

# Service Manual

Dolby NR-Equipped  
Stereo Double Cassette Deck

Cassette Deck  
**RS-TR165**



**Color**

(K) ... Black Type
(S) ... Silver Type

**Area**

Country Code	Area	Color
(E)	Continental Europe.	(K) (S)
(EB)	Great Britain.	(K) (S)
(EG)	F.R. Germany and Italy.	(K) (S)
(GC)	Third Region.	(K)
(GN)	Oceania.	(K)

## SPECIFICATIONS

### ■ CASSETTE DECK SECTION

<b>Deck system</b>	Stereo cassette deck
<b>Track system</b>	4-track, 2-channel
<b>Heads</b>	
(tape deck 1) Play	Permalloy head
(tape deck 2) Rec/play	Permalloy head
Erasing	Double-gap ferrite head
<b>Motors</b>	
(tape deck 1) Capstan/reel table drive	DC servo motor
(tape deck 2) Capstan/reel table drive	DC servo motor
<b>Recording system</b>	AC bias
<b>Bias frequency</b>	80 kHz
<b>Erasing system</b>	AC erase
<b>Tape speed</b>	4.8 cm/sec. (1-7/8 ips)
<b>Frequency response (w/o Dolby NR)</b>	
NORMAL	20 Hz~16 kHz
	20 Hz~15 kHz (DIN)
CrO <sub>2</sub>	20 Hz~16 kHz
	20 Hz~15 kHz (DIN)
METAL	20 Hz~18 kHz
	20 Hz~17 kHz (DIN)
<b>S/N</b> (signal level = max recording level, CrO <sub>2</sub> type tape)	
Dolby C NR on	74 dB (CCIR)
Dolby B NR on	66 dB (CCIR)
Dolby NR off	56 dB (A weighted)
<b>Wow and flutter</b>	0.07 % (WRMS) ±0.2 % (DIN)

**Fast forward and rewind times**

Approx. 110 seconds with C-60 cassette tape

**Input sensitivity and impedance**

LINE IN 60 mV/47 kΩ

**Output voltage and impedance**

LINE OUT 400 mV/800 Ω

HEADPHONES 30 mV/8 Ω

(8 Ω~600 Ω)

### ■ GENERAL

**Power consumption**

15 W

**Power supply**

For Great Britain AC 50 Hz/60 Hz, 240 V

For continental Europe AC 50 Hz/60 Hz, 220 V

For others AC 50 Hz/60 Hz, 110 V/127 V/220 V/240 V

**Dimensions (W × H × D)**

430 × 136 × 290 mm

(16-15/16" × 5-3/8" × 11-13/32")

**Weight**

4.8 kg (10.6 lb.)

**Note:**

Specifications are subject to change without notice.

Weight and dimensions are approximate.

\* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.

"Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

# Technics

Matsushita Electric Industrial Co., Ltd.  
Central P.O. Box 288, Osaka 530-91, Japan

## ■ CONTENTS

	Page		Page
• Safety Precaution .....	2	• Block Diagram.....	26, 27
• Accessories .....	2	• Wiring Connection Diagram .....	28
• How To Connection .....	3	• Resistors & Capacitors.....	29, 30
• Location of Controls .....	4, 5	• Replacement Parts List (Electrical Parts).....	31, 32
• Disassembly Instructions.....	6~9	• Mechanical Parts Location (DECK 1).....	33, 34
• Measurement and Adjustment Methodes.....	10~12	• Replacement Parts List (Mechanical Parts) .....	35, 36
• Terminal Function of IC's.....	13, 14	• Mechanical Parts Location (DECK 2).....	37, 38
• Printed Circuit Boards .....	15~18	• Replacement Parts List (Cabinet Parts) .....	39, 40
• Schematic Diagram.....	19~25	• Cabinet Parts Location.....	41, 42
• Terminal Guide of IC's, Transistors and Diodes .....	25		

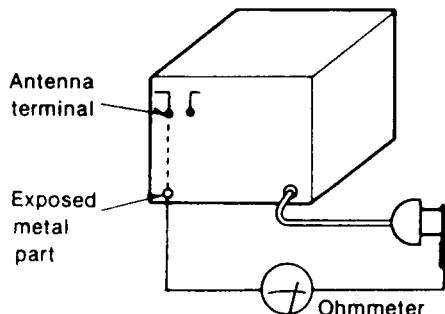
## ■ SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

## • INSULATION RESISTANCE TEST

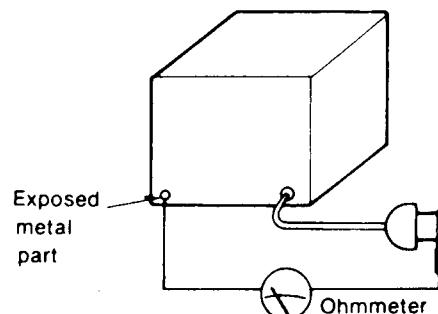
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between  $3M\Omega$  and  $5.2M\Omega$  to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

**Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance =  $3M\Omega - 5.2M\Omega$



(Fig. B)

Resistance = Approx  $\infty$

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

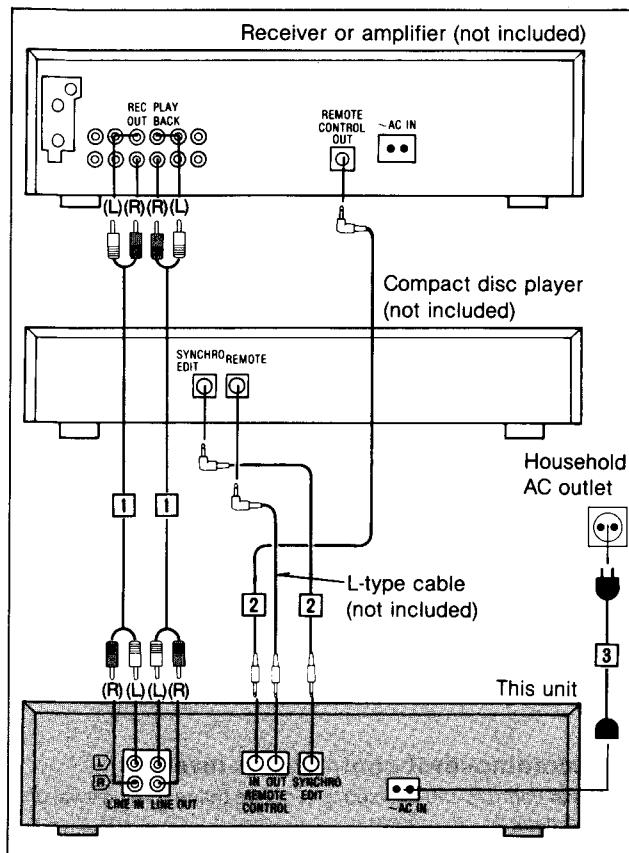
## ■ ACCESSORIES

• Stereo connection cables..... (SJP2249-3)	2	• L-type cables..... (SJP2257T)	2	• AC power supply cord (polarized)..... SJA173-1 : (GN) SFDAC05E03 : (E, EG) SJA193-1 : (EB) SJA173-1 : (GN) RJA0004 : (GC)	1
• AC plug adaptor .....	1				

## ■ HOW TO CONNECTION

Make connections in the numbered sequence by using the included cables.

- 1 Connect the stereo connection cables.**
- 2 Connect the L-type cables.**
- 3 Connect the AC power supply cord.**



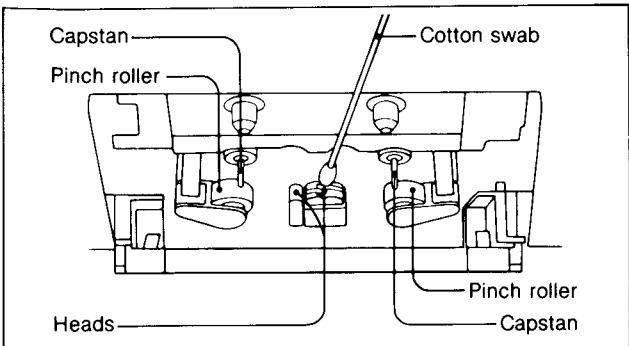
### • Maintenance

#### Head care

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

- 1) Press the power switch to switch OFF the power supply.
- 2) Press the eject button.
- 3) Clean the heads, pinch roller and the capstan shaft of each deck with a cotton swab (or with a soft, lint-free cloth) slightly moistened with alcohol.

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



The illustration at the left shows an example of connections made when this unit is combined with a Technics hi-fi component system, and shows only the connections to be made to and from this unit in that combination.

Refer to the illustration together with the instructions provided below.

#### “REMOTE CONTROL IN” terminal

Make a connection from this terminal to the control terminal for a cassette deck with a Technics receiver or a Technics amplifier. (For detailed information, refer to the operating instructions of the Technics receiver or the Technics amplifier.)

#### “REMOTE CONTROL OUT” terminal

Make a connection from this terminal to the “REMOTE INPUT” terminal of a Technics graphic equalizer or to the “REMOTE” terminal of a Technics compact disc player.

(For detailed information, refer to the operating instructions of the Technics graphic equalizer or the Technics compact disc player.)

#### “SYNCHRO EDIT” terminal

Make a connection from this terminal to a terminal that has the synchro-edit function of a Technics compact disc player.

#### AC power supply cord (3)

The configuration of the AC outlet and AC power supply cord differs according to area.

#### Placements 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”.

#### Head demagnetization

In order to maintain good sound quality during recording and playback, it is recommended that the heads should be demagnetized if distortion or poor sound quality persist after cleaning the heads.

If the heads become magnetized, they could create noise in recordings, loss of high-frequency response, or erasure of valuable recordings. Several types of head demagnetizers are available and may be purchased at local electronics supply stores. Follow the instructions that are supplied with the device.

- Do not bring any type of metal objects or tools such as magnetic screwdrivers in contact with the head assembly.

#### Maintenance of external surfaces

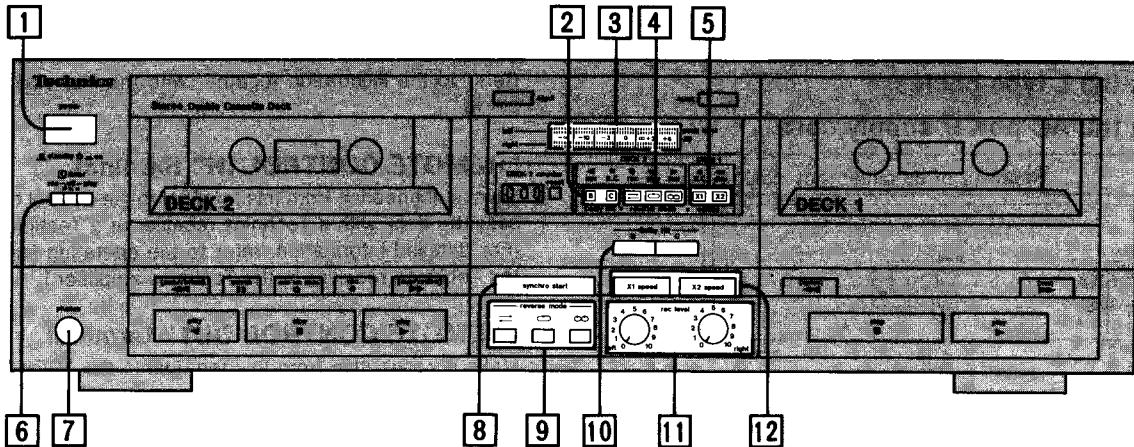
To clean this unit, use a soft, dry cloth.

For very dirty surfaces, dip a soft cloth in a weak soap-and-water solution and wring well. After cleaning, wipe with a soft, dry cloth.

Never use alcohol, paint thinner, benzine, or a chemically treated cloth to clean this unit.

Such chemicals may damage the unit's finish.

## ■ LOCATION OF CONTROLS



## Controls common to both tape decks

## 1 Power “standby ⏹ /on” switch (power/ ■ standby ⏹ = on)

This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the "standby  $\oplus$ " position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

## 2 Dolby noise-reduction indicators (B, C)

One of these indicators illuminates to show the type of Dolby noise-reduction system selected by pressing one of the Dolby noise-reduction buttons.

### 3 Input level meter (peak level)

During tape playback, this meter indicates the level of the recorded sound source.

During recording, it indicates the level to which the recording-level controls have been adjusted.

## 4 Reverse-mode indicators (, , )

One of these indicators illuminates to show which of the reverse modes was selected by the reverse-mode selectors.

## 5 Edit-recording tape-speed indicators

(**x1**, **x2**) One of these indicators illuminates to show which of the tape-to-tape recording speeds was selected by pressing one of the edit recording tape speed buttons.

## 6 Timer switch (□ timer)

**Timer switch (□ timer)**  
This switch is used to automatically begin a tape recording or tape playback at a certain time, selected by an optional timer.

## 7 Headphones jack (phones)

## 8 Synchro start button (synchro start)

**Synchro-start button (synchro start)**  
This button can be used to start a tape-to-tape recording, simultaneously starting tape deck 1 (the playback deck) and tape deck 2 (the recording deck).

## 9 Reverse-mode selectors (reverse mode)

These selectors can be used for selection of the reverse mode (for either playback or recording).

#### 10 Dolby noise-reduction buttons (Dolby NR)

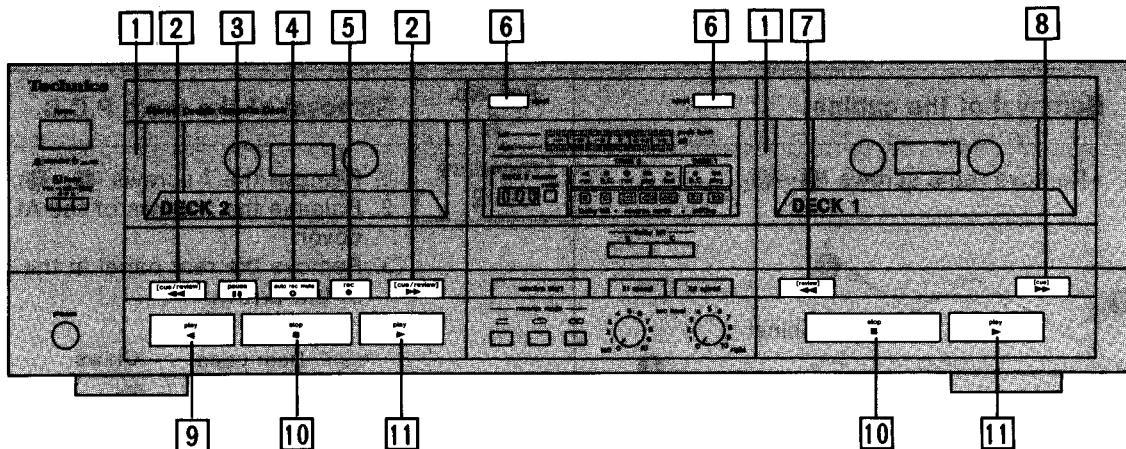
These buttons can be used to reduce the hiss noise that is characteristic of tape. This unit is provided with both the B-type and C-type noise-reduction systems.

## 11 Recording-level controls (rec level)

These controls can be used to regulate the recording level of tape deck 2.

## 12 Edit-recording tape-speed buttons (speed)

These buttons can be used to select the recording speed when a tape-to-tape recording is made.



## Controls applicable to tape deck 1 and/or 2

**1 Cassette holder**

**2 Fast-forward/cue, rewind/review buttons (cue/review/▶▶/◀◀)**

These buttons are used to advance or rewind the tape. During playback these buttons are used to cue or review while listening to the contents at high speed.

**3 Pause button (pause/■)**

This button can be used to temporarily stop the tape playback or recording of tape deck 2 only.

**4 Automatic-record-muting button (auto rec mute/○)**

This button can be used to make (during recording) a silent interval on the tape.

**5 Record button (rec/●)**

This button can be used to change tape deck 2 to the recording stand-by mode.

**6 Eject button (eject)**

This button can be used to open the cassette holder.

**7 Rewind/review button (review/◀◀)**

This button is used to rewind the tape. During playback this button is used to review the contents at high speed.

**8 Fast-forward/cue button (cue/▶▶)**

This button is used to advance the tape. During playback this button is used to cue the contents at high speed. (Refer to page 8.)

**9 Reverse-side playback button (play/◀)**

This button can be used to start the playback or recording of side "B" of the cassette in tape deck 2. (The tape will then begin moving in the right-to-left direction.)

**10 Stop button (stop/■)**

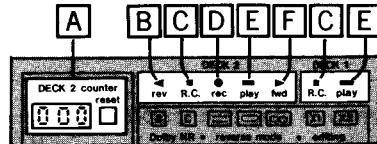
This button can be used to stop tape movement.

**11 Forward-side playback button (play/▶)**

This button can be used to start the playback or recording (for tape deck 2 only) of side "A" of the cassette in this tape deck.

(The tape will then begin moving in the left-to-right direction.)

## Indicators applicable only to tape deck 1 or 2



**A Tape deck 2 counter/reset button (DECK 2 counter/reset)**

This tape counter shows the amount of tape movement of the tape in tape deck 2.

The reset button can be used to reset the tape counter reading to "000".

**B Reverse-side indicator (rev/◀)**

Illuminates during playback or recording of tape deck 2, to indicate that side "B" of the tape is being used.

**C Remote-control indicator (R.C./■)**

This indicator illuminates to indicate that this tape deck can now be controlled by the remote-control transmitter.

**D Recording indicator (rec/●)**

This indicator illuminates to indicate that tape deck 2 is in the recording stand-by mode or is recording.

**E Playback indicator (play/■)**

When this indicator illuminates steadily, it indicates that this tape deck is in the playback mode or the recording mode (for tape deck 2 only).

When it flashes continually, this is an indication that tape deck 2 is in the pause mode or the recording stand-by mode.

**F Forward-side indicator (fwd/▶)**

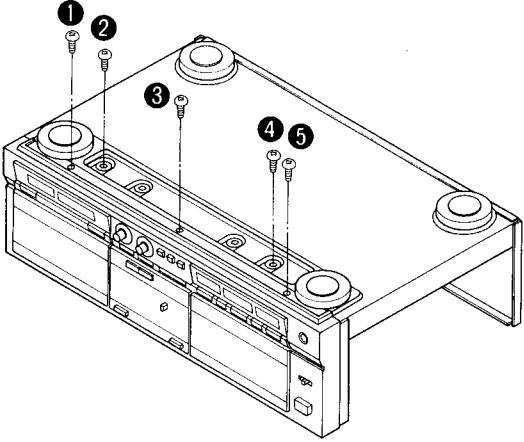
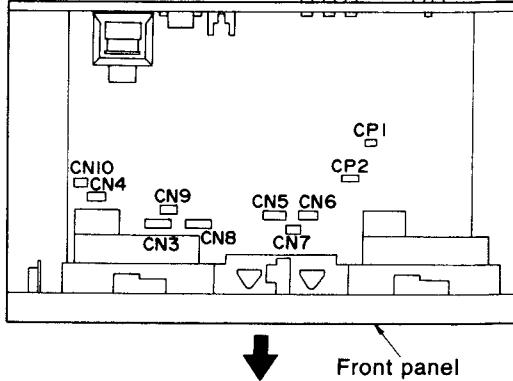
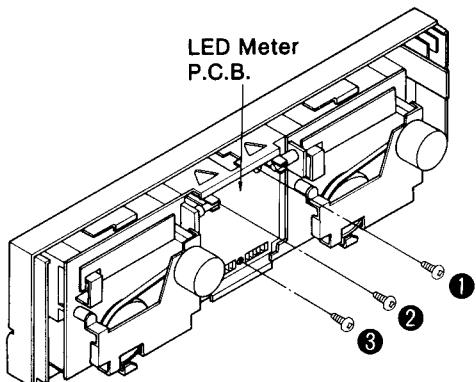
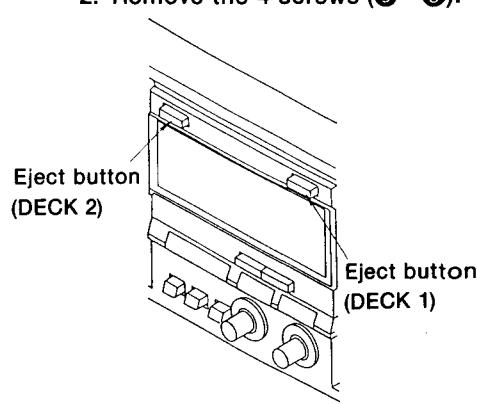
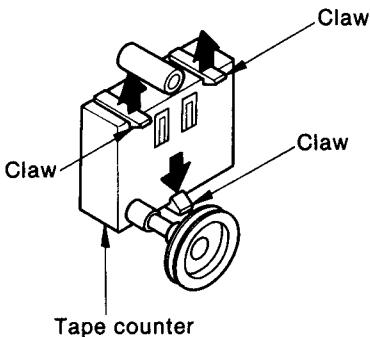
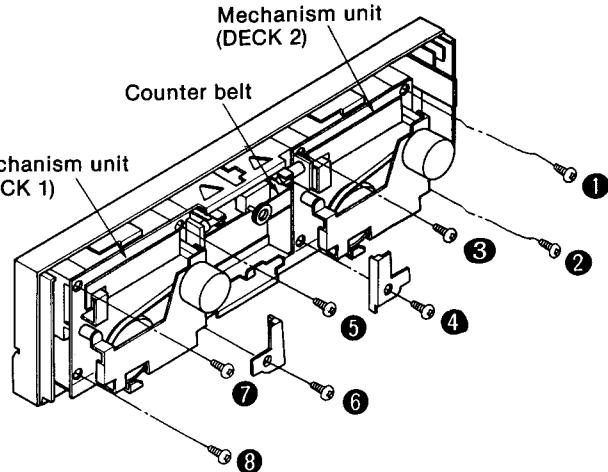
Illuminates during playback or recording of tape deck 2, to indicate that side "A" of the tape is being used.

