

# Service Manual

Stereo Cassette Deck

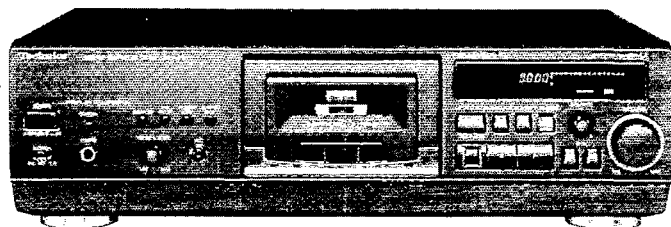
Cassette Deck

## RS-AZ7

\*  
 DOLBY B·C NR HX PRO

Colour

(K)...Black Type



### Area

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

\* Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Band and Olufsen. "Dolby", the double-D symbol and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

## AR-1 MECHANISM SERIES

### ■ SPECIFICATIONS

#### ■ CASSETTE DECK SECTION

Deck system	Stereo cassette deck
Track system	4-track, 2-channel
Recording system	AC bias
Bias frequency	210 kHz
Erasing system	AC erase
Heads	Recording head (Permalloy)×1 Playback head (Thin -Film type)×1 Erasing head (Double-gap ferrite)×1
Motors	Capstan drive (DC servo motor)×1 Reel table drive (DC motor)×1
Tape speed	4.8 cm/s.
Wow and flutter	0.07% (WRMS) ±0.2% (DIN)
Fast forward and rewind times	Approx. 35 seconds with C-60 cassette tape
Frequency response (Dolby NR off)	
TYPE I (NORMAL)	20 Hz–17 kHz, ±3 dB 20 Hz–18 kHz (DIN)
TYPE II (HIGH)	20 Hz–18 kHz, ±3 dB 20 Hz–19 kHz (DIN)
TYPE IV (METAL)	20 Hz–23 kHz, ±3 dB 20 Hz–24 kHz (DIN)
S/N (Signal level=max recording level, TYPE II type tape)	
NR off	62 dB (A weighted)
Dolby B NR on	71 dB (A weighted)
Dolby C NR on	78 dB (A weighted)

#### Input sensitivity and impedance

REC (IN) 100 mV/47 kΩ

#### Output voltage and impedance

PLAY (OUT) 500 mV/500 Ω

HEADPHONES 190 mV/(8 Ω)

(Load impedance 8 Ω–600 Ω)

### ■ GENERAL

#### Power consumption

26 W

2.8 W (Remocon Standby)

1.6 W (Power Standby)

#### Power supply

AC 50 Hz, 230 V–240 V

#### Dimensions (W×H×D)

430×125×290 mm

#### Weight

4.2 kg

#### Note:

Specifications are subject to change without notice.

Weight and dimensions are approximate.

#### ⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

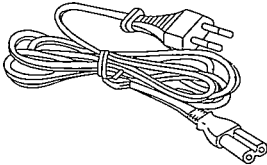
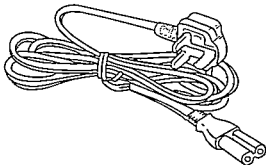
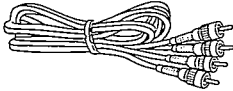
# Technics®

© 1996 Matsushita Electric Industrial Co., Ltd.  
 All rights reserved. Unauthorized copying and distribution is a violation of law.

## CONTENTS



	Page		Page
ACCESSORIES .....	2	WIRING CONNECTION DIAGRAM.....	28
CONNECTIONS.....	2, 3	TROUBLESHOOTING GUIDE.....	29~31
MAINTENANCE.....	3	BLOCK DIAGRAM.....	32~35
CAUTION FOR AC MAINS LEAD.....	4	SCHEMATIC DIAGRAM.....	36~43
FRONT PANEL CONTROLS.....	5	PRINTED CIRCUIT BOARDS.....	44~47
PLAYBACK.....	6~9	TERMINAL GUIDE.....	48~50
SELF-DIAGNOSTIC .....	10, 11	REPLACEMENT PARTS LIST .....	50, 51, 56, 57, 60
OPERATION CHECKS AND MAIN COMPONENT		CABINET PARTS LOCATION .....	52, 53
REPLACEMENT PROCEDURES.....	12~21	MECHANISM PARTS LOCATION .....	54, 55
ADJUSTMENT PROCEDURE.....	22, 23	RESISTORS AND CAPACITORS .....	58~60
MEASUREMENTS AND ADJUSTMENTS .....	24~27	PACKAGING .....	60



## ACCESSORIES

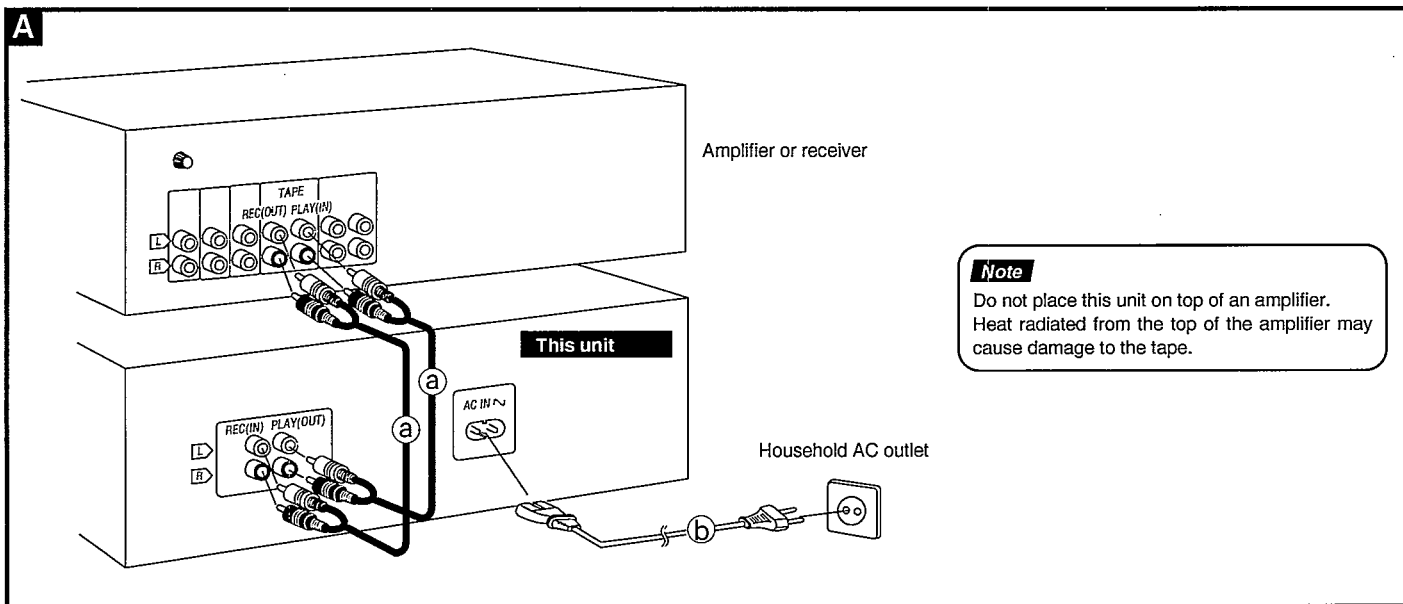
<p>AC power supply code ..... 1 pc. (RJA0019-2K)...(E, EG)</p> 	<p>(RJA0049-K)...(EB)</p> 	<p>Stereo connection cables ..... 2 pcs. (RJL4P004B08)</p> 
--	---	--

## CONNECTIONS

Stereo connection cable

White (L)  

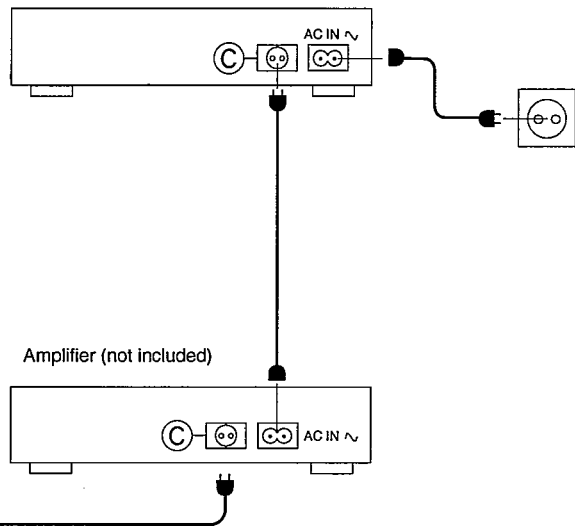
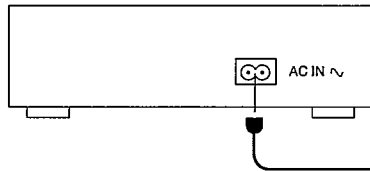
Red (R)  



B

Tuner with built-in timer or audio timer (not included)

This unit



Before making connections, make sure that the power to this unit and all other system components is turned off.

#### Note

- Avoid letting the cables touch each other as much as possible, otherwise noise will be generated.
- Although the figure below shows the AC power supply cord being connected to a household AC outlet, if the amplifier (or receiver) is equipped with an AC outlet, connect the cord to that outlet.

#### Placement hints

If this unit is placed near a receiver or a tuner, a "hum" noise may be heard during tape playback, recording, or AM reception of the receiver or the tuner.

If this occurs, leave as much space as possible between the units, or place them where there is the least amount of "hum".

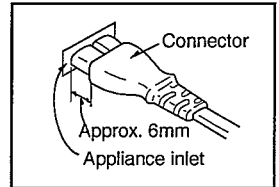
① Stereo connection cables (included)

### Connecting the AC power supply cord A

ⓑ AC power supply cord (included)

#### 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.



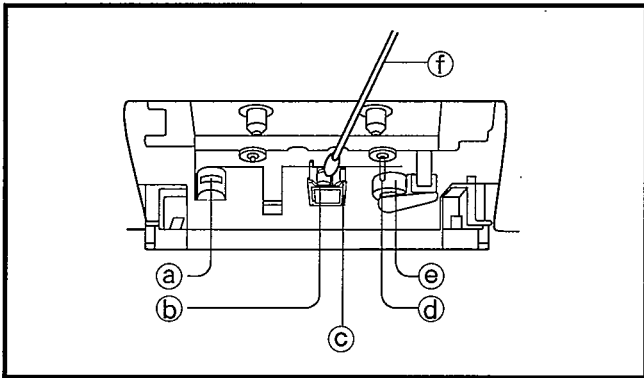
### For timer playback/recording B

ⓒ AC outlet

※ "SWITCHED" outlet

Power is controlled by the power switch.

## MAINTENANCE



### Maintenance of external surfaces

To clean this unit, use a soft, dry cloth.

If the surfaces are extremely dirty, use a soft cloth, dipped into a soap-and-water solution or a weak detergent solution.

Wring the cloth well before wiping the unit.

Wipe once again with a soft, dry cloth.

Never use alcohol, paint thinner, benzine, nor a chemically treated cloth to clean this unit.

Such chemicals may damage the finish of your unit.

### Head care

To assure sound quality for recording and playback, be sure to clean the heads after approximately every 10 hours of use.

- 1) Press OPEN/CLOSE to open the cassette holder.
- 2) Switch OFF the power.
- 3) Clean the heads, pinch roller and the capstan shaft with a cotton swab (or with a soft, lint-free cloth) slightly moistened with isopropyl alcohol.

Do not use any solution other than alcohol for head cleaning.

ⓐ Erasing head

ⓑ Recording head

ⓒ Playback head

ⓓ Capstan

ⓔ Pinch roller

ⓕ Cotton swab

#### Note

- NEVER use a demagnetizer.

You will seriously damage the head if you use a demagnetizer.

Though this was possible with older model heads, the AZ head built into this unit works on a completely different principle. A head demagnetizer will apply a strong magnetic force to the head which will cause a drop in performance.

- Do not touch the heads.

- Do not insert hands or other objects deeply inside equipment.

## ■ CAUTION FOR AC MAINS LEAD

### For (EB) area only

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark  or the BSI mark  on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local dealer.

### CAUTION!

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.

THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt please consult a qualified electrician.

### IMPORTANT

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


Blue: Neutral

Brown: Live

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

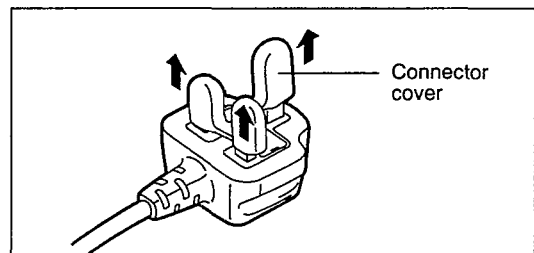
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol .

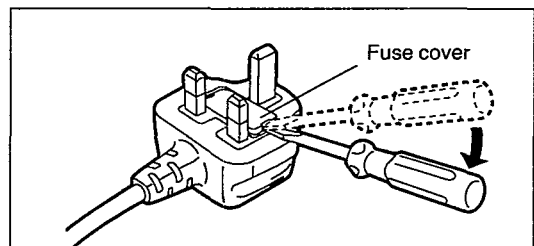
### Before use

Remove the connector cover as follows.

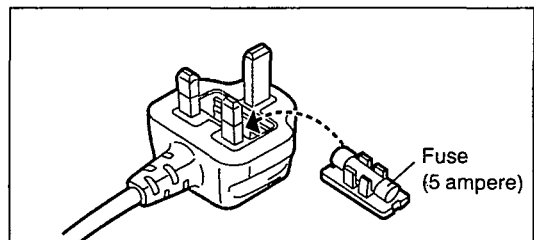


### How to replace the fuse

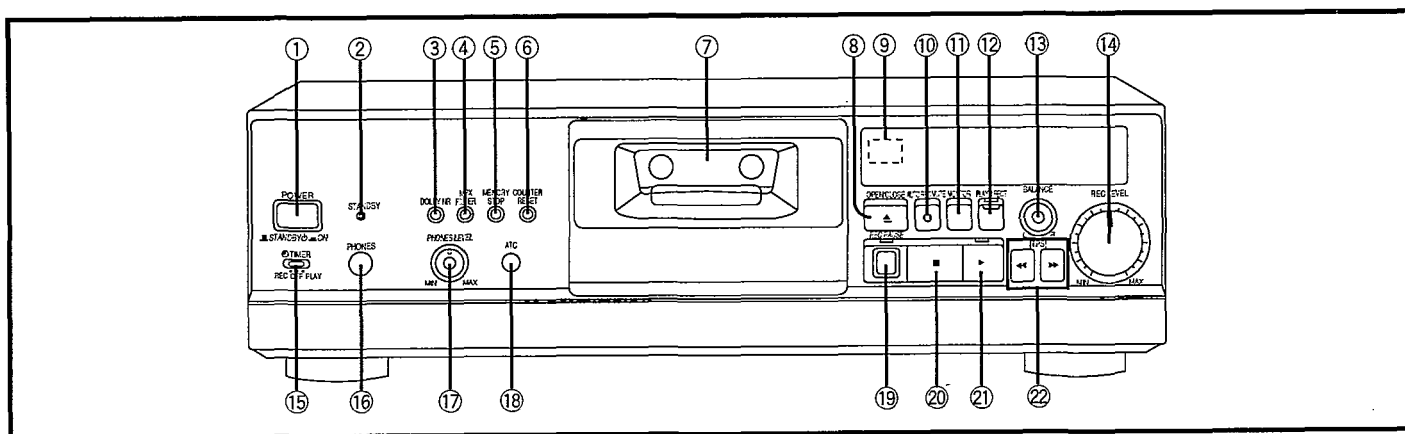
1. Remove the fuse cover with a screwdriver.



2. Replace the fuse and attach the fuse cover.

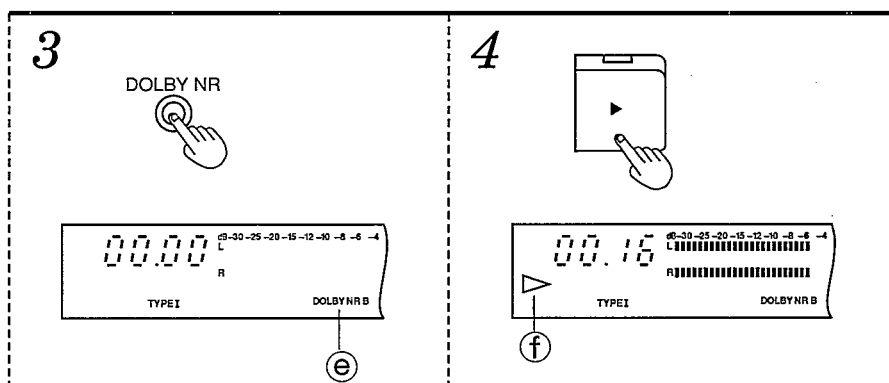
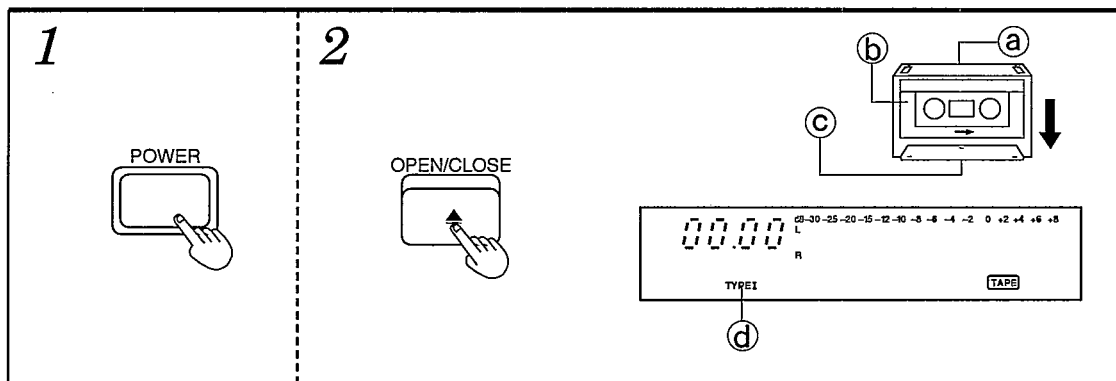
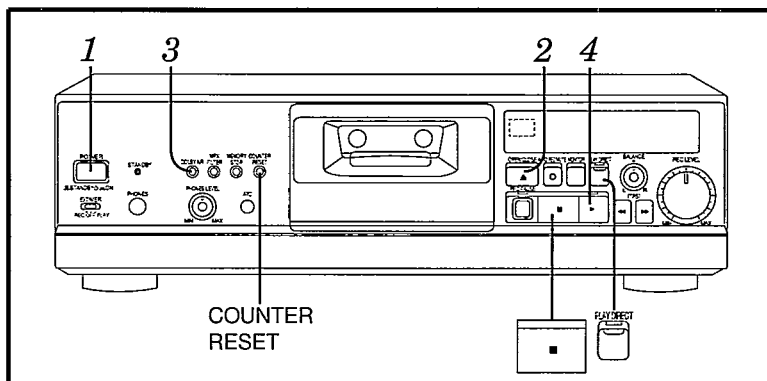


## FRONT PANEL CONTROLS



- 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.
- ② "STANDBY" indicator (STANDBY)  
With the POWER button in the ON position (■) the unit can be switched between the STANDBY and ON condition using the remote control. In the STANDBY condition the indicator will light.
- ③ Dolby noise-reduction button (DOLBY NR)
- ④ Multiplex filter button (MPX FILTER)
- ⑤ Memory stop button (MEMORY STOP)
- ⑥ Counter reset button (COUNTER RESET)
- ⑦ Cassette holder
- ⑧ Cassette holder open/close button (▲ OPEN/CLOSE)
- ⑨ Remote control signal sensor  
This cassette deck can be operated by using the remote control provided with a Technics amplifier or receiver.  
[See the operating instructions of the amplifier or the receiver for details.]
- ⑩ Automatic-record-muting button (● AUTO REC MUTE)
- ⑪ Monitor button (MONITOR)
- ⑫ Play direct button (PLAY DIRECT)
- ⑬ Recording-balance control (BALANCE)
- ⑭ Recording-level control (REC LEVEL)
- ⑮ Timer control (⌚ TIMER)
- ⑯ Headphones jack (PHONES)
- ⑰ Headphones volume control (PHONES LEVEL)
- ⑱ Auto tape calibration button (ATC)
- ⑲ Recording pause button (REC PAUSE)
- ⑳ Stop button (■)
- ㉑ Playback/record button (▶)
- ㉒ Rewind/fast-forward search buttons (◀◀ / ▶▶ [TPS])

# PLAYBACK



**1 Press POWER.**  
(The unit will switch on.)

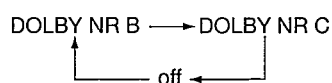
**2 Press OPEN/CLOSE, and then insert the cassette tape.**

Press again to close the cassette holder.

- Ⓐ Reverse side
- Ⓑ Forward side
- Ⓒ Tape opening facing downward.
- Ⓓ The tape type will be displayed.

**3 Press DOLBY NR to select the appropriate noise-reduction system.**

ⓔ Each time the button is pressed, the indicator will change in the order:



Select whichever you normally use for recording.

**4 Press ►.**  
(Playback will begin.)

ⓕ Illuminates

To stop playback, press ■.

**For your reference:**

When the cassette holder is open, pressing ►, ◀◀ or ▶▶ will close the holder and begin the playback, fast-forwarding or rewinding the tape.

Type of tape which can be played correctly:  
The unit automatically identifies the type of tape.

Normal position/ TYPE I	○
High position/ TYPE II	○
Metal position/ TYPE IV	○

## About the AZ head

This unit comes with a newly developed AZ head. AZ stands for amorphous Z. The recording head is the same as before, but the playback head has been built with new technology [Magnet Resistive (MR) device, thin film head, amorphous material]. Compared to older heads, the AZ head has the following advantages.

- Noise level is low because the MR device efficiently converts the magnetic signals into electric signals, which keeps impedance down.

### What is the MR device ?

It's a device that changes resistance by varying the magnitude of a magnetic field.

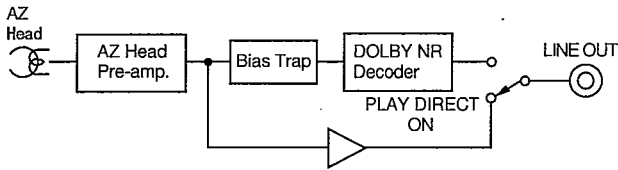
- Playback is possible with a wider range of sources thanks to the MR device and thin film head.
- Flat frequency characteristics are obtained because the contour effect doesn't occur.

### What is the contour effect ?

Depending on how the head core is configured, frequency characteristics tend to wander in the low range. The AZ head has a thin-film construction which minimizes the area contacting the tape, thus the contour effect doesn't occur.

## About the Play Direct function

This function lets you enjoy the clear sounds reproduced with the AZ head. When Play Direct is ON, the AZ head preamp outputs directly from the LINE OUT terminal instead of passing signals first through the bias trap and the noise reduction circuit.



### How to use

[While playback is stopped]

PLAY DIRECT



#### 1. Press PLAY DIRECT.

The indicator immediately above the button will flash for about 1.5 seconds and then will light up solidly.

#### 2. Press ►.

Playback will start.

### Note

If you press PLAY DIRECT while playing back a source, the sound will be muted instantly, but it will return in about 1.5 seconds.

## To cancel Play Direct

[While playback is stopped]

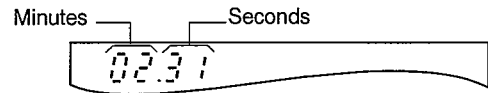
Press PLAY DIRECT.

### Note

- Do not use the Play Direct function when playing back tapes recorded in Dolby NR.
- You cannot use the Play Direct function while recording.

## About the linear counter

The linear counter indicates the amount of tape travel as the approximate of elapsed time.



To reset the linear counter, press COUNTER RESET. The linear counter indication will return to "00.00".

### Note

The linear counter is not a digital clock. The difference between the actual recording and playback time and the counter display may be anything up to several minutes.

## About the Dolby noise-reduction system

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.

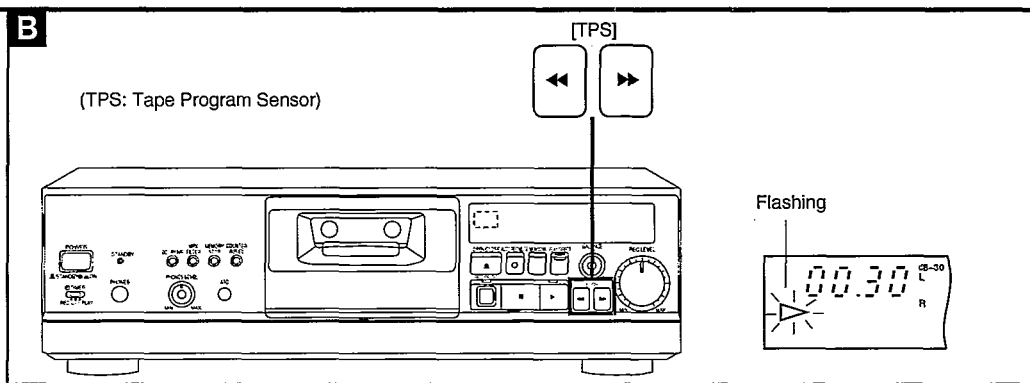
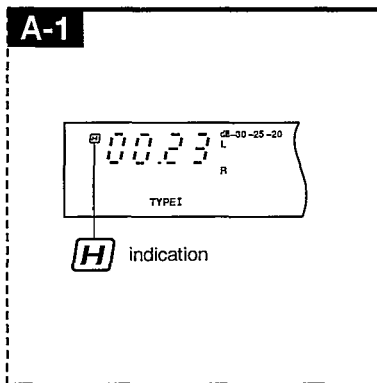
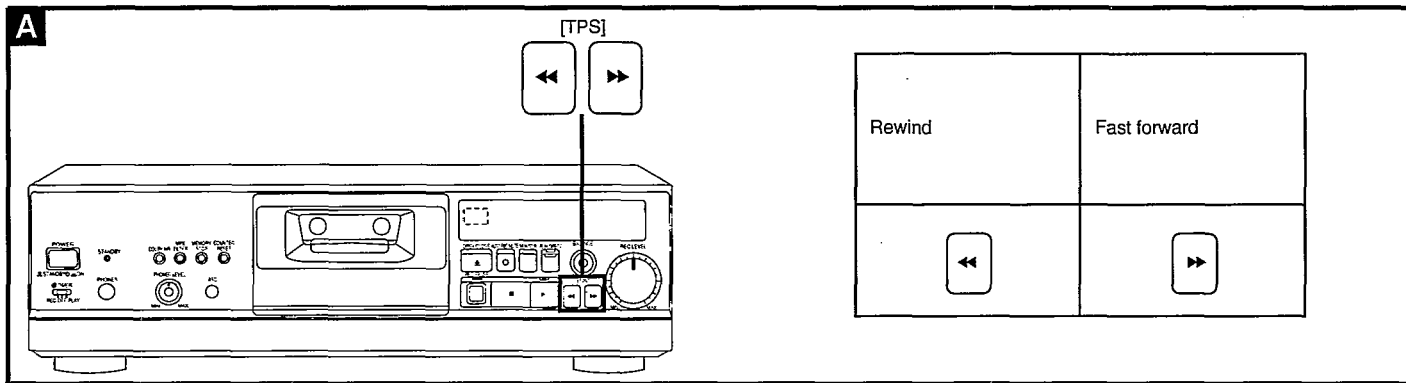
### Dolby C-type noise-reduction

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.

## About the Dolby HX-Pro headroom extension system

By functioning to improve the maximum output level of the tape's high-frequency range, this system permits recordings without a reduction in the level of the sound source's high-frequency range. In addition, by using the system in parallel with this unit's noise-reduction system, recording and playback with a greatly extended dynamic range is possible.



**To fast-forward or rewind the tape** **A**

[In stop mode]

Press ◀◀ or ▶▶.

**High-speed tape transport** **A-1**

When fast-forwarding from near the beginning of the tape or when rewinding from near the end of the tape, the tape travel speed will be faster than that during normal fast-forwarding or rewind.

- During high-speed tape transport, the **H** indication will light up.
- **To return to the normal speed during high-speed tape transport**  
Press the ◀◀ or ▶▶ button corresponding to the current direction of tape travel.

**For your reference**

The tape does not always travel at high speed when you start fast-forwarding or rewinding from somewhere in the middle.

**To find the beginning of a program (TPS function)** **B**

[While tape is being play back]

Press ◀◀ or ▶▶.

(The tape will be re-wound or fast-forwarded to the beginning of the track, and then playback will automatically begin.)

