

# Service Manual

Cassette Deck

## RS-TR474

**Supplement**

Dolby NR-Equipped  
Stereo Double Cassette Deck



Colour  
(K)...Black Type

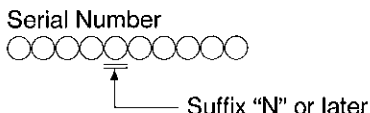
Suffix for Model No.	Area	Colour
(P)	U.S.A.	(K)
(PC)	Canada.	
(E)	Europe.	
(EB)	Great Britain.	
(EG)	Germany and Italy.	

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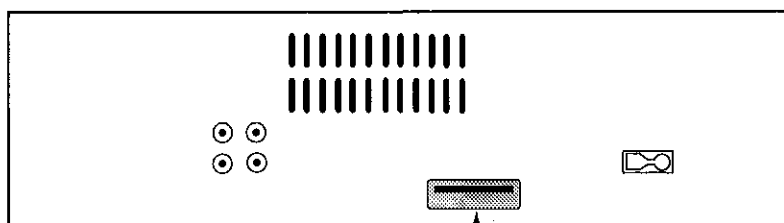
*PG36 NO SOUND R 406/7 O/C*  
*PG38 RE*  
*LOCATION CAUSE: S/C C423/4*

Please file and use this supplement manual together with the service manual for Model No. RS-TR474, Order No. AD9401007C5.

- Notes:**
- This supplement manual is intended to provide additional information or corrections to the existing service manual for model No. RS-TR474. Be sure to update your service manual for future reference.
  - Use this supplement for those sets with suffix "N" onward. (Refer to the following drawing.)



(REAR PANEL)



Serial Number Sticking Position

**⚠ 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.

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## ■ 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.

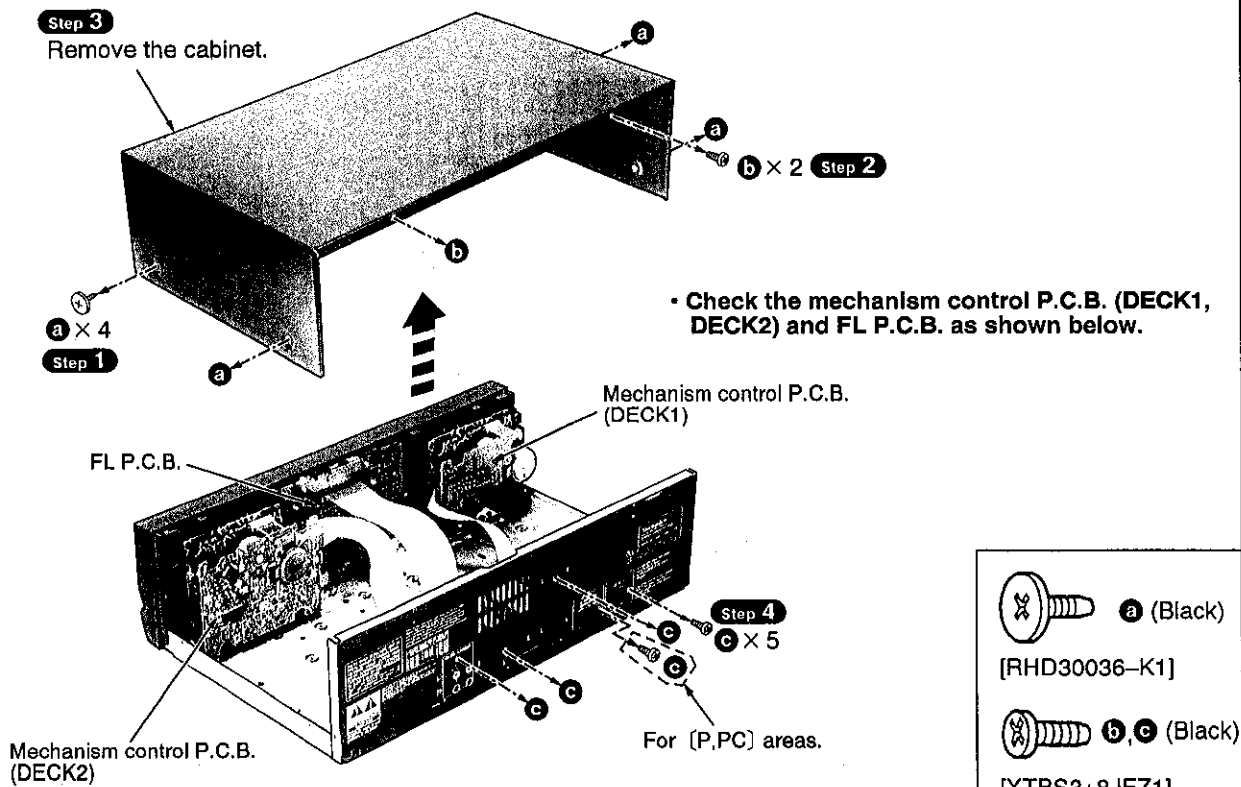
1. Checking for the mechanism control P.C.B., FL P.C.B. and main P.C.B. .... 2,3. Page.

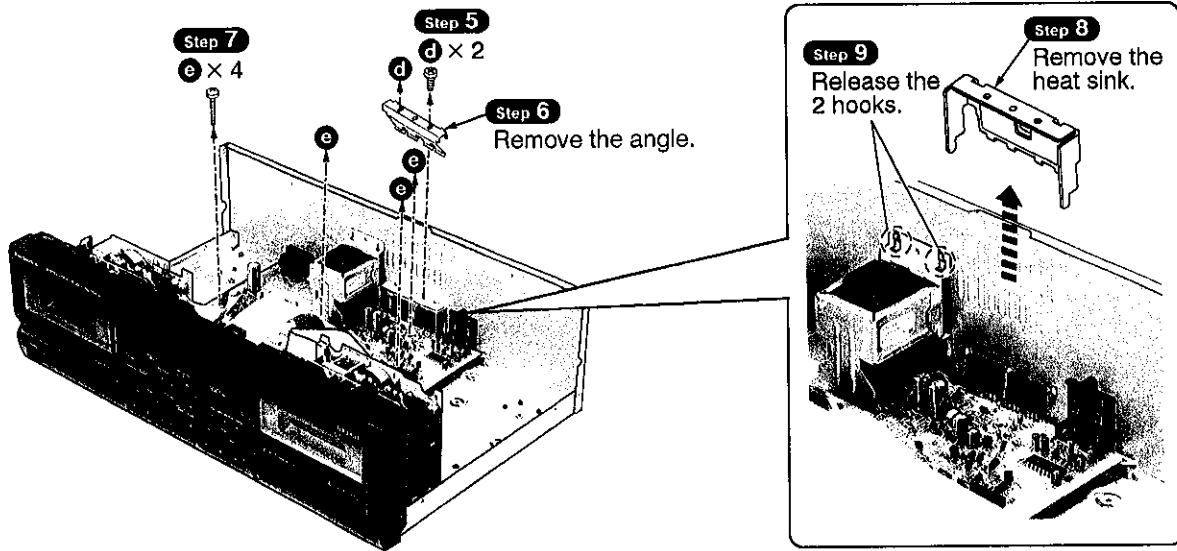
#### •Main Component Replacement Procedures

1. Replacement for the head block and pinch roller ass'y. .... 3~8.
2. Replacement for the belt, reel motor unit and capstan motor unit. .... 8~10.
3. Replacement for the parts mounted on mechanism P.C.B. and solenoid unit. .... 10,11.

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

### 1. Checking for the mechanism control P.C.B., FL P.C.B. and main P.C.B.

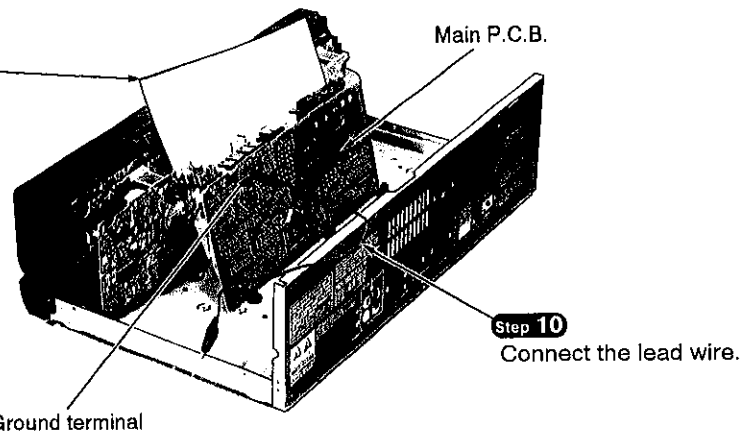




• Check the main P.C.B. as shown below.

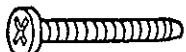
**NOTE**

Insulate main P.C.B. with insulation material to avoid short-circuit.



d (Black)

[XTBS3+8JFZ1]



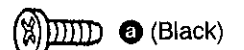
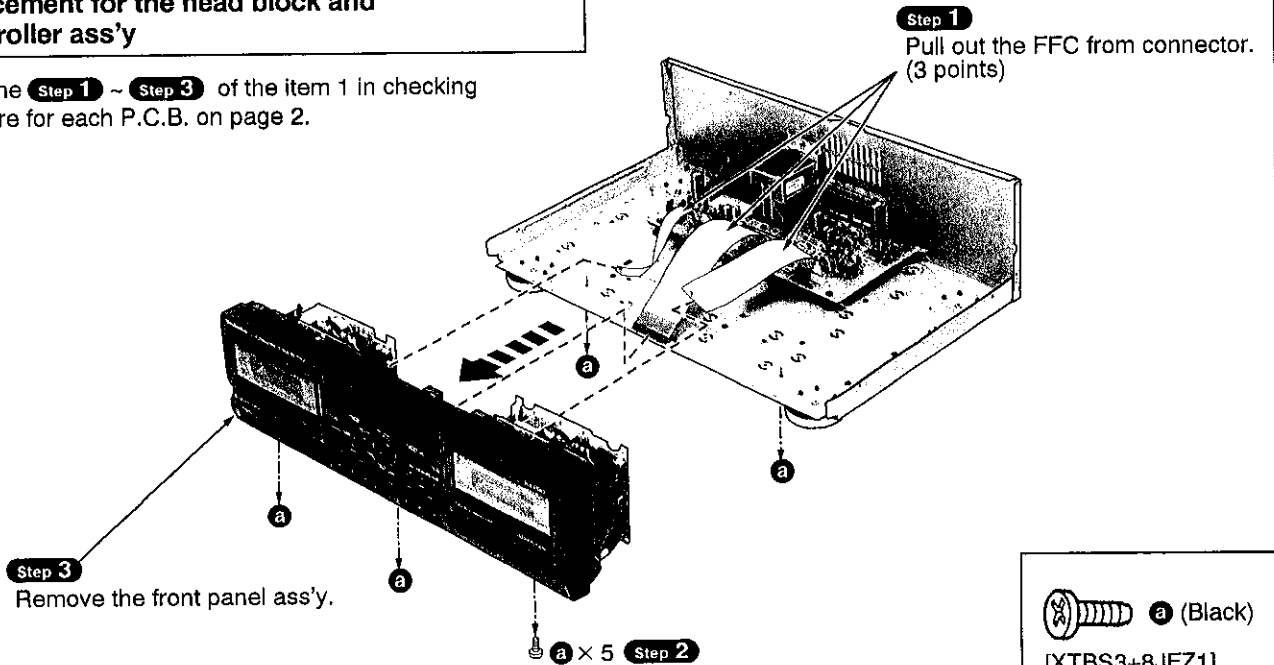
e (Black)

[XTB3+20JFZ]

**Main Component Replacement Procedures**

**1. Replacement for the head block and pinch roller ass'y**

• Follow the **Step 1** ~ **Step 3** of the item 1 in checking procedure for each P.C.B. on page 2.

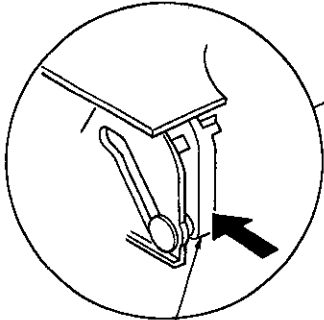


a (Black)

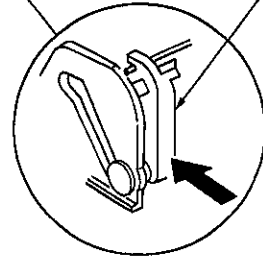
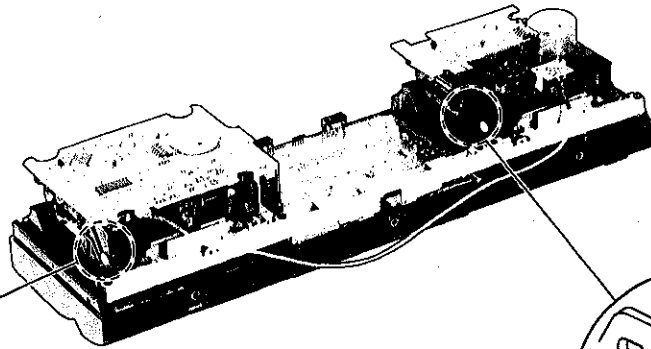
[XTBS3+8JFZ1]

**Step 4**

Press the drive lever.



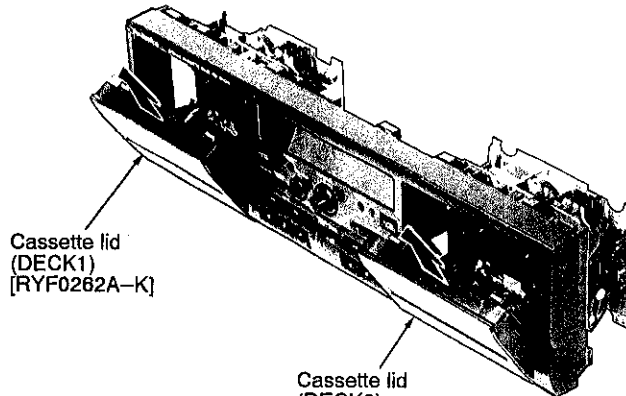
Drive lever  
(DECK2)



Drive lever  
(DECK1)

**Step 5**

Remove the cassette lid in the direction of arrow.

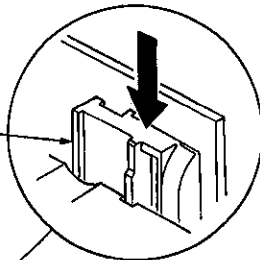


Cassette lid  
(DECK1)  
[RYF0262A-K]

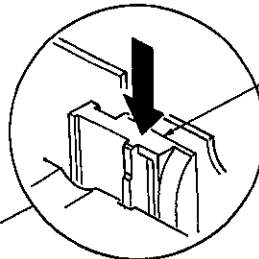
Cassette lid  
(DECK2)  
[RYF0262B-K]

**Step 6**

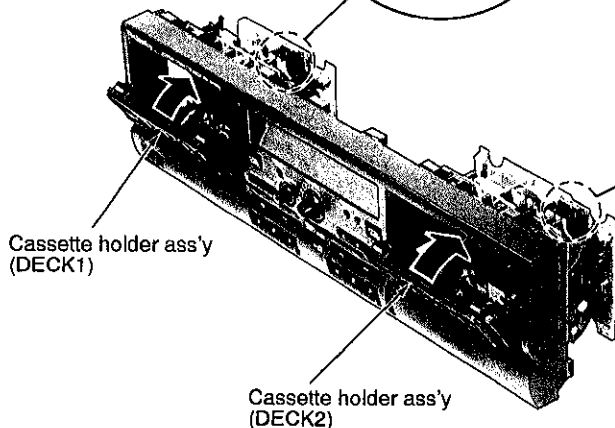
Press the drive rack, and then close the cassette holder ass'y.



Drive rack  
(DECK1)





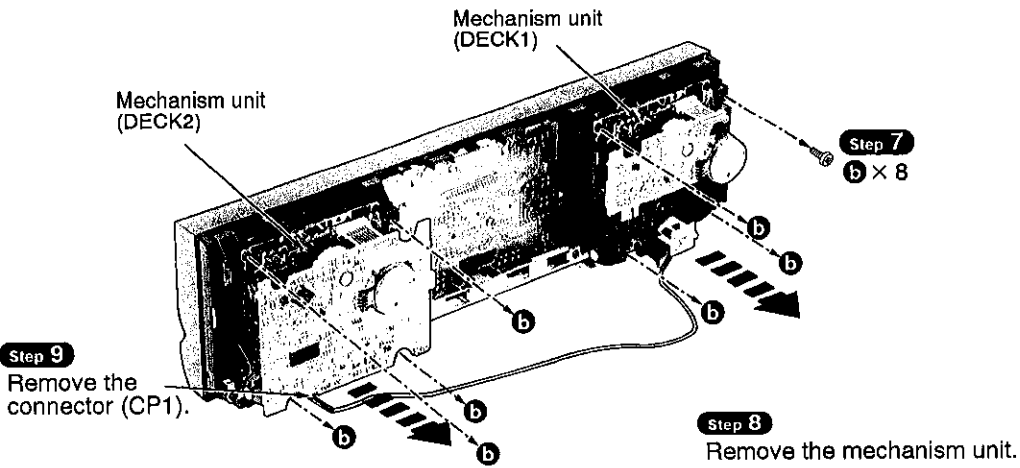
Drive rack  
(DECK2)



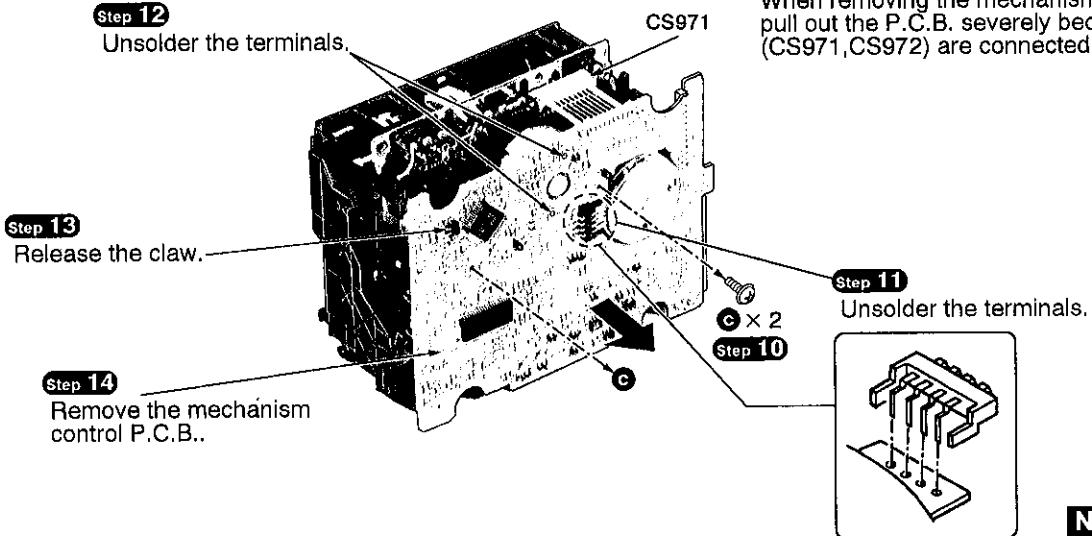
Cassette holder ass'y  
(DECK1)

Cassette holder ass'y  
(DECK2)

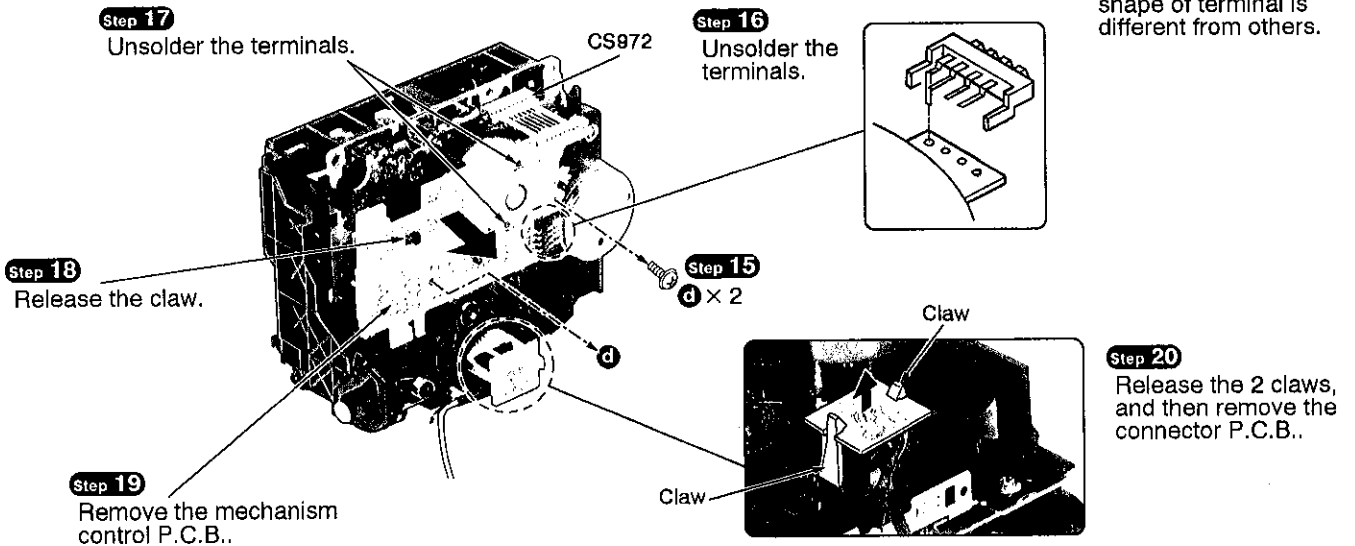
-  **b** (Black)
- [XTB3+10JFZ]
-  **c, d**
- [XTW2+6S]