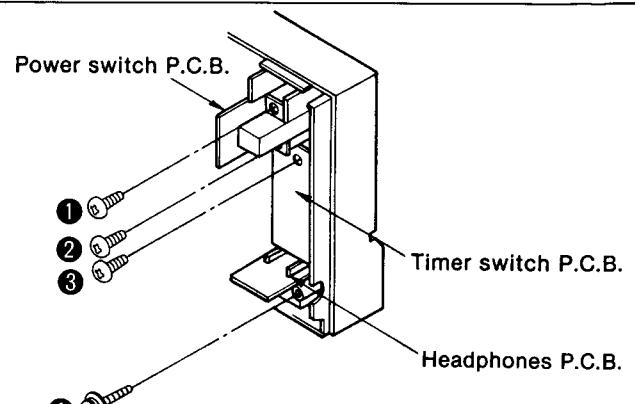
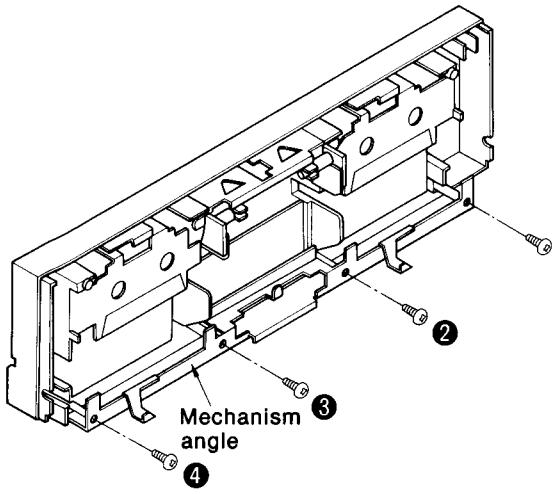
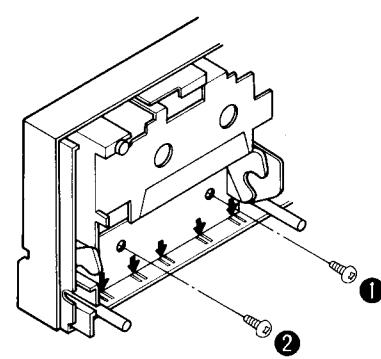
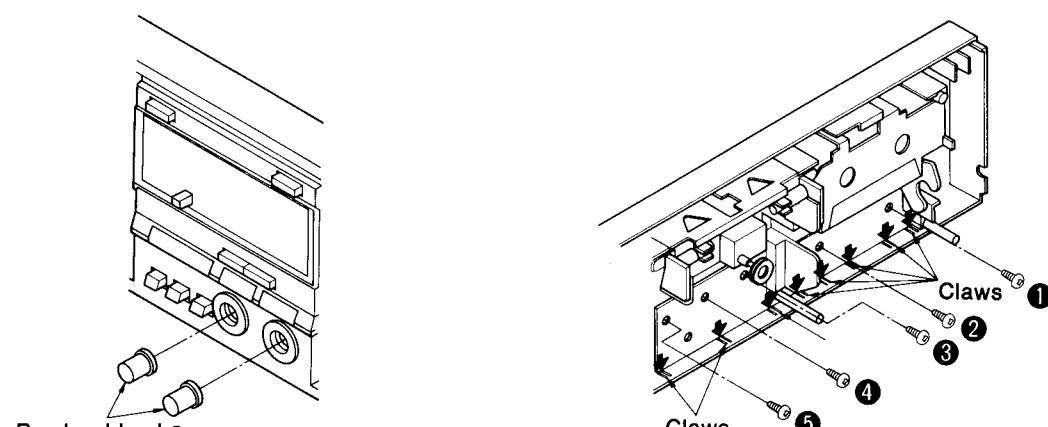
## ■ DISASSEMBLY INSTRUCTIONS

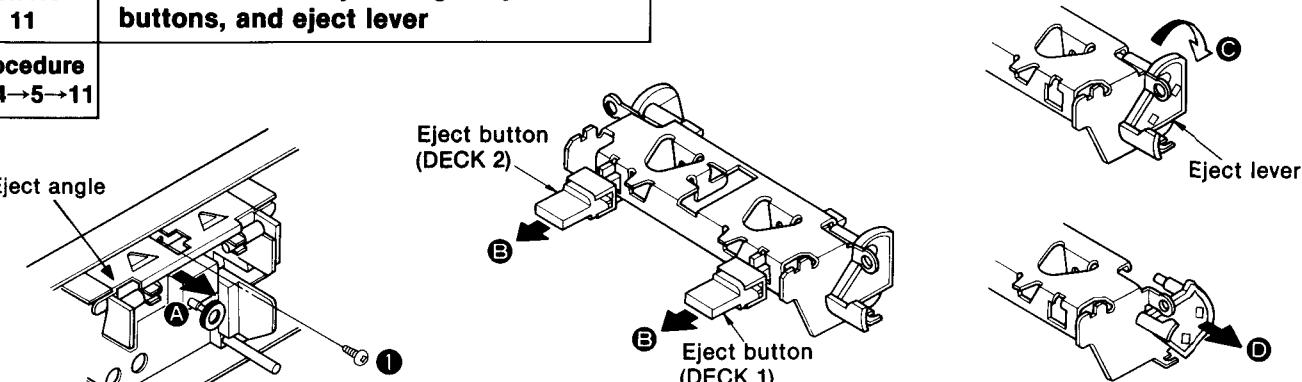
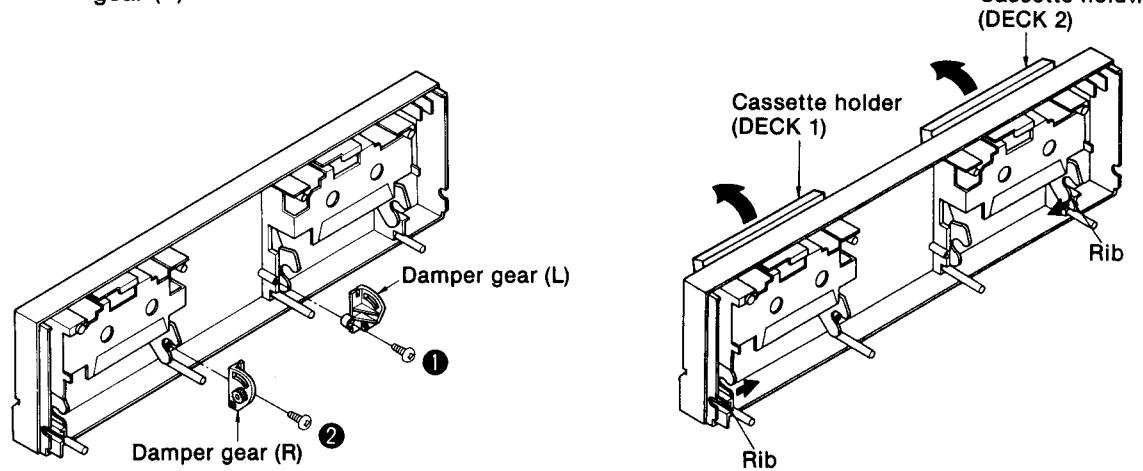
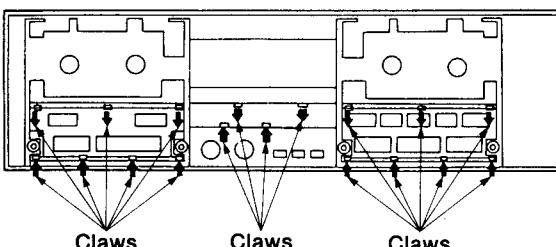
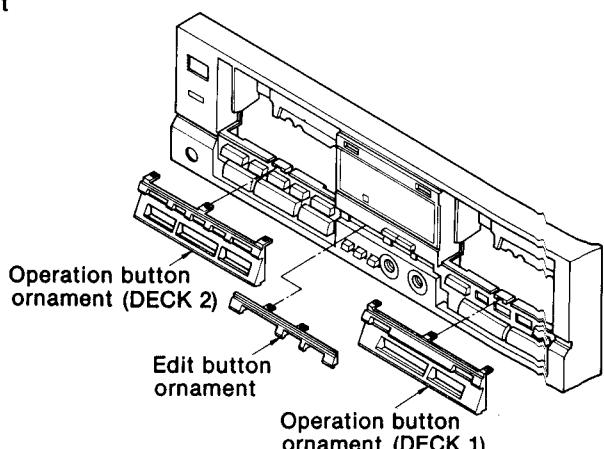
### “ATTENTION SERVICER”

Some chassis components may have sharp edges. Be careful when disassembling and servicing.

Ref. No. 1	Removal of the cabinet	Ref. No. 2	Removal of the main P.C.B.
Procedure 1	• Remove the 6 screws (①~⑥).	Procedure 1→2	1. Remove the 7 screws (①~⑦). 2. Release the 2 claws of the AC outlet cover. 3. Remove the rear panel in the direction of the arrow.
4. Remove the 6 screws (⑧~⑬). 5. Remove the 2 connectors (CP1, CP2). 6. Remove the 8 flat cables (CN3, CN4, CN5, CN6, CN7, CN8, CN9, CN10). 7. Remove the main P.C.B. in the direction of the arrow.			
<b>How to remove the flat cable</b> Pull out the flat cable while pressing the connector.			
<b>How to check the main P.C.B.</b> • When checking the soldered surfaces of main P.C.B. and replacing the parts, do as show. 1. Remove the 14 screws (①, ③, ⑦~⑬). 2. Remove the front panel in the direction of the arrow A.			3. Remove the bottom board in direction of the arrow B. 4. Reinstall the front panel to the main P.C.B.

Ref. No. 3	<b>Removal of the front panel ass'y</b>	2. Remove the 2 connectors (CP1, CP2). 3. Remove the 8 flat cables (CN3, CN4, CN5, CN6, CN7, CN8, CN9, CN10). 4. Remove the front panel in the direction of the arrow.	
Procedure 1→3	1. Remove the 5 screws (①~⑤).		
			
Ref. No. 4	<b>Removal of the LED meter P.C.B.</b>	Ref. No. 5	<b>Removal of the mechanism units</b>
Procedure 1→3→4	1. Remove the 3 screws (①~③). 2. Remove the meter P.C.B. in the direction of the arrow.	Procedure 1→3→4→5	<ul style="list-style-type: none"> <li>• Mechanism unit (DECK 2)           <ol style="list-style-type: none"> <li>1. Push the eject button.</li> <li>2. Remove the 4 screws (①~④).</li> <li>3. Remove the counter belt.</li> </ol> </li> <li>• Mechanism unit (DECK 1)           <ol style="list-style-type: none"> <li>1. Push the eject button.</li> <li>2. Remove the 4 screws (⑤~⑧).</li> </ol> </li> </ul>
			
Ref. No. 6	<b>Removal of the tape counter</b>		
Procedure 1→3→4→6	• Release the 3 claws.		
			

Ref. No. 7	<b>Removal of the power switch P.C.B., timer switch P.C.B. and headphones P.C.B.</b>	Procedure 1→3→7	<ul style="list-style-type: none"> <li>• Removal of the power switch P.C.B.</li> <li>1. Remove the 2 screws (1, 2).</li> <li>• Removal of the timer switch P.C.B.</li> <li>1. Remove the 1 screw (3).</li> <li>• Removal of the headphones P.C.B.</li> <li>1. Remove the 1 screw (4).</li> </ul>
			
Ref. No. 8	<b>Removal of the mechanism angle</b>	Ref. No. 9	<b>Removal of the operation (DECK 1) P.C.B.</b>
Procedure 5→8	<ul style="list-style-type: none"> <li>• Remove the 4 screws (1~4).</li> </ul>	Procedure 5→8→9	<ol style="list-style-type: none"> <li>1. Remove the 2 screws (1, 2).</li> <li>2. Release the 5 claws.</li> </ol>
			
Ref. No. 10	<b>Removal of the operation (DECK 2) P.C.B.</b>		<ol style="list-style-type: none"> <li>2. Remove the 5 screws (1~5).</li> <li>3. Release the 8 claws.</li> </ol>
Procedure 5→8→10	<ol style="list-style-type: none"> <li>1. Remove the rec level 2 knobs.</li> </ol>		

Ref. No. 11	<b>Removal of the eject angle, eject buttons, and eject lever</b>
Procedure 3→4→5→11	 <ol style="list-style-type: none"> <li>1. Remove the 1 screw (1).</li> <li>2. Pull out the eject angle in the direction of the arrow A.</li> <li>3. Pull out the eject buttons in the direction of the arrow B.</li> <li>4. Turn the eject lever in the direction of the arrow C, and remove the eject lever in the direction of the arrow D.</li> </ol>
Ref. No. 12	<b>Removal of the cassette holder (DECK 1 &amp; DECK 2)</b>
Procedure 5→8→12	<ol style="list-style-type: none"> <li>1. Remove the 2 screws (1, 2).</li> <li>2. Remove the damper gear (L) and damper gear (R).</li> <li>3. Remove the rib in the direction of the arrow.</li> <li>4. Remove the cassette holder in the direction of the arrow.</li> </ol> 
Ref. No. 13	<b>Removal of the operation button ornament and edit button ornament</b>
Procedure 9→10→12→13	<p>A. Removal of the operation button ornament (DECK 1, DECK 2).</p> <ol style="list-style-type: none"> <li>1. Release the 14 claws.</li> </ol>  <p>B. Removal of the edit button ornament.</p> <ol style="list-style-type: none"> <li>1. Release the 4 claws.</li> </ol> 

## ■ MEASUREMENT AND ADJUSTMENT METHODS

### Measurement Condition

- Rec. level control; Maximum
- Timer switch; Off
- Reverse-mode selector switch; 
- Edit-recording tape-speed selector; X1

- Dolby NR switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature  $20 \pm 5^\circ\text{C}$  ( $68 \pm 9^\circ\text{F}$ )

### Measuring Instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator

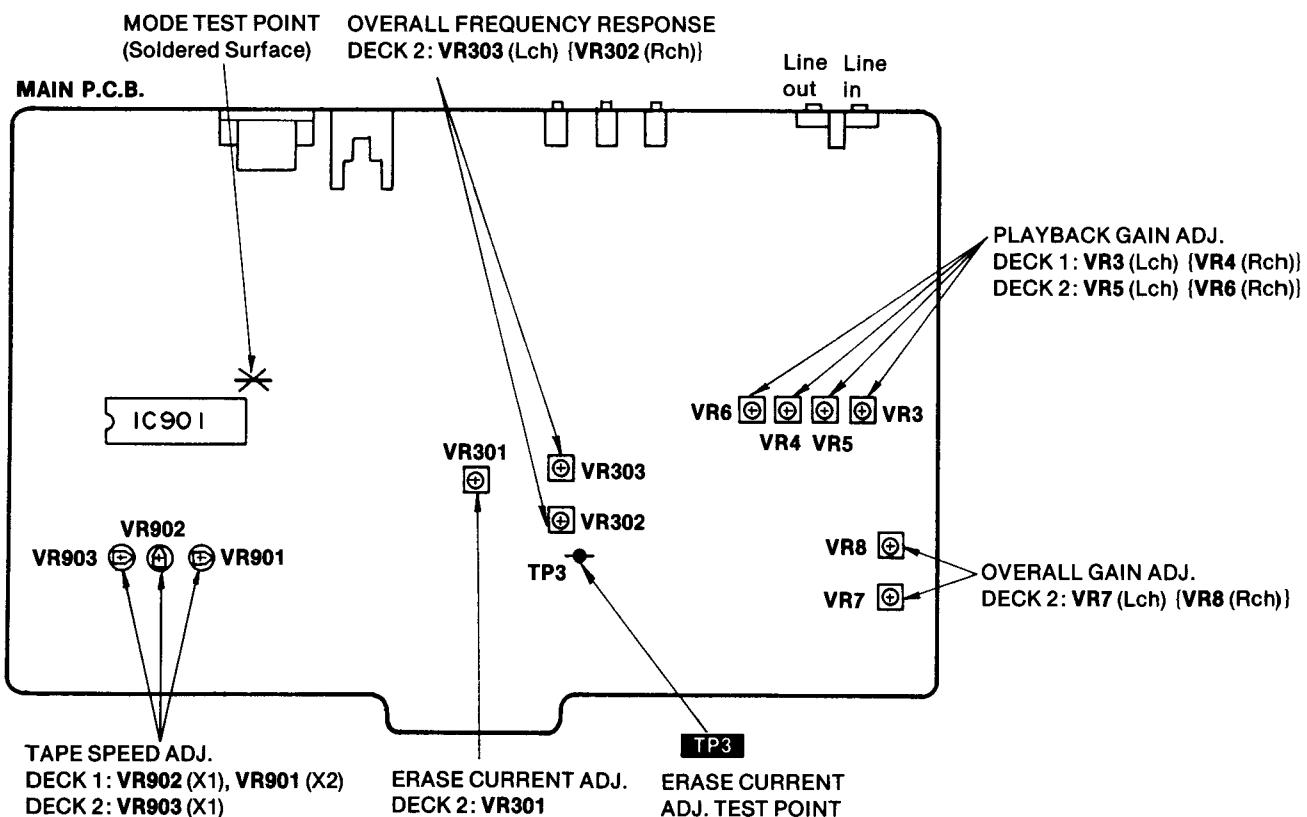
- ATT (Attenuator)
- DC voltmeter
- Resistor ( $600\Omega$ )

### Test tape

- Head azimuth adjustment (8kHz,  $-20\text{dB}$ ); QZZCFM
- Tape speed adjustment (3kHz,  $-10\text{dB}$ ); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz,  $-20\text{dB}$ ); QZZCFM

- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment  
Normal reference blank tape; QZZCRA  
CrO<sub>2</sub> reference blank tape; QZZCRX  
Metal reference blank tape; QZZCRZ

### • Adjustment Points



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

1. Playback the azimuth adjustment portion (8kHz, -20dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the outputs of the L-CH and R-CH are maximized and the lissajous waveform, as illustrated, approaches 0 degrees.
2. Perform the same adjustment in the play mode.
3. After the adjustment, apply screwlock to the azimuth adjusting screw.

**Note:** If L-CH and R-CH are not maximized at the same point, adjust to the point where the levels of each channel are maximized and equal.

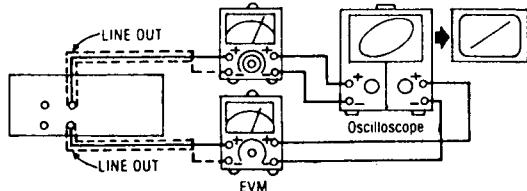


Fig. 1

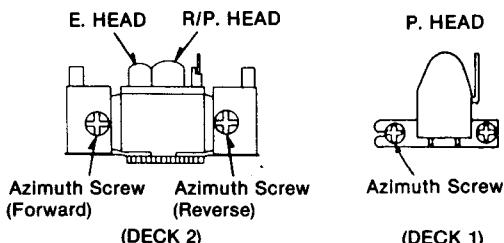


Fig. 2

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

1. Shift the edit-recording tape-speed selector to "X1".
2. Playback the middle portion of the test tape (QZZCWAT).
3. Adjust Deck 1=VR902 and Deck 2=VR903 so that the output is within the standard value.

**High speed**

4. Shift the edit-recording tape speed switch to "X2".
5. Playback the middle portion of the test tape (QZZCWAT).
6. Adjust Deck 1=VR901 so that the output is within the standard value.

**Note:** The Normal speed adjustment must be done before the High speed adjustment.

**Standard value:**  $3000 \pm 15 \text{ Hz}$  (Normal),  $6000 \pm 600 \text{ Hz}$  (High)

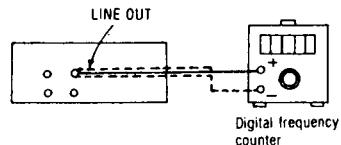


Fig. 3

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

1. Playback the gain adjusted portion (315Hz, 0dB) of the test tape (QZZCFM).
2. Adjust Deck 1=VR3 (L-CH) [[VR4 (R-CH)]] and Deck 2=VR5 (L-CH) [[VR6 (R-CH)]] so that the output is within the standard value.

**Standard value:**  $0.4 \text{ V} \pm 0.5 \text{ dB}$

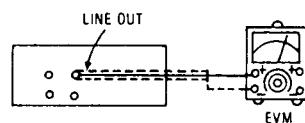


Fig. 4

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

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. 6 for both L-CH and R-CH.

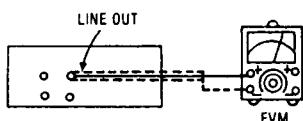


Fig. 5

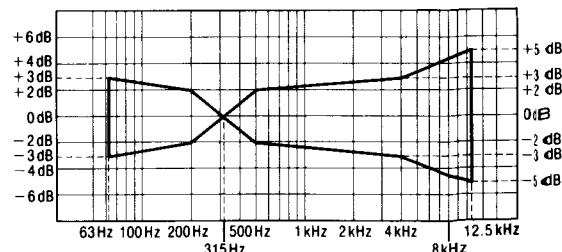


Fig. 6

**ERASE CURRENT ADJUSTMENT (DECK 2)**

1. Insert the Metal blank test tape (QZZCRZ) and set the unit to the Record Pause mode.
2. Adjust **VR301** so that the output between **TP3** and GND is within the standard value.