Tape returns to the beginning of the track currently being played, and playback begins.	Playback begins from the beginning of the next track.
◀◀	▶▶

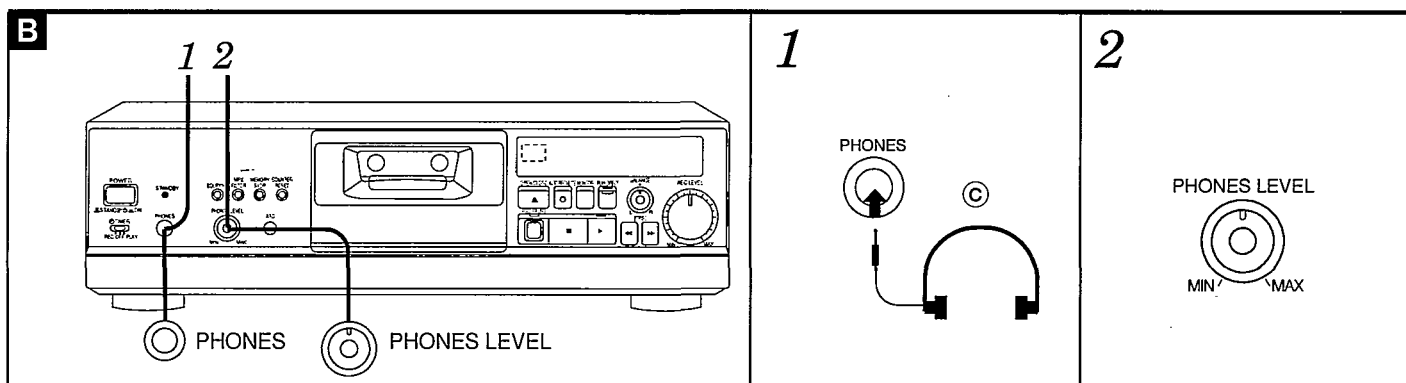
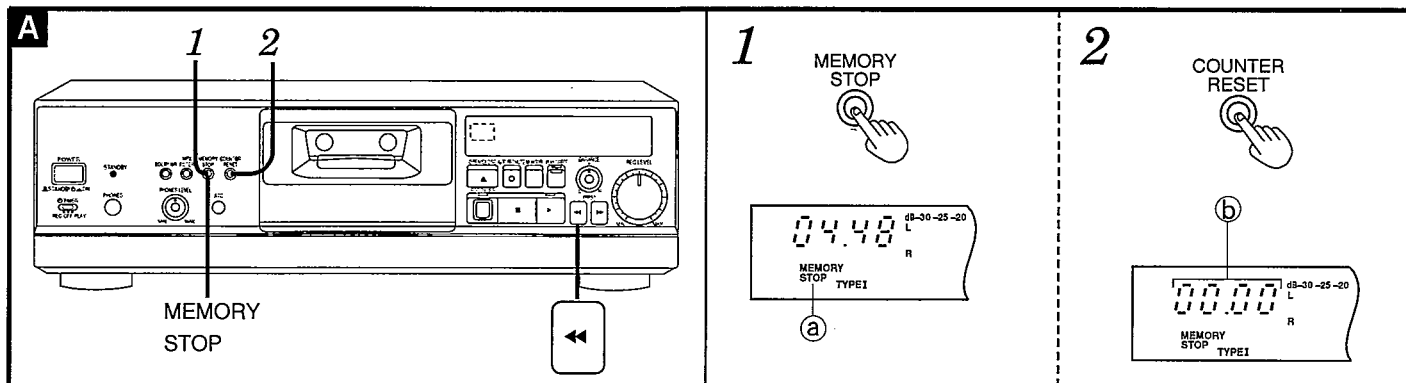
- During operation of the TPS function, "▷" indicator will flash quickly.
- To find the beginning of a track which is several tracks before or after the track currently being played, repeat the procedure until the desired track is found.

**Note**

Because the TPS function utilizes the blank spaces between tracks, it may not be able to function properly under the following conditions:

- When there is less than 4 seconds of silent interval between tracks
- When there are no completely silent intervals (such as when the tape has been recorded using a microphone)
- When there are especially low-level parts or silent parts inside a track (such as sometimes occurs in classical music)
- If the ◀◀ or ▶▶ button is pressed during playback when less than 10 seconds has elapsed from the beginning of the track or there is less than 10 seconds remaining to the beginning of the next track
- If the tracks have been recorded with a fade-in (a gradual increase in the recording level) or a fade-out (a gradual decrease in the recording level)





## Memory stop function **A**

- [While the tape deck is paused, playing back or recording a tape]  
Press **MEMORY STOP**.  
Ⓐ Illuminates
- [While the tape deck is paused, playing back or recording a tape]  
Press **COUNTER RESET** at the point where you wish to start playback or recording.  
This point will be memorized as the rewind position.  
Ⓑ The counter will be reset to "00.00".

### To rewind to the memorized point:

[While the tape deck is paused after playback or recording]

Press **◀◀** to rewind the tape.

The tape will stop rewinding when the counter reaches "00.00".

### To clear a memory stop point:

Press **MEMORY STOP**.

#### **Note**

The position where the counter was reset and the actual stopping position may be slightly different (within an error of 4 seconds).

## Listening through headphones **B**

### Preparation:

Set **PHONES LEVEL** to "MIN".

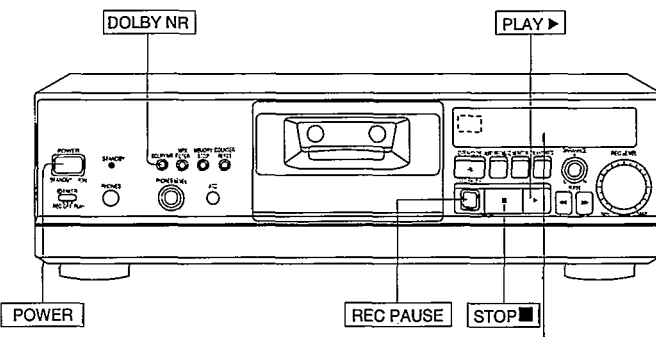
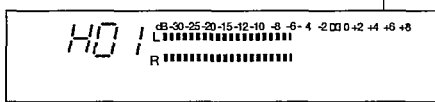
- Connect the headphones.**  
Ⓒ Headphones (not included)  
Plug type: 6.3 mm phone plug stereo type
- Use the PHONES LEVEL control to adjust the volume.**  
To increase the volume:  
Turn to the right  
  
To decrease the volume:  
Turn to the left

#### **Note**

Avoid listening for prolonged periods of time to prevent hearing damage.

## ■ SELF-DIAGNOSTIC

On this unit, each automatic adjustment result are displayed on the FL display. This function is convenient to check or identify.

Indication Procedure	Indication Position
<ul style="list-style-type: none"> <li>• Normal blank tape (which has the erase preventing piece folded.)</li> <li>• Normal blank tape (which has the erase preventing pieces respectively.)</li> </ul> <p><b>To enter Self-Diagnostic mode</b></p> <ol style="list-style-type: none"> <li>1. Check the deck is empty (no cassette tape), then turn on the power.</li> <li>2. Press and hold the DOLBY NR button (for more than 3 seconds), and also press the STOP (■) button until the level meter changes from constantly lit to blinking.</li> </ol> <p><b>To indicate Self-Diagnostic Function</b></p> <ol style="list-style-type: none"> <li>1. Insert a normal tape for the deck, either side A or B of which has the erase preventing piece folded. Then close the cassette holder.</li> <li>2. Press the PLAY (▶) button and play the tape for more than 1 second, then press the STOP (■) button.</li> <li>3. Insert a normal blank cassette tape the deck, both sides A and B of which have the erase preventing pieces respectively, and close the cassette holder. (NOTE: The tape has to be taken up by playback for about 1 minute.)</li> <li>4. Press the REC PAUSE button. This makes the deck perform the following operations automatically.</li> </ol>	 <p>Self-Diagnostic Function Indication (Example)</p> 
<p>Record an eight-second portion with no sound. ➡</p>	<p>Record a twenty-second portion off 400 Hz test signal.</p> <p>↓</p> <p>STOP when the portion with no sound is found. ◀</p>
<p>5. Press the STOP (■) button to display the Self-Diagnostic results. When a fault occurs, the FL display indicates the results of Self-Diagnostic tests. For multiple faults, the indication changes each time. (ex... H01→H02→F01→H01→H02→F01...)</p> <p>6. If there is no fault, the counter display remains unchanged when the STOP (■) button is pressed.</p>	<p>TPS-REVIEW search mode ◀</p> <p>Stop the unit. ◀</p>
<p><b>To resume Ordinary Indication</b></p> <p>To return the display to normal mode, switch the power off and then back on again.</p>	
<p><b>To indicate Self-Diagnostic Function again</b></p> <p>To have the indication appear again, take the above-stated steps 1 and 2 of "To enter Self-Diagnostic mode", and the STOP (■) button is pressed.</p>	
<p><b>To clear the memory of the Self-Diagnostic mode</b></p> <p>The contents of the Self-Diagnostic mode are stored in memory. To clear the memory, press the STOP (■) button for more than 6 seconds until "CL" appears in the FL display. After the repairing, the memory must be cleared.</p>	

## Indication Text

Symbol	Trouble	Remedy
H01	Irregular action of cassette mechanism.	The cassette mechanism mode switch (S971) and solenoid are defective. (Check and replace them.)
H02	No recording can be made, or the unit is placed in the recording mode though the erase preventing piece has been broken.	The erase preventing switch (S975) contacts improperly, or there is a shortcircuit. (Check and replace the switch.)
H03	Pressing the PLAY (▶) button fails to play the tape. Pressing the PLAY (▶) button causes the motor to rotate though nocassette tape is in.	The cassette half detect switch (S972) contacts improperly, or there is a shortcircuit. (Check and replace the switch.)
H04	The cassette holder will not open or close when the OPEN/CLOSE (▲) button is pressed.	The cassette holder open/close detect switch (S851, 852) contacts improperly, or there is a shortcircuit. (Check and replace the switch.)
H05	Pressing the OPEN/CLOSE (▲) button causes the cassette holder to open after it has closed, and vice versa.	
H06	No treble is produced when a normal tape is played or recorded.	The auto tape select (CrO <sub>2</sub> ) switch (S973) contacts improperly, or there is a shortcircuit. (Check and replace the switch.)
H07	Excessive treble is produced when a CrO <sub>2</sub> /Metal tape is played, or the recorded treble is distorted and at a low level.	The auto tape select (Metal) switch (S976) contacts improperly, or there is a shortcircuit. (Check and replace the switch.)
F01	When the PLAY (▶) button is pressed, the tape runs a little and stops soon.	The photo interrupter IC (IC971, 972) is defective and, as the result, reel pulse is out of order. (Check and replace the IC.)
F02	TPS does not operate.	The playback IC (IC2) is defective. (Check and replace the IC.)
F03	The cassette holder will not open or close when the OPEN/CLOSE (▲) button is pressed. Irregular action of cassette mechanism.	Reel motor is defective. (Check and replace it.)

## 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. Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.

### • Contents

#### •Checking Procedure for each P.C.B.

Page.

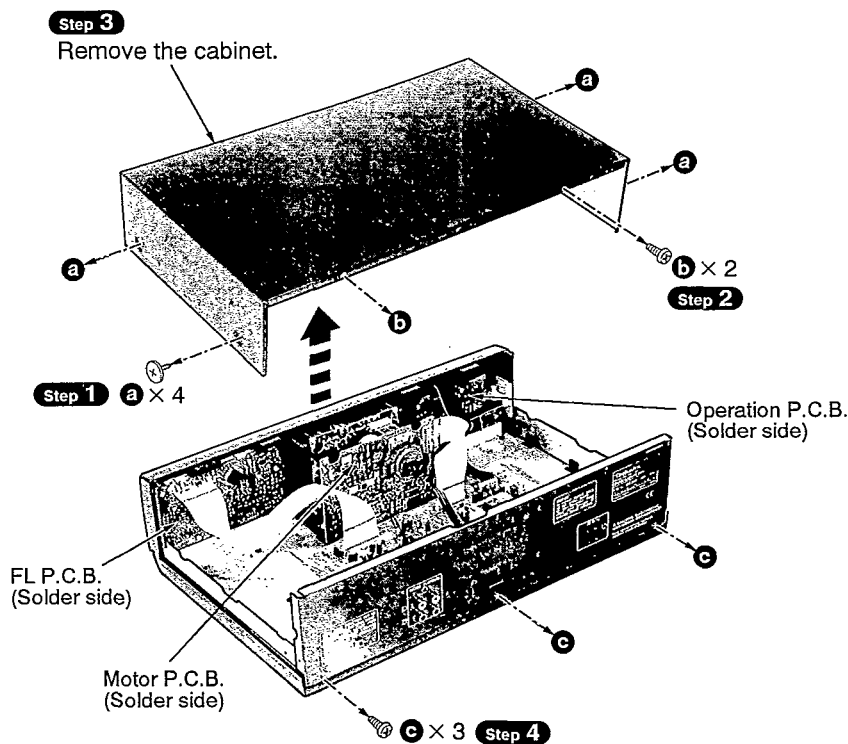
1. Checking for the motor P.C.B., FL P.C.B., operation P.C.B. and main P.C.B. .... 12,13.

#### •Main Component Replacement Procedures

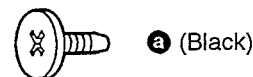
1. Replacement for the cassette lid ass'y, sub cassette holder and cassette holder ass'y. .... 13~17.
2. Replacement for the pinch arm (F), head block (rec./playback) and erase head. .... 18.
3. Replacement for the belt, reel motor and capstan motor. .... 18~20.
4. Replacement for the parts mounted on mechanism P.C.B. and solenoid. .... 21.

### ■ Checking Procedure for each P.C.B.

#### 1. Checking for the motor P.C.B., FL P.C.B., operation P.C.B. and main P.C.B.



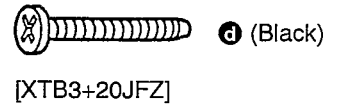
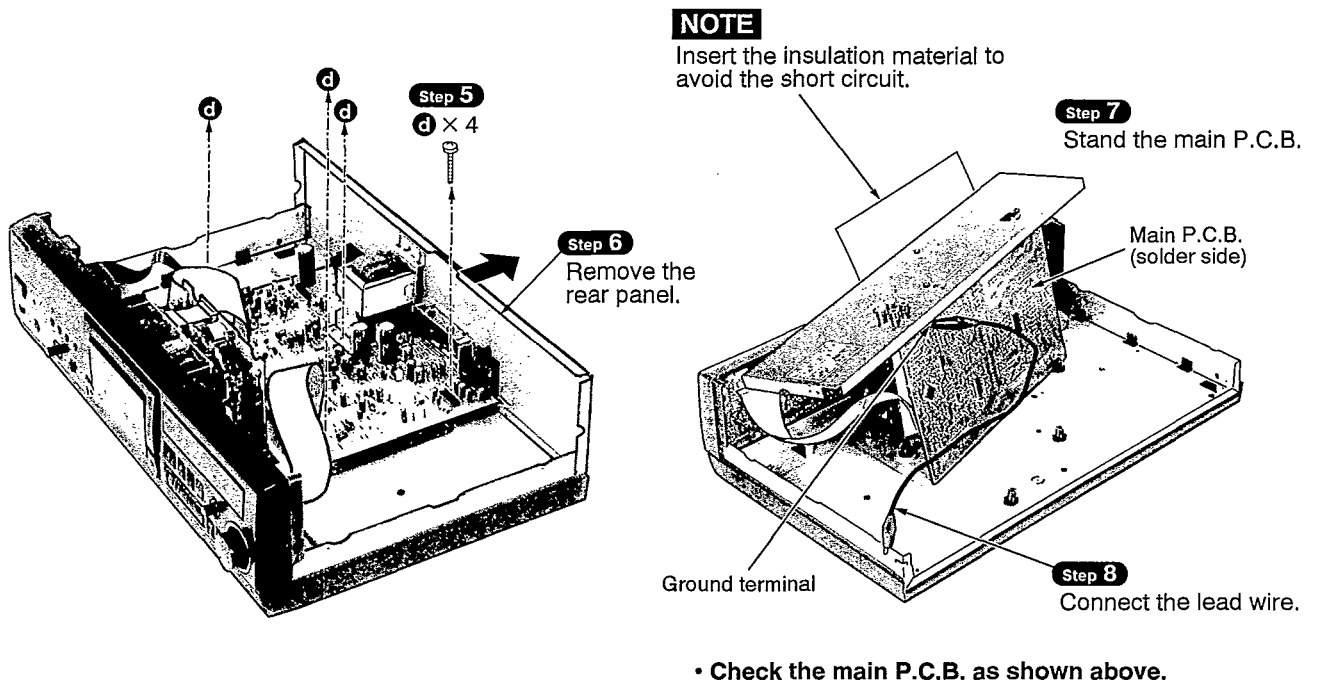
• Check the motor P.C.B., FL P.C.B. and operation P.C.B. as shown above.



[RHD30035-K1]



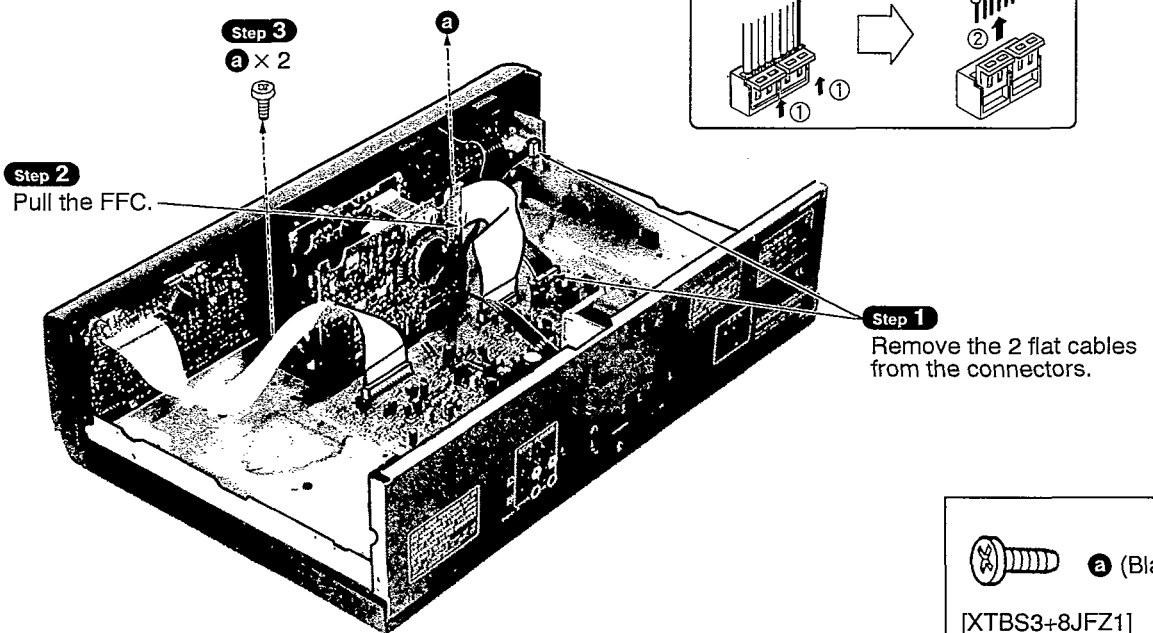
[XTBS3+8JFZ1]




## Main Component Replacement Procedures

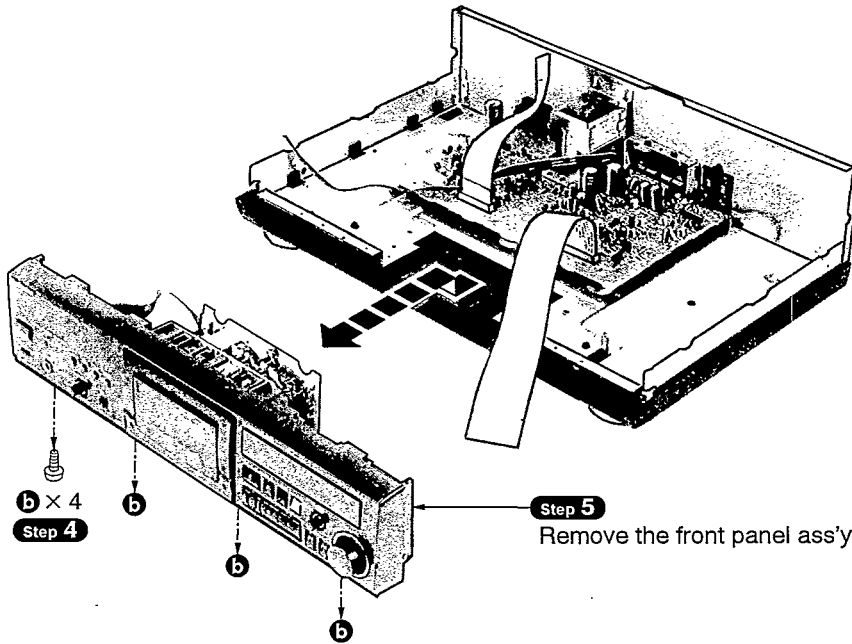
### 1. Replacement for the cassette lid ass'y, sub cassette holder and cassette holder ass'y

• Follow the item 1 ( **Step 1** ~ **Step 3** ) in checking procedures for each P.C.B. on page 12.



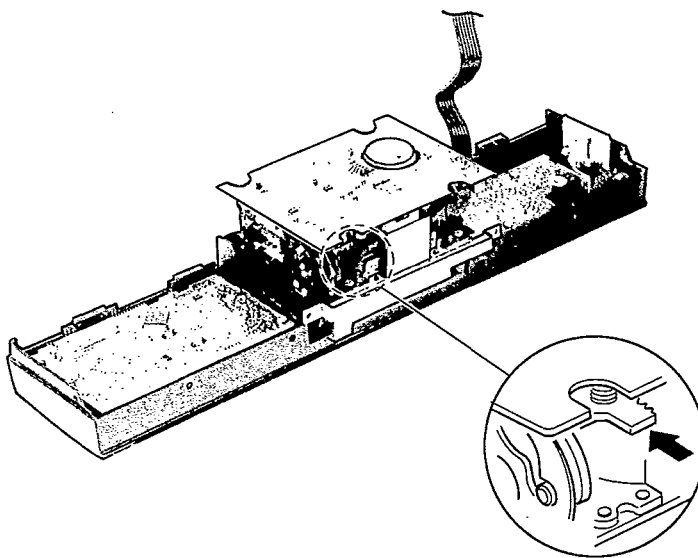
 **b** (Black)

[XTBS3+8JFZ1]

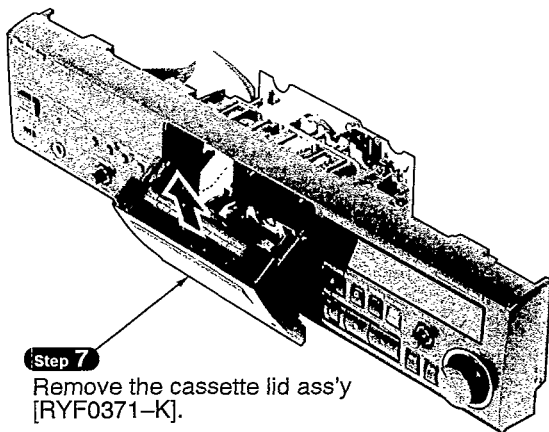


**b** x 4  
**Step 4**

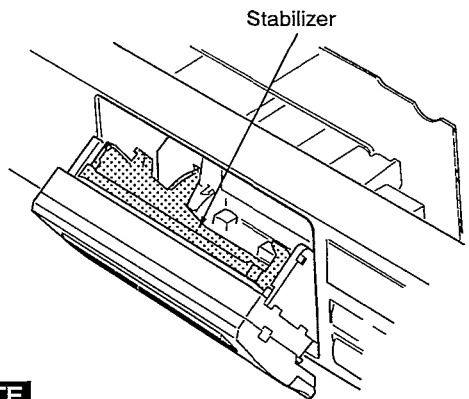
**Step 5**  
Remove the front panel ass'y.




**Step 6**  
Force the drive rack, and then open the cassette lid ass'y.



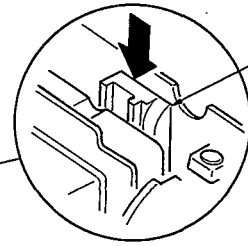
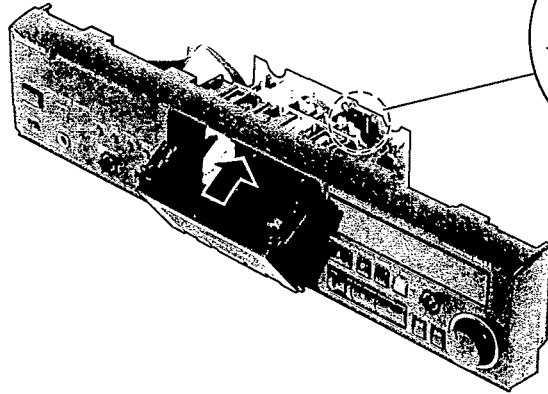
**Step 7**  
Remove the cassette lid ass'y [RYF0371-K].



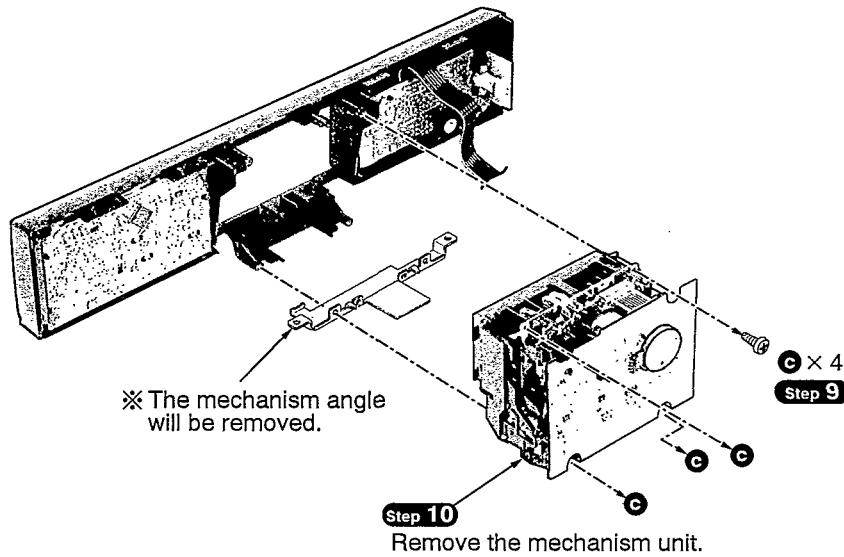
**NOTE**  
When replacing the cassette lid ass'y and cassette holder ass'y, avoid to push the stabilizer marking with .

**Step 8**

Push the drive rack, and then close the cassette holder ass'y.



Drive rack



※ The mechanism angle will be removed.

**c** × 4  
**Step 9**

**Step 10**

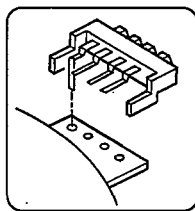
Remove the mechanism unit.

**Step 12**

Unsolder the capstan motor terminals.

**NOTE**

Handle with care the terminals.



**Step 14**

**d** × 2

**Step 15**

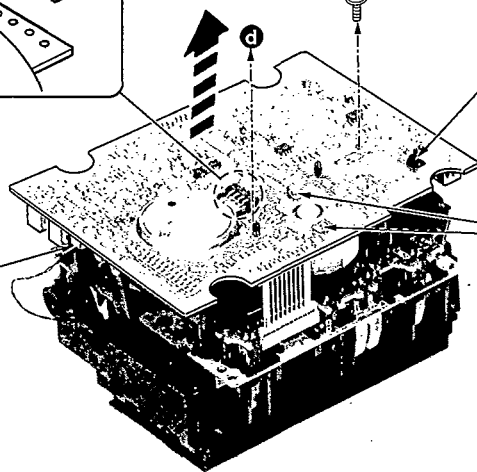
Release the claw, and then remove the motor P.C.B..

**Step 13**

Unsolder the reel motor terminals.

**Step 11**

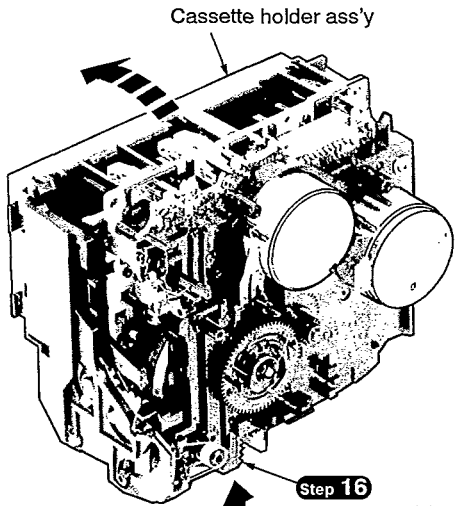
Pull the connector (CP102).



[XTB3+12GFY]



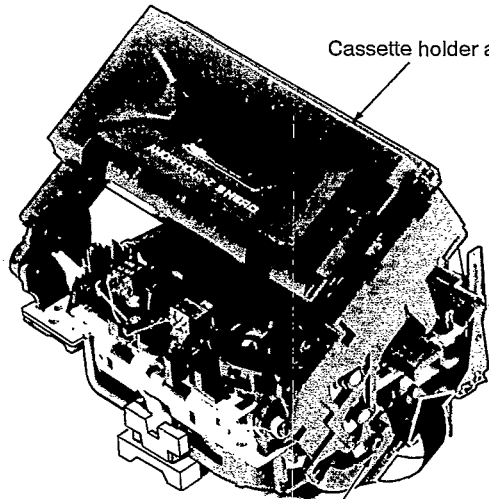
[XTW2+6S]



Cassette holder ass'y

**Step 16**

Push the drive rack, and then open the cassette holder ass'y.