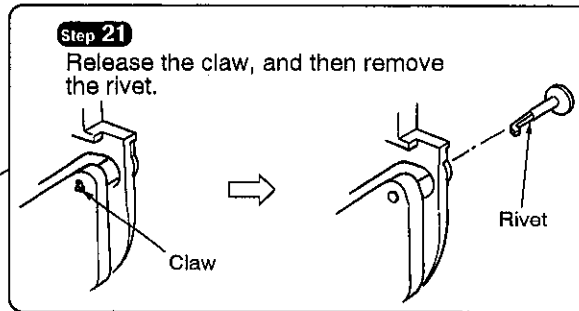
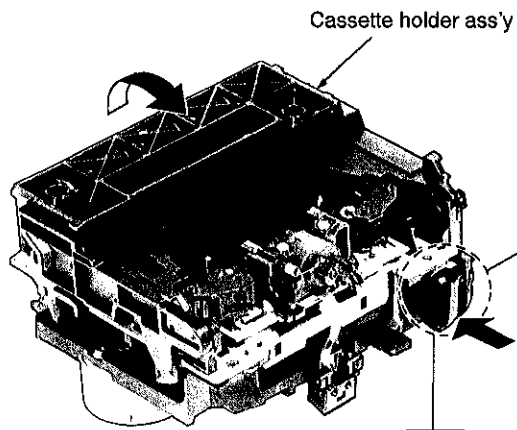


**[Removal of the mechanism control P.C.B. (DECK2)]**

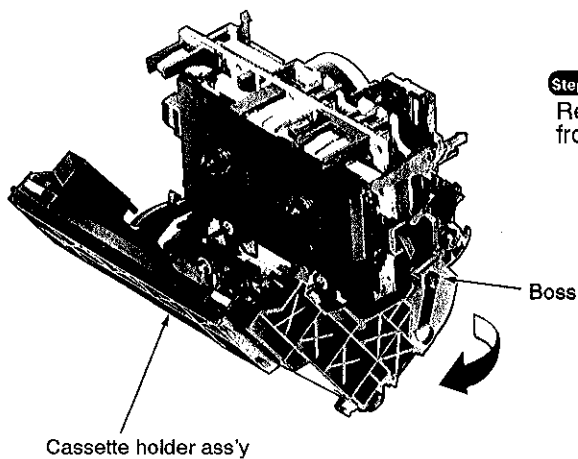


**[Removal of the mechanism control P.C.B. (DECK1)]**

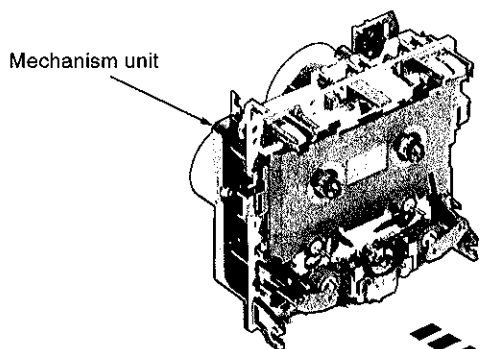




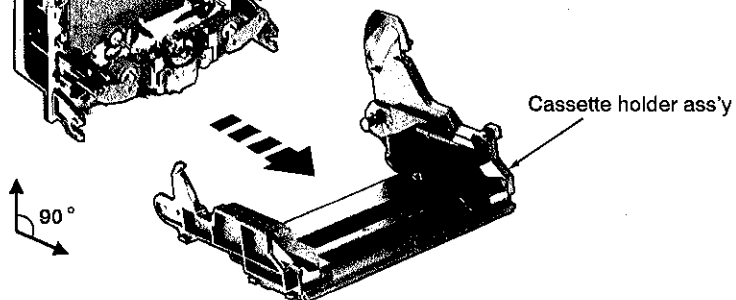
**Step 22**  
Press the drive lever, and then open the cassette holder ass'y.



**Step 23**  
Remove the cassette holder ass'y from boss.

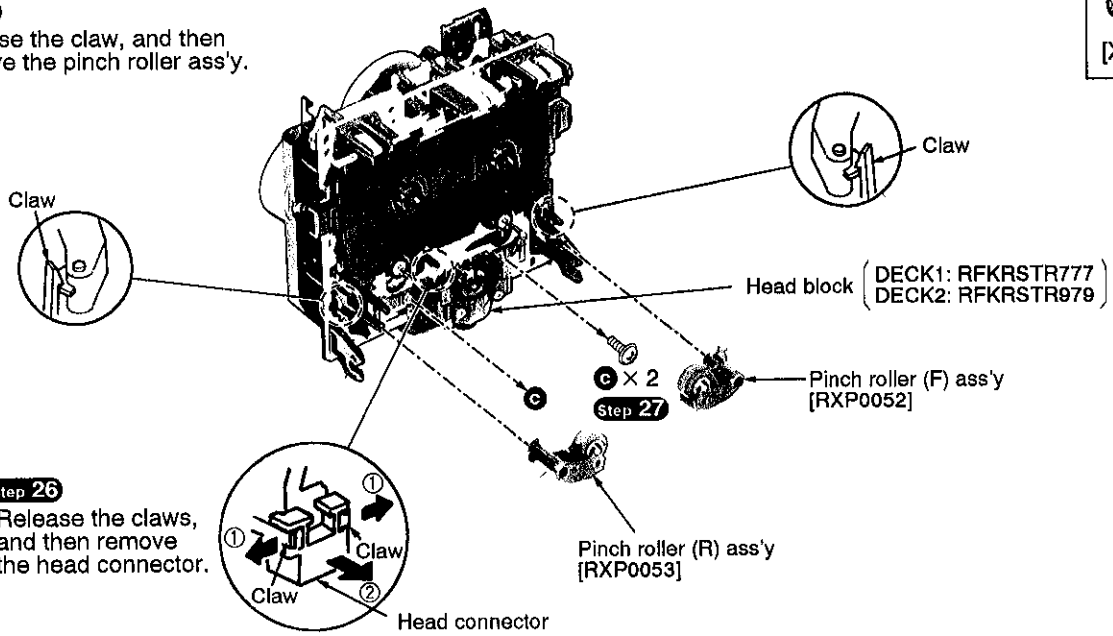


**Step 24**  
Locate the cassette holder ass'y and mechanism unit at a 90 degree angle as shown bellow, and then pull the cassette holder ass'y.



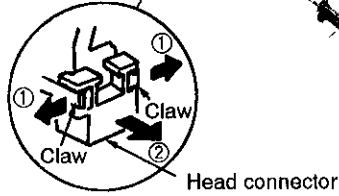
**Step 25**

Release the claw, and then remove the pinch roller ass'y.



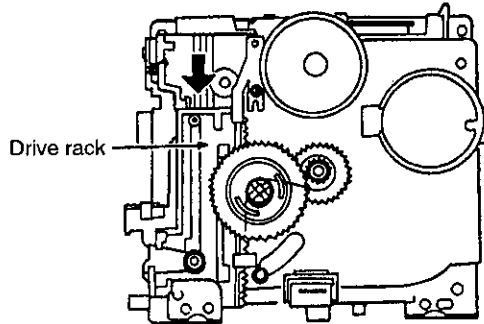
**Step 26**

Release the claws, and then remove the head connector.



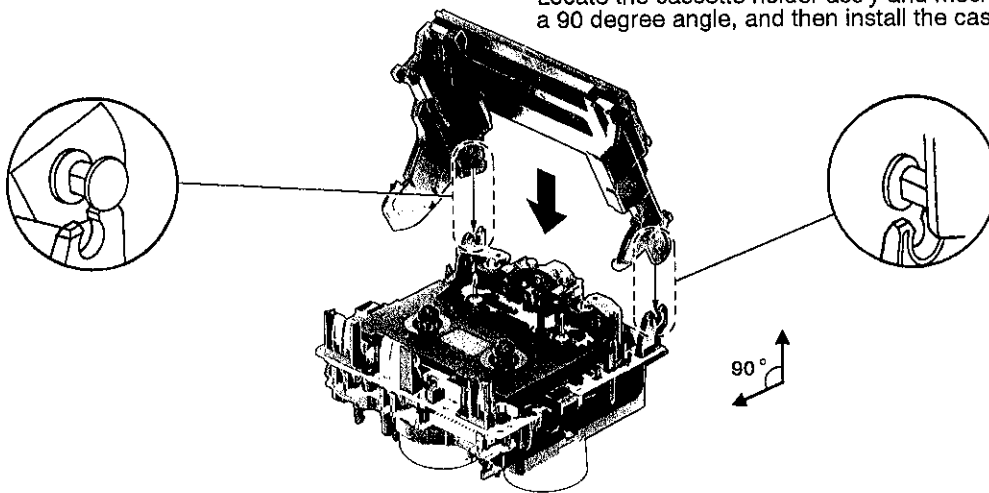
**Installation of the cassette holder ass'y after replacement**

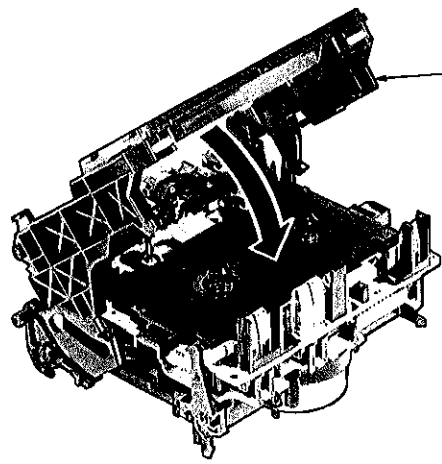
**Step 1** Push the drive rack in the direction of arrow.



**Step 2**

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

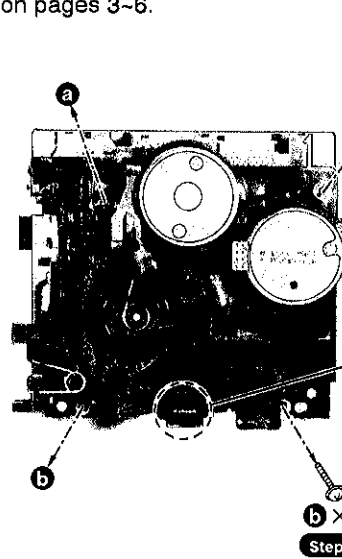




**Step 3**  
Close the cassette holder ass'y.

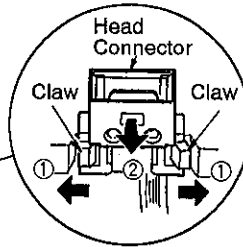
**2. Replacement for the belt, reel motor unit and capstan motor unit**

- Follow the **Step 1** ~ **Step 3** of the item 1 in checking procedure for each P.C.B. on page 2.
- Follow the **Step 1** ~ **Step 24** of the item 1 in main component replacement procedures on pages 3~6.

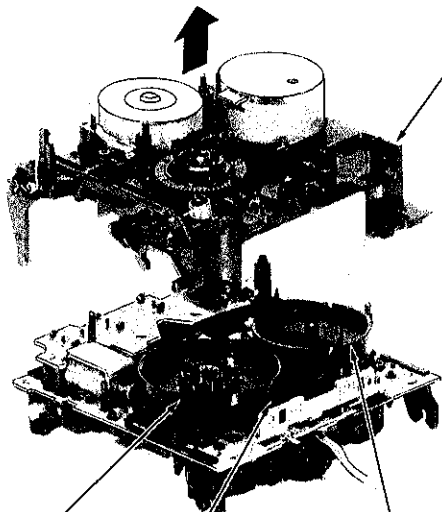


**Step 1**  
a × 2

b × 2  
**Step 2**



**Step 3**  
Release the claws, and then remove the head connector.



**Step 4**  
Remove the sub chassis ass'y.

※ Belt

	Part No.
DECK1	RDV108ZA
DECK2 (P,PC)	RDV108ZA
DECK2 (E,EB,EG)	RDV0015

Flywheel (F)    ※ Belt    Flywheel (R)

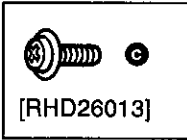
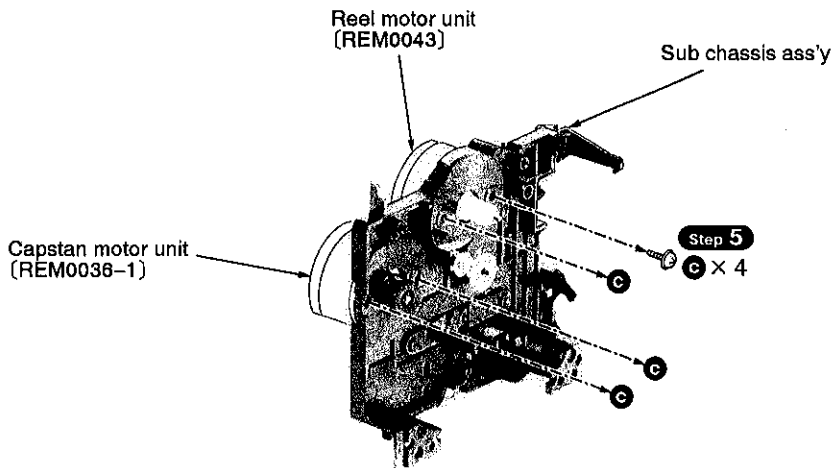


[XTW26+12S]



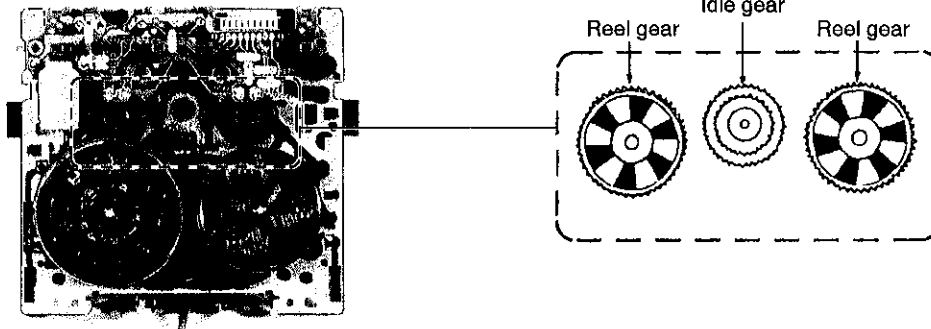
[XTW26+6L]



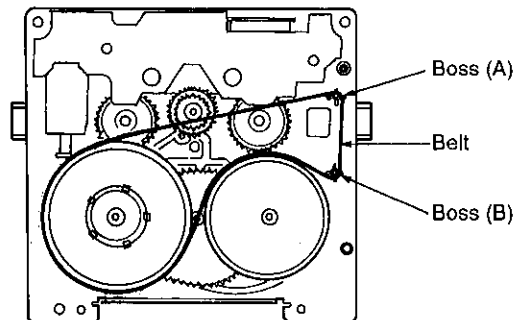


**Installation of the sub chassis ass'y after replacement**

**Step 1**  
Place the idle gear in the center.



**Step 2**  
Temporarily secure the belt.

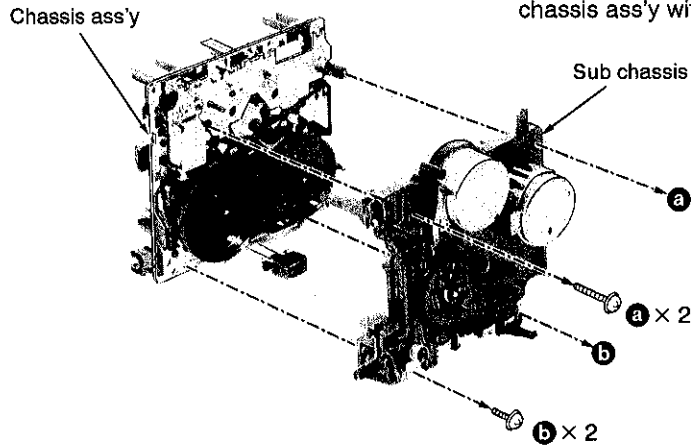


Chassis ass'y

**Step 3**

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

Sub chassis ass'y



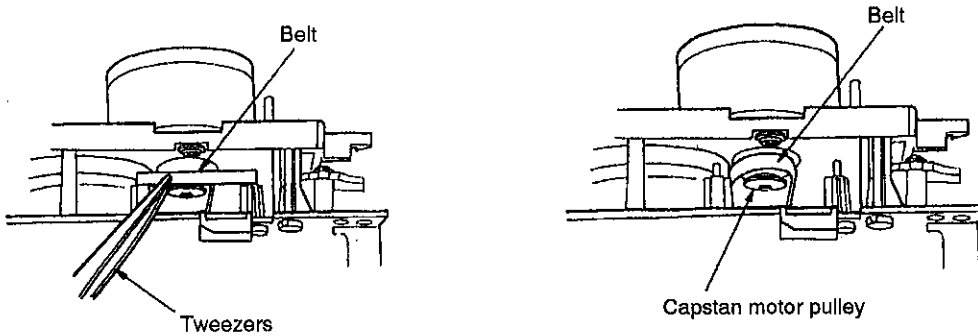
[XTW26+12S]



[XTW26+6L]

**Step 4**

Secure the belt with the capstan motor pulley.



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

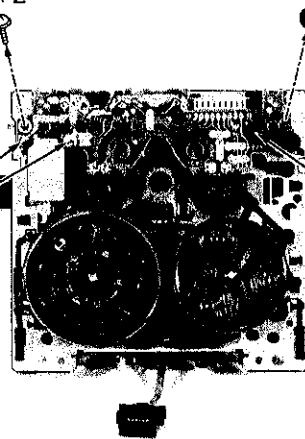
- Follow the **Step 1** ~ **Step 3** of the item 1 in checking procedure for each P.C.B. on page 2.
- Follow the **Step 1** ~ **Step 24** of the item 1 in main component replacement procedures on pages 3-6.
- Follow the **Step 1** ~ **Step 4** of the item 2 in main component replacement procedures on page 8.

**Step 1**

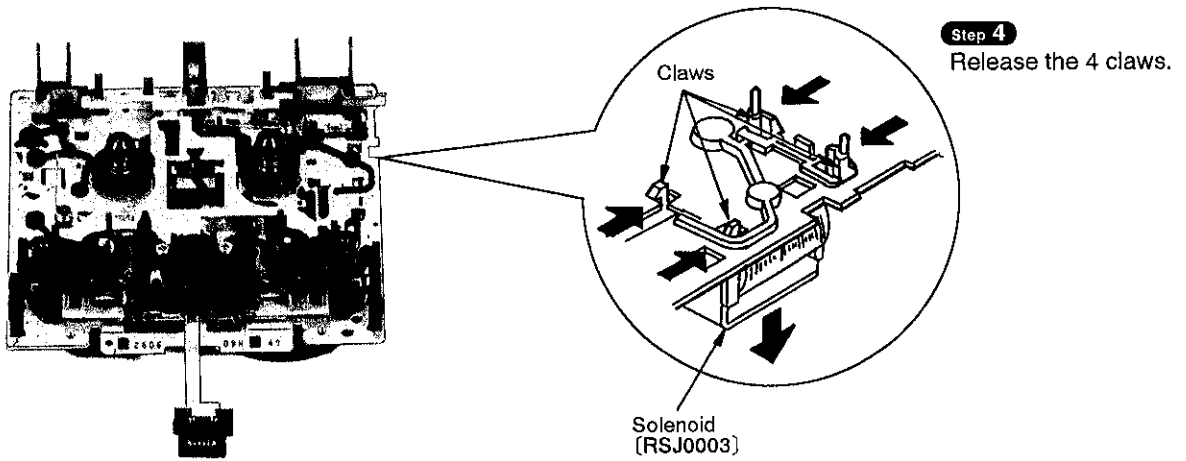
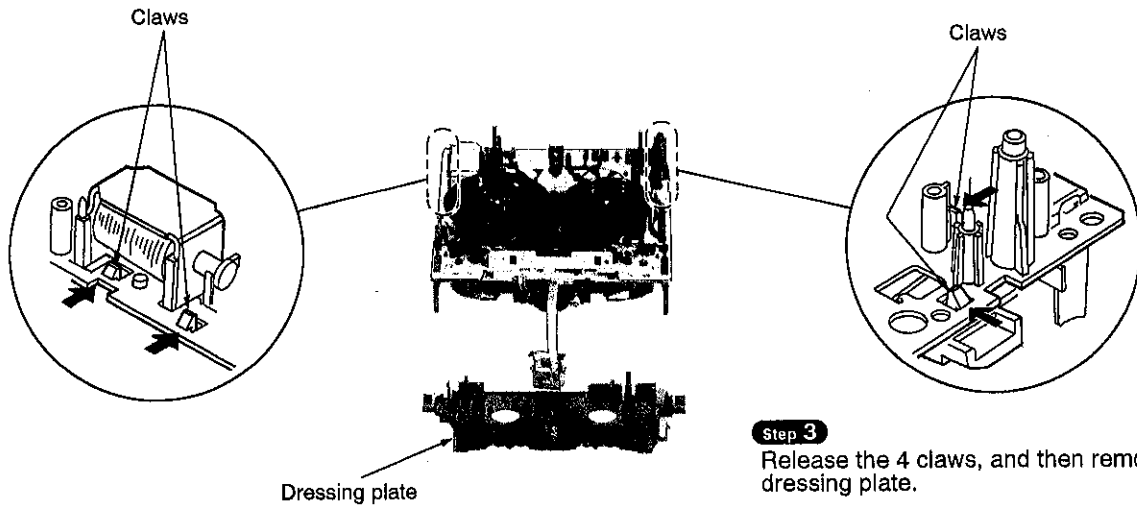
a x 2

**Step 2**

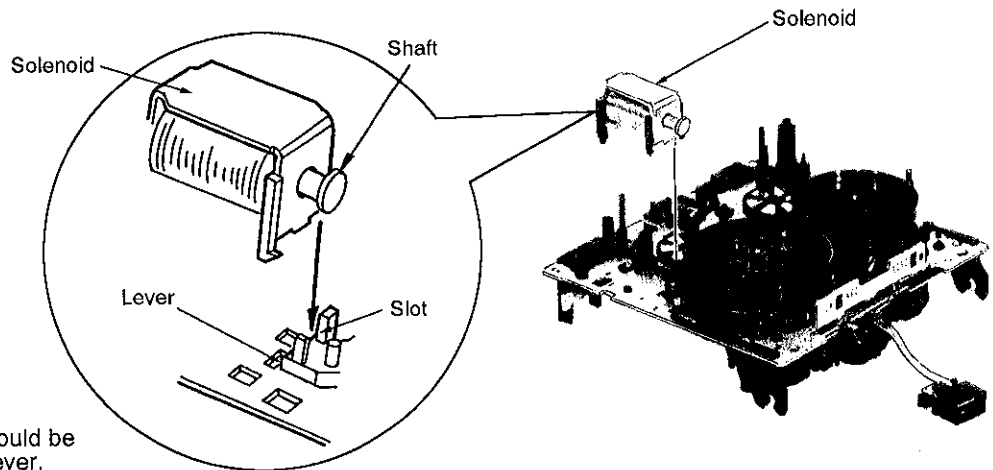
Unsolder the terminals.



