/16W 10K
R209	ERJ3GEYJ153V	1/16W 15K
R211	ERJ3GEYJ473V	1/16W 47K
R212	ERJ3GEYJ153V	1/16W 15K

Ref. No.	Part No.	Values & Remarks
R214	ERJ3GEYJ473V	1/16W 47K
R215	ERJ3GEYJ223V	1/16W 22K
R216	ERJ8GEYJ182V	1/8W 1.8K
R217	ERJ3GEYJ223V	1/16W 22K
R218	ERJ8GEYJ182V	1/8W 1.8K
R219	ERJ3GEYJ223V	1/16W 22K
R220	ERJ8GEYJ182V	1/8W 1.8K
R221	ERJ3GEYJ223V	1/16W 22K
R222	ERJ8GEYJ182V	1/8W 1.8K
R223	ERJ3GEYJ562V	1/16W 5.6K
R224, 225	ERJ3GEYD223V	1/16W 22K
R226	ERJ3GEYJ104V	1/16W 100K
R227	ERJ3GEYJ473V	1/16W 47K
R228	ERJ3GEYJ562V	1/16W 5.6K
R229, 230	ERJ3GEYD223V	1/16W 22K
R232, 233	ERJ3GEYJ104V	1/16W 100K
R234	ERJ3GEYJ123V	1/16W 12K
R235	ERJ3GEYJ153V	1/16W 15K
R236	ERJ3GEYJ183V	1/16W 18K
R237	ERJ3GEYJ474V	1/16W 470K
R238	ERJ3GEYJ153V	1/16W 15K
R239	ERJ3GEYJ474V	1/16W 470K
R240, 241	ERJ3GEYJ223V	1/16W 22K
R242, 243	ERJ3GEYJ102V	1/16W 1K
R244, 245	ERJ3GEYJ103V	1/16W 10K
R246-249	ERJ3GEYJ473V	1/16W 47K
R252	ERJ3GEYJ473V	1/16W 47K
R253-256	ERJ8GEYJ182V	1/8W 1.8K
R257	ERJ3GEYJ474V	1/16W 470K
R258, 259	ERJ3GEYJ223V	1/16W 22K
R260, 261	ERJ3GEYJ103V	1/16W 10K
R263, 264	ERJ3GEYJ273V	1/16W 27K
R265	ERJ3GEYJ332V	1/16W 3.3K
R266	ERJ3GEYJ393V	1/16W 39K
R267	ERJ3GEYJ332V	1/16W 3.3K
R268, 269	ERJ3GEYJ473V	1/16W 47K
R270, 271	ERJ3GEYJ472V	1/16W 4.7K
R272	ERJ3GEYJ393V	1/16W 39K
R273, 274	ERJ3GEYD103V	1/16W 10K
R275	ERJ3GEYD224V	1/16W 220K
R276	ERJ3GEYJ103V	1/16W 10K
R277	ERJ3GEYD224V	1/16W 220K
R278, 279	ERJ3GEYJ472V	1/16W 4.7K
R280	ERJ6GEYJ331V	1/10W 330
R281-287	ERJ3GEYJ103V	1/16W 10K
R288	ERJ3GEYJ473V	1/16W 47K
R289	ERJ3GEYJ103V	1/16W 10K
R291	ERDS2EJ121	1/4W 120
R293	ERDS2TJ473	1/4W 47K

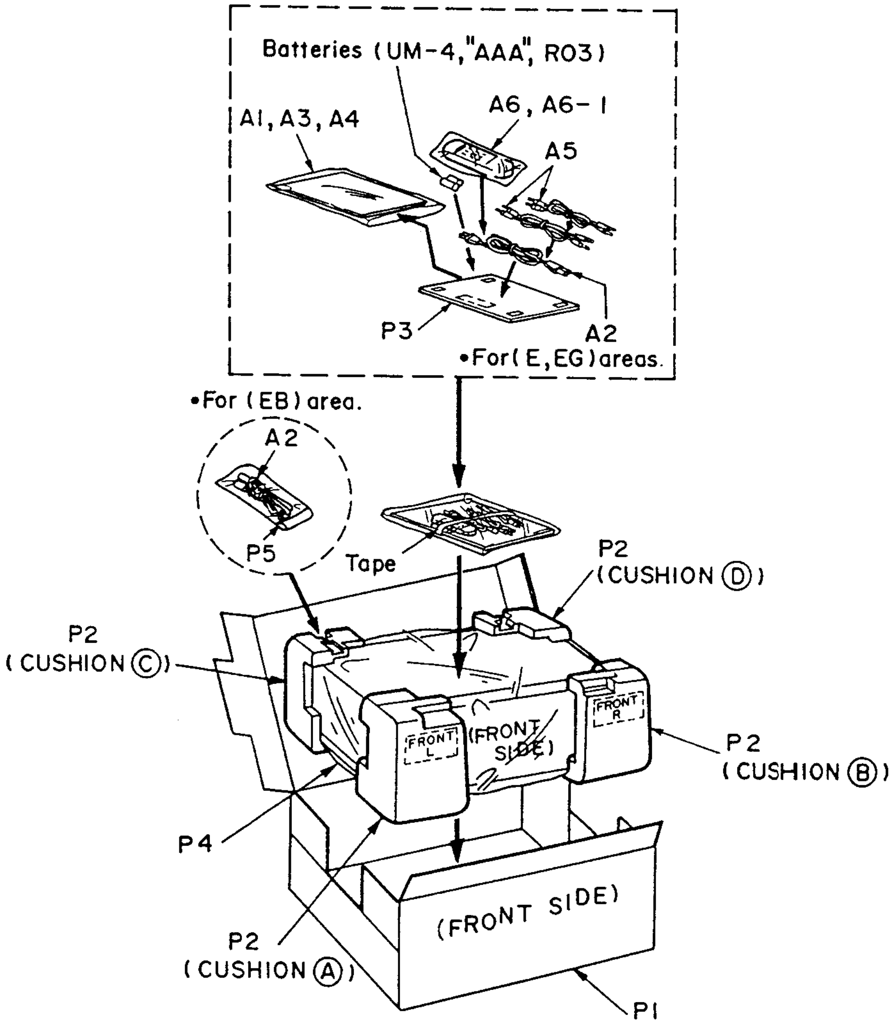
Ref. No.	Part No.	Values & Remarks
R294-297	ERJ3GEYJ103V	1/16W 10K
R301, 302	ERJ6GEYJ105	1/10W 1M
R303	ERJ6GEYJ103V	1/10W 10K
R304	ERJ6GEYJ562V	1/10W 5.6K
R305	ERJ6GEYJ153V	1/10W 15K
R306-308	ERJ6GEYJ822V	1/10W 8.2K
R309	ERJ6GEYJ182V	1/10W 1.8K
R310	ERJ6GEYJ101V	1/10W 100
R311	ERJ6GEYJ471V	1/10W 470
R312	ERJ6GEYJ101V	1/10W 100
R313, 314	ERJ6GEYJ331V	1/10W 330
R315, 316	ERJ6GEYJ183V	1/10W 18K
R317	ERJ6GEYJ821V	1/10W 820
R318	ERJ6GEYJ101V	1/10W 100
R319	ERJ6GEYJ823	1/10W 82K
R320	ERJ6GEYJ223V	1/10W 22K
R321	ERJ6GEYJ562V	1/10W 5.6K
R322	ERJ6GEYJ102V	1/10W 1K
R323	ERJ6GEYJ223V	1/10W 22K
R324	ERJ6GEYJ123V	1/10W 12K
R325	ERJ6GEYJ223V	1/10W 22K
R326, 327	ERJ6GEYJ183V	1/10W 18K
R328	ERJ6GEYJ473V	1/10W 47K
R329	ERJ6GEYJ123V	1/10W 12K
R330	ERJ6GEYJ473V	1/10W 47K
R331	ERJ6GEYJ122V	1/10W 1.2K
R332	ERJ6GEYJ471V	1/10W 470
R334	ERJ6GEYJ471V	1/10W 470
R335	ERJ6GEYJ102V	1/10W 1K
R336	ERJ6GEYJ101V	1/10W 100
R337	ERJ6GEYJ681V	1/10W 680
R349	ERJ6GEYJ222V	1/10W 2.2K
R350	ERJ6GEYJ103V	1/10W 10K
R351	ERJ6GEYJ102V	1/10W 1K
R352, 353	ERJ6GEYJ221V	1/10W 220
R354	ERJ3GEYJ151V	1/16W 150
R355	ERJ6GEYJ224V	1/10W 220K
R356, 357	ERJ6GEYJ331V	1/10W 330
R358	ERJ6GEYJ471V	1/10W 470
R361	ERJ6GEYJ102V	1/10W 1K
R362	ERJ6GEYJ101V	1/10W 100
R363-365	ERJ6GEYJ331V	1/10W 330
R366-371	ERJ6GEYJ101V	1/10W 100
R372	ERJ6GEYJ473V	1/10W 47K
R374, 375	ERJ6GEYJ122V	1/10W 1.2K
R376-379	ERJ3GEYJ102V	1/16W 1K
R381	ERJ6GEYJ102V	1/10W 1K
R382	ERJ6GEYJ101V	1/10W 100
R383	ERJ6GEYJ471V	1/10W 470

Ref. No.	Part No.	Values & Remarks
R384	ERJ6GEYJ223V	1/10W 22K
R401, 402	ERDAS3G273T	1/4W 27K
R403, 404	ERDAS3G394T	1/4W 390K
R405, 406	ERDAS3G151T	1/4W 150
R407-410	ERDAS3G682T	1/4W 6.8K
R411-414	ERDAS3G472T	1/4W 4.7K
R415, 416	ERJ6GEYJ472V	1/10W 4.7K
R417, 418	ERDAS3G103T	1/4W 10K
R419, 420	ERJ6GEYJ682V	1/10W 6.8K
R421	ERJ6GEYJ153V	1/10W 15K
R422-424	ERJ6GEYJ103V	1/10W 10K
R425	ERJ6GEYJ101V	1/10W 100
R427, 428	ERDAS3G101T	1/4W 100
R429, 430	ERDAS3G393T	1/4W 39K
R431, 432	ERDAS3G822T	1/4W 8.2K
R433, 434	ERDAS3G104	1/4W 100K
R435, 436	ERJ6GEYJ223V	1/10W 22K
R437, 438	ERJ6GEYJ103V	1/10W 10K
R439	ERJ6GEYJ471V	1/10W 470
R440	ERJ6GEYJ152V	1/10W 1.5K
R441, 442	ERJ6GEYJ391V	1/10W 390
R446	ERJ6GEYJ102V	1/10W 1K
R450	ERJ6GEYJ222V	1/10W 2.2K
R455-458	ERDAS3G101T	1/4W 100
R459, 460	ERJ6GEYJ102V	1/10W 1K
R461, 462	ERDAS3G124T	1/4W 120K
R463, 464	ERDAS3G391T	1/4W 390
R465, 466	ERDAS3G471T	1/4W 470
R467, 468	ERJ6GEYJ102V	1/10W 1K
R469, 470	ERDAS3G102T	1/4W 1K
R471, 472	ERDAS3G332T	1/4W 3.3K
R473, 474	ERDAS3G100T	1/4W 10
R475, 476	ERDAS3G330T	1/4W 33
R477, 478	ERDAS3G153T	1/4W 15K
R479, 480	ERDAS3G392T	1/4W 3.9K
R481, 482	ERDAS3G153T	1/4W 15K
R483, 484	ERDAS3G223T	1/4W 22K
R485-488	ERDAS3G332T	1/4W 3.3K
R489, 490	ERDAS3G223T	1/4W 22K
R491-494	ERDAS3G822T	1/4W 8.2K
R495	ERJ6GEYJ102V	1/10W 1K
R496	ERJ6GEYJ821V	1/10W 820
R497	ERJ6GEYJ122V	1/10W 1.2K
R498	ERJ6GEYJ471V	1/10W 470
R499	ERJ6GEYJ822V	1/10W 8.2K
R501, 502	ERJ6GEYJ122V	1/10W 1.2K
R503, 504	ERJ6GEYJ222V	1/10W 2.2K
R507, 508	ERJ6GEYJ562V	1/10W 5.6K
R509	ERJ6GEYJ223V	1/10W 22K
R511-513	ERJ6GEYJ223V	1/10W 22K
R514, 515	ERJ6GEYJ122V	1/10W 1.2K
R516, 517	ERJ6GEYJ153V	1/10W 15K
R518, 519	ERJ6GEYJ101V	1/10W 100
R522, 523	ERJ6GEYJ104V	1/10W 100K
R601	ERDS2TJ222	1/4W 2.2K
R602	ERDS2TJ181T	1/4W 180
R603	ERDS2TJ101	1/4W 100
R604, 605	ERDS2TJ103	1/4W 10K
R606	ERDS2TJ101	1/4W 100
R607	ERDS2TJ102	1/4W 1K
R608	ERDS2TJ101	1/4W 100
R610	ERDS2TJ222	1/4W 2.2K
R611	ERDS2TJ101	1/4W 100
R612	ERDS2TJ102	1/4W 1K
R613	ERDS2TJ681	1/4W 680
R614	ERDS2TJ102	1/4W 1K
R615, 616	ERDS2TJ472	1/4W 4.7K
R617	ERDS2TJ332	1/4W 3.3K
R618	ERDS2TJ102	1/4W 1K
R619	ERDS2TJ472	1/4W 4.7K
R620	ERDS1FVJ4R7T	1/2W 4.7 ⚠
R621, 622	ERDS2TJ102	1/4W 1K
R623, 624	ERDS2TJ392T	1/4W 3.9K
R625, 626	ERDS2TJ561	1/4W 560
R627, 628	ERDS2TJ105T	1/4W 1M
R629, 630	ERDS2TJ101	1/4W 100
R631, 632	ERQ16NKWR68E	1/6W 0.68 ⚠
R701-703	ERDS2TJ104	1/4W 100K
R704	ERDS2TJ224T	1/4W 220K
R705-707	ERDS2TJ102	1/4W 1K
R708	ERDS2TJ472	1/4W 4.7K
R709, 710	ERDS2TJ102	1/4W 1K
R711	ERDS2TJ221	1/4W 220
R712	ERDS2TJ102	1/4W 1K
R713	ERDS2TJ473	1/4W 47K
R714	ERDS2TJ102	1/4W 1K
R715-720	ERDS2TJ101	1/4W 100
R721-723	ERDS2TJ103	1/4W 10K
R724	ERDS2TJ473	1/4W 47K
R725	ERDS2TJ472	1/4W 4.7K
R726	ERDS2TJ473	1/4W 47K
R727	ERDS2TJ104	1/4W 100K
R731, 732	ERDS2TJ102	1/4W 1K
R733	ERDS2TJ122	1/4W 1.2K
R734	ERDS2TJ182	1/4W 1.8K
R735	ERDS2TJ222	1/4W 2.2K
R736	ERDS2TJ272T	1/4W 2.7K
R737	ERDS2TJ472	1/4W 4.7K
R738	ERDS2TJ682T	1/4W 6.8K
R739	ERDS2TJ103	1/4W 10K
R740	ERDS2TJ223	1/4W 22K
R741, 742	ERDS2TJ102	1/4W 1K
R743	ERDS2TJ221	1/4W 220
R744	ERDS2TJ391	1/4W 390
R745	ERDS2TJ102	1/4W 1K
R751	ERDS2TJ681	1/4W 680
R752, 753	ERDS2TJ221	1/4W 220
R761, 762	ERDS2TJ102	1/4W 1K
R763	ERDS2TJ122	1/4W 1.2K
R764	ERDS2TJ182	1/4W 1.8K
R765	ERDS2TJ222	1/4W 2.2K
R766	ERDS2TJ272T	1/4W 2.7K
R767	ERDS2TJ472	1/4W 4.7K
R768	ERDS2TJ682T	1/4W 6.8K
R769	ERDS2TJ221	1/4W 220
R781, 782	ERDS2TJ102	1/4W 1K
R783-786	ERDS2TJ183T	1/4W 18K
R787, 788	ERDS2TJ823T	1/4W 82K
R789, 790	ERDS2TJ473	1/4W 47K
R791, 792	ERDS2TJ151	1/4W 150
R793-797	ERDS2TJ102	1/4W 1K
R971	ERDS2TJ221	1/4W 220
R973, 974	ERDS2TJ393	1/4W 39K
		CAPACITORS
C1, 2	ECST0JY106RR	6.3V 10U
C3, 4	ECUV1H103KBN	50V 0.01U
C5-9	ECUV1C474ZFM	16V 0.47U
C10-12	ECUV1C474ZFM	16V 0.47U
C13, 14	ECUV1C105ZFM	16V 1U
C15-22	ECUV1H103KBN	50V 0.01U
C23	ECUV1H102KBN	50V 1000P
C24	ECUV1E104KBN	25V 0.1U
C25, 26	ECUV1H222KBN	50V 2200P
C27	ECUV1H390JCN	50V 39P
C28	ECUV1H102KBN	50V 1000P
C29, 30	ECUV1E333KBN	25V 0.033U
C31, 32	ECST0JY106RR	6.3V 10U
C33, 34	ECST1CY225RR	16V 2.2U
C35, 36	ECUV1C684KBM	16V 0.68U
C37, 38	ECUV1E333KBN	25V 0.033U
C39, 40	ECST1CY225RR	16V 2.2U
C41, 42	ECUV1H821KBN	50V 820P
C43, 44	ECUV1H103KBN	50V 0.01U
C45, 46	ECUV1H562KBN	50V 5600P
C47	ECEV0JV101SP	6.3V 100U
C49, 50	ECST0JY106RR	6.3V 10U
C51	ECUV1C105ZFM	16V 1U
C52, 53	ECST0JX226RR	6.3V 22U
C54	ECST0JY106RR	6.3V 10U
C55	ECUV1E333KBN	25V 0.033U
C56	ECST0JY106RR	6.3V 10U
C57, 58	ECUV1H103KBN	50V 0.01U
C59	ECUV1H180JCN	50V 18P
C60	ECUV1H070DCN	50V 7P