**Standard value:  $190 \pm 5 \text{ mA}$  (Metal)...EVM Reading:  $190 \pm 5 \text{ mV}$**

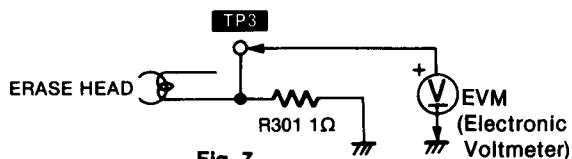


Fig. 7

**OVERALL FREQUENCY RESPONSE (DECK 2)**

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record Pause mode.
2. Apply a reference input signal (1kHz, -24dB) through an attenuator.
3. Attenuate the signal by 20dB and adjust the frequency from 50Hz~10kHz.
4. Record the frequency sweep.
5. Playback the recorded signal and assure that it is within the range shown in Fig. 8 in comparison to the reference frequency (1kHz).
6. If it is not within the standard range, adjust **VR303** (L-CH) and **VR302** (R-CH) so that the frequency level is within the standard range.
  - Level up in high frequency range .....Increase the bias current.
  - Level down in high frequency range ...Decrease the bias current.
7. Repeat steps 2~6 above using the CrO<sub>2</sub> tape (QZZCRX) and the Metal tape (QZZCRZ) increasing the frequency range to 12.5kHz (50Hz~12.5kHz).
8. Assure that the level is within the range shown in Fig. 9.

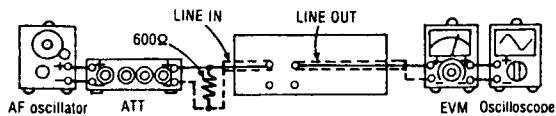


Fig. 10

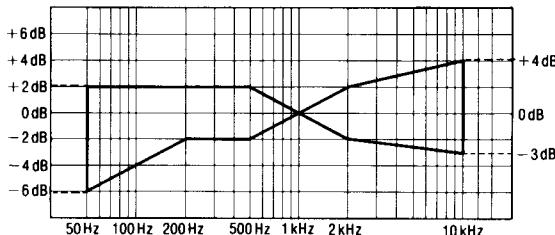
**Normal Overall frequency response chart (NR OUT)**

Fig. 8

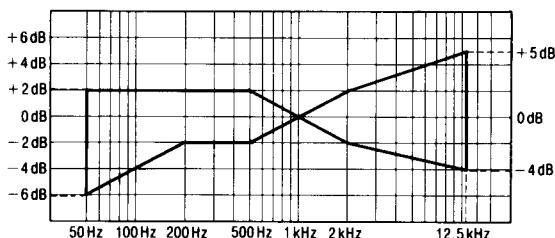
**CrO<sub>2</sub> Metal Overall frequency response chart (NR OUT)**

Fig. 9

**OVERALL GAIN ADJUSTMENT (DECK 2)**

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record pause mode.
2. Apply a reference input signal (1kHz, -24dB). Attenuate the output so that its level becomes 0.4V.
3. Record this input signal.
4. Playback the signal recorded in step 3 above, and assure that the output is within the standard value.
5. If it is not within the standard value, adjust **VR7** (L-CH) and **VR8** (R-CH).
6. Repeat the step 2~5 above until the output is within the standard value.

**Standard value:  $0.4V \pm 0.5\text{dB}$**

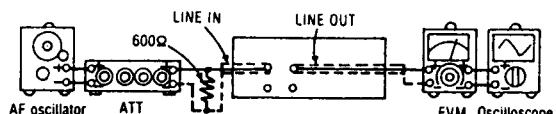


Fig. 11

## ■ TERMINAL FUNCTION OF IC's

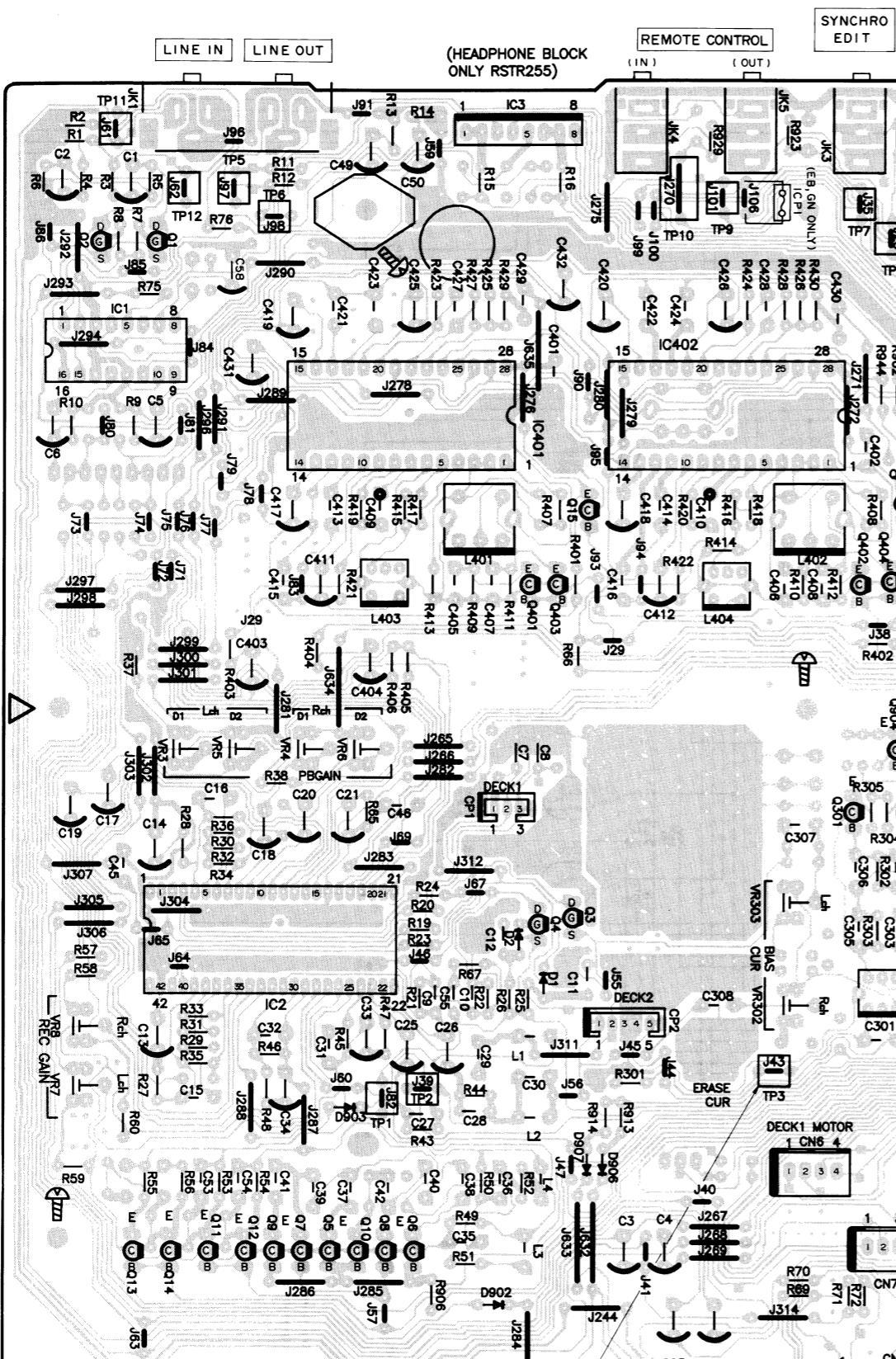
### • IC901 (M50746-145SP): MICROCOMPUTER

Pin No.	Mark	I/O Division	Function
1	V <sub>CC</sub>	I	Power supply terminal
2	A <sub>V<sub>SS</sub></sub>	—	• Connected to V <sub>SS</sub>
3	V <sub>REF</sub>	I	Standard voltage terminal (5V)
4	CRM	O	CUE/REV mute signal • "L" level in muting is off mode. • "H" level in muting is on mode.
5	DIR 2	O	Direction indicator signal of deck 2 • "L" level with forward mode. • "OPEN" with reverse mode.
6	MMT	O	Mater mute control signal • "L" level in muting is off mode. • "OPEN" when muting is on mode.
7	LMT	O	Line out mute signal (Not used, open)
8	RMT 2	O	Rec. amp. mute signal of deck 2 • "L" level in mute is off mode. • "H" level in mute is on mode.
9	DMT	O	Line out mute signal • "L" level in muting is off mode. • "OPEN" when muting is on mode.
10	REV 2	—	Connected to GND
11	REV 1	—	Connected to GND
12	KEY 2	I	Key switch scan (DECK 2: STOP, F.F., REW, F. PLAY, R. PLAY, REC., PAUSE, S. START, X2, X1, DOLBY NR)
13	KEY 1	I	Key switch scan (DECK 1: STOP, F.F., REW, PLAY, $\square$ , $\square$ , $\infty$ )
14	PLAY 2	O	Deck 2 Playback LED display/CUE, REV, LED display
15	PLAY 1	O	Deck 1 Playback LED display/CUE, REV, LED display
16	ARM 2	I	Auto Rec. mute terminal. "L"=KEY ON, "H"=KEY OFF
17	REC 1	I	Not used.
18	REC 2	O	Deck 2 Rec. mode LED display • "L" level in Deck 2 Rec. mode. • "H" level in other mode.
19	REM 2	O	Deck 2 Remote control LED display • "L" level in LED on mode. • "H" level in LED off mode.
20	REM 1	O	Deck 1 Remote control LED display • "L" level when LED is on mode. • "H" level when LED is off mode.
21	RENA	O	B side select signal to CD player, used during CD synchro editing mode.
22	SYNC	I	Synchro start signal input from CD player
23	RCS	I	Remote control serial data
24	TREC	I	Timer rec terminal
25	TPLAY	I	Timer play terminal
26	POF	I	Primary AC power detection terminal
27	CNV <sub>SS</sub>	—	Connected to V <sub>SS</sub>
28	RESET	I	Reset terminal • "L" level when reset is on mode. • "L" → "H" level when reset is off mode.
29	XIN	I	Clock OSC terminal
30	XOUT	O	
31	φ	I	Not used, open.
32	V <sub>SS</sub>	—	Connected to GND
33	TEST	—	Test terminal
34	PWIN	I	Power ON/OFF switch input • "L" level with power ON • "H" level with power OFF
35	REEL 1	I	Deck 1 Rotation pulse signal of reel table

Pin No.	Mark	I/O Division	Function
36	REEL 2	I	Deck 2 Rotation pulse signal of reel table
37	RINH 2	I	Deck 2 Reverse Rec. Inh. switch select terminal
38	FINH 2	I	Deck 2 Forward Rec. Inh. switch select terminal
39	MODE 1	I	Deck 1 mechanism mode switch select terminal
40	HALF 1	I	Deck 1 cassette half detection switch • "L" level in half detection switch is on mode. • "H" level in half detection switch is off mode.
41	MPX	O	MPX filter IN/OUT control signal • "OPEN" with Dolby NR "IN" • "L" level with Dolby NR "OUT"
42	<u>T2</u>	O	Deck 2 play select signal • "L" level with PLAY/CUE/REVIEW mode. • "H" level with any other mode.
43	<u>X2</u>	O	X2 Speed LED display • "L" level when LED is on mode. • "OPEN" when other mode.
44	<u>X1</u>	O	X1 Speed LED display • "L" level when LED is on mode. • "OPEN" when other mode.
45	T/S	I	Connected to GND
46	<u>C</u>	O	Dolby C LED display • "L" level when LED is on mode. • "OPEN" when other mode.
47	<u>B</u>	O	Dolby B LED display • "L" level when LED is on mode. • "OPEN" when other mode.
48	<u>ENC</u>	O	Encode/Decode select signal • "L" level in encode mode. • "H" level in decode mode.
49	C/M	I	Deck 1 one-way mechanism select terminal (Connected to GND)
50	<u>PWOUT</u>	O	Power ON/OFF output terminal
51	<u>SDATA</u>	O	Serial data output (Not used, open)
52	P04 (∞)	O	Reverse mode (∞) LED display.
53	P03 (↔)	O	Reverse mode (↔) LED display.
54	P02 (↔)	O	Reverse mode (↔) LED display.
55	DIR 1	O	Direction indicator signal of deck 1 (Not used, open)
56	FINH 1	I	Deck 1 Forward Rec. Inh. switch select terminal
57	HSP 1	O	Deck 1 Motor speed control signal • "L" level when normal speed (X1). • "H" level when high speed (X2).
58	SOL 1	O	Deck 1 Solenoid control signal • "H" level when solenoid is on mode. • "L" level when solenoid is off mode.
59	MOTOR 1	O	Deck 1 Motor control signal • "H" level when motor is on mode. • "L" level when motor is off mode.
60	MODE 2	I	Deck 2 mechanism mode switch select terminal
61	HALF 2	I	Deck 2 cassette half detection switch • "L" level in half detection switch in on mode. • "H" level in half detection switch in off mode.
62	HSP 2	O	Deck 2 Motor speed control signal • "H" level when normal speed (X1). • "L" level when high speed (X2).
63	SOL 2	O	Deck 2 Solenoid control signal • "H" level when solenoid is on mode. • "L" level when solenoid is off mode.
64	MOTOR 2	O	Deck 2 Motor control signal • "H" level when motor is on mode. • "L" level when motor is off mode.

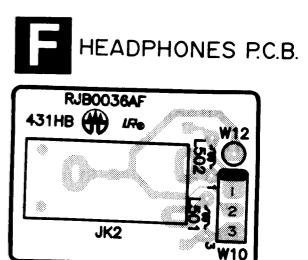
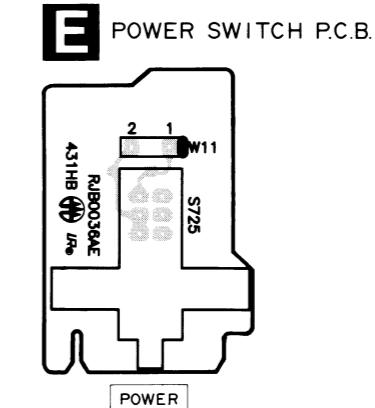
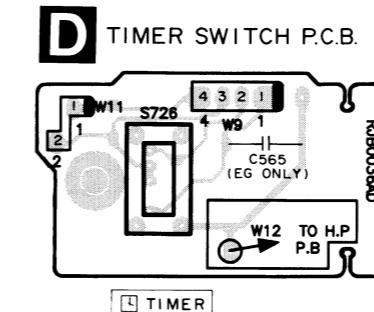
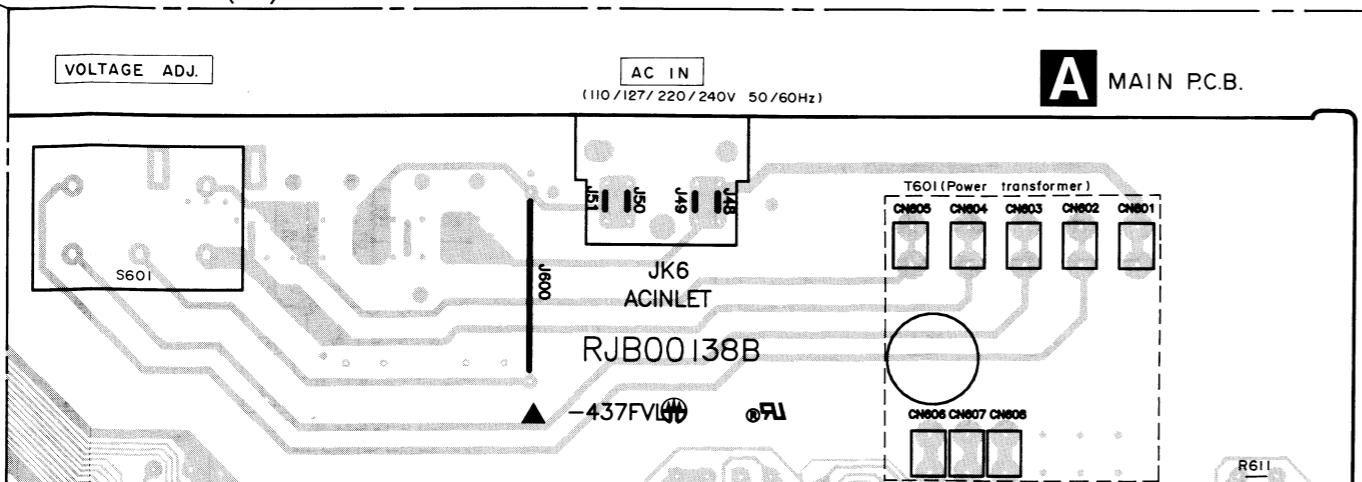
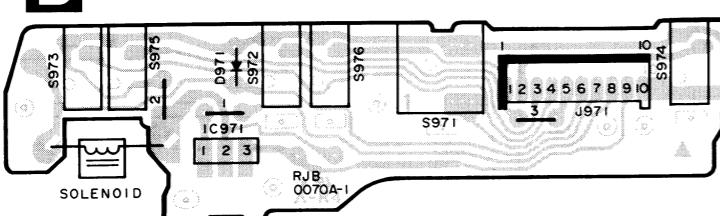
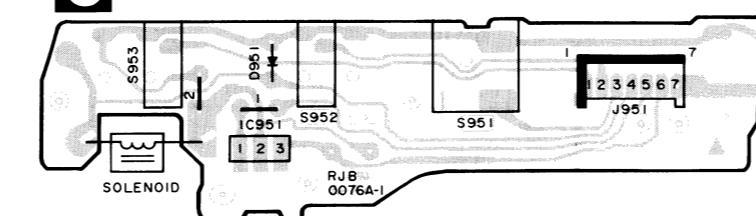
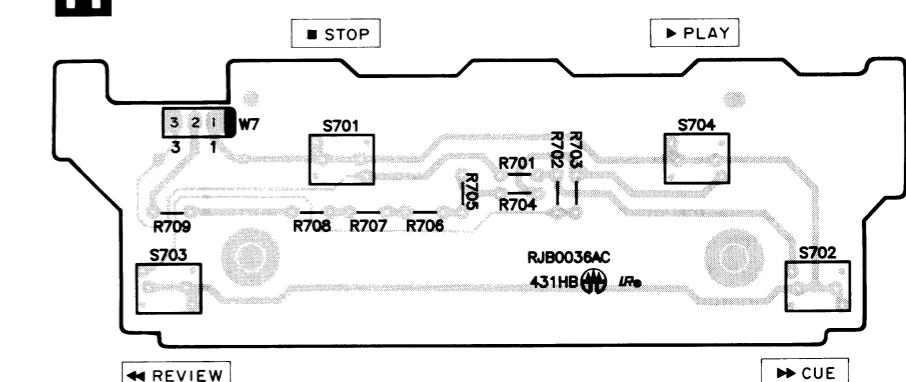
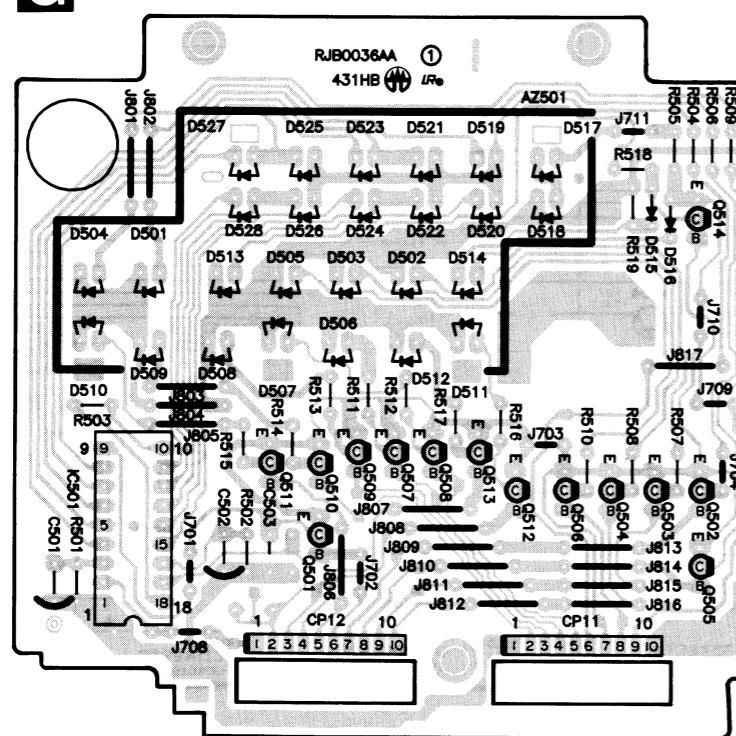
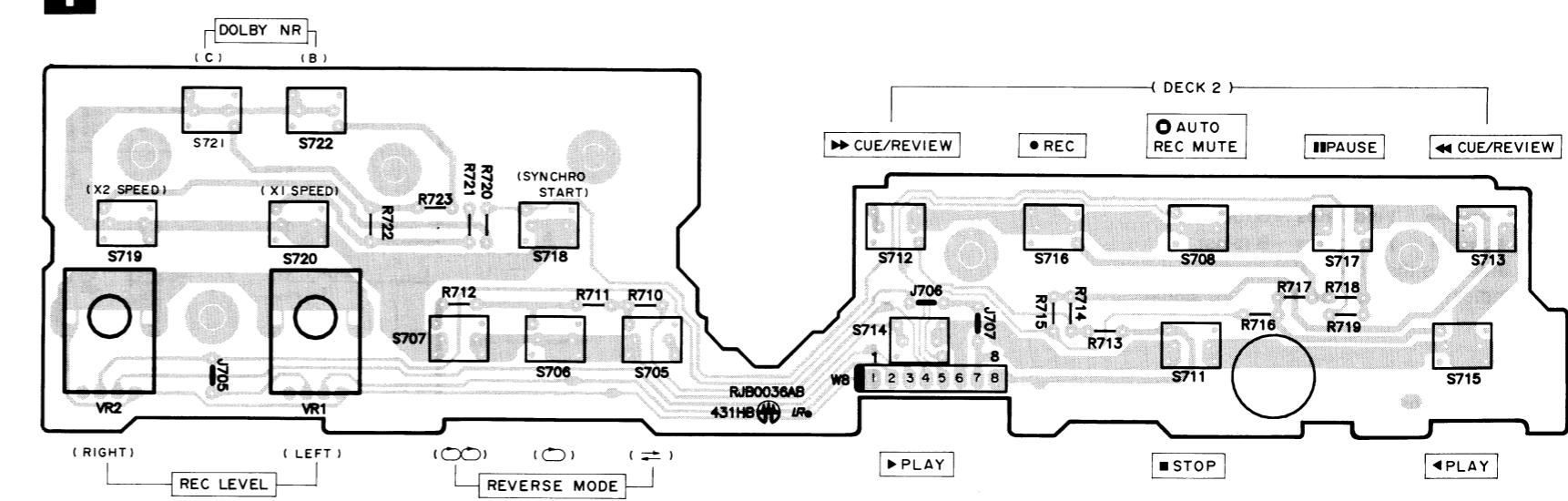
## ■ PRINTED CIRCUIT BOARDS

A



9 10 11 12 13 14 15 16 17 18 19

Power Source For (GC) area.