[XTW2+6S]



**Notice for installing the solenoid**



**NOTE**

• The shaft of solenoid should be aligned with the slot of lever.

## ■ WRITING TO EEPROM

This unit is equipped with EEPROM memory that stores a variety of design data and performance data such as playback gain, bias value, recording gain, recording equalization, etc., which was programmed at the factory.

This EEPROM memory is capable of being read and written to more than 100,000 times. To illustrate this, if one ATC operation is performed every hour continuously every day for ten years, it would still be possible to successfully read and write with the EEPROM.

Data is actually written in this EEPROM only when ATC is actuated or when power supply is turned on or off. Since it hardly breaks down, there will scarcely occur such a trouble as to require replacement.

### Measurement Condition

- Recording-level control; Maximum
- Recording-balance control; Center
- Reverse-mode selector switch;  $\rightleftarrows$
- Tape-to-tape recording-speed switch; Off
- Dolby NR switch; Off
- ATC switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature  $20\pm 5^{\circ}\text{C}$  ( $68\pm 9^{\circ}\text{F}$ )

### Measurement Instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- AF oscillator
- ATT (Attenuator)
- Resistor ( $600\Omega$ )

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

### Test Tape

- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall gain adjustment and Overall frequency response  
Normal reference blank tape; QZZCRA  
CrO<sup>2</sup> reference blank tape; QZZCRX1  
Metal reference blank tape; QZZCRZ5

**Note:** Step 1 to step 7 only has to be done after exchange of the EEPROM.

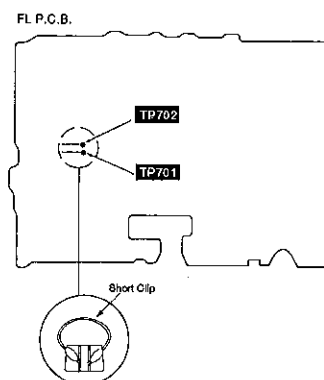
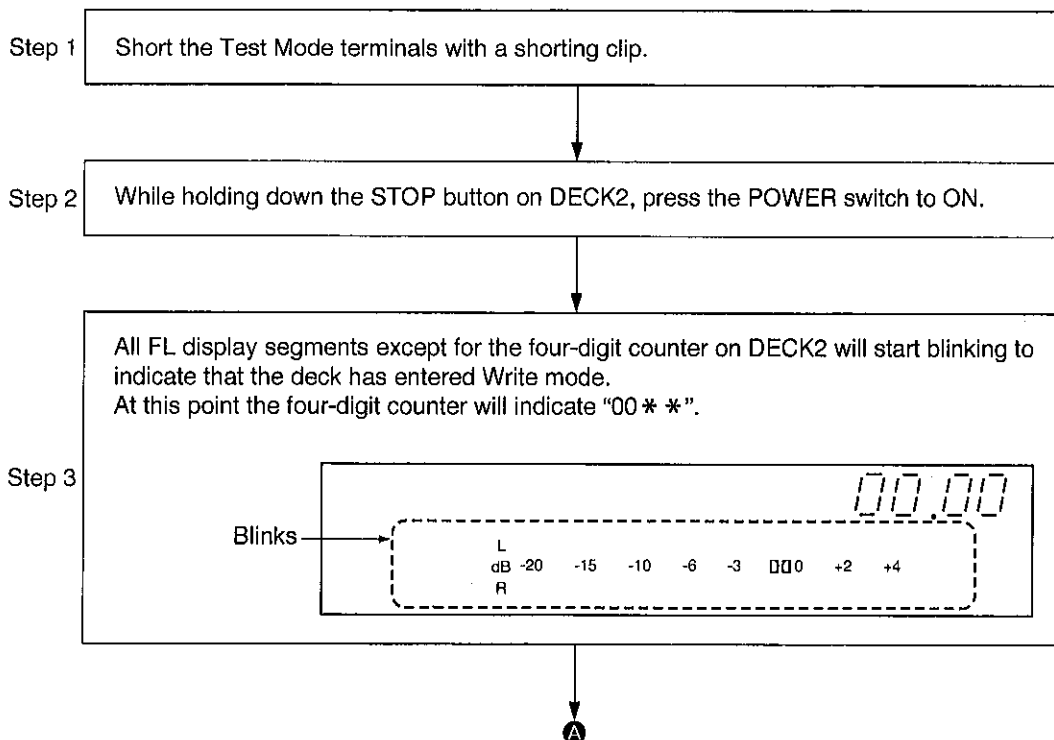
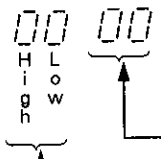


Fig. 1

### Notes:

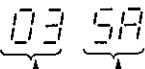
- The test mode terminals on FL P.C.B. should be shorted with a short clip as shown above figure.
- After the adjustment items disconnect the short clip.

Step 4 The counter shows a four-digit hex number. The two high-order digits indicate a ROM address, and the two low-order digits indicate the data stored at that address.

Step 5  Set these digits using the FF or REW button. The high- and low-order digits of the address increment alternately each time the FF button is pressed. The REW button causes these digits to decrement alternately. For fast incrementing or decrementing, hold down the FF or REW button.

Set these digits using the F. PLAY or R. PLAY button. The high- and low-order digits of the data increment alternately each time the F. PLAY button is pressed. The R. PLAY button causes these digits to decrement alternately. For fast incrementing or decrementing, hold down the F. PLAY or R. PLAY button.

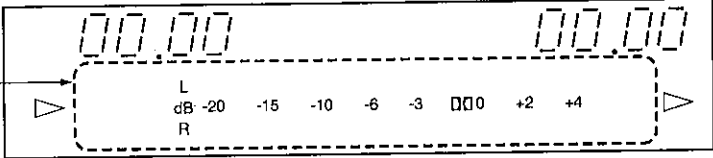
Example: Set "FF" in address 03 (see Fig. 3).

 Set these digits to "5A" using the F. PLAY or R. PLAY button.

Set these digits to "03" using the FF or REW button.

Step 6 Begin from address 00 and write data up to address 7F (data in ). Check that the data at address 7F is "00" (end), and then exit the write mode.

Step 7 After completing ROM writing, press the STOP button on DECK2 to restore the normal Test mode. The four-digit counter on DECK1 displays.



**PLAYBACK GAIN**

Step 8

- Set the AF oscillator's output frequency to 315Hz/-20dB (100mV) (see Fig. 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 are 320mV. When the adjustment is complete, release the REC button. (The deck stores the data at the moment the REC button is released.)
- Load the test tape, QZZCFM, into the deck and locate the section of the tape where the playback gain test tone (315Hz, 0dB) is recorded, then playback the portion. Press the ATC button, and the display will flash **M** slowly, meaning that playback gain is being automatically adjusted. Press the play button. (At this point the deck automatically adjusts playback gains.) After this playback the tape and verify that the output level falls in the specified range.

**Standard value: 320mV±0.5dB**

**Note:** If adjustment of PLAYBACK GAIN fails, the display will flash **M** rapidly. After a successful adjustment, the display will no longer show **M**.

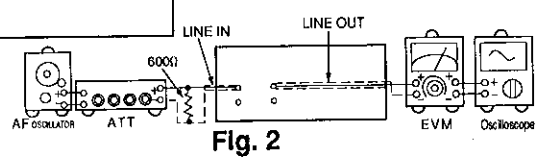


Fig. 2

**INITIAL SETTING UP FOR OVERALL GAIN AND OVERALL FREQUENCY RESPONSE**

ⓑ

Step 9

• Load a Normal blank test tape (QZZCRV2) into the deck under test. Press the ATC button, then the REC button. The display will flash **M** slowly. (At this point the deck automatically adjusts the overall gain and frequency response.)

• After the above setting, the overall gain for selection of CrO2 and Metal tape will be automatically set by the ROM and stored in the ROM.

**Note:** If adjustment of OVERALL GAIN or OVERALL FREQUENCY RESPONSE fails, the display will flash **M** rapidly. After a successful adjustment, the display will no longer show **M**.

Step 10

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

**Note:** If the microprocessor is replaced, it is not necessary to replace (or write data to ) the EEPROM.

• **EEPROM MAP**

Low \ High	0	1	2	3	4	6	7	8
0	00	—	80	90	—	—	—	—
1	00	—	80	80	—	—	—	—
2	—	—	92	4D	—	—	—	—
3	5A	—	—	54	—	—	—	—
4	—	—	—	4A	—	3C	6C	70
5	—	—	—	63	—	28	50	60
6	—	—	—	—	—	00	00	00
7	—	EC	—	—	—	58	54	60
8	—	—	—	—	—	90	70	50
9	—	—	A0	A0	92	20	34	34
A	—	—	60	06	—	10	14	08
B	—	—	70	20	—	20	20	20
C	—	—	60	10	—	A0	B0	D0
D	—	—	8C	06	—	90	90	90
E	—	—	58	FB	—	7F	7F	08
F	—	—	65	F5	—	80	80	00

**Fig. 3**

**Note:** At an address with no data value indicated (e.g. 01 → —), the ROM operates normally irrespective of the kind of the data supplied.

## MEASUREMENTS AND ADJUSTMENTS

### Measurement Condition

- Recording-level control; Maximum
- Recording-balance control; Center
- Reverse-mode selector switch;  $\rightleftarrows$
- Tape-to-tape recording speed switch; Off
- Dolby NR switch; Off
- ATC 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

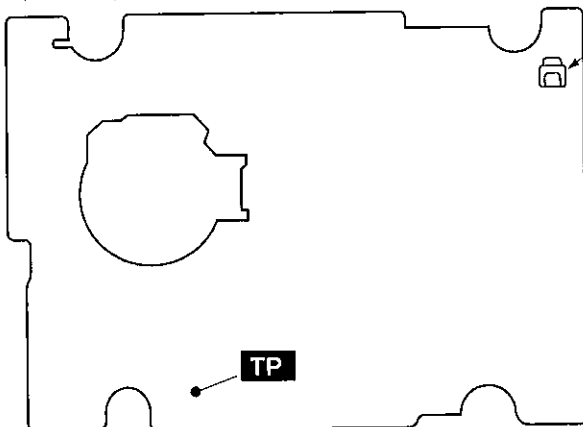
- EVM (Electronic Voltmeter)
  - Oscilloscope
  - Digital frequency counter
  - AF oscillator
  - ATT (Attenuator)
  - DC voltmeter
  - Resistor ( $600\ \Omega$ )
- Note:** Before adjustment, be sure to set the AF oscillator output level to 0dB (1kHz): 1V

### Test Tape

- Head azimuth adjustment (8kHz, -20dB)
  - Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB)
  - Playback gain adjustment (315Hz, 0dB)
- }; QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
  - Overall gain adjustment and Overall frequency response Normal reference blank tape; QZZCRA  
CrO<sub>2</sub> reference blank tape; QZZCRX1  
Metal reference blank tape; QZZCRZ5

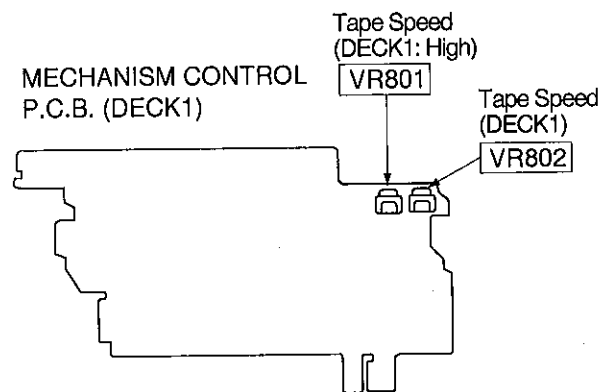
### Adjustment Points

MECHANISM CONTROL P.C.B.  
(DECK2)



Tape Speed  
(DECK2)  
VR852

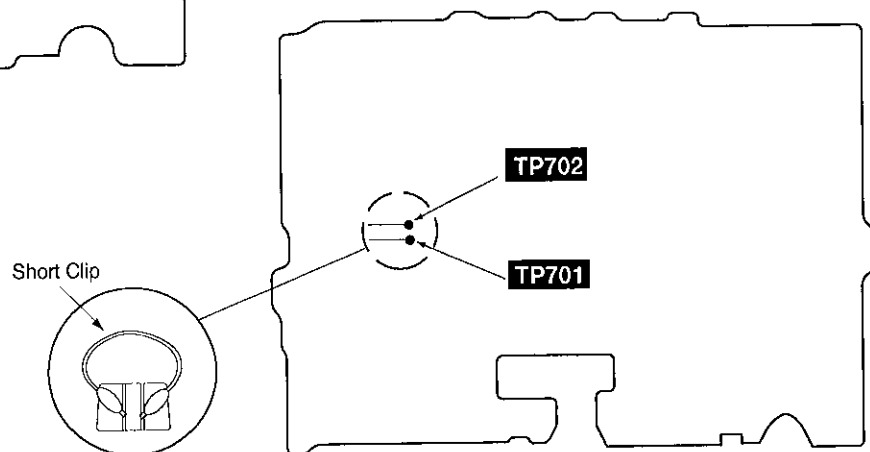
MECHANISM CONTROL  
P.C.B. (DECK1)



Tape Speed  
(DECK1: High)  
VR801

Tape Speed  
(DECK1)  
VR802

FL P.C.B.

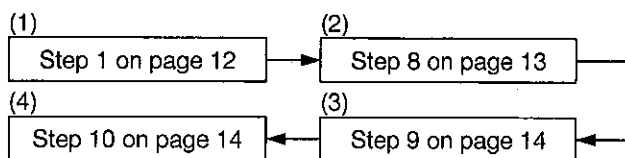


### Notes:

- The test mode terminals on FL P.C.B. should be shorted with a short clip as shown above figure.
- After the adjustment items disconnect the short clip.

**HEAD REPLACEMENT**

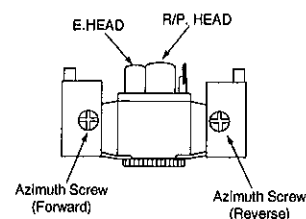
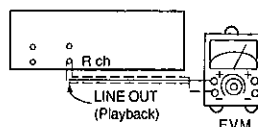
When replacing the R/P head or E head, adjust the head azimuth (erase head with small screw stop does not need adjustment) then start the EEPROM adjustment in the following sequence.



(The adjustment is necessary because the playback gain, the overall gain, and the overall frequency response are changed by the head replacement.)

**HEAD AZIMUTH ADJUSTMENT (DECK 1/2)**

1. Playback the azimuth adjustment portion (8kHz, -20dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the output of the R-CH are maximized.
2. Perform the same adjustment in the play mode.
3. Repeat the same check in reverse play mode.
4. After the adjustment, apply screwlock to the azimuth adjusting screw.

**TAPE SPEED ADJUSTMENT (DECK 1/2)****Normal speed**

1. Playback the middle portion of the test tape (QZZCWAT).
2. Short the test terminal.
3. Adjust Deck 1=**VR802** and Deck 2=**VR852** so that the output is within the standard value.

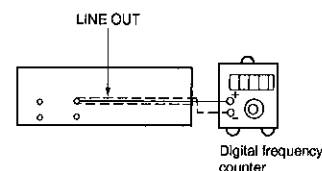
**Standard value: 3000±15Hz (NORMAL speed)**

**High speed [Set the unit to forward (FWD) mode.]**

4. Press the tape-to tape recording-speed selector switch (x2) button. This will set the high speed mode.
5. Playback the middle portion on the test tape (QZZCWAT).
6. At that time, check if the output from DECK2 is within the standard value.

**Standard value: 6000± 600Hz (HIGH speed)**

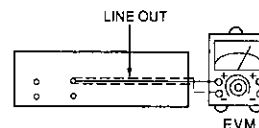
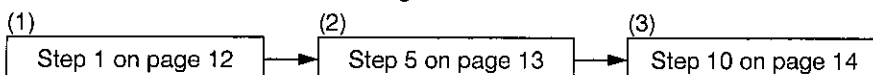
7. Adjust **VR801** so that the output frequency of DECK1 is within ±30Hz for the value of the output frequency of DECK2.
8. Release the test terminal.

**PLAYBACK GAIN MEASUREMENT (DECK 1/2)**

1. Load the test tape (QZZCFM) into the deck and locate the part where the playback gain test tone (315Hz, 0dB) is recorded. After this, play back the tape and verify that the output level falls in the specified range.

**Standard value: 320mV± 0.5dB**

2. If outside the standard value, data in EEPROM should be written again by taking the following procedure and there after section 1 should be carried out again.





**PLAYBACK FREQUENCY RESPONSE (DECK 1/2)**

1. Playback the frequency response portion (315Hz, 12.5kHz~63Hz, -20dB) of the test tape (QZZCFM).
2. Assure that the frequency response is within the range shown in Fig. 4 for both L-CH and R-CH.

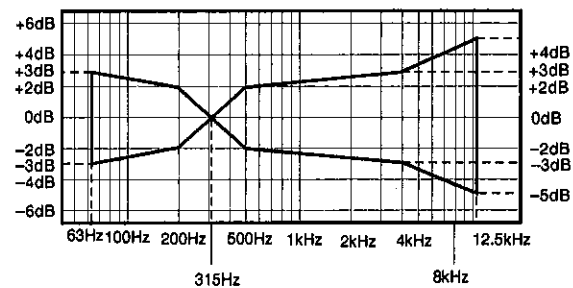
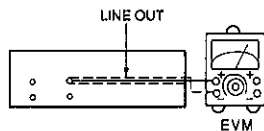
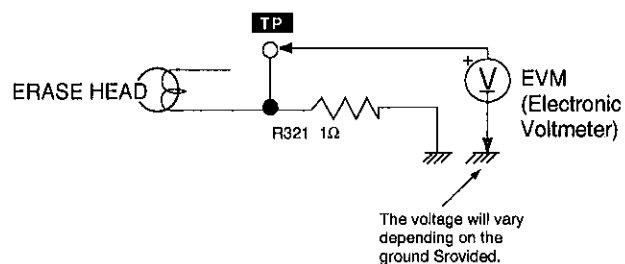


Fig. 4

**ERASE CURRENT ADJUSTMENT**

1. With no tape loaded in the deck, press the Record button.
2. Check if the output at this time between the erase current confirmation point TP on mechanism control P.C.B. (Deck 2) and GND (chassis) is within the standard value.