Ref. No.	Part No.	Values & Remarks
C62	ECUV1C105ZFM	16V 1U
C63	ECUV1E104KBN	25V 0.1U
C64	ECEV0JV101SP	6.3V 100U
C65, 66	ECUV1C105ZFM	16V 1U
C67	ECUV1E104KBN	25V 0.1U
C68	ECEV1CA101P	16V 100U
C70-72	ECUV1E104KBN	25V 0.1U
C73, 74	ECUV1H050CCN	50V 5P
C75, 76	ECUV1C684KBM	16V 0.68U
C77	ECUV1H221KBN	50V 220P
C78	ECUV1C105ZFM	16V 1U
C79, 80	ECUV1H101JCN	50V 100P
C81, 82	ECEV1AA221P	10V 220U
C83, 84	ECUV1H472KBN	50V 4700P
C85, 86	ECUV1H332KBN	50V 3300P
C101	ECUV1H103KBN	50V 0.01U
C102	ECUV1H222KBN	50V 2200P
C103	ECUV1H102KBN	50V 1000P
C105	ECEV0JV101SP	6.3V 100U
C106	ECEV1AA221P	10V 220U
C107	ECUV1H103KBN	50V 0.01U
C108, 109	ECUV1E104KBN	25V 0.1U
C201, 202	ECUV1H222KBN	50V 2200P
C203-205	ECUV1E104KBN	25V 0.1U
C207	ECUV1E153KBN	25V 0.015U
C208	ECUV1E104KBN	25V 0.1U
C210	ECUV1E153KBN	25V 0.015U
C211	ECUV1E104KBN	25V 0.1U
C212	ECEV1CA101P	16V 100U
C213	ECUV1E683KBM	25V 0.068U
C214	ECUV1H221KBN	50V 220P
C215	ECUV1E104KBN	25V 0.1U
C216	ECUV1E683KBM	25V 0.068U
C217	ECUV1H221KBN	50V 220P
C218	ECUV1C105ZFM	16V 1U
C219	ECUV1E104KBN	25V 0.1U
C221	ECST0JY106RR	6.3V 10U
C222	ECUV1E104KBN	25V 0.1U
C223	ECST0JY106RR	6.3V 10U
C224	ECUV1E104KBN	25V 0.1U
C226-228	ECUV1E104KBN	25V 0.1U
C229	ECEV1AA221P	10V 220U
C230	ECEV0JV101SP	6.3V 100U
C231	ECUV1E104KBN	25V 0.1U
C232, 233	ECUV1E473KBN	25V 0.047U
C234	ECUV1C105ZFM	16V 1U
C235	ECUV1E104KBN	25V 0.1U
C236	ECST0JY106RR	6.3V 10U
C237, 238	ECUV1H220JCN	50V 22P
C239	ECUV1C684KBM	16V 0.68U
C291	ECEA1CKA100B	16V 10U
C292	ECEA1CSN100B	16V 10U
C301	ECEA0JKA101B	6.3V 100U
C302-304	ECUV1E104ZFN	25V 0.1U
C305	ECEA0JKA101B	6.3V 100U
C306	ECUV1E104ZFN	25V 0.1U
C307	ECUV1H103KBN	50V 0.01U
C308	ECEA0JKA470B	6.3V 47U
C309	ECUV1H100DCN	50V 10P
C310	ECUV1H060DCN	50V 6P
C311	ECUV1H220JCN	50V 22P
C312	ECUV1H180JCN	50V 18P
C313	ECEA0JKA470B	6.3V 47U
C314	ECUV1H103KBN	50V 0.01U
C315	ECEA0JKA470B	6.3V 47U
C316	ECUV1E104ZFN	25V 0.1U
C317	ECQV1H683JM3	50V 0.068U
C318	ECQB1H392JF3	50V 3900P
C319	ECEA1AKA220B	10V 22U
C320	ECUV1H103KBN	50V 0.01U
C321	ECUV1H680JCN	50V 68P
C322	ECUV1H103KBN	50V 0.01U
C323-325	ECUV1E104ZFN	25V 0.1U
C326	ECEA0JKA101B	6.3V 100U
C327	ECUV1H150JCN	50V 15P
C328	ECUV1H103KBN	50V 0.01U
C329	ECEA0JKA101B	6.3V 100U
C330	ECUV1E104ZFN	25V 0.1U
C331	ECUV1E822KBN	25V 8200P
C332	ECEA1CKA100B	16V 10U
C333	ECUV1H470JCN	50V 47P
C334	ECEA1HKAR47B	50V 0.47U
C335	ECUV1E104ZFN	25V 0.1U
C336	ECUV1H103KBN	50V 0.01U
C337	ECEA0JKA101B	6.3V 100U
C338	ECEA1CKA101B	16V 100U
C339	ECUV1E104ZFN	25V 0.1U
C342-344	ECUV1E104ZFN	25V 0.1U
C345	ECUV1H103KBN	50V 0.01U
C347	ECUV1E104ZFN	25V 0.1U
C348, 349	ECEA1AKA220B	10V 22U
C350	ECUV1H220JCN	50V 22P
C351	ECUV1E104ZFN	25V 0.1U
C352	ECEA0JKA101B	6.3V 100U
C353	ECUV1H101JCN	50V 100P
C354	ECUV1H103KBN	50V 0.01U
C355	ECUV1H391JCN	50V 390P
C356-358	ECUV1E104ZFN	25V 0.1U
C359, 360	ECUV1H103KBN	50V 0.01U
C361-365	ECUV1E104ZFN	25V 0.1U
C366	ECUV1H100DCN	50V 10P
C367	ECUV1E104ZFN	25V 0.1U
C400	ECUV1E104ZFN	25V 0.1U
C401	ECA0JPXS101B	6.3V 100U
C402-405	ECUV1E104ZFN	25V 0.1U
C406	ECA0JPXS101B	6.3V 100U
C407, 408	ECUV1E104ZFN	25V 0.1U
C409	ECA1APXS101B	10V 100U
C410	ECUV1E104ZFN	25V 0.1U
C411	ECA0JPXS101B	6.3V 100U
C412	ECUV1E104ZFN	25V 0.1U
C413, 414	ECA0JPXS101B	6.3V 100U
C415	ECUV1E104ZFN	25V 0.1U
C416-418	ECA1CPXS330B	16V 33U
C419, 420	ECA1HPXS100B	50V 10U
C421, 422	ECQB1H182JF3	50V 1800P
C423, 424	ECHR1H101JZ3	50V 100P
C425, 426	ECHR1H102JZ3	50V 1000P
C427	ECUV1E104ZFN	25V 0.1U
C428, 429	ECA1CPXS101B	16V 100U
C430	ECUV1E104ZFN	25V 0.1U
C431	ECUV1H102KBN	50V 1000P
C432	ECA1HPXS100B	50V 10U
C434, 435	ECA1HPXS100B	50V 10U
C436-439	ECA1CPXS330B	16V 33U
C442, 443	ECUV1E104ZFN	25V 0.1U
C444, 445	ECA1CPXS330B	16V 33U
C446, 447	ECHR1H102JZ3	50V 1000P
C448	ECA1CPXS101B	16V 100U
C449	ECA0JPXS101B	6.3V 100U
C450	ECA1CPXS101B	16V 100U
C451	ECA0JPXS101B	6.3V 100U
C452	ECUV1H102KBN	50V 1000P
C453, 454	ECA0JPXS471B	6.3V 470U
C455, 456	ECA0JPXS101B	6.3V 100U
C457, 458	ECUV1E104ZFN	25V 0.1U
C459-462	ECHR1H102JZ3	50V 1000P
C463, 464	ECUV1H102KBN	50V 1000P
C465, 466	ECA1CPXS470B	16V 47U
C467, 468	ECHR1H101JZ3	50V 100P
C469, 470	ECHR1H102JZ3	50V 1000P
C471, 472	ECA1CPXS471E	16V 470U
C473-478	ECHR1H101JZ3	50V 100P
C487, 488	ECA1CPXS330B	16V 33U
C489, 490	ECUV1H102KBN	50V 1000P
C493, 494	ECUV1H470JCN	50V 47P
C495	ECUV1H102KBN	50V 1000P
C496-499	ECUV1E104ZFN	25V 0.1U
C501, 502	ECQV1H473JM3	50V 0.047U
C503, 504	ECA1HPXS010B	50V 1U
C505, 506	ECQB1H152JF3	50V 1500P
C507, 508	ECQV1H474JM3	50V 0.47U
C509, 510	ECQB1H152JF3	50V 1500P
C511, 512	ECQV1H474JM3	50V 0.47U
C513	ECEA1HKA010B	50V 1U
C514, 515	ECA0JPXS101B	6.3V 100U

Ref. No.	Part No.	Values & Remarks
C516, 517	ECUV1E104ZFN	25V 0.1U
C601	ECBT1E103ZF	25V 0.01U
C602	RCE1HM221BV	50V 220U
C603	ECA1EM331B	25V 330U ⚠
C604	ECBT1C103NS5	16V 0.01U
C605	ECKR2H682PE	500V 6800P
C606	ECA1VM472E	35V 4700U ⚠
C607, 608	ECBT1E103ZF	25V 0.01U
C609	ECEA1AKA101B	10V 100U
C610	ECA1CM682E	16V 6800U ⚠
C611, 612	ECEA1CKA100B	16V 10U
C613	ECEA1CKA101B	16V 100U
C614	ECEA1CKA100B	16V 10U
C615	ECA0JM472E	6.3V 4700U
C616	ECFR1E104ZF5	25V 0.1U
C617	ECKR2H682PE	500V 6800P
C618	ECA1JM101B	63V 100U ⚠
C619	ECA1EM222E	25V 2200U ⚠
C620	ECBT1C103NS5	16V 0.01U
C621, 622	ECA1EPXS330B	25V 33U
C623, 624	ECA1CPXS100B	16V 10U
C625, 626	ECA1EPXH102E	25V 1000U ⚠
C627, 628	ECA1EPXS330B	25V 33U
C629	ECEA1AKA470B	10V 47U
C630	ECA1AM331B	10V 330U
C631-634	ECEA1HKA010B	50V 1U
C701, 702	ECEA1HKA2R2B	50V 2.2U
C703	ECBT1E103ZF	25V 0.01U
C704	ECEA1AKA470B	10V 47U
C705	ECFR1E104KR	25V 0.1U
C706, 707	ECBT1E103ZF	25V 0.01U
C708	ECEA1AKA101B	10V 100U
C709	EECS5R5H473	5.5V 47000U
C710	ECBT1E103ZF	25V 0.01U
C711	ECEA1HKA010B	50V 1U
C712-714	ECBA1H681KB5	50V 680P
C715	ECBT1E103ZF	25V 0.01U
C781, 782	ECEA1CKA100B	16V 10U
C783, 784	ECA1ABX101B	10V 100U
C785-790	ECBT1E103ZF	25V 0.01U
C791, 792	ECEA1CKS220	16V 22U
C793	ECBT1E103ZF	25V 0.01U

■ PACKAGING



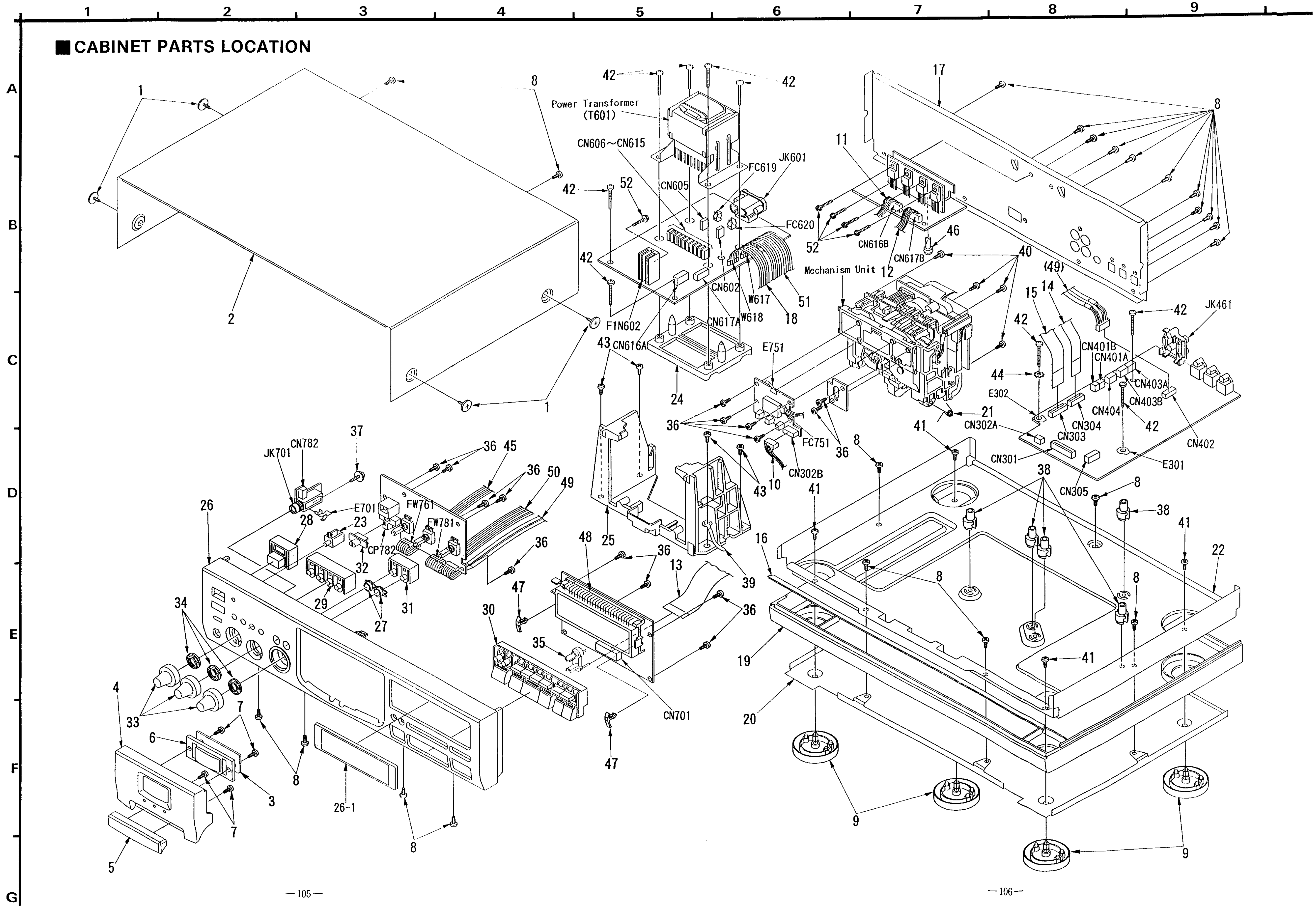
(CUSHION ⒶⒷⒸⒹ Part No. RPN0746)

REPLACEMENT PARTS LIST

Notes: *The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas.