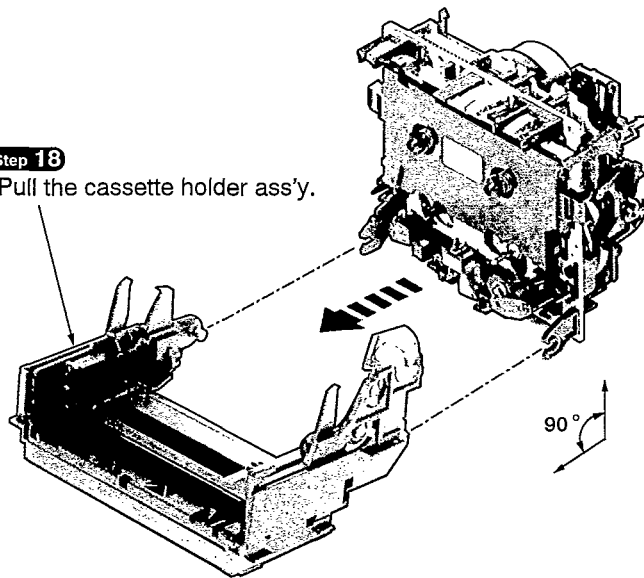
Cassette holder ass'y

**Step 17**

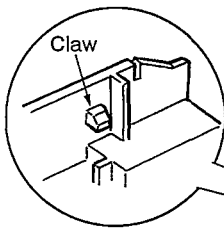
Remove the cassette holder ass'y from the drive lever shaft.

**Step 18**

Pull the cassette holder ass'y.



90°

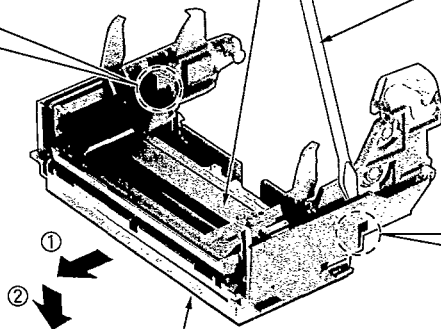


Claw

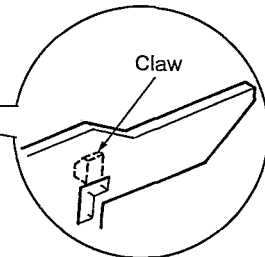
Stabilizer

**Step 19**

Release the claws on both side with minus screwdriver, and then remove the sub cassette holder in the direction of allow ① and ②.



Sub cassette holder [RKQ0190-K]



Claw

**NOTE**

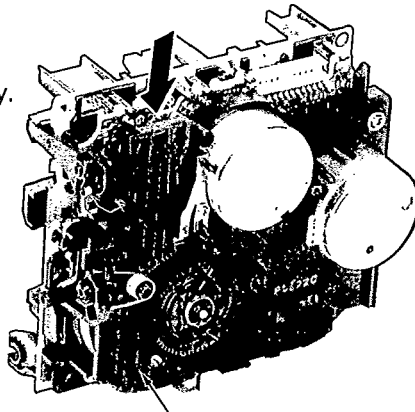
When replacing the sub cassette holder, avoid to push the stabilizer.



### Installation of the cassette holder ass'y after replacement

#### Step 20

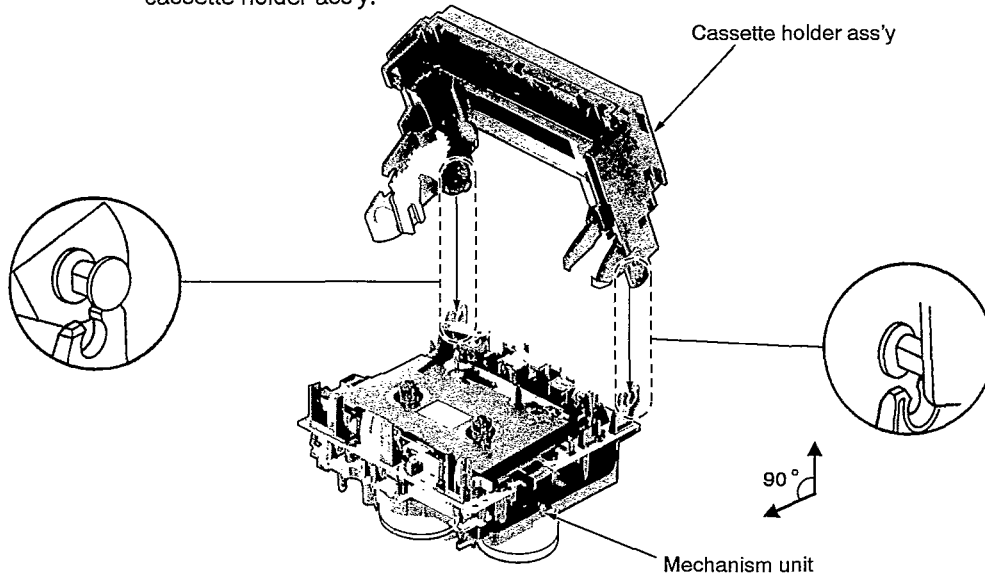
Force the drive rack fully.



Drive rack

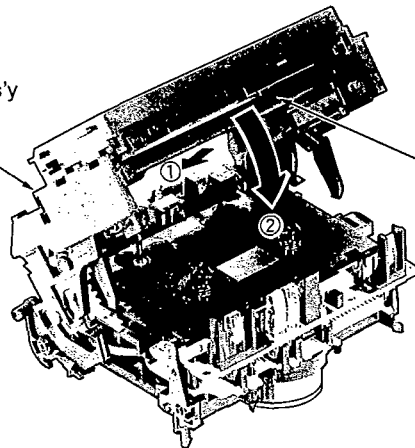
#### Step 21

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



Cassette holder ass'y

Stabilizer



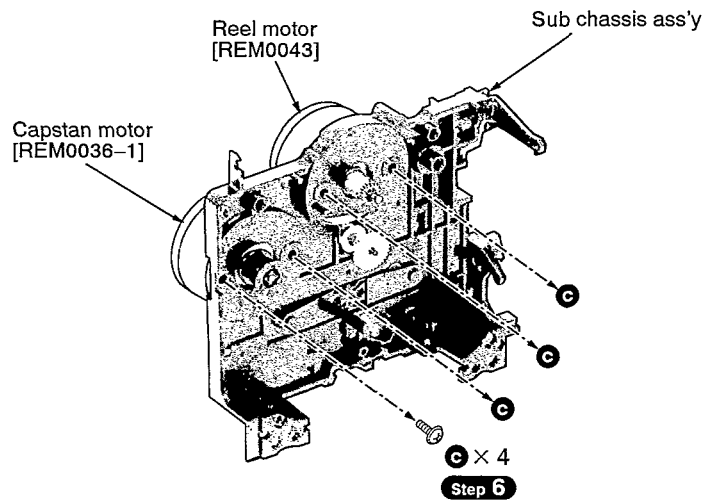
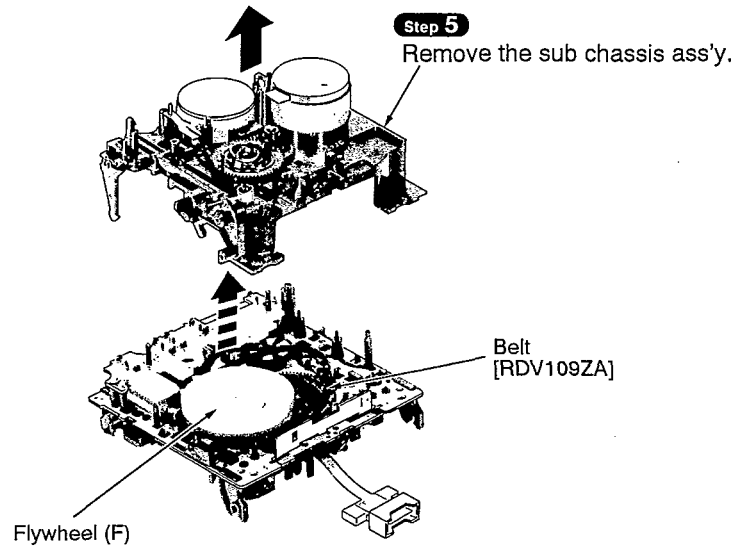
#### Step 22

Lower the stabilizer in the direction of arrow ①, and then push the cassette holder ass'y in the direction of arrow ②.





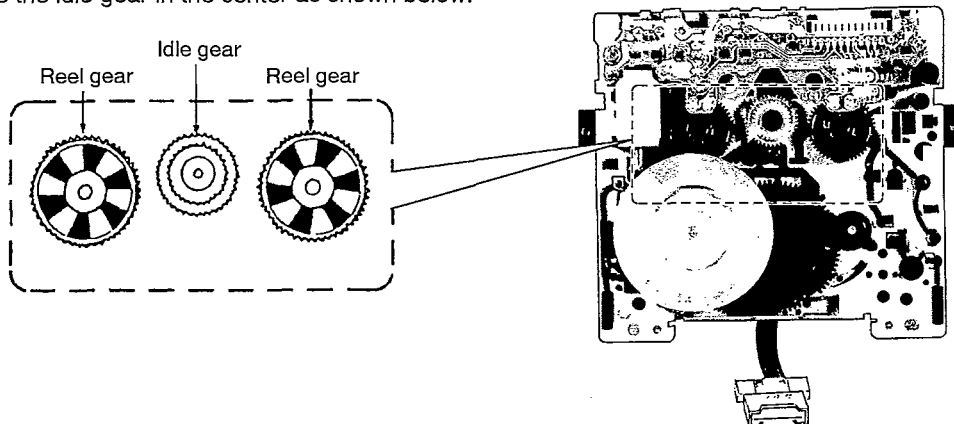
[RHD26013]



### Installation of the sub chassis ass'y after replacement

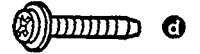
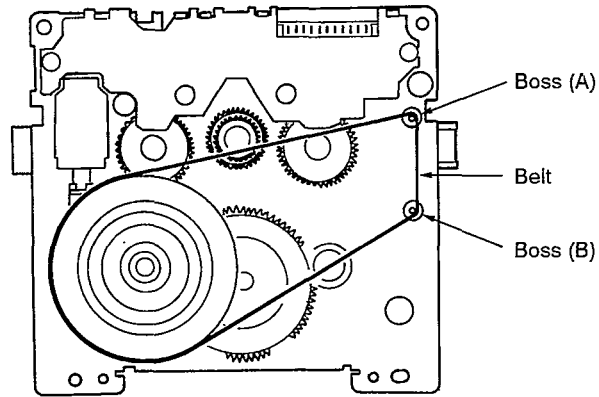
**Step 7**

Place the idle gear in the center as shown below.



**Step 8**

Temporarily secure the belt.



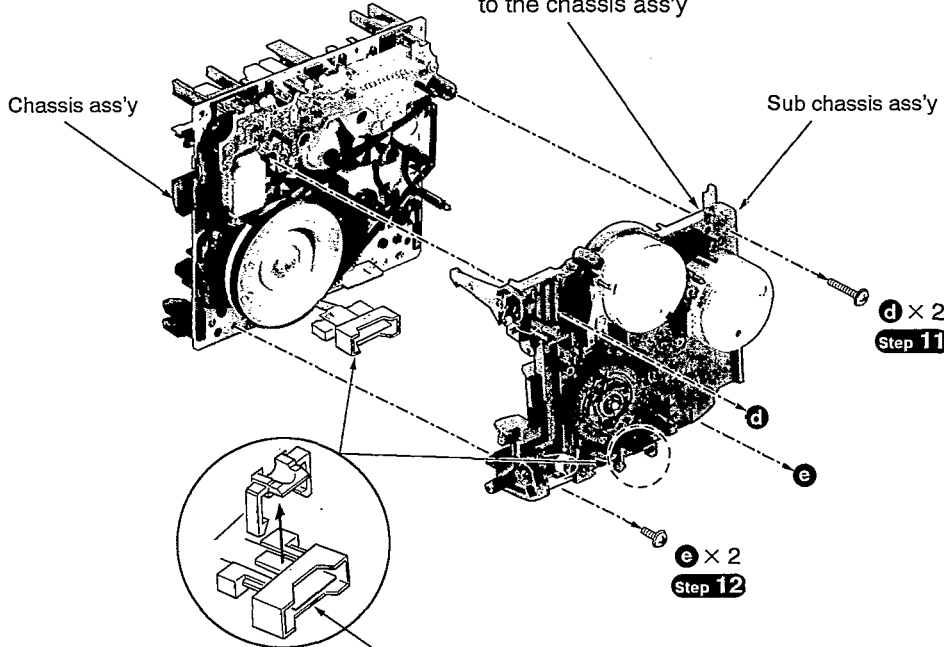
[XTW26+12S]



[XTW26+6L]

**Step 9**

Install the sub chassis ass'y to the chassis ass'y



**d** × 2  
**Step 11**

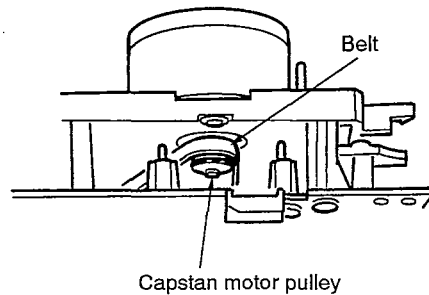
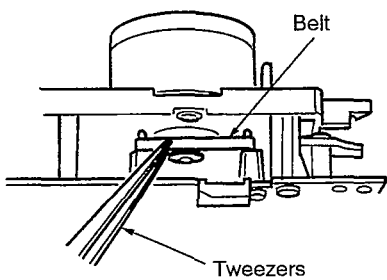
**e** × 2  
**Step 12**

**Step 10**

Install the head connector.

**Step 13**

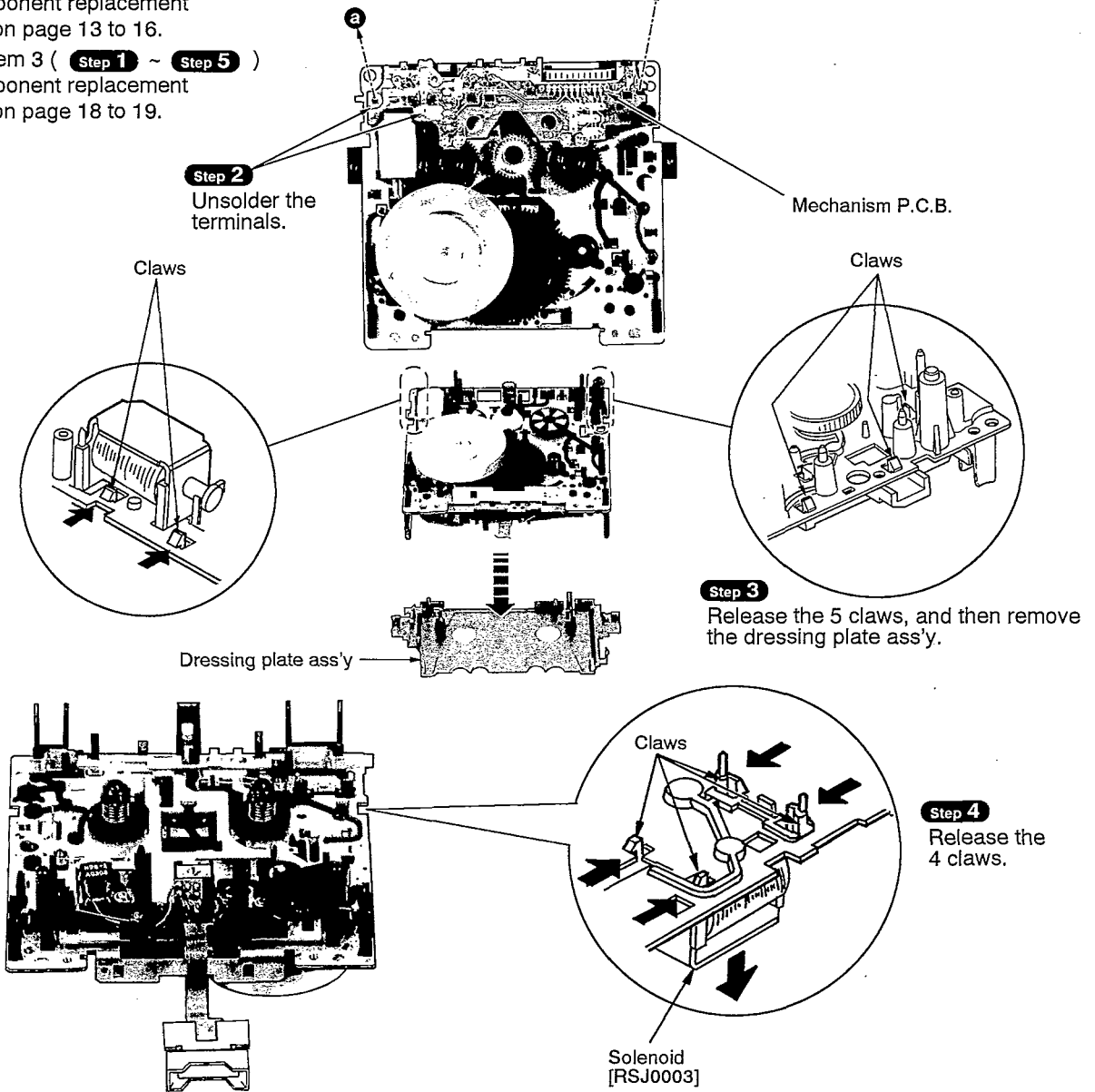
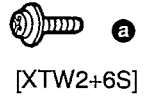
Secure the belt with the capstan motor pulley.



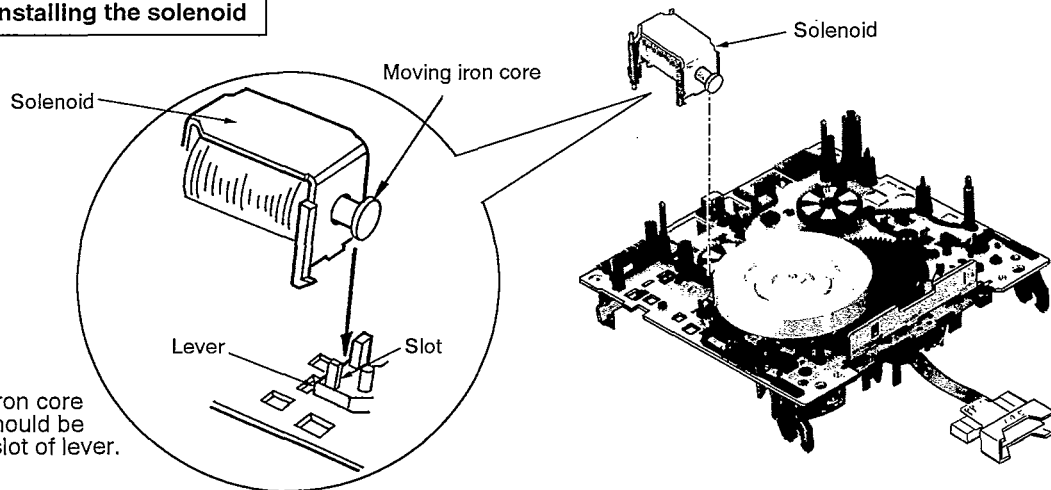
**4. Replacement for the parts mounted on mechanism P.C.B. and solenoid**

- Follow the item 1 ( **Step 1** ~ **Step 17** ) in main component replacement procedures on page 13 to 16.
- Follow the item 3 ( **Step 1** ~ **Step 5** ) in main component replacement procedures on page 18 to 19.

**Step 1**  
a x 2



**Notice for installing the solenoid**



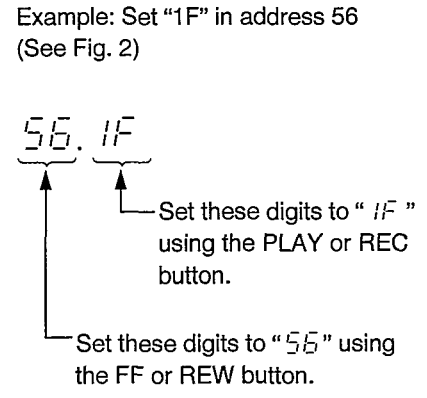
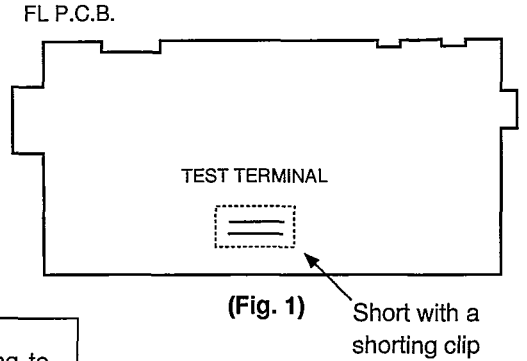
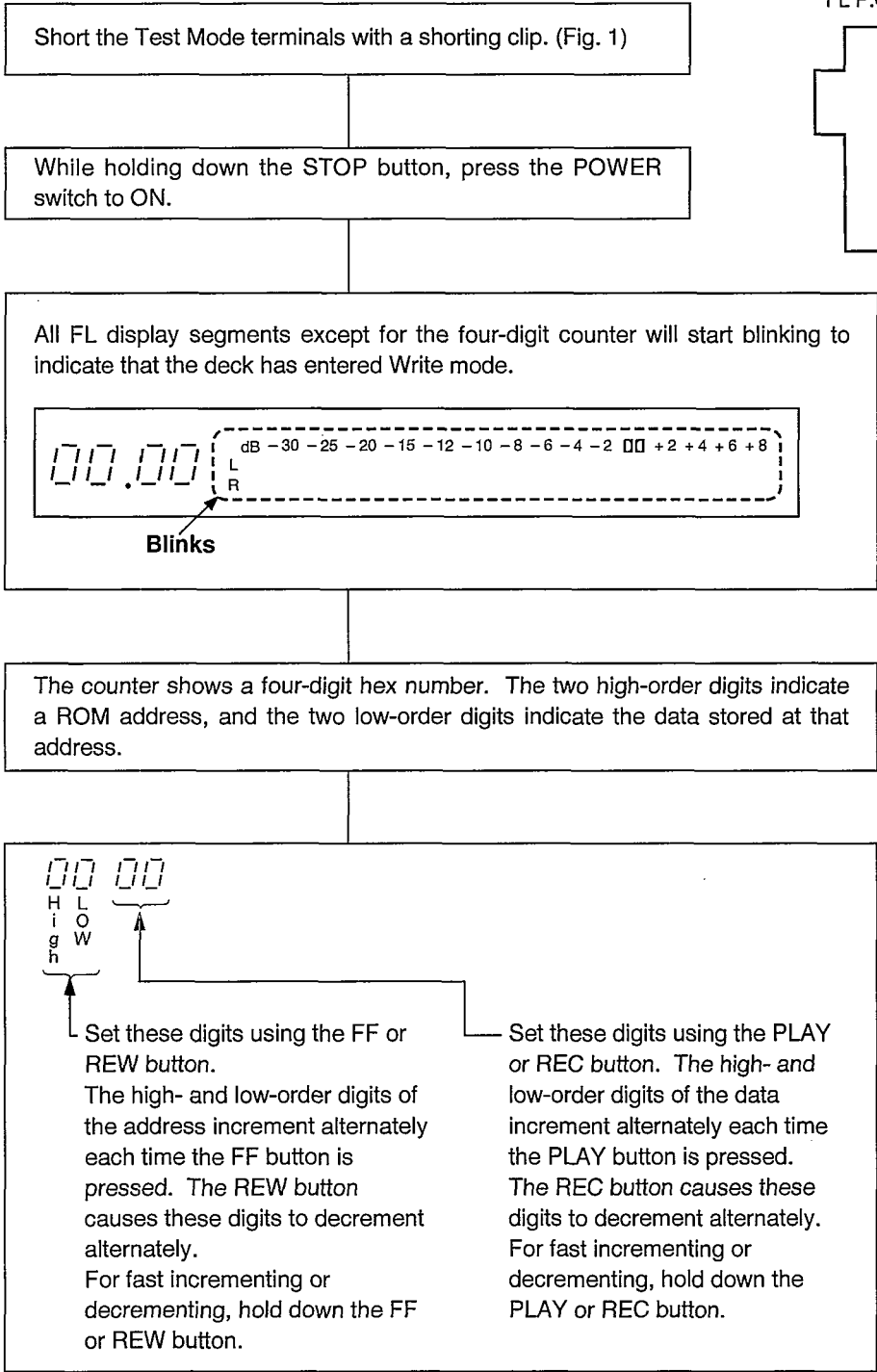
**NOTE**  
The moving iron core of solenoid should be aligned with slot of lever.

## ADJUSTMENT PROCEDURE

This unit holds recording bias and equalization data in its EEPROM chip. An internal CPU automatically adjusts playback gain, recording bias, overall gain, and overall frequency response according to the ROM data. Manual adjustment with potentiometers is no longer necessary except for head azimuth and tape speed. All other items require only measurement data checks. The adjustment and checkout procedures are as follows.

### Writing to EEPROM

The EEPROM chip holds the optimal recording bias and equalization data. If the chip has been replaced, be sure to write to it, following the steps below:

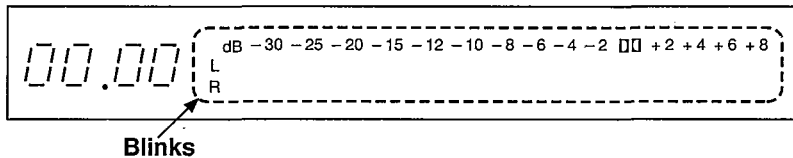


A

(A)

Begin from address  $0F$  and write data up to address  $7F$ . Check that the data at address  $7F$  is "00"(end), and then exit the write mode. (Fig. 2)

After completing ROM writing, press the STOP button to restore the normal Test mode. The four-digit counter displays.



Remove the shorting clip from the Test Mode terminals. The FL display will stop blinking.

● EEPROM MAP

High Low	0	1	2	3	4	5	6	7
0	00	—	—	—	—	—	—	—
1	00	—	—	—	—	—	—	—
2	—	00	—	—	—	—	—	—
3	—	00	—	—	—	—	—	—
4	—	0B	—	—	—	51	99	A8
5	—	28	—	—	—	00	00	00
6	—	21	—	—	—	1F	00	01
7	—	08	—	—	—	64	6A	FF
8	—	FB	—	—	—	BF	BF	FF
9	—	F5	—	—	—	—	—	—
A	—	50	—	—	—	—	—	85
B	—	60	—	—	—	73	73	73
C	—	58	—	—	—	68	68	68
D	—	8F	—	—	—	82	82	82
E	—	49	8A	8F	93	—	00	09
F	E8	53	0E	0D	0D	—	00	5A

Fig. 2

# MEASUREMENTS AND ADJUSTMENTS

## Measurement condition

- Recording-level control: Maximum
- Recording-balance control: Center
- Headphones volume control: Maximum
- Play direct switch: Off
- Dolby NR switch: Off
- ATC switch: Off
- MPX filter switch: Off
- Timer control switch: Off
- Make sure hands are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature  $20 \pm 5^{\circ}\text{C}$  ( $69 \pm 9^{\circ}\text{F}$ )

## Measuring instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator
- ATT (Attenuator)
- DC voltmeter
- Resistor ( $600\Omega$ )
- Distortion analyser

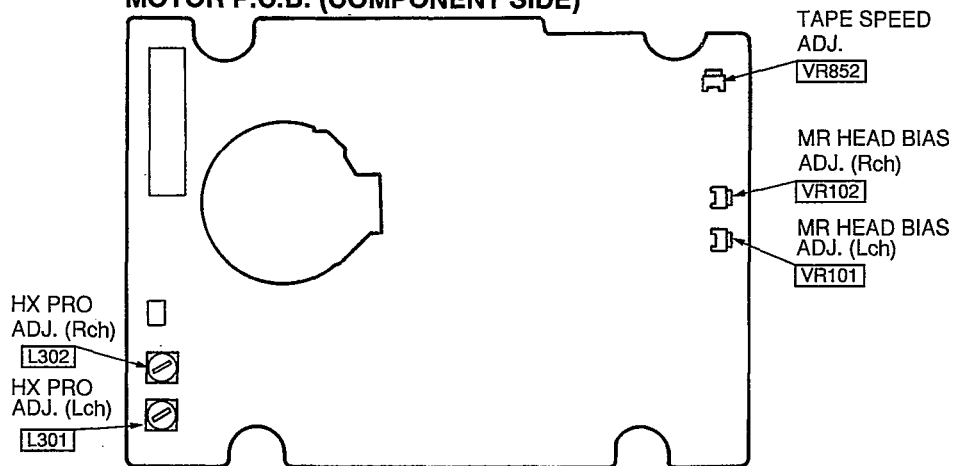
**Note:** Before adjustment, be sure to set the AF oscillator output level to 0dB (1kHz): 1V

## Test Tape

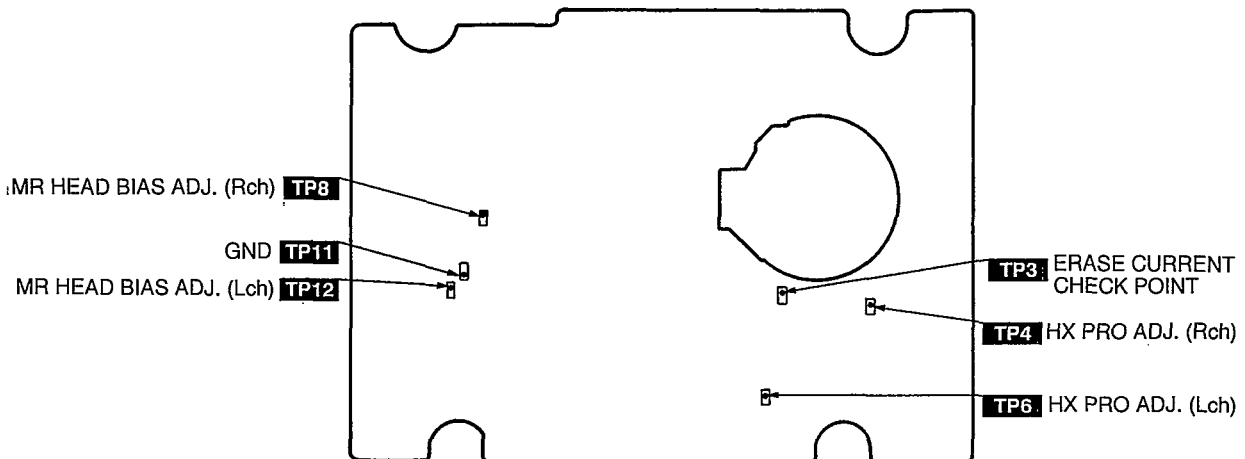
- Head azimuth adjustment (8kHz,  $-20\text{dB}$ )
  - Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz,  $-20\text{dB}$ )
  - Playback gain adjustment (315Hz, 0dB)
  - MR head bias adjustment and HX PRO adjustment.
- } : QZZCFM
- Tape speed adjustment (3kHz,  $-10\text{dB}$ ) : QZZCWAT
  - Overall gain adjustment and Overall frequency response
  - Normal blank tape
  - CrO<sub>2</sub> blank tape
  - Metal blank tape

## ● Adjustment Points

**MOTOR P.C.B. (COMPONENT SIDE)**



**MOTOR P.C.B. (FOIL SIDE)**





## HEAD AZIMUTH ADJUSTMENT

1. Connect the measuring instrument as shown in Fig. 1.
2. Playback the azimuth adjustment portion (8kHz, -20dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the output of the Rch are maximized. (Refer to Fig. 2)
3. After the adjustment, apply screwlock to the azimuth adjusting screw.