**Standard value: 175±15mA (Metal)**  
**EVM Reading: J341→TP 175±15mV**

**CONFIRMATION OF THE OVERALL GAIN AND OVERALL FREQUENCY RESPONSE**

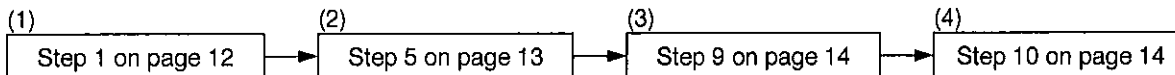
1. In the Record Pause mode, load a normal blank tape (QZZCRV) into the deck, and apply the reference input signal (1kHz, -24dB) to the Rec. input. Adjust the output to 320mV with the attenuator, and start recording.
2. While playing back the reference signal just recorded, verify that the output level falls in the following range.

**Standard value: 320mV±0.5dB**

3. 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, -24dB=approx. 63mV), to the Rec. input. Then start recording with a normal blank tape (QZZCRA).
4. Play back the test signals just recorded and verify that the levels at the test frequencies fall in the ranges specified in Fig. 5 with respect to the reference signal level.
5. Repeat steps 3 and 4 above for CrO<sub>2</sub> blank test tape (QZZCRX1) and Metal blank test tape (QZZCRZ5), 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. 6 with respect to the reference signal level.

Steps 1 through 2 above are concerned with overall gain; steps 3 through 5 pertain to overall frequency response.

6. If outside the standard value, data in EEPROM should be written again by taking the following procedure and thereafter section 1-5 should be carried out again.



Normal Overall frequency response chart (NR OUT)

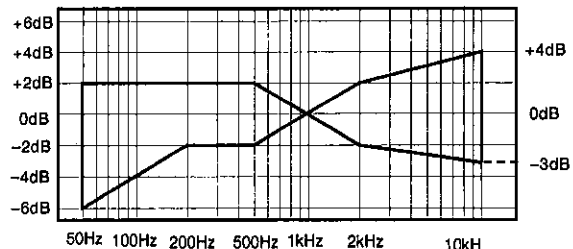


Fig. 5

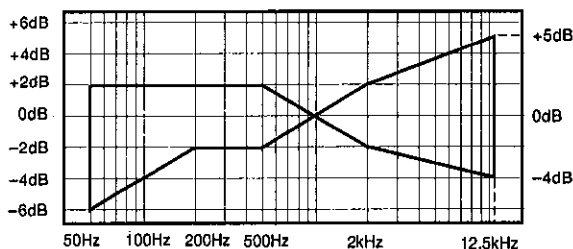
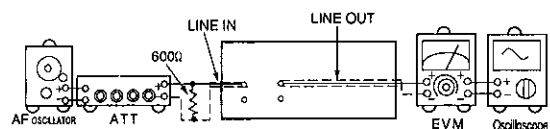
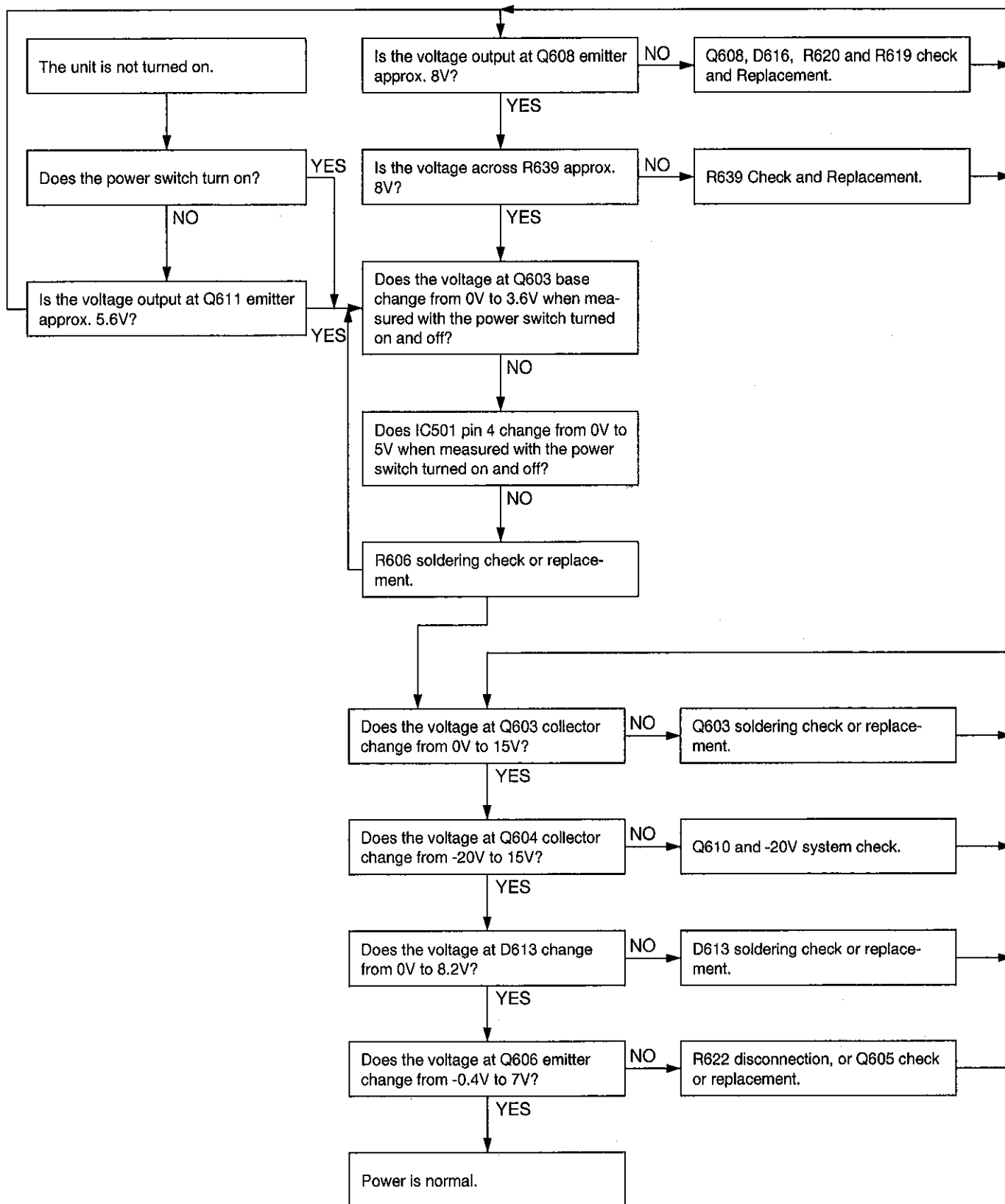
CrO<sub>2</sub> Metal Overall frequency response chart (NR OUT)

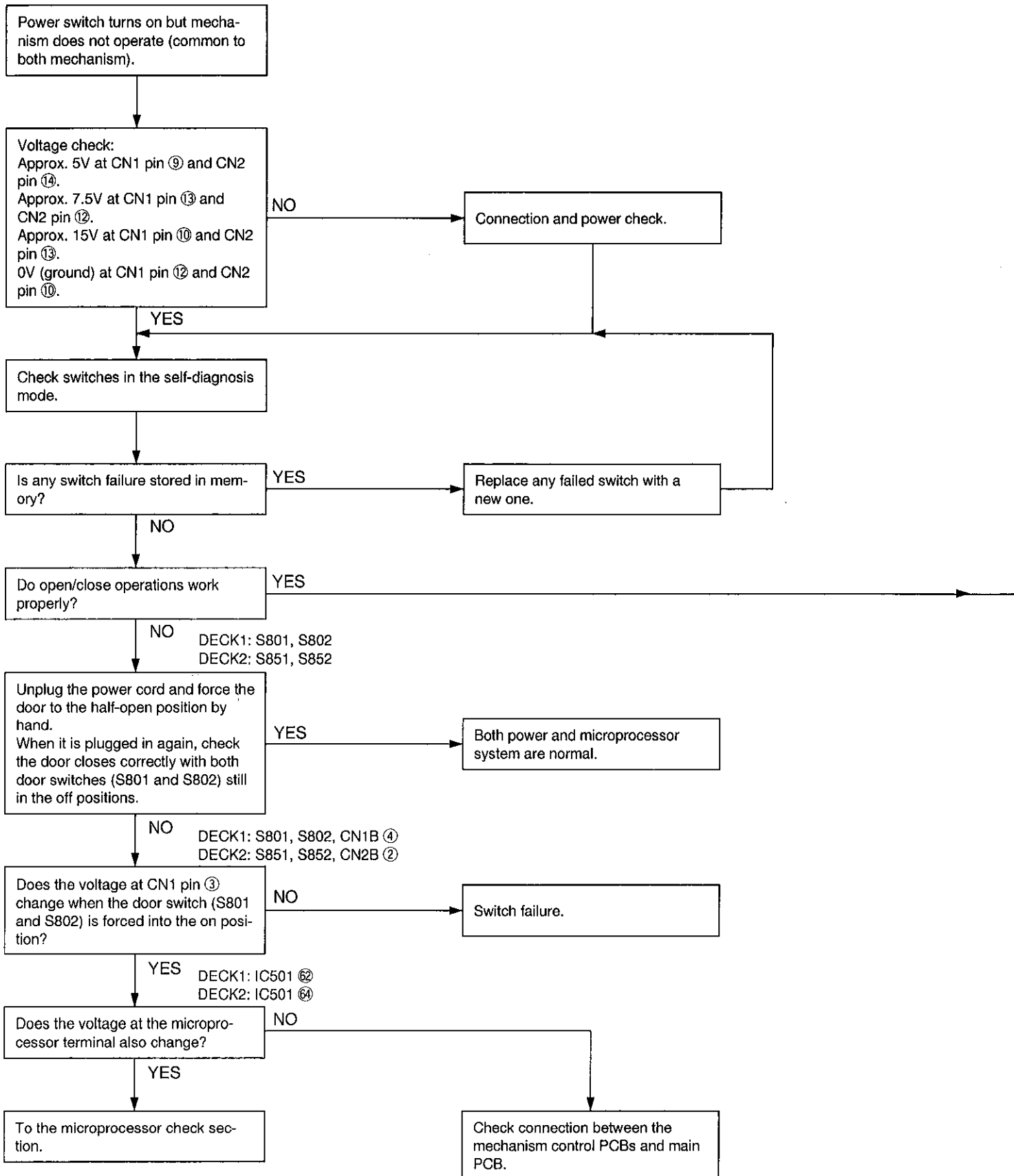
Fig. 6

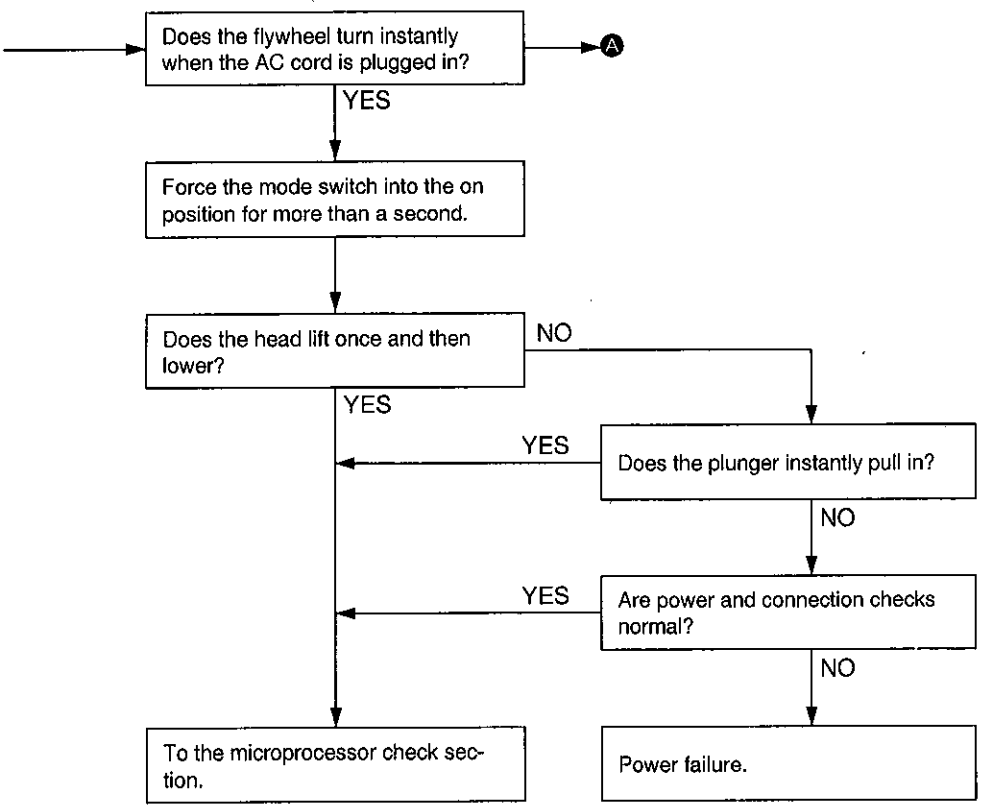
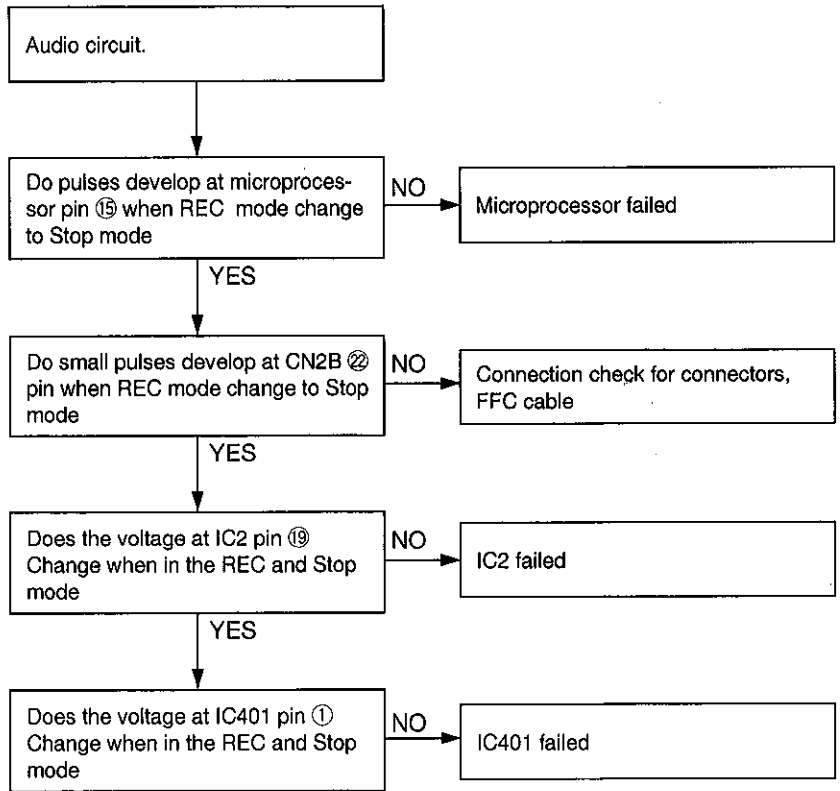


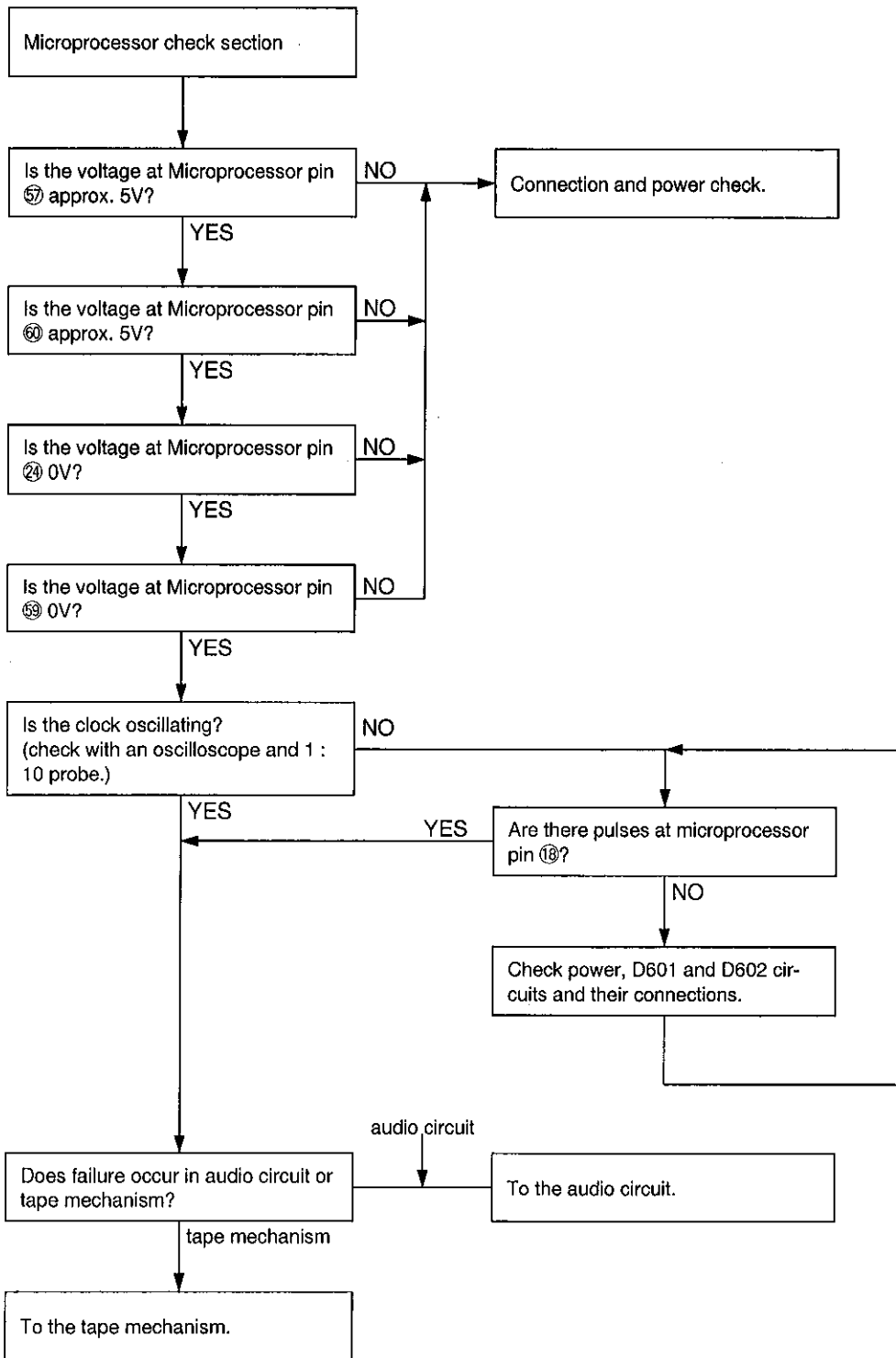
## ■ TROUBLESHOOTING GUIDE

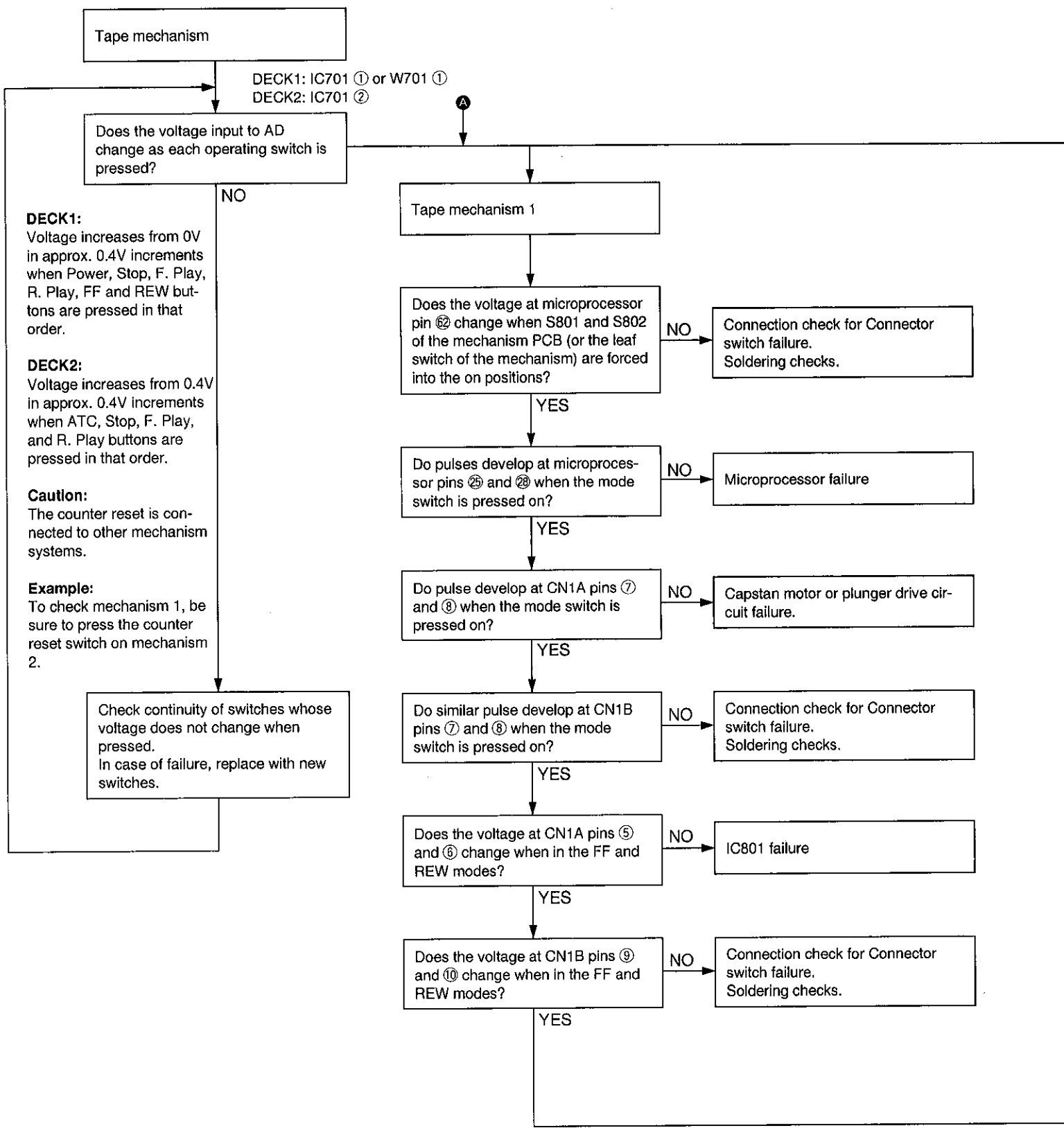
\* To perform troubleshooting, set the unit to the state described in the "Checking procedure each P.C.B." on pages 2, 3.