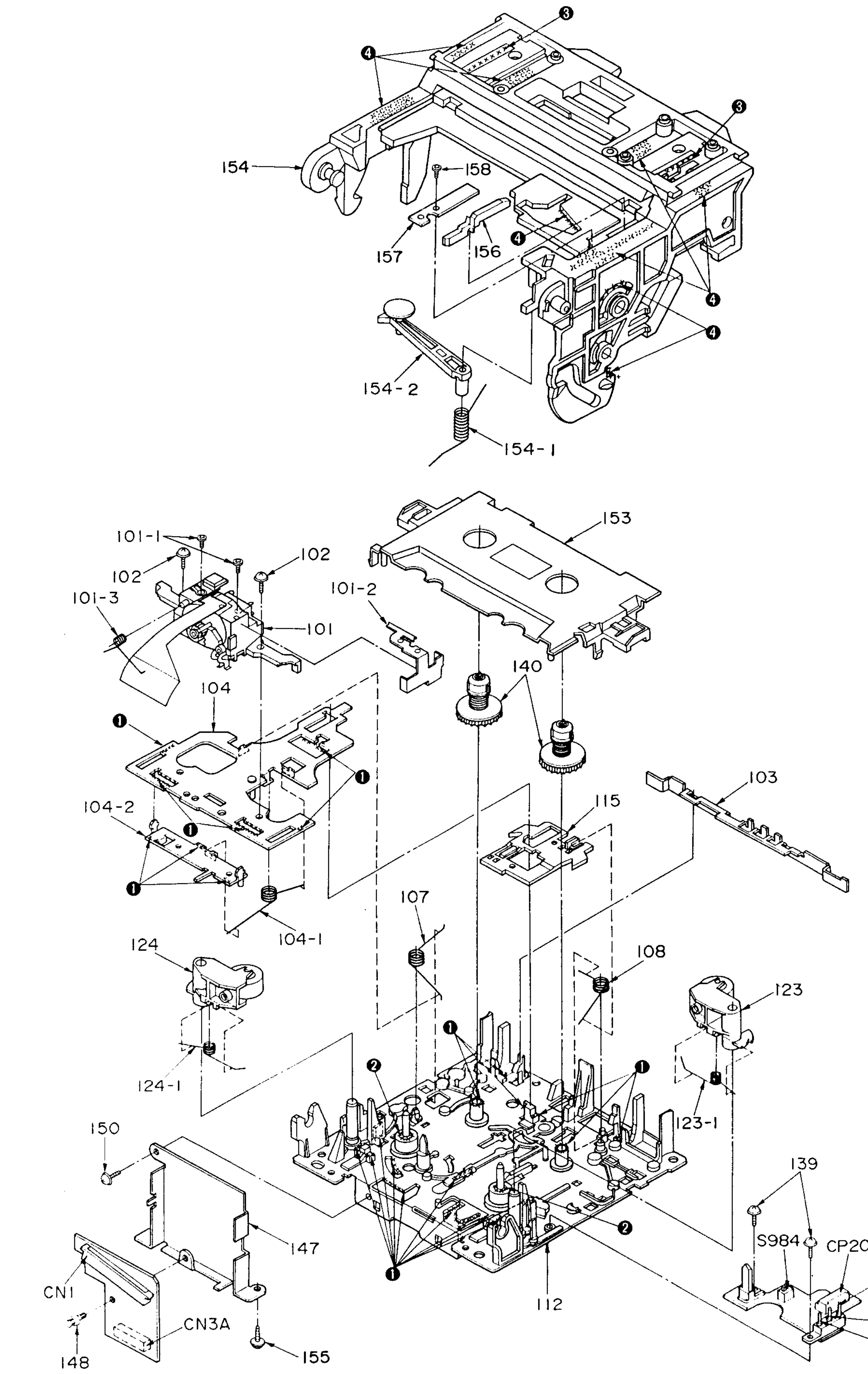
Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RHD30035-K	SCREW	
2	RKM0089D-1K	CABINET	
3	RDL0025	HALF MIRROR	
4	RFKLSDC8E-K	CASSETTE LID ASS'Y	
5	RGK0594-S	CASSETTE ORNAMENT	
6	RKW0307-Q	CASSETTE WINDOW	
7	XTBS26+6J	SCREW	
8	XTBS3+8JFZ1	SCREW	
9	RKA0053-A	FOOT	
10	REX0552	CONNECTOR (7P) ASS'Y	
11	REX0601	CONNECTOR (5P) ASS'Y	
12	REX0602	CONNECTOR (7P) ASS'Y	
13	REZ0617	FPC BOARD (22P)	
14	REZ0618-1	FPC BOARD (15P)	
15	REZ0619-1	FPC BOARD (15P)	
16	RGK0588-T	MOLE	
17	RGR0179A-C2A	REAR PANEL	(E)
17	RGR0179A-D2A	REAR PANEL	(EB)
17	RGR0179A-EA	REAR PANEL	(EG)
18	REZ0621	CONNECTOR (6P) ASS'Y	
19	RKU0050-K	THC BASE	
20	RMA0750	PUSH PLATE	
21	RME0151	HOLDER SPRING	
22	RMK0223	CHASSIS	
23	RGL0206-Q	PANEL LIGHT	
24	RMN0241	TRANSFORMER BASE	
25	RMQ0418	MECHANISM BASE	
26	RFKGSDC8E-K	FRONT PANEL ASS'Y	
26-1	RKW0306-Q	METER WINDOW	
27	RGK0534-N	ATC BUTTON ORNAMENT	
28	RGU0882-K	POWER BUTTON	
29	RFKNSDC8E-K	ATC BUTTON ASS'Y	
30	RGU0973-1K1	MAIN BUTTON	
31	RGU0974-K	TEXT BUTTON	
32	RGV0112-K	TIMER KNOB	
33	RGW0177-K	TONE KNOB	
34	RHN90001	NUT	
35	RMN0262	LED COVER	
36	XTBS26+8J	SCREW	
37	XTWS3+10Q	SCREW	
38	SHE185-2	P. C. B. SUPPORT	
39	SXE513	CABLE HOLDER	
40	XTB3+10JFZ	SCREW	
41	XTB3+14G	SCREW	
42	XTB3+16JFZ	SCREW	
43	XTB3+8F	SCREW	
44	XWC3B	WASHER	
45	RWJ1806480QX	FLAT CABLE (6P)	
46	SHR9775	RADIATOR SUPPORT	
47	RMN0195	FL PIECE	
48	RMN0239	FL HOLDER	
49	REX0542	CONNECTOR (6P) ASS'Y (FW771)	
50	RWJ1807460QX	FLAT CABLE (7P)	
51	REZ0620	CONNECTOR (10P) ASS'Y	
52	SNE2117-1	SCREW	

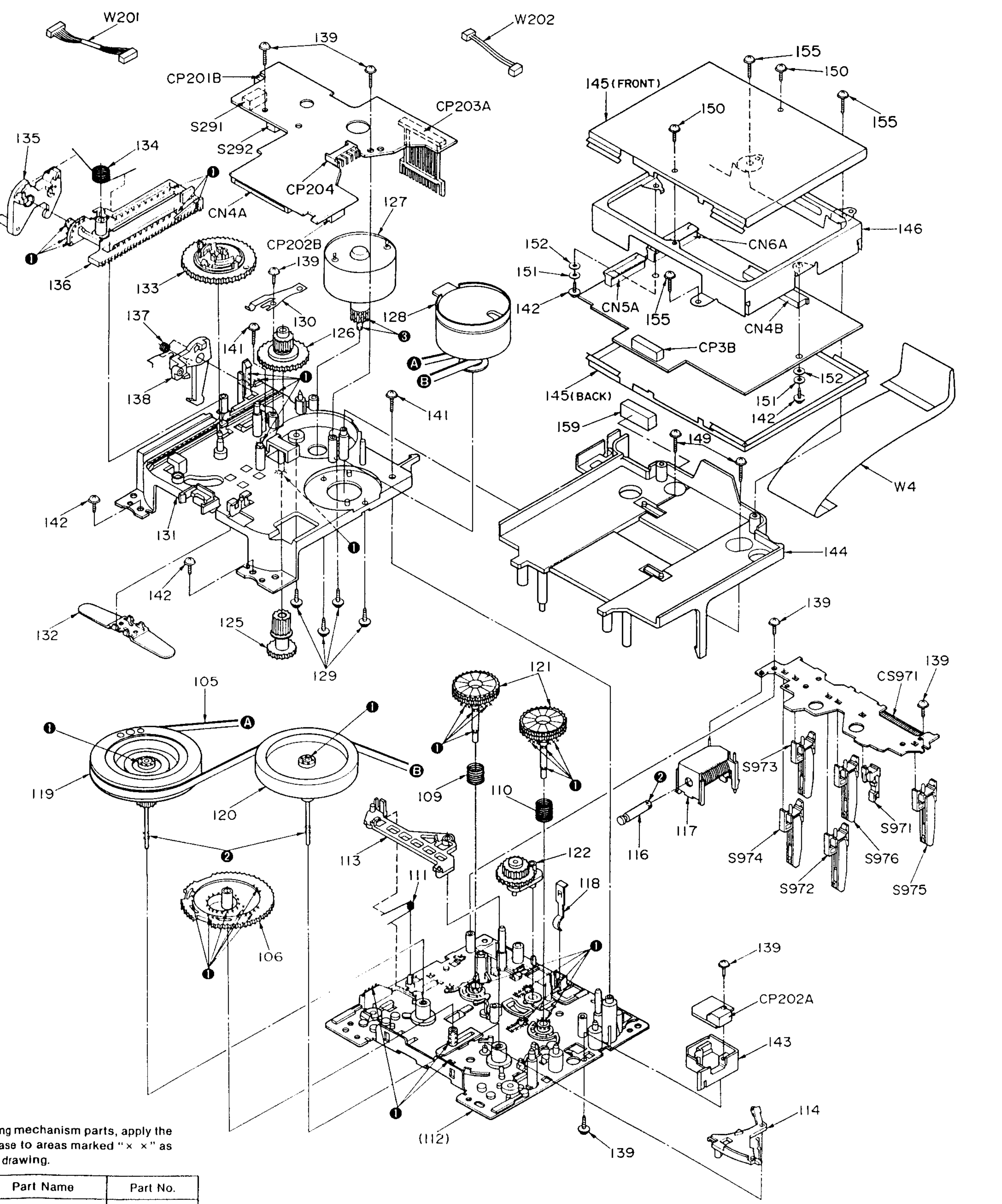
■ CABINET PARTS LOCATION



1 2 3 4 5 6 7 8 9

■ MECHANISM PARTS LOCATION





Note:

When changing mechanism parts, apply the specified grease to areas marked "× ×" as shown in the drawing.

Ref. No.	Part Name	Part No.
❶	FLOIL AK-152	SZZ0L18
❷	SWAFLUID #56	RZZ0L02
❸	MOLYCOAT EM-20L	RZZ0L05
❹	MOLYCOAT PG-671	RFKXPG671

REPLACEMENT PARTS LIST

Notes: *Important safety notice:
Components identified by △ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.
*Remote Control Ass'y: Supply period for three years from termination of production.
*The "(SF)" mark denotes the standard part.