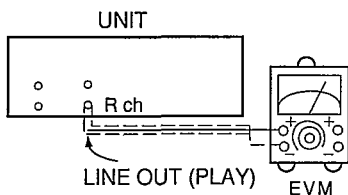


Fig. 1

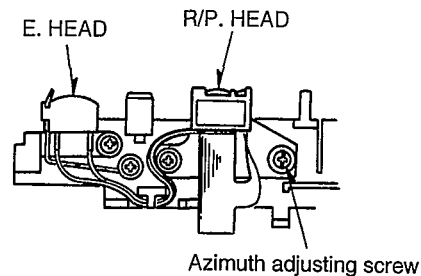


Fig. 2

## TAPE SPEED ADJUSTMENT

1. Connect the measuring instrument as shown in Fig. 3.
2. Playback the middle portion of the test tape (QZZCWAT).
3. Adjust VR852 for the output value shown below.

**Adjustment target:  $3000 \pm 15\text{Hz}$  (NORMAL speed)**

**Standard value:  $3000 \pm 45\text{Hz}$  (NORMAL speed)**

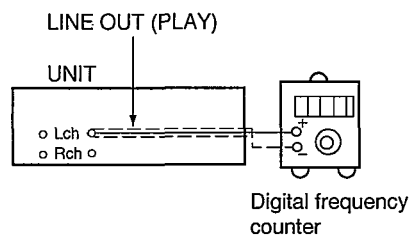


Fig. 3

## MR HEAD BIAS ADJUSTMENT

1. Connect the measuring instrument as shown in Fig. 4.
2. Short the section between the test points. (Lch: **TP12** and **TP11**, Rch: **TP8** and **TP11**)
3. Playback the playback gain adjustment portion (315 Hz, 0dB) of test tape (QZZCFM).
4. Adjust the VR101 (Lch) and VR102 (Rch) until the distortion is minimized.

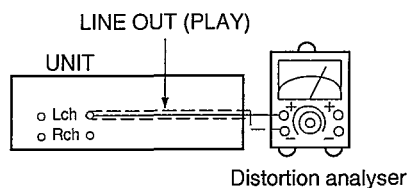


Fig. 4

**PLAYBACK GAIN ADJUSTMENT**

1. Connect the measuring as shown in Fig. 5. Adjust the frequency of OSC (315Hz).
2. With no tape loaded in the deck, press and hold the REC button. Adjust the test signal level using the Rec. Level and Balance controls until the line output levels on both channels, Lch and Rch, are 320mV. When the adjustment is complete, release the REC button. (The deck stores the data at the moment the REC button is released.)
3. Load the test tape (QZZCFM) into the deck and locate the part where the playback gain test tone (315Hz, 0dB) is recorded. Press the ATC button and then PLAY button. (Automatic adjustment of the Playback gain adjustment.) After this, play back the tape and verify that the output level falls in the specified range.

**Standard value: 320mV±0.5dB**

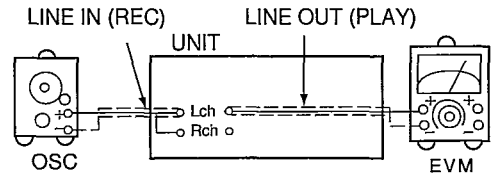


Fig. 5

**HX PRO ADJUSTMENT**

1. Connect the measuring instrument as shown in Fig. 6.
  2. Insert the Metal blank tape into the deck, and press the REC PAUSE button.
  3. Connect the EVM between TP6 (Lch) and TP4 (Rch). Adjust the L301 (Lch) and L302 (Rch) until the outputs are minimized.
- (Note: Please refer to the printed circuit board diagram for test point locations.)

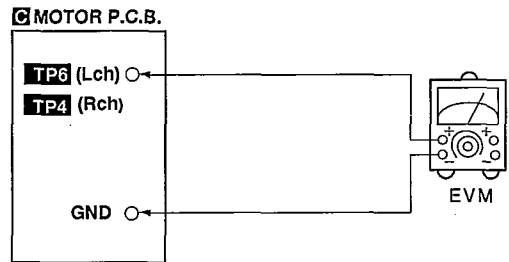


Fig. 6

**PLAYBACK FREQUENCY RESPONSE**

1. Connect the measuring instrument as shown in Fig. 7.
2. Playback the frequency response portion (315Hz, 12.5kHz~63Hz, -20dB) of the test tape (QZZCFM).
3. Assure that the frequency response is within the range shown in Fig. 8 for both Lch and Rch.

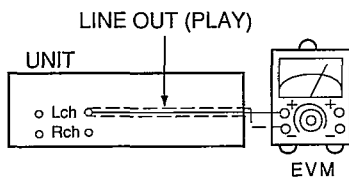


Fig. 7

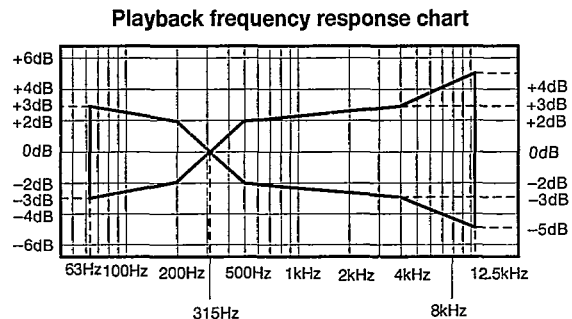


Fig. 8

## ERASE CURRENT CONFIRMATION

1. Connect the measuring instrument as shown in Fig. 9.
2. Insert the Metal blank tape into the deck, and press the REC PAUSE button.
3. Check if the output at this time between the erase current confirmation point **TP3** and **GND** (the output on both edged of R321) is within the standard value.

**Notes:**

- The test tape is not required when confirming the erase current.
- Please refer to the printed circuit board diagram (C MOTOR P.C.B.) for test point locations.

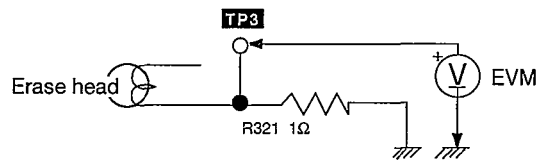


Fig. 9

Standard value	EVM reading
Metal tape: $190 \pm 20\text{mA}$	$(190 \pm 20\text{mA})$

## CONFIRMATION OF THE OVERALL GAIN AND OVERALL FREQUENCY RESPONSE

1. Connect the measuring instrument as shown in Fig. 10.
2. Load a Normal blank tape into the deck, press the ATC button, and then press the REC button. (automatic adjustment of the Overall gain and Overall frequency response.)
3. In the Record Pause mode, and apply the reference input signal (1kHz,  $-24\text{dB}$ ) to the Rec. input. adjust the output to 320mV with the attenuator, and start recording.
4. While playing back the reference signal just recorded, verify that the output level falls in following range.

**Standard value:  $320\text{mV} \pm 0.5\text{dB}$**

5. Afterward, apply a signal (frequency at the measured point in the range from 50Hz to 10kHz), whose level is 20dB lower than the reference signal level (1kHz,  $-24\text{dB} = \text{approx. } 63\text{mV}$ ), to the Rec. input. Then start recording with a Normal blank tape.
  6. Play back the test signals just recorded and verify that the levels at the test frequencies fall in the ranges specified in Fig.11 with respect to the reference signal level.
  7. Repeat steps 5 and 6 above for CrO<sub>2</sub> blank test tape and Metal blank test tape, in these cases raising the upper end of the test signal frequency range to 12.5kHz. Verify that the signal levels at the test frequencies fall in the ranges specified in Fig. 12 with respect to the reference signal level.
- Steps 1 through 4 above are concerned with overall gain; steps 5 through 7 pertain to overall frequency response.

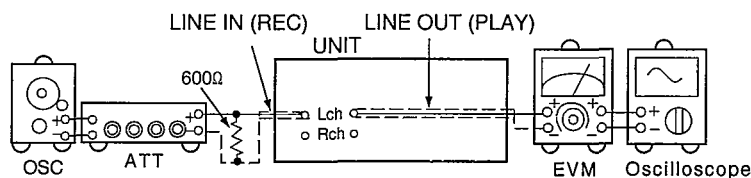


Fig. 10

**Normal Overall frequency response chart (NR OUT)**

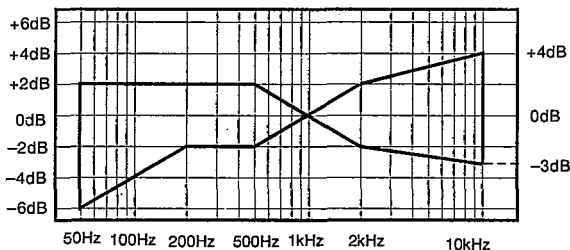


Fig. 11

**CrO<sub>2</sub> Metal Overall frequency response chart (NR OUT)**

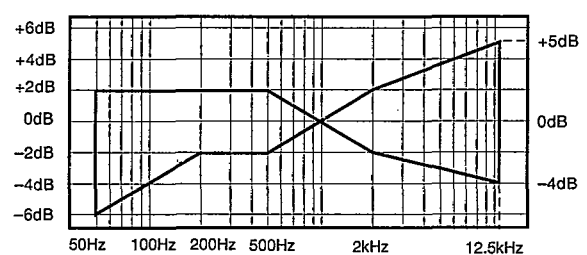
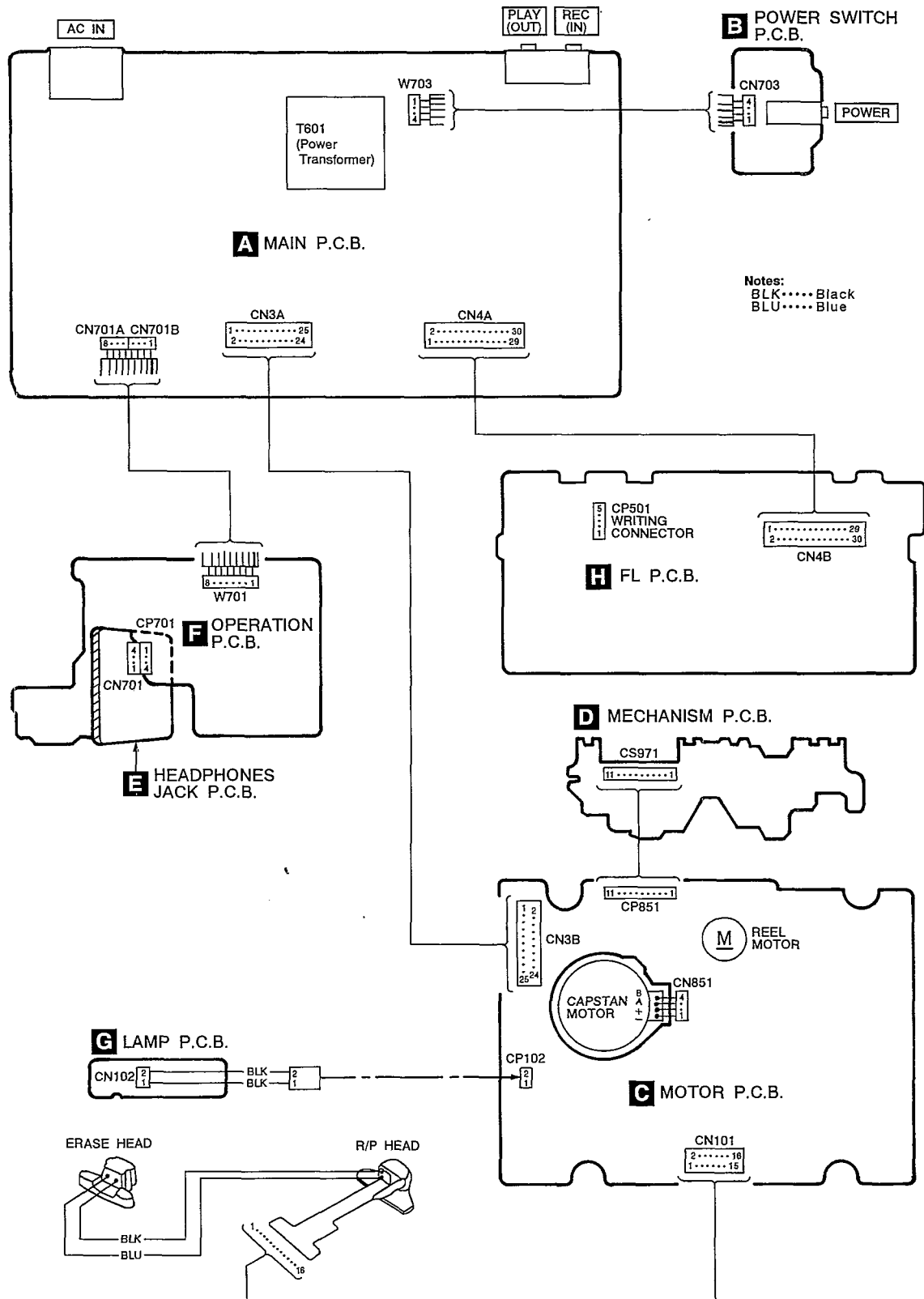
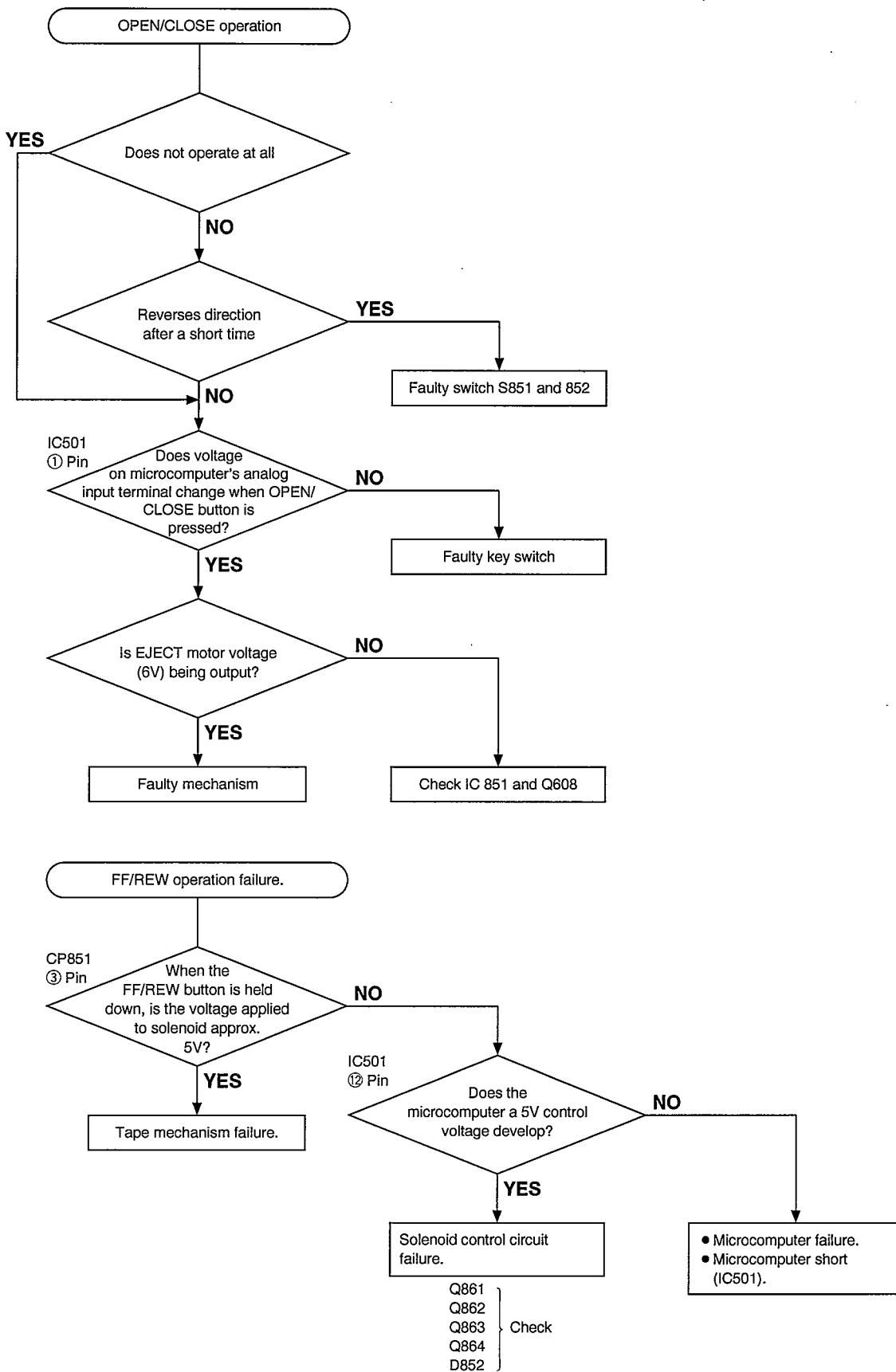