Tape mechanism 2

Does the voltage at microprocessor pin ⑭ change when S851 and S852 of the mechanism PCB (or the CrO2 and Metal SW of the mechanism) are forced into the on positions?

NO → Connection check for Connector switch failure.  
Soldering checks.

YES

Does the voltage at microprocessor pin ⑬ change when switch of the mechanism (MODE, Reverse, REC INH and HALF SW) are forced into the on positions?

NO → Connection check for Connector switch failure.  
Soldering checks.

YES

Do pulse develop at microprocessor pins ⑪ and ⑭ when the mode switch is pressed on?

NO → Microprocessor failure.

YES

Do pulse develop at CN2A pins ⑥ and ⑦ when the mode switch is pressed on?

NO → Capstan motor or plunger drive circuit failure.

YES

Do similar pulse develop at CN2B pins ⑥ and ⑦ when the mode switch is pressed on?

NO → Connection check for Connector switch failure.  
Soldering checks.

YES

Does the voltage at CN2A pins ⑧ and ⑨ change when in the FF and REW modes?

NO → IC851 failure.

YES

Does the voltage at CN2B pins ⑧ and ⑨ change when in the FF and REW modes?

NO → Connection check for Connector switch failure.  
Soldering checks.

YES

Does the plunger instantly pull in Play button is pressed?

NO → Plunger failure.

YES

Does the plunger remain pulled in during FF/REW operations?

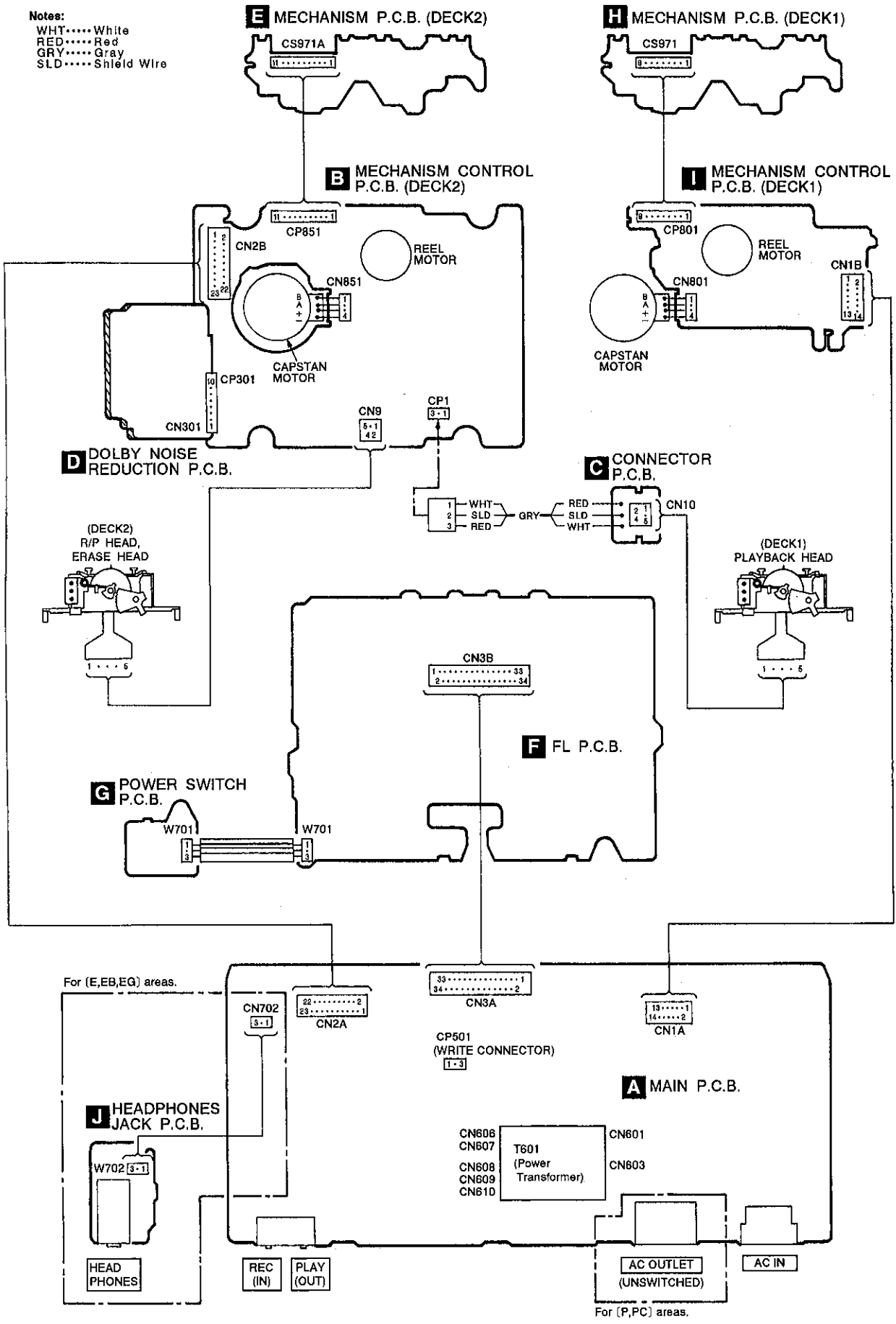
NO → Plunger failure.

YES

Belt has come off.  
Reel motor failure.

# WIRING CONNECTION DIAGRAM

**Notes:**  
 WHT..... White  
 RED..... Red  
 GRY..... Gray  
 SLD..... Shield Wire


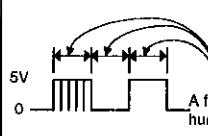




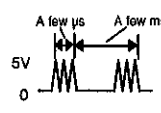


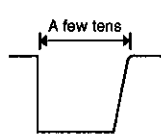

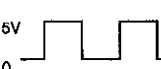




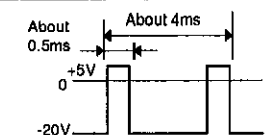
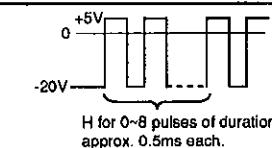
# TERMINAL GUIDE

## • IC501 (M38122M4251F): MICROCOMPUTER

\* To check the IC terminal table, set the unit to the state described in the "Checking procedure each P.C.B." on pages 2,3.

Pin No.	Mark	I/O Division	Function	Check Point	Description
1	KEY1	I	Key switch input	CN3A(27) pin	DECK1: When no key is pressed: 5V When Stop key is pressed: 0.4V When Power key is pressed: 0V When any other key is pressed : 0 to 5V
2	KEY2	I	Key switch input	CN3A(28) pin.	DECK2: When no key is pressed: 5V When Stop key is pressed: 0V When any other key pressed 0-5V
3	LM/TPS	I	Display level and TPS det. input	CN2A(20) pin	TPS mode No program: "L" (0V) program: "H" (5V)
4	POWER	O	Power supply control output	IC501(4) pin	Power ON: "H" (5V) Power OFF: "L" (0V)
5	EDATA	O	EEPROM serial data input/output	IC502(5) pin CP501(3) pin	 (ex...For ↔ REV PLAY mode is changed) Waveform appears in response to 6 below
6	ECS	O	EEPROM chip select signal ON: "H", OFF "L"	IC502(3) pin CP501(1) pin	 (ex... For ↑ REV PLAY mode is changed)
7	X2	O	EDIT mode (X1, X2) select output	Q506(B) pin	X2 EDIT : "L" (0V)
8	CONTROL	—	—————	IC501(6) pin	—————
9	P51	I	Deck 2 reel pulse det. input (supply side)	Q502(C) pin	 Supply reel on deck 2 Fast FF/REW mode is disabled unless both signals 9 and 10 are below
10	P50	I	Deck 2 reel pulse det. input (Takeup side)	Q503(C) pin	 Take up reel on deck 2
11	SOL2	O	Deck 2 solenoid drive output	Q663(B) pin	Deck 2 STOP → PLAY...10~100ms : "H" (5V) STOP → FF...10~100ms : "H" (5V)
12	CSOL2	O	Deck 2 solenoid hold output	D653(K) pin	Deck 2 FF/REW : "H" (5V)
13	HSPD2	O	Deck 2 reel motor speed select output	IC501(13) pin	Deck 2 High speed FF/REW/TPS mode : "H" (5V)

Pin No.	Mark	I/O Division	Function	Check Point	Description
14	CAP2	O	Deck 2 capstan motor control output	Q865 (B) pin	STOP: "L" (0V) PLAY: "H" (5V)
15	CLK	I	Serial clock for audio IC (IC2, IC401) and EEPROM (IC502)	IC502 (4) pin CP501 (2) pin	 Pulse signal is emitted only when a mode change occurs.
16	SDATA	O	Serial data for audio IC (IC2, IC401)	IC501 (16) pin	 Data output in response to 15 above
17	REMOTE	I	Remocon signal input ON: "H", OFF: "L"	IC501 (17) pin	H and L pulse waveform appears on the input of a remote control signal.
18	POF	I	Power off det. input ON: "H", OFF: "L"	CN3A (29) pin	 Rectified waveform at both 50 and 60Hz (clamping at 5V)  The microprocessor goes into standby mode when this signal is removed.
19	RESET	I	Reset input ON: "L", OFF: "H"	IC501 (18) pin	 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	P71	I	Deck 1 reel pulse det. input (supply side)	Q504 (C) pin	 Supply reel on deck 1  Fast FF/REW mode is disabled unless both signals 53 are active.
21	P70	I	Deck 1 reel pulse det. input (Take up side)	Q505 (C) pin	 Changes within the 0↔5V range each time the take up reel on deck 1 is through approximately 30 degrees.
22	XIN	I	Microcomputer clock OSC terminal	Z501 (1) pin	 Oscillator waveform at 6MHz
23	XOUT	O	Microcomputer clock OSC terminal	Z501 (3) pin	 Oscillator waveform at 6MHz
24	VSS	-	Microcomputer GND	IC501 (24) pin	0V
25	SOL1	O	Deck 1 solenoid drive output	Q613 (B) pin	Deck 1 STOP → PLAY...10~100ms : "F" (5V) STOP → FF...10~100ms : "F" (5V) (Twice)
26	CSOL1	O	Seck 1 solenoid drive output	D603 (K) pin	Deck 1 FF/REW : "H" (5V)

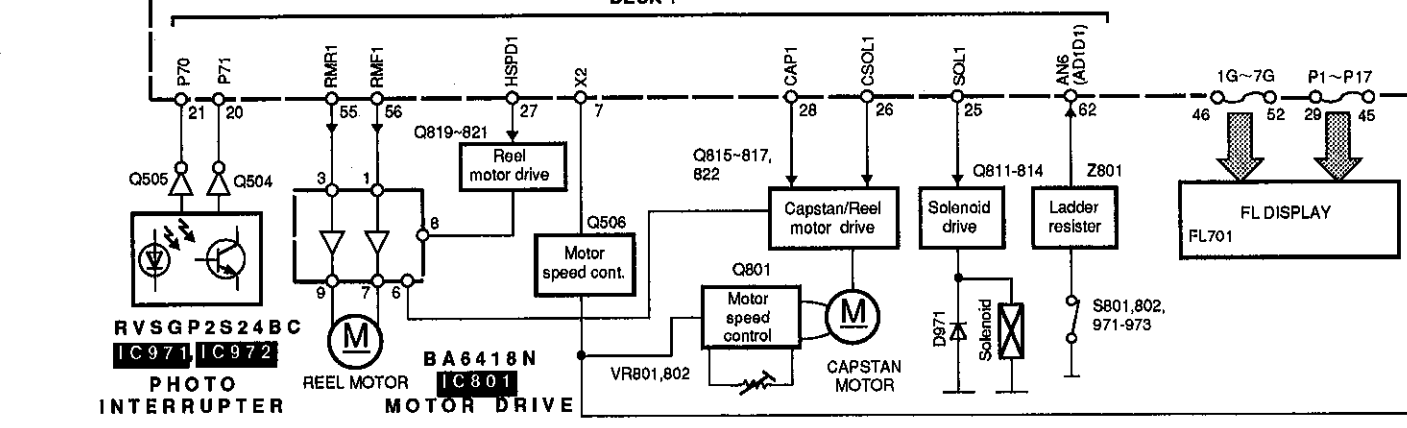
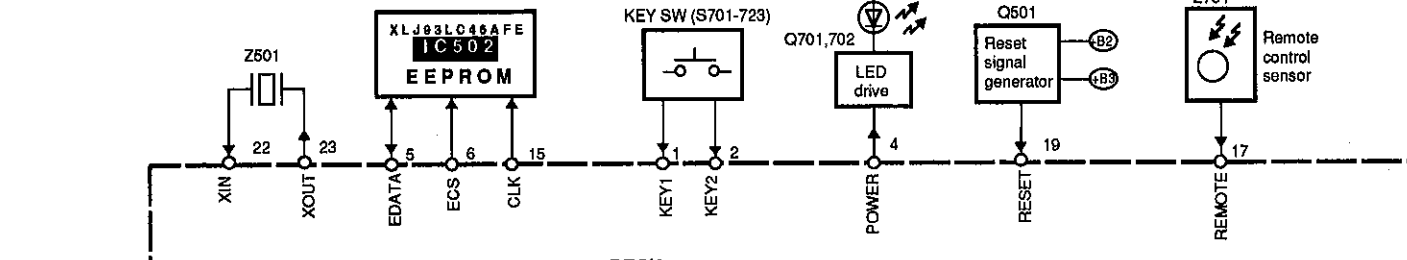
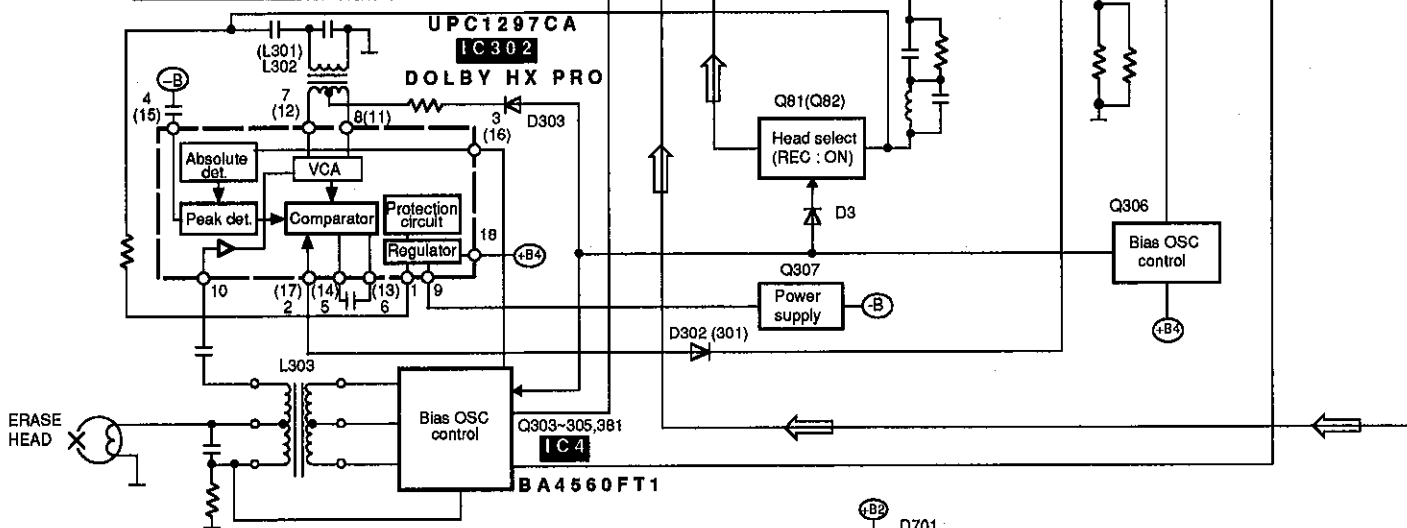
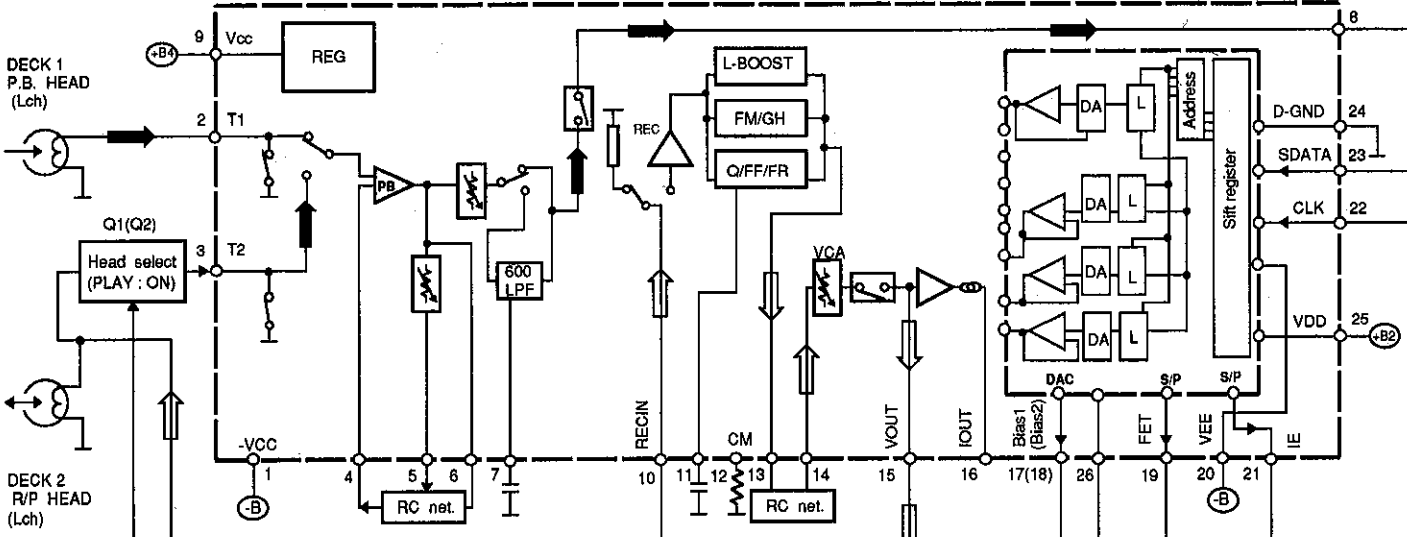
Pin No.	Mark	I/O Division	Function	Check Point	Description												
27	HSPD1	O	Deck 1 reel motor speed select output	IC501 ②7 pin IC501 ① pin	Deck1 High speed FF/REW/TPS mode : "H" (5V)												
28	CAP 1	O	Deck 1 capstan motor control output	Q815 ⑧ pin	Deck1 STOP: "L" (0V) PLAY: "H" (5V)												
29 ? 45	P1 ? P17	O	FL meter segment output ON: "H", OFF: "L"	FL701 ⑫ ~ ⑭ pin													
46 ? 52	1G ? 7G	O	FL meter glide output ON: "H", OFF: "L"	FL701 ⑤ ~ ⑪ pin	 H for 0~8 pulses of duration approx. 0.5ms each.												
53	RMR2	O	Deck 2 reel motor control output (REV)	IC851 ① pin	<table border="1"> <thead> <tr> <th></th> <th>STOP</th> <th>F. PLAY</th> <th>R. PLAY</th> </tr> </thead> <tbody> <tr> <td>RMR2</td> <td>L</td> <td>L</td> <td>H</td> </tr> <tr> <td>RMF2</td> <td>L</td> <td>H</td> <td>L</td> </tr> </tbody> </table>		STOP	F. PLAY	R. PLAY	RMR2	L	L	H	RMF2	L	H	L
	STOP	F. PLAY	R. PLAY														
RMR2	L	L	H														
RMF2	L	H	L														
54	RMF2	O	Deck 2 reel motor control output (FWD)	IC851 ③ pin													
55	RMR1	O	Deck 1 reel motor control output (REV)	IC801 ① pin	<table border="1"> <thead> <tr> <th></th> <th>STOP</th> <th>F. PLAY</th> <th>R. PLAY</th> </tr> </thead> <tbody> <tr> <td>RMR 1</td> <td>L</td> <td>L</td> <td>H</td> </tr> <tr> <td>RMF 1</td> <td>L</td> <td>H</td> <td>L</td> </tr> </tbody> </table>		STOP	F. PLAY	R. PLAY	RMR 1	L	L	H	RMF 1	L	H	L
	STOP	F. PLAY	R. PLAY														
RMR 1	L	L	H														
RMF 1	L	H	L														
56	RMF1	O	Deck 1 reel motor control output (FWD)	IC801 ③ pin													
57	VCC	-	Microcomputer terminal	IC501 ⑤7 pin	+5V, Backup												
58	-VP	-	FL meter pull down voltage input terminal	IC501 ⑤8 pin	-20V												
59	GND	-	GND terminal (A/D)	IC501 ⑤9 pin	0V												
60	VREF	I	Reference power supply (+5V) (A/D)	IC501 ⑥0 pin	Can be checked at pin ⑦ of connector CN801 or at pin of CN802												
61	AN7	I	Model select terminal	IC501 ⑥1 pin	Approx. 5V												
62	AD1D1	I	Deck 1 Mechanism switch (MODE, CrO <sub>2</sub> , HALF, OPEN/CLOSE)	CN1A ⑪ pin	No tape load: Approx. 4.1V Normal tape with tab: Approx. 2.6V CrO <sub>2</sub> tape with tab: Approx. 3.3V												
63	AD2D2	I	Deck 2 Mechanism switch (MODE, RINH, HALF) input	CN2A ⑩ pin	No tape load: Approx. 4.1V Normal tape with tab: Approx. 2.3V												
64	AD1D2	I	Deck 2 Mechanism switch (FINN, CrO <sub>2</sub> , Metal, OPEN/CLOSE) input	CN2A ② pin	No tape load: Approx. 4.1V Normal tape with tab: Approx. 0V CrO <sub>2</sub> tape with tab: Approx. 1.1V Metal tape with tab: Approx. 1.7V												