**B MECHANISM(DECK2) P.C.B.****C MECHANISM(DECK1) P.C.B.****H OPERATION (DECK1) P.C.B.****G LED METER P.C.B.****I OPERATION (DECK2) P.C.B.**

## SCHEMATIC DIAGRAM

(Parts list on pages 29~32.)

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

## Notes:

- S601: Voltage selector switch in "240V" position. (110V → 127V → 220V → 240V) ((GC) area only)
- S701: DECK 1 Stop switch in "off" position.
- S702: DECK 1 F.F. switch in "off" position.
- S703: DECK 1 Rew. switch in "off" position.
- S704: DECK 1 For. Playback switch in "off" position.
- S705: Reverse mode switch (↔) in "off" position.
- S706: Reverse mode switch (↔) in "off" position.
- S707: Reverse mode switch (∞) in "off" position.
- S708: DECK 2 Auto rec. mute switch in "off" position.
- S711: DECK 2 Stop switch in "off" position.
- S712: DECK 2 F.F. switch in "off" position.
- S713: DECK 2 Rew. switch in "off" position.
- S714: DECK 2 For. Playback switch in "off" position.
- S715: DECK 2 Rev. Playback switch in "off" position.
- S716: DECK 2 Record switch in "off" position.
- S717: DECK 2 Pause switch in "off" position.
- S718: Synchro-start switch in "off" position.
- S719: Editing tape speed selector (X2) in "off" position.
- S720: Editing tape speed selector (X1) in "off" position.
- S721: Dolby NR C switch in "off" position.
- S722: Dolby NR B switch in "off" position.
- S725: Power switch in "on" position.
- S726: Timer switch in "off" position.
- S951: DECK 1 Mode switch in "off" position.
- S952: DECK 1 Cassette half detection switch in "off" position.
- S953: DECK 1 ATS (CrO<sub>2</sub>) switch in "off" position.
- S971: DECK 2 Mode switch in "off" position.
- S972: DECK 2 Cassette half detection switch in "off" position.
- S973: DECK 2 Rev. Rec Inhibit switch in "off" position.
- S974: DECK 2 For. Rec Inhibit switch in "off" position.
- S975: DECK 2 ATS (CrO<sub>2</sub>) switch in "off" position.
- S976: DECK 2 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  $\Delta$  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

- (  $\Delta$   $\Delta$   $\Delta$  ) indicates +B (bias).
- (  $\Delta$   $\Delta$   $\Delta$   $\Delta$  ) indicates -B (bias).
- (  $\Delta$   $\Delta$   $\Delta$  ) indicates the flow of the playback signal.
- (  $\Delta$   $\Delta$  ) indicates the flow of the record signal.

## \* Caution!

IC and LSI are sensitive to static electricity.

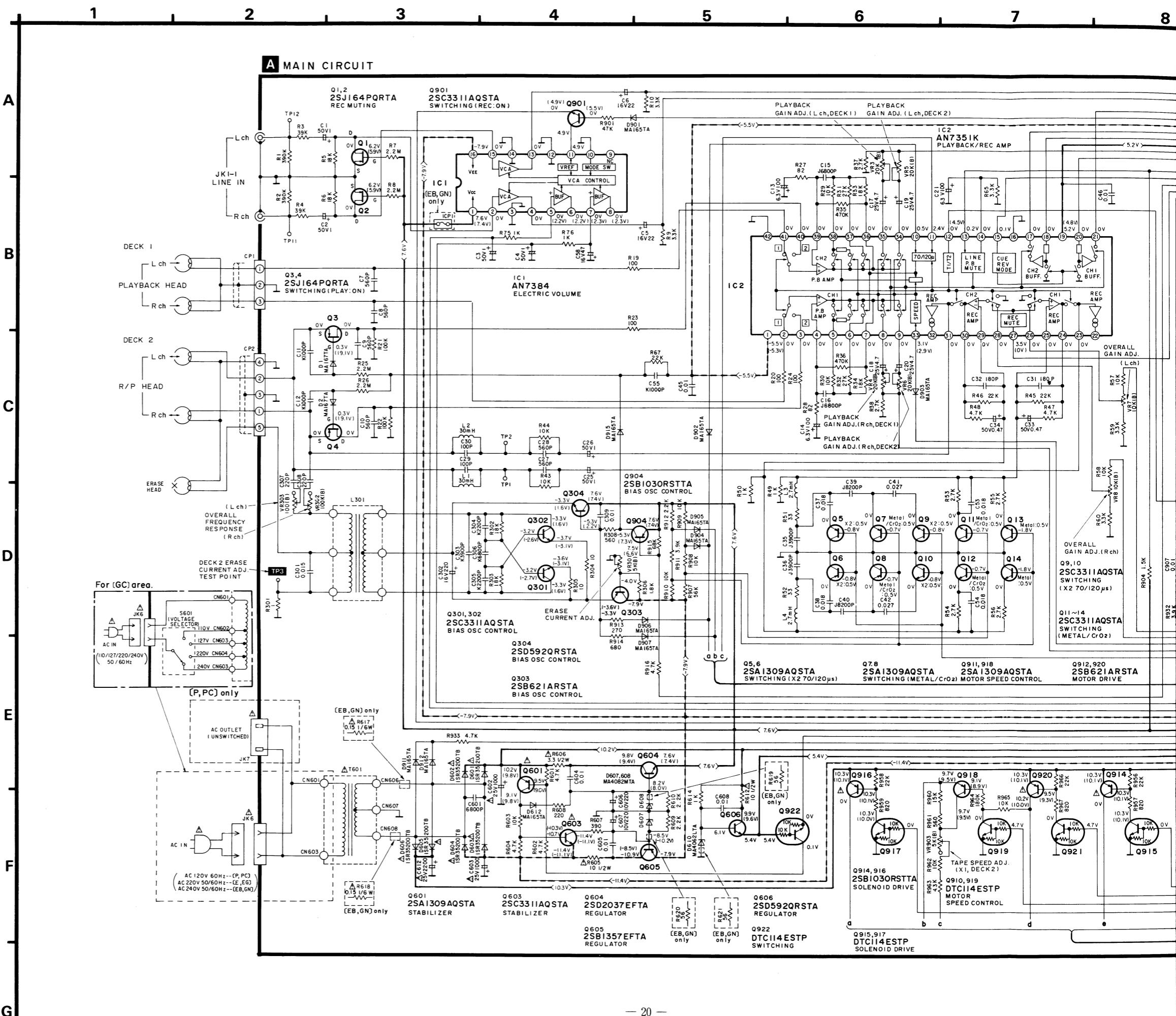
Secondary trouble can be prevented by taking care during repair.

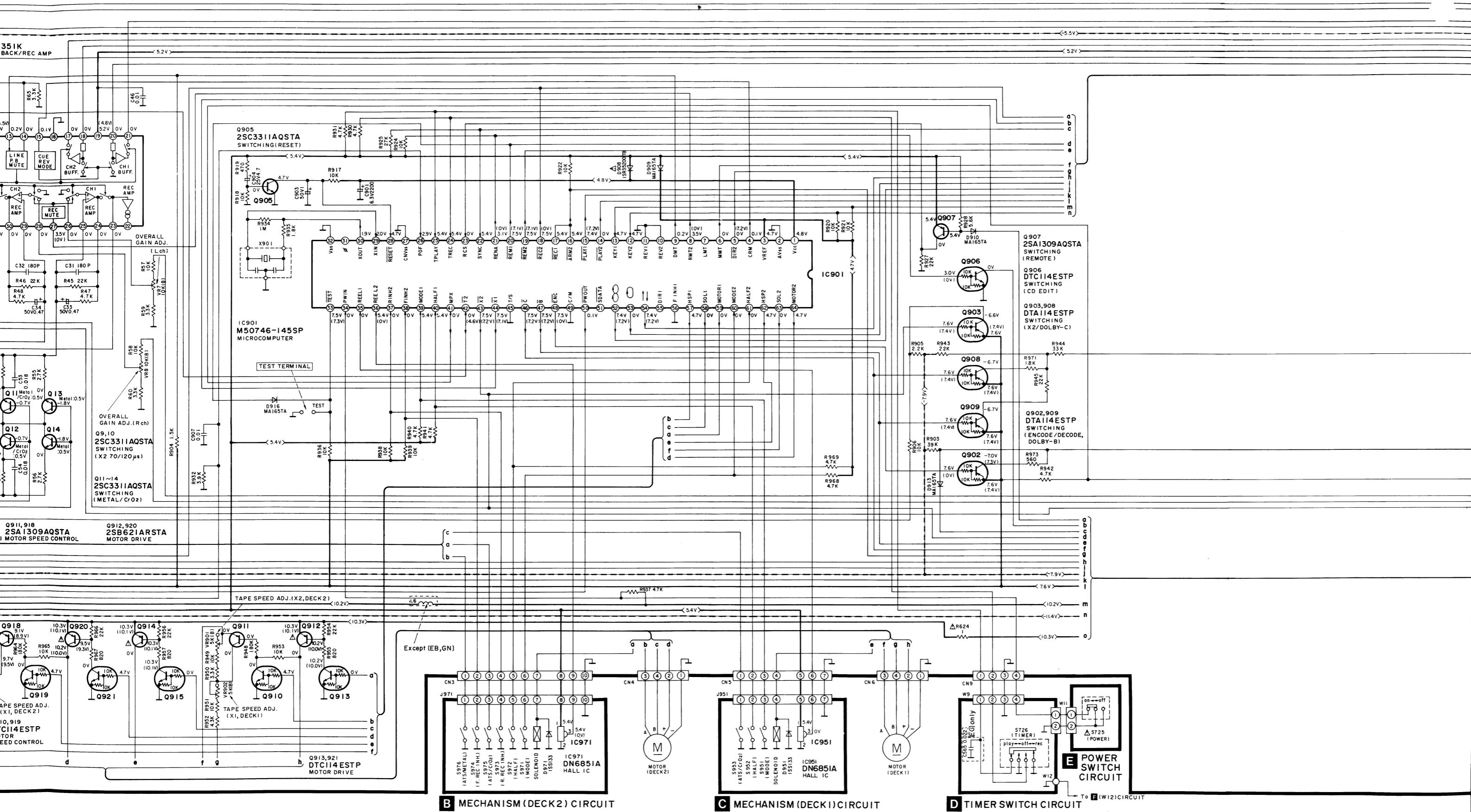
\* Cover the parts boxes made of plastics with aluminum foil.

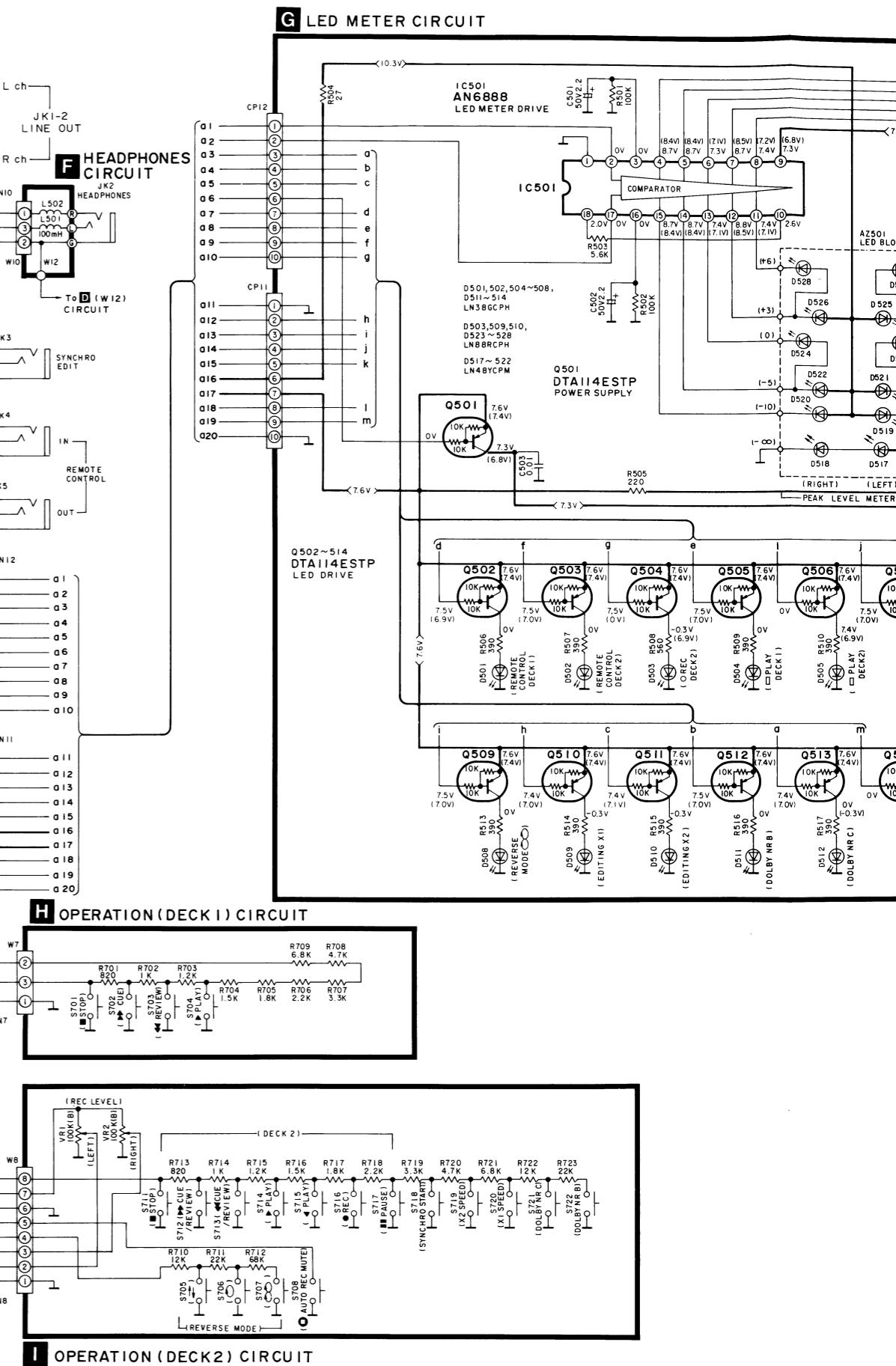
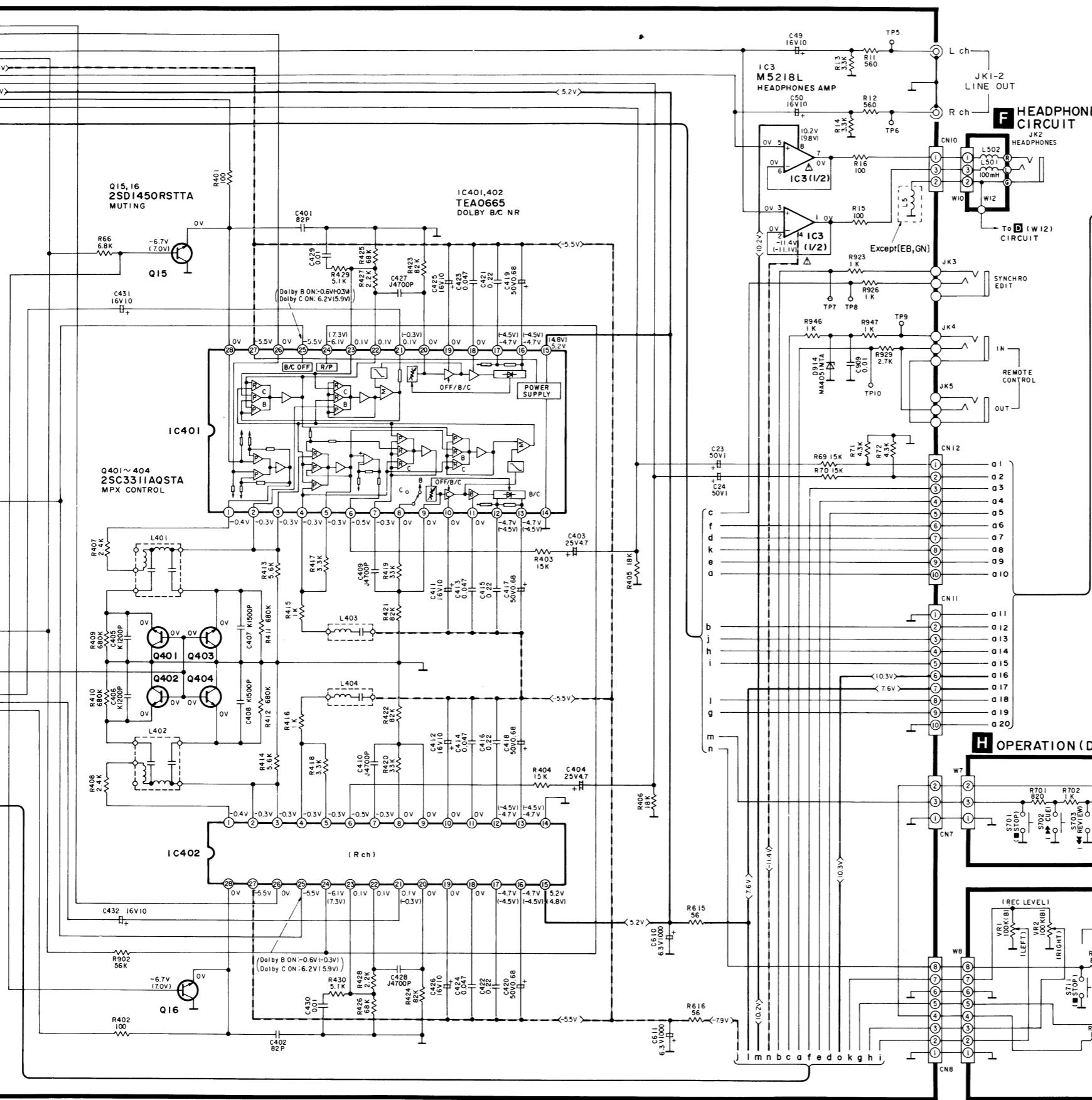
\* Ground the soldering iron.

\* Put a conductive mat on the work table.