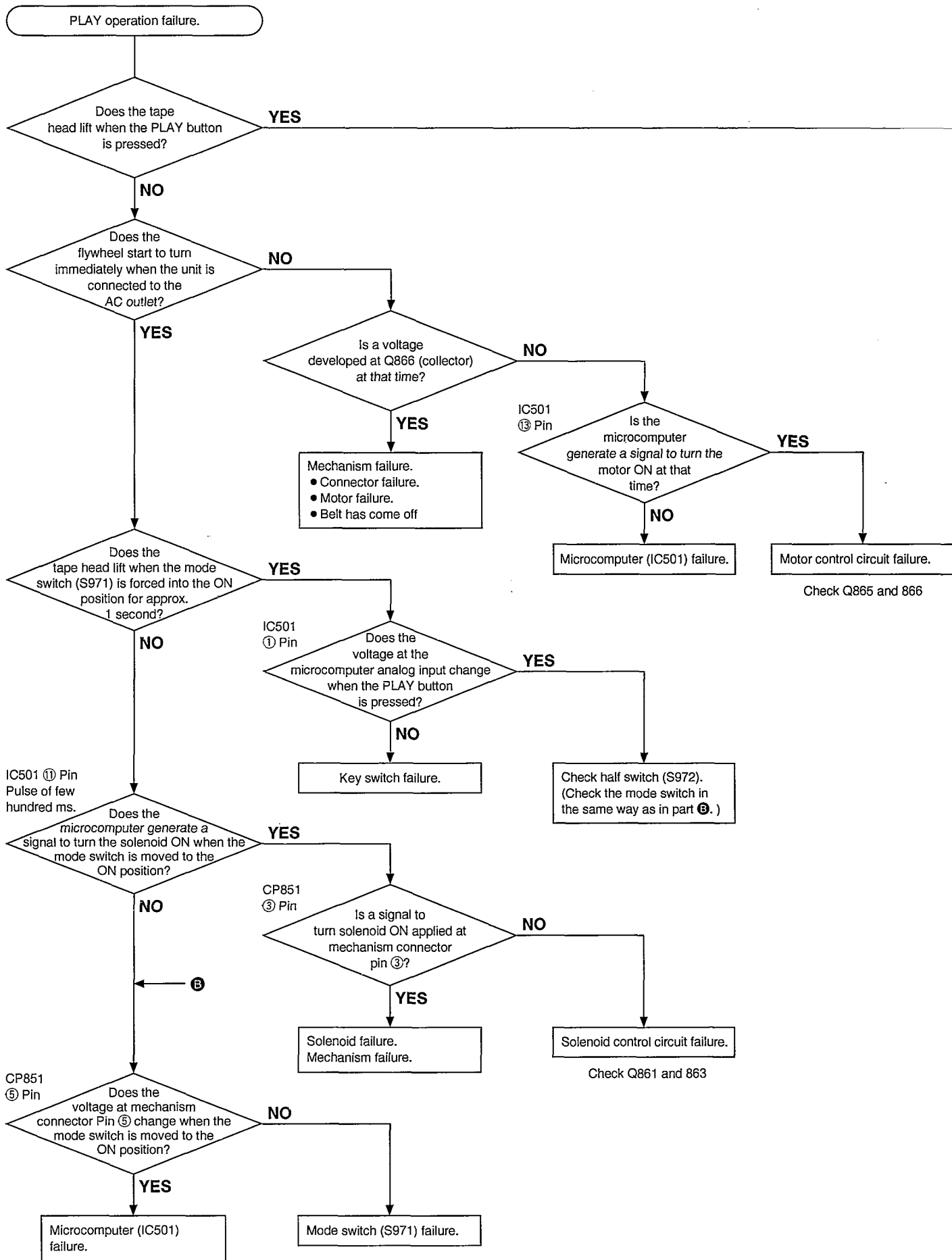
Fig. 12

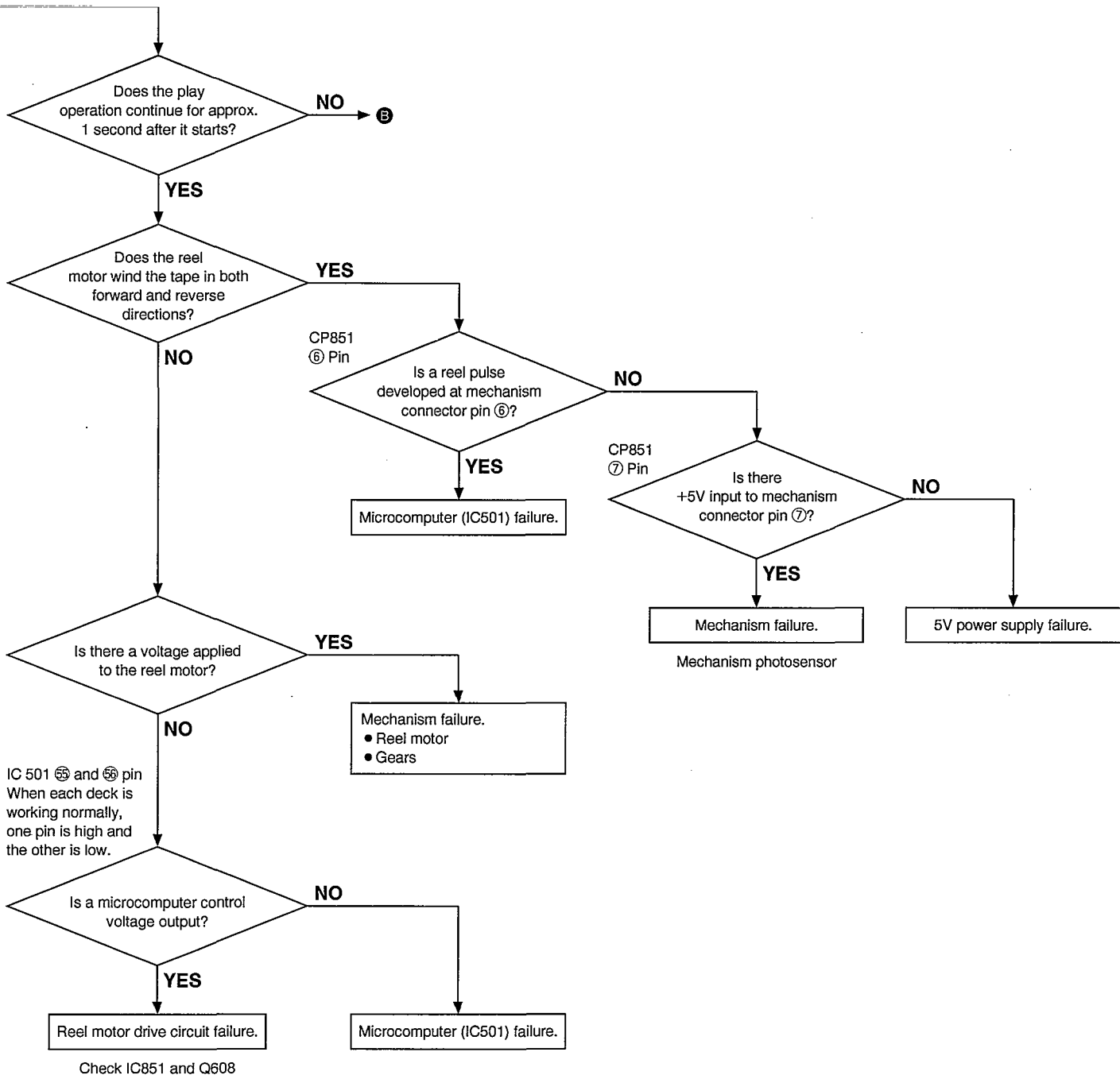
# WIRING CONNECTION DIAGRAM



# TROUBLESHOOTING GUIDE

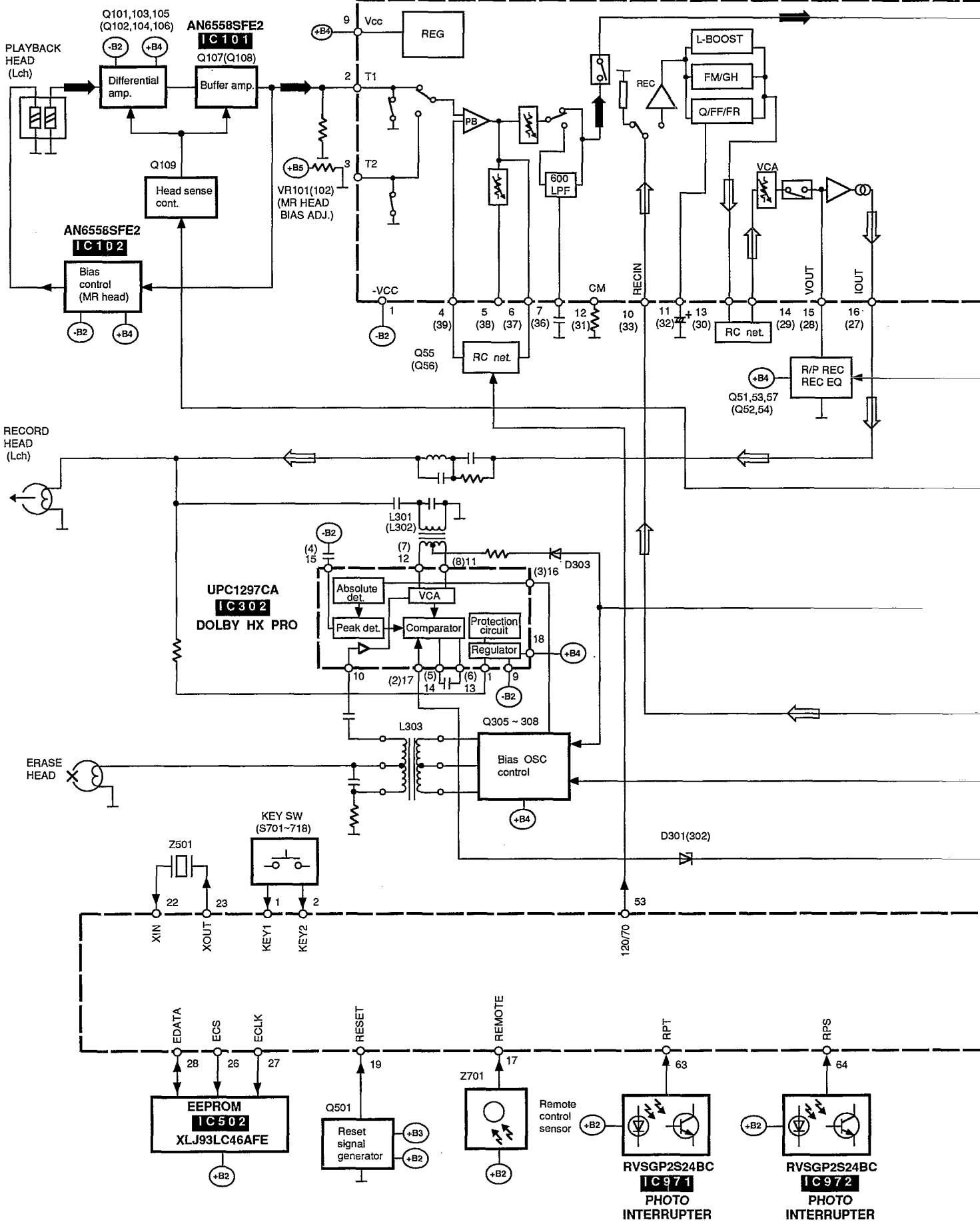






# BLOCK DIAGRAM

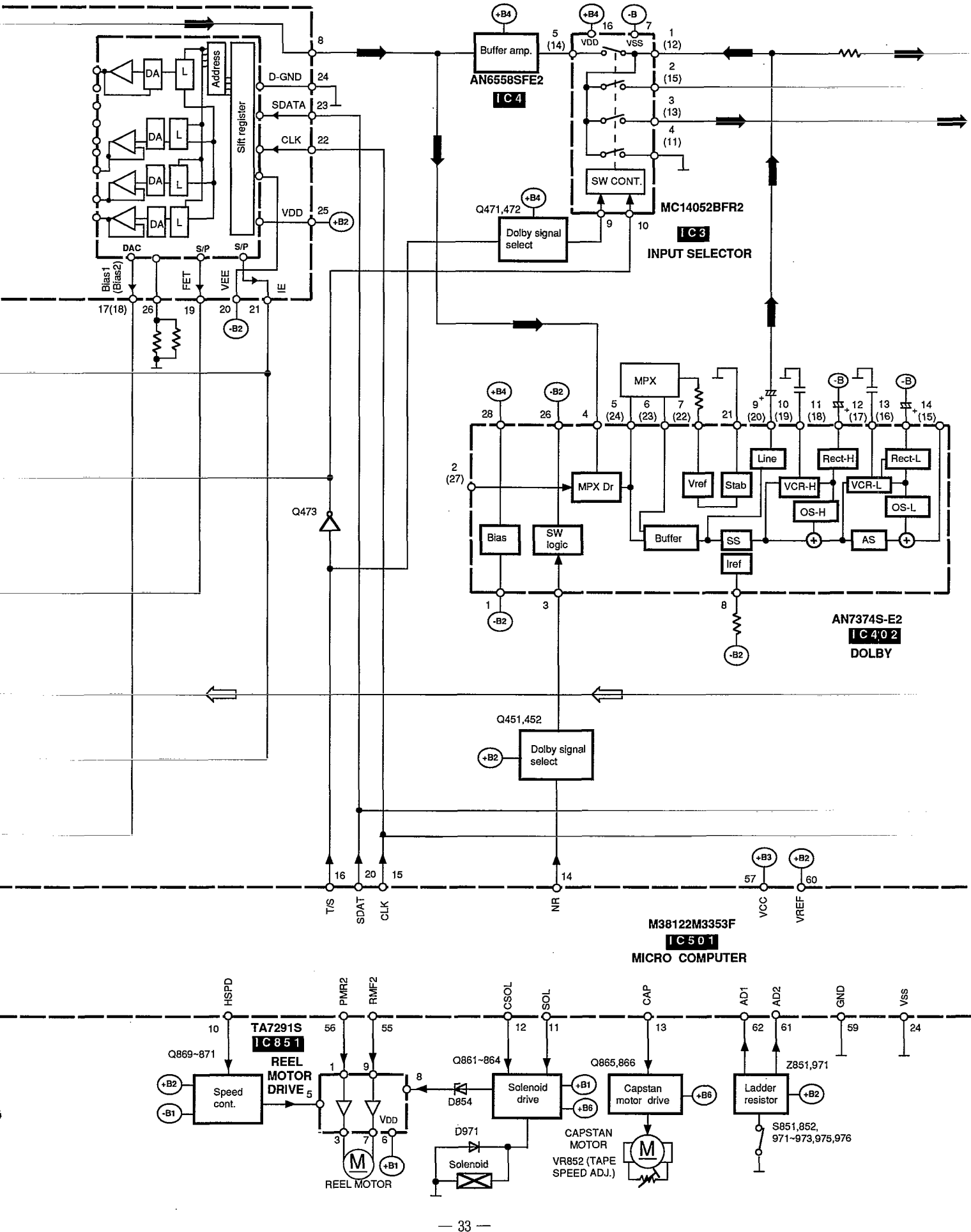
AN7356SC-E2 IC2 PLAYBACK / REC AMP





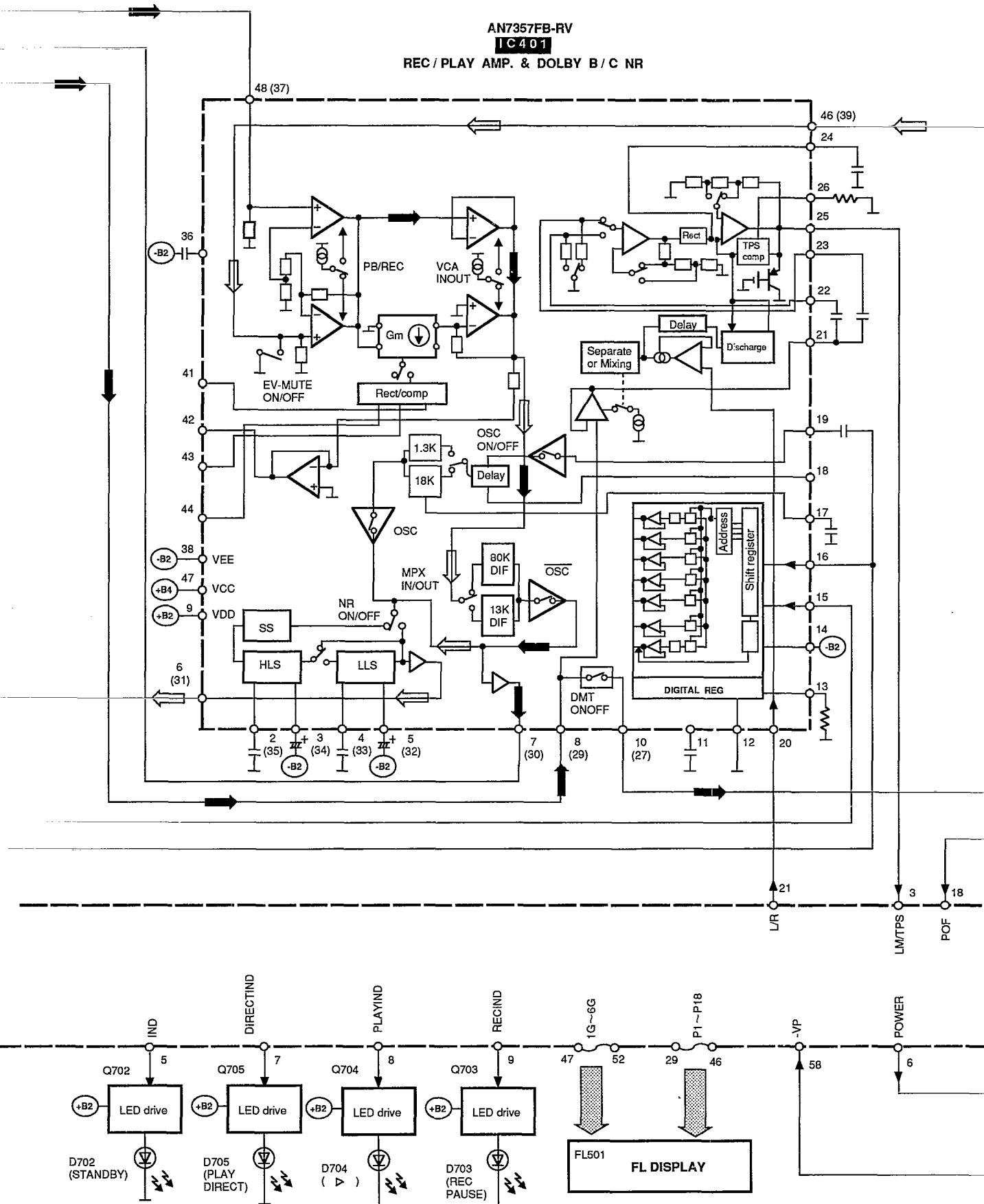
Signal line  $\blackrightarrow$  : Playback signal  $\blackleftarrow$  : Recording signal

※ ( ) : indicates pin No. of right channel .

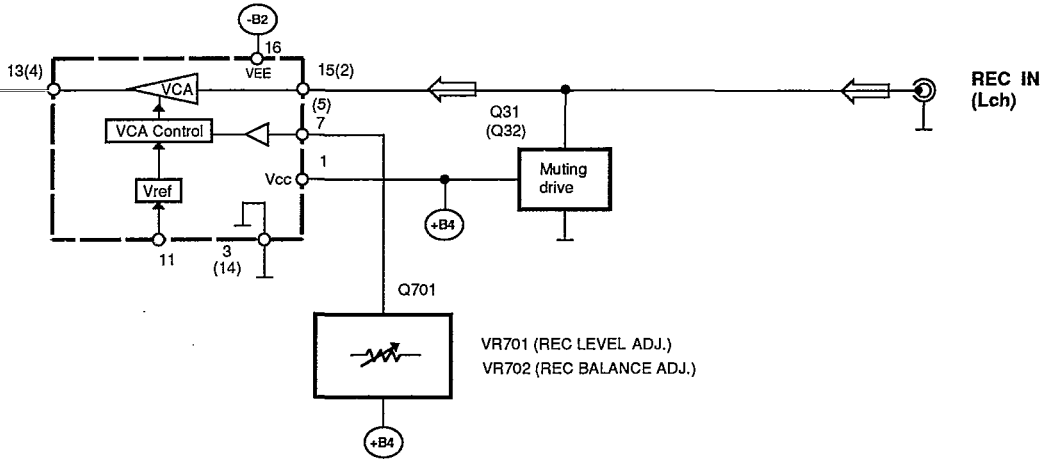


Signal line **➡** : Playback signal **➡** : Recording signal

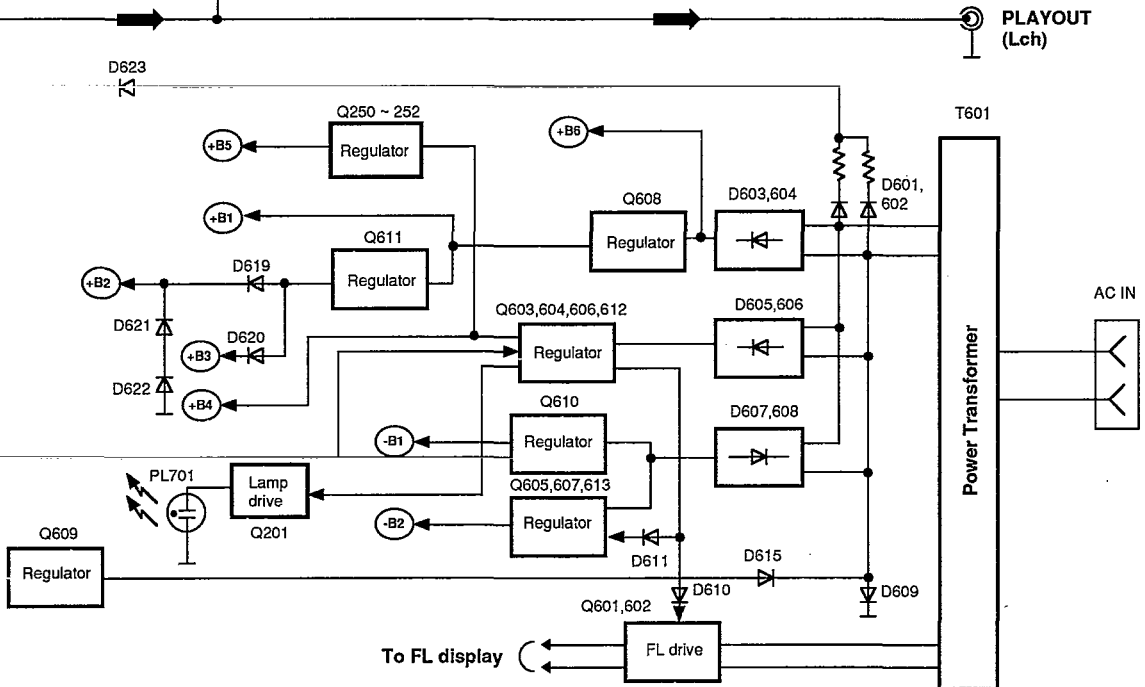
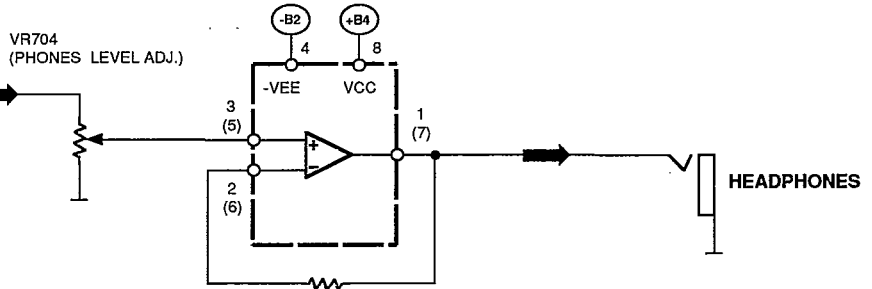
※ ( ) : indicates pin No. of right channel .



**AN7384N**  
**IC1**  
**ELECTRIC VOLUME**





**M5218AL**  
**IC701**  
**HEADPHONES AMP**



## ■ SCHEMATIC DIAGRAM (Parts list on pages 56~60.)

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

### Notes:

- S701: Stop switch (■).
- S702: Playback/Record switch (▶).
- S704: Fast-forward search switch (▶▶ TPS).
- S705: Rewind search switch (◀◀ TPS).
- S706: Recording/Pause switch (REC PAUSE).
- S707: Automatic-record-muting switch (● AUTO REC MUTE).
- S708: Cassette holder open/close switch (▲ OPEN/CLOSE).
- S709: Monitor switch (MONITOR).
- S710: Play direct switch (PLAY DIRECT).
- S711: Power "STANBY ○/ON" (POWER STANBY ○ ON) switch.
- S712: Counter reset switch (COUNTER RESET).
- S713: Memory stop switch (MEMORY STOP).
- S714: Multiplex filter switch (MPX FILTER).
- S715: Dolby noise-reduction switch (DOLBY NR).
- S716: Auto tape calibration switch (ATC).
- S718: Timer control switch (⊖ TIMER).
- S851: Cassette holder open detection switch in "off" position.
- S852: Cassette holder close detection switch in "off" position.
- S971: Mode switch in "off" position.
- S972: Half switch in "off" position.
- S973: ATS (CrO<sub>2</sub>) switch in "off" position.
- S975: Forward rec. inhibit switch in "off" position.
- S976: ATS (Metal) switch in "off" position.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.  
1K=1,000 (Ω), 1M=1,000k (Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.  
( ).....Voltage values at record mode.  
For measurement us EVM.
- Important safety notice:  
Components identified by Δ mark have special characteristics important for safety.  
When replacing any of components, be sure to use only manufacturer's specified parts.
- (———⟨+B⟩———) indicates +B (bias).
- (----⟨-B⟩----) indicates -B (bias).
- (  ) indicates the playback signal.
- (  ) indicates the recording signal.
- The supply part number is described alone in the replacement parts list.

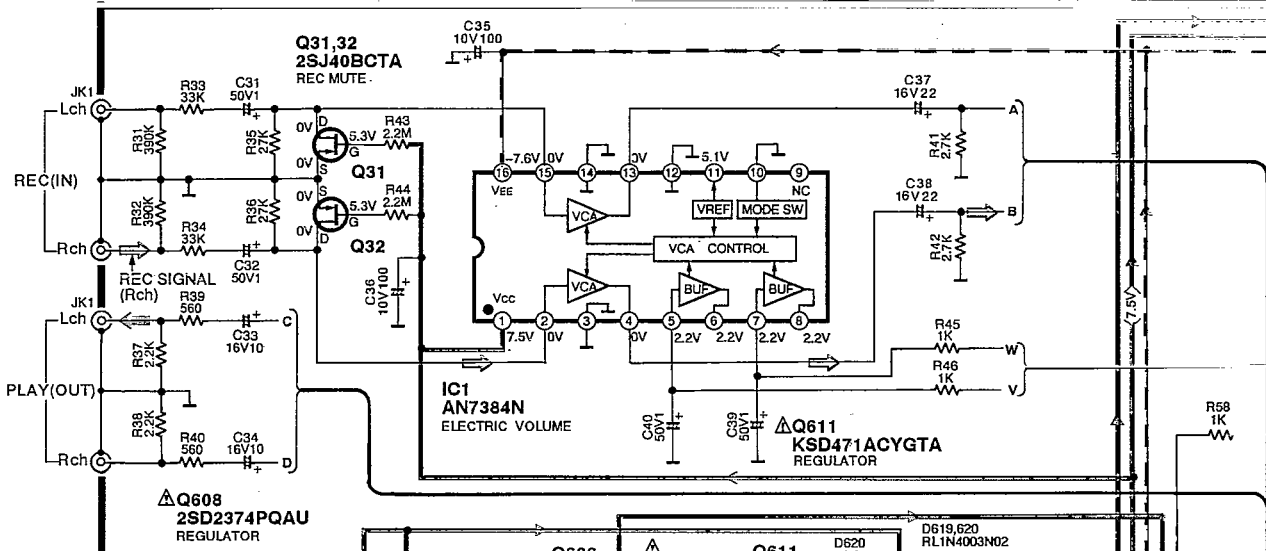
Part No.	Production Part No.	Supply Part No.
IC701	M5218AL	M5218L

### Caution!

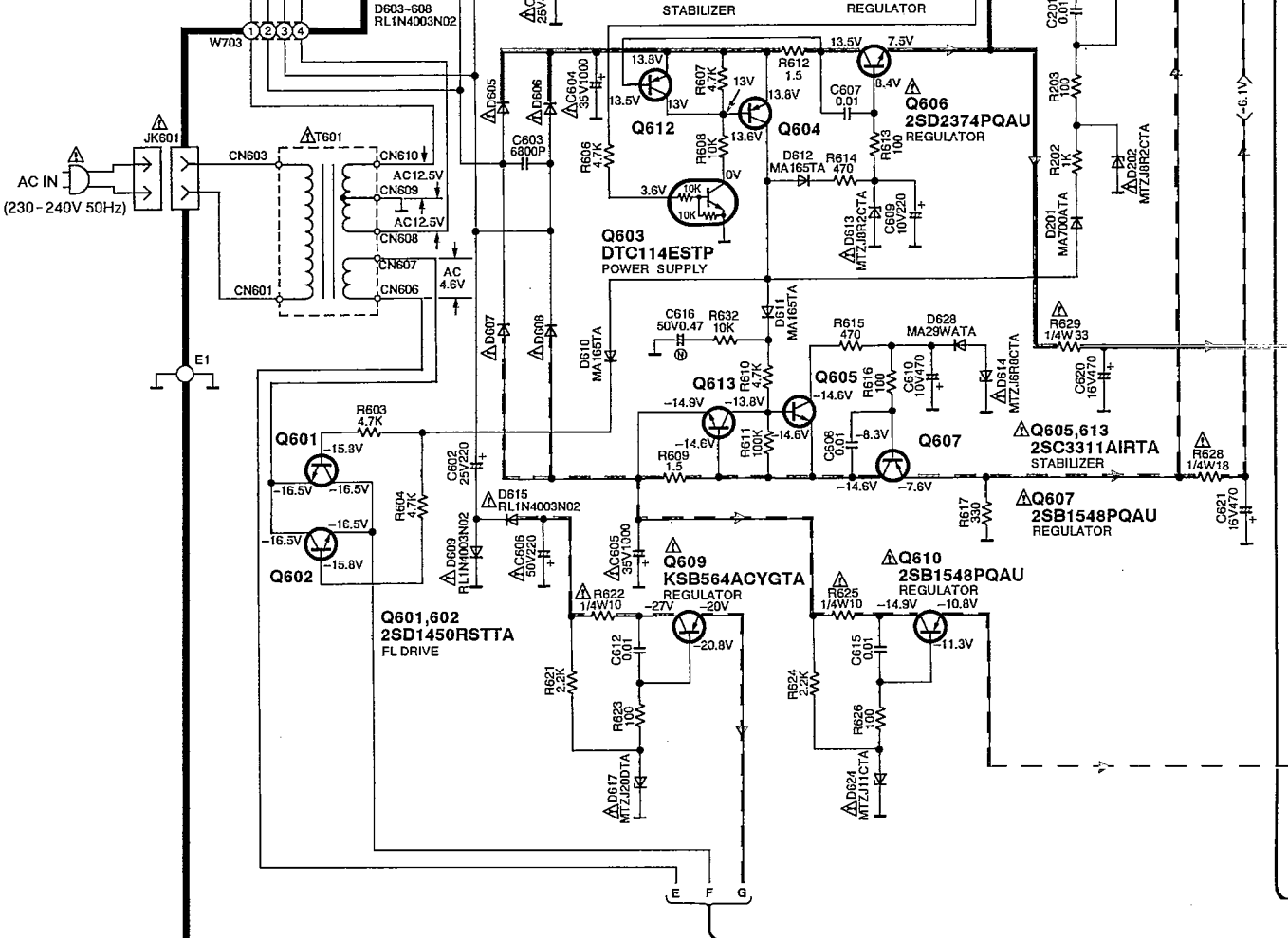
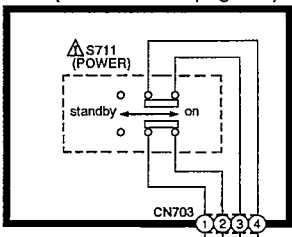
IC and LSI are sensitive to static electricity.  
Secondary trouble can be prevented by taking care during repair.

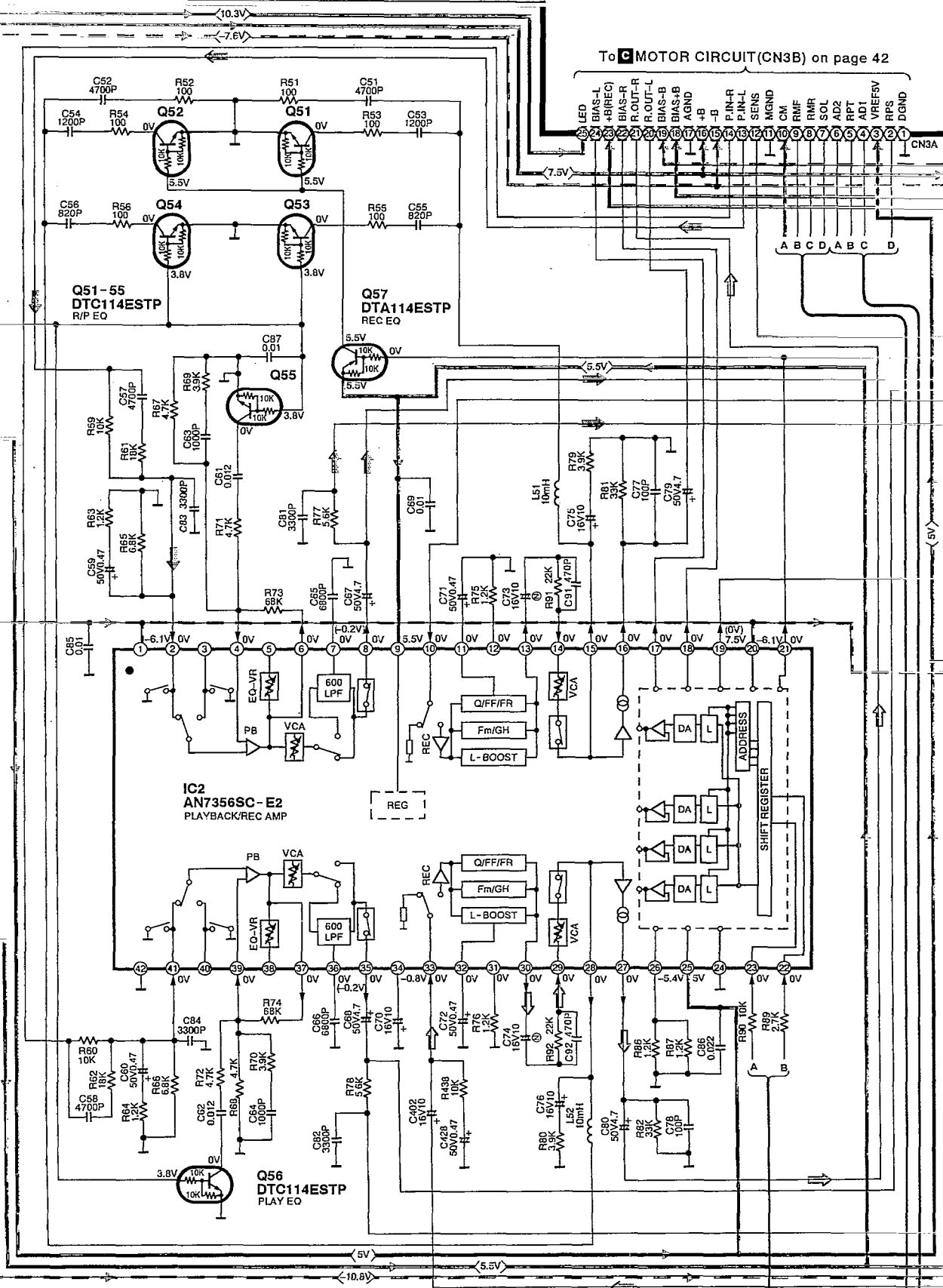
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.

**A** MAIN CIRCUIT (P.C.Board: on page 46)



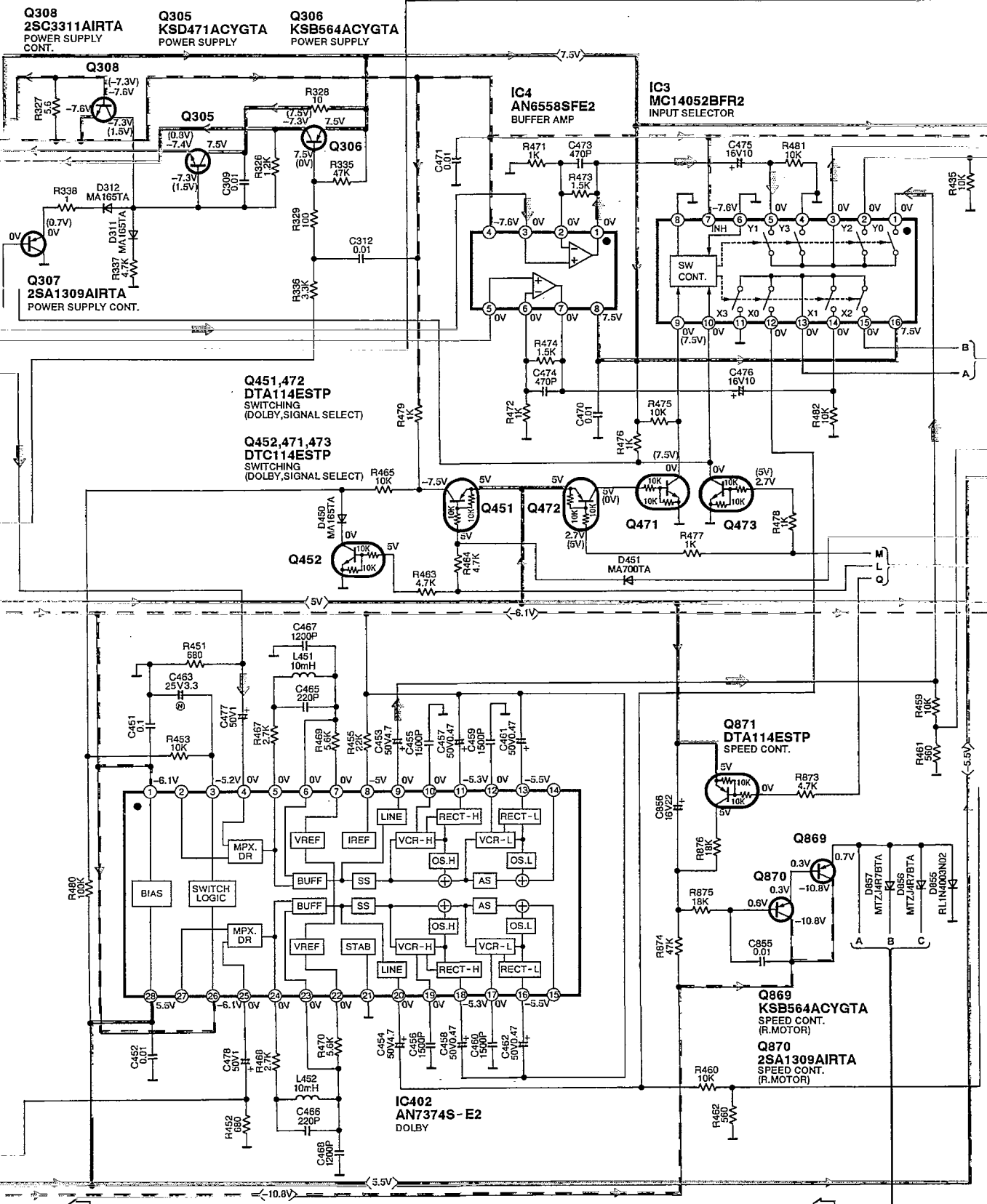
**B** POWER SWITCH CIRCUIT (P.C.Board: on page 45)