Ref. No.	Part No.	Part Name & Description	Remarks
		LOADING CASSETTE MECHANISM	
101	RXQ0326	HEAD BLOCK ASS'Y(REC/P.B.)	
101-1	RHD17015	AZIMUTH ADJ. SCREW	
101-2	RMA0763	EARTH PLATE	
101-3	RMB0265-1	HEAD HOLD SPRING	
102	XTW2+5L	SCREW	
103	RML0272	SWITCH LEVER	
104	RXQ0323	HEAD P.C.B. ASS'Y	
104-1	RMB0266-1	F/R ROD SPRING	
104-2	RXM0036	F/R ROD ASS'Y	
105	RDV0015	BELT	
106	RDK0019A	MAIN GEAR	
107	RMB0261	HEAD BASE SPRING	
108	RMB0262	BRAKE ROD SPRING	
109	RMB0263	SPRING	
110	RMB0264	SPRING	
111	RUW147ZA	TRIGGER LEVER SPRING	
112	RFKRSTR777AK	CHASSIS ASS'Y	
113	RML0267A	TRIGGER LEVER	
114	RML0268A	F/R LEVER	
115	RMM0091A	BRAKE ROD	
116	RMS0398-1	MOVING IRON CORE	
117	RSJ0003	SOLENOID	
118	RUS609ZC	TAPE PUSH SPRING	
119	RXF0040	FLYWHEEL(F)	
120	RXF0047	FLYWHEEL(R)	
121	RXG0036	REEL GEAR	
122	RXL0106	IDLER GEAR	
123	RXP0055	PINCH ROLLER ARM(F) ASS'Y	
123-1	RMB0259	PINCH ROLLER ARM(F) SPRING	
124	RXP0056	PINCH ROLLER ARM(R) ASS'Y	
124-1	RMB0260	PINCH ROLLER ARM(R) SPRING	
125	RDG0206A-1	LOADING GEAR	
126	RDG0209A	INTERMEDIATE GEAR	
127	REM0043	REEL MOTOR	
128	REM0045	CAPSTAM MOTOR	
129	RHD26013	SCREW	
130	RMC0169	RACK PUSH SPRING	
131	RFKRSTR979CK	SUB CHASSIS ASS'Y	
132	RMQ0314A	THRUST SHEET	
133	RXG0037	FRICTION GEAR	
134	RMB0269	DRIVE LEVER SPRING	
135	RML0270A-1	DRIVE LEVER	
136	RMQ0312A	DRIVE RACK	
137	RMB0268	HOOK SPRING	

Ref. No.	Part No.	Part Name & Description	Remarks
138	RML0271A	HOLDER HOOK	
139	XTW2+6S	SCREW	
140	RXR0018	REEL TABLE	
141	XTW26+12S	SCREW	
142	XTW26+6L	SCREW	
143	RMQ0403	FG HOLDER	
144	RMR0709-K	INTERMEDIATE CHASSIS	
145	RSC0335	SHIELD PLATE 1(FRONT/BACK)	
146	RSC0336	SHIELD PLATE 2	
147	RSC0337-1	SHIELD PLATE 3	
148	SHR9775	NYLON RIVET	
149	XTW26+10S	SCREW	
150	XTW26+4L	SCREW	
151	XWA26B	WASHER	
152	XWE26	WASHER	
153	RFKRSDC8-K	ORNAMENT PLATE ASS'Y	
154	RYF0253-K	CASSETTE HOLDER ASS'Y	
154-1	RMB0325	OPEN LEVER SPRING	
154-2	RXL0118	OPEN LEVER ASS'Y	
155	XYC26+FJ10	SCREW	
156	RML0320	DETECTION LEVER	
157	RMC0244	DETECTION LEVER SPRING	
158	RHQ0032-K	SCREW	
159	RMG0367-K	CUSHION RUBBER	
		PACKING MATERIAL	
P1	RPG1920	PACKING CASE	(E, EG)
P1	RPG1921	PACKING CASE	(EB)
P2	RPN0746	CUSHION	
P3	RPQ0164	PAD	
P4	XZB60X65A01Z	PROTECTION BAG(UNIT)	
P5	RPH0032	MIRROR SHEET	(EB)
		ACCESSORIES	
A1	RFKSSDC8E-K	INSTRUCTION MANUAL ASS'Y	(E)
A1	RQT2250-B	INSTRUCTION MANUAL	(EB)
A1	RFKSSDC8EG-K	INSTRUCTION MANUAL ASS'Y	(EG)
A2	RJA0019-2K	AC POWER SUPPLY CORD	(E, EG) ⚠(SF)
A2	VJA0733	AC POWER SUPPLY CORD	(EB) ⚠ (SF)
A3	RQA0013	WARRANTY CARD	
A4	RQCB0169	SERVICENTER LIST	
A5	SJP2249-3	STEREO CONNECTION CABLE	
A6	RAK-DC712WH	REMOTE CONTROL TRANSMITTER	
A6-1	RKK0020-K	BATTERY COVER	FOR R/C TRANSMITTER

Printed in Japan
H940304500 NH/YU/KK

RS-DC8 SERVICE MODE

[Outline]

The RS-DC8 is equipped with Service Mode Functions (10 items) for use in check of main IC, etc.
Please use the best of these functions that will be servicable for troubleshooting.

[Service Mode Setting]

Operating Steps

Step 1 Set the POWER button to ON.

↓

Step 2 Put a DCC tape in.

↓

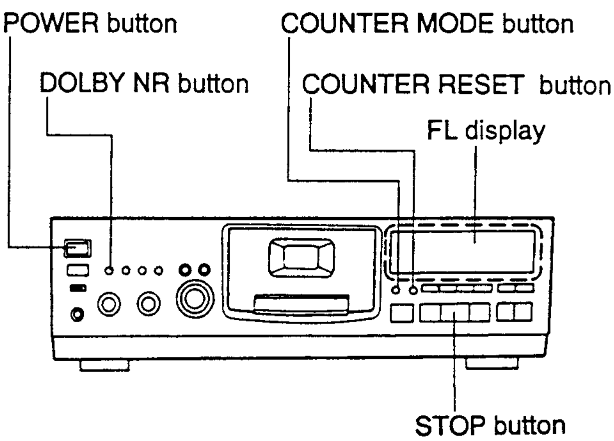
Step 3 Keep pressing the DOLBY NR button for not less than 2 seconds, press the STOP button ■.

↓

Step 4 Service Mode No. 1 indication (right hand table) appears on the FL display.

↓

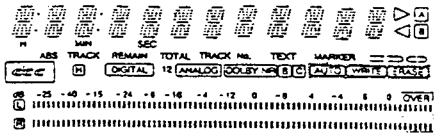
Step 5 Pressing the COUNTER MODE button causes Service Mode No1 → 2 → 3····11.



[Service Mode Cancellation]

Service Mode is canceled by pressing the COUNTER RESET button.
Do not turn off the power supply while the Service mode is displayed. (This is to prevent misoperation.)

[Actual Display]

Service Mode No.	Check Item	Service Mode Display (FL)	page
①	All Channel Error Rate	E 1 ▨ 0 9 2 1 6 ▨ ▨ ▨ ▨ ※	⇨ 4
②	Each Channel Error Rate	E 2 1 1 1 1 1 1 1 1 1 1 ※	⇨ 5
③	FL Display	All Extinction All Lighting Up 	⇨ 6
④	Operation Switch	S W ▨ 5 5 ▨ ▨ H 0 4 ▨ ▨ ※	⇨ 7
⑤	Mechanism Detection Switch	M 1 ▨ 1 1 1 1 1 1 0 1 ▨ ※	⇨ 8
⑥	Mechanism Operation	M 2 ▨ 0 1 0 0 0 ▨ E 0 0 ※	⇨ 9
⑦	Bus Line	S 1 ▨ 0 0 0 0 0 ▨ ▨ ▨ ▨ ※	⇨ 10
⑧	SPD/SBC	S 2 ▨ 0 D 2 F ▨ 3 8 C 2 ※	⇨ 11
⑨	Record on Tape	T 1 ▨ 0 0 ▨ ▨ ▨ 0 0 0 0 ※	⇨ 12
⑩	System Microcomputer	M C ▨ 0 2 6 0 ▨ 0 3 0 0 ※	⇨ 13
⑪	Aging Mode	T E S T 1 ▨ ▨ 0 0 0 0 1 ※	

Service Mode ① All Channel Error Rate

	Descriptions
Purpose	Drop Out (Error Quantity) during playback is detected in the DCC main data (8ch portion) area and shown as all channel total error quantity on the FL display.
Reading	Wait at least 5 seconds till error rate indication gets stabilized after the DCC tape is played.
Display / **Judgment**	(see table below)
Presumed Cause and Remedy	1. Dirty head → Head cleaning 2. Azimuth deviation → Azimuth adjustment 3. Any defective data line on head → IC1 (READ amplifier) → Each ch line check

Mode	Display
STOP mode	E 1 ▨ 0 9 2 1 6 ▨ ▨ ▨ ▨ Main data (all ch) error rate indication (digits 0 9 2 1 6)
PLAY mode	E 1 ▨ □ □ □ □ □ ▨ ▨ ▨ ▨ ※5 digits changing
JUDGE	**OK**: 0 0 0 0 0 ~ 0 0 2 5 0 **NG**: 0 0 2 5 1 ~ 0 9 2 1 6 ※Auditory value of sound skip is not less than $\boxed{01152}$.

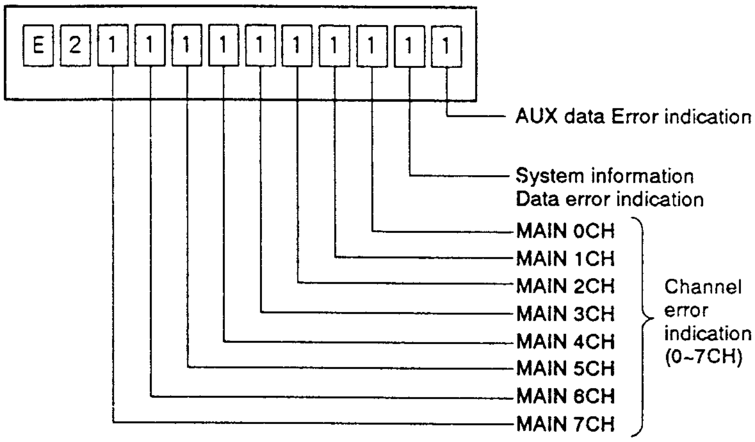
Service Mode ② Each Channel Error Rate

	Description
Purpose	Drop out (Error Quantity) on each channel (10 ch) during DCC playback is detected and, for each channel, shown on the FL display.
Reading	Wait at least 5 seconds till error rate indication gets stabilized after the DCC tape is played.

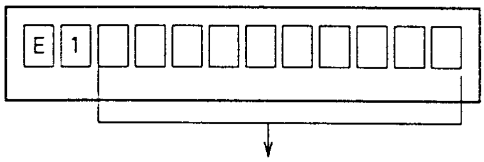
Display

Mode	Display
STOP mode	See STOP mode diagram below
PLAY mode	See PLAY mode diagram below
JUDGMENT	See JUDGMENT below

STOP mode



PLAY mode



Each segment changes to $\boxed{0}$ or $\boxed{1}$.

JUDGMENT

OK

0 0 0 0 0 0 0 0 0 0 0

Always $\boxed{0}$ → Best
Instantaneously $\boxed{1}$ → O.K

NG

Example:
0 0 0 0 0 0 0 0 0 1
0 0 0 0 0 0 0 0 1 0
0 0 0 0 0 0 0 1 1 1
1 1 1 0 0 0 0 0 0 0

There is always $\boxed{1}$ indicated at some place.

Presumed Cause and Remedy

1. Dirty head ——→ Head cleaning
2. Azimuth deviation ——→ Azimuth adjustment
3. Any defective data line on head → IC1 ——→ Each ch line check
   (READ amplifier)

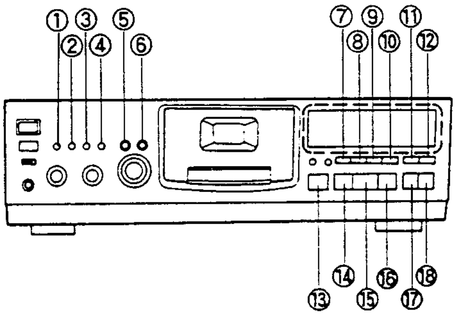
Service Mode ③ FL Display Check

Purpose

Judgment is formed as to O.K. or N.G. of each FL segment.

Procedure of Judgment

Display	Step	Presumed Cause
※ No display at first	All FL extinguished	NO → •FL segment defective •FL drive circuit
	YES ↓	
	Press 18 buttons se-guentially from ① to ⑱.	



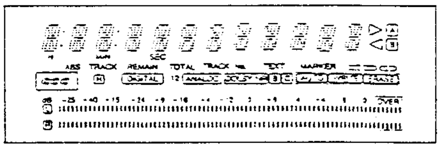
※ Do not press the following

POWER

COUNTER MODE

COUNTER RESET

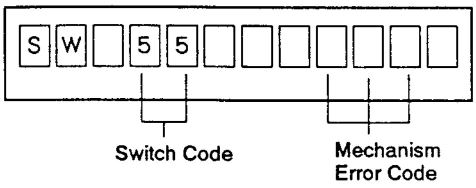
Display	Step	Presumed Cause
	All FLdisplay lighting up.	NO → •Each switch defective ⇩ •Can be checked by Service Mode ④.
	YES ↓	
	Normal	



Service Mode ④ Operation Switches Check

Purpose

Condition of each operation switch (O.K. or N.G.) and condition of mechanism can be confirmed.



Procedure of Judgment

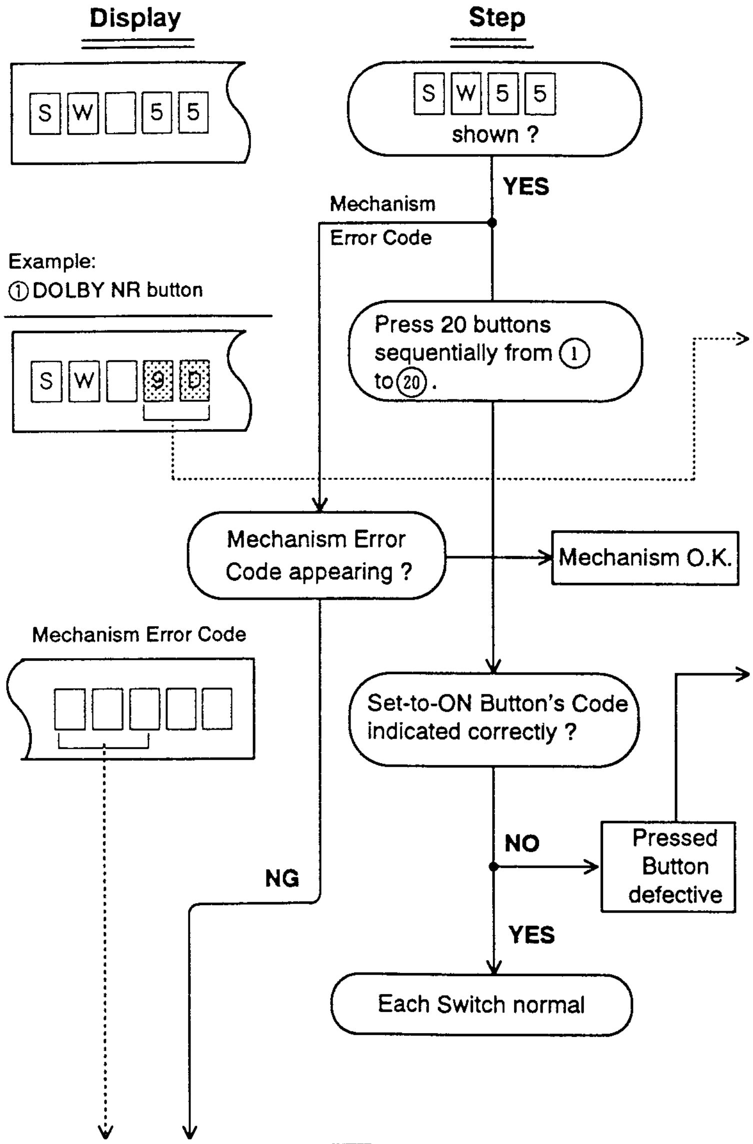


Table of Switch Code

	Code	Switch Name
①	9D	DOLBY NR
②	A3	REVERSE MODE
③	8B	INPUT
④	D8	MARKER AUTO
⑤	A8	TEXT MODE
⑥	A9	TEXT SCROLL
⑦	E9	END SEARCH
⑧	06	PAUSE
⑨	82	AUTO REC MUTE
⑩	08	REC
⑪	02	REW
⑫	03	FF
⑬	4A	F. SKIP
⑭	49	R. SKIP
⑮	9E	PLAY
⑯	00	STOP
⑰	97	DIRECTION
⑱	01	OPEN/CLOSE
⑲	A5	TIMER REC/OFF
⑳	A6	TIMER PLAY

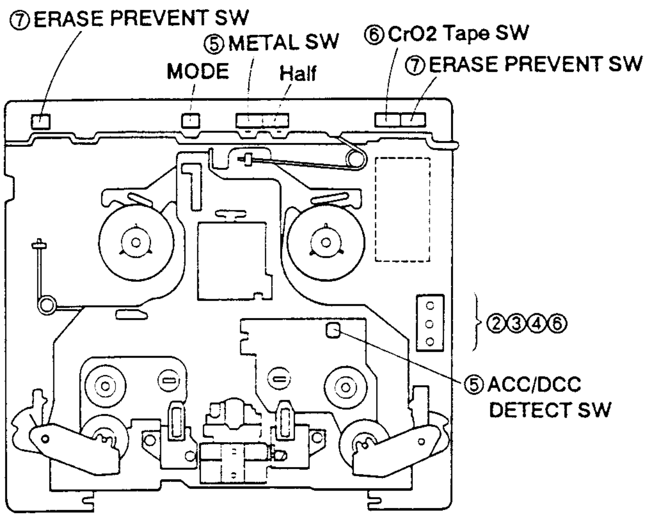
Symbol on Display	Trouble or Condition	
H01	Cassette mechanism fails to operate.	→ Mechanism block defective.
H04	Cassette holder cannot be opened by pressing ▲ (OPEN/CLOSE) button.	→ OPEN/CLOSE mechanism defective.
F01	When ▶ PLAY START button is pressed, tape starts running but stops soon.	→ Mechanism block defective.