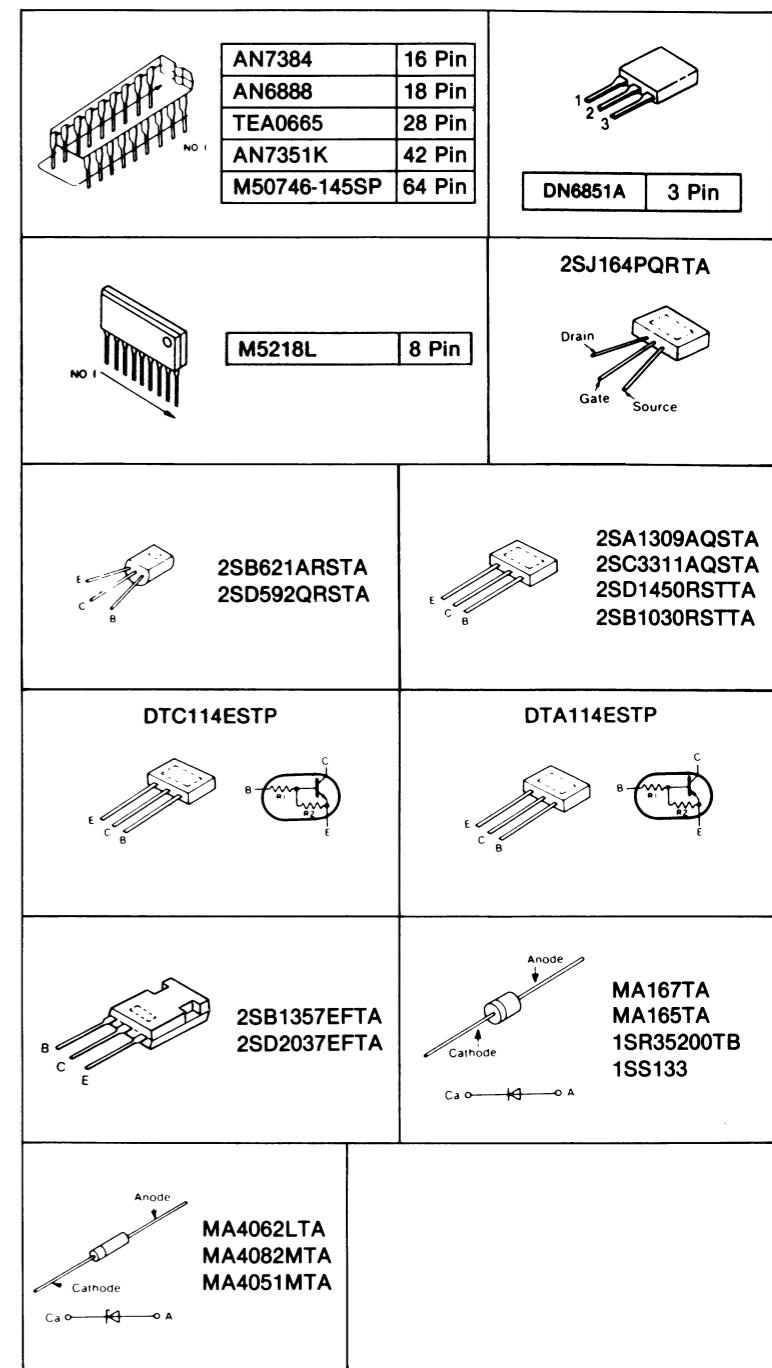
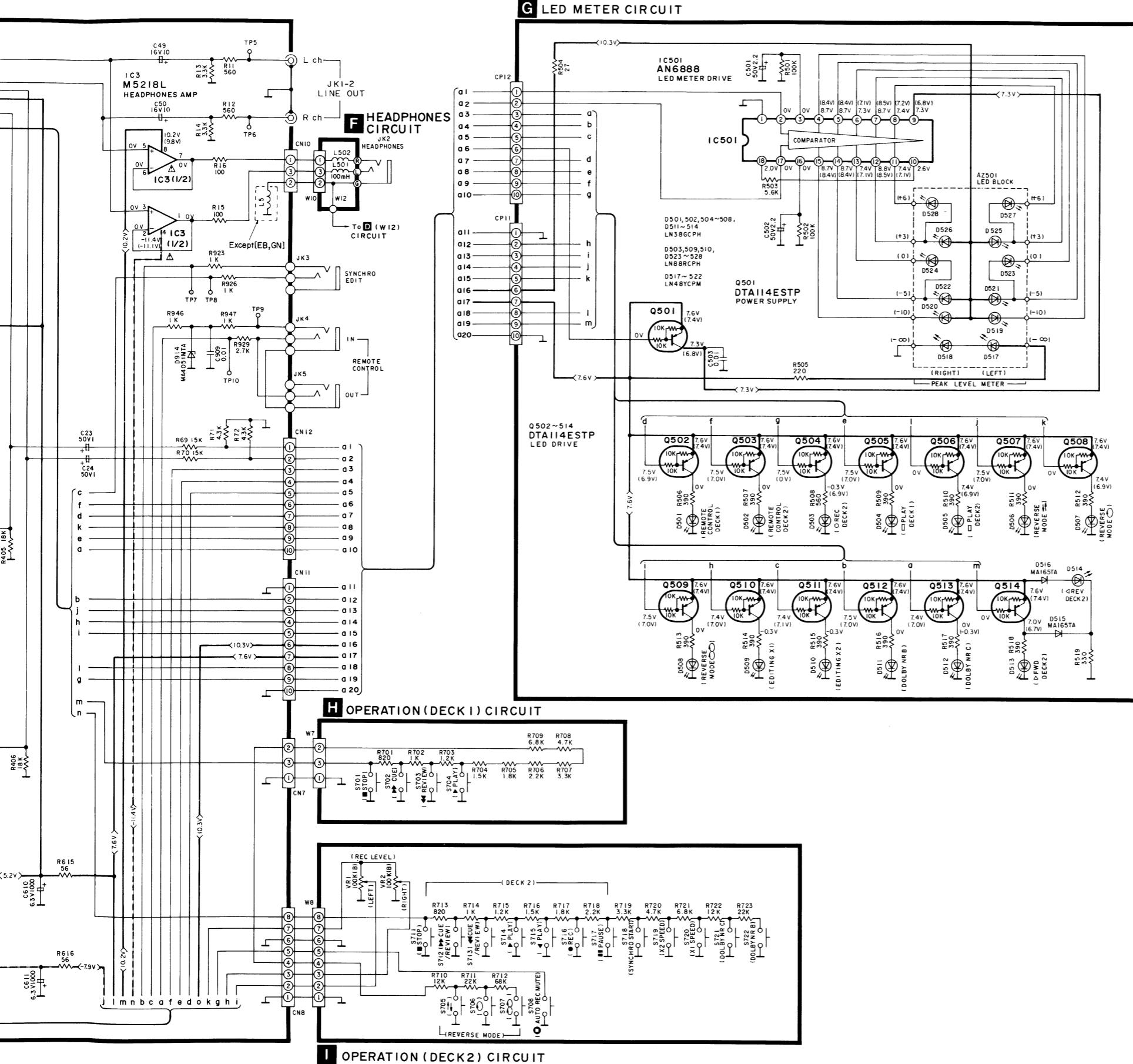
\* Do not touch the legs of IC or LSI with the fingers directly.



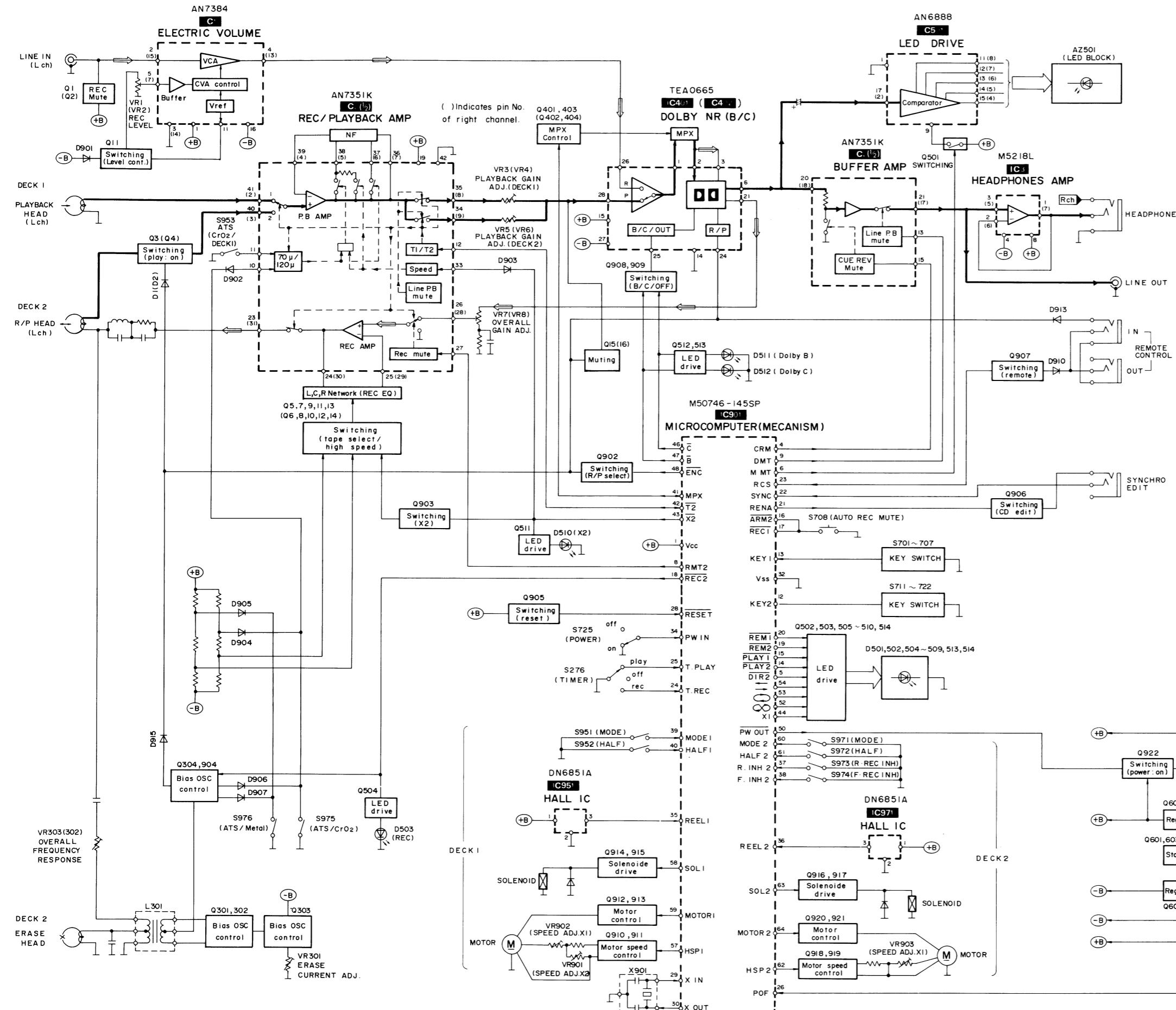




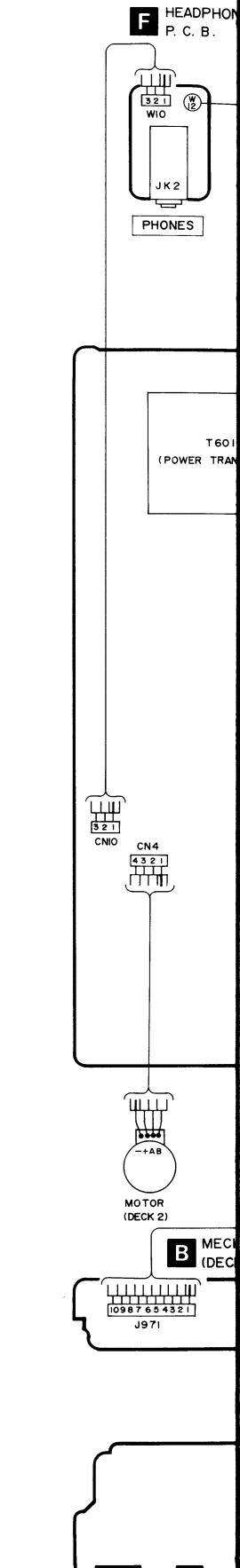
■ TERMINAL GUIDE OF IC's,  
TRANSISTORS AND DIODES



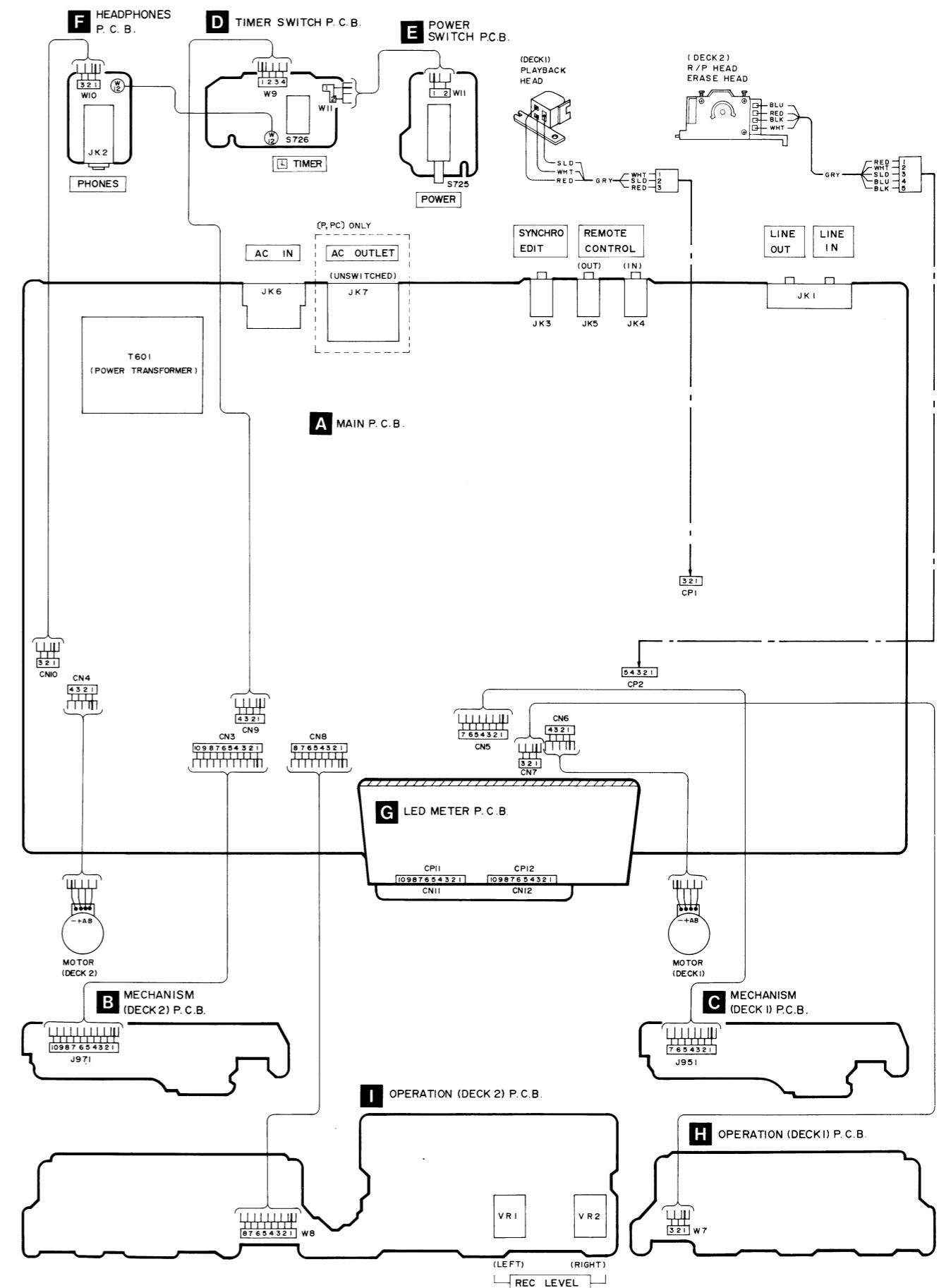
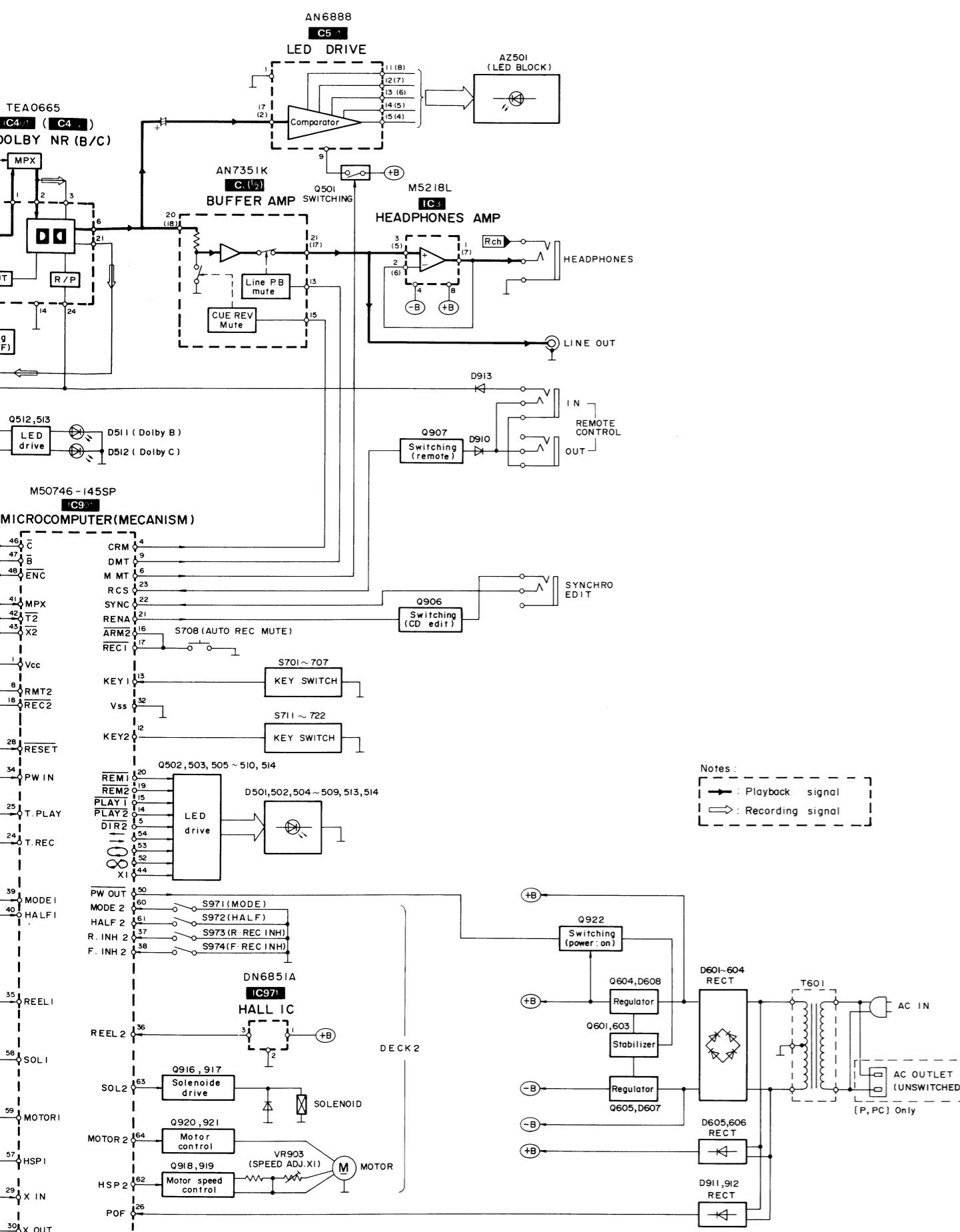
## ■ BLOCK DIAGRAM