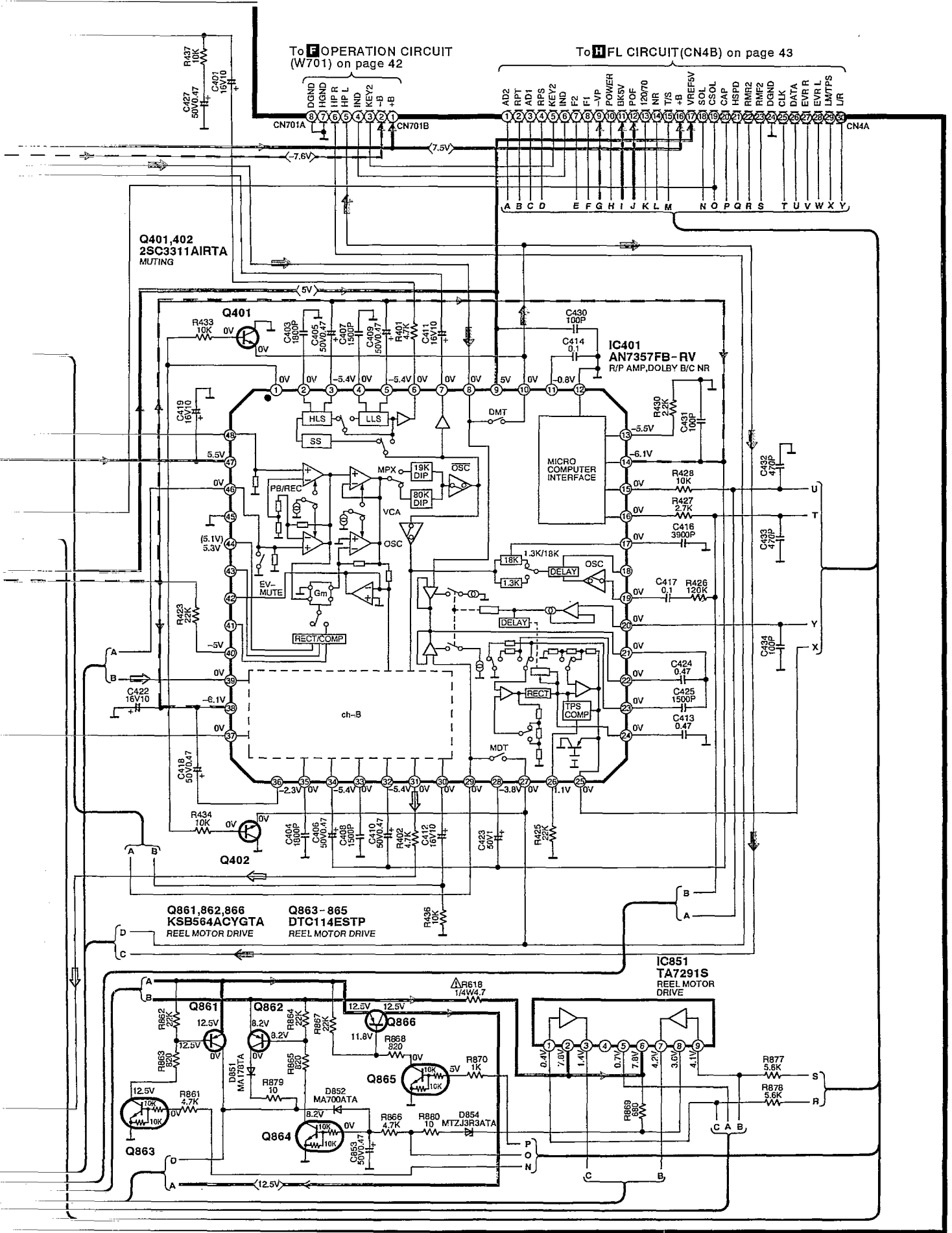




To MOTOR CIRCUIT (CN3B) on page 42

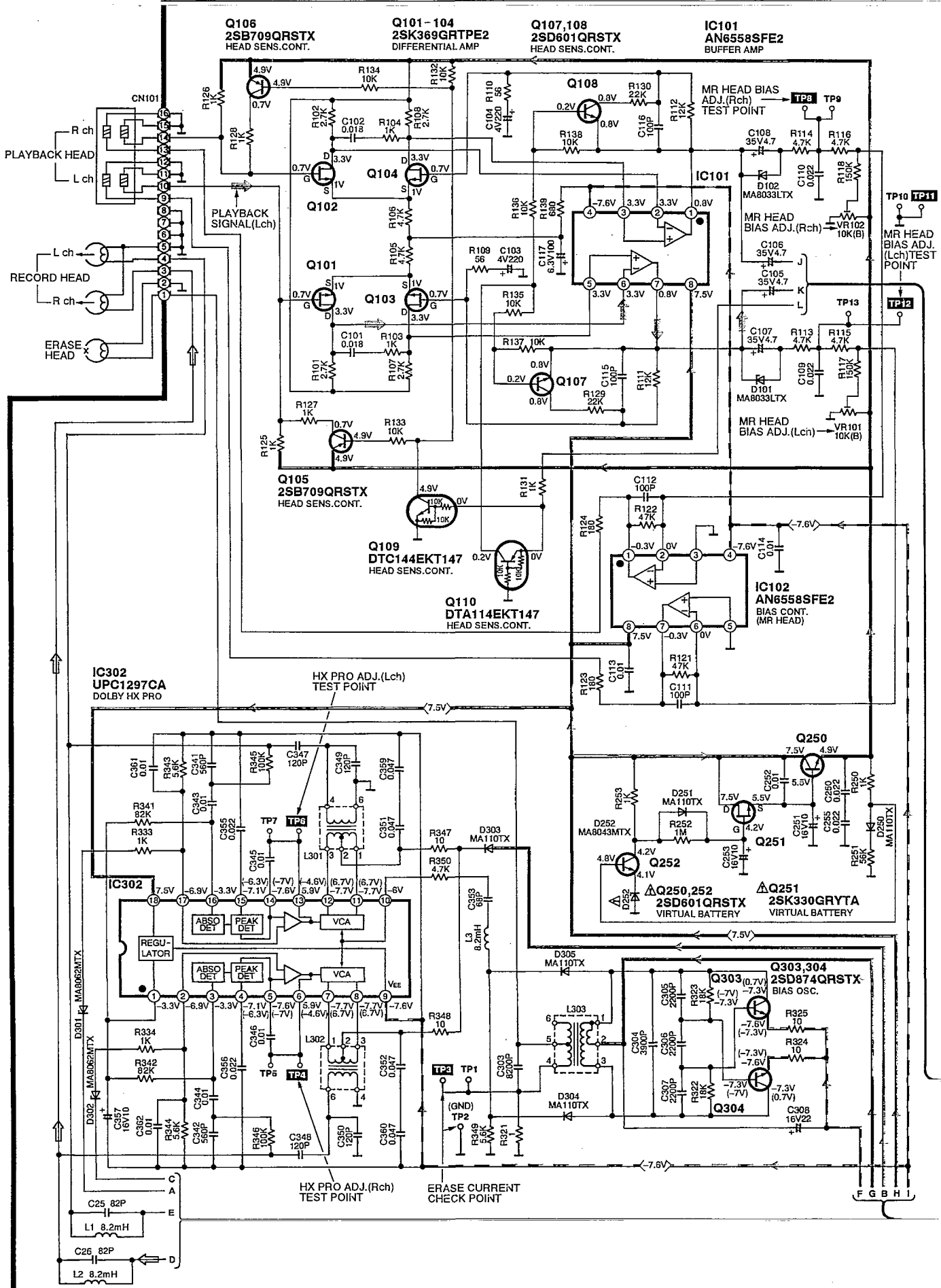
A MAIN CIRCUIT (P.C.Board: on page 46)





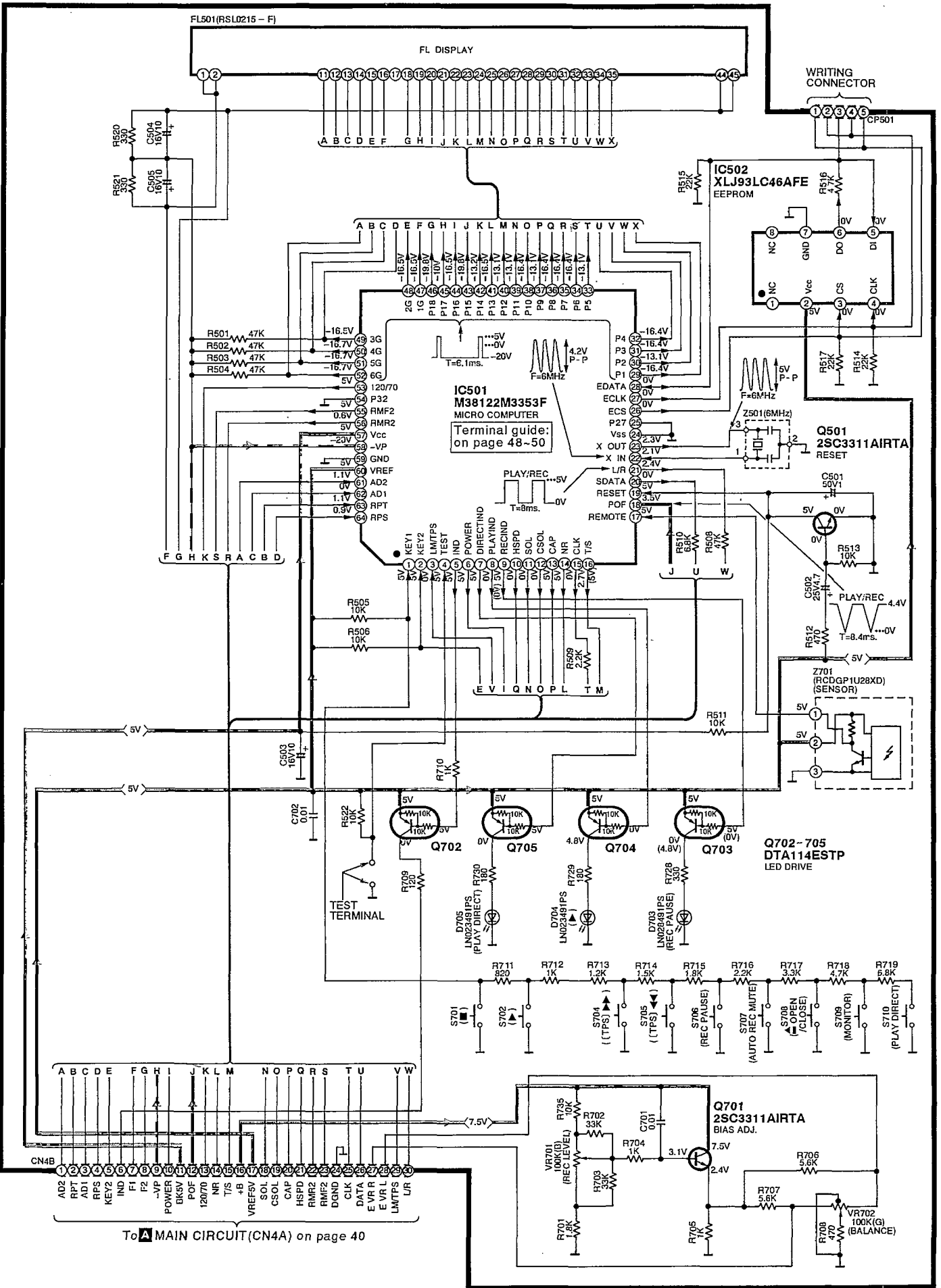


C MOTOR CIRCUIT (P.C.Board: on page 44)





H FL CIRCUIT (P.C.Board: on page 45)



To MAIN CIRCUIT (CN4A) on page 40

# PRINTED CIRCUIT BOARDS

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

A

B

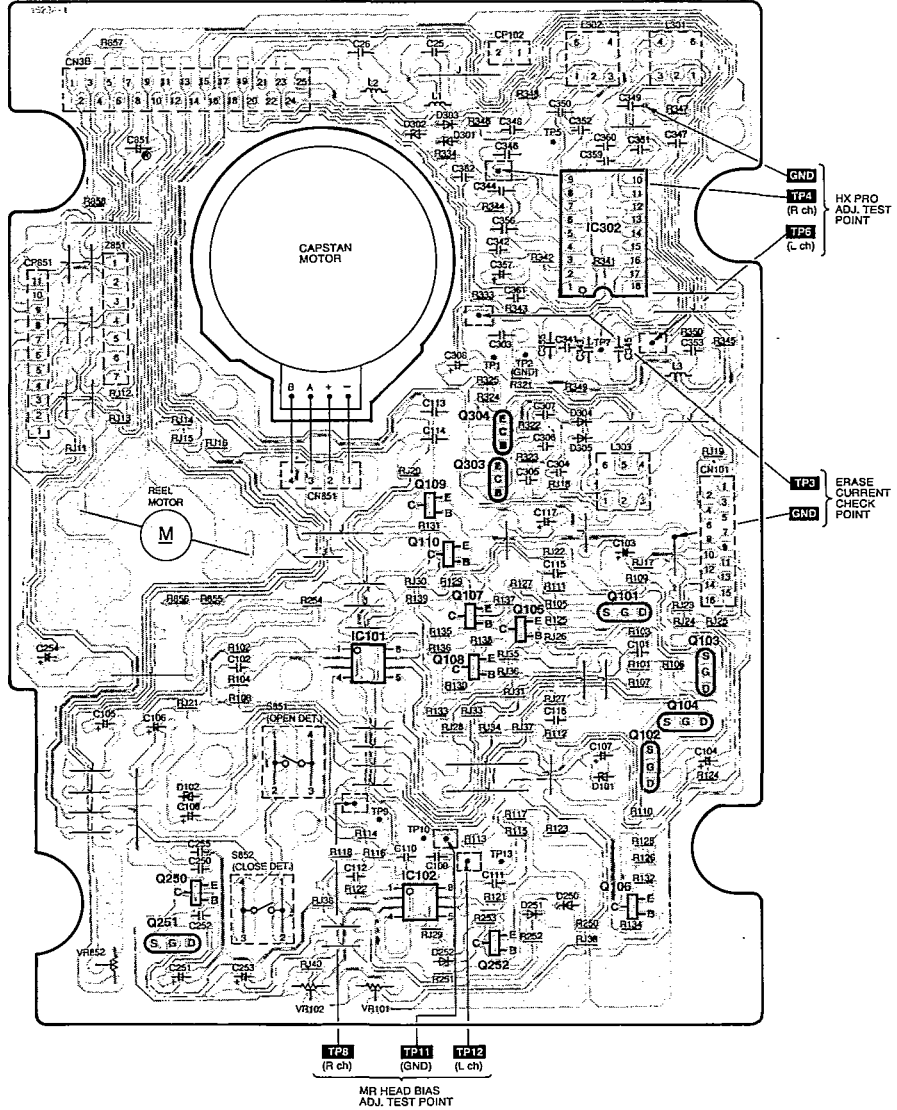
C

D

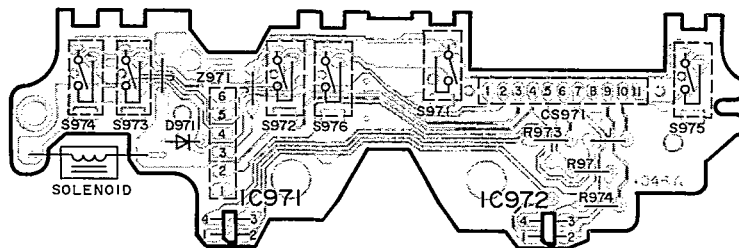
E

F

## C MOTOR P.C.B. (REP2286A-T)



## D MECHANISM P.C.B. (REP1656A)



6

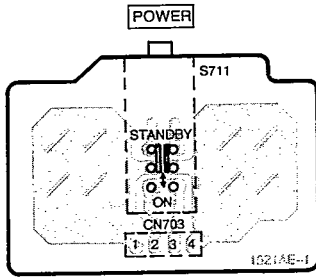
7

8

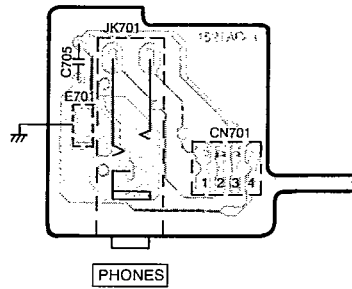
9

10

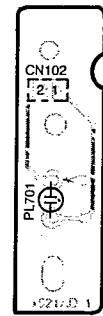
**B** POWER SWITCH P.C.B.  
(REP2285A-S)



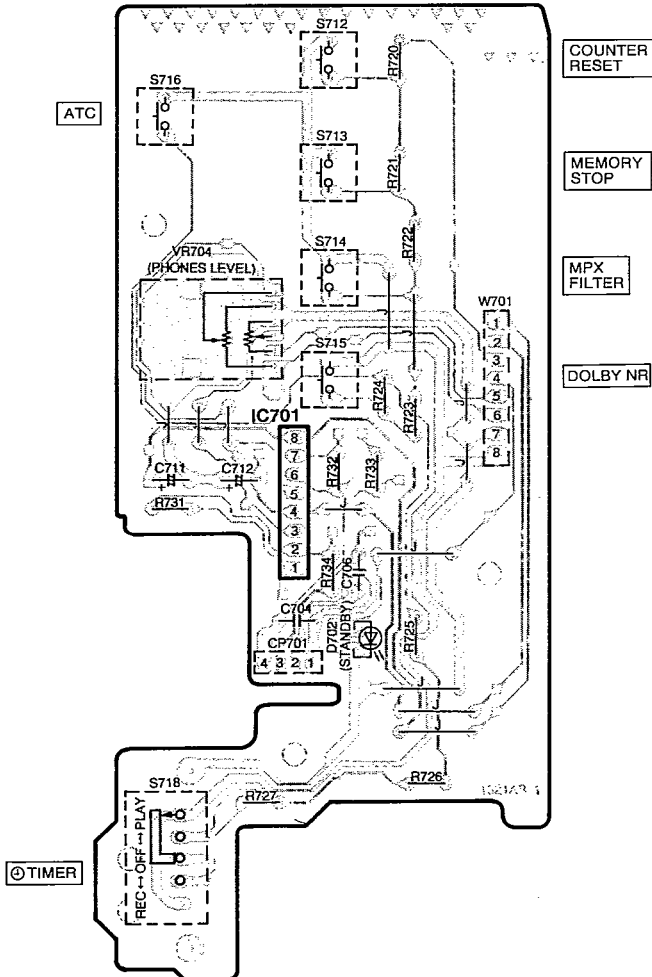
**E** HEADPHONES JACK P.C.B.  
(REP2285A-S)



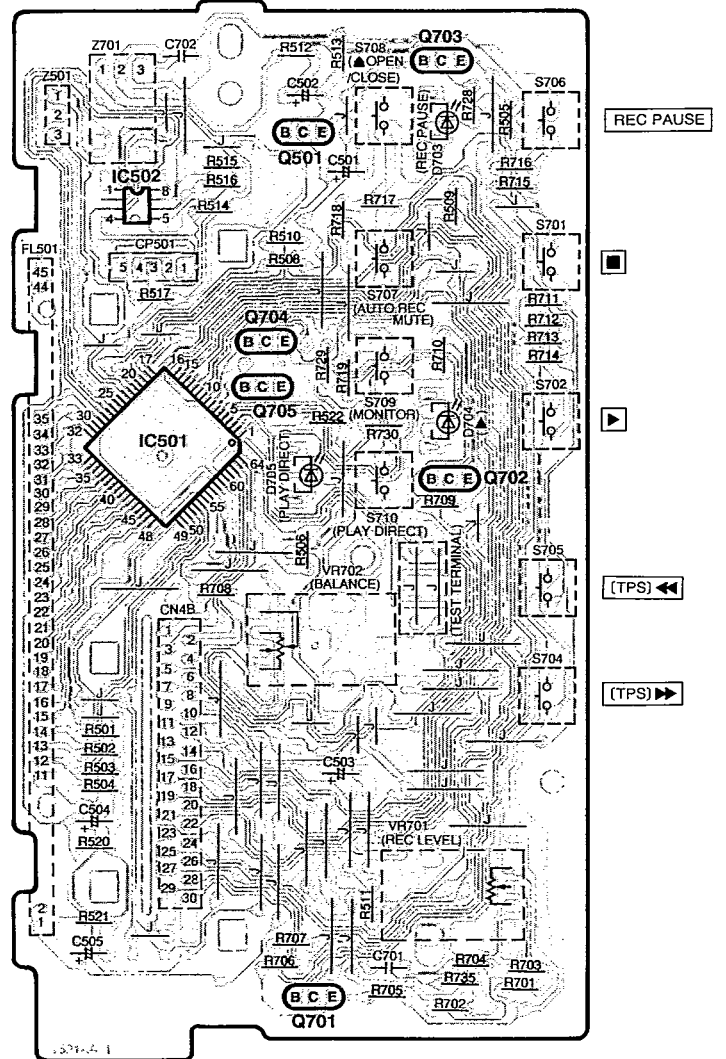
**G** LAMP P.C.B.  
(REP2285A-S)



**F** OPERATION P.C.B.  
(REP2285A-S)



**H** FL P.C.B.  
(REP2285A-S)



**A** MAIN P.C.B. (REP2284B-M)

A

B

C

D

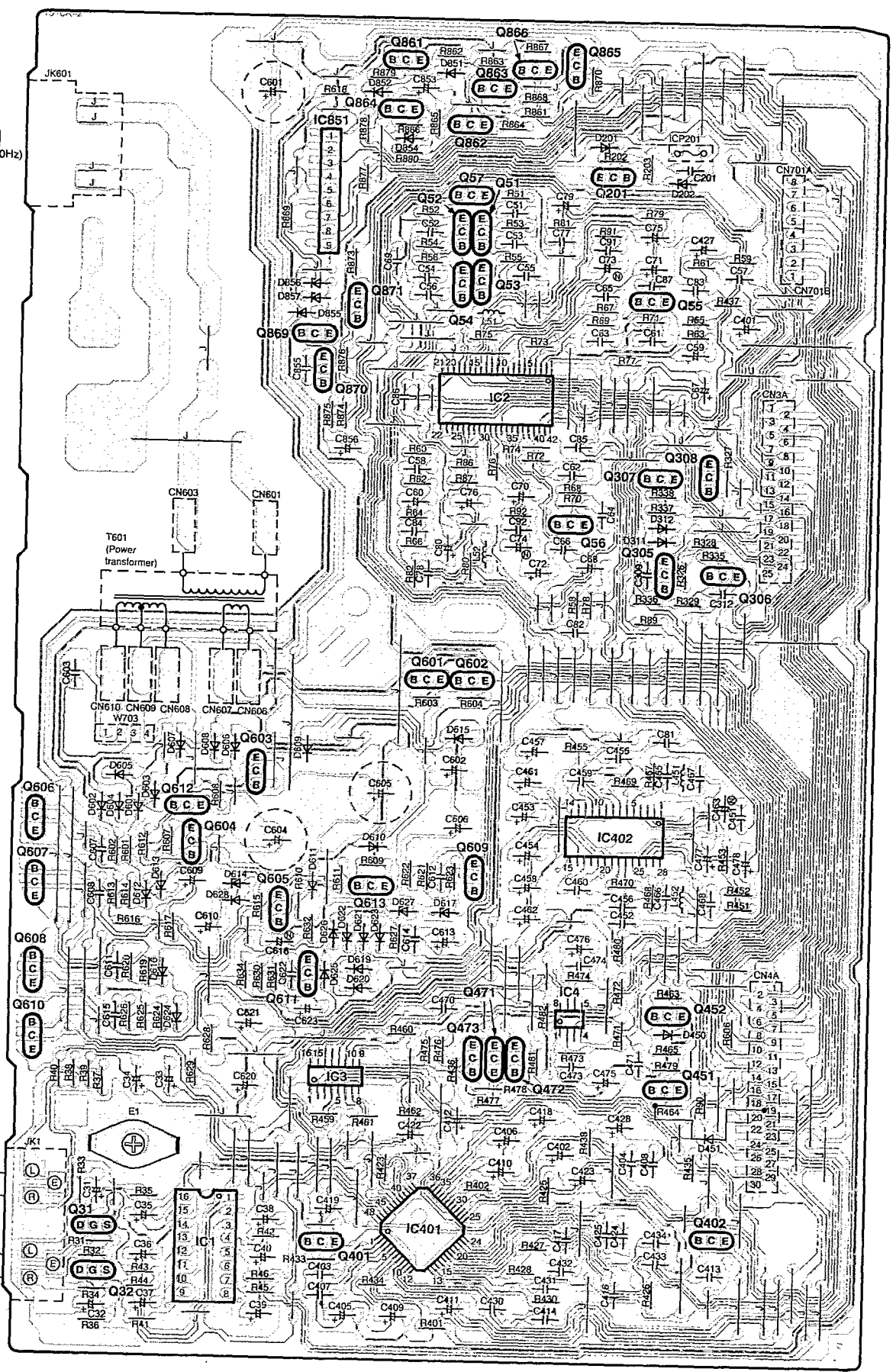
E

F

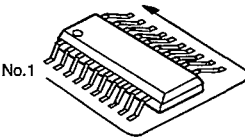
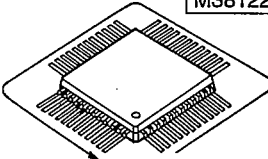
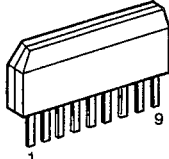
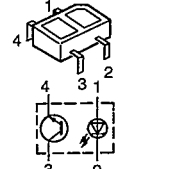
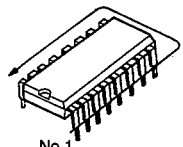
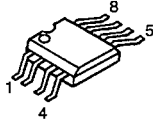
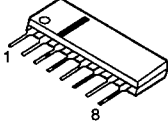
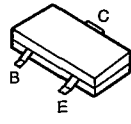
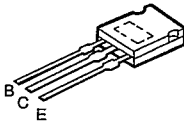
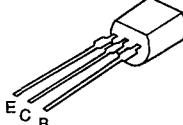
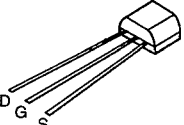
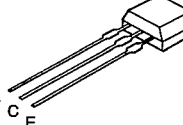

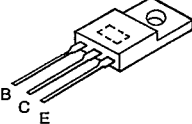
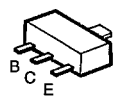
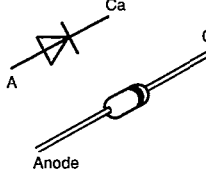
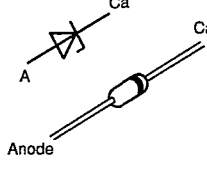
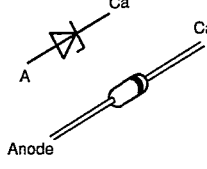
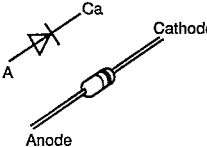
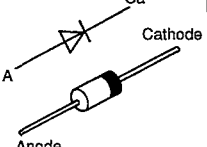
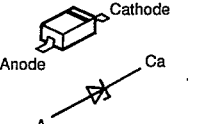
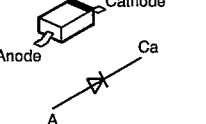
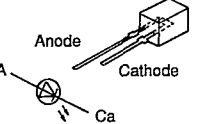
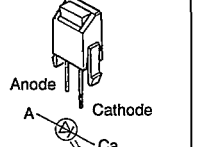
AC IN  
(230-240V 50Hz)

PLAY  
(OUT)

REC  
(IN)

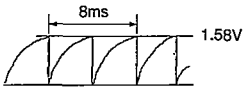
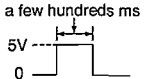



● Terminal guide of IC's, transistors and diodes

 <p>No.1</p>	<table border="1"> <tr><td>AN6558SFE2</td><td>8PIN</td></tr> <tr><td>MC14052BFR2</td><td>16PIN</td></tr> <tr><td>AN7374S-E2</td><td>28PIN</td></tr> <tr><td>AN7356SC-E2</td><td>42PIN</td></tr> </table>	AN6558SFE2	8PIN	MC14052BFR2	16PIN	AN7374S-E2	28PIN	AN7356SC-E2	42PIN	 <p>No.1</p>	<table border="1"> <tr><td>AN7357FB-RV</td><td>48PIN</td></tr> <tr><td>M38122M3353F</td><td>64PIN</td></tr> </table>	AN7357FB-RV	48PIN	M38122M3353F	64PIN	 <p>1</p>	<p>TA7291S</p>
AN6558SFE2	8PIN																
MC14052BFR2	16PIN																
AN7374S-E2	28PIN																
AN7356SC-E2	42PIN																
AN7357FB-RV	48PIN																
M38122M3353F	64PIN																
<p>RVSGP2S24BC</p> 	<table border="1"> <tr><td>AN7384N</td><td>16PIN</td></tr> <tr><td>UPC1297CA</td><td>18PIN</td></tr> </table>  <p>No.1</p>	AN7384N	16PIN	UPC1297CA	18PIN	<p>XLJ93LC46AFE</p> 	<p>M5218AL</p> 		<p>2SB709QRSTX 2SD601QRSTX DTA114EKT147 DTC144EKT147</p>								
AN7384N	16PIN																
UPC1297CA	18PIN																
<p>2SD2037EFTA</p> 	<p>KSB564ACYGTA KSD471ACYGTA</p> 	<p>2SJ40BCTA 2SK330GRYTA 2SK369GRTPE2</p> 	<p>DTA114ESTP DTC114ESTP</p> 		<p>2SA1309AIRTA 2SC3311AIRTA 2SD1450RSTTA</p>												
<p>2SB1548PQAU 2SD2374PQAU</p> 	<p>2SD874QRSTX</p> 	 <p>Ca A Cathode Anode</p>	<p>MA165TA MA29WATA RVD1SS133TA</p>  <p>Ca A Cathode Anode</p>	 <p>Ca A Cathode Anode</p>	<p>MTZJ11CTA MTZJ20DTA MTZJ3R3ATA MTZJ4R7BTA MTZJ5R1BTA MTZJ6R8CTA MTZJ8R2CTA MTZJ9R1BTA</p>												
<p>MA178TA MA700ATA</p>  <p>Ca A Cathode Anode</p>	<p>RL1N4003N02</p>  <p>Ca A Cathode Anode</p>	<p>MA8033LTX MA8043MTX MA8062MTX</p>  <p>Ca A Cathode Anode</p>	<p>MA110TX</p>  <p>Ca A Cathode Anode</p>	<p>LN873RP-C</p>  <p>Ca A Cathode Anode</p>	<p>LN023491PS LN028491PS</p>  <p>Ca A Cathode Anode</p>												

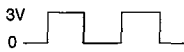

## ■ TERMINAL GUIDE

### ● IC501 (M38122M3353F): MICROCOMPUTER

Pin No.	Mark	I/O Division	Function	Check Point	Description
1	KEY1	I	KEY SW (STOP, PLAY, FF, REW, REC, ARM, OPEN/CLOSE, MONITOR, PLAYDIRECT) input	S701	When any other key is pressed : 0 to 5V When no key is pressed : 5V When Stop key is pressed : 0V
2	KEY2	I	KEY SW (COUNTER RESET, MEMORY, STOP, MPX, DOLBY NR, ATC, TIME REC/PLAY) input	CN4B ⑤	When any other key is pressed : 0 to 5V COUNTER RESET ON : 0V When no key is pressed (TIMER OFF) : 5V
3	LM/TPS	I	Display level and TPS det. input	CN4B ②	0dB signal input mode : TPS mode Program : "H" (5V) No program : "L" (0V) 
4	TEST	I	TEST MODE input	TEST JUMPER	Ordinary mode : "H" (5V) Test mode : "L" (0V) (Service mode)
5	IND	O	STANDBY LED Display output	R710	POWER ON : "H" (POWER OFF [STANDBY] : "L")
6	POWER	O	Power supply control output ON : "H", OFF : "L"	CN4B ⑩	POWER ON : "H" (5V) POWER OFF : "L" (0V)
7	DIRECT IND	O	PLAY DIRECT LED Display output	Q705 ⑥	PLAY DIRECT ON : "L" PLAY DIRECT OFF : "H"
8	PLAY IND	O	PLAY LED Display output	Q704 ⑦	PLAY : "L" STOP : "H"
9	REC IND	O	REC LED Display output	Q703 ⑧	REC : "L" STOP : "H"
10	HSPD	O	Reel motor high speed select output	CN4B ⑪	High speed FF/REW/TPS mode : "H" (5V) Other : "L" (0V)
11	SOL	O	Solenoid control output	CN4B ⑬	STOP → PLAY : a few hundreds ms PLAY → STOP : "H" 
12	CSOL	O	Solenoid hold control output	CN4B ⑭	FF/REW/TPS mode : "H" (5V) Other : "L" (0V)
13	CAP	O	Capstan motor control output ON : "H", OFF : "L"	CN4B ⑯	STOP/FF/REW : "L" (0V) PLAY : "H" (5V)
14	NR	O	DOLBY NR output	CN4B ⑰	DOLBY OFF : "H" (5V) DOLBY B : "OPEN" (2.5V) DOLBY C : "L" (0V)
15	CLK	O	Serial clock for audio IC output ON : "L", OFF : "H"	CN4B ⑳	 When a mode change occurs
16	T/S	O	Monitor change output	CN4B ㉑	SOURCE : "H" (5V) TAPE : "OPEN" (2.5V) PLAY DIRECT : "L" (0V)
17	REMOTE	I	Remocon signal input ON : "H", OFF : "L"	Z701 ①	H and L pulse waveform appears on the input of a remote control signal.