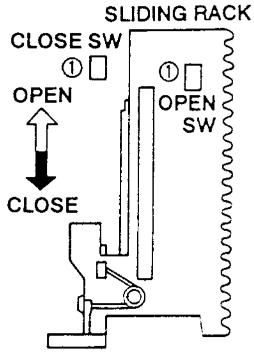
Service Mode ⑤ Mechanism Detection Switch Check

Purpose

Movement of each detection switch of mechanism can be donfirmed.

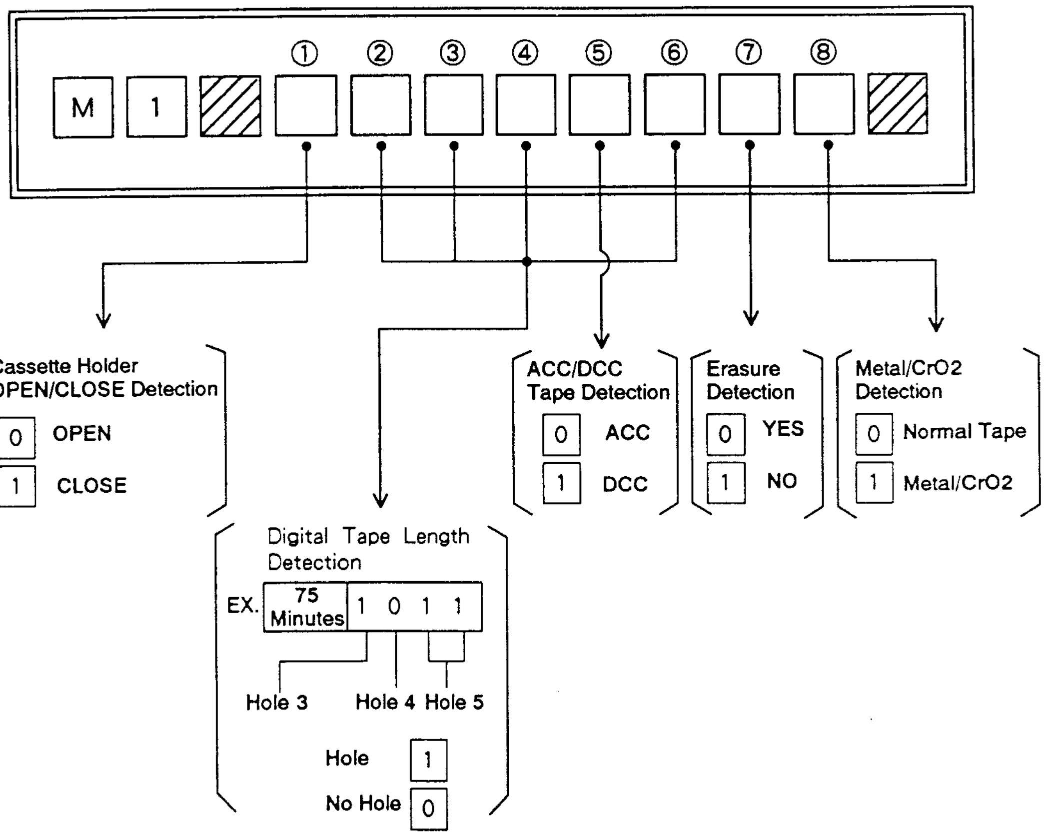
Location of Detection Switches





Position

Display



Example: With analog tape (normal type) loaded and cassette holder closed.

M	1	▨	1	0	0	0	0	0	0	1	▨

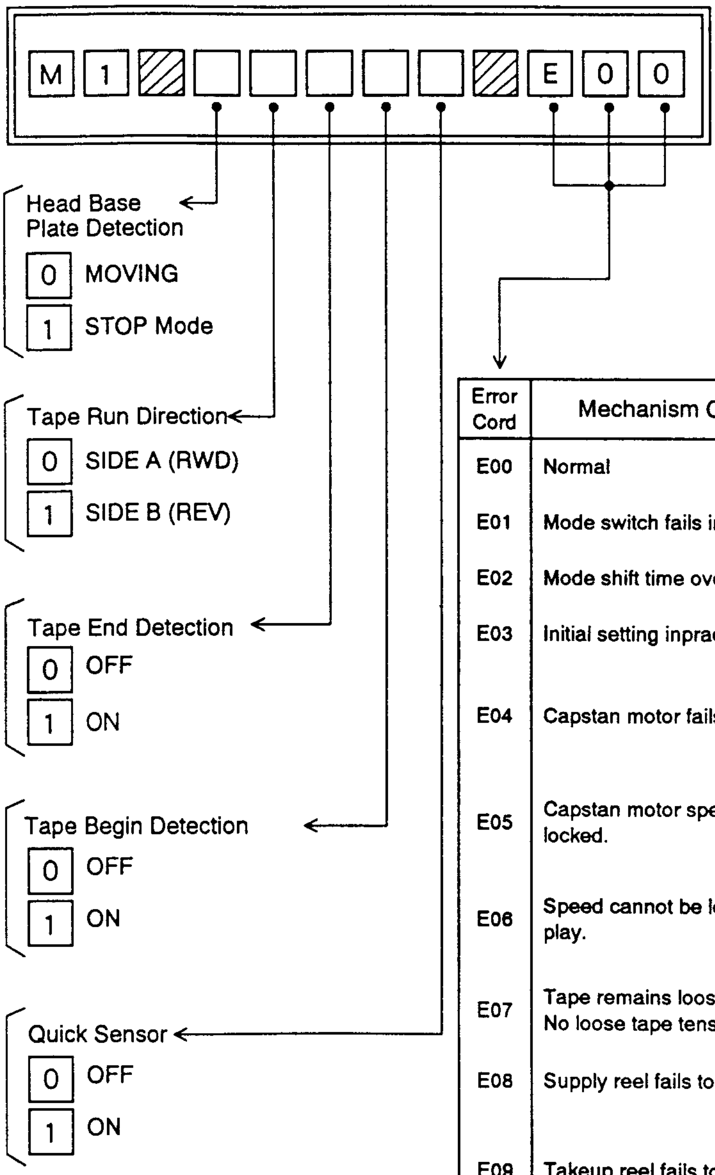
Service Mode ⑥ Mechanism Operation Check

Purpose

Troubles related mechanism operation can be confirmed.

Position

Display



Error Cord	Mechanism Condition	Presumed Cause
E00	Normal	
E01	Mode switch fails in detection.	•S971、Z971
E02	Mode shift time over	•Head base plate
E03	Initial setting inpracticalbe	•Capstan motor •Belt, solenoid, etc.
E04	Capstan motor fails to rotate	•Motor •IC201、IC209, etc.
E05	Capstan motor speed cannot be locked.	•IC201、IC209 •Q212~214 •Capstan Motor, etc.
E06	Speed cannot be locked during play.	
E07	Tape remains loose. No loose tape tensing action.	•IC201、IC205 •Reel motor.etc
E08	Supply reel fails to rotate.	•Reel gear •Idler gear •Intermediate gear
E09	Takeup reel fails to rotate.	
E0A	Half switch fails in detection.	•S972、Z971
E0F	Two or more troubles occurring.	

Service Mode ⑦ IC Bus Line Check

Purpose

Condition of bus line between IC305 (microcomputer) and each IC can be checked.

Position

S	1	▨	0	0	0	0	0	▨	▨	▨	▨
			①	②	③	④	⑤				

※ Independently of whether DCC tape is in or not or of mechanism condition.

Display during normal operation

O.K.
S 1 ▨ 0 0 0 0 0 ▨ ▨ ▨ ▨

Display upon failure

	N.G.	Communication Line	Presumed Cause
①	S 1 ▨ 1 0 0 0 0 ▨ ▨ ▨ ▨	IC201 (Servo) ⇔ IC305 Pin ⑧ — ⑦⑦ Pin ⑨ — ⑦⑧	Each terminal soldered improperly, or each IC
②	S 1 ▨ 0 1 0 0 1 ▨ ▨ ▨ ▨	IC301 (SPD) ⇔ IC305 Pin ⑦⑤ — ③④	
③	S 1 ▨ 0 0 1 0 0 ▨ ▨ ▨ ▨	IC302(SBC) ⇔ IC305 Pin ⑤② — ④② Pin ⑤⑧ — ②⑤ Pin ⑤⑦ — ②④ Pin ⑤⑥ — ②③	
④	S 1 ▨ 0 0 0 1 0 ▨ ▨ ▨ ▨	IC301 (SPD1) ⇔ IC305 Pin ⑦① — ④② Pin ⑥⑦ — ②⑤ Pin ⑥⑧ — ②④ Pin ⑥⑨ — ②③ Pin ⑦⓪ — ②②	
⑤	S 1 ▨ 0 0 0 0 1 ▨ ▨ ▨ ▨	IC301 ⑦② IC302 ⑤① IC303 ②⓪ IC304 ③④ — IC305 ④① Clock Line	
	S 1 ▨ 1 1 1 1 1 ▨ ▨ ▨ ▨	————	IC305 IC301 IC201

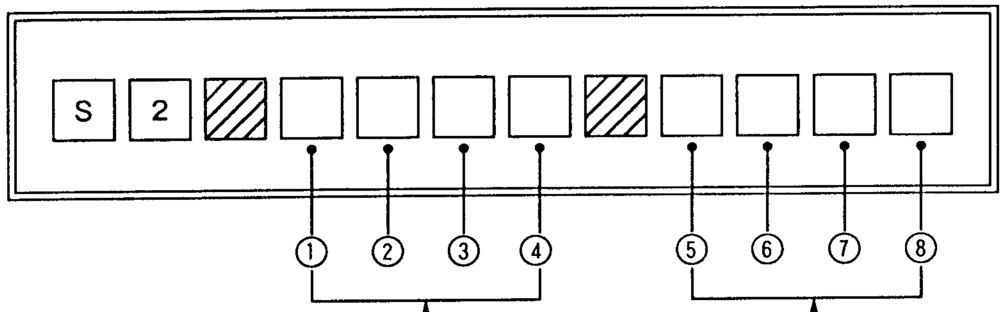
Service Mode ⑧ SPD/SBC Operation Check

Purpose

Operating conditions of SPD and SBC can be checked.

SPD: IC301
SBC: IC302

Position



Display during normal operation

	SPD Operation Check (normal time)
①	0 is indicated
②	D and 0 alternately
③	2 → 4 → 8 → A → C → E → 0 repeatedly
④	F and 7 alternately

NG ⇨ IC301 defective

	SBC Operation Check (normal time)	
⑤	Clock check	3 indicated during playback 1 when at a stop 1 FF.REW/Skip
⑥	Emphasis-Copy	8 at all times
⑦	Compression ratio	DCC format − C
⑧	Sampling frequency (differs for different tapes)	44.1 kHz → 2 48 kHz → 6 32 kHz → A

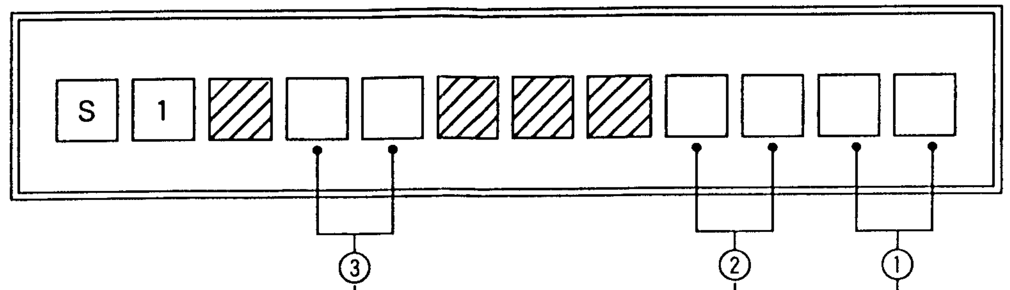
⇨ IC302 defective

Service Mode ⑨ DCC Tape Record Check

Purpose

Markers etc recorded on DCC tape are indicated.

Position



Sampling fs

0	0	44.1 kHz
0	1	48 kHz
1	0	32 kHz

Marker Cords

None	00
READ IN/SIDE A	10
READ OUT/SIDE A	20
READ IN/SIDE B	30
READ OUT/SIDE B	40
NEADS AGAIN (END)	50
STOP	60
REVERSE	70
HOME	80
NEXT	90
START (SHORT)	a 0
START (LONG)	b 0
TENP REVERSE	c 0
SKIP MARKER	*1
PAUSE MARKER	*4
MUTE MARKER	*2
FADE MARKER	*8

Copy Inhibition Cords

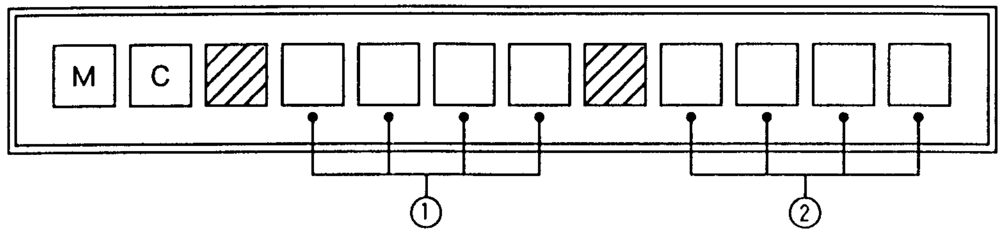
	Playback	Recording
00	Tape recorded with digital input from source with no restriction of copy. (almost nil)	Digital input from source with no restriction of copy.
01	Music tape with no restriction of copy. (almost nil)	Copy inhibited
10	Tape recorded with digital input from CD, etc.	Digital input from CD, etc.
11	Music tape, tape recorded with analog input.	Analog input applied.

Service Mode ⑩ System Microcomputer Check

Purpose

Funlty condition of control system from system controller (IC305) and Servo Processor (IC201) to Mechanism can be confirmed.