## ■ WIRING CO



## ■ WIRING CONNECTION DIAGRAM



## ■ RESISTORS & 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		R421-424	ERDS2TJ823T	1/4W	82K	R720	ERDS2TJ472T	1/4W	4.7K
R1, 2	ERDS2TJ394T	1/4W	390K	R425, 426	ERDS2TJ683T	1/4W	68K	R721	ERDS2TJ682T	1/4W	6.8K
R3, 4	ERDS2TJ393T	1/4W	39K	R427, 428	ERDS2TJ222T	1/4W	2.2K	R722	ERDS2TJ123T	1/4W	12K
R5, 6	ERDS2TJ183T	1/4W	18K	R429, 430	ERDS2TJ512	1/4W	5.1K	R723	ERDS2TJ223T	1/4W	22K
R7, 8	ERDS2TJ225	1/4W	2.2M	R501, 502	ERDS2TJ104	1/4W	100K	R901	ERDS2TJ473T	1/4W	47K
R9, 10	ERDS2TJ332T	1/4W	3.3K	R503	ERDS2TJ562T	1/4W	5.6K	R902	ERDS2TJ563	1/4W	56K
R11, 12	ERDS2TJ561T	1/4W	560	R504	ERDS2TJ270	1/4W	27	R903	ERDS2TJ393T	1/4W	39K
R13, 14	ERDS2TJ332T	1/4W	3.3K	R505	ERDS2TJ221T	1/4W	220	R904	ERDS2TJ152T	1/4W	1.5K
R15, 16	ERDS2TJ101T	1/4W	100	R506, 507	ERDS2TJ391	1/4W	390	R905	ERDS2TJ222T	1/4W	2.2K
R19, 20	ERDS2TJ101T	1/4W	100	R508	ERDS2TJ561T	1/4W	560	R906	ERDS2TJ103T	1/4W	10K
R21, 22	ERDS2TJ104	1/4W	100K	R509-518	ERDS2TJ391	1/4W	390	R907	ERDS2TJ563	1/4W	56K
R23, 24	ERDS2TJ101T	1/4W	100	R519	ERDS2TJ331	1/4W	330	R908-910	ERDS2TJ103T	1/4W	10K
R25, 26	ERDS2TJ225	1/4W	2.2M	R601, 602	ERDS2TJ472T	1/4W	4.7K	R911	ERDS2TJ392T	1/4W	3.9K
R27, 28	ERDS2TJ820T	1/4W	82	R603	ERDS2TJ103T	1/4W	10K	R912	ERDS2TJ222T	1/4W	2.2K
R29, 30	ERDS2TJ103T	1/4W	10K	R604	ERDS2TJ472T	1/4W	4.7K	R913	ERDS2TJ271T	1/4W	270
R31, 32	ERDS2TJ273T	1/4W	27K	R605	ERDS1FVJ100T	1/2W	10 (P, PC, E, EG, GC) $\Delta$	R914	ERDS2TJ681T	1/4W	680
R33, 34	ERDS2TJ183T	1/4W	18K	R605	ERD2FCVG100T	1/4W	10 (EB, GN) $\Delta$	R915	ERDS2TJ683T	1/4W	68K
R35, 36	ERDS2TJ474T	1/4W	470K	R606	ERDS1FVJ3R3T	1/2W	3.3 $\Delta$	R916	ERDS2TJ472T	1/4W	4.7K
R37, 38	ERDS2TJ272T	1/4W	2.7K	R607	ERDS2TJ391	1/4W	390	R917, 918	ERDS2TJ103T	1/4W	10K
R43, 44	ERDS2TJ103T	1/4W	10K	R608	ERDS2TJ221T	1/4W	220	R919	ERDS2TJ471T	1/4W	470
R45, 46	ERDS2TJ223T	1/4W	22K	R609, 610	ERDS2TJ222T	1/4W	2.2K	R920-922	ERDS2TJ103T	1/4W	10K
R47, 48	ERDS2TJ472T	1/4W	4.7K	R612	ERDS1FVJ100T	1/2W	10 (P, PC, E, EG, GC) $\Delta$	R923	ERDS2TJ102T	1/4W	1K
R49, 50	ERDS2TJ102T	1/4W	1K	R612	ERD2FCVG100T	1/4W	10 (EB, GN) $\Delta$	R924	ERDS2TJ103T	1/4W	10K
R51, 52	ERDS2TJ330	1/4W	33	R614	ERDS2TJ102T	1/4W	1K	R925	ERDS2TJ273T	1/4W	27K
R53-56	ERDS2TJ272T	1/4W	2.7K	R615, 616	ERDS2TJ560T	1/4W	56	R926	ERDS2TJ102T	1/4W	1K
R57, 58	ERDS2TJ103T	1/4W	10K	R617, 618	ERQ16NKR15E	1/6W	0.15 (EB, GN) $\Delta$	R927	ERDS2TJ223T	1/4W	22K
R59, 60	ERDS2TJ332T	1/4W	3.3K	R619-621	ERDS2TJ560T	1/4W	56 (EB, GN)	R928	ERDS2TJ562T	1/4W	5.6K
R65	ERDS2TJ332T	1/4W	3.3K	R624	ERDS2TJ1R0	1/4W	1.0 $\Delta$	R929	ERDS2TJ272T	1/4W	2.7K
R66	ERDS2TJ682T	1/4W	6.8K	R701	ERDS2TJ821T	1/4W	820	R930, 931	ERDS2TJ472T	1/4W	4.7K
R67	ERDS2TJ223T	1/4W	22K	R702	ERDS2TJ102T	1/4W	1K	R932	ERDS2TJ392T	1/4W	3.9K
R69, 70	ERDS2TJ153T	1/4W	15K	R703	ERDS2TJ122T	1/4W	1.2K	R933	ERDS2TJ472T	1/4W	4.7K
R71, 72	ERDS2TJ432	1/4W	4.3K	R704	ERDS2TJ152T	1/4W	1.5K	R934	ERDS2TJ105T	1/4W	1M
R75, 76	ERDS2TJ102T	1/4W	1K	R705	ERDS2TJ182T	1/4W	1.8K	R935	ERDS2TJ182T	1/4W	1.8K
R301	ERDS2TJ1R0T	1/4W	1.0	R706	ERDS2TJ222T	1/4W	2.2K	R936	ERDS2TJ103T	1/4W	10K
R302, 303	ERDS2TJ183T	1/4W	18K	R707	ERDS2TJ332T	1/4W	3.3K	R937	ERDS2TJ472T	1/4W	4.7K
R304, 305	ERDS2TJ100T	1/4W	10	R708	ERDS2TJ472T	1/4W	4.7K	R938, 939	ERDS2TJ103T	1/4W	10K
R306	ERDS2TJ182T	1/4W	1.8K	R709	ERDS2TJ682T	1/4W	6.8K	R940-942	ERDS2TJ472T	1/4W	4.7K
R308	ERDS2TJ561T	1/4W	560	R710	ERDS2TJ123T	1/4W	12K	R943	ERDS2TJ223T	1/4W	22K
R401, 402	ERDS2TJ101T	1/4W	100	R711	ERDS2TJ223T	1/4W	22K	R944	ERDS2TJ333T	1/4W	33K
R403, 404	ERDS2TJ153T	1/4W	15K	R712	ERDS2TJ683T	1/4W	68K	R945	ERDS2TJ223T	1/4W	22K
R405, 406	ERDS2TJ183T	1/4W	18K	R713	ERDS2TJ821T	1/4W	820	R946, 947	ERDS2TJ102T	1/4W	1K
R407, 408	ERDS2TJ242	1/4W	2.4K	R714	ERDS2TJ102T	1/4W	1K	R948	ERDS2TJ184	1/4W	180K
R409-412	ERDS2TJ684T	1/4W	680K	R715	ERDS2TJ122T	1/4W	1.2K	R949	ERDS2TJ103T	1/4W	10K
R413, 414	ERDS2TJ562T	1/4W	5.6K	R716	ERDS2TJ152T	1/4W	1.5K	R950	ERDS2TJ332T	1/4W	3.3K
R415, 416	ERDS2TJ102T	1/4W	1K	R717	ERDS2TJ182T	1/4W	1.8K	R951	ERDS2TJ103T	1/4W	10K
R417, 418	ERDS2TJ332T	1/4W	3.3K	R718	ERDS2TJ222T	1/4W	2.2K	R952	ERDS2TJ432	1/4W	4.3K
R419, 420	ERDS2TJ333T	1/4W	33K	R719	ERDS2TJ332T	1/4W	3.3K	R953	ERDS2TJ103T	1/4W	10K
								R954	ERDS2TJ223T	1/4W	22K
								R955	ERDS2TJ821T	1/4W	820

Ref. No.	Part No.	Values & Remarks		Ref. No.	Part No.	Values & Remarks				
R956	ERDS2TJ223T	1/4W	22K	C411, 412	ECEA1CK100B	16V	10U			
R957	ERDS2TJ821T	1/4W	820	C413, 414	ECQV1H473JZ	50V	0.047U			
R958	ERDS2TJ223T	1/4W	22K	C415, 416	ECQV1H224JZ3	50V	0.22U			
R959	ERDS2TJ821T	1/4W	820	C417-420	ECEA1HKR68B	50V	0.68U			
R960	ERDS2TJ153T	1/4W	15K	C421, 422	ECQV1H224JZ3	50V	0.22U			
R961	ERDS2TJ561T	1/4W	560	C423, 424	ECQV1H473JZ	50V	0.047U			
R962	ERDS2TJ103T	1/4W	10K	C425, 426	ECEA1CK100B	16V	10U			
R963	ERDS2TJ432	1/4W	4.3K	C427, 428	ECQB1H472JZ3	50V	4700P			
R964	ERDS2TJ184	1/4W	180K	C429, 430	ECQB1H103JZ	50V	0.01U			
R965	ERDS2TJ103T	1/4W	10K	C431, 432	ECEA1CK100B	16V	10U			
R966	ERDS2TJ223T	1/4W	22K	C501, 502	ECEA1HK2R2B	50V	2.2U			
R967	ERDS2TJ821T	1/4W	820	C503	ECKT1H103ZF	50V	0.01U			
R968, 969	ERDS2TJ472T	1/4W	4.7K	C565	ECKD1H223ZF	50V	0.022U (EG)			
R971	ERDS2TJ182T	1/4W	1.8K	C601	ECKD2H682PE	500V	6800P			
R973	ERDS2TJ561T	1/4W	560	C602, 603	ECEA1EU102B	25V	1000U $\Delta$			
		CAPACITORS		C604, 605	ECKT1H103ZF	50V	0.01U			
C1-4	ECEA1HK010B	50V	1U	C606, 607	ECEA1AU221B	10V	220U			
C5, 6	ECEA1CK220B	16V	22U	C608	ECKT1H103ZF	50V	0.01U			
C7-10	ECBT1H561KB5	50V	560P	C610, 611	ECEAOJU102E	6.3V	1000U			
C11, 12	ECBT1H102KB5	50V	1000P	C612	ECEA1EU222E	25V	2200U $\Delta$			
C13, 14	ECEAOJU101B	6.3V	100U	C901	ECEAOJU222B	6.3V	2200U			
C15, 16	ECQB1H682JZ3	50V	6800P	C903	ECEA1HW010B	50V	1U			
C17-20	ECEA1EK4R7B	25V	4.7U	C904	ECEA1EK4R7B	25V	4.7U			
C21	ECEAOJU101B	6.3V	100U	C907	ECKT1H103ZF	50V	0.01U			
C23-26	ECEA1HK010B	50V	1U	C909	ECKT1H103ZF	50V	0.01U			
C27, 28	ECBT1H561KB5	50V	560P							
C29, 30	ECKD2H101KB	500V	100P							
C31, 32	ECCD1H181K	50V	180P							
C33, 34	ECEA1HKR47	50V	0.47U							
C35, 36	ECQB1H392JZ	50V	3900P							
C37, 38	ECQB1H183JZ3	50V	0.018U							
C39, 40	ECQB1H822JZ	50V	8200P							
C41, 42	ECQB1H273JZ3	50V	0.027U							
C45, 46	ECKT1H103ZF	50V	0.01U							
C49, 50	ECEA1CK100B	16V	10U							
C53, 54	ECQB1H183JZ3	50V	0.018U							
C55	ECBT1H102KB5	50V	1000P							
C58	ECEA1CU470	16V	47U							
C301	ECQP1153JZ	50V	0.015U							
C302	ECEA1CU221	16V	220U							
C303	ECKD1H392K	50V	3900P							
C304, 305	ECFR1E222KAY	25V	2200P							
C306	ECFR1E682KAY	25V	6800P							
C307, 308	ECCD1H221KB	50V	220P							
C309	ECKT1H103ZF	50V	0.01U							
C401, 402	ECCR1H820K5	50V	82P							
C403, 404	ECEA1EK4R7B	25V	4.7U							
C405, 406	ECKD1H122KB	50V	1200P							
C407, 408	ECKD1H152KB	50V	1500P							
C409, 410	ECQB1H472JZ3	50V	4700P							

## Notes : \* Important safety notice:

Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

\* 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.

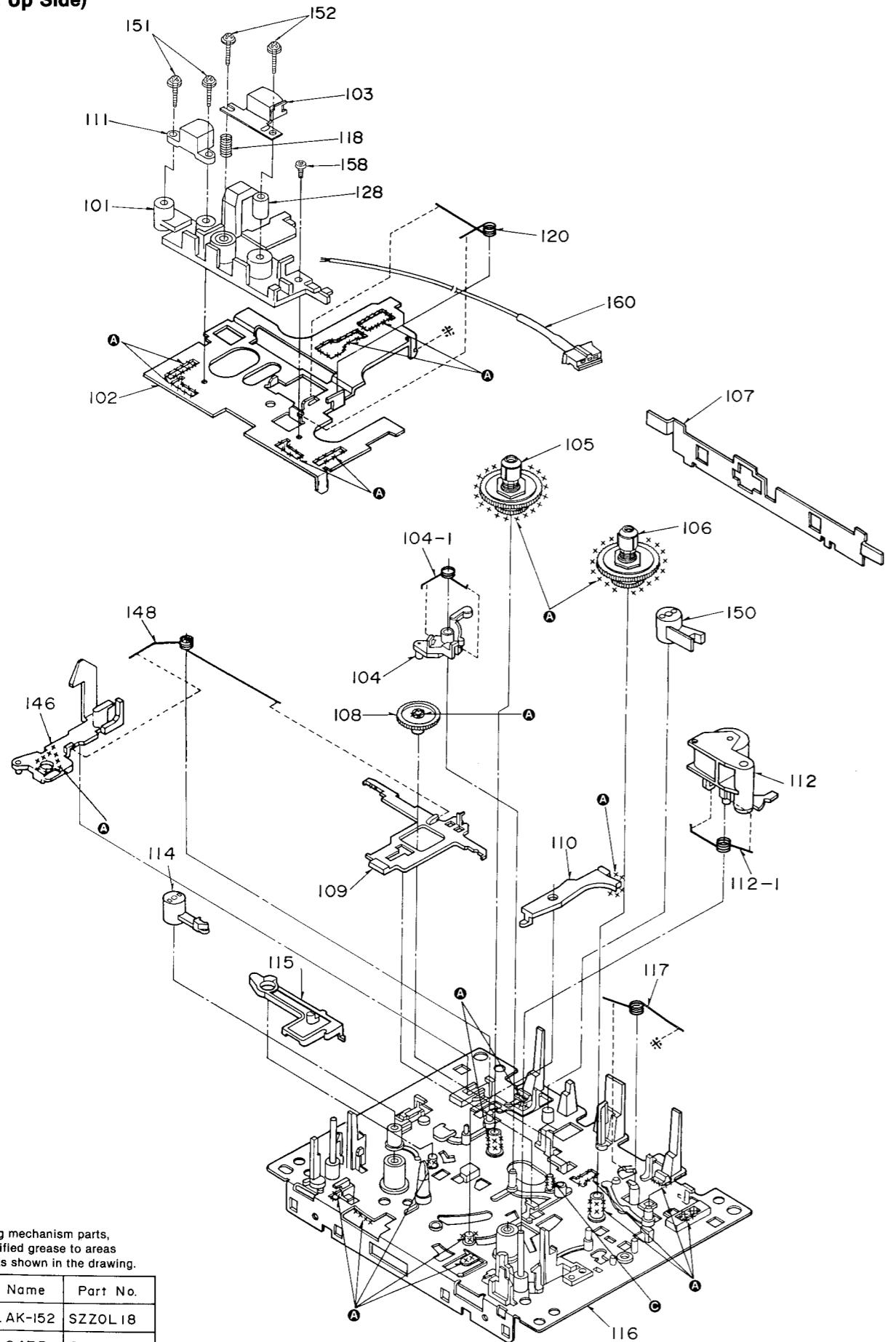
Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC1	AN7384	ELECTRIC VOLUME	
IC2	AN7351K	PLAYBACK/REC AMP	
IC3	M5218L	HEADPHONES AMP	$\Delta$
IC401, 402	TEA0665	DOLBY B/C NR	
IC501	AN6888	LED METER DRIVE	
IC901	M50746-145SP	MICROCOMPUTER	
IC951	DN6851A	HALL	
IC971	DN6851A	HALL	
		TRANSISTOR(S)	
Q1-4	2SJ164PQRTA	TRANSISTOR	
Q5-8	2SA1309AQSTA	TRANSISTOR	
Q9-14	2SC3311AQSTA	TRANSISTOR	
Q15, 16	2SD1450RSTTA	TRANSISTOR	
Q301, 302	2SC3311AQSTA	TRANSISTOR	
Q303	2SB621ARSTA	TRANSISTOR	
Q304	2SD592QRSTA	TRANSISTOR	
Q401-404	2SC3311AQSTA	TRANSISTOR	
Q501-514	DTA114ESTP	TRANSISTOR	
Q601	2SA1309AQSTA	TRANSISTOR	$\Delta$
Q603	2SC3311AQSTA	TRANSISTOR	$\Delta$
Q604	2SD2037EFTA	TRANSISTOR	
Q605	2SB1357EFTA	TRANSISTOR	
Q606	2SD592QRSTA	TRANSISTOR	
Q901	2SC3311AQSTA	TRANSISTOR	
Q902, 903	DTA114ESTP	TRANSISTOR	
Q904	2SB1030RSTTA	TRANSISTOR	
Q905	2SC3311AQSTA	TRANSISTOR	
Q906	DTC114ESTP	TRANSISTOR	
Q907	2SA1309AQSTA	TRANSISTOR	
Q908, 909	DTA114ESTP	TRANSISTOR	
Q910	DTC114ESTP	TRANSISTOR	
Q911	2SA1309AQSTA	TRANSISTOR	
Q912	2SB621ARSTA	TRANSISTOR	$\Delta$
Q913	DTC114ESTP	TRANSISTOR	
Q914	2SB1030RSTTA	TRANSISTOR	$\Delta$
Q915	DTC114ESTP	TRANSISTOR	
Q916	2SB1030RSTTA	TRANSISTOR	$\Delta$
Q917	DTC114ESTP	TRANSISTOR	
Q918	2SA1309AQSTA	TRANSISTOR	
Q919	DTC114ESTP	TRANSISTOR	
Q920	2SB621ARSTA	TRANSISTOR	$\Delta$
Q921, 922	DTC114ESTP	TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
		DIODE (S)	
D1, 2	MA167TA	DIODE	
D515, 516	MA165TA	DIODE	
D601-606	1SR35200TB	DIODE	$\Delta$
D607, 608	MA4082MTA	DIODE	
D610	MA4062LTA	DIODE	
D612	MA165TA	DIODE	
D901-907	MA165TA	DIODE	
D908	1SR35200TB	DIODE	$\Delta$
D909-913	MA165TA	DIODE	
D914	MA4051MTA	DIODE	
D915, 916	MA165TA	DIODE	
D951	ISS133	DIODE	
D971	ISS133	DIODE	
		I. C. PROTECTOR	
ICP1	SRUN10T	IC PROTECTOR	(EB, GN)
		VARIABLE RESISTOR(S)	
VR1, 2	EVJ02FF01B15	REC LEVEL CONTROL	
VR3-6	EVNDXAA00B24	PLAYBACK GAIN ADJ.	
VR7, 8	EVNDXAA00B14	OVERALL GAIN ADJ.	
VR301	EVNDXAA00B53	ERASE CURRENT ADJ.	
VR302, 303	EVNDXAA00B15	OVERALL FREQ. RESPONSE	
VR901-903	EVNDXAA00BS3	TAPE SPEED ADJ.	
		COIL (S)	
L1, 2	SLQX303-1KT	COIL	
L3, 4	SLQX272-1YT	COIL	
L5, 6	ELEPK4R7KA	COIL	(P, PC, E, EG)
L301	SL09B4-K	COIL	
L401, 402	QLM9Z10K	COIL	
L403, 404	SLM1B8-K	COIL	
L501, 502	RLQZP101KT-Y	COIL	
		TRANSFORMER(S)	
T601	RTP1K4C002-V	POWER TRANSFORMER	(P, PC) $\Delta$
T601	SLT5K252K	POWER TRANSFORMER	(E, EG) $\Delta$
T601	SLT5K253K	POWER TRANSFORMER	(EB, GN) $\Delta$
T601	SLT5K254K	POWER TRANSFORMER	(GC) $\Delta$

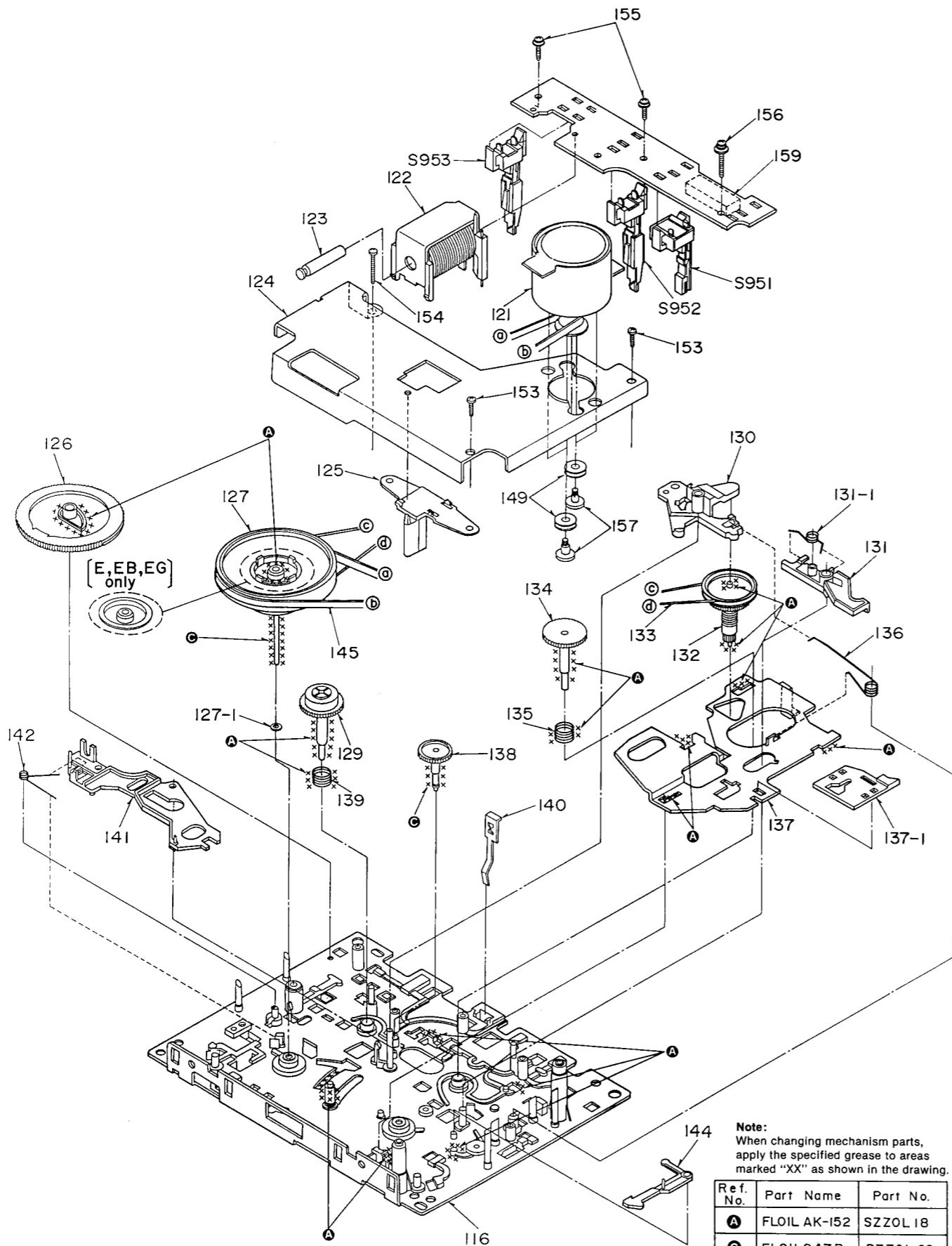
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		OSCILLATOR(S)		CN11, 12	RJU003K010M1	SOCKET(10P)	
X901	EFOGC4004T4	CERAMIC FILTER		CN601	RJS1A1101	SOCKET(1P)	
		SWITCH(ES)		CN602	RJS1A1101	SOCKET(1P)	(GC)
S601	SSR187-1	VOLTAGE SELECTOR	(GC)△	CN603	RJS1A1101	SOCKET(1P)	
S701	EVQQTG05R	STOP(DECK1)		CN604	RJS1A1101	SOCKET(1P)	(GC)
S702	EVQQTG05R	F. F. (DECK1)		CN605	RJS1A1101	SOCKET(1P)	(GC)
S703	EVQQTG05R	REW. (DECK1)		CN606-608	RJS1A1101	SOCKET(1P)	
S704	EVQQTG05R	F. PLAYBACK(DECK1)		CP1	SJTD313	CONNECTOR(3P)	
S705-707	EVQQTG05R	REVERSE MODE		CP2	SJTD513	CONNECTOR(5P)	
S708	EVQQTG05R	AUTO REC MUTE		CP11, 12	RJT003K010M	CONNECTOR(10P)	
S711	EVQQTG05R	STOP(DECK2)				GND PLATE	
S712	EVQQTG05R	F. F. (DECK2)				GND PLATE	
S713	EVQQTG05R	REW. (DECK2)		E1	SNE1004-1	GND PLATE	
S714	EVQQTG05R	F. PLAYBACK(DECK2)				JACK(S)	
S715	EVQQTG05R	R. PLAYBACK(DECK2)		JK1	SJF3069N	TERMINAL BOARD	
S716	EVQQTG05R	REC		JK2	SJJ134B	HEADPHONES JACK	
S717	EVQQTG05R	PAUSE		JK3	RJJ33T01	M3 JACK(BLACK)	
S718	EVQQTG05R	SYNCHRO-START		JK4	RJJ33TR01	M3 JACK(RED)	
S719	EVQQTG05R	TAPE SPEED(X2)		JK5	RJJ33TR01	M3 JACK(RED)	
S720	EVQQTG05R	TAPE SPEED(X1)		JK6	SJSD16	AC INLET	(P, PC, GN)△
S721	EVQQTG05R	DOLBY C NR		JK6	SJS9236	AC INLET	(E, EB, EG, GC)△
S722	EVQQTG05R	DOLBY B NR		JK7	SJS9331B	AC OUTLET	(P, PC)△
S725	SSH1230	POWER	△				
S726	SSS180-1	TIMER	(K)				
S726	SSS180-2	TIMER	(S)				
S951	RSH1A89Z	MODE(DECK1)					
S952	RSH1A90Z	HALF(DECK1)					
S953	RSH1A90Z	ATS(DECK1)					
S971	RSH1A89Z	MODE(DECK2)					
S972	RSH1A90Z	HALF(DECK2)					
S973	RSH1A90Z	R. REC INH.(DECK2)					
S974	RSH1A90Z	F. REC INH.(DECK2)					
S975	RSH1A90Z	ATS(DECK2)					
S976	RSH1A90Z	ATS(DECK2)					
		L. E. D. BLOCK					
AZ501	LN261478PH	L. E. D. BLOCK UNIT	(D501-514, D517-D528)				
		CONNECTOR(S) AND SOCKET(S)					
CN3	SJSD1005	CONNECTOR(10P)					
CN4	RJS1A1704	CONNECTOR(4P)					
CN5	SJSD0705	CONNECTOR(7P)					
CN6	RJS1A1704	CONNECTOR(4P)					
CN7	RJS1A1703	CONNECTOR(3P)					
CN8A, 8B	RJS1A1704	CONNECTOR(4P)					
CN9	RJS1A1704	CONNECTOR(4P)					
CN10	RJS1A1703	CONNECTOR(3P)					