Pin No.	Mark	I/O Division	Function	Check Point	Description	
18	POF	I	Power off det. output ON : "H", OFF : "L"	CN4B ⑫	5V 0	Rectified waveform at both 50 and 60Hz (clamping at 5V)
19	RESET	I	Reset input ON : "L", OFF : "H"	Q501 ③	5V 0	Usually, H(=5V) but L for a period of a few to a few tens of milliseconds is first plugged in when the player.
20	SDATA	O	Serial data for audio IC output ON : "L", OFF : "H"	CN4B ⑫	300mV 0	When a mode change occurs
21	L/R	O	Level meter input channel LCH : "L", RCH : "H"	R508	5V 0 8ms	Always
22	XIN	I	Microcomputer clock OSC terminal	Z501 ①		Oscillator waveform at 6MHz
23	XOUT	O	Microcomputer clock OSC terminal	Z501 ③		Oscillator waveform at 6MHz
24	Vss	—	Microcomputer GND	—	0V	
25	P27	—	Not used	—	Connected to GND	
26	ECS	O	EEPROM STROBE signal output (ON : "H", OFF : "L")	CP501 ⑤	5V 0 A few ms	(ex...For PLAY ↔ STOP mode is changed)
27	ECLK	O	EEPROM serial clock output ON : "H", OFF : "L"	CP501 ④	5V 0 A few ms	(ex...For PLAY ↔ STOP mode is changed)
28	EDATA	I/O	EEPROM serial data signal output ON : "H", OFF : "L"	CP501 ③	5V 0 A few ms	(ex...For PLAY ↔ STOP mode is changed)
29 ┆ 46	P1 ┆ P18	O	FL meter segment output	FL501 ⑱~⑳	+5V 0 -20V P1~P8	H for 0~6 pulses of duration approx. 0.8 ms each.
47 ┆ 52	1G ┆ 6G	O	FL meter glid output	FL501 ⑪~⑫	+5V 0 -20V 1G~6G approx. 0.8ms approx. 4.8ms	
53	120/70	O	Play EQ output	CN4B ⑬	Normal tape : "H" (5V) CrO <sub>2</sub> , Metal tape : "L" (0V)	
54	P32	—	Not used	—	Connected to GND	
55	RMF2	O	Reel motor control output (FWD)	CN4B ⑫	PLAY/FF : "L" (0V) Other : "H" (5V)	
56	RMR2	O	Reel motor control output (REW)	CN4B ⑫	REW : "L" (0V) Other : "H" (5V)	

Pin No.	Mark	I/O Division	Function	Check Point	Description
57	Vcc	I	Microcomputer terminal	CN4B ⑪	+5V
58	-Vp	I	FL meter pull down voltage input terminal	CN4B ⑨	-20V
59	GND	—	GND terminal (A/D)	CN4B ⑳	0V
60	VREF	I	Reference power supply (+5V) (A/D)	CN4B ⑰	+5V
61	AD2	I	Mechanism switch (HALF, MODE) input	CN4B ①	No tape STOP : 5V Tape STOP : approx. 0.6V PLAY : approx. 3.1V
62	AD1	I	Mechanism switch (RECINH, CrO <sub>2</sub> , METAL, OPEN/CLOSE) input	CN4B ③	Changes within the 0~5V range each time any switch is ON/OFF
63	RPT	I	Reel pulse det. input (Take up side)	CN4B ②	 <p>Changes within the 0 ↔ 3V range each time the take up reel is through approx. 30 degrees.</p>
64	RPS	I	Reel pulse det. input (Supply side)	CN4B ④	 <p>Changes within the 0 ↔ 3V range each time the supply reel is through approx. 30 degrees.</p>

# 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.

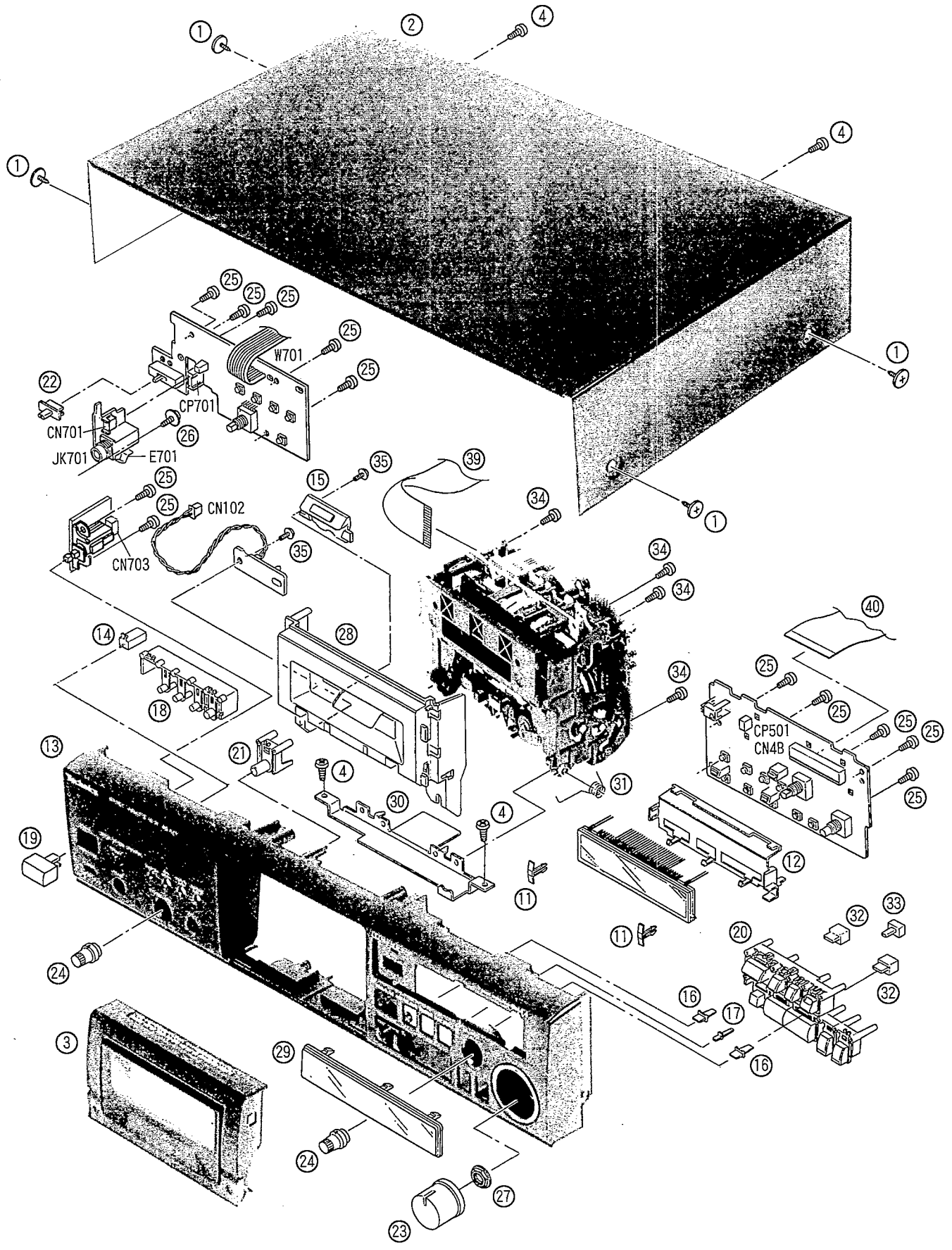
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS		19	RGU0890-K	BUTTON, POWER	
				20	RGU1317-K	BUTTON, OPERATION	
				21	RGU1318-K	BUTTON, ATC	
1	RHD30035-K1	SCREW		22	RGV0112-K	KNOB, TIMER	
2	RKM0114-K	CABINET		23	RGW0063-K	KNOB, REC. LEVEL	
3	RYF0371-K	CASSETTE LID ASS'Y		24	RGW0205-K	KNOB, REC. BALANCE/HP VOLUME	
4	XTBS3+8JFZ1	SCREW		25	RHD26017	SCREW	
5	RGRO230A-B	REAR PANEL	(E, EG)	26	RHD26018	SCREW	
5	RGRO230A-C	REAR PANEL	(EB)	27	RHN90001	NUT	
6	RKA0053-A	FOOT		28	RKQ0190-K	SUB CASSETTE HOLDER	
7	RKQ0089	P. C. B. HOLDER		29	RFKNSAZ7KB	TRANSPARENT PLATE ASS'Y	
8	RKU0059-K	BOTTOM BOARD		30	RMA0902	MECHANISM ANGLE	
9	RMCO285	ANGLE		31	RMB0388	SPRING, BALANCE	
10	RMKO202B	BOTTOM CHASSIS		32	RMG0410-K	SPACER(A)	
11	RMNO195	FL HOLD PIECE		33	RMG0411-K	SPACER(B)	
12	RMNO265	FL HOLDER		34	XTB3+12GFY	SCREW	
13	RFKGSZ7EK	FRONT PANEL ASS'Y		35	XTW2+6S	SCREW	
14	RGL0206-Q	PANEL LIGHT, STANDBY		36	XTB3+10GFZ	SCREW	
15	RGL0307-Q	PANEL LIGHT, HALF		37	XTB3+16CFN	SCREW	
16	RGL0308-Q	PANEL LIGHT, PLAY		38	XTB3+20JFZ	SCREW	
17	RGL0309-Q	PANEL LIGHT, DIRECT		39	REZ0872	FFC (25P)	
18	RFKNSAZ7KA	BUTTON ASS'Y, DOLBY		40	REZ0896	FFC (30P)	

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		MECHANISM PARTS		149	RHD20036-K	SCREW	
				150	RHD20037-K	SCREW	
				151	RMB0383	SPRING, EARTH	
101	RXF0040	FLYWHEEL (F)		152	RMB0485	SPRING, AZIMUTH	
102	RKF0334-K	CASSETTE HOLDER ASS' Y		153	RMQ0574	HEAD CONNECTOR	
103	RML0272	SWITCH LEVER		154	RMR0782-K	HEAD SPACER	
104	RXQ0452	HEAD BASE ASS' Y		155	RMX0121-1	SPACER	
105	RGK0582-K	DRESSING PLATE ASS' Y		156	SJH96-1	ERASE HEAD	
106	RED0040	HEAD BLOCK (REC. /PLAYBACK)		157	REX0776	HEAD READ WIRE (1P)	
107	RDV109ZA	BELT		158	REX0777	HEAD READ WIRE (1P)	
108	RDK0019A-1J	MAIN GEAR					
109	RMB0261	SPRING, HEAD BASE					
110	RMB0262	SPRING, BRAKE ROD					
111	RMB0263	SPRING (F)					
112	RMB0264	SPRING (R)					
113	RJW147ZA	SPRING, TRIGGER LEVER					
114	RML0267A	TRIGGER LEVER					
115	RGQ0121-K	LIFTER					
116	RM0091A	BRAKE ROD					
117	RMS0398-1	MOVING IRON CORE					
118	RSJ0003	SOLENOID					
119	RUS609ZC	SPRING, TAPE PRESSURE					
120	RXG0036	REEL GEAR					
121	RXL0106	IDLE GEAR					
122	RXP0052	PINCH ARM (F)					
122-1	RMB0259	SPRING, PINCH ARM (F)					
123	RDG0212A	LIFT ARM					
124	RDG0206A-1	LOADING GEAR					
125	RDG0209A	INTERMEDIATE GEAR					
126	REMO036-1	CAPSTAN MOTOR					
127	REMO043	REEL MOTOR (RM852)					
128	RHD26013	SCREW					
129	RMQ0169	SHIELD PLATE					
130	RMQ0314A	SURAS TO SPACER					
131	RXG0037	FRICTION GEAR					
132	RMQ0401	STABILIZER					
133	RML0275A	LIFT GEAR					
134	RMB0269	SPRING, DRIVE LEVER					
135	RML0270A-1	DRIVE LEVER					
136	RMQ0312A	DRIVE RACK					
137	RMB0268	SPRING, HOLDER HOOK					
138	RML0271A	HOLDER HOOK					
139	XTW2+6S	SCREW					
140	RXR0018	REEL TABLE					
141	XTW2+5L	SCREW					
142	XTW26+12S	SCREW					
143	XTW26+6L	SCREW					
144	RMB0324	SPRING, STABILIZER					
145	RFKJSCH404AK	SUB CHASSIS ASS' Y					
146	RFKJSCA7NB	CHASSIS ASS' Y					
147	RHD20026-W	SCREW					
148	RHD20031-Y	SCREW					

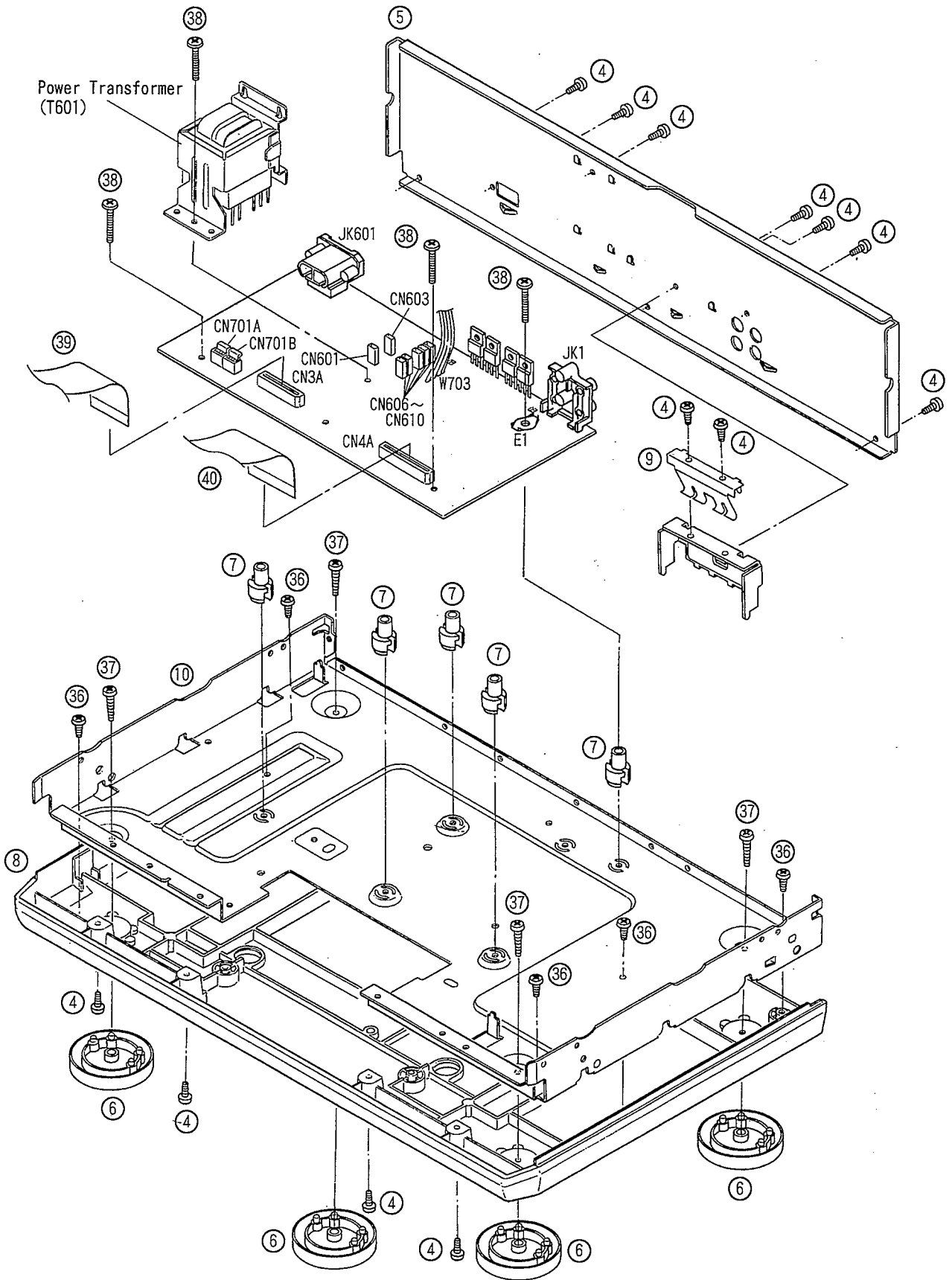
1 | 2 | 3 | 4 | 5

# CABINET PARTS LOCATION

A  
B  
C  
D  
E  
F



6 | 7 | 8 | 9 | 10



1 | 2 | 3 | 4 | 5

**MECHANISM PARTS LOCATION**

A

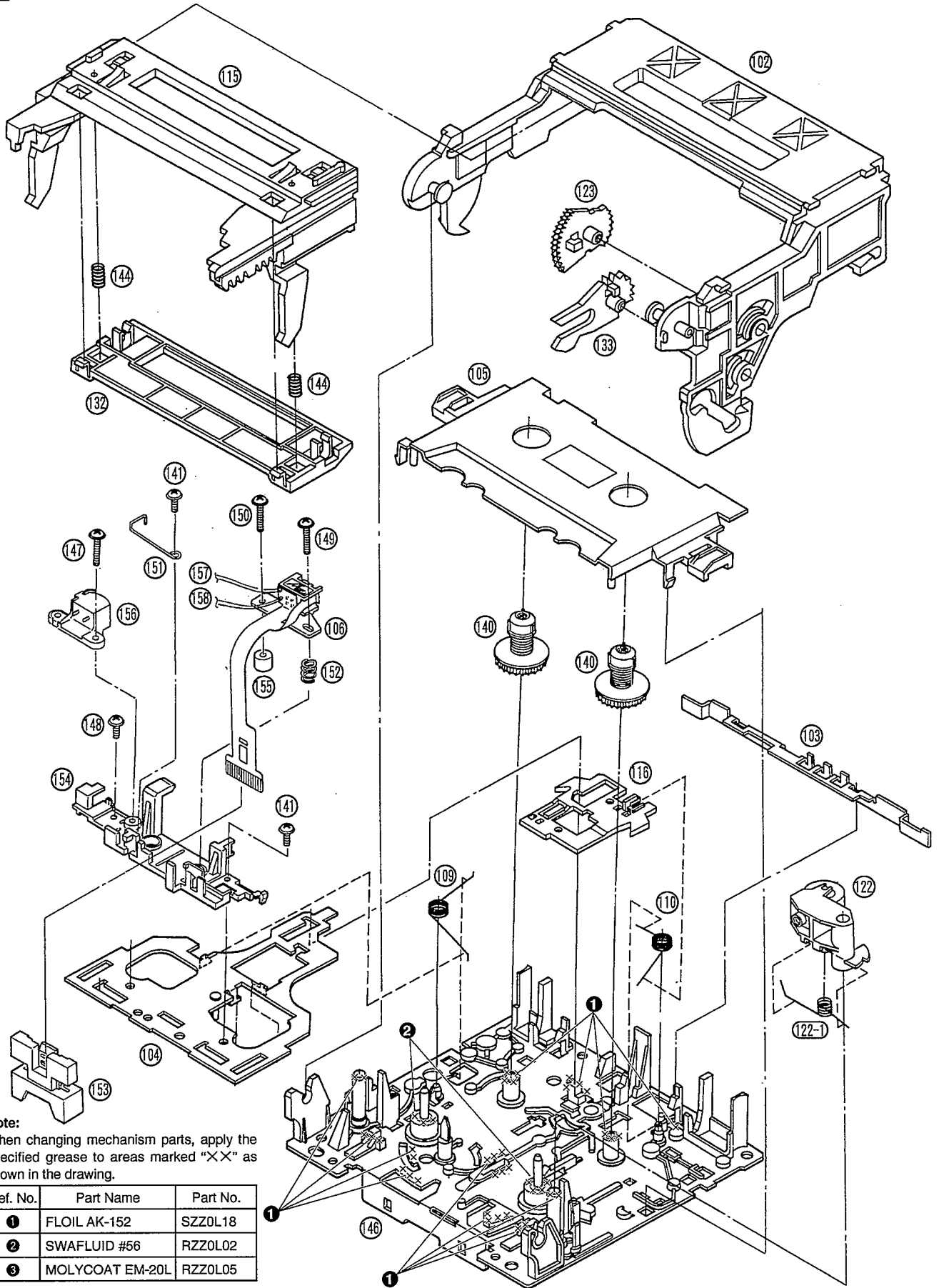
B

C

D

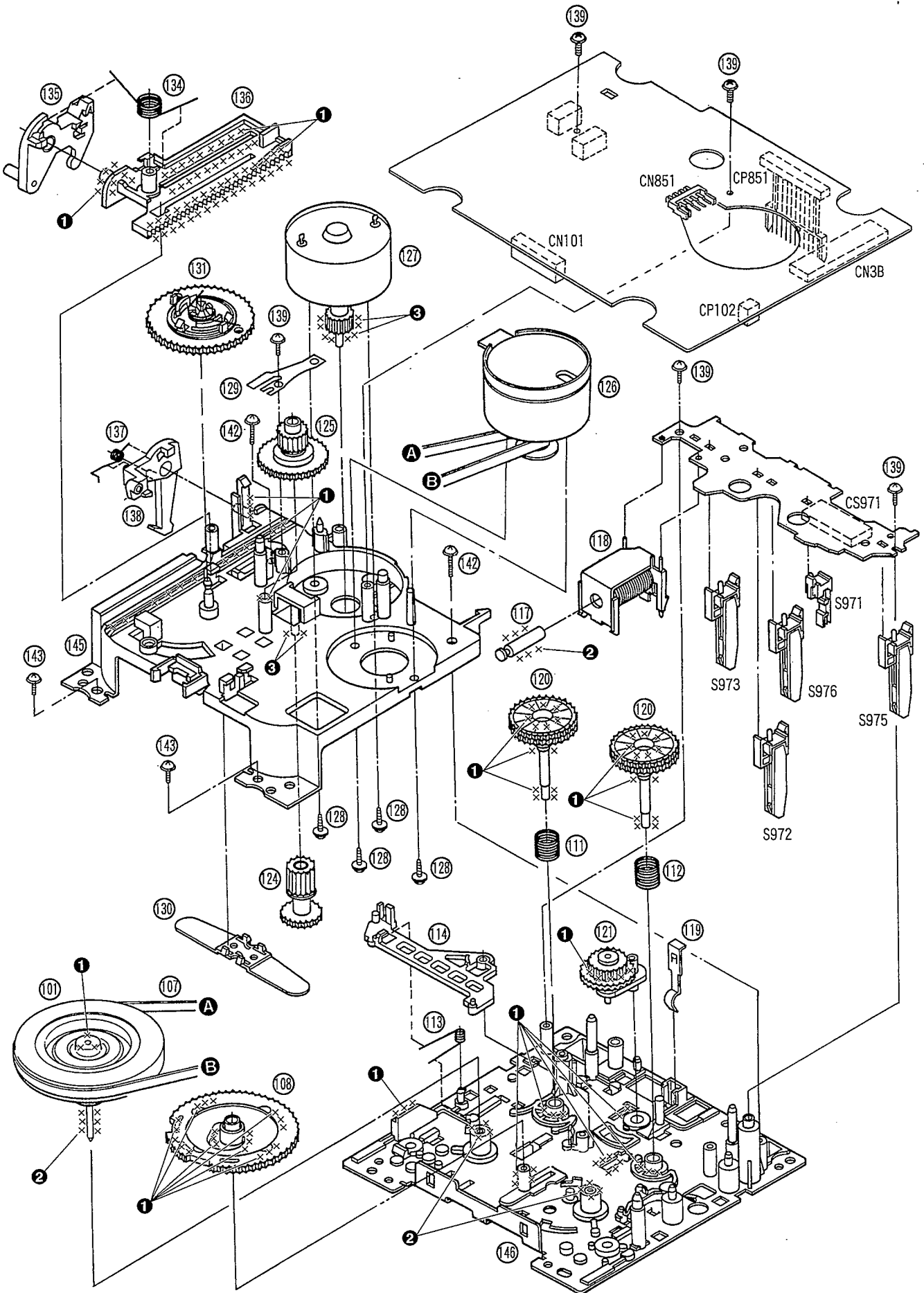
E

F



**Note:**  
When changing mechanism parts, apply the specified grease to areas marked "X" as shown in the drawing.

Ref. No.	Part Name	Part No.
①	FLOIL AK-152	SZZ0L18
②	SWAFLUID #56	RZZ0L02
③	MOLYCOAT EM-20L	RZZ0L05