Postion



① System controller (IC305) check

Mechanism Operation	DCC Tape	O.K. Indication	Mechanism Fault Code
OPEN → CLOSE	NO	0110 → 0201 → 0260 OPEN OK / CLOSE ACTION MONITORING / CLOSE O.K.	0102 OPEN FAULTY
	YES	0110 → 0201 → 0215 → 021A → 0220 (TAPE LOADING) / AUX DATA READ IN / MECHANISM STOP COMMAND / CLOSE O.K.	0202、0270 CLOSE FAULTY / MECHANISM FAULTY
CLOSE → OPEN	NO	0260 → 0101 → 0110 OPEN ACTION MONITORING	0102
	YES	0220 → 0101 → 0110	
STOP → PLAY	YES	0220 → 0315 → 0318 → 0320 (PLAY KEY PRESSING) / MECHANISM STOP COMMAND / MUTE COMMAND / PLAY O.K. (MUTE OFF)	0270
STOP → FF	YES	0220 → 0110 (FF KEY PRESSING) / FF O.K.	0270
STOP → REW	YES	0220 → 0810 (REW KEY PRESSING) / REW OK	0270
STOP → REC	Blank Tape	0220 → 0810 → 0505 → 050B → 510 REC KEY PRESSING / (REC O.K.) / (PLAY KEY PRESSING) / REC START COMMAND / START MARKER / REC O.K.	0270

② Servo Processor (IC201) Check

Mechanism Operation	DCC Type	O.K. Indication
STOP → FWD/Play (A – Side)	YES	0300 → 1300 → (1311) → 1310 0900 → 1900 → (1911) → 1910 STOP / Play Key Pressing / Play Command Reception O.K. / Play Mode Confirming / Play O.K.
STOP → REV/Play (B – Side)	YES	0300 → 5300 → (5311) → 5310 0900 → 5900 → (5911) → 5910 STOP / Play Key Pressing / Play Command Reception O.K. / Play Mode Confirming / Play O.K.
STOP → FF	YES	0300 → 9900 → 9A94 → 9A9A → AAAA → 9A94 → 900 / 300 STOP 0900 → 9900 FF Key Pressed / FF Command Reception O.K. / Accelerating / Moddle Speed / Full Torque / Speed Reducing
STOP → REW	YES	0300 → A900 → AAA4 → AAAA → AAA4 → 900 / 300 STOP 0900 → A900 FF Key Pressing / FF Command Reception O.K. / Accelerating / Full Touque / Speed Reducing

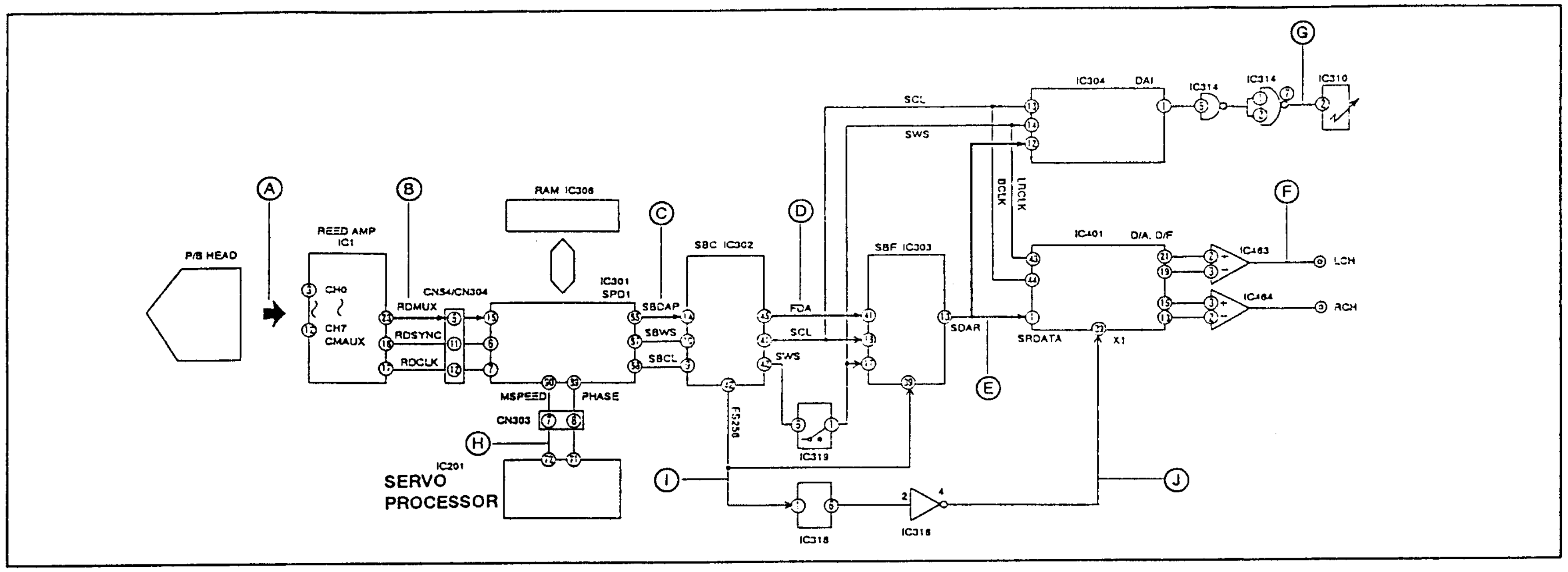
When IC305 or IC201 is defective, indication changes to $\boxed{0}\boxed{0}\boxed{0}\boxed{0}$ or $\boxed{F}\boxed{F}\boxed{F}\boxed{F}$.

Table of Detective Sections Confirmable in Each Service Mode

Service Mode No.	Check Item	READ AMP IC1	S.PDI IC301	RAM IC306	SBC IC302	SBF IC303	DAI IC304	System Microcomputer IC305	Panel Microcomputer IC701	Servo Processor IC201	Head	FL	Panel Switch	Mechanism and Mechanism Switch
1	All Channel Error Rate	○	○	○				○	○		○	○		
2	Each Channel Error Rate	○	○	○				○	○		○	○		
3	FL Display								○			◎	○	
4	Panel Switch								○			○	○	
5	Mechanism Switch							○	○	○		○		○
6	Mechanism Operation Switch							○	○	○		○		○
7	Bus Line	○	○		○	○	○	○		○		○		
8	SPD/SBC Check				○	○		○	○			○		
10	System Microcomputer check							○	○	○		○	○	○
9	DCC Tape Record Check	※ Each marker recorded on DCC tape can be detected.												

TROUBLESHOOTING

1 DCC Playback System Troubleshooting

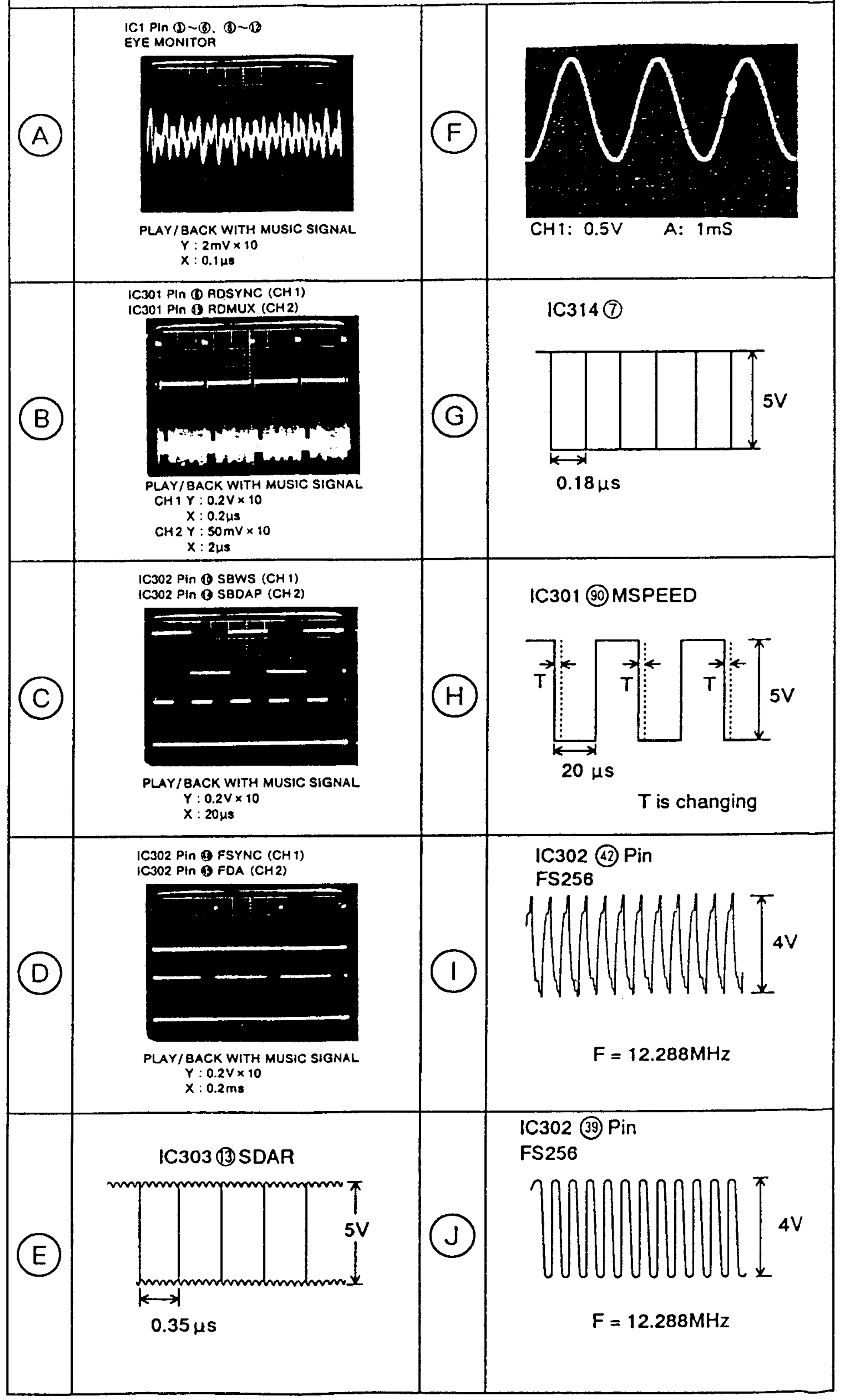


Trouble	Checking Procedure	Presumable Defective Part
•No DCC Sound is heard. (ACC O.K.)	Play a DCC tape. → Read the all error rate in Service Mode No. 1. → No change with 9821 → Confirm display of Service Mode No. 2 → (Ten digits all 1) YES →	Head, IC1, IC301, IC306 defective.
	(Error rate changes.) → AZIMUTH Adjustment; (Some out of ten digits are 0.) → AZIMUTH Adjustment	
•Sound skips	AZIMUTH Adjustment ① Rough adjustment is Service Mode No. 2. ② Accurate adjustment in Service Mode No. 1. ↓ NO	

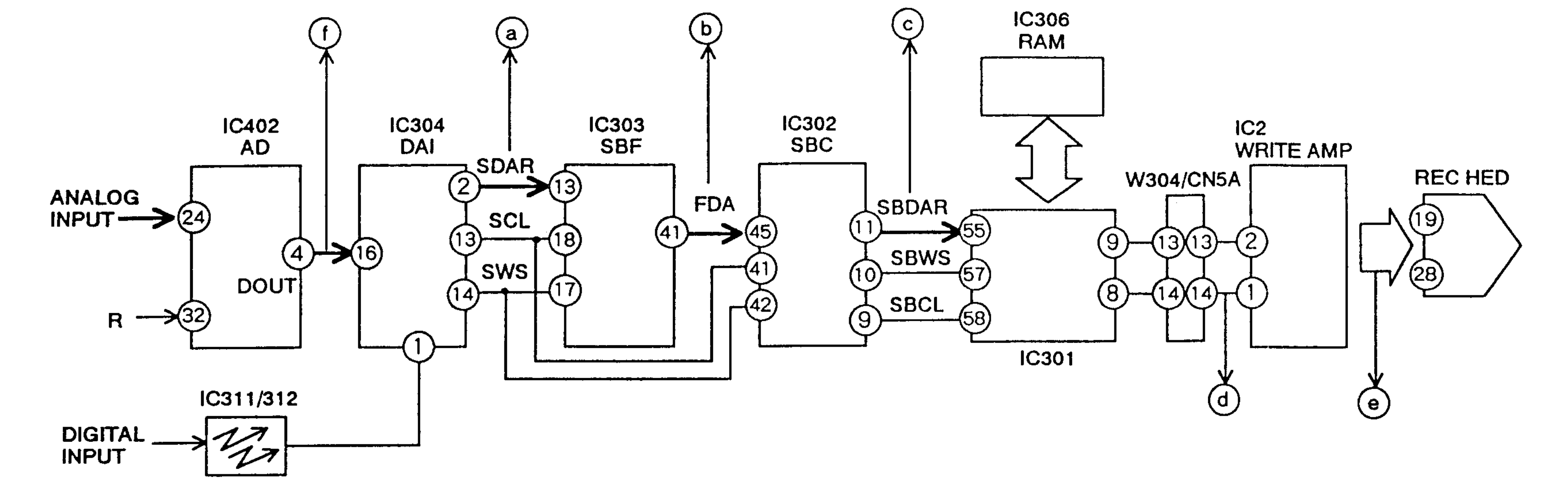
Refer to P.131,132

Checking Procedure	Test Point	Presumable Defective Part
Waveform Ⓐ appears ? (REED/WRITE PCB) — NO →	Ⓐ	Head defective. IC1, ③~⑥pin and ⑧~⑫pin Shorted
YES ↓ Waveform Ⓑ appears ? (Main PCB) — NO →	Ⓑ	IC1 defective.
YES ↓ Waveform Ⓒ appears ? (Main PCB) / Waveform Ⓗ appears ? (Main PCB) — NO →	Ⓒ Ⓗ	IC301 defective. IC306 defective.
YES ↓ Waveform Ⓓ appears ? (Main PCB) / Waveform Ⓘ appears ? (Main PCB) — NO →	Ⓓ Ⓘ	IC302 defective.
YES ↓ Waveform Ⓔ appears ? (Main PCB) →	Ⓔ	IC303 defective.
YES ↓ Waveform Ⓕ appears ? (Main PCB) →	Ⓕ	IC401, IC463 defective.
YES ↓ Waveform Ⓖ appears ? (Main PCB) →	Ⓖ	IC304, IC314 defective.