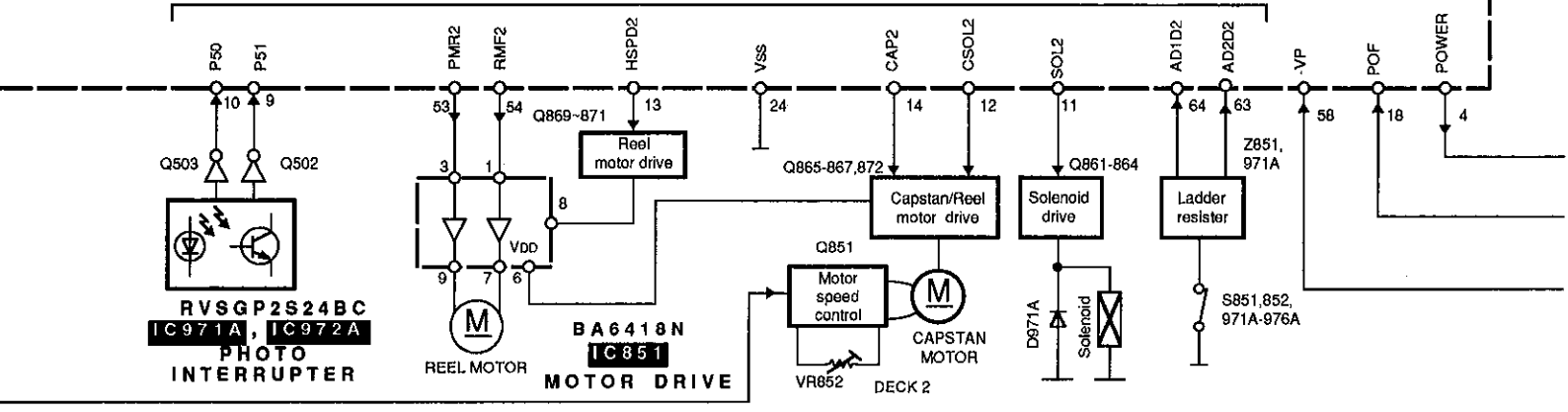
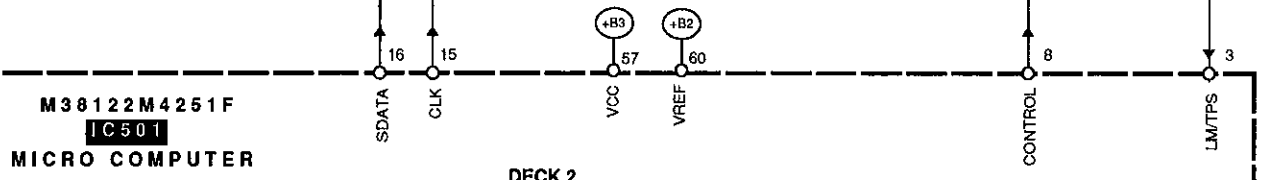
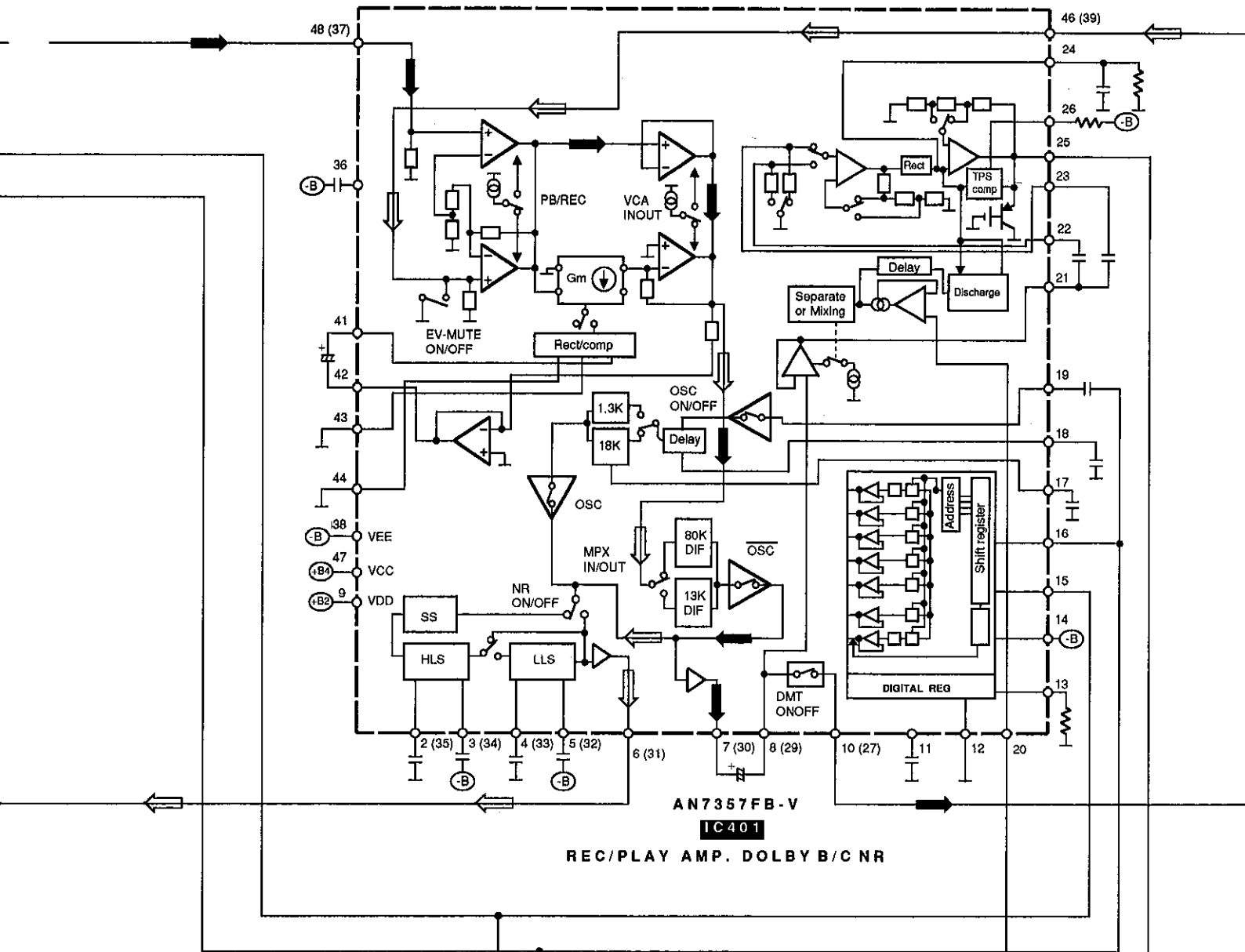
# BLOCK DIAGRAM

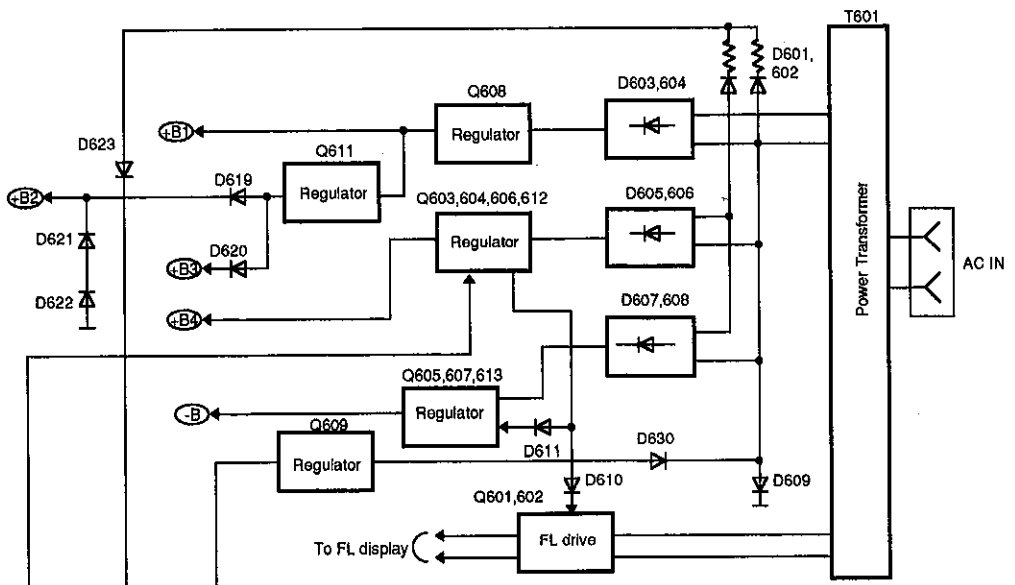
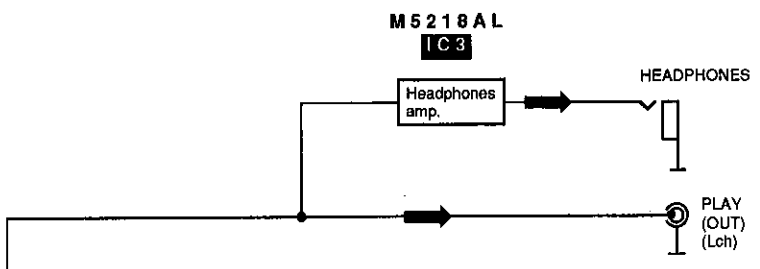
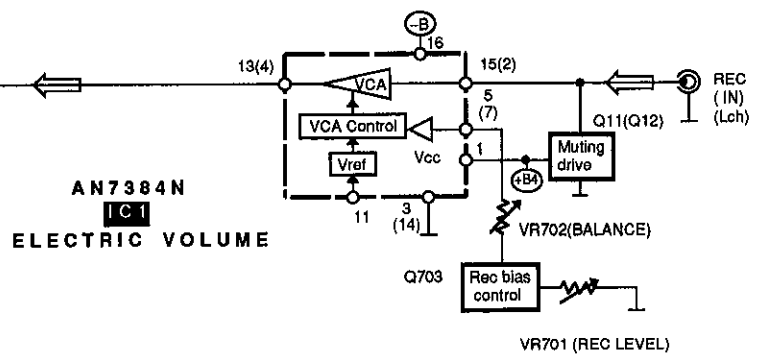
AN7356SC-E2

IC2

## PLAYBACK HEAD AMP







- Signal line
- → : Playback signal line
- ⇨ : Recording signal line

## ■ SCHEMATIC DIAGRAM (Parts list on pages 50, 54)

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

### Note:

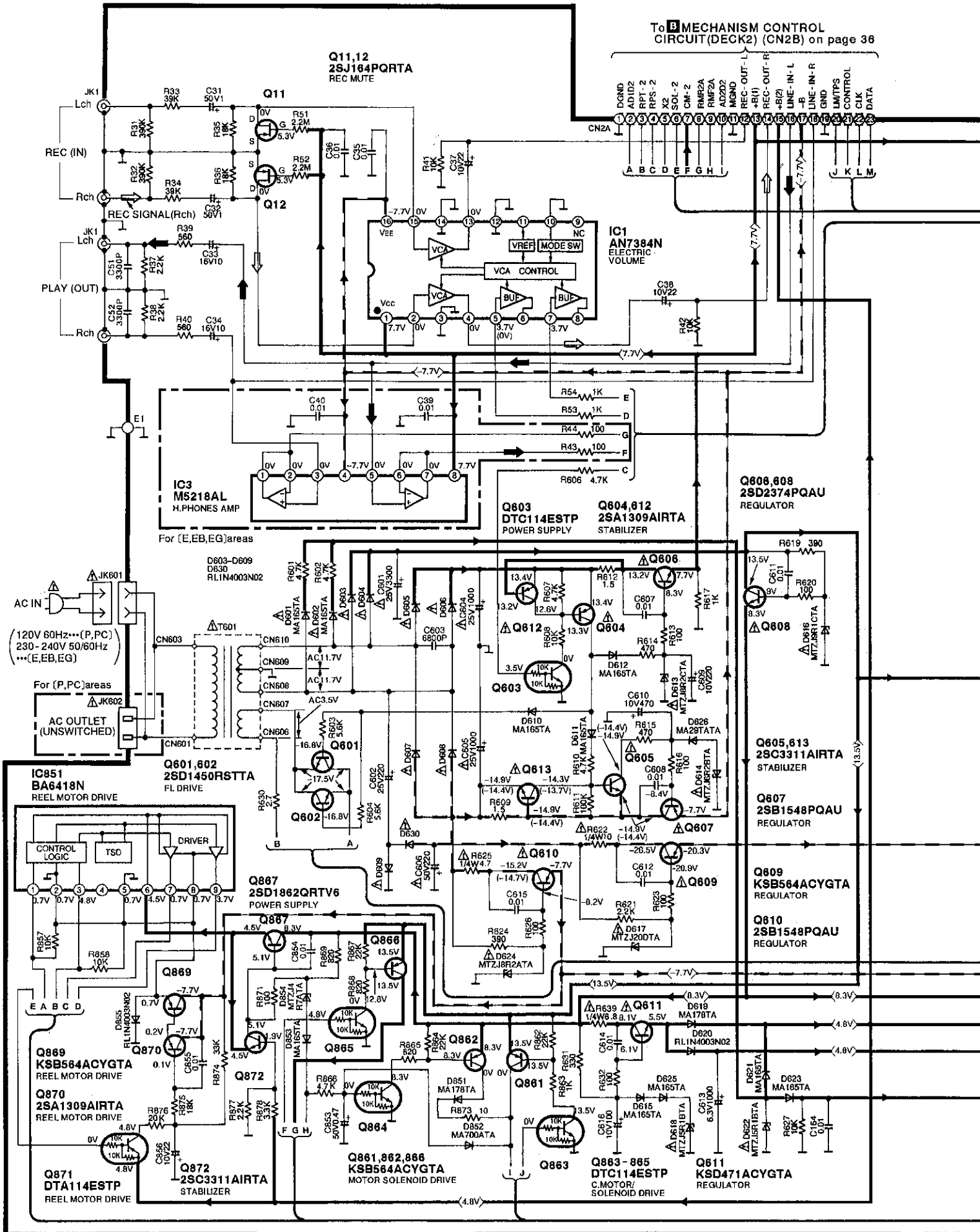
- S701: Power "STANDBY  $\odot$  /ON" (POWER, STANDBY  $\odot$  ON) switch.
- S702: Stop (DECK 1) (■) switch.
- S703: Forward-side playback switch (▶). (DECK 1)
- S704: Reverse-side playback switch (◀). (DECK 1)
- S705: Fast-forward search switch (▶▶ TPS). (DECK 1)
- S706: Rewind search switch (◀◀ TPS). (DECK 1)
- S707: Open/close switch (▲ OPEN/CLOSE). (DECK 1)
- S708: Dolby noise-reduction switch (DOLBY NR; [B], [C])
- S709: Reverse-mode select switch (REVERSE MODE).
- S710: Synchro-start switch (SYNCHRO START).
- S711: Tape-to-tape recording-speed switch (SPEED; X1, X2).
- S712: Counter reset switch (COUNTER 2 RESET). (DECK 2)
- S713: Auto tape calibration switch (ATC).
- S714: Stop (DECK 2) (■) switch.
- S715: Forward-side playback switch (▶). (DECK 2)
- S716: Reverse-side playback switch (◀). (DECK 2)
- S717: Fast-forward search switch (▶▶ TPS). (DECK 2)
- S718: Rewind search switch (◀◀ TPS). (DECK 2)
- S719: Open/close switch (▲ OPEN/CLOSE). (DECK 2)
- S720: Record switch (● REC). (DECK 2)
- S721: Pause switch (■ PAUSE). (DECK 2)
- S722: Automatic-record-muting switch (● AUTO REC MUTE). (DECK 2)
- S723: Counter reset switch (COUNTER 1 RESET) (DECK 1)
- S801: DECK 1 Cassette holder open detection switch in "off" position.
- S802: DECK 1 Cassette holder close detection switch in "off" position.
- S851: DECK 2 Cassette holder open detection switch in "off" position.
- S852: DECK 2 Cassette holder close detection switch in "off" position.
- S971: DECK 1 Mode switch in "off" position.
- S971A: DECK 2 Mode switch in "off" position.
- S972: DECK 1 Half switch in "off" position.
- S972A: DECK 2 Half switch in "off" position.
- S973: DECK 1 ATS (CrO<sub>2</sub>) switch in "off" position.
- S973A: DECK 2 ATS (CrO<sub>2</sub>) switch in "off" position.
- S974A: DECK 2 Reverse rec. inhibit switch in "off" position.
- S975A: DECK 2 Forward rec. inhibit switch in "off" position.
- S976A: DECK 2 ATS (Metal) switch in "off" position.
- Resistance are in ohms ( $\Omega$ ), 1/4 watt unless specified otherwise.  
1K=1,000 ( $\Omega$ ), 1M=1,000k ( $\Omega$ )
- Capacity are in micro-farads ( $\mu$ F) 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 value at record mode.
- For measurement us EVM.
- Important safety notice:  
Components identified by  $\Delta$  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.
IC4	BA4560FT1	SVIBA4560FT1