# REPLACEMENT PARTS LIST

**Notes:** \* Important safety notice:

 Components identified by  $\Delta$  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	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)		Q608	2SD2374PQAU	TRANSISTOR	$\Delta$
				Q609	KSB564ACYGTA	TRANSISTOR	$\Delta$
				Q610	2SB1548PQAU	TRANSISTOR	$\Delta$
IC1	AN7384N	ELECTRIC VOLUME		Q611	KSD471ACYGTA	TRANSISTOR	$\Delta$
IC2	AN7356SC-E2	PLAYBACK/REC AMP		Q612	2SA1309AIRTA	TRANSISTOR	$\Delta$
IC3	MC14052BFRZ	INPUT SELECTOR		Q613	2SC3311AIRTA	TRANSISTOR	$\Delta$
IC4	AN6558SFE2	BUFFER AMP		Q701	2SC3311AIRTA	TRANSISTOR	
IC101, 102	AN6558SFE2	BUFFER AMP		Q702-705	DTA114ESTP	TRANSISTOR	
IC302	UPC1297CA	DOLBY HX PRO		Q861, 862	KSB564ACYGTA	TRANSISTOR	
IC401	AN7357FB-RV	DOLBY B/C NR		Q863-865	DTC114ESTP	TRANSISTOR	
IC402	AN7374S-E2	DOLBY		Q866	KSB564ACYGTA	TRANSISTOR	
IC501	M38122M3353F	MICROCOMPUTER		Q869	KSB564ACYGTA	TRANSISTOR	
IC502	XLJ93LC46AFE	EEPROM		Q870	2SA1309AIRTA	TRANSISTOR	
IC701	M5218L	HEADPHONES AMP		Q871	DTA114ESTP	TRANSISTOR	
IC851	TA7291S	REEL MOTOR DRIVE				DIODE(S)	
IC971	RVSGP2S24BC	PHOTO INTERRUPTER					
IC972	RVSGP2S24BC	PHOTO INTERRUPTER					
		TRANSISTOR(S)		D101, 102	MA8033LTX	DIODE	
				D201	MA700	DIODE	
				D202	MTZJ8R2CTA	DIODE	$\Delta$
Q31, 32	2SJ40BCTA	TRANSISTOR		D250, 251	MA110TX	DIODE	
Q51-56	DTC114ESTP	TRANSISTOR		D252	MA8043MTX	DIODE	$\Delta$
Q57	DTA114ESTP	TRANSISTOR		D301, 302	MA8062MTX	DIODE	
Q101-104	2SK369GRTPE2	TRANSISTOR		D303-305	MA110TX	DIODE	
Q105, 106	2SB709QRSTX	TRANSISTOR		D311, 312	MA165	DIODE	
Q107, 108	2SD601QRSTX	TRANSISTOR		D450	MA165	DIODE	
Q109	DTC144EKT147	TRANSISTOR		D451	MA700	DIODE	
Q110	DTA114EKT147	TRANSISTOR		D601, 602	MA165	DIODE	$\Delta$
Q201	2SD2037EFTA	TRANSISTOR	$\Delta$	D603-609	RL1N4003N02	DIODE	$\Delta$
Q250	2SD601QRSTX	TRANSISTOR	$\Delta$	D610-612	MA165	DIODE	
Q251	2SK330GRYTA	TRANSISTOR	$\Delta$	D613	MTZJ8R2CTA	DIODE	$\Delta$
Q252	2SD601QRSTX	TRANSISTOR	$\Delta$	D614	MTZJ6R8CTA	DIODE	$\Delta$
Q303, 304	2SD874QRSTX	TRANSISTOR		D615	RL1N4003N02	DIODE	$\Delta$
Q305	KSD471ACYGTA	TRANSISTOR		D616	MTZJ9R1BTA	DIODE	$\Delta$
Q306	KSB564ACYGTA	TRANSISTOR		D617	MTZJ20DTA	DIODE	$\Delta$
Q307	2SA1309AIRTA	TRANSISTOR		D619, 620	RL1N4003N02	DIODE	
Q308	2SC3311AIRTA	TRANSISTOR		D621	MA165	DIODE	
Q401, 402	2SC3311AIRTA	TRANSISTOR		D622	MTZJ5R1BTA	DIODE	$\Delta$
Q451	DTA114ESTP	TRANSISTOR		D623	MA165	DIODE	
Q452	DTC114ESTP	TRANSISTOR		D624	MTZJ11CTA	DIODE	$\Delta$
Q471	DTC114ESTP	TRANSISTOR		D625, 626	MA165	DIODE	
Q472	DTA114ESTP	TRANSISTOR		D627	MTZJ5R1BTA	DIODE	$\Delta$
Q473	DTC114ESTP	TRANSISTOR		D628	MA29WA	DIODE	
Q501	2SC3311AIRTA	TRANSISTOR		D702	LN873RP-C	L. E. D	
Q601, 602	2SD1450RTA	TRANSISTOR		D703	LN028491PS	L. E. D	
Q603	DTC114ESTP	TRANSISTOR		D704, 705	LN023491PS	L. E. D	
Q604	2SA1309AIRTA	TRANSISTOR	$\Delta$	D851	MA178TA	DIODE	
Q605	2SC3311AIRTA	TRANSISTOR	$\Delta$	D852	MA700	DIODE	
Q606	2SD2374PQAU	TRANSISTOR	$\Delta$	D854	MTZJ3R3ATA	DIODE	
Q607	2SB1548PQAU	TRANSISTOR	$\Delta$	D855	RL1N4003N02	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
D856, 857	MTZJ4R7BTA	DIODE		S711	RSP2B010-2J	POWER	△
D971	RVD1SS133TA	DIODE		S712	EVQ21405R	COUNTER RESET	
		IC PROTECTOR(S)		S713	EVQ21405R	MEMORY STOP	
				S714	EVQ21405R	MPX FILTER	
ICP201	SRUN10	IC PROTECTOR	△	S715	EVQ21405R	DOLBY NR	
		VARIABLE RESISTOR(S)		S716	EVQ21405R	ATC	
				S718	RSS3A18YA-H	PLAY TIMER REC.	
VR101, 102	EVNDCAA03B14	MR HEAD BIAS ADJ.		S851	RSH1A024-U	OPEN DETECTION	
VR701	EVJ02FF03B15	REC LEVEL ADJ.		S852	RSH1A024-U	CLOSE DETECTION	
VR702	EVJ02SF02G15	REC BALANCE ADJ.		S971	RSH1A018-1U	MODE	
VR704	EVJY10F01A24	PHONES LEVEL ADJ.		S972	RSH1A019-2U	HALF	
VR852	EVNDCAA03B53	TAPE SPEED ADJ.		S973	RSH1A019-2U	ATS/C+02	
		OSC. (S) AND COMBINATION (S)		S975	RSH1A019-2U	F. REC. INH	
				S976	RSH1A019-2U	ATS/METAL	
						CONNECTOR (S) AND SOCKET (S)	
Z501	EFOEC6004T4	OSCILLATOR(6MHz)		CN3A	RJS1A6825	CONNECTOR(25P)	
Z701	RCDGP1U28XD	REMOTE SENSOR		CN3B	RJS1A6725-D	CONNECTOR(25P)	
Z851	EXBF7L355SYV	COMPONENT COMBINATION		CN4A	RJS1A6830	CONNECTOR(30P)	
Z971	EXBF6L306SYV	COMPONENT COMBINATION		CN4B	RJS1A6230-1	CONNECTOR(30P)	
		COIL (S)		CN101	RJS2A3316	CONNECTOR(16P)	
				CN102	REX0784	CONNECTOR ASS'Y(2P)	
L1-3	RLQZB822KT-D	COIL		CN601	RJS1A1101T1	CONNECTOR(1P)	
L51, 52	RLQB103JT-Y	COIL		CN603	RJS1A1101T1	CONNECTOR(1P)	
L301, 302	SL09B1-K	COIL		CN606-610	RJS1A1101T1	CONNECTOR(1P)	
L303	RL08B005-K	COIL		CN701	RJU057W004	SOCKET(4P)	
L451, 452	RLQB103JT-Y	COIL		CN701A	RJS1A6604	CONNECTOR(4P)	
		TRANSFORMER (S)		CN701B	RJS1A6604	CONNECTOR(4P)	
				CN703	RJS1A6604	CONNECTOR(4P)	
T601	RTP1K4B026-V	POWER TRANSFORMER	△	CN851	RJR0113	MOTOR CONNECTOR(4P)	
		DISPLAY TUBE (S)		CP102	RJP2G17ZA	CONNECTOR(2P)	
				CP501	SJS50581BB	SOCKET(5P)	
FL501	RSLO215-F	DISPLAY TUBE		CP701	RJT057W004-1	CONNECTOR(4P)	
		LAMP (S)		CP851	RJT071H11A	CONNECTOR(11P)	
				CS971	RJU071H11M	SOCKET(11P)	
						JACK(S)	
PL701	XAMR136S	LAMP		JK1	SJF3069A	TERMINAL BOARD:REC/PLAY	
		SWITCH(ES)		JK601	SJS9236	AC INLET	△
				JK701	SJJD19	HEADPHONES JACK	
						FLAT CABLE(S)	
S701	EVQ21405R	STOP					
S702	EVQ21405R	PLAY		W701	REZ0895-1	FLAT CABLE(8P)	
S704	EVQ21405R	F. F.		W703	REZ0918	FLAT CABLE(4P)	
S705	EVQ21405R	REW.					
S706	EVQ21405R	REC. PAUSE				GND PART(S)	
S707	EVQ21405R	AUTO REC. MUTE					
S708	EVQ21405R	OPEN/CLOSE		E1	SNE1004-2	GND PLATE	
S709	EVQ21405R	MONITOR		E701	SJSD165	GND PLATE	
S710	EVQ21405R	PLAY DIRECT					

# 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, 1K=1,000 (OHM), 1M=1,000k (OHM)

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
		RESISTORS	R253	ERJ6GEYJ102V	1/10W 1K	R511	ERDS2TJ103	1/4W 10K
			R254	ERJ6GEYJ271V	1/10W 270	R512	ERDS2TJ471	1/4W 470
			R321	ERJ6GEYJ1R0V	1/10W 1.0	R513	ERDS2TJ103	1/4W 10K
R31, 32	ERDAS3G394T	1/4W 390K	R322, 323	ERJ6GEYJ183V	1/10W 18K	R514, 515	ERDS2TJ223	1/4W 22K
R33, 34	ERDAS3G333	1/4W 33K	R324, 325	ERJ6GEYJ100	1/10W 10	R516	ERDS2TJ472	1/4W 4.7K
R35, 36	ERDAS3G273T	1/4W 27K	R326	ERDS2TJ122	1/4W 1.2K	R517	ERDS2TJ223	1/4W 22K
R37, 38	ERDAS3G222T	1/4W 2.2K	R327	ERDS2TJ5R6	1/4W 5.6	R520, 521	ERDS2TJ331	1/4W 330
R39, 40	ERDAS3G561	1/4W 560	R328	ERDS2TJ100	1/4W 10	R522	ERDS2TJ103	1/4W 10K
R41, 42	ERDAS3G272T	1/4W 2.7K	R329	ERDS2TJ101	1/4W 100	R601-604	ERDS2TJ472	1/4W 4.7K
R43, 44	ERDS2TJ225	1/4W 2.2M	R333, 334	ERJ6GEYJ102V	1/10W 1K	R606, 607	ERDS2TJ472	1/4W 4.7K
R45, 46	ERDS2TJ102	1/4W 1K	R335	ERDS2TJ473	1/4W 47K	R608	ERDS2TJ103	1/4W 10K
R51-56	ERDS2TJ101	1/4W 100	R336	ERDS2TJ332	1/4W 3.3K	R609	ERDS2TJ1R5T	1/4W 1.5
R58	ERDS2TJ102	1/4W 1K	R337	ERDS2TJ472	1/4W 4.7K	R610	ERDS2TJ472	1/4W 4.7K
R59, 60	ERDAS3G103T	1/4W 10K	R338	ERDS2TJ1R0	1/4W 1.0	R611	ERDS2TJ104	1/4W 100K
R61, 62	ERDAS3G183T	1/4W 18K	R341, 342	ERJ6GEYJ823	1/10W 82K	R612	ERDS2TJ1R5T	1/4W 1.5
R63, 64	ERDAS3G122	1/4W 1.2K	R343, 344	ERJ6GEYJ562V	1/10W 5.6K	R613	ERDS2TJ101	1/4W 100
R65, 66	ERDAS3G682T	1/4W 6.8K	R345, 346	ERJ6GEYJ104V	1/10W 100K	R614, 615	ERDS2TJ471	1/4W 470
R67, 68	ERDAS3G472T	1/4W 4.7K	R347, 348	ERJ6GEYJ100	1/10W 10	R616	ERDS2TJ101	1/4W 100
R69, 70	ERDAS3G392T	1/4W 3.9K	R349	ERJ6GEYJ562V	1/10W 5.6K	R617	ERDS2TJ331	1/4W 330
R71, 72	ERDAS3G472T	1/4W 4.7K	R350	ERJ6GEYJ472V	1/10W 4.7K	R618	ERD2FCVJ4R7T	1/4W 4.7 Δ
R73, 74	ERDAS3G683T	1/4W 68K	R401, 402	ERDAS3G472T	1/4W 4.7K	R619	ERDS2TJ391	1/4W 390
R75, 76	ERDS2TJ122	1/4W 1.2K	R423	ERDS2TJ223	1/4W 22K	R620	ERDS2TJ101	1/4W 100
R77, 78	ERDAS3G562T	1/4W 5.6K	R425	ERDS2TJ223	1/4W 22K	R621	ERDS2TJ222	1/4W 2.2K
R79, 80	ERDAS3G392T	1/4W 3.9K	R426	ERDS2TJ124T	1/4W 120K	R622	ERD2FCVG100T	1/4W 10 Δ
R81, 82	ERDAS3G333	1/4W 33K	R427	ERDS2TJ272T	1/4W 2.7K	R623	ERDS2TJ101	1/4W 100
R86, 87	ERDS2TJ122	1/4W 1.2K	R428	ERDS2TJ103	1/4W 10K	R624	ERDS2TJ222	1/4W 2.2K
R89	ERDS2TJ272T	1/4W 2.7K	R430	ERDS2TJ222	1/4W 2.2K	R625	ERD2FCVG100T	1/4W 10
R90	ERDS2TJ103	1/4W 10K	R433, 434	ERDS2TJ103	1/4W 10K	R626	ERDS2TJ101	1/4W 100
R91, 92	ERDAS3G223T	1/4W 22K	R435-438	ERDAS3G103T	1/4W 10K	R627	ERDS2TJ103	1/4W 10K
R101, 102	ERJ6GEYJ272V	1/10W 2.7K	R451, 452	ERDAS3G681	1/4W 680	R628	ERD2FCVG180T	1/4W 18 Δ
R103, 104	ERJ6GEYJ102V	1/10W 1K	R453	ERDS2TJ103	1/4W 10K	R629	ERD2FCVG330T	1/4W 33 Δ
R105, 106	ERJ6GEYJ472V	1/10W 4.7K	R455	ERDS2TJ223	1/4W 22K	R630	ERDS2TJ331	1/4W 330
R107, 108	ERJ6GEYJ272V	1/10W 2.7K	R459, 460	ERDAS3G103T	1/4W 10K	R631	ERDS2TJ101	1/4W 100
R109, 110	ERJ6GEYJ560V	1/10W 56	R461, 462	ERDAS3G561	1/4W 560	R632	ERDS2TJ103	1/4W 10K
R111, 112	ERJ6GEYJ123V	1/10W 12K	R463, 464	ERDS2TJ472	1/4W 4.7K	R634	ERD2FCVJ6R8T	1/4W 6.8 Δ
R113-116	ERJ6GEYJ472V	1/10W 4.7K	R465	ERDS2TJ103	1/4W 10K	R701	ERDS2TJ182	1/4W 1.8K
R117, 118	ERJ6GEYJ154V	1/10W 150K	R467, 468	ERDAS3G272T	1/4W 2.7K	R702, 703	ERDS2TJ333	1/4W 33K
R121, 122	ERJ6GEYJ473V	1/10W 47K	R469, 470	ERDAS3G562T	1/4W 5.6K	R704, 705	ERDS2TJ102	1/4W 1K
R123, 124	ERJ6GEYJ181V	1/10W 180	R471, 472	ERDAS3G102T	1/4W 1K	R706, 707	ERDS2TJ562	1/4W 5.6K
R125-128	ERJ6GEYJ102V	1/10W 1K	R473, 474	ERDAS3G152T	1/4W 1.5K	R708	ERDS2TJ471	1/4W 470
R129, 130	ERJ6GEYJ223V	1/10W 22K	R475	ERDS2TJ103	1/4W 10K	R709	ERDS2EJ121	1/4W 120
R131	ERJ6GEYJ102V	1/10W 1K	R476-479	ERDS2TJ102	1/4W 1K	R710	ERDS2TJ102	1/4W 1K
R132-138	ERJ6GEYJ103V	1/10W 10K	R480	ERDS2TJ104	1/4W 100K	R711	ERDS2TJ821	1/4W 820
R139	ERJ6GEYJ681V	1/10W 680	R481, 482	ERDAS3G103T	1/4W 10K	R712	ERDS2TJ102	1/4W 1K
R202	ERDS2TJ102	1/4W 1K	R501-504	ERDS2TJ473	1/4W 47K	R713	ERDS2TJ122	1/4W 1.2K
R203	ERDS2TJ101	1/4W 100	R505, 506	ERDS2TJ103	1/4W 10K	R714	ERDS2TJ152	1/4W 1.5K
R250	ERJ6GEYJ102V	1/10W 1K	R508	ERDS2TJ473	1/4W 47K	R715	ERDS2TJ182	1/4W 1.8K
R251	ERJ6GEYJ563V	1/10W 56K	R509	ERDS2TJ222	1/4W 2.2K	R716	ERDS2TJ222	1/4W 2.2K
R252	ERJ6GEYJ105	1/10W 1M	R510	ERDS2TJ682T	1/4W 6.8K	R717	ERDS2TJ332	1/4W 3.3K

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
R718	ERDS2TJ472	1/4W 4.7K	C57, 58	ECQB1H472JF3	50V 4700P	C407, 408	ECBT1C152JR5	16V 1500P
R719	ERDS2TJ682T	1/4W 6.8K	C59, 60	ECA1HPXSR47B	50V 0.47U	C409, 410	ECEA1HKAR47B	50V 0.47U
R720	ERDS2TJ821	1/4W 820	C61, 62	ECQB1H123JF3	50V 0.012U	C411, 412	ECA1CPXS100B	16V 10U
R721	ERDS2TJ102	1/4W 1K	C63, 64	ECQB1H102JF3	50V 1000P	C413	ECQV1H474JM3	50V 0.47U
R722	ERDS2TJ122	1/4W 1.2K	C65, 66	ECQB1H682JF3	50V 6800P	C414	ECBT1H104ZF5	50V 0.1U
R723	ERDS2TJ152	1/4W 1.5K	C67, 68	ECA1HPXS4R7B	50V 4.7U	C416	ECBT1C392KR5	16V 3900P
R724	ERDS2TJ182	1/4W 1.8K	C69	ECBT1E103ZF	25V 0.01U	C417	ECBT1H104ZF5	50V 0.1U
R725	ERDS2TJ222	1/4W 2.2K	C70	RCE1CKA100BG	16V 10U	C418	ECEA1HKAR47B	50V 0.47U
R726	ERDS2TJ332	1/4W 3.3K	C71, 72	ECA1HPXSR47B	50V 0.47U	C419	RCE1CKA100BG	16V 10U
R727	ERDS2TJ472	1/4W 4.7K	C73, 74	ECEA1CN100SB	16V 10U	C422	RCE1CKA100BG	16V 10U
R728	ERDS2TJ331	1/4W 330	C75, 76	ECA1CPXS100B	16V 10U	C423	ECEA1HKA010B	50V 1U
R729, 730	ERDS2TJ181T	1/4W 180	C77, 78	ECBT1H101KB5	50V 100P	C424	ECQV1H474JM3	50V 0.47U
R731, 732	ERDS2TJ101	1/4W 100	C79, 80	ECA1HPXS4R7B	50V 4.7U	C425	ECBT1C152KR5	16V 1500P
R733, 734	ERDS2TJ180T	1/4W 18	C81-84	ECBT1C332KR5	16V 3300P	C427, 428	ECA1HPXSR47B	50V 0.47U
R735	ERDS2TJ103	1/4W 10K	C85	ECBT1E103ZF	25V 0.01U	C430, 431	ECBT1H101KB5	50V 100P
R855	ERJ6GEYJ392V	1/10W 3.9K	C86	ECBT1E223ZF	25V 0.022U	C432, 433	ECBT1H471KB5	50V 470P
R856	ERJ6GEYJ103V	1/10W 10K	C87	ECBT1E103ZF	25V 0.01U	C434	ECBT1H101KB5	50V 100P
R857, 858	ERJ6GEYJ683V	1/10W 68K	C91, 92	ECBT1H471KB5	50V 470P	C451	ECBT1H104ZF5	50V 0.1U
R861	ERDS2TJ472	1/4W 4.7K	C101, 102	ECUV1E183KBN	25V 0.018U	C452	ECBT1E103ZF	25V 0.01U
R862	ERDS2TJ223	1/4W 22K	C103, 104	RCE0GKS221IG	4V 220U	C453, 454	ECA1HPXSR47B	50V 4.7U
R863	ERDS2TJ821	1/4W 820	C105-108	ECA1VAD4R7XI	35V 4.7U	C455, 456	ECQB1H152JF3	50V 1500P
R864	ERDS2TJ223	1/4W 22K	C109, 110	ECUV1E223KBN	25V 0.022U	C457, 458	ECEA1HKAR47B	50V 0.47U
R865	ERDS2TJ821	1/4W 820	C111, 112	ECUV1H101KCN	50V 100P	C459, 460	ECQB1H152JF3	50V 1500P
R866	ERDS2TJ472	1/4W 4.7K	C113, 114	ECQB1H103JF3	50V 0.01U	C461, 462	ECEA1HKAR47B	50V 0.47U
R867	ERDS2TJ223	1/4W 22K	C115, 116	ECUV1H101KCN	50V 100P	C463	ECEA1EKN3R3B	25V 3.3U
R868	ERDS2TJ821	1/4W 820	C117	RCE0JKS101IV	6.3V 100U	C465, 466	ECBT1H221KB5	50V 220P
R869	ERDS2TJ681	1/4W 680	C201	ECBT1E103ZF	25V 0.01U	C467, 468	ECBT1C122KR5	16V 1200P
R870	ERDS2TJ102	1/4W 1K	C250	ECUV1E223ZFN	25V 0.022U	C470, 471	ECBT1E103ZF	25V 0.01U
R873	ERDS2TJ472	1/4W 4.7K	C251	ECA1CAD100XI	16V 10U	C473, 474	ECBT1H471KB5	50V 470P
R874	ERDS2TJ473	1/4W 47K	C252	ECUV1H103ZFN	50V 0.01U	C475, 476	ECA1CPXS100B	16V 10U
R875, 876	ERDS2TJ183T	1/4W 18K	C253	ECA1CAD100XI	16V 10U	C477, 478	ECA1HPXS010B	50V 1U
R877, 878	ERDS2TJ562	1/4W 5.6K	C254	ECEA1AKS221I	10V 220U	C501	ECEA1HKA010B	50V 1U
R879, 880	ERDS2TJ100	1/4W 10	C255	ECUV1E223ZFN	25V 0.022U	C502	ECEA1EKA4R7B	25V 4.7U
R971	ERDS2TJ221	1/4W 220	C303	ECQP2A822JZT	100V 8200P	C503-505	RCE1CKA100BG	16V 10U
R973, 974	ERDS2TJ393	1/4W 39K	C304	ECUV1H392KBN	50V 3900P	C601	ECA1EM472E	25V 4700U $\Delta$
			C305-307	ECUV1H222KBN	50V 2200P	C602	ECA1EM221B	25V 220U
		CHIP JUMPER (S)	C308	RCE1CKS220IV	16V 22U	C603	ECKR2H682PE	500V 6800P
			C309	ECBT1E103ZF	25V 0.01U	C604, 605	ECA1VPT102ZE	35V 1000U $\Delta$
RJ11-31	ERJ6GEYOR00V	CHIP JUMPER	C312	ECBT1E103ZF	25V 0.01U	C606	RCE1HM221BV	50V 220U $\Delta$
RJ33-40	ERJ6GEYOR00V	CHIP JUMPER	C341, 342	ECUV1H561KBN	50V 560P	C607, 608	ECBT1E103ZF	25V 0.01U
			C343-346	ECQB1H103JF3	50V 0.01U	C609	ECEA1AJ221	10V 220U
		CAPACITORS	C347, 348	ECUV1H121KCN	50V 120P	C610	ECA1AM471B	10V 470U
			C349, 350	ECKR2H121KB5	500V 120P	C611, 612	ECBT1E103ZF	25V 0.01U
C25, 26	ECCR2H820J5	500V 82P	C351, 352	ECUV1E473KBN	25V 0.047U	C613	ECA0JM102B	6.3V 1000U $\Delta$
C31, 32	ECA1HPXS010B	50V 1U	C353	ECUV1H680KCN	50V 68P	C614, 615	ECBT1E103ZF	25V 0.01U
C33, 34	ECA1CPXS100B	16V 10U	C355, 356	ECQB1H223JF3	50V 0.022U	C616	ECEA1HKNR47B	50V 0.47U
C35, 36	ECA1APXS101B	10V 100U	C357	ECA1CAD100XI	16V 10U	C620, 621	ECA1CPX471TB	16V 470U
C37, 38	ECA1CPXS220B	16V 22U	C359, 360	ECUV1E473KBN	25V 0.047U	C622	ECBT1E103ZF	25V 0.01U
C39, 40	ECEA1HKA010B	50V 1U	C361, 362	ECUV1H103ZFN	50V 0.01U	C623	RCE1AKA101BG	10V 100U
C51, 52	ECQB1H472JF3	50V 4700P	C401, 402	ECA1CPXS100B	16V 10U	C701, 702	ECBT1E103ZF	25V 0.01U
C53, 54	ECQB1H122JF3	50V 1200P	C403, 404	ECBT1C182KR5	16V 1800P	C704, 705	ECBT1E103ZF	25V 0.01U
C55, 56	ECKD1H821KB	50V 820P	C405, 406	ECEA1HKAR47B	50V 0.47U	C706	ECBT1H104ZF5	50V 0.1U

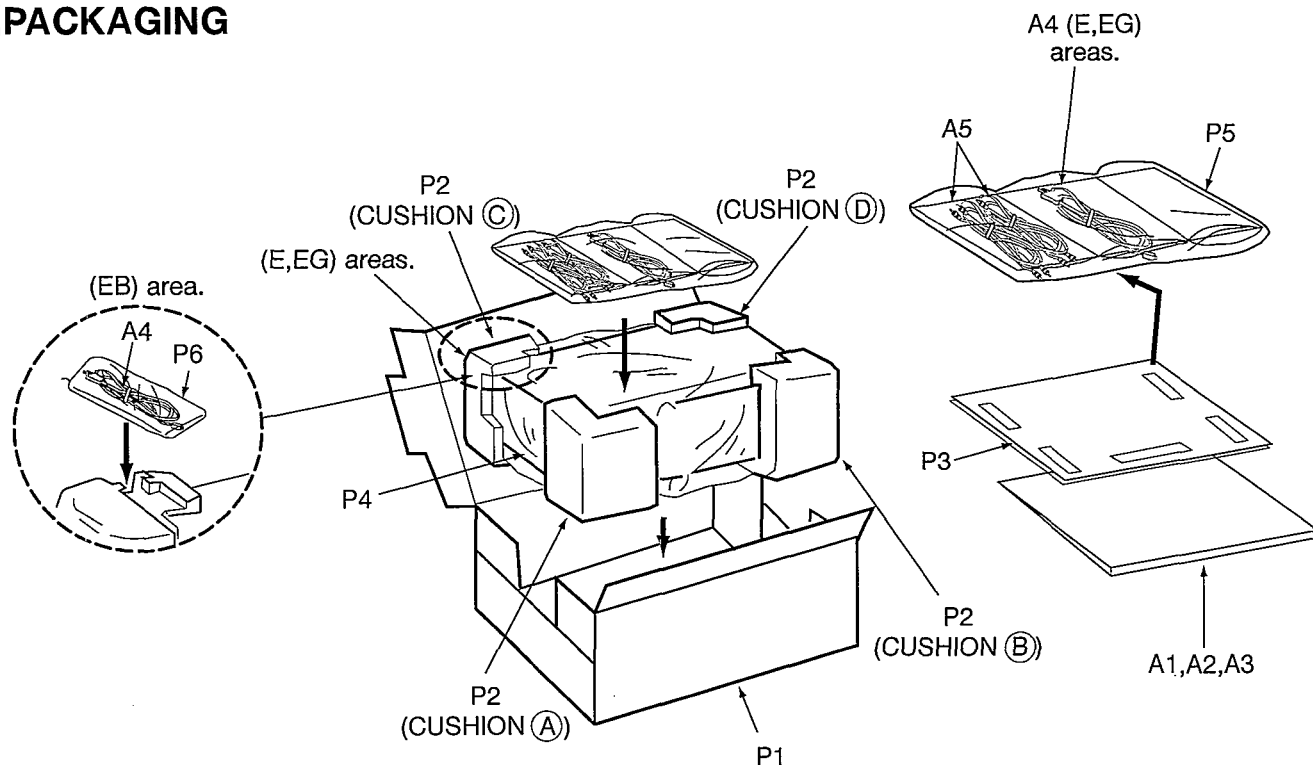
Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
C711, 712	ECE1CKA100BG	16V 10U	C853	ECEA1HKAR47B	50V 0.47U	C856	ECEA1CKA220B	16V 22U
C851	ECEA1CSN100I	16V 10U	C855	ECBT1E103ZF	25V 0.01U			

## REPLACEMENT PARTS LIST

**Notes:** \* Important safety notice:  
 Components identified by  $\Delta$  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.  
 \* The "(SF)" mark denotes the standard part.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		PACKING MATERIAL		A2	RQA0117	WARRANTY CARD	
				A3	RQCB0169	SERVICENTER LIST	
P1	RPG2956	PACKING CASE	(E, EG)	A4	RJA0019-2K	AC POWER SUPPLY CORD	(E, EG) $\Delta$ (SF)
P1	RPG2957	PACKING CASE	(EB)	A4	RJA0049-K	AC POWER SUPPLY CORD	(EB) $\Delta$
P2	RPN0956	CUSHION	(E, EG)	A5	RJLAP004B08	STEREO CONNECTION CABLE	
P2	RPN0979	CUSHION	(EB)			<GREASE OR JIG/TOOL>	
P3	RPQ0164	ACCESSORIES PAD				TEST TAPE	
P4	SPP723	PROTECTION COVER (THIS UNIT)		SA1	QZZCFM	OVERALL ADJUSTMENT CHECK	
P5	RPF0139	PROTECTION BAG (F. B., ACC.)		SA2	QZZCWAT	TEST SPEED ADJUSTMENT	
P6	RPH0032	MIRROR SHEET	(EB)			GREASE	
		ACCESSORIES					
A1	RFKSSAZ7EK	INSTRUCTION MANUAL ASS'Y	(E)	SA3	SZZ0L18	FLOIL AK-152	
A1	RQT3434-B	INSTRUCTION MANUAL	(EB)	SA4	RZZ0L02	OIL #56	
A1	RQT3433-D	INSTRUCTION MANUAL	(EG)	SA5	RZZ0L05	MOLYCOAT EM-20L	

## PACKAGING



<CUSHION (A), (B), (C), (D) Part No.: RPN0956(E,EG), RPN0979 (EB)>