Test Point Waveform

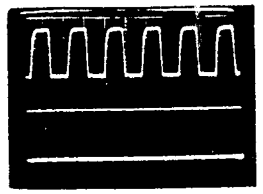
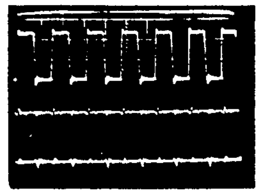
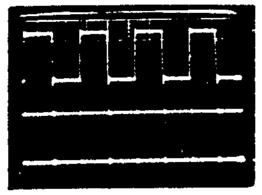
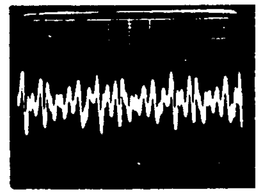
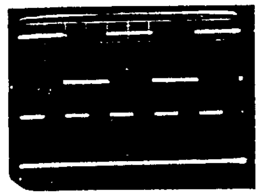
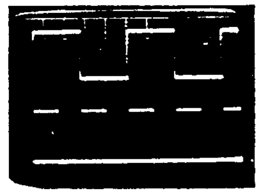


2 DCC Recording System Troubleshooting

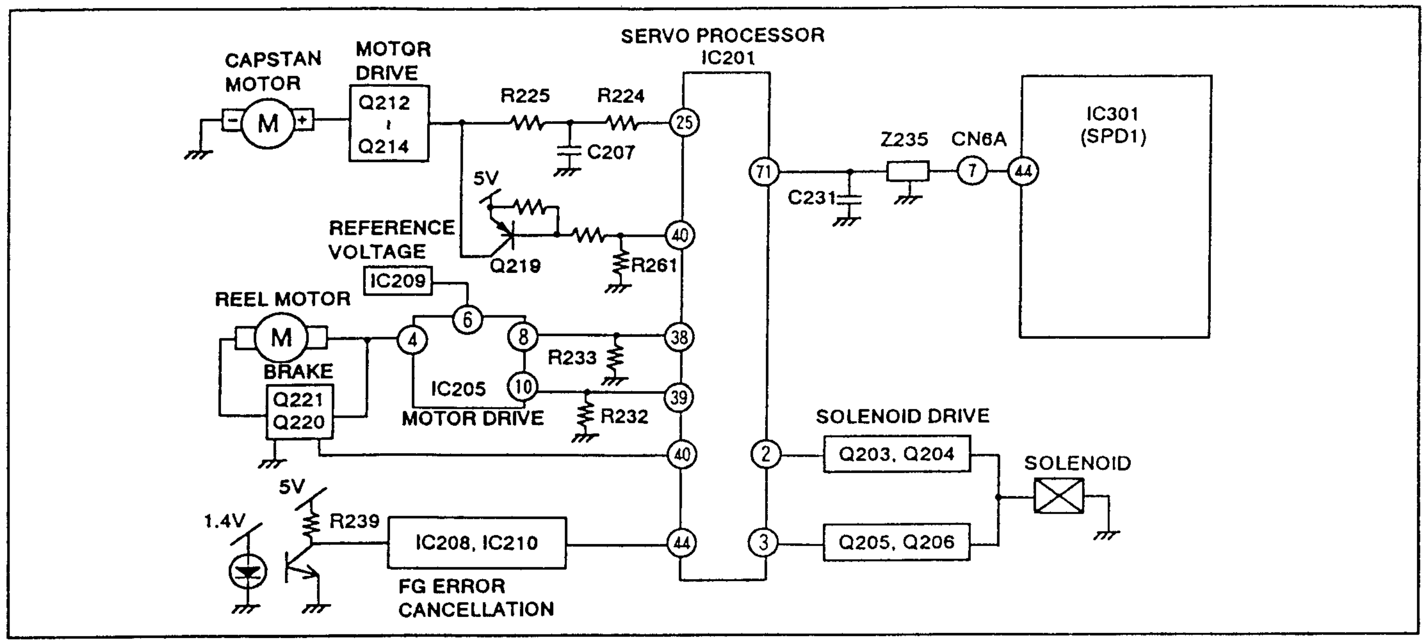


Refer to P.131,132

Trouble	Checking Procedure	Test Point	Presumable Defective Part
•No recording can be made	Load the unit with a blank tape and place it into the REC mode.		
	Input digital signal from DIGITAL Rec-IN. ※Use a CD player equipped with optical OUT.		
•No recording can be made with analog input	Digital signal can be recorded ? YES →		IC402, IC404, IC405 IC407, IC408 defective.
	NO ↓ ⓐ Waveform appears ? (Main PCB) NO →	ⓐ	IC304 defective.
	YES ↓ ⓑ Waveform appears ? (Main PCB) NO →	ⓑ	IC303 defective.
	YES ↓ ⓒ Waveform appears ? (Main PCB) NO →	ⓒ	IC302 defective.
	YES ↓ ⓓ Waveform appears ? (Main PCB, READ/WRITE PCB) NO →	ⓓ	IC306、IC301 defective.
•Sound skips; •No overwriting practicable	YES ↓ ⓔ Waveform appears ? 8READ/WRITE PCB) NO →	ⓔ	• Optimum recording current not adjusted properly •IC2 defective.
	YES →		Head defective.

Test Point Waveform			
ⓐ	IC303 Pin [illegible] SCL (CH1) IC303 Pin [illegible] SDAR (CH2)  REC WITHOUT MUSIC SIGNAL Y : 0.2V × 10 X : 0.2μs	ⓓ	IC301 Pin [illegible] WCLOCK (CH1) IC301 Pin [illegible] WDATA (CH2)  REC WITHOUT MUSIC SIGNAL Y : 0.2V × 10 X : 0.2μs
ⓑ	IC302 Pin [illegible] SBDAR (CH1)  REC WITHOUT MUSIC SIGNAL Y : 0.2V × 10 X : 0.5μs	ⓔ	IC2 Pin [illegible]~[illegible]  REC WITHOUT MUSIC SIGNAL Y : 2mV × 10 X : 0.1μs
ⓒ	IC302 Pin [illegible] SBWS (CH1) IC302 Pin [illegible] SBDAR (CH2)  REC WITHOUT MUSIC SIGNAL Y : 0.2V × 10 X : 20μs	ⓕ	IC402 Pin [illegible] WCK (CH1) IC402 Pin ④ DOUT (CH2)  REC WITHOUT MUSIC SIGNAL Y : 0.2V × 10 X : 5μs

3 Servo System Troubleshooting



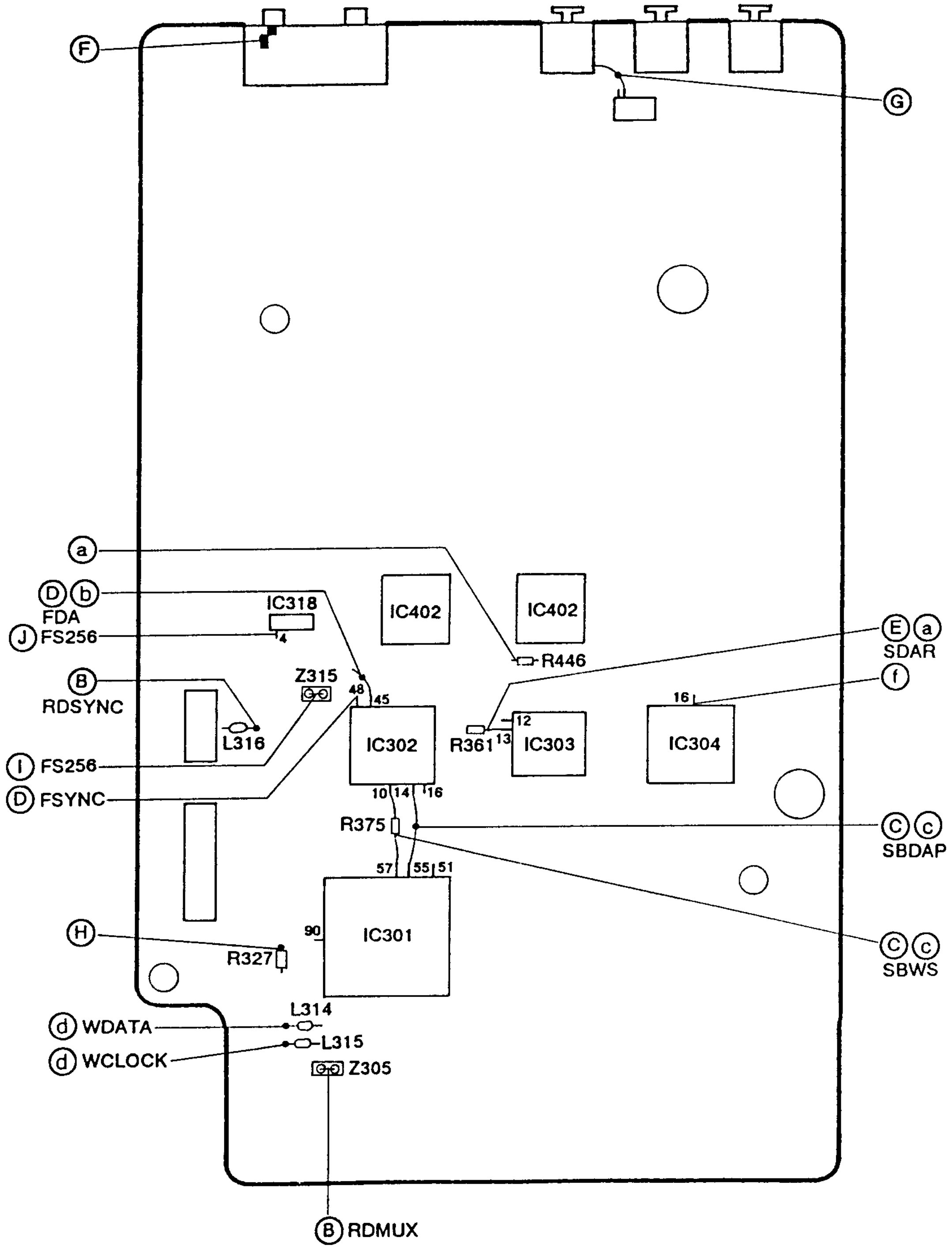
Refer to P.131,132

Trouble	Checking Procedure	Test Point	Presumable Defective Part
•No DCC sound is heard •Sound skips	Check while in Service Mode No. 6. ↓ Play as with DCC		
	Error code display by E O 5 ? → NO		Other defect; Mechanism fails to operate. Refer to Check Procedure.
	YES ↓ (Some a with E O 6) Waveform appears at IC301 pin 44 ? (READ/WRITE PCB) → NO	△1	IC301 defective.
	YES ↓ Make sure it is varying. 2.5V applied at IC201 pin 71 ? (READ/WRITE PCB) → NO	△2	R327, Z236 C231 defective.
	YES ↓ Make sure voltage is varying. Waveform appears at IC201 pin 25 ? (READ/WRITE PCB) → NO	△3	IC210 defective.
	YES ↓ Make sure it is varying. 5V applied at capstan motor ⊕ terminal ? (Motor PCB) → NO	△4	Q214 – Q212 defective.
	YES ↓ 30 ohms across capstan motor ⊕-⊖ terminal ? (Motor PCB) → NO	△4	Motor defective.
	YES ↓ Turn the capstan motor by hand: Caught by nothing ? → YES		Motor defective.
	→ NO		Belt, Flywheel, Pressure Roller
	Waveform appears at IC201 pin 44 ? (READ/WRITE PCB) → YES	△5	FG Circuit O.K.
	5V (Appearing 12 times by 1 rotation of motor)		PH291, IC208, IC210 defective.

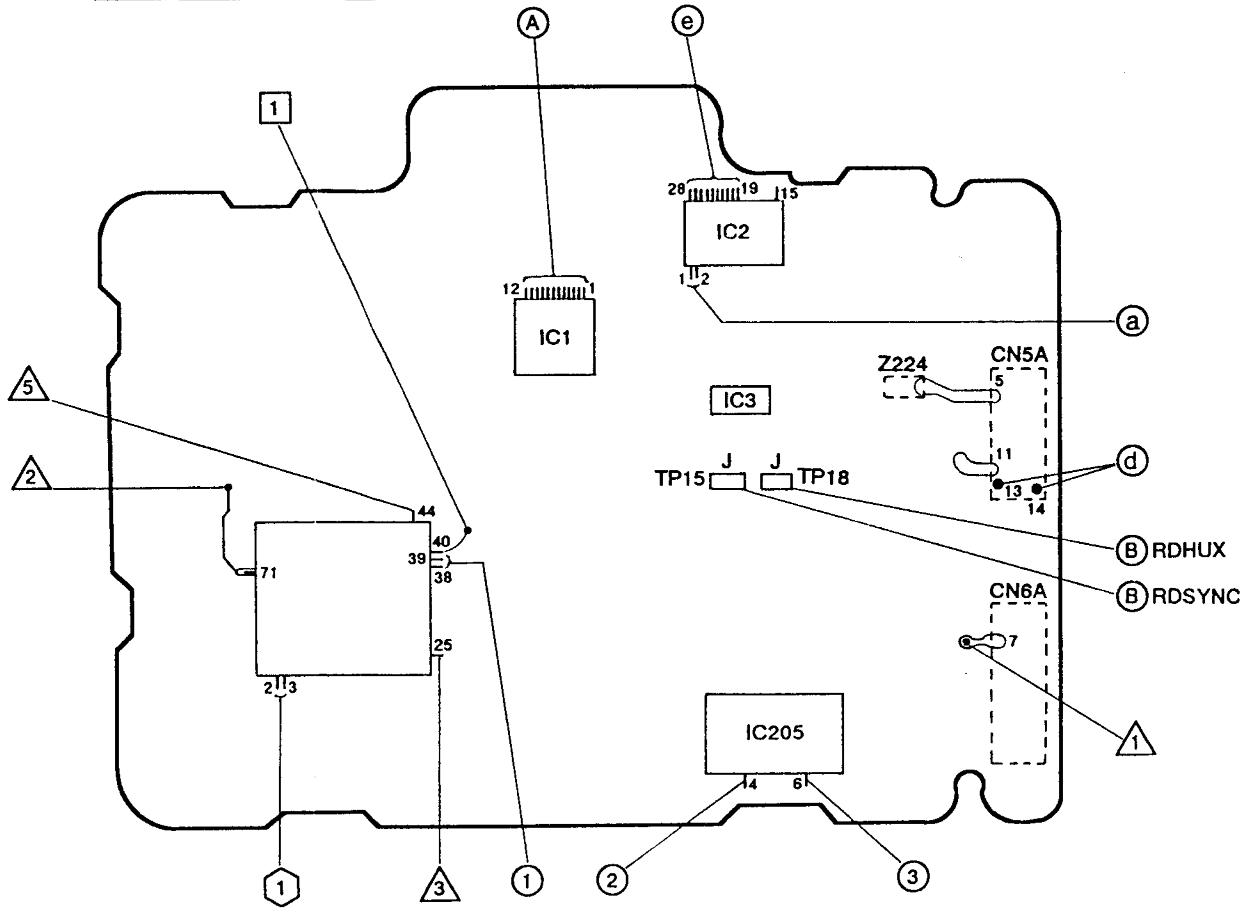
Trouble	Checking Procedure	Test Point	Presumable Defective Part
Capstan fails to rotate	Check while in Service Mode No. 6.		
	Error code displayed by E O 4 ? → NO		Other defect
	YES ↓ Voltage at IC201 Pin 40 becomes 0V ? → NO	1	IC201 defective.
	YES ↓ (Check while pressing the PLAY key) Voltage at capstan motor terminal becomes 5V ? → NO	△4	Q214~Q212 Q219 defective.
	YES		Capstan Motor
Plunger fails to be actuated	Mechanical sound is heard when a DCC tape is set ? → YES		Plunger is normal.
	NO ↓ (Closed mode) Pulse at IC201 Pins 2 and 3 ? → NO (65ms, 5V)	①	IC201 defective.
	YES ↓ (Press the PLAY key and check) Pulse at plunger ⊕ terminal ? → (65ms, 5V)	②	Q203~Q206 defective.
	YES ↓ Resistance across plunger ⊕⊖ terminals becomes 30 Ω → NO	②	Plunger defective.
Reel motor fails to rotate (Failure in OPEN/ CLOSE action, too)	Press the OPEN/CLOSE key.		
	Voltage at IC201 Pins 39 and 38 becomes as shown in the table below ? → NO	①	IC201 defective.
	YES ↓ 3.5V ~ 4V at IC205 Pin 6 ? → NO	②	IC209 defective.
	YES ↓ Voltage at IC205 Pin 4 as follow?? → NO Open → Close 7V Close → Open 4V	③	IC205 defective.
	Voltage across both ends of reel motor terminal as follow? → NO Open → Close 7V Close → Open 4V	④	Q221, Q220 defective.
	30 Ω across both ends of reel motor terminal ? → NO	④	Motor defective.
	Turn the reel motor by hand: Caught by nothing ? → YES		Loading Mechanism, Cassette Mechanism defective.