### 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 40)



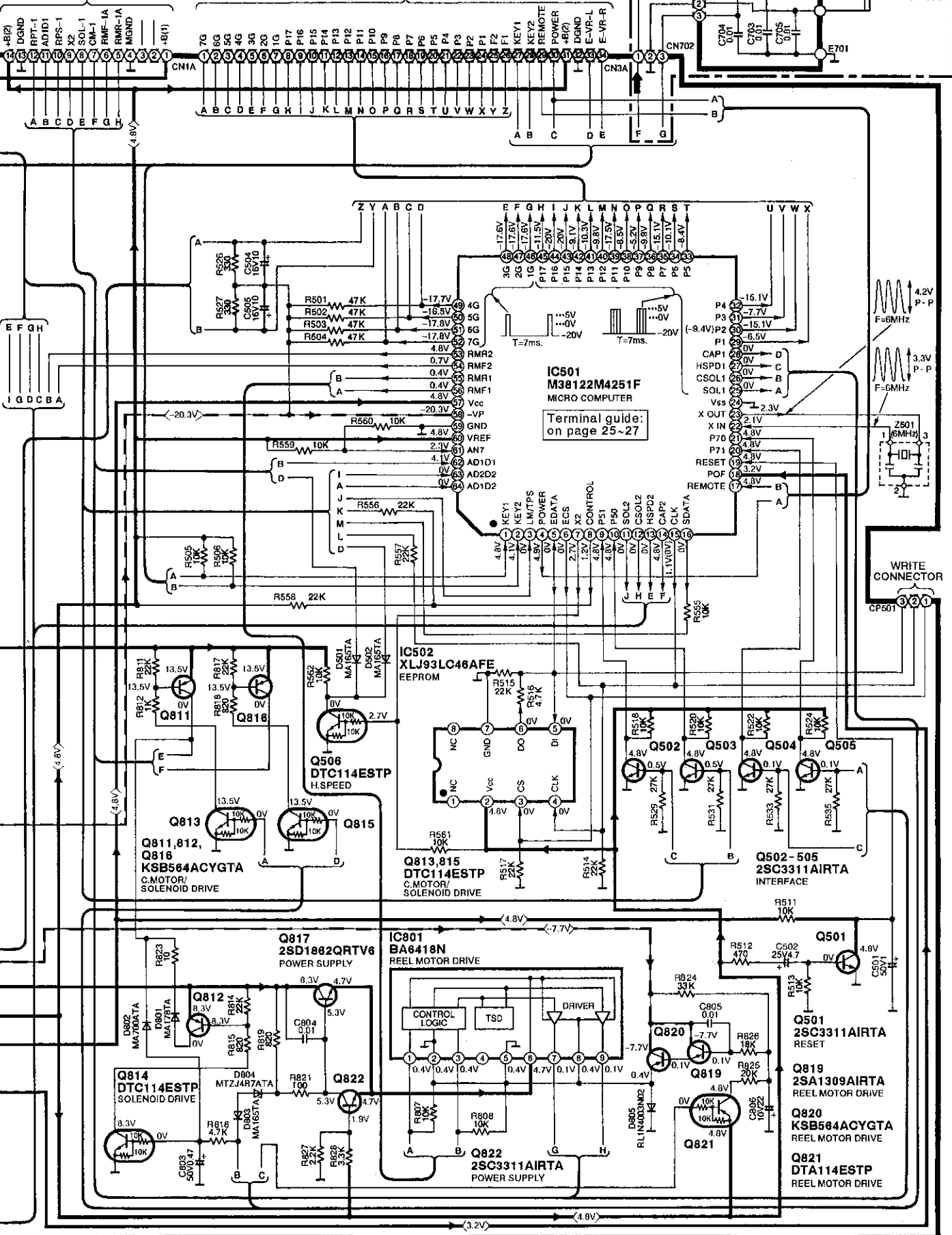


For(E,EB,EG)areas

### J HEADPHONES JACK CIRCUIT (P.C.Board: on page 40)

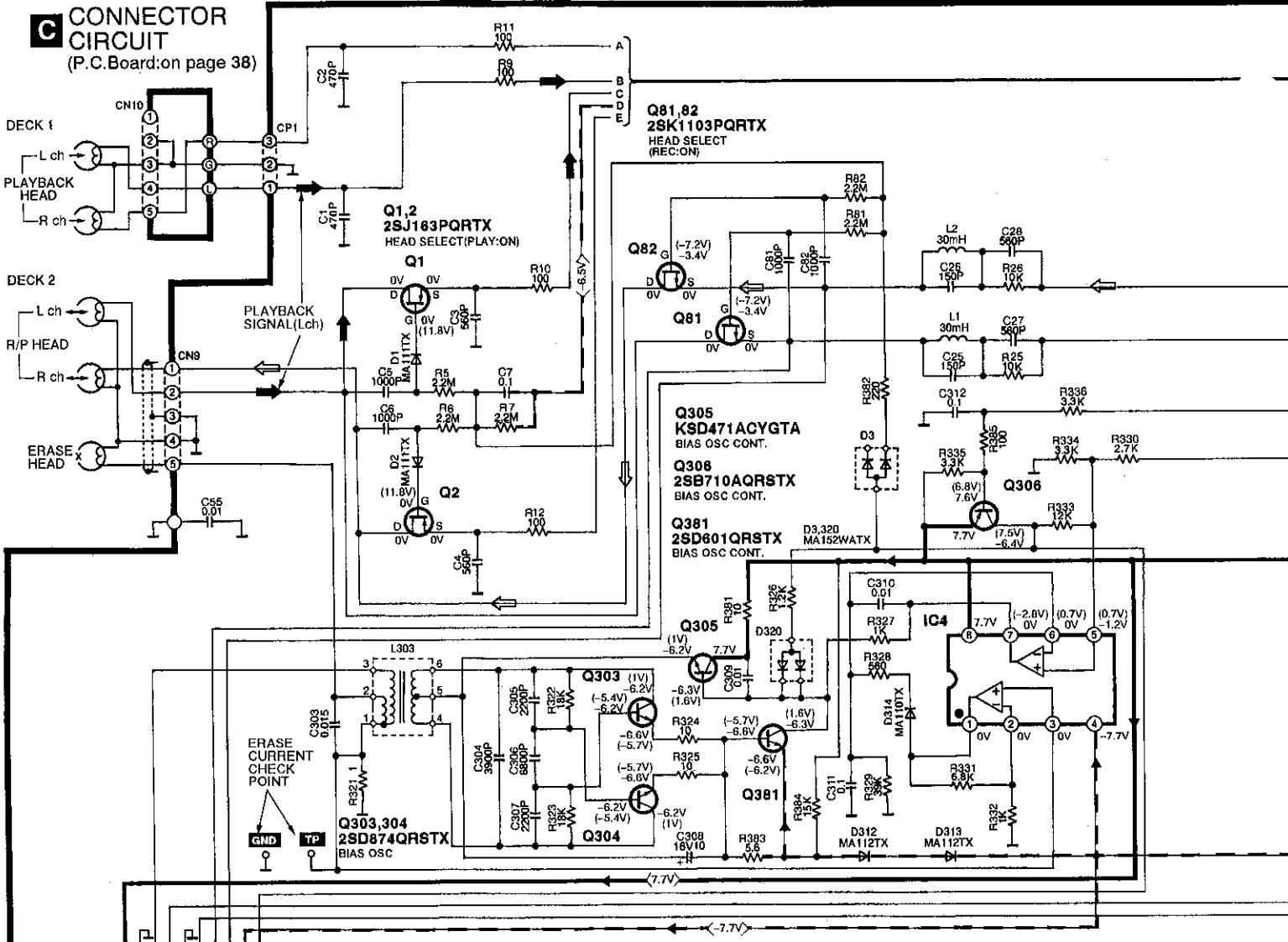
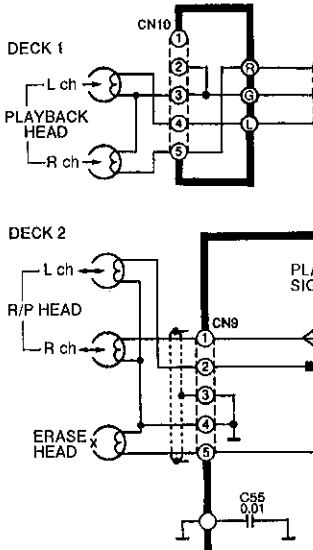
To **I** MECHANISM CONTROL CIRCUIT(DECK1) (CN1B) on page 37

To **F** FL CIRCUIT(CN3B) on page 37

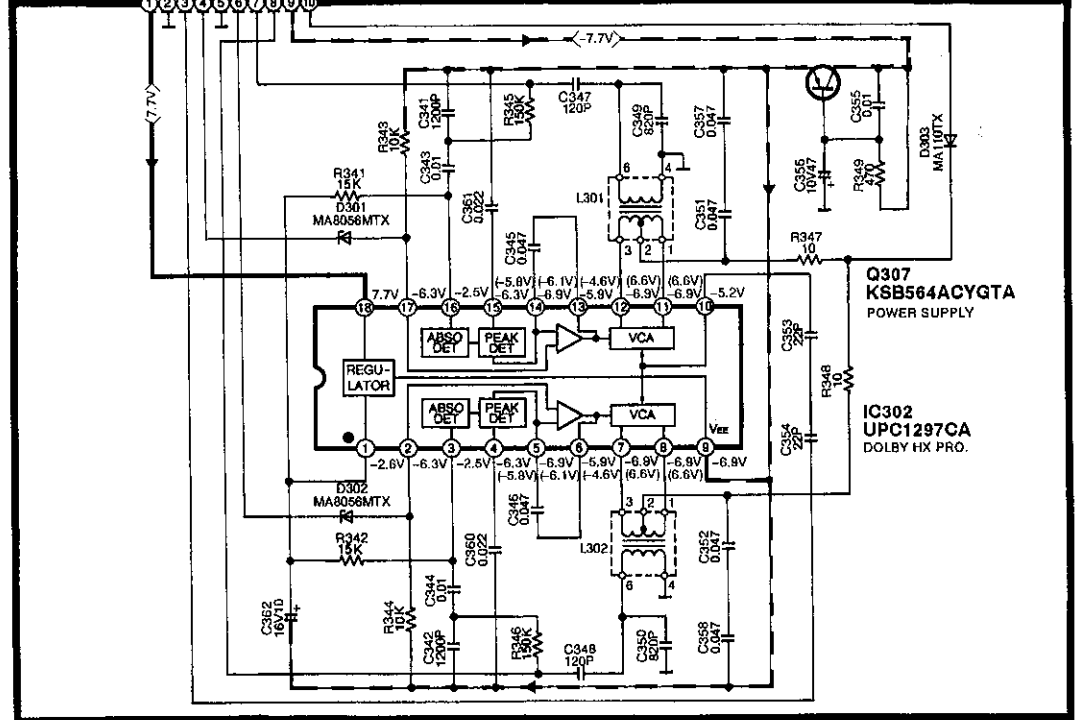


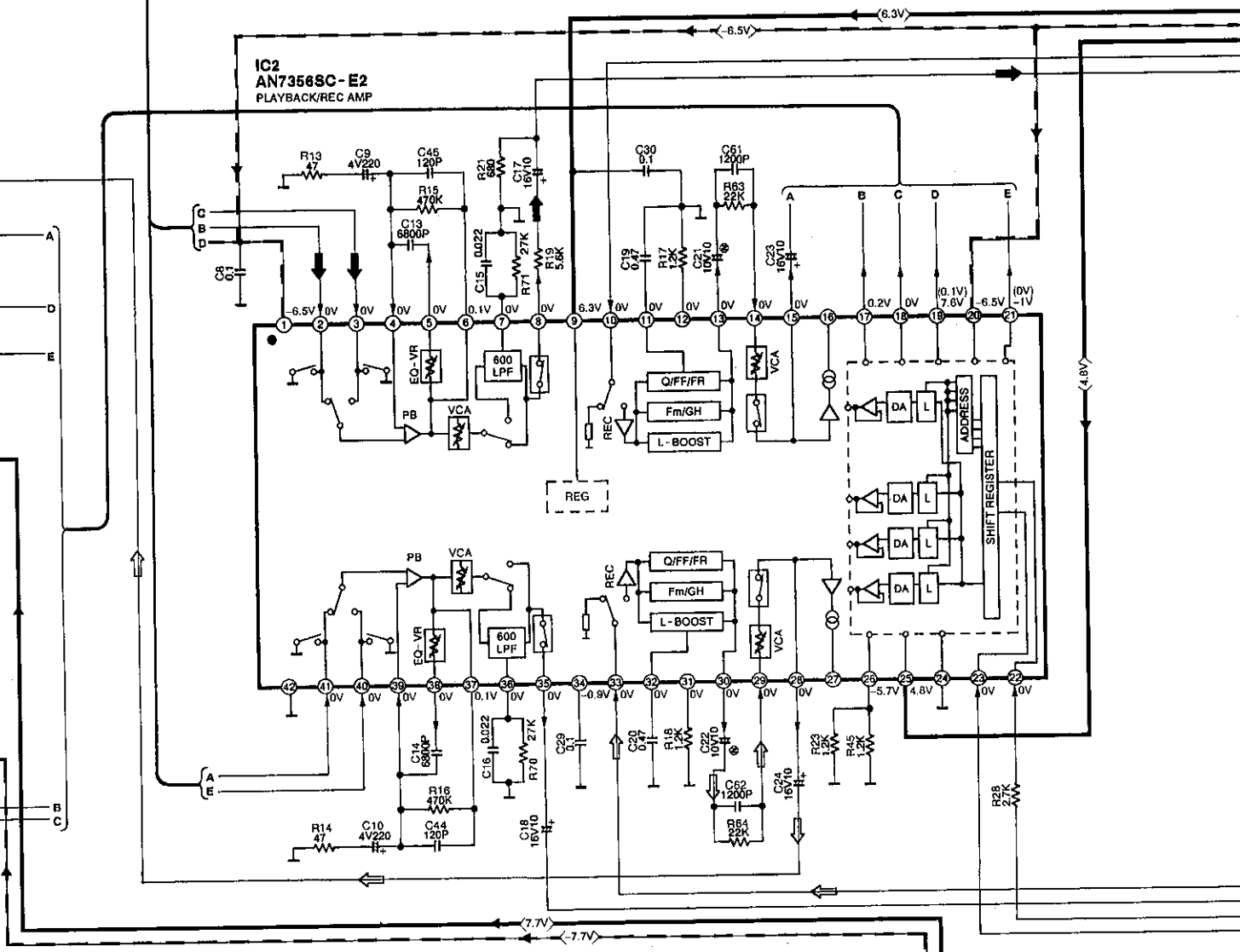
**B** MECHANISM CONTROL CIRCUIT(DECK2) (P.C.Board: on page 38)