## ■ MECHANICAL PARTS LOCATION

(DECK 1: Up Side)



(DECK 1: Down Side)



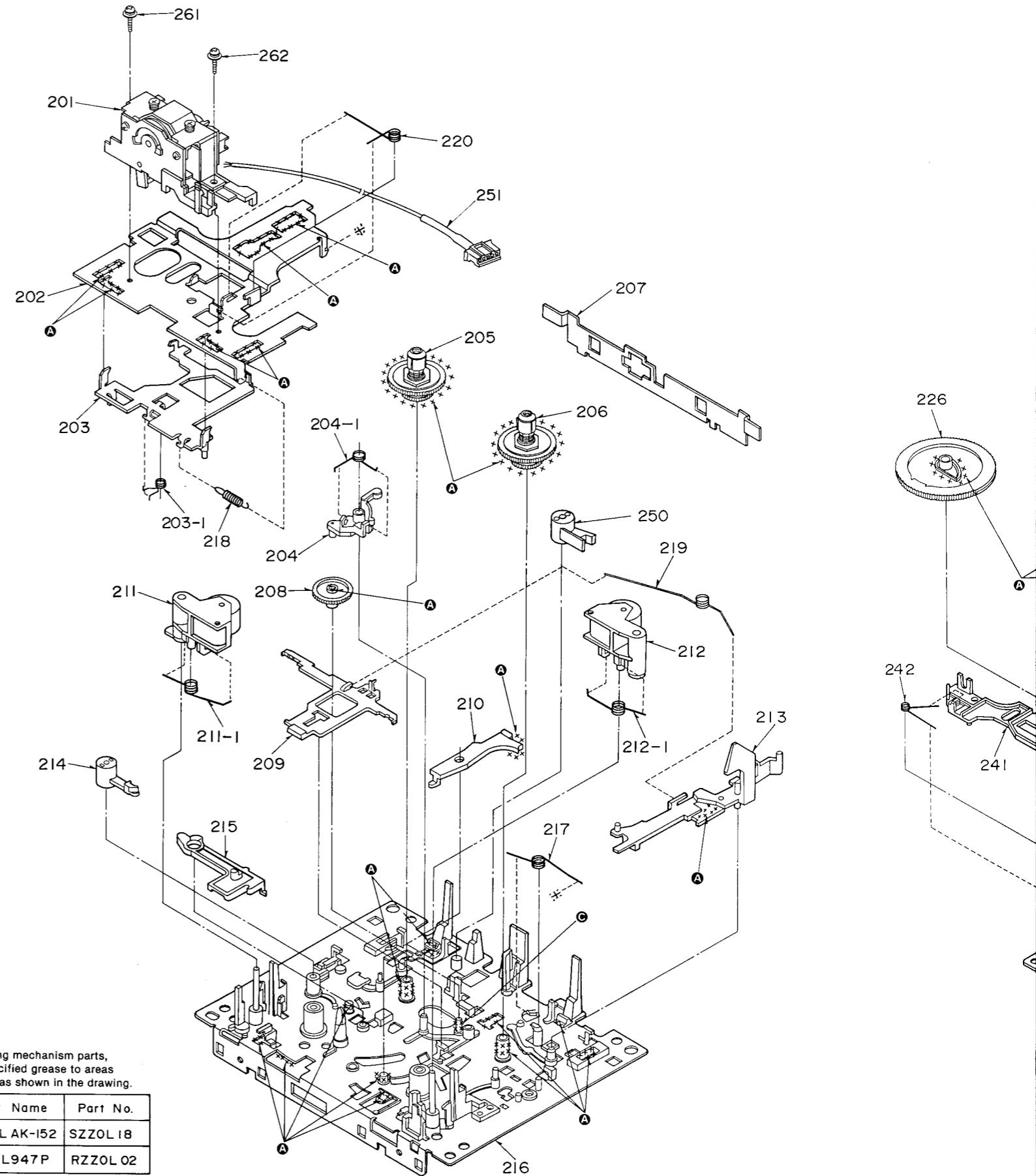
Ref. No.	Part No.	Part Name & Description	Remarks
MECHANISM PARTS LIST			
DECK2			
201	RXQ0019	HEAD BLOCK (REC./PLAYBACK)	
202	RUA793Z	HEAD BASE	
203	RZLAR300	ROD	
203-1	RUW143Z	SPRING	
204	IUB0089ZA	ARM	
204-1	RUW148ZA	SPRING	
205	IDM0018ZA	REEL TABLE (R)	
206	IDM0017ZA	REEL TABLE (F)	
207	RUB502Z	LEVER	
208	RDG5772Z	GEAR	
209	RUB508ZA	BRAKE ROD	
210	RUB506Z	LEVER	
211	IUB0088ZA	ARM (R)	
211-1	RUW141Z	SPRING	
212	IUB0087ZA	ARM (F)	
212-1	RUW140Z	SPRING	
213	RUB507Z	EJECT ROD (R)	
214	RNL12Z	DAMPER ARM	
215	RUB503Z	MAIN LEVER	
216	RZUSX980	CHASSIS	
217	RUW142ZA	SPRING	
218	RUD105Z	SPRING	
219	RUW144ZA	SPRING	
220	RUW139ZA	SPRING	
221	RFM134ZA	DC MOTOR	
222	IUE0015ZA	PLUNGER	
223	RUB428Z	MOVING IRON CORE	
224	RUL1030XA	ANGLE	
225	RMD5014Z	ANGLE	
226	RDG5927ZA	GEAR	
227	IDW0053ZA	FLYWHEEL (F)	
227-1	RNW139ZA	WASHER	
228	IDW0054ZA	FLYWHEEL (R)	
228-1	RNW138Z	WASHER	
229	IDG0006ZA	REEL TABLE GEAR	
230	RUB513Z	ARM	
231	IUB0091ZA	LEVER	
231-1	RUW146ZA	SPRING	
232	IDR0011ZA	MAIN PULLEY	
233	RDV902B	BELT	
234	RDG5769ZA	REEL TABLE GEAR	
235	RUQ10Z	SPRING	
236	RUW145ZA	SPRING	
237	IUB0090ZA	ROD	
237-1	RUB512Z	ROD	
238	RDG5773ZA	GEAR	
239	RUQ30Z	SPRING	
240	RUS609Z	TAPE PRESSURE SPRING	

Ref. No.	Part No.	Part Name & Description	Remarks
241	RUB514Z	LEVER	
242	RUW147ZA	SPRING	
243	RUB515Z	LEVER	
244	RUB5092A	LEVER	
245	RDV108ZA	CAPSTAN BELT	
249	RHG3032Z	RUBBER CUSHION	
250	RNL180ZA	DAMPER ARM	
251	REX0059	LEAD WIRE BLOCK	
261	XTW2+6L	SCREW	
262	XTW2+8L	SCREW	
263	XTN26+7J	SCREW	
264	XTN26+16F	SCREW	
265	XTW2+8S	SCREW	
266	XYC2+JF16	SCREW	
267	QHQ1303	SCREW	
268	RJS10T7ZA	CONNECTOR (10P), J971	
269	XYN26+F6	SCREW	

## ■ MECHANICAL PARTS LOCATION

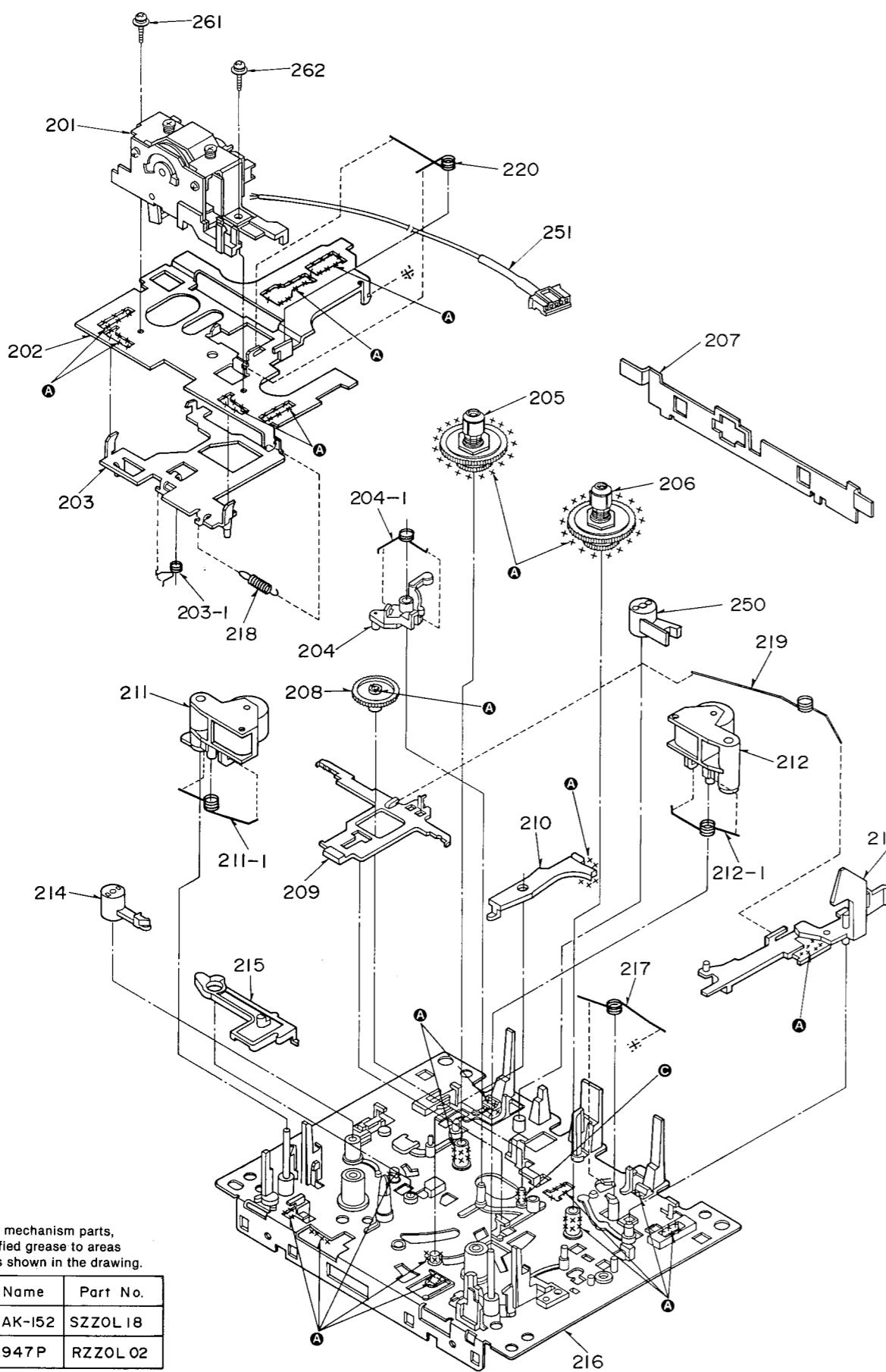
(DECK 2: Up Side)

(DECK 2: Down Side)



## ■ MECHANICAL PARTS LOCATION

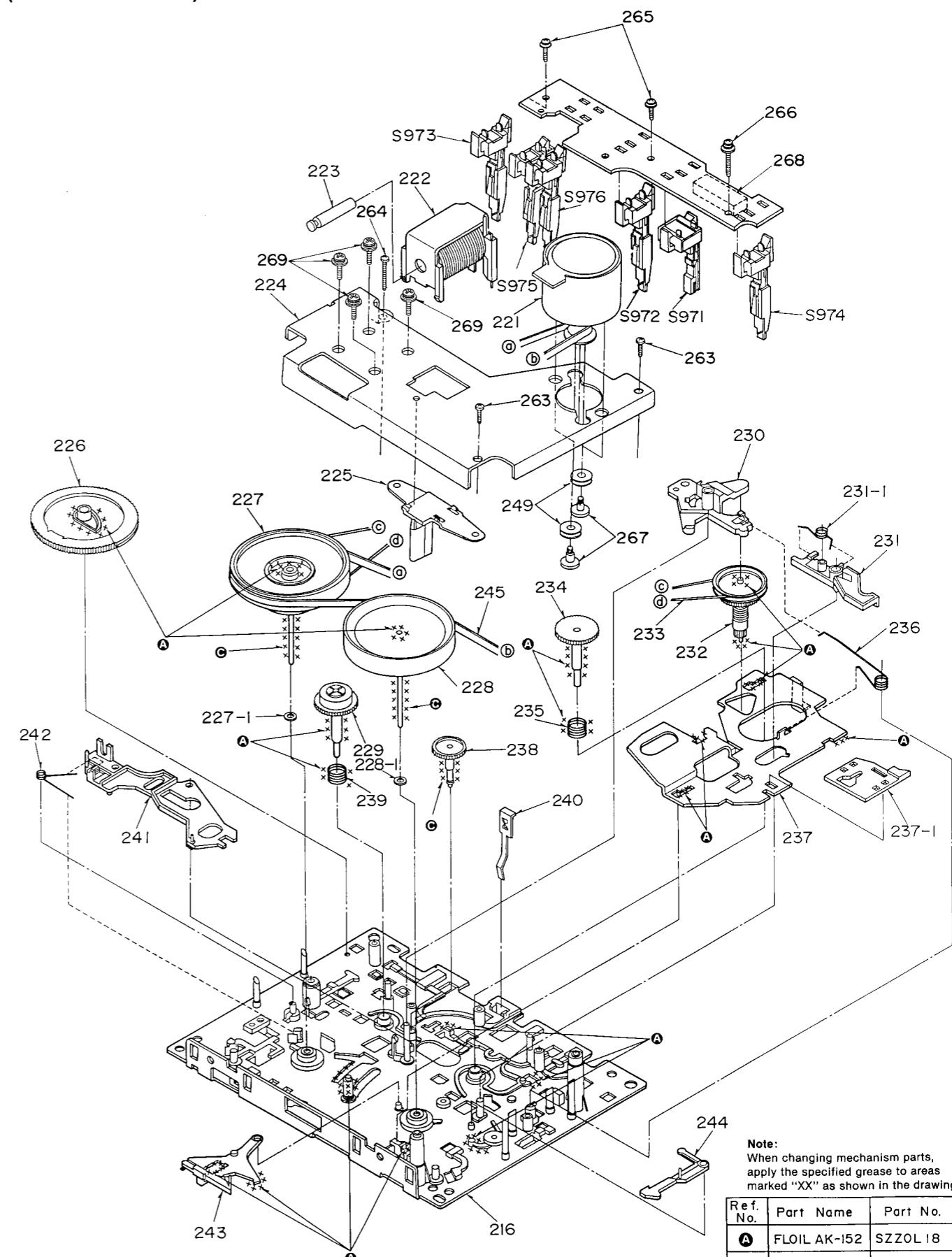
(DECK 2: Up Side)



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

Ref. No.	Part Name	Part No.
<b>A</b>	FLOIL AK-152	SZZOL18
<b>C</b>	FLOIL947P	RZZOL02

(DECK 2: Down Side)



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

Ref. No.	Part Name	Part No.
<b>A</b>	FLOIL AK-152	SZZOL18
<b>C</b>	FLOIL947P	RZZOL02