4 Troubleshooting Check Points

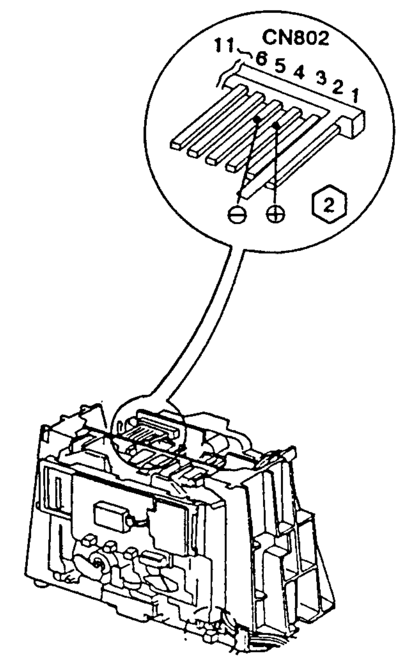
MAIN PCB



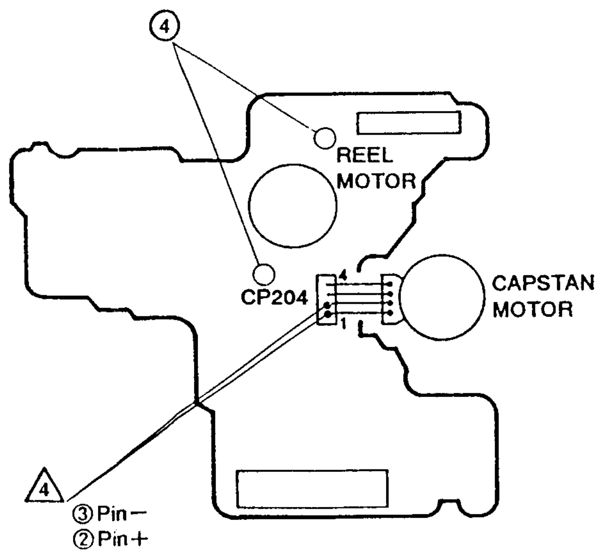
READ/WRITE PCB



MECHANISM CONNECTOR



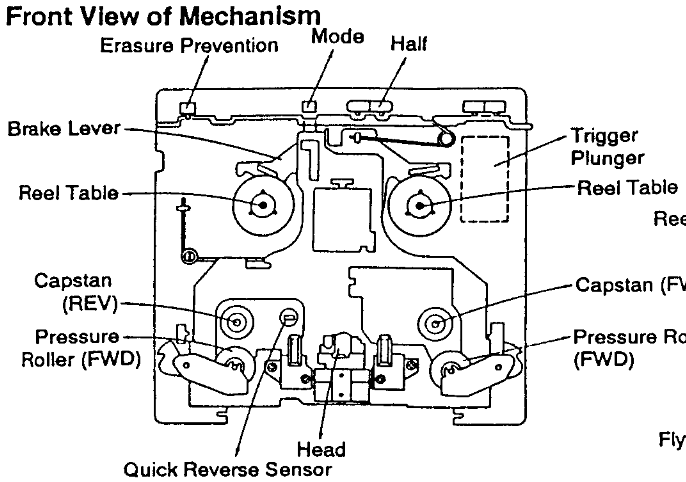
MOTOR PCB



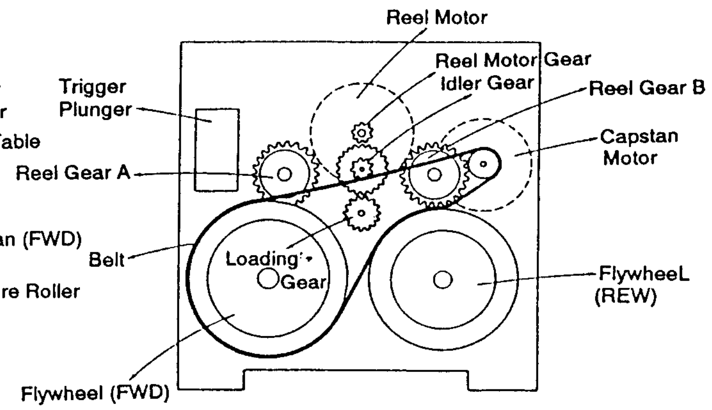
Test Point	
Ⓐ ~ Ⓙ	DCC Playback System
ⓐ ~ ⓕ	DCC Recording System
△1 ~ △5	Servo System (Sound Skip)
□1	Servo System (Capstan Motor)
⬡1 ~ ⬡2	Servo System (Plunger)
① ~ ④	Servo System (Reel Motor)

5 Mechanism Block Troubleshooting

Front View of Mechanism

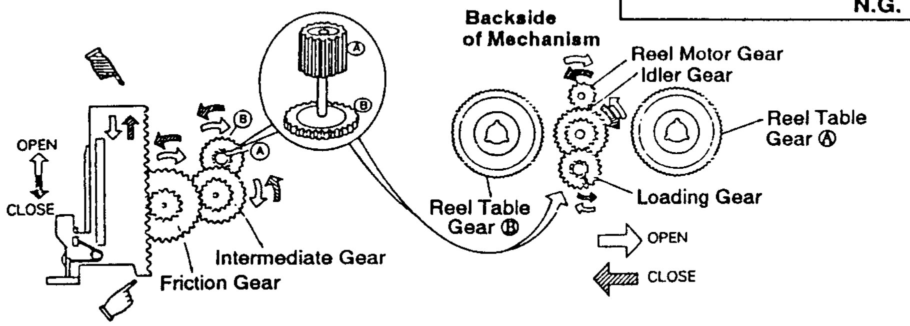
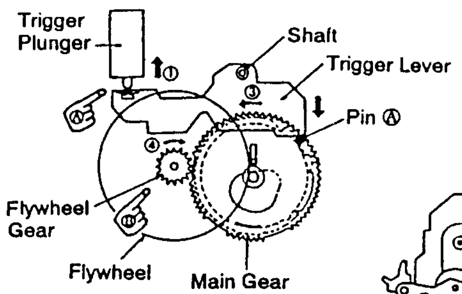
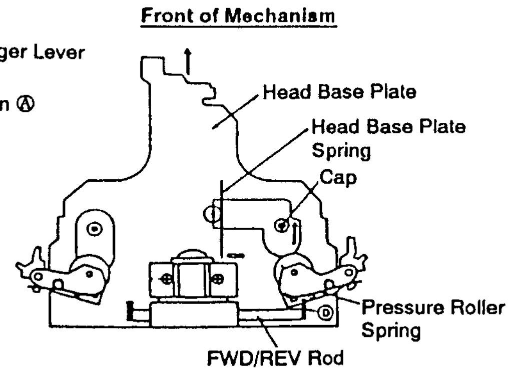


Backside View of Mechanism

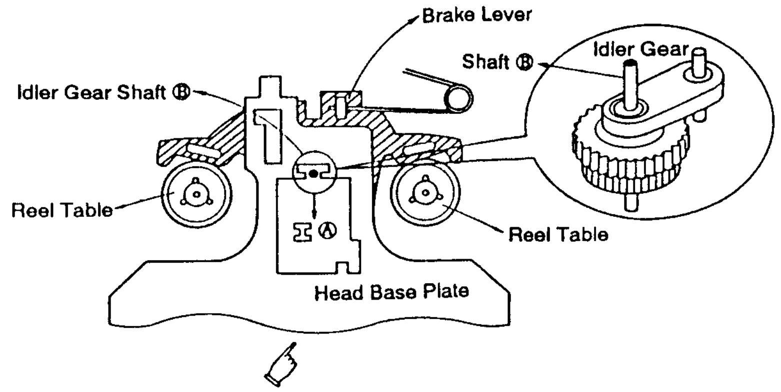
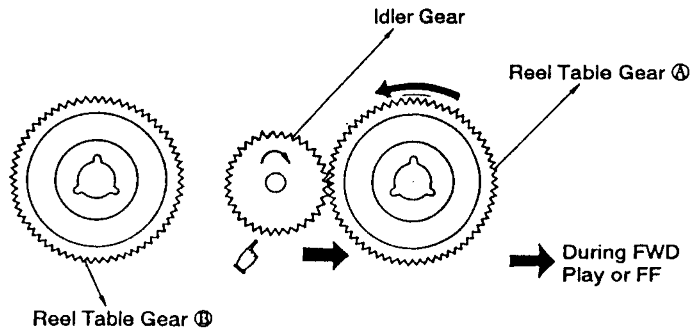
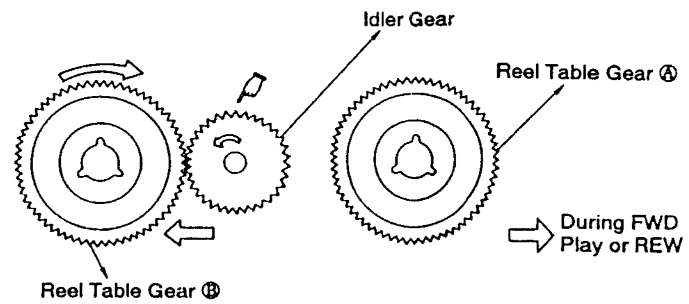


Preparation for Check

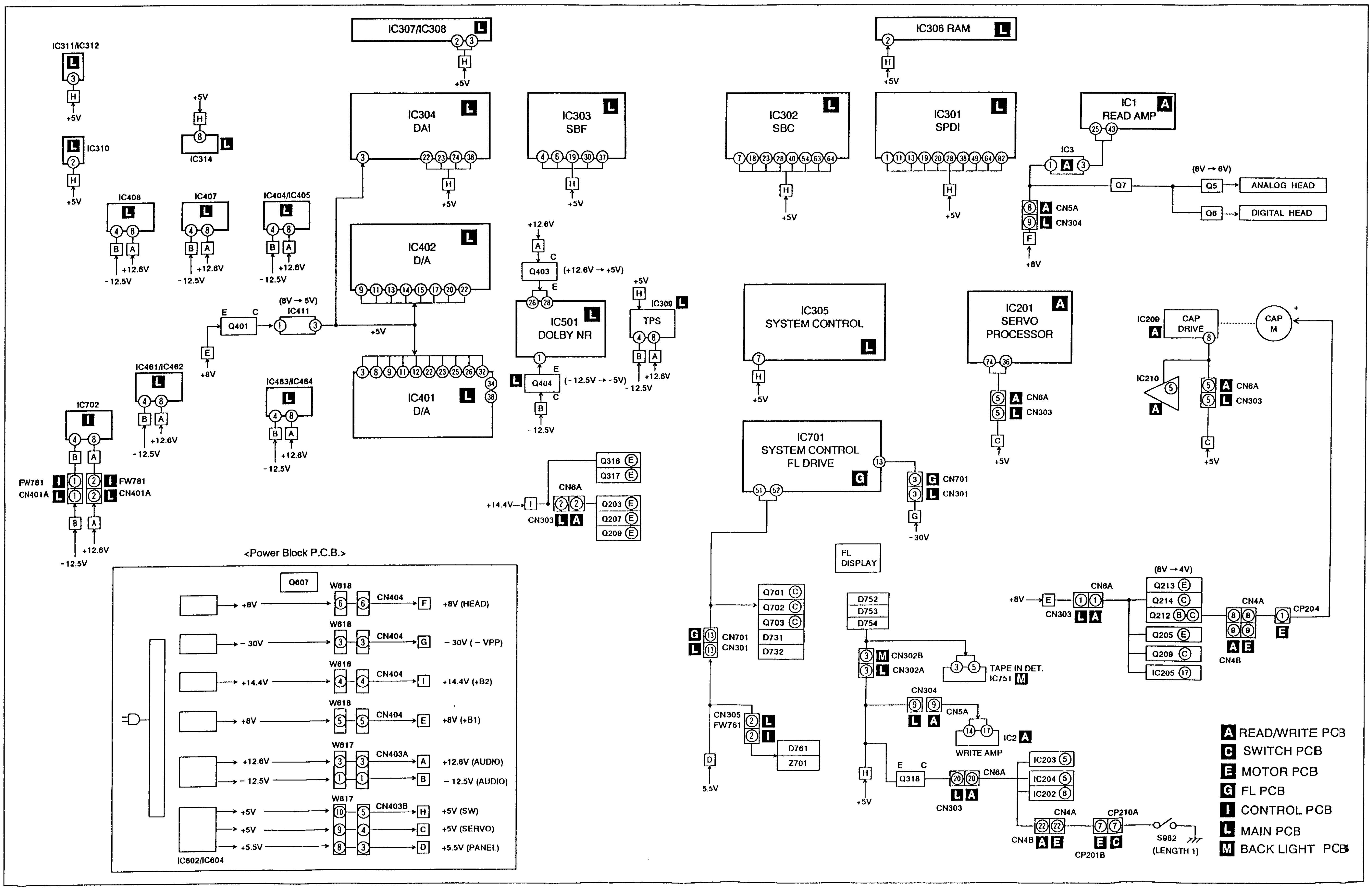
Removal of mechanism PCB and cassette holder, and separation of mechanism from loading base.

Trouble	Checking Procedure	Presumable Defective Part
Open/Close failure	Move drive rack up and down by hand. → Make sure drive rack, friction gear, intermediate gear, and loading gear move smoothly. → O.K. / N.G.	O.K.: Little Motor Gear, Idler Gear N.G.: Drive Rack, Friction Gear, Intermediate Gear, Loading Gear
		
Head base plate fails to ascend. Pressure roller fails to ascend.	Raise trigger lever by hand. → Main gear moves a little in direction ③? → O.K. → Flywheel (FWD) moves a little in direction ④? → N.G.	Main Gear, Flywheel Gear
	Main gear moves a little in direction ③? → N.G.	Trigger Lever, Main Gear
	Flywheel (FWD) moves a little in direction ④? → O.K. → Turn flywheel in direction ④ by hand. → Head base plate ascends? → O.K. → Capstan and pressure roller are brought into close contact ? → N.G.	FWD/REV Rod, pressure Roller Spring
	Head base plate ascends? → N.G.	Main Gear, Head Base Plate, Head Spring
	Backside of Mechanism  Front of Mechanism 	

Mechanism Block

Trouble	Checking Procedure	Presumable Defective Part
Takeup reel fails to rotate	Push up head base plate by hand. → Press idler gear against reel table gear Ⓐ by hand. → Turn idler gear in direction by hand and make sure reel table gear Ⓐ totates. → NO	Reel Table Gear, Idler Gear
	→ YES	Reel Motor
	*Release shaft Ⓑ of idler gear. *Release brake lever.	
	< STOP Time > Front View of Mechanism 	
		
		

6 +B/− B Line Flow Chart



7 PCB Connection