**C** CONNECTOR CIRCUIT (P.C.Board: on page 38)

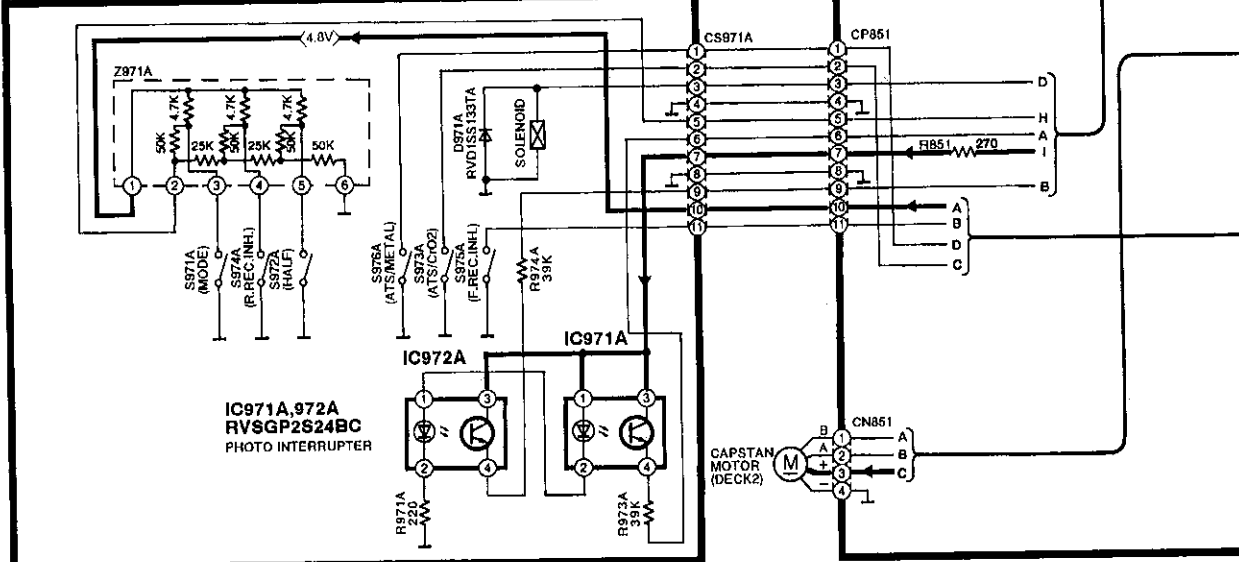


**D** DOLBY NOISE REDUCTION CIRCUIT (P.C.Board: on page 38)

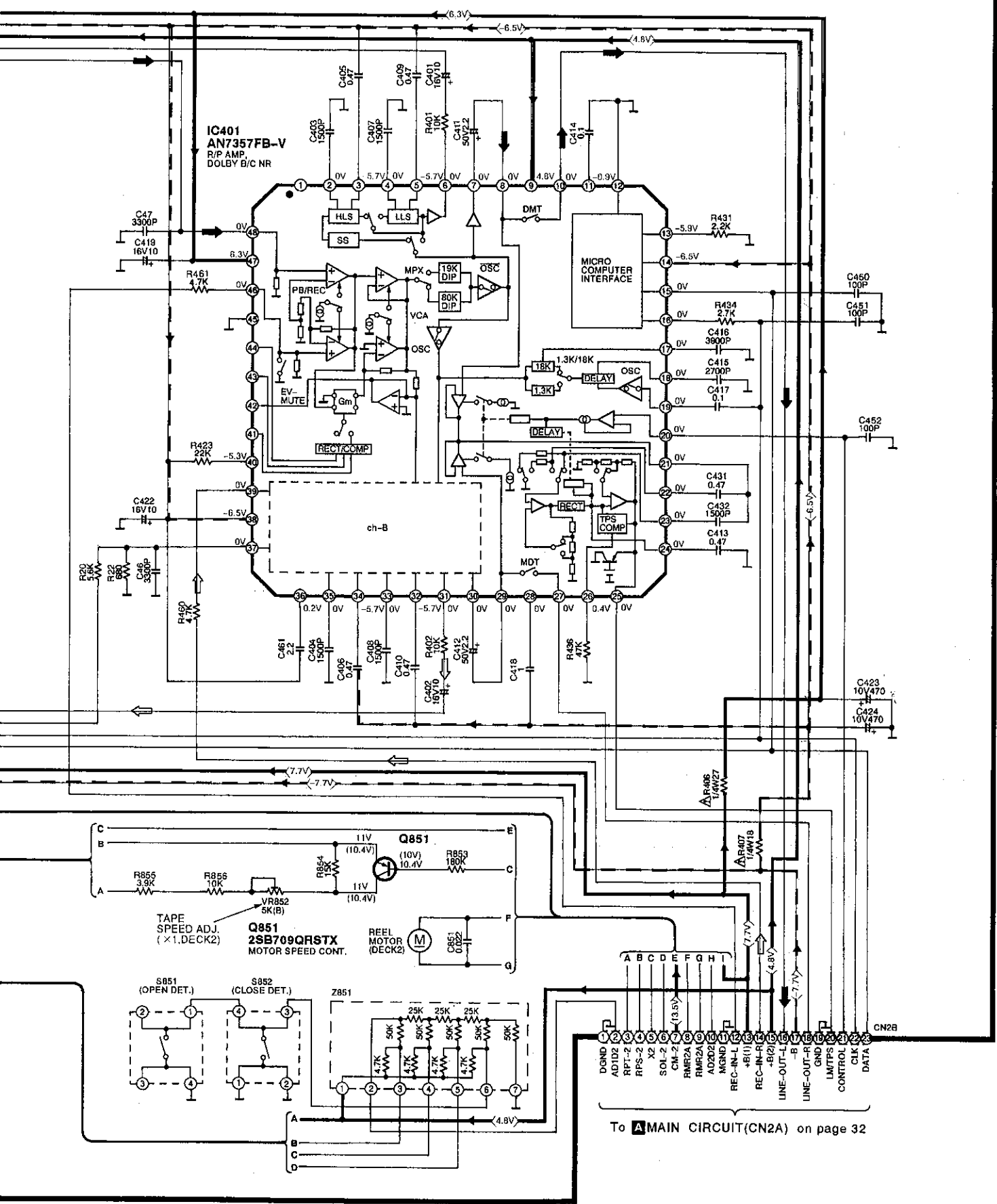




**E MECHANISM CIRCUIT (DECK2)**  
(P.C. Board: on page 39)

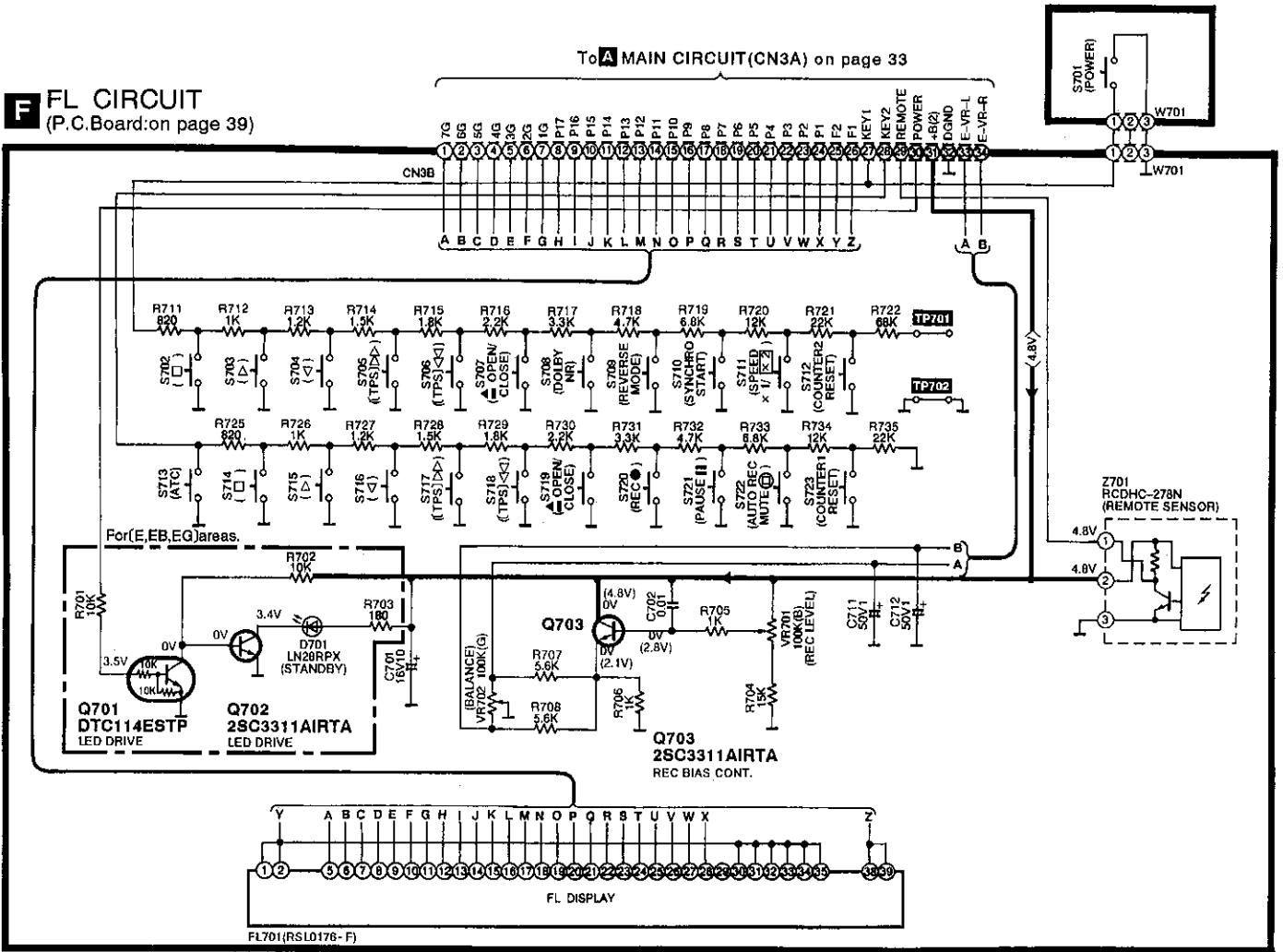


**B** MECHANISM CONTROL CIRCUIT(DECK2) (P.C.Board : on page 38)

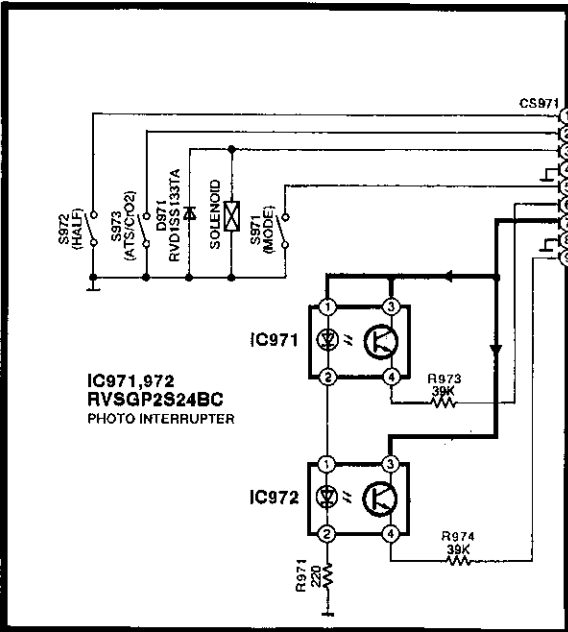


**G** POWER SWITCH CIRCUIT  
(P.C.Board: on page 40)

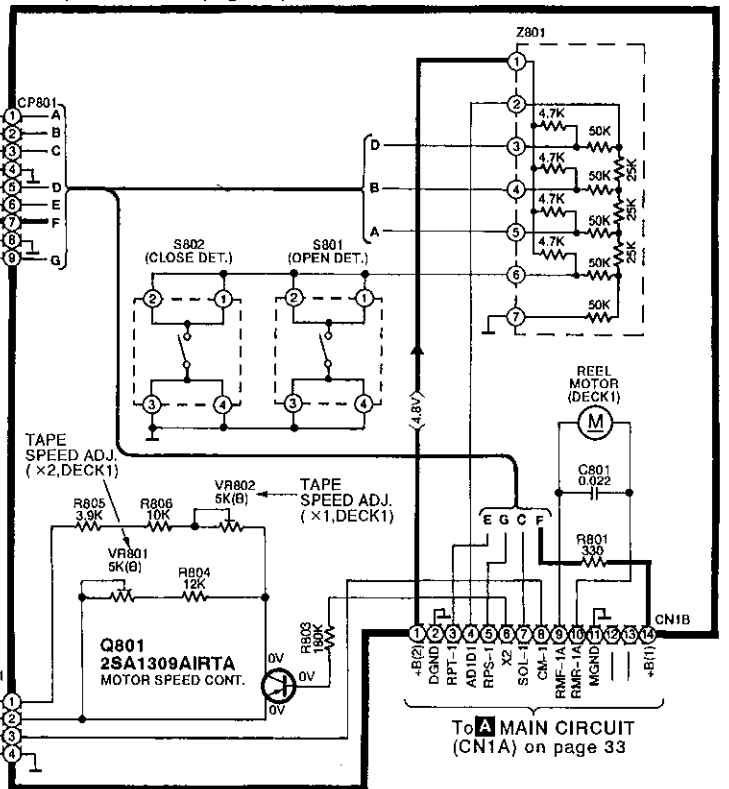
**F** FL CIRCUIT  
(P.C.Board: on page 39)



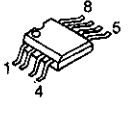
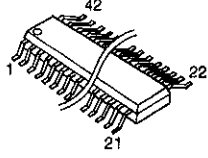
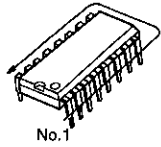
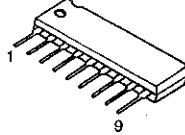
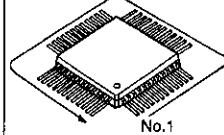
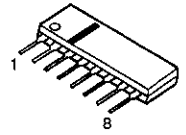
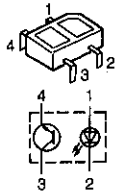

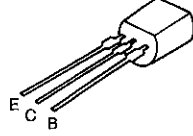
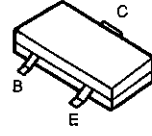
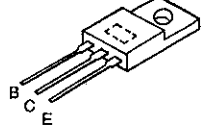
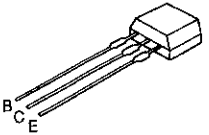
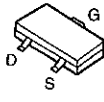
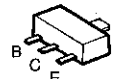

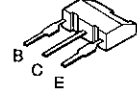
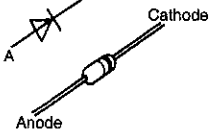
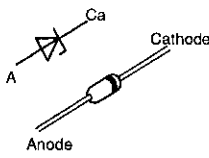
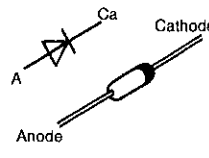
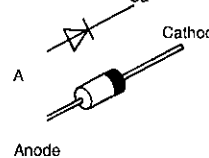
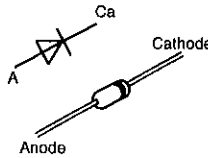
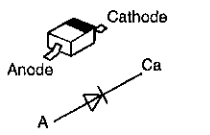
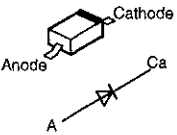
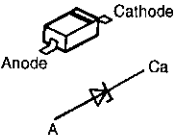
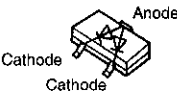
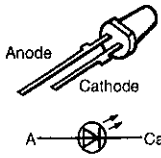
**H** MECHANISM CIRCUIT (DECK1)  
(P.C.Board: on page 39)



**I** MECHANISM CONTROL CIRCUIT (DECK1)  
(P.C.Board: on page 38)



# ■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

<p>XLJ93LC46AFE BA4560FT1</p> 	<p>AN7356SC-E2</p> 	<table border="1"> <tr> <td>AN7384N</td> <td>16PIN</td> </tr> <tr> <td>UPC1297CA</td> <td>18PIN</td> </tr> </table> 	AN7384N	16PIN	UPC1297CA	18PIN	<p>BA6418N</p> 	<table border="1"> <tr> <td>AN7357FB-V</td> <td>48PIN</td> </tr> <tr> <td>M38122M4251F</td> <td>64PIN</td> </tr> </table> 	AN7357FB-V	48PIN	M38122M4251F	64PIN	<p>M5218AL</p> 
AN7384N	16PIN												
UPC1297CA	18PIN												
AN7357FB-V	48PIN												
M38122M4251F	64PIN												
<p>RVSGP2S24BC</p> 		<p>2SA1309AIRTA 2SC3311AIRTA 2SD1450RSTTA</p>	<p>KSD471ACYGTA KSB564ACYGTA</p> 	<p>2SB709QRSTX 2SB710AQRSTX 2SD601QRSTX</p> 	<p>2SB1548PQAU 2SD2374PQAU</p> 								
<p>DTA114ESTP DTC114ESTP</p> 	<p>2SJ163PQRTX 2SK1103PQRTX</p> 	<p>2SD874QRSTX</p> 	<p>2SJ164PQRTA</p> 	<p>2SD1862QRTV6</p> 	<p>MA178TA MA700ATA</p> 								
	<p>MTZJ20DTA MTZJ4R7ATA MTZJ5R1BTA MTZJ6R2BTA MTZJ8R2ATA MTZJ8R2CTA MTZJ9R1CTA</p>	<p>MA29TATA</p> 	<p>RL1N4003N02</p> 	<p>MA165TA RVD1SS133TA</p> 	<p>MA110TX</p> 								
<p>MA111TX MA112TX</p> 	<p>MA8056MTX</p> 	<p>MA152WATX</p> 	<p>LN28RPX</p> 										

1 2 3 4 5

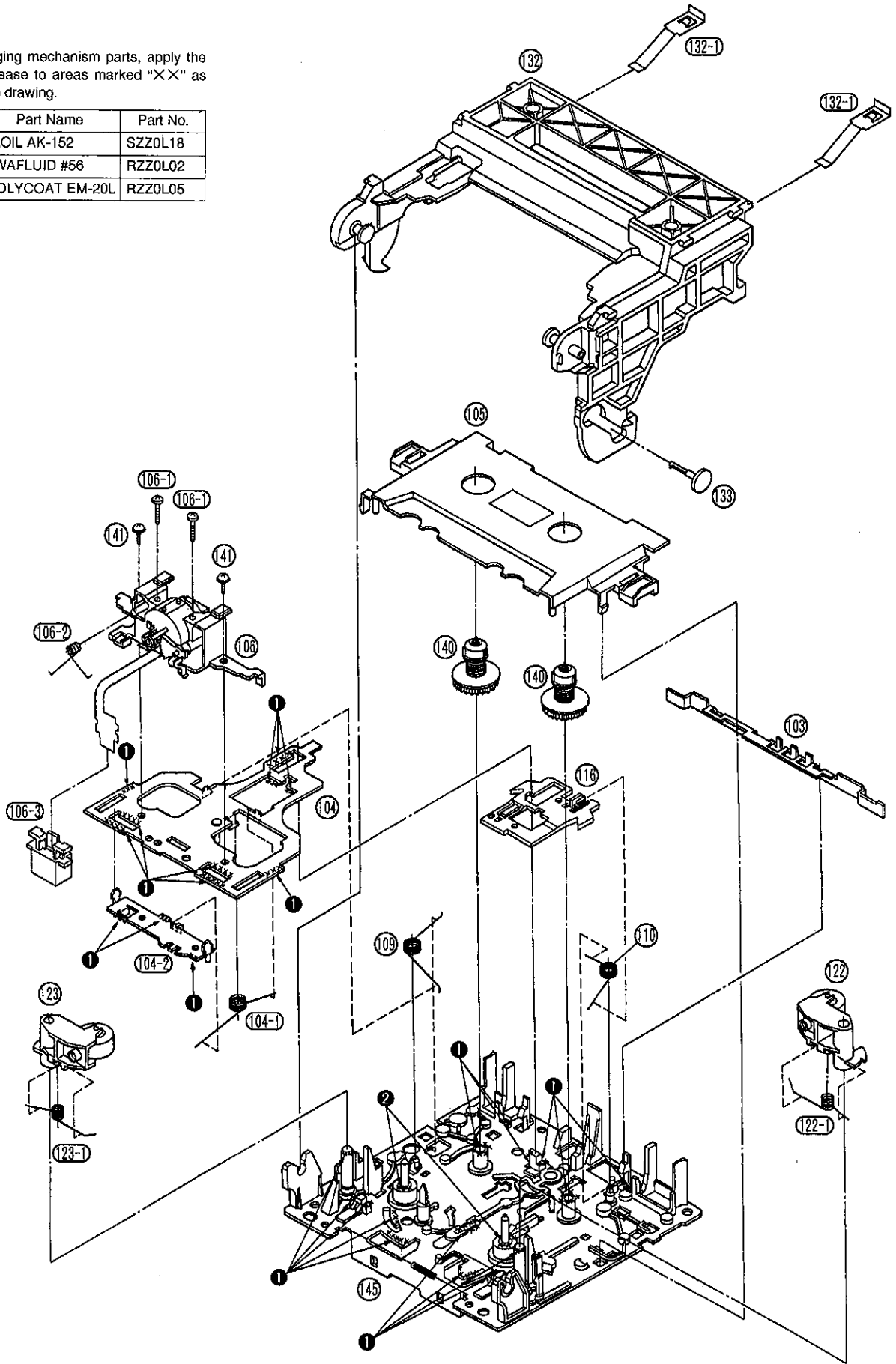
# MECHANISM PARTS LOCATION (DECK 1)

**Note:**

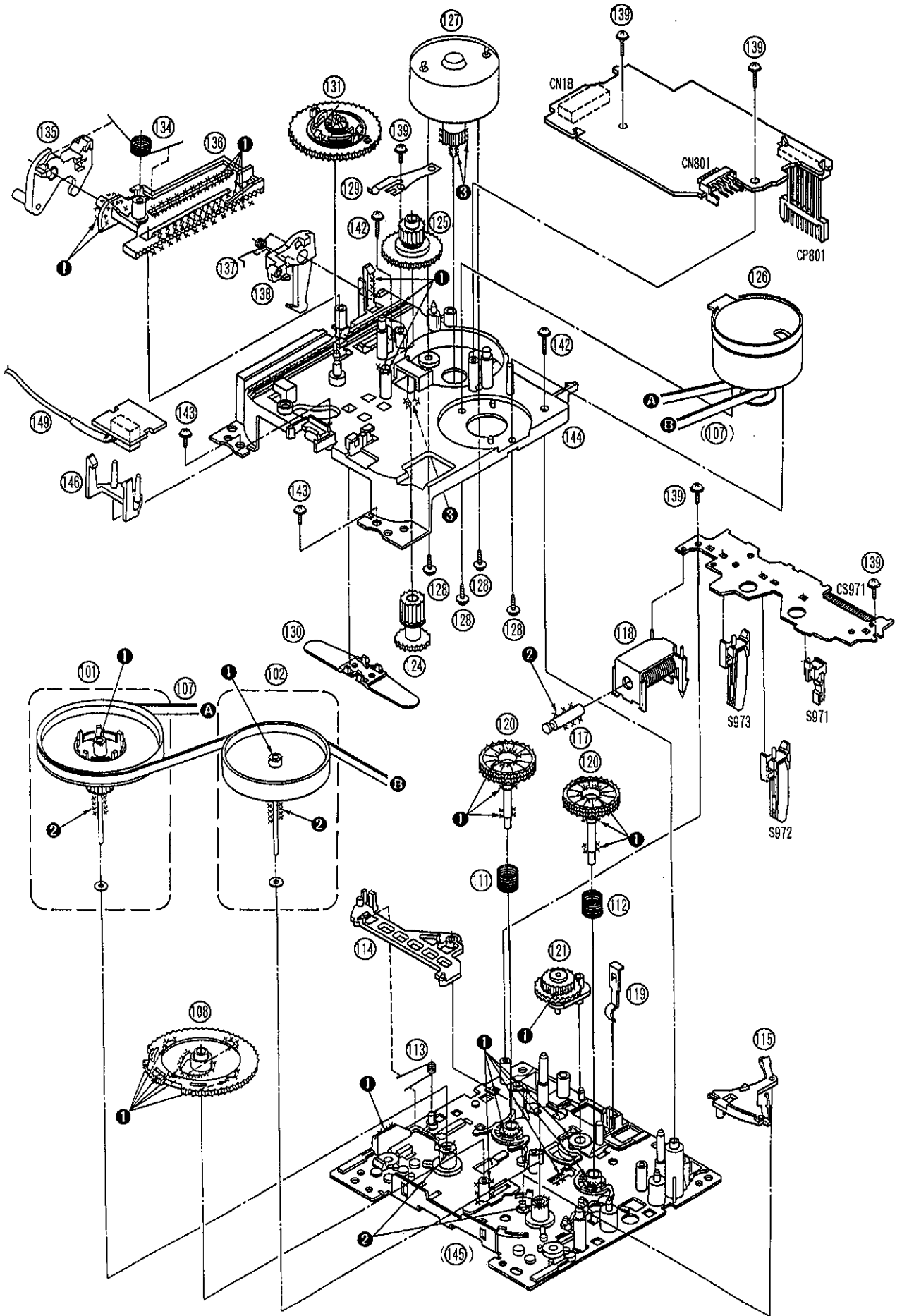
When changing mechanism parts, apply the specified grease to areas marked "X" as shown in the drawing.

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

A  
B  
C  
D  
E  
F  
G



6 | 7 | 8 | 9 | 10



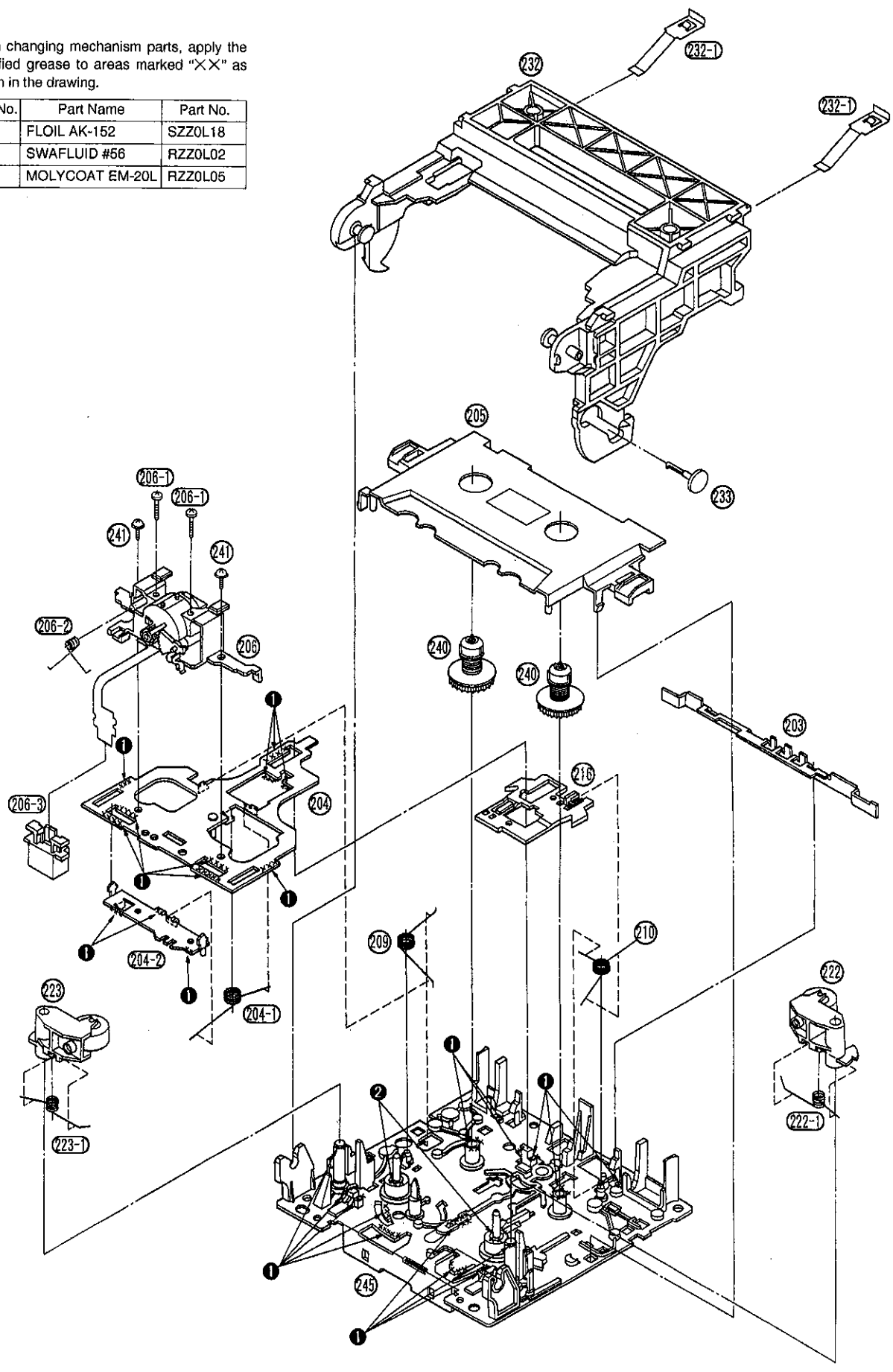


# MECHANISM PARTS LOCATION (DECK 2)

A  
B  
C  
D  
E  
F  
G

**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



6 | 7 | 8 | 9 | 10