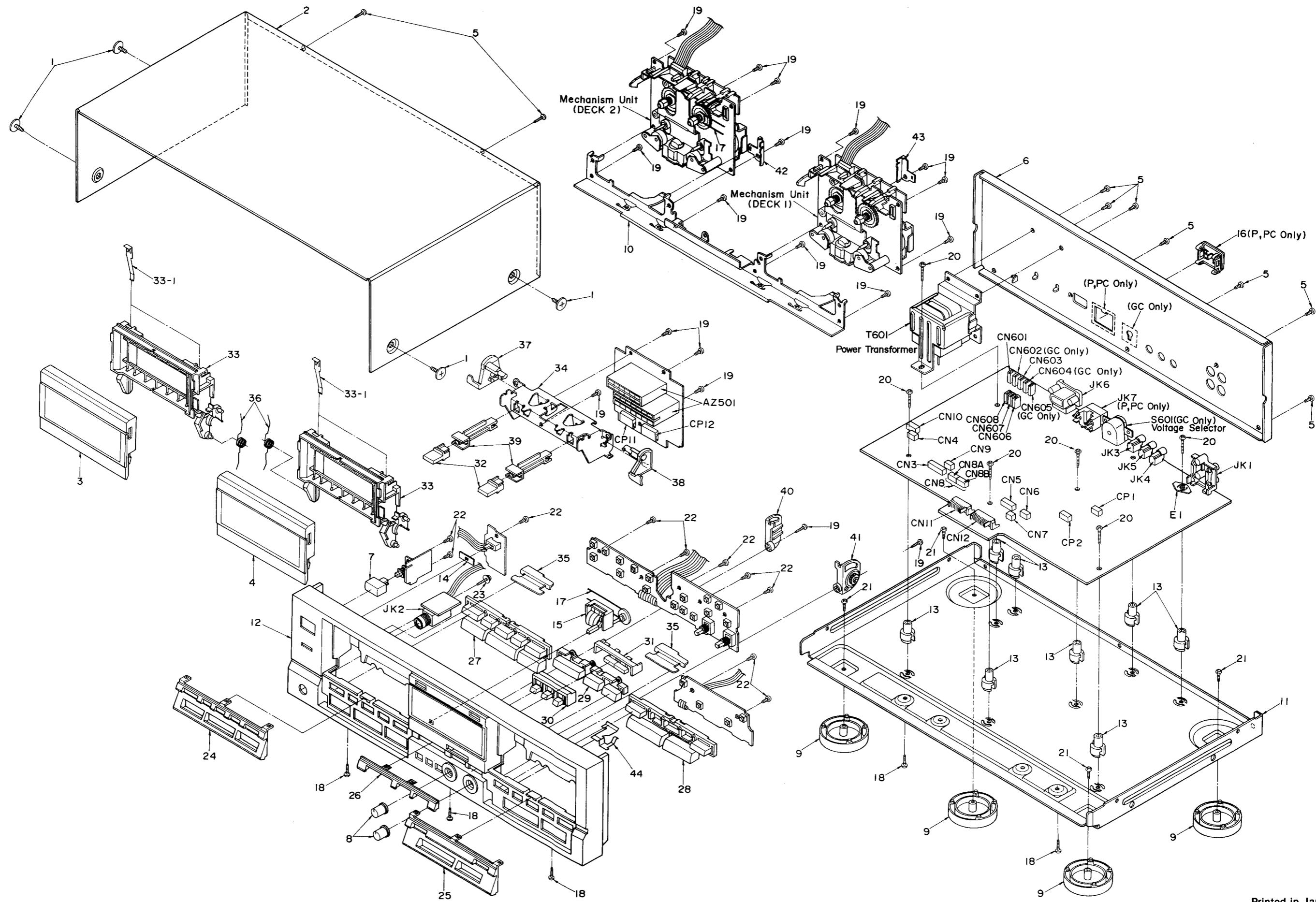
## REPLACEMENT PARTS LIST

Notes : \* Important safety notice:  
 Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.  
 \* 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
				28	RGU0065	BUTTON, OPERATION (DECK1)	(K)
		CABINET AND CHASSIS		28	RGU0065-S	BUTTON, OPERATION (DECK1)	(S)
1	SNE2129-1	SCREW	(K)	29	RGU0066	BUTTON, EDIT	(K)
1	SNE2129	SCREW	(S)	29	RGU0066-S	BUTTON, EDIT	(S)
2	RKM0016-K1	CABINET	(K)	30	RGU0067	BUTTON, REVERSE	(K)
2	RKM0016-S	CABINET	(S)	30	RGU0067-1S	BUTTON, REVERSE	(S)
3	RYF0063B-K	CASSETTE LID (DECK2)	(K)	31	RGU0068	BUTTON, DOLBY	(K)
3	RYF0063C-S	CASSETTE LID (DECK2)	(S)	31	RFKNSTR165ES	BUTTON ASS'Y, DOLBY	(S)
4	RYF0063-K	CASSETTE LID (DECK1)	(K)	32	RGU0070	BUTTON, EJECT	(K)
4	RYF0063-S	CASSETTE LID (DECK1)	(S)	32	RGU0070-S	BUTTON, EJECT	(S)
5	XTBS3+8JFZ1	SCREW		33	RKF0020A-3	CASSETTE HOLDER	
6	RGR0008A-H	REAR PANEL	(P, PC)	33-1	QBP2006A	SPRING, TAPE PRESSURE	
6	RGR0008B-N	REAR PANEL	(E)	34	RMA0051	EJECT ANGLE	
6	RGR0008B-P	REAR PANEL	(EG)	35	RMA0052-1	BRACKET	
6	RGR0008B-0	REAR PANEL	(EB, GN)	36	RME0026	SPRING, CASSETTE HOLDER	
6	RGR0008C-F	REAR PANEL	(GC)	37	RML0041	EJECT LEVER (L)	
7	RGU0030	BUTTON, POWER	(K)	38	RML0042	EJECT LEVER (R)	
7	RGU0030-S	BUTTON, POWER	(S)	39	RMD0014	EJECT ROD	
8	RGW0012	KNOB, REC. LEVEL	(K)	40	RMR0153	DAMPER GEAR (L) ASS'Y	
8	RGW0012-S	KNOB, REC. LEVEL	(S)	41	RMR0154	DAMPER GEAR (R) ASS'Y	
9	RKA0009-1	FOOT		42	RMA0113	DAMPER ANGLE (L)	
10	RMA0050	BRACKET, MECHANISM		43	RMA0114	DAMPER ANGLE (R)	
11	RMK0026-1	BOTTOM BOARD		44	RMC0035	GND PLATE	(S) (E, EB, EG)
12	RFKGSTR165EK	FRONT PANEL ASS'Y	(K) (E, EB, EG, GC, GN)			PACKING MATERIAL	
12	RFKGSTR165ES	FRONT PANEL ASS'Y	(S) (E, EB, EG)	P1	RPG0399	CARTON BOX	(K) (PC, E, EB, EG, GC, GN)
12	RFKGSTR165PK	FRONT PANEL ASS'Y	(K) (P, PC)	P1	RPG0400	CARTON BOX	(K) (P)
13	SHE187-2	HOLDER		P1	RPG0444	CARTON BOX	(S) (E, EB, EG)
14	SHR6076	ORNAMENT	(K)	P2	RPN0296A	PAD, FRONT(L)	
14	SHR6076-1	ORNAMENT	(S)	P3	RPN0296B	PAD, FRONT(R)	
15	SJN32	TAPE COUNTER		P4	RPN0296C	PAD, BACK(L)	
16	SJS9331A	AC OUTLET COVER	(P, PC)	P5	RPN0296D	PAD, BACK(R)	
17	SMQ20024	BELT, TAPE COUNTER		P6	SPSD152	PAD, ACCESSORIES	
18	XTBS3+10JFZ1	SCREW		P7	XZB50X65B02	PROTECTION COVER	
19	XTB3+10JFZ	SCREW				ACCESSORIES	
20	XTB3+20J	SCREW		A1	RQF0424	INSTRUCTION MANUAL UNIT	(E)
21	XTB3+6G	SCREW		A1	RQF0425	INSTRUCTION MANUAL UNIT	(EB)
22	XTB3+8JFZ	SCREW		A1	RQF0426	INSTRUCTION MANUAL UNIT	(EG)
23	XTWS3+10Q	SCREW		A1	RQF0427	INSTRUCTION MANUAL UNIT	(GC)
24	RGK0049	ORNAMENT, BUTTON (DECK2)	(K)	A1	RQF0428	INSTRUCTION MANUAL UNIT	(GN)
24	RGK0049-S	ORNAMENT, BUTTON (DECK2)	(S)	A1	RQF0429	INSTRUCTION MANUAL UNIT	(P)
25	RGK0050	ORNAMENT, BUTTON (DECK1)	(K)	A1	RQF0430	INSTRUCTION MANUAL UNIT	(PC)
25	RGK0050-S	ORNAMENT, BUTTON (DECK1)	(S)	A1-1	RFKSSTR165E	INSTRUCTION MANUAL ASS'Y	(E)
26	RGK0051	ORNAMENT, EDIT BUTTON	(K)	A1-1	RFKSSTR165PC	INSTRUCTION MANUAL ASS'Y	(PC)
26	RGK0051-S	ORNAMENT, EDIT BUTTON	(S)				
27	RGU0064	BUTTON, OPERATION (DECK2)	(K)				
27	RGU0064-S	BUTTON, OPERATION (DECK2)	(S)				

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
A1-1	RQT0350-B	INSTRUCTION MANUAL	(EB)				
A1-1	RQT0351-D	INSTRUCTION MANUAL	(EG)				
A1-1	RQT0352-G	INSTRUCTION MANUAL	(GC, GN)				
A1-1	RQT0353-P	INSTRUCTION MANUAL	(P)				
A1-2	RQA0013	WARRANTY CARD	(E, EB, EG)				
A1-2	SQX7179	WARRANTY CARD	(P)				
A1-2	SQX7183	WARRANTY CARD	(PC)				
A1-2	SQX7186	WARRANTY CARD	(GN)				
A1-3	RQCB0169	SERVICENTER LIST	(E, EB, EG, GC, GN)				
A1-3	SQX9129-1	SERVICENTER LIST	(P)				
A1-3	SQX9131	SERVICENTER LIST	(PC)				
A2	RJA0004	POWER CORD	(GC)	$\Delta$			
A2	SEDAC05E03	POWER CORD	(E, EG)	$\Delta$			
A2	SJA173-1	POWER CORD	(GN)	$\Delta$			
A2	SJA175	POWER CORD	(PC)	$\Delta$			
A2	SJA175-1	POWER CORD	(P)	$\Delta$			
A2	SJA193-1	POWER CORD	(EB)	$\Delta$			
A3	SJP2249-3	CORD					
A4	SJP2257T	REMOTE CONTROL CORD					
A5	SJP9215	AC PLUG ADAPTOR	(GC)	$\Delta$			

## ■ CABINET PARTS LOCATION



## Cassette Deck

## RS-TR165

## DEUTSCH

## MESSUNGEN UND EINSTELL METHODEN

## Meßinstrumente

- Elektronisches Voltmeter (EVM)
- Oszilloskop
- Digitaler Frequenzmesser
- Audiofrequenz-Oszillatator
- Dämpfungswiderstand
- Gleichstrom-Voltmeter
- Widerstand (600Ω)

## Tonkopf-Azimuteinstellung (Deck 2/1)

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Azimuteinstellung (8kHz, -20dB) ab. Drehen Sie die Azimuteinstellschraube so lange, bis die Abgaben des L-K und R-K den Höchstwert erreichen, und die Lissajouscche wellenfigur sich, wie abgebildet, 0 Grad nähert.

## Anmerkung:

Wenn L-K und R-K nicht auf demselben Punkt ihren Höchstwert erreichen, stellen Sie beide Kanäle auf den jeweiligen Höchstwert und gleichen dann aus.

2. Nehmen Sie denselben Einstellvorgang in der Wiedergabestellung vor.

## Prüfung des Pegelunterschiedes bei Vorwärts- und Rückwärtsdrehung

3. Den Abschnitt für Verstärkungseinstellung (315Hz, 0dB) des Prüfbandes (QZZCFM) wiedergeben und sicherstellen, daß der Pegelunterschied bei Vorwärts- und Rückwärtsdrehung kleiner als 1dB ist.
4. Nach der Einstellung Schrauben-Sicherungsmittel an die Azimuth-Einstellschraube geben.

## Bandgeschwindigkeits-einstellung (Deck 2/1)

## Normale Geschwindigkeit

1. Den Wahlschalter für Editier-Bandgeschwindigkeit auf "x1" stellen.
2. Den mittleren Teil des Prüfbandes (QZZCWAT) wiedergeben.
3. Deck 1 = VR902 und Deck 2=VR903 so einstellen, daß

## Hohe Geschwindigkeit

4. Den Wahlschalter für Editier-Bandgeschwindigkeit auf "x2" stellen und den Prüfmoduspunkt und GND verbinden.
5. Den mittleren Teil des Prüfbandes (QZZCWAT) wiedergeben.
6. Deck 1 = VR901 so einstellen, daß der Ausgang dem Sollwert entspricht.

## Einstellung der Wiedergabeverstärkungsregelung (Deck 2/1)

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Einstellung der Verstärkungsregelung (315Hz, 0dB) ab.
2. Stellen Sie VR3 (L-K) [[VR4 (R-K)]] für Deck 1 von VR5 (L-K) [[VR6 (R-K)]] für Deck 2 so ein, daß die Abgabe den Normwert erfüllt.

## Wiedergabefrequenzaang (Deck 2/1)

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für den Frequenzgang (315Hz, 12,5kHz~63Hz, -20dB) ab.
2. Achten Sie darauf, daß der Frequenzgang für beide Kanäle (L-K, R-K) in dem in Abb. 6 gezeigten Bereich liegt.

**Löschstromeinstellung (Deck 2)**

1. Die leere Metallband-Prüfkassette (QZZCRZ) einsetzen und das Gerät auf Aufnahmepause schalten.
2. VR301 so einstellen, daß der Ausgang zwischen TP3 und GND dem Sollwert entspricht.

**Gesamtfrequenzgang (Deck 2)**

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Pause-Betrieb.
2. Geben Sie über einen Lautstärkeregler ein Bezugseingabesignal (1kHz, -24dB) ein.
3. Stellen Sie das Signal auf 20dB und justieren die Frequenz von 50Hz~10kHz.
4. Nehmen Sie das Wobbelsignal auf.
5. Geben Sie das aufgenommene Signal wieder und achten darauf, daß dieses sich im Vergleich zur Bazugsfrequenz (1kHz) in dem in Abb. 8 aufgezeichneten Bereich befindet.
6. Sollte das Signal nicht im Normbereich liegen, justieren Sie VR303 (L-K) und VR302 (R-K), so daß der Frequenzpegel mit der Norm übereinstimmt.
7. Wiederholen Sie die Schritte 2~6 und verwenden das CrO<sub>2</sub> Band (QZZCRX) und das Metallband (QZZCRZ). Der Frequenzbereich wird auf 12.5kHz (50Hz~12.5kHz) angehoben.
8. Achten Sie darauf, daß sich der Frequenzpegel in dem in Abb. 9 aufgezeigten Bereich befindet.

**Einstellung der Gesamtverstärkungsregelung (Deck 2)**

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Betrieb.
2. Legen Sie ein Bezugseingabesignal (1kHz, -24dB) an. Stellen Sie das Ausgangssignal auf einen Pegel von 0.4V ein.
3. Nehmen Sie das Eingabesignal auf.
4. Geben Sie das in Schritt 3 oben aufgenommene Signal wieder und achten Sie darauf, daß das Ausgangssignal mit dem Normwert übereinstimmt.
5. Sollte der Wert nicht innerhalb der Norm liegen, justieren Sie VR7 (L-K) und VR8 (R-K).
6. Wiederholen Sie die Schritte 2~5 von oben so lange, bis das Ausgangssignal im Normbereich liegt.

# FRANÇAIS

## METHODES DES MEASURES ET REGLAGES

### Appareils de mesurage

- Voltmètre électronique
- Oscilloscope
- Compteur de fréquence numérique
- Oscillateur de fréquence audio
- A.T.T. (Atténuateur)
- Voltmètre à C.C.
- Résistance (600Ω)

### Reglage Azimutal de la tete (Platine 2/1)

1. Faire jouer la portion du réglage de l'azimuth (8kHz, -20dB) de la bande d'essai (QZZCFM). Ajuster la vis de la mise au point azimutale jusqu'à ce que les sorties du canal de gauche et du canal de droite soient maximisées et que la forme d'onde de Lissajous, comme il est illustré, approche de 0 degré.

#### Nota:

Si le canal de gauche et canal de droite ne sont pas maximisés au même point, régler le point où les niveaux de chaque canal sont maximisés et égaux.

2. Effectuer le même réglage sur le mode d'audition.

### Vérification de la différence de niveau pour les deux sens de rotation

3. Introduire une bande métal vierge prévue pour les essais (QZZCPZ) et vérifier que la différence de niveau pour les deux sens de rotation est inférieure à 1dB.
4. Après cela, mettre une goutte de vernis de blocage sur la vis de réglage de l'azimut.

### Reglage de la vitesse de défilement Vitesse (Platine 2/1)

#### normal

1. Placer le sélecteur de vitesse d'édition sur la position "x1".
2. Lire la partie centrale de la bande d'essai (QZZCWAT).
3. Régler VR902 pour la platine 1 et VR901 pour la platine 2 de manière que la sortie ait la valeur standard.

#### Grande vitesse

4. Placer le sélecteur de vitesse d'édition sur la position "x2" et relier le point de test et la masse (GND).
5. Lire la partie centrale de la bande d'essai (QZZCWAT).
6. Régler VR901 pour la platine 1 de manière que la sortie ait la valeur standard.

### Reglage de L'amplification de Lecture (Platine 2/1)

1. Faire jouer la partie réglée de l'amplification (315Hz, 0dB) de la bande d'essai (QZZCFM).
2. Régler la platine 1: VR3 (canal de gauche) [[VR4 (canal de droite)]] et la platine 2: VR5 (canal de gauche) [[VR6 (canal de droite)]] de telle sorte que la sortie soit en deçà de la valeur standard.

### Reponse en Fréquence de la Lecture (platine 2/1)

1. Faire jouer la partie de la réponse en fréquence (315Hz, 12.5kHz, -63Hz, -20dB) de la bande d'essai (QZZCFM).
2. S'assurer que la réponse en fréquence soit en deçà de la plage montrée dans la Fig. 6, à la fois pour le canal de gauche et le canal de droite.

### Reglage du courant d'effacement (Platine 2)

1. Introduire une bande métal vierge prévue pour les essais (QZZCRZ) et régler l'appareil en mode de pause d'enregistrement.
2. Régler VR301 de manière que la sortie entre TP3 et GND ait la valeur standard.

### Reponse en Fréquence Totale (Platine 2)

1. Introduire la bande d'essai vierge normale (QZZCRA) et régler l'appareil sur le mode d'intermission d'un disque.
2. Appliquer un signal d'entrée de référence (1kHz, -24dB) par l'intermédiaire d'un atténuateur.
3. Diminuer le signal de 20dB et régler la fréquence de 50Hz~10kHz.
4. Enregistrer le balayage de fréquence.
5. Faire jouer le signal enregistré et s'assurer qu'il soit en deçà de la plage montrée à la Fig. 8 en comparaison à la fréquence de référence (1kHz).
6. S'il n'est pas en deçà de la plage standard, régler VR303 (canal de gauche) et VR302 (canal de droite) de telle sorte que le niveau de fréquence soit en deçà de la plage standard.
7. Répéter les étapes 2~6 ci-dessus en utilisant la bande CrO<sub>2</sub> (QZZCRX) et la bande métallisée (QZZCRX) en augmentant la plage de fréquence à 12.5kHz.
8. S'assurer que le niveau soit en deçà de la plage montrée à la Fig. 9.

### Reglage de L'amplification Totale (Platine 2)

1. Introduire la bande d'essai vierge normale (QZZCRA) et régler l'appareil sur le mode d'intermission d'un disque.
2. Appliquer un signal d'entrée de référence (1kHz, -24dB). Diminuer la sortie de telle sorte que son niveau devienne de 0.4V.
3. Enregistrer ce signal d'entrée.
4. Faire jouer le signal enregistré à l'étape 3 ci-dessus, et s'assurer que la sortie en deçà de la valeur standard.
5. Si elle n'est pas en deçà de la valeur standard, régler VR7 (canal de gauche) et VR8 (canal de droite).
6. Répéter les étapes 2~5 ci-dessus jusqu'à ce que la sortie soit en deçà de la valeur standard.

## ESPAÑOL

## METODOS DE AJUSTE Y MEDIDA

## Instrumento de medición

- EVM (Voltímetro electrónico)
- Osciloscopio
- Frecuencímetro digital
- Oscilador AF
- ATT (Atenuador)
- Voltímetro CC
- Resistor (600Ω)

## Ajuste Azimutal de Cabeza (Platina 2/1)

1. Reproducir la porción de ajuste azimutal (8kHz, -20dB) de la cinta de prueba (QZZCFM). Variar el tornillo de ajuste azimutal hasta que las salidas del CH-I y CH-D se maximicen y forme de onda de lissajous, como ilustrado, se acerque a grado 0.

## Nota:

Si CH-I y CH-D no son maximizados en el mismo punto, ajustar al punto donde los niveles de cada canal sean maximizados e igualados.

2. Efectuar el mismo ajuste en la modalidad de reproducción.

## Ajuste de la Velocidad de la Cinta (Platina 2/1)

## Velocidad normal

1. Lleve a "x1" el selector de la velocidad de la cinta de edición.
2. Reproduzca la sección central de la cinta de prueba (QZZCWAT).
3. Ajuste la platina 1 = VR902 y la platina 2 = VR903 de modo que la salida quede comprendida dentro de los valores estándares.

## Comprobación de la diferencia de nivel de giro hacia adelante y hacia atrás

3. Reproduzca la parte del ajuste de ganancia (315Hz, 0dB) de la cinta de prueba (QZZCFM) y luego asegúrese de que la diferencia de nivel de giro hacia adelante y hacia atrás sea menor que 1dB.
4. Dcspués del ajuste, aplique pintura de fijación al tornillo de ajuste del azimut.

## Alta velocidad

4. Lleve a "x2" el selector de la velocidad de la cinta de edición y conecte GND y el punto de la modalidad de prueba.
5. Reproduzca la sección central de la cinta de prueba (QZZCWAT).
6. Ajuste la platina 1 = VR901 de modo que la salida quede comprendida dentro de los valores estándares.

## Ajuste de Ganancia de Reproducción (Platina 2/1)

1. Reproducir la porción ajustada de ganancia (315Hz, 0dB) de la cinta de prueba (QZZCFM).
2. Ajustar la Platina 1: VR3 (CH-I) [[VR4 (CH-D)]] y la Platina 2: VR5 (CH-I) [[VR6 (CH-D)]] de manera que la salida esté dentro del valor estándar.

## Respuesta de Frecuencia de Reproducción (Platina 2/1)

1. Reproducir la parte de respuesta de frecuencia de reproducción (315Hz, 12.5kHz~63Hz, -20dB) de la cinta de prueba (QZZCFM).
2. Asegurarse de que la respuesta de frecuencia esté dentro de la gama mostrada en la Fig. 6 para ambos CH-I y CH-D.

## Ajuste de la Corriente de Borrado (Platina 2)

1. Inserte la cinta de prueba metálica en blanco (QZZCRZ) y ponga el aparato en la modalidad de pausa de grabación.
2. Regule VR301 de modo que la salida entre TP3 y GND esté dentro de los valores estándares.

## Respuesta de Frecuencia Total (Platina 2)

1. Poner una cinta virgen normal (QZZCRA) y poner la unidad en la modalidad de Pausa de Grabación.
2. Aplicar la señal de entrada de referencia (1kHz, -24dB) a través de un atenuador.
3. Atenuar la señal por 20dB y ajustar la frecuencia de 50Hz~10kHz.
4. Grabar el barrido de frecuencia.
5. Reproducir la señal grabada y asegurarse de que esté dentro de la gama mostrada en la Fig. 8 en comparación con la frecuencia de referencia (1kHz).
6. Si no está dentro de la gama de frecuencia, ajustar VR303 (CH-I) y VR302 (CH-D) de manera que el nivel de frecuencia esté dentro de la gama estándar.
7. Repetir los pasos 2~6 de arriba utilizando la cinta CrO<sub>2</sub> (QZZCRX) y la cinta metálica (QZZCRZ) incrementando la gama de frecuencia a 12.5kHz (50Hz~12.5kHz).
8. Asegurarse de que el nivel esté dentro de la gama mostrada en la Fig. 9.

## Ajuste de Ganancia Total (Platina 2)

1. Insertar la cinta de prueba en blanco normal (QZZCRA) y poner la unidad en modalidad de pausa de Grabación.
2. Aplicar la señal de entrada de referencia (1kHz, -24dB). Atenuar la salida de manera que su nivel se haga 0.4V.
3. Grabar la señal de entrada.
4. Reproducir la señal grabada en el paso 3 de arriba y asegurarse de que la salida esté dentro del valor estándar.
5. Si no está dentro del valor estándar, ajustar VR7 (CH-I) y VR8 (CH-D).
6. Repetir el paso 2~5 de arriba hasta que la salida esté dentro del valor estándar.